Annex H: TSG RAN WG1 meetings in 2018 – 2019

TITLE	TYPE	DATES	LOCATION	CTRY
3GPPRAN1#94bis	WG	8 – 12 Oct 2018	Chengdu	China
3GPPRAN1#95	WG	12 – 16 Nov 2018	Spokane	US
3GPPRAN1-AH-1901	AH	21 - 25 Jan 2019	Taipei	Taiwan
3GPPRAN1#96	WG	25 Feb - 1 Mar 2019	Athens	Greece
3GPPRAN1#96bis	WG	8 - 12 Apr 2019	China	China
3GPPRAN1#97	WG	13 - 17 May 2019	US	US
3GPPRAN1-AH-1906-TBC	AH	24 - 28 Jun 2019	TBD	
3GPPRAN1#98	WG	26 - 30 Aug 2019	Prague	CZ
3GPPRAN1#98bis	WG	14 - 18 Oct 2019	China	China
3GPPRAN1#99	WG	18 - 22 Nov 2019	US	US

MEETING TYPES		
AH = Ad Hoc	ST = Startup Meeting	RG = Rapporteurs Group
JM = Joint	WG = Working Group	SG = Steering Group
PM = Preparatory Meeting	CM = Chairmen's meeting	TG = Task Group
RM = Resolution Meeting	OR = Ordinary	XO = Extraordinary

End of document

Appendix D

TDoc	Title	Source	TDoc Status	Reservation date	Uploaded
R1-1808000	Draft Agenda of RAN1#94 meeting	RAN1	revised	2018-07-08 20:06:54	2018-07-08 20:08:19
R1-1808001	Report of RAN1#93 meeting	ETSI	approved	2018-07-09 10:49:24	2018-08-17 08:27:54
R1-1808002	Highlights from RAN#80	RAN1	noted	2018-07-09 10:49:25	2018-08-17 08:20:29
R1-1808003	LS on the feasibility of 1 symbol GP for 60KHz in FR1 and 120KHz in FR2	RAN4, MediaT	treated	2018-07-09 10:49:25	2018-07-20 14:43:50
R1-1808004	LS on RMSI CORESET configuration for a band with 15kHz SSB SCS and 10MHz minimum	RAN4, CATT,	treated	2018-07-09 10:49:25	2018-07-20 14:43:50
R1-1808005	LS response on NB-IoT downlink channel quality determination and report	RAN4, Ericsso	treated	2018-07-09 10:49:25	2018-07-20 14:43:50
R1-1808006	Reply LS on updates for TS 36.300	RAN3, Huawei	noted	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808007	LS on NR Cell Information signalled over X2 for	RAN3,	treated	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808008	Additional Reply LS on eV2X evaluation methodology	SAE C-V2X TC Advanc	treated	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808009	LS reply on UL timing difference in EN-DC	RAN4, Intel	noted	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808010	LS on the feasibility of 1 symbol GP for 60KHz in FR1 and 120KHz in FR2	RAN4, MediaT	withdrawn	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808011	Reply LS on Narrowband measurement accuracy improvements	RAN4, Huawei	treated	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808012	LS response on NB-IoT downlink channel quality determination and report	RAN4, Ericsso	withdrawn	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808013	LS on eFeMTC CRS muting	RAN4,	noted	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808014	LS on 2RX requirements for vehicle mounted NR	RAN4,	noted	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808015	RAN4 response LS on Coexistence of NR-NR and NR-LTE networks	RAN4, Qualco	noted	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808016	LS on RMSI CORESET configuration for a band with 15kHz SSB SCS and 10MHz minimum	RAN4, CATT,	withdrawn	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808017	LS on UE feature list	RAN4, NTT	treated	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808018	LS reply on Coexistence of NR-NR and NR-LTE networks with synchronised, unsynchronised and semi-synchronised operation in 3400-3800 MHz	RAN, Huawei	noted	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808019	LS reply on minimum number of RX antennae for NR vehicular Ues	RAN, Samsu	noted	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808020	LS on NR UE feature list	RAN, NTT DOCOMO	treated	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808021	LS on L2 measurement specification for NR in	SA5,	noted	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808022	Wi-Fi Alliance Coexistence Test Plan for LTE-LAA Version 1.1.10	Wi-Fi Alliance	treated	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808023	Reply LS on PSCCH/PSSCH subframe numbering issue in partial network coverage	RAN2, Ericsso	treated	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808024	Reply LS on narrowband measurement	RAN2,	treated	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808025	Reply LS on RMSI CORESET configuration for a band with 15kHz SSB SCS and 10MHz minimum	RAN2, CATT	treated	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808026	Reply LS on PC5 transmission mechanism	RAN2,	noted	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808027	Reply LS to RAN1 on RRC parameters for V2X	RAN2,	treated	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808028	Reply LS on Agreements on Paging	RAN2,	treated	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808029	Reply LS on UE power class and UE capability on SRS carrier switch	RAN2, NTT	treated	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808030	LS on RAN2 progress on ANR	RAN2,	noted	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808031	Reply LS on CP latency reduction	RAN2,	noted	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808032	LS on final RAN2 agreements for euCA	RAN2,	treated	2018-07-09 10:49:25	2018-07-20 14:21:15
R1-1808033	WI work plan for Rel-16 LTE-MTC	Ericsso n	noted	2018-07-10 00:00:23	2018-08-10 21:24:55
R1-1808034	UE-group wake-up signal in LTE-MTC	Ericsso	available	2018-07-10 00:00:24	2018-08-10 21:24:55

R1-1808035	Support for transmission in preconfigured UL resources in LTE-MTC	Ericsson	available	2018-07-10 00:00:24	2018-08-10 21:24:55
R1-1808036	Scheduling of multiple DL/UL transport blocks in LTE-MTC	Ericsson	available	2018-07-10 00:00:24	2018-08-10 21:24:55
R1-1808037	Coexistence of LTE-MTC with NR	Ericsso	noted	2018-07-10 00:00:24	2018-08-10 21:24:55
R1-1808038	Support of quality report in Msg3 in LTE-MTC	Ericsso	available	2018-07-10 00:00:24	2018-08-10 21:24:55
R1-1808039	MPDCCH performance improvement in LTE-	Ericsso	available	2018-07-10 00:00:24	2018-08-10 21:24:55
R1-1808040	CE mode A and B improvements for LTE-MTC non-BL UEs	Ericsson	available	2018-07-10 00:00:24	2018-08-10 21:24:55
R1-1808041	Use of LTE control channel region for DL transmission in LTE-MTC	Ericsson	available	2018-07-10 00:00:24	2018-08-10 21:24:55
R1-1808042	Use of RSS for measurement improvements in LTE-MTC	Ericsson	available	2018-07-10 00:00:24	2018-08-10 21:24:55
R1-1808043	UE-group wake-up signal in NB-IoT	Ericsso	available	2018-07-10 00:00:24	2018-08-10 21:24:06
R1-1808044	Support for transmission in preconfigured UL resources in NB-IoT	Ericsson	available	2018-07-10 00:00:24	2018-08-10 21:24:06
R1-1808045	Scheduling of multiple DL/UL transport blocks in NB-IoT	Ericsson	available	2018-07-10 00:00:24	2018-08-10 21:24:06
R1-1808046	Coexistence of NB-IoT with NR	Ericsso	available	2018-07-10 00:00:24	2018-08-10 21:24:06
R1-1808047	Support of quality report in Msg3 for non-anchor access in NB-IoT	Ericsson	available	2018-07-10 00:00:24	2018-08-10 21:24:06
R1-1808048	Presence of NRS on a non-anchor carrier for paging in NB-IoT	Ericsson	available	2018-07-10 00:00:24	2018-08-10 21:24:06
R1-1808049	Discussion on the design of SCMA	Huawei,	revised	2018-07-10 00:00:54	2018-08-11 05:29:24
R1-1808050	Discussion on the design of NoMA receiver	Huawei	available	2018-07-10 00:00:54	2018-08-11 05:29:24
R1-1808051	Discussion on NoMA related procedures	Huawei	available	2018-07-10 00:00:54	2018-08-11 05:29:24
R1-1808052	Further discussion on NoMA evaluations	Huawei,	revised	2018-07-10 00:00:54	2018-08-11 05:29:24
R1-1808053	Evaluation results for OMA calibration	Huawei	available	2018-07-10 00:00:54	2018-08-11 05:29:24
R1-1808054	Evaluation results for mMTC scenario	Huawei	available	2018-07-10 00:00:54	2018-08-11 05:29:24
R1-1808055	Evaluation results for URLLC scenario	Huawei	available	2018-07-10 00:00:54	2018-08-11 05:29:24
R1-1808056	Evaluation results for eMBB scenario	Huawei	available	2018-07-10 00:00:54	2018-08-11 05:29:24
R1-1808057	LTE evaluation parameters and configurations for Rural-eMBB test environment	Huawei,	available	2018-07-10 00:00:54	2018-08-10 18:50:05
R1-1808058	NR numerology and frame structure for	Huawei	available	2018-07-10 00:00:55	2018-08-10 18:39:27
R1-1808059	DL channels and signals in NR unlicensed band	Huawei	available	2018-07-10 00:00:55	2018-08-10 18:39:27
R1-1808060	UL PHY channels for NR unlicensed	Huawei	available	2018-07-10 00:00:55	2018-08-10 18:39:27
R1-1808061	Coexistence and channel access for NR unlicensed band operations	Huawei,	available	2018-07-10 00:00:55	2018-08-10 18:39:27
R1-1808062	Initial access in NR unlicensed	Huawei	available	2018-07-10 00:00:55	2018-08-10 18:39:27
R1-1808063	HARQ enhancement in NR unlicensed	Huawei	available	2018-07-10 00:00:55	2018-08-10 18:39:27
R1-1808064	Transmission with configured grant in NR unlicensed band	Huawei,	available	2018-07-10 00:00:55	2018-08-10 18:39:27
R1-1808065	BWP operation in NR unlicensed band	Huawei	available	2018-07-10 00:00:55	2018-08-10 18:39:27
R1-1808066	Zero-Autocorrelation zone of frequency-interlaced	Huawei	available	2018-07-10 00:00:55	2018-08-10 18:39:27
R1-1808067	Discussion on remote interference mitigation mechanisms	Huawei,	available	2018-07-10 00:00:55	2018-08-10 17:01:50
R1-1808068	Discussion on reference signal design for identifying remote interference	Huawei,	available	2018-07-10 00:00:55	2018-08-10 17:01:50
R1-1808069	Remaining issues on DL control	Huawei,	available	2018-07-10 00:00:55	2018-08-11 00:22:28
R1-1808070	Discussion on UE power control	Huawei	available	2018-07-10 00:00:55	2018-08-11 05:29:24
R1-1808071	Corrections for TR38.811 Chapter 6 Non-Terrestrial Networks channel models	Huawei,	available	2018-07-10 00:00:56	2018-08-11 00:22:28
R1-1808072	Consideration on IMT-2020 self evaluation	Huawei	available	2018-07-10 00:00:56	2018-08-10 18:50:05
R1-1808073	Considerations and evaluation results for IMT-2020 for eMBB spectral efficiency	Huawei,	revised	2018-07-10 00:00:56	2018-08-10 18:50:05
R1-1808074	Considerations and evaluation results for IMT-2020 for user experienced data rate	Huawei,	revised	2018-07-10 00:00:56	2018-08-10 18:50:05
R1-1808075	Considerations and evaluation results for IMT-2020 for area traffic capacity	Huawei,	available	2018-07-10 00:00:56	2018-08-10 18:50:05
R1-1808076	Considerations and evaluation results for IMT-2020 for high mobility	Huawei,	available	2018-07-10 00:00:56	2018-08-10 18:50:05
R1-1808077	Considerations and evaluation results for IMT-2020 for peak spectral efficiency and peak data	Huawei,	available	2018-07-10 00:00:56	2018-08-10 18:50:05

