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|  <a href="#">TDoc_List_Meeting_RAN1-NR#2.zip</a>  | 2018/01/10 16:45                  | 794,9 KB                          |

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July 2017, Week 1

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Dear all,

Hope you all had a safe journey back...

Enclosed is a preliminary version of last week meeting.

Contributions have been uploaded to the 3GPP ftp web site – I'm going now to start checking them all and report the actual status into 3GU Tdoc\_list

BR  
P

**Patrick Merias**– Mobile Competence Center Technical Officer

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**3GPP TSG RAN WG1 Meeting #90  
Prague, Czech Rep, 21<sup>st</sup> – 25<sup>th</sup> August 2017**

**R1-171xxxx**

**Source:** MCC Support  
**Title:** Draft Report of 3GPP TSG RAN WG1 #AH\_NR2 v0.1.0  
(Qingdao, China, 27<sup>th</sup> – 30<sup>th</sup> June 2017)  
**Document for:** Comments



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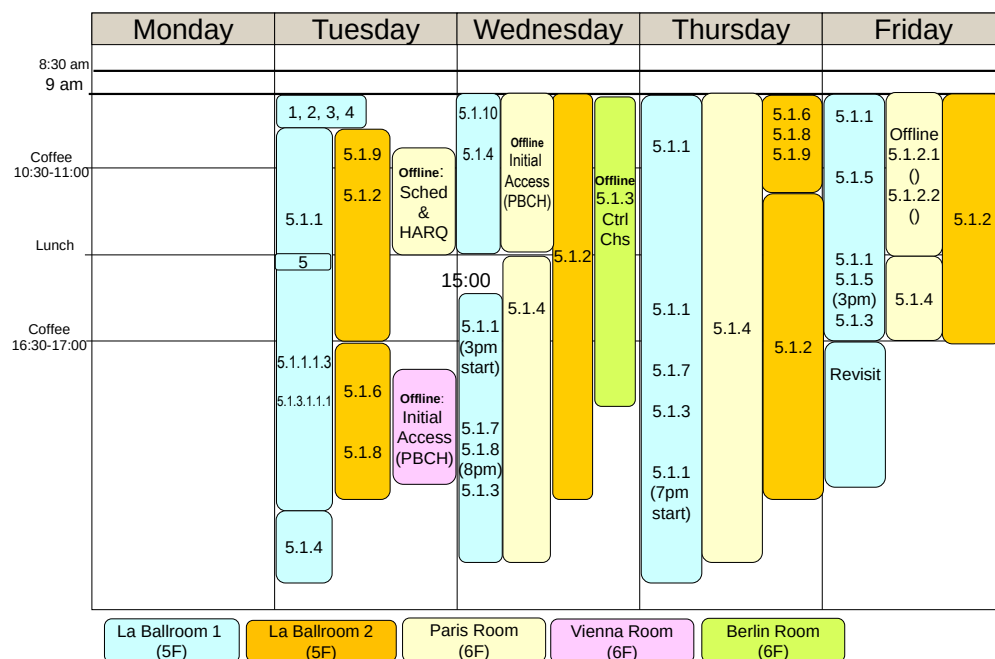
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## Main facts summary

The second 3GPP TSG WG RAN1 ad-hoc meeting on NR, hosted by ZTE Corporation, was held at the Meridien Qingdao, China. The meeting started at 9:00 on Tuesday 27<sup>th</sup> June and finished at 20:15 on Friday 30<sup>th</sup> June 2017. The number of attending delegates, having confirmed their participation through the electronic check-in application, was **394**. Note that the number of registered was 557.

The schedule of the week was as follows:



Note: The empty slots are devoted to offline sessions.

**The list of action points that required RAN1 close follow-up is listed in Annex F (end of document).**

The number of contributions for this meeting was xxxx, and those documents were categorized as followed.

| Agenda Item | Input Document | Treated Document |
|-------------|----------------|------------------|
| All         |                |                  |

Note: The amount of documents includes those discussed during the email discussion session post meeting.

|  |                                                   |
|--|---------------------------------------------------|
|  | Contribution is agreed/approved                   |
|  | Contribution is not pursued (no consensus)        |
|  | Further discussion is required – come-back needed |
|  | Working assumption                                |
|  | Specific action needed from MCC                   |
|  | Contribution is for email discussion/approval     |

## 1 Opening of the meeting

Mr Matthew Baker (Vice Chairman) welcomed the participants of the RAN WG1 ad-hoc meeting and opened the meeting at 09:00.

Mr Xinhui Wang on behalf of ZTE welcomed the delegates, and detailed the domestic arrangements for the full week.

### 1.1 Call for IPR

*The attention of the members of this Technical Specification Group was drawn to the fact that 3GPP Individual Members have the obligation under the IPR Policies of their respective Organizational Partners to inform their respective Organizational Partners of Essential IPRs they become aware of.*

*The members take note that they are hereby invited:*

- to investigate whether their organization or any other organization owns IPRs which were, or were likely to become Essential in respect of the work of 3GPP.
- to notify their respective Organizational Partners of all potential IPRs, e.g., for ETSI, by means of the IPR Information Statement and the Licensing declaration forms (e.g. see the ETSI IPR forms <http://webapp.etsi.org/Ipr/>).

### 1.2 Competition law statement

*The Chairman also drew Member's attention to the fact that 3GPP activities are subject to antitrust and competition laws and that compliance with said laws is therefore required of any participant of this WG meeting including the Chairman and Vice Chairmen. In case of question, please contact your legal counsel.*

*The present meeting will be conducted with strict impartiality and in the interests of 3GPP.*

*Furthermore, the Chairman reminded Members that timely submission of work items/contributions in advance of WG meetings is important to allow for full and fair consideration of such matters.*

### 1.3 Network usage conditions

*The PCG has laid down the following network usage conditions:*

**Users shall not use the network to engage in illegal activities. This includes activities such as copyright violation, hacking, espionage or any other activity that may be prohibited by local laws.**

**Users shall not engage in non-work related activities that consume excessive bandwidth** or cause significant degradation of the performance of the network.

Since the **network is a shared resource**, users should exercise some basic etiquette when using the 3GPP network at a meeting. It is understood that high bandwidth applications such as downloading large files or video streaming might be required for business purposes, but delegates should be strongly discouraged in performing these activities for personal use. Downloading a movie or doing something in an interactive environment for personal use essentially wastes bandwidth that others need to make the meeting effective. The meeting chairman should remind end users that the network is a shared resource; the more one user grabs, the less there is for another. Email and its attachments already take up significant bandwidth (certain email programs are not very bandwidth efficient). In case of need the chair can ask the delegates to restrict IT usage to things that are essential for the meeting itself.

1. **DON'T place your WiFi device in ad-hoc mode**
2. **DON'T set up a personal hotspot in the meeting room**
3. **DO try 802.11a if your WiFi device supports it**
4. **DON'T manually allocate an IP address**
5. **DON'T be a bandwidth hog by streaming video, playing online games, or downloading huge files**
6. **DON'T use packet probing software which clogs the local network (e.g., packet sniffers or port scanners)**

## 2 Approval of Agenda

[R1-1711601](#) Draft Agenda of RAN1#AH\_NR2 meeting RAN1 Chair

Matthew Baker (Vice Chairman) proposed the agenda for the meeting, as well the schedule of the week.

**Decision:** The agenda is approved.

### 3 Approval of Minutes from previous meetings

#### [R1-1709881](#) Report of RAN1#89 meeting ETSI

The document was presented by Patrick Merias from MCC (ETSI Mobile Competence Center) and provides a draft of the report from last RAN1#89 meeting in Hangzhou.

**Discussion:** MCC recalled that the report is a draft for information, with focus on the NR part – final report will be presented for approval at the next ordinary meeting (RAN1#90).

**Decision:** The document is approved.

#### [R1-1711586](#) Selected highlights from RAN#76 of relevance to RAN1 RAN1 Chair

The document (slide 3 relevant to NR) was presented by Matthew Baker (Vice Chairman) on behalf of RAN1 Chair and provides highlights relevant to RAN1 from the last plenary.

**Discussion:** Confirmation of one additional ad-hoc meeting in January 2018.

Panasonic understanding is that RAN1 works for eMBB low latency (December 2017), no need to work the solution satisfying URLLC at this meeting

Ericsson: the low latency part should be specified until December, independently of use cases (eMBB or URLLC). No need to limit our work to eMBB use case only for December. If clarification needed, should be a RAN discussion/decision

**Decision:** The document is noted.

### 4 Incoming Liaison Statements

#### NR Rel-15

##### [R1-1710211](#) LS on SR design principles in NRRAN2, Samsung

The document was presented by ... from Samsung and informs RAN1 of RAN2 most recent agreements on SR design principles for NR. RAN2 would like to inform RAN1 that it does not see the need for multi-bit SR support and ask RAN1 to take all this information into account in its own work on SR design.

**Decision:** The document is noted.

##### [R1-1710212](#) LS on UE measurement capabilities across LTE and NR RAN2, NTT DOCOMO

The document was presented by Hiroki Harada from NTT DOCOMO and asks RAN4 to investigate the UE measurement capabilities and answer the 5 questions listed in the LS.

**Discussion:** No action to RAN1.

**Decision:** The document is noted.

##### [R1-1710215](#) Response LS on reading time index indication for RRM measurements RAN2, Intel

The document was presented by Daewon Lee from Intel and is a reply to [R1-1706707](#):

- From RAN2 point of view, the UE should be able to perform beam/cell measurement and identification quickly and reliably with minimal need for measurement gaps. Therefore, if there is considerable delay due to reading the time index from PBCH, RAN2 observes that this may impact handover performance and UE power consumption. RAN2 would like to ask RAN1 to consider the above information in RAN1 design.
- In addition, RAN2 would like to ask RAN1 if the time index indication needs to be acquired by the UE for every measurement sample and if the UE also need to acquire the time index indication in the idle/inactive mode.

**Discussion:** Suggested reply in [R1-1710500](#).

**Decision:** The document is noted.

##### [R1-1710500](#) Draft Reply LS on reading time index indication for RRM measurements Intel Corporation

The document was presented by Daewon Lee from Intel and is a reply to R2-1706160 ([R1-1710215](#)).

- For UEs in CONNECTED mode, UE may be able to infer the SS block time index indication for detected NR PSS/SSS of neighbour cell, if the UE has successfully retrieve the SS block time index of any SS block from the neighbour cell. However, depending of network deployment scenario, configured SS burst set periodicity, and mobility situation of the UE, the UE may need to re-retrieve the SS block time index of neighbour cells time to time and possibly in every few measurement samples when SS burst set periodicity is configured to be very long (e.g. 160 msec). The frequency and instances in which the UE is required to read the SS block time index of the detected SS block is implementation specific. In case of inter-frequency RRM measurements, UE may be required to read the SS block time index within the measurement gap at least once.
- For UEs in IDLE/INACTIVE mode, UEs may not necessarily need the SS block time index for the cell re-selection process. UEs will be able to uniquely identify whether two SS blocks from a cell are from the same beam or not by interval between the two SS blocks. If the SS blocks are separately by integer multiple of the configured SS burst set periodicity, the two SS blocks are from the same beam. Otherwise, they are from different beam. Given that the UE is able to uniquely identify SS blocks (although it may not have the SS block time index information), it can perform per beam filtering of the measurements and ultimately derive the cell level quality. It should be noted that when the UE needs to camp on a cell, it will be required to successfully read the SS block time index information (as well as SFN in NR PBCH) to derive the slot and radio frame boundaries.

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**Decision:** The document is noted. To be treated under 5.1.1.1.3 for the preparation of the final answer.

**Friday:**

[R1-1711907](#) [DRAFT] Reply LS response on reading time index indication for RRM measurements Intel

**Decision:** The document is noted and final LS is [approved in R1-1711907](#).

**[R1-1710216](#) LS on Emergency Support in NR SA2, Nokia**

The document was presented by Karri Ranta-aho from Nokia and asks RAN to clarify and confirm the support for emergency services including regulatory requirements in NR for Rel-15.

**Discussion:** No action to RAN1.

**Decision:** The document is noted.

**[R1-1710220](#) Reply LS on Emergency Support in NR RAN, T-Mobile**

The document was presented by Scott Migaldi from T-Mobile and is the reply to [R1-1710216](#).

- RAN confirms that support for Emergency Services and the corresponding support for Location Services is included in the scope for release 15 work. Support for Emergency Services and the corresponding support for Location Services will be specified by June 2018, and will be applicable for both a non-standalone NR UE that is supported with a LTE PCell and for a standalone NR UE. This work will not delay the previously approved December 2017 completion goal deadline for non-standalone NR.
- The regulatory performance targets in any radio access technology are specified in the US by the FCC as shown below:

| FCC BENCHMARK | ACCURACY REQUIREMENT        |
|---------------|-----------------------------|
| APRIL 2017    | 40% of all 911 Calls <= 50m |
| APRIL 2018    | 50% of all 911 Calls <= 50m |
| APRIL 2020    | 70% of all 911 Calls <= 50m |
| APRIL 2021    | 80% of all 911 Calls <= 50m |

**Decision:** The document is noted.

**[R1-1710217](#) LS on Support for fake gNB detection mechanisms SA3, Nokia**

The document was presented by Karri Ranta-aho from Nokia.

**Discussion:** .Nokia suggested RAN1 looking at questions 4 and 5.

T-Mobile → make sure our reply won't have impact to roaming

**Decision:** The document is noted. Draft a reply in [R1-1711657](#) – (Nokia)

**Friday:**

[R1-1711657](#) [DRAFT] Response LS on Support for fake gNB detection mechanisms Nokia

**Decision:** The document is noted and final LS is [approved in R1-1711657](#).

**[R1-1710213](#) LS on UE categories for NR and LTE-NR Dual Connectivity RAN2, NTT DOCOMO**

The document was presented by Fred Takeda from NTT DOCOMO and asks RAN1 to provide input for Layer 1 parameter set today associated with UE category for LTE-NR DC and the NR standalone operation.

**Decision:** The document is noted.

**[R1-1710221](#) Reply LS on UE categories for NR and LTE-NR Dual Connectivity RAN, NTT DOCOMO**

The document was presented by Fred Takeda from NTT DOCOMO and is a preliminary reply to [R1-1710213](#).

Regarding item 1) The necessity of UE categories for UE in the LTE-NR DC (Opt. 3/4/7) as well as the NR standalone (Opt. 2)

RAN foresees industrial demand that LTE-NR DC (Option 3/4/7 series) enables operators to provide a certain peak data rate, as well as the NR standalone (Option 2). RAN would like to let RAN WGs to decide how the target peak data rate can be supported for LTE-NR DC and NR standalone in the specifications, e.g. whether the existing concept of UE category is inherited or a new concept in defining the target peak data rate is introduced. RAN sees that it is important that practical UE constraints are also taken into account in the UE capabilities and categories e.g. UE constraints due to hardware sharing during LTE – NR DC operations. It is also up to RAN WGs how the UE categories and capabilities are defined for LTE-NR DC as well as NR standalone.

Regarding item 2) The target peak data rate in DL and UL to be supported for Option 3 until December 2017 and item 3) The target peak data rate in DL and UL to be supported for the other options until June 2018.

RAN will discuss these items by email until TSG-RAN #77 and aim to decide the target value(s) at the #77 meeting.

**Decision:** The document is noted.

**[R1-1710214](#) LS reply to SA2 on maximum data rate RAN2, MediaTek**

The document was presented by ... from MediaTek and inform RAN1 of RAN2's conclusion that Options 3 also targets the same maximum data rate as NR SA, i.e. 20Gbps for downlink and 10Gbps for uplink per UE.

**Decision:** The document is noted.

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**[R1-1711055](#) Initial views on UE category NTT DOCOMO, INC.**

The document was presented by Fred Takeda from NTT DOCOMO.

Proposal 1: Define UE category based on the maximum number of DL/UL-SCH transport block bits transmitted/received within a fixed/reference time duration (e.g., 1ms).

- Difference in subcarrier-spacing is not visible in the UE category.
- FFS: different capabilities of MIMO/MCS results in different UE categories or in the same UE category with different values on some parameters.

One list of UE category is used for the use-cases of eMBB, URLLC, and mMTC.

Proposal 2: Identify soft-buffer definition for the LTE-NR dual connectivity, and inform RAN1's understanding to RAN2.

- Option 1: Soft-buffer sizes are defined for LTE operation and NR operation, respectively.
- Option 2: Soft-buffer size is defined as the sum of LTE and NR, and the soft-buffer is shared by LTE and NR in semi-static or dynamic manner.

**Discussion:** Panasonic → hard to downselect between option 1 & 2 in a timely manner (likely not before Dec 17).

Qualcomm → RAN1 should not worry too much at this meeting, mainly RAN2 issues.

Ericsson → no sure whether different UE categories are needed for eMBB, URLLC, and mMTC

**Decision:** The document is noted.

**[R1-1711476](#) On UE Categories/Capabilities Ericsson**

The document was presented by Daniel Larsson from Ericsson.

- Proposal 1: In NR, the number of supported MIMO layers is signalled as explicit capability (possibly per band) and not part of a UE category.
- Proposal 2: In NR, the modulation schemes is signalled as explicit UE capability and not part of a UE category.
- Proposal 3: Discuss whether NR capability signalling should allow the UE to indicate a peak data rate being lower than the peak L1 data rate derived from the supported scheduling bandwidth and modulation and MIMO schemes.
- Proposal 4: If it is agreed that UEs should be able to indicate a baseband processing restriction (see Proposal 2), the UEs indicate the total number of supported code blocks separately for UL and DL instead of a L1-bit-rate.
- Proposal 5: If Proposal 3 is agreed, the NW derives the UE's amount of supported soft buffer from the total number of supported code blocks in DL (hence, there is no need to specify and signal the soft-buffer size explicitly).
- Proposal 6: NR UEs should be able to advertise also a maximum scheduling bandwidth. The details need to be further studied
- Proposal 7: Discuss whether the total number of code block does not need to be signalled and this property can be derived from the maximum scheduling BW in addition to the other throughput affecting capabilities that the UE indicates

**Decision:** The document is noted.

---

**LSs received during the meeting from other WGs**

**[R1-1711892](#) Reply LS on PBCH content RAN2, Huawei**

**Decision:** The document is noted.

**[R1-1711940](#) LS to RAN1 on NR basic handover RAN2, Ericsson**

**Decision:** The document is noted. Prepare draft LS to RAN2 in [R1-1711968](#) – Dhiraj (Samsung)

**[R1-1711968](#) [DRAFT] Reply LS response on NR basic handover Samsung**

**Decision:** The document is noted and final LS is approved in [R1-1711987](#) with the addition of the following sentence in Section 1 *RAN1 will inform RAN2 when more details on RACH resources and the corresponding associations are available.*

**[R1-1711950](#) LS to RAN1 on Random Access RAN2, Samsung**

**Decision:** The document is noted.

Not treated.

**[R1-1711949](#) Reply LS to RAN1 on UL data transmission without UL grant for NR RAN2, Huawei**

## **5 NR**

### **5.1 New Radio Access Technology - WID in RP-171485**

**[R1-1711642](#) NR topics requiring coordination between RAN1 and RAN2 RAN2 Chair**

The document was presented by RAN1 Vice Chair on behalf of RAN2.

1. Beam management / recovery procedures: RAN2 assume that RAN1 is leading this topic and RAN2 will wait for RAN1 to make progress before discussing in detail. Once RAN1 has started to make progress then RAN2 will look at implications to RAN2 specifications. Input from RAN1 before the August WG meeting is preferable.
2. Beam aspects of random access procedures: Input from RAN1 before the August WG meeting is preferable.
3. UL/DL HARQ: RAN2 would like to receive input on e.g. the impact due to multiple numerologies, HARQ retransmission across numerologies, any other differences compared to LTE, etc. Initial input from RAN1 before the August WG meeting is preferable

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4. UL grant free transmission and relation to UL SPS: Based on LS [R1-1709805](#), RAN2 understands that discussion in RAN1 is still ongoing and expects to receive further information from a future meeting about any differences between UL SPS and grant free. Until such information is received RAN2 will continue to progress on RAN2 aspects of UL SPS, agreed to be as LTE as baseline. Additionally RAN2 will discuss some aspects of UL grant free and SPS, e.g. if any difference between them from RAN2 point of view, and will aim to provide input to RAN1 this meeting. Input from RAN1 before the August WG meeting is preferable
5. Impact of PDCCH design (e.g. 'core set') on PDCCH monitoring and DRX: RAN2 would like to receive input on e.g. the impact of the 'core set', beam related aspects, etc. Input from RAN1 before the August WG meeting is preferable.
6. PHR: RAN2 assume that RAN1 is leading this topic and we will implement any MAC signalling aspects as required (i.e. similar working arrangement as for LTE). Input from RAN1 before the October WG meeting is preferable.
7. UL power sharing between LTE/NR: RAN2 will need to be informed regarding the conclusions of RAN1 discussions on UL power sharing between LTE and NR.
8. Transport block sizes: RAN2 assume that RAN1 is leading this topic but that some coordination will be needed between RAN1 and RAN2.
9. L1 parameters to be configured by RRC: Initial input from RAN1 in advance of October WG meeting is preferable (in advance means enough time to enable the parameters to be analysed and contributions to be submitted to the October WG meeting). This implies the initial input should be available at the end of the September RAN1 ad hoc. It is acceptable if there is some degree of revision to the parameter set after the October WG meeting.
10. UE capabilities: RAN2 assume that we will lead the discussion of the UE category question delegated from RAN plenary (i.e. "RAN WGs to decide how the target peak data rate can be supported for LTE-NR DC and NR standalone in the specifications, e.g. whether the existing concept of UE category is inherited or a new concept in defining the target peak data rate is introduced" from LS RP-171480). RAN2 also has ongoing discussion on capability sharing and coordination between LTE and NR, where the exact capabilities for will require coordination with RAN1 and RAN4. RAN1 can begin discussions of the L1 capability parameters in parallel.

**Discussion:** Suggestion by VC to provide a reply per point (through an LS – at least for some of the bullets)

Ericsson: Make sure RAN1 is not starting email discussions during the upcoming summer period.

CATT: concern regarding RAN2's intention on point 4 (expecting info from RAN1, but has already decided to progress further).

CATT: also has concern of the impact to RAN2 if RAN1 cannot draw a clear answer to each of RAN2's questioning.

Huawei: let's continue RAN1 discussion on UL grant free transmission/UL SPS and later in the week liaise to RAN2.

**Decision:** The document is noted.

Coordinators for LSs to RAN2 (review status on Friday):

1. Beam management: Sundar (Qualcomm) [R1-1711683](#)
2. Beam aspects of Random Access: Teck Hu (Huawei) [R1-1711684](#)
3. UL/DL HARQ: Karri Ranta-aho (Nokia) [R1-1711685](#)
4. UL SPS / grant free: Fred (NTT DOCOMO) [R1-1711686](#)
5. PDCCH monitoring and DRX: Tony (CATT) [R1-1711687](#) - see 5.1.3.1

Friday

[R1-1711879](#) [Draft] LS on Beam Aspects of NR RACH Huawei

**Decision:** The document is noted and final LS is [approved in R1-1711880](#) with following updates

NR RACH procedures support [multiple beams](#) using a PRACH preamble format (Option 1) whereby the CP is inserted at the beginning of the [single or](#) consecutive multiple/repeated RACH sequences, the CP/GT between RACH sequences is omitted and the GT is reserved at the end of the [single or](#) consecutive multiple/repeated RACH sequences [e.g. potentially used for gNB Rx beam sweeping](#).

An 4-step RACH procedure is supported in NR [and](#), a RACH transmission occasion is defined as the time-frequency resource on which a PRACH message 1 is transmitted using the configured PRACH preamble format with a single particular tx beam. The random access configuration is included in the remaining minimum SI. In NR, the RACH configuration provides at least the RACH time/freq. information and the RACH preamble format. [gNB can configure an association between one or multiple occasion for SS Block and a subset of RACH resources and/or a subset of preamble indices. Tx Beam for Msg 1 and Msg 3 transmissions \(for UE in IDLE mode\) is selected by the UE and downlink Tx beam for Msg 2 can be obtained by the detected preamble and/or the RACH resource.](#)

Email approval of the LS on beam management until July 10<sup>th</sup> – Qualcomm

Email approval of the LS on UL/DL HARQ until July 6<sup>th</sup> – Nokia

[R1-1711318](#) Discussion on the options in NR design Panasonic  
[R1-1711366](#) "TS38.211 v0.0.1 NR; Physical channels and modulation" Ericsson LM  
[R1-1711886](#) "TS38.211 v0.0.2 NR; Physical channels and modulation" Ericsson LM

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**R1-171xxxx**

**Discussion:** Panasonic → as already commented earlier in the week, RAN1 should strive to endorse specs on day one of a meeting as the review of the specs during the meeting is very challenging and difficult.

**Decision:** The document is **endorsed as v0.1.0 in R1-1712004** as basis for further updates.

**Email discussion until August meeting about all specs**

- 1<sup>st</sup> step: All spec editors will provide new draft specs (including all agreements and WA) until July 14<sup>th</sup>
- 2nd step: All spec editors will provide further updated specs (including all agreements and WA) until August 4<sup>th</sup>
- All companies are recommended checking these specs and comment via the reflector
- All spec editors will update specs via the reflector and submit them to the August meeting (RAN1#90)
- Objective is to get the updated specs endorsed on Monday on Monday (day 1 of RAN1#90)

**Email discussion until the August meeting w.r.t the RRC parameters list for NR**

- Daniel (Ericsson) will provide an initial RRC parameters list until August 9<sup>th</sup>
- All companies are recommended checking it and comment via the reflector
- Daniel (Ericsson) will update it via the reflector and submit it to the August meeting (RAN1#90)
- Objective is to get the (updated) RRC parameters list agreed on Monday (day 1 of RAN1#90)

**5.1.1 Initial access and mobility**

Refer to [R1-1709821](#) for work plan.

**Friday**

**R1-1711984** [Draft] LS on NR initial access and mobility NTT DOCOMO

**Decision:** The document is noted and final LS to RAN2 is **approved in R1-1712001**.

**R1-1711985** [Draft] LS on NR initial access and mobility NTT DOCOMO

**Decision:** The document is noted and final LS to RAN4 is **approved in R1-1712003** with following updates  
Confirm Working Assumption for NR-SSS design from RAN1#89, **with following updates except for:**

- Ordering of initial state:
  - NR-SSS, initial value  $x(0) = 1, x(1) = 0, x(2) = 0, x(3) = 0, x(4) = 0, x(5) = 0, x(6) = 0$

**5.1.1.1 Synchronization signal and initial access procedure**

**5.1.1.1.1 Remaining details on SS sequence design**

*Include confirmation of WA of NR-SSS, and other details on NR-SSS such as sequence to RE mapping  
Note that NR-PSS and NR-SSS sequence design and RE mapping need to be finalized in this meeting*

**R1-1710501** NR PSS and SSS design Intel Corporation

- Proposal 1: Confirm the WA on NR-SSS made in RAN1#89 meeting.
- Proposal 2: Capture in the specification the text proposed in Section 3.

**Decision:** The document is noted.

**R1-1710807** On the Robustness of NR SSS in Frequency Offset MediaTek Inc.

- Observation 1: Due to the selection of  $m_0$ , current NR-SSS design is quite vulnerable to frequency offset.
- Proposal 1: NR-SSS should adopt the following  $m_0$  and  $m_1$  mapping:

$$m_0 = \left( 3 \left\lfloor \frac{N_{ID}^{(1)}}{112} \right\rfloor + N_{ID}^{(2)} \right) \times 5; \quad m_1 = (N_{ID}^{(1)} \bmod 112) + 1$$

**Discussion:** Huawei → no evaluations have motivated this proposal

**Decision:** The document is noted.

**Agreement:** Confirm Working Assumption for NR-SSS design from RAN1#89, except for:

- Ordering of initial state:
  - NR-SSS, initial value  $x(0) = 1, x(1) = 0, x(2) = 0, x(3) = 0, x(4) = 0, x(5) = 0, x(6) = 0$
- Cyclic shift values  $m_0$  and  $m_1$ :
  - FFS between formulae in the RAN1#89 working assumption and the following formulae, to be evaluated during this week and confirmed by Friday:

$$m_0 = \left( 3 \left\lfloor \frac{N_{ID}^{(1)}}{112} \right\rfloor + N_{ID}^{(2)} \right) \times 5; \quad m_1 = (N_{ID}^{(1)} \bmod 112)$$

**Thursday**

Above agreement is modified as follows:

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**Agreement:** Confirm Working Assumption for NR-SSS design from RAN1#89, with the following updates:

- Ordering of initial state:
  - NR-SSS, initial value  $x(0) = 1, x(1) = 0, x(2) = 0, x(3) = 0, x(4) = 0, x(5) = 0, x(6) = 0$
- Cyclic shift values  $m_0$  and  $m_1$  (as defined in [R1-1711888](#))

**R1-1711810** Analysis of SSS Proposals Intel Corporation

**Decision:** The document is noted.

**R1-1711860** Evaluation of NR-SS Huawei, HiSilicon

**Decision:** The document is noted.

**R1-1711888** WF on  $m_0$  and  $m_1$  for NR-SSS NTT DOCOMO, ITL, Intel, Samsung, InterDigital, Motorola Mobility, Lenovo

- The cyclic shift values  $m_0$  and  $m_1$  are jointly determined by the cell IDs carried by NR PSS (i.e.,  $N_{ID}^{(2)} = 0, 1, 2$ ) and NR SSS (i.e.,  $N_{ID}^{(1)} = 0, 1, \dots, 335$ ), where the cell ID is given by  $N_{ID}^{cell} = 3N_{ID}^{(1)} + N_{ID}^{(2)}$ 
  - $m_0 = \left( 3 \left\lfloor \frac{N_{ID}^{(1)}}{112} \right\rfloor + N_{ID}^{(2)} \right) 5$
  - $m_1 = (N_{ID}^{(1)} \bmod 112)$

**Discussion:** Also supported by Mediatek, LGE, ZTE.

**Decision:** The document is agreed.

**Agreement:** For NR-PSS:

- initial value  $x(0) = 0, x(1) = 1, x(2) = 1, x(3) = 0, x(4) = 1, x(5) = 1, x(6) = 1$

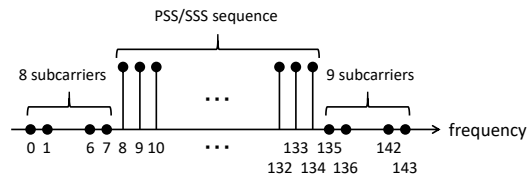
**R1-1711654** WF on NR-SS sequence design NTT DOCOMO, ZTE, InterDigital

- Update agreements on NR-PSS with following change
  - Number of PSS sequences: 3
    - PSS sequence details:
      - Frequency domain-based pure BPSK M sequence (fixing the time/freq. offset ambiguity)
        - 1 polynomial: Decimal 145 (i.e.  $g(x) = x^7 + x^4 + 1$ )
        - In freq. domain 3 cyclic shifts (0, 43, 86) to get the 3 PSS signals
        - Initial poly shift register value:  $x(0) = 0, x(1) = 1, x(2) = 1, x(3) = 0, x(4) = 1, x(5) = 1, x(6) = 1$
- Confirm working assumptions on NR-SSS with following changes
  - NR-SSS sequence design is 1 polynomial with 127 cyclic shifts, and 1 another polynomial with 9 cyclic shifts
    - Two generator polynomials will be defined for m-sequences, and cyclic shift according to NR-cell ID is applied to each m-sequence
    - Two polynomials are generated by  $g_0(x) = x^7 + x^4 + 1$  and  $g_1(x) = x^7 + x + 1$ 
      - Initial poly shift register value:  $x(0) = 1, x(1) = 0, x(2) = 0, x(3) = 0, x(4) = 0, x(5) = 0, x(6) = 0$
  - The cyclic shift values  $m_0$  and  $m_1$  are jointly determined by the cell IDs carried by NR PSS (i.e.,  $N_{ID}^{(2)} = 0, 1, 2$ ) and NR SSS (i.e.,  $N_{ID}^{(1)} = 0, 1, \dots, 335$ ), where the cell ID is given by  $N_{ID}^{cell} = 3N_{ID}^{(1)} + N_{ID}^{(2)}$ 
    - Option 1
      - $m_0 = 3 \left\lfloor \frac{N_{ID}^{(1)}}{112} \right\rfloor + N_{ID}^{(2)}$
      - $m_1 = (N_{ID}^{(1)} \bmod 112) + m_0 + 1$
    - Option 2
      - $m_0 = \left( 3 \left\lfloor \frac{N_{ID}^{(1)}}{112} \right\rfloor + N_{ID}^{(2)} \right) K$ , where  $K > 1$  (e.g., 5)
      - $m_1 = (N_{ID}^{(1)} \bmod 112)$
    - Down-selection of above options will be done within this meeting
- NR-SSS sequence is mapped to consecutive 127 subcarriers as well as NR-PSS
- Frequency center of NR-PSS/SSS is aligned with frequency center of NR-PBCH
- Update agreements on number of NR-SSS signals with following change
  - Number of SSS signals: 1008 post-scrambling
    - Note that number of NR physical cell IDs is 1008

**Decision:** The document is noted.

**Agreements:**

- NR-SSS sequence is mapped to consecutive 127 subcarriers as well as NR-PSS as follows:



- Centre frequency of NR-PSS/SSS is aligned with centre frequency of NR-PBCH
  - i.e. mapped on the 7<sup>th</sup> to 18<sup>th</sup> PRBs of the 24 PRBs used for the SS block
- Update agreements on number of NR-SSS signals with following change
  - Number of SSS signals: 1008 post-scrambling
- The number of NR physical cell IDs is 1008

Not treated.

|                            |                                                                      |                                     |
|----------------------------|----------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709884</a> | NR-SS sequence design                                                | ZTE                                 |
| <a href="#">R1-1709911</a> | Finalization of the NR-SSS                                           | Huawei, HiSilicon                   |
| <a href="#">R1-1710022</a> | Remaining detail of NR-PSS and NR-SSS Sequence Design and RE mapping | CATT                                |
| <a href="#">R1-1710258</a> | Remaining issue on SS Sequence Design                                | LG Electronics                      |
| <a href="#">R1-1710623</a> | Remaining details on SS sequence design                              | Samsung                             |
| <a href="#">R1-1710913</a> | On Design of Synchronization Signal Sequences in NR                  | InterDigital, Inc.                  |
| <a href="#">R1-1710975</a> | Considerations and Evaluation on SS Sequence Design for New Radio    | ITRI                                |
| <a href="#">R1-1711056</a> | Discussion on remaining details on SS sequence design for NR         | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711135</a> | Synchronization signal sequence design                               | Qualcomm Incorporated               |
| <a href="#">R1-1711260</a> | Remaining open issues on NR Synchronisation signal design            | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711275</a> | Discussion on NR-SSS working assumption                              | Motorola Mobility, Lenovo           |
| <a href="#">R1-1711371</a> | Remaining details on NR-SS sequence design                           | Ericsson                            |

#### 5.1.1.1.2 SS burst set composition

Include candidate locations of SS block within a slot

#### [R1-1711372](#) SS burst set composition Ericsson

- Proposal 1: The network decides whether a SS block position should be allocated or not.
- Proposal 2: For compositions with two SS blocks per a slot, for 15, 30 and 120 kHz, the SS blocks start at the 3<sup>rd</sup> and 9<sup>th</sup> symbols.
- Proposal 3: For 15 kHz subcarrier spacing and below 3 GHz carrier frequency, an SS block may be initiated at the 3<sup>rd</sup> symbol in a 14 symbol slot. SS blocks are transmitted in consecutive slots.
- Proposal 4: For 15 kHz subcarrier spacing and between 3 and 6 GHz carrier frequency, an SS block may be initiated at the 3<sup>rd</sup> and 9<sup>th</sup> symbols per 14 symbol slot.
- Proposal 5: For 30 kHz subcarrier spacing, an SS block may be initiated at the 3<sup>rd</sup> and 9<sup>th</sup> symbols in a 14 symbol slot. SS blocks are transmitted in every 2<sup>nd</sup> slot.
- Proposal 6: For 120 kHz, an SS burst is composed by up to 8 SS blocks.
- Proposal 7: For 120 kHz, the SS burst set is composed by up to 8 SS bursts with 1 DL/UL slot in-between SS bursts.
- Proposal 8: For 240 kHz, an SS slot pair is composed by SS blocks every 5<sup>th</sup> symbol, starting at the 5<sup>th</sup> symbol.
- Proposal 9: For 240 kHz, an SS burst is composed by up to 16 SS blocks (4 SS slot pairs).
- Proposal 10: For 240 kHz, the SS burst set is composed by up to 4 SS bursts with 8 DL/UL slots in-between bursts.

**Decision:** The document is noted.

#### [R1-1710412](#) NR SS block and burst set composition AT&T

- Proposal 1: For 15kHz, 30kHz, and 120kHz SS Block SCS, the two candidate SS Block positions within a 14 symbol slot are symbols 4-7 and 8-11.
- Proposal 2: For 240kHz SS Block SCS, the four candidate SS Block positions within two consecutive slots of 14 symbols are symbols 4-7 and 8-11 of the first slot, and symbols 2-5 and 6-9 of the second slot.
- Proposal 3: NR should support dedicated signalling for UE-specific indication of valid SS block time locations within a given SS burst set which accommodate different SS burst set periodicities.

**Decision:** The document is noted.

#### [R1-1711580](#) SS burst set composition Samsung (Revision of [R1-1710624](#))

- Proposal 1: For each frequency band, the NR-SS block mapping pattern is fixed/predefined.
- Proposal 2: For below 6GHz NR, the SS block mapping patterns shown in FIGURE 1 should be considered for SS burst set composition.

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- Proposal3: For above 6GHz NR, the SS block mapping patterns shown in FIGURE 3 should be considered for SS burst set composition.
- Proposal 4: SS blocks comprising an SS burst set shall be mapped in max 2~4ms duration, starting from a beginning of a frame or a half-frame.

**Decision:** The document is noted.

**R1-1711645 SS burst set composition consideration Qualcomm Incorporated** (Revision of [R1-1711136](#))

- Proposal 1: For burst-set with  $L = 4$  SS blocks, the blocks start in OFDM symbols {2,8,17,21}. Burst-set pattern with  $L \in \{8, 64\}$  SS blocks is obtained by further tiling the burst-set pattern for  $L = 4$ .
- Observation 1: For burst-set with  $L = 4$  blocks, each pair of blocks has a unique inter-block distance. These 4-choose-2 unique distances are {4, 6, 9, 13, 15, 19}.
- Observation 2: In burst-set pattern with  $L \leq 8$  blocks, for any two pairs of blocks  $\{l_1, l_2\}$  and  $\{l_3, l_4\}$  such that  $\Delta(\{l_1, l_2\}) = \Delta(\{l_3, l_4\})$ , we have that  $l_1 + l_2 = l_3 + l_4$  and thus  $\delta(\{l_1, l_2\}) = \delta(\{l_3, l_4\})$ . In words, all blocks pairs with the same inter-block distance have the same bit-difference between their indices (and thus the same bit-difference between their PBCH payloads.)
- Proposal 2: When UE assumes SS burst set periodicity of x ms (e.g. x = 20ms), UE assumes the same set of SS blocks within SS burst set are transmitted with periodicity of x ms
- Proposal 3: When UE assumes SS burst set periodicity of x ms (e.g. x = 20ms), if NW transmits the SS burst set with a smaller periodicity y ms ( $y < x$ , e.g. y=10ms), UE can assume that the same set of SS blocks within SS burst set are transmitted with periodicity of y ms
- Proposal 4: UE assumes that the transmitted SS blocks in a SS burst set are always logically consecutive, i.e. between any two transmitted SS blocks in a SS burst set, there are no gaps of non-transmitted SS block(s)

**Decision:** The document is noted.

- FFS offline (Jorma Kaikkonen, Nokia):
  - a. 7 symbol slot is only considered for 15 kHz subcarrier spacing?
  - b. 1 or 2 SS blocks within a 14 symbol slot?
  - c. If 2 SS blocks, is there a need for gaps between SS blocks in a 14 symbol slot?
  - d. Which are the starting symbols for SS blocks for each subcarrier spacing?

Revisit on Wednesday afternoon - [R1-1711678](#)

**Thursday**

|                            |                                         |       |
|----------------------------|-----------------------------------------|-------|
| <a href="#">R1-1711678</a> | Way forward on the mapping of SS blocks | Nokia |
| <a href="#">R1-1711899</a> | Way forward on the mapping of SS blocks | Nokia |

**Agreements:**

- Agree on pages 5, 7, 8 (30 kHz subcarrier spacing case) in [R1-1711899](#)
- **Working assumption** on pages 9, 10 (120, 240 kHz subcarrier spacing cases) in [R1-1711899](#)
  - Working assumption can be revisited if there are serious implications to UE AGC operation.

**Agreements:**

- For 15 kHz subcarrier spacing case,
  - Map two SS blocks candidate locations to the slot of 14 symbols as follows
    - First candidate location is at symbols 2-5
    - Second candidate location is at symbols 8-11

**R1-1711939 Way forward on the mapping of SS blocks with 30kHz SCS Huawei, HiSilicon, CATT, CATR, OPPO, MediaTek, Vivo**

Possible agreements:

- For 30 kHz subcarrier spacing case, try to agree on Option 1 or Option 3 until Friday, but if not, RAN1 will conclude that no consensus in RAN1 about the second SS block mapping pattern
- Option 1:
  - Map two SS blocks candidate locations to the slot of 14 symbols as follows
    - First candidate location is at symbols 2-5
    - Second candidate location is at symbols 8-11
  - Supported by Intel, LGE, Qualcomm, DOCOMO, ETRI, Samsung, ZTE, Ericsson, ITL (9)
- Option 3:
  - For slot of 14 symbols, two SS blocks are mapped within 14 symbols
    - First candidate SS block location is at symbols 1-4
    - Second candidate SS block location is at symbols 8-11
  - For slot of 7 symbols, one SS block is mapped within 7 symbols

- Candidate SS block location is at symbols 1-4
- Supported by Huawei, HiSilicon, CATT, CATR, OPPO, MediaTek, vivo (7)

Friday

[R1-1711939](#)    Way forward on the mapping of SS blocks with 30kHz SCS    Huawei, HiSilicon, CATT, CATR, OPPO, MediaTek, Vivo

- Agreements:
- For 30 kHz subcarrier spacing case, the second SS block mapping pattern is
    - Map two SS blocks candidate locations to the slot of 14 symbols as follows
      - First candidate location is at symbols 2-5
      - Second candidate location is at symbols 8-11
  - Note: In the case of NR-LTE coexistence, the first SS block mapping pattern (i.e., page 7 in [R1-1711899](#)) can be used
  - Note: It is up to RAN4 to decide the SS block mapping pattern for each frequency band

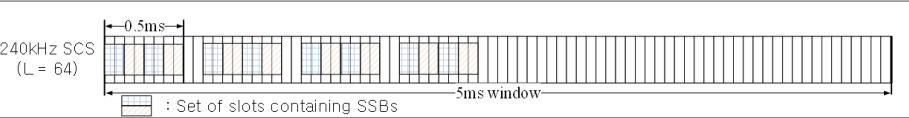
[R1-1711854](#)    SS burst set composition LG Electronics, Nokia

Updated in [R1-1711906](#)

- Agreements:
- For 15k Hz, 30 kHz, and 120 kHz subcarrier spacing, the following mapping to slots in a half radio frame is agreed
    - Note: For NR and LTE coexistence, duplex direction alignment can be achieved by subframe offset



- Agreement:
- For 240 kHz subcarrier spacing, the following mapping slot in a half radio frame is agreed



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Not treated.

|                            |                                                           |                                     |
|----------------------------|-----------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710372</a> | Remaining issues on SS block and SS burst set composition | vivo                                |
| <a href="#">R1-1709885</a> | The composition of SS burst sets                          | ZTE                                 |
| <a href="#">R1-1709912</a> | SS Burst Set and Block Composition                        | Huawei, HiSilicon                   |
| <a href="#">R1-1710023</a> | SS Burst Set Composition and SS Block Configuration       | CATT                                |
| <a href="#">R1-1710131</a> | Discussion on design of SS block                          | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710259</a> | Discussion on SS burst set composition                    | LG Electronics                      |
| <a href="#">R1-1710371</a> | Remaining issues on the subcarrier spacing of SS block    | Spreadtrum Communications           |
| <a href="#">R1-1710502</a> | SS Burst Set Composition                                  | Intel Corporation                   |
| <a href="#">R1-1710798</a> | Discussion on SS burst set composition                    | MediaTek Inc.                       |
| <a href="#">R1-1710914</a> | On SS Burst Set Composition and Multiplexing              | InterDigital, Inc.                  |
| <a href="#">R1-1711057</a> | Discussion on SS burst set composition for NR             | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711232</a> | Indication of actually transmitted SS blocks              | Sharp                               |
| <a href="#">R1-1711261</a> | On SS Burst Set Composition                               | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711394</a> | Discussion on SS Burst Set Design                         | Conviva Wireless LLC                |

**5.1.1.1.3 Timing indication based on SS block**

*Include discussion and evaluation based on email discussion [89-15] such as SS block time index indication mechanism, identification of radio frame boundary and identification of SFN*

*Note that SS block time index indication mechanism needs to be finalized in this meeting*

**[R1-1711646](#) Timing indication based on SS block consideration Qualcomm Incorporated (Revision of [R1-1711137](#))**

- Proposal 1: PBCH payload carries the synchronization signal block index and 5ms timing boundary.
- Proposal 2: For 10-bit SFN ( $s_9, s_8, \dots, s_2, s_1, s_0$ ), all bits except ( $s_2, s_1$ ) are sent in PBCH payload. Furthermore, two bits ( $s_2, s_1$ ) are signalled in PBCH scrambling or in SSS/DMRS.
- Observation 1: Multi-cell interference should be considered in deriving the number of bits that can be carried over PBCH DMRS, as cross-correlation between DMRS sequences across cells significantly impacts DMRS detection performance.
- Observation 2: For single-shot DMRS detection at -6dB SINR, only 2 bits are reliably delivered with 1/3 DMRS while less than 2 bits are reliably delivered with 1/4 DMRS for any PCI combinations.
- Observation 3: The capability of carrying information in DMRS reduces significantly if a high DMRS detection requirement is required e.g., 0.1% DMRS detection error.

**Decision:** The document is noted.

**[R1-1711589](#) Timing indication based on SS block Samsung (Revision of [R1-1710625](#))**

Proposal 1: 7-bit MSB of SFN explicitly indicated in MIB and 3-bit LSB of SFN implicitly indicated by using scrambling.

Proposal 2: Multiple NR-DMRS sequences are introduced to indicate the SS block index within an SS burst set.

- 1st preference: DMRS to indicate SS block indices in order to avoid additional latency and power consumption of reading PBCH payload.
- 2nd preference: DMRS to indicate partial SS block indices and offload remaining SS block indices in explicit bits of PBCH payload, if this design can satisfy the reliability and latency issues addressed by LS R2-1706160.

Observations:

- NR-DMRS sequence detection for NR-SS block index identification is much more robust than PBCH explicit indication, even more robust against interference in multi-cell scenarios.
- NR-DMRS sequence detection has no impact on the channel estimation for NR-PBCH detection.
- NR-DMRS uneven RE mapping cannot improve PBCH detection but only results in DMRS performance loss, compared with even mapping assuming similar DMRS overhead.

Proposal 3: NR-DMRS with even RE mapping is preferred for SS block index indication.

**Decision:** The document is noted.

**[R1-1710905](#) Signaling of SS block index Apple Inc.**

- Proposal 1: SS block should avoid the 1<sup>st</sup> symbol of every 0.5ms, which has longer duration compared to other OFDM symbols, to avoid ambiguity in UE detection.
- Proposal 2: nominal SS blocks are partitioned into SS bursts (or groups). Which SS blocks/bursts are actually transmitted can be configured by the network, although the indexing is based on the nominal SS blocks.
- Proposal 3: SS burst index is included in information bits of PBCH, while SS block index within a SS burst is signaled through PBCH implicitly, e.g., with different scrambling codes.
- Proposal 4: SS blocks within each SS burst can be combined to improve PBCH decoding reliability.
- Proposal 5: the set of K different scrambling codes can be selected from existing class of LFSR based sequences, such as M-sequence, Gold sequence, etc.
- Proposal 6: the number of SS blocks per SS burst (or group) K should be pre-determined, and can be band dependent.

- Observation 1: gNB beam mapping to SS blocks is transparent to UEs, regardless of the selection of Kand M
- Decision:** The document is noted.

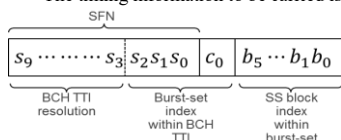
**R1-1711373 Timing indication based on SS block Ericsson**

- Proposal 1: The timing indication includes half-frame indication, slot/slot pair indication within a half-frame and the SS block indication within a slot/slot pair.
- Proposal 2: The slot group with consecutive or nonconsecutive slots to cover four possible SS block locations is proposed to unify the time indication design for all frequency ranges.
- Proposal 3: The half-frame specific scramble sequence is applied on the coded bits of NR-PBCH payload to indicate the half frame number  $n_{\text{half sfn}} = \{0, \dots, 15\}$ .
- Proposal 4: The explicit bits attached with the NR-PBCH MIB are used to indicate the slot group location.
- Proposal 5: The cover sequence can be used to implicitly indicate the four possible SS block positions within a slot group.

**Decision:** The document is noted.

Proposal:

- The timing information to be carried is as follows:



- This information is carried at least partly explicitly on the PBCH
- Options for a hybrid solution:
  - SS block index within burst set is carried by DMRS
    - 2 bits below 3 GHz, 3 bits for 3-6 GHz, 6 bits above 6 GHz
      - Achieves latency gain by enabling reception without decoding
      - Concerns on ability to carry so many bits on DMRS, and would require the DMRS to be invariant
  - SS block index (2/3 bits) within burst is carried by DMRS
    - 4/3 bits to indicate the burst in the burst set are carried in NR-PBCH payload
    - Can achieve latency gain below 3/6 GHz
    - Can enable the UE to obtain the beam index for inclusion in SS block measurement reporting without NR-PBCH decoding
    - But would still require the DMRS to be invariant
  - 2 bits of SFN carried by DMRS
    - Achieves complexity gain but not latency gain
  - SS block index (2 bits) within burst is carried by scrambling of both NR-PBCH and DMRS
    - 4 bits to indicate the burst in the burst set are carried in NR-PBCH payload
    - Achieves latency gain below 3 GHz
  - 3 bits of SFN carried by NR-PBCH payload scrambling

**Agreement:**

- One of the following two alternatives will be adopted (It is not precluded to adopt a different one of these alternatives below and above 6 GHz):
  - Alt1: 3 bits of SS block index are carried by changing the DMRS sequence within each 5ms period
    - It can be further considered to limit the number of bits carried in this way to 2 if carrying 3 bits is shown to cause problems
  - Alt2: 2 bits of SFN are carried by changing the DMRS sequence every 20ms
  - Check on Friday whether a decision can already be made between Alt 1 and Alt 2
- It can be further considered whether, in addition to the above, 3 bits of the SFN can be carried by scrambling of the PBCH
- Remaining bits of the timing indication are carried explicitly in the NR-PBCH payload
- Note that it is suggested that the above 2 bullets are actually equivalent.

**Thursday**

Alt.1 supported by ZTE, Samsung, NTT DOCOMO, Intel, vivo, Fujitsu, Nokia, InterDigital, Sharp, LGE, Sony

- Objected by Motorola mobility, Mediatek, Qualcomm, Huawei, HiSilicon, OPPO, Lenovo

Alt.2 supported by Qualcomm, MotM, CATT, Huawei, HiSilicon, Ericsson, Lenovo, OPPO

- Objected by Samsung, LGE, NTT DOCOMO, vivo, Fujitsu, Interdigital, ZTE, Nokia

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Conclusion: RAN1 will definitely select either Alt. 1 or Alt. 2 until Friday (11am), and all proponents are recommended to have following additional evaluations

- Individual pair of cell ID with the condition of worst case
- Random cell ID association with the separation of worst case DMRS pairs to different frequency shift position

Continue discussions until Friday – Samsung (Le)/Qualcomm (Peter)

---

**Friday**

Situation unchanged

Ericsson: Ok with either way – everyone should compromise, do not understand the companies objecting to these proposals

Qualcomm: decision should not be taken on counting the number of supporting companies and would like to see evaluation (asynchronous networks) and performance results of alternative 1. Suggested that the synchronization indication is included in the system information and RRM configuration.

Ericsson: could RAN1 decide first on synch indication and then make the choice between Alt 1 & 2?

**Agreements:**

- An indication related to the synchronization information is provided to the UE
  - When there is the indication for a carrier, UE can utilize serving cell timing to derive the index of SS block transmitted by neighbour cell (e.g., radio frame or SFN or symbol level synchronization)
  - Note that it is up to RAN2 how to provide this indication
  - Note that it is up to RAN4 about the feasibility of synchronization and its requirement

Chair : new round of show of hands

Alt.1 supported by ITL, vivo, Sony, Samsung, ZTE, DOCOMO, LGE, Sharp, ETRI, Fujitsu, Interdigital, Nokia, Intel (13)

- Objected by Qualcomm, Apple, Motorola Mobility (3)

Alt.2 supported by Qualcomm, Mediatek, OPPO, Huawei, HiSilicon, Xiaomi, Sequans, Motorola mobility, Lenovo, Apple, CATT (11)

- Objected by LGE, Samsung (2)

Qualcomm: still objecting to Alt.1 – has not got a technical answer showing the benefit of Alt 1 vs Alt 2

Samsung: RAN1 agreed synch indication, Alt 1 should be agreeable - very disappointed by Qualcomm

Let's revisit in the afternoon.

For sake of making progress, MotM and Apple withdrew their objection to Alt.1

Qualcomm could agree to take it as a working assumption

**Agreements:**

- **Working assumption:** 3 bits of SS block index are carried by changing the DMRS sequence within each 5ms period
  - It can be further considered to limit the number of bits carried in this way to 2 if carrying 3 bits is shown to cause problems
- FFS: details of scrambling of the PBCH which may or may not carry a part of timing information
- FFS: 5 ms half radio frame interval indication
- Remaining bits of the timing information are carried explicitly in the NR-PBCH payload

[R1-1711868](#)

**WF on DMRS indication Samsung**

[R1-1711946](#)

**WF on DMRS indication Samsung**

[R1-1711967](#)

**Timing information indicated by DMRS ZTE**

[R1-1711952](#)

**Performance evaluation of interference randomization Qualcomm Incorporated**

Not treated.

[R1-1709886](#)

Timing indication based on SS blocks ZTE

[R1-1709901](#)

Scrambling pattern for timing indication over PBCH Sequans Communications

[R1-1709913](#)

Time Index Indication Huawei, HiSilicon

[R1-1710024](#)

SS-block time index indication CATT

[R1-1710132](#)

Discussion on the timing indication of SS block Guangdong OPPO Mobile Telecom.

[R1-1710223](#)

Discussion on timing indication based on SS block Beijing Xinwei Telecom Techn.

[R1-1710231](#)

Consideration on timing indication based on SS block Fujitsu

[R1-1710260](#)

Discussion on SS block time index indication LG Electronics

[R1-1710370](#)

Discussion on time index indication Spreadtrum Communications

[R1-1710373](#)

Discussion on SS block time index indication vivo

[R1-1710419](#)

SS block time index indication AT&T

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|                            |                                                          |                                     |
|----------------------------|----------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710503</a> | Time Index Signaling for SS Blocks                       | Intel Corporation                   |
| <a href="#">R1-1710799</a> | Further discussion on SS block index indication          | MediaTek Inc.                       |
| <a href="#">R1-1710858</a> | Discussion on SS block time index indication             | Sony                                |
| <a href="#">R1-1710915</a> | On SS Block Based Timing Indication in NR                | InterDigital, Inc.                  |
| <a href="#">R1-1711058</a> | Discussion on timing indication based on SS block for NR | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711262</a> | SS block time index indication                           | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711274</a> | Discussion on location and timing indication of SS block | Xiaomi Technology                   |
| <a href="#">R1-1711276</a> | Indication of SS block timing information                | Motorola Mobility, Lenovo           |
| <a href="#">R1-1711351</a> | On timing indication for NR                              | ITL                                 |

**5.1.1.1.4 Remaining details on multiple SS block transmissions in wideband CC**

*Include number of SS blocks in wideband CC, RRM measurement with multiple SS blocks in wideband CC, and how to inform UE about presence/parameters of SS block(s)*

|                            |                                                                                          |                                     |
|----------------------------|------------------------------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709887</a> | Multiple SS blocks in wideband CC                                                        | ZTE                                 |
| <a href="#">R1-1709973</a> | On initial access for wideband carrier                                                   | Huawei, HiSilicon                   |
| <a href="#">R1-1710025</a> | Multiple SS block Transmission in wideband                                               | CATT                                |
| <a href="#">R1-1710133</a> | Remaining details on multiple SS block transmissions in wideband CC                      | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710261</a> | Remaining issues on Multiple SS block transmissions in wideband CC                       | LG Electronics                      |
| <a href="#">R1-1710374</a> | SS block transmissions and RRM measurement in wideband CC                                | vivo                                |
| <a href="#">R1-1710420</a> | SS block transmissions in a wideband CC                                                  | AT&T                                |
| <a href="#">R1-1710504</a> | SS Block(s) in Wideband Operation                                                        | Intel Corporation                   |
| <a href="#">R1-1710626</a> | Remaining details on multiple SS block transmissions in wideband CC                      | Samsung                             |
| <a href="#">R1-1710882</a> | Multiple SS Blocks in wideband carrier                                                   | Ericsson AB                         |
| <a href="#">R1-1711059</a> | Discussion on remaining details on multiple SS block transmissions in wideband CC for NR | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711138</a> | Multiple SS block transmissions design in wideband CC                                    | Qualcomm Incorporated               |
| <a href="#">R1-1711263</a> | SS-block transmission in multi CC deployments                                            | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711352</a> | Multiple SS block indication in wideband CC                                              | ITL                                 |
| <a href="#">R1-1711364</a> | Multiple SS block transmissions in a wideband CC                                         | ASUSTEK COMPUTER (SHANGHAI)         |

**5.1.1.2 Broadcast signal/channel**

**5.1.1.2.1 NR-PBCH contents and payload size**

*Include NR-PBCH contents, required number of bits for each content and corresponding payload size*

|                            |                                                    |                                     |
|----------------------------|----------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709888</a> | NR-PBCH contents                                   | ZTE                                 |
| <a href="#">R1-1709914</a> | NR-PBCH contents and payload size                  | Huawei, HiSilicon                   |
| <a href="#">R1-1710026</a> | NR PBCH Contents and Payload Size                  | CATT                                |
| <a href="#">R1-1710262</a> | Consideration on NR-PBCH contents and payload size | LG Electronics                      |
| <a href="#">R1-1710375</a> | Views on NR-PBCH contents and payload size         | vivo                                |
| <a href="#">R1-1710421</a> | Details of NR-PBCH contents                        | AT&T                                |
| <a href="#">R1-1710505</a> | NR PBCH Design                                     | Intel Corporation                   |
| <a href="#">R1-1710627</a> | NR-PBCH contents and payload size                  | Samsung                             |
| <a href="#">R1-1710797</a> | Discussion on PBCH Contents                        | MediaTek Inc.                       |
| <a href="#">R1-1710916</a> | On Physical Broadcast Channel in NR                | InterDigital, Inc.                  |
| <a href="#">R1-1711060</a> | Discussion on NR-PBCH contents and payload size    | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711139</a> | PBCH contents and payload size consideration       | Qualcomm Incorporated               |
| <a href="#">R1-1711264</a> | NR-PBCH content                                    | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711277</a> | Discussion on NR-PBCH contents                     | Motorola Mobility, Lenovo           |
| <a href="#">R1-1711374</a> | NR-PBCH Content and payload size                   | Ericsson                            |

**5.1.1.2.2 NR-PBCH RE mapping and SS block composition**

*Include discussion and evaluation based on email discussion [89-15] such as SS block composition, NR-PBCH RE mapping, etc. Note that SS block composition needs to be finalized in this meeting*

From Wednesday morning offline

**Agreements**

- For the case of 2 PBCH symbols within the SS block: PSS-PBCH-SSS-PBCH
- PBCH RE mapping: Alt. 1, NR-PBCH coded bits of the NR-PBCH code block(s) are mapped across REs in N PBCH symbols, where N is the number of PBCH symbols in a NR-SS block

|                            |                                                                |                                     |
|----------------------------|----------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1711140</a> | SS block composition and PBCH RE mapping design                | Qualcomm Incorporated               |
| <a href="#">R1-1710376</a> | NR-PBCH RE mapping and evaluation                              | vivo                                |
| <a href="#">R1-1710628</a> | NR-PBCH RE mapping and SS block composition                    | Samsung                             |
| <a href="#">R1-1710369</a> | NR-PBCH RE mapping and SS block composition                    | Spreadtrum Communications           |
| <a href="#">R1-1710506</a> | SS Block Composition                                           | Intel Corporation                   |
| <a href="#">R1-1710800</a> | Performance evaluation for RE mapping and SS block composition | MediaTek Inc.                       |
| <a href="#">R1-1710917</a> | On NR-PBCH RE Mapping and SS Block Composition                 | InterDigital, Inc.                  |
| <a href="#">R1-1709889</a> | NR-PBCH RE mapping and SS block composition                    | ZTE                                 |
| <a href="#">R1-1710006</a> | Discussion and evaluation on NR-PBCH design                    | Huawei, HiSilicon                   |
| <a href="#">R1-1710027</a> | NR PBCH RE mapping in SS Block                                 | CATT                                |
| <a href="#">R1-1710224</a> | Discussion and evaluation on SS block composition              | Beijing Xinwei Telecom Techn.       |
| <a href="#">R1-1710263</a> | Discussion on NR-PBCH RE mapping and SS block composition      | LG Electronics                      |
| <a href="#">R1-1710859</a> | Considerations on SS block compositions                        | Sony                                |
| <a href="#">R1-1711061</a> | Discussion on NR-PBCH design and SS block composition          | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711265</a> | SS block composition                                           | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711278</a> | NR-PBCH RE mapping                                             | Motorola Mobility, Lenovo           |
| <a href="#">R1-1711375</a> | NR-PBCH RE mapping and SS block composition                    | Ericsson                            |

#### 5.1.1.2.3 Sequence design of DMRS for NR-PBCH

*Include DMRS sequence generation, sequence to RE mapping, etc.*

*Note that DMRS sequence design and RE mapping need to be finalized in this meeting*

From Wednesday morning offline

Proposed working assumption (from Wednesday morning offline):

- Sequence type: Gold sequence
  - If cross correlation issues are found, other sequences can be considered
- Sequence initialization from cell ID, and 2 or 3 bits from time identification
- Different sequences in the N NR-PBCH symbols
  - Using longer sequence, different mapping, different initialization etc.

#### Working assumption:

- Sequence type: Gold sequence
  - If cross correlation issues are found, other sequences can be considered
- Sequence initialization from cell ID, and 2 or 3 bits from time identification
- Different sequences in the N NR-PBCH symbols
  - FFS: Using longer sequence, different mapping, different initialization etc.

Conclusion: Discuss further until Thursday and downselect from:

- Alt 1: Equal DMRS density across NR-PBCH with 3 RE/PRB/Symbol
  - Supported by NTT DOCOMO, Huawei, HiSilicon, vivo, ITL, LGE, OPPO, Intel, Mediatek, Ericsson, Fujitsu, ETRI, Samsung
- Alt 2: Equal DMRS density across NR-PBCH with 4 RE/PRB/Symbol
  - Supported by Samsung, ZTE, CATT, LGE
- Alt 3: Unequal DMRS density with 4 RE/PRB/Symbol outside the NR-PSS/SSS bandwidth and 2 RE/PRB/symbol inside the NR-PSS/SSS bandwidth
  - Supported by Qualcomm, Sony, Interdigital, Sierra

#### Thursday

CATT, ZTE (for compromise) also support Alt.1

Nokia can also go to Alt.1 although no evaluations have been performed (only Alt.2 and 3 were evaluated)

**Agreement:** Equal DMRS density across NR-PBCH with 3 RE/PRB/Symbol

**Agreement:** DMRS have the same RE position in all NR-PBCH symbols

Continue discussion on further details (Daewon, Intel)

#### Friday

[R1-1711943](#) Discussion on DMRS sequence for NR PBCH Intel

Conclusions:

- Companies are encouraged to provide the following information on NR PBCH DMRS sequence until 28th July in order to finalize the design – Daewon (Intel)
  - Sequence generation related parameters
    - Gold Code LFSR size
    - Gold Code Polynomials
    - initial state configuration
    - output shift offset (e.g. Nc in LTE)
  - Sequence Modulation
  - Sequence mapping to NR PBCH DMRS RE positions
  - Exact NR PBCH DMRS RE positions within the NR PBCH resource
  - Some examples of the information are shown in [R1-1711943](#)

Not treated.

|                            |                                                      |                                     |
|----------------------------|------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709890</a> | NR-PBCH DMRS design                                  | ZTE                                 |
| <a href="#">R1-1710007</a> | DMRS for NR-PBCH                                     | Huawei, HiSilicon                   |
| <a href="#">R1-1710028</a> | NR PBCH DM RS sequence design and RE mapping         | CATT                                |
| <a href="#">R1-1710225</a> | Discussion and evaluation on DMRS design for NR-PBCH | Beijing Xinwei Telecom Techn.       |
| <a href="#">R1-1710232</a> | Discussion on DMRS for NR-PBCH                       | Fujitsu                             |
| <a href="#">R1-1710264</a> | Discussion on DMRS design for NR-PBCH                | LG Electronics                      |
| <a href="#">R1-1710507</a> | DMRS Sequence for NR PBCH                            | Intel Corporation                   |
| <a href="#">R1-1710629</a> | Sequence design of DMRS for NR-PBCH                  | Samsung                             |
| <a href="#">R1-1710918</a> | On DMRS Designs for NR-PBCH                          | InterDigital, Inc.                  |
| <a href="#">R1-1711062</a> | Discussion on sequence design of DMRS for NR-PBCH    | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711141</a> | DMRS design for NR-PBCH                              | Qualcomm Incorporated               |
| <a href="#">R1-1711266</a> | NR-PBCH DMRS design                                  | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711353</a> | DMRS sequence design for NR-PBCH                     | ITL                                 |
| <a href="#">R1-1711376</a> | NR-PBCH DMRS design                                  | Ericsson                            |

5.1.1.2.4 Remaining minimum system information delivery

Include numerology used for RMSI delivery

Limit to 1 contribution per 1 company/organization/university

|                            |                                                                     |                                     |
|----------------------------|---------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709891</a> | RMSI delivery                                                       | ZTE                                 |
| <a href="#">R1-1709915</a> | Discussion on NR RMSI delivery                                      | Huawei, HiSilicon                   |
| <a href="#">R1-1710029</a> | RMSI Delivery                                                       | CATT                                |
| <a href="#">R1-1710134</a> | Discussion on the numerology of the RMSI                            | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710233</a> | Discussion on the CORESET for RMSI delivery                         | Fujitsu                             |
| <a href="#">R1-1710244</a> | PRB indexing for RMSI in NR                                         | NEC                                 |
| <a href="#">R1-1710265</a> | Remaining minimum system information delivery                       | LG Electronics                      |
| <a href="#">R1-1710508</a> | RMSI Delivery Mechanisms                                            | Intel Corporation                   |
| <a href="#">R1-1710608</a> | Delivery of remaining minimum system information                    | ETRI                                |
| <a href="#">R1-1710630</a> | Remaining minimum system information delivery                       | Samsung                             |
| <a href="#">R1-1710773</a> | CORESET configuration for RMSI scheduling                           | CMCC                                |
| <a href="#">R1-1710801</a> | Further discussion on Remaining minimum system information delivery | MediaTek Inc.                       |
| <a href="#">R1-1710841</a> | Discussion on remaining system information delivery                 | Beijing Xinwei Telecom Techn.       |
| <a href="#">R1-1710919</a> | On Minimum System Information Delivery                              | InterDigital, Inc.                  |
| <a href="#">R1-1711063</a> | Discussion on remaining minimum system information delivery for NR  | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711142</a> | Remaining system information delivery consideration                 | Qualcomm Incorporated               |
| <a href="#">R1-1711267</a> | On Remaining System Information Delivery                            | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711319</a> | Relation among NR-PBCH, SIBs and subcells                           | Panasonic                           |
| <a href="#">R1-1711377</a> | NR delivery of remaining minimum system information                 | Ericsson                            |

5.1.1.2.5 Other system information delivery

Include how to deliver other system information

Limit to 1 contribution per 1 company/organization/university

|                            |                                                 |                                |
|----------------------------|-------------------------------------------------|--------------------------------|
| <a href="#">R1-1709892</a> | Other SI delivery                               | ZTE                            |
| <a href="#">R1-1710030</a> | Delivery of Other System Information            | CATT                           |
| <a href="#">R1-1710135</a> | Discussion on the on-demand SI                  | Guangdong OPPO Mobile Telecom. |
| <a href="#">R1-1710266</a> | Other system information delivery               | LG Electronics                 |
| <a href="#">R1-1710379</a> | Identification NSA mode during initial access   | vivo                           |
| <a href="#">R1-1710477</a> | Discussion on other system information delivery | Huawei, HiSilicon              |

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|                            |                                                 |                                     |
|----------------------------|-------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710609</a> | Delivery of other system information            | ETRI                                |
| <a href="#">R1-1710631</a> | Other system information delivery               | Samsung                             |
| <a href="#">R1-1710802</a> | Further discussion on OSI delivery              | MediaTek Inc.                       |
| <a href="#">R1-1711143</a> | Other system information delivery consideration | Qualcomm Incorporated               |
| <a href="#">R1-1711378</a> | NR delivery of other system information         | Ericsson                            |
| <a href="#">R1-1711391</a> | On Other System Information Delivery            | Nokia, Alcatel-Lucent Shanghai Bell |

#### 5.1.1.3 Paging design

*Include PO/PF definition, whether/how to multiplex paging DCI and/or message with other signal/channel, spatial QCL assumption with other signal/channel, and paging indication mechanism*

*Limit to 1 contribution per 1 company/organization/university*

|                            |                                      |                                     |
|----------------------------|--------------------------------------|-------------------------------------|
| <a href="#">R1-1709893</a> | Paging design in NR                  | ZTE                                 |
| <a href="#">R1-1709916</a> | Multi-beam Paging for NR             | Huawei, HiSilicon                   |
| <a href="#">R1-1710031</a> | NR Paging Channel                    | CATT                                |
| <a href="#">R1-1710136</a> | On NR paging design and transmission | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710267</a> | Paging design in NR                  | LG Electronics                      |
| <a href="#">R1-1710509</a> | NR Paging Design                     | Intel Corporation                   |
| <a href="#">R1-1710632</a> | Paging design                        | Samsung                             |
| <a href="#">R1-1710803</a> | Further discussion on paging design  | MediaTek Inc.                       |
| <a href="#">R1-1711064</a> | Discussion on paging design for NR   | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711144</a> | Paging design consideration          | Qualcomm Incorporated               |
| <a href="#">R1-1711254</a> | Discussion on Paging Design          | III                                 |
| <a href="#">R1-1711271</a> | Paging in NR                         | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711379</a> | On NR paging design                  | Ericsson                            |

#### 5.1.1.4 Physical random access channel and random access procedure

##### 5.1.1.4.1 PRACH preamble format details for long/short sequence length

*Include discussion and evaluation based on email discussion [89-16], whether/how to support restricted set, etc.*

From Wednesday morning offline

|                            |                                                              |                        |
|----------------------------|--------------------------------------------------------------|------------------------|
| <a href="#">R1-1709894</a> | NR-PRACH formats for long/short sequences                    | ZTE                    |
| <a href="#">R1-1710510</a> | NR PRACH Preamble design                                     | Intel Corporation      |
| <a href="#">R1-1710633</a> | PRACH preamble format details for long/short sequence length | Samsung                |
| <a href="#">R1-1710268</a> | Discussion on PRACH preamble format details                  | LG Electronics         |
| <a href="#">R1-1711527</a> | PRACH Preamble Format Design                                 | Cohere Technologies    |
| <a href="#">R1-1711547</a> | Discussion on PRACH designs for short sequence               | Sequans Communications |

#### Agreements

- Confirm the working assumption on supporting format 3
- For formats with L=839
  - Unrestricted sets are supported
  - For restricted sets
    - 1.25 kHz: Restricted set A supported, Restricted set B is FFS
    - 5 kHz: Restricted set is supported with FFS if Restricted set A, B or both are supported
- For L=127/139 with option 1, formats with 1,2,4,6, and 12 OFDM symbols are supported
  - Discuss further until Friday actual format definitions with CP and GP (LGE)
    - Number of symbols can be adjusted if problems are identified

#### Thursday

[R1-1711875](#) WF on PRACH Preamble Format for Short sequence with Option 1 LG Electronics, NTT DOCOMO

Also supported by ZTE, Ericsson

#### Possible agreements:

- For 15kHz subcarrier spacing,
  - Agree at least followings

| Preamble format | # of Sequence | TCP | TSEQ | TGP | Path profile (Ts) | Path profile (us) | Maximum Cell radius (meter) | Use case |
|-----------------|---------------|-----|------|-----|-------------------|-------------------|-----------------------------|----------|
|-----------------|---------------|-----|------|-----|-------------------|-------------------|-----------------------------|----------|

|   |   |    |     |       |     |     |      |         |                                        |
|---|---|----|-----|-------|-----|-----|------|---------|----------------------------------------|
| A | 0 | 1  | 144 | 2048  | 0   | 48  | 1.56 | [469]   | TA is already known or Very small cell |
|   | 1 | 2  | 288 | 4096  | 0   | 96  | 3.13 | [469]   | Small cell                             |
|   | 2 | 4  | 576 | 8192  | 0   | 144 | 4.69 | [1,055] | Normal cell                            |
|   | 3 | 6  | 864 | 12288 | 0   | 144 | 4.69 | [1,758] | Normal cell                            |
| B | 4 | 12 | 936 | 24576 | 792 | 144 | 4.69 | [3,867] | Normal cell                            |

- Note 1: Unit is Ts, where Ts = 1/30.72MHz
- Note 2: PRACH preamble are aligned with OFDM symbol boundary for data with same numerology
- Note 3: Additional 16Ts for every 0.5ms should be included in T<sub>CP</sub> when RACH preamble is transmitted across 0.5ms boundary or from 0.5ms boundary
- Note 4: Note that cell radius can be changed later
- Note 5: For format A, GP can be defined within the last RACH preamble among consecutively transmitted RACH preambles

Continue offline discussions until Friday – Hyunsoo (LGE)

#### Friday

#### Agreements:

- For 15 kHz subcarrier spacing,
  - Agree on following preamble formats A2, A3, B4
  - Working assumption** on following preamble formats A0, A1, B0, B1, B2, B3, C0, C1

| Preamble format |   | # of Sequence | TCP  | TSEQ  | TGP | Path profile (Ts) | Path profile (us) | Maximum Cell radius (meter) | Use case                               |
|-----------------|---|---------------|------|-------|-----|-------------------|-------------------|-----------------------------|----------------------------------------|
| A               | 0 | 1             | 144  | 2048  | 0   | 48                | 1.56              | 469                         | TA is already known or Very small cell |
|                 | 1 | 2             | 288  | 4096  | 0   | 96                | 3.13              | 938                         | Small cell                             |
|                 | 2 | 4             | 576  | 8192  | 0   | 144               | 4.69              | 2,109                       | Normal cell                            |
|                 | 3 | 6             | 864  | 12288 | 0   | 144               | 4.69              | 3,516                       | Normal cell                            |
| B               | 0 | 1             | 144  | 2048  | 0   | 48                | 1.56              | 469                         | TA is already known or Very small cell |
|                 | 1 | 2             | 192  | 4096  | 96  | 96                | 3.13              | 469                         | Small cell                             |
|                 | 2 | 4             | 360  | 8192  | 216 | 144               | 4.69              | 1,055                       | Normal cell                            |
|                 | 3 | 6             | 504  | 12288 | 360 | 144               | 4.69              | 1,758                       | Normal cell                            |
|                 | 4 | 12            | 936  | 24576 | 792 | 144               | 4.69              | 3,867                       | Normal cell                            |
| C               | 0 | 1             | 1240 | 2048  | 0   | 144               | 4.69              | 5300                        | Normal cell                            |
|                 | 1 | 2             | 1384 | 4096  | 0   | 144               | 4.69              | 6000                        | Normal cell                            |

- Note 1: Unit is Ts, where Ts = 1/30.72MHz
- Note 2: PRACH preamble are aligned with OFDM symbol boundary for data with same numerology
- Note 3: Additional 16Ts for every 0.5ms should be included in TCP when RACH preamble is transmitted across 0.5ms boundary or from 0.5ms boundary
- Note 4: For format A, GP can be defined within the last RACH preamble among consecutively transmitted RACH preambles
- For 30/60/120 kHz subcarrier spacing, preamble format can be scaled according to subcarrier spacing.
  - Ts = 1/(2\*30720) ms for 30 kHz subcarrier spacing
  - Ts = 1/(4\*30720) ms for 60 kHz subcarrier spacing
  - Ts = 1/(8\*30720) ms for 120 kHz subcarrier spacing
  - Note that some of the formats may not be applicable to all subcarrier spacings

Not treated.

[R1-1711270](#) [89-16] Email discussion on NR-PRACH preamble formats based on short sequence length ZTE Corporation

[R1-1710008](#) PRACH preamble format details for long/short sequence length Huawei, HiSilicon

[R1-1710032](#) NR RACH Long and Short Preamble Sequence Length CATT

[R1-1710229](#) [89-16] Email discussion on NR-PRACH preamble formats based on short sequence length ZTE Corporation

[R1-1710889](#) NR Physical Random Access Channel Nokia, Alcatel-Lucent Shanghai Bell

[R1-1711065](#) Discussion on PRACH preamble format details for long/short sequence length for NR NTT DOCOMO, INC.

[R1-1711145](#) PRACH preamble format design for long/short sequence length Qualcomm Incorporated

[R1-1711270](#) [89-16] Email discussion on NR-PRACH preamble formats based on short sequence length ZTE Corporation

[R1-1711380](#) NR-RACH preamble format details Ericsson

#### 5.1.1.4.2 PRACH preamble format details for capacity enhancement and beam management

Include necessity and detailed solution for PRACH capacity enhancement, and PRACH design for beam management/recovery

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[R1-1711865](#) Multiple/Repeated PRACH Preamble Transmission with OCC across Preambles Qualcomm,  
Interdigital, Samsung, AT&T, Verizon  
[R1-1711827](#) WF on Capacity Enhancement for option 1 of PRACH preamble LGE, ITL  
[R1-1711849](#) WF on Preamble sequence for capacity enhancement Huawei, HiSilicon

Possible agreements:

- NR should support PRACH preambles with ZC sequences of length  $L=127$
- NR should support at least 64 PRACH preamble sequences per cell constructed from a single-root ZC sequence with m-sequence cover sequences.
  - The m-sequence cover sequences have length  $L=127$  and are obtained by cyclic-shifts of a single m-sequence generated from the generator polynomial  $g(D) = D^7 + D^3 + 1$ .

**Friday**

[R1-1711870](#) WF on NR PRACH capacity enhancement CATT, Huawei, TCL

- Support RACH format design for Option 4.

**Discussion:** Also supported by Nokia.

**Decision:** The document is noted.

[R1-1710890](#) NR Physical Random Access Channel Capacity Nokia, Alcatel-Lucent Shanghai Bell

- Proposal 1: RACH sequence capacity should consider the on-demand SI RACH requests.
- Proposal 2: Use the same PRACH preamble format for FDM multiplexed PRACH resources for initial access and PRACH resources for beam recovery requests.
- Proposal 3: In multiplexing resources for beam recovery requests in TDM manner with RACH slots, support SR like resource of PUCCH for beam recovery requests.
- Proposal 4: As capacity need to due handovers depend on network load and deployment, the NR should support flexible PRACH resource allocation both in time and frequency domain.
- Proposal 5: NR to consider dedicated PRACH preamble sequences for paging driven response.
- Proposal 6: RACH sequence capacity should consider paging indicator response.
- Proposal 7: Support 139 sequence length for short PRACH preamble sequence.
- Proposal 8: Consider preamble format 4 as a method to increase the PRACH preamble sequence capacity.
- Proposal 9: RACH configuration supports both option 1 and option 4.

**Decision:** The document is noted.

[R1-1711600](#) PRACH preamble sequences and formats for capacity enhancement and beam management Huawei,  
HiSilicon (Revision of [R1-1709917](#))

- Proposal 1: NR should support PRACH preambles with ZC sequences of length  $L=127$ .
- Proposal 2: NR should support at least 64 PRACH preamble sequences per cell constructed from a single-root ZC sequence with m-sequence cover sequences.
  - The m-sequence cover sequences have length  $L=127$  and are obtained by cyclic-shifts of a single m-sequence generated from the generator polynomial  $g(D) = D^7 + D^3 + 1$ .
- Proposal 3: 2-stage PRACH with proper UE grouping should be supported as an option to reduce detection complexity for the much higher PRACH spectral efficiency in NR.
- Proposal 4: NR supports option 4 for gNB sweeping.

**Decision:** The document is noted.

Not treated.

[R1-1709895](#) NR-PRACH formats: capacity enhancements and other use cases ZTE  
[R1-1709917](#) PRACH preamble sequences and formats for capacity enhancement and beam management Huawei,  
HiSilicon  
[R1-1710033](#) NR RACH Preamble Format for capacity enhancement, CATT  
[R1-1710269](#) Discussion on PRACH preamble for capacity enhancement LG Electronics  
[R1-1710511](#) Discussions on PRACH Capacity Intel Corporation  
[R1-1710610](#) NR-PRACH for various use cases ETRI  
[R1-1710634](#) PRACH preamble format details for capacity enhancement and beam management Samsung  
[R1-1710822](#) On PRACH design to support uplink requests MediaTek Inc.  
[R1-1710890](#) NR Physical Random Access Channel Capacity Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1711066](#) Discussion on PRACH preamble format details for capacity enhancement and beam management for NR  
NTT DOCOMO, INC.  
[R1-1711146](#) PRACH preamble design for capacity enhancement Qualcomm Incorporated  
[R1-1711381](#) NR-RACH preamble format details for capacity enhancement and beam management Ericsson  
[R1-1711569](#) PRACH Design TCL Communication Ltd.

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**5.1.1.4.3 Power ramping and power control during RA procedure**

*Include remaining details on PRACH power ramping and Msg.3 power control mechanism*

*Note that all remaining aspects related to power ramping/control during RA procedure need to be finalized in this meeting*

From Wednesday evening offline

**Agreements:**

- The UE calculates the PRACH transmit power for the retransmission at least based on the most recent estimate pathloss and power ramping
  - The pathloss is measured at least on the SS block associated with the PRACH resources/preamble subset
- UE behavior when reaching the maximum power
  - If the recalculated power is still at or above the  $P_{c,max}$ 
    - The UE can transmit at maximum power even if it changes its TX beam

To be discussed further:

- Is the UE required to select the PRACH resources based on the SS block received with the highest SS block RSRP?
- Is the UE is allowed to change SS block used for the pathloss estimate for retransmission?

**Thursday:** Above questions should not have an impact to RAN4 progress.

Continue discussion until Friday – Nazmul (Qualcomm)

**Friday:** Continue discussions at the next meeting.

**R1-1711861 WF on RACH Power Control Mechanism for Msg.1 Transmission LGE, NTT DOCOMO**

Also supported by Huawei, HiSilicon

Possible agreements:

- Configure the number of beam switching N for power ramping in Msg.1 (re)transmission, where,
  - when UE conducts beam switching and the number of beam switching is equal to or lower than the number N
    - The counter of power ramping remains unchanged,
  - when UE conducts beam switching and the number of beam switching is N+1
    - If UE doesn't reaches maximum power, the counter of power ramping increases
    - Otherwise, UE reports random access problem to upper layer
  - when the counter of power ramping increases
    - The number of beam switching is reset.
- Configure the maximum count of continuously increasing power ramping in a certain beam, where,
  - when the configured number is exceeded,
    - UE should change its beam for PRACH preamble retransmission.

Not treated.

|                            |                                                                          |                                     |
|----------------------------|--------------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709896</a> | Power control during random access procedure                             | ZTE                                 |
| <a href="#">R1-1709918</a> | Discussion on power ramping and power control during RA procedure        | Huawei, HiSilicon                   |
| <a href="#">R1-1710034</a> | RACH power control and power ramping procedure                           | CATT                                |
| <a href="#">R1-1710137</a> | Discussion on Power ramping and power control during RA procedure        | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710252</a> | Discussion on preamble transmitting power                                | NEC Corporation                     |
| <a href="#">R1-1710270</a> | Discussion on Power Control issue for Message 1 and 3                    | LG Electronics                      |
| <a href="#">R1-1710512</a> | PRACH Power ramping procedure                                            | Intel Corporation                   |
| <a href="#">R1-1710635</a> | Power ramping and power control during RA procedure                      | Samsung                             |
| <a href="#">R1-1710823</a> | PRACH Msg1 retransmission                                                | MediaTek Inc.                       |
| <a href="#">R1-1710870</a> | Power ramping for Msg1 preamble re-transmission                          | InterDigital, Inc.                  |
| <a href="#">R1-1710891</a> | Preamble Power Ramping and RACH Message 3 Power Control                  | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711067</a> | Discussion on power ramping and power control during RA procedure for NR | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711147</a> | Power ramping and power control for RA procedure                         | Qualcomm Incorporated               |
| <a href="#">R1-1711233</a> | Remaining issues on power ramping in NR                                  | Sharp                               |
| <a href="#">R1-1711382</a> | Power ramping and power control during RA procedure                      | Ericsson                            |

**5.1.1.4.4 4-step RA procedure**

*Include Msg.2/3/4 channel design, RACH configuration, non-contention based random access procedure, etc.*

**R1-1711866 WF on RACH configuration in RMSI Huawei, HiSilicon**

**Agreement:**

- All random access configuration information is broadcasted in all beams used for RMSI within a cell
  - i.e, RMSI information is common for all beams

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[R1-1711936](#)    **WF on CSI-RS based RACH Configuration**    Samsung, Ericsson, ZTE, Mediatek Mitsubishi, MTI  
Also supported by Nokia, Huawei, HiSilicon

**Agreements:**

- At least for handover case, a source cell can indicate in the handover command,
  - Association between RACH resources and CSI-RS configuration(s)
  - Association between RACH resources and SS blocks
  - A set of dedicated RACH resources (FFS: time/frequency/sequence)
  - [Note that above CSI-RS configuration is UE-specifically configured](#)

Formatted: English (United States)

[R1-1711876](#)    **WF on multiple Msg.1 transmission for contention free case**    Samsung, Huawei, Hisilicon, MediaTek, ZTE

**Possible agreements:**

- For contention free case, a UE can be configured to transmit multiple Msg.1 over multiple RACH transmission occasions before the end of a monitored RAR window

**Friday**

**Agreements:**

- For contention free case, a UE can be configured to transmit multiple Msg.1 over dedicated multiple RACH transmission occasions in time domain before the end of a monitored RAR window if the configuration of dedicated multiple RACH transmission occasions in time domain is supported.
  - Note: The time resource used for 'dedicated RACH in time domain' is different from the time resources of contention based random access
  - Note: Multiple Msg1 can be transmitted with same or different UE TX beams

[R1-1711799](#)    **WF on random access association configuration**    ZTE

**Possible agreements:**

- The subsets of PRACH resources/indices are defined using the following parameters
  - W: Number of preamble indices per subset of preamble indices
  - X: Number of preamble subsets per PRACH resource
  - Y: Number of associations per preamble subset per PRACH time instance
- The SS blocks are consecutively associated with the subsets of PRACH resources/indices using the following parameter
  - Z: Association time period
    - The number of PRACH time instances after which an association from an SS block occurs again

**Friday**

[R1-1711945](#)    **WF on random access association configuration**    ZTE

**Agreements:**

- For contention-based random access, an association between an SS block in the SS burst set and a subset of RACH resources and/or preamble indices is configured by a set of parameters in RMSI.
  - RAN1 strives to use the same set of parameters for different cases, e.g. analog/hybrid/digital beamforming at gNB, level of gNB beam correspondence, number of SS blocks, number of frequency multiplexed PRACH resources, PRACH resource density in time etc.
  - RAN1 strives to minimize the set of parameters.
  - FFS the set of parameters
  - FFS the number of SS blocks (if indicated in RMSI or MIB), e.g. the actually transmitted SS blocks or the maximum number (L).

Not treated.

[R1-1709897](#)    4-step random access procedure    ZTE  
[R1-1710035](#)    Further details on NR 4-step RA Procedure    CATT  
[R1-1710138](#)    NR 4-Step Random Access Procedure    Guangdong OPPO Mobile Telecom.  
[R1-1710218](#)    RACH transmission count Mitsubishi Electric Co.  
[R1-1710234](#)    Discussion on 4-step RA procedure Fujitsu  
[R1-1710271](#)    RACH Procedure LG Electronics  
[R1-1710422](#)    DL Tx beam reporting in msg. 3    AT&T  
[R1-1710478](#)    RACH procedures and resource configuration    Huawei, HiSilicon  
[R1-1710513](#)    4-step PRACH Procedures Intel Corporation  
[R1-1710636](#)    4-step RACH procedure    Samsung

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|                            |                                                          |                                     |
|----------------------------|----------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710774</a> | Discussion on RACH configuration                         | CMCC                                |
| <a href="#">R1-1710824</a> | On 4-step RACH procedure                                 | MediaTek Inc.                       |
| <a href="#">R1-1710860</a> | Considerations on 4-step RA procedure                    | Sony                                |
| <a href="#">R1-1710871</a> | Multiple Msg1 transmissions for one monitored RAR window | InterDigital, Inc.                  |
| <a href="#">R1-1710892</a> | NR 4-step RACH procedure                                 | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711068</a> | Discussion on 4-step RA procedure for NR                 | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711148</a> | 4-step RACH procedure consideration                      | Qualcomm Incorporated               |
| <a href="#">R1-1711279</a> | RACH configuration and procedure                         | Motorola Mobility, Lenovo           |
| <a href="#">R1-1711383</a> | 4-step random access procedure                           | Ericsson                            |

**5.1.1.5 Mobility procedure**

**5.1.1.5.1 Measurement based on SS block**

*Include whether/how to handle power offset between NR-SSS and PBCH-DMRS, one or multiple information on periodicity and timing for RRM measurement per carrier, etc.*

**[R1-1710977](#) Discussion on RRM measurement on SS blocks CMCC**

*Alt 1: Network indicates one single shortest periodicity for RRM measurement in the same carrier frequency.*

*Alt 2: Network indicates one single longest periodicity for RRM measurement in the same carrier frequency.*

*Alt 3: Network indicates two periodicities, one for the camping cell and the other for the neighboring cells in the same carrier frequency.*

- Observation 1: For IDLE mode UE RRM measurement, one single indication of the *longest* SS burst set periodicity of all the cells in the same carrier frequency can work, as long as the SS block timing locations within the SS burst set with longer periodicity is a subset of SS block timing locations within the SS burst set with shorter periodicity, i.e., *subset alignment of all SS blocks in the same carrier frequency*.
- Observation 2: From network operating perspective, subset alignment of SS blocks is necessary since it ensures the simple indication of SSBS periodicity for RRM measurement and that UE can also detect cells that are not configured in the neighbor cell list.
- Observation 3: For IDLE mode UE, both Alt 2 and Alt 3 can work.
- Proposal 1: It is slightly preferred that Alt 2, i.e., one periodicities and one information regarding SS block timing locations is indicated to IDLE mode UE for intra-frequency measurement.
- Proposal 2: For CONNECTED mode UE, two SSBS periodicities and two information regarding SS block timing locations are indicated for intra-frequency measurement.
- Proposal 3: Only one SSBS periodicity regarding inter-frequency measurement is preferred to be indicated.

**Decision:** The document is noted.

**[R1-1709919](#) SS Burst Periodicities and timing for UE RRM measurement Huawei, HiSilicon**

- Proposal 1: In addition to NR-SSS, UE may optionally use DMRS for PBCH to derive SS block RSRP as cell level quality for L3 mobility. Whether and how to use DMRS for PBCH is up to UE implementation.
- Proposal 2: NR should support fixed power offset between NR-SSS and PBCH-DMRS to use PBCH-DMRS to derive SS block RSRP for L3 mobility.
- Proposal 3: NR should support to indicate multiple SS burst set periodicities and information regarding measurement timing/duration to connected mode UE.
- Proposal 4: NR should support to indicate one SS burst set periodicity and one information regarding measurement timing/duration for all cells or non-serving cells to idle mode UE.

**Decision:** The document is noted.

**[R1-1710637](#) Measurement based on SS block Samsung**

- Proposal 1: A fixed EPRE power ratio shall be adopted between SSS and PBCH DMRS. The fixed ratio shall be 3.5dB.
- Proposal 2: Only a single SS burst set periodicity value shall be configured per carrier

**Decision:** The document is noted.

**[R1-1711761](#) WF on measurement based on SS block NTT DOCOMO, Ericsson, Huawei, HiSilicon, AT&T**

- Regarding the measurement timing configuration i.e., SS burst set periodicity/timing/duration information for UE RRM measurement per frequency carrier,
  - Only single measurement timing configuration is configured per frequency carrier to UE for IDLE mode measurement.
  - Multiple measurement timing configurations can be configured to UE in CONNECTED mode.
    - Different measurement timing configurations are applied to different group of cells on the frequency carrier
    - FFS maximum number of measurement timing configurations per frequency carrier

**Decision:** The document is noted.

**Agreements:**

- Regarding the SS block based RRM measurement timing configuration (SMTC) i.e., measurement window periodicity/duration/offset information for UE RRM measurement per frequency carrier,
  - For intra-frequency CONNECTED mode measurement, up to two measurement window periodicities can be configured
    - UE can be informed of which cell(s) is associated with which measurement window periodicity
      - For cell(s) that is not listed, longer measurement window periodicity is used
    - Single measurement window offset and duration are configured per frequency carrier
  - For IDLE mode measurements, only single SMTC is configured per frequency carrier
  - For inter-frequency CONNECTED mode measurements, only single SMTC is configured at least per frequency carrier
  - RAN1 asks RAN4 if there is any concern for inter-frequency measurement based on single SMTC or multiple SMTCs across different frequency carriers

**R1-1711801**      **WF on power offset of NR-PBCH DMRS and NR-SSS**      **MediaTek, Huawei, HiSilicon, NTT DOCOMO**

- A fixed power offset defined in the specification shall be adopted between SSS and PBCH DMRS.
  - FFS: 0 dB, 3 dB, or 3.5 dB power offset

**Decision:** The document is noted and the following is agreed:

**Agreement:** A fixed power offset defined in the specification shall be adopted between SSS and PBCH DMRS per frequency band

Not treated.

|                            |                                                                    |                                     |
|----------------------------|--------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1711800</a> | WF on SS block repetition                                          | ZTE, Sierra Wireless                |
| <a href="#">R1-1709898</a> | RRM measurements on IDLE mode RS                                   | ZTE                                 |
| <a href="#">R1-1710036</a> | IDLE and CONNECTED mode UE mobility based on SS-block measurements | CATT                                |
| <a href="#">R1-1710139</a> | On RRM measurement based on SS block                               | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710272</a> | SS block based RRM Measurement                                     | LG Electronics                      |
| <a href="#">R1-1710377</a> | SS block time index for idle/inactive measurement                  | vivo                                |
| <a href="#">R1-1710423</a> | Measurement based on SS block                                      | AT&T                                |
| <a href="#">R1-1710514</a> | SS Block based RRM Measurements                                    | Intel Corporation                   |
| <a href="#">R1-1710804</a> | Discussion on measurement based on SS block                        | MediaTek Inc.                       |
| <a href="#">R1-1711069</a> | Discussion on NR RRM measurement based on SS block                 | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711149</a> | Measurement based on SS block consideration                        | Qualcomm Incorporated               |
| <a href="#">R1-1711268</a> | SS block measurements and procedures                               | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711384</a> | Mobility measurements based on SS block                            | Ericsson                            |

**5.1.1.5.2 Measurement based on CSI-RS for L3 mobility**

*Include candidate periodicity values, whether/how transmission and/or measurement bandwidth is indicated, numerology of CSI-RS for L3 mobility, spatial QCL assumption, methods to obtain parameters of CSI-RS for L3 mobility, etc.  
Note that CSI-RS configuration parameters for L3 mobility need to be finalized in this meeting*

**R1-1710273**      **CSI-RS based RRM Measurement for L3 Mobility**      **LG Electronics**

- Proposal 1: Considering the UE behaviour of L3 mobility, CSI-RS for L3 mobility should be transmitted periodically, and the periodicity of CSI-RS is configured to be at least less than 20ms.
- Proposal 2: Transmission bandwidth of CSI-RS is signalled by UE-dedicated RRC message and how much part is used as measurement bandwidth is an implementation issue.
- Proposal 3: Symbol duration of CSI-RS is based on SCS of data channel and it is configured per frequency through UE-dedicated RRC configuration message. IFDMA is proposed for sub-time unit transmission within an OFDM symbol.
- Proposal 4: A part of spatial information can be exploited from a SS block if the beam width of SS block is super set but limited set of the beam width of CSI-RS.
- Proposal 5: When a UE detects SS block of a cell, which is not in the neighbour cell list or whose CSI-RS configuration is not given to the UE, UE may request CSI-RS configuration for that cell using measurement report.

**Decision:** The document is noted.

**R1-1710805**      **Discussion on CSI-RS for L3 mobility**      **MediaTek Inc.**

- Proposal 1: Candidate periodicity values of CSI-RS for L3 mobility is 5, 10, 20, 40, 80, 160 ms.
- Proposal 2: CSI-RS for L3 mobility and SS block burst are transmitted in TDM manner.

- Proposal 3: The CSI-RS for L3 mobility and the measurement gap should be aligned, and the entire CSI-RS for L3 mobility should be contained in the measurement gap.
- Proposal 4: NR supports measurement configuration of CSI-RS for L3 mobility, including
  - measurement bandwidth per carrier frequency
  - numerology
  - QCL assumption
- Observation 1: The numerologies of CSI-RS from different cells could be different, so it is unlikely all configuration parameters are valid for all CSI-RS resources on a carrier frequency (Method 2).
- Proposal 5: As a baseline, configuration parameters of CSI-RS for L3 mobility are valid for one CSI-RS resource. Certain parameters can be cell-specific/frequency-specific, e.g. periodicity.
- Observation 2: If the configuration parameters can be obtained from detected cell-ID (e.g. Method 3 & Method 5), then it is cell-specific configuration, and RAN1 does not see the need to support cell-specific configuration for CSI-RS for RRM measurement.
- Observation 3: Measuring CSI-RS with parameters derived from detected cells will increase UE complexity.

**Decision:** The document is noted.

**R1-1711762**    **WF on measurement based on CSI-RS**    **NTT DOCOMO, Ericsson, AT&T**

- Following CSI-RS properties for RRM measurement for L3 mobility are supported in NR
  - Configurable periodicity (as already agreed)
    - {5, 10, 20, 40, [80, 160]} ms are supported
  - Configurable transmission bandwidth (as already agreed)
    - FFS candidate values
  - Configurable measurement bandwidth (as already agreed) and frequency location
    - At least minimum carrier bandwidth for each frequency band/range and at least one additional wider bandwidth for each SCS (e.g., maximum UE bandwidth) are supported
      - FFS other candidate values for wider bandwidth for each SCS
    - Measurement of CSI-RS in subband/bandwidth part which may or may not contain SS Blocks is supported
  - Configurable parameters for sequence generation
  - Configurable numerology
    - For each frequency range, subcarrier spacing values applicable to data, CSI-RS for beam management and SS block in the frequency range are supported
  - FFS: Configurable spatial QCL with SS block
    - It is assumed that property of spatial QCL between SS block and CSI-RS for beam management will be reused
  - Configurable CSI-RS time/frequency resource (as already agreed)
    - CSI-RS design including RE mapping and density for beam management is assumed as baseline

**Decision:** The document is noted, modified and agreed as follows:

**Agreements:**

- Following CSI-RS properties for RRM measurement for L3 mobility are supported in NR
  - Configurable periodicity (as already agreed)
    - {5, 10, 20, 40, [80, 160]} ms are supported
    - This does not mean periodicity will be configured per CSI-RS resource
  - Configurable transmission bandwidth (as already agreed)
    - FFS candidate values
  - Configurable measurement bandwidth (as already agreed) and frequency location
    - At least minimum carrier bandwidth for each frequency band/range and at least one additional wider bandwidth for each SCS (e.g., maximum UE bandwidth) are supported
      - FFS other candidate values for wider bandwidth for each SCS
    - Measurement of CSI-RS in subband/bandwidth part which may or may not contain SS Blocks is supported
  - Configurable parameters for sequence generation
  - Configurable numerology
    - For each frequency range, subcarrier spacing values applicable to data, CSI-RS for beam management and SS block in the frequency range are supported
  - Association between CSI-RS for RRM measurement and SS block
    - It is assumed that property of spatial QCL between SS block and CSI-RS for beam management will be reused
  - Configurable CSI-RS time/frequency resource (as already agreed)
    - CSI-RS design including RE mapping and density for beam management is assumed as baseline
  - Note that above properties are relevant for RAN4 RRM measurement evaluations and not intended to be an exhaustive list of properties

**R1-1711864 Measurement window periodicity, duration and offset of CSI-RS for L3 mobility Qualcomm**

Possible agreements:

- For DRX operation,
  - For the CSI-RS based RRM measurement timing configuration (i.e., measurement window periodicity/duration/offset information), only a single measurement window periodicity, duration and offset for all CSI-RS resources are configured per frequency carrier
    - This applies to both intra-frequency and inter-frequency measurements

Not treated.

|                            |                                                                  |                                     |
|----------------------------|------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709899</a> | RRM measurements on CSI-RS for L3 mobility                       | ZTE                                 |
| <a href="#">R1-1709920</a> | CSI-RS configuration parameters for L3 mobility                  | Huawei, HiSilicon                   |
| <a href="#">R1-1710037</a> | L3 Mobility based on CSI-RS based measurements                   | CATT                                |
| <a href="#">R1-1710378</a> | CSI-RS configuration for L3 mobility                             | vivo                                |
| <a href="#">R1-1710424</a> | Measurement based on CSI-RS for L3 mobility                      | AT&T                                |
| <a href="#">R1-1710515</a> | CSI-RS based RRM Measurements                                    | Intel Corporation                   |
| <a href="#">R1-1710638</a> | Measurement based on CSI-RS for L3 mobility                      | Samsung                             |
| <a href="#">R1-1710775</a> | Discussion on RRM measurement on SS blocks                       | CMCC                                |
| <a href="#">R1-1711070</a> | Discussion on NR RRM measurement based on CSI-RS for L3 mobility | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711150</a> | Measurement based on CSI-RS for L3 mobility consideration        | Qualcomm Incorporated               |
| <a href="#">R1-1711385</a> | Measurements based on CSI-RS for L3 mobility                     | Ericsson                            |
| <a href="#">R1-1711392</a> | CSI-RS configuration for L3 mobility purposes                    | Nokia, Alcatel-Lucent Shanghai Bell |

**5.1.1.5.3 Radio link monitoring**

*Include RS used to derive SINR like metric for RLM*

*Note that RS used for radio link monitoring needs to be finalized in this meeting*

**R1-1711151 Radio link monitoring consideration Qualcomm Incorporated**

- Proposal 1: In Idle/RRC connected inactive/RRC connected active states, cell detection and measurements are based on cell-specific PSS and SSS for both the serving cell and neighboring cells.
- Proposal 2: Choice of RLM RS should consider the following aspects
  - RLM RS should be QCL with NR-PDCCH to reflect the channel experienced by NR-PDCCH
  - UE should be able to estimate the interference level experienced by NR-PDCCH
  - RLM RS should have guaranteed existence with lower enough periodicity, i.e. 10-20ms or DRX cycle if DRX cycle is longer than 10-200ms
  - Consider reuse RLM RS for other purposes to reduce overhead, i.e. beam management, tracking RS, etc.
- Proposal 3: LTE Radio Link Failure triggering procedure can be a starting pointing for NR radio link monitoring design
- Proposal 4: In addition to RLM based IS/OOS, beam failure recovery procedure can provide periodic/apperiodic IS and OOS indications to upper layers for the RLF procedure.

**Decision:** The document is noted.

**R1-1711763 WF on radio link monitoring NTT DOCOMO, Ericsson, AT&T**

- The RS used for RLM should have following properties
  - Periodic transmission with short enough periodicity
  - Wideband transmission relative to bandwidth of active bandwidth part
  - Supporting both single beam and multi-beam operations
  - Representing control channel quality, e.g., by QCL with PDCCH
- CSI-RS can be periodic and can be transmitted in wideband. CSI-RS has enough flexibility not only on periodicity and bandwidth but also on transmission beam/scheme to represent control channel quality and so on. Therefore, at least periodic CSI-RS can be used for RLM. In some case, CSI-RS for RLM and CSI-RS for RRM measurement and/or for beam management may share the same physical resources to reduce RS overhead.
- SS block can be also considered for RLM as SS block is the always-on signal to provide cell coverage. But there may be a case where SS block cannot provide some properties required for RLM, e.g., QCL with PDCCH.

**Decision:** The document is noted, modified as follows:

**Agreements**

- The RS used for RLM should have following properties
  - Periodic transmission with short enough periodicity
  - Wideband transmission relative to bandwidth of active bandwidth part
  - Supporting both single beam and multi-beam operations
  - Representing control channel quality
- Both CSI-RS based RLM and SS block based RLM are supported

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- o FFS: whether or not only a single type of RS is configured to UE for RLM at a time

**R1-1711806      WF on radio link monitoring in NR      Huawei, HiSilicon, Qualcomm, ATT**

- NR should support aperiodic indication from beam failure recovery to assist RLF procedure.
  - Example 1: aperiodic IS indication(s) from beam failure recovery can stop/reset T310
    - RAN2 can decide specific procedure
  - Example 2: aperiodic OOS indication from failure of beam recovery procedure
    - How to use aperiodic OOS indication can be decided in RAN2

**Decision:** The document is noted.

**Thursday**

- NR should strive to provide aperiodic indication based on beam failure recovery procedure to assist RLF procedure if the same RS is used for beam failure recovery and RLM procedure
  - Example 1: aperiodic IS indication(s) from beam failure recovery can stop/reset T310
    - RAN2 can decide specific procedure
  - Example 2: aperiodic OOS indication from failure of beam recovery procedure
    - How to use aperiodic OOS indication can be decided in RAN2

**Friday**

**R1-1711889      WF on Radio Link Monitoring in NR      Huawei, HiSilicon, Qualcomm, ATT, DOCOMO, Intel, Vivo, LGE**

**Agreements:**

- NR should strive to provide aperiodic indication(s) based on beam failure recovery procedure to assist radio link failure (RLF) procedure, if same RS is used for beam failure recovery and RLM procedures.
  - o Example 1: aperiodic indication(s) based on beam failure recovery procedure can reset/stop T310
    - RAN2 can decide specific procedure
  - o Example 2: aperiodic indication(s) based on failure of beam recovery procedure
    - How to use aperiodic indication can be decided in RAN2
  - o FFS: aperiodic indication(s) based on beam failure recovery procedure to assist RLF procedure if different RS is used

**R1-1711850      WF on RLM      CATT**

Not treated.

|                            |                                                          |                                     |                   |
|----------------------------|----------------------------------------------------------|-------------------------------------|-------------------|
| <a href="#">R1-1709900</a> | Radio link monitoring in NR                              | ZTE                                 |                   |
| <a href="#">R1-1709921</a> | Discussion on remaining issues of radio link monitoring  |                                     | Huawei, HiSilicon |
| <a href="#">R1-1710038</a> | NR Radio Link Monitoring                                 | CATT                                |                   |
| <a href="#">R1-1710274</a> | Discussion on Radio Link Monitoring in NR LG Electronics |                                     |                   |
| <a href="#">R1-1710425</a> | Radio link monitoring                                    | AT&T                                |                   |
| <a href="#">R1-1710516</a> | NR Radio Link Monitoring                                 | Intel Corporation                   |                   |
| <a href="#">R1-1710639</a> | Radio link monitoring                                    | Samsung                             |                   |
| <a href="#">R1-1710806</a> | Discussion on Radio Link Monitoring                      | MediaTek Inc.                       |                   |
| <a href="#">R1-1711071</a> | Discussion on NR RLM and RLF                             | NTT DOCOMO, INC.                    |                   |
| <a href="#">R1-1711269</a> | NR Radio link monitoring                                 | Nokia, Alcatel-Lucent Shanghai Bell |                   |
| <a href="#">R1-1711386</a> | Radio link monitoring                                    | Ericsson                            |                   |

**5.1.1.6 Other**

|                            |                                                          |                   |
|----------------------------|----------------------------------------------------------|-------------------|
| <a href="#">R1-1709922</a> | On numerology determination during initial access        | Huawei, HiSilicon |
| <a href="#">R1-1710445</a> | Minimum UE bandwidth in NR                               | Huawei, HiSilicon |
| <a href="#">R1-1710640</a> | Discussion on SS periodicity and PBCH TTISamsung         |                   |
| <a href="#">R1-1710641</a> | Considerations on PRACH design in high-mobility scenario | Samsung           |
| <a href="#">R1-1711387</a> | Consideration of PRACH Configuration in NR               | Ericsson          |
| <a href="#">R1-1711388</a> | Additional synchronization provision                     | Ericsson          |

**5.1.2 MIMO**

**R1-1711916      Chairman's notes of AI 5.1.2 MIMO      Ad-Hoc chair (Qualcomm)**

The document was presented by Wanshi Chen from Qualcomm.

**Decision:** The document is endorsed and content is incorporated as below, with the add-on regarding the conclusion on beam management details (see 5.1.2.2.1).

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**5.1.2.1 Multi-antenna scheme**

*Physical control channel related issues are to be discussed in the agenda item for scheduling/HARQ aspects.*

**5.1.2.1.1 Codeword mapping**

*Including codeword-to-layer mapping, codeword to resource mapping and interleaving*

|                            |                                                       |                       |
|----------------------------|-------------------------------------------------------|-----------------------|
| <a href="#">R1-1710642</a> | Finalizing Layer Mapping                              | Samsung               |
| <a href="#">R1-1710446</a> | Codeword to layer mapping in NR                       | Huawei, HiSilicon     |
| <a href="#">R1-1711007</a> | Codeword to layer mapping for DL and UL               | Ericsson              |
| <a href="#">R1-1711152</a> | CW to layer mapping and frequency domain interleaving | Qualcomm Incorporated |
| <a href="#">R1-1710426</a> | Remaining details of codeword mapping for NR MIMO     | AT&T                  |
| <a href="#">R1-1710517</a> | Remaining details on CW to MIMO layer mapping         | Intel Corporation     |

Continue discussion offline – Youngwoo (Samsung)/Leiming (Huawei)

[R1-1711935](#) Summary of Open Issues on Layer Mapping Samsung

**Agreements:**

- Companies are encouraged to provide evaluation results especially for URLLC, intra-slot frequency hopping, dynamic TDD and high speed train scenarios
  - Practical simulation assumptions e.g. CBG based HARQ, pre-emption indication, DMRS, interleaver should be considered.
  - For both CP-OFDM and DFT-S waveforms
  - Evaluation should be done considering both slot and mini-slot.

**Agreements:**

- NR supports higher layer signalling for the maximum number of MCS/RV/NDI in DCI for PDSCH
  - FFS HARQ ID
  - Unless indicated otherwise, UE assumes single MCS/RV/NDI in DCI, i.e. up to four MIMO layers
- NR supports higher layer signalling for the maximum number of CQIs in UCI
  - Unless indicated otherwise, UE assumes single CQI in UCI, i.e. up to four MIMO layers in RI report
    - FFS subband CQI
  - FFS Whether or not the actual number of CQIs is also RI dependent
  - Note: This higher layer signalling can be the other signalling related to RI/PMI reporting (e.g. RI restriction)
  - FFS applicability on single/multi TRP

Not treated.

|                            |                                                                 |                               |
|----------------------------|-----------------------------------------------------------------|-------------------------------|
| <a href="#">R1-1711665</a> | WF on MIMO layer to CW correspondence                           | Intel                         |
| <a href="#">R1-1709904</a> | Discussion on Remaining Details of Codeword Mapping             | Beijing Xinwei Telecom Techn. |
| <a href="#">R1-1710050</a> | On codeword mapping                                             | CATT                          |
| <a href="#">R1-1710175</a> | Codeword mapping and interleaving                               | ZTE                           |
| <a href="#">R1-1710255</a> | Remaining details on DMRS ports and number of layers indication | NEC Corporation               |
| <a href="#">R1-1710275</a> | Discussion on codeword mapping                                  | LG Electronics                |
| <a href="#">R1-1710594</a> | On codeword to RE mapping scheme                                | Lenovo, Motorola Mobility     |
| <a href="#">R1-1710611</a> | Discussion on codeword mapping                                  | ETRI                          |
| <a href="#">R1-1710815</a> | codeword mapping in NR                                          | MediaTek Inc.                 |
| <a href="#">R1-1711072</a> | Discussion on codeword mapping                                  | NTT DOCOMO, INC.              |

**5.1.2.1.2 Codebook based transmission for UL**

|                            |                                                  |                                                    |
|----------------------------|--------------------------------------------------|----------------------------------------------------|
| <a href="#">R1-1710643</a> | Codebook-Based UL Transmission                   | Samsung                                            |
| <a href="#">R1-1710518</a> | On codebook based UL transmission                | Intel Corporation                                  |
| <a href="#">R1-1710051</a> | Considerations on codebook based UL transmission | CATT                                               |
| <a href="#">R1-1711610</a> | UL MIMO for codebook based transmission          | Ericsson (Revision of <a href="#">R1-1711008</a> ) |
| <a href="#">R1-1711073</a> | Codebook design for uplink                       | NTT DOCOMO, INC.                                   |

Continue discussion offline – Yushu (Intel)

|                            |                                                                 |       |
|----------------------------|-----------------------------------------------------------------|-------|
| <a href="#">R1-1711674</a> | Summary of Issues and WFs on Codebook based transmission for UL | Intel |
| <a href="#">R1-1711881</a> | Summary of Issues and WFs on Codebook based transmission for UL | Intel |

**Conclusion:**

- To better understand the tradeoff of uplink cell throughput gain vs. the overhead of control signalling for down-selection, determine the control signalling for frequency-selective precoding after the codebook is defined

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[R1-1711874](#) NR UL MIMO Signaling Mechanism Ericsson, Nokia, Alcatel-Lucent Shanghai Bell, Qualcomm,  
CATT, ZTE  
[R1-1711792](#) WF on codebook based UL transmission MediaTek, Nokia, Shanghai Bell

Not treated.

[R1-1710140](#) On uplink codebook design Guangdong OPPO Mobile Telecom.  
[R1-1710176](#) Codebook based UL transmission ZTE  
[R1-1710276](#) Discussion on codebook based transmission for UL LG Electronics  
[R1-1710447](#) Codebook based transmission for UL MIMO Huawei, HiSilicon  
[R1-1710816](#) Codebook based transmission in UL MediaTek Inc.  
[R1-1710920](#) TPMI Indication for Frequency Selective UL Precoding InterDigital, Inc.  
[R1-1711153](#) Codebook based UL transmission Qualcomm Incorporated  
[R1-1711284](#) Codebook Based Transmission and Codebook Design for UL MIMO Nokia, Alcatel-Lucent Shanghai Bell

**5.1.2.1.3 Non-codebook based transmission for UL**

[R1-1709923](#) Non-codebook based transmission for UL MIMO Huawei, HiSilicon  
[R1-1710177](#) Non-Codebook based and Hybrid based UL transmission ZTE  
[R1-1710644](#) Discussion on Non-Codebook-Based UL Transmission Samsung  
[R1-1711154](#) Non-codebook based UL transmission Qualcomm Incorporated

Continue discussion offline – Jun (Nokia)

[R1-1711884](#) Summary of issues on UL non-codebook based transmissions Nokia, ASB  
[R1-1711750](#) WF on UL non-codebook based transmission Huawei, HiSilicon, DOCOMO, Sharp, LGE, Ericsson,  
China Telecom, Deutsche Telekom, Xinwei, Vodafone, CeWiT, China Unicom, Tejas Networks, CATR, IITH, IITM,  
Panasonic, ZTE, InterDigital, AT&T, SoftBank, KDDI  
Also supported by Fujitsu, Mitsubishi

**Agreements:**

- For PUSCH precoder determination in non-codebook-based UL MIMO, support at least one of the followings:
  - Alt.1: Signalling of SRI(s) only, without TPMI indication in the UL grant
  - Alt.2: Signalling of TRI only, without TPMI indication in the UL grant
  - Alt.3: Signalling of TRI and a single SRI, without TPMI indication in the UL grant
  - Alt. 4: signalling of a single TRI, a single CRI without TPMI indication in the UL grant
  - To down-select in the next meeting considering single- vs. multi-panel (companies are encouraged to perform more evaluations)
  - Note: this may depend UE's capability in terms of calibration

[R1-1710052](#) On non-codebook based UL transmission CATT  
[R1-1710277](#) Discussion on non-codebook based transmission for UL LG Electronics  
[R1-1710519](#) On non-codebook based UL transmission Intel Corporation  
[R1-1711009](#) UL MIMO for non-codebook based transmission Ericsson  
[R1-1711074](#) Beam determination for non-codebook based transmission for uplink NTT DOCOMO, INC.  
[R1-1711285](#) Non-codebook based UL-MIMO transmission Nokia, Alcatel-Lucent Shanghai Bell

**5.1.2.1.4 Diversity transmission for UL**

[R1-1710427](#) UL diversity transmission for NR AT&T  
[R1-1710178](#) Diversity based uplink transmission schemes ZTE

Continue offline discussion – Cristina (Mitsubishi)

[R1-1711845](#) Summary of AI 5.1.2.1.4 Diversity transmission for UL Mitsubishi

**Conclusion:**

- Companies are strongly encouraged to perform analysis and simulations for diversity transmission for both CP-OFDM and DFT-s-OFDM based UL considering various scenarios
- Aim to conclude in the next meeting

[R1-1710921](#) STBC-based Transmission for Uplink Transmit Diversity InterDigital, Inc.  
[R1-1711286](#) UL-MIMO diversity-based transmission Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1710053](#) Considerations on transmission diversity scheme in UL CATT

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|                            |                                             |                         |
|----------------------------|---------------------------------------------|-------------------------|
| <a href="#">R1-1710278</a> | Discussion on diversity transmission for UL | LG Electronics          |
| <a href="#">R1-1710448</a> | Diversity-based transmission for UL         | Huawei, HiSilicon       |
| <a href="#">R1-1710520</a> | On diversity based UL transmission          | Intel Corporation       |
| <a href="#">R1-1710645</a> | Diversity transmission for UL               | Samsung                 |
| <a href="#">R1-1710886</a> | UL diversity transmission for DFTsOFDM      | Mitsubishi Electric RCE |
| <a href="#">R1-1711010</a> | Robust Transmission Scheme for PUSCH        | Ericsson                |
| <a href="#">R1-1711155</a> | On UL diversity transmission scheme         | Qualcomm Incorporated   |

**5.1.2.1.5 PRB bundling for DL**

|                            |                                              |                                     |
|----------------------------|----------------------------------------------|-------------------------------------|
| <a href="#">R1-1709905</a> | <b>Further Discussion on DL PRB Bundling</b> | Beijing Xinwei Telecom Techn.       |
| <a href="#">R1-1711287</a> | <b>On details of PRB Bundling</b>            | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711156</a> | <b>Discussion on PRB bundling for DL</b>     | Qualcomm Incorporated               |

Continue offline discussion – Peng (Xinwei)

|                            |                                             |                                     |
|----------------------------|---------------------------------------------|-------------------------------------|
| <a href="#">R1-1711960</a> | <b>Summary of Issues on DL PRB bundling</b> | Xinwei                              |
| <a href="#">R1-1711990</a> | <b>WF on DL PRB Bundling</b>                | Xinwei, Huawei, HiSilicon, Qualcomm |

**Agreements:**

- For DL data transmission:
  - PRB bundling size values include
    - Case 1: one or more values down-selected from the following set
      - {1}, 2, 4, 8 and 16};
      - FFS the relationship with RBG size;
    - Case 2: values equal to consecutively scheduled bandwidth in frequency;
  - For UE-specific PRB bundling size indication, support dynamically indicated PRB bundling size with up to 1 bit overhead;
    - FFS implicit indication to reduce configuration overhead, e.g., based on DMRS configuration etc;
    - FFS the usage of above 1 bit, e.g. whether to switch between Case 1 and Case 2 or between two configured Case 1 values;
    - FFS other aspects related to MU-MIMO pairing and higher-layer signaling

Not treated.

|                            |                                           |                           |
|----------------------------|-------------------------------------------|---------------------------|
| <a href="#">R1-1710521</a> | On PRB bundling for DL                    | Intel Corporation         |
| <a href="#">R1-1709925</a> | PRB bundling size for DL data precoding   | Huawei, HiSilicon         |
| <a href="#">R1-1710054</a> | PRB bundling for DL transmission          | CATT                      |
| <a href="#">R1-1710179</a> | On PRB Bundling                           | ZTE                       |
| <a href="#">R1-1710360</a> | Discussion on PRB bundling size for NR DL | Spreadtrum Communications |
| <a href="#">R1-1710646</a> | PRB bundling for NR DMRS                  | Samsung                   |
| <a href="#">R1-1710922</a> | PRG Size Indication in NR                 | InterDigital, Inc.        |
| <a href="#">R1-1711011</a> | PRB bundling                              | Ericsson                  |

**5.1.2.1.6 Multi-TRP and Multi-panel transmission**

|                            |                                                  |          |
|----------------------------|--------------------------------------------------|----------|
| <u>DL</u>                  |                                                  |          |
| <a href="#">R1-1711013</a> | <b>DL multi-TRP and multi-panel transmission</b> | Ericsson |

**Agreements:**

- The maximum supported number of unicast and dynamically scheduled NR-PDSCHs a UE can be expected to simultaneously receive is 2 on a per component carrier basis in case of one bandwidth part for the component carrier
  - FFS in case of two or more bandwidth parts for the component carrier
  - FFS the max number of corresponding NR-PDCCHs

|                            |                                                             |     |
|----------------------------|-------------------------------------------------------------|-----|
| <a href="#">R1-1710180</a> | <b>Multi-TRP Transmission and interference coordination</b> | ZTE |
|----------------------------|-------------------------------------------------------------|-----|

UL

|                            |                                                                 |                   |
|----------------------------|-----------------------------------------------------------------|-------------------|
| <a href="#">R1-1710648</a> | <b>Discussions on NR UL multi-panel/multi-TRP</b>               | Samsung           |
| <a href="#">R1-1710522</a> | <b>Discussion on uplink multi-panel and multi-TRP operation</b> | Intel Corporation |
| <a href="#">R1-1711667</a> | <b>WF on multiple PDSCH approach of supporting NC-JT</b>        | Intel             |

**Agreements:**

- Send LS to RAN2 (cc RAN3) to inform about RAN1 agreement from RAN1#89 on the support of multiple PDSCHs transmission to the UE to support NC-JT operation

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- Include in the LS the following content
  - RAN1 agreement from RAN1#89
  - RAN1 is considering different scenarios including TRPs connected with ideal and non-ideal backhaul link, TRPs with same and different cell IDs, etc. to provide an increased throughput for users covered by different TRPs, and greater radio link reliability through dual connectivity-like operation
  - RAN1 thinks that the above agreement may have impact on RAN2 specification
  - Actions: RAN1 asks RAN2 to take into account the above agreement in RAN2's work and provide any information that may be relevant for future RAN1's work on this topic

Draft LS is **endorsed** in [R1-1711820](#). Final LS is **approved** in [R1-1712000](#).

Continue discussion offline – Xin (CATT)

[R1-1711857](#) **Summary of views on multi-TRP & multi-panel transmission** CATT

Not treated.

[R1-1709924](#) Multiple NR-PDCCH for Multiple TRP transmission Huawei, HiSilicon  
[R1-1710055](#) Considerations on multi-panel/multi-TRP transmission CATT  
[R1-1710141](#) Considerations on the multi-TRP/Multi-panel design to support the reception of multiple PDCCHGuangdong  
OPPO Mobile Telecom.  
[R1-1710235](#) Discussion on multiple NR-PDCCHs in NC-JT scheme Fujitsu  
[R1-1710279](#) Discussion on cooperative transmission LG Electronics  
[R1-1710428](#) On the details of multi-TRP and multi-panel transmission AT&T  
[R1-1710451](#) CSI acquisition details for NCJT Huawei, HiSilicon  
[R1-1710523](#) Support of downlink NC-JT in NR Intel Corporation  
[R1-1710647](#) Discussions on NR DL network coordination Samsung  
[R1-1710814](#) Multi-TRP and panel transmission MediaTek Inc.  
[R1-1710923](#) DCI Design for Multi-TRP/Panel Transmission for DL InterDigital, Inc.  
[R1-1710969](#) NR-PDCCH for multi-TRP transmission China Telecommunications  
[R1-1711012](#) UL multi-panel transmission Ericsson  
[R1-1711157](#) On multi-TRP and multi-panel transmission Qualcomm Incorporated  
[R1-1711288](#) On the maximum number of PDSCH/PDSCHs to be supported for multi-TRP transmission Nokia,  
Alcatel-Lucent Shanghai Bell

**5.1.2.1.7 Rate matching**

[R1-1710649](#) **On PDSCH rate matching for NR** Samsung  
[R1-1711014](#) **On rate matching** Ericsson

**Agreements:**

- A UE is configured with resources for PDSCH rate matching
  - FFS details
- A UE is configured with resources for PUSCH rate matching
  - FFS details

Continue discussion offline – Kunil (LGE)

[R1-1711841](#) **Summary of views on resource for PDSCH and PUSCH rate matching** LGE

Not treated.

[R1-1710181](#) Discussion on rate matching ZTE  
[R1-1710280](#) Discussion on rate matching LG Electronics  
[R1-1709933](#) Rate matching for data channel Huawei, HiSilicon  
[R1-1710429](#) On the need of per RE level PDSCH rate-matching and RE mapping signalling AT&T  
[R1-1710524](#) Rate matching for NR Intel Corporation  
[R1-1711158](#) On PDSCH and PUSCH RE mapping Qualcomm Incorporated

**5.1.2.1.8 Other**

[R1-1711159](#) **Transmission scheme for broadcast PDSCH** Qualcomm Incorporated

**Agreement:** For NR in Rel-15, DL transmission scheme 2 is not explicitly supported for broadcast PDSCH in specification

Not treated.

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|                            |                                                              |                   |
|----------------------------|--------------------------------------------------------------|-------------------|
| <a href="#">R1-1709926</a> | Discussion on transmission parameter sets                    | Huawei, HiSilicon |
| <a href="#">R1-1710182</a> | On transmission setting                                      | ZTE               |
| <a href="#">R1-1710650</a> | Discussion on transmission parameter sets                    | Samsung           |
| <a href="#">R1-1710651</a> | Discussion of number of PDSCCHs in NR-CoMP                   | Samsung           |
| <a href="#">R1-1710652</a> | Multi-TA procedures for Multi-TRP                            | Samsung           |
| <a href="#">R1-1711441</a> | On the feedback overhead reduction for multi-subband UL MIMO | Huawei, HiSilicon |
| <a href="#">R1-1711444</a> | Continuous precoding for NR DMRS in time domain              | Samsung           |

5.1.2.2 **Beam management**

5.1.2.2.1 **Beam management details**

|                            |                                |                       |
|----------------------------|--------------------------------|-----------------------|
| <a href="#">R1-1710654</a> | DL beam management for NR      | Samsung               |
| <a href="#">R1-1711160</a> | Beam management for NR         | Qualcomm Incorporated |
| <a href="#">R1-1710183</a> | DL beam management for NR MIMO | ZTE                   |
| <a href="#">R1-1709928</a> | UL beam management             | Huawei, HiSilicon     |
| <a href="#">R1-1711016</a> | UL beam management details     | Ericsson              |

Continue offline discussion – Sundar (Qualcomm)

|                            |                                 |          |
|----------------------------|---------------------------------|----------|
| <a href="#">R1-1711965</a> | Beam management offline summary | Qualcomm |
|----------------------------|---------------------------------|----------|

**Agreements:**

- RAN1 to study the relation (if any) between a measurement and/or reporting on a reference signal and a subsequent beam indication for beam management purposes
  - Study the indicator(s) used for PDCCH and PDSCH
  - Study whether there is a relationship between the indicator types e.g. same type of indicator or different types
- Study L1-RSRP reporting of multiple beams considering
  - Differential L1-RSRP for multiple beams
    - Reference RSRP for L1-RSRP differential report, e.g., predefined or configurable
  - Bit-width of reporting,
  - Number of groups/beams per group
  - UCI design of the beam reporting,
  - FFS: Other issues

**Agreements:**

- RAN1 agrees that the certain number of beam failure recovery request transmissions is NW configurable by using some parameters
  - Parameters used by the NW could be:
    - Number of transmissions
    - Solely based on timer
    - Combination of above
- FFS: whether beam failure recovery procedure is influenced by the RLF event

**Agreements:**

- In case of unsuccessful recovery from beam failure, UE sends an indication to higher layers, and refrains from further beam failure recovery
  - Relationship between RLF and unsuccessful beam failure recovery indication (if any) e.g. whether beam failure recovery procedure influences or is influenced by the RLF event
  - Send LS to inform RAN2 – to be done next meeting

**Proposals:**

- Support L1-RSRP reporting of measurements on SS block for beam management procedures
  - Supported by: Qualcomm, Samsung, Ericsson, vivo, NTT DOCOMO, Lenovo, MotM, OPPO, Spreadtrum, LGE, Sharp, Nokia, ASB, MediaTek, ZTE, AT&T, CEWiT, [Panasonic](#)
  - Objected by: InterDigital, Intel, Huawei, HiSilicon, CATT

**Conclusion:**

No consensus to support L1-RSRP reporting of measurements on SS block for beam management procedures in Rel-15

**Friday:**

[Qualcomm: strongly requested to remove the above conclusion – and suggested to leave the topic opened for the next meeting](#)

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Intel: concern with the process of deleting what was already agreed during the MIMO session – RAN1 spent a lot of time to reach and write down that conclusion

InterDigital: similar view as Intel

Samsung/Ericsson/Panasonic: ok to delete it

Qualcomm: Can “in Rel-15” be replaced by “in this meeting”

Ericsson: do not agree – it has a complete different meaning

Final conclusion:

- No consensus at this meeting to support L1-RSRP reporting of measurements on SS block for beam management procedures in Rel-15

Note: Any company/university/organization is free to contribute to this topic in future meetings

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|                            |                                                                 |                                     |
|----------------------------|-----------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709906</a> | Discussion on DL Beam Management                                | Beijing Xinwei Telecom Techn.       |
| <a href="#">R1-1710056</a> | Further consideration on downlink beam management               | CATT                                |
| <a href="#">R1-1710057</a> | Considerations on UL beam management                            | CATT                                |
| <a href="#">R1-1710142</a> | Discussion on the DL Beam Management                            | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710143</a> | Discussion on the UL Beam Management                            | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710184</a> | UL beam management for NR MIMO                                  | ZTE                                 |
| <a href="#">R1-1710281</a> | Discussion on DL beam management                                | LG Electronics                      |
| <a href="#">R1-1710282</a> | Discussion on UL beam management                                | LG Electronics                      |
| <a href="#">R1-1710361</a> | Differential RSRP report for beam management                    | Spreadtrum Communications           |
| <a href="#">R1-1710399</a> | Beam management and beam reporting                              | vivo                                |
| <a href="#">R1-1710430</a> | DL beam management details                                      | AT&T                                |
| <a href="#">R1-1710449</a> | General views on DL beam management                             | Huawei, HiSilicon                   |
| <a href="#">R1-1710525</a> | Details for UL Beam Management                                  | Intel Corporation                   |
| <a href="#">R1-1710526</a> | Details for DL Beam Management                                  | Intel Corporation                   |
| <a href="#">R1-1710595</a> | Discussion of RS for DL beam management                         | Lenovo, Motorola Mobility           |
| <a href="#">R1-1710653</a> | UL beam management                                              | Samsung                             |
| <a href="#">R1-1710776</a> | Comparisons on Beam Reporting in NR                             | CMCC                                |
| <a href="#">R1-1710808</a> | Discussions on NR DL beam management                            | MediaTek Inc.                       |
| <a href="#">R1-1710809</a> | Efficient UL beam management with imperfect beam correspondence | MediaTek Inc.                       |
| <a href="#">R1-1710851</a> | Considerations on DL beam management                            | Sony                                |
| <a href="#">R1-1710852</a> | Considerations on UL beam management                            | Sony                                |
| <a href="#">R1-1710924</a> | On Beam Management for DL Control and Data Channels             | InterDigital, Inc.                  |
| <a href="#">R1-1710925</a> | On Efficient UL Beam Management                                 | InterDigital, Inc.                  |
| <a href="#">R1-1711015</a> | On DL beam indication                                           | Ericsson                            |
| <a href="#">R1-1711075</a> | View on Beam Management Details                                 | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711289</a> | On the utilization of SS block for beam management              | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711290</a> | SRS transmission for beam management                            | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711334</a> | Considerations on UE Beamforming Management                     | ASUSTEK COMPUTER (SHANGHAI)         |
| <a href="#">R1-1711336</a> | Discussion on group based beam reporting                        | China Unicom                        |
| <a href="#">R1-1711473</a> | View on Multi-Beam Management                                   | KT Corp.                            |

**5.1.2.2.2 Mechanism to recover from beam failure**

|                            |                                                         |                                     |
|----------------------------|---------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710810</a> | Mechanism for flexible beam failure recovery            | MediaTek Inc.                       |
| <a href="#">R1-1710527</a> | Discussion for Mechanism to Recover from Beam Failure   | Intel Corporation                   |
| <a href="#">R1-1711291</a> | Beam Recovery in NR                                     | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1710283</a> | Discussion on beam failure recovery                     | LG Electronics                      |
| <a href="#">R1-1711076</a> | Further views on mechanism to recover from beam failure | NTT DOCOMO, INC.                    |

Discuss discussion offline – Chia-Hao (MTK)

[R1-1711897](#) Offline Discussion Summary on Beam Recovery MediaTek

[R1-1711717](#) WF on using SS block for beam recovery ZTE, Ericsson, NTT DOCOMO, MediaTek, Spreadtrum, vivo, OPPO, Qualcomm, Xinwei, LG Electronics, AT&T, Lenovo, CMCC, China Unicom, China Telecom, ASTRI, Samsung, Nokia, ASB, III, MTI, Sharp, National Instruments

Proposals:

- In addition to periodic CSI-RS, SS-block within the serving cell can be used for new candidate beam identification

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- Supported by: ZTE, Ericsson, NTT DOCOMO, MediaTek, Spreadtrum, vivo, OPPO, Qualcomm, Xinwei, LG Electronics, AT&T, Lenovo, CMCC, China Unicom, China Telecom, ASTRI, Samsung, Nokia, ASB, III, MTI, Sharp, National Instruments
- Objected by: IDC, HW, HiSi, Intel

Continue discussion next meeting

Not treated.

[R1-1709907](#) Discussion on Beam Failure Recovery Beijing Xinwei Telecom Techn.  
[R1-1709929](#) General views on beam failure recovery Huawei, HiSilicon  
[R1-1710058](#) Consideration on DL beam failure and recovery CATT  
[R1-1710144](#) On Beam Recovery Mechanism Guangdong OPPO Mobile Telecom.  
[R1-1710185](#) Discussion on beam recovery mechanism ZTE  
[R1-1710236](#) Discussion on beam failure recovery procedure Fujitsu  
[R1-1710251](#) Discussion on beam failure recovery request NEC Corporation  
[R1-1710364](#) Discussion on beam failure recovery Spreadtrum Communications  
[R1-1710400](#) Beam failure recovery procedure vivo  
[R1-1710431](#) Considerations on beam failure recovery mechanism AT&T  
[R1-1710596](#) Discussion of beam recovery procedure Lenovo, Motorola Mobility  
[R1-1710655](#) Beam failure recovery Samsung  
[R1-1710926](#) On Remaining Details of Beam Failure Recovery InterDigital, Inc.  
[R1-1711017](#) Mechanism to recover from beam failure Ericsson  
[R1-1711161](#) Beam recovery procedures Qualcomm Incorporated  
[R1-1711234](#) Discussion on mechanisms for beam failure recovery Sharp

**5.1.2.2.3 Other**

[R1-1710186](#) **Beam grouping evaluation for beam management** ZTE  
[R1-1710662](#) **On SS-block based beam management** Samsung  
[R1-1711292](#) **BPL definition and Spatial QCL time indication** Nokia, Alcatel-Lucent Shanghai Bell

Not treated.

[R1-1709927](#) Beam indication for DL control channel Huawei, HiSilicon  
[R1-1709930](#) Procedure details for beam failure recovery Huawei, HiSilicon  
[R1-1710005](#) Considerations on timing advance design in NR Huawei, HiSilicon  
[R1-1710145](#) Beam association relationship between data and control channels Guangdong OPPO Mobile Telecom.  
[R1-1710228](#) Further discussion on channel reciprocity and beam correspondence MTI  
[R1-1710450](#) Multi-beam transmission for DL control channel Huawei, HiSilicon  
[R1-1710459](#) Discussion on UL SRS transmission power Huawei, HiSilicon  
[R1-1710473](#) Network-based mechanism for millimeter-wave link recovery Huawei, HiSilicon  
[R1-1710528](#) On Timing Advance for multi-beam operation Intel Corporation  
[R1-1710656](#) Measurement and reporting for beam management Samsung  
[R1-1710657](#) Discussion on Group based reporting Samsung  
[R1-1710658](#) Discussion on Tx beam grouping configuration Samsung  
[R1-1710659](#) Discussion on beam indication for PDSCH Samsung  
[R1-1710660](#) L1 RSRP reporting for beam management Samsung  
[R1-1710661](#) L1-RSRP measurement duration Samsung  
[R1-1710663](#) DL beam management configuration Samsung  
[R1-1710664](#) QCL associations for beam management RS Samsung  
[R1-1710665](#) Aperiodic BSI reporting Samsung  
[R1-1710666](#) Beam management for PDCCH Samsung  
[R1-1711018](#) Beam management in C-DRX Ericsson  
[R1-1711019](#) On the use of SS for beam management Ericsson  
[R1-1711020](#) Further results on beam management without beam indication Ericsson  
[R1-1711021](#) Performance of beam grouping Ericsson  
[R1-1711022](#) On beam grouping Ericsson  
[R1-1711023](#) Analysis of beam indication signalling options Ericsson  
[R1-1711293](#) On beam grouping and reporting Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1711294](#) On Multi-beam Downlink Control Channel Operation Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1711295](#) Multi-beam Uplink Control Channel Operation Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1711401](#) Measurement RS for beam management Huawei, HiSilicon  
[R1-1711402](#) Relationship between beam failure recovery and RLF Huawei, HiSilicon

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[R1-1711403](#) Robust transmission for UL control channel Huawei, HiSilicon  
[R1-1711410](#) Cross-carrier beam management Huawei, HiSilicon  
[R1-1711445](#) System level evaluation results for beam management Samsung  
[R1-1711446](#) Link level evaluation results for beam management Samsung  
[R1-1711447](#) Link level simulation assumptions for beam management Samsung  
[R1-1711448](#) System level simulation assumptions for beam management Samsung

**5.1.2.3 CSI acquisition**

**5.1.2.3.1 CSI framework**

*Including beam management framework*

[R1-1709931](#) Discussion on CSI Framework Design Huawei, HiSilicon  
[R1-1711024](#) Further details of CSI framework Ericsson  
[R1-1710059](#) Summary of email discussion [89-17] NR CSI framework CATT  
Offline to come up with overhead numbers based on [R1-1710059](#) – Rakesh (CATT)

Continue offline discussion – Xiaoyi (AT&T)

[R1-1711893](#) Offline discussion summary on CSI framework AT&T

**Agreements:**

- For aperiodic CSI-RS triggering offset X, X is fixed to zero.
- For aperiodic CSI reporting on PUSCH, Y is indicated by DCI.
  - DCI to be used for indicating the timing for PUSCH is also used to indicate Y.
    - This applies to both UCI only and UCI+Data PUSCH
  - The set of values is configured by higher layer
    - The candidate set of values of Y is selected according to restricted conditions inferred from configuration of CSI related settings.
    - The condition include at least;
      - CSI parameter
      - Number of CSI-RS antenna ports if PMI is included
      - CSI-RS location
      - Frequency granularity of CSI
    - FFS: number of simultaneous CSI calculations
    - FFS on mechanisms to relax CSI report timing according to number of simultaneous CSI calculations
    - FFS different or same candidate Y value for the cases of UCI multiplexed with data and UCI only

Not treated.

