

Agenda Item: 2.2
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Title: Report of 3GPP TSG RAN WG2 meeting #95
Goteborg, Sweden, August 22 – 26, 2016
Document for: Approval

**Report of 3GPP TSG RAN WG2 meeting #95
held in Gotenburg, Sweden
August 22 - 26, 2016**



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Contents

Organisation of the meeting	10
Statistics/Executive Summary	10
1 Opening of the meeting (9 AM)	12
1 Opening of the meeting (9 AM)	12
1.1 Call for IPR	12
1.2 Network usage conditions	12
1.3 Other	13
2 General	13
2.1 Approval of the agenda	13
2.2 Approval of the report of the previous meeting	15
2.3 Reporting from other meetings	15
2.4 Others	16
3 Incoming liaisons	16
3.1 Joint UMTS/LTE relevance	16
3.2 LTE relevance	17
3.3 UMTS relevance	18
4 Joint UMTS/LTE: Rel-13 and earlier releases	19
4.1 Joint UMTS/LTE: Rel-12 and earlier releases	19
4.2 Joint UMTS/LTE: Rel-13 WIs	19
5 Joint UMTS/LTE: Rel-14	19
5.1 Other Joint UMTS/LTE Rel-14 WIs	20
5.2 Joint UMTS/LTE TEI14 enhancements	21
6 LTE: Rel-12 and earlier releases	21
7 LTE: Rel-13	25
7.1 WI: Licensed-Assisted Access using LTE	25
7.2 WI: CA enhancements	26
7.3 WI: Single-Cell point-to-multipoint transmission	27
7.4 Physical Layer Enhancements for MTC	27
7.4.1 Control Plane	28
7.4.2 User Plane	31
7.5 WI: ProSe enhancements	32
7.6 WI: LTE-WLAN Radio Level Integration	33
7.6.1 LTE+WLAN Aggregation	33
7.6.2 Interworking Enhancements	37
7.7 WI: Multicarrier Load Distribution in LTE	39
7.8 WI: Dual Connectivity Enhancements	39
7.9 WI: RAN enhancements for extended DRX in LTE	39
7.10 WI: Elevation Beamforming/Full-Dimension (FD) MIMO for LTE	41
7.11 WI: Further Enhancements of Minimization of Drive Tests for E-UTRAN	42
7.12 WI: Indoor Positioning Enhancements for UTRA and LTE	42
7.13 WI: LTE-WLAN RAN Level Integration supporting legacy WLAN	42
7.14 WI: Narrowband IOT	43
7.14.1 Control Plane	43
7.14.2 User Plane	44
7.15 Other LTE Rel-13 WIs	45
7.16 LTE TEI13 enhancements	46
7.16.1 CIoT optimisations	46
7.16.2 Other	47

8	LTE Rel-14.....	51
8.1	WI: Enhanced LAA for LTE	51
8.1.1	Random Access for LAA SCell	51
8.1.2	UL HARQ for LAA SCell	52
8.1.3	Other user plane.....	52
8.1.4	Control plane aspects	55
8.2	WI: Support for V2V services based on LTE sidelink	56
8.2.1	Geo-location aspects	56
8.2.2	Mobility and Path switch	57
8.2.3	QoS aspects	57
8.2.4	SPS enhancements.....	57
8.2.5	Stage 3	57
8.3	SI: Study on enhancement of VoLTE.....	59
8.3.1	Organisational.....	59
8.3.2	Codec mode/rate selection/adaptation	59
8.3.3	VoLTE/video signalling related enhancements.....	59
8.3.4	VoLTE/video quality related enhancements	59
8.3.5	Other	60
8.4	SI: Further Enhancements to LTE Device to Device, UE to Network Relays for IoT and Wearables	60
8.4.1	UE-to-Network Relay enhancements	60
8.4.1.1	Common relay architecture aspects	60
8.4.1.2	Non-3GPP related aspects	60
8.4.1.3	Other	60
8.4.2	LTE sidelink enhancements.....	61
8.4.2.1	Evaluation assumptions.....	61
8.4.2.2	Other	61
8.5	WI: Enhanced LTE-WLAN Aggregation (LWA)	61
8.5.1	Uplink over WLAN.....	62
8.5.2	Mobility enhancements	64
8.5.3	Support of 802.11ax, 802.11ad, and 802.11ay	65
8.5.3.1	Control plane enhancements	65
8.5.3.2	User plane enhancements	66
8.5.4	Feedback enhancements.....	66
8.5.5	ANR for LWA.....	66
8.5.6	Other	66
8.6	WI: Further mobility enhancements in LTE	66
8.6.1	RACH-less handover.....	67
8.6.2	Make before break handover.....	67
8.6.3	Other	67
8.7	WI: Further Indoor Positioning enhancements for UTRA and LTE	67
8.7.1	OTDOA and CID/E-CID enhancements	68
8.7.2	Enhancements for WLAN, Bluetooth, Barometric, and MBS	69
8.7.3	TBS positioning based on PRS	71
8.7.4	Other	71
8.8	WI: L2 latency reduction techniques for LTE.....	71
8.9	WI: Signalling reduction to enable light connection for LTE	72
8.9.1	Signalling reduction	72
8.9.2	Context storage/retrieval across eNBs.....	72
8.9.3	Paging enhancements	72
8.9.4	Other	73
8.10	WI: eMBMS enhancements for LTE.....	73
8.10.1	MBSFN subframe enhancements	73
8.10.2	MBSFN dedicated carrier	73
8.10.3	Multicarrier MBMS operation	73
8.10.4	MBMS reception without authentication.....	73
8.10.5	Other	73
8.11	WI: Enhancements of NB-IoT	74
8.11.1	Multicast	74
8.11.2	Non-anchor PRB enhancements	74
8.11.3	Mobility enhancements	74
8.11.4	Other	75
8.12	WI: Further Enhanced MTC	75

8.12.1	Multicast	75
8.12.2	Higher data rates	75
8.12.3	Other	76
8.13	WI: LTE-based V2X Services	76
8.13.1	SC-PTM/MBMSFN enhancements	76
8.13.2	SPS enhancements	76
8.13.3	V2P services	76
8.13.4	Other	77
8.14	Other LTE Rel-14 WIs	77
9	SI: Study on New Radio Access Technology	77
9.1	Organisational	77
9.2	General aspects	78
9.3	Deployment scenarios	80
9.4	Radio protocol architecture	81
9.4.1	Overall architecture	81
9.4.2	User plane	82
9.4.2.1	Overall user plane architecture	82
9.4.2.2	QoS	86
9.4.2.3	Other user plane aspects	87
9.4.3	Control plane	89
9.4.3.1	States	89
9.4.3.2	System information	91
9.4.3.3	LTE-NR tight interworking specific aspects	93
9.4.3.4	Other	95
9.5	Mobility	96
9.5.1	Intra NR RAT	96
9.5.1.1	Mobility with RRC involvement	96
9.5.1.2	Mobility without RRC involvement	99
9.5.1.3	Other	100
9.5.2	Inter-RAT	100
9.6	Other	101
10	UTRA Release 11 and earlier releases	101
11	UTRA Release 12	102
12	UTRA Release 13	103
12.1	WI: L2/L3 Downlink enhancements for UMTS	103
12.2	WI: Power saving enhancements for UMTS	104
12.3	WI: Support of EVS over UTRAN CS	104
12.4	WI: Network-Assisted Interference Cancellation and Suppression for UMTS	104
12.5	WI: Multiflow Enhancements for UTRA	104
12.6	WI: HSPA Dual-Band UL carrier aggregation	104
12.7	WI: Application specific Congestion control	104
12.8	WI: Indoor Positioning enhancements for UTRA and LTE	104
12.9	WI: Downlink TPC enhancements for UMTS	104
12.10	WI: Dual Carrier HSUPA Enhancements for UTRAN CS	104
12.11	UTRA TEI13 enhancements	105
13	UTRA Rel-14	105
13.1	WI: RRC optimization for UMTS	105
13.1.1	Filtered UPH measurements;	106
13.1.2	Simultaneous RAB setup and release	106
13.1.3	Others	107
13.2	WI: DTX/DRX enhancements in CELL_FACH	107
13.3	WI: Multi-Carrier Enhancements for UMTS	109
13.4	WI: Further Indoor Positioning Enhancements for UTRA and LTE	110
13.5	SI: Study on HSPA and LTE Joint Operation	110
13.6	TEI14	115
14	Outgoing LSs and email discussions from UTRA session	115
14.1	Agreed outgoing LSs from UTRA session	115
14.2	Email discussions from UTRA	115

15	Comebacks	116
15.1	LTE breakout sessions	116
15.1.1	Report from LTE Break-Out session	116
15.1.2	Report from LTE Break-Out session	117
15.1.3	Report from NB-IOT session	118
15.2	UMTS breakout session	118
15.3	Main session	118
15.4	Email Discussions from main session	118
16	Outgoing LS from LTE and Joint	120
17	Any other business	121
18	Closing of the meeting (17:10).....	121
Annex A:	List of participants.....	122
Annex B:	List of Tdocs	122
Annex C:	Incoming liaison statements for TSG RAN WG2 #95	122
Annex D:	Outgoing liaison statements of TSG RAN WG2 #95	128
Annex E:	List of agreed CRs for RAN #73.....	131
Annex F:	RAN WG2 meeting #95 post processing.....	140
	Email discussions/approvals	140
	CRs from other WGs to be agreed/reviewed by RAN2 before RAN #73:	147
	Preparation of status reports for SIs and WIs under RAN2 leadership for RAN #73:	148
	New SIs and WIs under RAN2 leadership for RAN #73:	149
Annex G:	LTE Breakout session: V2V, V2X, FeD2D, LATRED	150
7.5	WI: ProSe enhancements	150
8.2	WI: Support for V2V services based on LTE sidelink	151
8.2.1	Geo-location aspects	152
8.2.2	Mobility and Path switch	154
8.2.3	QoS aspects	156
8.2.4	SPS enhancements.....	158
8.2.5	Stage 3	159
8.4	SI: Further Enhancements to LTE Device to Device, UE to Network Relays for IoT and Wearables	165
8.4.1	UE-to-Network Relay enhancements	166
8.4.1.1	Common relay architecture aspects	166
8.4.1.2	Non-3GPP related aspects	168
8.4.1.3	Other	168
8.4.2	LTE sidelink enhancements	168
8.4.2.1	Evaluation assumptions.....	168
8.4.2.2	Other	168
8.8	WI: L2 latency reduction techniques for LTE.....	169
8.13	WI: LTE-based V2X Services	172
8.13.1	SC-PTM/MBMSFN enhancements	172
8.13.2	SPS enhancements.....	172
8.13.3	V2P services	173
8.13.4	Other	173
	Agreed outgoing LS	173
	Comeback on Friday	173
	E-mail discussion for the meeting.....	174
	Summary of Agreements from RAN2#95	175
Annex H:	LTE Breakout session: eVoLTE, Light conn, Mobility enh, eMBMS	179
8.3	SI: Study on enhancement of VoLTE.....	179
8.3.1	Organisational.....	179
8.3.2	Codec mode/rate selection/adaptation	179
8.3.3	VoLTE/video signalling related enhancements.....	180

8.3.4	VoLTE/video quality related enhancements	181
8.3.5	Other	181
8.6	WI: Further mobility enhancements in LTE	181
8.6.1	RACH-less handover.....	182
8.6.2	Make before break handover.....	183
8.6.3	Other	183
8.9	WI: Signalling reduction to enable light connection for LTE	183
8.9.1	Signalling reduction	184
8.9.2	Context storage/retrieval across eNBs.....	185
8.9.3	Paging enhancements	185
8.9.4	Other	185
8.10	WI: eMBMS enhancements for LTE.....	186
8.10.1	MBSFN subframe enhancements	186
8.10.2	MBSFN dedicated carrier	186
8.10.3	Multicarrier MBMS operation	186
8.10.4	MBMS reception without authentication.....	187
8.10.5	Other	187
	Summary of the LTE Break-Out session (eVoLTE, Light conn, Mobility enh, eMBMS)	188
Annex I:	LTE Breakout session on IoT	191
7.14	WI: Narrowband IOT.....	191
7.14.1	Control Plane	192
7.14.2	User Plane.....	199
8.11	WI: Enhancements of NB-IoT	204
8.11.1	Multicast and 8.12.1 Multicast.....	204
8.11.2	Non-anchor PRB enhancements	206
8.11.3	Mobility enhancements	208
8.11.4	Other	209
8.12	WI: Further Enhanced MTC	210
8.12.2	Higher data rates.....	210
8.12.3	Other	210
	SUMMARY	211
Annex K:	History	212

Organisation of the meeting

Meeting: 3GPP TSG RAN WG2 #95
 Meeting location: Gothenburg, Sweden
 Duration: Monday 22.08.2016 - Friday 26.08.2016
 Host: European Friends of 3GPP (EF3)
 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
 TSG RAN WG2 MCC Support: Yong-Jun Chung (ETSI MCC) email: Yong-jun.Chung@etsi.org
 Email reflector: 3GPP_TSG_RAN_WG2@LIST.ETSI.ORG
 Technical documents: ftp://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_95/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 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 #73 19.09. - 22.09.2016 New Orleans, USA
 TSG RAN WG2 #95bis 10.10. - 14.10.2016 Kaohsiung, Tiwan
 TSG RAN WG2 #96 14.11. - 18.11.2016 Rino, USA
 TSG RAN #73 05.12. - 08.12.2016 Vienna, Austria

Statistics/Executive Summary

TSG RAN WG2 #95 was held in Gothenburg, Sweden hosted by European Friends of 3GPP. This RAN WG2 meeting had 3 parallel sessions: UMTS session (see AI 10-14; Mon - Wed) and LTE Breakout sessions (see AI 7.5, 8.2, 8.4 and 8.8 in [R2-165840](#) (Annex G) and AI 8.3, 8.6, 8.9 and 8.10 in [R2-165841](#) (Annex H) and AI 7.14, 8.11 and 8.12 in [R2-165842](#) (Annex I)). All other topics were treated in the parallel main session.

- 267 participants (registered: 341 participants). (See <http://webapp.etsi.org/3GPPRegistration/fViewPart.asp?mid=31669>)
- 1393 Tdocs allocated with 1375 available contributions. (See attached Tdoc list)
- 56 incoming liaison statements (4 on UTRA, 52 on LTE; and 0 on joint aspects): 55 were noted and 1 was not treated as late incoming LSs. (See annex C)
- 21 outgoing liaison statements (2 on UTRA, 19 on LTE; and 0 on joint aspects), 3 of them approved by email. (See annex D)
- 44 email discussions scheduled after RAN2 #95 (plus email discussions of RAN2 WI/SI status reports and 3 CR from RAN3 to RAN2 TS 36.300). (See Annex F)
- Among 394 change requests (CRs) in total: 132 agreed (9 for UTRA 25.xxx/34.xxx specs, 122 for LTE 36.xxx specs and xx to 37.xxx specs) and 4 technically endorsed CR for RAN #73. (See Annex E)
- Several corrections made in REL-12/REL-13 and earlier releases.
- REL-13 WI: Narrowband IOT (AI 7.14):
 RAN2 made a number of corrections on various topics including MAC RAR format, DRX, resume procedure, access class barring, delay tolerant establishment cause, etc
- LTE REL-14 WI: Enhanced LAA for LTE (AI 8.1):
 RAN2 concluded discussion on multiple subframe scheduling, LBT priority class, PDCCH subframe definition, and IDC. RAN2 will continue to discuss at next meeting how to capture in stage 2 the RAN1 agreements on UL QoS (to be handled as a correction).

- LTE REL-14 WI: Support for V2V services based on LTE sidelink (AI 8.2):
RAN2 made stage 2/3 agreements on a large number of aspects.
- LTE REL-14 SI: Study on enhancement of VoLTE (AI: 8.3):
RAN2 agreed TR 36.750 v1.0.0 and provided to RAN for one step approval. SI considered completed from RAN2 point of view.
- LTE REL-14 SI: Further Enhancements to LTE Device to Device, UE to Network Relays for IoT and Wearables (AI 8.4):
It was discussed mainly on prioritization and coverage scenarios to be studied. RAN2 will initially focus on bidirectional relay design, while considering impact of the design in unidirectional.
- LTE REL-14 WI: Enhanced LTE-WLAN Aggregation (LWA) (AI 8.5):
Stage 2 and stage 3 (36.331 and 36.323) running CRs started.
- LTE REL-14 WI: Further mobility enhancements in LTE (AI 8.6):
Stage 2 and stage 3 running CRs started.
- LTE REL-14 WI: Further Indoor Positioning enhancements for UTRA and LTE (AI 8.7):
Running CRs for stage 2 (36.305) and stage 3 (36.355) updated adding WLAN assistance data and temperature to barometric assistance data.
- LTE REL-14 WI: L2 latency reduction techniques for LTE (AI 8.8):
RAN2 completed work on related latency reduction mechanisms, including Stage 3 details in impacted specifications. WI considered completed from RAN2 point of view.
- LTE REL-14 WI: Signalling reduction to enable light connection for LTE (AI 8.9):
RAN2 made good progress in further defining the behaviour associated with a lightly connected UE.
- LTE REL-14 WI: eMBMS enhancements for LTE (AI 8.10):
RAN2 made some initial agreements (and working assumption) taken on the characteristics of the new FeMBMS carrier.
- LTE REL-14 WI: Enhancements of NB-IoT (AI 8.11):
RAN2 made progress on non anchor carrier enhancements and mobility enhancements: Agreed to add support of NPRACH transmission on non-anchor carrier and support for paging transmission on non anchor carrier.
- LTE REL-14 WI: Further Enhanced MTC (AI 8.12):
RAN2 started to discuss and only objective discussed was multicast support which was discussed jointly with NB-IoT.
- LTE REL-14 WI: LTE-based V2X Services (AI 8.13):
RAN2 started to discuss and focused of discussions on SC-PTM and MBMS enhancements.
- SI: Study on New Radio Access Technology (AI 9):
Guidelines for protocol designed and deployments scenarios captured in RAN2 TR. There were discussions on overall architecture, U/C-plan and mobility details.
- UTRA REL-14 WI: RRC optimization for UMTS (AI 13.1):
RAN2 agreed to stage 3 details of new UPH event and simultaneous RAB setup and release. WI considered complete from RAN2 point of view.
- UTRA REL-14 WI: DTX/DRX enhancements in CELL_FACH (AI 13.2):
There were stage 3 discussions on DRX after RAN1 agreements - open issues postponed to next meeting. Also, limited progress on DTX pending RAN1's conclusions made and WI will be postponed by a quarter.
- UTRA REL-14 SI: Study on Multi-Carrier Enhancements for UMTS (AI 13.3):
There were main discussions on RRC configuration impact E-TFC selection, and enhanced TTI switching.
- UTRA REL-14 SI: Study on HSPA and LTE Joint Operation (AI 13.5):
RAN2 made good progress on signaling flow for single and dual standby case. SI may be postponed by a quarter.
-

1 Opening of the meeting (9 AM)

TSG RAN WG2 chairman Richard Burbidge (Intel Corporation) opened the meeting RAN WG2 #95 on Monday morning 22.08.2016 at 09:00 o'clock.

On behalf of the host, the European Friends of 3GPP (EF3), Mr.Anders Berggren (Sony Mobile Communication) welcomed the delegates to Gothenburg, Sweden and explained organisational issues.

Following RAN WG2 meeting rooms in Gothia Tower Hotel:

Main RAN2 room:	G3 room (1st Floor),	planned for 250 participants, Mon-Fri
RAN2 LTE Breakout sessions room:	G4 room (1st Floor),	planned for 100 participants, Mon - Thu
RAN2 LTE Breakout IoT sessions:	R5+R6 room (1st Floor),	planned for 50 participants, Mon - Thu
RAN2 UMTS session room:	R11+R12 room (1st Floor),	planned for 30 participants, Mon - Wed

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

[R2-164600](#) Proposed agenda for RAN2 #95 in Gothenburg, Sweden, 22.08 - 26.08.2016 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.

<i>Schedule</i>	Main room	LTE Breakout room 1	LTE Breakout room 2	UMTS room
Monday				
09:00 ->	[1], [2], [3], [4], [5], [6]			
11:00 ->	[7] Legacy LTE corrections (<i>starting with 5, 7.16.1 CloT opt, 7.8 eDRX, 7.4 eMTC to minimise overlap with NB-IOT, then 6 and remainder of 7</i>)			[10][11] UMTS Rel-8/9/10/11/12 [12] Rel-13 corrections
14:30 ->	[7] Legacy LTE corrections (cont)	[7.5] D2D Rel-13 corrections	[7.14] NB-IoT Rel-13 corrections	[13.2] DTX/DRX enhancements [2] [13.3] Multi-carrier [2]
17:00 ->		[8.2] V2V [1]		
Tuesday				
08:30 ->	[7] Legacy LTE corrections (cont)	[8.8] Latency red [1]		[13.4] Indoor positioning [0.25] [13.5] HSPA-LTE joint operation [1] [13.1] RRC optimizations [2]
11:00 ->		[8.2] V2V (cont) [1]		
14:30 ->	[8.7] IP [0.25]	[8.13] V2X [1]		
17:00 ->	[8.1] eLAA [2] [8.5] eLWA [1.5]	[8.3] VoLTE [1]		
Wednesday				
08:30 ->	[9] New RAT [4]	[8.4] feD2D [0.5]		[13.6] TEI14 [comebacks]
11:00 ->		[8.6] Mobility enh [1]		
14:30 ->		[8.9] Light conn [1.5]		
17:00 ->				
Thursday				
08:30 ->	[9] New RAT [4]	[8.11] eNB-IoT [1] [8.12] feMTC [1]		Comebacks if needed
11:00 ->				
14:30 ->		[8.10] eMBMS [1]		
17:00 ->		Comebacks for Rel-13 D2D and V2V		
Friday				
08:30 -> until 17:00	Left-overs, Comebacks including Joint LTE/UMTS			

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, eMBMS will be chaired by Vice Chair Nan Hu (CMCC)

Rel-13 NB-IOT, eNB-IoT and feMTC will be chaired by Johan Johansson (MediaTek)

Chairing of UMTS Sessions:

Diana Pani (Interdigital): Legacy UMTS and Rel-13 corrections

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

Xudong Yang (Huawei): RRC optimizations, Indoor positioning, HSPA-LTE joint operation

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

[R2-164601](#) Draft Report v1.0 for RAN2 #94 in Nanjing, China, 23.05 - 27.05.2016 ETSI MCC report
Comeback to approve on Friday
=> Approved in [R2-164670](#)

2.3 Reporting from other meetings

RAN-72

1 - RAN2 CRs

All RAN2 agreed CRs were approved by RAN with the following exceptions:

1 - [R2-164574](#) on eDRX paging hyper frame calculation which we will revisit at our next meeting (as I explained in more detail in a separate email).

2 - [R2-164399](#), 36.304 CR to introduce NB-IoT, was revised and approved in [RP-161195](#)

3 - [R2-164515](#), 36.323 CR to introduce NB-IoT, was revised and approved in [RP-161091](#)

4 - [R2-164573](#), 36.331 CR to introduce NB-IoT, was revised and approved in [RP-161211](#)

Following new company sourced CRs to RAN2 owned specs were approved:

1 - [RP-161270](#) on NAS timer settings for eMTC

2 - New WIs impacting RAN2

Further Enhanced MTC (RAN1 led, WID in [RP-161321](#))

Enhancements of NB-IoT (RAN1, [RP-161324](#))

LTE-based V2X Services (RAN1, [RP-161298](#))

Shortened TTI and processing time for LTE (RAN1, [RP-161299](#))

No new RAN2 led WIs were approved.

3 - Existing WIs

Study item on feD2D was revised in [RP-161303](#) based on the refined objectives provided by RAN2.

A number of other WIDs and SIDs were revised but without significant impacts to RAN2 work.

4 - NR

[RP-161253](#) on the NR scheduling and phasing was endorsed by RAN. Of relevance to RAN2 is that Rel-15 will target both standalone NT and non-standalone NR operation and will address eMBB low latency and high reliability. Please read the document for more details.

[RP-161269](#) was endorsed by a joint session of RAN/SA and contains a set of tasks for the WGs including RAN2, in particular related to the RAN/CN connectivity options that we should be studying.

[R2-161214](#) contains the revised NR SID. This adds clarification that the scope includes study of an evolved LTE connected to the Next Gen core.

5 - Future meetings

2 RAN2 ad-hoc meetings on New RAT will be held during 2017 (in addition to our 6 regular meetings in 2017).

- 17 - 19 Jan 2017
- 27 - 29 Jun 2017

Hosts and locations for these ad-hocs are to be determined. These meeting have already been added to the 3GPP meeting calendar

2.4 Others

Rapporteur changes

Spec	former rapporteur	proposed new rapporteur
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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/

R2-164602	RAN2 Compendium v32.0 after RAN#72	ETSI MCC	other
	late		
	Not treated		

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-72 is available in [RP-161335](#)

3 Incoming liaisons

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

3.1 Joint UMTS/LTE relevance

No incoming LS on Joint UMTS/LTE relevance received.

3.2 LTE relevance

Lower layer failure:

[R2-164603](#) Reply LS response to R3-161028 = [R2-163311](#) on lower layer failure (C1-162977; contact: Samsung) CT1 LS in cc: RAN2Rel-12 HetNet_eMOB_LTE-Core, TEI12
=> Noted

NB-IoT:

[R2-164608](#) LS on NB-IoT Performance ([R1-166037](#); contact: Huawei) RAN1 LS in cc: RAN2 Rel-13 TEI13
=> Noted

[R2-164656](#) LS on nrs-Power signaling for NB-IoT non-anchor carrier ([R1-168497](#); contact: ZTE) RAN1 LS into: RAN2 Rel-13 NB_IoT-Core Late
NOTE: Related CR is provided in [R2-165946](#) under AI 15.1.3.
=> New LS in
=> Noted

Prioritization of NAS signalling:

[R2-164636](#) LS on prioritization of NAS signalling (C1-164015; contact: Ericsson) CT1 LS in to: RAN2 Rel-13 CIoT-CT
=> Noted

Uplink Capacity Enhancements:

[R2-164613](#) LS on Uplink Capacity Enhancements for LTE ([R1-166044](#); contact: Ericsson) RAN1 LS in to: RAN2 Rel-14 LTE_UL_CAP_enh-Core
- Chairman suggest that RAN2 time needs to be added to the WI.
=> Noted

FS_AE_enTV:

[R2-164621](#) LS on RAN impacts from Receive Only Mode UE (S2-164141; contact: Huawei) SA2 LS in LS01 to: RAN2 Rel-14 FS_AE_enTV
- Ericsson suggest some offline before the MBMS session to discuss.
=> Noted

[R2-164640](#) LS out on RAN impacts from enTV study of SA WG2 (S2-163212; contact: Qualcomm) SA2 LS in LS01 to: RAN2 Rel-14 FS_AE_enTV
NOTE: draft reply LS and discussion paper provided in [R2-165469](#) and [R2-165467](#) in AI 8.10.5 and [R2-164938](#), [R2-165682](#) and [R2-165685](#) in AI 8.10.4
=> Noted

MMCMH:

[R2-164622](#) LS on Multiple RoHC Contexts for MMCMH (S4-160725; contact: Qualcomm) SA4 LS in to: RAN2 Rel-14 MMCMH_Enh
- LG understand that current RoHC supports multiple flows with context IDs.
- Ericsson wonder if there is a restriction due to the max number of bearers, if one bearer per party is needed. Qualcomm understand this will not be a problem but can indicate it in the LS.
- ZTE suggest also indicating the max RoHC context capability.
=> Draft Response in [R2-165843](#) (Qualcomm)

[R2-165843](#) Draft reply LS on Multiple RoHC Contexts for MMCMH (to: SA4; cc CT1, SA4; contact: Qualcomm) Qualcomm LS out
=> Approved in [R2-165936](#)

256QAM support:

[R2-164628](#) LS on 256QAM support for UE Category 9/10 from Rel-12 ([RP-161327](#); contact: Intel) RAN LS in to: RAN2 Rel-12 LTE_SC_enh_L1-Core
=> Noted

CSG and LIPA support:

[R2-164630](#) Response LS to [RP-160669](#) = on CSG and LIPA support in DC (Dual Connectivity) enhancements for LTE (S2-163205; contact: Nokia) SA2 LS in cc: RAN2 Rel-13 LTE_dualC_ext-Core

=> Noted

QoE reporting for streaming services:

[R2-164631](#) LS on QoE reporting for streaming services (S4-160866; contact: Huawei) SA4 LS in
to: RAN2 Rel-14 IQoE
=> Noted

MIMO capability

[R2-164645](#) Reply LS to [R2-164559](#) for clarification on MIMO capability ([R1-167914](#); contact: Huawei)
RAN1 LS in to: RAN2 Rel-10 TEI10Late
=> New LS in
- Huawei indicate that this has already been taken into account in the CRs in this meeting
=> Noted

Introduction of new UL categories

[R2-164652](#) LS on introduction of new UL categories in Rel-13 ([R1-168459](#); contact: Qualcomm) RAN1 LS
into: RAN2 Rel-13 TEI13Late
NOTE: Related CRs provided in [R2-165922](#) (36.331 CR) and [R2-165923](#) (36.306 CR) in AI
7.16.2
=> Noted

[R2-164653](#) LS on introduction of new UL categories in Rel-14 ([R1-168460](#); contact: Qualcomm) RAN1 LS
into: RAN2 Rel-14 LTE_UL_CAP_enh-Core Late
=> New LS in
=> Noted

LTE Rel-13 UE feature list

[R2-164658](#) LS on LTE Rel-13 UE feature list (R4-167200; contact: Qualcomm) RAN4 LS in
to: RAN2 Rel-13 Late
=> Noted in email discussion

eLAA

[R2-164654](#) LS on further RRC Parameters for Enhanced LAA for LTE ([R1-168346](#); contact: Ericsson)
RAN1 LS in to: RAN2 Rel-14 LTE_eLAA-Core
Not treated due to lack of time

In addition, the following LSin:

- [R2-164609](#), [R2-164610](#), [R2-164611](#) treated under AI 7.1
- [R2-164612](#), [R2-164618](#) treated under AI 7.4
- [R2-164620](#), [R2-164637](#) treated under AI 7.9
- [R2-164632](#) treated under AI 7.13
- [R2-164649](#) treated under AI 7.14
- [R2-164614](#), [R2-164623](#), [R2-164635](#), [R2-164639](#) treated under AI 7.1
- [R2-164641](#), [R2-164642](#), [R2-164644](#) treated under AI 8.1
- [R2-164606](#), [R2-164624](#), [R2-164627](#), [R2-164634](#), [R2-164650](#), [R2-164651](#), [R2-164655](#) treated under AI 8.2
- [R2-164619](#), [R2-164626](#), [R2-164647](#) treated under AI 8.3
- [R2-164607](#), [R2-164616](#), [R2-164617](#), [R2-164643](#) treated under AI 8.6
- [R2-164638](#) treated under AI 8.5
- [R2-164648](#) treated under AI 8.12
- [R2-164629](#) treated under AI 8.13
- [R2-164605](#) treated under AI 8.7
- [R2-164615](#) treated under AI 9.1
- [R2-164657](#) treated under AI 15.1.1

3.3 UMTS relevance

The following LSin:

- [R2-164604](#) treated under AI 13.2
- [R2-164625](#), [R2-164633](#) treated under AI 13.3

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”,
...

- [R2-164823](#) Introduction of LTE UE capability signaling enhancements Intel Corporation discussion
- Nokia support the proposal from Rel-10
 - Huawei see some sense but would like to check further before concluding.
 - Qualcomm ask if it would be optional for the UE. Intel explain it is their understanding and think it would be introduced in the same way as the previous freq band request without a separate capability to indicate support.
 - Ericsson think this could cause us problem and would like to think more about how the UMTS mechanism evolves. Also think the network doesn't know if the UE supports this.
 - Samsung ask if it is only if the UE supports R13 on LTE side that the UE will support this on UMTS. Samsung think it would not be necessary to have a separate capability.
- => Offline discussion (Intel)
- Update from offline: Some interest offline but not detailed discussion.
- ☒ **[95#23][LTE/UMTS] LTE capability signalling in UMTS (Intel)**
Discuss LTE capability signalling enhancements on UMTS and progress a CR.
Intended outcome: Agreeable CR to next meeting
Deadline: Thursday 22/09/2016

- [R2-164824](#) Introduction of LTE UE capability signaling enhancements Intel Corporation draftCR
25.331 10.20.0 - - C Rel-10 TEI10
Not treated

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](#))

No contributions received.

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

[R2-165068](#) Discussion on QoE Measurement Collection for streaming services Huawei, HiSilicon, China Unicom discussion

- ZTE think that both options are feasible and option 1 is transparent to RAN2 and hence preferable.
 - Ericsson think this needs proper studies from RAN2 point of view. The proposed WI ask for quite a lot of time.
 - LG agree with ZTE and considering time the option one is preferable.
 - China Unicom think there are advantages seen with option.
 - Qualcomm think that MDT is an overall architecture and involves SA5. We could say it is feasible from RRC point of view.
 - Nokia shares the view with ZTE. Also share Qualcomm view that only the RRC signalling can be commented on by RAN2.
 - MediaTek think that for MDT we had the mind-set that the measurements where linked with location and radio measurements but thinks this information could be correlated offline if there is a correlation id but that would be an SA5.
 - Samsung are unclear which approach is preferable. For option 2 we would need to further study.
 - CMCC think we could agree that the MDT frame work is feasible.
 - Nokia think we can't conclude it is feasible to provide application layer metrics in MDT. MDT so far is all radio layer information. Option 2 would add a lot of complexity.
- => Offline discussion to conclude how to respond to SA4 (Huawei). Possible starting point for the offline is a response which says:
"Option 1 is transparent to AS and RAN2 cannot comment further on this option.
Option 2 is feasible from the RAN2 RRC signalling point of view but RAN2 can't comment in MDT aspects out of RAN2 scope.
RAN2 could not conclude a preference from RAN2 point of view."
=> Noted

Moved from 8.14 to 5.1

[R2-164962](#) Need and motivation of streaming QoE Measurement Collection for 3GPP network China Unicom discussion
Not treated

Moved from 8.14 to 5.1

[R2-165071](#) Draft response LS on QoE reporting for streaming services Huawei LS out

=> Revised in [R2-165917](#)

[R2-165917](#) Draft response LS on QoE reporting for streaming services Huawei LS out

- Samsung suggest adding a comment that option 2 would require a WI in RAN2.
 - Nokia think we should not give the impression that it is just an SA4 discussion.
 - Samsung think we should indicate that a large number of companies preferred option 1.
- => Offline discussion to revise the LS. One option to consider is " Based on limited analysis RAN2 could not conclude a preference from RAN2 point of view, but a majority of companies indicated a preference for option 1."

=> Revised in [R2-165937](#)

[R2-165937](#) Draft response LS on QoE reporting for streaming services (to: SA4; cc: SA5; contact: Huawei) Huawei LS out reply to [R2-164631](#) = S4-160866 Rel-14 TEI14

=> Remove " 3) It is RAN2's understanding that SA4 should give guidance on which option is preferred, "

=> Approved in [R2-165972](#)

Moved from 8.14 to 5.1

[R2-165072](#) Introduction of QoE Measurement Collection for streaming services Huawei, HiSilicon, China Unicom CR 25.306 13.1.00507 - B Rel-14 TEI14

[R2-165076](#) Introduction of QoE Measurement Collection for streaming services Huawei, HiSilicon, China Unicom CR 25.331 13.3.05878 - B Rel-14 TEI14

[R2-165079](#) Introduction of QoE Measurement Collection for streaming services Huawei, HiSilicon, China
Unicom CR 36.306 13.2.01343 - B Rel-14 TEI14

[R2-165082](#) Introduction of QoE Measurement Collection for streaming services Huawei, HiSilicon, China
Unicom CR 36.331 13.2.02278 - B Rel-14 TEI14

Moved from 8.14 to 5.1

Above 4 Tdocs not treated

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](#))

Support of CAT 9/10 and CAT 13

[R2-164825](#) Support of CAT 9/10 and CAT 13 Intel Corporation discussion
 - HTC ask why the eNB might reject a UE that indicates both categories. It could cause an issue with categories defined in later releases. Intel explain a new category in future will use a new IE and hence there will be no backward compatibility.
 - Qualcomm agree that this might be a potential issue and eNB vendors should indicate if there is an issue. Huawei think there would be no problem for eNB and option 1 is simpler. Samsung agree with Huawei and think that in practice there is no existing R12 eNB.
 - ZTE ask if the intent it to allow Cat 9 UE support 256 QAM. Intel explain the RAN plenary agreement is that a UE can indicate both Cat 9/10 and Cat 13.
 - Nokia see no issue with reusing option 1 and that option 1 is simpler. Preference for option 1.
 - Ericsson would like a little more time to consider but initial reaction is that option 1 is fine.
 => Use option A to signal Cat 9/10 and Cat 13 (come back during the week is any problem found in offline checking)
 => Draft LS to RAN1 to inform them of our conclusion in [R2-165857](#) (Intel)
[R2-165857](#) Draft LS on Support of CAT 9/10 and CAT 13 (to: RAN1; cc: -; contact: Intel) Intel Corporation LS out
 => Remove " simultaneously "
 => Approved in [R2-165924](#)

[R2-164826](#) Support of CAT 9/10 and CAT 13 (option A) Intel Corporation CR 36.306 12.9.01337
 - C Rel-12 TEI12
 - Huawei suggest to update the table 4.1A-6. Nokia agree that the table should be updated.
 => Table to be updated
 => Revised in [R2-165855](#) CR rev 1

[R2-165855](#) Support of CAT 9/10 and CAT 13 Intel Corporation CR 36.306 12.9.01337 1 C
 Rel-12 TEI12
 => Agreed

[R2-164827](#) Support of CAT 9/10 and CAT 13 (option A) Intel Corporation CR 36.306 13.2.01338
 - A Rel-13 TEI12
 => Revised in [R2-165856](#) CR rev 1

[R2-165856](#) Support of CAT 9/10 and CAT 13 Intel Corporation CR 36.306 13.2.01338 1 A
 Rel-13 TEI12
 => Agreed

[R2-164828](#) Support of CAT 9/10 and CAT 13 (option B) Intel Corporation CR 36.306 12.9.01339
 - C Rel-12 TEI12

[R2-164829](#) Support of CAT 9/10 and CAT 13 (option B) Intel Corporation CR 36.306 13.2.01340
 - A Rel-13 TEI12

- [R2-164830](#) Support of CAT 9/10 and CAT 13 (option B) Intel Corporation CR 36.331 12.10.0
2255 - C Rel-12 TEI12
- [R2-164831](#) Support of CAT 9/10 and CAT 13 (option B) Intel Corporation CR 36.331 13.2.02256
- A Rel-13 TEI12
Above 4 Tdocs not treated

Intra-band contiguous CA capabilities

- [R2-164901](#) Clarification to intra-band contiguous CA capabilities Nokia, Alcatel-Lucent Shanghai Bell
CR 36.331 12.10.0 2267 - F Rel-12 TEI12
- Samsung ask what is the scenario for the second change,. Nokia explain that this list may have to be included in the v1270 extension and it needs to have an entry per bandwidth class.
 - Intel has same understanding as Nokia but wonder if the second change can be reworded.
 - DOCOMO suggest that an example might be useful to explain what the second change means.
- => Revised in [R2-165858](#) CR rev 1
- [R2-165858](#) Clarification to intra-band contiguous CA capabilities Nokia, Alcatel-Lucent Shanghai Bell
CR 36.331 12.10.0 2267 1 F Rel-12 TEI12

- ☒ **[95#01][LTE/Intraband CA] (Nokia)**
Conclude CR in [R2-165858](#)
Intended outcome: Agreed CR to RAN
Deadline: Thursday 01/09/2016

- [R2-164902](#) Clarification to intra-band contiguous CA capabilities Nokia, Alcatel-Lucent Shanghai Bell
CR 36.331 13.2.02268 - A Rel-13 TEI12
- => Revised in [R2-165859](#) CR rev 1

- [R2-165859](#) Clarification to intra-band contiguous CA capabilities Nokia, Alcatel-Lucent Shanghai Bell
CR 36.331 13.2.02268 1 A Rel-13 TEI12
Not treated

- [R2-165165](#) Modification on RRC processing delay for UE capability transfer Intel Corporation
discussion
- Huawei think this current processing delay should not be an issue for a UE that supports many CCs. Intel think the issue is not related to the number CCs but more to the number of bands and band combinations that it supports.
 - Samsung agree with this and think it is useful.
 - MediaTek think the proposal is against the trend where we normally want to reduce the delays and don't see a problem to implement this.
 - Nokia think as technology improves things should get faster. Not clear why this is necessary.
 - Qualcomm agree with MediaTek that there is no need to do this given the improvements over 10 years since R8.
- => Noted

- [R2-165166](#) Modification on RRC processing delay for UE capability transfer Intel Corporation CR
36.331 12.10.0 2285 - C Rel-12 TEI12

- [R2-165167](#) Modification on RRC processing delay for UE capability transfer Intel Corporation CR
36.331 13.2.02286 - A Rel-13 TEI12
Above 2 Tdocs not treated

- [R2-165507](#) Further clarifications on MIMO capabilityHuawei, HiSilicon discussion
- Qualcomm would like to introduce a capability bit and make it optional. Prefer release 13 and early implementable.
 - Nokia did not see an issue and not certain how a capability will help. Do not like this new approach.
 - Samsung explain that RAN1 has agreed to a signalling based solution. Huawei think we can provide a CR in line with RAN1 agreement that will modify the condition (remove limitation) for eNB to send an existing field. There would be no ASN.1 impact.
 - Huawei think the capability has 2 purposes, one for the signalling change and one for whether the UE supports the R12 change in an earlier release.

- Intel support to have a capability bit. Not sure how we can make it early implementable if it is R13.
- Ericsson think we only need a capability if there are existing implementations according to the R11 spec.
- Qualcomm think that for R11 the eNB can just downgrade the number of MIMO layers. Huawei understand that the only thing the eNB could do is not use the band combination
- => Create CRs to add capability bit and make the change to the configuration signalling according to RAN1 agreement (LS already agreed in RAN1)
- => Discuss offline regarding the release.
- => Noted
- [R2-165912](#) Indication of the maxLayersMIMOHuawei, HiSilicon CR 36.306 12.9.01349 - F
Rel-12 TEI12
=> Impact analysis to be updated
=> Agreed in [R2-165940](#) CR Rev 1
- [R2-165913](#) Indication of the maxLayersMIMOHuawei, HiSilicon CR 36.306 13.2.01350 - A
Rel-13 TEI12
=> Impact analysis to be updated
=> Agreed in [R2-165941](#) CR Rev
- [R2-165914](#) Indication of the maxLayersMIMOHuawei, HiSilicon CR 36.331 12.10.0 2343 - F
Rel-12 TEI12
=> Impact analysis to be updated
=> Agreed in [R2-165938](#) CR rev 1
- [R2-165915](#) Indication of the maxLayersMIMOHuawei, HiSilicon CR 36.331 13.2.02344 - A
Rel-13 TEI12
=> Impact analysis to be updated
=> Agreed in [R2-165939](#) CR Rev 1
- [R2-165389](#) DRB re-setup in Full Configuration Nokia, Alcatel-Lucent Shanghai Bell CR 36.331
13.2.02305 - F Rel-13 LTE-L23, TEI13
=> RAN and ME box to be ticked.
=> Agreed in [R2-165860](#) CR rev 1
- [R2-165290](#) Corrections on sidelink pre-configured parameters Huawei, HiSilicon CR 36.331
12.10.0 2291 - F Rel-12 LTE_D2D_Prox-Core
- [R2-165291](#) Corrections on sidelink pre-configured parameters Huawei, HiSilicon CR 36.331
13.2.02292 - A Rel-13 LTE_D2D_Prox-Core
- [R2-165292](#) Corrections on system information acquisition for Sidelink discovery Huawei, HiSilicon CR
36.331 12.10.0 2293 - F Rel-12 LTE_D2D_Prox-Core
- [R2-165293](#) Corrections on system information acquisition for Sidelink discovery Huawei, HiSilicon CR
36.331 13.2.02294 - A Rel-13 LTE_D2D_Prox-Core
Above 4 Tdocs not treated
- [R2-165395](#) Introduction of MBSFN measurements Nokia, Alcatel-Lucent Shanghai Bell CR 36.302
12.7.00081 - F Rel-12 MBMS_LTE_OS-Core
- Ericsson ask if this is fully aligned with stage 3
=> Check that it is aligned with stage 3 regarding the unicast measurement.
=> Cat B on coversheet
=> Revised in [R2-165861](#) CR rev 1
- [R2-165861](#) Introduction of MBSFN measurements Nokia, Alcatel-Lucent Shanghai Bell CR 36.302
12.7.00081 1 B Rel-12 MBMS_LTE_OS-Core
=> Agreed
- [R2-165396](#) Introduction of MBSFN measurements Nokia, Alcatel-Lucent Shanghai Bell CR 36.302
13.2.00082 - A Rel-13 MBMS_LTE_OS-Core
=> Revised in [R2-165862](#) CR rev 1
- [R2-165862](#) Introduction of MBSFN measurements Nokia, Alcatel-Lucent Shanghai Bell CR 36.302
13.2.00082 1 A Rel-13 MBMS_LTE_OS-Core
No changes compared to the rev '-' CR.
=> Agreed
- [R2-165622](#) Introducing cell identity in MBMSCountingResponse QUALCOMM Inc. CR 36.331
13.2.02330 - F Rel-13 MBMS_LTE_enh-Core

- ZTE think that the issue is only caused by parallel counting procedures in the same location and this should be avoided by eNB implementation.
 - Kyocera ask if in the case of a non serving cell it is easy for the eNB to avoid.
 - Nokia think that the MCE can know if different areas have counting ongoing and it is the responsibility of the MCE to avoid 2 parallel counting procedures. The UE can only send the counting response in connected. Hence not sure there is a big problem to solve.
 - Kyocera think there may also be distributed MCEs. ZTE think it might be a corner case of several MCEs controlled the same location.
- => Not pursued

[R2-165624](#) Ambiguity in MBMSCountingResponse when receiving eMBMS on SCell or non-serving cell
QUALCOMM Inc. discussion
=> Noted

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 LSs:

[R2-164609](#) LS on DRX and Reception of PDCCH scrambled by CC-RNTI ([R1-166038](#); contact: Panasonic) RAN1 LS in to: RAN2 Rel-13 LTE_LAA-Core
=> Noted

[R2-164610](#) Response LS to IEEE 802.11 regarding LAA ([R1-166040](#); contact: Qualcomm) RAN1 LS in cc: RAN2 Rel-13 LTE_LAA
=> Noted

[R2-164611](#) Response LS to Wi-Fi Alliance regarding LAA ([R1-166041](#); contact: Qualcomm) RAN1 LS in cc: RAN2 Rel-13 LTE_LAA
=> Noted

[R2-164847](#) DRX operation for LAA cells PANASONIC R&D Center Germany CR 36.321 13.2.0 0893 - F Rel-13 LTE_LAA-Core
=> Agreed

[R2-165318](#) CC-RNTI monitoring during DRX Ericsson CR 36.321 13.2.00911 - F Rel-13 LTE_LAA-Core
=> Not treated as covered by [R2-164847](#).

[R2-165320](#) PDCCH-subframe definition for LAA (Alt 1) Ericsson CR 36.321 13.2.00904 - F Rel-13 LTE_LAA-Core
=> CR is not pursued

[R2-165321](#) PDCCH-subframe definition for LAA (Alt 2) Ericsson CR 36.321 13.2.00905 - F Rel-13 LTE_LAA-Core

- Samsung think there is nothing broken with the current wording and it does cover the release 13 behaviour. Ericsson agree that the current wording does cover release 13 but not release 14, and this motivates to do some clean up.
- LG agree with the intent to make the definition more clear, and would also prefer alternative 2.
- CATT agree with Samsung that nothing is broken but support to rephrase from release 13.
- Huawei think if nothing is broken in R13 then we should not change R13.

=> CR is not pursued
=> Can be discussed again in the context of R14.

[R2-165391](#) PDCCH addressed to CC-RNTI monitoring and RSSI measurements for LAA Scell Nokia, Alcatel-Lucent Shanghai Bell, Ericsson CR 36.302 13.2.00079 - F Rel-13 LTE_LAA-Core
=> CR should be Cat B and change title to 'introduction of LAA'

=> Agreed in [R2-165863](#) CR rev 1

[R2-165393](#) CR on forwarding LAA measurement results for DC Nokia, Alcatel-Lucent Shanghai Bell
CR 36.331 13.2.02307 - F Rel-13 LTE_LAA-Core, LTE_dualC_enh-Core
- Huawei ask if anything else needs to be added to the inter-eNB signalling.
- Nokia understand that it is already possible in R13 that SCells can be LAA cells. It is only the RSSI measurements that are missing.
=> Fix CR number in coversheet
=> Agreed in [R2-165864](#) CR rev 1

[R2-165501](#) Handling of tdd-Config-r10 for LAA ScellHuawei, HiSilicon CR 36.331 13.2.02317 - F
Rel-13 LTE_LAA-Core
- CATT think it is not correct as a TDD cell is not a LAA cell.
- Nokia clarify that in RRC we use LAA SCell but in MAC we use FS3. Samsung explain that LAA SCell is defined in 36.300.
=> Remove " except for LAA SCell "
=> Agreed to [R2-165865](#) CR Rev 1

[R2-165635](#) Clarification of IE TDD-Config under LAA QUALCOMM Inc. CR 36.331 13.2.02332 - F
Rel-13 LTE_LAA-Core
- LG think the previous Huawei CR is sufficient and this is not needed. Ericsson agree that the Huawei CR is sufficient.
=> Not pursued

7.2 WI: CA enhancements

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

[R2-165036](#) eCA UE capability transfer- backwards compatibility aspects Samsung Telecommunications discussion
P2
- Ericsson support the transfer of both formats across X2/S1.
- Samsung had hoped it would be possible to rule out this option.
- Nokia wonder what it really means if we support this. Does it impact RAN3. Samsung think it impacts RAN2, particularly if we decide that a single container can be used, and a text proposal shows the impact.
- DOCOMO think it is clear that if included in a single container it will be very clear that the first refers to the legacy format and the second the new format. Samsung explain the issue is that the network requested fields (requested bands) have impact on both the new and old format and we can only include one set of network requested fields.
- Nokia think there will be some issue whatever we do and suggest that we look at the CRs.

=> RAN2 confirm the observations listed below:

Observation 1 The contents of the legacy supportedBandCombination field depends on the network request fields requestedFrequencyBands, requestedMaxCCsXL and requestReducedIntNonContComb (that were introduced from REL-10).

Observation 2 EUTRA capabilities that are forwarded to legacy nodes can be based on a UE response to a capability enquiry with concerned network request fields either absent, or set such not to affect bands/ BCs supported by such legacy nodes

Observation 3 The contents of the reduced supportedBandCombination field also depends on these network request fields (requestedFrequencyBands, requestedMaxCCsXL and requestReducedIntNonContComb)

Observation 4 In case both legacy and reduced format are transferred within a single UE capability container (i.e. UE-CapabilityRAT-Container), there is just a single copy of the concerned network request fields

[R2-164704](#) Backward compatibility of CA band combination signalling NTT DOCOMO, INC., Huawei, HiSilicon CR 36.331 13.2.02245 - F Rel-13 LTE_CA_enh_b5C-Core
- Nokia clarify that this is a simple option and doesn't preclude an option that works for a given network.
- Samsung think this doesn't solve the problem. How does this ensure interoperability.

- Nokia is concerned with the Samsung approach cause requirements on the network, and might impact the MME.
- Ericsson wonder what is the consequence if we don't allow eNBs to send separate capabilities.
- Huawei think that the source eNB must match watch target eNB requires and coordination can be left to the network.

=> Offline discussion to conclude final wording of the CR

=> Revised in [R2-165866](#) CR rev 1

[R2-165866](#) Backward compatibility of CA band combination signalling NTT DOCOMO, INC., Huawei, HiSilicon CR 36.331 13.2.02245 1 F Rel-13 LTE_CA_enh_b5C-Core

☒ **[95#02][LTE/CA] CR on CA band combination signalling (DOCOMO)**

Intended outcome: Agreed CR to RAN

Deadline: Thursday 01/09/2016

[R2-165037](#) Simplification of UE capability reporting procedure Samsung Telecommunications CR 36.331 13.2.02273 - F Rel-13 LTE_CA_enh_b5C-Core

- DOCOMO agree the intent but would like more time to check it is ok.
- Huawei agree with intent and would like to work on the wording offline.
- Nokia also agree.

=> Offline discussion to check the CR.

[R2-165918](#) Simplification of UE capability reporting procedure Samsung CR 36.331 13.2.02273 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](#))

[R2-164703](#) Clarification on DRX in SC-PTM HTC Corporation CR 36.321 13.2.00889 - F Rel-13 LTE_SC_PTM-Core

- LG think it is not needed to include all cases in the informative annex.
- Huawei is ok to have the CR

=> Word style to be corrected

=> Should be alphabetic order.

=> Agreed in [R2-166867](#) CR Rev 1

[R2-165232](#) Correction on Cell Selection when leaving RRC_CONNECTED state for SC-PTM TD Tech, Huawei CR 36.304 13.2.00327 - F Rel-13 LTE_SC_PTM-Core

- Kyocera want to check that the current cell has to be suitable. Huawei agree.
- LG think this is an enhancement and not a correction.
- ZTE agree this is an enhancement and not a correction. UE can rely in SIB15 to prioritise the frequency.
- Nokia wonder if the behaviour is good. For example after radio link failure this might not be good behaviour. It would be better to select a suitable cell where SC-PTM is available.
- Huawei explain they are addressing the normal case.

=> Not pursued

7.4 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:

[R2-164612](#) Reply LS to R4-163150 = [R2-163313](#) on continuous uplink transmission in eMTC ([R1-166042](#); contact: Intel) RAN1 LS in to: RAN2 Rel-13 LTE_MTCe2_L1-Core

=> Noted

[R2-164618](#) LS on continuous uplink transmission in eMTC (R4-164928; contact: Intel) RAN4 LS in to: RAN2 Rel-13 LTE_MTCe2_L1-Core

=> Noted

7.4.1 Control Plane

System Information

[R2-164895](#) Clarification on system information HTC Corporation CR 36.300 13.4.00900 - F
Rel-13 LTE_MTCe2_L1-Core

=> Agreed

[R2-165184](#) Corrections in Rel-13 eMTC SI acquisition Samsung Research America discussion
- Ericsson ask if the correct understanding is that MIB has to be received before accessing the target cell.

- Huawei support the CR.

=> To be provided as CR in [R2-165846](#) CR 2339 rev '1'

=> Include all unchanged text of the impacted sections.

=> Typo to be corrected.

[R2-165846](#) Corrections in Rel-13 eMTC SI acquisition Samsung CR 36.331 13.2.02339 - F
Rel-13 LTE_MTCe2_L1-Core

=> RAN and ME box to be checked

=> Comeback after more offline checking

=> Revised in [R2-165945](#)

[R2-165945](#) Corrections in Rel-13 eMTC SI acquisition Samsung CR 36.331 13.2.02339 1 F
Rel-13 LTE_MTCe2_L1-Core

=> CR form to be corrected

=> Agreed in [R2-165973](#) CR Rev 2

[R2-165192](#) Invalidation of stored system information in connected mode Qualcomm Japan Inc CR
36.331 13.2.02288 - F Rel-13 LTE_MTCe2_L1-Core, NB_IOT-Core
- Intel ask if the second part " as long as the UE remains in RRC_CONNECTED state and continues to be served by the same serving cell." is required.

=> 'may' to be changed to 'shall'

=> Some typos to be corrected

=> Decide whether to tick RAN box on coversheet

=> Revised in [R2-165847](#) CR rev 1

[R2-165847](#) Invalidation of stored system information in connected mode Qualcomm Incorporated CR
36.331 13.2.02288 1 F Rel-13 LTE_MTCe2_L1-Core, NB_IOT-Core

=> Agreed

[R2-165367](#) Correction on Modification Period for eMTC Huawei, HiSilicon CR 36.331 13.2.02303 - F
Rel-13 LTE_MTCe2_L1-Core

- LG think this may not be a critical problem. UE could accumulate SI across the modification period to acquire SIB2. Huawei ask how the UE knows where the SI boundary might be. LG thinks it is very rare that the SIB content changes and hence it doesn't matter if the UE accumulates across a boundary.

- Samsung would like to avoid changing the ASN.1. Suggest adding a note.

- Ericsson think this was intentional and we decided to leave it to the UE to handle. It is a rare case and the UE will just need to re-try. Huawei think a note to restrict the UE would be helpful.

- Qualcomm agree with Ericsson and think in most cases it is better to allow combining across boundaries.

- Intel would like the decision made here to also be applied for NB-IoT.

- MediaTek think there is no issue. UE has to be in poor radio and UE happen to acquire it at the boundary where it changes. In most cases where the UE fails to acquire then it will just try again. This has been discussed before.

=> Not pursued.

[R2-165611](#) Correction for system info value tag for eMTC Ericsson CR 36.331 13.2.02326 - F
Rel-13 LTE_MTCe2_L1-Core

=> Merged in the revision of either [R2-162184](#) or [R2-165192](#). Which one to be decided offline

Other

- [R2-165558](#) Early Cat M1 indication Ericsson discussion
 - Vodafone ask why can Decor not be used, and ask why this is needed for Cat M but not for other categories.
 - Ericsson is aware that Decor would be an alternative but prefer the option in the eNB.
 - Intel is not sure whether it is needed, it is not needed for the reasons we added it for Cat 0. If needed would be open to message 5.
 - Samsung has similar questions to Vodafone and see this just as an optimisation.
 - LG think this was discussed before and not agreed to be included. Maybe it could be discussed again in R14.
 => Noted
- [R2-165559](#) Early Cat M1 indication Ericsson CR 36.321 13.2.00913 - F Rel-13
 LTE_MTCe2_L1-Core
- [R2-165560](#) Early Cat M1 indication Ericsson CR 36.331 13.2.02321 - F Rel-13
 LTE_MTCe2_L1-Core
 Above 2 Tdocs not treated
- [R2-165556](#) T310 timer for eMTC Ericsson discussion
 => Noted
- [R2-165557](#) Extended T310 timer values for eMTC Ericsson
 - Vodafone think there is a difference between eMTC and NB-IOT as NB-IoT doesn't have re-establishment.
 - Intel ask if we should send an LS to RAN4 and ask if they have concerns.
 => Add clarification to the connected mode timers that the extended values apply to UEs that support EC. This should be a EUTRAN constraint rather than UE requirement as it is connected mode.
 => Conclude offline whether [[.]] is needed.
 => Revised in [R2-165848](#) CR rev 1
- [R2-165848](#) Extended T310 timer values for eMTC Ericsson CR 36.331 13.2.02320 1 F Rel-13
 LTE_MTCe2_L1-Core
 => Optional to be added
 => Agreed in [R2-165943](#) CR Rev 2
- [R2-164687](#) Clarification on CE mode A HTC Corporation CR 36.331 13.2.02243 - F Rel-13
 LTE_MTCe2_L1-Core
 - Huawei think this is not needed as eNB can handle it. Prefer signalled instead of configured.
 - Samsung think we should decide the signalling and not RAN1.
 => Not pursued. Merged with revision of [R2-165613](#)
- [R2-165613](#) Correction on PUSCH repetition numbers for CE Mode A Ericsson, Rohde-Schwarz CR 36.331 13.2.02328 - F Rel-13
 LTE_MTCe2_L1-Core
 => Remove " in this release of the specification."
 => Add a clarification that the value r8 can still be used as a default within RAN1 spec.
 => Revised in [R2-165849](#) CR rev 1
- [R2-165849](#) Correction on PUSCH repetition numbers for CE Mode A Ericsson, Rohde-Schwarz CR 36.331 13.2.02328 1 F Rel-13
 LTE_MTCe2_L1-Core
 => Agreed
- [R2-165193](#) Clarification on bit mapping of fdd-DownlinkOrTddSubframeBitmapLC and fdd-UplinkSubframeBitmapLC Qualcomm Japan Inc CR 36.331 13.2.02289 - F Rel-13
 LTE_MTCe2_L1-Core
 - Samsung ask if RAN1 spec includes these details?
 - Intel think this text was agreed in NB-IoT and this is alignment. Understand this is the correct thing to do.
 => Coversheet to be corrected
 => Agreed in [R2-165850](#) CR rev 1

- [R2-165365](#) Correction on UEPagingCoverageInformation Huawei, HiSilicon CR 36.331 13.2.02301
 - F Rel-13 LTE_MTCe2_L1-Core
 - Ericsson asks if some more clarification is needed to explain what this parameter means. Huawei think that we could reference what is described in RAN3.
 => Offline discussion to conclude how to clarify this field. Reference something is RAN3 is one possibility
 => Revised in [R2-165852](#) CR rev 1
- [R2-165852](#) Correction on UEPagingCoverageInformation Huawei, HiSilicon CR 36.331 13.2.02301
 1 F Rel-13 LTE_MTCe2_L1-Core
 => Agreed
- [R2-165366](#) Correction on Frequency Hopping Huawei, HiSilicon CR 36.331 13.2.02302 - F
 Rel-13 LTE_MTCe2_L1-Core
 => Offline discussion to conclude whether the change is needed (Huawei)
 - Update from offline: There was no consensus and hence the change is not proposed for this meeting.
 => Not pursued
- [R2-165390](#) Rel-13 correction for eMTC parameter values Nokia, Alcatel-Lucent Shanghai Bell CR 36.331 13.2.02306 - F Rel-13 LTE_MTCe2_L1-Core
 => Content from [R2-165612](#) to be merged in.
 => Revised in [R2-165853](#) CR rev 1
- [R2-165853](#) Rel-13 correction for eMTC parameter values Nokia, Alcatel-Lucent Shanghai Bell CR 36.331 13.2.02306 1 F Rel-13 LTE_MTCe2_L1-Core
 => Agreed
- [R2-165612](#) Correction on Narrowband numbering Ericsson CR 36.331 13.2.02327 - F Rel-13 LTE_MTCe2_L1-Core
 => To be merged into revision of [R2-165390](#)
- [R2-165432](#) Correction about eMTC frequency hopping parameters NTT DOCOMO INC. CR 36.331 13.2.02315 - F Rel-13 LTE_MTCe2_L1-Core
 => Agreed
- [R2-165608](#) Miscellaneous corrections on DL reception types Ericsson CR 36.302 13.2.00084 - F Rel-13 LTE_MTCe2_L1-Core
 => Agreed
- [R2-165609](#) Continuous uplink transmission in eMTC Ericsson CR 36.306 13.2.01347 - F Rel-13 LTE_MTCe2_L1-Core
 - Huawei thinks there is still ongoing work in RAN1/4 and suggest to postpone until next meeting.
 - Ericsson think what RAN4 is looking at whether the same applies for PRACH and that is a separate case.
 - Huawei also think RAN1 might make further changes based on feedback from RAN4.
 - Qualcomm wonder if we need to decide as which point the UE starts to create gaps. Ericsson understand it is only required above a certain number of repetitions and RAN4 will work on further details. E
 - Ericsson also understand that during random access will not be affected. Qualcomm understand that even during random access the UE needs to generate gaps.
 - LG wonder if any UE MAC behaviour needs to be specified during a gap.
 => Offline discussion to check with RAN1/4 colleagues before concluding whether to agree the CR this meeting or defer a meeting (Ericsson)
 - Update from offline: RAN4 will check whether gaps are required for the PRACH but it is clear from RAN1 that it is required for other cases.
 - Huawei understand that RAN4 is still studying the details and think it may still be concluded that it is not needed. RAN1 is also waiting for RAN4. Ericsson agree but it is only for the PRACH case but for the unicast case we already have agreement in RAN1 and so we need it in msg 3 or msg 5.
 - Intel understand that RAN4 are still discussing but share the view that we will most likely need something in msg 3/5.
 => Offline for more discussion and checking with RAN1/4

- Update from offline: RAN4 are still discussing the PRACH part.
- => Postponed to next meeting

[R2-165610](#) Continuous uplink transmission in eMTC Ericsson CR 36.331 13.2.02325 - F
Rel-13 LTE_MTCe2_L1-Core
Not treated

[R2-165614](#) Frequency hopping configuration for paging Ericsson CR 36.331 13.2.02329 - F
Rel-13 LTE_MTCe2_L1-Core
=> Agreed

7.4.2 User Plane

[R2-164701](#) Clarification on HARQ HTC Corporation CR 36.300 13.4.00890 - F Rel-13
LTE_MTCe2_L1-Core, NB_IOT-Core
- Huawei think there may be an NB-IoT CR that may impact the same section.
=> Check offline whether there is any clash with NB-IoT in [R2-164941/4942](#)
=> Revised in [R2-165909](#)

[R2-165909](#) Clarification on HARQ HTC Corporation CR 36.300 13.4.00890 1 F Rel-13
LTE_MTCe2_L1-Core, NB_IOT-Core
=> Agreed

[R2-164699](#) Clarification on BCCH reception for eMTC HTC Corporation CR 36.321 13.2.00888 - F
Rel-13 LTE_MTCe2_L1-Core
- Ericsson think that BR-BCCH cannot be mapped to BCH, and BR=BCCH only carries SI and SIB1
=> Revised in [R2-165854](#) CR Rev 1

[R2-165854](#) Clarification on BCCH reception for eMTC HTC Corporation CR 36.321 13.2.00888 1 F
Rel-13 LTE_MTCe2_L1-Core
=> Revised in [R2-165944](#) CR Rev 2

[R2-165944](#) Clarification on BCCH reception for eMTC HTC Corporation CR 36.321 13.2.00888 2 F
Rel-13 LTE_MTCe2_L1-Core
=> Agreed

Random access

[R2-165295](#) Clarification on RA preamble groups for eMTC NTT DOCOMO INC. CR 36.321 13.2.00902 - F Rel-13 LTE_MTCe2_L1-Core

Moved from 7.4.1 to 7.4.2

- Ericsson ask if we can have a group A or B with a group or EC implied by the and/or in the first change. DOCOMO agree that the 'or' is not needed.
- LG think the 'calculated as above' is not very clear. DOCOMO explain this is just copy and paste.
- Ericsson wonder if we need the CR at all.
- => Offline whether CR is needed and if so how it should be clarified.
- => Revised in [R2-165930](#)

[R2-165930](#) Clarification on RA preamble groups for eMTC NTT DOCOMO INC. CR 36.321 13.2.00902 1 F Rel-13 LTE_MTCe2_L1-Core
Revision of [R2-165295](#)
=> Agreed

[R2-164872](#) Issue on signalled parameters in PDCCH order in eMTC ZTE Corporation CR 36.321 13.2.00896 - F Rel-13 LTE_MTCe2_L1-Core
- Ericsson think this was discussed before in Malta. What we described was option 1. The intent is that the UE ramps up using the same preamble. We don't need to specify anything.
- LG have the same understanding as Ericsson.
- Huawei also agree.
=> Not pursued

[R2-165086](#) NDI handling for the grant in RAR for asynchronous UL HARQ Samsung discussion

- Samsung explain that don't need to discuss as agree now that fixed NDI is not required but wonder what is the initial value of NDI when the UE enters connected mode.
 - Ericsson think this was discussed and think it is implicit that MAC is reset when coming from idle, and when resetting MAC the spec does say set to 0.
 - Samsung think it is not clear that UE performs MAC reset before entering connected.
 - LG explain in their paper [R2-165634](#) that from a previous RAN2 discussion it was understood by all that MAC would initially set the value to zero, and no specification was required.
 - DOCOMO think it is not fully clear from the current spec.
 - Ericsson think it has been this way since release 8. Samsung think this is now a new case for R13 because the UE must have an MPDCCH. LG think that async HARQ doesn't make a difference to this.
- => RAN2 understanding that the initial NDI value when UE initialises MAC is 0 for all UL HARQ processes.
- => Predefined NDI for asynchronous HARQ is not required.

[R2-165634](#) Necessity of NDI in RAR grant for asynchronous HARQ LG Electronics Inc. discussion
=> Noted

[R2-165090](#) NDI handling for the grant in RAR for asynchronous UL HARQ SamsungCR 36.321
13.2.00900 - F Rel-13 LTE_MTCe2_L1-Core, LTE_eLAA-Core
=> Not treated. Covered by previous papers.

Other

[R2-165368](#) Correction on UL RTT Timer for UL async HARQ Huawei, HiSilicon CR 36.321 13.2.0
0906 - F Rel-13 LTE_MTCe2_L1-Core

- LG thinks this is already covered as the UE is already required to be in active time after the RAR reception. The only reason for starting the RTT timer is related to defining active time.
- Samsung is not sure why the uplink RTT timer is needed

=> Not pursued

[R2-165671](#) SPS configuration in MTC LG Electronics Inc. discussion

- Ericsson wonder why this is special for the SPS case. LG agree that it also applied to the DL dynamic assignment.
- Ericsson think we have described this clearly for the UL and DL is supposed to be the same. LG think for the DL there is a difference as without the non-adaptive case we need to consider a DL assignment for each repetition.

=> Noted

[R2-165672](#) Proposed CR to 36.321 on SPS in downlink for MTC LG Electronics Inc. CR 36.321
13.2.00919 - F Rel-13 LTE_MTCe2_L1-Core

- Ericsson think we need check offline that this aligns with the rest of the specs

=> Offline discussion to conclude the need for the CR and, if needed the detailed wording.

- Update from offline: Companies agree and understand the issue. Another CR has been prepared in [R2-165942](#)

=> Not pursued

[R2-165942](#) Repetition transmissions within a bundle in DL for MTC LGCR 36.321
=> Agreed

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 handled in the LTE Break Out session (See the result in Annex G)

- [R2-164698](#) Corrections to Destination Indexing Samsung Electronics Co., Ltd CR 36.321 13.2.00887 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-164972](#) Logical Channel Prioritization in Multiple SL Transmissions LG Electronics Inc. discussion
- [R2-164973](#) Logical Channel Prioritization in Multiple SL Transmissions: Option1 LG Electronics Inc. CR 36.321 13.2.00898 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-164974](#) Logical Channel Prioritization in Multiple SL Transmissions: Option2 LG Electronics Inc. CR 36.321 13.2.00899 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-165038](#) Correction of UE requirements regarding SIB19 acquisition Samsung Telecommunications CR 36.331 13.2.02274 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-165239](#) Correction to Sidelink Discovery Gap for Transmission Ericsson CR 36.321 13.2.00901 - F Rel-13 LTE_eD2D_Prox-Core
- [R2-165240](#) Correction to Sidelink Discovery Gap for Transmission Ericsson discussion
- [R2-165666](#) Proposed CR to 36.331 on destinationInfoListUC in MAC LG Electronics Inc. CR 36.331 13.2.02335 - F Rel-13 LTE_eD2D_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](#))

7.6.1 LTE+WLAN Aggregation

Stage 2 corrections

- [R2-164702](#) Small corrections to LWA HTC Corporation CR 36.300 13.4.00891 - F Rel-13 LTE_WLAN_radio-Core
- Intel think a number of specs confuse LWA PDU and LWAAP PDU. Suggest we use LWAAP PDU everywhere. Broadcom agree and RAN3 are updating all the specs accordingly. CATT agree.
 - MediaTek think it is quite clear.
 - Nokia think we have a defined LWAAP PDU and hence it makes sense to use the term.
- => We will use LWAAP PDU consistently.
- => Agreed
- [R2-164734](#) Corrections to WLAN measurement Huawei, HiSilicon CR 36.300 13.4.00895 - F Rel-13 LTE_WLAN_radio-Core
- Broadcom ask why WLAN carrier info is needed. Huawei explain this is just a change in terminology. Carrier info is a broader term than channel number. Qualcomm thinks this aligns with stage 3.
- => Wording can be improved offline
- => Revised in [R2-165868](#) CR rev 1
- [R2-165868](#) Corrections to WLAN measurement Huawei, HiSilicon CR 36.300 13.4.00895 1 F Rel-13 LTE_WLAN_radio-Core
- => Agreed
- [R2-164736](#) Corrections to the coexistence of LWA, RCLWI and DC, LWIP Huawei, HiSilicon CR 36.300 13.4.00897 - F Rel-13 LTE_WLAN_radio-Core
- Broadcom think the coexistence is defined in 23.402 and hence this is not needed.
 - Qualcomm think this is clearly aligned with our intentions.
 - Intel think the SA2 spec defines coexistence with ANDSF but ANDSF may not be deployed.
 - Qualcomm think that SA2 spec is all about existence with legacy mechanisms and ANDSF.
 - Huawei agreed with Intel and Qualcomm and think this is a RAN issue.
 - Samsung support the CR. This is purely about the RRC configuration of the RAN based mechanism which says that only one RAN based mechanism used at a time.
- => Discuss offline how to capture the requirement clearly.
- => Discuss the release 12 rules as well.
- => Revised in [R2-165869](#) CR rev 1
- [R2-165869](#) Corrections to the coexistence of LWA, RCLWI and DC, LWIP Huawei, HiSilicon CR 36.300 13.4.00897 1 F Rel-13 LTE_WLAN_radio-Core

- => Correct the terminology for " RAN rules " to "RAN assisted WLAN interworking"
- => Agreed in [R2-165947](#) CR Rev 2

[R2-165416](#) Avoiding concurrent operations of LWA with LAA or LWIP Intel Corporation CR 36.300 13.4.00906 - F Rel-13 LTE_WLAN_radio-Core

- Qualcomm thinks that LAA needs a separate discussion and they could exist although there could be IDC issues. Intel agree that the IDC issues are the reason that we should avoid it and it has so far not been discussed. Huawei think that different bands could be used for WLAN and LAA and hence we don't need to rule out. Broadcom agree with Qualcomm with regard to LAA.
- BlackBerry agree with Intel and wonder why the eNB would use LWA and LAA at the same time.