R1-1808078	Considerations and evaluation results for IMT-2020 for network energy efficiency	Huawei,	available	2018-07-10 00:00:56	2018-08-10 18:50:05
R1-1808079	Considerations and evaluation results for IMT-2020 for UE energy efficiency	Huawei,	available	2018-07-10 00:00:56	2018-08-10 18:50:05
R1-1808080	Considerations and evaluation results for IMT-2020 for mMTC connection density	Huawei,	available	2018-07-10 00:00:56	2018-08-10 18:50:05
R1-1808081	Considerations and evaluation results for IMT-2020 for reliability	Huawei,	revised	2018-07-10 00:00:56	2018-08-10 18:50:05
R1-1808082	Considerations and evaluation results for IMT-2020 for control plane latency	Huawei,	available	2018-07-10 00:00:56	2018-08-10 18:50:05
R1-1808083	Considerations and evaluation results for IMT-2020 for user plane latency	Huawei,	available	2018-07-10 00:00:56	2018-08-10 18:50:05
R1-1808084	Consideration on self evaluation of IMT-2020 for	Huawei	revised	2018-07-10 00:00:56	2018-08-10 18:50:05
R1-1808085	Consideration on IAB node discovery and RRM	Huawei	withdrawn	2018-07-10 00:00:56	
R1-1808086	On resource coordination and dynamic	Huawei	withdrawn	2018-07-10 00:00:56	
R1-1808087	On IAB node synchronization and timing	Huawei	available	2018-07-10 00:00:56	2018-08-10 15:07:52
R1-1808088	Consideration on cross-link interference in IAB	Huawei	available	2018-07-10 00:00:56	2018-08-10 15:07:52
R1-1808089	On high order modulation in IAB	Huawei	available	2018-07-10 00:00:57	2018-08-10 15:07:52
R1-1808090	System performance evaluation in multi-hop topology IAB network	Huawei,	available	2018-07-10 00:00:57	2018-08-10 15:07:52
R1-1808091	Overview of sidelink unicast, groupcast and broadcast support for NR V2X	Huawei,	available	2018-07-10 00:00:57	2018-08-10 18:39:27
R1-1808092	Overview of general PHY sidelink design	Huawei	available	2018-07-10 00:00:57	2018-08-10 18:39:27
R1-1808093	PHY sidelink structure and procedure for NR V2X	Huawei,	available	2018-07-10 00:00:57	2018-08-10 18:39:27
R1-1808094	Sidelink synchronization mechanisms for NR	Huawei	available	2018-07-10 00:00:57	2018-08-10 18:39:27
R1-1808095	Discussion on NR sidelink resource allocation by NR Uu and LTE Uu	Huawei,	noted	2018-07-10 00:00:57	2018-08-10 18:39:27
R1-1808096	Discussion on NR Uu to control LTE PC5	Huawei,	available	2018-07-10 00:00:57	2018-08-10 18:39:27
R1-1808097	Discussion on remaining issues of UE features	Huawei	noted	2018-07-10 00:00:57	2018-08-11 00:22:28
R1-1808098	Draft skeleton of TR 38.824: Study on physical layer enhancements for NR URLLC	Huawei,	noted	2018-07-10 00:00:57	2018-08-11 06:20:00
R1-1808099	UL inter-UE transmission prioritization and	Huawei	available	2018-07-10 00:00:57	2018-08-11 06:48:30
R1-1808100	Enhanced UL configured grant transmissions	Huawei	available	2018-07-10 00:00:57	2018-08-11 06:20:00
R1-1808101	Physical layer design for NR IAB	Huawei,	noted	2018-07-10 00:00:57	2018-08-10 15:07:52
R1-1808102	Evaluation and enhancement of NR Uu and LTE Uu for advanced V2X use cases	Huawei,	revised	2018-07-10 00:00:57	2018-08-10 18:39:27
R1-1808103	Remaining issues for physical uplink control channel	Huawei,	available	2018-07-10 00:00:57	2018-08-11 00:22:28
R1-1808104	Remaining issues on bandwidth part and CA	Huawei,	revised	2018-07-10 00:00:57	2018-08-10 17:01:50
R1-1808105	Remaining issues on data scheduling and HARQ	Huawei,	noted	2018-07-10 00:00:57	2018-08-10 17:01:50
R1-1808106	Additional enhancements for NB-IoT workplan	Huawei,	noted	2018-07-10 00:01:38	2018-08-11 02:22:13
R1-1808107	On support for UE-group wake-up signal	Huawei	available	2018-07-10 00:01:38	2018-08-11 02:22:13
R1-1808108	On support for transmission in preconfigured UL resources	Huawei,	available	2018-07-10 00:01:38	2018-08-11 02:22:13
R1-1808109	Discussion on scheduling multiple DL/UL transport blocks for SC-PTM and unicast	Huawei,	available	2018-07-10 00:01:38	2018-08-11 02:22:13
R1-1808110	On support of Msg3 quality reporting for non-anchor access	Huawei,	available	2018-07-10 00:01:38	2018-08-11 02:22:13
R1-1808111	NRS presence on non-anchor carriers for paging	Huawei,	available	2018-07-10 00:01:38	2018-08-11 02:22:13
R1-1808112	Discussion on NB-IoT coexistence with NR	Huawei	available	2018-07-10 00:01:38	2018-08-11 02:22:13
R1-1808113	On handling new and legacy NPRS for in-band	Huawei	noted	2018-07-10 00:01:38	2018-08-11 02:20:33
R1-1808114	Correction to NPRS mapping	Huawei	revised	2018-07-10 00:01:38	2018-08-11 02:20:33
R1-1808115	Coverage enhancement for Non-BL UE	Huawei,	available	2018-07-10 00:01:38	2018-08-11 02:21:34
R1-1808116	DL transmission on LTE control channel region	Huawei,	available	2018-07-10 00:01:38	2018-08-11 02:21:34
R1-1808117	Scheduling of multiple transport blocks	Huawei,	available	2018-07-10 00:01:38	2018-08-11 02:21:34