[R1-1711077](#) Discussion on CSI framework NTT DOCOMO, INC.  
[R1-1711296](#) On the CRI definition and usability in NR Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1709908](#) Discussion on CSI Framework and Semi-persistent CSI-RS Resources and Reports Activation Beijing  
Xinwei Telecom Techn.  
[R1-1710060](#) Views on CSI framework CATT  
[R1-1710187](#) On CSI framework details ZTE  
[R1-1710284](#) Discussion on CSI framework LG Electronics  
[R1-1710432](#) Discussion on the channels to carry CSI report AT&T  
[R1-1710529](#) On NR CSI framework Intel Corporation  
[R1-1710667](#) CSI Acquisition and Beam Management Framework Samsung  
[R1-1710927](#) On CSI framework for NR InterDigital, Inc.  
[R1-1711162](#) Details of CSI framework Qualcomm Incorporated

**5.1.2.3.2 Details of CSI acquisition**

*Including channel and interference measurement and reporting*

[R1-1710530](#) On Details of CSI acquisition Intel Corporation  
[R1-1711297](#) Remaining aspects on interference estimation options and configuration Nokia, Alcatel-Lucent  
Shanghai Bell

Continue discussion offline – Yuichi (DCM)

[R1-1711924](#) Summary of CSI Acquisition Details NTT DoCoMo

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Not treated.

|                            |                                                          |                       |
|----------------------------|----------------------------------------------------------|-----------------------|
| <a href="#">R1-1709932</a> | Channel and interference measurement for CSI acquisition | Huawei, HiSilicon     |
| <a href="#">R1-1711025</a> | On CSI acquisition and reporting                         | Ericsson              |
| <a href="#">R1-1710061</a> | Discussion on details of CSI acquisition                 | CATT                  |
| <a href="#">R1-1710188</a> | Details of CSI acquisition                               | ZTE                   |
| <a href="#">R1-1710285</a> | Discussion on interference measurement                   | LG Electronics        |
| <a href="#">R1-1710433</a> | On the details of CSI acquisition                        | AT&T                  |
| <a href="#">R1-1710668</a> | Discussions on CSI measurements and reporting for NR     | Samsung               |
| <a href="#">R1-1710854</a> | Considerations on interference measurement               | Sony                  |
| <a href="#">R1-1710928</a> | On CSI acquisition for NR                                | InterDigital, Inc.    |
| <a href="#">R1-1711078</a> | On CSI measurement for NR                                | NTT DOCOMO, INC.      |
| <a href="#">R1-1711163</a> | Details of CSI acquisition                               | Qualcomm Incorporated |

**5.1.2.3.3 CSI acquisition for reciprocity based operation**

|                            |                                                               |                                     |
|----------------------------|---------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710669</a> | <b>CSI Reporting for Reciprocity Operation</b>                | Samsung                             |
| <a href="#">R1-1711298</a> | <b>On the channel reciprocity support for CSI acquisition</b> | Nokia, Alcatel-Lucent Shanghai Bell |

Continue offline discussion – Ruyue (ZTE)

|                            |                                                                   |     |
|----------------------------|-------------------------------------------------------------------|-----|
| <a href="#">R1-1711725</a> | <b>Summary of CSI acquisition for reciprocity based operation</b> | ZTE |
|----------------------------|-------------------------------------------------------------------|-----|

Not treated.

|                            |                                                                       |                       |
|----------------------------|-----------------------------------------------------------------------|-----------------------|
| <a href="#">R1-1710189</a> | On reciprocity based CSI acquisition                                  | ZTE                   |
| <a href="#">R1-1711026</a> | Further discussion on CSI acquisition for reciprocity-based operation | Ericsson              |
| <a href="#">R1-1710062</a> | Views on reciprocity based CSI acquisition                            | CATT                  |
| <a href="#">R1-1710286</a> | Discussion on CSI acquisition for reciprocity based operation         | LG Electronics        |
| <a href="#">R1-1710812</a> | CSI acquisition for reciprocity based operation                       | MediaTek Inc.         |
| <a href="#">R1-1711164</a> | CSI acquisition for reciprocity based operation                       | Qualcomm Incorporated |
| <a href="#">R1-1711404</a> | Discussion on reciprocity based CSI acquisition mechanism             | Huawei, HiSilicon     |

**5.1.2.3.4 CSI feedback**

*Including type I/II codebook based scheme and other potential use cases, e.g., semi-open-loop*

|                            |                                        |         |
|----------------------------|----------------------------------------|---------|
| <a href="#">R1-1710190</a> | <b>CSI feedback mechanism on PUCCH</b> | ZTE     |
| <a href="#">R1-1710672</a> | <b>CSI parameters and multiplexing</b> | Samsung |

Continue discussion offline – Mark (Ericsson)

|                            |                                                                         |
|----------------------------|-------------------------------------------------------------------------|
| <a href="#">R1-1711904</a> | <b>Summary of views on CSI feedback for Type I and Type II Ericsson</b> |
|----------------------------|-------------------------------------------------------------------------|

**Agreement:**

- Periodic CSI reporting is carried at least on
  - Short PUCCH
  - Long PUCCH
  - FFS whether in single-slot only or in multiple slots

**Agreements:**

- Type I CSI feedback is supported for P/SP/A-CSI and can be carried on either one of PUCCH and PUSCH
- Type I subband CSI can be carried on either one of PUSCH and long PUCCH
- Type II CSI is carried at least on PUSCH
  - FFS CSI on PUCCH

CSF for TS2

|                            |                                                               |                                     |
|----------------------------|---------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1711300</a> | <b>CSI feedback in support of semi-open loop transmission</b> | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711405</a> | <b>CSI acquisition for DL robust transmission</b>             | Huawei, HiSilicon                   |

Continue discussion offline – Mark (Ericsson)

|                            |                                                             |          |
|----------------------------|-------------------------------------------------------------|----------|
| <a href="#">R1-1711905</a> | <b>Summary of CSI Feedback for Open-loop/Semi-open-loop</b> | Ericsson |
|----------------------------|-------------------------------------------------------------|----------|

Not treated.

|                            |                                      |          |
|----------------------------|--------------------------------------|----------|
| <a href="#">R1-1711029</a> | <b>Type I &amp; II CSI reporting</b> | Ericsson |
|----------------------------|--------------------------------------|----------|

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|                            |                                                                           |                                     |
|----------------------------|---------------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1711079</a> | CSI Feedback Design for NR MIMO                                           | NTT DOCOMO, INC.                    |
| <a href="#">R1-1710063</a> | Discussion on periodic and aperiodic CSI feedback                         | CATT                                |
| <a href="#">R1-1710191</a> | CSI feedback mechanism on PUSCH                                           | ZTE                                 |
| <a href="#">R1-1710192</a> | Overhead reduction for Type II CSIZTE                                     |                                     |
| <a href="#">R1-1710287</a> | Discussion on overhead reduction for Type II codebook                     | LG Electronics                      |
| <a href="#">R1-1710288</a> | Discussions on CSI reporting contents                                     | LG Electronics                      |
| <a href="#">R1-1710289</a> | CSI feedback for OL and semi-OL MIMO                                      | LG Electronics                      |
| <a href="#">R1-1710290</a> | UL channel utilization for CSI reporting                                  | LG Electronics                      |
| <a href="#">R1-1710434</a> | CSI feedback for closed loop and semi open loop transmission schemes AT&T |                                     |
| <a href="#">R1-1710452</a> | CSI acquisition details for hybrid CSI                                    | Huawei, HiSilicon                   |
| <a href="#">R1-1710453</a> | The remaining issues for Type I codebook                                  | Huawei, HiSilicon                   |
| <a href="#">R1-1710454</a> | The remaining issues for Type II codebook                                 | Huawei, HiSilicon                   |
| <a href="#">R1-1710670</a> | Remaining details of Type I and Type II CSI codebooks                     | Samsung                             |
| <a href="#">R1-1710671</a> | CSI support for transparent precoder cycling                              | Samsung                             |
| <a href="#">R1-1710673</a> | Differential reporting of Type II CSI                                     | Samsung                             |
| <a href="#">R1-1710674</a> | On higher rank (3 and 4) Type II CSI                                      | Samsung                             |
| <a href="#">R1-1710813</a> | Remaining issues in NR CSI feedback                                       | MediaTek Inc.                       |
| <a href="#">R1-1711027</a> | CSI feedback and Transparent PDSCH TxD                                    | Ericsson                            |
| <a href="#">R1-1711028</a> | Codebook subset restriction                                               | Ericsson                            |
| <a href="#">R1-1711030</a> | Encoding and mapping of CSI parameters                                    | Ericsson                            |
| <a href="#">R1-1711031</a> | CSI feedback for multi-TRP                                                | Ericsson                            |
| <a href="#">R1-1711080</a> | Feedback Design for CSI Type I                                            | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711081</a> | Feedback Design for CSI Type II                                           | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711165</a> | On Type I and Type II CSI feedback using PUCCH                            | Qualcomm Incorporated               |
| <a href="#">R1-1711166</a> | On CSI feedback for open- or semi-open-loop transmission                  | Qualcomm Incorporated               |
| <a href="#">R1-1711299</a> | Feedback transmission of type II codebook                                 | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711407</a> | Multiple-panel codebook                                                   | Huawei, HiSilicon                   |
| <a href="#">R1-1711408</a> | Category 2 codebook design for type II codebook                           | Huawei, HiSilicon                   |
| <a href="#">R1-1711409</a> | Codebook design for beamformed CSI-RS                                     | Huawei, HiSilicon                   |
| <a href="#">R1-1711566</a> | On semi-persistent CSI reporting on PUSCH                                 | Ericsson                            |

**5.1.2.3.5 Other**

|                            |                                                                   |                                     |
|----------------------------|-------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710675</a> | Discussion on CSI-RS Resource Activation                          | Samsung                             |
| <a href="#">R1-1710676</a> | Discussions on channel and interference measurements for NR       | Samsung                             |
| <a href="#">R1-1710677</a> | Discussions on CSI Feedback Signalling Overhead Reduction         | Samsung                             |
| <a href="#">R1-1711032</a> | On Dynamic Triggering for CSI Reports and CSI-RS                  | Ericsson                            |
| <a href="#">R1-1711033</a> | A comparison of CSI-RS activation schemes based on MAC CE and DCI | Ericsson                            |
| <a href="#">R1-1711034</a> | Identifying bounds on parameters in CSI framework                 | Ericsson                            |
| <a href="#">R1-1711035</a> | Frequency parametrization for Type II CSI codebook                | Ericsson                            |
| <a href="#">R1-1711036</a> | Further details of measurement restriction configuration          | Ericsson                            |
| <a href="#">R1-1711037</a> | Performance impact of inactive antenna ports                      | Ericsson                            |
| <a href="#">R1-1711038</a> | On partial bands and CSI acquisition                              | Ericsson                            |
| <a href="#">R1-1711039</a> | NR CSI Computation Capability                                     | Ericsson                            |
| <a href="#">R1-1711301</a> | On the CSI timing relationships                                   | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711406</a> | Other remaining issues for CSI framework                          | Huawei, HiSilicon                   |
| <a href="#">R1-1711449</a> | Discussions on service specific CSI for NR                        | Samsung                             |

**5.1.2.4 Reference signals and QCL**

**5.1.2.4.1 Multiplexing of different types of RSs**

*Including multiplexing and RE mapping of RSs*

|                            |                                                                 |      |
|----------------------------|-----------------------------------------------------------------|------|
| <a href="#">R1-1710193</a> | Discussion on multiplexing of different RSs                     | ZTE  |
| <a href="#">R1-1710064</a> | Discussion on RS multiplexing                                   | CATT |
| <a href="#">R1-1710435</a> | Multiplexing of CSI-RS with PDSCH in mixed numerology scenarios | AT&T |

**Agreement:**

- In NR, for a given BWP, support the case where CSI-RS for CSI acquisition and beam management is always transmitted with the same numerology as the PDSCH of the UE if PDSCH is present
  - FFS the case when PDSCH is not present

|                            |                                                              |         |
|----------------------------|--------------------------------------------------------------|---------|
| <a href="#">R1-1710678</a> | Discussions on multiplexing of different types of RSs for DL | Samsung |
|----------------------------|--------------------------------------------------------------|---------|

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Discuss further offline – Leiming (Huawei)

[R1-1711974](#) Summary of views on multiplexing of different types of RS Huawei, HiSilicon

Not treated.

|                            |                                                              |                                     |
|----------------------------|--------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710009</a> | Multiplexing different types of DL RS                        | Huawei, HiSilicon                   |
| <a href="#">R1-1710010</a> | Multiplexing different types of UL RS                        | Huawei, HiSilicon                   |
| <a href="#">R1-1710291</a> | On collision avoidance for PTRS and other RSs                | LG Electronics                      |
| <a href="#">R1-1710531</a> | On multiplexing of different RS types                        | Intel Corporation                   |
| <a href="#">R1-1710679</a> | Discussions on multiplexing of different types of RSs for UL | Samsung                             |
| <a href="#">R1-1711040</a> | On Multiplexing of RS types for downlink                     | Ericsson                            |
| <a href="#">R1-1711167</a> | On multiplexing of different types of RSs                    | Qualcomm Incorporated               |
| <a href="#">R1-1711302</a> | On multiplexing of different RS types                        | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711558</a> | Multiplexing of different types of RS for uplink             | Ericsson                            |

#### 5.1.2.4.2 CSI-RS

[R1-1711041](#) On CSI-RS for CSI-acquisition Ericsson

[R1-1711759](#) Summary of offline discussion on CSI-RS Samsung

#### Agreements:

- At least for CSI acquisition, for N=4 OFDM symbols,
  - Support two pairs of adjacent OFDM symbols for one CSI-RS resource where the two pairs can be adjacent or non-adjacent
    - For each pair, support a uniform RE mapping pattern in the time domain wherein the same sub-carriers are occupied in the two adjacent OFDM symbols
    - Note: CDM pattern will be discussed separately

#### Agreements:

- Support for CSI-RS sequence design:
  - (Working assumption) PN sequence at least for CSI-RS for CSI acquisition
  - UE specifically configured CSI-RS sequence seed
  - FFS, sequence design, e.g. PN sequence, ZC sequence, M sequence, etc., for other use cases such as beam management and fine time/frequency tracking

#### Agreements:

- For beam management, CSI-RS with sub-time units smaller than an OFDM symbol in a reference numerology is not supported in Rel-15

Continue discussion offline – Lu (Huawei)

[R1-1711922](#) WF on CSI-RS for BM Intel, Ericsson, CATT, Samsung, MediaTek, AT&T, NTT Docomo, KT

Also supported by Spreadtrum, Qualcomm

[R1-1711923](#) WF on CSI-RS for BM Samsung, Intel, AT&T, NTT DOCOMO, ZTE

[R1-1711787](#) WF on CSI-RS Samsung, Ericsson, NTT DOCOMO, CATT, LGE

#### Agreements:

- Regarding CSI-RS RE Patterns for CSI Acquisition, support at least the following CSI-RS RE patterns for CSI acquisition for OCC based CDM

| X  | Density<br>[RE/RB/port] | N | (Y,Z) | CDM                    | Remark            |
|----|-------------------------|---|-------|------------------------|-------------------|
| 1  | >1, 1                   | 1 | N.A.  | No CDM                 |                   |
| 2  | 1                       | 1 | (2,1) | FD-CDM2                |                   |
| 4  | 1                       | 2 | (2,2) | FD-CDM2, CDM4(FD2,TD2) |                   |
| 8  | 1                       | 2 | (2,2) | FD-CDM2, CDM4(FD2,TD2) |                   |
| 16 | 1                       | 2 | (2,2) | FD-CDM2, CDM4(FD2,TD2) |                   |
| 32 | 1, 1/2                  | 4 | (2,2) | FD-CDM2, CDM4(FD2,TD2) | FFS, CDM8 details |

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- Note: The RE pattern for an X-port CSI-RS resource spans  $N \geq 1$  OFDM symbols in the same slot and is comprised of one or multiple component CSI-RS RE patterns, where a component CSI-RS RE pattern is defined within a single PRB as Y adjacent REs in the frequency domain and Z adjacent REs in the time domain (agreements in RAN1#88)
- Note: Density 1/2 is based on a PRB-level comb with the same comb offset value for all ports.
- Note: REs for CDM2 and CDM4(FD2,TD2) comprise adjacent REs
- Note: RAN1 will continue discussing adding more entries to the above table

**Agreement:**

- For partial-band CSI-RS, partial-band can be the same as bandwidth part
  - FFS whether or not to have small values than the bandwidth of bandwidth part

**Agreements:**

- Confirm the WA with the following revision
  - Support PN sequence for CSI-RS for CSI acquisition and beam management
- FFS detailed sequence generation and initialization methods
  - E.g. function of slot number, OFDM symbol number, CP length, UE ID, cell ID, virtual cell ID, function of PRB position of configured CSI-RS resource, etc.

**Agreement:**

- Down-select among the following two options in the next meeting
  - Option 1-1: From a UE perspective, CSI-RS is not multiplexed on SS block OFDM symbol(s)
  - Option 1-2: From a UE perspective, CSI-RS can be multiplexed on SS block symbol(s)

**Agreements:**

- Down-select among the following two options in the next meeting:
  - Option 2-1: From a UE perspective, CSI-RS is not multiplexed on PDCCH OFDM symbol(s) for a slot
  - Option 2-2: From a UE perspective, CSI-RS can be multiplexed on PDCCH OFDM symbol(s) for a slot
    - Note: PDCCH decoding behavior at UE side will not be changed by Option 2-2.
  - Note: up to each company to define PDCCH OFDM symbols based on the max possible number of symbols or the configured PDCCH OFDM symbols for the slot

**R1-1711804    WF on CDM-8 in CSI-RS for CSI acquisition    LG Electronics, Samsung, CATT, NTT DOCOMO**

**Agreements:**

- For CDM-8 in CSI-RS for CSI acquisition, support at least one of the following:
  - Alt 1: Distributed across multiple of the component CSI-RS RE patterns
  - Alt 2: Fully contained within one component CSI-RS RE pattern
- For CDM-4, study further whether to support the ports being distributed across multiple of the component CSI-RS RE patterns

**R1-1711803    WF on configuration of CSI-RS for CSI acquisition    LGE, Samsung**

**Agreements:**

- For CSI acquisition, at least the following parameters associated with a CSI-RS resource can be indicated to be a UE based on higher-layer configuration:
  - Number of CSI-RS ports
  - Density (RE/PRB/port)
    - For density = 1/2, comb offset
  - CDM (Length, Type)
  - Locations of the component RE patterns for the corresponding CSI-RS resource
    - FFS on signaling details
  - Scrambling ID
- Note: the detailed approach for the above signaling is FFS

**R1-1711976    WF on CSI-RS for beam management    NTT DoCoMo, Ericsson, Samsung**

**R1-1711973    WF on CSI-RS for BM    Intel, Ericsson, Spreadtrum, MediaTek, Samsung, Verizon**

**Agreements:**

- CSI-RS resource with 1-port and 2-port for one OFDM symbol can be used for beam management
  - Value of  $D \geq 1$  represents RE/RB/port within a OFDM symbol.
  - For the case of 1-port
    - No CDM

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- Subcarrier spacing within a PRB for  $D > 1$ 
  - Even spacing
- Constant subcarrier spacing across PRB(s)
- Constant subcarrier spacing within a BWP
- FFS the values of D
- For the case of 2-port:
  - Reuse the same pattern as that of for CSI acquisition at least for  $D = 1$  (if supported)
- FFS: the potential number of CSI-RS OFDM symbols for beam management
- FFS: other values of X and D for beam management
- In the LS to RAN4, add “RAN1 are discussing the respective possible limited set values of D for 1-port and 2-port CSI-RS resource, e.g., taking from {1, 2, 3, 4, 6}. RAN4 is also welcome to provide inputs to select the values of D for 1-port and 2-port CSI-RS resources, respectively”

LS to be prepared in [R1-1712003](#) (Yuichi, DCM)

Email approval for the LS in [R1-1712003](#) until 7/7 (Yuichi, DoCoMo)

|                            |                                                                            |                                     |
|----------------------------|----------------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709946</a> | CSI-RS design in NR                                                        | Huawei, HiSilicon                   |
| <a href="#">R1-1709947</a> | CSI-RS design for beam management                                          | Huawei, HiSilicon                   |
| <a href="#">R1-1710065</a> | Design of CSI-RS for CSI acquisition                                       | CATT                                |
| <a href="#">R1-1710066</a> | Design of CSI-RS for beam management                                       | CATT                                |
| <a href="#">R1-1710146</a> | Disussion on CSI-RS design for beam management                             | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710194</a> | On CSI-RS for beam management                                              | ZTE                                 |
| <a href="#">R1-1710195</a> | On CSI-RS for CSI acquisition                                              | ZTE                                 |
| <a href="#">R1-1710256</a> | CSI-RS design for beam management and interference measurement             | NEC Corporation                     |
| <a href="#">R1-1710292</a> | On CSI-RS design for beam management                                       | LG Electronics                      |
| <a href="#">R1-1710293</a> | On CSI-RS design for CSI acquisition                                       | LG Electronics                      |
| <a href="#">R1-1710365</a> | Discussion on CSI-RS design for CSI acquisition                            | Spreadtrum Communications           |
| <a href="#">R1-1710401</a> | On CSI-RS design for beam management                                       | vivo                                |
| <a href="#">R1-1710436</a> | Remaining details of CSI-RS                                                | AT&T                                |
| <a href="#">R1-1710532</a> | <b>On CSI-RS for beam management</b>                                       | <b>Intel Corporation</b>            |
| <a href="#">R1-1710533</a> | On CSI-RS for CSI acquisition                                              | Intel Corporation                   |
| <a href="#">R1-1710680</a> | Discussions on CSI-RS design for NR MIMO                                   | Samsung                             |
| <a href="#">R1-1710681</a> | CSI-RS for beam management                                                 | Samsung                             |
| <a href="#">R1-1710811</a> | <b>IFDMA Based Beam Management CSI-RS for Flexible TX/RX Beam Sweeping</b> | <b>MediaTek Inc.</b>                |
| <a href="#">R1-1710833</a> | On CSI-RS configuration for fine time and frequency tracking support       | MediaTek Inc.                       |
| <a href="#">R1-1710931</a> | <b>CSI-RS Design for Beam Management</b>                                   | <b>InterDigital, Inc.</b>           |
| <a href="#">R1-1710974</a> | Discussion on using sub-time unit for CSI-RS of beam management            | ITRI                                |
| <a href="#">R1-1711042</a> | <b>On CSI-RS for beam management</b>                                       | <b>Ericsson</b>                     |
| <a href="#">R1-1711082</a> | CSI-RS for beam managment                                                  | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711083</a> | CSI-RS for CSI acquisition                                                 | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711168</a> | Discussion on CSI-RS design                                                | Qualcomm Incorporated               |
| <a href="#">R1-1711303</a> | On the CSI-RS configurations for NR CSI acquisition                        | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711304</a> | On CSI-RS Design for DL Beam Management                                    | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711339</a> | Consideration on the CSI-RS design for NR CATR                             |                                     |
| <a href="#">R1-1711468</a> | On CSI-RS design for DL beam management                                    | KT Corp.                            |

**5.1.2.4.3 DMRS**

*Limit to maximum 2 contributions (one for discussion, another for evaluation) per 1 company/organization/university for DL and UL, independently*

|                            |                                                                 |                                      |
|----------------------------|-----------------------------------------------------------------|--------------------------------------|
| <a href="#">R1-1709909</a> | <b>Further Evaluation and Discussion on DMRS Design Details</b> | <b>Beijing Xinwei Telecom Techn.</b> |
| <a href="#">R1-1710196</a> | <b>Discussion on downlink DMRS design</b>                       | <b>ZTE</b>                           |
| <a href="#">R1-1711043</a> | <b>On DL DMRS design</b>                                        | <b>Ericsson</b>                      |
| <a href="#">R1-1710831</a> | <b>On downlink DMRS design</b>                                  | <b>MediaTek Inc.</b>                 |

Continue discussion offline – Alex (Qualcomm)

[R1-1711778](#) Remaining issues on NR DM-RS Qualcomm  
[R1-1711797](#) WF on DMRS sequence, Samsung, Ericsson, Qualcomm Incorporated, CATT, Nokia, Alcatel-Lucent Shanghai Bell, Intel, AT&T, NTT DOCOMO, INC., LG Electronics, KT Corp., MediaTek Inc., Mitsubishi Electric Co., Spreadtrum, Fujitsu, Xinwei, KDDI, Panasonic, ITL  
Also supported SONY, KRRI

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**Agreement:** Both in DL and UL DMRS for CP-OFDM, only PN sequence is supported

**R1-1711784**    **WF on DMRS design**    **MediaTek, Huawei, HiSilicon, China Telecom, ZTE, ASUSTek, CeWiT, Spreadtrum, Tejas Networks, CATR, Deutsche Telekom, IITH, Xinwei, MTL, CHTTL, China Unicom, IITM, ITRI**

**Agreements:**

- The working assumption made in RAN1#89 for DM-RS is updated and agreed as follows for CP-OFDM:
  - A UE is configured by higher layers with DMRS pattern either from the front-loaded DMRS Configuration type 1 or from the front-loaded DMRS Configuration type 2 for DL/UL:
    - Configuration type 1:
      - One symbol:
        - Comb 2 + 2 CS, up to 4 ports
      - Two symbols:
        - Comb 2 + 2 CS + TD-OCC ({1 1} and {1 -1}), up to 8 ports
          - Note: It should be possible to schedule up to 4 ports without using both {1,1} and {1,-1}.
    - Configuration type 2:
      - One symbol:
        - 2-FD-OCC across adjacent REs in the frequency domain, up to 6 ports
      - Two symbols:
        - 2-FD-OCC across adjacent REs in the frequency domain + TD-OCC (both {1,1} and {1,-1}) up to 12 ports
          - Note: It should be possible to schedule up to 6 ports without using both {1,1} and {1,-1}.
    - From UE perspective, frequency domain CDMed DMRS ports are QCLED.
    - FFS: Whether the front-load DMRS configuration type for a UE for UL and DL can be different or not.
    - Note: If there are significant complexity/performance issues involved in the above agreements, down-selection can still be discussed

**R1-1711813**    **WF on DM-RS**    **NTT DOCOMO, Ericsson, Nokia, ASB, ZTE, KT Corp, Sharp, Qualcomm**

Proposals:

- In configuration 1 for DL, at least for SU-MIMO,
  - For 1-symbol, DM-RS  $N \leq 2$  layer reception are multiplexed without any CDM in frequency for a UE
  - For 2-symbol, DM-RS  $N \leq 4$  layer reception are multiplexed without any CDM in frequency for a UE
- FFS the case of UL MU-MIMO

Discuss till next meeting

**R1-1711783**    **WF on UL DMRS pattern for DFT-S-OFDM**    **LG Electronics, ZTE, Ericsson, NEC, NTT DOCOMO**

**Agreements:**

- For DFT-S-OFDM based PUSCH DMRS
  - DMRS are mapped to resource elements using a comb structure (IFDMA).
    - DMRS and associated PUSCH are multiplexed in time domain
    - At least the following (repetition factor, CS) combinations is supported
      - (2, 2)
  - Front load DMRS is allocated to 1 or 2 OFDM symbols
    - When 2 OFDM symbols are allocated, TD-OCC ({1 1} and {1 -1}) are supported for orthogonal DMRS port multiplexing.
    - FFS the detailed applicability of 1 vs. 2 OFDM symbols
    - FFS the location of the DMRS symbol(s)

**R1-1711816**    **WF on front-loaded DMRS design for slot aggregation**    **vivo, Huawei, HiSilicon**

Further discussion till next meeting

**R1-1711770**    **WF on DL DMRS for broadcast/multicast PDSCH**    **LG Electronics, Qualcomm**

**Agreements:**

- For broadcast/multicast PDSCH (other than PBCH), the PDSCH is transmitted with a single DMRS port:
  - Support using only one front-load DMRS Configuration from Configuration 1 and Configuration 2. To down-select from:
    - Alt 1: Configuration 1 (FFS 1 or 2 symbols)

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- Alt 2: Configuration 2 with 2 symbols
- Support additional DM-RS. To down-select from:
  - Alt 1: Additional DMRS is always present
  - Alt 2: Additional DMRS is configurable
  - FFS the number of additional DMRS symbol(s)

[R1-1711722](#)    **WF on multiplexing between DMRS and data**    **ZTE, Qualcomm, KT Corp., DOCOMO**

**Agreements:**

- Study further aspects related to DMRS and data multiplexing in DL and UL considering 14 and 7 symbol slots/mini-slots, 1 vs. 2 front loaded DM-RS symbols, additional DM-RS, etc.
- Study further aspects related to possibly power boosting DM-RS (performance, complexity, spec impact)

[R1-1711714](#)    **WF on DMRS multiplexing scheme in time domain**    **ZTE, Xinwei, ASTRI, Spreadtrum**

[R1-1711666](#)    **WF on SS block and DM-RS collision handling**    **Intel**

**Agreements:**

- Study further how to handle DM-RS and SS block collision (if any)
  - E.g., changing DM-RS symbol(s) position in time domain, no PDSCH transmission on the collided PRBs, dropping the DM-RS symbol in collision, etc.

[R1-1711771](#)    **WF on signalling DMRS configuration**    **LG Electronics, ZTE**

**Agreements:**

- The number of front-load DMRS symbols can be 1 or 2 when the number of DMRS ports allocated to UE is equal or less than N
  - N is 4 for Configuration 1 and 6 for Configuration 2.
  - FFS the details to determine 1 or 2 symbols

Not treated.

|                            |                                                       |                           |
|----------------------------|-------------------------------------------------------|---------------------------|
| <a href="#">R1-1709941</a> | Design of DL DMRS for data transmission               | Huawei, HiSilicon         |
| <a href="#">R1-1709942</a> | Evaluation results of DMRS design for DL data channel | Huawei, HiSilicon         |
| <a href="#">R1-1709943</a> | UL DMRS design for data transmission                  | Huawei, HiSilicon         |
| <a href="#">R1-1709944</a> | Evaluation results of DMRS design for UL data channel | Huawei, HiSilicon         |
| <a href="#">R1-1710067</a> | On DMRS design for DL                                 | CATT                      |
| <a href="#">R1-1710068</a> | On DMRS design for UL                                 | CATT                      |
| <a href="#">R1-1710197</a> | Evaluation results on DL DMRS                         | ZTE                       |
| <a href="#">R1-1710198</a> | Discussion on uplink DMRS design                      | ZTE                       |
| <a href="#">R1-1710257</a> | Considerations on the design of DMRS                  | NEC Corporation           |
| <a href="#">R1-1710294</a> | On DL DMRS design                                     | LG Electronics            |
| <a href="#">R1-1710295</a> | On UL DMRS design                                     | LG Electronics            |
| <a href="#">R1-1710362</a> | DMRS configurations for CP-OFDM.                      | Spreadtrum Communications |
| <a href="#">R1-1710402</a> | On DL DMRS design                                     | vivo                      |
| <a href="#">R1-1710410</a> | Evaluation of DL DMRS designs                         | Mitsubishi Electric Co.   |
| <a href="#">R1-1710411</a> | Views on DL DMRS designs                              | Mitsubishi Electric Co.   |
| <a href="#">R1-1710534</a> | On the remaining details of DM-RS design              | Intel Corporation         |
| <a href="#">R1-1710607</a> | On DM-RS for NR                                       | Intel Corporation         |
| <a href="#">R1-1710612</a> | Discussion on downlink DMRS design                    | ETRI                      |
| <a href="#">R1-1710613</a> | Discussion on uplink DMRS design                      | ETRI                      |
| <a href="#">R1-1710682</a> | Discussion on DL DMRS design for NR                   | Samsung                   |
| <a href="#">R1-1710683</a> | Evaluation results on DL DMRS for NR                  | Samsung                   |
| <a href="#">R1-1710684</a> | Discussion on UL DMRS design for NR                   | Samsung                   |
| <a href="#">R1-1710685</a> | Evaluation results on UL DMRS for NR                  | Samsung                   |
| <a href="#">R1-1710933</a> | On DM-RS design for NR                                | InterDigital, Inc.        |
| <a href="#">R1-1710970</a> | On front-load DMRS design                             | China Telecommunications  |
| <a href="#">R1-1711044</a> | On DL DMRS evaluations                                | Ericsson                  |
| <a href="#">R1-1711045</a> | On UL DMRS design                                     | Ericsson                  |
| <a href="#">R1-1711046</a> | On UL DMRS evaluations                                | Ericsson                  |
| <a href="#">R1-1711084</a> | Evaluation results of DM-RS                           | NTT DOCOMO, INC.          |

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|                            |                                                      |                                     |
|----------------------------|------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1711085</a> | Discussion on DM-RS design                           | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711169</a> | Discussion on UL DMRS design                         | Qualcomm Incorporated               |
| <a href="#">R1-1711170</a> | Discussion on DL DMRS design                         | Qualcomm Incorporated               |
| <a href="#">R1-1711171</a> | Evaluation of UL DMRS design                         | Qualcomm Incorporated               |
| <a href="#">R1-1711172</a> | Evaluation of DL DMRS design                         | Qualcomm Incorporated               |
| <a href="#">R1-1711305</a> | On design of DL DM-RS for NR physical data channels  | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711306</a> | DL DM-RS patterns link performance evaluation        | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711307</a> | On design of UL DM-RS for NR physical data channels  | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711340</a> | Consideration on the font loaded DM RS design for NR | CATR                                |
| <a href="#">R1-1711350</a> | DMRS pattern configuration for NR                    | ITL                                 |

**5.1.2.4.4 PT-RS**

|                            |                                 |                    |
|----------------------------|---------------------------------|--------------------|
| <a href="#">R1-1710296</a> | On DL PT-RS design              | LG Electronics     |
| <a href="#">R1-1709940</a> | PTRS for DFT-s-OFDM             | Huawei, HiSilicon  |
| <a href="#">R1-1710936</a> | Remaining Issues on PTRS for NR | InterDigital, Inc. |

Continue offline discussion – Mattias (Ericsson)

|                            |                            |                                                                |
|----------------------------|----------------------------|----------------------------------------------------------------|
| <a href="#">R1-1711914</a> | Overview of WFs on PTRS    | Ericsson                                                       |
| <a href="#">R1-1711815</a> | WF on PT-RS for DFT-S-OFDM | NTT DOCOMO, Mitsubishi Electric, Huawei, HiSilicon, Nokia, ASB |

**Agreements:**

- For PT-RS insertion for UL DFT-S-OFDM
  - Companies are encouraged to perform simulations with realistic simulation assumptions comparing pre-DFT vs. post-DFT PT-RS insertion
    - For pre-DFT, companies are encouraged to compare chunk-based distribution vs. non-chunk based distribution

**Agreements:**

- Support at least full symbol-level time density for time-domain PT-RS for DFT-S-OFDM (every PUSCH carrying symbol)
  - FFS: whether to support configurable symbol-level time density for time-domain PT-RS density reduction for DFT-S-OFDM
    - Note: If supported, the configuration can be implicit (associated with scheduled MCS and/or BW and/or DM-RS port(s)/position) or explicit, which is to be decided in next meeting

[R1-1711891](#) WF on PT-RS for DFT-S-OFDM Samsung, Intel, CATT

[R1-1711814](#) WF on PT-RS for CP-OFDM NTT DOCOMO, Ericsson, Nokia, ASB, Panasonic, Spreadtrum, ZTE

**Agreements:**

- If one DL PT-RS port is configured for a DL DM-RS port group, the DL PT-RS port and one DL DM-RS port in the DL DM-RS port group are associated for phase tracking, the association is determined in the specification
  - FFS details for the association
- If one DL PT-RS port is configured for a DL DM-RS port group, the DL PT-RS port is associated with:
  - Alt 1: the lowest DL DM-RS port in the DL DM-RS port group.
  - Alt 2: one DL DM-RS port in the DL DM-RS port group in a RB, where the one DL DM-RS port may vary across RBs
  - Other alternatives are not precluded
  - To conclude with one alternative next meeting
- FFS the case of two codewords

|                            |                     |                                                          |
|----------------------------|---------------------|----------------------------------------------------------|
| <a href="#">R1-1711688</a> | Way Forward on PTRS | Intel, Huawei, HiSilicon, National Instruments, MediaTek |
| <a href="#">R1-1711941</a> | Way Forward on PTRS | Intel, Huawei, HiSilicon, National Instruments, MediaTek |

**Agreements:**

- Study further whether or not to support power boosting for PT-RS considering different or same number of ports compared with DM-RS
- Down-selection among the following for CP-OFDM DL & UL for PTRS:
  - Opt-1: a single association table pair per subcarrier spacing
  - Opt-2: UE recommends the preferred thresholds in tables and/or gNB to update/confirm

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- Opt-3: multiple association tables for each subcarrier spacing, to reflect different phase noise models resulting from different carrier frequencies, subcarrier spacings, UE implementations
- Opt-4: a single association table pair per subcarrier spacing based on UE capability

[R1-1711895](#) **WF on Remaining Issues on PTRS for CP-OFDM – Part II** Huawei, HiSilicon, InterDigital, Xinwei, Intel, NI, Panasonic, Spreadtrum

[R1-1711932](#) **WF on PT-RS pattern in frequency domain** LG Electronics

**Agreements:**

- For PTRS for CP-OFDM, study further how to handle mapping PTRS in case of non-consecutive scheduling
  - Alt 1: based on PRBs
  - Alt 2: based on VRBs
  - Other alternatives are not precluded
  - Note: consecutive scheduling can be considered as a special case
- For PTRS for CP-OFDM, study further whether or not there is need for interference randomization for PT-RS and if so, how
  - Companies are encouraged to provide simulation results
- To continue study to finalize the PT-RS density tables w.r.t. to MCS and scheduled bandwidth

[R1-1711773](#) **WF on PT-RS collision avoidance** LG Electronics, Huawei, CATT, ZTE

**Agreement:** Study further how to handle PT-RS collision with CSI-RS

[R1-1711894](#) **WF on Remaining Issues on PTRS for CP-OFDM – Part I** Huawei, HiSilicon, InterDigital, Xinwei, NI, Panasonic

**Agreements:**

- For PTRS for CP-OFDM, NR supports
  - Information related to UE to facilitate PTRS port configuration
    - FFS details, e.g., UE to report information (if so, details), or re-using UE information available for other purposes

Not treated.

|                            |                                                              |                                     |
|----------------------------|--------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709939</a> | PTRS for CP-OFDM                                             | Huawei, HiSilicon                   |
| <a href="#">R1-1710069</a> | Considerations on RS for phase tracking                      | CATT                                |
| <a href="#">R1-1710199</a> | Discussion on RS for phase tracking                          | ZTE                                 |
| <a href="#">R1-1710227</a> | Further Discussion on PTRS Design Details                    | Beijing Xinwei Telecom Techn.       |
| <a href="#">R1-1710230</a> | <b>UL PTRS for DFT-s-OFDM waveform</b>                       | <b>Mitsubishi Electric RCE</b>      |
| <a href="#">R1-1710297</a> | On UL PT-RS design                                           | LG Electronics                      |
| <a href="#">R1-1710359</a> | PT-RS design                                                 | Panasonic Corporation               |
| <a href="#">R1-1710363</a> | Considerations on PT-RS for CP-OFDM                          | Spreadtrum Communications           |
| <a href="#">R1-1710403</a> | On PT-RS design for CP-OFDM                                  | vivo                                |
| <a href="#">R1-1710535</a> | <b>On PT-RS for CP-OFDM</b>                                  | <b>Intel Corporation</b>            |
| <a href="#">R1-1710536</a> | <b>On PT-RS for DFT-s-OFDM</b>                               | <b>Intel Corporation</b>            |
| <a href="#">R1-1710686</a> | On DL PTRS design                                            | Samsung                             |
| <a href="#">R1-1710687</a> | On UL PTRS for DFT-s-OFDM                                    | Samsung                             |
| <a href="#">R1-1710777</a> | Discussion on PT-RS design                                   | CMCC                                |
| <a href="#">R1-1711047</a> | On PTRS DL design                                            | Ericsson                            |
| <a href="#">R1-1711048</a> | On PTRS UL design                                            | Ericsson                            |
| <a href="#">R1-1711086</a> | Discussion on PT-RS design                                   | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711173</a> | Phase and frequency tracking reference signal considerations | Qualcomm Incorporated               |
| <a href="#">R1-1711308</a> | Discussion on PT-RS design for CP-OFDM                       | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711309</a> | On Details of the PT-RS Design for DFT-s-OFDM                | Nokia, Alcatel-Lucent Shanghai Bell |

**5.1.2.4.5 SRS**

|                            |                              |                       |
|----------------------------|------------------------------|-----------------------|
| <a href="#">R1-1710855</a> | Considerations on SRS design | Sony                  |
| <a href="#">R1-1711049</a> | On SRS design                | Ericsson              |
| <a href="#">R1-1711087</a> | Discussions on NR SRS Design | NTT DOCOMO, INC.      |
| <a href="#">R1-1711174</a> | Discussion on SRS design     | Qualcomm Incorporated |

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**Agreement:** For NR SRS, support sounding bandwidth in multiple of 4 PRBs

- FFS the detailed set of SRS sounding bandwidths to be supported
- At least 4 PRBs as SRS sounding bandwidth is supported

Continue offline discussion – Takano (SONY)

[R1-1711951](#) Open issues on SRS design SONY

[R1-1711791](#) Way Forward on SRS Switching Huawei, HiSilicon, Softbank, CMCC, Deutsche Telekom, CATR, Tejas Networks, OPPO, Qualcomm, CeWiT, Sony, ZTE, Xinwei, IITM, China Unicom, IITH, Ericsson, InterDigital, China Telecom, MediaTek

**Agreement:** Support antenna switching for SRS transmission within a carrier:

- FFS: Support at least [2Tx, 4Tx] switching

[R1-1711869](#) WF\_config\_collision\_SRS\_PUCCH\_L Mitsubishi Electric, AT&T, Panasonic, Samsung, Huawei, HiSilicon, ZTE

**Agreements:**

- From a UE perspective, NR supports one or both of the following options on a given carrier:
  - Option 1 : Support only one of the following options for avoiding collisions between NR-SRS and short PUCCH
    - Option 1-1 : symbol level TDM
    - Option 1-2 : FDM
    - Option 1-3 : both symbol level TDM and FDM
    - FFS : details
    - Note : other options are not precluded
  - Option 2: Prioritize SRS or short PUCCH transmission, i.e., drop SRS or short PUCCH in case of collision
    - FFS whether to have one prioritization rule, or configurable prioritization

[R1-1711852](#) WF on SRS Sequence Design Ericsson, Huawei, HiSilicon, Nokia, ASB, Panasonic, NTT DOCOMO

[R1-1711668](#) WF on SRS sequence for NR Intel, Samsung, Qualcomm

Also supported by LGE, KT, CATT

[R1-1711767](#) WF on SRS sequence generation for partial overlapping LG Electronics, Intel Corporation, ZTE

**Agreements:**

- NR supports at least the following SRS sequences
  - LTE SRS sequences
- Study further whether or not to additionally support the following for NR SRS sequence design:
  - Opt-1: Truncated ZC design
    - Set of [60] long ZC sequences designed for each of [5] different reference carrier bandwidths where the sequence length exceeds the carrier bandwidth before truncation
      - The portion of the truncated sequence corresponds to the SRS PRB location assigned to the UE
    - Ports on the same comb are separated by cyclic shifts which are repeated every n SRS REs, e.g. n=[8,12]
  - Opt-2: block-wise concatenation based ZC sequence generation.
    - The number of blocks (e.g. 1, 2, ...) and/or block length (e.g. 4RBs, 8RBs, ...) per each block is informed to UE
      - Alt1. the number of blocks and/or block length are configured by network. If 1 block is configured, SRS sequence for NR is the same as LTE SRS sequence
      - Alt2. Implicit signaling e.g. the number of blocks and block length are dependent on waveform. When DFT-S-OFDM is configured to UE, the number of block is one and the block length is equal to SRS BW; When CP-OFDM is configured, the number of blocks can be larger than 1.
  - Opt-3: Same LTE SRS sequence generation mechanism with additional roots
- To conclude during the next meeting
  - Evaluations to consider at least CM/PAPR and sequence cross-correlation for the case of fully and partially overlapping SRS allocations
  - Evaluations to further consider CM/PAPR for carrier bandwidths different than the reference ones

[R1-1711920](#) WF on SRS design in NR LG Electronics, CATT, Intel Corp., KT Corp., Qualcomm

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**[R1-1711930](#)      WF on SRS Configuration      Huawei, HiSilicon, OPPO**

- Agreement:** Support gNB to configure one or more groups where each group contains one or more SRS resource(s) to UE
- Note: different groups may be for different purposes, e.g., one or more groups for beam management, one for DL CSI acquisition, one for UL CSI acquisition, etc.

Not treated.

|                            |                                                       |                                     |
|----------------------------|-------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709936</a> | UL SRS design for beam management and CSI acquisition | Huawei, HiSilicon                   |
| <a href="#">R1-1710070</a> | Further considerations on SRS design                  | CATT                                |
| <a href="#">R1-1710147</a> | On SRS design for NR                                  | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710200</a> | Discussion on SRS design for NR                       | ZTE                                 |
| <a href="#">R1-1710298</a> | On SRS design and related operations                  | LG Electronics                      |
| <a href="#">R1-1710409</a> | Views on SRS designs                                  | Mitsubishi Electric Co.             |
| <a href="#">R1-1710537</a> | Discussion on SRS for NR                              | Intel Corporation                   |
| <a href="#">R1-1710688</a> | SRS design for NR                                     | Samsung                             |
| <a href="#">R1-1710817</a> | SRS design in NR                                      | MediaTek Inc.                       |
| <a href="#">R1-1710929</a> | Discussion on SRS sequence generation for NR          | Panasonic Corporation               |
| <a href="#">R1-1710938</a> | On SRS for NR                                         | InterDigital, Inc.                  |
| <a href="#">R1-1711310</a> | UL SRS design considerations in NR                    | Nokia, Alcatel-Lucent Shanghai Bell |

**5.1.2.4.6      TRS**

|                            |                                                            |                       |
|----------------------------|------------------------------------------------------------|-----------------------|
| <a href="#">R1-1709934</a> | Reference signal for fine time and frequency tracking      | Huawei, HiSilicon     |
| <a href="#">R1-1710832</a> | On TRS design requirement                                  | MediaTek Inc.         |
| <a href="#">R1-1711175</a> | Further analysis on fine time/frequency tracking RS design | Qualcomm Incorporated |

Further discussion offline, especially to narrow-down (possibly selecting) the possible range/set of values for the following parameters for TRS:

- X: the length of TRS burst in terms of number of slots
- Y: the TRS burst periodicity in terms of number of slots
- Sr: TRS subcarrier spacing
- Sr: TRS symbol spacing within a slot
- N: Number of OFDM symbols per TRS within a slot
- B: TRS bandwidth in terms of number of RBs

Revisit later this week – Chiao-yao (MTK) (including possible other aspects for TRS)

|                            |                         |                                                 |
|----------------------------|-------------------------|-------------------------------------------------|
| <a href="#">R1-1711765</a> | Summary of views on TRS | MediaTek                                        |
| <a href="#">R1-1711766</a> | WF on TRS               | MediaTek, Huawei, HiSilicon, Ericsson, Qualcomm |

- Agreements:**
- Slide 3 and slide 4 in [R1-1711766](#) are agreed with the following updates:
    - N: add value of 1
    - B: 50 RBs assuming SCS=15KHz (FFS, for other SCS values)

- Agreements:**
- TRS is UE-specifically managed
  - NR supports TRS for multi-TRP transmission
    - Details FFS
  - FFS how to handle the case of initial access and idle mode (e.g., the necessity of TRS or not, default value if TRS is necessary, etc)
  - FFS how to handle multi-beam transmission
  - FFS: whether the tracking performance enhancement is needed for long DRX

Not treated.

|                            |                                                       |                                     |
|----------------------------|-------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710201</a> | Discussion on fine time/frequency tracking of channel | ZTE                                 |
| <a href="#">R1-1710299</a> | Discussion on fine time/frequency tracking of channel | LG Electronics                      |
| <a href="#">R1-1710538</a> | Discussion on TRS                                     | Intel Corporation                   |
| <a href="#">R1-1710689</a> | Discussions on fine time/frequency tracking for NR    | Samsung                             |
| <a href="#">R1-1710853</a> | Considerations on fine time/frequency tracking        | Sony                                |
| <a href="#">R1-1711050</a> | On time and frequency tracking of the channel         | Ericsson                            |
| <a href="#">R1-1711311</a> | Views on the fTFT-RS in NR                            | Nokia, Alcatel-Lucent Shanghai Bell |

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**5.1.2.4.7 QCL**

[R1-1710202](#) QCL design for UL and DL MIMO ZTE  
[R1-1710539](#) On QCL for different BW parts and other QCL details Intel Corporation  
[R1-1711176](#) Discussion on QCL Qualcomm Incorporated  
[R1-1711312](#) On QCL Framework and Configurations in NR Nokia, Alcatel-Lucent Shanghai Bell

**Agreements:**

- For QCL, NR supports:
  - At least one or two DM-RS antenna port groups per PDSCH
    - FFS other number of groups
  - QCL assumption across carriers and bandwidth parts for DL
    - FFS details for indication, the applicable RS(s), the applicable QCL parameters, and configurability
    - FFS whether or not to have UE assisted management

Continue offline discussion – Mihai (Nokia)

Not treated.

[R1-1709935](#) Details of QCL assumptions and related RS design considerations Huawei, HiSilicon  
[R1-1710071](#) On QCL for NR CATT  
[R1-1710300](#) Discussion on QCL for NR LG Electronics  
[R1-1710690](#) On QCL for NR Samsung  
[R1-1710941](#) On QCL for NR InterDigital, Inc.  
[R1-1711051](#) The QCL framework in NR Ericsson

**5.1.2.4.8 Other**

[R1-1709937](#) UL SRS sequence design in NR Huawei, HiSilicon  
[R1-1709945](#) Common UL/DL DMRS design Huawei, HiSilicon  
[R1-1710455](#) Signaling of DMRS ports for SU/MU-MIMO Huawei, HiSilicon  
[R1-1710456](#) DMRS design for URLLC Huawei, HiSilicon  
[R1-1710457](#) Considerations on UE-specific RS Sequence Design Huawei, HiSilicon  
[R1-1710458](#) Discussion on UL DMRS power boosting Huawei, HiSilicon  
[R1-1711052](#) On the number of antenna ports for CSI-RS Ericsson  
[R1-1711053](#) On the collision between DMRS and DC subcarrier Ericsson  
[R1-1711246](#) Discussion on Bursty Interference Measurement Resources Qualcomm Incorporated

**5.1.2.5 Other**

*Including MIMO calibration*

[R1-1709938](#) SRS antenna switching Huawei, HiSilicon  
  
[R1-1709910](#) NR MIMO System Level Phase 3 Calibration Results Beijing Xinwei Telecom Techn.  
[R1-1710072](#) System level calibration results for NR MIMO CATT  
[R1-1710073](#) Link level calibration results for NR MIMO CATT  
[R1-1710203](#) Calibration results for Phase 1 NR MIMO link level calibration ZTE  
[R1-1710204](#) Calibration results for Phase 1 NR MIMO system level calibration ZTE  
[R1-1710205](#) Calibration results for Phase 2 NR MIMO link level calibration ZTE  
[R1-1710206](#) Calibration results for Phase 2 NR MIMO system level calibration ZTE  
[R1-1710207](#) Calibration results for Phase 3 NR MIMO calibration ZTE  
[R1-1710208](#) Further clarification on Phase 3 NR MIMO calibration ZTE  
[R1-1710301](#) Phase 3 SLS Calibration Results for NR MIMO LG Electronics  
[R1-1710302](#) Phase 2 LLS Calibration Results for NR MIMO LG Electronics  
[R1-1710540](#) Calibration results for Phase 2 NR MIMO system level calibration Intel Corporation  
[R1-1711393](#) Calibration results for Phase 1 NR MIMO system level calibration MOTOROLA MOBILITY LLC  
[R1-1711450](#) MIMO Phase-2 SLS calibration results on 30GHz frequency band Samsung  
[R1-1711451](#) MIMO Phase-2 LLS calibration results on 30GHz frequency band Samsung  
[R1-1711452](#) Evaluation results for dense urban on 30GHz frequency band Samsung

**5.1.3 Scheduling/HARQ aspects**

The document was presented by ... from ...

**Discussion:** .

**Decision:** The document is noted.

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**5.1.3.1 Physical downlink control channel**

[R1-1711567](#) Summary of e-mail discussion on DCI content Ericsson LM

[R1-1711910](#) [DRAFT] Reply LS on PDCCH design Ericsson

[R1-1711972](#) [DRAFT] Reply LS on PDCCH design Ericsson, CATT

[R1-1711992](#) [DRAFT] Reply LS on PDCCH design Ericsson, CATT

**Decision:** The document is noted and final LS is **approved in R1-1712005** by deleting a sentence “RAN1 may downselect between 7 and 14 symbols in the future.” and capture past agreements related to it in RAN1 #86bis (in Lisbon) as it is in Section 1.

**5.1.3.1.1 PDCCH structure**

R1-1711961 WF on PDCCH CRC Panasonic

**R1-1712006** WF on UE behaviour for reserved resource Samsung

**5.1.3.1.1.1 CCE-to-REG mapping and PDCCH-to-CCE mapping**

*Including REG bundle size/structure.*

**[R1-1711411](#) Evaluation on REG bundle sizes for 1-symbol CORESET duration Huawei, HiSilicon**

Observation 1: For 1-symbol CORESET configured with REG-to-CCE mapping without interleaving, same precoder across multiple CCEs, i.e., higher REG bundling size such as 12 REGs, will improve PDCCH performance.

Observation 2: for 1-symbol CORESET configured with REG-to-CCE mapping with interleaving,

- using smaller REG bundling size hence finer cycling granularity, precoder cycling can obtain more diversity gain, i.e., the performance curve of BLER vs SNR will have a steeper slope, especially for the case of low Delay spread(hence low frequency selectivity)and in high SNR region, where channel estimation performance can be ensured with smaller REG bundling size, e.g.,2;
- using larger REG bundling size such as 3 or 6, channel estimation performance can be improved, especially for the case of high Delay spread(hence high frequency selectivity)and in low SNR region, where PDCCH performance will be ensured by high PDCCH aggregation level;
- higher PDCCH aggregation level will benefit from larger bundling size;

Proposal: Configurable REG bundling size should be supported for 1-symbol CORESE configured with REG-to-CCE mapping with interleaving, and bundle size 2, 3 or 6 can be configured.

**Decision:** The document is noted.

**[R1-1711412](#) Evaluation on REG bundle sizes for more than 1 symbol CORESET duration Huawei, HiSilicon**

Observation 1: for 2- or 3-symbol CORESET configured with REG-to-CCE mapping without interleaving, same precoder across multiple CCEs, i.e., higher REG bundling size such as 12 REGs, will improve PDCCH performance.

Observation 2: for 2- or 3-symbol CORESET configured with REG-to-CCE mapping with interleaving:

- using lower REG bundling size (REG bundle pattern 0) have finer cycling granularity, precoder cycling can obtain more diversity gain, especially for the case high SNR region;
- using higher REG bundling size (REG bundle pattern 1), channel estimation performance can be improved, especially for the case of low SNR region;
- higher PDCCH aggregation level will benefit from larger bundling size;

Proposal: For Option2 in 2 and 3 OFDM symbol CORESET, the following REG bundle patterns can be configured:

- 1 symbol in time domain and {3,6} consecutive REGs in frequency domain;
- 1 symbol in time domain and {2,6} consecutive REGs in frequency domain;
- 2 symbols in time domain and 1 REG per symbol in frequency domain;
- 2 symbols in time domain and 3 consecutive REGs per symbol in frequency domain; Or
- 3 symbols in time domain and 1 REG per symbol in frequency domain;
- 3 symbols in time domain and 2 consecutive REGs per symbol in frequency domain.

**Decision:** The document is noted.

**[R1-1710541](#) NR PDCCH physical structure Intel Corporation**

- Observation 1: In case of CORESET of 1 OS and 48 RBs, REGBs of 3 and 6 REGs exhibit similar performance. While REGB of 6 REGs shows slightly better performance than REGB of 3 REGs for high AL NR-PDCCH in low SNR, the performance of REGB of 3 REGs is slightly better than that of REGB of 6 REGs for low AL NR-PDCCH in high SNR.
- Observation 2: In case of CORESET of 2(3) OS and 24(16) RBs, REGBs of 2(3) and 6 REGs exhibit similar performance. Specifically REGB of 6 REGs shows slightly better performance than REGB of 2(3) REGs for high AL NR-PDCCH in low SNR.

- Proposal 1: For non-interleaved REG-to-CCE mapping in 1-symbol CORESET, UE assumption of same precoding over multiple REG bundles can be configured by the gNB.
- Proposal 2: For interleaved REG-to-CCE mapping in 1-symbol CORESET, REG bundle size is 3REGs and UE assumption of same precoding over multiple REG bundles can be configured by the gNB.
- Proposal 3: For non-interleaved REG-to-CCE mapping in CORESET of more than 1 symbol with time-first mapping of REG-to-CCE, UE assumption of same precoding over multiple REG bundles can be configured by the gNB.
- Proposal 4: For interleaved REG-to-CCE mapping in CORESET of more than 1-symbol with time-first mapping of REG-to-CCE, REG bundle size is 2 REGs and 3 REGs for 2-symbol and 3-symbol CORESETs respectively, and UE assumption of same precoding over multiple REG bundles can be configured by the gNB.
- Proposal 5: At least for interleaved REG-to-CCE mapping in 1-symbol and multi-symbol CORESETs with time-first mapping, when configured, the same precoding may be assumed across no more than [2] REG bundles.
- Proposal 6: For multi-symbol PDCCH CORESET, adopt the following additional REG-to-CCE mapping option:
  - (Option 2) Support of frequency-first mapping such that:
    - REG-to-CCE mapping is exactly same as the case where a CORESET with 1 symbol
    - A PDCCH candidate can be mapped across OFDM symbols.

**Decision:** The document is noted.

**R1-1711708**      **WF on REG bundle size in a CORESET with interleaving**    LG Electronics, ETRI, NTT DOCOMO, Ericsson, InterDigital

- The REG bundle size in a CORESET with interleaving is
  - [2 or 3] for 1-symbol CORESET
  - 2 for 2-symbol CORESET when time-first REG-to-CCE mapping is applied
  - 3 for 3-symbol CORESET when time-first REG-to-CCE mapping is applied

**Decision:** The document is noted.

**Proposed agreement**

- The REG bundle size in a CORESET with interleaving is
  - Configurable between 2 and 6 for 1-symbol CORESET
  - Configurable between 2 and 6 for 2-symbol CORESET when time-first REG-to-CCE mapping is applied
  - Configurable between 3 and 6 for 3-symbol CORESET when time-first REG-to-CCE mapping is applied

**For 2 and 3 symbols CORESET**

- Option 1 REG bundle size = CORESET length
  - Supported by Samsung, LGE, Panasonic, NTT DOCOMO, Ericsson, ETRI, OPPO, ZTE, InterDigital
- Option 2 REG bundle size = 6
  - Nokia, ASB, Qualcomm

**Agreements**

**For a 1-symbol CORESET with interleaving,**

- At least REG bundle size = 2 is supported
- **Working assumption:**
  - REG bundle size = 6 is also supported
  - FFS whether configuration between 2 and 6 is explicit or implicit
  - Precoder granularity in frequency domain is equal to the REG bundle size in the frequency domain

**For a 2 or 3 symbol CORESET with interleaving,**

- At least REG bundle size = CORESET length is supported
- **Working assumption:**
  - REG bundle size = 6 is also supported
  - FFS whether configuration between CORESET length and 6 is explicit or implicit
  - Precoder granularity in frequency domain is equal to the REG bundle size in the frequency domain

(Note: REG bundle size = REGs in frequency domain x symbols in time domain)

The document was presented by ... from ...

**Discussion:** .

**Decision:** The document is noted.

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|                            |                                                            |                                     |
|----------------------------|------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710011</a> | Overview of PDCCH-CCE-REG mapping and REG bundling         | Huawei, HiSilicon                   |
| <a href="#">R1-1710074</a> | NR-PDCCH mapping structure                                 | CATT                                |
| <a href="#">R1-1710104</a> | CCE mapping with REG bundling                              | ZTE                                 |
| <a href="#">R1-1710148</a> | NR-PDCCH CCE-to-REG mapping with REG bundling              | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710303</a> | Discussion on NR-PDCCH structure                           | LG Electronics                      |
| <a href="#">R1-1710366</a> | Discussion on NR-REG to NR-CCE time-/frequency mapping     | Spreadtrum Communications           |
| <a href="#">R1-1710390</a> | Discussion on REG bundling size/structure                  | vivo                                |
| <a href="#">R1-1710614</a> | NR-PDCCH mapping structure and REG bundle size             | ETRI                                |
| <a href="#">R1-1710691</a> | Resource Mapping for PDCCH                                 | Samsung                             |
| <a href="#">R1-1710788</a> | Discussions on NR-PDCCH Structure                          | MediaTek Inc.                       |
| <a href="#">R1-1710903</a> | PDCCH structure for NR                                     | NEC                                 |
| <a href="#">R1-1710944</a> | On the impact of multi-beam operation on PDCCH structure   | InterDigital, Inc.                  |
| <a href="#">R1-1710973</a> | Discussion on REG bundle size                              | ITRI                                |
| <a href="#">R1-1710978</a> | On the PDCCH construction for NR                           | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711088</a> | Views on remaining issues of resource mapping for NR-PDCCH | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711177</a> | PDCCH structure                                            | Qualcomm Incorporated               |
| <a href="#">R1-1711235</a> | REG bundling for NR PDCCH                                  | Sharp                               |
| <a href="#">R1-1711273</a> | Design of resource mapping and NR-PDCCH                    | HTC Corporation                     |
| <a href="#">R1-1711280</a> | On CCE and PDCCH mapping                                   | Motorola Mobility, Lenovo           |
| <a href="#">R1-1711327</a> | The relation among REG, CCE, and CORESET                   | Panasonic                           |
| <a href="#">R1-1711475</a> | Views on CCE-to-REG mapping                                | KT Corp.                            |
| <a href="#">R1-1711477</a> | On NR-PDCCH Structure                                      | Ericsson                            |

**5.1.3.1.1.2 RS structure/mapping**

*Including possible wideband RS.*

**DMRS mapping**

- Option 1: DMRS is mapped on all REGs on all the OFDM symbols of a given PDCCH candidate
  - Supported by Ericsson, Nokia, ASB, ITRI, Huawei, HiSilicon, OPPO, Intel, ETRI, KT, Lenovo, MotM, Panasonic, NTT DOCOMO, CATT, MediaTek, CMCC, Sony, Spectrum
- Option 2 DMRS is mapped on all REGs on the first OFDM symbol of a given PDCCH candidate
  - Samsung, ZTE, Huawei, HiSilicon, vivo, InterDigital, LGE, Qualcomm, Sharp, Intel, NEC, Panasonic
- Option 3 DMRS is mapped on all REGs on the first and last OFDM symbols of a given PDCCH candidate
  - DOCOMO, CATT, MediaTek, CMCC, vivo, Sony, Spectrum

**Agreement**

- DMRS is mapped on all REGs on all the OFDM symbols of a given PDCCH candidate
  - The DMRS density is the same on all REGs

|                            |                                                              |                                     |
|----------------------------|--------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709950</a> | DMRS for NR-PDCCH                                            | Huawei, HiSilicon                   |
| <a href="#">R1-1710075</a> | Further details of NR-PDCCH RS structure                     | CATT                                |
| <a href="#">R1-1710105</a> | Issues regarding DMRS structure and mapping                  | ZTE                                 |
| <a href="#">R1-1710149</a> | On NR PDCCH RS design                                        | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710304</a> | Discussion on reference signal for NR-PDCCH                  | LG Electronics                      |
| <a href="#">R1-1710389</a> | DMRS design for NR-PDCCH                                     | vivo                                |
| <a href="#">R1-1710542</a> | On DM-RS design for NR PDCCH                                 | Intel Corporation                   |
| <a href="#">R1-1710615</a> | DMRS design for NR-PDCCH                                     | ETRI                                |
| <a href="#">R1-1710692</a> | DMRS Structure for PDCCH                                     | Samsung                             |
| <a href="#">R1-1710778</a> | On DMRS Design for NR-PDCCH                                  | CMCC                                |
| <a href="#">R1-1710789</a> | RS structures for NR-PDCCH                                   | MediaTek Inc.                       |
| <a href="#">R1-1710945</a> | On REG bundling and associated DMRS                          | InterDigital, Inc.                  |
| <a href="#">R1-1710979</a> | On the remaining details of PDCCH reference signal structure | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711089</a> | Views on DM-RS design for NR-PDCCH                           | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711178</a> | RS for DL control channel                                    | Qualcomm Incorporated               |
| <a href="#">R1-1711328</a> | RS mapping of NR-PDCCH                                       | Panasonic                           |
| <a href="#">R1-1711478</a> | On DM-RS for NR-PDCCH                                        | Ericsson                            |

**5.1.3.1.2 Search space**

**5.1.3.1.2.1 CORESET configuration**

*Including relationship between CORESET and search space.*

From offline discussion...

**Agreements:**

- For a CORESET which is configured by UE-specific higher-layer signalling, at least following are configured.
  - Frequency-domain resources, which may or may not be contiguous
    - Each contiguous part of a CORESET is equal to or more than the size of REG-bundle in frequency
      - FFS: exact size and number of contiguous parts for a CORESET
  - Starting OFDM symbol
  - Time duration
  - REG bundle size if the configuration is explicit
  - Transmission type (i.e., interleaved or non-interleaved)
  - More parameters may be added if agreed
- For a CORESET which is configured by UE-specific higher-layer signalling, at least following is configured.
  - Monitoring periodicity
    - FFS: it is a configuration per CORESET or per one or a set of PDCCH candidates
    - FFS: relation with DRX
    - FFS: default/fallback value

|                            |                                                                                 |                       |                       |
|----------------------------|---------------------------------------------------------------------------------|-----------------------|-----------------------|
| <a href="#">R1-1709951</a> | Configuration of control resource set                                           | Huawei, HiSilicon     |                       |
| <a href="#">R1-1710076</a> | Configuration aspects of the NR-PDCCH                                           | CATT                  |                       |
| <a href="#">R1-1710106</a> | NR-PDCCH CORESET configuration                                                  | ZTE                   |                       |
| <a href="#">R1-1710150</a> | PDCCH CORESET configuration and UE procedure on NR-PDCCH monitoring             |                       | Guangdong OPPO        |
| Mobile Telecom.            |                                                                                 |                       |                       |
| <a href="#">R1-1710305</a> | Discussion on CORESET configuration                                             | LG Electronics        |                       |
| <a href="#">R1-1710543</a> | CORESETs for NR PDCCH                                                           | Intel Corporation     |                       |
| <a href="#">R1-1710693</a> | CORESET Configurations                                                          | Samsung               |                       |
| <a href="#">R1-1710779</a> | Discussion on CORESET duration                                                  | CMCC                  |                       |
| <a href="#">R1-1710790</a> | Discussions on CORESET configurations                                           | MediaTek Inc.         |                       |
| <a href="#">R1-1710872</a> | CORESET Monitoring Under Dynamic Change of BWP                                  | InterDigital, Inc.    |                       |
| <a href="#">R1-1710980</a> | On the PDCCH control resource set and its connection to the search space for NR |                       | Nokia, Alcatel-Lucent |
| Shanghai Bell              |                                                                                 |                       |                       |
| <a href="#">R1-1711090</a> | Views on control resource set configuration for NR-PDCCH                        | NTT DOCOMO, INC.      |                       |
| <a href="#">R1-1711179</a> | Control resource set and search space                                           | Qualcomm Incorporated |                       |
| <a href="#">R1-1711272</a> | Configuration for control resource sets and search spaces                       | HTC Corporation       |                       |
| <a href="#">R1-1711329</a> | Configuration of CORESET                                                        | Panasonic             |                       |
| <a href="#">R1-1711368</a> | Discussion on the search space design                                           | Xiaomi technology     |                       |
| <a href="#">R1-1711479</a> | On Configuration of Control Resource Sets                                       | Ericsson              |                       |

**5.1.3.1.2.2 Search space design**

*Including possible nested search space. Both common search space and UE-specific search space should be considered.*

**R1-1711754 WF on NR PDCCH Blind decodes vivo, Samsung**

**Agreements:**

- For PDCCH blind decoding, at least for the non-initial access, at least the following can be configured:
  - Number of PDCCH candidates per CCE aggregation level, per DCI format size that the UE monitors
  - Set of aggregation levels
    - FFS explicit or implicit configuration
  - Set of DCI format sizes
    - FFS explicit or implicit configuration
  - FFS: per CORESET not used for initial access or search space
  - FFS: Signalling details
  - Note that the number of candidates can be zero
- UE blind decoding capability is known by NW
  - FFS: How the capability is derived

**Possible proposals from offline:**

- FFS: UE PDCCH blind decoding capability is defined in NR
  - FFS: The capability can be defined as the maximum number of blind decodes that a UE can support within a time unit.
  - FFS: the value of the time unit

|                            |                                                               |                                     |
|----------------------------|---------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710306</a> | Discussion on hierarchical search space structure             | LG Electronics                      |
| <a href="#">R1-1710544</a> | NR PDCCH: Search spaces and monitoring behavior               | Intel Corporation                   |
| <a href="#">R1-1709952</a> | Search space design                                           | Huawei, HiSilicon                   |
| <a href="#">R1-1710077</a> | Search space design for NR-PDCCH                              | CATT                                |
| <a href="#">R1-1710107</a> | Search space design for NR-PDCCH                              | ZTE                                 |
| <a href="#">R1-1710151</a> | NR PDCCH search space design with nested structure            | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710393</a> | Discussion on search space design supporting dynamic DCI size | vivo                                |
| <a href="#">R1-1710694</a> | Search Space Design                                           | Samsung                             |
| <a href="#">R1-1710780</a> | Discussion on NR-PDCCH search space design                    | CMCC                                |
| <a href="#">R1-1710946</a> | Search space design for eMBB-URLLC Multiplexing               | InterDigital, Inc.                  |
| <a href="#">R1-1710981</a> | On the search space design and UE blind detection             | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711091</a> | Views on search space design for NR-PDCCH                     | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711180</a> | Nested search space design                                    | Qualcomm Incorporated               |
| <a href="#">R1-1711321</a> | PDCCH BD reduction                                            | Panasonic                           |
| <a href="#">R1-1711330</a> | Search space design                                           | Panasonic                           |
| <a href="#">R1-1711480</a> | On Search Space and Blind Decoding Design                     | Ericsson                            |

#### 5.1.3.1.2.3 Multi-beam operation for PDCCH

|                            |                                                                          |                                     |
|----------------------------|--------------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710012</a> | Multi-beam operation for PDCCH                                           | Huawei, HiSilicon                   |
| <a href="#">R1-1710078</a> | Discussion on multi-beam operation for NR-PDCCH                          | CATT                                |
| <a href="#">R1-1710108</a> | Supporting Multi-beam in NR-PDCCH                                        | ZTE                                 |
| <a href="#">R1-1710152</a> | Search space design consideration for NR PDCCH with BF                   | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710307</a> | Discussion on multi-beam operation for NR-PDCCH                          | LG Electronics                      |
| <a href="#">R1-1710437</a> | Control channel configuration for multi-TRP and multi-panel transmission | AT&T                                |
| <a href="#">R1-1710545</a> | Multi-beam operation for NR PDCCH                                        | Intel Corporation                   |
| <a href="#">R1-1710616</a> | NR-PDCCH for broadcast information delivery                              | ETRI                                |
| <a href="#">R1-1710695</a> | Multibeam Transmission for PDCCH                                         | Samsung                             |
| <a href="#">R1-1710982</a> | PDCCH support for multi-beam system                                      | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711092</a> | Views on multi-beam based NR-PDCCH                                       | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711181</a> | Multi-beam control operation                                             | Qualcomm Incorporated               |
| <a href="#">R1-1711395</a> | Discussion on Multi-beam Operation for PDCCH                             | Convida Wireless LLC                |
| <a href="#">R1-1711481</a> | On Multi-beam and Multi-TRP Operation for PDCCH                          | Ericsson                            |

#### 5.1.3.1.3 Resource sharing between PDCCH and PDSCH

##### [R1-1711921](#) WF on PDCCH /PDSCH resource sharing ZTE, Nokia, Ericsson, LG, Panasonic, Qualcomm, Sharp

- The following is supported for dynamic resource reuse for PDSCH
  - RRC signaling to indicate the time and frequency resources for which the dynamic signaling below indicates resources for which PDSCH may or may not be mapped
    - FFS whether the time and frequency resources can correspond to resources used for purposes other than CORESETs configured for monitoring PDCCH by the UE or by other UEs
  - Dynamic signaling that
    - Indicates which of the time and frequency resources configured by the RRC signaling can be mapped to PDSCH (Details FFS) and
    - Can additionally indicate which of the time and frequency resources not indicated by the above RRC signaling and that are part of the CORESETs configured to the UE for PDCCH monitoring are mapped to PDSCH (Details FFS)
    - Note: Dynamic signaling overhead will limit the number of resources that can be dynamically indicated for reuse of resources. FFS the limit on the overhead.
  - UE can assume that the reused resources shall be within the frequency domain spanned by the resources allocated for the PDSCH
  - UE assumes that resources used for reception of PDCCH scheduling PDSCH are not reused
    - FFS: Reuse of resources used for other control signaling, e.g., common search space, group common PDCCH, broadcast PDCCH, UL grant

**Decision:** The document is noted.

|                            |                                                              |                   |
|----------------------------|--------------------------------------------------------------|-------------------|
| <a href="#">R1-1711482</a> | On Data Transmission in Control Resource Sets                | Ericsson          |
| <a href="#">R1-1710546</a> | Dynamic resource sharing between control and data            | Intel Corporation |
| <a href="#">R1-1709956</a> | Resource multiplexing of downlink control and data           | Huawei, HiSilicon |
| <a href="#">R1-1710079</a> | Flexible reuse of DL control resources for data transmission | CATT              |

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|                            |                                                        |                                     |
|----------------------------|--------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710109</a> | Resource sharing between PDCCH and PDSCH               | ZTE                                 |
| <a href="#">R1-1710153</a> | On resource sharing between PDCCH and PDSCH            | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710308</a> | Discussion on multiplexing between control and data    | LG Electronics                      |
| <a href="#">R1-1710617</a> | Discussion on dynamic indication of PDSCH start symbol | ETRI                                |
| <a href="#">R1-1710696</a> | Multiplexing NR-PDCCH and PDSCH                        | Samsung                             |
| <a href="#">R1-1710791</a> | Resource sharing between PDCCH and PDSCH               | MediaTek Inc.                       |
| <a href="#">R1-1710873</a> | PDSCH starting position in NR                          | InterDigital, Inc.                  |
| <a href="#">R1-1710983</a> | Resource sharing between PDCCH and PDSCH in NR         | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711093</a> | Resource sharing between data and control channels     | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711182</a> | Resource reuse for data in DL control region           | Qualcomm Incorporated               |
| <a href="#">R1-1711236</a> | Indication of PDSCH starting position for NR           | Sharp                               |
| <a href="#">R1-1711320</a> | Resource sharing between PDCCH and PDSCH               | Panasonic                           |
| <a href="#">R1-1711354</a> | PDSCH starting position indication for NR              | WILUS Inc.                          |

**5.1.3.1.4 Group-common PDCCH**

|                            |                                                                  |      |
|----------------------------|------------------------------------------------------------------|------|
| <a href="#">R1-1710968</a> | Summary of [89-20] email discussion on Group-common PDCCH for NR | CATT |
|----------------------------|------------------------------------------------------------------|------|

**Agreements:**

- In 'Slot format related information', 'Empty' is not indicated explicitly.
- Note: RAN1 specification ensures that UE(s) is/are aware of which resources can be for 'gap for DL-UL switching' and/or 'gap'
- Note: RAN1 specification ensures that UE(s) is/are aware of which resources are for 'CSI/interference measurement'.

**Agreements:**

- UE is configured with a CORESET to monitor group-common PDCCH.
- When configured, the group-common PDCCH follows the same CORESET configuration (e.g., REG-to-CCE mapping) of the CORESET.
  - A group-common PDCCH is formed by an integer number of CCEs.
- The CORESET for the monitored group-common PDCCH carrying SFI can be the same or different from the CORESET for the monitored PDCCH for other types of control signalling.

**Friday**

**R1-1711991**      **WF on contents of the group-common PDCCH**      CATT, NEC

**Agreement:** Prioritize discussion of SFI functionality of a group-common PDCCH.

- Further work will be on group-common PDCCH carrying the SFI at least in August meeting.

**5.1.3.1.4.1 Structure of group-common PDCCH**

*Limit to 1 contributions per 1 company/organization/university*

|                            |                                                       |                                     |
|----------------------------|-------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709954</a> | Structure of group-common PDCCH                       | Huawei, HiSilicon                   |
| <a href="#">R1-1710080</a> | Channel structure for group-common PDCCH              | CATT                                |
| <a href="#">R1-1710309</a> | Discussion on the structure of group common PDCCH     | LG Electronics                      |
| <a href="#">R1-1710438</a> | Group common PDCCH Structure for NR                   | AT&T                                |
| <a href="#">R1-1710547</a> | Group-common PDCCH: Physical structure                | Intel Corporation                   |
| <a href="#">R1-1710697</a> | UE-Group Common PDCCH Structure                       | Samsung                             |
| <a href="#">R1-1710792</a> | Structure of group-common PDCCH                       | MediaTek Inc.                       |
| <a href="#">R1-1710857</a> | On structure of group-common PDCCH                    | Sony                                |
| <a href="#">R1-1710947</a> | Group-common PDCCH design considerations              | InterDigital, Inc.                  |
| <a href="#">R1-1710984</a> | On the structure of group common PDCCH in NR          | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711094</a> | Views on structure of group-common PDCCH              | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711183</a> | Structure of group common PDCCH                       | Qualcomm Incorporated               |
| <a href="#">R1-1711237</a> | Group common PDCCH structure for NR                   | Sharp                               |
| <a href="#">R1-1711331</a> | Discussion on structure of group common PDCCH         | Panasonic                           |
| <a href="#">R1-1711355</a> | Discussion on structure for group-common PDCCH for NR | WILUS Inc.                          |
| <a href="#">R1-1711370</a> | Discussion on the search space design                 | Xiaomi Technology                   |
| <a href="#">R1-1711390</a> | Discussion on the structure of group common PDCCH     | Xiaomi Technology                   |
| <a href="#">R1-1711483</a> | On Group-Common PDCCH Structure and Configuration     | Ericsson                            |

**5.1.3.1.4.2 Contents of group-common PDCCH**

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*Limit to 1 contributions per 1 company/organization/university*

[R1-1709953](#) Contents of group-common PDCCH Huawei, HiSilicon  
[R1-1710081](#) Contents of the group-common PDCCH CATT  
[R1-1710110](#) Group-common PDCCH design consideration ZTE  
[R1-1710310](#) Discussion on the contents of group common PDCCH LG Electronics  
[R1-1710391](#) Discussion on group common PDCCH and BD vivo  
[R1-1710439](#) On the contents of group common PDCCH AT&T  
[R1-1710548](#) Group-common PDCCH: Contents Intel Corporation  
[R1-1710698](#) Functionalities of UE-Common PDCCH Samsung  
[R1-1710793](#) Contents of group-common PDCCH MediaTek Inc.  
[R1-1710856](#) On contents of group-common PDCCH Sony  
[R1-1710907](#) Control indicator in group-common PDCCH for UE power saving Apple Inc.  
[R1-1710985](#) On the contents of group common PDCCH in NR Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1711095](#) Views on contents of group-common PDCCH NTT DOCOMO, INC.  
[R1-1711184](#) Contents of group common PDCCH Qualcomm Incorporated  
[R1-1711238](#) Group common PDCCH contents for NR Sharp  
[R1-1711281](#) NR Group-common PDCCH contents and structure Motorola Mobility, Lenovo  
[R1-1711332](#) Discussion on contents of group common PDCCH Panasonic  
[R1-1711356](#) Discussion on contents for group-common PDCCH for NR WILUS Inc.  
[R1-1711369](#) Discussion on the content of group common PDCCH Xiaomi technology  
[R1-1711484](#) On the Content of Group-Common PDCCH Ericsson

**5.1.3.1.4.3 UE behaviour related to group-common PDCCH**

*Limit to 1 contributions per 1 company/organization/university*

[R1-1710082](#) Configuration and monitoring of the group-common PDCCH CATT  
[R1-1710154](#) Impact on common channel reception to PDCCH design Guangdong OPPO Mobile Telecom.  
[R1-1710311](#) Discussion on UE behavior for the group common PDCCH LG Electronics  
[R1-1710368](#) The relation among UE-specific DCI, GC-PDCCH, and semi-static signaling Spreadtrum Communications  
[R1-1710440](#) UE behaviour for group common PDCCH AT&T  
[R1-1710476](#) UE behavior related to group-common PDCCH Huawei, HiSilicon  
[R1-1710549](#) Group-common PDCCH: UE behavior Intel Corporation  
[R1-1710699](#) UE Behavior for UE-Group Common PDCCH Detection Samsung  
[R1-1710781](#) UE behaviour related to dynamic and semi-static configured resources CMCC  
[R1-1710794](#) UE behaviour for group-common PDCCH MediaTek Inc.  
[R1-1710906](#) UE behavior on UL/DL transmission direction determination in NR TDD Apple Inc.  
[R1-1710948](#) UE behaviour related to CORESET(s) configured by PBCH InterDigital, Inc.  
[R1-1710986](#) On the UE behaviour related to group common PDCCH in NR Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1711096](#) Views on UE behavior for group-common PDCCH NTT DOCOMO, INC.  
[R1-1711185](#) UE behaviour related to group common PDCCH Qualcomm Incorporated  
[R1-1711239](#) Group common PDCCH monitoring for NR Sharp  
[R1-1711333](#) Discussion on DL/UL transmission direction Panasonic  
[R1-1711357](#) Discussion on UE behavior for group-common PDCCH for NR WILUS Inc.  
[R1-1711485](#) On UE Procedures Related to Group-Common PDCCH Ericsson

**5.1.3.1.5 Ultra-reliable part of URLLC for DL control**

*Identify necessary techniques for physical downlink control channel to meet the URLLC requirements set forth by TR38.913.*

[R1-1709993](#) UE procedure of PDCCH monitoring for URLLC Huawei, HiSilicon  
[R1-1710111](#) NR-PDCCH for supporting URLLC ZTE  
[R1-1710155](#) DL control channel design for URLLC Guangdong OPPO Mobile Telecom.  
[R1-1710312](#) Discussion on DL control with ultra-reliability LG Electronics  
[R1-1710550](#) Satisfying ultra-reliability targets for NR PDCCH Intel Corporation  
[R1-1710700](#) PDCCH Design for URLLC Samsung  
[R1-1710862](#) Reliable PDCCH operation for URLLC Sony  
[R1-1710874](#) Considerations for ultra-reliable DCI transmission InterDigital, Inc.  
[R1-1710949](#) On Ultra-reliable and low-latency PDCCH InterDigital, Inc.  
[R1-1710987](#) On the URLLC specific aspects for DL control channel Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1711097](#) DL control channel design for URLLC NTT DOCOMO, INC.  
[R1-1711338](#) Consideration on physical downlink control channel for URLLC CATR  
[R1-1711486](#) On PDCCH for Ultra-Reliable Transmission Ericsson  
[R1-1711487](#) On the Performance Evaluation of PDCCH for Ultra-Reliable Transmission Ericsson  
[R1-1711552](#) Management of URLLC DL control channel efficiency and reliability Qualcomm Incorporated

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**5.1.3.1.6 Other**

The document was presented by ... from ...

**Discussion:** .

**Decision:** The document is noted.

[R1-1710395](#) DCI content size and compression vivo

[R1-1709955](#) UE-specific DCI contents in NR Huawei, HiSilicon  
[R1-1709957](#) Dynamic and semi-static DL/UL resource partition Huawei, HiSilicon  
[R1-1709986](#) PDCCH reliability for URLLC Huawei, HiSilicon  
[R1-1710460](#) Resource sharing between NR-PDCCH and data Huawei, HiSilicon  
[R1-1710467](#) DCI design for URLLC Huawei, HiSilicon  
[R1-1710701](#) Transmit Diversity for PDCCH Samsung  
[R1-1710702](#) Bandwidth Part Hopping for CORESETS Samsung  
[R1-1710988](#) On the usage of PDCCH DMRS as a complementary synchronization signal in DL Nokia, Alcatel-Lucent  
Shanghai Bell  
[R1-1711186](#) Common control resource set signaling in MIB Qualcomm Incorporated  
[R1-1711187](#) Advanced Grant Indication for UE Power Saving Qualcomm Incorporated  
[R1-1711413](#) CCE-to-REG mapping Huawei, HiSilicon  
[R1-1711414](#) PDCCH-to-CCE mapping Huawei, HiSilicon  
[R1-1711415](#) NR DL control capacity and blocking probability Huawei, HiSilicon  
[R1-1711423](#) PDCCH monitoring for slot-aggregation and cross-slot scheduling Huawei, HiSilicon  
[R1-1711431](#) HARQ feedback indication design for UL grant-free transmission Huawei, HiSilicon  
[R1-1711433](#) Discussion on remaining frequency resources on symbol carrying CORESET Huawei, HiSilicon  
[R1-1711453](#) DL and UL Assignment for NR TDD Samsung  
[R1-1711454](#) Slot Reconfiguration for Low Latency in TDD Samsung  
[R1-1711455](#) Indication of Reserved Resources Samsung

**5.1.3.2 Physical uplink control channel**

**5.1.3.2.1 PUCCH in short-duration**

**Wednesday offline summary:**

Discussions:

- Companies supporting option 4 (sequence selection)
  - Qualcomm, Ericsson, MediaTek, ZTE, LG, Interdigital, Motorola mobility, Lenovo, DOCOMO
  - For SR only case: Intel, ZTE
- Companies supporting option 1 (FDM RS and UCI)
  - Option 1-1: FDM two sequences, one sequence is modulated with UCI
  - Option 1-2: based on single sequence, modulate even tone of a single sequence.
  - Modulate can be BPSK or QPSK
  - Samsung (Option 1-1), ZTE (option 1-2), Huawei, HiSilicon (Option 1-2), intel (option 1-1), Nokia (option 1-1), CATT (?)
- Advantages of option 4 (sequence selection)
  - Lower PAPR than option 1
  - With 2 bits payload, better link level performance for 1 UE
    - For 3 UEs, one company provided link level simulation showing option 4 has better performance than option 1. ([R1-1711649](#))
  - MUX capacity is 6 UEs for 1 bit UCI, MUX capacity 3 UEs for 2 bits UCI
  - If multiplex with DMRS other UEs short PUCCH, can achieve flexible PUCCH allocation and higher multiplexing capacity.
  - Better MUX capacity for SR than 1-2.
- Advantages of option 1 (FDM RS and UCI)
  - Lower PAPR than LTE is only for option 1-2, but with worse cross-correlation than LTE.
  - MUX capacity of 6 UEs for 1 bit
  - Potential MUX capacity of 6 UEs for 2 bits

Qualcomm and Ericsson comment maximizing UE MUX capacity is not main design target for short PUCCH. Single UE performance is more important.

**Thursday**

**Agreements:**

- **Working assumption:**
  - For short-PUCCH with UCI of up to 2 bits (with/without SR), option 4 is supported.

- No more short-PUCCH format is supported for short-PUCCH in the WID scope.

#### 5.1.3.2.1.1 Short-PUCCH for UCI of up to 2 bits

|                            |                                                                                |                                     |
|----------------------------|--------------------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709958</a> | Short PUCCH for up to 2 UCI bits                                               | Huawei, HiSilicon                   |
| <a href="#">R1-1710083</a> | Short PUCCH for small UCI payloads                                             | CATT                                |
| <a href="#">R1-1710112</a> | On short PUCCH for up to 2 bits UCI                                            | ZTE                                 |
| <a href="#">R1-1710156</a> | Discussion on short PUCCH for up to 2 UCI bits                                 | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710313</a> | Design of short NR-PUCCH for up to 2 UCI bits                                  | LG Electronics                      |
| <a href="#">R1-1710386</a> | Discussion on short-PUCCH up to 2-bit                                          | vivo                                |
| <a href="#">R1-1710551</a> | Performance of short PUCCH format for 1~2 bits HARQ-ACK                        | Intel Corporation                   |
| <a href="#">R1-1710588</a> | Results for short PUCCH for UCI of up to 2 bits                                | IITH                                |
| <a href="#">R1-1710618</a> | Short-PUCCH for UCI of up to 2 bits                                            | ETRI                                |
| <a href="#">R1-1710703</a> | Short PUCCH for UCI of 1 or 2 Bits                                             | Samsung                             |
| <a href="#">R1-1710819</a> | Performance evaluation on channel structure of short PUCCH for 1 or 2 bits UCI | MediaTek Inc.                       |
| <a href="#">R1-1710893</a> | On the short PUCCH design for small UCI payloads                               | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1710930</a> | Discussion on 1-symbol NR-PUCCH for UCI of up to 2 bits                        | Panasonic Corporation               |
| <a href="#">R1-1710950</a> | Evaluations of 1-symbol short-PUCCH with 1 or 2 bit(s)                         | InterDigital, Inc.                  |
| <a href="#">R1-1711098</a> | Sequence-based PUCCH for UCI of up to 2 bits                                   | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711188</a> | Channelization of 1-symbol short PUCCH with 1 or 2 bits payload                | Qualcomm Incorporated               |
| <a href="#">R1-1711242</a> | Short PUCCH structure for UCI of up to 2 bits                                  | Sharp                               |
| <a href="#">R1-1711282</a> | Short PUCCH for up to 2 bit UCI                                                | Motorola Mobility, Lenovo           |
| <a href="#">R1-1711358</a> | Short PUCCH structure for UCI of up to 2 bits                                  | WILUS Inc.                          |
| <a href="#">R1-1711488</a> | On the Design of Short PUCCH for 1-2 UCI bits                                  | Ericsson                            |

#### 5.1.3.2.1.2 Short-PUCCH for UCI of more than 2 bits

|                            |                                                                      |                                     |
|----------------------------|----------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709959</a> | Short PUCCH with more than 2 UCI bits                                | Huawei, HiSilicon                   |
| <a href="#">R1-1710084</a> | Short PUCCH for moderate and large UCI payloads                      | CATT                                |
| <a href="#">R1-1710113</a> | On short-PUCCH for more than 2 bits                                  | ZTE                                 |
| <a href="#">R1-1710157</a> | Discussion on short PUCCH for more than 2 UCI bits                   | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710226</a> | Discussion on 2-symbol Short PUCCH with More Than 2 Bits             | Beijing Xinwei Telecom Techn.       |
| <a href="#">R1-1710253</a> | Discussion on extending of scheduling request                        | NEC Corporation                     |
| <a href="#">R1-1710314</a> | Design of short NR-PUCCH for more than 2 UCI bits                    | LG Electronics                      |
| <a href="#">R1-1710367</a> | Discussion on 1-symbol PUCCH design                                  | Spreadtrum Communications           |
| <a href="#">R1-1710387</a> | Discussion on short-PUCCH more than 2-bit                            | vivo                                |
| <a href="#">R1-1710408</a> | On pre-DFT RS/UCI multiplexing for PUCCH in short duration           | Mitsubishi Electric RCE             |
| <a href="#">R1-1710552</a> | 2-symbol NR PUCCH                                                    | Intel Corporation                   |
| <a href="#">R1-1710589</a> | Further discussion on pre-DFT multiplexing for short PUCCH           | IITH                                |
| <a href="#">R1-1710619</a> | Short-PUCCH for UCI of more than 2 bits                              | ETRI                                |
| <a href="#">R1-1710704</a> | Short PUCCH for UCI of more than 2 Bits                              | Samsung                             |
| <a href="#">R1-1710894</a> | Short PUCCH design for UCI of more than 2 bits                       | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711099</a> | FDM-based PUCCH for UCI of more than 2 bits                          | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711189</a> | Channelization of 1-symbol short PUCCH with more than 2 bits payload | Qualcomm Incorporated               |
| <a href="#">R1-1711243</a> | Short PUCCH structure for UCI of more than 2 bits                    | Sharp                               |
| <a href="#">R1-1711489</a> | On the Design of Short PUCCH for more than 2 UCI bits                | Ericsson                            |

#### 5.1.3.2.2 PUCCH in long-duration

|                            |                                                                |          |
|----------------------------|----------------------------------------------------------------|----------|
| <a href="#">R1-1711677</a> | Summary of the E-mail Discussion [89-21]: On Long PUCCH for NR | Ericsson |
|----------------------------|----------------------------------------------------------------|----------|

[R1-1711834](#) WF on Long PUCCH Format with 1-2 UCI bits Ericsson, Huawei, HiSilicon, LG, ZTE, MediaTek, Panasonic, WILUS Inc., Intel, Vivo, Cohere Technologies, ETRI, Motorola mobility, Lenovo, CATT

##### Possible agreements:

- For a long PUCCH with up to 2 bits UCI:
  - For location of DMRS select from one of the following alternative in the next meeting:
    - Alt 1: DMRS always occurs in even [or odd] symbols in the long PUCCH
    - Alt 2: DMRS always occurs in even [or odd] symbols in the slot
    - Alt 3: DMRS occurs in one or more sets of consecutive symbols within the long PUCCH. The occasion of DMRS symbols depends on the duration of long PUCCH.
    - Alt 4: DMRS occurs in one or more sets of consecutive symbols within the long PUCCH. The occasion of DMRS symbols depends on the duration of long PUCCH but fixed within the slot

##### Possible agreements:

- For a long PUCCH with up to 2 bits UCI:
  - The DM-RS symbol(s) are formed as follows:

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- DMRS for a PUCCH is a cyclic shift of a base sequence (e.g. a CAZAC or computer generated sequence) in frequency domain with Orthogonal Cover Code (OCC) in time.
- The data symbols are formed as the following:
  - The modulated UCI bit(s) is multiplied with a cyclic shift of a base sequence (e.g. a CAZAC or computer generated sequence) in frequency domain with Orthogonal Cover Code (OCC) in time.
    - Note: BPSK and QPSK modulations for 1 and 2 UCI bits, respectively.

**Thursday (offline)**

**[R1-1711912](#) WF on Long PUCCH Format with 1-2 UCI bits Ericsson, Huawei, HiSilicon, LG, ZTE, MediaTek, Panasonic, WILUS Inc., Intel, Vivo, Cohere Technologies, ETRI, Motorola mobility, Lenovo, CATT, Qualcomm**

**Agreements:**

- For a long PUCCH with up to 2 bits UCI:
  - **Working assumption:**
    - DMRS always occurs in every other symbols in the long PUCCH
      - FFS: even or odd symbols
    - The working assumption can be revisited if an issue is found in terms of transient period.

**Agreements:**

- The DMRS symbol(s) are formed as follows:
  - DMRS for a PUCCH is a sequence (e.g. a cyclic shift of a CAZAC or computer generated sequence) in frequency domain with Orthogonal Cover Code (OCC) in time.
- Note: The data symbols are formed as the following:
  - The modulated UCI bit(s) is multiplied with a sequence (e.g. a cyclic shift of a CAZAC or computer generated sequence) in frequency domain with Orthogonal Cover Code (OCC) in time.
    - BPSK and QPSK modulations for 1 and 2 UCI bits, respectively.
- Note: The usage of OCC for DMRS and UCI symbols is effectively disabled for differentiation of the users that are assigned with the same OCC.

**[R1-1711835](#) WF on Frequency Hopping for Long PUCCH Ericsson, MediaTek, Qualcomm, Panasonic, Intel, LG, NTT DOCOMO, Cohere Technologies, WILUS Inc., Huawei, HiSilicon, Samsung**

**Possible agreements:**

- For a long PUCCH with N symbols in a slot
  - At most one hop within a slot is supported.
    - FFS on how to enable or disable frequency hopping
  - In case of frequency hopping, the hop occurs at the end of the X-th symbol where
    - FFS between  $X = \text{floor}(N/2)$  or  $\text{ceil}(N/2)$

**Friday offline**

**Agreements:**

- For a PUCCH format for UCI with large payload with no multiplexing capacity within a slot:
  - The DMRS and UCI are mapped to different symbols.
  - For intra-slot frequency-hopping, one or two DMRS symbol(s) is/are mapped on each frequency-hop of the long-PUCCH.
    - Opt.1: one DMRS per frequency-hop
      - The location is around the middle of the frequency-hop
    - Opt.2: one or two DMRS per frequency-hop
      - FFS: the location of the DMRS symbol(s)
  - The DMRS symbol(s) are formed as follows:
    - DMRS for a PUCCH is a sequence (e.g. a cyclic shift of a CAZAC or computer generated sequence) in frequency domain.
  - **Working assumption:**
    - The symbols carrying UCI are formed as follows:
      - The UCI bits are encoded and scrambled, QPSK modulated and DFT pre-coded and mapped to the REs for the symbols carrying UCI of the long PUCCH

Friday: IITH commented during offline “Pi/2 BPSK modulation should be used for long duration PUCCH “, not captured due to concern from others

**[R1-1711996](#) WF on Long PUCCH Format for more than 2 UCI bits with Multi-user Multiplexing Ericsson**

**[R1-1709960](#) Overview of long PUCCH design Huawei, HiSilicon**

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[R1-1710590](#) Views on long-duration PUCCH IITH  
[R1-1711201](#) Uplink Resource for SR Qualcomm Incorporated

**5.1.3.2.2.1 Long-PUCCH for UCI of up to 2 bits**

*Focus on long-PUCCH within a slot.*

[R1-1709961](#) Long PUCCH structure for up to 2 bits with high multiplexing capacity Huawei, HiSilicon  
[R1-1710085](#) Long PUCCH for small UCI payloads CATT  
[R1-1710114](#) On long-PUCCH for up to 2 bits ZTE  
[R1-1710158](#) Discussion on long PUCCH for up to 2 UCI bits Guangdong OPPO Mobile Telecom.  
[R1-1710315](#) Design of long NR-PUCCH for up to 2 UCI bits LG Electronics  
[R1-1710553](#) Structure of 1~2 bits HARQ-ACK long PUCCH with TDM DMRS Intel Corporation  
[R1-1710598](#) Long PUCCH design for UCI of up to 2 bits Lenovo, Motorola Mobility  
[R1-1710705](#) Long PUCCH for UCI of 1 or 2 Bits Samsung  
[R1-1710895](#) On long PUCCH design for small payloads Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1710932](#) Discussion on channel structure of long-duration NR-PUCCH for UCI of up to 2 bits Panasonic Corporation  
[R1-1711100](#) Long-PUCCH for UCI of up to 2 bits NTT DOCOMO, INC.  
[R1-1711190](#) Long PUCCH design with 1 or 2 bits UCI payload Qualcomm Incorporated  
[R1-1711490](#) On the Design of Long PUCCH for 1-2 UCI bits Ericsson

**5.1.3.2.2.2 Long-PUCCH for UCI of more than 2 bits**

*Focus on long-PUCCH within a slot.*

[R1-1709962](#) Long PUCCH structure for moderate payload with some multiplexing capacity Huawei, HiSilicon  
[R1-1710086](#) Long PUCCH for moderate and large UCI payloads CATT  
[R1-1710115](#) On long-PUCCH for more than 2 bits ZTE  
[R1-1710316](#) Design of long NR-PUCCH for more than 2 UCI bits LG Electronics  
[R1-1710554](#) Long PUCCH for moderate and large payload Intel Corporation  
[R1-1710599](#) Long PUCCH design for UCI of more than 2 bits Lenovo, Motorola Mobility  
[R1-1710706](#) Long PUCCH for UCI of more than 2 Bits Samsung  
[R1-1710896](#) Long PUCCH design for UCI more than 2 bits Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1710934](#) Discussion on channel design of long-duration NR-PUCCH for UCI of more than 2 bits Panasonic Corporation  
[R1-1711101](#) Long-PUCCH for UCI of more than 2 bits NTT DOCOMO, INC.  
[R1-1711191](#) Long PUCCH design with more than 2 bits UCI payload Qualcomm Incorporated  
[R1-1711240](#) Slot structure of NR long PUCCH for more than 2 bits Sharp  
[R1-1711251](#) Design of Long-PUCCH for UCI of more than 2 bits Cohere Technologies  
[R1-1711491](#) On the Design of Long PUCCH for more than 2 UCI bits Ericsson

**5.1.3.2.2.3 Support of long-PUCCH over multiple slots**

[R1-1710013](#) Support of long-PUCCH over multiple slots Huawei, HiSilicon  
[R1-1710087](#) Design of multi-slot PUCCH transmission CATT  
[R1-1710116](#) Consideration on long-PUCCH over slots ZTE  
[R1-1710159](#) Slot aggregation and configuration for NR long PUCCH Guangdong OPPO Mobile Telecom.  
[R1-1710317](#) Support of long NR-PUCCH over multiple slots LG Electronics  
[R1-1710555](#) Long PUCCH over multiple slots Intel Corporation  
[R1-1710600](#) Long PUCCH over multiple slots Lenovo, Motorola Mobility  
[R1-1710620](#) Long-PUCCH over multiple slots ETRI  
[R1-1710707](#) Multi-Slot Long PUCCH Transmission Samsung  
[R1-1710935](#) Discussion on support of long-duration NR-PUCCH over multiple slots Panasonic Corporation  
[R1-1710976](#) NR Long PUCCH Requirements CMCC  
[R1-1711102](#) Long-PUCCH for more than one slot NTT DOCOMO, INC.  
[R1-1711192](#) Long PUCCH over multiple slots Qualcomm Incorporated  
[R1-1711241](#) Structure of NR long PUCCH over multiple slots Sharp  
[R1-1711252](#) Support of long-PUCCH over multiple slots Cohere Technologies  
[R1-1711492](#) On support of Long PUCCH over multiple slots Ericsson

**5.1.3.2.3 Transmit diversity for PUCCH**

[R1-1710160](#) Design of NR PUCCH with long duration Guangdong OPPO Mobile Telecom.  
[R1-1710222](#) Transmit diversity for DFTsOFDM-based PUCCH in long duration Mitsubishi Electric RCE  
[R1-1710254](#) Discussion on beam sweeping or beam changing of SR NEC Corporation

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[R1-1710318](#) Consideration on transmit diversity for NR-PUCCH LG Electronics  
[R1-1710441](#) Transmit diversity for PUCCH AT&T  
[R1-1710463](#) Transmit diversity for PUCCH Huawei, HiSilicon  
[R1-1710556](#) Transmit diversity for PUCCH Intel Corporation  
[R1-1710708](#) Transmit Diversity for PUCCH Samsung  
[R1-1710897](#) Transmit Diversity for PUCCH Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1710951](#) On transmit diversity for Long PUCCH InterDigital, Inc.  
[R1-1711193](#) Transmit diversity for PUCCH Qualcomm Incorporated  
[R1-1711493](#) On Transmit Diversity Schemes for PUCCH Ericsson

**5.1.3.2.4 Resource allocation for PUCCH**

[R1-1710088](#) Further discussion on PUCCH resource allocation CATT  
[R1-1710117](#) NR PUCCH resource allocation ZTE  
[R1-1710161](#) Resource indication for UL control channel Guangdong OPPO Mobile Telecom.  
[R1-1710237](#) PUCCH resource allocation Fujitsu  
[R1-1710319](#) Consideration on resource allocation for NR-PUCCH LG Electronics  
[R1-1710388](#) Discussion of PUCCH resource indication vivo  
[R1-1710461](#) PUCCH resource allocation for HARQ-ACK and SR Huawei, HiSilicon  
[R1-1710557](#) Resource allocation for PUCCH during initial access Intel Corporation  
[R1-1710709](#) Resource Allocation for PUCCH with HARQ-ACK Samsung  
[R1-1710782](#) Discussion on subband-based PUCCH resource allocation and indication CMCC  
[R1-1710898](#) On the resource allocation for PUCCH Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1710937](#) Discussion on resource allocation for uplink control channel Panasonic Corporation  
[R1-1711103](#) PUCCH resource allocation NTT DOCOMO, INC.  
[R1-1711194](#) Resource allocation for PUCCH Qualcomm Incorporated  
[R1-1711283](#) PUCCH resource allocation for HARQ-ACK feedback to Msg4 Motorola Mobility, Lenovo  
[R1-1711494](#) On Resource Allocation for PUCCH and Multiplexing PUCCH Formats Ericsson

**5.1.3.2.5 UCI multiplexing**

[R1-1709989](#) Discussion on UCI feedback for URLLC Huawei, HiSilicon

**5.1.3.2.5.1 UCI piggyback on PUSCH**

*For both PUSCH with CP-OFDM waveform and PUSCH with DFT-s-OFDM waveform*

[R1-1709963](#) UCI piggyback on PUSCH Huawei, HiSilicon  
[R1-1710089](#) Multiplexing of UCI and UL data on PUSCH CATT  
[R1-1710118](#) UCI multiplexing on PUSCH ZTE  
[R1-1710162](#) On UCI and data multiplexing in PUSCH Guangdong OPPO Mobile Telecom.  
[R1-1710320](#) Support of UCI piggyback on PUSCH for NR LG Electronics  
[R1-1710558](#) UCI multiplexing onto PUSCH Intel Corporation  
[R1-1710710](#) On UCI Multiplexing in PUSCH Samsung  
[R1-1710820](#) Discussion on UCI on PUSCH MediaTek Inc.  
[R1-1710899](#) UCI multiplexing on PUSCH Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1710939](#) Discussion on UCI on PUSCH Panasonic Corporation  
[R1-1710952](#) Considerations on UCI transmission on PUSCH InterDigital, Inc.  
[R1-1711104](#) UCI on PUSCH NTT DOCOMO, INC.  
[R1-1711195](#) UCI piggyback on PUSCH Qualcomm Incorporated  
[R1-1711359](#) Discussion on UCI piggyback on PUSCH WILUS Inc.  
[R1-1711495](#) On UCI on PUSCH Ericsson

**5.1.3.2.5.2 PUCCH-PUSCH multiplexing**

[R1-1710090](#) Simultaneous PUCCH-PUSCH transmission in NR CATT  
[R1-1710119](#) Multiplexing of PUSCH and short PUCCH ZTE  
[R1-1710163](#) Multiplexing of short PUCCH and long PUCCH Guangdong OPPO Mobile Telecom.  
[R1-1710321](#) Support of uplink channel multiplexing for NR LG Electronics  
[R1-1710464](#) Multiplexing of PUCCH and PUSCH Huawei, HiSilicon  
[R1-1710559](#) PUCCH-PUSCH multiplexing Intel Corporation  
[R1-1710711](#) On Simultaneous PUSCH and PUCCH Transmissions Samsung  
[R1-1710821](#) Discussion on PUCCH and PUSCH multiplexing MediaTek Inc.  
[R1-1710900](#) On the multiplexing between PUCCHs and PUSCH Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1710940](#) Discussion on UCI and data multiplexing Panasonic Corporation  
[R1-1711105](#) Multiplexing of PUCCH and PUSCH NTT DOCOMO, INC.

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|                            |                                                    |                       |
|----------------------------|----------------------------------------------------|-----------------------|
| <a href="#">R1-1711196</a> | Multiplexing of PUCCH and PUSCH                    | Qualcomm Incorporated |
| <a href="#">R1-1711244</a> | PUCCH and PUSCH multiplexing methods               | Sharp                 |
| <a href="#">R1-1711360</a> | Simultaneous transmission for long-PUCCH and PUSCH | WILUS Inc.            |
| <a href="#">R1-1711496</a> | On Simultaneous Transmission of PUSCH and PUCCH    | Ericsson              |

**5.1.3.2.6 Ultra-reliable part of URLLC for UL control**

*Identify necessary techniques for physical uplink control channel to meet the URLLC requirements set forth by TR38.913.*

|                            |                                                                        |                                     |
|----------------------------|------------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710120</a> | Analysis of URLLC reliability for uplink control channel               | ZTE                                 |
| <a href="#">R1-1710322</a> | Discussion on UL control with ultra-reliability                        | LG Electronics                      |
| <a href="#">R1-1710560</a> | On UL control channel design aspects for URLLC                         | Intel Corporation                   |
| <a href="#">R1-1710597</a> | Enhanced SR carried in UL control channel                              | Lenovo, Motorola Mobility           |
| <a href="#">R1-1710712</a> | PUCCH Design for URLLC                                                 | Samsung                             |
| <a href="#">R1-1710875</a> | Considerations for ultra-reliable UCI transmission                     | InterDigital, Inc.                  |
| <a href="#">R1-1710901</a> | On URLLC UCI transmission                                              | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1710942</a> | Discussion on SR for URLLC and multiplexing with HARQ-ACK              | Panasonic Corporation               |
| <a href="#">R1-1711106</a> | UL control channel design for URLLC                                    | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711497</a> | On PUCCH for Ultra-Reliable Transmission                               | Ericsson                            |
| <a href="#">R1-1711498</a> | On the Performance Evaluation of PUCCH for Ultra-Reliable Transmission | Ericsson                            |
| <a href="#">R1-1711548</a> | Resource allocation for PUCCH to support URLLC                         | Sequans Communications              |
| <a href="#">R1-1711553</a> | The necessity of reliable SR design for GF/GB UL URLLC transmission    | Qualcomm Incorporated               |

**5.1.3.2.7 Other**

|                            |                                                                      |                                     |
|----------------------------|----------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710561</a> | Configurations of various long PUCCH lengths                         | Intel Corporation                   |
| <a href="#">R1-1710562</a> | Short PUCCH formats for 1~2 bits UCI                                 | Intel Corporation                   |
| <a href="#">R1-1710563</a> | Cyclic shift assignment and CM for FDM DMRS and UCI                  | Intel Corporation                   |
| <a href="#">R1-1710564</a> | Short UL control channel early in a slot                             | Intel Corporation                   |
| <a href="#">R1-1710713</a> | Performance Results for Long PUCCH                                   | Samsung                             |
| <a href="#">R1-1710714</a> | Performance Results for UCI and Data Multiplexing                    | Samsung                             |
| <a href="#">R1-1710715</a> | UE-Group CSI Reporting                                               | Samsung                             |
| <a href="#">R1-1710716</a> | Multiplexing PUSCH with Short PUCCH or SRS                           | Samsung                             |
| <a href="#">R1-1710717</a> | BSI/CSI Transmission on PUCCH                                        | Samsung                             |
| <a href="#">R1-1710902</a> | CP-OFDM waveform for NR long PUCCH                                   | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711416</a> | Performance evaluations on 1-symbol PUCCH for up to 2 UCI bits       | Huawei, HiSilicon                   |
| <a href="#">R1-1711417</a> | Long PUCCH structure for large payload with no multiplexing capacity | Huawei, HiSilicon                   |
| <a href="#">R1-1711418</a> | On CSI feedback in NR                                                | Huawei, HiSilicon                   |
| <a href="#">R1-1711419</a> | Transmit diversity for short duration PUCCH                          | Huawei, HiSilicon                   |
| <a href="#">R1-1711420</a> | Multiplexing between PUCCHs                                          | Huawei, HiSilicon                   |
| <a href="#">R1-1711421</a> | Multiplexing of UL control channel and SRS in NR                     | Huawei, HiSilicon                   |

**5.1.3.3 DL/UL data scheduling and HARQ procedure**

From Thursday offline...

**Agreements:**

- RAN1 advises based on the current understanding that RAN2 can make progress without taking into account the progress of CBG retransmissions and pre-emption indication.
- RAN1 will strive for making CBG retransmissions and pre-emption indication being not be visible in the MAC spec.

**Agreements:**

- For HARQ,
  - The retransmissions can occupy a different frequency allocation than the initial transmission (Note, this is supported in LTE)
  - For downlink, the transmission durations for a given TB may not be the same in some cases.
    - Among initial transmission and retransmissions for a data having fixed DMRS position relative to the start of the slot
    - Among initial transmission and retransmissions for a data having fixed DMRS position relative to the start of the data
    - FFS: other cases
  - For uplink at least scheduled by a UL grant, the transmission durations for a given TB may not be the same in some cases.

**Agreements:**

- One TB is mapped to one DL/UL carrier.

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- Re-transmission of a TB cannot take place on different carrier than the initial transmission.
- **Working assumption:**
  - Re-transmission of a TB cannot take place on different numerology than the initial transmission in Rel. 15.
- When uplink CBG-based (re)transmission is configured, the UL grant indicates which CBG(s) of a TB is/are retransmitted

**Email approval of the LS capturing the above agreements/WA until 6<sup>th</sup> of July – Karri (Nokia)**

**5.1.3.3.1 DL/UL resource allocation**

[R1-1711322](#) Frequency/time resource assignment of the operation modes Panasonic

From Wednesday offline...

**Agreements:**

- For downlink, UE can be informed about the first DMRS position of the PDSCH between the following:
  - Fixed on the 3<sup>rd</sup> or 4<sup>th</sup> symbol of the slot (for, a.k.a, slot-based scheduling)
  - 1<sup>st</sup> symbol of the scheduled data (for a.k.a non-slot-based scheduling)
    - FFS: if special handling is needed for the case where some of the PRBs of the symbol of the scheduled data is overlapped with the other signals/channels
- FFS: When the UE is configured both slot-based scheduling and non-slot-based scheduling, the first DMRS position of the PDSCH can be changed between the 3<sup>rd</sup> or 4<sup>th</sup> symbol of the slot and 1<sup>st</sup> symbol of the scheduled data

**Agreements:**

- For uplink, the first DMRS position of the PUSCH is fixed relative to the start of the scheduled data.
  - FFS: Additional possibility of the another fixed position relative to the start of slot
  - The exact fixed position can be changed depending on the duration of the scheduled data

**Conclusion:**

- For both downlink and uplink, the second or later or additional DMRS is up to MIMO discussion.

**5.1.3.3.1.1 Frequency-domain resource allocation**

*Including resource allocation for PDSCH/PUSCH with CP-OFDM waveform and PUSCH with DFT-s-OFDM waveform.*

[R1-1710164](#) Bandwidth part configuration and frequency resource allocation Guangdong OPPO Mobile Telecom.

[R1-1711689](#) **Outputs of offline discussion on RBG size/number determination** OPPO

RBG size/number determination, following options are discussed:

- Option 1:
  - Semi-statically configure a size of Type0 RA bitmap in DCI.
  - Then determine the number and size of RBGs for a RA based on size of BWP and the size of the bitmap.
- Option 2:
  - RBG size can be semi-statically configured per BWP.
    - FFS: Dynamic switching of RBG size.
  - Then number of RBGs in the BWP is determined by size of the BWP and the configured/indicated RBG size.
- Option 3:
  - RBG size is determined by the BW of the BWP and/or PDCCH monitoring periodicity
    - FFS: Necessity of signaling

Friday

[R1-1711843](#) **Outputs of offline discussion on RBG size/number determination** OPPO, Nokia, LGE, Samsung, vivo, ZTE, CATR

**Agreements:**

- For PDSCH/PUSCH, the RBG size/number can be changed along with the change of the BWP used for resource allocation.
- FFS: If one or multiple of following option(s) is/are also used for RBG size/number determination:
  - Opt. 1: Semi-statically configured size of Type0 RA bitmap.
    - Number and size of RBGs for a RA is determined based on size of BWP and the size of the bitmap.
  - Opt. 2: Semi-statically configured RBG size(s) per BWP for deriving number of RBGs.
    - Number of RBGs in the BWP is determined by size of the BWP and the configured/indicated RBG size(s).
    - FFS: Dynamic switching of RBG size(s).
  - Opt. 3: DCI format/DCI format size (e.g. a compact DCI may be with a larger RBG size than a normal DCI).

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- Opt. 4: Transmission durations (e.g. a shorter-duration transmission may be with a larger RBG size than a longer one).
- Opt. 5: RBG size is determined depending on the size of the BWP.
- Other options are not precluded.

[R1-1711753](#)      **WF on UL Resource Allocation for PUSCH with DFT-s-OFDM waveform in NR**      NEC, NTT  
DOCOMO, Panasonic, OPPO, Ericsson, Nokia, ASB

**Agreements**

- In frequency-domain, for PUSCH with DFT-s-OFDM waveform in NR, contiguous resource allocation scheme based on LTE UL RA Type 0 is adopted in Rel. 15.
  - FFS:
    - A coarser granularity (i.e. more than 1RB) of resource assignment in order to reduce the overhead further
    - BW parts
- In frequency-domain, for PDSCH in NR, a resource allocation scheme based on LTE DL RA Type 2 is supported in Rel. 15.
  - FFS:
    - A coarser granularity (i.e. more than 1RB) of resource assignment in order to reduce the overhead further
    - BW parts
- In frequency-domain, for PUSCH with CP-OFDM waveform in NR, contiguous resource allocation scheme based on LTE UL RA Type 0 is supported in Rel. 15
  - FFS:
    - A coarser granularity (i.e. more than 1RB) of resource assignment in order to reduce the overhead further
    - BW parts
- A DCI format with resource allocation based on LTE DL RA type 0 (i.e., bit-map) is supported for PDSCH.
- A DCI format with resource allocation based on LTE DL RA type 0 (i.e., bit-map) is supported for PUSCH with CP-OFDM waveform.
- A DCI format with resource allocation based on LTE DL RA type 2 is supported for PDSCH.
- A DCI format with resource allocation based on LTE UL RA type 0 is supported for PUSCH with CP-OFDM waveform and with DFT-s-OFDM waveform.
- FFS: some or all of the above DCI formats have the same DCI payload size.

Proposals from offline

- FFS: for PUSCH transmission, the waveform is either dynamically indicated by the scheduling DCI or is semi-statically configured by higher-layer signalling.
  - This will be discussed in scheduling/HARQ agenda.
- FFS: whether to conform the following working assumption
  - In frequency-domain, for PUSCH with DFT-s-OFDM waveform, only contiguous resource allocation is supported in Rel. 15.

Not treated

|                            |                                                                         |                                |
|----------------------------|-------------------------------------------------------------------------|--------------------------------|
| <a href="#">R1-1709974</a> | Scheduling and resource allocation mechanism for active bandwidth parts | Huawei, HiSilicon              |
| <a href="#">R1-1710091</a> | NR DL/UL frequency domain resource allocation                           | CATT                           |
| <a href="#">R1-1710121</a> | Resource allocation in frequency domain                                 | ZTE                            |
| <a href="#">R1-1710164</a> | Bandwidth part configuration and frequency resource allocation          | Guangdong OPPO Mobile Telecom. |
| <a href="#">R1-1710245</a> | Frequency-domain resource allocation schemes for NR                     | NEC                            |
| <a href="#">R1-1710323</a> | Discussion on frequency-domain resource allocation                      | LG Electronics                 |
| <a href="#">R1-1710392</a> | Discussion on downlink RA                                               | vivo                           |
| <a href="#">R1-1710413</a> | Further details on forward compatible resources in NR                   | AT&T                           |
| <a href="#">R1-1710565</a> | DL/UL data frequency-domain resource allocation                         | Intel Corporation              |
| <a href="#">R1-1710718</a> | DL/UL Frequency Resource Allocation                                     | Samsung                        |
| <a href="#">R1-1710787</a> | On default bandwidth part                                               | PANASONIC                      |
| <a href="#">R1-1710953</a> | On frequency-domain resource allocation for NR                          | InterDigital, Inc.             |
| <a href="#">R1-1710989</a> | On resource allocation in frequency domain for PDSCH and PUSCH in NR    | Nokia, Alcatel-Lucent          |
| <a href="#">R1-1711107</a> | Frequency-domain resource allocation                                    | NTT DOCOMO, INC.               |

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|                            |                                                     |                             |
|----------------------------|-----------------------------------------------------|-----------------------------|
| <a href="#">R1-1711197</a> | MPR issue with distributed RB allocation in UL      | Qualcomm Incorporated       |
| <a href="#">R1-1711198</a> | Short PUSCH transmission in UL short duration       | Qualcomm Incorporated       |
| <a href="#">R1-1711363</a> | Two-step resource allocation for data channel in NR | ASUSTEK COMPUTER (SHANGHAI) |
| <a href="#">R1-1711499</a> | On Resource Allocation in the Frequency Domain      | Ericsson                    |

**5.1.3.3.1.2 Time-domain resource allocation**

*Timing/duration determination for symbol-level/slot-level/multi-slot-level scheduling.*

*Limit to 1 contributions per 1 company/organization/university*

|                            |                                                                                          |                                     |
|----------------------------|------------------------------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709994</a> | Discussion on data transmission duration                                                 | Huawei, HiSilicon                   |
| <a href="#">R1-1710092</a> | NR DL/UL time domain resource allocation                                                 | CATT                                |
| <a href="#">R1-1710165</a> | Time-domain resource allocation for NR                                                   | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710238</a> | Discussion on time domain resource allocation                                            | Fujitsu                             |
| <a href="#">R1-1710246</a> | Time-domain resource allocation schemes for NR                                           | NEC                                 |
| <a href="#">R1-1710324</a> | Discussion on time-domain resource allocation                                            | LG Electronics                      |
| <a href="#">R1-1710397</a> | Discussion on flexible length scheduling                                                 | vivo                                |
| <a href="#">R1-1710414</a> | Transmission duration indication for symbol-level/slot-level/multi-slot-level scheduling | AT&T                                |
| <a href="#">R1-1710566</a> | Time-domain resource allocation for DL and UL data                                       | Intel Corporation                   |
| <a href="#">R1-1710719</a> | DL/UL Time Resource Allocation                                                           | Samsung                             |
| <a href="#">R1-1710838</a> | Cross-slot scheduling for UE power saving                                                | MediaTek Inc.                       |
| <a href="#">R1-1710990</a> | Time-domain resource allocation for NR                                                   | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711108</a> | Time-domain resource allocation                                                          | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711471</a> | Discussions on Transmission Duration                                                     | KT Corp.                            |
| <a href="#">R1-1711500</a> | On Resource Allocation in the Time Domain                                                | Ericsson                            |

**5.1.3.3.1.3 Transport block size determination**

*Limit to 1 contributions per 1 company/organization/university*

|                            |                                                                              |                                     |
|----------------------------|------------------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709978</a> | TB mapping and TB size determination                                         | Huawei, HiSilicon                   |
| <a href="#">R1-1710325</a> | Discussion on TB size determination for NR                                   | LG Electronics                      |
| <a href="#">R1-1710720</a> | Transport Block Size Determination                                           | Samsung                             |
| <a href="#">R1-1710991</a> | Transport block size determination and the support of slot aggregation in NR | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711109</a> | Transport block size determination                                           | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711199</a> | Discussion TB size determination                                             | Qualcomm Incorporated               |
| <a href="#">R1-1711501</a> | On MCS/transport Block Size Determination                                    | Ericsson                            |

**5.1.3.3.2 UL data transmission procedure with grant**

*Including details for single/multiple SR configurations.*

|                            |                                                                      |                                                                                                         |
|----------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| <a href="#">R1-1710021</a> | Advantages of Underlay Scheduling Request method over PUCCH-based SR | Idaho National Laboratory                                                                               |
| <a href="#">R1-1710093</a> | Further details of grant-based UL transmission                       | CATT                                                                                                    |
| <a href="#">R1-1710122</a> | On scheduling request in NR                                          | ZTE                                                                                                     |
| <a href="#">R1-1710166</a> | Discussion on the UL waveform indication                             | Guangdong OPPO Mobile Telecom.                                                                          |
| <a href="#">R1-1710247</a> | Frequency hopping for NR UL PUSCH                                    | NEC                                                                                                     |
| <a href="#">R1-1710326</a> | Discussion on scheduling request for UL transmission with grant      | LG Electronics                                                                                          |
| <a href="#">R1-1710465</a> | On uplink data scheduling                                            | Huawei, HiSilicon                                                                                       |
| <a href="#">R1-1710567</a> | SR configuration and UL data scheduling                              | Intel Corporation                                                                                       |
| <a href="#">R1-1710721</a> | SR Transmission for Multiple Configurations                          | Samsung                                                                                                 |
| <a href="#">R1-1710722</a> | Procedures for Grant-Based UL Transmissions                          | Samsung                                                                                                 |
| <a href="#">R1-1710834</a> | On support of Grant-free and Grant-based transmission for UL         | URLLC MediaTek Inc.                                                                                     |
| <a href="#">R1-1710992</a> | Discussion on multiple SR configuration                              | Nokia, Alcatel-Lucent Shanghai Bell                                                                     |
| <a href="#">R1-1711110</a> | Scheduling request design in NR system                               | NTT DOCOMO, INC.                                                                                        |
| <a href="#">R1-1711200</a> | Simultaneous UL SR channel                                           | Qualcomm Incorporated                                                                                   |
| <a href="#">R1-1711502</a> | On UL Data Scheduling Grant in NR                                    | Ericsson                                                                                                |
| <a href="#">R1-1711503</a> | On Scheduling Request Enhancements                                   | Ericsson                                                                                                |
| <a href="#">R1-1711836</a> | WF on scheduling request for NR                                      | Idaho National Laboratory, KDDI, Lenovo, Motorola Mobility, IITH, CEWIT, IITM, Tejas Networks, Qualcomm |

**5.1.3.3.3 UL data transmission procedure without grant**

*Including HARQ/re-transmission, UE identification, relation b/w UL grant-free and UL SPS, etc.*

|                            |                                                                                 |                |
|----------------------------|---------------------------------------------------------------------------------|----------------|
| <a href="#">R1-1710328</a> | Summary of [89-22] Email discussion about UL data transmission without UL grant | LG Electronics |
|----------------------------|---------------------------------------------------------------------------------|----------------|

**Agreements:**

- In addition to the RS parameters, time and frequency resource are configured in a UE-specific manner.
  - Note: it is common understanding that the time and frequency resources configured for a UE may or may not collide with those for another UE (to be captured in the LS).
- WA: Both DFT-S-OFDM and CP-OFDM are supported for UL transmission without grant.
- NR supports more than 1 HARQ process for UL transmission without grant

**Offline summary (on-going):**

**R1-1711829 Offline discussions on UL data transmission without grant NTT DOCOMO**

- Function of L1 signalling
  - At least following functionality of the L1 signalling is supported
    - Activation/Deactivation
    - Modification of parameters configured by RRC
      - For example at least following parameters are common in the RRC configuration and L1 signaling
        - One physical resource including following
          - Time domain resource allocation for one transmission
          - Frequency domain resource allocation in terms of RB(s) or RBG(s)
          - UE-specific DMRS configuration
        - MCS/TBS
  - Switch to grant-based re-transmission for the same TB
    - Companies are encouraged to provide detailed methods to determine the grant is for the same TB
  - Companies are encouraged to provide analysis to prove the benefits of supporting an acknowledgement/indication of successful receiving of that TB from gNB in next meeting
- Formats of L1 signalling
  - Select from following two options to achieve each of the L1 signalling functionalities in next meeting
    - Option 1: UE-specific DCI (UL grant)
    - Option 2: Group common DCI
  - FFS the monitoring occasions for the L1 signalling
- RRC configurations
  - At least for UL transmission without UL grant and without L1 activation/deactivation signalling, the RRC (re-)configuration for a set of resource and parameters includes at least the following
  - Transmission interval, where the minimum value can be one slot or one mini-slot
  - One physical resource including following
    - Time domain resource allocation for one transmission
    - Frequency domain resource allocation in terms of RB(s) or RBG(s)
    - UE-specific DMRS configuration
  - At least one physical resource can be configured for one UE within the transmission interval
  - FFS multiple physical resources can be configured for one UE within the transmission interval
  - Note:
    - At least repetition can be performed on the same physical resource defined above
    - FFS multiple physical resources can be configured for the K repetitions, where  $K > 1$
  - Other transmission related parameters:
    - An MCS/TBS value
    - Number of repetitions K
    - Power control related parameters
    - FFS: HARQ process related parameters
    - FFS: Possible RVs related parameters for repetitions
    - FFS: Possible hopping related parameters including enable/disable configurability
    - FFS: Possible ACK feedback related parameters
    - FFS other parameters
  - Multiple sets of resource and parameters can be (re-)configured for each UE

---

**Friday**

**Agreements:**

- The same TA adjustment procedure/mechanism (including expiration of TA timer) is applied to UL transmission with and without UL grant
- For UL transmission without UL grant,
  - Open-loop power control based on pathloss estimate is supported.
  - FFS: Closed-loop power control is supported, which is based on NW signaling.

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- A UE shall not transmit anything on configured resources for UL transmission without UL grant when there is no transport block to transmit.
- FFS: UCI piggybacking with transport block is supported for UL transmission without UL grant.

**Agreement:** RAN1 considers that UE transmitting UL transmission without UL grant can be identified based on time/frequency resources and RS parameter(s).

**R1-1711969      Offline discussions on UL data transmission without grant NTT DOCOMO**

**Agreements:**

- Type of UL data transmission without grant
  - Type 1: UL data transmission without grant is only based on RRC (re)configuration without any L1 signalling
  - Type 2: UL data transmission without grant is based on both RRC configuration and L1 signalling to activation/deactivation for UL data transmission without grant
    - Note: functionality of modification is achieved the L1 signalling by activation
  - Type 3: UL data transmission without grant is based on RRC configuration, and allows L1 signalling to modify some parameters configured by RRC but no L1 signalling for activation
- For UL data transmission without grant, type 1 and type 2 have already been agreed, FFS type 3.
- FFS the reliability issues for L1 signalling.
- For Type 1 UL transmission without UL grant, the RRC (re-)configuration includes at least the following
  - Periodicity and offset of a resource with respect to SFN=0
  - Time domain resource allocation
  - Frequency domain resource allocation
  - UE-specific DMRS configuration
  - Note:
    - one TB is mapped to a resource at least consisting of time/frequency-domain resource
    - RAN1 will not introduce specific resource allocation and DMRS configuration for UL data transmission without grant separate from UL data transmission with UL grant within the Rel.15 WI
  - An MCS/TBS value
  - Number of repetitions K
  - Power control related parameters
  - FFS HARQ related parameters
  - FFS if multiple resources can be configured
- For Type 2 UL transmission without UL grant
  - The RRC (re-) configuration for resource and parameters includes at least the following
    - Periodicity of a resource
    - Power control related parameters
  - At least the following additional parameters for the resource are given by L1 signalling
    - Offset associated with the periodicity with respect to a timing reference indicated by L1 signalling for activation
      - FFS: the timing reference
    - Time domain resource allocation
    - Frequency domain resource allocation
    - UE-specific DMRS configuration
    - An MCS/TBS value
    - Note:
      - one TB is mapped to one resource
      - RAN1 will not introduce specific resource allocation and DMRS configuration for UL data transmission without grant separate from UL data transmission with UL grant within the Rel.15 WI
  - FFS multiple resources can be configured
  - FFS HARQ related parameters
  - FFS whether number of repetitions K is configured by RRC signalling and/or indicated by L1 signalling

**Email approval of the LS to RAN2 until 6<sup>th</sup> of July to explain RAN1 understandings based on above agreements – Lihui (NTT DOCOMO)**

Not treated.

[R1-1709991](#)

Resource configuration on UL transmission without grant      Huawei, HiSilicon

[R1-1709992](#)

UE identification and HARQ combining for grant-free transmissions      Huawei, HiSilicon

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|                            |                                                                                 |                                     |
|----------------------------|---------------------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710014</a> | Evaluation of UE identification for UL transmission without grant               | ZTE                                 |
| <a href="#">R1-1710015</a> | Considerations on the procedures of UL data transmission without grant          | ZTE                                 |
| <a href="#">R1-1710094</a> | Grant-free UL transmission procedure                                            | CATT                                |
| <a href="#">R1-1710167</a> | HARQ for uplink grant-free transmission                                         | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710239</a> | Discussions on HARQ for grant-free transmission                                 | Fujitsu                             |
| <a href="#">R1-1710248</a> | UL data transmission without grant                                              | NEC                                 |
| <a href="#">R1-1710327</a> | Discussion on UL transmission without grant                                     | LG Electronics                      |
| <a href="#">R1-1710328</a> | Summary of [89-22] Email discussion about UL data transmission without UL grant | LG Electronics                      |
| <a href="#">R1-1710380</a> | Discussion on UL grant-free transmission                                        | vivo                                |
| <a href="#">R1-1710568</a> | UL grant-free transmissions: Resource configuration                             | Intel Corporation                   |
| <a href="#">R1-1710601</a> | UL grant-free transmission for URLLC                                            | Lenovo, Motorola Mobility           |
| <a href="#">R1-1710621</a> | Resource allocation and transmission scheme for URLLC grant-free transmission   | ETRI                                |
| <a href="#">R1-1710723</a> | Procedures for Grant-Free UL Transmissions                                      | Samsung                             |
| <a href="#">R1-1710724</a> | Grant-Free and Grant-Based UL Transmissions                                     | Samsung                             |
| <a href="#">R1-1710835</a> | Grant-free Scheduling and retransmission schemes for UL URLLC                   | MediaTek Inc.                       |
| <a href="#">R1-1710836</a> | On use of scrambling for UL Grant-free URLLC transmission                       | MediaTek Inc.                       |
| <a href="#">R1-1710861</a> | Pre-emption in UL grant free resource                                           | Sony                                |
| <a href="#">R1-1710863</a> | Discussion on the retransmission of UL transmission without grant               | Sony                                |
| <a href="#">R1-1710887</a> | UL grant-free transmissions: Physical layer procedures                          | Intel Corporation                   |
| <a href="#">R1-1710963</a> | On network resources and UE transmission configurations for grant-free access   | NEC                                 |
| <a href="#">R1-1710971</a> | UL grant-free transmission for URLLC                                            | China Telecommunications            |
| <a href="#">R1-1710993</a> | Unified framework for UL grant-free and UL SPS                                  | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1710994</a> | UE identification and HARQ for URLLC UL grant-free                              | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711006</a> | Issues and Control Design for UL Grant-free URLLC                               | III                                 |
| <a href="#">R1-1711111</a> | Overall solutions for UL grant free transmission                                | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711253</a> | Resource configuration for UL transmission without grant                        | NICT                                |
| <a href="#">R1-1711323</a> | UL data transmission without grant                                              | Panasonic                           |
| <a href="#">R1-1711504</a> | On SPS/Grant-Free Transmission                                                  | Ericsson                            |
| <a href="#">R1-1711505</a> | On HARQ Retransmission for SPS/Grant-free                                       | Ericsson                            |

**5.1.3.3.4 CBG-based (re)transmission**

**[R1-1711883](#) WF on CBG retransmission Samsung**

Possible proposal from offline:

- CBG formation remains the same in retransmission as initial transmission

Possible agreement:

- Each CBG is the same set of CB(s) between initial transmission and retransmission

Friday

**[R1-1711958](#) WF on CBG retransmission Samsung, ZTE**

**Working assumption:** For initial transmission and retransmission, each CBG of a TB has the same set of CB(s).

**Agreement:** For CBG-based (re)transmission, the DCI scheduling CBG-based (re)transmission carries single RV field for the transport block.

