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Nanjing, China, May 23 – 27, 2016
Document for: Approval

**Report of 3GPP TSG RAN WG2 meeting #94
held in Nanjing, China
May 23 - 27, 2016**



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Organisation of the meeting

Meeting:	3GPP TSG RAN WG2 #94		
Meeting location:	Nanjing, China		
Duration:	Monday 23.05.2016 - Friday 27.05.2016		
Host:	Chinese Friends of 3GPP (CF3)		
TSG RAN WG2 Chairman:	Richard Burbidge (Intel Corporation)	email:	richard.c.burbidge@intel.com
TSG RAN WG2 Vice chairman:	Hu Nan (CMCC)	email:	hunan@chinamobile.com
TSG RAN WG2 Vice chairman:	Diana Pani (Interdigital Communications)	email:	diana.pani@interdigital.com
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Technical documents:	ftp://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_94/Docs		
Ad hocs:	Official parallel ad hocs held (see agenda item 2.1) on		
	LTE Breakout sessions:		
	Topics on Legacy LTE (D2D), feD2D, V2X, V2V, Latency red chaired by Diana Pani (Interdigital),		
	Topics on VoLTE, Light conn, Mobility enh chaired by Hu Nan (CMCC),		
	Topics on NB-IoT chaired by Johan Johansson (MediaTek)		
	UMTS sessions:		
	Topics on Legacy UMTS chaired by Diana Pani (Interdigital);		
	Topic on DTX/DRX enhancements and multi-carrier enhancements		
	chaired by Mark Curran (Ericsson);		
	Topics on RRC optimizations, HS+LTE SI, Indoor positioning and Rel-13 corrections		
	chaired by Xudong Yang (Huawei).		
next meetings:	TSG RAN #72	13.06. - 16.06.2016	Busan, South Korea
	TSG RAN WG2 #95	22.08. - 26.08.2016	Goteborg, Sweden
	TSG RAN #73	19.09. - 22.09.2016	New Orleans, USA
	TSG RAN WG2 #9bis	10.10. - 14.10.2016	Kaohsiung, Tiwan
	TSG RAN WG2 #96	14.11. - 18.11.2016	TBD, USA
	TSG RAN #73	05.12. - 08.12.2016	Vienna, Austria

Statistics/Executive Summary

TSG RAN WG2 #94 was held in Nanjing, China hosted by Chinese Friends of 3GPP. This RAN WG2 meeting had 3 parallel sessions: UMTS session (see AI 10-13; Mon - Wed) and LTE Breakout sessions (see AI 7.5, 8.2, 8.4, 8.8 and 8.11 in [R2-164420](#) (Annex G) and AI 8.3, 8.6, 8.9 and 8.12 in [R2-164421](#) (Annex H) and AI 7.14 in [R2-164422](#) (Annex I)). All other topics were treated in the parallel main session.

- 239 participants (registered before the meeting: 344 participants). (See attached participants list)
- 1283 Tdocs allocated with 1282 available contributions. (See attached Tdoc list)
- 43 incoming liaison statements (2 on UTRA, 40 on LTE; and 1 on joint aspects): 41 were noted and 2 were not treated as late incoming LSs. (See annex C)
- 32 outgoing liaison statements (2 on UTRA, 30 on LTE; and 0 on joint aspects), 4 of them approved by email. (See annex D)
- 40 email discussions scheduled after RAN2 #94 (plus email discussions of RAN2 WI/SI status reports and xx CR from RAN3 to RAN2 TS 36.300). (See Annex F)
- Among 430 change requests (CRs) in total: 200 agreed (17 for UTRA 25.xxx/34.xxx specs, 179 for LTE 36.xxx specs and xx to 37.xxx specs) and 4 technically endorsed CR for RAN #72. (See Annex E)
- Several corrections made in REL-13 and earlier releases.
- REL-13 WI: Narrowband IOT (AI 7.14):
RAN2 concluded the work and perform rigorous review of all CRs including ASN.1.
- LTE REL-14 WI: Enhanced LAA for LTE (AI 8.1):
RAN2 made progresses on random access, Async UL HARQ supported for LAA SCells, Routing restrictions. Running CRs created for stage 2, MAC and RRC specifications.

- LTE REL-14 WI: Support for V2V services based on LTE sidelink (AI 8.2):
RAN2 had continued discussions on topics of SPS Enhancements, geographical location reporting, Mobility Enhancements to reduce PC5 interruption times, Uu/PC5 Path Switch and QoS aspects.
- LTE REL-14 SI: Study on enhancement of VoLTE (AI: 8.3):
RAN2 had continued discussions on topics of codec mode/rate selection/adaptation and VoLTE/video quality related enhancements.
- LTE REL-14 SI: Further Enhancements to LTE Device to Device, UE to Network Relays for IoT and Wearables (AI 8.4):
RAN2 agreed to study the following scenarios based on input from SA1: Interface between relay and remote UE can be non-3GPP or 3GPP, Relay UE always has a Uu connection and Out-of-coverage and in-coverage Remote UEs are considered. Primary objective to address power efficiency aspects of wearable devices. RAN2 kindly asks RAN take into account these agreements/discussions in the revised SI provided in LS to RAN ([R2-164543](#)).
- LTE REL-14 WI: Enhanced LTE-WLAN Aggregation (LWA) (AI 8.5):
RAN2 had continued discussions on topics of uplink LWA, Mobility enhancements and Support for 802.11ax, 802.11ad, and 802.11ay.
- LTE REL-14 WI: Further mobility enhancements in LTE (AI 8.6):
RAN2 discussed on RACH-less handover and Make before break handover then progress communicated to RAN1/RAN4.
- LTE REL-14 WI: Further Indoor Positioning enhancements for UTRA and LTE (AI 8.7):
Running CRs created for stage 2 (36.305) and stage 3 (36.355) adding assistance data for MBS and barometric.
- LTE REL-14 WI: L2 latency reduction techniques for LTE (AI 8.8):
RAN2 agreed to introduce explicit MAC level feedback for SPS activation/deactivation.
- LTE REL-14 WI: Signalling reduction to enable light connection for LTE (AI 8.9):
Agreements made for a lightly connected UE: S1 connection of a light connected UE is kept and active, in order to hide the mobility and state transitions from CN. From RAN2 perspective, RAN initiated paging is feasible and beneficial for signalling and latency reduction. Also, conclusion communicated to RAN3.
- LTE REL-14 SI: Study on Latency reduction techniques for LTE (AI 8.10):
Agreed on TR 36.881 v0.8.0 for Study on Latency reduction techniques for LTE ([R2-164389](#)) to submit as v1.0.0 ([RP-161024](#)) for one step RAN approval. RAN1 conclusion/text proposals ([R2-164338](#)) captured. With this SI completed.
- LTE REL-14 SI: Feasibility Study on LTE-based V2X Services (AI 8.11):
RAN2 made progresses on UL Enhancements and DL Enhancements. SI completed from RAN2 point of view.
- LTE REL-14 WI: eMBMS enhancements for LTE (AI 8.12):
RAN2 agreed that legacy UEs are not supported on the new eMBMS carrier (more than 6 subframes configured for MBSFN).
- SI: Study on New Radio Access Technology (AI 9):
TR to capture RAN2 agreements started. Deployments scenarios to be considered in the study agreed. Joint session issues with SA2 and RAN3 at RAN2#94: 1) SA2 is not studying connection of an NR eNB to EPC (not in scope of Next Gen Core SI). RAN2 (and RAN3) is considering connection of NR eNB to EPC (at least via S1u for LTE-NR aggregation via 1A-like architecture). 2) SA2 and RAN3 are considering connection of an evolved LTE (eLTE) eNB to the Next Gen Core. RAN2 has so far not considered this in its study. Clarification from RAN required as to whether this is within scope of the NR SI.
- UTRA REL-14 WI: RRC optimization for UMTS (AI 13.1):
Good stage 3 progress and initial discussions on draft CRs.
- UTRA REL-14 WI: DTX/DRX enhancements in CELL_FACH (AI 13.2):
Some initial discussions on DTX/DRX impacts. Progress depending on RAN1 input.
- UTRA REL-14 SI: Study on Multi-Carrier Enhancements for UMTS (AI 13.3):
New DC-HSUPA scenarios considered (e.g. 2ms + 10ms and 10ms + 10ms). Solutions on enhanced TTI switching, RRC configuration/re-configuration, CFN handling agreed and captured in final agreed TP ([R2-164350](#)). SI Complete from RAN2 point of view.
- UTRA REL-14 SI: Study on HSPA and LTE Joint Operation (AI 13.5):
Initial working assumption that single Tx/Dual Rx and dual RRC will be used as a baseline. Target solution to have minimal or no impacts to the network.

1 Opening of the meeting (9 AM)

TSG RAN WG2 chairman Richard Burbidge (Intel Corporation) opened the meeting RAN WG2 #94 on Monday morning 23.05.2016 at 09:00 o'clock.

On behalf of the host, the Chinese Friends of 3GPP (CF3), Hu Nan (CMCC) welcomed the delegates to Nanjing, China and explained organisational issues.

Following RAN WG2 meeting rooms in the Shangri-La Hotel Nanjing:

Main RAN2 room:	Grand Ballroom (3 rd Floor),	planned for 300 participants, Mon-Fri
RAN2 LTE Breakout sessions room:	Yuhua room (3 rd Floor),	planned for 100 participants, Mon - Thu
RAN2 LTE Breakout NB-IoT sessions:	Qingliang room (3 rd Floor),	planned for 100 participants, Mon - Fri
RAN2 UMTS session room:	Qixia room (3 rd Floor),	planned for 35 participants, Mon - Thu

1 Opening of the meeting (9 AM)

1.1 Call for IPR

Richard Burbidge (TSG RAN WG2 chairman) made the following call for IPRs and reminded the delegates of their obligations with respect to IPRs:

The attention of the delegates of this Working Group is 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 delegates were asked to take note that they were 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 Statement and the Licensing declaration forms (<http://webapp.etsi.org/Ipr/>).

NOTE: IPRs may be declared to the Director-General or Chairman of the SDO, but not to the RAN WG2 Chairman.

1.2 Network usage conditions

The PCG has laid down the following network usage conditions that were shortly presented by the RAN2 chairman:

1. 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.

2. 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)**

1.3 Other

The PCG has laid down the following conditions that were shortly presented by the RAN2 chairman:

In accordance with the Working Procedures it is reaffirmed that:

- (i) compliance with all applicable antitrust and competition laws is required;
- (ii) timely submissions of work items in advance of TSG or WG meetings are important to allow for full and fair consideration of such matters; and
- (iii) the chairman will conduct the meeting with strict impartiality and in the interests of 3GPP

Note on (i): In case of question please contact your legal counsel.

Note on (ii): WIDs don't need to be submitted to the RAN2 meeting and will typically not be discussed here either.

2 General

THANK YOU to companies that request TDoc numbers and submit contributions early before deadline (really appreciated). Will start to refrain from treating late documents.

2.1 Approval of the agenda

[R2-163300](#) Proposed agenda for RAN2 #94 in Nanjing, China, 23.05.-27.05.2016 Intel (RAN2 Chairman) agenda
=> Approved

Please note that the following schedule is only indicative - topics may move forward or backward. An updated schedule may be provided closer to the meeting.

New RAT will not start before Wednesday morning and may have comebacks on Friday.

<i>Schedule</i>	Main room Grand Ballroom 1 (3F)	LTE Breakout room Yuhua Room (3F),	UMTS room Qixia Room(3F)	NB-IoT room Qingliang Room(3F)
Monday				
09:00 ->	[1], [2], [3], [4], [5]			
11:00 ->	[7.16.1] TEI13 (CIoT) [6] [7] Legacy LTE (starting with eDRX and eMTC corrections to minimise overlap with NB-IOT)		[10][11] UMTS Rel-8/9/10/11/12	
14:30 ->	[7] Legacy LTE	[7.5] D2D Rel-13 [1]	[12] Rel-13 corrections [13.2] DTX/DRX enhancements [13.3] Multi-carrier	[7.14.3] User Plane
17:00 ->		[8.2] V2V [1]		[7.14.1] Incoming LSs [7.14.3] User Plane
Tuesday				
08:30 ->	[7] Legacy LTE	[8.8] Latency red [1]	[13.4] Indoor positioning [13.5] HS + LTE	[7.14.2] RRC, SI
11:00 ->		[8.4] feD2D [1]		
14:30 ->	[8.1] eLAA [2]	[8.11] V2X [2]	[13.1] RRC optimizations	[7.14.1] UE Capabilities [7.14.2] Idle mode
17:00 ->	[8.5] eLWA			
Wednesday				
08:30 ->	[8.5] eLWA [1.5] (cont.)	[8.3] VoLTE [1]	[13.6] TEI14 [comebacks] [13.3] MC comeback (RAN1 part)	[7.14.3] User Plane, pass 2 [7.14.2] RRC, pass 2
11:00 ->	[8.7] IP [0.25] [7.16.2] TEI13 (cont.)	[8.9] Light conn [0.5] [8.12] eMBMS [0.5]		
14:30 ->	[9] New RAT [2] See Note 1	[8.6] Mobility enh [1]		[7.14.2] RRC, pass 2
17:00 ->				
Thursday				
08:30 ->	[9] New RAT [4]		Comebacks if needed	[7.14.1] Stage-2 Comebacks Remaining things.
11:00 ->				
14:30 ->				
17:00 ->		[7.5] D2D Rel-13 [0.5] [8.2] V2V cont. [0.5]		
Friday				
08:30 -> until 17:00	Left-overs, Comebacks including Joint LTE/UMTS			Potential NB-IoT comebacks

Note 1: New RAT discussion on Wed in the main room finished around 18:00 for a joint session on NR and Next Gen Core with SA2 and RAN3 which started at 18:30 in the SA2 meeting room in the InterContinental Nanjing

Chairing of LTE Sessions:

Legacy LTE (D2D), feD2D, V2X, V2V, Latency red will be chaired by Vice Chair Diana Pani (Interdigital)

VoLTE, Light conn, Mobility enh will be chaired by Vice Chair Nan Hu (CMCC)

NB-IOT will be chaired by Johan Johansson (MediaTek)

Chairing of UMTS Sessions:

Diana Pani (Interdigital): Legacy UMTS

Mark Curran (Ericsson): DTX/DRX enhancements and multi-carrier enhancements

Xudong Yang (Huawei): RRC optimizations, HS+LTE SI, Indoor positioning and Rel-13 corrections

Breaks

Morning coffee: 10:30 to 11:00

Lunch: 13:00 to 14:30

Afternoon coffee: 16:30 to 17:00

2.2 Approval of the report of the previous meeting

RAN2#93bis in Dubrovnik:

[R2-163301](#) Draft Report v1.0 for RAN2 #93bis in Dubrovnik, Croatia, 11.04 - 15.04.2016 ETSI MCC report
=> Come back to approve Friday

[R2-163341](#) Draft Report v2.0 for RAN2 #93bis in Dubrovnik, Croatia, 11.04 - 15.04.2016 ETSI MCC report
=> Approved in [R2-163343](#)

NB-IoT AH#2 in Sophia-Antipolis:

[R2-163302](#) Draft Report v1.0 of 3GPP TSG-RAN WG2 NB-IOT Ad-hoc Meeting#2 in Sophia-Antipolis, France, 03.05 - 04.05.2016 ETSI MCC report late
=> Approved in [R2-163342](#)

2.3 Reporting from other meetings

2.4 Others

Rapporteur changes

Spec	former rapporteur	proposed new rapporteur
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36.361	Satish K (Nokia)	Tero Henttonen (Nokia)
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36.321	Magnus Stattin (Ericsson)	Mats Folke (Ericsson).
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=> Changes approved

Isolated impact analysis

Note that an isolated impact analysis is required for Rel-8 to Rel-13 CRs from Q2 2016 onwards.

Only corrections where there is a proven problem are allowed for frozen releases (Rel-8 to Rel-13).

RAN2 WG compendium

Latest version can always be found at ftp://ftp.3gpp.org/tsg_ran/WG2_RL2/Org/RAN2_Compendium/

Drafting rules

Note that specification drafting rules in TR 21.801 must be followed when drafting a CR and draft TS/TR.

Latest version can always be found at http://www.3gpp.org/ftp/specs/archive/21_series/21.801/

Time Budget

The time budget endorsed at RAN-71 is available in [RP-160617](#)

3 Incoming liaisons

Note: LSs are moved to the respective agenda items if any.

3.1 Joint UMTS/LTE relevance

[R2-163311](#) LS on error scenarios during CSFB (R3-161028; contact: Samsung) RAN3 LS in to: RAN2 Rel-13 HetNet_eMOB_LTE-Core, TEI12
=> Response LS in [R2-164423](#). Content to be concluded after discussion of tdocs
=> Noted

Reply LS:

[R2-164423](#) Reply LS to RAN3 on error scenarios during CSFB (to: RAN3; cc: -; contact: Samsung) Samsung LS out Rel-13 HetNet_eMOB_LTE-Core, TEI12
=> Approved in [R2-164480](#)

3.2 LTE relevance

[R2-163305](#) LS on UE/band specific support of UL 256QAM ([R1-163915](#); contact: Nokia) RAN1 LS in cc: RAN2 Rel-14 LTE_UL_CAP_enh-Core
=> Noted

[R2-163310](#) LS on UE behaviour when receiving not supported target frequencies in configuration (R3-161003; contact: Nokia Networks) RAN3 LS in to: RAN2 Rel-13 TEI13

- ZTE think the behaviour is specified and the UE will ignore the whole list.
- Huawei think the network should respect UE capability. UE behaviour could be up to implementation.
- Intel think the UE ignore the not supported frequencies. There is a similar situation in the SIB. Intel think this is not an ASN.1 error and so ASN.1 error handling is not the case here.
- Nokia understand we have a general guideline that E-UTRAN should support UE capabilities when eNB configures the UE. The RAN3 case is a not typical case that the eNB does not have the capabilities. Our spec doesn't define this behaviour.
- Qualcomm do not have the same understanding as Intel and think UE could ignore the whole list. If we want to use this feature we must specify it.

=> Respond to RAN3 that there is no well defined UE behaviour.
=> Can consider in future whether we want to specify this case.
=> Response LS in [R2-164424](#) (Nokia)

[R2-164424](#) Reply LS on UE behaviour when receiving not supported target frequencies in configuration Nokia
=> Approved

[R2-163314](#) Reply LS to C1-161551 on MBSFN Area Id (S2-162244; contact: Nokia Networks) SA2 LS in cc: RAN2 Rel-13 MCPTT
=> Noted

[R2-163326](#) Reply LS to [R2-161945](#) on extension of search for higher priority PLMN cycle beyond 8 hours (S1-161585; contact: Deutsche Telekom) SA1 LS in to: RAN2 Rel-13 TEI13
late
=> Noted

[R2-164336](#) LS on Priority for V2V ([R1-165814](#); contact: Qualcomm) RAN1 LS in Rel-14 LTE_SL_V2V late
Not treated

[R2-164385](#) LS on Core Network overload control and delay tolerant access via NB-IOT SA2 LS in
=> Noted
=> Can be discussed next meeting whether it will be a late R13 correction or R14.

[R2-164386](#) Reply LS on NB-IOT NAS retransmission timers SA2 LS in
=> Noted

☒ **[94#23][LTE/NB-IOT] Response to SA2 on NAS timers (Vodafone)**
Provide response to the action in the incoming LS

Intended outcome: Approved LS

Deadline: Thursday 09/06/2016

[R2-163324](#) Reply LS to S1-154509 on V2X message characteristics (S3-160777; contact: TNO) SA3 LS
in to: RAN2 Rel-14 FS_V2XLTE late
Not treated

In addition, the following LSin:

- [R2-163303](#), [R2-163304](#), [R2-163319](#), [R2-163321](#) treated under AI 8.2
- [R2-163306](#), [R2-163317](#) treated under AI 7.16.1
- [R2-163308](#) treated under AI 7.1
- [R2-163307](#), [R2-163309](#), [R2-163313](#), [R2-163338](#) treated under AI 7.4
- [R2-163312](#), [R2-163322](#), [R2-163330](#) treated under AI 7.6
- [R2-163315](#) treated under AI 8.11
- [R2-163318](#) treated under AI 7.5
- [R2-163323](#), [R2-163330](#) treated under AI 8.5
- [R2-163320](#), [R2-163328](#), [R2-163333](#), [R2-163334](#), [R2-163335](#), [R2-163336](#), [R2-163337](#), [R2-163339](#), [R2-163340](#), [R2-164335](#) treated under AI 7.14.1
- [R2-163325](#) treated under AI 7.13
- [R2-163327](#) treated under AI 8.4
- [R2-163329](#) treated under AI 7.6 and 7.13
- [R2-164338](#) treated under AI 8.10
- [R2-163331](#) treated under AI 9.1

3.3 UMTS relevance

[R2-163332](#) LS on RAN1 multi-carrier enhancements for UMTS agreements ([R1-165511](#); contact: Huawei)
RAN1 LS in to: RAN2 Rel-14 FS_UTRA_MCe late
Not treated

The following LSin:

- [R2-163316](#) will be treated under AI 10.

4 Joint UMTS/LTE: Rel-13 and earlier releases

Contributions submitted under this agenda item will be handled in a joint UMTS/LTE session.

4.1 Joint UMTS/LTE: Rel-12 and earlier releases

(SIMTC-RAN_OC-Core, leading WG: RAN2, REL-11, started: Sep.11, closed: Sep. 12, WID: [RP-111373](#))

(eMDT_UMTSLTE-Core, leading WG: RAN2, REL-11, started: Sep.11, closed: Dec.12, WID: [RP-121204](#))

(SONenh2_LTE_UTRA-Core, leading WG: RAN3, REL-11, started: Sep.11, closed: Dec.12, WID: [RP-120314](#))

(rSRVCC-GERAN, leading WG: GERAN2, REL-11, started: Sep.11, closed: Nov.13, WID: GP-111290)

(EHNB_enh3-Core, leading WG: RAN3, REL-12, started: Sep.12, closed: Dec 13, WID: [RP-130741](#))

(MTCe_RAN-Core, leading WG: RAN2, REL-12, started: Dec.13, closed: Sep.14, WID: [RP-132053](#))

(UTRA_LTE_WLAN_interw-Core, leading WG: RAN2, REL-12, started: Dec.13, closed: Sep.14, WID: [RP-132101](#))

(LTE_UTRA_IncMon-Core, leading: RAN4, REL-12, started: Dec.13, closed: Dec. 14, WID: [RP-132061](#))

Including corrections to joint LTE+UMTS TEI functionality in Rel-8 to 12. E.g. “Multiple Frequency Bands per Cell”,
...

4.1.0 In Principle agreed CRs

- [R2-163345](#) Clarification for UE behaviour upon reception of requested E-UTRA frequency band list
Nokia, Qualcomm Incorp., Alcatel-Lucent Shanghai Bell CR 25.331 10.19.0 5853 -
F Rel-10 TEI10
NOTE: Ericsson co-signed as well.
=> Agreed
- [R2-163346](#) Clarification for UE behaviour upon reception of requested E-UTRA frequency band list
Nokia, Qualcomm Incorp., Alcatel-Lucent Shanghai Bell CR 25.331 11.16.0 5854 -
A Rel-11 TEI11
NOTE: Wrong WI code used and it should be TEI10 as same as cat.F CR's category.
=> Revised in [R2-164280](#)
- [R2-164280](#) Clarification for UE behaviour upon reception of requested E-UTRA frequency band list
Nokia, Qualcomm Incorp., Alcatel-Lucent Shanghai Bell, Ericsson CR 25.331 11.16.0
5854 1 A Rel-11 TEI10
=> Agreed
- [R2-163347](#) Clarification for UE behaviour upon reception of requested E-UTRA frequency band list
Nokia, Qualcomm Incorp., Alcatel-Lucent Shanghai Bell CR 25.331 12.9.05855 - A
Rel-12 TEI12
NOTE: Wrong WI code used and it should be TEI10 as same as cat.F CR's category.
=> Revised in [R2-164281](#)
- [R2-164281](#) Clarification for UE behaviour upon reception of requested E-UTRA frequency band list
Nokia, Qualcomm Incorp., Alcatel-Lucent Shanghai Bell, Ericsson CR 25.331 12.9.0
5855 1 A Rel-12 TEI10
=> Agreed
- [R2-163348](#) Clarification for UE behaviour upon reception of requested E-UTRA frequency band list
Nokia, Qualcomm Incorp., Alcatel-Lucent Shanghai Bell CR 25.331 13.2.05856 - A
Rel-13 TEI13
NOTE: Wrong WI code used and it should be TEI10 as same as cat.F CR's category.
Moved from 4.2 to 4.1.0
=> Revised in [R2-164282](#)
- [R2-164282](#) Clarification for UE behaviour upon reception of requested E-UTRA frequency band list
Nokia, Qualcomm Incorp., Alcatel-Lucent Shanghai Bell, Ericsson CR 25.331 13.2.0
5856 1 A Rel-13 TEI10
=> Agreed

4.1.1 Others

No contributions received.

4.2 Joint UMTS/LTE: Rel-13 WIs

Including correction related to the following WIs:

(ACDC-RAN-Core; leading WG: RAN2; REL-13; started: Mar. 15; closed: Dec. 15; [RP-150662](#))

- [R2-163846](#) Correction to T302 and T308 conflict issue Spreadtrum Communications draftCR 36.331
13.1.0- - F Rel-13 ACDC-RAN-Core
NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number
=> Revised in [R2-164292](#)
- [R2-164292](#) Correction to T302 and T308 conflict issue Spreadtrum Communications CR 36.331
13.1.02233 - F Rel-13 ACDC-RAN-Core
- Intel think there is no conflict. T308 is started when ACDC is barred and the upper layers are informed of the barring. There can be no case that T302 is also running a connection establishment cannot be attempted. Spreadtrum think that the connection establishment can be started for other reasons (not related to the barred application).
 - Nokia think the case of T308 expiry when T302 is running is covered need to check whether this is correct.
 - Huawei think we had an earlier agreement that NAS is not informed about barring status.
- => Offline discussion
- Update from offline. Two scenarios where the situation must be handled by RRC. RRC should provide the alleviation to the NAS after the timer expiry.

=> Agreed

Withdrawn:

R2-163411 Correction to T302 and T308 conflict issue Spreadtrum Communications CR 36.331
13.1.02119 - F Rel-13 ACDC-RAN-Core

5 Joint UMTS/LTE: Rel-14

UTRA_LTE_iPos_enh2-Core will be treated under separate UMTS and LTE agenda items in 8.7 and 13.4 respectively.

FS_UTRA_LTE_JOP will be treated under a UMTS agenda item in 13.5 only.

5.1 Other Joint UMTS/LTE Rel-14 WIs

No contributions received.

5.2 Joint UMTS/LTE TEI14 enhancements

Small Technical Enhancements affecting both LTE and UMTS Rel-14 that do not belong to any Rel-14 WI.

Note: A TEI enhancement proposal should be treated for only one meeting cycle and involve only one WG. Otherwise, a WI should be proposed at RAN plenary!

No time allocation for Joint UMTS/LTE TEI14 at this meeting.

No contributions received.

6 LTE: Rel-12 and earlier releases

(LTE-L23, leading WG: RAN2, REL-8, started: Sep. 06, closed: Dec. 08, WID: [RP-080747](#))

(LTE_CA-Core, leading WG: RAN1, REL-10, started: Dec. 09, closed: June 11, WID: [RP-100661](#))

(LTE_UL_MIMO-Core, leading WG: RAN1, REL-10, started: Dec.09, closed: June 11, WID: [RP-100959](#))

(LTE_eDL_MIMO-Core, leading WG: RAN1, REL-10, started: Dec.09, closed: March 11, WID: [RP-100196](#))

(LTE_Relay-Core, leading WG: RAN1, REL-10, started: Dec. 09, closed: June 11, WID: [RP-110911](#))

(MBMS_LTE_enh-Core, leading WG: RAN2, REL-10, started: June 10, closed: March 11, WID: [RP-101244](#))

(MDT_UMTSLTE-Core, leading WG: RAN2, REL-10, started: Dec. 09, closed: June 11, WID: [RP-100360](#))

(eICIC_LTE-Core, leading WG: RAN1, REL-10, started: March 10, closed: June 11, WID: [RP-100383](#))

(SONenh_LTE-Core, leading WG: RAN3, REL-10, started: March 10, closed: June 11, WID: [RP-101004](#))

(LTE_CA_enh-Core, leading WG: RAN1, REL-11, started: March 11, closed: Mar.13, WID: [RP-121999](#))

(MBMS_LTE_SC-Core, leading WG: RAN2, REL-11, started: June 10, closed: Sep.12, WID: [RP-120258](#))

(LTE_eDDA-Core, leading WG: RAN2, REL-11, started: March 11, closed: Dec.12, WID: [RP-120256](#))

(LCS_LTE-NBPS-Core, leading WG: RAN2, REL-11, started: March 09, closed: June. 13, WID: [RP-131259](#))

(eICIC_enh_LTE-Core, leading WG: RAN1, REL-11, started: March 11, closed: Dec. 12, WID: [RP-120860](#))

(SPIA_IDC_LTE-Core, leading WG: RAN2, REL-11, started: Sep.11, closed: Dec. 12, WID: [RP-111355](#))

(COMP_LTE_DL-Core, leading WG: RAN1, REL-11, started: Sep.11, closed: Dec.12, WID: [RP-111365](#))

(COMP_LTE_UL-Core, leading WG: RAN1, REL-11, started: Sep.11, closed: Dec.12, WID: [RP-111365](#))

(LTE_TDD_add_subframe, leading WG: RAN1, REL-11, started: March 12; closed: Sep. 12, WID: [RP-120384](#))
 (FS_HetNet_eMOB_LTE, leading WG: RAN2, REL-11, started: March 11, closed: Sep. 12, WID: [RP-110709](#))
 (LTE_enh_dl_ctrl-Core, leading WG: RAN1, REL-11, started: Dec. 11, closed: Dec. 12, WID: [RP-120871](#))
 (LTE_SC_enh_dualC-Core, leading WG: RAN2, REL-12, started: Dec.13, closed: Dec.14, WID: [RP-141797](#))
 (LTE_SC_enh_L1-Core, leading WG: RAN1, REL-12, started: Dec.13, closed: Dec.14, WID: [RP-132073](#))
 (LTE_D2D_Prox-Core, leading WG: RAN1, REL-12, started: Mar.14, closed: Mar.15, WID: [RP-142043](#))
 (MBMS_LTE_OS-Core, leading WG: RAN2, REL-12, started: Sep.13, closed: Dec.14, WID: [RP-140282](#))
 (LTE_NAICS-Core, leading WG: RAN1, Rel-12, started: Mar 14, closed: Dec.14, WID: [RP-140519](#))
 (LC_MTC_LTE-Core, leading WG: RAN1, REL-12, started: Jun 13, closed: Dec 14, WID: [RP-140522](#))
 (GCSE_LTE-MBMS_CM-Core, leading WG: RAN3, started: Sep. 14, closed: Mar. 2015, WID: [RP-141035](#))
 (LTE_CA_TDD_FDD-Core, leading WG: RAN1, REL-12, started: Jun 13, closed: Jun 14, WID: [RP-140465](#))
 (LCS_BDS-LTE-Core, leading WG: RAN2, REL-12, started: Mar 13, closed: Dec 13, WID: [RP-130416](#))
 (LTE_eDL_MIMO_enh-Core, leading WG: RAN1, REL-12, started: Sep 12, closed: June 14, WID: [RP-121416](#))
 (HetNet_eMOB_LTE-Core, leading WG: RAN2, REL-12, started: Dec.12, , closed: Sep 14, WID: [RP-122007](#))
 (Cov_Enh_LTE-Core, leading WG: RAN1, REL-12, started: Jun.13, closed: Jun.14, WID: [RP-130833](#))
 (LTE_TDD_eIMTA-Core, leading WG: RAN1, REL-12, started: Dec 12, closed: Jun.14, WID: [RP-121772](#))
 (SCM_LTE-Core, leading WG: RAN2, REL-12, started: Mar.14, closed: Sep.14, WID: [RP-140434](#))

6.0 In Principle agreed CRs

[R2-163388](#) Clarification on maximum number of DL-SCH transport block bits for DL Category 15 and 16
 NTT DOCOMO, INC., Samsung, Nokia, Alcatel-Lucent Shanghai Bell, Fujitsu, NEC CR
 36.306 12.8.01316 - F Rel-12 LTE_CA-Core, TEI12, LTE_SC_enh_L1-Core

[R2-163389](#) Clarification on maximum number of DL-SCH transport block bits for DL Category 15 and 16
 NTT DOCOMO, INC., Samsung, Nokia, Alcatel-Lucent Shanghai Bell, Fujitsu, NEC CR
 36.306 13.1.01317 - A Rel-13 LTE_CA-Core, TEI12, LTE_SC_enh_L1-Core

[R2-163457](#) Corrections on the data modulation of Downlink-Shared Channel NTT DOCOMO INC. CR
 36.302 12.6.00069 - F Rel-12 LTE_SC_enh_L1-Core

[R2-163458](#) Corrections on the data modulation of Downlink-Shared Channel NTT DOCOMO INC. CR
 36.302 13.1.00070 - A Rel-13 LTE_SC_enh_L1-Core

[R2-163480](#) drb-identity change in full configuration NTT DOCOMO INC. CR 36.331 12.9.02124 -
 F Rel-12 LTE-L23, TEI12

[R2-163481](#) drb-identity change in full configuration NTT DOCOMO INC. CR 36.331 13.1.02125 -
 A Rel-13 LTE-L23, TEI12

[R2-163497](#) Corrections on conditions for sidelink discovery operation Huawei, HiSilicon CR 36.304
 12.7.00303 - F Rel-12 LTE_D2D_Prox-Core
 NOTE: No cat.A CR for REL-13 needed

[R2-163498](#) Corrections for SL resource configuration during handover Huawei, HiSilicon CR 36.331
 12.9.02128 - F Rel-12 LTE_D2D_Prox-Core
 NOTE: No cat.A CR for REL-13 needed

[R2-163499](#) Corrections on RoHC description Huawei, HiSilicon CR 36.323 12.5.00164 - F
 Rel-12 LTE_D2D_Prox-Core

[R2-163500](#) Corrections on RoHC description Huawei, HiSilicon CR 36.323 13.1.00165 - A
 Rel-13 LTE_D2D_Prox-Core

- [R2-163501](#) Addition of sidelink in the overview model Huawei, HiSilicon CR 36.322 12.3.00119 - F Rel-12 LTE_D2D_Prox-Core
- [R2-163502](#) Corrections for sidelink description Huawei, HiSilicon CR 36.322 13.1.00120 - A Rel-13 LTE_D2D_Prox-Core
NOTE: CR title should be same with cat.F CR
=> Revised in [R2-164305](#)
- [R2-164305](#) Addition of sidelink in the overview model Huawei, HiSilicon CR 36.322 13.1.00120 1 A Rel-13 LTE_D2D_Prox-Core
- [R2-163503](#) Addition of S-RSRP abbreviation Huawei, HiSilicon CR 36.331 12.9.02129 - F Rel-12 LTE_D2D_Prox-Core
NOTE: No cat.A CR for REL-13 needed
- [R2-163647](#) Addition of S-RSRP abbreviation definition CATT CR 36.300 12.9.00870 - F Rel-12 LTE_D2D_Prox-Core
- [R2-163549](#) Clarification regarding IDC indication upon change of UL CA affecting GNSS Samsung Telecommunications CR 36.331 11.15.0 2138 - F Rel-11 SPIA_IDC_LTE-Core
- [R2-163550](#) Clarification regarding IDC indication upon change of UL CA affecting GNSS Samsung Telecommunications CR 36.331 12.9.02139 - A Rel-12 SPIA_IDC_LTE-Core
- [R2-163551](#) Clarification regarding IDC indication upon change of UL CA affecting GNSS Samsung Telecommunications CR 36.331 13.1.02140 - A Rel-13 SPIA_IDC_LTE-Core
- [R2-163704](#) Correction of IE name "systemInformationBlockType1Dedicated" Kyocera CR 36.331 13.1.02166 - F Rel-13 eICIC_enh_LTE-Core
NOTE: TEI13 should be added since eICIC_enh_LTE-Core was a REL-11 WI code
=> Revised in [R2-164291](#)
- [R2-164291](#) Correction of IE name "systemInformationBlockType1Dedicated" Kyocera CR 36.331 13.1.02166 1 F Rel-13 eICIC_enh_LTE-Core, TEI13
- [R2-164244](#) Clarification on the presence of ul-64QAM-r12 for DL-only bands Huawei, HiSilicon CR 36.331 12.9.02219 - F Rel-12 TEI12
- [R2-164245](#) Clarification on the presence of ul-64QAM-r12 for DL-only bands Huawei, HiSilicon CR 36.331 13.1.02220 - A Rel-13 TEI12
=> All above CRs are agreed
- [R2-163648](#) Addition of S-RSRP abbreviation definition CATT CR 36.300 13.3.00871 - A Rel-13 LTE_D2D_Prox-Core
- Intel think this shadow CR is not needed as it is already defined in R13 spec
=> Note pursued.

6.1 Others

Technically endorsed CRs from RAN2#93bis:

- [R2-163628](#) Split of DL and UL category 4 Sequans Communications CR 36.306 12.8.01324 - F
This Tdoc is technically endorsed in RAN2-93bis Rel-12 LTE-L23, TEI12
NOTE: Wrong CR Rev number used and it should be Rev - in the CR coversheet. It should be revised.
=> Revised in [R2-164285](#)
- [R2-164285](#) Split of DL and UL category 4 Sequans Communications CR 36.306 12.8.01324 1 F
This Tdoc is technically endorsed in RAN2-93bis Rel-12 LTE-L23, TEI12
=> Revised in [R2-164314](#)
- [R2-164314](#) Split of DL and UL category 4 Sequans Communications CR 36.306 12.8.01324 2 F
This Tdoc is technically endorsed in RAN2-93bis Rel-12 LTE-L23, TEI12
=> Technically endorsed. Will be sent to RAN for final decision.
- [R2-163629](#) Split of DL and UL category 4 Sequans Communications CR 36.306 13.1.01325 - A
Rel-13 LTE-L23, TEI12
=> Technically endorsed. Will be sent to RAN for final decision.
- [R2-163630](#) Split of DL and UL category 4 Sequans Communications CR 36.331 12.9.02157 - F
This Tdoc is technically endorsed in RAN2-93bis Rel-12 LTE-L23, TEI12

NOTE: Wrong CR Rev number used and it should be Rev - in the CR coversheet. It should be revised.

=> Revised in [R2-164286](#)

[R2-164286](#) Split of DL and UL category 4 Sequans Communications CR 36.331 12.9.02157 1 F
This Tdoc is technically endorsed in RAN2-93bis Rel-12 LTE-L23, TEI12

=> Technically endorsed. Will be sent to RAN for final decision.

[R2-163636](#) Split of DL and UL category 4 Sequans Communications CR 36.331 13.1.02158 - A
This Tdoc is technically endorsed in RAN2-93bis Rel-12 LTE-L23, TEI12

=> Technically endorsed. Will be sent to RAN for final decision.

CSFB

[R2-163394](#) Radio link failure during the CS fallback process Samsung Electronics Co., Ltd discussion
[R2-163688](#) RLF recovery during CSFB procedure Qualcomm Incorporated discussion
Related to RAN3 LS, [R2-163311](#)

- Two papers above discussed jointly.
 - Intel can agree that lower layer failure corresponds to RLF during the CSFB. Also understand that there are network solutions and UE solutions. The RAN3 solution is preferable.
 - Huawei think the only indication given to the NAS is on re-establishment failure and not RLF.
 - Qualcomm ask us if RLF corresponds to the NAS lower layer failure and the simple answer to this is 'no'. Nokia share the view that RLF does not indicate failure to NAS.
 - Intel clarify previous comment. In NAS layer the lower layer failure was very vague and meant to be any failure in AS that cannot be resolved in AS.
- => Answer to RAN3 that when RLF occurs the RRC specs do not send any indication to upper layers.

Dual Connectivity

[R2-163447](#) Data available for transmission due to PDCP data recovery Nokia, Alcatel-Lucent Shanghai Bell CR 36.323 12.5.00161 - F Rel-12 LTE_SC_enh_dualC-Core
- Nokia explain that the 'only' refers to data submit to lower layer only prior to the data recovery
=> Cover sheet should refer to the missing definition of data available for transmission.
=> Agreed in [R2-164443](#) CR Rev 1

[R2-163448](#) Data available for transmission due to PDCP data recovery Nokia, Alcatel-Lucent Shanghai Bell CR 36.323 13.1.00162 - A Rel-13 LTE_SC_enh_dualC-Core
=> Agreed in [R2-164444](#) CR Rev 1

[R2-163614](#) Correction on condition nonFullConfig in dual connectivity Intel Corporation CR 36.331 12.9.02153 - F Rel-12 LTE_SC_enh_dualC-Core
- Intel understand that if the target indicates full config then it can't provide an SCG configuration.
- ZTE think the CR is correct.
=> Agreed

[R2-163615](#) Correction on condition nonFullConfig in dual connectivity Intel Corporation CR 36.331 13.1.02154 - A Rel-13 LTE_SC_enh_dualC-Core
=> Agreed

[R2-163616](#) Condition of powerCoordinationInfo in dual connectivity Intel Corporation CR 36.331 12.9.02155 - F Rel-12 LTE_SC_enh_dualC-Core
- ZTE think the powerCoordination is only needed in the inter eNB scenario. Ericsson think that even in the inter eNB case it is optional for the eNB to signal this power coordination.
- Intel understand from RAN1 spec that it needs these parameters. Huawei have the same understanding as Intel but think the RAN1 spec is clear enough and hence the CR is not needed.
- Nokia it is not correct to make it conditionally present within a setup release structure.
- Samsung wonder why we are adding this clarification for specific parameters.
=> Not pursued.

=> RAN2 understanding that the powerCoordinationInfo must be provided to the UE upon SCG establishment whenever the parameters are required according to RAN1 spec requirements on power control.

[R2-163617](#) Condition of powerCoordinationInfo in dual connectivity Intel Corporation CR 36.331
13.1.02156 - A Rel-13 LTE_SC_enh_dualC-Core
=> Not pursued.

Other

[R2-163390](#) Clarification on RLC timer handling NTT DOCOMO INC. CR 36.322 12.3.00117 - F
Rel-12 LTE-L23, TEI12

- Intel think this is a release 8 issue and wonder if it is really need to clarify.
- Huawei ask if we have this for other timers that can take the value 0.
- DOCOMO explain the issue arose in NB-IoT discussions where some company had a different understanding of the timer value 0.
- Fujitsu think this was the outcome of an email discussion a few meetings ago and support the CR.
- Qualcomm support from R13.
- Intel also wonder whether this is specified in the best place. The text maybe should be somewhere related to the starting and stopping of timers.
- Ericsson ask what it would mean for other timers.

=> Postponed
=> RAN2 understanding that if the t-Reordering timer value is set to 0, the timer is expired immediately after started.
=> A CR attempting to clarify this behaviour in a more generic way (i.e. not specific to this particular timer) can be consider at the next meeting.

[R2-163391](#) Clarification on RLC timer handling NTT DOCOMO INC. CR 36.322 13.1.00118 - A
Rel-13 LTE-L23, TEI12
=> Postponed

[R2-163516](#) Clarification to intra-band contiguous CA capabilities Nokia, Alcatel-Lucent Shanghai Bell discussion

- Intel would like some offline discussion to better understand the conditions

=> Offline discussion (Nokia).

- Update from offline discussion: Seems we do need some clarification in the specification. Would like to draft a CR and attempt to agree by email and suggest a 2 week email.
- ZTE think that there is something in Rel 10 that is not clear.
- Nokia explain that the Rel-12 contains the ambiguity and so the Rel-12 will not be a true shadow.
- Samsung think the email agreement may not be long enough and we should not rush.

☒ **[94#14][LTE/Intra-band contiguous CA capabilities] (Nokia)**
Discuss Rel-10 CR to address the issues identified, noting that Rel-12 will not be a true shadow. Releases can be discuss during the email.
Intended outcome: Agreed CR for RAN
Deadline: Thursday 02/06/2016 (Date TBD but longer than 1 week if possible)

[R2-163896](#) DRB re-setup in Full configuration Nokia, Alcatel-Lucent Shanghai Bell discussion

- Huawei understand the UE keep the PDCP and LC config from the source eNB and hence the target doesn't need to provide them in the full configuration case.
- Qualcomm think it doesn't matter what the UE does as the network need to provide new config at the full configuration.
- Qualcomm think it will not work if the network doesn't provide a configuration, as the eNB doesn't know the UEs existing configuration.
- Intel understand that for full configuration there is never reuse of anything from the source.

=> Offline discussion (Nokia)

- Update from offline: The target always sends full configuration as if it is a new setup including PDCP config, etc. CR to to clarify this can be considered at the next meeting.
- Intel think that it could be clarified in the existing note but no other procedurals changes.

- [R2-163897](#) Clarification on DRB re-setup in full configuration Nokia, Alcatel-Lucent Shanghai Bell CR 36.331 13.1.02178 - F Rel-13 LTE-L23, TEI13
Not treated
- [R2-164259](#) Further clarification on MIMO capability Huawei, HiSilicon, NTT DOCOMO, INC. discussion Rel-10 TEI10
- Samsung understand that neither 1 nor 2 is correct. And there could be some different implementations in the market.
 - Huawei agree that from offline understanding 1 and 2 are not correct which is why they propose to align with understanding 3 but the RAN2 restriction should be removed. We would also need to support a capability for this.
 - DOCOMO think that the signalling is not needed for all inter-band CA cases. Better to clarify that it is only correct in some inter-band cases. Huawei agree with DOCOMO that it is not needed for all case. Intel have the same understanding but this is not a signalling issue but there are only cases where this problem occurs when the UE indicates different MIMO capability for the same band combination.
 - Intel suggest to send LS to describe the problem to ask for the best way to address this issue.
- => RAN2 confirm Understanding 3: From Rel-12, in RAN1 specification, the UE can use the maxLayersMIMO-r10 field to know which MIMO layer shall be used but there is a RAN2 limitation that maxLayersMIMO-r10 can only be configured for intra -band contiguous case.
- => Draft LS in [R2-164445](#) to RAN1 to describe the problem and potential solutions and ask their opinion. (Huawei)
- [R2-164445](#) LS to RAN1 on clarification on MIMO capability (to: RAN1; cc: -; contact: Huawei) Huawei LS out Rel-10 TEI10
- => Update action to say " RAN2 respectfully asks RAN1 to confirm RAN2's understanding, and if confirmed how to solve the problem. " and align text in last sentence.
- => More discussion to clarify the release situation in the LS
- => Revised in [R2-164529](#)
- [R2-164529](#) LS to RAN1 on clarification on MIMO capability (to: RAN1; cc: -; contact: Huawei) Huawei LS out Rel-10 TEI10
- => Approved in [R2-164559](#)
- [R2-164273](#) timeInfoUTC in SIB16 Nokia, Alcatel-Lucent Shanghai Bell discussion
- Qualcomm think some clarification may be needed. Would like to come back at the next meeting to see how to address this.
- => Noted
- => CR to address this issue may be considered for the next meeting.

7 LTE: Rel-13

7.1 WI: Licensed-Assisted Access using LTE

(LTE_LAA-Core, leading WG: RAN1, REL-13; started: June 15, closed: Dec. 15, WID: [RP-151045](#))

Incoming LS:

- [R2-163308](#) LS on DRS Duty Cycle ([R1-163931](#); contact: Qualcomm) RAN1 LS in to: RAN2 Rel-13 LTE_LAA-Core
- Ericsson think the text should refer to 'eNB capable of LAA operation'
 - BlackBerry ask if this is a recommendation on the eNB or a requirement.
- => CR to 36.300 can be provided in [R2-164455](#) CR 0881
- => Noted
- [R2-164455](#) Correction on DRS Duty Cycle Qualcomm CR 36.300 13.1.00881 - F Rel-13 LTE_LAA-Core
- => Revised I [R2-164541](#)
- [R2-164541](#) Correction on DRS Duty Cycle Qualcomm CR 36.300 13.1.00881 1 F Rel-13 LTE_LAA-Core

=> Agreed

CRs:

[R2-164262](#) LAA-parameters Huawei, HiSilicon CR 36.331 13.1.02227 - F Rel-13
LTE_LAA-Core
- Intel indicate that CR in [R2-163354](#) covered the same aspect and other changes.
- Qualcomm think the description of downlinkLAA field need to be checked and revised.
=> Check and revise field description
=> Any necessary changes can be included in a revision of CR in [R2-163354](#)
=> Not pursued

[R2-163752](#) Correction to IE UE-EUTRA-Capability ITRI CR 36.331 13.1.02168 - D Rel-13
LTE_LAA-Core
=> Not treated. Covered by above discussion.

7.2 WI: CA enhancements

(LTE_CA_enh_b5C-Core, leading WG: RAN1, REL-13; started: Dec. 14, closed: Dec. 15, WID: [RP-151984](#))

7.2.0 In Principle agreed CRs

[R2-163395](#) UE capability of an additional Rx and Tx requirement for a CA band combination NTT
DOCOMO, INC. CR 36.306 13.1.01318 - F Rel-13 LTE_CA-Core, TEI13

[R2-163926](#) Corrections on capability report for eCA Huawei, HiSilicon CR 36.331 13.1.02183 - F
Rel-13 LTE_CA_enh_b5C-Core

[R2-163927](#) Corrections on capability linking for measurement object extension Huawei, HiSilicon CR
36.306 13.1.01329 - F Rel-13 LTE_CA_enh_b5C-Core

[R2-164049](#) Some eCA related corrections Nokia, Alcatel-Lucent Shanghai Bell CR 36.331 13.1.0
2198 - F Rel-13 LTE_CA_enh_b5C-Core
=> All above CRs are agreed

[R2-163356](#) Inter-node signalling HTC Corporation, Nokia, Alcatel-Lucent Shanghai Bell CR 36.331
13.1.02116 - F Rel-13 LTE_CA_enh_b5C-Core, LTE_WLAN_radio-Core
=> Change 13xy to 1320
=> Agreed in [R2-164461](#) CR Rev 1

[R2-163398](#) Definition of a fallback band combination NTT DOCOMO, INC., Nokia, Alcatel-Lucent
Shanghai Bell CR 36.306 13.1.01320 - F Rel-13 LTE_CA-Core, TEI13
- DOCOMO would like to revise the wording of this CR
=> Revised in [R2-164462](#) CR Rev 1

[R2-164462](#) Definition of a fallback band combination NTT DOCOMO, INC., Nokia, Alcatel-Lucent
Shanghai Bell CR 36.306 13.1.01320 1 F Rel-13 LTE_CA-Core, TEI13
=> Discuss further offline to clarify the definition.
=> Revised in [R2-164530](#) CR Rev 2

[R2-164530](#) Definition of a fallback band combination NTT DOCOMO, INC., Nokia, Alcatel-Lucent
Shanghai Bell CR 36.306 13.1.01320 1 F Rel-13 LTE_CA-Core, TEI13
=> Agreed

[R2-163397](#) Assumption of UE radio access capabilities for skipped fallback band combinations NTT
DOCOMO, INC. CR 36.306 13.1.01319 - F Rel-13 LTE_CA_enh_b5C-Core
NOTE: [R2-163711](#) will replace this in principle agreed CR
=> Not pursued

7.2.1 Others

Capability related

[R2-163711](#) Capturing a new capability signalling format for Rel-13 CA enhancements NTT DOCOMO,
INC. CR 36.306 13.1.01327 - F This CR covers the change agreed in-principle in [R2-163397](#) and intends to replace [R2-163397](#) Rel-13 LTE_CA_enh_b5C-Core
- Qualcomm understand that some of the features that are bundled together can be used by
a UE supporting less than 5CC.

- Nokia think the new field indicates whether signalling is supported, but not whether the functionality is supported.
- Samsung think it is not clear that a UE supporting the new format must support beyond 5 CC or not. Qualcomm think in this case that a UE supporting 3CC supports the new format then the other capabilities should not be bundled.

=> Revised in [R2-164463](#) CR Rev 1

[R2-164463](#) Capturing a new capability signalling format for Rel-13 CA enhancements NTT DOCOMO, INC. CR 36.306 13.1.01327 1 F Rel-13 LTE_CA_enh_b5C-Core

=> Change last sentence to say " If the fallback band combinations for a given band combination are omitted in this field (see TS 36.331 [5]), the UE shall for all the omitted fallback band combinations support the same UE radio access capabilities as for the superset band combination "

=> Update coverpage

=> Agreed in [R2-164531](#) CR Rev 2

[R2-163424](#) Backward compatibility of CA band combination signalling NTT DOCOMO, INC., Huawei, HiSilicon CR 36.331 13.1.02123 - F Rel-13 LTE_CA_enh_b5C-Core

- ZTE think this was agreed to leave to eNB implementation. Suggest that this would be better as a note. DOCOMO think the proposed text is clear that this is eNB implementation
- Nokia think it should be make clear that the eNB man create based on the capabilities signalled by the UE.
- Samsung wonders what this achieves. It is eNB implementation whether it is created or by requesting twice on the radio.
- Qualcomm think it is useful to have something described.

=> Revised in [R2-164464](#) CR Rev 1

[R2-164464](#) Backward compatibility of CA band combination signalling NTT DOCOMO, INC., Huawei, HiSilicon CR 36.331 13.1.02123 1 F Rel-13 LTE_CA_enh_b5C-Core

- DOCOMO suggest postponing to the next meeting

=> Postponed

[R2-163552](#) eCA UE capability transfer Samsung Telecommunications discussion

- ZTE thinks we have already agree to eNB implementation. Samsung think that creation of the containers can be left to implementation, but if we provide both formats in a single container we need some clarification of what can be included.
- Nokia think the issue for a new eNB that can understand the legacy format and the new format. For this case the question is whether we should have 1 container or 2 container. 2 containers would all separate indication of requested band and max CCs in each container. Ericsson ask if it really a problem that the requested bands and number of CCs only appears once if we have a single container.

=> Discuss offline

- Update from offline discussion: Some companies think support of both formats is not needed but others do not want to rule this out.

=> Can be considered again at the next meeting.

[R2-164198](#) Skipping fallback "2DL + 1UL" CA in UE capability report in Rel 13 Qualcomm Incorporated discussion

=> Revised in [R2-164266](#)

[R2-164266](#) Skipping fallback "2DL + 1UL" CA in UE capability report in Rel 13 Qualcomm Incorporated discussion

- Qualcomm explain that the intent is to allow the UE to skip 2LD combinations that are fallback combinations of other combinations (e.g. 3 DL combinations)
- Huawei understand that the UE could then skip combination with higher MIMO capabilities. How would the eNB know. Qualcomm think in the case of higher capabilities then they can be reported.
- DOCOMO think this was discussed in Malta and concluded not to optimise but to report all the 2DL/1UL combinations. Qualcomm think this was left open in Malta

=> Offline discussion

- Update from offline: After offline there were no concerns about the CR.

- Qualcomm explain that if the skip flag is provided then the UE will skip 2DL+1UL combinations. Intel think the current behaviour is that the UE will include 2DL + 1UL for all supported bands. And the skipping, if the flag is provided, only applies for the network requested bands.

- Intel wonder how many band combinations can actually be skipped.
- => Further offline discussion

✉ **[94#01][LTE/CA] 2DL + 1 UL fallback skipping (Qualcomm)**

Discuss CR in [R2-164337](#).

Intended outcome: Agreed CR for RAN

Deadline: Thursday 02/06/2016

[R2-164337](#) Skipping fallback "2DL + 1UL" CA in UE capability report in Rel 13 Qualcomm Incorporated
CR 36.331 13.1.02240 - C Rel-13 LTE_CA_enh_b5C-Core
Not treated

[R2-163396](#) UE capability of an additional Rx and Tx requirement for a CA band combination NTT
DOCOMO, INC. CR 36.331 13.1.02118 - F Other CR related to in-principle agreed
CR [R2-163395](#) Rel-13 LTE_CA-Core, TEI13, LTE_CA_enh_b5C-Core
=> ASN.1 need to be corrected
=> Agreed in [R2-164466](#) CR Rev1

[R2-163485](#) [DRAFT] Reply LS on capability to distinguish UE between with or without HTFNTT
DOCOMO, INC. LS out LS answer to LS in [R2-161989](#) Rel-13 LTE_CA-Core, TEI13
=> Approved in [R2-164465](#)

Other

[R2-163869](#) PUCCH SCell interruption ASUSTEK COMPUTER (SHANGHAI) CR 36.321 13.1.00865
- F Rel-13 LTE_CA_enh_b5C-Core
- ZTE ask if the RAN4 interruption requirement applies to the PUCCH SCell
- ASUSTeK think the RAN4 spec does not exactly mention PUCCH SCell interruption. We
could send an LS to RAN4.
- Samsung think that RAN4 should conclude this.
=> Not pursued
=> Can find another CR in which to include this editorial change.

[R2-163929](#) Corrections on eCA Huawei, HiSilicon CR 36.331 13.1.02184 - F Rel-13
LTE_CA_enh_b5C-Core
=> Not pursued

[R2-164050](#) PUCCH SCell corrections Nokia, Alcatel-Lucent Shanghai Bell discussion
- Samsung ask if there is any need to change the field description of pucchCell.
=> Noted

[R2-164051](#) PUCCH SCell corrections Nokia, Alcatel-Lucent Shanghai Bell CR 36.331 13.1.02199
- F Rel-13 LTE_CA_enh_b5C-Core
=> Details can be discussed offline
=> Revised in [R2-164467](#) CR Rev1

[R2-164467](#) PUCCH SCell corrections Nokia, Alcatel-Lucent Shanghai Bell CR 36.331 13.1.02199
1 F Rel-13 LTE_CA_enh_b5C-Core
=> Agreed

7.3 WI: Single-Cell point-to-multipoint transmission

(LTE_SC_PTM-Core, leading WG: RAN2, REL-13; started: June 15, closed: Dec. 15, WID: [RP-151110](#))

7.3.0 In Principle agreed CRs

[R2-163357](#) Clarification on SC-PTM HTC Corporation CR 36.331 13.1.02117 - F Rel-13
LTE_SC_PTM-Core

[R2-163684](#) MBMS reception via MBSFN or SC-PTM Nokia, Alcatel-Lucent Shanghai Bell CR
36.306 13.1.01326 - F Rel-13 LTE_SC_PTM-Core

- [R2-163924](#) SC-PTM reception on non-Pcell Huawei, HiSilicon CR 36.302 13.1.00073 - F
Rel-13 LTE_SC_PTM-Core
- [R2-163925](#) System information acquisition for SC-PTM reception on non-Pcell Huawei, HiSilicon CR
36.331 13.1.02182 - F Rel-13 LTE_SC_PTM-Core
=> All above CRs are all agreed

7.3.1 Others

- [R2-163921](#) Clarification on PDCCH sub-frame for SC-PTM Huawei, HiSilicon, TD Tech CR 36.321
13.1.00866 - F Rel-13 LTE_SC_PTM-Core
- Intel ask if it is valid deployment to have MBMS and SC-PTM in the same cell. Huawei think that is possible.
 - ZTE agree with the intent but thinks we only need to clarify the TDD case.
 - Qualcomm think the CR is not needed.
- => Discuss offline
- Update from offline. Concluded the CR can be agreed.
- => Agreed
- [R2-163922](#) Correction on the definition of sc-mcch-duration Huawei, HiSilicon, TD Tech CR 36.331
13.1.02181 - F Rel-13 LTE_SC_PTM-Core
- Intel think the change creates more confusion.
- => Depends on [R2-163921](#). Comeback after that CR is concluded.
- Update from offline. Concluded the CR can be agreed.
- => Add reference to MAC spec for the PDCCH subframe definition
- => Agreed in [R2-164532](#) CR Rev 1

7.4 WI: Further LTE Physical Layer Enhancements for MTC

(LTE_MTCe2_L1-Core, leading WG: RAN1, REL-13; started: Sep. 14, closed: Mar. 16, WID: [RP-150492](#))

Incoming LSs:

- [R2-163307](#) Reply LS to [R2-160404](#) Extended coverage impact on NAS timers (C1-162300; contact: Ericsson) CT1 LS in to: RAN2 Rel-13 CIoT-CT, LTE_MTCe2_L1-Core
- Moved from 3.2 to 7.4

=> Noted

- [R2-163309](#) Reply LS to [R2-163108](#) on RAN2 review of all LTE features up to Rel-13 for Category M1 Ues ([R1-163938](#); contact: Ericsson) RAN1 LS in to: RAN2 Rel-13 LTE_MTCe2_L1-Core
- => Noted

- [R2-163313](#) LS on continuous uplink transmission in eMTC (R4-163150; contact: Intel) RAN4 LS in to: RAN2 Rel-13 LTE_MTCe2_L1-Core
- => Noted

- [R2-163338](#) LS on MPDCCH configuration for BL/CE UE ([R1-165748](#); contact: Ericsson) RAN1 LS in to: RAN2 Rel-13 LTE_MTCe2_L1-Core
- late
- New incoming LS
- => Noted

Related with incoming LS [R2-163338](#):

- [R2-164331](#) Clarification on EpcchSetConfig for eMTC Ericsson CR 36.331 13.1.02239 - F
Rel-13 LTE_MTCe2_L1-Core
- late
- => Impact analysis to be improved
- => Revised in [R2-164533](#) CR Rev 1
- => Offline checking

[R2-164533](#) Clarification on EpcchSetConfig for eMTC Ericsson CR 36.331 13.1.02239 - F
Rel-13 LTE_MTCe2_L1-Core
=> Agreed

7.4.0 In Principle agreed CRs

[R2-163351](#) Corrections to MTCe in TS 36.300 Intel Corporation CR 36.300 13.3.00864 - F
Rel-13 LTE_MTCe2_L1-Core

[R2-163352](#) Corrections to MTCe in TS 36.331 Intel Corporation CR 36.331 13.1.02114 - F
Rel-13 LTE_MTCe2_L1-Core

[R2-163353](#) Corrections to MTCe in TS 36.321 Intel Corporation CR 36.321 13.1.00854 - F
Rel-13 LTE_MTCe2_L1-Core

[R2-163416](#) Correction to MAC procedures for MTC HTC Corporation CR 36.321 13.1.00856 - F
Rel-13 LTE_MTCe2_L1-Core

[R2-163557](#) CR on SI window combining for MTCNTT DOCOMO INC. CR 36.331 13.1.02144 - F
Rel-13 LTE_MTCe2_L1-Core
moved from 7.9.0 to 7.4.0

[R2-163598](#) Correction on frequency hopping signaling Sequans Communications CR 36.331
13.1.02151 - F Rel-13 LTE_MTCe2_L1-Core
=> Revised in [R2-163637](#)

[R2-163637](#) Correction on frequency hopping signaling Sequans Communications CR 36.331
13.1.02151 1 F Revised due to an error in the cover sheet Rel-13 LTE_MTCe2_L1-Core

[R2-163661](#) HARQ RTT Timers in eMTC CATT CR 36.321 13.1.00859 - F Rel-13
LTE_MTCe2_L1-Core

[R2-163818](#) Asynchronous UL HARQ protocol operation PANASONIC R&D Center Germany CR
36.321 13.1.00860 - F Rel-13 LTE_MTCe2_L1-Core

[R2-163855](#) Correction of BCCH reception for LC-MTC Nokia, Alcatel-Lucent Shanghai Bell CR
36.321 13.1.00862 - F Rel-13 LTE_MTCe2_L1-Core

[R2-163928](#) Improvements for the representation of eMTC features Huawei, HiSilicon CR 36.302
13.1.00074 - F Rel-13 LTE_MTCe2_L1-Core

[R2-163952](#) Corrections on nB extension Huawei, HiSilicon CR 36.304 13.1.00313 - F Rel-13
LTE_MTCe2_L1-Core

[R2-163953](#) Correction on RA-RNTI value range Huawei, HiSilicon CR 36.321 13.1.00867 - F
Rel-13 LTE_MTCe2_L1-Core

[R2-164174](#) Stage 2 aspects of HARQ functionality for eMTC UEs Ericsson CR 36.300 13.3.00878
- F Rel-13 LTE_MTCe2_L1-Core

[R2-164183](#) Starting CE level for PDCCH order and HO Ericsson CR 36.321 13.1.00881 - F
Rel-13 LTE_MTCe2_L1-Core

[R2-164184](#) Valid subframes for FDD and TDD DL transmissions Ericsson CR 36.331 13.1.02211 - F
Rel-13 LTE_MTCe2_L1-Core
=> All above CRs are agreed

[R2-163954](#) Correction on DL retransmission and UL transmission Huawei, HiSilicon CR 36.321
13.1.00868 - F Rel-13 LTE_MTCe2_L1-Core
=> Coversheet summary of change to be updated
=> Revised in [R2-164430](#) CR rev 1

[R2-164430](#) Correction on DL retransmission and UL transmission Huawei, HiSilicon CR 36.321
13.1.00868 1 F Rel-13 LTE_MTCe2_L1-Core
=> Agreed

[R2-164152](#) Miscellaneous eMTC corrections Ericsson CR 36.331 13.1.02205 - F Rel-13
LTE_MTCe2_L1-Core
=> Redundant 'f' to be removed
=> Agreed in [R2-164431](#) CR rev 1

[R2-164179](#) Minor corrections to MAC for eMTC Ericsson CR 36.321 13.1.00877 - F Rel-13
LTE_MTCe2_L1-Core
=> Typo in MAC contention resolution timer to be fixed
=> CE level to be replaced by enhanced coverage level
=> Agreed in [R2-164432](#) rev 1

7.4.1 Control Plane

Including output of email discussion [93bis#05][LTE/MTC/NB-IOT] NAS timer extension (Ericsson).

Including output of email discussion [93bis#06][LTE/eDRX/NB-IOT] eDRX paging solution (Ericsson)

Note these email discussions will be treated during the NB-IoT ad-hoc.

System information

- [R2-163454](#) Dedicated Signalling of SI in Rel-13 eMTC Samsung Research America discussion
- Intel think when this was last discussed we agreed that dedicated signalling would only provide system information for handover and we would not do this for SI update.
 - Ericsson think that the eNB can use what is available. For the information that is available to be provided by dedicated signalling, it can be sent to the UE.
 - Samsung partially agree with Ericsson.
 - Ericsson think that for the mbsfn-SubframeConfigList we have some text that it must be provided.
- => Discuss offline (Samsung)
- Update from offline: eNB will provide the update sys info with the handover. The mbsfn-SubframeConfigList issue is covered by another CR. No new CR is needed.
- => Noted
- [R2-163455](#) SI update on the dedicated signalling in Rel-13 eMTC Samsung Research America discussion
- Not treated
- [R2-163559](#) Correction to System Information change notifications in RRC_IDLE for MTCe Intel Corporation CR 36.304 13.1.00305 - F Rel-13 LTE_MTCe2_L1-Core
- Ericsson think this could imply that all UEs could receive the notification from MPDCCH. Suggests adding 'as defined in ...'
- => Add ',' before 'as specified in [3].'
- => Agreed in [R2-164433](#) CR rev 1
- [R2-163643](#) Correction on system information handling in eMTC HTC Corporation CR 36.331 13.1.02159 - F Rel-13 LTE_MTCe2_L1-Core
- Intel have some concerns whether it makes sense to do this for the re-establishment case for CE mode B.
 - Intel think the change in 5.2.2.2 doesn't make sense as the sentence only refers to the handover case.
- => Remove change from 5.2.2.2
- => Change in 5.2.1.3 to "except when T311 is running".
- => Agreed in [R2-164434](#) CR rev 1
- [R2-163644](#) Correction on essential system information missing HTC Corporation CR 36.331 13.1.02160 - F Rel-13 LTE_MTCe2_L1-Core
- => Rephrase change to "if the UE is neither a BL UE nor in CE and the UE is unable to acquire.."
- => Agreed in [R2-164435](#) CR rev 1

UE capability related

- [R2-163690](#) The need for measurement gap capability for intra-frequency measurement with narrowband operation Qualcomm Incorporated discussion
- Ericsson would prefer a new field to indicate this to decouple the intra-freq case from the intra-band inter-freq case.
 - Qualcomm think that it would not be enough to have a single bit as in the Ericsson approach, it would have to be per band.
 - Samsung think that for a BL UE then there is no option but to use a gap, and for a normal UE in EC then there should be no problem (i.e. do the intra-freq measurements without gaps).

- Qualcomm think even for the case of a normal UE in EC might have to retune. Qualcomm think in RAN4 this is left to UE implementation.
- => Add new signalling to indicate the intra-Freq need to gaps on a per band basis. Change to be included revision of [R2-164164](#)
- => Companies can double check offline before the CR is seen on Friday.

[R2-163689](#) Measurement gap assisted intra-frequency measurement in case of narrowband operation
Qualcomm Incorporated CR 36.300 13.3.00872 - F Rel-13 LTE_MTCe2_L1-Core
=> Agreed

[R2-163691](#) Measurement gap assisted intra-frequency measurement in case of narrowband operation
Qualcomm Incorporated CR 36.331 13.1.02165 - F Rel-13 LTE_MTCe2_L1-Core
=> Not treated following discussion of above contributions.

[R2-164164](#) Feature Group Indicators and UE capabilities for eMTC Ericsson LM CR 36.331 13.1.02209 - F Rel-13 LTE_MTCe2_L1-Core
- ZTE suggest a separate field description for CE mode A and B
- Qualcomm think we also agreed to remove the 'yes' for FGI 16
=> Reference to MTC-Parameters would also need to be updated.
=> Revised in [R2-164436](#) CR Rev 1 to address comments above and include the agreement from discussion of [R2-163690](#).

[R2-164436](#) Feature Group Indicators and UE capabilities for eMTC Ericsson LM CR 36.331 13.1.02209 1 F Rel-13 LTE_MTCe2_L1-Core
=> v13xy to be changed to v1320
=> Agreed in [R2-164534](#) CR Rev 2

[R2-164166](#) UE capabilities for eMTC Ericsson CR 36.306 13.1.01334 - F Rel-13 LTE_MTCe2_L1-Core
=> Revised in [R2-164437](#) CR Rev 1 to include the agreement from discussion of [R2-163690](#)

[R2-164437](#) UE capabilities for eMTC Ericsson CR 36.306 13.1.01334 1 F Rel-13 LTE_MTCe2_L1-Core
=> Delete "define" in 4.3.5.1.x
=> Agreed in [R2-164535](#) CR Rev 2

[R2-164176](#) Correction on CE level ramp up for CE mode A UEs Ericsson CR 36.306 13.1.01335 - F Rel-13 LTE_MTCe2_L1-Core
- Intel think that this clarification may be needed for all the other channels as well, not just PRACH CE levels. Ericsson think this is clear in RAN1 specific for the other channels.
=> Changes to be merged into revision of [R2-164164](#)

[R2-163960](#) Correction on the value of maximum channel bandwidth Huawei, HiSilicon CR 36.306 13.1.01330 - F Rel-13 LTE_MTCe2_L1-Core
=> Agreed

Message classes

[R2-163987](#) Correction to eMTC message classes and logical channels Ericsson, NTT DOCOMO, Qualcomm Incorporated CR 36.300 13.3.00875 - F Rel-13 LTE_MTCe2_L1-Core
- Intel ask if this is now a general principle that for any new message class we need a new logical channel. Ericsson think this has always been the principle.
=> Agreed

[R2-163988](#) Correction to eMTC message classes and logical channels Ericsson, NTT DOCOMO, Qualcomm Incorporated CR 36.304 13.1.00315 - F Rel-13 LTE_MTCe2_L1-Core
=> Agreed

[R2-163989](#) Correction to eMTC message classes and logical channels Ericsson, NTT DOCOMO, Qualcomm Incorporated CR 36.321 13.1.00873 - F Rel-13 LTE_MTCe2_L1-Core
=> Agreed

[R2-163990](#) Correction to eMTC message classes and logical channels Ericsson, NTT DOCOMO, Qualcomm Incorporated CR 36.331 13.1.02195 - F Rel-13 LTE_MTCe2_L1-Core
=> Agreed

Other

[R2-164237](#) NAS timers for eMTC Ericsson discussion

- ZTE think the UE can be overridden by the eNB in the setup message. Why would the eNB have better knowledge. Ericsson explain that ii/ is to cope with changes in CE while the connection is being established.
- Qualcomm ask if ii means that the UE needs to modify the timer hat was started at the start of the connection establishment. Ericsson can see benefit but complexity to modify the ingoing timer but thinks it is up to CT1 discuss.
- ZTE think that part i is enough and ii is not needed.
- Intel points out that CT1 asked RAN2 to define the same approach for LTE and NB-IoT. Think there is more complexity to change the NAS timer based on reconfiguration of the CE Mode by the network. Suggests that MTC UEs that support CE mode would always use the longer timer. For non Cat M the longer timer would be used whenever the UE is operating in CE. Ericsson think this would cause a difference between UEs supporting mode A only and UEs supporting mode A and B.
- Ericsson think basing it with the value the UE is configured with is the simplest approach.
- Qualcomm think we try to never change timer values while they are running. Ericsson think that CT1 can decide whether it impacts running timers or just applies at the start of the next timer.
- Qualcomm is ok to rely on UE capability but wants to ensure that the MME has visibility of this capability. This may need to be checked. Ericsson think this information is in a container that is transparent to the MME.

=> Offline discussion (Ericsson)

- Update from offline. A draft CR and LS will be provided.

✉ **[94#02][LTE/eMTC] NAS timer CR (Ericsson)**
Discuss CR in [R2-164527](#) and LS in [R2-164526](#)
Intended outcome:Agreed CR to RAN and LS to CT1/RAN3/SA2
Deadline: Thursday 02/06/2016

[R2-164526](#) DRAFT - LS on Enhanced coverage impacts on NAS timers in eMTC (to: RAN3, CT1; cc: SA2; contact: Ericsson) Ericsson LS out

[R2-164527](#) NAS timer setting for eMTC Ericsson CR 36.331 13.1.02241 - F Rel-13
LTE_MTCe2_L1-Core

[R2-164235](#) Cell selection for CE Mode A and B Ericsson CR 36.304 13.1.00318 - F Rel-13
LTE_MTCe2_L1-Core

- Intel think that RAN4 is specifying requirements based on a single QqualminCE value. We may need to check with RAN4.
- Huawei wonder what is the motivation to differentiate and sees no need to do this.

=> Offline discussion (Ericsson)

- Update from offline: Proposal is withdrawn from this meeting.

=> Withdrawn

[R2-163558](#) On eDRX cycle values considering different MTC scenariosNTT DOCOMO INC. other

- ZTE asks what if the motivation. DOCOMO explain the main thing is the paging response time
- Huawei understand the motivation and asks why larger values are not also added.
- Samsung support the proposal.
- Ericsson thinks that this wasn't discussed much when we added the eDRX values.