R1-1808118	UL transmission in preconfigured resource	Huawei,	available	2018-07-10 00:01:38	2018-08-11 02:21:34
R1-1808119	Channel quality reporting in Msg3	Huawei	available	2018-07-10 00:01:38	2018-08-11 02:21:34
R1-1808120	On MPDCCH performance improvement	Huawei	available	2018-07-10 00:01:38	2018-08-11 02:21:34
R1-1808121	Support of sub-groups for MWUS	Huawei	available	2018-07-10 00:01:38	2018-08-11 02:21:34
R1-1808122	On eMTC co-existence with NR	Huawei	available	2018-07-10 00:01:38	2018-08-11 02:21:34
R1-1808123	Discussion on flexible DL starting PRB allocation in CEMode A	Huawei,	available	2018-07-10 00:01:38	2018-08-11 02:20:33
R1-1808124	Discussion on the flexible starting PRB for PUSCH resource allocation in FDD	Huawei,	available	2018-07-10 00:01:38	2018-08-11 02:20:33
R1-1808125	Corrections on EDT for eMTC	Huawei	available	2018-07-10 00:01:38	2018-08-11 02:20:33
R1-1808126	Corrections on MWUS	Huawei, HiSilico	endorsed	2018-07-10 00:01:38	2018-08-11 02:20:33
R1-1808127	Corrections on more flexible PDSCH/PUSCH resource allocation	Huawei,	available	2018-07-10 00:01:38	2018-08-11 02:20:33
R1-1808128	Corrections on NWUS	Huawei, HiSilico	endorsed	2018-07-10 00:01:38	2018-08-11 02:20:33
R1-1808129	Corrections on EDT for NB-IoT	Huawei,	available	2018-07-10 00:01:38	2018-08-11 02:20:33
R1-1808130	Corrections on physical layer SR	Huawei	noted	2018-07-10 00:01:38	2018-08-11 02:20:33
R1-1808131	Corrections on SPS	Huawei	available	2018-07-10 00:01:38	2018-08-11 02:20:33
R1-1808132	Corrections on NPRACH range enhancements	Huawei,	available	2018-07-10 00:01:38	2018-08-11 02:20:33
R1-1808133	Corrections on DL aspects for TDD	Huawei	available	2018-07-10 00:01:38	2018-08-11 02:20:33
R1-1808134	Corrections on UL aspects for TDD	Huawei	available	2018-07-10 00:01:38	2018-08-11 02:20:33
R1-1808135	Corrections on common aspects for TDD	Huawei	available	2018-07-10 00:01:38	2018-08-11 02:20:33
R1-1808136	Discussion on SRS transmission on more than one symbols of normal UL subframe	Huawei,	available	2018-07-10 02:25:05	2018-08-10 22:27:13
R1-1808137	On virtual cell ID for SRS sequence generation	Huawei	available	2018-07-10 02:25:06	2018-08-10 22:27:13
R1-1808138	Work plan of DL MIMO efficiency enhancements for LTE	Huawei,	noted	2018-07-10 02:25:06	2018-08-10 22:27:13
R1-1808139	Correction on the partial PUSCH mode field for FeLAA in 36.212	Huawei,	revised	2018-07-10 02:25:06	2018-08-10 22:28:13
R1-1808140	Correction on starting position of Partial PUSCH Mode 1 for FeLAA in 37.213	Huawei,	revised	2018-07-10 02:25:06	2018-08-10 22:28:13
R1-1808141	Correction on CRI definition in 36.213	Huawei	agreed	2018-07-10 02:25:06	2018-08-10 22:28:39
R1-1808142	Remaining issues on simultaneous reception or transmission over CCs and BWPs	Huawei,	available	2018-07-10 15:27:36	2018-08-10 17:34:52
R1-1808143	Remaining issues on CSI acquisition	Huawei	available	2018-07-10 15:27:37	2018-08-10 17:34:52
R1-1808144	Remaining issues on reference signals and QCL	Huawei,	available	2018-07-10 15:27:37	2018-08-10 17:34:52
R1-1808145	Remaining issues on beam management and beam failure recovery	Huawei,	available	2018-07-10 15:27:37	2018-08-10 17:34:52
R1-1808146	Remaining issues on multi-antenna schemes	Huawei	available	2018-07-10 15:27:37	2018-08-10 17:34:52
R1-1808147	Enhancements to Uplink and Downlink Physical Channels for NR URLLC	Ericsson	available	2018-07-10 18:58:56	2018-08-11 04:09:01
R1-1808148	Inter-UE Prioritization and Multiplexing of UL	Ericsso	available	2018-07-10 18:58:56	2018-08-11 04:09:01
R1-1808149	Enhancements to UL Grant-free Transmission for	Ericsso	available	2018-07-10 18:58:56	2018-08-11 04:09:01
R1-1808150	Text proposal to capture agreements made in RAN1#93 to TR 38.812 (NOMA)	ZTE	revised	2018-07-11 01:21:50	2018-08-11 00:42:41
R1-1808151	Transmitter side designs for NOMA	ZTE	available	2018-07-11 01:21:52	2018-08-11 00:42:41
R1-1808152	Multi-user advanced receivers for NOMA	ZTE	revised	2018-07-11 01:21:52	2018-08-11 00:42:41
R1-1808153	Procedures related to NOMA	ZTE	noted	2018-07-11 01:21:52	2018-08-11 00:42:41
R1-1808154	Prelimenary system-level simulation results for NOMA	ZTE	available	2018-07-11 01:21:52	2018-08-11 00:42:41
R1-1808155	Link-level simulation results for mMTC scenraio	ZTE	available	2018-07-11 01:21:52	2018-08-11 00:42:41
R1-1808156	Link-level simulation results for URLLC scenraio	ZTE	available	2018-07-11 01:21:52	2018-08-11 00:42:41
R1-1808157	Link-level simulation results for eMBB scenraio	ZTE	available	2018-07-11 01:21:52	2018-08-11 00:42:41
R1-1808158	Physical layer abstraction for NOMA SLS	ZTE	available	2018-07-11 01:21:52	2018-08-11 00:42:41
R1-1808159	Email discussion on the templates of reporting LLS evaluation results	ZTE	noted	2018-07-11 01:21:52	2018-08-11 00:42:41
R1-1808160	Email discussion on the calibration results of reference OMA single user cases	ZTE	revised	2018-07-11 01:21:52	2018-08-11 00:42:41