**Email approval until July 13<sup>th</sup> for downselection between the following – Jeongho (Samsung)**

- For the indicated number of CBGs per TB where “indicated” is realized by RRC, MAC, L1 signalling, the following options are considered for down-selection in RAN1#90.
  - Option 1. RRC signaling (for bit-field size)
  - Option 2. L1 signaling (for indication the number of CBGs per TB) + RRC signaling (for bit-field size)
  - Option 3. both Option 1 and Option 2
- To determine the number of CBG HARQ-ACK bits per TB, the following options are considered for down-selection in RAN1#90.
  - Option 1. A UE transmits HARQ-ACK bits only for scheduled CBGs.
    - “scheduled CBGs” means the CBGs scheduled in a (re)transmission
  - Option 2. A UE transmits HARQ-ACK bits for indicated CBGs.
    - FFS: “indicated” is realized by RRC, MAC, L1 signalling
  - Option 3. both Option 1 and Option 2 by configuration
- For DL CBG-based (re)transmission, when information on which CBG(s) is/are (re)transmitted is configured to be included in the DCI, the following options are considered for down-selection in RAN#90.
  - Option 1. TB-level NDI is jointly encoded with the information on which CBG(s) is/are (re)transmitted

- o Option 2. There is separate 1-bit bit-field for TB-level NDI.
- When CBG-based retransmission is configured, TB-level HARQ-A/N is supported and at least following options can be considered for down-selection in RAN1#90.
  - o Option 1. Add 1 bit upon CBG-level HARQ-ACK bits
  - o Option 2. Use all NACK of CBG-level HARQ-ACK bits
  - o Option 3. Use different PUCCH format or PUCCH resource
- For HARQ-ACK codebook for CBG-based retransmission, the following options are considered for down-selection in RAN1#90.
  - o Option 1. Dynamic codebook determination for multiple PDSCHs
  - o Option 2. Semi-static codebook determination for multiple PDSCHs
  - o Option 3. both Option 1 and Option 2 by configuration

#### 5.1.3.3.4.1 CBG construction

*Limit to 1 contribution per 1 company/organization/university*

|                            |                                                                                     |                                     |
|----------------------------|-------------------------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709968</a> | Discussion on CBG construction                                                      | Huawei, HiSilicon                   |
| <a href="#">R1-1710017</a> | CBG construction                                                                    | ZTE                                 |
| <a href="#">R1-1710095</a> | Details of CBG construction                                                         | CATT                                |
| <a href="#">R1-1710329</a> | Consideration on CBG construction for NR HARQ                                       | LG Electronics                      |
| <a href="#">R1-1710396</a> | Discussion on CB grouping                                                           | vivo                                |
| <a href="#">R1-1710442</a> | On CBG construction for NR PDSCH and PUSCH                                          | AT&T                                |
| <a href="#">R1-1710569</a> | On CBG construction                                                                 | Intel Corporation                   |
| <a href="#">R1-1710593</a> | Discussion on CBG grouping                                                          | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710602</a> | CBG construction for CBG-based retransmission                                       | Lenovo, Motorola Mobility           |
| <a href="#">R1-1710725</a> | CBG Construction                                                                    | Samsung                             |
| <a href="#">R1-1710830</a> | Discussion on CBG construction for CBG-based (re)transmission                       | MediaTek Inc.                       |
| <a href="#">R1-1710876</a> | CBG based HARQ for NR InterDigital, Inc.                                            |                                     |
| <a href="#">R1-1710995</a> | Mapping code blocks to code block groups                                            | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711112</a> | CBG construction                                                                    | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711202</a> | CBG Construction Principles for CBG-based Transmission with Multi-Bit HARQ feedback | Qualcomm Incorporated               |
| <a href="#">R1-1711506</a> | On Code Block Group Formation and CRC Attachment                                    | Ericsson                            |

#### 5.1.3.3.4.2 DL control signalling for CBG-based (re)transmission

*Including CBG information by the DCI.*

*Limit to 1 contribution per 1 company/organization/university*

|                            |                                                                                                          |                                     |
|----------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709967</a> | Scheduling mechanisms for CBG-based re-transmission                                                      | Huawei, HiSilicon                   |
| <a href="#">R1-1710018</a> | DL control for CBG                                                                                       | ZTE                                 |
| <a href="#">R1-1710096</a> | DL control signaling design for CBG-based operation                                                      | CATT                                |
| <a href="#">R1-1710168</a> | Discussion on CBG indication in DCI                                                                      | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710240</a> | Discussion on DL control signaling related to CBG based (re)-transmission                                | Fujitsu                             |
| <a href="#">R1-1710330</a> | Consideration on DCI signaling for CBG based HARQ                                                        | LG Electronics                      |
| <a href="#">R1-1710443</a> | DCI design for CBG based re transmission                                                                 | AT&T                                |
| <a href="#">R1-1710570</a> | DCI design and scheduling of CBG-based (re)transmissions                                                 | Intel Corporation                   |
| <a href="#">R1-1710603</a> | DL control signalling for CBG-based retransmission                                                       | Lenovo, Motorola Mobility           |
| <a href="#">R1-1710726</a> | Scheduling for CBG Retransmissions                                                                       | Samsung                             |
| <a href="#">R1-1710864</a> | Discussion on the CBG index indication by DCI                                                            | Sony                                |
| <a href="#">R1-1710908</a> | DL control signal for CBG-based transmission                                                             | Apple Inc.                          |
| <a href="#">R1-1710972</a> | Control signalling for CBG-based (re)transmission                                                        | China Telecommunications            |
| <a href="#">R1-1710996</a> | DL control signalling for CBG-based transmissions                                                        | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711113</a> | DL control signalling for CBG-based (re)transmission                                                     | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711203</a> | DCI considerations for CBG-based (re)-Transmissions                                                      | Qualcomm Incorporated               |
| <a href="#">R1-1711245</a> | Pardon the Interruption: Downlink Control Signaling to Enable Preemption and CBG-based (Re) Transmission | Sharp                               |
| <a href="#">R1-1711257</a> | Discussion on DL control signalling for CBG-based retransmission                                         | HTC Corporation                     |
| <a href="#">R1-1711316</a> | DL control signaling for CBG-based (re)transmission                                                      | Shenzhen Coolpad Technologies       |
| <a href="#">R1-1711324</a> | DL control signalling for CBG-based (re)transmission                                                     | Panasonic                           |
| <a href="#">R1-1711341</a> | Discussions on the indication for CBG                                                                    | CATR                                |
| <a href="#">R1-1711507</a> | On Retransmission Decoder Throughput Issues and CBG-based Retransmission Control                         | Ericsson                            |
| <a href="#">R1-1711531</a> | CBG based retransmission Sequans Communications                                                          |                                     |

#### 5.1.3.3.4.3 UL control signalling for CBG-based (re)transmission

*Including CBG-level HARQ-ACK feedback.*

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|                            |                                                                  |                                     |
|----------------------------|------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709969</a> | Discussion on CBG-based feedback                                 | Huawei, HiSilicon                   |
| <a href="#">R1-1710019</a> | UL control for CBG                                               | ZTE                                 |
| <a href="#">R1-1710097</a> | UL control signaling design for CBG-based operation              | CATT                                |
| <a href="#">R1-1710169</a> | Discussion on HARQ-ACK feedback for CBG-based transmission       | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710241</a> | Discussion on CBG based HARQ-ACK Design                          | Fujitsu                             |
| <a href="#">R1-1710331</a> | Consideration on UCI signaling for CBG based HARQ                | LG Electronics                      |
| <a href="#">R1-1710444</a> | Uplink control channel design for CBG based re transmission      | AT&T                                |
| <a href="#">R1-1710571</a> | HARQ-ACK feedback for CBG-based (re)transmissions                | Intel Corporation                   |
| <a href="#">R1-1710604</a> | UL HARQ-ACK feedback for CBG-based retransmission                | Lenovo, Motorola Mobility           |
| <a href="#">R1-1710727</a> | HARQ-ACK Feedback for CBG-Based Retransmissions                  | Samsung                             |
| <a href="#">R1-1710954</a> | HARQ feedback design considerations for CBG based transmission   | InterDigital, Inc.                  |
| <a href="#">R1-1710997</a> | HARQ-ACK feedback for CBG-based (re-)transmission in NR          | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711114</a> | UL control signalling for CBG-based (re)transmission             | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711204</a> | UCI considerations for CBG-based (re-)Transmissions              | Qualcomm Incorporated               |
| <a href="#">R1-1711258</a> | Discussion on UL control signalling for CBG-based retransmission | HTC Corporation                     |
| <a href="#">R1-1711361</a> | Discussion on UL HARQ-ACK feedback for CBG-based retransmission  | WILUS Inc.                          |
| <a href="#">R1-1711472</a> | Considerations on TB-CRC Failure                                 | KT Corp.                            |
| <a href="#">R1-1711508</a> | On Design of CBG HARQ-ACK Feedback Schemes                       | Ericsson                            |
| <a href="#">R1-1711530</a> | CBG based HARQ-Ack/Nack                                          | Sequans Communications              |

**5.1.3.3.5 HARQ-ACK feedback**

**5.1.3.3.5.1 HARQ-ACK feedback timing**

*Limit to 1 contributions per 1 company/organization/university*

|                            |                                                                                     |                                     |
|----------------------------|-------------------------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709970</a> | HARQ feedback timing for NR                                                         | Huawei, HiSilicon                   |
| <a href="#">R1-1710332</a> | Consideration on HARQ-ACK feedback timing for NR                                    | LG Electronics                      |
| <a href="#">R1-1710418</a> | HARQ-ACK feedback timing for FDD, semi-static TDD and mini-slot based transmissions | AT&T                                |
| <a href="#">R1-1710728</a> | HARQ-ACK Feedback Timing                                                            | Samsung                             |
| <a href="#">R1-1710783</a> | Discussion on timing design for semi-static DL/UL assignment                        | CMCC                                |
| <a href="#">R1-1710795</a> | Timing of HARQ-ACK for PDSCH                                                        | MediaTek Inc.                       |
| <a href="#">R1-1710877</a> | DL HARQ Feedback suppression                                                        | InterDigital, Inc.                  |
| <a href="#">R1-1710888</a> | HARQ-ACK feedback: Timing considerations                                            | Intel Corporation                   |
| <a href="#">R1-1710998</a> | Timing aspects for HARQ-ACK feedback                                                | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711115</a> | HARQ-ACK timing                                                                     | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711205</a> | Low latency impact analysis on user plane and control plane                         | Qualcomm Incorporated               |
| <a href="#">R1-1711509</a> | On HARQ Feedback Timing                                                             | Ericsson                            |

**5.1.3.3.5.2 HARQ-ACK multiplexing/bundling**

*Including solutions to address single/multiple TBs/CBGs over single/multiple carriers/TTIs.*

|                            |                                                     |                                     |
|----------------------------|-----------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710098</a> | NR HARQ-ACK multiplexing                            | CATT                                |
| <a href="#">R1-1710242</a> | Discussion on HARQ-ACK codebook                     | Fujitsu                             |
| <a href="#">R1-1710333</a> | Support of HARQ-ACK multiplexing/bundling for NR    | LG Electronics                      |
| <a href="#">R1-1710462</a> | On HARQ-ACK multiplexing and/or bundling            | Huawei, HiSilicon                   |
| <a href="#">R1-1710572</a> | HARQ-ACK multiplexing and bundling                  | Intel Corporation                   |
| <a href="#">R1-1710605</a> | HARQ-ACK codebook design for CBG-based transmission | Lenovo, Motorola Mobility           |
| <a href="#">R1-1710729</a> | HARQ-ACK Codeword Determination                     | Samsung                             |
| <a href="#">R1-1710999</a> | On HARQ feedback determination                      | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711116</a> | HARQ-ACK multiplexing                               | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711259</a> | Discussion on CBG-based HARQ feedback multiplexing  | HTC Corporation                     |
| <a href="#">R1-1711510</a> | On HARQ Codebook                                    | Ericsson                            |

**5.1.3.3.6 Processing time and HARQ process number**

|                             |                                    |                                                                |
|-----------------------------|------------------------------------|----------------------------------------------------------------|
| <a href="#">R1-17111856</a> | WF on Processing Time Requirements | Qualcomm, ZTE, Deutsche Telekom, Vodafone, Panasonic, Ericsson |
|-----------------------------|------------------------------------|----------------------------------------------------------------|

**Agreements**

- For NR, RAN1 should consider the UE processing time(s) in terms of symbols (N1, N2) together with absolute time (in us), instead of slots (K)
  - N1: the number of OFDM symbols required for UE processing from the end of NR-PDSCH reception to the earliest possible start of the corresponding ACK/NACK transmission from UE perspective.

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- o N2: the number of OFDM symbols required for UE processing from the end of NR-PDCCH containing the UL grant reception to the earliest possible start of the corresponding NR-PUSCH transmission from UE perspective.
- o Note the timing advance is not included in N1 and N2
  - FFS whether other aspects, e.g. UE UL/DL switching time, etc. are included in N1 and N2
- o FFS between the following for each combination defined in the next slide
  - Opt 1: UE reports N1 and N2 as UE capability
  - Opt 2: Fixed values of N1 and N2
- o UE is not expected transmit anything in uplink if the network set the values of K1 and/or K2 without leaving sufficient time for UE processing

Friday

[R1-1711957](#) **WF on Processing Time Requirements** **Qualcomm**

Conclusions:

- Email discussion about followings – Joseph (Qualcomm)
  - o Step 1: identify the candidate factors for processing time (until 4th Aug.)
  - o Step 2: identify the table (until 4th Aug.)
- Based on the proponents' input for step 1 and step 2, following work will be done:
  - o Step 3: fill-in the table
  - o Targeting finishing step 3 until September meeting.
    - Note: companies are encouraged to bring up initial numbers for the table to the August meeting
  - o Note: fill-in the table does not necessarily results in defining some UE capabilities or exact values of K1 and K2 in the specification.

**5.1.3.3.6.1 Number of HARQ processes and HARQ RTT**

[R1-1709965](#) Number of HARQ processes and HARQ RTT Huawei, HiSilicon  
[R1-1710099](#) Discussion on number of HARQ processes and HARQ RTT CATT  
[R1-1710334](#) Discussion on HARQ process number for NR LG Electronics  
[R1-1710394](#) Discussion on NR UE supporting self-contained operation vivo  
[R1-1710415](#) Remaining details on the number of HARQ processes in NR AT&T  
[R1-1710573](#) On HARQ processes and HARQ RTT Intel Corporation  
[R1-1710730](#) On Number of HARQ Processes and HARQ RTT Samsung  
[R1-1710967](#) Number of HARQ processes for co-existence with TD-LTE NEC Corporation  
[R1-1711000](#) On the number of HARQ processes Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1711117](#) Processing time and HARQ process number for NR NTT DOCOMO, INC.  
[R1-1711206](#) UE processing time Qualcomm Incorporated  
[R1-1711511](#) On Minimum Processing Time and Number of HARQ Processes in NR Ericsson

**5.1.3.3.6.2 Soft-buffer management**

[R1-1709966](#) Soft buffer handling Huawei, HiSilicon  
[R1-1710020](#) Consideration about CBG soft-buffer management ZTE  
[R1-1710100](#) Soft buffer management for NR CATT  
[R1-1710335](#) Discussion on soft buffer management for NR LG Electronics  
[R1-1710574](#) Soft-buffer requirements in NR Intel Corporation  
[R1-1710731](#) Soft Buffer Partitioning Samsung  
[R1-1711001](#) On the HARQ soft buffer handling Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1711118](#) Soft-buffer size and management NTT DOCOMO, INC.  
[R1-1711207](#) Considerations for soft buffer management Qualcomm Incorporated  
[R1-1711325](#) UE category modelling and soft buffer Panasonic  
[R1-1711512](#) On HARQ and Soft Buffer Handling Ericsson

**5.1.3.3.7 Multiplexing data with different transmission durations**

**5.1.3.3.7.1 Pre-emption indication for downlink**

*Including signalling details and UE behaviour when it is indicated.*

[R1-1711342](#) Discussion on the granularity of preemption indication CATR

Offline summary (on-going):

[R1-1711823](#) **WF on pre-emption indication** Huawei, HiSilicon, MediaTek, Sequans, NTT DOCOMO, Sony, vivo, ZTE, InterDigital, III

Proposals:

- For downlink preemption indication
  - It is transmitted using a group common DCI in PDCCH
    - Working Assumption: This group common DCI is separate from group common PDCCH for SFI
    - Group common DCI addresses a time duration and frequency band
  - Whether a UE needs to monitor preemption indication is configured by RRC signaling
  - The granularity of preemption indication in time domain can be configured
  - The granularity of preemption indication in frequency domain will be down selected from
    - Option 1: RBG(s) in a common frequency band addressed by group common DCI with a given numerology
    - Option 2: 1/N of a common frequency band addressed by group common DCI with a given numerology
      - FFS: the value of N.
  - Details of group common DCI for pre-emption indication
    - FFS CORESET configuration and monitoring interval for the group common DCI
    - FFS details of contents for the group common DCI (E.g. the time/freq of pre-emption, number of pre-emption)

Friday

[R1-171911](#) WF on pre-emption indication Huawei, HiSilicon, MediaTek, Sequans, NTT DOCOMO, Sony, vivo, ZTE, InterDigital, III, Intel, LGE, Samsung

Agreements

- For downlink preemption indication
  - It is transmitted using a group common DCI in PDCCH
    - FFS: This group common DCI is transmitted separately from SFI
    - Whether a UE needs to monitor preemption indication is configured by RRC signaling
    - The granularity of preemption indication in time domain can be configured
      - Details of granularity are FFS

[R1-171981](#) WF on group common pre-emption indication Huawei, HiSilicon, Sharp, ZTE, LGE, Sony, Panasonic, MediaTek, InterDigital

Not treated.

[R1-1709984](#) On pre-emption indication for DL multiplexing of URLLC and eMBB Huawei, HiSilicon  
[R1-1710101](#) Further design considerations for DL pre-emption indication CATT  
[R1-1710123](#) DL pre-emption indication ZTE  
[R1-1710170](#) Symbol-level resource allocation and pre-emption indication Guangdong OPPO Mobile Telecom.  
[R1-1710336](#) Discussion on pre-emption indication for downlink LG Electronics  
[R1-1710382](#) Discussion on pre-emption indication for downlink vivo  
[R1-1710575](#) Remaining details of DL pre-emption indication Intel Corporation  
[R1-1710732](#) Indication of Preempted Resources in DL Samsung  
[R1-1710865](#) Remaining issues on using pre-emption indicator for DL URLLC/eMBB multiplexing Sony  
[R1-1710955](#) Signalling design considerations for DL pre-emption indication InterDigital, Inc.  
[R1-1711002](#) On pre-emption indication Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1711119](#) Pre-emption indication for downlink NTT DOCOMO, INC.  
[R1-1711362](#) Discussion on UE behavior by pre-emption indication WILUS Inc.  
[R1-1711474](#) Views on preemption indication for DL KT Corp.  
[R1-1711513](#) On Pre-emption Indication for Downlink Ericsson  
[R1-1711551](#) Considerations on multiplexing with different transmission durations KDDI Corporation  
[R1-1711554](#) URLLC DL pre-emption and UL suspension indication channel design Qualcomm Incorporated

5.1.3.3.7.2 Possible enhancements for uplink

[R1-1709988](#) Discussion on UL multiplexing of grant-based eMBB and grant-free URLLC Huawei, HiSilicon  
[R1-1710124](#) Uplink multiplexing for different transmission durations ZTE  
[R1-1710243](#) On eMBB and URLLC multiplexing for Uplink Fujitsu  
[R1-1710337](#) Discussion on eMBB and URLLC multiplexing for uplink LG Electronics  
[R1-1710383](#) Discussion on UL multiplexing data with different transmission durations vivo  
[R1-1710576](#) Multiplexing of UL transmissions with different data durations and latency requirements Intel Corporation  
[R1-1710606](#) On eMBB/URLLC multiplexing for uplink transmission Lenovo, Motorola Mobility  
[R1-1710733](#) On Indication of Preempted Resources in UL Samsung  
[R1-1710867](#) Multiplexing data with different transmission durations for Uplink Sony  
[R1-1710956](#) Multiplexing of low-latency traffic and non-latency sensitive traffic in UL InterDigital, Inc.

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|                            |                                                              |                                     |
|----------------------------|--------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1711003</a> | Pause-Resume Scheduling for Low Latency Uplink Transmissions | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711120</a> | Multiplexing of different data durations for uplink          | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711208</a> | Timing advance for different numerology                      | Qualcomm Incorporated               |
| <a href="#">R1-1711514</a> | On Pre-emption Indication for Uplink                         | Ericsson                            |

**5.1.3.3.8 Ultra-reliable part of URLLC for scheduling/HARQ procedure**

*Identify necessary techniques for scheduling/HARQ procedure to meet the URLLC requirements set forth by TR38.913.*

|                            |                                                                                    |                                     |
|----------------------------|------------------------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709985</a> | PDSCH reliability for URLLC                                                        | Huawei, HiSilicon                   |
| <a href="#">R1-1709987</a> | Discussion on URLLC numerology                                                     | Huawei, HiSilicon                   |
| <a href="#">R1-1709990</a> | Link adaption for URLLC transmission                                               | Huawei, HiSilicon                   |
| <a href="#">R1-1710016</a> | Repetition/hopping related design and reliability evaluations for grant-free URLLC | ZTE                                 |
| <a href="#">R1-1710125</a> | Supporting Ultra reliability in scheduling                                         | ZTE                                 |
| <a href="#">R1-1710338</a> | Discussion on scheduling and HARQ procedure for URLLC                              | LG Electronics                      |
| <a href="#">R1-1710381</a> | Scheduling and HARQ aspects for URLLC reliability                                  | vivo                                |
| <a href="#">R1-1710466</a> | Consideration on subsequent transmission after pre-emption                         | Huawei, HiSilicon                   |
| <a href="#">R1-1710468</a> | Discussion on Multi-TRP cooperation for URLLC                                      | Huawei, HiSilicon                   |
| <a href="#">R1-1710469</a> | Support of URLLC for TDD                                                           | Huawei, HiSilicon                   |
| <a href="#">R1-1710577</a> | On link adaptation enhancements to support URLLC                                   | Intel Corporation                   |
| <a href="#">R1-1710734</a> | Scheduling/HARQ Procedures for URLLC                                               | Samsung                             |
| <a href="#">R1-1710837</a> | HARQ procedure for DL URLLC                                                        | MediaTek Inc.                       |
| <a href="#">R1-1710866</a> | Feedback for improving URLLC reliability                                           | Sony                                |
| <a href="#">R1-1711004</a> | Discussion on scheduling based URLLC transmission                                  | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711005</a> | CSI measuring and reporting procedure for URLLC                                    | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711121</a> | Scheduling and HARQ procedures for URLLC                                           | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711343</a> | Discussion on URLLC transmitted in same or different numerology resources          | ASUSTEK COMPUTER                    |
| (SHANGHAI)                 |                                                                                    |                                     |
| <a href="#">R1-1711432</a> | Discussion on over-the-air time synchronization for URLLC                          | Huawei, HiSilicon                   |
| <a href="#">R1-1711515</a> | On Supporting High Reliability for Data Transmissions                              | Ericsson                            |
| <a href="#">R1-1711555</a> | UL URLLC Capacity Based on URLLC and eMBB dynamic multiplexing                     | Qualcomm Incorporated               |
| <a href="#">R1-1711556</a> | Ultra reliable HARQ design with async CSI feedback                                 | Qualcomm Incorporated               |
| <a href="#">R1-1711560</a> | Discussion on wireless time synchronization for URLLC                              | SIA                                 |

**5.1.3.3.9 Other**

|                            |                                                                                     |                   |
|----------------------------|-------------------------------------------------------------------------------------|-------------------|
| <a href="#">R1-1709964</a> | HARQ processing time                                                                | Huawei, HiSilicon |
| <a href="#">R1-1710735</a> | Remaining Aspects for Short Scheduling Durations                                    | Samsung           |
| <a href="#">R1-1710736</a> | Triggered UCI Transmissions                                                         | Samsung           |
| <a href="#">R1-1710737</a> | DL Resource Allocation for Multiplexing Data with Different Transmissions Durations | Samsung           |
| <a href="#">R1-1710738</a> | Average User Plane Latency for Preemption based Multiplexing                        | Samsung           |
| <a href="#">R1-1711367</a> | On UE processing time                                                               | Ericsson LM       |
| <a href="#">R1-1711422</a> | Resource allocation for data channels                                               | Huawei, HiSilicon |
| <a href="#">R1-1711426</a> | CBG-based transmission/retransmission for DL multiplexing of eMBB and URLLC         | Huawei, HiSilicon |
| <a href="#">R1-1711427</a> | Discussion on group common pre-emption indication                                   | Huawei, HiSilicon |
| <a href="#">R1-1711428</a> | Superposed transmission of pre-emption indication with eMBB data                    | Huawei, HiSilicon |
| <a href="#">R1-1711429</a> | Consideration on ACK/NACK error in CBG-based retransmission                         | Huawei, HiSilicon |
| <a href="#">R1-1711430</a> | Discussion on UL multiplexing of grant-based eMBB and URLLC                         | Huawei, HiSilicon |
| <a href="#">R1-1711434</a> | Discussion on TB size determination                                                 | Huawei, HiSilicon |
| <a href="#">R1-1711435</a> | Unified design for slot and mini-slot                                               | Huawei, HiSilicon |
| <a href="#">R1-1711456</a> | HARQ Process Management in NR                                                       | Samsung           |
| <a href="#">R1-1711457</a> | Indication of Preempted Resources Prior to HARQ-ACK Feedback                        | Samsung           |
| <a href="#">R1-1711458</a> | Considerations on Signaling for Indicating Preempted Resources                      | Samsung           |
| <a href="#">R1-1711516</a> | On Mixed Numerology                                                                 | Ericsson          |

**5.1.3.4 Scheduling/HARQ aspects for carrier aggregation and dual connectivity**

|                            |                                                  |                   |
|----------------------------|--------------------------------------------------|-------------------|
| <a href="#">R1-1711425</a> | Summary of LTE CA/DC and remaining issues for NR | Huawei, HiSilicon |
|----------------------------|--------------------------------------------------|-------------------|

**5.1.3.4.1 Carrier aggregation**

|                            |                                       |                                                                    |
|----------------------------|---------------------------------------|--------------------------------------------------------------------|
| <a href="#">R1-1711846</a> | Way Forward on NR Carrier Aggregation | Huawei, HiSilicon, KT, CATR, MediaTek, Nokia, ASB, Ericsson, Intel |
|----------------------------|---------------------------------------|--------------------------------------------------------------------|

Also supported by LGE

Conclusions:

Email approval on the following until July 10<sup>th</sup> – Zhenfei (Huawei):

- NR support Primary Component Carrier (PCC) and Secondary Component Carrier (SCC)
  - A UE monitors PDCCH candidates in common search space(s) and UE specific search space(s) on PCC
  - A UE monitors PDCCH candidates on UE-specific search space(s) for an SCC
- Support cross carrier scheduling with CIF
  - A carrier is scheduled by one and only one carrier
  - FFS: the number of CIF bits and possible connection to BWPs
- NR Supports at least 2 cell groups for PUCCH
  - Carrier transmitting the PUCCH can be configured within the cell group
    - FFS The PUCCH configuration can be done by the UL PCC reconfiguration or PUCCH reconfiguration
- For scheduling with different and the same numerologies:
  - For self-scheduling
    - PDCCH and the scheduled PDSCH have the same numerologies
    - PDCCH and the scheduled PUSCH can have the same or different numerologies
      - The time granularity indicated in the DCI for the timing relationship between DCI and the corresponding PUSCH follows the numerology of the PUSCH transmission
  - For cross-carrier scheduling
    - PDCCH and the scheduled PDSCH/PUSCH can have different or the same numerologies
      - The time granularity indicated in the DCI for the timing relationship between DCI and the corresponding PDSCH/PUSCH follows the numerology of the PDSCH/PUSCH transmission
    - UE is not expected to support faster processing for the case of cross-carrier scheduled PDSCH/PUSCH transmission scheduled by a DCI requiring than the case of self-scheduled PDSCH/PUSCH transmission scheduled by the DCI.
- UCI feedback related to multiple DL component carriers is supported for DL component carriers operating with the same and different numerology
  - The time granularity indicated in the DCI for PDSCH and the corresponding HARQ-ACK follows the numerology for HARQ-ACK transmission
  - UE is not expected to support faster processing for the case when PDSCH and the corresponding HARQ-ACK use a different numerology than the case of the case when PDSCH and HARQ-ACK use the same numerology
- NR support 4 timing advance groups including Primary Timing Advance Group and Secondary Timing Advance Group(s)
  - Support PRACH transmission for timing advance acquisition on SCC

#### 5.1.3.4.1.1 Self-/cross-carrier scheduling and joint/separate UCI feedback

*For carriers with the same and different numerology*

|                            |                                                                  |                                     |
|----------------------------|------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709975</a> | On NR carrier aggregation                                        | Huawei, HiSilicon                   |
| <a href="#">R1-1710102</a> | Scheduling and HARQ support for NR CA                            | CATT                                |
| <a href="#">R1-1710171</a> | Bandwidth part based resource scheduling for carrier aggregation | Guangdong OPPO Mobile Telecom.      |
| <a href="#">R1-1710339</a> | Support of cross-CC DCI/UCI transmission for NR CA               | LG Electronics                      |
| <a href="#">R1-1710578</a> | Scheduling and UCI feedback for carrier aggregation              | Intel Corporation                   |
| <a href="#">R1-1710739</a> | Cross-Carrier Scheduling and HARQ-ACK Feedback                   | Samsung                             |
| <a href="#">R1-1710885</a> | On cross-carrier scheduling and joint UCI design                 | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1710964</a> | On UE-to-UE measurement for CLI management                       | NEC                                 |
| <a href="#">R1-1711122</a> | NR carrier aggregation                                           | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711209</a> | CA with mixed numerology                                         | Qualcomm Incorporated               |
| <a href="#">R1-1711517</a> | On Scheduling and UCI Handling in Carrier Aggregation            | Ericsson                            |

#### 5.1.3.4.1.2 SRS fast switching

*For carriers with the same and different numerology*

|                            |                                              |                                    |
|----------------------------|----------------------------------------------|------------------------------------|
| <a href="#">R1-1711847</a> | Way Forward on SRS Switching                 | Huawei, HiSilicon, MediaTek, Intel |
| <a href="#">R1-1709976</a> | SRS switching among CCs and bandwidth parts  | Huawei, HiSilicon                  |
| <a href="#">R1-1710579</a> | On SRS fast switching                        | Intel Corporation                  |
| <a href="#">R1-1710740</a> | Fast Carrier Switching for SRS Transmissions | Samsung                            |
| <a href="#">R1-1711518</a> | On SRS Fast Switching in NR                  | Ericsson                           |

#### 5.1.3.4.2 Dual connectivity

|                            |                                                                       |                   |
|----------------------------|-----------------------------------------------------------------------|-------------------|
| <a href="#">R1-1709977</a> | On NR dual connectivity                                               | Huawei, HiSilicon |
| <a href="#">R1-1710103</a> | Scheduling and HARQ support for NR DC                                 | CATT              |
| <a href="#">R1-1710340</a> | Discussion on dual connectivity with single active UL at a given time | LG Electronics    |

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|                            |                                             |                                     |
|----------------------------|---------------------------------------------|-------------------------------------|
| <a href="#">R1-1710580</a> | On Dual Connectivity for NR                 | Intel Corporation                   |
| <a href="#">R1-1710741</a> | DC for UE with Single UL Carrier Capability | Samsung                             |
| <a href="#">R1-1710884</a> | On NR CA/DC configuration                   | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711123</a> | LTE-NR Dual connectivity                    | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711519</a> | On Dual Connectivity for NR                 | Ericsson                            |

**5.1.4 Channel coding**

[R1-1711917](#) Chairman's notes of AI 5.1.4 Channel coding Ad-Hoc chair (Nokia)

The document was presented by Matthew Baker from Nokia.

**Decision:** The document is endorsed and the content is incorporated as below.

**5.1.4.1 LDPC code**

**5.1.4.1.1 Coding chain**

|                            |                                                     |                   |
|----------------------------|-----------------------------------------------------|-------------------|
| <a href="#">R1-1711344</a> | LDPC Coding chain                                   | Intel Corporation |
| <a href="#">R1-1710844</a> | Consideration on coding chain for eMBB data channel | ZTE               |

**5.1.4.1.1.1 CRC attachment**

|                                                                                 |                                                        |                                     |
|---------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710482</a>                                                      | Study of Number of CRC Bits for Small Transport Blocks | Ericsson                            |
| <a href="#">R1-1711533</a>                                                      | CRC attachment for Smaller TBs                         | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1710827</a>                                                      | On CRC attachment for TB and CB                        | MediaTek Inc.                       |
| Note: proposal is for $L_{TB-CRC} = 14$ for TBs less than e.g. 512 (or higher?) |                                                        |                                     |
| <a href="#">R1-1710957</a>                                                      | Data channel processing and CRC attachment             | InterDigital, Inc.                  |
| <a href="#">R1-1711210</a>                                                      | CRC attachment                                         | Qualcomm Incorporated               |

**Proposal** to be checked until RAN1#90 after LDPC design is complete:

- $L_{TB-CRC} = 16$  bits for TBs smaller than e.g. 1008 or 8432 bits
- $L_{CB-CRC} = 8$  bits
- Checking other values is not precluded

**Agreement:** CBG-level CRC is not adopted

Not treated.

|                            |                                                          |                                     |
|----------------------------|----------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710481</a> | Study of Number of CRC Bits for Code Blocks              | Ericsson                            |
| <a href="#">R1-1710044</a> | Consideration on CRC attachment for eMBB data            | CATT                                |
| <a href="#">R1-1710341</a> | Discussion on CRC reduction and attachment for eMBB data | LG Electronics                      |
| <a href="#">R1-1710480</a> | CRC Attachment for Code Block Group                      | Ericsson                            |
| <a href="#">R1-1711532</a> | CRC attachment for CBG                                   | Nokia, Alcatel-Lucent Shanghai Bell |

**5.1.4.1.1.2 Segmentation**

|                            |                                  |                                     |
|----------------------------|----------------------------------|-------------------------------------|
| <a href="#">R1-1710342</a> | Code block segmentation for eMBB | LG Electronics                      |
| <a href="#">R1-1710742</a> | CB segmentation on data channel  | Samsung                             |
| <a href="#">R1-1711534</a> | Code block segmentation of eMBB  | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711211</a> | LDPC segmentation                | Qualcomm Incorporated               |
| <a href="#">R1-1711439</a> | Segmentation for eMBB data       | Huawei, HiSilicon                   |

**Agreement:** Same value of Z for code blocks within a TB

[R1-1711535](#) Padding for LDPC Nokia, Alcatel-Lucent Shanghai Bell

**Agreement:** Working assumption from RAN1-NRAH#1 is confirmed that filler bits F are attached at the end of info block B

Not treated.

|                            |                                               |                    |
|----------------------------|-----------------------------------------------|--------------------|
| <a href="#">R1-1710743</a> | UE operation for two different base graphs    | Samsung            |
| <a href="#">R1-1710958</a> | Code block segmentation for eMBB data channel | InterDigital, Inc. |

**5.1.4.1.1.3 Rate matching**

[R1-1710344](#) Discussion on bit level interleaver LG Electronics

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[R1-1710484](#) Bit Ordering for Circular Buffer of LDPC Codes Ericsson  
[R1-1711538](#) Interleaving for LDPC Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1710828](#) On interleaver for NR LDPC code MediaTek Inc.  
[R1-1711212](#) LDPC rate matching Qualcomm Incorporated

**Conclusion for bit-level interleaving:** Revisit after the decision on modulation symbol interleaving in the MIMO session.

[R1-1710045](#) IR-HARQ scheme for NR LDPC codes CATT  
[R1-1710485](#) Rate Matching for NR LDPC codes Ericsson  
[R1-1711438](#) Rate matching for LDPC codes Huawei, HiSilicon

**Agreement:**

- The number of RVs is 4.
- The RVs are at fixed locations in the circular buffer
- RV#0 is self-decodable
- **Working assumption** (to be confirmed after selection of the BGs): The first 2Z punctured systematic bits are not entered into the circular buffer

Not treated

[R1-1711536](#) Rate matching for LDPC Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1710343](#) On rate matching with LDPC code for eMBB LG Electronics  
[R1-1710483](#) LDPC Code Performance at High Code RateEricsson

**5.1.4.1.1.4 Other**

[R1-1710486](#) Throughput Requirements of LDPC Decoder Ericsson  
[R1-1711440](#) On LDPC codes for eMBB data Huawei, HiSilicon

**5.1.4.1.2 LDPC code design**

*Finalise number of base graphs, compact vs. extended design, and other design details*

[R1-1711944](#) Observations on LDPC Shift Coefficients Qualcomm, Intel, Ericsson  
[R1-1711692](#) WF on final parity check matrix selection Nokia

**Agreements:** Down selection of PCMs are facilitated as follows:

- Considering the priority given to certain merged proposals in BG1 and BG2, the following ranking is used to facilitate the selection of parity check matrices in more fairer manner.
- The proponent(s) who are not selected for BG1 or BG2 are ranked above.
- The proponent(s) who are only in one selected solution of BG1 and BG2 are ranked next.
- The proponent(s) who are selected for both BG1 and BG2 are ranked below.
- Any PCMs with significant overlaps with previous PCM designs are ranked below.
- If there are several proponents end up with the same rank, mutual understanding may use to rank the companies.
  - Previous proposals on BG1 and BG2 and the effort put in there shall be considered when ranking.
  - Higher ranking may provide to proponents who were not in the BG1.
- Ranking changes from top to bottom when the proponent's proposal selected for a shift coefficient design.

Selection of final parity check matrices for BG1 is facilitated as below.

For Set  $i = 1:8$

- Step 1: Cross check BLER performance at 10-2 and 10-4 for the block sizes related to the Set  $i$  (within 512-to-8448) and code rates 8/9-to-1/3.
- Step 2: Identify the candidates which are within 0.1 dB BLER performance across most block sizes related to the Set  $i$  (within 512-to-8448) and code rates 8/9-to-1/3.
- Step 3: Higher ranked identified candidate which is proven to satisfy the selection criteria as below, the proposal is selected as shift coefficient design for Set  $i$ .
- Step 4: the selected proponent is ranked below others.

End

**Selection criteria for a ranked high proposal as candidate X:**

- A candidate among existing candidates which has better ( $>0.1\text{dB}$ ) BLER performance for block sizes related to the Set  $i$  (within 512-to-8448) and code rates 8/9-to-1/3 is selected as candidate Y.

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- Error floor should be checked by examining slope of BLER curves at BLER=10<sup>-4</sup>.
- Denote P1 as the number of simulation cases for which the required SNR of candidate X is smaller than the required SNR of candidate Y for more than 0.1dB
- Denote P2 as the number of simulation cases for which the required SNR of candidate Y is smaller than the required SNR of candidate X for more than 0.1dB
- If  $P2 - P1 \leq 2\%$  of all simulation cases (QPSK, block sizes related to the Set **i** (within 512-to-8448) and code rates 8/9-to-1/3, BLER targets), and satisfies the error floor requirement, candidate X is deemed to satisfy the selection criteria.

Selection of final parity check matrices for BG2 is facilitated as below.

For Set **i** = 1:8

- Step 1: Cross check BLER performance at 10<sup>-2</sup> and 10<sup>-4</sup> for the block sizes related to the Set **i** (within 40-to-2560) and code rates 2/3-to-1/5.
- Step 2: Identify the candidates which are within 0.1 dB BLER performance across most block sizes related to the Set **i** (within 40-to-2560) and code rates 2/3-to-1/5.
- Step 3: Higher ranked identified candidate which is proven to satisfy the selection criteria as below, the proposal is selected as shift coefficient design for Set **i**.
- Step 4: the selected proponent is ranked below others.

End

**Selection criteria for a ranked high proposal as candidate X:**

- A candidate among existing candidates which has better (>0.1dB) BLER performance for block sizes related to the Set **i** (within 40-to-2560) and code rates 2/3-to-1/5 is selected as candidate Y.
- Error floor should be checked by examining slope of BLER curves at BLER=10<sup>-4</sup>.
- Denote P1 as the number of simulation cases for which the required SNR of candidate X is smaller than the required SNR of candidate Y for more than 0.1dB
- Denote P2 as the number of simulation cases for which the required SNR of candidate Y is smaller than the required SNR of candidate X for more than 0.1dB
- If  $P2 - P1 \leq 2\%$  of all simulation cases (QPSK, block sizes related to the Set **i** (within 40-to-2560) and code rates 2/3-to-1/5, BLER targets), and satisfies the error floor requirement, candidate X is deemed to satisfy the selection criteria.

|                                             |                                                                       |                       |
|---------------------------------------------|-----------------------------------------------------------------------|-----------------------|
| <a href="#">R1-1711545</a><br>Shanghai Bell | Summary of [89-24] Email discussion LDPC code base graph #1 for NR    | Nokia, Alcatel-Lucent |
| <a href="#">R1-1711546</a><br>Shanghai Bell | Summary of [89-25] Email discussion on LDPC code base graph #2 for NR | Nokia, Alcatel-Lucent |

Not treated.

|                            |                                                     |                                     |
|----------------------------|-----------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710046</a> | LDPC design for eMBB data                           | CATT                                |
| <a href="#">R1-1710047</a> | Offset optimization for NR LDPC                     | CATT                                |
| <a href="#">R1-1710345</a> | Circulant permutation matrix design for LDPC codes  | LG Electronics                      |
| <a href="#">R1-1710487</a> | LDPC Code Design for Base Graph #1                  | Ericsson                            |
| <a href="#">R1-1710488</a> | LDPC Code Design for Base Graph #2                  | Ericsson                            |
| <a href="#">R1-1710489</a> | Application of Two Base Graphs for NR Data Channels | Ericsson                            |
| <a href="#">R1-1710744</a> | LDPC Code for BG#1                                  | Samsung                             |
| <a href="#">R1-1710745</a> | LDPC Code for BG#2                                  | Samsung                             |
| <a href="#">R1-1710746</a> | Modulo Lifting for Length-Flexible QC LDPC Codes    | Samsung                             |
| <a href="#">R1-1710829</a> | On NR LDPC design and performance                   | MediaTek Inc.                       |
| <a href="#">R1-1710845</a> | Shift coefficients design for base graph 1          | ZTE                                 |
| <a href="#">R1-1710846</a> | Shift coefficients design for base graph 2          | ZTE                                 |
| <a href="#">R1-1711213</a> | LDPC rate compatible design                         | Qualcomm Incorporated               |
| <a href="#">R1-1711345</a> | Base Graph 1 lifting and evaluations                | Intel Corporation                   |
| <a href="#">R1-1711346</a> | Base Graph 2 lifting and evaluations                | Intel Corporation                   |
| <a href="#">R1-1711436</a> | LDPC design for base graph 1                        | Huawei, HiSilicon                   |
| <a href="#">R1-1711437</a> | LDPC design for base graph 2                        | Huawei, HiSilicon                   |
| <a href="#">R1-1711537</a> | LDPC designs for base graph 1 and base graph 2      | Nokia, Alcatel-Lucent Shanghai Bell |

[R1-1711731](#)      **WF on LDPC code usage scenarios**      **MediaTek, Qualcomm, InterDigital, ZTE**

[R1-1711982](#)      **WF on LDPC parity check matrices**      **Nokia**

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**Agreement:** Final parity check matrices for NR LDPC base graph #1 and #2 are agreed as in excel files [R1-1711982\\_BG1.xlsx](#) and [R1-1711982\\_BG2.xlsx](#) in [R1-1711982](#).

**Agreements:**

- Base graph #1 is used for the initial transmission and subsequent re-transmissions of the same TB when
  - CBS > X or code rate of the initial transmission > Y
- Base graph #2 is used for the initial transmission and subsequent re-transmissions of the same TB when
  - CBS ≤ X and code rate of the initial transmission ≤ Y
- **Working assumption:** X = 2560 and Y = 0.67
  - FFS after PCM decisions if X can be extended to 3840 and/or Y can be extended to 0.75

To be checked how the receiver knows in each case the code rate of the initial transmission, and how exactly it is defined. FFS whether some UE capabilities may be possible that do not require the implementation of both base graphs.

**5.1.4.2 Polar code**

**5.1.4.2.1 Code construction**

[R1-1711443](#) **Summary of [89-26] Polar code for NR -- alignment of latency/complexity calculation for early termination** Huawei

The document was presented by Zukang Shen from Huawei.

**Decision:** The document is noted.

[R1-1711442](#) **Summary of [89-27] Polar code proposal for NR** Huawei

**Decision:** The document is noted.

[R1-1711644](#) **Study of Split-CRC Polar Code Construction for Early Termination** Tsofun Algorithm  
(Revision of [R1-1709883](#))

- Proposal 1: Use  $J+J'=n_{\text{FAR}} + 3$  for polar code construction.
- Proposal 2: If some of the J+J' bits are distributed to allow ET, a relaxed requirement for FAR due to undetectable decoding errors should be agreed.

**Decision:** The document is noted.

[R1-1711347](#) **Simple distributed CRC design for Polar codes** Intel Corporation

- Any assistance bits (if distributed) are based on CRC and are distributed in a controlled and simple way as proposed in the companion document [\[R1-1711348\]](#).

**Decision:** The document is noted.

[R1-1711215](#) **Evaluation of early termination for Polar codes** Qualcomm Incorporated

- Proposal: Adopt CRC-aided successive-cancellation list decoding (CA-SCL) (with one long CRC) solution of Polar codes for control channel for robust performance, lower complexity and latency.

**Decision:** The document is noted.

[R1-1710490](#) **CRC-based Polar Code Construction** Ericsson

- Proposal 1: Adopt CA-Polar for both DL and UL of NR.
- Proposal 2: Recursive and non-recursive distributed CRC (D-CRC) can be considered as alternative choices, if early termination is required to be supported via modified code construction.

**Decision:** The document is noted.

[R1-1711764](#) **WF on Polar codes construction** NTT DOCOMO, Ericsson, Qualcomm, Intel, Tsofun Algorithm, CATT, AT&T

- Assume the input information sequence of channel coding is  $(u_1, u_2, \dots, u_K)$
- If the  $i$ th assistant bit  $p_i$  of Polar codes are inserted after  $u_b$  ( $b=1,2,\dots,K$ ), then  $p_i$  can only linearly generated from information bits  $(u_1, u_2, \dots, u_b)$  without any interleaving,
  - That is, no interleaver is used before the basic Polar encoder, and the information bits are mapped into the encoder by keeping the same input order and no de-interleaver is used after the basic Polar decoder
- i.e.,  $p_i = a_1 u_1 \oplus a_2 u_2 \oplus \dots \oplus a_b u_b \oplus \dots \oplus a_K u_K$ , where

$$a_j = \begin{cases} 0 \text{ or } 1, & \text{if } j \leq b \\ 0, & \text{if } j > b \end{cases}$$

**Decision:** The document is noted.

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**R1-1711730** WF on the Number of Assistant Bits for Polar Construction  
Qualcomm, Intel, Tsofun Algorithm, Samsung, LG, Fujitsu

Ericsson, NTT DOCOMO,

- The number of assistant bits of Polar codes is
- $J+J' = n_{\text{FAR}} + 3$

**Decision:** The document is noted.

**Questions:**

- $J' = 3$  or 6?
- How are the  $J+J'$  bits generated?
- Which bits are distributed (if any) and how?

Proposal for further consideration over lunch:

- For DL and UL for  $K \geq 22$ :
  - The number of assistant bits of Polar codes is
    - $J+J' = n_{\text{FAR}} + 3$
    - The  $J+J'$  bits are generated from a single CRC polynomial
    - Working assumption that 3 bits are distributed
      - 6 distributed bits can be further considered if 3 is shown to be insufficient
- (FFS?) For UL for  $K < 22$ :
  - The number of assistant bits of Polar codes is
    - $J' = 6$
    - The  $J'$  bits comprise 3 CRC bits and 3 parity bits
    - 6 bits are distributed

Alternative proposal (Nokia)

- The number of assistant bits of Polar codes is
  - $J+J' = n_{\text{FAR}} + 6$
- The  $J+J'$  bits are generated from a single CRC polynomial plus at least 3 parity bits
- 9 of the  $J+J'$  bits are distributed

Possible compromise:

- The number of assistant bits of Polar codes is
  - $J+J' = n_{\text{FAR}} + 6$
- The  $J+J'$  bits are generated from a single CRC polynomial
- Confirm working assumption that some (9?) of the  $J+J'$  bits are distributed

---

Proposal:

- For DL & UL, at least for  $K > 22$ :
  - The number of assistant bits of Polar codes is
    - $J+J' = n_{\text{FAR}} + 3$
  - The  $J+J'$  bits are generated from:
    - Working assumption a single CRC polynomial with no interleaver
      - If it turns out that the FAR target cannot be satisfied, then FFS between:
        - Single CRC with interleaver, or
        - Two CRCs
    - Working assumption that 3 bits are distributed
      - 6 distributed bits can be further considered if 3 is shown to be insufficient
- FFS: For UL for  $K \leq 22$ :
  - The number of assistant bits of Polar codes is
    - $J' = 6$
    - The  $J'$  bits comprise 3 CRC bits and 3 parity bits
    - 6 bits are distributed

**Question:** Can the FAR target be satisfied using a single CRC polynomial with no interleaver, while achieving early termination benefits?

Yes: Intel, NTT DOCOMO, Ericsson, CATT, Qualcomm, ~~Tsofun~~, NEC

No: Nokia, LG, Huawei, CohLog, MediaTek, ZTE, Accelercomm, NEC, Tsofun

**Question:** Are the achievable early termination benefits (while achieving the FAR and BLER targets) worthwhile compared to the complexity of adding an interleaver?

Yes: LG, Nokia, MediaTek, Huawei, Accelercomm, ITRI, CohLog, NEC, Spreadtrum, InterDigital

No: Ericsson, NTT DOCOMO, Qualcomm, Intel, CATT, Fujitsu, Tsofun

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**Question:** Should we work on a code construction based solution to deliver early termination benefits while achieving the FAR and BLER targets with acceptable complexity?

a) Downlink

Yes: Samsung, Nokia, LG, Huawei, MediaTek, Intel, InterDigital, ZTE, ITRI, Spreadtrum, Tsofun, Coherent Logix, Accelercomm, NEC, Qualcomm (if there is a plan B), NTT DOCOMO (if there is a plan B)

No: Ericsson

b) Uplink

Yes: Nokia, Huawei, Accelercomm, LG, NEC, Intel (if same scheme as for DL)

No: Ericsson, Qualcomm, Samsung, Fujitsu

**Conclusion:**

- RAN1 will work on a code construction based solution to deliver early termination benefits while achieving the FAR and BLER targets with acceptable complexity at least for the DL
- Revisit UL after designing the DL solution.

**Possible solutions for code construction based solution to deliver early termination benefits while achieving the FAR and BLER targets with acceptable complexity for downselection:**

- Single CRC + interleaver
  - LG, Huawei, HiSilicon, Nokia, ASB, Coherent Logix, ZTE, Accelercomm, Spreadtrum, MediaTek
- Multiple segment CRCs
  - Tsofun, NTT DOCOMO, Qualcomm, CATT, Intel, Ericsson

**Agreement:**

- All companies work together to design for the DL a Single CRC polynomial + Interleaver scheme to deliver early termination benefits while achieving the FAR (in presence of AWGN, and in presence of random QPSK, and undetected errors in intended user's codeword), and BLER targets with acceptable complexity and latency.
  - **Working assumption** that the CRC length is 19 bits, to be finalised as part of the design, taking into account the number of blind decodes or hypotheses to be tested.
    - Longer CRCs will be considered if required to meet the FAR target
- For DL for  $K+nFAR \geq 12$ , and for UL where  $K+nFAR > 22$ ,  $J+J' = nFAR + 3$
- For UL, where  $12 \leq K+nFAR \leq 22$ ,  $J+J' = nFAR + 6$ , comprising 3 parity bits and  $nFAR + 3$  additional CRC bits

Note: K is the number of payload information bits without CRC or parity bits

Note:  $nFAR$  may be zero in some circumstances.

Note: UE specific scrambling is not precluded and will be considered separately.

From **R1-1708833** (submitted to RAN1#89):

Proposal: The interleaver is determined from the CRC generator matrix

**R1-1711980**

**Performance with L1 CRC polynomial Qualcomm**

**R1-1709996**

**Parity check bits for Polar code Huawei, HiSilicon**

**R1-1709997**

**Early termination for Polar code Huawei, HiSilicon**

**R1-1710048**

**Polar codes construction for NR control channel CATT**

**R1-1710747**

**Polar code construction Samsung**

**R1-1710847**

**Performance evaluations on Polar codes ZTE**

**R1-1711125**

**Performance evaluation of DSPC-Polar codes NTT DOCOMO, INC.**

**R1-1711214**

**Early termination scheme for Polar codes Qualcomm Incorporated**

**R1-1711540**

**Early termination benefits of CRC distribution Nokia, Alcatel-Lucent Shanghai Bell**

**R1-1711541**

**Performance evaluation of polar code constructions Nokia, Alcatel-Lucent Shanghai Bell**

**R1-1709882**

**Enhancement of Early Termination of Polar Codes by placing UE-ID on Frozen Symbols Tsofun**

**Algorithm**

**R1-1711570**

**UE\_ID Insertion for Early Block Discrimination on DCI Blind Detection Coherent Logix**

**R1-1709998**

**Polar code for very small block length Huawei, HiSilicon**

**R1-1711557**

**Performance of polar code for very small block length Qualcomm Incorporated**

**R1-1709902**

**Enhancements for Polar code construction Sequans Communications**

**R1-1709995**

**Polar code construction Huawei, HiSilicon**

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|                            |                                                                                                  |                                     |
|----------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710346</a> | Early termination effect of polar codes                                                          | LG Electronics                      |
| <a href="#">R1-1710479</a> | Evaluation of PM based early termination for Polar code                                          | Huawei, HiSilicon                   |
| <a href="#">R1-1710491</a> | Study of Early Termination for DCI                                                               | Ericsson                            |
| <a href="#">R1-1710748</a> | Scrambling for polar codes                                                                       | Samsung                             |
| <a href="#">R1-1710770</a> | Discussion on Polar code construction                                                            | Spreadtrum Communications           |
| <a href="#">R1-1711124</a> | Distributed simple parity check Polar codes                                                      | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711216</a> | <b>Decoding and encoding latency for polar codes with PC frozen bits or distributed CRC bits</b> |                                     |
| <b>Incorporated</b>        |                                                                                                  | <b>Qualcomm</b>                     |
| <a href="#">R1-1711217</a> | Performance comparison between CA-polar and PC-polar for very small block length                 | Qualcomm                            |
| <b>Incorporated</b>        |                                                                                                  |                                     |
| <a href="#">R1-1711348</a> | Evaluations of Polar code designs                                                                | Intel Corporation                   |
| <a href="#">R1-1711539</a> | Distributed CRC Polar code construction                                                          | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711571</a> | Scrambling Sequence Design for Early Block Discrimination on DCI Blind Detection                 | Coherent Logix                      |
| <a href="#">R1-1711572</a> | Scrambling Sequence Design for Multi-Mode Block Discrimination on DCI Blind Detection            | Coherent                            |
| <b>Logix</b>               |                                                                                                  |                                     |
| <a href="#">R1-1711573</a> | Early Block Discrimination on DCI Blind Detection                                                | Coherent Logix                      |

**R1-1711983** WF on Polar Code Construction With PC bits Huawei, HiSilicon, CATT, MTK, ZTE, Accelercomm, Coherent Logix, LG, Spreadtrum, Interdigital, Nokia

**Agreement:** For UL, where  $12 \leq K+nFAR \leq 22$ ,  $J+J' = nFAR + 6$ , 3 PC bits are generated according to the following steps:

1. Encode  $K$  info bits to  $K+nFAR+3$  CRC encoded bits,
  - o FFS the  $nFAR+3$  CRC bit locations
2. Select  $K' = K+nFAR+6$  most reliable bit positions
3. Select 3 PC bits from the  $K'$  reliable positions
  - o The most reliable  $n$  positions with  $w_{min}$ , where
    - $w_{min}$  is the minimum row weight (as defined in R1-1706193) of the  $K+nFAR+3$  most reliable positions within the  $K'$  reliable positions, where  $n$  is given by:
      - $n=1$  if  $M-K-nFAR > 192$
      - $n=0$  otherwise
  - o 3- $n$  positions selected in least reliable positions within the  $K'$  reliable positions.
4. **Working Assumption:** The value of the PC bits is obtained from a length-5 cycle shift register as in R1-1706193

5.1.4.2.2 Sequence design

**R1-1710470** Necessity of multiple sequence for Polar code Huawei, HiSilicon

**Agreement:**

- Channel bit interleaving is applied
  - o The interleaving is either performed as part of the rate matching and/or after rate matching
    - To be confirmed after the rate matching discussion whether the interleaving is a separate function
  - o FFS whether the interleaver is a function of the modulation
- The same sequence for each mother code size is used for all modulations
- The UL sequence for a given mother code size is also used for the DL

|                            |                                                               |                    |
|----------------------------|---------------------------------------------------------------|--------------------|
| <a href="#">R1-1710348</a> | Design of polar codes with high order modulations             | LG Electronics     |
| <a href="#">R1-1710961</a> | Interleaver design for polar codes with high order modulation | InterDigital, Inc. |

|                            |                                                                 |                                     |                                           |
|----------------------------|-----------------------------------------------------------------|-------------------------------------|-------------------------------------------|
| <a href="#">R1-1710000</a> | <b>Nested sequence for Polar code</b>                           |                                     | Huawei, HiSilicon                         |
| <a href="#">R1-1710493</a> | On Bit Mapping Design for Polar Codes                           | Ericsson                            |                                           |
| <a href="#">R1-1710843</a> | <b>On the storage of polar code sequences</b>                   |                                     | AccelerComm Ltd                           |
| <a href="#">R1-1711126</a> | <b>Sequence design of Polar codes</b>                           |                                     | NTT DOCOMO, INC.                          |
| <a href="#">R1-1711218</a> | <b>Sequence construction of Polar codes for control channel</b> |                                     | Qualcomm Incorporated                     |
| <a href="#">R1-1711542</a> | Sequence design for Polar codes                                 | Nokia, Alcatel-Lucent Shanghai Bell |                                           |
| <a href="#">R1-1711822</a> | <b>Design of combined-and-Nested polar code sequences</b>       | Samsung                             | (Revision of <a href="#">R1-1710749</a> ) |
| <a href="#">R1-1711781</a> | <b>Performance comparison of sequences for Polar code</b>       | Huawei                              |                                           |

**R1-1711794** WF on Polar Code Sequence evaluation criteria Samsung

Current support for each sequence:

- Polarization Weight (PW): Huawei, MediaTek, Nokia, LG, InterDigital, ZTE, Spreadtrum, CATT, Accel., Tsofun

- Optimized- combined-and-nested (CN): Samsung, Qualcomm, NTT DOCOMO, Ericsson, Tsofun
- mutual information density evolution (MI-DE): Qualcomm, Samsung, NTT DOCOMO, Ericsson, Tsofun,
- Intel: Intel, Samsung, Qualcomm, NTT DOCOMO, Ericsson, Tsofun
- Docomo: NTT DOCOMO, Ericsson, Samsung, Qualcomm, Tsofun

Proposal:

- PW is adopted up to N=512
  - Companies work together to design the sequence for N>512
- Objected by Samsung, Qualcomm, NTT DOCOMO, Ericsson, Tsofun

Agreement for Next Steps:

- Polar code sequence candidates, including any merged solutions, should be provided by Wed 2<sup>nd</sup> Aug – Zukang (Huawei)
- Identify candidates of polar code sequence according to the procedure below by Wed 9<sup>th</sup> Aug– Zukang (Huawei)
- Rate matching proposals for any sequence that has been selected as a winner by at least one company to be provided by Wed 16<sup>th</sup> Aug. – Zukang (Huawei)

Decision procedure:

Candidate sequences shall have the property of simple nestedness, i.e. one sequence of length N/2 is nested with the sequence of length N

- Presence or absence of any other property (including symmetry, arithmetic describability, down-nestedness (i.e. a sequence of length N/2 is nested within the lower half of the sequence of length N), up-and-down-nestedness (i.e. a sequence of length N/2 is nested in both the upper and lower halves of the sequence of length N)) shall not be used as a decision criterion.
- Performance metric
  - SNR to achieve 10<sup>-2</sup> and 10<sup>-3</sup> BLER
- Simulation assumptions
  - Evaluate the block error rate (BLER) performance versus SNR

|                                      |                                                                                                                                                                                                                                               |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Channel                              | AWGN Channel                                                                                                                                                                                                                                  |
| Modulation                           | QPSK                                                                                                                                                                                                                                          |
| Info. Block length (=K bits w/o CRC) | K = 8:1:min (200, K <sub>max,N</sub> ), where K <sub>max,N</sub> = ⌊5N/6 – (J + J')⌋<br><br>K = min (200, K <sub>max,N</sub> ):24:K <sub>max,N</sub> , where K <sub>max,N</sub> = ⌊5N/6 – (J + J')⌋<br><br>excluding any code rates below 1/8 |
| Codeword length (=N)                 | {64, 128, 256, 512, 1024}                                                                                                                                                                                                                     |
| Decoding algorithm                   | List-X with LLR-based min-sum                                                                                                                                                                                                                 |
| List sizes                           | 1,2,4,8,16 (pruned to 8 best paths for CRC check)                                                                                                                                                                                             |
| Code construction for evaluation     | CA polar                                                                                                                                                                                                                                      |
| Number of (J+J') bits                | 19 bits (0b10100010101101111001 where the last bit is d19)                                                                                                                                                                                    |

PerfThresh\_K = 0.1dB for lower range of K, 0.3dB for higher range of K  
PerfThresh\_L = 0.4dB for L=1, 0.2dB for L=2, 0.1dB otherwise.  
PerfThresh = max (PerfThresh\_K, PerfThresh\_L)

Each company selects a winning sequence by the following algorithm:

- For sequence A,
  - compare with sequence Bat each simulation case.
    - For each simulation case:
      - if A's performance is worse than B – PerfThresh, increment FailCount\_AB
      - if A's performance is better than B + PerfThresh, increment WinCount\_AB
    - If (FailCount\_AB – WinCountAB) / Total number of simulation cases > 2%, increment OverallFail\_A
  - compare with sequence Cat each simulation case.

- For each simulation case:
  - if A's performance is worse than  $C - \text{PerfThresh}$ , increment FailCount\_AC
  - if A's performance is better than  $C + \text{PerfThresh}$ , increment WinCount\_AC
- If  $(\text{FailCount\_AC} - \text{WinCount\_AC}) / \text{Total number of simulation cases} > 2\%$ , increment OverallFail\_A
- repeat for sequences D...N
- For sequence B,
  - compare with sequence A at each simulation case
  - etc
- ...
- For sequence N,
  - compare with sequence A
  - etc
- Select sequence with smallest OverallFail

If multiple sequences A to M have the same smallest OverallFail,

- For sequence A,
  - compare with sequence B at each simulation case.
    - For each simulation case, if A's performance is better than  $B + \text{PerfThresh}$ , increment WinCount\_AB
  - compare with sequence C at each simulation case.
    - For each simulation case, if A's performance is better than  $C + \text{PerfThresh}$ , increment WinCount\_AC
  - $\text{WinCount A} = \sum \text{WinCount\_AB...AM}$
  - repeat for sequences up to M
- Repeat for sequences B to M.
- Select sequence with highest WinCount, referred to as sequence W.
- If any  $\text{WinCount\_xW} > \text{WinCount Wx}$ , then sequence(s) x is/are also selected.

If more than 1 sequence is selected by at least one company, then the final sequence will be chosen from the sequences that were selected by at least one company according to the largest support in RAN1#90.

|                            |                                                                                     |                    |  |
|----------------------------|-------------------------------------------------------------------------------------|--------------------|--|
| <a href="#">R1-1710347</a> | Repetition scheme of polar codes                                                    | LG Electronics     |  |
| <a href="#">R1-1710750</a> | Design of unified rate-matching for polar codes                                     | Samsung            |  |
| <a href="#">R1-1710825</a> | Optimization and comparison of Polar code rate-matching design                      | MediaTek Inc.      |  |
| <a href="#">R1-1710848</a> | Rate matching scheme of Polar codes                                                 | ZTE                |  |
| <a href="#">R1-1710960</a> | Parameter selection for polar codes repetition                                      | InterDigital, Inc. |  |
| <a href="#">R1-1711219</a> | Determination of the values for the parameters in rate-matching for control channel | Qualcomm           |  |
| <a href="#">R1-1710496</a> | Thresholds for Mother Code Size Determination                                       | Ericsson           |  |
| <a href="#">R1-1711349</a> | Discussion on Polar code rate-matching                                              | Intel Corporation  |  |

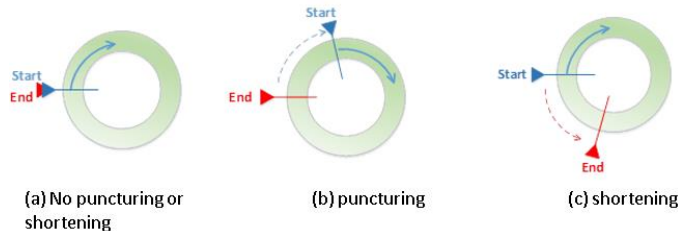
[R1-1711697](#) WF on rate matching for Polar codes Qualcomm

**Agreement:**  $R_{\min} = 1/8$

[R1-1711729](#) WF on Circular buffer of Polar Code Ericsson, Qualcomm, MediaTek, LGE

**Agreement:**

- To support repetition, puncturing, and shortening of Polar code:
  - The  $N=2^n$  coded bits at the output of Polar encoder is written into a length-N circular buffer in an order that is predefined for a given value of N
  - To obtain M coded bits for transmission
    - Puncturing is realized by selecting bits from position (N-M) to position (N-1) from the circular buffer
    - Shortening is realized by selecting bits from position 0 to position M-1 from the circular buffer
    - Repetition is realized by selecting all bits from the circular buffer, and additionally repeat (M-N) consecutive bits from the circular buffer
      - Exact set of repeated bits FFS till RAN1#90



**R1-1710751 Circular buffer management for polar code rate-matching Samsung**

|            |                                                               |                                     |
|------------|---------------------------------------------------------------|-------------------------------------|
| R1-1710492 | Information Sequence Design for Polar Codes                   | Ericsson                            |
| R1-1710494 | Impact of Puncturing on Bit-channel Capacities                | Ericsson                            |
| R1-1710495 | Polar Code Performance in Fading Channel                      | Ericsson                            |
| R1-1710591 | Sequence design evaluation for rate-matched polar codes       | NEC Corporation                     |
| R1-1710959 | Parameter selection for polar codes puncturing and shortening | InterDigital, Inc.                  |
| R1-1711127 | Rate matching of Polar codes                                  | NTT DOCOMO, INC.                    |
| R1-1711220 | Rate-matching scheme for control channel                      | Qualcomm Incorporated               |
| R1-1711543 | Rate matching for Polar codes                                 | Nokia, Alcatel-Lucent Shanghai Bell |

**5.1.4.2.3 Other**

|            |                                                               |                       |
|------------|---------------------------------------------------------------|-----------------------|
| R1-1709999 | Interleaver design for Polar code                             | Huawei, HiSilicon     |
| R1-1710752 | Design of channel interleaver for polar codes                 | Samsung               |
| R1-1710849 | Segmentation of Polar codes                                   | ZTE                   |
| R1-1711128 | Interleaving design of Polar codes                            | NTT DOCOMO, INC.      |
| R1-1711222 | Design and evaluation of Interleaver for Polar codes          | Qualcomm Incorporated |
| R1-1710001 | Rate matching for Polar code                                  | Huawei, HiSilicon     |
| R1-1710003 | Channel coding chain for control channel                      | Huawei, HiSilicon     |
| R1-1710842 | A flexible, low-latency, hardware-efficient SCL polar decoder | AccelerComm Ltd       |
| R1-1710868 | Blind Detection with Polar Codes                              | McGill University     |
| R1-1710869 | Partitioned List Decoding of Polar Codes                      | McGill University     |
| R1-1711221 | Design of Polar code for large UCI with segmentation          | Qualcomm Incorporated |

**5.1.4.3 PBCH**

|            |                                                                         |                                     |
|------------|-------------------------------------------------------------------------|-------------------------------------|
| R1-1710002 | Support of implicit soft combining for PBCH by Polar code construction  | Huawei, HiSilicon                   |
| R1-1710004 | Channel coding for URLLC                                                | Huawei, HiSilicon                   |
| R1-1710049 | Discussion on Polar codes for PBCH                                      | CATT                                |
| R1-1710349 | Details on PBCH coding                                                  | LG Electronics                      |
| R1-1710472 | Benefits of implicit soft combining for PBCH by Polar code construction | Huawei, HiSilicon                   |
| R1-1710497 | Study of Number of CRC Bits for PBCH                                    | Ericsson                            |
| R1-1710498 | Polar Code Design for NR-PBCH                                           | Ericsson                            |
| R1-1710826 | Polar coding design for NR-PBCH combining                               | MediaTek Inc.                       |
| R1-1710850 | Considerations on Channel Coding for NR-PBCH                            | ZTE                                 |
| R1-1711223 | PBCH channel coding                                                     | Qualcomm Incorporated               |
| R1-1711544 | Implicit timing indication for PBCH                                     | Nokia, Alcatel-Lucent Shanghai Bell |

**5.1.4.4 Other**

|            |                                                      |                        |
|------------|------------------------------------------------------|------------------------|
| R1-1709903 | Discussion of LTE-RM decoding ambiguity              | Sequans Communications |
| R1-1710471 | CRC polynomial for L1 control information and MIB    | Huawei, HiSilicon      |
| R1-1710499 | LDPC Code Performance for High Reliability Use Cases | Ericsson               |

**5.1.5 Modulation**

**R1-1711956 On Pi/2-BPSK with spectrum shaping Ericsson**

- Proposed agreement: Spectrum shaping is supported without RAN1 impact

**Decision:** The document is noted.

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[R1-1711831](#) WF on pi/2 BPSK with spectrum shaping IITH, ATT, Qualcomm, Deutsche Telekom, IITM, Reliance Jio, Samsung, Thales, INL, CEWiT, Tejas Networks, DISH, Sony

- pi/2 BPSK DFT-s-OFDM supports spectrum shaping without spectrum expansion of pi/2 BPSK data at least for uplink data for carrier frequencies below 6GHz
  - The spectrum shaping function shall be specified in RAN1

**Discussion:** Also supported by Interdigital

Ericsson is OK with main bullet, commented that RAN4 was expecting information by end of June meeting – if we proceed now with proposal, RAN1 will delay RAN4 progress

**Decision:** The document is noted.

[R1-1711909](#) [Draft] LS response on required NR parameters from RAN4 perspective Ericsson

**Decision:** The document is noted and final LS is [approved in R1-1711975](#) with following typo corrections

Based on this, RAN1 would like ~~the~~ to inform RAN4 that the RAN1 specifications will support the following modulation schemes in the uplink transmission direction:  $\pi/2$ -BPSK, QPSK, 16QAM, 64QAM, and 256QAM.

RAN1 specifications will support both OFDM (without DFT precoding) and DFT-precoded OFDM (a.k.a. DFTS-OFDM) for the uplink transmission direction. All above modulation schemes are supported for both OFDM and DFTS-precoded OFDM.

Although indicated in the RAN4-sourced LS as information not being necessary until later, RAN1 would also like to inform RAN4 that the RAN1 specifications will support the following -modulation schemes in the downlink transmission direction: QPSK, 16QAM, 64QAM, and 256QAM.

Not treated.

|                            |                                                          |                                     |
|----------------------------|----------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710474</a> | Further consideration on pi/2 BPSK with FDSS             | Huawei, HiSilicon                   |
| <a href="#">R1-1710592</a> | Next steps for pi/2 BPSK with spectrum shaping           | IITH                                |
| <a href="#">R1-1710753</a> | Modulation Schemes for NR                                | Samsung                             |
| <a href="#">R1-1710881</a> | On pi/2-BPSK DFTS-OFDM with spectrum shaping             | Ericsson AB                         |
| <a href="#">R1-1711224</a> | Consideration for MCS table                              | Qualcomm Incorporated               |
| <a href="#">R1-1711398</a> | On spectrum shaping for uplink Pi/2 BPSK with DFT-S-OFDM | Nokia, Alcatel-Lucent Shanghai Bell |

### 5.1.6 Duplexing

*Focus on cross-link interference management for duplexing flexibility*

[R1-1711918](#) Chairman's notes of AI 5.1.6 Duplexing Ad-Hoc chair (Qualcomm)

The document was presented by RAN1 chair on behalf of Wanshi Chen (Vice Chair).

**Decision:** The document is endorsed. Content incorporated below.

[R1-1710127](#) Viewpoint on NR CLI Management for Duplexing Work Plan ZTE

#### 5.1.6.1 Cross-link interference management

*Note that potential schemes are listed in Section 10.1 of TR38.802*

|                            |                                                                            |                                     |
|----------------------------|----------------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709982</a> | UE-to-UE measurement for cross-link interference mitigation                | Huawei, HiSilicon                   |
| <a href="#">R1-1710039</a> | Support of interference management schemes in duplexing flexibility        | CATT                                |
| <a href="#">R1-1710350</a> | Discussion on CLI measurement for Duplexing Flexibility                    | LG Electronics                      |
| <a href="#">R1-1710581</a> | Details on cross-link interference measurement                             | Intel Corporation                   |
| <a href="#">R1-1710755</a> | Cross-link Interference Management based on Coordinated Beamforming        | Samsung                             |
| <a href="#">R1-1710771</a> | Discussions on UE-to-UE interference measurement and report                | Panasonic                           |
| <a href="#">R1-1710784</a> | Discussion on UE-to-UE cross-link interference management                  | CMCC                                |
| <a href="#">R1-1710818</a> | CLI measurements in NR                                                     | MediaTek Inc.                       |
| <a href="#">R1-1710965</a> | On cross-carrier scheduling and HARQ-ACK feedback for NR CA                | NEC                                 |
| <a href="#">R1-1710128</a> | UE-to-UE measurement as an enabler for CLI mitigation schemes              | ZTE                                 |
| <a href="#">R1-1711129</a> | Discussion on cross-link interference mitigation for duplexing flexibility | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711225</a> | Dynamic TDD UE-to-UE measurement considerations                            | Qualcomm Incorporated               |
| <a href="#">R1-1711314</a> | On NR Cross-Link Symbol Alignment Scheme                                   | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711562</a> | On Hybrid TDD and Signaling for Cross-link Interference Mitigation         | Ericsson                            |

Further revised in [R1-1711706](#)

[R1-1711682](#) WF on UE-to-UE measurement as an enabler for CLI mitigation schemes ZTE

**Agreements:**

- For CLI management, support UE-to-UE interference measurement and reporting without the introduction of new RS(s)

**Agreements:**

- For UE-to-UE interference, support CLI measurement metrics which include at least one of
  - RSRP for the purpose of CLI
    - FFS the definition (e.g., based on SRS, DM-RS, etc.) and the corresponding reporting
  - RSSI for the purpose of CLI
    - FFS the definition (e.g., resources for the measurement) and the corresponding reporting
- For UE-to-UE interference, FFS additionally support CQI/CSI as the CLI measurement metrics and if so, its definition/reporting

[R1-1711707](#) WF on inter-TRP signaling for UE-to-UE cross-link interference measurement LGE  
[R1-1711700](#) WF on CLI measurement MediaTek  
[R1-1711842](#) WF on UE-to-UE crosslink measurement CMCC, Spreadtrum  
[R1-1711830](#) WF on UE-UE CLI measurement Huawei, HiSilicon, ZTE, MediaTek, Intel, CMCC  
[R1-1711851](#) WF on inter-gNB signaling for cross-link interference management LGE

[R1-1709981](#) TRP-to-TRP measurement for cross-link interference mitigation Huawei, HiSilicon  
[R1-1710129](#) Channel sensing based schemes for cross-link interference mitigation in NR ZTE  
[R1-1710351](#) Discussion on details of backhaul signaling for duplexing flexibility LG Electronics  
[R1-1710582](#) On RS transmission location for cross-link interference measurement for NR duplex flexibility Intel Corporation  
[R1-1710754](#) Cross-link Interference Management Based on UE Measurements Samsung  
[R1-1710772](#) Discussions on intended DL/UL direction configuration via Xn signalling Panasonic  
[R1-1711226](#) Dynamic TDD Cross-link interference management consideration Qualcomm Incorporated  
[R1-1711313](#) Cross-link interference management based on Xn support Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1711561](#) On Hybrid TDD and Measurements for Cross-link Interference Mitigation Ericsson

**5.1.6.2 Other**

[R1-1709983](#) UL Power control for cross-link interference mitigation Huawei, HiSilicon  
[R1-1710130](#) TRP-to-TRP measurement as an enabler for CLI mitigation schemes ZTE  
[R1-1710756](#) Performance Evaluation of Cross-Link Interference Management Samsung  
[R1-1710757](#) Timing Alignment on Cross-Link for Dynamic TDD Samsung  
[R1-1710758](#) Cross-Link Interference Management based on Power Control Samsung  
[R1-1710759](#) Discussion on CLI Mitigation with Network Coordination Samsung  
[R1-1710760](#) Interference Measurement Table and Beam Coordination Samsung  
[R1-1711130](#) Discussion on prioritized scenarios for duplexing flexibility NTT DOCOMO, INC.  
[R1-1711315](#) LBT-based UL transmission for dynamic TDD Nokia, Alcatel-Lucent Shanghai Bell  
[R1-1711563](#) On Dynamic TDD Scenarios Ericsson  
[R1-1711564](#) On Duplexing in Paired Spectrum Ericsson

**5.1.7 Wider bandwidth operations**

Refer to [R1-1709841](#) for work plan. Note that this agenda will be closed after this meeting.

[R1-1711795](#) On bandwidth parts and “RF” requirements Ericsson

Possible observations (from Wednesday offline)

- Usage scenarios #1, and 2, and 3 are at least identified as usage scenarios for BW part
  - From UE perspective, usage scenarios #1 and 3 are the same
- Usage scenario #4 can be considered in the context of carrier aggregation

**Observation:**

- Usage scenarios #1, and 2, and 3 in [R1-1711795](#) are at least identified as usage scenarios for BW part
  - From UE perspective, at least for single active BW part scenario, usage scenarios #1 and 3 are the same

**Agreements:**

- Usage scenario #4 in [R1-1711795](#) is supported in the context of non-contiguous intra-band carrier aggregation
  - Carrier without SS block can be configured for some UEs
- Send LS to RAN2/4 to tell above agreement/observation in [R1-1711824](#)

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**R1-1711824**      **Draft LS on non-contiguous CA**      **AT&T**

**Decision:** The document is noted and final LS is **approved in R1-1711825**

**MCC:** to attach **R1-1711795** to the LS

**R1-1711788**      **Way forward on further details of bandwidth part operation**      **Intel, AT&T, Huawei, HiSilicon**

Possible agreements (from Wednesday offline)

- For a single carrier WB UE, multiple active bandwidth parts with different numerologies are considered for a UE simultaneously
  - One TB is mapped per each active BWP.
  - FFS: The multiple active BWPs may overlap in frequency domain.
  - FFS: Cross-BWP scheduling is supported.
- Primary focus is to complete the single active bandwidth part case

**Agreements:**

- Primary focus is to complete the single active bandwidth part case
- If time is available later after completing the single active bandwidth part case, following cases should be considered for UE
  - For a single carrier WB UE, multiple active bandwidth parts with different numerologies are configured for a UE simultaneously
    - One TB is mapped per each active BWP.
    - FFS: The multiple active BWPs may overlap in frequency domain.
    - FFS: Cross-BWP scheduling is supported.

Possible agreement (from Wednesday offline)

- For intra-band scenario, capability(capabilities) of time required for bandwidth adaptation is reported by UE.
  - FFS: Detailed reporting contents
  - Minimum requirement for RF retuning time is to be determined by RAN 4

**R1-1711802**      **Way Forward on Further Details for Bandwidth Part**      **MediaTek, Huawei, HiSilicon**

**Agreements:**

- For FDD, separate sets of bandwidth part (BWP) configurations for DL & UL per component carrier
  - The numerology of DL BWP configuration is applied to at least PDCCH, PDSCH & corresponding DMRS
  - The numerology of UL BWP configuration is applied to at least PUCCH, PUSCH & corresponding DMRS
- For TDD, separate sets of BWP configurations for DL & UL per component carrier
  - The numerology of DL BWP configuration is applied to at least PDCCH, PDSCH & corresponding DMRS
  - The numerology of UL BWP configuration is applied to at least PUCCH, PUSCH & corresponding DMRS
  - For UE, if different active DL and UL BWPs are configured, UE is not expected to retune the center frequency of channel BW between DL and UL

**Agreements:**

- At least one of configured DL BWPs includes one CORESET with common search space at least in primary component carrier
- Each configured DL BWP includes at least one CORESET with UE-specific search space for the case of single active BWP at a given time
  - In case of single active BWP at a given time, if active DL BWP does not include common search space, then UE is not required to monitor the common search space

Possible agreement:

- For the indication of active DL/UL bandwidth part(s), support both DCI and time pattern schemes
  - FFS UE-specific DCI or group common DCI
  - FFS details of time pattern schemes

---

**Thursday**

**R1-1711812**      **WF on configuration of a BWP in wider bandwidth operation**      **LG Electronics, MediaTek**

**Agreement:**

- In configuration of a BWP,
  - A UE is configured with BWP in terms of PRBs.
    - The offset between BWP and a reference point is implicitly or explicitly indicated to UE.

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- FFS for reference point, e.g., center/boundary of NR carrier, channel number used for sync. and/or channel raster, or center/boundary of RMSI BW, center/boundary of SS block accessed during the initial access, etc.
- NR supports MU-MIMO between UEs in different (but overlapping) BWPs

**[R1-1711855](#) Way forward on PRB indexing Intel, Sharp, Ericsson, MediaTek, NTT DOCOMO, Panasonic, Nokia, ASB, NEC, KT, ETRI**

**Agreements:**

- Common PRB indexing is supported
  - The indexing is common to all the UEs sharing a wideband CC from network perspective, regardless of whether they are NB, CA, or WB UEs.
  - The indexing is with respect to the reference point
  - The indexing is with respect to a given numerology
  - Note: Example usage of common PRB indexing is for scheduling group common PDSCH, RS sequences, BWP configuration, etc.
- UE-specific PRB indexing is supported
  - It is indexed per BWP with respect to the configured SCS for the BWP
  - Note: Example usage of UE-specific indexing is for scheduling UE-specific PDSCH

**[R1-1711853](#) Activation/deactivation of bandwidth part Ericsson**

**Agreements:**

- Activation/deactivation of DL and UL bandwidth parts can be
  - by means of dedicated RRC signaling
    - Possibility to activate in the bandwidth part configuration
  - by means of DCI (explicitly and/or implicitly) or MAC CE [one to be selected]
    - by means of DCI could mean
      - Explicit: Indication in DCI (FFS: scheduling assignment/grant or a separate DCI) triggers activation/deactivation
        - Separate DCI means DCI not carrying scheduling assignment/grant
      - Implicit: Presence of DCI (scheduling assignment/grant) in itself triggers activation/deactivation
      - This does not imply that all these alternatives are to be supported.
  - FFS: by means of timer
  - FFS: according to configured time pattern

Prepare draft LS to RAN2/4 until Friday – Pei-Kai (Mediatek), Intel

**Friday**

**[R1-1711948](#)** [Draft] LS on bandwidth part operation in NR MediaTek  
Further revised in **[R1-1711989](#)** [Draft] LS on Bandwidth Part Operation in NR Mediatek

**Decision:** The document is noted and final LS is **approved in R1-1711998**.

**[R1-1711913](#) WF on introduction indication in SS block for cell update CMCC**

**[R1-1711873](#) WF on initial bandwidth part LG Electronics, Ericsson, MediaTek**

**[R1-1711795](#)** On bandwidth parts and 'RF' requirements Ericsson  
**[R1-1709972](#)** Overview of wider bandwidth operations Huawei, HiSilicon  
**[R1-1710040](#)** NR wider bandwidth operation CATT  
**[R1-1710126](#)** Resource allocation for wideband operation ZTE  
**[R1-1710172](#)** Discussion on UE specific RF bandwidth adaptation in NR Guangdong OPPO Mobile Telecom.  
**[R1-1710249](#)** PRB and RBG indexing within wider channel BW for NR NEC  
**[R1-1710352](#)** Remaining details on wider bandwidth operation LG Electronics  
**[R1-1710398](#)** NR transmission on anchor bandwidth part vivo  
**[R1-1710416](#)** Design considerations for NR operation with wide bandwidths AT&T  
**[R1-1710583](#)** Open issues for wider bandwidth operations Intel Corporation

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|                            |                                                         |                                     |
|----------------------------|---------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710622</a> | UE bandwidth configuration during initial access        | ETRI                                |
| <a href="#">R1-1710761</a> | Wider Bandwidth Operations                              | Samsung                             |
| <a href="#">R1-1710785</a> | Discussion on the change of SS block frequency position | CMCC                                |
| <a href="#">R1-1710796</a> | Further Details on Wider Bandwidth Operations in NR     | MediaTek Inc.                       |
| <a href="#">R1-1710878</a> | Bandwidth Adaptation via BWP Selection in NR            | InterDigital, Inc.                  |
| <a href="#">R1-1710883</a> | On wider band aspects of NR                             | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1710943</a> | Discussion on PRB grid and PRB indexing                 | Panasonic Corporation               |
| <a href="#">R1-1711131</a> | Remaining issues on wider bandwidth operations for NR   | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711227</a> | UE Power Saving during Active State                     | Qualcomm Incorporated               |

**5.1.8 NR-LTE co-existence**

Refer to [R1-1709844](#) for work plan.

**[R1-1711919](#) Chairman's notes of AI 5.1.8 NR-LTE co-existence Ad-Hoc chair (Qualcomm)**

The document was presented by RAN1 chair on behalf of Wanshi Chen (Vice Chair).

**Decision:** The document is endorsed. Content incorporated below.

|                            |                                                                 |                                |
|----------------------------|-----------------------------------------------------------------|--------------------------------|
| <a href="#">R1-1709980</a> | Subcarrier mapping for LTE-NR coexistence                       | Huawei, HiSilicon              |
| <a href="#">R1-1710173</a> | Discussion on the NR-LTE self-interference issue                | Guangdong OPPO Mobile Telecom. |
| <a href="#">R1-1710250</a> | Discussion on UL sharing of NR and LTE NEC                      |                                |
| <a href="#">R1-1710354</a> | Remaining details on UL sharing between LTE and NR              | LG Electronics                 |
| <a href="#">R1-1710384</a> | Interference analysis for LTE-NR co-existence                   | vivo                           |
| <a href="#">R1-1710417</a> | Remaining details of NR-LTE coexistence in overlapping spectrum | AT&T                           |

Proposals:

- Send an LS to RAN3 that specifications of Xn interface and enhanced X2 interface shall include messages to enable coordination between LTE MCG and NR SCG of:
  - SCell activation/deactivation/reconfiguration
  - MBSFN subframe configuration
  - Signaling needed for timing synchronization and SFN alignment between LTE and NR
  - TDD UL/DL configuration
  - Indication of semi-statically reserved resources reserved of LTE

Continue discussion offline – Ralf (AT&T)

**Thursday**

**[R1-1711710](#) WF on NR-LTE coexistence AT&T, Nokia, Ericsson, Vodafone**

**Agreements:**

- For LTE-NR coexistence in overlapping spectrum, support on the Xn interface and enhanced X2 interface messages
  - FFS details, e.g., SCell ON/OFF, LTE MBSFN subframe configuration, synchronization aspects between LTE and NR, indication of semi-statically reserved resources in frequency domain, Indication of semi-statically reserved resources in time domain, etc.
- For LTE-NR coexistence in adjacent spectrum, support on the Xn interface and enhanced X2 interface messages
  - FFS details, e.g., synchronization aspects between LTE and NR, TDD UL/DL configuration, etc.
  - FFS the case of multi-operator scenarios
- Aim to conclude the FFS parts for the above and send an LS to RAN3 in the next meeting

|                            |                                                |                                                  |
|----------------------------|------------------------------------------------|--------------------------------------------------|
| <a href="#">R1-1710584</a> | Open issues for LTE-NR coexistence             | Intel Corporation                                |
| <a href="#">R1-1710763</a> | LTE-NR coexistence for UL                      | Samsung                                          |
| <a href="#">R1-1710840</a> | Discussion on Uplink TDM Operation for NR NSA  | China Telecommunications                         |
| <a href="#">R1-1710880</a> | On uplink half-tone shift                      | Ericsson AB                                      |
| <a href="#">R1-1710904</a> | Uplink transmission in NR NSA mode             | Apple Inc.                                       |
| <a href="#">R1-1711701</a> | Considerations of NR-LTE coexistence in uplink | ZTE (Revision of <a href="#">R1-1710910</a> )    |
| <a href="#">R1-1711132</a> | Views on single UL transmission and UL sharing | NTT DOCOMO, INC.                                 |
| <a href="#">R1-1711229</a> | NR-LTE Co-channel Coexistence Considerations   | Qualcomm Incorporated                            |
| <a href="#">R1-1711337</a> | On NR-LTE coexistence for NSA and SA           | China Unicom                                     |
| <a href="#">R1-1711584</a> | On UL coverage extension of TDD @3.5GHz        | ORANGE (Revision of <a href="#">R1-1711365</a> ) |
| <a href="#">R1-1711400</a> | On 1Tx only UE in LTE-NR Dual Connectivity     | Nokia, Alcatel-Lucent Shanghai Bell              |

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**[R1-1711709](#)    WF on NR-LTE coexistence in overlapping spectrum    AT&T, Deutsche Telekom, Vodafone, Intel, Ericsson, Samsung, Orange, China Unicom, Huawei, HiSilicon, China Telecom**

**Agreements:**

- In NR, support configuration between the following for paired spectrum (support of scheme 2 below is conditioned on the assumption that 100kHz is adopted as a supported UL channel raster in NR to support LTE/NR co-existence with LTE FDD)
  - Scheme 1: Do nothing to allow subcarrier alignment between NR UL (15 kHz) and LTE UL
  - Scheme 2: Allow subcarrier alignment between NR UL (15 kHz) and LTE UL, where NR UL raster is with a 7.5 kHz shift to the LTE UL raster
- Send an LS to RAN4 - Ralf (AT&T)

**Wednesday**

**[R1-1711779](#)    [DRAFT] LS on subcarrier alignment and channel raster    AT&T, Sprint, T-Mobile USA, Huawei, HiSilicon, Samsung, Deutsche Telekom, Ericsson, Intel, China Telecom**

The document was presented by Ralf Bendlin from AT&T.

**Discussion:** .Qualcomm: let's delete "to support configuration of subcarrier alignment between NR UL (15 kHz) and LTE UL in paired spectrum".

AT&T compromise: RAN1 kindly requests RAN4 to take the above RAN1 agreement into account ensuring scheme 1 and scheme 2 are possible

Qualcomm: Scheme 2 is conditioned to RAN4 decision

**Decision:** The document is noted and final LS is **approved in [R1-1711834](#)** with the following updates:

Action to RAN4 WG:

RAN1 kindly requests RAN4 to take the above RAN1 agreement ~~to support configuration of subcarrier alignment between NR UL (15 kHz) and LTE UL in paired spectrum~~ into account when discussing NR channel raster.

Dates of next TSG-RAN WG1 Meetings:

|                   |                            |                        |
|-------------------|----------------------------|------------------------|
| RAN1 #90          | 21st – 25th August 2017    | Prague, Czech Republic |
| RAN1 NR Ad-Hoc#32 | 18th – 21th September 2017 | Nagoya, Japan          |

**Thursday**

**[R1-1711675](#)    Way forward on UE self-interference    Vivo, OPPO, Coolpad, China Telecom, Xiaomi, Huawei, HiSilicon, China Unicom**

**Agreements:**

- RAN1 to continue study the solution(s) to mitigate UE self-interference due to the simultaneous transmission and reception at the same time
  - Note: the issue is particular applicable for specific band combination(s) (e.g. harmonics related issues)
  - Note: the issue can be addressed if UE is not mandated to transmit on one carrier (F1) and receive on another carrier (F2) at the same time
- Send an LS to RAN4 regarding the above agreements – Xueming (Vivo), which is **approved in [R1-1711872](#)**

**[R1-1711705](#)    Way forward on handling of single UL transmission    NTT DoCoMo**

**[R1-1711848](#)    Way forward on handling of single UL transmission    NTT DoCoMo, Apple**

**Agreements:**

- Support the following solution to single UL transmission where NW synchronization between eNodeB and gNodeB is assumed (where there is at least one LTE carrier and at least one NR carrier of a different carrier frequency)
  - When UE is activated with multiple UL carriers on different frequencies, time-switching of LTE UL carrier and NR UL carrier is used
    - UL transmission timing pattern of LTE carrier and NR carrier is semi-statically shared between eNodeB and gNodeB
    - FFS: Signaling to UE of UL transmission timing pattern
  - UE simultaneously receives signals/channels from both NR DL carrier and LTE DL carrier
    - For scheduling/HARQ timing of LTE FDD carrier, the following timing can be considered, e.g., for LTE:
      - DL-reference UL/DL configuration for TDD
      - DL-reference UL/DL configuration defined for FDD-SCell in TDD-FDD CA with TDD-PCell
      - Up to NW implementation (i.e., no RAN1 spec. impact)
    - For scheduling/HARQ timing of NR carrier, no special handling would be necessary
  - Other solutions are not precluded

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- Send an LS to RAN2, RAN3, and RAN4 – Kazuaki (DCM), which is drafted and endorsed in [R1-1711877](#). Final LS approved in [R1-1711877](#).

[R1-1711817](#)    **WF on LTE/NR DC deployment scenarios to extend NR UL coverage** Orange, Deutsche Telekom, Ericsson, China Unicom, OPPO, Huawei, China Telecom, Nokia, ZTE

**Agreements:**

- RAN1 should consider the following scenarios as listed in [R1-1711817](#) in the future work especially in terms of UL coverage
  - Scenario 1
  - Scenario 2 where UL sharing is from network perspective
    - FFS where UL sharing from UE perspective
      - Aim to conclude in the next meeting; if no consensus, consider sending an LS to RANP for clarification
  - Scenario 3

Not treated.

|                            |                                                                   |                                     |
|----------------------------|-------------------------------------------------------------------|-------------------------------------|
| <a href="#">R1-1709979</a> | Overview of NR UL for LTE-NR coexistence                          | Huawei, HiSilicon                   |
| <a href="#">R1-1710041</a> | Support of UL carrier sharing between NR-LTE                      | CATT                                |
| <a href="#">R1-1710353</a> | Remaining details on DL sharing between LTE and NR                | LG Electronics                      |
| <a href="#">R1-1710385</a> | Issues on UL transmission for LTE-NR co-existence                 | vivo                                |
| <a href="#">R1-1710762</a> | LTE-NR coexistence for DL                                         | Samsung                             |
| <a href="#">R1-1710909</a> | Discussion of NR-LTE coexistence on DL                            | ZTE                                 |
| <a href="#">R1-1710912</a> | Reserved resources supporting NR co-existence with LTE and NB-IoT | Ericsson AB                         |
| <a href="#">R1-1711228</a> | NR LTE Adjacent Channel Coexistence Consideration                 | Qualcomm Incorporated               |
| <a href="#">R1-1711247</a> | NR LTE Adjacent Channel Coexistence Consideration                 | Qualcomm Incorporated               |
| <a href="#">R1-1711248</a> | NR-LTE Co-channel Coexistence Considerations                      | Qualcomm Incorporated               |
| <a href="#">R1-1711399</a> | LTE and NR performance in NR-LTE UL sharing                       | Nokia, Alcatel-Lucent Shanghai Bell |
| <a href="#">R1-1711559</a> | Uplink operation for LTE+NR Dual Connectivity                     | VODAFONE Group Plc                  |

**5.1.9 UL power control**

[R1-1711947](#)    **Chairman's notes of AI 5.1.9 UL Power Control** Ad-Hoc chair (Qualcomm)

The document was presented by RAN1 chair on behalf of Wanshi Chen (Vice Chair).

**Decision:** The document is endorsed. Content incorporated below.

**5.1.9.1 Power sharing mechanism**

*Including power sharing mechanism for LTE-NR dual connectivity, NR carrier aggregation and dual connectivity*

|                            |                                                   |                    |
|----------------------------|---------------------------------------------------|--------------------|
| <a href="#">R1-1709949</a> | Power control for CA and DC                       | Huawei, HiSilicon  |
| <a href="#">R1-1710042</a> | Power Sharing Mechanism                           | CATT               |
| <a href="#">R1-1710839</a> | UL Power Sharing for LTE-NR Dual Connectivity     | MediaTek Inc.      |
| <a href="#">R1-1710879</a> | Power Sharing Mechanisms with LTE-NR DC and NR DC | InterDigital, Inc. |
| <a href="#">R1-1711526</a> | Power Sharing for LTE-NR Dual Connectivity        | Ericsson           |

**Agreements:**

- Regarding power sharing for LTE-NR dual connectivity, support at least semi-static power sharing between LTE and NR
  - FFS details
  - Discuss further whether or not to support dynamic power sharing between LTE and NR
  - Discuss further impacts due to other factors, e.g., different TTI lengths, channel/service types, synchronous vs. asynchronous, different processing latency for LTE vs. NR, assumption regarding communication between NR vs. LTE at UE, specification impact to LTE (if any) and/or NR, etc.

Send an LS to RAN4 to inform the above agreements – Ravi (Ericsson)

**Friday**

[R1-1711898](#)    **[DRAFT] LS on power sharing for LTE-NR Dual Connectivity** Ericsson

**Discussion:** Nokia → should RAN2 be informed as well?

AT&T → WI code is incorrect

**Decision:** The document is noted and final LS is [approved in R1-1711999](#) by adding RAN2 in CC part and updating work item code to “NR\_newRAT”.

|                            |                                                          |                          |
|----------------------------|----------------------------------------------------------|--------------------------|
| <a href="#">R1-1711862</a> | WF on LTE-NR power sharing mechanism                     | NTT DoCoMo, InterDigital |
| <a href="#">R1-1710355</a> | Discussion on power sharing for LTE-NR dual connectivity | LG Electronics           |

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|                            |                                                  |                                     |
|----------------------------|--------------------------------------------------|-------------------------------------|
| <a href="#">R1-1710585</a> | Power sharing mechanism for NR dual connectivity | Intel Corporation                   |
| <a href="#">R1-1710764</a> | On UL Power Sharing for Multi-Cell Transmissions | Samsung                             |
| <a href="#">R1-1710911</a> | Power Control for CA and DC in NR                | ZTE                                 |
| <a href="#">R1-1711133</a> | LTE-NR power sharing mechanism                   | NTT DOCOMO, INC.                    |
| <a href="#">R1-1711396</a> | On power sharing between LTE and NR in DC        | Nokia, Alcatel-Lucent Shanghai Bell |

**5.1.9.2 NR power control framework**

*Including power control for PUSCH/PUCCH/SRS/DMRS, PHR calculation*

|                            |                                           |                                |
|----------------------------|-------------------------------------------|--------------------------------|
| <a href="#">R1-1710174</a> | Uplink power control for NR               | Guangdong OPPO Mobile Telecom. |
| <a href="#">R1-1710356</a> | Discussion on uplink power control for NR | LG Electronics                 |
| <a href="#">R1-1711818</a> | WF on UL power control                    | LGE, Ericsson, InterDigital    |

**Agreements:**

- In NR, PUSCH and at least some type(s) of SRS can share same closed loop power control command from gNB
  - FFS details, e.g., the type(s) of SRS, beam related aspects, etc.
- In NR, PUSCH and PUCCH rely on independent closed loop power control commands from gNB
- Study aspects related SRS carrier switching

|                            |                                   |                                          |
|----------------------------|-----------------------------------|------------------------------------------|
| <a href="#">R1-1711134</a> | Power control framework for PUSCH | NTT DOCOMO, INC.                         |
| <a href="#">R1-1711230</a> | Power control and PHR for NR      | Qualcomm Incorporated                    |
| <a href="#">R1-1711397</a> | UL Power Control for MIMO         | Nokia, Alcatel-Lucent Shanghai Bell      |
| <a href="#">R1-1711724</a> | Summary of power control          | ZTE                                      |
| <a href="#">R1-1711721</a> | WF on UL power control            | ZTE, NTT DoCoMo                          |
| <a href="#">R1-1711863</a> | WF on NR power control framework  | NTT DOCOMO, Nokia, Intel, InterDigital   |
| <a href="#">R1-1711819</a> | WF on PHR for different waveforms | LG Electronics, NTT DOCOMO, InterDigital |

**Agreement:** UE's power headroom report is based on the corresponding PUSCH transmission(s)

- FFS details

Not treated.

|                            |                                                   |                             |
|----------------------------|---------------------------------------------------|-----------------------------|
| <a href="#">R1-1709948</a> | General considerations on UL power control design | Huawei, HiSilicon           |
| <a href="#">R1-1710043</a> | NR Power Control Framework                        | CATT                        |
| <a href="#">R1-1710209</a> | On NR power control                               | ZTE                         |
| <a href="#">R1-1710210</a> | On NR PHR calculation                             | ZTE                         |
| <a href="#">R1-1710219</a> | UL transmission power control                     | Mitsubishi Electric Co.     |
| <a href="#">R1-1710357</a> | Discussion on uplink power headroom report for NR | LG Electronics              |
| <a href="#">R1-1710404</a> | UL multi-beam power control                       | vivo                        |
| <a href="#">R1-1710475</a> | Discussion on PHR calculation                     | Huawei, HiSilicon           |
| <a href="#">R1-1710586</a> | PUSCH and PUCCH power control                     | Intel Corporation           |
| <a href="#">R1-1710765</a> | Power Control Framework                           | Samsung                     |
| <a href="#">R1-1710766</a> | On PHR Requirements and Calculation               | Samsung                     |
| <a href="#">R1-1710786</a> | Discussion on NR power control and sharing        | CMCC                        |
| <a href="#">R1-1711602</a> | Common and Beam Specific Power Control Parameters | InterDigital, Inc.          |
| <a href="#">R1-1711054</a> | On the NR UL power control framework              | Ericsson                    |
| <a href="#">R1-1711249</a> | Power control and PHR for NR                      | Qualcomm Incorporated       |
| <a href="#">R1-1711335</a> | UL power control in multi-beam based approaches   | ASUSTEK COMPUTER (SHANGHAI) |

**5.1.10 Channel model**

[R1-1711623](#) **Correction on the formula of AnnexA** ZTE, Ericsson (Revision of [R1-1711255](#))

**Decision:** Agreed in [R1-1711758](#) as 38.901CR0016 with latest version of cover sheet (v11.2).

[R1-1711624](#) **Correction on Procedure A of spatial-consistency UT mobility modeling** ZTE, Ericsson (Revision of [R1-1711256](#))

**Decision:** Agreed in [R1-1711760](#) as 38.901CR0017 with latest version of cover sheet (v11.2).

**5.1.11 Other**

|                            |                                                                                                    |                   |
|----------------------------|----------------------------------------------------------------------------------------------------|-------------------|
| <a href="#">R1-1709971</a> | Remaining issues on ECP                                                                            | Huawei, HiSilicon |
| <a href="#">R1-1710358</a> | Multiplexing NCP and ECP                                                                           | LG Electronics    |
| <a href="#">R1-1710405</a> | Feasibility study on subband constellation rotation for uplink PAPR reduction for CP-OFDM waveform | vivo              |
| <a href="#">R1-1710406</a> | PAE consideration on supporting CP-OFDM and DFT-S-OFDM                                             | vivo              |

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|                            |                                                                           |                            |
|----------------------------|---------------------------------------------------------------------------|----------------------------|
| <a href="#">R1-1710407</a> | Forward compatibility consideration for ECP design and NR-MBMS            | vivo                       |
| <a href="#">R1-1710767</a> | ECP Aspects for 60kHz SCS                                                 | Samsung                    |
| <a href="#">R1-1710768</a> | On PAPR of DMRS for p/2-BPSK DFT-s-OFDM with Spectrum Shaping             | Samsung                    |
| <a href="#">R1-1710769</a> | RACH Aspects for CA and DC                                                | Samsung                    |
| <a href="#">R1-1710966</a> | Flexible subcarrier spacing in the uplink for NR use cases including mMTC | ATR                        |
| <a href="#">R1-1711231</a> | TDD-SUL CA scenario                                                       | Qualcomm Incorporated      |
| <a href="#">R1-1711250</a> | TDD-SUL CA scenario                                                       | Qualcomm Incorporated      |
| <a href="#">R1-1711326</a> | Comment on NR specification                                               | Panasonic                  |
| <a href="#">R1-1711389</a> | Further details on scrambling                                             | Ericsson                   |
| <a href="#">R1-1711424</a> | On bandwidth adaptation                                                   | Huawei, HiSilicon          |
| <a href="#">R1-1711459</a> | Modulation Scheme for URLLC with Preemption Multiplexing                  | Samsung                    |
| <a href="#">R1-1711460</a> | On Transparency of Spectrum Shaping for p/2-BPSK DFT-s-OFDM               | Samsung                    |
| <a href="#">R1-1711461</a> | On Spectrum Shaping Methods for p/2-BPSK DFT-s-OFDM                       | Samsung                    |
| <a href="#">R1-1711462</a> | On Modulation Schemes for High Spectral Efficiency                        | Samsung                    |
| <a href="#">R1-1711463</a> | Transmission and Reception for High-Order Modulation with MIMO            | Samsung                    |
| <a href="#">R1-1711528</a> | Extended Range Considerations for mMTC                                    | HUGHES Network Systems Ltd |
| <a href="#">R1-1711529</a> | Channel Model for Non-Terrestrial Networks                                | HUGHES Network Systems Ltd |
| <a href="#">R1-1711574</a> | Discussion on bandwidth part configuration                                | LG Electronics Inc.        |

**5.2 Other**

|                            |                                                                                                      |                             |
|----------------------------|------------------------------------------------------------------------------------------------------|-----------------------------|
| <a href="#">R1-1711317</a> | Discussion on NR Operating in Unlicensed Spectrum                                                    | ASUSTEK COMPUTER (SHANGHAI) |
| <a href="#">R1-1711464</a> | High level consideration on NR unlicensed band operation                                             | Huawei, HiSilicon           |
| <a href="#">R1-1711465</a> | NR Numerology on unlicensed bands                                                                    | Huawei, HiSilicon           |
| <a href="#">R1-1711466</a> | NR Frame structure on unlicensed bands                                                               | Huawei, HiSilicon           |
| <a href="#">R1-1711467</a> | Coexistence and Channel access for NR unlicensed band operations                                     | Huawei, HiSilicon           |
| <a href="#">R1-1711469</a> | NR standalone operation on unlicensed bands                                                          | Huawei, HiSilicon           |
| <a href="#">R1-1711470</a> | Discussion on NoMA study for Rel-15 SI                                                               | Huawei, HiSilicon           |
| <a href="#">R1-1711520</a> | Discussion of Multi-Antenna and Highly Directional Beam-Forming for Operation in Unlicensed Spectrum | Ericsson                    |
| <a href="#">R1-1711521</a> | On Autonomous UL Transmissions for NR in Unlicensed Spectrum                                         | Ericsson                    |
| <a href="#">R1-1711522</a> | On Channel Access Mechanisms for NR in Unlicensed Spectrum                                           | Ericsson                    |
| <a href="#">R1-1711523</a> | On NR Operation in the 60 GHz Unlicensed Band                                                        | Ericsson                    |
| <a href="#">R1-1711524</a> | On Physical Layer Design Policies for Unlicensed Operation of NR                                     | Ericsson                    |
| <a href="#">R1-1711525</a> | Technology Components for Unlicensed Operation                                                       | Ericsson                    |
| <a href="#">R1-1711549</a> | Considerations on Satellite channel model                                                            | THALES                      |
| <a href="#">R1-1711550</a> | NTN Bentpipe payload architecture and characteristics                                                | THALES                      |
| <a href="#">R1-1711568</a> | Considerations on HAPS channel model                                                                 | CNES, Thales                |

## 6 Closing of the meeting

Mr Chair thanked all for the progress achieved during this second ad-hoc meeting on NR.  
Special thanks to the Vice chairmen, especially at the start of the meeting and for chairing their respective sessions.  
Mr Chair thanked the host ZTE for the organization and facilities. Although meeting's start was a bit challenging, with inadequate number of seats, no power to all seats... during the first 1,5 hours of day one, the number of meeting rooms (5 all together) were really appreciated.

Then Mr chair warned the delegates that organizing the RAN1 chair and vice chair election at the next meeting could also be a challenge (due to the number of voting companies – likely to be around 300 – and the potential number of round of voting. August will be last meeting chaired by Satoshi-san.

Meeting was closed at 20:15.  
See you all in Prague.

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**Annex A: List of Tdocs at RAN1 #AH\_NR2**

Please see excel file attached to this report

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**Annex B: List of CRs agreed at RAN1 #AH\_NR2**

| TS/TR  | CR | Rev | Rel    | Title                                                                   | Cat | Vsn    | @ Mtg     | TD#        | Source to WG  | Work Item      |
|--------|----|-----|--------|-------------------------------------------------------------------------|-----|--------|-----------|------------|---------------|----------------|
| 38.901 | 16 | -   | Rel-14 | Correction on the fomula of Annex A                                     | F   | 14.1.0 | R1#AH_NR2 | R1-1711758 | ZTE, Ericsson | NR_newRAT-Core |
| 38.901 | 17 | -   | Rel-14 | Correction on Procedure A of spatially-consistency UT mobility modeling | F   | 14.1.0 | R1#AH_NR2 | R1-1711760 | ZTE, Ericsson | NR_newRAT-Core |
|        |    |     |        |                                                                         |     |        |           |            |               |                |

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**Annex C-1: List of Outgoing LSs from RAN1 #AH\_NR2**

| TDoc #     | Title                                                          | Source                     | Release | Related WIs    | Reply to   | To                     | Cc            | Original LS | Reply in |
|------------|----------------------------------------------------------------|----------------------------|---------|----------------|------------|------------------------|---------------|-------------|----------|
| R1-1711825 | LS on non-contiguous CA                                        | RAN1, AT&T                 | Rel-15  | NR_newRAT-Core |            | RAN2,<br>RAN4          |               |             |          |
| R1-1711839 | LS on subcarrier alignment and channel raster                  | RAN1, AT&T                 | Rel-15  | NR_newRAT-Core |            | RAN4                   |               |             |          |
| R1-1711872 | LS on UE self-interference                                     | RAN1, vivo                 | Rel-15  | NR_newRAT-Core |            | RAN4                   |               |             |          |
| R1-1711878 | LS on single UL transmission                                   | RAN1, NTT<br>DOCOMO        | Rel-15  | NR_newRAT-Core |            | RAN2,<br>RAN3,<br>RAN4 |               |             |          |
| R1-1711880 | LS on Beam Aspects of NR RACH                                  | RAN1,<br>Huawei            | Rel-15  | NR_newRAT-Core |            | RAN2                   |               |             |          |
| R1-1711966 | Reply LS on reading time index indication for RRM measurements | RAN1, Intel                | Rel-15  | NR_newRAT-Core | R2-1706160 | RAN2                   |               |             |          |
| R1-1711975 | LS response on required parameters from RAN4 perspective       | RAN1,<br>Ericsson          | Rel-15  | NR_newRAT-Core | R4-1704216 | RAN4                   |               |             |          |
| R1-1711987 | "Reply LS response on NR basic handover                        |                            | Rel-15  | NR_newRAT-Core | R2-1707503 | RAN2                   |               |             |          |
| "          | RAN1, Samsung                                                  |                            | Rel-15  | NR_newRAT-Core | S3-171568  | SA3                    | RAN2,<br>RAN4 |             |          |
| R1-1711997 | Response LS on Support for fake gNB detection mechanisms       | RAN1, Nokia                | Rel-15  | NR_newRAT-Core |            | RAN2,<br>RAN4          |               |             |          |
| R1-1711998 | LS on bandwidth part operation in NR                           | RAN1,<br>MediaTek          | Rel-15  | NR_newRAT-Core |            | RAN4                   | RAN2          |             |          |
| R1-1711999 | LS on power sharing for LTE-NR Dual Connectivity               | RAN1,<br>Ericsson          | Rel-15  | NR_newRAT-Core |            | RAN2                   | RAN3          |             |          |
| R1-1712000 | LS on support of multi-TRP transmission in NR                  | RAN1, Intel                | Rel-15  | NR_newRAT-Core |            | RAN2                   |               |             |          |
| R1-1712001 | LS on NR initial access and mobility                           | RAN1, NTT<br>DOCOMO        | Rel-15  | NR_newRAT-Core |            | RAN4                   |               |             |          |
| R1-1712002 | LS on NR initial access and mobility                           | RAN1, NTT<br>DOCOMO        | Rel-15  | NR_newRAT-Core |            | RAN2                   |               |             |          |
| R1-1712005 | Reply LS on PDCCH design                                       | RAN1,<br>Ericsson,<br>CATT | Rel-15  | NR_newRAT-Core |            | RAN2,<br>RAN4          |               |             |          |

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**Annex C-2: List of Incoming LSs from RAN1 #AH\_NR2**

| TDoc #     | Title                                                             | Source           | Release | Related WIs    | Reply to              | To               | Cc                   | Original LS | Reply in |
|------------|-------------------------------------------------------------------|------------------|---------|----------------|-----------------------|------------------|----------------------|-------------|----------|
| R1-1710211 | LS on SR design principles in NR                                  | RAN2, Samsung    | Rel-15  | NR_newRAT-Core |                       | RAN1             |                      | R2-1705867  |          |
| R1-1710212 | LS on UE measurement capabilities across LTE and NR               | RAN2, NTT DOCOMO | Rel-15  | NR_newRAT-Core |                       | RAN4             | RAN1                 | R2-1706140  |          |
| R1-1710213 | LS on UE categories for NR and LTE-NR Dual Connectivity           | RAN2, NTT DOCOMO | Rel-15  | NR_newRAT-Core |                       | RAN, RAN1        | RAN4                 | R2-1706141  |          |
| R1-1710214 | LS reply to SA2 on maximum data rate                              | RAN2, MediaTek   | Rel-15  | NR_newRAT-Core | S2-172398, R1-1706857 | SA2, RAN1        | RAN3, SA1, CT1, CT4  | R2-1706155  |          |
| R1-1710215 | Response LS on reading time index indication for RRM measurements | RAN2, Intel      | Rel-15  | NR_newRAT-Core | R1-1706707            | RAN1             |                      | R2-1706160  |          |
| R1-1710216 | LS on Emergency Support in NR                                     | SA2, Nokia       | Rel-15  | NR_newRAT-Core |                       | RAN              | SA, RAN1, RAN2, RAN3 | S2-173700   |          |
| R1-1710217 | LS on Support for fake gNB detection mechanisms                   | SA3, Nokia       | Rel-15  | NR_newRAT-Core |                       | RAN1, RAN2, RAN4 |                      | S3-171568   |          |
| R1-1710220 | Reply LS on Emergency Support in NR                               | RAN, T-Mobile    | Rel-15  | NR_newRAT-Core | S2-173700             | SA2              | SA, RAN1, RAN2, RAN3 | RP-171434   |          |
| R1-1710221 | Reply LS on UE categories for NR and LTE-NR Dual Connectivity     | RAN, NTT DOCOMO  | Rel-15  | NR_newRAT-Core | R2-1706141            | RAN2, RAN1       | RAN4                 | RP-171480   |          |
| R1-1711892 | Reply LS on PBCH content                                          | RAN2, Huawei     | Rel-15  | NR_newRAT-Core | R1-1709789            | RAN1             |                      | R2-1707490  |          |
| R1-1711940 | LS to RAN1 on NR basic handover                                   | RAN2, Ericsson   | Rel-15  | NR_newRAT-Core |                       | RAN1             |                      | R2-1707503  |          |
| R1-1711949 | Reply LS to RAN1 on UL data transmission without UL grant for NR  | RAN2, Huawei     | Rel-15  | NR_newRAT-Core | R1-1709805            | RAN1             |                      | R2-1707499  |          |
| R1-1711950 | LS to RAN1 on Random Access                                       | RAN2, Samsung    | Rel-15  | NR_newRAT-Core |                       | RAN1             |                      | R2-1707504  |          |

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**Annex D: List of Approved updated WIDs**

None

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Annex E: List of draft TSs/TRs agreed at RAN1 #AH\_NR2

| Tdoc Number | Title                                                | Source      | Conclusion/Decision |
|-------------|------------------------------------------------------|-------------|---------------------|
| R1-1712004  | TS38.211 v0.1.0 NR; Physical channels and modulation | Ericsson LM | Endorsed            |
|             |                                                      |             |                     |
|             |                                                      |             |                     |
|             |                                                      |             |                     |
|             |                                                      |             |                     |

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**Annex F: List of actions**

**- Outgoing LS**

[NRAH2-01] Sundar (Qualcomm)  
LS of beam management  
Email approval until 10th July

[NRAH2-02] Karri (Nokia)  
LS of UL/DL HARQ  
Email approval until 6th July

**- CR approval**

None

**- Text proposal for TS and TR**

[NRAH2-03] Editors

Email discussion until August meeting about all specs

- 1<sup>st</sup> step: All spec editors will provide new draft specs (including all agreements and WA) until July 14<sup>th</sup>
- 2nd step: All spec editors will provide further updated specs (including all agreements and WA) until August 4<sup>th</sup>
- All companies are recommended checking these specs and comment via the reflector
- All spec editors will update specs via the reflector and submit them to the August meeting (RAN1#90)
- Objective is to get the updated specs endorsed on Monday on Monday (day 1 of RAN1#90)

**- Miscellaneous**

[NRAH2-04] Daniel (Ericsson)

Email discussion until the August meeting w.r.t the RRC parameters list for NR

- Daniel (Ericsson) will provide an initial RRC parameters list until August 9<sup>th</sup>
- All companies are recommended checking it and comment via the reflector
- Daniel (Ericsson) will update it via the reflector and submit it to the August meeting (RAN1#90)
- Objective is to get the (updated) RRC parameters list agreed on Monday (day 1 of RAN1#90)

[NRAH2-05] Daewon (Intel)

DMRS sequence for NR PBCH

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Companies are encouraged to provide the information on NR PBCH DMRS sequence until 28th July in order to finalize the design

[NRAH2-06] Yuichi (DOCOMO)  
LS of CSI-RS for beam management  
Email approval for the LS in R1-1712003 until 7th July

[NRAH2-07] Lihui (DOCOMO)  
LS of UL SPS / grant free  
Email approval until 6th July to explain RAN1 understandings based on above agreements

[NRAH2-08] Jeongho (Samsung)  
Down selection of CBG-based (re)transmission Email approval until 13th July to have down selection

[NRAH2-09] Joseph (Qualcomm)  
Processing Time Requiriements  
1 Email discussion about followings – Joseph (Qualcomm)  
- Step 1: identify the candidate factors for processing time (until 4th Aug.)  
- Step 2: identify the table (until 4th Aug.) 1 Based on the proponents' input for step 1 and step 2, following work will be done:  
- Step 3: fill-in the table  
- Targeting finishing step 3 until September meeting.  
<sup>2</sup> Note: companies are encouraged to bring up initial numbers for the table to the August meeting  
- Note: fill-in the table does not necessarily results in defining some UE capabilities or exact values of K1 and K2 in the specification.

[NRAH2-10] Zhenfei (Huawei)  
Scheduling/HARQ aspects for CA  
Email approval until 10th July

[NRAH2-11] Zukang (Huawei)  
Polar code sequence  
- Polar code sequence candidates, including any merged solutions, should be provided by Wed 2nd Aug § Identify candidates of polar code sequence according to the procedure below by Wed 9th Aug § Rate matching proposals for any sequence that has been selected as a winner by at least one company to be provided by Wed 16th Aug.

[NRAH2-12] Zukang (Huawei)  
Polar code design on polynomial and interleaver for email discussion until August 7<sup>th</sup>  
Main target is on gathering all proposals about detailed design on polynomial and interleaver.

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**Annex G: List of participants at RAN1 #AH\_NR2**

Please see excel file attached to this report

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Annex H: TSG RAN WG1 meetings in 2017 – 2018

| TITLE                   | TYPE      | DATES                | LOCATION   | CTRY      |
|-------------------------|-----------|----------------------|------------|-----------|
| <u>3GPPRAN1#90</u>      | <u>WG</u> | 21 – 25 Aug 2017     | Prague     | Rep Czech |
| <u>3GPPRAN1-NR3</u>     | <u>AH</u> | 18 – 21 Sep 2017     | Nagoya     | Japan     |
| <u>3GPPRAN1#90bis</u>   | <u>WG</u> | 09 – 13 Oct 2017     | Prague     | Rep Czech |
| <u>3GPPRAN1#91</u>      | <u>WG</u> | 27 Nov – 01 Dec 2017 | Reno       | US        |
| <u>3GPPRAN1-AH-1801</u> | <u>AH</u> | 22 – 26 Jan 2018     | TBD        |           |
| <u>3GPPRAN1#92</u>      | <u>WG</u> | 26 Feb – 2 Mar 2018  | Athens     | Greece    |
| <u>3GPPRAN1#92bis</u>   | <u>WG</u> | 16 – 20 Apr 2018     | TBD        | China     |
| <u>3GPPRAN1#93</u>      | <u>WG</u> | 21 – 25 May 2018     | TBD        | Korea     |
| <u>3GPPRAN1#94</u>      | <u>WG</u> | 20 – 24 Aug 2018     | Gothenburg | Sweden    |
| <u>3GPPRAN1#94bis</u>   | <u>WG</u> | 8 – 12 Oct 2018      | TBD        | China     |
| <u>3GPPRAN1#95</u>      | <u>WG</u> | 12 – 16 Nov 2018     | TBD        | US        |