=> Add the proposed eDRX cycle value of hf6, hf10, hf 12, hf14

- [R2-163701](#) Draft LS on additional eDRX values NTT DOCOMO INC. LS out
Rel-13 LTE_MTCe2_L1-Core, LTE_extDRX-Core
- Ericsson thinks that some comment is needed about the fact that the specs are frozen.
=> hf8 should be removed
=> Add sentence that we would like this introduced in R13 versions of the spec.
=> Revised in [R2-164438](#)
- [R2-164438](#) Draft LS on additional eDRX values NTT DOCOMO INC. LS out Rel-13
LTE_MTCe2_L1-Core, LTE_extDRX-Core
- Intel ask if we can assume that it will be possible for CT1 to add the values in R13.
=> Change final sentence to say " RAN2 preference is that this change is part of Rel-13 specification "
=> Approved in [R2-164454](#) with change above.
- [R2-163847](#) Various corrections to MTCe related ASN.1 code and field descriptions Spreadtrum
Communications draftCR 36.331 13.1.0- - F Rel-13 LTE_MTCe2_L1-Core
NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number
=> Revised in [R2-164293](#)
- [R2-164293](#) Various corrections to MTCe related ASN.1 code and field descriptions Spreadtrum
Communications CR 36.331 13.1.02234 - F Rel-13 LTE_MTCe2_L1-Core
- Intel think the category values are not correct. Should be '17' and not 'n17', etc.
=> First change to be removed as it is also covered in [R2-164158](#)
=> Correct the cat values to remove the 'n'
=> Agreed in [R2-164439](#) CR rev 1
- [R2-163856](#) Clarification on preamble configuration for BL UEs or UEs in CE Nokia, Alcatel-Lucent
Shanghai Bell CR 36.331 13.1.02172 - F Rel-13 LTE_MTCe2_L1-Core
- Intel suggests simply saying that the UEs can ignore, irrespective of
preambleMappingInfoList
- Huawei think it is clear when values are applied and not and so nothing is needed.
- Ericsson think this should be evident from the UE behaviour specified elsewhere.
=> Not pursued
- [R2-163857](#) Correction on PRB pairs configuration for EPDCCH set for BL UEs or UEs in CE Nokia,
Alcatel-Lucent Shanghai Bell CR 36.331 13.1.02173 - F Rel-13
LTE_MTCe2_L1-Core
- Huawei think this change is not needed. This is clear in the RAN1 specs and the text here
doesn't conflict. Nokia think the current text is still misleading
- Qualcomm agree with Nokia and we can either remove this from our spec or correct it.
- Ericsson are ok with the CR.
=> Need to make clear that " EUTRAN configures value up to n6 for BL UEs or UEs in CE "
and " EUTRAN configures value n6 only for BL UEs or UEs in CE ". Wording for CR can
be worked offline
=> Revision in [R2-164441](#) CR Rev 1.
- [R2-164441](#) Correction on PRB pairs configuration for EPDCCH set for BL UEs or UEs in CE Nokia,
Alcatel-Lucent Shanghai Bell CR 36.331 13.1.02173 1 F Rel-13
LTE_MTCe2_L1-Core
- Ericsson think the text is ok but it clashes with [R2-164331](#)
=> Content to be merged into revision of [R2-164331](#)
- [R2-163858](#) Correction on configuration of PRACH and MPDCCH for RA procedure for BL UEs or UEs in
CE Nokia, Alcatel-Lucent Shanghai Bell CR 36.331 13.1.02174 - F Rel-13
LTE_MTCe2_L1-Core
=> CR to be updated so the mandatory nature is captured in the field description and the
OPTIONAL is not deleted. Detailed wording of how this is capture in the CR can be
discussed offline.
=> Revised in [R2-164440](#) CR Rev 1
- [R2-164440](#) Correction on configuration of PRACH and MPDCCH for RA procedure for BL UEs or UEs in
CE Nokia, Alcatel-Lucent Shanghai Bell CR 36.331 13.1.02174 1 F Rel-13
LTE_MTCe2_L1-Core
=> Agreed

- [R2-163908](#) Response LS on CIoT work progress in RAN2 NTT DOCOMO INC. LS out
 - Vodafone think that the terminology should be clarified. E.g. what is meant by non-NB-IOT, Cat M, CIoT optimisations, etc.
 - Huawei think it is clear in RAN2 that exception reporting is only for NB-IOT.
 => Change (e.g., Category M) to (including Cat-M and all other LTE categories)
 => WI should TEI13
 => "existing Access Barring" should be "existing LTE access control mechanisms"
 => With changes above approved in [R2-164425](#)
- [R2-163955](#) Corrections on TS 36.304 for eMTC Huawei, HiSilicon CR 36.304 13.1.00314 - F
 Rel-13 LTE_MTCe2_L1-Core
 => Revised in [R2-164547](#) CR Rev 1
- [R2-164547](#) Corrections on TS 36.304 for eMTC Huawei, HiSilicon CR 36.304 13.1.00314 1 F
 Rel-13 LTE_MTCe2_L1-Core
 => Agreed CR Rev 1
- [R2-163961](#) Add the field description for mpdcch-NarrowbandsToMonitor-r13 Huawei, HiSilicon CR 36.331 13.1.02189 - F Rel-13 LTE_MTCe2_L1-Core
 => Agreed
- [R2-163966](#) Correction on cell barring for BL UEs and UEs in CE Huawei, HiSilicon CR 36.331 13.1.02191 - F Rel-13 LTE_MTCe2_L1-Core
 - Intel suggest it is not clear what the else case refers to. Huawei think it could be changes to 'else if the UE is in EC'.
 - Ericsson think that this is not needed at all. If SIB1-BR is not scheduled the UE can't do anything at all. Samsung share the Ericsson view and this is covered by essential system information missing (i.e. SIB1 is missing).
 - Huawei think that if the cell is treated as barred it is defined behaviour and the UE will try again to receive SIB1-BR when the barring timer is expired.
 - Samsung point out he the spec does cover the case hat SIB1-BR is not scheduled
 => Not pursued.
- [R2-164071](#) Clarification of use of extended timer values for UEs that support CE mode B Intel Corporation CR 36.331 13.1.02201 - F Rel-13 LTE_MTCe2_L1-Core
 => Agreed
- [R2-164087](#) Correction to UL SPS operation Sequans Communications CR 36.331 13.1.02202 - F Rel-13 LTE_MTCe2_L1-Core
 - Intel understand that this applies only for CE mode A. Should this be clarified. Also for the cover page think that nothing is broken as uplink SPS could still work with a fixed HARQ process ID. but eNB has less flexibility.
 - Ericsson ask how the field is released (as it is Need ON).
 - Qualcomm think that the MAC spec is written in a way that this parameter is needed whenever UL SPS is configured with UL async HARQ.
 => Cover page can be updated
 => Correct the Need ON (e.g. could be released when SPS is released but details to be concluded offline)
 => Revised in [R2-164442](#) CR Rev 1
- [R2-164442](#) Correction to UL SPS operation Sequans Communications CR 36.331 13.1.02202 1 F Rel-13 LTE_MTCe2_L1-Core
 - Intel suggest that the field description is updated to clarify that SPS can only be configured for BL UE and UE in EC in CE mode A. Sequans think this limitation is detailed in the MAC spec.
 => Update impact analysis
 => Add reference to coverpage that RAN1 agreement is that UL SPS is only supported in CE mode A
 => Agreed in [R2-164536](#) CR Rev 2-
- [R2-164158](#) Further miscellaneous eMTC corrections Ericsson CR 36.331 13.1.02206 - F Rel-13 LTE_MTCe2_L1-Core
 - One of the changes is covered in another CR from Spreadtrum.
 => Agreed

- [R2-164162](#) Correction to Initial CE Level Ericsson CR 36.331 13.1.02207 - F Rel-13
LTE_MTCe2_L1-Core
- Intel think that changing the value range is not backward compatible. We could instead change the field description. Ericsson think that we can do it like this as the number of code points doesn't change.
- => Agreed
- [R2-164175](#) Miscellaneous corrections on DL reception types Ericsson CR 36.302 13.1.00075 - F Rel-13 LTE_MTCe2_L1-Core
- Huawei think that the parenthesis change is not correct, and the other changes are not essential.
- => Offline discussion
- Update from offline discussion: The CR can be postponed
- => Postponed
- Withdrawn:**
- [R2-163412](#) Various corrections to MTCe related ASN.1 code and field descriptions Spreadtrum Communications CR 36.331 13.1.02120 - F Rel-13 LTE_MTCe2_L1-Core
- [R2-163963](#) CE level selection for random access procedure Huawei, HiSilicon discussion
- [R2-164163](#) Correction to Initial CE Level Ericsson CR 36.331 13.1.02208 - F Rel-13
LTE_MTCe2_L1-Core
- [R2-164236](#) Cell selection for CE Mode A and B Ericsson CR 36.331 13.1.02218 - F Rel-13
LTE_MTCe2_L1-Core
- [R2-163964](#) Correction on CE level selection for random access procedure Huawei, HiSilicon CR 36.321 13.1.00871 - F Rel-13 LTE_MTCe2_L1-Core

7.4.2 User Plane

HARQ

- [R2-163956](#) Correction on UL asynchronous HARQ Huawei, HiSilicon CR 36.300 13.3.00874 - F Rel-13 LTE_MTCe2_L1-Core
- Moved from 7.4.1 to 7.4.2
- Ericsson's CR attempts to capture this in a more generic way instead of specific to BL UEs as async uplink HARQ is used for eLAA.
 - Intel think this change is already covered by the Ericsson in principle agreed CR. ([R2-164164](#)). Huawei think part of it may be covered but the changes in section 12 still need to be covered.
- => Work offline to determine what is needed beyond the agreed in principle CR.
- => Revised in [R2-164446](#) CR Rev 1
- [R2-164446](#) Correction on UL asynchronous HARQ Huawei, HiSilicon CR 36.300 13.3.00874 1 F Rel-13 LTE_MTCe2_L1-Core
- => Agreed
- [R2-164173](#) Correction on HARQ principles for eMTC UEs Ericsson CR 36.300 13.3.00877 - F Rel-13 LTE_MTCe2_L1-Core
- => Change can be considered for inclusion in the revision of [R2-163956](#).
- => Not pursued
- [R2-163868](#) Corrections on asynchronous UL HARQ operation ASUSTEK COMPUTER (SHANGHAI) CR 36.321 13.1.00864 - F Rel-13 LTE_MTCe2_L1-Core
- Ericsson ask if the notes need to be changed. ASUSTeK think the notes only apply to sync HARQ as they refer to feedback. LG think it is clear that feedback is not provided for async HARQ and hence the note is clear today, and it should not be necessary to move the " set HARQ_FEEDBACK to NACK;" to only apply for sync HARQ.
- => Keep the change to " - set HARQ_FEEDBACK to NACK;"
- => Come back to conclude after offline discussion on IR version

- Update from offline. Concluded that some change is needed for MAC spec for UL async HARQ. Suggest an email discussion to agree a CR on IR version based on [R2-163957](#). This CR will only contain the change on HARQ_FEEDBACK
- => Revised in [R2-164537](#) CR Rev 1

[R2-164537](#) Corrections on asynchronous UL HARQ operation ASUSTEK COMPUTER (SHANGHAI)
CR 36.321 13.1.00864 1 F Rel-13 LTE_MTCe2_L1-Core
=> Agreed

[R2-163957](#) Correction on IR version for UL HARQ Huawei, HiSilicon CR 36.321 13.1.00869 - F
Rel-13 LTE_MTCe2_L1-Core

- Ericsson explain that for CE mode A there is a RV values provided in DCI but for CE mode B there is a defined cycling if the RV. Also this shouldn't be tied to sync or async but more to whether it is adaptive or not.

=> Offline discussion to conclude what needs to be captured in MAC spec.
=> Revised in [R2-164447](#) CR Rev 1.

[R2-164447](#) Correction on IR version for UL HARQ Huawei, HiSilicon CR 36.321 13.1.00869 1 F
Rel-13 LTE_MTCe2_L1-Core

☒ **[94#03][LTE/MTC] CR to 36.321 in IR version (Huawei)**
Intended outcome: Agreed CR for RAN
Deadline: Thursday 02/06/2016

[R2-163965](#) Correction on N/A indication for UL transmission Huawei, HiSilicon CR 36.321 13.1.0
0872 - F Rel-13 LTE_MTCe2_L1-Core
=> Not pursued. Covered by discussion of R3-163868

[R2-164181](#) SPS support for eMTC UEs Ericsson CR 36.321 13.1.00879 - F Rel-13
LTE_MTCe2_L1-Core
=> Change the new notes to be normative text
=> Agreed in [R2-164448](#) CR Rev 1

Random Access

[R2-164178](#) Correction to random access procedure for eMTC Ericsson CR 36.321 13.1.00876 - F
Rel-13 LTE_MTCe2_L1-Core

Moved from 7.4.1 to 7.4.2

- => Last 2 bullets that are proposed to me removed should not be changed.
- => Agreed in [R2-164449](#) CR Rev 1

[R2-164180](#) PRACH preamble power for eMTC Ericsson CR 36.321 13.1.00878 - F Rel-13
LTE_MTCe2_L1-Core
=> Agreed

[R2-163958](#) HARQ process selection for UL asynchronous HARQ Huawei, HiSilicon discussion

- Samsung support the proposal.
- Ericsson ask what happens if this defined process is in use for normal data transmission. Huawei explain this is discussed in the other paper and consider it to be a rare case. UE will flush the process and there will have to be an RLC retransmission to recover.

=> Noted

[R2-163959](#) Correction on HARQ process selection for UL asynchronous HARQ Huawei, HiSilicon CR 36.321 13.1.00870 - F Rel-13 LTE_MTCe2_L1-Core

- Ericsson ask if RAN1 need to be informed.
- LG ask if the same issue applied for NB-IoT. Huawei thinks that this change also applies to NB-IoT and any other feature that uses async (e.g. LAA). ZTE point out that for NB-IOT there is only one HARQ process so here is no issue.

=> Agreed
=> Draft LS in [R2-164450](#) to RAN1 to inform them of this CR so they can assess if any impact to RAN1. (Huawei)

[R2-164450](#) Draft LS to RAN1 on HARQ process selection for UL asynchronous HARQ (to: RAN1; cc: -; contact: Huawei) Huawei LS out Rel-13 LTE_MTCe2_L1-Core
=> Approved in [R2-164538](#)

[R2-163967](#) Collision of HARQ process identifier between Message 3 and normal transmissionHuawei, HiSilicon discussion
=> Noted

[R2-164177](#) Correction on Random Access CE-level ramp-up for CE mode A UEsEricsson CR 36.321
13.1.00875 - F Rel-13 LTE_MTCe2_L1-Core
Moved from 7.4.1 to 7.4.2
=> Agreed

DRX

[R2-163962](#) Correction on the intended UE behaviour for DRX Timers Huawei, HiSilicon CR 36.331
13.1.02190 - F Rel-13 LTE_MTCe2_L1-Core
Moved from 7.4.1 to 7.4.2

=> Space to be removed from " drx-ULRetransmission Timer " and font to be corrected
=> Withdrawn due to wrong spec & CR number used
=> For this replacement, 36.321 CR provided in [R2-164451](#) CR 0886 rev -

[R2-164451](#) Correction on the intended UE behaviour for DRX Timers Huawei, HiSilicon CR 36.321
13.1.00886 - F Rel-13 LTE_MTCe2_L1-Core
=> Agreed

SR

[R2-163456](#) Clarification on SR prohibit timer in Rel-13 eMTC Samsung Research Americadiscussion
[R2-164185](#) SR Prohibit Timer for Rel-13 eMTC UEsEricsson discussion
- 2 papers above discussed together
- LG agree with the Ericsson proposal that the timer starts at the first TTI of bundle.
- Qualcomm ask if we could have the case where MAC requests SR transmission while an SR transmission if already ongoing. Ericsson explain that this case is possible but it should be avoided by proper selection of the timer value.
- Samsung agree with the Ericsson proposal. Qualcomm also support the Ericsson proposal
=> SR-prohibit timer is started in the first TTI of the SR repetitions.

[R2-164182](#) SR prohibit timer for eMTC UEs Ericsson CR 36.321 13.1.00880 - F Rel-13
LTE_MTCe2_L1-Core
=> Do not remove the deleted sentence on SR counter.
=> Do not include the SR counter in the new sentence on first TTI of the bundle (i.e. sentence only refers to timer)
=> Agreed in [R2-164452](#) CR Rev 1

[R2-164205](#) Remaining issues on SR in eMTC LG Electronics Inc. discussion
- Only section 2.2. and last proposal discussed following conclusion of above papers.
- Ericsson wonder if this would work in the half duplex case. LG explain that Phy doesn't know when MAC stops the SR and hence the Phy will continue with the ongoing bundle.
- Qualcomm think the proposal makes sense but doesn't want to change the physical layer behaviour at this stage.
- LG think that we can specify the indication and leave to RAN1 how to handle the indication.
=> Offline discussion Tuesday morning coffee break (LG)
- Update from offline: Most companies would prefer to stop the ongoing SR transmission and the UL grant is received. But need to check if this is covered in RAN1 specs, and if not already covered the preference is to address this in RAN1 specifications.
=> Comeback Friday after checking of RAN1 status (LG)
- Update from offline. Found some further issues on cancelling SR and may come back at the next meeting.

Late

- [R2-164321](#) Correction on the DRX operation for UL asynchronous HARQ Huawei, HiSilicon CR 36.321 13.1.00884 - F Rel-13 LTE_MTCe2_L1-Core late
- Qualcomm think the text is referring to a different subframe but MAC spec is always written referring to the current subframe.
 - => Comeback after more time for offline checking
 - Update from offline. The CR requires some update.
 - => revised in [R2-164546](#) CR Rev 1
- [R2-164546](#) Correction on the DRX operation for UL asynchronous HARQ Huawei, HiSilicon CR 36.321 13.1.00884 - F Rel-13 LTE_MTCe2_L1-Core

- ☒ **[94#04][LTE/MTC] DRX for async HARQ (Huawei)**
 Discuss [R2-164546](#)
 Intended outcome: Agreed CR to RAN
 Deadline: Thursday 02/06/2016

7.5 WI: ProSe enhancements

(LTE_eD2D_Prox-Core, leading WG: RAN2, REL-13; started: Dec. 14, closed: Mar. 16, WID: [RP-150441](#))

WI complete from RAN2 perspective

Documents in this agenda item will be handled in the LTE Break Out session

Incoming LS:

- [R2-163318](#) Reply LS to [R2-157090](#) on RAN2 agreements for inter-carrier/Inter-PLMN sidelink discovery (S2-162141; contact: Huawei) SA2 LS in
 to: RAN2 Rel-13 eProSe-Ext-SA2, LTE_eD2D_Prox-Core

7.5.0 In Principle agreed CRs

- [R2-163491](#) Corrections for sidelink description Huawei, HiSilicon, ZTE CR 36.300 13.3.00867 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-163492](#) Miscellaneous correction for sidelink Huawei, HiSilicon, ITRI, ZTE CR 36.331 13.1.02126 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-163493](#) Corrections for conditions of sidelink operation Huawei, HiSilicon CR 36.331 13.1.02127 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-163494](#) Correction for conditions of sidelink operation Huawei, HiSilicon CR 36.304 13.1.00302 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-163495](#) Correction for sidelink Huawei, HiSilicon CR 36.302 13.1.00071 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-163496](#) Correction for sidelink Huawei, HiSilicon CR 36.323 13.1.00163 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-163544](#) Small eSL related corrections Samsung Telecommunications CR 36.331 13.1.02134 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-163646](#) Corrections on sidelink related description in TS36.302 CATT CR 36.302 13.1.00072 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-163756](#) Clarification on the usage of threshold conditions for sidelink relay UE ITRI CR 36.331 13.1.02169 - F Rel-13 LTE_eD2D_Prox-Core

7.5.1 Others

- [R2-163374](#) Corrections to Logical Channel Prioritisation Samsung Electronics Co., Ltd other
- [R2-163375](#) Corrections to Logical Channel Prioritisation Samsung Electronics Co., Ltd CR 36.321 13.1.00855 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-163408](#) Discussion on allocation resource conflict for unicast communication Spreadtrum Communications discussion
- [R2-163504](#) Correction on conditions for establishing RRC Connection for sidelink communication Huawei, HiSilicon, ITRI CR 36.331 13.1.02130 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-163505](#) Corrections for sidelink communication transmission Huawei, HiSilicon, ITRI, Qualcomm Incorporated CR 36.331 13.1.02131 - F Rel-13 LTE_eD2D_Prox-Core

- [R2-163506](#) Correction on conditions for Relay and Remote UE operation Huawei, HiSilicon CR 36.300 13.3.00868 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-163507](#) Corrections on carrier frequency prioritization for PS sidelink discovery Huawei, HiSilicon CR 36.304 13.1.00304 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-163508](#) Corrections for sidelink logical channel prioritization Huawei, HiSilicon CR 36.321 13.1.00858 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-163623](#) Clarification on eD2D capability Intel Corporation discussion
- [R2-163624](#) Clarification on eD2D capability Intel Corporation CR 36.306 13.1.01323 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-163649](#) Corrections on description of commTxAllowRelayCommon CATT CR 36.331 13.1.02161 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-163822](#) UL SPS and Sidelink discovery gap PANASONIC R&D Center Germany CR 36.321 13.1.00861 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-163948](#) Correction to commTxResourceReqRelayUC Ericsson CR 36.331 13.1.02187 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-164057](#) Small corrections of timer description for Sidelink Kyocera CR 36.331 13.1.02200 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-164197](#) Clarification on informing availability of transmission resources for relay UE LG Electronics France CR 36.331 13.1.02215 - F Rel-13 LTE_eD2D_Prox-Core
- Withdrawn:**
- [R2-163409](#) Source layer-2 ID for allocation resource conflict for unicast communication Spreadtrum Communications draftCR 36.331 13.1.0- - F Rel-13 LTE_D2D_Prox-Core

7.6 WI: LTE-WLAN Radio Level Integration

(LTE_WLAN_radio-Core, leading WG: RAN2, started: Mar. 15, closed: Mar. 16, WID: [RP-152213](#))

Incoming LS:

- [R2-163312](#) LS on WT triggered S-Kwt update (R3-161029; contact: Huawei) RAN3 LS in cc: RAN2 Rel-13 LTE_WLAN_radio-Core
=> Noted
- [R2-163322](#) Reply LS to R3-161029 = [R2-163312](#) on WT triggered S-Kwt update (S3-160720; contact: Huawei) SA3 LS in cc: RAN2Rel-13 LTE_WLAN_radio-Core
late
=> Noted
- [R2-163329](#) LS on LWA and LWIP updates (S3-160810; contact: Nokia Networks) SA3 LS in to: RAN2 Rel-14 LTE_WLAN_aggr-Core
late
Moved from 3.2 to 7.6 and 7.13
=> Noted

7.6.0 In Principle agreed CRs

- [R2-163358](#) Clarification on LWA HTC Corporation CR 36.300 13.3.00865 - F Rel-13 LTE_WLAN_radio-Core
- [R2-163359](#) Clarifications on LWA capability HTC Corporation CR 36.306 13.1.01315 - F Rel-13 LTE_WLAN_radio-Core
- [R2-163360](#) Clarification on LWA HTC Corporation CR 36.323 13.1.00160 - F Rel-13 LTE_WLAN_radio-Core
- [R2-163566](#) Miscellaneous Stage-2 corrections for LWAIntel Corporation CR 36.300 13.3.00869 - F Rel-13 LTE_WLAN_radio-Core
- [R2-163567](#) Avoiding simultaneous configuration of LWA and DC for a UE Intel Corporation CR 36.331 13.1.02145 - F Rel-13 LTE_WLAN_radio-Core
- [R2-163568](#) Miscellaneous RRC corrections for LWAIntel Corporation CR 36.331 13.1.02146 - F Rel-13 LTE_WLAN_radio-Core
- [R2-163651](#) Steering command during T350 SAMSUNG Electronics Co., Ltd. CR 36.331 13.1.02162 - F Rel-13 LTE_WLAN_radio-Core

- [R2-163758](#) Correction of RCLWI call flow CATT CR 36.300 13.3.00873 - F Rel-13
LTE_WLAN_radio-Core
- [R2-163782](#) Corrections to LWA CATT CR 36.331 13.1.02170 - F Rel-13 LTE_WLAN_radio-Core
- [R2-163796](#) Variable Handling for RCLWI CATT CR 36.331 13.1.02171 - F Rel-13
LTE_WLAN_radio-Core
- [R2-163971](#) WLAN measurements and user preference NEC Telecom MODUS Ltd. CR 36.331
13.1.02192 - F Rel-13 LTE_WLAN_radio-Core
- [R2-164247](#) The granularity of LWAAP entity Huawei, HiSilicon CR 36.331 13.1.02222 - F
Rel-13 LTE_WLAN_radio-Core
- [R2-164248](#) Clarification on WLAN measurment Huawei, HiSilicon CR 36.331 13.1.02223 - F
Rel-13 LTE_WLAN_radio-Core
- [R2-164249](#) Polling for LWA status report Huawei, HiSilicon CR 36.323 13.1.00169 - F Rel-13
LTE_WLAN_radio-Core
- [R2-164251](#) The handling of WLAN status monitoring Huawei, HiSilicon CR 36.331 13.1.02224 -
F Rel-13 LTE_WLAN_radio-Core
- [R2-163545](#) Alignment of RCLWI configuration Samsung Telecommunications CR 36.331 13.1.0
2135 - F Rel-13 LTE_WLAN_radio-Core
=> Revised in [R2-164330](#) to add impact analysis in CR coversheet
- [R2-164330](#) Alignment of RCLWI configuration Samsung Telecommunications CR 36.331 13.1.0
2135 1 F Rel-13 LTE_WLAN_radio-Core
=> Above CRs are all agreed
- [R2-164250](#) Clarification on WLAN connection status reporting for RCLWI Huawei, HiSilicon CR
36.300 13.3.00879 - F Rel-13 LTE_WLAN_radio-Core
=> CR and tdoc number to be added to the cover page
=> Agreed in [R2-164468](#) CR Rev 1
- [R2-163546](#) Configuration of LWA and LWIP upon handover Samsung Telecommunications CR
36.331 13.1.02136 - F Rel-13 LTE_WLAN_radio-Core,
LTE_WLAN_radio_legacy-Core
=> Location and meeting date to be corrected
=> Agreed in [R2-164469](#) CR Rev 1
- [R2-164126](#) Clarification of LWA status report MediaTek Inc. CR 36.323 13.1.00168 - F Rel-13
LTE_WLAN_radio-Core
=> Discuss offline whether clarification for the case where everything has been discarded
needs to be added.
=> Coversheet need to be corrected.
=> Revised in [R2-164475](#) CR Rev 1
- [R2-164475](#) Clarification of LWA status report MediaTek Inc. CR 36.323 13.1.00168 1 F Rel-13
LTE_WLAN_radio-Core
- ☒ **[94#05][LTE/LWA] LWA status reportr (MediaTek)**
Discuss [R2-164475](#)
Intended outcome:Agreed CR to RAN
Deadline: Thursday 02/06/2016

7.6.1 LTE+WLAN Aggregation

Measurement related

- [R2-163519](#) Correction to WLAN measurements Nokia, Alcatel-Lucent Shanghai Bell CR 36.331
13.1.02132 - F Rel-13 LTE_WLAN_radio-Core
- Intel do not see the need for a capability for this .
- MediaTek is not sure if the capability bit is required.
- Nokia explain that the current spec is not broken but the consequence is that the eNB can
only add WLAB measurements in the original list and not the extended list.
=> Remove the capability from the CR
=> Revised in [R2-164470](#) CR Rev 1
- [R2-164470](#) Correction to WLAN measurements Nokia, Alcatel-Lucent Shanghai Bell CR 36.331
13.1.02132 1 F Rel-13 LTE_WLAN_radio-Core

=>Agreed

[R2-163978](#) Correction to WLAN measurements Nokia, Alcatel-Lucent Shanghai Bell CR 36.306
13.1.01331 - F Rel-13 LTE_WLAN_radio-Core
=> Not pursued

[R2-163520](#) Clarification on WLAN mobility set Nokia, Alcatel-Lucent Shanghai Bell discussion
- Intel think allowing this would not be a correction but it could be considered in R14.
- Qualcomm think we need to define what we mean by matching. Can see some value in doing this for SSID, not for BSSID.
- MediaTek think the current spec is quite clear - matching means that everything must match. Huawei agree with MediaTek. BlackBerry have the same view.
=> RAN2 understanding that use of wild card in the WLAN id strings is not allowed in R13 according to the current specs.
=> Noted

[R2-163521](#) Clarification on WLAN RSSI Nokia, Alcatel-Lucent Shanghai Bell discussion
- Intel explain that we used to have beacon RSSI and then IEEE told that it was better to use active scanning and as a result we decided to allow RSSI on other frames to be used. We should not reverse out decision but the text could be improved.
- Qualcomm thinks this can be clarified in RAN1 specs and conformance test can address the issue of different RSSI metrics being used on serving and neighbour WLAN
=> Send LS to RAN1 to change the definition in 36.214 to state something like "The WLAN RSSI as used in RRC specification [7] is refers to RSSI as defined in IEEE 802.11 specification [15]." instead of the current definition. Wording to be decided offline
=> Draft LS provided in [R2-164471](#)

[R2-164471](#) Draft LS to RAN1 on WLAN RSSI (to: RAN1; cc: -, contact: Nokia Networks) Nokia Networks
LS out Rel-13 LTE_WLAN_radio-Core
=> Approved in [R2-164548](#)

[R2-163573](#) Autonomous WLAN measurement ID removal Intel Corporation CR 36.331 13.1.02147
- F Rel-13 LTE_WLAN_radio-Core
- Samsung wonder why autonomous removal is being done. We normally try to do this. The current text is for the case where the network cannot do this. If the network is able to do it then we rely on the network.
- Nokia agree with Samsung that when eNB releases the mobility set then it should release these events.
- HTC think that the mobility set is released at re-establishment. Samsung think that the WLAN measurement can continue to exist with a mobility set and then be cleaned by the eNB is a later reconfiguration.
=> Discuss offline (Intel)
- Update from offline: A use case has been identified and there were no remaining concerns. For connection re-establishment it is not possible to send a measurement reconfig and for WLAN some of the measurements would refer to a mobility set that is cleared at the re-establishment.
=> Capture use case on the cover sheet.
=> Agreed in [R2-164549](#) CR Rev 1

[R2-163575](#) Resolving channel number ambiguity – option 1 Intel Corporation CR 36.331 13.1.0
2148 - F Rel-13 LTE_WLAN_radio-Core
=> Not pursued

[R2-163576](#) Resolving channel number ambiguity – option 2 Intel Corporation CR 36.331 13.1.0
2149 - F Rel-13 LTE_WLAN_radio-Core
- Ericsson think that the eNB can ensure that a reasonable configuration is provided. Huawei have the same view as Ericsson. Also it would not make sense to provide this additional information in all countries when the problem only occurs in Japan. Intel think in R14 the problem will occur in other countries.
- Samsung think that option 1 should be agreed. Qualcomm also support adding the conditions in option 1.
- Nokia ask if channel 256 is every used. Intel clarify that IEEE use 1..255.
- Kyocera think that this needs to be resolved but not a strong preference of option1 or 2.

- Nokia have some sympathy for Ericsson's view but prefer option 1 if they have to choose. CATT prefer to leave it to good eNB configuration
- => Clarify that value 0 is not used. To be decided offline whether this is done in field description or by changing the range.
- => RAN2 understand that the ambiguous channel numbers will be signalled together with country code and operating class to resolve the ambiguity.
- => Revised in [R2-164472](#) CR rev 1

[R2-164472](#) Correction to channel number range Intel Corporation CR 36.331 13.1.02149 1 F
Rel-13 LTE_WLAN_radio-Core
=> Agreed

[R2-163577](#) Correction of backhaul bandwidth description Intel Corporation CR 36.331 13.1.02150
- F Rel-13 LTE_WLAN_radio-Core
=> Agreed

Other control plane

[R2-163553](#) Clarification regarding WLAN unavailability (user preference) Samsung Telecommunications discussion

- Ericsson think this has been discussed several time and we agreed not to do this.
- Kyocera think it would be good to have an available indication. The network can't figure this out on its own.
- Huawei think that we can just rely on the measurement result. Intel think that this approach is abusing measurements but acknowledges the issue and has some sympathy.
- LG agrees with Samsung's intention.
- MediaTek ask if we agreed that when the WLAN becomes available again then will the UE start its WLAN measurements again.
- Qualcomm think it is a valid problem, and would go a step further and have suspend/resume in R14.
- Nokia point out that for DC when SCG is released the measurements still continue. Otherwise agree with Ericsson for R13 but could discuss in R14.
- NEC would prefer the option in the paper where the WLAN measurements are reset.
- Huawei think that the eNB could release and reconfigure the measurements to make the UE report when the WLAN is available again.

=> Can be further considered for R14
=> Noted

[R2-163554](#) Introduction of status report upon WLAN becoming available Samsung Telecommunications
CR 36.331 13.1.02141 - F Rel-13 LTE_WLAN_radio-Core
=> Not pursued

[R2-164018](#) IDC for WLAN integration Ericsson discussion

- NEC think in this case the eNB will know the LTE and WLAN frequencies being used by the UE. Qualcomm think the eNB knows what it configures and does see the differentiation between the legacy and new case. Blackberry think eNB knows what it configured and also there could be adjacent frequencies causing the problem that eNB would know about.
- Nokia has some sympathy but can't support for R13. Would like to support for R14.
- Intel point out that IDC was removed from the R14 WI.

=> Noted
frequencies.

[R2-164019](#) IDC for WLAN integration Ericsson CR 36.306 13.1.01332 - F Rel-13
LTE_WLAN_radio-Core
=> Not treated following discussion of previous paper

[R2-164020](#) IDC for WLAN integration Ericsson CR 36.331 13.1.02197 - F Rel-13
LTE_WLAN_radio-Core
=> Not treated following discussion of previous paper

[R2-163874](#) Clarification on LWA HTC Corporation CR 36.331 13.1.02175 - F Rel-13
LTE_WLAN_radio-Core

=> Agreed

[R2-164016](#) UE actions upon WLAN connection failure Ericsson discussion
- Qualcomm thinks there is no problem in the current spec as it says "all WLANs", and also we left to implementation what WLAN failure means. Samsung, LG agree with Qualcomm. Ericsson ask if the current WLAN fails how long does the UE have to find an alternative. Being left to UE implementation implies the UE could spec a long time.
=> Noted

[R2-164017](#) UE actions upon WLAN connection failure Ericsson CR 36.331 13.1.02196 - F
Rel-13 LTE_WLAN_radio-Core
=> Not treated following discussion of previous paper

[R2-164232](#) Avoiding conflict between Rel13 LWA/LWIP and Rel12 RALWI LG Electronics Inc. discussion
=> Noted

[R2-164233](#) Avoiding conflict between rel13 LWA/LWIP and rel12 RALWI LG Electronics Inc. CR 36.331 13.1.02216 - F Rel-13 LTE_WLAN_radio-Core
=> Change the wording to "none of steeringCommandWLAN, lwa-Configuration and lwip-Configuration are configured"
=> CR number to be added to cover sheet.
=> Agreed in [R2-164473](#) CR Rev 1

User plane

[R2-163509](#) Clarification on Control PDU for LWAHTC Corporation CR 36.323 13.1.00166 - F
Rel-13 LTE_WLAN_radio-Core
=> Final bullet should just be "a LWA status report"
=> Agreed in [R2-164474](#) CR Rev 1

[R2-163517](#) Setting the HRW field in LWA status report Nokia, Alcatel-Lucent Shanghai Bell discussion
- MediaTek think it is clear what the UE behaviour is in the in principle agreed CR. Understand that UE feedback is for flow control but the Nokia paper seems to suggest it is being done for link quality feedback and hence don't agree with the proposed change.
- LG think the Nokia proposal is not correct as outside of the window means it could be higher or lower than the window.
- MediaTek think the HRW must accurately reflect the highest received PDU but with the Nokia change this may not always be the case.
- Nokia think it is normal process, as for DC, to send some data over the link and observe what happens.
- Samsung is not sure there is a case that all PDCP PDUs are just discarded. Intel think the case where everything is discarded, if it happens, could be clarified in the original CR.
=> Noted

[R2-163518](#) Addition of COUNT determination for the purpose of HRW setting Nokia, Alcatel-Lucent Shanghai Bell CR 36.323 13.1.00167 - F Rel-13 LTE_WLAN_radio-Core
=> Not treated following discussion of previous paper.

Withdrawn:

[R2-164234](#) Avoiding conflict between rel13 LWA/LWIP and rel12 RALWI LG Electronics Inc. CR 36.331 13.1.02217 - F Rel-13 LTE_WLAN_radio-Core

7.6.2 Interworking Enhancements

Including output of email discussion [93bis#20][LTE/LWI] State transitions (Samsung)

[R2-163653](#) Email discussion report on [93bis#20][LTE/LWI] State transitions SAMSUNG Electronics Co., Ltd. Report

[R2-163660](#) Impact analysis in case that UE maintains the dedication RCLWI configuration SAMSUNG Electronics Co., Ltd. Discussion
- Discussed together with previous paper

- Nokia ask what is the problem with the UE moving to idle and retaining the configuration. Does anything need to be clarified for this case. Samsung think for the idle case it should be ok to retain the configuration.
- Samsung explain if the UE has T350 and reselects in idle then it will discard.
- Qualcomm think it makes sense to release at cell reselection and return to connected. Ericsson think this will result in frequency releases.
- Ericsson think that network vendors are fine with the UE keeping the configuration when the UE returns to connected. Nokia do see some problem for connected and prefer to clear on coming to connected.
- => UE should release the dedicated RCLWI configurations (i.e. mobility set & RCLWI command) upon re-entering RRC_CONNECTED.
- => For cell reselection no change from current specification.

[R2-163654](#) UE behaviours while configured with steeringCommandWLAN (release) SAMSUNG Electronics Co., Ltd. CR 36.331 13.1.02163 - F Rel-13 LTE_WLAN_radio-Core
=> Revised in [R2-164476](#) CR Rev 1 to reflect decision from previous paper.

[R2-164476](#) UE behaviours while configured with steeringCommandWLAN (release) SAMSUNG Electronics Co., Ltd. CR 36.331 13.1.02163 1 F Rel-13 LTE_WLAN_radio-Core
=> Agreed

[R2-163655](#) UE behaviours while configured with steeringCommandWLAN (retain) SAMSUNG Electronics Co., Ltd. CR 36.331 13.1.02164 - F Rel-13 LTE_WLAN_radio-Core
=> Not pursued

[R2-164021](#) Correction of traffic steering granularity Ericsson CR 36.300 13.3.00876 - F Rel-13 LTE_WLAN_radio-Core

- Ericsson think the behaviour in CT1 specs if that the UE can offload at flow levels. MediaTek think the agreement in R13 is that offload is a PDN level.
- Qualcomm think this needs to be discussed with SA2. Intel agree.
- Samsung agree with Ericsson and think that any CN logic can work with R13 LWI. Nokia also agree with Ericsson.
- MediaTek think in the past we explicitly decided to exclude NBIFOM.
- Huawei think we should just reuse what SA2 decided.
- Intel agree they are bot R13 feature but there needs to be a discussion whether they work together.

=> Offline for checking with SA2 whether there are any issues for 2 features to work together.

- Qualcomm think the best approach is to send an LS to SA2 for them to confirm

=> Postponed to next meeting. LS may be considered at the next meeting.

7.7 WI: Multicarrier Load Distribution in LTE

(LTE_MC_load-Core, leading WG: RAN2, started: Mar. 15, closed: Dec. 15, WID: [RP-152181](#))

7.7.0 In Principle agreed CRs

[R2-163705](#) Clarification of timer description for MCLD Kyocera CR 36.331 13.1.02167 - F Rel-13 LTE_MC_Load -Core
=> Agreed

[R2-163895](#) Renaming UE_ID used for MCLD purposes Nokia, Alcatel-Lucent Shanghai Bell CR 36.304 13.1.00312 - F Rel-13 LTE_MC_load-Core
=> Agreed

7.7.1 Others

[R2-163612](#) Clarification on ambiquity after T360 expiry Intel Corporation CR 36.304 13.1.00307 - F Rel-13 LTE_MC_load-Core
=> Revision of [R2-163612](#):

[R2-164334](#) Clarification on ambiquity after T360 expiry Intel Corporation CR 36.304 13.1.00307 1 F Rel-13 LTE_MC_load-Core
=> Agreed

- [R2-163627](#) Avoiding ping-pong upon inter-frequency redistribution Samsung Telecommunications CR 36.304 13.1.00308 - F Rel-13 LTE_MC_load-Core
 - CR contains 2 options. Samsung suggest to focus on option A.
 => To be revised to include option A only. Detailed wording issues may be discussed offline
 => Revised in [R2-164456](#) CR Rev 1
 - Revision not made available as changes were made to a revision of [R2-163612](#) instead.
- [R2-164456](#) Avoiding ping-pong upon inter-frequency redistribution Samsung Telecommunications CR 36.304 13.1.00308 1 F Rel-13 LTE_MC_load-Core
 => Withdrawn
- [R2-163727](#) Discussion on ambiguity after timer T360 expiry Kyocera discussion
 - Above 3 papers discussion together
 - ZTE think there is no big problem before the redistribution as the UE is stable on the highest priority frequency. But after T360 expiry there is an issue. We only need to address that issue. Prefer the Samsung proposal.
 - Nokia also prefer Samsung option A which is the simplest of the proposed solutions.
 - Kyocera would also be ok with Samsung option A.
 - Intel think that Samsung option A achieves the same outcome but it deprioritised and then immediately reprioritises again but this will not have visible external behaviour.
 => Noted
- [R2-163729](#) Clarification of ambiguity on broadcasted absolute priority for MCLD (Alt.1) Kyocera CR 36.304 13.1.00309 - F Rel-13 LTE_MC_Load -Core
 => Not treated following previous discussion
- [R2-164192](#) Clarification of ambiguity on broadcasted absolute priority for MCLD (Alt.2) Kyocera CR 36.304 13.1.00317 - F Rel-13 LTE_MC_load-Core
 => Not treated following previous discussion
- [R2-163848](#) Correction to sub priority usage in cell reselection evaluation process Spreadtrum Communications draftCR 36.304 13.1.0- - F Rel-13 LTE_MC_load-Core
 NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number
 => Revised in [R2-164294](#)
- [R2-164294](#) Correction to sub priority usage in cell reselection evaluation process Spreadtrum Communications CR 36.304 13.1.00319 - F Rel-13 LTE_MC_load-Core
 - ZTE think the current text is ok as there is no case that a sub priority can be given but a priority is not given.
 - Intel also think that in 36.304 we can be generic. And in 36.331 it is clear that the sub priority field is only present if the priority is present.
 => Not pursued
- [R2-163849](#) Clarification to field description for the timer T360 Spreadtrum Communications draftCR 36.331 13.1.0- - F Rel-13 LTE_MC_load-Core
 NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number
 => Revised in [R2-164295](#)
- [R2-164295](#) Clarification to field description for the timer T360 Spreadtrum Communications CR 36.331 13.1.02235 - F Rel-13 LTE_MC_load-Core
 => Agreed
- [R2-163850](#) Clarification to ordering of Rel13 Frequency priority lists Spreadtrum Communications draftCR 36.331 13.1.0- - F Rel-13 LTE_MC_load-Core
 NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number
 => Revised in [R2-164296](#)
- [R2-164296](#) Clarification to ordering of Rel13 Frequency priority lists Spreadtrum Communications CR 36.331 13.1.02236 - F Rel-13 LTE_MC_load-Core
 => Agreed
- [R2-163933](#) Corrections to RS-SINR configuration Nokia, Alcatel-Lucent Shanghai Bell CR 36.331 13.1.02185 - F Rel-13 LTE_MC_load-Core
 - The CR includes an incompatible change to the ASN.1
 - Ericsson think that there is no big issue to provide this every time as it is just 2 bits and the optionality would anyway be one bit.

- => Addition of OPTIONAL to be removed from the CR.
- => Agreed in [R2-164457](#) CR Rev 1

moved from 7.15.1 to 7.7.1

Withdrawn:

- [R2-163413](#) Correction to sub priority usage in cell reselection evaluation process Spreadtrum Communications CR 36.304 13.1.00301 - F Rel-13 LTE_MC_load-Core
- [R2-163414](#) Clarification to field description for the timer T360 Spreadtrum Communications CR 36.331 13.1.02121 - F Rel-13 LTE_MC_load-Core
- [R2-163415](#) Clarification to ordering of Rel13 Frequency priority lists Spreadtrum Communications CR 36.331 13.1.02122 - F Rel-13 LTE_MC_load-Core
- [R2-163555](#) Avoiding ping-pong upon inter-frequency redistribution Samsung Telecommunications CR 36.331 13.1.02142 - F Rel-13 LTE_MC_load-Core
- [R2-163731](#) Clarification of ambiguity on broadcasted absolute priority for MCLD (Alt.2) Kyocera CR 36.304 13.1.00310 - F Rel-13 LTE_MC_Load -Core

7.8 WI: Dual Connectivity Enhancements

(LTE_dualC_enh-Core, leading WG: RAN2, started: Mar. 15, closed: Dec. 15, WID: [RP-151739](#))

7.8.0 In Principle agreed CRs

- [R2-163361](#) Clarification on DC HTC Corporation CR 36.300 13.3.00866 - F Rel-13 LTE_dualC_enh-Core
- => Agreed

7.8.1 Others

No contributions received.

7.9 WI: RAN enhancements for extended DRX in LTE

(LTE_extDRX-Core; leading WG: RAN2; started: Mar. 15; closed: Mar. 16; WID: [RP-150493](#))

7.9.0 In Principle agreed CRs

- [R2-163951](#) Correction on SI update for eDRXH Huawei, HiSilicon CR 36.331 13.1.02188 - F Rel-13 LTE_extDRX-Core
- => Comment " This CR is yet to be updated based on the latest version of the specification " to be removed from the cover sheet
- => Agreed in [R2-164429](#) CR rev 1

7.9.1 Others

Output of email discussion [93bis#06][LTE/eDRX/NB-IOT]:

- [R2-164170](#) Correction to paging window length in eDRX Ericsson CR 36.304 13.1.00316 - F result of email discussion [93bis#06][LTE/eDRX/NB-IOT] Rel-13 LTE_extDRX-Core, NB_IOT-Core
- Nokia think that the MME will not know the cell level configured DRX cycle and hence not sure that this will work. The cell within one eNB can be configured differently and the MME is just informed a single value per eNB.
- DOCOMO understand that it is applied to all the cells of that eNB.
- Huawei have the same understanding as Nokia.
- Huawei think that the paging window should be a multiple of one DRX cycle and not the broadcast one. Ericsson think it is not a big problem and we can choose a single value to use. Qualcomm wonder if this solves the original problem if we base this in a single value.
- Sony think it should be up to UE and MME to determine the number of POs within the window. If the UE wants to receive 3 PO then the PTW must be 3 cycles.
- => Offline discussion after Monday afternoon coffee break (Ericsson)

- Update after offline: Proposal is to use 2.56s as the base for the PTW length (i.e. PTW is an integer multiple of 2.56s)
- DOCOMO think if the value 2.56 is hard coded then the network has to send more pages if it used 1.28 DRX cycle. Ericsson think it would still be possible to use a PTW that is 1 single paging occasion but granularity will differ
- => Use a fixed value as the base for the PTW length (i.e. PTW is an integer multiple of the fixed value). Value is 1.28s

[R2-164169](#) Draft LS on Paging window length Ericsson LS out
result of email discussion [93bis#06][LTE/eDRX/NB-IOT] Rel-13 LTE_extDRX-Core, NB_IoT-Core

- => To be revised to reflect the agreement from the paper above.
- => Can also be used to reflect any decision from NB-IOT
- => Revised in [R2-164453](#)

[R2-164453](#) Draft LS on Paging window length (to: RAN3, SA2, CT1; cc:-; contact: Ericsson) Ericsson LS out Rel-13 LTE_extDRX-Core, NB_IoT-Core

- => Remove " RAN2 noted that MME can be made aware of the default DRX cycle (Default Paging DRX) in S1AP signalling for proper setting of the paging window length."
- => Remove the zero code point. Add a 16 code point.
- => Correct second action to be SA2
- => Add sentence that this LS overrides the previously sent LS
- => Approved in [R2-164482](#)

[R2-163790](#) Further Discussion on Idle Mode DRX Samsung Electronics Co., Ltd discussion
Moved from 7.14.2.4 to 7.9.1

- Intel has sympathy for the proposal but think the current solution doesn't obtain the optimum behaviour and hence OK to keep the current behaviour. Think we also need to discuss whether we have the same solution as NB-IoT. Intel think this addresses the start of the PTW but for this we are ok to keep the current behaviour.
- Ericsson think that the nB parameter also has an effect of collecting UEs in the same occasion. This will be another think to look at.
- Nokia think this was discussed during the R13 WI and so we can keep the current behaviour. Huawei agree with Nokia.
- => Noted

[R2-163633](#) Remaining issues in eDRX Intel Corporation discussion
=> Not treated. Covered by earlier discussion

[R2-164514](#) eDRX Paging Hyper-Frame Calculation Intel Corporation, Samsung, Sequans
- DOCOMO think any fix to the formula it should be done in this release. Suggest an email discussion to look at the details.
=> To update the eDRX PH calculation to address the issue identified in the paper.

- ✉ **[94#15][LTE/eDRX] eDRX Paging Hyper-Frame Calculation (Intel)**
Aim to conclude the solution and develop CRs for RAN.
LS including the conclusion can be agreed to be sent to RAN3/SA2/CT1 if found necessary
Intended outcome: Agreed CR to RAN, and approved LS if found necessary
Deadline: Thursday 02/06/2016 (Date TBD - may be longer if possible)

7.10 WI: Elevation Beamforming/Full-Dimension (FD) MIMO for LTE

(LTE_EBF_FDMIMO-Core; leading WG: RAN1; started: June. 15; closed: Dec. 15; WID: [RP-151085](#))

7.10.0 In Principle agreed CRs

- [R2-163547](#) Introducing EBF/FD-MIMO capabilities Samsung Telecommunications CR 36.306
13.1.01322 - F Rel-13 LTE_EBF_FDMIMO-Core
- [R2-164148](#) Correction to FD-MIMO field descriptions Ericsson CR 36.331 13.1.02204 - F
Rel-13 LTE_EBF_FDMIMO-Core
- [R2-164323](#) Corrections on Support of CRI reporting in MAC ETRI CR 36.321 13.1.00885 - F
Rel-13 LTE_EBF_FDMIMO-Core
late
=> All above CRs agreed
- [R2-163548](#) Introducing EBF/FD-MIMO capabilities Samsung Telecommunications CR 36.331
13.1.02137 - F Rel-13 LTE_EBF_FDMIMO-Core
- Intel point out some minor ASN.1 issues to be fixed
=> ASN.1 errors to be fixed
=> Agreed in [R2-164458](#) CR Rev 1

7.10.1 Others

- [R2-163556](#) Correction of periodic CSI reporting and clarification on p-C and CBR signalling Samsung Telecommunications CR 36.331 13.1.02143 - F Rel-13 LTE_EBF_FDMIMO-Core
=> Discuss offline regarding some additional changes that may be needed
=> Revised in [R2-164459](#) CR Rev 1
- [R2-164459](#) Correction of periodic CSI reporting and clarification on p-C and CBR signalling Samsung Telecommunications CR 36.331 13.1.02143 1 F Rel-13 LTE_EBF_FDMIMO-Core
=> Revised in [R2-164550](#) CR Rev 2
- [R2-164550](#) Correction of periodic CSI reporting and clarification on p-C and CBR signalling Samsung Telecommunications CR 36.331 13.1.02143 2 F Rel-13 LTE_EBF_FDMIMO-Core
=> Correct the release suffix
=> Agreed in [R2-164564](#) CR Rev 3

Withdrawn:

- [R2-163603](#) Correction of periodic CSI reporting and clarification on p-C and CBR signalling Samsung Telecommunications CR 36.304 13.1.00306 - F Rel-13 LTE_EBF_FDMIMO-Core

7.11 WI: Further Enhancements of Minimization of Drive Tests for E-UTRAN

(LTE_eMDT2-Core; leading WG: RAN2; started: Sep. 15; closed: Dec 15; WID: [RP-151611](#))

No contributions received.

7.12 WI: Indoor Positioning Enhancements for UTRA and LTE

(UTRA_LTE_iPos_enh-Core; leading WG: RAN2; started: Sep. 15; closed: Dec 15; WID: [RP-152251](#))

No contributions received.

7.13 WI: LTE-WLAN RAN Level Integration supporting legacy WLAN

(LTE_WLAN_radio_legacy-Core; leading WG: RAN2; started: Sep. 15; closed: Mar 15; WID: [RP-151615](#))

Incoming LS:

[R2-163325](#) LS on Progress on Security for LWIP (S3-160831; contact: NTT DOCOMO)SA3 LS in
cc: RAN2 Rel-13 LTE_WLAN_radio-Core
late
=> Noted
Moved from 3.2 to 7.13

[R2-163329](#) LS on LWA and LWIP updates (S3-160810; contact: Nokia Networks) SA3 LS in
to: RAN2 Rel-14 LTE_WLAN_aggr-Core
late
=> Noted
Moved from 3.2 to 7.6 and 7.13

7.13.0 In Principle agreed CR

[R2-163522](#) Small corrections to LWIP Nokia, Alcatel-Lucent Shanghai Bell CR 36.331 13.1.02133
- F Rel-13 LTE_WLAN_radio_legacy-Core
=> Replace "E-UTRA" with "E-UTRAN" in the ASN.1
=> Agreed in [R2-164477](#) CR Rev 1

7.13.1 Others

[R2-163523](#) Corrections to LWIPEP specification Nokia, Alcatel-Lucent Shanghai Bell CR 36.361
13.0.00001 - F Rel-13 LTE_WLAN_radio_legacy-Core
=> Editorial corrections to be addressed
=> Agreed in [R2-164478](#) Cr Rev 1

[R2-163524](#) Correction to WLAN measurement support for LWIP Nokia, Alcatel-Lucent Shanghai Bell
CR 36.306 13.1.01321 - F Rel-13 LTE_WLAN_radio_legacy-Core
=> Agreed

[R2-164328](#) Introduction of the LWIP counter Nokia, Alcatel-Lucent Shanghai Bell CR 36.331
13.1.02238 - F Rel-13 LTE_WLAN_radio_legacy-Core
=> Can discuss how to capture that the counter must be provided whenever the IPSec tunnel
is configured.
=> Field descriptions can be worked on offline
=> Revised in [R2-164479](#)

[R2-164479](#) Introduction of LWIP counter Nokia, Alcatel-Lucent Shanghai Bell CR 36.331 13.1.0
2238 1 C Rel-13 LTE_WLAN_radio_legacy-Core
=> Agreed

[R2-164327](#) Reply LS to SA3 on Introduction of LWIP counter (to: SA3; cc: RAN3; contact: Nokia
Networks)
late
=> Attach the agreed CR
=> Approved in [R2-164551](#)

7.14 WI: Narrowband IOT

(NB_IOT-Core; leading WG: RAN1; started: Sep. 15; target: Jun. 16; WID: [RP-152284](#))

Time budget: N/A

Documents in this agenda item will be handled in the NB-IoT Break Out session

7.14.1 General

Organization, Requirements, Overall CP/UP aspects

Incoming LSs:

[R2-163320](#) LS on RRC parameter list for NB-IoT ([R1-163954](#); contact: Huawei) RAN1 LS in
to: RAN2 Rel-13 NB_IoT-Core
late

[R2-163328](#) Reply to: LS on Clarifications on RRC Resume Request (S3-160694; contact: Nokia Networks)
SA3 LS in to: RAN2 Rel-13 NB_IoT-Core
late

Output of email discussions:

[R2-164287](#) 36.300 Running CR to Implement Stage 2 Agreements on NB-IoT Huawei CR 36.300
13.3.00880 - B result of email discussion [93bis#10][NB-IOT] Rel-13 NB_IOT-Core

[R2-164288](#) 36.302 Running CR to Capture Agreements on NB-IoT Huawei CR 36.302 13.1.00076
- B result of email discussion [93bis#15][NB-IOT] Rel-13 NB_IOT-Core

[R2-163903](#) Email report [93bis#16][NB-IOT] CR to 36.306 Ericsson report
result of email discussion [93bis#16][NB-IOT] Rel-13 NB_IOT-Core

[R2-163902](#) Introduction of NB-IoT UE capabilities Ericsson CR 36.306 13.1.01328 - B result of
email discussion [93bis#16][NB-IOT] Rel-13 NB_IOT-Core

[R2-164056](#) UE capability for frequency correction without transmit gapsQUALCOMM Incorporated
discussion

[R2-164161](#) UE Contention Resolution Identity MAC control element Ericsson discussion

[R2-164309](#) Open issues on UE capabilities Ericsson discussion
late

Withdrawn:

[R2-163674](#) 36.300 Running CR to Implement Stage 2 Agreements on NB-IoT Huawei draftCR 36.300
13.3.0- - result of email discussion [93bis#10][NB-IOT] Rel-13 NB_IOT-Core
NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number

[R2-163675](#) 36.302 Running CR to Capture Agreements on NB-IoT Huawei draftCR 36.302 13.1.0-
- result of email discussion [93bis#15][NB-IOT] Rel-13 NB_IOT-Core
NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number

[R2-163873](#) Remaining open issues in NB-IoT Nokia discussion

7.14.2 Control Plane

7.14.2.1 Radio Resource Control - RRC

Output of email discussions:

[R2-164289](#) 36.331 CR to Capture Agreements on NB-IoT Huawei CR 36.331 13.1.02231 - B
result of email discussion [93bis#17][NB-IOT] Rel-13 NB_IOT-Core
NOTE: This CR will be revised in [R2-164290](#) including ASN.1 review comments

[R2-164290](#) 36.331 CR including ASN.1 Huawei CR 36.331 13.1.02231 1 B result of email
discussion [93bis#17][NB-IOT]Rel-13 NB_IOT-Core Revision of [R2-164289](#)

[R2-164034](#) Email discussion report on [NB-IOT-AH#2] Multi-PRB configuration Ericsson discussion
result of email discussion [NB-IOT-AH#2]

[R2-163479](#) Procedure of Access Barring Check for NB-IoT CATT discussion

[R2-163634](#) Random Access for CIoT UP solution in MCO Intel Corporation discussion

[R2-163635](#) Radio Link Failure handlingIntel Corporation discussion

[R2-163640](#) Remaining issues for RLF ZTE corporation discussion

[R2-163641](#) Resume failure and suspension maintenance indication ZTE corporation discussion
- MediaTek agree that NAS needs to be informed

Agreements

- 1: To inform upper layers about the failure to resume the RRC connection with suspend indication or the failure to resume the RRC connection without suspend indication.
- 2: To inform upper layers of the failure to resume the RRC connection with suspend indication in the case that T300 expires after sending RRCConnectionResumeRequest message.

[R2-163679](#) Radio Link Failure Huawei, HiSilicon, Neul discussion

[R2-163683](#) Terminology for NB-IoT solution 18 Huawei, HiSilicon, Neul discussion

[R2-163891](#) Review issue list for NB-IoT second round ASN.1 and RRC review Ericsson, Huawei, HiSilicon, Neul discussion

[R2-163901](#) Content of the RRCConnectionResumeComplete message Ericsson discussion

[R2-163904](#) RLF in NB-IoTEricsson discussion

[R2-164159](#) Further aspects of RRC Resume Ericsson discussion

=> Revised in [R2-164322](#)

[R2-164322](#) Further aspects of RRC Resume Ericsson discussion

[R2-164214](#) Normal data at RRC connection for mo-ExceptionData NEC discussion

[R2-164242](#) Further consideration on DVI LG Electronics Inc. discussion

[R2-164243](#) LS on latest updates about Data Volume Indicator (DVI) for NB-IOT in RAN2 LG Electronics Inc. LS out

[R2-164310](#) Maximum number of NPDCCH repetitions for paging Ericsson discussion late

[R2-164316](#) Inter-node messages in NB-IoT Ericsson CR 36.331 13.1.02237 - B Rel-13 NB_IOT-Core late

Withdrawn:

[R2-163676](#) 36.331 Running CR to Capture Agreements on NB-IoT Huawei draftCR 36.331 13.1.0- - result of email discussion [93bis#17][NB-IOT] Rel-13 NB_IOT-Core

NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number

[R2-163677](#) 36.331 Running CR including ASN.1 Huawei draftCR 36.331 13.1.0- - result of email discussion [93bis#17][NB-IOT] Rel-13 NB_IOT-Core

NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number

[R2-163872](#) Remaining RRC aspects in NB-IoT Nokia discussion

7.14.2.2 System Information

[R2-163370](#) Applicability of Downlink Sub frames for Transmission Gemalto N.V. discussion

[R2-164035](#) SI-message specific repetition levels for NB-IoT Ericsson discussion

[R2-164118](#) Discussion on system information scheduling ZTE Corporation discussion

Withdrawn:

[R2-164300](#) [DRAFT] LS on TB sizes for SI-messages for NB-IoT (to: RAN1; cc: -; contact: Ericsson)

Ericsson LS out result of email discussion [NB-IOT-AH#1] Rel-13 NB-IOT-Core

NOTE: withdrawn due to RAN2#94 Tdoc number allocated instead of NB-IoT AH#2

7.14.2.3 Idle mode procedures

Output of email discussion:

[R2-163870](#) Introduction of NB-IoT in 36.304 Nokia CR 36.304 13.1.00311 - B result of email discussion [93bis#11][NB-IOT]Rel-13 NB_IOT-Core

[R2-163680](#) Discussion on Treselection Huawei, HiSilicon, Neul discussion

[R2-163905](#) RRM issues in NB-IoT Ericsson discussion

Withdrawn:

[R2-163906](#) Temporary Qoffset in NB-IoT Ericsson discussion

[R2-163907](#) Temporary Qoffset in NB-IoT Ericsson CR 36.331 13.1.02179 - B Rel-13 NB_IOT-Core

7.14.2.4 Paging

[R2-163790](#) Further Discussion on Idle Mode DRX Samsung Electronics Co., Ltd discussion

7.14.3 User Plane

7.14.3.1 MAC/RLC

Output of email discussions:

[R2-163638](#) Summary of email discussion [93bis#07][NB-IOT] RACH open issuesZTE corporation discussion result of email discussion [93bis#07][NB-IOT]

[R2-163392](#) Email disc summary on t-Reordering for NB-IoT NTT DOCOMO INC. report

Re-submission of [R2-163217](#); result of email discussion [93bis#08]

[R2-164036](#) Email discussion report on [93bis#12][NB-IOT] CR to 36.321 Ericsson discussion result of email discussion [93bis#12][NB-IOT]

[R2-164298](#) Introduction of NB-IoT to 36.321 Ericsson CR 36.321 13.1.00883 - B result of email discussion [93bis#12][NB-IOT]Rel-13 NB_IOT-Core

[R2-164283](#) Introduction of NB-IoT NTT DOCOMO INC. CR 36.322 13.1.00121 - B result of email discussion [93bis#13][NB-IOT] Rel-13 NB_IOT-Core

- [R2-163387](#) Short Packet Mode for DVI and RCL on UEASTRI discussion
- [R2-163483](#) Subsequent BSR/PHR Transmission CATT discussion
- [R2-163639](#) Remaining MAC issues ZTE corporation discussion
- [R2-163678](#) UL Scheduling Remaining Issues Huawei, HiSilicon, Neul discussion
- [R2-163681](#) Random Access Procedure Remaining Issues Huawei, HiSilicon, Neul discussion
- [R2-163682](#) Discussion on DVI and BSR Huawei, HiSilicon, Neul discussion
- [R2-163779](#) Connected Mode DRX Configuration for NB IoT Samsung Electronics Co., Ltd discussion
- [R2-163851](#) Connected mode DRX for NB-IOT MediaTek Inc. discussion
- [R2-163852](#) NB-IOT MAC Issues on DVI and BSR MediaTek Inc. discussion
- [R2-163871](#) Further details on RA procedure Nokia discussion
- [R2-164038](#) UE Contention Resolution Identity MAC control element Ericsson discussion
- [R2-164039](#) Connected mode DRX timers for NB-IoT Ericsson discussion
- [R2-164040](#) BSR and DVI for NB-IoT Ericsson discussion
- [R2-164041](#) UP miscellaneous timers for NB-IoT Ericsson discussion
- [R2-164202](#) Reconsideration on drx-InactivityTimer for NB-IoT LG Electronics Inc., Nokia, NEC discussion
=> Revised in [R2-164307](#)
- [R2-164307](#) Reconsideration on drx-InactivityTimer for NB-IoT LG Electronics Inc., Nokia, NEC, Alcatel-Lucent Shanghai Bell, CATT
- [R2-164311](#) Release assistance indication in MAC Ericsson, Vodafone GmbH, AT&T, Gemalto N.V., CATT discussion
late

Withdrawn:

- [R2-163393](#) Introduction of NB-IoT NTT DOCOMO INC. draftCR 36.322 13.1.0- - B result of email discussion [93bis#13][NB-IOT] Rel-13 NB_IOT-Core
NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number
- [R2-164037](#) Introduction of NB-IoT to 36.321 Ericsson draftCR 36.321 13.1.0- - result of email discussion [93bis#12][NB-IOT] Rel-13 NB_IOT-Core
NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number
- [R2-164038](#) UE Contention Resolution Identity MAC control element Ericsson discussion
NOTE: [R2-164038](#) is replaced by [R2-164161](#)

7.14.3.2 PDCP

Output of email discussions:

- [R2-164297](#) Introduction of NB-IoT functionality to PDCP protocol Qualcomm Incorporated (Rapporteur) CR 36.323 13.1.00171 - B result of email discussion [93bis#14][NB-IOT] Rel-13 NB_IOT-Core
- [R2-164042](#) Email discussion report on [NB-IOT-AH#3] PDCP handling at Resume Ericsson discussion result of email discussion [NB-IOT-AH#3] Rel-13 NB_IOT-Core
- [R2-164043](#) Draft CR to 36.331 for updates related to RRC suspend/resume Ericsson draftCR 36.331 13.1.0- - Rel-13 NB_IOT-Core
NOTE: No intension to submit to RAN plenary
- [R2-164044](#) Draft CR to 36.323 for introducing RRC suspend/resume Ericsson draftCR 36.323 13.1.0- - Rel-13 NB_IOT-Core
NOTE: No intension to submit to RAN plenary
- [R2-164308](#) Discussion on PDCP SDU Size Huawei, HiSilicon, Neul discussion
late

Withdrawn:

- [R2-163880](#) Introduction of NB-IoT functionality to PDCP protocol Qualcomm Incorporated (Rapporteur) draftCR 36.323 13.1.0- - B result of email discussion [93bis#14][NB-IOT] Rel-13 NB_IOT-Core
NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number

7.15 Other LTE Rel-13 WIs

7.15.0 In Principle agreed CRs

- [R2-163613](#) Support of CRS-Assistance signaling for the DL Control Channel IM Intel Corporation CR 36.331 13.1.02152 - C Rel-13 LTE_IM_DLCCH
NOTE: Wrong WI code used. '-Perf' should be added.
=> Revised in [R2-164312](#)
- [R2-164312](#) Support of CRS-Assistance signaling for the DL Control Channel IM Intel Corporation CR 36.331 13.1.02152 1 C Rel-13 LTE_IM_DLCCH-Perf
- [R2-163935](#) UL UE Categories support for 64 QAM Nokia, Alcatel-Lucent Shanghai Bell, NTT DOCOMO, INC. CR 36.331 13.1.02186 - F Rel-13 LTE_UL64QAM
NOTE: Wrong WI code used and '-Core' should be added.
=> Revised in [R2-164313](#)
- [R2-164313](#) UL UE Categories support for 64 QAM Nokia, Alcatel-Lucent Shanghai Bell, NTT DOCOMO, INC. CR 36.331 13.1.02186 1 F Rel-13 LTE_UL64QAM-Core
- [R2-164246](#) Correction on keeping SCG upon inter eNB handover Huawei, HiSilicon CR 36.331 13.1.02221 - F Rel-13 LTE_dualC_ext-Core
=> All above CRs are agreed

7.15.1 Others

- [R2-164188](#) Introducing UE capability of CRS-IM for TM 1-9 Qualcomm Inc., LG Electronics Inc. CR 36.331 13.1.02212 - B Rel-13 LTE_CRSIM-Perf
NOTE: Cat.B used for closed WI code
- [R2-164189](#) Introducing UE capability of CCH-IM (Option 1: 1 bit) Qualcomm Inc., LG Electronics Inc. CR 36.331 13.1.02213 - B Rel-13 LTE_IM_DLCCH-Perf
- [R2-164190](#) Introducing UE capability of CCH-IM (Option 2: 2 bits) Qualcomm Incorporated CR 36.331 13.1.02214 - B Rel-13 LTE_IM_DLCCH-Perf
=> Comeback Friday for all above 3 CRs if we have received LS from RAN4
=> Postponed
- [R2-164260](#) Handling upon the handover from the MeNB to the SeNB Huawei, HiSilicon discussion
=> Noted
- [R2-164261](#) Clarification on the handover from the MeNB to the SeNB Huawei, HiSilicon CR 36.331 13.1.02226 - F Rel-13 LTE_dualC_ext-Core
=> Revised in [R2-164528](#)
- [R2-164528](#) Clarification on the handover from the MeNB to the SeNB Huawei, HiSilicon CR 36.331 13.1.02226 - F Rel-13 LTE_dualC_ext-Core
=> Agreed

7.16 LTE TEI13 enhancements

Small Technical Enhancements affecting LTE Rel-13 that do not belong to any Rel-13 WI.

Note: A TEI enhancement proposal should be treated for only one meeting cycle and involve only one WG. Otherwise, a WI should be proposed at RAN plenary!

Only contributions related to already submitted proposals will be treated under TEI13 (e.g. CIoT optimisations for non-NB-IoT UEs, Control of Unattended/Background Traffic)

7.16.1 CIoT optimisations

Including output of email discussion [93bis#30][LTE/CIOT opt] Stage 3 CR (Ericsson)

Incoming LS:

- [R2-163306](#) Reply LS to [R2-162020](#) on the RRC establishment cause for CIoT in WB-E-UTRAN (C1-162140; contact: NTT DOCOMO) CT1 LS in to: RAN2 Rel-13 CIoT-CT
Moved from 3.2 to 7.16.1

- Draft response in [R2-163908](#)
- => Noted

[R2-163317](#) Reply LS to S2-161260 = [R2-162117](#) on Clarifications on RRC Resume Request (R3-161016; contact: Ericsson) RAN3 LS in cc: RAN2Rel-13 NB_IoT-Core
Moved from 3.2 to 7.16.1

=> Noted

Output of email discussion:

[R2-164171](#) Summary of email discussion 93bis#30 for CIOT opt solution Ericsson discussion result of email discussion [93bis#30]

P1,2

- Intel think if dedicatedInfoNas is included then NAS can be sent in the complete message then it can be uncertain whether a NAS message in the complete of sent on SRB2 is received first. Ericsson think that the eNB can ensure that the NAS PDUs can be delivered to the higher layers in the correct order. Intel think the consequence is that the first NAS PDU must be in the RRCResumeComplete.
- ZTE think the selectedPLMNid should be optional. Huawei think all the parameters in P1 should be optional

P3,4

- Intel wonder if we need to discuss the whole procedure or just this small part. Ericsson think the rest of the procedure is clear from the running CR, and also we will discuss the context information.
- Samsung think that with P4 we are mimicking re-establishment but now also trying to add some of the functionality of the subsequent reconfiguration. Ericsson think it is a bit different as in this case there is no mandatory subsequent reconfiguration. And also think it is important to avoid overhead in this case.
- Qualcomm think the parameters should be released at the time of suspension instead of resume.

P6

- Intel want to confirm that the indication in SIB2 do not impact mobility in any way. Huawei agree that it should not impact mobility. Nokia also agree.

P7

- Huawei prefer separate message for NB-IoT and LTE as the content will be a bit different for the 2 cases. Nokia suggest that this is discussed in NB-IOT session. Ericsson prefer to have a common message definition and all we need to check is that the request doesn't go over the message size limit. Vodafone has sympathy for keeping separate messages but suggests to discuss in NB-IOT session.

P8

- Qualcomm think that up solution should be handled in the same way as the CP solution. All flags should be provided in advance of connection establishment to upper layers. Nokia agree with Qualcomm so NAS layer can select the correct solution.
- DOCOMO think that it is sufficient for NAS to know about the support of CP solution, and the support of UP solution can be handled in the AS layer.

P9

- Intel wonder if option d works if the UE moves to a non-supporting cell and then returns back to a supporting cell. Ericsson agree that this should not be done as it releases the context unnecessarily. Huawei think that this will not be a common case as a whole area of the network will support this CIOT optimisation. Qualcomm agree that d is not good for all scenarios.
- Samsung think that that the NAS doesn't need to know whether it is a resume procedure of an RRC Connection Establishment procedure. Ericsson understand that NAS does need to know between the 2 procedures.
- Qualcomm think that with option c the UE can fall back to CP solution or it can also delay the data further. NAS need the information to make the decision.
- From short offline: There is some support for both a and c.
- Ericsson prefer a as it is the simplest approach. Huawei think that option c is not complicated. Nokia also support option c as this is anyway done for the CP solution. Qualcomm agree that option c is better. CATT also support option c so NAS handles all selection. Intel can seem some benefit of option a but suggest that we can wait for CT1. DOCOMO has some sympathy with option a as our intention was to reduce signalling load

over the air and think it should not be a choice of NAS whether RRC is resumed or established from scratch. LG also prefer option a. Vodafone think we should go for the simplest approach which is option c.

P11, 12, 13

- Ericsson think it is not needed to list all parameters. Huawei support Ericsson, and also if not sure that we need to define the UE resume context, we can just state that the UE keeps the current configuration.
- Nokia ask if there is some harm in listing these things. Ericsson think that it would mean that we need to list everything. Nokia suggest that it is defined as 'anything that can be configured with RRC reconfiguration'.
- MediaTek think we decided in NB-IoT that we would not define in detail. The only need for detail definition is the UE context forwarded over X2. Ericsson think the X2 is a separate discussion. MediaTek explain the difference between NB-IoT and LTE is just the parts of the configuration that are release.
- Qualcomm prefer to define all IEs.
- => Offline discussion to conclude how to define the UE resume context. (Ericsson)
- Intel have some concerns on agreement 10 and would like some offline discussion
- Ericsson agree that this agreement is more related to complexity reduction that the resume functionality and it can be discussed more.
- Update from offline: Also discussed with NB-IOT session and is captured in both the NB-IOT and CIOT CRs.

- => Offline discussion on the number of DRBs to be supported in relation to MTC (Intel)
- Update from offline:
- => The number of DRBs supported by the LTE UE (for UEs supporting UP optimisation and/or CP optimisation) is the same as for legacy LTE UEs.

- Nokia think there is no behaviour for integrity check failure of the RRCConnectionResume. Nokia propose that in this case the UE deletes the stored context. Intel thinks that a fraudulent network could send a resume and delete the UE contexts.
- => Offline discussion on how to handle the integrity check failure in the resume message. (Nokia)
- Update from offline: An LS to SA3 was sent from the NB-IOT session

Agreements:

- 1 Add following parameters to RRCConnectionResumeComplete: selectedPLMN-Identity, dedicatedInfoNAS, rlf-InfoAvailable, logMeasAvailableMBSFN, logMeasAvailable, connEstFailInfoAvailable, mobilityState, mobilityHistoryAvail. All fields are optional fields.
- 1a If NAS message is received in RRCConnectionResumeComplete and on SRB2 then NAS message in RRCConnectionResumeComplete is delivered to upper layers first.
- 2 During RRC Resume, UE releases those parameters which are released during re-establishment today: MCG SCell(s), powerPrefIndicationConfig, reportProximityConfig, obtainLocationConfig, idc-Config, measSubframePatternPCell, SCG configuration, naics configuration, LWA configuration and LWIP release procedure. When the parameters are released will be finalised in the details of the CR.
- 3 Add possibility to reconfigure measConfig and antennaInfoDedicatedPCell to RRCConnectionResume in addition to radioResourceConfigDedicated
- 4 radioResourceConfigDedicated-r13 in RRCConnectionResume should have need code NEED ON.
- 5 The indications in SIB2 for the support of "CIoT CP solution", "CIoT UP solution" and "Attach without PDN" can be signalled per PLMN.
- 6 Introduce new messages for RRCConnectionResumeRequest and RRCConnectionResume in the LTE module. (NB-IOT can discuss whether to reuse this or add separate definitions)
- 7 The AS layer forwards broadcasted cpCIoTEPSOptimisation-allowed indication from SIB2 to the NAS layer. NAS layer knows the support indications in advance of connection establishment and handles further actions in this case.
- 8 Agree solutions 'c' for the handling the scenario when the cell does not support UP CIoT optimization (i.e. indicate support of option c to NAS).
- 9 Non-NB-IoT UEs using CIoT CP solution support AS security and RRC Configurations procedures

10 The UE supporting AS context caching should support all features mandatory for its category/release

=> Send LS to CT1 to inform them of this agreement re indicating supported features to upper layers. [R2-164426](#) (Ericsson)

[R2-164426](#) DRAFT - LS to CT1 on RAN2 agreements on CIoT optimisations Ericsson
 => Correct cpCIOTEPSOptimisation-allowed to be aligned with latest CR.
 => Last sentence of bullet 3 revised to " If NAS layer request AS to perform RRC Connection Establishment then the AS layer will release the stored context."
 => Change " RRC resume " to "UP optimisation" in bullet 3.
 => Change bullet 2 to say that all indications in SIB2 are forwarded to upper layers.
 => Add that bullet 3 is an example.
 => Approved in [R2-164460](#)

[R2-164172](#) Running CR to capture CIoT optimizations for non-NB-IoT UEs Ericsson CR 36.331
 13.1.02210 - B Rel-13 TEI13
 NOTE: WI code is missing in Tdoc request
 - Can be indicated on the cover page if there is a potential conflict with another CR
 => Revised in [R2-164427](#) CR Rev1 to capture agreements from this meeting
 => Coversheet to be updated.

[R2-164427](#) CR to capture CIoT optimizations for non-NB-IoT UEs Ericsson CR 36.331 13.1.02210
 1 B Rel-13 TEI13
 => Some (editorial) alignment to NB-IOT CRs is required.
 => LTE and NB-IOT will have separate message definitions.

✉ **[94#06][LTE/CIOT] RRC CR (Ericsson)**
 Companies should provide comments on aspects common to NB-IOT and CIOT CRs to this email discussion.
 Intended outcome: Agreed CR to RAN
 Deadline: Thursday 02/06/2016

✉ **[94#07][LTE/CIOT] PDCP CR (Ericsson)**
 CR is a 'mirror' of the already agreed NB-IOT PDCP CR with some NB-IOT sepecific aspects removed.
 Intended outcome: Agreed CR to RAN
 Deadline: Thursday 02/06/2016

Random access

[R2-163368](#) RA preamble partitioning for multiple CCCH SDU sizes NTT DOCOMO, INC. discussion
 - Huawei think that for legacy UE the size of msg3 is not normally larger than 56 bits. DOCOMO explain that since release 8 it has been possible to indicate a larger grant size based on this mechanism. Huawei agree it is in the spec but msg3 is never greater than 56 bits.
 - Ericsson ask if there is any network control over this new behaviour, and think it would be good have control. Ericsson point out that the current requirement that the UL grant is only 56 bits.
 - DOCOMO think it can be network choice to always assign the larger grant size, or instead to use this mechanism of the network doesn't want to use larger grant to legacy UEs.
 - Intel how can the network indicate that the UE must use a truncated resume ID. DOCOMO explain there is a bit in the SIB to request the use of the short resume ID.
 - NEC think that the UE should be allowed to send the truncated ID even if the cell is requesting the full resume ID.
 - DOCOMO explain the current PRACH partition is not applied for Cat M UEs.

Agreements

1 UE selects RA preamble group B such if the CCCH SDU size is greater than messageSizeGroupA irrespective of the pathloss threshold.
 FFS if any further network control of this behaviour is required.

FFS whether this behaviour applies to Cat.M1 UEs.

- => Offline discussion on FFS points. (DOCOMO)
- Update from offline: On first FFS point there was still opinion that a broadcast control bit is needed. On second FFS it was found that from RRC point of view the legacy parameter setting can be applicable for Cat M1 UEs. No additional enhancement is needed for this part - i.e. legacy parameters are used by M1 UEs.
- Samsung wonder whether we can add the broadcast control bit at this late stage. DOCOMO think that even without this bit don't see any legacy issues.
- Huawei don't see the need to add the new broadcast bit.
- => Don't add a broadcast indication to control this behaviour.