=> Not pursued. Will be covered by revision of [R2-164736](#).

[R2-164739](#) Correction on WLAN authentication Huawei, HiSilicon CR 36.300 13.4.00898 - F Rel-13 LTE_WLAN_radio-Core

- MediaTek suggest we don't use PMK and PSK and instead just refer to SA3 specs.
- Qualcomm think we should minimise change at this point.

=> Add definition of the abbreviation PSK

=> Agreed in [R2-165870](#) CR Rev 1

[R2-165437](#) Correction to WLAN deployment scenarios MediaTek Inc., CMCC, China Telecom, Beijing Xiaomi Mobile Software Co. discussion

- Ericsson think the whole point of WT was to avoid using the term AP. Qualcomm think the point is to define the standardised interface and the network can deploy differently if it wants.
- Intel support the proposal as it is already supported and we have agreements based on this.
- Broadcom thinks that this changes the requirements.
- MediaTek think is just saying that there are deployments where WT is not needed.
- Nokia support the intent. This is case is an option of co-location of WT with eNB. Good to clarify this is supported.

=> Discuss offline to see if a note might be agreeable (MediaTek)

- Update from offline: Offline did not converge but many companies could agree to a note which is proposed on [R2-165910](#).

=> Noted

[R2-165446](#) Correction to LWA deployment scenarios MediaTek Inc., CMCC, China Telecom, Beijing Xiaomi Mobile Software Co. CR 36.300 13.4.00908 - F Rel-13 LTE_WLAN_radio-Core

=> Not pursued.

=> Revised in [R2-165910](#)

[R2-165910](#) Correction to LWA deployment scenarios MediaTek Inc., CMCC, China Telecom, Beijing Xiaomi Mobile Software Co. CR 36.300 13.4.00908 1 F Rel-13 LTE_WLAN_radio-Core revision of [R2-15446](#)

- Broadcom do not appear with the motivation of the CR or the proposed update. Understand that it would introduce security issues as the ethernet would open up access to the eNB.
- CMCC think this is realisable and support the CR
- Intel also think the note adds some value to clarify what people already understand is supported.
- Ericsson agree it is realisable but don't support to add a CR.
- China Telecom think this is a feasible deployment choice
- Xiaomi also support.
- Nokia also support the CR.
- Vodafone also think this is a possible scenario and the security aspects are the operator responsibility.

=> RAN2 understand that the scenario described in the document is a feasible deployment choice. RAN2 will not work further on how this deployment could be realised.

=> Not pursued

- [R2-164690](#) Clarification on LWA HTC Corporation CR 36.323 13.2.10173 - F Rel-13
LTE_WLAN_radio-Core
- Nokia ask if " WLAN interface " is a clear term.
=> " WLAN interface " to be clarified in some way.
=> Not pursued. Content covered by Intel CR
- [R2-165410](#) Clarification on PDCP Control PDU in LWA Intel Corporation CR 36.323 13.2.10177 - F Rel-13 LTE_WLAN_radio-Core
- Samsung support the CR
- LG think it was not agreed that the status report is always transmitted over LTE. Qualcomm agree this was not discussed but it makes sense. Nokia agree with Qualcomm. LG think in DC we discussed a lot about limiting the status report but for LWA we did not discuss and if we do this it would better be a Rel-14 enhancement. CATT agree with LG.
- Samsung clarify that this is only the status report in the DL and hence not for the flow control case.
- Nokia prefer the MediaTek NMP CR.
- LG think the NMP = 0 case is not required.
=> Can discuss whether routing of PDCP status report over WLAN will be allowed in R13.
=> Wording regarding NMP to be discussed offline
=> Revised in [R2-165871](#) CR Rev 1
- [R2-165871](#) Clarification on NMP in LWA status report Intel Corporation, MediaTek Inc. CR 36.323 13.2.10177 1 F Rel-13 LTE_WLAN_radio-Core
=> Agreed
- [R2-165452](#) Correction of the definition of NMP in LWA status report MediaTek Inc. CR 36.323 13.2.10178 - F Rel-13 LTE_WLAN_radio-Core
- MediaTek is ok with the Intel CR
=> Not pursued. Content covered by Intel CR
- [R2-164903](#) Addition of COUNT determination for the purpose of HRW setting Nokia, Alcatel-Lucent Shanghai Bell CR 36.323 13.2.10175 - F Rel-13 LTE_WLAN_radio-Core
- LG think this has been discussed several times before. This case happens in the duplication case.
- Nokia think this is the same as R8 but simply with 2 legs and what we had before was an error.
- Qualcomm thinks the CR is fine. Intel agree. MediaTek agree.
- Intel suggest 'use' instead of 'assume'.
=> Change 'assume' to 'use'
=> Other editorial fixes.
=> Agreed in [R2-165872](#) CR Rev 1
- [R2-165679](#) Corrections to PDCP Status Reporting QUALCOMM CDMA Technologies CR 36.323 13.2.10179 - F Rel-13 LTE_WLAN_radio-Core
=> Agreed
- RRC - WLAN measurements
- [R2-164851](#) Removal of event W1 upon mobility set configuration Huawei, HiSilicon discussion
- Ericsson think that the eNB can ensure that this never happens and hence we don't need autonomous removal.
- LG think the original intent was not to clear W1.
=> Noted
- [R2-164737](#) Autonomous removal of event W1 upon mobility set configuration Huawei, HiSilicon CR 36.331 13.2.02247 - F Rel-13 LTE_WLAN_radio-Core
=> Not pursued
- [R2-165199](#) Periodic WLAN measurement reporting MediaTek Inc. discussion
- Qualcomm think we did discuss and it is clear in our spec that periodic is not supported. Intel agree with Qualcomm.

- Nokia think that looking at the spec now it looks like it is included. All we did was discuss event triggered and not periodic. Ericsson agree.
- Qualcomm think we do not have periodic reporting in our spec but RAN4 do have it. Nokia think that periodic is supported based on the current signalling and nothing prevents the periodic choice from being selected.
- => Offline discussion to conclude whether R13 supports period measurements or not.
- Update from offline: Discussion did not converge but all companies agree it was not discussed during the WI. Majority think that periodic measurements should not be supported.
- Qualcomm think the intent was definitely not to support periodic.
- => Can be revisited at the next meeting. Companies are encouraged to progress offline before the next meeting.
- => Postponed

[R2-164738](#) Correction on measurement reporting for WLAN Huawei, HiSilicon CR 36.331 13.2.02248 - F Rel-13 LTE_WLAN_radio-Core
=> Remove "; for its fields"
=> Change to "reportConfigInterRAT within the VarMeasConfig"
=> Agreed in [R2-165873](#) CR Rev 1

[R2-165039](#) Small corrections regarding (WLAN) measurement reporting Samsung Telecommunications CR 36.331 13.2.02275 - F Rel-13 LTE_WLAN_radio-Core, LTE_WLAN_radio_legacy-Core
=> Editorial to be corrected
=> Agreed in [R2-165874](#) CR Rev 1

[R2-165411](#) Maximum number of WLAN-Identifiers Intel Corporation CR 36.331 13.2.02311 - F Rel-13 LTE_WLAN_radio-Core
- Samsung ask why eNB would configure more than support by the UE. Qualcomm agree that this is eNB mis-configuration. Broadcom agree and also wonder what the impact on system would be if the eNB doesn't report back.
- Huawei also agree that the this is not an issue.
=> Change of the remove and add order to be retained in the CR. Other changes to be removed
=> Revised in [R2-165875](#) CR Rev 1
=> RAN2 understand that if the eNB configures more than the allowed number of WLAN Ids then the UE behaviour is not specified.

[R2-165875](#) Order of addition and removal of WLAN-Identifiers Intel Corporation CR 36.331 13.2.02311 1 F Rel-13 LTE_WLAN_radio-Core
=> Agreed

[R2-165414](#) Multiple WLAN measurement objects on the same frequency Intel Corporation CR 36.331 13.2.02313 - F Rel-13 LTE_WLAN_radio-Core
- Samsung think that the need for multiple events is not a reason to have multiple objects.
- Ericsson think the use case if 2 measurement objects with different SSID that point to the same frequency
=> Agreed

[R2-165415](#) WLAN RSSI range for WLAN measurement thresholds Intel Corporation CR 36.331 13.2.02314 - F Rel-13 LTE_WLAN_radio-Core
- Samsung think this is not really needed. Nokia agree. Ericsson agree as it is supported by stage 3 and see no reason to change.
=> Not pursued.

RRC - WLAN status

[R2-164744](#) Correction on WLAN connection management Huawei, HiSilicon CR 36.331 13.2.02253 - F Rel-13 LTE_WLAN_radio-Core
=> Agreed

- [R2-165040](#) Small correction regarding WLAN status reporting Samsung Telecommunications CR 36.331 13.2.02276 - F Rel-13 LTE_WLAN_radio-Core, LTE_WLAN_radio_legacy-Core
=> Not pursued. Covered by CR in LWIP AI.
- [R2-165408](#) Clarification on associationTimer Intel Corporation CR 36.331 13.2.02309 - F Rel-13 LTE_WLAN_radio-Core
=> Discuss offline whether "E-UTRAN includes associationTimer only upon change in WLAN mobility set or lwa-WT-Counter." needs to be included in the CR.
=> "if not already part of it" removed from the CR
=> Revised in [R2-165876](#) CR Rev 1
- [R2-165876](#) Clarification on associationTimer Intel Corporation CR 36.331 13.2.02309 1 F Rel-13 LTE_WLAN_radio-Core
=> Agreed

RRC - Other

- [R2-165409](#) Clarification on PDCP-Config and statusFeedback for LWA Intel Corporation CR 36.331 13.2.02310 - F Rel-13 LTE_WLAN_radio-Core
- Qualcomm think that this was discussed to be available for other cases.
- MediaTek agree with the CR and sees no use case to use it other than LWA. We discussed the need for it only for LWA. It would still only be an LWA capable UE that implements this.
- Ericsson doesn't want to limit the usage of the 2 types of status report.
=> Agreed
- [R2-164741](#) Corrections to simultaneous configuration of LWA, RCLWI and LWIP Huawei, HiSilicon CR 36.331 13.2.02250 - F Rel-13 LTE_WLAN_radio-Core
=> Revised in [R2-165851](#) which is withdrawn then meeting treated this Tdoc instead of revision.
=> Revisit pending outcome of the stage 2 CR that is still not concluded
- [R2-165851](#) Corrections to simultaneous configuration of LWA, RCLWI and LWIP Huawei, HiSilicon, Intel Corporation CR 36.331 13.2.02250 1 F Rel-13 LTE_WLAN_radio-Core
=> Revised [R2-165919](#)
- [R2-165919](#) Corrections to simultaneous configuration of LWA, RCLWI and LWIP Huawei, HiSilicon, Intel Corporation CR 36.331 13.2.02250 2 F Rel-13 LTE_WLAN_radio-Core
=> Agreed
- [R2-164740](#) Correction on WLAN authentication Huawei, HiSilicon CR 36.331 13.2.02249 - F Rel-13 LTE_WLAN_radio-Core
=> Change Preshared Key and Pairwise Master Key to PSK and PMK and add abbreviations in the definitions section (as PSK is used more than once in the spec)
=> Agreed [R2-165877](#) CR Rev 1
- [R2-165678](#) Corrections for LWA/LWIP QUALCOMM CDMA Technologies CR 36.331 13.2.02337 - F Rel-13 LTE_WLAN_radio-Core
=> Remove the change to 'new' (already covered in another CR)
=> Agreed in [R2-165878](#) CR Rev 1

Withdrawn:

- [R2-164731](#) Corrections to the coexistence of LWA, RCLWI and DC, LWIP Huawei, HiSilicon CR 36.300 13.4.00892 - F Rel-13 LTE_WLAN_radio-Core
- [R2-164742](#) Correction on WLAN connection management LTE_WLAN_radio-Core CR 36.331 13.2.02251 - F Rel-13 LTE_WLAN_radio-Core

7.6.2 Interworking Enhancements

- [R2-164733](#) Corrections to RCLWI procedure Huawei, HiSilicon CR 36.300 13.4.00894 - F Rel-13 LTE_WLAN_radio-Core
- Intel suggest wording the sentence of step 3 to start with "after successful association". And figure may need to be updated.

- => Revised in [R2-165879](#) CR Rev 1
- [R2-165879](#) Corrections to RCLWI procedure Huawei, HiSilicon CR 36.300 13.4.00894 1 F
Rel-13 LTE_WLAN_radio-Core
=> Agreed
- [R2-164735](#) Corrections to WLAN connection status report for RCLWI Huawei, HiSilicon CR 36.300
13.4.00896 - F Rel-13 LTE_WLAN_radio-Core
- Ericsson think this is clear from stage 3 and not needed here. Samsung also agree. CATT also agree.
 - Huawei think we already have this not in the LWA stage 2 section and so it is needed also for RCLWI. Qualcomm think we should be consistent and hence suggest to add it.
- => Offline discussion to check that this is covered by stage 3 and decide whether to remove the other occurrence in stage 2.
- => Revised in [R2-165920](#)
- [R2-165920](#) Corrections to WLAN connection status report for RCLWI Huawei, HiSilicon CR 36.300
13.4.00896 1 F Rel-13 LTE_WLAN_radio-Core
=> To be revised to remove the other notes in the stage 2.
- => Revised in [R2-165948](#) CR Rev 2
- [R2-165948](#) Corrections to WLAN connection status report for RCLWI Huawei, HiSilicon CR 36.300
13.4.00896 2 F Rel-13 LTE_WLAN_radio-Core
=> Agreed
- [R2-165417](#) RCLWI traffic steering granularity Intel Corporation CR 36.300 13.4.00907 - F
Rel-13 LTE_WLAN_radio-Core
- Ericsson support the proposal and think we should inform CT1.
 - Broadcom agree with the CR and the LS to CT1.
 - Qualcomm think the intent is ok but this this should be handled in SA2. And SA2 update will be needed. Hence LS should go to SA2 as well anyway the CT1 spec only refers to PDN. We should not change our spec until SA2 conclude.
 - Intel think the wording is future proof for whatever SA2 decide
 - MediaTek agree with the intent. Think also that APN granularity is mentioned in 36.300.
- => Agreed
- [R2-164743](#) Correction on UE actions upon leaving RRC Connected Huawei, HiSilicon CR 36.331
13.2.02252 - F Rel-13 LTE_WLAN_radio-Core
- Ericsson think that today the spec is allowed to send steerToLTE and with a 30 minute timer which would prevent UE steering to WLAN for this time. Samsung think the Ericsson case is the intended behaviour and it has been discussed before.
 - Huawei explain that we have inconsistent behaviour when we have the timer set and when we don't.
- => Offline discussion to conclude
- Update from offline: Majority wanted to progress with the CR but the reason for change was updated
- => Revised in [R2-165921](#)
- [R2-165921](#) Correction on UE actions upon leaving RRC Connected Huawei, HiSilicon CR 36.331
13.2.02252 1 F Rel-13 LTE_WLAN_radio-Core
=> Not pursued
- [R2-165147](#) Clarifications on RCLWI HTC Corporation CR 36.331 13.2.02282 - F Rel-13
LTE_WLAN_radio-Core
- HTC explain that on configuration of RCLWI the AS sends the configuration to upper layers but we don't release it.
 - MediaTek think that it is not clear what the UE does when upper layers are informed of the release of the RCLWI configuration. There could be an upper layer mechanism active and after released the upper layer mechanism may become active.
- => Wording to be concluded offline
- => Revised in [R2-165881](#) CR Rev 1
- [R2-165881](#) Clarifications on RCLWI HTC Corporation CR 36.331 13.2.02282 1 F Rel-13
LTE_WLAN_radio-Core
=> Agreed
- [R2-165323](#) NBIFOM and steering command Ericsson discussion

=> Not treated as covered by Intel CT in [R2-165417](#)

[R2-165324](#) Draft LS on NBIFOM and steering command Ericsson LS out
- MediaTek think we should just inform them of the change we have agreed.
=> To be revised to tell SA2 about the agreed CR (also to be attached)
=> Should be to SA2 as well as CT1.
=> Revised in [R2-165880](#)

[R2-165880](#) Draft LS on NBIFOM and steering command (to: SA2, CT1; cc: -; contact: Ericsson) Ericsson LS out
=> Approved in [R2-165949](#)

7.7 WI: Multicarrier Load Distribution in LTE

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

[R2-164700](#) The field name is not highlighted with italic CATR, Spreadtrum Communication CR
36.304 13.2.00321 - F Rel-13 LTE_MC_load-Core
=> Agreed

[R2-165309](#) Clarification of UE redistribution target selection Ericsson CR 36.304 13.2.00328 - F
Rel-13 LTE_MC_load-Core
- Samsung suggest a simpler approach to just add 0.5 to the UE ID. Ericsson think that the UE ID is and integer
- Intel prefer the Ericsson approach. Nokia is also ok with the Ericsson proposal.
=> Agreed

[R2-165398](#) Introduction of RS-SINR measurement to 36.302 Nokia, Alcatel-Lucent Shanghai Bell CR
36.302 13.2.00083 - F Rel-13 LTE_MC_load-Core
=> Change to Cat B
=> Agreed in [R2-165883](#) CR Rev 1

7.8 WI: Dual Connectivity Enhancements

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

[R2-164840](#) SSTD measurement in dual connectivity Intel Corporation discussion
- Ericsson ask if this is critical if we don't remove the measurement. Suggests that the eNB could handle this. Intel's aim is also to be consistent with other cases.
- Qualcomm think that the measurement is already removed due to existing requirements in periodical measurements. Nokia have the same understanding.
=> Discuss offline to conclude whether any change is needed (Intel)
- Update from offline Concluded that the change is not needed
=> Noted

[R2-164841](#) Autonomous removal for SSTD measurement ID Intel Corporation CR 36.331 13.2.0
2257 - F Rel-13 LTE_dualC_enh-Core
=> Not pursued

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](#))

Incoming LSs:

[R2-164620](#) Reply LS to [R2-164575](#) on eDRX Paging Hyper-frame and PTW_Start Calculation ([RP-161311](#); contact: NTT DOCOMO) RAN LS in to: RAN2 Rel-13 LTE_extDRX-Core
=> Noted

[R2-164637](#) Reply LS to [R2-164582](#) on eDRX paging timing calculation and security concern (S3-161153; contact: NTT DOCOMO) SA3 LS in to: RAN2 Rel-13 LTE_extDRX-Core
=> Noted

[R2-165189](#) UE_ID for PH and PTW calculation Qualcomm Japan Inc discussion
=> Noted

[R2-164998](#) Remaining issues in eDRX PH and PTW calculations Intel Corporation discussion

- LG is ok with proposal 1 to use S-TMSI
- Samsung is also ok with proposal 1.
- Nokia ok with proposal but wonders about paging for recovery when S-TMSI is not available. DOCOMO think it is rare that S-TMSI is not available but think there can be cases that don't come from MME reset and recovery. DOCOMO can agree to use S-TMSI but think it needs to be hashed to ensure that it is random.
- ZTE also support proposal 1. Think that if eDRX is deployed in the network then the network can ensure that S-TMSI is random.
- Ericsson agree with DOCOMO that S-TMSI should be hashed to make it random
- Huawei support proposal 1 and that network can ensure the randomness
- Ericsson think that RAN has no control over the randomness of the allocation and hence we should define a hash function. Ericsson think we could also consider the reverse bits of the IMSI.
- CATT prefer to keep NB-IOT simple and suggest non-hashed value for NB-IOT
- Ericsson explain a hash function could take all bits of S-TMS to generate a 10 bits value.

=> Offline discussion to conclude between (DOCOMO)

- a/ Qualcomm proposal (reversed bit order to IMSI)
- b/ Hashed S-TMSI

Outcome of offline:

- Support to go for solution B using the S-TMSI. For option A it seemed that the distribution of UEs was not even for the cases of most interest to operators. CR is being drafted.
 - Vodafone would like more time to double check that option b is ok.
- => Hashed S-TMSI to be adopted (with some time given for people to double check this agreement)
- => It is understood that the decision to use S-TMSI may result in a very rare case where the UE is not reachable (e.g. when MME does not have S-TMSI).
- => LS to RAN3 to inform them of our status in [R2-165927](#) (DOCOMO)

[R2-165927](#) LS to RAN3 on eDRX PH and PTW calculations (to: RAN3; cc: -; contact: NTT DOCOMO) NTT DOCOMO LS out

- MediaTek request people to check with colleagues from other groups so that we do not learn later that there are issues such as with the unreachable problem.

=> Add CT1 to the actions

=> Change second sentence to "Note that RAN2 is performing a 2-weeks email checking to confirm the solution and to develop the actual RAN2 CR"

=> Change "that other version " to "the June version"

=> Add CT4 to cc list

=> Approved in [R2-165935](#)

☒ **[95#19][LTE/eDRX] CR on PH and PTW start calculation (DOCOMO)**
Intended outcome: Agreed CR for RAN
Deadline: Thursday 08/09/2016

[R2-165401](#) Way forward on eDRX paging distribution problem NTT DOCOMO INC. discussion

- Ericsson think this was a conscious decision to continue this discussion and hence there should not be any equipment with the legacy specification.

=> We will make a backward incompatible change to the spec to implement the PH and PTW start calculation

=> Notice should be added to 3GPP website to indicate that other version of the spec should not be used for implementing eDRX.

[R2-165403](#) On eDRX AS-NAS state mismatch NTT DOCOMO INC. discussion

- Samsung assume that eDRX capability if a cell will not change frequently.

- Vodafone also think this is easily solved by deployment and it is really an issue in a rare case then the UE could initiate a tracking area update. DOCOMO think it can be achieved in the network if the TAs are planned to ensure TAU but in the same TA you still have the problem.
 - DOCOMO explain the only concern with cells not supporting eDRX is power consumption, not an interoperability issue.
 - Qualcomm think the scenario works ok today and there is no paging miss but there is of course a power consumption issue if the cell doesn't support eDRX.
 - Sierra Wireless think that reading system information is also a power consumption issue.
 - Intel think it was previously discussed whether eDRX support could influence cell reselection. Don't see any problem with the current spec.
 - Huawei think it is not a problem that needs to be solved as it is a rare case.
 - CATT think that all eNBs under the same TA will need to support eDRX or not, and hence this is not an issue.
- => Noted

[R2-164996](#) Correction to eDRX acquisition period Intel Corporation, NTT DOCOMO, INC. CR 36.331 13.2.02271 - F Rel-13 LTE_extDRX-Core
=> Noted pursued. Covered by [R2-165190](#).

[R2-165190](#) Clarification on DRX cycle used by the UE Qualcomm Japan CR 36.331 13.2.02287 - F Rel-13 LTE_extDRX-Core
- Nokia think we should use 'using' to cover the case that the UE is configured with eDRX but not using it as the eNB doesn't support.
- Neul think the connected mode paragraph needs more investigation.
- Intel think that we have so far not used the 'eDRX' term for the cycle in 36.331 but it is used in 36.304. We may need to use some terms or definitions from 36.304.
=> Revised in [R2-165845](#) CR rev1
=> Add NB-IoT WI on coversheet

[R2-165845](#) Clarification on DRX cycle used by the UE Qualcomm Incorporated CR 36.331 13.2.02287 1 F Rel-13 LTE_extDRX-Core, NB_IOT-Core
=> TO be updated to show all changes (show the removal of e from eDRX)
=> Typo to be corrected
=> Agreed in [R2-165950](#) CR Rev 2

Withdrawn:
[R2-165715](#) On UE_ID for eDRX Sequans Communications discussion late

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](#))

[R2-165041](#) Introduction of EB/FD-MIMO Terminologies Samsung Telecommunications CR 36.300 13.4.00904 - F Rel-13 LTE_EBF_FDMIMO-Core
=> Agreed

[R2-165712](#) Issue on 12 and 16-port CSI-RS resource configuration NEC discussion
=> Noted

[R2-165713](#) Correction on 12/16-port CSI-RS resource configuration for FD-MIMO NEC CR 36.331 13.2.02338 - F Rel-13 LTE_EBF_FDMIMO-Core
=> Details of CR to be worked offline
=> Revised in [R2-165884](#) CR Rev 1

[R2-165884](#) Correction on 12/16-port CSI-RS resource configuration for FD-MIMO NEC CR 36.331 13.2.02338 1 F Rel-13 LTE_EBF_FDMIMO-Core

- ☒ **[95#03][LTE/FD-MIMO] CR on 12/16 CSI-RS resource (NEC)**
Intended outcome: Agreed CR for RAN
Deadline: Thursday 01/09/2016

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](#))

- [R2-165164](#) Maximum number of simultaneous UL PDCP delay measurements for FeMDT Intel Corporation CR 36.331 13.2.02284 - F Rel-13 LTE_eMDT2-Core
- Kyocera agree with the proposal to limited the configuration 1 due to the UE complexity. Samsung also support.
=> CR number to be corrected
=> Agreed in [R2-165885](#) CR Rev 1

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:

- [R2-164632](#) Response LS to S3-160831 = [R2-163325](#) on Progress on Security for LWIP (SP-160457; contact: Nokia) SALS in cc: RAN2Rel-13
=> Noted

CRs:
Stage 2

- [R2-164691](#) Clarification on LWIP HTC Corporation CR 36.300 13.4.00889 - F Rel-13
LTE_WLAN_radio_legacy-Core
=> To be corrected to be based on the latest version of the spec.
=> Leave " applies the new configuration " in the spec.
=> Revised in [R2-165886](#) CR Rev 1

- [R2-165886](#) Clarification on LWIP HTC Corporation CR 36.300 13.4.00889 1 F Rel-13
LTE_WLAN_radio_legacy-Core
=> Agreed

- [R2-164732](#) Corrections to the coexistence of LWIP and LWA, RCLWI Huawei, HiSilicon CR 36.300
13.4.00893 - F Rel-13 LTE_WLAN_radio_legacy-Core
=> Align with the wording used for the LWA CRs.
=> Revised in [R2-165887](#)

- [R2-165887](#) Corrections to the coexistence of LWIP and LWA, RCLWI Huawei, HiSilicon CR 36.300
13.4.00893 1 F Rel-13 LTE_WLAN_radio_legacy-Core
=> To be revised to correct the terminology "Ran rules"
=> Agreed in [R2-165951](#) CR Rev 2

LWIP

- [R2-164689](#) Clarification on LWIPEP HTC Corporation CR 36.361 13.1.00002 - F Rel-13
LTE_WLAN_radio_legacy-Core
=> Change DRB to "DRB identity"
=> Agreed in [R2-165888](#) CR Rev 1

- [R2-165412](#) Correction on GRE header size Intel Corporation CR 36.361 13.1.00003 - F
Rel-13 LTE_WLAN_radio_legacy-Core

- => To be checked offline whether the reference to RFC 2784 [4] should be removed
- Update from offline checking. the Second reference to RGC 2784 is required for some values.
- => Agreed

RRC

- [R2-164688](#) Correction to LWIP and LWA HTC Corporation CR 36.331 13.2.02244 - F Rel-13 LTE_WLAN_radio-Core, LTE_WLAN_radio_legacy-Core
- Nokia think that the mobility and tunnel can be configured in 2 steps. Hence the tunnel may not have to be included when LWIP is configured. After the first step the UE will just do the association with WLAN and then send the association report and the eNB can then configure the tunnel and this is done for security reasons.
 - MediaTek think that the WLAN-MobilityConfig field descriptions should also cover RCLWI
 - Samsung suggest a clarification that there must be 1 WLAN identity configured for when LWA or LWIP is configured, instead of changes to the field descriptions.
- => Remove "The E-UTRAN includes this field when LWIP is configured." from LWIP-Configuration
- => Revised in [R2-165889](#) CR Rev 1
- [R2-165889](#) Correction to LWIP and LWA HTC Corporation CR 36.331 13.2.02244 1 F Rel-13 LTE_WLAN_radio-Core, LTE_WLAN_radio_legacy-Core
- => Agreed
- [R2-165413](#) Clarification on LWIP-PSK Intel Corporation CR 36.331 13.2.02312 - F Rel-13 LTE_WLAN_radio_legacy-Core
- => Content to be merged into the revision of [R2-164688](#).
- => Not pursued

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 handled in the LTEBreak Out session on IoT (See the result in Annex I)

Incoming LSs:

- [R2-164614](#) Response LS to S3-160694 = [R2-163328](#) on Clarifications on RRC Resume Request (R3-161426; contact: Nokia) RAN3 LS in cc: RAN2Rel-13 NB_IOT-Core
- [R2-164623](#) Reply LS to [R2-163123](#) on Maximum upper layer data packet size for NB-IoT (C1-163141; contact: Nokia) CT1 LS in to: RAN2 Rel-13 NB_IOT-Core, CIoT-CT
- [R2-164635](#) Reply LS to S2-163061 = [R2-164385](#) on delay tolerant access via NB-IOT (C1-164010; contact: Qualcomm) CT1 LS in to: RAN2 Rel-13 CIoT-CT
- [R2-164639](#) Reply LS to [R2-163288](#) on Multiple bearer capability handling (C1-163890; contact: Intel) CT1 LS in to: RAN2 Rel-13 CIoT-CT

7.14.1 Control Plane

- [R2-164676](#) Correction to access barring checking for network sharing case QUALCOMM INCORPORATED CR 36.331 13.2.02242 - F Rel-13 NB_IOT-Core
- [R2-164719](#) Correction to system information for NB-IoT HTC Corporation CR 36.331 13.2.02246 - F Rel-13 NB_IOT-Core
- [R2-164762](#) Correction to Discontinuous Reception for Paging CATT CR 36.304 13.2.00323 - F Rel-13 NB_IOT-Core
- [R2-164763](#) Correction to functions not supported for NB-IoT CATT CR 36.300 13.4.00899 - F Rel-13 NB_IOT-Core
- [R2-164765](#) Corrections to TS36.331 CATT CR 36.331 13.2.02254 - F Rel-13 NB_IOT-Core
- [R2-164862](#) Issue on resume procedure ZTE Corporation discussion
- [R2-164864](#) Issue on resume procedure ZTE Corporation CR 36.331 13.2.02258 - F Rel-13 NB_IOT-Core
- [R2-164886](#) Corrections to NB-IoT in 36.331 Huawei CR 36.331 13.2.02262 - F Rel-13 NB_IOT-Core

R2-164887	Alignment between RRC and RAN1 specifications	Huawei, HiSilicon, Neul Limited discussion
R2-164888	Cleanup of the NB-IoT ASN.1	Huawei CR 36.331 13.2.02263 - F Rel-13 NB_IOT-Core
R2-164889	NB-IoT RRC Processing Delays	Huawei, HiSilicon, Neul Limited discussion
R2-164890	NB-IoT RRC Processing Delays	Huawei CR 36.331 13.2.02264 - F Rel-13 NB_IOT-Core
R2-164891	Clarification on valid downlink sub frame for SI message	QUALCOMM INCORPORATED CR 36.331 13.2.02265 - F Rel-13 NB_IOT-Core
R2-164892	Miscellaneous corrections to section 4 and 5 for NB-IoT	QUALCOMM INCORPORATED CR 36.331 13.2.02266 - F Rel-13 NB_IOT-Core
R2-164941	Corrections to NB-IoT general in 36.300	Huawei CR 36.300 13.4.00901 - F Rel-13 NB_IOT-Core
R2-164942	Corrections to NB-IoT HARQ in 36.300	Huawei CR 36.300 13.4.00902 - D Rel-13 NB_IOT-Core
R2-164943	Corrections to NB-IoT downlink reception type combinations in 36.302	Huawei, Samsung, Ericsson CR 36.302 13.2.00078 - F Rel-13 NB_IOT-Core
R2-164944	Corrections to NB-IoT in 36.304	Huawei CR 36.304 13.2.00325 - F Rel-13 NB_IOT-Core
R2-164994	Corrections to NB-IoT description in TS 36.300	Intel Corporation CR 36.300 13.4.00903 - F Rel-13 NB_IOT-Core
R2-164995	Correction to System Information change notifications in RRC_IDLE for NB-IoT	Intel Corporation CR 36.304 13.2.00326 - F Rel-13 NB_IOT-Core
R2-164997	Alignment of procedure when handling up-Clot-EPS-Optimisation	Intel Corporation CR 36.331 13.2.02272 - F Rel-13 NB_IOT-Core
R2-165132	Correction on cell reslection procedure while T300 is running	HTC Corporation CR 36.331 13.2.02279 - F Rel-13 NB_IOT-Core
R2-165133	Correction on full configuration	HTC Corporation CR 36.331 13.2.02280 - F Rel-13 NB_IOT-Core
R2-165135	Correction on SRB addition and modification	HTC Corporation CR 36.331 13.2.02281 - F Rel-13 NB_IOT-Core
R2-165152	Overload control and DelayTolerantAccess establishment cause	Ericsson discussion
R2-165153	Introduction of DelayTolerantAccess establishment cause in NB-IoT	Ericsson, Qualcomm Incorporated CR 36.331 13.2.02283 - B cat.B used for closed WI Rel-13 NB_IOT-Core
R2-165369	Corrections on Modification Period for NB-IoT	Huawei CR 36.331 13.2.02304 - F Rel-13 NB_IOT-Core
R2-165455	Minor editorial corrections for NB-IoT	Ericsson CR 36.331 13.2.02316 - D Rel-13 NB_IOT-Core
R2-165512	Relax NB-IoT UE requirements to support broadcast and DL HARQ processes simultaneously	QUALCOMM INCORPORATED CR 36.321 13.2.00912 - C cat.C used for closed WI Rel-13 NB_IOT-Core
R2-165629	Clarification of si-RepetitionPattern and SI message accumulation across different SI windows	Intel Corporation discussion
R2-165630	Clarification of si-RepetitionPattern and SI message accumulation across different SI windows	Intel Corporation CR 36.331 13.2.02331 - F Rel-13 NB_IOT-Core
R2-165641	Correction on system information required by NB-IoT UE in connected mode	LG Electronics France CR 36.331 13.2.02333 - F Rel-13 NB_IOT-Core
R2-165654	NB-IoT reservation of RA resources	Ericsson, NTT DOCOMO Inc., QUALCOMM INCORPORATED discussion
R2-165655	Reservation of RA resources in NB-IoT	Ericsson, NTT DOCOMO Inc., QUALCOMM INCORPORATED CR 36.331 13.2.02334 - F Rel-13 NB_IOT-Core
Withdrawn:		
R2-165511	Relax NB-IoT UE requirements to support broadcast and DL HARQ processes simultaneously	QUALCOMM INCORPORATED CR 36.331 13.2.02319 - C cat.C used for closed WI Rel-13 NB_IOT-Core

7.14.2 User Plane

R2-164745	Correction to DRX for NB-IoT	HTC Corporation CR 36.321 13.2.00890 - F Rel-13 NB_IOT-Core
R2-164764	Correction to MAC RAR CATT	CR 36.321 13.2.00891 - F Rel-13 NB_IOT-Core

R2-164782	Clarification on MAC timers	HTC Corporation	CR	36.321	13.2.00892	-	F	Rel-13
	NB_IOT-Core							
R2-164867	Correction on RA-RNTI calculation and Backoff Parameter values	ZTE Corporation	CR	36.321	13.2.00894	-	F	Rel-13
	NB_IOT-Core							
R2-164870	Issue on signalled parameters in PDCCH order in NB-IoT	ZTE Corporation	CR	36.321	13.2.00895	-	F	Rel-13
	NB_IOT-Core							
R2-164924	Correction to HARQ RTT	HTC Corporation	CR	36.321	13.2.00897	-	F	Rel-13
	NB_IOT-Core							
R2-165370	Correction on MAC procedure and DRX related issues	Huawei	CR	36.321	13.2.00907	-	F	Rel-13
	NB_IOT-Core							
R2-165371	Correction on RACH related issues	Huawei	CR	36.321	13.2.00908	-	F	Rel-13
	NB_IOT-Core							
R2-165372	Correction on Random Access Resource selection (Option 1)	Huawei	CR	36.321	13.2.00909	-	F	Rel-13
	NB_IOT-Core							
R2-165373	Correction on Random Access Resource selection (Option 2)	Huawei	CR	36.321	13.2.00910	-	F	Rel-13
	NB_IOT-Core							
R2-165640	Further consideration on DVI	LG Electronics Inc.	discussion					
R2-165642	CR to 36.321 on Clarification on provision of Data Volume	LG Electronics Inc.	CR	36.321	13.2.00915	-	F	Rel-13
	NB_IOT-Core							
R2-165645	LS on latest updates about Data Volume Indicator (DVI) for NB-IOT in RAN2	LG Electronics Inc.	LS out					Rel-13
	NB_IOT-Core							
R2-165652	Clarification of the applicability of Data Volume (DV) and Power Headroom Reporting (PHR) procedure	Ericsson	CR	36.321	13.2.00916	-	F	Rel-13
	NB_IOT-Core							
R2-165653	Clarification of the Random Access procedure for NB-IoT	Ericsson	CR	36.321	13.2.00917	-	F	Rel-13
	NB_IOT-Core							
R2-165669	Correction on On Duration handling in NB-IoT	LG Electronics Inc.	discussion					
R2-165670	Proposed CR to 36.321 on onDurationTimer	LG Electronics Inc.	CR	36.321	13.2.00918	-	F	Rel-13
	NB_IOT-Core							

7.15 Other LTE Rel-13 WIs

- [R2-165564](#) Introducing UE capability of CCH-IM (Option 1: 1 bit) QUALCOMM Inc. CR 36.331 13.2.02322 - B cat.B used for frozen Rel Rel-13 LTE_IM_DLCCH-Perf
- Qualcomm explain that RAN4 have not yet concluded so it will not be possible to conclude the RAN2 CRs yet. Qualcomm explain the main difference compared to Ericsson is this is per UE whereas the Ericsson proposal is per band combination.
 - Huawei think that is chipset vendors are ok to have this as per UE then why not have it as per UE.
 - Intel think it should be included in RAN4 and from RAN2 point of view the per band combination has significant overhead that can be avoided if not necessary.
 - Qualcomm wonder what is the benefit if the capability if per band combination.
- => From RAN2 point of view the signalling for "both per UE" and "per band per band combination are possible" but per UE has less overhead. From signalling perspective RAN2 would prefer "per UE"
- => Comeback Friday to check status in RAN4
- Update from offline: RAN4 have now concluded and sent an LS but update to te CRs is required.

- ✉ **[95#04][LTE/CCH-IM and CRS IM] 36.331 and 36.306 CR (Qualcomm)**
 LS from RAN4 to be provided at start of email discussion. Update CRs to take RAN4 agreements into account.
 Intended outcome: Agreed CRs to RAN
 Deadline: Thursday 01/09/2016

- [R2-165565](#) Introducing UE capability of CCH-IM (Option 2: 2 bits) QUALCOMM Inc. CR 36.331 13.2.02323 - B cat.B used for frozen Rel Rel-13 LTE_IM_DLCCH-Perf
- [R2-165307](#) CC-IM capability Ericsson CR 36.331 13.2.02296 - F Rel-13 LTE_IM_DLCCH-Perf

Moved from 7.16.2 to 7.15

- [R2-165570](#) Introducing UE capability of CRS-IM for TM 1-9 QUALCOMM Inc. CR 36.331 13.2.02324 - B cat.B used for frozen Rel Rel-13 LTE_CRSIM-Perf

[R2-165308](#) CRS-IM capability for non-TM10 case Ericsson CR36.331 13.2.0 2297 - F Rel-13
LTE_CRSIM-Perf Moved from 7.16.2 to 7.15

Above 4 Tdocs not treated

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 corrections related to already agreed TEI13 proposals will be treated under this agenda item.

7.16.1 CIoT optimisations

Stage 2 corrections

- [R2-165473](#) Corrections to C-LoT optimisations in Stage-2 Ericsson LM CR 36.300 13.4.00909 - F
Rel-13 TEI13
- DOCOMO think there is some misalignment with 23.401
 - Huawei think we don't need the figures in stage 2.
 - ZTE support the proposal to extend to non-NB-IOT UEs and think the figures can be useful.
 - Samsung think the figures are useful and think it more important that the figures align with stage 3 and the SA2 stage.
 - Huawei think there are cases where we don't have these figures so why is it needed for these cases.
 - Vodafone think we should be consistent and include for other procedures.
- => CRs to be progressed offline.
=> Can consider whether figure for CP optimisation is also added.
=> NB-IOT to be added to the WI codes.
=> Revised in [R2-165844](#)
- [R2-165844](#) Corrections to C-LoT optimisations in Stage-2 Ericsson LM CR 36.300 13.4.00909 1 F
Rel-13 TEI13, NB_IOT-Core
=> Agreed
- [R2-165253](#) Keys storage on C-LoT optimizations for non-NB-IoT UE Huawei, HiSilicon CR 36.300
13.4.00905 - F Rel-13 TEI13
=> Agreed
- [R2-164686](#) Clarification on CIoT HTC Corporation CR 36.300 13.4.00888 - F Rel-13 TEI13
=> Not treated as covered by previous CR.

Stage 3 corrections

- [R2-164705](#) Idle mode UE behaviour on user plane CIoT EPS optimisation NTT DOCOMO, INC.
discussion
P1
- Ericsson think that the UE would keep to context on inter-RAT reselection in case the UE returns to LTE. Question might be whether to release when the UE access another RAT and think this could be ok. ZTE share the view of Ericsson and think there is no complexity at all.
 - Intel share the view of Ericsson and ZTE but wonder if anything needs to be captured. Intel think it is clear that other RAT cells don't support the feature.
 - DOCOMO is also ok with option 3 if UE vendors are ok. Think there could be some NAS impact if the UE connects to the other RAT.
 - Qualcomm think it is not completely if there would be NAS impact with option 3 and support option 1.
 - Huawei think for LTE R13 it doesn't matter can be left to UE implementation.
 - DOCOMO think the current spec might imply that the UE keeps the context for ever.

- LG think if the stored context is usable if the UE returns to LTE then it makes sense to keep it.
- => Offline discussion on inter-RAT case, including investigation of potential NAS impact, and consideration of what would need to be specified in AS. Leaving to UE implementation may be possible outcome. (DOCOMO)

Updates from offline: Concluded that there is no NAS impact and preference is to discard the context after the cell selection to another RAT.

P2

- Ericsson support the proposal that this is the intention of the spec, and it should be clear today.
- Qualcomm agree the spec if clear. Nokia agree and this it is also clear for inter-RAT case.
- => For intra-LTE case it is clearly specified when the context is released, and as a consequence it is kept on reselection to a non supporting cell. No spec change needed.

[R2-164706](#) Idle mode UE behaviour on user plane CIoT EPS optimisation NTT DOCOMO, INC. CR 36.304 13.2.00322 - F Rel-13 TEI13

=> Revised in [R2-165928](#)

[R2-165928](#) Idle mode UE behaviour on user plane CIoT EPS optimisation NTT DOCOMO, INC. CR 36.304 13.2.00322 1 F Rel-13 TEI13

- Huawei think nothing is needed as a TAU will be triggered after the inter-RAT cell reselection.
- DOCOMO explain that TAUs might not always be performed if ISR is activated. Also it doesn't preclude optimisations or improvements in future.
- Intel think it would be good to clarify that the context is release in R13 and other things can be discussed for future releases. Qualcomm agree.
- Ericsson is ok to capture this if it doesn't limit future uses cases.
- => "UE discards" changed to "UE shall discard"
- => This does not preclude any future optimisations or improvements.
- => Agreed in [R2-165952](#) CR Rev 2

[R2-164923](#) Clarification on RRC processing delay for CIoT HTC Corporation CR 36.331 13.2.02269 - F Rel-13 TEI13

=> Agreed

[R2-165252](#) Correction on C-IoT optimizations for non-NB-IoT UE Huawei, HiSilicon CR 36.331 13.2.02290 - F Rel-13 TEI13

=> Agreed

[R2-165350](#) Measurement configuration during RRC resume in CIoT QUALCOMM incorporated CR 36.331 13.2.02299 - F Rel-13 TEI13

=> Agreed

7.16.2 Other

E-CID for TDD

[R2-164976](#) Discussion on the issue of E-CID Positioning for TDD CATT discussion

- Qualcomm think nothing can be done for earlier than Rel-13. For Rel13 we can specify a single behaviour. Intel have the same view and think we only need signalling in LPP to capture this.
- Nokia understand there will be 2 behaviour in early UEs in the market and we should focus on the signalling behaviour for what was agreed in RAN.
- CATT explain that new equipment that is compliant to earlier releases should also be allowed to use the correct behaviour. If we only add signalling to LPP then in LPPa we cannot know if the correct behaviour is used.
- CMCC share the same view as CATT and the problem should be fixed earlier than release 13.
- Qualcomm think LPP is not fixed to a release and hence we can add the indication in Rel-13 LPP and the indication can be implemented by a UE whenever it wants to.
- => Discuss offline how to progress (CATT)

Update on offline discussion: RAN4 CR on new mapping table is agreed so we need to consider it in our specs. Assumption taken that: All SLMC will be upgraded to support R13 and new UEs will only use behaviour 1. CRs provided based on these assumptions.

=> Noted

- [R2-164978](#) Discussion on supporting new mapping Table for UE Rx – Tx time difference CATT discussion Rel-13 TEI13
- Qualcomm think this is a similar issue and we should address with a capability indication that the UE is using the new mapping table. We should not require the UE to provide both measurement results with 2 mapping tables. Nokia agree with Qualcomm.
 - CATT ask how a legacy SMLC will interpret a report send by a new UE with the new mapping table.
 - Qualcomm think that RAN1 and RAN4 have discussed this at length and all we need to do is discuss the LPP side. This is essentially a new measurement for TDD in Rel-13.
- => Discuss together with the previous paper.
- => Noted
- [R2-164979](#) Supporting new UE Rx – Tx time difference mapping table CATT CR 36.331 13.2.02270
- F Rel-13 TEI13
- => Revised in [R2-165925](#)
- [R2-165925](#) Supporting new UE Rx – Tx time difference mapping table CATT CR 36.331 13.2.02270
- 1 F Rel-13 TEI13
- => -v1330 should be r13
- => CR Cat should be C
- => Agreed in [R2-165954](#) CR Rev 2
- [R2-165926](#) Supporting new UE Rx – Tx time difference mapping table CATT CR 36.306 13.2.01352
- F Rel-13 TEI13
- => CR Cat should be C
- => Agreed in [R2-165955](#) CR Rev 1
- [R2-164980](#) Supporting new UE Rx – Tx time difference mapping table CATT CR 36.355 13.1.00148
- F Rel-13 TEI13
- => Not pursued as covered in [R2-165911](#)
- [R2-164981](#) Draft Reply LS on ECID positioning for TDD CATT LS out Rel-13 TEI13
- => Revised in [R2-165957](#)
- [R2-165957](#) Draft Reply LS on ECID positioning for TDD CATT LS out Rel-13 TEI13
- => Approved in [R2-165974](#)
- [R2-165255](#) Correction of ECID positioning for TDD Qualcomm Incorporated CR 36.355 13.1.00143
- 2 F Rel-13 LCS_LTE, TEI13 Revision of [R2-163673](#)
- => Revised in [R2-165911](#)
- [R2-165911](#) Correction of ECID positioning for TDD Qualcomm Incorporated CR 36.355 13.1.00143
- 3 F Rel-13 LCS_LTE, TEI13
- => CR Cat should be C
- => Agreed in [R2-165956](#) CR Rev 4

Zero timer values

- [R2-165296](#) Clarification on timer handling for zero value NTT DOCOMO INC., Fujitsu, NEC CR 36.321 13.2.00903 - F Rel-13 LTE-L23, TEI13
- Ericsson wonder if the RRC CR can be modified to cover all the L2 specs.
 - DOCOMO explain this was discussed but there were concerns with that approach.
 - Qualcomm has concern about a general clarification for RRC timers. There are so many timers in RRC it is difficult to check that all are ok. For new timers we can specify them in this way.
- => Try to specify the requirement in RRC with some general text and then for each timer indicate whether the general behaviour applies.
- => Not pursued
- [R2-165298](#) Clarification on timer handling for zero value NTT DOCOMO INC., Fujitsu, NEC CR 36.322 13.2.00122 - F Rel-13 LTE-L23, TEI13

=> Not pursued

[R2-165300](#) Clarification on timer handling for zero value NTT DOCOMO INC., Fujitsu, NEC CR
36.323 13.2.10176 - F Rel-13 LTE-L23, TEI13

=> Not pursued

[R2-165301](#) Clarification on timer handling for zero value NTT DOCOMO INC., Fujitsu, NEC CR
36.331 13.2.02295 - F Rel-13 LTE-L23, TEI13

=> To be updated to be aligned with agreement for [R2-165296](#)

=> Revised in [R2-165890](#) CR Rev 1

[R2-165890](#) Clarification on timer handling for zero value NTT DOCOMO INC., Fujitsu, NEC CR
36.331 13.2.02295 1 F Rel-13 LTE-L23, TEI13

=> Agreed

UE categories

[R2-165506](#) Introduction of 1.2Gbps and 1.6Gbps UE categories in Rel-13 Huawei, HiSilicon, NTT DOCOMO, INC., SoftBank discussion

=> Revised in [R2-165730](#)

[R2-165730](#) Introduction of 1.2Gbps and 1.6Gbps UE categories in Rel-13 Huawei, HiSilicon, NTT DOCOMO, INC., SoftBank discussion

=> Noted

[R2-165504](#) Introduction of 1.2Gbps and 1.6Gbps UE categories in Rel-13 Huawei, HiSilicon, NTT DOCOMO, INC., SoftBank CR 36.331 13.2.02318 - F Rel-13 TEI13

=> Change to Cat B

=> Endorsed in [R2-165891](#) CR Rev 1 for final decision in RAN

[R2-165505](#) Introduction of 1.2Gbps and 1.6Gbps UE categories in Rel-13 Huawei, HiSilicon, NTT DOCOMO, INC., SoftBank CR 36.306 13.2.01346 - F Rel-13 TEI13

=> Revised in [R2-165729](#)

[R2-165729](#) Introduction of 1.2Gbps and 1.6Gbps UE categories in Rel-13 Huawei, HiSilicon, NTT DOCOMO, INC., SoftBank CR 36.306 13.2.01346 1 F Rel-13 TEI13

- Qualcomm asked how the L2 buffer size was calculated. Huawei explain that it was calculated in the same way as done in R8 and for DC. Qualcomm would like to double check number.

=> Comeback Friday to check status from RAN1

[R2-165916](#) Introduction of 1.2Gbps and 1.6Gbps UE categories in Rel-13 Huawei, HiSilicon, NTT DOCOMO, INC., SoftBank CR 36.306 13.2.01346 2 B Rel-13 TEI13

=> Endorsed for RAN to make final decision.

Other

[R2-165191](#) Discussion on on-duration timer Qualcomm Japan Inc discussion

- LG have the same interpretation. DRX cycle is only used after the first expiry of the inactivity timer. Ericsson think that this will make the UE never wake up and UEs don't behave this way. Also think that this has been discussed several times before.
 - LG don't see any real problem or confusion in the UE behaviour.
 - Intel also have the same understanding as Qualcomm.
 - Qualcomm explain the issue is related to whether the UE is transmitting the CQI immediately after the reconfiguration.
 - Ericsson concern is when the inactivity timer is started after the reconfiguration, and if there is no activity after reconfiguration then it may not be started and hence never expire.
- => RAN2 confirm that the specification is clear and the UE is not expected to transmit the CQI after the reconfiguration with DRX configuration and before the first expiry of the inactivity timer.

[R2-165325](#) IDC for WLAN integration Ericsson discussion

- Samsung ask why this is not already possible with existing IDC cause values. Ericsson think it would not be possible for the eNB take the decision to reconfigure LTE to allow LWA to continue. If the intent is to always favour LTE then the existing mechanism will work.
- Samsung think the current mechanism is sufficient for this case, but for the LAA we have not done anything.
- Intel explain that the IDC was de prioritised for the R14 WI.

- Nokia do like this mechanism although it can't be essential. Would like to consider for R14.
 - BlackBerry have the same view as Samsung.
 - Samsung think that the eNB doesn't know the frequency of WLAN from the IDC indication but it can know this from the configuration of LWA.
- => Noted

[R2-165326](#) IDC for WLAN integration Ericsson CR 36.306 13.2.01344 - B cat.B used for frozen Rel Rel-13 TEI13, LTE_WLAN_radio-Core

[R2-165327](#) IDC for WLAN integration Ericsson CR 36.331 13.2.02298 - B cat.B used for frozen Rel Rel-13 TEI13, LTE_WLAN_radio-Core
Above 2 Tdocs not treated

[R2-165405](#) Detecting new inter-RAT neighbours Nokia, Alcatel-Lucent Shanghai Bell discussion
36.331 13.1.0 Rel-13 TEI13
=> Noted
=> Can continue to be discussed in the scope of TEI14.

[R2-165406](#) Detecting new inter-RAT neighbours Nokia, Alcatel-Lucent Shanghai Bell CR 36.331
13.2.02308 - C Rel-13 TEI13
Not treated

[R2-165563](#) Clarification on RACH backoff time to avoid unnecessary RRC connection setup failures
QUALCOMM Inc. discussion
=> Noted

[R2-165562](#) Clarification on RACH backoff time to avoid unnecessary RRC connection setup failures
QUALCOMM Inc. CR 36.321 13.2.00914 - F Rel-13 TEI13
Not treated

[R2-165677](#) Proposed CR to 36.331 on extended PHR corrections LG Electronics Inc. CR 36.331
13.2.02336 - F Rel-13 LTE-L23, TEI13
=> WI to be changed to enhanced CA
=> Impact analysis
=> Agreed in [R2-165929](#) CR rev1

Related with RAN1 LS [R2-164652](#)

[R2-165922](#) CR to 36.331 on Introduction of new UL categories in Rel-13 Qualcomm CR 36.331
13.2.02345 - B Rel-13 TEI13 Late
=> Missing update to the UL64QAM field
=> Revised in [R2-165959](#) CR Rev 1

[R2-165959](#) CR to 36.331 on Introduction of new UL categories in Rel-13 Qualcomm CR 36.331
13.2.02345 1 B Rel-13 TEI13
=> Endorsed to be send to RAN as an attachment in an LS.

[R2-165923](#) CR to 36.306 on Introduction of new UL categories in Rel-13 Qualcomm CR 36.306
13.2.01351 - B Rel-13 TEI13 Late
=> To provide a revision without the category combinations
=> Revised in [R2-165958](#) Cr Rev 1

[R2-165958](#) CR to 36.306 on Introduction of new UL categories in Rel-13 Qualcomm CR 36.306
13.2.01351 1 B Rel-13 TEI13
=> Endorsed to be send to RAN as an attachment in an LS.

[R2-165960](#) Draft LS on Introduction of new UL categories in Rel-13 (to: RAN; cc: -; contact: Qualcomm)
Qualcomm LS out

✉ **[95#05][LTE/UL categories] LS to RAN on new UL categories (Qualcomm)**
Intended outcome: Approved LS to RAN.
Deadline: Thursday 01/09/2016

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-160881](#))

Time budget 2TU

Incoming LSs:

[R2-164641](#) LS on Enhanced LAA for LTE ([R1-166050](#); contact: Ericsson) RAN1 LS in to: RAN2 Rel-14 LTE_eLAA-Core Late

- Intel have a contribution showing some impact to LCP.
- BlackBerry ask if the RAN1 agreements should be captured in stage 2
- Huawei think the necessary parts are included in their stage 2 CR.

=> Noted

[R2-164642](#) LS on L1 parameters for Enhanced LAA ([R1-166051](#); contact: Ericsson) RAN1 LS in to: RAN2 Rel-14 LTE_eLAA-Core Late

=> Noted

[R2-164644](#) LS on RRC Parameters and PRACH for Enhanced LAA for LTE ([R1-166052](#); contact: Ericsson) RAN1 LS in to: RAN2 Rel-14 LTE_eLAA-Core Late

=> Noted

8.1.1 Random Access for LAA SCell

Random access on LAA SCells will be treated with lower priority as described in WI status report [RP-161250](#) and pending input from RAN1 whether it will be specified within this WI.

[R2-165496](#) Handling of RAN2 RACH agreements Huawei, HiSilicon discussion

=> Random access related agreements taken within this WI can be used as a baseline for any future WI that adds random access for LAA SCells

TA

[R2-165639](#) TA handling in LAA SCell LG Electronics Inc. discussion

- Nokia think that it would be enough to assume that the LAA SCell is always in a TAG with a licensed cell. Ericsson think RAN2 should not limit even if RAN4 only define requirements for one case. We should not prevent a remote radio head deployment.
- Huawei agree with Nokia.
- LG think the point is whether we allow to configure a TAG with only LAA cells.
- Samsung agree with Ericsson and support the proposal. Qualcomm also agree.
- ZTE think the RAN1 specs will need to be updated if we go with this proposal.
- LG think a TA value fixed in the spec would be enough. Nokia think that RAN1 have precluded having LAA SCells in the TAG without other cells.
- Huawei is not sure that RAN2 can conclude on the value 0.
- LG think that a fixed value can be used by the network as a reference for subsequent adjustments.
- Intel suggest we fix an initial value 0 and eNB can choose to use this or to place the LAA SCell in a TAG with other cells.
- Nokia ask about the issues of power control. Intel think the power control issues are similar to enh mobility and should not be an issue.

=> Offline discussion to conclude whether to use a fixed TA=0 or to place a limitation on configuration of the TAG containing the LAA SCell.

- Update from offline: Majority of companies think it should be allowed to configure a TAG with only LAA cells. Some companies have a concern re RAN4 and suggest an LS.
- Ericsson don't see the need to send an LS and it is normal for our specs to support more than possible in RAN4. Nokia think that RAN4 is already discussing and think we should ask them. Qualcomm think that RAN4 are already discussing a similar question re mobility enhancements.

=> LS to RAN4, cc RAN1, in [R2-165961](#) (LG).

=> LS will ask in which conditions the LAA SCell can be used as a reliable timing reference.

[R2-165961](#) LS on Timing reference for LAA SCell draftLS LG
=> Approved in [R2-165965](#)

RAR window monitoring

[R2-165314](#) RAR-window monitoring in LAA Ericsson discussion
[R2-165495](#) Considerations on leftover issues for RACH Huawei, HiSilicon discussion
NDI for RAR

[R2-165638](#) Necessity of NDI in RAR grant for asynchronous HARQ LG Electronics Inc. discussion
[R2-165315](#) NDI for MSG3 Ericsson discussion Moved from 8.1.3 to 8.1.1

Above 4 Tdocs not treated

8.1.2 UL HARQ for LAA SCell

Remaining aspects, if any, on UL HARQ for LAA SCells

[R2-165319](#) Asynch UL HARQ for LAA Ericsson draftCR 36.321 13.2.0- - B Rel-14
LTE_eLAA-Core
=> Remove the " if any "
=> To be included in update of the current running CR in [R2-165896](#)

[R2-165896](#) Running 36.321 CR on Enhanced LAA for LTE Ericsson draftCR 36.321 13.2.0- - B
Rel-14 LTE_eLAA-Core
=> Agreed in [R2-165963](#) CR 0922 Rev '-'

[R2-165497](#) HARQ impact of multiple subframes scheduling Huawei, HiSilicon discussion

- CATT think that nothing in the MAC spec needs to be changed.
- LG also agree there is nothing to change.
- Nokia agree that in MAC we should model as an UL grant per subframe. A slight different is the start of the inactivity timer which should only be once at the beginning of the multiple subframes. Huawei think this is already covered in the spec.
- Ericsson think that now the UE can be schedule far into the future and hence we might want to consider starting the inactivity timer differently. CATT think we should be able to live with in in this release.

Agreements

1: The MAC layer receives UL grant in corresponding subframe for multiple subframes scheduling although physical layer only receives one UL grant. The MAC layer considers that only one PDCCH is received (e.g. for purposes of DRX timer handling)

[R2-165316](#) Multisubframe scheduling Ericsson discussion
Moved from 8.1.3 to 8.1.2

=> Not treated as covered by previous paper

[R2-165136](#) On starting a UL HARQ RTT Timer HTC Corporation draftCR 36.321 13.2.0- - B
Rel-14 LTE_eLAA-Core

- Ericsson suggest a more general clarification to make it clear that transmitted in MAC spec means it is transmitted just from the MAC perspective.

=> Offline discussion to find a general wording to clarification that transmitted in MAC spec means it is transmitted just from the MAC perspective. Can be included in the running CR.

Moved from 8.1.3 to 8.1.2

8.1.3 Other user plane

Including any remaining aspects of QoS, logical channel prioritisation, impacts to DRX, etc

Including stage 3 CRs

- [R2-165498](#) Running Stage 2 CR for eLAA Huawei, HiSilicon draftCR 36.300 13.4.0- - B Rel-14 LTE_eLAA-Core
- BlackBerry understand that some of the greyed out agreements do need to be captured in the stage 2.
 - BlackBerry think the note in 5.7.1 is not clear.
- => To be revised in [R2-165897](#) CR 0910 Rev '1'
- => Also to include any other stage 2 agreements from this meeting.
- [R2-165897](#) Stage 2 CR for eLAA Huawei, HiSilicon CR 36.300 13.4.00910 - B Rel-14 LTE_eLAA-Core
- => RAN2 will discuss how to capture the RAN1 agreements in stage 2 at the next meeting. This will be treated as a correction in the next meeting.
- => Agreed
- [R2-165392](#) Introduction of eLAA Nokia, Alcatel-Lucent Shanghai Bell, Ericsson CR 36.302 13.2.0 0080 - B Rel-14 LTE_eLAA-Core
- => Remove RSSI part that is related to Rel-13
- => Agreed in [R2-165898](#) CR Rev 1. Note the CR includes some changes in the table that are also present in release 13 CR - to be resolved in implementation.

LBT priority class

- [R2-165503](#) Considerations on UL Qos mapping for LAA Scell Huawei, HiSilicon discussion
- [R2-164839](#) Interaction between LBT priority class and LCP Intel Corporation discussion
- Discussed jointly with previous paper.
 - Ericsson think there is no conflict between the LBT rules and LCP rules. Intel understand that the UL grant is associated to an LCG but the UE is not aware of this. Ericsson doesn't think the grant is associated with an LCG at the point in time that the UE receives it.
 - Qualcomm think this can be handled by eNB.
 - MediaTek think there is a conflict between the agreements from RAN1 and RAN2 and as a consequence the priority class used by the UE may not be consistent with the data in the transmission. However don't understand the proposal to address this.
 - Huawei understand the requirement in the spec is on eNB and hence eNB should address it and not UE.
 - Nokia agree with Ericsson and Huawei. RAN1 understood that we didn't want to touch LCP.
 - BlackBerry understand the problem only occurs in the case of data arrival for a new LCG after the BSR was sent. It is difficult to solve this issue. think we have to live with what we have.
- => MAC layer uses the existing LCP rules on multiplexing of UL data and does not need to care about which LBT type or LBT priority class is used by PHY. (i.e. no change to existing LCP)
- [R2-164749](#) Further Discussion of QoS for eLAA CATT discussion
- => Can be discussed offline which aspects of the RAN1 agreements should be covered in our stage 2.

PDCCH subframe definition

- [R2-164750](#) Further Discussion on PDCCH-subframe definition for LAA CATT discussion
- Ericsson would prefer some further clarification of the PDCCH definition
 - Samsung think that also in the context of Rel 14, nothing is needed.
 - Ericsson think the issue is that 'available for DL' doesn't mean that there will be DL.
 - Qualcomm think that we are referring to potential DL subframes. Some clean up would be useful
 - BlackBerry think the aspect to be clarified is that LAA cells are all considered as DL until the point when the UE is instructed to transmit in them.
 - LG support Ericsson's effort to clarify with bullets.
- => Add a note to the PDCCP subframe definition. Note to say something like "For FS3 all subframes are considered as DL subframes" (wording to be finalised offline)

=> More substantial clean-up of the definition can be considered as a separate CR in a future meeting.

[R2-165261](#) Clarification on PDCCH subframe definition Samsung India discussion
=> Not treated as covered by previous discussion.

[R2-165317](#) PDCCH monitoring for LAA Ericsson discussion
- Nokia think that nothing is needed as this situation already happened in FDD/TDD aggregation. Huawei agree that nothing is needed
- BlackBerry think it needs to be clarified that this is per cell.
- Samsung would prefer to update according to alternative 2.
- Intel would prefer alt 2 to be specified.
=> The UE does not monitor the PDCCH of an LAA cell if the UE transmits on that particular LAA-cell
=> Can consider offline whether similar change is appropriate for the FDD-TDD aggregation.

[R2-165494](#) Considerations on PDCCH monitoring for LAA Scell Huawei, HiSilicon discussion
=> Not treated as covered by previous paper.

PHR related

[R2-165093](#) PH values for LAA SCells Samsung discussion
- Ericsson sees no reason to always send virtual. If the LBT is successful then real PHR is the best to send. Huawei agree with Ericsson and nothing to change in MAC. Nokia also agree. LG agree and think it has been discussed many times before and concluded that it is a RAN1 issue to decide which to send.
- Intel point out that RAN1 have already agreed based on the actual scheduling .
=> Noted

[R2-165502](#) Considerations on Type 2 PH Huawei, HiSilicon discussion
- Ericsson see this as a signalling optimisation and doesn't see a benefit. LG think the legacy spec is ok.
- Nokia support the proposal.
- BlackBerry understand that the power headroom for LAA and licensed may be separate as the UE has separate RF chains and independent power.
- Huawei point out a RAN1 agreement that simultaneous transmission may or may not be configured.
=> Offline discussion. If able to conclude offline then the outcome can be included in the running CRs.

[R2-165953](#) Considerations on Type 2 PH Huawei, HiSilicon draft CR 36.321 13.2.0- - F Rel-14 LTE_eLAA-Core
=> Can be discussed as a correction at the next meeting
=> Postponed

[R2-165664](#) PHR aspect for supporting UL LAA LG Electronics Inc. discussion
P1
- Ericsson think single value is dl-PathlossChange is ok for normal small cells and should be ok also for LAA SCells. LG explain that the intent to control the trigger frequency for LAA SCells.
- Huawei don't see an issue. Samsung also agree with Ericsson and Huawei
P2
- Nokia think that RAN1 agreed that PHR is based on scheduled and hence should not be affected by LBT.
=> Noted

Other

[R2-165394](#) BSR routing for eLAA Nokia, Alcatel-Lucent Shanghai Bell discussion
- Ericsson think there could be cases it is nice it might also cause unnecessary SR in the PCell when the BSR could have been send on LAA SCell. Nokia explain that this is just

like the legacy behaviour for SRB. LG think this was proposed before and not agreed and it is not nice as the content of the BSR determines the transmission path.

- Huawei think that SR on the licensed cell might not work as the eNB might give a grant on the LAA SCell.
- => Noted

- [R2-165573](#) Scheduling aspects of eLAA BlackBerry UK Limited discussion
- Huawei wonder why P2 would be needed is we have P1. BlackBerry think there are 2 things, when the UE enters and when the UE leaves back-off state.
 - Ericsson thinks this is a corner case and does not need to be addressed.
 - Nokia think the eNB can try to do the first proposal. Proposal 2 would be an optimisation.
 - BlackBerry think it could be a common case of Cat 4 LBT is used in a cell.
 - Nokia is still discuss exactly what parameters would be given to the UE in the UL grant but if the eNB gives the window size then it might have more information to determine how long the UE will back-off.
- => Noted

Moved from 8.1.4 to 8.1.3

8.1.4 Control plane aspects

Including stage 3 CRs

- [R2-165499](#) Introduction of enhanced LAA for LTE Huawei, HiSilicon draftCR 36.306 13.2.0- - B
Rel-14 LTE_eLAA-Core

Moved from 8.1.3 to 8.1.4

=> Agreed in [R2-165900](#) CR 1348 CR Rev '1'.

- [R2-165500](#) Introduction of enhanced LAA for LTE Huawei, HiSilicon draftCR 36.331 13.2.0- - B
Rel-14 LTE_eLAA-Core

=> Revised in [R2-165882](#)

- [R2-165882](#) Introduction of enhanced LAA for LTE Huawei, HiSilicon draftCR 36.331 13.2.0- - B
Rel-14 LTE_eLAA-Core

=> Revised in [R2-165901](#) CR 2340 CR Rev '1'

=> To be reviewed offline and also updated to include agreements from this meeting.

- [R2-165901](#) Introduction of enhanced LAA for LTE Huawei, HiSilicon CR 36.331 13.2.02340 - B
Rel-14 LTE_eLAA-Core#

=> Remove " on a long term basis (e.g. by level of regulation)"

=> Remove late non critical extension for Rel-13

=> Agreed in [R2-165964](#) CR Rev 1

=> LAA work item is considered completed from RAN2 point of view. Moved from 8.1.3 to 8.1.4

- [R2-165108](#) Discussion on RRC Signaling to Support UL/DL Scheduling Combination 2 Shenzhen Coolpad Technologies discussion

=> Not treated as covered by previous CR.

=> Withdrawn by author

IDC

- [R2-165278](#) IDC issue in eLAA Samsung India discussion

=> Noted

- [R2-165281](#) IDC support in eLAA Samsung India draftCR 36.300 13.4.0- - Rel-13
LTE_eLAA-Core

- Ericsson think we discussed this previously and the previous conclusion still holds.
- In previous discussion there was a view that IDC may be work in the case of UL LAA and think we can think again about this issue.
- BlackBerry support the proposal. Prefer 'eNB shall configure'. Broadcom agree.
- The CR doesn't change the SI conclusion but proposed to capture it in the spec.

- Qualcomm support the CR and think it is the only sensible eNB implementation. Sony also support.
- Huawei think it may be a sensible solution. Think that detach/attach might be a better solution.
- Cable Labs also support the CR.
- Ericsson think there are cases where depending on the bands used of LAA the eNB can ensure that there is no WLAN and hence no IDC issue.

=> Revised in [R2-165902](#) CR 0911 Rev '1'

=> Detailed wording to be worked offline. Starting point for discussion "eNB should configure the UE with IDC indication upon receiving the LAA capability or upon configuring the UE for LAA operation". Text can also reflect case where there might be no issue due to the band used for LAA.

[R2-165902](#) IDC support in eLAA SamsungCR 36.300 13.4.00911 - B Rel-14 LTE_eLAA-Core

- Ericsson think the issue for DL was settled in R13 and nothing was captured and the discussion this meeting was only for UL. Huawei has the same understanding.
 - Samsung think that all companies agreed that this was not resolved in R13.
- => Agreed

Withdrawn:

[R2-164721](#) Scheduling aspects of eLAA BlackBerry UK Limited discussion

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-161272](#))

Time budget: 2 TU

Documents in this agenda item handled in the LTE Break Out session. (See the result of Annex G.)

Incoming LSs:

- [R2-164606](#) LS on RAN1 agreements potentially related to RAN2 in sidelink-based V2V ([R1-165965](#); contact: LGE) RAN1 LS in to: RAN2 Rel-14 LTE_SL_V2V-Core
- [R2-164619](#) Reply LS to [R1-163746](#) = [R2-163319](#) on V2V multicarrier configuration (R4-164930; contact: LGE) RAN4 LS in to: RAN2 Rel-14 LTE_SL_V2V-Core
- [R2-164624](#) LS on L1 parameters for sidelink-based V2V ([R1-165968](#); contact: LGE) RAN1 LS in to: RAN2 Rel-14 LTE_SL_V2V-Core
- [R2-164627](#) LS on V2V Authorization (R3-161540; contact: Huawei) RAN3 LS in to: RAN2 Rel-14 LTE_SL_V2V-Core
- [R2-164634](#) LS on Priority for V2V ([R1-165814](#); contact: Qualcomm) RAN1 LS in to: RAN2 Rel-14 LTE_SL_V2V-Core

8.2.1 Geo-location aspects

Stage 3 aspects related to zone calculation, reporting mechanisms and triggers.