MEETING TYPES

AH = Ad Hoc

JM = Joint

PM = Preparatory Meeting

RM = Resolution Meeting

ST = Startup Meeting

WG = Working Group

CM = Chairmen's meeting

OR = Ordinary

RG = Rapporteurs Group

SG = Steering Group

TG = Task Group

XO = Extraordinary

*End of document*

|    | A                          | B                                                                                       | C                             | D                 | E                     | F          | G           | H        | I                                                      | J                      | K           | L                                                                          | M                                  | N                         |
|----|----------------------------|-----------------------------------------------------------------------------------------|-------------------------------|-------------------|-----------------------|------------|-------------|----------|--------------------------------------------------------|------------------------|-------------|----------------------------------------------------------------------------|------------------------------------|---------------------------|
|    | TDoc                       | Title                                                                                   | Source                        | Contact           | Contact ID            | Type       | For         | Abstract | Secretary Remarks                                      | Agenda item sort order | Agenda item | Agenda item description                                                    | TDoc sort order within agenda item | TDoc Status               |
| 1  |                            |                                                                                         |                               |                   |                       |            |             |          |                                                        |                        |             |                                                                            |                                    |                           |
| 2  | <a href="#">R1-1709880</a> | Draft Agenda of RAN1#AH_NR2 meeting                                                     | RAN1 Chair                    | Patrick Merias    | <a href="#">52292</a> | agenda     | Approval    |          |                                                        | 2                      | 2           | Approval of Agenda                                                         | 0                                  | <a href="#">revised</a>   |
| 3  | <a href="#">R1-1709881</a> | Report of RAN1#89 meeting                                                               | ETSI                          | Patrick Merias    | <a href="#">52292</a> | report     | Information |          | For information only, shall go for approval at RAN1#90 | 3                      | 3           | Review of Minutes from previous meeting                                    | 0                                  | <a href="#">noted</a>     |
| 4  | <a href="#">R1-1709882</a> | Enhancement of Early Termination of Polar Codes by placing UE-ID on Frozen Symbols      | Tsfun Algorithm               | Alexander Smekhov | <a href="#">71316</a> | discussion |             |          |                                                        | 127                    | 5.1.4.2.1   | Code construction                                                          | 0                                  | <a href="#">available</a> |
| 5  | <a href="#">R1-1709883</a> | Study of Split-CRC Polar Code Construction for Early Termination                        | Tsfun Algorithm               | Alexander Smekhov | <a href="#">71316</a> | discussion | Decision    |          |                                                        | 127                    | 5.1.4.2.1   | Code construction                                                          | 0                                  | <a href="#">revised</a>   |
| 6  | <a href="#">R1-1709884</a> | NR-SS sequence design                                                                   | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 9                      | 5.1.1.1.1   | Remaining details on SS sequence design                                    | 0                                  | <a href="#">available</a> |
| 7  | <a href="#">R1-1709885</a> | The composition of SS burst sets                                                        | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 10                     | 5.1.1.1.2   | SS burst set composition                                                   | 0                                  | <a href="#">available</a> |
| 8  | <a href="#">R1-1709886</a> | Timing indication based on SS blocks                                                    | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 11                     | 5.1.1.1.3   | Timing indication based on SS block                                        | 0                                  | <a href="#">available</a> |
| 9  | <a href="#">R1-1709887</a> | Multiple SS blocks in wideband CC                                                       | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 12                     | 5.1.1.1.4   | Remaining details on multiple SS block transmissions in wideband CC        | 0                                  | <a href="#">available</a> |
| 10 | <a href="#">R1-1709888</a> | NR-PBCH contents                                                                        | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 14                     | 5.1.1.2.1   | NR-PBCH contents and payload size                                          | 0                                  | <a href="#">available</a> |
| 11 | <a href="#">R1-1709889</a> | NR-PBCH RE mapping and SS block composition                                             | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 15                     | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                                | 0                                  | <a href="#">available</a> |
| 12 | <a href="#">R1-1709890</a> | NR-PBCH DMRS design                                                                     | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 16                     | 5.1.1.2.3   | Sequence design of DMRS for NR-PBCH                                        | 0                                  | <a href="#">available</a> |
| 13 | <a href="#">R1-1709891</a> | RMSI delivery                                                                           | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 17                     | 5.1.1.2.4   | Remaining minimum system information delivery                              | 0                                  | <a href="#">available</a> |
| 14 | <a href="#">R1-1709892</a> | Other SI delivery                                                                       | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 18                     | 5.1.1.2.5   | Other system information delivery                                          | 0                                  | <a href="#">available</a> |
| 15 | <a href="#">R1-1709893</a> | Paging design in NR                                                                     | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 19                     | 5.1.1.3     | Paging design                                                              | 0                                  | <a href="#">available</a> |
| 16 | <a href="#">R1-1709894</a> | NR-PRACH formats for long/short sequences                                               | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 21                     | 5.1.1.4.1   | PRACH preamble format details for long/short sequence length               | 0                                  | <a href="#">available</a> |
| 17 | <a href="#">R1-1709895</a> | NR-PRACH formats: capacity enhancements and other use cases                             | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 22                     | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management | 0                                  | <a href="#">available</a> |
| 18 | <a href="#">R1-1709896</a> | Power control during random access procedure                                            | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 23                     | 5.1.1.4.3   | Power ramping and power control during RA procedure                        | 0                                  | <a href="#">available</a> |
| 19 | <a href="#">R1-1709897</a> | 4-step random access procedure                                                          | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 24                     | 5.1.1.4.4   | 4-step RA procedure                                                        | 0                                  | <a href="#">available</a> |
| 20 | <a href="#">R1-1709898</a> | RRM measurements on IDLE mode RS                                                        | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 26                     | 5.1.1.5.1   | Measurement based on SS block                                              | 0                                  | <a href="#">available</a> |
| 21 | <a href="#">R1-1709899</a> | RRM measurements on CSI-RS for L3 mobility                                              | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 27                     | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility                                | 0                                  | <a href="#">available</a> |
| 22 | <a href="#">R1-1709900</a> | Radio link monitoring in NR                                                             | ZTE                           | Yifei Yuan        | <a href="#">58526</a> | discussion |             |          |                                                        | 28                     | 5.1.1.5.3   | Radio link monitoring                                                      | 0                                  | <a href="#">available</a> |
| 23 | <a href="#">R1-1709901</a> | Scrambling pattern for timing indication over PBCH                                      | Sequans Communications        | Michal Palgy      | <a href="#">66137</a> | discussion | Decision    |          |                                                        | 11                     | 5.1.1.1.3   | Timing indication based on SS block                                        | 0                                  | <a href="#">available</a> |
| 24 | <a href="#">R1-1709902</a> | Enhancements for Polar code construction                                                | Sequans Communications        | Michal Palgy      | <a href="#">66137</a> | discussion | Decision    |          |                                                        | 127                    | 5.1.4.2.1   | Code construction                                                          | 0                                  | <a href="#">available</a> |
| 25 | <a href="#">R1-1709903</a> | Discussion of LTE-RM decoding ambiguity                                                 | Sequans Communications        | Michal Palgy      | <a href="#">66137</a> | discussion | Discussion  |          |                                                        | 131                    | 5.1.4.4     | Other                                                                      | 0                                  | <a href="#">available</a> |
| 26 | <a href="#">R1-1709904</a> | Discussion on Remaining Details of Codeword Mapping                                     | Beijing Xinwei Telecom Techn. | Peng Sun          | <a href="#">62183</a> | discussion | Decision    |          |                                                        | 32                     | 5.1.2.1.1   | Codeword mapping                                                           | 0                                  | <a href="#">available</a> |
| 27 | <a href="#">R1-1709905</a> | Further Discussion on DL PRB Bundling                                                   | Beijing Xinwei Telecom Techn. | Peng Sun          | <a href="#">62183</a> | discussion | Decision    |          |                                                        | 36                     | 5.1.2.1.5   | PRB bundling for DL                                                        | 0                                  | <a href="#">noted</a>     |
| 28 | <a href="#">R1-1709906</a> | Discussion on DL Beam Management                                                        | Beijing Xinwei Telecom Techn. | Peng Sun          | <a href="#">62183</a> | discussion | Decision    |          |                                                        | 41                     | 5.1.2.2.1   | Beam management details                                                    | 0                                  | <a href="#">available</a> |
| 29 | <a href="#">R1-1709907</a> | Discussion on Beam Failure Recovery                                                     | Beijing Xinwei Telecom Techn. | Peng Sun          | <a href="#">62183</a> | discussion | Decision    |          |                                                        | 42                     | 5.1.2.2.2   | Mechanism to recover from beam failure                                     | 0                                  | <a href="#">available</a> |
| 30 | <a href="#">R1-1709908</a> | Discussion on CSI Framework and Semi-persistent CSI-RS Resources and Reports Activation | Beijing Xinwei Telecom Techn. | Peng Sun          | <a href="#">62183</a> | discussion | Decision    |          |                                                        | 45                     | 5.1.2.3.1   | CSI framework                                                              | 0                                  | <a href="#">available</a> |
| 31 | <a href="#">R1-1709909</a> | Further Evaluation and Discussion on DMRS Design Details                                | Beijing Xinwei Telecom Techn. | Peng Sun          | <a href="#">62183</a> | discussion | Decision    |          |                                                        | 53                     | 5.1.2.4.3   | DMRS                                                                       | 0                                  | <a href="#">noted</a>     |
| 32 | <a href="#">R1-1709910</a> | NR MIMO System Level Phase 3 Calibration Results                                        | Beijing Xinwei Telecom Techn. | Peng Sun          | <a href="#">62183</a> | discussion | Decision    |          |                                                        | 59                     | 5.1.2.5     | Other                                                                      | 0                                  | <a href="#">available</a> |
| 33 | <a href="#">R1-1709911</a> | Finalization of the NR-SSS                                                              | Huawei, HiSilicon             | Brian Classon     | <a href="#">45750</a> | other      |             |          |                                                        | 9                      | 5.1.1.1.1   | Remaining details on SS sequence design                                    | 0                                  | <a href="#">available</a> |
| 34 | <a href="#">R1-1709912</a> | SS Burst Set and Block Composition                                                      | Huawei, HiSilicon             | Brian Classon     | <a href="#">45750</a> | other      |             |          |                                                        | 10                     | 5.1.1.1.2   | SS burst set composition                                                   | 0                                  | <a href="#">available</a> |
| 35 | <a href="#">R1-1709913</a> | Time Index Indication                                                                   | Huawei, HiSilicon             | Brian Classon     | <a href="#">45750</a> | other      |             |          |                                                        | 11                     | 5.1.1.1.3   | Timing indication based on SS block                                        | 0                                  | <a href="#">available</a> |
| 36 | <a href="#">R1-1709914</a> | NR-PBCH contents and payload size                                                       | Huawei, HiSilicon             | Brian Classon     | <a href="#">45750</a> | other      |             |          |                                                        | 14                     | 5.1.1.2.1   | NR-PBCH contents and payload size                                          | 0                                  | <a href="#">available</a> |
| 37 | <a href="#">R1-1709915</a> | Discussion on NR RMSI delivery                                                          | Huawei, HiSilicon             | Brian Classon     | <a href="#">45750</a> | other      |             |          |                                                        | 17                     | 5.1.1.2.4   | Remaining minimum system information delivery                              | 0                                  | <a href="#">available</a> |
| 38 | <a href="#">R1-1709916</a> | Multi-beam Paging for NR                                                                | Huawei, HiSilicon             | Brian Classon     | <a href="#">45750</a> | other      |             |          |                                                        | 19                     | 5.1.1.3     | Paging design                                                              | 0                                  | <a href="#">available</a> |
| 39 | <a href="#">R1-1709917</a> | PRACH preamble sequences and formats for capacity enhancement and beam management       | Huawei, HiSilicon             | Brian Classon     | <a href="#">45750</a> | other      |             |          |                                                        | 22                     | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management | 0                                  | <a href="#">revised</a>   |
| 40 | <a href="#">R1-1709918</a> | Discussion on power ramping and power control during RA procedure                       | Huawei, HiSilicon             | Brian Classon     | <a href="#">45750</a> | other      |             |          |                                                        | 23                     | 5.1.1.4.3   | Power ramping and power control during RA procedure                        | 0                                  | <a href="#">available</a> |

|    | A                          | B                                                                     | C                 | D             | E                     | F          | G | H | I | J   | K           | L                                           | M | N                         |
|----|----------------------------|-----------------------------------------------------------------------|-------------------|---------------|-----------------------|------------|---|---|---|-----|-------------|---------------------------------------------|---|---------------------------|
| 41 | <a href="#">R1-1709919</a> | SS Burst Periodicities and timing for UE RRM measurement              | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 26  | 5.1.1.5.1   | Measurement based on SS block               | 0 | <a href="#">noted</a>     |
| 42 | <a href="#">R1-1709920</a> | CSI-RS configuration parameters for L3 mobility                       | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 27  | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility | 0 | <a href="#">available</a> |
| 43 | <a href="#">R1-1709921</a> | Discussion on remaining issues of radio link monitoring               | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 28  | 5.1.1.5.3   | Radio link monitoring                       | 0 | <a href="#">available</a> |
| 44 | <a href="#">R1-1709922</a> | On numerology determination during initial access                     | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | discussion |   |   |   | 29  | 5.1.1.6     | Other                                       | 0 | <a href="#">available</a> |
| 45 | <a href="#">R1-1709923</a> | Non-codebook based transmission for UL MIMO                           | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 34  | 5.1.2.1.3   | Non-codebook based transmission fo UL       | 0 | <a href="#">noted</a>     |
| 46 | <a href="#">R1-1709924</a> | Multiple NR-PDCCH for Multiple TRP transmission                       | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 37  | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission      | 0 | <a href="#">available</a> |
| 47 | <a href="#">R1-1709925</a> | PRB bundling size for DL data precoding                               | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 36  | 5.1.2.1.5   | PRB bundling for DL                         | 0 | <a href="#">available</a> |
| 48 | <a href="#">R1-1709926</a> | Discussion on transmission parameter sets                             | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 39  | 5.1.2.1.8   | Other                                       | 0 | <a href="#">available</a> |
| 49 | <a href="#">R1-1709927</a> | Beam indication for DL control channel                                | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 43  | 5.1.2.2.3   | Other                                       | 0 | <a href="#">available</a> |
| 50 | <a href="#">R1-1709928</a> | UL beam management                                                    | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 41  | 5.1.2.2.1   | Beam management details                     | 0 | <a href="#">noted</a>     |
| 51 | <a href="#">R1-1709929</a> | General views on beam failure recovery                                | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure      | 0 | <a href="#">available</a> |
| 52 | <a href="#">R1-1709930</a> | Procedure details for beam failure recovery                           | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 43  | 5.1.2.2.3   | Other                                       | 0 | <a href="#">available</a> |
| 53 | <a href="#">R1-1709931</a> | Discussion on CSI Framework Design                                    | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 45  | 5.1.2.3.1   | CSI framework                               | 0 | <a href="#">noted</a>     |
| 54 | <a href="#">R1-1709932</a> | Channel and interference measurement for CSI acquisition              | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 46  | 5.1.2.3.2   | Details of CSI acquisition                  | 0 | <a href="#">revised</a>   |
| 55 | <a href="#">R1-1709933</a> | Rate matching for data channel                                        | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 38  | 5.1.2.1.7   | Rate matching                               | 0 | <a href="#">available</a> |
| 56 | <a href="#">R1-1709934</a> | Reference signal for fine time and frequency tracking                 | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 56  | 5.1.2.4.6   | TRS                                         | 0 | <a href="#">noted</a>     |
| 57 | <a href="#">R1-1709935</a> | Details of QCL assumptions and related RS design considerations       | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 57  | 5.1.2.4.7   | QCL                                         | 0 | <a href="#">available</a> |
| 58 | <a href="#">R1-1709936</a> | UL SRS design for beam management and CSI acquisition                 | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 55  | 5.1.2.4.5   | SRS                                         | 0 | <a href="#">available</a> |
| 59 | <a href="#">R1-1709937</a> | UL SRS sequence design in NR                                          | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 58  | 5.1.2.4.8   | Other                                       | 0 | <a href="#">available</a> |
| 60 | <a href="#">R1-1709938</a> | SRS antenna switching                                                 | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 59  | 5.1.2.5     | Other                                       | 0 | <a href="#">available</a> |
| 61 | <a href="#">R1-1709939</a> | PTRS for CP-OFDM                                                      | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 54  | 5.1.2.4.4   | PT-RS                                       | 0 | <a href="#">available</a> |
| 62 | <a href="#">R1-1709940</a> | PTRS for DFT-s-OFDM                                                   | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 54  | 5.1.2.4.4   | PT-RS                                       | 0 | <a href="#">noted</a>     |
| 63 | <a href="#">R1-1709941</a> | Design of DL DMRS for data transmission                               | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 53  | 5.1.2.4.3   | DMRS                                        | 0 | <a href="#">available</a> |
| 64 | <a href="#">R1-1709942</a> | Evaluation results of DMRS design for DL data channel                 | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 53  | 5.1.2.4.3   | DMRS                                        | 0 | <a href="#">available</a> |
| 65 | <a href="#">R1-1709943</a> | UL DMRS design for data transmission                                  | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 53  | 5.1.2.4.3   | DMRS                                        | 0 | <a href="#">available</a> |
| 66 | <a href="#">R1-1709944</a> | Evaluation results of DMRS design for UL data channel                 | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 53  | 5.1.2.4.3   | DMRS                                        | 0 | <a href="#">available</a> |
| 67 | <a href="#">R1-1709945</a> | Common UL/DL DMRS design                                              | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 58  | 5.1.2.4.8   | Other                                       | 0 | <a href="#">available</a> |
| 68 | <a href="#">R1-1709946</a> | CSI-RS design in NR                                                   | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 52  | 5.1.2.4.2   | CSI-RS                                      | 0 | <a href="#">available</a> |
| 69 | <a href="#">R1-1709947</a> | CSI-RS design for beam management                                     | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 52  | 5.1.2.4.2   | CSI-RS                                      | 0 | <a href="#">available</a> |
| 70 | <a href="#">R1-1709948</a> | General considerations on UL power control design                     | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 140 | 5.1.9.2     | NR power control framework                  | 0 | <a href="#">available</a> |
| 71 | <a href="#">R1-1709949</a> | Power control for CA and DC                                           | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 139 | 5.1.9.1     | Power sharing mechanism                     | 0 | <a href="#">noted</a>     |
| 72 | <a href="#">R1-1709950</a> | DMRS for NR-PDCCH                                                     | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 64  | 5.1.3.1.1.2 | RS structure/mapping                        | 0 | <a href="#">available</a> |
| 73 | <a href="#">R1-1709951</a> | Configuration of control resource set                                 | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 66  | 5.1.3.1.2.1 | CORESET configuration                       | 0 | <a href="#">available</a> |
| 74 | <a href="#">R1-1709952</a> | Search space design                                                   | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 67  | 5.1.3.1.2.2 | Search space design                         | 0 | <a href="#">available</a> |
| 75 | <a href="#">R1-1709953</a> | Contents of group-common PDCCH                                        | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH              | 0 | <a href="#">available</a> |
| 76 | <a href="#">R1-1709954</a> | Structure of group-common PDCCH                                       | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCH             | 0 | <a href="#">available</a> |
| 77 | <a href="#">R1-1709955</a> | UE-specific DCI contents in NR                                        | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 75  | 5.1.3.1.6   | Other                                       | 0 | <a href="#">available</a> |
| 78 | <a href="#">R1-1709956</a> | Resource multiplexing of downlink control and data                    | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 69  | 5.1.3.1.3   | Resource sharing between PDCCH and PDSCH    | 0 | <a href="#">available</a> |
| 79 | <a href="#">R1-1709957</a> | Dynamic and semi-static DL/UL resource partition                      | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 75  | 5.1.3.1.6   | Other                                       | 0 | <a href="#">available</a> |
| 80 | <a href="#">R1-1709958</a> | Short PUCCH for up to 2 UCI bits                                      | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits         | 0 | <a href="#">available</a> |
| 81 | <a href="#">R1-1709959</a> | Short PUCCH with more than 2 UCI bits                                 | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits     | 0 | <a href="#">available</a> |
| 82 | <a href="#">R1-1709960</a> | Overview of long PUCCH design                                         | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 80  | 5.1.3.2.2   | PUCCH in long-duration                      | 0 | <a href="#">available</a> |
| 83 | <a href="#">R1-1709961</a> | Long PUCCH structure for up to 2 bits with high multiplexing capacity | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other      |   |   |   | 81  | 5.1.3.2.2.1 | Long-PUCCH for UCI of up to 2 bits          | 0 | <a href="#">available</a> |

|     | A                          | B                                                                         | C                 | D             | E                     | F     | G | H | I | J   | K           | L                                                                   | M | N                         |
|-----|----------------------------|---------------------------------------------------------------------------|-------------------|---------------|-----------------------|-------|---|---|---|-----|-------------|---------------------------------------------------------------------|---|---------------------------|
| 84  | <a href="#">R1-1709962</a> | Long PUCCH structure for moderate payload with some multiplexing capacity | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 82  | 5.1.3.2.2.2 | Long-PUCCH for UCI of more than 2 bits                              | 0 | <a href="#">available</a> |
| 85  | <a href="#">R1-1709963</a> | UCI piggyback on PUSCH                                                    | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 87  | 5.1.3.2.5.1 | UCI piggyback on PUSCH                                              | 0 | <a href="#">available</a> |
| 86  | <a href="#">R1-1709964</a> | HARQ processing time                                                      | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 112 | 5.1.3.3.9   | Other                                                               | 0 | <a href="#">available</a> |
| 87  | <a href="#">R1-1709965</a> | Number of HARQ processes and HARQ RTT                                     | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 106 | 5.1.3.3.6.1 | Number of HARQ processes and HARQ RTT                               | 0 | <a href="#">available</a> |
| 88  | <a href="#">R1-1709966</a> | Soft buffer handling                                                      | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 107 | 5.1.3.3.6.2 | Soft-buffer management                                              | 0 | <a href="#">available</a> |
| 89  | <a href="#">R1-1709967</a> | Scheduling mechanisms for CBG-based re-transmission                       | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission                | 0 | <a href="#">available</a> |
| 90  | <a href="#">R1-1709968</a> | Discussion on CBG construction                                            | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 99  | 5.1.3.3.4.1 | CBG construction                                                    | 0 | <a href="#">available</a> |
| 91  | <a href="#">R1-1709969</a> | Discussion on CBG-based feedback                                          | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission                | 0 | <a href="#">available</a> |
| 92  | <a href="#">R1-1709970</a> | HARQ feedback timing for NR                                               | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 103 | 5.1.3.3.5.1 | HARQ-ACK feedback timing                                            | 0 | <a href="#">available</a> |
| 93  | <a href="#">R1-1709971</a> | Remaining issues on ECP                                                   | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 142 | 5.1.11      | Other                                                               | 0 | <a href="#">available</a> |
| 94  | <a href="#">R1-1709972</a> | Overview of wider bandwidth operations                                    | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 136 | 5.1.7       | Wider bandwidth operations                                          | 0 | <a href="#">available</a> |
| 95  | <a href="#">R1-1709973</a> | On initial access for wideband carrier                                    | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 12  | 5.1.1.1.4   | Remaining details on multiple SS block transmissions in wideband CC | 0 | <a href="#">available</a> |
| 96  | <a href="#">R1-1709974</a> | Scheduling and resource allocation mechanism for active bandwidth parts   | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                                | 0 | <a href="#">available</a> |
| 97  | <a href="#">R1-1709975</a> | On NR carrier aggregation                                                 | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 115 | 5.1.3.4.1.1 | Self-/cross-carrier scheduling and joint/separate UCI feedback      | 0 | <a href="#">available</a> |
| 98  | <a href="#">R1-1709976</a> | SRS switching among CCs and bandwidth parts                               | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 116 | 5.1.3.4.1.2 | SRS fast switching                                                  | 0 | <a href="#">available</a> |
| 99  | <a href="#">R1-1709977</a> | On NR dual connectivity                                                   | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 117 | 5.1.3.4.2   | Dual connectivity                                                   | 0 | <a href="#">available</a> |
| 100 | <a href="#">R1-1709978</a> | TB mapping and TB size determination                                      | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 95  | 5.1.3.3.1.3 | Transport block size determination                                  | 0 | <a href="#">available</a> |
| 101 | <a href="#">R1-1709979</a> | Overview of NR UL for LTE-NR coexistence                                  | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 137 | 5.1.8       | NR-LTE co-existence                                                 | 0 | <a href="#">available</a> |
| 102 | <a href="#">R1-1709980</a> | Subcarrier mapping for LTE-NR coexistence                                 | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 137 | 5.1.8       | NR-LTE co-existence                                                 | 0 | <a href="#">noted</a>     |
| 103 | <a href="#">R1-1709981</a> | TRP-to-TRP measurement for cross-link interference mitigation             | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 134 | 5.1.6.1     | Cross-link interference management                                  | 0 | <a href="#">available</a> |
| 104 | <a href="#">R1-1709982</a> | UE-to-UE measurement for cross-link interference mitigation               | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 134 | 5.1.6.1     | Cross-link interference management                                  | 0 | <a href="#">noted</a>     |
| 105 | <a href="#">R1-1709983</a> | UL Power control for cross-link interference mitigation                   | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 135 | 5.1.6.2     | Other                                                               | 0 | <a href="#">available</a> |
| 106 | <a href="#">R1-1709984</a> | On pre-emption indication for DL multiplexing of URLLC and eMBB           | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                                 | 0 | <a href="#">available</a> |
| 107 | <a href="#">R1-1709985</a> | PDSCH reliability for URLLC                                               | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure          | 0 | <a href="#">available</a> |
| 108 | <a href="#">R1-1709986</a> | PDCCH reliability for URLLC                                               | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 75  | 5.1.3.1.6   | Other                                                               | 0 | <a href="#">available</a> |
| 109 | <a href="#">R1-1709987</a> | Discussion on URLLC numerology                                            | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure          | 0 | <a href="#">available</a> |
| 110 | <a href="#">R1-1709988</a> | Discussion on UL multiplexing of grant-based eMBB and grant-free URLLC    | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 110 | 5.1.3.3.7.2 | Possible enhancements for uplink                                    | 0 | <a href="#">available</a> |
| 111 | <a href="#">R1-1709989</a> | Discussion on UCI feedback for URLLC                                      | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 86  | 5.1.3.2.5   | UCI multiplexing                                                    | 0 | <a href="#">available</a> |
| 112 | <a href="#">R1-1709990</a> | Link adaption for URLLC transmission                                      | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure          | 0 | <a href="#">available</a> |
| 113 | <a href="#">R1-1709991</a> | Resource configuration on UL transmission without grant                   | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                        | 0 | <a href="#">available</a> |
| 114 | <a href="#">R1-1709992</a> | UE identification and HARQ combining for grant-free transmissions         | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                        | 0 | <a href="#">available</a> |
| 115 | <a href="#">R1-1709993</a> | UE procedure of PDCCH monitoring for URLLC                                | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 74  | 5.1.3.1.5   | Ultra-reliable part of URLLC for DL control                         | 0 | <a href="#">available</a> |
| 116 | <a href="#">R1-1709994</a> | Discussion on data transmission duration                                  | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 94  | 5.1.3.3.1.2 | Time-domain resource allocation                                     | 0 | <a href="#">available</a> |
| 117 | <a href="#">R1-1709995</a> | Polar code construction                                                   | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 127 | 5.1.4.2.1   | Code construction                                                   | 0 | <a href="#">available</a> |
| 118 | <a href="#">R1-1709996</a> | Parity check bits for Polar code                                          | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 127 | 5.1.4.2.1   | Code construction                                                   | 0 | <a href="#">noted</a>     |
| 119 | <a href="#">R1-1709997</a> | Early termination for Polar code                                          | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 127 | 5.1.4.2.1   | Code construction                                                   | 0 | <a href="#">noted</a>     |
| 120 | <a href="#">R1-1709998</a> | Polar code for very small block length                                    | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 127 | 5.1.4.2.1   | Code construction                                                   | 0 | <a href="#">noted</a>     |
| 121 | <a href="#">R1-1709999</a> | Interleaver design for Polar code                                         | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 129 | 5.1.4.2.3   | Other                                                               | 0 | <a href="#">available</a> |
| 122 | <a href="#">R1-1710000</a> | Nested sequence for Polar code                                            | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 128 | 5.1.4.2.2   | Sequence design                                                     | 0 | <a href="#">noted</a>     |
| 123 | <a href="#">R1-1710001</a> | Rate matching for Polar code                                              | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 129 | 5.1.4.2.3   | Other                                                               | 0 | <a href="#">revised</a>   |
| 124 | <a href="#">R1-1710002</a> | Support of implicit soft combining for PBCH by Polar code construction    | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 130 | 5.1.4.3     | PBCH                                                                | 0 | <a href="#">revised</a>   |
| 125 | <a href="#">R1-1710003</a> | Channel coding chain for control channel                                  | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 129 | 5.1.4.2.3   | Other                                                               | 0 | <a href="#">available</a> |
| 126 | <a href="#">R1-1710004</a> | Channel coding for URLLC                                                  | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |   |   |   | 130 | 5.1.4.3     | PBCH                                                                | 0 | <a href="#">available</a> |

|     | A                          | B                                                                                  | C                         | D             | E                     | F          | G          | H | I | J   | K           | L                                                                          | M | N                         |
|-----|----------------------------|------------------------------------------------------------------------------------|---------------------------|---------------|-----------------------|------------|------------|---|---|-----|-------------|----------------------------------------------------------------------------|---|---------------------------|
| 127 | <a href="#">R1-1710005</a> | Considerations on timing advance design in NR                                      | Huawei, HiSilicon         | Brian Classon | <a href="#">45750</a> | other      |            |   |   | 43  | 5.1.2.2.3   | Other                                                                      | 0 | <a href="#">available</a> |
| 128 | <a href="#">R1-1710006</a> | Discussion and evaluation on NR-PBCH design                                        | Huawei, HiSilicon         | Brian Classon | <a href="#">45750</a> | other      |            |   |   | 15  | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                                | 0 | <a href="#">available</a> |
| 129 | <a href="#">R1-1710007</a> | DMRS for NR-PBCH                                                                   | Huawei, HiSilicon         | Brian Classon | <a href="#">45750</a> | other      |            |   |   | 16  | 5.1.1.2.3   | Sequence design of DMRS for NR-PBCH                                        | 0 | <a href="#">available</a> |
| 130 | <a href="#">R1-1710008</a> | PRACH preamble format details for long/short sequence length                       | Huawei, HiSilicon         | Brian Classon | <a href="#">45750</a> | other      |            |   |   | 21  | 5.1.1.4.1   | PRACH preamble format details for long/short sequence length               | 0 | <a href="#">available</a> |
| 131 | <a href="#">R1-1710009</a> | Multiplexing different types of DL RS                                              | Huawei, HiSilicon         | Brian Classon | <a href="#">45750</a> | other      |            |   |   | 51  | 5.1.2.4.1   | Multiplexing of different types of RSs                                     | 0 | <a href="#">available</a> |
| 132 | <a href="#">R1-1710010</a> | Multiplexing different types of UL RS                                              | Huawei, HiSilicon         | Brian Classon | <a href="#">45750</a> | other      |            |   |   | 51  | 5.1.2.4.1   | Multiplexing of different types of RSs                                     | 0 | <a href="#">available</a> |
| 133 | <a href="#">R1-1710011</a> | Overview of PDCCH-CCE-REG mapping and REG bundling                                 | Huawei, HiSilicon         | Brian Classon | <a href="#">45750</a> | other      |            |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping                                | 0 | <a href="#">available</a> |
| 134 | <a href="#">R1-1710012</a> | Multi-beam operation for PDCCH                                                     | Huawei, HiSilicon         | Brian Classon | <a href="#">45750</a> | other      |            |   |   | 68  | 5.1.3.1.2.3 | Multi-beam operation for PDCCH                                             | 0 | <a href="#">available</a> |
| 135 | <a href="#">R1-1710013</a> | Support of long-PUCCH over multiple slots                                          | Huawei, HiSilicon         | Brian Classon | <a href="#">45750</a> | other      |            |   |   | 83  | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots                                  | 0 | <a href="#">available</a> |
| 136 | <a href="#">R1-1710014</a> | Evaluation of UE identification for UL transmission without grant                  | ZTE                       | Yifei Yuan    | <a href="#">58525</a> | discussion |            |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                               | 0 | <a href="#">available</a> |
| 137 | <a href="#">R1-1710015</a> | Considerations on the procedures of UL data transmission without grant             | ZTE                       | Yifei Yuan    | <a href="#">58525</a> | discussion |            |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                               | 0 | <a href="#">available</a> |
| 138 | <a href="#">R1-1710016</a> | Repetition/hopping related design and reliability evaluations for grant-free URLLC | ZTE                       | Yifei Yuan    | <a href="#">58525</a> | discussion |            |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure                 | 0 | <a href="#">available</a> |
| 139 | <a href="#">R1-1710017</a> | CBG construction                                                                   | ZTE                       | Yifei Yuan    | <a href="#">58525</a> | discussion |            |   |   | 99  | 5.1.3.3.4.1 | CBG construction                                                           | 0 | <a href="#">available</a> |
| 140 | <a href="#">R1-1710018</a> | DL control for CBG                                                                 | ZTE                       | Yifei Yuan    | <a href="#">58525</a> | discussion |            |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission                       | 0 | <a href="#">available</a> |
| 141 | <a href="#">R1-1710019</a> | UL control for CBG                                                                 | ZTE                       | Yifei Yuan    | <a href="#">58525</a> | discussion |            |   |   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission                       | 0 | <a href="#">available</a> |
| 142 | <a href="#">R1-1710020</a> | Consideration about CBG soft-buffer management                                     | ZTE                       | Yifei Yuan    | <a href="#">58525</a> | discussion |            |   |   | 107 | 5.1.3.3.6.2 | Soft-buffer management                                                     | 0 | <a href="#">available</a> |
| 143 | <a href="#">R1-1710021</a> | Advantages of Underlay Scheduling Request method over PUCCH-based SR               | Idaho National Laboratory | Ramon Khalona | <a href="#">19055</a> | other      | Discussion |   |   | 96  | 5.1.3.3.2   | UL data transmission procedure with grant                                  | 0 | <a href="#">available</a> |
| 144 | <a href="#">R1-1710022</a> | Remaining detail of NR-PSS and NR-SSS Sequence Design and RE mapping               | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 9   | 5.1.1.1.1   | Remaining details on SS sequence design                                    | 0 | <a href="#">available</a> |
| 145 | <a href="#">R1-1710023</a> | SS Burst Set Composition and SS Block Configuration                                | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 10  | 5.1.1.1.2   | SS burst set composition                                                   | 0 | <a href="#">available</a> |
| 146 | <a href="#">R1-1710024</a> | SS-block time index indication                                                     | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 11  | 5.1.1.1.3   | Timing indication based on SS block                                        | 0 | <a href="#">available</a> |
| 147 | <a href="#">R1-1710025</a> | Multiple SS block Transmission in wideband                                         | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 12  | 5.1.1.1.4   | Remaining details on multiple SS block transmissions in wideband CC        | 0 | <a href="#">available</a> |
| 148 | <a href="#">R1-1710026</a> | NR PBCH Contents and Payload Size                                                  | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 14  | 5.1.1.2.1   | NR-PBCH contents and payload size                                          | 0 | <a href="#">available</a> |
| 149 | <a href="#">R1-1710027</a> | NR PBCH RE mapping in SS Block                                                     | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 15  | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                                | 0 | <a href="#">available</a> |
| 150 | <a href="#">R1-1710028</a> | NR PBCH DM RS sequence design and RE mapping                                       | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 16  | 5.1.1.2.3   | Sequence design of DMRS for NR-PBCH                                        | 0 | <a href="#">available</a> |
| 151 | <a href="#">R1-1710029</a> | RMSI Delivery                                                                      | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 17  | 5.1.1.2.4   | Remaining minimum system information delivery                              | 0 | <a href="#">available</a> |
| 152 | <a href="#">R1-1710030</a> | Delivery of Other System Information                                               | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 18  | 5.1.1.2.5   | Other system information delivery                                          | 0 | <a href="#">available</a> |
| 153 | <a href="#">R1-1710031</a> | NR Paging Channel                                                                  | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 19  | 5.1.1.3     | Paging design                                                              | 0 | <a href="#">available</a> |
| 154 | <a href="#">R1-1710032</a> | NR RACH Long and Short Preamble Sequence Length                                    | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 21  | 5.1.1.4.1   | PRACH preamble format details for long/short sequence length               | 0 | <a href="#">available</a> |
| 155 | <a href="#">R1-1710033</a> | NR RACH Preamble Format for capacity enhancement.                                  | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 22  | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management | 0 | <a href="#">revised</a>   |
| 156 | <a href="#">R1-1710034</a> | RACH power control and power ramping procedure                                     | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 23  | 5.1.1.4.3   | Power ramping and power control during RA procedure                        | 0 | <a href="#">revised</a>   |
| 157 | <a href="#">R1-1710035</a> | Further details on NR 4-step RA Procedure                                          | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 24  | 5.1.1.4.4   | 4-step RA procedure                                                        | 0 | <a href="#">available</a> |
| 158 | <a href="#">R1-1710036</a> | IDLE and CONNECTED mode UE mobility based on SS block measurements                 | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 26  | 5.1.1.5.1   | Measurement based on SS block                                              | 0 | <a href="#">available</a> |
| 159 | <a href="#">R1-1710037</a> | L3 Mobility based on CSI-RS based measurements                                     | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 27  | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility                                | 0 | <a href="#">revised</a>   |
| 160 | <a href="#">R1-1710038</a> | NR Radio Link Monitoring                                                           | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 28  | 5.1.1.5.3   | Radio link monitoring                                                      | 0 | <a href="#">available</a> |
| 161 | <a href="#">R1-1710039</a> | Support of interference management schemes in duplexing flexibility                | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 134 | 5.1.6.1     | Cross-link interference management                                         | 0 | <a href="#">noted</a>     |
| 162 | <a href="#">R1-1710040</a> | NR wider bandwidth operation                                                       | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 136 | 5.1.7       | Wider bandwidth operations                                                 | 0 | <a href="#">available</a> |
| 163 | <a href="#">R1-1710041</a> | Support of UL carrier sharing between NR-LTE                                       | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 137 | 5.1.8       | NR-LTE co-existence                                                        | 0 | <a href="#">available</a> |
| 164 | <a href="#">R1-1710042</a> | Power Sharing Mechanism                                                            | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 139 | 5.1.9.1     | Power sharing mechanism                                                    | 0 | <a href="#">noted</a>     |
| 165 | <a href="#">R1-1710043</a> | NR Power Control Framework                                                         | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 140 | 5.1.9.2     | NR power control framework                                                 | 0 | <a href="#">available</a> |
| 166 | <a href="#">R1-1710044</a> | Consideration on CRC attachment for eMBB data                                      | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 121 | 5.1.4.1.1.1 | CRC attachment                                                             | 0 | <a href="#">available</a> |
| 167 | <a href="#">R1-1710045</a> | IR-HARQ scheme for NR LDPC codes                                                   | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 123 | 5.1.4.1.1.3 | Rate matching                                                              | 0 | <a href="#">noted</a>     |
| 168 | <a href="#">R1-1710046</a> | LDPC design for eMBB data                                                          | CATT                      | Yanping Xing  | <a href="#">57090</a> | discussion | Decision   |   |   | 125 | 5.1.4.1.2   | LDPC code design                                                           | 0 | <a href="#">revised</a>   |

|     | A                          | B                                                            | C    | D            | E                     | F          | G        | H | I | J   | K           | L                                               | M | N                           |
|-----|----------------------------|--------------------------------------------------------------|------|--------------|-----------------------|------------|----------|---|---|-----|-------------|-------------------------------------------------|---|-----------------------------|
| 169 | <a href="#">R1-1710047</a> | Offset optimization for NR LDPC                              | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 125 | 5.1.4.1.2   | LDPC code design                                |   | 0 <a href="#">available</a> |
| 170 | <a href="#">R1-1710048</a> | Polar codes construction for NR control channel              | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 127 | 5.1.4.2.1   | Code construction                               |   | 0 <a href="#">noted</a>     |
| 171 | <a href="#">R1-1710049</a> | Discussion on Polar codes for PBCH                           | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 130 | 5.1.4.3     | PBCH                                            |   | 0 <a href="#">revised</a>   |
| 172 | <a href="#">R1-1710050</a> | On codeword mapping                                          | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 32  | 5.1.2.1.1   | Codeword mapping                                |   | 0 <a href="#">available</a> |
| 173 | <a href="#">R1-1710051</a> | Considerations on codebook based UL transmission             | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 33  | 5.1.2.1.2   | Codebook based transmission for UL              |   | 0 <a href="#">noted</a>     |
| 174 | <a href="#">R1-1710052</a> | On non-codebook based UL transmission                        | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 34  | 5.1.2.1.3   | Non-codebook based transmission fo UL           |   | 0 <a href="#">available</a> |
| 175 | <a href="#">R1-1710053</a> | Considerations on transmission diversity scheme in UL        | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 35  | 5.1.2.1.4   | Diversity transmission for UL                   |   | 0 <a href="#">available</a> |
| 176 | <a href="#">R1-1710054</a> | PRB bundling for DL transmission                             | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 36  | 5.1.2.1.5   | PRB bundling for DL                             |   | 0 <a href="#">available</a> |
| 177 | <a href="#">R1-1710055</a> | Considerations on multi-panel/multi-TRP transmission         | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 37  | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission          |   | 0 <a href="#">available</a> |
| 178 | <a href="#">R1-1710056</a> | Further consideration on downlink beam management            | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 41  | 5.1.2.2.1   | Beam management details                         |   | 0 <a href="#">available</a> |
| 179 | <a href="#">R1-1710057</a> | Considerations on UL beam management                         | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 41  | 5.1.2.2.1   | Beam management details                         |   | 0 <a href="#">available</a> |
| 180 | <a href="#">R1-1710058</a> | Consideration on DL beam failure and recovery                | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure          |   | 0 <a href="#">available</a> |
| 181 | <a href="#">R1-1710059</a> | Summary of email discussion [89-17] NR CSI framework         | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 45  | 5.1.2.3.1   | CSI framework                                   |   | 0 <a href="#">noted</a>     |
| 182 | <a href="#">R1-1710060</a> | Views on CSI framework                                       | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 45  | 5.1.2.3.1   | CSI framework                                   |   | 0 <a href="#">available</a> |
| 183 | <a href="#">R1-1710061</a> | Discussion on details of CSI acquisition                     | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 46  | 5.1.2.3.2   | Details of CSI acquisition                      |   | 0 <a href="#">available</a> |
| 184 | <a href="#">R1-1710062</a> | Views on reciprocity based CSI acquisition                   | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 47  | 5.1.2.3.3   | CSI acquisition for reciprocity based operation |   | 0 <a href="#">available</a> |
| 185 | <a href="#">R1-1710063</a> | Discussion on periodic and aperiodic CSI feedback            | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 48  | 5.1.2.3.4   | CSI feedback                                    |   | 0 <a href="#">available</a> |
| 186 | <a href="#">R1-1710064</a> | Discussion on RS multiplexing                                | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 51  | 5.1.2.4.1   | Multiplexing of different types of RSs          |   | 0 <a href="#">noted</a>     |
| 187 | <a href="#">R1-1710065</a> | Design of CSI-RS for CSI acquisition                         | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 52  | 5.1.2.4.2   | CSI-RS                                          |   | 0 <a href="#">available</a> |
| 188 | <a href="#">R1-1710066</a> | Design of CSI-RS for beam management                         | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 52  | 5.1.2.4.2   | CSI-RS                                          |   | 0 <a href="#">available</a> |
| 189 | <a href="#">R1-1710067</a> | On DMRS design for DL                                        | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 53  | 5.1.2.4.3   | DMRS                                            |   | 0 <a href="#">available</a> |
| 190 | <a href="#">R1-1710068</a> | On DMRS design for UL                                        | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 53  | 5.1.2.4.3   | DMRS                                            |   | 0 <a href="#">available</a> |
| 191 | <a href="#">R1-1710069</a> | Considerations on RS for phase tracking                      | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 54  | 5.1.2.4.4   | PT-RS                                           |   | 0 <a href="#">available</a> |
| 192 | <a href="#">R1-1710070</a> | Further considerations on SRS design                         | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 55  | 5.1.2.4.5   | SRS                                             |   | 0 <a href="#">available</a> |
| 193 | <a href="#">R1-1710071</a> | On QCL for NR                                                | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 57  | 5.1.2.4.7   | QCL                                             |   | 0 <a href="#">available</a> |
| 194 | <a href="#">R1-1710072</a> | System level calibration results for NR MIMO                 | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 59  | 5.1.2.5     | Other                                           |   | 0 <a href="#">available</a> |
| 195 | <a href="#">R1-1710073</a> | Link level calibration results for NR MIMO                   | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 59  | 5.1.2.5     | Other                                           |   | 0 <a href="#">available</a> |
| 196 | <a href="#">R1-1710074</a> | NR-PDCCH mapping structure                                   | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCCH-to-CCE mapping    |   | 0 <a href="#">available</a> |
| 197 | <a href="#">R1-1710075</a> | Further details of NR-PDCCH RS structure                     | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 64  | 5.1.3.1.1.2 | RS structure/mapping                            |   | 0 <a href="#">available</a> |
| 198 | <a href="#">R1-1710076</a> | Configuration aspects of the NR-PDCCH                        | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 66  | 5.1.3.1.2.1 | CORESET configuration                           |   | 0 <a href="#">available</a> |
| 199 | <a href="#">R1-1710077</a> | Search space design for NR-PDCCH                             | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 67  | 5.1.3.1.2.2 | Search space design                             |   | 0 <a href="#">available</a> |
| 200 | <a href="#">R1-1710078</a> | Discussion on multi-beam operation for NR-PDCCH              | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 68  | 5.1.3.1.2.3 | Multi-beam operation for PDCCH                  |   | 0 <a href="#">available</a> |
| 201 | <a href="#">R1-1710079</a> | Flexible reuse of DL control resources for data transmission | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 69  | 5.1.3.1.3   | Resource sharing between PDCCH and PDSCCH       |   | 0 <a href="#">available</a> |
| 202 | <a href="#">R1-1710080</a> | Channel structure for group-common PDCCH                     | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCH                 |   | 0 <a href="#">available</a> |
| 203 | <a href="#">R1-1710081</a> | Contents of the group-common PDCCH                           | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                  |   | 0 <a href="#">available</a> |
| 204 | <a href="#">R1-1710082</a> | Configuration and monitoring of the group-common PDCCH       | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH      |   | 0 <a href="#">available</a> |
| 205 | <a href="#">R1-1710083</a> | Short PUCCH for small UCI payloads                           | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits             |   | 0 <a href="#">revised</a>   |
| 206 | <a href="#">R1-1710084</a> | Short PUCCH for moderate and large UCI payloads              | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits         |   | 0 <a href="#">available</a> |
| 207 | <a href="#">R1-1710085</a> | Long PUCCH for small UCI payloads                            | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 81  | 5.1.3.2.2.1 | Long-PUCCH for UCI of up to 2 bits              |   | 0 <a href="#">available</a> |
| 208 | <a href="#">R1-1710086</a> | Long PUCCH for moderate and large UCI payloads               | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 82  | 5.1.3.2.2.2 | Long-PUCCH for UCI of more than 2 bits          |   | 0 <a href="#">available</a> |
| 209 | <a href="#">R1-1710087</a> | Design of multi-slot PUCCH transmission                      | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 83  | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots       |   | 0 <a href="#">available</a> |
| 210 | <a href="#">R1-1710088</a> | Further discussion on PUCCH resource allocation              | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 85  | 5.1.3.2.4   | Resource allocation for PUCCH                   |   | 0 <a href="#">available</a> |
| 211 | <a href="#">R1-1710089</a> | Multiplexing of UCI and UL data on PUSCH                     | CATT | Yanping Xing | <a href="#">57090</a> | discussion | Decision |   |   | 87  | 5.1.3.2.5.1 | UCI piggyback on PUSCH                          |   | 0 <a href="#">available</a> |

|     | A                          | B                                                                          | C                              | D              | E                     | F          | G        | H | I | J   | K           | L                                                             | M | N                         |
|-----|----------------------------|----------------------------------------------------------------------------|--------------------------------|----------------|-----------------------|------------|----------|---|---|-----|-------------|---------------------------------------------------------------|---|---------------------------|
| 212 | <a href="#">R1-1710090</a> | Simultaneous PUCCH-PUSCH transmission in NR                                | CATT                           | Yanping Xing   | <a href="#">57090</a> | discussion | Decision |   |   | 88  | 5.1.3.2.5.2 | PUCCH-PUSCH multiplexing                                      | 0 | <a href="#">available</a> |
| 213 | <a href="#">R1-1710091</a> | NR DL/UL frequency domain resource allocation                              | CATT                           | Yanping Xing   | <a href="#">57090</a> | discussion | Decision |   |   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                          | 0 | <a href="#">available</a> |
| 214 | <a href="#">R1-1710092</a> | NR DL/UL time domain resource allocation                                   | CATT                           | Yanping Xing   | <a href="#">57090</a> | discussion | Decision |   |   | 94  | 5.1.3.3.1.2 | Time-domain resource allocation                               | 0 | <a href="#">available</a> |
| 215 | <a href="#">R1-1710093</a> | Further details of grant-based UL transmission                             | CATT                           | Yanping Xing   | <a href="#">57090</a> | discussion | Decision |   |   | 96  | 5.1.3.3.2   | UL data transmission procedure with grant                     | 0 | <a href="#">available</a> |
| 216 | <a href="#">R1-1710094</a> | Grant-free UL transmission procedure                                       | CATT                           | Yanping Xing   | <a href="#">57090</a> | discussion | Decision |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                  | 0 | <a href="#">available</a> |
| 217 | <a href="#">R1-1710095</a> | Details of CBG construction                                                | CATT                           | Yanping Xing   | <a href="#">57090</a> | discussion | Decision |   |   | 99  | 5.1.3.3.4.1 | CBG construction                                              | 0 | <a href="#">available</a> |
| 218 | <a href="#">R1-1710096</a> | DL control signaling design for CBG-based operation                        | CATT                           | Yanping Xing   | <a href="#">57090</a> | discussion | Decision |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission          | 0 | <a href="#">available</a> |
| 219 | <a href="#">R1-1710097</a> | UL control signaling design for CBG-based operation                        | CATT                           | Yanping Xing   | <a href="#">57090</a> | discussion | Decision |   |   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission          | 0 | <a href="#">available</a> |
| 220 | <a href="#">R1-1710098</a> | NR HARQ-ACK multiplexing                                                   | CATT                           | Yanping Xing   | <a href="#">57090</a> | discussion | Decision |   |   | 104 | 5.1.3.3.5.2 | HARQ-ACK multiplexing/bundling                                | 0 | <a href="#">available</a> |
| 221 | <a href="#">R1-1710099</a> | Discussion on number of HARQ processes and HARQ RTT                        | CATT                           | Yanping Xing   | <a href="#">57090</a> | discussion | Decision |   |   | 106 | 5.1.3.3.6.1 | Number of HARQ processes and HARQ RTT                         | 0 | <a href="#">available</a> |
| 222 | <a href="#">R1-1710100</a> | Soft buffer management for NR                                              | CATT                           | Yanping Xing   | <a href="#">57090</a> | discussion | Decision |   |   | 107 | 5.1.3.3.6.2 | Soft-buffer management                                        | 0 | <a href="#">available</a> |
| 223 | <a href="#">R1-1710101</a> | Further design considerations for DL pre-emption indication                | CATT                           | Yanping Xing   | <a href="#">57090</a> | discussion | Decision |   |   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                           | 0 | <a href="#">available</a> |
| 224 | <a href="#">R1-1710102</a> | Scheduling and HARQ support for NR CA                                      | CATT                           | Yanping Xing   | <a href="#">57090</a> | discussion | Decision |   |   | 115 | 5.1.3.4.1.1 | Self/cross-carrier scheduling and joint/separate UCI feedback | 0 | <a href="#">available</a> |
| 225 | <a href="#">R1-1710103</a> | Scheduling and HARQ support for NR DC                                      | CATT                           | Yanping Xing   | <a href="#">57090</a> | discussion | Decision |   |   | 117 | 5.1.3.4.2   | Dual connectivity                                             | 0 | <a href="#">available</a> |
| 226 | <a href="#">R1-1710104</a> | CCE mapping with REG bundling                                              | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping                   | 0 | <a href="#">available</a> |
| 227 | <a href="#">R1-1710105</a> | Issues regarding DMRS structure and mapping                                | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 64  | 5.1.3.1.1.2 | RS structure/mapping                                          | 0 | <a href="#">available</a> |
| 228 | <a href="#">R1-1710106</a> | NR-PDCCH CORESET configuration                                             | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 66  | 5.1.3.1.2.1 | CORESET configuration                                         | 0 | <a href="#">available</a> |
| 229 | <a href="#">R1-1710107</a> | Search space design for NR-PDCCH                                           | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 67  | 5.1.3.1.2.2 | Search space design                                           | 0 | <a href="#">available</a> |
| 230 | <a href="#">R1-1710108</a> | Supporting Multi-beam in NR-PDCCH                                          | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 68  | 5.1.3.1.2.3 | Multi-beam operation for PDCCH                                | 0 | <a href="#">available</a> |
| 231 | <a href="#">R1-1710109</a> | Resource sharing between PDCCH and PDSCH                                   | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 69  | 5.1.3.1.3   | Resource sharing between PDCCH and PDSCH                      | 0 | <a href="#">available</a> |
| 232 | <a href="#">R1-1710110</a> | Group-common PDCCH design consideration                                    | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                                | 0 | <a href="#">available</a> |
| 233 | <a href="#">R1-1710111</a> | NR-PDCCH for supporting URLLC                                              | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 74  | 5.1.3.1.5   | Ultra-reliable part of URLLC for DL control                   | 0 | <a href="#">available</a> |
| 234 | <a href="#">R1-1710112</a> | On short PUCCH for up to 2 bits UCI                                        | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                           | 0 | <a href="#">available</a> |
| 235 | <a href="#">R1-1710113</a> | On short-PUCCH for more than 2 bits                                        | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits                       | 0 | <a href="#">available</a> |
| 236 | <a href="#">R1-1710114</a> | On long-PUCCH for up to 2 bits                                             | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 81  | 5.1.3.2.2.1 | Long-PUCCH for UCI of up to 2 bits                            | 0 | <a href="#">available</a> |
| 237 | <a href="#">R1-1710115</a> | On long-PUCCH for more than 2 bits                                         | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 82  | 5.1.3.2.2.2 | Long-PUCCH for UCI of more than 2 bits                        | 0 | <a href="#">available</a> |
| 238 | <a href="#">R1-1710116</a> | Consideration on long-PUCCH over slots                                     | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 83  | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots                     | 0 | <a href="#">available</a> |
| 239 | <a href="#">R1-1710117</a> | NR PUCCH resource allocation                                               | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 85  | 5.1.3.2.4   | Resource allocation for PUCCH                                 | 0 | <a href="#">available</a> |
| 240 | <a href="#">R1-1710118</a> | UCI multiplexing on PUSCH                                                  | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 87  | 5.1.3.2.5.1 | UCI piggyback on PUSCH                                        | 0 | <a href="#">available</a> |
| 241 | <a href="#">R1-1710119</a> | Multiplexing of PUSCH and short PUCCH                                      | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 88  | 5.1.3.2.5.2 | PUCCH-PUSCH multiplexing                                      | 0 | <a href="#">available</a> |
| 242 | <a href="#">R1-1710120</a> | Analysis of URLLC reliability for uplink control channel                   | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 89  | 5.1.3.2.6   | Ultra-reliable part of URLLC for UL control                   | 0 | <a href="#">available</a> |
| 243 | <a href="#">R1-1710121</a> | Resource allocation in frequency domain                                    | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                          | 0 | <a href="#">available</a> |
| 244 | <a href="#">R1-1710122</a> | On scheduling request in NR                                                | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 96  | 5.1.3.3.2   | UL data transmission procedure with grant                     | 0 | <a href="#">available</a> |
| 245 | <a href="#">R1-1710123</a> | DL pre-emption indication                                                  | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                           | 0 | <a href="#">available</a> |
| 246 | <a href="#">R1-1710124</a> | Uplink multiplexing for different transmission durations                   | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 110 | 5.1.3.3.7.2 | Possible enhancements for uplink                              | 0 | <a href="#">available</a> |
| 247 | <a href="#">R1-1710125</a> | Supporting Ultra reliability in scheduling                                 | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure    | 0 | <a href="#">available</a> |
| 248 | <a href="#">R1-1710126</a> | Resource allocation for wideband operation                                 | ZTE                            | Yifei Yuan     | <a href="#">58525</a> | discussion |          |   |   | 136 | 5.1.7       | Wider bandwidth operations                                    | 0 | <a href="#">available</a> |
| 249 | <a href="#">R1-1710127</a> | Viewpoint on NR CLI Management for Duplexing Work Plan                     | ZTE                            | Carolyn Taylor | <a href="#">19440</a> | discussion |          |   |   | 133 | 5.1.6       | Duplexing                                                     | 0 | <a href="#">noted</a>     |
| 250 | <a href="#">R1-1710128</a> | UE-to-UE measurement as an enabler for CLI mitigation schemes              | ZTE                            | Carolyn Taylor | <a href="#">19440</a> | discussion |          |   |   | 134 | 5.1.6.1     | Cross-link interference management                            | 0 | <a href="#">noted</a>     |
| 251 | <a href="#">R1-1710129</a> | Channel sensing based schemes for cross-link interference mitigation in NR | ZTE                            | Carolyn Taylor | <a href="#">19440</a> | discussion |          |   |   | 134 | 5.1.6.1     | Cross-link interference management                            | 0 | <a href="#">available</a> |
| 252 | <a href="#">R1-1710130</a> | TRP-to-TRP measurement as an enabler for CLI mitigation schemes            | ZTE                            | Carolyn Taylor | <a href="#">19440</a> | discussion |          |   |   | 135 | 5.1.6.2     | Other                                                         | 0 | <a href="#">available</a> |
| 253 | <a href="#">R1-1710131</a> | Discussion on design of SS block                                           | Guangdong OPPO Mobile Telecom. | Jia Shen       | <a href="#">67727</a> | discussion | Decision |   |   | 10  | 5.1.1.1.2   | SS burst set composition                                      | 0 | <a href="#">available</a> |
| 254 | <a href="#">R1-1710132</a> | Discussion on the timing indication of SS block                            | Guangdong OPPO Mobile Telecom. | Jia Shen       | <a href="#">67727</a> | discussion | Decision |   |   | 11  | 5.1.1.1.3   | Timing indication based on SS block                           | 0 | <a href="#">available</a> |

|     | A                          | B                                                                                              | C                              | D                | E                     | F          | G        | H | I | J   | K           | L                                                                   | M | N                         |
|-----|----------------------------|------------------------------------------------------------------------------------------------|--------------------------------|------------------|-----------------------|------------|----------|---|---|-----|-------------|---------------------------------------------------------------------|---|---------------------------|
| 255 | <a href="#">R1-1710133</a> | Remaining details on multiple SS block transmissions in wideband CC                            | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 12  | 5.1.1.1.4   | Remaining details on multiple SS block transmissions in wideband CC | 0 | <a href="#">available</a> |
| 256 | <a href="#">R1-1710134</a> | Discussion on the numerology of the RMSI                                                       | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 17  | 5.1.1.2.4   | Remaining minimum system information delivery                       | 0 | <a href="#">available</a> |
| 257 | <a href="#">R1-1710135</a> | Discussion on the on-demand SI                                                                 | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 18  | 5.1.1.2.5   | Other system information delivery                                   | 0 | <a href="#">available</a> |
| 258 | <a href="#">R1-1710136</a> | On NR paging design and transmission                                                           | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 19  | 5.1.1.3     | Paging design                                                       | 0 | <a href="#">available</a> |
| 259 | <a href="#">R1-1710137</a> | Discussion on Power ramping and power control during RA procedure                              | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 23  | 5.1.1.4.3   | Power ramping and power control during RA procedure                 | 0 | <a href="#">available</a> |
| 260 | <a href="#">R1-1710138</a> | NR 4-Step Random Access Procedure                                                              | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 24  | 5.1.1.4.4   | 4-step RA procedure                                                 | 0 | <a href="#">available</a> |
| 261 | <a href="#">R1-1710139</a> | On RRM measurement based on SS block                                                           | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 26  | 5.1.1.5.1   | Measurement based on SS block                                       | 0 | <a href="#">available</a> |
| 262 | <a href="#">R1-1710140</a> | On uplink codebook design                                                                      | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 33  | 5.1.2.1.2   | Codebook based transmission for UL                                  | 0 | <a href="#">available</a> |
| 263 | <a href="#">R1-1710141</a> | Considerations on the multi-TRP/Multi-panel design to support the reception of multiple PDCCCH | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 37  | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission                              | 0 | <a href="#">available</a> |
| 264 | <a href="#">R1-1710142</a> | Discussion on the DL Beam Management                                                           | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 41  | 5.1.2.2.1   | Beam management details                                             | 0 | <a href="#">available</a> |
| 265 | <a href="#">R1-1710143</a> | Discussion on the UL Beam Management                                                           | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 41  | 5.1.2.2.1   | Beam management details                                             | 0 | <a href="#">available</a> |
| 266 | <a href="#">R1-1710144</a> | On Beam Recovery Mechanism                                                                     | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure                              | 0 | <a href="#">available</a> |
| 267 | <a href="#">R1-1710145</a> | Beam association relationship between data and control channels                                | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 43  | 5.1.2.2.3   | Other                                                               | 0 | <a href="#">available</a> |
| 268 | <a href="#">R1-1710146</a> | Discussion on CSI-RS design for beam management                                                | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 52  | 5.1.2.4.2   | CSI-RS                                                              | 0 | <a href="#">available</a> |
| 269 | <a href="#">R1-1710147</a> | On SRS design for NR                                                                           | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 55  | 5.1.2.4.5   | SRS                                                                 | 0 | <a href="#">available</a> |
| 270 | <a href="#">R1-1710148</a> | NR-PDCCH CCE-to-REG mapping with REG bundling                                                  | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCCH-to-CCE mapping                        | 0 | <a href="#">available</a> |
| 271 | <a href="#">R1-1710149</a> | On NR PDCCCH RS design                                                                         | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 64  | 5.1.3.1.1.2 | RS structure/mapping                                                | 0 | <a href="#">available</a> |
| 272 | <a href="#">R1-1710150</a> | PDCCCH CORESET configuration and UE procedure on NR-PDCCH monitoring                           | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 66  | 5.1.3.1.2.1 | CORESET configuration                                               | 0 | <a href="#">available</a> |
| 273 | <a href="#">R1-1710151</a> | NR PDCCCH search space design with nested structure                                            | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 67  | 5.1.3.1.2.2 | Search space design                                                 | 0 | <a href="#">available</a> |
| 274 | <a href="#">R1-1710152</a> | Search space design consideration for NR PDCCCH with BF                                        | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 68  | 5.1.3.1.2.3 | Multi-beam operation for PDCCCH                                     | 0 | <a href="#">available</a> |
| 275 | <a href="#">R1-1710153</a> | On resource sharing between PDCCCH and PDSCH                                                   | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 69  | 5.1.3.1.3   | Resource sharing between PDCCCH and PDSCH                           | 0 | <a href="#">available</a> |
| 276 | <a href="#">R1-1710154</a> | Impact on common channel reception to PDCCCH design                                            | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCCH                         | 0 | <a href="#">available</a> |
| 277 | <a href="#">R1-1710155</a> | DL control channel design for URLLC                                                            | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 74  | 5.1.3.1.5   | Ultra-reliable part of URLLC for DL control                         | 0 | <a href="#">available</a> |
| 278 | <a href="#">R1-1710156</a> | Discussion on short PUCCH for up to 2 UCI bits                                                 | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                                 | 0 | <a href="#">available</a> |
| 279 | <a href="#">R1-1710157</a> | Discussion on short PUCCH for more than 2 UCI bits                                             | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits                             | 0 | <a href="#">available</a> |
| 280 | <a href="#">R1-1710158</a> | Discussion on long PUCCH for up to 2 UCI bits                                                  | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 81  | 5.1.3.2.2.1 | Long-PUCCH for UCI of up to 2 bits                                  | 0 | <a href="#">available</a> |
| 281 | <a href="#">R1-1710159</a> | Slot aggregation and configuration for NR long PUCCH                                           | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 83  | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots                           | 0 | <a href="#">available</a> |
| 282 | <a href="#">R1-1710160</a> | Design of NR PUCCH with long duration                                                          | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 84  | 5.1.3.2.3   | Transmit diversity for PUCCH                                        | 0 | <a href="#">available</a> |
| 283 | <a href="#">R1-1710161</a> | Resource indication for UL control channel                                                     | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 85  | 5.1.3.2.4   | Resource allocation for PUCCH                                       | 0 | <a href="#">available</a> |
| 284 | <a href="#">R1-1710162</a> | On UCI and data multiplexing in PUSCH                                                          | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 87  | 5.1.3.2.5.1 | UCI piggyback on PUSCH                                              | 0 | <a href="#">available</a> |
| 285 | <a href="#">R1-1710163</a> | Multiplexing of short PUCCH and long PUCCH                                                     | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 88  | 5.1.3.2.5.2 | PUCCH-PUSCH multiplexing                                            | 0 | <a href="#">available</a> |
| 286 | <a href="#">R1-1710164</a> | Bandwidth part configuration and frequency resource allocation                                 | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                                | 0 | <a href="#">available</a> |
| 287 | <a href="#">R1-1710165</a> | Time-domain resource allocation for NR                                                         | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 94  | 5.1.3.3.1.2 | Time-domain resource allocation                                     | 0 | <a href="#">available</a> |
| 288 | <a href="#">R1-1710166</a> | Discussion on the UL waveform indication                                                       | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 96  | 5.1.3.3.2   | UL data transmission procedure with grant                           | 0 | <a href="#">available</a> |
| 289 | <a href="#">R1-1710167</a> | HARQ for uplink grant-free transmission                                                        | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                        | 0 | <a href="#">available</a> |
| 290 | <a href="#">R1-1710168</a> | Discussion on CBG indication in DCI                                                            | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission                | 0 | <a href="#">available</a> |
| 291 | <a href="#">R1-1710169</a> | Discussion on HARQ-ACK feedback for CBG-based transmission                                     | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission                | 0 | <a href="#">available</a> |
| 292 | <a href="#">R1-1710170</a> | Symbol-level resource allocation and pre-emption indication                                    | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                                 | 0 | <a href="#">available</a> |
| 293 | <a href="#">R1-1710171</a> | Bandwidth part based resource scheduling for carrier aggregation                               | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 115 | 5.1.3.4.1.1 | Self/cross-carrier scheduling and joint/separate UCI feedback       | 0 | <a href="#">available</a> |
| 294 | <a href="#">R1-1710172</a> | Discussion on UE specific RF bandwidth adaptation in NR                                        | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 136 | 5.1.7       | Wider bandwidth operations                                          | 0 | <a href="#">available</a> |
| 295 | <a href="#">R1-1710173</a> | Discussion on the NR-LTE self-interference issue                                               | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 137 | 5.1.8       | NR-LTE co-existence                                                 | 0 | <a href="#">noted</a>     |
| 296 | <a href="#">R1-1710174</a> | Uplink power control for NR                                                                    | Guangdong OPPO Mobile Telecom. | Jia Shen         | <a href="#">67727</a> | discussion | Decision |   |   | 140 | 5.1.9.2     | NR power control framework                                          | 0 | <a href="#">noted</a>     |
| 297 | <a href="#">R1-1710175</a> | Codeword mapping and interleaving                                                              | ZTE                            | Ruyue Yu-Ngok Li | <a href="#">43128</a> | discussion |          |   |   | 32  | 5.1.2.1.1   | Codeword mapping                                                    | 0 | <a href="#">revised</a>   |

|     | A                          | B                                                                 | C                       | D                 | E                     | F          | G        | H | I | J   | K         | L                                               | M | N                           |
|-----|----------------------------|-------------------------------------------------------------------|-------------------------|-------------------|-----------------------|------------|----------|---|---|-----|-----------|-------------------------------------------------|---|-----------------------------|
| 298 | <a href="#">R1-1710176</a> | Codebook based UL transmission                                    | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 33  | 5.1.2.1.2 | Codebook based transmission for UL              |   | 0 <a href="#">available</a> |
| 299 | <a href="#">R1-1710177</a> | Non-Codebook based and Hybrid based UL transmission               | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 34  | 5.1.2.1.3 | Non-codebook based transmission for UL          |   | 0 <a href="#">noted</a>     |
| 300 | <a href="#">R1-1710178</a> | Diversity based uplink transmission schemes                       | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 35  | 5.1.2.1.4 | Diversity transmission for UL                   |   | 0 <a href="#">noted</a>     |
| 301 | <a href="#">R1-1710179</a> | On PRB Bundling                                                   | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 36  | 5.1.2.1.5 | PRB bundling for DL                             |   | 0 <a href="#">available</a> |
| 302 | <a href="#">R1-1710180</a> | Multi-TRP Transmission and interference coordination              | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 37  | 5.1.2.1.6 | Multi-TRP and Multi-panel transmission          |   | 0 <a href="#">noted</a>     |
| 303 | <a href="#">R1-1710181</a> | Discussion on rate matching                                       | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 38  | 5.1.2.1.7 | Rate matching                                   |   | 0 <a href="#">available</a> |
| 304 | <a href="#">R1-1710182</a> | On transmission setting                                           | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 39  | 5.1.2.1.8 | Other                                           |   | 0 <a href="#">available</a> |
| 305 | <a href="#">R1-1710183</a> | DL beam management for NR MIMO                                    | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 41  | 5.1.2.2.1 | Beam management details                         |   | 0 <a href="#">noted</a>     |
| 306 | <a href="#">R1-1710184</a> | UL beam management for NR MIMO                                    | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 41  | 5.1.2.2.1 | Beam management details                         |   | 0 <a href="#">available</a> |
| 307 | <a href="#">R1-1710185</a> | Discussion on beam recovery mechanism                             | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 42  | 5.1.2.2.2 | Mechanism to recover from beam failure          |   | 0 <a href="#">available</a> |
| 308 | <a href="#">R1-1710186</a> | Beam grouping evaluation for beam management                      | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 43  | 5.1.2.2.3 | Other                                           |   | 0 <a href="#">noted</a>     |
| 309 | <a href="#">R1-1710187</a> | On CSI framework details                                          | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 45  | 5.1.2.3.1 | CSI framework                                   |   | 0 <a href="#">revised</a>   |
| 310 | <a href="#">R1-1710188</a> | Details of CSI acquisition                                        | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 46  | 5.1.2.3.2 | Details of CSI acquisition                      |   | 0 <a href="#">available</a> |
| 311 | <a href="#">R1-1710189</a> | On reciprocity based CSI acquisition                              | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 47  | 5.1.2.3.3 | CSI acquisition for reciprocity based operation |   | 0 <a href="#">revised</a>   |
| 312 | <a href="#">R1-1710190</a> | CSI feedback mechanism on PUCCH                                   | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 48  | 5.1.2.3.4 | CSI feedback                                    |   | 0 <a href="#">noted</a>     |
| 313 | <a href="#">R1-1710191</a> | CSI feedback mechanism on PUSCH                                   | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 48  | 5.1.2.3.4 | CSI feedback                                    |   | 0 <a href="#">available</a> |
| 314 | <a href="#">R1-1710192</a> | Overhead reduction for Type II CSI                                | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 48  | 5.1.2.3.4 | CSI feedback                                    |   | 0 <a href="#">available</a> |
| 315 | <a href="#">R1-1710193</a> | Discussion on multiplexing of different RSs                       | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 51  | 5.1.2.4.1 | Multiplexing of different types of RSs          |   | 0 <a href="#">noted</a>     |
| 316 | <a href="#">R1-1710194</a> | On CSI-RS for beam management                                     | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 52  | 5.1.2.4.2 | CSI-RS                                          |   | 0 <a href="#">available</a> |
| 317 | <a href="#">R1-1710195</a> | On CSI-RS for CSI acquisition                                     | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 52  | 5.1.2.4.2 | CSI-RS                                          |   | 0 <a href="#">available</a> |
| 318 | <a href="#">R1-1710196</a> | Discussion on downlink DMRS design                                | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 53  | 5.1.2.4.3 | DMRS                                            |   | 0 <a href="#">noted</a>     |
| 319 | <a href="#">R1-1710197</a> | Evaluation results on DL DMRS                                     | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 53  | 5.1.2.4.3 | DMRS                                            |   | 0 <a href="#">available</a> |
| 320 | <a href="#">R1-1710198</a> | Discussion on uplink DMRS design                                  | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 53  | 5.1.2.4.3 | DMRS                                            |   | 0 <a href="#">available</a> |
| 321 | <a href="#">R1-1710199</a> | Discussion on RS for phase tracking                               | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 54  | 5.1.2.4.4 | PT-RS                                           |   | 0 <a href="#">available</a> |
| 322 | <a href="#">R1-1710200</a> | Discussion on SRS design for NR                                   | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 55  | 5.1.2.4.5 | SRS                                             |   | 0 <a href="#">available</a> |
| 323 | <a href="#">R1-1710201</a> | Discussion on fine time/frequency tracking of channel             | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 56  | 5.1.2.4.6 | TRS                                             |   | 0 <a href="#">available</a> |
| 324 | <a href="#">R1-1710202</a> | QCL design for UL and DL MIMO                                     | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 57  | 5.1.2.4.7 | QCL                                             |   | 0 <a href="#">noted</a>     |
| 325 | R1-1710203                 | Calibration results for Phase 1 NR MIMO link level calibration    | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 59  | 5.1.2.5   | Other                                           |   | 0 <a href="#">withdrawn</a> |
| 326 | R1-1710204                 | Calibration results for Phase 1 NR MIMO system level calibration  | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 59  | 5.1.2.5   | Other                                           |   | 0 <a href="#">withdrawn</a> |
| 327 | R1-1710205                 | Calibration results for Phase 2 NR MIMO link level calibration    | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 59  | 5.1.2.5   | Other                                           |   | 0 <a href="#">withdrawn</a> |
| 328 | <a href="#">R1-1710206</a> | Calibration results for Phase 2 NR MIMO system level calibration  | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 59  | 5.1.2.5   | Other                                           |   | 0 <a href="#">available</a> |
| 329 | <a href="#">R1-1710207</a> | Calibration results for Phase 3 NR MIMO calibration               | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 59  | 5.1.2.5   | Other                                           |   | 0 <a href="#">available</a> |
| 330 | <a href="#">R1-1710208</a> | Further clarification on Phase 3 NR MIMO calibration              | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 59  | 5.1.2.5   | Other                                           |   | 0 <a href="#">available</a> |
| 331 | <a href="#">R1-1710209</a> | On NR power control                                               | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 140 | 5.1.9.2   | NR power control framework                      |   | 0 <a href="#">available</a> |
| 332 | <a href="#">R1-1710210</a> | On NR PHR calculation                                             | ZTE                     | Ruyue Yu-Ngok Li  | <a href="#">43128</a> | discussion |          |   |   | 140 | 5.1.9.2   | NR power control framework                      |   | 0 <a href="#">available</a> |
| 333 | <a href="#">R1-1710211</a> | LS on SR design principles in NR                                  | RAN2, Samsung           | Patrick Merias    | <a href="#">52292</a> | LS in      |          |   |   | 4   | 4         | Incoming Liaison Statements                     |   | 0 <a href="#">treated</a>   |
| 334 | <a href="#">R1-1710212</a> | LS on UE measurement capabilities across LTE and NR               | RAN2, NTT DOCOMO        | Patrick Merias    | <a href="#">52292</a> | LS in      |          |   |   | 4   | 4         | Incoming Liaison Statements                     |   | 0 <a href="#">treated</a>   |
| 335 | <a href="#">R1-1710213</a> | LS on UE categories for NR and LTE-NR Dual Connectivity           | RAN2, NTT DOCOMO        | Patrick Merias    | <a href="#">52292</a> | LS in      |          |   |   | 4   | 4         | Incoming Liaison Statements                     |   | 0 <a href="#">treated</a>   |
| 336 | <a href="#">R1-1710214</a> | LS reply to SA2 on maximum data rate                              | RAN2, MediaTek          | Patrick Merias    | <a href="#">52292</a> | LS in      |          |   |   | 4   | 4         | Incoming Liaison Statements                     |   | 0 <a href="#">treated</a>   |
| 337 | <a href="#">R1-1710215</a> | Response LS on reading time index indication for RRM measurements | RAN2, Intel             | Patrick Merias    | <a href="#">52292</a> | LS in      |          |   |   | 4   | 4         | Incoming Liaison Statements                     |   | 0 <a href="#">treated</a>   |
| 338 | <a href="#">R1-1710216</a> | LS on Emergency Support in NR                                     | SA2, Nokia              | Patrick Merias    | <a href="#">52292</a> | LS in      |          |   |   | 4   | 4         | Incoming Liaison Statements                     |   | 0 <a href="#">treated</a>   |
| 339 | <a href="#">R1-1710217</a> | LS on Support for fake gNB detection mechanisms                   | SA3, Nokia              | Patrick Merias    | <a href="#">52292</a> | LS in      |          |   |   | 4   | 4         | Incoming Liaison Statements                     |   | 0 <a href="#">treated</a>   |
| 340 | <a href="#">R1-1710218</a> | RACH transmission count                                           | Mitsubishi Electric Co. | Fumihiro Hasegawa | <a href="#">61720</a> | discussion | Decision |   |   | 24  | 5.1.1.4.4 | 4-step RA procedure                             |   | 0 <a href="#">available</a> |

|     | A                          | B                                                                                    | C                             | D                           | E                     | F          | G          | H | I | J   | K           | L                                                                   | M | N                         |
|-----|----------------------------|--------------------------------------------------------------------------------------|-------------------------------|-----------------------------|-----------------------|------------|------------|---|---|-----|-------------|---------------------------------------------------------------------|---|---------------------------|
| 341 | <a href="#">R1-1710219</a> | UL transmission power control                                                        | Mitsubishi Electric Co.       | Fumihito Hasegawa           | <a href="#">61720</a> | discussion | Decision   |   |   | 140 | 5.1.9.2     | NR power control framework                                          | 0 | <a href="#">available</a> |
| 342 | <a href="#">R1-1710220</a> | Reply LS on Emergency Support in NR                                                  | RAN, T-Mobile                 | Patrick Merias              | <a href="#">52292</a> | LS in      |            |   |   | 4   | 4           | Incoming Liaison Statements                                         | 0 | <a href="#">treated</a>   |
| 343 | <a href="#">R1-1710221</a> | Reply LS on UE categories for NR and LTE-NR Dual Connectivity                        | RAN, NTT DOCOMO               | Patrick Merias              | <a href="#">52292</a> | LS in      |            |   |   | 4   | 4           | Incoming Liaison Statements                                         | 0 | <a href="#">treated</a>   |
| 344 | <a href="#">R1-1710222</a> | Transmit diversity for DFTsOFDM-based PUCCH in long duration                         | Mitsubishi Electric RCE       | Cristina Ciocchina-Duchesne | <a href="#">56339</a> | discussion | Decision   |   |   | 84  | 5.1.3.2.3   | Transmit diversity for PUCCH                                        | 0 | <a href="#">available</a> |
| 345 | <a href="#">R1-1710223</a> | Discussion on timing indication based on SS block                                    | Beijing Xinwei Telecom Techn. | Peng Sun                    | <a href="#">62183</a> | discussion | Decision   |   |   | 11  | 5.1.1.1.3   | Timing indication based on SS block                                 | 0 | <a href="#">available</a> |
| 346 | <a href="#">R1-1710224</a> | Discussion and evaluation on SS block composition                                    | Beijing Xinwei Telecom Techn. | Peng Sun                    | <a href="#">62183</a> | discussion | Decision   |   |   | 15  | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                         | 0 | <a href="#">available</a> |
| 347 | <a href="#">R1-1710225</a> | Discussion and evaluation on DMRS design for NR-PBCH                                 | Beijing Xinwei Telecom Techn. | Peng Sun                    | <a href="#">62183</a> | discussion | Decision   |   |   | 16  | 5.1.1.2.3   | Sequence design of DMRS for NR-PBCH                                 | 0 | <a href="#">available</a> |
| 348 | <a href="#">R1-1710226</a> | Discussion on 2-symbol Short PUCCH with More Than 2 Bits                             | Beijing Xinwei Telecom Techn. | Peng Sun                    | <a href="#">62183</a> | discussion | Decision   |   |   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits                             | 0 | <a href="#">available</a> |
| 349 | <a href="#">R1-1710227</a> | Further Discussion on PTRS Design Details                                            | Beijing Xinwei Telecom Techn. | Peng Sun                    | <a href="#">62183</a> | discussion | Decision   |   |   | 54  | 5.1.2.4.4   | PT-RS                                                               | 0 | <a href="#">withdrawn</a> |
| 350 | <a href="#">R1-1710228</a> | Further discussion on channel reciprocity and beam correspondence                    | MTI                           | Chie Ming Chou              | <a href="#">64291</a> | discussion |            |   |   | 43  | 5.1.2.2.3   | Other                                                               | 0 | <a href="#">available</a> |
| 351 | <a href="#">R1-1710229</a> | [89-16] Email discussion on NR-PRACH preamble formats based on short sequence length | ZTE Corporation               | Jan Johansson               | <a href="#">72705</a> | discussion | Discussion |   |   | 21  | 5.1.1.4.1   | PRACH preamble format details for long/short sequence length        | 0 | <a href="#">revised</a>   |
| 352 | <a href="#">R1-1710230</a> | UL PTRS for DFTsOFDM waveform                                                        | Mitsubishi Electric RCE       | Cristina Ciocchina-Duchesne | <a href="#">56339</a> | discussion | Decision   |   |   | 54  | 5.1.2.4.4   | PT-RS                                                               | 0 | <a href="#">noted</a>     |
| 353 | <a href="#">R1-1710231</a> | Consideration on timing indication based on SS block                                 | Fujitsu                       | Tim Mousley                 | <a href="#">10954</a> | other      |            |   |   | 11  | 5.1.1.1.3   | Timing indication based on SS block                                 | 0 | <a href="#">available</a> |
| 354 | <a href="#">R1-1710232</a> | Discussion on DMRS for NR-PBCH                                                       | Fujitsu                       | Tim Mousley                 | <a href="#">10954</a> | other      |            |   |   | 16  | 5.1.1.2.3   | Sequence design of DMRS for NR-PBCH                                 | 0 | <a href="#">available</a> |
| 355 | <a href="#">R1-1710233</a> | Discussion on the CORESET for RMSI delivery                                          | Fujitsu                       | Tim Mousley                 | <a href="#">10954</a> | other      |            |   |   | 17  | 5.1.1.2.4   | Remaining minimum system information delivery                       | 0 | <a href="#">available</a> |
| 356 | <a href="#">R1-1710234</a> | Discussion on 4-step RA procedure                                                    | Fujitsu                       | Tim Mousley                 | <a href="#">10954</a> | other      |            |   |   | 24  | 5.1.1.4.4   | 4-step RA procedure                                                 | 0 | <a href="#">available</a> |
| 357 | <a href="#">R1-1710235</a> | Discussion on multiple NR-PDCCHs in NC-JT scheme                                     | Fujitsu                       | Tim Mousley                 | <a href="#">10954</a> | other      |            |   |   | 37  | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission                              | 0 | <a href="#">available</a> |
| 358 | <a href="#">R1-1710236</a> | Discussion on beam failure recovery procedure                                        | Fujitsu                       | Tim Mousley                 | <a href="#">10954</a> | other      |            |   |   | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure                              | 0 | <a href="#">available</a> |
| 359 | <a href="#">R1-1710237</a> | PUCCH resource allocation                                                            | Fujitsu                       | Tim Mousley                 | <a href="#">10954</a> | other      |            |   |   | 85  | 5.1.3.2.4   | Resource allocation for PUCCH                                       | 0 | <a href="#">available</a> |
| 360 | <a href="#">R1-1710238</a> | Discussion on time domain resource allocation                                        | Fujitsu                       | Tim Mousley                 | <a href="#">10954</a> | other      |            |   |   | 94  | 5.1.3.3.1.2 | Time-domain resource allocation                                     | 0 | <a href="#">available</a> |
| 361 | <a href="#">R1-1710239</a> | Discussions on HARQ for grant-free transmission                                      | Fujitsu                       | Tim Mousley                 | <a href="#">10954</a> | other      |            |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                        | 0 | <a href="#">available</a> |
| 362 | <a href="#">R1-1710240</a> | Discussion on DL control signaling related to CBG based (re-)transmission            | Fujitsu                       | Tim Mousley                 | <a href="#">10954</a> | other      |            |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re-)transmission               | 0 | <a href="#">available</a> |
| 363 | <a href="#">R1-1710241</a> | Discussion on CBG based HARQ-ACK Design                                              | Fujitsu                       | Tim Mousley                 | <a href="#">10954</a> | other      |            |   |   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re-)transmission               | 0 | <a href="#">available</a> |
| 364 | <a href="#">R1-1710242</a> | Discussion on HARQ-ACK codebook                                                      | Fujitsu                       | Tim Mousley                 | <a href="#">10954</a> | other      |            |   |   | 104 | 5.1.3.3.5.2 | HARQ-ACK multiplexing/bundling                                      | 0 | <a href="#">available</a> |
| 365 | <a href="#">R1-1710243</a> | On eMBB and URLLC multiplexing for Uplink                                            | Fujitsu                       | Tim Mousley                 | <a href="#">10954</a> | other      |            |   |   | 110 | 5.1.3.3.7.2 | Possible enhancements for uplink                                    | 0 | <a href="#">available</a> |
| 366 | <a href="#">R1-1710244</a> | PRB indexing for RMSI in NR                                                          | NEC                           | Yassin Awad                 | <a href="#">37300</a> | discussion | Decision   |   |   | 17  | 5.1.1.2.4   | Remaining minimum system information delivery                       | 0 | <a href="#">available</a> |
| 367 | <a href="#">R1-1710245</a> | Frequency-domain resource allocation schemes for NR                                  | NEC                           | Yassin Awad                 | <a href="#">37300</a> | discussion | Decision   |   |   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                                | 0 | <a href="#">available</a> |
| 368 | <a href="#">R1-1710246</a> | Time-domain resource allocation schemes for NR                                       | NEC                           | Yassin Awad                 | <a href="#">37300</a> | discussion | Decision   |   |   | 94  | 5.1.3.3.1.2 | Time-domain resource allocation                                     | 0 | <a href="#">available</a> |
| 369 | <a href="#">R1-1710247</a> | Frequency hopping for NR UL PUSCH                                                    | NEC                           | Yassin Awad                 | <a href="#">37300</a> | discussion | Decision   |   |   | 96  | 5.1.3.3.2   | UL data transmission procedure with grant                           | 0 | <a href="#">available</a> |
| 370 | <a href="#">R1-1710248</a> | UL data transmission without grant                                                   | NEC                           | Yassin Awad                 | <a href="#">37300</a> | discussion | Decision   |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                        | 0 | <a href="#">available</a> |
| 371 | <a href="#">R1-1710249</a> | PRB and RBG indexing within wider channel BW for NR                                  | NEC                           | Yassin Awad                 | <a href="#">37300</a> | discussion | Decision   |   |   | 136 | 5.1.7       | Wider bandwidth operations                                          | 0 | <a href="#">available</a> |
| 372 | <a href="#">R1-1710250</a> | Discussion on UL sharing of NR and LTE                                               | NEC                           | Yassin Awad                 | <a href="#">37300</a> | discussion | Decision   |   |   | 137 | 5.1.8       | NR-LTE co-existence                                                 | 0 | <a href="#">noted</a>     |
| 373 | <a href="#">R1-1710251</a> | Discussion on beam failure recovery request                                          | NEC Corporation               | Yukai Gao                   | <a href="#">62939</a> | discussion |            |   |   | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure                              | 0 | <a href="#">available</a> |
| 374 | <a href="#">R1-1710252</a> | Discussion on preamble transmitting power                                            | NEC Corporation               | Yukai Gao                   | <a href="#">62939</a> | discussion |            |   |   | 23  | 5.1.1.4.3   | Power ramping and power control during RA procedure                 | 0 | <a href="#">withdrawn</a> |
| 375 | <a href="#">R1-1710253</a> | Discussion on extending of scheduling request                                        | NEC Corporation               | Yukai Gao                   | <a href="#">62939</a> | discussion |            |   |   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits                             | 0 | <a href="#">withdrawn</a> |
| 376 | <a href="#">R1-1710254</a> | Discussion on beam sweeping or beam changing of SR                                   | NEC Corporation               | Yukai Gao                   | <a href="#">62939</a> | discussion |            |   |   | 84  | 5.1.3.2.3   | Transmit diversity for PUCCH                                        | 0 | <a href="#">withdrawn</a> |
| 377 | <a href="#">R1-1710255</a> | Remaining details on DMRS ports and number of layers indication                      | NEC Corporation               | Yukai Gao                   | <a href="#">62939</a> | discussion |            |   |   | 32  | 5.1.2.1.1   | Codeword mapping                                                    | 0 | <a href="#">available</a> |
| 378 | <a href="#">R1-1710256</a> | CSI-RS design for beam management and interference measurement                       | NEC Corporation               | Yukai Gao                   | <a href="#">62939</a> | discussion |            |   |   | 52  | 5.1.2.4.2   | CSI-RS                                                              | 0 | <a href="#">available</a> |
| 379 | <a href="#">R1-1710257</a> | Considerations on the design of DMRS                                                 | NEC Corporation               | Yukai Gao                   | <a href="#">62939</a> | discussion |            |   |   | 53  | 5.1.2.4.3   | DMRS                                                                | 0 | <a href="#">available</a> |
| 380 | <a href="#">R1-1710258</a> | Remaining issue on SS Sequence Design                                                | LG Electronics                | Youngwoo Yun                | <a href="#">45048</a> | discussion | Decision   |   |   | 9   | 5.1.1.1.1   | Remaining details on SS sequence design                             | 0 | <a href="#">available</a> |
| 381 | <a href="#">R1-1710259</a> | Discussion on SS burst set composition                                               | LG Electronics                | Youngwoo Yun                | <a href="#">45048</a> | discussion | Decision   |   |   | 10  | 5.1.1.1.2   | SS burst set composition                                            | 0 | <a href="#">available</a> |
| 382 | <a href="#">R1-1710260</a> | Discussion on SS block time index indication                                         | LG Electronics                | Youngwoo Yun                | <a href="#">45048</a> | discussion | Decision   |   |   | 11  | 5.1.1.1.3   | Timing indication based on SS block                                 | 0 | <a href="#">available</a> |
| 383 | <a href="#">R1-1710261</a> | Remaining issues on Multiple SS block transmissions in wideband CC                   | LG Electronics                | Youngwoo Yun                | <a href="#">45048</a> | discussion | Decision   |   |   | 12  | 5.1.1.1.4   | Remaining details on multiple SS block transmissions in wideband CC | 0 | <a href="#">available</a> |

|     | A                          | B                                                             | C              | D            | E                     | F          | G        | H | I                 | J  | K           | L                                                                          | M | N                         |
|-----|----------------------------|---------------------------------------------------------------|----------------|--------------|-----------------------|------------|----------|---|-------------------|----|-------------|----------------------------------------------------------------------------|---|---------------------------|
| 384 | <a href="#">R1-1710262</a> | Consideration on NR-PBCH contents and payload size            | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 14 | 5.1.1.2.1   | NR-PBCH contents and payload size                                          | 0 | <a href="#">available</a> |
| 385 | <a href="#">R1-1710263</a> | Discussion on NR-PBCH RE mapping and SS block composition     | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 15 | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                                | 0 | <a href="#">available</a> |
| 386 | <a href="#">R1-1710264</a> | Discussion on DMRS design for NR-PBCH                         | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 16 | 5.1.1.2.3   | Sequence design of DMRS for NR-PBCH                                        | 0 | <a href="#">available</a> |
| 387 | <a href="#">R1-1710265</a> | Remaining minimum system information delivery                 | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 17 | 5.1.1.2.4   | Remaining minimum system information delivery                              | 0 | <a href="#">available</a> |
| 388 | <a href="#">R1-1710266</a> | Other system information delivery                             | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   | Late contribution | 18 | 5.1.1.2.5   | Other system information delivery                                          | 0 | <a href="#">withdrawn</a> |
| 389 | <a href="#">R1-1710267</a> | Paging design in NR                                           | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 19 | 5.1.1.3     | Paging design                                                              | 0 | <a href="#">available</a> |
| 390 | <a href="#">R1-1710268</a> | Discussion on PRACH preamble format details                   | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 21 | 5.1.1.4.1   | PRACH preamble format details for long/short sequence length               | 0 | <a href="#">available</a> |
| 391 | <a href="#">R1-1710269</a> | Discussion on PRACH preamble for capacity enhancement         | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 22 | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management | 0 | <a href="#">available</a> |
| 392 | <a href="#">R1-1710270</a> | Discussion on Power Control issue for Message 1 and 3         | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 23 | 5.1.1.4.3   | Power ramping and power control during RA procedure                        | 0 | <a href="#">available</a> |
| 393 | <a href="#">R1-1710271</a> | RACH Procedure                                                | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 24 | 5.1.1.4.4   | 4-step RA procedure                                                        | 0 | <a href="#">available</a> |
| 394 | <a href="#">R1-1710272</a> | SS block based RRM Measurement                                | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 26 | 5.1.1.5.1   | Measurement based on SS block                                              | 0 | <a href="#">available</a> |
| 395 | <a href="#">R1-1710273</a> | CSI-RS based RRM Measurement for L3 Mobility                  | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 27 | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility                                | 0 | <a href="#">noted</a>     |
| 396 | <a href="#">R1-1710274</a> | Discussion on Radio Link Monitoring in NR                     | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 28 | 5.1.1.5.3   | Radio link monitoring                                                      | 0 | <a href="#">available</a> |
| 397 | <a href="#">R1-1710275</a> | Discussion on codeword mapping                                | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 32 | 5.1.2.1.1   | Codeword mapping                                                           | 0 | <a href="#">available</a> |
| 398 | <a href="#">R1-1710276</a> | Discussion on codebook based transmission for UL              | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 33 | 5.1.2.1.2   | Codebook based transmission for UL                                         | 0 | <a href="#">available</a> |
| 399 | <a href="#">R1-1710277</a> | Discussion on non-codebook based transmission for UL          | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 34 | 5.1.2.1.3   | Non-codebook based transmission for UL                                     | 0 | <a href="#">available</a> |
| 400 | <a href="#">R1-1710278</a> | Discussion on diversity transmission for UL                   | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 35 | 5.1.2.1.4   | Diversity transmission for UL                                              | 0 | <a href="#">available</a> |
| 401 | <a href="#">R1-1710279</a> | Discussion on cooperative transmission                        | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 37 | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission                                     | 0 | <a href="#">available</a> |
| 402 | <a href="#">R1-1710280</a> | Discussion on rate matching                                   | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 38 | 5.1.2.1.7   | Rate matching                                                              | 0 | <a href="#">available</a> |
| 403 | <a href="#">R1-1710281</a> | Discussion on DL beam management                              | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 41 | 5.1.2.2.1   | Beam management details                                                    | 0 | <a href="#">available</a> |
| 404 | <a href="#">R1-1710282</a> | Discussion on UL beam management                              | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 41 | 5.1.2.2.1   | Beam management details                                                    | 0 | <a href="#">available</a> |
| 405 | <a href="#">R1-1710283</a> | Discussion on beam failure recovery                           | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 42 | 5.1.2.2.2   | Mechanism to recover from beam failure                                     | 0 | <a href="#">noted</a>     |
| 406 | <a href="#">R1-1710284</a> | Discussion on CSI framework                                   | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 45 | 5.1.2.3.1   | CSI framework                                                              | 0 | <a href="#">available</a> |
| 407 | <a href="#">R1-1710285</a> | Discussion on interference measurement                        | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 46 | 5.1.2.3.2   | Details of CSI acquisition                                                 | 0 | <a href="#">available</a> |
| 408 | <a href="#">R1-1710286</a> | Discussion on CSI acquisition for reciprocity based operation | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 47 | 5.1.2.3.3   | CSI acquisition for reciprocity based operation                            | 0 | <a href="#">available</a> |
| 409 | <a href="#">R1-1710287</a> | Discussion on overhead reduction for Type II codebook         | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 48 | 5.1.2.3.4   | CSI feedback                                                               | 0 | <a href="#">available</a> |
| 410 | <a href="#">R1-1710288</a> | Discussions on CSI reporting contents                         | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 48 | 5.1.2.3.4   | CSI feedback                                                               | 0 | <a href="#">available</a> |
| 411 | <a href="#">R1-1710289</a> | CSI feedback for OL and semi-OL MIMO                          | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 48 | 5.1.2.3.4   | CSI feedback                                                               | 0 | <a href="#">available</a> |
| 412 | <a href="#">R1-1710290</a> | UL channel utilization for CSI reporting                      | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 48 | 5.1.2.3.4   | CSI feedback                                                               | 0 | <a href="#">available</a> |
| 413 | <a href="#">R1-1710291</a> | On collision avoidance for PTRS and other RSs                 | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 51 | 5.1.2.4.1   | Multiplexing of different types of RSs                                     | 0 | <a href="#">available</a> |
| 414 | <a href="#">R1-1710292</a> | On CSI-RS design for beam management                          | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 52 | 5.1.2.4.2   | CSI-RS                                                                     | 0 | <a href="#">available</a> |
| 415 | <a href="#">R1-1710293</a> | On CSI-RS design for CSI acquisition                          | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 52 | 5.1.2.4.2   | CSI-RS                                                                     | 0 | <a href="#">available</a> |
| 416 | <a href="#">R1-1710294</a> | On DL DMRS design                                             | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 53 | 5.1.2.4.3   | DMRS                                                                       | 0 | <a href="#">available</a> |
| 417 | <a href="#">R1-1710295</a> | On UL DMRS design                                             | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 53 | 5.1.2.4.3   | DMRS                                                                       | 0 | <a href="#">available</a> |
| 418 | <a href="#">R1-1710296</a> | On DL PT-RS design                                            | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 54 | 5.1.2.4.4   | PT-RS                                                                      | 0 | <a href="#">noted</a>     |
| 419 | <a href="#">R1-1710297</a> | On UL PT-RS design                                            | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 54 | 5.1.2.4.4   | PT-RS                                                                      | 0 | <a href="#">revised</a>   |
| 420 | <a href="#">R1-1710298</a> | On SRS design and related operations                          | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 55 | 5.1.2.4.5   | SRS                                                                        | 0 | <a href="#">available</a> |
| 421 | <a href="#">R1-1710299</a> | Discussion on fine time/frequency tracking of channel         | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 56 | 5.1.2.4.6   | TRS                                                                        | 0 | <a href="#">available</a> |
| 422 | <a href="#">R1-1710300</a> | Discussion on QCL for NR                                      | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 57 | 5.1.2.4.7   | QCL                                                                        | 0 | <a href="#">available</a> |
| 423 | <a href="#">R1-1710301</a> | Phase 3 SLS Calibration Results for NR MIMO                   | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 59 | 5.1.2.5     | Other                                                                      | 0 | <a href="#">available</a> |
| 424 | <a href="#">R1-1710302</a> | Phase 2 LLS Calibration Results for NR MIMO                   | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 59 | 5.1.2.5     | Other                                                                      | 0 | <a href="#">available</a> |
| 425 | <a href="#">R1-1710303</a> | Discussion on NR-PDCH structure                               | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 63 | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCH-to-CCE mapping                                 | 0 | <a href="#">available</a> |
| 426 | <a href="#">R1-1710304</a> | Discussion on reference signal for NR-PDCH                    | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 64 | 5.1.3.1.1.2 | RS structure/mapping                                                       | 0 | <a href="#">available</a> |

|     | A                          | B                                                                               | C              | D            | E                     | F          | G        | H | I                 | J   | K           | L                                                             | M | N                         |
|-----|----------------------------|---------------------------------------------------------------------------------|----------------|--------------|-----------------------|------------|----------|---|-------------------|-----|-------------|---------------------------------------------------------------|---|---------------------------|
| 427 | <a href="#">R1-1710305</a> | Discussion on CORESET configuration                                             | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 66  | 5.1.3.1.2.1 | CORESET configuration                                         | 0 | <a href="#">available</a> |
| 428 | <a href="#">R1-1710306</a> | Discussion on hierarchical search space structure                               | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 67  | 5.1.3.1.2.2 | Search space design                                           | 0 | <a href="#">available</a> |
| 429 | <a href="#">R1-1710307</a> | Discussion on multi-beam operation for NR-PDCCH                                 | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 68  | 5.1.3.1.2.3 | Multi-beam operation for PDCCH                                | 0 | <a href="#">available</a> |
| 430 | <a href="#">R1-1710308</a> | Discussion on multiplexing between control and data                             | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 69  | 5.1.3.1.3   | Resource sharing between PDCCH and PDSCH                      | 0 | <a href="#">available</a> |
| 431 | <a href="#">R1-1710309</a> | Discussion on the structure of group common PDCCH                               | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCH                               | 0 | <a href="#">available</a> |
| 432 | <a href="#">R1-1710310</a> | Discussion on the contents of group common PDCCH                                | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                                | 0 | <a href="#">available</a> |
| 433 | <a href="#">R1-1710311</a> | Discussion on UE behavior for the group common PDCCH                            | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH                    | 0 | <a href="#">available</a> |
| 434 | <a href="#">R1-1710312</a> | Discussion on DL control with ultra-reliability                                 | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 74  | 5.1.3.1.5   | Ultra-reliable part of URLLC for DL control                   | 0 | <a href="#">available</a> |
| 435 | <a href="#">R1-1710313</a> | Design of short NR-PUCCH for up to 2 UCI bits                                   | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                           | 0 | <a href="#">available</a> |
| 436 | <a href="#">R1-1710314</a> | Design of short NR-PUCCH for more than 2 UCI bits                               | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits                       | 0 | <a href="#">available</a> |
| 437 | <a href="#">R1-1710315</a> | Design of long NR-PUCCH for up to 2 UCI bits                                    | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 81  | 5.1.3.2.2.1 | Long-PUCCH for UCI of up to 2 bits                            | 0 | <a href="#">available</a> |
| 438 | <a href="#">R1-1710316</a> | Design of long NR-PUCCH for more than 2 UCI bits                                | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 82  | 5.1.3.2.2.2 | Long-PUCCH for UCI of more than 2 bits                        | 0 | <a href="#">available</a> |
| 439 | <a href="#">R1-1710317</a> | Support of long NR-PUCCH over multiple slots                                    | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 83  | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots                     | 0 | <a href="#">available</a> |
| 440 | <a href="#">R1-1710318</a> | Consideration on transmit diversity for NR-PUCCH                                | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 84  | 5.1.3.2.3   | Transmit diversity for PUCCH                                  | 0 | <a href="#">available</a> |
| 441 | <a href="#">R1-1710319</a> | Consideration on resource allocation for NR-PUCCH                               | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 85  | 5.1.3.2.4   | Resource allocation for PUCCH                                 | 0 | <a href="#">available</a> |
| 442 | <a href="#">R1-1710320</a> | Support of UCI piggyback on PUSCH for NR                                        | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 87  | 5.1.3.2.5.1 | UCI piggyback on PUSCH                                        | 0 | <a href="#">available</a> |
| 443 | <a href="#">R1-1710321</a> | Support of uplink channel multiplexing for NR                                   | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 88  | 5.1.3.2.5.2 | PUCCH-PUSCH multiplexing                                      | 0 | <a href="#">available</a> |
| 444 | <a href="#">R1-1710322</a> | Discussion on UL control with ultra-reliability                                 | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 89  | 5.1.3.2.6   | Ultra-reliable part of URLLC for UL control                   | 0 | <a href="#">available</a> |
| 445 | <a href="#">R1-1710323</a> | Discussion on frequency-domain resource allocation                              | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                          | 0 | <a href="#">available</a> |
| 446 | <a href="#">R1-1710324</a> | Discussion on time-domain resource allocation                                   | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 94  | 5.1.3.3.1.2 | Time-domain resource allocation                               | 0 | <a href="#">available</a> |
| 447 | <a href="#">R1-1710325</a> | Discussion on TB size determination for NR                                      | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 95  | 5.1.3.3.1.3 | Transport block size determination                            | 0 | <a href="#">available</a> |
| 448 | <a href="#">R1-1710326</a> | Discussion on scheduling request for UL transmission with grant                 | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 96  | 5.1.3.3.2   | UL data transmission procedure with grant                     | 0 | <a href="#">available</a> |
| 449 | <a href="#">R1-1710327</a> | Discussion on UL transmission without grant                                     | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                  | 0 | <a href="#">available</a> |
| 450 | <a href="#">R1-1710328</a> | Summary of [89-22] Email discussion about UL data transmission without UL grant | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                  | 0 | <a href="#">noted</a>     |
| 451 | <a href="#">R1-1710329</a> | Consideration on CBG construction for NR HARQ                                   | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 99  | 5.1.3.3.4.1 | CBG construction                                              | 0 | <a href="#">available</a> |
| 452 | <a href="#">R1-1710330</a> | Consideration on DCI signaling for CBG based HARQ                               | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission          | 0 | <a href="#">available</a> |
| 453 | <a href="#">R1-1710331</a> | Consideration on UCI signaling for CBG based HARQ                               | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission          | 0 | <a href="#">available</a> |
| 454 | <a href="#">R1-1710332</a> | Consideration on HARQ-ACK feedback timing for NR                                | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 103 | 5.1.3.3.5.1 | HARQ-ACK feedback timing                                      | 0 | <a href="#">available</a> |
| 455 | <a href="#">R1-1710333</a> | Support of HARQ-ACK multiplexing/bundling for NR                                | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 104 | 5.1.3.3.5.2 | HARQ-ACK multiplexing/bundling                                | 0 | <a href="#">available</a> |
| 456 | <a href="#">R1-1710334</a> | Discussion on HARQ process number for NR                                        | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 106 | 5.1.3.3.6.1 | Number of HARQ processes and HARQ RTT                         | 0 | <a href="#">available</a> |
| 457 | <a href="#">R1-1710335</a> | Discussion on soft buffer management for NR                                     | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 107 | 5.1.3.3.6.2 | Soft-buffer management                                        | 0 | <a href="#">available</a> |
| 458 | <a href="#">R1-1710336</a> | Discussion on pre-emption indication for downlink                               | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                           | 0 | <a href="#">available</a> |
| 459 | <a href="#">R1-1710337</a> | Discussion on eMBB and URLLC multiplexing for uplink                            | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 110 | 5.1.3.3.7.2 | Possible enhancements for uplink                              | 0 | <a href="#">available</a> |
| 460 | <a href="#">R1-1710338</a> | Discussion on scheduling and HARQ procedure for URLLC                           | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure    | 0 | <a href="#">available</a> |
| 461 | <a href="#">R1-1710339</a> | Support of cross-CC DCI/UCI transmission for NR CA                              | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 115 | 5.1.3.4.1.1 | Self/cross-carrier scheduling and joint/separate UCI feedback | 0 | <a href="#">available</a> |
| 462 | <a href="#">R1-1710340</a> | Discussion on dual connectivity with single active UL at given time             | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 117 | 5.1.3.4.2   | Dual connectivity                                             | 0 | <a href="#">available</a> |
| 463 | <a href="#">R1-1710341</a> | Discussion on CRC reduction and attachment for eMBB data                        | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 121 | 5.1.4.1.1.1 | CRC attachment                                                | 0 | <a href="#">available</a> |
| 464 | <a href="#">R1-1710342</a> | Code block segmentation for eMBB                                                | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 122 | 5.1.4.1.1.2 | Segmentation                                                  | 0 | <a href="#">noted</a>     |
| 465 | <a href="#">R1-1710343</a> | On rate matching with LDPC code for eMBB                                        | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 123 | 5.1.4.1.1.3 | Rate matching                                                 | 0 | <a href="#">available</a> |
| 466 | <a href="#">R1-1710344</a> | Discussion on bit level interleaver                                             | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 123 | 5.1.4.1.1.3 | Rate matching                                                 | 0 | <a href="#">noted</a>     |
| 467 | <a href="#">R1-1710345</a> | Circulant permutation matrix design for LDPC codes                              | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion |          |   | Late contribution | 125 | 5.1.4.1.2   | LDPC code design                                              | 0 | <a href="#">revised</a>   |
| 468 | <a href="#">R1-1710346</a> | Early termination effect of polar codes                                         | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 127 | 5.1.4.2.1   | Code construction                                             | 0 | <a href="#">available</a> |
| 469 | <a href="#">R1-1710347</a> | Repetition scheme of polar codes                                                | LG Electronics | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |                   | 128 | 5.1.4.2.2   | Sequence design                                               | 0 | <a href="#">revised</a>   |

|     | A                          | B                                                                        | C                         | D            | E                     | F          | G        | H | I | J   | K           | L                                                                   | M | N                         |
|-----|----------------------------|--------------------------------------------------------------------------|---------------------------|--------------|-----------------------|------------|----------|---|---|-----|-------------|---------------------------------------------------------------------|---|---------------------------|
| 470 | <a href="#">R1-1710348</a> | Design of polar codes with high order modulations                        | LG Electronics            | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |   | 128 | 5.1.4.2.2   | Sequence design                                                     | 0 | <a href="#">available</a> |
| 471 | <a href="#">R1-1710349</a> | Details on PBCH coding                                                   | LG Electronics            | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |   | 130 | 5.1.4.3     | PBCH                                                                | 0 | <a href="#">available</a> |
| 472 | <a href="#">R1-1710350</a> | Discussion on CLI measurement for Duplexing Flexibility                  | LG Electronics            | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |   | 134 | 5.1.6.1     | Cross-link interference management                                  | 0 | <a href="#">noted</a>     |
| 473 | <a href="#">R1-1710351</a> | Discussion on details of backhaul signaling for duplexing flexibility    | LG Electronics            | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |   | 134 | 5.1.6.1     | Cross-link interference management                                  | 0 | <a href="#">available</a> |
| 474 | <a href="#">R1-1710352</a> | Remaining details on wider bandwidth operation                           | LG Electronics            | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |   | 136 | 5.1.7       | Wider bandwidth operations                                          | 0 | <a href="#">available</a> |
| 475 | <a href="#">R1-1710353</a> | Remaining details on DL sharing between LTE and NR                       | LG Electronics            | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |   | 137 | 5.1.8       | NR-LTE co-existence                                                 | 0 | <a href="#">available</a> |
| 476 | <a href="#">R1-1710354</a> | Remaining details on UL sharing between LTE and NR                       | LG Electronics            | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |   | 137 | 5.1.8       | NR-LTE co-existence                                                 | 0 | <a href="#">available</a> |
| 477 | <a href="#">R1-1710355</a> | Discussion on power sharing for LTE-NR dual connectivity                 | LG Electronics            | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |   | 139 | 5.1.9.1     | Power sharing mechanism                                             | 0 | <a href="#">available</a> |
| 478 | <a href="#">R1-1710356</a> | Discussion on uplink power control for NR                                | LG Electronics            | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |   | 140 | 5.1.9.2     | NR power control framework                                          | 0 | <a href="#">noted</a>     |
| 479 | <a href="#">R1-1710357</a> | Discussion on uplink power headroom report for NR                        | LG Electronics            | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |   | 140 | 5.1.9.2     | NR power control framework                                          | 0 | <a href="#">available</a> |
| 480 | <a href="#">R1-1710358</a> | Multiplexing NCP and ECP                                                 | LG Electronics            | Youngwoo Yun | <a href="#">45048</a> | discussion | Decision |   |   | 142 | 5.1.11      | Other                                                               | 0 | <a href="#">available</a> |
| 481 | <a href="#">R1-1710359</a> | PT-RS design                                                             | Panasonic Corporation     | Shotaro Maki | <a href="#">69884</a> | discussion |          |   |   | 54  | 5.1.2.4.4   | PT-RS                                                               | 0 | <a href="#">available</a> |
| 482 | <a href="#">R1-1710360</a> | Discussion on PRB bundling size for NR DL                                | Spreadtrum Communications | Arto Lehti   | <a href="#">61519</a> | discussion | Decision |   |   | 36  | 5.1.2.1.5   | PRB bundling for DL                                                 | 0 | <a href="#">available</a> |
| 483 | <a href="#">R1-1710361</a> | Differential RSRP report for beam management                             | Spreadtrum Communications | Arto Lehti   | <a href="#">61519</a> | discussion | Decision |   |   | 41  | 5.1.2.2.1   | Beam management details                                             | 0 | <a href="#">available</a> |
| 484 | <a href="#">R1-1710362</a> | DMRS configurations for CP-OFDM.                                         | Spreadtrum Communications | Arto Lehti   | <a href="#">61519</a> | discussion | Decision |   |   | 53  | 5.1.2.4.3   | DMRS                                                                | 0 | <a href="#">available</a> |
| 485 | <a href="#">R1-1710363</a> | Considerations on PT-RS for CP-OFDM                                      | Spreadtrum Communications | Arto Lehti   | <a href="#">61519</a> | discussion | Decision |   |   | 54  | 5.1.2.4.4   | PT-RS                                                               | 0 | <a href="#">available</a> |
| 486 | <a href="#">R1-1710364</a> | Discussion on beam failure recovery                                      | Spreadtrum Communications | Arto Lehti   | <a href="#">61519</a> | discussion | Decision |   |   | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure                              | 0 | <a href="#">available</a> |
| 487 | <a href="#">R1-1710365</a> | Discussion on CSI-RS design for CSI acquisition                          | Spreadtrum Communications | Arto Lehti   | <a href="#">61519</a> | discussion | Decision |   |   | 52  | 5.1.2.4.2   | CSI-RS                                                              | 0 | <a href="#">available</a> |
| 488 | <a href="#">R1-1710366</a> | Discussion on NR-REG to NR-CCE time-/frequency mapping                   | Spreadtrum Communications | Arto Lehti   | <a href="#">61519</a> | discussion | Decision |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping                         | 0 | <a href="#">available</a> |
| 489 | <a href="#">R1-1710367</a> | Discussion on 1-symbol PUCCH design                                      | Spreadtrum Communications | Arto Lehti   | <a href="#">61519</a> | discussion | Decision |   |   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits                             | 0 | <a href="#">available</a> |
| 490 | <a href="#">R1-1710368</a> | The relation among UE-specific DCI, GC-PDCCH, and semi-static signaling  | Spreadtrum Communications | Arto Lehti   | <a href="#">61519</a> | discussion | Decision |   |   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH                          | 0 | <a href="#">available</a> |
| 491 | <a href="#">R1-1710369</a> | NR-PBCH RE mapping and SS block composition                              | Spreadtrum Communications | Arto Lehti   | <a href="#">61519</a> | discussion | Decision |   |   | 15  | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                         | 0 | <a href="#">noted</a>     |
| 492 | <a href="#">R1-1710370</a> | Discussion on time index indication                                      | Spreadtrum Communications | Arto Lehti   | <a href="#">61519</a> | discussion | Decision |   |   | 11  | 5.1.1.1.3   | Timing indication based on SS block                                 | 0 | <a href="#">available</a> |
| 493 | <a href="#">R1-1710371</a> | Remaining issues on the subcarrier spacing of SS block                   | Spreadtrum Communications | Arto Lehti   | <a href="#">61519</a> | discussion | Decision |   |   | 10  | 5.1.1.1.2   | SS burst set composition                                            | 0 | <a href="#">available</a> |
| 494 | <a href="#">R1-1710372</a> | Remaining issues on SS block and SS burst set composition                | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 10  | 5.1.1.1.2   | SS burst set composition                                            | 0 | <a href="#">available</a> |
| 495 | <a href="#">R1-1710373</a> | Discussion on SS block time index indication                             | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 11  | 5.1.1.1.3   | Timing indication based on SS block                                 | 0 | <a href="#">available</a> |
| 496 | <a href="#">R1-1710374</a> | SS block transmissions and RRM measurement in wideband CC                | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 12  | 5.1.1.1.4   | Remaining details on multiple SS block transmissions in wideband CC | 0 | <a href="#">available</a> |
| 497 | <a href="#">R1-1710375</a> | Views on NR-PBCH contents and payload size                               | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 14  | 5.1.1.2.1   | NR-PBCH contents and payload size                                   | 0 | <a href="#">available</a> |
| 498 | <a href="#">R1-1710376</a> | NR-PBCH RE mapping and evaluation                                        | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 15  | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                         | 0 | <a href="#">noted</a>     |
| 499 | <a href="#">R1-1710377</a> | SS block time index for idle/inactive measurement                        | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 26  | 5.1.1.5.1   | Measurement based on SS block                                       | 0 | <a href="#">withdrawn</a> |
| 500 | <a href="#">R1-1710378</a> | CSI-RS configuration for L3 mobility                                     | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 27  | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility                         | 0 | <a href="#">available</a> |
| 501 | <a href="#">R1-1710379</a> | Identification NSA mode during initial access                            | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 18  | 5.1.1.2.5   | Other system information delivery                                   | 0 | <a href="#">available</a> |
| 502 | <a href="#">R1-1710380</a> | Discussion on UL grant-free transmission                                 | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                        | 0 | <a href="#">available</a> |
| 503 | <a href="#">R1-1710381</a> | Scheduling and HARQ aspects for URLLC reliability                        | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure          | 0 | <a href="#">available</a> |
| 504 | <a href="#">R1-1710382</a> | Discussion on pre-emption indication for downlink                        | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                                 | 0 | <a href="#">available</a> |
| 505 | <a href="#">R1-1710383</a> | Discussion on UL multiplexing data with different transmission durations | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 110 | 5.1.3.3.7.2 | Possible enhancements for uplink                                    | 0 | <a href="#">available</a> |
| 506 | <a href="#">R1-1710384</a> | Interference analysis for LTE-NR co-existence                            | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 137 | 5.1.8       | NR-LTE co-existence                                                 | 0 | <a href="#">noted</a>     |
| 507 | <a href="#">R1-1710385</a> | Issues on UL transmission for LTE-NR co-existence                        | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 137 | 5.1.8       | NR-LTE co-existence                                                 | 0 | <a href="#">available</a> |
| 508 | <a href="#">R1-1710386</a> | Discussion on short-PUCCH up to 2-bit                                    | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                                 | 0 | <a href="#">withdrawn</a> |
| 509 | <a href="#">R1-1710387</a> | Discussion on short-PUCCH more than 2-bit                                | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits                             | 0 | <a href="#">revised</a>   |
| 510 | <a href="#">R1-1710388</a> | Discussion of PUCCH resource indication                                  | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 85  | 5.1.3.2.4   | Resource allocation for PUCCH                                       | 0 | <a href="#">withdrawn</a> |
| 511 | <a href="#">R1-1710389</a> | DMRS design for NR-PDCCH                                                 | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 64  | 5.1.3.1.1.2 | RS structure/mapping                                                | 0 | <a href="#">available</a> |
| 512 | <a href="#">R1-1710390</a> | Discussion on REG bundling size/structure                                | vivo                      | Yu Ding      | <a href="#">67720</a> | discussion |          |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping                         | 0 | <a href="#">available</a> |

|     | A                          | B                                                                                                  | C                       | D                         | E                     | F          | G        | H | I | J   | K           | L                                                                   | M | N                         |
|-----|----------------------------|----------------------------------------------------------------------------------------------------|-------------------------|---------------------------|-----------------------|------------|----------|---|---|-----|-------------|---------------------------------------------------------------------|---|---------------------------|
| 513 | <a href="#">R1-1710391</a> | Discussion on group common PDCCH and BD                                                            | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                                      | 0 | <a href="#">available</a> |
| 514 | <a href="#">R1-1710392</a> | Discussion on downlink RA                                                                          | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                                | 0 | <a href="#">available</a> |
| 515 | <a href="#">R1-1710393</a> | Discussion on search space design supporting dynamic DCI size                                      | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 67  | 5.1.3.1.2.2 | Search space design                                                 | 0 | <a href="#">available</a> |
| 516 | <a href="#">R1-1710394</a> | Discussion on NR UE supporting self-contained operation                                            | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 106 | 5.1.3.3.6.1 | Number of HARQ processes and HARQ RTT                               | 0 | <a href="#">available</a> |
| 517 | <a href="#">R1-1710395</a> | DCI content size and compression                                                                   | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 75  | 5.1.3.1.6   | Other                                                               | 0 | <a href="#">available</a> |
| 518 | <a href="#">R1-1710396</a> | Discussion on CB grouping                                                                          | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 99  | 5.1.3.3.4.1 | CBG construction                                                    | 0 | <a href="#">available</a> |
| 519 | <a href="#">R1-1710397</a> | Discussion on flexible length scheduling                                                           | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 94  | 5.1.3.3.1.2 | Time-domain resource allocation                                     | 0 | <a href="#">available</a> |
| 520 | <a href="#">R1-1710398</a> | NR transmission on anchor bandwidth part                                                           | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 136 | 5.1.7       | Wider bandwidth operations                                          | 0 | <a href="#">available</a> |
| 521 | <a href="#">R1-1710399</a> | Beam management and beam reporting                                                                 | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 41  | 5.1.2.2.1   | Beam management details                                             | 0 | <a href="#">available</a> |
| 522 | <a href="#">R1-1710400</a> | Beam failure recovery procedure                                                                    | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure                              | 0 | <a href="#">available</a> |
| 523 | <a href="#">R1-1710401</a> | On CSI-RS design for beam management                                                               | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 52  | 5.1.2.4.2   | CSI-RS                                                              | 0 | <a href="#">available</a> |
| 524 | <a href="#">R1-1710402</a> | On DL DMRS design                                                                                  | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 53  | 5.1.2.4.3   | DMRS                                                                | 0 | <a href="#">available</a> |
| 525 | <a href="#">R1-1710403</a> | On PT-RS design for CP-OFDM                                                                        | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 54  | 5.1.2.4.4   | PT-RS                                                               | 0 | <a href="#">available</a> |
| 526 | <a href="#">R1-1710404</a> | UL multi-beam power control                                                                        | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 140 | 5.1.9.2     | NR power control framework                                          | 0 | <a href="#">available</a> |
| 527 | <a href="#">R1-1710405</a> | Feasibility study on subband constellation rotation for uplink PAPR reduction for CP-OFDM waveform | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 142 | 5.1.11      | Other                                                               | 0 | <a href="#">available</a> |
| 528 | <a href="#">R1-1710406</a> | PAE consideration on supporting CP-OFDM and DFT-S OFDM                                             | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 142 | 5.1.11      | Other                                                               | 0 | <a href="#">available</a> |
| 529 | <a href="#">R1-1710407</a> | Forward compatibility consideration for ECP design and NR-MBMS                                     | vivo                    | Yu Ding                   | <a href="#">67720</a> | discussion |          |   |   | 142 | 5.1.11      | Other                                                               | 0 | <a href="#">available</a> |
| 530 | <a href="#">R1-1710408</a> | On pre-DFT RS/UCI multiplexing for PUCCH in short duration                                         | Mitsubishi Electric RCE | Cristina Ciocina-Duchesne | <a href="#">56339</a> | discussion | Decision |   |   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits                             | 0 | <a href="#">available</a> |
| 531 | <a href="#">R1-1710409</a> | Views on SRS designs                                                                               | Mitsubishi Electric Co. | Fumihito Hasegawa         | <a href="#">61720</a> | discussion |          |   |   | 55  | 5.1.2.4.5   | SRS                                                                 | 0 | <a href="#">revised</a>   |
| 532 | <a href="#">R1-1710410</a> | Evaluation of DL DMRS designs                                                                      | Mitsubishi Electric Co. | Fumihito Hasegawa         | <a href="#">61720</a> | discussion |          |   |   | 53  | 5.1.2.4.3   | DMRS                                                                | 0 | <a href="#">available</a> |
| 533 | <a href="#">R1-1710411</a> | Views on DL DMRS designs                                                                           | Mitsubishi Electric Co. | Fumihito Hasegawa         | <a href="#">61720</a> | discussion |          |   |   | 53  | 5.1.2.4.3   | DMRS                                                                | 0 | <a href="#">available</a> |
| 534 | <a href="#">R1-1710412</a> | NR SS block and burst set composition                                                              | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 10  | 5.1.1.1.2   | SS burst set composition                                            | 0 | <a href="#">noted</a>     |
| 535 | <a href="#">R1-1710413</a> | Further details on forward compatible resources in NR                                              | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                                | 0 | <a href="#">available</a> |
| 536 | <a href="#">R1-1710414</a> | Transmission duration indication for symbol-level/slot-level/multi-slot-level scheduling           | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 94  | 5.1.3.3.1.2 | Time-domain resource allocation                                     | 0 | <a href="#">available</a> |
| 537 | <a href="#">R1-1710415</a> | Remaining details on the number of HARQ processes in NR                                            | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 106 | 5.1.3.3.6.1 | Number of HARQ processes and HARQ RTT                               | 0 | <a href="#">available</a> |
| 538 | <a href="#">R1-1710416</a> | Design considerations for NR operation with wide bandwidths                                        | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 136 | 5.1.7       | Wider bandwidth operations                                          | 0 | <a href="#">available</a> |
| 539 | <a href="#">R1-1710417</a> | Remaining details of NR-LTE coexistence in overlapping spectrum                                    | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 137 | 5.1.8       | NR-LTE co-existence                                                 | 0 | <a href="#">noted</a>     |
| 540 | <a href="#">R1-1710418</a> | HARQ-ACK feedback timing for FDD, semi-static TDD and mini-slot based transmissions                | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 103 | 5.1.3.3.5.1 | HARQ-ACK feedback timing                                            | 0 | <a href="#">available</a> |
| 541 | <a href="#">R1-1710419</a> | SS block time index indication                                                                     | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 11  | 5.1.1.1.3   | Timing indication based on SS block                                 | 0 | <a href="#">available</a> |
| 542 | <a href="#">R1-1710420</a> | SS block transmissions in a wideband CC                                                            | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 12  | 5.1.1.1.4   | Remaining details on multiple SS block transmissions in wideband CC | 0 | <a href="#">available</a> |
| 543 | <a href="#">R1-1710421</a> | Details of NR-PBCH contents                                                                        | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 14  | 5.1.1.2.1   | NR-PBCH contents and payload size                                   | 0 | <a href="#">available</a> |
| 544 | <a href="#">R1-1710422</a> | DL Tx beam reporting in msg. 3                                                                     | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 24  | 5.1.1.4.4   | 4-step RA procedure                                                 | 0 | <a href="#">available</a> |
| 545 | <a href="#">R1-1710423</a> | Measurement based on SS block                                                                      | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 26  | 5.1.1.5.1   | Measurement based on SS block                                       | 0 | <a href="#">available</a> |
| 546 | <a href="#">R1-1710424</a> | Measurement based on CSI-RS for L3 mobility                                                        | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 27  | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility                         | 0 | <a href="#">available</a> |
| 547 | <a href="#">R1-1710425</a> | Radio link monitoring                                                                              | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 28  | 5.1.1.5.3   | Radio link monitoring                                               | 0 | <a href="#">available</a> |
| 548 | <a href="#">R1-1710426</a> | Remaining details of codeword mapping for NR MIMO                                                  | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 32  | 5.1.2.1.1   | Codeword mapping                                                    | 0 | <a href="#">noted</a>     |
| 549 | <a href="#">R1-1710427</a> | UL diversity transmission for NR                                                                   | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 35  | 5.1.2.1.4   | Diversity transmission for UL                                       | 0 | <a href="#">noted</a>     |
| 550 | <a href="#">R1-1710428</a> | On the details of multi-TRP and multi-panel transmission                                           | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 37  | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission                              | 0 | <a href="#">available</a> |
| 551 | <a href="#">R1-1710429</a> | On the need of per RE level PDSCH rate-matching and RE mapping signalling                          | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 38  | 5.1.2.1.7   | Rate matching                                                       | 0 | <a href="#">available</a> |
| 552 | <a href="#">R1-1710430</a> | DL beam management details                                                                         | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 41  | 5.1.2.2.1   | Beam management details                                             | 0 | <a href="#">available</a> |
| 553 | <a href="#">R1-1710431</a> | Considerations on beam failure recovery mechanism                                                  | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure                              | 0 | <a href="#">available</a> |
| 554 | <a href="#">R1-1710432</a> | Discussion on the channels to carry CSI report                                                     | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 45  | 5.1.2.3.1   | CSI framework                                                       | 0 | <a href="#">available</a> |
| 555 | <a href="#">R1-1710433</a> | On the details of CSI acquisition                                                                  | AT&T                    | Milap Majmudar            | <a href="#">70953</a> | discussion | Decision |   |   | 46  | 5.1.2.3.2   | Details of CSI acquisition                                          | 0 | <a href="#">available</a> |

|     | A                          | B                                                                        | C                 | D              | E                     | F          | G        | H | I | J   | K           | L                                                          | M | N                         |
|-----|----------------------------|--------------------------------------------------------------------------|-------------------|----------------|-----------------------|------------|----------|---|---|-----|-------------|------------------------------------------------------------|---|---------------------------|
| 556 | <a href="#">R1-1710434</a> | CSI feedback for closed loop and semi open loop transmission schemes     | AT&T              | Milap Majmudar | <a href="#">70953</a> | discussion | Decision |   |   | 48  | 5.1.2.3.4   | CSI feedback                                               | 0 | <a href="#">available</a> |
| 557 | <a href="#">R1-1710435</a> | Multiplexing of CSI-RS with PDSCH in mixed numerology scenarios          | AT&T              | Milap Majmudar | <a href="#">70953</a> | discussion | Decision |   |   | 51  | 5.1.2.4.1   | Multiplexing of different types of RSs                     | 0 | <a href="#">noted</a>     |
| 558 | <a href="#">R1-1710436</a> | Remaining details of CSI-RS                                              | AT&T              | Milap Majmudar | <a href="#">70953</a> | discussion | Decision |   |   | 52  | 5.1.2.4.2   | CSI-RS                                                     | 0 | <a href="#">available</a> |
| 559 | <a href="#">R1-1710437</a> | Control channel configuration for multi-TRP and multi-panel transmission | AT&T              | Milap Majmudar | <a href="#">70953</a> | discussion | Decision |   |   | 68  | 5.1.3.1.2.3 | Multi-beam operation for PDCCH                             | 0 | <a href="#">available</a> |
| 560 | <a href="#">R1-1710438</a> | Group common PDCCH Structure for NR                                      | AT&T              | Milap Majmudar | <a href="#">70953</a> | discussion | Decision |   |   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCH                            | 0 | <a href="#">available</a> |
| 561 | <a href="#">R1-1710439</a> | On the contents of group common PDCCH                                    | AT&T              | Milap Majmudar | <a href="#">70953</a> | discussion | Decision |   |   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                             | 0 | <a href="#">available</a> |
| 562 | <a href="#">R1-1710440</a> | UE behaviour for group common PDCCH                                      | AT&T              | Milap Majmudar | <a href="#">70953</a> | discussion | Decision |   |   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH                 | 0 | <a href="#">available</a> |
| 563 | <a href="#">R1-1710441</a> | Transmit diversity for PUCCH                                             | AT&T              | Milap Majmudar | <a href="#">70953</a> | discussion | Decision |   |   | 84  | 5.1.3.2.3   | Transmit diversity for PUCCH                               | 0 | <a href="#">withdrawn</a> |
| 564 | <a href="#">R1-1710442</a> | On CBG construction for NR PDSCH and PUSCH                               | AT&T              | Milap Majmudar | <a href="#">70953</a> | discussion | Decision |   |   | 99  | 5.1.3.3.4.1 | CBG construction                                           | 0 | <a href="#">available</a> |
| 565 | <a href="#">R1-1710443</a> | DCI design for CBG based re transmission                                 | AT&T              | Milap Majmudar | <a href="#">70953</a> | discussion | Decision |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission       | 0 | <a href="#">available</a> |
| 566 | <a href="#">R1-1710444</a> | Uplink control channel design for CBG based re transmission              | AT&T              | Milap Majmudar | <a href="#">70953</a> | discussion | Decision |   |   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission       | 0 | <a href="#">available</a> |
| 567 | <a href="#">R1-1710445</a> | Minimum UE bandwidth in NR                                               | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | discussion |          |   |   | 29  | 5.1.1.6     | Other                                                      | 0 | <a href="#">available</a> |
| 568 | <a href="#">R1-1710446</a> | Codeword to layer mapping in NR                                          | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 32  | 5.1.2.1.1   | Codeword mapping                                           | 0 | <a href="#">noted</a>     |
| 569 | <a href="#">R1-1710447</a> | Codebook based transmission for UL MIMO                                  | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 33  | 5.1.2.1.2   | Codebook based transmission for UL                         | 0 | <a href="#">available</a> |
| 570 | <a href="#">R1-1710448</a> | Diversity-based transmission for UL                                      | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 35  | 5.1.2.1.4   | Diversity transmission for UL                              | 0 | <a href="#">available</a> |
| 571 | <a href="#">R1-1710449</a> | General views on DL beam management                                      | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 41  | 5.1.2.2.1   | Beam management details                                    | 0 | <a href="#">revised</a>   |
| 572 | <a href="#">R1-1710450</a> | Multi-beam transmission for DL control channel                           | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 43  | 5.1.2.2.3   | Other                                                      | 0 | <a href="#">available</a> |
| 573 | <a href="#">R1-1710451</a> | CSI acquisition details for NCJT                                         | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 37  | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission                     | 0 | <a href="#">available</a> |
| 574 | <a href="#">R1-1710452</a> | CSI acquisition details for hybrid CSI                                   | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 48  | 5.1.2.3.4   | CSI feedback                                               | 0 | <a href="#">available</a> |
| 575 | <a href="#">R1-1710453</a> | The remaining issues for Type I codebook                                 | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 48  | 5.1.2.3.4   | CSI feedback                                               | 0 | <a href="#">available</a> |
| 576 | <a href="#">R1-1710454</a> | The remaining issues for Type II codebook                                | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 48  | 5.1.2.3.4   | CSI feedback                                               | 0 | <a href="#">available</a> |
| 577 | <a href="#">R1-1710455</a> | Signaling of DMRS ports for SU/MU-MIMO                                   | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 58  | 5.1.2.4.8   | Other                                                      | 0 | <a href="#">available</a> |
| 578 | <a href="#">R1-1710456</a> | DMRS design for URLLC                                                    | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 58  | 5.1.2.4.8   | Other                                                      | 0 | <a href="#">available</a> |
| 579 | <a href="#">R1-1710457</a> | Considerations on UE-specific RS Sequence Design                         | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 58  | 5.1.2.4.8   | Other                                                      | 0 | <a href="#">available</a> |
| 580 | <a href="#">R1-1710458</a> | Discussion on UL DMRS power boosting                                     | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 58  | 5.1.2.4.8   | Other                                                      | 0 | <a href="#">available</a> |
| 581 | <a href="#">R1-1710459</a> | Discussion on UL SRS transmission power                                  | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 43  | 5.1.2.2.3   | Other                                                      | 0 | <a href="#">available</a> |
| 582 | <a href="#">R1-1710460</a> | Resource sharing between NR-PDCCH and data                               | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 75  | 5.1.3.1.6   | Other                                                      | 0 | <a href="#">available</a> |
| 583 | <a href="#">R1-1710461</a> | PUCCH resource allocation for HARQ-ACK and SR                            | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 85  | 5.1.3.2.4   | Resource allocation for PUCCH                              | 0 | <a href="#">available</a> |
| 584 | <a href="#">R1-1710462</a> | On HARQ-ACK multiplexing and/or bundling                                 | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 104 | 5.1.3.3.5.2 | HARQ-ACK multiplexing/bundling                             | 0 | <a href="#">available</a> |
| 585 | <a href="#">R1-1710463</a> | Transmit diversity for PUCCH                                             | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 84  | 5.1.3.2.3   | Transmit diversity for PUCCH                               | 0 | <a href="#">available</a> |
| 586 | <a href="#">R1-1710464</a> | Multiplexing of PUCCH and PUSCH                                          | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 88  | 5.1.3.2.5.2 | PUCCH-PUSCH multiplexing                                   | 0 | <a href="#">available</a> |
| 587 | <a href="#">R1-1710465</a> | On uplink data scheduling                                                | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 96  | 5.1.3.3.2   | UL data transmission procedure with grant                  | 0 | <a href="#">available</a> |
| 588 | <a href="#">R1-1710466</a> | Consideration on subsequent transmission after pre-emption               | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure | 0 | <a href="#">available</a> |
| 589 | <a href="#">R1-1710467</a> | DCI design for URLLC                                                     | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 75  | 5.1.3.1.6   | Other                                                      | 0 | <a href="#">available</a> |
| 590 | <a href="#">R1-1710468</a> | Discussion on Multi-TRP cooperation for URLLC                            | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure | 0 | <a href="#">available</a> |
| 591 | <a href="#">R1-1710469</a> | Support of URLLC for TDD                                                 | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure | 0 | <a href="#">available</a> |
| 592 | <a href="#">R1-1710470</a> | Necessity of multiple sequence for Polar code                            | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 128 | 5.1.4.2.2   | Sequence design                                            | 0 | <a href="#">noted</a>     |
| 593 | <a href="#">R1-1710471</a> | CRC polynomial for L1 control information and MIB                        | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 131 | 5.1.4.4     | Other                                                      | 0 | <a href="#">available</a> |
| 594 | <a href="#">R1-1710472</a> | Benefits of implicit soft combining for PBCH by Polar code construction  | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 130 | 5.1.4.3     | PBCH                                                       | 0 | <a href="#">revised</a>   |
| 595 | <a href="#">R1-1710473</a> | Network-based mechanism for millimeter-wave link recovery                | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 43  | 5.1.2.2.3   | Other                                                      | 0 | <a href="#">available</a> |
| 596 | <a href="#">R1-1710474</a> | Further consideration on pi/2 BPSK with FDSS                             | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 132 | 5.1.5       | Modulation                                                 | 0 | <a href="#">available</a> |
| 597 | <a href="#">R1-1710475</a> | Discussion on PHR calculation                                            | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 140 | 5.1.9.2     | NR power control framework                                 | 0 | <a href="#">available</a> |
| 598 | <a href="#">R1-1710476</a> | UE behavior related to group-common PDCCH                                | Huawei, HiSilicon | Brian Classon  | <a href="#">45750</a> | other      |          |   |   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH                 | 0 | <a href="#">available</a> |

|     | A                          | B                                                                    | C                 | D                 | E                     | F          | G        | H | I                 | J   | K           | L                                                                          | M | N                           |
|-----|----------------------------|----------------------------------------------------------------------|-------------------|-------------------|-----------------------|------------|----------|---|-------------------|-----|-------------|----------------------------------------------------------------------------|---|-----------------------------|
| 599 | <a href="#">R1-1710477</a> | Discussion on other system information delivery                      | Huawei, HiSilicon | Brian Classon     | <a href="#">45750</a> | other      |          |   |                   | 18  | 5.1.1.2.5   | Other system information delivery                                          |   | 0 <a href="#">available</a> |
| 600 | <a href="#">R1-1710478</a> | RACH procedures and resource configuration                           | Huawei, HiSilicon | Brian Classon     | <a href="#">45750</a> | other      |          |   |                   | 24  | 5.1.1.4.4   | 4-step RA procedure                                                        |   | 0 <a href="#">available</a> |
| 601 | <a href="#">R1-1710479</a> | Evaluation of PM based early termination for Polar code              | Huawei, HiSilicon | Brian Classon     | <a href="#">45750</a> | other      |          |   |                   | 127 | 5.1.4.2.1   | Code construction                                                          |   | 0 <a href="#">available</a> |
| 602 | <a href="#">R1-1710480</a> | CRC Attachment for Code Block Group                                  | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 121 | 5.1.4.1.1.1 | CRC attachment                                                             |   | 0 <a href="#">available</a> |
| 603 | <a href="#">R1-1710481</a> | Study of Number of CRC Bits for Code Blocks                          | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 121 | 5.1.4.1.1.1 | CRC attachment                                                             |   | 0 <a href="#">available</a> |
| 604 | <a href="#">R1-1710482</a> | Study of Number of CRC Bits for Small Transport Block                | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 121 | 5.1.4.1.1.1 | CRC attachment                                                             |   | 0 <a href="#">noted</a>     |
| 605 | <a href="#">R1-1710483</a> | LDPC Code Performance at High Code Rate                              | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 123 | 5.1.4.1.1.3 | Rate matching                                                              |   | 0 <a href="#">available</a> |
| 606 | <a href="#">R1-1710484</a> | Bit Ordering for Circular Buffer of LDPC Codes                       | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 123 | 5.1.4.1.1.3 | Rate matching                                                              |   | 0 <a href="#">noted</a>     |
| 607 | <a href="#">R1-1710485</a> | Rate Matching for NR LDPC codes                                      | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 123 | 5.1.4.1.1.3 | Rate matching                                                              |   | 0 <a href="#">noted</a>     |
| 608 | <a href="#">R1-1710486</a> | Throughput Requirements of LDPC Decoder                              | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 124 | 5.1.4.1.1.4 | Other                                                                      |   | 0 <a href="#">available</a> |
| 609 | <a href="#">R1-1710487</a> | LDPC Code Design for Base Graph #1                                   | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   | Late contribution | 125 | 5.1.4.1.2   | LDPC code design                                                           |   | 0 <a href="#">available</a> |
| 610 | <a href="#">R1-1710488</a> | LDPC Code Design for Base Graph #2                                   | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   | Late contribution | 125 | 5.1.4.1.2   | LDPC code design                                                           |   | 0 <a href="#">available</a> |
| 611 | <a href="#">R1-1710489</a> | Application of Two Base Graphs for NR Data Channels                  | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 125 | 5.1.4.1.2   | LDPC code design                                                           |   | 0 <a href="#">available</a> |
| 612 | <a href="#">R1-1710490</a> | CRC-based Polar Code Construction                                    | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 127 | 5.1.4.2.1   | Code construction                                                          |   | 0 <a href="#">noted</a>     |
| 613 | <a href="#">R1-1710491</a> | Study of Early Termination for DCI                                   | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 127 | 5.1.4.2.1   | Code construction                                                          |   | 0 <a href="#">available</a> |
| 614 | <a href="#">R1-1710492</a> | Information Sequence Design for Polar Codes                          | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   | Late contribution | 128 | 5.1.4.2.2   | Sequence design                                                            |   | 0 <a href="#">withdrawn</a> |
| 615 | <a href="#">R1-1710493</a> | On Bit Mapping Design for Polar Codes                                | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 128 | 5.1.4.2.2   | Sequence design                                                            |   | 0 <a href="#">revised</a>   |
| 616 | <a href="#">R1-1710494</a> | Impact of Puncturing on Bit-channel Capacities                       | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 128 | 5.1.4.2.2   | Sequence design                                                            |   | 0 <a href="#">revised</a>   |
| 617 | <a href="#">R1-1710495</a> | Polar Code Performance in Fading Channel                             | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 128 | 5.1.4.2.2   | Sequence design                                                            |   | 0 <a href="#">revised</a>   |
| 618 | <a href="#">R1-1710496</a> | Thresholds for Mother Code Size Determination                        | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 128 | 5.1.4.2.2   | Sequence design                                                            |   | 0 <a href="#">available</a> |
| 619 | <a href="#">R1-1710497</a> | Study of Number of CRC Bits for PBCH                                 | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 130 | 5.1.4.3     | PBCH                                                                       |   | 0 <a href="#">available</a> |
| 620 | <a href="#">R1-1710498</a> | Polar Code Design for NR-PBCH                                        | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 130 | 5.1.4.3     | PBCH                                                                       |   | 0 <a href="#">available</a> |
| 621 | <a href="#">R1-1710499</a> | LDPC Code Performance for High Reliability Use Cases                 | Ericsson          | Yufei Blankenship | <a href="#">59257</a> | discussion |          |   |                   | 131 | 5.1.4.4     | Other                                                                      |   | 0 <a href="#">available</a> |
| 622 | <a href="#">R1-1710500</a> | Draft Reply LS on reading time index indication for RRM measurements | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | LS out     | Decision |   |                   | 4   | 4           | Incoming Liaison Statements                                                |   | 0 <a href="#">noted</a>     |
| 623 | <a href="#">R1-1710501</a> | NR PSS and SSS design                                                | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 9   | 5.1.1.1.1   | Remaining details on SS sequence design                                    |   | 0 <a href="#">noted</a>     |
| 624 | <a href="#">R1-1710502</a> | SS Burst Set Composition                                             | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 10  | 5.1.1.1.2   | SS burst set composition                                                   |   | 0 <a href="#">available</a> |
| 625 | <a href="#">R1-1710503</a> | Time Index Signaling for SS Blocks                                   | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 11  | 5.1.1.1.3   | Timing indication based on SS block                                        |   | 0 <a href="#">revised</a>   |
| 626 | <a href="#">R1-1710504</a> | SS Block(s) in Wideband Operation                                    | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 12  | 5.1.1.1.4   | Remaining details on multiple SS block transmissions in wideband CC        |   | 0 <a href="#">available</a> |
| 627 | <a href="#">R1-1710505</a> | NR PBCH Design                                                       | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 14  | 5.1.1.2.1   | NR-PBCH contents and payload size                                          |   | 0 <a href="#">available</a> |
| 628 | <a href="#">R1-1710506</a> | SS Block Composition                                                 | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 15  | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                                |   | 0 <a href="#">revised</a>   |
| 629 | <a href="#">R1-1710507</a> | DMRS Sequence for NR PBCH                                            | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 16  | 5.1.1.2.3   | Sequence design of DMRS for NR-PBCH                                        |   | 0 <a href="#">available</a> |
| 630 | <a href="#">R1-1710508</a> | RMSI Delivery Mechanisms                                             | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 17  | 5.1.1.2.4   | Remaining minimum system information delivery                              |   | 0 <a href="#">available</a> |
| 631 | <a href="#">R1-1710509</a> | NR Paging Design                                                     | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 19  | 5.1.1.3     | Paging design                                                              |   | 0 <a href="#">available</a> |
| 632 | <a href="#">R1-1710510</a> | NR PRACH Preamble design                                             | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 21  | 5.1.1.4.1   | PRACH preamble format details for long/short sequence length               |   | 0 <a href="#">available</a> |
| 633 | <a href="#">R1-1710511</a> | Discussions on PRACH Capacity                                        | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   | Late contribution | 22  | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management |   | 0 <a href="#">available</a> |
| 634 | <a href="#">R1-1710512</a> | PRACH Power ramping procedure                                        | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 23  | 5.1.1.4.3   | Power ramping and power control during RA procedure                        |   | 0 <a href="#">available</a> |
| 635 | <a href="#">R1-1710513</a> | 4-step PRACH Procedures                                              | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 24  | 5.1.1.4.4   | 4-step RA procedure                                                        |   | 0 <a href="#">available</a> |
| 636 | <a href="#">R1-1710514</a> | SS Block based RRM Measurements                                      | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 26  | 5.1.1.5.1   | Measurement based on SS block                                              |   | 0 <a href="#">available</a> |
| 637 | <a href="#">R1-1710515</a> | CSI-RS based RRM Measurements                                        | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 27  | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility                                |   | 0 <a href="#">available</a> |
| 638 | <a href="#">R1-1710516</a> | NR Radio Link Monitoring                                             | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 28  | 5.1.1.5.3   | Radio link monitoring                                                      |   | 0 <a href="#">available</a> |
| 639 | <a href="#">R1-1710517</a> | Remaining details on CW to MIMO layer mapping                        | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 32  | 5.1.2.1.1   | Codeword mapping                                                           |   | 0 <a href="#">noted</a>     |
| 640 | <a href="#">R1-1710518</a> | On codebook based UL transmission                                    | Intel Corporation | Seunghee Han      | <a href="#">47329</a> | discussion | Decision |   |                   | 33  | 5.1.2.1.2   | Codebook based transmission for UL                                         |   | 0 <a href="#">noted</a>     |

|     | A                          | B                                                                | C                 | D            | E                     | F          | G        | H | I | J  | K           | L                                           | M | N                         |
|-----|----------------------------|------------------------------------------------------------------|-------------------|--------------|-----------------------|------------|----------|---|---|----|-------------|---------------------------------------------|---|---------------------------|
| 641 | <a href="#">R1-1710519</a> | On non-codebook based UL transmission                            | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 34 | 5.1.2.1.3   | Non-codebook based transmission for UL      | 0 | <a href="#">available</a> |
| 642 | <a href="#">R1-1710520</a> | On diversity based UL transmission                               | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 35 | 5.1.2.1.4   | Diversity transmission for UL               | 0 | <a href="#">available</a> |
| 643 | <a href="#">R1-1710521</a> | On PRB bundling for DL                                           | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 36 | 5.1.2.1.5   | PRB bundling for DL                         | 0 | <a href="#">available</a> |
| 644 | <a href="#">R1-1710522</a> | Discussion on uplink multi-panel and multi-TRP operation         | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 37 | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission      | 0 | <a href="#">noted</a>     |
| 645 | <a href="#">R1-1710523</a> | Support of downlink NC-JT in NR                                  | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 37 | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission      | 0 | <a href="#">available</a> |
| 646 | <a href="#">R1-1710524</a> | Rate matching for NR                                             | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 38 | 5.1.2.1.7   | Rate matching                               | 0 | <a href="#">available</a> |
| 647 | <a href="#">R1-1710525</a> | Details for UL Beam Management                                   | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 41 | 5.1.2.2.1   | Beam management details                     | 0 | <a href="#">available</a> |
| 648 | <a href="#">R1-1710526</a> | Details for DL Beam Management                                   | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 41 | 5.1.2.2.1   | Beam management details                     | 0 | <a href="#">available</a> |
| 649 | <a href="#">R1-1710527</a> | Discussion for Mechanism to Recover from Beam Failure            | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 42 | 5.1.2.2.2   | Mechanism to recover from beam failure      | 0 | <a href="#">noted</a>     |
| 650 | <a href="#">R1-1710528</a> | On Timing Advance for multi-beam operation                       | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 43 | 5.1.2.2.3   | Other                                       | 0 | <a href="#">available</a> |
| 651 | <a href="#">R1-1710529</a> | On NR CSI framework                                              | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 45 | 5.1.2.3.1   | CSI framework                               | 0 | <a href="#">available</a> |
| 652 | <a href="#">R1-1710530</a> | On Details of CSI acquisition                                    | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 46 | 5.1.2.3.2   | Details of CSI acquisition                  | 0 | <a href="#">noted</a>     |
| 653 | <a href="#">R1-1710531</a> | On multiplexing of different RS types                            | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 51 | 5.1.2.4.1   | Multiplexing of different types of RSs      | 0 | <a href="#">available</a> |
| 654 | <a href="#">R1-1710532</a> | On CSI-RS for beam management                                    | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 52 | 5.1.2.4.2   | CSI-RS                                      | 0 | <a href="#">noted</a>     |
| 655 | <a href="#">R1-1710533</a> | On CSI-RS for CSI acquisition                                    | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 52 | 5.1.2.4.2   | CSI-RS                                      | 0 | <a href="#">available</a> |
| 656 | <a href="#">R1-1710534</a> | On the remaining details of DM-RS design                         | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 53 | 5.1.2.4.3   | DMRS                                        | 0 | <a href="#">available</a> |
| 657 | <a href="#">R1-1710535</a> | On PT-RS for CP-OFDM                                             | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 54 | 5.1.2.4.4   | PT-RS                                       | 0 | <a href="#">noted</a>     |
| 658 | <a href="#">R1-1710536</a> | On PT-RS for DFT-s-OFDM                                          | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 54 | 5.1.2.4.4   | PT-RS                                       | 0 | <a href="#">noted</a>     |
| 659 | <a href="#">R1-1710537</a> | Discussion on SRS for NR                                         | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 55 | 5.1.2.4.5   | SRS                                         | 0 | <a href="#">available</a> |
| 660 | <a href="#">R1-1710538</a> | Discussion on TRS                                                | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 56 | 5.1.2.4.6   | TRS                                         | 0 | <a href="#">available</a> |
| 661 | <a href="#">R1-1710539</a> | On QCL for different BW parts and other QCL details              | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 57 | 5.1.2.4.7   | QCL                                         | 0 | <a href="#">noted</a>     |
| 662 | <a href="#">R1-1710540</a> | Calibration results for Phase 2 NR MIMO system level calibration | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 59 | 5.1.2.5     | Other                                       | 0 | <a href="#">available</a> |
| 663 | <a href="#">R1-1710541</a> | NR PDCCH physical structure                                      | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 63 | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping | 0 | <a href="#">noted</a>     |
| 664 | <a href="#">R1-1710542</a> | On DM-RS design for NR PDCCH                                     | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 64 | 5.1.3.1.1.2 | RS structure/mapping                        | 0 | <a href="#">available</a> |
| 665 | <a href="#">R1-1710543</a> | CORESETs for NR PDCCH                                            | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 66 | 5.1.3.1.2.1 | CORESET configuration                       | 0 | <a href="#">available</a> |
| 666 | <a href="#">R1-1710544</a> | NR PDCCH: Search spaces and monitoring behavior                  | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 67 | 5.1.3.1.2.2 | Search space design                         | 0 | <a href="#">available</a> |
| 667 | <a href="#">R1-1710545</a> | Multi-beam operation for NR PDCCH                                | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 68 | 5.1.3.1.2.3 | Multi-beam operation for PDCCH              | 0 | <a href="#">available</a> |
| 668 | <a href="#">R1-1710546</a> | Dynamic resource sharing between control and data                | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 69 | 5.1.3.1.3   | Resource sharing between PDCCH and PDSCH    | 0 | <a href="#">available</a> |
| 669 | <a href="#">R1-1710547</a> | Group-common PDCCH: Physical structure                           | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 71 | 5.1.3.1.4.1 | Structure of group-common PDCCH             | 0 | <a href="#">available</a> |
| 670 | <a href="#">R1-1710548</a> | Group-common PDCCH: Contents                                     | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 72 | 5.1.3.1.4.2 | Contents of group-common PDCCH              | 0 | <a href="#">available</a> |
| 671 | <a href="#">R1-1710549</a> | Group-common PDCCH: UE behavior                                  | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 73 | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH  | 0 | <a href="#">available</a> |
| 672 | <a href="#">R1-1710550</a> | Satisfying ultra-reliability targets for NR PDCCH                | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 74 | 5.1.3.1.5   | Ultra-reliable part of URLLC for DL control | 0 | <a href="#">available</a> |
| 673 | <a href="#">R1-1710551</a> | Performance of short PUCCH format for 1~2 bits HARQ ACK          | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 78 | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits         | 0 | <a href="#">available</a> |
| 674 | <a href="#">R1-1710552</a> | 2-symbol NR PUCCH                                                | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 79 | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits     | 0 | <a href="#">available</a> |
| 675 | <a href="#">R1-1710553</a> | Structure of 1~2 bits HARQ-ACK long PUCCH with TDM DMRS          | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 81 | 5.1.3.2.2.1 | Long-PUCCH for UCI of up to 2 bits          | 0 | <a href="#">available</a> |
| 676 | <a href="#">R1-1710554</a> | Long PUCCH for moderate and large payload                        | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 82 | 5.1.3.2.2.2 | Long-PUCCH for UCI of more than 2 bits      | 0 | <a href="#">available</a> |
| 677 | <a href="#">R1-1710555</a> | Long PUCCH over multiple slots                                   | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 83 | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots   | 0 | <a href="#">available</a> |
| 678 | <a href="#">R1-1710556</a> | Transmit diversity for PUCCH                                     | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 84 | 5.1.3.2.3   | Transmit diversity for PUCCH                | 0 | <a href="#">available</a> |
| 679 | <a href="#">R1-1710557</a> | Resource allocation for PUCCH during initial access              | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 85 | 5.1.3.2.4   | Resource allocation for PUCCH               | 0 | <a href="#">available</a> |
| 680 | <a href="#">R1-1710558</a> | UCI multiplexing onto PUSCH                                      | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 87 | 5.1.3.2.5.1 | UCI piggyback on PUSCH                      | 0 | <a href="#">available</a> |
| 681 | <a href="#">R1-1710559</a> | PUCCH-PUSCH multiplexing                                         | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 88 | 5.1.3.2.5.2 | PUCCH-PUSCH multiplexing                    | 0 | <a href="#">available</a> |
| 682 | <a href="#">R1-1710560</a> | On UL control channel design aspects for URLLC                   | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 89 | 5.1.3.2.6   | Ultra-reliable part of URLLC for UL control | 0 | <a href="#">available</a> |
| 683 | <a href="#">R1-1710561</a> | Configurations of various long PUCCH lengths                     | Intel Corporation | Seunghee Han | <a href="#">47329</a> | discussion | Decision |   |   | 90 | 5.1.3.2.7   | Other                                       | 0 | <a href="#">available</a> |