R1-1808161	Achieving ultra-low latency in grant-based URLLC transmission with minimum overhead	Idaho Nationa	available	2018-07-11 16:32:39	2018-08-10 16:07:44
R1-1808162	L1 enhancements for URLLC	Huawei	revised	2018-07-12 17:27:12	2018-08-11 06:37:01
R1-1808163	Maintenance for Downlink signals and channels	ZTE	revised	2018-07-13 02:30:07	2018-08-10 09:13:59
R1-1808164	Maintenance for Physical random access channel and procedure	ZTE	available	2018-07-13 02:30:08	2018-08-10 09:13:59
R1-1808165	Maintenance for Mobility procedure	ZTE	available	2018-07-13 02:30:08	2018-08-10 09:24:58
R1-1808166	LS on termination of contention-free BFR	RAN2,	treated	2018-07-20 09:46:55	2018-07-20 14:43:50
R1-1808167	Reply LS on numberOfRA-PreamblesGroupA	RAN2,	treated	2018-07-20 09:46:55	2018-07-20 14:43:50
R1-1808168	LS on overlapping SIB1 and SI messages	RAN2,	treated	2018-07-20 09:46:55	2018-07-20 14:43:50
R1-1808169	LS on short message transmission using DCI	RAN2,	treated	2018-07-20 09:46:55	2018-07-20 14:21:15
R1-1808170	Reply LS on NR Cell Information signalled over	RAN2,	noted	2018-07-20 09:46:55	2018-07-20 14:21:15
R1-1808171	Reply LS on Bandwidth configuration for initial BWP	RAN2, NTT	treated	2018-07-20 09:46:55	2018-07-20 14:21:15
R1-1808172	LS on Further Agreements on Paging Occasions	RAN2,	treated	2018-07-20 09:46:55	2018-07-20 14:21:15
R1-1808173	LS on additional TDD configuration periodicities	RAN2,	treated	2018-07-20 09:46:55	2018-07-20 14:21:15
R1-1808174	LS on Active DL BWPs overlapping/non-overlapping with Initial DL BWP	RAN2, ZTE	treated	2018-07-20 09:46:55	2018-07-20 14:21:15
R1-1808175	LS on RA preambles mapping to SSBs	RAN2,	treated	2018-07-20 09:46:55	2018-07-20 14:21:15
R1-1808176	LS on clarification of	RAN4,	treated	2018-07-20 09:46:55	2018-07-20 14:21:15
R1-1808177	LS on potential enhancement of DR-mode of	SA2,	noted	2018-07-20 09:46:55	2018-07-20 14:21:15
R1-1808178	LS on the transmission of video over PC5	SA4,	noted	2018-07-20 09:46:55	2018-07-20 14:21:15
R1-1808179	LS on Joint ETSI - OSA Workshop: Open Implementations & Standardization	ETSI	treated	2018-07-20 09:46:55	2018-07-20 14:21:15
R1-1808180	IEEE 802.11 WG LS to 3GPP RAN4 on certain channel combinations for LAA in 5GHz	IEEE 802.11	noted	2018-07-20 09:46:56	2018-07-20 14:21:15
R1-1808181	IEEE 802.11 WG LS to 3GPP RAN in relation to a proposed joint Coexistence Workshop	IEEE 802.11 Workin	noted	2018-07-20 09:46:56	2018-07-20 14:21:15
R1-1808182	Updated UMi calibration results for user experience data rate in the multi-layer network	ZTE	available	2018-07-22 07:47:38	2018-08-10 03:42:57
R1-1808183	Updated DL spectral efficiency in the eMBB usage scenario for IMT-2020 self evaluation	ZTE	revised	2018-07-22 07:47:42	2018-08-10 03:42:57
R1-1808184	Link curve performance of LDPC coding in IMT-2020 self evaluation	ZTE	available	2018-07-22 07:47:42	2018-08-10 03:42:57
R1-1808185	Updated UL spectral efficiency in the eMBB usage scenario for IMT-2020 self evaluation	ZTE	revised	2018-07-22 07:47:42	2018-08-10 03:42:57
R1-1808186	Consideration on Evaluation methodology of IMT-2020 self-evaluation	ZTE	revised	2018-07-22 07:47:42	2018-08-10 14:12:35
R1-1808187	Consideration on Evaluation of mobility of IMT-2020 self-evaluation	ZTE	available	2018-07-22 07:47:42	2018-08-10 03:42:57
R1-1808188	Consideration on Evaluation of reliability of IMT-2020 self-evaluation	ZTE	available	2018-07-22 07:47:42	2018-08-10 03:42:57
R1-1808189	Consideration on Evaluation of connection density of IMT-2020 self-evaluation	ZTE	revised	2018-07-22 07:47:42	2018-08-10 03:42:57
R1-1808190	Draft Agenda of RAN1#94 meeting	RAN1	approved	2018-07-23 12:16:05	2018-07-23 12:24:52
R1-1808191	On compact DCI for URLLC	Mitsubishi	available	2018-07-23 14:28:20	2018-08-10 17:13:11
R1-1808192	Discussion on additional SRS symbols	ZTE	available	2018-07-26 01:52:14	2018-08-11 04:27:49
R1-1808193	Discussion on virtual cell ID for SRS	ZTE	available	2018-07-26 01:52:18	2018-08-11 04:27:49
R1-1808194	Maintenance for Multi-antenna scheme	ZTE	available	2018-07-26 01:52:18	2018-08-11 04:27:49
R1-1808195	Maintenance for CSI acquisition	ZTE	revised	2018-07-26 01:52:19	2018-08-11 04:27:49
R1-1808196	Maintenance for beam management	ZTE	available	2018-07-26 01:52:19	2018-08-11 04:27:49
R1-1808197	Maintenance for Reference signals and QCL	ZTE	available	2018-07-26 01:52:19	2018-08-11 04:27:49
R1-1808198	Simultaneous transmission and reception of	ZTE	available	2018-07-26 01:52:19	2018-08-11 04:27:49
R1-1808199	Enhancements on multi-beam operation	ZTE	available	2018-07-26 01:52:19	2018-08-11 04:27:49
R1-1808200	Maintenance for UL power control	ZTE	available	2018-07-26 01:52:19	2018-08-11 04:27:49
R1-1808201	Enhancements on Type II CSI feedback for MU-	ZTE	available	2018-07-26 02:09:06	2018-08-11 04:27:49
R1-1808202	Enhancements on multi-TRP	ZTE	available	2018-07-26 08:12:06	2018-08-11 04:27:49
R1-1808203	On sidelink design for NR V2X	Mitsubishi	available	2018-07-27 14:30:31	2018-08-10 17:13:11

R1-1808204	Link-Level Simulation Results for ACMA with Synchronous, Asynchronous transmission	HUGHES	available	2018-07-30 16:52:44	2018-08-10 16:53:18
R1-1808205	Partially Asynchronous and Multi-stream Transmission of ACMA	HUGHES	available	2018-07-30 17:08:18	2018-08-10 16:53:59
R1-1808206	Remaining issues on NR DL Control	ZTE	revised	2018-07-31 09:19:49	2018-08-11 03:33:19
R1-1808207	Remaining issues on NR PUCCH	ZTE	available	2018-07-31 09:19:49	2018-08-11 03:33:19
R1-1808208	Remaining issues on BWP	ZTE	available	2018-07-31 09:19:49	2018-08-11 03:33:19
R1-1808209	Remaining aspects for rate matching	ZTE	available	2018-07-31 09:19:49	2018-08-11 03:33:19
R1-1808210	Remaining Issues of NR scheduling and HARQ process	ZTE	available	2018-07-31 09:19:49	2018-08-11 03:33:19
R1-1808211	URLLC PHY enhancements	ZTE	available	2018-07-31 09:19:49	2018-08-11 03:33:19
R1-1808212	On Inter-UE multiplexing between eMBB and	ZTE	available	2018-07-31 09:19:49	2018-08-11 03:33:19
R1-1808213	Enhanced UL grant-free transmissions	ZTE	available	2018-07-31 09:19:49	2018-08-11 03:33:20
R1-1808214	Discussion on ssb-PositionsInBurst mismatch in SIB1 and ServingcellConfigCommon	vivo	available	2018-08-01 16:09:04	2018-08-10 16:24:26
R1-1808215	On UE-group wake-up signal for eMTC	vivo	available	2018-08-01 16:09:04	2018-08-10 22:26:18
R1-1808216	On UE-group wake-up signal for NB-IoT	vivo	available	2018-08-01 16:09:04	2018-08-10 22:26:18
R1-1808217	Remaining issues on broadcast signals and channels	vivo	available	2018-08-01 16:09:04	2018-08-10 16:24:26
R1-1808218	Remaining issues on mobility procedure	vivo	available	2018-08-01 16:09:04	2018-08-10 16:24:26
R1-1808219	Remaining issues on multi-antenna scheme	vivo	available	2018-08-01 16:09:04	2018-08-10 16:08:30
R1-1808220	Remaining issues on CSI acquisition	vivo	available	2018-08-01 16:09:04	2018-08-10 16:08:30
R1-1808221	Remaining issues on beam management	vivo	available	2018-08-01 16:09:04	2018-08-10 16:08:30
R1-1808222	Remaining issues on reference signals and QCL	vivo	available	2018-08-01 16:09:04	2018-08-10 16:08:30
R1-1808223	Remaining issues on simultaneous reception of DL/UL physical channels and RSs	vivo	available	2018-08-01 16:09:04	2018-08-10 16:08:30
R1-1808224	Remaining issues on PDCCH	vivo	available	2018-08-01 16:09:04	2018-08-11 03:32:58
R1-1808225	Remaining issues on PUCCH	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808226	Remaining issues on scheduling and HARQ	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808227	Discussion on SRS enhancements	vivo	available	2018-08-01 16:09:05	2018-08-11 01:43:41
R1-1808228	Remaining issues on UL power control	vivo	available	2018-08-01 16:09:05	2018-08-10 16:08:30
R1-1808229	Rel-15 UE features for eMBB and URLLC	vivo	available	2018-08-01 16:09:05	2018-08-10 22:34:39
R1-1808230	Discussion on NOMA transmitters	vivo	available	2018-08-01 16:09:05	2018-08-10 16:08:30
R1-1808231	Receiver design considerations for NOMA	vivo	noted	2018-08-01 16:09:05	2018-08-10 16:08:30
R1-1808232	Discussion on NOMA procedures	vivo	available	2018-08-01 16:09:05	2018-08-10 16:08:30
R1-1808233	Evaluations for NOMA	vivo	available	2018-08-01 16:09:05	2018-08-11 03:32:58
R1-1808234	Frame structure for NR-U operation	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808235	Discussion on physical DL channel design in unlicensed spectrum	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808236	Discussion on physical UL channel design in unlicensed spectrum	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808237	Discussion on the channel access procedures	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808238	Discussion on initial access and mobility	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808239	Discussion on HARQ operation for NR-U	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808240	Discussion on the enhancements to configured grants	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808241	Enhancements to support NR backhaul links	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808242	Considerations on sidelink unicast, groupcast and broadcast	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808243	Physical layer structure and procedure for NR sidelink	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808244	NR sidelink synchronization mechanism	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808245	NR sidelink resource allocation	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808246	Enhancements of LTE Uu and NR Uu to control NR sidelink	vivo	noted	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808247	Coexistence mechanism for LTE and NR V2X	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26