[R2-163425](#) RACH partitioning extension for U-plane C-IoT optimisation NTT DOCOMO, INC. CR 36.321 13.1.00857 - C Rel-13 TEI13

- Samsung think the message size group A refers to the MAC PDU and not the CCCH SDU.
- => Revision in [R2-164428](#) CR Rev 1 to also include any outcome from offline discussion of FFS points.

[R2-164428](#) Functional extension for U-plane C-IoT optimisation NTT DOCOMO, INC. CR 36.321 13.1.00857 1 C Rel-13 TEI13

- => Impact analysis to be added

✉ **[94#08][LTE/CIOT] MAC CR on RACH partitioning (DOCOMO)**
 Intended outcome: Agreed CR to RAN ([R2-164555](#))
 Deadline: Thursday 02/06/2016

[R2-163669](#) Discussion on option 2c and PRACH partitioning Samsungdiscussion

- Samsung explain that they are ok with the DOCOMO proposal.
- => Noted

[R2-164213](#) Resume ID for non-NB-IoT NEC discussion

- Ericsson think we should not make a difference for BL UEs and UEs in EC.
- Samsung think the simplest approach is to do nothing for this case. Meaning that is eNB requests full ID then eNB must always give a larger grant.
- => We will not support further enhancements to PRACH partitioning for MTC UEs and UEs in EC. If network requests full resume ID then it will always be used.

[R2-164045](#) UE Contention Resolution Identity MAC control element Ericsson discussion

- Samsung wonder whether it is easier to have a larger contention resolution MAC CE. Ericsson prefer to avoid the extra overhead or define a new MAC CE. Huawei think it is better to truncate. Nokia also support to truncate to allow reuse the existing MAC CE
- ZTE support the Ericsson proposal.
- Samsung would like to check what the CR looks like.
- => The Contention resolution MAC CE is constructed by truncating the UL CCCH to (first) 48 bits.
- => Changes for that can be included in revision of [R2-163425](#)

Resume ID

[R2-163670](#) How to truncate RESUME ID Samsungdiscussion

- Huawei prefer to use the 24 LSBs to include more bits of the UE id and less of the eNB Id.
- ZTE think this paper assumes that it is not aligned to the decision taken in RAN3. RAN3 have agreed that there will be 20 bits of the network and 20 of UE Id. Samsung think that RAN3 did not agree on any particular structure.
- Ericsson can support the Huawei proposal to provide 24 LSBs. Sony think in many case the eNB part is useless.
- Vodafone think RAN3 needs to define a fixed mapping to enable interworking between network vendors.
- ZTE prefer the mapping to be configurable.
- Intel think the source eNB can resolve the UE id based on the MAC-I which is now provided to the source and hence it makes sense for the UE to provide as much as possible of the eNB ID.
- => Discuss offline (Samsung)

- Update from offline. Options still under consideration:
 - a/ 24 LSB
 - b/ 24 bit in the middle
 - c/ 12 LSB from 20 MSB and 12 LSB from 20 LSB
- => Truncated ID constructed as 12 LSB from 20 MSB and 12 LSB from 20 LSB
- => LS to RAN3 to inform them that they use the same mapping when they send the truncated ID over X2
- => LS **R2-14509** (ZTE)

[R2-164509](#) DRAFT LS on truncated Resume ID (to: RAN2; cc: -; contact: ZTE) ZTE LS out
 => First bullet to start "• When sending the release indication to the UE, RAN2 understands that the eNB formats the ..."
 => Approved in [R2-164525](#)

[R2-163910](#) Terminology for Resume ID Huawei, HiSilicon discussion
 - Ericsson prefer to keep resume ID. Samsung also ok with resume ID. MediaTek also agree
 => Noted

Other

[R2-163909](#) Open issues on CIoT optimizations for non-NB-IoT Huawei, HiSilicon discussion
 => Already covered by earlier discussion

[R2-163642](#) Open issues for CIoT optimization ZTE corporation discussion
 => Revised in [R2-164320](#)

[R2-164320](#) Open issues for CIoT optimization ZTE corporation discussion
 - Ericsson think NB-IoT agreed to use the existing short MAC-I calculation. ZTE think this was left open in NB-IoT
 => To be discussed in NB-IoT session. LTE will follow the decision from NB-IoT

[R2-163362](#) Precondition for suspend ? Samsung R&D Institute UK discussion
 - Intel has the same understanding for whole solution, not just NB-IOT and MTC.
 => Confirm that for NB-IOT and LTE, connection suspension can only be performed when at least 1 DRB is successfully established. To be clarified in the RRC CR.

Further optimisations

- [R2-164274](#) Early RRC Connection Release for CIoT traffic support Sequans Communications discussion
- [R2-164275](#) Introduction of Release Indication PDCP Control PDU Sequans Communications CR 36.323 13.1.00170 - B Rel-13 TEI13
- [R2-164276](#) Introduction of Release Indication Sequans Communications CR 36.331 13.1.02228 - B Rel-13 TEI13
- [R2-164277](#) Introduction of SRB only handover HTC Corporation CR 36.331 13.1.02229 - B Rel-13 TEI13
- [R2-164278](#) Introduction of inter-RAT handover from LTE for SRB only HTC Corporation CR 25.331 13.2.05872 - B Rel-13 TEI13
- [R2-164279](#) Introduction of UE capability for SRB only handover HTC Corporation CR 36.306 13.1.01336 - B Rel-13 TEI13
- Above 6 Tdocs not treated

Withdrawn:

[R2-164319](#) Consideration on truncated ResumeID ZTE Corporation discussion

7.16.2 Other

Including output of email discussion [93bis#18][LTE/HPUE] LS from RAN4 [R2-162991](#) (Sprint)

Including output of email discussion [93bis#19][LTE/Rel-13] TDD/FDD capabilities (Huawei)

Including output of email discussion [93bis#21][LTE/Unattended data] 36.331 CR (Verizon)

Output of email discussions:

HPUE

[R2-163350](#) Email Discussion 94-18 HPUE RAN4 LS SPRINT Corporation report result of email discussion [93bis#18][LTE/HPUE]
 - Intel wonder what is the need to have this from Rel 13. Sprint would like this to be included in R13 UEs and don't see an issue with doing this.
 - Qualcomm think the band support is release independent. OK to add this in R13.
 - Huawei share the view from Qualcomm and so ok to add this in R13. Samsung agree.
 Agreements:
 1. Add in Rel 13 a new per band capability to indicate the power class to the eNB.
 => LS to RAN4 to inform them out decision from this meeting. [R2-164488](#) (Sprint)

[R2-164488](#) Draft reply LS to RAN4 on HPUE Sprint LS out
 => Final sentence changed to " Furthermore, RAN2 asks RAN4 to define a default power class per band in TS 36.101 Rel-13."
 => Approved in [R2-164556](#)

[R2-164133](#) UE Power Class in UE capability signaling Ericsson, SprintCR 36.331 13.1.02203 - F Rel-13 TEI13
 - Samsung ask if the spares are really usable.
 - DOCOMO think that this is not needed for any band with only a single power class. Think instead we could refer to RAN4 spec for a default value of power class.
 => Remove the default of 23 dBm and point to RAN4 spec for the default power class.
 => Remove the spares
 => ASN.1 to be corrected
 => Revised in [R2-164486](#) CR Rev 1

[R2-164486](#) UE Power Class in UE capability signaling Ericsson, SprintCR 36.331 13.1.02203 1 F Rel-13 TEI13
 => Agreed

[R2-164136](#) UE Power Class in UE capability signaling Ericsson, SprintCR 36.306 13.1.01333 - F Rel-13 TEI13
 => Remove the default of 23 dBm and point to RAN4 spec for the default power class
 => Reference to 36.133 to be corrected.
 => Move to 4.3.5.2
 => Agreed in [R2-164487](#) CR Rev 1

TDD/FCC UE

[R2-163919](#) Summary of email discussion: [93bis#19][LTE/Rel-13] TDD/FDD capabilities Huawei report result of email discussion [93bis#19]

Agreements

- 1 "LTE carrier aggregation beyond 5CCs" capabilities are not differentiated for FDD and TDD.
- 2 Proposal 2: SC-PTM capabilities are differentiated for FDD and TDD.

[R2-163920](#) Correction on FDD/TDD differentiation for Rel-13 capabilities Huawei CR 36.331 13.1.02180 - F result of email discussion [93bis#19] Rel-13 TEI13
 => Agreed

Unattended data

[R2-163460](#) Restricting Unattended Data Traffic Verizon, Ericsson, Qualcomm Inc., Applied Communication Sciences, Office of Emergency Communications, MediaTek draftCR 36.331 13.1.0- - B result of email dsicussion [93bis#21][LTE/Unattended data] Rel-

13 TEI13

NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number

=> Revised in [R2-164284](#)

[R2-164284](#) Restricting Unattended Data Traffic Verizon, Ericsson, Qualcomm Inc., Applied Communication Sciences, Office of Emergency Communications, MediaTek CR 36.331 13.1.02230 - B result of email discussion [93bis#21][LTE/Unattended data] Rel-13 TEI13

- Nokia suggests avoiding the repetition by grouping the fields into an IE definition.
- Samsung ask if there is discussion about stopping the timer such as cell reselection. Verizon explain that the timer always runs until expiry. Intel understood that at cell reselection it should be stopped.

=> Changes on changes to be removed

=> Remove revision marks from cover page

=> ASN.1 to be updated with a IE definition to group the fields

=> Discuss if any timer stop condition is needed

=> Revised in [R2-164503](#) CR Rev 1

[R2-164503](#) Restricting Unattended Data Traffic Verizon, Ericsson, Qualcomm Inc., Applied Communication Sciences, Office of Emergency Communications, MediaTek CR 36.331 13.1.02230 1 B result of email discussion [93bis#21][LTE/Unattended data] Rel-13 TEI13

=> Agreed

ASN.1 review leftovers

[R2-163983](#) ASN.1 review left-overs Ericsson discussion

Proposal 1 Close all remaining issues and discuss possible actions."

Proposal 2 Issues S.113, E.208, Z.015, H.040, D.012, E.212 and E.172 can be closed without actions.

Proposal 3 Issues C.006, H.024, Z.007, C.010, C.015 and D.013 can be closed for now in the review issues list but discussed further as maintenance issues if there is still some interests to correct them.

Proposal 4 Issue C.015 can be closed in the review issues list for now but discussed further as a maintenance issue if there is still some interests to correct it.

Proposal 5 Issues D.038 can be captured in 36.331 v13.2.0.

Proposal 6 Correct the usage of field and information element terms in 36.331 v13.2.0.

Proposal 7 Discuss the concept of unified indentation offline and fix the indentation issue e.g. during CR implementation as soon as the NB-IoT work item is completed.

=> All proposals above agreed

[R2-163984](#) Miscellaneous corrections resulting from REL-13 ASN.1 review Ericsson CR 36.331 13.1.02193 - F Rel-13 TEI13

=> Only D038 to be kept

=> Move to the annex containing guidelines and add a note pointing to the Annex.

=> Agreed in [R2-164504](#) CR Rev 1

[R2-163985](#) Review issue list for ASN.1 freeze Ericsson discussion

=> To be revised according to the outcome of [R2-163983](#)

=> Ensure all issues are closed

=> Revised in [R2-164505](#)

[R2-164505](#) Review issue list for ASN.1 freeze Ericsson discussion

=> ASN.1 review is complete.

[R2-163354](#) Miscellaneous corrections to TS 36.331 Intel Corporation CR 36.331 13.1.02115 - F Rel-13 TEI13

=> revised in [R2-164332](#)

[R2-164332](#) Miscellaneous corrections to TS 36.331 Intel Corporation CR 36.331 13.1.02115 1 F Rel-13 TEI13

=> downlinkLAA field to be clarified if there is additional functionality that needs to be supported.

=> Revised in [R2-164506](#) CR Rev 2

R2-164506	Miscellaneous corrections to TS 36.331 Intel Corporation Rel-13 TEI13 => Agreed	CR	36.331	13.1.02115	2	F
R2-163355	Miscellaneous corrections to TS 36.306 Intel Corporation Rel-13 TEI13 => revised in R2-164333	CR	36.306	13.1.01314	-	F
R2-164333	Miscellaneous corrections to TS 36.306 Intel Corporation Rel-13 TEI13 => downlinkLAA part needs revision based on offline discussion => Revised in R2-164507 CR Rev 2	CR	36.306	13.1.01314	1	F
R2-164507	Miscellaneous corrections to TS 36.306 Intel Corporation Rel-13 TEI13 => Agreed	CR	36.306	13.1.01314	2	F
R2-163878	Miscellaneous corrections HTC Corporation TEI13 => Impact analysis to be added. => Agreed in R2-164508 CR Rev 1	CR	36.331	13.1.02176	-	F Rel-13
R2-163986	Correction to usage of field and information element terms 2194 - F Rel-13 TEI13 => Merged with Intel CR in R2-164333 => Not pursued	Ericsson CR	36.331	13.1.0		
Other						
R2-163673	Correction of ECID positioning for TDD - F Rel-13 LCS_LTE, TEI13 ☒ [94#09][LTE/ECID positioning] (Qualcomm) Intended outcome:Agreed CR to RAN Deadline: Thursday 02/06/2016	Qualcomm Incorporated CR	36.355	13.1.00143		
R2-164194	Clarification on RA-RNTI determination for PRACH in TDD 36.321 13.1.00882 - F Rel-13 TEI13 => Agreed	Qualcomm Incorporated CR				
R2-163867	Correction on MAC entity - F Rel-13 TEI13	ASUSTEK COMPUTER (SHANGHAI) CR	36.321	13.1.00863		
R2-163881	Detecting new inter-RAT neighbours Nokia, Alcatel-Lucent Shanghai Bell	discussion				
R2-163883	Detecting new inter-RAT neighbours Nokia, Alcatel-Lucent Shanghai Bell 13.1.02177 - C Rel-13 TEI13	CR 36.331				
R2-164195	UE Preferred C-DRX Cycle Reporting for VoLTE Motorola Solutions Inc., Sprint Corp., the U.S. Department of Commerce, Verizon Rel-13 TEI13	Qualcomm Inc., Apple Inc., AT&T Inc., discussion				
R2-163459	Discussion on RRC state mismatch Avoid eMTC/NB-IoT UEs Staying in RRC Connected State Unnecessarily discussion Above 6 Tdocs not treated	NTT DOCOMO INC. discussion Qualcomm Inc.				

8 LTE Rel-14

8.1 WI: Enhanced LAA for LTE

(LTE_eLAA-Core; leading WG: RAN1; REL-14; started: Dec. 15; target: Sep. 16; WID: [RP-160407](#))

Time budget 2TU

8.1.1 Random Access for LAA SCell

[R2-164052](#) Random access for LAA SCell Nokia, Alcatel-Lucent Shanghai Bell discussion

- Discussed in combination with following paper.

P2

- Huawei support this proposal

P3

- Huawei think that we can reuse the existing formula unless RAN1 decide something different.

P4

- Huawei support this proposal

P5

- Ericsson think the behaviour today is that it is left to UE implementation but it seems a reasonable proposal. Nokia think that in legacy it was an unintentional case, but in this case it might be intentional behaviour for example due to the observed load in one cell it can change to another.
- LG ask what the UE should do if it gets a PDCCH order in the same cell. If the UE has received a RAR in the same TAG does it make sense to follow the new PDCCH order.
- Samsung think it can still be left to UE implementation. BlackBerry thinks we have in the past we decided not to optimise for cases where the SCell is heavily loaded and it would be better for eNB to remove the SCell.

=> Noted

[R2-164206](#) Life time of a dedicated preamble on LAA SCell LG Electronics Inc. discussion

P1

- Ericsson think that we can just define the behaviour for all cells and it will be ok.
- LG think for legacy it is quite clear that the duration is limited.
- Huawei think it is reasonable to clarify that the new behaviour is only for LAA SCell

P2

- Ericsson think that a timer adds complexity and it might impact the number of preambles sent depending on how far in advance the preamble is scheduled.
- Intel think that RAN1 are still discussing the PDCCH order and think that they may defined a limited resource allocation for the PRACH. BlackBerry understand that all UL transmission will be scheduled by the eNB so the eNB always knows and there is no ambiguity.
- Samsung think this is independent of the RAN1 discussion and the LG proposal makes sense.
- Huawei think it is true that RAN1 still discuss whether PRACH resource is periodic.
- Ericsson suggest to stay with the current approach which is to use counters. Huawei agree with counter. BlackBerry agree.
- Samsung think with the counter the eNB doesn't know how long the UE keeps the preamble. eNB can't know if the UE is successful or not at LBT. BlackBerry think that the eNB only needs to know the RACH resource and the UE counts on every RACH resource irrespective of whether transmission occurs in that resource. Samsung think in this case the existing counter can be used. Huawei think there will be 2 counters, one for counting the PRACH resources and the other for power ramping.
- Nokia also support the counter.
- Huawei think we can use the same preambleTransMax as currently defined

Agreements:

1. RAN2 confirms that we will specify that the dedicated RAP is used for a limited time duration only for LAA SCell (CR details are still FFS).
2. Introduce a new random access preamble transmission attempt counter PREAMBLE_ATTEMPT_COUNTER which is incremented regardless of whether a transmission occurs
3. Transmission of RAR always happens in PCell.
4. For calculation of RA-RNTI, the existing formula can be reused, i.e., t_id is the index of the first subframe of the specified PRACH ($0 \leq t_id < 10$) and f_id is the index of the specified PRACH interlace/PRB within that subframe $0 \leq f_id < 6$.
5. The RA preamble (re)transmission should always be in the same LAA SCell.

[R2-163662](#) UL grant in RAR for eLAA SAMSUNG Electronics Co., Ltd. Discussion

- Samsung think NDI was not discussed for MTC but it should be discuss for that case also.
 - Huawei support the proposal to reuse the MTC approach but not sure if we need anything for NDI.
 - Samsung explain that RAR is received on PCell but msg 3 is transmitted on the SCell. DOCOMO understand that the msg 3 would also be in the PCell. Huawei think what matters is whether the HARQ is async and not whether it is SCell.
- => Noted

Agreement

- 1 Use a predefined HARQ process ID for RAR for eLAA. (same mechanism can be re-used for Rel-13 eMTC.)

FFS Whether a predefined value for NDI is required

[R2-163610](#) Remaining issues on RACH for eLAA Intel Corporation discussion

[R2-163725](#) Random Access for eLAA Samsungdiscussion

[R2-164009](#) Impact on Random Access due to LBT Ericsson discussion

=> Above 3 contribution not discussed based on outcome of above papers.

[R2-164252](#) Considerations on leftover issues for RACH Huawei, Ericsson discussion

P1

- Ericsson think that the UE should still monitor. The eNB may not have been able to send a RAR in one window and may defer it to a later window. UE should still monitor even if the UE was not able to transmit another preamble. BlackBerry agree that for the first attempt there is no point to monitor for RAR if LBT fails.
- LG think we have the case today where preamble is not sent due to measurement gap and the UE is still required to monitor.
- Samsung think that this means the UE will add additional delay after a preamble where LBT fails.
- Intel would prefer more time to think.

=> Proposal 1 can be consider again for the next meeting

=> Noted

8.1.2 UL HARQ for LAA SCell

[R2-164253](#) The UE handling on the dropped UL HARQ transmission Huawei, HiSilicon discussion

- Ericsson thinks we agreed to do this last time by not agreeing an opposite proposal.

Agreements

- 1: For LAA SCell(s), the dropped transmission due to LBT is considered as performed transmission, i.e. the MAC entity remembers the NDI regardless of the LBT result.

[R2-164238](#) Clarification of UL HARQ Handling QUALCOMM CDMA Technologies discussion

P3

- Samsung think there is no choice for the UE. UE will get an UL grant, build the MAC PDU and then L1 will decide whether it can be sent based on LBT.
- Ericsson think when the UE has 2 grants at the same time then we leave to UE implementation which grant to use.
- BlackBerry think this is fully specified today.
- Huawei think that P3 results in the UE choosing an UL grant to use after the LBT result. Qualcomm think it only applies if the UL grant is sufficient to use.
- LG think when we have 2 UL grants in same TTI then we leave it to UE implementation. It could be the same for this case.
- Qualcomm clarify that in their proposal it could be within different subframes. And think it could work in the case that the UE gets the same sizes grant.

=> RAN2 understanding the P1 and P2 were covered by agreements from last meeting.

=> Noted

[R2-164059](#) Considerations on UL HARQ RTT TimerCMCC discussion

- Intel checked with RAN1 and understand that the first schedule will provide a HARQ process and the subsequent ones will be derived from this.

- Nokia have the same understanding and agreed previously that the HARQ RTT timer is started at the point where transmission happen and not when the grant is received.
 - Huawei assume that separate HARQ processes are used.
- => Noted

8.1.3 Other user plane

Including uplink bearer mapping to LAA SCells, transmission of MAC CEs on LAA SCells, QoS aspects, logical channel prioritisation, impacts to DRX, etc

Routing restrictions

[R2-164011](#) Routing restrictions in LAA Ericsson, LG Electronics discussion

- Discussed together with following paper

[R2-164053](#) Bearer and MAC CE mapping for eLAA Nokia, Alcatel-Lucent Shanghai Bell discussion
P1 (discussed with P1 of previous paper)

- Huawei think that if we configure per logical channel then the RRC change can be made in one place.
- Samsung wonder if the restriction per logical channel applies for MAC CEs.
- Samsung think that it is more consistent with current RRC structure to configure per bearer.
- ZTE think this is only for DRBs. Huawei think we concluded last meeting that both SRBs and DRBs can use the same mechanism.

P2 (discussed with P2 of previous paper)

- MediaTek would prefer the Nokia approach to allow use of LAA cells and this is consistent with CA. Qualcomm think that for LAA it is sufficient to go with the Nokia approach. BlackBerry have the same view.
- Huawei also support the Nokia proposal. Intel have the same view
- Ericsson were think to make the signalling more generic for future scenarios.

P3

- LG ask what is the benefit in sending MAC CEs on licenced cells. Ericsson explain that this allows the eNB not to have to schedule the UE on the licensed cell all the time, in the case that the quality of the carriers is the same. Nokia agree that sometimes LAA cells might be equally good and other times they may not be and hence why they propose it can be configured.
- Intel ask if MAC CEs can only be sent over licensed, how would the network know that the UE has to be scheduled on the licensed cell. Huawei think this is the reason that we would like them to be allowed on LAA SCells
- LG think it could be UE implementation whether the MAC CE is sent in licensed or unlicensed. Intel agree with LG. BlackBerry also agree.

P4

- BlackBerry think that MAC CEs should always be allowed to go over either types of cell. Nokia think it is like the routing restricting for traffic, we would like to control where they can be sent. Intel agree with BlackBerry. LG think the basic assumption is that there is not issue with sending of LAA SCells so no config is needed.

P5

- LG think this doesn't need to be discussed if MAC CEs can be sent on both.

Agreements

- 1 Routing restrictions are configured per logical channel and apply for SRBs and DRBs.
- 2 Logical channel configuration indicates whether traffic for a logical channel can be transmitted in LAA SCells, i.e., configuration is not per serving cell.
- 3 MAC CEs can be sent via LAA SCells
- 4 If there are UL grants for both licensed and unlicensed serving cells in a TTI, it is left to UE implementation whether MAC CEs are sent through licensed or unlicensed cells.

[R2-164254](#) Further considerations on Qos control for LAA Scell Huawei, HiSilicon discussion
=> Not treated based on discussion of previous paper.

[R2-163607](#) UL QoS handling for eLAA Intel Corporation discussion

=> Not treated based on discussion of previous paper.

[R2-163877](#) QoS and DRX aspects of eLAA BlackBerry UK Limited discussion
P1,2

- Ericsson think that eNB should make the decision and transparent to the CN.
- Huawei have the same view as Ericsson, eNB knows the QoS.
- Nokia have the same view.

=> Noted

LCP

[R2-164255](#) Considerations on LCP for LAA Scell Huawei, HiSilicon discussion
- discussed together with following paper

[R2-164155](#) Logical Channel Prioritization in LAA LG Electronics Inc. discussion
P2

- Ericsson thinks that P2 doesn't have spec impact. Huawei understand joint processing means the UE consider the total grant received within a single TTI and we have a note for this in the MAC spec. This note might need some modification. LG think we might not need to capture anything.

P3 (discussed with P2 of above paper)

- Qualcomm think this can be left to UE implementation. Ericsson think this is already covered by the recommendation to maximise the transmission of data.

P4

- Huawei think that P4 is eNB implementation

Agreements

- 1: Joint processing of UL grants in one TTI shall be allowed only when the UL grants serve the same logical channels. (can be concluded later whether this has spec impact)
- 2: If UL grant for licensed cells and UL grant for unlicensed cells are allocated in the same TTI, it is left up to UE implementation which UL grant shall be processed first.
- 3: The LCP procedure should be applied to different logical channels depending on for which cell the UL grant is allocated.
 - For UL grant for licensed cells, the UE performs LCP for all logical channels.
 - For UL grant for unlicensed cells, the UE performs LCP only for logical channels that are allowed to be offloaded to unlicensed cell.

Priority class selection

[R2-163482](#) Discussion on UL QoS Support for eLAA CATT discussion

- Huawei think there is no agreement in RAN1 and so we should wait.
- Intel think that Cat 4 LBT has already been agreed and this goes against that agreement. BlackBerry think that at least for CAT 4 we will need something in RAN2 but we should wait for RAN1.
- Qualcomm think that RAN1 is also discussing.
- Ericsson think we can't take agreements now.
- MediaTek think we have priority classes and a mapping in DL and think we could do the same for UL.
- BlackBerry explain that one proposal in RAN1 is that the eNB will give the parameters for Cat 4 LBT, for example per grant.

=> Noted

[R2-164154](#) On priority classes for uplink LBT MediaTek Inc. discussion

[R2-163608](#) Selection of CAT-4 LBT Priority class for eLAA Intel Corporation discussion
Above 2 Tdocs not treated

DRX

[R2-164014](#) PDCCH-subframe definition for LAA Ericsson discussion

- Huawei think P1 can be agreed. LG also support P1 and P2.

- Intel have a different proposal but are ok to go with this approach. For counting it can be based on this PDCCH definition. For monitoring of PDCCH subframes that should still be based on the PDCCH. Nokia support P1 but have the same proposal as Intel for proposal 3.
 - BlackBerry agree with P1 but think we need to capture that UE doesn't monitor for UL subframes.
 - LG think we already have the case that the UE can't monitor the PDCCH in a PDCCH subframe as the PDCCH subframes is the union of DL sub frames from more than one cell. Huawei think we don't need to capture anything about non monitoring of PDCCH.
 - Samsung think we need some behaviour specified for PDCCH subframes that are UL subframes.
 - Nokia think if we clarify this for eLAA then we should also clarify for FDD/TDD carrier aggregation.
- => Noted

Agreements

- 1 All subframes are considered PDCCH-subframes for LAA cells in MAC (no change from legacy behaviour)

[R2-163609](#) Connected mode DRX impact due to UL-DL TX burst for eLAA Intel Corporation discussion
[R2-164055](#) DRX for eLAA Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-164256](#) Considerations on DRX for LAA Scell Huawei, HiSilicon discussion
 Above 3 Tdocs not treated

PHR

[R2-164054](#) PHR for eLAA Nokia, Alcatel-Lucent Shanghai Bell discussion

- Ericsson think that if the UE has done LBT and is in back-off then it knows it can't transmit and it would be ok to adjust the PHR.
- BlackBerry indicate we agreed we would not change the content of a MAC PDU based on the outcome of LBT. Qualcomm also agree.
- BlackBerry think that PHR values should always be set based on the assumption that it will transmit. Nokia think the UE should base this on whether the UE is scheduled.
- LG think the previous decision was that real or virtual PHR came from RAN1.

=> Inform RAN1 that the content of a MAC PDU (including any PHR value) will not change after it has been built. As an example, it will not change based on the outcome of LBT.
 => If any other agreement from this meeting impact RAN1 then they can also be added.
 => Draft LS in [R2-164481](#) (Nokia)

[R2-164481](#) Draft LS on PHR for eLAA (to: RAN1, RAN4; cc: -; contact: Nokia Networks) Nokia Networks
 LS out Rel-14 LTE_eLAA-Core
 => Approved in [R2-164489](#)

[R2-164219](#) PHR aspect for supporting UL LAA LG Electronics Inc. discussion
[R2-163665](#) PHR details for eLAA SAMSUNG Electronics Co., Ltd. discussion
 Above 2 Tdocs not treated

Other

[R2-164012](#) Transmissions of SR and MAC CEs in LAA Ericsson discussion
[R2-163663](#) UL scheduling for eLAA SAMSUNG Electronics Co., Ltd. discussion
[R2-164010](#) Multi-subframe scheduling Ericsson discussion
 Above 3 Tdocs not treated

Stage 3 CR

[R2-164013](#) Running MAC CR for LAA Ericsson CR 36.321 13.1.00874 - B Rel-14
 LTE_eLAA-Core
 => To be updated to include agreements from this meeting.
☒ **[94#16][LTE/eLAA] Running MAC CR (Ericsson)**
 Intended outcome: Endorsed running CR
 Deadline: Thursday 09/06/2016

☒ **[94#17][LTE/eLAA] Running Stage 2 CR (Huawei)**

Intended outcome: Endorsed running CR updated with agreement from this meeting

Deadline: Thursday 09/06/2016

8.1.4 Control plane aspects

- [R2-163611](#) RRC Configuration for eLAA Intel Corporation discussion
 - [R2-164257](#) Considerations on CP impact for LAA Scell Huawei, HiSilicon discussion
 - [R2-163728](#) IDC issue for eLAA Samsung discussion
- Above 3 Tdocs not treated

Stage 3 CR

- [R2-164258](#) Introduction of enhanced LAA for LTE Huawei, HiSilicon CR 36.331 13.1.02225 - B
Rel-14 LTE_eLAA-Core
=> To be updated to include agreements from this meeting.
=> remove the UE capability part that has not yet been discussed
- ☒ **[94#18][LTE/eLAA] Running RRC CR (Huawei)**
Intended outcome: Endorsed running CR
Deadline: Thursday 09/06/2016

8.2 WI: Support for V2V services based on LTE sidelink

(LTE_SL_V2V-Core; leading WG: RAN1; started: Dec. 15; target: Sept 16; WID: [RP-160649](#))

Time budget: 1.5 TU

Documents in this agenda item will be handled in the LTE Break Out session

Incoming LSs:

- [R2-163303](#) LS on resource allocation for V2V ([R1-163906](#); contact: LGE) RAN1 LS in
to: RAN2 Rel-14 LTE_SL_V2V-Core
- [R2-163304](#) LS on V2X synchronization procedure ([R1-163907](#); contact: NTT DOCOMO) RAN1 LS in
to: RAN2 Rel-14 LTE_SL_V2V-Core
- [R2-163319](#) LS on V2X multicarrier configuration ([R1-163746](#); contact: Ericsson) RAN1 LS in
to: RAN2 Rel-14 LTE_SL_V2V-Core
late
- [R2-163321](#) Reply LS to S2-162248 = [R2-163315](#) on EPC procedures for providing eNB with V2X
authorization information (S1-161587; contact: LGE) SA2 LS in
cc: RAN2 Rel-14 LTE_SL_V2V-Core
late
- [R2-163324](#) Reply LS to S1-154509 on V2X message characteristics (S3-160777; contact: TNO) SA3 LS
into: RAN2 Rel-14 FS_V2XLTE
late

8.2.1 Geo-location aspects

How to define zones and if signalling optimizations are required

Geo-location reporting, type of signalling and what is contained in the report

- [R2-163404](#) Discussion on the Geo-based Resource Allocation for Mode-2 V2V Operation Guangdong
OPPO Mobile Telecom. discussion
- [R2-163430](#) UE Geo Location Report for V2V Fiberhome Technologies Group discussion
- [R2-163453](#) Necessity of geo reporting based on zone concept Samsung Electronics Co., Ltd
discussion
- [R2-163619](#) Geo-location reporting for sidelink resource allocation Intel Corporation discussion
- [R2-163697](#) Remaining Issues of UE Geo-Location Reporting for PC5-based V2V Shenzhen Coolpad
Technologies discussion
- [R2-163810](#) Resource Allocation Based on Geo Information Huawei, HiSilicon discussion
- [R2-163824](#) Geo based Resource Allocation for V2V over PC5 ZTE Corporation discussion

- [R2-163836](#) SPS enhancements for V2V over PC5 ZTE Corporation discussion
- [R2-163899](#) Zone based resource allocation Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-164065](#) Zoning and Geographical information reporting for V2V Qualcomm Incorporated discussion
- [R2-164097](#) Geo-location resource allocation based on zones and headings Interdigital Asia LLC discussion
- [R2-164102](#) UE Geographical Feedbacks for V2X Ericsson discussion
- [R2-164216](#) Geo-Information based resource allocation LG Electronics Inc. discussion
- Withdrawn:**
- [R2-163825](#) Geo based Resource Allocation for V2X over PC5 ZTE Corporation discussion

8.2.2 Mobility and Path switch

Including output of email discussion [93bis#24][LTE/V2V] Tx PC5 and Uu path switch for V2V – Huawei

Including output of email discussion [93bis#25][LTE/V2V] Mobility for V2V – Intel

Output of email discussions:

- [R2-163815](#) Summary of [93bis#24][LTE/V2V] Tx PC5 and Uu path switch for V2V Huawei, HiSilicon discussion result of email discussion [93bis#24][LTE/V2V]
- [R2-163620](#) Report of email discussion [93bis#25] Mobility for V2V Intel Corporation discussion result of email discussion [93bis#25]
- [R2-163420](#) Mobility Enhancements for LTE-Uu Based V2X CATT other
- [R2-163452](#) Mitigation of mobility interruption for resource allocation Samsung Electronics Co., Ltd discussion
- [R2-163618](#) To limit Tx and Rx interruption time in cell reselection Intel Corporation discussion
- [R2-163645](#) Tx PC5 and Uu Path Selection for V2V CATT other
- [R2-163813](#) Further discussion on mobility issues for sidelink V2V Huawei, HiSilicon discussion
- [R2-163820](#) Considerations on mobility enhancements for V2V ZTE Corporation discussion
- [R2-163837](#) Some considerations on the V2V path selection between Uu and PC5 ZTE Corporation discussion
- [R2-163887](#) PC5 measurement for V2V path switch between Uu and PC5 Potevio Company Limited discussion
- [R2-164064](#) Consideration of sidelink synchronization on V2V mobility Kyocera discussion
- [R2-164108](#) Enhancements to Sidelink Mobility Ericsson discussion
- [R2-164113](#) V2X Path Selection Ericsson discussion

8.2.3 QoS aspects

Is PPPP sufficient and does RAN need to change QoS modeling for V2V (dependent on SA2 progress/conclusions and eventual LS response)

- [R2-163811](#) Support of QoS for PC5-based V2V transport Huawei, HiSilicon discussion
- [R2-163819](#) QoS handling for PC5-based V2V transmission ZTE Corporation discussion
- [R2-164061](#) Priority handling in V2V Communication Qualcomm Incorporated discussion
- [R2-164106](#) Congestion Control in V2X Sidelink Ericsson discussion

8.2.4 Other

SPS aspects for mode 1 and mode 2

Pools for V2V

- [R2-163405](#) Discussion on Spectrum Resource Indication for V2V Guangdong OPPO Mobile Telecom. discussion
- [R2-163418](#) V2X Sidelink MAC Subheader CATT other
- [R2-163419](#) New SDU Type for PC5-based V2X CATT other
- [R2-163451](#) UE reporting and dynamic SL SPS transmission Samsung Electronics Co., Ltd discussion
- [R2-163621](#) Resource pool management for V2X Intel Corporation discussion
- [R2-163622](#) Support of multiple carriers/PLMNs Intel Corporation discussion
- [R2-163809](#) Stage-3 issues for PC5 based V2V Huawei, HiSilicon discussion
- [R2-163812](#) Enhancements for Sidelink Resource Allocation Huawei, HiSilicon discussion
- [R2-163814](#) Multicarrier Operation for PC5-based V2V Huawei, HiSilicon discussion
- [R2-163865](#) SL SPS for V2V Innovative Technology Lab Co. discussion

[R2-164063](#) SPS for V2V Communication Qualcomm Incorporated discussion
[R2-164079](#) Support of Semi-Persistent Scheduling for PC5 mode 1 LG Electronics France discussion
[R2-164084](#) Channel aspects for PC5 V2V LG Electronics France discussion
[R2-164099](#) Layer-2 Protocol Stack for PC5-based V2X Ericsson discussion
[R2-164100](#) Discussion on PC5 multiple carrier Ericsson discussion
[R2-164101](#) DRAFT LS Reply on V2X Subscriber Information Ericsson LS out
[R2-164105](#) Sidelink Resource Allocation in V2X Ericsson discussion
[R2-164109](#) Inter-PLMN Operations for Sidelink Ericsson discussion
[R2-164111](#) On the Need of Sidelink Gaps for V2V Ericsson discussion
[R2-164218](#) Resource allocation enhancement for V2V LG Electronics Inc. discussion
Withdrawn:
[R2-164070](#) Proposed CR to 36.321 on Support for V2V services based on LTE sidelink LG Electronics
 draft CR 36.321 13.1.0- - B Rel-14 LTE_SL_V2V-Core
 late

8.3 SI: Study on enhancement of VoLTE

(FS_LTE_eVoLTE; leading WG: RAN2; REL-14; started: Mar. 16; target: Sep. 16; SID: [RP-160563](#))

Time budget 1TU

Documents in this agenda item will be handled in the LTE Break Out session

8.3.1 Organisational

Including LSs, skeleton of TR, etc

Including output of email discussion [93bis#29][LTE/eVoLTE] TR skeleton and capturing agreements (CMCC)

Output of email discussion:

[R2-163717](#) eVoLTE TR update to capture meeting agreements CMCC draft TR 36.750 0.1.1
 result of email discussion [93bis#29][LTE/eVoLTE] Rel-14 FS_LTE_eVoLTE

[R2-163723](#) Codec selection and adaptation solutions CMCC discussion
[R2-163876](#) Considerations on the scope of the VoLTE enhancements Nokia, Alcatel-Lucent Shanghai
 Bell discussion

8.3.2 Codec mode/rate selection/adaptation

[R2-163402](#) Discussion on Per Cell Codec Rate Adaptation Guangdong OPPO Mobile Telecom.
 discussion
[R2-163560](#) Considerations on RAN-based codec mode/rate adaptation mechanism for VoLTE Intel
 Corporation discussion
[R2-163693](#) End to end considerations for Vocoder Rate Adaptation Qualcomm Incorporated discussion
[R2-163734](#) RAN-based codec rate adaptation Kyocera discussion
[R2-163789](#) Enhanced Codec Control MediaTek Inc. discussion
[R2-163833](#) RAN codec rate adaptation Panasonic Corporation discussion
[R2-163859](#) Discussion on the adaptive codec rate change ZTE Corporation discussion
[R2-164058](#) End-to-end Impact of VoLTE Codec Rate Adaptation Motorola Solutions, Inc. discussion
[R2-164186](#) Codec rate adaptation Ericsson discussion
[R2-164264](#) RAN based codec adaptation solution Huawei, HiSilicon discussion
[R2-164317](#) Codec selection and adaptation solutions CMCC discussion
 late

Withdrawn:

[R2-163834](#) RAN codec rate adaptation Panasonic Corporation discussion

8.3.3 VoLTE/video signalling related enhancements

E.g prioritisation of VoLTE/video related signalling, reduction of call drop probability, etc

Including output of email discussion [93bis#27][LTE/eVoLTE] Identify the potential problems from signalling aspect (Huawei)

Output of email discussion:

[R2-164263](#) Report and summary of email discussion 93bis#27LTEeVoLTE Huawei discussion
result of email discussion [93bis#27]

[R2-163561](#) Considerations on video signalling related enhancements Intel Corporation discussion
=> Revised in [R2-164318](#)

[R2-164318](#) Considerations on video signalling related enhancements Intel Corporation discussion

[R2-164240](#) Prioritization of MT MMTEL Voice or Video LG Electronics Inc. discussion

8.3.4 VoLTE/video quality related enhancements

Enhancements to improve the perceived voice/video quality. This aspect of the WI is expected to be RAN1 led.

[R2-163694](#) Error resiliency of EVS Channel Aware mode Qualcomm Incorporated discussion

[R2-164187](#) VoLTE/video quality related enhancements Ericsson discussion

[R2-164265](#) VoLTE coverage enhancement Huawei, HiSilicon discussion

[R2-164326](#) VoLTE coverage enhancement Huawei, HiSilicon discussion
late

8.3.5 Other

No contributions received.

8.4 SI: Further Enhancements to LTE Device to Device, UE to Network Relays for IoT and Wearables

(FS_feD2D_IoT_relay_wearable; leading WG: RAN2; REL-14; started: Mar. 16; target: Jun. 16; SID: [RP-160677](#))

Contributions should focus on evaluating scenarios in RAN2 considering progress in SA WGs. As a result of the identified scenarios and potential impacts/complexity analysis of supporting those scenarios, refine objectives of the SI accordingly.

Time budget 1TU

Documents in this agenda item will be handled in the LTE Break Out session

Incoming LS:

[R2-163327](#) LS on REAR service requirements (S1-161605; contact: Qualcomm) SA1 LS in
to: RAN2 Rel-14 REAR
late

Moved from 3.2 to 8.4

[R2-163401](#) On future D2D SI - further discussion Sequans Communications discussion

[R2-163403](#) Discussion on eMTC for FeD2D Guangdong OPPO Mobile Telecom. discussion

[R2-163599](#) Further Discussion on scenarios and use cases for Wearable/IoT Huawei, HiSilicon
discussion

[R2-163600](#) Wearable values to both operator and consumers Huawei, HiSilicon discussion

[R2-163601](#) Feasibility of Bluetooth based solution for wearable Huawei, HiSilicon discussion

[R2-163602](#) General technical consideration on PC5 enhancement for UE-To-NW relay Huawei, HiSilicon
discussion

[R2-163625](#) On NB-IoT scope in Rel-14 FeD2D Intel Corporation discussion

[R2-163797](#) Scope of D2D Relay Enhancement ITRI discussion

[R2-163817](#) Discussions on NB-IOT for FeD2D Innovative Technology Lab Co. discussion

[R2-163839](#) Further discussion on the working scope of R14 feD2D ZTE Corporation discussion

[R2-163936](#) Scope and phasing of D2D Relay enhancements Sony discussion

[R2-163937](#) Consideration on L2 Relay Requirements Sony discussion

[R2-163949](#) Relaying scenarios for wearables Ericsson discussion

[R2-163950](#) Analysis of SA1 requirements on Wearables Ericsson discussion
late

[R2-163970](#) Scope and Scenarios of Wearable devices PANASONIC R&D Center Germany discussion

[R2-163982](#) On alignment of FeD2D with ProSe U.S. Department of Commerce discussion

- [R2-164066](#) [draft] LS to RAN Plenary on refined objectives of FeD2D SI for UE to Network Relays for IoT and Wearables Qualcomm Incorporated LS out
- [R2-164068](#) Consideration of ProSe Relay operation for wearable devices Kyocera discussion
- [R2-164220](#) NB-IOT for FeD2D LG Electronics Inc. discussion
- Withdrawn:**
- [R2-163410](#) Considerations on L2 UE-To-NW relay technology for FeD2D Spreadtrum Communications discussion

8.5 WI: Enhanced LTE-WLAN Aggregation (LWA)

(LTE_WLAN_aggr-Core; leading WG: RAN2; REL-14; started: Mar. 16; target: Mar. 17; WID: [RP-160600](#))

Time budget 1.5TU

Incoming LSs:

- [R2-163323](#) Reply LS to [R2-163147](#) on key change during HO for eLWA (S3-160725; contact: Ericsson) SA3 LS in to: RAN2 Rel-14 LTE_WLAN_aggr-Core late
- Intel think that SA3 assume we will find a solution for SA3 about when the new key will start to be used.
 - Huawei wonder what is the benefit of keeping the LWA configuration for such a short time. And expect SA3 will provide the solution.
 - Qualcomm think we can assume that we can continue to use the existing key after handover but SA3 will determine when the new key is taken into place.
 - Nokia think that we can progress the work and SA3 can review.
 - LG ask when the key in PDCP will be changed. Qualcomm assume there is no change today and it changes at HO. Samsung agree that nothing changes and ciphering in PDCP will change at HO but we will need synchronisation. We are only talking about the key used in WLAN.
 - Broadcom think that SA3 expect some call flows from RAN2 before they do more work.
 - Intel report that RAN3 is working on call flows.
- => Noted
- [R2-163330](#) Liaison response to 3GPP [R2-163148](#) (IEEE 802.11-14/0694r; contact: Intel) IEEE802.11 LS into: RAN2 Rel-13 LTE_WLAN_radio-Core late
- Ericsson ask what they answer for measurement requirement. Intel explain that they didn't cover performance requirements and it can be clarified later by us or RAN4.
 - Apple consider that the question we ask is answered and we can use the measurements.
- => Noted

8.5.1 Uplink over WLAN

- [R2-164200](#) Scheduling of uplink transmission for LWA QUALCOMM CDMA Technologies discussion
- Broadcom thinks that some things need to be discussed first all bearer be able to sent over WLAN.
 - Nokia think we will always have legacy where bearer is over LTE only and we should add one new bearer for LTE and WLAN.
 - Nokia would agree that there should be zero impact in eNB scheduling algorithm but we might have impact in what the UE reports in BSR.
 - Broadcom asks if the UE is expected to make a request to the eNB each time it is send data to WLAN. Apple think it is difficult for the eNB to have any control of transmission over WLAN.
- => RAN2 will first discuss and agree on how uplink data will be transmitted for an LWA bearer on LTE and WLAN before discussing options for uplink direction.
- => Sending a PDCP PDUs to WLAN is based on "some" eNB control without impacting existing WLAN MAC. (this eliminate full per packet eNB scheduling of WLAN and eliminates full UE implementation).
- [R2-163376](#) Discussion on Scheduling Issue for UL Split Bearer in eLWA CATT discussion P1

- LG explain that in DC the threshold was introduced because for small packet size it was difficult to report the split but in this case there is only BSR on LTE and hence see no gain to have a threshold. CATT think that for small volumes of traffic it adds complexity. It is only worth to do if traffic exceeds some level.
 - Huawei also thinks there should be a threshold. There is only a need to split if volume is above the threshold
 - Broadcom think the WLAN pipe is available and so it should always be able to use it and only when it spills over does it make sense to use LTE.
 - Qualcomm thinks the key issue is BSR reporting and the UE should only send the amount of data that is expected to be sent on LTE.
 - LG think in this case a PDCP SDU can be immediately sent to WLAN and it will then not be included in the LTE BSR report. MediaTek think to keep things simple it makes sense to use DC like threshold. BlackBerry think the reason we have threshold is that below the threshold it doesn't make sense to split and that is the same for WLAN.
 - Apple have a similar view to Qualcomm. Wonders what the benefit of the threshold would be.
 - Xinwei think that DC and LWA are different cases and below the threshold the WLAN should be used and it should be based on network policy.
 - TelecomItalia think control it is useful to have some way to manage the traffic in the network. Open to details but have to have some control.
 - Ericsson think that due to backhaul delays it makes sense to not send small volumes of data over WLAN and the threshold helps with this.
- => Noted

[R2-163525](#) Specifying Uplink over WLAN Nokia, Alcatel-Lucent Shanghai Bell discussion

- P1
- Broadcom see a use case where it is not useful. E.g. could have a UE sending video on UL but have nothing on the DL.
 - Nokia think the proposal reduces the number of capabilities and options.
- P2
- MediaTek think it is not possible to ensure that data is sent only over WLAN without affecting legacy behaviour. Think we should distinguish between split and switched.
- MediaTek think the UL is different from the DL as in the DL is in full control of where data is sent.
- P3
- BlackBerry explain there is not much buffering on WLAN MAC
- P4
- Qualcomm is not sure whether UL/DL failure is useful for the eNB. Nokia thinks it is useful to let the eNB change the bearer direction.
 - Intel think this needs more consideration.
 - TCL think that it should be allow for a UE to retransmit on LTE a PDU that has failed on WLAN in which case the status reporting may not be needed.
 - Ericsson think that UL failures can be considered even today.
- P6
- Nokia gave some update from offline discussion on P6. Companies would like to double check and also that a capability would probably not be needed.
 - TCL think this is UE implementation.

Agreements

- 1 Only support split bearer type for Rel-14 eLWA UL.
 - 2 UE can be configured so that traffic on the UL split bearer can only be submitted for transmission on both, WLAN only or LTE only.
- FFS whether we additionally have a threshold like mechanism, e.g. similar to DC.

✉ [94#28][LTE/eLWA] UL transmission (Nokia)

Summarise solutions for UL transmission over UL split bearer, capture pros and cons, and company view.
Also include discussion of whether WLAN MAC ACKs at the UE can be available to PDCP.

Intended outcome: Email report to next meeting

Deadline: Thursday 04/08/2016

- [R2-163572](#) UL Support for LWA Intel Corporation discussion
[R2-163777](#) Uplink bearer configuration and BSR procedure for eLWA Huawei, HiSilicon discussion
[R2-163377](#) Remaining Issue for UL Bearer Support in eLWA CATT discussion
[R2-163490](#) Uplink bearer split for enhanced LTE WLAN radio aggregation TCL Communication Ltd. discussion
[R2-163666](#) UL split and other user plane issues for eLWA SAMSUNG Electronics Co., Ltd. discussion
[R2-163668](#) the BSR design for the LWA bearer Beijing Xinwei Telecom Techn. discussion
[R2-163770](#) Control for uplink data transmission over WLAN in eLWA Fujitsu discussion
[R2-163934](#) BSR procedure for eLWA HTC Corporation discussion
[R2-164048](#) Consideration on uplink data transmission for eLWA Kyocera discussion
[R2-164143](#) Uplink for eLWA Ericsson discussion
[R2-164144](#) PDCP considerations for eLWA UL Ericsson discussion
[R2-164156](#) BSR issue in UL LWA bearer LG Electronics Inc. discussion
Above 12 Tdocs not treated

QoS

- [R2-164139](#) Uplink QoS for enhanced LWA MediaTek Inc., Beijing Xiaomi Mobile Software Co., MTI discussion
[R2-164015](#) Access Category selection for eLWA Ericsson discussion
Above 2 Tdocs not treated

Other

- [R2-163765](#) Uplink bearer identification for eLWA Huawei, HiSilicon discussion
[R2-163667](#) protocol architecture enhancement and bearer issues for uplink transmission in eLWA Beijing Xinwei Telecom Techn. discussion
[R2-164135](#) Uplink routing for enhanced LWA MediaTek Inc., Beijing Xiaomi Mobile Software Co. discussion
[R2-163383](#) Text Proposal for LWAAP to Support of UL Bearer in Rel-14 LWA CATT discussion
Above 4 Tdocs not treated

Stage 2 CR

- [R2-163527](#) CR to Stage-2 on uplink over WLAN Nokia, Alcatel-Lucent Shanghai Bell discussion
Not treated

- ☒ **[94#19][LTE/eLWA] Running stage 2 CR (Intel)**
Capture agreements from this and previous meeting in the Annex and within stage 2 text as appropriate.
Intended outcome: Endorsed running CR
Deadline: Thursday 09 June 2016

Stage 3 CRs

- [R2-163526](#) CR to LWAAP on uplink over WLAN Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-164222](#) LWAAP running CR for LWA LG Electronics Inc. CR 36.360 13.0.00001 - B Rel-14 LTE_WLAN_aggr-Core
Above 2 Tdocs not treated

- ☒ **[94#20][LTE/eLWA] Running 36.360 CR (LG)**
Capture agreements from this and previous meeting in the Annex/Coversheet and within stage 3 text as appropriate.
Intended outcome: Endorsed running CR
Deadline: Thursday 09 June 2016

8.5.2 Mobility enhancements

E.g. intra and inter eNB handover without WT change, enhancements to WT change, etc.

Further progress is pending feedback from SA3 and hence this AI may be treated with lower priority at this meeting.

- [R2-163363](#) Solutions for LTE handover while maintaining LTE-WLAN aggregation Samsung R&D Institute UK discussion
 - [R2-163380](#) Discussion on mobility enhancement for eLWA CATT discussion
 - [R2-163384](#) LS on Principles for Mobility Procedures for eLWA CATT LS out
 - [R2-163528](#) Handling PDCP ciphering-key change in eLWA Nokia, Alcatel-Lucent Shanghai Bell discussion
 - [R2-163529](#) Inter-eNB HO without WT change Nokia, Alcatel-Lucent Shanghai Bell discussion
 - [R2-163571](#) Handover without WT change for LWA Intel Corporation discussion
 - [R2-163574](#) Suspend/resume functionality for LWA Intel Corporation discussion
 - [R2-163766](#) Impact of LTE Handover while Keeping LWA ITRI discussion
 - [R2-163768](#) WLAN Connection Success Indication upon LTE Handover without WT Change ITRI discussion
 - [R2-163783](#) Mobility enhancements for eLWA Huawei, HiSilicon discussion
 - [R2-163973](#) LTE handover preparation for mobility enhancements NEC Telecom MODUS Ltd. discussion
 - [R2-164141](#) Mobility optimizations for eLWA Ericsson discussion
 - [R2-164191](#) Principles for LTE mobility without WT change QUALCOMM CDMA Technologies discussion
- All Above Tdocs not treated

8.5.3 Support of 802.11ax, 802.11ad, and 802.11ay

8.5.3.1 Control plane enhancements

E.g. support 60 GHz band and channels in measurements,

- [R2-164140](#) Enhancements to support 60 GHz new band and increased data rates Ericsson discussion
 - Proposal 1 RAN2 not to consider measurement support for 60GHz before IEEE informs there will be measurement requirements for 60GHz in Rel14 time frame.
 - Proposal 2 RAN2 not to specify support for eLWA for 60GHz in Rel-14.
 - Discussed together with following paper
 - => Noted
- [R2-163565](#) 60GHz support in eLWA Intel Corporation, Ruckus, Sprint, KT Corp., China Telecom, BlackBerry UK Limited, Mediatek Inc., Sony, Convida Wireless, Qualcomm Incorporated discussion
 - Qualcomm think the WID is clear that we will support 60GHz.
 - Apple also support adding the 60GHz support. Samsung also support adding this band to the measurement.
 - Huawei support Ericsson view and want to wait until measurement requirements feedback is received. Broadcom think the IEEE LS was clear that the measurements are defined and we support the agreement.
 - Ruckus think ad is published and includes the measurements.
 - Qualcomm also point out that the RSSI measurements from R13 are also available for 60GHz.
 - Nokia think it is clearly in the WI scope and can add the possibility to include the 60GHz band.
 - CATT support Ericsson's view and think the measurement requirements was not answered by IEEE and also the use cases of ad are different from operator deployed WLAN.
 - AT support adding 60 GHz
 - KT support this and this it can be used by hotspot APs deployed by operators.
 - Intel point out the IEEE LS does say that measurement requirements are defined although it doesn't provide the details to us but in RAN2 we only need to know they are defined. RAN4 can look at the details more. IEEE also think the use case is valid as they would like it included in the LWA framework.
 - Xinwei do not support the proposal.

- Ericsson is not happy to agree until we have seen the performance requirements.
- => Add support for 60GHz band in WLAN measurements (at least RSSI) and LWA configuration (i.e. mobility set).

[R2-163378](#) Discussion on CP Aspect to Support 60GHz WLAN CATT discussion
[R2-163762](#) Mobility Set Regarding WLANs Supporting 60 GHz ITRI discussion
 Above 2 Tdocs not treated

8.5.3.2 User plane enhancements

E.g. enhancements for increased data rates of 802.11ax, 802.11ad, and 802.11ay, etc

[R2-163854](#) Support of high data rate 802.11 technologies China Telecommunications discussion
 P1

- Nokia think for high data rate it does only make sense to schedule over one link but this will not make a difference to our spec.
- Qualcomm agree with Nokia. UE doesn't need to know that eNB will only schedule on WLAN.
- Broadcom agree with Nokia's point but think it would be useful for the UE to know.
- TCL agree with Nokia also.

P3

- Qualcomm think this is related to the mobility enhancements. And also RAN3 would need to consult with SA3.
- Intel think it is not related to mobility and we could ask SA3 to consider this.
- Broadcom think it would be useful for implementation but it would need to be discussed by SA3. MediaTek think this will not work with split bearer.
- Huawei think we can't make decision until we ask SA3.
- Samsung think we will have a problem if you consider the LS just received.
- Qualcomm think the UE needs to handle the high rate but why should PDCP be the bottleneck. Broadcom think current application processors can't cope with this rate of encryption
- LG think it is difficult to apply encryption per packet.
- MediaTek think this could work with a switched bearer and so it should be considered. We are doing this to reduce UE computation. Intel think that PDCP might be a bottle neck and so we should discuss this. We might also want to look at different solutions.
- BlackBerry think we should ask SA3 but on the understanding that there is other encryption.

=> Send LS to SA3 to ask if it would be possible to disable PDCP encryption for high data rate traffic over WLAN. Ask if it impacts the previous response on mobility. [R2-164483](#) (Intel)

[R2-164483](#) Draft LS to SA3 on PDCP encryption in eLWA (to: SA3; cc: -; contact: Intel) Intel Corporation
 LS out Rel-14 LTE_WLAN_aggr-Core

☒ **[94#21][LTE/eLWA] LS on PDCP encryption (Intel)**
 Intended outcome: Approved LS.
 Deadline: Thursday 09/06/2016

[R2-164157](#) PDCP reordering enhancement for LWA bearer LG Electronics Inc. discussion

- Qualcomm think this is a useful optimisation but this assume that WLAN delivers in sequence. LG thinks it doesn't matter if WLAN delivers in sequence or not as there is a PDCP SN. LG think it is a correct observation that WLAN delivers in sequence.
- Broadcom explain that WLAN delivers in order.
- TCL think there are cases where this may have some bad consequences.
- Huawei think the current approach works well and don't see need for any enhancement.
- Samsung think that this was proposed 3 years ago but at data recover the eNB can retransmit and out of order will be received on one link. Nokia agree with Samsung.

=> Noted

[R2-163569](#) eLWA optimizations for high data rate 802.11 technologies Intel Corporation discussion
[R2-163379](#) Discussion on UP Aspect to Support 60GHz WLAN CATT discussion

Above 2 Tdocs not treated

8.5.4 Feedback enhancements

E.g. additional information collection and feedback e.g. for better estimation of available WLAN capacity and LWA performance improvement

Additional WLAN performance metrics

[R2-164150](#) Feedback enhancements for enhanced LWA MediaTek Inc. discussion
[R2-164193](#) Feedback Enhancements for LWA QUALCOMM CDMA Technologies discussion
[R2-163972](#) Reporting of WLAN channel availability information NEC Telecom MODUS Ltd. discussion
[R2-163570](#) Considerations for additional WLAN metrics Intel Corporation discussion
[R2-164142](#) On feedback optimization for eLWA Ericsson discussion

Other

[R2-163382](#) UE Location Collection for WLAN Mobility Set Configuration CATT discussion
[R2-164228](#) Further enhancements of WLAN connection status report LG Electronics Inc. discussion
Above 7 Tdocs not treated

8.5.5 ANR for LWA

Discussion on ANR expected to progress in RAN3 before progressing in RAN2 and hence this AI may be treated with lower priority at this meeting.

[R2-163381](#) Discussion on AP reporting for LWA ANR CATT discussion
[R2-163530](#) ANR for enhanced LWA Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-163664](#) ANR for eLWA Beijing Xinwei Telecom Techn. discussion
Above 3 Tdocs not treated

8.5.6 Other

[R2-164229](#) Further enhancement of WLAN measurement report LG Electronics Inc. discussion
Not treated

8.6 WI: Further mobility enhancements in LTE

(LTE_eMob-Core; leading WG: RAN2; REL-14; started: Mar. 16; target: Dec. 16; WID: [RP-160636](#))

Time budget 1TU

Documents in this agenda item will be handled in the LTE Break Out session

Including output of email discussion [93bis#28][LTE/Mobility enhancement] Discussion on solution 2 family (ZTE)

8.6.1 RACH-less handover

[R2-163564](#) UL grant in target cell for RACHless Handover CATT other
[R2-163605](#) UL grant for RACH-less handover Intel Corporation discussion
[R2-163862](#) Remaining issues of RACH-less Handover ZTE Corporation discussion
[R2-163992](#) Network controlled RACH-less handover Ericsson discussion
[R2-164239](#) Further details of RACH-less handover QUALCOMM CDMA Technologies discussion

8.6.2 Make before break handover

Output of email discussion:

[R2-163863](#) Email discussion on solution 2 family ZTE Corporation discussion
result of email discussion [93bis#28][LTE/Mobility enhancement]

[R2-163563](#) Consideration on solutions for Mobility enhancement CATT other
[R2-163606](#) Different options for solution 2 Intel Corporation discussion
[R2-163656](#) Discussion on Intra-eNB Handover Huawei, HiSilicon discussion
[R2-163657](#) Simultaneous Data Transmission in Inter-eNB Handover Huawei, HiSilicon discussion
[R2-163864](#) Comparison between candidate options of solution 2 family ZTE Corporation discussion

- [R2-163866](#) Further Details of Option 6 for Solution 2 ETRI discussion
=> Revised in [R2-164329](#)
- [R2-164329](#) Further Details of Option 6 for Solution 2 ETRI discussion
- [R2-163981](#) "make-before-break" HO in LTE and its implications Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-164225](#) Considerations on solution 2 for mobility enhancements LG Electronics France discussion

8.6.3 Other

- [R2-163738](#) Further considerations on solutions for the LTE mobility enhancements and analysis of the functional impact Samsung discussion

8.7 WI: Further Indoor Positioning enhancements for UTRA and LTE

(UTRA_LTE_iPos_enh2-Core; leading WG: RAN2; REL-14; started: Mar. 16; target: Dec. 16; WID: [RP-160538](#))

Time budget 0.25TU

8.7.1 OTDOA and CID/E-CID enhancements

Input from RAN1 required before RAN2 can progress this AI.

- [R2-163991](#) Network assisted cell selection for OTDOA enhancement Ericsson discussion
Qualcomm think RAN1 need to sort out OTDOA before we can discuss this.
- Nokia have same understand as Qualcomm but also understand this is a new solution but would prefer it is considered in RAN1. It is suggesting to standardise a method to select the reference cell. Ericsson explain that the selection criteria are given to the UE in the assistance data so the server has control over the UE (whether the UE is free to choose or whether SMLC gives one cell)
 - Qualcomm agree the selection of the cell impacts performance and that today it is up to the UE to decide the reference. The server is anyway free to reselect the reference cell and can be done in server implementation.
 - Qualcomm understand that all OTDOA enhancements are discussed in RAN1 even if they don't affect RAN1 specs. Intel think that this is for RAN1 to select the options and then we will do the RAN2 spec changes. Also has some sympathy for the proposal but it should be up to RAN1 to decide.
- => Noted

8.7.2 Enhancements for WLAN, Bluetooth, Barometric, and MBS

Including addition of assistance data and UE-based positioning

- [R2-164223](#) Assistance Data for Indoor Positioning enhancements NextNav, AT&T, Broadcom draftCR 36.305 13.0.0- - B Based on the endorsed running CR in [R2-163119](#) from RAN2#93-bis with some additional corrections. Rel-14 UTRA_LTE_iPos_enh2-Core
=> Revised in [R2-164324](#)
- [R2-164324](#) Assistance Data for Indoor Positioning enhancements NextNav, AT&T, Broadcom draftCR 36.305 13.0.0- - B Rel-14 UTRA_LTE_iPos_enh2-Core
- Qualcomm ask what the barometric assistance of temperature and humidity are added. Nextnav think for a UE to make an accurate height estimation the temperature and humidity can help. Qualcomm think that the device will need temperature and humidity sensor in the UE. NextNav think no additional sensor is needed.
 - Qualcomm would like to understand what the UE should do with this data.
 -
- => Remove the temperature and humidity. Discussion paper proposing addition can be considered at next meeting.
- => 8.6.2.x : check whether the reference in the note should be E-UTRAN or SMLC.
- => Endorsed in [R2-164484](#)

[R2-164224](#) Assistance Data for Indoor Positioning enhancements NextNav, AT&T, Broadcom draftCR
36.355 13.1.0- - B Rel-14 UTRA_LTE_iPos_enh2-Core
=> Revised in [R2-164325](#)

[R2-164325](#) Assistance Data for Indoor Positioning enhancements NextNav, AT&T, Broadcom draftCR
36.355 13.1.0- - B Rel-14 UTRA_LTE_iPos_enh2-Core

- Intel has comments on the ASN.1 details e.g. why there is optional boolean together with conditional.
- Qualcomm ask why the barometric reference needs 8 reference values. One should be enough. Why is the higher granularity needed for the geographical area shape and if we need it then we should maybe define a new shape. NextNav explain the higher granularity is needed due to the floor level FCC requirements and we could define a new shape. NextNav think that it can be useful to give more than one reference pressure to the UE, and think it is better than the LPPE approach. Qualcomm think that the WID is to use LPPE as the starting point but there is no justification why.

=> Remove parts different from LPPE. Contributions can be consider next time for enhancements over LPPE.
=> Remove the temperature and humidity
=> Revised in [R2-164485](#)

[R2-164485](#) Assistance Data for Indoor Positioning enhancements NextNav, AT&T, Broadcom draftCR
36.355 13.1.0- - B Rel-14 UTRA_LTE_iPos_enh2-Core
=> Endorsed as running CR

8.7.3 TBS positioning based on PRS

Input from RAN1 required before RAN2 can progress this AI.

No contributions received.

8.7.4 Other

No contributions received.

8.8 WI: L2 latency reduction techniques for LTE

(LTE_LATRED_L2-Core; leading WG: RAN2; REL-14; started: Mar. 16; target: Sep. 16; WID: [RP-160667](#))

Time budget 1TU

Documents in this agenda item will be handled in the LTE Break Out session

8.8.1 SPS feedback

Need for feedback for SPS activation. Solutions on how to provide feedback

[R2-163385](#) UL SPS command feedback Fiberhome Technologies Group discussion
[R2-163475](#) Feedback for SPS activation and deactivation CATT discussion
[R2-163671](#) Feedback for SPS activation/deactivation Samsung discussion
[R2-163698](#) Feedback for SPS activation/deactivation Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-163781](#) Acknowledgements for SPS commands Ericsson discussion
[R2-163916](#) Discussion on feedback for SPS activation and deactivationHuawei, HiSilicon discussion
[R2-164207](#) SPS feedback for SPS release LG Electronics Inc. discussion
[R2-164217](#) Need of feedback for SPS activation LG Electronics Inc. discussion

8.8.2 Other

How to deal with retransmission colliding with SPS resources

Other stage 3 aspects

[R2-163386](#) Discussion of retransmission for short SPS periodFiberhome Technologies Group discussion
[R2-163477](#) Retransmission issue in short SPS interval CATT discussion

- [R2-163478](#) TDD issue in short SPS interval CATT discussion
=> Revised in [R2-164299](#)
- [R2-164299](#) TDD issue in short SPS interval CATT discussion
- [R2-163626](#) HARQ retransmissions for short SPS interval Intel Corporation discussion
- [R2-163672](#) Text proposal to capture muting behaviour in 36.321 Samsung discussion
- [R2-163692](#) UCI transmission when UE skips empty BSR Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-163695](#) UL lost handling when UE configured to skip padding BSR Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-163699](#) Impact on DRX with pre-scheduling and short SPS periodicity Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-163703](#) Retransmission collision with SPS occasion Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-163771](#) Considerations on the SPS resource efficiency Fujitsu discussion
- [R2-163785](#) Non-adaptive retransmissions for SPS Ericsson discussion
- [R2-163792](#) Periodic BSR in SPSEricsson discussion
- [R2-163793](#) SPS interval alignment Ericsson discussion
- [R2-163795](#) TDD SPS configuration Ericsson discussion
- [R2-163838](#) Introduction of L2 Latency reduction techniques Ericsson draftCR 36.300 13.3.0- - Rel-13 LTE_LATRED_L2-Core
- [R2-163861](#) Discussion on DTX and HARQ ZTE Corporation discussion
- [R2-163911](#) Short SPS periodicity values Huawei, HiSilicon discussion
- [R2-163912](#) DRX optimization for short SPS period Huawei, HiSilicon discussion
- [R2-163913](#) Collision of new transmission and retransmission in short SPS period Huawei, HiSilicon discussion
- [R2-163914](#) Short SPS period in TDD Huawei, HiSilicon discussion
- [R2-163915](#) Problem of UL DTX detection Huawei, HiSilicon discussion
- [R2-163917](#) Implicit SPS release under UL grants skipping Huawei, HiSilicon discussion
- [R2-163918](#) PUSCH resource waste in case of short SPS period Huawei, HiSilicon discussion
- [R2-163942](#) Introduction of L2 Latency reduction techniques Ericsson draftCR 36.321 13.1.0- - B Rel-14 LTE_LATRED_L2-Core
- [R2-163943](#) L2 Latency reduction techniques Ericsson draftCR 36.321 13.1.0- - B Rel-14 LTE_LATRED_L2-Core
- [R2-163944](#) Introduction of L2 Latency reduction techniques Ericsson draftCR 36.331 13.1.0- - B Rel-14 LTE_LATRED_L2-Core
- [R2-164090](#) TDD configurations with skip padding and short intervals Ericsson draftCR 36.321 13.1.0- - B Rel-14 LTE_LATRED_L2-Core
- [R2-164116](#) On issues with skipping of UL padding transmissions Sequans Communications discussion

8.9 WI: Signalling reduction to enable light connection for LTE

(LTE_LIGHT_CON-Core; leading WG: RAN2; REL-14; started: Mar. 16; target: Mar. 17; WID: [RP-160540](#))

Time budget 0.5TU

Documents in this agenda item will be handled in the LTE Break Out session

8.9.1 Paging enhancements

E.g. signaling reduction by limiting the paging area.

Note the WID indicates that only the paging objective is to discussed within Q2 2016

- [R2-163450](#) Design principles and considerations for the LTE light connection Samsung Electronics discussion
- [R2-163474](#) Paging in light connection CATT discussion
- [R2-163632](#) Light connection DRX paging cycle and mechanism Intel Corporation discussion
- [R2-163724](#) Paging in Light Connection CMCC discussion
- [R2-163803](#) RAN-based paging for light connection China Unicom discussion
- [R2-163831](#) Discussion on Performance of Light Connection Samsung Electronics discussion
- [R2-163860](#) Discussion on the paging area for light connection China Telecommunications discussion

- [R2-163884](#) General principle for signalling reduction of paging lightly connected UE Potevio Company Limited discussion
- [R2-163888](#) Paging for light connection Nokia, Alcatel-Lucent Shanghai Bell other
- [R2-163930](#) Evaluation on RAN initiated paging and MME initiated paging Huawei, HiSilicon discussion
- [R2-163931](#) Analysis of power consumption for paging area update Huawei, HiSilicon discussion
- [R2-163932](#) On RAN initiated paging Huawei, HiSilicon, China Telecom discussion
- [R2-164047](#) Details of paging enhancements and Light Connection Kyocera discussion
- [R2-164226](#) Paging enhancements for signalling reduction NTT DOCOMO, INC. discussion late

8.9.2 Other

- [R2-163631](#) Benefits of Light connection over suspend-resume procedure Intel Corporation discussion
- [R2-163889](#) Context Fetch in light of light connection Nokia Networks Oy other
- [R2-164046](#) General issues in Light Connection Kyocera discussion
- [R2-164227](#) RRC Suspend/Resume for Light Connection Ericsson other
- [R2-164271](#) General considerations on lightweight connection LG Electronics Inc. discussion

8.10 SI: Study on Latency reduction techniques for LTE

(FS_LTE_LATRED; leading WG: RAN2; started: Mar. 15; target: June 16; SID: [RP-150465](#))

WI complete from RAN2 perspective. No time allocation at this meeting.

Documents in this agenda item will be handled in the LTE Break Out session

No contributions received.

- [R2-164338](#) LS on TR update for latency reduction RAN1
- New incoming LS
 - => Noted
- ✉ **[94#10][LTE/Latred SI] TR (Ericsson)**
Update TR to reflect RAN1 LS received.
Intended outcome: Agreed TR to submit for one step RAN approval.
Deadline: Thursday 02/06/2016

8.11 SI: Feasibility Study on LTE-based V2X Services

(FS_LTE_V2X; leading WG: RAN1; started: June. 15; target: June 16; SID: [RP-151109](#))

Time budget: 2TU

Documents in this agenda item will be handled in the LTE Break Out session

Including output of email discussion [93bis#26][LTE/V2X] – TP capturing RAN2 agreements

Incoming LS:

- [R2-163315](#) LS on EPC procedures for providing eNB with V2X authorization information (S2-162248; contact: LGE) SA2 LS in to: RAN2 Rel-14 FS_V2XARC

8.11.1 UL enhancements

UL SPS enhancements

- [R2-163406](#) Discussion on SPS Enhancements for V2X Guangdong OPPO Mobile Telecom. discussion
- [R2-163421](#) Consideration on SPS Enhancement CATT other
- [R2-163807](#) Discussion on CAM characteristics Huawei, HiSilicon, InterDigital, LG Electronics Inc., OPPO discussion
- [R2-163840](#) SPS enhancements for V2X over Uu ZTE Corporation discussion
- [R2-163885](#) UE assisted information for SPS Potevio Company Limited discussion
- [R2-163900](#) Multiple inter-dependent UL SPS occasions Nokia, Alcatel-Lucent Shanghai Bell discussion

- [R2-164082](#) Proposed TP for UL SPS enhancements LG Electronics, InterDigital, OPPO, Huawei discussion
- [R2-164112](#) SPS Enhancements for Uu Operations in V2X Ericsson discussion

8.11.2 DL enhancements

Improvements of MBMS/SC-PTM services on the basis of UE geographical location (whether there is a need for a specific AS mechanism or the application layer mechanism is sufficient), MBMSFN latency, and other DL enhancements.

- [R2-163422](#) Inter-PLMN V2X Downlink Reception CATT other
- [R2-163798](#) Utilizing UE location information for V2X using MBMS ITRI discussion
- [R2-163804](#) Discussion on Uu-based V2X reception Huawei, HiSilicon discussion
- [R2-163806](#) Further Consideration on inter-PLMN operation for Scenario 2 Huawei, HiSilicon discussion
- [R2-163841](#) DL enhancement for supporting inter-PLMN operation ZTE Corporation discussion
- [R2-163843](#) [Draft] LS on DL Inter-PLMN operation for V2X ZTE Corporation discussion
- [R2-163898](#) Discussion on operational aspects of MBMS with MBSFN and SC-PTM Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-164073](#) Potential enhancement for MBMS Control Plane latency reduction LG Electronics discussion
- [R2-164081](#) Proposed TP capturing solutions for DL broadcast enhancements LG Electronics France discussion
- [R2-164103](#) MBMS Enhancements for V2X Ericsson discussion
- [R2-164107](#) V2X Message Provisioning for MBMS Ericsson discussion
- [R2-164110](#) On MBMS Latency Ericsson discussion

8.11.3 Mobility enhancements

Need for mobility enhancements not targeting V2V, etc.

- [R2-163799](#) Discussion on mobility enhancement for V2X ITRI, National Taiwan University discussion
- [R2-163844](#) Mobility enhancement under localized MBMS deployment ZTE Corporation discussion
- [R2-164074](#) Potential mobility enhancements for V2X LG Electronics France discussion

8.11.4 Other

Output of email discussions:

- [R2-163650](#) TP for TR36.885 capturing RAN2#93bis agreements LG Electronics Inc. discussion related with email discussion [93bis#26][LTE/V2X]
- [R2-164221](#) Draft LS to RAN1 on RAN2 agreements related to V2X LG Electronics Inc. LS out related with email discussion [93bis#26][LTE/V2X] late
- [R2-163423](#) LTE-Uu Based V2X Uplink Latency Evaluation and Downlink Latency Evaluation CATT other
- [R2-163772](#) Considerations on congestion control for the case with high density of UEs Fujitsu discussion
- [R2-163805](#) Discussion on V2I transport based on PC5 Huawei, HiSilicon discussion
- [R2-163808](#) Congestion Control for Uu and PC5 based V2X transmission Huawei, HiSilicon discussion
- [R2-164080](#) Potential enhancements for V2P LG Electronics France discussion
- [R2-164083](#) Proposed TP capturing solutions for V2P service LG Electronics France discussion
- [R2-164098](#) Power Consumption Aspects for V2P Interdigital Asia LLC discussion
- [R2-164104](#) Other Uu Enhancements for V2X Ericsson discussion
- [R2-164199](#) New QCI for V2X LG Electronics Inc. discussion
- [R2-164201](#) Draft LS on new QCI values for V2X LG Electronics Inc. LS out
- [R2-164204](#) V2X authorization LG Electronics Inc. discussion
- [R2-164208](#) Draft reply LS on EPC procedures for providing eNB with V2X authorization information LG Electronics Inc. LS out

8.12 WI: eMBMS enhancements for LTE

(MBMS_LTE_enh2; leading WG: RAN1; REL-14; started: Mar. 16; target: Mar. 17; WID: [RP-160675](#))

Time budget: 0.5 TU

Documents in this agenda item will be handled in the LTE Break Out session

8.12.1 MBSFN subframe enhancements

Including use of subframes 0, 4, 5, 9 (FS1) and 0, 1, 5, 6 (FS2) for MBSFN, and configuring MBSFN subframes without a unicast control region and cell-specific reference signals.