|     | A                          | B                                                                                             | C                              | D             | E                     | F          | G          | H | I | J   | K           | L                                                             | M | N                         |
|-----|----------------------------|-----------------------------------------------------------------------------------------------|--------------------------------|---------------|-----------------------|------------|------------|---|---|-----|-------------|---------------------------------------------------------------|---|---------------------------|
| 684 | <a href="#">R1-1710562</a> | Short PUCCH formats for 1-2 bits UCI                                                          | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 90  | 5.1.3.2.7   | Other                                                         | 0 | <a href="#">available</a> |
| 685 | <a href="#">R1-1710563</a> | Cyclic shift assignment and CM for FDM DMRS and UC                                            | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 90  | 5.1.3.2.7   | Other                                                         | 0 | <a href="#">available</a> |
| 686 | <a href="#">R1-1710564</a> | Short UL control channel early in a slot                                                      | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 90  | 5.1.3.2.7   | Other                                                         | 0 | <a href="#">available</a> |
| 687 | <a href="#">R1-1710565</a> | DL/UL data frequency-domain resource allocation                                               | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                          | 0 | <a href="#">available</a> |
| 688 | <a href="#">R1-1710566</a> | Time-domain resource allocation for DL and UL data                                            | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 94  | 5.1.3.3.1.2 | Time-domain resource allocation                               | 0 | <a href="#">available</a> |
| 689 | <a href="#">R1-1710567</a> | SR configuration and UL data scheduling                                                       | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 96  | 5.1.3.3.2   | UL data transmission procedure with grant                     | 0 | <a href="#">available</a> |
| 690 | <a href="#">R1-1710568</a> | UL grant-free transmissions: Resource configuration                                           | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                  | 0 | <a href="#">available</a> |
| 691 | <a href="#">R1-1710569</a> | On CBG construction                                                                           | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 99  | 5.1.3.3.4.1 | CBG construction                                              | 0 | <a href="#">available</a> |
| 692 | <a href="#">R1-1710570</a> | DCI design and scheduling of CBG-based (re)transmissions                                      | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission          | 0 | <a href="#">available</a> |
| 693 | <a href="#">R1-1710571</a> | HARQ-ACK feedback for CBG-based (re)transmissions                                             | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission          | 0 | <a href="#">available</a> |
| 694 | <a href="#">R1-1710572</a> | HARQ-ACK multiplexing and bundling                                                            | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 104 | 5.1.3.3.5.2 | HARQ-ACK multiplexing/bundling                                | 0 | <a href="#">available</a> |
| 695 | <a href="#">R1-1710573</a> | On HARQ processes and HARQ RTT                                                                | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 106 | 5.1.3.3.6.1 | Number of HARQ processes and HARQ RTT                         | 0 | <a href="#">available</a> |
| 696 | <a href="#">R1-1710574</a> | Soft-buffer requirements in NR                                                                | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 107 | 5.1.3.3.6.2 | Soft-buffer management                                        | 0 | <a href="#">available</a> |
| 697 | <a href="#">R1-1710575</a> | Remaining details of DL pre-emption indication                                                | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                           | 0 | <a href="#">available</a> |
| 698 | <a href="#">R1-1710576</a> | Multiplexing of UL transmissions with different data durations and latency requirements       | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 110 | 5.1.3.3.7.2 | Possible enhancements for uplink                              | 0 | <a href="#">available</a> |
| 699 | <a href="#">R1-1710577</a> | On link adaptation enhancements to support URLLC                                              | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure    | 0 | <a href="#">available</a> |
| 700 | <a href="#">R1-1710578</a> | Scheduling and UCI feedback for carrier aggregation                                           | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 115 | 5.1.3.4.1.1 | Self/cross-carrier scheduling and joint/separate UCI feedback | 0 | <a href="#">available</a> |
| 701 | <a href="#">R1-1710579</a> | On SRS fast switching                                                                         | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 116 | 5.1.3.4.1.2 | SRS fast switching                                            | 0 | <a href="#">available</a> |
| 702 | <a href="#">R1-1710580</a> | On Dual Connectivity for NR                                                                   | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 117 | 5.1.3.4.2   | Dual connectivity                                             | 0 | <a href="#">available</a> |
| 703 | <a href="#">R1-1710581</a> | Details on cross-link interference measurement                                                | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 134 | 5.1.6.1     | Cross-link interference management                            | 0 | <a href="#">noted</a>     |
| 704 | <a href="#">R1-1710582</a> | On RS transmission location for cross-link interference measurement for NR duplex flexibility | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 134 | 5.1.6.1     | Cross-link interference management                            | 0 | <a href="#">available</a> |
| 705 | <a href="#">R1-1710583</a> | Open issues for wider bandwidth operations                                                    | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 136 | 5.1.7       | Wider bandwidth operations                                    | 0 | <a href="#">available</a> |
| 706 | <a href="#">R1-1710584</a> | Open issues for LTE-NR coexistence                                                            | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 137 | 5.1.8       | NR-LTE co-existence                                           | 0 | <a href="#">noted</a>     |
| 707 | <a href="#">R1-1710585</a> | Power sharing mechanism for NR dual connectivity                                              | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 139 | 5.1.9.1     | Power sharing mechanism                                       | 0 | <a href="#">available</a> |
| 708 | <a href="#">R1-1710586</a> | PUSCH and PUCCH power control                                                                 | Intel Corporation              | Seunghee Han  | <a href="#">47329</a> | discussion | Decision   |   |   | 140 | 5.1.9.2     | NR power control framework                                    | 0 | <a href="#">available</a> |
| 709 | <a href="#">R1-1710587</a> | Polar code construction for NR control channel                                                | NEC Corporation                | Prakash Chaki | <a href="#">70856</a> | discussion |            |   |   | 127 | 5.1.4.2.1   | Code construction                                             | 0 | <a href="#">available</a> |
| 710 | <a href="#">R1-1710588</a> | Results for short PUCCH for UCI of up to 2 bits                                               | IITH                           | Kuchi Kiran   | <a href="#">61192</a> | discussion |            |   |   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                           | 0 | <a href="#">available</a> |
| 711 | <a href="#">R1-1710589</a> | Further discussion on pre-DFT multiplexing for short PUCCH                                    | IITH                           | Kuchi Kiran   | <a href="#">61192</a> | discussion |            |   |   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits                       | 0 | <a href="#">available</a> |
| 712 | <a href="#">R1-1710590</a> | Views on long-duration PUCCH                                                                  | IITH                           | Kuchi Kiran   | <a href="#">61192</a> | discussion |            |   |   | 80  | 5.1.3.2.2   | PUCCH in long-duration                                        | 0 | <a href="#">available</a> |
| 713 | <a href="#">R1-1710591</a> | Sequence design evaluation for rate-matched polar codes                                       | NEC Corporation                | Prakash Chaki | <a href="#">70856</a> | discussion |            |   |   | 128 | 5.1.4.2.2   | Sequence design                                               | 0 | <a href="#">available</a> |
| 714 | <a href="#">R1-1710592</a> | Next steps for pi/2 BPSK with spectrum shaping                                                | IITH                           | Kuchi Kiran   | <a href="#">61192</a> | discussion |            |   |   | 132 | 5.1.5       | Modulation                                                    | 0 | <a href="#">available</a> |
| 715 | <a href="#">R1-1710593</a> | Discussion on CBG grouping                                                                    | Guangdong OPPO Mobile Telecom. | Jia Shen      | <a href="#">67727</a> | discussion | Decision   |   |   | 99  | 5.1.3.3.4.1 | CBG construction                                              | 0 | <a href="#">available</a> |
| 716 | <a href="#">R1-1710594</a> | On codeword to RE mapping scheme                                                              | Lenovo, Motorola Mobility      | Chenxi Zhu    | <a href="#">64707</a> | discussion | Discussion |   |   | 32  | 5.1.2.1.1   | Codeword mapping                                              | 0 | <a href="#">available</a> |
| 717 | <a href="#">R1-1710595</a> | Discussion of RS for DL beam management                                                       | Lenovo, Motorola Mobility      | Chenxi Zhu    | <a href="#">64707</a> | discussion | Discussion |   |   | 41  | 5.1.2.2.1   | Beam management details                                       | 0 | <a href="#">available</a> |
| 718 | <a href="#">R1-1710596</a> | Discussion of beam recovery procedure                                                         | Lenovo, Motorola Mobility      | Chenxi Zhu    | <a href="#">64707</a> | discussion | Discussion |   |   | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure                        | 0 | <a href="#">available</a> |
| 719 | <a href="#">R1-1710597</a> | Enhanced SR carried in UL control channel                                                     | Lenovo, Motorola Mobility      | Chenxi Zhu    | <a href="#">64707</a> | discussion | Discussion |   |   | 89  | 5.1.3.2.6   | Ultra-reliable part of URLLC for UL control                   | 0 | <a href="#">available</a> |
| 720 | <a href="#">R1-1710598</a> | Long PUCCH design for UCI of up to 2 bits                                                     | Lenovo, Motorola Mobility      | Chenxi Zhu    | <a href="#">64707</a> | discussion | Discussion |   |   | 81  | 5.1.3.2.2.1 | Long-PUCCH for UCI of up to 2 bits                            | 0 | <a href="#">available</a> |
| 721 | <a href="#">R1-1710599</a> | Long PUCCH design for UCI of more than 2 bits                                                 | Lenovo, Motorola Mobility      | Chenxi Zhu    | <a href="#">64707</a> | discussion | Discussion |   |   | 82  | 5.1.3.2.2.2 | Long-PUCCH for UCI of more than 2 bits                        | 0 | <a href="#">available</a> |
| 722 | <a href="#">R1-1710600</a> | Long PUCCH over multiple slots                                                                | Lenovo, Motorola Mobility      | Chenxi Zhu    | <a href="#">64707</a> | discussion | Discussion |   |   | 83  | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots                     | 0 | <a href="#">available</a> |
| 723 | <a href="#">R1-1710601</a> | UL grant-free transmission for URLLC                                                          | Lenovo, Motorola Mobility      | Chenxi Zhu    | <a href="#">64707</a> | discussion | Discussion |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                  | 0 | <a href="#">available</a> |
| 724 | <a href="#">R1-1710602</a> | CBG construction for CBG-based retransmission                                                 | Lenovo, Motorola Mobility      | Chenxi Zhu    | <a href="#">64707</a> | discussion | Discussion |   |   | 99  | 5.1.3.3.4.1 | CBG construction                                              | 0 | <a href="#">available</a> |
| 725 | <a href="#">R1-1710603</a> | DL control signalling for CBG-based retransmission                                            | Lenovo, Motorola Mobility      | Chenxi Zhu    | <a href="#">64707</a> | discussion | Discussion |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission          | 0 | <a href="#">available</a> |
| 726 | <a href="#">R1-1710604</a> | UL HARQ-ACK feedback for CBG-based retransmission                                             | Lenovo, Motorola Mobility      | Chenxi Zhu    | <a href="#">64707</a> | discussion | Discussion |   |   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission          | 0 | <a href="#">available</a> |

|     | A                          | B                                                                             | C                         | D            | E                     | F          | G          | H | I | J   | K           | L                                                                          | M | N                         |
|-----|----------------------------|-------------------------------------------------------------------------------|---------------------------|--------------|-----------------------|------------|------------|---|---|-----|-------------|----------------------------------------------------------------------------|---|---------------------------|
| 727 | <a href="#">R1-1710605</a> | HARQ-ACK codebook design for CBG-based transmission                           | Lenovo, Motorola Mobility | Chenxi Zhu   | <a href="#">64707</a> | discussion | Discussion |   |   | 104 | 5.1.3.3.5.2 | HARQ-ACK multiplexing/bundling                                             | 0 | <a href="#">available</a> |
| 728 | <a href="#">R1-1710606</a> | On eMBB/URLLC multiplexing for uplink transmission                            | Lenovo, Motorola Mobility | Chenxi Zhu   | <a href="#">64707</a> | discussion | Discussion |   |   | 110 | 5.1.3.3.7.2 | Possible enhancements for uplink                                           | 0 | <a href="#">available</a> |
| 729 | <a href="#">R1-1710607</a> | On DM-RS for NR                                                               | Intel Corporation         | Seunghee Han | <a href="#">47329</a> | discussion | Decision   |   |   | 53  | 5.1.2.4.3   | DMRS                                                                       | 0 | <a href="#">available</a> |
| 730 | <a href="#">R1-1710608</a> | Delivery of remaining minimum system information                              | ETRI                      | Jihyung Kim  | <a href="#">65152</a> | discussion |            |   |   | 17  | 5.1.1.2.4   | Remaining minimum system information delivery                              | 0 | <a href="#">available</a> |
| 731 | <a href="#">R1-1710609</a> | Delivery of other system information                                          | ETRI                      | Jihyung Kim  | <a href="#">65152</a> | discussion |            |   |   | 18  | 5.1.1.2.5   | Other system information delivery                                          | 0 | <a href="#">available</a> |
| 732 | <a href="#">R1-1710610</a> | NR-PRACH for various use cases                                                | ETRI                      | Jihyung Kim  | <a href="#">65152</a> | discussion |            |   |   | 22  | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management | 0 | <a href="#">available</a> |
| 733 | <a href="#">R1-1710611</a> | Discussion on codeword mapping                                                | ETRI                      | Jihyung Kim  | <a href="#">65152</a> | discussion |            |   |   | 32  | 5.1.2.1.1   | Codeword mapping                                                           | 0 | <a href="#">available</a> |
| 734 | <a href="#">R1-1710612</a> | Discussion on downlink DMRS design                                            | ETRI                      | Jihyung Kim  | <a href="#">65152</a> | discussion |            |   |   | 53  | 5.1.2.4.3   | DMRS                                                                       | 0 | <a href="#">available</a> |
| 735 | <a href="#">R1-1710613</a> | Discussion on uplink DMRS design                                              | ETRI                      | Jihyung Kim  | <a href="#">65152</a> | discussion |            |   |   | 53  | 5.1.2.4.3   | DMRS                                                                       | 0 | <a href="#">available</a> |
| 736 | <a href="#">R1-1710614</a> | NR-PDCCH mapping structure and REG bundle size                                | ETRI                      | Jihyung Kim  | <a href="#">65152</a> | discussion |            |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping                                | 0 | <a href="#">available</a> |
| 737 | <a href="#">R1-1710615</a> | DMRS design for NR-PDCCH                                                      | ETRI                      | Jihyung Kim  | <a href="#">65152</a> | discussion |            |   |   | 64  | 5.1.3.1.1.2 | RS structure/mapping                                                       | 0 | <a href="#">available</a> |
| 738 | <a href="#">R1-1710616</a> | NR-PDCCH for broadcast information delivery                                   | ETRI                      | Jihyung Kim  | <a href="#">65152</a> | discussion |            |   |   | 68  | 5.1.3.1.2.3 | Multi-beam operation for PDCCH                                             | 0 | <a href="#">available</a> |
| 739 | <a href="#">R1-1710617</a> | Discussion on dynamic indication of PDSCH start symbol                        | ETRI                      | Jihyung Kim  | <a href="#">65152</a> | discussion |            |   |   | 69  | 5.1.3.1.3   | Resource sharing between PDCCH and PDSCH                                   | 0 | <a href="#">available</a> |
| 740 | <a href="#">R1-1710618</a> | Short-PUCCH for UCI of up to 2 bits                                           | ETRI                      | Jihyung Kim  | <a href="#">65152</a> | discussion |            |   |   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                                        | 0 | <a href="#">available</a> |
| 741 | <a href="#">R1-1710619</a> | Short-PUCCH for UCI of more than 2 bits                                       | ETRI                      | Jihyung Kim  | <a href="#">65152</a> | discussion |            |   |   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits                                    | 0 | <a href="#">available</a> |
| 742 | <a href="#">R1-1710620</a> | Long-PUCCH over multiple slots                                                | ETRI                      | Jihyung Kim  | <a href="#">65152</a> | discussion |            |   |   | 83  | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots                                  | 0 | <a href="#">available</a> |
| 743 | <a href="#">R1-1710621</a> | Resource allocation and transmission scheme for URLLC grant-free transmission | ETRI                      | Jihyung Kim  | <a href="#">65152</a> | discussion |            |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                               | 0 | <a href="#">available</a> |
| 744 | <a href="#">R1-1710622</a> | UE bandwidth configuration during initial access                              | ETRI                      | Jihyung Kim  | <a href="#">65152</a> | discussion |            |   |   | 136 | 5.1.7       | Wider bandwidth operations                                                 | 0 | <a href="#">available</a> |
| 745 | <a href="#">R1-1710623</a> | Remaining details on SS sequence design                                       | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 9   | 5.1.1.1.1   | Remaining details on SS sequence design                                    | 0 | <a href="#">available</a> |
| 746 | <a href="#">R1-1710624</a> | SS burst set composition                                                      | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 10  | 5.1.1.1.2   | SS burst set composition                                                   | 0 | <a href="#">revised</a>   |
| 747 | <a href="#">R1-1710625</a> | Timing indication based on SS block                                           | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 11  | 5.1.1.1.3   | Timing indication based on SS block                                        | 0 | <a href="#">revised</a>   |
| 748 | <a href="#">R1-1710626</a> | Remaining details on multiple SS block transmissions in wideband CC           | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 12  | 5.1.1.1.4   | Remaining details on multiple SS block transmissions in wideband CC        | 0 | <a href="#">available</a> |
| 749 | <a href="#">R1-1710627</a> | NR-PBCH contents and payload size                                             | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 14  | 5.1.1.2.1   | NR-PBCH contents and payload size                                          | 0 | <a href="#">available</a> |
| 750 | <a href="#">R1-1710628</a> | NR-PBCH RE mapping and SS block composition                                   | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 15  | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                                | 0 | <a href="#">noted</a>     |
| 751 | <a href="#">R1-1710629</a> | Sequence design of DMRS for NR-PBCH                                           | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 16  | 5.1.1.2.3   | Sequence design of DMRS for NR-PBCH                                        | 0 | <a href="#">available</a> |
| 752 | <a href="#">R1-1710630</a> | Remaining minimum system information delivery                                 | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 17  | 5.1.1.2.4   | Remaining minimum system information delivery                              | 0 | <a href="#">available</a> |
| 753 | <a href="#">R1-1710631</a> | Other system information delivery                                             | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 18  | 5.1.1.2.5   | Other system information delivery                                          | 0 | <a href="#">available</a> |
| 754 | <a href="#">R1-1710632</a> | Paging design                                                                 | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 19  | 5.1.1.3     | Paging design                                                              | 0 | <a href="#">available</a> |
| 755 | <a href="#">R1-1710633</a> | PRACH preamble format details for long/short sequence length                  | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 21  | 5.1.1.4.1   | PRACH preamble format details for long/short sequence length               | 0 | <a href="#">available</a> |
| 756 | <a href="#">R1-1710634</a> | PRACH preamble format details for capacity enhancement and beam management    | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 22  | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management | 0 | <a href="#">available</a> |
| 757 | <a href="#">R1-1710635</a> | Power ramping and power control during RA procedure                           | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 23  | 5.1.1.4.3   | Power ramping and power control during RA procedure                        | 0 | <a href="#">available</a> |
| 758 | <a href="#">R1-1710636</a> | 4-step RACH procedure                                                         | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 24  | 5.1.1.4.4   | 4-step RA procedure                                                        | 0 | <a href="#">available</a> |
| 759 | <a href="#">R1-1710637</a> | Measurement based on SS block                                                 | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 26  | 5.1.1.5.1   | Measurement based on SS block                                              | 0 | <a href="#">noted</a>     |
| 760 | <a href="#">R1-1710638</a> | Measurement based on CSI-RS for L3 mobility                                   | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 27  | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility                                | 0 | <a href="#">revised</a>   |
| 761 | <a href="#">R1-1710639</a> | Radio link monitoring                                                         | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 28  | 5.1.1.5.3   | Radio link monitoring                                                      | 0 | <a href="#">available</a> |
| 762 | <a href="#">R1-1710640</a> | Discussion on SS periodicity and PBCH TTI                                     | Samsung                   | Younsun Kim  | <a href="#">43499</a> | discussion |            |   |   | 29  | 5.1.1.6     | Other                                                                      | 0 | <a href="#">available</a> |
| 763 | <a href="#">R1-1710641</a> | Considerations on PRACH design in high-mobility scenario                      | Samsung                   | Younsun Kim  | <a href="#">43499</a> | discussion |            |   |   | 29  | 5.1.1.6     | Other                                                                      | 0 | <a href="#">available</a> |
| 764 | <a href="#">R1-1710642</a> | Finalizing Layer Mapping                                                      | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 32  | 5.1.2.1.1   | Codeword mapping                                                           | 0 | <a href="#">noted</a>     |
| 765 | <a href="#">R1-1710643</a> | Codebook-Based UL Transmission                                                | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 33  | 5.1.2.1.2   | Codebook based transmission for UL                                         | 0 | <a href="#">noted</a>     |
| 766 | <a href="#">R1-1710644</a> | Discussion on Non-Codebook-Based UL Transmission                              | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 34  | 5.1.2.1.3   | Non-codebook based transmission fo UL                                      | 0 | <a href="#">noted</a>     |
| 767 | <a href="#">R1-1710645</a> | Diversity transmission for UL                                                 | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 35  | 5.1.2.1.4   | Diversity transmission for UL                                              | 0 | <a href="#">available</a> |
| 768 | <a href="#">R1-1710646</a> | PRB bundling for NR DMRS                                                      | Samsung                   | Younsun Kim  | <a href="#">43499</a> | other      | Decision   |   |   | 36  | 5.1.2.1.5   | PRB bundling for DL                                                        | 0 | <a href="#">available</a> |

|     | A                          | B                                                            | C       | D           | E                     | F     | G        | H | I | J  | K         | L                                               | M | N                         |
|-----|----------------------------|--------------------------------------------------------------|---------|-------------|-----------------------|-------|----------|---|---|----|-----------|-------------------------------------------------|---|---------------------------|
| 769 | <a href="#">R1-1710647</a> | Discussions on NR DL network coordination                    | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 37 | 5.1.2.1.6 | Multi-TRP and Multi-panel transmission          | 0 | <a href="#">available</a> |
| 770 | <a href="#">R1-1710648</a> | Discussions on NR UL multi-panel/multi-TRP                   | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 37 | 5.1.2.1.6 | Multi-TRP and Multi-panel transmission          | 0 | <a href="#">noted</a>     |
| 771 | <a href="#">R1-1710649</a> | On PDSCH rate matching for NR                                | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 38 | 5.1.2.1.7 | Rate matching                                   | 0 | <a href="#">noted</a>     |
| 772 | <a href="#">R1-1710650</a> | Discussion on transmission parameter sets                    | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 39 | 5.1.2.1.8 | Other                                           | 0 | <a href="#">available</a> |
| 773 | <a href="#">R1-1710651</a> | Discussion of number of PDSCHs in NR-CoMP                    | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 39 | 5.1.2.1.8 | Other                                           | 0 | <a href="#">available</a> |
| 774 | <a href="#">R1-1710652</a> | Multi-TA procedures for Multi-TRP                            | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 39 | 5.1.2.1.8 | Other                                           | 0 | <a href="#">available</a> |
| 775 | <a href="#">R1-1710653</a> | UL beam management                                           | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 41 | 5.1.2.2.1 | Beam management details                         | 0 | <a href="#">available</a> |
| 776 | <a href="#">R1-1710654</a> | DL beam management for NR                                    | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 41 | 5.1.2.2.1 | Beam management details                         | 0 | <a href="#">noted</a>     |
| 777 | <a href="#">R1-1710655</a> | Beam failure recovery                                        | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 42 | 5.1.2.2.2 | Mechanism to recover from beam failure          | 0 | <a href="#">available</a> |
| 778 | <a href="#">R1-1710656</a> | Measurement and reporting for beam management                | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">available</a> |
| 779 | <a href="#">R1-1710657</a> | Discussion on Group based reporting                          | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">available</a> |
| 780 | <a href="#">R1-1710658</a> | Discussion on Tx beam grouping configuration                 | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">available</a> |
| 781 | <a href="#">R1-1710659</a> | Discussion on beam indication for PDSCH                      | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">available</a> |
| 782 | <a href="#">R1-1710660</a> | L1 RSRP reporting for beam management                        | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">available</a> |
| 783 | <a href="#">R1-1710661</a> | L1-RSRP measurement duration                                 | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">available</a> |
| 784 | <a href="#">R1-1710662</a> | On SS-block based beam management                            | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">noted</a>     |
| 785 | <a href="#">R1-1710663</a> | DL beam management configuration                             | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">available</a> |
| 786 | <a href="#">R1-1710664</a> | OCL associations for beam management RS                      | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">available</a> |
| 787 | <a href="#">R1-1710665</a> | Aperiodic BSI reporting                                      | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">available</a> |
| 788 | <a href="#">R1-1710666</a> | Beam management for PDCCH                                    | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">revised</a>   |
| 789 | <a href="#">R1-1710667</a> | CSI Acquisition and Beam Management Framework                | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 45 | 5.1.2.3.1 | CSI framework                                   | 0 | <a href="#">available</a> |
| 790 | <a href="#">R1-1710668</a> | Discussions on CSI measurements and reporting for NR         | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 46 | 5.1.2.3.2 | Details of CSI acquisition                      | 0 | <a href="#">available</a> |
| 791 | <a href="#">R1-1710669</a> | CSI Reporting for Reciprocity Operation                      | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 47 | 5.1.2.3.3 | CSI acquisition for reciprocity based operation | 0 | <a href="#">noted</a>     |
| 792 | <a href="#">R1-1710670</a> | Remaining details of Type I and Type II CSI codebooks        | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 48 | 5.1.2.3.4 | CSI feedback                                    | 0 | <a href="#">available</a> |
| 793 | <a href="#">R1-1710671</a> | CSI support for transparent precoder cycling                 | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 48 | 5.1.2.3.4 | CSI feedback                                    | 0 | <a href="#">available</a> |
| 794 | <a href="#">R1-1710672</a> | CSI parameters and multiplexing                              | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 48 | 5.1.2.3.4 | CSI feedback                                    | 0 | <a href="#">noted</a>     |
| 795 | <a href="#">R1-1710673</a> | Differential reporting of Type II CSI                        | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 48 | 5.1.2.3.4 | CSI feedback                                    | 0 | <a href="#">available</a> |
| 796 | <a href="#">R1-1710674</a> | On higher rank (3 and 4) Type II CSI                         | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 48 | 5.1.2.3.4 | CSI feedback                                    | 0 | <a href="#">available</a> |
| 797 | <a href="#">R1-1710675</a> | Discussion on CSI-RS Resource Activation                     | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 49 | 5.1.2.3.5 | Other                                           | 0 | <a href="#">available</a> |
| 798 | <a href="#">R1-1710676</a> | Discussions on channel and interference measurements for NR  | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 49 | 5.1.2.3.5 | Other                                           | 0 | <a href="#">available</a> |
| 799 | <a href="#">R1-1710677</a> | Discussions on CSI Feedback Signalling Overhead Reduction    | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 49 | 5.1.2.3.5 | Other                                           | 0 | <a href="#">available</a> |
| 800 | <a href="#">R1-1710678</a> | Discussions on multiplexing of different types of RSs for DL | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 51 | 5.1.2.4.1 | Multiplexing of different types of RSs          | 0 | <a href="#">noted</a>     |
| 801 | <a href="#">R1-1710679</a> | Discussions on multiplexing of different types of RSs for UL | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 51 | 5.1.2.4.1 | Multiplexing of different types of RSs          | 0 | <a href="#">available</a> |
| 802 | <a href="#">R1-1710680</a> | Discussions on CSI-RS design for NR MIMO                     | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 52 | 5.1.2.4.2 | CSI-RS                                          | 0 | <a href="#">available</a> |
| 803 | <a href="#">R1-1710681</a> | CSI-RS for beam management                                   | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 52 | 5.1.2.4.2 | CSI-RS                                          | 0 | <a href="#">available</a> |
| 804 | <a href="#">R1-1710682</a> | Discussion on DL DMRS design for NR                          | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 53 | 5.1.2.4.3 | DMRS                                            | 0 | <a href="#">available</a> |
| 805 | <a href="#">R1-1710683</a> | Evaluation results on DL DMRS for NR                         | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 53 | 5.1.2.4.3 | DMRS                                            | 0 | <a href="#">available</a> |
| 806 | <a href="#">R1-1710684</a> | Discussion on UL DMRS design for NR                          | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 53 | 5.1.2.4.3 | DMRS                                            | 0 | <a href="#">available</a> |
| 807 | <a href="#">R1-1710685</a> | Evaluation results on UL DMRS for NR                         | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 53 | 5.1.2.4.3 | DMRS                                            | 0 | <a href="#">available</a> |
| 808 | <a href="#">R1-1710686</a> | On DL PTRS design                                            | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 54 | 5.1.2.4.4 | PT-RS                                           | 0 | <a href="#">available</a> |
| 809 | <a href="#">R1-1710687</a> | On UL PTRS for DFT-s-OFDM                                    | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 54 | 5.1.2.4.4 | PT-RS                                           | 0 | <a href="#">available</a> |
| 810 | <a href="#">R1-1710688</a> | SRS design for NR                                            | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 55 | 5.1.2.4.5 | SRS                                             | 0 | <a href="#">available</a> |
| 811 | <a href="#">R1-1710689</a> | Discussions on fine time/frequency tracking for NR           | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |   | 56 | 5.1.2.4.6 | TRS                                             | 0 | <a href="#">available</a> |

|     | A                          | B                                                 | C       | D           | E                     | F     | G        | H | I                 | J   | K           | L                                                    | M | N                         |
|-----|----------------------------|---------------------------------------------------|---------|-------------|-----------------------|-------|----------|---|-------------------|-----|-------------|------------------------------------------------------|---|---------------------------|
| 812 | <a href="#">R1-1710690</a> | On QCL for NR                                     | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 57  | 5.1.2.4.7   | QCL                                                  | 0 | <a href="#">available</a> |
| 813 | <a href="#">R1-1710691</a> | Resource Mapping for PDCCH                        | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping          | 0 | <a href="#">available</a> |
| 814 | <a href="#">R1-1710692</a> | DMRS Structure for PDCCH                          | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 64  | 5.1.3.1.1.2 | RS structure/mapping                                 | 0 | <a href="#">revised</a>   |
| 815 | <a href="#">R1-1710693</a> | CORESET Configurations                            | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 66  | 5.1.3.1.2.1 | CORESET configuration                                | 0 | <a href="#">available</a> |
| 816 | <a href="#">R1-1710694</a> | Search Space Design                               | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 67  | 5.1.3.1.2.2 | Search space design                                  | 0 | <a href="#">available</a> |
| 817 | <a href="#">R1-1710695</a> | Multibeam Transmission for PDCCH                  | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 68  | 5.1.3.1.2.3 | Multi-beam operation for PDCCH                       | 0 | <a href="#">available</a> |
| 818 | <a href="#">R1-1710696</a> | Multiplexing NR-PDCCH and PDSCH                   | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 69  | 5.1.3.1.3   | Resource sharing between PDCCH and PDSCH             | 0 | <a href="#">available</a> |
| 819 | <a href="#">R1-1710697</a> | UE-Group Common PDCCH Structure                   | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCH                      | 0 | <a href="#">available</a> |
| 820 | <a href="#">R1-1710698</a> | Functionalities of UE-Common PDCCH                | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                       | 0 | <a href="#">available</a> |
| 821 | <a href="#">R1-1710699</a> | UE Behavior for UE-Group Common PDCCH Detection   | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH           | 0 | <a href="#">available</a> |
| 822 | <a href="#">R1-1710700</a> | PDCCH Design for URLLC                            | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 74  | 5.1.3.1.5   | Ultra-reliable part of URLLC for DL control          | 0 | <a href="#">available</a> |
| 823 | <a href="#">R1-1710701</a> | Transmit Diversity for PDCCH                      | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 75  | 5.1.3.1.6   | Other                                                | 0 | <a href="#">available</a> |
| 824 | <a href="#">R1-1710702</a> | Bandwidth Part Hopping for CORESETS               | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 75  | 5.1.3.1.6   | Other                                                | 0 | <a href="#">available</a> |
| 825 | <a href="#">R1-1710703</a> | Short PUCCH for UCI of 1 or 2 Bits                | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                  | 0 | <a href="#">available</a> |
| 826 | <a href="#">R1-1710704</a> | Short PUCCH for UCI of more than 2 Bits           | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits              | 0 | <a href="#">available</a> |
| 827 | <a href="#">R1-1710705</a> | Long PUCCH for UCI of 1 or 2 Bits                 | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 81  | 5.1.3.2.2.1 | Long-PUCCH for UCI of up to 2 bits                   | 0 | <a href="#">available</a> |
| 828 | <a href="#">R1-1710706</a> | Long PUCCH for UCI of more than 2 Bits            | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 82  | 5.1.3.2.2.2 | Long-PUCCH for UCI of more than 2 bits               | 0 | <a href="#">available</a> |
| 829 | <a href="#">R1-1710707</a> | Multi-Slot Long PUCCH Transmission                | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 83  | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots            | 0 | <a href="#">available</a> |
| 830 | <a href="#">R1-1710708</a> | Transmit Diversity for PUCCH                      | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 84  | 5.1.3.2.3   | Transmit diversity for PUCCH                         | 0 | <a href="#">available</a> |
| 831 | <a href="#">R1-1710709</a> | Resource Allocation for PUCCH with HARQ-ACK       | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 85  | 5.1.3.2.4   | Resource allocation for PUCCH                        | 0 | <a href="#">available</a> |
| 832 | <a href="#">R1-1710710</a> | On UCI Multiplexing in PUSCH                      | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 87  | 5.1.3.2.5.1 | UCI piggyback on PUSCH                               | 0 | <a href="#">available</a> |
| 833 | <a href="#">R1-1710711</a> | On Simultaneous PUSCH and PUCCH Transmissions     | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 88  | 5.1.3.2.5.2 | PUCCH-PUSCH multiplexing                             | 0 | <a href="#">available</a> |
| 834 | <a href="#">R1-1710712</a> | PUCCH Design for URLLC                            | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 89  | 5.1.3.2.6   | Ultra-reliable part of URLLC for UL control          | 0 | <a href="#">available</a> |
| 835 | <a href="#">R1-1710713</a> | Performance Results for Long PUCCH                | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 90  | 5.1.3.2.7   | Other                                                | 0 | <a href="#">available</a> |
| 836 | <a href="#">R1-1710714</a> | Performance Results for UCI and Data Multiplexing | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 90  | 5.1.3.2.7   | Other                                                | 0 | <a href="#">available</a> |
| 837 | <a href="#">R1-1710715</a> | UE-Group CSI Reporting                            | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   | Late contribution | 90  | 5.1.3.2.7   | Other                                                | 0 | <a href="#">withdrawn</a> |
| 838 | <a href="#">R1-1710716</a> | Multiplexing PUSCH with Short PUCCH or SRS        | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 90  | 5.1.3.2.7   | Other                                                | 0 | <a href="#">available</a> |
| 839 | <a href="#">R1-1710717</a> | BS/CSI Transmission on PUCCH                      | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 90  | 5.1.3.2.7   | Other                                                | 0 | <a href="#">available</a> |
| 840 | <a href="#">R1-1710718</a> | DL/UL Frequency Resource Allocation               | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                 | 0 | <a href="#">available</a> |
| 841 | <a href="#">R1-1710719</a> | DL/UL Time Resource Allocation                    | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 94  | 5.1.3.3.1.2 | Time-domain resource allocation                      | 0 | <a href="#">available</a> |
| 842 | <a href="#">R1-1710720</a> | Transport Block Size Determination                | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 95  | 5.1.3.3.1.3 | Transport block size determination                   | 0 | <a href="#">available</a> |
| 843 | <a href="#">R1-1710721</a> | SR Transmission for Multiple Configurations       | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 96  | 5.1.3.3.2   | UL data transmission procedure with grant            | 0 | <a href="#">available</a> |
| 844 | <a href="#">R1-1710722</a> | Procedures for Grant-Based UL Transmissions       | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 96  | 5.1.3.3.2   | UL data transmission procedure with grant            | 0 | <a href="#">available</a> |
| 845 | <a href="#">R1-1710723</a> | Procedures for Grant-Free UL Transmissions        | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant         | 0 | <a href="#">available</a> |
| 846 | <a href="#">R1-1710724</a> | Grant-Free and Grant-Based UL Transmissions       | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant         | 0 | <a href="#">available</a> |
| 847 | <a href="#">R1-1710725</a> | CBG Construction                                  | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 99  | 5.1.3.3.4.1 | CBG construction                                     | 0 | <a href="#">available</a> |
| 848 | <a href="#">R1-1710726</a> | Scheduling for CBG Retransmissions                | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission | 0 | <a href="#">available</a> |
| 849 | <a href="#">R1-1710727</a> | HARQ-ACK Feedback for CBG-Based Retransmissions   | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission | 0 | <a href="#">available</a> |
| 850 | <a href="#">R1-1710728</a> | HARQ-ACK Feedback Timing                          | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 103 | 5.1.3.3.5.1 | HARQ-ACK feedback timing                             | 0 | <a href="#">available</a> |
| 851 | <a href="#">R1-1710729</a> | HARQ-ACK Codeword Determination                   | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 104 | 5.1.3.3.5.2 | HARQ-ACK multiplexing/bundling                       | 0 | <a href="#">available</a> |
| 852 | <a href="#">R1-1710730</a> | On Number of HARQ Processes and HARQ RTT          | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 106 | 5.1.3.3.6.1 | Number of HARQ processes and HARQ RTT                | 0 | <a href="#">available</a> |
| 853 | <a href="#">R1-1710731</a> | Soft Buffer Partitioning                          | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 107 | 5.1.3.3.6.2 | Soft-buffer management                               | 0 | <a href="#">available</a> |
| 854 | <a href="#">R1-1710732</a> | Indication of Preempted Resources in DL           | Samsung | Younsun Kim | <a href="#">43499</a> | other | Decision |   |                   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                  | 0 | <a href="#">available</a> |

|     | A                          | B                                                                                   | C                         | D           | E                     | F          | G          | H | I                 | J   | K           | L                                                              | M | N                         |
|-----|----------------------------|-------------------------------------------------------------------------------------|---------------------------|-------------|-----------------------|------------|------------|---|-------------------|-----|-------------|----------------------------------------------------------------|---|---------------------------|
| 855 | <a href="#">R1-1710733</a> | On Indication of Preempted Resources in UL                                          | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 110 | 5.1.3.3.7.2 | Possible enhancements for uplink                               | 0 | <a href="#">available</a> |
| 856 | <a href="#">R1-1710734</a> | Scheduling/HARQ Procedures for URLLC                                                | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure     | 0 | <a href="#">available</a> |
| 857 | <a href="#">R1-1710735</a> | Remaining Aspects for Short Scheduling Durations                                    | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 112 | 5.1.3.3.9   | Other                                                          | 0 | <a href="#">available</a> |
| 858 | <a href="#">R1-1710736</a> | Triggered UCI Transmissions                                                         | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 112 | 5.1.3.3.9   | Other                                                          | 0 | <a href="#">available</a> |
| 859 | <a href="#">R1-1710737</a> | DL Resource Allocation for Multiplexing Data with Different Transmissions Durations | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 112 | 5.1.3.3.9   | Other                                                          | 0 | <a href="#">available</a> |
| 860 | <a href="#">R1-1710738</a> | Average User Plane Latency for Preemption based Multiplexing                        | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 112 | 5.1.3.3.9   | Other                                                          | 0 | <a href="#">available</a> |
| 861 | <a href="#">R1-1710739</a> | Cross-Carrier Scheduling and HARQ-ACK Feedback                                      | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 115 | 5.1.3.4.1.1 | Self-/cross-carrier scheduling and joint/separate UCI feedback | 0 | <a href="#">available</a> |
| 862 | <a href="#">R1-1710740</a> | Fast Carrier Switching for SRS Transmissions                                        | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 116 | 5.1.3.4.1.2 | SRS fast switching                                             | 0 | <a href="#">available</a> |
| 863 | <a href="#">R1-1710741</a> | DC for UE with Single UL Carrier Capability                                         | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 117 | 5.1.3.4.2   | Dual connectivity                                              | 0 | <a href="#">available</a> |
| 864 | <a href="#">R1-1710742</a> | CB segmentation on data channel                                                     | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 122 | 5.1.4.1.1.2 | Segmentation                                                   | 0 | <a href="#">noted</a>     |
| 865 | <a href="#">R1-1710743</a> | UE operation for two different base graphs                                          | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 122 | 5.1.4.1.1.2 | Segmentation                                                   | 0 | <a href="#">available</a> |
| 866 | <a href="#">R1-1710744</a> | LDPC Code for BG#1                                                                  | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 125 | 5.1.4.1.2   | LDPC code design                                               | 0 | <a href="#">available</a> |
| 867 | <a href="#">R1-1710745</a> | LDPC Code for BG#2                                                                  | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 125 | 5.1.4.1.2   | LDPC code design                                               | 0 | <a href="#">available</a> |
| 868 | <a href="#">R1-1710746</a> | Modulo Lifting for Length-Flexible QC LDPC Codes                                    | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 125 | 5.1.4.1.2   | LDPC code design                                               | 0 | <a href="#">available</a> |
| 869 | <a href="#">R1-1710747</a> | Polar code construction                                                             | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 127 | 5.1.4.2.1   | Code construction                                              | 0 | <a href="#">available</a> |
| 870 | <a href="#">R1-1710748</a> | Scrambling for polar codes                                                          | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 127 | 5.1.4.2.1   | Code construction                                              | 0 | <a href="#">available</a> |
| 871 | <a href="#">R1-1710749</a> | Design of combined-and-Nested polar code sequences                                  | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 128 | 5.1.4.2.2   | Sequence design                                                | 0 | <a href="#">revised</a>   |
| 872 | <a href="#">R1-1710750</a> | Design of unified rate-matching for polar codes                                     | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 128 | 5.1.4.2.2   | Sequence design                                                | 0 | <a href="#">available</a> |
| 873 | <a href="#">R1-1710751</a> | Circular buffer management for polar code rate-matching                             | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 128 | 5.1.4.2.2   | Sequence design                                                | 0 | <a href="#">noted</a>     |
| 874 | <a href="#">R1-1710752</a> | Design of channel interleaver for polar codes                                       | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 129 | 5.1.4.2.3   | Other                                                          | 0 | <a href="#">available</a> |
| 875 | <a href="#">R1-1710753</a> | Modulation Schemes for NR                                                           | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 132 | 5.1.5       | Modulation                                                     | 0 | <a href="#">available</a> |
| 876 | <a href="#">R1-1710754</a> | Cross-link Interference Management Based on UE Measurements                         | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 134 | 5.1.6.1     | Cross-link interference management                             | 0 | <a href="#">available</a> |
| 877 | <a href="#">R1-1710755</a> | Cross-link Interference Management based on Coordinated Beamforming                 | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 134 | 5.1.6.1     | Cross-link interference management                             | 0 | <a href="#">noted</a>     |
| 878 | <a href="#">R1-1710756</a> | Performance Evaluation of Cross-Link Interference Management                        | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 135 | 5.1.6.2     | Other                                                          | 0 | <a href="#">available</a> |
| 879 | <a href="#">R1-1710757</a> | Timing Alignment on Cross-Link for Dynamic TDD                                      | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 135 | 5.1.6.2     | Other                                                          | 0 | <a href="#">available</a> |
| 880 | <a href="#">R1-1710758</a> | Cross-Link Interference Management based on Power Control                           | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 135 | 5.1.6.2     | Other                                                          | 0 | <a href="#">available</a> |
| 881 | <a href="#">R1-1710759</a> | Discussion on CLI Mitigation with Network Coordination                              | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 135 | 5.1.6.2     | Other                                                          | 0 | <a href="#">available</a> |
| 882 | <a href="#">R1-1710760</a> | Interference Measurement Table and Beam Coordination                                | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 135 | 5.1.6.2     | Other                                                          | 0 | <a href="#">available</a> |
| 883 | <a href="#">R1-1710761</a> | Wider Bandwidth Operations                                                          | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 136 | 5.1.7       | Wider bandwidth operations                                     | 0 | <a href="#">available</a> |
| 884 | <a href="#">R1-1710762</a> | LTE-NR coexistence for DL                                                           | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 137 | 5.1.8       | NR-LTE co-existence                                            | 0 | <a href="#">available</a> |
| 885 | <a href="#">R1-1710763</a> | LTE-NR coexistence for UL                                                           | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 137 | 5.1.8       | NR-LTE co-existence                                            | 0 | <a href="#">noted</a>     |
| 886 | <a href="#">R1-1710764</a> | On UL Power Sharing for Multi-Cell Transmissions                                    | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   | Late contribution | 139 | 5.1.9.1     | Power sharing mechanism                                        | 0 | <a href="#">available</a> |
| 887 | <a href="#">R1-1710765</a> | Power Control Framework                                                             | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 140 | 5.1.9.2     | NR power control framework                                     | 0 | <a href="#">available</a> |
| 888 | <a href="#">R1-1710766</a> | On PHR Requirements and Calculation                                                 | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 140 | 5.1.9.2     | NR power control framework                                     | 0 | <a href="#">available</a> |
| 889 | <a href="#">R1-1710767</a> | ECP Aspects for 60kHz SCS                                                           | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 142 | 5.1.11      | Other                                                          | 0 | <a href="#">available</a> |
| 890 | <a href="#">R1-1710768</a> | On PAPR of DMRS for p/2-BPSK DFT-s-OFDM with Spectrum Shaping                       | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 142 | 5.1.11      | Other                                                          | 0 | <a href="#">available</a> |
| 891 | <a href="#">R1-1710769</a> | RACH Aspects for CA and DC                                                          | Samsung                   | Younsun Kim | <a href="#">43499</a> | other      | Decision   |   |                   | 142 | 5.1.11      | Other                                                          | 0 | <a href="#">available</a> |
| 892 | <a href="#">R1-1710770</a> | Discussion on Polar code construction                                               | Spreadtrum Communications | Arto Lehti  | <a href="#">61519</a> | discussion | Decision   |   |                   | 127 | 5.1.4.2.1   | Code construction                                              | 0 | <a href="#">available</a> |
| 893 | <a href="#">R1-1710771</a> | Discussions on UE-to-UE interference measurement and report                         | Panasonic                 | Lilei Wang  | <a href="#">56630</a> | discussion | Decision   |   |                   | 134 | 5.1.6.1     | Cross-link interference management                             | 0 | <a href="#">noted</a>     |
| 894 | <a href="#">R1-1710772</a> | Discussions on intended DL/UL direction configuration via Xn signalling             | Panasonic                 | Lilei Wang  | <a href="#">56630</a> | discussion | Decision   |   |                   | 134 | 5.1.6.1     | Cross-link interference management                             | 0 | <a href="#">available</a> |
| 895 | <a href="#">R1-1710773</a> | CORESET configuration for RMSI scheduling                                           | CMCC                      | Hui Tong    | <a href="#">58245</a> | other      | Discussion |   |                   | 17  | 5.1.1.2.4   | Remaining minimum system information delivery                  | 0 | <a href="#">available</a> |
| 896 | <a href="#">R1-1710774</a> | Discussion on RACH configuration                                                    | CMCC                      | Hui Tong    | <a href="#">58245</a> | other      | Discussion |   |                   | 24  | 5.1.1.4.4   | 4-step RA procedure                                            | 0 | <a href="#">available</a> |
| 897 | <a href="#">R1-1710775</a> | Discussion on RRM measurement on SS blocks                                          | CMCC                      | Hui Tong    | <a href="#">58245</a> | other      | Discussion |   |                   | 27  | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility                    | 0 | <a href="#">withdrawn</a> |

|     | A                          | B                                                                    | C             | D          | E                     | F          | G          | H | I                 | J   | K           | L                                               | M | N                         |
|-----|----------------------------|----------------------------------------------------------------------|---------------|------------|-----------------------|------------|------------|---|-------------------|-----|-------------|-------------------------------------------------|---|---------------------------|
| 898 | <a href="#">R1-1710776</a> | Comparisons on Beam Reporting in NR                                  | CMCC          | Hui Tong   | <a href="#">58245</a> | other      | Discussion |   |                   | 41  | 5.1.2.2.1   | Beam management details                         | 0 | <a href="#">available</a> |
| 899 | <a href="#">R1-1710777</a> | Discussion on PT-RS design                                           | CMCC          | Hui Tong   | <a href="#">58245</a> | other      | Discussion |   |                   | 54  | 5.1.2.4.4   | PT-RS                                           | 0 | <a href="#">available</a> |
| 900 | <a href="#">R1-1710778</a> | On DMRS Design for NR-PDCCH                                          | CMCC          | Hui Tong   | <a href="#">58245</a> | other      | Discussion |   |                   | 64  | 5.1.3.1.1.2 | RS structure/mapping                            | 0 | <a href="#">available</a> |
| 901 | <a href="#">R1-1710779</a> | Discussion on CORESET duration                                       | CMCC          | Hui Tong   | <a href="#">58245</a> | other      | Discussion |   |                   | 66  | 5.1.3.1.2.1 | CORESET configuration                           | 0 | <a href="#">available</a> |
| 902 | <a href="#">R1-1710780</a> | Discussion on NR-PDCCH search space design                           | CMCC          | Hui Tong   | <a href="#">58245</a> | other      | Discussion |   |                   | 67  | 5.1.3.1.2.2 | Search space design                             | 0 | <a href="#">available</a> |
| 903 | <a href="#">R1-1710781</a> | UE behaviour related to dynamic and semi-static configured resources | CMCC          | Hui Tong   | <a href="#">58245</a> | other      | Discussion |   |                   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH      | 0 | <a href="#">available</a> |
| 904 | <a href="#">R1-1710782</a> | Discussion on subband-based PUCCH resource allocation and indication | CMCC          | Hui Tong   | <a href="#">58245</a> | other      | Discussion |   |                   | 85  | 5.1.3.2.4   | Resource allocation for PUCCH                   | 0 | <a href="#">available</a> |
| 905 | <a href="#">R1-1710783</a> | Discussion on timing design for semi-static DL/UL assignment         | CMCC          | Hui Tong   | <a href="#">58245</a> | other      | Discussion |   |                   | 103 | 5.1.3.3.5.1 | HARQ-ACK feedback timing                        | 0 | <a href="#">available</a> |
| 906 | <a href="#">R1-1710784</a> | Discussion on UE-to-UE cross-link interference management            | CMCC          | Hui Tong   | <a href="#">58245</a> | other      | Discussion |   |                   | 134 | 5.1.6.1     | Cross-link interference management              | 0 | <a href="#">noted</a>     |
| 907 | <a href="#">R1-1710785</a> | Discussion on the change of SS block frequency position              | CMCC          | Hui Tong   | <a href="#">58245</a> | other      | Discussion |   |                   | 136 | 5.1.7       | Wider bandwidth operations                      | 0 | <a href="#">available</a> |
| 908 | <a href="#">R1-1710786</a> | Discussion on NR power control and sharing                           | CMCC          | Hui Tong   | <a href="#">58245</a> | other      | Discussion |   |                   | 140 | 5.1.9.2     | NR power control framework                      | 0 | <a href="#">available</a> |
| 909 | <a href="#">R1-1710787</a> | On default bandwidth part                                            | PANASONIC     | Quan Kuang | <a href="#">64589</a> | discussion |            |   |                   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation            | 0 | <a href="#">available</a> |
| 910 | <a href="#">R1-1710788</a> | Discussions on NR-PDCCH Structure                                    | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping     | 0 | <a href="#">available</a> |
| 911 | <a href="#">R1-1710789</a> | RS structures for NR-PDCCH                                           | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 64  | 5.1.3.1.1.2 | RS structure/mapping                            | 0 | <a href="#">available</a> |
| 912 | <a href="#">R1-1710790</a> | Discussions on CORESET configurations                                | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 66  | 5.1.3.1.2.1 | CORESET configuration                           | 0 | <a href="#">available</a> |
| 913 | <a href="#">R1-1710791</a> | Resource sharing between PDCCH and PDSCH                             | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 69  | 5.1.3.1.3   | Resource sharing between PDCCH and PDSCH        | 0 | <a href="#">available</a> |
| 914 | <a href="#">R1-1710792</a> | Structure of group-common PDCCH                                      | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCH                 | 0 | <a href="#">available</a> |
| 915 | <a href="#">R1-1710793</a> | Contents of group-common PDCCH                                       | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                  | 0 | <a href="#">available</a> |
| 916 | <a href="#">R1-1710794</a> | UE behaviour for group-common PDCCH                                  | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH      | 0 | <a href="#">available</a> |
| 917 | <a href="#">R1-1710795</a> | Timing of HARQ-ACK for PDSCH                                         | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 103 | 5.1.3.3.5.1 | HARQ-ACK feedback timing                        | 0 | <a href="#">available</a> |
| 918 | <a href="#">R1-1710796</a> | Further Details on Wider Bandwidth Operations in NR                  | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 136 | 5.1.7       | Wider bandwidth operations                      | 0 | <a href="#">available</a> |
| 919 | <a href="#">R1-1710797</a> | Discussion on PBCH Contents                                          | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 14  | 5.1.1.2.1   | NR-PBCH contents and payload size               | 0 | <a href="#">available</a> |
| 920 | <a href="#">R1-1710798</a> | Discussion on SS burst set composition                               | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 10  | 5.1.1.1.2   | SS burst set composition                        | 0 | <a href="#">available</a> |
| 921 | <a href="#">R1-1710799</a> | Further discussion on SS block index indication                      | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 11  | 5.1.1.1.3   | Timing indication based on SS block             | 0 | <a href="#">available</a> |
| 922 | <a href="#">R1-1710800</a> | Performance evaluation for RE mapping and SS block composition       | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 15  | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition     | 0 | <a href="#">noted</a>     |
| 923 | <a href="#">R1-1710801</a> | Further discussion on Remaining minimum system information delivery  | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 17  | 5.1.1.2.4   | Remaining minimum system information delivery   | 0 | <a href="#">available</a> |
| 924 | <a href="#">R1-1710802</a> | Further discussion on OSI delivery                                   | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 18  | 5.1.1.2.5   | Other system information delivery               | 0 | <a href="#">available</a> |
| 925 | <a href="#">R1-1710803</a> | Further discussion on paging design                                  | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 19  | 5.1.1.3     | Paging design                                   | 0 | <a href="#">available</a> |
| 926 | <a href="#">R1-1710804</a> | Discussion on measurement based on SS block                          | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 26  | 5.1.1.5.1   | Measurement based on SS block                   | 0 | <a href="#">available</a> |
| 927 | <a href="#">R1-1710805</a> | Discussion on CSI-RS for L3 mobility                                 | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 27  | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility     | 0 | <a href="#">noted</a>     |
| 928 | <a href="#">R1-1710806</a> | Discussion on Radio Link Monitoring                                  | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 28  | 5.1.1.5.3   | Radio link monitoring                           | 0 | <a href="#">available</a> |
| 929 | <a href="#">R1-1710807</a> | On the Robustness of NR SSS in Frequency Offset                      | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 9   | 5.1.1.1.1   | Remaining details on SS sequence design         | 0 | <a href="#">noted</a>     |
| 930 | <a href="#">R1-1710808</a> | Discussions on NR DL beam management                                 | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 41  | 5.1.2.2.1   | Beam management details                         | 0 | <a href="#">available</a> |
| 931 | <a href="#">R1-1710809</a> | Efficient UL beam management with imperfect beam correspondence      | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 41  | 5.1.2.2.1   | Beam management details                         | 0 | <a href="#">available</a> |
| 932 | <a href="#">R1-1710810</a> | Mechanism for flexible beam failure recovery                         | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure          | 0 | <a href="#">noted</a>     |
| 933 | <a href="#">R1-1710811</a> | IFDMA Based Beam Management CSI-RS for Flexible TX/RX Beam Sweeping  | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 52  | 5.1.2.4.2   | CSI-RS                                          | 0 | <a href="#">noted</a>     |
| 934 | <a href="#">R1-1710812</a> | CSI acquisition for reciprocity based operation                      | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 47  | 5.1.2.3.3   | CSI acquisition for reciprocity based operation | 0 | <a href="#">available</a> |
| 935 | <a href="#">R1-1710813</a> | Remaining issues in NR CSI feedback                                  | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 48  | 5.1.2.3.4   | CSI feedback                                    | 0 | <a href="#">available</a> |
| 936 | <a href="#">R1-1710814</a> | Multi-TRP and panel transmission                                     | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   | Late contribution | 37  | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission          | 0 | <a href="#">available</a> |
| 937 | <a href="#">R1-1710815</a> | codeword mapping in NR                                               | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 32  | 5.1.2.1.1   | Codeword mapping                                | 0 | <a href="#">available</a> |
| 938 | <a href="#">R1-1710816</a> | Codebook based transmission in UL                                    | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 33  | 5.1.2.1.2   | Codebook based transmission for UL              | 0 | <a href="#">available</a> |
| 939 | <a href="#">R1-1710817</a> | SRS design in NR                                                     | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   | Late contribution | 55  | 5.1.2.4.5   | SRS                                             | 0 | <a href="#">available</a> |
| 940 | <a href="#">R1-1710818</a> | CLI measurements in NR                                               | MediaTek Inc. | Tao Chen   | <a href="#">56050</a> | discussion |            |   |                   | 134 | 5.1.6.1     | Cross-link interference management              | 0 | <a href="#">noted</a>     |

|     | A                          | B                                                                              | C                             | D            | E                     | F          | G          | H | I | J   | K           | L                                                                          | M | N                         |
|-----|----------------------------|--------------------------------------------------------------------------------|-------------------------------|--------------|-----------------------|------------|------------|---|---|-----|-------------|----------------------------------------------------------------------------|---|---------------------------|
| 941 | <a href="#">R1-1710819</a> | Performance evaluation on channel structure of short PUCCH for 1 or 2 bits UCI | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                                        | 0 | <a href="#">available</a> |
| 942 | <a href="#">R1-1710820</a> | Discussion on UCI on PUSCH                                                     | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 87  | 5.1.3.2.5.1 | UCI piggyback on PUSCH                                                     | 0 | <a href="#">available</a> |
| 943 | <a href="#">R1-1710821</a> | Discussion on PUCCH and PUSCH multiplexing                                     | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 88  | 5.1.3.2.5.2 | PUCCH-PUSCH multiplexing                                                   | 0 | <a href="#">available</a> |
| 944 | <a href="#">R1-1710822</a> | On PRACH design to support uplink requests                                     | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 22  | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management | 0 | <a href="#">available</a> |
| 945 | <a href="#">R1-1710823</a> | PRACH Msg1 retransmission                                                      | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 23  | 5.1.1.4.3   | Power ramping and power control during RA procedure                        | 0 | <a href="#">revised</a>   |
| 946 | <a href="#">R1-1710824</a> | On 4-step RACH procedure                                                       | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 24  | 5.1.1.4.4   | 4-step RA procedure                                                        | 0 | <a href="#">available</a> |
| 947 | <a href="#">R1-1710825</a> | Optimization and comparison of Polar code rate-matching design                 | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 128 | 5.1.4.2.2   | Sequence design                                                            | 0 | <a href="#">available</a> |
| 948 | <a href="#">R1-1710826</a> | Polar coding design for NR-PBCH combining                                      | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 130 | 5.1.4.3     | PBCH                                                                       | 0 | <a href="#">available</a> |
| 949 | <a href="#">R1-1710827</a> | On CRC attachment for TB and CB                                                | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 121 | 5.1.4.1.1.1 | CRC attachment                                                             | 0 | <a href="#">noted</a>     |
| 950 | <a href="#">R1-1710828</a> | On interleaver for NR LDPC code                                                | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 123 | 5.1.4.1.1.3 | Rate matching                                                              | 0 | <a href="#">noted</a>     |
| 951 | <a href="#">R1-1710829</a> | On NR LDPC design and performance                                              | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 125 | 5.1.4.1.2   | LDPC code design                                                           | 0 | <a href="#">revised</a>   |
| 952 | <a href="#">R1-1710830</a> | Discussion on CBG construction for CBG-based (re)transmission                  | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 99  | 5.1.3.3.4.1 | CBG construction                                                           | 0 | <a href="#">available</a> |
| 953 | <a href="#">R1-1710831</a> | On downlink DMRS design                                                        | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 53  | 5.1.2.4.3   | DMRS                                                                       | 0 | <a href="#">noted</a>     |
| 954 | <a href="#">R1-1710832</a> | On TRS design requirement                                                      | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 56  | 5.1.2.4.6   | TRS                                                                        | 0 | <a href="#">noted</a>     |
| 955 | <a href="#">R1-1710833</a> | On CSI-RS configuration for fine time and frequency tracking support           | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 52  | 5.1.2.4.2   | CSI-RS                                                                     | 0 | <a href="#">available</a> |
| 956 | <a href="#">R1-1710834</a> | On support of Grant-free and Grant-based transmission for UL URLLC             | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 96  | 5.1.3.3.2   | UL data transmission procedure with grant                                  | 0 | <a href="#">available</a> |
| 957 | <a href="#">R1-1710835</a> | Grant-free Scheduling and retransmission schemes for UL URLLC                  | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                               | 0 | <a href="#">available</a> |
| 958 | <a href="#">R1-1710836</a> | On use of scrambling for UL Grant-free URLLC transmission                      | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                               | 0 | <a href="#">available</a> |
| 959 | <a href="#">R1-1710837</a> | HARQ procedure for DL URLLC                                                    | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure                 | 0 | <a href="#">available</a> |
| 960 | <a href="#">R1-1710838</a> | Cross-slot scheduling for UE power saving                                      | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 94  | 5.1.3.3.1.2 | Time-domain resource allocation                                            | 0 | <a href="#">available</a> |
| 961 | <a href="#">R1-1710839</a> | UL Power Sharing for LTE-NR Dual Connectivity                                  | MediaTek Inc.                 | Tao Chen     | <a href="#">56050</a> | discussion |            |   |   | 139 | 5.1.9.1     | Power sharing mechanism                                                    | 0 | <a href="#">noted</a>     |
| 962 | <a href="#">R1-1710840</a> | Discussion on Uplink TDM Operation for NR NSA                                  | China Telecommunications      | Sen Xu       | <a href="#">56667</a> | discussion | Discussion |   |   | 137 | 5.1.8       | NR-LTE co-existence                                                        | 0 | <a href="#">noted</a>     |
| 963 | <a href="#">R1-1710841</a> | Discussion on remaining system information delivery                            | Beijing Xinwei Telecom Techn. | Peng Sun     | <a href="#">62183</a> | discussion | Decision   |   |   | 17  | 5.1.1.2.4   | Remaining minimum system information delivery                              | 0 | <a href="#">available</a> |
| 964 | <a href="#">R1-1710842</a> | A flexible, low-latency, hardware-efficient SCL polar decoder                  | AccelerComm Ltd               | Rob Maunder  | <a href="#">67229</a> | discussion | Discussion |   |   | 129 | 5.1.4.2.3   | Other                                                                      | 0 | <a href="#">available</a> |
| 965 | <a href="#">R1-1710843</a> | On the storage of polar code sequences                                         | AccelerComm Ltd               | Rob Maunder  | <a href="#">67229</a> | discussion | Discussion |   |   | 128 | 5.1.4.2.2   | Sequence design                                                            | 0 | <a href="#">noted</a>     |
| 966 | <a href="#">R1-1710844</a> | Consideration on coding chain for eMBB data channel                            | ZTE                           | Yifei Yuan   | <a href="#">58526</a> | discussion |            |   |   | 120 | 5.1.4.1.1   | Coding chain                                                               | 0 | <a href="#">available</a> |
| 967 | <a href="#">R1-1710845</a> | Shift coefficients design for base graph 1                                     | ZTE                           | Yifei Yuan   | <a href="#">58526</a> | discussion |            |   |   | 125 | 5.1.4.1.2   | LDPC code design                                                           | 0 | <a href="#">revised</a>   |
| 968 | <a href="#">R1-1710846</a> | Shift coefficients design for base graph 2                                     | ZTE                           | Yifei Yuan   | <a href="#">58526</a> | discussion |            |   |   | 125 | 5.1.4.1.2   | LDPC code design                                                           | 0 | <a href="#">revised</a>   |
| 969 | <a href="#">R1-1710847</a> | Performance evaluations on Polar codes                                         | ZTE                           | Yifei Yuan   | <a href="#">58526</a> | discussion |            |   |   | 127 | 5.1.4.2.1   | Code construction                                                          | 0 | <a href="#">available</a> |
| 970 | <a href="#">R1-1710848</a> | Rate matching scheme of Polar codes                                            | ZTE                           | Yifei Yuan   | <a href="#">58526</a> | discussion |            |   |   | 128 | 5.1.4.2.2   | Sequence design                                                            | 0 | <a href="#">available</a> |
| 971 | <a href="#">R1-1710849</a> | Segmentation of Polar codes                                                    | ZTE                           | Yifei Yuan   | <a href="#">58526</a> | discussion |            |   |   | 129 | 5.1.4.2.3   | Other                                                                      | 0 | <a href="#">revised</a>   |
| 972 | <a href="#">R1-1710850</a> | Considerations on Channel Coding for NR-PBCH                                   | ZTE                           | Yifei Yuan   | <a href="#">58526</a> | discussion |            |   |   | 130 | 5.1.4.3     | PBCH                                                                       | 0 | <a href="#">available</a> |
| 973 | <a href="#">R1-1710851</a> | Considerations on DL beam management                                           | Sony                          | Martin Beale | <a href="#">59973</a> | other      |            |   |   | 41  | 5.1.2.2.1   | Beam management details                                                    | 0 | <a href="#">available</a> |
| 974 | <a href="#">R1-1710852</a> | Considerations on UL beam management                                           | Sony                          | Martin Beale | <a href="#">59973</a> | other      |            |   |   | 41  | 5.1.2.2.1   | Beam management details                                                    | 0 | <a href="#">available</a> |
| 975 | <a href="#">R1-1710853</a> | Considerations on fine time/frequency tracking                                 | Sony                          | Martin Beale | <a href="#">59973</a> | other      |            |   |   | 56  | 5.1.2.4.6   | TRS                                                                        | 0 | <a href="#">available</a> |
| 976 | <a href="#">R1-1710854</a> | Considerations on interference measurement                                     | Sony                          | Martin Beale | <a href="#">59973</a> | other      |            |   |   | 46  | 5.1.2.3.2   | Details of CSI acquisition                                                 | 0 | <a href="#">available</a> |
| 977 | <a href="#">R1-1710855</a> | Considerations on SRS design                                                   | Sony                          | Martin Beale | <a href="#">59973</a> | other      |            |   |   | 55  | 5.1.2.4.5   | SRS                                                                        | 0 | <a href="#">noted</a>     |
| 978 | <a href="#">R1-1710856</a> | On contents of group-common PDCCH                                              | Sony                          | Martin Beale | <a href="#">59973</a> | other      |            |   |   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                                             | 0 | <a href="#">available</a> |
| 979 | <a href="#">R1-1710857</a> | On structure of group-common PDCCH                                             | Sony                          | Martin Beale | <a href="#">59973</a> | other      |            |   |   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCH                                            | 0 | <a href="#">available</a> |
| 980 | <a href="#">R1-1710858</a> | Discussion on SS block time index indication                                   | Sony                          | Martin Beale | <a href="#">59973</a> | other      |            |   |   | 11  | 5.1.1.1.3   | Timing indication based on SS block                                        | 0 | <a href="#">revised</a>   |
| 981 | <a href="#">R1-1710859</a> | Considerations on SS block compositions                                        | Sony                          | Martin Beale | <a href="#">59973</a> | other      |            |   |   | 15  | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                                | 0 | <a href="#">revised</a>   |
| 982 | <a href="#">R1-1710860</a> | Considerations on 4-step RA procedure                                          | Sony                          | Martin Beale | <a href="#">59973</a> | other      |            |   |   | 24  | 5.1.1.4.4   | 4-step RA procedure                                                        | 0 | <a href="#">available</a> |

|      | A                          | B                                                                              | C                                   | D                          | E                     | F          | G        | H | I                 | J   | K           | L                                                                          | M | N                         |
|------|----------------------------|--------------------------------------------------------------------------------|-------------------------------------|----------------------------|-----------------------|------------|----------|---|-------------------|-----|-------------|----------------------------------------------------------------------------|---|---------------------------|
| 983  | <a href="#">R1-1710861</a> | Pre-emption in UL grant free resource                                          | Sony                                | Martin Beale               | <a href="#">59973</a> | other      |          |   |                   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                               | 0 | <a href="#">available</a> |
| 984  | <a href="#">R1-1710862</a> | Reliable PDCCH operation for URLLC                                             | Sony                                | Martin Beale               | <a href="#">59973</a> | other      |          |   |                   | 74  | 5.1.3.1.5   | Ultra-reliable part of URLLC for DL control                                | 0 | <a href="#">available</a> |
| 985  | <a href="#">R1-1710863</a> | Discussion on the retransmission of UL transmission without grant              | Sony                                | Martin Beale               | <a href="#">59973</a> | other      |          |   |                   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                               | 0 | <a href="#">available</a> |
| 986  | <a href="#">R1-1710864</a> | Discussion on the CBG index indication by DCI                                  | Sony                                | Martin Beale               | <a href="#">59973</a> | other      |          |   |                   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission                       | 0 | <a href="#">available</a> |
| 987  | <a href="#">R1-1710865</a> | Remaining issues on using pre-emption indicator for DL URLLC/eMBB multiplexing | Sony                                | Martin Beale               | <a href="#">59973</a> | other      |          |   |                   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                                        | 0 | <a href="#">available</a> |
| 988  | <a href="#">R1-1710866</a> | Feedback for improving URLLC reliability                                       | Sony                                | Martin Beale               | <a href="#">59973</a> | other      |          |   |                   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure                 | 0 | <a href="#">available</a> |
| 989  | <a href="#">R1-1710867</a> | Multiplexing data with different transmission durations for Uplink             | Sony                                | Martin Beale               | <a href="#">59973</a> | other      |          |   |                   | 110 | 5.1.3.3.7.2 | Possible enhancements for uplink                                           | 0 | <a href="#">available</a> |
| 990  | <a href="#">R1-1710868</a> | Blind Detection with Polar Codes                                               | McGill University                   | Carlo Condo                | <a href="#">70564</a> | discussion |          |   | Late contribution | 129 | 5.1.4.2.3   | Other                                                                      | 0 | <a href="#">withdrawn</a> |
| 991  | <a href="#">R1-1710869</a> | Partitioned List Decoding of Polar Codes                                       | McGill University                   | Carlo Condo                | <a href="#">70564</a> | discussion |          |   | Late contribution | 129 | 5.1.4.2.3   | Other                                                                      | 0 | <a href="#">withdrawn</a> |
| 992  | <a href="#">R1-1710870</a> | Power ramping for Msg1 preamble re-transmission                                | InterDigital, Inc.                  | Aata El Hamss              | <a href="#">71288</a> | discussion |          |   |                   | 23  | 5.1.1.4.3   | Power ramping and power control during RA procedure                        | 0 | <a href="#">available</a> |
| 993  | <a href="#">R1-1710871</a> | Multiple Msg1 transmissions for one monitored RAR window                       | InterDigital, Inc.                  | Aata El Hamss              | <a href="#">71288</a> | discussion |          |   |                   | 24  | 5.1.1.4.4   | 4-step RA procedure                                                        | 0 | <a href="#">available</a> |
| 994  | <a href="#">R1-1710872</a> | CORESET Monitoring Under Dynamic Change of BWP                                 | InterDigital, Inc.                  | Aata El Hamss              | <a href="#">71288</a> | discussion |          |   |                   | 66  | 5.1.3.1.2.1 | CORESET configuration                                                      | 0 | <a href="#">available</a> |
| 995  | <a href="#">R1-1710873</a> | PDSCH starting position in NR                                                  | InterDigital, Inc.                  | Aata El Hamss              | <a href="#">71288</a> | discussion |          |   |                   | 69  | 5.1.3.1.3   | Resource sharing between PDCCH and PDSCH                                   | 0 | <a href="#">available</a> |
| 996  | <a href="#">R1-1710874</a> | Considerations for ultra-reliable DCI transmission                             | InterDigital, Inc.                  | Aata El Hamss              | <a href="#">71288</a> | discussion |          |   |                   | 74  | 5.1.3.1.5   | Ultra-reliable part of URLLC for DL control                                | 0 | <a href="#">available</a> |
| 997  | <a href="#">R1-1710875</a> | Considerations for ultra-reliable UCI transmission                             | InterDigital, Inc.                  | Aata El Hamss              | <a href="#">71288</a> | discussion |          |   |                   | 89  | 5.1.3.2.6   | Ultra-reliable part of URLLC for UL control                                | 0 | <a href="#">available</a> |
| 998  | <a href="#">R1-1710876</a> | CBG based HARQ for NR                                                          | InterDigital, Inc.                  | Aata El Hamss              | <a href="#">71288</a> | discussion |          |   |                   | 99  | 5.1.3.3.4.1 | CBG construction                                                           | 0 | <a href="#">available</a> |
| 999  | <a href="#">R1-1710877</a> | DL HARQ Feedback suppression                                                   | InterDigital, Inc.                  | Aata El Hamss              | <a href="#">71288</a> | discussion |          |   |                   | 103 | 5.1.3.3.5.1 | HARQ-ACK feedback timing                                                   | 0 | <a href="#">available</a> |
| 1000 | <a href="#">R1-1710878</a> | Bandwidth Adaptation via BWP Selection in NR                                   | InterDigital, Inc.                  | Aata El Hamss              | <a href="#">71288</a> | discussion |          |   |                   | 136 | 5.1.7       | Wider bandwidth operations                                                 | 0 | <a href="#">available</a> |
| 1001 | <a href="#">R1-1710879</a> | Power Sharing Mechanisms with LTE-NR DC and NR DC                              | InterDigital, Inc.                  | Aata El Hamss              | <a href="#">71288</a> | discussion |          |   |                   | 139 | 5.1.9.1     | Power sharing mechanism                                                    | 0 | <a href="#">noted</a>     |
| 1002 | <a href="#">R1-1710880</a> | On uplink half-tone shift                                                      | Ericsson AB                         | Erik Dahlman               | <a href="#">23366</a> | discussion | Decision |   |                   | 137 | 5.1.8       | NR-LTE co-existence                                                        | 0 | <a href="#">noted</a>     |
| 1003 | <a href="#">R1-1710881</a> | On pi/2-BPSK DFTS-OFDM with spectrum shaping                                   | Ericsson AB                         | Erik Dahlman               | <a href="#">23366</a> | discussion | Decision |   |                   | 132 | 5.1.5       | Modulation                                                                 | 0 | <a href="#">available</a> |
| 1004 | <a href="#">R1-1710882</a> | Multiple SS Blocks in wideband carrier                                         | Ericsson AB                         | Erik Dahlman               | <a href="#">23366</a> | discussion | Decision |   |                   | 12  | 5.1.1.1.4   | Remaining details on multiple SS block transmissions in wideband CC        | 0 | <a href="#">available</a> |
| 1005 | <a href="#">R1-1710883</a> | On wider band aspects of NR                                                    | Nokia, Alcatel-Lucent Shanghai Bell | Karol Schober              | <a href="#">68456</a> | other      | Approval |   |                   | 136 | 5.1.7       | Wider bandwidth operations                                                 | 0 | <a href="#">available</a> |
| 1006 | <a href="#">R1-1710884</a> | On NR CA/DC configuration                                                      | Nokia, Alcatel-Lucent Shanghai Bell | Karol Schober              | <a href="#">68456</a> | other      | Approval |   |                   | 117 | 5.1.3.4.2   | Dual connectivity                                                          | 0 | <a href="#">available</a> |
| 1007 | <a href="#">R1-1710885</a> | On cross-carrier scheduling and joint UCI design                               | Nokia, Alcatel-Lucent Shanghai Bell | Karol Schober              | <a href="#">68456</a> | other      | Approval |   |                   | 115 | 5.1.3.4.1.1 | Self/cross-carrier scheduling and joint/separate UCI feedback              | 0 | <a href="#">available</a> |
| 1008 | <a href="#">R1-1710886</a> | UL diversity transmission for DFTsOFDM                                         | Mitsubishi Electric RCE             | Cristina Ciochina-Duchesne | <a href="#">56339</a> | discussion | Decision |   |                   | 35  | 5.1.2.1.4   | Diversity transmission for UL                                              | 0 | <a href="#">available</a> |
| 1009 | <a href="#">R1-1710887</a> | UL grant-free transmissions: Physical layer procedures                         | Intel Corporation                   | Seunghee Han               | <a href="#">47329</a> | discussion | Decision |   |                   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                               | 0 | <a href="#">available</a> |
| 1010 | <a href="#">R1-1710888</a> | HARQ-ACK feedback: Timing considerations                                       | Intel Corporation                   | Seunghee Han               | <a href="#">47329</a> | discussion | Decision |   |                   | 103 | 5.1.3.3.5.1 | HARQ-ACK feedback timing                                                   | 0 | <a href="#">withdrawn</a> |
| 1011 | <a href="#">R1-1710889</a> | NR Physical Random Access Channel                                              | Nokia, Alcatel-Lucent Shanghai Bell | Emad Farag                 | <a href="#">66840</a> | discussion | Decision |   |                   | 21  | 5.1.1.4.1   | PRACH preamble format details for long/short sequence length               | 0 | <a href="#">available</a> |
| 1012 | <a href="#">R1-1710890</a> | NR Physical Random Access Channel Capacity                                     | Nokia, Alcatel-Lucent Shanghai Bell | Emad Farag                 | <a href="#">66840</a> | discussion | Decision |   |                   | 22  | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management | 0 | <a href="#">noted</a>     |
| 1013 | <a href="#">R1-1710891</a> | Preamble Power Ramping and RACH Message 3 Power Control                        | Nokia, Alcatel-Lucent Shanghai Bell | Emad Farag                 | <a href="#">66840</a> | discussion | Decision |   |                   | 23  | 5.1.1.4.3   | Power ramping and power control during RA procedure                        | 0 | <a href="#">available</a> |
| 1014 | <a href="#">R1-1710892</a> | NR 4-step RACH procedure                                                       | Nokia, Alcatel-Lucent Shanghai Bell | Emad Farag                 | <a href="#">66840</a> | discussion | Decision |   |                   | 24  | 5.1.1.4.4   | 4-step RA procedure                                                        | 0 | <a href="#">available</a> |
| 1015 | <a href="#">R1-1710893</a> | On the short PUCCH design for small UCI payloads                               | Nokia, Alcatel-Lucent Shanghai Bell | Emad Farag                 | <a href="#">66840</a> | discussion | Decision |   |                   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                                        | 0 | <a href="#">available</a> |
| 1016 | <a href="#">R1-1710894</a> | Short PUCCH design for UCI of more than 2 bits                                 | Nokia, Alcatel-Lucent Shanghai Bell | Emad Farag                 | <a href="#">66840</a> | discussion | Decision |   |                   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits                                    | 0 | <a href="#">available</a> |
| 1017 | <a href="#">R1-1710895</a> | On long PUCCH design for small payloads                                        | Nokia, Alcatel-Lucent Shanghai Bell | Emad Farag                 | <a href="#">66840</a> | discussion | Decision |   |                   | 81  | 5.1.3.2.2.1 | Long-PUCCH for UCI of up to 2 bits                                         | 0 | <a href="#">available</a> |
| 1018 | <a href="#">R1-1710896</a> | Long PUCCH design for UCI more than 2 bits                                     | Nokia, Alcatel-Lucent Shanghai Bell | Emad Farag                 | <a href="#">66840</a> | discussion | Decision |   |                   | 82  | 5.1.3.2.2.2 | Long-PUCCH for UCI of more than 2 bits                                     | 0 | <a href="#">available</a> |
| 1019 | <a href="#">R1-1710897</a> | Transmit Diversity for PUCCH                                                   | Nokia, Alcatel-Lucent Shanghai Bell | Emad Farag                 | <a href="#">66840</a> | discussion | Decision |   |                   | 84  | 5.1.3.2.3   | Transmit diversity for PUCCH                                               | 0 | <a href="#">available</a> |

|      | A                          | B                                                                                  | C                                   | D                    | E                     | F          | G          | H | I | J   | K           | L                                                    | M | N                         |
|------|----------------------------|------------------------------------------------------------------------------------|-------------------------------------|----------------------|-----------------------|------------|------------|---|---|-----|-------------|------------------------------------------------------|---|---------------------------|
| 1020 | <a href="#">R1-1710898</a> | On the resource allocation for PUCCH                                               | Nokia, Alcatel-Lucent Shanghai Bell | Emad Farag           | <a href="#">66840</a> | discussion | Decision   |   |   | 85  | 5.1.3.2.4   | Resource allocation for PUCCH                        | 0 | <a href="#">available</a> |
| 1021 | <a href="#">R1-1710899</a> | UCI multiplexing on PUSCH                                                          | Nokia, Alcatel-Lucent Shanghai Bell | Emad Farag           | <a href="#">66840</a> | discussion | Decision   |   |   | 87  | 5.1.3.2.5.1 | UCI piggyback on PUSCH                               | 0 | <a href="#">available</a> |
| 1022 | <a href="#">R1-1710900</a> | On the multiplexing between PUCCHs and PUSCH                                       | Nokia, Alcatel-Lucent Shanghai Bell | Emad Farag           | <a href="#">66840</a> | discussion | Decision   |   |   | 88  | 5.1.3.2.5.2 | PUCCH-PUSCH multiplexing                             | 0 | <a href="#">available</a> |
| 1023 | <a href="#">R1-1710901</a> | On URLLC UCI transmission                                                          | Nokia, Alcatel-Lucent Shanghai Bell | Emad Farag           | <a href="#">66840</a> | discussion | Decision   |   |   | 89  | 5.1.3.2.6   | Ultra-reliable part of URLLC for UL control          | 0 | <a href="#">available</a> |
| 1024 | <a href="#">R1-1710902</a> | CP-OFDM waveform for NR long PUCCH                                                 | Nokia, Alcatel-Lucent Shanghai Bell | Emad Farag           | <a href="#">66840</a> | discussion | Decision   |   |   | 90  | 5.1.3.2.7   | Other                                                | 0 | <a href="#">available</a> |
| 1025 | <a href="#">R1-1710903</a> | PDCCH structure for NR                                                             | NEC                                 | Yassin Awad          | <a href="#">37300</a> | discussion | Decision   |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping          | 0 | <a href="#">available</a> |
| 1026 | <a href="#">R1-1710904</a> | Uplink transmission in NR NSA mode                                                 | Apple Inc.                          | Wei Zeng             | <a href="#">70918</a> | discussion | Discussion |   |   | 137 | 5.1.8       | NR-LTE co-existence                                  | 0 | <a href="#">noted</a>     |
| 1027 | <a href="#">R1-1710905</a> | Signaling of SS block index                                                        | Apple Inc.                          | Wei Zeng             | <a href="#">70918</a> | discussion | Discussion |   |   | 11  | 5.1.1.1.3   | Timing indication based on SS block                  | 0 | <a href="#">noted</a>     |
| 1028 | <a href="#">R1-1710906</a> | UE behavior on UL/DL transmission direction determination in NR TDD                | Apple Inc.                          | Wei Zeng             | <a href="#">70918</a> | discussion | Discussion |   |   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH           | 0 | <a href="#">available</a> |
| 1029 | <a href="#">R1-1710907</a> | Control indicator in group-common PDCCH for UE power saving                        | Apple Inc.                          | Wei Zeng             | <a href="#">70918</a> | discussion | Discussion |   |   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                       | 0 | <a href="#">available</a> |
| 1030 | <a href="#">R1-1710908</a> | DL control signal for CBG-based transmission                                       | Apple Inc.                          | Wei Zeng             | <a href="#">70918</a> | discussion | Discussion |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission | 0 | <a href="#">available</a> |
| 1031 | <a href="#">R1-1710909</a> | Discussion of NR-LTE coexistence on DL                                             | ZTE                                 | Wenfeng Zhang        | <a href="#">71639</a> | discussion | Decision   |   |   | 137 | 5.1.8       | NR-LTE co-existence                                  | 0 | <a href="#">available</a> |
| 1032 | <a href="#">R1-1710910</a> | Considerations of NR-LTE coexistence in uplink                                     | ZTE                                 | Wenfeng Zhang        | <a href="#">71639</a> | discussion | Decision   |   |   | 137 | 5.1.8       | NR-LTE co-existence                                  | 0 | <a href="#">revised</a>   |
| 1033 | <a href="#">R1-1710911</a> | Power Control for CA and DC in NR                                                  | ZTE                                 | Wenfeng Zhang        | <a href="#">71639</a> | discussion | Decision   |   |   | 139 | 5.1.9.1     | Power sharing mechanism                              | 0 | <a href="#">available</a> |
| 1034 | <a href="#">R1-1710912</a> | Reserved resources supporting NR co-existence with LTE and NB-IoT                  | Ericsson AB                         | Erik Dahlman         | <a href="#">23366</a> | discussion | Decision   |   |   | 137 | 5.1.8       | NR-LTE co-existence                                  | 0 | <a href="#">available</a> |
| 1035 | <a href="#">R1-1710913</a> | On Design of Synchronization Signal Sequences in NR                                | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 9   | 5.1.1.1.1   | Remaining details on SS sequence design              | 0 | <a href="#">available</a> |
| 1036 | <a href="#">R1-1710914</a> | On SS Burst Set Composition and Multiplexing                                       | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 10  | 5.1.1.1.2   | SS burst set composition                             | 0 | <a href="#">available</a> |
| 1037 | <a href="#">R1-1710915</a> | On SS Block Based Timing Indication in NR                                          | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 11  | 5.1.1.1.3   | Timing indication based on SS block                  | 0 | <a href="#">available</a> |
| 1038 | <a href="#">R1-1710916</a> | On Physical Broadcast Channel in NR                                                | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 14  | 5.1.1.2.1   | NR-PBCH contents and payload size                    | 0 | <a href="#">available</a> |
| 1039 | <a href="#">R1-1710917</a> | On NR-PBCH RE Mapping and SS Block Composition                                     | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 15  | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition          | 0 | <a href="#">noted</a>     |
| 1040 | <a href="#">R1-1710918</a> | On DMRS Designs for NR-PBCH                                                        | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 16  | 5.1.1.2.3   | Sequence design of DMRS for NR-PBCH                  | 0 | <a href="#">available</a> |
| 1041 | <a href="#">R1-1710919</a> | On Minimum System Information Delivery                                             | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 17  | 5.1.1.2.4   | Remaining minimum system information delivery        | 0 | <a href="#">available</a> |
| 1042 | <a href="#">R1-1710920</a> | TPMI Indication for Frequency Selective UL Precoding                               | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 33  | 5.1.2.1.2   | Codebook based transmission for UL                   | 0 | <a href="#">available</a> |
| 1043 | <a href="#">R1-1710921</a> | STBC-based Transmission for Uplink Transmit Diversity                              | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 35  | 5.1.2.1.4   | Diversity transmission for UL                        | 0 | <a href="#">available</a> |
| 1044 | <a href="#">R1-1710922</a> | PRG Size Indication in NR                                                          | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 36  | 5.1.2.1.5   | PRB bundling for DL                                  | 0 | <a href="#">available</a> |
| 1045 | <a href="#">R1-1710923</a> | DCI Design for Multi-TRP/Panel Transmission for DL                                 | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 37  | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission               | 0 | <a href="#">available</a> |
| 1046 | <a href="#">R1-1710924</a> | On Beam Management for DL Control and Data Channels                                | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 41  | 5.1.2.2.1   | Beam management details                              | 0 | <a href="#">available</a> |
| 1047 | <a href="#">R1-1710925</a> | On Efficient UL Beam Management                                                    | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 41  | 5.1.2.2.1   | Beam management details                              | 0 | <a href="#">available</a> |
| 1048 | <a href="#">R1-1710926</a> | On Remaining Details of Beam Failure Recovery                                      | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure               | 0 | <a href="#">available</a> |
| 1049 | <a href="#">R1-1710927</a> | On CSI framework for NR                                                            | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 45  | 5.1.2.3.1   | CSI framework                                        | 0 | <a href="#">available</a> |
| 1050 | <a href="#">R1-1710928</a> | On CSI acquisition for NR                                                          | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 46  | 5.1.2.3.2   | Details of CSI acquisition                           | 0 | <a href="#">available</a> |
| 1051 | <a href="#">R1-1710929</a> | Discussion on SRS sequence generation for NR                                       | Panasonic Corporation               | Tetsuya Yamamoto     | <a href="#">59095</a> | discussion |            |   |   | 55  | 5.1.2.4.5   | SRS                                                  | 0 | <a href="#">available</a> |
| 1052 | <a href="#">R1-1710930</a> | Discussion on 1-symbol NR-PUCCH for UCI of up to 2 bits                            | Panasonic Corporation               | Tetsuya Yamamoto     | <a href="#">59095</a> | discussion |            |   |   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                  | 0 | <a href="#">revised</a>   |
| 1053 | <a href="#">R1-1710931</a> | CSI-RS Design for Beam Management                                                  | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 52  | 5.1.2.4.2   | CSI-RS                                               | 0 | <a href="#">noted</a>     |
| 1054 | <a href="#">R1-1710932</a> | Discussion on channel structure of long-duration NR-PUCCH for UCI of up to 2 bits  | Panasonic Corporation               | Tetsuya Yamamoto     | <a href="#">59095</a> | discussion |            |   |   | 81  | 5.1.3.2.2.1 | Long-PUCCH for UCI of up to 2 bits                   | 0 | <a href="#">available</a> |
| 1055 | <a href="#">R1-1710933</a> | On DM-RS design for NR                                                             | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 53  | 5.1.2.4.3   | DMRS                                                 | 0 | <a href="#">available</a> |
| 1056 | <a href="#">R1-1710934</a> | Discussion on channel design of long-duration NR-PUCCH for UCI of more than 2 bits | Panasonic Corporation               | Tetsuya Yamamoto     | <a href="#">59095</a> | discussion |            |   |   | 82  | 5.1.3.2.2.2 | Long-PUCCH for UCI of more than 2 bits               | 0 | <a href="#">available</a> |
| 1057 | <a href="#">R1-1710935</a> | Discussion on support of long-duration NR-PUCCH over multiple slots                | Panasonic Corporation               | Tetsuya Yamamoto     | <a href="#">59095</a> | discussion |            |   |   | 83  | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots            | 0 | <a href="#">available</a> |
| 1058 | <a href="#">R1-1710936</a> | Remaining Issues on PTRS for NR                                                    | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 54  | 5.1.2.4.4   | PT-RS                                                | 0 | <a href="#">noted</a>     |
| 1059 | <a href="#">R1-1710937</a> | Discussion on resource allocation for uplink control channel                       | Panasonic Corporation               | Tetsuya Yamamoto     | <a href="#">59095</a> | discussion |            |   |   | 85  | 5.1.3.2.4   | Resource allocation for PUCCH                        | 0 | <a href="#">available</a> |
| 1060 | <a href="#">R1-1710938</a> | On SRS for NR                                                                      | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 55  | 5.1.2.4.5   | SRS                                                  | 0 | <a href="#">available</a> |

|      | A                          | B                                                                             | C                                   | D                    | E                     | F          | G          | H | I | J   | K           | L                                                              | M | N                         |
|------|----------------------------|-------------------------------------------------------------------------------|-------------------------------------|----------------------|-----------------------|------------|------------|---|---|-----|-------------|----------------------------------------------------------------|---|---------------------------|
| 1061 | <a href="#">R1-1710939</a> | Discussion on UCI on PUSCH                                                    | Panasonic Corporation               | Tetsuya Yamamoto     | <a href="#">59095</a> | discussion |            |   |   | 87  | 5.1.3.2.5.1 | UCI piggyback on PUSCH                                         | 0 | <a href="#">available</a> |
| 1062 | <a href="#">R1-1710940</a> | Discussion on UCI and data multiplexing                                       | Panasonic Corporation               | Tetsuya Yamamoto     | <a href="#">59095</a> | discussion |            |   |   | 88  | 5.1.3.2.5.2 | PUCCH-PUSCH multiplexing                                       | 0 | <a href="#">available</a> |
| 1063 | <a href="#">R1-1710941</a> | On QCL for NR                                                                 | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 57  | 5.1.2.4.7   | QCL                                                            | 0 | <a href="#">available</a> |
| 1064 | <a href="#">R1-1710942</a> | Discussion on SR for URLLC and multiplexing with HARQ-ACK                     | Panasonic Corporation               | Tetsuya Yamamoto     | <a href="#">59095</a> | discussion |            |   |   | 89  | 5.1.3.2.6   | Ultra-reliable part of URLLC for UL control                    | 0 | <a href="#">available</a> |
| 1065 | <a href="#">R1-1710943</a> | Discussion on PRB grid and PRB indexing                                       | Panasonic Corporation               | Tetsuya Yamamoto     | <a href="#">59095</a> | discussion |            |   |   | 136 | 5.1.7       | Wider bandwidth operations                                     | 0 | <a href="#">available</a> |
| 1066 | <a href="#">R1-1710944</a> | On the impact of multi-beam operation on PDCCH structure                      | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping                    | 0 | <a href="#">available</a> |
| 1067 | <a href="#">R1-1710945</a> | On REG bundling and associated DMRS                                           | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 64  | 5.1.3.1.1.2 | RS structure/mapping                                           | 0 | <a href="#">available</a> |
| 1068 | <a href="#">R1-1710946</a> | Search space design for eMBB-URLLC Multiplexing                               | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 67  | 5.1.3.1.2.2 | Search space design                                            | 0 | <a href="#">available</a> |
| 1069 | <a href="#">R1-1710947</a> | Group-common PDCCH design considerations                                      | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCH                                | 0 | <a href="#">available</a> |
| 1070 | <a href="#">R1-1710948</a> | UE behaviour related to CORESET(s) configured by PBCH                         | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH                     | 0 | <a href="#">available</a> |
| 1071 | <a href="#">R1-1710949</a> | On Ultra-reliable and low-latency PDCCH                                       | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 74  | 5.1.3.1.5   | Ultra-reliable part of URLLC for DL control                    | 0 | <a href="#">available</a> |
| 1072 | <a href="#">R1-1710950</a> | Evaluations of 1-symbol short-PUCCH with 1 or 2 bit(s)                        | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                            | 0 | <a href="#">available</a> |
| 1073 | <a href="#">R1-1710951</a> | On transmit diversity for Long PUCCH                                          | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 84  | 5.1.3.2.3   | Transmit diversity for PUCCH                                   | 0 | <a href="#">available</a> |
| 1074 | <a href="#">R1-1710952</a> | Considerations on UCI transmission on PUSCH                                   | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 87  | 5.1.3.2.5.1 | UCI piggyback on PUSCH                                         | 0 | <a href="#">available</a> |
| 1075 | <a href="#">R1-1710953</a> | On frequency-domain resource allocation for NR                                | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                           | 0 | <a href="#">available</a> |
| 1076 | <a href="#">R1-1710954</a> | HARQ feedback design considerations for CBG based transmission                | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission           | 0 | <a href="#">available</a> |
| 1077 | <a href="#">R1-1710955</a> | Signalling design considerations for DL pre-emption indication                | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                            | 0 | <a href="#">available</a> |
| 1078 | <a href="#">R1-1710956</a> | Multiplexing of low-latency traffic and non-latency sensitive traffic in UL   | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 110 | 5.1.3.3.7.2 | Possible enhancements for uplink                               | 0 | <a href="#">available</a> |
| 1079 | <a href="#">R1-1710957</a> | Data channel processing and CRC attachment                                    | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 121 | 5.1.4.1.1.1 | CRC attachment                                                 | 0 | <a href="#">noted</a>     |
| 1080 | <a href="#">R1-1710958</a> | Code block segmentation for eMBB data channel                                 | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 122 | 5.1.4.1.1.2 | Segmentation                                                   | 0 | <a href="#">available</a> |
| 1081 | <a href="#">R1-1710959</a> | Parameter selection for polar codes puncturing and shortening                 | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 128 | 5.1.4.2.2   | Sequence design                                                | 0 | <a href="#">available</a> |
| 1082 | <a href="#">R1-1710960</a> | Parameter selection for polar codes repetition                                | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 128 | 5.1.4.2.2   | Sequence design                                                | 0 | <a href="#">available</a> |
| 1083 | <a href="#">R1-1710961</a> | Interleaver design for polar codes with high order modulation                 | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 128 | 5.1.4.2.2   | Sequence design                                                | 0 | <a href="#">available</a> |
| 1084 | <a href="#">R1-1710962</a> | Common and Beam Specific Power Control Parameters                             | InterDigital, Inc.                  | Shahrokh Nayeb Nazar | <a href="#">72080</a> | discussion |            |   |   | 140 | 5.1.9.2     | NR power control framework                                     | 0 | <a href="#">withdrawn</a> |
| 1085 | <a href="#">R1-1710963</a> | On network resources and UE transmission configurations for grant-free access | NEC                                 | Kevin Lin            | <a href="#">45809</a> | discussion | Decision   |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                   | 0 | <a href="#">available</a> |
| 1086 | <a href="#">R1-1710964</a> | On UE-to-UE measurement for CLI management                                    | NEC                                 | Kevin Lin            | <a href="#">45809</a> | discussion | Decision   |   |   | 115 | 5.1.3.4.1.1 | Self-/cross-carrier scheduling and joint/separate UCI feedback | 0 | <a href="#">available</a> |
| 1087 | <a href="#">R1-1710965</a> | On cross-carrier scheduling and HARQ-ACK feedback for NR CA                   | NEC                                 | Kevin Lin            | <a href="#">45809</a> | discussion | Decision   |   |   | 134 | 5.1.6.1     | Cross-link interference management                             | 0 | <a href="#">available</a> |
| 1088 | <a href="#">R1-1710966</a> | Flexible subcarrier spacing in the uplink for NR use cases including mMTC     | ATR                                 | ROYA EBRAHIM REZAGAH | <a href="#">66159</a> | discussion |            |   |   | 142 | 5.1.11      | Other                                                          | 0 | <a href="#">available</a> |
| 1089 | <a href="#">R1-1710967</a> | Number of HARQ processes for co-existence with TD-LTE                         | NEC Corporation                     | Takahiro Sasaki      | <a href="#">39454</a> | discussion | Decision   |   |   | 106 | 5.1.3.3.6.1 | Number of HARQ processes and HARQ RTT                          | 0 | <a href="#">available</a> |
| 1090 | <a href="#">R1-1710968</a> | Summary of [89-20] email discussion on Group-common PDCCH for NR              | CATT                                | Yanping Xing         | <a href="#">57090</a> | discussion |            |   |   | 70  | 5.1.3.1.4   | Group-common PDCCH                                             | 0 | <a href="#">noted</a>     |
| 1091 | <a href="#">R1-1710969</a> | NR-PDCCH for multi-TRP transmission                                           | China Telecommunications            | Jianchi Zhu          | <a href="#">58216</a> | discussion |            |   |   | 37  | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission                         | 0 | <a href="#">available</a> |
| 1092 | <a href="#">R1-1710970</a> | On front-load DMRS design                                                     | China Telecommunications            | Jianchi Zhu          | <a href="#">58216</a> | discussion |            |   |   | 53  | 5.1.2.4.3   | DMRS                                                           | 0 | <a href="#">available</a> |
| 1093 | <a href="#">R1-1710971</a> | UL grant-free transmission for URLLC                                          | China Telecommunications            | Jianchi Zhu          | <a href="#">58216</a> | discussion |            |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                   | 0 | <a href="#">available</a> |
| 1094 | <a href="#">R1-1710972</a> | Control signalling for CBG-based (re)transmission                             | China Telecommunications            | Jianchi Zhu          | <a href="#">58216</a> | discussion |            |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission           | 0 | <a href="#">available</a> |
| 1095 | <a href="#">R1-1710973</a> | Discussion on REG bundle size                                                 | ITRI                                | Hung-hsiang Wang     | <a href="#">46683</a> | discussion |            |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping                    | 0 | <a href="#">available</a> |
| 1096 | <a href="#">R1-1710974</a> | Discussion on using sub-time unit for CSI-RS of beam management               | ITRI                                | Hung-hsiang Wang     | <a href="#">46683</a> | discussion |            |   |   | 52  | 5.1.2.4.2   | CSI-RS                                                         | 0 | <a href="#">available</a> |
| 1097 | <a href="#">R1-1710975</a> | Considerations and Evaluation on SS Sequence Design for New Radio             | ITRI                                | Hung-hsiang Wang     | <a href="#">46683</a> | discussion |            |   |   | 9   | 5.1.1.1.1   | Remaining details on SS sequence design                        | 0 | <a href="#">available</a> |
| 1098 | <a href="#">R1-1710976</a> | NR Long PUCCH Requirements                                                    | CMCC                                | Hui Tong             | <a href="#">58245</a> | other      | Discussion |   |   | 83  | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots                      | 0 | <a href="#">available</a> |
| 1099 | <a href="#">R1-1710977</a> | Discussion on RRM measurement on SS blocks                                    | CMCC                                | Hui Tong             | <a href="#">58245</a> | other      | Discussion |   |   | 26  | 5.1.1.5.1   | Measurement based on SS block                                  | 0 | <a href="#">noted</a>     |
| 1100 | <a href="#">R1-1710978</a> | On the PDCCH construction for NR                                              | Nokia, Alcatel-Lucent Shanghai Bell | Sigen Ye             | <a href="#">45768</a> | discussion |            |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping                    | 0 | <a href="#">available</a> |

|      | A                          | B                                                                               | C                                      | D              | E                     | F          | G        | H | I | J   | K           | L                                                          | M | N                         |
|------|----------------------------|---------------------------------------------------------------------------------|----------------------------------------|----------------|-----------------------|------------|----------|---|---|-----|-------------|------------------------------------------------------------|---|---------------------------|
| 1101 | <a href="#">R1-1710979</a> | On the remaining details of PDCCH reference signal structure                    | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 64  | 5.1.3.1.1.2 | RS structure/mapping                                       | 0 | <a href="#">available</a> |
| 1102 | <a href="#">R1-1710980</a> | On the PDCCH control resource set and its connection to the search space for NR | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 66  | 5.1.3.1.2.1 | CORESET configuration                                      | 0 | <a href="#">available</a> |
| 1103 | <a href="#">R1-1710981</a> | On the search space design and UE blind detection                               | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 67  | 5.1.3.1.2.2 | Search space design                                        | 0 | <a href="#">available</a> |
| 1104 | <a href="#">R1-1710982</a> | PDCCH support for multi-beam system                                             | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 68  | 5.1.3.1.2.3 | Multi-beam operation for PDCCH                             | 0 | <a href="#">available</a> |
| 1105 | <a href="#">R1-1710983</a> | Resource sharing between PDCCH and PDSCH in NR                                  | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 69  | 5.1.3.1.3   | Resource sharing between PDCCH and PDSCH                   | 0 | <a href="#">available</a> |
| 1106 | <a href="#">R1-1710984</a> | On the structure of group common PDCCH in NR                                    | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCH                            | 0 | <a href="#">available</a> |
| 1107 | <a href="#">R1-1710985</a> | On the contents of group common PDCCH in NR                                     | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                             | 0 | <a href="#">available</a> |
| 1108 | <a href="#">R1-1710986</a> | On the UE behaviour related to group common PDCCH in NR                         | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH                 | 0 | <a href="#">available</a> |
| 1109 | <a href="#">R1-1710987</a> | On the URLLC specific aspects for DL control channel                            | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 74  | 5.1.3.1.5   | Ultra-reliable part of URLLC for DL control                | 0 | <a href="#">available</a> |
| 1110 | <a href="#">R1-1710988</a> | On the usage of PDCCH DMRS as a complementary synchronization signal in DL      | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 75  | 5.1.3.1.6   | Other                                                      | 0 | <a href="#">available</a> |
| 1111 | <a href="#">R1-1710989</a> | On resource allocation in frequency domain for PDSCH and PUSCH in NR            | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                       | 0 | <a href="#">available</a> |
| 1112 | <a href="#">R1-1710990</a> | Time-domain resource allocation for NR                                          | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 94  | 5.1.3.3.1.2 | Time-domain resource allocation                            | 0 | <a href="#">available</a> |
| 1113 | <a href="#">R1-1710991</a> | Transport block size determination and the support of slot aggregation in NR    | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 95  | 5.1.3.3.1.3 | Transport block size determination                         | 0 | <a href="#">available</a> |
| 1114 | <a href="#">R1-1710992</a> | Discussion on multiple SR configuration                                         | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 96  | 5.1.3.3.2   | UL data transmission procedure with grant                  | 0 | <a href="#">available</a> |
| 1115 | <a href="#">R1-1710993</a> | Unified framework for UL grant-free and UL SPS                                  | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant               | 0 | <a href="#">available</a> |
| 1116 | <a href="#">R1-1710994</a> | UE identification and HARQ for URLLC UL grant-free                              | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant               | 0 | <a href="#">available</a> |
| 1117 | <a href="#">R1-1710995</a> | Mapping code blocks to code block groups                                        | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 99  | 5.1.3.3.4.1 | CBG construction                                           | 0 | <a href="#">available</a> |
| 1118 | <a href="#">R1-1710996</a> | DL control signalling for CBG-based transmissions                               | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission       | 0 | <a href="#">available</a> |
| 1119 | <a href="#">R1-1710997</a> | HARQ-ACK feedback for CBG-based (re-)transmission in NR                         | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission       | 0 | <a href="#">available</a> |
| 1120 | <a href="#">R1-1710998</a> | Timing aspects for HARQ-ACK feedback                                            | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 103 | 5.1.3.3.5.1 | HARQ-ACK feedback timing                                   | 0 | <a href="#">available</a> |
| 1121 | <a href="#">R1-1710999</a> | On HARQ feedback determination                                                  | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 104 | 5.1.3.3.5.2 | HARQ-ACK multiplexing/bundling                             | 0 | <a href="#">available</a> |
| 1122 | <a href="#">R1-1711000</a> | On the number of HARQ processes                                                 | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 106 | 5.1.3.3.6.1 | Number of HARQ processes and HARQ RTT                      | 0 | <a href="#">available</a> |
| 1123 | <a href="#">R1-1711001</a> | On the HARQ soft buffer handling                                                | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 107 | 5.1.3.3.6.2 | Soft-buffer management                                     | 0 | <a href="#">available</a> |
| 1124 | <a href="#">R1-1711002</a> | On pre-emption indication                                                       | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                        | 0 | <a href="#">available</a> |
| 1125 | <a href="#">R1-1711003</a> | Pause-Resume Scheduling for Low Latency Uplink Transmissions                    | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 110 | 5.1.3.3.7.2 | Possible enhancements for uplink                           | 0 | <a href="#">available</a> |
| 1126 | <a href="#">R1-1711004</a> | Discussion on scheduling based URLLC transmission                               | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure | 0 | <a href="#">available</a> |
| 1127 | <a href="#">R1-1711005</a> | CSI measuring and reporting procedure for URLLC                                 | Nokia, Alcatel-Lucent<br>Shanghai Bell | Signe Ye       | <a href="#">45768</a> | discussion |          |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure | 0 | <a href="#">available</a> |
| 1128 | <a href="#">R1-1711006</a> | Issues and Control Design for UL Grant-free URLLC                               | Ill                                    | Chun-che Chien | <a href="#">43585</a> | discussion |          |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant               | 0 | <a href="#">available</a> |
| 1129 | <a href="#">R1-1711007</a> | Codeword to layer mapping for DL and UL                                         | Ericsson                               | Stephen Grant  | <a href="#">65572</a> | discussion | Decision |   |   | 32  | 5.1.2.1.1   | Codeword mapping                                           | 0 | <a href="#">noted</a>     |
| 1130 | <a href="#">R1-1711008</a> | UL MIMO for codebook based transmission                                         | Ericsson                               | Stephen Grant  | <a href="#">65572</a> | discussion | Decision |   |   | 33  | 5.1.2.1.2   | Codebook based transmission for UL                         | 0 | <a href="#">revised</a>   |

|      | A                          | B                                                                     | C        | D             | E                     | F          | G        | H | I | J  | K         | L                                               | M | N                         |
|------|----------------------------|-----------------------------------------------------------------------|----------|---------------|-----------------------|------------|----------|---|---|----|-----------|-------------------------------------------------|---|---------------------------|
| 1131 | <a href="#">R1-1711009</a> | UL MIMO for non-codebook based transmission                           | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 34 | 5.1.2.1.3 | Non-codebook based transmission for UL          | 0 | <a href="#">available</a> |
| 1132 | <a href="#">R1-1711010</a> | Robust Transmission Scheme for PUSCH                                  | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 35 | 5.1.2.1.4 | Diversity transmission for UL                   | 0 | <a href="#">available</a> |
| 1133 | <a href="#">R1-1711011</a> | PRB bundling                                                          | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 36 | 5.1.2.1.5 | PRB bundling for DL                             | 0 | <a href="#">available</a> |
| 1134 | <a href="#">R1-1711012</a> | UL multi-panel transmission                                           | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 37 | 5.1.2.1.6 | Multi-TRP and Multi-panel transmission          | 0 | <a href="#">available</a> |
| 1135 | <a href="#">R1-1711013</a> | DL multi-TRP and multi-panel transmission                             | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 37 | 5.1.2.1.6 | Multi-TRP and Multi-panel transmission          | 0 | <a href="#">noted</a>     |
| 1136 | <a href="#">R1-1711014</a> | On rate matching                                                      | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 38 | 5.1.2.1.7 | Rate matching                                   | 0 | <a href="#">noted</a>     |
| 1137 | <a href="#">R1-1711015</a> | On DL beam indication                                                 | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 41 | 5.1.2.2.1 | Beam management details                         | 0 | <a href="#">available</a> |
| 1138 | <a href="#">R1-1711016</a> | UL beam management details                                            | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 41 | 5.1.2.2.1 | Beam management details                         | 0 | <a href="#">noted</a>     |
| 1139 | <a href="#">R1-1711017</a> | Mechanism to recover from beam failure                                | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 42 | 5.1.2.2.2 | Mechanism to recover from beam failure          | 0 | <a href="#">available</a> |
| 1140 | <a href="#">R1-1711018</a> | Beam management in C-DRX                                              | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">available</a> |
| 1141 | <a href="#">R1-1711019</a> | On the use of SS for beam management                                  | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">available</a> |
| 1142 | <a href="#">R1-1711020</a> | Further results on beam management without beam indication            | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">available</a> |
| 1143 | <a href="#">R1-1711021</a> | Performance of beam grouping                                          | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">available</a> |
| 1144 | <a href="#">R1-1711022</a> | On beam grouping                                                      | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">available</a> |
| 1145 | <a href="#">R1-1711023</a> | Analysis of beam indication signalling options                        | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 43 | 5.1.2.2.3 | Other                                           | 0 | <a href="#">available</a> |
| 1146 | <a href="#">R1-1711024</a> | Further details of CSI framework                                      | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 45 | 5.1.2.3.1 | CSI framework                                   | 0 | <a href="#">noted</a>     |
| 1147 | <a href="#">R1-1711025</a> | On CSI acquisition and reporting                                      | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 46 | 5.1.2.3.2 | Details of CSI acquisition                      | 0 | <a href="#">available</a> |
| 1148 | <a href="#">R1-1711026</a> | Further discussion on CSI acquisition for reciprocity-based operation | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 47 | 5.1.2.3.3 | CSI acquisition for reciprocity based operation | 0 | <a href="#">revised</a>   |
| 1149 | <a href="#">R1-1711027</a> | CSI feedback and Transparent PDSCH Tx                                 | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 48 | 5.1.2.3.4 | CSI feedback                                    | 0 | <a href="#">available</a> |
| 1150 | <a href="#">R1-1711028</a> | Codebook subset restriction                                           | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 48 | 5.1.2.3.4 | CSI feedback                                    | 0 | <a href="#">available</a> |
| 1151 | <a href="#">R1-1711029</a> | Type I & II CSI reporting                                             | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 48 | 5.1.2.3.4 | CSI feedback                                    | 0 | <a href="#">available</a> |
| 1152 | <a href="#">R1-1711030</a> | Encoding and mapping of CSI parameters                                | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 48 | 5.1.2.3.4 | CSI feedback                                    | 0 | <a href="#">available</a> |
| 1153 | <a href="#">R1-1711031</a> | CSI feedback for multi-TRP                                            | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 48 | 5.1.2.3.4 | CSI feedback                                    | 0 | <a href="#">available</a> |
| 1154 | <a href="#">R1-1711032</a> | On Dynamic Triggering for CSI Reports and CSI-RS                      | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 49 | 5.1.2.3.5 | Other                                           | 0 | <a href="#">available</a> |
| 1155 | <a href="#">R1-1711033</a> | A comparison of CSI-RS activation schemes based on MAC CE and DCI     | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 49 | 5.1.2.3.5 | Other                                           | 0 | <a href="#">available</a> |
| 1156 | <a href="#">R1-1711034</a> | Identifying bounds on parameters in CSI framework                     | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 49 | 5.1.2.3.5 | Other                                           | 0 | <a href="#">available</a> |
| 1157 | <a href="#">R1-1711035</a> | Frequency parametrization for Type II CSI codebook                    | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 49 | 5.1.2.3.5 | Other                                           | 0 | <a href="#">available</a> |
| 1158 | <a href="#">R1-1711036</a> | Further details of measurement restriction configuration              | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 49 | 5.1.2.3.5 | Other                                           | 0 | <a href="#">available</a> |
| 1159 | <a href="#">R1-1711037</a> | Performance impact of inactive antenna ports                          | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 49 | 5.1.2.3.5 | Other                                           | 0 | <a href="#">revised</a>   |
| 1160 | <a href="#">R1-1711038</a> | On partial bands and CSI acquisition                                  | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 49 | 5.1.2.3.5 | Other                                           | 0 | <a href="#">available</a> |
| 1161 | <a href="#">R1-1711039</a> | NR CSI Computation Capability                                         | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 49 | 5.1.2.3.5 | Other                                           | 0 | <a href="#">available</a> |
| 1162 | <a href="#">R1-1711040</a> | On Multiplexing of RS types for downlink                              | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 51 | 5.1.2.4.1 | Multiplexing of different types of RSs          | 0 | <a href="#">available</a> |
| 1163 | <a href="#">R1-1711041</a> | On CSI-RS for CSI-acquisition                                         | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 52 | 5.1.2.4.2 | CSI-RS                                          | 0 | <a href="#">noted</a>     |
| 1164 | <a href="#">R1-1711042</a> | On CSI-RS for beam management                                         | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 52 | 5.1.2.4.2 | CSI-RS                                          | 0 | <a href="#">noted</a>     |
| 1165 | <a href="#">R1-1711043</a> | On DL DMRS design                                                     | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 53 | 5.1.2.4.3 | DMRS                                            | 0 | <a href="#">noted</a>     |
| 1166 | <a href="#">R1-1711044</a> | On DL DMRS evaluations                                                | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 53 | 5.1.2.4.3 | DMRS                                            | 0 | <a href="#">available</a> |
| 1167 | <a href="#">R1-1711045</a> | On UL DMRS design                                                     | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 53 | 5.1.2.4.3 | DMRS                                            | 0 | <a href="#">available</a> |
| 1168 | <a href="#">R1-1711046</a> | On UL DMRS evaluations                                                | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 53 | 5.1.2.4.3 | DMRS                                            | 0 | <a href="#">available</a> |
| 1169 | <a href="#">R1-1711047</a> | On PTRS DL design                                                     | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 54 | 5.1.2.4.4 | PT-RS                                           | 0 | <a href="#">available</a> |
| 1170 | <a href="#">R1-1711048</a> | On PTRS UL design                                                     | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 54 | 5.1.2.4.4 | PT-RS                                           | 0 | <a href="#">available</a> |
| 1171 | <a href="#">R1-1711049</a> | On SRS design                                                         | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 55 | 5.1.2.4.5 | SRS                                             | 0 | <a href="#">noted</a>     |
| 1172 | <a href="#">R1-1711050</a> | On time and frequency tracking of the channel                         | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 56 | 5.1.2.4.6 | TRS                                             | 0 | <a href="#">revised</a>   |
| 1173 | <a href="#">R1-1711051</a> | The QCL framework in NR                                               | Ericsson | Stephen Grant | <a href="#">65572</a> | discussion | Decision |   |   | 57 | 5.1.2.4.7 | QCL                                             | 0 | <a href="#">available</a> |

|      | A                          | B                                                                                               | C                | D              | E                     | F          | G        | H | I | J   | K           | L                                                                          | M | N                         |
|------|----------------------------|-------------------------------------------------------------------------------------------------|------------------|----------------|-----------------------|------------|----------|---|---|-----|-------------|----------------------------------------------------------------------------|---|---------------------------|
| 1174 | <a href="#">R1-1711052</a> | On the number of antenna ports for CSI-RS                                                       | Ericsson         | Stephen Grant  | <a href="#">65572</a> | discussion | Decision |   |   | 58  | 5.1.2.4.8   | Other                                                                      | 0 | <a href="#">available</a> |
| 1175 | <a href="#">R1-1711053</a> | On the collision between DMRS and DC subcarrier                                                 | Ericsson         | Stephen Grant  | <a href="#">65572</a> | discussion | Decision |   |   | 58  | 5.1.2.4.8   | Other                                                                      | 0 | <a href="#">available</a> |
| 1176 | <a href="#">R1-1711054</a> | On the NR UL power control framework                                                            | Ericsson         | Stephen Grant  | <a href="#">65572</a> | discussion | Decision |   |   | 140 | 5.1.9.2     | NR power control framework                                                 | 0 | <a href="#">available</a> |
| 1177 | <a href="#">R1-1711055</a> | Initial views on UE category                                                                    | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 4   | 4           | Incoming Liaison Statements                                                | 0 | <a href="#">noted</a>     |
| 1178 | <a href="#">R1-1711056</a> | Discussion on remaining details on SS sequence design for NR                                    | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 9   | 5.1.1.1.1   | Remaining details on SS sequence design                                    | 0 | <a href="#">available</a> |
| 1179 | <a href="#">R1-1711057</a> | Discussion on SS burst set composition for NR                                                   | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 10  | 5.1.1.1.2   | SS burst set composition                                                   | 0 | <a href="#">available</a> |
| 1180 | <a href="#">R1-1711058</a> | Discussion on timing indication based on SS block for NR                                        | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 11  | 5.1.1.1.3   | Timing indication based on SS block                                        | 0 | <a href="#">available</a> |
| 1181 | <a href="#">R1-1711059</a> | Discussion on remaining details on multiple SS block transmissions in wideband CC for NR        | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 12  | 5.1.1.1.4   | Remaining details on multiple SS block transmissions in wideband CC        | 0 | <a href="#">available</a> |
| 1182 | <a href="#">R1-1711060</a> | Discussion on NR-PBCH contents and payload size                                                 | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 14  | 5.1.1.2.1   | NR-PBCH contents and payload size                                          | 0 | <a href="#">available</a> |
| 1183 | <a href="#">R1-1711061</a> | Discussion on NR-PBCH design and SS block composition                                           | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 15  | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                                | 0 | <a href="#">revised</a>   |
| 1184 | <a href="#">R1-1711062</a> | Discussion on sequence design of DMRS for NR-PBCH                                               | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 16  | 5.1.1.2.3   | Sequence design of DMRS for NR-PBCH                                        | 0 | <a href="#">available</a> |
| 1185 | <a href="#">R1-1711063</a> | Discussion on remaining minimum system information delivery for NR                              | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 17  | 5.1.1.2.4   | Remaining minimum system information delivery                              | 0 | <a href="#">available</a> |
| 1186 | <a href="#">R1-1711064</a> | Discussion on paging design for NR                                                              | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 19  | 5.1.1.3     | Paging design                                                              | 0 | <a href="#">available</a> |
| 1187 | <a href="#">R1-1711065</a> | Discussion on PRACH preamble format details for long/short sequence length for NR               | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 21  | 5.1.1.4.1   | PRACH preamble format details for long/short sequence length               | 0 | <a href="#">available</a> |
| 1188 | <a href="#">R1-1711066</a> | Discussion on PRACH preamble format details for capacity enhancement and beam management for NR | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 22  | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management | 0 | <a href="#">available</a> |
| 1189 | <a href="#">R1-1711067</a> | Discussion on power ramping and power control during RA procedure for NR                        | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 23  | 5.1.1.4.3   | Power ramping and power control during RA procedure                        | 0 | <a href="#">available</a> |
| 1190 | <a href="#">R1-1711068</a> | Discussion on 4-step RA procedure for NR                                                        | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 24  | 5.1.1.4.4   | 4-step RA procedure                                                        | 0 | <a href="#">available</a> |
| 1191 | <a href="#">R1-1711069</a> | Discussion on NR RRM measurement based on SS block                                              | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 26  | 5.1.1.5.1   | Measurement based on SS block                                              | 0 | <a href="#">available</a> |
| 1192 | <a href="#">R1-1711070</a> | Discussion on NR RRM measurement based on CSI-RS for L3 mobility                                | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 27  | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility                                | 0 | <a href="#">available</a> |
| 1193 | <a href="#">R1-1711071</a> | Discussion on NR RLM and RLF                                                                    | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 28  | 5.1.1.5.3   | Radio link monitoring                                                      | 0 | <a href="#">available</a> |
| 1194 | <a href="#">R1-1711072</a> | Discussion on codeword mapping                                                                  | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 32  | 5.1.2.1.1   | Codeword mapping                                                           | 0 | <a href="#">available</a> |
| 1195 | <a href="#">R1-1711073</a> | Codebook design for uplink                                                                      | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 33  | 5.1.2.1.2   | Codebook based transmission for UL                                         | 0 | <a href="#">noted</a>     |
| 1196 | <a href="#">R1-1711074</a> | Beam determination for non-codebook based transmission for uplink                               | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 34  | 5.1.2.1.3   | Non-codebook based transmission for UL                                     | 0 | <a href="#">available</a> |
| 1197 | <a href="#">R1-1711075</a> | View on Beam Management Details                                                                 | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 41  | 5.1.2.2.1   | Beam management details                                                    | 0 | <a href="#">available</a> |
| 1198 | <a href="#">R1-1711076</a> | Further views on mechanism to recover from beam failure                                         | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure                                     | 0 | <a href="#">noted</a>     |
| 1199 | <a href="#">R1-1711077</a> | Discussion on CSI framework                                                                     | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 45  | 5.1.2.3.1   | CSI framework                                                              | 0 | <a href="#">available</a> |
| 1200 | <a href="#">R1-1711078</a> | On CSI measurement for NR                                                                       | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 46  | 5.1.2.3.2   | Details of CSI acquisition                                                 | 0 | <a href="#">available</a> |
| 1201 | <a href="#">R1-1711079</a> | CSI Feedback Design for NR MIMO                                                                 | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 48  | 5.1.2.3.4   | CSI feedback                                                               | 0 | <a href="#">available</a> |
| 1202 | <a href="#">R1-1711080</a> | Feedback Design for CSI Type I                                                                  | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 48  | 5.1.2.3.4   | CSI feedback                                                               | 0 | <a href="#">available</a> |
| 1203 | <a href="#">R1-1711081</a> | Feedback Design for CSI Type II                                                                 | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 48  | 5.1.2.3.4   | CSI feedback                                                               | 0 | <a href="#">available</a> |
| 1204 | <a href="#">R1-1711082</a> | CSI-RS for beam management                                                                      | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 52  | 5.1.2.4.2   | CSI-RS                                                                     | 0 | <a href="#">available</a> |
| 1205 | <a href="#">R1-1711083</a> | CSI-RS for CSI acquisition                                                                      | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 52  | 5.1.2.4.2   | CSI-RS                                                                     | 0 | <a href="#">available</a> |
| 1206 | <a href="#">R1-1711084</a> | Evaluation results of DM-RS                                                                     | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 53  | 5.1.2.4.3   | DMRS                                                                       | 0 | <a href="#">available</a> |
| 1207 | <a href="#">R1-1711085</a> | Discussion on DM-RS design                                                                      | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 53  | 5.1.2.4.3   | DMRS                                                                       | 0 | <a href="#">available</a> |
| 1208 | <a href="#">R1-1711086</a> | Discussion on PT-RS design                                                                      | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 54  | 5.1.2.4.4   | PT-RS                                                                      | 0 | <a href="#">available</a> |
| 1209 | <a href="#">R1-1711087</a> | Discussions on NR SRS Design                                                                    | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 55  | 5.1.2.4.5   | SRS                                                                        | 0 | <a href="#">noted</a>     |
| 1210 | <a href="#">R1-1711088</a> | Views on remaining issues of resource mapping for NR-PDCCH                                      | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping                                | 0 | <a href="#">available</a> |
| 1211 | <a href="#">R1-1711089</a> | Views on DM-RS design for NR-PDCCH                                                              | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 64  | 5.1.3.1.1.2 | RS structure/mapping                                                       | 0 | <a href="#">available</a> |
| 1212 | <a href="#">R1-1711090</a> | Views on control resource set configuration for NR-PDCCH                                        | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 66  | 5.1.3.1.2.1 | CORESET configuration                                                      | 0 | <a href="#">available</a> |
| 1213 | <a href="#">R1-1711091</a> | Views on search space design for NR-PDCCH                                                       | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 67  | 5.1.3.1.2.2 | Search space design                                                        | 0 | <a href="#">available</a> |
| 1214 | <a href="#">R1-1711092</a> | Views on multi-beam based NR-PDCCH                                                              | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 68  | 5.1.3.1.2.3 | Multi-beam operation for PDCCH                                             | 0 | <a href="#">available</a> |
| 1215 | <a href="#">R1-1711093</a> | Resource sharing between data and control channels                                              | NTT DOCOMO, INC. | Kazuaki Takeda | <a href="#">43136</a> | discussion |          |   |   | 69  | 5.1.3.1.3   | Resource sharing between PDCCH and PDSCH                                   | 0 | <a href="#">available</a> |

|      | A                          | B                                                                          | C                     | D              | E                     | F          | G          | H | I | J   | K           | L                                                              | M | N                         |
|------|----------------------------|----------------------------------------------------------------------------|-----------------------|----------------|-----------------------|------------|------------|---|---|-----|-------------|----------------------------------------------------------------|---|---------------------------|
| 1216 | <a href="#">R1-1711094</a> | Views on structure of group-common PDCCH                                   | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCH                                | 0 | <a href="#">available</a> |
| 1217 | <a href="#">R1-1711095</a> | Views on contents of group-common PDCCH                                    | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                                 | 0 | <a href="#">available</a> |
| 1218 | <a href="#">R1-1711096</a> | Views on UE behavior for group-common PDCCH                                | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH                     | 0 | <a href="#">available</a> |
| 1219 | <a href="#">R1-1711097</a> | DL control channel design for URLLC                                        | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 74  | 5.1.3.1.5   | Ultra-reliable part of URLLC for DL control                    | 0 | <a href="#">available</a> |
| 1220 | <a href="#">R1-1711098</a> | Sequence-based PUCCH for UCI of up to 2 bits                               | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                            | 0 | <a href="#">available</a> |
| 1221 | <a href="#">R1-1711099</a> | FDM-based PUCCH for UCI of more than 2 bits                                | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits                        | 0 | <a href="#">available</a> |
| 1222 | <a href="#">R1-1711100</a> | Long-PUCCH for UCI of up to 2 bits                                         | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 81  | 5.1.3.2.2.1 | Long-PUCCH for UCI of up to 2 bits                             | 0 | <a href="#">available</a> |
| 1223 | <a href="#">R1-1711101</a> | Long-PUCCH for UCI of more than 2 bits                                     | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 82  | 5.1.3.2.2.2 | Long-PUCCH for UCI of more than 2 bits                         | 0 | <a href="#">available</a> |
| 1224 | <a href="#">R1-1711102</a> | Long-PUCCH for more than one slot                                          | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 83  | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots                      | 0 | <a href="#">available</a> |
| 1225 | <a href="#">R1-1711103</a> | PUCCH resource allocation                                                  | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 85  | 5.1.3.2.4   | Resource allocation for PUCCH                                  | 0 | <a href="#">available</a> |
| 1226 | <a href="#">R1-1711104</a> | UCI on PUSCH                                                               | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 87  | 5.1.3.2.5.1 | UCI piggyback on PUSCH                                         | 0 | <a href="#">available</a> |
| 1227 | <a href="#">R1-1711105</a> | Multiplexing of PUCCH and PUSCH                                            | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 88  | 5.1.3.2.5.2 | PUCCH-PUSCH multiplexing                                       | 0 | <a href="#">available</a> |
| 1228 | <a href="#">R1-1711106</a> | UL control channel design for URLLC                                        | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 89  | 5.1.3.2.6   | Ultra-reliable part of URLLC for UL control                    | 0 | <a href="#">available</a> |
| 1229 | <a href="#">R1-1711107</a> | Frequency-domain resource allocation                                       | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                           | 0 | <a href="#">available</a> |
| 1230 | <a href="#">R1-1711108</a> | Time-domain resource allocation                                            | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 94  | 5.1.3.3.1.2 | Time-domain resource allocation                                | 0 | <a href="#">available</a> |
| 1231 | <a href="#">R1-1711109</a> | Transport block size determination                                         | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 95  | 5.1.3.3.1.3 | Transport block size determination                             | 0 | <a href="#">available</a> |
| 1232 | <a href="#">R1-1711110</a> | Scheduling request design in NR system                                     | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 96  | 5.1.3.3.2   | UL data transmission procedure with grant                      | 0 | <a href="#">available</a> |
| 1233 | <a href="#">R1-1711111</a> | Overall solutions for UL grant free transmission                           | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                   | 0 | <a href="#">available</a> |
| 1234 | <a href="#">R1-1711112</a> | CBG construction                                                           | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 99  | 5.1.3.3.4.1 | CBG construction                                               | 0 | <a href="#">available</a> |
| 1235 | <a href="#">R1-1711113</a> | DL control signalling for CBG-based (re)transmission                       | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission           | 0 | <a href="#">available</a> |
| 1236 | <a href="#">R1-1711114</a> | UL control signalling for CBG-based (re)transmission                       | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission           | 0 | <a href="#">available</a> |
| 1237 | <a href="#">R1-1711115</a> | HARQ-ACK timing                                                            | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 103 | 5.1.3.3.5.1 | HARQ-ACK feedback timing                                       | 0 | <a href="#">available</a> |
| 1238 | <a href="#">R1-1711116</a> | HARQ-ACK multiplexing                                                      | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 104 | 5.1.3.3.5.2 | HARQ-ACK multiplexing/bundling                                 | 0 | <a href="#">available</a> |
| 1239 | <a href="#">R1-1711117</a> | Processing time and HARQ process number for NR                             | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 106 | 5.1.3.3.6.1 | Number of HARQ processes and HARQ RTT                          | 0 | <a href="#">available</a> |
| 1240 | <a href="#">R1-1711118</a> | Soft-buffer size and management                                            | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 107 | 5.1.3.3.6.2 | Soft-buffer management                                         | 0 | <a href="#">available</a> |
| 1241 | <a href="#">R1-1711119</a> | Pre-emption indication for downlink                                        | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                            | 0 | <a href="#">available</a> |
| 1242 | <a href="#">R1-1711120</a> | Multiplexing of different data durations for uplink                        | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 110 | 5.1.3.3.7.2 | Possible enhancements for uplink                               | 0 | <a href="#">available</a> |
| 1243 | <a href="#">R1-1711121</a> | Scheduling and HARQ procedures for URLLC                                   | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure     | 0 | <a href="#">available</a> |
| 1244 | <a href="#">R1-1711122</a> | NR carrier aggregation                                                     | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 115 | 5.1.3.4.1.1 | Self-/cross-carrier scheduling and joint/separate UCI feedback | 0 | <a href="#">available</a> |
| 1245 | <a href="#">R1-1711123</a> | LTE-NR Dual connectivity                                                   | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 117 | 5.1.3.4.2   | Dual connectivity                                              | 0 | <a href="#">available</a> |
| 1246 | <a href="#">R1-1711124</a> | Distributed simple parity check Polar codes                                | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 127 | 5.1.4.2.1   | Code construction                                              | 0 | <a href="#">available</a> |
| 1247 | <a href="#">R1-1711125</a> | Performance evaluation of DSPC-Polar codes                                 | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 127 | 5.1.4.2.1   | Code construction                                              | 0 | <a href="#">noted</a>     |
| 1248 | <a href="#">R1-1711126</a> | Sequence design of Polar codes                                             | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 128 | 5.1.4.2.2   | Sequence design                                                | 0 | <a href="#">noted</a>     |
| 1249 | <a href="#">R1-1711127</a> | Rate matching of Polar codes                                               | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 128 | 5.1.4.2.2   | Sequence design                                                | 0 | <a href="#">available</a> |
| 1250 | <a href="#">R1-1711128</a> | Interleaving design of Polar codes                                         | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 129 | 5.1.4.2.3   | Other                                                          | 0 | <a href="#">available</a> |
| 1251 | <a href="#">R1-1711129</a> | Discussion on cross-link interference mitigation for duplexing flexibility | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 134 | 5.1.6.1     | Cross-link interference management                             | 0 | <a href="#">noted</a>     |
| 1252 | <a href="#">R1-1711130</a> | Discussion on prioritized scenarios for duplexing flexibility              | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 135 | 5.1.6.2     | Other                                                          | 0 | <a href="#">available</a> |
| 1253 | <a href="#">R1-1711131</a> | Remaining issues on wider bandwidth operations for NR                      | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 136 | 5.1.7       | Wider bandwidth operations                                     | 0 | <a href="#">available</a> |
| 1254 | <a href="#">R1-1711132</a> | Views on single UL transmission and UL sharing                             | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 137 | 5.1.8       | NR-LTE co-existence                                            | 0 | <a href="#">noted</a>     |
| 1255 | <a href="#">R1-1711133</a> | LTE-NR power sharing mechanism                                             | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 139 | 5.1.9.1     | Power sharing mechanism                                        | 0 | <a href="#">available</a> |
| 1256 | <a href="#">R1-1711134</a> | Power control framework for PUSCH                                          | NTT DOCOMO, INC.      | Kazuaki Takeda | <a href="#">43136</a> | discussion |            |   |   | 140 | 5.1.9.2     | NR power control framework                                     | 0 | <a href="#">noted</a>     |
| 1257 | <a href="#">R1-1711135</a> | Synchronization signal sequence design                                     | Qualcomm Incorporated | Peter Gaal     | <a href="#">57198</a> | discussion | Discussion |   |   | 9   | 5.1.1.1.1   | Remaining details on SS sequence design                        | 0 | <a href="#">available</a> |
| 1258 | <a href="#">R1-1711136</a> | SS burst set composition consideration                                     | Qualcomm Incorporated | Peter Gaal     | <a href="#">57198</a> | discussion | Discussion |   |   | 10  | 5.1.1.1.2   | SS burst set composition                                       | 0 | <a href="#">revised</a>   |

|      | A                          | B                                                            | C                     | D          | E                     | F          | G          | H | I | J  | K           | L                                                                          | M | N                         |
|------|----------------------------|--------------------------------------------------------------|-----------------------|------------|-----------------------|------------|------------|---|---|----|-------------|----------------------------------------------------------------------------|---|---------------------------|
| 1259 | <a href="#">R1-1711132</a> | Timing indication based on SS block consideration            | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 11 | 5.1.1.1.3   | Timing indication based on SS block                                        | 0 | <a href="#">revised</a>   |
| 1260 | <a href="#">R1-1711138</a> | Multiple SS block transmissions design in wideband CC        | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 12 | 5.1.1.1.4   | Remaining details on multiple SS block transmissions in wideband CC        | 0 | <a href="#">available</a> |
| 1261 | <a href="#">R1-1711139</a> | PBCH contents and payload size consideration                 | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 14 | 5.1.1.2.1   | NR-PBCH contents and payload size                                          | 0 | <a href="#">available</a> |
| 1262 | <a href="#">R1-1711140</a> | SS block composition and PBCH RE mapping design              | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 15 | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                                | 0 | <a href="#">noted</a>     |
| 1263 | <a href="#">R1-1711141</a> | DMRS design for NR-PBCH                                      | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 16 | 5.1.1.2.3   | Sequence design of DMRS for NR-PBCH                                        | 0 | <a href="#">available</a> |
| 1264 | <a href="#">R1-1711142</a> | Remaining system information delivery consideration          | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 17 | 5.1.1.2.4   | Remaining minimum system information delivery                              | 0 | <a href="#">available</a> |
| 1265 | <a href="#">R1-1711143</a> | Other system information delivery consideration              | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 18 | 5.1.1.2.5   | Other system information delivery                                          | 0 | <a href="#">available</a> |
| 1266 | <a href="#">R1-1711144</a> | Paging design consideration                                  | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 19 | 5.1.1.3     | Paging design                                                              | 0 | <a href="#">available</a> |
| 1267 | <a href="#">R1-1711145</a> | PRACH preamble format design for long/short sequence length  | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 21 | 5.1.1.4.1   | PRACH preamble format details for long/short sequence length               | 0 | <a href="#">available</a> |
| 1268 | <a href="#">R1-1711146</a> | PRACH preamble design for capacity enhancement               | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 22 | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management | 0 | <a href="#">available</a> |
| 1269 | <a href="#">R1-1711147</a> | Power ramping and power control for RA procedure             | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 23 | 5.1.1.4.3   | Power ramping and power control during RA procedure                        | 0 | <a href="#">available</a> |
| 1270 | <a href="#">R1-1711148</a> | 4-step RACH procedure consideration                          | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 24 | 5.1.1.4.4   | 4-step RA procedure                                                        | 0 | <a href="#">available</a> |
| 1271 | <a href="#">R1-1711149</a> | Measurement based on SS block consideration                  | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 26 | 5.1.1.5.1   | Measurement based on SS block                                              | 0 | <a href="#">available</a> |
| 1272 | <a href="#">R1-1711150</a> | Measurement based on CSI-RS for L3 mobility consideration    | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 27 | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility                                | 0 | <a href="#">available</a> |
| 1273 | <a href="#">R1-1711151</a> | Radio link monitoring consideration                          | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 28 | 5.1.1.5.3   | Radio link monitoring                                                      | 0 | <a href="#">noted</a>     |
| 1274 | <a href="#">R1-1711152</a> | CW to layer mapping and frequency domain interleaving        | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 32 | 5.1.2.1.1   | Codeword mapping                                                           | 0 | <a href="#">noted</a>     |
| 1275 | <a href="#">R1-1711153</a> | Codebook based UL transmission                               | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 33 | 5.1.2.1.2   | Codebook based transmission for UL                                         | 0 | <a href="#">available</a> |
| 1276 | <a href="#">R1-1711154</a> | Non-codebook based UL transmission                           | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 34 | 5.1.2.1.3   | Non-codebook based transmission for UL                                     | 0 | <a href="#">noted</a>     |
| 1277 | <a href="#">R1-1711155</a> | On UL diversity transmission scheme                          | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 35 | 5.1.2.1.4   | Diversity transmission for UL                                              | 0 | <a href="#">available</a> |
| 1278 | <a href="#">R1-1711156</a> | Discussion on PRB bundling for DL                            | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 36 | 5.1.2.1.5   | PRB bundling for DL                                                        | 0 | <a href="#">noted</a>     |
| 1279 | <a href="#">R1-1711157</a> | On multi-TRP and multi-panel transmission                    | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 37 | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission                                     | 0 | <a href="#">available</a> |
| 1280 | <a href="#">R1-1711158</a> | On PDSCH and PUSCH RE mapping                                | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 38 | 5.1.2.1.7   | Rate matching                                                              | 0 | <a href="#">available</a> |
| 1281 | <a href="#">R1-1711159</a> | Transmission scheme for broadcast PDSCH                      | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 39 | 5.1.2.1.8   | Other                                                                      | 0 | <a href="#">noted</a>     |
| 1282 | <a href="#">R1-1711160</a> | Beam management for NR                                       | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 41 | 5.1.2.2.1   | Beam management details                                                    | 0 | <a href="#">noted</a>     |
| 1283 | <a href="#">R1-1711161</a> | Beam recovery procedures                                     | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 42 | 5.1.2.2.2   | Mechanism to recover from beam failure                                     | 0 | <a href="#">available</a> |
| 1284 | <a href="#">R1-1711162</a> | Details of CSI framework                                     | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 45 | 5.1.2.3.1   | CSI framework                                                              | 0 | <a href="#">available</a> |
| 1285 | <a href="#">R1-1711163</a> | Details of CSI acquisition                                   | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 46 | 5.1.2.3.2   | Details of CSI acquisition                                                 | 0 | <a href="#">available</a> |
| 1286 | <a href="#">R1-1711164</a> | CSI acquisition for reciprocity based operation              | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 47 | 5.1.2.3.3   | CSI acquisition for reciprocity based operation                            | 0 | <a href="#">available</a> |
| 1287 | <a href="#">R1-1711165</a> | On Type I and Type II CSI feedback using PUCCH               | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 48 | 5.1.2.3.4   | CSI feedback                                                               | 0 | <a href="#">available</a> |
| 1288 | <a href="#">R1-1711166</a> | On CSI feedback for open- or semi-open-loop transmission     | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 48 | 5.1.2.3.4   | CSI feedback                                                               | 0 | <a href="#">available</a> |
| 1289 | <a href="#">R1-1711167</a> | On multiplexing of different types of RSs                    | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 51 | 5.1.2.4.1   | Multiplexing of different types of RSs                                     | 0 | <a href="#">available</a> |
| 1290 | <a href="#">R1-1711168</a> | Discussion on CSI-RS design                                  | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 52 | 5.1.2.4.2   | CSI-RS                                                                     | 0 | <a href="#">revised</a>   |
| 1291 | <a href="#">R1-1711169</a> | Discussion on UL DMRS design                                 | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 53 | 5.1.2.4.3   | DMRS                                                                       | 0 | <a href="#">available</a> |
| 1292 | <a href="#">R1-1711170</a> | Discussion on DL DMRS design                                 | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 53 | 5.1.2.4.3   | DMRS                                                                       | 0 | <a href="#">available</a> |
| 1293 | <a href="#">R1-1711171</a> | Evaluation of UL DMRS design                                 | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 53 | 5.1.2.4.3   | DMRS                                                                       | 0 | <a href="#">available</a> |
| 1294 | <a href="#">R1-1711172</a> | Evaluation of DL DMRS design                                 | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 53 | 5.1.2.4.3   | DMRS                                                                       | 0 | <a href="#">available</a> |
| 1295 | <a href="#">R1-1711173</a> | Phase and frequency tracking reference signal considerations | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 54 | 5.1.2.4.4   | PT-RS                                                                      | 0 | <a href="#">available</a> |
| 1296 | <a href="#">R1-1711174</a> | Discussion on SRS design                                     | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 55 | 5.1.2.4.5   | SRS                                                                        | 0 | <a href="#">noted</a>     |
| 1297 | <a href="#">R1-1711175</a> | Further analysis on fine time/frequency tracking RS design   | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 56 | 5.1.2.4.6   | TRS                                                                        | 0 | <a href="#">noted</a>     |
| 1298 | <a href="#">R1-1711176</a> | Discussion on QCL                                            | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 57 | 5.1.2.4.7   | QCL                                                                        | 0 | <a href="#">noted</a>     |
| 1299 | <a href="#">R1-1711177</a> | PDCC structure                                               | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 63 | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping                                | 0 | <a href="#">revised</a>   |
| 1300 | <a href="#">R1-1711178</a> | RS for DL control channel                                    | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |   | 64 | 5.1.3.1.1.2 | RS structure/mapping                                                       | 0 | <a href="#">revised</a>   |