Including output from email discussion [94#29][LTE/V2V] – Geo-location reporting (Qualcomm)

- [R2-164783](#) Report of email discussion [94#29] Geo-location reporting Qualcomm Incorporated report
- [R2-164746](#) Zone Calculation and resource mapping CATT discussion late
- [R2-164747](#) Resource selection based on sensing CATT discussion
- [R2-164842](#) Further considerations for geo-location reporting Intel Corporation discussion
- [R2-164850](#) V2V sensing and Geo-information interaction PANASONIC R&D Center Germany discussion
- [R2-165035](#) Resource allocation scheme for UEs without geo-location information Kyocera discussion
- [R2-165073](#) Text proposal to capture zone Configuration for V2V in 36.331 CATT discussion
- [R2-165075](#) Text proposal to capture zone Calculation for V2V in 36.321 CATT discussion
- [R2-165139](#) Based on geo-location reporting for Zone-based resource management in V2V service ITRI discussion
- [R2-165235](#) Discussion on zone reporting Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-165399](#) Geo based Resource Allocation for V2V over PC5 ZTE Corporation discussion

- [R2-165456](#) Flexible zone ID to pool ID mapping Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-165515](#) Location-aware resource allocation for V2X Ericsson discussion
- [R2-165594](#) Geo-information reporting LG Electronics Inc. discussion

8.2.2 Mobility and Path switch

Details on how pool information is signaled in handover command for synch and rx resource pools

Whether additional AS information needs to be provided to higher layers (dependent on SA2 input)

- [R2-164756](#) Mobility and Path Switch in V2V Communication Qualcomm Incorporated discussion
- [R2-164876](#) Consideration on mobility enhancement Huawei, HiSilicon discussion
- [R2-165042](#) Sensing related interruption for UE autonomous resource selection Samsung Telecommunications discussion
- [R2-165140](#) The suitability of PC5 measurement for V2V PC5 handover ITRI, National Taiwan University discussion
- [R2-165178](#) Considerations on service continuity in V2V case Fujitsu discussion
- [R2-165233](#) Discussion on the remaining issues on V2V mobility ZTE Corporation discussion
- [R2-165259](#) Discussion on the V2V path configuration signalling design ZTE Corporation discussion
- [R2-165521](#) On Exceptional Pools 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 LS response)

- [R2-164757](#) QoS for V2V Communication over PC5 Qualcomm Incorporated discussion
- [R2-164848](#) QoS support for UE autonomous resource allocation mode PANASONIC R&D Center Germany discussion
- [R2-165279](#) QoS aspects for PC5-based V2V transport ZTE Corporation discussion
- [R2-165347](#) Communication Resource Set Design with Message Forwarding for V2VASTRI, TCL Communication Ltd. discussion
- [R2-165516](#) Congestion Control in V2V Ericsson discussion
- [R2-165528](#) V2x QoS Ericsson discussion
- [R2-165593](#) QoS aspect for V2V LG Electronics Inc. discussion

8.2.4 SPS enhancements

Discussion on whether single or multiple SPS can be active at the same time and whether a SPS is linked to one or more RBs

UE assistance information, triggering of UE assistance and other remaining stage 3 details

- [R2-164774](#) Discussion on Details of V2V/V2X SPS Enhancements Guangdong OPPO Mobile Telecom. discussion
- [R2-164849](#) Radio resource selection behaviour for sensing and semi-persistent transmission PANASONIC R&D Center Germany discussion
- [R2-164877](#) Discussions on SPS over Sidelink Huawei, HiSilicon discussion
- [R2-165059](#) Discussion on SPS for V2V Interdigital Asia LLC discussion
- [R2-165074](#) UE reporting and enhanced UL SPS for V2V Samsung Electronics Co., Ltd discussion
- [R2-165129](#) Remaining Issues on SPS Configurations for PC5 Mode 1 Shenzhen Coolpad Technologies discussion
- [R2-165212](#) RAN2 related cross-carrier issues CMCC discussion
- [R2-165288](#) Discussion on Multiple SL SPS for V2X Transmission ASUSTEK COMPUTER (SHANGHAI) discussion
- [R2-165400](#) SPS enhancements for V2V over PC5 ZTE Corporation discussion
- [R2-165526](#) SPS Protocol for Sidelink Ericsson discussion
- [R2-165534](#) Details of DCI and SPS configuration Qualcomm Incorporated discussion
- [R2-165693](#) SL SPS configuration and UE assistant information LG Electronics France discussion

8.2.5 Stage 3

All other stage 3 aspects, including L2, L3, and QoS

Including output from email discussion [94#30][LTE/V2V] – RRC Open issues (Huawei)

Including output from email discussion [94#31][LTE/V2V] – Layer 2 open issues (CATT)

R2-164880	Summary of [94#30][LTE/V2V] – RRC Open issues Huawei, HiSilicon discussion
R2-164771	Report of email discussion 94#31 Layer 2 Open Issues CATT report late
CRs:	
R2-164772	Introduction of PC5 V2V for 36.304 CATT CR 36.304 13.2.00324 - B Rel-14 LTE_SL_V2V-Core
R2-164773	Introduction of PC5 V2V for 36.323 CATT CR 36.323 13.2.10174 - B Rel-14 LTE_SL_V2V-Core
R2-164882	Introducing V2V to TS 36.302 Huawei, HiSilicon CR 36.302 13.2.00077 - B Rel-14 LTE_SL_V2V-Core
R2-164883	Introducing V2V to TS 36.331 Huawei, HiSilicon CR 36.331 13.2.02261 - B Rel-14 LTE_SL_V2V-Core
R2-165529	Introducing Sidelink SPS in MAC Ericsson draftCR 36.321 13.2.0- - B Rel-14 LTE_SL_V2V-Core
R2-165530	Introducing Sidelink SPS in RRC Ericsson draftCR 36.331 13.2.0- - B Rel-14 LTE_SL_V2V-Core
R2-165531	Introducing non-IP SDU type Ericsson draftCR 36.323 13.2.1- - B Rel-14 LTE_SL_V2V-Core
R2-165691	Draft CR to 36.321 on Support for V2V services based on LTE sidelink (for UE autonomous resource selection) LG Electronics France draftCR 36.321 13.2.0- - B Rel-14 LTE_SL_V2V-Core
R2-165692	Draft CR to 36.321 on Support for V2V services based on LTE sidelink (for SL SPS) LG Electronics France draftCR 36.321 13.2.0- - B Rel-14 LTE_SL_V2V-Core
R2-164748	Misalignment between DFN periodicity and synchronization periodicity CATT discussion
R2-164758	Inter-Carrier Configuration CATT discussion
R2-164759	UE Sensing result Report CATT discussion
R2-164760	DFN Derivation from GNSS CATT discussion
R2-164761	Cross-carrier Scheduling for V2V CATT discussion
R2-164770	Draft LS on usage of Destination ID to differentiate PS sidelink and V2X sidelink CATT LS out
R2-164775	Discussion on Spectrum Configuration for V2V Guangdong OPPO Mobile Telecom. discussion
R2-164843	Support of multiple carriers/PLMNs Intel Corporation discussion
R2-164844	Resource pool management for V2X Intel Corporation discussion
R2-164875	DFN calculation based on GNSS Huawei, HiSilicon discussion
R2-164878	UE autonomous resource selection based on sensing Huawei, HiSilicon discussion
R2-164879	V2V Synchronization Configuration Huawei, HiSilicon discussion
R2-164881	Discussion on conditions for V2X sidelink communication Huawei, HiSilicon discussion
R2-165077	Text proposal for Misalignment between DFN periodicity and synchronization periodicity CATT discussion
R2-165078	Text Proposal to Capture V2X Configuration Carrier in 36.331 CATT discussion
R2-165081	Text proposal to Ccapture V2X Configuration Carrier in 36.304 CATT discussion
R2-165083	Text Proposal to Capture V2X Measurement in 36.331 CATT discussion
R2-165084	Text Proposal for V2X dedicated carrier CATT discussion
R2-165087	Text Proposal for Multiple SPS CATT discussion
R2-165089	TP to capture sensing based resource selection in 36.321 CATT discussion
R2-165205	Remaining issues on SL SPS Innovative Technology Lab Co. discussion
R2-165517	Discussion on PC5 Multiple Carrier Ericsson discussion
R2-165519	Inter-PLMN Operations for V2V Ericsson discussion
R2-165520	On Sidelink Cross-Carrier Scheduling Ericsson discussion
R2-165523	On the Need of Sidelink Gaps for V2V Ericsson discussion
R2-165524	Layer- 2 Protocol Stack for PC5-based V2X Ericsson discussion
R2-165525	RRC Details of V2V Configuration Ericsson discussion
R2-165592	Coexistence of PC5-V2V and Uu LG Electronics Inc. discussion
R2-165689	General Issues on MAC CR for V2V services LG Electronics France discussion
R2-165690	UE autonomous resource selection mode in MAC CR LG Electronics France discussion

8.3 SI: Study on enhancement of VoLTE

(FS_LTE_eVoLTE; leading WG: RAN2; REL-14; started: Mar. 16; target: Sep. 16; SID: [RP-160902](#))

Time budget 1TU

Documents in this agenda item handled in the LTE Break Out session. (See the result of Annex H.)

8.3.1 Organisational

Including LSs, skeleton of TR, etc

Incoming LS:

[R2-164626](#) LS on enhancement of VoLTE (R3-161519; contact: Huawei) RAN3 LS in to: RAN2 Rel-14 FS_LTE_eVoLTE

8.3.2 Codec mode/rate selection/adaptation

Including output from email discussion [94#32][LTE/eVoLTE] (CMCC)

[R2-165218](#) TR update to capture the solutions and agreements CMCC pCR 36.750 0.2.0 - - - result of email discussion [94#32] Rel-14 FS_LTE_eVoLTE

[R2-165297](#) TP for VoLTE/Video codec adaptation CMCC pCR 36.750 0.2.0 - - - Rel-14 FS_LTE_eVoLTE

[R2-164778](#) Discussion on Per-Cell Signaling Codec Rate Adaptation and Evaluation of the Candidate RAN-based Solutions Guangdong OPPO Mobile Telecom. discussion

[R2-164985](#) Remaining issues in RAN-assisted codec rate adaptation Kyocera discussion

[R2-165105](#) Codec Mode Selection Panasonic Corporation discussion

[R2-165268](#) Discussion on the code rate reporting ZTE Corporation discussion

[R2-165510](#) Further discussion on RAN based codec adaption solution Huawei, HiSilicon discussion

[R2-165615](#) Evaluation criteria for RAN assisted codec rate selection and adaptation Ericsson discussion

[R2-165616](#) Evaluation of RAN assisted codec rate selection and adaptation solutions Ericsson discussion

[R2-165617](#) RAN assisted codec rate selection and adaptation Ericsson 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 from email discussion [94#33][LTE/eVoLTE] (Huawei)

[R2-165508](#) Report and summary of email discussion 94#33LTE eVoLTE Huawei discussion

[R2-164992](#) Video signalling related enhancements Intel Corporation discussion

[R2-164993](#) VoLTE Codec mode/rate selection/adaptation Intel Corporation discussion

[R2-165509](#) Capture RAN3 conclusion on redirection Huawei, HiSilicon discussion

[R2-165665](#) Prioritization of MT MO MMTEL Voice or Video LG Electronics Inc. discussion

[R2-165709](#) VoLTE/video access priority Nokia, Alcatel-Lucent Shanghai Bell 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.

[R2-165194](#) On eNB awareness of EVS codec for coverage and mobility enhancements Qualcomm Japan Inc discussion

[R2-165217](#) TP for VoLTE/video enhancements to improve quality CMCC pCR

[R2-165628](#) VoLTE support analysis for Cat M1 UEs Intel Corporation discussion

[R2-165646](#) Consideration on delay budget relaxing Huawei, HiSilicon discussion late

8.3.5 Other

- [R2-165106](#) Proposal to send LS to SA4 Panasonic Corporation discussion
[R2-165680](#) UE Preferred C-DRX Cycle Reporting for VoLTE Qualcomm Inc., Apple Inc., AT&T Inc.,
Motorola Solutions Inc., the U.S. Department of Commerce, Verizon discussion

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. 17; SID: [RP-161303](#))

Time budget 0.5TU

Documents in this agenda item handled in the LTE Break Out session. (See the result of Annex G.)

8.4.1 UE-to-Network Relay enhancements

8.4.1.1 Common relay architecture aspects

Connectivity scenarios

Relaying options for UP/CP

- [R2-164779](#) Discussion on The Protocol Architecture of Layer 2 UE-to-Network Relay Guangdong OPPO
Mobile Telecom. discussion
[R2-164835](#) Discussion on L2 relaying options Intel Corporation discussion
[R2-164836](#) Discussion on relay based scenarios for FeD2D Intel Corporation discussion
[R2-165027](#) Phasing of D2D Relay enhancements Sony discussion
[R2-165028](#) Consideration on Relay Mode (RM) RLC Requirements Sony discussion
[R2-165029](#) CIoT signaling optimisation reuse for Relay Sony discussion
[R2-165060](#) Relaying Options for UP and CP Interdigital Asia LLC discussion
[R2-165061](#) Discussion on Connectivity Scenarios Interdigital Asia LLC discussion
[R2-165130](#) Discussion on Architecture Issues for ProSe UE-to-NW relay in Release 14 Shenzhen
Coolpad Technologies discussion
[R2-165148](#) Support non-3GPP access for wearables III discussion
[R2-165230](#) Discussion on relay schemes for feD2D ZTE Corporation discussion
[R2-165241](#) Requirements on the Evolved UE-to-Network Relay solution Ericsson discussion
[R2-165242](#) Reference models for Evolved ProSe UE-to-Network Relay Ericsson discussion
[R2-165244](#) Use cases and scenarios for the relay solution Ericsson discussion
[R2-165254](#) Considerations on the evolved UE-to-Network Relay scenario and architecture ZTE
Corporation discussion
[R2-165464](#) Layer 2 architecture for UE-to-Network Relay Huawei, HiSilicon discussion
[R2-165470](#) Current relaying framework and its gaps Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-165471](#) Basic principles and work prioritization Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-165579](#) Coverage scenarios for wearable devices Huawei, HiSilicon, LG Electronics, Interdigital,
Sequans discussion
[R2-165599](#) Relaying options for UP and CP LG Electronics Inc. discussion
[R2-165600](#) Architecture for feD2D LG Electronics Inc. discussion

8.4.1.2 Non-3GPP related aspects

Aspects specific to non-3GPP related scenarios (improvements to BT or WiFi are out of scope of this SI)

- [R2-165465](#) Feasibility of Bluetooth for UE relay Huawei, HiSilicon discussion

8.4.1.3 Other

Mobility, authorization, connection setup, service continuity, etc

- [R2-164837](#) Scenarios for service continuity in FeD2D Intel Corporation discussion
[R2-164983](#) Path selection Intel Corporation discussion
[R2-165062](#) Discussion on service continuity scenarios KDDI Corporation discussion

- [R2-165285](#) Discussion on connection setup for FeD2D ASUSTEK COMPUTER (SHANGHAI) discussion
[R2-165461](#) Procedures of the remote UE connection establishment with CN via a relay UE Huawei, HiSilicon discussion
[R2-165462](#) Relay discovery and connection setup procedures on LTE Sidelink Huawei, HiSilicon discussion
[R2-165597](#) TR skeleton for feD2D LG Electronics Inc. discussion
[R2-165598](#) Mobility aspect of remote UE LG Electronics Inc. discussion
[R2-165684](#) [draft] LS on QoS support of UE-to-Network Relay over LTE sidelink Huawei LS out
 Withdrawn:
[R2-165683](#) [draft] LS on QoS support of UE-to-Network Relay over LTE sidelink Huawei LS out

8.4.2 LTE sidelink enhancements

8.4.2.1 Evaluation assumptions

RAN2 specific evaluation assumptions and traffic modelling

- [R2-165243](#) Evaluation assumptions and possible sidelink enhancements Ericsson discussion
[R2-165586](#) Traffic Scenarios for feD2D Sequans Communications discussion

8.4.2.2 Other

Other RAN2 enhancements related to QoS, link efficiency, cost and power saving. As per RAN2 agreements the primary objective should be to address power efficiency for the wearable device (this is applicable to all UE categories).

- [R2-164838](#) Considerations for power saving Intel Corporation discussion
[R2-165141](#) Discussion on QoS for D2D Relay Enhancement ITRI discussion
[R2-165262](#) Initial consideration on the power efficiency of remote UE ZTE Corporation discussion
[R2-165466](#) QoS Aspects for the UE-to-NW Relay over Sidelink Huawei, HiSilicon 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-160923](#))

Time budget 1.5TU

Incoming LS:

- [R2-164638](#) Reply LS to [R2-164557](#) on PDCP ciphering for high data rates in eLWA (S3-161223; contact: Qualcomm) SA3 LS in to: RAN2 Rel-14
 => Noted

Running CRs

- [R2-165424](#) Stage-2 running CR for eLWA Intel Corporation draftCR 36.300 13.4.0- - B Rel-14 LTE_WLAN_aggr-Core
 => Endorsed as running CR
 => Revised in [R2-165932](#)
- [R2-165932](#) Stage-2 running CR for eLWA Intel Corporation draftCR 36.300 13.4.0- - B Rel-14 LTE_WLAN_aggr-Core Revision of [R2-165424](#)
- ☒ **[95#20][LTE/eLWA] 36.300 running CR (Intel)**
 Intended outcome: Endorsed running CR
 Deadline: Thursday 08/09/2016
- [R2-165425](#) Stage-3 running CR for eLWA Intel Corporation draftCR 36.331 13.2.0- - B Rel-14 LTE_WLAN_aggr-Core
 => Endorsed as running CR
 => Revised in [R2-165933](#)
- [R2-165933](#) Stage-3 running CR for eLWA Intel Corporation draftCR 36.331 13.2.0- - B Rel-14 LTE_WLAN_aggr-Core Revision of [R2-165425](#)

- ☒ **[95#21][LTE/eLWA] 36.331 running CR (Intel)**
Intended outcome: Endorsed running CR
Deadline: Thursday 08/09/2016

[R2-165934](#) PDCP running CR for eLWA Intel Corporation draftCR 36.323 13.2.1- - B Rel-14 LTE_WLAN_aggr-Core

- ☒ **[95#22][LTE/eLWA] 36.323 running CR (Intel)**
Intended outcome: Endorsed running CR
Deadline: Thursday 08/09/2016

[R2-164970](#) LWAAP running CR for LWA LG Electronics Inc. (LWAAP rapporteur) CR 36.360
13.0.00002 - B Rel-14 LTE_WLAN_aggr-Core
=> Endorsed as running CR

8.5.1 Uplink over WLAN

Including output from email discussion [94#28][LTE/eLWA] UL transmission (Nokia)

[R2-164904](#) Report of Email discussion [94#28][LTE/eLWA] UL transmission Nokia, Alcatel-Lucent
Shanghai Bell report
=> Revised to [R2-165899](#)

[R2-165899](#) Report of Email discussion [94#28][LTE/eLWA] UL transmission Nokia, Alcatel-Lucent Shanghai
Bell report
P2

- Qualcomm think that this implies that the UE makes a hard decision to send over WLAN.
- BlackBerry think nothing is needed to be changed as today we count all the data in PDCP and data sent to WLAN is no longer in PDCP. Nokia tends to agree and would be ok to not change the specs.
- Broadcom think we should only report what we intend to send over LTE.

P5

- MediaTek is not sure that PDCP or LWA status reports are required. If we do this we would have to specify what UE does on receiving these.

Agreements

- 1: If the UL of a bearer can be configured over WLAN only, that bearer will never trigger BSR while the UL is configured only over WLAN.
- 2: All UL data that may potentially be sent over LTE (except UL data already sent or decided to be sent to WLAN MAC) is counted towards the BSR. (This may not result in any change to the stage 3 specification.)
- 3: When UL bearer split is enabled, UE decides which PDUs to transmit on WLAN link (FFS how this might work in detail within limits of the mechanism for splitting traffic between LTE and WLAN).

Split bearer operation

[R2-165673](#) Control of LWA Uplink Transmission on WLAN QUALCOMM CDMA Technologies
discussion

- Kyocera asked if there is a use case where the eNB wants to send the majority of traffic over LTE and just use WLAN for overload managements. Ericsson agrees with the comments.

Agreements

- 1: Uplink transmission over WLAN will not impact LTE MAC procedures for buffer status reporting (trigger, format, and transmission) and logical channel multiplexing and assembly. Determination of which PDUs are sent over WLAN is not determined by MAC, RLC, LWAAP

- [R2-164852](#) Issues related to uplink transmission for eLWA Huawei, HiSilicon discussion
- Proposal 1: eNB determines the uplink split ratio and PDCP PDUs are delivered to lower layers as soon as generated.
 - Proposal 3: eNB groups LWA bearers into one LCG based on implementation.
- => Noted

- [R2-164680](#) Further Discussion on Scheduling Issue for UL Split Bearer in eLWA CATT discussion
Discussed together with the previous paper
- Qualcomm think we can't specify when PDCP pushes data to the WLAN link. Huawei think if the UE delivers data as soon as available then a threshold may not be required.
 - BlackBerry would prefer not to have any threshold and the WLAN link should be usable as soon as LWA uplink is configured. Broadcom agree with BlackBerry.
 - TCL would like to support split ratio on top of this mechanism.
 - Samsung think nothing is needed but think this could be replaced with a max rate over WLAN. MediaTek also would be ok with nothing but think it will not be agreeable.
 - Intel would also be ok with full UE control. This is BlackBerry's preference but see that the eNB still has control by deciding whether to give the UE a UL grant.
 - Broadcom think this mechanism would delay use of the resources over WLAN for no reason.

Agreements

- 1: For eLWA UL, a threshold is configured by eNB and the UE will send UL traffic on both LTE and WLAN links only if the data available for transmission in PDCP exceeds the threshold. (intention is that the threshold is considered in UE before any traffic is sent to WLAN)
- 1a When above threshold the distribution of traffic to the 2 links is according to agreement 3 for [R2-165899](#)
- 2: For eLWA UL, when the data available for transmission in PDCP is below or equal to the threshold, the UE will send UL traffic over LTE link only or WLAN link only as configured by the eNB.

- [R2-164905](#) Uplink split bearer for eLWA Nokia, Alcatel-Lucent Shanghai Bell discussion

- [R2-165478](#) Uplink configuration for eLWA Ericsson discussion

- [R2-164971](#) BSR and data transmission in UL LWA bearer LG Electronics Inc. discussion

- [R2-165475](#) BSR and uplink packet transmission for eLWA Ericsson discussion

- [R2-165717](#) eLWA uplink data transmission Kyocera Corporation discussion

- [R2-164681](#) Remaining Issues for UL Bearer Support in eLWACATT discussion

Above 6 Tdocs not treated

UL flow control

- [R2-165479](#) PDCP considerations for eLWA UL Ericsson discussion
- Qualcomm ask how the UE can know what has been successfully sent over WLAN without some feedback. MediaTek has sympathy for Qualcomm comment but we can assume that WLAN link is fairly reliable, and some internal mechanism can report to PDCP in UE if a packet fails.
 - Broadcom thinks that the UE has no way to be certain that a PDU was successfully transmitted.
 - Qualcomm asks what is wrong with PDCP status report so the eNB can ensure that no more than half the SN space is in flight.
 - Samsung ask if there is no ack from WLAN then what is the trigger for the PDCP to remove the PDCP PDU from the buffer.
 - LG clarify that there is no issue to UE to receive a PDCP status report at any time
- => Offline discussion to progress the issue, and issue can be revisited at the next meeting.

WLAN Access Category selection

- [R2-165430](#) Uplink QoS for enhanced LWA MediaTek Inc. discussion

=> Revised in [R2-165704](#)

- [R2-165704](#) Uplink QoS for enhanced LWA MediaTek Inc., Beijing Xiaomi Mobile Software Co. discussion

- Intel think that for DL it was left to WLAN eNB implementation. Ericsson this it is different as the operator can configure there WLAN nodes.
- MediaTek think that it can still be the WT that makes the decision and provides it to the eNB to pass on to the UE.
- CATT think this can be left to UE implementation as for normal UL WLAN traffic. BlackBerry have a similar view, and the UE knows the QCI and the QCI to AC mapping based on the table already available.
- Intel think the mapping must come from the WT.
- Nokia think this would place excess requirements on WT when most of the traffic is best effort only.

Agreements

- 1 Mapping between LWA bearer and IEEE 802.11 AC will be determined in the WT. RRC used to provide the mapping to the UE. RAN3 to complete the Xw aspects

=> LS to RAN3 to inform them of our decisions in [R2-165903](#) (Intel)

[R2-165903](#) Draft LS on RAN2 agreements for Uplink QoS for enhanced LWA (to: RAN3; cc: -; contact: Intel) Intel LS out

=> Add " and communicated to eNB " to the end of bullet 1

=> Change second bullet to " RRC is used to provide the AC per LWA bearer to the UE "

=> Approved in [R2-165966](#)

[R2-165322](#) Access Category selection for eLWA Ericsson discussion

[R2-165098](#) WLAN Access Category for uplink in eLWA Samsungdiscussion

Above 2 Tdocs not treated

Routing of UL PDUs to WT

[R2-165433](#) Uplink routing for enhanced LWA MediaTek Inc. discussion

=> Revised in [R2-165703](#)

[R2-165703](#) Uplink routing for enhanced LWA MediaTek Inc., Beijing Xiaomi Mobile Software Co. discussion

Not treated

Other topics

[R2-165095](#) Bearer combinations for eLWA Samsungdiscussion

Not treated

8.5.2 Mobility enhancements

E.g. intra and inter eNB handover without WT change, enhancements to WT change, etc, noting that RAN3 have made good progress and is drafting stage 2 and 3 CRs.

HO without WT change - general aspects:

[R2-164853](#) Mobility enhancement for eLWA Huawei, HiSilicon discussion

- Samsung support both proposal. LG also support
- Nokia think P1 is for RAN3 but support P2.

Agreement:

- 1: RAN2 to include LWA-Config-r13 and the WLAN measurement results in the AS-Config.

[R2-164869](#) LWA configuration between S-eNB and T-eNB during handover without WT change Huawei, HiSilicon CR 36.331 13.2.02260 - B Rel-14 LTE_WLAN_aggr-Core
Not treated

[R2-164684](#) Discussion on eLWA mobility CATT discussion

=> Conclusion captured in agreement for [R2-164853](#)

[R2-165716](#) Handover without WT change for LWA Intel Corporation (UK) Ltd discussion

- Samsung think the eNB can wait a long time but it is left to eNB implementation. But question is how we would enforce it.

Agreement

- 1 eNB does not need to change WLAN security key at handover but does need to be replaced at some later time.

HO without WT change - security aspects:

- [R2-164906](#) Inter-eNB HO without WT change Nokia, Alcatel-Lucent Shanghai Bell discussion
- Intel think it is excessive to include this key indicator in every packet. Qualcomm think there are also easier approaches. TCL don't see the benefit of the key indicator as it impacts all user plane packets. LG also agree and think that the SN number to synchronise the key change can be included in the handover.
 - Samsung think that the SN in handover will cause a big interruption in the traffic via WLAN.
 - Ericsson think we can accept some interruption but it will still be better than R13. Ericsson thinks the key indicator approach also cause interruption as packets are dropped.
 - Ericsson think that the application layer can be quite robust to packet errors.
 - Nokia think that interruptions of a few ms are aimed to be saved in enh mobility WI.
- => Noted

☒ **[95#24][LTE/eLWA] PDCP key change at handover (Nokia)**

Intended outcome: Identify solutions to address PDCP key change at handover. Describe the full solutions and identify pros and cons. Recommendation for way forward if possible. Deadline: Thursday 22/09/2016

- [R2-165476](#) Intra- and inter-eNB HO for eLWA without WT change Ericsson discussion
- [R2-164781](#) eLWA service continuity in Mobility aspects TCL Communication Ltd. discussion
- [R2-164723](#) LTE handover while keeping LWA: PDCP security aspects Samsung R&D Institute UK discussion
- Above 3 Tdocs not treated

- [R2-164724](#) S-KWT update independent of handover Samsung R&D Institute UK discussion
- Intel think that we already have a procedure to update the WT counter at any time without it being linked to a handover. Nokia have the same understanding.

Agreements

- 1 Handover and S-KWT update can be achieved with 2 independent procedures over the radio. First a handover that does not trigger a S-KWT update, and then at a later time a reconfiguration procedure that does trigger S-KWT update.

- [R2-165138](#) Re-keying without re-association for eLWA HTC Corporation discussion
- [R2-165237](#) On handling PDCP ciphering key change for mobility optimization China Telecommunications discussion
- [R2-165605](#) PDCP security key handling when handover without WLAN change LG Electronics Inc. discussion
- Above 3 Tdocs not treated

Other

- [R2-165418](#) Suspend/resume functionality for LWA Intel Corporation discussion
- Not treated

Withdrawn:

- [R2-164865](#) LWA configuration between S-eNB and T-eNB during handover without WT change HUAWEI TECHNOLOGIES Co. Ltd. CR 36.331 13.2.02259 - B Rel-14 LTE_WLAN_aggr-Core

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,

- [R2-164907](#) Support of 60 GHz in measurements and mobility set Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-164854](#) Control plane issues related to the support of 60GHz Huawei, HiSilicon discussion
- [R2-164682](#) Discussion on CP Aspect to Support 60GHz WLAN CATT discussion
- Above 3 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

- [R2-165422](#) eLWA optimizations for high data rate 802.11 technologies Intel Corporation discussion
- [R2-164683](#) Discussion on UP Aspect to Support 60GHz WLAN CATT discussion
- [R2-164855](#) The impact of disabling PDCP ciphering Huawei, HiSilicon discussion
- [R2-164909](#) UE maximum bitrate with eLWA Nokia, Alcatel-Lucent Shanghai Bell discussion
- Above 4 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

- [R2-165429](#) Feedback enhancements for enhanced LWA MediaTek Inc. discussion
=> Revised in [R2-165705](#)
- [R2-165705](#) Feedback enhancements for enhanced LWA MediaTek Inc., Beijing Xiaomi Mobile Software Co. discussion
- [R2-165675](#) Feedback Enhancements for LWA QUALCOMM CDMA Technologies discussion
- [R2-165477](#) On feedback optimization for eLWA Ericsson discussion
- [R2-165423](#) Considerations for additional WLAN metrics Intel Corporation discussion
- [R2-165602](#) Further enhancements of WLAN connection status report LG Electronics Inc. discussion
- [R2-164685](#) UE Location Collection for WLAN Mobility Set Configuration CATT discussion
- Above 7 Tdocs not treated

8.5.5 ANR for LWA

Including any aspects of ANR that RAN2 may be able to progress without input from RAN3, given that RAN3 have so far not made any conclusions and have now deprioritised the topic.

- [R2-164908](#) ANR for LWA Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-164856](#) ANR enhancement for eLWA Huawei, HiSilicon discussion
- Above 2 Tdocs not treated

8.5.6 Other

- [R2-165043](#) Introducing clearing of measurements upon reporting WLAN unavailability Samsung Telecommunications CR 36.331 13.2.02277 - F Rel-14 LTE_WLAN_aggr-Core, TEI14
NOTE: cat.F should be cat.B and wondering why TEI14 needed in WI code
- [R2-165601](#) Further enhancement of WLAN measurement report LG Electronics Inc. discussion
- Above 2 Tdocs 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-160921](#))

Time budget 1TU

Documents in this agenda item handled in the LTE Break Out session. (See the result of Annex H.)

Incoming LS:

- [R2-164607](#) Reply LS to [R2-164565](#) on the feasibility of mobility enhancement solutions ([R1-165996](#); contact: ZTE) RAN1 LS in to: RAN2 Rel-14 LTE_eMob-Core
- [R2-164616](#) Response LS to [R2-163135](#) on the feasibility of mobility enhancement solutions (R3-161542; contact: ZTE) RAN3 LS in to: RAN2 Rel-14 LTE_eMob-Core

- [R2-164617](#) Reply LS to [R2-163135](#) on the feasibility of mobility enhancement solutions (R4-164906; contact: ZTE) RAN4 LS in to: RAN2 Rel-14 LTE_eMob-Core
- [R2-164643](#) Reply LS to [R2-163135](#) on the feasibility of mobility enhancement solutions ([R1-166053](#); contact: ZTE) RAN1 LS in to: RAN2 Rel-14 LTE_eMob-Core Late

8.6.1 RACH-less handover

- [R2-164672](#) Further considerations on the RACH-less handover for the LTE mobility enhancements Samsungdiscussion
- [R2-164832](#) RACH-less handover for small cell Intel Corporation discussion
- [R2-164939](#) Remaining issues on RACH less handover Huawei, HiSilicon discussion
- [R2-165181](#) Issues on RACH-less handover CATT discussion
- [R2-165269](#) Coordination between working groups on the RACH-less solution ZTE Corporation discussion
=> Revised in [R2-165728](#)
- [R2-165728](#) Coordination between working groups on the RACH-less solution ZTE Corporation discussion
- [R2-165273](#) Remaining RAN2 issues of RACH-less Handover ZTE Corporation discussion
- [R2-165274](#) Draft reply LS on the feasibility of mobility enhancement solutions ZTE Corporation discussion
- [R2-165275](#) Draft LS on the evaluation of RACH-less solution ZTE Corporation discussion
- [R2-165457](#) Further considerations on RACH-less handover Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-165623](#) Considerations on RACH-less Handover LG Electronics Francediscussion
- [R2-165718](#) Timing advance determination by target eNB for RACH-less handover Kyocera Corporation discussion
- [R2-165687](#) Uplink Grant for RACH-less Handover QUALCOMM CDMA Technologies discussion
- Moved from 8.8 to 8.6.1

8.6.2 Make before break handover

- [R2-164673](#) Further considerations on solutions for maintaining a connection to the source eNB Samsung discussion
- [R2-164833](#) Stage 3 detail for option 1 Intel Corporation discussion
- [R2-164834](#) Stage 3 detail for option 4 Intel Corporation discussion
- [R2-164940](#) Remaining issues on Solution 2 Huawei, HiSilicon discussion
- [R2-165183](#) Issues on Make before break handover CATT discussion
- [R2-165234](#) Consideration on handover failure and data forwarding China Telecom Corporation Ltd. discussion
- [R2-165270](#) Discussion on make before break solution ZTE Corporation discussion
- [R2-165271](#) RLF analysis on make before break solution ZTE Corporation discussion

8.6.3 Other

- [R2-164674](#) On combining solutions for the LTE mobility enhancements Samsungdiscussion
- [R2-164675](#) Solutions for the LTE mobility enhancements and analysis of their network side impact Samsung discussion
Same discussion paper is submitted to RAN WG3

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

Incoming LS:

- [R2-164605](#) LS on OTDOA for the same PCI ([R1-165853](#); contact: Huawei) RAN1 LS in to: RAN2 Rel-14 UTRA_LTE_iPos_enh2-Core
=> Noted

8.7.1 OTDOA and CID/E-CID enhancements

Input from RAN1 required before RAN2 can progress this AI.

- [R2-164910](#) Discussion on the same PCI case for OTDOA enhancements Huawei, HiSilicon discussion
- Qualcomm view is that PRS ID is not related to the cell portion. Proposal 2 is probably ok.
 - Intel is not sure if the cell portion ID can be used to identify the TP and more than one TP can fall in the same cell portion. Qualcomm think the TP could be identified by the Cell portion and the PCI.
 - Nokia did not understand why we need more than one ID to identify the pattern.
 - Huawei think muting id alone is not sufficient.
 - Qualcomm think if cell portion is replaced by a TP id then the proposal is acceptable.

Agreements:

1: Introduce PRS muting pattern per TP in LPP.

2: Introduce PRS ID per TP in LPP.

- [R2-165260](#) OTDOA Enhancements for the Shared Cell-ID Scenario Qualcomm Incorporated discussion
- => Noted
 - => Offline discussion to determine which CR to use as the starting point and to merge the CRs to create a running CR (draft CR) in [R2-165892](#)

- [R2-165892](#) Running CR on Introduction of OTDOA enhancements Huawei draftCR 36.355 13.1.0-
- B Rel-14 UTRA_LTE_iPos_enh2-Core
 - Intel point out that TPid needs to be aligned with RAN3. Huawei suggest it should be the same range as PRS ID.
- => Endorsed as running CR

- [R2-165513](#) Introduction of OTDOA enhancements to solve 'same PCI' problem Intel Corporation CR 36.355 13.1.00152 - B Rel-14 UTRA_LTE_iPos_enh2-Core

- [R2-164914](#) CR on distinguishing small cells with same PCI Huawei, HiSilicon CR 36.355 13.1.00147 - B Rel-14 UTRA_LTE_iPos_enh2-Core

- [R2-164916](#) CR on Introduction of OTDOA with same PCI feature Huawei, HiSilicon CR 36.306 13.2.01342 - B Rel-14 UTRA_LTE_iPos_enh2-Core

- [R2-165263](#) Draft CR 36.355: OTDOA Enhancements for the Shared Cell-ID Scenario Qualcomm Incorporated draftCR 36.355 13.1.0 - B Rel-14 UTRA_LTE_iPos_enh2-Core Moved from 8.7.2 to 8.7.1

Above 4 Tdocs not treated

Same PCI for E-CID

- [R2-164912](#) Discussion on the same PCI case for E-CID enhancements Huawei, HiSilicon discussion
- Nokia think the RAN1 LS only addresses OTDOA and hence suggest to wait for RAN1 to progress on this aspect.
 - Intel is aware of a RAN1 paper that propose no CSI-RS measurement reported from the UE to SMLC.
 - Ericsson agree it is difficult to discuss until RAN1 have progressed.
- => Noted

- [R2-164913](#) CR on using CSI-RSRP measurements to distinguish small cells with same PCI Huawei, HiSilicon CR 36.355 13.1.00146 - B Rel-14 UTRA_LTE_iPos_enh2-Core
- Not treated

RSTD quantisation

- [R2-164911](#) CR for reducing RSTD quantization error Huawei, HiSilicon CR 36.355 13.1.00145 - B Rel-14 UTRA_LTE_iPos_enh2-Core
- Huawei explain that this issue is not yet concluded in RAN4 but they will conclude this week.
 - Qualcomm is ok with the principle but has some comments on the details. Would also prefer that it is just a running CR until the WI is complete.

- Nokia thinks there still needs to be discussion in RAN1. Huawei think this was already discussed and supported in RAN1. Qualcomm agree with Huawei that the decision that is useful has been made in R13 time.

=> Comeback Friday to check status in RAN4

=> Revised in [R2-165893](#)

[R2-165893](#) CR for reducing RSTD quantization error Huawei, HiSilicon CR 36.355 13.1.00145 1
B Rel-14 UTRA_LTE_iPos_enh2-Core

=> Postponed to next meeting

[R2-164915](#) CR on Introduction of reduced quantization error feature Huawei, HiSilicon CR 36.306
13.2.01341 - B Rel-14 UTRA_LTE_iPos_enh2-Core
=> Not pursued

8.7.2 Enhancements for WLAN, Bluetooth, Barometric, and MBS

Including addition of assistance data and UE-based positioning

Running CRs

[R2-165695](#) Running CR for 36.305 Further Indoor positioning enhancements NextNav draftCR 36.305
13.0.0- - B Rel-14 UTRA_LTE_iPos_enh2-Core
=> Endorsed as running CR

=> Revised to include the agreements from this meeting in [R2-165894](#)

[R2-165894](#) Running CR for 36.305 Further Indoor positioning enhancements NextNav draftCR 36.305
13.0.0- - B Rel-14 UTRA_LTE_iPos_enh2-Core
=> Endorsed as running CR

[R2-165694](#) Running CR for 36.355 Further Indoor positioning enhancements NextNav draftCR 36.355
13.1.0- - B Rel-14 UTRA_LTE_iPos_enh2-Core
=> Endorsed as running CR

=> Revised to include the agreements from this meeting in [R2-165895](#)

[R2-165895](#) Running CR for 36.355 Further Indoor positioning enhancements NextNav draftCR 36.355
13.1.0- - B Rel-14 UTRA_LTE_iPos_enh2-Core
=> Endorsed as running CR

☒ **[95#25][LTE/IP] Progress specific of WLAN assistance data (Intel)**

Discuss WLAN assistance data and recommend a set of data to be included

Intended outcome: Email discussion report

Deadline: Thursday 22/09/2016

[R2-165706](#) GAD for Indoor Positioning NextNav, Intel, Broadcom discussion

- Qualcomm think this is not required. We should just use the position of the transmitters directly from the other specs.
- NextNav can agree to Qualcomm's point and is ok to reference the other specs for the transmitter location.

=> Noted

[R2-165707](#) Assistance Data for Barometric Pressure Sensor-based positioning NextNav, Broadcom discussion

- Ericsson agree that temperature has an effect but sensor type also has an effect and it becomes difficult to compensate for all variables. Is this indoor temperature? NextNav explain that this is the temperature at the reference pressure point. We don't compensate for the difference due to indoor temperature
- NextNav think the scope here is to focus on the atmospheric aspects.
- Nokia is ok to provide the temperature but wonder if the UE knows how to use the information. NextNav think the UE algorithm is implementation.

Agreements

- 1: Include temperature in the Barometric Pressure sensor assistance data for UE based positioning.

- [R2-165708](#) Barometric Pressure Sensor-based positioning LPPE alignment NextNav, Broadcom discussion
 - Qualcomm think this is not related to the WI.
 - NextNav agree it is not directly related to the scope of the WI.
 => Noted
 => Can be consider for TEI14 in a future meeting
- [R2-164846](#) UE Wi-Fi MAC Address in WLAN Measurement Information Comtech Telecommunications Cor discussion
 - Apple have a strong disagreement and cannot agree to reporting the MAC address due to privacy issues.
 - AT+T support the proposal.
 => Can be consider for TEI14 in a future meeting
 => Noted
- [R2-164822](#) Adding UE Wi-Fi MAC Address to WLAN Measurement Information Comtech Telecommunications Cor CR 36.355 13.1.00144 - C Rel-14 UTRA_LTE_iPos_enh2-Core
 Not treated
- [R2-165421](#) Enhancements for WLAN FTM positioning Intel Corporation discussion
 - Apple think that it is not legal for a UE to report such information about 3rd party WiFi equipment to the network. Qualcomm agree with Apple. It is a form of crowd sourcing that is not in the WI. Sony has similar concerns about privacy issue of providing this information.
 - Qualcomm doesn't agree with FTM part of P2. Nokia agree with Qualcomm but think there is some confusion about the fine granularity of reporting allows FTM already. It would be good to clarify if we already have FTM support.
 - Nokia think the purge time is not critical to include.
 - Huawei wonder whether FTM would have RAN4 impact. Intel understand that RAN4 don't have WLAN performance in their scope, as for other indoor positioning technologies.
 => Noted
- | |
|---|
| <p>Agreements
 1: Introduce WLAN assistance data. FFS exactly what information will be provided.
 2: Introduce UE based positioning</p> |
|---|
- [R2-165427](#) Introduction of WLAN AP assistance data and UE-based WLAN positioning method (Stage-2) Intel Corporation CR 36.305 13.0.00062 - B Rel-14 UTRA_LTE_iPos_enh2-Core
 Not treated
- [R2-165419](#) Introduction of WLAN AP assistance data for WLAN FTM positioning method Intel Corporation CR 36.355 13.1.00149 - B Rel-14 UTRA_LTE_iPos_enh2-Core
 => Revised in [R2-165723](#)
- [R2-165723](#) Introduction of WLAN AP assistance data for WLAN FTM positioning method Intel Corporation CR 36.355 13.1.00149 1 B Rel-14 UTRA_LTE_iPos_enh2-Core
[R2-165419](#)
 Not treated
- [R2-165420](#) Introduction of UE-based WLAN positioning mode and methods Intel Corporation CR 36.355 13.1.00150 - B Rel-14 UTRA_LTE_iPos_enh2-Core
 => Revised in [R2-165724](#)
- [R2-165724](#) Introduction of UE-based WLAN positioning mode and methods Intel Corporation CR 36.355 13.1.00150 1 B Rel-14 UTRA_LTE_iPos_enh2-Core [R2-165420](#)
 Not treated
- [R2-165426](#) Introduction of WLAN AP information reporting Intel Corporation CR 36.355 13.1.00151 - B Rel-14 UTRA_LTE_iPos_enh2-Core

=> Revised in [R2-165725](#)

[R2-165725](#) Introduction of WLAN AP information reporting Intel Corporation CR 36.355 13.1.00151
1 B Rel-14 UTRA_LTE_iPos_enh2-Core [R2-165426](#)
Not treated

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 handled in the LTE Break Out session. (See the result of Annex G.)

Finalise all stage 3 aspects

Including output from email discussion [94#34][LTE/LATRED] – 36.321 running CR (Ericsson)

Including output from email discussion [94#35][LTE/LATRED] – 36.331 running CR (Ericsson)

CRs:

[R2-165313](#) Introduction of L2 Latency reduction techniques running CREricsson draftCR 36.331
13.2.0- - B Rel-14 LTE_LATRED_L2-Core

[R2-165346](#) Introduction of L2 Latency reduction techniques running CREricsson draftCR 36.321
13.2.0- - B result of email discussion [94#34] Rel-14 LTE_LATRED_L2-Core

[R2-165348](#) Support for skipped padding and short SPS interval Ericsson draftCR 36.306 13.2.0- -
B Rel-14 LTE_LATRED_L2-Core

[R2-165349](#) Introduction of L2 latency reduction techniques capabilities Ericsson draftCR 36.331
13.2.0- - B Rel-14 LTE_LATRED_L2-Core

[R2-165359](#) UE capabilities on L2 latency reduction techniques Huawei, HiSilicon CR 36.306
13.2.01345 - B Rel-14 LTE_LATRED_L2-Core

[R2-165360](#) UE capabilities on L2 latency reduction techniques Huawei, HiSilicon CR 36.331
13.2.02300 - B Rel-14 LTE_LATRED_L2-Core

[R2-165532](#) Remaining issues of L2 Latency reduction techniques Ericsson draftCR 36.321 13.2.0-
- B Rel-14 LTE_LATRED_L2-Core
late

[R2-164804](#) Further consideration on retransmission prioritization CATT discussion

[R2-165134](#) Impact on DRX with pre-scheduling and short SPS periodicity Nokia, Alcatel-Lucent Shanghai
Bell discussion

[R2-165149](#) UL lost handling when UE configured to skip UL transmission Nokia, Alcatel-Lucent Shanghai
Bell discussion

[R2-165182](#) Performance of short SPS interval in TDD CATT discussion

[R2-165185](#) Distinguishing non-adaptive retransmission and initial transmission Samsung Electronics
Co., Ltd discussion

[R2-165204](#) Enabling non-adaptive HARQ retransmissions on SPS resources Intel Corporation
discussion

[R2-165266](#) Discussion on the configurable feedback ZTE Corporation discussion

[R2-165267](#) Discussion on the feedback transmission of SPS release ZTE Corporation discussion

[R2-165351](#) DRX and short SPS intervals Ericsson discussion

[R2-165352](#) Periodic BSR in SPSEricsson discussion

[R2-165353](#) Configuration of non-adaptive retransmissions Ericsson discussion

[R2-165354](#) Remaining issues with SPS with skip padding and short periods Ericsson discussion

- [R2-165355](#) Discussion on UE capabilities on L2 latency reduction techniques Huawei, HiSilicon discussion
- [R2-165356](#) Short SPS periodicity values Huawei, HiSilicon discussion
- [R2-165357](#) DRX optimization for short SPS period Huawei, HiSilicon discussion
- [R2-165358](#) PUSCH resource waste in case of short SPS period Huawei, HiSilicon discussion
- [R2-165637](#) Remaining issues with skipping of UL padding TX Sequans Communications discussion
- [R2-165663](#) Remaining issues on SPS Confirmation MAC CE LG Electronics Inc. discussion
- [R2-165686](#) Remaining Open Issues for Uplink Skipping QUALCOMM CDMA Technologies 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-160937](#))

Time budget 1.5TU

Documents in this agenda item handled in the LTE Break Out session. (See the result of Annex H.)

8.9.1 Signalling reduction

Including contributions relating to objectives on signalling reduction at mobility (e.g. UE centric mobility), and S1 signalling reduction at mobility and state transitions, as well as further details of UE light connected considering RAN2#94 agreements.

- [R2-164677](#) Design principles and considerations for the LTE light connection Samsung discussion
- [R2-164866](#) Configuration and light connection area handling Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-164868](#) Reselection and Paging handling for light connection Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-164975](#) Aspects for signalling reduction of light connection China Unicom discussion
- [R2-164986](#) Details of lightly connected UEs Intel Corporation discussion
- [R2-165069](#) Details of paging enhancements for Light Connected UEs Kyocera discussion
- Moved from 8.9.3 to 8.9.1
- [R2-165070](#) General issues in Light Connection Kyocera discussion
- Moved from 8.9.4 to 8.9.1
- [R2-165214](#) Signalling reduction during state transition CMCC discussion
- [R2-165231](#) Consideration on mobility procedure China Telecom Corporation Ltd. discussion
- [R2-165246](#) The functions of light connection Huawei, HiSilicon discussion
- [R2-165247](#) Mobility notification for the lightly connected UE Huawei, HiSilicon discussion
- [R2-165248](#) Procedure for transition between normal RRC connection and light RRC connection Huawei, HiSilicon discussion
- [R2-165303](#) On the paging area management for light connection ASUSTEK COMPUTER (SHANGHAI) discussion
- [R2-165561](#) RRC Suspend/Resume for Light Connection Ericsson discussion
- Withdrawn:
- [R2-164678](#) Design principles and considerations for the LTE light connection Samsung discussion
- [R2-165258](#) On the paging area management for light connection ASUSTEK COMPUTER (SHANGHAI) discussion

8.9.2 Context storage/retrieval across eNBs

This aspect of the WI is led by RAN3 but RAN2 impacting aspects may be discussed here.

- [R2-164987](#) Mobility support for lightly connected UEs Intel Corporation discussion
- [R2-165249](#) RAN2 impact of Context fetch in light connection Huawei, HiSilicon discussion
- [R2-165667](#) General considerations on lightweight connection LG Electronics Inc. discussion

8.9.3 Paging enhancements

Details of RAN initiated paging design, e.g., DRX, paging ID

- [R2-164845](#) Paging in Extended DRX for Light Connection CATT discussion
- [R2-164988](#) Details on RAN-initiated paging design Intel Corporation discussion
- [R2-165030](#) UE specific Paging area definition Sony discussion

[R2-165215](#) RAN-initiated Paging in Light Connection CMCC discussion
[R2-165250](#) On RAN initiated paging Huawei, HiSilicon discussion

8.9.4 Other

[R2-165251](#) Stage2 Running CR of light connection Huawei, HiSilicon draftCR 36.300 13.4.0- - B
Rel-14 LTE_LIGHT_CON-Core

8.10 WI: eMBMS enhancements for LTE

(MBMS_LTE_enh2-Core; leading WG: RAN1; REL-14; started: Mar. 16; target: Mar. 17; WID: [RP-161297](#))

Time budget: 1TU

Documents in this agenda item handled in the LTE Break Out session. (See the result of Annex H.)

8.10.1 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.

[R2-164934](#) Discussion on MBFSN resource expansion Huawei, HiSilicon discussion
[R2-164935](#) Discussion on MBSFN subframe without PDCCH and CRS Huawei, HiSilicon discussion
[R2-165463](#) Impact of additional MBSFN sub-frames support Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-165480](#) Overview on Rel-14 FeMBMS Ericsson, Qualcomm Incorporated discussion
[R2-165481](#) eMBMS subframe enhancements Ericsson discussion
[R2-165603](#) MBSFN subframe enhancements for SCell LG Electronics Inc. discussion

8.10.2 MBSFN dedicated carrier

[R2-164936](#) Discussion on Standalone MBMS Cell Huawei, HiSilicon discussion
[R2-165085](#) SI Reception Samsung Electronics Co., Ltd discussion
[R2-165088](#) MCCH and MCCH Change Notification Samsung Electronics Co., Ltd discussion
[R2-165483](#) Dedicated FeMBMS operation Ericsson discussion
[R2-165604](#) Consideration on standalone MBMS carrier LG Electronics Inc. discussion

8.10.3 Multicarrier MBMS operation

[R2-165460](#) MBMS SAs for multi-PLMN unicast/eMBMS reception Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-165482](#) Asynchronous multi-carrier MBMS reception Ericsson discussion

8.10.4 MBMS reception without authentication

[R2-164937](#) Impact analysis on Receive Only mode Huawei, HiSilicon discussion
[R2-164938](#) Draft Reply LS on [R2-164621](#) to SA2 on RAN impacts from Receive Only Mode UE Huawei, HiSilicon LS out late
[R2-165514](#) Authentication in eMBMS Ericsson discussion
[R2-165682](#) Discussion on SA2 LS for Shared eMBMS and Receive Only Mode QUALCOMM CDMA Technologies discussion
[R2-165685](#) [DRAFT] Reply LS on RAN impacts from enTV study of SA WG2 QUALCOMM CDMA Technologies LS out

8.10.5 Other

[R2-165467](#) Shared MBMS Network and Receive Only Mode considerations based on SA2 LSs Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-165469](#) [DRAFT] Reply LS on RAN impacts of Shared MBMS Network and Receive Only Mode in eMBMS Nokia, Alcatel-Lucent Shanghai Bell LS out

8.11 WI: Enhancements of NB-IoT

(NB_IOTenh-Core, leading WG: RAN1; REL-14; started: June 16; target: Mar. 17; WID: [RP-161324](#))

Time budget: 1TU

Documents in this agenda item handled in the LTE Break Out session on IoT. (See the result of Annex I.)

8.11.1 Multicast

This agenda item may be treated jointly with 8.12.1

- [R2-164767](#) Multicast for NB-IoT and eMTC CATT discussion
- [R2-164857](#) Consideration on supporting multicast in NB-IoT ZTE Corporation discussion
- [R2-165210](#) Discussion on SC-PTM for NB-IoT SHARP Corporation discussion
- [R2-165375](#) General Aspects of Multi-Cast in NB-IoT Huawei, HiSilicon, Neul Ltd. discussion
- [R2-165376](#) Configuration of Multi-Cast in NB-IoT Huawei, HiSilicon, Neul Ltd. discussion
- [R2-165377](#) Coverage Enhancement for Multi-Cast in NB-IoT Huawei, HiSilicon, Neul Ltd. discussion
- [R2-165621](#) Details of SC-PTM support for NB-IoT UEs Ericsson discussion
- [R2-165627](#) RAN2 impacts to enable multicast for eMTC and NB-IoT Intel Corporation discussion
- [R2-165632](#) Considerations on multicast support in NB-IoT LG Electronics France discussion
- [R2-165636](#) Overview of SC-PTM and common eMTC and NB-IoT aspects Ericsson discussion
- [R2-165647](#) SIB related issues for SC-PTM in NB-IoT LG Electronics Inc. discussion
- [R2-165648](#) SC-PTM MTCH reception related issues in NB-IoT LG Electronics Inc. discussion

8.11.2 Non-anchor PRB enhancements

- [R2-164768](#) Access Enhancements for NB-IoT CATT discussion
- [R2-164769](#) Paging Enhancements for NB-IoT CATT discussion
- [R2-164780](#) Support of NPRACH and paging transmission on Nonanchor PRB Gemalto N.V. discussion
- [R2-164858](#) Consideration for paging on multi-carrier in NB-IoT ZTE Corporation discussion
- [R2-164859](#) Consideration for PRACH on multi-carrier in NB-IoT ZTE Corporation discussion
- [R2-164953](#) RACH and Paging on non-anchor NB-IoT Carrier MediaTek Inc. discussion
- [R2-164989](#) Considerations of NPRACH transmissions in non-anchor carrier Intel Corporation discussion
- [R2-164990](#) Considerations of idle mode paging in non-anchor carrier Intel Corporation discussion
- [R2-165176](#) Transmission of NPRACH on a non-anchor NB-IoT PRB Fujitsu discussion
- [R2-165207](#) random access for eNB-IoT SHARP Corporation discussion
- [R2-165208](#) Consideration for paging on non-anchor carrier SHARP Corporation discussion
- [R2-165209](#) Random access procedure on Non-Ancor PRB III discussion
- [R2-165236](#) Non-anchor PRB enhancements Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-165378](#) NBPRAN on Non-anchor NB-IoT Carrier Huawei, HiSilicon, Neul Ltd. discussion late
- [R2-165379](#) Paging on Non-anchor NB-IoT Carrier Huawei, HiSilicon, Neul Ltd. discussion
- [R2-165472](#) NPRACH on a non-anchor NB-IoT PRB NEC discussion
- [R2-165533](#) NPRACH on Non-anchor NB-IoT Carrier Huawei, HiSilicon, Neul Ltd. discussion
- [R2-165553](#) Paging on a non-anchor carrier Sequans Communications discussion
- [R2-165554](#) NPRACH on a non-anchor carrier Sequans Communications discussion
- [R2-165650](#) NB IOT Paging enhancement LG Electronics Inc. discussion
- [R2-165656](#) Random Access on Non-Ancor Carriers in NB-IoT Ericsson discussion
- [R2-165657](#) Non-anchor carrier Paging in NB-IoT Ericsson discussion

8.11.3 Mobility enhancements

- [R2-164766](#) Discussion on Mobility Enhancement CATT discussion
- [R2-164860](#) Consideration on mobility enhancement in NB-IoT ZTE Corporation discussion
- [R2-164952](#) Mobility enhancements for NB-IoT MediaTek Inc. discussion
- [R2-164991](#) RRC Connected mobility for NB-IoT UEs using CIoT EPS UP optimizations Intel Corporation discussion
- [R2-164999](#) RRC Connected mobility for NB-IoT UEs using CIoT EPS CP optimizations Intel Corporation discussion
- [R2-165159](#) Mobility enhancements NB-IoT Ericsson discussion

- [R2-165238](#) Mobility enhancement for NB-IoT UP solution Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-165245](#) Mobility enhancement for NB-IoT CP solution Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-165256](#) DRAFT LS on mobility enhancement for CP solution Nokia LS out
- [R2-165380](#) Mobility enhancements in connected mode Huawei, HiSilicon, Neul Ltd. discussion
- [R2-165381](#) Load balancing enhancement Huawei, HiSilicon, Neul Ltd. discussion
- [R2-165625](#) Need for UE centric mobility for service continuity LG Electronics France discussion
- [R2-165626](#) Fast RRC connection re-establishment in NB-IoT LG Electronics France discussion
- [R2-165631](#) Support of RRC Connection Re-establishment for CP solution LG Electronics France discussion

8.11.4 Other

- [R2-164722](#) Measurements for Positioning Gemalto N.V. discussion
- [R2-164861](#) Consideration on new UE power class ZTE Corporation discussion
- [R2-165154](#) Release Assistance Indication Ericsson discussion
- [R2-165155](#) Introduction of Release Assistance Indication Ericsson draftCR 36.331 13.2.0- - B Rel-14 NB_IoTEnh-Core
- [R2-165156](#) Introduction of Release Assistance Indication Ericsson draftCR 36.321 13.2.0- - B Rel-14 NB_IoTEnh-Core
- [R2-165157](#) Further reduced power class in NB-IoT Ericsson discussion
- [R2-165160](#) Positioning enhancements for NB-IoT Ericsson discussion
- [R2-165264](#) Requirements for NB IoT Positioning Enhancements Evaluations VODAFONE Group Plc discussion
- [R2-165374](#) NB-IoT Release 14 enhancements work plan Huawei, HiSilicon discussion
- [R2-165382](#) Positioning consideration in NB-IoT Huawei, HiSilicon, Neul Ltd. discussion
- [R2-165440](#) Access barring for delay tolerant access QUALCOMM INCORPORATED discussion
- [R2-165445](#) Introduction of access barring for delay tolerant access in NB-IoT QUALCOMM INCORPORATED draftCR 36.331 13.2.0- - B Rel-14 NB_IoTEnh-Core

8.12 WI: Further Enhanced MTC

(LTE-feMTC-Core, leading WG: RAN1; REL-14; started: June 16; target: Mar. 17; WID: [RP-161321](#))

Time budget: 1TU

Documents in this agenda item handled in the LTE Break Out session on IoT. (See the result of Annex I.)

8.12.1 Multicast

This agenda item may be treated jointly with 8.11.1

- [R2-165056](#) Multicast enhancements for FeMTC Kyocera discussion
- [R2-165383](#) General consideration on SC-PTM support for FeMTC Huawei, HiSilicon discussion
- [R2-165384](#) MCCH configuration and design for FeMTC Huawei, HiSilicon discussion
- [R2-165385](#) Coverage Enhancement for SC-PTM in FeMTC Huawei, HiSilicon discussion
- [R2-165619](#) Overview of SC-PTM and common eMTC and NB-IoT aspects Ericsson discussion
- [R2-165620](#) Details of SC-PTM support for eMTC UEs Ericsson discussion
- [R2-165633](#) Considerations on multicast support in FeMTC LG Electronics France discussion
- [R2-165659](#) SIB related issues for SC-PTM in FeMTC LG Electronics Inc. discussion
- [R2-165661](#) SC-PTM MTCH reception related issues in FeMTC LG Electronics Inc. discussion

8.12.2 Higher data rates

- [R2-164730](#) Higher performance targets for Further Enhanced MTC Apple Europe Limited discussion
- [R2-164871](#) Consideration on supporting higher data rates in eMTC ZTE Corporation discussion
- [R2-165386](#) On supporting larger maximum TBS for FeMTC Huawei, HiSilicon discussion
- [R2-165387](#) Introduction a capability of larger maximum UL TBS for TDD HD-FDD Huawei, HiSilicon draftCR 36.306 13.2.0- - B Rel-14 LTE_feMTC-Core
- [R2-165388](#) Indication for the extended maximum UL TBS for Cat M1 Huawei, HiSilicon draftCR 36.331 13.2.0- - B Rel-14 LTE_feMTC-Core

[R2-165397](#) Higher data rates for MTC Ericsson LM discussion

8.12.3 Other

[R2-165158](#) Inter-frequency measurements for Further Enhanced MTC Ericsson discussion

[R2-165197](#) Discussion on RRC state mismatch NTT DOCOMO INC. discussion

[R2-165618](#) WI work plan for Further Enhanced MTC Ericsson discussion

[R2-165676](#) Avoid UEs Staying in RRC Connected State Unnecessarily QUALCOMM Inc. discussion

[R2-165306](#) RRC Idle/Connected mode mismatch Ericsson discussion

Moved from 7.16.2 to 8.12.3

8.13 WI: LTE-based V2X Services

(LTE_V2X-Core, leading WG: RAN1; REL-14; started: June 16; target: Mar. 17; WID: [RP-161298](#))

Time budget: 1TU

Documents in this agenda item handled in the LTE Break Out session. (See the result of Annex G.)

Incoming LS:

[R2-164629](#) LS Response to [R2-163134](#) on QoS requirements for V2X (S2-163081; contact: Huawei)
SA2 LS in to: RAN2 Rel-14 FS_V2XARC

Workplan:

[R2-165727](#) RAN2 work plan for V2X WI LG Electronics Inc. discussion
Late

8.13.1 SC-PTM/MBMSFN enhancements

Shorter modification/repetition periods.

Additional enhancements related to DL transmissions in small areas based on geographical areas – to be discussed if/after input from SA2/RAN3 has been received.

[R2-165057](#) DL multicast transmission in smaller area for V2X services Kyocera discussion

[R2-165265](#) MBMS enhancement for supporting of V2X service ZTE Corporation discussion

[R2-165522](#) On MBMS Latency Ericsson discussion

8.13.2 SPS enhancements

Discussions aligned with V2V and will be discussed after V2V agreements are done

[R2-164873](#) Discussion on Multiple SPS CATT discussion

[R2-164874](#) UE Assistance Information for SPS Transmissions CATT discussion

[R2-164919](#) Enhancements of Uplink SPS for Uu-based V2X Huawei, HiSilicon discussion
=> Revised in [R2-165688](#)

[R2-165688](#) Enhancements of Uplink SPS for Uu-based V2X Huawei, HiSilicon discussion

[R2-165402](#) SPS enhancements for V2X over Uu ZTE Corporation discussion

[R2-165458](#) Further considerations on UL SPS enhancements Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-165527](#) SPS Protocol for Uu Ericsson discussion

[R2-165696](#) UL SPS configuration and UE assistant information LG Electronics France discussion

8.13.3 V2P services

Specific aspects to V2P (e.g. resource selection) and power aspects

[R2-164884](#) Discussion on P2V service CATT discussion

[R2-164984](#) V2P Services over PC5 Qualcomm Incorporated discussion

[R2-165177](#) Considerations on power saving for V2P communications Fujitsu discussion

[R2-165454](#) Efficient V2P/P2V activation Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-165518](#) Discussion on V2P Ericsson discussion

8.13.4 Other

QoS, Inter-PLMN and others

- [R2-164885](#) Inter-PLMN V2X Reception CATT discussion
[R2-164917](#) Support of QoS for PC5-based V2X transport Huawei, HiSilicon discussion
[R2-164918](#) Draft LS Response on QoS requirements for V2X Huawei, HiSilicon LS out
[R2-164920](#) Inter-PLMN operation for Uu-based V2X Huawei, HiSilicon discussion
[R2-164921](#) Support Multi-carrier Multi-PLMN Operations for PC5 Based V2X Huawei, HiSilicon discussion
[R2-164982](#) Inter-PLMN V2V communication Qualcomm Incorporated discussion
[R2-165310](#) Support of inter-PLMN operation for V2X Samsung Electronics Co., Ltd discussion
[R2-165428](#) Inter-PLMN V2X aspects Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-165595](#) Support of inter-PLMN for PC5 and Uu LG Electronics Inc. discussion
[R2-165596](#) New QCI for V2X LG Electronics Inc. discussion
Withdrawn:
[R2-165080](#) Support of inter-PLMN operation for V2X Samsung Electronics Co., Ltd discussion

8.14 Other LTE Rel-14 WIs

This agenda item may be used for documents relating to Rel-14 WIs with no allocated RAN2 time but which might have minor RAN2 impact.

No contributions received.

9 SI: Study on New Radio Access Technology

FS_NR_newRAT; leading WG: RAN1; REL-14; started: Mar. 16; target: Jun. 17; WID: [RP-161214](#)

Time budget: 8 TUs

9.1 Organisational

LSs, work plan, skeleton TR, etc.

Incoming LS:

- [R2-164615](#) Reply LS on Formation of IEEE 1914 Next Generation Fronthaul Interface Working Group (R3-161538; contact: Intel) RAN3 LS in cc: RAN2Rel-14 FS_NR_newRAT
=> Noted
- [R2-164707](#) RAN WG's progress on NR technology SI in the May meeting NTT DOCOMO, INC. (Rapporteur) discussion
- Ericsson think that dual and multi connectivity are not clear terms. DOCOMO think this is something that we will also need to discuss.
=> Noted
- [R2-164784](#) Status of NG study in SA2 Nokia, CMCC (Rapporteur) discussion
- CATT ask if the phasing affects our work. Nokia think that anything that needs SA2 aspects would have to be deferred also in RAN.
=> Noted
- [R2-165168](#) Work plan on NR Study Item in RAN2 and RAN3 NTT DOCOMO, INC. (Rapporteur) discussion
- Ericsson ask about need for joint meeting with RAN1.
=> After this meeting rapporteur/chairs will identify topics where we have tight relation and where we need key feedback in order to make progress with RAN1 and propose a split of responsibilities with RAN1/2.

✉ [\[95#26\]](#)[LTE/NR] Update TR (DOCOMO)

Update TR based on agreed TPs
Intended outcome: Agreed TR version 0.3.0
Deadline: Thursday 01/09/2016

9.2 General aspects

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

Including output from email discussion [94#37][NR] Guidelines (DOCOMO)

Guidelines

[R2-164708](#) Summary of email discussion [94#37][NR] Guidelines NTT DOCOMO, INC. (Email discussion rapporteur) report result of email discussion [94#37][NR] Rel-14 FS_NR_newRAT

Agreements:

- 1 The following aspects are captured as guidelines in the TR.
 - ☐ Commonality between tight interworking and standalone operations.
 - ☐ Commonality and future proofing to various use cases and services
 - ☐ L2 functions and RRC in LTE as baseline

[R2-164718](#) Text Proposal to TR 38.804 on guidelines for designing NR radio protocols NTT DOCOMO, INC. pCR 38.804 0.2.0 related to email discussion [94#37] Rel-14 FS_NR_newRAT
=> Change "controlled" to "based"
=> Removal for 4th bullet under "In terms of intra-NR mobility:"
=> Other comments to be taken into account
=> Revised in [R2-165905](#)

[R2-165905](#) Text Proposal to TR 38.804 on guidelines for designing NR radio protocols NTT DOCOMO, INC. pCR 38.804 0.2.0 - - - Rel-14 FS_NR_newRAT
=> Agreed to be added to next version of TR

URLLC

[R2-164959](#) Considerations for Ultra Reliable Low Latency Communications (URLLC) with High Mobility Nokia, Alcatel-Lucent Shanghai Bell discussion

- Ericsson think that URLLC has no mobility requirements but packet delay requirement which would apply during mobility events.
- CATT wonder if there is more to capture compared to last time.
- DOCOMO point out a note that the low delay requirements should be considered as an average. Hence it may not be required to meet it during the mobility event.

=> Whether the delay requirements for URLLC and eV2X apply during mobility events has to be clarified. Also the speed of the device and error rate when the delay requirements apply needs to be clarified. LS to be sent to RAN to ask for clarification in [R2-165906](#)

[R2-165906](#) Draft LS to RAN on clarification delay requirement (to: RAN; cc: -; contact: Nokia) Nokia LS out
=> Remove the CC
=> Update question 3 to ask "what are the control plane latency requirements for LTE-NR interworking with LTE as master and with NR as master." Wording to be finalised offline.
=> Clarify that Q4 relates to LTE as master
=> Revised in [R2-165967](#)

[R2-165967](#) LS on NR requirements (to: RAN; cc: -; contact: Nokia) RAN2 LS out
=> Approved

[R2-165447](#) Support for ultra-reliable low latency communication (URLLC) Huawei, HiSilicon discussion

- Ericsson think the requirements might still be met with connectivity to a single TRP.
 - Nokia ask if this is like a soft handover like approach. Huawei are not excluding the intra-frequency case.
 - LG ask if TRP in the paper can be understood as cell. Huawei think it does not have to be a cell.
 - Samsung ask what the handover means in the multi-connectivity scenario.
- => Noted

[R2-165590](#) On URLLC design principles Ericsson discussion
Not treated

Unlicensed

[R2-165052](#) Supporting NR in unlicensed spectrum InterDigital Communications discussion

- Huawei asked if we need to discuss given that RAN1 has prioritised licensed in phase one. Verizon think the study item needs to cover all aspects.
- Nokia understand there is no prioritisation for the SI other than an FSS for standalone.
- CMCC prefer to prioritise licensed.
- Huawei think the main discussion of unlicensed will be in RAN1.
- Interdigital explain proposals 2-4 have RAN2 impact

=> Noted

[R2-165003](#) Consideration of the Impact of unlicensed access to 5G design Intel corporation discussion

- Huawei thinks this doesn't impact RAN2 and should be discussed in RAN1. Ericsson think that we need to consider in our L2 design that LBT might be done and hence transmission may be dropped.
- Apple think it is given that LBT will be needed.
- Huawei think we can't consider this in user plane design before RAN1 have concluded.
- Samsung think that LBT is not sufficient to use in all spectrum.

=> Noted

[R2-165342](#) Supporting NR in unlicensed spectrum Ericsson discussion
[R2-164963](#) NR in unlicensed spectrum LG Electronics Inc. discussion
[R2-165174](#) Robust Design to Support Various Spectrums in NR Samsung discussion
Above 3 Tdocs not treated

Energy efficiency

[R2-165283](#) Text proposal to TR 38.804 on guidelines for improving energy efficiency in NR Samsung discussion

- Huawei don't disagree but wonder if they will be useful in our design.
- Nokia think that the RAN requirements TR is sufficient.
- LG think the guideline from the system info email discussion may be sufficient and P3 is not needed.