[R2-163531](#) Impact of additional MBSFN sub-frames support Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-163659](#) Expand MBFSN Sub-frame in SCell Huawei, HiSilicon discussion

[R2-164145](#) eMBMS operation for SCellEricsson discussion

8.12.2 MBSFN dedicated carrier

[R2-163532](#) Standalone eMBMS carrier considerations Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-163658](#) Discussion on Standalone MBMS Cell Huawei, HiSilicon discussion

[R2-164146](#) Standalone eMBMS operation Ericsson discussion

[R2-164230](#) Consideration on MBSFN dedicated carrier LG Electronics Inc. discussion

8.12.3 Multicarrier MBMS operation

[R2-163533](#) Analysis of scenarios for multi-carrier eMBMS/unicast operation Nokia, Alcatel-Lucent Shanghai Bell discussion

8.12.4 MBMS reception without authentication

[R2-163534](#) Non-authenticated UEs support Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-164120](#) Authentication in eMBMS Ericsson discussion

8.12.5 Other

[R2-164147](#) Work plan for eMBMS enhancements for LTE Ericsson discussion

[R2-164203](#) System Aspects of eMBMS Enhancements and RAN2 Impact QUALCOMM CDMA Technologies discussion

Draft TR:

[R2-164272](#) TR for eMBMS enhancementsEricsson draft TR 36.743 0.0.1
Rel-14 MBMS_LTE_enh2-Core

9 SI: Study on New Radio Access Technology

FS_NR_newRAT; leading WG: RAN1; REL-14; started: Mar. 16; target: Jun. 17; WID: [RP-160671](#)

Time budget: 6 TUs

9.1 Organisational

LSs, work plan, skeleton TR, etc.

Including output of email discussion [93bis#22][NR] TR skeleton structure (DOCOMO)

Including rapporteur input to the joint session with SA2/RAN3.

Incoming Ls

[R2-163331](#) Support of 3GPP measurements for Mobile Edge Computing (MEC(16)000206R1; contact: Telecom Italia) ETSI ISG MEC LS in to: RAN2 Rel-14 FS_NR_newRAT late

Moved from 3.2 to 9.1

- Ericsson ask what impact this may have for us. Nokia is asking that they are asking for the 36.314 measurements to be available in the API.
 - Huawei think this is being discussed in SA2 and it is too early for us to look at this. Also for RAN measurements we don't know what we have for NR.
- => Noted

Output of email discussion:

- [R2-163543](#) TR 38.804 v0.0.1 on Study on New Radio Access Technology; Radio Interface Protocol Aspects NTT DOCOMO, INC. (Rapporteur) draft TR 38.804 0.0.1
TR skeleton as an output of email discussion [93bis#22]
=> Agreed in [R2-164500](#) ver 0.1.0
- [R2-163400](#) RAN WG's progress on New Radio Access Technology SI NTT DOCOMO, INC. (Rapporteur) discussion
=> Noted
- [R2-163436](#) Status of NG study in SA2 Nokia (Rapporteur) discussion
=> Revised in [R2-164315](#)
- [R2-164315](#) Status of NG study in SA2 Nokia, CMCC (Rapporteurs) discussion
=> Noted
- [R2-163941](#) RAN2 status on NR study - Rapporteur input to SA2/RAN3 joint session NTT DOCOMO, INC. (Rapporteur) discussion
late
=> Revised in [R2-164501](#)
- [R2-164501](#) RAN2 status on NR study - Rapporteur input to SA2/RAN3 joint session NTT DOCOMO, INC. (Rapporteur) discussion
late
=> Add "agreed to be studied"
=> Remove the Figure in slide 6
=> Remove DC or CA in title of slide 3.
=> Revised in [R2-164502](#)
- [R2-164502](#) RAN2 status on NR study - Rapporteur input to SA2/RAN3 joint session NTT DOCOMO, INC. (Rapporteur) discussion Proposed rapporteur input to the joint session with SA2/RAN3
=> Reported to joint session with SA2/RAN3 then noted.
- Discuss whether any email discussions should be started to progress the work.
- DCOMOsuggest 3 emails (not for collecting company views but developing common understanding) on:

Agreed email discussions

- 1/ U plane aspects: develop common understanding on gains and draw backs on the study areas 1 and 4 identified during discussion of [R2-164124](#) (DOCOMO)
- 2/ C plane aspects for tight interworking: to develop common understanding on gains and draw back regarding the FFS points from the discussion this week. WI rapporteur to identify which FFS topics to address (INTEL)
- 3/ System information: develop common understanding of the basic approaches and common understanding of the gains and draw back regarding "system information on demand". Based on the basic approaches proposed in this meeting. (other approaches may be proposed to future meetings) (SAMSUNG)
- 4/ Update the TR based on the agreements from this weeks meeting. (DOCOMO)

9.2 General aspects

May include contributions on principles, guidelines and other general aspects not address deployment scenarios agenda item.

Guidelines

- [R2-163979](#) Guidelines for radio protocol design to be captured in the TR NTT DOCOMO, INC. discussion
- Intel think that commonality is desirable but should not be seen as a requirements. Would also like to understand what is configurable packet loss. DCOMO explain that this is a guideline rather than a requirement.
 - MediaTek support capturing something but it is important that they are not seen as requirements.
 - Huawei also support to capture something.

- Samsung wonder if the U-plane bullets are captured in the RAN requirements TR.
 - Nokia think the guidelines are obvious and don't need to be captured
 - OPPO understand the intent to keep commonality but think it may not be possible considering the diverse services to be support . Prefer not to capture anything.
 - ZTE think the protocol architecture should be common but functionally it could be different
 - .
 - CATT wonder if we really can have commonality.
- => Noted
- ☒ **[94#37][NR] Guidelines (DOCOMO)**
Discuss guidelines from [R2-163979](#) and any other guidelines proposed this meeting.
Intended outcome: Email discussion report with a recommendation for guidelines that can be captured in the TR.
Deadline: Thursday 04/08/2016

Unlicensed

- [R2-163748](#) Design Considerations for NR in Unlicensed Spectrum Samsung Electronics Co., Ltd discussion
- Ericsson see some use case for standalone operation in unlicensed, and considers that the difference may be small.
 - DT think that we don't have clear requirements for this from RAN TR.
 - Apple do not see standalone unlicensed as the main use case and would like to see the assisted operation prioritised
 - IDC think we leave this discussion to RAN. Nokia agree it is still FFS in the SI. CMCC agree and also think this is not discussed in RAN1.
 - Huawei ask if for the assisted cases whether LTE will always be the anchor. NR on unlicensed will need a lot of work and so it doesn't make sense to study that now.
- => Noted

[R2-164096](#) Supporting NR in unlicensed spectrum INTERDIGITAL COMMUNICATIONS discussion
Moved from 9.3 to 9.2

[R2-164031](#) Supporting NR in unlicensed spectrum Ericsson discussion
Moved from 9.4.1 to 9.2

URLLC

[R2-164008](#) High level URLLC requirements Ericsson discussion
Moved from 9.4.1.1 to 9.2

- CMCC think we need to handle cases when the service is not available due to the network being heavily loaded. Ericsson think congestion is something that can always happen. Qualcomm think that things like access control will be important to ensure high availability. Nokia agree with Ericsson's proposal. DOCOMO also agree with Ericsson.
 - Intel also agree that high availability is a network design consideration but there are some standardisation feature that can help with it. But ok with the proposal.
 - IDC agree with the intent of the proposal. Can consider additional aspects on availability later.
 - DOCOMO think that the service requirements and use cases are captured in the RAN TR but we should capture in our TR only if it is related to protocol design.
- => Study will not focus on high availability as in node, HW/SW, transport link availability, and instead the focus should be on coverage, mobility, radio link features etc. related to providing low latency and/or high reliability.
- => Guideline above will be included in the email discussion on guidelines.

MTC

[R2-163832](#) Discussion for 5G mMTC Samsung Electronics discussion

- Nokia think that the first proposal is covered by the SID and asks what is meant by differentiated in the second proposal.

- CATT ask why is assumes that ULRRRC is not power limited. There are use cases where ULRRRC does have power limitations, e.g. industrial sensors. We think the 3 use cases are quite orthogonal and deserve specific treatment.
 - Huawei think the KPI for MTC is in the RAN requirements. If we need higher requirements then that should be discussed in RAN.
 - Samsung explain that performance could be in terms of number of devices, power consumption, etc. Samsung think many of the RAN performance numbers can be met by LT/MTC.NB-IOT etc. and do not justify enough to add MTC to NR.
 - MediaTek think we should just follow the KPI from the RAN TR. Convidia agree. Nokia also agree.
- => Noted

[R2-163407](#) Discussion on Efficient Small Data Transmission in NR Guangdong OPPO Mobile Telecom.
discussion
Not treated

Latency

[R2-163778](#) Latency Analysis for NRMediaTek Inc. discussion
Not treated

Other

[R2-163461](#) Mapping between RAN KPIs and use cases CATT discussion
[R2-163726](#) Multicast and Broadcast in NextGen RAN National Taiwan University discussion
[R2-163994](#) Future proofness and energy efficiency Ericsson discussion
[R2-164003](#) NR Network Energy PerformanceEricsson discussion
[R2-163801](#) Energy Efficiency Enhancement for UE of New RAT Samsung Electronics Co, LTD
discussion
[R2-163938](#) High level discussion on CP/UP separation for NR Deutsche Telekom AG discussion
NOTE: wrong Tdoc number inside the document
[R2-163995](#) Operation in higher frequencies Ericsson discussion
[R2-164007](#) Tight NR/LTE interworking and stand-alone NR access Ericsson discussion
Moved from 9.1 to 9.2

[R2-164086](#) NGRAN - NGCore MediaTek Inc. discussion
[R2-164114](#) Connected Mode DRX Considerations Qualcomm Incorporated, Convida Wireless
discussion
Above 10 Tdocs not treated

Withdrawn:

[R2-163597](#) RAN - CN connectivity Huawei, HiSilicon discussion
[R2-164072](#) General views on support of eV2X in NR LG Electronics discussion

9.3 Deployment scenarios

Including output of email discussion [93bis#23][NR] Deployment scenarios (DOCOMO)

Output of email discussions:

[R2-163399](#) Summary of email discussion [93bis#23][NR] Deployment scenarios NTT DOCOMO, INC.
(Email discussion rapporteur) report Summary report of email discussion [93bis#23]
=> Revised in [R2-164306](#)
[R2-164306](#) Summary of email discussion [93bis#23][NR] Deployment scenarios NTT DOCOMO, INC.
(Email discussion rapporteur) report Summary report of email discussion [93bis#23]

Agreements:

- 1: The following scenarios in terms of cell layout, Node B location for LTE-NR aggregation are captured in the TR.
 - 1.1). LTE and NR "cells" are overlaid and co-located providing nearly the same coverage; both are macro or small cells.
 - 1.2). LTE and NR cells are overlaid, and co-located or not co-located providing different coverage; one is a macro cell and the other is a small cell.

- 2: The following scenarios in terms of CN connection for LTE-NR aggregation are captured in the TR.
- 2.1). NR tightly integrated in LTE via EPC (U-plane data is split at CN or RAN).
 - 2.2). LTE tightly integrated in NR via New CN (U-plane data is split at CN or RAN).
 - 2.3). NR tightly integrated in LTE via New CN (U-plane data is split at CN or RAN).
- Note: To be confirmed at joint meeting whether any concern studying case where NR connects to EPC via UP
- 3: The following scenarios in terms of cell layout for standalone NR are captured into the TR.
- 3.1). Macro cell only deployment
 - 3.2). Heterogeneous deployment
 - 3.3). Small cell only deployment
- Proposal 4: The following scenarios in terms of CN connection for single RAT and inter-RAT standalone operation are captured in the TR.
- For single RAT operation:
- 4.1). NR Node B is connected to New CN.
 - 4.2). LTE eNB is connected to NR Node B New CN (or EPC as today).
- For inter-RAT mobility:
- 4.3). LTE eNB is connected to EPC and NR Node B is connected to New CN.
 - 4.4). Both LTE eNB and NR Node B are connected to New CN.

☒ **[94#24][NR] Deployment scenarios text proposal (DOCOMO)**

Intended outcome: Agreed TP for inclusion in TR

Deadline: Thursday 09/06/2016

[R2-163969](#) Text Proposal to TR 38.804 on NR deployment scenarios NTT DOCOMO, INC. discussion related to email discussion [93bis#23]
=> TP is agreed after email discussion [94#24][NR]

[R2-163592](#) NR-WLAN interworking deployment scenarios Intel Corporation, Qualcomm Incorporated discussion

- MediaTek ask if scenario 2 has any impact in RAN2.
- Intel gave update from offline. Companies are ok for y.1 but people need to understand better what might be the impact in RAN2. But we should ask SA2 during the joint.

Agreements

1: Scenario: WLAN integration with NR

=> Ask SA2 during joint whether scenario y.2 (WLAN connected directly to NextGen Core) whether this scenario could have RAN2 impact.

[R2-163487](#) Deployment scenarios for LTE-NR interworking Samsung R&D Institute UK discussion

- Ericsson ask if the 2 interfaces are the same. Samsung think it is an SA2 decision but they could be the same so the UE has 2 RRC and 2 NAS connections to the core.
- Huawei think that the 2 UEs would have the same NAS. Samsung confirm that they are connected to the same NAS but 2 instances. Ericsson don't see the benefit of this approach. Samsung think the benefit is independent operation for the network of the 2 slices.
- Qualcomm can see some benefit for the UE if it wanted to connect to 2 services that are only available by different networks. Don't see any impact to RAN2.
- ZTE ask if any coordination would be needed. Samsung think the intent that there is no coordination.

=> Noted

[R2-163773](#) An NR Cell Deployment Scenario Fujitsu discussion

- Huawei think the discussion is dependent on the cell definition and hence should wait.

- DOCOMO think this is relate also to the previous paper and think it would be good to understand what is a RAN slice.
- => Noted

[R2-163787](#) Deployment scenario for tight interworking between NR and LTE ITRI discussion

- Huawei think this is an inter-RAT mobility case.
 - Samsung would prefer not to capture this scenario now.
 - ZTE don't see this scenario as interworking but more like relaying.
- => Noted

RAN-CN interface

[R2-163462](#) Consideration on RAN-CN interface for NR CATT discussion

[R2-164123](#) RAN-CN functional split analysis Qualcomm Incorporated, Convida Wireless discussion
Moved from 9.4.1.1 to 9.3

[R2-163996](#) CN / RAN aspects of NR integration Ericsson discussion
Moved from 9.4.1.2 to 9.3

[R2-164209](#) RAN-CN interface assumption in tight interworking NEC discussion
Moved from 9.4.1.2 to 9.3

[R2-163489](#) NR Backhaul design principles Samsung R&D Institute UK discussion
Moved from 9.4.1.3 to 9.3

Above 5 Tdocs not treated

9.4 Radio protocol architecture

9.4.1 Overall architecture

9.4.1.1 Common aspects

Including aspects of the overall protocol architecture that are common to both LTE-NR tight interworking and standalone NR operation.

[R2-164165](#) Control plane aspects of higher frequency support in NR Huawei, HiSilicon discussion

- Nokia agree with proposal 1 and 2 but it is too early to decide that we prioritise in the study item. Samsung support Nokia. It is too early to conclude that SA HF will not work well.
- Huawei clarify that the high/low boundary is about 6GHz.
- CATT agree with Nokia that we should not prioritise. LG think there are many issues to consider for the standalone HF and so it makes sense to start with assisted operations. Samsung think the SI requires us to study all cases.

=> Noted

[R2-164092](#) Concurrent RAT operation with NR Qualcomm Incorporated, Convida Wireless discussion

- CMCC is not sure why we need to consider VoIP support via another RAT and also that 2G/3G is not part of the study. Qualcomm explain this is just an example but there will be cases where we would like to use concurrent RATs.
- Samsung ask if this means more than one CN connection. Qualcomm explain the main point is that there is more than one radio connection.
- Qualcomm explain the case is multiple rx chains but one tx chain that is shared between the RATs by TDM
- Ericsson assume that we have concurrent RAT operation. Also think that RAN4 would have to analyse this before we conclude there are issues with the uplink. In R12 we have cases of 2 tx chains. Qualcomm explain that even if the device has more than one tx chain they cannot always be used together.
- Apple think that dual tx as a baseline is a burden for the UE and we should consider solution to avoid this.

- Nokia think it is interesting and should be studied. IDC was a hack and it would be good to have a cleaner framework from the beginning. Wonder if we can minimise the impact on the non NR system.
 - MediaTek is also interested in this kind of proposal. It is not that the device doesn't have 2 tx but in some situations it cannot be used.
 - Huawei think we also need to consider the design from RAN1 and RAN4 and think the SID objectives should be considered in RAN.
 - Broadcom agree with the comments from Nokia.
 - CATT is open to study but would like to understand the scenarios that can be studied.
 - Samsung is interested in this proposal and think it can be disused in RAN2.
- => Noted

[R2-163367](#) 5G Radio Protocol Architecture Samsung R&D Institute UK discussion
[R2-163700](#) Protocol architecture for NR NTT DOCOMO INC. discussion
[R2-163764](#) Architecture for Standalone NR and LTE-NR Tight Interworking MediaTek Inc. discussion
[R2-164151](#) New RB configurations in 5G LG Electronics Inc. discussion
[R2-164215](#) Initial thought on NR Network Node LG Electronics Inc. discussion
[R2-164030](#) Targeted Protocol Latency Ericsson discussion
 Above 6 Tdocs not treated

9.4.1.2 LTE-NR tight interworking aspects

Including consideration of the general approach for LTE-NR tight interworking, for example DC approach or CA approach.

LTE-NR aggregation approach

- [R2-163702](#) LTE-NR aggregation NTT DOCOMO INC. discussion
- Ericsson agree with proposal 1 but see the CA case as more complex and it would need to be studied if there are gains. DC should be good enough.
 - LG share the view of Ericsson. Think that DC is also good for ideal backhaul case.
 - Huawei think that DC can be used with ideal and non-ideal backhaul. Also think that CA described in the paper is not the same as LTE CA as it has separate MACs. DOCOMO explain the in the CA case that they both have access to a common buffer and that is what gives the gains. In DC there are separate buffers.
 - MediaTek support proposal 1.
 - CATT support to have DC. Wonder if we need to study again to find the performance differences between CA and DC
 - Samsung think we don't need the CA based approach for LTE-NR. Nokia have the same view. Intel have the same view and with ideal backhaul joint scheduling can be performed on DC.
 - CMCC wonder if the DC approach is feasible as some options may not be supported by the SA2. We did not discuss with them whether 3C has any impact to the CN.
 - Huawei think the SA2 concerns were with 1a but not 3c. We can support at least the 3c option.

Agreements:

- 1 - DC approach for LTE-NR aggregation will be studied (FFS whether 3c/1a-like or other user plane architecture to be used)
- 1a LTE as master and NR as master will both be studied..
- 2- The CA based LTE-NR aggregation will not be studied as part of the study item

- [R2-163733](#) Discussion on the architecture for the tight interworking between LTE and NR ZTE Corporation discussion
- Samsung think that LTE-NR is mainly eMBB but don't exclude other cases. LG share the same view as Samsung.
 - Ericsson also don't think it should be restricted to eMBB.
 - Huawei share the view that it should not be limited to eMBB.
 - Nokia think it also depends on the CN that we can connected to.
 - BlackBerry also agree and think it also depends on whether we have bearer split.

- CMCC think the main point of aggregation is to improve the throughput and hence the main focus is eMBB. TelecomItalia share the view of CMCC.
 - ZTE ask do we need to study how to meet the requirements of other vertical for LTE-NR interworking
- => Noted

[R2-163438](#) Dual connectivity for tight LTE-NR tight interworking Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-164270](#) General considerations on LTE-NR tight interworking Huawei, HiSilicon discussion

[R2-163585](#) User plane architecture options for LTE-NR interworking with ideal backhaul Intel corporation discussion

[R2-164210](#) Overall architecture in tight interworking NEC discussion
Above 4 Tdocs not treated

9.4.1.3 Standalone NR aspects

Intra-NR aggregation

[R2-164033](#) Aggregation of carriers for NR Ericsson discussion

- Ericsson explain that 'aggregation of carrier' included DC and CA like approaches.
- LG think we will need to support DC and CA mechanism

Agreements

- 1 Aggregation of NR carriers is to be studied

Moved from 9.4.1.1 to 9.4.1.3

[R2-163685](#) Carrier Aggregation in Standalone NR Nokia, Alcatel-Lucent Shanghai Bell discussion

- ZTE ask if the numerology may be different for the different carriers to be aggregated. Nokia think this still needs to be studied,
- CATT wonder if we can really see how CA like aggregation can work without understanding the lower layer operation. Huawei think we don't yet know what CA would mean for NR
- DOCOMO think that even for high frequency bands there are scenarios where bands need to be aggregated.
- IDC also think lower layer aggregation should be studied. Also point out that RAN1 are considering different numerology within one carrier.
- Convidia have some sympathy for supporting CA and DC like approaches. Ericsson think the differences in numerology might be possible to hide from the upper layers.
- Samsung think it is not clear whether aggregation by upper or lower layers.

Agreements

- 1 As in LTE, NR shall study lower layer aggregation (e.g. CA-like) and upper layer aggregation (e.g. DC-like)

[R2-163687](#) Multi-connectivity in standalone NR Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-164032](#) Multi-connectivity within NR Ericsson discussion
Above 2 Tdocs not treated

L3 transport

[R2-163591](#) Transport of L3 signalling in standalone NR Intel corporation discussion

- Nokia think that proposal 1 should be easy to agree but think that SA2 is considering that NAS might be carried over IP or in some other way. Qualcomm agree that we should wait for SA2 regarding NAS.
- Fujitsu think that RAN3 have already done similar work.
- LG think that proposal 1 is quite obvious. CMCC wonder whether in-sequence and security are required. Huawei are fine with proposal one and think it is needed for network to have reliable control.

Agreements

- 1 User plane stack provides an in-sequence, secure and guaranteed delivery for transport of RRC signalling.

9.4.2 User plane

Identification of functions of the user plane and allocation to user plane protocol layers, support of radio bearer within the NR, etc.

Also including consideration of the overall user plane architecture for LTE-NR tight interworking (e.g. consideration of 1a, 3c, etc. in the case a DC interworking approach is adopted).

Overall user plane architecture

[R2-163588](#) Function split and evaluation criteria for NR user plane architecture Intel corporation discussion

- Samsung think that segmentation can be optional. CATT ask if segmentation is needed for all services and all cases and there might be cases where it isn't needed.
- Ericsson think there are cases where segmentation is needed and should be supported by all UEs. Nokia think it is obvious that it has to be supported but maybe it can be turned off. Huawei agree but it can be discussed whether it is configurable. LG think that even today we have RLC TM which has not segmentation.

P3

- MediaTek think we also need to consider the support of verticals in the study of the stack.
 - CATT think that friendliness with LTE interworking is desirable but it should not impact the performance of NR. LG share the view that LTE interworking should not restrict the design of NR. IDC share the view of CATT and LG. Huawei think we need to consider how the stack will perform in the interworking scenario. Intel clarify that we need to consider interworking but it is not mean to restrict.
 - TelecomItalia think the performance of our stack will depend on the front haul split.
- => Noted

[R2-164025](#) Higher layer protocol functions and services Ericsson discussion

- Nokia agree at a high level but now we need to review every function whether it needs to remain or move. Huawei support using LTE stack as a baseline. MediaTek think we need to consider all functions where they are placed.
- Qualcomm agree that all the functions will likely be need but we will need changes to support NR. LG think that we have to evaluate each function. Intel think all the functions are needed but we need to evaluate how to distribute them. CATT share this view. IDC share this view.
- Convidia also assume that LTE functions are baseline.
- Samsung think that current LTE is a good starting point.
- CMCC think we need to consider new functions and modification of existing functions.

Agreements

- 1 LTE L2 functions are consider as a baseline for NR. Order, allocation to sublayers, possible merger of functions needs to be considered on a case by case basis.

[R2-164124](#) User Plane L2 function analysis Qualcomm Incorporated, Convida Wireless discussion

- Samsung think that in legacy security is not configurable in LTE. It is always required. Qualcomm think that encryption should be configurable. MediaTek think that for the new use cases it might need to be configurable. DOCOMO ask in which case security is not needed.

P2

- LG support that reordering needs to be supported in the upper part of the stack
- Broadcom do not support that recording is needed as it can be supported in higher layers.
- CATT see that location of reordering might need to be reconfigurable

- Huawei think that reordering is needed for recovery of lost packets.
- MediaTek think one important function is traffic distribution.
- Samsung think we have 2 reordering for different purposes in LTE. Qualcomm propose a single reordering entity. Samsung is not sure that the reordering for HARQ can be eliminated. LG think they 2 reordering functions can be merged.
- Broadcom think that the RLC reordering is needed but the reordering at PDCP is not required. Need for reordering in PDCP should be investigated

Agreements:

- 1 Study whether a single packet reordering function is possible
- 2 Study whether segmentation function can be configured (enabled/disabled) to support different services
- 3 Study whether concatenation function can be moved to lowest L2 sublayer.
- 4 Study whether retransmission of PDU segments can be removed (i.e. only complete PDU level retransmission)

[R2-163439](#) UP Radio Protocols for NR Nokia, Alcatel-Lucent Shanghai Bell discussion

Agreement:

- 1 NR UP protocol stack supports maintaining of multiple parallel "logical channels" that can be configured with different characteristics and priorities. (Note: use of the term logical channel does not imply the existence of an RLC).

[R2-163593](#) Analysis of L2 protocol functions for NR air interface Huawei, HiSilicon discussion

[R2-163760](#) Placement and grouping of user plane functions in NR Samsungdiscussion

[R2-163842](#) User plane enhancements for 5G SAMSUNG Electronics Co., Ltd. discussion

[R2-163589](#) User plane architecture options for NR Intel corporation discussion

[R2-164137](#) L2 functions for CU-DU split LG Electronics Inc. discussion

[R2-164024](#) Multiplexing in MAC for NR Ericsson discussion

[R2-163417](#) UP Architecture for Standalone NR MediaTek Inc. discussion

[R2-163464](#) Functionality of user plane in NR CATT discussion

[R2-164022](#) Analysis of the needs for ARQ in NR Ericsson discussion

[R2-163366](#) 5G User Plane radio protocol overview Samsung R&D Institute UK discussion

[R2-163720](#) User plane functions & architecture in NR CMCC discussion

[R2-163737](#) Discussion on the NR user plane protocol design ZTE Corporation discussion

[R2-164029](#) Handling of different services Ericsson discussion

Above 13 Tdocs not treated

LTE-NR DC architecture

[R2-164027](#) Tight integration of NR and LTE User Plane design Ericsson discussion

- Nokia can not support to have 3c only as it will be problematic for the NR data rates to go through LTE.
- Samsung think we don't understand the implication yet of deciding on 1a.
- Huawei have the same view as 1a. We have no idea if we can use S1u between NR and EPC. This could make NR more complicated
- CATT think we need to study 3c and 1a more.
- DT think we should only keep 3c and 1a is open.
- LG also think that we should start with 3c.
- Nokia think we should consider both in the study. IDC agree and think we can assume at the moment that it is transparent to the EPC.
- Ericsson think there is a clear use case for 1a. ZTE support Ericsson.
- TelecomItalia don't see a string need to support 1a.
- Intel think it is important to study 1a as well.

Agreements

- 1 Study both split bearer (3C bearers) and direct routing (1A bearers) for LTE-NR multi-RAT.

[R2-163749](#) On the need of new DRB types in NR Samsungdiscussion

- Ericsson understand the proposal is to send high data rate to the NR SeNB instead of LTE MeNB but then when there is a blockage the data is all routed to the LTE MeNB. It would be as efficient to move the bearer to LTE. Samsung explain that it reduced interruption and avoids path switch.
 - Ericsson think the sudden change in data rate will anyway cause problems for the upper layers.
 - LG don't see the gain to introduce this new type of bearer.
 - CMCC see some benefit to route the high data rate to the NR node B. CATT also support to study his case and see some benefits also from latency point of view.
 - ZTE also see some benefit. Broadcom also see some benefit.
 - Huawei don't see the strong motivation. Nokia also agree and wonder what buffer it will require in the UE.
- => Noted

Moved from 9.4.1.2 to 9.4.2

- [R2-164094](#) UP Protocol Architecture Aspects for Tight Integration of LTE and NR INTERDIGITAL COMMUNICATIONS discussion
- [R2-163463](#) UP architecture for LTE-NR interworking CATT discussion
- [R2-163735](#) Discussion on the user plane for the tight interworking between NR and LTE ZTE Corporation discussion
- [R2-164269](#) LTE-NR tight interworking user planeHuawei, HiSilicon discussion
Above 4 Tdocs not treated

Bearerers/QoS

Moved from 9.4.1.3 to 9.4.2

- [R2-164119](#) Principles for QoS in the RAN Qualcomm Incorporated, Convida Wireless discussion
- ZTE ask if a single flow will only map to one DRB. Qualcomm explain multiple flows to one DRB but one flow only to one DRB.
 - Huawei support this but it needs to be discussed with SA2. Qualcomm agree that this relates to the bearer model but we in RAN2 can decide whether we keep DRBs.
 - Ericsson are fine with the proposals.
 - LG as which group is responsible for the flow to bearer mapping. Qualcomm think in SA2 go for a bearer less model then we will need to split the bearer with RAN maybe with support from CN.
 - Broadcom ask if the intent to allow treatment per user. Will user profile information be necessary in the RAN. Qualcomm think one approach might that the CN just tells the RAN about new traffic flows and RAN can then create the bearer.

Agreements

- 1: The "data radio bearer" (DRB) defines the Over-The-Air packet treatments in the RAN.
- 2: A DRB serves a set of packets requiring the same packet forwarding treatment, e.g. reliability, target delay, etc.
- 3: A separate DRB is defined for each different packet forwarding treatment required.

- [R2-163440](#) Network Convergence Sublayer for NR Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-163583](#) Use of bearers in NR Intel corporation discussion
- [R2-164089](#) Radio Bearers and Per-Flow QoS for New Radio Access INTERDIGITAL COMMUNICATIONS discussion
Above 3 Tdocs not treated

Support of verticals

- [R2-163594](#) NR MAC: multiplexing diverse services on a common NR air interface Huawei, HiSilicon discussion
- Ericsson ask if multiple numerologies to one UE at the same time has been agreed, and whether over one carrier. Huawei confirm this is agreed in RAN1. Samsung think this has

been agreed but is not sure if this is from the UE point of view. Intel also understand that this is from the network perspective.

- Qualcomm wonder if it is different from what we have today with MBMS, D2D, etc. in a single carrier.
 - Huawei think the frame structure such as TTI will be visible to L2.
- => Noted

- [R2-163740](#) NR User plane architecture for supporting multiple services Samsung discussion
- Ericsson think there can be many services per bearer but the proposal suggests the opposite. Samsung clarify they are referring to the verticals.
 - Samsung explain the figures do not distinguish between UE and network side.
 - Ericsson think that different verticals should also be allowed to be mapped to the same bearer is they have the same QoS. Samsung think RAN1 assume different physical layer.
 - MediaTek think that proposal 4 allows different services in the same physical resources. Don't want to preclude that multiple MAC entity is required.
 - CATT think that the mapping of services to DRBs can be implementation and we must just ensure all the requirements of the services can be met.
 - LG think on the uplink there is always single MAC.
 - Panasonic think in the UE there can be only 1 MAC but different configuration, multiplexing restrictions, etc.
 - Nokia don't see the use case of the different verticals in one UE at the same time.
 - Panasonic understand that different verticals needs to be supported at the same time. Samsung assume that this is possible. LG also agree.
 - Huawei is open to supporting more than one vertical. But we need to look at supporting the different phy numerologies without caring about the reason.
 - Samsung think that one example might be V2P at the same time as MBB.
- => Noted

- [R2-164153](#) RB specific L2 entity LG Electronics Inc. discussion
Not treated

Moved from 9.4.1.3 to 9.4.2

DRX

- [R2-164023](#) DRX in NR Ericsson discussion
Not treated

MAC specifics

- [R2-164026](#) Overview of MAC grant handling in NR Ericsson discussion
[R2-163580](#) Discussion on MAC functionalities for NR Intel corporation discussion
Above 2 Tdocs not treated

Other

- [R2-163892](#) Discussion on Dynamic TTI Configuration MediaTek Inc. discussion
[R2-163775](#) Radio Bearer Handling and Challenges for 5G Fujitsu discussion
[R2-163774](#) Adaptation Function for Fronthauling Fujitsu discussion
[R2-164028](#) Infrequent small data transmissions for inactive UEs Ericsson discussion
Above 4 Tdocs not treated

9.4.3 Control plane

9.4.3.1 LTE-NR tight interworking aspects

Identification of functionality of the NR control plane for LTE-NR tight interworking (e.g. NR radio configuration, measurements, UE capability coordination, etc.).

Consideration of transport for the control plane (e.g. via LTE, NR or both), transparency to LTE, ciphering/integrity, etc.

[R2-163510](#) Definition of Single and multiple RRC connections Nokia, Alcatel-Lucent Shanghai Bell discussion
=> Noted

Points to consider:

- How many RRC state machines does the UE have (one or two)
- Can both NR and LTE generate ASN.1
- Can NR and LTE generate final RRC messages
- Is ASN.1 generated by one node transparent to the other node
- Can the messages be carried over both LTE and NR Uu interfaces

[R2-163968](#) NR C-plane architecture: New RRC vs. Enhanced LTE RRC NTT DOCOMO INC. other
Moved from 9.4.1.1 to 9.4.3.1

=> Noted

[R2-164005](#) Overview of RRC architecture options for the LTE-NR tight interworking Ericsson discussion
Moved from 9.4.1.2 to 9.4.3.1

Observation 1 Single RRC connection configures the UE for both LTE and NR with a single RRC state, associated to both LTE and NR.

Observation 2 A single RRC connection, associated to a single RRC entity, can enable a low complexity state handling at the UE.

Observation 3 With the single RRC connection option, signalling can be transported over LTE and/or NR, i.e., RRC diversity feature can be supported.

Observation 4 In case of dual RRC connection option, coordination is expected for the RRC messages generated by different RRC entities.

Observation 5 RRC diversity can also be supported for the dual RRC connection option.

Observation 6 Dual RRC connection option allows the configuration of dedicated SRB(s) for NR in addition to the common LTE and NR SRBs.

Based on the discussion in section 2 we propose the following:

Proposal 1 NR/LTE Dual Connectivity should take a "single RRC connection" as a working assumption.

=> Noted

[R2-163511](#) Control plane options for RRC in LTE NR tight interworking Nokia, Alcatel-Lucent Shanghai Bell discussion
- Discussed together with paper above.

Agreements

=> UE has a single RRC state machine based on the master, and single control plane connection to CN

=> Network has two RRC entities that can generate ASN.1

=> ASN.1 generated by the secondary can be transported by the master (at least in some cases, e.g. for first configuration)

FSS points to consider for next meeting.

- Is ASN.1 generated by one node transparent (no necessity for the master to understand the ASN.1 generated by the secondary) to the other node?
- Can NR and LTE generate final RRC messages?
- Can secondary send messages directly to UE over the secondary radio (e.g. an SRB on the secondary)
- Can messages generated by master node can be transported over the secondary radio.
- Can a single message generated by master/secondary node can be transported over both master and secondary radio.
- UL cases also to be considered.

[R2-163465](#) RRC/RRM for LTE-NR interworking CATT discussion

[R2-163467](#) Control plane for support of tight interworking between NR and LTE CATT discussion

- [R2-163587](#) RRC aspects for LTE-NR interworking Intel corporation discussion
[R2-163696](#) Initial considerations on C-plane Protocol Design for LTE-NR Tight Interworking Shenzhen Coolpad Technologies discussion
[R2-163708](#) Considerations on control plane for LTE-NR dual connectivity CMCC discussion
[R2-163739](#) Consideration on the Dual RRC for LTE NR tight interworking ZTE Corporation discussion
[R2-163741](#) Discussion on control plane for the DC based LTE NR tight interworking ZTE Corporation discussion
[R2-163791](#) UE Capabilities Issues for tight interworking between NR and LTEITRI discussion
[R2-163794](#) Control plane architecture for tight interworking between NR and LTEITRI discussion
[R2-163845](#) Consideration on control plane for tight interworking between NR and LTE KT Corporation discussion
[R2-163940](#) RRC states for LTE-NR tight integration Sony discussion
[R2-163974](#) System Information handling for LTE-NR tight interworking NTT DOCOMO, INC. discussion
[R2-164069](#) NR Control Plane Latency and Deployment Scenarios Convida Wireless discussion
[R2-164091](#) Control Plane Architecture for Interworking between NR and LTE INTERDIGITAL COMMUNICATIONS discussion
[R2-164093](#) Control Plane Functions for Interworking between NR and LTEINTERDIGITAL COMMUNICATIONS discussion
[R2-164211](#) CP architecture in tight interworking NEC discussion
[R2-164231](#) Partial UE-centric Mobility in NR-LTE interworking scenario LG Electronics Inc. discussion
[R2-164268](#) LTE-NR tight interworking control plane Huawei, HiSilicon discussion
 Above 18 Tdocs not treated

9.4.3.2 Standalone NR aspects

9.4.3.2.1 Functionality

Identification of functionality of the control plane

- [R2-163512](#) RRC services and functions Nokia, Alcatel-Lucent Shanghai Bell discussion

Agreements:

- 1- Functions of LTE RRC are taken as a baseline for NR RRC

- [R2-163595](#) RRC support for network slicing Huawei, HiSilicon discussion
[R2-163514](#) Control Plane architecture for NR-NR multi-connectivity Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-163718](#) Control Plane functions in NR CMCC discussion
[R2-164160](#) Control Plane and Connectivity Principles for NR INTERDIGITAL COMMUNICATIONS discussion
[R2-163468](#) Control plane for support of NR standalone operationCATT discussion
[R2-163513](#) NR RRC control plane protocol stack considerations Nokia, Alcatel-Lucent Shanghai Bell discussion
 Above 6 Tdocs not treated

Withdrawn:

- [R2-163584](#) RRC functions for standalone NR Intel corporation discussion
[R2-164134](#) General considerations on RRC Huawei, HiSilicon discussion

9.4.3.2.2 States

Consideration of RRC states related to mobility, data activity, etc.

- [R2-163998](#) Handling of inactive UEs Ericsson discussion
- LG think if the UE is in suspended state then the UE is idle. Samsung explain that even in connected PCH state the UE does cell reselection.
 - DCOMO think we had bad experience from UMTS of too many RRC states and for LTE we wanted to simplify. Also for NR we need to consider more use cases. Think that the use of the new state should be configurable for the network.
 - Samsung think that data transfer in this state will require common resources which we don't have today in LTE.
 Samsung wonder if we need to discuss first and idle state. Intel thing we can leave to SA1 whether we have an idle state.

Agreements:

- 1 Study the introduction of a RAN controlled "state" characterised by, at least:
 - a/ - UEs in RAN controlled state should incur minimum signalling, minimise power consumption, minimise resource costs in the RAN/CN making it possible to maximise the number of UEs utilising (and benefiting from) this state
 - b/ Able to start data transfer with low delay (as required by RAN requirements)
- FFS whether data transfer is by leaving the "state" or data transfer can occur within the "state"
 FFS whether "state" translates to an RRC state

Potential characteristics of the RAN controlled "state" for study:

- a/ the CN/RAN connection is maintained
- b/ AS context stored in RAN
- c/ Network knows the UE's location within an area and UE performs mobility within that area without notifying the network.
- d/ RAN can trigger paging of UEs which are in the RAN controlled "inactive state"
- e/ No dedicated resources

[R2-163486](#) RRC states for Next Radio Samsung discussion

- Discussed together with the previous paper
- => Noted

[R2-163369](#) Idle Mode Design for 5G RAT Samsung R&D Institute UK discussion

[R2-163582](#) Standalone NR: Discussion on mobility framework Intel corporation discussion

[R2-163441](#) RRC States for NR Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-163449](#) Consideration of UE states CMCC discussion

[R2-163469](#) UE state in NR from RAN point of view CATT discussion

[R2-163742](#) Consideration on RRC state in New RAT ZTE Corporation discussion

[R2-163830](#) Discussion on new state in 5G NR Samsung Electronics discussion

[R2-164077](#) Three Options for RRC States of Standalone NR LG Electronics discussion

[R2-164085](#) UE states MediaTek Inc. discussion

[R2-164095](#) NR RRC states definition Qualcomm Incorporated, Convida Wireless discussion

[R2-164115](#) NR IDLE Mode Principles Qualcomm Incorporated discussion

[R2-164167](#) Considerations on power efficient RRC state definition in NR Huawei, HiSilicon discussion

Above 12 Tdocs not treated

9.4.3.2.3 System information

Including minimisation of system information overhead, impact of beam sweeping, etc.

System information - general principles

[R2-164006](#) Requirements for system information distribution Ericsson discussion

[R2-163371](#) System Information Signalling Design in NR Samsung Electronics Co., Ltd other

[R2-164078](#) Observations about on-demand SI delivery mechanism LG Electronics France discussion

[R2-163743](#) Consideration on the system information in NR ZTE Corporation discussion

[R2-163975](#) System Information design for standalone NR operation NTT DOCOMO, INC. discussion

[R2-163977](#) System Information Enhancements for NR Sony discussion

[R2-163470](#) System information in NR CATT discussion

[R2-163586](#) System information for standalone NR deployment Intel corporation discussion

[R2-163853](#) System information handling in NR ETRI discussion

[R2-163980](#) System information on demand in standalone NR NEC Telecom MODUS Ltd. Discussion

[R2-164067](#) NR System Information Aspects Convida Wireless discussion

[R2-164088](#) System Information Acquisition for New Radio Access INTERDIGITAL COMMUNICATIONS discussion

[R2-164122](#) NR System Information Provisioning Qualcomm Incorporated, Convida Wireless discussion

[R2-164127](#) System information design Huawei, HiSilicon discussion

Above all Tdocs not treated

System information for high frequencies/beamformed

[R2-163997](#) Solution principles for system information distribution Ericsson discussion

Not treated

9.4.3.2.4 Initial access

[R2-163372](#) Random Access Procedure in NR Samsung Electronics Co., Ltd other
[R2-163373](#) Service Specific Cell (Re-) Selection in NR Samsung Electronics Co., Ltd other
[R2-163893](#) Initial access for NR MediaTek Inc. discussion
[R2-163923](#) Initial access in NR Huawei, HiSilicon discussion
[R2-164075](#) Connection Establishment and Access Control for Standalone NR LG Electronics France discussion
 Above all Tdocs not treated

9.4.3.2.5 Other

Other aspects may include the support of small data, security (although little discussion on security may be possible until we have more information from SA3), etc.

[R2-163442](#) Efficient Small Data Transmissions Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-163776](#) Co-existence scenarios for LTE and NR Samsung discussion
[R2-163976](#) Frequency domain resources for NR measurements NTT DOCOMO, INC. discussion
[R2-164130](#) Support for ultra-reliable low latency communication (URLLC) Huawei, HiSilicon discussion
[R2-164131](#) Consideration on grant free transmission for NR Huawei, HiSilicon discussion
[R2-164138](#) Fast Uplink Channel LG Electronics Inc. discussion
 Above all Tdocs not treated

9.5 Mobility

9.5.1 Intra NR RAT

Including consideration of different levels of mobility ('beam' and 'cell'), impacts on protocols of each level, etc.

General requirements

[R2-163364](#) Intra-5G Mobility related requirements Samsung R&D Institute UK discussion

Agreements:

1 NR eNB corresponds to 1 or many TRPs

Agreed requirements

2: As baseline, NR shall support a state with network controlled mobility handling and a state with UE controlled mobility.

3: For typical NR inter-eNB network controlled mobility, minimise the required measurement configuration to be provided to the UE to configure measurements (e.g. avoid the need to provide detailed 'cell' level information). More detailed information may be provided to address some cases.

4 Minimise context move as a consequence of UE based mobility.

[R2-163744](#) Consideration on the Intra-NR mobility ZTE Corporation discussion
[R2-163515](#) Implications of High Frequency Bands on Mobility Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-163879](#) RAN2 Impacts in HF-NR MediaTek Inc. discussion
[R2-163446](#) Mobility Scenarios in NR Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-163686](#) Considerations for Ultra Reliable Low Latency Communications (URLLC) with High Mobility Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-164128](#) Design principles for mobility in NR Huawei, HiSilicon discussion
[R2-164000](#) Mobility execution in NR Ericsson discussion
[R2-164002](#) Network controlled mobility Ericsson discussion
[R2-164076](#) Initial analysis and challenges for support of high mobility LG Electronics France discussion
[R2-164117](#) Mobility for NR Qualcomm Incorporated, Convida Wireless discussion
 Above 10 Tdocs not treated

'Cell'/beam related terminology and principles

- [R2-163578](#) Discussion of mobility related definition and terminology in NR Intel corporation discussion
- Nokia think that TRPG is what we used to call a cell.
 - Ericsson think that we need to understand mobility procedures at the UE. Sometimes it need to be reconfigured and sometime it does not. UE doesn't need to be aware of the topology.
 - Huawei understand that for changes across TRPG we need some RRC reconfiguration and within TRPG it does not.
 - Samsung agree on the intent as RAN1 will be late working on this terminology. Think the difference between cell and TRPG group is whether there is a reference signal with which the UE can determine the cell
 - Nokia wonder if we care about TRPs or whether we just need to care about beams. And some beams transmit a cell identity.
 - CATT think we may have many different areas that might not be the same.
 - Huawei think that we need some understanding of cell for the use by RRC procedures. Whether cell is related to certain reference signals can be left to RAN1.
 - MediaTek think we can just use the term cell.
- => Noted

- [R2-163437](#) Beam Terminology Nokia, Alcatel-Lucent Shanghai Bell discussion
- Huawei ask if an omni directional transmission is a beam. Samsung think we need to handle above and below 6 with common procedures in which case considering a omni as a beam would be beneficial.
 - Huawei think that the beam is a set of reference signalling and think we can't agree until RAN1 has made progress on beams and references signals. Intel don't know if RAN1 have agreed to a beam index or whether the beam will be transparent to the UE.
 - Qualcomm think we need to have a cell id to understand which cell is associated with a beam.
 - Nokia think we will not live without the definition of cell. We need to abstract from beams at RRC level and that is cell.

Agreements

Two levels of network controlled mobility:

1: RRC driven at 'cell' level.

2: Zero/Minimum RRC involvement (e.g. at MAC /PHY)

FFS what is the definition of a cell

FFS whether the following can be defined as a cell:

- A cell is defined by the presence of a Cell Identifier (CI).
- Beam(s) associated to the same cell are linked to the same Cell Identifier

Moved from 9.2 to 9.5.1

[R2-163365](#) Introduction of "Cell" concept in 5G Samsung R&D Institute UK discussion

[R2-163716](#) Discussion on terminology of beamforming based high frequency NR Samsung R&D Institute UK discussion

Moved from 9.2 to 9.5.1

[R2-163484](#) Mobility Supporting for HF-NR MediaTek Inc. discussion

[R2-163719](#) Mobility management for connected mode in NR CMCC discussion

[R2-163473](#) Intra-RAT mobility in NR CATT discussion

[R2-163471](#) Cell concept in NR CATT discussion

Moved from 9.2 to 9.5.1

[R2-163721](#) Decouple the UE and Cell in NR system design CMCC discussion

Moved from 9.4.1.1 to 9.5.1

[R2-163722](#) Design principles of NR radio system architecture CMCC discussion

Moved from 9.4.1.1 to 9.5.1

Above 8 Tdocs not treated

Beam management

- [R2-163476](#) Beam management in NR Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-163730](#) Use cases and RAN2 issues of beam tracking in a beamforming based high frequency NR Samsung R&D Institute UK discussion
- [R2-164121](#) Beam-based aspects for New Radio INTERDIGITAL COMMUNICATIONS discussion
Above 3 Tdocs not treated

Beam sweeping

- [R2-163443](#) On beam sweeping and its implications Nokia, Alcatel-Lucent Shanghai Bell discussion
Not treated

RRM

- [R2-163999](#) Mobility based on DL and UL measurements Ericsson discussion
- [R2-163652](#) Discussion on Beam Measurement for 5G New Radio Interface in mmWave Frequency Bands Samsung Electronics discussion
- [R2-164001](#) Mobility measurements and procedures Ericsson discussion
- [R2-163939](#) Mobility Using Uplink Measurements Sony discussion
- [R2-164125](#) Mobility procedures - decision points and measurements Qualcomm Incorporated discussion
Above 5 Tdocs not treated

RLM

- [R2-163800](#) Radio Link Failure detection in mmW systems Samsung R&D Institute UK discussion
Not treated

Other

- [R2-164129](#) UE mobility tracking in "active state" and in "power saving" state Huawei, HiSilicon discussion
- [R2-163736](#) Mobility aspects of high frequency NR Samsung discussion
- [R2-163579](#) Mobility and beam support in NR Intel corporation discussion
- [R2-163466](#) Intra-NR RAT mobility consideration MTI, ITRI discussion
Above 4 Tdocs not treated

Withdrawn:

- [R2-163712](#) Use cases and RAN2 issues of beam tracking in a beamforming based high frequency NR Samsung R&D Institute UK discussion

9.5.2 Inter-RAT

Including consideration of mobility between NR and LTE, and potentially other RATs.

- [R2-163488](#) Inter-RAT handover with LTE Samsung R&D Institute UK discussion
- [R2-163993](#) NR/LTE tight interworking: CP requirements on Mobility and Dual Connectivity Ericsson discussion

Moved from 9.4.1.2 to 9.5.2

- [R2-163581](#) inter-RAT mobility between NR and LTE Intel corporation discussion
- [R2-163472](#) inter-RAT mobility in NR CATT discussion
- [R2-163745](#) Consideration on the Inter-RAT mobility between NR and LTE ZTE Corporation discussion
- [R2-164212](#) Inter-RAT mobility with direct interface between eNB and NR NEC discussion
Above all Tdocs not treated

Withdrawn:

- [R2-163596](#) Inter-RAT mobility Huawei, HiSilicon discussion

9.6 Other

Other aspects may include the impacts of slicing and QoS (although little discussion on slicing may be possible until we have more information from SA2), etc.

- [R2-163444](#) On Hybrid ARQ functionality for NR Nokia, Alcatel-Lucent Shanghai Bell discussion
 - [R2-163445](#) Scheduling Framework and Requirements Nokia, Alcatel-Lucent Shanghai Bell discussion
 - [R2-163604](#) RRC specification for 5G Samsung Telecommunications discussion
 - [R2-163732](#) Discussion on NR Vehicular Communication Samsung Electronics discussion
 - [R2-163746](#) Further discussion on the RAN QoS control ZTE Corporation discussion
 - [R2-163747](#) Discussion on the impact of NW slicing on RAN side ZTE Corporation discussion
 - [R2-163802](#) Layer 2 design to support multiple service verticals Samsung Electronics Co, LTD discussion
 - [R2-163875](#) NR Network Energy Requirement CMCC discussion
 - [R2-163894](#) Radio Bearers and Logical Channels MediaTek Inc. discussion
 - [R2-164004](#) RAN support for network slicing Ericsson discussion
 - [R2-164149](#) RB concept and QoS framework in 5G New RAT LG Electronics Inc. discussion
 - [R2-164168](#) General considerations on power modelling for the user equipment Huawei, HiSilicon discussion
 - [R2-164267](#) Considerations on 5G RAN QoS framework Huawei, HiSilicon discussion
- Above all Tdocs not treated

Withdrawn:

- [R2-163590](#) Dynamic connected mode DRX consideration in NR Intel corporation discussion
- [R2-164132](#) General considerations on power modelling for the user equipment Huawei, HiSilicon discussion

10 UTRA Release 11 and earlier releases

10.0 In principle agreed CRs

- [R2-163426](#) Introduction of DB-DC-HSUPA in earlier release Qualcomm Incorporated CR 25.306
11.10.0 0505 - B Rel-11 HSUPA_DB_MC-Core
NOTE: TEI11 should be added since HSUPA_DB_MC-Core was a REL-13 WI code
=> Revised in [R2-164301](#)
- [R2-164301](#) Introduction of DB-DC-HSUPA in earlier release Qualcomm Incorporated CR 25.306
11.10.0 0505 1 B Rel-11 HSUPA_DB_MC-Core, TEI11
=> The CR is agreed
- [R2-163427](#) Introduction of DB-DC-HSUPA in earlier release Qualcomm Incorporated CR 25.306
12.7.00506 - A Rel-12 HSUPA_DB_MC-Core
NOTE: TEI11 should be added since HSUPA_DB_MC-Core was a REL-13 WI code
=> Revised in [R2-164302](#)
- [R2-164302](#) Introduction of DB-DC-HSUPA in earlier release Qualcomm Incorporated CR 25.306
12.7.00506 1 A Rel-12 HSUPA_DB_MC-Core, TEI11
=> The CR is agreed

10.1 Other

Incoming LS:

- [R2-163316](#) LS on rate adaptation quality issues in uplink for UTRAN (S4-160500; contact: Orange) SA4
LS in to: RAN2
move 3.3 to 10.1
=> Noted
- [R2-163713](#) Discussion on rate adaptation quality issues in uplink for UTRAN Huawei, HiSilicon discussion
 - Samsung wonders if the observed problem occurred for synchronous or asynchronous reconfiguration or both. Nokia Net also would like to understand the scenario and configuration (RAB combination, voice RAB?). Orange provides reference to the SA4 paper S4-160434. Orange's understanding is that it always happens for certain UEs.

- Nokia wonders how the “apply gating at the radio level” is going to solve the problem. Orange thinks that RAN should find a solution and we don’t have to stick to the wording of the LS.
- Qualcomm thinks that if this is an issue then a network solution would be preferable. Also they would like to understand the severity of the problem as within 60-80 ms we are losing 3 or 4 packets.
- *to understand when this problem happens*
- After comeback
 - Orange explain that all tested UEs were behaving the same and packets of higher rates were blocked.
 - Orange explains that asynchronous re-configuration is used in the tests.
- => Noted

[R2-163428](#) Introduction of DB-DC-HSUPA in earlier release Qualcomm Incorporated CR 25.331
 11.16.0 5857 - B Rel-11 HSUPA_DB_MC-Core
 NOTE: TEI11 should be added since HSUPA_DB_MC-Core was a REL-13 WI code
 => Revised in [R2-164303](#)

[R2-164303](#) Introduction of DB-DC-HSUPA in earlier release Qualcomm Incorporated CR 25.331
 11.16.0 5857 1 B Rel-11 HSUPA_DB_MC-Core, TEI11
 - Ericsson indicates that “maxAddPos” has to be defined
 => remove space in “> Support for Dual Band Dual Cell E-DCH operation”
 - Samsung wonders if we need to change the Rel-13 spec to put that “> Support for Dual Band Dual Cell E-DCH operation” is Rel-11. Ericsson thinks that it would result in a mismatch between tabular and ASN.1
 => The CR is revised in [R2-164340](#)

[R2-164340](#) Introduction of DB-DC-HSUPA in earlier release Qualcomm Incorporated CR 25.331
 11.16.0 5857 2 B
 => The CR is agreed

[R2-163429](#) Introduction of DB-DC-HSUPA in earlier release Qualcomm Incorporated CR 25.331
 12.9.05858 - A Rel-12 HSUPA_DB_MC-Core
 NOTE: TEI11 should be added since HSUPA_DB_MC-Core was a REL-13 WI code
 => Revised in [R2-164304](#)

[R2-164304](#) Introduction of DB-DC-HSUPA in earlier release Qualcomm Incorporated CR 25.331
 12.9.05858 1 A Rel-12 HSUPA_DB_MC-Core, TEI11
 => The CR is revised in [R2-164341](#)

[R2-164341](#) Introduction of DB-DC-HSUPA in earlier release Qualcomm Incorporated CR 25.331
 12.9.05858 2 A
 => The CR is agreed

11 UTRA Release 12

(EDCH_enh-Core, leading WG: RAN2, REL-12, started: Dec. 13, **closed:** Dec. 14, WID: [RP-140127](#))

(UTRA_SIBenh-Core, leading WG: RAN2, started: Dec. 13, **closed:** Sep 14, WID: [RP-140131](#))

(UTRA_hetnet_enh-Core, leading WG: RAN1, started: Dec.13, **closed:** Sep. 14, [RP-140463](#))

(UTRA_DCHenh-Core, leading WG: RAN1, started: Sept.13, **closed:** Sep. 14, [RP-131357](#))

(UTRA_LTE_WLAN_interw-Core, leading WG: RAN2, REL-12, started: Dec.13, **closed:** Sep. 14, WID: [RP-132101](#))

(LTE_UTRA_IncMon-Core, leading: RAN4, REL-12, started: Dec.13, **closed:** Dec. 14, WID: [RP-132061](#))

Input to any other Rel-12 WI/SI not explicitly listed above.

(UTRA_hetnet_mob-Core, leading WG: RAN2, Started: Dec.13, closed: June 14, WID: [RP-140463](#))

(LCS_BDS-UTRA-Core, leading WG: RAN2, started: March 13, closed: Dec.13, WID: [RP-130416](#))

(EHNB_enh3-Core, leading WG: RAN3, REL-12, started: Sep.12, closed: Dec 13, WID: [RP-130741](#))

(LCR_TDD_HSPA_sign_enh-Core, leading WG: RAN1, started: Dec 12, closed: Dec 13, WID: [RP-121984](#))

(LTE_UTRA_SDL_BandL-Core, leading WG: RAN4, started: June 13, closed: June 14, WID: [RP-140092](#))

Including corrections for UTRA functionality introduced as TEI12.

11.0 In principle agreed CRs

- [R2-163431](#) Correction on the naming E-DCH decoupling Huawei, HiSilicon CR 25.308 13.1.00174
 - F Rel-13 TEI13, UTRA_HetNet_enh-Core
 => The CR is agreed
- [R2-163432](#) Correction on the naming E-DCH decoupling Huawei, HiSilicon CR 25.319 13.0.00139
 - F Rel-13 TEI13, UTRA_HetNet_enh-Core
 => The CR is agreed
- [R2-163433](#) Correction on the naming E-DCH decoupling Huawei, HiSilicon CR 25.331 13.2.05859
 - F Rel-13 TEI13, UTRA_HetNet_enh-Core
 => The CR is agreed
- [R2-163434](#) Correction on DCH enhancements Huawei, HiSilicon CR 25.300 12.5.00039 - F
 Rel-12 UTRA_DCHenh-Core
 - Samsung thinks we should clarify that both CS and PS are mapped "If a UE is configured with both CS and PS mapped to the DCH transport channel"
 => add "both" CS and PS
 => the reference should be change to TR and not TS in the cover page and reference section
 => The CR is agreed in [R2-164342](#) CR rev1
- [R2-163435](#) Correction on DCH enhancements Huawei, HiSilicon CR 25.300 13.1.00040 - A
 Rel-13 UTRA_DCHenh-Core
 => apply same changes as [R2-163434](#)
 => The CR is agreed in [R2-164343](#) CR rev1

11.1 Other

- [R2-164060](#) Clarification for DCH enhancements Qualcomm Incorporated CR 25.331 12.9.05870 - F
 Rel-12 UTRA_DCHenh-Core
 late
 - Samsung doesn't support the change as we would be effectively linking CPC support with DCH enhancements. This was discussed in RAN1 and agreed to capture it the way it is currently done. Qualcomm's intention is not to link to CPC with DCH enhancements. Samsung indicates that it would be the outcome or the other option would be that the network would have to switch the UE to R99 if it doesn't support. Huawei has the same understanding as Samsung.
 - Huawei indicates that RAN2 agreed that DCH enhancements with PS mapped to DCH is supported for 0kpbs, but the CR suggests otherwise. Qualcomm agrees but means that the sentence was for the other cases.
 => The CR is postponed
- [R2-164062](#) Clarification for DCH enhancements Qualcomm Incorporated CR 25.331 13.2.05871 - A
 Rel-13 UTRA_DCHenh-Core
 => The CR is not treated.

12 UTRA Release 13

12.1 WI: L2/L3 Downlink enhancements for UMTS

(UTRA_EDL_L23-Core, leading WG: RAN2, started: June 15, closed: Dec. 15, WID: [RP-152184](#))

- [R2-163535](#) Correction of retrievable configurations Ericsson CR 25.331 13.2.05860 - F Rel-13 UTRA_EDL_L23-Core

- Samsung thinks that the intention of “store” was to delete what was there before and store new configuration.
- Nokia Net understands that the intention is to overwrite. Maybe one suggestion is to use the word “update”

=> The CR is revised in [R2-164345](#)

[R2-164345](#) Correction of retrievable configurations Ericsson CR 25.331 13.2.05860 1 F Rel-13 UTRA_EDL_L23-Core

=> Delete first change

=> target configuration changed to “resulting” configuration in cover page and in the text

=> The CR is agreed in [R2-164353](#) CR rev2 with the changes above

[R2-163709](#) Discussion on the stored retrievable configuration for CELL_FACH Huawei, HiSilicon discussion

- Ericsson thinks that we discussed the PCH case and the UE stores the CELL_FACH that’s why the current wording is correct.
- Ericsson thinks that we should change add invoked as well, “stored/invoked”. Samsung has some sympathy on the intention and the wording is confusing.

=> Noted

[R2-163710](#) Correction on the stored retrievable configuration for CELL_FACH Huawei, HiSilicon CR 25.331 13.2.05867 - F Rel-13 UTRA_EDL_L23-Core

=> The CR is postponed

[R2-163886](#) Corrections and clarifications to URA_PCH with seamless transition to CELL_FACH state functionality Ericsson CR 25.331 13.2.05869 - F Rel-13 UTRA_EDL_L23-Core

- Samsung has some concerns that 8.1.6.2 contains changes to legacy section. There is an option to split the CR is two and capture the legacy impacted changes in a second CR, and put the Rel-8 codes.

=> Create a second CR

- Samsung wonders if the change 8.3.1.6 are also needed for the legacy case. Ericsson indicates that the variable means different things for CELL_PCH and URA_PCH

=> The CR is revised in [R2-164347](#)

[R2-164347](#) Corrections and clarifications to URA_PCH with seamless transition to CELL_FACH state functionality Ericsson CR 25.331 13.2.05869 1 F Rel-13 UTRA_EDL_L23-Core

=> delete “move to CELL_FACH” from section 8.4.2.2 and move it to [R2-164348](#)

=> delete “the UE” from section 8.5.47 and move it to [R2-164348](#)

=> The CR is agreed in [R2-164354](#) CR rev2 with the changes above

[R2-164348](#) Corrections to the enhanced CELL_FACH Ericsson CR 25.331 13.2.0 - F Rel-13 UTRA_EDL_L23-Core

- update WI codes and CR number

=> The CR is postponed

12.2 WI: Power saving enhancements for UMTS

(UTRA_SDATA_POWSAV-Core, leading WG: RAN2, started: June 15, closed: Dec 15, WID: [RP-151998](#))

No contribution received.

12.3 WI: Support of EVS over UTRAN CS

(EVSoCS_UTRAN-Core; leading WG: RAN2, started: Dec. 14, closed: Dec 15, WID: [RP-142282](#))

No contribution received.

12.4 WI: Network-Assisted Interference Cancellation and Suppression for UMTS

(UTRA_NAICS-Core, Leading WG: RAN1, started: Sep. 15, closed: Dec. 2015, WID: [RP-151879](#))

No contribution received.

12.5 WI: Multiflow Enhancements for UTRA

(HSDPA_MFTX_enh-Core; leading WG: RAN2; started March 15; closed: Sep. 15; WID: [RP-150288](#))

No contribution received.

12.6 WI: HSPA Dual-Band UL carrier aggregation

(HSUPA_DB_MC-Core; leading WG: RAN4; REL-13; started: Dec. 14; closed: Dec. 15; WID: [RP-151852](#))

No contribution received.

12.7 WI: Application specific Congestion control

(ACDC-RAN-Core; leading WG: RAN2; REL-13; started: Mar. 15; closed: Dec. 15; WID: [RP-150512](#))

UMTS specific aspects of ACDC

No contribution received.

12.8 WI: Indoor Positioning enhancements for UTRA and LTE

(UTRA_LTE_iPos_enh-Core; leading WG: RAN2; REL-13; started: Sept. 15; closed: Dec. 15; WID: [RP-152251](#))

UMTS specific aspects of indoor positioning

[R2-163562](#) Corrections to RAT-independent positioning methodsIntel Corporation CR 25.331
13.2.05865 - F Rel-13 UTRA_LTE_iPos_enh-Core
- Ericsson indicates that the new error codes were discussed in Rel-13 and it was decided that we didn't need them. The reason was that they can only be configured with existing indoor positioning and we can re-use the existing ones. Intel thinks that the consequence of not adding this error codes is that it will be undefined.
=> Check if the error codes should be removed and wording of the first change
=> Intel explains after comeback that the error codes would impact the PCAP specs so the codes should be removed for now
=> The CR is revised in [R2-164344](#)

[R2-164344](#) Corrections to RAT-independent positioning methodsIntel Corporation CR 25.331
13.2.05865 1 F Rel-13 UTRA_LTE_iPos_enh-Core12.9 WI: Downlink TPC
enhancements for UMTS
=> The CR is agreed

(UTRA_EDL_TPC-Core; leading WG: RAN1; REL-13; started: Sept. 15; closed: Dec. 15; WID: [RP-151880](#))

No contribution received.

12.10 WI: Dual Carrier HSUPA Enhancements for UTRAN CS

(DC_HSUPA_CS-Core; leading WG: RAN2; REL-13; started: Sept. 15; closed: Dec. 15; WID: [RP-151780](#))

No contribution received.

12.11 UTRA TEI13 enhancements

Small Technical Enhancements affecting UMTS Rel-13 that do not belong to any Rel-13 WI.

Note: A TEI enhancement proposal should be treated for only one meeting cycle and involve only one WG. Otherwise, a WI should be proposed at RAN plenary!

[R2-163536](#) Discontinuation of physical channel features Ericsson CR 25.331 13.2.05861 - C
Rel-13 TEI13

- Samsung doesn't see the use case and the problem. Ericsson thinks that there is no option to not invoke a physical layer configuration if you don't want to use it.
 - Huawei understand the intention and is fine with the current CR
 - Nokia Net also doesn't understand the use case. Nokia Net thinks that the network has to possibility to overwrite it and change it. Ericsson thinks that the network will have to signal the configuration once again.
- => The CR is postponed

[R2-163537](#) Storing of the SRB configuration at RRC Connection Setup Ericsson CR 25.331 13.2.0 5862 - C Rel-13 TEI13

- Huawei thinks that the other problem is that the network may not support this feature. Ericsson doesn't think it is a big problem if the UE always stores this configuration, but another option is to add a network support in the SIB.
- Samsung thinks that from a UE side this is a bit strange that we require the UE to do something without knowing if the network will use it or support it. Further are we saving that much.
- Qualcomm wonders if this means that we always have to store the SRBs in ID 1. Qualcomm wonders what happens when we move to idle mode. Ericsson indicates that it clears the configuration.

=> The CR is postponed

[R2-163706](#) Discussion on UE behaviours on storing E-RGCH configuration Huawei, HiSilicon discussion

- Nokia Net thinks that the network can align the primary and secondary configuration.
- Qualcomm thinks that with proper network behaviour this is not an issue.
- Huawei thinks that we should try to clarify. Ericsson is fine with the changes in this proposal

on wording of intended behaviour and on the need of a CR

- Samsung is not sure that there is no inter-operability and some more discussions should take place

=> Noted

[R2-163707](#) Correction on UE behaviours on storing E-RGCH configuration Huawei, HiSilicon CR 25.331 13.2.05866 - F Rel-13 RANimp-DC_HSUPA, TEI13

=> The CR is postponed

[R2-163882](#) Rapporteur corrections for 25.331 RRC specification Ericsson CR 25.331 13.2.05868 - D Rel-13 TEI13

=> The CR is revised in [R2-164349](#)

[R2-164349](#) Rapporteur corrections for 25.331 RRC specification Ericsson CR 25.331 13.2.05868 1 D Rel-13 TEI13

=> The CR is agreed

13 UTRA Rel-14

13.1 WI: RRC optimization for UMTS

(UTRA_RRCopt-Core; leading WG: RAN2; REL-14; started: Dec. 15; target: Sept. 16; WID: [RP-160287](#))

Time budget 2 TUs

13.1.1 Filtered UPH measurements;

[R2-163540](#) Generic UPH measurement Ericsson discussion

- Chair: so we are on the same page that we will introduce RRC level event and decide if to introduce implementation mechanism (RAN3 impacts foreseen) as well.
- NN: for this new event, could be used in both DCH and FACH?
- E///: for DCH only.
- Huawei: is this dependent on E-DCH or not?

- E///: no, it is not link to E-DCH.
 - QC: what's the difference from E6A/D?
 - E///: E6A/D is not sufficient, for example, maximum power could be easily triggered which doesn't reflect the coverage situation.
 - NN: proposal 6 is misleading, will we have stage 2 or not?
 - Huawei: stage 2 is needed.
- ⇒ Noted.

Agreements:

- We will introduce Event 6H and Event 6I, we will introduce the following parameters for Event 6H and Event 6I: UPH threshold, Hysteresis, Time-to-trigger, Filter coefficient, and configurable pending time after trigger.
- We will have both stage 2 & 3 CRs

- [R2-163541](#) Introduction of UPH measurements Ericsson CR 25.331 13.2.05864 - B Rel-14 UTRA_RRCopt-Core
- Huawei: 10.3.7.80, we already have "pending time after trigger", suggest to reuse.
 - E///: we need to check, not sure if it could be reused or not.
 - Huawei: 10.3.7.y, why two spare values needed?
 - E///: in case we will introduce new events in the future.
 - Huawei: 14.6.2.x/y, suggest to also add some figures to elaborate, as existing way, but no strong opinion. In cover page, "**Other specs affected**" should be updated.
- ⇒ Postponed.
- [R2-163788](#) Discussion on UPH measurement Huawei, HiSilicon discussion
- NN: for observation 1, you mean periodical has to be configured in Uu interface?
 - Huawei: yes.
 - NN: but periodical is an existing mechanism, it is up to network to implement it or not, and there is no UE impact. Huawei confirms.
 - NN: UPH report is linked to E-DCH, but this should be the motivation of the WI, E-DCH is the majority case;
 - E///: CS is an important use case which is not based on E-DCH.
 - Huawei: the legacy mechanism is not linked to E-DCH, we should follow this approach which is also reflected in E///'s proposal.
- ⇒ Noted.
- [R2-163835](#) Further discussion on Filtered UPH measurements Nokia, Alcatel-Lucent Shanghai Bell discussion
- NN: to E/// and Huawei, since lub is kind of internal interface, so we could implement in a proprietary way, we don't have strong opinion, just to check if the solution is acceptable?
 - E///: we see drawbacks of the proposal, so we don't see the need to standardize.
 - Huawei: it is our understanding that WI should find proposal for all cases, it seems to us this proposal is limited to use cases.
- ⇒ Noted.
- [R2-163947](#) Introduction of UPH measurements Ericsson CR 25.300 13.1.00042 - B Rel-14 UTRA_RRCopt-Core
- E///: will change the title to "introduction of RRC events" or something like this.
 - NN: "RRC optimization" seems to be more general.
 - E///: we have "down link enhancements", we can discuss more.
 - Huawei: last sentence is too much stage 3 description; impact analysis is not needed.
- ⇒ Postponed.

Withdrawn:

- [R2-163826](#) Further discussion on Filtered UPH measurements Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-163827](#) Further discussion on Filtered UPH measurements Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-163828](#) Further discussion on Filtered UPH measurements Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-163829](#) Further discussion on Filtered UPH measurements Nokia, Alcatel-Lucent Shanghai Bell discussion

13.1.2 Simultaneous RAB setup and release

[R2-163538](#) Simultaneous RAB Setup and Release Ericsson discussion
 - E///: no strong opinion for simultaneous SRB setup/release, it is not a common case.

=> Noted

[R2-163539](#) Introduction of simultaneous setup and release Ericsson CR 25.331 13.2.05863 - B
 Rel-14 UTRA_RRCopt-Core
 - Huawei: last column, should add R14;
 - E///: "signalling RB to setup" will be removed, and cover page will be updated.
 - Huawei: title should also be updated.
 - NN: in RAN3, we have a combined CR for a WI.
 - Chair: in RAN2, we do it feature by feature.
 => Postponed.

[R2-163714](#) Discussion on simultaneous SRB setup and release in the same message Huawei, HiSilicon discussion
 - E///: the main use case here is to setup a SRB and release a RAB at the same time, but also no strong opinion.
 - NN: we could not find use case for setting up a SRB by RBR message.
 - Huawei: for SRB4, we think it should normally be configured in RRC CON setup message.
 => Noted.
 => We will not use radio bearer reconfigure (RBR) message to setup a signalling radio bearer (SRB).

[R2-163946](#) Introduction of simultaneous setup and release Ericsson CR 25.300 13.1.00041 - B
 Rel-14 UTRA_RRCopt-Core
 - Chair: title of the sections should be updated.
 - Huawei: last sentence is too much stage 3 like; and signalling related texts should be removed.
 - E///: we can remove.
 => Postponed.

13.1.3 Others

[R2-163945](#) RRC optimization Ericsson discussion
 - QC: we are OK.
 - Huawei: are there any RAN3 impacts for the two functionalities we agreed.
 - E///: no, except the one proposed by NN which we have not agreed.
 => Noted.

we agree to **Introduce a capability bit for each of the two enhancements (could think a bit more about the naming):**
UPH measurement and report
Simultaneous RAB setup and release

13.2 WI: DTX/DRX enhancements in CELL_FACH

(FACH_DTXDRX-Core, leading WG: RAN2; REL-14; started: Dec. 15; target: Sept. 16; WID: [RP-160185](#))

Time budget 2 TUs

[R2-163715](#) Discussion on enhancement to CELL_FACH DTX Huawei, HiSilicon discussion
 - Ericsson: The figure is confusing. A & B are the same (i.e. the timer is also running in scenario B)
 - Huawei: We can agree that they are the same.
 => Noted.

13.3 SI: Study on Multi-Carrier Enhancements for UMTS

(FS_UTRA_MCe, leading WG: RAN1; REL-14; started: Dec. 15; target: June 16; SID: [RP-152290](#))

Time budget 2 Tus

=> SI complete from RAN2 point of view

- [R2-163750](#) Discussion on enhanced TTI switching in MC enhancements Huawei, HiSilicon discussion
- Ericsson: It would be good to distinguish the impacts between the 2+10 and 10+10 scenario's. We think that there will be more impacts for the 2+10 case.
 - Huawei: We do not distinguish as we think they are quite similar.
 - Samsung: If we re-use the REL-12 TTI switching solution, can it also be applied to the legacy DC case? As this is still Study Item phase, we should not mix how TTI switch cannot be used with the legacy case.
 - Huawei: We don't think so as in legacy DC we only have 2+2 case.
- => Noted

- [R2-163751](#) TP on enhanced TTI switching in MC enhancements Huawei, HiSilicon pCR 25.707 0.2.0
- Samsung: The two solutions i.e. RRC and enhanced TTI can be listed as separate solutions under a general section. So change the proposed heading in 7.1 to something more generic.
 - Revised in [R2-164350](#):

- [R2-164350](#) TP on solutions for MC enhancements Huawei, HiSilicon pCR 25.707 0.2.0

=> This TP will also contain the updated TP in [R2-163754](#), [R2-163754](#) and [R2-163890](#) below)

=> moved to email discussion

- ☒ **[94#13][UMTS/MC enhancements] – TP capturing RAN2 agreements [Huawei]**
- Agreed TP capturing RAN2 agreements ([R2-164350](#))
- Agree to LS to: RAN1, cc: RAN3 to provide RAN2 agreed TP (([R2-164352](#))) and state that from RAN2 point of view the SI is closed
- Deadline: Thursday, June 2nd

- [R2-163753](#) Discussion on TTI configuration in MC enhancements Huawei, HiSilicon discussion
- => Noted.

- [R2-163754](#) TP on TTI configuration in MC enhancements Huawei, HiSilicon pCR 25.707 0.2.0
- Ericsson: Same comment about differentiating the impacts between the scenarios.
 - Samsung: Any reason why we have a separate TP. It looks like just more detail than provided than in [R2-163751](#).
 - Huawei: We can try to merge these two TP's.
 - Nokia: Why is configuration 1+B 'not suggested' in table?
 - Huawei: We will add more on our analysis on why this should not be supported in updated TP.
 - Nokia: In Figure 1, do we really need the 2+10 – 10+2 case? It seems very corner.
 - Huawei: We should not exclude at this point.
- => The TP is revised and merged into [R2-164350](#) above.

- [R2-163755](#) Discussion on CFN handling in MC enhancements Huawei, HiSilicon discussion
- => Noted

- [R2-163757](#) TP on CFN handling in MC enhancements Huawei, HiSilicon pCR 25.707 0.2.0
- Ericsson: We think is only needed in the 2+10 case, so maybe this can be clarified.
 - Nokia: We think it is also needed for 10+10 case if we allow method B
 - Huawei: We think if the NW wants to reconfigure UE from 2+2 to 10+10, method A is preferred.
- => The TP is revised and merged into [R2-164350](#) above.