R1-1808248	Layer 1 enhancements for URLLC	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808249	UL inter UE Tx prioritization for URLLC	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808250	Enhanced UL grant-free transmissions for	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808251	Other enhancements for URLLC	vivo	available	2018-08-01 16:09:05	2018-08-10 16:24:26
R1-1808252	On NR UE power saving	vivo	available	2018-08-01 16:09:05	2018-08-10 22:26:18
R1-1808253	Discussion on synchronized user multiplexing for NR-U	TCL Comm	available	2018-08-02 16:18:44	2018-08-09 20:46:36
R1-1808254	Discussion on partial slot transmission in NR-U	TCL Comm	revised	2018-08-02 16:19:49	2018-08-09 00:02:21
R1-1808255	Discussion on enhanced reliability	TCL Comm	available	2018-08-02 16:21:50	2018-08-10 07:36:39
R1-1808256	Discussion on two stage feedback for URLLC	TCL Comm	available	2018-08-02 16:22:35	2018-08-10 07:37:21
R1-1808257	Discussion on user multiplexing for NR-U	TCL Comm	available	2018-08-02 16:23:19	2018-08-09 00:02:21
R1-1808258	Discussion on Frequency Reuse for NR-U	TCL Comm	available	2018-08-02 16:24:04	2018-08-09 20:46:36
R1-1808259	Remaining issues in NR R-15 UE features	MediaT	revised	2018-08-03 09:19:47	2018-08-11 05:25:47
R1-1808260	Remaining issues of PUCCH	MediaT ek Inc.	available	2018-08-03 09:19:47	2018-08-11 05:26:28
R1-1808261	Remaining issues of DLUL data scheduling and HARQ procedure	MediaT ek Inc.	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808262	Remaining issues in physical downlink control channel	MediaT ek Inc.	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808263	Remaining issues in CSI acquisition	MediaT	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808264	Remaining issues for beam management and beam failure recovery	MediaT ek Inc.	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808265	Discussions on simultaneous reception and transmission across CCs	MediaT ek Inc.	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808266	MPR and A-MPR considerations for EN-DC UE	MediaT	revised	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808267	Remaining issues in PRACH design and RACH procedure	MediaT ek Inc.	revised	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808268	Remaining issues on downlink signals and channels for initial access	MediaT ek Inc.	revised	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808269	Remaining issues in RRM measurement	MediaT	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808270	Remaining issues on bandwidth part and carrier aggregation in NR	MediaT ek Inc.	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808271	On frame structure design for NR-U operation	MediaT	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808272	On downlink transmission detection in NR-U	MediaT	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808273	On UL signals and channels in NR-U	MediaT	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808274	On channel access procedure in NR-U	MediaT	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808275	On initial access procedure in NR-U	MediaT	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808276	Enhancements on HARQ for NR-U operation	MediaT	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808277	Discussion on NR-U configured grant	MediaT ek Inc.	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808278	Modelling power consumption in NR modems	MediaT	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808279	UE power consumption adaptation based on	MediaT	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808280	On NR V2X physical channel design issues	MediaT ek Inc.	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808281	On NR V2X resource allocation	MediaT	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808282	On NR V2X synchronization issues	MediaT	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808283	On NR Uu to support NR V2X services	MediaT ek Inc.	noted	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808284	View on NR positioning	MediaT	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808285	Study and evaluations of NR control channels for	MediaT	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808286	Evaluation and analysis for UL multiplexing between eMBB and URLLC	MediaT ek Inc.	noted	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808287	Evaluation of configured-grant for NR URLLC	MediaT	available	2018-08-03 09:19:47	2018-08-11 05:31:02
R1-1808288	On NOMA procedures for Grant Free	Orange	noted	2018-08-03 10:48:15	2018-08-10 10:22:36
R1-1808289	Remaining issues on Beam Failure Recovery	China Teleco	available	2018-08-06 07:14:07	2018-08-07 08:50:15
R1-1808290	Considerations on procedures related to NOMA	Fujitsu	available	2018-08-06 11:21:55	2018-08-10 09:43:36
R1-1808291	On flexible starting positions and related PDCCH monitoring for NR-U	Fujitsu	available	2018-08-06 11:21:55	2018-08-10 09:43:36

R1-1808292	On UL signals and channels design for NR-U	Fujitsu	available	2018-08-06 11:21:55	2018-08-10 09:43:36
R1-1808293	On channel access procedure for NR-U	Fujitsu	available	2018-08-06 11:21:55	2018-08-10 09:43:36
R1-1808294	SLS Study on Realization of Stringent Reliability in Mode-4 NR-V2X	Fujitsu	available	2018-08-06 11:21:55	2018-08-10 09:43:36
R1-1808295	Considerations on sidelink physical layer structures	Fujitsu	available	2018-08-06 11:21:55	2018-08-10 09:43:36
R1-1808296	Discussion on Subframe-based Resource Selection Parameters in Mode-4 NR-V2X	Fujitsu	available	2018-08-06 11:21:55	2018-08-10 09:43:36
R1-1808297	Resource Allocation for NR V2X Sidelink Communication considering Low Latency	Fujitsu	available	2018-08-06 11:21:55	2018-08-10 09:43:36
R1-1808298	Discussion on LLS parameters of fast fading model	Fujitsu	available	2018-08-06 11:21:55	2018-08-10 09:43:36
R1-1808299	Discussion on Sidelink Bi-mode Transmission in NR-V2X	Fujitsu	revised	2018-08-06 11:21:55	2018-08-10 09:43:36
R1-1808300	Discussion on latency performance of Uu-based sidelink resource allocation	Fujitsu	available	2018-08-06 11:21:55	2018-08-10 09:43:36
R1-1808301	On improved reliability of UCI piggybacked PUSCH	Fujitsu	available	2018-08-06 11:21:55	2018-08-10 09:43:36
R1-1808302	Discussion on UL preemption indication	Fujitsu	available	2018-08-06 11:21:55	2018-08-10 10:09:44
R1-1808303	Liaison ESOA (EMEA Satellite Operators Association) on 5G for Satellite Systems	ESOA, Thales	treated	2018-08-06 12:48:12	2018-08-06 13:02:58
R1-1808304	Discussion on the Reliability Enhancement for Grant-free Transmission	China Teleco	available	2018-08-06 13:02:43	2018-08-07 08:50:15
R1-1808305	Discussion on PUCCH Resource Allocation and HARQ Codebook Determination in URLLC	China Teleco	withdrawn	2018-08-06 13:25:41	2018-08-07 08:50:15
R1-1808306	UL multiplexing for URLLC	China Teleco	available	2018-08-06 13:42:22	2018-08-07 08:50:15
R1-1808307	Sidelink design for unicast and groupcast	Fraunhofer	noted	2018-08-06 13:48:25	2018-08-10 13:05:02
R1-1808308	HARQ Processing Timeline Enhancements for	Fraunh	available	2018-08-06 13:49:38	2018-08-10 13:21:51
R1-1808309	Enhancements for NR V2X Resource Allocation	Fraunh	available	2018-08-06 13:51:39	2018-08-10 11:02:40
R1-1808310	Corrections on RACH	Fujitsu	available	2018-08-06 23:26:48	2018-08-10 17:01:01
R1-1808311	Corrections on Codebook based transmission	Fujitsu	available	2018-08-06 23:26:49	2018-08-10 17:01:01
R1-1808312	Corrections on SRS antenna ports	Fujitsu	available	2018-08-06 23:26:49	2018-08-10 17:01:01
R1-1808313	Corrections on Subclause 9.2 UCI reporting in PUCCH in TS 38.213	Fujitsu	available	2018-08-06 23:26:49	2018-08-10 17:01:01
R1-1808314	Corrections on Type 1 HARQ-ACK codebook on	Fujitsu	available	2018-08-06 23:26:49	2018-08-10 17:01:01
R1-1808315	Corrections on HARQ-ACK codebooks on	Fujitsu	available	2018-08-06 23:26:49	2018-08-10 17:01:01
R1-1808316	Clarification on UCI multiplexing on PUSCH	Fujitsu	available	2018-08-06 23:26:49	2018-08-10 17:01:01
R1-1808317	Simulation Methodology and Preliminary Results for NR-U	ZTE	available	2018-08-07 04:12:52	2018-08-11 01:17:45
R1-1808318	Discussion on frame structure for NR-U	ZTE	available	2018-08-07 04:12:52	2018-08-11 01:17:45
R1-1808319	Considerations on DL reference signals and channels design for NR-U	ZTE	available	2018-08-07 04:12:52	2018-08-11 01:17:45
R1-1808320	Considerations on UL reference signals and channels design for NR-U	ZTE	available	2018-08-07 04:12:52	2018-08-11 01:17:45
R1-1808321	Discussion on Channel access mechanism for	ZTE	available	2018-08-07 04:12:52	2018-08-11 01:17:45
R1-1808322	Discussion on initial access and mobility for NR-	ZTE	available	2018-08-07 04:12:52	2018-08-11 01:17:45
R1-1808323	Discussion on scheduling and HARQ for NR-U	ZTE	available	2018-08-07 04:12:52	2018-08-11 01:17:45
R1-1808324	Discussion on configured grant for NR-U	ZTE	available	2018-08-07 04:12:52	2018-08-11 01:17:45
R1-1808325	Consideration on RIM framework and mechanisms for improving network robustness	ZTE	available	2018-08-07 04:12:52	2018-08-11 01:17:45
R1-1808326	Consideration on reference signal design for remote interference management	ZTE	noted	2018-08-07 04:12:52	2018-08-11 01:17:45
R1-1808327	Remaining issues on Rel-15 NR UE features	ZTE	available	2018-08-07 07:04:36	2018-08-11 04:27:49
R1-1808328	Introduction of eV2X	Ericsson	agreed	2018-08-07 13:31:19	2018-08-07 19:09:48
R1-1808329	TP to 38.211 on handling of initial BWP configuration (response to R2-1810943)	Ericsson	available	2018-08-07 13:37:52	2018-08-10 14:10:48