|      | A                          | B                                                                                         | C                     | D          | E                     | F          | G          | H | I                 | J   | K           | L                                                             | M | N                         |
|------|----------------------------|-------------------------------------------------------------------------------------------|-----------------------|------------|-----------------------|------------|------------|---|-------------------|-----|-------------|---------------------------------------------------------------|---|---------------------------|
| 1301 | <a href="#">R1-1711179</a> | Control resource set and search space                                                     | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 66  | 5.1.3.1.2.1 | CORESET configuration                                         | 0 | <a href="#">available</a> |
| 1302 | <a href="#">R1-1711180</a> | Nested search space design                                                                | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 67  | 5.1.3.1.2.2 | Search space design                                           | 0 | <a href="#">available</a> |
| 1303 | <a href="#">R1-1711181</a> | Multi-beam control operation                                                              | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 68  | 5.1.3.1.2.3 | Multi-beam operation for PDCCH                                | 0 | <a href="#">withdrawn</a> |
| 1304 | <a href="#">R1-1711182</a> | Resource reuse for data in DL control region                                              | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 69  | 5.1.3.1.3   | Resource sharing between PDCCH and PDSCH                      | 0 | <a href="#">available</a> |
| 1305 | <a href="#">R1-1711183</a> | Structure of group common PDCCH                                                           | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCH                               | 0 | <a href="#">available</a> |
| 1306 | <a href="#">R1-1711184</a> | Contents of group common PDCCH                                                            | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                                | 0 | <a href="#">revised</a>   |
| 1307 | <a href="#">R1-1711185</a> | UE behaviour related to group common PDCCH                                                | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH                    | 0 | <a href="#">available</a> |
| 1308 | <a href="#">R1-1711186</a> | Common control resource set signaling in MIB                                              | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 75  | 5.1.3.1.6   | Other                                                         | 0 | <a href="#">available</a> |
| 1309 | <a href="#">R1-1711187</a> | Advanced Grant Indication for UE Power Saving                                             | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 75  | 5.1.3.1.6   | Other                                                         | 0 | <a href="#">available</a> |
| 1310 | <a href="#">R1-1711188</a> | Channelization of 1-symbol short PUCCH with 1 or 2 bits payload                           | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                           | 0 | <a href="#">available</a> |
| 1311 | <a href="#">R1-1711189</a> | Channelization of 1-symbol short PUCCH with more than 2 bits payload                      | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits                       | 0 | <a href="#">available</a> |
| 1312 | <a href="#">R1-1711190</a> | Long PUCCH design with 1 or 2 bits UCI payload                                            | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 81  | 5.1.3.2.2.1 | Long-PUCCH for UCI of up to 2 bits                            | 0 | <a href="#">available</a> |
| 1313 | <a href="#">R1-1711191</a> | Long PUCCH design with more than 2 bits UCI payload                                       | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 82  | 5.1.3.2.2.2 | Long-PUCCH for UCI of more than 2 bits                        | 0 | <a href="#">available</a> |
| 1314 | <a href="#">R1-1711192</a> | Long PUCCH over multiple slots                                                            | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 83  | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots                     | 0 | <a href="#">available</a> |
| 1315 | <a href="#">R1-1711193</a> | Transmit diversity for PUCCH                                                              | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 84  | 5.1.3.2.3   | Transmit diversity for PUCCH                                  | 0 | <a href="#">available</a> |
| 1316 | <a href="#">R1-1711194</a> | Resource allocation for PUCCH                                                             | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 85  | 5.1.3.2.4   | Resource allocation for PUCCH                                 | 0 | <a href="#">available</a> |
| 1317 | <a href="#">R1-1711195</a> | UCI piggyback on PUSCH                                                                    | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 87  | 5.1.3.2.5.1 | UCI piggyback on PUSCH                                        | 0 | <a href="#">available</a> |
| 1318 | <a href="#">R1-1711196</a> | Multiplexing of PUCCH and PUSCH                                                           | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 88  | 5.1.3.2.5.2 | PUCCH-PUSCH multiplexing                                      | 0 | <a href="#">available</a> |
| 1319 | <a href="#">R1-1711197</a> | MPR issue with distributed RB allocation in UL                                            | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                          | 0 | <a href="#">available</a> |
| 1320 | <a href="#">R1-1711198</a> | Short PUSCH transmission in UL short duration                                             | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                          | 0 | <a href="#">available</a> |
| 1321 | <a href="#">R1-1711199</a> | Discussion TB size determination                                                          | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 95  | 5.1.3.3.1.3 | Transport block size determination                            | 0 | <a href="#">available</a> |
| 1322 | <a href="#">R1-1711200</a> | Simultaneous UL SR channel                                                                | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 96  | 5.1.3.3.2   | UL data transmission procedure with grant                     | 0 | <a href="#">available</a> |
| 1323 | <a href="#">R1-1711201</a> | Uplink Resource for SR                                                                    | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 80  | 5.1.3.2.2   | PUCCH in long-duration                                        | 0 | <a href="#">available</a> |
| 1324 | <a href="#">R1-1711202</a> | CBG Construction Principles for CBG-based Transmission with Multi-Bit HARQ feedback       | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 99  | 5.1.3.3.4.1 | CBG construction                                              | 0 | <a href="#">available</a> |
| 1325 | <a href="#">R1-1711203</a> | DCI considerations for CBG-based (re-)Transmissions                                       | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re-)transmission         | 0 | <a href="#">available</a> |
| 1326 | <a href="#">R1-1711204</a> | UCI considerations for CBG-based (re-)Transmissions                                       | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re-)transmission         | 0 | <a href="#">available</a> |
| 1327 | <a href="#">R1-1711205</a> | Low latency impact analysis on user plane and control plane                               | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 103 | 5.1.3.3.5.1 | HARQ-ACK feedback timing                                      | 0 | <a href="#">available</a> |
| 1328 | <a href="#">R1-1711206</a> | UE processing time                                                                        | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 106 | 5.1.3.3.6.1 | Number of HARQ processes and HARQ RTT                         | 0 | <a href="#">available</a> |
| 1329 | <a href="#">R1-1711207</a> | Considerations for soft buffer management                                                 | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 107 | 5.1.3.3.6.2 | Soft-buffer management                                        | 0 | <a href="#">available</a> |
| 1330 | <a href="#">R1-1711208</a> | Timing advance for different numerology                                                   | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 110 | 5.1.3.3.7.2 | Possible enhancements for uplink                              | 0 | <a href="#">available</a> |
| 1331 | <a href="#">R1-1711209</a> | CA with mixed numerology                                                                  | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   | Late contribution | 115 | 5.1.3.4.1.1 | Self/cross-carrier scheduling and joint/separate UCI feedback | 0 | <a href="#">available</a> |
| 1332 | <a href="#">R1-1711210</a> | CRC attachment                                                                            | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 121 | 5.1.4.1.1.1 | CRC attachment                                                | 0 | <a href="#">noted</a>     |
| 1333 | <a href="#">R1-1711211</a> | LDPC segmentation                                                                         | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 122 | 5.1.4.1.1.2 | Segmentation                                                  | 0 | <a href="#">noted</a>     |
| 1334 | <a href="#">R1-1711212</a> | LDPC rate matching                                                                        | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 123 | 5.1.4.1.1.3 | Rate matching                                                 | 0 | <a href="#">available</a> |
| 1335 | <a href="#">R1-1711213</a> | LDPC rate compatible design                                                               | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 125 | 5.1.4.1.2   | LDPC code design                                              | 0 | <a href="#">revised</a>   |
| 1336 | <a href="#">R1-1711214</a> | Early termination scheme for Polar codes                                                  | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 127 | 5.1.4.2.1   | Code construction                                             | 0 | <a href="#">available</a> |
| 1337 | <a href="#">R1-1711215</a> | Evaluation of early termination for Polar codes                                           | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 127 | 5.1.4.2.1   | Code construction                                             | 0 | <a href="#">noted</a>     |
| 1338 | <a href="#">R1-1711216</a> | Decoding and encoding latency for polar codes with PC frozen bits or distributed CRC bits | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 127 | 5.1.4.2.1   | Code construction                                             | 0 | <a href="#">noted</a>     |
| 1339 | <a href="#">R1-1711217</a> | Performance comparison between CA-polar and PC-polar                                      | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 127 | 5.1.4.2.1   | Code construction                                             | 0 | <a href="#">available</a> |
| 1340 | <a href="#">R1-1711218</a> | Sequence construction of Polar codes for control channel                                  | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 128 | 5.1.4.2.2   | Sequence design                                               | 0 | <a href="#">revised</a>   |
| 1341 | <a href="#">R1-1711219</a> | Determination of the values for the parameters in rate-matching for control channel       | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 128 | 5.1.4.2.2   | Sequence design                                               | 0 | <a href="#">available</a> |
| 1342 | <a href="#">R1-1711220</a> | Rate-matching scheme for control channel                                                  | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 128 | 5.1.4.2.2   | Sequence design                                               | 0 | <a href="#">available</a> |
| 1343 | <a href="#">R1-1711221</a> | Design of Polar code for large UCI with segmentation                                      | Qualcomm Incorporated | Peter Gaal | <a href="#">57198</a> | discussion | Discussion |   |                   | 129 | 5.1.4.2.3   | Other                                                         | 0 | <a href="#">available</a> |

|      | A                          | B                                                                                                        | C                                   | D                     | E                     | F          | G          | H | I                 | J   | K           | L                                                    | M | N                         |
|------|----------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|-----------------------|------------|------------|---|-------------------|-----|-------------|------------------------------------------------------|---|---------------------------|
| 1344 | <a href="#">R1-1711222</a> | Design and evaluation of Interleaver for Polar codes                                                     | Qualcomm Incorporated               | Peter Gaal            | <a href="#">57198</a> | discussion | Discussion |   |                   | 129 | 5.1.4.2.3   | Other                                                | 0 | <a href="#">available</a> |
| 1345 | <a href="#">R1-1711223</a> | PBCH channel coding                                                                                      | Qualcomm Incorporated               | Peter Gaal            | <a href="#">57198</a> | discussion | Discussion |   |                   | 130 | 5.1.4.3     | PBCH                                                 | 0 | <a href="#">revised</a>   |
| 1346 | <a href="#">R1-1711224</a> | Consideration for MCS table                                                                              | Qualcomm Incorporated               | Peter Gaal            | <a href="#">57198</a> | discussion | Discussion |   |                   | 132 | 5.1.5       | Modulation                                           | 0 | <a href="#">noted</a>     |
| 1347 | <a href="#">R1-1711225</a> | Dynamic TDD UE-to-UE measurement considerations                                                          | Qualcomm Incorporated               | Peter Gaal            | <a href="#">57198</a> | discussion | Discussion |   |                   | 134 | 5.1.6.1     | Cross-link interference management                   | 0 | <a href="#">available</a> |
| 1348 | <a href="#">R1-1711226</a> | Dynamic TDD Cross-link interference management consideration                                             | Qualcomm Incorporated               | Peter Gaal            | <a href="#">57198</a> | discussion | Discussion |   |                   | 134 | 5.1.6.1     | Cross-link interference management                   | 0 | <a href="#">available</a> |
| 1349 | <a href="#">R1-1711227</a> | UE Power Saving during Active State                                                                      | Qualcomm Incorporated               | Peter Gaal            | <a href="#">57198</a> | discussion | Discussion |   |                   | 136 | 5.1.7       | Wider bandwidth operations                           | 0 | <a href="#">available</a> |
| 1350 | <a href="#">R1-1711228</a> | NR LTE Adjacent Channel Coexistence Consideration                                                        | Qualcomm Incorporated               | Peter Gaal            | <a href="#">57198</a> | discussion | Discussion |   |                   | 137 | 5.1.8       | NR-LTE co-existence                                  | 0 | <a href="#">available</a> |
| 1351 | <a href="#">R1-1711229</a> | NR-LTE Co-channel Coexistence Considerations                                                             | Qualcomm Incorporated               | Peter Gaal            | <a href="#">57198</a> | discussion | Discussion |   |                   | 137 | 5.1.8       | NR-LTE co-existence                                  | 0 | <a href="#">noted</a>     |
| 1352 | <a href="#">R1-1711230</a> | Power control and PHR for NR                                                                             | Qualcomm Incorporated               | Peter Gaal            | <a href="#">57198</a> | discussion | Discussion |   |                   | 140 | 5.1.9.2     | NR power control framework                           | 0 | <a href="#">noted</a>     |
| 1353 | <a href="#">R1-1711231</a> | TDD-SUL CA scenario                                                                                      | Qualcomm Incorporated               | Peter Gaal            | <a href="#">57198</a> | discussion | Discussion |   | Late contribution | 142 | 5.1.11      | Other                                                | 0 | <a href="#">withdrawn</a> |
| 1354 | <a href="#">R1-1711232</a> | Indication of actually transmitted SS blocks                                                             | Sharp                               | Toshizo Nogami        | <a href="#">60264</a> | other      |            |   |                   | 10  | 5.1.1.1.2   | SS burst set composition                             | 0 | <a href="#">available</a> |
| 1355 | <a href="#">R1-1711233</a> | Remaining issues on power ramping in NR                                                                  | Sharp                               | Toshizo Nogami        | <a href="#">60264</a> | other      |            |   |                   | 23  | 5.1.1.4.3   | Power ramping and power control during RA procedure  | 0 | <a href="#">available</a> |
| 1356 | <a href="#">R1-1711234</a> | Discussion on mechanisms for beam failure recovery                                                       | Sharp                               | Toshizo Nogami        | <a href="#">60264</a> | other      |            |   |                   | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure               | 0 | <a href="#">available</a> |
| 1357 | <a href="#">R1-1711235</a> | REG bundling for NR PDCCH                                                                                | Sharp                               | Toshizo Nogami        | <a href="#">60264</a> | other      |            |   |                   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping          | 0 | <a href="#">available</a> |
| 1358 | <a href="#">R1-1711236</a> | Indication of PDSCH starting position for NR                                                             | Sharp                               | Toshizo Nogami        | <a href="#">60264</a> | other      |            |   |                   | 69  | 5.1.3.1.3   | Resource sharing between PDCCH and PDSCH             | 0 | <a href="#">available</a> |
| 1359 | <a href="#">R1-1711237</a> | Group common PDCCH structure for NR                                                                      | Sharp                               | Toshizo Nogami        | <a href="#">60264</a> | other      |            |   |                   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCH                      | 0 | <a href="#">available</a> |
| 1360 | <a href="#">R1-1711238</a> | Group common PDCCH contents for NR                                                                       | Sharp                               | Toshizo Nogami        | <a href="#">60264</a> | other      |            |   |                   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                       | 0 | <a href="#">available</a> |
| 1361 | <a href="#">R1-1711239</a> | Group common PDCCH monitoring for NR                                                                     | Sharp                               | Toshizo Nogami        | <a href="#">60264</a> | other      |            |   |                   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH           | 0 | <a href="#">available</a> |
| 1362 | <a href="#">R1-1711240</a> | Slot structure of NR long PUCCH for more than 2 bits                                                     | Sharp                               | Toshizo Nogami        | <a href="#">60264</a> | other      |            |   |                   | 82  | 5.1.3.2.2.2 | Long-PUCCH for UCI of more than 2 bits               | 0 | <a href="#">available</a> |
| 1363 | <a href="#">R1-1711241</a> | Structure of NR long PUCCH over multiple slots                                                           | Sharp                               | Toshizo Nogami        | <a href="#">60264</a> | other      |            |   |                   | 83  | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots            | 0 | <a href="#">available</a> |
| 1364 | <a href="#">R1-1711242</a> | Short PUCCH structure for UCI of up to 2 bits                                                            | Sharp                               | Toshizo Nogami        | <a href="#">60264</a> | other      |            |   |                   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                  | 0 | <a href="#">available</a> |
| 1365 | <a href="#">R1-1711243</a> | Short PUCCH structure for UCI of more than 2 bits                                                        | Sharp                               | Toshizo Nogami        | <a href="#">60264</a> | other      |            |   |                   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits              | 0 | <a href="#">available</a> |
| 1366 | <a href="#">R1-1711244</a> | PUCCH and PUSCH multiplexing methods                                                                     | Sharp                               | Toshizo Nogami        | <a href="#">60264</a> | other      |            |   |                   | 88  | 5.1.3.2.5.2 | PUCCH-PUSCH multiplexing                             | 0 | <a href="#">available</a> |
| 1367 | <a href="#">R1-1711245</a> | Pardon the Interruption: Downlink Control Signaling to Enable Preemption and CBG-based (Re) Transmission | Sharp                               | Toshizo Nogami        | <a href="#">60264</a> | other      |            |   |                   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission | 0 | <a href="#">available</a> |
| 1368 | <a href="#">R1-1711246</a> | Discussion on Bursty Interference Measurement Resources                                                  | Qualcomm Incorporated               | Peter Gaal            | <a href="#">57198</a> | discussion | Discussion |   |                   | 58  | 5.1.2.4.8   | Other                                                | 0 | <a href="#">available</a> |
| 1369 | <a href="#">R1-1711247</a> | Contents of group common PDCCH                                                                           | Qualcomm Incorporated               | Peter Gaal            | <a href="#">57198</a> | discussion | Discussion |   | Late contribution | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                       | 0 | <a href="#">available</a> |
| 1370 | <a href="#">R1-1711248</a> | NR-LTE Co-channel Coexistence Considerations                                                             | Qualcomm Incorporated               | Peter Gaal            | <a href="#">57198</a> | discussion | Discussion |   |                   | 137 | 5.1.8       | NR-LTE co-existence                                  | 0 | <a href="#">withdrawn</a> |
| 1371 | <a href="#">R1-1711249</a> | Power control and PHR for NR                                                                             | Qualcomm Incorporated               | Peter Gaal            | <a href="#">57198</a> | discussion | Discussion |   |                   | 138 | 5.1.9       | UL power control                                     | 0 | <a href="#">withdrawn</a> |
| 1372 | <a href="#">R1-1711250</a> | TDD-SUL CA scenario                                                                                      | Qualcomm Incorporated               | Peter Gaal            | <a href="#">57198</a> | discussion | Discussion |   |                   | 142 | 5.1.11      | Other                                                | 0 | <a href="#">withdrawn</a> |
| 1373 | <a href="#">R1-1711251</a> | Design of Long-PUCCH for UCI of more than 2 bits                                                         | Cohere Technologies                 | Christian Ibars Casas | <a href="#">66231</a> | discussion | Decision   |   |                   | 82  | 5.1.3.2.2.2 | Long-PUCCH for UCI of more than 2 bits               | 0 | <a href="#">available</a> |
| 1374 | <a href="#">R1-1711252</a> | Support of long-PUCCH over multiple slots                                                                | Cohere Technologies                 | Christian Ibars Casas | <a href="#">66231</a> | discussion | Decision   |   |                   | 83  | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots            | 0 | <a href="#">available</a> |
| 1375 | <a href="#">R1-1711253</a> | Resource configuration for UL transmission without grant                                                 | NICT                                | Masayuki Oodo         | <a href="#">69716</a> | discussion |            |   |                   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant         | 0 | <a href="#">available</a> |
| 1376 | <a href="#">R1-1711254</a> | Discussion on Paging Design                                                                              | Ill                                 | Chun-che Chien        | <a href="#">43585</a> | discussion |            |   |                   | 19  | 5.1.1.3     | Paging design                                        | 0 | <a href="#">available</a> |
| 1377 | <a href="#">R1-1711255</a> | Correction on the formula of AnnexA                                                                      | ZTE                                 | Nan Zhang             | <a href="#">64596</a> | draftCR    | Decision   |   |                   | 141 | 5.1.10      | Channel model                                        | 0 | <a href="#">revised</a>   |
| 1378 | <a href="#">R1-1711256</a> | Correction on Procedure A of spatially-consistency UT mobility modeling                                  | ZTE                                 | Nan Zhang             | <a href="#">64596</a> | draftCR    | Decision   |   |                   | 141 | 5.1.10      | Channel model                                        | 0 | <a href="#">revised</a>   |
| 1379 | <a href="#">R1-1711257</a> | Discussion on DL control signalling for CBG-based retransmission                                         | HTC Corporation                     | Ling-san Meng         | <a href="#">59466</a> | discussion |            |   |                   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission | 0 | <a href="#">available</a> |
| 1380 | <a href="#">R1-1711258</a> | Discussion on UL control signalling for CBG-based retransmission                                         | HTC Corporation                     | Ling-san Meng         | <a href="#">59466</a> | discussion |            |   |                   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission | 0 | <a href="#">available</a> |
| 1381 | <a href="#">R1-1711259</a> | Discussion on CBG-based HARQ feedback multiplexing                                                       | HTC Corporation                     | Ling-san Meng         | <a href="#">59466</a> | discussion |            |   |                   | 104 | 5.1.3.3.5.2 | HARQ-ACK multiplexing/bundling                       | 0 | <a href="#">available</a> |
| 1382 | <a href="#">R1-1711260</a> | Remaining open issues on NR Synchronisation signal design                                                | Nokia, Alcatel-Lucent Shanghai Bell | Karri Ranta-aho       | <a href="#">64268</a> | discussion | Decision   |   |                   | 9   | 5.1.1.1.1   | Remaining details on SS sequence design              | 0 | <a href="#">available</a> |
| 1383 | <a href="#">R1-1711261</a> | On SS Burst Set Composition                                                                              | Nokia, Alcatel-Lucent Shanghai Bell | Karri Ranta-aho       | <a href="#">64268</a> | discussion | Decision   |   |                   | 10  | 5.1.1.1.2   | SS burst set composition                             | 0 | <a href="#">available</a> |
| 1384 | <a href="#">R1-1711262</a> | SS block time index indication                                                                           | Nokia, Alcatel-Lucent Shanghai Bell | Karri Ranta-aho       | <a href="#">64268</a> | discussion | Decision   |   |                   | 11  | 5.1.1.1.3   | Timing indication based on SS block                  | 0 | <a href="#">available</a> |

|      | A                          | B                                                                                    | C                                      | D               | E                     | F          | G          | H | I                 | J  | K           | L                                                                   | M | N                         |
|------|----------------------------|--------------------------------------------------------------------------------------|----------------------------------------|-----------------|-----------------------|------------|------------|---|-------------------|----|-------------|---------------------------------------------------------------------|---|---------------------------|
| 1385 | <a href="#">R1-1711263</a> | SS-block transmission in multi CC deployments                                        | Nokia, Alcatel-Lucent<br>Shanghai Bell | Karri Ranta-aho | <a href="#">64268</a> | discussion | Decision   |   |                   | 12 | 5.1.1.1.4   | Remaining details on multiple SS block transmissions in wideband CC | 0 | <a href="#">available</a> |
| 1386 | <a href="#">R1-1711264</a> | NR-PBCH content                                                                      | Nokia, Alcatel-Lucent<br>Shanghai Bell | Karri Ranta-aho | <a href="#">64268</a> | discussion | Decision   |   |                   | 14 | 5.1.1.2.1   | NR-PBCH contents and payload size                                   | 0 | <a href="#">revised</a>   |
| 1387 | <a href="#">R1-1711265</a> | SS block composition                                                                 | Nokia, Alcatel-Lucent<br>Shanghai Bell | Karri Ranta-aho | <a href="#">64268</a> | discussion | Decision   |   |                   | 15 | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                         | 0 | <a href="#">available</a> |
| 1388 | <a href="#">R1-1711266</a> | NR-PBCH DMRS design                                                                  | Nokia, Alcatel-Lucent<br>Shanghai Bell | Karri Ranta-aho | <a href="#">64268</a> | discussion | Decision   |   |                   | 16 | 5.1.1.2.3   | Sequence design of DMRS for NR-PBCH                                 | 0 | <a href="#">available</a> |
| 1389 | <a href="#">R1-1711267</a> | On Remaining System Information Delivery                                             | Nokia, Alcatel-Lucent<br>Shanghai Bell | Karri Ranta-aho | <a href="#">64268</a> | discussion | Decision   |   |                   | 17 | 5.1.1.2.4   | Remaining minimum system information delivery                       | 0 | <a href="#">available</a> |
| 1390 | <a href="#">R1-1711268</a> | SS block measurements and procedures                                                 | Nokia, Alcatel-Lucent<br>Shanghai Bell | Karri Ranta-aho | <a href="#">64268</a> | discussion | Decision   |   |                   | 26 | 5.1.1.5.1   | Measurement based on SS block                                       | 0 | <a href="#">available</a> |
| 1391 | <a href="#">R1-1711269</a> | NR Radio link monitoring                                                             | Nokia, Alcatel-Lucent<br>Shanghai Bell | Karri Ranta-aho | <a href="#">64268</a> | discussion | Decision   |   |                   | 28 | 5.1.1.5.3   | Radio link monitoring                                               | 0 | <a href="#">available</a> |
| 1392 | <a href="#">R1-1711270</a> | [89-16] Email discussion on NR-PRACH preamble formats based on short sequence length | ZTE Corporation                        | Jan Johansson   | <a href="#">72705</a> | discussion | Discussion |   |                   | 21 | 5.1.1.4.1   | PRACH preamble format details for long/short sequence length        | 0 | <a href="#">available</a> |
| 1393 | <a href="#">R1-1711271</a> | Paging in NR                                                                         | Nokia, Alcatel-Lucent<br>Shanghai Bell | Karri Ranta-aho | <a href="#">64268</a> | discussion | Decision   |   |                   | 19 | 5.1.1.3     | Paging design                                                       | 0 | <a href="#">available</a> |
| 1394 | <a href="#">R1-1711272</a> | Configuration for control resource sets and search spaces                            | HTC Corporation                        | Chien-Hsin Tang | <a href="#">70236</a> | discussion |            |   |                   | 66 | 5.1.3.1.2.1 | CORESET configuration                                               | 0 | <a href="#">available</a> |
| 1395 | <a href="#">R1-1711273</a> | Design of resource mapping and NR-PDCCH                                              | HTC Corporation                        | Chien-Hsin Tang | <a href="#">70236</a> | discussion |            |   |                   | 63 | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping                         | 0 | <a href="#">available</a> |
| 1396 | <a href="#">R1-1711274</a> | Discussion on location and timing indication of SS block                             | Xiaomi Technology                      | Yang Liu        | <a href="#">66714</a> | discussion | Decision   |   |                   | 11 | 5.1.1.1.3   | Timing indication based on SS block                                 | 0 | <a href="#">available</a> |
| 1397 | <a href="#">R1-1711275</a> | Discussion on NR-SSS working assumption                                              | Motorola Mobility,<br>Lenovo           | Vijay Nangia    | <a href="#">34148</a> | discussion |            |   |                   | 9  | 5.1.1.1.1   | Remaining details on SS sequence design                             | 0 | <a href="#">available</a> |
| 1398 | <a href="#">R1-1711276</a> | Indication of SS block timing information                                            | Motorola Mobility,<br>Lenovo           | Vijay Nangia    | <a href="#">34148</a> | discussion |            |   |                   | 11 | 5.1.1.1.3   | Timing indication based on SS block                                 | 0 | <a href="#">available</a> |
| 1399 | <a href="#">R1-1711277</a> | Discussion on NR-PBCH contents                                                       | Motorola Mobility,<br>Lenovo           | Vijay Nangia    | <a href="#">34148</a> | discussion |            |   |                   | 14 | 5.1.1.2.1   | NR-PBCH contents and payload size                                   | 0 | <a href="#">available</a> |
| 1400 | <a href="#">R1-1711278</a> | NR-PBCH RE mapping                                                                   | Motorola Mobility,<br>Lenovo           | Vijay Nangia    | <a href="#">34148</a> | discussion |            |   |                   | 15 | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                         | 0 | <a href="#">available</a> |
| 1401 | <a href="#">R1-1711279</a> | RACH configuration and procedure                                                     | Motorola Mobility,<br>Lenovo           | Vijay Nangia    | <a href="#">34148</a> | discussion |            |   |                   | 24 | 5.1.1.4.4   | 4-step RA procedure                                                 | 0 | <a href="#">available</a> |
| 1402 | <a href="#">R1-1711280</a> | On CCE and PDCCH mapping                                                             | Motorola Mobility,<br>Lenovo           | Vijay Nangia    | <a href="#">34148</a> | discussion |            |   |                   | 63 | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping                         | 0 | <a href="#">available</a> |
| 1403 | <a href="#">R1-1711281</a> | NR Group-common PDCCH contents and structure                                         | Motorola Mobility,<br>Lenovo           | Vijay Nangia    | <a href="#">34148</a> | discussion |            |   |                   | 72 | 5.1.3.1.4.2 | Contents of group-common PDCCH                                      | 0 | <a href="#">available</a> |
| 1404 | <a href="#">R1-1711282</a> | Short PUCCH for up to 2 bit UCI                                                      | Motorola Mobility,<br>Lenovo           | Vijay Nangia    | <a href="#">34148</a> | discussion |            |   | Late contribution | 78 | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                                 | 0 | <a href="#">available</a> |
| 1405 | <a href="#">R1-1711283</a> | PUCCH resource allocation for HARQ-ACK feedback to Msg4                              | Motorola Mobility,<br>Lenovo           | Vijay Nangia    | <a href="#">34148</a> | discussion |            |   |                   | 85 | 5.1.3.2.4   | Resource allocation for PUCCH                                       | 0 | <a href="#">available</a> |
| 1406 | <a href="#">R1-1711284</a> | Codebook Based Transmission and Codebook Design for UL MIMO                          | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu    | <a href="#">68296</a> | discussion | Decision   |   |                   | 33 | 5.1.2.1.2   | Codebook based transmission for UL                                  | 0 | <a href="#">available</a> |
| 1407 | <a href="#">R1-1711285</a> | Non-codebook based UL-MIMO transmission                                              | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu    | <a href="#">68296</a> | discussion | Decision   |   |                   | 34 | 5.1.2.1.3   | Non-codebook based transmission fo UL                               | 0 | <a href="#">available</a> |
| 1408 | <a href="#">R1-1711286</a> | UL-MIMO diversity-based transmission                                                 | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu    | <a href="#">68296</a> | discussion | Decision   |   |                   | 35 | 5.1.2.1.4   | Diversity transmission for UL                                       | 0 | <a href="#">available</a> |
| 1409 | <a href="#">R1-1711287</a> | On details of PRB Bundling                                                           | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu    | <a href="#">68296</a> | discussion | Decision   |   |                   | 36 | 5.1.2.1.5   | PRB bundling for DL                                                 | 0 | <a href="#">noted</a>     |
| 1410 | <a href="#">R1-1711288</a> | On the maximum number of PDSCH/PDSCHs to be supported for multi-TRP transmission     | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu    | <a href="#">68296</a> | discussion | Decision   |   |                   | 37 | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission                              | 0 | <a href="#">available</a> |
| 1411 | <a href="#">R1-1711289</a> | On the utilization of SS block for beam management                                   | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu    | <a href="#">68296</a> | discussion | Decision   |   |                   | 41 | 5.1.2.2.1   | Beam management details                                             | 0 | <a href="#">available</a> |
| 1412 | <a href="#">R1-1711290</a> | SRS transmission for beam management                                                 | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu    | <a href="#">68296</a> | discussion | Decision   |   |                   | 41 | 5.1.2.2.1   | Beam management details                                             | 0 | <a href="#">available</a> |
| 1413 | <a href="#">R1-1711291</a> | Beam Recovery in NR                                                                  | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu    | <a href="#">68296</a> | discussion | Decision   |   |                   | 42 | 5.1.2.2.2   | Mechanism to recover from beam failure                              | 0 | <a href="#">noted</a>     |
| 1414 | <a href="#">R1-1711292</a> | BPL definition and Spatial QCL time indication                                       | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu    | <a href="#">68296</a> | discussion | Decision   |   |                   | 43 | 5.1.2.2.3   | Other                                                               | 0 | <a href="#">noted</a>     |
| 1415 | <a href="#">R1-1711293</a> | On beam grouping and reporting                                                       | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu    | <a href="#">68296</a> | discussion | Decision   |   |                   | 43 | 5.1.2.2.3   | Other                                                               | 0 | <a href="#">available</a> |
| 1416 | <a href="#">R1-1711294</a> | On Multi-beam Downlink Control Channel Operation                                     | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu    | <a href="#">68296</a> | discussion | Decision   |   |                   | 43 | 5.1.2.2.3   | Other                                                               | 0 | <a href="#">available</a> |
| 1417 | <a href="#">R1-1711295</a> | Multi-beam Uplink Control Channel Operation                                          | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu    | <a href="#">68296</a> | discussion | Decision   |   |                   | 43 | 5.1.2.2.3   | Other                                                               | 0 | <a href="#">available</a> |

|      | A                          | B                                                                      | C                                      | D                | E                     | F          | G        | H | I | J   | K           | L                                                    | M | N                         |
|------|----------------------------|------------------------------------------------------------------------|----------------------------------------|------------------|-----------------------|------------|----------|---|---|-----|-------------|------------------------------------------------------|---|---------------------------|
| 1418 | <a href="#">R1-1711298</a> | On the CRI definition and usability in NR                              | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 45  | 5.1.2.3.1   | CSI framework                                        | 0 | <a href="#">available</a> |
| 1419 | <a href="#">R1-1711297</a> | Remaining aspects on interference estimation options and configuration | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 46  | 5.1.2.3.2   | Details of CSI acquisition                           | 0 | <a href="#">noted</a>     |
| 1420 | <a href="#">R1-1711298</a> | On the channel reciprocity support for CSI acquisition                 | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 47  | 5.1.2.3.3   | CSI acquisition for reciprocity based operation      | 0 | <a href="#">noted</a>     |
| 1421 | <a href="#">R1-1711299</a> | Feedback transmission of type II codebook                              | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 48  | 5.1.2.3.4   | CSI feedback                                         | 0 | <a href="#">revised</a>   |
| 1422 | <a href="#">R1-1711300</a> | CSI feedback in support of semi-open loop transmission                 | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 48  | 5.1.2.3.4   | CSI feedback                                         | 0 | <a href="#">noted</a>     |
| 1423 | <a href="#">R1-1711301</a> | On the CSI timing relationships                                        | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 49  | 5.1.2.3.5   | Other                                                | 0 | <a href="#">available</a> |
| 1424 | <a href="#">R1-1711302</a> | On multiplexing of different RS types                                  | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 51  | 5.1.2.4.1   | Multiplexing of different types of RSs               | 0 | <a href="#">available</a> |
| 1425 | <a href="#">R1-1711303</a> | On the CSI-RS configurations for NR CSI acquisition                    | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 52  | 5.1.2.4.2   | CSI-RS                                               | 0 | <a href="#">available</a> |
| 1426 | <a href="#">R1-1711304</a> | On CSI-RS Design for DL Beam Management                                | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 52  | 5.1.2.4.2   | CSI-RS                                               | 0 | <a href="#">available</a> |
| 1427 | <a href="#">R1-1711305</a> | On design of DL DM-RS for NR physical data channels                    | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 53  | 5.1.2.4.3   | DMRS                                                 | 0 | <a href="#">available</a> |
| 1428 | <a href="#">R1-1711306</a> | DL DM-RS patterns link performance evaluation                          | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 53  | 5.1.2.4.3   | DMRS                                                 | 0 | <a href="#">available</a> |
| 1429 | <a href="#">R1-1711307</a> | On design of UL DM-RS for NR physical data channels                    | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 53  | 5.1.2.4.3   | DMRS                                                 | 0 | <a href="#">available</a> |
| 1430 | <a href="#">R1-1711308</a> | Discussion on PT-RS design for CP-OFDM                                 | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 54  | 5.1.2.4.4   | PT-RS                                                | 0 | <a href="#">available</a> |
| 1431 | <a href="#">R1-1711309</a> | On Details of the PT-RS Design for DFT-s-OFDM                          | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 54  | 5.1.2.4.4   | PT-RS                                                | 0 | <a href="#">revised</a>   |
| 1432 | <a href="#">R1-1711310</a> | UL SRS design considerations in NR                                     | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 55  | 5.1.2.4.5   | SRS                                                  | 0 | <a href="#">available</a> |
| 1433 | <a href="#">R1-1711311</a> | Views on the TFFT-RS in NR                                             | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 56  | 5.1.2.4.6   | TRS                                                  | 0 | <a href="#">available</a> |
| 1434 | <a href="#">R1-1711312</a> | On QCL Framework and Configurations in NR                              | Nokia, Alcatel-Lucent<br>Shanghai Bell | Mihai Enescu     | <a href="#">68296</a> | discussion | Decision |   |   | 57  | 5.1.2.4.7   | QCL                                                  | 0 | <a href="#">noted</a>     |
| 1435 | <a href="#">R1-1711313</a> | Cross-link interference management based on Xn support                 | Nokia, Alcatel-Lucent<br>Shanghai Bell | Karri Ranta-aho  | <a href="#">64268</a> | discussion | Decision |   |   | 134 | 5.1.6.1     | Cross-link interference management                   | 0 | <a href="#">available</a> |
| 1436 | <a href="#">R1-1711314</a> | On NR Cross-Link Symbol Alignment Scheme                               | Nokia, Alcatel-Lucent<br>Shanghai Bell | Karri Ranta-aho  | <a href="#">64268</a> | discussion | Decision |   |   | 134 | 5.1.6.1     | Cross-link interference management                   | 0 | <a href="#">noted</a>     |
| 1437 | <a href="#">R1-1711315</a> | LBT-based UL transmission for dynamic TDD                              | Nokia, Alcatel-Lucent<br>Shanghai Bell | Karri Ranta-aho  | <a href="#">64268</a> | discussion | Decision |   |   | 135 | 5.1.6.2     | Other                                                | 0 | <a href="#">available</a> |
| 1438 | <a href="#">R1-1711316</a> | DL control signalling for CBG-based (re)transmission                   | Shenzhen Coolpad<br>Technologies       | Mingju Li        | <a href="#">60196</a> | discussion | Decision |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission | 0 | <a href="#">available</a> |
| 1439 | <a href="#">R1-1711317</a> | Discussion on NR Operating in Unlicensed Spectrum                      | ASUSTEK<br>COMPUTER<br>(SHANGHAI)      | Alex Liou        | <a href="#">65894</a> | discussion |          |   |   | 143 | 5.2         | Other                                                | 0 | <a href="#">available</a> |
| 1440 | <a href="#">R1-1711318</a> | Discussion on the options in NR design                                 | Panasonic                              | Hidetoshi Suzuki | <a href="#">21346</a> | discussion | Decision |   |   | 6   | 5.1         | New Radio Access Technology - WID in RP-171485       | 0 | <a href="#">available</a> |
| 1441 | <a href="#">R1-1711319</a> | Relation among NR-PBCH, SIBs and subcells                              | Panasonic                              | Hidetoshi Suzuki | <a href="#">21346</a> | discussion | Decision |   |   | 17  | 5.1.1.2.4   | Remaining minimum system information delivery        | 0 | <a href="#">available</a> |
| 1442 | <a href="#">R1-1711320</a> | Resource sharing between PDCCH and PDSCH                               | Panasonic                              | Hidetoshi Suzuki | <a href="#">21346</a> | discussion | Decision |   |   | 69  | 5.1.3.1.3   | Resource sharing between PDCCH and PDSCH             | 0 | <a href="#">available</a> |
| 1443 | <a href="#">R1-1711321</a> | PDCCH BD reduction                                                     | Panasonic                              | Hidetoshi Suzuki | <a href="#">21346</a> | discussion | Decision |   |   | 67  | 5.1.3.1.2.2 | Search space design                                  | 0 | <a href="#">available</a> |
| 1444 | <a href="#">R1-1711322</a> | Frequency/time resource assignment of the operation modes              | Panasonic                              | Hidetoshi Suzuki | <a href="#">21346</a> | discussion | Decision |   |   | 92  | 5.1.3.3.1   | DL/UL resource allocation                            | 0 | <a href="#">available</a> |
| 1445 | <a href="#">R1-1711323</a> | UL data transmission without grant                                     | Panasonic                              | Hidetoshi Suzuki | <a href="#">21346</a> | discussion | Decision |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant         | 0 | <a href="#">available</a> |
| 1446 | <a href="#">R1-1711324</a> | DL control signalling for CBG-based (re)transmission                   | Panasonic                              | Hidetoshi Suzuki | <a href="#">21346</a> | discussion | Decision |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission | 0 | <a href="#">available</a> |
| 1447 | <a href="#">R1-1711325</a> | UE category modelling and soft buffer                                  | Panasonic                              | Hidetoshi Suzuki | <a href="#">21346</a> | discussion | Decision |   |   | 107 | 5.1.3.3.6.2 | Soft-buffer management                               | 0 | <a href="#">available</a> |
| 1448 | <a href="#">R1-1711326</a> | Comment on NR specification                                            | Panasonic                              | Hidetoshi Suzuki | <a href="#">21346</a> | discussion | Decision |   |   | 142 | 5.1.11      | Other                                                | 0 | <a href="#">available</a> |
| 1449 | <a href="#">R1-1711327</a> | The relation among REG, CCE, and CORESET                               | Panasonic                              | Hidetoshi Suzuki | <a href="#">21346</a> | discussion | Decision |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping          | 0 | <a href="#">available</a> |

|      | A                          | B                                                                         | C                           | D                | E                     | F          | G          | H | I | J   | K           | L                                                                   | M | N                         |
|------|----------------------------|---------------------------------------------------------------------------|-----------------------------|------------------|-----------------------|------------|------------|---|---|-----|-------------|---------------------------------------------------------------------|---|---------------------------|
| 1450 | <a href="#">R1-1711328</a> | RS mapping of NR-PDCCH                                                    | Panasonic                   | Hidetoshi Suzuki | <a href="#">21346</a> | discussion | Decision   |   |   | 64  | 5.1.3.1.1.2 | RS structure/mapping                                                | 0 | <a href="#">available</a> |
| 1451 | <a href="#">R1-1711329</a> | Configuration of CORESET                                                  | Panasonic                   | Hidetoshi Suzuki | <a href="#">21346</a> | discussion | Decision   |   |   | 66  | 5.1.3.1.2.1 | CORESET configuration                                               | 0 | <a href="#">available</a> |
| 1452 | <a href="#">R1-1711330</a> | Search space design                                                       | Panasonic                   | Hidetoshi Suzuki | <a href="#">21346</a> | discussion | Decision   |   |   | 67  | 5.1.3.1.2.2 | Search space design                                                 | 0 | <a href="#">available</a> |
| 1453 | <a href="#">R1-1711331</a> | Discussion on structure of group common PDCCH                             | Panasonic                   | Hidetoshi Suzuki | <a href="#">21346</a> | discussion | Decision   |   |   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCH                                     | 0 | <a href="#">available</a> |
| 1454 | <a href="#">R1-1711332</a> | Discussion on contents of group common PDCCH                              | Panasonic                   | Hidetoshi Suzuki | <a href="#">21346</a> | discussion | Decision   |   |   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                                      | 0 | <a href="#">available</a> |
| 1455 | <a href="#">R1-1711333</a> | Discussion on DL/UL transmission direction                                | Panasonic                   | Hidetoshi Suzuki | <a href="#">21346</a> | discussion | Decision   |   |   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH                          | 0 | <a href="#">available</a> |
| 1456 | <a href="#">R1-1711334</a> | Considerations on UE Beamforming Management                               | ASUSTEK COMPUTER (SHANGHAI) | Mingche Li       | <a href="#">53966</a> | discussion |            |   |   | 41  | 5.1.2.2.1   | Beam management details                                             | 0 | <a href="#">available</a> |
| 1457 | <a href="#">R1-1711335</a> | UL power control in multi-beam based approaches                           | ASUSTEK COMPUTER (SHANGHAI) | Mingche Li       | <a href="#">53966</a> | discussion |            |   |   | 140 | 5.1.9.2     | NR power control framework                                          | 0 | <a href="#">available</a> |
| 1458 | <a href="#">R1-1711336</a> | Discussion on group based beam reporting                                  | China Unicom                | Xiao Han         | <a href="#">46713</a> | discussion |            |   |   | 41  | 5.1.2.2.1   | Beam management details                                             | 0 | <a href="#">available</a> |
| 1459 | <a href="#">R1-1711337</a> | On NR-LTE coexistence for NSA and SA                                      | China Unicom                | Xiao Han         | <a href="#">46713</a> | discussion |            |   |   | 137 | 5.1.8       | NR-LTE co-existence                                                 | 0 | <a href="#">noted</a>     |
| 1460 | <a href="#">R1-1711338</a> | Consideration on physical downlink control channel for URLLC              | CATR                        | Yanping Xing     | <a href="#">57090</a> | other      | Discussion |   |   | 74  | 5.1.3.1.5   | Ultra-reliable part of URLLC for DL control                         | 0 | <a href="#">available</a> |
| 1461 | <a href="#">R1-1711339</a> | Consideration on the CSI-RS design for NR                                 | CATR                        | Yanping Xing     | <a href="#">57090</a> | other      | Discussion |   |   | 52  | 5.1.2.4.2   | CSI-RS                                                              | 0 | <a href="#">available</a> |
| 1462 | <a href="#">R1-1711340</a> | Consideration on the font loaded DM RS design for NR                      | CATR                        | Yanping Xing     | <a href="#">57090</a> | other      | Discussion |   |   | 53  | 5.1.2.4.3   | DMRS                                                                | 0 | <a href="#">available</a> |
| 1463 | <a href="#">R1-1711341</a> | Discussions on the indication for CBG                                     | CATR                        | Yanping Xing     | <a href="#">57090</a> | other      | Discussion |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission                | 0 | <a href="#">available</a> |
| 1464 | <a href="#">R1-1711342</a> | Discussion on the granularity of preemption indication                    | CATR                        | Yanping Xing     | <a href="#">57090</a> | other      | Discussion |   |   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                                 | 0 | <a href="#">available</a> |
| 1465 | <a href="#">R1-1711343</a> | Discussion on URLLC transmitted in same or different numerology resources | ASUSTEK COMPUTER (SHANGHAI) | Denry Huang      | <a href="#">65852</a> | agenda     |            |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure          | 0 | <a href="#">available</a> |
| 1466 | <a href="#">R1-1711344</a> | LDPC Coding chain                                                         | Intel Corporation           | Seunghee Han     | <a href="#">47329</a> | discussion | Decision   |   |   | 120 | 5.1.4.1.1   | Coding chain                                                        | 0 | <a href="#">available</a> |
| 1467 | <a href="#">R1-1711345</a> | Base Graph 1 lifting and evaluations                                      | Intel Corporation           | Seunghee Han     | <a href="#">47329</a> | discussion | Decision   |   |   | 125 | 5.1.4.1.2   | LDPC code design                                                    | 0 | <a href="#">revised</a>   |
| 1468 | <a href="#">R1-1711346</a> | Base Graph 2 lifting and evaluations                                      | Intel Corporation           | Seunghee Han     | <a href="#">47329</a> | discussion | Decision   |   |   | 125 | 5.1.4.1.2   | LDPC code design                                                    | 0 | <a href="#">revised</a>   |
| 1469 | <a href="#">R1-1711347</a> | Simple distributed CRC design for Polar codes                             | Intel Corporation           | Seunghee Han     | <a href="#">47329</a> | discussion | Decision   |   |   | 127 | 5.1.4.2.1   | Code construction                                                   | 0 | <a href="#">noted</a>     |
| 1470 | <a href="#">R1-1711348</a> | Evaluations of Polar code designs                                         | Intel Corporation           | Seunghee Han     | <a href="#">47329</a> | discussion | Decision   |   |   | 127 | 5.1.4.2.1   | Code construction                                                   | 0 | <a href="#">available</a> |
| 1471 | <a href="#">R1-1711349</a> | Discussion on Polar code rate-matching                                    | Intel Corporation           | Seunghee Han     | <a href="#">47329</a> | discussion | Decision   |   |   | 128 | 5.1.4.2.2   | Sequence design                                                     | 0 | <a href="#">available</a> |
| 1472 | <a href="#">R1-1711350</a> | DMRS pattern configuration for NR                                         | ITL                         | Sung Jun Yoon    | <a href="#">58632</a> | other      |            |   |   | 53  | 5.1.2.4.3   | DMRS                                                                | 0 | <a href="#">available</a> |
| 1473 | <a href="#">R1-1711351</a> | On timing indication for NR                                               | ITL                         | Sung Jun Yoon    | <a href="#">58632</a> | other      |            |   |   | 11  | 5.1.1.1.3   | Timing indication based on SS block                                 | 0 | <a href="#">available</a> |
| 1474 | <a href="#">R1-1711352</a> | Multiple SS block indication in wideband CC                               | ITL                         | Sung Jun Yoon    | <a href="#">58632</a> | other      |            |   |   | 12  | 5.1.1.1.4   | Remaining details on multiple SS block transmissions in wideband CC | 0 | <a href="#">available</a> |
| 1475 | <a href="#">R1-1711353</a> | DMRS sequence design for NR-PBCH                                          | ITL                         | Sung Jun Yoon    | <a href="#">58632</a> | other      |            |   |   | 16  | 5.1.1.2.3   | Sequence design of DMRS for NR-PBCH                                 | 0 | <a href="#">available</a> |
| 1476 | <a href="#">R1-1711354</a> | PDSCH starting position indication for NR                                 | WILUS Inc.                  | Minseok Noh      | <a href="#">62848</a> | discussion | Discussion |   |   | 69  | 5.1.3.1.3   | Resource sharing between PDCCH and PDSCH                            | 0 | <a href="#">available</a> |
| 1477 | <a href="#">R1-1711355</a> | Discussion on structure for group-common PDCCH for NR                     | WILUS Inc.                  | Minseok Noh      | <a href="#">62848</a> | discussion | Discussion |   |   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCH                                     | 0 | <a href="#">available</a> |
| 1478 | <a href="#">R1-1711356</a> | Discussion on contents for group-common PDCCH for NR                      | WILUS Inc.                  | Minseok Noh      | <a href="#">62848</a> | discussion | Discussion |   |   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                                      | 0 | <a href="#">available</a> |
| 1479 | <a href="#">R1-1711357</a> | Discussion on UE behavior for group-common PDCCH for NR                   | WILUS Inc.                  | Minseok Noh      | <a href="#">62848</a> | discussion | Discussion |   |   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCH                          | 0 | <a href="#">available</a> |
| 1480 | <a href="#">R1-1711358</a> | Short PUCCH structure for UCI of up to 2 bits                             | WILUS Inc.                  | Minseok Noh      | <a href="#">62848</a> | discussion | Discussion |   |   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                                 | 0 | <a href="#">available</a> |
| 1481 | <a href="#">R1-1711359</a> | Discussion on UCI piggyback on PUSCH                                      | WILUS Inc.                  | Minseok Noh      | <a href="#">62848</a> | discussion | Discussion |   |   | 87  | 5.1.3.2.5.1 | UCI piggyback on PUSCH                                              | 0 | <a href="#">available</a> |
| 1482 | <a href="#">R1-1711360</a> | Simultaneous transmission for long-PUCCH and PUSCH                        | WILUS Inc.                  | Minseok Noh      | <a href="#">62848</a> | discussion | Discussion |   |   | 88  | 5.1.3.2.5.2 | PUCCH-PUSCH multiplexing                                            | 0 | <a href="#">available</a> |
| 1483 | <a href="#">R1-1711361</a> | Discussion on UL HARQ-ACK feedback for CBG-based retransmission           | WILUS Inc.                  | Minseok Noh      | <a href="#">62848</a> | discussion | Discussion |   |   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission                | 0 | <a href="#">available</a> |
| 1484 | <a href="#">R1-1711362</a> | Discussion on UE behavior by pre-emption indication                       | WILUS Inc.                  | Minseok Noh      | <a href="#">62848</a> | discussion | Discussion |   |   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                                 | 0 | <a href="#">available</a> |
| 1485 | <a href="#">R1-1711363</a> | Two-step resource allocation for data channel in NR                       | ASUSTEK COMPUTER (SHANGHAI) | Eddie Lin        | <a href="#">40159</a> | discussion |            |   |   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                                | 0 | <a href="#">available</a> |
| 1486 | <a href="#">R1-1711364</a> | Multiple SS block transmissions in a wideband CC                          | ASUSTEK COMPUTER (SHANGHAI) | Eddie Lin        | <a href="#">40159</a> | discussion |            |   |   | 12  | 5.1.1.1.4   | Remaining details on multiple SS block transmissions in wideband CC | 0 | <a href="#">available</a> |
| 1487 | <a href="#">R1-1711365</a> | On UL coverage extension of TDD @3.5GHz                                   | ORANGE                      | Hao Lin          | <a href="#">65530</a> | discussion |            |   |   | 137 | 5.1.8       | NR-LTE co-existence                                                 | 0 | <a href="#">revised</a>   |
| 1488 | <a href="#">R1-1711366</a> | TS38.211 v0.0.1 NR; Physical channels and modulation                      | Ericsson LM                 | Stefan Parkvall  | <a href="#">28759</a> | draft TS   |            |   |   | 6   | 5.1         | New Radio Access Technology - WID in RP-171485                      | 0 | <a href="#">revised</a>   |
| 1489 | <a href="#">R1-1711367</a> | On UE processing time                                                     | Ericsson LM                 | Stefan Parkvall  | <a href="#">28759</a> | discussion | Decision   |   |   | 112 | 5.1.3.3.9   | Other                                                               | 0 | <a href="#">available</a> |

|      | A                          | B                                                                            | C                                   | D               | E                     | F          | G        | H | I | J   | K           | L                                                                          | M | N                         |
|------|----------------------------|------------------------------------------------------------------------------|-------------------------------------|-----------------|-----------------------|------------|----------|---|---|-----|-------------|----------------------------------------------------------------------------|---|---------------------------|
| 1490 | <a href="#">R1-1711368</a> | Discussion on the search space design                                        | Xiaomi technology                   | Yajun Zhu       | <a href="#">71337</a> | discussion |          |   |   | 66  | 5.1.3.1.2.1 | CORESET configuration                                                      | 0 | <a href="#">available</a> |
| 1491 | <a href="#">R1-1711369</a> | Discussion on the content of group common PDCCH                              | Xiaomi technology                   | Yajun Zhu       | <a href="#">71337</a> | discussion |          |   |   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCH                                             | 0 | <a href="#">available</a> |
| 1492 | <a href="#">R1-1711370</a> | Discussion on the search space design                                        | Xiaomi Technology                   | Yajun Zhu       | <a href="#">71337</a> | discussion |          |   |   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCH                                            | 0 | <a href="#">withdrawn</a> |
| 1493 | <a href="#">R1-1711371</a> | Remaining details on NR-SS sequence design                                   | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 9   | 5.1.1.1.1   | Remaining details on SS sequence design                                    | 0 | <a href="#">available</a> |
| 1494 | <a href="#">R1-1711372</a> | SS burst set composition                                                     | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 10  | 5.1.1.1.2   | SS burst set composition                                                   | 0 | <a href="#">noted</a>     |
| 1495 | <a href="#">R1-1711373</a> | Timing indication based on SS block                                          | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 11  | 5.1.1.1.3   | Timing indication based on SS block                                        | 0 | <a href="#">noted</a>     |
| 1496 | <a href="#">R1-1711374</a> | NR-PBCH Content and payload size                                             | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 14  | 5.1.1.2.1   | NR-PBCH contents and payload size                                          | 0 | <a href="#">available</a> |
| 1497 | <a href="#">R1-1711375</a> | NR-PBCH RE mapping and SS block composition                                  | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 15  | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                                | 0 | <a href="#">available</a> |
| 1498 | <a href="#">R1-1711376</a> | NR-PBCH DMRS design                                                          | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 16  | 5.1.1.2.3   | Sequence design of DMRS for NR-PBCH                                        | 0 | <a href="#">available</a> |
| 1499 | <a href="#">R1-1711377</a> | NR delivery of remaining minimum system information                          | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 17  | 5.1.1.2.4   | Remaining minimum system information delivery                              | 0 | <a href="#">available</a> |
| 1500 | <a href="#">R1-1711378</a> | NR delivery of other system information                                      | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 18  | 5.1.1.2.5   | Other system information delivery                                          | 0 | <a href="#">available</a> |
| 1501 | <a href="#">R1-1711379</a> | On NR paging design                                                          | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 19  | 5.1.1.3     | Paging design                                                              | 0 | <a href="#">available</a> |
| 1502 | <a href="#">R1-1711380</a> | NR-RACH preamble format details                                              | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 21  | 5.1.1.4.1   | PRACH preamble format details for long/short sequence length               | 0 | <a href="#">available</a> |
| 1503 | <a href="#">R1-1711381</a> | NR-RACH preamble format details for capacity enhancement and beam management | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 22  | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management | 0 | <a href="#">available</a> |
| 1504 | <a href="#">R1-1711382</a> | Power ramping and power control during RA procedure                          | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 23  | 5.1.1.4.3   | Power ramping and power control during RA procedure                        | 0 | <a href="#">available</a> |
| 1505 | <a href="#">R1-1711383</a> | 4-step random access procedure                                               | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 24  | 5.1.1.4.4   | 4-step RA procedure                                                        | 0 | <a href="#">available</a> |
| 1506 | <a href="#">R1-1711384</a> | Mobility measurements based on SS block                                      | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 26  | 5.1.1.5.1   | Measurement based on SS block                                              | 0 | <a href="#">available</a> |
| 1507 | <a href="#">R1-1711385</a> | Measurements based on CSI-RS for L3 mobility                                 | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 27  | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility                                | 0 | <a href="#">available</a> |
| 1508 | <a href="#">R1-1711386</a> | Radio link monitoring                                                        | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 28  | 5.1.1.5.3   | Radio link monitoring                                                      | 0 | <a href="#">available</a> |
| 1509 | <a href="#">R1-1711387</a> | Consideration of PRACH Configuration in NR                                   | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion |          |   |   | 29  | 5.1.1.6     | Other                                                                      | 0 | <a href="#">available</a> |
| 1510 | <a href="#">R1-1711388</a> | Additional synchronization provision                                         | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion |          |   |   | 29  | 5.1.1.6     | Other                                                                      | 0 | <a href="#">available</a> |
| 1511 | <a href="#">R1-1711389</a> | Further details on scrambling                                                | Ericsson                            | Asbjorn Grovlen | <a href="#">45069</a> | discussion | Decision |   |   | 142 | 5.1.11      | Other                                                                      | 0 | <a href="#">available</a> |
| 1512 | <a href="#">R1-1711390</a> | Discussion on the structure of group common PDCCH                            | Xiaomi Technology                   | Yajun Zhu       | <a href="#">71337</a> | discussion |          |   |   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCH                                            | 0 | <a href="#">available</a> |
| 1513 | <a href="#">R1-1711391</a> | On Other System Information Delivery                                         | Nokia, Alcatel-Lucent Shanghai Bell | Karri Ranta-aho | <a href="#">64268</a> | discussion | Decision |   |   | 18  | 5.1.1.2.5   | Other system information delivery                                          | 0 | <a href="#">available</a> |
| 1514 | <a href="#">R1-1711392</a> | CSI-RS configuration for L3 mobility purposes                                | Nokia, Alcatel-Lucent Shanghai Bell | Karri Ranta-aho | <a href="#">64268</a> | discussion | Decision |   |   | 27  | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility                                | 0 | <a href="#">available</a> |
| 1515 | <a href="#">R1-1711393</a> | Calibration results for Phase 1 NR MIMO system level calibration             | MOTOROLA MOBILITY LLC               | Colin Frank     | <a href="#">46352</a> | discussion |          |   |   | 59  | 5.1.2.5     | Other                                                                      | 0 | <a href="#">available</a> |
| 1516 | <a href="#">R1-1711394</a> | Discussion on SS Burst Set Design                                            | Conviva Wireless LLC                | Qing Li         | <a href="#">65106</a> | discussion |          |   |   | 10  | 5.1.1.1.2   | SS burst set composition                                                   | 0 | <a href="#">available</a> |
| 1517 | <a href="#">R1-1711395</a> | Discussion on Multi-beam Operation for PDCCH                                 | Conviva Wireless LLC                | Qing Li         | <a href="#">65106</a> | discussion |          |   |   | 68  | 5.1.3.1.2.3 | Multi-beam operation for PDCCH                                             | 0 | <a href="#">available</a> |
| 1518 | <a href="#">R1-1711396</a> | On power sharing between LTE and NR in DC                                    | Nokia, Alcatel-Lucent Shanghai Bell | Emad Farag      | <a href="#">66840</a> | discussion | Decision |   |   | 139 | 5.1.9.1     | Power sharing mechanism                                                    | 0 | <a href="#">available</a> |
| 1519 | <a href="#">R1-1711397</a> | UL Power Control for MIMO                                                    | Nokia, Alcatel-Lucent Shanghai Bell | Emad Farag      | <a href="#">66840</a> | discussion | Decision |   |   | 140 | 5.1.9.2     | NR power control framework                                                 | 0 | <a href="#">noted</a>     |
| 1520 | <a href="#">R1-1711398</a> | On spectrum shaping for uplink P/2 BPSK with DFT-S-OFDM                      | Nokia, Alcatel-Lucent Shanghai Bell | Karri Ranta-aho | <a href="#">64268</a> | discussion | Decision |   |   | 132 | 5.1.5       | Modulation                                                                 | 0 | <a href="#">available</a> |
| 1521 | <a href="#">R1-1711399</a> | LTE and NR performance in NR-LTE UL sharing                                  | Nokia, Alcatel-Lucent Shanghai Bell | Karri Ranta-aho | <a href="#">64268</a> | discussion | Decision |   |   | 137 | 5.1.8       | NR-LTE co-existence                                                        | 0 | <a href="#">available</a> |
| 1522 | <a href="#">R1-1711400</a> | On 1Tx only UE in LTE-NR Dual Connectivity                                   | Nokia, Alcatel-Lucent Shanghai Bell | Karri Ranta-aho | <a href="#">64268</a> | discussion | Decision |   |   | 137 | 5.1.8       | NR-LTE co-existence                                                        | 0 | <a href="#">noted</a>     |
| 1523 | <a href="#">R1-1711401</a> | Measurement RS for beam management                                           | Huawei, HiSilicon                   | Brian Classon   | <a href="#">45750</a> | other      |          |   |   | 43  | 5.1.2.2.3   | Other                                                                      | 0 | <a href="#">available</a> |
| 1524 | <a href="#">R1-1711402</a> | Relationship between beam failure recovery and RLF                           | Huawei, HiSilicon                   | Brian Classon   | <a href="#">45750</a> | other      |          |   |   | 43  | 5.1.2.2.3   | Other                                                                      | 0 | <a href="#">available</a> |
| 1525 | <a href="#">R1-1711403</a> | Robust transmission for UL control channel                                   | Huawei, HiSilicon                   | Brian Classon   | <a href="#">45750</a> | other      |          |   |   | 43  | 5.1.2.2.3   | Other                                                                      | 0 | <a href="#">available</a> |
| 1526 | <a href="#">R1-1711404</a> | Discussion on reciprocity based CSI acquisition mechanism                    | Huawei, HiSilicon                   | Brian Classon   | <a href="#">45750</a> | other      |          |   |   | 47  | 5.1.2.3.3   | CSI acquisition for reciprocity based operation                            | 0 | <a href="#">available</a> |
| 1527 | <a href="#">R1-1711405</a> | CSI acquisition for DL robust transmission                                   | Huawei, HiSilicon                   | Brian Classon   | <a href="#">45750</a> | other      |          |   |   | 48  | 5.1.2.3.4   | CSI feedback                                                               | 0 | <a href="#">noted</a>     |
| 1528 | <a href="#">R1-1711406</a> | Other remaining issues for CSI framework                                     | Huawei, HiSilicon                   | Brian Classon   | <a href="#">45750</a> | other      |          |   |   | 49  | 5.1.2.3.5   | Other                                                                      | 0 | <a href="#">available</a> |

|      | A                          | B                                                                                                         | C                 | D             | E                     | F     | G        | H | I | J   | K           | L                                                                     | M | N                         |
|------|----------------------------|-----------------------------------------------------------------------------------------------------------|-------------------|---------------|-----------------------|-------|----------|---|---|-----|-------------|-----------------------------------------------------------------------|---|---------------------------|
| 1529 | <a href="#">R1-1711407</a> | Multiple-panel codebook                                                                                   | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 48  | 5.1.2.3.4   | CSI feedback                                                          | 0 | <a href="#">available</a> |
| 1530 | <a href="#">R1-1711408</a> | Category 2 codebook design for type II codebook                                                           | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 48  | 5.1.2.3.4   | CSI feedback                                                          | 0 | <a href="#">available</a> |
| 1531 | <a href="#">R1-1711409</a> | Codebook design for beamformed CSI-RS                                                                     | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 48  | 5.1.2.3.4   | CSI feedback                                                          | 0 | <a href="#">available</a> |
| 1532 | <a href="#">R1-1711410</a> | Cross-carrier beam management                                                                             | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 43  | 5.1.2.2.3   | Other                                                                 | 0 | <a href="#">available</a> |
| 1533 | <a href="#">R1-1711411</a> | Evaluation on REG bundle sizes for 1-symbol CORESE duration                                               | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping                           | 0 | <a href="#">noted</a>     |
| 1534 | <a href="#">R1-1711412</a> | Evaluation on REG bundle sizes for more than 1 symbol CORESET duration                                    | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping                           | 0 | <a href="#">noted</a>     |
| 1535 | <a href="#">R1-1711413</a> | CCE-to-REG mapping                                                                                        | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 75  | 5.1.3.1.6   | Other                                                                 | 0 | <a href="#">available</a> |
| 1536 | <a href="#">R1-1711414</a> | PDCCH-to-CCE mapping                                                                                      | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 75  | 5.1.3.1.6   | Other                                                                 | 0 | <a href="#">available</a> |
| 1537 | <a href="#">R1-1711415</a> | NR DL control capacity and blocking probability                                                           | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 75  | 5.1.3.1.6   | Other                                                                 | 0 | <a href="#">available</a> |
| 1538 | <a href="#">R1-1711416</a> | Performance evaluations on 1-symbol PUCCH for up to 2 UCI bits                                            | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 90  | 5.1.3.2.7   | Other                                                                 | 0 | <a href="#">available</a> |
| 1539 | <a href="#">R1-1711417</a> | Long PUCCH structure for large payload with no multiplexing capacity                                      | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 90  | 5.1.3.2.7   | Other                                                                 | 0 | <a href="#">available</a> |
| 1540 | <a href="#">R1-1711418</a> | On CSI feedback in NR                                                                                     | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 90  | 5.1.3.2.7   | Other                                                                 | 0 | <a href="#">available</a> |
| 1541 | <a href="#">R1-1711419</a> | Transmit diversity for short duration PUCCH                                                               | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 90  | 5.1.3.2.7   | Other                                                                 | 0 | <a href="#">available</a> |
| 1542 | <a href="#">R1-1711420</a> | Multiplexing between PUCCHs                                                                               | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 90  | 5.1.3.2.7   | Other                                                                 | 0 | <a href="#">available</a> |
| 1543 | <a href="#">R1-1711421</a> | Multiplexing of UL control channel and SRS in NR                                                          | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 90  | 5.1.3.2.7   | Other                                                                 | 0 | <a href="#">available</a> |
| 1544 | <a href="#">R1-1711422</a> | Resource allocation for data channels                                                                     | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 112 | 5.1.3.3.9   | Other                                                                 | 0 | <a href="#">available</a> |
| 1545 | <a href="#">R1-1711423</a> | PDCCH monitoring for slot-aggregation and cross-slot scheduling                                           | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 75  | 5.1.3.1.6   | Other                                                                 | 0 | <a href="#">available</a> |
| 1546 | <a href="#">R1-1711424</a> | On bandwidth adaptation                                                                                   | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 142 | 5.1.11      | Other                                                                 | 0 | <a href="#">available</a> |
| 1547 | <a href="#">R1-1711425</a> | Summary of LTE CA/DC and remaining issues for NR                                                          | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 113 | 5.1.3.4     | Scheduling/HARQ aspects for carrier aggregation and dual connectivity | 0 | <a href="#">available</a> |
| 1548 | <a href="#">R1-1711426</a> | CBG-based transmission/retransmission for DL multiplexing of eMBB and URLLC                               | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 112 | 5.1.3.3.9   | Other                                                                 | 0 | <a href="#">available</a> |
| 1549 | <a href="#">R1-1711427</a> | Discussion on group common pre-emption indication                                                         | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 112 | 5.1.3.3.9   | Other                                                                 | 0 | <a href="#">available</a> |
| 1550 | <a href="#">R1-1711428</a> | Superposed transmission of pre-emption indication with eMBB data                                          | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 112 | 5.1.3.3.9   | Other                                                                 | 0 | <a href="#">available</a> |
| 1551 | <a href="#">R1-1711429</a> | Consideration on ACK/NACK error in CBG-based retransmission                                               | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 112 | 5.1.3.3.9   | Other                                                                 | 0 | <a href="#">available</a> |
| 1552 | <a href="#">R1-1711430</a> | Discussion on UL multiplexing of grant-based eMBB and URLLC                                               | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 112 | 5.1.3.3.9   | Other                                                                 | 0 | <a href="#">available</a> |
| 1553 | <a href="#">R1-1711431</a> | HARQ feedback indication design for UL grant-free transmission                                            | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 75  | 5.1.3.1.6   | Other                                                                 | 0 | <a href="#">available</a> |
| 1554 | <a href="#">R1-1711432</a> | Discussion on over-the-air time synchronization for URLLC                                                 | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure            | 0 | <a href="#">available</a> |
| 1555 | <a href="#">R1-1711433</a> | Discussion on remaining frequency resources on symbol carrying CORESET                                    | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 75  | 5.1.3.1.6   | Other                                                                 | 0 | <a href="#">available</a> |
| 1556 | <a href="#">R1-1711434</a> | Discussion on TB size determination                                                                       | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 112 | 5.1.3.3.9   | Other                                                                 | 0 | <a href="#">available</a> |
| 1557 | <a href="#">R1-1711435</a> | Unified design for slot and mini-slot                                                                     | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 112 | 5.1.3.3.9   | Other                                                                 | 0 | <a href="#">available</a> |
| 1558 | <a href="#">R1-1711436</a> | LDPC design for base graph 1                                                                              | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 125 | 5.1.4.1.2   | LDPC code design                                                      | 0 | <a href="#">revised</a>   |
| 1559 | <a href="#">R1-1711437</a> | LDPC design for base graph 2                                                                              | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 125 | 5.1.4.1.2   | LDPC code design                                                      | 0 | <a href="#">available</a> |
| 1560 | <a href="#">R1-1711438</a> | Rate matching for LDPC codes                                                                              | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 123 | 5.1.4.1.1.3 | Rate matching                                                         | 0 | <a href="#">noted</a>     |
| 1561 | <a href="#">R1-1711439</a> | Segmentation for eMBB data                                                                                | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 122 | 5.1.4.1.1.2 | Segmentation                                                          | 0 | <a href="#">noted</a>     |
| 1562 | R1-1711440                 | On LDPC codes for eMBB data                                                                               | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 124 | 5.1.4.1.1.4 | Other                                                                 | 0 | <a href="#">withdrawn</a> |
| 1563 | <a href="#">R1-1711441</a> | On the feedback overhead reduction for multi-subband UL MIMO                                              | Huawei, HiSilicon | Brian Classon | <a href="#">45750</a> | other |          |   |   | 39  | 5.1.2.1.8   | Other                                                                 | 0 | <a href="#">available</a> |
| 1564 | <a href="#">R1-1711442</a> | Summary of [89-27] Polar code proposal for NR                                                             | Huawei            | Brian Classon | <a href="#">45750</a> | other |          |   |   | 127 | 5.1.4.2.1   | Code construction                                                     | 0 | <a href="#">noted</a>     |
| 1565 | <a href="#">R1-1711443</a> | Summary of [89-26] Polar code for NR -- alignment of latency/complexity calculation for early termination | Huawei            | Brian Classon | <a href="#">45750</a> | other |          |   |   | 127 | 5.1.4.2.1   | Code construction                                                     | 0 | <a href="#">noted</a>     |
| 1566 | <a href="#">R1-1711444</a> | Continuous precoding for NR DMRS in time domain                                                           | Samsung           | Younsun Kim   | <a href="#">43499</a> | other | Decision |   |   | 39  | 5.1.2.1.8   | Other                                                                 | 0 | <a href="#">available</a> |
| 1567 | <a href="#">R1-1711445</a> | System level evaluation results for beam management                                                       | Samsung           | Younsun Kim   | <a href="#">43499</a> | other | Decision |   |   | 43  | 5.1.2.2.3   | Other                                                                 | 0 | <a href="#">available</a> |
| 1568 | <a href="#">R1-1711446</a> | Link level evaluation results for beam management                                                         | Samsung           | Younsun Kim   | <a href="#">43499</a> | other | Decision |   |   | 43  | 5.1.2.2.3   | Other                                                                 | 0 | <a href="#">available</a> |
| 1569 | <a href="#">R1-1711447</a> | Link level simulation assumptions for beam management                                                     | Samsung           | Younsun Kim   | <a href="#">43499</a> | other | Decision |   |   | 43  | 5.1.2.2.3   | Other                                                                 | 0 | <a href="#">available</a> |
| 1570 | <a href="#">R1-1711448</a> | System level simulation assumptions for beam management                                                   | Samsung           | Younsun Kim   | <a href="#">43499</a> | other | Decision |   |   | 43  | 5.1.2.2.3   | Other                                                                 | 0 | <a href="#">available</a> |

|      | A                          | B                                                                       | C                 | D               | E                     | F          | G        | H | I | J   | K           | L                                                    | M | N                           |
|------|----------------------------|-------------------------------------------------------------------------|-------------------|-----------------|-----------------------|------------|----------|---|---|-----|-------------|------------------------------------------------------|---|-----------------------------|
| 1571 | <a href="#">R1-1711449</a> | Discussions on service specific CSI for NR                              | Samsung           | Younsun Kim     | <a href="#">43499</a> | other      | Decision |   |   | 49  | 5.1.2.3.5   | Other                                                |   | 0 <a href="#">available</a> |
| 1572 | <a href="#">R1-1711450</a> | MIMO Phase-2 SLS calibration results on 30GHz frequency band            | Samsung           | Younsun Kim     | <a href="#">43499</a> | other      | Decision |   |   | 59  | 5.1.2.5     | Other                                                |   | 0 <a href="#">available</a> |
| 1573 | <a href="#">R1-1711451</a> | MIMO Phase-2 LLS calibration results on 30GHz frequency band            | Samsung           | Younsun Kim     | <a href="#">43499</a> | other      | Decision |   |   | 59  | 5.1.2.5     | Other                                                |   | 0 <a href="#">available</a> |
| 1574 | <a href="#">R1-1711452</a> | Evaluation results for dense urban on 30GHz frequency band              | Samsung           | Younsun Kim     | <a href="#">43499</a> | other      | Decision |   |   | 59  | 5.1.2.5     | Other                                                |   | 0 <a href="#">available</a> |
| 1575 | <a href="#">R1-1711453</a> | DL and UL Assignment for NR TDD                                         | Samsung           | Younsun Kim     | <a href="#">43499</a> | other      | Decision |   |   | 75  | 5.1.3.1.6   | Other                                                |   | 0 <a href="#">available</a> |
| 1576 | <a href="#">R1-1711454</a> | Slot Reconfiguration for Low Latency in TDD                             | Samsung           | Younsun Kim     | <a href="#">43499</a> | other      | Decision |   |   | 75  | 5.1.3.1.6   | Other                                                |   | 0 <a href="#">available</a> |
| 1577 | <a href="#">R1-1711455</a> | Indication of Reserved Resources                                        | Samsung           | Younsun Kim     | <a href="#">43499</a> | other      | Decision |   |   | 75  | 5.1.3.1.6   | Other                                                |   | 0 <a href="#">available</a> |
| 1578 | <a href="#">R1-1711456</a> | HARQ Process Management in NR                                           | Samsung           | Younsun Kim     | <a href="#">43499</a> | other      | Decision |   |   | 112 | 5.1.3.3.9   | Other                                                |   | 0 <a href="#">available</a> |
| 1579 | <a href="#">R1-1711457</a> | Indication of Preempted Resources Prior to HARQ-ACK Feedback            | Samsung           | Younsun Kim     | <a href="#">43499</a> | other      | Decision |   |   | 112 | 5.1.3.3.9   | Other                                                |   | 0 <a href="#">available</a> |
| 1580 | <a href="#">R1-1711458</a> | Considerations on Signaling for Indicating Preempted Resources          | Samsung           | Younsun Kim     | <a href="#">43499</a> | other      | Decision |   |   | 112 | 5.1.3.3.9   | Other                                                |   | 0 <a href="#">available</a> |
| 1581 | <a href="#">R1-1711459</a> | Modulation Scheme for URLLC with Preemption Multiplexing                | Samsung           | Younsun Kim     | <a href="#">43499</a> | other      | Decision |   |   | 142 | 5.1.11      | Other                                                |   | 0 <a href="#">available</a> |
| 1582 | <a href="#">R1-1711460</a> | On Transparency of Spectrum Shaping for p/2-BPSK DFT-s-OFDM             | Samsung           | Younsun Kim     | <a href="#">43499</a> | other      | Decision |   |   | 142 | 5.1.11      | Other                                                |   | 0 <a href="#">available</a> |
| 1583 | <a href="#">R1-1711461</a> | On Spectrum Shaping Methods for p/2-BPSK DFT-s-OFDM                     | Samsung           | Younsun Kim     | <a href="#">43499</a> | other      | Decision |   |   | 142 | 5.1.11      | Other                                                |   | 0 <a href="#">available</a> |
| 1584 | <a href="#">R1-1711462</a> | On Modulation Schemes for High Spectral Efficiency                      | Samsung           | Younsun Kim     | <a href="#">43499</a> | other      | Decision |   |   | 142 | 5.1.11      | Other                                                |   | 0 <a href="#">available</a> |
| 1585 | <a href="#">R1-1711463</a> | Transmission and Reception for High-Order Modulation with MIMO          | Samsung           | Younsun Kim     | <a href="#">43499</a> | other      | Decision |   |   | 142 | 5.1.11      | Other                                                |   | 0 <a href="#">available</a> |
| 1586 | <a href="#">R1-1711464</a> | High level consideration on NR unlicensed band operation                | Huawei, HiSilicon | Brian Classon   | <a href="#">45750</a> | other      |          |   |   | 143 | 5.2         | Other                                                |   | 0 <a href="#">available</a> |
| 1587 | <a href="#">R1-1711465</a> | NR Numerology on unlicensed bands                                       | Huawei, HiSilicon | Brian Classon   | <a href="#">45750</a> | other      |          |   |   | 143 | 5.2         | Other                                                |   | 0 <a href="#">available</a> |
| 1588 | <a href="#">R1-1711466</a> | NR Frame structure on unlicensed bands                                  | Huawei, HiSilicon | Brian Classon   | <a href="#">45750</a> | other      |          |   |   | 143 | 5.2         | Other                                                |   | 0 <a href="#">available</a> |
| 1589 | <a href="#">R1-1711467</a> | Coexistence and Channel access for NR unlicensed band operations        | Huawei, HiSilicon | Brian Classon   | <a href="#">45750</a> | other      |          |   |   | 143 | 5.2         | Other                                                |   | 0 <a href="#">available</a> |
| 1590 | <a href="#">R1-1711468</a> | On CSI-RS design for DL beam management                                 | KT Corp.          | Kyu Jin Park    | <a href="#">58528</a> | discussion | Decision |   |   | 52  | 5.1.2.4.2   | CSI-RS                                               |   | 0 <a href="#">available</a> |
| 1591 | <a href="#">R1-1711469</a> | NR standalone operation on unlicensed bands                             | Huawei, HiSilicon | Brian Classon   | <a href="#">45750</a> | other      |          |   |   | 143 | 5.2         | Other                                                |   | 0 <a href="#">available</a> |
| 1592 | <a href="#">R1-1711470</a> | Discussion on NoMA study for Rel-15 SI                                  | Huawei, HiSilicon | Brian Classon   | <a href="#">45750</a> | other      |          |   |   | 143 | 5.2         | Other                                                |   | 0 <a href="#">available</a> |
| 1593 | <a href="#">R1-1711471</a> | Discussions on Transmission Duration                                    | KT Corp.          | Kyu Jin Park    | <a href="#">58528</a> | discussion | Decision |   |   | 94  | 5.1.3.3.1.2 | Time-domain resource allocation                      |   | 0 <a href="#">available</a> |
| 1594 | <a href="#">R1-1711472</a> | Considerations on TB-CRC Failure                                        | KT Corp.          | Kyu Jin Park    | <a href="#">58528</a> | discussion | Decision |   |   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission |   | 0 <a href="#">available</a> |
| 1595 | <a href="#">R1-1711473</a> | View on Multi-Beam Management                                           | KT Corp.          | Kyu Jin Park    | <a href="#">58528</a> | discussion | Decision |   |   | 41  | 5.1.2.2.1   | Beam management details                              |   | 0 <a href="#">available</a> |
| 1596 | <a href="#">R1-1711474</a> | Views on preemption indication for DL                                   | KT Corp.          | Kyu Jin Park    | <a href="#">58528</a> | discussion | Decision |   |   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                  |   | 0 <a href="#">available</a> |
| 1597 | <a href="#">R1-1711475</a> | Views on CCE-to-REG mapping                                             | KT Corp.          | Kyu Jin Park    | <a href="#">58528</a> | discussion | Decision |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCCH-to-CCE mapping         |   | 0 <a href="#">available</a> |
| 1598 | <a href="#">R1-1711476</a> | On UE Categories/Capabilities                                           | Ericsson          | Sorour Falahati | <a href="#">58325</a> | discussion | Decision |   |   | 4   | 4           | Incoming Liaison Statements                          |   | 0 <a href="#">noted</a>     |
| 1599 | <a href="#">R1-1711477</a> | On NR-PDCCH Structure                                                   | Ericsson          | Sorour Falahati | <a href="#">58325</a> | discussion | Decision |   |   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCCH-to-CCE mapping         |   | 0 <a href="#">available</a> |
| 1600 | <a href="#">R1-1711478</a> | On DM-RS for NR-PDCCH                                                   | Ericsson          | Sorour Falahati | <a href="#">58325</a> | discussion | Decision |   |   | 64  | 5.1.3.1.1.2 | RS structure/mapping                                 |   | 0 <a href="#">available</a> |
| 1601 | <a href="#">R1-1711479</a> | On Configuration of Control Resource Sets                               | Ericsson          | Sorour Falahati | <a href="#">58325</a> | discussion | Decision |   |   | 66  | 5.1.3.1.2.1 | CORESET configuration                                |   | 0 <a href="#">available</a> |
| 1602 | <a href="#">R1-1711480</a> | On Search Space and Blind Decoding Design                               | Ericsson          | Sorour Falahati | <a href="#">58325</a> | discussion | Decision |   |   | 67  | 5.1.3.1.2.2 | Search space design                                  |   | 0 <a href="#">available</a> |
| 1603 | <a href="#">R1-1711481</a> | On Multi-beam and Multi-TRP Operation for PDCCCH                        | Ericsson          | Sorour Falahati | <a href="#">58325</a> | discussion | Decision |   |   | 68  | 5.1.3.1.2.3 | Multi-beam operation for PDCCCH                      |   | 0 <a href="#">available</a> |
| 1604 | <a href="#">R1-1711482</a> | On Data Transmission in Control Resource Sets                           | Ericsson          | Sorour Falahati | <a href="#">58325</a> | discussion | Decision |   |   | 69  | 5.1.3.1.3   | Resource sharing between PDCCCH and PDSCH            |   | 0 <a href="#">available</a> |
| 1605 | <a href="#">R1-1711483</a> | On Group-Common PDCCCH Structure and Configuration                      | Ericsson          | Sorour Falahati | <a href="#">58325</a> | discussion | Decision |   |   | 71  | 5.1.3.1.4.1 | Structure of group-common PDCCCH                     |   | 0 <a href="#">available</a> |
| 1606 | <a href="#">R1-1711484</a> | On the Content of Group-Common PDCCCH                                   | Ericsson          | Sorour Falahati | <a href="#">58325</a> | discussion | Decision |   |   | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCCH                      |   | 0 <a href="#">available</a> |
| 1607 | <a href="#">R1-1711485</a> | On UE Procedures Related to Group-Common PDCCCH                         | Ericsson          | Sorour Falahati | <a href="#">58325</a> | discussion | Decision |   |   | 73  | 5.1.3.1.4.3 | UE behaviour related to group-common PDCCCH          |   | 0 <a href="#">available</a> |
| 1608 | <a href="#">R1-1711486</a> | On PDCCCH for Ultra-Reliable Transmission                               | Ericsson          | Sorour Falahati | <a href="#">58325</a> | discussion | Decision |   |   | 74  | 5.1.3.1.5   | Ultra-reliable part of URLLC for DL control          |   | 0 <a href="#">available</a> |
| 1609 | <a href="#">R1-1711487</a> | On the Performance Evaluation of PDCCCH for Ultra-Reliable Transmission | Ericsson          | Sorour Falahati | <a href="#">58325</a> | discussion | Decision |   |   | 74  | 5.1.3.1.5   | Ultra-reliable part of URLLC for DL control          |   | 0 <a href="#">available</a> |
| 1610 | <a href="#">R1-1711488</a> | On the Design of Short PUCCH for 1-2 UCI bits                           | Ericsson          | Sorour Falahati | <a href="#">58325</a> | discussion | Decision |   |   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                  |   | 0 <a href="#">available</a> |
| 1611 | <a href="#">R1-1711489</a> | On the Design of Short PUCCH for more than 2 UCI bits                   | Ericsson          | Sorour Falahati | <a href="#">58325</a> | discussion | Decision |   |   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits              |   | 0 <a href="#">available</a> |
| 1612 | <a href="#">R1-1711490</a> | On the Design of Long PUCCH for 1-2 UCI bits                            | Ericsson          | Sorour Falahati | <a href="#">58325</a> | discussion | Decision |   |   | 81  | 5.1.3.2.2.1 | Long-PUCCH for UCI of up to 2 bits                   |   | 0 <a href="#">available</a> |
| 1613 | <a href="#">R1-1711491</a> | On the Design of Long PUCCH for more than 2 UCI bits                    | Ericsson          | Sorour Falahati | <a href="#">58325</a> | discussion | Decision |   |   | 82  | 5.1.3.2.2.2 | Long-PUCCH for UCI of more than 2 bits               |   | 0 <a href="#">available</a> |

|      | A                          | B                                                                                                   | C                                   | D                     | E                     | F          | G           | H | I | J   | K           | L                                                             | M | N                         |
|------|----------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|-----------------------|------------|-------------|---|---|-----|-------------|---------------------------------------------------------------|---|---------------------------|
| 1614 | <a href="#">R1-1711492</a> | On support of Long PUCCH over multiple slots                                                        | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 83  | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots                     | 0 | <a href="#">available</a> |
| 1615 | <a href="#">R1-1711493</a> | On Transmit Diversity Schemes for PUCCH                                                             | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 84  | 5.1.3.2.3   | Transmit diversity for PUCCH                                  | 0 | <a href="#">available</a> |
| 1616 | <a href="#">R1-1711494</a> | On Resource Allocation for PUCCH and Multiplexing PUCCH Formats                                     | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 85  | 5.1.3.2.4   | Resource allocation for PUCCH                                 | 0 | <a href="#">available</a> |
| 1617 | <a href="#">R1-1711495</a> | On UCI on PUSCH                                                                                     | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 87  | 5.1.3.2.5.1 | UCI piggyback on PUSCH                                        | 0 | <a href="#">available</a> |
| 1618 | <a href="#">R1-1711496</a> | On Simultaneous Transmission of PUSCH and PUCCH                                                     | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 88  | 5.1.3.2.5.2 | PUCCH-PUSCH multiplexing                                      | 0 | <a href="#">available</a> |
| 1619 | <a href="#">R1-1711497</a> | On PUCCH for Ultra-Reliable Transmission                                                            | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 89  | 5.1.3.2.6   | Ultra-reliable part of URLLC for UL control                   | 0 | <a href="#">available</a> |
| 1620 | <a href="#">R1-1711498</a> | On the Performance Evaluation of PUCCH for Ultra-Reliable Transmission                              | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 89  | 5.1.3.2.6   | Ultra-reliable part of URLLC for UL control                   | 0 | <a href="#">available</a> |
| 1621 | <a href="#">R1-1711499</a> | On Resource Allocation in the Frequency Domain                                                      | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                          | 0 | <a href="#">available</a> |
| 1622 | <a href="#">R1-1711500</a> | On Resource Allocation in the Time Domain                                                           | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 94  | 5.1.3.3.1.2 | Time-domain resource allocation                               | 0 | <a href="#">available</a> |
| 1623 | <a href="#">R1-1711501</a> | On MCS/transport Block Size Determination                                                           | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 95  | 5.1.3.3.1.3 | Transport block size determination                            | 0 | <a href="#">available</a> |
| 1624 | <a href="#">R1-1711502</a> | On UL Data Scheduling Grant in NR                                                                   | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 96  | 5.1.3.3.2   | UL data transmission procedure with grant                     | 0 | <a href="#">available</a> |
| 1625 | <a href="#">R1-1711503</a> | On Scheduling Request Enhancements                                                                  | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 96  | 5.1.3.3.2   | UL data transmission procedure with grant                     | 0 | <a href="#">available</a> |
| 1626 | <a href="#">R1-1711504</a> | On SPS/Grant-Free Transmission                                                                      | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                  | 0 | <a href="#">available</a> |
| 1627 | <a href="#">R1-1711505</a> | On HARQ Retransmission for SPS/Grant-free                                                           | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                  | 0 | <a href="#">available</a> |
| 1628 | <a href="#">R1-1711506</a> | On Code Block Group Formation and CRC Attachment                                                    | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 99  | 5.1.3.3.4.1 | CBG construction                                              | 0 | <a href="#">available</a> |
| 1628 | <a href="#">R1-1711507</a> | On Retransmission Decoder Throughput Issues and CBG-based Retransmission Control                    | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission          | 0 | <a href="#">available</a> |
| 1629 | <a href="#">R1-1711508</a> | On Design of CBG HARQ-ACK Feedback Schemes                                                          | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission          | 0 | <a href="#">available</a> |
| 1630 | <a href="#">R1-1711509</a> | On HARQ Feedback Timing                                                                             | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 103 | 5.1.3.3.5.1 | HARQ-ACK feedback timing                                      | 0 | <a href="#">available</a> |
| 1631 | <a href="#">R1-1711510</a> | On HARQ Codebook                                                                                    | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 104 | 5.1.3.3.5.2 | HARQ-ACK multiplexing/bundling                                | 0 | <a href="#">available</a> |
| 1632 | <a href="#">R1-1711511</a> | On Minimum Processing Time and Number of HARQ Processes in NR                                       | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 106 | 5.1.3.3.6.1 | Number of HARQ processes and HARQ RTT                         | 0 | <a href="#">available</a> |
| 1634 | <a href="#">R1-1711512</a> | On HARQ and Soft Buffer Handling                                                                    | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 107 | 5.1.3.3.6.2 | Soft-buffer management                                        | 0 | <a href="#">available</a> |
| 1635 | <a href="#">R1-1711513</a> | On Pre-emption Indication for Downlink                                                              | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                           | 0 | <a href="#">available</a> |
| 1636 | <a href="#">R1-1711514</a> | On Pre-emption Indication for Uplink                                                                | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 110 | 5.1.3.3.7.2 | Possible enhancements for uplink                              | 0 | <a href="#">available</a> |
| 1637 | <a href="#">R1-1711515</a> | On Supporting High Reliability for Data Transmissions                                               | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure    | 0 | <a href="#">available</a> |
| 1638 | <a href="#">R1-1711516</a> | On Mixed Numerology                                                                                 | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 112 | 5.1.3.3.9   | Other                                                         | 0 | <a href="#">available</a> |
| 1639 | <a href="#">R1-1711517</a> | On Scheduling and UCI Handling in Carrier Aggregation                                               | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 115 | 5.1.3.4.1.1 | Self/cross-carrier scheduling and joint/separate UCI feedback | 0 | <a href="#">available</a> |
| 1640 | <a href="#">R1-1711518</a> | On SRS Fast Switching in NR                                                                         | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 116 | 5.1.3.4.1.2 | SRS fast switching                                            | 0 | <a href="#">available</a> |
| 1641 | <a href="#">R1-1711519</a> | On Dual Connectivity for NR                                                                         | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 117 | 5.1.3.4.2   | Dual connectivity                                             | 0 | <a href="#">available</a> |
| 1642 | <a href="#">R1-1711520</a> | Discussion of Multi-Antenna and Highly Directional Beamforming for Operation in Unlicensed Spectrum | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Information |   |   | 143 | 5.2         | Other                                                         | 0 | <a href="#">available</a> |
| 1643 | <a href="#">R1-1711521</a> | On Autonomous UL Transmissions for NR in Unlicensed Spectrum                                        | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Information |   |   | 143 | 5.2         | Other                                                         | 0 | <a href="#">available</a> |
| 1644 | <a href="#">R1-1711522</a> | On Channel Access Mechanisms for NR in Unlicensed Spectrum                                          | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Information |   |   | 143 | 5.2         | Other                                                         | 0 | <a href="#">available</a> |
| 1645 | <a href="#">R1-1711523</a> | On NR Operation in the 60 GHz Unlicensed Band                                                       | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Information |   |   | 143 | 5.2         | Other                                                         | 0 | <a href="#">available</a> |
| 1646 | <a href="#">R1-1711524</a> | On Physical Layer Design Policies for Unlicensed Operation of NR                                    | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Information |   |   | 143 | 5.2         | Other                                                         | 0 | <a href="#">available</a> |
| 1647 | <a href="#">R1-1711525</a> | Technology Components for Unlicensed Operation                                                      | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Information |   |   | 143 | 5.2         | Other                                                         | 0 | <a href="#">available</a> |
| 1648 | <a href="#">R1-1711526</a> | Power Sharing for LTE-NR Dual Connectivity                                                          | Ericsson                            | Sorour Falahati       | <a href="#">58325</a> | discussion | Decision    |   |   | 139 | 5.1.9.1     | Power sharing mechanism                                       | 0 | <a href="#">noted</a>     |
| 1649 | <a href="#">R1-1711527</a> | PRACH Preamble Format Design                                                                        | Cohere Technologies                 | Christian Ibars Casas | <a href="#">66231</a> | discussion | Decision    |   |   | 21  | 5.1.1.4.1   | PRACH preamble format details for long/short sequence length  | 0 | <a href="#">available</a> |
| 1650 | <a href="#">R1-1711528</a> | Extended Range Considerations for mMTC                                                              | HUGHES Network Systems Ltd          | Mustafa Eroç          | <a href="#">70202</a> | discussion |             |   |   | 142 | 5.1.11      | Other                                                         | 0 | <a href="#">available</a> |
| 1651 | <a href="#">R1-1711529</a> | Channel Model for Non-Terrestrial Networks                                                          | HUGHES Network Systems Ltd          | Mustafa Eroç          | <a href="#">70202</a> | discussion |             |   |   | 142 | 5.1.11      | Other                                                         | 0 | <a href="#">available</a> |
| 1652 | <a href="#">R1-1711530</a> | CBG based HARQ-Ack/Nack                                                                             | Sequans Communications              | GUANG LIU             | <a href="#">64119</a> | discussion |             |   |   | 101 | 5.1.3.3.4.3 | UL control signalling for CBG-based (re)transmission          | 0 | <a href="#">available</a> |
| 1653 | <a href="#">R1-1711531</a> | CBG based retransmission                                                                            | Sequans Communications              | GUANG LIU             | <a href="#">64119</a> | discussion |             |   |   | 100 | 5.1.3.3.4.2 | DL control signalling for CBG-based (re)transmission          | 0 | <a href="#">available</a> |
| 1654 | <a href="#">R1-1711532</a> | CRC attachment for CBG                                                                              | Nokia, Alcatel-Lucent Shanghai Bell | Keeth Jayasinghe      | <a href="#">64118</a> | discussion | Decision    |   |   | 121 | 5.1.4.1.1.1 | CRC attachment                                                | 0 | <a href="#">available</a> |
| 1654 | <a href="#">R1-1711533</a> | CRC attachment for Smaller TBs                                                                      | Nokia, Alcatel-Lucent Shanghai Bell | Keeth Jayasinghe      | <a href="#">64118</a> | discussion | Decision    |   |   | 121 | 5.1.4.1.1.1 | CRC attachment                                                | 0 | <a href="#">noted</a>     |
| 1655 |                            |                                                                                                     |                                     |                       |                       |            |             |   |   |     |             |                                                               |   |                           |

|      | A                          | B                                                                     | C                                   | D                | E                     | F          | G           | H                                                 | I                 | J   | K           | L                                                                          | M | N                         |
|------|----------------------------|-----------------------------------------------------------------------|-------------------------------------|------------------|-----------------------|------------|-------------|---------------------------------------------------|-------------------|-----|-------------|----------------------------------------------------------------------------|---|---------------------------|
| 1656 | <a href="#">R1-1711534</a> | Code block segmentation of eMBB                                       | Nokia, Alcatel-Lucent Shanghai Bell | Keeth Jayasinghe | <a href="#">64118</a> | discussion | Decision    |                                                   |                   | 122 | 5.1.4.1.1.2 | Segmentation                                                               | 0 | <a href="#">noted</a>     |
| 1657 | <a href="#">R1-1711535</a> | Padding for LDPC                                                      | Nokia, Alcatel-Lucent Shanghai Bell | Keeth Jayasinghe | <a href="#">64118</a> | discussion | Decision    |                                                   |                   | 122 | 5.1.4.1.1.2 | Segmentation                                                               | 0 | <a href="#">noted</a>     |
| 1658 | <a href="#">R1-1711536</a> | Rate matching for LDPC                                                | Nokia, Alcatel-Lucent Shanghai Bell | Keeth Jayasinghe | <a href="#">64118</a> | discussion | Decision    |                                                   |                   | 123 | 5.1.4.1.1.3 | Rate matching                                                              | 0 | <a href="#">available</a> |
| 1659 | <a href="#">R1-1711537</a> | LDPC designs for base graph 1 and base graph 2                        | Nokia, Alcatel-Lucent Shanghai Bell | Keeth Jayasinghe | <a href="#">64118</a> | discussion | Decision    |                                                   | Late contribution | 125 | 5.1.4.1.2   | LDPC code design                                                           | 0 | <a href="#">available</a> |
| 1660 | <a href="#">R1-1711538</a> | Interleaving for LDPC                                                 | Nokia, Alcatel-Lucent Shanghai Bell | Keeth Jayasinghe | <a href="#">64118</a> | discussion | Decision    |                                                   |                   | 123 | 5.1.4.1.1.3 | Rate matching                                                              | 0 | <a href="#">noted</a>     |
| 1661 | <a href="#">R1-1711539</a> | Distributed CRC Polar code construction                               | Nokia, Alcatel-Lucent Shanghai Bell | Keeth Jayasinghe | <a href="#">64118</a> | discussion | Decision    |                                                   |                   | 127 | 5.1.4.2.1   | Code construction                                                          | 0 | <a href="#">available</a> |
| 1662 | <a href="#">R1-1711540</a> | Early termination benefits of CRC distribution                        | Nokia, Alcatel-Lucent Shanghai Bell | Keeth Jayasinghe | <a href="#">64118</a> | discussion | Decision    |                                                   |                   | 127 | 5.1.4.2.1   | Code construction                                                          | 0 | <a href="#">available</a> |
| 1663 | <a href="#">R1-1711541</a> | Performance evaluation of polar code constructions                    | Nokia, Alcatel-Lucent Shanghai Bell | Keeth Jayasinghe | <a href="#">64118</a> | discussion | Decision    |                                                   | Late contribution | 127 | 5.1.4.2.1   | Code construction                                                          | 0 | <a href="#">available</a> |
| 1664 | <a href="#">R1-1711542</a> | Sequence design for Polar codes                                       | Nokia, Alcatel-Lucent Shanghai Bell | Keeth Jayasinghe | <a href="#">64118</a> | discussion | Decision    |                                                   |                   | 128 | 5.1.4.2.2   | Sequence design                                                            | 0 | <a href="#">available</a> |
| 1665 | <a href="#">R1-1711543</a> | Rate matching for Polar codes                                         | Nokia, Alcatel-Lucent Shanghai Bell | Keeth Jayasinghe | <a href="#">64118</a> | discussion | Decision    |                                                   |                   | 128 | 5.1.4.2.2   | Sequence design                                                            | 0 | <a href="#">available</a> |
| 1666 | <a href="#">R1-1711544</a> | Implicit timing indication for PBCH                                   | Nokia, Alcatel-Lucent Shanghai Bell | Keeth Jayasinghe | <a href="#">64118</a> | discussion | Decision    |                                                   |                   | 130 | 5.1.4.3     | PBCH                                                                       | 0 | <a href="#">available</a> |
| 1667 | <a href="#">R1-1711545</a> | Summary of [89-24] Email discussion LDPC code base graph #1 for NR    | Nokia, Alcatel-Lucent Shanghai Bell | Keeth Jayasinghe | <a href="#">64118</a> | discussion | Decision    |                                                   |                   | 125 | 5.1.4.1.2   | LDPC code design                                                           | 0 | <a href="#">available</a> |
| 1668 | <a href="#">R1-1711546</a> | Summary of [89-25] Email discussion on LDPC code base graph #2 for NR | Nokia, Alcatel-Lucent Shanghai Bell | Keeth Jayasinghe | <a href="#">64118</a> | discussion | Decision    |                                                   |                   | 125 | 5.1.4.1.2   | LDPC code design                                                           | 0 | <a href="#">available</a> |
| 1669 | <a href="#">R1-1711547</a> | Discussion on PRACH designs for short sequence                        | Sequans Communications              | GUANG LIU        | <a href="#">64119</a> | discussion |             |                                                   |                   | 21  | 5.1.1.4.1   | PRACH preamble format details for long/short sequence length               | 0 | <a href="#">available</a> |
| 1670 | <a href="#">R1-1711548</a> | Resource allocation for PUCCH to support URLLC                        | Sequans Communications              | GUANG LIU        | <a href="#">64119</a> | discussion |             |                                                   |                   | 89  | 5.1.3.2.6   | Ultra-reliable part of URLLC for UL control                                | 0 | <a href="#">available</a> |
| 1671 | <a href="#">R1-1711549</a> | Considerations on Satellite channel model                             | THALES                              | Thibault Deleu   | <a href="#">64070</a> | discussion | Information | Considerations on Satellite channel model         |                   | 143 | 5.2         | Other                                                                      | 0 | <a href="#">available</a> |
| 1672 | <a href="#">R1-1711550</a> | NTN Bentpipe payload architecture and characteristics                 | THALES                              | Thibault Deleu   | <a href="#">64070</a> | discussion | Information | Bentpipe payload architecture and characteristics |                   | 143 | 5.2         | Other                                                                      | 0 | <a href="#">available</a> |
| 1673 | <a href="#">R1-1711551</a> | Considerations on multiplexing with different transmission durations  | KDDI Corporation                    | Takeo Ohseki     | <a href="#">58533</a> | other      |             |                                                   |                   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                                        | 0 | <a href="#">available</a> |
| 1674 | <a href="#">R1-1711552</a> | Management of URLLC DL control channel efficiency and reliability     | Qualcomm Incorporated               | Peter Gaal       | <a href="#">57198</a> | discussion | Discussion  |                                                   |                   | 74  | 5.1.3.1.5   | Ultra-reliable part of URLLC for DL control                                | 0 | <a href="#">available</a> |
| 1675 | <a href="#">R1-1711553</a> | The necessity of reliable SR design for GF/GB UL URLLC transmission   | Qualcomm Incorporated               | Peter Gaal       | <a href="#">57198</a> | discussion | Discussion  |                                                   |                   | 89  | 5.1.3.2.6   | Ultra-reliable part of URLLC for UL control                                | 0 | <a href="#">available</a> |
| 1676 | <a href="#">R1-1711554</a> | URLLC DL pre-emption and UL suspension indication channel design      | Qualcomm Incorporated               | Peter Gaal       | <a href="#">57198</a> | discussion | Discussion  |                                                   |                   | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                                        | 0 | <a href="#">available</a> |
| 1677 | <a href="#">R1-1711555</a> | UL URLLC Capacity Based on URLLC and eMBB dynamic multiplexing        | Qualcomm Incorporated               | Peter Gaal       | <a href="#">57198</a> | discussion | Discussion  |                                                   |                   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure                 | 0 | <a href="#">available</a> |
| 1678 | <a href="#">R1-1711556</a> | Ultra reliable HARQ design with async CSI feedback                    | Qualcomm Incorporated               | Peter Gaal       | <a href="#">57198</a> | discussion | Discussion  |                                                   |                   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure                 | 0 | <a href="#">available</a> |
| 1679 | <a href="#">R1-1711557</a> | Performance of polar code for very small block length                 | Qualcomm Incorporated               | Peter Gaal       | <a href="#">57198</a> | discussion | Discussion  |                                                   |                   | 127 | 5.1.4.2.1   | Code construction                                                          | 0 | <a href="#">available</a> |
| 1680 | <a href="#">R1-1711558</a> | Multiplexing of different types of RS for uplink                      | Ericsson                            | Stephen Grant    | <a href="#">65572</a> | discussion | Decision    |                                                   |                   | 51  | 5.1.2.4.1   | Multiplexing of different types of RSs                                     | 0 | <a href="#">available</a> |
| 1681 | <a href="#">R1-1711559</a> | Uplink operation for LTE+NR Dual Connectivity                         | VODAFONE Group Plc                  | Razieh Razavi    | <a href="#">63862</a> | discussion |             |                                                   | Late contribution | 137 | 5.1.8       | NR-LTE co-existence                                                        | 0 | <a href="#">withdrawn</a> |
| 1682 | <a href="#">R1-1711560</a> | Discussion on wireless time synchronization for URLLC                 | SIA                                 | Chunhe Song      | <a href="#">72342</a> | discussion |             |                                                   |                   | 111 | 5.1.3.3.8   | Ultra-reliable part of URLLC for scheduling/HARQ procedure                 | 0 | <a href="#">available</a> |
| 1683 | <a href="#">R1-1711561</a> | On Hybrid TDD and Measurements for Cross-link Interference Mitigation | Ericsson                            | Sorour Falahati  | <a href="#">58325</a> | discussion | Decision    |                                                   |                   | 134 | 5.1.6.1     | Cross-link interference management                                         | 0 | <a href="#">available</a> |
| 1684 | <a href="#">R1-1711562</a> | On Hybrid TDD and Signaling for Cross-link Interference Mitigation    | Ericsson                            | Sorour Falahati  | <a href="#">58325</a> | discussion | Decision    |                                                   |                   | 134 | 5.1.6.1     | Cross-link interference management                                         | 0 | <a href="#">revised</a>   |
| 1685 | <a href="#">R1-1711563</a> | On Dynamic TDD Scenarios                                              | Ericsson                            | Sorour Falahati  | <a href="#">58325</a> | discussion | Decision    |                                                   |                   | 135 | 5.1.6.2     | Other                                                                      | 0 | <a href="#">available</a> |
| 1686 | <a href="#">R1-1711564</a> | On Duplexing in Paired Spectrum                                       | Ericsson                            | Sorour Falahati  | <a href="#">58325</a> | discussion | Decision    |                                                   |                   | 135 | 5.1.6.2     | Other                                                                      | 0 | <a href="#">available</a> |
| 1687 | <a href="#">R1-1711565</a> | On bandwidth parties                                                  | Ericsson AB                         | Erik Dahlman     | <a href="#">23366</a> | discussion | Decision    |                                                   |                   | 136 | 5.1.7       | Wider bandwidth operations                                                 | 0 | <a href="#">available</a> |
| 1688 | <a href="#">R1-1711566</a> | On semi-persistent CSI reporting on PUSCH                             | Ericsson                            | Sebastian Faxälv | <a href="#">63374</a> | discussion | Decision    |                                                   |                   | 48  | 5.1.2.3.4   | CSI feedback                                                               | 0 | <a href="#">available</a> |
| 1689 | <a href="#">R1-1711567</a> | Summary of e-mail discussion on DCI content                           | Ericsson LM                         | Stefan Parkvall  | <a href="#">28759</a> | discussion |             |                                                   | Late contribution | 61  | 5.1.3.1     | Physical downlink control channel                                          | 0 | <a href="#">available</a> |
| 1690 | <a href="#">R1-1711568</a> | Considerations on HAPS channel model                                  | CNES, Thales                        | Thibault Deleu   | <a href="#">64070</a> | discussion | Information | Considerations on HAPS channel model              |                   | 143 | 5.2         | Other                                                                      | 0 | <a href="#">available</a> |
| 1691 | <a href="#">R1-1711569</a> | PRACH Design                                                          | TCL Communication Ltd.              | Umer Salim       | <a href="#">70602</a> | discussion |             |                                                   |                   | 22  | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management | 0 | <a href="#">available</a> |

|      | A                          | B                                                                                                | C                                   | D              | E                     | F          | G           | H                                                                                                | I                                                             | J   | K           | L                                                                          | M | N                         |
|------|----------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------|----------------|-----------------------|------------|-------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-----|-------------|----------------------------------------------------------------------------|---|---------------------------|
| 1692 | <a href="#">R1-1711570</a> | UE_ID Insertion for Early Block Discrimination on DCI Blind Detection                            | Coherent Logix                      | Kevin Shelby   | <a href="#">67999</a> | discussion | Decision    | Elaborates on the benefits of UE_ID insertion in frozen bits for early DCI block discrimination. |                                                               | 127 | 5.1.4.2.1   | Code construction                                                          | 0 | <a href="#">available</a> |
| 1693 | <a href="#">R1-1711571</a> | Scrambling Sequence Design for Early Block Discrimination on DCI Blind Detection                 | Coherent Logix                      | Kevin Shelby   | <a href="#">67999</a> | discussion | Decision    | Disclose the scrambling sequence considerations for early DCI block discrimination.              |                                                               | 127 | 5.1.4.2.1   | Code construction                                                          | 0 | <a href="#">available</a> |
| 1694 | <a href="#">R1-1711572</a> | Scrambling Sequence Design for Multi-Mode Block Discrimination on DCI Blind Detection            | Coherent Logix                      | Kevin Shelby   | <a href="#">67999</a> | discussion | Decision    | Scrambling sequence considerations for multi-mode block discrimination                           | Late contribution                                             | 127 | 5.1.4.2.1   | Code construction                                                          | 0 | <a href="#">withdrawn</a> |
| 1695 | <a href="#">R1-1711573</a> | Early Block Discrimination on DCI Blind Detection                                                | Coherent Logix                      | Kevin Shelby   | <a href="#">67999</a> | discussion | Decision    | Methods of early block discrimination of DCI blind detection.                                    | Late contribution                                             | 127 | 5.1.4.2.1   | Code construction                                                          | 0 | <a href="#">available</a> |
| 1696 | <a href="#">R1-1711574</a> | Discussion on bandwidth part configuration                                                       | LG Electronics Inc.                 | Yunjung Yi     | <a href="#">56790</a> | discussion |             |                                                                                                  |                                                               | 142 | 5.1.11      | Other                                                                      | 0 | <a href="#">available</a> |
| 1697 | <a href="#">R1-1711575</a> | Discussion on Polar codes for PBCH                                                               | CATT                                | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |                                                                                                  |                                                               | 130 | 5.1.4.3     | PBCH                                                                       | 0 | <a href="#">available</a> |
| 1698 | <a href="#">R1-1711576</a> | L3 Mobility based on CSI-RS based measurements                                                   | CATT                                | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |                                                                                                  |                                                               | 27  | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility                                | 0 | <a href="#">available</a> |
| 1699 | <a href="#">R1-1711577</a> | On UL coverage extension of TDD @3.5GHz                                                          | ORANGE                              | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  |                                                               | 137 | 5.1.8       | NR-LTE co-existence                                                        | 0 | <a href="#">revised</a>   |
| 1700 | <a href="#">R1-1711578</a> | Circulant permutation matrix design for LDPC codes base graph #2                                 | LG Electronics                      | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  | Late contribution                                             | 125 | 5.1.4.1.2   | LDPC code design                                                           | 0 | <a href="#">revised</a>   |
| 1701 | <a href="#">R1-1711579</a> | Calibration results for Phase 1 and Phase 2 NR MIMO system level calibration                     | vivo                                | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  |                                                               | 59  | 5.1.2.5     | Other                                                                      | 0 | <a href="#">available</a> |
| 1702 | <a href="#">R1-1711580</a> | SS burst set composition                                                                         | Samsung                             | Patrick Merias | <a href="#">52292</a> | other      | Decision    |                                                                                                  |                                                               | 10  | 5.1.1.1.2   | SS burst set composition                                                   | 0 | <a href="#">noted</a>     |
| 1703 | <a href="#">R1-1711581</a> | Measurement based on CSI-RS for L3 mobility                                                      | Samsung                             | Patrick Merias | <a href="#">52292</a> | other      | Decision    |                                                                                                  |                                                               | 27  | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility                                | 0 | <a href="#">available</a> |
| 1704 | <a href="#">R1-1711582</a> | Analysis of the benefits of PC bits for Polar code                                               | Huawei, HiSilicon                   | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  |                                                               | 127 | 5.1.4.2.1   | Code construction                                                          | 0 | <a href="#">available</a> |
| 1705 | <a href="#">R1-1711583</a> | DMRS Structure for PDCCH                                                                         | Samsung                             | Patrick Merias | <a href="#">52292</a> | other      | Decision    |                                                                                                  |                                                               | 64  | 5.1.3.1.1.2 | RS structure/mapping                                                       | 0 | <a href="#">available</a> |
| 1706 | <a href="#">R1-1711584</a> | On UL coverage extension of TDD @3.5GHz                                                          | ORANGE                              | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  |                                                               | 137 | 5.1.8       | NR-LTE co-existence                                                        | 0 | <a href="#">noted</a>     |
| 1707 | <a href="#">R1-1711585</a> | Partial pre-emption based multiplexing data with different transmission durations in DL          | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  |                                                               | 112 | 5.1.3.3.9   | Other                                                                      | 0 | <a href="#">available</a> |
| 1708 | <a href="#">R1-1711586</a> | Selected highlights from RAN#76 of relevance to RAN1                                             | RAN1 Chair                          | Patrick Merias | <a href="#">52292</a> | other      | Information |                                                                                                  | Only relevant for NR part shall be presented again at RAN1#90 | 3   | 3           | Review of Minutes from previous meeting                                    | 0 | <a href="#">noted</a>     |
| 1709 | <a href="#">R1-1711587</a> | Shift coefficients design for base graph 1                                                       | ZTE                                 | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  |                                                               | 125 | 5.1.4.1.2   | LDPC code design                                                           | 0 | <a href="#">revised</a>   |
| 1710 | <a href="#">R1-1711588</a> | Shift coefficients design for base graph 2                                                       | ZTE                                 | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  |                                                               | 125 | 5.1.4.1.2   | LDPC code design                                                           | 0 | <a href="#">revised</a>   |
| 1711 | <a href="#">R1-1711589</a> | Timing indication based on SS block                                                              | Samsung                             | Patrick Merias | <a href="#">52292</a> | other      | Decision    |                                                                                                  |                                                               | 11  | 5.1.1.1.3   | Timing indication based on SS block                                        | 0 | <a href="#">noted</a>     |
| 1712 | <a href="#">R1-1711590</a> | Feedback transmission of type II codebook                                                        | Nokia, Alcatel-Lucent Shanghai Bell | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |                                                                                                  |                                                               | 48  | 5.1.2.3.4   | CSI feedback                                                               | 0 | <a href="#">available</a> |
| 1713 | <a href="#">R1-1711591</a> | Link level performance evaluation for mobility scenario                                          | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  | Late contribution                                             | 58  | 5.1.2.4.8   | Other                                                                      | 0 | <a href="#">available</a> |
| 1714 | <a href="#">R1-1711592</a> | Composite beam transmission for SS blocks                                                        | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  | Late contribution                                             | 43  | 5.1.2.2.3   | Other                                                                      | 0 | <a href="#">available</a> |
| 1715 | <a href="#">R1-1711593</a> | System level evaluation on effect of penetration loss in sub-6GHz and above-6GHz frequency bands | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  | Late contribution                                             | 59  | 5.1.2.5     | Other                                                                      | 0 | <a href="#">available</a> |
| 1716 | <a href="#">R1-1711594</a> | Analysis on random cluster effect in map-based hybrid channel model                              | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  | Late contribution                                             | 59  | 5.1.2.5     | Other                                                                      | 0 | <a href="#">available</a> |
| 1717 | <a href="#">R1-1711595</a> | Impact of channel estimation error on the performance of high spectral efficiency MIMO schemes   | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  | Late contribution                                             | 142 | 5.1.11      | Other                                                                      | 0 | <a href="#">available</a> |
| 1718 | <a href="#">R1-1711596</a> | Indication of Preempted Resources for TB-based re-transmission                                   | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  | Late contribution                                             | 112 | 5.1.3.3.9   | Other                                                                      | 0 | <a href="#">available</a> |
| 1719 | <a href="#">R1-1711597</a> | Remaining Issues on RB Grid                                                                      | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  | Late contribution                                             | 142 | 5.1.11      | Other                                                                      | 0 | <a href="#">available</a> |
| 1720 | <a href="#">R1-1711598</a> | On numerology for NR RACH                                                                        | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  | Late contribution                                             | 29  | 5.1.1.6     | Other                                                                      | 0 | <a href="#">available</a> |
| 1721 | <a href="#">R1-1711599</a> | Remaining issues on PT-RS density in CP-OFDM                                                     | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  | Late contribution                                             | 58  | 5.1.2.4.8   | Other                                                                      | 0 | <a href="#">available</a> |
| 1722 | <a href="#">R1-1711600</a> | PRACH preamble sequences and formats for capacity enhancement and beam management                | Huawei, HiSilicon                   | Patrick Merias | <a href="#">52292</a> | other      |             |                                                                                                  |                                                               | 22  | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management | 0 | <a href="#">noted</a>     |
| 1723 | <a href="#">R1-1711601</a> | Draft Agenda of RAN1#AH_NIR2 meeting                                                             | RAN1 Chair                          | Patrick Merias | <a href="#">52292</a> | agenda     | Approval    |                                                                                                  |                                                               | 2   | 2           | Approval of Agenda                                                         | 0 | <a href="#">approved</a>  |
| 1724 | <a href="#">R1-1711602</a> | Common and Beam Specific Power Control Parameters                                                | InterDigital, Inc.                  | Patrick Merias | <a href="#">52292</a> | discussion |             |                                                                                                  |                                                               | 140 | 5.1.9.2     | NR power control framework                                                 | 0 | <a href="#">available</a> |
| 1725 | <a href="#">R1-1711603</a> | Short PUCCH for small UCI payloads                                                               | CATT                                | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |                                                                                                  |                                                               | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                                        | 0 | <a href="#">available</a> |
| 1726 | <a href="#">R1-1711604</a> | Beam management for PDCCH                                                                        | Samsung                             | Patrick Merias | <a href="#">52292</a> | other      | Decision    |                                                                                                  |                                                               | 43  | 5.1.2.2.3   | Other                                                                      | 0 | <a href="#">available</a> |
| 1727 | <a href="#">R1-1711605</a> | PBCH channel coding                                                                              | Qualcomm Incorporated               | Patrick Merias | <a href="#">52292</a> | discussion | Discussion  |                                                                                                  |                                                               | 130 | 5.1.4.3     | PBCH                                                                       | 0 | <a href="#">available</a> |

|      | A                          | B                                                                       | C                                   | D              | E                     | F          | G           | H | I                 | J   | K           | L                                                                          | M | N                         |
|------|----------------------------|-------------------------------------------------------------------------|-------------------------------------|----------------|-----------------------|------------|-------------|---|-------------------|-----|-------------|----------------------------------------------------------------------------|---|---------------------------|
| 1728 | <a href="#">R1-1711606</a> | Codeword mapping and interleaving                                       | ZTE                                 | Patrick Merias | <a href="#">52292</a> | discussion |             |   |                   | 32  | 5.1.2.1.1   | Codeword mapping                                                           | 0 | <a href="#">available</a> |
| 1729 | <a href="#">R1-1711607</a> | On CSI framework details                                                | ZTE                                 | Patrick Merias | <a href="#">52292</a> | discussion |             |   |                   | 45  | 5.1.2.3.1   | CSI framework                                                              | 0 | <a href="#">available</a> |
| 1730 | <a href="#">R1-1711608</a> | On reciprocity based CSI acquisition                                    | ZTE                                 | Patrick Merias | <a href="#">52292</a> | discussion |             |   |                   | 47  | 5.1.2.3.3   | CSI acquisition for reciprocity based operation                            | 0 | <a href="#">available</a> |
| 1731 | <a href="#">R1-1711609</a> | Further discussion on CSI acquisition for reciprocity-based operation   | Ericsson                            | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                   | 47  | 5.1.2.3.3   | CSI acquisition for reciprocity based operation                            | 0 | <a href="#">available</a> |
| 1732 | <a href="#">R1-1711610</a> | UL MIMO for codebook based transmission                                 | Ericsson                            | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                   | 33  | 5.1.2.1.2   | Codebook based transmission for UL                                         | 0 | <a href="#">noted</a>     |
| 1733 | <a href="#">R1-1711611</a> | Time Index Signaling for SS Blocks                                      | Intel Corporation                   | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                   | 11  | 5.1.1.1.3   | Timing indication based on SS block                                        | 0 | <a href="#">revised</a>   |
| 1734 | <a href="#">R1-1711612</a> | SS Block Composition                                                    | Intel Corporation                   | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                   | 15  | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                                | 0 | <a href="#">revised</a>   |
| 1735 | <a href="#">R1-1711613</a> | On time and frequency tracking of the channel                           | Ericsson                            | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                   | 56  | 5.1.2.4.6   | TRS                                                                        | 0 | <a href="#">available</a> |
| 1736 | <a href="#">R1-1711614</a> | Dynamic resource allocation for Integrated Access and Backhaul          | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |   | Late contribution | 143 | 5.2         | Other                                                                      | 0 | <a href="#">available</a> |
| 1737 | <a href="#">R1-1711615</a> | Deployment scenarios for Integrated Access and Backhaul                 | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |   | Late contribution | 143 | 5.2         | Other                                                                      | 0 | <a href="#">available</a> |
| 1738 | <a href="#">R1-1711616</a> | Evaluation assumptions for Integrated Access and Backhaul               | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |   | Late contribution | 143 | 5.2         | Other                                                                      | 0 | <a href="#">available</a> |
| 1739 | <a href="#">R1-1711617</a> | RACH power control and power ramping procedure                          | CATT                                | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                   | 23  | 5.1.1.4.3   | Power ramping and power control during RA procedure                        | 0 | <a href="#">available</a> |
| 1740 | <a href="#">R1-1711618</a> | NR RACH Preamble Format for capacity enhancement.                       | CATT                                | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                   | 22  | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management | 0 | <a href="#">available</a> |
| 1741 | <a href="#">R1-1711619</a> | Discussion on msg.3 tx timing determination                             | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |   | Late contribution | 29  | 5.1.1.6     | Other                                                                      | 0 | <a href="#">available</a> |
| 1742 | <a href="#">R1-1711620</a> | Discussion on RACH design                                               | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |   | Late contribution | 29  | 5.1.1.6     | Other                                                                      | 0 | <a href="#">available</a> |
| 1743 | <a href="#">R1-1711621</a> | Assisted information for Msg.3 tx beam determination                    | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |   | Late contribution | 29  | 5.1.1.6     | Other                                                                      | 0 | <a href="#">available</a> |
| 1744 | <a href="#">R1-1711622</a> | Discussion on NR-PBCH design and SS block composition                   | NTT DOCOMO, INC.                    | Patrick Merias | <a href="#">52292</a> | discussion |             |   |                   | 15  | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                                | 0 | <a href="#">available</a> |
| 1745 | <a href="#">R1-1711623</a> | Correction on the formula of AnnexA                                     | ZTE, Ericsson                       | Patrick Merias | <a href="#">52292</a> | draftCR    | Decision    |   |                   | 141 | 5.1.10      | Channel model                                                              | 0 | <a href="#">revised</a>   |
| 1746 | <a href="#">R1-1711624</a> | Correction on Procedure A of spatially-consistency UT mobility modeling | ZTE, Ericsson                       | Patrick Merias | <a href="#">52292</a> | draftCR    | Decision    |   |                   | 141 | 5.1.10      | Channel model                                                              | 0 | <a href="#">revised</a>   |
| 1747 | <a href="#">R1-1711625</a> | PRACH Msg1 retransmission                                               | MediaTek Inc.                       | Patrick Merias | <a href="#">52292</a> | discussion |             |   |                   | 23  | 5.1.1.4.3   | Power ramping and power control during RA procedure                        | 0 | <a href="#">available</a> |
| 1748 | <a href="#">R1-1711626</a> | RRM for wider bandwidth operations                                      | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |   | Late contribution | 29  | 5.1.1.6     | Other                                                                      | 0 | <a href="#">available</a> |
| 1749 | <a href="#">R1-1711627</a> | LDPC shift coefficients design for BG1                                  | Samsung                             | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   | Late contribution | 125 | 5.1.4.1.2   | LDPC code design                                                           | 0 | <a href="#">available</a> |
| 1750 | <a href="#">R1-1711628</a> | LDPC shift coefficients design for BG2                                  | Samsung                             | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   | Late contribution | 125 | 5.1.4.1.2   | LDPC code design                                                           | 0 | <a href="#">available</a> |
| 1751 | <a href="#">R1-1711629</a> | Performance evaluation of LDPC shift coefficients design for BG1        | Samsung                             | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   | Late contribution | 125 | 5.1.4.1.2   | LDPC code design                                                           | 0 | <a href="#">available</a> |
| 1752 | <a href="#">R1-1711630</a> | Performance evaluation of LDPC shift coefficients design for BG2        | Samsung                             | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   | Late contribution | 125 | 5.1.4.1.2   | LDPC code design                                                           | 0 | <a href="#">available</a> |
| 1753 | <a href="#">R1-1711631</a> | On Details of the PT-RS Design for DFT-s-OFDM                           | Nokia, Alcatel-Lucent Shanghai Bell | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                   | 54  | 5.1.2.4.4   | PT-RS                                                                      | 0 | <a href="#">available</a> |
| 1754 | <a href="#">R1-1711632</a> | Channel and interference measurement for CSI acquisition                | Huawei, HiSilicon                   | Patrick Merias | <a href="#">52292</a> | other      |             |   |                   | 46  | 5.1.2.3.2   | Details of CSI acquisition                                                 | 0 | <a href="#">available</a> |
| 1755 | <a href="#">R1-1711633</a> | PDCH structure                                                          | Qualcomm Incorporated               | Patrick Merias | <a href="#">52292</a> | discussion | Discussion  |   |                   | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCH-to-CCE mapping                                 | 0 | <a href="#">available</a> |
| 1756 | <a href="#">R1-1711634</a> | RS for DL control channel                                               | Qualcomm Incorporated               | Patrick Merias | <a href="#">52292</a> | discussion | Discussion  |   |                   | 64  | 5.1.3.1.1.2 | RS structure/mapping                                                       | 0 | <a href="#">available</a> |
| 1757 | <a href="#">R1-1711635</a> | Summary of Open Issues on Layer Mapping                                 | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |   |                   | 32  | 5.1.2.1.1   | Codeword mapping                                                           | 0 | <a href="#">revised</a>   |
| 1758 | <a href="#">R1-1711636</a> | General views on DL beam management                                     | Huawei, HiSilicon                   | Patrick Merias | <a href="#">52292</a> | other      |             |   |                   | 41  | 5.1.2.2.1   | Beam management details                                                    | 0 | <a href="#">available</a> |
| 1759 | <a href="#">R1-1711637</a> | Discussion on NTN Deployment Scenarios                                  | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |   | Late contribution | 143 | 5.2         | Other                                                                      | 0 | <a href="#">available</a> |
| 1760 | <a href="#">R1-1711638</a> | Discussion on transition between NR network coordination schemes        | Samsung                             | Patrick Merias | <a href="#">52292</a> | discussion |             |   | Late contribution | 39  | 5.1.2.1.8   | Other                                                                      | 0 | <a href="#">available</a> |
| 1761 | <a href="#">R1-1711639</a> | Performance comparison of interleaver designs                           | Qualcomm                            | Patrick Merias | <a href="#">52292</a> | other      |             |   |                   | 129 | 5.1.4.2.3   | Other                                                                      | 0 | <a href="#">available</a> |
| 1762 | <a href="#">R1-1711640</a> | Interleaver design for Polar codes                                      | Qualcomm Incorporated               | Patrick Merias | <a href="#">52292</a> | discussion | Discussion  |   |                   | 129 | 5.1.4.2.3   | Other                                                                      | 0 | <a href="#">withdrawn</a> |
| 1763 | <a href="#">R1-1711641</a> | Repetition scheme of polar codes                                        | LG Electronics                      | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                   | 128 | 5.1.4.2.2   | Sequence design                                                            | 0 | <a href="#">available</a> |
| 1764 | <a href="#">R1-1711642</a> | NR topics requiring coordination between RAN1 and RAN2                  | RAN2 Chair                          | Patrick Merias | <a href="#">52292</a> | discussion | Information |   |                   | 6   | 5.1         | New Radio Access Technology - WID in RP-171485                             | 0 | <a href="#">noted</a>     |
| 1765 | <a href="#">R1-1711643</a> | Views on SRS designs                                                    | Mitsubishi Electric                 | Patrick Merias | <a href="#">52292</a> | discussion |             |   |                   | 55  | 5.1.2.4.5   | SRS                                                                        | 0 | <a href="#">available</a> |
| 1766 | <a href="#">R1-1711644</a> | Study of Split-CRC Polar Code Construction for Early Termination        | Tsotun Algorithm                    | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                   | 127 | 5.1.4.2.1   | Code construction                                                          | 0 | <a href="#">noted</a>     |
| 1767 | <a href="#">R1-1711645</a> | SS burst set composition consideration                                  | Qualcomm Incorporated               | Patrick Merias | <a href="#">52292</a> | discussion | Discussion  |   |                   | 10  | 5.1.1.1.2   | SS burst set composition                                                   | 0 | <a href="#">noted</a>     |
| 1768 | <a href="#">R1-1711646</a> | Timing indication based on SS block consideration                       | Qualcomm Incorporated               | Patrick Merias | <a href="#">52292</a> | discussion | Discussion  |   |                   | 11  | 5.1.1.1.3   | Timing indication based on SS block                                        | 0 | <a href="#">noted</a>     |
| 1769 | <a href="#">R1-1711647</a> | Time Index Signaling for SS Blocks                                      | Intel Corporation                   | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                   | 11  | 5.1.1.1.3   | Timing indication based on SS block                                        | 0 | <a href="#">available</a> |

|      | A                          | B                                                                   | C                                                                                                | D                     | E                     | F          | G           | H | I | J   | K           | L                                                            | M | N                         |
|------|----------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------|-----------------------|------------|-------------|---|---|-----|-------------|--------------------------------------------------------------|---|---------------------------|
| 1770 | <a href="#">R1-1711648</a> | SS Block Composition                                                | Intel Corporation                                                                                | Patrick Merias        | <a href="#">52292</a> | discussion | Decision    |   |   | 15  | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                  | 0 | <a href="#">available</a> |
| 1771 | <a href="#">R1-1711649</a> | Discussion on 1-symbol NR-PUCCH for UCI of up to 2 bits             | Panasonic Corporation                                                                            | Patrick Merias        | <a href="#">52292</a> | discussion |             |   |   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits                          | 0 | <a href="#">available</a> |
| 1772 | <a href="#">R1-1711650</a> | NR-PBCH content                                                     | Nokia, Alcatel-Lucent, Shanghai Bell                                                             | Patrick Merias        | <a href="#">52292</a> | discussion | Decision    |   |   | 14  | 5.1.1.2.1   | NR-PBCH contents and payload size                            | 0 | <a href="#">available</a> |
| 1773 | <a href="#">R1-1711651</a> | Discussion on CSI-RS design                                         | Qualcomm Incorporated                                                                            | Patrick Merias        | <a href="#">52292</a> | discussion | Discussion  |   |   | 52  | 5.1.2.4.2   | CSI-RS                                                       | 0 | <a href="#">withdrawn</a> |
| 1774 | <a href="#">R1-1711652</a> | Summary of the 2nd NOMA Workshop                                    | ZTE                                                                                              | Patrick Merias        | <a href="#">52292</a> | other      | Information |   |   | 143 | 5.2         | Other                                                        | 0 | <a href="#">available</a> |
| 1775 | <a href="#">R1-1711653</a> | Considerations of NR-LTE coexistence in uplink                      | ZTE                                                                                              | Patrick Merias        | <a href="#">52292</a> | discussion | Decision    |   |   | 137 | 5.1.8       | NR-LTE co-existence                                          | 0 | <a href="#">revised</a>   |
| 1776 | <a href="#">R1-1711654</a> | WF on NR-SS sequence design                                         | NTT DOCOMO, ZTE, InterDigital                                                                    | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 9   | 5.1.1.1.1   | Remaining details on SS sequence design                      | 0 | <a href="#">noted</a>     |
| 1777 | <a href="#">R1-1711655</a> | Discussion on short-PUCCH more than 2-bit                           | Patrick Merias                                                                                   | <a href="#">52292</a> | discussion            |            |             |   |   | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits                      | 0 | <a href="#">available</a> |
| 1778 | <a href="#">R1-1711656</a> | WF on PRACH formats for long sequence length (L = 839)              | ZTE                                                                                              | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 21  | 5.1.1.4.1   | PRACH preamble format details for long/short sequence length | 0 | <a href="#">withdrawn</a> |
| 1779 | <a href="#">R1-1711657</a> | [DRAFT] Response LS on Support for fake gNB detection mechanisms    | Nokia                                                                                            | Patrick Merias        | <a href="#">52292</a> | LS out     | Decision    |   |   | 4   | 4           | Incoming Liaison Statements                                  | 0 | <a href="#">revised</a>   |
| 1780 | <a href="#">R1-1711658</a> | Considerations on SS block compositions                             | Sony                                                                                             | Patrick Merias        | <a href="#">52292</a> | other      |             |   |   | 15  | 5.1.1.2.2   | NR-PBCH RE mapping and SS block composition                  | 0 | <a href="#">available</a> |
| 1781 | <a href="#">R1-1711659</a> | Discussion on SS block time index indication                        | Sony                                                                                             | Patrick Merias        | <a href="#">52292</a> | other      |             |   |   | 11  | 5.1.1.1.3   | Timing indication based on SS block                          | 0 | <a href="#">available</a> |
| 1782 | <a href="#">R1-1711660</a> | WF on CSI-RS                                                        | Samsung, Ericsson, NTT DOCOMO, CATT                                                              | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 52  | 5.1.2.4.2   | CSI-RS                                                       | 0 | <a href="#">available</a> |
| 1783 | <a href="#">R1-1711661</a> | Summary of views on NR CSI-RS                                       | Huawei, HiSilicon                                                                                | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 52  | 5.1.2.4.2   | CSI-RS                                                       | 0 | <a href="#">available</a> |
| 1784 | <a href="#">R1-1711662</a> | WF on CW to layer mapping                                           | Huawei, HiSilicon, ZTE, Xinxin, China Unicom, ETRI, Softbank, DOCOMO, LG, Deutsche Telekom, CATR | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 32  | 5.1.2.1.1   | Codeword mapping                                             | 0 | <a href="#">available</a> |
| 1785 | <a href="#">R1-1711663</a> | On UL PT-RS design                                                  | LG Electronics                                                                                   | Patrick Merias        | <a href="#">52292</a> | discussion | Decision    |   |   | 54  | 5.1.2.4.4   | PT-RS                                                        | 0 | <a href="#">withdrawn</a> |
| 1786 | <a href="#">R1-1711664</a> | WF on number of MCS and CQI configuration                           | Intel, Samsung                                                                                   | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 32  | 5.1.2.1.1   | Codeword mapping                                             | 0 | <a href="#">available</a> |
| 1787 | <a href="#">R1-1711665</a> | WF on MIMO layer to CW correspondence                               | Intel, AT&T                                                                                      | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 32  | 5.1.2.1.1   | Codeword mapping                                             | 0 | <a href="#">available</a> |
| 1788 | <a href="#">R1-1711666</a> | WF on SS block and DM-RS collision handling                         | Intel                                                                                            | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 53  | 5.1.2.4.3   | DMRS                                                         | 0 | <a href="#">noted</a>     |
| 1789 | <a href="#">R1-1711667</a> | WF on multiple PDSCH approach of supporting NC-JT                   | Intel                                                                                            | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 37  | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission                       | 0 | <a href="#">noted</a>     |
| 1790 | <a href="#">R1-1711668</a> | WF on SRS sequence for NR                                           | Intel, Samsung, Qualcomm                                                                         | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 55  | 5.1.2.4.5   | SRS                                                          | 0 | <a href="#">noted</a>     |
| 1791 | <a href="#">R1-1711669</a> | LDPC design for eMBB data                                           | CATT                                                                                             | Patrick Merias        | <a href="#">52292</a> | discussion | Decision    |   |   | 125 | 5.1.4.1.2   | LDPC code design                                             | 0 | <a href="#">revised</a>   |
| 1792 | <a href="#">R1-1711670</a> | Summary of remaining items on beam management                       | Qualcomm                                                                                         | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 41  | 5.1.2.2.1   | Beam management details                                      | 0 | <a href="#">withdrawn</a> |
| 1793 | <a href="#">R1-1711671</a> | Performance impact of inactive antenna ports                        | Ericsson                                                                                         | Patrick Merias        | <a href="#">52292</a> | discussion | Decision    |   |   | 49  | 5.1.2.3.5   | Other                                                        | 0 | <a href="#">available</a> |
| 1794 | <a href="#">R1-1711672</a> | Summary of QCL                                                      | Nokia, Alcatel-Lucent, Shanghai Bell                                                             | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 57  | 5.1.2.4.7   | QCL                                                          | 0 | <a href="#">available</a> |
| 1795 | <a href="#">R1-1711673</a> | WF on QCL                                                           | Nokia, Alcatel-Lucent, Shanghai Bell                                                             | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 57  | 5.1.2.4.7   | QCL                                                          | 0 | <a href="#">withdrawn</a> |
| 1796 | <a href="#">R1-1711674</a> | Summary of Issues and WFs on Codebook based transmission for UL     | Intel                                                                                            | Patrick Merias        | <a href="#">52292</a> | discussion | Decision    |   |   | 33  | 5.1.2.1.2   | Codebook based transmission for UL                           | 0 | <a href="#">revised</a>   |
| 1797 | <a href="#">R1-1711675</a> | WF on UE self-interference                                          | Vivo, OPPO, Coolpad, China Telecom, Xiaomi, Huawei, HiSilicon, China Unicom                      | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 137 | 5.1.8       | NR-LTE co-existence                                          | 0 | <a href="#">noted</a>     |
| 1798 | <a href="#">R1-1711676</a> | WF on Transmission Scheme of Broadcast PDSCH                        | Qualcomm                                                                                         | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 39  | 5.1.2.1.8   | Other                                                        | 0 | <a href="#">withdrawn</a> |
| 1799 | <a href="#">R1-1711677</a> | Summary of the E-mail Discussion [89-21]: On Long PUCCH for NR      | Ericsson                                                                                         | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 80  | 5.1.3.2.2   | PUCCH in long-duration                                       | 0 | <a href="#">noted</a>     |
| 1800 | <a href="#">R1-1711678</a> | Way forward on the mapping of SS blocks                             | Nokia                                                                                            | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 10  | 5.1.1.1.2   | SS burst set composition                                     | 0 | <a href="#">revised</a>   |
| 1801 | <a href="#">R1-1711679</a> | Impact of Puncturing on Bit-channel Capacities                      | Ericsson                                                                                         | Patrick Merias        | <a href="#">52292</a> | discussion |             |   |   | 128 | 5.1.4.2.2   | Sequence design                                              | 0 | <a href="#">available</a> |
| 1802 | <a href="#">R1-1711680</a> | WF on LTE-NR Coexistence with UL sharing                            | Huawei, HiSilicon                                                                                | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 137 | 5.1.8       | NR-LTE co-existence                                          | 0 | <a href="#">withdrawn</a> |
| 1803 | <a href="#">R1-1711681</a> | WF on the structure of a data channel including DMRS                | Panasonic, OPPO, NTT DOCOMO                                                                      | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 91  | 5.1.3.3     | DL/UL data scheduling and HARQ procedure                     | 0 | <a href="#">available</a> |
| 1804 | <a href="#">R1-1711682</a> | WF on UE to UE measurement as an enabler for CLI mitigation schemes | ZTE                                                                                              | Patrick Merias        | <a href="#">52292</a> | other      | Decision    |   |   | 134 | 5.1.6.1     | Cross-link interference management                           | 0 | <a href="#">noted</a>     |
| 1805 | <a href="#">R1-1711683</a> | [DRAFT LS] on NR Beam Management                                    | Qualcomm                                                                                         | Patrick Merias        | <a href="#">52292</a> | LS out     | Decision    |   |   | 6   | 5.1         | New Radio Access Technology - WID in RP-171485               | 0 | <a href="#">revised</a>   |
| 1806 | <a href="#">R1-1711684</a> | [DRAFT] LS on Beam Aspects of NR RACH                               | Huawei                                                                                           | Patrick Merias        | <a href="#">52292</a> | LS out     | Decision    |   |   | 6   | 5.1         | New Radio Access Technology - WID in RP-171485               | 0 | <a href="#">revised</a>   |