- [R2-163759](#) Discussion on E-TFC selection in MC enhancements Huawei, HiSilicon discussion
- Ericsson: We are not sure if it is better to always send the non-scheduled on 2ms, as 10ms may have better coverage.
 - Ericsson: Also we don't think anything is needed for the issue 3.
 - Huawei: We can check further with RAN1.
 - Samsung: For issue 2 & 3 we had the same discussion during DB-DC-HSUPA and at that time we decided to do nothing. For issue 1, this can be more complicated so we should check with RAN1 & RAN2 how this will work.
- => We will not capture anything related to E-TFC selection in a TP. Can revisit during WI phase when it can be checked further with RAN1/4.
- => Noted

- [R2-163761](#) TP on E-TFC selection in MC enhancements Huawei, HiSilicon pCR 25.707 0.2.0
=> Not treated.
- [R2-163763](#) Discussion on general impact in RAN2 Huawei, HiSilicon discussion
=> Noted
- [R2-163890](#) Text Proposal on Impacts on RAN2 specifications Ericsson pCR 25.707 0.2.0
We will list the impacted specifications based on solution i.e. RRC reconfiguration or enhanced TTI switching.
=> The TP is revised and merged into [R2-164350](#) above

13.4 WI: Further Indoor Positioning Enhancements for UTRA and LTE

(UTRA_LTE_iPos_enh2-Core, leading WG: RAN2; REL-14; started: Mar. 16; target: Dec. 16; WID: [RP-160538](#))

Time budget 0.25 TUs

No contribution received.

13.5 SI: Study on HSPA and LTE Joint Operation

(FS_UTRA_LTE_JOP, leading WG: RAN3; REL-14; started: Mar. 16; target: Sept. 16; SID: [RP-160571](#))

- [R2-163816](#) Analysis on the possible solution of the joint operation China Unicom discussion
- NN: on observation 1, doubt on the conclusion observed. In the future, there are dual standby case now, maybe will happen in UMTS.
 - CUC: for B, LTE should provide UMTS target info which will impact LTE; for C, the case is rare, our network don't have such UEs.
 - Huawei: maybe we could take a look at HW and E's paper on B;
 - E///: generally, it is hard to avoid impacts on LTE.
- ⇒ Noted
- [R2-164241](#) On concurrent UMTS CS and LTE PS operation Qualcomm Incorporated discussion
- QC: basically this was the same one as last meeting we submitted.
 - Samsung: on Tx sharing, not sure if it will be discussed in SI or WI phase; one or two Tx chains?
 - QC: if we are based on two Tx, the discussion may not be needed, just UMTS and LTE separate operation; in reality, two Tx terminals are rarely seen, considering power and cost;
 - Samsung: even for two Tx chains, it still has impacts, e.g., UL maximum power transmission, power split between UMTS and LTE; for single, how the multiplexing of Tx should work.
 - CUC: in our network, mainly Single Tx and Dual Rx UEs, so we would like to focus on this type.
 - Samsung: even for single Tx and dual Rx, we still need to understand, for example, coverage issues based on DCH+ mechanism; and the switching between U and L takes time;
 - QC: for coverage issues, you may need fallback to legacy;
 - NN: in 10ms duration, how the UL power is used?
 - CUC: our motivation is to anchor our CS voice on UMTS and PS on LTE, so that we could reform our UMTS frequency step by step.
 - Samsung: we are fine with the motivation, we just want to understand all the implications that the solution will have.
 - E///: we think there are open issues in QC's paper for further clarifications.
 - NN: we shared Samsung's view on switching time; another concern is, for down link, if DRX is configured in LTE, will DL transmission be still ongoing?
 - NN: in NN understanding, if during Tx off, if UE also doesn't listen to downlink, it seems that single Rx also works.
 - QC: then there will be additional behaviour for tuning.
 - QC: firstly we need to configure LTE with C-DRX, downlink should not be impacted.
 - Samsung: will the UE try to listen to downlink during Tx off?
 - QC: we will follow the current C-DRX operation.

- Huawei: for C-DRX in LTE, both downlink and uplink are scheduled by the network, it is kind of C-DRX and C-DTX.
- Samsung: the overall procedure, for single Tx/dual Rx and dual Rx/dual Tx, should be the same, assuming we take single standby mechanism; the only difference is the Tx multiplexing.

⇒ Noted

⇒ Working assumption: Single Tx/Dual Rx is the baseline; for further discussion, we will focus on this baseline.

[R2-163767](#)

Consideration on the UMTS and LTE joint operation Huawei, HiSilicon discussion

- E///: MME not involved solution may not work, will provide analysis in next meeting.
- Huawei: is it Figure 1-b? E///: yes.
- Huawei: CPJ should be HSPA-LTE joint operation indication which was used in RAN3 paper.

⇒ Noted.

⇒ RAN2 consensus is, it is preferred to have a solution which should have less or no core network impacts.

[R2-163769](#)

Considerations on configuration of concurrent operation Huawei, HiSilicon discussion late

- Samsung: it seems UE has to be configured immediately with DCH+ enhancements when moving to UMTS, i.e., in the message of eNB directing UE to UMTS for CS, DCH+ should be configured.
- QC: when UE is connected to UMTS, RNC will know its capability and configure accordingly.
- E///: on observation 1, UMTS should adjust the timing, which may cause the disturbance to speech?
- QC: the timing adjustment is maximum around a couple of ms, it should not impact the voice quality.
- NN: we have the same concern as E///, not sure if the timing adjustment is just within, say, 10ms? For figure 1, is it possible to adjust timing in LTE side?
- QC: the motivation is not to touch LTE as much as possible.
- NN: we also don't want to impact LTE, just wondering if there is any existing mechanism in LTE to solve this. Anyway we need to check.
- QC: if to do this in LTE, anyway, UE need to report UMTS timing to LTE.
- CUC: both could work technically, but we need to see the benefit of doing this in LTE.
- NN: it could be simpler,
- Huawei: we also agree with QC's motivation.
- NN: why we have the thinking because when UE tries to access to UMTS, it might take 2~3 seconds.
- CUC: we would like to define some procedures for triggering concurrent CS&PS transmission, we assume both ways of adjusting time, either in LTE or in UMTS, could work. We would like to use Huawei's proposal as base line, since it is illustrated in detail.
- Samsung: do we assume there are some interactions in network side between U and L?
- QC: no, it is based on UE reporting, UE reports LTE timing to UMTS.
- Samsung: as a working assumption, we are fine with the motivation, but we are concerned about the gap it would take.
- QC: not that concerned, since there are two Rx, so downlink is not a problem.
- NN: we suggest for next step what detailed info to be exchanged via UE.
- CUC: we understand concern from Samsung, but we would like to see some baseline procedures.
- NN: option a and b can be baseline.

⇒ Noted.

⇒ As a starting point, further discussion are based on option A and option B, we will decide which option will be focused on/prioritized in the next meeting. We will see detailed analysis for the timing issue in the next meeting.

[R2-163542](#)

HSPA and LTE Joint operation Ericsson discussion

- Huawei: for the UE assistance info, UE specific or cell specific? We think it should be UE specific, but how could UE specific be broadcast in LTE SIB?
 - E///: no, it is cell specific.
 - Chair: maybe we should compare the current mechanism and the proposal in this paper.
 - E///: yes, we will.
 - Huawei: in LTE spec, in SIB 6, there are info for inter-RAT cell reselection, could this be reused instead of introducing new assistance info?
 - QC&Samsung: in LTE SIB, just UMTS frequency info.
 - NN: it was discussed in CSFB that UMTS SIB couldn't be just copied and broadcast in LTE SIB.
- ⇒ Noted.

[R2-163786](#)

Discussion on UL interworking enhancements Huawei, HiSilicon discussion

- E///: we will provide detailed analysis for the next meeting.
 - Samsung: we have similar opinion as Huawei. Similar proposal was discussed, i.e. why UE could not just go directly to UMTS without exchanging info with LTE, the response at that time was, there were concerns on UE disappearing from LTE without being informed to LTE network.
 - Huawei: from LTE network point of view, the UE behaviour is not in control, and may not be able to test.
 - QC: we are revisiting internally how the current CSFB mechanism was reached, for sure there are reasons, we also agree with Huawei that we need to investigate in details; if you omit something in LTE there are gain, but for UMTS side, what delta you could get, maybe nothing.
 - CUC: we agree with QC, we should focus on the main part, i.e. joint operation not CSFB enhancements.
- ⇒ Noted.

[R2-163784](#)

Discussion on dual standby in HSPA and LTE Joint Operation Huawei, HiSilicon discussion

- NN: how the 1/3 and 2/3 came?
 - Huawei: it assumes that both two transceivers operate independently with same power saving mechanisms, and one consumes 1/3, so two just theoretically 2/3.
 - NN: in general, we agree with the observation.
 - E///: we have similar understanding as Huawei.
- ⇒ Noted.

[R2-163821](#)

Dual Standby in LTE&UMTS Joint Cooperation Nokia, Alcatel-Lucent Shanghai Bell discussion

- Chair: your discussion is based on single Tx/dual Rx?
- NN: yes.
- Huawei: for observation 1, what low latency means?
- NN: just compared with CSFB, the latency is reduced.
- Huawei: do you have any numerical value?
- NN: should be better than E///'s proposal, since no need for the UE to read SIB.
- Huawei: in figure 2, the configuration of concurrent transmission steps are missing.
- NN: as a whole solution, it should include the activation/deactivation steps.
- Huawei: it should be good to have some comparison analysis between single standby and dual standby.
- NN: the way of configuring concurrent transmission should be different from that of single standby, also, analysis of advantages and drawbacks are needed for all solutions.
- Huawei: what "RRC relocation" means?
- NN: it was just copied from spec for CSFB.
- QC: so our main concern is the power consumption; another point is, in the case that LTE and UMTS band are too close so that UE will share one Rx chain, one RF filter for example, there will be problem, e.g., CS paging and PS paging at the same time.
- NN: in case of such scenario, we can't give any suggestion how the UE should behave in our network, maybe it is up to UE implementation.
- QC: we just want to point out there are problematic cases.
- Samsung: similar question asked by Huawei, for dual standby case, if CS paging is received, how the network would configure the concurrent transmission? Will the CN be aware of the concurrent transmission.
- NN: we think CN is not impacted, but it is not just simply reuse the signalling flow for single standby, more work is needed.

⇒ Noted.

⇒ Both single standby and dual standby will be studied.

- [R2-163823](#) Reporting UE capability of U&L joint cooperation Nokia, Alcatel-Lucent Shanghai Bell discussion
- Chair: to E and Huawei, is this based on a MME not involved solution?
 - NN: we prefer MME not impacted;
 - E///: this is also our preference, but we are not sure if it would work.
 - QC: we also prefer not to impact CN, but maybe we are not in a good situation to answer this question. For example, MME should be aware that the UE is in a joint operation and now CS is ongoing.
 - Huawei: we think NN's proposal is based on MME not involved solution.
- ⇒ Noted.
- [R2-163780](#) TP on configuration of concurrent operation Huawei, HiSilicon pCR 37.805 0.1.0 late
- Huawei: there is no TR structure, can rapporteur give some guidance?
 - CUC: for the moment, we have general TR structure with some general sections, but we try to have more updates, if agreed by RAN3, to the TR structure.
- ⇒ Postponed
- ⇒ We will have email discussion, trying to capture all the RAN2 progress/consensus achieved in this meeting, into the latest TR structure to be approved by RAN3. The purpose of the email discussion is to have a baseline TP for next meeting. The deadline should be one week before the submission deadline of next RAN2 meeting.
- ⇒ We will send an LS to RAN3 informing RAN2's latest progress and consensus.
- ✉ **[94#36][UMTS/Joint UMTS-LTE] – running TP capturing RAN2 agreements (China Unicom)**
- Running TP capturing RAN2 agreements to be submitted to next meeting
 - Deadline: two weeks before next meeting
- [R2-164351](#) draft LS to RAN3 on the latest RAN2 agreements of Study on HSPA and LTE Joint Operation ChinaUnicom
- => Change the last agreement to “Both single standby and dual standby will be studied”
 - => Change “Agreement 1” to “Working assumption” and renumber other agreements
 - => The LS is approved in [R2-164355](#)

13.6 TEI14

Small Technical Enhancements affecting UMTS Rel-14 that do not belong to any Rel-14 WI.

Note: A TEI enhancement proposal should be treated for only one meeting cycle and involve only one WG. Otherwise, a WI should be proposed at RAN plenary!

- [R2-163349](#) Latency reduction for uplink signalling Nokia, Alcatel-Lucent Shanghai Bell discussion
- E///: is it just for small data transmission or could be commonly used?
 - NN: we are open.
 - QC: it is optional or mandatory?
 - NN: it is optional.
 - QC: capability bit needed?
 - NN: optional without capability bit.
 - E///: maybe it is good for the network to know the capability.
 - QC: even not sure how it is tested in RAN5 without a capability bit; the motivation is fine, but results for lab test will justify enough or not.
 - QC: we would like time to check the gains, and we also need time to check how it would work from UE point of view.
- Huawei doesn't think that these values can be discussed by RAN2
- ⇒ Noted

14 Outgoing LSs and email discussions from UTRA session

14.1 Approved outgoing LSs from UTRA session

[R2-164355](#) LS on HSPA and LTE Joint Operation (to: RAN3; cc: -; contact: China Unicom) RAN2 LS out Rel-14 FS_UTRA_LTE_JOP

14.2 Email discussions from UTRA

- ☒ **[UMTS/MC enhancements] – TP capturing RAN2 agreements [Huawei]**
 - Agreed TP capturing RAN2 agreements ([R2-164350](#))
 - Agree to LS to: RAN1, cc: RAN3 to provide RAN2 agreed TP ([R2-164352](#)) and state that from RAN2 point (of view the SI is closed
 - Deadline: Thursday, June 2nd
- ☒ **[UMTS/Joint UMTS-LTE] – running TP capturing RAN2 agreements (China Unicom)**
 - Running TP capturing RAN2 agreements to be submitted to next meeting
 - Deadline: two weeks before next meeting

15 Comebacks

This agenda item will be used during the meeting. No documents are supposed to be submitted by delegates.

15.1 LTE breakout sessions

15.1.1 Report from LTE Break-Out session

[R2-164420](#) Report from LTE Break-Out Session, Vice-Chair (InterDigital)
CBF: Report from LTE Break-Out Session, Vice-Chair (InterDigital)
=> Approved

[R2-164494](#) Corrections for sidelink logical channel prioritization Huawei, HiSilicon CR 36.321
13.1.00858 2 F Rel-13 LTE_eD2D_Prox-Core
=> Agreed

[R2-164376](#) [draft] LS to RAN Plenary on refined objectives of FeD2D SI for UE to Network Relays for IoT and Wearables Qualcomm Incorporated LS out

- Nokia think that the requirement from SA1 on Relays supporting legacy UEs is not mentioned and hence this can not be recommended. Qualcomm think this can be handled by implementation and hence is not a primary objective of the WI. Huawei have the same view. Intel, LG, Samsung, Ericsson also have the same view.
- Nokia would like this to be mentioned as a secondary objective

=> Change action to " RAN2 respectfully asks RAN Plenary to take into account the revised scope and objectives of the FeD2D SI for UE to Network Relays for IoT and Wearables "

=> Approved in [R2-164543](#)

[R2-164495](#) TP on UL SPS agreements and other agreements LG
=> Text proposal is agreed

[R2-164496](#) TP on DL enhancements Huawei
=> Revised to [R2-164553](#)

[R2-164553](#) TP on DL enhancements Huawei
=> Text proposal is agreed.

[R2-164544](#) LS to RAN1 on agreed TPs LG
=> Attachment tdoc numbers to be corrected
=> Approved in [R2-164558](#)

[R2-164497](#) Discussion on CAM characteristics Huawei, HiSilicon, InterDigital, LG Electronics Inc.,
OPPO discussion Rel-14 FS_LTE_V2X
=> Text proposal is agreed

LTE_LATRED_L2-Core:

[R2-164375](#) Draft LS to RAN1 on RAN2 agreements on skipping UL transmissions Nokia NetworksLS
out to: RAN1 from: RAN2 Rel-14 LTE_LATRED_L2-Core
- Intel would like to clearly indicate what is assumption, agreement and other information.
=> Revised in [R2-164542](#)

[R2-164542](#) Draft LS to RAN1 on RAN2 agreements on skipping UL transmissions Nokia NetworksLS
out to: RAN1 from: RAN2 Rel-14 LTE_LATRED_L2-Core
=> Change second sentence of second para to " RAN2 understands that the eNB may not be
able to distinguish between uplink transmission and skipped uplink transmission (i.e.
DTX), "
=> RAN2 respectfully asks RAN1 to confirm the RAN2 assumptions regarding bullet b and
provide feedback if any concern, and align their specifications on UCI in bullet c if needed.
=> Approved in [R2-164554](#)

15.1.2 Report from LTE Break-Out session

[R2-164421](#) Report from LTE Break-Out Session, Vice-Chair (CMCC)
CBF: Report from LTE Break-Out Session, Vice-Chair (CMCC)
- Change "=> Solution 1 is feasible at least in the case of reusing of time alignment
values." to add "from RAN2 perspective"
- Bulltet 5 change "RTP CMT" to "RTP CMR"
- Ericsson ask if we should sent the latest agreement to RAN1 and RAN4
=> With changes above the report is approved
=> LS to RAN1/4 to update to the LS sent previously to remove the questions that are no
longer relevant (ZTE) in [R2-164540](#)

[R2-164540](#) LS on the evaluation of simultaneous transmission and reception ZTE
=> Approved in [R2-164565](#)

eVoLTE:

[R2-164382](#) Draft LS to RAN1 on RAN2 agreements for VoLTE/video quality related enhancements
Ericsson LS out Rel-14 FS_LTE_eVoLTE
- [R2-164187](#) presented in the eVoLTE session was revisted to [R2-164552](#) and attached to
this draft LS.
☒ **[94#25][LTE/eVOLTE] LS to RAN1 (Ericsson)**
Double check the figures in the attachment.
Intended outcome: Approved LS
Deadline: Thursday 09/06/2016

Light Connection:

[R2-164383](#) Draft LS to RAN3 on RAN2 agreements for RAN initiated paging and MME initiated paging
Huawei LS out Rel-14 LTE_LIGHT_CON-Core
=> Change paragraph to " The S1 connection of a "lightly connected" UE is kept and active, in
order to hide the mobility and state transitions from the CN. From RAN2 perspective, for
the "lightly connected" UE, the RAN initiated paging is feasible and beneficial in terms of
signalling reduction as well as decreasing the latency. Thus the RAN initiated paging can
be introduced from RAN2 perspective."
=> Approved in [R2-164545](#)

15.1.3 Report from NB-IOT session

[R2-164422](#) Report from NB-IOT Break-Out Session, Session Chair (MediaTek)
CBF: Report from LTE Break-Out Session, Session Chair (MediaTek)
=> Approved

15.2 UMTS breakout session

15.3 Main session

This section contains a temporary list of comebacks (press F9 to update while the cursor is inside the list).

- ☞ => Come back to approve Friday
- ☞ => Come back to approve Friday
- ☞ => Offline discussion
- ☞ => Offline discussion (Nokia).
- ☞ => Offline discussion (Nokia)
- ☞ => Draft LS in R2-164445 to RAN1 to describe the problem and potential solutions and ask their opinion. (Huawei)
- ☞ => CR to 36.300 can be provided in R2-164455 CR 0881
- ☞ => Revised in R2-164462 CR Rev 1
- ☞ => Revised in R2-164463 CR Rev 1
- ☞ => Revised in R2-164464 CR Rev 1
- ☞ => Discuss offline
- ☞ => Offline discussion
- ☞ => Revised in R2-164467 CR Rev1
- ☞ => Discuss offline
- ☞ => Depends on R2-163921. Comeback after that CR is concluded.
- ☞ - New incoming LS
- ☞ - New incoming LS
- ☞ => Revised in R2-164430 CR rev 1
- ☞ => Discuss offline (Samsung)
- ☞ => Revised in R2-164436 CR Rev 1 to address comments above and include the agreement from discussion of R2-163690.
- ☞ => Revised in R2-164437 CR Rev 1 to include the agreement from discussion of R2-163690
- ☞ => Offline discussion (Ericsson)
- ☞ => Offline discussion (Ericsson)
- ☞ => Revision in R2-164441 CR Rev 1.
- ☞ => Revised in R2-164440 CR Rev 1
- ☞ => Revised in R2-164442 CR Rev 1
- ☞ => Offline discussion
- ☞ => Revised in R2-164446 CR Rev 1
- ☞ => Come back to conclude after offline discussion on IR version
- ☞ => Revised in R2-164447 CR Rev 1.

- ☞ => Draft LS in R2-164450 to RAN1 to inform them of this CR so they can assess if any impact to RAN1. (Huawei)
- ☞ => For this replacement, 36.321 CR provided in R2-164451 CR 0886 rev -
- ☞ => Comeback Friday after checking of RAN1 status (LG)
- ☞ => Comeback after more time for offline checking
- ☞ => Discuss offline whether clarification for the case where everything has been discard need to be added.
- ☞ => Revised in R2-164470 CR Rev 1
- ☞ => Draft LS provided in R2-164471
- ☞ => Discuss offline (Intel)
- ☞ => Revised in R2-164472 CR rev 1
- ☞ => Revised in R2-164476 CR Rev 1 to reflect decision from previous paper.
- ☞ => Offline for checking with SA2 whether there are any issues for 2 features to work together.
- ☞ For revision of R2-163612:
- ☞ => Revised in R2-164456 CR Rev 1
- ☞ => Revised in R2-164459 CR Rev 1
- ☞ => Revised in R2-164479
- ☞ => Comeback to treat after CR has been agreed
- ☞ => Comeback Friday for all above 3 CRs if we have received LS from RAN4
- ☞ => Offline discussion to conclude how to define the UE resume context. (Ericsson)
- ☞ => Offline discussion on the number of DRBs to be supported in relation to MTC (Intel)
- ☞ => Offline discussion on how to handle the integrity check failure in the resume message. (Nokia)
- ☞ => Revised in R2-164427 CR Rev1 to capture agreements from this meeting
- ☞ => Offline discussion on FFS points. (DOCOMO)
- ☞ => Revision in R2-164428 CR Rev 1 to also include any outcome from offline discussion of FFS points.
- ☞ => LS R2-14509 (ZTE)
- ☞ => LS to RAN4 to inform them out decision from this meeting. R2-164488 (Sprint)
- ☞ => Revised in R2-164486 CR Rev 1
- ☞ => Revised in R2-164503 CR Rev 1
- ☞ => Revised in R2-164506 CR Rev 2
- ☞ => Revised in R2-164507 CR Rev 2
- ☞ => Send LS to SA3 to ask if it would be possible to disable PDCP encryption for high data rate traffic over WLAN. Ask if it impacts the previous response on mobility. R2-164483 (Intel)
- ☞ => Revised in R2-164485
- ☞ CBF: Report from LTE Break-Out Session, Vice-Chair (InterDigital)
- ☞ CBF: Report from LTE Break-Out Session, Vice-Chair (CMCC)
- ☞ CBF: Report from LTE Break-Out Session, Session Chair (MediaTek)

15.4 Email Discussions from main session

This section contains a **preliminary list** of email discussions (press F9 to update while the cursor is inside the list). A complete list will be provided on the RAN2 email reflector after the meeting.

- ☒ [94#xx][LTE/NB-IOT] Response to SA2 on NAS timers (Vodafone) Provide response to the action in he incoming LS Intended outcome: Approved LS Deadline: Thursday 09/06/2016
- ☒ [94#xx][LTE/Intra-band contiguous CA capabilities] (Nokia) Discuss Rel-10 CR to address the issues identified, noting that Rel-12 will not be a true shadow. Releases can be discuss during the email. Intended outcome: Agreed CR for RAN Deadline: Thursday 02/06/2016 (Date TBD but longer than 1 week if possible)
- ☒ [94#xx][LTE/CA] 2DL + 1 UL fallback skipping (Qualcomm) Discuss CR in R2-164337. Intended outcome: Agreed CR for RAN Deadline: Thursday 02/06/2016
- ☒ [94#xx][LTE/eMTC] NAS timer CR (Ericsson) Discuss CR in R2-14526 and LS in R2-164526 Intended outcome: Agreed CR to RAN and LS to CT1/RAN3/SA2 Deadline: Thursday 02/06/2016
- ☒ [94#xx][LTE/MTC] CR to 36.331 in IR version (Huawei) Intended outcome: Agreed CR for RAN Deadline: Thursday 02/06/2016
- ☒ [94#xx][LTE/MTC] DRX for async HARQ (Huawei) Discuss R2-164546 Intended outcome: Agreed CR to RAN Deadline: Thursday 02/06/2016
- ☒ [94#xx][LTE/LWA] LWA status reportr (MediaTek) Discuss R2-164475 Intended outcome: Agreed CR to RAN Deadline: Thursday 02/06/2016
- ☒ [94#xx][LTE/eDRX] eDRX Paging Hyper-Frame Calculation (Intel) Aim to conclude the solution and develop CRs for RAN. LS including the conclusion can be agreed to be sent to RAN3/SA2/CT1 if found necessary Intended outcome: Agreed CR to RAN, and approved LS if found necessary Deadline: Thursday 02/06/2016 (Date TBD - may be longer if possible)
- ☒ [94#xx][LTE/CIOT] RRC CR (Ericsson) Companies should provide comments on aspects common to NB-IOT and CIOT CRs to this email discussion. Intended outcome: Agreed CR to RAN Deadline: Thursday 02/06/2016
- ☒ [94#xx][LTE/CIOT] PDCP CR (Ericsson) CR is a 'mirror' of the already agreed NB-IOT PDCP CR with some NB-IOT sepecific aspects removed. Intended outcome: Agreed CR to RAN Deadline: Thursday 02/06/2016
- ☒ [94#xx][LTE/CIOT] MAC CR on RACH partitioning (DOCOMO) Intended outcome: AGreed CR to RAN (R2-164555) Deadline: Thursday 02/06/2016
- ☒ [94#xx][LTE/ECID positioning] (Qualcomm) Intended outcome: Agreed CR to RAN Deadline: Thursday 02/06/2016
- ☒ [94#xx][LTE/eLAA] Running MAC CR (Ericsson) Intended outcome: Endorsed running CR Deadline: Thursday 09/06/2016
- ☒ [94#xx][LTE/eLAA] Running Stage 2 CR (Huawei) Intended outcome: Endorsed running CR updated with agreement from this meeting Deadline: Thursday 09/06/2016
- ☒ [94#xx][LTE/eLAA] Running RRC CR (Huawei) Intended outcome: Endorsed running CR Deadline: Thursday 09/06/2016
- ☒ [94#xx][LTE/eLWA] UL transmission (Nokia) Summarise solutions for UL transmission over UL split bearer, capture pros and cons, and company view. Also include discussion of whether WLAN MAC ACKs at the UE can be available to PDCP. Intended outcome: Email report to next meeting Deadline: Thursday 04/08/2016
- ☒ [94#xx][LTE/eLWA] Running stage 2 CR (Intel) Capture agreements from this and previous meeting in the Annex and within stage 2 text as appropriate. Intended outcome: Endorsed running CR Deadline: Thursday 09 June 2016

- ☒ [94#xx][LTE/eLWA] Running 36.360 CR (LG) Capture agreements from this and previous meeting in the Annex/Coversheet and within stage 3 text as appropriate. Intended outcome: Endorsed running CR Deadline: Thursday 09 June 2016
- ☒ [94#xx][LTE/eLWA] LS on PDCP encryption (Intel) Intended outcome: Approved LS. Deadline: Thursday 09/06/2016
- ☒ [94#xx][LTE/Latred SI] TR (Ericsson) Update TR to reflect RAN1 LS received. Intended outcome: Agreed TR to submit fro one step RAN approval. Deadline: Thursday 02/06/2016
- ☒ [94#xx][NR/Guidelines] (DOCOMO) Discuss guidelines from R2-163979 and any other guidelines proposed this meeting. Intended outcome: Email discussion report with a recommendation for guidelines that can be captured in the TR. Deadline: Thursday 04/08/2016
- ☒ [94#xx][NR/Deployment scenarios text proposal] (DOCOMO) Intended outcome: Agreed TP for inclusion in TR Deadline: Thursday 09/06/2016
- ☒ [UMTS/MC enhancements] – TP capturing RAN2 agreements [Huawei]
- ☒ [UMTS/Joint UMTS-LTE] – running TP capturing RAN2 agreements (China Unicom)
- ☒ [UMTS/MC enhancements] – TP capturing RAN2 agreements [Huawei]
- ☒ [UMTS/Joint UMTS-LTE] – running TP capturing RAN2 agreements (China Unicom)
- ☒ [94#xx][LTE/eVOLTE] LS to RAN1 (Ericsson) Double check the figures in the attachment. Intended outcome: Approved LS Deadline: Thursday 09/06/2016
- ☒ [LTE/V2V] – Geo-location reporting (Qualcomm)
- ☒ [LTE/V2V] – Running 36.300 (LG)
- ☒ [LTE/V2V] – RRC Open issues (Huawei)
- ☒ [LTE/V2V] – Layer 2 open issues (CATT)
- ☒ [LTE/LATRED] – 36.300 running CR (Ericsson)
- ☒ [LTE/LATRED] – 36.321 running CR (Ericsson)
- ☒ [LTE/LATRED] – 36.331 running CR (Ericsson)
- ☒ [LTE/V2X] – TP with RAN2 agreements (LG)
- ☒ [LTE/LATRED] – 36.300 running CR (Ericsson)
- ☒ [LTE/LATRED] – 36.321 running CR (Ericsson)
- ☒ [LTE/LATRED] – 36.331 running CR (Ericsson)
- ☒ [LTE/V2V] – Geo-location reporting (Qualcomm)
- ☒ [LTE/V2V] – Running 36.300 (LG)
- ☒ [LTE/V2V] – RRC Open issues (Huawei)
- ☒ [LTE/V2V] – Layer 2 open issues (CATT)
- ☒ [LTE/V2X] – TP with RAN2 agreements (LG)
- ☒ [94#xx][LTE/eVoLTE] (CMCC)
- ☒ [94#xx][LTE/eVoLTE] (Huawei)
- ☒ [94#xx][LTE/eVoLTE] (CMCC)
- ☒ [94#xx][LTE/eVoLTE] (Huawei)

- ☒ Short Email discussion: Final Review of R2-164516 (for agreed version)
- ☒ Short Email for final review of **R2-164518**

16 Outgoing LS from LTE and Joint

Draft LSs should be submitted to their corresponding agenda item if there is one. If there is no appropriate agenda item, draft LSs may be submitted to this agenda item.

Draft outgoing LSs (not related to any Agenda Item above)

None

Approved LSs

This section contains a list of approved outgoing LSs (See Annex C).

17 Any other business

Future meeting dates

Click [here](#) for the overview of all RAN2 and RAN meeting dates.

MEETING	DATES	LOCATION	HOST	CO-LOCATION
RAN2 #93	15 Feb. - 19 Feb. 2016	Malta	EF3	RAN1/2/3/4/5
RAN #71	07 Mar. - 10. Mar. 2016	Gotebory, Sweden	EF3	
RAN2 #93bis	11 Apr. - 15. Apr. 2016	Dubrovnik, Croatia	EF3	
RAN2 #94	23 May - 27 May. 2016	tbd, China	CMCC	RAN1/2/3/4/5
RAN #72	13 Jun. -16 Jun. 2016.	tbd, South Korea	TTA	
RAN2 #95	22 Aug. - 26 Aug. 2016	Gotebory, Sweden	EF3	
RAN #73	19 Sep. - 22 Sep. 2016	tbd, USA	NAF3	

EF3: European Friends of 3GPP
 NAF3: North American Friends of 3GPP
 JF3: Japanese Friends of 3GPP

18 Closing of the meeting (17:00)

The TSG RAN WG2 chairman Richard Burbidge (Intel Corporation) thanked the delegates for participating and session chairs for contributing to RAN WG2 meeting #94. He also thanked the Chinese Friends of 3GPP (CF3) for hosting this meeting.

TSG RAN WG2 chairman Richard Burbidge (Intel Corporation) closed the meeting on Friday 27.05.2016 around 17:10.

Annex A: List of participants

The list of participants of this RAN WG2 meeting #94 is be attached to this report.

Total number of participants: 239 (registered before the meeting: 344)

Annex B: List of Tdocs

The list of Tdocs of this RAN WG2 meeting #94 is attached to this report.

Total number of Tdocs: 1283 of which 1 Tdocs are not available, i.e. 1282 Tdocs are available.

Annex C: Incoming liaison statements for TSG RAN WG2 #94

RAN2 Tdoc	title (original Tdoc; contact)	source	original Tdoc	status	final LS answer	additional comments
R2-163303	LS on resource allocation for V2V (R1-163906 ; contact: LGE)	RAN1	R1-163906	noted		re-submitted from RAN2#93bis
R2-163304	LS on V2X synchronization procedure (R1-163907 ; contact: NTT DOCOMO)	RAN1	R1-163907	noted		re-submitted from RAN2#93bis
R2-163305	LS on UE/band specific support of UL 256QAM (R1-163915 ; contact: Nokia)	RAN1	R1-163906	noted		re-submitted from RAN2#93bis
R2-163306	Reply LS to R2-162020 on the RRC establishment cause for CIoT in WB-E-UTRAN (C1-162140; contact: NTT DOCOMO)	CT1	C1-162140	noted	R2-164425	
R2-163307	Reply LS to R2-160404 Extended coverage impact on NAS timers (C1-162300; contact: Ericsson)	CT1	C1-162300	noted		
R2-163308	LS on DRS Duty Cycle (R1-163931 ; contact: Qualcomm)	RAN1	R1-163931	noted		

Report of 3GPP TSG RAN WG2 #94, Nanjing, China, May 23 - 27, 2016

RAN2 Tdoc	title (original Tdoc; contact)	source	original Tdoc	status	final LS answer	additional comments
R2-163309	Reply LS to R2-163108 on RAN2 review of all LTE features up to Rel-13 for Category M1 Ues (R1-163938 ; contact: Ericsson)	RAN1	R1-163938	noted		
R2-163310	LS on UE behaviour when receiving not supported target frequencies in configuration (R3-161003; contact: Nokia Networks)	RAN3	R3-161003	noted	R2-164424	
R2-163311	LS on error scenarios during CSFB (R3-161028; contact: Samsung)	RAN3	R3-161028	noted	R2-164480	
R2-163312	LS on WT triggered S-Kwt update (R3-161029; contact: Huawei)	RAN3	R3-161029	noted		
R2-163313	LS on continuous uplink transmission in eMTC (R4-163150; contact: Intel)	RAN4	R4-163150	noted		
R2-163314	Reply LS to C1-161551 on MBSFN Area Id (S2-162244; contact: Nokia Networks)	SA2	S2-162244	noted		
R2-163315	LS on EPC procedures for providing eNB with V2X authorization information (S2-162248; contact: LGE)	SA2	S2-162248	noted	R2-164498	
R2-163316	LS on rate adaptation quality issues in uplink for UTRAN (S4-160500; contact: Orange)	SA4	S4-160500	noted		
R2-163317	Reply LS to S2-161260 = R2-162117 on Clarifications on RRC Resume Request (R3-161016; contact: Ericsson)	RAN3	R3-161016	noted		
R2-163318	Reply LS to R2-157090 on RAN2 agreements for inter-carrier/Inter-PLMN sidelink discovery (S2-162141; contact: Huawei)	SA2	S2-162141	noted		
R2-163319	LS on V2X multicarrier configuration (R1-163746 ; contact: Ericsson)	RAN1	R1-163746	noted		
R2-163320	LS on RRC parameter list for NB-IoT (R1-163954 ; contact: Huawei)	RAN1	R1-163954	noted		
R2-163321	Reply LS to S2-162248 = R2-163315 on EPC procedures for providing eNB with V2X authorization information (S1-161587; contact: LGE)	SA2	S1-161587	noted		
R2-163322	Reply LS to R3-161029 = R2-163312 on WT triggered S-Kwt update (S3-160720; contact: Huawei)	SA3	S3-160720	noted		
R2-163323	Reply LS to R2-163147 on key change during HO for eLWA (S3-160725; contact: Ericsson)	SA3	S3-160725	noted		

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RAN2 Tdoc	title (original Tdoc; contact)	source	original Tdoc	status	final LS answer	additional comments
R2-163324	Reply LS to S1-154509 on V2X message characteristics (S3-160777; contact: TNO)	SA3	S3-160777	noted		
R2-163325	LS on Progress on Security for LWIP (S3-160831; contact: NTT DOCOMO)	SA3	S3-160831	noted		
R2-163326	Reply LS to R2-161945 on extension of search for higher priority PLMN cycle beyond 8 hours (S1-161585; contact: Deutsche Telekom)	SA1	S1-161585	noted		
R2-163327	LS on REAR service requirements (S1-161605; contact: Qualcomm)	SA1	S1-161605	noted		
R2-163328	Reply to: LS on Clarifications on RRC Resume Request (S3-160694; contact: Nokia Networks)	SA3	S3-160694	noted	R2-164414	
R2-163329	LS on LWA and LWIP updates (S3-160810; contact: Nokia Networks)	SA3	S3-160810	noted	R2-164551	
R2-163330	Liaison response to 3GPP R2-163148 (IEEE 802.11-14/0694r; contact: Intel)	IEEE802.11	IEEE 802.11-14/0694r	noted		
R2-163331	Support of 3GPP measurements for Mobile Edge Computing (MEC(16)000206R1; contact: Telecom Italia)	ETSI ISG MEC	MEC(16)000206R1	noted		
R2-163332	LS on RAN1 multi-carrier enhancements for UMTS agreements (R1-165511 ; contact: Huawei)	RAN1	R1-165511	available		
R2-163333	Reply LS to R3-161032 = R2-163206 on questions on NB-IOT (C1-162926; contact: Nokia Networks)	CT1	C1-162926	noted		
R2-163334	Reply LS to R2-163294 on TB sizes for SI-messages for NB-IoT (R1-165710 ; contact: Huawei)	RAN1	R1-165710	noted		
R2-163335	Reply LS to R2-161885 on updated TS 36.300 section 5 for NB-IoT (R1-165711 ; contact: Huawei)	RAN1	R1-165711	noted		
R2-163336	Reply LS to R2-163046 on NB-IoT RRM requirements (R4-164085; contact: Huawei)	RAN4	R4-164085	noted		
R2-163337	LS on RRM measurement for NB-IOT (R4-164454; contact: Ericsson)	RAN4	R4-164454	noted		
R2-163338	LS on MPDCCH configuration for BL/CE UE (R1-165748 ; contact: Ericsson)	RAN1	R2-164331	noted		

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RAN2 Tdoc	title (original Tdoc; contact)	source	original Tdoc	status	final LS answer	additional comments
R2-163339	Response LS to R1-162069 = R2-162137 on uplink transmission gap in NB-IoT (R4-164459; contact: Sony)	RAN4	R4-164459	noted		
R2-163340	LS on Tx Gaps for Frequency Error Correction (R4-164532; contact: Qualcomm)	RAN4	R4-164532	noted		
R2-164335	LS on RRC parameter list for NB-IoT (R1-165906 ; contact: Huawei)	RAN1	R1-165906	noted		
R2-164336	LS on Priority for V2V (R1-165814 ; contact: Qualcomm)	RAN1	R1-165814	available		
R2-164338	LS on TR update for latency reduction (R1-165913 ; contact: Ericsson)	RAN1	R1-165913	noted		
R2-164385	LS on Core Network overload control and delay tolerant access via NB-IOT (S2-163061; contact: Qualcomm)	SA2	S2-163061	noted		
R2-164386	Reply LS to R2-163290 on NB-IOT NAS retransmission timers (S2-163080; contact: Vodafone)	SA2	S2-163080	noted	R2-164578	

postponed: LS answer was postponed to next RAN2 meeting (note: incoming LS will not be presented again at the next meeting and involved parties are requested to submit proposal for draft outgoing LS answer to next meeting).

Summary:

- In total: 43 LSs (2 on UTRA, 40 on LTE, 1 on joint aspects)
- 3 resubmissions from RAN2 #93bis
- 41 incoming LSs were noted and 3 were not treated as late incoming LSs.
- 27 of the 43 incoming LSs were received after Tdoc allocation deadline for RAN2 #94 meeting:
- For 0 incoming LS an LS answer was **postponed**.

Annex D: Outgoing liaison statements of TSG RAN WG2 #94

Only final outgoing LSs are listed here.

final LS Tdoc	title	to	cc	contact	reply to	release	WI	comments
R2-164352	LS on RAN2 aspects on MC enhancements (to: RAN1; cc: RAN3; contact: Huawei)	RAN1	RAN3	Huawei		Rel-13	UTRA_EDL_L23-Core	LS was sent out after email discussion [94#13][UMTS/MC enhancements]
R2-164355	LS on HSPA and LTE Joint Operation (to: RAN3; cc: -; contact: China Unicom)	RAN3	-	China Unicom		Rel-14	FS_UTRA_LTE_JOP	LS was sent out on 25.05.2016 during the meeting
R2-164356	LS on V2V transmission path selection (to: SA2, RAN1, RAN3; cc: -; contact: Huawei)	SA2, RAN1, RAN3	-	Huawei		Rel-14	LTE_SL_V2V-Core	LS was sent out on 25.05.2016 during the meeting
R2-164359	LS to RAN1 on SPS (to: RAN1; cc: -; contact: LGE)	RAN1	-	LGE		Rel-14	LTE_SL_V2V-Core	LS was sent out on 24.05.2016 during the meeting
R2-164373	LS to RAN1 on RAN2 agreements related to V2X (to: RAN1; cc: -; contact: LGE)	RAN1	-	LGE		Rel-14	FS_LTE_V2X	LS was sent out on 24.05.2016 during the meeting
R2-164404	LS on impacts on NAS timer for NB-IoT (to: CT1; cc: RAN3; contact: Huawei)	CT1	RAN3	Huawei		Rel-13	NB_IOT-Core	LS was sent out on 25.05.2016 during the meeting
R2-164414	Reply LS to S3-160694 on Clarifications on RRC Resume Request (to: SA3; cc: SA2, RAN3, CT1; contact: Nokia)	SA3	SA2, RAN3, CT1	Nokia	S3-160694 = R2-163328	Rel-13	NB_IOT-Core, TEI13	LS was sent out on 26.05.2016 during the meeting
R2-164424	Reply LS on UE behaviour when receiving not supported target frequencies in configuration (to: RAN3; cc: -; contact: Nokia)	RAN3	-	Nokia	R3-161003 = R2-163310	Rel-13	TEI13	LS was sent out on 24.05.2016 during the meeting

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final LS Tdoc	title	to	cc	contact	reply to	release	WI	comments
R2-164425	Response LS on CloT work progress in RAN2 (to: CT1; cc: SA2, RAN3; contact: NTT DOCOMO)	CT1	SA2, RAN3	NTT DOCOMO	C1-162140 = R2-163306	Rel-13	TEI13	LS was sent out on 24.05.2016 during the meeting
R2-164454	LS on additional eDRX values (to: CT1, RAN3; cc: -; contact: NTT DOCOMO)	CT1, RAN3	-	NTT DOCOMO		Rel-13	LTE_MTCe2_L1-Core, LTE_extDRX-Core	LS was sent out on 24.05.2016 during the meeting
R2-164460	LS to CT1 on RAN2 agreements on CloT optimisations (to: CT1; cc: -; contact: Ericsson)	CT1	-	Ericsson		Rel-13	TEI13, NB_IOT-Core	LS was sent out on 24.05.2016 during the meeting
R2-164465	Reply LS on capability to distinguish UE between with or without HTF (to: RAN4; cc: -; contact: NTT DOCOMO)	RAN4	-	NTT DOCOMO	R4-161343 = R2-161989	Rel-13	LTE_CA-Core, TEI13	LS was sent out on 24.05.2016 during the meeting
R2-164480	Response LS on error scenarios during CSFB (to: RAN3, CT1; cc: -; contact: Samsung)	RAN3, CT1	-	Samsung	R3-161028 = R2-163311	Rel-13	HetNet_eMOB_LTE-Core, TEI12	LS was sent out on 24.05.2016 during the meeting
R2-164482	LS on Paging window length (to: RAN3, SA2, CT1; cc:-; contact: Ericsson)	RAN3, SA2, CT1	-	Ericsson		Rel-13	LTE_extDRX-Core, NB_IoT-Core	LS was sent out on 24.05.2016 during the meeting
R2-164489	LS to RAN1 on RAN2 agreement on eLAA (to: RAN1; cc: -; contact: Nokia)	RAN1	-	Nokia		Rel-14	LTE_eLAA-Core	LS was sent out on 25.05.2016 during the meeting
R2-164498	Reply LS on EPC procedures for providing eNB with V2X authorization information (to: SA2; cc: RAN1, RAN3, SA1; contact: LGE)	SA2	RAN1, RAN3, SA1	LGE	S2-162248 = R2-163315	Rel-14	FS_LTE_V2X	LS was sent out on 26.05.16 during the meeting
R2-164525	LS on truncated Resume ID (to: RAN3; cc: -; contact: ZTE)	RAN3	-	ZTE		Rel-13	TEI13	LS was sent out on 27.05.16 during the meeting
R2-164538	LS to RAN1 on HARQ process selection for UL asynchronous HARQ (to: RAN1; cc: -; contact: Huawei)	RAN1	-	Huawei		Rel-13	LTE_MTCe2_L1-Core, LTE_eLAA-Core	

final LS Tdoc	title	to	cc	contact	reply to	release	WI	comments
R2-164543	LS to RAN Plenary on refined objectives of FeD2D SI for UE to Network Relays for IoT and Wearables (to: RAN; cc: -; contact: Qualcomm)	RAN	-	Qualcomm		Rel-14	FS_feD2D_IoT_relay_wearable	
R2-164545	LS on RAN initiated paging for the light connection (to: RAN3; cc: -; contact: Huawei)	RAN3	-	Huawei		Rel-14	LTE_LIGHT_CON-Core	
R2-164548	LS to RAN1 on WLAN RSSI (to: RAN1; cc: RAN4; contact: Nokia)	RAN1	RAN4	Nokia		Rel-13	LTE_WLAN_radio-Core	
R2-164551	Reply LS to SA3 on LWIP counter (to: SA3; cc: -; contact: Nokia)	SA3	-	Nokia	S3-160810 = R2-163329	Rel-13	LTE_WLAN_radio_legacy-Core	
R2-164554	LS to RAN1 on RAN2 agreements on skipping Uplink transmission (to: RAN1; cc: -; contact: Nokia)	RAN1	-	Nokia		Rel-14	LTE_LATRED_L2-Core	
R2-164556	Reply LS to RAN4 on Handover Optimization for HPUE – RAN2 Decisions (to: RAN4; cc: -; contact: Sprint)	RAN4	-	Sprint	R4-161767 = R2-162991	Rel-13	LTE_B14_PSBB_HPUE-Core, TEI13	
R2-164557	LS on PDCP ciphering for high data rates in eLWA (to: SA3; cc: -; contact: Intel)	SA3	-	Intel		Rel-14	LTE_WLAN_aggr-Core	LS was sent out after email discussion [94#21][LTE/eLWA]
R2-164558	LS to RAN1 on agreed TPs (to: RAN1; cc: -; contact: LGE)	RAN1	-	LGE		Rel-14	FS_LTE_V2X	
R2-164559	LS to RAN1 on clarification on MIMO capability (to: RAN1; cc: -; contact: Huawei)	RAN1	-	Huawei		Rel-10	TEI10	
R2-164565	LS on the evaluation of simultaneous transmission and reception (to: RAN1, RAN4; cc: -; contact: ZTE)	RAN1, RAN4	-	ZTE		Rel-14	LTE_eMob-Core	

final LS Tdoc	title	to	cc	contact	reply to	release	WI	comments
R2-164566	LS to RAN1 on RAN2 agreements for VoLTE/video quality related enhancements (to: RAN1; cc: -; contact: Ericsson)	RAN1	-	Ericsson		Rel-14	FS_LTE_eVoLTE	LS was sent out after email discussion [94#25][LTE/eVoLTE]
R2-164575	LS on RAN2 agreements on eDRX Paging Hyper-frame Calculation (to: RAN3, SA2; cc: CT1, CT4; contact: Samsung)	RAN3	CT1, CT4	Samsung		Rel-13	LTE_extDRX-Core	LS was sent out after email discussion [94#15][LTE/eDRX]
R2-164578	Reply LS on NB-IOT NAS retransmission timers (to: SA2, CT1; cc: RAN3, CT4; contact: Vodafone)	SA2, CT1	RAN3, CT4	Vodafone	S2-163080 = R2-164386	Rel-13	NB_IOT-Core	LS was sent out after email discussion [94#23][LTE/NB-IOT]
R2-164582	LS on eDRX paging timing calculation and security concern (to: SA3; cc: RAN3, SA2, CT1; contact: NTT DOCOMO)	SA3	RAN3, SA2, CT1	NTT DOCOMO		Rel-13	LTE_extDRX-Core	LS was sent out after email discussion [94#15][LTE/eDRX]

Summary:

In total 32 outgoing LSs of RAN2 #94:
 2 on UTRA, 30 on LTE/E-UTRA and 0 on joint aspects.

Annex E:

List of agreed CRs for RAN #72

□ Overview of 199 agreed and 4 technically endorsed RAN2 CRs submitted to RAN #72 (Busan, Korea): see also RP-160700:

spec	REL-8	REL-9	REL-10	REL-11	REL-12	REL-13	CRs	specs	rapporteur	email
25.300	0	0	0	0	1	1	2	2	ALI, Amaanat (Nokia Networks)	amaanat.ali@nokia.com
25.306	0	0	0	1	1	0	2	2	EKLÖF, Cecilia (Ericsson)	cedia.eklof@ericsson.com
25.308	0	0	0	0	0	1	1	1	Ravi Kuchibhotla (Motorola)	ravi.kuchibhotla@motorola.com
25.319	0	0	0	0	0	1	1	1	Hyung-Nam Choi (Intel)	hyung-nam.choi@intel.com
25.331	0	0	1	2	2	5	10	4	Mark Curran (Ericsson) /ASN.1: Xudong Yang (Huawei)	mark.curran@ericsson.com yangxudong@huawei.com
36.300	0	0	0	0	1	20	21	2	Benoist Sebire (Nokia)	benoist.sebire@nokia.com
36.302	0	0	0	0	1	6	7	2	Chunli Wu (Nokia)	chunli.wu@nokia.com
36.304	0	0	0	0	1	10+2*	11+2*	2	Jarkko Koskela (Nokia)	jarkko.t.koskela@nokia.com
36.306	0	0	0	0	2+1*	16+1*	18+2*	2	Ravi Kuchibhotla (Motorola)	ravi.kuchibhotla@motorola.com
36.321	0	0	0	0	0	28	28	1	Mats Folke (Ericsson)	mats.folke@ericsson.com
36.322	0	0	0	0	1	2	3	2	Toru Uchino (NTT DoCoMo)	tooru.uchino.fv@nttdocomo.com
36.323	0	0	0	0	2	8+1*	10+1*	2	Seung June Yi (LGE)	seungjune@lge.com
36.331	0	0	0	0	7	80+4*	88+4*	3	Himke van der Velde (Samsung)	himke.vandervelde@samsung.com
36.361	0	0	0	0	0	1	1	1	Tero Henttonen (Nokia)	tero.henttonen@nokia.com
UTRA	0	0	1	3	4	8	16	10		
LTE	0	0	0	0	15+1*	171+8*	187+9*	17		
total	0	0	1	3	19+1*	179+8*	203+9*	27		

*: 9 company CRs

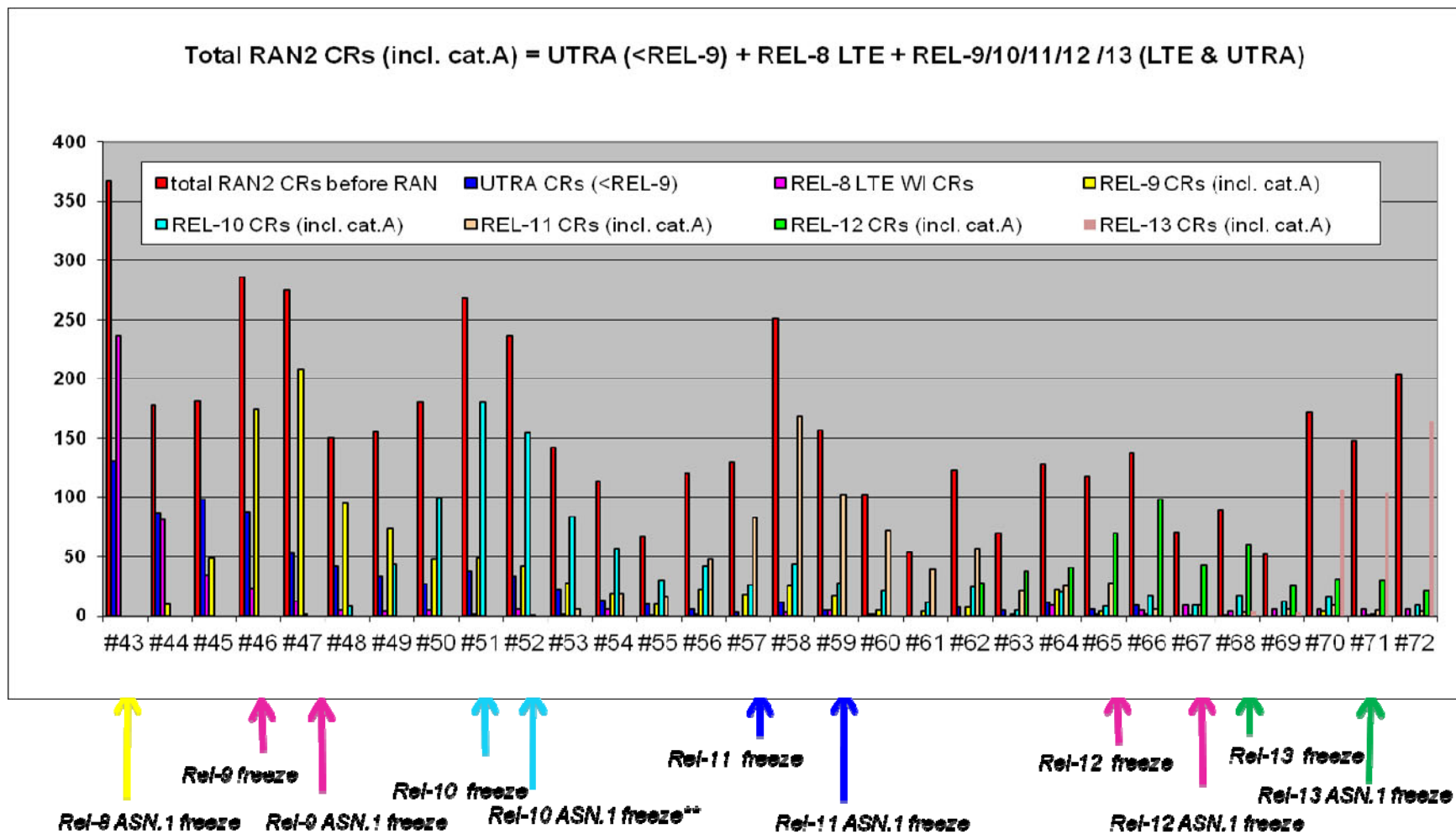


Figure E-1: RAN2 CRs submitted to the previous and the following RAN plenary #72

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The following table includes the RAN2 CRs submitted to RAN #72 in Busan, Korea:

Spec	CR #	rev	cat	REL	RAN2 Tdoc	Title	SI/WI	RAN2 Source	RAN2 status	RAN Tdoc	RAN status	Remarks
25.300	0039	1	F	Rel-12	R2-164342	Correction on DCH enhancements	UTRA_DCHenh-Core	Huawei, HiSilicon	agreed	RP-161079	approved	
25.300	0040	1	A	Rel-13	R2-164343	Correction on DCH enhancements	UTRA_DCHenh-Core	Huawei, HiSilicon	agreed	RP-161079	approved	
25.306	0505	1	B	Rel-11	R2-164301	Introduction of DB-DC-HSUPA in earlier release	HSUPA_DB_MC-Core, TEI11	Qualcomm Incorporated	agreed	RP-161083	approved	
25.306	0506	1	A	Rel-12	R2-164302	Introduction of DB-DC-HSUPA in earlier release	HSUPA_DB_MC-Core, TEI11	Qualcomm Incorporated	agreed	RP-161083	approved	
25.308	0174	-	F	Rel-13	R2-163431	Correction on the naming E-DCH decoupling	TEI13, UTRA_HetNet_enh-Core	Huawei, HiSilicon	agreed	RP-161079	approved	
25.319	0139	-	F	Rel-13	R2-163432	Correction on the naming E-DCH decoupling	TEI13, UTRA_HetNet_enh-Core	Huawei, HiSilicon	agreed	RP-161079	approved	
25.331	5853	-	F	Rel-10	R2-163345	Clarification for UE behaviour upon reception of requested E-UTRA frequency band list	TEI10	Nokia, Qualcomm Incorp., Alcatel-Lucent Shanghai Bell	agreed	RP-161076	approved	NOTE: Ericsson co-signed
25.331	5854	1	A	Rel-11	R2-164280	Clarification for UE behaviour upon reception of requested E-UTRA frequency band list	TEI10	Nokia, Qualcomm Incorp., Alcatel-Lucent Shanghai Bell, Ericsson	agreed	RP-161076	approved	
25.331	5855	1	A	Rel-12	R2-164281	Clarification for UE behaviour upon reception of requested E-UTRA frequency band list	TEI10	Nokia, Qualcomm Incorp., Alcatel-Lucent Shanghai Bell, Ericsson	agreed	RP-161076	approved	
25.331	5856	1	A	Rel-13	R2-164282	Clarification for UE behaviour upon reception of requested E-UTRA frequency band list	TEI10	Nokia, Qualcomm Incorp., Alcatel-Lucent Shanghai Bell, Ericsson	agreed	RP-161076	approved	
25.331	5857	2	B	Rel-11	R2-164340	Introduction of DB-DC-HSUPA in earlier release	HSUPA_DB_MC-Core, TEI11	Qualcomm Incorporated	agreed	RP-161083	approved	
25.331	5858	2	A	Rel-12	R2-164341	Introduction of DB-DC-HSUPA in earlier release	HSUPA_DB_MC-Core, TEI11	Qualcomm Incorporated	agreed	RP-161083	approved	
25.331	5859	-	F	Rel-13	R2-163433	Correction on the naming E-DCH decoupling	TEI13, UTRA_HetNet_enh-Core	Huawei, HiSilicon	agreed	RP-161079	approved	
25.331	5860	2	F	Rel-13	R2-164353	Correction of retrievable configurations	UTRA_EDL_L23-Core	Ericsson	agreed	RP-161083	approved	
25.331	5865	1	F	Rel-13	R2-164344	Corrections to RAT-independent positioning methods	UTRA_LTE_iPos_enh-Core	Intel Corporation	agreed	RP-161082	approved	
25.331	5868	1	D	Rel-13	R2-164349	Rapporteur corrections for 25.331 RRC specification	TEI13	Ericsson	agreed	RP-161080	-	Note: RAN2 agreed CR R2-164349 was forgotten to be packed into RP-161080 and can therefore not be considered approved. However, due to its editorial cat.D character MCC will take care of these changes in the CR implementation after RAN #72.
25.331	5869	2	F	Rel-13	R2-164354	Corrections and clarifications to URA_PCH with seamless transition to CELL_FACH state functionality	UTRA_EDL_L23-Core	Ericsson	agreed	RP-161083	approved	
36.300	0864	-	F	Rel-13	R2-163351	Corrections to MTCe in TS 36.300	LTE_MTCe2_L1-Core	Intel Corporation	agreed	RP-161080	approved	
36.300	0865	-	F	Rel-13	R2-163358	Clarification on LWA	LTE_WLAN_radio-Core	HTC Corporation	agreed	RP-161080	approved	

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Spec	CR #	rev	cat	REL	RAN2 Tdoc	Title	SI/WI	RAN2 Source	RAN2 status	RAN Tdoc	RAN status	Remarks
36.300	0866	-	F	Rel-13	R2-163361	Clarification on DC	LTE_dualC_enh-Core	HTC Corporation	agreed	RP-161080	approved	
36.300	0867	-	F	Rel-13	R2-163491	Corrections for sidelink description	LTE_eD2D_Prox-Core	Huawei, HiSilicon, ZTE	agreed	RP-161080	approved	
36.300	0868	1	F	Rel-13	R2-164493	Correction on conditions for Relay and Remote UE operation	LTE_eD2D_Prox-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.300	0869	-	F	Rel-13	R2-163566	Miscellaneous Stage-2 corrections for LWA	LTE_WLAN_radio-Core	Intel Corporation	agreed	RP-161080	approved	
36.300	0870	-	F	Rel-12	R2-163647	Addition of S-RSRP abbreviation definition	LTE_D2D_Prox-Core	CATT	agreed	RP-161078	approved	
36.300	0872	-	F	Rel-13	R2-163689	Measurement gap assisted intra-frequency measurement in case of narrowband operation	LTE_MTCe2_L1-Core	Qualcomm Incorporated	agreed	RP-161080	approved	
36.300	0873	-	F	Rel-13	R2-163758	Correction of RCLWI call flow	LTE_WLAN_radio-Core	CATT	agreed	RP-161080	approved	
36.300	0874	1	F	Rel-13	R2-164446	Correction on UL asynchronous HARQ	LTE_MTCe2_L1-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.300	0875	-	F	Rel-13	R2-163987	Correction to eMTC message classes and logical channels	LTE_MTCe2_L1-Core	Ericsson, NTT DOCOMO, Qualcomm Incorporated	agreed	RP-161080	approved	
36.300	0878	-	F	Rel-13	R2-164174	Stage 2 aspects of HARQ functionality for eMTC UEs	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161080	approved	
36.300	0879	1	F	Rel-13	R2-164468	Clarification on WLAN connection status reporting for RCLWI	LTE_WLAN_radio-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.300	0880	3	B	Rel-13	R2-164415	Introduction of NB-IoT	NB_IOT-Core	Huawei	agreed	RP-161081	approved	
36.300	0881	1	F	Rel-13	R2-164541	Correction on DRS Duty Cycle	LTE_LAA-Core	Qualcomm	agreed	RP-161080	approved	
36.300	0882	-	B	Rel-13	R2-164567	Introduction Control Plane CIoT EPS Optimization	NB_IOT-Core, TEI13	RAN3 (contact: Huawei)	agreed	RP-161081	approved	
36.300	0883	-	B	Rel-13	R2-164568	Introduction of the UE context resume function	NB_IOT-Core	RAN3 (contact: Ericsson)	agreed	RP-161081	approved	
36.300	0884	-	F	Rel-13	R2-164569	Correction on WT Association Confirmation	LTE_WLAN_radio-Core	RAN3 (contact: Huawei)	agreed	RP-161080	approved	
36.300	0885	-	F	Rel-13	R2-164570	Correction on WT initiated WT Modification procedure	LTE_WLAN_radio-Core	RAN3 (contact: Huawei)	agreed	RP-161080	approved	
36.300	0886	-	F	Rel-13	R2-164571	Correction on flow control	LTE_WLAN_radio-Core	RAN3 (contact: Huawei)	agreed	RP-161080	approved	
36.300	0887	-	F	Rel-13	R2-164572	Correction of Reroute NAS Request	DECOR-UTRA_LTE-Core	RAN3 (contact: Nokia, Alcatel-Lucent Shanghai Bell)	agreed	RP-161082	approved	
36.302	0069	-	F	Rel-12	R2-163457	Corrections on the data modulation of Downlink-Shared Channel	LTE_SC_enh_L1-Core	NTT DOCOMO INC.	agreed	RP-161078	approved	
36.302	0070	-	A	Rel-13	R2-163458	Corrections on the data modulation of Downlink-Shared Channel	LTE_SC_enh_L1-Core	NTT DOCOMO INC.	agreed	RP-161078	approved	
36.302	0071	1	F	Rel-13	R2-164362	Correction for sidelink	LTE_eD2D_Prox-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.302	0072	1	F	Rel-13	R2-164363	Corrections on sidelink related description in TS36.302	LTE_eD2D_Prox-Core	CATT	agreed	RP-161080	approved	
36.302	0073	-	F	Rel-13	R2-163924	SC-PTM reception on non-Pcell	LTE_SC_PTM-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.302	0074	-	F	Rel-13	R2-163928	Improvements for the representation of eMTC features	LTE_MTCe2_L1-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.302	0076	1	B	Rel-13	R2-164409	Introduction of NB-IoT in 36.302	NB_IOT-Core	Huawei	agreed	RP-161081	approved	
36.304	0302	-	F	Rel-13	R2-163494	Correction for conditions of sidelink operation	LTE_eD2D_Prox-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.304	0303	-	F	Rel-12	R2-163497	Corrections on conditions for sidelink discovery operation	LTE_D2D_Prox-Core	Huawei, HiSilicon	agreed	RP-161078	approved	NOTE: No cat.A CR for REL-13 needed since this correction already introduced in REL-13
36.304	0304	1	F	Rel-13	R2-164369	Corrections on carrier frequency prioritization for PS	LTE_eD2D_Prox-Core	Huawei, HiSilicon	agreed	RP-161080	approved	

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						sidelink discovery						
36.304	0305	1	F	Rel-13	R2-164433	Correction to System Information change notifications in RRC_IDLE for MTCe	LTE_MTCe2_L1-Core	Intel Corporation	agreed	RP-161080	approved	
36.304	0307	1	F	Rel-13	R2-164334	Clarification of UE behaviour immediately after T360 expiry	LTE_MC_load-Core	Intel Corporation, Samsung Telecommunications, ZTE corporation, Nokia, Kyocera	agreed	RP-161080	approved	
36.304	0311	1	B	Rel-13	R2-164399	Introduction of NB-IoT in 36.304	NB_IOT-Core	Nokia	agreed	RP-161081	revised	
36.304	0311	2	B	Rel-13	-	Introduction of NB-IoT in 36.304 including correction of Paging UE_ID for NB-IOT	NB_IOT-Core	-	-	RP-161195	approved	-
36.304	0312	-	F	Rel-13	R2-163895	Renaming UE_ID used for MCLD purposes	LTE_MC_load-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161080	approved	
36.304	0313	-	F	Rel-13	R2-163952	Corrections on nB extension	LTE_MTCe2_L1-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.304	0314	1	F	Rel-13	R2-164547	Corrections on TS 36.304 for eMTC	LTE_MTCe2_L1-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.304	0315	-	F	Rel-13	R2-163988	Correction to eMTC message classes and logical channels	LTE_MTCe2_L1-Core	Ericsson, NTT DOCOMO, Qualcomm Incorporated	agreed	RP-161080	approved	
36.304	0320	-	F	Rel-13	R2-164574	eDRX Paging Hyper-Frame Calculation	LTE_extDRX-Core	Samsung	agreed	RP-161080	revised	
36.304	0320	1	C	Rel-13	-	eDRX Paging Hyper-Frame and PTW_Start Calculation	LTE_extDRX-Core	-	-	RP-161155	postponed	-
36.306	0354	1	C	Rel-12	-	Support of 256QAM for UE categories 6,7,9 and 10	LTE_SC_enh_L1-Core	-	-	RP-160956	rejected	RP-160222
36.306	0355	1	A	Rel-13	-	Support of 256QAM for UE categories 6,7,9 and 10	LTE_SC_enh_L1-Core	-	-	RP-160957	rejected	RP-160223
36.306	1314	2	F	Rel-13	R2-164507	Miscellaneous corrections to TS 36.306	TEI13	Intel Corporation	agreed	RP-161080	approved	
36.306	1315	-	F	Rel-13	R2-163359	Clarifications on LWA capability	LTE_WLAN_radio-Core	HTC Corporation	agreed	RP-161080	approved	
36.306	1316	-	F	Rel-12	R2-163388	Clarification on maximum number of DL-SCH transport block bits for DL Category 15 and 16	LTE_CA-Core, TEI12, LTE_SC_enh_L1-Core	NTT DOCOMO, INC., Samsung, Nokia, Alcatel-Lucent Shanghai Bell, Fujitsu, NEC	agreed	RP-161076	approved	
36.306	1317	-	A	Rel-13	R2-163389	Clarification on maximum number of DL-SCH transport block bits for DL Category 15 and 16	LTE_CA-Core, TEI12, LTE_SC_enh_L1-Core	NTT DOCOMO, INC., Samsung, Nokia, Alcatel-Lucent Shanghai Bell, Fujitsu, NEC	agreed	RP-161076	approved	
36.306	1318	-	F	Rel-13	R2-163395	UE capability of an additional Rx and Tx requirement for a CA band combination	LTE_CA-Core, TEI13	NTT DOCOMO, INC.	agreed	RP-161076	approved	
36.306	1320	2	F	Rel-13	R2-164530	Definition of a fallback band combination	LTE_CA-Core, TEI13	NTT DOCOMO, INC., Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161076	approved	
36.306	1321	-	F	Rel-13	R2-163524	Correction to WLAN measurement support for LWIP	LTE_WLAN_radio_legacy-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161080	approved	
36.306	1322	-	F	Rel-13	R2-163547	Introducing EBF/FD-MIMO capabilities	LTE_EBF_FDMIMO-Core	Samsung Telecommunications	agreed	RP-161080	approved	
36.306	1323	1	F	Rel-13	R2-164370	Clarification on eD2D capability	LTE_eD2D_Prox-Core	Intel Corporation	agreed	RP-161080	approved	
36.306	1324	2	F	Rel-12	R2-164314	Split of DL and UL category 4	LTE-L23, TEI12	Sequans Communications	endorsed	RP-161074	rejected	NOTE: No cat.A CR for REL-13 needed since this correction already introduced in REL-

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												13
36.306	1325	-	A	Rel-13	R2-163629	Split of DL and UL category 4	LTE-L23, TEI12	Sequans Communications	endorsed	RP-161074	rejected	NOTE: No cat.A CR for REL-13 needed since this correction already introduced in REL-13
36.306	1326	-	F	Rel-13	R2-163684	MBMS reception via MBSFN or SC-PTM	LTE_SC_PTM-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161080	approved	
36.306	1327	2	F	Rel-13	R2-164531	Capturing a new capability signalling format for Rel-13 CA enhancements	LTE_CA_enh_b5C-Core	NTT DOCOMO, INC.	agreed	RP-161080	approved	
36.306	1328	2	B	Rel-13	R2-164513	Introduction of NB-IoT UE capabilities	NB_IOT-Core	Ericsson	agreed	RP-161081	approved	
36.306	1329	-	F	Rel-13	R2-163927	Corrections on capability linking for measurement object extension	LTE_CA_enh_b5C-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.306	1330	-	F	Rel-13	R2-163960	Correction on the value of maximum channel bandwidth	LTE_MTCe2_L1-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.306	1333	1	F	Rel-13	R2-164487	UE Power Class in UE capability signaling	TEI13	Ericsson, Sprint	agreed	RP-161080	approved	
36.306	1334	2	F	Rel-13	R2-164535	UE capabilities for eMTC	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161080	approved	
36.321	0854	-	F	Rel-13	R2-163353	Corrections to MTCe in TS 36.321	LTE_MTCe2_L1-Core	Intel Corporation	agreed	RP-161080	approved	
36.321	0855	1	F	Rel-13	R2-164492	Corrections to Logical Channel Prioritisation	LTE_eD2D_Prox-Core	Samsung	agreed	RP-161080	approved	
36.321	0856	-	F	Rel-13	R2-163416	Correction to MAC procedures for MTC	LTE_MTCe2_L1-Core	HTC Corporation	agreed	RP-161080	approved	
36.321	0857	3	C	Rel-13	R2-164576	Functional extension for U-plane C-IoT optimisation	TEI13	NTT DOCOMO, INC.	agreed	RP-161080	approved	
36.321	0858	2	F	Rel-13	R2-164494	Corrections for sidelink logical channel prioritization	LTE_eD2D_Prox-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.321	0859	-	F	Rel-13	R2-163661	HARQ RTT Timers in eMTC	LTE_MTCe2_L1-Core	CATT, Ericsson	agreed	RP-161080	approved	
36.321	0860	-	F	Rel-13	R2-163818	Asynchronous UL HARQ protocol operation	LTE_MTCe2_L1-Core	Panasonic	agreed	RP-161080	approved	
36.321	0861	1	F	Rel-13	R2-164364	UL SPS and Sidelink discovery gap	LTE_eD2D_Prox-Core	Panasonic, Interdigital, Qualcomm, Innovative Technology Lab Co	agreed	RP-161080	approved	
36.321	0862	-	F	Rel-13	R2-163855	Correction of BCCH reception for LC-MTC	LTE_MTCe2_L1-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161080	approved	
36.321	0864	1	F	Rel-13	R2-164537	Corrections on asynchronous UL HARQ operation	LTE_MTCe2_L1-Core	ASUSTeK	agreed	RP-161080	approved	
36.321	0866	-	F	Rel-13	R2-163921	Clarification on PDCCH sub-frame for SC-PTM	LTE_SC_PTM-Core	Huawei, HiSilicon, TD Tech	agreed	RP-161080	approved	
36.321	0867	-	F	Rel-13	R2-163953	Correction on preamble group selection and RA-RNTI value range	LTE_MTCe2_L1-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.321	0868	1	F	Rel-13	R2-164430	Correction on DL HARQ retransmission and UL transmission repetitions within a bundle	LTE_MTCe2_L1-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.321	0869	2	F	Rel-13	R2-164499	Correction on IR version for UL HARQ	LTE_MTCe2_L1-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.321	0870	-	F	Rel-13	R2-163959	Correction on HARQ process selection for UL asynchronous HARQ	LTE_MTCe2_L1-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.321	0873	-	F	Rel-13	R2-163989	Correction to eMTC message classes and logical channels	LTE_MTCe2_L1-Core	Ericsson, NTT DOCOMO, Qualcomm Incorporated	agreed	RP-161080	approved	
36.321	0875	-	F	Rel-13	R2-164177	Correction on Random Access CE-level ramp-up for CE mode A UEs	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161080	approved	
36.321	0876	1	F	Rel-13	R2-164449	Correction to random access procedure for eMTC	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161080	approved	
36.321	0877	2	F	Rel-13	R2-164539	Minor corrections to MAC for eMTC	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161080	approved	

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36.321	0878	-	F	Rel-13	R2-164180	PRACH preamble power for eMTC	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161080	approved	
36.321	0879	1	F	Rel-13	R2-164448	SPS support for eMTC UEs	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161080	approved	
36.321	0880	1	F	Rel-13	R2-164452	SR prohibit timer for eMTC UEs	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161080	approved	
36.321	0881	-	F	Rel-13	R2-164183	Starting CE level for PDCCH order and HO	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161080	approved	
36.321	0882	-	F	Rel-13	R2-164194	Clarification on RA-RNTI determination for PRACH in TDD	TEI13	Qualcomm Incorporated	agreed	RP-161080	approved	
36.321	0883	4	B	Rel-13	R2-164521	Introduction of NB-IoT to 36.321	NB_IOT-Core	Ericsson	agreed	RP-161081	approved	
36.321	0884	2	F	Rel-13	R2-164562	Correction on the DRX operation for UL asynchronous HARQ	LTE_MTCe2_L1-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.321	0885	-	F	Rel-13	R2-164323	Corrections on Support of CRI reporting in MAC	LTE_EBF_FDMIMO-Core	ETRI	agreed	RP-161080	approved	
36.321	0886	-	F	Rel-13	R2-164451	Correction on the intended UE behaviour for DRX Timers	LTE_MTCe2_L1-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.322	0119	-	F	Rel-12	R2-163501	Addition of sidelink in the overview model	LTE_D2D_Prox-Core	Huawei, HiSilicon	agreed	RP-161078	approved	
36.322	0120	1	A	Rel-13	R2-164305	Addition of sidelink in the overview model	LTE_D2D_Prox-Core	Huawei, HiSilicon	agreed	RP-161078	approved	
36.322	0121	2	B	Rel-13	R2-164511	Introduction of NB-IoT	NB_IOT-Core	NTT DOCOMO INC.	agreed	RP-161081	approved	
36.323	0160	-	F	Rel-13	R2-163360	Clarification on LWA	LTE_WLAN_radio-Core	HTC Corporation	agreed	RP-161080	approved	
36.323	0161	1	F	Rel-12	R2-164443	Data available for transmission due to PDCP data recovery	LTE_SC_enh_dualC-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161078	approved	
36.323	0162	1	A	Rel-13	R2-164444	Data available for transmission due to PDCP data recovery	LTE_SC_enh_dualC-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161078	approved	
36.323	0163	-	F	Rel-13	R2-163496	Correction for sidelink	LTE_eD2D_Prox-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.323	0164	-	F	Rel-12	R2-163499	Corrections on RoHC description	LTE_D2D_Prox-Core	Huawei, HiSilicon	agreed	RP-161078	approved	
36.323	0165	-	A	Rel-13	R2-163500	Corrections on RoHC description	LTE_D2D_Prox-Core	Huawei, HiSilicon	agreed	RP-161078	approved	
36.323	0166	1	F	Rel-13	R2-164474	Clarification on Control PDU for LWA	LTE_WLAN_radio-Core	HTC Corporation	agreed	RP-161080	approved	
36.323	0169	-	F	Rel-13	R2-164249	Polling for LWA status report	LTE_WLAN_radio-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.323	0171	3	B	Rel-13	R2-164515	Introduction of NB-IoT functionality to PDCP protocol	NB_IOT-Core	Qualcomm Incorporated (Rapporteur)	agreed	RP-161081	revised	
36.323	0171	4	B	Rel-13	-	Introduction of NB-IoT functionality to PDCP protocol	NB_IOT-Core	-	-	RP-161091	approved	
36.323	0172	-	B	Rel-13	R2-164346	PDCP CR to capture C-IoT optimizations for non-NB-IoT UEs	TEI13	Ericsson	agreed	RP-161080	approved	
36.331	2114	-	F	Rel-13	R2-163352	Corrections to MTCe in TS 36.331	LTE_MTCe2_L1-Core	Intel Corporation	agreed	RP-161080	approved	
36.331	2115	2	F	Rel-13	R2-164506	Miscellaneous corrections to TS 36.331	TEI13	Intel Corporation, Ericsson	agreed	RP-161080	approved	
36.331	2116	1	F	Rel-13	R2-164461	Inter-node signalling	LTE_CA_enh_b5C-Core, LTE_WLAN_radio-Core	HTC Corporation, Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161080	approved	
36.331	2117	-	F	Rel-13	R2-163357	Clarification on SC-PTM	LTE_SC_PTM-Core	HTC Corporation	agreed	RP-161080	approved	
36.331	2118	1	F	Rel-13	R2-164466	UE capability of an additional Rx and Tx requirement for a CA band combination	LTE_CA-Core, TEI13, LTE_CA_enh_b5C-Core	NTT DOCOMO, INC.	agreed	RP-161076	approved	
36.331	2124	-	F	Rel-12	R2-163480	drb-identity change in full configuration	LTE-L23, TEI12	NTT DOCOMO INC.	agreed	RP-161073	approved	
36.331	2125	-	A	Rel-13	R2-163481	drb-identity change in full configuration	LTE-L23, TEI12	NTT DOCOMO INC.	agreed	RP-161073	approved	
36.331	2126	-	F	Rel-13	R2-163492	Miscellaneous correction for sidelink	LTE_eD2D_Prox-Core	Huawei, HiSilicon, ITRI, ZTE	agreed	RP-161080	approved	
36.331	2127	-	F	Rel-13	R2-163493	Corrections for conditions of sidelink operation	LTE_eD2D_Prox-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.331	2128	-	F	Rel-12	R2-163498	Corrections for SL resource configuration during handover	LTE_D2D_Prox-Core	Huawei, HiSilicon	agreed	RP-161078	approved	NOTE: No cat.A CR for REL-13

