



Discussion on the completion of Rel-14 LTE work items

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Progress of ongoing LTE WIs

WI	Core part completion level					Core part completion date
	Overall	RAN1	RAN2	RAN3	RAN4	
V2X	75%	85%	70%	85%	70%	Mar. 2017
eFD-MIMO	80%	95%	0%	--	0%	Mar. 2017
MUST	100%	100%	--	--	100%	Dec. 2016
FeMBMS	80%	100%	80%	100%	5%	Mar. 2017
SRS switching	100%	100%	100%	--	100%	Dec. 2016
Indoor positioning	100%	100%	100%	100%	100%	Dec. 2016
UL capacity enh	85%	95%	50%	--	90%	Mar. 2017
FeMTC	70%	80%	75%	5%	40%	Mar. 2017
NB-IoT enh	70%	90%	85%	60%	60%	Marc. 2017
High speed	100%	100%	100%	--	100%	Dec. 2016
Voice/video enh	80%	80%	70%	90%	--	Mar. 2017
eLAA	97%	100%	100%	--	90%	Mar. 2017
eMob	90%	100%	90%	80%	100%	Mar. 2017
sTTI	10%	15%	5%	--	10%	Sep. 2017

Observations on V2X progress

- **RAN2:** Some progress was made on SPS and PC5 QoS. However, still quite some open issues are to be addressed, including:
 - Content of UL/SL SPS configuration and UE assistance information for UL/SL SPS
 - Congestion control, including CBR measurement configuration and reporting, adaptation of transmission parameters for different PPPP and CBR, etc.
 - Prioritization between SL and UL, with respect to different cases agreed by RAN1
 - Inter-carrier resource configuration and Multi-carrier operation
 - Synchronization issues, including synchronization procedure and DFN offset
 - V2P resource configuration
 - PC5 and Uu path selection
 - **The first draft of the 36.331 CR (including the ASN.1) was not discussed yet, and RAN2 typically needs two additional meeting cycles to agree on it.**

Observations on V2X progress

- **RAN4 RF:** Good progress were made. However, still quite some open issues are to be addressed, including:
 - **Single carrier operation in Band 47 (PC5 V2X)**
 - To conclude the co-existence study of V2X and DSRC
 - A-MPR requirements for both adjacent and non-adjacent RB allocations for power class 3
 - MPR/A-MPR requirements for both adjacent and non-adjacent RB allocations for power class 2
 - Handling co-existence requirements with CEN DSRC (LS was sent to RAN2 and feedback from RAN2 is needed)
 - In-band emission requirement
 - **Multi carrier operation with Band 47 (PC5 V2X) and licensed bands (Uu V2X/WAN) – high priority as per RAN4 agreement**
 - RF requirements for MCC band combinations (B3/B7/B8/B39/B41 combined with B47)
 - Only one CC in each band is supported in Rel-14
 - **Multi carrier operation at Band 47 (PC5 V2X)**
 - Only contiguous 10MHz+10MHz is supported in Rel-14, other bandwidth combinations are left for further study
 - RAN4 needs to identify all possible impacted RF requirements to support 2 contiguous CCs (MPR, A-MPR, etc.)
 - Whether to define requirements for 2 Tx depends on further study and progress in RAN4

Observations on sTTI progress

- While good progress were made on some sTTI aspects (e.g. sTTI pattern), other major design decisions are still pending
 - Scheduling for sPDSCH/sPUSCH (e.g. one vs. two-level sDCI, multi-sTTI scheduling, etc.) and corresponding sDCI design
 - sPDCCH structure and search space
 - Scheduling and HARQ timing
 - sPDSCH and sPUSCH design, e.g. DMRS design
 - sPUCCH design, e.g. sPUCCH structure
- RAN1#73 agreements: complete the following objectives (including striving to complete the corresponding ASN.1) by RAN#76, with further discussions on which release to include the following objectives in future RAN meetings
 - Processing time reduction for legacy 1ms TTI, for FS1/2/3
 - For FS1, sPDCCH/sPDSCH/sPUSCH/sPUCCH design based on
 - 2-symbol for sPDCCH/sPDSCH
 - 2-symbol for sPUSCH/sPUCCH
 - CRS based and DMRS based sPDCCH/sPDSCH for FS1
 - DL CA and UL non-CA for FS1

Proposals

- Include 2-day RAN2/4 ad hoc meeting for V2X in Jan. 2017 Spokane meeting, e.g.
 - Possible arrangement: Monday (Jan. 16, 2017) and Tuesday (Jan. 17, 2017), or
 - Possible arrangement: Tuesday (Jan. 17, 2017) and Wednesday (Jan. 18, 2017)
- Include 2-day RAN1 ad hoc meeting for sTTI in Jan. 2017 Spokane meeting, e.g.
 - Possible arrangement: Tuesday (Jan. 17, 2017) and Wednesday (Jan. 18, 2017)

THANK YOU

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