|      | A                          | B                                                                          | C                                                                                                                  | D              | E                     | F          | G        | H | I         | J   | K           | L                                               | M | N                         |
|------|----------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------|-----------------------|------------|----------|---|-----------|-----|-------------|-------------------------------------------------|---|---------------------------|
| 1807 | <a href="#">R1-1711685</a> | [DRAFT] LS on HARQ operation                                               | Nokia                                                                                                              | Patrick Merias | <a href="#">52292</a> | LS out     | Decision |   | For email | 6   | 5.1         | New Radio Access Technology - WID in RP-171485  | 0 | <a href="#">revised</a>   |
| 1808 | <a href="#">R1-1711686</a> | LS on NR UL SPS / UL transmission without UL grant                         | RAN1, NTT DOCOMO                                                                                                   | Patrick Merias | <a href="#">52292</a> | LS out     | Approval |   |           | 6   | 5.1         | New Radio Access Technology - WID in RP-171485  | 0 | <a href="#">approved</a>  |
| 1809 | R1-1711687                 | [DRAFT LS] to RAN2 on PDCCH monitoring and DRX                             | CATT                                                                                                               | Patrick Merias | <a href="#">52292</a> | LS out     | Decision |   |           | 6   | 5.1         | New Radio Access Technology - WID in RP-171485  | 0 | <a href="#">withdrawn</a> |
| 1810 | <a href="#">R1-1711688</a> | Way Forward on PTRS                                                        | Intel                                                                                                              | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 54  | 5.1.2.4.4   | PT-RS                                           | 0 | <a href="#">revised</a>   |
| 1811 | <a href="#">R1-1711689</a> | Outputs of offline discussion on RBG size/number determination             | OPPO                                                                                                               | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation            | 0 | <a href="#">revised</a>   |
| 1812 | <a href="#">R1-1711690</a> | WF on the number of CBGs                                                   | OPPO                                                                                                               | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 99  | 5.1.3.3.4.1 | CBG construction                                | 0 | <a href="#">available</a> |
| 1813 | <a href="#">R1-1711691</a> | Analysis of SSS Proposals                                                  | Intel Corporation                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 9   | 5.1.1.1.1   | Remaining details on SS sequence design         | 0 | <a href="#">revised</a>   |
| 1814 | <a href="#">R1-1711692</a> | WF on final PCM selection                                                  | Nokia, Alcatel-Lucent Shanghai Bell                                                                                | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 125 | 5.1.4.1.2   | LDPC code design                                | 0 | <a href="#">noted</a>     |
| 1815 | <a href="#">R1-1711693</a> | Base Graph 1 lifting and evaluations                                       | Intel Corporation                                                                                                  | Patrick Merias | <a href="#">52292</a> | discussion | Decision |   |           | 125 | 5.1.4.1.2   | LDPC code design                                | 0 | <a href="#">available</a> |
| 1816 | <a href="#">R1-1711694</a> | Base Graph 2 lifting and evaluations                                       | Intel Corporation                                                                                                  | Patrick Merias | <a href="#">52292</a> | discussion | Decision |   |           | 125 | 5.1.4.1.2   | LDPC code design                                | 0 | <a href="#">available</a> |
| 1817 | <a href="#">R1-1711695</a> | WF on cross-link interference aware UPLC                                   | Huawei                                                                                                             | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 134 | 5.1.6.1     | Cross-link interference management              | 0 | <a href="#">available</a> |
| 1818 | <a href="#">R1-1711696</a> | On NR LDPC design and performance                                          | MediaTek Inc.                                                                                                      | Patrick Merias | <a href="#">52292</a> | discussion |          |   |           | 125 | 5.1.4.1.2   | LDPC code design                                | 0 | <a href="#">revised</a>   |
| 1819 | <a href="#">R1-1711697</a> | WF on rate-matching for Polar codes                                        | Qualcomm                                                                                                           | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 128 | 5.1.4.2.2   | Sequence design                                 | 0 | <a href="#">noted</a>     |
| 1820 | <a href="#">R1-1711698</a> | WF on interleaver design                                                   | Qualcomm                                                                                                           | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 129 | 5.1.4.2.3   | Other                                           | 0 | <a href="#">available</a> |
| 1821 | <a href="#">R1-1711699</a> | WF on SRS design in NR                                                     | LG Electronics                                                                                                     | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 55  | 5.1.2.4.5   | SRS                                             | 0 | <a href="#">revised</a>   |
| 1822 | <a href="#">R1-1711700</a> | WF on CLI measurement                                                      | MediaTek Inc.                                                                                                      | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 134 | 5.1.6.1     | Cross-link interference management              | 0 | <a href="#">noted</a>     |
| 1823 | <a href="#">R1-1711701</a> | Considerations of NR-LTE coexistence in uplink                             | ZTE                                                                                                                | Patrick Merias | <a href="#">52292</a> | discussion | Decision |   |           | 137 | 5.1.8       | NR-LTE co-existence                             | 0 | <a href="#">noted</a>     |
| 1824 | <a href="#">R1-1711702</a> | Rate matching for Polar code                                               | Huawei, HiSilicon                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      |          |   |           | 129 | 5.1.4.2.3   | Other                                           | 0 | <a href="#">available</a> |
| 1825 | R1-1711703                 | Support of implicit soft combining for PBCH by Polar code construction     | Huawei, HiSilicon                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      |          |   |           | 130 | 5.1.4.3     | PBCH                                            | 0 | <a href="#">withdrawn</a> |
| 1826 | R1-1711704                 | Benefits of implicit soft combining for PBCH by Polar code construction    | Huawei, HiSilicon                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      |          |   |           | 130 | 5.1.4.3     | PBCH                                            | 0 | <a href="#">withdrawn</a> |
| 1827 | <a href="#">R1-1711705</a> | WF on handling of single UL transmission                                   | NTT DOCOMO                                                                                                         | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 137 | 5.1.8       | NR-LTE co-existence                             | 0 | <a href="#">revised</a>   |
| 1828 | R1-1711706                 | On Hybrid TDD and Signaling for Cross-link Interference Mitigation         | Ericsson                                                                                                           | Patrick Merias | <a href="#">52292</a> | discussion | Decision |   |           | 134 | 5.1.6.1     | Cross-link interference management              | 0 | <a href="#">withdrawn</a> |
| 1829 | <a href="#">R1-1711707</a> | WF on inter-TRP signaling for UE-to-UE cross-link interference measurement | LG Electronics                                                                                                     | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 134 | 5.1.6.1     | Cross-link interference management              | 0 | <a href="#">noted</a>     |
| 1830 | <a href="#">R1-1711708</a> | WF on REG bundle size in a CORESET with interleaving                       | LG Electronics, ETRI, NTT DOCOMO, Ericsson, InterDigital                                                           | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 63  | 5.1.3.1.1.1 | CCE-to-REG mapping and PDCCH-to-CCE mapping     | 0 | <a href="#">noted</a>     |
| 1831 | <a href="#">R1-1711709</a> | WF on NR-LTE coexistence in overlapping spectrum                           | AT&T, Deutsche Telekom, Vodafone, Intel, Ericsson, Samsung, Orange, China Unicom, Huawei, HiSilicon, China Telecom | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 137 | 5.1.8       | NR-LTE co-existence                             | 0 | <a href="#">noted</a>     |
| 1832 | <a href="#">R1-1711710</a> | WF on NR-LTE coexistence                                                   | AT&T, Nokia, Ericsson, Vodafone                                                                                    | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 137 | 5.1.8       | NR-LTE co-existence                             | 0 | <a href="#">noted</a>     |
| 1833 | <a href="#">R1-1711711</a> | LDPC design for eMBB data                                                  | CATT                                                                                                               | Patrick Merias | <a href="#">52292</a> | discussion | Decision |   |           | 125 | 5.1.4.1.2   | LDPC code design                                | 0 | <a href="#">available</a> |
| 1834 | <a href="#">R1-1711712</a> | WF on group-based beam reporting                                           | ZTE, ASTRI, Nokia, ASB, NTT DOCOMO, Intel, Qualcomm, Samsung, AT&T                                                 | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 41  | 5.1.2.2.1   | Beam management details                         | 0 | <a href="#">available</a> |
| 1835 | R1-1711713                 | WF on beam indication                                                      | ZTE                                                                                                                | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 41  | 5.1.2.2.1   | Beam management details                         | 0 | <a href="#">withdrawn</a> |
| 1836 | <a href="#">R1-1711714</a> | WF on DMRS multiplexing in time domain                                     | ZTE, Xinwei, ASTRI, Spreadtrum                                                                                     | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 53  | 5.1.2.4.3   | DMRS                                            | 0 | <a href="#">noted</a>     |
| 1837 | <a href="#">R1-1711715</a> | WF on channel reciprocity based CSI                                        | ZTE, Nokia, ASB, LG Electronics, ASTRI, Ericsson, NTT DOCOMO                                                       | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 47  | 5.1.2.3.3   | CSI acquisition for reciprocity based operation | 0 | <a href="#">available</a> |
| 1838 | <a href="#">R1-1711716</a> | WF on partial channel reciprocity based CSI                                | ZTE, GMCC, China Telecom, China Unicom, ASTRI                                                                      | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |           | 47  | 5.1.2.3.3   | CSI acquisition for reciprocity based operation | 0 | <a href="#">available</a> |

|      | A                          | B                                                         | C                                                                                                                                                                                                                | D              | E                     | F          | G        | H | I | J   | K           | L                                               | M | N                         |
|------|----------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------------|------------|----------|---|---|-----|-------------|-------------------------------------------------|---|---------------------------|
| 1839 | <a href="#">R1-1711717</a> | WF on using SS block for beam recovery                    | ZTE, Ericsson, NTT DCOMO, MediaTek, Spreadtrum, vivo, OPPO, Qualcomm, Xinwei, LG Electronics, AT&T, Lenovo, CMCC, China Unicom, China Telecom, ASTRI, Samsung, Nokia, ASB, III, MTI, Sharp, National Instruments | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure          | 0 | <a href="#">noted</a>     |
| 1840 | <a href="#">R1-1711718</a> | WF on DL beam indication with beam correspondence         | ZTE                                                                                                                                                                                                              | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 41  | 5.1.2.2.1   | Beam management details                         | 0 | <a href="#">withdrawn</a> |
| 1841 | <a href="#">R1-1711719</a> | WF on CSI in PUCCH                                        | ZTE, NTT DCOMO                                                                                                                                                                                                   | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 48  | 5.1.2.3.4   | CSI feedback                                    | 0 | <a href="#">available</a> |
| 1842 | <a href="#">R1-1711720</a> | WF on Type II CSI                                         | ZTE, MediaTek                                                                                                                                                                                                    | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 48  | 5.1.2.3.4   | CSI feedback                                    | 0 | <a href="#">available</a> |
| 1843 | <a href="#">R1-1711721</a> | WF on power control                                       | ZTE, NTT DCOMO                                                                                                                                                                                                   | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 140 | 5.1.9.2     | NR power control framework                      | 0 | <a href="#">noted</a>     |
| 1844 | <a href="#">R1-1711722</a> | WF on DMRS multiplexing with data                         | ZTE, Qualcomm, KT Corp., NTT DCOMO                                                                                                                                                                               | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 53  | 5.1.2.4.3   | DMRS                                            | 0 | <a href="#">noted</a>     |
| 1845 | <a href="#">R1-1711723</a> | WF on CSI-RS CDM pattern                                  | ZTE                                                                                                                                                                                                              | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 52  | 5.1.2.4.2   | CSI-RS                                          | 0 | <a href="#">available</a> |
| 1846 | <a href="#">R1-1711724</a> | Summary of power control                                  | ZTE                                                                                                                                                                                                              | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 140 | 5.1.9.2     | NR power control framework                      | 0 | <a href="#">noted</a>     |
| 1847 | <a href="#">R1-1711725</a> | Summary of channel reciprocity based CSI                  | ZTE                                                                                                                                                                                                              | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 47  | 5.1.2.3.3   | CSI acquisition for reciprocity based operation | 0 | <a href="#">noted</a>     |
| 1848 | <a href="#">R1-1711726</a> | WF on DMRS port multiplexing in frequency domain          | MediaTek Inc.                                                                                                                                                                                                    | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 53  | 5.1.2.4.3   | DMRS                                            | 0 | <a href="#">withdrawn</a> |
| 1849 | <a href="#">R1-1711727</a> | LDPC design for base graph 1                              | Huawei, HiSilicon                                                                                                                                                                                                | Patrick Merias | <a href="#">52292</a> | other      |          |   |   | 125 | 5.1.4.1.2   | LDPC code design                                | 0 | <a href="#">available</a> |
| 1850 | <a href="#">R1-1711728</a> | WF on CRC Attachment for CBGs                             | Ericsson                                                                                                                                                                                                         | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 121 | 5.1.4.1.1.1 | CRC attachment                                  | 0 | <a href="#">available</a> |
| 1851 | <a href="#">R1-1711729</a> | WF on Circular buffer of Polar Code                       | Ericsson, Qualcomm, MediaTek, LGE                                                                                                                                                                                | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 128 | 5.1.4.2.2   | Sequence design                                 | 0 | <a href="#">noted</a>     |
| 1852 | <a href="#">R1-1711730</a> | WF on the Number of Assistant Bits for Polar Construction | Ericsson, NTT DCOMO, Qualcomm, Intel, Tsotun Algorithm, Samsung, LG, Fujitsu                                                                                                                                     | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 127 | 5.1.4.2.1   | Code construction                               | 0 | <a href="#">noted</a>     |
| 1853 | <a href="#">R1-1711731</a> | WF on LDPC Code Usage Scenarios                           | MediaTek, Qualcomm, InterDigital, ZTE                                                                                                                                                                            | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 125 | 5.1.4.1.2   | LDPC code design                                | 0 | <a href="#">noted</a>     |
| 1854 | <a href="#">R1-1711732</a> | void                                                      | ETSI                                                                                                                                                                                                             | Patrick Merias | <a href="#">52292</a> | other      |          |   |   | 118 | 5.1.4       | Channel coding                                  | 0 | <a href="#">withdrawn</a> |
| 1855 | <a href="#">R1-1711733</a> | void                                                      | ETSI                                                                                                                                                                                                             | Patrick Merias | <a href="#">52292</a> | other      |          |   |   | 118 | 5.1.4       | Channel coding                                  | 0 | <a href="#">withdrawn</a> |
| 1856 | <a href="#">R1-1711734</a> | void                                                      | ETSI                                                                                                                                                                                                             | Patrick Merias | <a href="#">52292</a> | other      |          |   |   | 118 | 5.1.4       | Channel coding                                  | 0 | <a href="#">withdrawn</a> |
| 1857 | <a href="#">R1-1711735</a> | void                                                      | ETSI                                                                                                                                                                                                             | Patrick Merias | <a href="#">52292</a> | other      |          |   |   | 118 | 5.1.4       | Channel coding                                  | 0 | <a href="#">withdrawn</a> |
| 1858 | <a href="#">R1-1711736</a> | void                                                      | ETSI                                                                                                                                                                                                             | Patrick Merias | <a href="#">52292</a> | other      |          |   |   | 118 | 5.1.4       | Channel coding                                  | 0 | <a href="#">withdrawn</a> |
| 1859 | <a href="#">R1-1711737</a> | void                                                      | ETSI                                                                                                                                                                                                             | Patrick Merias | <a href="#">52292</a> | other      |          |   |   | 118 | 5.1.4       | Channel coding                                  | 0 | <a href="#">withdrawn</a> |
| 1860 | <a href="#">R1-1711738</a> | void                                                      | ETSI                                                                                                                                                                                                             | Patrick Merias | <a href="#">52292</a> | other      |          |   |   | 118 | 5.1.4       | Channel coding                                  | 0 | <a href="#">withdrawn</a> |
| 1861 | <a href="#">R1-1711739</a> | void                                                      | ETSI                                                                                                                                                                                                             | Patrick Merias | <a href="#">52292</a> | other      |          |   |   | 118 | 5.1.4       | Channel coding                                  | 0 | <a href="#">withdrawn</a> |
| 1862 | <a href="#">R1-1711740</a> | void                                                      | ETSI                                                                                                                                                                                                             | Patrick Merias | <a href="#">52292</a> | other      |          |   |   | 118 | 5.1.4       | Channel coding                                  | 0 | <a href="#">withdrawn</a> |
| 1863 | <a href="#">R1-1711741</a> | void                                                      | ETSI                                                                                                                                                                                                             | Patrick Merias | <a href="#">52292</a> | other      |          |   |   | 118 | 5.1.4       | Channel coding                                  | 0 | <a href="#">withdrawn</a> |
| 1864 | <a href="#">R1-1711742</a> | void                                                      | ETSI                                                                                                                                                                                                             | Patrick Merias | <a href="#">52292</a> | other      |          |   |   | 118 | 5.1.4       | Channel coding                                  | 0 | <a href="#">withdrawn</a> |
| 1865 | <a href="#">R1-1711743</a> | void                                                      | ETSI                                                                                                                                                                                                             | Patrick Merias | <a href="#">52292</a> | other      |          |   |   | 118 | 5.1.4       | Channel coding                                  | 0 | <a href="#">withdrawn</a> |
| 1866 | <a href="#">R1-1711744</a> | void                                                      | ETSI                                                                                                                                                                                                             | Patrick Merias | <a href="#">52292</a> | other      |          |   |   | 118 | 5.1.4       | Channel coding                                  | 0 | <a href="#">withdrawn</a> |
| 1867 | <a href="#">R1-1711745</a> | void                                                      | ETSI                                                                                                                                                                                                             | Patrick Merias | <a href="#">52292</a> | other      |          |   |   | 118 | 5.1.4       | Channel coding                                  | 0 | <a href="#">withdrawn</a> |
| 1868 | <a href="#">R1-1711746</a> | WF on time resource indication                            | OPPO                                                                                                                                                                                                             | Patrick Merias | <a href="#">52292</a> | other      |          |   |   | 94  | 5.1.3.3.1.2 | Time-domain resource allocation                 | 0 | <a href="#">withdrawn</a> |
| 1869 | <a href="#">R1-1711747</a> | Shift coefficients design for base graph 1                | ZTE                                                                                                                                                                                                              | Patrick Merias | <a href="#">52292</a> | discussion |          |   |   | 125 | 5.1.4.1.2   | LDPC code design                                | 0 | <a href="#">available</a> |
| 1870 | <a href="#">R1-1711748</a> | Shift coefficients design for base graph 2                | ZTE                                                                                                                                                                                                              | Patrick Merias | <a href="#">52292</a> | discussion |          |   |   | 125 | 5.1.4.1.2   | LDPC code design                                | 0 | <a href="#">available</a> |
| 1871 | <a href="#">R1-1711749</a> | Segmentation of Polar codes                               | ZTE                                                                                                                                                                                                              | Patrick Merias | <a href="#">52292</a> | discussion |          |   |   | 129 | 5.1.4.2.3   | Other                                           | 0 | <a href="#">available</a> |

|      | A                          | B                                                                     | C                                                                                                                                                                                                            | D              | E                     | F          | G        | H | I | J   | K           | L                                           | M | N                         |
|------|----------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------------|------------|----------|---|---|-----|-------------|---------------------------------------------|---|---------------------------|
| 1872 | <a href="#">R1-1711750</a> | WF on UL non-codebook based transmission                              | Huawei, HiSilicon, DCOMO, Sharp, LGE, Ericsson, China Telecom, Deutsche Telekom, Xinwei, Vodafone, CeWIT, China Unicom, Tejas Networks, CATR, IITH, IITM, Panasonic, ZTE, InterDigital, AT&T, SoftBank, KDDI | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 34  | 5.1.2.1.3   | Non-codebook based transmission for UL      | 0 | <a href="#">noted</a>     |
| 1873 | <a href="#">R1-1711751</a> | On Bit Mapping Design for Polar Codes                                 | Ericsson                                                                                                                                                                                                     | Patrick Merias | <a href="#">52292</a> | discussion |          |   |   | 128 | 5.1.4.2.2   | Sequence design                             | 0 | <a href="#">available</a> |
| 1874 | <a href="#">R1-1711752</a> | Polar Code Performance in Fading Channel                              | Ericsson                                                                                                                                                                                                     | Patrick Merias | <a href="#">52292</a> | discussion |          |   |   | 128 | 5.1.4.2.2   | Sequence design                             | 0 | <a href="#">available</a> |
| 1875 | <a href="#">R1-1711753</a> | WF on UL resource allocation for PUSCH with DT-s-OFDM waveform in NR  | NEC, NTT DCOMO, Panasonic, OPPO, Ericsson, Nokia, ASB                                                                                                                                                        | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation        | 0 | <a href="#">noted</a>     |
| 1876 | <a href="#">R1-1711754</a> | WF on NR PDCCH blind decodes                                          | vivo, Samsung                                                                                                                                                                                                | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 67  | 5.1.3.1.2.2 | Search space design                         | 0 | <a href="#">noted</a>     |
| 1877 | <a href="#">R1-1711755</a> | Open issues on SRS design                                             | Sony                                                                                                                                                                                                         | Patrick Merias | <a href="#">52292</a> | discussion |          |   |   | 55  | 5.1.2.4.5   | SRS                                         | 0 | <a href="#">revised</a>   |
| 1878 | R1-1711756                 | WF on Polar rate-matching selection                                   | MediaTek Inc.                                                                                                                                                                                                | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 128 | 5.1.4.2.2   | Sequence design                             | 0 | <a href="#">withdrawn</a> |
| 1879 | <a href="#">R1-1711757</a> | Optimization and comparison of Polar code rate-matching design        | MediaTek Inc.                                                                                                                                                                                                | Patrick Merias | <a href="#">52292</a> | discussion |          |   |   | 128 | 5.1.4.2.2   | Sequence design                             | 0 | <a href="#">available</a> |
| 1880 | <a href="#">R1-1711758</a> | Correction on the formula of AnnexA                                   | ZTE, Ericsson                                                                                                                                                                                                | Patrick Merias | <a href="#">52292</a> | CR         | Decision |   |   | 141 | 5.1.10      | Channel model                               | 0 | <a href="#">agreed</a>    |
| 1881 | <a href="#">R1-1711759</a> | Summary of offline discussion on CSI-RS                               | Samsung                                                                                                                                                                                                      | Patrick Merias | <a href="#">52292</a> | discussion |          |   |   | 52  | 5.1.2.4.2   | CSI-RS                                      | 0 | <a href="#">noted</a>     |
| 1882 | <a href="#">R1-1711760</a> | Correction on Procedure A of spatial-consistency UT mobility modeling | ZTE, Ericsson                                                                                                                                                                                                | Patrick Merias | <a href="#">52292</a> | CR         | Decision |   |   | 141 | 5.1.10      | Channel model                               | 0 | <a href="#">agreed</a>    |
| 1883 | <a href="#">R1-1711761</a> | WF on measurement based on SS block                                   | NTT DCOMO, Ericsson, Huawei, HiSilicon, AT&T                                                                                                                                                                 | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 26  | 5.1.1.5.1   | Measurement based on SS block               | 0 | <a href="#">noted</a>     |
| 1884 | <a href="#">R1-1711762</a> | WF on measurement based on CSI-RS                                     | NTT DCOMO, Ericsson, AT&T                                                                                                                                                                                    | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 27  | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility | 0 | <a href="#">noted</a>     |
| 1885 | <a href="#">R1-1711763</a> | WF on radio link monitoring                                           | NTT DCOMO, Ericsson, AT&T                                                                                                                                                                                    | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 28  | 5.1.1.5.3   | Radio link monitoring                       | 0 | <a href="#">noted</a>     |
| 1886 | <a href="#">R1-1711764</a> | WF on Polar codes construction                                        | NTT DCOMO, Ericsson, Qualcomm, Intel, Tsinghua Algorithm, CATT, AT&T                                                                                                                                         | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 127 | 5.1.4.2.1   | Code construction                           | 0 | <a href="#">noted</a>     |
| 1887 | <a href="#">R1-1711765</a> | Summary of views on TRS                                               | MediaTek Inc.                                                                                                                                                                                                | Patrick Merias | <a href="#">52292</a> | discussion |          |   |   | 56  | 5.1.2.4.6   | TRS                                         | 0 | <a href="#">noted</a>     |
| 1888 | <a href="#">R1-1711766</a> | WF on TRS                                                             | MediaTek, Huawei, HiSilicon, Ericsson, Qualcomm                                                                                                                                                              | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 56  | 5.1.2.4.6   | TRS                                         | 0 | <a href="#">noted</a>     |
| 1889 | <a href="#">R1-1711767</a> | WF on SRS sequence generation for partial overlapping                 | LG Electronics, Intel Corporation, ZTE                                                                                                                                                                       | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 55  | 5.1.2.4.5   | SRS                                         | 0 | <a href="#">noted</a>     |
| 1890 | <a href="#">R1-1711768</a> | On bandwidth parts and 'RF' requirements                              | Ericsson                                                                                                                                                                                                     | Patrick Merias | <a href="#">52292</a> | discussion |          |   |   | 136 | 5.1.7       | Wider bandwidth operations                  | 0 | <a href="#">revised</a>   |
| 1891 | <a href="#">R1-1711769</a> | WF on CSI feedback for NCJT                                           | LG Electronics, Ericsson, Intel                                                                                                                                                                              | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 37  | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission      | 0 | <a href="#">available</a> |
| 1892 | <a href="#">R1-1711770</a> | WF on DL DMRS for broadcast/multicast PDSCH                           | LG Electronics, Qualcomm                                                                                                                                                                                     | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 53  | 5.1.2.4.3   | DMRS                                        | 0 | <a href="#">noted</a>     |
| 1893 | <a href="#">R1-1711771</a> | WF on signaling DMRS configuration                                    | LG Electronics, ZTE                                                                                                                                                                                          | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 53  | 5.1.2.4.3   | DMRS                                        | 0 | <a href="#">noted</a>     |
| 1894 | <a href="#">R1-1711772</a> | WF on processing time requirements                                    | Qualcomm                                                                                                                                                                                                     | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 105 | 5.1.3.3.6   | Processing time and HARQ process number     | 0 | <a href="#">revised</a>   |
| 1895 | <a href="#">R1-1711773</a> | WF on PT-RS collision avoidance                                       | LG Electronics, Huawei, CATT, ZTE                                                                                                                                                                            | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 54  | 5.1.2.4.4   | PT-RS                                       | 0 | <a href="#">noted</a>     |
| 1896 | <a href="#">R1-1711774</a> | Circulant permutation matrix design for LDPC codes                    | LG Electronics                                                                                                                                                                                               | Patrick Merias | <a href="#">52292</a> | discussion |          |   |   | 125 | 5.1.4.1.2   | LDPC code design                            | 0 | <a href="#">revised</a>   |
| 1897 | <a href="#">R1-1711775</a> | Circulant permutation matrix design for LDPC codes base graph #2      | LG Electronics                                                                                                                                                                                               | Patrick Merias | <a href="#">52292</a> | discussion |          |   |   | 125 | 5.1.4.1.2   | LDPC code design                            | 0 | <a href="#">revised</a>   |
| 1898 | <a href="#">R1-1711776</a> | WF on PUCCH resource allocation                                       | LG Electronics                                                                                                                                                                                               | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 85  | 5.1.3.2.4   | Resource allocation for PUCCH               | 0 | <a href="#">available</a> |
| 1899 | <a href="#">R1-1711777</a> | WF on CW to layer mapping scheme for data channels                    | Qualcomm, ATT, Ericsson, Samsung, Nokia, ASB, CATT, Interdigital, Intel, Sharp, Verizon, BT, CHITL, Panasonic, NEC, KDDI                                                                                     | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 32  | 5.1.2.1.1   | Codeword mapping                            | 0 | <a href="#">available</a> |
| 1900 | <a href="#">R1-1711778</a> | Remaining issues on NR DM-RS                                          | Qualcomm                                                                                                                                                                                                     | Patrick Merias | <a href="#">52292</a> | discussion |          |   |   | 53  | 5.1.2.4.3   | DMRS                                        | 0 | <a href="#">noted</a>     |

|      | A                          | B                                                          | C                                                                                                                                                                                                                                       | D              | E                     | F          | G        | H | I | J   | K           | L                                            | M | N                         |
|------|----------------------------|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------------|------------|----------|---|---|-----|-------------|----------------------------------------------|---|---------------------------|
| 1901 | <a href="#">R1-1711779</a> | [DRAFT] LS on subcarrier alignment and channel raster      | AT&T, Sprint, T-Mobile USA, Huawei, HiSilicon, Samsung, Deutsche Telekom, Ericsson, Intel, China Telecom                                                                                                                                | Patrick Merias | <a href="#">52292</a> | LS out     | Decision |   |   | 137 | 5.1.8       | NR-LTE co-existence                          | 0 | <a href="#">revised</a>   |
| 1902 | <a href="#">R1-1711780</a> | Summary on DL PRB bundling                                 | Xinwei                                                                                                                                                                                                                                  | Patrick Merias | <a href="#">52292</a> | discussion |          |   |   | 36  | 5.1.2.1.5   | PRB bundling for DL                          | 0 | <a href="#">revised</a>   |
| 1903 | <a href="#">R1-1711781</a> | WF on performance comparison of sequences for Polar code   | Huawei, HiSilicon                                                                                                                                                                                                                       | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 128 | 5.1.4.2.2   | Sequence design                              | 0 | <a href="#">noted</a>     |
| 1904 | <a href="#">R1-1711782</a> | WF on UL transmission without grant                        | NEC                                                                                                                                                                                                                                     | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 97  | 5.1.3.3.3   | UL data transmission procedure without grant | 0 | <a href="#">available</a> |
| 1905 | <a href="#">R1-1711783</a> | WF on UL DMRS pattern for DFT-S-OFDM                       | LG Electronics, ZTE, Ericsson, NEC, NTT DOCOMO                                                                                                                                                                                          | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 53  | 5.1.2.4.3   | DMRS                                         | 0 | <a href="#">noted</a>     |
| 1906 | <a href="#">R1-1711784</a> | WF on DMRS design                                          | MediaTek, Huawei, HiSilicon, China Telecom, ZTE, ASUSTek, CeWIT, Spreadtrum, Tejas Networks, CATR, Deutsche Telekom, IITH, Xinwei, MTI, CHITL, China Unicom, IITM, ITRI                                                                 | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 53  | 5.1.2.4.3   | DMRS                                         | 0 | <a href="#">noted</a>     |
| 1907 | <a href="#">R1-1711785</a> | WF on periodic CSI reporting on short PUCCH                | Ericsson, Samsung, Huawei, HiSilicon, CATT                                                                                                                                                                                              | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 48  | 5.1.2.3.4   | CSI feedback                                 | 0 | <a href="#">available</a> |
| 1908 | <a href="#">R1-1711786</a> | WF on unifying wideband and partial band definitions       | Ericsson, LGE, Samsung                                                                                                                                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 48  | 5.1.2.3.4   | CSI feedback                                 | 0 | <a href="#">available</a> |
| 1909 | <a href="#">R1-1711787</a> | WF on CSI-RS                                               | Samsung, Ericsson, NTT DOCOMO, CATT, LGE                                                                                                                                                                                                | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 52  | 5.1.2.4.2   | CSI-RS                                       | 0 | <a href="#">noted</a>     |
| 1910 | <a href="#">R1-1711788</a> | Way forward on further details of bandwidth part operation | Intel, AT&T, Huawei, HiSilicon                                                                                                                                                                                                          | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 136 | 5.1.7       | Wider bandwidth operations                   | 0 | <a href="#">noted</a>     |
| 1911 | <a href="#">R1-1711789</a> | Way forward on PRB indexing                                | Intel, Sharp, ETRI                                                                                                                                                                                                                      | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 136 | 5.1.7       | Wider bandwidth operations                   | 0 | <a href="#">revised</a>   |
| 1912 | <a href="#">R1-1711790</a> | On NR LDPC design and performance                          | MediaTek Inc.                                                                                                                                                                                                                           | Patrick Merias | <a href="#">52292</a> | discussion |          |   |   | 125 | 5.1.4.1.2   | LDPC code design                             | 0 | <a href="#">available</a> |
| 1913 | <a href="#">R1-1711791</a> | WF on Antenna Switching for SRS Transmission               | Huawei, HiSilicon, Softbank, CMCC, Deutsche Telekom, CATR, Tejas Networks, OPPO, Qualcomm, CeWIT, Sony, ZTE, Xinwei, IITH, China Unicom, IITH, Ericsson, InterDigital, China Telecom, MediaTek                                          | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 55  | 5.1.2.4.5   | SRS                                          | 0 | <a href="#">noted</a>     |
| 1914 | <a href="#">R1-1711792</a> | WF on codebook based UL transmission                       | MediaTek, Nokia, Alcatel-Lucent Shanghai Bell                                                                                                                                                                                           | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 33  | 5.1.2.1.2   | Codebook based transmission for UL           | 0 | <a href="#">noted</a>     |
| 1915 | <a href="#">R1-1711793</a> | WF on codeword mapping                                     | MediaTek Inc.                                                                                                                                                                                                                           | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 32  | 5.1.2.1.1   | Codeword mapping                             | 0 | <a href="#">available</a> |
| 1916 | <a href="#">R1-1711794</a> | WF on polar code sequence                                  | Samsung                                                                                                                                                                                                                                 | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 128 | 5.1.4.2.2   | Sequence design                              | 0 | <a href="#">noted</a>     |
| 1917 | <a href="#">R1-1711795</a> | On bandwidth parts and 'RF' requirements                   | Ericsson                                                                                                                                                                                                                                | Patrick Merias | <a href="#">52292</a> | discussion |          |   |   | 136 | 5.1.7       | Wider bandwidth operations                   | 0 | <a href="#">noted</a>     |
| 1918 | <a href="#">R1-1711796</a> | 1-symbol short PUCCH with 1 or 2 bits UCI                  | Qualcomm                                                                                                                                                                                                                                | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 78  | 5.1.3.2.1.1 | Short-PUCCH for UCI of up to 2 bits          | 0 | <a href="#">available</a> |
| 1919 | <a href="#">R1-1711797</a> | WF on DMRS sequence                                        | Samsung, Ericsson, Qualcomm Incorporated, CATT, Nokia, Alcatel-Lucent Shanghai Bell, Intel, AT&T, NTT DOCOMO, INC., LG Electronics, KT Corp., MediaTek Inc., Mitsubishi Electric Co., Spreadtrum, Fujitsu, Xinwei, KDDI, Panasonic, ITH | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |   | 53  | 5.1.2.4.3   | DMRS                                         | 0 | <a href="#">noted</a>     |

|      | A                          | B                                                                       | C                                                                                         | D              | E                     | F      | G        | H | I    | J   | K           | L                                                                          | M | N                           |
|------|----------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------|-----------------------|--------|----------|---|------|-----|-------------|----------------------------------------------------------------------------|---|-----------------------------|
| 1920 | <a href="#">R1-1711798</a> | Summary of CSI Acquisition Details                                      | NTT DOCOMO                                                                                | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 46  | 5.1.2.3.2   | Details of CSI acquisition                                                 |   | 0 <a href="#">revised</a>   |
|      | <a href="#">R1-1711799</a> | WF on random access association configuration                           | ZTE                                                                                       | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 24  | 5.1.1.4.4   | 4-step RA procedure                                                        |   | 0 <a href="#">revised</a>   |
| 1921 | <a href="#">R1-1711800</a> | WF on SS block repetition                                               | ZTE, Sierra Wireless                                                                      | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 26  | 5.1.1.5.1   | Measurement based on SS block                                              |   | 0 <a href="#">available</a> |
| 1922 | <a href="#">R1-1711801</a> | WF on power offset of NR-PBCH DMRS and NR-SSS                           | MediaTek, Huawei, HiSilicon, NTT DOCOMO                                                   | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 26  | 5.1.1.5.1   | Measurement based on SS block                                              |   | 0 <a href="#">noted</a>     |
| 1923 | <a href="#">R1-1711802</a> | WF on further details for bandwidth part                                | MediaTek, Huawei, HiSilicon                                                               | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 136 | 5.1.7       | Wider bandwidth operations                                                 |   | 0 <a href="#">noted</a>     |
| 1924 | <a href="#">R1-1711803</a> | WF on configuration of CSI-RS for CSI acquisition                       | LG Electronics, Samsung                                                                   | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 52  | 5.1.2.4.2   | CSI-RS                                                                     |   | 0 <a href="#">noted</a>     |
| 1925 | <a href="#">R1-1711804</a> | WF on CDM-8 in CSI-RS for CSI acquisition                               | LG Electronics, Samsung, CATT, NTT DOCOMO                                                 | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 52  | 5.1.2.4.2   | CSI-RS                                                                     |   | 0 <a href="#">noted</a>     |
| 1926 | <a href="#">R1-1711805</a> | WF on Single DCI based NCJT                                             | LG Electronics, Intel Corporation, ZTE                                                    | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 37  | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission                                     |   | 0 <a href="#">available</a> |
| 1927 | <a href="#">R1-1711806</a> | WF on radio link monitoring in NR                                       | Huawei, HiSilicon, Qualcomm, ATT                                                          | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 28  | 5.1.1.5.3   | Radio link monitoring                                                      |   | 0 <a href="#">noted</a>     |
| 1928 | <a href="#">R1-1711807</a> | Summary of views on multi-TRP & multi-panel transmission                | CATT                                                                                      | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 37  | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission                                     |   | 0 <a href="#">revised</a>   |
| 1929 | <a href="#">R1-1711808</a> | WF on PDSCH rate matching                                               | LG Electronics, Panasonic, NTT DOCOMO, InterDigital, Intel                                | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 38  | 5.1.2.1.7   | Rate matching                                                              |   | 0 <a href="#">available</a> |
| 1930 | <a href="#">R1-1711809</a> | WF on slot format indication with group common PDCCCH                   | LG Electronics, InterDigital, ...                                                         | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 72  | 5.1.3.1.4.2 | Contents of group-common PDCCCH                                            |   | 0 <a href="#">available</a> |
| 1931 | <a href="#">R1-1711810</a> | Analysis of SSS Proposals                                               | Intel Corporation                                                                         | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 9   | 5.1.1.1.1   | Remaining details on SS sequence design                                    |   | 0 <a href="#">noted</a>     |
| 1932 | <a href="#">R1-1711811</a> | WF on CSI measurement details                                           | NTT DOCOMO, ZTE, Nokia, ASB, NEC                                                          | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 46  | 5.1.2.3.2   | Details of CSI acquisition                                                 |   | 0 <a href="#">available</a> |
| 1933 | <a href="#">R1-1711812</a> | WF on configuration of a bandwidth part in wideband bandwidth operation | LG Electronics, MediaTek                                                                  | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 136 | 5.1.7       | Wider bandwidth operations                                                 |   | 0 <a href="#">noted</a>     |
| 1934 | <a href="#">R1-1711813</a> | WF on DM-RS                                                             | NTT DOCOMO, Ericsson, Nokia, ASB, ZTE, KT Corp, Sharp, Qualcomm                           | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 53  | 5.1.2.4.3   | DMRS                                                                       |   | 0 <a href="#">noted</a>     |
| 1935 | <a href="#">R1-1711814</a> | WF on PT-RS for DFT-S-OFDM                                              | NTT DOCOMO, Ericsson, Nokia, ASB, Panasonic, Spreadtrum, ZTE                              | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 54  | 5.1.2.4.4   | PT-RS                                                                      |   | 0 <a href="#">noted</a>     |
| 1936 | <a href="#">R1-1711815</a> | WF on PT-RS for CP-OFDM                                                 | NTT DOCOMO, Mitsubishi Electric, Huawei, HiSilicon, Nokia, ASB                            | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 54  | 5.1.2.4.4   | PT-RS                                                                      |   | 0 <a href="#">noted</a>     |
| 1937 | <a href="#">R1-1711816</a> | WF on front-loaded DMRS design for slot aggregation                     | vivo, Huawei, HiSilicon                                                                   | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 53  | 5.1.2.4.3   | DMRS                                                                       |   | 0 <a href="#">noted</a>     |
| 1938 | <a href="#">R1-1711817</a> | WF on LTE-NR DC deployment scenarios to extend NR UL coverage           | Orange, Deutsche Telekom, Ericsson, China Unicom, OPPO, Huawei, China Telecom, Nokia, ZTE | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 137 | 5.1.8       | NR-LTE co-existence                                                        |   | 0 <a href="#">noted</a>     |
| 1939 | <a href="#">R1-1711818</a> | WF on UL power control                                                  | LG Electronics, Ericsson, InterDigital                                                    | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 140 | 5.1.9.2     | NR power control framework                                                 |   | 0 <a href="#">noted</a>     |
| 1940 | <a href="#">R1-1711819</a> | WF on PHR for different waveforms                                       | LG Electronics, NTT DOCOMO, InterDigital                                                  | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 140 | 5.1.9.2     | NR power control framework                                                 |   | 0 <a href="#">noted</a>     |
| 1941 | <a href="#">R1-1711820</a> | [DRAFT] LS on support of multi-TRP transmission in NR                   | Intel                                                                                     | Patrick Merias | <a href="#">52292</a> | LS out | Decision |   |      | 37  | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission                                     |   | 0 <a href="#">revised</a>   |
| 1942 | <a href="#">R1-1711821</a> | WF on Configuration of UL Transmission without Grant                    | Ericsson                                                                                  | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                               |   | 0 <a href="#">withdrawn</a> |
| 1943 | <a href="#">R1-1711822</a> | Design of combined-and-Nested polar code sequences                      | Samsung                                                                                   | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 128 | 5.1.4.2.2   | Sequence design                                                            |   | 0 <a href="#">noted</a>     |
| 1944 | <a href="#">R1-1711823</a> | WF on pre-emption indication                                            | Huawei, HiSilicon, MediaTek, Sequans, NTT DOCOMO, Sony, vivo, ZTE, InterDigital, III      | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink                                        |   | 0 <a href="#">revised</a>   |
| 1945 | <a href="#">R1-1711824</a> | [DRAFT] LS on non-contiguous CA                                         | AT&T                                                                                      | Patrick Merias | <a href="#">52292</a> | LS out | Decision |   |      | 136 | 5.1.7       | Wider bandwidth operations                                                 |   | 0 <a href="#">revised</a>   |
| 1946 | <a href="#">R1-1711825</a> | LS on non-contiguous CA                                                 | RAN1, AT&T                                                                                | Patrick Merias | <a href="#">52292</a> | LS out | Approval |   | sent | 136 | 5.1.7       | Wider bandwidth operations                                                 |   | 0 <a href="#">approved</a>  |
| 1947 | <a href="#">R1-1711826</a> | WF on interleaver design on NR polar codes                              | LG Electronics                                                                            | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 128 | 5.1.4.2.2   | Sequence design                                                            |   | 0 <a href="#">withdrawn</a> |
| 1948 | <a href="#">R1-1711827</a> | WF on Capacity Enhancement for option 1 of PRACH preamble               | LG Electronics, IITL                                                                      | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 22  | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management |   | 0 <a href="#">noted</a>     |
| 1949 | <a href="#">R1-1711828</a> | WF on RACH power control                                                | LG Electronics, ETRI                                                                      | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |      | 23  | 5.1.1.4.3   | Power ramping and power control during RA procedure                        |   | 0 <a href="#">available</a> |
| 1950 |                            |                                                                         |                                                                                           |                |                       |        |          |   |      |     |             |                                                                            |   |                             |

|      | A                          | B                                                                | C                                                                                                                                              | D              | E                     | F          | G        | H | I    | J   | K           | L                                                                          | M | N                         |
|------|----------------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------------|------------|----------|---|------|-----|-------------|----------------------------------------------------------------------------|---|---------------------------|
| 1951 | <a href="#">R1-1711829</a> | Offline discussions on UL data transmission without grant        | NTT DOCOMO                                                                                                                                     | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 97  | 5.1.3.3.3   | UL data transmission procedure without grant                               | 0 | <a href="#">noted</a>     |
|      | <a href="#">R1-1711830</a> | WF on UE-UE CLI measurement                                      | Huawei, HiSilicon, ZTE, MediaTek, Intel, CMCC                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 134 | 5.1.6.1     | Cross-link interference management                                         | 0 | <a href="#">noted</a>     |
| 1952 | <a href="#">R1-1711831</a> | WF on pi/2 BPSK with spectrum shaping                            | IITH, ATT, Qualcomm, Deutsche Telekom, IITM, Reliance Jio, Samsung, Thales, INL, CEWIT, Tejas Networks, DISH, Sony                             | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 132 | 5.1.5       | Modulation                                                                 | 0 | <a href="#">noted</a>     |
| 1953 | <a href="#">R1-1711832</a> | WF on Pre-DFT Multiplexing of RS and UCI in short duration PUCCH | IITH                                                                                                                                           | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits                                    | 0 | <a href="#">available</a> |
| 1954 | <a href="#">R1-1711833</a> | WF on waveform for long duration PUCCH                           | IITH, ATT, Deutsche Telekom, IITM, Reliance Jio, DISH, Thales, CEWIT, Tejas Networks, Sony, INL                                                | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 82  | 5.1.3.2.2.2 | Long-PUCCH for UCI of more than 2 bits                                     | 0 | <a href="#">available</a> |
| 1955 | <a href="#">R1-1711834</a> | WF on Long PUCCH Format with 1-2 UCI bits                        | Ericsson, Huawei, HiSilicon, LG, ZTE, MediaTek, Panasonic, WILUS Inc., Intel, Vivo, Cohere Technologies, ETRI, Motorola mobility, Lenovo, CATT | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 80  | 5.1.3.2.2   | PUCCH in long-duration                                                     | 0 | <a href="#">revised</a>   |
|      | <a href="#">R1-1711835</a> | WF on Frequency Hopping for Long PUCCH                           | Ericsson, MediaTek, Qualcomm, Panasonic, Intel, LG, NTT DOCOMO, Cohere Technologies, WILUS Inc., Huawei, HiSilicon, Samsung                    | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 80  | 5.1.3.2.2   | PUCCH in long-duration                                                     | 0 | <a href="#">noted</a>     |
| 1957 | <a href="#">R1-1711836</a> | WF on scheduling request for NR                                  | Idaho National Laboratory, KDDI, Lenovo, Motorola Mobility, IITH, CEWIT, IITM, Tejas Networks, Qualcomm                                        | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 96  | 5.1.3.3.2   | UL data transmission procedure with grant                                  | 0 | <a href="#">available</a> |
| 1958 | <a href="#">R1-1711837</a> | Open issues on SRS design                                        | Sony                                                                                                                                           | Patrick Merias | <a href="#">52292</a> | discussion |          |   |      | 55  | 5.1.2.4.5   | SRS                                                                        | 0 | <a href="#">revised</a>   |
| 1959 | <a href="#">R1-1711838</a> | WF on Beam Reporting                                             | Intel, Huawei, HiSilicon, InterDigital CATT                                                                                                    | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 41  | 5.1.2.2.1   | Beam management details                                                    | 0 | <a href="#">available</a> |
| 1960 | <a href="#">R1-1711839</a> | LS on subcarrier alignment and channel raster                    | RAN1, AT&T                                                                                                                                     | Patrick Merias | <a href="#">52292</a> | LS out     | Approval |   | sent | 137 | 5.1.8       | NR-LTE co-existence                                                        | 0 | <a href="#">approved</a>  |
| 1961 | <a href="#">R1-1711840</a> | WF on Frequency Hopping for Multi-slot Long PUCCH                | LG Electronics                                                                                                                                 | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 83  | 5.1.3.2.2.3 | Support of long-PUCCH over multiple slots                                  | 0 | <a href="#">available</a> |
| 1962 | <a href="#">R1-1711841</a> | Summary of views on resource for PDSCH and PUSCH rate matching   | LG Electronics                                                                                                                                 | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 38  | 5.1.2.1.7   | Rate matching                                                              | 0 | <a href="#">noted</a>     |
| 1963 | <a href="#">R1-1711842</a> | WF on UE-to-UE crosslink measurement                             | CMCC, Spreadtrum                                                                                                                               | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 134 | 5.1.6.1     | Cross-link interference management                                         | 0 | <a href="#">noted</a>     |
| 1964 | <a href="#">R1-1711843</a> | Outputs of offline discussion on RBG size/number determination   | OPPO, Nokia, LG, Samsung, vivo, ZTE, CATR                                                                                                      | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 93  | 5.1.3.3.1.1 | Frequency-domain resource allocation                                       | 0 | <a href="#">noted</a>     |
| 1965 | <a href="#">R1-1711844</a> | WF on the number of CBGs                                         | OPPO                                                                                                                                           | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 99  | 5.1.3.3.4.1 | CBG construction                                                           | 0 | <a href="#">available</a> |
| 1966 | <a href="#">R1-1711845</a> | Summary of AI 5.1.2.1.4 Diversity transmission for UL            | Mitsubishi Electric                                                                                                                            | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 35  | 5.1.2.1.4   | Diversity transmission for UL                                              | 0 | <a href="#">noted</a>     |
| 1967 | <a href="#">R1-1711846</a> | WF on NR CA                                                      | Huawei, HiSilicon, KT, CATR, MediaTek, Nokia, ASB, Ericsson, Intel                                                                             | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 114 | 5.1.3.4.1   | Carrier aggregation                                                        | 0 | <a href="#">noted</a>     |
| 1968 | <a href="#">R1-1711847</a> | WF on SRS switching                                              | Huawei, HiSilicon                                                                                                                              | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 116 | 5.1.3.4.1.2 | SRS fast switching                                                         | 0 | <a href="#">available</a> |
| 1969 | <a href="#">R1-1711848</a> | WF on handling of single UL transmission                         | NTT DOCOMO, Apple                                                                                                                              | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 137 | 5.1.8       | NR-LTE co-existence                                                        | 0 | <a href="#">noted</a>     |
| 1970 | <a href="#">R1-1711849</a> | WF on Preamble sequence for capacity enhancement                 | Huawei, HiSilicon                                                                                                                              | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 22  | 5.1.1.4.2   | PRACH preamble format details for capacity enhancement and beam management | 0 | <a href="#">noted</a>     |
| 1971 | <a href="#">R1-1711850</a> | WF for NR RLM                                                    | CATT                                                                                                                                           | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 28  | 5.1.1.5.3   | Radio link monitoring                                                      | 0 | <a href="#">noted</a>     |
| 1972 | <a href="#">R1-1711851</a> | WF on inter-gNB signaling for cross-link interference management | LG Electronics                                                                                                                                 | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |      | 134 | 5.1.6.1     | Cross-link interference management                                         | 0 | <a href="#">noted</a>     |
| 1973 |                            |                                                                  |                                                                                                                                                |                |                       |            |          |   |      |     |             |                                                                            |   |                           |

|      | A                          | B                                                                             | C                                                                                  | D              | E                     | F      | G        | H | I                                               | J   | K         | L                                                                          | M | N                         |
|------|----------------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------|-----------------------|--------|----------|---|-------------------------------------------------|-----|-----------|----------------------------------------------------------------------------|---|---------------------------|
| 1974 | <a href="#">R1-1711852</a> | WF on SRS sequence design                                                     | Ericsson, Huawei, HiSilicon, Nokia, ASB, Panasonic, NTT DOCOMO                     | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 55  | 5.1.2.4.5 | SRS                                                                        | 0 | <a href="#">noted</a>     |
| 1975 | <a href="#">R1-1711853</a> | Activation/deactivation of bandwidth parts                                    | Ericsson                                                                           | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 136 | 5.1.7     | Wider bandwidth operations                                                 | 0 | <a href="#">noted</a>     |
| 1976 | <a href="#">R1-1711854</a> | WF on SS Burst set Composition                                                | LG Electronics                                                                     | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 10  | 5.1.1.1.2 | SS burst set composition                                                   | 0 | <a href="#">revised</a>   |
| 1977 | <a href="#">R1-1711855</a> | Way forward on PRB indexing                                                   | Intel, Sharp, Ericsson, MediaTek, NTT DOCOMO, Panasonic, Nokia, ASB, NEC, KT, ETRI | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 136 | 5.1.7     | Wider bandwidth operations                                                 | 0 | <a href="#">noted</a>     |
| 1978 | <a href="#">R1-1711856</a> | WF on processing time requirements                                            | Qualcomm, ZTE, Deutsche Telekom, Vodafone, Panasonic, Ericsson                     | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 105 | 5.1.3.3.6 | Processing time and HARQ process number                                    | 0 | <a href="#">revised</a>   |
| 1979 | <a href="#">R1-1711857</a> | Summary of views on multi-TRP & multi-panel transmission                      | CATT                                                                               | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 37  | 5.1.2.1.6 | Multi-TRP and Multi-panel transmission                                     | 0 | <a href="#">noted</a>     |
| 1980 | <a href="#">R1-1711858</a> | WF on beam failure recovery request                                           | LG Electronics, Intel, Huawei, HiSilicon, vivo                                     | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 42  | 5.1.2.2.2 | Mechanism to recover from beam failure                                     | 0 | <a href="#">available</a> |
| 1981 | <a href="#">R1-1711859</a> | WF on SRS beam sweeping behavior                                              | LG Electronics, Huawei, HiSilicon, Samsung, Ericsson                               | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 41  | 5.1.2.2.1 | Beam management details                                                    | 0 | <a href="#">available</a> |
| 1982 | <a href="#">R1-1711860</a> | Evaluation of NR-SS                                                           | Huawei, HiSilicon                                                                  | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 9   | 5.1.1.1.1 | Remaining details on SS sequence design                                    | 0 | <a href="#">noted</a>     |
| 1983 | <a href="#">R1-1711861</a> | WF on RACH power control mechanism Msg.1 transmission                         | LG Electronics, NTT DOCOMO                                                         | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 23  | 5.1.1.4.3 | Power ramping and power control during RA procedure                        | 0 | <a href="#">noted</a>     |
| 1984 | <a href="#">R1-1711862</a> | WF on power sharing mechanism                                                 | NTT DOCOMO, InterDigital                                                           | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 139 | 5.1.9.1   | Power sharing mechanism                                                    | 0 | <a href="#">noted</a>     |
| 1985 | <a href="#">R1-1711863</a> | WF on NR power control framework                                              | NTT DOCOMO INC., Nokia, Intel, InterDigital                                        | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 140 | 5.1.9.2   | NR power control framework                                                 | 0 | <a href="#">noted</a>     |
| 1986 | <a href="#">R1-1711864</a> | Measurement window periodicity, duration and offset of CSI-RS for L3 mobility | Qualcomm                                                                           | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 27  | 5.1.1.5.2 | Measurement based on CSI-RS for L3 mobility                                | 0 | <a href="#">noted</a>     |
| 1987 | <a href="#">R1-1711865</a> | Multiple/repeated PRACH preamble transmission with OCC across preambles       | Qualcomm, Interdigital, Samsung, AT&T, Verizon                                     | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 22  | 5.1.1.4.2 | PRACH preamble format details for capacity enhancement and beam management | 0 | <a href="#">noted</a>     |
| 1988 | <a href="#">R1-1711866</a> | WF on RACH configuration in RMSI                                              | Huawei, HiSilicon                                                                  | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 24  | 5.1.1.4.4 | 4-step RA procedure                                                        | 0 | <a href="#">noted</a>     |
| 1989 | <a href="#">R1-1711867</a> | Observations on PBCH Signaling                                                | Qualcomm                                                                           | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 130 | 5.1.4.3   | PBCH                                                                       | 0 | <a href="#">withdrawn</a> |
| 1990 | <a href="#">R1-1711868</a> | WF on DMRS indication                                                         | Samsung                                                                            | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 11  | 5.1.1.1.3 | Timing indication based on SS block                                        | 0 | <a href="#">revised</a>   |
| 1991 | <a href="#">R1-1711869</a> | WF on collision avoidance between short PUCCH and SRS                         | Mitsubishi Electric, AT&T, Panasonic, Samsung, Huawei, HiSilicon, ZTE              | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 55  | 5.1.2.4.5 | SRS                                                                        | 0 | <a href="#">noted</a>     |
| 1992 | <a href="#">R1-1711870</a> | NR PRACH capacity enhancement                                                 | CATT, Huawei, TCL                                                                  | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 22  | 5.1.1.4.2 | PRACH preamble format details for capacity enhancement and beam management | 0 | <a href="#">noted</a>     |
| 1993 | <a href="#">R1-1711871</a> | WF on radio link monitoring in NR                                             | Huawei, HiSilicon, Qualcomm, ATT, NTT DOCOMO, Intel                                | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 28  | 5.1.1.5.3 | Radio link monitoring                                                      | 0 | <a href="#">revised</a>   |
| 1994 | <a href="#">R1-1711872</a> | LS on UE self-interference                                                    | RAN1, vivo                                                                         | Patrick Merias | <a href="#">52292</a> | LS out | Approval |   |                                                 | 137 | 5.1.8     | NR-LTE co-existence                                                        | 0 | <a href="#">approved</a>  |
| 1995 | <a href="#">R1-1711873</a> | WF on initial bandwidth part                                                  | LG Electronics, Ericsson, MediaTek                                                 | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 136 | 5.1.7     | Wider bandwidth operations                                                 | 0 | <a href="#">noted</a>     |
| 1996 | <a href="#">R1-1711874</a> | NR UL MIMO Signaling Mechanism                                                | Ericsson, Nokia, Alcatel-Lucent Shanghai Bell, Qualcomm, CATT, ZTE                 | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 33  | 5.1.2.1.2 | Codebook based transmission for UL                                         | 0 | <a href="#">noted</a>     |
| 1997 | <a href="#">R1-1711875</a> | WF on PRACH Preamble Format for Short sequence with Option 1                  | LG Electronics, NTT DOCOMO                                                         | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 21  | 5.1.1.4.1 | PRACH preamble format details for long/short sequence length               | 0 | <a href="#">noted</a>     |
| 1998 | <a href="#">R1-1711876</a> | WF on multiple Msg1 transmission for contention free case                     | Samsung, Huawei, HiSilicon, MediaTek, ZTE                                          | Patrick Merias | <a href="#">52292</a> | other  | Decision |   |                                                 | 24  | 5.1.1.4.4 | 4-step RA procedure                                                        | 0 | <a href="#">noted</a>     |
| 1999 | <a href="#">R1-1711877</a> | [DRAFT] LS on single UL transmission                                          | NTT DOCOMO                                                                         | Patrick Merias | <a href="#">52292</a> | LS out | Decision |   |                                                 | 137 | 5.1.8     | NR-LTE co-existence                                                        | 0 | <a href="#">revised</a>   |
| 2000 | <a href="#">R1-1711878</a> | LS on single UL transmission                                                  | RAN1, NTT DOCOMO                                                                   | Patrick Merias | <a href="#">52292</a> | LS out | Approval |   | sent - MCC to correct WI code to NR_newRAT-Core | 137 | 5.1.8     | NR-LTE co-existence                                                        | 0 | <a href="#">approved</a>  |
| 2001 | <a href="#">R1-1711879</a> | [DRAFT] LS on Beam Aspects of NR RACH                                         | Huawei                                                                             | Patrick Merias | <a href="#">52292</a> | LS out | Decision |   |                                                 | 6   | 5.1       | New Radio Access Technology - WID in RP-171485                             | 0 | <a href="#">revised</a>   |
| 2002 | <a href="#">R1-1711880</a> | LS on Beam Aspects of NR RACH                                                 | RAN1, Huawei                                                                       | Patrick Merias | <a href="#">52292</a> | LS out | Approval |   | sent                                            | 6   | 5.1       | New Radio Access Technology - WID in RP-171485                             | 0 | <a href="#">approved</a>  |

|      | A                          | B                                                                            | C                                                                                                         | D              | E                     | F          | G        | H | I                   | J   | K           | L                                              | M | N                         |
|------|----------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|----------------|-----------------------|------------|----------|---|---------------------|-----|-------------|------------------------------------------------|---|---------------------------|
| 2003 | <a href="#">R1-1711881</a> | Summary of Issues and WFs on Codebook based transmission for UL              | Intel                                                                                                     | Patrick Merias | <a href="#">52292</a> | discussion | Decision |   |                     | 33  | 5.1.2.1.2   | Codebook based transmission for UL             | 0 | <a href="#">noted</a>     |
| 2004 | <a href="#">R1-1711882</a> | WF on use of SS blocks in beam management                                    | Qualcomm                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 41  | 5.1.2.2.1   | Beam management details                        | 0 | <a href="#">withdrawn</a> |
| 2005 | <a href="#">R1-1711883</a> | WF on CBG retransmission                                                     | Samsung                                                                                                   | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 98  | 5.1.3.3.4   | CBG-based (re)transmission                     | 0 | <a href="#">revised</a>   |
| 2006 | <a href="#">R1-1711884</a> | Summary of issues on UL non-codebook based transmission                      | Nokia, Alcatel-Lucent, Shanghai Bell                                                                      | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 34  | 5.1.2.1.3   | Non-codebook based transmission fo UL          | 0 | <a href="#">noted</a>     |
| 2007 | <a href="#">R1-1711885</a> | WF on change of SS block frequency position                                  | CMCC                                                                                                      | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 136 | 5.1.7       | Wider bandwidth operations                     | 0 | <a href="#">available</a> |
| 2008 | <a href="#">R1-1711886</a> | TS38.211 v0.0.2 NR; Physical channels and modulation                         | Ericsson LM                                                                                               | Patrick Merias | <a href="#">52292</a> | draft TS   |          |   |                     | 6   | 5.1         | New Radio Access Technology - WID in RP-171485 | 0 | <a href="#">revised</a>   |
| 2009 | <a href="#">R1-1711887</a> | WF on 2-symbol NR-PUCCH                                                      | LG Electronics                                                                                            | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 79  | 5.1.3.2.1.2 | Short-PUCCH for UCI of more than 2 bits        | 0 | <a href="#">available</a> |
| 2010 | <a href="#">R1-1711888</a> | WF on m0 and m1 for NR-SSS                                                   | NTT DOCOMO, ITL, Intel, Samsung, InterDigital, Motorola Mobility, Lenovo                                  | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 9   | 5.1.1.1.1   | Remaining details on SS sequence design        | 0 | <a href="#">agreed</a>    |
| 2011 | <a href="#">R1-1711889</a> | WF on radio link monitoring in NR                                            | Huawei, HiSilicon, Qualcomm, ATT, NTT DOCOMO, Intel, Vivo, LGE                                            | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 28  | 5.1.1.5.3   | Radio link monitoring                          | 0 | <a href="#">noted</a>     |
| 2012 | <a href="#">R1-1711890</a> | WF on UL frequency selective precoding in UL non-codebook based transmission | Huawei, HiSilicon, LG Electronics                                                                         | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 34  | 5.1.2.1.3   | Non-codebook based transmission fo UL          | 0 | <a href="#">available</a> |
| 2013 | <a href="#">R1-1711891</a> | WF on PT-RS for DFT-S-OFDM                                                   | Samsung, Intel, CATT                                                                                      | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 54  | 5.1.2.4.4   | PT-RS                                          | 0 | <a href="#">noted</a>     |
| 2014 | <a href="#">R1-1711892</a> | Reply LS on PBCH content                                                     | RAN2, Huawei                                                                                              | Patrick Merias | <a href="#">52292</a> | LS in      |          |   |                     | 4   | 4           | Incoming Liaison Statements                    | 0 | <a href="#">treated</a>   |
| 2015 | <a href="#">R1-1711893</a> | Offline discussions summary on CSI framework                                 | AT&T                                                                                                      | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 45  | 5.1.2.3.1   | CSI framework                                  | 0 | <a href="#">noted</a>     |
| 2016 | <a href="#">R1-1711894</a> | WF on remaining issues on PTRS for CP-OFDM - Part 1                          | Huawei, HiSilicon, InterDigital, Xinwei, NI, Panasonic                                                    | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 54  | 5.1.2.4.4   | PT-RS                                          | 0 | <a href="#">noted</a>     |
| 2017 | <a href="#">R1-1711895</a> | WF on remaining issues on PTRS for CP-OFDM - Part 2                          | Huawei, HiSilicon, InterDigital, Xinwei, Intel, NI, Panasonic, Spreadtrum                                 | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 54  | 5.1.2.4.4   | PT-RS                                          | 0 | <a href="#">noted</a>     |
| 2018 | <a href="#">R1-1711896</a> | WF on UE assistance information for UL beam management                       | MediaTek, Samsung, Intel                                                                                  | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 41  | 5.1.2.2.1   | Beam management details                        | 0 | <a href="#">available</a> |
| 2019 | <a href="#">R1-1711897</a> | Offline discussion summary on beam recovery                                  | MediaTek                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure         | 0 | <a href="#">noted</a>     |
| 2020 | <a href="#">R1-1711898</a> | [DRAFT] LS on power sharing for LTE-NR Dual Connectivity                     | Ericsson                                                                                                  | Patrick Merias | <a href="#">52292</a> | LS out     | Decision |   |                     | 139 | 5.1.9.1     | Power sharing mechanism                        | 0 | <a href="#">revised</a>   |
| 2021 | <a href="#">R1-1711899</a> | Way forward on the mapping of SS blocks                                      | Nokia                                                                                                     | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 10  | 5.1.1.1.2   | SS burst set composition                       | 0 | <a href="#">noted</a>     |
| 2022 | <a href="#">R1-1711900</a> | WF on remaining issues on CSI-RS for mobility with RAN4 impact               | Ericsson                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 27  | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility    | 0 | <a href="#">available</a> |
| 2023 | <a href="#">R1-1711901</a> | WF on remaining RLM issues with RAN4 impact                                  | Ericsson                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 28  | 5.1.1.5.3   | Radio link monitoring                          | 0 | <a href="#">available</a> |
| 2024 | <a href="#">R1-1711902</a> | WF on CSI-RS resources for L3 mobility                                       | Ericsson                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 27  | 5.1.1.5.2   | Measurement based on CSI-RS for L3 mobility    | 0 | <a href="#">available</a> |
| 2025 | <a href="#">R1-1711903</a> | WF on SRS for UL beam management                                             | OPPO, Intel, Samsung, Xinwei                                                                              | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 41  | 5.1.2.2.1   | Beam management details                        | 0 | <a href="#">available</a> |
| 2026 | <a href="#">R1-1711904</a> | Summary of views on CSI feedback for Type I and Type II                      | Ericsson                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 48  | 5.1.2.3.4   | CSI feedback                                   | 0 | <a href="#">noted</a>     |
| 2027 | <a href="#">R1-1711905</a> | Summary of CSI Feedback for Open-loop/Semi-open-loop                         | Ericsson                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 48  | 5.1.2.3.4   | CSI feedback                                   | 0 | <a href="#">noted</a>     |
| 2028 | <a href="#">R1-1711906</a> | WF on SS Burst set Composition                                               | LG Electronics, Nokia, InterDigital, British Telecom                                                      | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 10  | 5.1.1.1.2   | SS burst set composition                       | 0 | <a href="#">noted</a>     |
| 2029 | <a href="#">R1-1711907</a> | Draft Reply LS on reading time index indication for RRM measurements         | Intel Corporation                                                                                         | Patrick Merias | <a href="#">52292</a> | LS out     | Decision |   |                     | 4   | 4           | Incoming Liaison Statements                    | 0 | <a href="#">revised</a>   |
| 2030 | <a href="#">R1-1711908</a> | Reserved resource for forward compatibility                                  | Ericsson                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 142 | 5.1.11      | Other                                          | 0 | <a href="#">available</a> |
| 2031 | <a href="#">R1-1711909</a> | [DRAFT] LS response on required parameters from RAN4 perspective             | Ericsson                                                                                                  | Patrick Merias | <a href="#">52292</a> | LS out     | Decision |   |                     | 132 | 5.1.5       | Modulation                                     | 0 | <a href="#">revised</a>   |
| 2032 | <a href="#">R1-1711910</a> | [DRAFT] Reply LS on PDCCH design                                             | Ericsson, CATT                                                                                            | Patrick Merias | <a href="#">52292</a> | LS out     | Decision |   | Reply to R1-1711642 | 61  | 5.1.3.1     | Physical downlink control channel              | 0 | <a href="#">revised</a>   |
| 2033 | <a href="#">R1-1711911</a> | WF on pre-emption indication                                                 | Huawei, HiSilicon, MediaTek, Sequans, NTT DOCOMO, Sony, vivo, ZTE, InterDigital, III, Intel, LGE, Samsung | Patrick Merias | <a href="#">52292</a> | other      | Decision |   |                     | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink            | 0 | <a href="#">noted</a>     |

|      | A                          | B                                                                    | C                                                                                                                                                        | D              | E                     | F          | G           | H | I                   | J   | K           | L                                            | M | N                         |
|------|----------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------------|------------|-------------|---|---------------------|-----|-------------|----------------------------------------------|---|---------------------------|
| 2034 | <a href="#">R1-1711912</a> | WF on Long PUCCH Format with 1-2 UCI bits                            | Ericsson, Huawei, HiSilicon, LG, ZTE, MediaTek, Panasonic, WILUS Inc., Intel, Vivo, Cohere Technologies, ETRI, Motorola mobility, Lenovo, CATT, Qualcomm | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 80  | 5.1.3.2.2   | PUCCH in long-duration                       | 0 | <a href="#">noted</a>     |
| 2035 | <a href="#">R1-1711913</a> | WF on introduction indication in SS block for cell update            | CMCC                                                                                                                                                     | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 136 | 5.1.7       | Wider bandwidth operations                   | 0 | <a href="#">noted</a>     |
| 2036 | <a href="#">R1-1711914</a> | Overview of WFs on PTRS                                              | Ericsson                                                                                                                                                 | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 54  | 5.1.2.4.4   | PT-RS                                        | 0 | <a href="#">noted</a>     |
| 2037 | <a href="#">R1-1711915</a> | WF on PTRS multiplexing with other RSs for CP-OFDM                   | ZTE                                                                                                                                                      | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 51  | 5.1.2.4.1   | Multiplexing of different types of RSs       | 0 | <a href="#">revised</a>   |
| 2038 | <a href="#">R1-1711916</a> | Chairman's notes of AI 5.1.2 MIMO                                    | Ad-Hoc chair (Qualcomm)                                                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      | Endorsement |   |                     | 30  | 5.1.2       | MIMO                                         | 0 | <a href="#">endorsed</a>  |
| 2039 | <a href="#">R1-1711917</a> | Chairman's notes of AI 5.1.4 Channel coding                          | Ad-Hoc chair (Nokia)                                                                                                                                     | Patrick Merias | <a href="#">52292</a> | other      | Endorsement |   |                     | 118 | 5.1.4       | Channel coding                               | 0 | <a href="#">endorsed</a>  |
| 2040 | <a href="#">R1-1711918</a> | Chairman's notes of AI 5.1.6 Duplexing                               | Ad-Hoc chair (Qualcomm)                                                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      | Endorsement |   |                     | 133 | 5.1.6       | Duplexing                                    | 0 | <a href="#">endorsed</a>  |
| 2041 | <a href="#">R1-1711919</a> | Chairman's notes of AI 5.1.8 NR-LTE co-existence                     | Ad-Hoc chair (Qualcomm)                                                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      | Endorsement |   |                     | 137 | 5.1.8       | NR-LTE co-existence                          | 0 | <a href="#">endorsed</a>  |
| 2042 | <a href="#">R1-1711920</a> | WF on SRS design in NR                                               | LG Electronics, CATT, Intel Corp., KT Corp., Qualcomm                                                                                                    | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 55  | 5.1.2.4.5   | SRS                                          | 0 | <a href="#">noted</a>     |
| 2043 | <a href="#">R1-1711921</a> | WF on PDCCH and PDSCH resource sharing                               | ZTE, Nokia, Ericsson, LG, Panasonic, Qualcomm, Sharp                                                                                                     | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 69  | 5.1.3.1.3   | Resource sharing between PDCCH and PDSCH     | 0 | <a href="#">noted</a>     |
| 2044 | <a href="#">R1-1711922</a> | WF on CSI-RS for BM                                                  | Intel, Ericsson, CATT, Samsung, MediaTek, AT&T, NTT Docomo, KT                                                                                           | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 52  | 5.1.2.4.2   | CSI-RS                                       | 0 | <a href="#">noted</a>     |
| 2045 | <a href="#">R1-1711923</a> | WF on CSI-RS for BM                                                  | Samsung, Intel, AT&T, NTT DOCOMO, ZTE                                                                                                                    | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 52  | 5.1.2.4.2   | CSI-RS                                       | 0 | <a href="#">noted</a>     |
| 2046 | <a href="#">R1-1711924</a> | Summary of CSI Acquisition Details                                   | NTT DOCOMO                                                                                                                                               | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 46  | 5.1.2.3.2   | Details of CSI acquisition                   | 0 | <a href="#">noted</a>     |
| 2047 | R1-1711925                 | Remaining part of email summary for UL transmission without UL grant | LG Electronics                                                                                                                                           | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 97  | 5.1.3.3.3   | UL data transmission procedure without grant | 0 | <a href="#">withdrawn</a> |
| 2048 | <a href="#">R1-1711926</a> | WF on PT-RS pattern in the frequency domain                          | LG Electronics                                                                                                                                           | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 54  | 5.1.2.4.4   | PT-RS                                        | 0 | <a href="#">revised</a>   |
| 2049 | <a href="#">R1-1711927</a> | WF on gNB response for beam failure request                          | Huawei, HiSilicon, LG Electronics, Intel                                                                                                                 | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure       | 0 | <a href="#">available</a> |
| 2050 | <a href="#">R1-1711928</a> | WF on PRACH for beam failure recovery request transmission           | Huawei, HiSilicon, LG Electronics, Ericsson, CATT, NTT DOCOMO                                                                                            | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 42  | 5.1.2.2.2   | Mechanism to recover from beam failure       | 0 | <a href="#">available</a> |
| 2051 | <a href="#">R1-1711929</a> | WF on Beam Reporting                                                 | Huawei, HiSilicon, Samsung, Intel, Nokia, Oppo, National Instruments                                                                                     | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 41  | 5.1.2.2.1   | Beam management details                      | 0 | <a href="#">available</a> |
| 2052 | <a href="#">R1-1711930</a> | WF on SRS Configuration                                              | Huawei, HiSilicon, OPPO                                                                                                                                  | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 55  | 5.1.2.4.5   | SRS                                          | 0 | <a href="#">noted</a>     |
| 2053 | <a href="#">R1-1711931</a> | [DRAFT] Reply LS on PDCCH design                                     | Ericsson, CATT                                                                                                                                           | Patrick Merias | <a href="#">52292</a> | LS out     | Decision    |   | Reply to R1-1711642 | 61  | 5.1.3.1     | Physical downlink control channel            | 0 | <a href="#">revised</a>   |
| 2054 | <a href="#">R1-1711932</a> | WF on PT-RS pattern in the frequency domain                          | LG Electronics                                                                                                                                           | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 54  | 5.1.2.4.4   | PT-RS                                        | 0 | <a href="#">noted</a>     |
| 2055 | <a href="#">R1-1711933</a> | WF on HARQ-ACK multiplexing for NR                                   | LG Electronics                                                                                                                                           | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 104 | 5.1.3.3.5.2 | HARQ-ACK multiplexing/bundling               | 0 | <a href="#">available</a> |
| 2056 | <a href="#">R1-1711934</a> | WF on HARQ-ACK bundling for NR                                       | LG Electronics                                                                                                                                           | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 104 | 5.1.3.3.5.2 | HARQ-ACK multiplexing/bundling               | 0 | <a href="#">available</a> |
| 2057 | <a href="#">R1-1711935</a> | Summary of Open Issues on Layer Mapping                              | Samsung                                                                                                                                                  | Patrick Merias | <a href="#">52292</a> | discussion |             |   |                     | 32  | 5.1.2.1.1   | Codeword mapping                             | 0 | <a href="#">noted</a>     |
| 2058 | <a href="#">R1-1711936</a> | WF on CSI-RS based RACH configuration                                | Samsung, Ericsson, ZTE, Mediatek Mitsubishi, MTI                                                                                                         | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 24  | 5.1.1.4.4   | 4-step RA procedure                          | 0 | <a href="#">noted</a>     |
| 2059 | R1-1711937                 | Circulant permutation matrix design for LDPC codes                   | LG Electronics                                                                                                                                           | Patrick Merias | <a href="#">52292</a> | discussion |             |   |                     | 125 | 5.1.4.1.2   | LDPC code design                             | 0 | <a href="#">withdrawn</a> |
| 2060 | R1-1711938                 | Circulant permutation matrix design for LDPC codes base graph #2     | LG Electronics                                                                                                                                           | Patrick Merias | <a href="#">52292</a> | discussion |             |   |                     | 125 | 5.1.4.1.2   | LDPC code design                             | 0 | <a href="#">withdrawn</a> |
| 2061 | <a href="#">R1-1711939</a> | WF on the mapping of SS blocks with 30kHz SCS                        | Huawei, HiSilicon, CATT, CATR, OPPO, MediaTek, Vivo                                                                                                      | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 10  | 5.1.1.1.2   | SS burst set composition                     | 0 | <a href="#">noted</a>     |
| 2062 | <a href="#">R1-1711940</a> | LS to RAN1 on NR basic handover                                      | RAN2, Ericsson                                                                                                                                           | Patrick Merias | <a href="#">52292</a> | LS in      |             |   |                     | 4   | 4           | Incoming Liaison Statements                  | 0 | <a href="#">treated</a>   |
| 2063 | <a href="#">R1-1711941</a> | Way Forward on PTRS                                                  | Intel, Huawei, HiSilicon, National Instruments, MediaTek                                                                                                 | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                     | 54  | 5.1.2.4.4   | PT-RS                                        | 0 | <a href="#">noted</a>     |

|      | A                          | B                                                                      | C                                                       | D              | E                     | F          | G           | H | I                                                                                                | J   | K         | L                                                            | M | N                         |
|------|----------------------------|------------------------------------------------------------------------|---------------------------------------------------------|----------------|-----------------------|------------|-------------|---|--------------------------------------------------------------------------------------------------|-----|-----------|--------------------------------------------------------------|---|---------------------------|
| 2064 | <a href="#">R1-1711942</a> | WF on periodic CSI reporting on short PUCCH                            | Ericsson, Samsung, Huawei, HiSilicon, CATT              | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 48  | 5.1.2.3.4 | CSI feedback                                                 | 0 | <a href="#">available</a> |
| 2065 | <a href="#">R1-1711943</a> | Discussion on DMRS sequence for NR PBCH                                | Intel                                                   | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 16  | 5.1.1.2.3 | Sequence design of DMRS for NR-PBCH                          | 0 | <a href="#">noted</a>     |
| 2066 | <a href="#">R1-1711944</a> | Observations on LDPC Shift Coefficients                                | Qualcomm                                                | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 125 | 5.1.4.1.2 | LDPC code design                                             | 0 | <a href="#">noted</a>     |
| 2067 | <a href="#">R1-1711945</a> | WF on random access association configuration                          | ZTE                                                     | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 24  | 5.1.1.4.4 | 4-step RA procedure                                          | 0 | <a href="#">noted</a>     |
| 2068 | <a href="#">R1-1711946</a> | WF on DMRS indication                                                  | Samsung                                                 | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 11  | 5.1.1.1.3 | Timing indication based on SS block                          | 0 | <a href="#">noted</a>     |
| 2069 | <a href="#">R1-1711947</a> | Chairman's notes of AI 5.1.9 UL Power Control                          | Ad-Hoc chair (Qualcomm)                                 | Patrick Merias | <a href="#">52292</a> | other      | Endorsement |   |                                                                                                  | 138 | 5.1.9     | UL power control                                             | 0 | <a href="#">endorsed</a>  |
| 2070 | <a href="#">R1-1711948</a> | [Draft] LS on bandwidth part operation in NR                           | MediaTek                                                | Patrick Merias | <a href="#">52292</a> | LS out     | Decision    |   |                                                                                                  | 136 | 5.1.7     | Wider bandwidth operations                                   | 0 | <a href="#">revised</a>   |
| 2071 | <a href="#">R1-1711949</a> | Reply LS to RAN1 on UL data transmission without UL grant for NR       | RAN2, Huawei                                            | Patrick Merias | <a href="#">52292</a> | LS in      |             |   |                                                                                                  | 4   | 4         | Incoming Liaison Statements                                  | 0 | <a href="#">postponed</a> |
| 2072 | <a href="#">R1-1711950</a> | LS to RAN1 on Random Access                                            | RAN2, Samsung                                           | Patrick Merias | <a href="#">52292</a> | LS in      |             |   |                                                                                                  | 4   | 4         | Incoming Liaison Statements                                  | 0 | <a href="#">treated</a>   |
| 2073 | <a href="#">R1-1711951</a> | Open issues on SRS design                                              | Sony                                                    | Patrick Merias | <a href="#">52292</a> | discussion |             |   |                                                                                                  | 55  | 5.1.2.4.5 | SRS                                                          | 0 | <a href="#">noted</a>     |
| 2074 | <a href="#">R1-1711952</a> | Performance evaluation of interference randomization                   | Qualcomm Inc.                                           | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                                                                                                  | 11  | 5.1.1.1.3 | Timing indication based on SS block                          | 0 | <a href="#">noted</a>     |
| 2075 | R1-1711953                 | Evaluation of proposed PCMs for BG#1                                   | Huawei, HiSilicon                                       | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                                                                                                  | 125 | 5.1.4.1.2 | LDPC code design                                             | 0 | <a href="#">withdrawn</a> |
| 2076 | R1-1711954                 | Evaluation of proposed PCMs for BG#2                                   | Huawei, HiSilicon                                       | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                                                                                                  | 125 | 5.1.4.1.2 | LDPC code design                                             | 0 | <a href="#">withdrawn</a> |
| 2077 | R1-1711955                 | Ranking of proposed PCMs for BG#1 and BG#2 based on evaluation results | Huawei, HiSilicon                                       | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                                                                                                  | 125 | 5.1.4.1.2 | LDPC code design                                             | 0 | <a href="#">withdrawn</a> |
| 2078 | <a href="#">R1-1711956</a> | On Pi/2-BPSK with spectrum shaping                                     | Ericsson                                                | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                                                                                                  | 132 | 5.1.5     | Modulation                                                   | 0 | <a href="#">noted</a>     |
| 2079 | <a href="#">R1-1711957</a> | WF on processing time requirements                                     | Qualcomm                                                | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 105 | 5.1.3.3.6 | Processing time and HARQ process number                      | 0 | <a href="#">noted</a>     |
| 2080 | <a href="#">R1-1711958</a> | WF on CBG retransmission                                               | Samsung, ZTE                                            | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 98  | 5.1.3.3.4 | CBG-based (re)transmission                                   | 0 | <a href="#">noted</a>     |
| 2081 | <a href="#">R1-1711959</a> | WF on DL PRB bundling                                                  | Xinwei                                                  | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 36  | 5.1.2.1.5 | PRB bundling for DL                                          | 0 | <a href="#">revised</a>   |
| 2082 | <a href="#">R1-1711960</a> | Summary on DL PRB bundling                                             | Xinwei                                                  | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                                                                                                  | 36  | 5.1.2.1.5 | PRB bundling for DL                                          | 0 | <a href="#">noted</a>     |
| 2083 | R1-1711961                 | WF on the false alarm rate target of eMBB DCI                          | Panasonic, Qualcomm, Intel, NTT DOCOMO                  | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 62  | 5.1.3.1.1 | PDCCH structure                                              | 0 | <a href="#">withdrawn</a> |
| 2084 | <a href="#">R1-1711962</a> | Way Forward on network-based beam failure recovery                     | Huawei, HiSilicon                                       | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 43  | 5.1.2.2.3 | Other                                                        | 0 | <a href="#">available</a> |
| 2085 | <a href="#">R1-1711963</a> | Crosscheck Results for PCM of BG1                                      | Samsung                                                 | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                                                                                                  | 125 | 5.1.4.1.2 | LDPC code design                                             | 0 | <a href="#">available</a> |
| 2086 | <a href="#">R1-1711964</a> | Crosscheck Results for PCM of BG2                                      | Samsung                                                 | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                                                                                                  | 125 | 5.1.4.1.2 | LDPC code design                                             | 0 | <a href="#">available</a> |
| 2087 | <a href="#">R1-1711965</a> | Beam management offline summary                                        | Qualcomm                                                | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                                                                                                  | 41  | 5.1.2.2.1 | Beam management details                                      | 0 | <a href="#">noted</a>     |
| 2088 | <a href="#">R1-1711966</a> | Reply LS on reading time index indication for RRM measurements         | RAN1, Intel                                             | Patrick Merias | <a href="#">52292</a> | LS out     | Approval    |   | MCC to correct Response to: LS R1-1706160 (R2-170215) as Response to: LS R2-1706160 (R1-1710215) | 4   | 4         | Incoming Liaison Statements                                  | 0 | <a href="#">noted</a>     |
| 2089 | <a href="#">R1-1711967</a> | Timing information indicated by DMRS                                   | ZTE                                                     | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 11  | 5.1.1.1.3 | Timing indication based on SS block                          | 0 | <a href="#">noted</a>     |
| 2090 | <a href="#">R1-1711968</a> | [DRAFT] Reply LS response on NR basic handover                         | Samsung                                                 | Patrick Merias | <a href="#">52292</a> | LS out     | Decision    |   |                                                                                                  | 4   | 4         | Incoming Liaison Statements                                  | 0 | <a href="#">revised</a>   |
| 2091 | <a href="#">R1-1711969</a> | Offline discussions on UL data transmission without grant              | NTT DOCOMO                                              | Patrick Merias | <a href="#">52292</a> | discussion | Decision    |   |                                                                                                  | 97  | 5.1.3.3.3 | UL data transmission procedure without grant                 | 0 | <a href="#">noted</a>     |
| 2092 | <a href="#">R1-1711970</a> | WF on RACH preamble format for short sequence with and 2 OFDM symbols  | Nokia, Alcatel-Lucent, Shanghai Bell                    | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 21  | 5.1.1.4.1 | PRACH preamble format details for long/short sequence length | 0 | <a href="#">available</a> |
| 2093 | <a href="#">R1-1711971</a> | WF on QCL assumption in NR                                             | ZTE, ASTRI, Nokia, ASB                                  | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 57  | 5.1.2.4.7 | QCL                                                          | 0 | <a href="#">available</a> |
| 2094 | <a href="#">R1-1711972</a> | [DRAFT] Reply LS on PDCCH design                                       | Ericsson, CATT                                          | Patrick Merias | <a href="#">52292</a> | LS out     | Decision    |   | Reply to R1-1711642                                                                              | 61  | 5.1.3.1   | Physical downlink control channel                            | 0 | <a href="#">revised</a>   |
| 2095 | <a href="#">R1-1711973</a> | WF on CSI-RS for BM                                                    | Intel, Ericsson, Spreadtrum, MediaTek, Samsung, Verizon | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 52  | 5.1.2.4.2 | CSI-RS                                                       | 0 | <a href="#">available</a> |
| 2096 | <a href="#">R1-1711974</a> | Summary of views on multiplexing of different types of RS              | Huawei, HiSilicon                                       | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 51  | 5.1.2.4.1 | Multiplexing of different types of RSs                       | 0 | <a href="#">noted</a>     |
| 2097 | <a href="#">R1-1711975</a> | LS response on required parameters from RAN4 perspective               | RAN1, Ericsson                                          | Patrick Merias | <a href="#">52292</a> | LS out     | Approval    |   |                                                                                                  | 132 | 5.1.5     | Modulation                                                   | 0 | <a href="#">approved</a>  |
| 2098 | <a href="#">R1-1711976</a> | WF on CSI-RS for beam management                                       | NTT DOCOMO, Ericsson, Samsung                           | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 52  | 5.1.2.4.2 | CSI-RS                                                       | 0 | <a href="#">noted</a>     |
| 2099 | R1-1711977                 | Sequence construction of Polar codes for control channels              | Qualcomm Incorporated                                   | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 128 | 5.1.4.2.2 | Sequence design                                              | 0 | <a href="#">withdrawn</a> |
| 2100 | <a href="#">R1-1711978</a> | LDPC rate compatible design                                            | Qualcomm Incorporated                                   | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 125 | 5.1.4.1.2 | LDPC code design                                             | 0 | <a href="#">available</a> |
| 2101 | R1-1711979                 | Performance cross-check for PCMs of NR LDPC BG1 and BG2                | MediaTek                                                | Patrick Merias | <a href="#">52292</a> | other      | Decision    |   |                                                                                                  | 125 | 5.1.4.1.2 | LDPC code design                                             | 0 | <a href="#">withdrawn</a> |

|      | A                          | B                                                                             | C                                                                                                       | D              | E                     | F        | G        | H | I                                                      | J   | K           | L                                              | M | N                         |
|------|----------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------|-----------------------|----------|----------|---|--------------------------------------------------------|-----|-------------|------------------------------------------------|---|---------------------------|
| 2102 | <a href="#">R1-1711980</a> | Performance with L1 CRC polynomial                                            | Qualcomm Incorporated                                                                                   | Patrick Merias | <a href="#">52292</a> | other    | Decision |   |                                                        | 127 | 5.1.4.2.1   | Code construction                              | 0 | <a href="#">noted</a>     |
|      | <a href="#">R1-1711981</a> | WF on group common pre-emption indication                                     | Huawei, HiSilicon, Sharp, ZTE, LG, Sony, Panasonic, MediaTek, InterDigital                              | Patrick Merias | <a href="#">52292</a> | other    | Decision |   |                                                        | 109 | 5.1.3.3.7.1 | Pre-emption indication for downlink            | 0 | <a href="#">noted</a>     |
| 2103 |                            |                                                                               |                                                                                                         |                |                       |          |          |   |                                                        |     |             |                                                |   |                           |
| 2104 | <a href="#">R1-1711982</a> | WF on LDPC parity check matrices                                              | Nokia                                                                                                   | Patrick Merias | <a href="#">52292</a> | other    | Decision |   |                                                        | 125 | 5.1.4.1.2   | LDPC code design                               | 0 | <a href="#">noted</a>     |
|      | <a href="#">R1-1711983</a> | WF on Polar Code Construction With PC bits                                    | Huawei, HiSilicon, CATT, MTK, ZTE, DCM, Accelercomm, Coherentlogix, LG, Spreadtrum, Interdigital, Nokia | Patrick Merias | <a href="#">52292</a> | other    | Decision |   |                                                        | 127 | 5.1.4.2.1   | Code construction                              | 0 | <a href="#">noted</a>     |
| 2105 |                            |                                                                               |                                                                                                         |                |                       |          |          |   |                                                        |     |             |                                                |   |                           |
| 2106 | <a href="#">R1-1711984</a> | [DRAFT] LS on NR initial access and mobility                                  | NTT DOCOMO                                                                                              | Patrick Merias | <a href="#">52292</a> | LS out   | Decision |   |                                                        | 7   | 5.1.1       | Initial access and mobility                    | 0 | <a href="#">revised</a>   |
| 2107 | <a href="#">R1-1711985</a> | [DRAFT] LS on NR initial access and mobility                                  | NTT DOCOMO                                                                                              | Patrick Merias | <a href="#">52292</a> | LS out   | Decision |   |                                                        | 7   | 5.1.1       | Initial access and mobility                    | 0 | <a href="#">revised</a>   |
| 2108 | <a href="#">R1-1711986</a> | WF on PTRS multiplexing with other RSs for CP-OFDM                            | ZTE                                                                                                     | Patrick Merias | <a href="#">52292</a> | other    | Decision |   |                                                        | 51  | 5.1.2.4.1   | Multiplexing of different types of RSs         | 0 | <a href="#">available</a> |
| 2109 | <a href="#">R1-1711987</a> | Reply LS response on NR basic handover                                        | RAN1, Samsung                                                                                           | Patrick Merias | <a href="#">52292</a> | LS out   | Approval |   |                                                        | 4   | 4           | Incoming Liaison Statements                    | 0 | <a href="#">approved</a>  |
| 2110 | <a href="#">R1-1711988</a> | WF on beam indication for PDCCH                                               | Samsung                                                                                                 | Patrick Merias | <a href="#">52292</a> | other    | Decision |   |                                                        | 43  | 5.1.2.2.3   | Other                                          | 0 | <a href="#">available</a> |
| 2111 | <a href="#">R1-1711989</a> | [Draft] LS on bandwidth part operation in NR                                  | MediaTek                                                                                                | Patrick Merias | <a href="#">52292</a> | LS out   | Decision |   |                                                        | 136 | 5.1.7       | Wider bandwidth operations                     | 0 | <a href="#">revised</a>   |
| 2112 | <a href="#">R1-1711990</a> | WF on DL PRB bundling                                                         | Xinwei                                                                                                  | Patrick Merias | <a href="#">52292</a> | other    | Decision |   |                                                        | 36  | 5.1.2.1.5   | PRB bundling for DL                            | 0 | <a href="#">noted</a>     |
| 2113 | <a href="#">R1-1711991</a> | WF on contents of the group-common PDCCH                                      | CATT, NEC                                                                                               | Patrick Merias | <a href="#">52292</a> | other    | Decision |   |                                                        | 70  | 5.1.3.1.4   | Group-common PDCCH                             | 0 | <a href="#">noted</a>     |
| 2114 | <a href="#">R1-1711992</a> | [DRAFT] Reply LS on PDCCH design                                              | Ericsson, CATT                                                                                          | Patrick Merias | <a href="#">52292</a> | LS out   | Decision |   | Reply to R1-1711642                                    | 61  | 5.1.3.1     | Physical downlink control channel              | 0 | <a href="#">revised</a>   |
| 2115 | <a href="#">R1-1711993</a> | WF on UE behavior for reserved resource                                       | Samsung                                                                                                 | Patrick Merias | <a href="#">52292</a> | other    | Decision |   |                                                        | 62  | 5.1.3.1.1   | PDCCH structure                                | 0 | <a href="#">revised</a>   |
| 2116 | <a href="#">R1-1711994</a> | WF on UE power saving with PDCCH monitoring in CDRX                           | Qualcomm                                                                                                | Patrick Merias | <a href="#">52292</a> | other    | Decision |   |                                                        | 75  | 5.1.3.1.6   | Other                                          | 0 | <a href="#">available</a> |
| 2117 | <a href="#">R1-1711995</a> | WF on the content of the long PUCCH resource configuration                    | Ericsson                                                                                                | Patrick Merias | <a href="#">52292</a> | other    | Decision |   |                                                        | 85  | 5.1.3.2.4   | Resource allocation for PUCCH                  | 0 | <a href="#">available</a> |
| 2118 | <a href="#">R1-1711996</a> | WF on long PUCCH Format for more than 2 UCI bits with multi-user multiplexing | Ericsson                                                                                                | Patrick Merias | <a href="#">52292</a> | other    | Decision |   |                                                        | 80  | 5.1.3.2.2   | PUCCH in long-duration                         | 0 | <a href="#">available</a> |
| 2119 | <a href="#">R1-1711997</a> | Response LS on Support for fake gNB detection mechanisms                      | RAN1, Nokia                                                                                             | Patrick Merias | <a href="#">52292</a> | LS out   | Approval |   |                                                        | 4   | 4           | Incoming Liaison Statements                    | 0 | <a href="#">approved</a>  |
| 2120 | <a href="#">R1-1711998</a> | LS on bandwidth part operation in NR                                          | RAN1, MediaTek                                                                                          | Patrick Merias | <a href="#">52292</a> | LS out   | Approval |   |                                                        | 136 | 5.1.7       | Wider bandwidth operations                     | 0 | <a href="#">approved</a>  |
| 2121 | <a href="#">R1-1711999</a> | LS on power sharing for LTE-NR Dual Connectivity                              | RAN1, Ericsson                                                                                          | Patrick Merias | <a href="#">52292</a> | LS out   | Approval |   |                                                        | 139 | 5.1.9.1     | Power sharing mechanism                        | 0 | <a href="#">approved</a>  |
| 2122 | <a href="#">R1-1712000</a> | LS on support of multi-TRP transmission in NR                                 | RAN1, Intel                                                                                             | Patrick Merias | <a href="#">52292</a> | LS out   | Approval |   |                                                        | 37  | 5.1.2.1.6   | Multi-TRP and Multi-panel transmission         | 0 | <a href="#">approved</a>  |
| 2123 | <a href="#">R1-1712001</a> | LS on NR initial access and mobility                                          | RAN1, NTT DOCOMO                                                                                        | Patrick Merias | <a href="#">52292</a> | LS out   | Approval |   |                                                        | 7   | 5.1.1       | Initial access and mobility                    | 0 | <a href="#">approved</a>  |
| 2124 | <a href="#">R1-1712002</a> | LS on NR initial access and mobility                                          | RAN1, NTT DOCOMO                                                                                        | Patrick Merias | <a href="#">52292</a> | LS out   | Approval |   |                                                        | 7   | 5.1.1       | Initial access and mobility                    | 0 | <a href="#">approved</a>  |
| 2125 | <a href="#">R1-1712003</a> | [DRAFT] Reply LS on CSI-RS design for beam management                         | NTT DOCOMO                                                                                              | Patrick Merias | <a href="#">52292</a> | LS out   | Decision |   | For email                                              | 52  | 5.1.2.4.2   | CSI-RS                                         | 0 | <a href="#">revised</a>   |
| 2126 | <a href="#">R1-1712004</a> | TS38.211 v0.1.0 NR; Physical channels and modulation                          | Ericsson LM                                                                                             | Patrick Merias | <a href="#">52292</a> | draft TS |          |   |                                                        | 6   | 5.1         | New Radio Access Technology - WID in RP-171485 | 0 | <a href="#">endorsed</a>  |
| 2127 | <a href="#">R1-1712005</a> | Reply LS on PDCCH design                                                      | RAN1, Ericsson, CATT                                                                                    | Patrick Merias | <a href="#">52292</a> | LS out   | Approval |   | Reply to R1-1711642                                    | 61  | 5.1.3.1     | Physical downlink control channel              | 0 | <a href="#">approved</a>  |
| 2128 | <a href="#">R1-1712006</a> | WF on UE behavior for reserved resource                                       | Samsung                                                                                                 | Patrick Merias | <a href="#">52292</a> | other    | Decision |   |                                                        | 62  | 5.1.3.1.1   | PDCCH structure                                | 0 | <a href="#">noted</a>     |
| 2129 | <a href="#">R1-1712007</a> | LS on NR Beam Management                                                      | RAN1, Qualcomm                                                                                          | Patrick Merias | <a href="#">52292</a> | LS out   | Approval |   | For email                                              | 6   | 5.1         | New Radio Access Technology - WID in RP-171485 | 0 | <a href="#">approved</a>  |
| 2130 | <a href="#">R1-1712008</a> | LS on HARQ operation                                                          | RAN1, Nokia                                                                                             | Patrick Merias | <a href="#">52292</a> | LS out   | Approval |   | Reply to R1-1711642                                    | 6   | 5.1         | New Radio Access Technology - WID in RP-171485 | 0 | <a href="#">approved</a>  |
| 2131 | <a href="#">R1-1712009</a> | Reply LS on CSI-RS design for beam management                                 | RAN1, NTT DOCOMO                                                                                        | Patrick Merias | <a href="#">52292</a> | LS out   | Approval |   |                                                        | 52  | 5.1.2.4.2   | CSI-RS                                         | 0 | <a href="#">approved</a>  |
| 2132 | <a href="#">R1-1712010</a> | LS on a correction to the applicable UL modulation schemes                    | RAN1, Huawei                                                                                            | Patrick Merias | <a href="#">52292</a> | LS out   | Approval |   |                                                        | 132 | 5.1.5       | Modulation                                     | 0 | <a href="#">approved</a>  |
| 2133 | <a href="#">R1-1712011</a> | TS38.211 v0.1.1 NR; Physical channels and modulation                          | Ericsson LM                                                                                             | Patrick Merias | <a href="#">52292</a> | draft TS |          |   | Capture decisions up to and including RAN1 NR AdHoc #2 | 6   | 5.1         | New Radio Access Technology - WID in RP-171485 | 0 | <a href="#">available</a> |
| 2134 | <a href="#">R1-1712012</a> | TS38.201 v0.0.1 NR; Physical layer; General descriptor                        | NTT DOCOMO                                                                                              | Patrick Merias | <a href="#">52292</a> | draft TS |          |   | Capture decisions up to and including RAN1 NR AdHoc #2 | 6   | 5.1         | New Radio Access Technology - WID in RP-171485 | 0 | <a href="#">available</a> |
| 2135 | <a href="#">R1-1712013</a> | TS38.202 v0.0.1 NR; Physical layer services provided by the physical layer    | Qualcomm                                                                                                | Patrick Merias | <a href="#">52292</a> | draft TS |          |   | Capture decisions up to and including RAN1 NR AdHoc #2 | 6   | 5.1         | New Radio Access Technology - WID in RP-171485 | 0 | <a href="#">available</a> |
|      | <a href="#">R1-1712014</a> | TS38.212 v0.0.1 NR; Multiplexing and channel coding                           | Huawei                                                                                                  | Patrick Merias | <a href="#">52292</a> | draft TS |          |   | Capture decisions up to and including RAN1 NR AdHoc #2 | 6   | 5.1         | New Radio Access Technology - WID in RP-171485 | 0 | <a href="#">available</a> |
| 2136 |                            |                                                                               |                                                                                                         |                |                       |          |          |   |                                                        |     |             |                                                |   |                           |
|      | <a href="#">R1-1712015</a> | TS38.213 v0.0.1 NR; Physical layer procedures for control                     | Samsung                                                                                                 | Patrick Merias | <a href="#">52292</a> | draft TS |          |   | Capture decisions up to and including RAN1 NR AdHoc #2 | 6   | 5.1         | New Radio Access Technology - WID in RP-171485 | 0 | <a href="#">available</a> |
| 2137 |                            |                                                                               |                                                                                                         |                |                       |          |          |   |                                                        |     |             |                                                |   |                           |

|      | A                          | B                                                      | C     | D              | E                     | F        | G | H | I                                                      | J | K   | L                                              | M | N                         |
|------|----------------------------|--------------------------------------------------------|-------|----------------|-----------------------|----------|---|---|--------------------------------------------------------|---|-----|------------------------------------------------|---|---------------------------|
| 2138 | <a href="#">R1-1712016</a> | TS38.214 v0.0.1 NR; Physical layer procedures for data | Nokia | Patrick Merias | <a href="#">52292</a> | draft TS |   |   | Capture decisions up to and including RAN1 NR AdHoc #2 | 6 | 5.1 | New Radio Access Technology - WID in RP-171485 | 0 | <a href="#">available</a> |
| 2139 | <a href="#">R1-1712017</a> | TS38.215 v0.0.1 NR; Physical layer measurements        | Intel | Patrick Merias | <a href="#">52292</a> | draft TS |   |   | Capture decisions up to and including RAN1 NR AdHoc #2 | 6 | 5.1 | New Radio Access Technology - WID in RP-171485 | 0 | <a href="#">available</a> |

|    | O                   | P                   | Q              | R                          | S       | T    | U       | V           | W  | X           | Y           | Z           | AA       | AB | AC | AD          | AE       |
|----|---------------------|---------------------|----------------|----------------------------|---------|------|---------|-------------|----|-------------|-------------|-------------|----------|----|----|-------------|----------|
|    | Reservation date    | Uploaded            | Is revision of | Revised to                 | Release | Spec | Version | Related Wis | CR | CR revision | CR category | TSG CR Pack | Reply to | To | Cc | Original LS | Reply in |
| 1  |                     |                     |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 2  | 2017-06-08 07:56:05 | 2017-06-08 08:07:46 |                | <a href="#">R1-1711601</a> |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 3  | 2017-06-08 07:56:09 | 2017-06-22 14:16:07 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 4  | 2017-06-08 09:08:38 | 2017-06-19 17:58:35 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 5  | 2017-06-08 09:13:04 | 2017-06-19 17:58:35 |                | <a href="#">R1-1711644</a> |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 6  | 2017-06-08 11:12:14 | 2017-06-17 02:00:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 7  | 2017-06-08 11:12:16 | 2017-06-17 02:00:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 8  | 2017-06-08 11:12:16 | 2017-06-19 14:06:44 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 9  | 2017-06-08 11:12:16 | 2017-06-17 02:00:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 10 | 2017-06-08 11:12:16 | 2017-06-17 02:00:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 11 | 2017-06-08 11:12:16 | 2017-06-19 14:06:44 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 12 | 2017-06-08 11:12:16 | 2017-06-17 02:00:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 13 | 2017-06-08 11:12:16 | 2017-06-17 02:00:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 14 | 2017-06-08 11:12:16 | 2017-06-17 02:00:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 15 | 2017-06-08 11:12:16 | 2017-06-17 02:00:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 16 | 2017-06-08 11:12:16 | 2017-06-17 02:00:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 17 | 2017-06-08 11:12:16 | 2017-06-17 02:00:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 18 | 2017-06-08 11:12:16 | 2017-06-17 02:00:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 19 | 2017-06-08 11:12:16 | 2017-06-17 02:00:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 20 | 2017-06-08 11:12:16 | 2017-06-17 02:00:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 21 | 2017-06-08 11:12:16 | 2017-06-17 02:00:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 22 | 2017-06-08 11:12:16 | 2017-06-17 02:00:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 23 | 2017-06-08 12:35:54 | 2017-06-15 15:48:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 24 | 2017-06-08 12:37:26 | 2017-06-15 15:48:24 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 25 | 2017-06-08 12:41:19 | 2017-06-15 19:15:08 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 26 | 2017-06-08 13:20:28 | 2017-06-16 09:52:57 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 27 | 2017-06-08 13:20:33 | 2017-06-16 09:52:57 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 28 | 2017-06-08 13:20:33 | 2017-06-16 09:52:57 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 29 | 2017-06-08 13:20:33 | 2017-06-16 09:52:56 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 30 | 2017-06-08 13:20:33 | 2017-06-16 09:52:56 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 31 | 2017-06-08 13:20:33 | 2017-06-16 09:52:56 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 32 | 2017-06-08 13:23:32 | 2017-06-16 09:52:56 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 33 | 2017-06-08 13:23:32 | 2017-06-17 02:50:38 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 34 | 2017-06-08 13:23:32 | 2017-06-17 03:15:49 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 35 | 2017-06-08 13:23:32 | 2017-06-17 02:50:38 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 36 | 2017-06-08 13:23:32 | 2017-06-17 02:50:38 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 37 | 2017-06-08 13:23:32 | 2017-06-17 02:50:38 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 38 | 2017-06-08 13:23:32 | 2017-06-17 02:50:38 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 39 | 2017-06-08 13:23:32 | 2017-06-17 02:50:38 |                | <a href="#">R1-1711600</a> |         |      |         |             |    |             |             |             |          |    |    |             |          |
| 40 | 2017-06-08 13:23:32 | 2017-06-17 02:50:38 |                |                            |         |      |         |             |    |             |             |             |          |    |    |             |          |

|    | O                   | P                   | Q | R          | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|----|---------------------|---------------------|---|------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 41 | 2017-06-08 13:23:33 | 2017-06-17 02:50:38 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 42 | 2017-06-08 13:23:33 | 2017-06-17 02:50:38 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 43 | 2017-06-08 13:23:33 | 2017-06-17 02:50:38 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 44 | 2017-06-08 13:23:33 | 2017-06-17 02:50:38 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 45 | 2017-06-08 13:23:33 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 46 | 2017-06-08 13:23:33 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 47 | 2017-06-08 13:23:33 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 48 | 2017-06-08 13:23:33 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 49 | 2017-06-08 13:23:33 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 50 | 2017-06-08 13:23:33 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 51 | 2017-06-08 13:23:33 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 52 | 2017-06-08 13:23:33 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 53 | 2017-06-08 13:23:33 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 54 | 2017-06-08 13:23:33 | 2017-06-17 03:15:49 |   | R1-1711632 |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 55 | 2017-06-08 13:23:33 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 56 | 2017-06-08 13:23:33 | 2017-06-17 02:55:43 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 57 | 2017-06-08 13:23:33 | 2017-06-17 02:55:43 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 58 | 2017-06-08 13:23:33 | 2017-06-17 02:55:43 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 59 | 2017-06-08 13:23:33 | 2017-06-17 03:15:49 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 60 | 2017-06-08 13:23:33 | 2017-06-17 02:55:43 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 61 | 2017-06-08 13:23:33 | 2017-06-17 02:55:43 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 62 | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 63 | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 64 | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 65 | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 66 | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 67 | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 68 | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 69 | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 70 | 2017-06-08 13:23:34 | 2017-06-17 03:15:49 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 71 | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 72 | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 73 | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 74 | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 75 | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 76 | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 77 | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 78 | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 79 | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 80 | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 81 | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 82 | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 83 | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R                          | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|----------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 84  | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 85  | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 86  | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 87  | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 88  | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 89  | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 90  | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 91  | 2017-06-08 13:23:34 | 2017-06-17 02:50:38 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 92  | 2017-06-08 13:23:34 | 2017-06-17 02:50:39 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 93  | 2017-06-08 13:23:34 | 2017-06-17 02:52:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 94  | 2017-06-08 13:23:34 | 2017-06-17 02:52:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 95  | 2017-06-08 13:23:34 | 2017-06-17 02:52:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 96  | 2017-06-08 13:23:34 | 2017-06-17 02:52:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 97  | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 98  | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 99  | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 100 | 2017-06-08 13:23:34 | 2017-06-17 02:52:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 101 | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 102 | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 103 | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 104 | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 105 | 2017-06-08 13:23:34 | 2017-06-17 02:55:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 106 | 2017-06-08 13:23:34 | 2017-06-17 02:52:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 107 | 2017-06-08 13:23:35 | 2017-06-17 02:52:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 108 | 2017-06-08 13:23:35 | 2017-06-17 02:52:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 109 | 2017-06-08 13:23:35 | 2017-06-17 02:52:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 110 | 2017-06-08 13:23:35 | 2017-06-17 02:58:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 111 | 2017-06-08 13:23:35 | 2017-06-17 02:52:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 112 | 2017-06-08 13:23:35 | 2017-06-17 02:52:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 113 | 2017-06-08 13:23:35 | 2017-06-17 02:58:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 114 | 2017-06-08 13:23:35 | 2017-06-17 02:58:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 115 | 2017-06-08 13:23:35 | 2017-06-17 02:52:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 116 | 2017-06-08 13:23:35 | 2017-06-17 02:52:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 117 | 2017-06-08 13:23:35 | 2017-06-20 05:17:54 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 118 | 2017-06-08 13:23:35 | 2017-06-20 05:17:54 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 119 | 2017-06-08 13:23:35 | 2017-06-20 05:17:54 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 120 | 2017-06-08 13:23:35 | 2017-06-20 05:17:54 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 121 | 2017-06-08 13:23:35 | 2017-06-20 05:17:54 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 122 | 2017-06-08 13:23:35 | 2017-06-20 05:17:54 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 123 | 2017-06-08 13:23:35 | 2017-06-20 05:17:55 |   | <a href="#">R1-1711702</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 124 | 2017-06-08 13:23:35 | 2017-06-20 05:17:55 |   | <a href="#">R1-1711703</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 125 | 2017-06-08 13:23:35 | 2017-06-20 05:17:55 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 126 | 2017-06-08 13:23:35 | 2017-06-20 05:17:55 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R                          | S                      | T | U | V                            | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|----------------------------|------------------------|---|---|------------------------------|---|---|---|---|----|----|----|----|----|
| 127 | 2017-06-08 13:23:35 | 2017-06-17 02:58:56 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 128 | 2017-06-08 13:23:35 | 2017-06-19 23:10:03 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 129 | 2017-06-08 13:23:35 | 2017-06-17 02:52:07 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 130 | 2017-06-08 13:23:35 | 2017-06-17 02:52:07 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 131 | 2017-06-08 13:23:35 | 2017-06-17 03:15:49 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 132 | 2017-06-08 13:23:35 | 2017-06-17 02:56:42 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 133 | 2017-06-08 13:23:35 | 2017-06-17 02:56:42 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 134 | 2017-06-08 13:23:35 | 2017-06-17 02:56:42 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 135 | 2017-06-08 13:23:35 | 2017-06-17 02:52:07 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 136 | 2017-06-08 16:06:50 | 2017-06-17 05:55:50 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 137 | 2017-06-08 16:06:51 | 2017-06-17 05:55:50 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 138 | 2017-06-08 16:06:51 | 2017-06-17 05:55:50 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 139 | 2017-06-08 17:03:44 | 2017-06-17 02:00:24 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 140 | 2017-06-08 17:03:47 | 2017-06-17 02:00:24 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 141 | 2017-06-08 17:03:47 | 2017-06-17 02:00:24 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 142 | 2017-06-08 17:03:47 | 2017-06-17 02:00:24 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 143 | 2017-06-08 18:37:48 | 2017-06-16 15:44:06 |   |                            | <a href="#">Rel-15</a> |   |   | <a href="#">FS_NR_newRAT</a> |   |   |   |   |    |    |    |    |    |
| 144 | 2017-06-09 04:08:59 | 2017-06-17 03:10:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 145 | 2017-06-09 04:09:10 | 2017-06-17 03:10:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 146 | 2017-06-09 04:09:10 | 2017-06-17 03:10:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 147 | 2017-06-09 04:09:10 | 2017-06-17 03:10:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 148 | 2017-06-09 04:09:11 | 2017-06-17 03:10:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 149 | 2017-06-09 04:09:11 | 2017-06-17 03:10:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 150 | 2017-06-09 04:09:11 | 2017-06-17 03:10:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 151 | 2017-06-09 04:09:11 | 2017-06-17 03:10:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 152 | 2017-06-09 04:09:11 | 2017-06-17 03:10:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 153 | 2017-06-09 04:09:11 | 2017-06-17 03:10:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 154 | 2017-06-09 04:09:11 | 2017-06-17 03:10:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 155 | 2017-06-09 04:09:11 | 2017-06-17 03:10:43 |   | <a href="#">R1-1711618</a> |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 156 | 2017-06-09 04:09:11 | 2017-06-17 03:10:43 |   | <a href="#">R1-1711617</a> |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 157 | 2017-06-09 04:09:11 | 2017-06-17 03:10:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 158 | 2017-06-09 04:09:11 | 2017-06-17 03:10:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 159 | 2017-06-09 04:09:11 | 2017-06-17 03:10:43 |   | <a href="#">R1-1711676</a> |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 160 | 2017-06-09 04:09:11 | 2017-06-17 03:10:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 161 | 2017-06-09 04:09:11 | 2017-06-17 03:10:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 162 | 2017-06-09 04:09:12 | 2017-06-17 03:10:44 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 163 | 2017-06-09 04:09:12 | 2017-06-17 03:10:44 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 164 | 2017-06-09 04:09:12 | 2017-06-17 03:10:44 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 165 | 2017-06-09 04:09:12 | 2017-06-19 07:39:42 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 166 | 2017-06-09 04:09:13 | 2017-06-19 07:39:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 167 | 2017-06-09 04:09:13 | 2017-06-19 07:39:43 |   |                            |                        |   |   |                              |   |   |   |   |    |    |    |    |    |
| 168 | 2017-06-09 04:09:13 | 2017-06-19 07:39:43 |   | <a href="#">R1-1711669</a> |                        |   |   |                              |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R                          | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|----------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 169 | 2017-06-09 04:09:13 | 2017-06-19 07:39:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 170 | 2017-06-09 04:09:13 | 2017-06-19 07:39:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 171 | 2017-06-09 04:09:13 | 2017-06-17 03:10:44 |   | <a href="#">R1-1711575</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 172 | 2017-06-09 04:09:13 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 173 | 2017-06-09 04:09:13 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 174 | 2017-06-09 04:09:13 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 175 | 2017-06-09 04:09:14 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 176 | 2017-06-09 04:09:14 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 177 | 2017-06-09 04:09:14 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 178 | 2017-06-09 04:09:14 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 179 | 2017-06-09 04:09:15 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 180 | 2017-06-09 04:09:15 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 181 | 2017-06-09 04:09:15 | 2017-06-28 13:47:51 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 182 | 2017-06-09 04:09:15 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 183 | 2017-06-09 04:09:15 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 184 | 2017-06-09 04:09:15 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 185 | 2017-06-09 04:09:15 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 186 | 2017-06-09 04:09:15 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 187 | 2017-06-09 04:09:15 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 188 | 2017-06-09 04:09:15 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 189 | 2017-06-09 04:09:15 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 190 | 2017-06-09 04:09:15 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 191 | 2017-06-09 04:09:15 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 192 | 2017-06-09 04:09:15 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 193 | 2017-06-09 04:09:16 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 194 | 2017-06-09 04:09:16 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 195 | 2017-06-09 04:09:16 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 196 | 2017-06-09 04:09:16 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 197 | 2017-06-09 04:09:16 | 2017-06-17 03:10:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 198 | 2017-06-09 04:09:16 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 199 | 2017-06-09 04:09:16 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 200 | 2017-06-09 04:09:16 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 201 | 2017-06-09 04:09:16 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 202 | 2017-06-09 04:09:16 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 203 | 2017-06-09 04:09:16 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 204 | 2017-06-09 04:09:16 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 205 | 2017-06-09 04:09:16 | 2017-06-17 03:10:44 |   | <a href="#">R1-1711603</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 206 | 2017-06-09 04:09:16 | 2017-06-17 03:10:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 207 | 2017-06-09 04:09:16 | 2017-06-17 03:10:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 208 | 2017-06-09 04:09:16 | 2017-06-17 03:10:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 209 | 2017-06-09 04:09:16 | 2017-06-17 03:10:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 210 | 2017-06-09 04:09:16 | 2017-06-17 03:10:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 211 | 2017-06-09 04:09:16 | 2017-06-17 03:10:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 212 | 2017-06-09 04:09:16 | 2017-06-17 03:10:43 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 213 | 2017-06-09 04:09:16 | 2017-06-17 03:10:43 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 214 | 2017-06-09 04:09:16 | 2017-06-17 03:10:43 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 215 | 2017-06-09 04:09:16 | 2017-06-17 03:10:43 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 216 | 2017-06-09 04:09:17 | 2017-06-17 03:10:43 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 217 | 2017-06-09 04:09:17 | 2017-06-17 03:10:43 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 218 | 2017-06-09 04:09:17 | 2017-06-17 03:10:43 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 219 | 2017-06-09 04:09:17 | 2017-06-17 03:10:43 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 220 | 2017-06-09 04:09:17 | 2017-06-17 03:10:43 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 221 | 2017-06-09 04:09:17 | 2017-06-17 03:10:43 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 222 | 2017-06-09 04:09:17 | 2017-06-17 03:10:43 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 223 | 2017-06-09 04:09:17 | 2017-06-17 03:10:43 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 224 | 2017-06-09 04:09:17 | 2017-06-17 03:10:43 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 225 | 2017-06-09 04:09:17 | 2017-06-17 03:10:43 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 226 | 2017-06-09 05:05:04 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 227 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 228 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 229 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 230 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 231 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 232 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 233 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 234 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 235 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 236 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 237 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 238 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 239 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 240 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 241 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 242 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 243 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 244 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 245 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 246 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 247 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 248 | 2017-06-09 05:05:08 | 2017-06-17 02:00:24 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 249 | 2017-06-11 03:47:14 | 2017-06-16 19:17:01 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 250 | 2017-06-11 03:49:05 | 2017-06-16 19:17:01 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 251 | 2017-06-11 03:50:57 | 2017-06-16 19:17:01 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 252 | 2017-06-11 03:52:32 | 2017-06-16 19:17:01 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 253 | 2017-06-11 13:52:15 | 2017-06-16 10:20:33 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 254 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R                          | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|----------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 255 | 2017-06-11 13:52:20 | 2017-06-17 07:24:57 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 256 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 257 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 258 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 259 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 260 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 261 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 262 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 263 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 264 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 265 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 266 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 267 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 268 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 269 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 270 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 271 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 272 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 273 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 274 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 275 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 276 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 277 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 278 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 279 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 280 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 281 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 282 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 283 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 284 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 285 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 286 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 287 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 288 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 289 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 290 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 291 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 292 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 293 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 294 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 295 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 296 | 2017-06-11 13:52:20 | 2017-06-16 10:20:33 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 297 | 2017-06-12 04:53:25 | 2017-06-17 06:03:44 |   | <a href="#">R1-1711606</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R                          | S | T | U | V                              | W | X | Y | Z | AA                    | AB               | AC                   | AD         | AE |
|-----|---------------------|---------------------|---|----------------------------|---|---|---|--------------------------------|---|---|---|---|-----------------------|------------------|----------------------|------------|----|
| 298 | 2017-06-12 04:53:26 | 2017-06-17 06:03:44 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 299 | 2017-06-12 04:53:26 | 2017-06-17 07:34:50 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 300 | 2017-06-12 04:53:26 | 2017-06-17 07:59:10 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 301 | 2017-06-12 04:53:26 | 2017-06-17 06:03:44 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 302 | 2017-06-12 04:53:26 | 2017-06-17 06:03:45 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 303 | 2017-06-12 04:53:26 | 2017-06-17 09:49:27 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 304 | 2017-06-12 04:53:26 | 2017-06-17 06:03:45 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 305 | 2017-06-12 04:53:26 | 2017-06-17 08:38:22 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 306 | 2017-06-12 04:53:26 | 2017-06-17 06:03:45 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 307 | 2017-06-12 04:53:26 | 2017-06-17 06:03:45 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 308 | 2017-06-12 04:53:26 | 2017-06-17 06:03:45 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 309 | 2017-06-12 04:53:26 | 2017-06-17 06:03:45 |   | <a href="#">R1-1711607</a> |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 310 | 2017-06-12 04:53:26 | 2017-06-17 06:03:45 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 311 | 2017-06-12 04:53:26 | 2017-06-17 06:08:04 |   | <a href="#">R1-1711608</a> |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 312 | 2017-06-12 04:53:26 | 2017-06-17 06:22:50 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 313 | 2017-06-12 04:53:26 | 2017-06-17 06:27:05 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 314 | 2017-06-12 04:53:26 | 2017-06-17 06:34:51 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 315 | 2017-06-12 04:53:26 | 2017-06-17 06:37:44 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 316 | 2017-06-12 04:53:27 | 2017-06-17 09:31:38 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 317 | 2017-06-12 04:53:27 | 2017-06-17 06:42:11 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 318 | 2017-06-12 04:53:27 | 2017-06-17 06:45:51 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 319 | 2017-06-12 04:53:27 | 2017-06-17 06:47:54 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 320 | 2017-06-12 04:53:27 | 2017-06-17 06:50:33 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 321 | 2017-06-12 04:53:27 | 2017-06-17 06:54:49 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 322 | 2017-06-12 04:53:27 | 2017-06-17 06:56:23 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 323 | 2017-06-12 04:53:27 | 2017-06-17 07:00:25 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 324 | 2017-06-12 04:53:27 | 2017-06-17 08:49:19 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 325 | 2017-06-12 04:53:27 |                     |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 326 | 2017-06-12 04:53:27 |                     |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 327 | 2017-06-12 04:53:27 |                     |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 328 | 2017-06-12 04:53:27 | 2017-06-17 09:53:31 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 329 | 2017-06-12 04:53:27 | 2017-06-17 09:53:31 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 330 | 2017-06-12 04:53:27 | 2017-06-17 09:53:31 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 331 | 2017-06-12 04:53:27 | 2017-06-17 07:03:20 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 332 | 2017-06-12 05:00:17 | 2017-06-17 07:07:22 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |
| 333 | 2017-06-12 06:44:17 | 2017-06-12 07:18:45 |   | <a href="#">Rel-15</a>     |   |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |                       | RAN1             |                      | R2-1705867 |    |
| 334 | 2017-06-12 06:44:19 | 2017-06-12 07:18:45 |   | <a href="#">Rel-15</a>     |   |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |                       | RAN4             | RAN1                 | R2-1706140 |    |
| 335 | 2017-06-12 06:44:19 | 2017-06-12 07:18:45 |   | <a href="#">Rel-15</a>     |   |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |                       | RAN, RAN1        | RAN4                 | R2-1706141 |    |
| 336 | 2017-06-12 06:44:19 | 2017-06-12 07:18:45 |   | <a href="#">Rel-15</a>     |   |   |   | EDCE5, 5GS_Ph1                 |   |   |   |   | S2-172398, R1-1706857 | SA2, RAN1        | RAN3, SA1, CT1, CT4  | R2-1706155 |    |
| 337 | 2017-06-12 06:44:19 | 2017-06-12 07:18:45 |   | <a href="#">Rel-15</a>     |   |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   | R1-1706707            | RAN1             |                      | R2-1706160 |    |
| 338 | 2017-06-12 06:44:19 | 2017-06-12 07:18:45 |   | <a href="#">Rel-15</a>     |   |   |   | <a href="#">5GS_Ph1</a>        |   |   |   |   |                       | RAN              | SA, RAN1, RAN2, RAN3 | S2-173700  |    |
| 339 | 2017-06-12 06:44:19 | 2017-06-12 07:18:45 |   | <a href="#">Rel-15</a>     |   |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |                       | RAN1, RAN2, RAN4 |                      | S3-171568  |    |
| 340 | 2017-06-12 07:51:14 | 2017-06-16 00:23:55 |   |                            |   |   |   |                                |   |   |   |   |                       |                  |                      |            |    |

|     | O                   | P                   | Q | R                          | S                      | T | U | V                              | W | X | Y | Z | AA         | AB         | AC                   | AD        | AE |
|-----|---------------------|---------------------|---|----------------------------|------------------------|---|---|--------------------------------|---|---|---|---|------------|------------|----------------------|-----------|----|
| 341 | 2017-06-12 07:52:49 | 2017-06-16 00:23:56 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 342 | 2017-06-12 09:48:20 | 2017-06-12 09:57:25 |   |                            | <a href="#">Rel-15</a> |   |   | <a href="#">5GS_Ph1</a>        |   |   |   |   | S2-173700  | SA2        | SA, RAN1, RAN2, RAN3 | RP-171434 |    |
| 343 | 2017-06-12 09:48:20 | 2017-06-12 09:57:25 |   |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   | R2-1706141 | RAN2, RAN1 | RAN4                 | RP-171480 |    |
| 344 | 2017-06-12 14:29:33 | 2017-06-16 14:58:34 |   |                            | <a href="#">Rel-15</a> |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 345 | 2017-06-13 06:18:38 | 2017-06-16 09:52:57 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 346 | 2017-06-13 06:18:39 | 2017-06-16 09:52:57 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 347 | 2017-06-13 06:18:39 | 2017-06-16 09:52:57 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 348 | 2017-06-13 06:18:39 | 2017-06-16 09:52:57 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 349 | 2017-06-13 06:18:39 |                     |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 350 | 2017-06-13 10:38:10 | 2017-06-16 09:18:05 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 351 | 2017-06-13 11:51:50 | 2017-06-13 11:58:10 |   | <a href="#">R1-1711270</a> |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 352 | 2017-06-13 15:34:41 | 2017-06-16 14:58:34 |   |                            | <a href="#">Rel-15</a> |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 353 | 2017-06-13 16:37:38 | 2017-06-16 16:40:53 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 354 | 2017-06-13 16:37:38 | 2017-06-16 16:40:54 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 355 | 2017-06-13 16:37:38 | 2017-06-16 16:40:55 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 356 | 2017-06-13 16:37:38 | 2017-06-16 16:40:55 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 357 | 2017-06-13 16:37:38 | 2017-06-16 16:40:56 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 358 | 2017-06-13 16:37:38 | 2017-06-16 16:40:57 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 359 | 2017-06-13 16:37:38 | 2017-06-16 16:40:58 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 360 | 2017-06-13 16:37:38 | 2017-06-16 16:41:00 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 361 | 2017-06-13 16:37:38 | 2017-06-16 16:41:02 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 362 | 2017-06-13 16:37:38 | 2017-06-16 16:41:02 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 363 | 2017-06-13 16:37:38 | 2017-06-16 16:41:04 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 364 | 2017-06-13 16:37:38 | 2017-06-16 16:41:04 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 365 | 2017-06-13 16:37:38 | 2017-06-16 16:41:04 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 366 | 2017-06-13 17:48:57 | 2017-06-17 05:46:17 |   |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a>      |   |   |   |   |            |            |                      |           |    |
| 367 | 2017-06-13 17:48:57 | 2017-06-17 05:46:17 |   |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a>      |   |   |   |   |            |            |                      |           |    |
| 368 | 2017-06-13 17:48:57 | 2017-06-17 05:46:17 |   |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a>      |   |   |   |   |            |            |                      |           |    |
| 369 | 2017-06-13 17:48:57 | 2017-06-17 05:46:17 |   |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a>      |   |   |   |   |            |            |                      |           |    |
| 370 | 2017-06-13 17:48:57 | 2017-06-17 05:46:17 |   |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a>      |   |   |   |   |            |            |                      |           |    |
| 371 | 2017-06-13 17:48:57 | 2017-06-17 05:46:17 |   |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a>      |   |   |   |   |            |            |                      |           |    |
| 372 | 2017-06-13 17:48:57 | 2017-06-17 05:46:17 |   |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a>      |   |   |   |   |            |            |                      |           |    |
| 373 | 2017-06-14 03:06:13 | 2017-06-16 08:51:56 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 374 | 2017-06-14 03:07:23 |                     |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 375 | 2017-06-14 03:08:16 |                     |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 376 | 2017-06-14 03:08:59 |                     |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 377 | 2017-06-14 03:09:46 | 2017-06-16 08:51:56 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 378 | 2017-06-14 03:11:05 | 2017-06-16 08:51:56 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 379 | 2017-06-14 03:11:40 | 2017-06-16 08:51:56 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 380 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 381 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 382 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |
| 383 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |                            |                        |   |   |                                |   |   |   |   |            |            |                      |           |    |