=> Noted

[R2-165545](#) Future proofness and energy efficiency Ericsson discussion
[R2-165163](#) Consideration to network energy efficiency for NR Samsung Electronics Co., Ltd discussion
[R2-165284](#) Energy efficiency enhancement in new RRC state of NR Samsung discussion
=> Revised in [R2-165904](#)
[R2-165904](#) Energy efficiency enhancement in new RRC state of NR Samsung discussion
Above 4 Tdocs not treated

Other

[R2-164956](#) NR Multi-connectivity in DU/CU architecture Nokia, Alcatel-Lucent Shanghai Bell discussion

- Qualcomm think that RAN3 have not made much progress on CU/DU split. We don't need to consider the CU/DU split in RAN2 design. DOCOMO agree it is too early to look at CU/DU aspects in RAN2. Maybe we should look at multi connectivity (radio resources from multiple NR nodes) aggregating from radio interface point of view.

- Samsung think we need a definition of multiconnectivity.
- CATT think that multiconnectivity is not necessarily restricted to the DC approach.
- LG understanding of multiconnectivity is one radio bearer with more than dual MAC entity
- Ericsson think we should start from considering a single unit per gNB.
- MediaTek think that it is obvious that if we have a CU DU split we will have to looking at it eventually.

=> Offline discussion define the term multiconnectivity to be used in future RAN2 discussion (not necessarily a term that will end up in the spec) (DOCOMO)

[R2-165931](#) Definition of Multi-Connectivity NTT DOCOMO INC. discussion

=> Definition that may be used in future discussion in RAN2 " Multi-Connectivity: Mode of operation whereby a multiple Rx/Tx UE in the connected mode is configured to utilise radio resources amongst E-UTRA and/or NR provided by multiple distinct schedulers connected via non-ideal backhaul."

=> The term "Multi-Connectivity with WLAN" may be used in RAN2 discussion to extend the concept to WLAN.

=> These definitions are not expected to be captured in a TR or TS.

[R2-165031](#) AT&T Views on 5G Architecture Evolution AT&T discussion

=> Noted

[R2-165490](#) Migration path from LTE to NR Huawei, HiSilicon discussion

[R2-165491](#) Overview of 5G Architecture Options Huawei, HiSilicon discussion

[R2-165206](#) CP/UP separation for NR Deutsche Telekom AG, AT&T, SK-Telecom, Intel, CMCC, Telecom Italia discussion

[R2-165340](#) Targeted Protocol Latency Ericsson discussion

Above 4 Tdocs not treated

9.3 Deployment scenarios

May include proposals for deployment scenarios additional to those already captured.

[R2-164709](#) Updated Text Proposal to TR 38.804 on NR deployment scenarios NTT DOCOMO, INC. pCR 38.804 0.2.0 Related to email discussion [94#24] Rel-14 FS_NR_newRAT

=> To be progressed offline

=> Revised in [R2-165907](#)

[R2-165907](#) Updated Text Proposal to TR 38.804 on NR deployment scenarios NTT DOCOMO, INC. pCR 38.804 0.2.0 - - - Rel-14 FS_NR_newRAT

=> Agreed to be added to the TR.

[R2-165536](#) Small updates to TP [R2-163969](#) on deployments scenarios Ericsson discussion

=> To be considered in offline discussion of the TP in [R2-164709](#)

[R2-164800](#) Relay Scenario CATT discussion

- Vodafone think we should not include it now even if it may become useful later on. Relays were not included in the first release of LTE. CATT point out that the SI has this objective.
 - CMCC think this is an important use case.
 - Ericsson agree with the Vodafone view unless it is really needed for a specific use case. LG also agree.
 - Huawei think we should consider relay but think the scope should be broadened to include UE relay.
 - DOCOMO suggest a note to indicate that the use case will be studied later in the SI.
- => Add sentence to the TR to indicate that the relay case is to be taken into account in our studies.

[R2-165114](#) Clarification on the scenarios of LTE NR tight interworking ZTE Corporation, ZTE Microelectronics discussion

P1

- Qualcomm think from the UE perspective it would appear as separate LTE and NR SCG, and it doesn't matter to the UE that they are co-located in the same eNB. LG have the same understanding.
- Huawei think it may not be an important case but it would be allowed by the mechanism.

P2

- CATT think this was raised in the email discussion on capability coordination. For NR think there are scenarios that we should support multiple NR eNBs. But from LTE eNB point of view it might only see a single NR SeNB.
 - Ericsson think we should not limit to one as adding more might be difficult later
 - IDC think we should look at this limitation when we have more detail how multiconnectivity works.
- => Noted

[R2-165010](#) NR interworking with WLAN Intel corporation discussion
Moved from 9.4.2.1 to 9.3

- Nokia is ok to study both options but don't like to use the terms 3c, 1a, etc.
 - Broadcom support the intention.
 - Ericsson think we don't have 1a bearers for WLAN in LTE.
 - Huawei think that SA2 will only consider NextGen core to WLAN in phase 2. Hence we don't need further enhancements beyond LWA, LWIP approaches.
 - MediaTek think we should use LWA and LWIP as baseline for our design for NR.
 - Nokia think he study does not have phases.
 - Vodafone think we need to focus on LTE protocols before considering WLAN.
 - Ericsson think we should study LWA, LWIP, and RCLWI approaches and too early to add 1a scenario.
 - BlackBerry think we can have an agreement that the radio protocols should support WLAN as lower layers.
- => LWA and LWIP and RCLWI are baseline for NR-WLAN interworking

[R2-165146](#) Discussion on NR-WLAN Deployment Scenario ITRI discussion
[R2-165587](#) Low frequency assisted high frequency operation Huawei, HiSilicon discussion
[R2-164964](#) Consideration on different NR operations LG Electronics Inc. discussion
Moved from 9.2 to 9.3

Above 3 Tdocs not treated

9.4 Radio protocol architecture

9.4.1 Overall architecture

May include high level, general protocol architecture aspects that don't fit with the agenda items below. If there is an appropriate agenda item below, please use it.

SCG bearer support for LTE-NR tight interworking

[R2-164727](#) Direct User Plane between NR and EPC ? Samsung R&D Institute UK discussion
[R2-165115](#) Consideration on the performance requirement for LTE NR tight interworking ZTE Corporation, ZTE Microelectronics discussion

- Discussed jointly with the previous paper
- DOCOMO think that the latency does requirement does not need to be met in all cases as long as it can be met in at least one case. DOCOMO think it is not clear what impact there will be on the LTE PDCP baseline to support NextGenCore
- Huawei think the scenarios can be decoupled and the delay doesn't have to be met in the case of the split bearer.
- IDC support the SCG bearer but has sympathy with the Samsung opinion. Nokia agree. Intel also agree.

Agreements

- 1 SCG bearer for LTE-NR interworking with EPC as CN will be studied. Final decision on support of SCG bearer will be made after more details of the impact of Next Gen Core to PDCP have been studied.
 - 2 RAN2 understand that the C plane latency requirement from the RAN requirements TR does not have to be met for the LTE-NR interworking case.
- FFS what are the U plane latency requirements for LTE-NR interworking case.

=> Include RAN2 understanding and question on U-plane latency in the LS to RAN on the requirements.

NR carrier aggregation

- [R2-165328](#) Aggregation of carriers in NR Ericsson discussion
- Qualcomm think it is clear we will end up with CA in NR.
 - Huawei think that CA aggregation may not be needed just to address the issue of needing a separate uplinks for the aggregation at PDCP level.
 - IDC think MAC layer aggregation is essential, Panasonic agree. LG think was already agreed at the previous meeting.
 - DOCOMO point out that even in a single carrier there could be different numerologies.
 - MediaTek think that different numerologies are mainly for different use cases and in most cases a single numerologies should be sufficient.

Agreement
From RAN2 point of view, aggregation of carriers with different numerologies should be supported in NR. (Modelling aspects such as whether it is a single or multiple MAC entity is FFS)

- [R2-165343](#) Possible Optimization for CA in NR Ericsson discussion
Not treated

RRC diversity

- [R2-164751](#) Control Plane architecture for NR-NR multi-connectivity Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-165025](#) RRC Architecture and its Signaling Transmission Huawei, HiSilicon discussion
- [R2-165331](#) Dual connectivity in NR Ericsson discussion
Above 3 Tdocs not treated

eLTE

- [R2-165109](#) Consideration on the eLTE ZTE Corporation, ZTE Microelectronics discussion
Not treated

Other

- [R2-165582](#) UE context awareness to optimize the RAN performance Qualcomm Europe Inc.(Italy) discussion
- [R2-165128](#) Support of standalone and non-standalone NR RAN modes KT Corp. discussion
- [R2-164977](#) Uplink operation for LTE + NR Dual Connectivity VODAFONE Group Plc discussion
- [R2-165005](#) Discussion on 5G NR power consumption Intel corporation discussion
- [R2-165008](#) Aggregation within NR Intel corporation discussion
- [R2-165572](#) Connected Mode DRX Considerations Qualcomm Europe Inc.(Italy), Convida Wireless discussion
- [R2-165585](#) General aspects for NR HF cell Huawei, HiSilicon discussion
Above 7 Tdocs not treated

9.4.2 User plane

9.4.2.1 Overall user plane architecture

Allocation of user plane protocol functions to protocol layers, possible merger of functions, etc.

Considering both standalone and any LTE-NR tight interworking aspects.

Including out from email discussion [94#38][NR] U plane aspects (DOCOMO)

[R2-165304](#) Email disc summary on [94#38][NR] U-plane aspects for NR NTT DOCOMO INC. report result of email discussion [94#38] Rel-14 FS_NR_newRAT

P1

- Intel understand the issue with dual reordering is that PDCP can only perform ciphering after all the RLC SDUs are delivered to upper layers and this increases latency.
- => Noted

[R2-164785](#) About UP Functions for NR Nokia, Alcatel-Lucent Shanghai Bell discussion

P1

- Ericsson think we need to consider the whole picture. If we don't do concatenation then ARQ will operate on large chunks which is not desirable.
 - LG think we have concatenation in LTE in MAC and RLC and think it can be removed from RLC.
 - Panasonic also agree with proposal 1 and see not issue apart from the SN space. CATT also support.
 - Huawei think we should separate implementation from protocol design. Also agree with Ericsson that we need to consider the whole picture. Samsung think we are discussing protocol design and support proposal 1.
 - Intel also support proposal 1 and think it is beneficial from transmitter processing perspective.
 - DOCOMO would like to understand if the precomputation is actually a problem from implementation.
 - Qualcomm supports proposal 1. This is a real time function and does not need to be coupled by ARQ.
 - MediaTek think we don't need concatenation in RLC just because it was there in LTE. The important thing is what is done in real time and what can be prepared ahead.
 - LG explain that RLC cannot prepare the RLC PDU in advance as it can only be done after grant is received. And from overhead point of view it can avoid the LI field in RLC.
 - Ericsson think the MAC header structure in order to understand the benefits. Important question is whether the LI is all in one place in the front of the PDU to spread across the PDU.
 - ZTE think the benefits are not so clear and so would like to study further.
- => Noted

☒ **[95#26][LTE/NR] Concatenation (Ericsson)**

Identify the impacts of concatenation at RLC compared to concatenation at MAC. Impacts considered should at least look at real time processing impacts and overhead. Impacts should at least be analysed based on the baseline LTE MAC and RLC headers.
Intended outcome: Email discussion report to next meeting
Deadline: Thursday 22/09/2016

[R2-165337](#) Second level retransmissions in NR Ericsson discussion

- MediaTek think that we need to achieve high reliability and that it is not desirable to make HARQ highly reliable. It would be good to have ARQ.
 - CATT also agree that ARQ is required. There could be cases to consider locating ARQ in the upper part of the stack.
 - Huawei share the view that per bearer ARQ is needed.
 - Ericsson don't want to do ARQ above a back haul that might be congested. Hence it cannot be in PDCP in the DC scenario. CATT think that ARQ at PDCP can bring some benefits. LG agree with CATT and think we already have some level of ARQ on PDCP. Huawei explain that PDCP retransmission is normal case for DC.
- => Noted

[R2-165006](#) User plane architecture for NR Intel corporation discussion

P1

- Ericsson think that goal 1 and 3 are already possible in LTE, but 2 is useful.
- Nokia doesn't think that 3 is possible for RLC-AM.
- MediaTek think 1 is possible but is not sure that PDCP segments can be deciphered out of order.

- Huawei same view as MediaTek. More study needed regarding the possible benefit of deciphering PDU segments.
- Broadcom support goal 3 for the new RAT, it is not possible for the new RAT.
- LG think that goal 3 is a good goal in NR. Samsung think it that goal 3 is possible for at least some PDUs.
- Qualcomm agree goal 3 is not possible in LTE but support it for NR and this would reduce receiver side processing delay.
- DOCOMO think that goal 3 is possible in implementation. Ericsson agree with DOCOMO.
- CATT support goal 3.
- Intel think today it would only be possible in an implementation is the PDCP SN is available and hence only in the first segment can be deciphered.
- Qualcomm see goal 2 is the main reason for any change to the LTE baseline.
- ZTE think that goal 3 implies removal for the reordering in RLC layer

P6

- Samsung do not see motivation for removing reordering from the RLC. It would mean PDCP must handle HARQ out of sequence and reordering may be delayed due to back haul delay.
- Huawei also do not see motivation for this proposal.
- Nokia support the proposal. For URLLC it will harm us to wait for RLC to reorder and it will also delay the possibility for PDCP to decipher. In LTE we changed the PDCP reordering over time to provide full reordering functionality. Qualcomm agree with Nokia.
- MediaTek think it might depend on future decisions but in general we support the intent to deliver PDUs as quick as possible to PDCP.
- IDC sees an issue with this is that reassembly is done at different layer from segmentation. LG think this applies for PDU level reordering and we might need segment layer reordering in RLC. Panasonic has the same understanding as LG.
- CATT support the proposal
- ZTE wonder how it works if retransmission is performed in RLC. Intel explain that RLC may need to do some book keeping in order for retransmission to work. Ericsson see some relation to ARQ. Huawei also see reordering and retransmission need to be considered together. Qualcomm see these as 2 different issues as is the case with HARQ that doesn't do reordering.

=> Noted

☒ **[95#27][LTE/NR] Reordering (Intel)**

Identify the impacts of reordering at RLC compared to reordering only at PDCP. Impacts considered should at least look at ease and delay of deciphering and delay, reassembling function, ARQ operation.. Different use cases should be analysed including DC ideal and no ideal back haul, and other use cases for NR.

Intended outcome: Email discussion report to next meeting

Deadline: Thursday 22/09/2016

R2-165022	L2 Reordering and Retransmission Functions Huawei, HiSilicon discussion
R2-165125	Consideration on the Segmentation and Concatenation for NR UPZTE Corporation, ZTE Microelectronics discussion
R2-165578	U-plane improvements for HW friendly implementations – UE RX side Qualcomm Europe Inc.(Italy), Broadcom discussion
R2-165552	UP reordering aspects for NR Ericsson discussion
R2-164969	L2 functions for CU/DU split LG Electronics Inc. discussion
R2-164728	5G User Plane radio protocol overview Samsung R&D Institute UK discussion
R2-164801	A Generic U-plane Stack for NR CATT discussion
R2-164802	A Central ARQ for Multi-connectivity CATT discussion
R2-164803	Single Stage Reordering for NR U-plane StackCATT discussion
R2-164863	Discussion on Connectionless Nokia, Alcatel-Lucent Shanghai Bell discussion
R2-164894	NR UP Function Enhancements MediaTek Inc. discussion
R2-164896	NR UP Function Split MediaTek Inc. discussion
R2-165018	MAC entities to support multiple NR verticals Intel corporation discussion
R2-165021	NR User Plane Function Analysis Huawei, HiSilicon discussion

late

- [R2-165023](#) Analysis of Segmentation and Concatenation in NR L2 Huawei, HiSilicon discussion
 - [R2-165058](#) User plane protocol functions for NR SAMSUNG Electronics Co., Ltd. discussion
 - [R2-165123](#) Consideration on the NR UP design ZTE Corporation, ZTE Microelectronics discussion
 - [R2-165124](#) Consideration on the Retransmission and Reordering for NR UP ZTE Corporation, ZTE Microelectronics discussion
 - [R2-165170](#) Design Principles of Placement of NR User Plane Functions Samsungdiscussion
 - [R2-165195](#) Some guidelines for NR User Plane design for eMBBMediaTek Inc. discussion
 - [R2-165332](#) Flexible TTIs from UP perspective Ericsson discussion
 - [R2-165487](#) Consideration on the NR PDCP design Huawei, HiSilicon discussion
 - [R2-165489](#) LTE-NR tight interworking user plane detail design Huawei, HiSilicon discussion
 - [R2-165577](#) U-plane improvements for HW friendly implementations – UE TX side Qualcomm Europe Inc.(Italy), Broadcomdiscussion
 - [R2-165710](#) Location of concatenation function NEC discussion
- Above 25 Tdocs not treated

Bearer types

- [R2-165339](#) Supported bearer types for Dual Connectivity with NR Ericsson discussion
 - Proposal 2 SCG-split-bearers are down prioritized for NR.
 => Noted

- [R2-165302](#) Discussion on SCG split bearer NTT DOCOMO INC. discussion
 - Huawei think we discussed in DC that there is some routing problem and that is why we had 1a. If we have this routing problem then a split SCG bearer will not be helpful.
 - DOCOMO think that the main motivation is due to the bit rate difference between LTE and NR.
 - LG understand the 1a and 3c options are for quite different operator deployments depending on whether the operator has ideal back haul.
 - Ericsson think the only benefit to distribute the PDCP processing to the SeNB. DOCOMO agree the benefit is to distribute the PDCP processing and think without it the PDCP processing in the LTE eNB will be the bottleneck.
 - Samsung thinks it also avoids the need to upgrade the link X2 link for higher data rates. Huawei think the data rate requirement is the same.
 - CATT think we did not limit the number of SeNB and if could be many SeNB and small cells in which case is it good to distribute the processing.
 - LG see no gain to aggregate if the throughput of the 2 RATs is very different, and if the throughput is similar then the MCG split bearer can be used.
 - BlackBerry see split bearer for LTE-NR is more for 'fall back' rather than for aggregation.
 => Study the new bearer type to split the bearer while setting the U-plane termination point in SeNB.

- [R2-164954](#) Text Proposal to TR 38.804 on bearer types to be studied for LTE-NR Dual Connectivity NTT DOCOMO, INC. pCR 38.804 0.2.0 - - - Rel-14 FS_NR_newRAT late
 - => Offline discussion to develop the text proposal on SCG split bearer. Can also include text on evaluation of the SCG split bearer based on the discussion in the meeting (DOCOMO)
 - => Revised in [R2-165908](#)
- [R2-165908](#) Text Proposal to TR 38.804 on bearer types to be studied for LTE-NR Dual Connectivity NTT DOCOMO, INC. pCR 38.804 0.2.0 - - - Rel-14 FS_NR_newRAT
 - => Add an editor's note to say that the figures assume LTE baseline user plane stack.
 - => Align CN interface names
 - => Agreed in [R2-165968](#) to be included in the TR

- [R2-164786](#) On aggregation of LTE and NR on a split bearer Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-164966](#) New RB configurations in 5G LG Electronics Inc. discussion
- [R2-165049](#) UP Protocol Architecture Aspects for Tight Integration of LTE and NR InterDigital Communications discussion
- [R2-165127](#) Consideration on the SCG split bearer ZTE Corporation, ZTE Microelectronics discussion
- [R2-165486](#) Comparison on LTE-NR tight interworking user plane options Huawei, HiSilicon discussion

[R2-164787](#) Upper layer aggregation for NR-NR multi-connectivity Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-164788](#) Carrier Aggregation between carriers of different numerologies Nokia, Alcatel-Lucent Shanghai Bell discussion
Above 7 Tdocs not treated

9.4.2.2 QoS

Addressing impacts of the QoS model for NextGen core as being developed by SA2

[R2-165336](#) QoS framework for NR Ericsson discussion

P1

- ZTE think there is no detail yet from SA2 on what is in the header over the NG-u interface
- Huawei thinks it is not clear it is an identifier will be used.
- Vodafone think it should not be up to eNB implementation to decide whether to start a new DRB or not for a new QoS indication.
- LG think the number of radio bearers is limited and hence it may be needed to map similar QoS to one radio bearers.
- Samsung think the key question is whether the eNB is allowed to mux data with different flow ids. MediaTek think today we are forced to different radio bearers even if they will receive the same forwarding treatment.
- Huawei think the eNB will try to meet the QoS requirement but if we stick with one to one then we end up with EPS bearer

P2

- CATT think we need to understand if packets from different PDU sessions can be mapped to the same DRB.
- Nokia understand that different PDU sessions should not be mixed on a single radio bearer as a relocation of a PDU session would need certain packets to be cleared from the queue lower in the stack.
- Huawei wonder of the PDU sessions can be differentiate at the core level.

P4

- Ericsson explain that the explicit signalling might be needed for the case that there is no initial DL packet. Intel think that this is being addressed in SA2.
- Intel understand that reflective provides the UE with the TFT and the QoS without the need for NAS signalling.
- CATT ask if the reflective QoS is visible to the eNB.
- Broadcom explain that SA2 agreed that a PDU session has a default QoS rule. For reflective QoS the UE will send any uplink packet on the same radio bearer as that used for a received PDU with the same five tuple.

Agreements

- 1 For DL for a non-GBR flow, the eNB sees an indication over NG-u and based on the indication the eNB maps the packet to a DRB of an appropriate QoS.
RAN2 understanding of SA2 agreements is that eNB has a QoS profile associated with the indication.
FFS whether there is a requirement for every different QoS indication to be mapped to a different radio bearer.
- 2 Functionality is required to differentiate flows from different PDN-connections over the radio interface (e.g. by using separate DRBs or by an explicit indication in a header)
- 3 For DL, the eNB establishes DRBs for the UE taking the QoS profiles in to account.
FFS how the DRB is established in the first packet is an UL packet.

[R2-165024](#) Flow, DRB, and QoS in RAN Huawei, HiSilicon discussion

P2

- Ericsson think that it would be possible to map a GBR to the same DRB and a non-GBR if the UE was in a situation where the same DRB could provide the desired GBR QoS. MediaTek think this might not work in the case of the uplink assuming today's LCP procedures. Huawei think the RAN would not be able to provide the desired QoS in this case.
- IDC think the GBR and non-GBR will have different QoS and hence will not be multiplexed together.

- MediaTek think GBR is mainly achieved by prioritisation and there is nothing fundamental to require them to be mapped to different DRBs.
- Vodafone think this cannot be left to implementation and the eNB must map to different DRBs. GBR should always go to DRB.
- LG think that the GBR and non-GBR data can anyway be multiplexed in MAC and hence there is no reason to keep them in separate DRBs.

=> FFS whether there is a requirement for GBR flows and non GBR flows to be mapped to different DRBs.

- [R2-164951](#) Data Radio Bearers MediaTek Inc. discussion
 - [R2-164692](#) QoS model for NR RAN Samsungdiscussion
 - [R2-165051](#) Radio Bearers and Per-Flow QoS for New Radio Access InterDigital Communications discussion
 - [R2-164967](#) RB specific L2 entity LG Electronics Inc. discussion
 - [R2-164714](#) QoS framework impact on RAN CATT discussion
=> Revised in [R2-165720](#)
 - [R2-165720](#) QoS framework impact on RAN CATT discussion
 - [R2-164789](#) Radio bearer management principles Nokia, Alcatel-Lucent Shanghai Bell discussion
 - [R2-164965](#) QoS framework in 5G New RAT LG Electronics Inc. discussion
 - [R2-165011](#) RAN aspects of QoS framework for Next Gen Core Intel corporation discussion
 - [R2-165113](#) Consideration on QoS enforcement in NG RAN ZTE Corporation, ZTE Microelectronics discussion
 - [R2-165404](#) QoS framework: Data Flow and DRB mapping NTT DOCOMO INC. discussion
 - [R2-165583](#) QoS for slicing in RAN Qualcomm Europe Inc.(Italy)discussion
 - [R2-165681](#) Principles for QoS in the RAN Qualcomm Europe Inc.(Italy)discussion
- Above 13 Tdocs not treated

9.4.2.3 Other user plane aspects

May include more detailed discussion of specific user plane functions, e.g. MAC functions.

Support of multiple numerologies

- [R2-165055](#) UE Support for Multiple Numerologies with NR InterDigital Communications discussion
 - IDC explain that the network can support multiple numerologies within a single carrier.
 - Huawei think to allow the UE to be simultaneously scheduled on different numerologies is important.
 - Ericsson think this is a RAN1 discussion whether a single UE can use more than numerology in a single carrier. IDC think RAN1 need to look at it but we should not preclude this possibility.
 - ZTE agree with the proposal and think that UE can connect to different services that will require it.
 - Samsung think we need more input from RAN1.
 - LG think we need to understand more such as whether the UE is configured with more than one TTI or does the TTI change from time to time.
 - Intel thinks this needs clarification on what simultaneous means.
 - DOCOMO think we have anyway agree to study different numerologies provided on different carrier and the issues may not be that different for a single carrier.
 - Panasonic understand there will be at least one reference numerology used for reference signals and a potentially different one for services etc.
 - Ericsson think the earlier decision is sufficient. The use case for different carrier is that a macro cell has a different numerology from a small cell. But within one cell it is not so clear.
- => Noted
- [R2-165126](#) Consideration on the NR MAC architecture ZTE Corporation, ZTE Microelectronics discussion
- [R2-165175](#) MAC Aspects for Supporting Multiple Services Samsungdiscussion
Above 2 Tdocs not treated

DRX

- [R2-165329](#) DRX in NR active mode Ericsson discussion
- LG think we should be able to make changes to the LTE DRX approach although it can be considered as baseline. Qualcomm agree.
 - MediaTek think there are a lot of details in DRX related to physical layer and this will impact the DRX design in MAC.
 - Huawei is also ok with proposal 1.
 - Qualcomm think we need to consider improvements over the LTE baseline.

P2

- Samsung wonder what the motivation is and whether this will give much battery saving.
 - CATT wonder if this implies some sort of DRX per DRB
 - Nokia think that the main battery saving would come from the new RRC state and the active DRX may not need to be optimised further
- => Noted

- [R2-165187](#) C-DRX for NR Samsung Research America discussion
Not treated

HARQ

- [R2-165333](#) HARQ for NR Ericsson discussion
- LG support the proposal.
 - Samsung ask if RAN1 have discussed this. Intel explain that RAN1 have agreed that at least async will be supported in UL and DL. Think the proposal is reasonable. If we want sync we should justify why it is needed.
 - Nokia agree that we can make this decision and support the proposal
 - Convidia also support the proposal.

Agreement

- 1 From MAC perspective it is preferable for NR to support only asynchronous HARQ in UL and DL

- [R2-165002](#) Discussion on HARQ operations for NR Intel corporation discussion
[R2-165334](#) HARQ RTT and Slow Start Performance of NR Ericsson discussion
Above 2 Tdocs not treated

Multiplexing

- [R2-165335](#) Logical Channel Multiplexing in MAC for NR Ericsson discussion
Not treated

Scheduling

- [R2-165341](#) Uplink scheduling for for NR Ericsson discussion
[R2-165151](#) UL Scheduling for Latency Reduction in NR Samsung discussion
[R2-165662](#) Scheduling in New RAT with multiple connectivity in NR LG Electronics Inc. discussion
Above 3 Tdocs not treated

Random access

- [R2-165286](#) Random access procedure in NR ASUSTEK COMPUTER (SHANGHAI) discussion
[R2-165299](#) Discussion on latency of random access in NR ASUSTEK COMPUTER (SHANGHAI) discussion
[R2-165361](#) Random access procedure in NR Huawei, HiSilicon discussion
Above 3 Tdocs not treated

Other

- [R2-164790](#) Network Convergence Sublayer for NR Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-164900](#) Retransmission function in NR MediaTek Inc. discussion

- [R2-164955](#) Intra-frequency multi-connectivity in standalone NR Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-165179](#) MAC function for URLLC support Fujitsu discussion
Above 4 Tdocs not treated

9.4.3 Control plane

9.4.3.1 States

Including further study of the 'RAN controlled state'

- [R2-164791](#) Discussion of RRC States and its configurability for NR Nokia, Alcatel-Lucent Shanghai Bell discussion
- Ericsson think we should think about the functions in the new state that are significantly different from idle.
 - CATT think that it would not be our decision to exclude idle.

Agreements:

- 1: RRC states with significantly overlapping characteristics should be avoided.
- 2: At least one RRC state for low activity should meet the NR control plane latency requirement and must be capable of achieving a comparable power efficiency to that of LTE's IDLE state.

- [R2-165122](#) Consideration on the RRC state in New RAT ZTE Corporation, ZTE Microelectronics discussion
- P3
- MediaTek think that the connection can be maintained by it is not so clear that the state would be transparent to the CN. We could be looking at very long DRX times.
 - LG think that CP latency should not be the rational for the new inactive state.
 - Intel the key think is that the mobility is hidden from the CN and the RAN handles the mobility without the CN involvement. But the message is common across many papers.
 - CATT support proposal 3.
 - Huawei support maintaining the connection but not sure whether it can be transparent to the CN.
 - Qualcomm share the view of Huawei and MediaTek whether it can be transparent to the CN but the proposal can be the baseline. Convidia share the same view.
 - IDC think that SA2 is somehow expecting that the CN will be aware

Agreement

- 1 One UE has only one NR RRC state at one time.
- 2 The connection (both CP and UP) between RAN and Core should be maintained in the "new state"

FFS whether the "new state" can be transparent to Core.

- 3 For the UE in the "new state", a RAN initiated notification procedure should be used to reach UE. And the notification related parameters should be configured by RAN itself.

FFS how the notification will be transmitted (e.g. via a beam, broadcast, etc.)

- 4: For the UE in the "new state", RAN should be aware whenever the UE moves from one "RAN-based notification area" to another.

FFS how CN location updates and RAN updates interact, if needed

- [R2-165004](#) Discussion on new RAN controlled states for NR Intel corporation discussion
- [R2-164679](#) Design principles for the new RAN controlled state Samsungdiscussion
- [R2-164713](#) UE state transition diagram for NR NTT DOCOMO, INC. discussion
- [R2-164805](#) Characteristics of NR Inactive State CATT discussion
- [R2-164806](#) UE Mobility in Inactive State CATT discussion
- [R2-164807](#) Support Data Transmission in Inactive State CATT discussion
- [R2-164922](#) Text proposal to TR 38.804 on NR UE states and state transitions NTT DOCOMO, INC. pCR 38.804 0.2.0 - - - TP related to [R2-164713](#) Rel-14 FS_NR_newRAT
- [R2-165048](#) RAN Controlled State for New Radio Access InterDigital Communications discussion

R2-165104	Inactive State and Support of inter-RAT Interworking CATT discussion
R2-165145	Discussion on RAN controlled state for NR ITRI discussion
R2-165161	Details of RAN controlled state ETRI discussion
R2-165211	Discussion on UE states in NR CMCC discussion
R2-165537	Characteristics of Inactive state Ericsson discussion
R2-165575	NR RRC inactive state principles Qualcomm Europe Inc.(Italy), Convida Wireless discussion
R2-165580	UE battery life impact for NR cell DTX for network energy efficiency Qualcomm Europe Inc.(Italy) discussion
R2-165649	UE Mobility in RAN Controlled State for New Radio Access INTERDIGITAL COMMUNICATIONS discussion
R2-165658	RAN Based Paging for New Radio Access INTERDIGITAL COMMUNICATIONS discussion
R2-165697	RAN controlled state in Standalone NR LG Electronics France discussion
R2-165722	Discussion on new RRC state in NR Samsung discussion
	Late
	Above 19 Tdocs not treated

Data transmission in 'low activity state'

- [R2-164945](#) RAN controlled UE states MediaTek Inc. discussion
- [R2-165538](#) State transition and small data transmissions for inactive UEs Ericsson discussion
- Discussed jointly with the previous paper
 - LG ask if Ericsson assume that the UE will always be under network controlled mobility when it is transferring data. Ericsson explain this is their understanding, but the very first data may be transmitted at the state transition.
 - DOCOMO think sending data in message 2 was not agreed in the context of LTE and wonders what coverage is expected. Even for MTC use cases we need to assume 100 byte data plus msg 3 RRC message and hence assume the coverage will be very small. Ericsson think the issue for LTE was limited repetitions for msg 3.
 - Huawei think that in NB-IOT there were a lot of issues for data in message 3 and it was not agreed so this can't be the baseline for NR.
 - LG think the NG-u is kept in the new state and hence what is the problem to send data in this state. Ericsson think that many parameters will need to be provided to the UE for data transmission and hence an RRC procedure will be needed. Qualcomm agree with LG and think that RAN will have the context and hence can send data in the new state.
 - Intel ask if the 2 proposals are mutually exclusive. Ericsson think we need at least one solution and think that we should have good justification to have more than one solution.
 - MediaTek think the main issue is the state transition that we should avoid to optimise the small data transmission.
 - Apple think it would be beneficial for power consumption to transmit before the transition.
 - BlackBerry think the key question is what is the overhead associated with the transition.
 - Samsung think battery life is the key issue and it would be good to study transmission in this state.
 - DOCOMO also prefer to study data transmission within the new state. Have concerns how it would be possible to ensure the same coverage as LTE.
 - Nokia think the key question is what it is possible to achieve without a handshake with the network. One packet may be possible but more than that may need a state transition.
 - Sierra support being able to send a small amount of data with the least amount of power.
 - CATT think that repetitions need to be considered within the latency analysis, also ask if we have a state transition is there a second mechanism to move the UE back to the state quickly.
 - Samsung think we need more input from RAN 1 for example if the UE needs to be UL synced to transmit in this new state.
- => Agree that, in the 'new state' there will be a mechanism where the UE first transits to the full connected state where data transmission can occur.
- => RAN2 will study the possibility for the UE to perform data transmission without state transition from the 'new state' to full connected.
- ☒ **[95#28][NR] Data transmission in 'new state' (Huawei)**
- To identify the potential benefits and disadvantages associated with a/ the UE performing state transition from the 'new state' to full connected in order to transfer data, and b/ data transfer able to occur in the 'new state'.

- Email should focus first on the aspects related to uplink transmission and then, if time allows, consider aspects related to downlink transmission.
Intended outcome: Email discussion report to the next meeting.
Deadline: Thursday 22/09/2016

[R2-165441](#) Discussion on RRC state in NR Huawei, HiSilicon discussion
[R2-164777](#) Discussion on Efficient Small Data transmission in "Inactive" StateGuangdong OPPO Mobile Telecom. discussion
[R2-164968](#) Fast Uplink Channel LG Electronics Inc. discussion
 Above 3 Tdocs not treated

Idle

[R2-165574](#) NR idle mode principles Qualcomm Europe Inc.(Italy) discussionLate

[R2-165719](#) Text proposal for NR RRC states SamsungpCR 38.804 0.2.0
 Late
 Above 2 Tdocs not treated

9.4.3.2 System information

Including minimisation of system information overhead, impact of beam sweeping, etc.

Including output from email discussion [94#40][NR] System information (Samsung)

[R2-165201](#) Report of email discussion on [94#40][NR] System information Samsung India discussion
 result of email discussion [94#40] Rel-14 FS_NR_newRAT

Agreements

- 1: RAN2 to agree on proposals 1, 4, 5, 6 and 7 from [1] to be captured as guidelines for SI design in RAN2 TR with rephrasing of some proposals if needed.
- 2: Other mechanisms than periodic broadcast of system information should be studied during study item.
- 3: Agree on the terminology of Minimum SI (at least for purpose of the SI discussions).
- 4: Minimum SI needs to be broadcasted periodically.
- 5: Contents and format of minimum SI are FFS. Content will at least include information to support cell selection, for acquiring other SI, for accessing the cell.
FFS Whether all "cells"/TRPs periodically broadcast the minimum SI.
- 6: Agree on the terminology of Other SI where other SI comprises everything not broadcasted in minimum SI.
FFS Whether ETWS/CMAS like information would be considered as Other SI or Minimum SI
- 7: Both network triggered and UE initiated mechanisms for Other SI delivery shall be further studied.
- 8: It is network decision whether other SI is broadcasted or delivered through UE-specific signalling.

[R2-165549](#) Guidelines for System Information distribution Ericsson discussion

Agreed guidelines:

- 1 System information distribution in NR should be designed such that UEs supporting less than the carrier bandwidth can determine at least the minimum system information.
- 2 System information broadcast should allow configurations that enable network energy efficiency (e.g. by long DTX durations)

=> Guidelines to be added to the TR

[R2-164693](#) System Information Signalling Design in NR Samsung Electronics Co., Ltd discussion
 P4

- DOCOMO think this implies that the network need to manage all of the possible SI configurations in the system and if one changes for one cell then the network needs to update this in all cells. Samsung think that system information that might frequently change could be broadcast. The UE would only need to update the table in a new cell if it doesn't have the latest information for that cell. Should not be frequent.

- MediaTek think the UE should not be required to store system information for any cell other than the serving cell.
- Huawei think that the network should also be able to broadcast the Other SI.
- MediaTek think we need a mechanism so the UE knows if the SI is valid in a new cell. Could be some extension to the value tag that we have.
- Panasonic ask if the intent is that system info change can be handled by changing between configurations of a single SIB. Samsung explain that system info can be change by switching configuration but we also need some validity time for example. Samsung explain that the UE will store whatever is received in the response from the network. Nokia think this means the UE has to store multiple copies of one SIB.
- LG explain that today the UE stores at most one SIB per cell but in this case the UE would store more than one SIB per cell. Samsung explain that the SIB configuration are not tied to a cell and hence one stored version might be valid in several cells. LG thinks that this has implication on the network to ensure that the cell configurations are aligned.
- Samsung think this may not need cell to cell coordination but could be done at PLMN level.

P6

- IDC ask if this means all cells will be required to send system information. Samsung answer yes for all the cells where the UE is allowed to camp. LG agree with Samsung.
- Nokia ask if the UE is mandated to acquire minimum SI on reselection. Samsung think this may not always be needed if the UE already has the information from a previous cell.
- Ericsson think we should not exclude the case that the UE can acquire from another cell, it would mean these standalone cells would always need to send SI.
- Panasonic think it is desirable for the UE to not have to acquire anything from other cells.
- CATT think in some cases there may be no other way than to receive the SI from the cell itself.
- MediaTek agree the principle that UE doesn't need to go to another cell to get the SI.
- Huawei agree with the proposal if the cell is a standalone cell.

=> Noted

[R2-165202](#)

Quantitative Analysis of on-demand SI delivery Samsung India discussion

- Proposal#1: RAN2 is requested to capture the analysis on signalling cost and power consumption in the RAN2 TR.
- Proposal#2: On demand SI delivery approach can be considered as a candidate solution for provisioning SI in NR.
- Proposal#3: If an on demand approach is support the system design then it is network decision to enable the on-demand approach so that UE can initiate SI request.

=> Noted

[R2-165305](#)

Preliminary evaluation of on-demand SI provisioning NTT DOCOMO, INC. discussion

- Discussed together with the previous contribution.
- DOCOMO is not arguing that there is no gain but would like to continue to study and the 2 analyses could be captured in the TR.
- Ericsson wonder of the fraction of resource is the correct metric as this assumes a fully loaded system. The issue is that the SI transmission could be 100% transmission when the system is not loaded and this impacts the network energy consumption. MediaTek also think that the metric is not a good indication.
- Intel think that the overhead might be higher at higher frequency due to additional repetition.
- Nokia think that there was consensus in the email about the problems of broadcast in high frequency operation and wonders what more study is needed.
- DOCOMO that just reducing the periodicity of the broadcast signal doesn't help with energy efficiency.
- Panasonic think we need to look at the system info delivery in the case of beam sweeping. Samsung indicating that beam sweeping was considered in their contribution.
- CATT think that on demand also enables us to identify the forward compatibility aspects

☒ [95#29][NR] On demand SI (Samsung)

Analyse the benefits and disadvantages of the on demand SI delivery. To include consideration of all the performance evaluations provided to the meeting, and also

consideration of other factors. Assumptions used in the performance evaluations are to be verified. Recommendations from the analysis can also be discussed.

Intended outcome: Email discussion report to next meeting

Deadline: Thursday 22/09/2016

- [R2-164808](#) System Information Categories and Delivery Mechanisms CATT discussion
[R2-165111](#) System Information delivery in NR ZTE Corporation, ZTE Microelectronics discussion
[R2-165550](#) Index based provisioning of system information in NR Ericsson discussion
[R2-164776](#) Discussion on NR System Information Design Guangdong OPPO Mobile Telecom.
discussion
[R2-164792](#) On beam sweeping and its implications Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-164809](#) System Information Area CATT discussion
[R2-164810](#) System Information Acquisition Procedure for Idle/Inactive UE CATT discussion
[R2-164811](#) On-demand System Information Delivery Mechanism CATT discussion
[R2-164947](#) Stored System Information MediaTek Inc. discussion
[R2-164948](#) On-demand System Information Acquisition MediaTek Inc. discussion
[R2-164958](#) Distribution of System Information in NR Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-165007](#) System information for standalone NR deployment Intel corporation discussion
[R2-165026](#) Delivery of System Information in NR Huawei, HiSilicon discussion
[R2-165032](#) System Information Enhancements for NR Sony discussion
[R2-165047](#) System Information Acquisition for New Radio Access InterDigital Communications
discussion
[R2-165110](#) NR Random Access procedure ZTE Corporation, ZTE Microelectronics discussion
[R2-165162](#) Details of system information delivery in NR ETRI discussion
[R2-165200](#) Contents of Minimum System Information Samsung India discussion
[R2-165257](#) Discussion on System Information Acquisition III discussion
[R2-165474](#) Analysis of resource efficiency gain using on-demand SI in standalone NR NEC discussion
[R2-165576](#) NR System Information Provisioning Qualcomm Europe Inc.(Italy), Convida Wireless
discussion
[R2-165588](#) NR System Information Aspects Convida Wireless discussion
[R2-165606](#) Requesting of on-demand SI LG Electronics Inc. discussion
SFN transmission of SI

- [R2-165551](#) Broadcasting SI by means of SFN transmission in NR Ericsson discussion
Above 24 Tdocs not treated

9.4.3.3 LTE-NR tight interworking specific aspects

Including transport for the control plane (e.g. via LTE, NR or both), transparency to LTE, ciphering/integrity, UE capability coordination, etc.

Including output from email discussion [94#39][NR] C plane aspects for tight interworking (Intel)

- [R2-165012](#) Report of email discussion: [94#39][NR] C plane aspects for tight interworking Intel
corporation discussion result of email discussion [94#39] Rel-14 FS_NR_newRAT
=> Noted
- [R2-165468](#) Control Plane Aspects for Interworking between NR and LTE INTERDIGITAL
COMMUNICATIONS discussion
P5
- Ericsson think the starting point for the discussion should be capabilities. Huawei think that coordination can be done by network signalling. Intel think the proposal is useful even without hard split of capabilities.
 - Ericsson think that the alternative is to use X2 signalling and they are 2 ways to achieve the same thing and new X2 signalling may be too heavy.
 - DOCOMO think we need to understand how the coordination is performed.
 - Samsung think that X2 like signalling could be tuned to just this case and there would not be a need to understand lots of other signalling. Ericsson think the implication is that we would have to discuss all the parameters to determine whether they are needed over X2.
 - Qualcomm assume a hard split of capabilities and hence coordination is not required.
 - Nokia think the overlap or parameters would be quite limited and only few parameters would need to be known, and if it is a hard split then it is even easier.

- BlackBerry think the other alternative would be to not use split bearer which would avoid the capability coordination. This is based on assumption that only SRBs would be supported over LTE so very minimal capability.
- CATT think that the capability could also be a semi static split.
- IDC think if the eNB wants to look into the container that would be allowed.

P7

- Huawei understand the final message to be like we have done for inter-RAT.
- Ericsson don't see the benefit of doing it different from LTE. Huawei see that we will have a separate NR RRC spec and would like identical behaviour of the UE on reception of this message whether it is received on standalone NR or via LTE. Intel support the proposal and Huawei's comments. Nokia also support.
- Samsung think it will not make a big difference whether it is a message or IE.
- Intel think that the full RRC message does not restrict the option of joint success failure.

Agreements

- 1: Separate RRC specification for NR should be introduced and maintained even for the case of LTE + NR interworking.
- 2 Some coordination is required between LTE (respectively NR) master node and NR (respectively LTE) secondary node.

FFS whether UE capabilities are involved in the coordination

- 3 LTE (respectively NR) master node should not need to modify or add to the NR (respectively LTE) configuration of the UE

FFS: Whether LTE (respectively NR) master node should not be required to understand NR (respectively) configuration of the UE.

FFS: Whether NR RRC messages generated by NR node are final RRC messages.

[R2-165547](#) CP aspects of NR-LTE interworking Ericsson discussion

=> Noted

[R2-165016](#) LTE and NR interaction for configuration coordination Intel corporation discussion

- Discussed together with the previous paper
- Ericsson don't see the gain for the network to not have to understand the configuration when it does need to understand the second container. Intel explain that the MeNB would not need to understand all the configuration which has many parts not relevant. Ericsson think that we will need to decide on each and every parameter. See the hard split as on implementation and in that case it would not need to be comprehend.
- Nokia sees benefit in interoperability.

=> Noted

[R2-165143](#) Considerations for transparency and coordination between LTE and NR ITRI discussion
Not treated

[R2-165644](#) Capability Coordination across RATs Qualcomm Europe Inc.(Italy)discussion

- Samsung think it should be possible for the master to be able to be aware of the impact of its choice of capability set on the other RAT.
- Intel think it will not be so clear how many sets would be needed if the UE supports many carriers and bands. Think that many sets would be needed.
- Samsung ask if it could lead to an explosion of the UE capability.
- Qualcomm thinks that master and choose and then secondary can follow but it would also be possible to fine tune the negotiation to enable the secondary more choice.
- Samsung think that some high frequency bands could be independent and it might be better to provide indication of conflicts rather than allowed combinations.
- Ericsson think it is important to understand whether the UE can just tell the eNB the number of carriers or whether it has to provide the combinations.
- Qualcomm think that agreement 1 would be too strict if there is not the possibility for the UE to update its capabilities.

Agreements

- 1 From a RAN2 perspective, we aim to have an independent capability information for NR and LTE (meaning that node of one RAT does not need to look at the capabilities of the other RAT). Does not preclude that capabilities of one RAT might contain some information related to the other RAT (e.g. at least measurement capabilities)

- 2 RAN2 should study further how to coordinate capabilities between the UE, LTE eNB and NR gNB.

☒ **[95#30][NR] Capability coordination for NR and LTE (Qualcomm)**

Progress the understanding of possible different solutions for how to coordinate capabilities between the UE, LTE eNB and NR gNB. Some assumptions can be made on what capabilities might need to be shared (LTE can be used as a baseline for at least one set of assumptions, other sets of assumptions may also be considered).

Intended outcome: Email discussion report

Deadline: Thursday 22/09/2016

- [R2-165054](#) Control Plane Functions and Transport Mechanism for NR+LTE interworking InterDigital Communications discussion
 - [R2-164710](#) Discussion on RRC Diversity for LTE-NR Tight Interworking CATT discussion
 - [R2-164752](#) General considerations for LTE-NR tight interworking Nokia, Alcatel-Lucent Shanghai Bell discussion
 - [R2-164711](#) Discussion on RRC Architecture for LTE-NR Tight Interworking CATT discussion
 - [R2-164712](#) CP Procedure for LTE and NR interworking CATT discussion
 - [R2-164799](#) Open Issues of LTE-NR Tight Interworking CATT discussion
 - [R2-164815](#) RRC for standalone NR CATT discussion
 - [R2-164950](#) System Information handling for LTE-NR tight interworking NTT DOCOMO, INC. discussion Resubmission of [R2-163974](#)
 - [R2-165009](#) UE capability coordination in LTE-NR interworking Intel corporation discussion
 - [R2-165013](#) Discussion on NR SeNB configuration Intel corporation discussion
 - [R2-165044](#) UE capability coordination in case of IRAT DC Samsung Telecommunications discussion
 - [R2-165045](#) Use of RRM measurements in IRAT DC Samsung Telecommunications discussion
 - [R2-165116](#) Consideration on the capability coordination in LTE/NR tight interworking ZTE Corporation, ZTE Microelectronics discussion
 - [R2-165117](#) Consideration on the control plane for the LTE NR tight interworking ZTE Corporation, ZTE Microelectronics discussion
 - [R2-165144](#) RRC message generation and transmission for LTE-NR tight interworking ITRI discussion
 - [R2-165196](#) Control plane issues for tight interworking between NR and LTE KT Corporation discussion
- Above 16 Tdocs not treated

Other aspects

- [R2-165330](#) Dual Connectivity based link switch between LTE and NR Ericsson discussion
 - [R2-165344](#) Specifications for NR Ericsson discussion
 - [R2-165338](#) Simultaneous RX-TX in LTE and NR Ericsson discussion
 - [R2-165488](#) Functionality and procedure for LTE-NR tight interworking Huawei, HiSilicon discussion
 - [R2-165492](#) RRC aspects in LTE-NR tight interworking Huawei, HiSilicon discussion
 - [R2-165546](#) RRC diversity Ericsson discussion
 - [R2-165571](#) NR radio architecture aspects BlackBerry UK Limited discussion
 - [R2-165591](#) Control Plane Latency for Tight Interworking Convida Wireless discussion
 - [R2-165643](#) NR RRC signalling principles Qualcomm Europe Inc.(Italy)discussion
 - [R2-165711](#) RRC entity in LTE-NR tight interworking NEC discussion
- Above 10 Tdocs not treated

Withdrawn:

- [R2-164812](#) CP Procedure for LTE and NR interworking CATT discussion
- [R2-164813](#) Discussion on RRC Architecture for LTE-NR Tight Interworking CATT discussion
- [R2-164814](#) Discussion on RRC Diversity for LTE-NR Tight Interworking CATT discussion
- [R2-164720](#) NR radio architecture aspects BlackBerry UK Limited discussion
- [R2-165569](#) NR radio architecture aspects BlackBerry UK Limited discussion

9.4.3.4 Other

Other aspects may include the initial access, security (although little discussion on security may be possible until we have more information from SA3), support of small data, etc.

Security

[R2-165543](#) Security in NR Ericsson discussion
[R2-164793](#) Security Handling for UP in NR Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-165544](#) Draft LS to SA3 about security Ericsson LS out late
Above 4 Tdocs not treated

Access control

[R2-165589](#) Access control for NR Ericsson discussion
[R2-165698](#) Connection Establishment and Access Control for Standalone NR LG Electronics France discussion
[R2-165188](#) Barring for NR Samsung Research America discussion
Above 3 Tdocs not treated

Initial access

[R2-164695](#) Random Access Procedure in NR Samsung Electronics Co., Ltd discussion
[R2-164696](#) Random Access in NR – Flexible UE BW Aspects Samsung Electronics Co., Ltd discussion
[R2-164816](#) Analysis on NR Initial Access CATT discussion
[R2-164817](#) Physical Layer Impacts on RA Design CATT discussion
[R2-164821](#) Random Access Procedure for NR CATT discussion
[R2-165714](#) Initial access with infrequent small data MediaTek Inc. discussion
Above 6 Tdocs not treated

Other

[R2-164694](#) Service Specific Cell (Re-) Selection in NR Samsung Electronics Co., Ltd discussion
[R2-164697](#) Paging in NR – Beamforming Aspects Samsung Electronics Co., Ltd discussion
[R2-164753](#) Paging in NR at HF operation Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-164717](#) Analysis of target C-plane latency for NR NTT DOCOMO, INC. discussion
[R2-164754](#) NR RRC control plane protocol stack considerations Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-164794](#) Efficient Small Data Transmissions Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-165017](#) UE capability signaling framework for NR Intel corporation discussion
[R2-165053](#) Control Plane and Connectivity Principles for NR InterDigital Communications discussion
[R2-165169](#) Considerations for new multiple access schemes Samsung Electronics Co., Ltd discussion
[R2-165362](#) QoS aware initial access Huawei, HiSilicon discussion
[R2-165442](#) Grant-free transmission Huawei, HiSilicon discussion
Above 11 Tdocs not treated

Withdrawn:

[R2-164949](#) Initial access with infrequent small data MediaTek Inc. discussion
[R2-165444](#) Infrequent small data transmission in NR Huawei, HiSilicon discussion
late

9.5 Mobility

9.5.1 Intra NR RAT

9.5.1.1 Mobility with RRC involvement

Including study of 'cell' level mobility, further discussion of cell definition, measurements for 'cell' level mobility, etc

General

[R2-164795](#) Mobility scenarios in NR Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-165120](#) Consideration on intra-NR mobility ZTE Corporation, ZTE Microelectronics discussion
[R2-164725](#) Intra-5G Mobility related requirements Samsung R&D Institute UK discussion
[R2-165216](#) Discussion on Intra-NR Mobility CMCC discussion

Moved from 9.5.1.3 to 9.5.1.1

[R2-165294](#) Mobility Support for Full RRC Signaling III discussion
[R2-165607](#) Partial UE-centric Mobility in NR-LTE interworking scenario LG Electronics Inc. discussion
Above 6 Tdocs not treated

'Cell' definition

[R2-164726](#) More details for the "NR cell" Samsung R&D Institute UK discussion

- Ericsson think it is FFS what the xSS is, One option is that it could be a beam identifier. We need to study if it is associated with a group of beams or just a beam.
- Samsung clarify that xSS just refers to whatever RAN1 decide will be used as discovery signal.
- DOCOMO explain that in for the single beam case RAN1 has concluded that the XSS is like a PCI as we have in LTE.
- Intel think that RAN1 have only decided for idle mode but nothing has been decided for connected mode.
- Samsung assume xSS is beam specific but it is not critical for this discussion. Samsung where assuming the same xSS for idle and connected. MediaTek has the same view as Samsung.

=> RAN2 understanding of RAN1 agreement: There is an "xSS" (similar as LTE cell specific RS). On the "xSS" there is at least a NR Cell Id. The xSS is at least used in idle

Agreements related to RRC based mobility

RAN2 preference:

- 1 In connected active we are able to use non-UE specific RS for measurements (UE may not need to be aware whether the RS is UE-specific or non-UE specific)
- 2 The non-UE specific RS can be found by the UE without much configuration
- 3 The non-UE specific RS encodes an identity

FFS1 Is RS in connected the same as "xSS"

FFS2 What does the non-UE specific RS identify? e.g. Cell, beam, TRP, zone, or something else.

FFS3 Does the UE have to be able to somehow identify a grouping from this identity

These agreements are not intended to preclude uplink based mobility

Final decision whether to introduce non-UE specific RS design is RAN1 responsibility

[R2-164796](#) Discussion on Cell definition in New Radio Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-164897](#) 'Cell' Concept in NR MediaTek Inc. discussion
[R2-165000](#) Mobility type support in NR Intel corporation discussion
[R2-165584](#) Beam and cell definitions Qualcomm Europe Inc.(Italy)discussion
Moved from 9.5.1.3 to 9.5.1.2

[R2-165118](#) Consideration on the cell concept in the NRZTE Corporation, ZTE Microelectronics discussion

[R2-165435](#) On definition of NR cell Huawei, HiSilicon discussion
Moved from 9.2 to 9.5.1.1

[R2-164818](#) Intra-NR CONNECTED State Mobility CATT discussion
[R2-164819](#) NR Areas and NR Cell CATT discussion
[R2-165219](#) Terminology of "Cell" in NR CMCC discussion
Moved from 9.4.1 to 9.5.1.1

Above 9 Tdocs not treated

Measurements UL

- [R2-164893](#) Considerations on mobility based on UL signals Nokia, Alcatel-Lucent Shanghai Bell discussion
- ZTE asks how the neighbour cell decodes the UL signal without uplink signal. Nokia agree this is an issue that needs to be further discussed as the UE specific parameters would need to be provided to the neighbour cell.
 - MediaTek think there is a concern about the resources required in other cells.
 - Qualcomm think there is also random access cell based UL mobility that can be considered. Nokia has not concluded that SRS1 is the preference on which signal is used.
 - Intel think we should also take into account power consumption, X2 overhead etc. Also wonders if it is just of intra-cell or also for inter-cell. Huawei think it can work in both cases.
 - Samsung agree with Intel and think we need to capture what needs to be studied.
 - MediaTek think if it is supported then it should be complementary to the DL measurements.
 - Nokia think we need to consider whether it is standalone or used with DL measurements and the RRC states it would be used in.
 - OPPO think measurement precision in different channel conditions needs to be considered.
- => RAN2 will study mobility in connected active state based on UL signals . Study should at least consider power consumption, network internal signalling aspects, scalability, mobility performance, etc.

- [R2-165033](#) Mobility Using Uplink Measurements Sony discussion
- [R2-165439](#) UE centric design for NR Huawei, HiSilicon discussion

=> Revised in [R2-165721](#)

- [R2-165721](#) UE centric design for NR Huawei, HiSilicon discussion
- Moved from 9.2 to 9.5.1.1

- [R2-165448](#) UE mobility tracking in "active state" Huawei, HiSilicon discussion
- [R2-165539](#) Mobility based on DL and UL measurements Ericsson discussion
- [R2-165567](#) Mobility procedures - decision points and measurements Qualcomm Europe Inc.(Italy) discussion
- [R2-165364](#) Measurement and mobility for high frequency Huawei, HiSilicon discussion
- [R2-165436](#) Design principles for mobility in NR Huawei, HiSilicon discussion
- Moved from 9.2 to 9.5.1.1

- [R2-165213](#) Discussion on uplink measurement based mobility CMCC discussion
- Moved from 9.5.1.3 to 9.5.1.1
- Above 9 Tdocs not treated

Measurements DL

- [R2-165540](#) RRM measurements and mobility control in RRC CONNECTED Ericsson discussion
- [R2-165015](#) Measurement in NR Intel corporation discussion
- [R2-165119](#) Consideration on the Measurement for the NR ZTE Corporation, ZTE Microelectronics discussion
- [R2-165107](#) Mobility procedures in NR networks MediaTek Inc. discussion
- [R2-165150](#) Measurements for Cell-level Mobility in High Frequency NR Samsung discussion
- [R2-165289](#) Consideration on beamforming for cell level mobility ASUSTEK COMPUTER (SHANGHAI) discussion
- Above 6 Tdocs not treated

Idle mode

- [R2-164729](#) Idle Mode Design for 5G RAT Samsung R&D Institute UK discussion
- Ericsson asks if the UE needs to do some sort of beam tracking in idle in order to camp on the best beam. Samsung think the UE does need to ensure that the UE is on a good enough beam to receive paging.
 - CATT as if the sync channel, system info, paging, etc. was transmitted by SFN would this be a beam? Intel share the view as CATT. Nokia also have the same view and think that it would be easier not to distinguish beams in idle. Ericsson also share this view

- Huawei think we just care about the cell which might be multiple beams.
- MediaTek think that the UE will eventually have to find a beam for access. Samsung see 2 reasons for UE to find a beam, one is coverage and the other is uplink access.

Agreements

- 1: In the 5G system, the UE camps on the best cell
FFS how the UE determines the best cell

- [R2-165449](#) Benefit of UL beacon tracking for "power saving state" Huawei, HiSilicon discussion
- MediaTek think in LTE light connection we have the concept of the UE informing the network on moving out of the RAN based paging area. This avoids the need to periodic transmissions.
 - Samsung ask if the assumption is that there are 2 separate RF transmit chains. Huawei explain this it is one implementation.
 - Samsung wonders if the UE needs to decode some DL signal first before it can transmit. All the cells would need to use the same resource to transmit. Think it is sufficient for the UE to indicate to a new cell its new location whenever it changes cells.
 - Qualcomm understand that the UE will have to receive DL sync first but understand that it doesn't require much power as the UE already has the timing. To there is very short receive and then very short transmit and think there can be some power saving. Huawei confirm this is also their understanding.
- => Noted

- [R2-165555](#) Energy conserved operation evaluation Huawei, HiSilicon discussion
moved from 9.5.1.2 to 9.5.1.1

- [R2-165541](#) IDLE mode operation and initial access Ericsson discussion
[R2-165131](#) Consideration on intra NR RAT mobility ASUSTEK COMPUTER (SHANGHAI) discussion
Above 3 Tdocs not treated

Other

- [R2-165180](#) High Frequency Mobility Framework (RRC level) Samsungdiscussion
[R2-165001](#) Evaluation of handover performance in new RAT Intel corporation discussion
[R2-164755](#) Implications of High Frequency Bands on Mobility Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-165312](#) Measurement Configuration Reduction for Intra-NR MobilityASTRI, TCL Communication Ltd. discussion
[R2-165345](#) Inter-Virtual Cell Handover in Two-Layer NR Networks ASTRI, TCL Communication Ltd. discussion
Above 5 Tdocs not treated

9.5.1.2 Mobility without RRC involvement

Including study of RAN2 aspects of 'beam' level mobility, terminology, beam management, measurements for 'beam' level mobility, etc. May need to be treated with lower priority until further progress has been made by RAN1.

- [R2-165363](#) L2/3 impact of beam switching in high frequency Huawei, HiSilicon discussion
- Samsung share the concern with Huawei.
 - Nokia think that not everything can be done by L1 and hence it might at least involve the lower layers of L2. We need to work with RAN1 on this. Nokia think similar to CA where the activation is done at MAC because we have acknowledged transmission.
 - Ericsson agree this is not just RAN1 but think that it can wait for more RAN1 progress.
 - DOCOMO tend to agree but we should not preclude discussion
- => Discussion of this topic will be treated with lower priority until RAN1 have concluded whether the beam mobility will have visibility to L2/3

- [R2-165171](#) Discussion of TRP related Issues in NR Samsungdiscussion

[R2-164797](#) Beam Management in NR Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-164898](#) Beam Management MediaTek Inc. discussion
[R2-165173](#) Discussion on multi-beam based operation and related terminology Samsungdiscussion
[R2-165287](#) Beam management in NR ASUSTEK COMPUTER (SHANGHAI) discussion
[R2-165050](#) Beam-based aspects for New Radio InterDigital Communications discussion
[R2-165142](#) Discussion on Enhances Handover in New Radio Technology Access ITRI discussion
[R2-165172](#) RAN2 issues of beam tracking in multi-beam based NR Samsungdiscussion
[R2-165700](#) Management of Beam, TRP and Cell LG Electronics Francdiscussion
Above 9 Tdocs not treated

Withdrawn:

[R2-164820](#) inter-RAT mobility CATT discussion

9.5.1.3 Other

Including e.g. RLM,RLF, etc

RLM/RLF

[R2-165203](#) Radio Link Failure detection in High Frequency NR systems Samsung R&D Institute UK discussion

Moved from 9.5.1.1 to 9.5.1.3

[R2-164899](#) RLM and RLF in HF-NRMediaTek Inc. discussion
Above 2 Tdocs not treated

Other

[R2-164946](#) Frequency domain resources for NR measurements NTT DOCOMO, INC. discussion
Resubmission of [R2-163976](#)

[R2-165581](#) Mobility interface for NRQualcomm Europe Inc.(Italy), Convida Wireless discussion

[R2-165701](#) Initial analysis and challenges for support of high mobility LG Electronics Francdiscussion
Above 3 Tdocs not treated

9.5.2 Inter-RAT

Including consideration of mobility between NR and LTE, and potentially other RATs.

Dual RAT operation

[R2-165014](#) Inter-RAT mobility between NR and legacy technologies Intel corporation discussion

[R2-165566](#) Concurrent RAT operation with RX sharing Qualcomm Europe Inc.(Italy), Convida Wireless discussion

Moved from 9.4.1 to 9.5.2

[R2-165186](#) TDM Operation across Different RATs Samsung Research Americadiscussion

Moved from 9.4.1 to 9.5.2

[R2-165568](#) Text Proposal on TX/RX Sharing Concurrent RAT operation with NR Qualcomm Europe Inc.(Italy), Convida Wireless discussion

Moved from 9.4.1 to 9.5.2

Above 4 Tdocs not treated

Other

[R2-165450](#) Discussion on LTE-NR handover Huawei, HiSilicon discussion

[R2-165548](#) Mobility between LTE and NR for inactive UEs Ericsson discussion

[R2-164957](#) Tight interworking of evolved LTE and NR Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-165034](#) Inter-RAT Inter-MeNB handover in LTE-NR tight interworking Sony discussion

[R2-165660](#) Inter-RAT Mobility with Dual Connectivity in NR LG Electronics Inc. discussion

Above 5 Tdocs not treated

9.6 Other

Other aspects may include e.g. the impacts of slicing (although little discussion on slicing may be possible until we have more information from SA2), etc

Slicing

[R2-165282](#) E2E network slice: concept and requirements from RAN perspective Samsungdiscussion
Moved to from 9.2 to 9.6

[R2-165019](#) Key Principles for Support of Network Slicing in RAN Huawei, HiSilicon discussion
Moved to from 9.2 to 9.6

[R2-165020](#) RRC Support of Network Slicing Huawei, HiSilicon discussion

[R2-165112](#) Consideration on the impact of NW slicing on RAN ZTE Corporation, ZTE Microelectronics discussion

[R2-165277](#) RAN Design Issues for Supporting Slicing Samsungdiscussion

[R2-165542](#) RAN support for network slicing Ericsson discussion

[R2-165668](#) Resource Isolation for RAN Part of Network Slice Qualcomm Europe Inc.(Italy)discussion
Above 7 Tdocs not treated

Other

[R2-164798](#) Scheduling Framework and Requirements Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-165046](#) RRC specification for 5G Samsung Telecommunications discussion

[R2-165121](#) Consideration on the transport layer protocol and evaluation assumption ZTE Corporation, ZTE Microelectronics discussion

[R2-165137](#) Factors to impact UL contention-based transmission Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-165198](#) Discussion on NR V2X Service Samsung Electronics Co, LTD discussion

[R2-165311](#) Co-existence scenarios for LTE and NR Samsung India discussion

[R2-165651](#) Support of flexible TTI in NR LG Electronics Inc. discussion

[R2-165702](#) Support of mMTC for New RAT LG Electronics France discussion
Above 8 Tdocs not treated

Withdrawn:

[R2-165674](#) QoS for slicing in RAN Qualcomm Europe Inc.(Italy)discussion

[R2-165699](#) QoS principles for slicing in RAN Qualcomm Europe Inc.(Italy)discussion

10 UTRA Release 11 and earlier releases

[R2-164927](#) Discussion on rate adaptation quality issues in uplink for UTRAN Huawei, HiSilicon discussion

- Qualcomm thinks that it can be fixed on the UE side and would prefer no change
=> Postponed.

[R2-164928](#) Discussion on UE measurement capability of E-UTRAN Huawei, HiSilicon discussion

- Ericsson thinks interpretation 1 is the correct understanding. Companies need some more time to check, so we postpone discussion until next meeting.

=> Noted.

[R2-165431](#) MIMO Configuration at RRC Connection Setup Ericsson discussion

- Samsung indicates that MIMO cannot be configured in SETUP as the network doesn't know UE capability at that point. MIMO in DL secondary was probably included unintentionally.
- Huawei clarifies that RRC connection request includes two capabilities DC MIMO capability and another one for 4 carrier it is possible to configure MIMO in RRC connection setup. Samsung doesn't see a capability for single carrier MIMO.

if we should allow MIMO configuration in the primary configuration and if so how to do it and from what release

- ⇒ It is RAN2's common understanding that, during RRC CON setup phase, there is no need to configure MIMO and 4*4 MIMO on secondary DL carrier.
- ⇒ Noted.

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.

[R2-164715](#) On DCH-enhancements concurrency with HS/EUL Qualcomm Europe Inc.(France) CR 25.331 12.10.0 5874 - F Rel-12 UTRA_DCHenh-Core

=> Change to Category C

=> Update to include impact analysis

=> The CR is revised in [R2-165731](#)

[R2-165731](#) On DCH-enhancements concurrency with HS/EUL Qualcomm Europe Inc.(France) CR 25.331 12.10.0 5874 1 C Rel-12 UTRA_DCHenh-Core

- QC: Comments from Samsung to cover page have been incorporated in latest version.

- Huawei: The **Source to TSG** field on coverpage should indicate 'R2'

=> The CR is agreed with these changes in [R2-165747](#).

[R2-165747](#) On DCH-enhancements concurrency with HS/EUL Qualcomm Europe Inc.(France) CR 25.331 12.10.0 5874 2 C Rel-12 UTRA_DCHenh-Core

=> CR is agreed.

[R2-164716](#) On DCH-enhancements concurrency with HS/EUL (Rel. 13) Qualcomm Europe Inc.(France) CR 25.331 13.3.05875 - A Rel-13 UTRA_DCHenh-Core

=> The CR is revised in [R2-165732](#)

[R2-165732](#) On DCH-enhancements concurrency with HS/EUL (Rel. 13) Qualcomm Europe Inc.(France) CR 25.331 13.3.05875 1 A Rel-13 UTRA_DCHenh-Core

- Same comment applies from Huawei for **Source to TSG** field

- E///: The wrong Tdoc is on the coverpage. Also there is a white space in the name of the zip file.

- Nokia: The '(Rel-13)' should be removed from the Title.

=> The CR is agreed with these changes in [R2-165748](#).

[R2-165748](#) On DCH-enhancements concurrency with HS/EUL Qualcomm Europe Inc.(France) CR 25.331 13.3.05875 2 A Rel-13 UTRA_DCHenh-Core

=> CR is agreed.

- [R2-165434](#) Clarification on signalling for DCH Enhancements Ericsson CR 25.331 12.10.0 5882 - F Rel-12 UTRA_DCHenh-Core
- Qualcomm clarifies that these are different IEs and if they are not included we should be using the old one rather than rejecting the configuration. Samsung agrees with Qualcomm but finds that the Note in the tabular 10.3.5.15 introduces the confusion. Huawei thinks that according to note the network should configure the UE so the CR would not be needed.
- check the reason for the note and intended behaviour
- ⇒ The CR is postponed
- [R2-165438](#) Clarification on signalling for DCH Enhancements Ericsson CR 25.331 13.3.05883 - 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](#))

- [R2-164926](#) Correction on the stored retrievable configuration for CELL_FACHHuawei, HiSilicon CR 25.331 13.3.05877 - F Rel-13 UTRA_EDL_L23-Core
- Ericsson still has some concerns as the UE doesn't receive configuration in CELL_PCH, URA_PCH
 - Ericsson suggests to make the NOTE "This information shall be stored and invoked as part of a retrievable configuration for CELL_DCH"
 - Samsung doesn't think we should have the note at all. At the point of using the configuration the UE will validate the configuration.
 - Ericsson clarifies that the Note 1 was added only for IEs that the UE shouldn't store as part of CELL_FACH configuration
 - Huawei: After offline discussion, Ericsson still have some doubts. We can postpone CR until next meeting.
- => Postponed.
- [R2-165459](#) Corrections and clarifications for seamless transition to CELL_FACH state functionality Ericsson CR 25.331 13.3.05885 - F Rel-13 RANimp-UplinkEnhState, UTRA_EDL_L23-Core
- Samsung wonders why in 8.1.3.6 we don't align the behaviour with HSPA_RNTI_STORED_PCH for both CELL_PCH and URA_PCH. Ericsson is open to try to align the behaviour.
 - Nokia Net wonders why in 8.5.47 the UE moves to CELL_FACH twice. If we keep this change we should align 8.5.40
- => Update section 8.5.40 and 8.5.56
- => The CR is revised in [R2-165733](#)
- [R2-165733](#) Corrections and clarifications for seamless transition to CELL_FACH state functionality Ericsson CR 25.331 13.3.05885 1 F Rel-13 RANimp-UplinkEnhState, UTRA_EDL_L23-Core
- to see if we can better align the behaviours
- After offline:
- As E/// reported that, Samsung suggested to align the handling of URA_PCH seamless with legacy CELL_PCH.
 - E///: some changes are needed with the suggestion from Samsung, not sure if we should go for this way.
 - HW: we share the view with E///, we think the current CR is OK. Maybe we could go for a short email approval.
 - NN: fine with a short email approval, and other changes were already reflected in the CR.
- ⇒ We will go for a short email discussion, one week.
- ☒ **[95#16][UMTS/DL enh] CR on seamless transition to CELL-FACH (Ericsson)**
- The purpose is to agree the CR for the plenary. Deadline: Sep.2

Discussion Deadline: one week after meeting.

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 contributions 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 contributions 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 contributions 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 contributions 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 contributions 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 contributions 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

No contributions received.

12.9 WI: Downlink TPC enhancements for UMTS

(UTRA_EDL_TPC-Core; leading WG: RAN1; REL-13; started: Sept. 15; closed: Dec. 15; WID: [RP-151880](#))

No contributions 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 contributions 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!

[R2-164925](#) Correction on UE behaviours on storing E-RGCH configuration Huawei, HiSilicon CR
25.331 13.3.05876 - F Rel-13 RANimp-DC_HSUPA, TEI13
- Samsung and Nokia Net have a concern that there may be some mismatch between Rel-9 and Rel13 UEs
After offline discussion it is sufficient to capture something in meeting notes.
=> The CR is not pursued.

⇒ It is RAN2 common understanding that for E-DCH radio link on secondary uplink frequency, E-RGCH configuration is dependent on E-HICH configuration.