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												needed since this correction already introduced in REL-13
36.331	2129	-	F	Rel-12	R2-163503	Addition of S-RSRP abbreviation	LTE_D2D_Prox-Core	Huawei, HiSilicon	agreed	RP-161078	approved	NOTE: No cat.A CR for REL-13 needed since this correction already introduced in REL-13
36.331	2130	1	F	Rel-13	R2-164365	Correction on conditions for establishing RRC Connection for sidelink communication	LTE_eD2D_Prox-Core	Huawei, HiSilicon, ITRI	agreed	RP-161080	approved	
36.331	2131	1	F	Rel-13	R2-164366	Corrections for sidelink communication transmission	LTE_eD2D_Prox-Core	Huawei, HiSilicon, ITRI, Qualcomm Incorporated	agreed	RP-161080	approved	
36.331	2132	1	F	Rel-13	R2-164470	Correction to WLAN measurements	LTE_WLAN_radio-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161080	approved	
36.331	2133	1	F	Rel-13	R2-164477	Small corrections to LWIP	LTE_WLAN_radio_legacy-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161080	approved	
36.331	2134	1	F	Rel-13	R2-164361	Small eSL related corrections	LTE_eD2D_Prox-Core	Samsung	agreed	RP-161080	approved	
36.331	2135	1	F	Rel-13	R2-164330	Alignment of RCLWI configuration	LTE_WLAN_radio-Core	Samsung	agreed	RP-161080	approved	
36.331	2136	1	F	Rel-13	R2-164469	Configuration of LWA and LWIP upon handover	LTE_WLAN_radio-Core, LTE_WLAN_radio_legacy-Core	Samsung	agreed	RP-161080	approved	
36.331	2137	1	F	Rel-13	R2-164458	Introducing EBF/FD-MIMO capabilities	LTE_EBF_FDMIMO-Core	Samsung Telecommunications	agreed	RP-161080	approved	
36.331	2138	-	F	Rel-11	R2-163549	Clarification regarding IDC indication upon change of UL CA affecting GNSS	SPIA_IDC_LTE-Core	Samsung Telecommunications	agreed	RP-161077	approved	
36.331	2139	-	A	Rel-12	R2-163550	Clarification regarding IDC indication upon change of UL CA affecting GNSS	SPIA_IDC_LTE-Core	Samsung Telecommunications	agreed	RP-161077	approved	
36.331	2140	-	A	Rel-13	R2-163551	Clarification regarding IDC indication upon change of UL CA affecting GNSS	SPIA_IDC_LTE-Core	Samsung Telecommunications	agreed	RP-161077	approved	
36.331	2143	3	F	Rel-13	R2-164564	Correction of periodic CSI reporting and clarification on p-C and CBR signalling	LTE_EBF_FDMIMO-Core	Samsung	agreed	RP-161080	approved	
36.331	2144	-	F	Rel-13	R2-163557	CR on SI window combining for MTC	LTE_MTCe2_L1-Core	NTT DOCOMO INC.	agreed	RP-161080	approved	
36.331	2145	-	F	Rel-13	R2-163567	Avoiding simultaneous configuration of LWA and DC for a UE	LTE_WLAN_radio-Core	Intel Corporation	agreed	RP-161080	approved	
36.331	2146	-	F	Rel-13	R2-163568	Miscellaneous RRC corrections for LWA	LTE_WLAN_radio-Core	Intel Corporation	agreed	RP-161080	approved	
36.331	2147	1	F	Rel-13	R2-164549	Autonomous WLAN measurement ID removal	LTE_WLAN_radio-Core	Intel Corporation	agreed	RP-161080	approved	
36.331	2149	1	F	Rel-13	R2-164472	Correction to channel number range	LTE_WLAN_radio-Core	Intel Corporation	agreed	RP-161080	approved	
36.331	2150	-	F	Rel-13	R2-163577	Correction of backhaul bandwidth description	LTE_WLAN_radio-Core	Intel Corporation	agreed	RP-161080	approved	
36.331	2151	1	F	Rel-13	R2-163637	Correction on frequency hopping signaling	LTE_MTCe2_L1-Core	Sequans Communications	agreed	RP-161080	approved	
36.331	2152	1	C	Rel-13	R2-164312	Support of CRS-Assistance signaling for the DL Control Channel IM	LTE_IM_DLCCCH-Perf	Intel Corporation	agreed	RP-161075	approved	
36.331	2153	-	F	Rel-12	R2-163614	Correction on condition nonFullConfig in dual connectivity	LTE_SC_enh_dualC-Core	Intel Corporation	agreed	RP-161078	approved	
36.331	2154	-	A	Rel-13	R2-163615	Correction on condition nonFullConfig in dual connectivity	LTE_SC_enh_dualC-Core	Intel Corporation	agreed	RP-161078	approved	
36.331	2157	1	F	Rel-12	R2-164286	Split of DL and UL category 4	LTE-L23, TEI12	Sequans Communications	endorsed	RP-161074	rejected	NOTE: No cat.A

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Spec	CR #	rev	cat	REL	RAN2 Tdoc	Title	SI/WI	RAN2 Source	RAN2 status	RAN Tdoc	RAN status	Remarks
												CR for REL-13 needed since this correction already introduced in REL-13
36.331	2158	-	A	Rel-13	R2-163636	Split of DL and UL category 4	LTE-L23, TEI12	Sequans Communications	endorsed	RP-161074	rejected	NOTE: No cat.A CR for REL-13 needed since this correction already introduced in REL-13
36.331	2159	1	F	Rel-13	R2-164434	Correction on system information handling in eMTC	LTE_MTCe2_L1-Core	HTC Corporation	agreed	RP-161080	approved	
36.331	2160	1	F	Rel-13	R2-164435	Correction on essential system information missing	LTE_MTCe2_L1-Core	HTC Corporation	agreed	RP-161080	approved	
36.331	2162	-	F	Rel-13	R2-163651	Steering command during T350	LTE_WLAN_radio-Core	SAMSUNG Electronics Co., Ltd.	agreed	RP-161080	approved	
36.331	2163	1	F	Rel-13	R2-164476	UE behaviours while configured with steeringCommandWLAN (release)	LTE_WLAN_radio-Core	Samsung	agreed	RP-161080	approved	
36.331	2166	1	F	Rel-13	R2-164291	Correction of IE name "systemInformationBlockType1Dedicated"	eICIC_enh_LTE-Core, TEI13	Kyocera	agreed	RP-161077	approved	
36.331	2167	-	F	Rel-13	R2-163705	Clarification of timer description for MCLD	LTE_MC_Load-Core	Kyocera	agreed	RP-161080	approved	
36.331	2169	-	F	Rel-13	R2-163756	Clarification on the usage of threshold conditions for sidelink relay UE	LTE_eD2D_Prox-Core	ITRI	agreed	RP-161080	approved	
36.331	2170	-	F	Rel-13	R2-163782	Corrections to LWA	LTE_WLAN_radio-Core	CATT	agreed	RP-161080	approved	
36.331	2171	-	F	Rel-13	R2-163796	Variable Handling for RCLWI	LTE_WLAN_radio-Core	CATT	agreed	RP-161080	approved	
36.331	2174	1	F	Rel-13	R2-164440	Correction on configuration of PRACH and MPDCCH for RA procedure for BL UEs or UEs in CE	LTE_MTCe2_L1-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161080	approved	
36.331	2175	-	F	Rel-13	R2-163874	Clarification on LWA	LTE_WLAN_radio-Core	HTC Corporation	agreed	RP-161080	approved	
36.331	2176	1	F	Rel-13	R2-164508	Miscellaneous corrections	TEI13	HTC Corporation	agreed	RP-161080	approved	
36.331	2180	-	F	Rel-13	R2-163920	Correction on FDD/TDD differentiation for Rel-13 capabilities	TEI13	Huawei	agreed	RP-161080	approved	
36.331	2181	1	F	Rel-13	R2-164532	Correction on the definition of sc-mcch-duration	LTE_SC_PTM-Core	Huawei, HiSilicon, TD Tech	agreed	RP-161080	approved	
36.331	2182	-	F	Rel-13	R2-163925	System information acquisition for SC-PTM reception on non-Pcell	LTE_SC_PTM-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.331	2183	-	F	Rel-13	R2-163926	Corrections on capability report for eCA	LTE_CA_enh_b5C-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.331	2185	1	F	Rel-13	R2-164457	Corrections to RS-SINR configuration	LTE_MC_load-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161080	approved	
36.331	2186	1	F	Rel-13	R2-164313	UL UE Categories support for 64 QAM	LTE_UL64QAM-Core	Nokia, Alcatel-Lucent Shanghai Bell, NTT DOCOMO, INC.	agreed	RP-161080	approved	
36.331	2188	1	F	Rel-13	R2-164429	Correction on SI update for eDRX	LTE_extDRX-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.331	2189	-	F	Rel-13	R2-163961	Add the field description for mpdcch-NarrowbandsToMonitor-r13	LTE_MTCe2_L1-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.331	2192	-	F	Rel-13	R2-163971	WLAN measurements and user preference	LTE_WLAN_radio-Core	NEC	agreed	RP-161080	approved	
36.331	2193	1	F	Rel-13	R2-164504	Miscellaneous corrections resulting from REL-13 ASN.1 review	TEI13	Ericsson	agreed	RP-161080	approved	

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Spec	CR #	rev	cat	REL	RAN2 Tdoc	Title	SI/WI	RAN2 Source	RAN2 status	RAN Tdoc	RAN status	Remarks
36.331	2195	-	F	Rel-13	R2-163990	Correction to eMTC message classes and logical channels	LTE_MTCe2_L1-Core	Ericsson, NTT DOCOMO, Qualcomm Incorporated	agreed	RP-161080	approved	
36.331	2198	-	F	Rel-13	R2-164049	Some eCA related corrections	LTE_CA_enh_b5C-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161080	approved	
36.331	2199	1	F	Rel-13	R2-164467	PUCCH SCell corrections	LTE_CA_enh_b5C-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161080	approved	
36.331	2200	1	F	Rel-13	R2-164367	Small corrections of timer description for Sidelink	LTE_eD2D_Prox-Core	Kyocera	agreed	RP-161080	approved	
36.331	2201	-	F	Rel-13	R2-164071	Clarification of use of extended timer values for UEs that support CE mode B	LTE_MTCe2_L1-Core	Intel Corporation	agreed	RP-161080	approved	
36.331	2202	2	F	Rel-13	R2-164536	Correction to UL SPS operation	LTE_MTCe2_L1-Core	Sequans Communications	agreed	RP-161080	approved	
36.331	2203	1	F	Rel-13	R2-164486	UE Power Class in UE capability signaling	TEI13	Ericsson, Sprint	agreed	RP-161080	approved	
36.331	2204	-	F	Rel-13	R2-164148	Correction to FD-MIMO field descriptions	LTE_EBF_FDMIMO-Core	Ericsson	agreed	RP-161080	approved	
36.331	2205	1	F	Rel-13	R2-164431	Miscellaneous eMTC corrections	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161080	approved	
36.331	2206	-	F	Rel-13	R2-164158	Further miscellaneous eMTC corrections	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161080	approved	
36.331	2207	-	F	Rel-13	R2-164162	Correction to Initial CE Level	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161080	approved	
36.331	2209	2	F	Rel-13	R2-164534	Feature Group Indicators and UE capabilities for eMTC	LTE_MTCe2_L1-Core	Ericsson LM	agreed	RP-161080	approved	
36.331	2210	2	B	Rel-13	R2-164519	CR to capture Clot optimizations for non-NB-IoT UEs	TEI13	Ericsson	agreed	RP-161080	approved	
36.331	2211	-	F	Rel-13	R2-164184	Valid subframes for FDD and TDD DL transmissions	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161080	approved	
36.331	2216	1	F	Rel-13	R2-164473	Avoiding conflict between rel13 LWA/LWIP and rel12 RALWI	LTE_WLAN_radio-Core	LG Electronics Inc.	agreed	RP-161080	approved	
36.331	2219	-	F	Rel-12	R2-164244	Clarification on the presence of ul-64QAM-r12 for DL-only bands	TEI12	Huawei, HiSilicon	agreed	RP-161078	approved	
36.331	2220	-	A	Rel-13	R2-164245	Clarification on the presence of ul-64QAM-r12 for DL-only bands	TEI12	Huawei, HiSilicon	agreed	RP-161078	approved	
36.331	2221	-	F	Rel-13	R2-164246	Correction on keeping SCG upon inter eNB handover	LTE_dualC_ext-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.331	2222	-	F	Rel-13	R2-164247	The granularity of LWAAP entity	LTE_WLAN_radio-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.331	2223	-	F	Rel-13	R2-164248	Clarification on WLAN measurment	LTE_WLAN_radio-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.331	2224	-	F	Rel-13	R2-164251	The handling of WLAN status monitoring	LTE_WLAN_radio-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.331	2226	1	F	Rel-13	R2-164528	Clarification on the handover from the MeNB to the SeNB	LTE_dualC_ext-Core	Huawei, HiSilicon	agreed	RP-161080	approved	
36.331	2230	1	B	Rel-13	R2-164503	Restricting Unattended Data Traffic	TEI13	Verizon, Ericsson, Qualcomm Inc., Applied Communication Sciences, Office of Emergency Communications, MediaTek	agreed	RP-161080	approved	
36.331	2231	6	B	Rel-13	R2-164573	Introduction of NB-IoT in 36.331	NB_IOT-Core	Huawei	agreed	RP-161081	revised	
36.331	2231	7	B	Rel-13	-	Introduction of NB-IoT in 36.331	NB_IOT-Core	-	-	RP-161211	approved	
36.331	2231	8	B	Rel-13	-	Introduction of NB-IoT in 36.331	NB_IOT-Core	-	-	RP-161248	withdrawn	
36.331	2233	-	F	Rel-13	R2-164292	Correction to T302 and T308 conflict issue	ACDC-RAN-Core	Spreadtrum Communications	agreed	RP-161080	approved	
36.331	2234	1	F	Rel-13	R2-164439	Various corrections to MTCe related ASN.1 code and field descriptions	LTE_MTCe2_L1-Core	Spreadtrum Communications	agreed	RP-161080	approved	

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Spec	CR #	rev	cat	REL	RAN2 Tdoc	Title	SI/WI	RAN2 Source	RAN2 status	RAN Tdoc	RAN status	Remarks
36.331	2235	-	F	Rel-13	R2-164295	Clarification to field description for the timer T360	LTE_MC_load-Core	Spreadtrum Communications	agreed	RP-161080	approved	
36.331	2236	-	F	Rel-13	R2-164296	Clarification to ordering of Rel13 Frequency priority lists	LTE_MC_load-Core	Spreadtrum Communications	agreed	RP-161080	approved	
36.331	2238	1	C	Rel-13	R2-164479	Introduction of LWIP counter	LTE_WLAN_radio_legacy-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161080	approved	
36.331	2239	1	F	Rel-13	R2-164533	Clarification on EpcchSetConfig for eMTC	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161080	approved	
36.331	2240	2	C	Rel-13	R2-164577	Skipping fallback "2DL + 1UL" CA in UE capability report in Rel 13	LTE_CA_enh_b5C-Core	Qualcomm Incorporated	agreed	RP-161080	approved	
36.331	2241	2	F	Rel-13	-	NAS timer settings for eMTC	LTE_MTCe2_L1-Core	-	-	RP-161112	revised	revised in RP-161270
36.331	2241	3	F	Rel-13	-	NAS timer settings for eMTC	LTE_MTCe2_L1-Core	-	-	RP-161270	approved	RP-161112
36.361	0001	1	F	Rel-13	R2-164478	Corrections to LWIPEP specification	LTE_WLAN_radio_legacy-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161080	approved	

- Rows highlighted in yellow indicate company contributions treated at RAN #72 for which no Tdoc was submitted to RAN2 #94.
- The table above has 215 entries (rows excl. header row) of which 199 CRs were approved at RAN #72:
 - 200 CRs agreed by RAN2 of which then 195 CRs were approved by RAN #72, 1 CR [R2-164349](#) were not treated due to be forgotten to be packed into RP-161080 (However, due to its editorial cat.D character MCC took care of these changes in the CR implementation after RAN #72.) and 4 CRs were revised in company contributions.
 - 4 CRs technically endorsed by RAN2 of which then 4 CRs were rejected.
 - 9 company contributions (highlighted in yellow) of which then 4 CRs were approved, 2 CRs were rejected, 1 CR was postponed, 1 CR was withdrawn, and 1 CR was revised at RAN #72.

So finally: Approved RAN2 CRs after RAN #72: 199.

spec	REL-8	REL-9	REL-10	REL-11	REL-12	REL-13	CRs	specs	rapporteur	email
25.300	0	0	0	0	1	1	2	2	ALI, Amaanat (Nokia Networks)	amaanat.ali@nokia.com
25.306	0	0	0	1	1	0	2	2	EKLÖF, Cecilia (Ericsson)	cedia.eklof@ericsson.com
25.308	0	0	0	0	0	1	1	1	Ravi Kuchibhotla (Motorola)	ravi.kuchibhotla@motorola.com
25.319	0	0	0	0	0	1	1	1	Hyung-Nam Choi (Intel)	hyung-nam.choi@intel.com
25.331	0	0	1	2	2	5	10	4	Mark Curran (Ericsson) /ASN.1: Xudong Yang (Huawei)	mark.curran@ericsson.com yangxudong@huawei.com
36.300	0	0	0	0	1	20	21	2	Benoist Sebire (Nokia)	benoist.sebire@nokia.com
36.302	0	0	0	0	1	6	7	2	Chunli Wu (Nokia)	chunli.wu@nokia.com
36.304	0	0	0	0	1	9	10	2	Jarkko Koskela (Nokia)	jarkko.t.koskela@nokia.com
36.306	0	0	0	0	1	15	16	2	Ravi Kuchibhotla (Motorola)	ravi.kuchibhotla@motorola.com
36.321	0	0	0	0	0	28	28	1	Mats Folke (Ericsson)	mats.folke@ericsson.com
36.322	0	0	0	0	1	2	3	2	Toru Uchino (NTT DoCoMo)	tooru.uchino.fv@nttdocomo.com
36.323	0	0	0	0	2	8	10	2	Seung June Yi (LGE)	seungjune.yi@lge.com
36.331	0	0	0	1	6	80	87	3	Himke van der Velde (Samsung)	himke.vandervelde@samsung.com
36.361	0	0	0	0	0	1	1	1	Tero Henttonen (Nokia)	tero.henttonen@nokia.com
UTRA	0	0	1	3	4	8	16	10		
LTE	0	0	0	1	13	169	183	17		
total	0	0	1	4	17	177	199	27		

Annex F: RAN WG2 meeting #94 post processing

Email discussions/approvals

Rapporteur companies are requested to kick-off email discussions as soon as possible via the RAN2 email reflector. Important: In the beginning of the subject of each email the corresponding identifier [...] of the email discussion has to be used in order to allow sorting of the different email discussions.

Email discussions with finalisation by Thu 02.06.2016 midnight Pacific time, i.e. Fri 03.06.2016 9am CEST:

[94#01][LTE/CA] 2DL + 1 UL fallback skipping (Qualcomm)

Discuss CR in [R2-164337](#).

Intended outcome: Agreed CR for RAN

Deadline: Thursday 02/06/2016

conclusion: Email discussion was kicked off by Feilu Liu (Qualcomm)
on 31.05.2016.
36.331 CR [R2-164577](#) was agreed on 08.06.2016.

[94#02][LTE/eMTC] NAS timer CR (Ericsson)

Discuss CR in [R2-164527](#) and LS in [R2-164526](#)

Intended outcome: Agreed CR to RAN and LS to CT1/RAN3/SA2

Deadline: Thursday 02/06/2016

conclusion: Email discussion was kicked off by Håkan Palm (Ericsson)
on 31.05.2016.
36.331 CR [R2-164560](#) and Draft LS [R2-164561](#) to RAN3 and CT1 were
postponed with lack of consensus on 08.06.2016.

[94#03][LTE/eMTC] CR to 36.321 on IR version (Huawei)

Discuss CR in [R2-164447](#)

Intended outcome: Agreed CR for RAN

Deadline: Thursday 02/06/2016

conclusion: Email discussion was kicked off by Chenli (Huawei)
on 30.05.2016.
36.321 CR [R2-164499](#) was agreed on 04.06.2016.

[94#04][LTE/eMTC] DRX for async HARQ (Huawei)

Discuss [R2-164546](#)

Intended outcome: Agreed CR to RAN

Deadline: Thursday 02/06/2016

conclusion: Email discussion was kicked off by Chenli (Huawei)
on 30.05.2016.
36.321 CR [R2-164562](#) was agreed on 06.06.2016.

[94#05][LTE/LWA] LWA status report (MediaTek)

Discuss CR in [R2-164475](#)

Intended outcome: Agreed CR to RAN

Deadline: Thursday 02/06/2016

conclusion: Email discussion was kicked off by Pavan Nuggehalli (Media Tek)
on 31.05.2016.
Email discussion closed without having reached its intended objective
on 06.06.2016.

[94#06][LTE/CIOT] RRC CR (Ericsson)

- Companies should provide comments on aspects common to NB-IOT and CIOT CRs to
this email discussion.

Intended outcome: Agreed CR to RAN

Deadline: Thursday 02/06/2016

conclusion: Email discussion was kicked off by Riikka Susitaival (Ericsson)
on 30.05.2016.
36.331 CR [R2-164519](#) was agreed on 06.06.2016.

[94#07][LTE/CIOT] PDCP CR (Ericsson)

- CR is a 'mirror' of the already agreed NB-IOT PDCP CR with some NB-IOT specific aspects removed.

Intended outcome: Agreed CR to RAN
Deadline: Thursday 02/06/2016
conclusion: Email discussion was kicked off by Riikka Susitaival (Ericsson)
on 30.05.2016.
36.323 CR [R2-164346](#) was agreed on 06.06.2016.

[94#08][LTE/CIOT] MAC CR on RACH partitioning (DOCOMO)

Intended outcome: Agreed CR to RAN (in [R2-164555](#))
Deadline: Thursday 02/06/2016
conclusion: Email discussion was kicked off by Hideaki Takahashi (NTT DOCOMO)
on 30.05.2016.
36.321 CR [R2-164576](#) was agreed on 07.06.2016.

[94#09][LTE/TEI13] ECID positioning for TDD (Qualcomm)

Intended outcome: Agreed CR to RAN
Deadline: Thursday 02/06/2016
conclusion: Email discussion was kicked off by Sven Fischer (Qualcomm)
on 29.05.2016.
Email discussion closed without having reached its intended objective
on 07.06.2016 and the issue is postponed until the next meeting.

[94#10][LTE/Latred SI] TR (Ericsson)

Update TR to reflect RAN1 LS received in [R2-164338](#)
Intended outcome: Agreed TR to submit for one step RAN approval.
Deadline: Thursday 02/06/2016
conclusion: Email discussion was kicked off by Henrik Enbuske (Ericsson)
on 31.05.2016.
TR 36.881 v0.7.1 [R2-164386](#) and TR 36.881 v0.8.0 [R2-164389](#) were agreed
on 07.06.2016.

[94#11][LTE/NB-IOT] 36.331 CR (Huawei)

Final Review of [R2-164516](#)
Intended outcome: Agreed CR for RAN
Deadline: Thursday 02/06/2016
conclusion: Email discussion was kicked off by Odile Rollinger (Neul)
on 29.05.2016.
36.321 CR [R2-164573](#) was agreed on 07.06.2016.

[94#12][LTE/NB-IOT] 36.321 CR (Ericsson)

Final Review of [R2-164518](#)
Intended outcome: Agreed CR for RAN
Deadline: Thursday 02/06/2016
conclusion: Email discussion was kicked off by Bela Rathonyi (Ericsson)
on 27.05.2016.
36.321 CR [R2-164521](#) was agreed on 08.06.2016.

[94#13][UMTS/MC enhancements] – TP capturing RAN2 agreements [Huawei]

- Agreed TP capturing RAN2 agreements ([R2-164350](#))
- Agree to LS to: RAN1, cc: RAN3 to provide RAN2 agreed TP ([R2-164352](#)) and state that from RAN2 point of view the SI is closed
- Deadline: Thursday, June 2nd

conclusion: Email discussion was kicked off by Chen jun (Huawei)
on 30.05.2016.
TP [R2-164350](#) was agreed and LS [R2-164352](#) to RAN1 approved
on 06.06.2016.

Email discussions with finalisation by Mon 06.06.2016 midnight Pacific time, i.e. Tue 07.06.2016 9am CEST:

- [94#14][LTE/CA] Intra-band contiguous CA capabilities (Nokia)
Discuss Rel-10 CR to address the issues identified [R2-163516](#), noting that Rel-12 CR will not be a true shadow. Releases can be discuss during the email.
Intended outcome: Agreed CRs for RAN
Deadline: Thursday 06/06/2016
conclusion: Email discussion was kicked off by Henttonen, Tero (Nokia) on 02.06.2016.
Email discussion closed without having reached its intended objective on 07.06.2016 and the issue is postponed until the next meeting.
- [94#15][LTE/eDRX] eDRX Paging Hyper-Frame Calculation (Samsung)
Aim to conclude the solution and develop CRs for RAN.
LS to RAN3/SA2/CT including the conclusion can be agreed if found necessary.
Note email discussion assigned to Intel but after meeting changed to Samsung by mutual agreement.
Intended outcome: Agreed CR to RAN, and approved LS if necessary
Deadline: Thursday 06/06/2016
conclusion: Email discussion was kicked off by Pravjyot Singh Deogun (Samsung) on 31.05.2016.
LS [R2-164582](#) to SA3 approved on 28.06.2016.

Email discussions with finalisation by Thu 09.06.2016 midnight Pacific time, i.e. Fri 10.06.2015 9am CEST:

- [94#16][LTE/eLAA] Running MAC CR (Ericsson)
Intended outcome: Endorsed running CR
Deadline: Thursday 09/06/2016
conclusion: Email discussion was kicked off by Mattias Bergström A (Ericsson) on 31.05.2016.
Running 36.321 CR [R2-164522](#) was endorsed on 13.06.2016.
- [94#17][LTE/eLAA] Running Stage 2 CR (Huawei)
Intended outcome: Endorsed running CR
Deadline: Thursday 09/06/2016
conclusion: Email discussion was kicked off by Yi Guo (Huawei) on 03.06.2016.
Running 36.300 CR [R2-164523](#) was endorsed on 13.06.2016.
- [94#18][LTE/eLAA] Running RRC CR (Huawei)
Intended outcome: Endorsed running CR
Deadline: Thursday 09/06/2016
conclusion: Email discussion was kicked off by Yi Guo (Huawei) on 02.06.2016.
Running 36.331 CR [R2-164524](#) was endorsed on 13.06.2016.
- [94#19][LTE/eLWA] Running stage 2 CR (Intel)
Capture agreements from this and previous meeting in the Annex and within stage 2 text as appropriate
Intended outcome: Endorsed running CR
Deadline: Thursday 09 June 2016
conclusion: Email discussion was kicked off by Sirotkin, Sasha (Intel) on 07.06.2016.
Running 36.300 CR [R2-164390](#) was endorsed on 15.06.2016.
- [94#20][LTE/eLWA] Running 36.360 CR (LG)
Capture agreements from this and previous meeting in the Annex/Coversheet and within stage 3 text as appropriate.
Intended outcome: Endorsed running CR
Deadline: Thursday 09 June 2016
conclusion: Email discussion was kicked off by SeungJune Yi (LGE)

on 02.06.2016.

Running 36.360 CR [R2-164391](#) was endorsed on 13.06.2016.

[94#21][LTE/eLWA] LS on PDCP encryption (Intel)

Intended outcome: Approved LS to SA3.

Deadline: Thursday 09/06/2016

conclusion: Email discussion was kicked off by Sirotkin, Sasha (Intel)
on 07.06.2016.

LS [R2-164557](#) was approved on 13.06.2016.

[94#22][LTE/V2V] – Running 36.300 (LG)

- Endorsed running 36.300 capturing RAN2 agreements

Deadline: Thursday 09/06/2016

conclusion: Email discussion was kicked off by Jaewook Lee(LGE)
on 30.05.2016.

Running 36.300 CR [R2-164580](#) was endorsed on 13.06.2016.

[94#23][LTE/NB-IOT] Response to SA2 on NAS timers (Vodafone)

Provide response to the action in the incoming LS [R2-164386](#)

Intended outcome: Approved LS

Deadline: Thursday 09/06/2016

conclusion: Email discussion was kicked off by Kulakov, Alexej (Vodafone)
on 02.06.2016.

LS [R2-164578](#) was approved on 13.06.2016.

[94#24][NR] Deployment scenarios text proposal (DOCOMO)

Intended outcome: Agreed TP for inclusion in TR

Deadline: Thursday 09/06/2016

conclusion: Email discussion was kicked off by Hideaki Takahashi (NTT DOCOMO)
on 03.06.2016.

TP [R2-163969](#) was agreed on 14.06.2016.

[94#25][LTE/eVoLTE] LS to RAN1 (Ericsson)

Double check the figures in the attachment.

Intended outcome: Approved LS

Deadline: Thursday 09/06/2016

conclusion: Email discussion was kicked off by Emre Yavuz (Ericsson)
on 06.06.2016.

LS [R2-164566](#) was approved and attached [R2-164579](#) was noted
on 13.06.2016.

[94#26][LTE/LATRED] – 36.300 running CR (Ericsson)

- agree to running CR

Deadline: Thursday 09/06/2016

conclusion: Email discussion was kicked off by Henrik Enbuske (Ericsson)
on 03.06.2016.

Running 36.300 CR [R2-164394](#) was endorsed on 15.06.2016.

[94#27][NR] TR update (DOCOMO)

- Update the TR based on the agreements from this week's meeting.

- Intended outcome: Endorsed version of TR

Deadline: Thursday 09/06/2016

conclusion: Email discussion was kicked off by Hideaki Takahashi (NTT DOCOMO)
on 03.06.2016.

TR 36.804 v0.1.1 [R2-164393](#) and TR 36.804 v0.2.0 [R2-164581](#) were agreed
on 15.06.2016.

Email discussions with finalisation by Thu 04.08.2016 midnight Pacific time, i.e. Fri 05.08.2016 9am CEST:

[94#28][LTE/eLWA] UL transmission (Nokia)

Summarise solutions for UL transmission over UL split bearer, capture pros and cons, and company view.

Also include discussion of whether WLAN MAC ACKs at the UE can be available to PDCP

Intended outcome: Email report to next meeting

Deadline: Thursday 04/08/2016

conclusion: Email discussion was kicked off by Henttonen, Tero (Nokia)
on 27.06.2016.

Email discussion result is provided to RAN2 #95 in [R2-164904](#).

[94#29][LTE/V2V] – Geo-location reporting (Qualcomm)

- Discuss details of zone calculation formula and configuration/mapping (including out-of-coverage)
- What is reported and triggers for reporting
- Reporting mechanisms (e.g. MAC CE vs. RRC)
- Applicability of zone concept for Mode 1

Deadline: Thursday 04/08/2016

conclusion: Email discussion was kicked off by Baghel, Sudhir (Qualcomm)
on 29.06.2016.

Email discussion result is provided to RAN2 #95 in [R2-164783](#).

[94#30][LTE/V2V] – RRC Open issues (Huawei)

- List open issues for 36.331 (2 weeks)
- Gather company inputs on open issues

Deadline: Thursday 04/08/2016

conclusion: Email discussion was kicked off by Zhenzhen (Huawei)
on 01.08.2016.

Email discussion result is provided to RAN2 #95 in [R2-164880](#).

[94#31][LTE/V2V] – Layer 2 open issues (CATT)

- Progress on open issues for layer 2 based on contributions from this meeting (except QoS)

Deadline: Thursday 04/08/2016

conclusion: Email discussion was kicked off by Fangli Xu (CATT)
on 06.06.2016.

Email discussion result is provided to RAN2 #95 in [R2-164771](#).

[94#32][LTE/eVoLTE] (CMCC)

- Capture the RAN-assisted solutions and procedures according to the agreements above as a baseline into the TR. Can use the figure 2 and 3 in this paper.
 - Capture all agreements from this meeting
- Intended outcome: agreed TP on the RAN-assisted solution.

Deadline: Thursday 04/08/2016

conclusion: Email discussion was kicked off by Chen Zhuo (CMCC)
on 04.07.2016.

Email discussion result is provided to RAN2 #95 in [R2-165218](#).

[94#33][LTE/eVoLTE] (Huawei)

Continue the email discussion until next meeting.

Use the observations and report we have achieved in [R2-164263](#).

Intended outcome: Try to address the requirements and agreed views into the TR.

Deadline: Thursday 04/08/2016

conclusion: Email discussion was kicked off by Yi Guo (Huawei)
on 05.07.2016.

Email discussion result is provided to RAN2 #95 in [R2-165508](#).

[94#34][LTE/LATRED] – 36.321 running CR (Ericsson)

- Outcome: agree to running CR

Deadline: Thursday 04/08/2016

conclusion: Email discussion was kicked off by Henrik Enbuske (Ericsson)
on 08.06.2016.

Email discussion result is provided to RAN2 #95 in [R2-165346](#).

[94#35][LTE/LATRED] – 36.331 running CR (Ericsson)

- Discussion on allowed SPS periodicity for TDD/FDD
 - Outcome: Agree to running CR
- Deadline: Thursday 04/08/2016
- conclusion: Email discussion was kicked off by Henrik Enbuske (Ericsson) on 27.06.2016.
Email discussion results are provided to RAN2 #95 in [R2-16xxxx](#) and [R2-16xxxx](#).

[94#36][UMTS/Joint UMTS-LTE] – running TP capturing RAN2 agreements (China Unicom)

- Running TP capturing RAN2 agreements to be submitted to next meeting
- Deadline: Thursday 04/08/2016
- conclusion: Email discussion was kicked off by Chen jun (Huawei) on 09.08.2016.
Email discussion result is provided to RAN2 #95 in [R2-165407](#).

[94#37][NR] Guidelines (DOCOMO)

- Discuss guidelines from [R2-163979](#) and any other guidelines proposed this meeting.
Intended outcome: Email discussion report with a recommendation for guidelines that can be captured in the TR.
- Deadline: Thursday 04/08/2016
- conclusion: Email discussion was kicked off by Hideaki Takahashi (NTT DOCOMO) on 30.06.2016.
Email discussion result is provided to RAN2 #95 in [R2-164708](#).

[94#38][NR] U plane aspects (DOCOMO)

- Develop common understanding on gains and drawbacks on the study areas 1 and 4 identified during discussion of [R2-164124](#)
- Intended outcome: Email discussion report
- Deadline: Thursday 04/08/2016
- conclusion: Email discussion was kicked off by Toru Uchino (NTT DOCOMO) on 07.07.2016.
Email discussion result is provided to RAN2 #95 in [R2-165304](#).

[94#39][NR] C plane aspects for tight interworking (Intel)

- Develop common understanding on gains and drawbacks regarding the FFS points from the discussion this week. WI rapporteur to identify which FFS topics to address
- Intended outcome: Email discussion report
- Deadline: Thursday 04/08/2016
- conclusion: Email discussion was kicked off by Palat, Sudeep K (Intel) on 22.06.2016.
Email discussion result is provided to RAN2 #95 in [R2-165012](#).

[94#40][NR] System information (Samsung)

- Develop common understanding of the basic approaches and common understanding of the gains and drawbacks regarding "system information on demand". Based on the basic approaches proposed in this meeting (other approaches may be proposed to future meetings)
- Intended outcome: Email discussion report
- Deadline: Thursday 04/08/2016
- conclusion: Email discussion was kicked off by Mangesh Abhimanyu Ingale (Samsung) on 22.06.2016.
Email discussion result is provided to RAN2 #95 in [R2-165201](#).

CRs from other WGs to be agreed/reviewed by RAN2 before RAN #72:

The following 6 RAN3 CRs to RAN2 TS 36.300 were provided by MCC on Thu 31.05.2016 for review until Fri 20.05.2016 09:00 CEST:

36.300: 6 CRs [R2-164569](#) Correction on WT Association Confirmation RAN3 (contact: Huawei) CR
36.300 13.3.00884 - F Rel-13 LTE_WLAN_radio-Core R3-160658
=> Agreed

[R2-164570](#) Correction on WT initiated WT Modification procedure RAN3 (contact: Huawei) CR
36.300 13.3.00885 - F Rel-13 LTE_WLAN_radio-Core R3-160996
=> Agreed

[R2-164571](#) Correction on flow control RAN3 (contact: Huawei) CR 36.300 13.3.00886 - F
Rel-13 LTE_WLAN_radio-Core R3-160997
=> Agreed

[R2-164567](#) Introduction Control Plane CIoT EPS Optimization RAN3 (contact: Huawei) CR 36.300
13.3.00882 - B Rel-13 NB_IOT-Core, TEI13 R3-161052
=> Agreed

[R2-164568](#) Introduction of the UE context resume function RAN3 (contact: Ericsson) CR 36.300
13.3.00883 - B Rel-13 NB_IOT-Core R3-161433
=> Agreed

[R2-164572](#) Correction of Reroute NAS Request RAN3 (contact: Nokia, Alcatel-Lucent Shanghai Bell)
CR 36.300 13.3.00887 - F Rel-13 DECOR-UTRA_LTE-Core R3-161004
=> Agreed

Preparation of status reports for SIs and WIs under RAN2 leadership for RAN #72:

Rapporteurs were asked to make draft status reports available for review on the RAN2 reflector (without Tdoc number) as soon as possible after RAN2 #94. Below the results of RAN #72 are summarized as percentage complete/target completion date/status report.

- REL-14 SI: Study on Latency reduction techniques for LTE, rapporteur: Enbuske, Henrik (Ericsson)
acronym: FS_LTE_LATRED, SID: **RP-150465** at RAN #67, TR 36.881
History: RAN #67: new/June 16/-
RAN #68: 10%/June 16/**RP-150780**
RAN #69: 25%/June 16/**RP-151286**
RAN #70: 50%/June 16/**RP-151909**
RAN #71: 60%/June 16/**RP-160206**
now: RAN #72: 100%/June 16/**RP-160875**
- REL-14 WI: RRC optimization for UMTS, rapporteur: Eklöf, Cecilia (Ericsson)
acronym: UTRA_RRCopt-Core, WID: **RP-152267** at RAN #70; revised in **RP-152267** at RAN#71
History: RAN #70: new/Sep 16/
RAN #71: 8%/Sep 16/**RP-160286**
Now: RAN #72: 70%/Sep 16/**RP-160827**
- REL-14 WI: DTX/DRX enhancements in CELL_FACH, rapporteur: Chen, Jun (Huawei)
acronym: FACH_DTXDRX-Core, WID: **RP-152286** at RAN #69; revised in **RP-152286** at RAN#71
History: RAN #70: new/June 16/-
RAN #71: 20%/June 16/**RP-160184**
Now: RAN #72: 50%/June 16/**RP-160931**
- REL-14 WI: Core part: Signalling reduction to enable light connection for LTE, rapporteur: Xiaodong YANG (Huawei)
acronym: LTE_LIGHT_CON-Core, WID: **RP-160937** at RAN #71
History: RAN #71: new/March 17/-
Now: RAN #72: 10%/March 17/**RP-161161**
- REL-14 WI: Core part: Enhanced LTE-WLAN Aggregation (LWA), rapporteur: Sasha Sirotkin (Intel)
acronym: LTE_WLAN_aggr-Core, WID: **RP-160600** at RAN #71; revised in **RP-160923** at RAN #72
History: RAN #71: new/March 17/-
Now: RAN #72: 25%/March 17/**RP-160924**
- REL-14 WI: Core part: Further mobility enhancements in LTE, rapporteur: DU, ZHONGDA (ZTE)
acronym: LTE_eMob-Core, WID: **RP-160636** at RAN #71; revised in **RP-160921** at RAN #71
History: RAN #71: new/Dec 16/-
Now: RAN #72: 25%/Dec 16/**RP-161294**
- REL-14 WI: Core part: L2 latency reduction techniques for LTE, rapporteur: Enbuske, Henrik (Ericsson)
acronym: LTE_LATRED_L2-Core, WID: **RP-160667** at RAN #71
History: RAN #71: new/ Sep 16/-
Now: RAN #72: 80%/Sep 16/**RP-161161**
- REL-14 WI: Core part: Further Indoor Positioning Enhancements for UTRA and LTE, rapporteur: Xue, Jiantao (Huawei)
acronym: UTRA_LTE_iPos_enh2-Core, WID: **RP-160538** at RAN #71
History: RAN #71: new/Dec 16/-
Now: RAN #72: 30%/Dec 16/ **RP-160779**
- REL-14 SI: Study on enhancement of VoLTE, rapporteur: Chen, Zhuo (CMCC)
acronym: FS_LTE_eVoLTE, WID: **RP-160563** at RAN #71; revised in **RP-160902** at RAN #72
History: RAN #71: new/Sept 16/-
Now: RAN #72: 75%/Sept 16/**RP-160817**
- REL-14 WI: Study on further enhancements to LTE Device to Device (D2D), UE to network relays for IoT (Internet of Things) and wearables, rapporteur: Sudhir Kumar Baghel (Qualcomm)

acronym: FS_feD2D_IoT_relay_wearable, WID: **RP-160677** at RAN #71; revised in **RP-161303** at RAN #72
History: RAN #71: new/March 17/-
Now: RAN #72: 2%/March 17/ **RP-161159**

New SIs and WIs under RAN2 leadership for RAN #72:

- REL-14 WI: Core part: Multi-Carrier Enhancements for UMTS, rapporteur: Chen, Zhuo (CMCC)
acronym: UTRA_MCe-Core, WID: **RP-161259** at RAN #72
now: RAN #72: new/Dec 16/-

Annex G: LTE Breakout session: V2V, V2X, FeD2D, LATRED

On Monday and Thursday of RAN2 #94, in parallel to the main LTE session, an LTE Breakout session on V2V, V2X, FeD2D and LATRED session was held in room (Yuhua) chaired by RAN2 vice-chairman Diana Pani (Interdigital) addressing:

On Monday:

7.5 LTE: Rel-13: WI: ProSe enhancements

8.2 LTE: Rel-14: WI: Support for V2V services based on LTE sidelink

On Tuesday:

8.8 LTE: Rel-14: WI: L2 latency reduction techniques for LTE

8.4 LTE: Rel-14: SI: Further Enhancements to LTE Device to Device, UE to Network Relays for IoT and Wearables

8.11 LTE: Rel-14: SI: Feasibility Study on LTE-based V2X Services

On Thursday:

7.5 LTE: Rel-13: WI: ProSe enhancements

8.2 LTE: Rel-14: WI: Support for V2V services based on LTE sidelink

The corresponding report of this session [R2-164420](#) was presented and approved on Friday and the contents is provided in this Annex G for convenience reasons.

7.5 WI: ProSe enhancements

(LTE_eD2D_Prox-Core, leading WG: RAN2, REL-13; started: Dec. 14, closed: Mar. 16, WID: [RP-150441](#))

WI complete from RAN2 perspective

Documents in this agenda item will be handled in the LTE Break Out session

Incoming LS:

[R2-163318](#) Reply LS to [R2-157090](#) on RAN2 agreements for inter-carrier/Inter-PLMN sidelink discovery (S2-162141; contact: Huawei) SA2 LS in
to: RAN2 Rel-13 eProSe-Ext-SA2, LTE_eD2D_Prox-Core
=> Noted

7.5.0 In Principle agreed CRs

[R2-163491](#) Corrections for sidelink description Huawei, HiSilicon, ZTE CR 36.300 13.3.00867 -
F Rel-13 LTE_eD2D_Prox-Core
=> The CR is agreed

[R2-163492](#) Miscellaneous correction for sidelink Huawei, HiSilicon, ITRI, ZTE CR 36.331 13.1.02126
- F Rel-13 LTE_eD2D_Prox-Core
=> The CR is agreed

[R2-163493](#) Corrections for conditions of sidelink operation Huawei, HiSilicon CR 36.331 13.1.02127
- F Rel-13 LTE_eD2D_Prox-Core
=> The CR is agreed

[R2-163494](#) Correction for conditions of sidelink operation Huawei, HiSilicon CR 36.304 13.1.00302
- F Rel-13 LTE_eD2D_Prox-Core
=> The CR is agreed

[R2-163495](#) Correction for sidelink Huawei, HiSilicon CR 36.302 13.1.00071 - F Rel-13
LTE_eD2D_Prox-Core

=> update reference in cover page from 36.213 to 36.214
=> The CR is agreed in [R2-164362](#) r1

[R2-163496](#) Correction for sidelink Huawei, HiSilicon CR 36.323 13.1.00163 - F Rel-13
LTE_eD2D_Prox-Core
=> The CR is agreed

[R2-163544](#) Small eSL related corrections Samsung Telecommunications CR 36.331 13.1.02134 -
F Rel-13 LTE_eD2D_Prox-Core
=> Revise with date and impact analysis
=> The CR is revised in [R2-164361](#)

[R2-164361](#) Small eSL related corrections Samsung Telecommunications CR 36.331 13.1.02134 1
F Rel-13 LTE_eD2D_Prox-Core
=> The CR is agreed

[R2-163646](#) Corrections on sidelink related description in TS36.302 CATT CR 36.302 13.1.00072 -
F Rel-13 LTE_eD2D_Prox-Core
=> delete bullet 1) in reason for change and summary of change
=> The CR is agreed in [R2-164363](#) r1 with the bullet 1) deleted from cover page

[R2-163756](#) Clarification on the usage of threshold conditions for sidelink relay UE ITRI CR 36.331
13.1.02169 - F Rel-13 LTE_eD2D_Prox-Core
=> The CR is agreed

7.5.1 Others

CRs to 36.321

[R2-163374](#) Corrections to Logical Channel Prioritisation Samsung Electronics Co., Ltd other
Proposal 1: All the MAC PDUs corresponding to an SCI should correspond to same destination layer 2 ID. The source layer 2 ID can be different in each MAC PDU.
- CATT wonders why we have multiple source Layer 2 ID. Samsung explains that there is different source layer 2 ID for different PDN connections.
- Qualcomm, Ericsson, and Panasonic think that technically this can be an optimization but we can support this scenario in a non-optimal way. Samsung would like to understand what happens when the UE has two source IDs and two different logical channels with different priority. Qualcomm thinks that this scenario will still occur. Samsung agrees that starvation can occur but because of the way we have specified it, we are causing the starvation even if the UE has the resources.
- Intel and Huawei are ok with the change
- Huawei thinks we can also optimize it as part of TEI
Proposal 2: For logical channel prioritization corresponding to an SCI, only consider sidelink logical channels not previously selected for this SC period and the SC periods (if any) which are overlapping with this SC period, to have data available for transmission
- Samsung doesn't think that the re-ordering is not an optimization but a problem that occur

Option 1: prevent re-ordering issue by preventing similar logical channels

Option 2: prevent re-ordering issue by preventing transmission of same destination

Option 3: introduce re-ordering by increasing re-ordering window

- ZTE has a preference for Option 1. Intel prefers option 1 or 2.
 - Ericsson has a preference for option 3 as no specification changes are needed.
 - Panasonic indicates that the problem only exists if we support same destination for the overlapping case and wonders why we would support this.
 - Ericsson thinks that we shouldn't make changes to the specs as it is a close WI. Chair indicates that we can make changes if we find problems with the specs (i.e. when we are not doing optimizations).
 - Ericsson still thinks that we shouldn't add an artificial restriction to the specs but rather use the existing re-ordering functionality. This would be more future proof. Panasonic thinks that this is only for mode 2 and then we would have two different behaviours.
 - Samsung thinks that if we acknowledge the issue then we should fix it properly with option 1
- => RAN2 acknowledges that the re-ordering issue exists and should be fixed

- => Prevent re-ordering issue by preventing transmission of same logical channels on overlapping SCIs
- => Noted

[R2-163375](#) Corrections to Logical Channel Prioritisation Samsung Electronics Co., Ltd CR 36.321
13.1.00855 - F Rel-13 LTE_eD2D_Prox-Core

=> The CR is revised in [R2-164492](#)

[R2-164492](#) Corrections to Logical Channel Prioritisation Samsung Electronics Co., Ltd CR 36.321
13.1.00855 1 F Rel-13 LTE_eD2D_Prox-Core

=> The CR agreed

[R2-163508](#) Corrections for sidelink logical channel prioritization Huawei, HiSilicon CR 36.321
13.1.00858 - F Rel-13 LTE_eD2D_Prox-Core

=> The CR is revised in [R2-164491](#)

[R2-164491](#) Corrections for sidelink logical channel prioritization Huawei, HiSilicon CR 36.321
13.1.00858 1 F Rel-13 LTE_eD2D_Prox-Core

- Ericsson doesn't think there is any problem to solve. Panasonic, Qualcomm think that this is a useful clarification.
- Ericsson thinks that the previous CR solved the problem.
- => Only keep one change between step 0 and 1 "For each MAC PDU associated to the SCI"
- => Update cover page with summary of change
- => The CR is revised in [R2-164494](#)

[R2-164494](#) Corrections for sidelink logical channel prioritization Huawei, HiSilicon CR 36.321
13.1.00858 2 F Rel-13 LTE_eD2D_Prox-Core

[CB]

[R2-163822](#) UL SPS and Sidelink discovery gap PANASONIC R&D Center Germany CR 36.321
13.1.00861 - F Rel-13 LTE_eD2D_Prox-Core

- => Update cover page with UE to UE impact analysis
- ZTE thinks that the "and" should be an "or". Panasonic explains that the "and" is in line with legacy gaps.
- Intel indicates that last meeting it wasn't clear why it was there for the legacy in the first place so not sure why we are adding it now. Panasonic explains that it is to be consistent with legacy.
- Samsung wonders what is the consequence if we don't add this note. Asustek indicates that they tried to remove the legacy note but it was kept so the spec is not changed. Qualcomm thinks that we should be consistent
- => the CR is revised in [R2-164364](#)

[R2-164364](#) UL SPS and Sidelink discovery gap PANASONIC R&D Center Germany CR 36.321
13.1.00861 1 F Rel-13 LTE_eD2D_Prox-Core

=> The CR is agreed

CRs to 36.331

[R2-163504](#) Correction on conditions for establishing RRC Connection for sidelink communication Huawei, HiSilicon, ITRI CR 36.331 13.1.02130 - F Rel-13 LTE_eD2D_Prox-Core

- => Impact analysis should be in summary of change
- Nokia Net and Intel wonder if the UE is acting as a relay UE can it be in idle and connected. Huawei explains that it can be in idle and in this section it is supposed to be in idle. Samsung thinks that there needs to be some cleanup as the definition of UE acting as relay requires both discovery and communication.
- => Cleanup of definitions will be done in another CR
- => The CR is agreed in [R2-164365](#) with the impact analysis placed in the summary of change

[R2-163505](#) Corrections for sidelink communication transmission Huawei, HiSilicon, ITRI, Qualcomm Incorporated CR 36.331 13.1.02131 - F Rel-13 LTE_eD2D_Prox-Core

- => Impact analysis should be in summary of change
- CATT thinks that *commTxPoolExceptional* shouldn't be included as it is for RLF cases. Huawei explains that for remote UE it can be used for idle UE.
- => The CR is agreed in [R2-164366](#) r1 with the impact analysis added in the summary of changes

[R2-163649](#) Corrections on description of commTxAllowRelayCommon CATT CR 36.331 13.1.02161
 - F Rel-13 LTE_eD2D_Prox-Core
 - Ericsson thinks that "remote UE" is not a common term used
 - LG thinks that it is clear from the procedural text that this IE is only used by remote UE so this CR may not be needed. Qualcomm checked and it is clear in the text already.
 => Agree to the change that the *commTxAllowRelayCommon* is only used by sidelink remote UE but the procedural text is sufficient
 => The CR is not pursued

[R2-163948](#) Correction to commTxResourceReqRelayUC Ericsson CR 36.331 13.1.02187 - F
 Rel-13 LTE_eD2D_Prox-Core
 - Intel wonders if this means that we will not support the multiple destinations. Ericsson explains that in the last meeting we discussed this and agreed to not add multiple destinations.
 - Samsung wonders what will happen if the ID is included multiple times. Ericsson thinks that if we don't specify anything it leaves things ambiguous.
 - Qualcomm thinks this clarification is fine given our agreement last meeting.
 - Samsung thinks that generally we specify this in the procedural text.
 - InterDigital wonders if the same clarification has to be done for the *commTxAllowRelayCommon* IE. Intel's understanding is that this will only happen for the unicast case.
 => The procedural text indicates that the UE is not allowed to include the same destination ID more than once in the *DestinationInfoList*
 => The CR is not pursued

[R2-164057](#) Small corrections of timer description for Sidelink Kyocera CR 36.331 13.1.02200 - F
 Rel-13 LTE_eD2D_Prox-Core
 - Huawei indicates that the change "upon handover and re-establishment." Was already agreed and is not needed
 => delete from CR "upon handover and re-establishment."
 => The CR is agreed in [R2-164367](#) r1 with the deletion above

[R2-164197](#) Clarification on informing availability of transmission resources for relay UE LG Electronics France CR 36.331 13.1.02215 - F Rel-13 LTE_eD2D_Prox-Core
 => Impact analysis has to be added
 - ZTE thinks that the existing text is ok or we should add a separate section to explain the stopping condition.
 - Intel is ok with the intention but we need to change the sentence.
 - Panasonic thinks a better way is to add [that it is no more configured]. LG indicates that for remote UE we changed it to whether so we should stay aligned.
 - Ericsson doesn't think this is needed. We are not very detailed with the interaction with higher layer.
 => The CR is not pursued

CRs to 36.300

[R2-163506](#) Correction on conditions for Relay and Remote UE operation Huawei, HiSilicon CR 36.300 13.3.00868 - F Rel-13 LTE_eD2D_Prox-Core
 => no need for interoperability section
 - Intel agrees with the intention but doesn't think there is a need to define out-of-coverage "and cannot detect any suitable cell". Huawei thinks that it is not clear what out-of-coverage of EUTRAN means. Ericsson agrees with Intel, the first sentence is ok. Qualcomm also thinks the second part is not needed.
 => The first part is agreeable
 => The CR is revised in [R2-164493](#)

[R2-164493](#) Correction on conditions for Relay and Remote UE operation Huawei, HiSilicon CR 36.300 13.3.00868 1 F Rel-13 LTE_eD2D_Prox-Core
 => The CR is agreed

CRs to 36.304

[R2-163507](#) Corrections on carrier frequency prioritization for PS sidelink discovery Huawei, HiSilicon CR 36.304 13.1.00304 - F Rel-13 LTE_eD2D_Prox-Core

- Intel wonders if we need a separate sentence for the public safety discovery as we have a sentence about public safety communication. This is the case for relay discovery. What about group member discovery. Qualcomm is fine with the CR as it is aligning with communication.
 - Intel would like to understand if a UE supporting PS discovery should support PS communication. QC confirms
- => The CR is agreed in [R2-164369](#) with impact analysis text moved to summary of change

Capability

[R2-163623](#)

Clarification on eD2D capability Intel Corporation discussion

- Qualcomm would like to understand what is the impact of such agreement. Intel just wants to confirm and minute the understanding.
- Huawei thinks that it is strange that Rel-13 SLSS is supported and Rel-12 SLSS is not. Qualcomm, Intel explain
- Intel clarifies that Note 1 should have been: "Note1: In case of OOC Discovery UE already supports PSDCH and R13 SLSS transmission/reception, it is assumed the UE also supports D2D discovery for in-coverage scenario **for synchronized network case**"

=> RAN2 confirms that the eD2D capabilities in Table-1 is a common understanding => Noted

[R2-163624](#)

Clarification on eD2D capability Intel Corporation CR 36.306 13.1.01323 - F
Rel-13 LTE_eD2D_Prox-Core

=> Add CR number

- Huawei thinks that this is in 36.331 and doesn't need to be in 36.306

=> The CR is agreed in [R2-164370](#) r1

[R2-163408](#)

Discussion on allocation resource conflict for unicast communication Spreadtrum Communications discussion

- Qualcomm thinks that this is a closed release and no need to optimize
- Intel thinks that this may result in ASN.1 changes and are reluctant to consider this issue in Rel-13

=> Noted

Withdrawn:

[R2-163409](#)

Source layer-2 ID for allocation resource conflict for unicast communication Spreadtrum Communications draftCR 36.331 13.1.0- - F Rel-13 LTE_D2D_Prox-Core

8.2 WI: Support for V2V services based on LTE sidelink

(LTE_SL_V2V-Core; leading WG: RAN1; started: Dec. 15; target: Sept 16; WID: [RP-160649](#))

Time budget: 1.5 TU

Documents in this agenda item will be handled in the LTE Break Out session

Incoming LSs:

[R2-163303](#)

LS on resource allocation for V2V ([R1-163906](#); contact: LGE) RAN1 LS in
to: RAN2 Rel-14 LTE_SL_V2V-Core
=> Noted

[R2-163304](#)

LS on V2X synchronization procedure ([R1-163907](#); contact: NTT DOCOMO) RAN1 LS in
to: RAN2 Rel-14 LTE_SL_V2V-Core
=> Noted

8.2.1 Geo-location aspects

How to define zones and if signalling optimizations are required

Geo-location reporting, type of signalling and what is contained in the report

[R2-163810](#)

Resource Allocation Based on Geo Information Huawei, HiSilicon discussion

- Potevio would like to understand if the zone is square or a rectangle. Qualcomm thinks that it is a configuration option and there shouldn't be any restriction and it would make sense for it to be a rectangle
 - Panasonic would like to understand if these resources are only for the road. Qualcomm wonders what is the importance of this. Huawei thinks that it can be anywhere.
 - Ericsson wonders how big this zone is. Is it on a cell level granularity. Qualcomm and Intel think that it is definitely a portion of a cell.
 - Coolpad wonders if the zone configuration is dynamic.
 - Intel wonders if this zone is for tx only or both tx and rx. Ericsson wonders if this can also be useful for rx pools, especially for V2P. Qualcomm thinks that we anyways agreed to prioritize P2V.
- => The zone concept applies only to tx pools
=> Noted

[R2-163899](#) Zone based resource allocation Nokia, Alcatel-Lucent Shanghai Bell discussion

- Intel wonders why we need to consider zone based concept for mode 1. Nokia Net thinks it can be used. Ericsson agrees with Intel.
 - Huawei has a concern for the reference point. For in-coverage the reference point can be configured by the eNB. For out-of-coverage this may be problematic and different UE can have different reference points. Nokia Net thinks it may happen, but what is important is that the calculations are done properly by the UE. Ericsson thinks that the solution should apply to both in-coverage and out-of-coverage.
 - Qualcomm thinks that there is a third option not transmit any information at all and no reference signal is needed.
- => Noted

[R2-164065](#) Zoning and Geographical information reporting for V2V Qualcomm Incorporated discussion

- Ericsson wonders if that would require the UE to download the map of the whole world. Qualcomm explains that you don't need the full map, the eNB provides information on how the world should be split. Panasonic thinks that the network should also provide mod coefficient. Qualcomm indicates that it will depend on the number of resources pools.
 - Huawei wonders why a reference point is needed if it is fixed. Qualcomm explains that it is relative so you need a point.
 - Ericsson wonders what is the UE behaviour with respect to pool partitioning. Qualcomm thinks that the UE behaviour will be the same for all solution once the zones are defined. Intel agrees with Qualcomm. Panasonic thinks that a zone will be mapped to a resource pool.
- => Noted

[R2-164102](#) UE Geographical Feedbacks for V2X Ericsson discussion

- Panasonic thinks that if we give a reference point only then we are basically giving a circle and we have to be careful to not overlap.
 - Qualcomm thinks this doesn't work for out-of-coverage. Ericsson thinks this can be pre-configured. Qualcomm thinks that this would require a large number of preconfigured.
 - Intel thinks that signalling overhead should be taken into account when considering the solution. Intel wonders how many zones would be required per cell. Qualcomm explains that according to simulations 2 zones were sufficient. Panasonic thinks that we can different number of zones based on topology and we need a solution that is flexible and we should avoid providing GPS coordinated.
 - Ericsson thinks that the solution should ensure that the eNB can disable.
- => Noted

Discussion on zone definitions:

1. **Option 2:** Zone information (length and width) and a reference point is broadcasted by eNB (1)
2. **Option 3:** The world is divided in geographical zones and the UE determines the zone with a modulo operation. Length and width is provide by the eNB. A single fixed reference point is used (e.g. 0,0)
3. **Option 4:** A reference point is associated to a pool and the UE selects the pool with the closest reference point

Agreements:

- The world is divided in geographical zones and the UE determines the zone with a modulo operation. Length and width is provide by the eNB (for in-coverage) and pre-configured for out-of-coverage. A single fixed reference point is used (e.g. 0,0). FFS on exact modulo operation formula and values (if needed)
- The zoning feature is configurable for both in-coverage and out-of-coverage.
- The feature is used at least for mode 2 operation. FFS if needed for mode 1 and how reporting for mode 1 will be done.
- The network can configure the UE to report the complete UE location information (regardless of zone configuration).
- Zone concept can be applied to out-of-coverage. FFS on how to define number of zones and pool mapping
- The zone concept applies only to tx pools

Discussion after comeback:

- Nokia Net would like to agree that we can report the zone for mode 1 as well. Coolpad agrees. Ericsson would like to discuss this further as it may want to have more information. Panasonic thinks that the same granularity may be required in both cases. The UE may move and it may not be too important to report exactly where within the zone the UE is. Intel agrees with Ericsson.
- Huawei would like to know whether the UE can report the location as well. Nokia thinks either or can be reported.
- Huawei wonders how we can map a zone to a pool if we have too many zone index. Panasonic explains that this is why we have a modulo operation, the result of the modulo operation will map to a pool. The length and width will give you an index and the modulo operation based on number of pools will be performed.
- ZTE thinks that for mode 1 this would be an optimization.
- Ericsson would like to have the option that at least the network can configure the UE to report the complete UE location information. Panasonic considers this as a possible fallback
- Nokia Net thinks we should discuss whether the zone concept can be applied to out-of-coverage and how.
- Huawei wonders if we agreed to report the zones.

☒ **[LTE/V2V] – Geo-location reporting (Qualcomm)**

- Discuss details of zone calculation formula and configuration/mapping (including out-of-coverage)
- What is reported and triggers for reporting
- Reporting mechanisms (e.g. MAC CE vs. RRC)
- Applicability of zone concept for Mode 1
- **Deadline:** one week before submission deadline

Not treated

[R2-163697](#) Remaining Issues of UE Geo-Location Reporting for PC5-based V2V Shenzhen Coolpad Technologies discussion

[R2-163824](#) Geo based Resource Allocation for V2V over PC5 ZTE Corporation discussion

[R2-163619](#) Geo-location reporting for sidelink resource allocation Intel Corporation discussion

[R2-163404](#) Discussion on the Geo-based Resource Allocation for Mode-2 V2V Operation Guangdong OPPO Mobile Telecom. discussion

[R2-163430](#) UE Geo Location Report for V2V Fiberhome Technologies Group discussion

[R2-163453](#) Necessity of geo reporting based on zone concept Samsung Electronics Co., Ltd discussion

[R2-164097](#) Geo-location resource allocation based on zones and headings Interdigital Asia LLC discussion

[R2-164216](#) Geo-Information based resource allocation LG Electronics Inc. discussion

Withdrawn:

[R2-163825](#) Geo based Resource Allocation for V2X over PC5 ZTE Corporation discussion

8.2.2 Mobility and Path switch

Including output of email discussion [93bis#24][LTE/V2V] Tx PC5 and Uu path switch for V2V – Huawei

Including output of email discussion [93bis#25][LTE/V2V] Mobility for V2V – Intel

Output of email discussions:

[R2-163620](#) Report of email discussion [93bis#25] Mobility for V2V Intel Corporation discussion result of email discussion [93bis#25]

Proposal 1: Sync and Rx resource pool configurations for the target cell can be signaled in the handover command.

- LG thinks that this information is already provided in the serving cell. Panasonic had expressed a similar view. Ericsson thinks that it is ok to include it. Panasonic wonders if we should specify what happens when the IE is not present. InterDigital has the same understanding as Panasonic.
- Samsung wonders until when the UE uses this pool, until it receives SIB18. Ericsson thinks that the configuration should be the same and there shouldn't be a big mismatch.

Proposal 2: Exceptional Tx resource pool configurations for the target cell can be signaled in the handover command.

- Ericsson wonders why we are limiting this to exceptional pool and not mode 2 pool. Intel and InterDigital explains that this the behaviour for Rel-12/13 and it makes sense to use the exceptional pool.
- Ericsson is concerned that we are defining many pools. Intel explains that we have exceptional pools in Rel-13. Samsung thinks that in addition to exceptional pool the handover command should also provide the dedicated signalling. Qualcomm explains that we are already providing the tx pool in the handover command.
- Ericsson thinks that the whole framework of exceptional pools is not needed for V2V as traffic model is quite different from Rel-12/13. Qualcomm wonders what happens for the RLF case. Panasonic thinks that exceptional pools are needed as re-establishment can take up to seconds. Ericsson thinks that we need capture UE behaviour that when the UE is using exception resources the UE needs to use sensing. The UE has to do sensing for about 1seconds before using the resources before the RLF occurs. Panasonic thinks that sensing is a problem not only for the exception resource pool but rather a general problem for every time you change the pool.
- Panasonic thinks that the network can just configure mode 2 in the handover command.
- CATT wonders what happens if no exceptional pool is provided in handover command. Intel thinks the UE will follow Rel-12/13.

Proposal 3: If the exceptional Tx resource pool is included with mode 1 configuration into handover command, the UE starts the exceptional Tx resource pool from the reception of handover command and continues it while T304 is running.

- Ericsson thinks that we should continue it until the UE receives a grant. Nokia Net doesn't know if this is possible.

Proposal 4: We need to limit Tx/Rx PC5 interruption time in cell reselection.

- InterDigital wonders why we are optimizing idle mode since we made an assumption that the UE is in connected. Intel thinks that we should consider the idle mode for V2V for inter-plmn case and out-of-coverage case.
- Ericsson thinks that we can leave it up to UE implementation to acquire the relevant SIB18 before the reselection.

Proposal 5: We don't need to further enhance to handle RLF/HO failure cases.

=> Noted

Agreements:

- Sync and Rx resource pool configurations for the target cell can be signaled in the handover command. FFS on the signalling details and UE behaviour (e.g. whether the UE has to acquire the target SIB configuration)
- For mode 1, (exceptional) Tx resource pool configurations for the target cell can be signaled in the handover command.
- If the (exceptional) Tx resource pool is included with mode 1 configuration into handover command, the UE starts the (exceptional) Tx resource pool from the reception of handover command and continues it while T304 is running
- For idle mode re-selection, it is up to UE implementation to minimize interruption time associated with SIBv2v acquisition.
- We don't need to further enhance to handle RLF/HO failure cases
- FFS on what UE behaviour is when using exceptional pool with respect to sensing

and resource selection within the pool based on the outcome of RAN1. If there is a problem we can come back to the exceptional pool discussion.

- [R2-163815](#) Summary of [93bis#24][LTE/V2V] Tx PC5 and Uu path switch for V2V Huawei, HiSilicon discussion result of email discussion [93bis#24][LTE/V2V]
- Proposal 1: E-UTRAN can configure one of the following 3 options: 1) Uu only, 2) PC5 only and 3) both Uu and PC5.*
- Qualcomm thinks that this should be for one carrier otherwise it doesn't make sense. LG doesn't want to restrict. Ericsson and Intel think that we should prioritize the case that V2V is in a dedicate carrier.
 - Intel wonders what happens for case when UEs in coverage are using Uu and there are out-of-coverage UEs. The UE can't receive. Huawei thinks that the network can take care of the configuration.
- Proposal 2: E-UTRAN considers PC5/Uu load and V2V traffic types for path selection/switch.*
- Qualcomm thinks that we don't need dynamic path switch and the UE follows network configuration.
 - Chair wonders what happens if Uu and PC5 are both configured. How does the UE decide where the data is transmitted. Intel thinks we should leave it up to UE upper layer.
 - Ericsson thinks that the application layer can decide and it can use load and other information. LG thinks we should be careful as the application layer will not be modified so we should assume there will be some upper layer function.
 - LG thinks that the eNB should control the path switch and should have the means to divide the use of the resources.
 - ZTE thinks that the eNB doesn't have the application layer and doesn't have the message type. Huawei doesn't see how the application layer can decide everything. The eNB should send some control information to the UE.
 - Ericsson thinks that we should start with something simple and see if there is anything additional needed.
 - Panasonic wonders if there is multiple applications, different paths can be selected.
 - Huawei finds it strange that the eNB would configure both and the UE decides on its own, as there should be a purpose for the eNB to provide such configuration. Intel explains that this is only from a RAN2 point of view as upper layers can decide based on other configuration/information.
 - Huawei thinks that the eNB should have control. ZTE thinks that the eNB has control by configuring both Uu and PC5.
 - Qualcomm wonders if we should tell SA2 how often the path switch is done. LG thinks that fast dynamic switching is not expected.
- => Noted

Agreements:

- The following configurations are allowed by eNB for transmission of V2V: 1) Uu only, 2) PC5 only and 3) both Uu and PC5 for V2V transmissions in different carriers.
- If both Uu and PC5 are configured for V2V transmissions, it is left up to UE upper layers which path is selected. FFS whether any additional AS information is provide to upper layers
- the eNB can configure the V2V transmission configuration in SIB and/or dedicated signalling

=> Sent LS to SA2 and RAN1: capturing agreements on path selection above. Mention RAN2 agreement that transmission of same message on both interfaces is not allowed.

- [R2-164372](#) Draft LS on V2V transmission path selection Huawei LS out to: SA2 , RAN1 from: RAN2 Rel-14 LTE_SL_V2V-Core
- => The LS is approved in [R2-164356](#)

Mobility

Not treated

- [R2-163813](#) Further discussion on mobility issues for sidelink V2V Huawei, HiSilicon discussion

- [R2-163820](#) Considerations on mobility enhancements for V2V ZTE Corporation discussion

- [R2-163420](#) Mobility Enhancements for LTE-Uu Based V2X CATT other
[R2-163452](#) Mitigation of mobility interruption for resource allocation Samsung Electronics Co., Ltd
discussion
[R2-164108](#) Enhancements to Sidelink Mobility Ericsson discussion

Cell reselection

Not treated

- [R2-163618](#) To limit Tx and Rx interruption time in cell reselection Intel Corporation discussion

Path Switching

Not treated

- [R2-163645](#) Tx PC5 and Uu Path Selection for V2V CATT other
[R2-163837](#) Some considerations on the V2V path selection between Uu and PC5 ZTE Corporation
discussion
[R2-163887](#) PC5 measurement for V2V path switch between Uu and PC5 Potevio Company Limited
discussion
[R2-164064](#) Consideration of sidelink synchronization on V2V mobility Kyocera discussion
[R2-164113](#) V2X Path Selection Ericsson discussion

8.2.3 QoS aspects

Is PPPP sufficient and does RAN need to change QoS modeling for V2V (dependent on SA2 progress/conclusions and eventual LS response)

- [R2-163819](#) QoS handling for PC5-based V2V transmission ZTE Corporation discussion
[R2-164106](#) Congestion Control in V2X Sidelink Ericsson discussion

- [R2-163811](#) Support of QoS for PC5-based V2V transport Huawei, HiSilicon discussion
[R2-164061](#) Priority handling in V2V Communication Qualcomm Incorporated discussion

8.2.4 Other

SPS aspects for mode 1 and mode 2

Pools for V2V

SPS enhancements

This to be treated with V2X

Agreements related to V2V WI from discussions/agreements in 8.11.1

- Multiple SPS configuration with different configuration parameters can be configured by eNB. Which SPS configuration is being activated/deactivated can be signalled. Details of control signalling are left to RAN1. It is FFS whether we allow multiple configurations to be active at the same time. Two options are possible:
 - o One active SPS at a time (as per LTE)
 - o Multiple SPS active at a time (SPS configuration and UE assistance information may be linked to one or more radio bearers).
- UE assistance at least on periodicity and/or timing can be provided to eNB. UE assistance can be configured by eNB. UL SPS configuration is decided by eNB. Triggering of UE assistance are FFS

For V2V WI (PC5) and V2X (Uu) conclusion:

- From a RAN2 point of view, for UL SPS, it is not necessary to send an indication to the eNB that an SPS grant will not be used. Therefore, the working assumption on "the UE can indicate to the eNB that it does not intend to transmit data before a transmission associated to an SPS configuration" is not needed.

Not treated

- [R2-164063](#) SPS for V2V Communication Qualcomm Incorporated discussion
[R2-163812](#) Enhancements for Sidelink Resource Allocation Huawei, HiSilicon discussion
- [R2-163836](#) SPS enhancements for V2V over PC5 ZTE Corporation discussion
 Moved from 8.2.1
- [R2-163451](#) UE reporting and dynamic SL SPS transmission Samsung Electronics Co., Ltd discussion
[R2-163865](#) SL SPS for V2V Innovative Technology Lab Co. discussion
[R2-164079](#) Support of Semi-Persistent Scheduling for PC5 mode 1 LG Electronics France discussion

Layer 2 protocol

Not treated

- [R2-163418](#) V2X Sidelink MAC Subheader CATT other
[R2-163419](#) New SDU Type for PC5-based V2X CATT other
[R2-164084](#) Channel aspects for PC5 V2V LG Electronics France discussion
[R2-164099](#) Layer- 2 Protocol Stack for PC5-based V2X Ericsson discussion
- [R2-163405](#) Discussion on Spectrum Resource Indication for V2V Guangdong OPPO Mobile Telecom.
 Discussion
 => The CR is revised in [R2-163405](#)
- [R2-164490](#) Discussion on Spectrum Resource Indication for V2V Guangdong OPPO Mobile Telecom.
 discussion Rel-14 LTE_SL_V2V-Core

Resource pools

Not treated

- [R2-163621](#) Resource pool management for V2X Intel Corporation discussion
[R2-164105](#) Sidelink Resource Allocation in V2X Ericsson discussion
- [R2-164101](#) DRAFT LS Reply on V2X Subscriber Information Ericsson LS out

Multi-carrier and inter-plmn

Not treated

- [R2-163814](#) Multicarrier Operation for PC5-based V2V Huawei, HiSilicon discussion
[R2-164109](#) Inter-PLMN Operations for Sidelink Ericsson discussion
[R2-163622](#) Support of multiple carriers/PLMNs Intel Corporation discussion
[R2-164100](#) Discussion on PC5 multiple carrier Ericsson discussion

Gaps

Not treated

- [R2-164111](#) On the Need of Sidelink Gaps for V2V Ericsson discussion
[R2-164218](#) Resource allocation enhancement for V2V LG Electronics Inc. discussion

- [R2-163809](#) Stage-3 issues for PC5 based V2V Huawei, HiSilicon discussion
 Discussion on new SIB
 => We will introduce new SIB for V2X
- On introducing a different logical channel:
- Panasonic thinks that we need to wait for SA2 and progress on QoS. LG thinks that it is also linked to new physical channels.
 - Huawei thinks that we don't have to wait for SA2 to discuss QoS.
- => Noted

- [R2-164070](#) Proposed CR to 36.321 on Support for V2V services based on LTE sidelink LG Electronics
 draftCR 36.321 13.1.0- - B Rel-14 LTE_SL_V2V-Core
 late
- Tdoc was not submitted during the meeting and will be treated during email discussion.
- => Withdrawn
- ☒ **[LTE/V2V] – Running 36.300 (LG)**
- Endorsed running 36.300 capturing RAN2 agreements

- Deadline: one week after the meeting
- ☒ **[LTE/V2V] – RRC Open issues (Huawei)**
 - List open issues for 36.331 (2 weeks)
 - Gather company inputs on open issues
 - Deadline: one week before the meeting
- ☒ **[LTE/V2V] – Layer 2 open issues (CATT)**
 - Progress on open issues for layer 2 based on contributions from this meeting (except QoS)
 - Deadline: one week before the meeting

8.4 SI: Further Enhancements to LTE Device to Device, UE to Network Relays for IoT and Wearables

(FS_feD2D_IoT_relay_wearable; leading WG: RAN2; REL-14; started: Mar. 16; target: Jun. 16; SID: [RP-160677](#))

Contributions should focus on evaluating scenarios in RAN2 considering progress in SA WGs. As a result of the identified scenarios and potential impacts/complexity analysis of supporting those scenarios, refine objectives of the SI accordingly.