|     | O                   | P                   | Q | R          | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 384 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 385 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 386 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 387 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 388 | 2017-06-14 07:52:45 |                     |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 389 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 390 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
|     | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 391 |                     |                     |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 392 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 393 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 394 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 395 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 396 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 397 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 398 | 2017-06-14 07:52:45 | 2017-06-17 05:30:17 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
|     | 2017-06-14 07:52:45 | 2017-06-17 05:32:05 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 399 |                     |                     |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 400 | 2017-06-14 07:52:45 | 2017-06-17 05:32:05 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 401 | 2017-06-14 07:52:45 | 2017-06-17 05:32:05 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 402 | 2017-06-14 07:52:45 | 2017-06-17 05:32:05 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 403 | 2017-06-14 07:52:45 | 2017-06-17 05:32:05 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 404 | 2017-06-14 07:52:45 | 2017-06-17 05:32:05 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 405 | 2017-06-14 07:52:45 | 2017-06-17 05:32:05 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 406 | 2017-06-14 07:52:45 | 2017-06-17 05:32:05 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 407 | 2017-06-14 07:52:45 | 2017-06-17 05:32:05 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 408 | 2017-06-14 07:52:45 | 2017-06-17 05:32:06 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 409 | 2017-06-14 07:52:45 | 2017-06-17 05:32:06 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 410 | 2017-06-14 07:52:45 | 2017-06-17 05:32:06 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 411 | 2017-06-14 07:52:45 | 2017-06-17 05:32:06 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 412 | 2017-06-14 07:52:45 | 2017-06-17 05:32:06 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 413 | 2017-06-14 07:52:45 | 2017-06-17 05:32:06 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 414 | 2017-06-14 07:52:45 | 2017-06-17 05:32:06 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 415 | 2017-06-14 07:52:45 | 2017-06-17 05:32:06 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 416 | 2017-06-14 07:52:45 | 2017-06-17 05:32:06 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 417 | 2017-06-14 07:52:45 | 2017-06-17 05:32:06 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 418 | 2017-06-14 07:52:45 | 2017-06-17 05:32:06 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 419 | 2017-06-14 07:52:45 | 2017-06-17 05:32:06 |   | R1-1711663 |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 420 | 2017-06-14 07:52:45 | 2017-06-17 05:32:06 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 421 | 2017-06-14 07:52:45 | 2017-06-17 05:32:06 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 422 | 2017-06-14 07:52:45 | 2017-06-17 05:32:06 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 423 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 424 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 425 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 426 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R                          | S                      | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|----------------------------|------------------------|---|---|---|---|---|---|---|----|----|----|----|----|
| 427 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 428 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 429 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 430 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 431 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 432 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 433 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 434 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 435 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 436 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 437 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 438 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 439 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 440 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 441 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 442 | 2017-06-14 07:52:46 | 2017-06-17 05:33:41 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 443 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 444 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 445 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 446 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 447 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 448 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 449 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 450 | 2017-06-14 07:52:46 | 2017-06-27 15:27:51 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 451 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 452 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 453 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 454 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 455 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 456 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 457 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 458 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 459 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 460 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 461 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 462 | 2017-06-14 07:52:46 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 463 | 2017-06-14 07:52:46 | 2017-06-20 05:34:16 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 464 | 2017-06-14 07:52:46 | 2017-06-20 05:34:16 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 465 | 2017-06-14 07:52:46 | 2017-06-20 05:34:16 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 466 | 2017-06-14 07:52:47 | 2017-06-20 05:34:16 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 467 | 2017-06-14 07:52:47 | 2017-06-27 15:17:52 |   | <a href="#">R1-1711774</a> | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 468 | 2017-06-14 07:52:47 | 2017-06-20 05:34:16 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 469 | 2017-06-14 07:52:47 | 2017-06-20 05:34:16 |   | <a href="#">R1-1711641</a> |                        |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R                          | S                      | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|----------------------------|------------------------|---|---|---|---|---|---|---|----|----|----|----|----|
| 470 | 2017-06-14 07:52:47 | 2017-06-20 05:34:16 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 471 | 2017-06-14 07:52:47 | 2017-06-20 05:34:16 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 472 | 2017-06-14 07:52:47 | 2017-06-17 05:45:28 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 473 | 2017-06-14 07:52:47 | 2017-06-17 05:46:07 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 474 | 2017-06-14 07:52:47 | 2017-06-17 05:46:07 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 475 | 2017-06-14 07:52:47 | 2017-06-17 05:46:07 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 476 | 2017-06-14 07:52:47 | 2017-06-17 05:46:07 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 477 | 2017-06-14 07:52:47 | 2017-06-17 05:46:07 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 478 | 2017-06-14 07:52:47 | 2017-06-17 05:46:07 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 479 | 2017-06-14 07:52:47 | 2017-06-17 05:46:07 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 480 | 2017-06-14 07:52:47 | 2017-06-17 05:46:07 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 481 | 2017-06-14 08:59:05 | 2017-06-16 08:17:09 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 482 | 2017-06-14 09:08:41 | 2017-06-16 10:31:12 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 483 | 2017-06-14 09:08:41 | 2017-06-16 10:31:12 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 484 | 2017-06-14 09:08:41 | 2017-06-16 10:31:12 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 485 | 2017-06-14 09:08:41 | 2017-06-16 10:31:12 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 486 | 2017-06-14 09:08:41 | 2017-06-16 10:31:12 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 487 | 2017-06-14 09:08:41 | 2017-06-16 10:31:12 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 488 | 2017-06-14 09:08:41 | 2017-06-16 10:31:12 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 489 | 2017-06-14 09:08:41 | 2017-06-16 10:31:12 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 490 | 2017-06-14 09:08:41 | 2017-06-16 10:31:12 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 491 | 2017-06-14 09:08:41 | 2017-06-16 10:31:12 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 492 | 2017-06-14 09:08:41 | 2017-06-19 14:13:21 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 493 | 2017-06-14 09:08:41 | 2017-06-16 10:31:12 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 494 | 2017-06-14 12:28:06 | 2017-06-17 06:44:33 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 495 | 2017-06-14 12:28:06 | 2017-06-20 05:37:40 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 496 | 2017-06-14 12:28:06 | 2017-06-17 06:44:33 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 497 | 2017-06-14 12:28:06 | 2017-06-17 06:44:33 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 498 | 2017-06-14 12:28:06 | 2017-06-20 05:37:40 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 499 | 2017-06-14 12:28:06 |                     |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 500 | 2017-06-14 12:28:06 | 2017-06-17 06:44:33 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 501 | 2017-06-14 12:28:06 | 2017-06-17 06:44:33 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 502 | 2017-06-14 12:28:06 | 2017-06-17 06:44:33 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 503 | 2017-06-14 12:28:06 | 2017-06-17 06:44:33 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 504 | 2017-06-14 12:28:06 | 2017-06-17 06:44:33 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 505 | 2017-06-14 12:28:06 | 2017-06-17 06:44:33 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 506 | 2017-06-14 12:28:06 | 2017-06-17 06:44:33 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 507 | 2017-06-14 12:28:06 | 2017-06-17 06:44:33 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 508 | 2017-06-14 12:28:07 | 2017-06-17 06:56:31 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 509 | 2017-06-14 12:28:07 | 2017-06-17 06:56:31 |   | <a href="#">R1-1711855</a> |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 510 | 2017-06-14 12:28:07 |                     |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 511 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 512 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q          | R | S      | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|------------|---|--------|---|---|---|---|---|---|---|----|----|----|----|----|
| 513 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 514 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 515 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 516 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 517 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 518 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 519 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 520 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 521 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 522 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 523 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 524 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 525 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 526 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 527 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 528 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 529 | 2017-06-14 12:28:07 | 2017-06-17 06:44:33 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 530 | 2017-06-14 13:38:38 | 2017-06-16 14:58:34 |            |   | Rel-15 |   |   |   |   |   |   |   |    |    |    |    |    |
| 531 | 2017-06-14 15:38:40 | 2017-06-16 09:53:04 | R1-1711643 |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 532 | 2017-06-14 15:43:21 | 2017-06-16 09:53:04 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 533 | 2017-06-14 15:46:25 | 2017-06-16 09:53:04 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 534 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 535 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 536 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 537 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 538 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 539 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 540 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 541 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 542 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 543 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 544 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 545 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 546 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 547 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 548 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 549 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 550 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 551 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 552 | 2017-06-14 18:39:05 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 553 | 2017-06-14 18:45:46 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 554 | 2017-06-14 18:45:46 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |
| 555 | 2017-06-14 18:45:46 | 2017-06-17 03:18:23 |            |   |        |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R          | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 556 | 2017-06-14 18:45:46 | 2017-06-17 03:18:23 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 557 | 2017-06-14 18:45:46 | 2017-06-17 03:18:23 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 558 | 2017-06-14 18:45:46 | 2017-06-17 03:18:23 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 559 | 2017-06-14 18:45:46 | 2017-06-17 03:18:23 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 560 | 2017-06-14 18:45:46 | 2017-06-17 03:18:23 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 561 | 2017-06-14 18:45:46 | 2017-06-17 03:18:23 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 562 | 2017-06-14 18:45:46 | 2017-06-17 03:18:23 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 563 | 2017-06-14 18:45:46 | 2017-06-17 03:18:23 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 564 | 2017-06-14 18:45:46 | 2017-06-17 03:18:23 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 565 | 2017-06-14 18:45:46 | 2017-06-17 03:18:23 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 566 | 2017-06-14 18:45:46 | 2017-06-17 03:18:23 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 567 | 2017-06-14 21:19:49 | 2017-06-17 02:52:07 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 568 | 2017-06-14 21:19:49 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 569 | 2017-06-14 21:19:49 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 570 | 2017-06-14 21:19:49 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 571 | 2017-06-14 21:19:49 | 2017-06-17 02:58:56 |   | R1-1711636 |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 572 | 2017-06-14 21:19:49 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 573 | 2017-06-14 21:19:49 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 574 | 2017-06-14 21:19:49 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 575 | 2017-06-14 21:19:49 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 576 | 2017-06-14 21:19:49 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 577 | 2017-06-14 21:19:49 | 2017-06-17 02:56:42 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 578 | 2017-06-14 21:19:49 | 2017-06-17 02:56:42 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 579 | 2017-06-14 21:19:49 | 2017-06-17 02:56:42 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 580 | 2017-06-14 21:19:49 | 2017-06-17 02:56:42 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 581 | 2017-06-14 21:19:49 | 2017-06-17 02:56:42 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 582 | 2017-06-14 21:19:49 | 2017-06-17 02:56:42 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 583 | 2017-06-14 21:19:49 | 2017-06-17 02:56:42 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 584 | 2017-06-14 21:19:49 | 2017-06-17 02:56:42 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 585 | 2017-06-14 21:19:49 | 2017-06-17 02:56:42 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 586 | 2017-06-14 21:19:49 | 2017-06-17 02:56:42 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 587 | 2017-06-14 21:19:49 | 2017-06-17 02:52:07 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 588 | 2017-06-14 21:19:49 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 589 | 2017-06-14 21:19:50 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 590 | 2017-06-14 21:19:50 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 591 | 2017-06-14 21:19:50 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 592 | 2017-06-14 21:19:50 | 2017-06-20 05:17:55 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 593 | 2017-06-14 21:19:50 | 2017-06-20 05:17:55 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 594 | 2017-06-14 21:19:50 | 2017-06-20 05:17:55 |   | R1-1711704 |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 595 | 2017-06-14 21:19:50 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 596 | 2017-06-14 21:19:50 | 2017-06-17 02:58:56 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 597 | 2017-06-14 21:19:50 | 2017-06-17 02:56:42 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 598 | 2017-06-14 21:19:50 | 2017-06-17 02:56:42 |   |            |   |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R                          | S                      | T | U                              | V | W | X | Y | Z | AA                        | AB                   | AC | AD | AE |
|-----|---------------------|---------------------|---|----------------------------|------------------------|---|--------------------------------|---|---|---|---|---|---------------------------|----------------------|----|----|----|
| 599 | 2017-06-14 21:19:50 | 2017-06-17 02:52:07 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 600 | 2017-06-14 21:19:50 | 2017-06-17 02:52:07 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 601 | 2017-06-14 21:19:50 | 2017-06-20 05:17:55 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 602 | 2017-06-14 22:27:05 | 2017-06-20 07:06:34 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 603 | 2017-06-14 22:27:05 | 2017-06-20 07:06:34 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 604 | 2017-06-14 22:27:05 | 2017-06-20 07:06:34 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 605 | 2017-06-14 22:27:05 | 2017-06-20 07:06:34 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 606 | 2017-06-14 22:27:05 | 2017-06-20 07:06:34 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 607 | 2017-06-14 22:27:05 | 2017-06-20 07:06:34 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 608 | 2017-06-14 22:27:05 | 2017-06-20 07:06:34 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 609 | 2017-06-14 22:27:05 | 2017-06-27 15:17:52 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 610 | 2017-06-14 22:27:05 | 2017-06-27 15:17:52 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 611 | 2017-06-14 22:27:05 | 2017-06-20 07:06:34 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 612 | 2017-06-14 22:27:05 | 2017-06-20 07:06:34 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 613 | 2017-06-14 22:27:05 | 2017-06-20 07:06:34 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 614 | 2017-06-14 22:27:05 |                     |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 615 | 2017-06-14 22:27:05 | 2017-06-20 07:06:34 |   | <a href="#">R1-1711751</a> |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 616 | 2017-06-14 22:27:05 | 2017-06-20 07:06:34 |   | <a href="#">R1-1711679</a> |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 617 | 2017-06-14 22:27:05 | 2017-06-20 07:06:34 |   | <a href="#">R1-1711752</a> |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 618 | 2017-06-14 22:27:05 | 2017-06-20 07:06:35 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 619 | 2017-06-14 22:27:05 | 2017-06-20 07:06:35 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 620 | 2017-06-14 22:27:05 | 2017-06-20 07:06:34 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 621 | 2017-06-15 00:22:53 | 2017-06-17 06:19:32 |   | <a href="#">R1-1711907</a> | <a href="#">Rel-15</a> |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |   | <a href="#">R2-170215</a> | <a href="#">RAN2</a> |    |    |    |
| 622 | 2017-06-15 00:22:53 | 2017-06-17 06:19:32 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 623 | 2017-06-15 00:22:53 | 2017-06-17 06:19:32 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 624 | 2017-06-15 00:22:54 | 2017-06-17 06:19:32 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 625 | 2017-06-15 00:22:54 | 2017-06-20 04:44:09 |   | <a href="#">R1-1711611</a> |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 626 | 2017-06-15 00:22:54 | 2017-06-17 10:18:33 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 627 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 628 | 2017-06-15 00:22:54 | 2017-06-20 04:44:09 |   | <a href="#">R1-1711612</a> |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 629 | 2017-06-15 00:22:54 | 2017-06-17 08:09:28 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 630 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 631 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 632 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 633 | 2017-06-15 00:22:54 | 2017-06-27 15:17:52 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 634 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 635 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 636 | 2017-06-15 00:22:54 | 2017-06-17 07:10:49 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 637 | 2017-06-15 00:22:54 | 2017-06-17 07:10:49 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 638 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 639 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |
| 640 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |                            |                        |   |                                |   |   |   |   |   |                           |                      |    |    |    |

|     | O                   | P                   | Q | R | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 641 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 642 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 643 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 644 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 645 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 646 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 647 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 648 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 649 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 650 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 651 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 652 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 653 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 654 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 655 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 656 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 657 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 658 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 659 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 660 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 661 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 662 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 663 | 2017-06-15 00:22:54 | 2017-06-17 08:50:57 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 664 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 665 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 666 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 667 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 668 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 669 | 2017-06-15 00:22:54 | 2017-06-17 06:24:59 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 670 | 2017-06-15 00:22:54 | 2017-06-17 06:24:59 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 671 | 2017-06-15 00:22:54 | 2017-06-17 06:24:59 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 672 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 673 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 674 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 675 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 676 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 677 | 2017-06-15 00:22:54 | 2017-06-17 09:31:05 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 678 | 2017-06-15 00:22:54 | 2017-06-17 06:19:31 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 679 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 680 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 681 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 682 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 683 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 684 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 685 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 686 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 687 | 2017-06-15 00:22:55 | 2017-06-17 09:35:22 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 688 | 2017-06-15 00:22:55 | 2017-06-17 06:24:59 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 689 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 690 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 691 | 2017-06-15 00:22:55 | 2017-06-17 06:24:59 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 692 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 693 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 694 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 695 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 696 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 697 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 698 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 699 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 700 | 2017-06-15 00:22:55 | 2017-06-17 06:24:59 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 701 | 2017-06-15 00:22:55 | 2017-06-17 07:00:10 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 702 | 2017-06-15 00:22:55 | 2017-06-17 06:24:59 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 703 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 704 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 705 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 706 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 707 | 2017-06-15 00:22:55 | 2017-06-17 06:24:59 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 708 | 2017-06-15 00:22:55 | 2017-06-17 06:19:32 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 709 | 2017-06-15 00:57:03 | 2017-06-20 03:41:45 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 710 | 2017-06-15 01:02:02 | 2017-06-16 22:04:30 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 711 | 2017-06-15 01:04:00 | 2017-06-16 22:22:45 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 712 | 2017-06-15 01:06:19 | 2017-06-16 22:36:26 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 713 | 2017-06-15 01:07:14 | 2017-06-20 03:42:25 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 714 | 2017-06-15 01:10:10 | 2017-06-16 21:25:44 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 715 | 2017-06-15 01:13:24 | 2017-06-16 10:20:33 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 716 | 2017-06-15 02:53:58 | 2017-06-16 18:49:37 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 717 | 2017-06-15 02:53:58 | 2017-06-16 18:49:37 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 718 | 2017-06-15 02:53:58 | 2017-06-16 18:49:37 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 719 | 2017-06-15 02:53:58 | 2017-06-16 18:49:37 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 720 | 2017-06-15 02:53:58 | 2017-06-16 18:49:37 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 721 | 2017-06-15 02:53:58 | 2017-06-16 18:49:37 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 722 | 2017-06-15 02:53:58 | 2017-06-16 18:49:37 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 723 | 2017-06-15 02:53:58 | 2017-06-16 18:49:37 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 724 | 2017-06-15 02:53:58 | 2017-06-16 18:49:37 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 725 | 2017-06-15 02:53:58 | 2017-06-16 18:49:37 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 726 | 2017-06-15 02:53:58 | 2017-06-16 18:49:37 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R                          | S                      | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|----------------------------|------------------------|---|---|---|---|---|---|---|----|----|----|----|----|
| 727 | 2017-06-15 02:53:58 | 2017-06-16 18:49:37 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 728 | 2017-06-15 02:53:58 | 2017-06-16 18:49:37 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 729 | 2017-06-15 03:58:48 | 2017-06-17 06:19:32 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 730 | 2017-06-15 04:47:45 | 2017-06-17 02:52:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 731 | 2017-06-15 04:47:45 | 2017-06-17 02:52:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 732 | 2017-06-15 04:47:45 | 2017-06-17 02:52:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 733 | 2017-06-15 04:47:45 | 2017-06-17 02:52:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 734 | 2017-06-15 04:47:46 | 2017-06-17 02:52:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 735 | 2017-06-15 04:47:46 | 2017-06-17 02:52:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 736 | 2017-06-15 04:47:46 | 2017-06-17 02:52:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 737 | 2017-06-15 04:47:46 | 2017-06-17 02:52:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 738 | 2017-06-15 04:47:46 | 2017-06-17 02:52:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 739 | 2017-06-15 04:47:46 | 2017-06-17 02:52:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 740 | 2017-06-15 04:47:46 | 2017-06-17 02:52:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 741 | 2017-06-15 04:47:46 | 2017-06-17 02:52:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 742 | 2017-06-15 04:47:46 | 2017-06-17 02:52:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 743 | 2017-06-15 04:47:46 | 2017-06-17 02:52:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 744 | 2017-06-15 04:47:46 | 2017-06-17 02:52:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 745 | 2017-06-15 08:06:47 | 2017-06-16 20:00:34 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 746 | 2017-06-15 08:06:47 | 2017-06-17 01:00:30 |   | <a href="#">R1-1711580</a> |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 747 | 2017-06-15 08:06:47 | 2017-06-20 04:47:54 |   | <a href="#">R1-1711589</a> |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 748 | 2017-06-15 08:06:47 | 2017-06-16 16:24:13 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 749 | 2017-06-15 08:06:47 | 2017-06-16 21:03:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 750 | 2017-06-15 08:06:47 | 2017-06-20 04:50:07 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 751 | 2017-06-15 08:06:47 | 2017-06-16 20:00:34 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 752 | 2017-06-15 08:06:47 | 2017-06-16 12:30:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 753 | 2017-06-15 08:06:47 | 2017-06-16 12:30:24 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 754 | 2017-06-15 08:06:47 | 2017-06-17 00:42:26 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 755 | 2017-06-15 08:06:47 | 2017-06-16 07:58:22 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 756 | 2017-06-15 08:06:47 | 2017-06-16 10:51:50 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 757 | 2017-06-15 08:06:47 | 2017-06-16 10:51:50 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 758 | 2017-06-15 08:06:47 | 2017-06-16 10:51:50 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 759 | 2017-06-15 08:06:47 | 2017-06-16 19:59:42 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 760 | 2017-06-15 08:06:47 | 2017-06-16 19:59:42 |   | <a href="#">R1-1711581</a> |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 761 | 2017-06-15 08:06:47 | 2017-06-16 19:59:42 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 762 | 2017-06-15 08:06:47 | 2017-06-17 01:50:11 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 763 | 2017-06-15 08:06:47 | 2017-06-16 10:51:50 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 764 | 2017-06-15 08:06:47 | 2017-06-16 21:23:17 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 765 | 2017-06-15 08:06:47 | 2017-06-16 20:15:10 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 766 | 2017-06-15 08:06:47 | 2017-06-16 21:23:17 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 767 | 2017-06-15 08:06:47 | 2017-06-16 06:58:08 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 768 | 2017-06-15 08:06:47 | 2017-06-16 06:58:08 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R                          | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|----------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 769 | 2017-06-15 08:06:47 | 2017-06-16 07:44:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 770 | 2017-06-15 08:06:47 | 2017-06-16 07:44:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 771 | 2017-06-15 08:06:48 | 2017-06-16 19:59:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 772 | 2017-06-15 08:06:48 | 2017-06-16 06:58:08 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 773 | 2017-06-15 08:06:48 | 2017-06-16 19:15:24 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 774 | 2017-06-15 08:06:48 | 2017-06-16 23:45:41 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 775 | 2017-06-15 08:06:48 | 2017-06-16 21:31:21 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 776 | 2017-06-15 08:06:48 | 2017-06-16 22:14:27 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 777 | 2017-06-15 08:06:48 | 2017-06-17 01:50:11 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 778 | 2017-06-15 08:06:48 | 2017-06-16 21:31:21 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 779 | 2017-06-15 08:06:48 | 2017-06-16 21:31:21 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 780 | 2017-06-15 08:06:48 | 2017-06-16 21:31:22 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 781 | 2017-06-15 08:06:48 | 2017-06-16 21:31:22 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 782 | 2017-06-15 08:06:48 | 2017-06-16 06:58:08 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 783 | 2017-06-15 08:06:48 | 2017-06-16 22:14:27 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 784 | 2017-06-15 08:06:48 | 2017-06-16 22:14:27 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 785 | 2017-06-15 08:06:48 | 2017-06-16 22:14:27 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 786 | 2017-06-15 08:06:48 | 2017-06-16 22:14:27 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 787 | 2017-06-15 08:06:48 | 2017-06-16 23:45:41 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 788 | 2017-06-15 08:06:48 | 2017-06-16 00:17:37 |   | <a href="#">R1-1711604</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 789 | 2017-06-15 08:06:48 | 2017-06-16 21:23:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 790 | 2017-06-15 08:06:48 | 2017-06-16 06:58:08 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 791 | 2017-06-15 08:06:48 | 2017-06-16 21:23:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 792 | 2017-06-15 08:06:48 | 2017-06-16 20:15:10 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 793 | 2017-06-15 08:06:48 | 2017-06-16 06:58:08 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 794 | 2017-06-15 08:06:48 | 2017-06-16 21:23:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 795 | 2017-06-15 08:06:48 | 2017-06-16 20:15:10 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 796 | 2017-06-15 08:06:48 | 2017-06-16 20:15:10 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 797 | 2017-06-15 08:06:48 | 2017-06-16 21:23:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 798 | 2017-06-15 08:06:48 | 2017-06-16 06:58:08 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 799 | 2017-06-15 08:06:48 | 2017-06-16 18:47:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 800 | 2017-06-15 08:06:48 | 2017-06-16 07:44:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 801 | 2017-06-15 08:06:48 | 2017-06-16 07:44:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 802 | 2017-06-15 08:06:48 | 2017-06-16 07:44:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 803 | 2017-06-15 08:06:48 | 2017-06-16 10:13:46 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 804 | 2017-06-15 08:06:48 | 2017-06-16 07:25:09 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 805 | 2017-06-15 08:06:48 | 2017-06-16 07:46:21 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 806 | 2017-06-15 08:06:48 | 2017-06-16 07:46:21 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 807 | 2017-06-15 08:06:48 | 2017-06-16 07:46:21 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 808 | 2017-06-15 08:06:48 | 2017-06-16 07:58:22 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 809 | 2017-06-15 08:06:48 | 2017-06-16 07:58:22 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 810 | 2017-06-15 08:06:48 | 2017-06-16 21:31:22 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 811 | 2017-06-15 08:06:48 | 2017-06-16 07:44:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R                          | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|----------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 812 | 2017-06-15 08:06:48 | 2017-06-16 19:59:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 813 | 2017-06-15 08:06:48 | 2017-06-16 12:30:24 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 814 | 2017-06-15 08:06:49 | 2017-06-16 12:30:24 |   | <a href="#">R1-1711583</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 815 | 2017-06-15 08:06:49 | 2017-06-17 01:26:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 816 | 2017-06-15 08:06:49 | 2017-06-16 12:30:24 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 817 | 2017-06-15 08:06:49 | 2017-06-16 12:30:24 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 818 | 2017-06-15 08:06:49 | 2017-06-16 12:30:24 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 819 | 2017-06-15 08:06:49 | 2017-06-17 01:26:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 820 | 2017-06-15 08:06:49 | 2017-06-17 01:26:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 821 | 2017-06-15 08:06:49 | 2017-06-17 01:26:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 822 | 2017-06-15 08:06:49 | 2017-06-16 07:17:15 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 823 | 2017-06-15 08:06:49 | 2017-06-17 00:42:26 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 824 | 2017-06-15 08:06:49 | 2017-06-17 01:26:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 825 | 2017-06-15 08:06:49 | 2017-06-17 02:43:12 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 826 | 2017-06-15 08:06:49 | 2017-06-17 02:43:12 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 827 | 2017-06-15 08:06:49 | 2017-06-17 01:26:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 828 | 2017-06-15 08:06:49 | 2017-06-17 01:26:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 829 | 2017-06-15 08:06:49 | 2017-06-16 12:30:24 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 830 | 2017-06-15 08:06:49 | 2017-06-17 02:43:12 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 831 | 2017-06-15 08:06:49 | 2017-06-16 10:51:50 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 832 | 2017-06-15 08:06:49 | 2017-06-17 01:26:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 833 | 2017-06-15 08:06:49 | 2017-06-17 01:26:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 834 | 2017-06-15 08:06:49 | 2017-06-16 07:17:15 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 835 | 2017-06-15 08:06:49 | 2017-06-17 02:43:12 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 836 | 2017-06-15 08:06:49 | 2017-06-17 02:43:12 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 837 | 2017-06-15 08:06:49 |                     |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 838 | 2017-06-15 08:06:49 | 2017-06-17 01:26:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 839 | 2017-06-15 08:06:49 | 2017-06-16 23:45:41 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 840 | 2017-06-15 08:06:49 | 2017-06-17 00:42:26 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 841 | 2017-06-15 08:06:49 | 2017-06-16 10:51:50 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 842 | 2017-06-15 08:06:49 | 2017-06-16 07:36:57 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 843 | 2017-06-15 08:06:49 | 2017-06-16 07:39:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 844 | 2017-06-15 08:06:49 | 2017-06-16 07:39:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 845 | 2017-06-15 08:06:49 | 2017-06-16 07:39:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 846 | 2017-06-15 08:06:49 | 2017-06-16 10:51:50 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 847 | 2017-06-15 08:06:49 | 2017-06-16 07:36:57 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 848 | 2017-06-15 08:06:49 | 2017-06-16 10:51:50 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 849 | 2017-06-15 08:06:49 | 2017-06-16 10:51:50 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 850 | 2017-06-15 08:06:50 | 2017-06-16 10:51:50 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 851 | 2017-06-15 08:06:50 | 2017-06-16 07:36:57 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 852 | 2017-06-15 08:06:50 | 2017-06-17 01:26:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 853 | 2017-06-15 08:06:50 | 2017-06-17 01:26:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 854 | 2017-06-15 08:06:50 | 2017-06-16 07:17:15 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R                          | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|----------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 855 | 2017-06-15 08:06:50 | 2017-06-16 12:30:24 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 856 | 2017-06-15 08:06:50 | 2017-06-16 07:17:16 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 857 | 2017-06-15 08:06:50 | 2017-06-16 07:39:43 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 858 | 2017-06-15 08:06:50 | 2017-06-17 01:26:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 859 | 2017-06-15 08:06:50 | 2017-06-16 06:52:04 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 860 | 2017-06-15 08:06:50 | 2017-06-16 06:52:04 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 861 | 2017-06-15 08:06:50 | 2017-06-17 01:26:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 862 | 2017-06-15 08:06:50 | 2017-06-17 01:26:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 863 | 2017-06-15 08:06:50 | 2017-06-17 01:26:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 864 | 2017-06-15 08:06:50 | 2017-06-19 10:55:02 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 865 | 2017-06-15 08:06:50 | 2017-06-19 10:55:02 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 866 | 2017-06-15 08:06:50 | 2017-06-20 06:37:16 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 867 | 2017-06-15 08:06:50 | 2017-06-20 06:37:16 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 868 | 2017-06-15 08:06:50 | 2017-06-20 06:37:16 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 869 | 2017-06-15 08:06:50 | 2017-06-20 06:37:16 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 870 | 2017-06-15 08:06:50 | 2017-06-20 06:37:16 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 871 | 2017-06-15 08:06:50 | 2017-06-20 06:37:16 |   | <a href="#">R1-1711822</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 872 | 2017-06-15 08:06:50 | 2017-06-20 06:37:16 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 873 | 2017-06-15 08:06:50 | 2017-06-20 06:37:16 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 874 | 2017-06-15 08:06:50 | 2017-06-20 06:37:16 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 875 | 2017-06-15 08:06:50 | 2017-06-17 02:01:01 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 876 | 2017-06-15 08:06:50 | 2017-06-16 22:14:27 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 877 | 2017-06-15 08:06:50 | 2017-06-16 07:54:11 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 878 | 2017-06-15 08:06:50 | 2017-06-16 22:14:27 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 879 | 2017-06-15 08:06:50 | 2017-06-16 07:54:11 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 880 | 2017-06-15 08:06:50 | 2017-06-16 07:54:11 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 881 | 2017-06-15 08:06:50 | 2017-06-16 19:15:24 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 882 | 2017-06-15 08:06:51 | 2017-06-16 08:10:01 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 883 | 2017-06-15 08:06:51 | 2017-06-16 12:30:24 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 884 | 2017-06-15 08:06:51 | 2017-06-16 12:30:24 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 885 | 2017-06-15 08:06:51 | 2017-06-16 09:36:38 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 886 | 2017-06-15 08:06:51 | 2017-06-22 03:09:57 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 887 | 2017-06-15 08:06:51 | 2017-06-17 02:43:12 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 888 | 2017-06-15 08:06:51 | 2017-06-16 10:51:50 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 889 | 2017-06-15 08:06:51 | 2017-06-17 02:43:12 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 890 | 2017-06-15 08:06:51 | 2017-06-17 02:01:01 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 891 | 2017-06-15 08:06:51 | 2017-06-16 13:47:05 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 892 | 2017-06-15 08:42:47 | 2017-06-19 14:13:21 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 893 | 2017-06-15 09:25:24 | 2017-06-16 09:22:06 |   | <a href="#">R1-1713857</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 894 | 2017-06-15 09:25:24 | 2017-06-16 09:22:06 |   | <a href="#">R1-1713858</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 895 | 2017-06-15 09:46:37 | 2017-06-17 02:39:22 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 896 | 2017-06-15 09:46:37 | 2017-06-17 02:39:22 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 897 | 2017-06-15 09:46:37 |                     |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 898 | 2017-06-15 09:46:37 | 2017-06-17 02:39:22 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 899 | 2017-06-15 09:46:37 | 2017-06-17 02:39:22 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 900 | 2017-06-15 09:46:37 | 2017-06-17 02:39:22 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 901 | 2017-06-15 09:46:37 | 2017-06-17 02:39:22 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 902 | 2017-06-15 09:46:37 | 2017-06-17 02:39:22 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 903 | 2017-06-15 09:46:37 | 2017-06-17 02:39:22 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 904 | 2017-06-15 09:46:37 | 2017-06-17 02:39:22 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 905 | 2017-06-15 09:46:37 | 2017-06-17 02:39:22 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 906 | 2017-06-15 09:46:37 | 2017-06-17 02:39:22 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 907 | 2017-06-15 09:46:37 | 2017-06-17 02:39:22 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 908 | 2017-06-15 09:46:37 | 2017-06-17 02:39:22 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 909 | 2017-06-15 09:50:28 | 2017-06-15 09:57:44 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 910 | 2017-06-15 10:24:15 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 911 | 2017-06-15 10:24:15 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 912 | 2017-06-15 10:24:15 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 913 | 2017-06-15 10:24:15 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 914 | 2017-06-15 10:24:15 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 915 | 2017-06-15 10:24:15 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 916 | 2017-06-15 10:24:15 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 917 | 2017-06-15 10:24:15 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 918 | 2017-06-15 10:24:15 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 919 | 2017-06-15 10:24:15 | 2017-06-20 06:02:12 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 920 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 921 | 2017-06-15 10:24:16 | 2017-06-20 06:02:12 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 922 | 2017-06-15 10:24:16 | 2017-06-17 05:47:09 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 923 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 924 | 2017-06-15 10:24:16 | 2017-06-20 06:02:12 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 925 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 926 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 927 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 928 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 929 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 930 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 931 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 932 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 933 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 934 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 935 | 2017-06-15 10:24:16 | 2017-06-23 20:31:49 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 936 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 937 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 938 | 2017-06-15 10:24:16 | 2017-06-23 20:31:49 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 939 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 940 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |

|     | O                   | P                   | Q | R                          | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|-----|---------------------|---------------------|---|----------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 941 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 942 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 943 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 944 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 945 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   | <a href="#">R1-1711625</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 946 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 947 | 2017-06-15 10:24:16 | 2017-06-20 06:02:12 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 948 | 2017-06-15 10:24:16 | 2017-06-20 06:02:12 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 949 | 2017-06-15 10:24:16 | 2017-06-20 06:02:12 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 950 | 2017-06-15 10:24:16 | 2017-06-20 06:02:12 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 951 | 2017-06-15 10:24:16 | 2017-06-20 06:02:12 |   | <a href="#">R1-1711696</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 952 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 953 | 2017-06-15 10:24:16 | 2017-06-17 05:19:18 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 954 | 2017-06-15 10:24:16 | 2017-06-17 05:19:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 955 | 2017-06-15 10:24:16 | 2017-06-17 05:19:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 956 | 2017-06-15 10:24:16 | 2017-06-17 05:19:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 957 | 2017-06-15 10:24:16 | 2017-06-17 05:19:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 958 | 2017-06-15 10:24:16 | 2017-06-17 05:19:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 959 | 2017-06-15 10:24:16 | 2017-06-17 05:19:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 960 | 2017-06-15 10:24:16 | 2017-06-17 05:19:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 961 | 2017-06-15 10:24:16 | 2017-06-17 05:19:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 962 | 2017-06-15 10:49:27 | 2017-06-16 12:39:08 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 963 | 2017-06-15 11:12:24 | 2017-06-16 09:52:57 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 964 | 2017-06-15 11:29:56 | 2017-06-16 21:38:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 965 | 2017-06-15 11:31:22 | 2017-06-16 21:38:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 966 | 2017-06-15 12:32:22 | 2017-06-20 06:38:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 967 | 2017-06-15 12:32:22 | 2017-06-20 06:38:44 |   | <a href="#">R1-1711587</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 968 | 2017-06-15 12:32:22 | 2017-06-20 06:38:44 |   | <a href="#">R1-1711588</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 969 | 2017-06-15 12:32:22 | 2017-06-20 06:38:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 970 | 2017-06-15 12:32:22 | 2017-06-20 06:38:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 971 | 2017-06-15 12:32:22 | 2017-06-20 06:38:44 |   | <a href="#">R1-1711749</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 972 | 2017-06-15 12:32:22 | 2017-06-20 06:38:44 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 973 | 2017-06-15 13:05:36 | 2017-06-16 16:58:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 974 | 2017-06-15 13:05:36 | 2017-06-16 16:58:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 975 | 2017-06-15 13:05:36 | 2017-06-16 16:58:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 976 | 2017-06-15 13:05:36 | 2017-06-16 16:58:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 977 | 2017-06-15 13:05:36 | 2017-06-16 16:58:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 978 | 2017-06-15 13:05:36 | 2017-06-16 16:58:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 979 | 2017-06-15 13:05:36 | 2017-06-16 16:58:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 980 | 2017-06-15 13:05:36 | 2017-06-19 20:01:27 |   | <a href="#">R1-1711659</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 981 | 2017-06-15 13:05:36 | 2017-06-19 20:01:27 |   | <a href="#">R1-1711658</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 982 | 2017-06-15 13:05:36 | 2017-06-16 16:58:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q                          | R | S                      | T | U | V                         | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|----------------------------|---|------------------------|---|---|---------------------------|---|---|---|---|----|----|----|----|----|
| 983  | 2017-06-15 13:05:36 | 2017-06-16 16:58:19 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 984  | 2017-06-15 13:05:36 | 2017-06-16 16:58:19 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 985  | 2017-06-15 13:05:36 | 2017-06-16 16:58:19 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 986  | 2017-06-15 13:05:36 | 2017-06-16 16:58:19 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 987  | 2017-06-15 13:05:36 | 2017-06-16 16:58:19 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 988  | 2017-06-15 13:05:36 | 2017-06-16 16:58:19 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 989  | 2017-06-15 13:05:36 | 2017-06-16 16:58:19 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 990  | 2017-06-15 13:49:00 |                     | <a href="#">R1-1708273</a> |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 991  | 2017-06-15 13:52:26 |                     |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 992  | 2017-06-15 14:07:00 | 2017-06-16 20:55:03 |                            |   | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a> |   |   |   |   |    |    |    |    |    |
| 993  | 2017-06-15 14:07:00 | 2017-06-16 20:55:03 |                            |   | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a> |   |   |   |   |    |    |    |    |    |
| 994  | 2017-06-15 14:07:00 | 2017-06-16 20:55:03 |                            |   | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a> |   |   |   |   |    |    |    |    |    |
| 995  | 2017-06-15 14:07:00 | 2017-06-16 20:55:03 |                            |   | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a> |   |   |   |   |    |    |    |    |    |
| 996  | 2017-06-15 14:07:00 | 2017-06-16 20:55:03 |                            |   | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a> |   |   |   |   |    |    |    |    |    |
| 997  | 2017-06-15 14:07:00 | 2017-06-16 20:55:03 |                            |   | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a> |   |   |   |   |    |    |    |    |    |
| 998  | 2017-06-15 14:07:00 | 2017-06-16 20:55:03 |                            |   | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a> |   |   |   |   |    |    |    |    |    |
| 999  | 2017-06-15 14:07:00 | 2017-06-16 20:55:03 |                            |   | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a> |   |   |   |   |    |    |    |    |    |
| 1000 | 2017-06-15 14:07:00 | 2017-06-16 20:55:03 |                            |   | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a> |   |   |   |   |    |    |    |    |    |
| 1001 | 2017-06-15 14:07:00 | 2017-06-16 20:55:03 |                            |   | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a> |   |   |   |   |    |    |    |    |    |
| 1002 | 2017-06-15 14:31:31 | 2017-06-16 21:30:26 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1003 | 2017-06-15 14:33:11 | 2017-06-16 21:30:26 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1004 | 2017-06-15 14:38:27 | 2017-06-16 21:30:26 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1005 | 2017-06-15 14:43:35 | 2017-06-16 16:34:45 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1006 | 2017-06-15 14:43:35 | 2017-06-16 16:34:45 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1007 | 2017-06-15 14:43:35 | 2017-06-16 16:34:45 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1008 | 2017-06-15 16:01:47 | 2017-06-16 14:58:34 |                            |   | <a href="#">Rel-15</a> |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1009 | 2017-06-15 16:40:08 | 2017-06-17 06:19:32 |                            |   | <a href="#">Rel-15</a> |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1010 | 2017-06-15 16:41:03 |                     |                            |   | <a href="#">Rel-15</a> |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1011 | 2017-06-15 17:23:41 | 2017-06-16 21:12:36 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1012 | 2017-06-15 17:23:41 | 2017-06-16 21:12:36 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1013 | 2017-06-15 17:23:41 | 2017-06-16 21:12:36 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1014 | 2017-06-15 17:24:28 | 2017-06-16 21:23:22 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1015 | 2017-06-15 17:24:28 | 2017-06-16 21:23:22 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1016 | 2017-06-15 17:24:28 | 2017-06-16 21:23:22 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1017 | 2017-06-15 17:24:28 | 2017-06-16 21:23:22 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1018 | 2017-06-15 17:24:28 | 2017-06-16 21:23:22 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1019 | 2017-06-15 17:24:28 | 2017-06-16 21:23:22 |                            |   |                        |   |   |                           |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q | R                          | S                      | T | U | V                         | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|---|----------------------------|------------------------|---|---|---------------------------|---|---|---|---|----|----|----|----|----|
| 1020 | 2017-06-15 17:24:28 | 2017-06-16 21:23:22 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1021 | 2017-06-15 17:24:28 | 2017-06-16 21:23:22 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1022 | 2017-06-15 17:24:28 | 2017-06-16 21:23:22 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1023 | 2017-06-15 17:24:28 | 2017-06-16 21:23:22 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1024 | 2017-06-15 17:24:28 | 2017-06-16 21:23:22 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1025 | 2017-06-15 17:34:00 | 2017-06-17 05:46:17 |   |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT</a> |   |   |   |   |    |    |    |    |    |
| 1026 | 2017-06-15 18:48:58 | 2017-06-17 04:14:25 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1027 | 2017-06-15 18:48:59 | 2017-06-17 04:14:25 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1028 | 2017-06-15 18:48:59 | 2017-06-17 04:14:25 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1029 | 2017-06-15 18:48:59 | 2017-06-17 04:14:25 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1030 | 2017-06-15 18:48:59 | 2017-06-17 04:14:25 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1031 | 2017-06-15 19:16:36 | 2017-06-17 02:58:30 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1032 | 2017-06-15 19:20:04 | 2017-06-17 02:58:30 |   | <a href="#">R1-1711653</a> |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1033 | 2017-06-15 19:22:45 | 2017-06-17 02:58:30 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1034 | 2017-06-15 20:57:12 | 2017-06-16 21:30:26 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1035 | 2017-06-16 00:11:27 | 2017-06-17 02:41:30 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1036 | 2017-06-16 00:13:07 | 2017-06-17 02:41:30 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1037 | 2017-06-16 00:15:16 | 2017-06-20 04:20:51 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1038 | 2017-06-16 00:17:06 | 2017-06-17 02:41:30 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1039 | 2017-06-16 00:18:23 | 2017-06-20 04:20:51 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1040 | 2017-06-16 00:19:14 | 2017-06-17 02:41:30 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1041 | 2017-06-16 00:20:20 | 2017-06-17 02:41:30 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1042 | 2017-06-16 00:21:43 | 2017-06-16 23:50:38 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1043 | 2017-06-16 00:22:23 | 2017-06-16 23:50:38 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1044 | 2017-06-16 00:23:13 | 2017-06-16 23:50:38 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1045 | 2017-06-16 00:23:55 | 2017-06-16 23:50:38 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1046 | 2017-06-16 00:24:51 | 2017-06-16 23:50:38 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1047 | 2017-06-16 00:25:56 | 2017-06-16 23:51:11 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1048 | 2017-06-16 00:26:36 | 2017-06-16 23:51:11 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1049 | 2017-06-16 00:27:17 | 2017-06-16 23:51:11 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1050 | 2017-06-16 00:27:59 | 2017-06-16 23:51:11 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1051 | 2017-06-16 00:28:02 | 2017-06-16 10:02:07 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1052 | 2017-06-16 00:28:38 | 2017-06-16 10:02:07 |   | <a href="#">R1-1711649</a> |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1053 | 2017-06-16 00:28:44 | 2017-06-16 23:51:11 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1054 | 2017-06-16 00:29:05 | 2017-06-16 10:02:07 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1055 | 2017-06-16 00:29:16 | 2017-06-16 23:51:34 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1056 | 2017-06-16 00:29:27 | 2017-06-16 10:02:07 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1057 | 2017-06-16 00:29:48 | 2017-06-16 10:02:07 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1058 | 2017-06-16 00:29:52 | 2017-06-16 23:51:34 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1059 | 2017-06-16 00:30:13 | 2017-06-16 10:02:07 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |
| 1060 | 2017-06-16 00:30:27 | 2017-06-16 23:51:34 |   |                            |                        |   |   |                           |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q | R                          | S | T | U | V                              | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|---|----------------------------|---|---|---|--------------------------------|---|---|---|---|----|----|----|----|----|
| 1061 | 2017-06-16 00:30:35 | 2017-06-16 10:02:07 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1062 | 2017-06-16 00:30:53 | 2017-06-16 10:02:07 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1063 | 2017-06-16 00:31:02 | 2017-06-16 23:51:34 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1064 | 2017-06-16 00:31:10 | 2017-06-16 10:02:07 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1065 | 2017-06-16 00:31:33 | 2017-06-16 10:02:07 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1066 | 2017-06-16 00:31:54 | 2017-06-16 23:51:34 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1067 | 2017-06-16 00:32:29 | 2017-06-16 23:51:58 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1068 | 2017-06-16 00:33:05 | 2017-06-16 23:51:58 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1069 | 2017-06-16 00:33:54 | 2017-06-16 23:51:58 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1070 | 2017-06-16 00:34:31 | 2017-06-16 23:51:58 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1071 | 2017-06-16 00:35:27 | 2017-06-16 23:51:58 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1072 | 2017-06-16 00:36:11 | 2017-06-17 05:36:32 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1073 | 2017-06-16 00:36:52 | 2017-06-16 23:52:20 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1074 | 2017-06-16 00:37:46 | 2017-06-16 23:52:20 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1075 | 2017-06-16 00:38:23 | 2017-06-16 23:52:20 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1076 | 2017-06-16 00:39:02 | 2017-06-16 23:52:20 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1077 | 2017-06-16 00:39:39 | 2017-06-16 23:52:20 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1078 | 2017-06-16 00:40:25 | 2017-06-16 23:52:42 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1079 | 2017-06-16 00:41:15 | 2017-06-16 23:52:42 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1080 | 2017-06-16 00:43:49 | 2017-06-16 23:52:42 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1081 | 2017-06-16 00:44:32 | 2017-06-16 23:52:42 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1082 | 2017-06-16 00:45:06 | 2017-06-16 23:52:42 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1083 | 2017-06-16 00:45:37 | 2017-06-16 23:52:55 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1084 | 2017-06-16 00:46:20 | 2017-06-16 23:52:55 |   | <a href="#">R1-1711602</a> |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1085 | 2017-06-16 01:48:34 | 2017-06-16 06:28:42 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1086 | 2017-06-16 01:48:34 | 2017-06-16 06:28:42 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1087 | 2017-06-16 01:48:34 | 2017-06-16 06:28:42 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1088 | 2017-06-16 01:49:13 | 2017-06-16 02:14:35 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1089 | 2017-06-16 02:03:08 | 2017-06-16 09:27:36 |   | <a href="#">R1-1712995</a> |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1090 | 2017-06-16 02:20:28 | 2017-06-28 13:47:51 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1091 | 2017-06-16 02:21:34 | 2017-06-16 08:11:55 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1092 | 2017-06-16 02:23:10 | 2017-06-16 08:11:55 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1093 | 2017-06-16 02:27:44 | 2017-06-16 08:11:55 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1094 | 2017-06-16 02:29:56 | 2017-06-16 08:11:55 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1095 | 2017-06-16 02:36:07 | 2017-06-16 08:54:11 |   |                            |   |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    |    |    |    |    |
| 1096 | 2017-06-16 02:36:07 | 2017-06-16 08:54:11 |   |                            |   |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    |    |    |    |    |
| 1097 | 2017-06-16 02:36:07 | 2017-06-16 08:54:11 |   |                            |   |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    |    |    |    |    |
| 1098 | 2017-06-16 02:43:39 | 2017-06-17 02:39:22 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1099 | 2017-06-16 02:50:19 | 2017-06-17 02:39:22 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |
| 1100 | 2017-06-16 02:57:52 | 2017-06-17 03:29:17 |   |                            |   |   |   |                                |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q | R                          | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|---|----------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 1101 | 2017-06-16 02:57:52 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1102 | 2017-06-16 02:57:52 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1103 | 2017-06-16 02:57:52 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1104 | 2017-06-16 02:57:52 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1105 | 2017-06-16 02:57:52 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1106 | 2017-06-16 02:57:52 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1107 | 2017-06-16 02:57:52 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1108 | 2017-06-16 02:57:52 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1109 | 2017-06-16 02:57:52 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1110 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1111 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1112 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1113 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1114 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1115 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1116 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1117 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1118 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1119 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1120 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1121 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1122 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1123 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1124 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1125 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1126 | 2017-06-16 02:57:53 | 2017-06-17 03:29:17 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1127 | 2017-06-16 02:57:53 | 2017-06-17 04:36:40 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1128 | 2017-06-16 03:22:13 | 2017-06-16 20:22:34 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1129 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1130 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   | <a href="#">R1-1711610</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q | R                          | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|---|----------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 1131 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1132 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1133 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1134 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1135 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1136 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1137 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1138 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1139 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1140 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1141 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1142 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1143 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1144 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1145 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1146 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1147 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1148 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   | <a href="#">R1-1711609</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1149 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1150 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1151 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1152 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1153 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1154 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1155 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1156 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1157 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1158 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1159 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   | <a href="#">R1-1711671</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1160 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1161 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1162 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1163 | 2017-06-16 03:22:19 | 2017-06-17 05:56:36 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1164 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1165 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1166 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1167 | 2017-06-16 03:22:19 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1168 | 2017-06-16 03:22:20 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1169 | 2017-06-16 03:22:20 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1170 | 2017-06-16 03:22:20 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1171 | 2017-06-16 03:22:20 | 2017-06-17 05:29:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1172 | 2017-06-16 03:22:20 | 2017-06-17 05:29:07 |   | <a href="#">R1-1711613</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1173 | 2017-06-16 03:22:20 | 2017-06-17 05:29:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q | R                          | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|---|----------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 1174 | 2017-06-16 03:22:20 | 2017-06-17 05:29:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1175 | 2017-06-16 03:22:20 | 2017-06-17 05:29:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1176 | 2017-06-16 03:22:20 | 2017-06-17 05:29:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1177 | 2017-06-16 03:35:04 | 2017-06-17 04:15:18 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1178 | 2017-06-16 03:35:04 | 2017-06-17 03:27:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1179 | 2017-06-16 03:35:04 | 2017-06-17 03:27:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1180 | 2017-06-16 03:35:04 | 2017-06-20 05:34:46 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1181 | 2017-06-16 03:35:04 | 2017-06-17 03:27:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1182 | 2017-06-16 03:35:04 | 2017-06-17 03:27:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1183 | 2017-06-16 03:35:04 | 2017-06-20 05:34:46 |   | <a href="#">R1-1711622</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1184 | 2017-06-16 03:35:04 | 2017-06-17 03:27:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1185 | 2017-06-16 03:35:04 | 2017-06-17 03:27:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1186 | 2017-06-16 03:35:04 | 2017-06-17 03:27:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1187 | 2017-06-16 03:35:04 | 2017-06-17 03:27:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1188 | 2017-06-16 03:35:04 | 2017-06-17 03:27:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1189 | 2017-06-16 03:35:04 | 2017-06-17 03:27:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1190 | 2017-06-16 03:35:04 | 2017-06-17 03:27:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1191 | 2017-06-16 03:35:04 | 2017-06-17 03:27:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1192 | 2017-06-16 03:35:04 | 2017-06-17 03:27:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1193 | 2017-06-16 03:35:04 | 2017-06-17 03:27:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1194 | 2017-06-16 03:35:05 | 2017-06-17 05:25:40 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1195 | 2017-06-16 03:35:05 | 2017-06-17 03:27:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1196 | 2017-06-16 03:35:05 | 2017-06-17 03:27:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1197 | 2017-06-16 03:35:05 | 2017-06-17 05:25:40 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1198 | 2017-06-16 03:35:05 | 2017-06-17 05:25:40 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1199 | 2017-06-16 03:35:05 | 2017-06-17 05:25:40 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1200 | 2017-06-16 03:35:05 | 2017-06-17 05:25:40 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1201 | 2017-06-16 03:35:05 | 2017-06-17 05:25:40 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1202 | 2017-06-16 03:35:05 | 2017-06-17 05:25:40 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1203 | 2017-06-16 03:35:05 | 2017-06-17 05:25:40 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1204 | 2017-06-16 03:35:05 | 2017-06-17 05:25:40 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1205 | 2017-06-16 03:35:05 | 2017-06-17 05:25:40 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1206 | 2017-06-16 03:35:05 | 2017-06-16 16:33:53 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1207 | 2017-06-16 03:35:05 | 2017-06-16 16:33:53 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1208 | 2017-06-16 03:35:05 | 2017-06-16 16:33:53 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1209 | 2017-06-16 03:35:05 | 2017-06-17 05:25:40 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1210 | 2017-06-16 03:35:05 | 2017-06-17 04:15:18 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1211 | 2017-06-16 03:35:05 | 2017-06-17 04:15:18 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1212 | 2017-06-16 03:35:05 | 2017-06-17 04:15:18 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1213 | 2017-06-16 03:35:05 | 2017-06-17 04:15:18 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1214 | 2017-06-16 03:35:05 | 2017-06-17 04:15:18 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1215 | 2017-06-16 03:35:05 | 2017-06-17 04:15:18 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q | R                          | S                      | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|---|----------------------------|------------------------|---|---|---|---|---|---|---|----|----|----|----|----|
| 1216 | 2017-06-16 03:35:05 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1217 | 2017-06-16 03:35:05 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1218 | 2017-06-16 03:35:05 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1219 | 2017-06-16 03:35:05 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1220 | 2017-06-16 03:35:05 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1221 | 2017-06-16 03:35:05 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1222 | 2017-06-16 03:35:05 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1223 | 2017-06-16 03:35:05 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1224 | 2017-06-16 03:35:05 | 2017-06-17 04:15:19 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1225 | 2017-06-16 03:35:05 | 2017-06-17 04:15:19 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1226 | 2017-06-16 03:35:05 | 2017-06-17 04:15:19 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1227 | 2017-06-16 03:35:05 | 2017-06-17 04:15:19 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1228 | 2017-06-16 03:35:05 | 2017-06-17 04:15:19 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1229 | 2017-06-16 03:35:05 | 2017-06-17 04:15:19 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1230 | 2017-06-16 03:35:05 | 2017-06-17 04:15:19 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1231 | 2017-06-16 03:35:06 | 2017-06-17 04:15:19 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1232 | 2017-06-16 03:35:06 | 2017-06-17 04:15:19 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1233 | 2017-06-16 03:35:06 | 2017-06-17 04:15:19 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1234 | 2017-06-16 03:35:06 | 2017-06-17 04:15:19 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1235 | 2017-06-16 03:35:06 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1236 | 2017-06-16 03:35:06 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1237 | 2017-06-16 03:35:06 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1238 | 2017-06-16 03:35:06 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1239 | 2017-06-16 03:35:06 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1240 | 2017-06-16 03:35:06 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1241 | 2017-06-16 03:35:06 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1242 | 2017-06-16 03:35:06 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1243 | 2017-06-16 03:35:06 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1244 | 2017-06-16 03:35:06 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1245 | 2017-06-16 03:35:06 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1246 | 2017-06-16 03:35:06 | 2017-06-20 03:01:06 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1247 | 2017-06-16 03:35:06 | 2017-06-20 03:01:06 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1248 | 2017-06-16 03:35:06 | 2017-06-20 03:01:06 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1249 | 2017-06-16 03:35:06 | 2017-06-20 03:01:06 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1250 | 2017-06-16 03:35:06 | 2017-06-20 03:01:06 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1251 | 2017-06-16 03:35:06 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1252 | 2017-06-16 03:35:06 | 2017-06-17 04:15:18 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1253 | 2017-06-16 03:35:06 | 2017-06-16 16:33:53 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1254 | 2017-06-16 03:35:06 | 2017-06-16 10:05:35 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1255 | 2017-06-16 03:35:06 | 2017-06-17 03:27:57 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1256 | 2017-06-16 03:35:06 | 2017-06-17 03:27:57 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1257 | 2017-06-16 03:51:27 | 2017-06-17 06:59:10 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1258 | 2017-06-16 03:51:27 | 2017-06-17 06:59:10 |   | <a href="#">R1-1711645</a> | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q | R                          | S                      | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|---|----------------------------|------------------------|---|---|---|---|---|---|---|----|----|----|----|----|
| 1259 | 2017-06-16 03:51:27 | 2017-06-20 04:56:36 |   | <a href="#">R1-1711646</a> | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-16 03:51:27 | 2017-06-17 06:59:10 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1260 |                     |                     |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1261 | 2017-06-16 03:51:27 | 2017-06-17 06:59:10 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1262 | 2017-06-16 03:51:27 | 2017-06-20 04:56:36 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1263 | 2017-06-16 03:51:27 | 2017-06-17 06:59:11 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1264 | 2017-06-16 03:51:27 | 2017-06-17 06:59:11 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1265 | 2017-06-16 03:51:27 | 2017-06-17 06:59:11 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1266 | 2017-06-16 03:51:27 | 2017-06-17 06:59:11 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1267 | 2017-06-16 03:51:27 | 2017-06-17 06:59:11 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-16 03:51:27 | 2017-06-17 06:59:11 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1268 |                     |                     |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1269 | 2017-06-16 03:51:27 | 2017-06-17 06:59:11 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-16 03:51:27 | 2017-06-17 06:59:11 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1270 |                     |                     |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1271 | 2017-06-16 03:51:27 | 2017-06-17 06:59:10 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1272 | 2017-06-16 03:51:27 | 2017-06-17 06:59:10 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1273 | 2017-06-16 03:51:27 | 2017-06-17 07:04:57 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1274 | 2017-06-16 03:51:27 | 2017-06-17 05:16:31 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1275 | 2017-06-16 03:51:27 | 2017-06-17 05:58:12 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1276 | 2017-06-16 03:51:27 | 2017-06-17 05:59:34 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1277 | 2017-06-16 03:51:27 | 2017-06-17 05:33:03 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1278 | 2017-06-16 03:51:27 | 2017-06-17 05:16:31 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1279 | 2017-06-16 03:51:27 | 2017-06-17 05:16:31 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1280 | 2017-06-16 03:51:27 | 2017-06-17 06:01:02 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1281 | 2017-06-16 03:51:27 | 2017-06-17 06:02:25 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1282 | 2017-06-16 03:51:27 | 2017-06-17 05:16:31 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1283 | 2017-06-16 03:51:27 | 2017-06-17 05:16:31 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1284 | 2017-06-16 03:51:27 | 2017-06-17 06:05:57 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1285 | 2017-06-16 03:51:27 | 2017-06-17 06:05:57 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1286 | 2017-06-16 03:51:27 | 2017-06-17 05:50:14 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1287 | 2017-06-16 03:51:27 | 2017-06-17 05:51:33 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1288 | 2017-06-16 03:51:27 | 2017-06-17 05:52:48 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1289 | 2017-06-16 03:51:27 | 2017-06-17 05:16:31 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1290 | 2017-06-16 03:51:27 | 2017-06-17 05:54:22 |   | <a href="#">R1-1711651</a> | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1291 | 2017-06-16 03:51:27 | 2017-06-17 05:33:03 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1292 | 2017-06-16 03:51:27 | 2017-06-17 05:16:31 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1293 | 2017-06-16 03:51:27 | 2017-06-17 05:16:31 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1294 | 2017-06-16 03:51:27 | 2017-06-17 05:16:32 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1295 | 2017-06-16 03:51:27 | 2017-06-17 05:16:32 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1296 | 2017-06-16 03:51:27 | 2017-06-17 05:17:10 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1297 | 2017-06-16 03:51:27 | 2017-06-17 06:09:16 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1298 | 2017-06-16 03:51:27 | 2017-06-17 06:09:16 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1299 | 2017-06-16 03:51:27 | 2017-06-17 06:48:43 |   | <a href="#">R1-1711633</a> | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-16 03:51:27 | 2017-06-17 06:48:43 |   | <a href="#">R1-1711634</a> | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1300 |                     |                     |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q | R                          | S                      | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|---|----------------------------|------------------------|---|---|---|---|---|---|---|----|----|----|----|----|
| 1301 | 2017-06-16 03:51:28 | 2017-06-17 06:48:43 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1302 | 2017-06-16 03:51:28 | 2017-06-17 06:48:43 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1303 | 2017-06-16 03:51:28 |                     |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1304 | 2017-06-16 03:51:28 | 2017-06-17 06:48:43 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1305 | 2017-06-16 03:51:28 | 2017-06-17 06:48:43 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1306 | 2017-06-16 03:51:28 | 2017-06-17 06:48:43 |   | <a href="#">R1-1711247</a> | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1307 | 2017-06-16 03:51:28 | 2017-06-17 06:48:43 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1308 | 2017-06-16 03:51:28 | 2017-06-17 06:40:09 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1309 | 2017-06-16 03:51:28 | 2017-06-17 06:40:09 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1310 | 2017-06-16 03:51:28 | 2017-06-17 05:17:10 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1311 | 2017-06-16 03:51:28 | 2017-06-17 05:33:03 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1312 | 2017-06-16 03:51:28 | 2017-06-17 05:17:10 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1313 | 2017-06-16 03:51:28 | 2017-06-17 06:37:55 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1314 | 2017-06-16 03:51:28 | 2017-06-17 05:17:10 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1315 | 2017-06-16 03:51:28 | 2017-06-17 05:35:03 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1316 | 2017-06-16 03:51:28 | 2017-06-17 05:17:10 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1317 | 2017-06-16 03:51:28 | 2017-06-17 05:17:10 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1318 | 2017-06-16 03:51:28 | 2017-06-17 05:38:14 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1319 | 2017-06-16 03:51:28 | 2017-06-17 05:17:10 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1320 | 2017-06-16 03:51:28 | 2017-06-17 05:17:10 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1321 | 2017-06-16 03:51:28 | 2017-06-17 05:17:10 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1322 | 2017-06-16 03:51:28 | 2017-06-17 05:17:10 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1323 | 2017-06-16 03:51:28 | 2017-06-17 05:17:10 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1324 | 2017-06-16 03:51:28 | 2017-06-18 23:50:05 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1325 | 2017-06-16 03:51:28 | 2017-06-18 23:50:05 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1326 | 2017-06-16 03:51:28 | 2017-06-18 23:50:05 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1327 | 2017-06-16 03:51:28 | 2017-06-17 05:17:42 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1328 | 2017-06-16 03:51:28 | 2017-06-18 23:50:05 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1329 | 2017-06-16 03:51:28 | 2017-06-17 06:12:46 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1330 | 2017-06-16 03:51:28 | 2017-06-17 05:17:42 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1331 | 2017-06-16 03:51:28 | 2017-06-23 20:31:49 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1332 | 2017-06-16 03:51:28 | 2017-06-20 05:20:08 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1333 | 2017-06-16 03:51:28 | 2017-06-20 05:20:08 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1334 | 2017-06-16 03:51:28 | 2017-06-20 05:20:08 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1335 | 2017-06-16 03:51:28 | 2017-06-20 05:20:08 |   | <a href="#">R1-1711978</a> | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1336 | 2017-06-16 03:51:28 | 2017-06-20 06:50:31 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1337 | 2017-06-16 03:51:28 | 2017-06-20 06:50:31 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1338 | 2017-06-16 03:51:28 | 2017-06-20 06:50:31 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1339 | 2017-06-16 03:51:28 | 2017-06-20 06:26:53 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1340 | 2017-06-16 03:51:28 | 2017-06-20 06:50:31 |   | <a href="#">R1-1711977</a> | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1341 | 2017-06-16 03:51:28 | 2017-06-20 06:26:53 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1342 | 2017-06-16 03:51:28 | 2017-06-20 06:26:53 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1343 | 2017-06-16 03:51:29 | 2017-06-20 06:26:53 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q                          | R                          | S                      | T                      | U      | V                                | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|----------------------------|----------------------------|------------------------|------------------------|--------|----------------------------------|---|---|---|---|----|----|----|----|----|
| 1344 | 2017-06-16 03:51:29 | 2017-06-20 06:26:53 |                            |                            | <a href="#">Rel-15</a> |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1345 | 2017-06-16 03:51:29 | 2017-06-20 05:25:02 |                            | <a href="#">R1-1711605</a> | <a href="#">Rel-15</a> |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1346 | 2017-06-16 03:51:29 | 2017-06-18 23:50:09 |                            |                            | <a href="#">Rel-15</a> |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1347 | 2017-06-16 03:51:29 | 2017-06-17 06:20:57 |                            |                            | <a href="#">Rel-15</a> |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1348 | 2017-06-16 03:51:29 | 2017-06-17 06:20:57 |                            |                            | <a href="#">Rel-15</a> |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1349 | 2017-06-16 03:51:29 | 2017-06-17 06:20:57 |                            |                            | <a href="#">Rel-15</a> |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1350 | 2017-06-16 03:51:29 | 2017-06-17 06:20:57 |                            |                            | <a href="#">Rel-15</a> |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1351 | 2017-06-16 03:51:29 | 2017-06-17 06:20:57 |                            |                            | <a href="#">Rel-15</a> |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1352 | 2017-06-16 03:51:29 | 2017-06-17 05:17:42 |                            |                            | <a href="#">Rel-15</a> |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1353 | 2017-06-16 03:51:29 |                     |                            |                            | <a href="#">Rel-15</a> |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1354 | 2017-06-16 03:52:45 | 2017-06-17 01:27:00 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1355 | 2017-06-16 03:52:45 | 2017-06-17 01:27:00 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1356 | 2017-06-16 03:52:45 | 2017-06-17 01:27:00 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1357 | 2017-06-16 03:52:45 | 2017-06-17 01:27:00 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1358 | 2017-06-16 03:52:45 | 2017-06-17 01:27:00 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1359 | 2017-06-16 03:52:45 | 2017-06-17 01:27:00 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1360 | 2017-06-16 03:52:45 | 2017-06-17 01:27:00 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1361 | 2017-06-16 03:52:45 | 2017-06-17 01:27:00 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1362 | 2017-06-16 03:52:45 | 2017-06-17 01:27:00 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1363 | 2017-06-16 03:52:45 | 2017-06-17 01:27:00 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1364 | 2017-06-16 03:52:45 | 2017-06-17 01:27:00 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1365 | 2017-06-16 03:52:45 | 2017-06-17 01:27:00 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1366 | 2017-06-16 03:52:45 | 2017-06-17 01:27:00 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1367 | 2017-06-16 04:20:24 | 2017-06-17 05:17:42 |                            |                            | <a href="#">Rel-15</a> |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1368 | 2017-06-16 04:20:24 | 2017-06-23 20:31:49 | <a href="#">R1-1711184</a> |                            | <a href="#">Rel-15</a> |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1369 | 2017-06-16 04:20:24 |                     |                            |                            | <a href="#">Rel-15</a> |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1370 | 2017-06-16 04:20:24 |                     |                            |                            | <a href="#">Rel-15</a> |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1371 | 2017-06-16 04:20:24 |                     |                            |                            | <a href="#">Rel-15</a> |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1372 | 2017-06-16 04:20:24 |                     |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1373 | 2017-06-16 04:37:23 | 2017-06-17 05:25:01 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1374 | 2017-06-16 04:41:50 | 2017-06-17 05:25:14 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1375 | 2017-06-16 04:45:59 | 2017-06-16 11:03:26 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1376 | 2017-06-16 05:41:13 | 2017-06-16 12:14:15 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1377 | 2017-06-16 05:46:26 | 2017-06-17 03:37:13 |                            | <a href="#">R1-1711623</a> | <a href="#">Rel-14</a> | <a href="#">38.901</a> | 14.0.0 | <a href="#">FS 6GHz CH model</a> |   |   | A |   |    |    |    |    |    |
| 1378 | 2017-06-16 05:46:26 | 2017-06-17 03:37:13 |                            | <a href="#">R1-1711624</a> | <a href="#">Rel-14</a> | <a href="#">38.901</a> | 14.0.0 | <a href="#">FS 6GHz CH model</a> |   |   | F |   |    |    |    |    |    |
| 1379 | 2017-06-16 05:57:05 | 2017-06-17 01:28:34 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1380 | 2017-06-16 05:58:13 | 2017-06-17 01:28:34 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1381 | 2017-06-16 05:59:28 | 2017-06-17 01:28:34 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1382 | 2017-06-16 06:06:34 | 2017-06-16 18:13:14 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1383 | 2017-06-16 06:06:34 | 2017-06-16 18:13:14 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |
| 1384 | 2017-06-16 06:06:34 | 2017-06-16 18:13:14 |                            |                            |                        |                        |        |                                  |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q | R                          | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|---|----------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 1385 | 2017-06-16 06:06:34 | 2017-06-16 18:13:14 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1386 | 2017-06-16 06:06:34 | 2017-06-16 18:13:14 |   | <a href="#">R1-1711650</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1387 | 2017-06-16 06:06:34 | 2017-06-16 18:13:14 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1388 | 2017-06-16 06:06:34 | 2017-06-16 18:13:14 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1389 | 2017-06-16 06:06:34 | 2017-06-16 18:13:14 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1390 | 2017-06-16 06:06:34 | 2017-06-16 18:13:14 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1391 | 2017-06-16 06:06:34 | 2017-06-16 18:13:14 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1392 | 2017-06-16 06:08:11 | 2017-06-16 21:19:03 |   | <a href="#">R1-1710229</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1393 | 2017-06-16 06:14:48 | 2017-06-16 18:13:14 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1394 | 2017-06-16 06:18:37 | 2017-06-16 10:59:06 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1395 | 2017-06-16 06:25:14 | 2017-06-16 10:59:29 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1396 | 2017-06-16 06:39:00 | 2017-06-18 03:18:55 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1397 | 2017-06-16 07:11:37 | 2017-06-17 06:13:40 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1398 | 2017-06-16 07:11:37 | 2017-06-20 06:28:55 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1399 | 2017-06-16 07:11:37 | 2017-06-19 03:13:16 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1400 | 2017-06-16 07:11:37 | 2017-06-20 06:28:55 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1401 | 2017-06-16 07:11:37 | 2017-06-17 05:59:36 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1402 | 2017-06-16 07:11:37 | 2017-06-19 06:26:29 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1403 | 2017-06-16 07:11:37 | 2017-06-19 03:13:16 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1404 | 2017-06-16 07:11:37 | 2017-06-26 09:06:31 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1405 | 2017-06-16 07:11:37 | 2017-06-19 03:13:16 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1406 | 2017-06-16 07:40:21 | 2017-06-16 21:15:08 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1407 | 2017-06-16 07:40:21 | 2017-06-16 21:15:08 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1408 | 2017-06-16 07:40:21 | 2017-06-16 21:15:08 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1409 | 2017-06-16 07:40:21 | 2017-06-16 21:15:08 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1410 | 2017-06-16 07:40:21 | 2017-06-16 21:15:08 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1411 | 2017-06-16 07:40:21 | 2017-06-16 21:15:08 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1412 | 2017-06-16 07:40:21 | 2017-06-16 21:15:08 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1413 | 2017-06-16 07:40:21 | 2017-06-16 21:15:08 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1414 | 2017-06-16 07:40:21 | 2017-06-17 05:31:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1415 | 2017-06-16 07:40:21 | 2017-06-16 21:13:19 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1416 | 2017-06-16 07:40:21 | 2017-06-16 21:15:47 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1417 |                     |                     |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q                          | R                          | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|----------------------------|----------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 1418 | 2017-06-16 07:40:21 | 2017-06-16 21:15:47 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1419 | 2017-06-16 07:40:21 | 2017-06-16 21:15:48 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1420 | 2017-06-16 07:40:21 | 2017-06-16 21:15:48 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1421 | 2017-06-16 07:40:21 | 2017-06-16 21:15:48 |                            | <a href="#">R1-1711590</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1422 | 2017-06-16 07:40:21 | 2017-06-16 21:15:48 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1423 | 2017-06-16 07:40:21 | 2017-06-16 21:15:48 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1424 | 2017-06-16 07:40:21 | 2017-06-17 05:31:19 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1425 | 2017-06-16 07:40:21 | 2017-06-16 21:15:48 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1426 | 2017-06-16 07:40:21 | 2017-06-16 21:16:33 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1427 | 2017-06-16 07:40:21 | 2017-06-16 21:16:33 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1428 | 2017-06-16 07:40:21 | 2017-06-16 21:16:33 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1429 | 2017-06-16 07:40:21 | 2017-06-16 21:16:33 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1430 | 2017-06-16 07:40:21 | 2017-06-16 21:16:33 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1431 | 2017-06-16 07:40:21 | 2017-06-16 21:16:33 |                            | <a href="#">R1-1711631</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1432 | 2017-06-16 07:40:21 | 2017-06-16 21:16:33 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1433 | 2017-06-16 07:40:21 | 2017-06-16 21:16:33 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1434 | 2017-06-16 07:40:21 | 2017-06-16 21:16:33 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1435 | 2017-06-16 08:09:04 | 2017-06-16 18:18:46 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1436 | 2017-06-16 08:09:04 | 2017-06-16 18:18:46 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1437 | 2017-06-16 08:09:04 | 2017-06-16 18:18:46 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1438 | 2017-06-16 08:41:31 | 2017-06-16 09:58:22 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1439 | 2017-06-16 08:45:52 | 2017-06-16 12:44:50 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1440 | 2017-06-16 08:50:17 | 2017-06-16 11:33:21 | <a href="#">R1-1708105</a> | <a href="#">R1-1713865</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1441 | 2017-06-16 08:50:17 | 2017-06-16 11:33:21 | <a href="#">R1-1708106</a> | <a href="#">R1-1713867</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1442 | 2017-06-16 08:50:17 | 2017-06-16 11:54:48 | <a href="#">R1-1708111</a> | <a href="#">R1-1713869</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1443 | 2017-06-16 08:50:17 | 2017-06-16 11:33:21 | <a href="#">R1-1708110</a> |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1444 | 2017-06-16 08:50:17 | 2017-06-16 11:37:48 | <a href="#">R1-1708114</a> | <a href="#">R1-1713870</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1445 | 2017-06-16 08:50:17 | 2017-06-16 11:37:48 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1446 | 2017-06-16 08:50:17 | 2017-06-16 11:49:07 |                            | <a href="#">R1-1713871</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1447 | 2017-06-16 08:50:17 | 2017-06-16 11:49:07 |                            | <a href="#">R1-1713872</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1448 | 2017-06-16 08:50:18 | 2017-06-16 11:37:48 | <a href="#">R1-1708119</a> |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1449 | 2017-06-16 08:50:18 | 2017-06-16 11:49:07 |                            |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q                          | R                          | S                      | T                      | U     | V                              | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|----------------------------|----------------------------|------------------------|------------------------|-------|--------------------------------|---|---|---|---|----|----|----|----|----|
| 1450 | 2017-06-16 08:50:18 | 2017-06-16 11:52:25 | <a href="#">R1-1708108</a> |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1451 | 2017-06-16 08:50:18 | 2017-06-16 11:52:25 | <a href="#">R1-1708109</a> | <a href="#">R1-1713875</a> |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1452 | 2017-06-16 08:50:18 | 2017-06-16 11:41:35 | <a href="#">R1-1708109</a> | <a href="#">R1-1713874</a> |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1453 | 2017-06-16 08:50:18 | 2017-06-16 11:41:35 | <a href="#">R1-1708113</a> | <a href="#">R1-1713877</a> |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1454 | 2017-06-16 08:50:18 | 2017-06-16 11:41:35 | <a href="#">R1-1708113</a> | <a href="#">R1-1713878</a> |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1455 | 2017-06-16 08:50:18 | 2017-06-16 11:52:25 | <a href="#">R1-1708112</a> | R1-1713868, R1-1713879     |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1456 | 2017-06-16 08:51:31 | 2017-06-16 17:56:36 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1457 | 2017-06-16 08:53:02 | 2017-06-16 17:56:36 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1458 | 2017-06-16 08:59:23 | 2017-06-17 05:46:05 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1459 | 2017-06-16 09:01:40 | 2017-06-17 05:46:05 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1460 | 2017-06-16 09:06:00 | 2017-06-16 09:11:15 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1461 | 2017-06-16 09:06:00 | 2017-06-16 09:11:15 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1462 | 2017-06-16 09:06:00 | 2017-06-16 09:11:15 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1463 | 2017-06-16 09:06:00 | 2017-06-16 09:11:15 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1464 | 2017-06-16 09:06:00 | 2017-06-16 09:11:15 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1465 | 2017-06-16 09:06:17 | 2017-06-16 10:34:01 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1466 | 2017-06-16 09:17:09 | 2017-06-20 05:18:59 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1467 | 2017-06-16 09:17:09 | 2017-06-20 05:20:10 |                            | <a href="#">R1-1711693</a> |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1468 | 2017-06-16 09:17:09 | 2017-06-20 05:20:10 |                            | <a href="#">R1-1711694</a> |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1469 | 2017-06-16 09:17:09 | 2017-06-20 06:23:28 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1470 | 2017-06-16 09:17:09 | 2017-06-20 06:23:28 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1471 | 2017-06-16 09:17:09 | 2017-06-20 05:20:10 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1472 | 2017-06-16 09:23:22 | 2017-06-17 10:46:11 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1473 | 2017-06-16 09:24:51 | 2017-06-19 06:27:36 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1474 | 2017-06-16 09:26:34 | 2017-06-17 10:46:11 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1475 | 2017-06-16 09:27:42 | 2017-06-17 10:46:11 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1476 | 2017-06-16 09:49:13 | 2017-06-17 08:04:26 |                            |                            | <a href="#">Rel-15</a> |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1477 | 2017-06-16 09:49:13 | 2017-06-17 08:04:26 |                            |                            | <a href="#">Rel-15</a> |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1478 | 2017-06-16 09:49:13 | 2017-06-17 08:04:26 |                            |                            | <a href="#">Rel-15</a> |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1479 | 2017-06-16 09:49:13 | 2017-06-17 08:04:26 |                            |                            | <a href="#">Rel-15</a> |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1480 | 2017-06-16 09:49:13 | 2017-06-17 08:04:26 |                            |                            | <a href="#">Rel-15</a> |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1481 | 2017-06-16 09:49:13 | 2017-06-17 08:04:26 |                            |                            | <a href="#">Rel-15</a> |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1482 | 2017-06-16 09:49:13 | 2017-06-17 08:04:26 |                            |                            | <a href="#">Rel-15</a> |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1483 | 2017-06-16 09:49:13 | 2017-06-17 08:04:26 |                            |                            | <a href="#">Rel-15</a> |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1484 | 2017-06-16 09:49:13 | 2017-06-17 08:04:26 |                            |                            | <a href="#">Rel-15</a> |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1485 | 2017-06-16 09:50:00 | 2017-06-17 02:48:57 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1486 | 2017-06-16 09:52:21 | 2017-06-17 02:49:16 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1487 | 2017-06-16 09:53:43 | 2017-06-16 15:23:03 |                            | <a href="#">R1-1711577</a> |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |
| 1488 | 2017-06-16 10:27:10 | 2017-06-19 07:47:13 |                            | <a href="#">R1-1711886</a> | <a href="#">Rel-15</a> | <a href="#">38.211</a> | 0.0.1 | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    |    |    |    |    |
| 1489 | 2017-06-16 10:29:05 | 2017-06-16 15:16:59 |                            |                            |                        |                        |       |                                |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q | R | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 1490 | 2017-06-16 10:42:13 | 2017-06-16 11:53:51 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1491 | 2017-06-16 10:43:15 | 2017-06-16 11:53:51 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1492 | 2017-06-16 10:44:13 |                     |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1493 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1494 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1495 | 2017-06-16 10:46:48 | 2017-06-19 21:15:41 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1496 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1497 | 2017-06-16 10:46:48 | 2017-06-19 21:15:41 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1498 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1499 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1500 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1501 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1502 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1503 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1504 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1505 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1506 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1507 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1508 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1509 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1510 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1511 | 2017-06-16 10:46:48 | 2017-06-17 05:48:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1512 | 2017-06-16 10:49:26 | 2017-06-16 11:53:51 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1513 | 2017-06-16 11:03:00 | 2017-06-19 11:19:16 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1514 | 2017-06-16 11:03:00 | 2017-06-16 18:13:14 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1515 | 2017-06-16 11:14:26 | 2017-06-17 04:32:27 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1516 | 2017-06-16 11:39:23 | 2017-06-17 03:55:55 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1517 | 2017-06-16 11:42:33 | 2017-06-17 03:56:38 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1518 | 2017-06-16 11:47:55 | 2017-06-16 16:22:19 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1519 | 2017-06-16 11:47:55 | 2017-06-16 16:22:19 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1520 | 2017-06-16 12:28:57 | 2017-06-16 18:22:15 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1521 | 2017-06-16 12:28:57 | 2017-06-16 18:44:34 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1522 | 2017-06-16 12:28:57 | 2017-06-16 18:44:34 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1523 | 2017-06-16 12:36:39 | 2017-06-17 03:15:49 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1524 | 2017-06-16 12:36:39 | 2017-06-17 03:15:49 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1525 | 2017-06-16 12:36:39 | 2017-06-17 03:15:49 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1526 | 2017-06-16 12:36:39 | 2017-06-17 04:46:39 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1527 | 2017-06-16 12:36:39 | 2017-06-17 03:15:49 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1528 | 2017-06-16 12:36:39 | 2017-06-17 03:15:49 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q | R                          | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|---|----------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 1529 | 2017-06-16 12:36:39 | 2017-06-17 05:30:51 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1530 | 2017-06-16 12:36:39 | 2017-06-17 03:15:49 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1531 | 2017-06-16 12:36:39 | 2017-06-17 03:15:49 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1532 | 2017-06-16 12:36:39 | 2017-06-17 03:15:49 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1533 | 2017-06-16 12:36:39 | 2017-06-17 02:56:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1534 | 2017-06-16 12:36:39 | 2017-06-17 02:56:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1535 | 2017-06-16 12:36:39 | 2017-06-17 02:56:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1536 | 2017-06-16 12:36:39 | 2017-06-17 02:56:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1537 | 2017-06-16 12:36:39 | 2017-06-17 02:56:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1538 | 2017-06-16 12:36:39 | 2017-06-17 02:56:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1539 | 2017-06-16 12:36:39 | 2017-06-17 02:56:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1540 | 2017-06-16 12:36:39 | 2017-06-17 02:56:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1541 | 2017-06-16 12:36:39 | 2017-06-17 02:56:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1542 | 2017-06-16 12:36:39 | 2017-06-17 02:56:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1543 | 2017-06-16 12:36:39 | 2017-06-17 02:56:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1544 | 2017-06-16 12:36:39 | 2017-06-17 02:56:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1545 | 2017-06-16 12:36:39 | 2017-06-17 02:56:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1546 | 2017-06-16 12:36:39 | 2017-06-17 02:52:07 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1547 | 2017-06-16 12:36:39 | 2017-06-17 02:56:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1548 | 2017-06-16 12:36:39 | 2017-06-17 02:58:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1549 | 2017-06-16 12:36:39 | 2017-06-17 02:58:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1550 | 2017-06-16 12:36:39 | 2017-06-17 02:58:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1551 | 2017-06-16 12:36:39 | 2017-06-17 02:58:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1552 | 2017-06-16 12:36:39 | 2017-06-17 02:58:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1553 | 2017-06-16 12:36:39 | 2017-06-17 02:58:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1554 | 2017-06-16 12:36:39 | 2017-06-17 02:58:56 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1555 | 2017-06-16 12:36:39 | 2017-06-17 03:15:49 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1556 | 2017-06-16 12:36:39 | 2017-06-17 03:15:49 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1557 | 2017-06-16 12:36:40 | 2017-06-27 15:17:52 |   | <a href="#">R1-1711727</a> |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1558 | 2017-06-16 12:36:40 | 2017-06-27 15:17:52 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1559 | 2017-06-16 12:36:40 | 2017-06-27 15:17:52 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1560 | 2017-06-16 12:36:40 | 2017-06-20 05:18:35 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1561 | 2017-06-16 12:36:40 | 2017-06-20 05:18:35 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1562 | 2017-06-16 12:36:40 |                     |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1563 | 2017-06-16 12:36:40 | 2017-06-18 14:26:23 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1564 | 2017-06-16 12:36:40 | 2017-06-20 05:17:55 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1565 | 2017-06-16 12:36:40 | 2017-06-20 05:17:55 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1566 | 2017-06-16 12:56:25 | 2017-06-16 19:59:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1567 | 2017-06-16 12:56:25 | 2017-06-16 19:59:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1568 | 2017-06-16 12:56:25 | 2017-06-16 19:59:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1569 | 2017-06-16 12:56:25 | 2017-06-16 19:59:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1570 | 2017-06-16 12:56:25 | 2017-06-16 19:59:42 |   |                            |   |   |   |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q | R | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 1571 | 2017-06-16 12:56:25 | 2017-06-16 19:59:42 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1572 | 2017-06-16 12:56:25 | 2017-06-17 02:01:01 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1573 | 2017-06-16 12:56:25 | 2017-06-17 02:01:01 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1574 | 2017-06-16 12:56:25 | 2017-06-17 02:01:01 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1575 | 2017-06-16 12:56:25 | 2017-06-16 19:59:42 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1576 | 2017-06-16 12:56:25 | 2017-06-17 02:01:01 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1577 | 2017-06-16 12:56:25 | 2017-06-16 19:59:42 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1578 | 2017-06-16 12:56:25 | 2017-06-16 19:59:42 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1579 | 2017-06-16 12:56:25 | 2017-06-17 02:01:01 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1580 | 2017-06-16 12:56:25 | 2017-06-17 02:01:01 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1581 | 2017-06-16 12:56:25 | 2017-06-17 02:01:01 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1582 | 2017-06-16 12:56:25 | 2017-06-17 02:01:01 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1583 | 2017-06-16 12:56:25 | 2017-06-17 02:01:01 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1584 | 2017-06-16 12:56:25 | 2017-06-17 02:01:01 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1585 | 2017-06-16 12:56:25 | 2017-06-17 02:01:01 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1586 | 2017-06-16 12:57:57 | 2017-06-17 02:52:07 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1587 | 2017-06-16 12:59:14 | 2017-06-17 02:52:07 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1588 | 2017-06-16 13:00:09 | 2017-06-17 02:52:07 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1589 | 2017-06-16 13:01:00 | 2017-06-17 02:52:07 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1590 | 2017-06-16 13:01:55 | 2017-06-16 13:21:51 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1591 | 2017-06-16 13:01:55 | 2017-06-17 02:52:07 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1592 | 2017-06-16 13:02:52 | 2017-06-17 02:52:07 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1593 | 2017-06-16 13:04:51 | 2017-06-16 13:21:51 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1594 | 2017-06-16 13:07:24 | 2017-06-16 13:21:51 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1595 | 2017-06-16 13:09:28 | 2017-06-16 13:21:52 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1596 | 2017-06-16 13:11:45 | 2017-06-16 13:21:52 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1597 | 2017-06-16 13:12:59 | 2017-06-16 13:21:52 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1598 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1599 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1600 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1601 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1602 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1603 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1604 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1605 | 2017-06-16 13:23:46 | 2017-06-17 06:05:49 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1606 | 2017-06-16 13:23:46 | 2017-06-17 06:05:49 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1607 | 2017-06-16 13:23:46 | 2017-06-17 06:05:49 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1608 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1609 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1610 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1611 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1612 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1613 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q | R | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 1614 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1615 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1616 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1617 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1618 | 2017-06-16 13:23:46 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1619 | 2017-06-16 13:23:46 | 2017-06-17 06:02:03 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1620 | 2017-06-16 13:23:46 | 2017-06-17 06:02:03 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1621 | 2017-06-16 13:23:46 | 2017-06-17 06:02:03 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1622 | 2017-06-16 13:23:46 | 2017-06-17 06:02:03 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1623 | 2017-06-16 13:23:46 | 2017-06-17 06:02:03 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1624 | 2017-06-16 13:23:46 | 2017-06-17 06:02:03 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1625 | 2017-06-16 13:23:46 | 2017-06-17 06:02:03 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1626 | 2017-06-16 13:23:46 | 2017-06-17 06:02:03 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1627 | 2017-06-16 13:23:46 | 2017-06-17 06:02:03 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1628 | 2017-06-16 13:23:46 | 2017-06-17 06:02:03 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1629 | 2017-06-16 13:23:46 | 2017-06-17 06:02:03 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1630 | 2017-06-16 13:23:46 | 2017-06-17 06:02:03 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1631 | 2017-06-16 13:23:47 | 2017-06-17 06:02:03 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1632 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1633 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1634 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1635 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1636 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1637 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1638 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1639 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1640 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1641 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1642 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1643 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1644 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1645 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1646 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1647 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1648 | 2017-06-16 13:23:47 | 2017-06-17 06:02:02 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1649 | 2017-06-16 13:28:26 | 2017-06-17 03:53:10 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1650 | 2017-06-16 13:29:00 | 2017-06-16 18:49:43 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1651 | 2017-06-16 13:30:50 | 2017-06-16 18:50:04 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1652 | 2017-06-16 13:31:43 | 2017-06-16 13:40:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1653 | 2017-06-16 13:32:49 | 2017-06-16 13:40:06 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1654 | 2017-06-16 13:33:18 | 2017-06-19 20:31:15 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1655 | 2017-06-16 13:33:18 | 2017-06-19 20:31:15 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q | R                          | S                      | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|---|----------------------------|------------------------|---|---|---|---|---|---|---|----|----|----|----|----|
| 1656 | 2017-06-16 13:33:18 | 2017-06-19 20:31:15 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1657 | 2017-06-16 13:33:18 | 2017-06-19 20:31:15 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1658 | 2017-06-16 13:33:18 | 2017-06-19 20:31:15 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1659 | 2017-06-16 13:33:18 | 2017-06-27 15:17:52 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1660 | 2017-06-16 13:33:18 | 2017-06-19 20:31:16 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1661 | 2017-06-16 13:33:18 | 2017-06-19 20:31:16 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1662 | 2017-06-16 13:33:18 | 2017-06-25 11:52:50 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1663 | 2017-06-16 13:33:18 | 2017-06-19 20:31:16 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1664 | 2017-06-16 13:33:18 | 2017-06-19 20:31:16 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1665 | 2017-06-16 13:33:18 | 2017-06-19 20:31:16 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1666 | 2017-06-16 13:33:18 | 2017-06-19 20:31:16 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1667 | 2017-06-16 13:33:18 | 2017-06-19 20:31:16 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1668 | 2017-06-16 13:33:18 | 2017-06-19 20:31:16 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1669 | 2017-06-16 13:34:47 | 2017-06-16 13:40:06 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1670 | 2017-06-16 13:36:26 | 2017-06-16 13:40:06 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1671 | 2017-06-16 13:46:12 | 2017-06-16 16:38:55 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1672 | 2017-06-16 13:48:59 | 2017-06-16 17:39:55 |   |                            | <a href="#">Rel-5</a>  |   |   |   |   |   |   |   |    |    |    |    |    |
| 1673 | 2017-06-16 14:03:54 | 2017-06-16 14:06:30 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1674 | 2017-06-16 14:05:10 | 2017-06-17 05:17:42 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1675 | 2017-06-16 14:05:10 | 2017-06-17 05:17:42 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1676 | 2017-06-16 14:05:10 | 2017-06-17 05:17:42 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1677 | 2017-06-16 14:05:10 | 2017-06-17 05:17:42 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1678 | 2017-06-16 14:05:10 | 2017-06-17 05:17:42 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1679 | 2017-06-16 14:05:10 | 2017-06-20 06:26:53 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1680 | 2017-06-16 14:11:16 | 2017-06-17 05:29:07 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1681 | 2017-06-16 14:15:40 |                     |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1682 | 2017-06-16 14:18:16 | 2017-06-16 15:23:03 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1683 | 2017-06-16 14:51:20 | 2017-06-17 04:32:04 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1684 | 2017-06-16 14:51:20 | 2017-06-17 04:32:04 |   | <a href="#">R1-1711706</a> |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1685 | 2017-06-16 14:51:20 | 2017-06-17 04:32:04 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1686 | 2017-06-16 14:51:20 | 2017-06-17 04:32:04 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1687 | 2017-06-16 14:56:26 | 2017-06-16 21:30:26 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1688 | 2017-06-16 14:58:03 | 2017-06-16 21:13:44 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1689 | 2017-06-16 15:03:03 | 2017-06-27 15:17:52 |   |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1690 | 2017-06-16 16:18:46 | 2017-06-16 16:39:44 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1691 | 2017-06-16 21:26:15 | 2017-06-16 21:32:24 |   |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q                          | R                          | S                      | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|----------------------------|----------------------------|------------------------|---|---|---|---|---|---|---|----|----|----|----|----|
| 1692 | 2017-06-16 21:34:19 | 2017-06-20 02:58:41 |                            |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1693 | 2017-06-16 21:34:19 | 2017-06-20 02:58:41 |                            |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1694 | 2017-06-16 21:34:19 |                     |                            |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1695 | 2017-06-16 21:34:19 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1696 | 2017-06-17 07:03:22 | 2017-06-17 10:09:23 |                            |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1697 | 2017-06-19 07:50:21 | 2017-06-19 08:58:20 | <a href="#">R1-1710049</a> |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1698 | 2017-06-19 07:51:33 | 2017-06-20 07:43:52 | <a href="#">R1-1710037</a> |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1699 | 2017-06-19 20:43:18 | 2017-06-20 07:43:52 | <a href="#">R1-1711365</a> | <a href="#">R1-1711584</a> |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1700 | 2017-06-20 09:15:57 | 2017-06-27 15:17:52 |                            | <a href="#">R1-1711775</a> | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1701 | 2017-06-20 09:21:11 | 2017-06-21 16:29:24 |                            |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1702 | 2017-06-20 09:25:07 | 2017-06-27 15:17:52 | <a href="#">R1-1710624</a> |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1703 | 2017-06-20 09:25:41 | 2017-06-28 13:47:52 | <a href="#">R1-1710638</a> |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1704 | 2017-06-20 16:24:50 | 2017-06-21 16:29:24 |                            |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1705 | 2017-06-21 12:15:49 | 2017-06-23 20:31:49 | <a href="#">R1-1710692</a> |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1706 | 2017-06-21 12:18:11 | 2017-06-23 20:31:49 | <a href="#">R1-1711577</a> |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1707 | 2017-06-21 12:21:03 | 2017-06-23 20:31:49 |                            |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |
| 1708 | 2017-06-21 12:26:05 | 2017-06-21 16:29:24 |                            |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1709 | 2017-06-21 16:44:44 | 2017-06-27 15:17:52 | <a href="#">R1-1710845</a> | <a href="#">R1-1711747</a> |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1710 | 2017-06-21 16:45:08 | 2017-06-27 15:17:52 | <a href="#">R1-1710846</a> | <a href="#">R1-1711748</a> |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1711 | 2017-06-22 07:58:35 | 2017-06-23 20:31:49 | <a href="#">R1-1710625</a> |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1712 | 2017-06-22 08:34:10 | 2017-06-22 08:57:13 | <a href="#">R1-1711299</a> |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1713 | 2017-06-22 08:41:54 | 2017-06-23 20:31:49 |                            |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1714 | 2017-06-22 08:41:54 | 2017-06-23 20:31:49 |                            |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1715 | 2017-06-22 08:41:54 | 2017-06-23 20:31:49 |                            |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1716 | 2017-06-22 08:41:54 | 2017-06-23 20:31:49 |                            |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1717 | 2017-06-22 08:41:54 | 2017-06-27 15:17:52 |                            |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1718 | 2017-06-22 08:41:54 | 2017-06-23 20:31:49 |                            |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1719 | 2017-06-22 08:41:54 | 2017-06-23 20:31:49 |                            |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1720 | 2017-06-22 08:41:54 | 2017-06-23 20:31:49 |                            |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1721 | 2017-06-22 08:41:54 | 2017-06-23 20:31:49 |                            |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1722 | 2017-06-22 09:02:24 | 2017-06-22 14:56:47 | <a href="#">R1-1709917</a> |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1723 | 2017-06-22 13:29:38 | 2017-06-22 14:16:07 | <a href="#">R1-1709880</a> |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1724 | 2017-06-22 13:33:16 | 2017-06-22 14:56:47 | <a href="#">R1-1710962</a> |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1725 | 2017-06-22 20:16:34 | 2017-06-23 20:31:49 | <a href="#">R1-1710083</a> |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1726 | 2017-06-22 20:19:15 | 2017-06-23 20:31:49 | <a href="#">R1-1710666</a> |                            |                        |   |   |   |   |   |   |   |    |    |    |    |    |
| 1727 | 2017-06-22 20:20:43 | 2017-06-27 15:17:52 | <a href="#">R1-1711223</a> |                            | <a href="#">Rel-15</a> |   |   |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q                          | R                          | S                      | T                      | U      | V                              | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|----------------------------|----------------------------|------------------------|------------------------|--------|--------------------------------|---|---|---|---|----|----|----|----|----|
| 1728 | 2017-06-22 20:25:16 | 2017-06-25 11:52:50 | <a href="#">R1-1710175</a> |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1729 | 2017-06-22 20:25:55 | 2017-06-25 11:52:50 | <a href="#">R1-1710187</a> |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1730 | 2017-06-22 20:26:20 | 2017-06-25 11:52:50 | <a href="#">R1-1710189</a> |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1731 | 2017-06-22 20:28:49 | 2017-06-26 03:03:20 | <a href="#">R1-1711026</a> |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1732 | 2017-06-22 20:29:25 | 2017-06-26 09:06:31 | <a href="#">R1-1711008</a> |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1733 | 2017-06-22 20:30:39 | 2017-06-25 02:49:29 | <a href="#">R1-1710503</a> | <a href="#">R1-1711647</a> |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1734 | 2017-06-22 20:31:07 | 2017-06-25 02:49:29 | <a href="#">R1-1710506</a> | <a href="#">R1-1711648</a> |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1735 | 2017-06-23 16:05:08 | 2017-06-26 01:09:57 | <a href="#">R1-1711050</a> |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1736 | 2017-06-23 20:38:37 | 2017-06-24 06:59:12 |                            |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1737 | 2017-06-23 20:38:37 | 2017-06-24 06:59:12 |                            |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1738 | 2017-06-23 20:38:37 | 2017-06-24 06:59:12 |                            |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1739 | 2017-06-23 20:38:37 | 2017-06-24 06:59:12 | <a href="#">R1-1710034</a> |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
|      | 2017-06-23 20:38:37 | 2017-06-26 01:09:57 | <a href="#">R1-1710033</a> |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1740 | 2017-06-23 20:38:37 | 2017-06-24 06:59:12 |                            |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1741 | 2017-06-23 20:38:37 | 2017-06-24 06:59:12 |                            |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1742 | 2017-06-23 20:38:37 | 2017-06-24 06:59:12 |                            |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1743 | 2017-06-23 20:38:37 | 2017-06-24 06:59:12 |                            |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1744 | 2017-06-23 20:38:37 | 2017-06-27 15:17:52 | <a href="#">R1-1711061</a> |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1745 | 2017-06-23 20:38:37 | 2017-06-28 13:47:52 | <a href="#">R1-1711255</a> | <a href="#">R1-1711758</a> | <a href="#">Rel-14</a> | <a href="#">38.901</a> | 14.1.0 | <a href="#">NR_newRAT-Core</a> |   |   | F |   |    |    |    |    |    |
| 1746 | 2017-06-23 20:38:37 | 2017-06-28 13:47:52 | <a href="#">R1-1711256</a> | <a href="#">R1-1711760</a> | <a href="#">Rel-14</a> | <a href="#">38.901</a> | 14.1.0 | <a href="#">NR_newRAT-Core</a> |   |   | F |   |    |    |    |    |    |
| 1747 | 2017-06-23 20:38:37 | 2017-06-24 06:59:12 | <a href="#">R1-1710823</a> |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1748 | 2017-06-23 20:38:37 | 2017-06-24 06:59:12 |                            |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1749 | 2017-06-23 20:38:37 | 2017-06-27 15:17:52 |                            |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1750 | 2017-06-23 20:38:37 | 2017-06-27 15:17:52 |                            |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1751 | 2017-06-23 20:38:37 | 2017-06-27 15:17:52 |                            |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1752 | 2017-06-23 20:38:37 | 2017-06-27 15:17:52 |                            |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
|      | 2017-06-23 20:38:37 | 2017-06-24 14:35:52 | <a href="#">R1-1711309</a> |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1753 | 2017-06-23 20:38:37 | 2017-06-25 11:52:50 | <a href="#">R1-1709932</a> |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1754 | 2017-06-23 20:49:38 | 2017-06-25 02:49:29 | <a href="#">R1-1711177</a> |                            | <a href="#">Rel-15</a> |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1755 | 2017-06-23 20:50:11 | 2017-06-25 02:49:29 | <a href="#">R1-1711178</a> |                            | <a href="#">Rel-15</a> |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1756 | 2017-06-23 20:53:10 |                     |                            | <a href="#">R1-1711935</a> | <a href="#">Rel-15</a> |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1757 | 2017-06-24 06:57:47 | 2017-06-25 11:52:50 | <a href="#">R1-1710449</a> |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1758 | 2017-06-24 14:39:04 | 2017-06-25 11:52:50 |                            |                            | <a href="#">Rel-15</a> |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1759 | 2017-06-24 14:41:03 | 2017-06-25 11:52:50 |                            |                            | <a href="#">Rel-15</a> |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1760 | 2017-06-25 03:02:41 | 2017-06-27 15:17:52 |                            |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1761 | 2017-06-25 03:04:55 |                     | <a href="#">R1-1708649</a> |                            | <a href="#">Rel-15</a> |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1762 | 2017-06-26 01:56:09 | 2017-06-27 15:17:52 | <a href="#">R1-1710347</a> |                            | <a href="#">Rel-15</a> |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1763 | 2017-06-26 08:43:03 | 2017-06-26 09:06:31 |                            |                            | <a href="#">Rel-15</a> |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1764 | 2017-06-26 08:43:54 | 2017-06-27 15:17:52 | <a href="#">R1-1710409</a> |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1765 | 2017-06-26 09:18:42 | 2017-06-27 15:17:52 | <a href="#">R1-1709883</a> |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1766 | 2017-06-26 09:20:30 | 2017-06-27 15:17:52 | <a href="#">R1-1711136</a> |                            | <a href="#">Rel-15</a> |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1767 | 2017-06-26 09:21:26 | 2017-06-27 15:17:52 | <a href="#">R1-1711137</a> |                            | <a href="#">Rel-15</a> |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1768 | 2017-06-26 14:32:45 | 2017-06-27 15:17:52 | <a href="#">R1-1711611</a> |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |
| 1769 |                     |                     |                            |                            |                        |                        |        |                                |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q                          | R                          | S                      | T | U | V                              | W | X | Y | Z | AA        | AB   | AC         | AD | AE |
|------|---------------------|---------------------|----------------------------|----------------------------|------------------------|---|---|--------------------------------|---|---|---|---|-----------|------|------------|----|----|
| 1770 | 2017-06-26 14:33:33 | 2017-06-27 15:17:52 | <a href="#">R1-1711612</a> |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1771 | 2017-06-27 15:10:16 | 2017-06-27 15:17:52 | <a href="#">R1-1710930</a> |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1772 | 2017-06-27 15:10:17 | 2017-06-27 15:17:52 | <a href="#">R1-1711264</a> |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1773 | 2017-06-27 15:10:18 |                     | <a href="#">R1-1711168</a> |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1774 | 2017-06-27 15:10:19 | 2017-06-27 15:17:52 |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1775 | 2017-06-27 15:10:19 | 2017-06-27 15:17:52 | <a href="#">R1-1710910</a> | <a href="#">R1-1711701</a> |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1776 | 2017-06-27 15:10:20 | 2017-06-27 15:17:52 |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1777 | 2017-06-27 15:10:20 | 2017-06-27 15:17:52 | <a href="#">R1-1710387</a> |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1778 | 2017-06-27 15:10:20 |                     |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1779 | 2017-06-27 15:10:20 | 2017-07-01 00:57:51 |                            | <a href="#">R1-1711997</a> | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   | S3-171568 | SA3  | RAN2, RAN4 |    |    |
| 1780 | 2017-06-27 15:10:21 | 2017-06-27 15:17:52 | <a href="#">R1-1710859</a> |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1781 | 2017-06-27 15:10:21 | 2017-06-27 15:17:52 | <a href="#">R1-1710858</a> |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1782 | 2017-06-27 15:10:21 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1783 | 2017-06-27 15:10:21 | 2017-06-27 15:17:52 |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1784 | 2017-06-27 15:10:21 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1785 | 2017-06-27 15:10:21 |                     | <a href="#">R1-1710297</a> |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1786 | 2017-06-27 15:10:22 | 2017-07-01 00:57:51 |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1787 | 2017-06-27 15:10:22 | 2017-07-01 00:57:51 |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1788 | 2017-06-27 15:10:22 | 2017-06-29 12:37:51 |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1789 | 2017-06-27 15:10:22 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1790 | 2017-06-27 15:10:22 | 2017-06-29 12:37:51 |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1791 | 2017-06-27 15:10:22 | 2017-06-27 15:17:52 | <a href="#">R1-1710046</a> | <a href="#">R1-1711711</a> |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1792 | 2017-06-27 15:10:23 |                     |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1793 | 2017-06-27 15:10:23 | 2017-06-27 15:17:52 | <a href="#">R1-1711037</a> |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1794 | 2017-06-27 15:10:23 | 2017-06-27 15:17:52 |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1795 | 2017-06-27 15:10:23 |                     |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1796 | 2017-06-27 15:10:23 | 2017-06-28 13:47:52 |                            | <a href="#">R1-1711881</a> |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1797 | 2017-06-27 15:10:23 | 2017-06-27 15:17:52 |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1798 | 2017-06-27 15:10:23 |                     |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1799 | 2017-06-27 15:10:23 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1800 | 2017-06-27 15:10:23 | 2017-06-29 12:37:51 |                            | <a href="#">R1-1711899</a> |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1801 | 2017-06-27 15:10:23 | 2017-06-28 13:47:52 | <a href="#">R1-1710494</a> |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1802 | 2017-06-27 15:10:24 |                     |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1803 | 2017-06-27 15:10:24 | 2017-06-27 15:17:52 |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1804 | 2017-06-27 15:10:24 | 2017-06-27 15:17:52 |                            |                            |                        |   |   |                                |   |   |   |   |           |      |            |    |    |
| 1805 | 2017-06-27 15:10:24 | 2017-07-01 00:57:51 |                            | <a href="#">R1-1712007</a> | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |           | RAN2 |            |    |    |
| 1806 | 2017-06-27 15:10:24 | 2017-06-29 12:37:51 |                            | <a href="#">R1-1711879</a> | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |           | RAN2 |            |    |    |

|      | O                   | P                   | Q | R                          | S                          | T | U | V                              | W | X | Y | Z | AA | AB   | AC | AD | AE |
|------|---------------------|---------------------|---|----------------------------|----------------------------|---|---|--------------------------------|---|---|---|---|----|------|----|----|----|
| 1807 | 2017-06-27 15:10:24 | 2017-07-01 00:57:51 |   | <a href="#">R1-1712008</a> | <a href="#">Rel-15</a>     |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    | RAN2 |    |    |    |
| 1808 | 2017-06-27 15:10:24 | 2017-08-12 09:40:07 |   |                            | <a href="#">Rel-15</a>     |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    | RAN2 |    |    |    |
| 1809 | 2017-06-27 15:10:24 |                     |   |                            | <a href="#">Rel-15</a>     |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    | RAN2 |    |    |    |
| 1810 | 2017-06-27 15:10:24 | 2017-06-29 12:37:51 |   | <a href="#">R1-1711941</a> |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1811 | 2017-06-27 15:10:24 | 2017-07-03 14:07:51 |   | <a href="#">R1-1711843</a> |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1812 | 2017-06-27 15:10:24 | 2017-06-28 13:47:52 |   |                            |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1813 | 2017-06-27 15:10:24 | 2017-06-28 13:47:52 |   | <a href="#">R1-1711810</a> |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1814 | 2017-06-27 15:10:24 | 2017-06-27 15:17:52 |   |                            |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1815 | 2017-06-27 15:10:24 | 2017-06-27 15:17:52 |   | <a href="#">R1-1711345</a> |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1816 | 2017-06-27 15:10:25 | 2017-06-27 15:17:52 |   | <a href="#">R1-1711346</a> |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1817 | 2017-06-27 15:10:25 | 2017-06-27 15:17:52 |   |                            |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1818 | 2017-06-27 15:10:25 | 2017-06-27 15:17:52 |   | <a href="#">R1-1710829</a> | <a href="#">R1-1711790</a> |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1819 | 2017-06-27 15:10:25 | 2017-06-29 12:37:51 |   |                            |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1820 | 2017-06-27 15:10:25 | 2017-06-29 12:37:51 |   |                            |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1821 | 2017-06-27 15:10:25 | 2017-06-29 12:37:51 |   | <a href="#">R1-1711920</a> |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1822 | 2017-06-27 15:10:25 | 2017-06-27 15:17:52 |   |                            |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1823 | 2017-06-27 15:10:25 | 2017-06-27 15:17:52 |   | <a href="#">R1-1711653</a> |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1824 | 2017-06-27 15:10:25 | 2017-06-28 13:47:52 |   | <a href="#">R1-1710001</a> |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1825 | 2017-06-27 15:10:26 |                     |   | <a href="#">R1-1710002</a> |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1826 | 2017-06-27 15:10:26 |                     |   | <a href="#">R1-1710472</a> |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1827 | 2017-06-27 15:10:26 | 2017-06-27 15:17:52 |   | <a href="#">R1-1711848</a> |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1828 | 2017-06-27 15:10:26 |                     |   | <a href="#">R1-1711562</a> |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1829 | 2017-06-27 15:10:27 | 2017-06-27 15:17:52 |   |                            |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1830 | 2017-06-27 15:10:27 | 2017-06-27 15:17:52 |   |                            |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1831 | 2017-06-27 15:10:27 | 2017-06-29 12:37:51 |   |                            |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1832 | 2017-06-27 15:10:27 | 2017-06-27 15:17:52 |   | <a href="#">R1-1711669</a> |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1833 | 2017-06-27 15:10:27 | 2017-07-01 00:57:51 |   |                            |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1834 | 2017-06-27 15:10:27 |                     |   |                            |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1835 | 2017-06-27 15:10:27 | 2017-06-28 13:47:52 |   |                            |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1836 | 2017-06-27 15:10:27 | 2017-07-01 00:57:51 |   |                            |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1837 | 2017-06-27 15:10:27 | 2017-07-01 00:57:51 |   |                            |                            |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1838 | 2017-06-27 15:10:27 | 2017-07-01 00:57:51 |   |                            |                            |   |   |                                |   |   |   |   |    |      |    |    |    |

|      | O                   | P                   | Q                          | R | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|----------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
|      | 2017-06-27 15:10:27 | 2017-07-01 00:57:51 |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1839 |                     |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1840 | 2017-06-27 15:10:27 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1841 | 2017-06-27 15:10:27 | 2017-07-01 00:57:51 |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1842 | 2017-06-27 15:10:27 | 2017-07-01 00:57:51 |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1843 | 2017-06-27 15:10:27 | 2017-06-29 12:37:51 |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1844 | 2017-06-27 15:10:27 | 2017-06-29 12:37:51 |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1845 | 2017-06-27 15:10:27 | 2017-06-28 13:47:52 |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1846 | 2017-06-27 15:10:27 | 2017-06-29 12:37:51 |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1847 | 2017-06-27 15:10:27 | 2017-07-01 00:57:51 |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1848 | 2017-06-27 15:10:28 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1849 | 2017-06-27 15:10:28 | 2017-06-27 15:17:52 | <a href="#">R1-1711436</a> |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1850 | 2017-06-27 15:10:28 | 2017-06-28 13:47:52 |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1851 | 2017-06-27 15:10:28 | 2017-07-01 00:57:52 |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1852 | 2017-06-27 15:10:28 | 2017-06-28 13:47:52 |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1853 | 2017-06-27 15:10:28 | 2017-07-01 00:57:52 |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1854 | 2017-06-27 15:10:28 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1855 | 2017-06-27 15:10:28 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1856 | 2017-06-27 15:10:28 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1857 | 2017-06-27 15:10:28 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1858 | 2017-06-27 15:10:28 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1859 | 2017-06-27 15:10:28 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1860 | 2017-06-27 15:10:28 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1861 | 2017-06-27 15:10:28 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1862 | 2017-06-27 15:10:28 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1863 | 2017-06-27 15:10:28 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1864 | 2017-06-27 15:10:28 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1865 | 2017-06-27 15:10:29 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1866 | 2017-06-27 15:10:29 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1867 | 2017-06-27 15:10:29 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1868 | 2017-06-27 15:10:29 |                     |                            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1869 | 2017-06-28 13:41:41 | 2017-07-01 00:57:52 | <a href="#">R1-1711587</a> |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1870 | 2017-06-28 13:41:42 | 2017-07-01 00:57:52 | <a href="#">R1-1711588</a> |   |   |   |   |   |   |   |   |   |    |    |    |    |    |
| 1871 | 2017-06-28 13:41:42 | 2017-07-01 00:57:52 | <a href="#">R1-1710849</a> |   |   |   |   |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q                          | R                          | S                      | T                      | U      | V                              | W    | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|----------------------------|----------------------------|------------------------|------------------------|--------|--------------------------------|------|---|---|---|----|----|----|----|----|
|      | 2017-06-28 13:41:42 | 2017-07-01 00:57:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1872 |                     |                     |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1873 | 2017-06-28 13:41:43 | 2017-06-28 13:47:52 | <a href="#">R1-1710493</a> |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1874 | 2017-06-28 13:41:43 | 2017-06-28 13:47:52 | <a href="#">R1-1710495</a> |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:43 | 2017-06-29 12:37:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1875 |                     |                     |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1876 | 2017-06-28 13:41:43 | 2017-06-28 13:47:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1877 | 2017-06-28 13:41:43 | 2017-06-28 13:47:52 | <a href="#">R1-1711837</a> |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1878 | 2017-06-28 13:41:43 |                     |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1879 | 2017-06-28 13:41:43 | 2017-06-28 13:47:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1880 | 2017-06-28 13:41:43 | 2017-07-01 00:57:52 | <a href="#">R1-1711623</a> |                            | <a href="#">Rel-14</a> | <a href="#">38.901</a> | 14.1.0 | <a href="#">NR_newRAT-Core</a> | 0016 |   | F |   |    |    |    |    |    |
| 1881 | 2017-06-28 13:41:45 | 2017-06-28 13:47:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1882 | 2017-06-28 13:41:45 | 2017-07-01 00:57:52 | <a href="#">R1-1711624</a> |                            | <a href="#">Rel-14</a> | <a href="#">38.901</a> | 14.1.0 | <a href="#">NR_newRAT-Core</a> | 0017 |   | F |   |    |    |    |    |    |
|      | 2017-06-28 13:41:46 | 2017-06-28 13:47:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1883 |                     |                     |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1884 | 2017-06-28 13:41:46 | 2017-06-28 13:47:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1885 | 2017-06-28 13:41:46 | 2017-06-28 13:47:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:46 | 2017-06-28 13:47:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1886 |                     |                     |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1887 | 2017-06-28 13:41:46 | 2017-06-29 12:37:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:46 | 2017-07-01 00:57:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1888 |                     |                     |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1889 | 2017-06-28 13:41:46 | 2017-06-29 12:37:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1890 | 2017-06-28 13:41:46 | 2017-06-28 13:47:52 | <a href="#">R1-1711795</a> |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1891 | 2017-06-28 13:41:46 | 2017-07-01 00:57:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1892 | 2017-06-28 13:41:46 | 2017-06-28 13:47:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1893 | 2017-06-28 13:41:46 | 2017-06-28 13:47:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1894 | 2017-06-28 13:41:46 | 2017-06-29 12:37:52 | <a href="#">R1-1711856</a> |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:47 | 2017-06-29 12:37:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1895 |                     |                     |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1896 | 2017-06-28 13:41:47 | 2017-06-28 13:47:52 | <a href="#">R1-1710345</a> | <a href="#">R1-1711937</a> | <a href="#">Rel-15</a> |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1897 | 2017-06-28 13:41:47 | 2017-06-28 13:47:52 | <a href="#">R1-1711578</a> | <a href="#">R1-1711938</a> | <a href="#">Rel-15</a> |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1898 | 2017-06-28 13:41:47 | 2017-07-01 00:57:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:47 | 2017-07-01 00:57:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1899 |                     |                     |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |
| 1900 | 2017-06-28 13:41:47 | 2017-06-29 12:37:52 |                            |                            |                        |                        |        |                                |      |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q                          | R                          | S                      | T | U | V                              | W | X | Y | Z | AA | AB   | AC | AD | AE |
|------|---------------------|---------------------|----------------------------|----------------------------|------------------------|---|---|--------------------------------|---|---|---|---|----|------|----|----|----|
|      | 2017-06-28 13:41:47 | 2017-06-28 13:47:52 |                            | <a href="#">R1-1711839</a> | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    | RAN4 |    |    |    |
| 1901 |                     |                     |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1902 | 2017-06-28 13:41:47 | 2017-06-28 13:47:52 |                            | <a href="#">R1-1711960</a> |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1903 | 2017-06-28 13:41:47 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1904 | 2017-06-28 13:41:47 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1905 | 2017-06-28 13:41:47 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1906 | 2017-06-28 13:41:47 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1907 | 2017-06-28 13:41:47 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1908 | 2017-06-28 13:41:47 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1909 | 2017-06-28 13:41:47 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1910 | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1911 | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 |                            | <a href="#">R1-1711855</a> |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1912 | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 | <a href="#">R1-1711696</a> |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1913 | 2017-06-28 13:41:48 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1914 | 2017-06-28 13:41:48 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1915 | 2017-06-28 13:41:48 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1916 | 2017-06-28 13:41:48 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1917 | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 | <a href="#">R1-1711768</a> |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1918 | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |
| 1919 | 2017-06-28 13:41:48 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |    |    |

|      | O                   | P                   | Q                          | R                          | S                      | T | U | V                              | W | X | Y | Z | AA | AB         | AC   | AD | AE |
|------|---------------------|---------------------|----------------------------|----------------------------|------------------------|---|---|--------------------------------|---|---|---|---|----|------------|------|----|----|
| 1920 | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 |                            | <a href="#">R1-1711924</a> |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1921 | 2017-06-28 13:41:48 | 2017-06-29 12:37:52 |                            | <a href="#">R1-1711945</a> |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1922 | 2017-06-28 13:41:48 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
|      | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1923 | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1924 | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1925 | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
|      | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1926 | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1927 | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1928 | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 |                            | <a href="#">R1-1711871</a> |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1929 | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 |                            | <a href="#">R1-1711857</a> |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
|      | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1930 | 2017-06-28 13:41:48 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1931 | 2017-06-28 13:41:48 | 2017-06-28 13:47:52 | <a href="#">R1-1711691</a> |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1932 | 2017-06-28 13:41:49 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1933 | 2017-06-28 13:41:49 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1934 | 2017-06-28 13:41:49 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
|      | 2017-06-28 13:41:49 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1935 | 2017-06-28 13:41:49 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
|      | 2017-06-28 13:41:49 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1936 | 2017-06-28 13:41:49 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
|      | 2017-06-28 13:41:49 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1937 | 2017-06-28 13:41:49 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1938 | 2017-06-28 13:41:49 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
|      | 2017-06-28 13:41:49 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1939 | 2017-06-28 13:41:49 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1940 | 2017-06-28 13:41:49 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1941 | 2017-06-28 13:41:49 | 2017-06-29 12:37:52 |                            | <a href="#">R1-1712000</a> | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    | RAN2       | RAN3 |    |    |
| 1942 | 2017-06-28 13:41:49 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1943 | 2017-06-28 13:41:49 | 2017-06-29 12:37:52 | <a href="#">R1-1710749</a> |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1944 | 2017-06-28 13:41:49 | 2017-07-03 14:07:52 |                            | <a href="#">R1-1711911</a> |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
|      | 2017-06-28 13:41:49 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1945 | 2017-06-28 13:41:49 | 2017-06-28 13:47:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1946 | 2017-06-28 13:41:49 | 2017-06-28 13:47:52 |                            |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    | RAN2, RAN4 |      |    |    |
| 1947 | 2017-06-28 13:41:49 | 2017-06-28 13:47:52 |                            |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    | RAN2, RAN4 |      |    |    |
| 1948 | 2017-06-28 13:41:50 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1949 | 2017-06-28 13:41:50 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |
| 1950 | 2017-06-28 13:41:50 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |            |      |    |    |

|      | O                   | P                   | Q                          | R                          | S                      | T | U                              | V | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|----------------------------|----------------------------|------------------------|---|--------------------------------|---|---|---|---|---|----|----|----|----|----|
| 1951 | 2017-06-28 13:41:50 | 2017-06-28 13:47:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:50 | 2017-06-29 12:37:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1952 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:50 | 2017-06-29 12:37:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1953 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:50 | 2017-06-29 12:37:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1954 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:50 | 2017-06-29 12:37:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1955 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:50 | 2017-06-28 13:47:52 |                            | <a href="#">R1-1711912</a> |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1956 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:50 | 2017-06-28 13:47:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1957 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:50 | 2017-07-01 00:57:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1958 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:50 | 2017-06-29 12:37:52 | <a href="#">R1-1711755</a> | <a href="#">R1-1711951</a> |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1959 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:50 | 2017-07-01 00:57:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1960 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:50 | 2017-06-28 13:47:52 | <a href="#">R1-1711779</a> |                            | <a href="#">Rel-15</a> |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |   |    |    |    |    |    |
| 1961 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:50 | 2017-07-01 00:57:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1962 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:50 | 2017-07-01 00:57:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1963 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:50 | 2017-06-29 12:37:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1964 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:50 | 2017-06-29 12:37:52 | <a href="#">R1-1711689</a> |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1965 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-28 13:41:50 | 2017-06-29 12:37:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1966 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-29 12:30:08 | 2017-07-01 00:57:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1967 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-29 12:30:09 | 2017-07-01 00:57:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1968 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-29 12:30:09 | 2017-07-01 00:57:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1969 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-29 12:30:09 | 2017-06-29 12:37:52 | <a href="#">R1-1711705</a> |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1970 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1971 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1972 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
|      | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |
| 1973 |                     |                     |                            |                            |                        |   |                                |   |   |   |   |   |    |    |    |    |    |

|      | O                   | P                   | Q                          | R                          | S                      | T | U | V                              | W | X | Y | Z | AA | AB               | AC | AD | AE |
|------|---------------------|---------------------|----------------------------|----------------------------|------------------------|---|---|--------------------------------|---|---|---|---|----|------------------|----|----|----|
| 1974 | 2017-06-29 12:30:10 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1975 | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1976 | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 |                            | <a href="#">R1-1711906</a> |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
|      | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 | <a href="#">R1-1711789</a> |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1977 |                     |                     |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
|      | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 | <a href="#">R1-1711772</a> | <a href="#">R1-1711957</a> |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1978 |                     |                     |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1979 | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 | <a href="#">R1-1711807</a> |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
|      | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1980 |                     |                     |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
|      | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1981 |                     |                     |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1982 | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1983 | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1984 | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1985 | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1986 | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
|      | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1987 |                     |                     |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1988 | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1989 | 2017-06-29 12:30:10 |                     |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1990 | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 |                            | <a href="#">R1-1711946</a> |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
|      | 2017-06-29 12:30:10 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1991 |                     |                     |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1992 | 2017-06-29 12:30:10 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
|      | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 | <a href="#">R1-1711806</a> | <a href="#">R1-1711889</a> |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1993 |                     |                     |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1994 | 2017-06-29 12:30:10 | 2017-06-29 12:37:52 |                            |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    | RAN4             |    |    |    |
|      | 2017-06-29 12:30:11 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1995 |                     |                     |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
|      | 2017-06-29 12:30:11 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1996 |                     |                     |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1997 | 2017-06-29 12:30:11 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
|      | 2017-06-29 12:30:11 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1998 |                     |                     |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 1999 | 2017-06-29 12:30:11 | 2017-06-29 12:37:52 |                            |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    | RAN2, RAN3, RAN4 |    |    |    |
|      | 2017-06-29 12:30:11 | 2017-06-29 12:37:52 |                            |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    | RAN2, RAN3, RAN4 |    |    |    |
| 2000 |                     |                     |                            |                            |                        |   |   |                                |   |   |   |   |    |                  |    |    |    |
| 2001 | 2017-06-29 12:30:11 | 2017-06-29 12:37:52 | <a href="#">R1-1711684</a> | <a href="#">R1-1711880</a> | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    | RAN2             |    |    |    |
| 2002 | 2017-06-29 12:30:11 | 2017-06-29 12:37:52 | <a href="#">R1-1711879</a> |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    | RAN2             |    |    |    |

|      | O                   | P                   | Q                          | R                          | S                      | T                      | U     | V                              | W | X | Y | Z | AA         | AB   | AC   | AD         | AE |
|------|---------------------|---------------------|----------------------------|----------------------------|------------------------|------------------------|-------|--------------------------------|---|---|---|---|------------|------|------|------------|----|
| 2003 | 2017-06-29 12:30:11 | 2017-07-01 00:57:52 | <a href="#">R1-1711674</a> |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2004 | 2017-06-29 12:30:11 |                     |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2005 | 2017-06-29 12:30:11 | 2017-06-29 12:37:52 |                            | <a href="#">R1-1711958</a> |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2006 | 2017-06-29 12:30:11 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2007 | 2017-06-29 12:30:11 | 2017-06-29 12:37:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2008 | 2017-06-29 12:30:11 | 2017-07-01 00:57:52 | <a href="#">R1-1711366</a> | <a href="#">R1-1712004</a> | <a href="#">Rel-15</a> | <a href="#">38.211</a> | 0.0.2 | <a href="#">NR_newRAT-Core</a> |   |   |   |   |            |      |      |            |    |
| 2009 | 2017-06-29 12:30:13 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
|      | 2017-06-29 12:30:13 | 2017-06-29 12:37:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2010 |                     |                     |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
|      | 2017-06-29 12:30:13 | 2017-06-29 12:37:52 | <a href="#">R1-1711871</a> |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2011 |                     |                     |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2012 | 2017-06-29 12:30:13 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2013 | 2017-06-29 12:30:13 | 2017-06-29 12:37:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2014 | 2017-06-29 12:30:13 | 2017-06-29 12:37:52 |                            |                            | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |   | R1-1709789 | RAN1 |      | R2-1707490 |    |
| 2015 | 2017-06-29 12:30:13 | 2017-06-29 12:37:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
|      | 2017-06-29 12:30:13 | 2017-06-29 12:37:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2016 |                     |                     |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
|      | 2017-06-29 12:30:13 | 2017-06-29 12:37:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2017 |                     |                     |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2018 | 2017-06-29 12:30:13 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2019 | 2017-06-29 12:30:13 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2020 | 2017-06-29 12:30:13 | 2017-06-29 12:37:52 |                            | <a href="#">R1-1711999</a> | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |   |            |      | RAN4 |            |    |
| 2021 | 2017-06-29 12:30:13 | 2017-06-29 12:37:52 | <a href="#">R1-1711678</a> |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2022 | 2017-06-29 12:30:13 | 2017-06-29 12:37:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2023 | 2017-06-29 12:30:13 | 2017-06-29 12:37:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2024 | 2017-06-29 12:30:13 | 2017-06-29 12:37:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2025 | 2017-06-29 12:30:13 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2026 | 2017-06-29 12:30:13 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2027 | 2017-06-29 12:30:13 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
|      | 2017-06-29 12:30:13 | 2017-06-29 12:37:52 | <a href="#">R1-1711854</a> |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2028 |                     |                     |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2029 | 2017-06-29 12:30:13 | 2017-07-01 00:57:52 | <a href="#">R1-1710500</a> | <a href="#">R1-1711966</a> | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |   | R2-170215  | RAN2 |      |            |    |
|      | 2017-06-29 12:30:14 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2030 |                     |                     |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2031 | 2017-06-29 12:30:14 | 2017-07-01 00:57:52 |                            | <a href="#">R1-1711975</a> | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |   |            |      | RAN4 |            |    |
| 2032 | 2017-06-29 12:30:14 | 2017-06-29 12:37:52 |                            | <a href="#">R1-1711931</a> | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |   |            |      | RAN2 |            |    |
|      | 2017-06-29 12:30:14 | 2017-06-29 12:37:52 | <a href="#">R1-1711823</a> |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |
| 2033 |                     |                     |                            |                            |                        |                        |       |                                |   |   |   |   |            |      |      |            |    |

|      | O                   | P                   | Q                          | R                          | S                      | T | U | V                              | W | X | Y | Z | AA | AB   | AC | AD         | AE |
|------|---------------------|---------------------|----------------------------|----------------------------|------------------------|---|---|--------------------------------|---|---|---|---|----|------|----|------------|----|
| 2034 | 2017-06-29 12:30:14 | 2017-06-29 12:37:52 | <a href="#">R1-1711834</a> |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2035 | 2017-06-29 12:30:14 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2036 | 2017-06-29 12:30:14 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2037 | 2017-06-29 12:30:14 | 2017-07-01 00:57:52 |                            | <a href="#">R1-1711986</a> |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2038 | 2017-06-29 12:30:14 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2039 | 2017-06-29 12:30:14 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2040 | 2017-06-29 12:30:14 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2041 | 2017-06-29 12:30:14 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2042 | 2017-06-29 12:30:14 | 2017-06-29 12:37:52 | <a href="#">R1-1711699</a> |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2043 | 2017-06-29 12:30:14 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2044 | 2017-06-29 12:30:14 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2045 | 2017-06-29 12:30:14 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2046 | 2017-06-29 12:30:14 | 2017-07-01 00:57:52 | <a href="#">R1-1711798</a> |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2047 | 2017-06-29 12:30:14 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2048 | 2017-06-29 12:30:14 | 2017-06-29 12:37:52 |                            | <a href="#">R1-1711932</a> |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2049 | 2017-06-29 12:30:14 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2050 | 2017-06-29 12:30:15 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2051 | 2017-06-29 12:30:15 | 2017-07-03 14:07:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2052 | 2017-06-29 12:30:15 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2053 | 2017-06-29 12:30:15 | 2017-07-01 00:57:52 | <a href="#">R1-1711910</a> | <a href="#">R1-1711972</a> | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    | RAN2 |    |            |    |
| 2054 | 2017-06-29 12:30:15 | 2017-07-01 00:57:52 | <a href="#">R1-1711926</a> |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2055 | 2017-06-29 12:30:15 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2056 | 2017-06-29 12:30:15 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2057 | 2017-06-29 12:30:15 | 2017-07-01 00:57:52 | <a href="#">R1-1711636</a> |                            | <a href="#">Rel-15</a> |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2058 | 2017-06-29 12:30:15 | 2017-06-29 12:37:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2059 | 2017-07-01 00:51:26 |                     | <a href="#">R1-1711774</a> |                            | <a href="#">Rel-15</a> |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2060 | 2017-07-01 00:51:28 |                     | <a href="#">R1-1711776</a> |                            | <a href="#">Rel-15</a> |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2061 | 2017-07-01 00:51:28 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |
| 2062 | 2017-06-29 00:00:00 | 2017-06-29 00:00:00 |                            |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    | RAN1 |    | R2-1707503 |    |
| 2063 | 2017-07-01 00:51:33 | 2017-07-01 00:57:52 | <a href="#">R1-1711688</a> |                            |                        |   |   |                                |   |   |   |   |    |      |    |            |    |

|      | O                   | P                   | Q                          | R                          | S                      | T | U | V                              | W | X | Y | Z | AA         | AB         | AC | AD         | AE |
|------|---------------------|---------------------|----------------------------|----------------------------|------------------------|---|---|--------------------------------|---|---|---|---|------------|------------|----|------------|----|
| 2064 | 2017-07-01 00:51:33 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2065 | 2017-07-01 00:51:33 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2066 | 2017-07-01 00:51:33 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2067 | 2017-07-01 00:51:33 | 2017-07-01 00:57:52 | <a href="#">R1-1711799</a> |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2068 | 2017-07-01 00:51:34 | 2017-07-01 00:57:52 | <a href="#">R1-1711868</a> |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2069 | 2017-07-01 00:51:34 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2070 | 2017-07-01 00:51:34 | 2017-07-01 00:57:52 |                            | <a href="#">R1-1711989</a> | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |            | RAN2, RAN4 |    |            |    |
| 2071 | 2017-07-01 00:51:35 | 2017-07-01 00:57:52 |                            |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   | R1-1709805 | RAN1       |    | R2-1707499 |    |
| 2072 | 2017-07-01 00:51:35 | 2017-07-01 00:57:52 |                            |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |            | RAN1       |    | R2-1707504 |    |
| 2073 | 2017-07-01 00:51:35 | 2017-07-01 00:57:52 | <a href="#">R1-1711837</a> |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2074 | 2017-07-01 00:51:35 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2075 | 2017-07-01 00:51:35 |                     |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2076 | 2017-07-01 00:51:35 |                     |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2077 | 2017-07-01 00:51:35 |                     |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2078 | 2017-07-01 00:51:35 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2079 | 2017-07-01 00:51:35 | 2017-07-01 00:57:52 | <a href="#">R1-1711856</a> |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2080 | 2017-07-01 00:51:35 | 2017-07-01 00:57:52 | <a href="#">R1-1711883</a> |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2081 | 2017-07-01 00:51:35 | 2017-07-01 00:57:52 |                            | <a href="#">R1-1711990</a> |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2082 | 2017-07-01 00:51:35 | 2017-07-01 00:57:52 | <a href="#">R1-1711780</a> |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2083 | 2017-07-01 00:51:35 |                     |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2084 | 2017-07-01 00:51:35 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2085 | 2017-07-01 00:51:35 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2086 | 2017-07-01 00:51:35 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2087 | 2017-07-01 00:51:35 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2088 | 2017-07-01 00:51:35 | 2017-07-01 00:57:52 | <a href="#">R1-1711907</a> |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   | R2-1706160 | RAN2       |    |            |    |
| 2089 | 2017-07-01 00:51:36 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2090 | 2017-07-01 00:51:36 | 2017-07-01 00:57:52 |                            | <a href="#">R1-1711987</a> | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   | R2-1707503 | RAN2       |    |            |    |
| 2091 | 2017-07-01 00:51:36 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2092 | 2017-07-01 00:51:36 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2093 | 2017-07-01 00:51:37 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2094 | 2017-07-01 00:51:37 | 2017-07-01 00:57:52 | <a href="#">R1-1711931</a> | <a href="#">R1-1711992</a> | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |            | RAN2       |    |            |    |
| 2095 | 2017-07-01 00:51:37 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2096 | 2017-07-01 00:51:37 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2097 | 2017-07-01 00:51:37 | 2017-07-01 00:57:52 | <a href="#">R1-1711909</a> |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   | R4-1704216 | RAN4       |    |            |    |
| 2098 | 2017-07-01 00:51:37 | 2017-07-01 00:57:52 |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |
| 2099 | 2017-07-01 00:51:37 |                     | <a href="#">R1-1711218</a> |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |            |            |    |            |    |
| 2100 | 2017-07-01 00:51:38 | 2017-07-01 00:57:52 | <a href="#">R1-1711213</a> |                            | <a href="#">Rel-15</a> |   |   | <a href="#">NR_newRAT-Core</a> |   |   |   |   |            |            |    |            |    |
| 2101 | 2017-07-01 00:51:38 |                     |                            |                            |                        |   |   |                                |   |   |   |   |            |            |    |            |    |

|      | O                   | P                   | Q                          | R                          | S                      | T                      | U     | V                              | W | X | Y | Z          | AA | AB         | AC         | AD | AE         |
|------|---------------------|---------------------|----------------------------|----------------------------|------------------------|------------------------|-------|--------------------------------|---|---|---|------------|----|------------|------------|----|------------|
| 2102 | 2017-07-01 00:51:38 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |            |    |            |            |    |            |
|      | 2017-07-01 00:51:38 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |            |    |            |            |    |            |
| 2103 |                     |                     |                            |                            |                        |                        |       |                                |   |   |   |            |    |            |            |    |            |
| 2104 | 2017-07-01 00:51:38 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |            |    |            |            |    |            |
|      | 2017-07-01 00:51:38 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |            |    |            |            |    |            |
| 2105 |                     |                     |                            |                            |                        |                        |       |                                |   |   |   |            |    |            |            |    |            |
| 2106 | 2017-07-01 00:51:38 | 2017-07-01 00:57:52 |                            | <a href="#">R1-1712001</a> | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    | RAN2       |            |    |            |
| 2107 | 2017-07-01 00:51:39 | 2017-07-01 00:57:52 |                            | <a href="#">R1-1712002</a> | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    | RAN4       |            |    |            |
| 2108 | 2017-07-01 00:51:39 | 2017-07-01 00:57:52 | <a href="#">R1-1711915</a> |                            |                        |                        |       |                                |   |   |   |            |    |            |            |    |            |
| 2109 | 2017-07-01 00:51:39 | 2017-07-01 00:57:52 | <a href="#">R1-1711968</a> |                            | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   | R2-1707503 |    | RAN2       |            |    |            |
| 2110 | 2017-07-01 00:51:39 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |            |    |            |            |    |            |
| 2111 | 2017-07-01 00:51:39 | 2017-07-01 00:57:52 | <a href="#">R1-1711948</a> | <a href="#">R1-1711998</a> | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    | RAN2, RAN4 |            |    |            |
| 2112 | 2017-07-01 00:51:39 | 2017-07-01 00:57:52 | <a href="#">R1-1711959</a> |                            |                        |                        |       |                                |   |   |   |            |    |            |            |    |            |
| 2113 | 2017-07-01 00:51:39 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |            |    |            |            |    |            |
| 2114 | 2017-07-01 00:51:39 | 2017-07-01 00:57:52 | <a href="#">R1-1711972</a> | <a href="#">R1-1712005</a> | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    | RAN2       |            |    |            |
| 2115 | 2017-07-01 00:51:39 | 2017-07-01 00:57:52 |                            | <a href="#">R1-1712006</a> |                        |                        |       |                                |   |   |   |            |    |            |            |    |            |
| 2116 | 2017-07-01 00:51:39 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |            |    |            |            |    |            |
| 2117 | 2017-07-01 00:51:39 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |            |    |            |            |    |            |
| 2118 | 2017-07-01 00:51:39 | 2017-07-01 00:57:52 |                            |                            |                        |                        |       |                                |   |   |   |            |    |            |            |    |            |
| 2119 | 2017-07-01 00:51:39 | 2017-07-01 00:57:52 | <a href="#">R1-1711657</a> |                            | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   | S3-171568  |    | SA3        | RAN2, RAN4 |    |            |
|      | 2017-07-01 00:51:40 | 2017-08-12 09:38:54 | <a href="#">R1-1711989</a> |                            | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    | RAN2, RAN4 |            |    |            |
| 2120 | 2017-07-01 00:51:40 | 2017-07-01 00:57:52 | <a href="#">R1-1711898</a> |                            | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    | RAN4       | RAN2       |    |            |
| 2121 | 2017-07-01 00:51:40 | 2017-07-01 00:57:52 | <a href="#">R1-1711820</a> |                            | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    | RAN2       | RAN3       |    |            |
| 2122 | 2017-07-01 00:51:40 | 2017-07-01 00:57:52 | <a href="#">R1-1711984</a> |                            | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    | RAN2       |            |    |            |
| 2123 | 2017-07-01 00:51:40 | 2017-07-01 00:57:52 | <a href="#">R1-1711985</a> |                            | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    | RAN4       |            |    | R4-1708275 |
| 2124 | 2017-07-01 00:51:41 | 2017-07-01 00:57:52 |                            | <a href="#">R1-1712009</a> | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   | R4-1704216 |    | RAN4       | RAN2       |    |            |
| 2125 | 2017-07-01 00:51:41 | 2017-07-01 17:35:54 | <a href="#">R1-1711886</a> | <a href="#">R1-1712011</a> | <a href="#">Rel-15</a> | <a href="#">38.211</a> | 0.1.0 | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    |            |            |    |            |
| 2126 | 2017-07-01 00:51:45 | 2017-07-01 00:57:52 | <a href="#">R1-1711992</a> |                            | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    | RAN2       |            |    |            |
| 2127 | 2017-07-01 00:51:45 | 2017-07-01 00:57:52 | <a href="#">R1-1711993</a> |                            |                        |                        |       |                                |   |   |   |            |    |            |            |    |            |
| 2128 | 2017-07-01 17:34:26 | 2017-08-12 09:30:36 | <a href="#">R1-1711683</a> |                            | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    | RAN2       |            |    |            |
| 2129 | 2017-08-12 09:33:29 | 2017-08-12 09:34:07 | <a href="#">R1-1711685</a> |                            | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    | RAN2       |            |    |            |
| 2130 | 2017-08-12 09:33:30 | 2017-08-12 09:34:07 | <a href="#">R1-1712003</a> |                            | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    | RAN4       | RAN2       |    |            |
| 2131 | 2017-08-12 09:33:30 | 2017-08-12 09:34:07 |                            |                            | <a href="#">Rel-15</a> |                        |       | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    | RAN4       |            |    |            |
| 2132 | 2017-07-17 00:00:00 | 2017-07-17 00:00:00 | <a href="#">R1-1712004</a> |                            | <a href="#">Rel-15</a> | <a href="#">38.211</a> | 0.1.1 | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    |            |            |    |            |
| 2133 | 2017-07-17 00:00:00 | 2017-07-17 00:00:00 |                            |                            | <a href="#">Rel-15</a> | <a href="#">38.201</a> | 0.0.1 | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    |            |            |    |            |
| 2134 | 2017-07-17 00:00:00 | 2017-07-17 00:00:00 |                            |                            | <a href="#">Rel-15</a> | <a href="#">38.202</a> | 0.0.1 | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    |            |            |    |            |
| 2135 | 2017-07-17 00:00:00 | 2017-07-17 00:00:00 |                            | <a href="#">R1-1714564</a> | <a href="#">Rel-15</a> | <a href="#">38.212</a> | 0.0.1 | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    |            |            |    |            |
| 2136 | 2017-07-17 00:00:00 | 2017-07-17 00:00:00 |                            |                            | <a href="#">Rel-15</a> | <a href="#">38.213</a> | 0.0.1 | <a href="#">NR_newRAT-Core</a> |   |   |   |            |    |            |            |    |            |
| 2137 |                     |                     |                            |                            |                        |                        |       |                                |   |   |   |            |    |            |            |    |            |

|      | O                   | P                   | Q | R | S                      | T                      | U     | V                              | W | X | Y | Z | AA | AB | AC | AD | AE |
|------|---------------------|---------------------|---|---|------------------------|------------------------|-------|--------------------------------|---|---|---|---|----|----|----|----|----|
| 2138 | 2017-07-17 00:00:00 | 2017-07-17 00:00:00 |   |   | <a href="#">Rel-15</a> | <a href="#">38.214</a> | 0.0.1 | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    |    |    |    |    |
| 2139 | 2017-07-17 00:00:00 | 2017-07-17 00:00:00 |   |   | <a href="#">Rel-15</a> | <a href="#">38.215</a> | 0.0.1 | <a href="#">NR_newRAT-Core</a> |   |   |   |   |    |    |    |    |    |