[R2-165220](#) Physical channel features in retrievable configurations Ericsson discussion
- Huawei sees some benefits to this enhancements
- Samsung indicates that from the UE perspective this requires partial removal of the configuration. This was discussed in the study item phase and we decided to erase everything and now we are going back. Ericsson thinks that if we send the full message we lose the benefit of the feature. Nokia Net agrees with Samsung that the network can always overwrite the full configuration.
- Samsung agrees that it may not be too efficient but there is a tradeoff between complexity and efficiency.
- Nokia Net wonders how critical this problem is.
=> There is no consensus on the problem or solution
=> Noted

[R2-165221](#) Discontinuation of physical channel features Ericsson CR 25.331 13.3.05879 - C
Rel-13 TEI13
=> Not treated

[R2-165272](#) Rapporteur correction for 25.321 MAC specification Nokia CR 25.321 13.2.00817 - D
Rel-13 TEI13
=> Thbs should be updated to Tbhs
=> Double indentation should be fixed in many section
=> The CR is postponed

[R2-165726](#) Breaking the ASN.1 nesting level in the Inter RAT Handover Info message Ericsson CR
25.331 13.3.05886 - F Rel-13 TEI13
Late
- Ericsson acknowledges that we should have a general check for other messages but for now this is the only one found.
=> General understanding is that we should fix this problems for all messages. The guideline should be to fix it starting from level 14
=> The CR is revised in [R2-165734](#)

[R2-165734](#) Breaking the ASN.1 nesting level in the Inter RAT Handover Info message Ericsson CR
25.331 13.3.05886 1 F Rel-13 TEI13
⇒ The CR is agreed.

13 UTRA Rel-14

13.1 WI: RRC optimization for UMTS

(UTRA_RRCoOpt-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;

[R2-165222](#) Introduction of RRC events for UPH reporting Ericsson CR 25.300 13.2.00045 - B
Rel-14 UTRA_RRCopt-Core

- HW: this is stage 2 CR, so no need to touch stage 3 details, e.g., the name of 6h and 6i;
- E///: it is OK
- ⇒ To remove 6h and 6i.
- ⇒ RRC events => RRC measurement events
- ⇒ The CR is revised in [R2-165736](#) r1

[R2-165736](#) Introduction of RRC events for UPH reporting Ericsson CR 25.300 13.2.00045 1 B
Rel-14 UTRA_RRCopt-Core

- ⇒ The CR is agreed.

[R2-165223](#) Introduction of RRC events for UPH reporting Ericsson CR 25.306 13.1.00508 - B
Rel-14 UTRA_RRCopt-Core

- HW: it is better to mention 6h and 6i explicitly.
- ⇒ RRC events => RRC measurement events, including the change in coversheet
- ⇒ 4.9 and 5.1 => 4.9, 5.1
- ⇒ Will mention 6h and 6i
- ⇒ The CR is revised in [R2-165737](#) r1

[R2-165737](#) Introduction of RRC events for UPH reporting Ericsson CR 25.306 13.1.00508 1 B
Rel-14 UTRA_RRCopt-Core

- ⇒ The CR is agreed

[R2-165224](#) Introduction of RRC events for UPH reporting Ericsson CR 25.331 13.3.05880 - B
Rel-14 UTRA_RRCopt-Core

- Samsung: suggest to be aligned all the places in the context, e.g., UPH, UE power headroom, the preference is UE power headroom.
- QC: the events are for DCH state? E/// confirms. QC would like to mention it somewhere.
- QC: the rule should be similar to traffic volume report as mentioned in 14.4.2, for example, if pending timer is active, the even 6h should not be triggered.
- HW: pending timer after trigger, the semantics description should be aligned with tabular 10.3.7.72
- HW: 14.6.2.x, formatting issue, e.g. level 3> is not correctly formatted, similar issues exist in 14.6.2.y
- HW: we are still checking the ASN.1.
- Samsung: in 10.3.7.75, the extension looks strange, better to have explicit ones, i.e. 6h/6i, but we need to check the ASN.1 impacts.
- Samsung: in 10.3.7.80, CV clause and Notes, seems redundant. The tabular seems not be aligned with ASN.1, regarding the optional and mandatory, we need to check.
- Samsung: for the IE "UE-InternalEventResults-r14", it is suggested to have more spare values for further proof. And, this new IE is critical extension, the name should be updated.
- Samsung: we should align the name of capability among specifications, i.e. RRC measurement events everywhere.
- ⇒ The CR is revised in [R2-165738](#) r1, and will go for email approval.

⇒

✉ [\[95#17\]\[UMTS/RRC opt\] CR on UPH reporting \(Ericsson\)](#)

⇒ [Intended outcome: email approval for plenary](#)

⇒ [Discussion deadline: Friday, Sep 2nd](#)

13.1.2 Simultaneous RAB setup and release

[R2-165225](#) Introduction of simultaneous RAB/RB setup and release Ericsson CR 25.300 13.2.00046
- B Rel-14 UTRA_RRCopt-Core

- HW: no slash in feature name, could be updated like simultaneous RAB and RB, or, just simultaneous RAB. Samsung: the intention is OK, since we will have simultaneous RB setup/release.
- E///: maybe just simultaneous RAB setup and release.
- HW: the last sentence in the change may not be needed, it is stage 3. E///: fine to remove.
- ⇒ Remove the last sentence in the change.
- ⇒ Allows => allows to
- ⇒ Offline for a better name of this feature
- ⇒ The CR is revised in [R2-165739](#) r1

- [R2-165739](#) Introduction of simultaneous RAB/RB setup and release Ericsson CR 25.300 13.2.00046
1 B Rel-14 UTRA_RRCopt-Core
⇒ The CR is agreed.
- [R2-165226](#) Introduction of simultaneous RAB/RB setup and release Ericsson CR 25.306 13.1.00509
- B Rel-14 UTRA_RRCopt-Core
⇒ To align the feature name with stage 2 CR.
⇒ The CR is revised in [R2-165740](#) r1.
- [R2-165740](#) Introduction of simultaneous RAB/RB setup and release Ericsson CR 25.306 13.1.00509
1 B Rel-14 UTRA_RRCopt-Core
⇒ The CR is agreed.
- [R2-165227](#) Introduction of simultaneous RAB/RB setup and release Ericsson CR 25.331 13.3.05881
- B Rel-14 UTRA_RRCopt-Core
- QC: in section 8.2.2, shall we try to say, optionally establish a RB and/or to optionally release a RB? E///: and/or is needed, but "optionally" is not needed.
- Samsung: how about "The radio bearer reconfiguration procedure is used to setup, release and reconfigure parameters for a radio bearer." E/// is fine with such wording.
- Samsung: in section 10.2.27, logically, it is better to shift the order, e.g. to put RB related changes after ">>>RB information to be affected". E///: ok.
- QC: it is suggested to have a note like "UE behaviour is unspecified if the setup and release of the same RB is happened in the same message." E///: ok
- HW: in 10.2.27, "Rel-14" was missing in version column. E///: ok.
⇒ The CR is revised in [R2-165741](#) r1
- R2-165741 Introduction of simultaneous RAB/RB setup and release Ericsson CR 25.331 13.3.05881
1 B Rel-14 UTRA_RRCopt-Core
⇒ To align the name between tabular and ASN.1, supportofSimultaneousSetupandRelease => supportofSimultaneousSetupandReleaseofRABsRBs
⇒ To update Note4: If any combination of setup, reconfiguration and release of the same radio bearer is included in the same RADIO BEARER RECONFIGURATION message, the UE behavior is unspecified.
⇒ The CR is revised in [R2-165743](#) r2
- R2-165743 Introduction of simultaneous RAB/RB setup and release Ericsson CR 25.331 13.3.05881
2 B Rel-14 UTRA_RRCopt-Core
- Huawei: On cover page, the Other Specs should be checked 'Yes'
- Huawei: Also the section 10.3.3.42 is missing from 'Clause affected' section on cover page
⇒ With these changes the CR is agreed in [R2-165746](#) r3
- R2-165746 Introduction of simultaneous RAB/RB setup and release Ericsson CR 25.331 13.3.05881
3 B Rel-14 UTRA_RRCopt-Core
⇒ The CR is agreed

13.1.3 Others

No contributions received.

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

Incoming LS:

[R2-164604](#) LS on HS-SCCH DRx Design in Cell FACH ([R1-165512](#); contact: Qualcomm) RAN1 LS in to: RAN2 Rel-14 FACH_DTXDRX-Core
=> Noted.

[R2-164646](#) LS on Updates on HS-SCCH DRX Feature in Cell FACH ([R1-167914](#); contact: Qualcomm) LS in to: RAN2 Rel-14 FACH_DTXDRX-Core
=> Noted.

[R2-164929](#) Discussion on DTX enhancement in CELL_FACH Huawei, HiSilicon discussion

E///: For power control, none in DTX and if retransmissions then power that is used could be wrong one. The gain of the feature in that case is not so clear.

Huawei: It depends on how feature is configured. If there are Re-TX then UE should not go into DTX.

E///: Then UE needs to be configured to wait. How does NW know that UE will have to perform Re-TX, before entering DTX.

Huawei: Inactivity timer is used to judge when UE enters DTX.

E///: Yes but this timer will need to be set to large value to 'allow' for possible RE-TX.

Huawei: We are not so concerned with Power Control, as DTX period is quite short.

E///: The transmission may fail because incorrect power is used, so we think it is a concern.

Huawei: RAN1 still discussing, but one solution is to have similar as for CELL_DCH.

=> Noted.

[R2-164930](#) Discussion on DRX enhancement in CELL_FACH Huawei, HiSilicon discussion

E///: A good summary, and we are quite aligned. We also agree we should try to reuse existing mechanism/formula where possible.

=> Noted.

[R2-164931](#) Introduction of DTX and DRX enhancements in CELL_FACH Huawei, HiSilicon CR 25.308 13.2.00175 - B Rel-14 FACH_DTXDRX-Core

E///: This spec should just contain the DRX, not DTX which should go to 25.319. To avoid duplication.

Huawei: We did it this way as the legacy DTX/DRX are described in both, but OK to avoid this duplication.

=> Postponed.

[R2-164932](#) Introduction of DTX and DRX enhancements in CELL_FACH Huawei, HiSilicon CR 25.319 13.1.00140 - B Rel-14 FACH_DTXDRX-Core

E///: Similar comment as for 25.308.

=> Postponed.

[R2-164933](#) Introduction of DTX and DRX enhancements in CELL_FACH Huawei, HiSilicon CR 25.300 13.2.00043 - B Rel-14 FACH_DTXDRX-Core

Huawei: We will not duplicate the description here, but just add reference to 25.308 and 25.319 for DRX and DTX respectively.

=> Postponed.

[R2-165443](#) Considerations on the DRX enhancements in CELL_FACH Ericsson discussion

Huawei: In RAN1 they have been discussing a fixed offset.

QC: Any value greater than 8ms is fine.

=> Noted.

Agreements:

- The value range of the IE "HS-DSCH Rx burst_{FACH}" to be extended (signalling details FFS) to include new values of 0.4 and 0.8 radio frames as per RAN1 LS [R2-164646](#).
- The value range of the IE "HS-DSCH DRX cycle_{FACH}" to be extended (signalling details FFS) to include a new maximum value of 64 frames.

[R2-165451](#) A discussion on requirements for HS-SCCH DRx feature in CELL FACH Qualcomm Europe Inc.(France) discussion

Huawei: The risk to miss the early indication may be high given that the Burst is only 1 or 2ms

QC: 640ms brings us closer to IDLE mode, and we think it is possible.

E///: Can we use 1 or 2 subframes?

QC: Yes depending on the signalled value.

QC: Propose a mail discussion to progress the CR for DRX, including the formulae.

=> Noted.

[R2-165453](#) Introduction of HS-SCCH DRx feature in enhanced Cell FACH Qualcomm Europe Inc.(France) CR 25.331 13.3.05884 - B Rel-14 FACH_DTXDRX-Core

=> the CR is revised in [R2-165735](#)

[R2-165735](#) Introduction of HS-SCCH DRx feature in enhanced Cell FACH Qualcomm Europe Inc.(France) CR 25.331 13.3.05884 1 B Rel-14 FACH_DTXDRX-Core

Huawei: What about capability?

QC: Yes we will need to provide CR to 25.306.

=> Postponed.

- ✉ **[95#44][UMTS/DTX DRX enh] Running CRs on HS-SCCH DRX (Qualcomm)**
 - CR to 25.331
 - CR to 25.306

13.3 WI: Multi-Carrier Enhancements for UMTS

(UTRA_MCe-Core, leading WG: RAN2; REL-14; started: Jun. 16; target: Dec 16; SID: [RP-161259](#))

Time budget 2 TUs

Incoming LSs:

- [R2-164625](#) LS on Multi-carrier enhancements (R3-161516; contact: Huawei) RAN3 LS in cc: RAN2 Rel-14 FS_UTRA_MCe
=> Noted,
- [R2-164633](#) LS on RAN1 multi-carrier enhancements for UMTS agreements (R1- 165511; contact: Huawei) RAN1 LS in to: RAN2 Rel-14 FS_UTRA_MCe
=> Noted.
- [R2-165063](#) Discussion on RRC configuration impacts due to MC enhancements Huawei, HiSilicon discussion

Proposal 1: It is proposed RAN2 to discuss and agree the modification of RRC configuration procedure for MC enhancements: the IE "E-DCH Transmission Time Interval", "Happy bit delay condition", "Scheduling Information Configuration" and "Reference E-TFCIs" shall be added for secondary UL frequency.

Samsung: We understand the need for E-DCH TTI Interval, but why the other IE's
Huawei: Because we can now have different TTI on each UL frequency.
Nokia: Will these new IE's be needed for legacy 2 & 2 TTI configuration
Huawei: Clarifies that these new IE's are only needed when the TTI differs between primary & secondary.

Proposal 2: It is proposed RAN2 to agree introducing the 10ms TTI configuration of DTX information for secondary uplink frequency.

Samsung: In general we should try to allow a combination of features that already exist for legacy MC, unless it is identified that such combination of features is not possible/feasible.
Huawei: We want to allow 10msTTI configuration for DTX which today is only supported for 2ms TTI.
Samsung: What is the limiting factor today, procedure text or ASN.1 signalling?
Huawei: We need to check more
Nokia: Is there a need for having DTX when TTI is different on primary and secondary?
QC: We think it is difficult to implement DTX when the TTI differs on primary and secondary. Perhaps we should contact RAN1.
Samsung: Wonders what the complexity is, as today the DTX works independently for each UL frequency.

=> Agreed to send LS to RAN1.

=> Noted

- [R2-165742](#) draft LS on Multi-carrier enhancements (to: RAN1; contact: Huawei) Huawei LS out Rel-14 UTRA_MCe-Core
 - ⇒ DTX => uplink DTX
 - ⇒ Update to "RAN2 is discussing the possibility of configuring Multi-Carrier enhancements in combination with legacy features. RAN2 would like to understand, in case that primary and secondary frequency is configured with different TTIs, whether it is feasible to configure uplink DTX on either primary frequency or secondary frequency or both."

- ⇒ To fill the name of the WI.
- ⇒ The CR is revised in [R2-165744](#)

[R2-165744](#) LS on Multi-carrier enhancements (to: RAN1; contact: Huawei) Huawei LS out Rel-14
UTRA_MCe-Core

- ⇒ The LS is approved.

Proposal 3: It is proposed RAN2 to agree that dual cell E-DCH transmission with DPDCH can be used when MC enhancements is configured.

Agreements:

Any new IE's needed in RRC signalling will only be added to allow the case of configuring a different TTI on secondary than on primary. The IE's needed are FFS

In general we should try to allow a combination of features that already exist for legacy MC, unless it is identified that such combination of features is not possible/feasible.

[R2-165064](#) Discussion on enhanced TTI switching in MC enhancements Huawei, HiSilicon discussion
Nokia: The TTI switching is not part of the WID objective. (RP-161259)
Huawei: The WID gives RRC configuration as an example.
Samsung: We also think the TTI switching is not part, but if companies have an interest to work on this then we need to check on the technical aspects. Maybe for TEI14.
Nokia: We can discuss this aspects, but not prioritise.
=> Noted.

[R2-165228](#) TTI switching for Multi-Carrier Enhancements Ericsson discussion
=> Noted.

[R2-165065](#) Discussion on E-TFC selection aspect in MC enhancements Huawei, HiSilicon discussion

Samsung: For P2, is the proposal to use the 10ms E-TFC selection for both the primary & secondary.
Huawei: Huawei confirms.
Samsung: This is not something we can conclude in RAN2, will need to check with RAN1/RAN4.
E///: We think there may be an issue with re-transmissions.
QC: There is paper in RAN1 on this aspect to be discussed.
=> Noted.

[R2-165066](#) Introduction of MC enhancements Huawei, HiSilicon CR 25.300 13.2.00044 - B
Rel-14 UTRA_MCe
NOTE: WI code should be "UTRA_MCe-Core"
E///: The 25.300 should reference the 25.319 where the feature is described.
=> Postponed

[R2-165067](#) Introduction of MC enhancements Huawei, HiSilicon CR 25.319 13.1.00141 - B
Rel-14 UTRA_MCe
NOTE: WI code should be "UTRA_MCe-Core"

[R2-165229](#) Switching of primary carrier Ericsson discussion
Samsung: This is similar to the discussion on the UL TTI switching. We should not prioritise this but we can look if time allows.
Huawei, Nokia: We agree.
=> Noted

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 contributions 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](#))

Including output from email discussion [94#36][UMTS/Joint UMTS-LTE] – running TP capturing RAN2 agreements (China Unicom)

Time budget 1 TU

[R2-165407](#) Running TP capturing RAN2 agreements China Unicom pCR 37.805 1.0.0 - - -
 result of email discussion [94#36][UMTS/Joint UMTS-LTE] Rel-14 FS_UTRA_LTE_JOP

- NN: For figure 2, the read line is for CS paging which applies to single standby case, for dual standby case, the CS paging should be directly from UMTS.
- ⇒ To add a note saying something like “for dual standby case, CS paging should come directly from UMTS side.”
- E///: why section 2&3 deleted?
- HW: there should be no changes to section 2&3.
- ⇒ There is no need to include section 2&3 in the TP.
- E///: for section 3, if we should refer to some abbreviations in other spec, for example, MME/EPC.
- HW: companies should check if all the abbreviations used in the TP were already defined in those references in section 2, if already defined, no need to put them under section 3.
- CUC: we should just check the part which was agreed by RAN2.
- ⇒ With the changes updated, the TP will be used as base line for further possible agreed TPs.
- ⇒ Will send an LS to RAN3, capturing all the TPs agreed by RAN2.
- ⇒ Revised in [R2-165745](#)

[R2-164961](#) Remaining issues for the solutions of joint operation China Unicom discussion

- ⇒ Noted.

[R2-165096](#) Discussion on dual standby in UMTS and LTE joint operation Huawei, HiSilicon discussion

- NN: agree with observation 1; for option 2, it should be similar as single standby case.
- HW: for observation 2, the difference is, there is no need to involve eNB for single standby case.
- NN: for the moment, we don't know which LTE uplink message to indicate to eNB.
- ⇒ Noted.

[R2-165485](#) Further considerations on Dual standby solution for HSPA and LTE Joint Operation Ericsson discussion

late

- NN: what's your purpose of those FFS, to put it in TR or just asking questions?
- E///: the intention is to have comparison between single standby and dual standby.
- CUC: would like to get some common understanding and possible solutions and capture into the TR.
- CUC: for some FFS, don't know how to progress.
- HW: we could treat all the discussion papers and then discuss all the FFSs to see if they are addressed by the proposed solutions, if not, we should list the remaining FFSs.
- ⇒ Noted.

[R2-165102](#) TP on dual standby in UMTS and LTE joint operation Huawei, HiSilicon pCR 37.805 1.0.0

- - - Rel-14 FS_UTRA_LTE_JOP
- E///: is there a need to have a figure for single standby?
- HW: for the TPs for dual standby, there is no need to touch single standby case, could remove all those texts related with single standby case
- NN: for the comparison, it should be captured in 7.4 which is for solution comparison.
- ⇒ Merged into [R2-165745](#)

[R2-165276](#) TP for Dual Standby in LTE&UMTS Joint Cooperation Nokia, Alcatel-Lucent Shanghai Bell, China Unicom discussion

- NN: some updates are needed to some figures, and there are some typos.
- CUC: from the papers from E, HW and NN, we could reach common understanding on use case 1, suggest to use HW's TP as base line.
- NN: for the case of connected UE in UMTS initiating PS service, case 3, signalling flow for dual standby is similar as for single standby.
- ⇒ Noted.

Discussions:

NN: assuming there is no interworking between RNC and eNB, how network capability is known to each other, for single standby case?

Idle mode operation and the camping strategy

FFS: The impact on LTE and UTRAN for Broadcast information on network support of Joint operation

Common understanding: network has to broadcast the capability of supporting concurrent transmission.

FFS: Each time the UE enters or leaves the service area for Joint operation, it needs to register/deregister with the appropriate core network to secure the availability of PS services. How this can be done and whether the UE behavior needs to be specified need further study.

Common understanding: leave to UE implementation, just as current dual standby UE does, no specification impacts.

FFS: The UE needs to resolve potential conflicts between Dual standby and the broadcast inter-RAT cell reselection criteria. How this can be done and whether the UE behavior needs to be specified need further study.

Common understanding: this is more a network implementation.

Data transmission and reception and connected mode operation in LTE.

For a Dual standby solution, it must be possible to activate time multiplexing between UMTS and LTE during an ongoing connection on a need basis i.e. avoid any static configuration.

Leave it to afternoon session discussion, it should be common for both single and dual standby case.

Addition of CS service

If it is possible to perform the signaling (including the random access procedure) for setting up the CS RAB in UTRAN before the required time-multiplexing is configured, and the impact of this on the ongoing PS call and the setup of the CS call; if not possible, the DTX/DRX pattern in E-UTRAN needs to be configured before the CS connection can be set-up. This will require study on the impact on call setup delay and whether DCH enhancement can be set up for stand-alone SRB.

it should be common for both single and dual standby case.

CS operation in UTRAN connected mode

FFS: The criteria for disabling Joint operation due to "too frequent" fallback to the 20ms mode and whether the criteria need to be specified or left for UE implementation.

QC: in the WI phase, we could investigate if such a fall back mechanism is needed or not.

NN: not sure about "too frequent" means. E///: it is not precise, the intention is to say somehow network may need to fallback.

Common for both single and dual standby case.

FFS: The procedure for disabling Joint operation during a voice call.

HW: concern on this use case.

NN: maybe it is initiated by UE to stop joint operation.

QC: that would be simple from UE side, could be up to UE implementation. UE could initiate a RAU to be disconnected from LTE side.

E///: in the WI phase, we could discuss if anything to be specified for such disabling behaviour. From network side, this disabling behaviour should be common for single and dual standby case, from UE side, it is up to UE implementation.

FFS: If the disabling of Joint operation should be immediate or is it possible to wait until the start of a PS call.

- E///: the intention is, if disabling is allowed, how it should work, immediate or another way.
- NN: it should be immediate.
- QC: also think it would be better to be immediate disabling.
- NN: this was captured in our TP.

⇒ If disabling is allowed, we could use LTE RRC connection release or deregister from LTE to do it. It is also common for dual standby and single standby case.

Addition of PS service

FFS: Whether in LTE it is possible to perform the signaling (including random access) for setting up the time multiplexing needed for Joint operation and the impact on the call setup delay.

it should be common for both single and dual standby case

FFS: If it is decided for use case 3a that the disabling of Joint operation due to coverage should be delayed until this use case, the impact on performance in LTE (e.g., call setup delay) and procedural aspects need to be investigated.

⇒ No longer needed here.

⇒ We will use TP from NN as baseline for dual standby case, and merge some TPs from Huawei's paper.

[R2-165493](#)

Further considerations on Concurrent operation solution for HSPA and LTE Joint Operation
Ericsson discussion

late (general)

Configuration of Concurrent PS and CS operation in LTE and UMTS

FFS: How to set up a DTX/DRX pattern in LTE that matches the DTX pattern of the DCH enhancement 10ms mode.

- QC: UMTS should align with LTE, LTE set DTX/DRX, UMTS will align with LTE after.
- E///: fine for the case of PS ongoing and adding CS, but what for the opposite case.
- QC: maybe some voice packet might be lost without being noticed by UE.
- HW: QC's paper has solutions to those FFSs, maybe we should take a look at QC's paper first.

⇒ Covered in QC's paper, UMTS should firstly align with LTE timing, then DTX/DRX pattern setup by LTE could match with DCH+ pattern.

FFS: If it is possible in LTE to configure the offset of the DTX/DRX pattern to any value or if it is necessary to reconfigure the chip timing of an ongoing connection in UMTS to match the DTX/DRX offset in LTE.

⇒ Also covered in QC's paper, similar as above.

FFS: Configuration of a connection in UMTS with a specific chip time on the UE's request.

⇒ UE should report the timing difference to UMTS network, and UMTS network will configure the offset to UE, so that the timing is aligned between UMTS and LTE at UE side.

FFS: The disturbance on the existing connection (in both LTE and UMTS) and the impact on call setup delay of the new connection.

⇒ FFS remains here, we need to analysis how long the gap is needed and to what extent the UMTS call setup delay will be impacted. (see conclusion for QC's paper [R2-165535](#))

Concurrent PS and CS operation in LTE and UMTS

FFS: The criteria for disabling Joint operation due to the need to fall back to the 20ms mode in UMTS and whether the criteria need to be specified or left for UE implementation.

- HW: we could just apply what we concluded for dual standby case.

⇒ Regarding the criteria, it is up to network implementation; PS call is terminated in LTE side.

FFS: Strategy for handling the PS connection in LTE when disabling Joint operation due to loss of coverage.

⇒ Covered by the FFS above.

-

FFS: Degradation in signaling latency in LTE.

⇒ There will be negative impacts on LTE RRC establishment latency.

-

FFS: How the MME is informed of the return of the UE from UMTS.

⇒ With combined TAU trigger, there is no restriction that UE has to be in idle; but triggering condition is a new one, that should be stage 3 details.

-

FFS: If a baseline LTE procedure can be used to reconfigure the DTX/DRX setting of the connection. If not, how the new procedure should work.

⇒ With legacy LTE RRC message, maybe no change, just reuse C-DRX reconfiguration. (stage 3 details).

-

[R2-165535](#)

Solution description for concurrent UMTS CS and LTE PS Qualcomm Incorporated discussion

- E///: in section 2.2, it is not obvious that this could work without LTE new signalling or new IEs.
- QC: it could be called as a UE decided gap.
- NN: how long is the gap?
- QC: around 100ms.

- QC: we are fine with a network based approach, we just can confirm that from UE side, either UE based or network based approach could work.
- NN: there might be radio link failure when UE is moving.
- QC/HW: for uplink failure, it is up to network; for downlink, UE could always receive.
- E///: we think MME might be impacted.
- QC: LTE knows when CS in UMTS is completed and UE returns to LTE.
- E///: the difference is, currently, when TAU is triggered, LTE is in idle; but in our case here, now UE is RRC connected.
- HW/QC: in combined TAU trigger, there is no restriction that UE has to be in idle; but triggering condition is a new one, that should be stage 3 details.
- ⇒ FFS: for use case of LTE connected UE trying to initiate CS service, how long the GAP should be, during the period of GAP, what are the negative impacts to UMTS RRC establishment procedure.
- ⇒ Concurrent transmission based on 10ms+10ms mode could work, assuming RRC is established in both UMTS and LTE side.
- ⇒ Noted

- [R2-165484](#) Further considerations on single standby solution for HSPA and LTE Joint Operation Ericsson discussion late single standby
- E///: most of the FFSs were covered by previous discussion paper, the last FFS is a new one.
 - HW: it was also covered by the TAU related discussion, and no new cause is needed.
 - E///: for 1d, the CSFB procedure has to be updated, e.g. indication of concurrent operation, so that UE is still camped on LTE.
 - HW: yes, we agree, and in HW/QC's paper, such indication was illustrated in the figure.
 - ⇒ Noted.

- [R2-165097](#) Discussion on UMTS and LTE interworking enhancements Huawei, HiSilicon discussion
- NN: we see papers in RAN3 from E/// on this topic.
 - E///: we share the observation in this paper, our intention is, on top of the existing enhanced CSFB mechanism, i.e. UMTS SI container could be pre-configured to UE, so that access latency in UMTS side could be similar as existing enhanced CSFB procedure.
 - E///: let's see how the discussion is ongoing in RAN3, then we will see if we need some TPs for next meeting.
 - ⇒ Noted.

- [R2-165091](#) U&L joint operation case 1 analysis Huawei, HiSilicon discussion
- NN: maybe we just need to capture eNB controlling solution.
 - HW: fine.
 - HW: we are not sure what if RAN3 will progress, but the two solutions are similar on joint operation configuration procedure.
 - E///: in figure 2, seems MME also impacted?
 - HW: capability is reported to eNB, MME not touched.
 - ⇒ Noted.

- [R2-165092](#) U&L joint operation case 2 analysis Huawei, HiSilicon discussion
- HW: QC has a slight different proposal, we are open, seems QC's is better.
 - ⇒ Noted.

- [R2-165094](#) U&L joint operation case 3 analysis Huawei, HiSilicon discussion
- E///: for figure 1, as we discussed, we would like network to configure the gap; for the UE indication of finishing CS or PS, we are fine to have it, it should be good for the network to know the service in other side is finished.
 - NN: for case 3, we suppose the network which configures gap should be RNC.
 - ⇒ Noted.

[R2-165099](#) TP of solutions on use case 1 Huawei, HiSilicon pCR 37.805 1.0.0 - - - Rel-14
FS_UTRA_LTE_JOP

[R2-165100](#) TP of solutions on use case 2 Huawei, HiSilicon pCR 37.805 1.0.0 - - - Rel-14
FS_UTRA_LTE_JOP

[R2-165101](#) TP of solutions on use case 3 Huawei, HiSilicon pCR 37.805 1.0.0 - - - Rel-14
FS_UTRA_LTE_JOP

- ⇒ We use QC's proposed TP in [R2-165535](#) as baseline for single standby use case, and merge Huawei's TP.
- ⇒ Regarding timing alignment, we will focus on option B; for the purpose of minimizing the impact on LTE, it is RAN2 group's understanding that option A is not preferred.
- ⇒ Merged into [R2-165745](#)

[R2-165103](#) TP on conclusion on RAN2 solutions for UMTS and LTE joint operation Huawei, HiSilicon
pCR 37.805 1.0.0 - - - Rel-14 FS_UTRA_LTE_JOP

- ⇒ Merged into [R2-165745](#)

[R2-165280](#) TP for solution impact analysis in LTE&UMTS Joint Cooperation Nokia, Alcatel-Lucent
Shanghai Bell discussion

- HW: for the call setup time in real networks, could you please provide more details, e.g. parameters or working assumptions.
 - E///: given the time, we could not reach consensus on the solution comparison for the moment.
 - CUC: we could just list the procedure and details of each solution, maybe there is no need to have comparison part.
 - QC: in our proposal, we don't have CN impacts. Regarding the latency, our proposal is similar as legacy CSFB mechanism.
- ⇒ Noted

[R2-165745](#) TP on RAN2 agreements on UMTS and LTE joint operation ChinaUnicom pCR 37.805
1.0.0 - - - Rel-14 FS_UTRA_LTE_JOP

The TP will go for email approval, to be submitted to RAN#73

- ☒ **[95#18][UMTS/LTE JOP] TP on RAN2 agreements and LS to RAN3 (China Unicom)**
 - TP on RAN2 agreements on UMTS and LTE joint operation
 - LS to RAN3 on RAN2 agreements on UMTS and LTE joint operation

Discussion Deadline: Friday 2nd September.

Withdrawn:

[R2-164960](#) Remaining issues for the solutions of joint operation China Unicom discussion

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!

No contributions received.

14 Outgoing LSs and email discussions from UTRA session

14.1 Agreed outgoing LSs from UTRA session

[R2-165744](#) **LS on Multi-carrier enhancements (contact: Huawei) RAN1 LS out Rel-14 FS_UTRA_Mce**

14.2 Email discussions from UTRA

- ☒ **[95#16][UMTS/DL enh] CR on seamless transition to CELL-FACH (Ericsson)**
 - The purpose is to agree the CR for the plenary. Deadline: Sep.2
 - Discussion Deadline: one week after meeting.

- ☒ **[\[95#17\]\[UMTS/RRC opt\] CR on UPH reporting \(Ericsson\)](#)**

- ⇒ [Intended outcome: email approval for plenary](#)

- ⇒ [Discussion deadline: Friday, Sep 2nd](#)

- ✉ **[95#44][UMTS/DTX DRX enh] Running CRs on HS-SCCH DRX (Qualcomm)**
 - CR to 25.331
 - CR to 25.306

- ✉ **[95#18][UMTS/LTE JOP] TP on RAN2 agreements and LS to RAN3 (China Unicom)**
 - TP on RAN2 agreements on UMTS and LTE joint operation
 - LS to RAN3 on RAN2 agreements on UMTS and LTE joint operation

Discussion Deadline: Friday 2nd September.

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

- [R2-165840](#) Report from LTE Break-Out Session, Vice-Chair (InterDigital)
CBF: Report from LTE Break-Out Session, Vice-Chair (InterDigital)
=> Note that the TR 36.746 v0.1.0 which is clean version of agreed TR 36.746 v0.0.1 in [R2-165597](#) provided in [R2-165749](#)
=> Approved
- [R2-165757](#) Corrections on system information acquisition for Sidelink discovery Huawei, HiSilicon CR 36.331 13.2.02294 1 A Rel-13 LTE_D2D_Prox-Core
=> Withdrawn, changes of the CR are covered elsewhere.
- [R2-165758](#) Correction of UE requirements regarding SIB19 acquisition Samsung Telecommunications CR 36.331 13.2.02274 1 F Rel-13 LTE_eD2D_Prox-Core
=> Agreed
- [R2-165774](#) LS to RAN1 on exceptional pool handling Oppo LS out to: RAN1 from:
RAN2 Rel-14 LTE_SL_V2V-Core
=> Approved in [R2-165962](#)
- [R2-165775](#) WF on V2V work item LG Electronics Inc. Discussion Rel-14
LTE_SL_V2V-Core
=> RAN2 agree to include in the CRs for V2V WI the completed set of objectives (i.e. set 1 in the document) to target work item completion.
- [R2-165776](#) Correction to Sidelink Discovery Gap for Transmission CR
=> Agreed
- LS from RAN1
- [R2-165767](#) Introduction of L2 Latency reduction techniques running CReEricsson CR 36.321 13.2.0-0920 B Rel-14 LTE_LATRED_L2-Core
✉ **[95#07][LTE/Latency reduction] – CR to 36.321 – Ericsson**

- Include possible agreements as a result of RAN1 LS
 - Agree on CR to 36.321
 - Deadline: one week after the meeting
- ☒ **[95#08][LTE/Latency reduction] – CR to 36.331 – Ericsson**
- Agree on CR to 36.331 ([R2-165766](#) CR 2341)
 - Deadline: one week after the meeting

[R2-164657](#) Reply LS on RAN2 Agreements on Skipping Uplink Transmission RAN1

- Intel think based on tis we can remove the aspects in RV0 from the MAC spec. Qualcomm agree with Intel.

=> New input from RAN1 needs to be taken into account in email discussion on MAC CR, and potentially RRC CR.

=> Noted

15.1.2 Report from LTE Break-Out session

[R2-165841](#) Report from LTE Break-Out Session, Vice-Chair (CMCC)
CBF: Report from LTE Break-Out Session, Vice-Chair (CMCC)
feMBMS:

- => Bullet 3 under feMBMS is an agreement (not working assumption)

Mobility enhancements:

- LG ask is TA=0 decision for mobility enhancements is also a good assumption for other cases such as LAA. Intel think that TA=0 is appropriate for other cases of small cells.

=> Mobility enhancement agreement 3 can be re discussed at the next meeting. Can be treated as a working assumption for the purposes of drafting the CRs.

Light connection

- Intel point out that some agreements in the report were not included in the summary.

=> In the report, [R2-165789](#) was duplicated so one of [R2-165789](#) (Video Use Case TP based on [R2-164992](#) Intel TP) was changed with [R2-165798](#) which was agreed.

=> Approved

☒ **[95#31][LTE/Light connection] Progress FSS (Intel)**

Progress selected FSS items based on contributions that were submitted to the meeting.
Selection of appropriate FFS items to be performed by the rapporteurs
Intended outcome: Email discussion report to the next meeting
Deadline: Thursday 22/09/2016

=> **CB Friday:** Send an LS to RAN1/3/4 to inform our progress after this meeting and ask the feasibility of solutions we will further considered. The draft LS will be provided in [R2-165786](#) (ZTE). In the LS, we should indicate that RAN3 should fix the data forwarding issue.

[R2-165786](#) DRAFT –LS on further mobility enhancements (to: RAN1, RAN3, RAN4; cc: -; contact: ZTE)
ZTE Corporation LS out Rel-14 LTE_eMob-Core

=> Revised in [R2-165787](#)

[R2-165787](#) DRAFT –LS on further mobility enhancements (to: RAN1, RAN3, RAN4; cc: -; contact: ZTE)
ZTE Corporation LS out Rel-14 LTE_eMob-Core

=> Add a note saying "In addition RAN2 agreed agreement 3 can be re discussed at the next meeting. Can be treated as a working assumption for the purposes of drafting the CRs"

=> Approved in [R2-165969](#)

eMBMS

=> **CB Friday:** Draft an LS to RAN1 to inform our progress of this meeting. The draft LS will be provided in [R2-165794](#). (Qualcomm)

[R2-165794](#) [DRAFT] LS on RAN2 agreements on FeMBMS (to: RAN1; cc: -; contact: Qualcomm)
Qualcomm LS out Rel-14 MBMS_LTE_enh2-Core

NOTE: Wrong Tdoc number and WI code used

=> Approved in [R2-165970](#)

=> **CB Friday:** Draft reply LS to SA2, provided in [R2-165797](#) (Nokia) (Not correct number!!)

[R2-165797](#) Reply LS on RAN impacts of Shared MBMS Network and Receive Only Mode in eMBMS
draft LS Nokia
=> Approved in [R2-165971](#)

15.1.3 Report from NB-IOT session

[R2-165842](#) Report from NB-IOT Break-Out Session, Session Chair (MediaTek)
CBF: Report from LTE Break-Out Session, Session Chair (MediaTek)
=> Report approved

Comebacks

[R2-165825](#) Issue on resume procedure ZTE Corporation CR 36.331 13.2.02258 2 F Rel-13 NB_IOT-Core
Status: This CR is Endorsed, pending offline check of solution (Ericsson). Initial comments have been addressed in this version. Awaiting final approval.
- Samsung would like some more time to check
=> Agreed
-

[R2-165822](#) Alignment of procedure when handling up-CIoT-EPS-Optimisation Intel Corporation CR 36.331 13.2.02272 1 F Rel-13 NB_IOT-Core
Revision of [R2-164997](#). Not yet agreed, applies also to TEI13. Allocated to Friday comebacks by author's request.
=> Agreed

[R2-165946](#) nrs-Power signaling for NB-IoT non-anchor carrier ZTE Corporation CR 36.331 13.2.02346 - F related with RAN1 LS [R2-164656](#) Rel-13 NB_IOT-Core
- new CR related to new incoming LS
=> Agreed

15.2 UMTS breakout session

15.3 Main session

This section contains a temporary list of comebacks which is used during the meeting.

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.

- ☒ [95#23][LTE/UMTS] LTE capability signalling in UMTS (Intel)
- ☒ [95#01][LTE/Intraband CA] (Nokia)
- ☒ [95#02][LTE/CA] CR on CA band combination signalling (DOCOMO)
- ☒ [95#19][LTE/eDRX] CR on PH and PTW start calculation (DOCOMO)
- ☒ [95#03][LTE/FD-MIMO] CR on 12/16 CSI-RS resource (NEC)
- ☒ [95#04][LTE/CCH-IM and CRS IM] 36.331 and 36.306 CR (Qualcomm)
- ☒ [95#05][LTE/UL categories] LS to RAN on new UL categories (Qualcomm)
- ☒ [95#20][LTE/eLWA] 36.300 running CR (Intel)
- ☒ [95#21][LTE/eLWA] 36.331 running CR (Intel)

- ☒ [95#22][LTE/eLWA] 36.323 running CR (Intel)
- ☒ [95#24][LTE/eLWA] PDCP key change at handover (Nokia)
- ☒ [95#25][LTE/IP] Progress specific of WLAN assistance data (Intel)
- ☒ [95#26][LTE/NR] Update TR (DOCOMO)
- ☒ [95#26][LTE/NR] Concatenation (Ericsson)
- ☒ [95#27][LTE/NR] Reordering (Intel)
- ☒ [95#28][NR] Data transmission in 'new state' (Huawei)
- ☒ [95#29][NR] On demand SI (Samsung)
- ☒ [95#30][NR] Capability coordination for NR and LTE (Qualcomm)
- ☒ [95#16][UMTS/DL enh] CR on seamless transition to CELL-FACH (Ericsson)
- ☒ [95#17][UMTS/RRC opt] CR on UPH reporting (Ericsson)
- ☒ [95#44][UMTS/DTX DRX enh] Running CRs on HS-SCCH DRX (Qualcomm)
- ☒ [95#18][UMTS/LTE JOP] TP on RAN2 agreements and LS to RAN3 (China Unicom)
- ☒ [95#16][UMTS/DL enh] CR on seamless transition to CELL-FACH (Ericsson)
- ☒ [95#17][UMTS/RRC opt] CR on UPH reporting (Ericsson)
- ☒ [95#44][UMTS/DTX DRX enh] Running CRs on HS-SCCH DRX (Qualcomm)
- ☒ [95#18][UMTS/LTE JOP] TP on RAN2 agreements and LS to RAN3 (China Unicom)
- ☒ [95#07][LTE/Latency reduction] – CR to 36.321 – Ericsson
- ☒ [95#08][LTE/Latency reduction] – CR to 36.331 – Ericsson
- ☒ [95#31][LTE/Light connection] Progress FSS (Intel)
- ☒ [LTE/V2V] – SPS – Ericsson
- ☒ [LTE/V2V] – CR to 36.321 – LG
- ☒ [LTE/V2V] – CR to 36.331 – Huawei
- ☒ [LTE/V2V] – CR to 36.323 – CATT
- ☒ [LTE/V2V] – CR to 36.304 – CATT
- ☒ [LTE/V2V] – CR to 36.302 – Huawei
- ☒ [LTE/V2V] – CR to 36.300 – LG
- ☒ [LTE/FeD2D] – Update TR 36.746 LG
- ☒ [LTE/FeD2D] – Capture requirements – Ericsson
- ☒ [LTE/FeD2D] – Scenarios and RRC states - Huawei
- ☒ [LTE/Latency reduction] – CR to 36.321 – Ericsson
- ☒ [LTE/Latency reduction] – CR to 36.331 – Ericsson
- ☒ [LTE/V2V] – SPS – Ericsson
- ☒ [LTE/V2V] – CR to 36.321 – LG
- ☒ [LTE/V2V] – CR to 36.331 – Huawei

- ☒ [LTE/V2V] – CR to 36.323 – CATT
- ☒ [LTE/V2V] – CR to 36.304 – CATT
- ☒ [LTE/V2V] – CR to 36.302 – Huawei
- ☒ [LTE/V2V] – CR to 36.300 – LG
- ☒ [LTE/FeD2D] – Update TR 36.746 - LG
- ☒ [LTE/FeD2D] – Capture requirements – Ericsson
- ☒ [LTE/FeD2D] – Scenarios and RRC states - Huawei
- ☒ [94#xx][LTE/eVoLTE] TR 36.750 completion (CMCC/Huawei)
- ☒ [95#xx][LTE/eMob] Running stage 2 CR of introducing eMob (Intel)
- ☒ [95#xx][LTE/eMob] Running stage 3 CR of introducing eMob (ZTE)
- ☒ [95#xx][LTE/Light Con] Running stage 2 CR of light connection (Huawei)
- ☒ [94#xx][LTE/eVoLTE] TR 36.750 completion (CMCC/Huawei)
- ☒ [95#xx][LTE/eMob] Running stage 2 CR of introducing eMob (Intel)
- ☒ [95#xx][LTE/eMob] Running stage 3 CR of introducing eMob (ZTE)
- ☒ [95#xx][LTE/Light Con] Running stage 2 CR of light connection (xxxx)
- ☒ Email discussion to next meeting (Neul), on processing delays, including start-stop definitions and values.
- ☒ Email discussion on the need for a feedback mechanism for SC-PTM for NB-IoT and/or MTC (Huawei).
- ☒ RACH on non-anchor carrier, clarify and to extent possible narrow down the options (CATT)
- ☒ Email discussion Paging open issues clarify and to extent possible narrow down the options (Ericsson)
- ☒ Mobility, to structure proposals and determine possible ways forward. Can also discuss the problems to be solved (Nokia)
- ☒ [NB-IoT] Email discussion to next meeting (Neul), on RRC processing delays.
- ☒ [eNB-IoT] Email Discussion RACH on non-anchor carrier, clarify and to extent possible, narrow down the options (CATT)
- ☒ [eNB-IoT] Email discussion Paging open issues, clarify and to extent possible, narrow down the options (Ericsson)
- ☒ [eNB-IoT] Mobility Enhancements, to structure proposals and determine possible ways forward. Can also discuss the problems to be solved (Nokia)
- ☒ Email discussion on the need for a feedback mechanism for SC-PTM for NB-IoT and/or MTC (Huawei).

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)

No contributions received.

Approved LSs

Please see Annex D.

17 Any other business

Future meeting dates

Click [here](#) for the overview of all RAN2 and RAN meeting dates.

18 Closing of the meeting (17:10)

The TSG RAN WG2 chairman Richard Burbidge (Intel Corporation) thanked the delegates for participating and session chairs for contributing to RAN WG2 meeting #95. He also thanked the European Friends of 3GPP (EF3) for hosting this meeting.

TSG RAN WG2 chairman Richard Burbidge (Intel Corporation) closed the meeting on Friday 26.08.2016 around 17:10.

Annex A: List of participants

The list of participants of this RAN WG2 meeting #95 is at: <http://webapp.etsi.org/3GPPRegistration/fViewPart.asp?mid=31669>

Total number of participants: 267 (registered 341)

Annex B: List of Tdocs

The list of Tdocs of this RAN WG2 meeting #95 is attached to this report.

Total number of Tdocs: 1393 of which 381 Tdocs are not available, i.e. 1375 Tdocs are available.

Annex C: Incoming liaison statements for TSG RAN WG2 #95

RAN2 Tdoc	title (original Tdoc; contact)	source	original Tdoc	status	final LS answer	additional comments
R2-164603	Reply LS response to R3-161028 = R2-163311 on lower layer failure (C1-162977; contact: Samsung)	CT1	C1-162977	noted		
R2-164604	LS on HS-SCCH DRx Design in Cell Fach (R1-165512 ; contact: Qualcomm)	RAN1	R1-165512	noted		
R2-164605	LS on OTDOA for the same PCI (R1-165853 ; contact: Huawei)	RAN1	R1-165853	noted		
R2-164606	LS on RAN1 agreements potentially related to RAN2 in sidelink-based V2V (R1-165965 ; contact: LGE)	RAN1	R1-165965	noted		

RAN2 Tdoc	title (original Tdoc; contact)	source	original Tdoc	status	final LS answer	additional comments
R2-164607	Reply LS to R2-164565 on the feasibility of mobility enhancement solutions (R1-165996 ; contact: ZTE)	RAN1	R1-165996	noted		
R2-164608	LS on NB-IoT Performance (R1-166037 ; contact: Huawei)	RAN1	R1-166037	noted		
R2-164609	LS on DRX and Reception of PDCCH scrambled by CC-RNTI (R1-166038 ; contact: Panasonic)	RAN1	R1-166038	noted		
R2-164610	Response LS to IEEE 802.11 regarding LAA (R1-166040 ; contact: Qualcomm)	RAN1	R1-166040	noted		
R2-164611	Response LS to Wi-Fi Alliance regarding LAA (R1-166041 ; contact: Qualcomm)	RAN1	R1-166041	noted		
R2-164612	Reply LS to R4-163150 = R2-163313 on continuous uplink transmission in eMTC (R1-166042 ; contact: Intel)	RAN1	R1-166042	noted		
R2-164613	LS on Uplink Capacity Enhancements for LTE (R1-166044 ; contact: Ericsson)	RAN1	R1-166044	noted		
R2-164614	Response LS to S3-160694 = R2-163328 on Clarifications on RRC Resume Request (R3-161426; contact: Nokia)	RAN3	R3-161426	noted		
R2-164615	Reply LS on Formation of IEEE 1914 Next Generation Fronthaul Interface Working Group (R3-161538; contact: Intel)	RAN3	R3-161538	noted		
R2-164616	Response LS to R2-163135 on the feasibility of mobility enhancement solutions (R3-161542; contact: ZTE)	RAN3	R3-161542	noted		
R2-164617	Reply LS to R2-163135 on the feasibility of mobility enhancement solutions (R4-164906; contact: ZTE)	RAN4	R4-164906	noted		
R2-164618	LS on continuous uplink transmission in eMTC (R4-164928; contact: Intel)	RAN4	R4-164928	noted		
R2-164619	Reply LS to R1-163746 = R2-163319 on V2V multicarrier configuration (R4-164930; contact: LGE)	RAN4	R4-164930	noted		

RAN2 Tdoc	title (original Tdoc; contact)	source	original Tdoc	status	final LS answer	additional comments
R2-164620	Reply LS to R2-164575 on eDRX Paging Hyper-frame and PTW_Start Calculation (RP-161311 ; contact: NTT DOCOMO)	RAN	RP-161311	noted		
R2-164621	LS on RAN impacts from Receive Only Mode UE (S2-164141; contact: Huawei)	SA2	S2-164141	noted		
R2-164622	LS on Multiple RoHC Contexts for MMCMH (S4-160725; contact: Qualcomm)	SA4	S4-160725	noted		
R2-164623	Reply LS to R2-163123 on Maximum upper layer data packet size for NB-IoT (C1-163141; contact: Nokia)	CT1	C1-163141	noted		
R2-164624	LS on L1 parameters for sidelink-based V2V (R1-165968 ; contact: LGE)	RAN1	R1-165968	noted		
R2-164625	LS on Multi-carrier enhancements (R3-161516; contact: Huawei)	RAN3	R3-161516	noted		
R2-164626	LS on enhancement of VoLTE (R3-161519; contact: Huawei)	RAN3	R3-161519	noted		
R2-164627	LS on V2V Authorization (R3-161540; contact: Huawei)	RAN3	R3-161540	noted		
R2-164628	LS on 256QAM support for UE Category 9/10 from Rel-12 (RP-161327 ; contact: Intel)	RAN	RP-161327	noted		
R2-164629	LS Response to R2-163134 on QoS requirements for V2X (S2-163081; contact: Huawei)	SA2	S2-163081	noted	R2-165773	
R2-164630	Response LS to RP-160669 = on CSG and LIPA support in DC (Dual Connectivity) enhancements for LTE (S2-163205; contact: Nokia)	SA2	S2-163205	noted		
R2-164631	LS on QoE reporting for streaming services (S4-160866; contact: Huawei)	SA4	S4-160866	noted	R2-165972	
R2-164632	Response LS to S3-160831 = R2-163325 on Progress on Security for LWIP (SP-160457; contact: Nokia)	SA	SP-160457	noted		
R2-164633	LS on RAN1 multi-carrier enhancements for UMTS agreements (R1-165511; contact: Huawei)	RAN1	R1- 165511	noted		

Report of 3GPP TSG RAN WG2 #95, Gothenburg, Sweden, August 22 - 26, 2016

RAN2 Tdoc	title (original Tdoc; contact)	source	original Tdoc	status	final LS answer	additional comments
R2-164634	LS on Priority for V2V (R1-165814 ; contact: Qualcomm)	RAN1	R1-165814	noted	R2-165765	
R2-164635	Reply LS to S2-163061 = R2-164385 on delay tolerant access via NB-IOT (C1-164010; contact: Qualcomm)	CT1	C1-164010	noted	R2-165824	
R2-164636	LS on prioritization of NAS signalling (C1-164015; contact: Ericsson)	CT1	C1-164015	noted		
R2-164637	Reply LS to R2-164582 on eDRX paging timing calculation and security concern (S3-161153; contact: NTT DOCOMO)	SA3	S3-161153	noted		
R2-164638	Reply LS to R2-164557 on PDCP ciphering for high data rates in eLWA (S3-161223; contact: Qualcomm)	SA3	S3-161223	noted		
R2-164639	Reply LS to R2-163288 on Multiple bearer capability handling (C1-163890; contact: Intel)	CT1	C1-163890	noted		
R2-164640	LS out on RAN impacts from enTV study of SA WG2 (S2-163212; contact: Qualcomm)	SA2	S2-163212	noted	R2-165971	
R2-164641	LS on Enhanced LAA for LTE (R1-166050 ; contact: Ericsson)	RAN1	R1-166050	noted		LS received during the meeting
R2-164642	LS on L1 parameters for Enhanced LAA (R1-166051 ; contact: Ericsson)	RAN1	R1-166051	noted		LS received during the meeting
R2-164643	Reply LS to R2-163135 on the feasibility of mobility enhancement solutions (R1-166053 ; contact: ZTE)	RAN1	R1-166053	noted	R2-165765	LS received during the meeting
R2-164644	LS on RRC Parameters and PRACH for Enhanced LAA for LTE (R1-166052 ; contact: Ericsson)	RAN1	R1-166052	noted		LS received during the meeting
R2-164645	Reply LS to R2-164559 for clarification on MIMO capability (R1-167914 ; contact: Huawei)	RAN1	R1-167914	noted		LS received during the meeting
R2-164646	LS on Updates on HS-SCCH DRX Feature in Cell FACH (R1-167914 ; contact: Huawei)	RAN1	R1-167914	noted		LS received during the meeting

RAN2 Tdoc	title (original Tdoc; contact)	source	original Tdoc	status	final LS answer	additional comments
R2-164647	Reply LS to R2-164566 on VoLTE and video quality related enhancements (R1-168256 ; contact: CMCC)	RAN1	R1-168256	noted		LS received during the meeting
R2-164648	LS regarding agreements for FeMTC (R1-168300 ; contact: Qualcomm)	RAN1	R1-168300	noted		LS received during the meeting
R2-164649	LS on applicability of NRSRQ measurement (R4-166696; contact: Huawei)	RAN1	R4-166696	noted		LS received during the meeting
R2-164650	LS on RAN1 agreements in sidelink-based V2V (R1-168251 ; contact: LGE)	RAN1	R1-168251	noted		LS received during the meeting
R2-164651	LS on L1 parameters for sidelink-based V2V (R1-168252 ; contact: LGE)	RAN1	R1-168252	noted		LS received during the meeting
R2-164652	LS on introduction of new UL categories in Rel-13 (R1-168459 ; contact: Qualcomm)	RAN1	R1-168459	noted		LS received during the meeting
R2-164653	LS on introduction of new UL categories in Rel-14 (R1-168460 ; contact: Qualcomm)	RAN1	R1-168460	noted		LS received during the meeting
R2-164654	LS on further RRC Parameters for Enhanced LAA for LTE (R1-168346 ; contact: Ericsson)	RAN1	R1-168346	available		LS received during the meeting
R2-164655	LS on Timing Offset Indication for V2V (R1-168250 ; contact: Ericsson)	RAN1	R1-168250	noted		LS received during the meeting
R2-164656	LS on nrs-Power signaling for NB-IoT non-anchor carrier (R1-168497 ; contact: ZTE)	RAN1	R1-168497	noted		LS received during the meeting
R2-164657	Reply LS to R2-164554 on RAN2 Agreements on Skipping Uplink Transmission (R1-168528 ; contact: Nokia)	RAN1	R1-168528	noted		LS received during the meeting
R2-164658	LS on LTE Rel-13 UE feature list (R4-167200; contact: Qualcomm)	RAN4	R4-167200	noted		LS received during the meeting

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: 56 LSs (4 on UTRA, 52 on LTE, 0 on joint aspects)

Report of 3GPP TSG RAN WG2 #95, Gothenburg, Sweden, August 22 - 26, 2016

- 2 resubmissions from RAN2 #94
- 55 incoming LSs were noted and 1 were not treated as late incoming LSs.
- 18 of the 56 incoming LSs were received after Tdoc allocation deadline for RAN2 #95 meeting:
- For 0 incoming LS an LS answer was postponed.

Annex D:

Outgoing liaison statements of TSG RAN WG2 #95

final LS Tdoc	title	to	cc	contact	reply to	release	WI	comments
R2-165744	LS on Multi-Carrier enhancements (to: RAN1; cc: -; contact: Huawei)	RAN1	-	Huawei		Rel-14	UTRA_MCe-Core	LS sent out on 23.08.2016 during the meeting
R2-165765	Response LS to Priority for V2V (to: RAN1; cc: SA2; contact: LGE)	RAN1	SA2	LGE	R2-164634 = R1-165814	Rel-14	LTE_SL_V2V-Core	LS was send out on 23.08.2016 during the meeting
R2-165773	LS Response on QoS requirements for V2X (to: SA1, SA2 cc: RAN1, RAN3; contact: Intel)	SA1, SA2	RAN1, RAN3	Intel	R2-164629 = S2-163081	Rel-14	LTE_SL_V2V-Core	
R2-165793	LS on RAN2#95 agreements Light Connection (to: RAN3; cc: -; contact: Intel)	RAN3	-	Intel		Rel-14	LTE_LIGHT_CON-Core	LS was sent out on 25.08.2016
R2-165804	LS to SA4 on the the progress of study on enhancement of VoLTE (to: SA4; cc: -; contact: Huawei)	SA4	-	Huawei		Rel-14	FS_LTE_eVoLTE	LS was sent out after one week email discussion
R2-165824	Response LS on delay tolerant access via NB-IOT (to: SA2, CT, CT1; cc: RAN3; contact: Qualcomm)	SA2, CT, CT1	RAN3	Qualcomm	R2-164635 = C1-164010, R2-164385 = S2-163061	Rel-13	NB_IOT-Core	
R2-165924	LS on Support of CAT 9/10 and CAT 13 (to: RAN1; cc: -; contact: Intel)	RAN1	-	Intel		Rel-12	TEI12	LS was sent out on 26.08.2016
R2-165935	LS on eDRX PH and PTW calculations (to: SA2, RAN3, CT1; cc: SA3; contact: NTT DOCOMO)	SA2, RAN3, CT1	SA3, CT4	NTT DOCOMO		Rel-13	LTE_extDRX-Core	LS was sent out on 26.08.2016

final LS Tdoc	title	to	cc	contact	reply to	release	WI	comments
R2-165936	Reply LS on Multiple RoHC Contexts for MMCMH (to: SA4; cc: CT1, SA2; contact: Qualcomm)	SA4	CT1, SA2	Qualcomm	R2-164622 = S4-160725	Rel-14	MMCMH_Enh	
R2-165949	LS on NBIFOM and steering command (to: SA2, CT1; cc: -; contact: Ericsson)	SA2, CT1	-	Ericsson		Rel-13	LTE_WLAN_radio-Core	
R2-165962	LS on Exceptional Pool Handling for V2X (to: RAN1; cc: -; contact: OPPO)	RAN1	-	OPPO		Rel-14	LTE_SL_V2V-Core	
R2-165965	LS on Timing reference for LAA SCell (to: RAN4; cc: RAN1; contact: LGE)	RAN4	RAN1	LGE		Rel-14	LTE_eLAA-Core	
R2-165966	LS on QoS mapping for eLWA UL (to: RAN3; cc: -; contact: Intel)	RAN3	-	Intel		Rel-14	LTE_WLAN_aggr-Core	
R2-165967	LS on NR requirements (to: RAN; cc: -; contact: Nokia)	RAN	-	Nokia		Rel-14	FS_NR_newRAT	
R2-165969	LS on further mobility enhancements (to: RAN1, RAN3, RAN4; cc: -; contact: ZTE)	RAN1, RAN3, RAN4	-	ZTE		Rel-14	LTE_eMob-Core	
R2-165970	LS on RAN2 agreements on FeMBMS (to: RAN1; cc: -; contact: Qualcomm)	RAN1	-	Qualcomm		Rel-14	MBMS_LTE_enh2-Core	
R2-165971	Reply LS on RAN impacts of Shared MBMS Network and Receive Only Mode in eMBMS (to: SA2, RAN3; cc: -; contact: Nokia)	SA2, RAN3	-	Nokia	R2-164640 = S2-163212	Rel-14	MBMS_LTE_enh2-Core	
R2-165972	Response LS on QoE reporting for streaming services (to: SA4; cc: SA5; contact: Huawei)	SA4	SA5	Huawei	R2-164631 = S4-160866	Rel-14	TEI14	

final LS Tdoc	title	to	cc	contact	reply to	release	WI	comments
R2-165974	Reply LS on ECID positioning for TDD (to: RAN1, RAN3, RAN4; cc: RAN5; contact: CATT)	RAN1, RAN3, RAN4	RAN5		R2-162108 = R1-161518	Rel-13	TEI13	
R2-165975	LS on Introduction of new UL categories in Rel-13 (to: RAN; cc: RAN1; contact: Qualcomm)	RAN	RAN1	Qualcomm		Rel-13	TEI13	LS eas sent out after one week email discussion
R2-165977	LS on RAN2 agreements on UMTS and LTE joint operation (to: RAN3; cc: -; China Unicom)	RAN3	-	China Unicom		Rel-14	FS_UTRA_LTE_JOP	LS was sent out after one week email discussion

Summary:

In total 21 outgoing LSs of RAN2 #95:
2 on UTRA, 19 on LTE/E-UTRA and 0 on joint aspects.

Annex E:

List of agreed CRs for RAN #73

□ Overview of 131 agreed and 4 technically endorsed RAN2 CRs submitted to RAN #73 (New Orleans, USA): see also [RP-161345](#):

spec	REL-8	REL-9	REL-10	REL-11	REL-12	REL-13	REL-14	CRs	specs	rapporteur	email
25.300	0	0	0	0	0	0	2	2	1	ALI, Amaanat (Nokia Networks)	amaanat.ali@nokia.com
25.306	0	0	0	0	0	0	2	2	1	EKLÖF, Cecilia (Ericsson)	cecilia.eklof@ericsson.com
25.331	0	0	0	0	1	2+1*	2	6	3	Mark Curran (Ericsson) /ASN.1: Xudong Yang (Huawei)	mark.curran@ericsson.com yangxudong@huawei.com
36.300	0	0	0	0	0	18	3	21	2	Benoist Sebire (Nokia)	benoist.sebire@nokia.com
36.302	0	0	0	0	1	5	2	8	3	Chunli Wu (Nokia)	chunli.wu@nokia.com
36.304	0	0	0	0	0	5	1	6	2	Jarkko Koskela (Nokia)	jarkko.t.koskela@nokia.com
36.306	0	0	0	0	2	5+4*	1	12	3	Ravi Kuchibhotla (Motorola)	ravi.kuchibhotla@motorola.com
36.321	0	0	0	0	0	10	3	13	2	Mats Folke (Ericsson)	mats.folke@ericsson.com
36.323	0	0	0	0	0	3	1	4	2	Seung June Yi (LGE)	seungjune.yi@lge.com
36.331	0	0	0	0	2	54+4*	3	63	3	Himke van der Velde (Samsung)	himke.vandervelde@samsung.com
36.355	0	0	0	0	0	1	0	1	1	Masato Kitazoe (Qualcomm)	mkitazoe@QTI.QUALCOMM.COM
36.361	0	0	0	0	0	2	0	2	1	Tero Henttonen (Nokia)	tero.henttonen@nokia.com
UTRA	0	0	0	0	1	3	6	10	5		
LTE	0	0	0	0	5	111	14	134	19		
total	0	0	0	0	6	113	20	144	24		

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*: 9 company CRs

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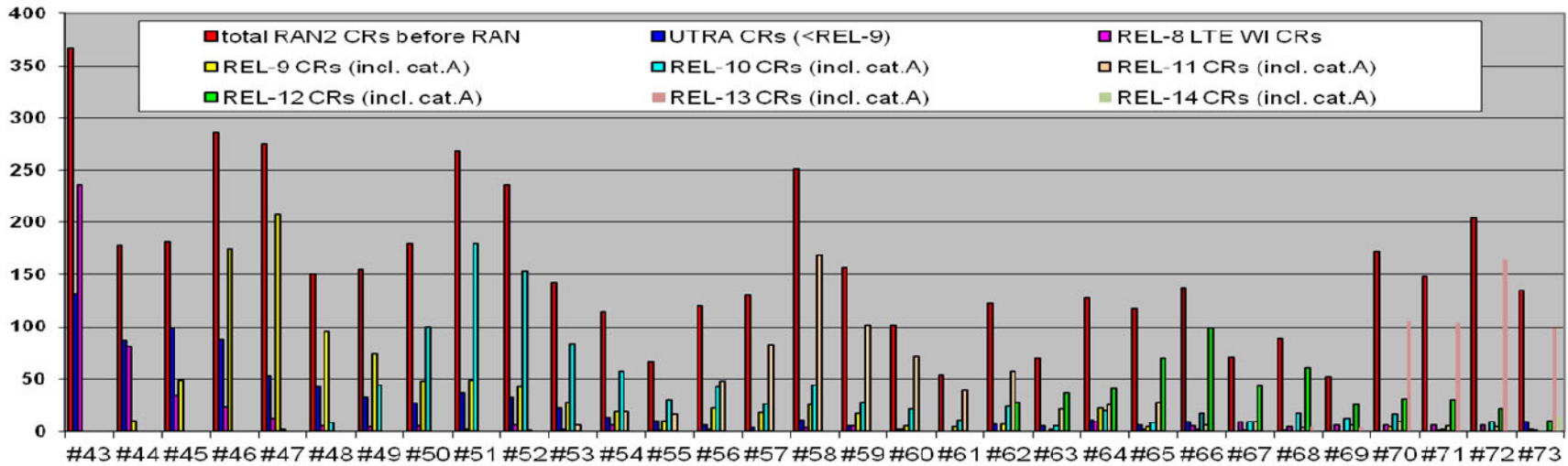
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Total RAN2 CRs (incl. cat.A) = UTRA (<REL-9) + REL-8 LTE + REL-9/10/11/12 /13 /14 (LTE & UTRA)



emarks

cat.C used
en Rel

25.331	5886	1	F	Rel-13	R2-165834	transition to CE/L_FACH state functionality	TEL	Ericsson	agreed	RP-161759	approved	
36.300	0889	1	F	Rel-13	R2-165886	Clarification on LWIP	Rel-11 freeze	HTC Corporation	agreed	RP-161757	approved	
36.300	0890	1	F	Rel-13	R2-165909	Clarification on LWIP	Rel-10 ASN.1 freeze	HTC Corporation	agreed	RP-161756	approved	
36.300	0891	1	F	Rel-13	R2-164702	Small corrections to LWA	Rel-9 ASN.1 freeze	HTC Corporation	agreed	RP-161756	approved	
36.300	0893	2	F	Rel-13	R2-165951	Corrections to the coexistence of LWIP and DC, LWA, RCLWI, RAN assisted WLAN interworking	Rel-10 ASN.1 freeze**	Huawei, HiSilicon	agreed	RP-161757	approved	
36.300	0894	1	F	Rel-13	R2-165879	Corrections to RCLWI procedure	Rel-11 ASN.1 freeze	Huawei, HiSilicon	agreed	RP-161756	approved	
36.300	0895	1	F	Rel-13	R2-165868	Corrections to WLAN measurement	Rel-12 ASN.1 freeze	Huawei, HiSilicon	agreed	RP-161756	approved	
36.300	0896	2	F	Rel-13	R2-165948	Corrections to WLAN connection status report for LWA	Rel-13 ASN.1 freeze	Huawei, HiSilicon	agreed	RP-161756	approved	
36.300	0897	2	F	Rel-13	R2-165947	Corrections to the coexistence of LWA, RCLWI and DC, LWIP, RAN assisted WLAN interworking	Rel-14 ASN.1 freeze	Huawei, HiSilicon, Intel Corporation	agreed	RP-161756	approved	
36.300	0898	1	F	Rel-13	R2-165870	Correction on WLAN authentication		Huawei, HiSilicon	agreed	RP-161756	approved	
36.300	0900	-	F	Rel-13	R2-164895	Clarification on system information		HTC Corporation	agreed	RP-161755	approved	

Report of 3GPP TSG RAN WG2 #95, Gothenburg, Sweden, August 22 - 26, 2016

Spec	CR #	rev	cat	REL	RAN2 Tdoc	Title	SI/WI	RAN2 Source	RAN2 status	RAN Tdoc	RAN status	Remarks
36.300	0903	1	F	Rel-13	R2-165808	Corrections to NB-IoT description in TS 36.300	NB_IOT-Core	Intel Corporation, Huawei, CATT	agreed	RP-161758	approved	
36.300	0904	-	F	Rel-13	R2-165041	Introduction of EB/FD-MIMO Terminologies	LTE_EBF_FDMIMO-Core	Samsung	agreed	RP-161762	approved	
36.300	0905	-	F	Rel-13	R2-165253	Keys storage on C-IoT optimizations for non-NB-IoT UE	TEI13	Huawei, HiSilicon	agreed	RP-161759	approved	
36.300	0907	-	F	Rel-13	R2-165417	RCLWI traffic steering granularity	LTE_WLAN_radio-Core	Intel Corporation	agreed	RP-161756	approved	
36.300	0909	1	F	Rel-13	R2-165844	Corrections to C-IoT optimisations in Stage-2	TEI13, NB_IOT-Core	Ericsson	agreed	RP-161758	approved	
36.300	0910	-	B	Rel-14	R2-165897	Stage 2 CR for eLAA	LTE_eLAA-Core	Huawei, HiSilicon	agreed	RP-161745	approved	
36.300	0911	-	B	Rel-14	R2-165902	IDC support in eLAA	LTE_eLAA-Core	Samsung	agreed	RP-161745	approved	
36.300	0912	-	F	Rel-13	R2-165750	Correction on CSG support in Dual Connectivity	LTE_SC_enh_dualC-Core	RAN3 (contact: Nokia, Alcatel-Lucent Shanghai Bell)	agreed	RP-161549	approved	NOTE: The CR will be brought by RAN3 CR pack RP-161549 with their related CRs
36.300	0913	-	F	Rel-13	R2-165751	Correction of UE Radio Capability Information	TEI13	RAN3 (contact: Nokia, Alcatel-Lucent Shanghai Bell, TeliaSonera, Huawei)	agreed	RP-161759	approved	
36.300	0914	-	F	Rel-13	R2-165752	Correction on WT initiated WT modification procedure	LTE_WLAN_radio-Core	RAN3 (contact: Huawei)	agreed	RP-161756	approved	
36.300	0915	-	B	Rel-14	R2-165836	Introduction of V2V services based on LTE sidelink	LTE_SL_V2V-Core	LG Electronics Inc.	agreed	RP-161746	approved	
36.302	0077	2	B	Rel-14	R2-165835	Introducing V2V to TS 36.302	LTE_SL_V2V-Core	Huawei, HiSilicon	agreed	RP-161746	approved	
36.302	0078	-	F	Rel-13	R2-164943	Corrections to NB-IoT downlink reception type combinations	NB_IOT-Core	Huawei, Samsung, Ericsson	agreed	RP-161758	approved	
36.302	0079	1	B	Rel-13	R2-165863	Introduction of LAA	LTE_LAA-Core	Nokia, Alcatel-Lucent Shanghai Bell, Ericsson	agreed	RP-161753	approved	NOTE: cat.B used for frozen Rel
36.302	0080	1	B	Rel-14	R2-165898	Introduction of eLAA	LTE_eLAA-Core	Nokia, Alcatel-Lucent Shanghai Bell, Ericsson	agreed	RP-161745	approved	
36.302	0081	1	B	Rel-12	R2-165861	Introduction of MBSFN measurements	MBMS_LTE_OS-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161751	approved	NOTE: cat.B used for frozen Rel
36.302	0082	1	A	Rel-13	R2-165862	Introduction of MBSFN measurements	MBMS_LTE_OS-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161751	approved	
36.302	0083	1	B	Rel-13	R2-165883	Introduction of RS-SINR measurement to 36.302	LTE_MC_load-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161762	approved	NOTE: cat.B used for frozen REL
36.302	0084	-	F	Rel-13	R2-165608	Miscellaneous corrections on DL reception types	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161755	approved	
36.304	0321	-	F	Rel-13	R2-164700	The field name is not highlighted with italic	LTE_MC_load-Core	CATR, Spreadtrum Communication	agreed	RP-161762	approved	
36.304	0322	2	F	Rel-13	R2-165952	Idle mode UE behaviour on user plane CIoT EPS optimisation	TEI13	NTT DOCOMO, INC.	agreed	RP-161759	approved	
36.304	0324	1	B	Rel-14	R2-165807	Introduction of PC5 V2V for 36.304	LTE_SL_V2V-Core	CATT	agreed	RP-161746	approved	
36.304	0325	1	F	Rel-13	R2-165810	Corrections to NB-IoT	NB_IOT-Core	Huawei, Intel Corporation, CATT	agreed	RP-161758	approved	
36.304	0328	-	F	Rel-13	R2-165309	Clarification of UE redistribution target selection	LTE_MC_load-Core	Ericsson	agreed	RP-161762	approved	
36.304	0329	-	C	Rel-13	R2-165778	PH and PTW_Start calculation for eDRX	LTE_extDRX-Core,	Ericsson, NTT	agreed	RP-161762	approved	NOTE: cat.C used