R1-1808330	Remaining issues on beam management and beam failure recovery	Sony	available	2018-08-07 22:06:51	2018-08-11 00:40:14
R1-1808331	Consideration on the transmitter side signal processing for NOMA	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808332	Considerations on NOMA related procedures	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808333	Considerations on Frame Structure for NR Unlicensed Operations	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808334	Considerations on DL Signals and Channels for NR unlicensed operation	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808335	Considerations on channel access for NR unlicensed operations	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808336	Considerations on initial access and mobility for NR unlicensed operations	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808337	Considerations on HARQ enhancements for NR unlicensed operations	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808338	Considerations on Enhancements to Configured Grants for NR Unlicensed operation	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808339	Discussion on Enhancements to support NR backhaul links	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808340	Discussion on support of unicast, groupcast and broadcast in NR V2X	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808341	Initial considerations on NR V2X resource allocation mechanism	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808342	Considerations on remote interference management	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808343	On Layer 1 enhancement for URLLC	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808344	On UL inter UE pre-emption	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808345	On Enhancement of UL grant-free transmissions	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808346	Multiple active BWPs	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808347	UE-group wake-up signal for MTC	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808348	Transmission in preconfigured UL resources	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808349	Support of scheduling of multiple DL / UL transport blocks for MTC	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808350	Coexistence of eMTC with NR	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808351	On providing quality report in Message 3	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808352	On MPDCCH performance improvement	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808353	DL transmission in the LTE control channel region	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808354	On Measurement performance improvements for MTC	Sony	available	2018-08-07 22:06:52	2018-08-11 00:40:14
R1-1808355	Multiple TB Grant Design for Unicast	Sierra Wireles	available	2018-08-08 00:03:52	2018-08-10 23:38:52
R1-1808356	Multiple TB Grant Design for Unicast	Sierra Wireles	available	2018-08-08 00:05:54	2018-08-10 23:38:52
R1-1808357	Pre-configured UL Resources Design Considerations	Sierra Wireles	available	2018-08-08 00:07:45	2018-08-10 23:38:52
R1-1808358	Pre-configured UL Resources Design Considerations	Sierra Wireles	available	2018-08-08 00:09:08	2018-08-10 23:38:52
R1-1808359	Discussion on subband based channel access procedures for NR-U	NEC	available	2018-08-08 01:03:11	2018-08-10 12:59:04
R1-1808360	Discussion on HARQ enhancements for NR-U	NEC	available	2018-08-08 01:03:11	2018-08-10 12:59:04
R1-1808361	Discussion on configured grants in NR-U	NEC	available	2018-08-08 01:03:11	2018-08-10 12:59:04
R1-1808362	Remaining issues on CSI reporting	NEC	available	2018-08-08 01:03:11	2018-08-10 12:59:04
R1-1808363	Remaining issues on PUCCH	NEC	available	2018-08-08 01:03:11	2018-08-10 12:59:04
R1-1808364	Evaluation results for eMBB spectrum efficiency	NEC	available	2018-08-08 01:03:11	2018-08-10 12:59:04
R1-1808365	Evaluation results for eMBB spectrum efficiency	NEC	available	2018-08-08 01:03:11	2018-08-10 12:59:04
R1-1808366	Draft reply LS to RAN2 on termination of	CATT	available	2018-08-08 01:53:41	2018-08-11 04:33:03
R1-1808367	Corrections to the PSCCH decoding capability in	CATT	revised	2018-08-08 01:53:41	2018-08-11 04:33:03
R1-1808368	Discussion on SRS capacity and coverage enhancement	CATT	noted	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808369	Consideration on multiple SRS symbols in a	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808370	Remaining issues of broadcasting signals and channels	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03

R1-1808371	Remaining issues of physical random access channel and procedure	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808372	Remaining issues of Mobility procedure	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808373	Issues on transmission schemes	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808374	Issues on CSI acquisition	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808375	Issues on beam management	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808376	Issues on reference signals	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808377	Discussion on simultaneous transmission and reception of different channels/signals	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808378	Corrections to NR PDCCH	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808379	Corrections to UCI feedback procedures	CATT	revised	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808380	Corrections to DL/UL scheduling and HARQ management	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808381	Corrections on carrier aggregation and bandwidth part operation	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808382	Corrections on rate matching	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808383	Remaining issues of LTE-NR Dual Connectivity	CATT	noted	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808384	Remaining issues of NR power control	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808385	On Rel-15 UE features	CATT	revised	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808386	NOMA transmitter side signal processing	CATT	available	2018-08-08 01:53:42	2018-08-11 05:09:54
R1-1808387	Discussion on NOMA receivers	CATT	available	2018-08-08 01:53:42	2018-08-11 05:09:54
R1-1808388	Discussion on NOMA procedures	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808389	Link level and initial system level evaluation results of NOMA	CATT	available	2018-08-08 01:53:42	2018-08-11 05:25:31
R1-1808390	Link level evaluation results of OMA	CATT	available	2018-08-08 01:53:42	2018-08-11 05:09:54
R1-1808391	System level calibration of NOMA	CATT	available	2018-08-08 01:53:42	2018-08-11 05:25:31
R1-1808392	Frame Structure for NR Unlicencensed	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808393	DL Physical Channel and Signal Design for NR Unlicensed Operations	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808394	UL Physical Channel and Signal Design for NR Unlicensed Operations	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808395	Channel Access Procedures for NR Unlicensed	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808396	Initial Access and Mobiity for NR Unlicensed	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808397	HARQ Operations in NR-U	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808398	NR Physical Layer design for IAB backhual link	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808399	Support of unicast, groupcast and broadcast in NR sidelink	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808400	Physical layer structure and procedure in NR V2X	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808401	Considerations on synchronization mechanism in	CATT	noted	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808402	Considerations on resource allocation	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808403	Evaluation of Uu for advanced V2X use cases	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808404	On LTE Uu and NR Uu control NR sidelink in NR V2X	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808405	On NR Uu control LTE sidelink in NR V2X	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808406	QoS management in NR V2X	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808407	Coexistence of NR sidelink and LTE sidelink in	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808408	Views on remote interference management	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808409	Discussion on identification of strong gNB interferers	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808410	Discussion on PHY enhancements for Rel-16	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808411	Discussion on inter-UE UL multiplexing	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808412	On enhancements to configured UL grant	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808413	Remaining issues on evaluation methodology for self-evaluation	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808414	Discussions on detailed link budget evaluation	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808415	Discussions on calculation of shadow fading margin for link budget	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03