Time budget 1TU

Documents in this agenda item will be handled in the LTE Break Out session

Incoming LS:

[R2-163327](#)

LS on REAR service requirements (S1-161605; contact: Qualcomm) SA1 LS in to: RAN2 Rel-14 REAR late

- Panasonic has many questions, like multiple PLMN, whether the network expects the relay and remote UE be visible to the network in connected mode. InterDigital clarifies that SA1 requirement state that remote and relay UE are connected to the PLMN.
- Qualcomm explains that service continuity will be supported between Rel-14 relay UEs.
- Ericsson thinks that we need to make some prioritization given the wide scope of the SA1 requirements.
- Huawei thinks we should capture: The Rel-13 backward compatibility aspects are specific to public safety and assume that SA1 is not asking to support service continuity between Rel-13 and Rel-14 UEs since there is no service continuity in Rel-13 to begin with. Intel agrees and the only new think added is ProSe. US Gov doesn't think that service continuity between Rel-13 and Rel-14 is not expected.
- Ericsson understands that SA1 no longer distinguishes between public safety and commercial use cases. Qualcomm thinks that at least for out-of-coverage the requirements are only for public safety. US gov also thinks that there is no differentiation.
- US gov explains that the remote UE is visible and in control by the network via the relay UE and there is no difference between PS and commercial.

On the backward compatibility:

- The Rel-13 backward compatibility requirement doesn't impact the scoping exercise of the RAN2 SI. The aspects are specific to public safety.
- Sony wonders what backwards compatibility really means. Panasonic doesn't think we need to consider backward compatibility and focus on pairing. Nokia Net thinks that we need to look at it. The rel-14 PS relay should support Rel-13 PS remote UEs.
- Apple doesn't see a benefit to include the backward compatibility at least for commercial case.
- US gov thinks that some of backward compatibility aspects include co-existence of Rel-13 and Rel-14 in the same spectrum. Qualcomm thinks that when we design Rel-14 we can ensure that Rel-13 operation shouldn't break when they co-exist in the same spectrum.

- Huawei thinks that we can agree that a Rel-13 UE cannot meet the SA1 requirements and the Rel-14 relay UE shouldn't be designed to ensure that a Rel-13 UE can connect to the relay UE.
- ZTE doesn't think that we should design two different solutions
- Nokia Net thinks it is too early.
- Nokia Net and Ericsson don't feel comfortable excluding the Rel-13 connecting to a Rel-14 UE.

On out-of-coverage

- Ericsson doesn't think that out-of-coverage is only for public safety. Qualcomm indicates that up to now we have only consider out-of-coverage for public safety. Ericsson thinks that we can design one solution and we can also use it for commercial. Huawei thinks that this is a plenary discussion but we should make clear that if we allow out-of-coverage commercial devices they will be controlled devices.
- => Co-existence with Rel-13 PS devices in the same spectrum will be taken into account
- => For public safety, allowing a Rel-13 UE to connect to a Rel-14 UE-to-NW relay UE will not be a primary objective of the RAN2 study item. If some mechanism can be re-used without changes, it can be discussed. There is nothing that prohibits a Rel-14 UE to implement Rel-13 features/mechanism to connect to Rel-13 UEs. Contributions can be brought if problems are identified.
- => A single mechanism should be studied and no need to differentiate between PS and commercial cases.
- => Assume that SA1 is not asking to support service continuity between Rel-13 and Rel-14 UEs since there is no service continuity in Rel-13 to begin with.
- => In line with SA1 requirement, out-of-coverage remote UE will be studied and evaluated from RAN2 perspective there is no reason to differentiate between PS and commercial use cases, with the assumption that the network will have full control to authorize out-of-coverage operation for certain UEs.
- => Noted

[R2-163982](#) On alignment of FeD2D with ProSe U.S. Department of Commerce discussion

=> The CR is revised in [R2-164374](#)

[R2-164374](#) On alignment of FeD2D with ProSe U.S. Department of Commerce, TTA discussion
Rel-14 FS_feD2D_IoT_relay_wearable

=> Noted

[R2-163949](#) Relaying scenarios for wearables Ericsson discussion

On layer 3 relaying

- Apple think that we need to consider battery consumption aspects in the solutions
- Huawei thinks that the objective is not restrictive to layer 3 relay.
- Interdigital asks if QoS was considered. Ericsson thinks that this is part of the objective
- => Assumption is that all relaying solutions can be studied. Existing SI objective is not restrictive and no need to update objective
- => Noted

[R2-163625](#) On NB-IoT scope in Rel-14 FeD2D Intel Corporation discussion

- Ericsson supports that we should consider NB-IoT. Qualcomm shares the understanding of Intel.
- LG doesn't think that there is a big gain for the relay UE to support NB-IoT to the remote UE. Intel understand that the relay UE can do both. LG thinks that eMTC is sufficient and why we should support NB-IoT.
- Sony and Nokia Net sees that there is impact to RAN1 and given time limitation we should focus and prioritize eMTC. Nokia Net thinks that we should down prioritize NB-IoT.
- Nokia Net wonders if we would also be expected to support QoS and service continuity for NB-IoT. Intel thinks it should be device agnostic.
- Qualcomm thinks that NB-IoT fits well in the power consumption requirement.
- ZTE would like to minimize the changes to the physical layer.
- LG thinks that NB-IoT doesn't support mobility and wearable devices are mobile. Huawei thinks that the mobility issues can be handle in the other NB-IoT work items.
- Panasonic wonders if this would require RAN2 to discuss all the NB-IoT RAN2 aspects and solutions of NB-IoT. Qualcomm and Intel think that Rel-13 will be baseline.
- Panasonic is concerned with the amount of things that are in scope of the study objective.

- Ericsson thinks we should add that from a technical perspective it can be beneficial to include this in the WI but there are some concerns on the other working groups and TUs. Panasonic understand that the power saving benefits were coming from the fact that the UE is connected to a relay. Is this not sufficient and we do need to also have the NB-IoT solution. Qualcomm explains that the link between UEs would be more power efficient.
- => From a RAN2 point of view and technical perspective it can be beneficial to include NB-IoT in the study. However, there are some concerns on the RAN1 and RAN2 impacts and available TUs.
- => Noted

[R2-163600](#) Wearable values to both operator and consumers Huawei, HiSilicon discussion
[R2-164066](#) [draft] LS to RAN Plenary on refined objectives of FeD2D SI for UE to Network Relays for IoT and Wearables Qualcomm Incorporated LS out

- Ericsson thinks we could have an LS translating the agreements into an objective.
- Nokia Net thinks that we should align the terminology with SA1 (e.g. evolved relay)
- Ericsson indicates that Bluetooth is not part of SA1 requirements. Qualcomm explains that if we can design non-3GPP tech agnostic way it could be fine.

=> All new agreements should be added and terminology aligned with SA1
 => The LS is revised in [R2-164376](#)

[R2-164376](#) [draft] LS to RAN Plenary on refined objectives of FeD2D SI for UE to Network Relays for IoT and Wearables Qualcomm Incorporated LS out [CB]

Not treated

[R2-163839](#) Further discussion on the working scope of R14 FeD2D ZTE Corporation discussion

[R2-163401](#) On future D2D SI - further discussion Sequans Communications discussion

[R2-163403](#) Discussion on eMTC for FeD2D Guangdong OPPO Mobile Telecom. discussion

[R2-163599](#) Further Discussion on scenarios and use cases for Wearable/IoT Huawei, HiSilicon discussion

[R2-163601](#) Feasibility of Bluetooth based solution for wearable Huawei, HiSilicon discussion

[R2-163602](#) General technical consideration on PC5 enhancement for UE-To-NW relay Huawei, HiSilicon discussion

[R2-163817](#) Discussions on NB-IOT for FeD2D Innovative Technology Lab Co. discussion

[R2-164220](#) NB-IOT for FeD2D LG Electronics Inc. discussion

[R2-163797](#) Scope of D2D Relay Enhancement ITRI discussion

[R2-163936](#) Scope and phasing of D2D Relay enhancements Sony discussion

[R2-163937](#) Consideration on L2 Relay Requirements Sony discussion

[R2-163950](#) Analysis of SA1 requirements on Wearables Ericsson discussion late

[R2-163970](#) Scope and Scenarios of Wearable devices PANASONIC R&D Center Germany discussion

[R2-164068](#) Consideration of ProSe Relay operation for wearable devices Kyocera discussion

Withdrawn:

[R2-163410](#) Considerations on L2 UE-To-NW relay technology for FeD2D Spreadtrum Communications discussion

8.8 WI: L2 latency reduction techniques for LTE

(LTE_LATRED_L2-Core; leading WG: RAN2; REL-14; started: Mar. 16; target: Sep. 16; WID: [RP-160667](#))

Time budget 1TU

Documents in this agenda item will be handled in the LTE Break Out session

8.8.1 SPS feedback

Need for feedback for SPS activation. Solutions on how to provide feedback

[R2-163671](#) Feedback for SPS activation/deactivation Samsung discussion

- Nokia Net wonders according to figure 3 the resources is only released at N+4. Samsung explains that the resource is released at N and BSR transmitted after dynamic grant.

- Nokia Net thinks that we need to discuss when we release if we have already a MAC PDU created. CATT has a similar view as Nokia Net and take UE processing time into account.

=> Noted

[R2-163698](#)

Feedback for SPS activation/deactivation Nokia, Alcatel-Lucent Shanghai Bell discussion

- LG wonders if the UE an ACK is expected for the MAC CE. Nokia Net confirms that an ACK is received. LG asks what happens if a NACK is received. Nokia Net explains that the UE has to perform retransmissions but can release the SPS resource. Huawei thinks that the UE can't release the resources immediately and has to wait for ACK. Ericsson thinks that we have two parts to consider, the configured grants and the non-adaptive retransmissions, so the configured SPS resources can be released by retransmission can continue.
- Intel wonders what the UE and eNB do during this ack waiting period. CATT thinks that the eNB can reserve the resource for a while and we don't have to so tightly align the time. LG has a different understanding. Nokia Net thinks that this is similar to the implicit release, the UE releases according the first transmission. Nokia Net thinks this is legacy behaviour. In the spec it is already stated that retransmissions can continue after SPS grant has been released.

=> Noted

[R2-163781](#)

Acknowledgements for SPS commands Ericsson discussion

- Huawei indicates that there is another solution like PUCCH. LG also has another solution based on UL grant.
- Samsung thinks that we discussed this last meeting and we decided to not have a layer 1 solution. Huawei thinks that we can have some RAN1 impacts. Samsung doesn't think that this is a small change and RAN1 has discussed this in the past. Ericsson agrees with Samsung. Ericsson considers that we have some RAN2 solutions on the table and we should consider those. Panasonic has the same understanding, it is not so easy to design a layer solution. For example, the deactivation DCI doesn't have a valid grant and RAN1 would have to design a new association. Intel also supports RAN1 solutions.

=> RAN1 specific solution have been precluded as this is a RAN2 work item

=> Noted

Discussions

Options:

1. *To trigger regular BSR upon deactivation of SPS resource when skipULTxSPS is configured*
2. *New MAC CE for SPS deactivation feedback and SPS resource is released after transmission of the new MAC CE*
3. *Padding BSR as SPS deactivation feedback and SPS resource is released after transmission of the padding BSR*
4. *PUCCH feedback*

- Samsung prefers the first solution as it is the simplest solution. Nokia Net thinks that the eNB cannot distinguish whether it is a regular BSR or not. Ericson thinks that 2 and 3 are very similar. LG wonders if for the first one the UE would trigger SR and send BSR in the dynamic grant.

=> Option 1 and 4 have been excluded

- Intel wonders when the UE release the resources and what does the eNB do. Nokia Net that we can specify similar to the implicit release.
- Intel thinks that if SPS interval is 1 then we could be delaying up to 4. Huawei thinks that we should clarify N+4. Samsung thinks that we shouldn't specify UE implementation. Some UEs may have MAC CE available and we don't need to specify any timing relation.
- CATT thinks that we don't need to MAC CE will be send in the next available SPS occasion as we can send it either in the SPS or dynamic grant.
- Intel wonders if the same MAC CE for activation can be used. Ericsson, Nokia think the same can be used.

Agreements:

- New MAC CE for SPS deactivation feedback when skipping padding feature is configured. No scheduling request is triggered.
- SPS resource is cleared after first transmission of the new MAC CE. Retransmission of MAC CE can continue after clearing the configured UL grant.

- The new MAC CE will also be used for SPS activation feedback. The same MAC CE is used (i.e. same LCHID)

- [R2-163385](#) UL SPS command feedback Fiberhome Technologies Group discussion
- [R2-163475](#) Feedback for SPS activation and deactivation CATT discussion
- [R2-163916](#) Discussion on feedback for SPS activation and deactivation Huawei, HiSilicon discussion
- [R2-164207](#) SPS feedback for SPS release LG Electronics Inc. discussion
- [R2-164217](#) Need of feedback for SPS activation LG Electronics Inc. discussion

8.8.2 Other

How to deal with retransmission colliding with SPS resources

Other stage 3 aspects

Retransmissions

- [R2-163386](#) Discussion of retransmission for short SPS period Fiberhome Technologies Group discussion
 - [R2-163785](#) Non-adaptive retransmissions for SPS Ericsson discussion
- Proposal 1 If the UE has no new UL data available, allow non-adaptive retransmissions on SPS resources based on ACK/NACK on PHICH.*
- Intel thinks we should have the same behaviour for both cases. Nokia thinks we should call it new transmission repetitions as it depends on the modelling.
- Proposal 2 If the UE has new UL data available, allow and prioritize non-adaptive retransmissions on SPS resources in case NACK is received. In case of ACK, transmit new data.*
- Proposal 3 Non-adaptive retransmissions are done based on RV0, since the eNB does not know when the UE did the initial transmission when skip-padding is configured.*
- Intel wonders how this is different in from legacy case, how does the eNB know and what is the difference. Nokia Net explains that because of the skipping the eNB doesn't know if the UE transmitted anything before and if it didn't detect anything before it can't do combining.
 - Huawei thinks that there can be an issue but not sure of the criticality of the issue. Huawei would prefer to send an LS to RAN1. Nokia Net thinks that the detectability is an issue. LG agrees with Nokia. Sequans share the concern with Huawei.
 - Ericsson thinks in the LS we should provide the solutions that RAN2 is considering about RV 0.
 - LG wonders if the UE increases the tx counter will be increased. Nokia confirms.
 - Sequans thinks that RV zero helps but it doesn't solve everything. Intel agrees with Sequans.
 - Nokia Net thinks that we can use RV 0 as a working assumption, send the LS to RAN1 and if there are any concerns we can revisit.
- Proposal 4 Adaptive retransmissions are prioritized over non-adaptive retransmissions, and are not skipped.*
- Samsung would like to see the specification changes first. Ericsson doesn't think it is very complex. CATT thinks that this is new behaviour. Ericsson thinks that this is an error case that should be handled in the specifications.
- => Noted

Agreements:

- Allow and prioritize *non-adaptive retransmissions* on SPS resources

Working assumption

- *Non-adaptive retransmissions are done based on RV0. FFS if anything additional is needed*

- => Send an LS to RAN1 (Nokia Net)
- RAN2 agreements on UL skipping.
 - RAN2 assumes that there is some UL DTX
 - Explain the problem with retransmissions

- Provide RAN2 working assumption
- Agreement: If UL data is skipped RAN2 should not generate a TB. RAN2 assumes that in this case the UCI should be sent on PUCCH. Confirm that this is possible according to existing RAN1 specs.

[R2-164375](#) Draft LS to RAN1 on RAN2 agreements on skipping UL transmissions Nokia NetworksLS out to: RAN1 from: RAN2 Rel-14 LTE_LATRED_L2-Core [CBF]

Not treated

[R2-163477](#) Retransmission issue in short SPS interval CATT discussion

[R2-163626](#) HARQ retransmissions for short SPS interval Intel Corporation discussion

[R2-163703](#) Retransmission collision with SPS occasion Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-163913](#) Collision of new transmission and retransmission in short SPS period Huawei, HiSilicon discussion

TDD

[R2-163478](#) TDD issue in short SPS interval CATT discussion

=> Revised in [R2-164299](#)

[R2-164299](#) TDD issue in short SPS interval CATT discussion

=> Noted

Agreements:

- SPS configuration is not optimized for TDD. The UL SPS occasion calculation formula is used.
- Two-interval configuration should not be configured for TDD with SPS interval shorter than 10ms.
- The restriction of 10 subframes boundary is only applicable for the SPS interval longer than 10ms
- All the subframes including both UL subframes and DL subframes are considered as potential UL SPS subframes. If one UL SPS subframe calculated according to the SPS occasion calculation formula is a downlink subframe or a special subframe, the UE will skip this UL SPS occasion

[R2-163795](#) TDD SPS configuration Ericsson discussion

- Huawei prefers to use the existing formula.

=> Noted

[R2-163914](#) Short SPS period in TDD Huawei, HiSilicon discussion

=> Noted

UCI problem

[R2-163692](#) UCI transmission when UE skips empty BSR Nokia, Alcatel-Lucent Shanghai Bell discussion

- Intel thinks that the RAN1 specs state "transmitting" and not "allocated" in section 10.1

=> If UL data is skipped RAN2 should not generate a TB, the UCI should be sent on PUCCH

UL DTX detection

Not treated

[R2-163695](#) UL lost handling when UE configured to skip padding BSR Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-163861](#) Discussion on DTX and HARQ ZTE Corporation discussion

[R2-163915](#) Problem of UL DTX detection Huawei, HiSilicon discussion

[R2-164116](#) On issues with skipping of UL padding transmissions Sequans Communications discussion

[R2-163792](#) Periodic BSR in SPSEricsson discussion

DRX

Not treated

[R2-163699](#) Impact on DRX with pre-scheduling and short SPS periodicity Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-163912](#) DRX optimization for short SPS period Huawei, HiSilicon discussion

[R2-163771](#) Considerations on the SPS resource efficiency Fujitsu discussion

SPS periodicity/configuration

Not treated

[R2-163793](#) SPS interval alignment Ericsson discussion

[R2-163911](#) Short SPS periodicity values Huawei, HiSilicon discussion

[R2-163917](#) Implicit SPS release under UL grants skipping Huawei, HiSilicon discussion

[R2-163918](#) PUSCH resource waste in case of short SPS period Huawei, HiSilicon discussion

CRs

Not treated

[R2-163838](#) Introduction of L2 Latency reduction techniques Ericsson draftCR 36.300 13.3.0- -
Rel-13 LTE_LATRED_L2-Core

[R2-163942](#) Introduction of L2 Latency reduction techniques Ericsson draftCR 36.321 13.1.0- - B
Rel-14 LTE_LATRED_L2-Core

[R2-163943](#) L2 Latency reduction techniques Ericsson draftCR 36.321 13.1.0- - B Rel-14
LTE_LATRED_L2-Core

[R2-163672](#) Text proposal to capture muting behaviour in 36.321 Samsung discussion

[R2-163944](#) Introduction of L2 Latency reduction techniques Ericsson draftCR 36.331 13.1.0- - B
Rel-14 LTE_LATRED_L2-Core

[R2-164090](#) TDD configurations with skip padding and short intervals Ericsson draftCR 36.321
13.1.0- - B Rel-14 LTE_LATRED_L2-Core

☒ [LTE/LATRED] – 36.300 running CR (Ericsson)

- agree to running CR
- one week after meeting

☒ [LTE/LATRED] – 36.321 running CR (Ericsson)

- Outcome: agree to running CR
- two weeks before next meeting

☒ [LTE/LATRED] – 36.331 running CR (Ericsson)

- Discussion on allowed SPS periodicity for TDD/FDD
- Outcome: Agree to running CR
- two weeks before next meeting

8.11 SI: Feasibility Study on LTE-based V2X Services

(FS_LTE_V2X; leading WG: RAN1; started: June. 15; target: June 16; SID: [RP-151109](#))

Time budget: 2TU

Documents in this agenda item will be handled in the LTE Break Out session

Including output of email discussion [93bis#26][LTE/V2X] – TP capturing RAN2 agreements

[R2-164358](#) TP on UL SPS agreements and other agreements LG
=> Remove changes on changes

[R2-164495](#) TP on UL SPS agreements and other agreements LG
[CBF]
[R2-164357](#) TP on DL enhancements Huawei

- Ericsson would like to understand why SC-PTM SIB20 reading delay is 0. Huawei thinks that the SIB can be read later and in MBMSFN would have to read SIB first. Ericsson wonders what happens if MCCH is different.
 - Nokia Net doesn't think that a single TMGI may not solve the control plane latency due to mobility is a problem for per-location TMGI. We should clarify that for MBSFN this issue can exist for same or different TMGI. ZTE agrees. Ericsson thinks that this also depends on the size of the MBSFN area, in small areas it may be a problem but in large areas it may also not be an issue.
- => Discuss the following update:
- For SC-PTM, the control plane latency due to mobility is a problem for per-location TMGI. The control plane latency due to mobility is not a problem when using common G-RNTI.
 - For MBSFN, the control plane latency due to mobility may be a problem for common or per-location TMGI when the MBSFN area is small.

=> The TP is revised in [R2-164496](#)

[R2-164496](#) TP on DL enhancements Huawei
[CB]

☒ **[LTE/V2X] – TP with RAN2 agreements (LG)**

- Agree to merged final TP capturing RAN2 agreements
- Agree to LS to RAN1 and state that from RAN2 point of view the study item can be closed
- Deadline: Wednesday, June 1st

Incoming LS:

[R2-163315](#) LS on EPC procedures for providing eNB with V2X authorization information (S2-162248; contact: LGE) SA2 LS in to: RAN2 Rel-14 FS_V2XARC
=> Noted

[R2-163319](#) LS on V2X multicarrier configuration ([R1-163746](#); contact: Ericsson) RAN1 LS in to: RAN2 Rel-14 LTE_SL_V2V-Core
late
=> Noted

[R2-163321](#) Reply LS to S2-162248 = [R2-163315](#) on EPC procedures for providing eNB with V2X authorization information (S1-161587; contact: LGE) SA2 LS in cc: RAN2 Rel-14 LTE_SL_V2V-Core
late
=> Noted

[R2-163324](#) Reply LS to S1-154509 on V2X message characteristics (S3-160777; contact: TNO) SA3 LS into: RAN2 Rel-14 FS_V2XLTE
late
=> Noted

8.11.1 UL enhancements

UL SPS enhancements

- [R2-163807](#) Discussion on CAM characteristics Huawei, HiSilicon, InterDigital, LG Electronics Inc., OPPO discussion
- Ericsson wonders if we need to cover more than what we already captured last meeting. If we want to be specific we can maybe just copy the ETSI specs.
 - ZTE thinks that CAM message is variable but we can divide in two parts one with safety one without safety.
 - Qualcomm thinks that we should capture some of this observation but we shouldn't copy the ETSI specs and not be too detailed. InterDigital thinks that the implications of the ETSI rules to RAN should be covered.
 - Intel thinks that capturing the proposal is sufficient.
 - Oppo thinks that we should capture some of the implications of ETSI.
 - Nokia Net thinks that we should agree that CAM messages are periodic but can change from time to time.
 - Qualcomm suggests to reference the ETSI spec and capture observation 1, 2, 3, and 7. Ericsson thinks that we should explain what first and second triggering conditions are.

Huawei thinks that to be complete we should mention DCC. Ericsson thinks DCC is an additional complication.

Additional observation: Due to V2X traffic pattern occasionally some SPS occasions will not be used

- CATT thinks that this is the case for all traffic patterns and it is not specific to V2X and maybe doesn't need to be captured. Ericsson thinks that VoIP is more predictable and this situation may happen more often. CATT thinks that we should capture just a general observation. Panasonic thinks that observation 5 also captures this.
- Chair thinks we can keep this in mind when analysing different solutions

=> Add reference to ETSI spec. Add brief description of the two triggering condition and capture observations 1, 2, 3, 5, and 7

=> The TP is updated in [R2-164377](#)

[R2-164377](#) Discussion on CAM characteristics Huawei, HiSilicon, InterDigital, LG Electronics Inc.,
OPPO discussion Rel-14 FS_LTE_V2X

- Ericsson thinks we should add the case for low speed
 - Intel thinks that we should stick to capturing to what we agreed.
 - Ericsson thinks that we should capture sentence in urban case the vehicle dynamics are more varying in high speeds and periodicity can vary
- => change the wording to "when the vehicle is travelling at a relatively stable speed within a certain range which depends on vehicle speed"

=> The text can be put in the annex

=> The TP is revised in [R2-164497](#)

[R2-164497](#) Discussion on CAM characteristics Huawei, HiSilicon, InterDigital, LG Electronics Inc.,
OPPO discussion Rel-14 FS_LTE_V2X
[CBF]

[R2-163840](#) SPS enhancements for V2X over Uu ZTE Corporation discussion

Proposal 1: Configuring multiple SPS processes with different configuration parameters shall be supported.

- Panasonic wonders if only one SPS configuration is active at a time and we should consider making it radio bearer. LG thinks that we should have simultaneous configuration for VoIP and CAM for example.
- Intel and Ericsson think that we should have one SPS active at a time. Huawei agrees and if there is some size mismatch dynamic scheduling can be used.
- LG wonders what happens if we have two types of periodic traffic with different periodicity. Panasonic thinks that one consequence that dynamic scheduling may have to be used.
- Qualcomm indicates that even for the same logical channel we can have different message sizes.
- Samsung thinks that one consequence of multiple SPS is that the UE would have to maintain different queues per message type.
- Ericsson thinks that in the assistance information we should provide which type of channel the periodicity is for.

Proposal 2: The legacy SPS activation and release mechanism can be reused for the case of multiple SPS process and the UE could be told which SPS process is activated or released based on different SPS C-RNTIs.

Proposal 3: UE may report the preferred periodicity and subframe offset to eNB, and the eNB may configure the SPS resources accordingly. In this way, the SPS configuration by eNB could be aligned with UE's current V2X transmission needs.

- Nokia Net wonders how the UE determines the desired periodicity and whether it is really feasible for the UE to know this. ZTE considers that the application layer can make the suggestions based on internal information.
- Huawei thinks that periodicity should be left to eNB implementation. Ericsson has the same understanding as Huawei and Nokia and we should list the implications.
- Qualcomm thinks that to have any predictability the UE has to be involved and if we leave it up to eNB it is too late and SPS would not be useful. LG thinks that it is still unclear if the UE can estimate periodicity. BSR can may be used. Interdigital agrees with Qualcomm. For the timing changes it would be impossible to know for the eNB. Panasonic agrees that the UE is the best place to know. Samsung, ITL and Oppo also agrees.

- Potavio thinks that UE is the node that has the information and some assistance makes sense the eNB can make the final decision.
 - Ericsson thinks that it is important to notify the eNB when SPS occasions are not lost
 - Panasonic wonders if message size can also be suggested. LG thinks that maybe can just rely on existing BSR. Huawei agrees and BSR can be used to determine message size. Panasonic doesn't see how BSR can be used for PC5 as we report a buffer for all logical channels. BSR triggers are based on when new data is available and if we rely on periodic BSR then periodicity needs to be quite small. Huawei agrees that timing assistance can be provided but periodicity is not a problem. CATT thinks that a one shot assistance information is more efficient and if we are sending the timing information we can also include the periodic information.
 - Qualcomm thinks that we should design UL SPS with both V2V and V2X in mind and a similar solution should be used.
 - Ericsson thinks that we should limit the reporting and have triggers based on some history.
- Proposal 4: The UE can send preferred SPS time pattern by MAC CE or RRC signalling. When UE's geographical position, speed, direction changes, the SPS configuration for V2X can be updated based on the SPS time pattern.*
- LG thinks that MAC CE is a better option.

Proposal 5: The UE can adopt dynamic scheduling to request resource allocation when the SPS resource is not available.

- Potavio wonders how long the UE is expected to use dynamic scheduling

=> Noted

R2-164112

SPS Enhancements for Uu Operations in V2X Ericsson discussion

To limit resource wastage, the UE should inform the network when SPS resources are not used, e.g. on control signalling, both for PC5 and Uu

- LG thinks that Uu SPS we already have some mechanism to release the resources but for PC5 we don't have such mechanism.
- Huawei wonders if we have multiple SPS active then is really necessary. Ericsson explains that for this reason we actually need this proposal as some SPS resources will not be used.
- Intel thinks that we agree to enhance SPS because there is some periodicity and regularity. If the traffic is dynamic then we shouldn't have any SPS enhancements. Huawei agrees.
- Huawei thinks that legacy SPS mechanisms allows for some wasted resources.
- CATT wonders how quickly the network needs to be informed and how many occasions will be missed. Ericsson thinks that the notification can be done a 4 or 5ms before. Samsung thinks that the wastage is not happening very often then there is no point to have this notification and if it is happening very often then there is no need to have a SPS configuration.
- Ericsson thinks that we shouldn't revisit RAN1 agreements. Huawei thinks that we have RAN2 enhancements now and the RAN1 solution is not as useful anymore.
- LG thinks that for PC5 the eNB can't know that the UE has released. Intel thinks this if on a per SPS occasion and it is over-specified.

After come back

- LG summarizes that the majority of companies don't think the RAN1 working assumption is needed.
- Can we capture: For the study, capture the solution that to limit resource wastage, the UE should inform the network when SPS resources are not used, e.g. on control signalling, both for PC5 and Uu and pros/cons
- Intel wonders if we should capture only agreeable solutions. Ericsson thinks that it would mean that we need to revisit the solutions already in the TR. Nokia Net agrees with Intel.

=> The majority of companies agree that from a RAN2 point of view, for UL SPS, it is not necessary to send an indication to the eNB that an SPS grant will not be used. Therefore, the working assumption on "the UE can indicate to the eNB that it does not intend to transmit data before a transmission associated to an SPS configuration" is not needed.

=> Noted

[R2-164082](#) Proposed TP for UL SPS enhancements LG Electronics, InterDigital, OPPO, Huawei discussion
=> Not treated

Agreements:

UL SPS

- For V2V WI and V2X, Multiple SPS configuration with different configuration parameters can be configured by eNB. Which SPS configuration is being activated/deactivate can be signalled. Details of control signalling are left to RAN1. For V2V, it is FFS whether we allow multiple configurations to be active at the same time.
- For V2X, we will capture the two options are possible, one active SPS at a time (as per LTE) and multiple SPS active at a time (SPS configuration and UE assistance information may be linked to one or more radio bearers).
- For V2V WI and V2X, UE assistance at least on periodicity and/or timing can be provided to eNB. UE assistance can be configured by eNB. UL SPS configuration is decided by eNB. Triggering of UE assistance can be discussed as part of stage 3 discussions.
- For V2X study item:
Capture the solution in the TR: the UE can inform the network when SPS resources are not used, e.g. on control signalling
- The TP will capture pros and cons of the identified solutions

For V2V WI (PC5) and V2X (Uu) conclusion:

- From a RAN2 point of view, for UL SPS, it is not necessary to send an indication to the eNB that an SPS grant will not be used. Therefore, the working assumption on "the UE can indicate to the eNB that it does not intend to transmit data before a transmission associated to an SPS configuration" is not needed.

=> LS to RAN1 (LG)

- The majority of companies agree that from a RAN2 point of view, for UL SPS, it is not necessary to send an indication to the eNB that an SPS grant will not be used. Therefore, the working assumption on "the UE can indicate to the eNB that it does not intend to transmit data before a transmission associated to an SPS configuration" is not needed.

[R2-164378](#) Draft LS to RAN1 on SPS LG LS out to: RAN1 from: RAN2 Rel-14
LTE_SL_V2V-Core
Rel-14

- Huawei thinks we should just capture the agreement box

=> Update WI code to V2V

=> Keep first part of the text capturing majority of companies view and then include the full RAN2 agreement box

=> The LS is approved in [R2-164359](#)

Not treated

[R2-163406](#) Discussion on SPS Enhancements for V2X Guangdong OPPO Mobile Telecom. discussion

[R2-163421](#) Consideration on SPS Enhancement CATT other

[R2-163885](#) UE assisted information for SPS Potevio Company Limited discussion

[R2-163900](#) Multiple inter-dependent UL SPS occasions Nokia, Alcatel-Lucent Shanghai Bell discussion

- CATT thinks that this is a reasonable solutions and it would more flexibility and it would minimize impacts.
- Panasonic wonders how early in advance does the UE need to do this to give enough time to the eNB to give the resource to another UE.
- Coolpad wonders if this solution is already somehow included in the multiple SPS. Oppo wonders if this solution can also be used for V2V.

=> Noted

8.11.2 DL enhancements

Improvements of MBMS/SC-PTM services on the basis of UE geographical location (whether there is a need for a specific AS mechanism or the application layer mechanism is sufficient), MBMSFN latency, and other DL enhancements.

- [R2-164107](#) V2X Message Provisioning for MBMS Ericsson discussion
- LG thinks we should also capture that the same G-RNTI can be used across cells. Ericsson thinks that this can be implementation. Huawei explains that if it is the same the UE doesn't have to acquire cell information. Ericsson wonders if we would lose some flexibility in terms of message provisioning. LG thinks that we have different options.
- => Noted

- [R2-163898](#) Discussion on operational aspects of MBMS with MBSFN and SC-PTM Nokia, Alcatel-Lucent Shanghai Bell discussion
- Huawei agrees with the observations
 - LG and Ericsson don't think the observations need to be captured at this point. There were other analysis on MBMS and SC-PTM that were not captured.
- => No intention to prioritize at this point in time.
- => Noted

Not treated

- [R2-163798](#) Utilizing UE location information for V2X using MBMS ITRI discussion
- [R2-163804](#) Discussion on Uu-based V2X reception Huawei, HiSilicon discussion
- [R2-163844](#) Mobility enhancement under localized MBMS deployment ZTE Corporation discussion

Control plane latency reductions

- [R2-164073](#) Potential enhancement for MBMS Control Plane latency reduction LG Electronics discussion
- Intel thinks that the SIB acquisition time in idle mode was addressed already in V2V. The difference here is that we need to consider the MCCH acquisition. LG thinks we need to consider connected mode as well.
 - Ericsson is not sure how big the problem is and what we can really optimize. From their point of view the main delay is from SIB acquisition.
 - LG thinks that this is a critical problem. The UE may lose up to 50ms of data when switching MBSFN subframes.
 - Intel sees a discrepancy between LG and Ericsson analysis. In Ericsson is not a big problem. LG explain that ericsson doesn't include SIB/MIB. Ericsson thinks that maybe only SIB acquisition delay reduction could be sufficient. SIB acquisition delay reduction would imply less efforts from RAN2 perspective.
 - ZTE thinks that the neighbour cell SIB should be included in the serving cell SIB
 - Nokia Net wonders how the UE knows which PDCCH to read, the UE to acquire the information on SIB. Ericsson thinks that in multiple TMGI case we still need to acquire the SIB.
 - LG thinks that we should at least capture the observation that for MBSFN we may lose some packets. Ericsson wonders what losing some packets means. Qualcomm thinks that this is only a problem for the multiple TMGIs so one solution is to use a single TMGI.
 - Ericsson thinks that MCCH acquisition delay can be reduced by UE implementation in idle mode.
 - Intel wonders which MCCH repetition period will be used in the latency analysis. LG indicates that Ericsson has used a lower repetition period. Ericsson thinks we should take into account the previous agreements.
- => Capture a latency analysis using new repetition and periodicity value and the current allowed values. Companies to agree on the set of values to be used. Identify the two sources of delay (SIB and MCCH). Capture the agreement from V2V that UE implementation can be used to reduce the SIB acquisition delay for idle mode. This is a problem for per location TMGI.
- => Noted

- [R2-164110](#) On MBMS Latency Ericsson discussion
- => Noted

[R2-164081](#) Proposed TP capturing solutions for DL broadcast enhancements LG Electronics France discussion
=> TP is revised in [R2-164360](#)

[R2-164360](#) Proposed TP capturing solutions for DL broadcast enhancements LG Electronics France discussion
=> Not treated

[R2-164103](#) MBMS Enhancements for V2X Ericsson discussion
=> Noted

Agreements:

- Capture in the TR that single TMGI across cell(s) or MBSFN area or per location TMGIs are possible. The actual solution will depend on SA2 and RAN3 discussions.
- For SC-PTM, a single G-RNTI can be common across cells(s)
- TMGI and G-RNTI are configurable by the network.

Inter-PLMN

Not treated

[R2-163422](#) Inter-PLMN V2X Downlink Reception CATT other

[R2-163806](#) Further Consideration on inter-PLMN operation for Scenario 2 Huawei, HiSilicon discussion

[R2-163841](#) DL enhancement for supporting inter-PLMN operation ZTE Corporation discussion

[R2-163843](#) [Draft] LS on DL Inter-PLMN operation for V2X ZTE Corporation discussion

8.11.3 Mobility enhancements

Need for mobility enhancements not targeting V2V, etc.

Not treated

[R2-163799](#) Discussion on mobility enhancement for V2X ITRI, National Taiwan University discussion

[R2-164074](#) Potential mobility enhancements for V2X LG Electronics France discussion

8.11.4 Other

Output of email discussions:

[R2-163650](#) TP for TR36.885 capturing RAN2#93bis agreements LG Electronics Inc. discussion related with email discussion [93bis#26][LTE/V2X]
-agreed already in email discussion?

=> The TP is agreed

[R2-164221](#) Draft LS to RAN1 on RAN2 agreements related to V2X LG Electronics Inc. LS out related with email discussion [93bis#26][LTE/V2X]
late

=> Update the LS to only state: RAN2 has agreed to a TP and ask RAN1 to kindly include the TP into the TR

=> LS is updated in [R2-164371](#)

[R2-164371](#) Draft LS to RAN1 on RAN2 agreements related to V2X LG Electronics Inc. LS out related with email discussion [93bis#26][LTE/V2X] Rel-14 FS_LTE_V2X

=> The LS is approved in [R2-164373](#)

[R2-163423](#) LTE-Uu Based V2X Uplink Latency Evaluation and Downlink Latency Evaluation CATT other

- LG wonders if it is important to capture separate latency

- Intel doesn't see the real need

=> Noted

Congestion control

[R2-163772](#) Considerations on congestion control for the case with high density of UEs Fujitsu discussion

- [R2-163808](#) Congestion Control for Uu and PC5 based V2X transmission Huawei, HiSilicon discussion
 - LG thinks that this can be discussed in the WI phase and SA2 also needs to discuss this
 => Noted

V2P

- [R2-164080](#) Potential enhancements for V2P LG Electronics France discussion
 - LG wonders if the functionality of geo-location reporting can also be used for V2P.
 Qualcomm indicates that for V2V it was for resource allocation now we are extending it for other reasons.
 => Noted

- [R2-164098](#) Power Consumption Aspects for V2P Interdigital Asia LLC discussion
 - LG supports proposal 2.
 - Qualcomm supports proposal 1, but for proposal 2 we agreed to prioritize P2V. LG thinks that for PC5 is not just for V2P.
 - LG wonders if P UE needs to do sensing. It would be beneficial for power saving that the P UE doesn't perform sensing, so a different pool can be beneficial.
 - Ericsson indicates that RAN1 has agreed that at least random selection for resource allocation is beneficial and sensing is still FFS.
 => Noted

- [R2-164083](#) Proposed TP capturing solutions for V2P service LG Electronics France discussion
 => Not treated

V2I

- [R2-163805](#) Discussion on V2I transport based on PC5 Huawei, HiSilicon discussion
 - LG wonders if unicast is really essential for the two use cases considering that the broadcast is already supported. LG thinks that we don't need to optimize for unicast. Huawei thinks that it comes for free and if we want to support it we can use some of the Rel-13 solutions.
 - Ericsson thinks that mechanism is based on broadcast
 - LG explains that DSRC is based on broadcast only
 - Qualcomm is not clear why we need unicast, and if it is needed upper layer can do that.
 - Intel reminds that according to latency analysis unicast couldn't meet the requirement.
 => The design will be based on broadcast mechanism. RAN2 will not optimize for unicast case.
 => Noted

Other

- [R2-164104](#) Other Uu Enhancements for V2X Ericsson discussion
 => Noted

- [R2-164199](#) New QCI for V2X LG Electronics Inc. discussion
 - Intel wonders why 10^{-3} is proposed.
 - Ericsson supports the proposals.
 - Panasonic thinks that we should wait for an LS. Huawei thinks that we are not the experts of deciding these values. LG just wanted to confirm.
 => No need to send anything to SA2 until they ask us
 => Noted

- [R2-164201](#) Draft LS on new QCI values for V2X LG Electronics Inc. LS out
 => Not treated

LS response

On the pools for V2X, P2X, I2X

- A separate pool for each of them
 - A common pool for all cases
 - A common pool for V2X and I2X and one pool for P2X
- Panasonic wonders what we are trying to achieve. LG considers at least power savings and latency.
 - Panasonic thinks we should avoid fragmentation of pools as much as possible.
 - Ericsson suggests that we can agree that we have a solution which allows a pool to be mapped to a service/type of UEs. Panasonic wonders how the access stratum knows

about the service. Qualcomm doesn't see a need for different pools as we have the priority framework for that.

- ZTE thinks that a separate pool for P2X can be beneficial for power saving.
- Intel thinks that we a full view before we decide to differentiate pools, we already have too much pool segregation.
- Panasonic wonders if we can have a common pool and the P2V UEs just don't do sensing.

=> A common pool is used for V2X and I2X. FFS whether a separate pool is needed for P2X or the common pool can be used. We will wait for RAN1 to finish their discussion on sensing.

=> Noted

[R2-164204](#) V2X authorization LG Electronics Inc. discussion

=> Not treated

[R2-164208](#) Draft reply LS on EPC procedures for providing eNB with V2X authorization information LG Electronics Inc. LS out

- CATT wonders if we should differentiate for the stationary devices.

=> Answer for the second one should capture that RAN2 and RAN1 are still discussing PC5 resource pools

=> LS is updated [R2-164379](#)

[R2-164379](#) Draft reply LS on EPC procedures for providing eNB with V2X authorization information LG Electronics Inc. LS out Rel-14 FS_LTE_V2X

=> The LS is approved in [R2-164498](#)

Agreed outgoing LS

[R2-164356](#) LS on V2V transmission path selection RAN2 LS out to: SA2, RAN1, RAN3
from: RAN2 Rel-14 LTE_SL_V2V-Core

[R2-164359](#) LS to RAN1 on SPS RAN2 LS out to: RAN1 from: RAN2 Rel-14
LTE_SL_V2V-Core

[R2-164373](#) Draft LS to RAN1 on RAN2 agreements related to V2X RAN2 LS out
related with email discussion [93bis#26][LTE/V2X] Rel-14 FS_LTE_V2X

[R2-164498](#) Draft reply LS on EPC procedures for providing eNB with V2X authorization information RAN2 LS out to: SA2 cc: RAN1, RAN3, SA1 from: RAN2 Rel-14
FS_LTE_V2X

Comeback on Friday

[R2-164375](#) Draft LS to RAN1 on RAN2 agreements on skipping UL transmissions Nokia Networks LS out to: RAN1 from: RAN2 Rel-14 LTE_LATRED_L2-Core
[CB]

[R2-164494](#) Corrections for sidelink logical channel prioritization Huawei, HiSilicon CR 36.321
13.1.00858 2 F Rel-13 LTE_eD2D_Prox-Core
[CB]

[R2-164376](#) [draft] LS to RAN Plenary on refined objectives of FeD2D SI for UE to Network Relays for IoT and Wearables Qualcomm Incorporated LS out
[CB]

[R2-164495](#) TP on UL SPS agreements and other agreements LG
[CB]

[R2-164496](#) TP on DL enhancements Huawei
[CB]

[R2-164497](#) Discussion on CAM characteristics Huawei, HiSilicon, InterDigital, LG Electronics Inc., OPPO discussion Rel-14 FS_LTE_V2X
[CB]

E-mail discussion for the meeting

- ☒ **[LTE/LATRED] – 36.300 running CR (Ericsson)**
 - agree to running CR
 - one week after meeting
- ☒ **[LTE/LATRED] – 36.321 running CR (Ericsson)**
 - Outcome: agree to running CR
 - two weeks before next meeting
- ☒ **[LTE/LATRED] – 36.331 running CR (Ericsson)**
 - Discussion on allowed SPS periodicity for TDD/FDD
 - Outcome: Agree to running CR
 - two weeks before next meeting
- ☒ **[LTE/V2V] – Geo-location reporting (Qualcomm)**
 - Discuss details of zone calculation formula and configuration/mapping (including out-of-coverage)
 - What is reported and triggers for reporting
 - Reporting mechanisms (e.g. MAC CE vs. RRC)
 - Applicability of zone concept for Mode 1
 - **Deadline:** one week before submission deadline
- ☒ **[LTE/V2V] – Running 36.300 (LG)**
 - Endorsed running 36.300 capturing RAN2 agreements
 - **Deadline:** one week after the meeting
- ☒ **[LTE/V2V] – RRC Open issues (Huawei)**
 - List open issues for 36.331 (2 weeks)
 - Gather company inputs on open issues
 - **Deadline:** one week before the meeting
- ☒ **[LTE/V2V] – Layer 2 open issues (CATT)**
 - Progress on open issues for layer 2 based on contributions from this meeting (except QoS)
 - **Deadline:** one week before the meeting
- ☒ **[LTE/V2X] – TP with RAN2 agreements (LG)**
 - Agree to merged final TP capturing RAN2 agreements
 - Agree to LS to RAN1 and state that from RAN2 point of view the study item can be closed
 - **Deadline:** Wednesday, June 1st

Summary of Agreements on Rel-13

Agreements on Wearables

- Co-existence with Rel-13 PS devices in the same spectrum will be taken into account
- For public safety, allowing a Rel-13 UE to connect to a Rel-14 UE-to-NW relay UE will not be a primary objective of the RAN2 study item. If some mechanism can be re-used without changes, it can be discussed. There is nothing that prohibits a Rel-14 UE to implement Rel-13 features/mechanism to connect to Rel-13 UEs. Contributions can be brought if problems are identified.
- A single mechanism should be studied and no need to differentiate between PS and commercial cases.

- Assume that SA1 is not asking to support service continuity between Rel-13 and Rel-14 UEs since there is no service continuity in Rel-13 to begin with.
- In line with SA1 requirement, out-of-coverage remote UE will be studied and evaluated from RAN2 perspective there is no reason to differentiate between PS and commercial use cases, with the assumption that the network will have full control to authorize out-of-coverage operation for certain UEs.
- Assumption is that all relaying solutions can be studied. Existing SI objective is not restrictive and no need to update objective
- From a RAN2 point of view and technical perspective it can be beneficial to include NB-IoT in the study. However, there are some concerns on the RAN1 and RAN2 impacts and available TUs.

V2V WI Agreements

Geo-location reporting

- The world is divided in geographical zones and the UE determines the zone with a modulo operation. Length and width is provided by the eNB (for in-coverage) and pre-configured for out-of-coverage. A single fixed reference point is used (e.g. 0,0). FFS on exact modulo operation formula and values (if needed)
- The zoning feature is configurable for both in-coverage and out-of-coverage.
- The feature is used at least for mode 2 operation. FFS if needed for mode 1 and how reporting for mode 1 will be done.
- The network can configure the UE to report the complete UE location information (regardless of zone configuration).
- Zone concept can be applied to out-of-coverage. FFS on how to define number of zones and pool mapping
- The zone concept applies only to tx pools

UL SPS

Agreements related to V2V WI from discussions/agreements in 8.11.1

- Multiple SPS configuration with different configuration parameters can be configured by eNB. Which SPS configuration is being activated/deactivated can be signalled. Details of control signalling are left to RAN1. It is FFS whether we allow multiple configurations to be active at the same time. Two options are possible:
 - o One active SPS at a time (as per LTE)
 - o Multiple SPS active at a time (SPS configuration and UE assistance information may be linked to one or more radio bearers).
- UE assistance at least on periodicity and/or timing can be provided to eNB. UE assistance can be configured by eNB. UL SPS configuration is decided by eNB. Triggering of UE assistance is FFS

For V2V WI (PC5) and V2X (Uu) conclusion:

- From a RAN2 point of view, for UL SPS, it is not necessary to send an indication to the eNB that an SPS grant will not be used. Therefore, the working assumption on "the UE can indicate to the eNB that it does not intend to transmit data before a transmission associated to an SPS configuration" is not needed.

Path switch between PC5 and Uu

- The following configurations are allowed by eNB for transmission of V2V: 1) Uu only, 2) PC5 only and 3) both Uu and PC5 for V2V transmissions in different carriers.
- If both Uu and PC5 are configured for V2V transmissions, it is left up to UE upper layers which path is selected. FFS whether any additional AS information is provided to upper layers
- the eNB can configure the V2V transmission configuration in SIB and/or dedicated signalling

Mobility

- Sync and Rx resource pool configurations for the target cell can be signaled in the handover command. FFS on the signalling details and UE behaviour (e.g. whether the UE has to acquire the target SIB configuration)

- For mode 1, (exceptional) Tx resource pool configurations for the target cell can be signaled in the handover command.
- If the (exceptional) Tx resource pool is included with mode 1 configuration into handover command, the UE starts the (exceptional) Tx resource pool from the reception of handover command and continues it while T304 is running
- For idle mode re-selection, it is up to UE implementation to minimize interruption time associated with SIBv2v acquisition.
- We don't need to further enhance to handle RLF/HO failure cases
- FFS on what UE behaviour is when using exceptional pool with respect to sensing and resource selection within the pool based on the outcome of RAN1. If there is a problem we can come back to the exceptional pool discussion.

V2X SI Agreements

UL SPS

- For V2V WI and V2X, Multiple SPS configuration with different configuration parameters can be configured by eNB. Which SPS configuration is being activated/deactivate can be signalled. Details of control signalling are left to RAN1. For V2V, it is FFS whether we allow multiple configurations to be active at the same time.
- For V2X, we will capture the two options are possible, one active SPS at a time (as per LTE) and multiple SPS active at a time (SPS configuration and UE assistance information may be linked to one or more radio bearers).
- For V2V WI and V2X, UE assistance at least on periodicity and/or timing can be provided to eNB. UE assistance can be configured by eNB. UL SPS configuration is decided by eNB. Triggering of UE assistance can be discussed as part of stage 3 discussions.
- For V2X study item:
- Capture the solution in the TR: the UE can inform the network when SPS resources are not used, e.g. on control signalling
- The TP will capture pros and cons of the identified solutions

For V2V WI (PC5) and V2X (Uu) conclusion:

- From a RAN2 point of view, for UL SPS, it is not necessary to send an indication to the eNB that an SPS grant will not be used. Therefore, the working assumption on "the UE can indicate to the eNB that it does not intend to transmit data before a transmission associated to an SPS configuration" is not needed.

DL enhancements

- Capture in the TR that single TMGI across cell(s) or MBSFN area or per location TMGIs are possible. The actual solution will depend on SA2 and RAN3 discussions.
- For SC-PTM, a single G-RNTI can be common across cells(s)
- TMGI and G-RNTI are configurable by the network.

Pools

- A common pool is used for V2X and I2X. FFS whether a separate pool is needed for P2X or the common pool can be used. We will wait for RAN1 to finish their discussion on sensing

Latency reduction WI Agreements

Agreements on SPS activation/deactivation feedback

- New MAC CE for SPS deactivation feedback when skipping padding feature is configured. No scheduling request is triggered.
- SPS resource is cleared after first transmission of the new MAC CE. Retransmission of MAC CE can continue after clearing the configured UL grant.
- The new MAC CE will also be used for SPS activation feedback. The same MAC CE is used (i.e. same LCHID)

Non-adaptive retransmissions

- Allow and prioritize *non-adaptive retransmissions* on SPS resources

Working assumption

- *Non-adaptive retransmissions are done based on RV0. FFS if anything additional is needed*

TDD

- SPS configuration is not optimized for TDD. The UL SPS occasion calculation formula is used.
- Two-interval configuration should not be configured for TDD with SPS interval shorter than 10ms.
- The restriction of 10 subframes boundary is only applicable for the SPS interval longer than 10ms
- All the subframes including both UL subframes and DL subframes are considered as potential UL SPS subframes. If one UL SPS subframe calculated according to the SPS occasion calculation formula is a downlink subframe or a special subframe, the UE will skip this UL SPS occasion

UCI

- If UL data is skipped RAN2 should not generate a TB, the UCI should be sent on PUCCH

Annex H:

LTE Breakout session: eVoLTE, Light conn, Mobility enh, eMBMS

On Wednesday of RAN2 #94, in parallel to the main LTE session, an LTE breakout session on eVoLTE, Light conn and Mobility enh. was held in room (Yuhua) chaired by RAN2 vice-chairman Hu Nan (CMCC) addressing:

On Wednesday:

- 8.3 LTE: Rel-14: SI: Study on enhancement of VoLTE
- 8.9 LTE: Rel-14: WI: Signalling reduction to enable light connection for LTE
- 8.12 LTE: Rel-14: WI: eMBMS enhancements for LTE
- 8.6 LTE: Rel-14: WI: Further mobility enhancements in LTE

The corresponding report of this session [R2-164421](#) was presented and approved on Fri in the joint session and the contents is provided in this Annex H for convenience reasons.

8.3 SI: Study on enhancement of VoLTE

(FS_LTE_eVoLTE; leading WG: RAN2; REL-14; started: Mar. 16; target: Sep. 16; SID: [RP-160563](#))

Time budget 1TU

Documents in this agenda item will be handled in the LTE Break Out session

8.3.1 Organisational

Including LSs, skeleton of TR, etc

Including output of email discussion [93bis#29][LTE/eVoLTE] TR skeleton and capturing agreements (CMCC)

Output of email discussion:

[R2-163717](#) eVoLTE TR update to capture meeting agreements CMCC draft TR 36.750 0.1.1
result of email discussion [93bis#29][LTE/eVoLTE] Rel-14 FS_LTE_eVoLTE
=> The TR is agreed
=> The clean version will be provided in [R2-164381](#). The version is 0.2.0

[R2-163876](#) Considerations on the scope of the VoLTE enhancements Nokia, Alcatel-Lucent Shanghai
Bell discussion
=> Not treated

8.3.2 Codec mode/rate selection/adaptation

[R2-163693](#) End to end considerations for Vocoder Rate Adaptation Qualcomm Incorporated discussion
- ZTE think using SIP is out of the scope of RAN2.
- Huawei agree with Qualcomm that we need end-to-end solution and would like to reuse the current mechanism.
- Qualcomm thinks we should consider the interworking with other solutions
=> Capture the following requirement in the TR in 5.2.1.
Solutions for vocoder rate adaptation should take into account the radio conditions in both ends of the communication path as the existing solutions did.

[R2-163789](#) Enhanced Codec Control MediaTek Inc. discussion
P2:
- Huawei thinks it is already described clearly in SA specs.
P3 & P4:
- Nokia thinks they already in the objectives of the SID.
P5:

- Kyocera wonders the meaning of network command, controlled or just signalling. MTK thinks it is RAN-assisted signalling.

Agreements:

- 1 The indication from the eNB should be in the form of a suggested recommended bitrate (e.g., maxim bitrate for service of the UE could use), which can be used for both codec rate increase and codec rate decrease cases.

[R2-164264](#) RAN based codec adaption solution Huawei, HiSilicon discussion

- CATT wants to know whether core network will be impacted through RAN layer-based solution. Moto solution think the impact cannot be avoided.
- CMCC and Huawei think there is no impact on the current specs of CN.

Agreements:

- 1 Indication from eNB is used for RAN-involved codec adaptation.
- 2 For down and up side-tuning in uplink, the eNB sends a codec tuning message to the UE, and the UE should use the bitrate indicated in codec down side-tuning message as one input to do codec adaptation on the uplink side.
- 3 For down and up side-tuning in downlink, the eNB sends a codec tuning message to the UE, and the UE should send application layer message, e.g. RTP CMT to the peer UE. The peer UE could use the indication as one input to codec rate adaptation.

FFS: Before participating in the codec adaptation the eNB could know the codec rate used by UE through UE report.

☒ **[94#xx][LTE/eVoLTE] (CMCC)**

- Capture the RAN-assisted solutions and procedures according to the agreements above as a baseline into the TR. Can use the figure 2 and 3 in this paper.
 - Capture all agreements from this meeting
- Intended outcome: agreed TP on the RAN-assisted solution.
Deadline: Thursday 18/08/2016

[R2-163723](#) Codec selection and adaptation solutions CMCC discussion *Move from 8.3.1 to 8.3.2*
=> Revised in [R2-164317](#)

[R2-164317](#) Codec selection and adaptation solutions CMCC discussion
=> Not treated

[R2-163402](#) Discussion on Per Cell Codec Rate AdaptationGuangdong OPPO Mobile Telecom.
Discussion

[R2-163734](#) RAN-based codec rate adaptation Kyocera discussion
=> Not treated

[R2-163560](#) Considerations on RAN-based codec mode/rate adaptation mechanism for VoLTE Intel Corporation discussion

[R2-163833](#) RAN codec rate adaptation Panasonic Corporation discussion
=> Not treated

[R2-163859](#) Discussion on the adaptive codec rate change ZTE Corporation discussion
=> Not treated

[R2-164058](#) End-to-end Impact of VoLTE Codec Rate Adapataion Motorola Solutions, Inc. discussion
=> Not treated

[R2-164186](#) Codec rate adaptation Ericsson discussion
=> Not treated

Withdrawn:

[R2-163834](#) RAN codec rate adaptation Panasonic Corporation discussion

8.3.3 VoLTE/video signalling related enhancements

E.g. prioritisation of VoLTE/video related signalling, reduction of call drop probability, etc

Including output of email discussion [93bis#27][LTE/eVoLTE] Identify the potential problems from signalling aspect (Huawei)

Output of email discussion:

[R2-164263](#) Report and summary of email discussion 93bis#27LTEeVoLTE Huawei discussion
result of email discussion [93bis#27]

=> Noted

✉ **[94#xx][LTE/eVoLTE] (Huawei)**

Continue the email discussion until next meeting.

Use the observations and report we have achieved in [R2-164263](#).

Intended outcome: Try to address the requirements and agreed views into the TR.

Deadline: Thursday 18/08/2016

[R2-163561](#) Considerations on video signalling related enhancements Intel Corporation discussion

=> Revised in [R2-164318](#)

[R2-164318](#) Considerations on video signalling related enhancements Intel Corporation discussion

=> Not treated

[R2-164240](#) Prioritization of MT MMTEL Voice or Video LG Electronics Inc. discussion

=> Not treated

8.3.4 VoLTE/video quality related enhancements

Enhancements to improve the perceived voice/video quality. This aspect of the WI is expected to be RAN1 led.

[R2-164187](#) VoLTE/video quality related enhancements Ericsson discussion

=> Focus the study of VoLTE/video quality related enhancements on the techniques introduced by the eMTC work item.

=> Focus the study of VoLTE/video quality related enhancements on the techniques available in CE mode A (with/without SPS) for Cat-M1 and other UE categories.



=> **CB on Friday:** Draft an LS in [R2-164382](#) to RAN1 with recommended evaluation assumptions for VoLTE quality related enhancements and the two agreements above.

[R2-164265](#) VoLTE coverage enhancement Huawei, HiSilicon discussion

=> Revised in [R2-164326](#)

[R2-164326](#) VoLTE coverage enhancement Huawei, HiSilicon discussion

=> Not treated

[R2-163694](#) Error resiliency of EVS Channel Aware mode Qualcomm Incorporated discussion

=> Not treated

8.3.5 Other

No contributions received.

8.9 WI: Signalling reduction to enable light connection for LTE

(LTE_LIGHT_CON-Core; leading WG: RAN2; REL-14; started: Mar. 16; target: Mar. 17; WID: http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_71/Docs/RP-160540.zipRP-160540)

Time budget 0.5TU

Documents in this agenda item will be handled in the LTE Break Out session

8.9.1 Paging enhancements

E.g. signaling reduction by limiting the paging area.

Note the WID indicates that only the paging objective is to be discussed within Q2 2016

Working assumptions made in last meeting:

S1 connection of a UE lightly connected is kept and active, in order to hide the mobility and state transitions from CN
Light connected UE can be addressed only by the trigger of paging initiated by eNB or MME

- [R2-163450](#) Design principles and considerations for the LTE light connection Samsung Electronics discussion
=> Not treated
- [R2-163888](#) Paging for light connection Nokia, Alcatel-Lucent Shanghai Bell other
- Huawei don't agree the observation1.
- Potevio thinks the RAN-based paging has benefit in terms of signalling saving.
=> Noted
- [R2-163930](#) Evaluation on RAN initiated paging and MME initiated paging Huawei, HiSilicon discussion
=> S1 connection of a UE lightly connected is kept and active, in order to hide the mobility and state transitions from CN. For the UE lightly connected, the RAN initiated paging is feasible and beneficial in terms of signalling reduction as well as decreasing latency from RAN2 perspective. Thus the RAN initiated paging can be introduced from RAN2 perspective.
- We try the agreement that "S1 connection of a UE lightly connected is kept and active, in order to hide the mobility and state transitions from CN. For the UE lightly connected, the RAN initiated paging is introduced from RAN2 perspective."
Support the above agreement: 15
Not support: 4
✉ => **CB:** Draft an LS in [R2-164383](#) (Huawei) to inform RAN3 on the above agreements. RAN3 can challenge our decision.
- [R2-163831](#) Discussion on Performance of Light Connection Samsung Electronics discussion
=> Not treated
- [R2-163724](#) Paging in Light Connection CMCC discussion
=> Not treated
- [R2-163632](#) Light connection DRX paging cycle and mechanism Intel Corporation discussion
=> Not treated
- [R2-163474](#) Paging in light connection CATT discussion
=> Not treated
- [R2-163803](#) RAN-based paging for light connection China Unicom discussion
=> Not treated
- [R2-163860](#) Discussion on the paging area for light connection China Telecommunications discussion
=> Not treated
- [R2-163884](#) General principle for signalling reduction of paging lightly connected UE Potevio Company Limited discussion
=> Not treated
- [R2-163931](#) Analysis of power consumption for paging area update Huawei, HiSilicon discussion
=> Not treated
- [R2-163932](#) On RAN initiated paging Huawei, HiSilicon, China Telecom discussion
=> Not treated
- [R2-164047](#) Details of paging enhancements and Light Connection Kyocera discussion
=> Not treated
- [R2-164226](#) Paging enhancements for signalling reduction NTT DOCOMO, INC. discussion
late
=> Not treated

8.9.2 Other

- [R2-163631](#) Benefits of Light connection over suspend-resume procedure Intel Corporation discussion
=> Not treated
- [R2-163889](#) Context Fetch in light of light connection Nokia Networks Oy other
=> Not treated
- [R2-164046](#) General issues in Light Connection Kyocera discussion
=> Not treated
- [R2-164227](#) RRC Suspend/Resume for Light Connection Ericsson other
=> Not treated
- [R2-164271](#) General considerations on lightweight connection LG Electronics Inc. discussion

=> Not treated

8.12 WI: eMBMS enhancements for LTE

(MBMS_LTE_enh2; leading WG: RAN1; REL-14; started: Mar. 16; target: Mar. 17; WID: http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_71/Docs/RP-160675.zip RP-160675)

Time budget: 0.5 TU

Documents in this agenda item will be handled in the LTE Break Out session

- [R2-164147](#) Work plan for eMBMS enhancements for LTE Ericsson discussion *move from 8.12.5 to 8.12*
- Huawei would like to prioritise the work part.
 - Nokia thinks we can handle all the parts.
 - Huawei thinks the bullet a) will potentially impact RAN2.
- => Noted

Draft TR:

- [R2-164272](#) TR for eMBMS enhancements Ericsson draft TR 36.743 0.0.1
Rel-14 MBMS_LTE_enh2-Core *move from 8.12.5 to 8.12*
=> Offline discussion on the TR skeleton.
=> The skeleton is agreed as baseline in [R2-164384](#) TR 36.743 v0.1.0.

8.12.1 MBSFN subframe enhancements

Including use of subframes 0, 4, 5, 9 (FS1) and 0, 1, 5, 6 (FS2) for MBSFN, and configuring MBSFN subframes without a unicast control region and cell-specific reference signals.

- [R2-164145](#) eMBMS operation for SCell Ericsson discussion
=> Legacy UEs are not supported on the new eMBMS carrier (more than 6 subframes configured for MBSFN).
=> FFS one possible solution that assuming DRS with at least PSS/SSS/CRS for the SCell eMBMS carrier.
- [R2-163531](#) Impact of additional MBSFN sub-frames support Nokia, Alcatel-Lucent Shanghai Bell discussion
=> Not treated
- [R2-163659](#) Expand MBSFN Sub-frame in SCell Huawei, HiSilicon discussion
=> Not treated

8.12.2 MBSFN dedicated carrier

- [R2-163658](#) Discussion on Standalone MBMS Cell Huawei, HiSilicon discussion
=> Not treated
- [R2-163532](#) Standalone eMBMS carrier considerations Nokia, Alcatel-Lucent Shanghai Bell discussion
=> Not treated
- [R2-164146](#) Standalone eMBMS operation Ericsson discussion
=> Not treated
- [R2-164230](#) Consideration on MBSFN dedicated carrier LG Electronics Inc. discussion
=> Not treated

8.12.3 Multicarrier MBMS operation

- [R2-163533](#) Analysis of scenarios for multi-carrier eMBMS/unicast operation Nokia, Alcatel-Lucent Shanghai Bell discussion
=> Not treated

8.12.4 MBMS reception without authentication

- [R2-163534](#) Non-authenticated UEs support Nokia, Alcatel-Lucent Shanghai Bell discussion
=> Not treated
- [R2-164120](#) Authentication in eMBMS Ericsson discussion
=> Not treated

8.12.5 Other

[R2-164203](#) System Aspects of eMBMS Enhancements and RAN2 Impact QUALCOMM CDMA Technologies discussion
=> Not treated

8.6 WI: Further mobility enhancements in LTE

(LTE_eMob-Core; leading WG: RAN2; REL-14; started: Mar. 16; target: Dec. 16; WID: http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_71/Docs/RP-160636.zipRP-160636)

Time budget 1TU

Documents in this agenda item will be handled in the LTE Break Out session

Including output of email discussion [93bis#28][LTE/Mobility enhancement] Discussion on solution 2 family (ZTE)

8.6.1 RACH-less handover

[R2-163992](#) Network controlled RACH-less handover Ericsson discussion

- Ericsson thinks the antenna should be co-located in intra-eNB cells.
- Intel see lots of value from Ericsson's paper.
- Ericsson think it is not necessary to consider intra-cell handover.
- => RACH procedure can be avoided at least in some deployments without introducing any new time alignment control or estimation mechanisms because the network knows when the timing alignment is the same for both source and target cells.
- => Solution 1 is feasible at least in the case of reusing of time alignment values.

[R2-164239](#) Further details of RACH-less handover QUALCOMM CDMA Technologies discussion

- LG and CATT think the step4 will introduce extra delay.
- => Noted
- => Waiting for the input from other WGs.

[R2-163564](#) UL grant in target cell for RACHless Handover CATT other
=> Noted

[R2-163605](#) UL grant for RACH-less handover Intel Corporation discussion
=> RAN2 to adopt option B2 to get UL grant for RACH-less solution. Option B2 is that "Target eNB pre-allocated periodic UL grant".

[R2-163862](#) Remaining issues of RACH-less Handover ZTE Corporation discussion
=> Not treated

8.6.2 Make before break handover

Output of email discussion:

[R2-163863](#) Email discussion on solution 2 family ZTE Corporation discussion
result of email discussion [93bis#28][LTE/Mobility enhancement]

- => The candidate options mentioned in the email discussion are categorized as follows:
 - Category A (No simultaneous Rx/Tx from another intra-frequency cell): Option 2b/4b/6(Case 0)
 - Category B (No simultaneous Tx but need simultaneous Rx of PSS/SSS/CRS from another intra-frequency cell): Option 1/2a/4a/Option 6(Case 1)
 - Category C (Simultaneous Tx of PRACH to another intra-frequency cell and simultaneous Rx of PDSCH/PDCCH from another intra-frequency cell): Option 2c/6(Case 2)
 - Category D (Simultaneous Tx of PRACH/PUSCH/PUCCH/SRS to another intra-frequency cell and simultaneous Rx of PDSCH/PDCCH from another intra-frequency cell): Option 3/5/7/8/6(case 3)

[R2-163981](#) "make-before-break" HO in LTE and its implications Nokia, Alcatel-Lucent Shanghai Bell discussion
- ZTE thinks the security key issue only exists in CAT D.
=> CAT D solutions have security key problem.

=> RAN2 will choose at most one solution from the solution group 2 to be further considered in the Work Item

[R2-163864](#) Comparison between candidate options of solution 2 family ZTE Corporation discussion

=> Noted

[R2-163606](#) Different options for solution 2 Intel Corporation discussion

- Intel withdraw option 3.

=> Noted

[R2-164380](#) "Way forward" for further mobility enhancements in LTE Intel, Ericsson, Nokia, Qualcomm, CATT discussion

=> Noted

- Ericsson wonders how the indication in option 6 works.

- ETRI thinks the main benefit of option 6 is to save downlink resource.

=> Remove options of CAT C and D from the candidate options of solution 2 family.

=> Remove option 2a and 2b in [R2-163863](#) from the candidate options of solution 2 family.

=> Remove option 6 in [R2-163863](#) from the candidate options of solution 2 family.

[R2-163656](#) Discussion on Intra-eNB Handover Huawei, HiSilicon discussion

=> Not treated

[R2-163563](#) Consideration on solutions for Mobility enhancement CATT other

=> Not treated

[R2-163657](#) Simultaneous Data Transmission in Inter-eNB Handover Huawei, HiSilicon discussion

=> Not treated

[R2-163866](#) Further Details of Option 6 for Solution 2 ETRI discussion

=> Revised in [R2-164329](#)

[R2-164329](#) Further Details of Option 6 for Solution 2 ETRI discussion

=> Not treated

[R2-164225](#) Considerations on solution 2 for mobility enhancements LG Electronics France discussion

=> Not treated

8.6.3 Other

[R2-163738](#) Further considerations on solutions for the LTE mobility enhancements and analysis of the functional impact Samsung discussion

=> Not treated

Summary of the LTE Break-Out session (eVoLTE, Light conn, Mobility enh, eMBMS)

Agreed CRs

None

Comeback on Friday

eVoLTE:

- ✍ **CB on Friday:** Draft an LS in [R2-164382](#) to RAN1 with recommended evaluation assumptions for VoLTE quality related enhancements and the related two agreements.

Light Connection:

- ✍ => **CB:** Draft an LS in [R2-164383](#) (Huawei) to inform RAN3 on the above agreements. RAN3 can challenge our decision.

Email Discussion

eVoLTE:

- ✉ **[94#xx][LTE/eVoLTE] (CMCC)**
 - Capture the RAN-assisted solutions and procedures according to the agreements above as a baseline into the TR. Can use the figure 2 and 3 in this paper.
 - Capture all agreements from this meetingIntended outcome: agreed TP on the RAN-assisted solution.
Deadline: Thursday 18/08/2016
- ✉ **[94#xx][LTE/eVoLTE] (Huawei)**

Continue the email discussion until next meeting.
Use the observations and report we have achieved in [R2-164263](#).
Intended outcome: Try to address the requirements and agreed views into the TR.
Deadline: Thursday 18/08/2016

Agreements

eVoLTE:

Agreements:

Regarding codec rate adaptation:

- 1 The indication from the eNB should be in the form of a suggested recommended bitrate (e.g., maxim bitrate for service of the UE could use), which can be used for both codec rate increase and codec rate decrease cases.
2. Capture the following requirement in the TR in 5.2.1.
Solutions for vocoder rate adaptation should take into account the radio conditions in both ends of the communication path as the existing solutions did.
- 3 Indication from eNB is used for RAN-involved codec adaptation.
- 4 For down and up side-tuning in uplink, the eNB sends a codec tuning message to the UE, and the UE should use the bitrate indicated in codec down side-tuning message as one input to do codec adaptation on the uplink side.
- 5 For down and up side-tuning in downlink, the eNB sends a codec tuning message to the UE, and the UE should send application layer message, e.g. RTP CMT to the peer UE. The peer UE could use the indication as one input to codec rate adaptation.

Regarding VoLTE/video quality related enhancements

- 1 Focus the study of VoLTE/video quality related enhancements on the techniques introduced by the eMTC work item.
- 2 Focus the study of VoLTE/video quality related enhancements on the techniques available in CE mode A (with/without SPS) for Cat-M1 and other UE categories.

Light Connection:

- => S1 connection of a UE lightly connected is kept and active, in order to hide the mobility and state transitions from CN. For the UE lightly connected, the RAN initiated paging is feasible and beneficial in terms of signalling reduction as well as decreasing latency from RAN2 perspective. Thus the RAN initiated paging can be introduced from RAN2 perspective.

eMBMS:

We agreed the TR skeleton.

- => Legacy UEs are not supported on the new eMBMS carrier (more than 6 subframes configured for MBSFN).

Mobility enhancement:

- => RACH procedure can be avoided at least in some deployments without introducing any new time alignment control or estimation mechanisms because the network knows when the timing alignment is the same for both source and target cells.
- => Solution 1 is feasible at least in the case of reusing of time alignment values.
- => RAN2 to adopt option B2 to get UL grant for RACH-less solution. Option B2 is that "Target eNB pre-allocated periodic UL grant".
- => The candidate options mentioned in the email discussion are categorized as follows:
 - Category A (No simultaneous Rx/Tx from another intra-frequency cell): Option 2b/4b/6(Case 0)
 - Category B (No simultaneous Tx but need simultaneous Rx of PSS/SSS/CRS from another intra-frequency cell): Option 1/2a/4a/Option 6(Case 1)
 - Category C (Simultaneous Tx of PRACH to another intra-frequency cell and simultaneous Rx of PDSCH/PDCCH from another intra-frequency cell): Option 2c/6(Case 2)
 - Category D (Simultaneous Tx of PRACH/PUSCH/PUCCH/SRS to another intra-frequency cell and simultaneous Rx of PDSCH/PDCCH from another intra-frequency cell): Option 3/5/7/8/6(case 3)
- => CAT D solutions have security key problem.
- => RAN2 will choose at most one solution from the solution group 2 to be further considered in the Work Item
- => Remove options of CAT C and D from the candidate options of solution 2 family.
- => Remove option 2a and 2b in [R2-163863](#) from the candidate options of solution 2 family
- => Remove option 6 in [R2-163863](#) from the candidate options of solution 2 family.

Annex I:

LTE Breakout session on NB-IoT

On Tuesday, Wednesday and Thursday of RAN2 #94, in parallel to the main LTE session, an LTE Breakout session on NB-IoT was held in room (Qingliang) chaired by session chairman Johan Johansson (MediaTek) addressing:

From Monday to Friday Morning:

7.14 LTE: Rel-13: WI: Narrowband IOT

The corresponding report of this session [R2-164422](#) was presented and approved on Fri in the joint session and the contents is provided in this Annex I for convenience reasons.

Time Schedule

Note that the time schedule is tentative and items may move back and forth.

Monday 23/5	
14:30 ->	[7.14.3] User Plane
17:00 ->	[7.14.1] Incoming LSes [7.14.3] User Plane
Tuesday 24/5	
08:30 ->	[7.14.2] RRC, SI
11:00 ->	
14:30 ->	[7.14.1] UE Capabilities
17:00 ->	[7.14.2] Idle mode
Wednesday 25/5	
08:30 ->	[7.14.3] User Plane, pass 2, [7.14.2] RRC, pass 2 Comebacks
11:00 ->	
14:30 ->	
17:00 ->	Comebacks
Thursday 26/5	
08:30 ->	Comebacks
11:00 ->	
14:30 ->	
17:00 ->	
Friday 27/5	
08:30 ->	Potential comebacks
11:00 ->	

7.14 WI: Narrowband IOT

(NB_IOT-Core; leading WG: RAN1; started: Sep. 15; target: Jun. 16; WID: [RP-152284](#))

Time budget: N/A

Documents in this agenda item will be handled in the NB-IoT Break Out session

7.14.1 General

Organization, Requirements, Overall CP/UP aspects

Incoming LSs:

[R2-163320](#) LS on RRC parameter list for NB-IoT ([R1-163954](#); contact: Huawei) RAN1 LS in to: RAN2 Rel-13 NB_IoT-Core late

- Huawei indicates that this has already been included in SIB2 in the running CR, in Npusch config common.