Report of 3GPP TSG RAN WG2 #95, Gothenburg, Sweden, August 22 - 26, 2016

Spec	CR #	rev	cat	REL	RAN2 Tdoc	Title	SI/WI	RAN2 Source	RAN2 status	RAN Tdoc	RAN status	Remarks
						paging	NB_IOT-Core	DOCOMO, INC.				for frozen Rel
36.306	1337	1	C	Rel-12	R2-165855	Support of CAT 9/10 and CAT 13	TEI12	Intel Corporation	agreed	RP-161761	approved	NOTE: cat.C used for frozen Rel
36.306	1338	1	A	Rel-13	R2-165856	Support of CAT 9/10 and CAT 13	TEI12	Intel Corporation	agreed	RP-161761	approved	
36.306	1346	2	B	Rel-13	R2-165916	Introduction of 1.2Gbps and 1.6Gbps UE categories in Rel-13	TEI13	Huawei, HiSilicon, NTT DOCOMO, INC., SoftBank	endorsed	RP-161760	approved	NOTE: cat.B used for frozen REL
36.306	1347	1	B	Rel-13	-	Continuous uplink transmission in eMTC	LTE_MTCe2_L1-Core			RP-161588	revised	RP-161826
36.306	1347	2	B	Rel-13	-	Continuous uplink transmission in eMTC	LTE_MTCe2_L1-Core			RP-161826	approved	
36.306	1348	-	B	Rel-14	R2-165900	Introduction of enhanced LAA for LTE	LTE_eLAA-Core	Huawei, HiSilicon	agreed	RP-161745	approved	
36.306	1349	1	F	Rel-12	R2-165940	Indication of the maxLayersMIMO	TEI12	Huawei, HiSilicon	agreed	RP-161751	approved	
36.306	1350	1	A	Rel-13	R2-165941	Indication of the maxLayersMIMO	TEI12	Huawei, HiSilicon	agreed	RP-161751	approved	
36.306	1351	1	B	Rel-13	R2-165958	CR to 36.306 on Introduction of new UL categories in Rel-13	TEI13	Qualcomm	endorsed	RP-161776	postponed	NOTE: The CRs were intended for RAN informaion through the LS R2-165975 but, in RAN procedural aspect, it is requested to submit RAN2 CR pack to RAN#73 for RAN to look at these together with company CR RP-161513 which is to revise R2-165958 of RP-161776
36.306	1351	2	B	Rel-13	-	Introduction of new UL categories in Rel-13	TEI13			RP-161513	withdrawn	
36.306	1352	1	C	Rel-13	R2-165955	Supporting new UE Rx – Tx time difference mapping table	TEI13	CATT	agreed	RP-161759	approved	NOTE: cat.C used for frozen Rel
36.306	1353	-	B	Rel-13	R2-165799	Introducing UE capability of Rel 13 CCH IM	LTE_IM_DLCCH-Perf	QUALCOMM Inc.	agreed	RP-161761	approved	NOTE: cat.B used for frozen Rel
36.306	1354	-	B	Rel-13	R2-165800	Introducing UE capability of CRS-IM for TM 1-9	LTE_CRSIM-Perf	QUALCOMM Inc.	agreed	RP-161761	approved	NOTE: cat.B used for frozen Rel
36.306	1355	-	F	Rel-13	-	Introduction of IOT bit for unicast MPDCCH/PDSCH/PUSCH frequency hopping	LTE_MTCe2_L1-Core			RP-161510	rejected	
36.321	0887	1	F	Rel-13	R2-165756	Corrections to Destination Indexing	LTE_eD2D_Prox-Core	Samsung Electronics Co., Ltd	agreed	RP-161752	approved	
36.321	0888	2	F	Rel-13	R2-165944	Clarification on BCCH reception for eMTC	LTE_MTCe2_L1-Core	HTC Corporation	agreed	RP-161755	approved	
36.321	0889	1	F	Rel-13	R2-165867	Clarification on DRX in SC-PTM	LTE_SC_PTM-Core	HTC Corporation	agreed	RP-161762	approved	
36.321	0893	-	F	Rel-13	R2-164847	DRX operation for LAA cells	LTE_LAA-Core	Panasonic	agreed	RP-161753	approved	
36.321	0901	2	F	Rel-13	R2-165776	Correction to Sidelink Discovery Gap for Transmission	LTE_eD2D_Prox-Core	Ericsson	agreed	RP-161752	approved	
36.321	0902	1	F	Rel-13	R2-165930	Clarification on RA preamble groups for eMTC	LTE_MTCe2_L1-Core	NTT DOCOMO INC.	agreed	RP-161755	approved	
36.321	0907	2	F	Rel-13	R2-165827	Correction on MAC procedure and DRX related issues	NB_IOT-Core	Huawei, HiSilicon, Neul Limited, Ericsson, HTC	agreed	RP-161758	approved	

Report of 3GPP TSG RAN WG2 #95, Gothenburg, Sweden, August 22 - 26, 2016

Spec	CR #	rev	cat	REL	RAN2 Tdoc	Title	SI/WI	RAN2 Source	RAN2 status	RAN Tdoc	RAN status	Remarks
36.321	0917	2	F	Rel-13	R2-165831	Clarification of the Random Access procedure for NB-IoT	NB_IOT-Core	Ericsson, Huawei, ZTE Corporation	agreed	RP-161758	approved	
36.321	0918	2	F	Rel-13	R2-165837	onDurationTimer start for NB-IoT	NB_IOT-Core	LG Electronics Inc.	agreed	RP-161758	approved	
36.321	0920	-	B	Rel-14	R2-165767	Introduction of L2 Latency reduction techniques	LTE_LATRED_L2-Core	Ericsson	agreed	RP-161747	approved	
36.321	0921	-	F	Rel-13	R2-165942	Repetition transmissions within a bundle in DL for MTC	LTE_MTCe2_L1-Core	LG Electronics Inc., Ericsson	agreed	RP-161755	approved	
36.321	0922	-	B	Rel-14	R2-165963	Introducing eLAA in MAC	LTE_eLAA-Core	Ericsson	agreed	RP-161745	approved	
36.321	0923	1	B	Rel-14	R2-165839	Support for V2V services based on LTE sidelink	LTE_SL_V2V-Core	LG Electronics Inc.	agreed	RP-161746	approved	
36.323	0174	2	B	Rel-14	R2-165834	Introduction of PC5 V2V for 36.323	LTE_SL_V2V-Core	CATT	agreed	RP-161746	approved	
36.323	0175	1	F	Rel-13	R2-165872	Addition of COUNT determination for the purpose of HRW setting	LTE_WLAN_radio-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161756	approved	
36.323	0177	1	F	Rel-13	R2-165871	Clarification on NMP in LWA status report	LTE_WLAN_radio-Core	Intel Corporation, MediaTek Inc.	agreed	RP-161756	approved	
36.323	0179	-	F	Rel-13	R2-165679	Corrections to PDCP Status Reporting	LTE_WLAN_radio-Core	Qualcomm Incorporated, LG Electronics, Intel Corporation	agreed	RP-161756	approved	
36.331	2242	1	F	Rel-13	R2-165820	Correction to access barring checking for network sharing case	NB_IOT-Core	QUALCOMM INCORPORATED	agreed	RP-161758	approved	
36.331	2244	1	F	Rel-13	R2-165889	Correction to LWIP and LWA	LTE_WLAN_radio-Core, LTE_WLAN_radio_legacy-Core	HTC, Intel Corporation, ITRI	agreed	RP-161757	approved	
36.331	2245	2	F	Rel-13	R2-165984	Backward compatibility of CA band combination signalling	LTE_CA_enh_b5C-Core	NTT DOCOMO, INC., Huawei, HiSilicon	agreed	RP-161754	approved	
36.331	2248	1	F	Rel-13	R2-165873	Correction on measurement reporting for WLAN	LTE_WLAN_radio-Core	Huawei, HiSilicon	agreed	RP-161756	approved	
36.331	2249	1	F	Rel-13	R2-165877	Correction on WLAN authentication	LTE_WLAN_radio-Core	Huawei, HiSilicon	agreed	RP-161756	approved	
36.331	2250	2	F	Rel-13	R2-165919	Corrections to simultaneous configuration of LWA, RCLWI and LWIP	LTE_WLAN_radio-Core	Huawei, HiSilicon, Intel Corporation	agreed	RP-161756	approved	
36.331	2253	-	F	Rel-13	R2-164744	Correction on WLAN connection management	LTE_WLAN_radio-Core	Huawei, HiSilicon	agreed	RP-161756	approved	
36.331	2254	1	F	Rel-13	R2-165821	Corrections to TS36.331	NB_IOT-Core	CATT	agreed	RP-161758	approved	
36.331	2258	2	F	Rel-13	R2-165825	Issue on resume procedure	NB_IOT-Core, TEI13	ZTE Corporation	agreed	RP-161758	approved	
36.331	2261	1	B	Rel-14	R2-165780	Introducing V2V to TS 36.331	LTE_SL_V2V-Core	Huawei, HiSilicon	agreed	RP-161746	approved	
36.331	2262	-	F	Rel-13	R2-164886	Corrections to NB-IoT in 36.331	NB_IOT-Core	Huawei	agreed	RP-161758	approved	
36.331	2263	-	F	Rel-13	R2-164888	Cleanup of the NB-IoT ASN.1	NB_IOT-Core	Huawei	agreed	RP-161758	approved	
36.331	2266	3	F	Rel-13	R2-165838	Miscellaneous corrections to section 4 and 5 for NB-IoT	NB_IOT-Core	Qualcomm Incorporated, Ericsson	agreed	RP-161758	approved	
36.331	2267	3	F	Rel-12	R2-165986	Clarification to intra-band contiguous CA capabilities	TEI12	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161751	approved	
36.331	2268	3	A	Rel-13	R2-165987	Clarification to intra-band contiguous CA capabilities	TEI12	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161751	approved	
36.331	2269	-	F	Rel-13	R2-164923	Clarification on RRC processing delay for ClO_T	TEI13	HTC Corporation	agreed	RP-161759	approved	
36.331	2270	2	C	Rel-13	R2-165954	Supporting new UE Rx - Tx time difference mapping table	TEI13	CATT	agreed	RP-161759	approved	NOTE: cat.C used for frozen Rel

Report of 3GPP TSG RAN WG2 #95, Gothenburg, Sweden, August 22 - 26, 2016

Spec	CR #	rev	cat	REL	RAN2 Tdoc	Title	SI/WI	RAN2 Source	RAN2 status	RAN Tdoc	RAN status	Remarks
36.331	2272	1	F	Rel-13	R2-165822	Alignment of procedure when handling up-CIoT-EPS-Optimisation	NB_IOT-Core, TEI13	Intel Corporation	agreed	RP-161758	approved	
36.331	2273	1	F	Rel-13	R2-165918	Simplification of UE capability reporting procedure	LTE_CA_enh_b5C-Core	Samsung	agreed	RP-161754	approved	
36.331	2274	2	F	Rel-13	R2-165777	Corrections on system information acquisition for Sidelink discovery	LTE_D2D_Prox-Core, LTE_eD2D_Prox-Core	Samsung, Huawei, HiSilicon, Intel	agreed	RP-161752	approved	
36.331	2275	1	F	Rel-13	R2-165874	Small corrections regarding (WLAN) measurement reporting	LTE_CA_enh_b5C-Core, LTE_WLAN_radio-Core, LTE_WLAN_radio_legacy-Core	Samsung	agreed	RP-161756	approved	
36.331	2279	-	F	Rel-13	R2-165132	Correction on cell reslection procedure while T300 is running	NB_IOT-Core	HTC Corporation	agreed	RP-161758	approved	
36.331	2280	1	F	Rel-13	R2-165817	Correction on full configuration	NB_IOT-Core	HTC Corporation	agreed	RP-161758	approved	
36.331	2281	1	F	Rel-13	R2-165818	Correction on SRB addition and modification	NB_IOT-Core	HTC Corporation	agreed	RP-161758	approved	
36.331	2282	1	F	Rel-13	R2-165881	Clarifications on RCLWI	LTE_WLAN_radio-Core	HTC Corporation	agreed	RP-161756	approved	
36.331	2283	1	F	Rel-13	R2-165819	Introduction of DelayTolerantAccess establishment cause in NB-IoT	NB_IOT-Core	Ericsson, Qualcomm Incorporated	agreed	RP-161758	approved	
36.331	2284	1	F	Rel-13	R2-165885	Maximum number of simultaneous UL PDCP delay measurements for FeMDT	LTE_eMDT2-Core	Intel Corporation	agreed	RP-161762	approved	
36.331	2287	2	F	Rel-13	R2-165950	Clarification on DRX cycle used by the UE	LTE_extDRX-Core, NB_IOT-Core	Qualcomm Incorporated	agreed	RP-161762	approved	
36.331	2288	1	F	Rel-13	R2-165847	Invalidation of stored system information in connected mode	LTE_MTCe2_L1-Core, NB_IOT-Core	Qualcomm Incorporated	agreed	RP-161755	approved	
36.331	2289	1	F	Rel-13	R2-165850	Clarification on bit mapping of fdd-DownlinkOrTddSubframeBitmapLC and fdd-UplinkSubframeBitmapLC	LTE_MTCe2_L1-Core	Qualcomm Incorporated	agreed	RP-161755	approved	
36.331	2290	-	F	Rel-13	R2-165252	Correction on C-IoT optimizations for non-NB-IoT UE	TEI13	Huawei, HiSilicon	agreed	RP-161759	approved	
36.331	2295	1	F	Rel-13	R2-165890	Clarification on timer handling for zero value	LTE-L23, TEI13	NTT DOCOMO INC., Fujitsu, NEC	agreed	RP-161749	approved	
36.331	2299	-	F	Rel-13	R2-165350	Measurement configuration during RRC resume in CIoT	TEI13	QUALCOMM incorporated	agreed	RP-161759	approved	
36.331	2301	1	F	Rel-13	R2-165852	Correction on UEPagingCoverageInformation	LTE_MTCe2_L1-Core	Huawei, HiSilicon	agreed	RP-161755	approved	
36.331	2305	1	F	Rel-13	R2-165860	DRB re-setup in Full Configuration	LTE-L23, TEI13	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161749	approved	
36.331	2306	1	F	Rel-13	R2-165853	Rel-13 correction for eMTC parameter values	LTE_MTCe2_L1-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161755	approved	
36.331	2307	1	F	Rel-13	R2-165864	CR on forwarding LAA measurement results for DC	LTE_LAA-Core, LTE_dualC_enh-Core	Nokia, Alcatel-Lucent Shanghai Bell	agreed	RP-161753	approved	
36.331	2309	1	F	Rel-13	R2-165876	Clarification on associationTimer	LTE_WLAN_radio-Core	Intel Corporation	agreed	RP-161756	approved	
36.331	2310	-	F	Rel-13	R2-165409	Clarification on PDCP-Config and statusFeedback for LWA	LTE_WLAN_radio-Core	Intel Corporation	agreed	RP-161756	approved	
36.331	2311	1	F	Rel-13	R2-165875	Order of addition and removal of WLAN-Identifiers	LTE_WLAN_radio-Core	Intel Corporation	agreed	RP-161756	approved	
36.331	2313	-	F	Rel-13	R2-165414	Multiple WLAN measurement objects on the same frequency	LTE_WLAN_radio-Core	Intel Corporation	agreed	RP-161756	approved	
36.331	2315	-	F	Rel-13	R2-165432	Correction about eMTC frequency hopping	LTE_MTCe2_L1-Core	NTT DOCOMO INC.	agreed	RP-161755	approved	

Report of 3GPP TSG RAN WG2 #95, Gothenburg, Sweden, August 22 - 26, 2016

Spec	CR #	rev	cat	REL	RAN2 Tdoc	Title	SI/WI	RAN2 Source	RAN2 status	RAN Tdoc	RAN status	Remarks
						parameters						
36.331	2317	1	F	Rel-13	R2-165865	Handling of tdd-Config-r10 for LAA Scell	LTE_LAA-Core	Huawei, HiSilicon	agreed	RP-161753	approved	
36.331	2318	1	B	Rel-13	R2-165891	Introduction of 1.2Gbps and 1.6Gbps UE categories in Rel-13	TEI13	Huawei, HiSilicon, NTT DOCOMO, INC., SoftBank	endorsed	RP-161760	approved	NOTE: cat.B used for frozen REL
36.331	2320	2	F	Rel-13	R2-165943	Extended T310 timer values for eMTC	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161755	approved	
36.331	2323	1	B	Rel-13	R2-165753	Introducing UE capability of Rel 13 CCH IM	LTE_IM_DLCCH-Perf	QUALCOMM Inc.	agreed	RP-161761	approved	NOTE: cat.B used for frozen Rel
36.331	2324	1	B	Rel-13	R2-165754	Introducing UE capability of CRS-IM for TM 1-9	LTE_CRSIM-Perf	QUALCOMM Inc.	agreed	RP-161761	approved	NOTE: cat.B used for frozen Rel
36.331	2325	1	B	Rel-13	-	Continuous uplink transmission in eMTC	LTE_MTCe2_L1-Core	-	-	RP-161589	revised	RP-161827
36.331	2325	2	B	Rel-13	-	Continuous uplink transmission in eMTC	LTE_MTCe2_L1-Core	-	-	RP-161827	approved	-
36.331	2328	1	F	Rel-13	R2-165849	Correction on PUSCH repetition numbers for CE Mode A	LTE_MTCe2_L1-Core	Ericsson, Rohde-Schwarz	agreed	RP-161755	approved	
36.331	2329	-	F	Rel-13	R2-165614	Frequency hopping configuration for paging	LTE_MTCe2_L1-Core	Ericsson	agreed	RP-161755	approved	
36.331	2334	2	F	Rel-13	R2-165830	Reservation of RA resources in NB-IoT	NB_IOT-Core	Ericsson, NTT DOCOMO Inc., QUALCOMM INCORPORATED	agreed	RP-161758	approved	
36.331	2336	1	F	Rel-13	R2-165929	Extended PHR corrections	LTE_CA_enh_b5C-Core, TEI13	LG Electronics Inc.	agreed	RP-161754	approved	
36.331	2337	1	F	Rel-13	R2-165878	Corrections for LWA/LWIP	LTE_WLAN_radio-Core	QUALCOMM CDMA Technologies	agreed	RP-161756	approved	
36.331	2338	3	F	Rel-13	R2-165988	Correction on 12/16-port CSI-RS resource configuration for FD-MIMO	LTE_EBF_FDMIMO-Core	NEC	agreed	RP-161762	approved	
36.331	2339	2	F	Rel-13	R2-165973	Corrections in Rel-13 eMTC SI acquisition	LTE_MTCe2_L1-Core	Samsung	agreed	RP-161755	approved	
36.331	2340	1	B	Rel-14	R2-165964	Introduction of enhanced LAA for LTE	LTE_eLAA-Core	Huawei, HiSilicon	agreed	RP-161745	approved	
36.331	2341	-	B	Rel-14	R2-165766	Introduction of L2 Latency reduction techniques	LTE_LATRED_L2-Core	Ericsson	agreed	RP-161747	approved	
36.331	2342	-	F	Rel-13	R2-165829	Correction of downlink gap applicability for NB-IoT	NB_IOT-Core	Ericsson	agreed	RP-161758	approved	
36.331	2343	1	F	Rel-12	R2-165938	Indication of the maxLayersMIMO	TEI12	Huawei, HiSilicon	agreed	RP-161751	approved	
36.331	2344	1	A	Rel-13	R2-165939	Indication of the maxLayersMIMO	TEI12	Huawei, HiSilicon	agreed	RP-161751	approved	
36.331	2345	1	B	Rel-13	R2-165959	CR to 36.331 on Introduction of new UL categories in Rel-13	TEI13	Qualcomm	endorsed	RP-161776	postponed	related to LS R2-165975
36.331	2346	-	F	Rel-13	R2-165946	nrs-Power signaling for NB-IoT non-anchor carrier	NB_IOT-Core	ZTE Corporation	agreed	RP-161758	approved	related with RAN1 LS R2-164656
36.331	2347	-	F	Rel-13	-	Introduction of IOT bit for unicast MPDCCH/PDSCH/PUSCH frequency hopping	LTE_MTCe2_L1-Core	-	-	RP-161509	revised	RP-161845
36.331	2347	1	F	Rel-13	-	Introduction of IOT bit for unicast MPDCCH/PDSCH/PUSCH frequency hopping	LTE_MTCe2_L1-Core	-	-	RP-161845	rejected	-
36.355	0143	4	C	Rel-13	R2-165956	Correction of ECID positioning for TDD	LCS_LTE, TEI13	Qualcomm Incorporated	agreed	RP-161750	approved	NOTE: cat.C used for frozen Rel
36.361	0002	1	F	Rel-13	R2-165888	Clarification on LWIPEP	LTE_WLAN_radio_legacy-Core	HTC Corporation	agreed	RP-161757	approved	
36.361	0003	-	F	Rel-13	R2-165412	Correction on GRE header size	LTE_WLAN_radio_legacy-	Intel Corporation	agreed	RP-161757	approved	

Report of 3GPP TSG RAN WG2 #95, Gothenburg, Sweden, August 22 - 26, 2016

Spec	CR #	rev	cat	REL	RAN2 Tdoc	Title	SI/WI	RAN2 Source	RAN2 status	RAN Tdoc	RAN status	Remarks
							Core					

- Rows highlighted in yellow indicate company contributions treated at RAN #73 for which no Tdoc was submitted to RAN2 #95.
- The table above has 144 entries (rows excl. header row) of which 135 CRs were approved at RAN #73:
 - 131 CRs agreed by RAN2 of which then 131 CRs were approved by RAN #73, 0 were postponed and 0 CR was revised in company contributions.
 - 4 CRs were technically endorsed by RAN2 then 2 were approved at RAN#73 and 0 CRs were postponed at RAN #73.
 - 9 company contributions (highlighted in yellow) of which then 2 CRs were approved and other 7 CRs were revised, rejected, or withdrawn at RAN #73.
 - Please note that NB-IOT MAC CR 0918 R2 Correction to MAC RAR ([R2-165828](#)) was agreed in RAN2#95 but mistakenly not submitted to RAN#73 and hence was not included in above list and was not implemented in the September 16 specifications. However implementers can assume that this CR will be included in the Dec 16 specifications.

So finally: Approved RAN2 CRs after RAN #73: 135.

spec	REL-8	REL-9	REL-10	REL-11	REL-12	REL-13	REL-14	CRs	specs	rapporteur	email
25.300	0	0	0	0	0	0	2	2	1	ALI, Amaanat (Nokia Networks)	amaanat.ali@nokia.com
25.306	0	0	0	0	0	0	2	2	1	EKLÖF, Cecilia (Ericsson)	cecilia.eklof@ericsson.com
25.331	0	0	0	0	1	2	2	5	3	Mark Curran (Ericsson) /ASN.1: Xudong Yang (Huawei)	mark.curran@ericsson.com yangxudong@huawei.com
36.300	0	0	0	0	0	18	3	21	2	Benoist Sebire (Nokia)	benoist.sebire@nokia.com
36.302	0	0	0	0	1	5	2	8	3	Chunli Wu (Nokia)	chunli.wu@nokia.com
36.304	0	0	0	0	0	5	1	6	2	Jarkko Koskela (Nokia)	jarkko.t.koskela@nokia.com
36.306	0	0	0	0	2	7*	1	10	3	Ravi Kuchibhotla (Motorola)	ravi.kuchibhotla@motorola.com
36.321	0	0	0	0	0	10	3	13	2	Mats Folke (Ericsson)	mats.folke@ericsson.com
36.323	0	0	0	0	0	3	1	4	2	Seung June Yi (LGE)	seungjune.yi@lge.com
36.331	0	0	0	0	2	56*	3	61	3	Himke van der Velde (Samsung)	himke.vandervelde@samsung.com
36.355	0	0	0	0	0	1	0	1	1	Masato Kitazoe (Qualcomm)	mkitazoe@QTI.QUALCOMM.COM
36.361	0	0	0	0	0	2	0	2	1	Tero Henttonen (Nokia)	tero.henttonen@nokia.com
UTRA	0	0	0	0	1	2	6	9	5		
LTE	0	0	0	0	5	107	14	126	19		
total	0	0	0	0	6	109	20	135	24		

Annex F: RAN WG2 meeting #95 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 01.09.2016 midnight Pacific time, i.e. Fri 02.09.2016 9am CEST:

[95#01][LTE/CA] CR on Inband CA (Nokia)

Intended outcome: Agreed CR to RAN

Deadline: Thursday 01/09/2016

conclusion: Email discussion was kicked off by Tero Henttonen (Nokia)
on 27.08.2016.
36.331 CRs [R2-165986](#) and [R2-165987](#) were agreed on 05.09.2016.

[95#02][LTE/CA] CR on CA band combination signalling (DOCOMO)

Intended outcome: Agreed CR to RAN

Deadline: Thursday 01/09/2016

conclusion: Email discussion was kicked off by Hideaki Takahashi (NTT DOCOMO)
on 27.08.2016.
36.331 CR [R2-165984](#) was agreed on 02.09.2016.

[95#03][LTE/FD-MIMO] CR on 12/16 CSI-RS resource (NEC)

Intended outcome: Agreed CR for RAN

Deadline: Thursday 01/09/2016

conclusion: Email discussion was kicked off by Hisashi Futaki (NEC)
on 29.08.2016.
36.331 CR [R2-165988](#) was agreed on 07.09.2016.

[95#04][LTE/CCH-IM and CRS IM] 36.331 and 36.306 CRs (Qualcomm)

LS from RAN4 to be provided at start of email discussion. Update CRs to take RAN4 agreements into account.

Intended outcome: Agreed CRs to RAN

Deadline: Thursday 01/09/2016

conclusion: Email discussion was kicked off by Feilu Liu (Qualcomm)
on 30.08.2016.
36.331 CRs [R2-165753](#) & [R2-165754](#) and
36.306 CRs [R2-165799](#) & [R2-165800](#) were agreed on 03.09.2016.

[95#05][LTE/UL categories] LS to RAN on new UL categories (Qualcomm)

Intended outcome: Approved LS to RAN.

Deadline: Thursday 01/09/2016

conclusion: Email discussion was kicked off by Masato Kitazoe (Qualcomm)
on 27.08.2016.
Teh LS [R2-165975](#) was approved on 02.09.2016.

[95#06][LTE/NR] Update TR (DOCOMO)

Update TR based on agreed TPs

Intended outcome: Agreed TR version 0.3.0

Deadline: Thursday 01/09/2016

conclusion: Email discussion was kicked off by Hideaki Takahashi (NTT DOCOMO)
on 29.08.2016.
TR 38.804 v0.2.1 [R2-165985](#) and
TR 38.804 v0.3.0 [R2-165989](#) were agreed on 02.09.2016.

[95#07][LTE/Latency reduction] – CR to 36.321 – Ericsson

- Include possible agreements as a result of RAN1 LS
Intended outcome: Agreed CR for RAN
Deadline: Thursday 01/09/2016
conclusion: Email discussion was kicked off by Henrik Enbuske (Ericsson)
on 29.08.2016.
36.321 CR [R2-165769](#) was agreed on 06.09.2016.

[95#08][LTE/Latency reduction] – CR to 36.331 – Ericsson

- Agree on CR to 36.331 ([R2-165766](#) CR 2341)
- Intended outcome: Agreed CR for RAN
Deadline: Thursday 01/09/2016
conclusion: Email discussion was kicked off by Henrik Enbuske (Ericsson)
on 29.08.2016.
36.331 CR [R2-165766](#) was agreed on 07.09.2016.

[95#09][LTE/V2V] – CR to 36.321 – LG

- Agree to CR to 36.321 for RAN submission
Deadline: Thursday 01/09/2016
conclusion: Email discussion was kicked off by Youngdae Lee (LGE)
on 29.08.2016.
36.321 CR [R2-165839](#) was agreed on 13.09.2016.

[95#10][LTE/V2V] – CR to 36.331 – Huawei

- Agree to CR to 36.321 for RAN submission
Deadline: Thursday 01/09/2016
conclusion: Email discussion was kicked off by Zhenzhen Cao (Huawei)
on 29.08.2016.
36.331 CR [R2-165780](#) was agreed on 09.09.2016.

[95#11][LTE/V2V] – CR to 36.323 – CATT

- Agree to CR to 36.323 for RAN submission
Deadline: Thursday 01/09/2016
conclusion: Email discussion was kicked off by Zhe Chen (CATT)
on 30.08.2016.
36.323 CR [R2-165834](#) was agreed on 06.09.2016.

[95#12][LTE/V2V] – CR to 36.304 – CATT

- Agree to CR to 36.304 for RAN submission
Deadline: Thursday 01/09/2016
conclusion: Email discussion was kicked off by Zhe Chen (CATT)
on 30.08.2016.
36.304 CR [R2-165807](#) was agreed on 06.09.2016.

[95#13][LTE/V2V] – CR to 36.302 – Huawei

- Agree to CR to 36.302 for RAN submission
Deadline: Thursday 01/09/2016
conclusion: Email discussion was kicked off by Xiao Xiao (Huawei)
on 30.08.2016.
36.302 CR [R2-165835](#) was agreed on 06.09.2016.

[95#14][LTE/V2V] – CR to 36.300 – LG

- Agree to CR to 36.300 for RAN submission
Deadline: Thursday 01/09/2016
conclusion: Email discussion was kicked off by Jaewook Lee (LGE)
on 29.08.2016.
36.300 CR [R2-165836](#) was agreed on 09.09.2016.

[95#15][LTE/eVoLTE] TR 36.750 completion (CMCC/Huawei)

- Capture all the approved TPs and agreements from this meeting into the TR (CMCC)
- The wording of TR should be improved.
- Draft LS to SA4 to inform the progress. The latest TR should be attached to the LS

Intended outcome: 1) Approved TR of 36.750 (Huawei), 2) Approved LS (Huawei)

Deadline: Thursday 01/09/2016

conclusion: Email discussion was kicked off by Yi Guo (Huawei)
on 29.08.2016.
TR 36.750 v0.3.1 [R2-165804](#) and TR 36.750 v0.4.0 [R2-165805](#) were agreed.
Also, related LS to SA4 [R2-165804](#) was approved on 09.09.2016.

[95#16][UMTS/DL enh] CR on seamless transition to CELL-FACH (Ericsson)

Intended outcome: Agreed CR to RAN

Deadline: Thursday 01/09/2016

conclusion: Email discussion was kicked off by Mark Curran (Ericsson)
on 29.08.2016.
The email discussion is closed without an agreed CR on 09.09.2016.

[95#17][UMTS/RRC opt] CR on UPH reporting (Ericsson)

Intended outcome: Agreed CR to RAN

Deadline: Thursday 01/09/2016

conclusion: Email discussion was kicked off by Cecilia Eklöf (Ericsson)
on 30.08.2016.
25.331 CR [R2-165738](#) was agreed on 04.09.2016.

[95#18][UMTS/LTE JOP] TP on RAN2 agreements and LS to RAN3 (China Unicom)

Intended outcome: Agreed TP and approved LS to RAN3

Deadline: Thursday 01/09/2016

conclusion: Email discussion was kicked off by YUE MA (CHINA UNICOM)
on 28.08.2016.
The TP [R2-165833](#) was agreed and the LS to RAN3 was approved
on 03.09.2016.

Email discussions with finalisation by Thu 08.09.2016 midnight Pacific time, i.e. Fri 09.09.2016 9am CEST:

[95#19][LTE/eDRX] CR on PH and PTW start calculation (DOCOMO)

Intended outcome: Agreed CR for RAN

Deadline: Thursday 08/09/2016

conclusion: Email discussion was kicked off by Wuri A. Hapsari (NTT DOCOMO)
on 29.08.2016.
36.304 CR [R2-165778](#) was agreed on 12.09.2016.

[95#20][LTE/eLWA] 36.300 running CR (Intel)

Intended outcome: Endorsed running CR

Deadline: Thursday 08/09/2016

conclusion: Email discussion was kicked off by Sasha Sirotkin (Intel)
on 29.08.2016.
Running 36.300 CR [R2-165981](#) was endorsed on 13.09.2016.

[95#21][LTE/eLWA] 36.331 running CR (Intel)

Intended outcome: Endorsed running CR

Deadline: Thursday 08/09/2016

conclusion: Email discussion was kicked off by Sasha Sirotkin (Intel)
on 29.08.2016.
Running 36.331 CR [R2-165982](#) was endorsed on 13.09.2016.

[95#22][LTE/eLWA] 36.323 running CR (Intel)

Intended outcome: Endorsed running CR

Deadline: Thursday 08/09/2016

conclusion: Email discussion was kicked off by Sasha Sirotkin (Intel)
on 29.08.2016.
Running 36.323 CR [R2-165983](#) was endorsed on 13.09.2016.

Email discussions with finalisation by Thu 22.09.2016 midnight Pacific time, i.e. Fri 23.09.2016 9am CEST:

[95#23][LTE/UMTS] LTE capability signalling in UMTS (Intel)

Discuss LTE capability signalling enhancements on UMTS and progress a CR.

Intended outcome: Agreeable CR to next meeting

Deadline: Thursday 22/09/2016

conclusion: Email discussion was kicked off by Youn Hyoung Heo (Intel)
on 14.09.2016.

Email discussion result is provided to RAN2 #95bis in [R2-166552](#).

[95#24][LTE/eLWA] PDCP key change at handover (Nokia)

Identify solutions to address PDCP key change at handover. Describe the full solutions and identify pros and cons. Recommendation for way forward if possible.

Intended outcome: Email discussion report

Deadline: Thursday 22/09/2016

conclusion: Email discussion was kicked off by Tero Henttonen (Nokia)
on 06.09.2016.

Email discussion result is provided to RAN2 #95bis in [R2-166137](#).

[95#25][LTE/IP] Progress specifics of WLAN assistance data (Intel)

Discuss WLAN assistance data and recommend a set of data to be included

Intended outcome: Email discussion report

Deadline: Thursday 22/09/2016

conclusion: Email discussion was kicked off by Chandru Aswani (Intel)
on 04.09.2016.

Email discussion result is provided to RAN2 #95bis in [R2-166843](#).

[95#26][LTE/NR] Concatenation (Ericsson)

Identify the impacts of concatenation at RLC compared to concatenation at MAC. Impacts considered should at least look at real time processing impacts and overhead. Impacts should at least be analysed based on the baseline LTE MAC and RLC headers.

Intended outcome: Email discussion report to next meeting

Deadline: Thursday 22/09/2016

conclusion: Email discussion was kicked off by Mattias Bergström A (Ericsson)
on 05.09.2016.

Email discussion result is provided to RAN2 #95bis in [R2-166904](#).

[95#27][LTE/NR] Reordering (Intel)

Identify the impacts of reordering at RLC compared to reordering only at PDCP. Impacts considered should at least look at ease and delay of deciphering and delay, reassembly function, ARQ operation.. Different use cases should be analysed including DC with ideal and non ideal back haul, and other use cases for NR.

Intended outcome: Email discussion report to next meeting

Deadline: Thursday 22/09/2016

conclusion: Email discussion was kicked off by Yujian Zhang (Intel)
on 08.09.2016.

Email discussion result is provided to RAN2 #95bis in [R2-166883](#).

[95#28][NR] Data transmission in 'new state' (Huawei)

To identify the potential benefits and disadvantages associated with a/ the UE performing state transition from the 'new state' to full connected in order to transfer data, and b/ data transfer able to occur in the 'new state'.

- Email should focus first on the aspects related to uplink transmission and then, if time allows, consider aspects related to downlink transmission.

Intended outcome: Email discussion report to the next meeting.

Deadline: Thursday 22/09/2016

conclusion: Email discussion was kicked off by David lecompte (Huawei)
on 14.09.2016.

Email discussion result is provided to RAN2 #95bis in [R2-166986](#).

[95#29][NR] On demand SI (Samsung)

Analyse the benefits and disadvantages of the on demand SI delivery. To include consideration of all the performance evaluations provided to the meeting, and also

consideration of other factors. Assumptions used in the performance evaluations are to be verified. Recommendations from the analysis can also be discussed.

Intended outcome: Email discussion report to next meeting

Deadline: Thursday 22/09/2016

conclusion: Email discussion was kicked off by Mangesh A Ingale (Samsung)
on 12.09.2016.

Email discussion result is provided to RAN2 #95bis in [R2-166497](#).

[95#30][NR] Capability coordination for NR and LTE (Qualcomm)

Progress the understanding of possible different solutions for how to coordinate capabilities between the UE, LTE eNB and NR gNB. Some assumptions can be made on what capabilities might need to be shared (LTE can be used as a baseline for at least one set of assumptions, other sets of assumptions may also be considered).

Intended outcome: Email discussion report

Deadline: Thursday 22/09/2016

conclusion: Email discussion was kicked off by Keiichi Kubota (Qualcomm)
on 07.09.2016.

Email discussion result is provided to RAN2 #95bis in [R2-167065](#).

[95#31][LTE/Light connection] Progress FFS (Intel)

Progress selected FFS items based on contributions that were submitted to the meeting.

Selection of appropriate FFS items to be performed by the rapporteurs

Intended outcome: Email discussion report to the next meeting

Deadline: Thursday 22/09/2016

conclusion: Email discussion was kicked off by Marta M Tarradell (Intel)
on 09.09.2016.

Email discussion result is provided to RAN2 #95bis in [R2-166688](#).

[95#32][LTE/V2V] – SPS – Ericsson

- Discuss and agree to:
- Additional content - FFS PPPP or LCID
- Type of message used, how SPS release is indicated
- SPS configuration (per Logical channel, per PPPP, or per UE) and how to multiplex data in SPS occasion
- Content of SPS configuration and SR mask
- Max number of SPS configuration

Intended outcome: Email discussion report

Deadline: Thursday 22/09/2016

conclusion: Email discussion was kicked off by Marco Belleschi (Ericsson)
on 12.09.2016.

Email discussion result is provided to RAN2 #95bis in [R2-166975](#).

[95#33][LTE/FeD2D] – Update TR 36.746 - LG

- TR update with agreements up to RAN2#95
- Discuss need for additional sub-sections

Deadline: Thursday 22/09/2016

conclusion: Email discussion was kicked off by Jaewook Lee (LGE)
on 19.09.2016.

Email discussion result is provided to RAN2 #95bis in [R2-167016](#).

[95#34][LTE/FeD2D] – Capture requirements – Ericsson

- Agree on RAN requirements. Start with [R2-165241](#) as a baseline.
- Outcome: TP

Deadline: Thursday 22/09/2016

conclusion: Email discussion was kicked off by Mats Folke (Ericsson)
on 08.09.2016.

Email discussion result is provided to RAN2 #95bis in [R2-166730](#).

[95#35][LTE/FeD2D] – Scenarios and RRC states - Huawei

- Capture coverage scenarios
 - Discuss and agree on possible RRC states for relay and remote UEs
- Deadline: Thursday 22/09/2016

conclusion: Email discussion was kicked off by Nathan Tenny (Huawei)
on 10.09.2016.
Email discussion result is provided to RAN2 #95bis in [R2-166913](#).

[95#36][LTE/eMob] Running stage 2 CR of introducing eMob (Intel)
Based on the agreements we have achieved so far from RAN2#93bis to RAN2#95
Intended outcome: Running 36.300 CR
Deadline: Thursday 22/09/2016
conclusion: Email discussion was kicked off by Candy Yiu (Intel)
on 07.09.2016.
Email discussion result is provided to RAN2 #95bis in [R2-166250](#).

[95#37][LTE/eMob] Running stage 3 CR of introducing eMob (ZTE)
Based on the agreements we have achieved so far from RAN2#93bis to RAN2#95
Intended outcome: Running 36.331 CR
Deadline: Thursday 22/09/2016
conclusion: Email discussion was kicked off by Yumin Wu (ZTE)
on 09.09.2016.
Email discussion result is provided to RAN2 #95bis in [R2-166606](#).

[95#38][LTE/Light Con] Running stage 2 CR of light connection (Huawei)
Based on the agreements we have achieved so far from RAN2#93bis to RAN2#95
Intended outcome: Running 36.300 CR
Deadline: Thursday 22/09/2016
conclusion: Email discussion was kicked off by Xiaodong Yang (Huawei)
on 09.09.2016.
Email discussion result is provided to RAN2 #95bis in [R2-166627](#).

[95#39][NB-IoT] RRC processing delays.(Neul)
Intended outcome: Email discussion report
Deadline: Thursday 22/09/2016
conclusion: Email discussion was kicked off by Steven Wenham (Neul)
on 15.09.2016.
Email discussion result is provided to RAN2 #95bis in [R2-166315](#).

[95#40][eNB-IoTenh] RACH on non-anchor carrier (CATT)
Clarify and to extent possible, narrow down the options
Intended outcome: Email discussion report
Deadline: Thursday 22/09/2016
conclusion: Email discussion was kicked off by Yuan Zhang (CATT)
on 09.09.2016.
Email discussion result is provided to RAN2 #95bis in [R2-166210](#).

[95#41][eNB-IoTenh] Paging open issues, (Ericsson)
clarify and to extent possible, narrow down the options
Intended outcome: Email discussion report
Deadline: Thursday 22/09/2016
conclusion: Email discussion was kicked off by Oscar Ohlsson (Ericsson)
on 02.09.2016.
Email discussion result is provided to RAN2 #95bis in [R2-166278](#).

[95#42][eNB-IoTenh] Mobility Enhancements
Structure proposals and determine possible ways forward. Can also discuss the problems to
be solved (Nokia)
Intended outcome: Email discussion report
Deadline: Thursday 22/09/2016
conclusion: Email discussion was kicked off by Jussi-Pekka Koskinen (Nokia)
on 20.09.2016.
Email discussion result is provided to RAN2 #95bis in [R2-166587](#).

[95#43][LTE/feMTC/NB-IoTenh] SC-PTM feedback mechanism (Huawei).
Discussion on the need for a feedback mechanism for SC-PTM for NB-IoT and/or MTC

Intended outcome: Email discussion report

Deadline: Thursday 22/09/2016

conclusion: Email discussion was kicked off by Chenli (ALi) (Huawei)
on 13.09.2016.
Email discussion result is provided to RAN2 #95bis in [R2-166316](#).

[95#44][UMTS/DTX DRX enh] Running CRs on HS-SCCH DRX (Qualcomm)

Intended outcome: Endorsed running CRs to 25.331 and 25.306 to next meeting

Deadline: Thursday 22/09/2016

conclusion: Email discussion was kicked off by Aravindh Suriyamoorthy (Qualcomm)
on 15.09.2016.
Email discussion results are provided to RAN2 #95bis in [R2-166932](#) &
[R2-166945](#).

CRs from other WGs to be agreed/reviewed by RAN2 before RAN #73:

The following 3 RAN3 CRs to RAN2 TS 36.300 were provided by MCC on Wed 31.08.2016 for review until Fri 02.08.2016 09:00 CEST:

36.300: 3 CRs:

[R2-165750](#) Correction on CSG support in Dual Connectivity RAN3 (contact: Nokia, Alcatel-Lucent Shanghai Bell) CR 36.300 13.4.00912 - F Rel-13 LTE_SC_enh_dualC-Core R3-161625

=> Agreed

[R2-165751](#) Correction of UE Radio Capability Information RAN3 (contact: Nokia, Alcatel-Lucent Shanghai Bell, TeliaSonera, Huawei) CR 36.300 13.4.00913 - F Rel-13 TEI13 R3-161874

=> Agreed

[R2-165752](#) Correction on WT initiated WT modification procedure RAN3 (contact: Huawei) CR 36.300 13.4.00914 - F Rel-13 LTE_WLAN_radio-Core R3-161956

=> Agreed

Preparation of status reports for SIs and WIs under RAN2 leadership for RAN #73:

Rapporteurs were asked to make draft status reports available for review on the RAN2 reflector (without Tdoc number) as soon as possible after RAN2 #95. Below the results of RAN #73 are summarized as percentage complete/target completion date/status report.

- 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**
RAN #72: 70%/Sep 16/**RP-160827**
Now: RAN #73: 100%/Sep 16/**RP-161739**
- 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**
RAN #72: 50%/June 16/**RP-160931**
Now: RAN #73: 70%/June 16/**RP-161658**
- REL-14 WI: Core part: Multi-Carrier Enhancements for UMTS, rapporteur: Chen, Zhuo (CMCC)
acronym: UTRA_MCe-Core, WID: **RP-161259** at RAN #72
History: RAN #72: new/Dec 16/-
now: RAN #73: 35%/Dec 16/**RP-161657**
- 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/-
RAN #72: 10%/March 17/**RP-161161**
Now: RAN #73: 35%/March 17/**RP-161805**
- 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/-
RAN #72: 25%/March 17/**RP-160924**
Now: RAN #73: 45%/March 17/**RP-161577**
- 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/-
RAN #72: 25%/Dec 16/**RP-161294**
Now: RAN #73: 25%/Dec 16/**RP-161696**
- 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/-
RAN #72: 80%/Sep 16/**RP-161161**
Now: RAN #73: 100%/Sep 16/**RP-161514**
- 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; revised in **RP-161850** at RAN#73
History: RAN #71: new/Dec 16/-
RAN #72: 30%/Dec 16/**RP-160779**
Now: RAN #73: 60%/Dec 16/**RP-161851**
- 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/-

RAN #72: 75%/Sept 16/**RP-160817**
Now: RAN #73: 100%/Sept 16/**RP-161530**

- 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/-
RAN #72: 2%/March 17/ **RP-161159**
Now: RAN #73: 5%/March 17/ **RP-161649**

New SIs and WIs under RAN2 leadership for RAN #73:

- REL-14 WI: Core part: Voice and Video Enhancement for LTE, rapporteur: Chen, Zhuo (CMCC)
acronym: LTE_VoLTE_ViLTE_enh-Core, WID: **RP-161856** at RAN #73
now: RAN #73: new/March 17/-
- REL-14 WI: Core part: Quality of Experience (QoE) Measurement Collection for streaming services in UTRAN, rapporteur: Yue Ma (China Unicom)
acronym: UMTS_QMC_Streaming-Core, WID: **RP-161917** at RAN #73
now: RAN #73: new/ March 17/-

Annex G:

LTE Breakout session: V2V, V2X, FeD2D, LATRED

On Monday and Thursday of RAN2 #95, in parallel to the main LTE session, an LTE Breakout session on V2V, V2X, FeD2D and LATRED session was held in G4 room chaired by RAN2 vice-chairman Diana Pani (Interdigital) addressing:

This is the report from breakout sessions covering the following Items:

- 7.5 LTE: Rel-13: WI: ProSe enhancements
- 8.2 LTE: Rel-14: WI: Support for V2V services based on LTE sidelink
- 8.4 LTE: Rel-14: SI: Further Enhancements to LTE Device to Device, UE to Network Relays for IoT and Wearables
- 8.8 LTE: Rel-14: WI: L2 latency reduction techniques for LTE

The corresponding report of this session [R2-165840](#) 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

[R2-164698](#) Corrections to Destination Indexing Samsung Electronics Co., Ltd CR 36.321 13.2.0
0887 - F Rel-13 LTE_eD2D_Prox-Core
=> change the wording to "all the lists in the same order as specified in [8]"
=> The CR is agreed in [R2-165756](#) r1 with the change above

[R2-165666](#) Proposed CR to 36.331 on destinationInfoListUC in MAC LG Electronics Inc. CR 36.331
13.2.02335 - F Rel-13 LTE_eD2D_Prox-Core
=> Not pursued

[R2-165038](#) Correction of UE requirements regarding SIB19 acquisition Samsung Telecommunications
CR 36.331 13.2.02274 - F Rel-13 LTE_eD2D_Prox-Core
- LG prefers Huawei's CR
- Qualcomm thinks that this is related to Rel-13 so we should treat it here.
=> The CR is revised in [R2-165758](#)

Discussion including [R2-165293](#) and [R2-165038](#)
=> Update [R2-165293](#) into [R2-165757](#) to only contain Rel-12 changes and treat in main session
=> Update [R2-165038](#) into [R2-165758](#) to contain the changes from Samsung and Huawei

[R2-165758](#) Correction of UE requirements regarding SIB19 acquisition Samsung Telecommunications
CR 36.331 13.2.02274 1 F Rel-13 LTE_eD2D_Prox-Core
[CBF]

[R2-165759](#) Correction to Sidelink Discovery Gap for Transmission Ericsson CR 36.321 13.2.00901
1 F Rel-13 LTE_eD2D_Prox-Core

[R2-164972](#) Logical Channel Prioritization in Multiple SL Transmissions LG Electronics Inc. discussion
- Panasonic thinks that we should have one behaviour and not change the behaviour. Samsung indicates that we had a number of discussions last meeting and these options were already on the table.
- Qualcomm thinks that as long as one of the logical channels or destination are different then there is no reason to revert.
- LG thinks that we only discussed non-overlapping period.

- => Noted
- [R2-164973](#) Logical Channel Prioritization in Multiple SL Transmissions: Option1 LG Electronics Inc. CR 36.321 13.2.00898 - F Rel-13 LTE_eD2D_Prox-Core
=> Not treated
- [R2-164974](#) Logical Channel Prioritization in Multiple SL Transmissions: Option2 LG Electronics Inc. CR 36.321 13.2.00899 - F Rel-13 LTE_eD2D_Prox-Core
=> Not treated
- [R2-165240](#) Correction to Sidelink Discovery Gap for Transmission Ericsson discussion
- Intel agrees with the intention but wonders if the UE will know whether there will be discovery transmission in advance
 - Qualcomm thinks that there is a misunderstanding. The UE should only prioritize discovery when there is discovery + associated overhead
 - Panasonic thinks that we shouldn't have UL transmissions at all during the full gap.
 - ZTE and Nokia Net think that we are now overprotecting and we should just mention overhead.
 - Ericsson and LG suggest that we can just change the definition of sidelink discovery to include retuning overhead. Qualcomm thinks that we should just reference the RRC spec.
- => We will address the issue by properly defining transmission gap
=> Noted
- [R2-165239](#) Correction to Sidelink Discovery Gap for Transmission Ericsson CR 36.321 13.2.00901
- F Rel-13 LTE_eD2D_Prox-Core
- => The CR is revised
- [R2-165759](#) Correction to Sidelink Discovery Gap for Transmission Ericsson CR 36.321 13.2.00901
- 1 F Rel-13 LTE_eD2D_Prox-Core
[CBF]

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-161272](#))

Time budget: 2 TU

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

Incoming LSs:

- [R2-164606](#) LS on RAN1 agreements potentially related to RAN2 in sidelink-based V2V ([R1-165965](#); contact: LGE) RAN1 LS in to: RAN2 Rel-14 LTE_SL_V2V-Core
=> Noted
- [R2-164619](#) Reply LS to [R1-163746](#) = [R2-163319](#) on V2V multicarrier configuration (R4-164930; contact: LGE) RAN4 LS in to: RAN2 Rel-14 LTE_SL_V2V-Core
- Intel understands that we agreed that the UE cannot transmit UL and PC5 at the same time. Qualcomm indicates that the agreement was that the same message cannot be transmitted at the same time.
- => Noted
- [R2-164624](#) LS on L1 parameters for sidelink-based V2V ([R1-165968](#); contact: LGE) RAN1 LS in to: RAN2 Rel-14 LTE_SL_V2V-Core
- Huawei wonders if we need to include new power control parameters for V2V.
- => Noted
- [R2-164627](#) LS on V2V Authorization (R3-161540; contact: Huawei) RAN3 LS in to: RAN2 Rel-14 LTE_SL_V2V-Core
=> Noted
- [R2-164629](#) LS Response to [R2-163134](#) on QoS requirements for V2X (S2-163081; contact: Huawei) SA2 LS in to: RAN2 Rel-14 FS_V2XARC
=> moved from AI 8.13
=> Noted

[R2-164634](#) LS on Priority for V2V ([R1-165814](#); contact: Qualcomm) RAN1 LS in to: RAN2 Rel-14 LTE_SL_V2V-Core
=> Noted

[R2-164650](#) LS on RAN1 agreements in sidelink-based V2V ([R1-168251](#); contact: LGE) RAN1

- LG indicates that destination ID is no longer sent in SCI.
- LG thinks that step 3-0 should be captured in the MAC CR. Huawei agrees. Intel thinks this will result in MAC doing step 3-0, then PHY 3-1, then back in MAC for 3-2, seems like a lot of back and forth. Huawei thinks that the order doesn't matter too much.

=> Capture step 3-0 and 3-2 in the MAC CR

- Intel wonders if in the case that the TB doesn't fit into the selected whether the UE should reselect or whether the UE should segment such that the data fits into the selected resource. Huawei wonders how to capture it in the spec?

=> Capture in the MAC CR that the UE may reselect if it wants to avoid segmentation.

On FFS from RAN1

- Panasonic thinks that the RAN1 assumption can already be achieved by current specifications. If the UE has not data it won't transmit anything.

=> RAN2 ensures the assumption

- Huawei wonders what latency requirement needs to be fulfilled. LG thinks that it is 100ms. Huawei explains that it is between 20ms to 100ms. Panasonic understands that this is aligned with the mode 2 QoS discussion. Ericsson thinks that PPPP includes the latency. Panasonic thinks that for mode 1 that is possible but not for mode 2. Huawei doesn't think it can be deduced from PPPP.

=> RAN2 assumes that the upper layers also provide to the UE the latency value. It is not clear if upper layers need to provide it in addition to PPPP or if PPPP also implicitly carries this information. Include it in LS.

- Panasonic wonders how the UE knows the retransmission resources are determined. LG indicates that this will be specified in PHY

=> FFS how this is captured in the MAC
=> Noted

[R2-164651](#) LS on L1 parameters for sidelink-based V2V ([R1-168252](#); contact: LGE) RAN1

- Ericsson explains that there are two more discussions pending in RAN1 that may impact RRC.

=> Noted

[R2-164655](#) LS on Timing Offset Indication for V2V RAN1

- Intel would like to understand how to use this offset. Ericsson thinks that this was cover existing network deployments that have synchronized the timing.

=> Update DFN formula
=> Noted

8.2.1 Geo-location aspects

Stage 3 aspects related to zone calculation, reporting mechanisms and triggers.

Including output from email discussion [94#29][LTE/V2V] – Geo-location reporting (Qualcomm)

[R2-164783](#) Report of email discussion [94#29] Geo-location reporting Qualcomm Incorporated report *Proposal 1*

- Ericsson wonders if instead of ceiling we should use floor instead. Interdigital thinks this is not a major issue

Proposal 4:

- Nokia Net thinks that Zone ID is beneficial and it should be up to the network to configure the UE to either report Zone ID or complete location information. Ericsson thinks that geographical location shouldn't be linked to zoning, but we can investigate if we can improve overhead. ZTE agrees with Nokia and don't think that eNB need the detailed information.

- Intel thinks that we shouldn't spend any more time on this as majority of companies don't see the need. Ericsson thinks that it depends on frequency of report. LG agrees with Intel.
- Huawei doesn't think overhead is an issue as the location information is only a few tens of bit.

Proposal 5:

- Huawei and Samsung think that periodic reporting may be sufficient and the eNB can adjust the periodicity.
- Intel thinks that to make progress periodic reporting is sufficient.
- LG are ok with Proposal 5
- Nokia Net agrees with both
- Ericsson thinks that location change should be just in terms of meters as the eNB may not configure zone ID. Huawei doesn't think it makes sense to report it in terms of meter as it may not be precise. Intel agrees and accuracy requirement will be difficult in term of testing.
- Ericsson wonders what the periodicity will be and whether we need to reconsider the overhead.

Proposal 6:

- Ericsson is concerned that this message terminates in LPP. Intel clarifies that it is also used for GNSS. Ericsson thinks that by using positioning messages we may be restricting the UEs to use the positioning architecture. Intel explains that the message terminates in the RRC and is not related to LPP and it was related to MDT.
- LG wonders if we should include timestamp in RRC message. Intel considered it but thinks the eNB can figure it would since it has configured the periodicity. Qualcomm doesn't think we need to be super optimized.

=> Noted

Agreements:

- The zones will be calculated according to the following modulo operation is used.

$$x' = \text{Floor}(x / L) \text{ Mod } N_x;$$

$$y' = \text{Floor}(y / W) \text{ Mod } N_y;$$

$$\text{Zone_id} = y' * N_x + x',$$
 where the values of x, y in the above equations can be respectively specified as the longitude and latitude of the UE's location in the specification.
- Following parameters are required for zoning:
 - o Length of each zone (L)
 - o Width of each zone (W)
 - o Number of of zone in length (Nx)
 - o Number of of zone in width (Ny)
- Zoning mechanism and parameters are same for in-coverage and out of coverage, with only difference of parameters provided by eNB or pre-configured
- No need to report calculated zone ID, as complete location information reporting is already agreed in RAN2
- Location reporting triggers are based on periodic reporting. For the reporting interval, the current value ranges used for periodical measurement reporting from 120ms to 1 hour can be used.
- FFS on all related RRC parameters
- RRC messaging, *MeasurementReport*, will be used for location reporting. *The existing IE LocationInfo will be used.*
- Sensing will be performed for the pools associated to zones.
- The values for length of each zone (L) include: 5m, 10m, 20m, 50m, 100m, 200m, 500m.
- The values for width of each zone (W) include: 5m, 10m, 20m, 50m, 100m, 200m, 500m.
- FFS if some restrictions of L and W combination - should be captured in the RRC CR
- The number zones in length (Nx) includes: 1, 2, 3, 4.
- The number of zones in width (Ny) includes: 1, 2, 3, 4.
- the values of x0 and y0 are set to 0 and correspond to geographical coordinates.
- The maximum number of Tx pools/zones allowed is 8.

- | |
|---|
| - The maximum number of Rx pools is 16. |
| |

[R2-164842](#) Further considerations for geo-location reporting Intel Corporation discussion

- Huawei doesn't think that 1hr is not really needed but we can re-use the existing reporting interval.
- CATT wonders if we should also

Proposal 4:

- Ericsson thinks that the geo-location reporting was agreed for both PC5 and Uu so we should use a message applicable to both. Intel thinks that this was mainly for PC5. Qualcomm agrees that the eNB can use the information for anything, but agrees that we should be able to use both messages as in the proposal.
- Samsung wonders if the network has to configure the UE which message to use.
- InterDigital wonders what the benefits are to reporting in the UE location information, is this really needed.
- Intel wonders how we will address the 100ms delay then. The UE has to wait for the network to configure the periodical reporting to report. Huawei and Ericsson don't think this is critical as the eNB can still perform the scheduling, it is not essential.

=> Noted

[R2-165760](#) RRC parameters related to geo-location Huawei discussion

- Define range of parameters required for geo-location
- QC is concerned with 5 and 10m configuration. Panasonic explains that the intention will not be to use 5x5

=> Noted

[R2-165594](#) Geo-information reporting LG Electronics Inc. discussion

=> Not treated

Not treated

[R2-164746](#) Zone Calculation and resource mapping CATT discussion

late

[R2-164747](#) Resource selection based on sensing CATT discussion

[R2-164850](#) V2V sensing and Geo-information interaction PANASONIC R&D Center Germany discussion

[R2-165035](#) Resource allocation scheme for UEs without geo-location information Kyocera discussion

[R2-165073](#) Text proposal to capture zone Configuration for V2V in 36.331 CATT discussion

[R2-165075](#) Text proposal to capture zone Calculation for V2V in 36.321 CATT discussion

[R2-165139](#) Based on geo-location reporting for Zone-based resource management in V2V service ITRI discussion

[R2-165235](#) Discussion on zone reporting Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-165399](#) Geo based Resource Allocation for V2V over PC5 ZTE Corporation discussion

[R2-165456](#) Flexible zone ID to pool ID mapping Nokia, Alcatel-Lucent Shanghai Bell discussion

[R2-165515](#) Location-aware resource allocation for V2X Ericsson discussion

8.2.2 Mobility and Path switch

Details on how pool information is signaled in handover command for synch and rx resource pools

Whether additional AS information needs to be provided to higher layers (dependent on SA2 input)

Path switch

[R2-164756](#) Mobility and Path Switch in V2V Communication Qualcomm Incorporated discussion

- Huawei wonders if the access stratum has to tell application layer which options are available. Qualcomm assumes that AS should notify the application layer.
- Ericsson agrees

=> Noted

[R2-165178](#) Considerations on service continuity in V2V case Fujitsu discussion

=> Not treated

[R2-165259](#) Discussion on the V2V path configuration signalling design ZTE Corporation discussion

=> Not treated

Mobility

[R2-164876](#) Consideration on mobility enhancement Huawei, HiSilicon discussion

=> Noted

[R2-165521](#) On Exceptional Pools Ericsson discussion

=> Noted

[R2-165042](#) Sensing related interruption for UE autonomous resource selection Samsung Telecommunications discussion

=> Noted

Discussion on [R2-164876](#), [R2-165042](#) and [R2-165521](#)

- Option1: random selection mechanism is used for the exceptional Tx pool during handover
- Option 2: exceptional pool is provided from source eNB

- Ericsson and LG would like to comply with RAN1 agreement on sensing, so Option 2.
 - Qualcomm thinks that sensing is being used by RAN1 for mode 2, but exceptional pool is being used for mode 1. Qualcomm is ok with option 1.
 - Intel doesn't think that for mode 2 in idle mode the zone change is a problem as the UE can sense in advance. For connected mode this problem only occurs during a reconfiguration.
 - Intel thinks that we should have a common solution to cover all three cases.
 - LG thinks that the tx pool should be already configured in the rx pool so the UE can pre-sense. Samsung has a similar view. Intel indicates that even if the UE has a rx pool it doesn't differentiate between pools.
 - Huawei thinks that we cannot sense the rx pools as the tx pool is being provided by target cell.
 - Panasonic would like to have a simple solution.
 - Ericsson thinks that to minimize UE complexity we should be provided the
- => Noted

For Offline discussion – Qualcomm

For exceptional pool handling:

1. The UE can perform random selection on the exceptional pool
2. The source cell can provide the exceptional pool and perform pre-sensing

For mode 2 zone changes:

- Assumption is that the UE can pre-sense other configured tx pools in advance for zone changes. Is there a problem with zones between different cells?

[R2-165770](#) WF on selection mode for exception pool Qualcomm

Proposal 1: Expand usage of existing "Exception pool" for any transition case (e.g., idle-to-connected transition, RRCReconfigure, handover, but except the case described in Proposal 3).

- Samsung indicates that handover case was already agreed

Proposal 2: When the "Exception pool" is used, UE uses "random selection" to select the resource for TX.

- Ericsson thinks that RAN1 should confirm and if we want to save time we should agree to sensing. Huawei, Intel and QC don't think this goes against RAN1 agreement. The exceptional pool is only temporary.
- LG also agrees that RAN1 should confirm and this is mostly related to mode 1 and we should downprioritize. Intel doesn't think that this only for mode 1. Ericsson agrees with LG and also indicates that this will happen quite often during handover.
- Ericsson wonders how the MAC is impacted to capture the different behaviour.
- Samsung also agrees and notes that it is only used for 1 second and doesn't see a problem with using random selection.
- Panasonic and ZTE also think that we shouldn't use random selection.
- CATT also agrees with the proposals.
- Qualcomm explains that random selection is not precluded by RAN1

- Ericsson thinks that if we do random selection then the resources of the exceptional pool should be orthogonal to the sensing pool.
 - Samsung thinks that if we want to mandate sensing then we have to revert the decision and provide the pool to the UE via broadcast or in source cell.
 - Oppo thinks that we should allow pre-sensing.
 - Huawei thinks that to perform sensing on the target cell you need to have the timing of the target cell. LG doesn't think there is a problem with timing acquisition as in the typical case the UE would be using GNSS timing.
 - Intel doesn't see a problem with the sensing for the serving cell case.
 - Samsung wonders if we have to capture the pre-sensing. Panasonic thinks that anyways we have to specify that the UE has to sense on all tx pools. CATT thinks that sensing for mode 1 UE is a burden for the UE. Panasonic explains that the UE will anyways have to decode the SA.
- => Noted

[R2-165772](#) LS to RAN1 on exceptional pool handling Oppo LS out to: RAN1 from:
 RAN2 Rel-14

- Qualcomm thinks we should give some information on the exceptional pool and why we made the agreement (e.g. for latency requirement as a result of interruption from sensing). ZTE thinks that we shouldn't give any explanation.

=> Update LS with short explanation
 => Update text "for transition between pools (e.g., during idle-to-connected)"
 => LS is revised in [R2-165774](#)

[R2-165774](#) LS to RAN1 on exceptional pool handling Oppo LS out to: RAN1 from:
 RAN2 Rel-14 LTE_SL_V2V-Core
 [CBF]

Agreements:

Path switch

- AS informs upper layer of the path configuration. From RAN2 point of view, path switching is done by UE upper layer and there is no need to specify AS layer information to upper layer for the sake of path switching.

Mobility

- The RRC specification will include the exceptional pools in SIB21 (for the non-handover case).
- Pre-sensing on the exceptional pool is used for exceptional pool provided by serving cell (e.g. idle-to-connected, RLF cases, RRC reconfig).
- For handover case, an "exceptional" pool is provided by the target cell. The UE uses random selection on this pool.
- Send LS to RAN1 to inform them and asking if they have any real concern.

[R2-165140](#) The suitability of PC5 measurement for V2V PC5 handover ITRI, National Taiwan University discussion

=> Not treated

[R2-165233](#) Discussion on the remaining issues on V2V mobility ZTE Corporation discussion

=> Not treated

8.2.3 QoS aspects

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

[R2-165593](#) QoS aspect for V2V LG Electronics Inc. discussion

Observation 1) PPPP reflects priority, delay, loss rate and other criteria in application layer.

Observation 2) Using PPPP is sufficient for supporting QoS for V2V for network scheduled mode.

Observation 3) Using PPPP is sufficient for supporting QoS for V2V for the UE autonomous resource pool selection mode.

Observation 4) The case of V2X communication is sharing the same radio resources with other applications using PC5 transmission does not need to be addressed.

- TCL is not sure about observation 4 and thinks that this is a SA1 issue. LG doesn't think that resources will be shared with other non-V2V services as it is using different physical channels. Ericsson and Panasonic agree. Panasonic indicates that this will impact MAC modelling and how we map services to physical channels. Ericsson thinks that we should inform SA2 that we expect this.
 - ZTE wonders how we will ensure that AMBR is satisfied for autonomous PC5.
 - Ericsson thinks that we should capture that we different traffic should have different PPPP.
- => Noted

[R2-164848](#)

QoS support for UE autonomous resource allocation mode PANASONIC R&D Center Germany discussion

- Huawei thinks that the UE should be provided with QoS parameters for mode 2. Nokia Net share the same understanding as Panasonic. Ericsson thinks that PPPP is already a form of QoS and there is no need to have additional optimizations. Panasonic indicates that in RAN1 they already have maximum delay for sensing.
 - LG doesn't think that AMBR is needed as there is some application layer control. Qualcomm supports LG view. Panasonic indicates that the SA2 AMBR is called PC5 AMBR and is not linked to a mode. InterDigital agrees. Motorola agrees with Panasonic.
 - Qualcomm thinks that AMBR will be used in connected mode only.
 - Chair thinks we indicate to SA2 that RAN2 made an assumption that PPPP is sufficient and AMBR is not taken into account for mode 2.
 - RAN2 needs to understand if the intention of SA2 was to explicitly exclude mode 2.
- => Noted

Agreements:

- RAN2 doesn't expect V2X PC5 resources to be shared with other non-V2X applications.
- For mode 1, RAN2 agrees that PPPP and other QoS parameters provided by higher layers will be used.
- For mode 2, RAN2 assumes that only PPPP can be used to ensure QoS for PC5 V2V.
- Send LS to SA2:
 - o List agreements/assumptions
 - o Point out that in mode 2 (with some background on mode 2) it may not be possible to respect some of QoS parameters other than PPPP (e.g. AMBR).
 - o Ask whether mode 2 was explicitly excluded

[R2-165516](#)

Congestion Control in V2V Ericsson discussion

=> Not treated

[R2-165761](#)

LS to SA2 on QoS for V2V Intel LS out to: SA2 cc: RAN3, RAN1 from: RAN2 Rel-14

=> Actions should be both to SA1/SA2

=> Change "confirm" to "clarify" and some editorial comments

=> LS is revised in [R2-165771](#)

[R2-165771](#)

LS to SA2 on QoS for V2X (respond LS to [R2-164629](#)/ S2-163081) Intel LS out

to: SA2 cc: RAN1 cc: RAN3 from: RAN2 Rel-14 LTE_SL_V2V-Core

- Nokia wonders if with the current wording it sounds like RAN2 thinks that PPPP is sufficient.

=> Add "V2X" UE in last sentence of the LS text

=> Update actions"

ACTION: 1) RAN2 kindly asks SA2 to take the above RAN2 agreements into account and to give feedback on whether the above RAN2 assumption on not enforcing AMBR for mode 2 is reasonable.

2) RAN2 kindly asks SA2 to give feedback on whether the upper layer provides PDB information in addition to PPPP, or if PPPP also implicitly indicates this information and how this is achieved for mode 2 operation.

=> The LS is approved in [R2-165773](#)

Not treated

[R2-164757](#) QoS for V2V Communication over PC5 Qualcomm Incorporated discussion

[R2-165279](#) QoS aspects for PC5-based V2V transport ZTE Corporation discussion

[R2-165528](#) V2x QoS Ericsson discussion

8.2.4 SPS enhancements

Discussion on whether single or multiple SPS can be active at the same time and whether a SPS is linked to one or more RBs

UE assistance information, triggering of UE assistance and other remaining stage 3 details

Discussion based on Proposal 9-14 of email discussion 94#31 ([R2-164771](#))

Proposal 9: Multiple SPS can be activated simultaneously.

Proposal 10: The UE assistance information reporting for SPS is triggered based on UE implementation.

- Ericsson thinks that some rules are necessary to limit the amount of reporting from UE. For example, the report shouldn't be sent if the offset to the next SPS occasion is not greater than a threshold and a prohibit timer can be used. Qualcomm assumes that the eNB can control the reporting and there is no need to add to the rules. Intel agrees with QC.
- LG thinks that the question is how we will configure the offset.
- Ericsson thinks at least we should have a way to cancel the trigger.
- Huawei thinks that the prohibit timer can be left to UE implementation. InterDigital agrees with Ericsson.

Proposal 11: The UE assistance information includes the periodicity and timing offset. How to present the UE assistance information is FFS.

- Ericsson wonders what periodicity and timing offset refers to here. Intel clarifies that it is the preferred SPS interval if the periodicity of packet generation changes. Ericsson would like to understand how to test. Panasonic explains that it is an expected packet periodicity. Ericsson thinks that we should have a definition, the interval between the last two packets. Panasonic thinks we should leave up to the UE. Nokia Net that we can enhance the UE assistance with some UE buffer report.
-

Proposal 12: The UE estimates the periodicity and timing offset based on UE implementation.

Proposal 13: At least explicit SPS resource release by eNB based on UE's transmission over indication should be supported, and whether other SPS release triggers should be introduced can be further discussed.

Proposal 14: Whether SPS configuration should be linked to radio bearers can be further discussed.

[R2-164877](#) Discussions on SPS over Sidelink Huawei, HiSilicon discussion

=> Noted

Agreements:

- Multiple SPS can be activated simultaneously
- UE assistance triggers are left to UE implementation. The network should be able to configure UE assistance information.
- The UE assistance information includes a set of preferred expected SPS interval, timing offset with respect subframe0 of the SFN0 (frame and subframe number). FFS if per logical channel.