R1-1808416	Discussions on penetration margin and SD for	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808417	Discussions on overhead for spectrum efficiency	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808418	Self-evaluation on Peak Data Rate and Peak Spectrum Efficiency for NR	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808419	Self-evaluation on Peak Data Rate and Peak Spectrum Efficiency for LTE	CATT	revised	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808420	Self-evaluation on Spectrum Efficiency and Area Traffic Capacity in Indoor Hotspot-eMBB	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808421	Self-evaluation on Spectrum Efficiency and User Experienced Data Rate in Dense Urban-eMBB	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808422	Self-evaluation on NR Spectrum Efficiency in	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808423	Self-evaluation on LTE Spectrum Efficiency in	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808424	Self-evaluation on CP latency	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808425	Self-evaluation on UP latency for NR	CATT	revised	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808426	Self-evaluation on UP latency for LTE	CATT	revised	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808427	Self-evaluation on Energy Efficiency	CATT	available	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808428	Self-evaluation on Mobility	CATT	revised	2018-08-08 01:53:42	2018-08-11 04:33:03
R1-1808429	Self-evaluation on Reliability	CATT	revised	2018-08-08 01:53:42	2018-08-11 05:44:50
R1-1808430	UE-group wake-up signal for MTC	Nokia, Nokia	available	2018-08-08 06:51:00	2018-08-10 16:26:11
R1-1808431	Transmission in preconfigured UL resources	Nokia, Nokia	available	2018-08-08 06:52:26	2018-08-10 16:29:51
R1-1808432	Scheduling of multiple DL/UL transport blocks	Nokia, Nokia	available	2018-08-08 06:53:19	2018-08-11 08:48:14
R1-1808433	Coexistence of eMTC with NR	Nokia, Nokia	available	2018-08-08 06:55:38	2018-08-10 20:14:30
R1-1808434	Support of Quality report in Msg3	Nokia, Nokia	available	2018-08-08 06:56:53	2018-08-10 16:29:51
R1-1808435	MPDCCH performance improvement	Nokia, Nokia	available	2018-08-08 06:58:15	2018-08-10 20:14:30
R1-1808436	CE mode A and B improvements for non-BL UEs	Nokia, Nokia	available	2018-08-08 06:59:23	2018-08-10 16:26:11
R1-1808437	Consideration on the usage of LTE control channel region	Nokia, Nokia	available	2018-08-08 07:00:25	2018-08-10 16:26:11
R1-1808438	Use of RSS for measurement improvements	Nokia, Nokia	available	2018-08-08 07:01:37	2018-08-10 16:29:51
R1-1808439	UE group wake-up signal for NB-IoT	Nokia, Nokia	available	2018-08-08 07:03:06	2018-08-10 16:26:11
R1-1808440	Preconfigured Grant for Uplink transmission	Nokia, Nokia	available	2018-08-08 07:04:30	2018-08-10 16:26:11
R1-1808441	Scheduling of multiple DL/UL transport blocks	Nokia, Nokia	available	2018-08-08 07:05:36	2018-08-11 08:48:57
R1-1808442	Coexistence of NB-IoT with NR	Nokia, Nokia	available	2018-08-08 07:06:47	2018-08-10 20:14:30
R1-1808443	Support of Quality report in Msg3 for non-anchor access	Nokia, Nokia	available	2018-08-08 07:08:19	2018-08-10 16:29:51
R1-1808444	Presence of NRS on a non-anchor carrier for paging	Nokia, Nokia	available	2018-08-08 07:09:22	2018-08-10 20:14:30
R1-1808445	Views on additional symbols for SRS	Mitsubi	revised	2018-08-08 07:20:55	2018-08-09 14:39:40
R1-1808446	Views on SRS virtual cell ID	Mitsubi	available	2018-08-08 07:24:07	2018-08-09 14:39:40
R1-1808447	Discussions on UL inter-UE Tx multiplexing	Mitsubi	available	2018-08-08 07:28:24	2018-08-09 14:39:40
R1-1808448	IMT-2020 self-evaluation: UP latency analysis for FDD and dynamic TDD with UE processing	Nokia, Nokia	available	2018-08-08 08:18:47	2018-08-10 19:08:00
R1-1808449	IMT-2020 self-evaluation: UP latency analysis for FDD and dynamic TDD with UE processing	Nokia, Nokia	available	2018-08-08 08:18:48	2018-08-10 19:08:00
R1-1808450	IMT-2020 self-evaluation: UP latency analysis for static TDD with UE processing capability 1	Nokia, Nokia	available	2018-08-08 08:18:48	2018-08-10 19:08:00
R1-1808451	IMT-2020 self-evaluation: UP latency analysis for static TDD with UE processing capability 2	Nokia, Nokia	available	2018-08-08 08:18:48	2018-08-10 19:08:00
R1-1808452	IMT-2020 Self Evaluation: CP latency	Nokia, Nokia	available	2018-08-08 08:18:48	2018-08-10 19:08:00
R1-1808453	IMT-2020 self evaluation: Network energy efficiency	Nokia, Nokia	available	2018-08-08 08:18:48	2018-08-10 19:08:00
R1-1808454	[draft] Response LS on short message	LG	available	2018-08-08 09:37:50	2018-08-11 05:20:53
R1-1808455	Corrections related to CSI feedback	LG	noted	2018-08-08 09:37:50	2018-08-11 05:20:53
R1-1808456	eIMTA support with sTTI operation	LG	endorsed	2018-08-08 09:37:50	2018-08-11 05:20:53

R1-1808457	Corrections on collision handling between subslot UL SPS and SPUCCH	LG Electro	endorsed	2018-08-08 09:37:50	2018-08-11 05:20:53
R1-1808458	Correction to NRS subframes and additional SIB1-NB-to-subframe mapping	LG Electro	revised	2018-08-08 09:37:50	2018-08-11 05:20:53
R1-1808459	Discussion on NPRACH preamble formats for NPDCCH order	LG Electro	available	2018-08-08 09:37:50	2018-08-11 05:20:53
R1-1808460	Correction on RE mapping rule in a DwPTS	LG	available	2018-08-08 09:37:50	2018-08-11 05:20:53
R1-1808461	Clarification on valid UL subframe caused by symbol groups dropping	LG Electro	available	2018-08-08 09:37:50	2018-08-11 05:20:53
R1-1808462	Corrections on blind/HARQ-less PDSCH repetition	LG Electronics	noted	2018-08-08 09:37:50	2018-08-11 05:20:53
R1-1808463	Corrections on power control for UL SPS operation	LG Electro	endorsed	2018-08-08 09:37:50	2018-08-11 05:20:53
R1-1808464	Discussion on AUL-initiated COT sharing for LAA	LG	noted	2018-08-08 09:37:50	2018-08-11 05:20:53
R1-1808465	Discussion on UE-grouping wake up signal in	LG	available	2018-08-08 09:37:50	2018-08-11 05:20:53
R1-1808466	Discussion on preconfigured UL resources in MTC	LG Electro	available	2018-08-08 09:37:50	2018-08-11 05:20:53
R1-1808467	Discussion on multiple transmission blocks scheduling in MTC	LG Electro	available	2018-08-08 09:37:50	2018-08-11 05:20:53
R1-1808468	Discussion on coexistence of LTE-MTC with NR	LG	available	2018-08-08 09:37:50	2018-08-11 05:20:54
R1-1808469	Downlink channel quality report during random access procedure	LG Electro	available	2018-08-08 09:37:50	2018-08-11 05:20:54
R1-1808470	Discussion on MPDCCH performance	LG	available	2018-08-08 09:37:50	2018-08-11 05:20:54
R1-1808471	CE mode improvements for non-BL Ues	LG Electro	available	2018-08-08 09:37:50	2018-08-11 05:20:54
R1-1808472	On the use of LTE control channel region for LTE-MTC DL transmission	LG Electro	available	2018-08-08 09:37:50	2018-08-11 05:20:54
R1-1808473	Discussion on the use of RSS for measurement improvement	LG Electro	available	2018-08-08 09:37:50	2018-08-11 05:20:54
R1-1808474	Discussion on UE-grouping wake up signal in NB-	LG	available	2018-08-08 09:37:50	2018-08-11 05:20:54
R1-1808475	Discussion on preconfigured UL resources in NB-IoT	LG Electro	available	2018-08-08 09:37:50	2018-08-11 05:20:54
R1-1808476	Discussion on multiple transmission blocks scheduling in NB-IoT	LG Electro	available	2018-08-08 09:37:50	2018-08-11 05:20:54
R1-1808477	Discussion on coexistence of NB-IoT with NR	LG	available	2018-08-08 09:37:50	2018-08-11 05:20:54
R1-1808478	Downlink channel quality report during random access procedure on a non-anchor carrier	LG Electro	available	2018-08-08 09:37:50	2018-08-11 05:20:54
R1-1808479	Discussion on NRS on an a non-anchor carrier	LG Electro	available	2018-08-08 09:37:50	2018-08-11 05:20:54
R1-1808480	Enhancements on SRS resource allocation	LG	available	2018-08-08 09:37:50	2018-08-11 05:20:54
R1-1808481	Discussion on VCID for SRS sequence	LG	available	2018-08-08 09:37:51	2018-08-11 05:20:54
R1-1808482	Maintenance for Downlink signals and channels	LG Electro	available	2018-08-08 09:37:51	2018-08-11 05:20:54
R1-1808483	Maintenance for Physical random access channel and procedure	LG Electro	available	2018-08-08 09:37:51	2018-08-11 05:20:54
R1-1808484	Maintenance for Mobility procedure	LG	available	2018-08-08 09:37:51	2018-08-11 05:20:54
R1-1808485	Text proposals on multi-antenna scheme	LG	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808486	Text proposals on CSI acquisition	LG	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808487	Text proposals on BM and BFR	LG	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808488	Text proposals on reference signals	LG Electro	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808489	Remaining issues on simultaneous Tx/Rx	LG	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808490	Remaining issues on downlink control channel	LG Electro	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808491	Correction on PUCCH and UCI multiplexing for NR	LG Electro	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808492	Discussion on DL/UL data scheduling and HARQ procedure	LG ELECT	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808493	Correction on CA and BWP operation for NR	LG Electro	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808494	TA command reception with dynamic BWP	LG	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808495	Remaining issues on NR LTE coexistence	LG	noted	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808496	Discussion on MCS table selection for URLLC	LG	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808497	Discussion on UE features including URLLC	LG	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808498	Confirmation of some evaluation assumption	LG	revised	2018-08-08 09:37:51	2018-08-11 05:23:28