⇒ **noted**

[R2-163328](#) Reply to: LS on Clarifications on RRC Resume Request (S3-160694; contact: Nokia Networks) SA3 LS in to: RAN2 Rel-13 NB_IoT-Core late

- Chair think that for NB-IoT, a UE with a stored context will always attempt a resume.
- Qualcomm think that cleanup is needed also if the Resume fails, but maybe this is more of CT1/R3 responsibility.
- Nokia think that R2 doesn't need to respond on context cleanup, but should address the short MAC-I, and reply.
- Vodafone think we could comment on that Resume ID shall be different in subsequence suspends. QC think that this is not in the R2 specifications. Chair think we could include in the LS reply that we don't cover this in R2 TSeS.
- CATT think we could include some error handling in the UE to ensure the SA3 requirement. Ericsson think this is up to the network. Chair think we don't usually have such conditions.
- Blackberry think we should add CT1. We add CT1.
- Nokia think we should respond that we assume that RAN3 handled context cleanup.
- Input to short MAC-I calculation: Suggestions on the table are
 - o Alt 1: Same input as reestablishment + ResumeDiscriminator: C-RNTI + source pci + target cell ID + 1 bit
 - o Alt 2: Full resume ID + target cell ID.
- Ericsson support alt 1.
- ZTE think that C-RNTI should not be used as there is a risk that C-RNTI is the same for different stored UE contexts. Ericsson think this doesn't matter as we anyway use the UE keys for the MAC-I derivation.
- QC clarifies that target cell ID is the cell ID where the UE does the resume.
- QC think that alt 2 gives better security and would support this.
- Intel wonders if the algorithm need to be changed if we use different size input compared to reestablishment. ZTE think this need to be clarified by SA3. Intel think that the impact is less if we go with alt 1. CATT agrees. ZTE think that if there was an issue with this, SA3 would have indicated so.
- LG indicates that similar issues exist for "light connection".
- Neul wonders what ALT1 means for the impact to RRC.
- Raise of hands, support of
 - o ALT1: 7
 - o ALT2: 3

- ⇒ **Input to short MAC-I calculation: Same input as reestablishment + Resume Constant.**
- ⇒ **UE need to store the input used for the MAC-I calculation in addition to the UE context/configuration.**
- ⇒ **We take into account the info given in the LS, in RRC, in the table specifying protection of messages.**
- ⇒ **Noted**

For the Reply:

- ⇒ **We assume that RAN3 handles context cleanup**
- ⇒ **Resume ID being different in subsequent suspends is not covered in the R2 specifications.**
- ⇒ **We add CT1**
- ⇒ **We include the short MAC-I input parameters**

[R2-163333](#) Reply LS on questions on NB-IOT Lsin
⇒ **noted**

[R2-163336](#) Reply LS on NB-IoT RRM requirements LSin
- Huawei indicates that we already have taken this reply into account.
⇒ **noted**

[R2-163337](#) LS on RRM measurement for NB-IOT LSin
- Ericsson indicate that we already have taken this into account.
⇒ **Noted**

[R2-163334](#) Reply LS on TB sizes for SI-messages for NB-IoT LSin
- Already taken into account
⇒ **Noted**

[R2-163335](#) Reply LS on updated TS 36.300 section 5 for NB-IoT LSin
- We need to take this into account
- We should review this as part of offline review of final 36.300 version.
⇒ **We include into 36.300**
⇒ **Noted**

[R2-163339](#) Response to LS on uplink transmission gap in NB-IoT LSin
Intel indicates that RAN1 is working on this.
⇒ **Noted**

[R2-163340](#) LS on Tx Gaps for Frequency Error Correction LSin
⇒ **Noted**

- Intel are ok to attempt to comply to the request.
- Nokia and Ericsson think that maybe capability signalling is not needed. Nokia think that configuration signalling may be needed.
- Mediatek think we should postpone this. Huawei agrees.
- Qualcomm think that the gaps are currently implemented by scheduling. Nokia think this is for long transmissions of a single transport block, thus it is not handled by scheduling. Nokia think that for cells where we have good radio conditions it could be useful to be able to disable the use of such gaps.
- Nokia indicates that in current specifications, the presence of gaps is hard-coded in L1 specification. Nokia proposes Alt 1 and think this will work. Huawei think that Nokias proposal has RAN1 impact. Ericsson has the same understanding as Nokia.

- QC think we should implement the contents of the LS.
- Ericsson think we should not have the capability signalling, they have concerns, especially how this is signalled early. Mediatek think we need to investigate and we should postpone this. Huawei, ZTE, CATT agrees and prefers alt 0. Ericsson do not think that this should be signalled in message 3. Qualcomm wonders why. Ericsson don't want to waste the spare bits.
- Qualcomm think that alt 1A is pointless. It means that the lowest capability UEs need to be able to operate without gaps. Qualcomm think that it is easy to implement option 2B.
- DT think this is an optimization and that we can treat this in the next release. Vodafone think this is indeed about UE capabilities. Vodafone think we should have this also for lowest capability UEs.

On the table:

Alt 0 No enable/disable

Alt 1A Cell specific signaling to enable/disable. No capability signalling

Alt 2B Only dedicated signalling to enable/disable. UE provides capability.

Can discuss offline. We need an easily agreeable signalling solution.

- Qualcomm indicates that opinions seems diverging, and it may be difficult to reach consensus. Companies are concerned that RAN1 would need to review the conclusions from RAN4.
- Intel indicates that a common solution for eMTC and NB-IoT has been agreed in R4. Ericsson think we need an LS. R4-164658 is the agreed way forward for eMTC. QC clarifies that R4 has agreed that UEs shall be able to operate without UCG gaps. Huawei has a different opinion, and think that R4 opinions are inconclusive.
- Vodafone understand that this is mainly an issue in R1, not really in R2, because R2 signalling should not be a problem. Vodafone think that we could also do this in Rel-14.

Can check this offline. We attempt to make decisions Friday. If not possible, we postpone.

- Mediatek think there was no progress on this in R1. Huawei think there was no consensus.
- No progress in other groups yet at end of NB-IoT Session

[R2-164335](#) LS on RRC parameter list for NB-IoT LSin

⇒ **We take this into account in RRC**

⇒ **noted**

Incoming LSs, from main session:

[R2-163317](#) Reply LS to S2-161260 = [R2-162117](#) on Clarifications on RRC Resume Request (R3-161016; contact: Ericsson) RAN3 LS in cc: RAN2 Rel-13 NB-IoT-Core

[R2-163326](#) Reply LS to [R2-161945](#) on extension of search for higher priority PLMN cycle beyond 8 hours (S1-161585; contact: Deutsche Telekom) SA1 LS in to: RAN2 Rel-13 TEI13 late

The above two LSes were not treated in the NB-IoT session

LS out

Reply LS (reply to [R2-163328](#)) in [R2-164395](#) (Nokia)

[R2-164395](#) Draft Reply LS on Clarifications on RRC Resume Request Nokia LSout

- Ericsson want to wait, to possibly take into account progress for non-NB-IoT.
- Vodafone think we will anyway not change the agreements done here.
- Intel wonders if SA3 are asking the question on resume ID being different is due to non understanding that the UE will discard it. Nokia think the confusion is due to eNB possibly providing the same ID to one UE multiple times.

⇒ **We add the information that UE discards the resume ID at reception of Resume, Setup, Reject (if suspend indication is not present).**

- [R2-164407](#) ⇒ **We add agreement on integrity protection failure, updated Draft in [R2-164407](#)**
Draft Reply LS on Clarifications on RRC Resume Request Nokia Lsout
- Intel think we should add the clarification in a sentence that this is applicable to both NB-IoT and Non-NB-IoT.
 - ZTE think it is confusing that we only mention that we release UE context etc at integrity protection failure. Intel think we can have this but think we can enhance the text
 - Vodafone think we can keep the text as it is correct.
- ⇒ **add the clarification in a sentence that this is applicable to both NB-IoT and Non-NB-IoT**
- ⇒ **Approved with this change, final version in [R2-164414](#)**

- [R2-164403](#) Draft LS on timers LSout Huawei
- Vodafone think we need to be clearer when we say “extended” and clearly indicate for which RAT the baseline times applies.
 - Nokia wonders why we need this. QC also wonder what CT1 will do with this.
 - Ericsson wonders if CT1 know what t-pollretransmit is. Huawei indicates that for MTC we sent such LS.
 - QC think that if we send this, R3 should be included.
 - Vodafone think this is useful and we should send the LS.
- ⇒ **We just inform about the worst case values (upper end of range) for NB-IoT and we don’t use the word “extend”**
- ⇒ **Add R3 as CC**
- ⇒ **With these changes the LS is approved in [R2-164404](#)**

General

- [R2-164311](#) Release assistance indication in MAC Ericsson, Vodafone GmbH, AT&T, Gemalto N.V., CATT
discussion
late

Moved to 7.14.1 from 7.14.3.1

- Ericsson indicates that we don’t need to spend time on this as there is still one operator with strong concerns.
 - Vodafone point out that the arguments provided are general and not option specific and for fairness we should consider this.
- Possibility to continue offline, after lunch Thursday
- ⇒ **noted**

- [R2-164417](#) Way forward on NB-IoT fast dormancy Ericsson, Vodafone GmbH, AT&T, CMCC, Gemalto N.V., CATT, Sony, BlackBerry
- Docomo cannot accept the proposed solution. The application behaviour is reliable. The proposal is not technically correct. The trigger to send buffer size Zero BSR is not clear. Docomo thinks a prohibit timer is needed. Docomo think that the application is unpredictable but can accept this.
 - Docomo think there can be a lot of additional signalling.
 - Nokia think we can use the PPI, and think that using MAC is strange.
 - ZTE think that the Ericsson solution is the minimum impact solution. ZTE agrees that there is no need for a prohibit timer, and there is no additional triggering of BSR.
 - ZTE think that the meaning of text “the UE may have more data to send or receive in the near future” or similar need to be further clarified in order to have a working feature. LG agrees.
 - Sony think that concerns raise come from past experience and expect NB-IoT UEs to be better.
 - Vodafone think the problems raised are generic. Vodafone wonders what are the specific concerns for this particular case.
 - Gemalto think the network can control this.

- Ericsson think this is mandatory for the UE and optional for the network. QC think mandatory is ok. Docomo think this kind of functions is never mandatory.
- Chair think we will need more discussion, as the relation between the solution, and mandatoryness etc is not clear.

⇒ **Postpone (to later release)**

[R2-164418](#) Release Assistance Indication DraftCR

⇒ **Not pursued**

[R2-164419](#) Release Assistance Indication DraftCR

⇒ **Not pursued**

36.306, UE Capabilities

[R2-163903](#) Email report [93bis#16][NB-IOT] CR to 36.306 Ericsson report
result of email discussion [93bis#16][NB-IOT] Rel-13 NB_IOT-Core

- As the participation was thinm Ericsson proposes to note this document

⇒ **Noted**

[R2-164309](#) Open issues on UE capabilities Ericsson discussion
late
P1:

- Intel wonder if we can reuse the eMTC 20dBm capability. Chair wonder why we would reuse.
- Ericsson though it would be more clear to have a new name. Vodafone agrees
- Neul think the name need to be reviewed.

P2:

- Vodafone wonders why a feature that is not needed in the beginning is mandatory. Docomo want this to be mandatory. Vodafone think this should be optional.

P3/4

- Neul wonders why we need to signal this. Ericsson think that a REL-13 network will not understand how a rel-14 UE indicates capability of NB1, without update.
- Gemalto think Ericsson's point is valid.
- Qualcomm think that if there is a lower capability than what the eNB supports, there are other possibilities, e.g. introduce a future bit in SI to indicate supported min category.

P5:

- Already agreed on high level. We include the details in the update of the corresponding RRC CR.

Offline on ue-Category-r13 { nb1 }

- Ericsson reports that there was no convergence offline.
- Ericsson also thinks there were misunderstandings.
- Huawei think there is anyway a minimum capability, and the signalling will not change anything.
- QC think that we cannot anyway go below NB1.
- Chair summary: we don't signal this then

⇒ **powerClassNB-20dBm-r13 optional UE capability is supported in NB-IoT and signalled in UE-Capability-NB-r13, exact parameter name can be determined offline.**

⇒ **multiNS-Pmax-r13 is an capability in NB-IoT signalled in UE-Capability-NB-r13**

⇒ **Noted**

[R2-164056](#) UE capability for frequency correction without transmit gaps QUALCOMM Incorporated discussion

- QC understands that R4 has not yet concluded on this and we should await conclusion before final agreement, if agreed. R4 is discussing this capability.
- Some small Procedure text is also needed.
- Vodafone wonders why we need this in MSG3 as this is for long transmissions.
- QC doesn't think the eNB will have the capability.

- Ericsson think this is a RAN2 issue. Ericsson assumes that the network may configure gaps regardless UE capability. Qualcomm agrees.
- Ericsson do not think this is very significant, especially as this is for long transmissions.
- QC think that the relevant transmission durations is between 200ms and upwards, and the gaps are significant length.

Comeback to this when/if we get indication from RAN4.

⇒ **Noted**

[R2-163902](#) Introduction of NB-IoT UE capabilities Ericsson CR36.30613.1.0 1328 - B result of email discussion [93bis#16][NB-IOT] Rel-13 NB_IOT-Core

- Neul does not like the -r13 suffix for UE category.
- Vodafone wonders how this is done for eMTC. Qualcomm indicates that it is done the same way as for LTE but NB-IoT signalling is separate.
- Should include CR numbers for other specs.

⇒ **We use “UE-category-NB” for the title of the UE categories for NB-IoT in 36.306.**

⇒ **Use multiCarrier instead of multiPRB, check offline further consistency (e.g. multiTone)**

⇒ **update the CR with agreements.**

⇒ **Revised CR in [R2-164400](#)**

we expect to come back Thursday afternoon

[R2-164400](#) Introduction of NB-IoT UE capabilities Ericsson CR 36.306 13.1.01328 1 B

- Nokia want to signal the UE category. Why are we not signalling this? Ericsson think this was just an optimization. Ericsson, Intel and Nokia think that signalling this can avoid future problems. CATT supports this. Vodafone wonders why. Intel think that a future UE may need to signal multiple UE categories (depending on how we define UE category), and for this case it is not nice to indicate NB1 category by absence of an IE.
- For Multi-carrier-rel13, “multiple PRB operation” should be changed to “multi-carrier-operation”.

⇒ **For Multi-carrier-rel13, multiple PRB operation should be changed to multi-carrier-operation.**

⇒ **We signal ue-Category-NB-r13 { nb1 } explicitly. This IE has one value and is optional**

⇒ **Shall clarify in RRC that a UE of this release shall signal ue-Category-NB-r13.**

⇒ **Need to remove changes-on-changes, and change-marks on the cover page.**

⇒ **4.3.5.58, reference to R4 TS should 36.101.**

⇒ **Remove the details from the coversheet, for consistency with other CRs.**

⇒ **Add CR number for other specs affected**

⇒ **NSPmaxlist shall be optional**

⇒ **With these changes the CR is agreed unseen in [R2-164513](#)**

[R2-164513](#) Introduction of NB-IoT UE capabilities Ericsson CR36.30613.1.0 1328 2 B

⇒ **Agreed**

36.300

[R2-164287](#) 36.300 Running CR to Implement Stage 2 Agreements on NB-IoT Huawei CR36.30013.3.0 0880

- B result of email discussion [93bis#10][NB-IOT] Rel-13 NB_IOT-Core

- Huawei indicates that we need to do some consistency update, e.g. change back to multiCarrier.
- There is an FFS
- Should include CR numbers for other specs.

⇒ **Revised in [R2-164401](#) (Huawei)**

[R2-164401](#) 36.300 Running CR to Implement Stage 2 Agreements on NB-IoT Huawei CR 36.300
13.3.00880 B

- QC point out that the L1 chapter still talks about “PRB” and “carrier” in an inconsistent way.
- Huawei think that we can change PRB to carrier in all places in the section on multi-carrier operation.
- QC point out that that multi-PRB is also mentioned in section 18.
- Intel think that RAN2 concepts of anchor and non-anchor carrier should be related to RAN1 concept. Huawei think that it is sufficient to have anchor and non-anchor carrier in stage-3. Intel think we should use the RAN2 terminology/the shorter names for the CIOT solution chapter (7.3a).
- Huawei think that if we change in section 7.3a then we change everywhere and introduce an explanation in the definitions section. Qualcomm supports to do such change.

⇒ **We add definition that explains how RAN1 definition of carriers in multi-carrier relate to anchor and non-anchor carrier, and in the text we use anchor and non-anchor.**

⇒ **We use carrier consistently (not PRB) in multi-carrier texts.**

⇒ **Revised in [R2-164411](#).**

[R2-164411](#) 36.300 Running CR to Implement Stage 2 Agreements on NB-IoT Huawei CR 36.300
13.3.00880 B

- Ericsson think that we should re-write the definition of the non-anchor carrier to be from UE point of view.
- QC think that we need to align the definition and the text in 5.5a
- After offline, it was concluded that we should remove the RAN3 parts and those will be in a separate CR to RAN.

⇒ **Definition: Anchor carrier: In NB-IoT, a carrier where the UE assumes that NPSS/NSSS/NPBCH/SIB-NB are transmitted**

⇒ **Definition: Non-anchor carrier: In NB-IoT, a carrier where the UE does not assume that NPSS/NSSS/NPBCH/SIB-NB are transmitted**

⇒ **In 5.5a, Remove the sentence about Idle mode.**

⇒ **In 5.5a, Remove the last sentence.**

⇒ **Remove RAN3 parts from the CR (applies to subclause 20, 19, 10)**

⇒ **With these changes the CR is agreed in [R2-164415](#)**

R2-1644115 36.300 Running CR to Implement Stage 2 Agreements on NB-IoT Huawei CR 36.300
13.3.00880 3 B

⇒ **Agreed**

36.302

[R2-164288](#) 36.302 Running CR to Capture Agreements on NB-IoT Huawei CR36.30213.1.0 0076 - B
result of email discussion [93bis#15][NB-IOT] Rel-13 NB_IOT-Core

- Should remove tracked changes on the cover sheet
- Should include CR numbers for other specs.

Revised in [R2-164409](#) (Huawei)

[R2-164409](#) 36.302 Running CR to Capture Agreements on NB-IoT Huawei CR 36.302 13.1.00076
1 B

- Intel points out that there seems to be a formatting problem, e.g. fonts are not the same between sections of text. However the differences are not indicated by change marks. Can check whether this is an issue

⇒ **Agreed**

Withdrawn:

R2-163674 36.300 Running CR to Implement Stage 2 Agreements on NB-IoT Huawei draftCR 36.300 13.3.0
- - result of email discussion [93bis#10][NB-IOT] Rel-13 NB_IOT-Core
NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number

R2-163675 36.302 Running CR to Capture Agreements on NB-IoT Huawei draftCR 36.302 13.1.0 - -
- - result of email discussion [93bis#15][NB-IOT] Rel-13 NB_IOT-Core
NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number

7.14.2 Control Plane

7.14.2.1 Radio Resource Control - RRC

36.331

[R2-164289](#) 36.331 CR to Capture Agreements on NB-IoT Huawei CR36.331 13.1.0 2231 - B result of email discussion [93bis#17][NB-IOT] Rel-13 NB_IOT-Core
NOTE: This CR will be revised in [R2-164290](#) including ASN.1 review comments

- This is the version that was distributed for review.

⇒ **revised**

[R2-164290](#) 36.331 CR including ASN.1 Huawei CR36.331 13.1.0 2231 1 B result of email discussion [93bis#17][NB-IOT] Rel-13 NB_IOT-Core Revision of [R2-164289](#)

- This captures the outcome of the Ad-hoc and issues resolution from email review and L1 parameter from RAN1.
- Editor comments that this should be checked / reviewed. Items are marked with orange color in the review issue list.

⇒ **revised**

Revision in [R2-164397](#), to include outcome of this meeting. Revision to be available Thursday, for discussion Friday.

- Neul indicates that NAS will be informed twice with the current solution
- RetransmissionBSRTimer range is in sf. Ericsson think that if all other timers are in unit pp, also this timer should use the same unit.
- Ericsson wonders if we need to specify what the DRXstartsubframe offset refers to.
- Intel wonders if the UE-category in UE Radio Paging Info will be specified in 36.305. Neul explains that this is only used over network interfaces. Nokia wonders if the NB1 ever need to be changed.

⇒ **The indication to NAS of failed UL information transfer is only done when security has not been started.**

⇒ **We define the range of RetransmissionBSRTimer in unit pp.**

⇒ **We need to specify value of t-PollRetransmit in default config**

⇒ **We will add: L1 parameters according to R1 LS, same PCI configuration according to offline, RLC configurations according to RLC discussion, and address some editorials (e.g., remove one editor's note).**

⇒ **Remove the "IMPORTANT" comments in the MIB definitions.**

⇒ **Update SI TB-size acc to agreements.**

⇒ **With these comments we endorse the contents of this CR.**

⇒ **Revised**

Revision in [R2-164512](#), comeback Friday

- We update the overstrike and changes-on-changes at a later version.

[R2-164512](#)

- 36.331 CR including ASN.1 Huawei CR 36.331 13.1.02231 2 B
- 5.3.3.4a: QC think we should add the word stored before the UE AS Context.
 - QC further think we should be aligned between PDCP and RRC in the definitions section on the "stored UE AS context".
 - Intel think that for carrierconfigdedicated-NB, the guardband condition should only refer to operationModelInfo set to guardband in the MIB
 - QC wonders how this will work in the future. Neul think that future usage is flexible, and the IE may be present or not present. Intel wonders if we would consider spares instead of optional. Ericsson think this way is better.
 - For 5.3.3.8: Intel think we need to review the resulting behaviour of the indications to NAS.
 - Intel think that there is a forward compatibility issue for Radio paging info. Intel think that the UE need to report the radio paging info and that eNB cannot construct this. It is sufficient to report UE category.
 - Intel think that schedulingInfoSI could be simplified and we remove the SEQUENCE level. Neul think we can do this

- ⇒ **5.3.3.4a: we add the word "stored" before the UE AS Context, to be consistent with PDCP.**
- ⇒ **for carrierconfigdedicated-NB, the guardband condition should only refer to "operationModelInfo set to guardband in the MIB".**
- ⇒ **For RLC configuration: in the title, "R" in "RLC.." has been accidentally removed. It need to be put back**
- ⇒ **For RLC configuration: In the field descriptions reference should be 36.322**
- ⇒ **For UE category, the field description to be updated to say that the IE shall always be present in this version of the TS (or any equivalent wording).**
- ⇒ **9.2.1.1: t-reordering shall be N/A**
- ⇒ **In 5.3.3.8: Resume ID should be added to "discard the stored UE AS context"**
- ⇒ **Next version to be a clean version, to be finally checked by email**
- ⇒ **The UE to provide the UE category in radio paging info (rather than the eNB to construct this).**
- ⇒ **schedulingInfoSI to be simplified and we remove the SEQUENCE level.**
- ⇒ **The value in the default configuration for t-PollRetransmit is 25s**
- ⇒ **The value range of the BSR retransmit timer is {pp4, pp16, pp64, pp128, pp256, pp512, infinity, spare}**
- ⇒ **Include further Friday agreements from this meeting**
- ⇒ **Revised in [R2-164516](#), which is endorsed unseen.**

☒ **Short Email discussion: Final Review of [R2-164516](#) (for agreed version)**

[R2-163891](#)

Review issue list for NB-IoT second round ASN.1 and RRC review Ericsson, Huawei, HiSilicon, Neul discussion

- Z.004: ZTE think the problem is when the UE shall acquire the SIB. Intel think that the current text seems clear. QC think that we already agreed that the condition is that SIB14 need to be read only in case of connection establishment.
- E.079: Neul think we can reference 36.213. R1 is introducing clarifications in this meeting in this TS.
- E.081: Intel and Neul think this is clear considering the contents of other sections.

- H.90: Intel are ok to not have this. ZTE think that we have plenty of bits in the resume message and we can also have these in message 5. ZTE think we should send these bits. Ericsson don't want to send this in MSG3.
- H.91: Intel think this is not required by CT1.
- H.35: was offline agreed to not use containing.
- Z.024: QC think that maybe SIB14 can have shorter periodicity than SIB1. Neul agrees that this can be possible. Ericsson would like to wait with this discussion until we have discussed SI repetition.
- Z.025: Intel think that for CIOT in general, selected PLMN was agreed to be included but not registered MME. QC wonders how the context can be valid in a new PLMN ..
- E.015: QC think that we can leave it in, if we don't have a clear view of the requirements. Chair think that we should have a consistent agreement for inter- and intra-frequency.
- E.93: neul wonders what is the benefit. Ericsson think that we can e.g. have one PRACH resource for single tone and multi-tone. Ericsson indicates that the MAC CR allows this.
- H.124/125: Ericsson think it would be good to have a description. Intel point out that maybe current description (for LTE) is sufficient.
- H.116: Ericsson think we should use the default value infinity.
- H.120: Ericsson think for RLC-AM we need to indicate +2 as SRB1 and SRBbis may coexist for short moments in time.
- Z.024: ZTE think this would still make sense. Ericsson think that sometimes we might need the smaller values. Ericsson think that sometimes we may want to send SIB14 more often. Huawei also don't see a problem with smaller values.
- Z.025: After offline, ZTE think current agreement is valid.
- I.055.2: Intel think we should coordinate between eMTC and NB-IoT. Chair think that in any case this should be fixed for NB-IoT, and coordination can be done offline. Ericsson wonders what the leftmost or first bit. Intel agrees this need to be clear. Intel indicates that this is the way we have described it in the past.

Comeback discussion for the value of periodic BSR timer in the default configuration.

- The value in the default configuration is pp8
- The range for the periodic BSR timer shall be [pp2, pp4, pp8, pp16, pp64, pp128, infinity, spare]

⇒ **I.047: The issue need to be addressed, but can be resolved offline**

⇒ **Z.004: No action.**

⇒ **Z.018 discussed based on discussion paper**

⇒ **E.079: We introduce a ref to 36.213**

⇒ **E.081: No action**

⇒ **I.066: We go with option 2**

⇒ **I.005: disc separately**

⇒ **C002: discussed based on discussion paper**

⇒ **H.90: proposed resolution is agreed.**

⇒ **Z.019: proposed resolution is agreed.**

⇒ **Z.020: proposed resolution is agreed.**

⇒ **Z.021: proposed resolution is agreed.**

⇒ **Z.022, E.083: proposed resolution is agreed.**

⇒ **E.084: proposed resolution is agreed.**

⇒ **E.86: This issue is closed based on specific discussion**

⇒ **E.088: No action**

⇒ **I.067: proposed resolution is agreed.**

⇒ **H.91: proposed resolution is agreed.**

⇒ **H.35: No action.**

⇒ **Q.009: proposed resolution is agreed.**

- ⇒ Q.018: no action
- ⇒ Z.024: We stick with current values in the running CR
- ⇒ Z.025: Selected PLMN and Dedicated info NAS is included. Registered MME is not included.
- ⇒ E.015: We support cell blacklisting, both intra- and inter-freq.
- ⇒ E.92: already agreed
- ⇒ E.93: A restriction that different NPRACH resources cannot have the same repetition level has been captured in the MAC spec, and is captured in RRC as well
- ⇒ E.53: already agreed
- ⇒ H.55: We support multiple priority (reuse the current MAC text).
- ⇒ Z.015: no action
- ⇒ Z.016: should instead take into account the agreements from RACH email discussion.
- ⇒ H.103: handled in offline discussion from MAC discussion.
- ⇒ H.105: no action (see instead contributions for value range)
- ⇒ H.106: Issue is closed based on RLC 36.322 discussion
- ⇒ H.108: Remove the "Max" from npdcch-MaxNumRepetition-r13
- ⇒ Z.26: covered by the MAC discussion
- ⇒ E.91: the proposed resolution is agreed
- ⇒ I.055.2: the proposed resolution is agreed
- ⇒ H.110: discuss later based on contribution
- ⇒ H.111: import the related definitions from LTE module
- ⇒ H.124/125: We attempt to have descriptions related to need code OP. Ericsson volunteers to provide a first version. Determine offline.
- ⇒ E.068/69: discuss later based on contribution
- ⇒ E.070: the proposed resolution is agreed.
- ⇒ I.062: the proposed resolution is agreed, and we need to update in 36.306 as well.
- ⇒ H.112: the proposed resolution is agreed.
- ⇒ H.115: the proposed resolution is agreed.
- ⇒ N.15, H.79: No action. The configuration for SRB1 and SRB1bis is the same.
- ⇒ E.54: the proposed resolution is agreed.
- ⇒ H.116: Value in the default configuration is infinity.
- ⇒ H.117: the proposed resolution is agreed.
- ⇒ H.119: the proposed resolution is agreed.
- ⇒ E.075/076: discuss later based on contribution
- ⇒ N.33: It shall be clear that LTE processing requirements do not apply to NB-IoT.
- ⇒ H.120: we add a new column for NB-IoT. We assume that 2 RLC-AM entities are used for SRB1 and SRB1bis. Number for DRBs is depending on UE capability (0, 1, 2).
- ⇒ The value for the periodic BSR timer in the default configuration is pp8
- ⇒ The range for the periodic BSR timer shall be [pp2, pp4, pp8, pp16, pp64, pp128, infinity, spare]
- ⇒ H.124: Both IEs shall have need code OR
- ⇒ Revised in [R2-164517](#)

[R2-164517](#) Review issue list for NB-IoT second round ASN.1 and RRC review Ericsson, Huawei, HiSilicon, Neul discussion

- All RRC issues are closed

⇒ **Noted**

Multi-carrier configuration, discussion spawned from RRC review discussion

- Neul think we need to determine other parameters than gap and bitmap for the nonAnchorCarrier configuration
- We discuss together with gap and bitmap configuration.
- Neul report from the offline: There are agreements, but not yet clear which scenarios are applicable. Neul think RAN1 is discussing but there will probably not be an LS but a way forward etc agreed captured in R1 minutes.
- Thu morning: We need further offline

⇒ **We assume that the possible combinations anchor / non-anchor are: [guardband/guardband, guardband/inband, inband/inband, inband/guardband, standalone/standalone], with the restriction that carriers are not more than 20MHz apart.**

Offline discussion outcome in [R2-164510](#)

[R2-164510](#) Multi-carrier configuration Huawei

- Neul think we need to align naming, but except for this the proposal is ok.
- Intel think we should indicate need code OP in the condition and that what to assume at non-presence should be described in the field description of the IE.
- Ericsson wonders if this is the same as was sent out.

⇒ **Agree with this proposal to in-principle define what is the scenario-specific configuration (same PCI ind). Detail comments need to be addressed, which is done when integrating this into the main RRC CR.**

⇒ **noted**

[R2-164316](#) Inter-node messages in NB-IoT Ericsson CR36.331 13.1.0 2237 - B Rel-13 NB_IOT-Core late

- Neul wonders if the paging info is only transmitted between eNB and MME, or if this is sent over the air. Nokia think that this information is needed, but only in the network. Ericsson confirms that this is only sent in the network.
- Gemalto think that there is text on the handover use case in the text for NB-IoT. What is the target eNB. Ericsson think that this is mainly a consequence of fitting NB-IoT into the current sections.
- Vodafone would like to clearly separate the context fetch from handover preparation. NEC would like to use a new message, but if we use the same message it should at least be clear that for NB-IoT this is used for fetching of resume context rather than handover. QC also think that the use case for NB-IoT is different. Vodafone think that using handoverpreparation is acceptable.
- Nokia think that AS-config need to be changed to AS-ConfigNB
- Nokia think that eNB is providing CE level information to the MME, but this is missing. Ericsson explains that this is covered in a different document.
- Intel wonders whether we shall have the supported bandwidth for paging? Ericsson confirms that this is not applicable.

⇒ **The use case for NB-IoT need to be briefly described.**

⇒ **We update the existing texts with applicability statements for NB-IoT.**

⇒ **Lots of detailed comments, provide offline to editor,**

⇒ **Revised**

CR update in [R2-164398](#) (Ericsson)

[R2-164398](#) Inter-node messages in NB-IoT Ericsson CR 36.331 13.1.02237 - B Rel-13 NB_IOT-Core

- ARFCN-ValueEUTRA-r9 should not be used, use CarrierFreq-NB from the NB-IoT module instead.
- "handover" is still used in several locations in the text. This should be replaced by something else (the proposed IE name is ok).
- Editor will update the contents, check offline, and the contents will then be merged.

⇒ **With these comments the contents is agreed**

⇒ **Merged into the main RRC CR.**

AS-NAS interaction

[R2-163641](#) Resume failure and suspension maintenance indication ZTE corporation discussion

Not treated in NB-IoT session

[R2-164242](#) Further consideration on DVI LG Electronics Inc. discussion

- LG explains that the problem is that NAS doesn't inform AS about the data volume.
- Chair thinks that the 3GPP stack can be viewed as one entity, and that we only need to describe inter-TS-dependencies when there is logic defined in the different TSes for which the interaction need to be defined, Neul agrees.
- LG think that one solution is that NAS send the initial message to AS and the decision to send or not to send will be in the AS layer.
- ZTE think NAS layer will know the size information so there is no problem.
- No support.

⇒ **Noted**

[R2-164243](#) LS on latest updates about Data Volume Indicator (DVI) for NB-IOT in RAN2 LG Electronics Inc. LS out

Not treated

[R2-164214](#) Normal data at RRC connection for mo-ExceptionDataNEC discussion

- Intel is thinking CT1 is discussing this anyway. And RAN2 do not need to bring this up. Ericsson agrees.

⇒ **We will not further discuss this.**

⇒ **noted**

Specific Configurations

[R2-164310](#) Maximum number of NPDCCH repetitions for paging Ericsson discussion late

- ZTE wonders if the full range 1..2048 will be used. Ericsson think this can be useful. Huawei are ok with this ..
- ZTE would like to check.
- After offline ZTE are ok with the integer value range.
- Chair wonders if we need to specify anything for multi-vendor interoperability for the case when the parameter has a value that can never be used over the Uu interface.
- Samsung wonders if we ever would use a value that is not a power of 2.

⇒ **A UEPagingCoverageInformationNB-r13-IEs is introduced in UEPagingCoverageInformation that can include up to 2048 NPDCCH repetitions**

⇒ **The value range is INTEGER (1..2048) for NB-IoT.**

⇒ **Add a explanatory note that this range allows also values that are not used for Uu configurations.**

⇒ **noted**

[R2-164034](#)

Email discussion report on [NB-IOT-AH#2] Multi-PRB configuration Ericsson discussion result of email discussion [NB-IOT-AH#2]

- Huawei wonders if to update also stage-2
- QC think we should be consistent across specifications, and indeed update stage-2.
- QC think that multi-carrier has a specific meaning and should not be used.

P3

- QC think that the main point of having multi-PRB is for capacity expansion of a carrier/PRB, and that using this expansion PRB/carrier also as an anchor we'd need common channels also on this PRB/carrier. QC see no benefit of having a non-anchor carrier serve as an anchor for others. Mediatek agrees, and think the main point is the overhead of common transmissions. Huawei agrees, and think there may be RAN1 impact if we allow this.
- Ericsson think that the subframes for common transmissions can be indicated as not available, and there is no impact on RAN1. Ericsson think that the load distribution in Idle mode is not good enough.
- Samsung support the Ericsson view.
- ZTE think that there may be R1 impacts, so it is unclear if this is feasible at this point in time. Ericsson think this is a misunderstanding.

Configurations, for Gaps and valid subframes bitmap

- Discussion on proposal in email-disc paper vs the proposal in the running CR.
- ZTE wonders for the E proposal what is the behaviour.

⇒ **We use the names “anchor carrier” and “non-anchor carrier” in the context of multi-carrier operations.**

⇒ **The PCI of a non-anchor carrier/PRB is always the same as its associated anchor carrier/PRB.**

⇒ **A non-anchor carrier/PRB cannot serve as an anchor carrier/PRB with NPSS/NSSS/NPBCH/SIB1-NB for other UEs.**

⇒ **noted**

For Gap and valid sub-frame configuration for non-anchor-carrier discuss offline.

- This discussion converged and input to RRC cr,

[R2-163634](#)

Random Access for CIoT UP solution in MCO Intel Corporation discussion

- Ericsson think that R1 has made a decision but think that RAN2 need to discuss in detail how this shall work.

⇒ **We aim for the following: After RACH, when the UE was served on a non-anchor carrier, the UE will go back to the non-anchor carrier where it was previously served.**

⇒ **noted**

Huawei think this is quite complex. Huawei think R1 only considered PDCCH order, and R1 didn't consider R2 impact.

- Ericsson think we indeed can find a RAN2-only solution.

Comeback: Way forward how this shall work in detail, and spec impact (Intel).

[R2-164405](#)

Way forward RACH for MCO Intel

- Ericsson think that alt 3 doesn't work.
- Neul explains that alt 3 is only for PDCCH order.

- Ericsson think that eNB do not know how to act if the UE comes from Idle. How can the network know whether the UE is accessing for PDCCH order or initial transmission
- Vodafone are wondering what is the problem with alternative 1.
- Ericsson think that alternative 1 just brings more overhead, compared to alternative 2.
- Ericsson think that we can go for alt 2, and just hard-code this behaviour in the TS.
- QC think alt 2 works well.
- Ericsson think there is no problem with search space, UE uses CSS on the anchor and continued to use the previously configured USS on the non-anchor.
- NEC think that alt 2 has no impact on RAN1 regarding cross carrier scheduling.
- Vodafone think that Alt1 would be the baseline as alt2 could be somewhat more complex for the eNB. Intel could accept alt 2.

⇒ **We don't go for alt 3**

⇒ **We go for alt 2.**

⇒ **noted**

Radio Link Failure

[R2-163635](#) Radio Link Failure handling Intel Corporation discussion

P1

- Huawei think we can refer to common search space. Intel think we need to use USS. Mediatek agrees with Intel.
- Neul wonders what is the impact to RRC. Probably no impact at all.
- Intel think that RAN4 are already assuming this.

P2/P3

- RAN2 already agreed this.

P3

- Samsung wonders if the lower values are really applicable.

⇒ **As any NB-IoT UE is always configured with specific coverage enhanced level, radio link monitoring takes into account the maximum NB-PDCCH repetition value configured for the NB-PDCCH to be used by the UE. The value of the maximum number of repetitions for NB-PDCCH is configured via dedicated signalling (i.e. RRC Connection Setup or RRC Connection Reconfiguration) as part of the NB-PDCCH USS configuration**

⇒ **Noted**

[R2-163679](#) Radio Link Failure Huawei, HiSilicon, Neul discussion

Proposal 4 remains

- Ericsson think we will get a R4 LS on this.

⇒ **The value range of T310 needs to be extended for NB-IoT, e.g. ENUMERATED {ms0, ms200, ms500, ms1000, ms2000, ms4000, ms8000}. We reconsider this if we get an LS from RAN4.**

⇒ **noted**

[R2-163904](#) RLF in NB-IoT Ericsson discussion

⇒ **noted**

Suspend Resume

[R2-164159](#) Further aspects of RRC Resume Ericsson discussion

Revised in

[R2-164322](#) Further aspects of RRC Resume Ericsson discussion

P1

- The running CR already allows this, so we consider this already agreed.

P6

- Intel asks for clarifications. Is the right action to release the UE. Chair think this is an abnormal case that will happen very rarely.

⇒ **Capture the protection of resume related RRC messages in the table in Annex A.6 in [3] as outlined in Clause 4 above.**

⇒ **Agree on the proposed updates to 5.3.3.4a for the case where the check on the Integrity protection of the RRCConnectionResume message fails.**

⇒ **Noted**

[R2-163683](#) Terminology for NB-IoT solution 18 Huawei, HiSilicon, Neul discussion

Not treated

[R2-163901](#) Content of the RRCConnectionResumeComplete message Ericsson discussion

P1 Covered in the ASN.1 review issue list

P2

- Neul think we should have this optional as there can be a combination of CP and UP solution.

⇒ **Noted**

[R2-163640](#) Remaining issues for RLF ZTE corporation discussion

- Ericsson think we should not change at this stage.
- Intel and Ericsson think this would change the model for decision for suspension.

⇒ **Noted**

On definition of resume UE context, and the references to it in procedure text

- Intel think we need further decisions
- Chair think we agreed at the Adhoc on a high level.
- We need a stage-3 text proposal for NB-IoT.

Stage-3 proposal offline (Ericsson). Offline discussion thursday Coffeebreak

- Offline was held and conclusion were made

⇒ **DRAFT text with marked changes to be provided, and merged with the main RRC CR.**

Access Barring

[R2-163479](#) Procedure of Access Barring Check for NB-IoT CATT discussion

- Ericsson agrees with this.
- Neul agrees with the first case but is not sure about the second one.
- Ill wonders if NB-IoT can handle the case if UE only belongs to special AC class. Neul think this is not possible. A ue will always have a normal class as well.

⇒ **Agreed, and we integrate the proposal into the RRC CR.**

⇒ **noted**

Withdrawn:

R2-163676 36.331 Running CR to Capture Agreements on NB-IoT Huawei draftCR 36.331 13.1.0 - -
result of email discussion [93bis#17][NB-IOT] Rel-13 NB_IOT-Core
NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number

R2-163677 36.331 Running CR including ASN.1 Huawei draftCR 36.331 13.1.0 - - result of email
discussion [93bis#17][NB-IOT] Rel-13 NB_IOT-Core
NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number

7.14.2.2 System Information

[R2-164035](#) SI-message specific repetition levels for NB-IoT Ericsson discussion

- ZTE wonders what is the status of R1 discussion on small TBS. Ericsson think R1 is going for the Huawei proposal. ZTE point out that if the smaller TB sizes are covered by shorter transmissions there is less need. ZTE think that if we use similar sizes we get similar code rates.
- Intel confirms that RAN1 has agreed.
- Mediatek support the proposal.

For SI messages

- ⇒ **We confirm that if we have the additional smaller TB sizes we will have 8 TBS values {56 (2ms), 120 (2ms), 208 (8ms), 256, 328, 440, 552, 680}**
- ⇒ **si-RepetitionPattern-r13 is indicated per SI-message in SIB1-NB.**
- ⇒ **noted**

[R2-164118](#) Discussion on system information scheduling ZTE Corporation discussion

- Intel are concerned that a configuration may involve “spill-over” transmissions into another SI window. Intel think that we need a rule that a UE shall not receive the last bundle if it spills over into another SI window. Huawei LG and Ericsson think this can be resolved by network configuration.
 - Intel think that in the worst case there will only be 2 available subframes per frame. ZTE think that anyway this can be handled by proper network configuration.
- ⇒ **agree that option 2 is the correct interpretations**
 - ⇒ **the SI message transmission offset is a SI-Window offset**
 - ⇒ **Text proposal integrated offline, using the provided text as baseline.**
 - ⇒ **noted**

[R2-163370](#) Applicability of Downlink Sub frames for Transmission Gemalto N.V. discussion

- Ericsson think it could be optional but don't need to make this conditional.
 - Ericsson think this is clear today, and considers this a general tool.
 - Neul indicates that according to RAN1 at least the 10ms bitmap shall be supported for stand-alone.
- ⇒ **Noted.**

Withdrawn:

[R2-164300](#) [DRAFT] LS on TB sizes for SI-messages for NB-IoT (to: RAN1; cc: -; contact: Ericsson) Ericsson
LS out result of email discussion [NB-IOT-AH#1] Rel-13 NB-IOT-Core
NOTE: withdrawn due to RAN2#94 Tdoc number allocated instead of NB-IoT AH#2

7.14.2.3 Idle mode procedures

36.304

[R2-163870](#) Introduction of NB-IoT in 36.304 Nokia CR36.304 13.1.0 0311 - B result of email discussion [93bis#11][NB-IOT] Rel-13 NB_IOT-Core

- LG want to point out that there is a typo in 5.2.8a "an" should be "a".
- Chair notices that there are still changes on changes ..
- Nokia notices that the CR no need to be added.
- Neul points out that there should be CR numbers in the other TSes list.

⇒ **revised**

Revision in [R2-164399](#) (nokia). Available Thursday morning.

[R2-164399](#) Introduction of NB-IoT in 36.304 Nokia CR 36.304 13.1.00311 1 B

- Chair wonders if Headings can be changed in 3GPP TSes?

⇒ **The CR is agreed**

General

[R2-163905](#) RRM issues in NB-IoT Ericsson discussion

P1:

- We consider this already agreed.

⇒ **noted**

[R2-163680](#) Discussion on Treselection Huawei, HiSilicon, Neul discussion

⇒ **noted**

Discussion on two papers above

- Huawei think that Tevaluate = 2 DRX cycles.
- Intel think we might need to wait for RAN4. Ericsson think we can decide.
- Vodafone would like some smaller values possible for mobility.
- Intel think that measurements need to be taken over several subframes.
- Nokia think that the min time interval can remain 1s as this is there mainly to prevent ping pong.

⇒ **The Treselection range will be ENUMERATED {0, 3, 6, 9, 12, 15, 18, 21}. Default value is 3.**

⇒ **The min time interval between two consecutive reselections can remain 1s.**

⇒ **We assume that Treselection should be larger than Tevaluation.**

Withdrawn:

[R2-163906](#) Temporary Qoffset in NB-IoT Ericsson discussion

[R2-163907](#) Temporary Qoffset in NB-IoT Ericsson CR36.331 13.1.0 2179 - B Rel-13 NB_IOT-Core

7.14.2.4 Paging

eDRX, discussion after eDRX decisions in the main session

- QC wonders if the proposal on the table means that we get alignment of paging occasions and PTW. Ericsson think yes.
- Vodafone don't like this, and would like to stick with the current solution.
- Docomo think that different eNBs can have different default paging cycles.

- Ericsson think that 1.28s is a value and granularity is not useful for NB-IoT in bad coverage.
- Huawei think we also need to re-agree the value range. Ericsson agrees there is a problem with the initial agreement of 1.28 factor and the signalled 4 bits.
- The signalled 4 bits x, where x is a range where the mapping is different per RAT.
- We discussed that For NB-IoT, we use the same method to determine the PTW length as for LTE, i.e. a fixed factor is used and the PTW is x * the fixed factor, where For NB-IoT, the fixed factor is 1.28s
- ON the value range, QC wonders if we can have uniform distribution by reducing the 40.96 value. Ericsson explains that they would like to support 4 POs at a DRX cycle of 10.24s.

⇒ **The possible value range should still result in PTW of 0 .. 40s**

⇒ **The value range of PTW for NB-IoT is {0, 2.56, 5.12, 7.68, 10.24, 12.8, 15.36, 17.92, 20.48, 23.04, 25.6, 28.16, 30.72, 33.28, 35.84, 40.96} seconds**

⇒ **Include these agreements in the LS to CT1 and R3 (Ericsson). We don't need to see the LS in the NB-IoT session.**

[R2-164406](#)

eDRX in NB-IoT Nokia

- Vodafone think we can have it optional for the UE but not for the network.
- Intel think that indeed the function is optional on NAS level, and think that this flag is only for possible future disable, and would support this.
- Ericsson would be fine to have this.
- Ericsson think that the flag allows to support eDRX in the CN but only partially in the RAN.
- QC think that eDRX indeed is complex, but think that core network will be upgraded, and that eDRX is needed. QC think the on/off on TA level is sufficient, i.e. that we don't need this flag.
- Huawei think this is not needed, and think that NAS negotiation is sufficient. LG agrees.
- Nokia explains that a target scenario is IoT, when UEs initially don't implement this. QC think that this anyway need to be fixed. Vodafone think that the eNB is minimal.
- Chair summary: Not much support

⇒ **noted**

Also in main session:

[R2-163790](#)

Further Discussion on Idle Mode DRX Samsung Electronics Co., Ltd discussion

- LG indicates that this was not agreed in the main session and is not needed.
- Intel think this was discussed and we don't need this.
- Samsung explains that the simulations have been comprehensive.

⇒ **Noted**

7.14.3 User Plane

7.14.3.1 MAC/RLC

36.321

[R2-164036](#)

Email discussion report on [93bis#12][NB-IOT] CR to 36.321Ericsson discussion result of email discussion [93bis#12][NB-IOT]

⇒ **Noted**

- H.002: Naming. Use existing names in 36.321.
- H.011: Related to RV cycling, we need to introduce a consistency update based on 36.213.
- L.001: How to caputre non-usage of PBR. LG think we should discuss the intention. Chair think we simply only use the baseline logical channel prioritization, meaning that we have no rate dependent PBR priority, bucket handling etc. Ericsson didn't consider the case of introducing PBR later. Vodafone think we should not prevent to support PBR in the future.

- LG wonders if we need to specify behaviour for same priority UEs. Ericsson think no.
- Intel would like to have another method than PBR = infinity.

⇒ **H.002: We use existing names in 36.321.**

⇒ **We don't use PBR for NB-IoT.**

How to model no-use of PBR in the TS, discuss offline.

- Ericsson wonders if we can model non-usage of PBR in RRC instead of MAC by defining fixed parameter values there. Neul think this should be in MAC, for NB-IoT we don't have these parameters in RRC. LG and mediatek would also like to specify in MAC.
- In the offline it was agreed that in logical channel prioritization we don't use step 1 and 2 for NB-IoT, but only step 3, i.e. PBR is not applicable to NB-IoT. Ericsson would the TS rapporteur to check this.

⇒ **In logical channel prioritization we don't use step 1 and 2 for NB-IoT, but only step 3, i.e. PBR is not applicable to NB-IoT.**

H.011, H.013 Comeback (Ericsson) H.011 Related to RV cycling, we need to introduce a consistency update based on 36.213, H.013 related to R4 definition for PHR.

- Ericsson indicates that the reference to R4 definition maybe not is ready at this meeting, but we can close the RAN2 work anyway. Huawei agree we can close the R2 work anyway. Ericsson think we can remove the subclause, and just refer to the TS.
- THUS, maybe we need to later update the reference.

⇒ **Resolution included in the MAC CR, reviewed with the MAC CR.**

[R2-164298](#)

Introduction of NB-IoT to 36.321 Ericsson CR36.321 13.1.0 0883 - B result of email discussion [93bis#12][NB-IOT] Rel-13 NB_IOT-Core

- Neul explains that it would be preferable to have a separate section for RACH. Neul however think that the proposed text now is a lot clearer.
- Intel support the proposal in the CR.
- Huawei ask if CE level etc is only used in the context of RACH in TS 36.321. Intel wonders if a UE when he gets connected if RACH is needed to change CE level. Will the network configure CE levels. Ericsson confirms that UE will be configured but with repetition levels.
- Nokia observes that NB-IoT definition is different between different TSes.
- Chair think the definition of Data for DVI is strange. QC think we can just refer to data that is known to access stratum. LG think that data may be in the NAS layer. Ericsson indicates that the previous wording was different.

⇒ **For strong overlap with other CRs we introduce an exact copy of the other CR and the NB-IoT addition, but care need to be taken e.g. both CRs has to be approved in the end.**

⇒ **One issue on bullet intonation in 5.1.2. To be corrected in the next update.**

⇒ **We use the existing section on RACH, and apply the suggested clarifications (in the CR) to understand what is meant by coverage level, CE level (or enhanced coverage level, as proposed in another CR for eMTC for 36.321) for the RACH procedure NB-IoT in TS 36.321.**

⇒ **We should have some explanation or definition what is an NB-IoT UE.**

⇒ **An NB-IoT UE is a UE that uses NB-IoT. This definition is introduced in all TSes using this term.**

⇒ **We use the definition of NB-IoT from the RRC TS is other TSes as well.**

⇒ **For the definition of data for DVI, we clarify, and avoid the reference to future established logical channels,**

⇒ **CR number should be added on the cover sheet.**

⇒ **revised**

CR revision in [R2-164396](#), incorporating agreements from this meeting and the comments above (Ericsson)

- [R2-164396](#) Introduction of NB-IoT to 36.321 Ericsson CR 36.321 13.1.00883 1 B
- General: there are several CRs for eMTC, Ericsson indicates that there are proposals in the main session to change the structure for RACH resource selection to align it better with NB-IoT (and LTE)
 - Intel proposes that we can review preliminary merged CRs (inofficial). Ericsson think that clashes is normally resolved by the rapporteur, but this may be possible.
 - Huawei think that most eMTC CRs will not affect NB-IoT, and think this could be handled in CR implementation, or even at next meeting.
- TS comments
- 5.4.6 will not be included in the next revision
 - 7.7: ref to RAN1 TS need to be added.
 - Contention resolution according to the latest agreements for MCO need to be updated (was not included in this version).
 - 6.1.3.10: small update to make clear that for resume also data associated to established logical channels.
 - Definitions: Intel think we may need to do some updates to the definition of drx inactivity timer.
 - 5.1.4: We should not refer to other CRs that are not directly related to changes for NB-IoT.
 - 5.4.3.1: add a "the" between "and" and "corresponding"
 - 5.7: Huawei wonders if we need to clarify "if the PDCCH indicates a transmission for a NB-IoT UE", e.g. add (DL, UL). Could be discussed offline.
 - Remove the changes-on-changes.
- ⇒ **We endorse this version as a baseline, with the TS comments above.**
- ⇒ **revised**

CR revision in [R2-164416](#), addressing the TS comments above.

- [R2-164416](#) Introduction of NB-IoT to 36.321 Ericsson CR 36.321 13.1.00883 1 B
- ZTE think "a PRACH resource is grouped into a CE level" is unclear. Ericsson would like to keep this.
 - Intel think the mapping of the subcarrier index to ra-PreambleIndex is not clear. In 5.1.1 it seems possible to misunderstand that the subcarrier index is indicated by RRC.
 -
- ⇒ **3: Max to be removed in npdcch-MaxNumRepetitions and npdcch-MaxNumRepetitions-RA**
- ⇒ **PDCCH period (pp): Refers to the interval between the start of two PDCCH occasions and depends on the currently used PDCCH search space [2]. For an NB-IoT UE, a timer duration is configured by upper layers in units of a PDCCH period. The calculation of number of PDCCH subframes for a timer is done by multiplying the number of PDCCH periods with npdcch-NumRepetitions-RA when the UE uses the common search space or by npdcch-NumRepetitions when the UE uses the UE specific search space**
- ⇒ **Change "select the Random Access Preambles group and the PRACH resource corresponding to the selected CE level and, in case of NB-IoT, the support for multi-tone Msg3 transmission" into "select the Random Access Preambles group and the PRACH resource corresponding to the selected CE level and, in case of NB-IoT, additionally corresponding to the support for multi-tone Msg3 transmission"**
- ⇒ **In RRC, we remove the definition of Pdcch period.**
- ⇒ **The agreements above supersedes other (previous) agreements on this.**
- ⇒ **Change "a PRACH resource is grouped into a CE level" to "a PRACH resource is mapped into a CE level"**
- ⇒ **In 5.1.1 text enhancement can be considered (by email or even later) to avoid the potential misunderstanding that the subcarrier index is indicated by RRC.**
- ⇒ **Revised**

⇒ **New version in R2-164518, including the agreements above, which is endorsed unseen**

☒ **Short Email for final review of R2-164518**

Particular issue:

Ericsson explains that R1 has agreed to introduce a tone_index in PDCCH order R1-165652, which has impact on MAC. This would impact 5.1.1 and 5.1.2. There will not be an LS from R1 on this today.

- Intel understands that a UE that receives this, still uses contention based RACH, but this would impact RACH resource selection for subsequent attempts, where this UE would keep the indicated resource.

⇒ **We will implement support for the tone_index (according to way forward in R1-165652).**

⇒ **The UE will continue use the indicated subcarrier also for re-attempts.**

MAC General

[R2-164161](#) UE Contention Resolution Identity MAC control element Ericsson discussion

⇒ **Agreed also for NB-IoT.**

⇒ **Noted**

[R2-163483](#) Subsequent BSR/PHR Transmission CATT discussion

- P1: Intel and DT think we should not reopen the discussion on PHR for post-MSG3 transmissions.
- P2: Ericsson think that the table should be discussed based on other papers as well. We discuss this further after more presentations.

⇒ **We don't pursue PHR after MSG3 in Rel-13.**

⇒ **Reuse short BSR MAC CE for BSR signalling for subsequent data transmission.**

⇒ **Noted**

[R2-163387](#) Short Packet Mode for DVI and RCL on UEASTRI discussion

- The proposal is to have two modes for DVI, with one mode with better data size resolution for small packets.
- Mediatek think we don't need this, but should just define the tables carefully.

⇒ **Noted**

RACH

[R2-163638](#) Summary of email discussion [93bis#07][NB-IOT] RACH open issues ZTE corporation discussion result of email discussion [93bis#07][NB-IOT]

P2:

- Huawei think we should have the band_id. ZTE think the gain is rarely achieved, but introduces the problem that we cannot multiplex RAR from different bands in the RAR.
- Chair think there is a problem at the worst coverage, where there is only a single PDCCH opportunity in the window, and we then it is needed to multiplex.

P3

- Fujitsu support the proposal to have a coverage level/NPRACH resource indicator in RA-RNTI.
- Huawei think UEs in different RACH coverage levels will monitor different search space and there will not be collisions.
- Ericsson think this is useful when we configure multiple RACH resources, and there may be an overlap.

- ZTE acknowledges that there may be an overlap but decoding will result in receive failure most of the times, and think that the possibility for real problems is very small. Mediatek agrees. Qualcomm think that in case this rare event happens, contention resolution will resolve the issue. CATT think that the gain is very limited. Nokia agrees.

P4:

- Mediatek wonders if we need a floor () function. ZTE think that all applicable SFNs are a multiple of 4.

P5:

- LG points out that this means that PRACH-period is now the granularity and the max time is now the backoff _parameter_value * PRACH_period_CELx. LG think we can just have a new table. Ericsson agrees. LG think that if we do this we can reuse the existing text.
- Huawei think that the main benefit with PRACH period multiplication is to have more granularity.
- ZTE think that with this proposal we can have a simple list. ZTE think that the alternative is to not have any reference at all to PRACH period, but involves to come up with a range that covers 100's of ms up to 500s.
- QC think that a multiplication factor is better than having a larger table.
- Huawei think we need > 16 values to cover the range. Ericsson wonders if we need 56 values. Ericsson think that 16 values would be sufficient. LG agrees.
- Chair think that a flat table is simpler. QC think that there is also testing simplifications.
- Huawei wonders how we can choose the values?

⇒ **The (mod operation based on the) maximum RAN Window Size (W) is removed from the RA-RNTI formula.**

⇒ **A band indicator shall not be included in the RA-RNTI formula.**

⇒ **A coverage level/NPRACH resource indicator is not included in the RA-RNTI formula.**

⇒ **The RA-RNTI formula for NB-IoT is: RA-RNTI=1+SFN/4, with frequency information in the RAR and a RA-RNTI space of 1~256**

⇒ **We use the same method as for LTE for the BI values, i.e. a list of 16 values, that can be signalled, and the backoff time is not further dependent on PRACH period.**

⇒ **The Range of the backoff parameter value is**

0
 $2^8 = 256$
 $2^9 = 512$
 $2^{10} = 1024$
...
 $2^{18} = 262144$
 $2^{19} = 524288$

⇒ **noted**

[R2-163681](#) Random Access Procedure Remaining Issues Huawei, HiSilicon, Neuldiscussion

- Covered by previous

⇒ **Noted**

[R2-163871](#) Further details on RA procedure Nokia discussion

P1/P2:

- Ericsson indicates that when CCCH is indicated by LCID the DVI/PHR CE is always included and this is already in the running CR. Already the assumption is that we use one MAC subheader.

⇒ **We confirm that we use only one MAC subheader for MSG3 for both CCCH and DVI/PHR, and this is already in the running CR.**

⇒ **noted**

DRX

[R2-164202](#) Reconsideration on drx-InactivityTimer for NB-IoT LG Electronics Inc., Nokia, NEC discussion
=> Revised in [R2-164307](#)

[R2-164307](#) Reconsideration on drx-InactivityTimer for NB-IoT LG Electronics Inc., Nokia, NEC, Alcatel-Lucent Shanghai Bell, CATT

- Chair is wondering what is broken. LG think it is matter of battery consumption
- Ericsson think the main matter is of defining when to start the active time. Ericsson think that there is a risk that active time start too early but not likely, and don't see a need for this. Mediatek agrees.
- LG think the main point is to remove the condition when RTT timer and inactivity timer is running simultaneously. Intel support the proposed changes.
- Ericsson think that the blue line will always be 4ms.
- Huawei don't see the benefit and suggest to stop the discussion.
- Nokia think we should start the inactivity timer when RTT timer has expired.
- Ericsson suggest that UE should start PDCCH monitoring at the first PDCCH occasion 4ms after HARQ feedback.
- Docomo would like to keep the timers separate.
- Vodafone would not like to optimize.
- Nokia think that the UE should stop monitoring PDCCH when RTT timer starts, because for half duplex operation the UE cannot be scheduled anyway during this time.
- Samsung think that the UE should stop monitoring the PDCCH once PDCCH has been successfully decoded. Nokia think this is the same point in time as when the HARQ RTT timer starts.

- ⇒ **When UE need to continue PDCCH monitoring after a transmission, UE should start PDCCH monitoring at the first PDCCH occasion 4ms after HARQ feedback and/or PUSCH transmission, i.e. after RTT timer expiry.**
- ⇒ **Active time shall start at the point in time indicated above.**
- ⇒ **The UE should stop monitoring PDCCH when RTT timer starts.**
- ⇒ **We keep the current timers, i.e. both inactivity timer and retransmission timer.**
- ⇒ **noted**

[R2-163851](#) Connected mode DRX for NB-IOT MediaTek Inc. discussion

P1:

- Ericsson think that P2 and P3 is covered by previous agreement.
- Ericsson wonders if the second part of P1 is needed, but agrees that there shall be alignment.
- Ericsson think we can configure the DRX cycle + offset for UE such that it always coincides with the start of a PDCCH occasion.

- ⇒ **The onDurationTimer is configured in number of PDCCH occasions.**
- ⇒ **noted**

[R2-164039](#) Connected mode DRX timers for NB-IoT Ericsson discussion

- Huawei wonders if we change in general from PDCCH period to PDCCH Occasions. Ericsson think yes.

P3

- Chair wonders how to use the 8 bits. Ericsson think that even distribution is the target.
- Ericsson explains that the value should be used with a factor that is dependent long DRX cycle.
- Mtk supports this.

P4:

- ZTE point out that on duration should not be longer than the DRX cycle.
- Ericsson agrees but think this is a case of wrong configuration. LG agrees, and think we don't need specific text in the TSes.

P7:

- Huawei think we don't need to change this. LG want to review the text proposal instead.

- ⇒ **The OnDuration periods should be aligned with the scheduling interval in NB-IoT (T) and the length of the long DRX cycle should be a multiple of T.**
- ⇒ **Use the following long DRX cycles: sf256, sf512, sf1024, sf1536, sf2048, sf3072, sf4096, sf4608, sf6144, sf7680, sf8192, sf9216, spare4, spare3, spare2, spare1.**
- ⇒ **Use 8 bits for specifying the OnDuration offset for any of the different long DRX cycles.**
- ⇒ **The granularity is long DRX cycle / 256.**
- ⇒ **Use the following OnDurationTimer values: pdcch occasions {1, 2, 3, 4, 8, 16, 32 spare1}.**
- ⇒ **Use the following drx-InactivityTimer values: pdcch occasions {0, 1, 2, 3, 4, 8, 16, 32}.**
- ⇒ **We use Pdcch Occasions instead of Pdcch Period also for DRX retransmission timer and DRX UL retransmission timer.**
- ⇒ **noted**

Check that ranges are ok with this change

- Mediatek think the range should be ok. Huawei confirms that the ranges are ok.
- Chair think we should specify what is meant by these kind of units. ZTE agrees. ZTE think e.g. that PDCCH period as such is not mentioned in RAN1 specifications. Ericsson think we should use "T".

Offline on Clarify the unit that is used for configuration

[R2-164410](#)

Way Forward on PDCCH Occasions in NB-IOT Mediatek

- Chair think we need to discriminate between the Start of timer and Duration of timer
- Ericsson think that duration is most important. Ericsson proposes that if the timer spans several then the UE can compensate.
- Ericsson think that the network should configure such that start of timers start at the right points in time.
- Huawei think there are two proposals on the table for the duration: pp, T, uss.
- Mediatek think that pp could be ok.

Chair summary: proposals are still not clear. Offline to continue.

⇒ **Revised in [R2-164412](#)**

[R2-164412](#)

Way Forward #2 on PDCCH Occasions in NB-IOT Mediatek

P2

- Huawei think this is not a problem. Ericsson think this need to be specified, as this can happen and the problem could be significant for small values, e.g. the result could be that also for configured value 2 could give the result that still only one opportunity would be used by the UE.
- Huawei think that if a timer stops in the "middle" of a PDCCH occasion, the UE will likely fail to receive this. Ericsson think that to ensure certain number of PDCCH occasions is monitored then the network would then have to configure larger numbers than needed
- Huawei could anyway accept this if Ericsson can find a good way to capture this.
- We assume only MAC timers are affected by this.
- ⇒ **We use the notation ppX, i.e. pp1, pp2, etc, where pp can be translated as "PDCCH Period"**
- ⇒ **When the ending point of a MAC timer or window is within a PDCCH CSS/USS, it is automatically extended to the end of the CSS/USS.**
- ⇒ **noted**

[R2-163639](#) Remaining MAC issues ZTE corporation discussion

⇒ **Noted**

[R2-163779](#) Connected Mode DRX Configuration for NB IoT Samsung Electronics Co., Ltd discussion

- Samsung think that the main pint is that the UE shall stop monitoring PDCCH when the PDCCH has been successfully decoded.
- LG think that this is a small optimization, and think that the main impact is to stop the onduration timer. LG suggest that we don't look at all small optimizations.
- Samsung think that RAN1 has already agreed this.

Discuss offline whether the UE shall stop monitoring PDCCH when the PDCCH has been successfully decoded (Samsung).

- Some progress but not fully concluded.

Round 2

- Samsung think that inactivity timer and retransmission timer should stop when PDCCH is received.
- Samsung quotes RAN1 agreement that PDCCH need not be monitored from PDCCH reception and start of scheduled transmission.
- Ericsson think that we need to implement the RAN1 agreement by defining timer behaviours such that the active time do not include this time, and the required change is the change of timers.
- Samsung also think the onduration timer need to be stopped. Ericsson agrees.
- Samsung wonders if the start condition need to change. Ericsson indicates that this is already changed for NB-IoT.
- Intel wonders if the onduration timer can span several PDCCH occasions. Ericsson think that for further scheduling we rely on other timers, and that onduration is only for the first scheduling.

⇒ **We follow the RAN1 agreement such that the UE does not try to receive PDCCH when PDCCH is not sent.**

⇒ **Inactivity timer, UL retransmission timer and onDuration timer shall stop when PDCCH is received.**

⇒ **noted**

Support for UL scheduling

[R2-163678](#) UL Scheduling Remaining Issues Huawei, HiSilicon, Neuldiscussion

P1 is already agreed

P2

- Ericsson think we should keep the flag.

P3

- Ericsson want to add value infinity, and would like to have a few smaller values as well.

⇒ **We confirm that sr-ProhibitTimer is not supported for NB-IoT and it can be removed from the RRC ASN.1.**

⇒ **noted**

Offline on Value range for logicalChannelSR-ProhibitTimer-NB-r13. FFS if the values of logicalChannelSR-ProhibitTimer-NB-r13 are enumerated as {pp20, pp40, pp64, pp128, pp512, pp1024, pp2560, spare}. Offline discussion (Neul).

- Neul indicates that there was progress. The proposal is {pp2, pp8, pp32, pp128, pp512, pp1024, pp2560, spare}
- Ericsson want to replace pp2560 with pp2048

⇒ **logicalChannelSR-ProhibitTimer-NB-r13 value range is is {pp2, pp8, pp32, pp128, pp512, pp1024, pp2048, spare} (maybe pp need to be changed based on other agreements)**

[R2-164040](#) BSR and DVI for NB-IoT Ericsson discussion

P1:

- LG think that we should use the existing short BSR format but could consider to change the value range. Huawei and Nokia agrees. ZTE.
- CATT would like to keep legacy short BSR as it is, also including the value range
- Ericsson think we don't need so many values. Not for mgs3 and not for subsequent transmissions.
- LG wonders what is the benefit of a 4 bit BSR, when we could reuse the 8-bit BSR. Ericsson think that one benefit is to reuse the same table between BSR and DVI, and to have future extension possibility.
- Ericsson think that we may need more information for UL scheduling in the next release.
- Ericsson think that we will not use most of the code points if using the LTE BSR range.

P4

- The value range of periodic BSR timer (periodicBSR-Timer) is part of offline discussion above.

P5 (applicable for DPI):

- LG think we should have larger values. Larger than 1500 bytes, as SDU size is up to 1500 bytes. Docomo agrees. Huawei agrees.
- Ericsson think that there will be new BSRs. The max TB size is anyway around 125 bytes.

- ⇒ **The format of LTE short BSR is reused, meaning that the BSR is 6 bits.**
- ⇒ **We use the LTE BSR range.**
- ⇒ **Use the smaller buffer size intervals as specified in table 1 for the DPR in NB-IoT. Add a couple of larger values, with the highest value meaning >= 1500 bytes.**
- ⇒ **noted**

[R2-163682](#) Discussion on DVI and BSR Huawei, HiSilicon, Neuldiscussion

- ⇒ **Noted**

[R2-163852](#) NB-IOT MAC Issues on DVI and BSR MediaTek Inc. discussion

- ⇒ **Noted**

36.322

[R2-164283](#) Introduction of NB-IoT NTT DOCOMO INC. CR36.322 13.1.0 0121 - B result of email discussion [93bis#13][NB-IOT] Rel-13 NB_IOT-Core

- Only t-reordering is an open issue
- Update other specs affected on the cover sheet

CR revision in [R2-164413](#), including agreements from this meeting (docomo). CB Thursday. THERE WAS a double tdoc number allocation (collision with tdoc 4401)

- Docomo explains that t-reordering do not need to be configured. Instead a new parameter "disableStatusReportSN-Gap", is proposed to be configured.
- Neul wonders what is the default value. Docomo think that the default is "not present", i.e. status reports are enabled. Ericsson think it should be the opposite. Neul think that the default should be to not trigger such status reports.
- Huawei think we should remove the details on the cover sheet to be consistent between the CRs.

- ⇒ **The name of the new parameter should be "enableStatusReportSN-Gap". Corresponding wording to be updated.**
- ⇒ **Remove the details on the cover sheet, to align with coversheet of the other CRs.**
- ⇒ **In 5.2.3, remove the redundant "."**

- ⇒ In 4.4, remove ending s in “configurations”.
- ⇒ With these changes the CR is agreed. Final version in [R2-164511](#).

[R2-164511](#) Introduction of NB-IoT NTT DOCOMO INC. CR 36.322 13.1.00121 - B
⇒ Agreed

RLC General

[R2-163392](#) Email disc summary on t-Reordering for NB-IoT NTT DOCOMO INC. report
Re-submission of [R2-163217](#); result of email discussion [93bis#08]

P1

- Ericsson want to have the possibility to disable RLC status reports at SN gaps, and point out that in most cases it is more efficient to only rely on polling, which will cause less status reports.
- QC didn't take part in the email discussion, but think that sending status report can be costly, especially for the case of multi-carrier, so QC would support the possibility disable the SN gap trigger. Ericsson think that the issue is not related to the single-multi-carrier scenario.
- Neul think we don't need this status report trigger at all. Sony think this is true in most cases.
- Docomo think that SN gap is due to ack-nack error. Docomo think that L1 should provide sufficient reliability so this doesn't happen often. Ericsson think that in some situations, especially in bad coverage, the error rate is not always low, and that putting these requirements on L1 may be costly.
- DT sympathises with Ericsson. Sony also think it should be possible to disable.
- Docomo think that there is TS impact, and docomo don't want to fix it now. Ericsson agrees that there is TS impact, but compared to all other impacts it is small.
- LG think that RLC status PDU shall be sent at ack-to-nack-error. Ericsson agrees and think that the last pdu poll will cover this.
- Sony think that the poll in the last PDU is sufficient for most traffic cases, and think that the NB-IoT traffic is different from LTE. Sony also don't think this is complex.
- Docomo cannot agree to this change as we don't have a draft CR, and think that the impact is large. Chair wonders whether enable/disable is simpler than [0ms, infinity].
- Fujitsu wonders whether we need to specify anything for the enable/disable decision.
- Huawei think we should have enable/disable.
- Docomo think we can achieve the desired effect by logical channel SR prohibit. Ericsson think that then we need to set very long values. Docomo think this is no problem as the network can then poll by providing a blind UL grant. Huawei don't want to connect these things.

- ⇒ It is common understanding that the value zero of timer means t-Reordering is started and expired immediately, i.e., does not mean timer never starts.
- ⇒ RLC status reporting due to SN gap can be disabled for NB-IoT
- ⇒ When Status report is triggered due to SN gap, the triggering is immediate, i.e. as if t-reordering is set to 0ms. There is no other configurability of t-reordering except 0 ms and possibly infinity, depending on the implementation of the agreements above.
- ⇒ noted

Timers

[R2-164041](#) UP miscellaneous timers for NB-IoT Ericsson discussion

P1 is discussed offline

P3:

- Chair wonders why we have infinity. Isn't this optional? Neul clarifies that it is conditional and always provided for setup for LTE.

⇒ **The PDCP discardTimer value range {sf5120, sf10240, sf20480, sf40960, sf81920, infinity, spare2, spare1}.**

⇒ **noted**

Withdrawn:

R2-163393 Introduction of NB-IoT NTT DOCOMO INC. draftCR 36.322 13.1.0 - - B result of email discussion [93bis#13][NB-IOT] Rel-13 NB_IOT-Core
NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number

R2-164037 Introduction of NB-IoT to 36.321 Ericsson draftCR 36.321 13.1.0 - - result of email discussion [93bis#12][NB-IOT] Rel-13 NB_IOT-Core
NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number

R2-164038 UE Contention Resolution Identity MAC control element Ericsson discussion
NOTE: **R2-164038** is replaced by [R2-164161](#)

7.14.3.2 PDCP

Output of email discussions:

[R2-164297](#) Introduction of NB-IoT functionality to PDCP protocol Qualcomm Incorporated (Rapporteur) CR 36.323 13.1.0 0171 - B result of email discussion [93bis#14][NB-IOT] Rel-13 NB_IOT-Core

- One open issue on the max SDU size
- CR numbers for the affects specs to be added on the cover sheet.
- Brackets etc should be removed.

⇒ **revised**

Revised in [R2-164402](#) (QC), including agreements from this meeting.

[R2-164402](#) Introduction of NB-IoT functionality to PDCP protocol Qualcomm Incorporated (Rapporteur) CR 36.323 13.1.0 0171 1 B Rel-13 NB_IOT-Core

- Huawei asks if cached AS context and its contents is what is agreed offline.
- Intel think this should be aligned.
- Remove the highlighting.

⇒ **Except this detail the CR seems agreeable**

⇒ **revised**

Revised in [R2-164408](#) (QC), after the offline result on resume context,

[R2-164408](#) Introduction of NB-IoT functionality to PDCP protocol Qualcomm Incorporated (Rapporteur) CR 36.323 13.1.0 0171 2 B Rel-13 NB_IOT-Core

⇒ **In 36.331, when triggering PDCP re-establishment at Resume, it shall be indicated/clear that “stored UE AS context is used”.**

⇒ **In this CR, the definition of stored UE AS context shall be removed.**

⇒ **Revised**

⇒ **With this change the contents is agreed. Final version in [R2-164515](#), agreed unseen**

[R2-164515](#) Introduction of NB-IoT functionality to PDCP protocol Qualcomm Incorporated (Rapporteur) CR 36.323 13.1.0 0171 2 B Rel-13 NB_IOT-Core

⇒ **Agreed**

[R2-164308](#) Discussion on PDCP SDU Size Huawei, HiSilicon, Neul discussion late

- QC proposes 1600 octets in order to have some margin.
 - ⇒ **The maximum size of PDCP SDU and PDCP control PDU is 1600 octets in NB-IoT.**
 - ⇒ **noted**

[R2-164042](#)

Email discussion report on [NB-IOT-AH#3] PDCP handling at Resume Ericsson discussion result of email discussion [NB-IOT-AH#3] Rel-13 NB_IOT-Core

- QC think that data being kept in buffers at suspend would be an abnormal case.
- In the current running RRC CR re-establishment is not covered at all.
 - ⇒ **We confirm that During suspend-resume RLC and PDCP will be re-established**
 - ⇒ **At RRC suspend RBs are suspended, and at RRC Resume RBs are resumed.**
 - ⇒ **PDCP is re-established at RRC resume.**
 - ⇒ **RLC is re-established at RRC resume.**
 - ⇒ **noted**

[R2-164043](#)

Draft CR to 36.331 for updates related to RRC suspend/resume Ericsson draftCR 36.331 13.1.0 -
- Rel-13 NB_IOT-Core

NOTE: No intention to submit to RAN plenary

- Ericsson point out that there are two proposals, re-establishment and resume suspend of bearers.
- Huawei want to re-establish both RLC and PDCP at resume. Huawei and Nokia think that all DL data will have been acknowledged when suspend happens. Intel agrees.
- All companies seem to agree that re-establishment shall be done.
- Huawei think we should only cover the simple scenarios. Ericsson don't think there is a complexity difference
 - ⇒ **Relevant parts are merged into the main RRC CR**

[R2-164044](#)

Draft CR to 36.323 for introducing RRC suspend/resume Ericsson draftCR 36.323 13.1.0 -
- Rel-13 NB_IOT-Core

NOTE: No intention to submit to RAN plenary

- Intel think we should consider to not mention RRC resume
 - ⇒ **With the agreements above the new section 5.x is not needed.**
 - ⇒ **Agree that the actions in the CR above shall be done, if no improvements to the text are found needed, we use the text in the CR.**

Determine offline improvements for the split RRC/PDCP and the resulting CR text – resolved.

⇒ **Relevant parts are merged into the main RRC CR**

Withdrawn:

[R2-163880](#)

Introduction of NB-IoT functionality to PDCP protocol Qualcomm Incorporated (Rapporteur)
draftCR 36.323 13.1.0 - - B result of email discussion [93bis#14][NB-IOT] Rel-13 NB_IOT-Core

NOTE: Wrong Tdoc type used. It should be the type 'CR' with new Tdoc number

Annex K: History

Document history		
Date	TSG RAN WG2 Tdoc	Subject
16.05.2016	-	Skeleton report for RAN WG2 #94 provided before the meeting
17.05.2016	-	Update 1 of skeleton report for RAN WG2 #94 provided before the meeting
19.05.2016	-	Update 2 of skeleton report for RAN WG2 #94 provided before the meeting
22.05.2016	-	Update 3 of skeleton report for RAN WG2 #94 provided before the meeting
30.05.2016	-	Draft report v0.1 for RAN WG2 #94 provided after the meeting
12.08.2016	R2-164601	Draft report v1.0 for RAN WG2 #94 provided after the meeting
26.08.2016	R2-164670	Report v2.0 for RAN WG2 #94 provided after the meeting
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