UE assistance:

- The UE Assistance Information is allowed to be reported if change in estimated periodicity of packet arrival occurs
- The UE Assistance Information is allowed to be reported if change in estimated offset of packet arrival occurs
- The UE assistance information is configured by the eNB
- The UE Assistance Info can be reported both in case SPS is configured or not
- UE Assistance Info per SPS existing or suggested configuration(s). Details of configurations are FFS.
- UE Assistance information reporting is configured by the eNB at least for PC5 V2X.
- Additional Content of UE

- o If configured by the eNB, SPS index of the SPS configuration

Questions for CB – Ericsson

- How to control UE assistance reporting:
 - Prohibit timer
 - Or an agreeable rule that is very simple
- FFS on details of how SPS configuration looks like- FFS if UE assistance is linked to a possible SPS configuration. FFS if it is per logical channel?
- FFS if the SPS configuration is linked to a radio bearer
- FFS if a SPS occasion can only be used by the logical channels associated to the SPS configuration or can be used by any logical channels after the logical channels associated to SPS have been served.
- How many active SPS are allowed and how many SPS configurations can be configured?
- FFS if it is MAC or RRC

[R2-165762](#) Summary of offline SPS agreements Ericsson Discussion
=> Move it to email discussion using the summary as baseline.

Proposal 5:

- Qualcomm wonders what happens if there is no SPS config (e.g. for the first one)

✉ [LTE/V2V] – SPS – Ericsson

Discuss and agree to:

- Additional content - **FFS PPPP or LCID**
- Type of message used, how SPS release is indicated
- SPS configuration (per Logical channel, per PPPP, or per UE) and how to multiplex data in SPS occasion
- Content of SPS configuration and SR mask
- Max number of SPS configuration
- Deadline: Sept. 23

Not treated

[R2-165129](#) Remaining Issues on SPS Configurations for PC5 Mode 1 Shenzhen Coolpad Technologies discussion

[R2-164774](#) Discussion on Details of V2V/V2X SPS Enhancements Guangdong OPPO Mobile Telecom. discussion

[R2-164849](#) Radio resource selection behaviour for sensing and semi-persistent transmission PANASONIC R&D Center Germany discussion

[R2-165059](#) Discussion on SPS for V2V Interdigital Asia LLC discussion

[R2-165074](#) UE reporting and enhanced UL SPS for V2V Samsung Electronics Co., Ltd discussion

[R2-165212](#) RAN2 related cross-carrier issues CMCC discussion

[R2-165288](#) Discussion on Multiple SL SPS for V2X Transmission ASUSTEK COMPUTER (SHANGHAI) discussion

[R2-165400](#) SPS enhancements for V2V over PC5 ZTE Corporation discussion

[R2-165526](#) SPS Protocol for Sidelink Ericsson discussion

[R2-165534](#) Details of DCI and SPS configuration Qualcomm Incorporated discussion

[R2-165693](#) SL SPS configuration and UE assistant information LG Electronics France discussion

[R2-165205](#) Remaining issues on SL SPS Innovative Technology Lab Co. discussion
=> Moved from 8.2.5

8.2.5 Stage 3

All other stage 3 aspects, including L2, L3, and QoS

Including output from email discussion [94#30][LTE/V2V] – RRC Open issues (Huawei)

Including output from email discussion [94#31][LTE/V2V] – Layer 2 open issues (CATT)

Layer 2

[R2-164771](#) Report of email discussion 94#31 Layer 2 Open Issues CATT report late

Proposal 4: STCH for sidelink communication can be reused by PC5-based V2V.

- LG indicates that the characteristics of physical channels will be different and we should agree that legacy logical channels shouldn't be multiplexed in the same physical channel.
- Ericsson doesn't see a problem that warrants a change to the logical channel definitions and the differentiation can be done based on identifiers.

Proposal 5: Whether the STCH for PC5-based V2V should be separated from that used for sidelink communication can be further discussed.

- LG indicates that there are two ways to differentiate 1) separate LCID space 2) via L2 destination IDs.
- LG prefers separate LCID. Ericsson understands that different destination ID pairs will be used for V2V. LG thinks that for separation for MCPTT and V2V would require separation. Samsung wonders why we need this if we have separate pools. Samsung thinks that the UE should know whether the packet is for PS or for V2V. Panasonic agrees, and we only need to specify mapping between logical channels and physical channels.
- Coolpad wonders how many LCIDs need to be reserved. LG responds 8.

Proposal 6: Majority of companies support to use Destination ID to identify the logical channel of V2V. However RAN2 shall confirm the usage of Destination ID with SA2. Send LS to SA2 to check whether they can provide separate Destination ID for PC5-based V2V and sidelink communication

- Ericsson doesn't think an LS is needed, it is clear in SA2 specs. Samsung is not sure if this distinction is possible and we should ensure with SA2. In Rel-13 we made the distinction in MAC PDU for unicast.
 - LG doesn't see why we should ask SA2 as it doesn't matter. The UE can make the distinction at the transmitter side.
- => No need to send an LS to SA2. The UE can determine at the transmitter side in which pool it should transmit the data.

Proposal 8

- Ericsson thinks that if RAN1 removes the destination ID from SCI we may have to change the MAC header. QC shares understanding. Intel thinks that even if RAN1 decides to remove it, we can still keep the same header. LG shares Intel understanding.
 - Qualcomm thinks we should keep the full ID. Ericsson thinks that if we want to shorten the IDs we need to do a full analysis.
 - LG asks if we would use a different MAC PDU and new version. LG can agree to that.
- => Noted

[R2-165524](#) Layer- 2 Protocol Stack for PC5-based V2X Ericsson discussion
=> Noted

[R2-165523](#) On the Need of Sidelink Gaps for V2V Ericsson discussion

- QC understands whether gaps are needed is based on rx/tx discussion. We are not sure whether we need to share the tx chain and if so, how to handle the share tx chain should be discussed.

=> Noted

[R2-165689](#) General Issues on MAC CR for V2V services LG Electronics France discussion

- Intel and Ericsson don't see the need to change legacy behaviour related to prioritization and multiplexing. LG is concerned because RAN1 agreed to indicate the priority in the SCI

=> Noted

[R2-165592](#) Coexistence of PC5-V2V and Uu LG Electronics Inc. discussion
=> Noted

Agreements:

- PC5-U will be used as the protocol stack for PC5-based V2V
- Introduce a new PDCP SDU type "non-IP" in PDCP header for PC5-based V2V
- Only RLC UM mode is supported for PC5-based V2V
- STCH for sidelink communication can be reused by PC5-based V2V.

- Non-V2X (e.g. PS) data cannot be multiplexed with V2V transmissions and transmitted on V2V PC5 sidelink channels.
- Reuse the Source ID, Destination ID and LCID to identify the logical channel for PC5-based V2V
- PC5-based V2V will reuse the MAC header of sidelink communication. MAC header is extended to 24bits to include the full destination ID. New MAC PDU with new version will be introduced.
- Priority in SCI corresponds to the PPPP of highest priority data in the MAC PDU.

=> Respond to LS from RAN1 [R2-164634](#) and provide last agreement on PPPP

[R2-165764](#) Response LS to RAN1 [R2-164634](#) LG Electronics Inc. LS out to: RAN1
=> The LS is approved in [R2-165765](#)

RRC

[R2-164880](#) Summary of [94#30][LTE/V2V] – RRC Open issues Huawei, HiSilicon discussion
=> As a baseline legacy name should not be changed. As a baseline "V2X sidelink communication" is used
Proposal 5: Idle UEs should read V2X transmission path(s) configured in SIB21 and inform upper layers of the configured path(s). Connected UEs should inform upper layers of the V2X transmission path(s) if it receives configuration in RRC dedicated signaling

- Qualcomm thinks that we should just configure PC5 resources. Panasonic thinks that for Uu the eNB should tell the UE that Uu can also be used. Ericsson doesn't think that anything special is needed for Uu, as the UE will be configured with a bearer. Ericsson thinks that in SIB capability is not needed.
- Huawei explains that the proposal to use the SIB for PC5 would be similar to sidelink legacy.
- Intel doesn't see the need to indicate Uu. Qualcomm thinks that for Uu we should use legacy configuration. We should assume that by default Uu can be supported and the UE can request the service. If PC5 is also supported the configuration can be provided to the UE.
- Panasonic thinks that this is contradicting yesterday's agreement.

on how allowed path configuration is provided to the UE – Huawei

Questions:

- Idle mode:
 - If Uu and PC5 path availability needs to be broadcasted
- Connected mode:
- Whether the UE needs to indicate anything specific to the eNB regarding Uu and/or PC5 support

Proposal 6

- InterDigital and Ericsson think the UE sidelink information is for sidelink.

Proposal 7

- Qualcomm and Ericsson doesn't see a need to indicate anything for rx.

Proposal 9

- Ericsson thinks we should also include 50ms? Huawei doesn't see the need.

Proposal 12: Maximum 8 Tx pools and 16 Rx pools are defined for V2V WI

- LG thinks that we should 9Tx pools and 18rx pools
- Ericsson thinks that one pool is sufficient as RAN1 has studied one pool. One pool per zone. LG can agree to one pool per zone but we should specify a maximum value.
- Huawei clarifies that this is 8tx pool in total not per zone.
- Panasonic is concerned that if we remove priority pool then we may not have ways to prioritize. Ericsson clarifies that RAN1's understanding is that priority can be handled within a pool. Panasonic thinks that we can limit the maximum number of pools but we don't need to restrict to one pool per zone. Nokia and ZTE do not want to restrict.
- Qualcomm indicates that fragmentation is an issue for RAN1 and since RAN1 is assuming that one pool is used for all priorities we should do the same.
- LG would like to ensure that the same pool can be configured for different zones. Ericsson agrees we can allow it.

=> Noted

After comeback

- Huawei, LG thinks that we should change the legacy Rel-13 and Rel-12 terminology to "PS sidelink communication"
 - Chair has some concerns on changing legacy terminology
 - Samsung, Panasonic also feel uncomfortable. Panasonic also is concerned with implementers seeing different terminology
- => Keep legacy terminology for now

[R2-165769](#) WF on PC5/Uu path configurationHuawei Discussion Rel-14
 LTE_SL_V2V-Core

- Ericsson thinks that there is no need for this.
- Panasonic thinks that we have to report which path is available.
- Qualcomm thinks that Uu path is a UE specific configuration and doesn't understand how the SIB bit would work. Cool pad also agrees
- LG doesn't think this is a critical issue.

=> Discuss this in the V2X work item
 => Noted

[R2-165525](#) RRC Details of V2V Configuration Ericsson discussion

The UE may not operate sidelink vehicle communication when in limited service state

- Huawei think that we should re-use existing conditions. LG would like to support sidelink in limited service state. Ericsson understands that V2V are not public safety UEs and this is specified in SA2 "ProSe-enabled non-Public Safety UE shall not use ProSe when in limited service state". LG still thinks that there are use cases to allow this.
- Qualcomm also thinks we should ask SA2 as this sentence was introduced for Rel-13 without considering V2X.

=> Include the question into LS to SA2 indicating that RAN2 has made the following working assumption "The UE should not operate sidelink vehicle communication when in limited service state" and ask if the restriction still applies for V2X.

Proposal 9

- Huawei thinks that the serving cell can configure the UE to transmit synchronization configuration for another carrier.

=> Noted

[R2-164881](#) Discussion on conditions for V2X sidelink communication Huawei, HiSilicon discussion

=> Not treated

Agreements:

- When requesting sidelink resources, the UE should inform the eNB that it is interested in V2X in *SidelinkUEInformation*
- Legacy mechanism should be used for reception purposes. If the UE is configured by higher layers to receive V2X communication and PC5 resources are provided the UE receives on those configured resources. If Uu is configured and PC5 is configured the UE should monitor on both.
- Introduce SPS periodicity values 50ms, 100ms, 200ms, 300ms, 400ms, 500ms, 600ms, 700ms, 800ms, 900ms and 1000ms for V2V UL/SL SPS
- One pool per zone is configured and no resource pool per priority is needed. FFS on maximum number of pools/zones allowed to be configured.
- Zone concept is not applied to exceptional sidelink transmission pools
- Working assumption: The UE should not operate sidelink vehicle communication when in limited service state
- The UE may operate sidelink vehicle communication when fulfilling the conditions for sidelink communication operation not related to limited service state
- As a baseline SIB21 resources transmission can follow Rel-13 rules
- For synchronization, commSyncConfig-r12 IE can be reused and a new IE indicating the synchronization reference (eNB, UE, GNSS)
- The UE follows pre-configuration of synchronization parameters in case there is no cell in the V2V carrier and no configuration from serving cell is received.
- In case the eNB configures the eNB timing as synchronization type to the UE for the V2V carrier, the synchronization configuration (i.e., SL-SyncConfigNFreq-r13) is configured by the eNB for the V2V carrier. The UE should follow

PCell(RRC_CONNECTED) /serving cell (RRC_IDLE) for synchronization and DL measurement

Pools

- [R2-164844](#) Resource pool management for V2X Intel Corporation discussion
A common resource pool with new DMRS format is used for V2X, I2X and P2X
 => P2X can be discussed in V2X WI
 => Noted

Resource selection and reselection

- [R2-164878](#) UE autonomous resource selection based on sensing Huawei, HiSilicon discussion
Proposal 2: For a given sidelink logical channel, the UE should trigger (re-)selection of semi-persistent resources only if: 1) the sidelink logical channel has data for transmission; 2) the data of the sidelink logical channel arrives periodically, according to UE implementation based observation; 3) and the UE has no semi-persistent resources selected for the specific sidelink logical channel.

- Panasonic thinks that we should at least specify when the UE is allowed to do the reservation. For example, what happens when the UE gets new data.
- Ericsson doesn't think that reservation procedure should be linked to a logical channel.

Proposal 3: The UE may trigger resource selection of one-shot sidelink resources, 1) if the data of the logical channel arrives aperiodically or does not have regular message size, according to UE implementation based observation; or 2) if there is some data left in the logical channel which has been configured with semi-persistent resources, after the semi-persistent resource is used up in a TTI

- Qualcomm asks if RAN1 has a scheme to support this. Huawei doesn't think that the UE always has to do semi-persistence. Panasonic has the same view and Huawei.
- Ericsson asks why we would change Rel-13 UE behavior. Huawei explains it is because of RAN1 sensing and reserving.
- Ericsson wonders if this is assuming several booking processes. Panasonic assumes so. Ericsson explains that RAN1 has only considered single process. Huawei thinks that it should be up to RAN2 how many processes to have in parallel. Qualcomm also thinks that we should keep it simple and have a single processes. Panasonic also thinks that it is a bit strange that we have different SPS processes.
- Huawei explains that the RAN1 agreement is not perfectly correct as the TB is created by the MAC.

=> Noted

Questions – Panasonic

- Should RAN2 consider parallel transmissions/booking processes and how many booking processes we will allow
- Sanity check of RAN1 agreements

After comeback

- Asustek wonders how to handle the case when there is more data than 2. Panasonic thinks that the UE can use one shot transmissions in that case.
- Ericsson would like to restrict the UE from always booking two processes. Panasonic thinks that if the UE reserved resources it should use the reserved resources rather than use one shot transmission.
- LG wonders how to differentiate between these two type of transmissions?

Agreements

- => Maximum number of resource booking process is 2 and it will be fixed in the specification. The UE is allowed to use one shot transmission if two processes are not sufficient. FFS if mechanisms to restrict UEs from over booking are needed. FFS how the UE selects type of booking and transmission.
- => The UE should comply with SC FDM requirement and these are independent processes

- [R2-165690](#) UE autonomous resource selection mode in MAC CR LG Electronics France discussion

- => As per RAN1 agreement, if one or more pools of resources are (re-)configured by RRC, MAC triggers resource reselection.
=> Noted

Multi-carrier

Not treated

- [R2-165517](#) Discussion on PC5 Multiple Carrier Ericsson discussion
[R2-164843](#) Support of multiple carriers/PLMNs Intel Corporation discussion

- [R2-165520](#) On Sidelink Cross-Carrier Scheduling Ericsson discussion
[R2-164761](#) Cross-carrier Scheduling for V2V CATT discussion

Inter-PLMN

- [R2-165519](#) Inter-PLMN Operations for V2V Ericsson discussion
=> Not treated

DFN calculations

- [R2-164760](#) DFN Derivation from GNSS CATT discussion
=> Noted

=> The following formula for DFN calculation from GNSS is used:

$$DFN = \lfloor 0.1 \times (T_{current} - T_{ref}) \rfloor \bmod 1024$$

$$SubframeNumber = \lfloor (T_{current} - T_{ref}) \rfloor \bmod 10$$

=> The reference UTC time (T_{ref}) in the above formula is suggested to 00:00:00 on Gregorian calendar date 1 January, 1900 (midnight between Thursday, December 31, 1899 and Friday, January 1, 1900).

=> Include offset [0, 1 ms] with the granularity of 1 us.

- [R2-164875](#) DFN calculation based on GNSS Huawei, HiSilicon discussion
=> Not treated

Synchronization config

- [R2-164879](#) V2V Synchronization Configuration Huawei, HiSilicon discussion
- Ericsson indicates that there is still some discussion on RAN1
=> Noted

Not treated

- [R2-164748](#) Misalignment between DFN periodicity and synchronization periodicity CATT discussion
[R2-164758](#) Inter-Carrier Configuration CATT discussion
[R2-164775](#) Discussion on Spectrum Configuration for V2V/Guangdong OPPO Mobile Telecom. discussion

Reporting to network

- [R2-164759](#) UE Sensing result Report CATT discussion
=> Noted

- [R2-164770](#) Draft LS on usage of Destination ID to differentiate PS sidelink and V2X sidelink CATT LS out
=> Noted

CRs:

- [R2-164772](#) Introduction of PC5 V2V for 36.304 CATT CR 36.304 13.2.00324 - B Rel-14
LTE_SL_V2V-Core

R2-164773	Introduction of PC5 V2V for 36.323 CATT CR 36.323 13.2.10174 - B Rel-14 LTE_SL_V2V-Core
R2-164882	Introducing V2V to TS 36.302 Huawei, HiSilicon CR 36.302 13.2.00077 - B Rel-14 LTE_SL_V2V-Core
<i>Not treated</i>	
R2-164883	Introducing V2V to TS 36.331 Huawei, HiSilicon CR 36.331 13.2.02261 - B Rel-14 LTE_SL_V2V-Core
R2-165529	Introducing Sidelink SPS in MAC Ericsson draftCR 36.321 13.2.0- - B Rel-14 LTE_SL_V2V-Core
R2-165530	Introducing Sidelink SPS in RRC Ericsson draftCR 36.331 13.2.0- - B Rel-14 LTE_SL_V2V-Core
R2-165531	Introducing non-IP SDU type Ericsson draftCR 36.323 13.2.1- - B Rel-14 LTE_SL_V2V-Core
R2-165691	Draft CR to 36.321 on Support for V2V services based on LTE sidelink (for UE autonomous resource selection) LG Electronics France draftCR 36.321 13.2.0- - B Rel-14 LTE_SL_V2V-Core
R2-165692	Draft CR to 36.321 on Support for V2V services based on LTE sidelink (for SL SPS) LG Electronics France draftCR 36.321 13.2.0- - B Rel-14 LTE_SL_V2V-Core
R2-165077	Text proposal for Misalignment between DFN periodicity and synchronization periodicity CATT discussion
R2-165078	Text Proposal to Capture V2X Configuration Carrier in 36.331 CATT discussion
R2-165081	Text proposal to Ccapture V2X Configuration Carrier in 36.304 CATT discussion
R2-165083	Text Proposal to Capture V2X Measurement in 36.331 CATT discussion
R2-165084	Text Proposal for V2X dedicated carrier CATT discussion
R2-165087	Text Proposal for Multiple SPS CATT discussion
R2-165089	TP to capture sensing based resource selection in 36.321 CATT discussion

- ☒ **[LTE/V2V] – CR to 36.321 – LG**
 - Agree to CR to 36.321 for RAN submission
 - Deadline: One week after the meeting
- ☒ **[LTE/V2V] – CR to 36.331 – Huawei**
 - Agree to CR to 36.321 for RAN submission
 - Deadline: One week after the meeting
- ☒ **[LTE/V2V] – CR to 36.323 – CATT**
 - Agree to CR to 36.323 for RAN submission
 - Deadline: One week after the meeting
- ☒ **[LTE/V2V] – CR to 36.304 – CATT**
 - Agree to CR to 36.304 for RAN submission
 - Deadline: One week after the meeting
- ☒ **[LTE/V2V] – CR to 36.302 – Huawei**
 - Agree to CR to 36.302 for RAN submission
 - Deadline: One week after the meeting
- ☒ **[LTE/V2V] – CR to 36.300 – LG**
 - Agree to CR to 36.300 for RAN submission
 - Deadline: One week after 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. 17; SID: [RP-161303](#))

Time budget 0.5TU

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

8.4.1 UE-to-Network Relay enhancements

8.4.1.1 Common relay architecture aspects

Connectivity scenarios

Relaying options for UP/CP

- [R2-165597](#) TR skeleton for FeD2D LG Electronics Inc. discussion
- Ericsson asks if we have considered what terminology to use and if we are using SA terminology. LG and Intel would be fine to use the existing SA terminology
 - Ericsson wonders who the target audience is. Huawei thinks the primary target is the 3GPP groups. Ericsson explains that if we were to also consider external sources we would maybe have to explain better some aspects in the TR.
 - Sequans thinks that we can start already elaborating on the scenario section with coverage and traffic scenarios.
- => Section 4 should include agreed scenarios so far up to and including RAN2#95
- Intel wonders who would take care of traffic scenarios. Sequans explains that RAN2 should start. Intel is concerned that different groups will assume different scenario.
- => Further skeleton section updates will be discussed over email
- => The TR is agreed
- ☒ **[LTE/FeD2D] – Update TR 36.746 LG**
- TR update with agreements up to RAN2#95
 - Discuss need for additional sub-sections
 - Deadline: Sept. 23rd

Prioritization and Requirements

[R2-165027](#) Phasing of D2D Relay enhancements Sony discussion

Initially focus on/prioritise some relatively simple PC5 improvements for low-complexity devices supporting unicast/AM operation over PC5 with L2 relay enhancements

Once the basic PC5 unicast and relay work has progressed, then consider other enhancements such as NB-IOT based sidelink and physical layer improvements for PC5

- Intel understands that NB-IoT is pending RAN1 TU discussions. Nokia has the same understanding.
 - Nokia asks what is meant by low complexity devices. Sony explains that it is just covering MTC device
 - Sony explains that with this proposal RAN2 should work on simple PC5 improvements without waiting for RAN1.
- => RAN2 should not focus on sidelink NB-IoT enhancements (until further RAN plenary instructions)
- => Noted

[R2-165471](#) Basic principles and work prioritization Nokia, Alcatel-Lucent Shanghai Bell discussion

Proposal 1: RAN2 should initially focus on bidirectional relay design in order to support all coverage scenarios and allow for maximum power consumption optimizations for the Remote UE.

- LG thinks that we should also keep in mind the generic relay.
 - Ericsson agrees as unidirectional relay would not work for out-of-coverage and for in-coverage it would be an optimization and there could be some benefits.
 - Sequans thinks that it is too early to exclude unidirectional
 - Nokia's intention is not to exclude unidirectional but just to focus. Intel and Huawei agree once we have done the job of bidirectional then unidirectional can be considered.
- => RAN2 will initially focus on bidirectional relay design, but should consider impact of the design in unidirectional

Proposal 2: Evolved ProSe UE-to-Network Relay should, as a baseline, support both UP and CP relaying including relevant System Information and dedicated RRC signaling, paging and connection establishment procedure.

- ZTE also thinks that SI and paging should be considered but we should discuss whether it is necessary to have such relaying for in-coverage
- Huawei thinks this is similar to proposal 1.
- Ericsson is not ready to agree that some information such as SI and paging need to be relayed. Nokia thinks that we should study and see how to handle SI, but paging is important to reach the UE.
- Sequans asks how to handle the NAS CP or are we focusing on RRC. Ericsson thinks we should keep this in mind.
- What control plane functions should be supported are FFS.

=> RAN2 should study relay design support for both CP and UP.

Proposal 3: To allow for efficient support of diverse data applications RAN2 should study Layer 2 enhancements to sidelink communications, e.g. HARQ feedback and RLC AM mode support.

- ZTE thinks that HARQ feedback would have large RAN1 impacts. Ericsson thinks that RAN2 can decide what features we would like and give guidance to RAN1.

=> Noted

[R2-165241](#)

Requirements on the Evolved UE-to-Network Relay solution Ericsson discussion

- Intel asks if these requirements are similar to SA1. Ericsson considers additional aspects that SA1 hasn't considered, such as device complexity and power consumption.

=> Noted

☒ [LTE/FeD2D] – Capture requirements – Ericsson

- Agree on RAN requirements. Start with [R2-165241](#) as a baseline.
- Outcome: TP
- Deadline: Sept. 23

Scenarios

[R2-165579](#)

Coverage scenarios for wearable devices Huawei, HiSilicon, LG Electronics, Interdigital, Sequans discussion

- Ericsson is fine with capturing coverage scenarios, but proposals 2 should be studied further.
- Intel thinks that we should also cover the RRC states in the email discussion

=> Noted

☒ [LTE/FeD2D] – Scenarios and RRC states - Huawei

- Capture coverage scenarios
- Discuss and agree on possible RRC states for relay and remote UEs
- Deadline: week before the meeting

Not treated

[R2-164836](#)

Discussion on relay based scenarios for FeD2D Intel Corporation discussion

[R2-165061](#)

Discussion on Connectivity Scenarios Interdigital Asia LLC discussion

[R2-165130](#)

Discussion on Architecture Issues for ProSe UE-to-NW relay in Release 14 Shenzhen Coolpad Technologies discussion

[R2-165230](#)

Discussion on relay schemes for FeD2D ZTE Corporation discussion

[R2-165244](#)

Use cases and scenarios for the relay solution Ericsson discussion

Architecture

Not treated

[R2-165242](#)

Reference models for Evolved ProSe UE-to-Network Relay Ericsson discussion

[R2-165600](#)

Architecture for FeD2D LG Electronics Inc. discussion

[R2-165464](#)

Layer 2 architecture for UE-to-Network Relay Huawei, HiSilicon discussion

- [R2-164779](#) Discussion on The Protocol Architecture of Layer 2 UE-to-Network Relay Guangdong OPPO Mobile Telecom. discussion
- [R2-164835](#) Discussion on L2 relaying options Intel Corporation discussion
- [R2-165028](#) Consideration on Relay Mode (RM) RLC Requirements Sony discussion
- [R2-165029](#) CloT signaling optimisation reuse for Relay Sony discussion
- [R2-165060](#) Relaying Options for UP and CP Interdigital Asia LLC discussion
- [R2-165254](#) Considerations on the evolved UE-to-Network Relay scenario and architecture ZTE Corporation discussion
- [R2-165470](#) Current relaying framework and its gaps Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-165599](#) Relaying options for UP and CP LG Electronics Inc. discussion

8.4.1.2 Non-3GPP related aspects

Aspects specific to non-3GPP related scenarios (improvements to BT or WiFi are out of scope of this SI)

Not treated

- [R2-165465](#) Feasibility of Bluetooth for UE relay Huawei, HiSilicon discussion
- [R2-165148](#) Support non-3GPP access for wearables III discussion
=> moved from 8.4.1.3

8.4.1.3 Other

Mobility, authorization, connection setup, service continuity, etc

Not treated

- [R2-164837](#) Scenarios for service continuity in FeD2D Intel Corporation discussion
- [R2-165462](#) Relay discovery and connection setup procedures on LTE Sidelink Huawei, HiSilicon discussion
- [R2-164983](#) Path selection Intel Corporation discussion
- [R2-165062](#) Discussion on service continuity scenarios KDDI Corporation discussion
- [R2-165285](#) Discussion on connection setup for FeD2D ASUSTEK COMPUTER (SHANGHAI) discussion
- [R2-165461](#) Procedures of the remote UE connection establishment with CN via a relay UE Huawei, HiSilicon discussion
- [R2-165598](#) Mobility aspect of remote UE LG Electronics Inc. discussion
- [R2-165684](#) [draft] LS on QoS support of UE-to-Network Relay over LTE sidelink Huawei LS out
- ~~[R2-165683](#)~~ [draft] LS on QoS support of UE-to-Network Relay over LTE sidelink Huawei LS out

8.4.2 LTE sidelink enhancements

8.4.2.1 Evaluation assumptions

RAN2 specific evaluation assumptions and traffic modelling

- [R2-165243](#) Evaluation assumptions and possible sidelink enhancements Ericsson discussion
=> Not treated
- [R2-165586](#) Traffic Scenarios for feD2D Sequans Communications discussion
- Sequans thinks that traffic scenarios are very important for architecture design. Ericsson thinks that we should limit number of email discussion. LG thinks we can wait to start traffic model discussion. Intel would like some more time until next meeting.
- => Noted

8.4.2.2 Other

Other RAN2 enhancements related to QoS, link efficiency, cost and power saving. As per RAN2 agreements the primary objective should be to address power efficiency for the wearable device (this is applicable to all UE categories).

Noted

- [R2-164838](#) Considerations for power saving Intel Corporation discussion
- [R2-165141](#) Discussion on QoS for D2D Relay Enhancement ITRI discussion
- [R2-165262](#) Initial consideration on the power efficiency of remote UE ZTE Corporation discussion
- [R2-165466](#) QoS Aspects for the UE-to-NW Relay over Sidelink Huawei, HiSilicon 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

Finalise all stage 3 aspects

Including output from email discussion [94#34][LTE/LATRED] – 36.321 running CR (Ericsson)

Including output from email discussion [94#35][LTE/LATRED] – 36.331 running CR (Ericsson)

CRs:

[R2-165313](#) Introduction of L2 Latency reduction techniques running CReEricsson draftCR 36.331
13.2.0- - B Rel-14 LTE_LATRED_L2-Core
- LG thinks that the release of the two features should be independent. Ericsson agrees
=> Update the release mechanism
- CATT thinks that twointerval config we should have a condition on 10ms SPS. Ericsson explains that it is in the field description
=> Update field description to “or equal” than 10ms
- ZTE thinks that the disabling of implicit release. Qualcomm thinks we can include that in the field description. Nokia Net indicates that this is already included in MAC.
=> Update field description for implicit release
=> The CR is endorsed in [R2-165763](#) with the changes above

[R2-165766](#) Introduction of L2 Latency reduction techniques running CReEricsson CR 36.331 13.2.0-
2341 B Rel-14 LTE_LATRED_L2-Core
=> Move to email discussion

[R2-165346](#) Introduction of L2 Latency reduction techniques running CReEricsson draftCR 36.321
13.2.0- - B result of email discussion [94#34] Rel-14 LTE_LATRED_L2-Core
- LG would like to rephrase “trigger SPS” to be more aligned with existing MAC CE text. Ericsson is open to streamline the procedures in the updates.
=> The CR is endorsed

[R2-165767](#) Introduction of L2 Latency reduction techniques running CReEricsson CR 36.321 13.2.0-
0920 B Rel-14 LTE_LATRED_L2-Core
[CBF]

Not treated

[R2-165348](#) Support for skipped padding and short SPS interval Ericsson draftCR 36.306 13.2.0- -
B Rel-14 LTE_LATRED_L2-Core

[R2-165349](#) Introduction of L2 latency reduction techniques capabilities Ericsson draftCR 36.331
13.2.0- - B Rel-14 LTE_LATRED_L2-Core

[R2-165359](#) UE capabilities on L2 latency reduction techniques Huawei, HiSilicon CR 36.306
13.2.01345 - B Rel-14 LTE_LATRED_L2-Core

[R2-165360](#) UE capabilities on L2 latency reduction techniques Huawei, HiSilicon CR 36.331
13.2.02300 - B Rel-14 LTE_LATRED_L2-Core

[R2-165532](#) Remaining issues of L2 Latency reduction techniques Ericsson draftCR 36.321 13.2.0-
- B Rel-14 LTE_LATRED_L2-Core
late

[R2-165686](#) Remaining Open Issues for Uplink Skipping QUALCOMM CDMA Technologies discussion
Proposal 2: With uplink skipping, non-adaptive retransmissions on non-SPS occasions are allowed when configured by the eNB in which case ACK/NACK are always transmitted on PHICH corresponding to the configured or scheduled grant times.
- Qualcomm just clarifies that this is just suggested eNB behaviour. Intel asks what the configuration is referring to. Qualcomm indicates that it would be an eNB configuration if the UE is allowed to do non-adaptive in non-SPS resources. Huawei and Nokia Net don't see the need for the new configuration as this is legacy behaviour.
- QC explains that the eNB may not detect the transmission. Nokia Net thinks that the eNB can always transmit ACK/NACK.

=> We will rely on legacy behaviour and non-adaptive retransmissions can continue on non-SPS resources and eNB can take non-adaptive retransmissions into account.

Proposal 3: Introduce new SPS periodicities of 1ms, 2ms, 4ms, and 8ms.

- Ericsson, Samsung, Huawei think that values larger 5ms don't give much gain. Huawei, CATT, Intel thinks 5ms is a good value especially for TDD. Ericsson, Intel, Huawei think 3ms should be included to give eNB flexibility.

Proposal 4: If RAN1 confirms the usage of fixed RV, this is done only when uplink skipping is configured and applicable to all non-adaptive retransmissions.

- Intel agrees. Ericsson thinks that for dynamic UL skipping this shouldn't be the case, since the eNB is in control. Qualcomm thinks we should make the distinction. Nokia Net and ZTE don't think that we should have non-adaptive on non-SPS resources.

=> Noted

[R2-165354](#) Remaining issues with SPS with skip padding and short periods Ericsson discussion

Proposal 3 The UE configured with periodic BSR only transmit when the UE buffer is non-empty

- Samsung and LG thinks that this is an optimization and eNB is in control of periodicity.
- Sequans, Intel, QC, TCL, Huawei, Nokia Net agree to not transmit.
- Samsung doesn't see the benefit of having short BSR periodicity. Sequans thinks that for new data arrival it is important to be able to transmit BSR. Nokia Net explains that the periodic BSR is important for non-first BSR for bursty transmissions.
- Samsung and LG don't see the use cases. Intel, Qualcomm, and supporting companies explain that it doesn't make sense to transmit BSR 0 when we are skipping all UL transmissions.
- Nokia Net thinks small data is only at the beginning and later one we can have more data.
- Intel thinks that we agreed to skip data and BSR should apply to this as well.
- LG objects to the proposal

=> Noted

[R2-165637](#) Remaining issues with skipping of UL padding TX Sequans Communications discussion

Proposal 2: do not send PHR when skip UL padding is enabled and no UL data is to be sent

- ZTE, Ericsson, and LG think that the periodic PHR can be used to avoid UL loss. LG thinks that instead of introducing a new periodic UL transmission we can use the PHR. Sequans indicates that the reason for new uplink transmission was to decouple the periodicity required for PHR.
- Nokia Net thinks that the periodicity of PHR may be too long for that purpose but are fine to not skip PHR.
- LG thinks that we can use a short BSR period to handle UL loss.
- Huawei thinks that we don't need to do anything special as we already have a few mechanisms to handle this.

=> Noted

[R2-165663](#) Remaining issues on SPS Confirmation MAC CE LG Electronics Inc. discussion

Proposal 1: To confirm that when the SPS Confirmation MAC CE is sent on SPS grant, the SPS Confirmation MAC CE is sent on the earliest SPS grant which occurs on or after the subframe where UL grant for SPS release exists

- Ericsson confirms the intention

=> The CR can be reviewed offline

Proposal 3: When the PDCCH for SPS activation/release is received, the HARQ entity should flush the HARQ buffer of the HARQ process associated with the SPS grant where SPS Confirmation MAC CE is to be transmitted

- Ericsson thinks that non-adaptive can be prioritized over MAC CE. Samsung doesn't think that it is crucial to prioritize the MAC CE. LG thinks it's important to transmit the MAC CE. Qualcomm thinks data is more important. Nokia Net thinks there are ways for the network to prioritize MAC CE by suspending non-adaptive retransmissions.

=> Non-adaptive retransmissions will be prioritized over MAC CE for SPS.

=> Noted

[R2-165353](#) Configuration of non-adaptive retransmissions Ericsson discussion

New non-adaptive retransmission behaviour is coupled with skip padding configuration, i.e. independent of short SPS interval configuration

- CATT thinks that we should also discuss the coupling with short SPS interval.
 - Intel doesn't see why we should couple it with skip padding.
 - Samsung thinks we should just rely on sensible network implementation.
 - LG support the proposals.
 - Qualcomm thinks that we can have a condition that if periodicity is below 10, UL skipping is always configured. Intel agrees. ZTE doesn't want to mandate eNB behaviour. Ericsson thinks that this is a strong recommendation.
 - Huawei thinks that as long as independent configuration of UL skipping and short SPS is allowed.
 - Samsung and LG think that we can simplify MAC CR by just using UL skipping as a condition.
- => Noted

Agreements

- Adaptive retransmissions have higher priority.
- Allowed SPS periodicities: 1ms, 2ms, 3ms, 4ms, 5ms
- Pending RAN1 confirmation, fixed RV is done when uplink skipping for SPS is configured and applicable to all related non-adaptive retransmissions. For dynamic grant skipping legacy RV behaviour applies.
- For UL skipping, the UE configured with periodic BSR only transmit when the UE buffer is non-empty
- Periodic PHR is not skipped
- SPS Confirmation MAC CE can be sent on an UL grant. In case there are both of UL grant and SPS grant on the same subframe, the UL grant is prioritized over the SPS grant
- UL skipping and short SPS are independently configured. If short periodicity, below 10ms is configured, UL skipping should always be configured.

- [R2-165134](#) Impact on DRX with pre-scheduling and short SPS periodicity Nokia, Alcatel-Lucent Shanghai Bell discussion
- Ericsson agrees with the proposals
 - Samsung and LG don't think that DRX is in the scope of the WI. Nokia Net doesn't agree. Proposal 6 will impact latency.
 - LG confirms that proposal 2 and 4 are correct.
- => Noted

Not treated

- [R2-165351](#) DRX and short SPS intervals Ericsson discussion
- [R2-165357](#) DRX optimization for short SPS period Huawei, HiSilicon discussion

- [R2-165352](#) Periodic BSR in SPSEricsson discussion

- [R2-164804](#) Further consideration on retransmission prioritization CATT discussion
- [R2-165185](#) Distinguishing non-adaptive retransmission and initial transmission Samsung Electronics Co., Ltd discussion

- [R2-165204](#) Enabling non-adaptive HARQ retransmissions on SPS resources Intel Corporation discussion

- [R2-165266](#) Discussion on the configurable feedback ZTE Corporation discussion

- [R2-165355](#) Discussion on UE capabilities on L2 latency reduction techniques Huawei, HiSilicon discussion

- [R2-165149](#) UL lost handling when UE configured to skip UL transmission Nokia, Alcatel-Lucent Shanghai Bell discussion

- [R2-165182](#) Performance of short SPS interval in TDD CATT discussion
- [R2-165267](#) Discussion on the feedback transmission of SPS release ZTE Corporation discussion
- [R2-165356](#) Short SPS periodicity values Huawei, HiSilicon discussion

[R2-165358](#) PUSCH resource waste in case of short SPS period Huawei, HiSilicon discussion

8.13 WI: LTE-based V2X Services

(LTE_V2X-Core, leading WG: RAN1; REL-14; started: June 16; target: Mar. 17; WID: [RP-161298](#))

Time budget: 1TU

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

Workplan:

[R2-165727](#) RAN2 work plan for V2X WI LG Electronics Inc. discussion
Late
=> Noted

8.13.1 SC-PTM/MBMSFN enhancements

Shorter modification/repetition periods.

Additional enhancements related to DL transmissions in small areas based on geographical areas – to be discussed if/after input from SA2/RAN3 has been received.

[R2-165057](#) DL multicast transmission in smaller area for V2X services Kyocera discussion
- Intel asks what transmission type is assumed for proposal 1. Kyocera explains that it is related to reception side.
=> Noted

[R2-165265](#) MBMS enhancement for supporting of V2X service ZTE Corporation discussion
- LG supports proposals 1-3 but we can discuss the detailed values. CATT also agrees but don't think we need so many modification period. ZTE has no strong opinion but finds the values can be used for the future.
- Ericsson agrees as well and is ok to have the shorter periods. ZTE indicates that the values are similar to SC-PTM.
=> Shorter MCCH period, shorter modification period and shorter MCH scheduling period will be added. The number of values added and actual values are FFS.
- Intel thinks that maybe we don't need the gap as we can handle it by application layer. Ericsson also thinks we should avoid such impacts.
=> Noted

[R2-165522](#) On MBMS Latency Ericsson discussion
=> Not treated

8.13.2 SPS enhancements

Discussions aligned with V2V and will be discussed after V2V agreements are done

=> Assumption is that V2V SPS related agreements will also be used for V2X

Not treated

[R2-164873](#) Discussion on Multiple SPS CATT discussion
[R2-164874](#) UE Assistance Information for SPS Transmissions CATT discussion
[R2-164919](#) Enhancements of Uplink SPS for Uu-based V2X Huawei, HiSilicon discussion
=> Revised in [R2-165688](#)
[R2-165688](#) Enhancements of Uplink SPS for Uu-based V2X Huawei, HiSilicon discussion
[R2-165402](#) SPS enhancements for V2X over Uu ZTE Corporation discussion
[R2-165458](#) Further considerations on UL SPS enhancements Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-165527](#) SPS Protocol for Uu Ericsson discussion
[R2-165696](#) UL SPS configuration and UE assistant information LG Electronics France discussion

8.13.3 V2P services

Specific aspects to V2P (e.g. resource selection) and power aspects

Not treated

- [R2-164884](#) Discussion on P2V service CATT discussion
- [R2-164984](#) V2P Services over PC5 Qualcomm Incorporated discussion
- [R2-165177](#) Considerations on power saving for V2P communications Fujitsu discussion
- [R2-165454](#) Efficient V2P/P2V activation Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-165518](#) Discussion on V2P Ericsson discussion

8.13.4 Other

QoS, Inter-PLMN and others

Not treated

- [R2-164885](#) Inter-PLMN V2X Reception CATT discussion
- [R2-164917](#) Support of QoS for PC5-based V2X transport Huawei, HiSilicon discussion
- [R2-165347](#) Communication Resource Set Design with Message Forwarding for V2VASTRI, TCL Communication Ltd. discussion
Moved from 8.2.3
- [R2-164918](#) Draft LS Response on QoS requirements for V2X Huawei, HiSilicon LS out
- [R2-164920](#) Inter-PLMN operation for Uu-based V2X Huawei, HiSilicon discussion
- [R2-164921](#) Support Multi-carrier Multi-PLMN Operations for PC5 Based V2X Huawei, HiSilicon discussion
- [R2-164982](#) Inter-PLMN V2V communication Qualcomm Incorporated discussion
- [R2-165310](#) Support of inter-PLMN operation for V2X Samsung Electronics Co., Ltd discussion
- [R2-165428](#) Inter-PLMN V2X aspects Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-165595](#) Support of inter-PLMN for PC5 and Uu LG Electronics Inc. discussion
- [R2-165596](#) New QCI for V2X LG Electronics Inc. discussion
 - Huawei asks why there is a different value for PELR, we should use the SA2 defined value.
 - => Two new QCIs will be introduced as per SA2 definition.
 - => Confirm observation that two QCI values with different PDB can be assigned with the same priority
 - => Include this agreements and answers in the same LS to SA2 ([R2-165761](#))
 - => Noted

Withdrawn:

- [R2-165080](#) Support of inter-PLMN operation for V2X Samsung Electronics Co., Ltd discussion

Agreed outgoing LS

[R2-165773](#) LS to SA2 on QoS for V2X (respond LS to [R2-164629](#)/ S2-163081) RAN2 LS out to:
SA2 cc: RAN1 cc: RAN3 from: RAN2 Rel-14 LTE_SL_V2V-Core

[R2-165765](#) Response LS to priority for V2V RAN1 on [R2-164635](#) RAN2 LS out to: RAN1 cc:
SA2 Rel-14

Comeback on Friday

[R2-165757](#) Corrections on system information acquisition for Sidelink discovery Huawei, HiSilicon CR
36.331 13.2.02294 1 A Rel-13 LTE_D2D_Prox-Core
=> Withdrawn ?

[R2-165758](#) Correction of UE requirements regarding SIB19 acquisition Samsung Telecommunications
CR 36.331 13.2.02274 1 F Rel-13 LTE_eD2D_Prox-Core

[R2-165774](#) LS to RAN1 on exceptional pool handling Oppo LS out to: RAN1 from:
RAN2 Rel-14 LTE_SL_V2V-Core

[R2-165775](#) WF on V2V work item LG Electronics Inc. Discussion Rel-14 LTE_SL_V2V-
Core

LS from RAN1

[R2-165767](#) Introduction of L2 Latency reduction techniques running CReEricsson CR 36.321 13.2.0-
0920 B Rel-14 LTE_LATRED_L2-Core

- ☒ **[LTE/Latency reduction] – CR to 36.321 – Ericsson**
 - Include possible agreements as a result of RAN1 LS
 - Agree on CR to 36.321
 - Deadline: one week after the meeting
- ☒ **[LTE/Latency reduction] – CR to 36.331 – Ericsson**
 - Agree on CR to 36.331 ([R2-165766](#) CR 2341)
 - Deadline: one week after the meeting

E-mail discussion for the meeting

- ☒ **[LTE/V2V] – SPS – Ericsson**
 - *Discuss and agree to:*
 - Additional content - **FFS PPPP or LCID**
 - Type of message used, how SPS release is indicated
 - SPS configuration (per Logical channel, per PPPP, or per UE) and how to multiplex data in SPS occasion
 - Content of SPS configuration and SR mask
 - Max number of SPS configuration
 - Deadline: Sept. 23
- ☒ **[LTE/V2V] – CR to 36.321 – LG**
 - Agree to CR to 36.321 for RAN submission
 - Deadline: One week after the meeting
- ☒ **[LTE/V2V] – CR to 36.331 – Huawei**
 - Agree to CR to 36.321 for RAN submission
 - Deadline: One week after the meeting
- ☒ **[LTE/V2V] – CR to 36.323 – CATT**
 - Agree to CR to 36.323 for RAN submission
 - Deadline: One week after the meeting
- ☒ **[LTE/V2V] – CR to 36.304 – CATT**
 - Agree to CR to 36.304 for RAN submission
 - Deadline: One week after the meeting
- ☒ **[LTE/V2V] – CR to 36.302 – Huawei**
 - Agree to CR to 36.302 for RAN submission
 - Deadline: One week after the meeting
- ☒ **[LTE/V2V] – CR to 36.300 – LG**
 - Agree to CR to 36.300 for RAN submission
 - Deadline: One week after the meeting

- ☒ **[LTE/FeD2D] – Update TR 36.746 - LG**
 - TR update with agreements up to RAN2#95
 - Discuss need for additional sub-sections
 - Deadline: Sept 23
- ☒ **[LTE/FeD2D] – Capture requirements – Ericsson**
 - Agree on RAN requirements. Start with [R2-165241](#) as a baseline.
 - Outcome: TP
 - Deadline: Sept. 23
- ☒ **[LTE/FeD2D] – Scenarios and RRC states - Huawei**
 - Capture coverage scenarios
 - Discuss and agree on possible RRC states for relay and remote UEs
 - Deadline: Sept. 23

Summary of Agreements from RAN2#95

Agreements on Wearables

- RAN2 will initially focus on bidirectional relay design, but should consider impact of the design in unidirectional
- RAN2 should study relay design support for both CP and UP
- Coverage scenarios to be captured and discussed over email

Latency reduction WI Agreements

- Completed all stage 3 issues and endorsed initial stage 3 CRs.
- We will rely on legacy behaviour and non-adaptive retransmissions can continue on non-SPS resources and eNB can take non-adaptive retransmissions into account
- Non-adaptive retransmissions will be prioritized over MAC CE for SPS
- Adaptive retransmissions have higher priority.
- Allowed SPS periodicities: 1ms, 2ms, 3ms, 4ms, 5ms
- Pending RAN1 confirmation, fixed RV is done when uplink skipping for SPS is configured and applicable to all related non-adaptive retransmissions. For dynamic grant skipping legacy RV behaviour applies.
- For UL skipping, the UE configured with periodic BSR only transmit when the UE buffer is non-empty
- Periodic PHR is not skipped
- SPS Confirmation MAC CE can be sent on an UL grant. In case there are both of UL grant and SPS grant on the same subframe, the UL grant is prioritized over the SPS grant
- UL skipping and short SPS are independently configured. If short periodicity, below 10ms is configured, UL skipping should always be configured.

V2X SI Agreements

- Only 0.25 TUs spent on V2X with focus on SC-PTM and MBMS enhancements
- Issues such SPS and QoS were discussed together with V2V
 - o Assumption is that V2V SPS related agreements will also be used for V2X
- Shorter MCCH period, shorter modification period and shorter MCH scheduling period will be added. The number of values added and actual values are FFS.

V2V SI Agreements

Geo-location aspects

The zones will be calculated according to the following modulo operation is used.

$$\begin{aligned}x' &= \text{Floor}(x / L) \bmod N_x; \\y' &= \text{Floor}(y / W) \bmod N_y; \\ \text{Zone_id} &= y' * N_x + x',\end{aligned}$$

where the values of x, y in the above equations can be respectively specified as the longitude and latitude of the UE's location in the specification.

- Following parameters are required for zoning:
 - o Length of each zone (L)
 - o Width of each zone (W)
 - o Number of of zone in length (Nx)
 - o Number of of zone in width (Ny)
- Zoning mechanism and parameters are same for in-coverage and out of coverage, with only difference of parameters provided by eNB or pre-configured
- No need to report calculated zone ID, as complete location information reporting is already agreed in RAN2
- Location reporting triggers are based on periodic reporting. For the reporting interval, the current value ranges used for periodical measurement reporting from 120ms to 1 hour can be used.
- FFS on all related RRC parameters
- RRC messaging, *MeasurementReport*, will be used for location reporting. *The existing IE LocationInfo will be used.*
- Sensing will be performed for the pools associated to zones.
- The values for length of each zone (L) include: 5m, 10m, 20m, 50m, 100m, 200m, 500m.
- The values for width of each zone (W) include: 5m, 10m, 20m, 50m, 100m, 200m, 500m.
- FFS if some restrictions of L and W combination - should be captured in the RRC CR
- The number zones in length (Nx) includes: 1, 2, 3, 4.
- The number of zones in width (Ny) includes: 1, 2, 3, 4.
- the values of x0 and y0 are set to 0 and correspond to geographical coordinates.
- The maximum number of Tx pools/zones allowed is 8.
- The maximum number of Rx pools is 16.

Path switch

- AS informs upper layer of the path configuration. From RAN2 point of view, path switching is done by UE upper layer and there is no need to specify AS layer information to upper layer for the sake of path switching.

Mobility

- The RRC specification will include the exceptional pools in SIB21 (for the non-handover case).
- Pre-sensing on the exceptional pool is used for exceptional pool provided by serving cell (e.g. idle-to-connected, RLF cases, RRC reconfig).
- For handover case, an "exceptional" pool is provided by the target cell. The UE uses random selection on this pool.
- Send LS to RAN1 to inform them and asking if they have any real concern.

QoS

- RAN2 doesn't expect V2X PC5 resources to be shared with other non-V2X applications.
- For mode 1, RAN2 agrees that PPPP and other QoS parameters provided by higher layers will be used.
- For mode 2, RAN2 assumes that only PPPP can be used to ensure QoS for PC5 V2V.
- Send LS to SA2:
 - o List agreements/assumptions
 - o Point out that in mode 2 (with some background on mode 2) it may not be possible to respect some of QoS parameters other than PPPP (e.g. AMBR).
 - o Ask whether mode 2 was explicitly excluded

SPS

- Multiple SPS can be activated simultaneously
- UE assistance triggers are left to UE implementation. The network should be able to configure UE assistance information.
- The UE assistant information includes a set of preferred expected SPS interval, timing offset with respect subframe0 of the SFN0 (frame and subframe number). FFS if per logical channel.

UE assistance:

- The UE Assistance Information is allowed to be reported if change in estimated periodicity of packet arrival occurs

- The UE Assistance Information is allowed to be reported if change in estimated offset of packet arrival occurs
- The UE assistance information is configured by the eNB
- The UE Assistance Info can be reported both in case SPS is configured or not
- UE Assistance Info per SPS existing or suggested configuration(s). Details of configurations are FFS.
- UE Assistance information reporting is configured by the eNB at least for PC5 V2X.
- Additional Content of UE
 - o If configured by the eNB, SPS index of the SPS configuration

Layer 2 protocol

- PC5-U will be used as the protocol stack for PC5-based V2V
- Introduce a new PDCP SDU type "non-IP" in PDCP header for PC5-based V2V
- Only RLC UM mode is supported for PC5-based V2V
- STCH for sidelink communication can be reused by PC5-based V2V.
- Non-V2X (e.g. PS) data cannot be multiplexed with V2V transmissions and transmitted on V2V PC5 sidelink channels.
- Reuse the Source ID, Destination ID and LCID to identify the logical channel for PC5-based V2V
- PC5-based V2V will reuse the MAC header of sidelink communication. MAC header is extended to 24bits to include the full destination ID. New MAC PDU with new version will be introduced.
- Priority in SCI corresponds to the PPPP of highest priority data in the MAC PDU.

MAC related aspects

- Maximum number of resource booking process is 2 and it will be fixed in the specification. The UE is allowed to use one shot transmission if two processes are not sufficient. FFS if mechanisms to restrict UEs from over booking are needed. FFS how the UE selects type of booking and transmission.
- The UE should comply with SC FDM requirement and these are independent processes

RRC related aspects

- When requesting sidelink resources, the UE should inform the eNB that it is interested in V2X in *SidelinkUEInformation*
- Legacy mechanism should be used for reception purposes. If the UE is configured by higher layers to receive V2X communication and PC5 resources are provided the UE receives on those configured resources. If Uu is configured and PC5 is configured the UE should monitor on both.
- Introduce SPS periodicity values 50ms, 100ms, 200ms, 300ms, 400ms, 500ms, 600ms, 700ms, 800ms, 900ms and 1000ms for V2V UL/SL SPS
- One pool per zone is configured and no resource pool per priority is needed. FFS on maximum number of pools/zones allowed to be configured.
- Zone concept is not applied to exceptional sidelink transmission pools
- Working assumption: The UE should not operate sidelink vehicle communication when in limited service state
- The UE may operate sidelink vehicle communication when fulfilling the conditions for sidelink communication operation not related to limited service state
- As a baseline SIB21 resources transmission can follow Rel-13 rules
- For synchronization, commSyncConfig-r12 IE can be reused and a new IE indicating the synchronization reference (eNB, UE, GNSS)
- The UE follows pre-configuration of synchronization parameters in case there is no cell in the V2V carrier and no configuration from serving cell is received. In case the eNB configures the eNB timing as synchronization type to the UE for the V2V carrier, the synchronization configuration (i.e., SL-SyncConfigNFreq-r13) is configured by the eNB for the V2V carrier. The UE should follow PCell(RRC_CONNECTED) /serving cell (RRC_IDLE) for synchronization and DL measurement
- DFN calculation

=> The following formula for DFN calculation from GNSS is used:

$$DFN = \lfloor 0.1 \times (T_{current} - T_{ref}) \rfloor \bmod 1024$$

$$SubframeNumber = \lfloor (T_{current} - T_{ref}) \rfloor \bmod 10$$

- => The reference UTC time (Tref) in the above formula is suggested to 00:00:00 on Gregorian calendar date 1 January, 1900 (midnight between Thursday, December 31, 1899 and Friday, January 1, 1900).
 - => Include offset [0, 1 ms] with the granularity of 1 us.
-

Annex H:

LTE Breakout session: eVoLTE, Light conn, Mobility enh, eMBMS

On Wednesday of RAN2 #95, in parallel to the main LTE session, an LTE breakout session on eVoLTE, Light conn and Mobility enh. was held in G4 room chaired by RAN2 vice-chairman Hu Nan (CMCC) addressing:

This is the report from breakout sessions covering the following Items:

- 8.3 LTE: Rel-14: SI: Study on enhancement of VoLTE
- 8.6 LTE: Rel-14: WI: Further mobility enhancements in LTE
- 8.9 LTE: Rel-14: WI: Signalling reduction to enable light connection for LTE
- 8.10 LTE: Rel-14: WI: eMBMS enhancements for LTE

The corresponding report of this session [R2-165842](#) 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-160902](#))

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

Incoming LS:

[R2-164626](#) LS on enhancement of VoLTE (R3-161519; contact: Huawei) RAN3 LS in
to: RAN2 Rel-14 FS_LTE_eVoLTE
=> Noted

8.3.2 Codec mode/rate selection/adaptation

Including output from email discussion [94#32][LTE/eVoLTE] (CMCC)

[R2-165218](#) TR update to capture the solutions and agreements CMCC draftTR 36.750 0.2.1 - -
- result of email discussion [94#32] Rel-14 FS_LTE_eVoLTE
NOTE: There is version number error in draftTR cover. It should be considered as v0.2.1, not v0.3.0.

=> Change "vocoder" into "codec" in section 5.2

=> With this change, TR is agreed in [R2-165784](#) without change marks. The version is 0.3.0

[R2-165783](#) Evaluation criteria for RAN assisted codec rate selection and adaptation Ericsson discussion
Revision of [R2-165615](#)

- OPPO thinks that "Independence of cross layer information" is implementation issue.

- Samsung wonders why we need to evaluate security.

=> Capture the text proposal in Section 3 in the TR 36.750.

[R2-165615](#) Evaluation criteria for RAN assisted codec rate selection and adaptation Ericsson discussion
=> Not treated

[R2-165616](#) Evaluation of RAN assisted codec rate selection and adaptation solutions Ericsson
discussion

=> Noted

✍ => Offline discussion to update the TP adding security issue. Fix other controversial issues.
Come back on Thursday.

- [R2-165788](#) Evaluation of RAN assisted codec rate selection and adaptation solutions Ericsson discussion
=> Capture the text proposal into TR. The wording can be improved.
- [R2-165510](#) Further discussion on RAN based codec adaption solution Huawei, HiSilicon discussion
- Ericsson thinks it is not necessary to make eNB know the codec rate and mode.
- Huawei thinks which set the UE can support and this information is useful for the congestion case.
=> Noted
- [R2-165617](#) RAN assisted codec rate selection and adaptation Ericsson discussion
=> Remove the Editor's note of 5.3.1 of TR 376.750 and indicate that we don't have enough time to study this use case.
- [R2-164985](#) Remaining issues in RAN-assisted codec rate adaptation Kyocera discussion
=> Not treated
- [R2-165297](#) TP for VoLTE/Video codec adaptation CMCC pCR 36.750 0.2.0 - - - Rel-14 FS_LTE_eVoLTE

=> Use the following description as the baseline for section 5.4:

In case the eNB determines to recommend a connected-mode UE to modify the bit rate due to e.g. poor radio condition or network congestion detected in uplink or downlink transmission direction, it sends a message with the recommended codec bit rate to that UE for usage. And then the UE may use this recommended bit rate as an input to initiate an end-to-end negotiation on the codec rate adaptation by sending an application layer message (e.g. RTCP or RTP CMR) to the peer UE. Accordingly, the peer UE may further retrieve a recommended codec bit rate from its serving eNB to ensure an end-to-end codec adaptation.

The codec adaptation procedure between the UE and eNB are (including the solutions mentioned in [R2-165616](#))

=> Change "codec bit rate" to "bit rate" in the whole TR.

CB on Thursday to provide a revised TP for the solution part of VoLTE/Video codec adaptation.

- [R2-165790](#) TP on solution descriptions of VoLTE codec adaptation CMCC TP36.750 0.3.0
=> Agreed and Capture it in the draft ATR.
- [R2-165795](#) TP on solutions and recommendations CMCC TP36.750 0.3.0
=> Confirm that "described in Section 5.3.1, 6.1.2, 6.1.4, 7.1.2 and 7.1.3" only including use cases.
=> Change to "Note: The use cases described in Section 5.3.1, 6.1.2, 6.1.4, 7.1.2 and 7.1.3 of this TR are not considered in this section since they are not fully studied"
=> With this change, the TP is Agreed in [R2-165796](#).
- [R2-164778](#) Discussion on Per-Cell Signaling Codec Rate Adaptation and Evaluation of the Candidate RAN-based Solutions Guangdong OPPO Mobile Telecom. Discussion
=> Not treated
- [R2-165105](#) Codec Mode Selection Panasonic Corporation discussion
=> Not treated
- [R2-165268](#) Discussion on the code rate reporting ZTE Corporation discussion
=> Not treated
- [R2-164993](#) VoLTE Codec mode/rate selection/adaptation Intel Corporation discussion
=> Not treated

8.3.3 VoLTE/video signalling related enhancements

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

Including output from email discussion [94#33][LTE/eVoLTE] (Huawei)

- [R2-165508](#) Report and summary of email discussion 94#33LTE eVoLTE Huawei discussion
=> Noted

- [R2-165782](#) Capture RAN3 conclusion on redirectionHuawei, HiSilicon discussion Revision of [R2-165509](#)
=> Add a note in procedure part the cause value is not decided yet. With this change, the TP is agreed in [R2-165785](#).
- [R2-165509](#) Capture RAN3 conclusion on redirectionHuawei, HiSilicon discussion
=> Not treated
- [R2-164992](#) Video signalling related enhancements Intel Corporation discussion
CB on Thursday: => Provide a TP to capture the use case (section 6.1 in the TP) in 6.1 of the TR 36.750.
- [R2-165789](#) Video Use Case TP based on [R2-164992](#) Intel TP
=> TP is agreed. Capture it into TR.
- [R2-165665](#) Prioritization of MT MO MMTEL Voice or Video LG Electronics Inc. discussion
=> Not treated
- [R2-165709](#) VoLTE/video access priority Nokia, Alcatel-Lucent Shanghai Bell 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.

- [R2-165194](#) On eNB awareness of EVS codec for coverage and mobility enhancements Qualcomm Japan Inc discussion
=> The evaluation part of the paper is out of the scope of RAN2.
=> Try to capture the use case.
=> Noted
- [R2-165217](#) TP for VoLTE/video enhancements to improve quality CMCC pCR
=> Not treated
- [R2-165628](#) VoLTE support analysis for Cat M1 UEs Intel Corporation discussion
=> Not treated
- [R2-165646](#) Consideration on delay budget relaxing Huawei, HiSilicon discussion late
 **CB: Reply LS from RAN1:**
- [R2-164647](#) Reply LS to [R2-164566](#) on VoLTE and video quality related enhancements ([R1-168256](#); contact: CMCC) RAN1 LS in to: RAN2 Rel-14 FS_LTE_eVoLTE
=> Noted
- [R2-165791](#) TP for VoLTE and video quality related enhancements case CMCC TP
=> Agreed.

8.3.5 Other

- [R2-165680](#) UE Preferred C-DRX Cycle Reporting for VoLTE Qualcomm Inc., Apple Inc., AT&T Inc., Motorola Solutions Inc., the U.S. Department of Commerce, Verizon discussion
 **CB on Thursday if consensus achieved.**
=> Capture use case into TR.
- [R2-165106](#) Proposal to send LS to SA4 Panasonic Corporation discussion
=> Not treated
- ☒ **[94#xx][LTE/eVoLTE] TR 36.750 completion (CMCC/Huawei)**
- Capture all the approved TPs and agreements from this meeting into the TR (CMCC)
 - The wording of TR should be improved.
 - Draft LS to SA4 to inform the progress. The latest TR should be attached to the LS
- Intended outcome: 1) Approved TR of 36.750 (Huawei), 2) Approved LS (Huawei)
Deadline: Thursday 08/09/2016

8.6 WI: Further mobility enhancements in LTE

(LTE_eMob-Core; leading WG: RAN2; REL-14; started: Mar. 16; target: Dec. 16; WID: [RP-160921](#))

Time budget 1TU

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

Incoming LS:

- [R2-164607](#) Reply LS to [R2-164565](#) on the feasibility of mobility enhancement solutions (R1-165996; contact: ZTE) RAN1 LS in to: RAN2 Rel-14 LTE_eMob-Core
=> Noted
- [R2-164643](#) Reply LS to [R2-163135](#) on the feasibility of mobility enhancement solutions (R1-166053; contact: ZTE) RAN1 LS in to: RAN2 Rel-14 LTE_eMob-Core Late
=> Noted
- [R2-164616](#) Response LS to [R2-163135](#) on the feasibility of mobility enhancement solutions (R3-161542; contact: ZTE) RAN3 LS in to: RAN2 Rel-14 LTE_eMob-Core
=> Noted
- [R2-164617](#) Reply LS to [R2-163135](#) on the feasibility of mobility enhancement solutions (R4-164906; contact: ZTE) RAN4 LS in to: RAN2 Rel-14 LTE_eMob-Core
=> Noted

8.6.1 RACH-less handover

- [R2-165269](#) Coordination between working groups on the RACH-less solution ZTE Corporation discussion

Agreements

- 1 The asynchronous RACH-less solution is excluded.
- 2 Only the RACH-less solution that the TA value of the source cell is reused for the targeted cell, or TA=0 will be further considered.

- [R2-165274](#) Draft reply LS on the feasibility of mobility enhancement solutions ZTE Corporation discussion
=> Not treated
- [R2-165781](#) RACH-less handover for small cell Intel Corporation discussion Revision of [R2-164832](#)
=> The activation of RACH-less is decided by target eNB.
- [R2-164832](#) RACH-less handover for small cell Intel Corporation discussion Revised in [R2-165871](#)
=> Not treated
- [R2-164939](#) Remaining issues on RACH less handover Huawei, HiSilicon discussion
=> Not treated
- [R2-164672](#) Further considerations on the RACH-less handover for the LTE mobility enhancements Samsungdiscussion
=> Not treated
- [R2-165273](#) Remaining RAN2 issues of RACH-less Handover ZTE Corporation discussion
=> The subframe allocation and uplink grant format can be configured by RRC message. If the subframe allocation and uplink grant format is configured, the starting subframe of the configured uplink grant is provided by the target eNB in RRC message. If UE doesn't receive UL grant in RRC message, it will monitor PDCCH of the target eNB for UL grant. UE doesn't need to know the SFN of the target eNB.
=> The above agreement in red colour can be revisited because the inconsistency issue pointed out by Intel.
=> RACH-less solution can be used for SCG change and handover scenarios.
- [R2-165181](#) Issues on RACH-less handover CATT discussion
=> Not treated
- [R2-165274](#) Draft reply LS on the feasibility of mobility enhancement solutions ZTE Corporation discussion
=> Postponed
- [R2-165275](#) Draft LS on the evaluation of RACH-less solution ZTE Corporation discussion
=> Not treated
- [R2-165457](#) Further considerations on RACH-less handover Nokia, Alcatel-Lucent Shanghai Bell discussion
=> Not treated
- [R2-165623](#) Considerations on RACH-less Handover LG Electronics France discussion
=> Not treated
- [R2-165687](#) Uplink Grant for RACH-less Handover QUALCOMM CDMA Technologies discussion
Moved from 8.8 to 8.6.1
=> Not treated

[R2-165718](#) Timing advance determination by target eNB for RACH-less handover Kyocera Corporation
discussion
=> Not treated

8.6.2 Make before break handover

[R2-165270](#) Discussion on make before break solution ZTE Corporation discussion

Agreements:

1. The "make before break handover solution" means the UE continues downlink and uplink with the source cell until the UE performs the first transmission through PUSCH or PRACH to the target eNB.
2. The solution is applicable for intra frequency handover and SCG change. Inter frequency case is FFS.

[R2-165271](#) RLF analysis on make before break solution ZTE Corporation discussion
=> Not treated

[R2-164673](#) Further considerations on solutions for maintaining a connection to the source eNB
Samsung discussion
=> Not treated

[R2-164833](#) Stage 3 detail for option 1 Intel Corporation discussion
=> Not treated

[R2-164834](#) Stage 3 detail for option 4 Intel Corporation discussion
=> Not treated

[R2-164940](#) Remaining issues on Solution 2 Huawei, HiSilicon discussion
=> Not treated

[R2-165183](#) Issues on Make before break handover CATT discussion
=> Not treated

[R2-165234](#) Consideration on handover failure and data forwarding China Telecom Corporation Ltd.
Discussion
=> Not treated

8.6.3 Other

[R2-164674](#) On combining solutions for the LTE mobility enhancements Samsung discussion
=> Consider RACH-less solution and "maintaining a connection to the source eNB" as two independent mechanisms, activation of which is up to the network decision. Two solutions can be activated simultaneously.

[R2-164675](#) Solutions for the LTE mobility enhancements and analysis of their network side impact
Samsung discussion
Same discussion paper is submitted to RAN WG3
=> Not treated

✍ => **CB Friday:** Send an LS to RAN1/3/4 to inform our progress after this meeting and ask the feasibility of solutions we will further considered. The draft LS will be provided in [R2-165786](#) (ZTE). In the LS, we should indicate that RAN3 should fix the data forwarding issue.

☒ **[95#xx][LTE/eMob] Running stage 2 CR of introducing eMob (Intel)**

=> Based on the agreements we have achieved so far from RAN2#93bis to RAN2#95
Intended outcome: Running 36.300 CR
Deadline: Thursday 29/09/2016

☒ **[95#xx][LTE/eMob] Running stage 3 CR of introducing eMob (ZTE)**

=> Based on the agreements we have achieved so far from RAN2#93bis to RAN2#95
Intended outcome: Running 36.331 CR
Deadline: Thursday 29/09/2016

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-160937](#))

Time budget 1.5TU

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

8.9.1 Signalling reduction

Including contributions relating to objectives on signalling reduction at mobility (e.g. UE centric mobility), and S1 signalling reduction at mobility and state transitions, as well as further details of UE light connected considering RAN2#94 agreements.

- [R2-165214](#) Signalling reduction during state transition CMCC discussion
=> Noted
- [R2-165561](#) RRC Suspend/Resume for Light Connection Ericsson discussion
=> Noted
- [R2-165246](#) The functions of light connection Huawei, HiSilicon discussion
=> Noted
- Intel and Huawei thin we should focus on stage 2 functionality.

Agreements:

the functions of a lightly connected UE include:

- S1 connection is kept and active in the "anchor eNB"
- Support of RAN initiated paging
- The paging process is controlled by "anchor eNB"
- eNB controlled RAN based paging area
- RAN based paging area update mechanism. RAN based paging area can be configurable as UE specific
- Performing cell reselection based mobility, the same cell reselection mechanism in RRC IDLE.
- The UE AS context is kept in both UE and "anchor eNB" side.
- The ECM state is ECM-CONNECTED, from perspective of network. From UE perspective the state is FFS.
- When a "lightly connected" UE is paged (via RAN-initiated paging) or when any MO data/signaling is triggered, the UE will get back to be connected to eNB. The related procedure is FFS.
- A UE enters into "lightly connected" by RRC signaling. The details are FFS.

- [R2-165248](#) Procedure for transition between normal RRC connection and light RRC connection Huawei, HiSilicon discussion
=> Noted

- [R2-164986](#) Details of lightly connected UEs Intel Corporation discussion
=> Noted

The following documents are not treated:

- [R2-164677](#) Design principles and considerations for the LTE light connection Samsungdiscussion

- [R2-164866](#) Configuration and light connection area handling Nokia, Alcatel-Lucent Shanghai Bell discussion

- [R2-164868](#) Reselection and Paging handling for light connection Nokia, Alcatel-Lucent Shanghai Bell discussion

- [R2-164975](#) Aspects for signalling reduction of light connection China Unicom discussion

- [R2-165069](#) Details of paging enhancements for Light Connected UEs Kyocera discussion
Moved from 8.9.3 to 8.9.1

- [R2-165070](#) General issues in Light Connection Kyocera discussion
Moved from 8.9.4 to 8.9.1

- [R2-165231](#) Consideration on mobility procedure China Telecom Corporation Ltd.discussion

- [R2-165247](#) Mobility notification for the lightly connected UE Huawei, HiSilicon discussion

- [R2-165303](#) On the paging area management for light connection ASUSTEK COMPUTER (SHANGHAI) discussion

- [R2-165667](#) General considerations on lightweight connection LG Electronics Inc. discussion

Withdrawn:

- [R2-164678](#) Design principles and considerations for the LTE light connection Samsungdiscussion

[R2-165258](#) On the paging area management for light connection ASUSTEK COMPUTER (SHANGHAI) discussion

8.9.2 Context storage/retrieval across eNBs

This aspect of the WI is led by RAN3 but RAN2 impacting aspects may be discussed here.

[R2-165249](#) RAN2 impact of Context fetch in light connection Huawei, HiSilicon discussion
=> Not treated

8.9.3 Paging enhancements

Details of RAN initiated paging design, e.g., DRX, paging ID

[R2-165250](#) On RAN initiated paging Huawei, HiSilicon discussion
=> The UE specific paging area configuration in term of cell list or new list of paging area ID shall be supported by dedicated and/or broadcast RRC signaling. Further optimization and down selection can be considered.
=> UE lightly connected is required to notify the network when it moves out of the configured RAN based paging area.
=> The paging area can be configured as one or more cells from RAN2 point of view. The configured cells can come from different eNB.

[R2-164988](#) Details on RAN-initiated paging design Intel Corporation discussion
=> To take as a baseline that Rel-13 legacy PO/PF calculations are used for the RAN-initiated paging. The input parameters for PO/PF calculation can be changed if necessary.
=> To define a UE ID for paging calculation. Select the UE ID from (a) NAS UE ID (i.e. S-TMSI), (b) Rel-13 UE Resume ID, (c) a new RAN UE ID or (d) IMSI mode.
=> To define a UE ID conveyed in paging message. Select the UE ID from (a) NAS UE ID (i.e. S-TMSI), (b) Rel-13 UE Resume ID, (c) a new RAN UE ID or (d) IMSI mode.
✎ => Send LS out to RAN3 to ask the feasibility of these candidate solutions. Draft LS can be provided in [R2-165789](#) (Intel). **CB Thursday.**
=> To discuss the preference of (a) using legacy RRC paging message (and associated legacy P-RNTI) vs (b) defining a new RRC RAN-initiated paging message (and associated new P-RNTI_2) for UEs in lightly connected.
=> FFS: To define RAN-based paging DRX cycle which is UE specific.

[R2-165789](#) Reply LS on VoLTE and video quality related enhancements Intel Corporation LS out
=> Change to "To discuss the preference of using legacy RRC paging message vs defining a new RRC RAN-initiated paging message for UEs in lightly connected."
=> Change to "RAN2 respectfully asks RAN3 to take the above RAN2 agreements into consideration and if applicable."
=> With these changes the LS is approved in [R2-165793](#)

[R2-164987](#) Mobility support for lightly connected UEs Intel Corporation discussion
=> Not treated

[R2-164845](#) Paging in Extended DRX for Light Connection CATT discussion
=> Not treated

[R2-165030](#) UE specific Paging area definition Sony discussion
=> Not treated

[R2-165215](#) RAN-initiated Paging in Light Connection CMCC discussion
=> Not treated

8.9.4 Other

[R2-165251](#) Stage2 Running CR of light connection Huawei, HiSilicon draftCR 36.300 13.4.0- - B
Rel-14 LTE_LIGHT_CON-Core

- ✉ **[95#xx][LTE/Light Con] Running stage 2 CR of light connection (Huawei)**
=> Based on the agreements we have achieved so far from RAN2#93bis to RAN2#95
Intended outcome: Running 36.300 CR
Deadline: Thursday 29/09/2016

8.10 WI: eMBMS enhancements for LTE

(MBMS_LTE_enh2-Core; leading WG: RAN1; REL-14; started: Mar. 16; target: Mar. 17; WID: [RP-161297](#))

Time budget: 1TU

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

8.10.1 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.

[R2-165480](#) Overview on Rel-14 FeMBMS Ericsson, Qualcomm Incorporated discussion

=> Noted

[R2-165603](#) MBSFN subframe enhancements for SCell LG Electronics Inc. discussion

=> Noted

Working assumption/agreement:

1. Non standalone case: Rel-14 FeMBMS carrier broadcasts MIB and all SI needed to receive FeMBMS transmission in idle mode. Which of the necessary SI and contents are FFS.
2. The Rel-14 FeMBMS carrier does not support paging functionality for mobile terminating calls.



CB on Friday: => Draft an LS to RAN1 to inform our progress of this meeting. The draft LS will be provided in [R2-165794](#). (Qualcomm)

[R2-165463](#) Impact of additional MBSFN sub-frames support Nokia, Alcatel-Lucent Shanghai Bell discussion

=> Noted

[R2-165481](#) eMBMS subframe enhancements Ericsson discussion

=> For Non standalone case, from RAN2 point of view subframes 0, 4, 5, 9 (FS1) and 0, 1, 5, 6 (FS2) may be used as MBSFN subframes for FS1 (FS2) in eMBMS carrier. It is understood that 100% MBSFN subframe allocation allows for subframes to be set aside for example cell search and necessary system information.

[R2-164934](#) Discussion on MBSFN resource expansion Huawei, HiSilicon discussion

=> Not treated

[R2-164935](#) Discussion on MBSFN subframe without PDCCH and CRS Huawei, HiSilicon discussion

=> Not treated

8.10.2 MBSFN dedicated carrier

The following documents are not treated.

[R2-165604](#) Consideration on standalone MBMS carrier LG Electronics Inc. discussion

[R2-165483](#) Dedicated FeMBMS operation Ericsson discussion

[R2-164936](#) Discussion on Standalone MBMS Cell Huawei, HiSilicon discussion

[R2-165085](#) SI Reception Samsung Electronics Co., Ltd discussion

[R2-165088](#) MCCH and MCCH Change Notification Samsung Electronics Co., Ltd discussion

8.10.3 Multicarrier MBMS operation

[R2-165460](#) MBMS SAs for multi-PLMN unicast/eMBMS reception Nokia, Alcatel-Lucent Shanghai Bell discussion

=> Not treated

[R2-165482](#) Asynchronous multi-carrier MBMS reception Ericsson discussion

=> Not treated

8.10.4 MBMS reception without authentication

- [R2-165682](#) Discussion on SA2 LS for Shared eMBMS and Receive Only Mode QUALCOMM CDMA Technologies discussion
=> Noted
- [R2-165467](#) Shared MBMS Network and Receive Only Mode considerations based on SA2 LSs Nokia, Alcatel-Lucent Shanghai Bell discussion
=> Noted
- [R2-165469](#) [DRAFT] Reply LS on RAN impacts of Shared MBMS Network and Receive Only Mode in eMBMS Nokia, Alcatel-Lucent Shanghai Bell LS out
=> Change to "but the details of how to achieve this is out of the responsibility of RAN2."
=> Remove "It may be required to prohibit legacy UEs from camping on further enhanced MBMS carrier for other reasons, not related to Receive Only Mode operation, which is under RAN2 study as part of "eMBMS enhancements for LTE" Work Item."
✍ => **CB Friday:** Offline discussion based on the Draft with the changes. The draft LS will be provided in [R2-165793](#) (Nokia)
- [R2-164937](#) Impact analysis on Receive Only mode Huawei, HiSilicon discussion
=> Not treated
- [R2-164938](#) Draft Reply LS on [R2-164621](#) to SA2 on RAN impacts from Receive Only Mode UE Huawei, HiSilicon LS out late
=> Not treated
- [R2-165514](#) Authentication in eMBMS Ericsson discussion
=> Not treated
- [R2-165685](#) [DRAFT] Reply LS on RAN impacts from enTV study of SA WG2 QUALCOMM CDMA Technologies LS out
=> Not treated

8.10.5 Other

Summary of the LTE Break-Out session (eVoLTE, Light conn, Mobility enh, eMBMS)

Agreed CRs

None

Comeback on Friday

eMob :

- ⇒ **CB Friday:** Send an LS to RAN1/3/4 to inform our progress after this meeting and ask the feasibility of solutions we will further considered. The draft LS will be provided in [R2-165786](#) (ZTE). In the LS, we should indicate that RAN3 should fix the data forwarding issue.

eMBMS

- ⇒ **CB Friday:** Draft an LS to RAN1 to inform our progress of this meeting. The draft LS will be provided in [R2-165794](#). (Qualcomm)
- ⇒ **CB Friday:** Draft reply LS to SA2, provided in [R2-165793](#) (Nokia)

Email Discussion

eVoLTE:

- ☒ **[94#xx][LTE/eVoLTE] TR 36.750 completion (CMCC/Huawei)**
 - Capture all the approved TPs and agreements from this meeting into the TR (CMCC)
 - The wording of TR should be improved.
 - Draft LS to SA4 to inform the progress. The latest TR should be attached to the LS
- Intended outcome: 1) Approved TR of 36.750 (Huawei), 2) Approved LS (Huawei)
Deadline: Thursday 08/09/2016

eMob

- ☒ **[95#xx][LTE/eMob] Running stage 2 CR of introducing eMob (Intel)**
 - ⇒ Based on the agreements we have achieved so far from RAN2#93bis to RAN2#95
- Intended outcome: Running 36.300 CR
Deadline: Thursday 29/09/2016
- ☒ **[95#xx][LTE/eMob] Running stage 3 CR of introducing eMob (ZTE)**
 - ⇒ Based on the agreements we have achieved so far from RAN2#93bis to RAN2#95
- Intended outcome: Running 36.331 CR
Deadline: Thursday 29/09/2016

Light con

- ☒ **[95#xx][LTE/Light Con] Running stage 2 CR of light connection (xxxx)**
 - ⇒ Based on the agreements we have achieved so far from RAN2#93bis to RAN2#95
- Intended outcome: Running 36.300 CR
Deadline: Thursday 29/09/2016

Agreements

eVoLTE:

Regarding codec mode/rate selection/adaptation, the use cases and candidate solutions are identified. We also agreed the evaluation criteria and the corresponding evaluation results. All related TPs are agreed.

Regarding VoLTE/video signalling related enhancements, the TP which capturing the email discussion results and the RAN3 conclusion is agreed. Also we agreed to capture the use case of video signalling related enhancements into the draft TR.

Regarding VoLTE/video quality related enhancements, we agree to capture the conclusion from RAN1 into the draft TR. And also we agree to capture the use case of eNB awareness of EVS codec and the UE preference of CRDX reporting.

After online and offline discussion, all the open issues of the SI are solved.

eMob:

Agreements

- 1 The asynchronous RACH-less solution is excluded.
- 2 Only the RACH-less solution that the TA value of the source cell is reused for the targeted cell, or TA=0 will be further considered.
- 3 **The subframe allocation and uplink grant format can be configured by RRC message. If the subframe allocation and uplink grant format is configured, the starting subframe of the configured uplink grant is provided by the target eNB in RRC message. If UE doesn't receive UL grant in RRC message, it will monitor PDCCH of the target eNB for UL grant. UE doesn't need to know the SFN of the target eNB.**
 Note: The above agreement in red colour can be revisited because the inconsistency issue pointed out by Intel.
- 4 RACH-less solution can be used for SCG change and handover scenarios.
- 5 The "make before break handover solution" means the UE continues downlink and uplink with the source cell until the UE performs the first transmission through PUSCH or PRACH to the target eNB.
- 6 The "make before break" solution is applicable for intra frequency handover and SCG change. Inter frequency case is FFS.
7. Consider RACH-less solution and "make before break" as two independent mechanisms, activation of which is up to the network decision. Two solutions can be activated simultaneously.

Light con:

Agreements:

- 1 the functions of a lightly connected UE include:
 - S1 connection is kept and active in the "anchor eNB"
 - Support of RAN initiated paging
 - The paging process is controlled by "anchor eNB"
 - eNB controlled RAN based paging area
 - RAN based paging area update mechanism. RAN based paging area can be configurable as UE specific
 - Performing cell reselection based mobility, which is the same cell reselection mechanism in RRC IDLE.
 - The UE AS context is kept in both UE and "anchor eNB" side.
 - The ECM state is ECM-CONNECTED, from perspective of network. From UE perspective the state is FFS.
 - When a "lightly connected" UE is paged (via RAN-initiated paging) or when any MO data/signaling is triggered, the UE will get back to be connected to eNB. The related procedure is FFS.
 - A UE enters into "lightly connected" by RRC signaling. The details are FFS.
- 2 The UE specific paging area configuration in term of cell list or new list of paging area ID shall be supported by dedicated and/or broadcast RRC signaling. Further optimization and down selection can be considered.
- 3 UE lightly connected is required to notify the network when it moves out of the configured RAN based paging area.
- 4 The paging area can be configured as one or more cells from RAN2 point of view. The

configured cells can come from different eNB.

- 5 To take as a baseline that Rel-13 legacy PO/PF calculations are used for the RAN-initiated paging. The input parameters for PO/PF calculation can be changed if necessary.
- 6 To define a UE ID for paging calculation. Select the UE ID from (a) NAS UE ID (i.e. S-TMSI), (b) Rel-13 UE Resume ID, (c) a new RAN UE ID or (d) IMSI mode.
- 7 To define a UE ID conveyed in paging message. Select the UE ID from (a) NAS UE ID (i.e. S-TMSI), (b) Rel-13 UE Resume ID, (c) a new RAN UE ID or (d) IMSI mode.

feMBMS:

Working assumption/agreement:

1. Non standalone case: Rel-14 FeMBMS carrier broadcasts MIB and all SI needed to receive FeMBMS transmission in idle mode. Which of the necessary SI and contents are FFS.
2. The Rel-14 FeMBMS carrier does not support paging functionality for mobile terminating calls.
3. For Non standalone case, from RAN2 point of view subframes 0, 4, 5, 9 (FS1) and 0, 1, 5, 6 (FS2) may be used as MBSFN subframes for FS1 (FS2) in eMBMS carrier. It is understood that 100% MBSFN subframe allocation allows for subframes to be set aside for example cell search and necessary system information.

Annex I: LTE Breakout session on IoT

On Tuesday Wednesday and Thursday of RAN2 #95, in parallel to the main LTE session, an LTE Breakout session on NB-IoT was held in R5+R6 room chaired by session chairman Johan Johansson (MediaTek) addressing:

This is the report from breakout sessions covering the following Items:

- 7.14 LTE: Rel-13: WI: Narrowband IOT
- 8.11 WI: Enhancements of NB-IoT
- 8.12 WI: Further Enhanced MTC

The corresponding report of this session [R2-165842](#) was presented and approved on Fri in the joint session and the contents is provided in this Annex I for convenience reasons.

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

Incoming LSs:

[R2-164614](#) Response LS to S3-160694 = [R2-163328](#) on Clarifications on RRC Resume Request (R3-161426; contact: Nokia) RAN3 LS in cc: RAN2Rel-13 NB_IOT-Core

⇒ **Noted**

[R2-164623](#) Reply LS to [R2-163123](#) on Maximum upper layer data packet size for NB-IoT (C1-163141; contact: Nokia) CT1 LS in to: RAN2 Rel-13 NB_IOT-Core, CloT-CT

- Ericsson think the CT1 limit is just a recommendation. Nokia also think we don't need to change our specs.

⇒ **Noted**

[R2-164635](#) Reply LS to S2-163061 = [R2-164385](#) on delay tolerant access via NB-IOT (C1-164010; contact: Qualcomm) CT1 LS in to: RAN2 Rel-13 CloT-CT

- CT1 is waiting for RAN2 decision on delay tolerant access.

⇒ **We will respond, to this LS and to the previous one from SA2. Topic discussed based on contributions later.**

⇒ **Draft Reply in [R2-165806](#) (QC)**

⇒ **Noted**

[R2-164639](#) Reply LS to [R2-163288](#) on Multiple bearer capability handling (C1-163890; contact: Intel) CT1 LS in to: RAN2 Rel-13 CloT-CT

⇒ **Noted**

New incoming LSs:

[R2-164649](#) LS on applicability of NRSRQ measurement (R4-166696; contact: Huawei) RAN4 LS in cc: RAN2 Rel-13 NB_IOT-Core

- Chair wonders if R2 need to update name of measurements. Ericsson think we discussed this earlier and decided to stick with the current naming

⇒ **Noted**

Outgoing LS

[R2-165806](#) Draft Reply LS to [R2-164635](#) on delay tolerant access via NB-IOT Qualcomm Lsout
⇒ **Approved, final version in [R2-165824](#)**

7.14.1 Control Plane

36.300

[R2-164941](#) Corrections to NB-IoT general in 36.300 Huawei CR 36.300 13.4.00901 - F Rel-13 NB_IOT-Core
- Ericsson has some editorial comments, spelling of optimisation etc.
⇒ **Offline checking**
⇒ **Revision in [R2-165807](#) (rev 1) was cancelled (not provided)**
⇒ **Merged with CR in [R2-164994](#)**

[R2-164994](#) Corrections to NB-IoT description in TS 36.300 Intel Corporation CR 36.300 13.4.00903 - F Rel-13 NB_IOT-Core
- Vodafone would like to keep the sentence on positioning in section 4.
- Intel think this is as usual for E-UTRA in general and the text is not needed.
- Intel encourages companies to check change in section 10.5.1.
- Intel wonders if Huawei could provide visio figures as indicated by comments in the document.
- QC, in section 18, think that CP/UP CIOT indications could be seen as capabilities and should be mentioned here. Intel think that these are NAS capabilities. QC think there is AS behaviour dependency. Can discuss offline.
⇒ **Keep the sentence on positioning in section 4.**
⇒ **Offline check**
⇒ **Huawei to provide visio versions of the two figures indicated.**
⇒ **Revised in [R2-165808](#) (rev 1)**

[R2-165808](#) Corrections to NB-IoT description in TS 36.300 Intel Corporation CR 36.300 13.4.00903 1 F Rel-13 NB_IOT-Core
⇒ **Agreed**

[R2-164942](#) Corrections to NB-IoT HARQ in 36.300 Huawei CR 36.300 13.4.00902 - D Rel-13 NB_IOT-Core
⇒ **Merged with CR in [R2-164994](#)**

[R2-164763](#) Correction to functions not supported for NB-IoT CATT CR 36.300 13.4.00899 - F Rel-13 NB_IOT-Core
- QC wonders what is meant by SMS. Chair think this is ACB skip for SMS.
- Intel point out that we don't even support ACB, so maybe it could be mentioned in a more generic way and explain also that ACB is not supported.
- CATT would like to keep the listing of the cases of ACB skip that is not supported.
- Chair think this is editorial
⇒ **Add "ACB" as a non supported function.**
⇒ **Merged with CR in [R2-164994](#)**

36.302 and simultaneous reception

[R2-164943](#) Corrections to NB-IoT downlink reception type combinations in 36.302 Huawei, Samsung, Ericsson CR 36.302 13.2.00078 - F Rel-13 NB_IOT-Core
⇒ **Agreed**

[R2-165512](#) Relax NB-IoT UE requirements to support broadcast and DL HARQ processes simultaneously QUALCOMM INCORPORATED CR 36.321 13.2.00912 - C cat.C used for closed WI Rel-13 NB_IOT-Core
- Qualcomm think that this is different to the previous one.

- Ericsson think that the previous is sufficient, but agrees with the behaviour of the proposal.
- Intel think that we could mention as a NOTE in 36.302 that reception also includes interleaving and HARQ. Qualcomm think this should be in 36.321.
- Huawei support this clarification.
- Ericsson point out that impact analysis is needed.

⇒ **RAN2 think the proposal is correct.**

⇒ **Work offline on the wording and coversheet**

⇒ **Revised in [R2-165809](#) (rev 1)**

[R2-165809](#) Relax NB-IoT UE requirements to support broadcast and DL HARQ processes simultaneously
QUALCOMM INCORPORATED CR 36.321 13.2.00912 1 F Rel-13 NB_IOT-Core

- Ericsson think this should be clear from other specifications, such as 36.302 or 36.306, and that this kind of clarifications should not be in the protocol specs. Ericsson cannot accept this one. Qualcomm think this is not clear from any of the other specifications. The number of HARQ processes is specified in 36.213 but not for NB-IoT.

⇒ **Postponed**

36.304

[R2-164762](#) Correction to Discontinuous Reception for Paging CATT CR 36.304 13.2.00323 - F Rel-13 NB_IOT-Core

⇒ **Merged with CR in [R2-164944](#)**

[R2-164944](#) Corrections to NB-IoT in 36.304 Huawei CR 36.304 13.2.00325 - F Rel-13 NB_IOT-Core

⇒ **Add “for NB-IoT”**

⇒ **Revised in [R2-165810](#) (rev 1)**

[R2-165810](#) Corrections to NB-IoT in 36.304 Huawei CR 36.304 13.2.00325 1 F Rel-13 NB_IOT-Core

⇒ **Agreed**

[R2-164995](#) Correction to System Information change notifications in RRC_IDLE for NB-IoT Intel Corporation CR 36.304 13.2.00326 - F Rel-13 NB_IOT-Core

⇒ **Change references to include both TS or TR number and [reference]**

⇒ **Merged with CR in [R2-164944](#)**

36.331 RACH resource reservation

[R2-165654](#) NB-IoT reservation of RA resources Ericsson, NTT DOCOMO Inc., QUALCOMM INCORPORATED discussion

- DT wonders if this is the same CR as for RP
- Ericsson confirms that on a high level yes, but with changes to make it backwards compatible.
- Nokia wonders if this really can be ASN.1 backwards compatible. The chair thinks this is indeed the proposal.
- Intel think we might need to revisit this when the user plane people comes back.
- DT wonders if this is optional. Ericsson explains that all resources can indeed be configured to be used for CB RACH.

⇒ **Agree that we introduce signalling so that we can use a subset of RACH resources for Contention Based RACH**

[R2-165655](#) Reservation of RA resources in NB-IoT Ericsson, NTT DOCOMO Inc., QUALCOMM INCORPORATED CR 36.331 13.2.02334 - F Rel-13 NB_IOT-Core

- Huawei wonders why there are two formulas and wonders if R1 TS is impacted.
- Huawei that that category should not be B, and think that corrections not related to the RA resource reservation should not be present

⇒ **Check offline, impact to R1 spec, removal “other” corrections, cover sheet.**

⇒ **Revised in [R2-165811](#) (rev 1)**

[R2-165811](#) Reservation of RA resources in NB-IoT Ericsson, NTT DOCOMO Inc., QUALCOMM INCORPORATED CR 36.331 13.2.02334 1 F Rel-13 NB_IOT-Core
 - Chair think impact analysis need to be added, a colon and line break need to be removed from afield description.

⇒ **Agreed unseen in [R2-165830](#) (rev 2) with the following change: impact analysis need to be added, a colon and line break need to be removed from a field description**

36.331 Particular issues

[R2-164862](#) Issue on resume procedure ZTE Corporation discussion
 - Huawei wonders how we can re-establish without restore first.
 - LG wonders why eNB cannot use stored SN for the transmission? ZTE point out that the eNB could be a different eNB. The options seems to the to either reset L2 or to forward SN over X2.
 - ZTE think the problem is at a new eNB.
 - Huawei wonder why we can't reset L2 when going to Idle instead, which was proposed earlier by Ericsson. LG think we should go for a X2 solution.
 - Ericsson think that the option 2 is the best approach, and would avoid any problems.
 - Huawei think that the UE should first resume SRB1 and then receive RRC resume.
 - P1: QC think this is a problem only if RLC SN is not part of the UE context.
 - QC, CATT and LG support option 1.
 - ZTE think that option 3 is the simplest one and suggest this is the way to go.
 - Vodafone wonders what is the problem with option 2. Option 2 seems simplest. QC would be fine also with option 2. Vodafone don't want to involve RAN3.
 - QC think that also option 2 requires changes at the network side.
 - LG wonders if option 2 would be only for SRB1?
 - Ericsson would like to do the option 2 for all bearers.

Option 1: To include RLC SN relevant info in X2 RETRIEVE UE CONTEXT RESPONSE message

Option 2: To reset RLC state variables including RLC SN while suspension

Option 3: To reset RLC state variables including RLC SN while initiating resume procedure, i.e. UE performs RLC reestablishment procedure to reset RLC state variables while sending RRCConnectionResumeRequest message.

⇒ **RAN2 confirm the unsynchronized RLC SN issue while UE resumes its connection at different eNB, if RLC SN is not part of the UE context forwarded on X2.**

⇒ **We go for option 2 (for all bearers), and this is applicable also to LTE.**

[R2-164864](#) Issue on resume procedure ZTE Corporation CR 36.331 13.2.02258 - F Rel-13 NB_IOT-Core

⇒ **Revised according to agreements above, in [R2-165812](#) (rev 1)**

[R2-165812](#) Issue on resume procedure ZTE Corporation CR 36.331 13.2.02258 1 F Rel-13 NB_IOT-Core

- Chair think that Impact analysis need to be updated to state full non-interoperability. HTC point out that the impacted functionality also need update to just indicate resume in general.
- Ericsson would like to check the interaction between RLC reset and PDCP reset.

⇒ **Revised in [R2-165825](#) (rev 2)**

[R2-165825](#) Issue on resume procedure ZTE Corporation CR 36.331 13.2.02258 2 F Rel-13 NB_IOT-Core

- Ericsson would like to continue checking and come back tomorrow
- All issues in the CR have been addressed.

⇒ **Endorsed, pending offline check (Ericsson)**

- [R2-164887](#) Alignment between RRC and RAN1 specifications Huawei, HiSilicon, Neul Limited discussion
- P1: QC wonders if this wouldn't be clarified in R1 spec. Huawei think this is not the case. Huawei think that TBS is not sufficient, and the usage of the TBS table for SI need to be clarified.
 - P2: ZTE wonders if we could allocate all resource for multi-tone. Ericsson think that this cannot be done, and this is a consequence of the decision to only have one PRACH resource per coverage level. The intention is to guarantee that there is single-tone configurations for the best-coverage configurations.

⇒ **Agreed**

- [R2-164888](#) Cleanup of the NB-IoT ASN.1 Huawei CR 36.331 13.2.02263 - F Rel-13 NB_IOT-Core
- QC wonders why we restrict logical channel by text and not by ASN.1. Huawei think we never release SRB1bis and that uses 3.

⇒ **Agreed**

- [R2-165133](#) Correction on full configuration HTC Corporation CR 36.331 13.2.02280 - F Rel-13 NB_IOT-Core

⇒ **On the cover-sheet, the RAN box need to be ticked.**

⇒ **With this update the CR is agreed unseen in [R2-165817](#) (rev 1)**

- [R2-165817](#) Correction on full configuration HTC Corporation CR 36.331 13.2.02280 1 F Rel-13 NB_IOT-Core

⇒ **Agreed (unseen)**

- [R2-165135](#) Correction on SRB addition and modification HTC Corporation CR 36.331 13.2.02281 - F Rel-13 NB_IOT-Core
- Nokia agreed that the section is not clear and some change may be needed
 - Huawei think that the proposed correction is not correct. Chair agrees.

⇒ **Revised in [R2-165818](#) (rev 1)**

- [R2-165818](#) Correction on SRB addition and modification HTC Corporation CR 36.331 13.2.02281 1 F Rel-13 NB_IOT-Core

⇒ **agreed**

- [R2-165152](#) Overload control and DelayTolerantAccess establishment cause Ericsson discussion
Proposal 1: Introduce DelayTolerantAccess establishment cause in NB-IoT
Proposal 2: Introduce DelayTolerantAccess establishment cause for NB-IoT in REL-13.
- Chair asks how this would be used. Huawei think this is like a third priority class determined e.g. by subscription.
 - Vodafone think we have discussed this before and there is no use case. Vodafone think we don't need this. QC think we can debate use case a lot. QC think this is just another tool and we should not discuss so much. Ericsson agrees and think that overload mechanisms need this.
 - Intel think that all mechanism to make it work is already there.
 - Nokia would prefer to have this in Rel-14.
 - Vodafone think this introduces a complication for system operation.
 - The chair think that the clarification that all Normal reporting is considered to be delay tolerant would resolve all overload control issues.
 - Huawei think that SA2 just want to apply the same handling to both NB-IoT and eMTC.
 - Nokia wonders if this means that the June Specs cannot be used.
 - LG think we shouldn't discuss more.
 - Vodafone think that barring should not be affected, and could accept to introduce this in Rel-14. Ericsson think that introduction in Rel-14 would bring more complexity.
 - Nokia think that if we don't change the barring the feature is useless.
 - Huawei think we can agree without the barring.

- ⇒ **P2 is Agreed**
- ⇒ **For Rel-13, delay tolerant cause is equivalent to normal reporting cause w.r.t. Access Barring.**
- ⇒ **Noted**

[R2-165153](#) Introduction of DelayTolerantAccess establishment cause in NB-IoT Ericsson, Qualcomm Incorporated CR 36.331 13.2.02283 - B cat.B used for closed WI Rel-13 NB_IOT-Core

- Huawei and Ericsson clarifies that the change indeed is backwards compatible.

- ⇒ **Cover sheet needs update: impact analysis, Cat should be F,**
- ⇒ **The IE need version number.**
- ⇒ **Revised in [R2-165819](#) (rev 1)**

[R2-165819](#) Introduction of DelayTolerantAccess establishment cause in NB-IoT Ericsson, Qualcomm Incorporated CR 36.331 13.2.02283 1 B cat.B used for closed WI Rel-13 NB_IOT-Core

- ⇒ **Agreed**

[R2-164676](#) Correction to access barring checking for network sharing case QUALCOMM INCORPORATED CR 36.331 13.2.02242 - F Rel-13 NB_IOT-Core

- Impact analysis need to be added on the cover sheet.

- ⇒ **Agreed unseen with the addition of impact analysis on the cover sheet in [R2-165820](#) (rev 1).**

[R2-165820](#) Correction to access barring checking for network sharing case QUALCOMM INCORPORATED CR 36.331 13.2.02242 - F Rel-13 NB_IOT-Core

- ⇒ **Agreed (unseen)**

36.331 General

[R2-164765](#) Corrections to TS36.331 CATT CR 36.331 13.2.02254 - F Rel-13 NB_IOT-Core

- 2nd change: ACB should be included as a non supported function.
- 3rd change: Change to indicate "all access causes except for <name of cause for MT> instead".
- 4th change: Huawei indicates that M cannot be changed to O. Field descriptions of dl-CarrierConfig and ul-CarrierConfig need additional change. The fields cannot be absent.
- 5th change: ok, although the first change is a duplicate ..
- QC wonders if the list of non supported functions is confusing to a reader. Chair think we should ensure consistency between the groups, and if further clarification is needed it can be introduced later.

- ⇒ **Revised in [R2-165821](#) (rev 1) according to comments above**

[R2-165821](#) Corrections to TS36.331 CATT CR 36.331 13.2.02254 1 F Rel-13 NB_IOT-Core

- ⇒ **Agreed**

[R2-164886](#) Corrections to NB-IoT in 36.331 Huawei CR 36.331 13.2.02262 - F Rel-13 NB_IOT-Core

- Ericsson wonders what is the UE behaviour if the UE doesn't get the SIBs. Is there a collision with the text for essential system information.
- HUawei indicates that this clarifies the UE aqcision of SI in Connected.
- HTC support but have a different motivation in 4719.

- ⇒ **Agreed (unchanged)**

[R2-164892](#) Miscellaneous corrections to section 4 and 5 for NB-IoT QUALCOMM INCORPORATED CR 36.331 13.2.02266 - F Rel-13 NB_IOT-Core

- NEC would like to not change any parts that has not been modified for NB-IoT. Huawei agrees.
- 1st change: NB-IoT does support connected mode UE specific DRX.
- 1st change, second part: the text within brackets should remain as it refers to paging in general.
- 1st change, third part, keep the old text
- 2nd change: ok
- 3rd change: keep the old text
- 4th change (5.2.1.3): 1st part is ok. The others: keep existing text.
- 5th change: Keep the existing text.
- 6th change: ok
- 7th change (5.2.2.5): ok
- 8th change (5.2.2.9): nothing should be removed but a carriage return is missing.
- 9th, 10th, 11th changes: keep the old text
- 12th change: ok
- 13th change (5.3.8.1): Huawei think the change is not correct. Keep the old text.

⇒ **Revised in [R2-165823](#) (rev 1)**

[R2-165823](#) Miscellaneous corrections to section 4 and 5 for NB-IoT QUALCOMM INCORPORATED
CR 36.331 13.2.02266 1 F Rel-13 NB_IOT-Core

⇒ **Last change: Update text that is wrong when enabling MS word formatting view.**

⇒ **Cat shall be F**

⇒ **Agreed unseen with those changes, in [R2-165826](#) (rev 2)**

[R2-164997](#) Alignment of procedure when handling up-Clot-EPS-OptimisationIntel Corporation CR
36.331 13.2.02272 - F Rel-13 NB_IOT-Core

- 5.3.3.4: Intel think that AS shall just forward the indication is received from upper layer. Huawei think we don't want more test cases. Intel indicates that if there is only one case, then this can be specified by CT1. Intel think this change is applicable to both NB-IoT and LTE in general. Ericsson and CATT support this change. ZTE prefers the original text as this is not applicable to MO data. Huawei think that we anyway need to change when we add delay tolerant cause.

⇒ **Agree change in 5.3.3.4, to be provided in revised CR**

⇒ **Cover sheet need to indicate TEI13 and addition of impact analysis**

⇒ **Revised in [R2-165822](#) (rev 1)**

[R2-165132](#) Correction on cell reslection procedure while T300 is running HTC Corporation CR
36.331 13.2.02279 - F Rel-13 NB_IOT-Core

- The change seems correct. It aligns with handling of T300 expiry.

⇒ **Agreed**

[R2-165455](#) Minor editorial corrections for NB-IoTEricsson CR 36.331 13.2.02316 - D Rel-13
NB_IOT-Core

- 9.2.2: Huawei point out that default value is release for all IEs that have the setup/release design. Huawei think this is a non-backwards compatible change, as default configurations need to be defined from start.
- QC think that headings are needed for the impacted sections, and that the cover sheet need to be updated with impact analysis.

⇒ **Except the change in 9.2.2, merge with CR in [R2-164892](#)**

36.331 System Information

[R2-164719](#) Correction to system information for NB-IoT HTC Corporation CR 36.331 13.2.02246
- F Rel-13 NB_IOT-Core

- The problem is resolved but the detailed solution in [R2-164886](#) is used instead ..

⇒ **Merged with CR in [R2-164886](#)**

[R2-165641](#) Correction on system information required by NB-IoT UE in connected mode LG Electronics
France CR 36.331 13.2.02333 - F Rel-13 NB_IOT-Core

⇒ **Merged with CR in [R2-164886](#)**

[R2-164891](#) Clarification on valid downlink sub frame for SI message QUALCOMM INCORPORATED
CR 36.331 13.2.02265 - F Rel-13 NB_IOT-Core

- Ericsson think that we don't need Notes to specify correct configurations.
- Chair think the intention is correct, but agree we don't usually have notes. Intel and Nokia agrees.
- QC point out that the problem scenario is related to coverage and thus it would be important.

⇒ **The intention is confirmed correct**

⇒ **Not pursued**

[R2-165369](#) Corrections on Modification Period for NB-IoT Huawei CR 36.331 13.2.02304 - F
Rel-13 NB_IOT-Core

- Was treated in eMTC session and not agreed there.

⇒ **Not pursued.**

[R2-165629](#) Clarification of si-RepetitionPattern and SI message accumulation across different SI windows
Intel Corporation discussion

- The intention is to clarify the existing behaviour.
- All companies seems to agree on the intended behaviour.
- SI valid radio frames: Ericsson think we don't need a new concept. Huawei agrees. LG agrees
- Intel proposes as an alternative to have a figure.
- Sequans indicate that maybe the tabular is confusing as it is stated that the repetition pattern indicated the SI valid frames. Maybe it should say start frames instead ..

⇒ **We don't introduce "SI valid radio frames"**

⇒ **Second change also not agreed.**

⇒ **Noted**

[R2-165630](#) Clarification of si-RepetitionPattern and SI message accumulation across different SI windows
Intel Corporation CR 36.331 13.2.02331 - F Rel-13 NB_IOT-Core

⇒ **Not pursued**

36.331 Processing Delays

[R2-164889](#) NB-IoT RRC Processing Delays Huawei, HiSilicon, Neul Limited discussion

- Ericsson wonders why we should start after the HARQ transmission. Neul explains that the time should be independent of L1.
- Nokia wonders why we cannot use the LTE specification of the delay. Nokia think that this can be used. Neul think that for NB-IoT a decoding delay would need to be added, and with the proposal here we wouldn't need that.
- ZTE think the G in the figure is confusing. In legacy we just refer to the UL grant.

⇒ **Agree to specify the processing delays for NB-IoT.**

⇒ **We have an email discussion and we can also discuss the RRC release behaviour incl the timer to allow for sending feedback.**

- ☒ **Email discussion to next meeting (Neul), on processing delays, including start-stop definitions and values.**

[R2-164890](#) NB-IoT RRC Processing Delays Huawei CR 36.331 13.2.02264 - F Rel-13
NB_IOT-Core

⇒ **postponed**

Late tdoc:

[R2-165829](#) Correction of downlink gap applicability for NB-IoT Ericsson CR 36.331 13.2.02342 -
F Rel-13 NB_IOT-Core
- Huawei think the change is correct.
⇒ **Agreed**

Withdrawn:

[R2-165511](#) Relax NB-IoT UE requirements to support broadcast and DL HARQ processes simultaneously
QUALCOMM INCORPORATED CR 36.331 13.2.02319 - C cat.C used for closed
WI Rel-13 NB_IOT-Core

7.14.2 User Plane

DRX

[R2-165370](#) Correction on MAC procedure and DRX related issues Huawei CR 36.321 13.2.00907
- F Rel-13 NB_IOT-Core
- 1st change: The drx inactivity timer condition is somewhat wrong, "after" should be used as in the original text. LG think that the condition should refer to HARQ RTT timer.
- 2nd change: Ericsson think that the reference is not according to correct style. For this change LG would prefer the change from HTC.
- Ericsson would like to merge some CRs and would not like to have several CRs for the same section.
- 3rd change: LG think it isn't needed. It is redundant, but it is confusing to add "except for NB-IoT", as the reader might think this should NOT be done. Ericsson are fine with this change.
- 4th change: Ericsson think this is not needed, as DRX timers are in the unit of pdccch-period, Note that PDCCH period is not constant, and according to R1 specs PDCCH period will be extended. The proposed text is likely to introduce confusion.
- 5th change: Ericsson wonders why this is not needed. Huawei think that there may be several PDCCH candidates. The old and new text seems equivalent.
- 6th change: Ericsson think that +3 is already accounted for and that this text should be removed. QC agrees
- 7th change: Ericsson think this is not needed as this functionality is anyway not applicable to NB-IoT.
- QC comments that the sections in the CR is no in order.
⇒ **Agree that we should have 1, 2, 3, changes in principle. Discuss if we need change 5, 6. Modify according to comments above. We will not have changes 4 and 7.**
⇒ **Revision in [R2-165813](#) (rev 1)**

[R2-165813](#) Correction on MAC procedure and DRX related issues Huawei CR 36.321 13.2.00907
1 F Rel-13 NB_IOT-Core
- 7.7: Ericsson think we should not change PDCCH occasion to PDCCH candidate. Ericsson think there is significant functional difference and with the change there may be a significant impact to power consumption. Mediatek also have doubts.
⇒ **Unless there can be consensus at this meeting for the proposed change in 7.7 to change PDCCH occasion to PDCCH candidate, we will not have this.**
⇒ **On the cover sheet, add co-sourcing companies, update the WI code,**
⇒ **Simplify the impact analysis.**
⇒ **Revised in [R2-165827](#) (rev 2)**

[R2-165827](#) Correction on MAC procedure and DRX related issues Huawei CR 36.321 13.2.00907
2 F Rel-13 NB_IOT-Core
⇒ **agreed**

[R2-164782](#) Clarification on MAC timers HTC Corporation CR 36.321 13.2.00892 - F Rel-13
NB_IOT-Core

- Huawei think there is no terminology and wonders why the dependency to search space is removed. HTC propose to remove this because it is unclear. Mediatek prefers the Huawei text. Ericsson clarifies that the dependency is that CSS and USS is different. CATT prefers Huawei's proposal.
- Intel wonders if PDCCH occasion is needed. Ericsson think yes.

⇒ **The additions are Merged with the CR above in [R2-165370](#) (except for the removal of the dependency to search space).**

[R2-164745](#) Correction to DRX for NB-IoT HTC Corporation CR 36.321 13.2.00890 - F Rel-13 NB_IOT-Core

- LG think that we can define PDSCH and PUSCH to also include NPDSCH and NPUSCH. HTC think that this is one alternative, but think that UL and DL transmission is sufficient for MAC. Ericsson are fine with any of these proposals, but for the DL transmission it should be ensured that we do not indicate NPDCCH .. Huawei agree with LG

⇒ **Agree to resolve this problem, but to define PDSCH and PUSCH to also include NPDSCH and NPUSCH. Merge this into the CR above in [R2-165370](#).**

[R2-164924](#) Correction to HARQ RTT HTC Corporation CR 36.321 13.2.00897 - F Rel-13 NB_IOT-Core

- Already covered (mostly)

⇒ **Merge with CR in [R2-165370](#), the NPUSCH abbreviations part**

[R2-165669](#) Correction on On Duration handling in NB-IoT LG Electronics Inc. discussion

- Huawei are not sure. Mediatek supports this. Intel support this .
- Sequans wonders if onduration timer would be started after expiry of the RTT timer. LG think no, but UE may still be in active based on retransmission timer. Ericsson point out that retransmission timer may be zero.

⇒ **We go this way**

⇒ **Noted**

[R2-165670](#) Proposed CR to 36.321 on onDurationTimer LG Electronics Inc. CR 36.321 13.2.00918 - F Rel-13 NB_IOT-Core

⇒ **Update the cover sheet with interop statement**

⇒ **Revised in [R2-165814](#) (rev 1)**

[R2-165814](#) Proposed CR to 36.321 on onDurationTimer LG Electronics Inc. CR 36.321 13.2.00918 1 F Rel-13 NB_IOT-Core

⇒ **Agreed**

RACH

[R2-164764](#) Correction to MAC RAR CATT CR 36.321 13.2.00891 - F Rel-13 NB_IOT-Core

- The chair think that this change is non-bw-compatible
- Ericsson agrees some change is needed but think that R bits should be allocated differently, (1 Rbit in beginning and the rest at the end of the UL grant) and the text need changes. Neul, ZTE agrees with Ericsson.

⇒ **Work offline on the wording**

⇒ **1 R bit first, the rest of the R bits after UL grant.**

⇒ **Revised in [R2-165815](#) (rev 1)**

[R2-165815](#) Correction to MAC RAR CATT CR 36.321 13.2.00891 - F Rel-13 NB_IOT-Core

- Chair think that the UL Grant cannot be provided in an interoperable format without the CR, and that we could state that the RACH procedure doesn't work without this, and in the interoperability statement it is made clear that if only one of UE or eNB implements this but not the other the RACH procedure doesn't work.

⇒ **Update the impact analysis: make clear that if only one of UE or eNB implements this but not the other the RACH procedure doesn't work**

⇒ **Update the consequences if not approved to include that UL Grant cannot be provided in an interoperable format, and that the RACH procedure doesn't work.**

⇒ **Agreed unseen in [R2-165828](#)**

=> MCC: Please note that NB-IOT MAC CR 0918 R2 Correction to MAC RAR ([R2-165828](#)) was agreed in RAN2#95 but mistakenly not submitted to RAN#73 and hence was not implemented in the September 16 specifications. However implementers can assume that this CR will be included in the Dec 16 specifications.

[R2-164867](#) Correction on RA-RNTI calculation and Backoff Parameter values ZTE Corporation CR 36.321 13.2.00894 - F Rel-13 NB_IOT-Core

- 1st change: Ericsson and Huawei are not sure this is needed, and would like to discuss offline. ZTE doesn't understand but think it depends on how to define SFN_id.
- 2nd change: Ericsson think we shouldn't change this and think this isn't related to T300. ZTE think we didn't take T300 into account when we discussed this. LG support this change, as the UE will fail RRC connection setup. CATT wonders why T300 is related. ZTE think that the UE may not have another chance to access. Ericsson think that overload anyway need to be handled, regardless T300. QC are happy to keep the existing values ..

After offline

- MAC is reset after T300 expiry, so ZTE assume that the backoff value is lost when T300 expires. Ericsson still think that longer values will distribute UEs to longer backoffs.
- Chair think the two highest code points are likely to not be used.
- Huawei wonders what the UE would do if the long values are used in Connected mode. ZTE are not sure.
- 1st change: Huawei wonders what exactly is the SFN_id. ZTE think that this may be clarified further, i.e. that "specified PRACH" need to be clarified.

⇒ **Not sufficient support for 2nd change**

⇒ **The understanding that SFN_id = SFN of the radio frame of the first transmission/repetition of the PRACH, seems sufficiently clear in the current text.**

⇒ **Agree to 1st change, which is merged into CR in [R2-165653](#)**

⇒ **Merged**

[R2-165371](#) Correction on RACH related issues Huawei CR 36.321 13.2.00908 - F Rel-13 NB_IOT-Core

- 3rd change: LG wonders if this need to be a note. It can be normative. Ericsson think that this was by a NOTE for legacy. OK .. kept as a note.

⇒ **2nd change: change to "Except for NB-IoT, ..." instead.**

⇒ **3rd change: corresponding changed to corresponds.**

⇒ **Merge with CR in [R2-165653](#)**

[R2-165653](#) Clarification of the Random Access procedure for NB-IoT Ericsson CR 36.321 13.2.00917 - F Rel-13 NB_IOT-Core

- QC points out that the first change don't have a section heading.
- 2nd change: ZTE point out that 000000 is a valid tone, and it is strange to use this as an indication of UE resource selection. ZTE think that we could pick a number that is > 48 to indicate. LG wonders if there is a logical difference to legacy. Ericsson point out that the number 000000 is part of the baseline and was not proposed to change. ZTE are otherwise happy with the second change.
- 2nd change: ZTE don't understand what is PRACH resource. This might need to be checked. Huawei indicates that there is also a CR in RAN1 for clarification on the signalled repetition number. ZTE think it would be clearer to use repetition number

⇒ **Allow time for checking**

⇒ **Revised in [R2-165816](#) (rev 1)**

Comeback Thursday.

We need to decide what to do:

- Option 2 (random selection at change of CE level) 5
- Option 3 (use the indicated resource at change of CE level) 7
- Result of show of hand was 5-7 (i.e. like flipping a coin).
- Ericsson think that the eNB can know exactly when a UE makes the first attempt for a PDCCH order.
- Ericsson think that option 3 is exactly the solution to be used for contention free RACH in Rel-14, so this option would be more future proof

⇒ **We go with option 3**

[R2-165816](#) Clarification of the Random Access procedure for NB-IoT Ericsson CR 36.321 13.2.0
0917 1 F Rel-13 NB_IOT-Core

⇒ **Revision is Agreed unseen, with the change to tick the RAN box on the cover sheet in [R2-165831](#) (rev 2)**

[R2-165372](#) Correction on Random Access Resource selection (Option 1) Huawei CR 36.321
13.2.00909 - F Rel-13 NB_IOT-Core

- Ericsson think this CR is a subset of the previous one. Huawei acknowledge this.

⇒ **Merge with the previous CR in [R2-165653](#)**

[R2-165373](#) Correction on Random Access Resource selection (Option 2) Huawei CR 36.321
13.2.00910 - F Rel-13 NB_IOT-Core

- LG prefers this structure (option 2) compared to 5372 or 5653. DT supports option 2. Huawei think that it is clear the option 2 is more maintainable.
- QC prefers option 1 as we should not encourage changes just for structure. Ericsson want to keep similarity between NB-IoT and LTE / eMTC. Vodafone also think we should not change the structure only for niceness. ZTE also prefer option 1.
- Huawei wonders who would object to option 2. Huawei has a very strong preference for option 2. Ericsson have a strong opinion to not go for option 2.

⇒ **We go with the current structure, i.e. option 1 or acc to [R2-165653](#)**

⇒ **Not pursued**

[R2-164870](#) Issue on signalled parameters in PDCCH order in NB-IoT ZTE Corporation CR 36.321
13.2.00895 - F Rel-13 NB_IOT-Core

- Ericsson wonders how the similar CR to eMTC was treated. ZTE explains that it is not agreed.
- Ericsson acknowledge that this is not clear for NB-IoT, but don't want to change the index 0.
- LG think that we could just use the indicated subcarrier. Ericsson think that the problem is that the indicated subcarrier may not be available in the next CE level. Huawei think that we can do random selection of subcarrier for the next CE level. Ericsson likes the ZTE proposal.

After offline discussion

- ZTE explains that most companies seems to want to change, and suggest to go with the proposed change. Ericsson, ZTE, Intel, Neul discussed this.
- Vodafone think that RACH can just be stopped and the network provides a new PDCCH order. ZTE think this is a bigger change. Ericsson agrees, and think there is also impact to RAN1 specifications. Huawei point out that when this happens in eMTC the UE can indeed just stop
- Ericsson wonder how this would work. Huawei think that the network will know based on received on received preamble. Ericsson point out that the UE will be listening for RAR and will not be able to receive anything.

⇒ **Continue the offline discussion (ZTE), what will the UE do when changing CE level at PDCCH order with a specific subcarrier indicated**

⇒ **Mini-session on this topic, wed morning coffeebreak 1030 in the NB-IoT room.**

Mini session summary:

Options for PDCCH order and coverage level change:

- 1) Only do RACH at one coverage level when initiated by PDCCH order
- 2) UE do "random" RACH resource selection when coverage level change
- 3) We attempt to use the indicated resource also when the UE is changing coverage level.
 - We choose between options 2 and 3.
 - NO easy consensus. It seems everyone has a good understanding on the topic now.

For continuation, see comments to [R2-165816](#) above

Support for UL scheduling

- [R2-165640](#) Further consideration on DVI LG Electronics Inc. discussion
- Huawei think there is no problem. For UP there is no NAS message.
 - Ericsson think that we don't need to change our specifications, it is obvious that NAS sizes are needed from NAS layer. Mediatek also think this isn't needed.
 - QC sympathises but think this has already been discussed in CT1. CT1 concluded this was up to implementation. Nokia also think this is up to UE implementation.
 - Intel also don't want to send a LS.

⇒ **Noted**

- [R2-165642](#) CR to 36.321 on Clarification on provision of Data Volume LG Electronics Inc. CR 36.321
13.2.00915 - F Rel-13 NB_IOT-Core

⇒ **Not pursued**

- [R2-165645](#) LS on latest updates about Data Volume Indicator (DVI) for NB-IOT in RAN2 LG Electronics Inc. LS out
Rel-13 NB_IOT-Core

⇒ **Noted**

- [R2-165652](#) Clarification of the applicability of Data Volume (DV) and Power Headroom Reporting (PHR) procedure Ericsson CR 36.321 13.2.00916 - F Rel-13 NB_IOT-Core
- Huawei think the text should be in the beginning.
 - Nokia wonders if this related also to LTE UEs. Intel is also wondering about this. Ericsson think not. In Rel-13 this is only for NB-IoT.
 - Ericsson points out that the short PH report is definitely only for NB-IoT.
 - Intel wonders if there is a problem of allowing this for non NB-IoT UEs.
 - QC think that the network may not recognize this field for non-NB-IoT.
 - ZTE think that we also need to check whether it can fit in the MSG3 grant. ZTE think this is only for NB-IoT.
 - LG think this is just a clarification change and it is ok. QC agrees.
 - QC wonders if we really need duplication of PH description text. Ericsson see no reason to change.

⇒ **Merge with CR in [R2-165370](#), could modify offline (e.g. move to the beginning of the section).**

8.11 WI: Enhancements of NB-IoT

(NB_IOTenh-Core, leading WG: RAN1; REL-14; started: June 16; target: Mar. 17; WID: [RP-161324](#))

Time budget: 1TU

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

Work Plan

[R2-165374](#) NB-IoT Release 14 enhancements work plan Huawei, HiSilicon discussion
Moved from 8.11.4

⇒ **Noted**

8.11.1 Multicast and 8.12.1 Multicast

Plan: Treat 8.11.1 and 8.12.1 together, focus on eNB-IoT aspects first and then discuss applicability to feMTC. Many stage-2 level aspects seems to be tentatively common.

Architecture, Idle and Connected mode, Service Continuity, SIB15, SIB20, PDCCH -> MCCH, MCCH modification: Period, MCCH change notification, PDCCH -> MTCH, Narrowband/non-anchor carrier MTCH, MCCH? Repetitions, Coverage levels of PDCCH/MCCH/MTCH, Retransmissions and feedback (RAN2 or RAN1), Mobility, Power consumption and DRX, RLC Mode

General and Coverage Enhancement

[R2-165375](#) General Aspects of Multi-Cast in NB-IoT Huawei, HiSilicon, Neul Ltd. Discussion

- P1: Huawei think it means that we reuse GCS. Chair wonders which functions we need to take into account. Ericsson think that P1 in general is ok, but have concerns on functionality. QC wonders if we need to send a LS.
- Chair proposes that we just send a LS to inform on progress.
- P2: QC wonders if this is only for NB-IoT. LG has concerns on supporting connected for NB-IoT. Kyocera point out that there is a difference between MTC and NB-IoT. Kyocera are ok for NB-IoT but think we need more discussion for MTC. LG think this means that there will be some impact to current TS. QC think there are difference in use cases and that we might need to support SC-MTC in connected for MTC. ZTE think that the UE cannot receive multicast in connected mode. LG agrees.
- P3: Nokia wonders how service continuity in connected.
- P7: Ericsson think we shouldn't do this, there is no time, and Ericsson think there are other mechanisms that can do this. QC and LG agree with Ericsson. LG think the node B can do blind retransmissions.
- P7: ZTE and Kyocera think feedback and retransmissions.
- P7: chair think this proposal is too big for this WI.

- ⇒ **The Rel-13 SC-PTM architecture is assumed for multi-cast design for NB-IoT and MTC.**
- ⇒ **Reception of multi-cast in RRC_IDLE mode is required by both NB-IoT and MTC.**
- ⇒ **Reception of multi-cast in RRC_CONNECTED mode is not required for NB-IoT and FFS for MTC.**
- ⇒ **Service continuity of multi-cast should be supported as in Rel-13 for Idle mode for NB-IoT and MTC.**
- ⇒ **RAN2 assumes that the legacy SC-MTCH mechanism in which the SC-MTCH is scheduled by PDCCH is reused for multi-cast in NB-IoT and MTC to achieve flexible scheduling.**
- ⇒ **RAN2 assumes that repetition for SC-MTCH transmission will be introduced for multi-cast in NB-IoT and MTC.**

✉ **Email discussion on the need for a feedback mechanism for SC-PTM for NB-IoT and/or MTC (Huawei).**

- [R2-165377](#) Coverage Enhancement for Multi-Cast in NB-IoT Huawei, HiSilicon, Neul Ltd. Discussion
- ZTE think that it is difficult to determine the required CE level for a service.
 - QC wonders how GCS AS determines CE level if there are many UEs in different CE level.
 - Huawei think that every UE reports to GCS AS. Nokia think this would cost a lot, especially for moving UEs, that would need to report every time CE level changes. ZTE wonders if the UE need to connect just to report the CE level. Huawei indicate that the UE anyway for SC-PTM need to report its location to the GCS AS. Nokia think that CE level reporting for Idle is a big problem.
 - Intel point out that the network already know the CE level at last TAU of the UEs (if they are stationary).
 - Ericsson think it is strange that GCS AS makes the decision on the CE level. Shouldn't RAN decide this.

⇒ **The CE level information (e.g. repetitions) is one of the AS configurations for SC-MTCH.**

- [R2-164857](#) Consideration on supporting multicast in NB-IoT ZTE Corporation discussion
- P3: Intel wonders about MTC
- P4: Ericsson think we don't need to limit if we have RLC-UM.
- P6/7: Intel think that the agreements may be misleading such that the UE is required to receive multiple carriers.
- P8: chair think that for file transfer service, optimizations could be a valid topic. Huawei want dynamic scheduling. Nokia also prefer this. LG agrees.

- ⇒ **UM mode is to be used for SC-PTM in NB-IoT and MTC.**
- ⇒ **To use SIB20 (or a somewhat modified variant) for SC-MCCH configuration (a new SIB20-NB for NB-IoT).**
- ⇒ **Both SC-MCCH and SC-MTCH can maybe be scheduled on anchor carrier and/or non-anchor carrier for NB-IoT.**
- ⇒ **SC-MCCH and SC-MTCH can maybe be scheduled on different carriers for NB-IoT and for MTC (narrowband for MTC). Need to consider e.g. MCCH modification and e.g. frequency hopping for MTC.**

- [R2-165636](#) Overview of SC-PTM and common eMTC and NB-IoT aspects Ericsson discussion
- [R2-165627](#) RAN2 impacts to enable multicast for eMTC and NB-IoT Intel Corporation discussion
- [R2-165376](#) Configuration of Multi-Cast in NB-IoT Huawei, HiSilicon, Neul Ltd. Discussion
- [R2-164767](#) Multicast for NB-IoT and eMTC CATT discussion
- [R2-165210](#) Discussion on SC-PTM for NB-IoT SHARP Corporation discussion
- [R2-165621](#) Details of SC-PTM support for NB-IoT UEs Ericsson discussion
- [R2-165647](#) SIB related issues for SC-PTM in NB-IOT LG Electronics Inc. discussion
- [R2-165648](#) SC-PTM MTCH reception related issues in NB-IOT LG Electronics Inc. discussion

Mobility

- [R2-165632](#) Considerations on multicast support in NB-IoT LG Electronics France discussion

Documents submitted under 8.12.1 Multicast

- [R2-165056](#) Multicast enhancements for FeMTC Kyocera discussion
- [R2-165383](#) General consideration on SC-PTM support for FeMTC Huawei, HiSilicon discussion
- [R2-165384](#) MCCH configuration and design for FeMTC Huawei, HiSilicon discussion
- [R2-165385](#) Coverage Enhancement for SC-PTM in FeMTC Huawei, HiSilicon discussion
- [R2-165619](#) Overview of SC-PTM and common eMTC and NB-IoT aspects Ericsson discussion
- [R2-165620](#) Details of SC-PTM support for eMTC UEs Ericsson discussion
- [R2-165633](#) Considerations on multicast support in FeMTC LG Electronics France discussion
- [R2-165659](#) SIB related issues for SC-PTM in FeMTC LG Electronics Inc. discussion

[R2-165661](#) SC-PTM MTCH reception related issues in feMTC LG Electronics Inc. discussion

8.11.2 Non-anchor PRB enhancements

RACH

Used from Idle and Connected, Connected: UL data, DL Data (PDCCH order), reestablishment (e.g. CE level change), broadcast configuration, carrier selection: same as paging carrier, based on UE_ID, with time factor, random selection, explicit indication in PDCCH order, with configured probabilities, uneven distribution, for exception report, dependent on UE power class, Dependent on RSRP, Reselect carrier in case of failure.

[R2-164768](#) Access Enhancements for NB-IoT CATT discussion

- Ericsson think it is assumed that there is a PRACH and Paging on every non-anchor carrier that carries either of those.
- CATT confirms that they have assume that PAGING and RACH go together. Ericsson think this is not the case as this is a FDD system. Huawei agrees with Ericsson. Intel also agrees.
- QC wonders if there can be different number of carriers for DL and for UL. Ericsson confirms that this is the case.
- Ericsson think we shouldn't list the cases.

⇒ **Support the transmission of NPRACH on a non-anchor carrier in the case of initial access from RRC_IDLE and in the case of RRC connection re-establishment procedure.**

⇒ **Support the transmission of NPRACH on a non-anchor carrier in the case of PDCCH order and in the case of UL transmission during RRC_CONNECTED requiring random access procedure.**

[R2-164859](#) Consideration for PRACH on multi-carrier in NB-IoT ZTE Corporation discussion

⇒ **The network broadcasts the non-anchor carrier RACH resource configuration (BCCH is currently on anchor carrier)**

[R2-165554](#) NPRACH on a non-anchor carrier Sequans Communications discussion

- Sequans agree that paging and RACH do not need to be linked.
- ZTE wonders if we need to reserve an carrier for exception report. Sequans think this could be a possibility but maybe not necessary but exception reports could be allocated to low load carriers eg? QC think we need to be careful as there could be storms of exception reports. Ericsson shares the view of qualcomm.
- Intel think P2 is not clear.

⇒ **noted**

[R2-165656](#) Random Access on Non-Anchor Carriers in NB-IoT Ericsson discussion

- LG wonders if we can reselect to another carrier as fallback
- P9: Sequans wonders if different carriers are transmitted with different power. Ericsson think this is indeed the case.

⇒ **During the RA procedure including Msg1/Msg2/Msg3/Msg4 (one attempt), it is sufficient to use one and the same UL carrier (for Msg1/Msg3) and one and the same DL carrier (for Msg2/Msg4).**

⇒ **If no dedicated configuration (physicalConfigDedicated-NB) is provided to the UE in Msg4, the UE remains on the UL carrier where Msg1/Msg3 was transmitted and on the DL carrier where Msg2/Msg4 was received.**

LISTING OF OPEN ISSUES below (no attempt to clarify or evaluate)

- Nokia wonders what is the configured non-anchor carrier for connected mode. Nokia think there are several options

Configuration

Independent per carrier or some part same for all carriers?

Restrictions / configuration of UL/DL carrier?

NPRACH and CSS_RA resources configuration flexibility

Measurements

RSRP measurements for NPRACH selection done on the anchor carrier frequency or not?

Carrier Selection, from Idle (or Connected?)

1. Anchor carrier
2. Paging carrier
- 3.a. Based on UE-ID
- 3.b. Based on random number
4. Any available carrier that can be used for RACH
5. Considering a time factor?
6. Depending on CE level
7. For load balancing / even load / by configured probability
- 7.a. For uneven distribution
8. especially for exception report,
9. Reselection of RACH resource, e.g. after reattempts.
10. dependent on UE power class

Carrier selection, additionally for Connected

1. Configured non-anchor carrier (possible to reconfigure carrier)
2. Signalled by PDCCH order (require a new DCI format?)

☒ **RACH on non-anchor carrier, clarify and to extent possible narrow down the options (CATT)**

- [R2-164989](#) Considerations of NPRACH transmissions in non-anchor carrier Intel Corporation discussion
- [R2-165533](#) NPRACH on Non-anchor NB-IoT Carrier Huawei, HiSilicon, Neul Ltd. Discussion
- [R2-165472](#) NPRACH on a non-anchor NB-IoT PRB NEC discussion
- [R2-165236](#) Non-anchor PRB enhancements Nokia, Alcatel-Lucent Shanghai Bell discussion
- [R2-164953](#) RACH and Paging on non-anchor NB-IoT Carrier MediaTek Inc. discussion
- [R2-164780](#) Support of NPRACH and paging transmission on Nonanchor PRB Gemalto N.V. discussion
- [R2-165176](#) Transmission of NPRACH on a non-anchor NB-IoT PRB Fujitsu discussion
- [R2-165207](#) random access for eNB-IoT SHARP Corporation discussion
- [R2-165209](#) Random access procedure on Non-Anchor PRB III discussion
- R2-165378** NBPRAN on Non-anchor NB-IoT Carrier Huawei, HiSilicon, Neul Ltd. discussion late

Paging

Carrier selection: Same as eMTC? time domain factor?, SI change indication, Direct Indication, Configuration which carrier to be included, option to not include anchor? Uneven load distribution? Only for anchor? Dependent/independent of CE level?

UE capability handling, Paging configuration: same or different between carriers.

- [R2-165379](#) Paging on Non-anchor NB-IoT Carrier Huawei, HiSilicon, Neul Ltd. Discussion
- Ericsson wonders if the P1 assumes that all carriers have the same output power.
 - Huawei confirms that this is the case.

⇒ **NB-IoT system information includes a list of carriers which can be used for paging.**

- ⇒ **We assume that The existing paging frame and subframe calculations in 36.304 are reused.**

[R2-165657](#)

Non-anchor carrier Paging in NB-IoT Ericsson discussion

- P7: QC point out that the UE need to know how to handle different power carriers. Intel think the repetitions can be different.

- ⇒ **The paging procedure for Rel-14 is the same as for Rel-13, i.e. the paging message on NPDSCH is scheduled by NPDCCH.**
- ⇒ **When paging is done on non-anchor carriers both the NPDCCH and the NPDSCH is received on the same non-anchor carrier.**
- ⇒ **In order for the eNB to know if a UE can be paged on a non-anchor carrier some information needs to be provided from the MME as part of the paging message.**

OPEN

- Whether to use the existing PNB formula or a modified version, and what modifications to use
- Support for uneven paging load distribution among anchor/non-anchor carriers.
- Support for CE-level differentiated paging
- Is The paging configuration common for all NB-IoT paging carriers?
- Do we need to handle unfairness wrt some UEs always receiving with higher number of rep.

- ☒ **Email discussion Paging open issues clarify and to extent possible narrow down the options (Ericsson)**

[R2-164990](#)

Considerations of idle mode paging in non-anchor carrier Intel Corporation discussion

[R2-164858](#)

Consideration for paging on multi-carrier in NB-IoT ZTE Corporation discussion

[R2-165553](#)

Paging on a non-anchor carrier Sequans Communications discussion

[R2-164769](#)

Paging Enhancements for NB-IoT CATT discussion

[R2-165208](#)

Consideration for paging on non-anchor carrier SHARP Corporation discussion

[R2-165650](#)

NB IOT Paging enhancement LG Electronics Inc. discussion

8.11.3 Mobility enhancements

Data interruption time, Data loss, Context fetch at reestablishment, CP solution Reestablishment, Resume instead of reestablishment, Reestablishment with reconfiguration, Handover, RLF triggered mobility, cell reselection, fast RLF, redirection, enhanced measurements and RLF detection.

UP and CP solution

[R2-165625](#)

Need for UE centric mobility for service continuity LG Electronics France discussion

- Nokia wonders how to do the reest. for CP solution without Security. Chair think this is discussed briefly in two other papers.

⇒ **noted**

[R2-164952](#)

Mobility enhancements for NB-IoT MediaTek Inc. discussion

⇒ **noted**

DISCUSSION

- Proposals: Stick to UE based mobility, trigger either at RLF or earlier
- Vodafone think that the target is to trigger RLF by another criterion and think this is essential.
- Ericsson has concerns that the UE just leaves before the connection turns non-usable. Ericsson think that a good enough cell may be sufficient, and think this would be really difficult to control.

- ☒ **Mobility, to structure proposals and determine possible ways forward. Can also discuss the problems to be solved (Nokia)**

[R2-165159](#) Mobility enhancements NB-IoT Ericsson discussion
[R2-165380](#) Mobility enhancements in connected mode Huawei, HiSilicon, Neul Ltd. Discussion
[R2-165626](#) Fast RRC connection re-establishment in NB-IoT LG Electronics France discussion
[R2-164766](#) Discussion on Mobility Enhancement CATT discussion

CP solution

[R2-164999](#) RRC Connected mobility for NB-IoT UEs using CIoT EPS CP optimizations Intel Corporation discussion
[R2-165631](#) Support of RRC Connection Re-establishment for CP solution LG Electronics France discussion
[R2-165245](#) Mobility enhancement for NB-IoT CP solution Nokia, Alcatel-Lucent Shanghai Bell discussion
[R2-165256](#) DRAFT LS on mobility enhancement for CP solution Nokia LS out

UP solution

[R2-164860](#) Consideration on mobility enhancement in NB-IoT ZTE Corporation discussion
[R2-164991](#) RRC Connected mobility for NB-IoT UEs using CIoT EPS UP optimizations Intel Corporation discussion
[R2-165238](#) Mobility enhancement for NB-IoT UP solution Nokia, Alcatel-Lucent Shanghai Bell discussion

Other

[R2-165381](#) Load balancing enhancement Huawei, HiSilicon, Neul Ltd. Discussion

8.11.4 Other

Positioning

[R2-165264](#) Requirements for NB IoT Positioning Enhancements Evaluations VODAFONE Group Plc discussion
[R2-165160](#) Positioning enhancements for NB-IoT Ericsson discussion
[R2-165382](#) Positioning consideration in NB-IoT Huawei, HiSilicon, Neul Ltd. Discussion
[R2-164722](#) Measurements for Positioning Gemalto N.V. discussion

Low power UE

[R2-164861](#) Consideration on new UE power class ZTE Corporation discussion
[R2-165157](#) Further reduced power class in NB-IoT Ericsson discussion

Connection Release Assistance

[R2-165154](#) Release Assistance Indication Ericsson discussion
[R2-165155](#) Introduction of Release Assistance Indication Ericsson draftCR 36.331 13.2.0- - B Rel-14 NB_IOTenh-Core
[R2-165156](#) Introduction of Release Assistance Indication Ericsson draftCR 36.321 13.2.0- - B Rel-14 NB_IOTenh-Core

Delay Tolerant Access

[R2-165440](#) Access barring for delay tolerant access QUALCOMM INCORPORATED discussion
[R2-165445](#) Introduction of access barring for delay tolerant access in NB-IoT QUALCOMM INCORPORATED draftCR 36.331 13.2.0- - B Rel-14 NB_IOTenh-Core

8.12 WI: Further Enhanced MTC

(LTE-feMTC-Core, leading WG: RAN1; REL-14; started: June 16; target: Mar. 17; WID: [RP-161321](#))

Time budget: 1TU

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

Incoming LS

[R2-164648](#) LS regarding agreements for FeMTC ([R1-168300](#); contact: Qualcomm)

- QC understand that R2 CRs will be needed.
- Huawei want to treat new UE caps today.

⇒ **Noted**

Work Plan

[R2-165618](#) WI work plan for Further Enhanced MTC Ericsson discussion

⇒ **Noted**

8.12.2 Higher data rates

[R2-165397](#) Higher data rates for MTC Ericsson LM discussion

[R2-164730](#) Higher performance targets for Further Enhanced MTC Apple Europe Limited discussion

[R2-164871](#) Consideration on supporting higher data rates in eMTC ZTE Corporation discussion

[R2-165386](#) On supporting larger maximum TBS for FeMTC Huawei, HiSilicon discussion

[R2-165387](#) Introduction a capability of larger maximum UL TBS for TDD HD-FDD Huawei, HiSilicon draftCR 36.306 13.2.0- - B Rel-14 LTE_feMTC-Core

[R2-165388](#) Indication for the extended maximum UL TBS for Cat M1 Huawei, HiSilicon draftCR 36.331 13.2.0- - B Rel-14 LTE_feMTC-Core

8.12.3 Other

Mobility

[R2-165158](#) Inter-frequency measurements for Further Enhanced MTC Ericsson discussion

- Can be discussed later

RRC state mismatch

[R2-165197](#) Discussion on RRC state mismatch NTT DOCOMO INC. discussion

[R2-165306](#) RRC Idle/Connected mode mismatch Ericsson discussion

Moved to 8.12.3 from 7.16.2

[R2-165676](#) Avoid UEs Staying in RRC Connected State Unnecessarily QUALCOMM Inc. discussion

- Qualcomm think we should agree that this can happen. Sequans support to address this issue. Orange as well
- Vodafone don't understand the use case. RLC-AM should take care of this. Vodafone have not seen this.
- Intel think that solutions should be discussed further.

⇒ **RAN2 think this can happen, and should be addressed.**

⇒ **To be further discussed under TEI14**

SUMMARY

7.14 NB-IoT corrections

CRs below could be considered mandatory for NB-IoT operation on top of June version:

[R2-165815](#) 36.321 Correction to MAC RAR CATT
[R2-165825](#) 36.331 Issue on resume procedure ZTE Corporation (CIOT UP optimization)

Email discussions

- ☒ [NB-IoT] Email discussion to next meeting (Neul), on RRC processing delays.

Comebacks

[R2-165825](#) Issue on resume procedure ZTE Corporation CR 36.331 13.2.02258 2 F Rel-13 NB_IOT-Core
- Status: This CR is Endorsed, pending offline check of solution (Ericsson). Initial comments have been addressed in this version. Awaiting final approval.
[R2-165822](#) Alignment of procedure when handling up-Clot-EPS-Optimisation Intel Corporation CR 36.331 13.2.02272 1 F Rel-13 NB_IOT-Core
- Revision of [R2-164997](#). Not yet agreed, applies also to TEI13. Allocated to Friday comebacks by author's request.

8.11 Enhancements for NB-IoT

Email discussions

- ☒ [eNB-IoT] Email Discussion RACH on non-anchor carrier, clarify and to extent possible, narrow down the options (CATT)
- ☒ [eNB-IoT] Email discussion Paging open issues, clarify and to extent possible, narrow down the options (Ericsson)
- ☒ [eNB-IoT] Mobility Enhancements, to structure proposals and determine possible ways forward. Can also discuss the problems to be solved (Nokia)

8.12 Further enhancements for MTC

Email discussion 8.11 and 8.12

- ☒ Email discussion on the need for a feedback mechanism for SC-PTM for NB-IoT and/or MTC (Huawei).

On RRC state mismatch

Conclusion: RAN2 think this can happen, and should be addressed.
To be further discussed under TEI14

Annex K: History

Document history		
Date	TSG RAN WG2 Tdoc	Subject
15.08.2016	-	Skeleton report for RAN WG2 #95 provided before the meeting
17.08.2016	-	Update 1 of skeleton report for RAN WG2 #95 provided before the meeting
19.08.2016	-	Update 2 of skeleton report for RAN WG2 #95 provided before the meeting
31.08.2016	-	Draft report v0.1 for RAN WG2 #95 provided after the meeting
01.10.2016	R2-166001	Draft report v1.0 for RAN WG2 #95 provided after the meeting
14.10.2016	R2-166054	Report v2.0 for RAN WG2 #95 provided after the meeting
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