R1-1808499	Transmitter side signal processing schemes for NCMA	LG Electro	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808500	Considerations on the receiver types and NoMA	LG	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808501	Discussion on procedures related to NOMA	LG	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808502	Further LLS evaluation for NCMA in mMTC	LG Electro	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808503	Simulation methodology for NR unlicensed operation	LG Electro	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808504	Frame structure for NR unlicensed operation	LG	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808505	Physical layer design of DL signals and channels for NR unlicensed operation	LG Electro	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808506	Physical layer design of UL signals and channels for NR unlicensed operation	LG Electro	available	2018-08-08 09:37:51	2018-08-11 05:23:28
R1-1808507	Channel access procedure for NR unlicensed	LG	available	2018-08-08 09:37:52	2018-08-11 05:23:28
R1-1808508	Initial access and mobility for NR unlicensed	LG	available	2018-08-08 09:37:52	2018-08-11 05:23:28
R1-1808509	HARQ procedure for NR unlicensed operation	LG	available	2018-08-08 09:37:52	2018-08-11 05:23:28
R1-1808510	Discussion on configured grant for NR unlicensed operation	LG Electro	available	2018-08-08 09:37:52	2018-08-11 05:23:28
R1-1808511	Discussions on NR IAB support	LG Electro	available	2018-08-08 09:37:52	2018-08-11 05:23:28
R1-1808512	Remaining issue on evaluation assumptions in	LG	available	2018-08-08 09:37:52	2018-08-11 05:23:28
R1-1808513	Discussions on discovery among NR IAB nodes	LG	available	2018-08-08 09:37:52	2018-08-11 05:23:28
R1-1808514	Discussions on access and backhaul link timing	LG	available	2018-08-08 09:37:52	2018-08-11 05:23:28
R1-1808515	Discussions on node behavior for IAB link	LG	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808516	Discussions on HARQ-ACK transmission for NR	LG	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808517	Initial access procedure in IAB scenario	LG	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808518	Work plan of Study on NR V2X	LG	noted	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808519	Discussion on support of unicast, groupcast and broadcast for sidelink	LG Electro	noted	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808520	Discussion on sidelink physical layer structures and procedures	LG Electro	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808521	Discussion on sidelink synchronization	LG	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808522	Discussion on sidelink resource allocation	LG	noted	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808523	Discussion on remaining aspects of simulation	LG	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808524	Discussion on evaluation of Uu for advanced V2X use cases	LG Electro	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808525	Discussion on LTE Uu and NR Uu enhancements to control NR sidelink	LG Electro	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808526	Discussion on NR Uu enhancements to control LTE sidelink	LG Electro	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808527	Discussion on QoS management	LG	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808528	Discussion on coexistence mechanisms	LG	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808529	Discussion on mechanism for NR RIM support	LG Electro	noted	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808530	Discussion on procedure for NR RIM	LG Electro	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808531	Discussion on layer 1 enhancements	LG	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808532	Discussion on UL inter UE Tx prioritization	LG	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808533	Discussion on enhancement for grant-free	LG	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808534	Discussion on differentiation of eMBB and	LG	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808535	Discussion on evaluation methodology for	LG	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808536	Evaluation results of Dense Urban-eMBB for IMT-2020 self-evaluation	LG Electro	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808537	Evaluation results of Rural-eMBB for IMT-2020	LG	available	2018-08-08 09:37:52	2018-08-11 05:25:24
R1-1808538	Evaluation results of Indoor Hotspot-eMBB for IMT-2020 self-evaluation	LG Electro	available	2018-08-08 09:37:53	2018-08-11 05:25:24
R1-1808539	Initial evaluation results of IMT-2020 self-evaluation for high mobility	LG Electro	available	2018-08-08 09:37:53	2018-08-11 05:25:24
R1-1808540	QoS Management for NR V2X	Fraunh	available	2018-08-08 09:54:54	2018-08-10 11:59:43

R1-1808541	A comparison of polar and LDPC codes for URLLC	Polaran	withdrawn	2018-08-08 10:30:06	2018-08-08 10:38:29
R1-1808542	Remaining issues on RACH procedure	vivo	available	2018-08-08 10:55:52	2018-08-10 16:24:26
R1-1808543	Frame structure for NR-U operation	Lenovo, Motorol	available	2018-08-08 14:48:16	2018-08-10 22:48:32
R1-1808544	UL signals and channels for NR-U operation	Lenovo, Motorol	available	2018-08-08 14:48:19	2018-08-10 22:48:32
R1-1808545	HARQ-ACK enhancement for NR-U	Lenovo, Motorol	available	2018-08-08 14:48:19	2018-08-10 22:48:32
R1-1808546	Initial self evaluation results for Dense Urban-eMBB UL spectrum efficiency	Lenovo, Motorol	available	2018-08-08 14:48:19	2018-08-10 22:48:32
R1-1808547	Additional SRS symbols	Lenovo, Motorol	available	2018-08-08 14:48:19	2018-08-10 22:48:32
R1-1808548	Virtual cell ID for SRS	Lenovo, Motorol	available	2018-08-08 14:48:19	2018-08-10 22:48:32
R1-1808549	Maintenance for codebook and non-codebook based UL transmission	Lenovo, Motorol	available	2018-08-08 14:48:19	2018-08-10 22:48:32
R1-1808550	Maintenance on CSI reporting	Lenovo, Motorol	available	2018-08-08 14:48:19	2018-08-10 22:48:32
R1-1808551	Discussion on resource partitioning for IAB network	Lenovo, Motorol	available	2018-08-08 14:48:19	2018-08-10 22:48:32
R1-1808552	Discussion on discovery and measurement for IAB network	Lenovo, Motorol	available	2018-08-08 14:48:19	2018-08-10 22:48:32
R1-1808553	Support of unicast, groupcast and broadcast for NR V2X	Lenovo, Motorol	available	2018-08-08 14:48:19	2018-08-10 22:48:32
R1-1808554	Physical layer structures and procedure in NR V2X	Lenovo, Motorol	noted	2018-08-08 14:48:19	2018-08-10 22:48:32
R1-1808555	Synchronization mechanism in NR V2X	Lenovo, Motorol	available	2018-08-08 14:48:19	2018-08-10 22:48:32
R1-1808556	Resource allocation mechanism in NR V2X	Lenovo, Motorol	available	2018-08-08 14:48:19	2018-08-10 22:48:32
R1-1808557	Design of scheduling of multiple DL/UL transport blocks for Rel.16 MTC	Lenovo, Motorol	available	2018-08-08 14:48:19	2018-08-10 22:48:32
R1-1808558	Design of Use of LTE Control Channel Region for DL Transmission	Lenovo, Motorol	available	2018-08-08 14:48:19	2018-08-10 22:48:32
R1-1808559	Design of scheduling of multiple DL/UL transport blocks for Rel.16 NBIoT	Lenovo, Motorol	available	2018-08-08 14:48:19	2018-08-10 22:48:32
R1-1808560	Considerations on improving DL measurement accuracy	Huawei,	available	2018-08-08 15:26:30	2018-08-11 02:21:34
R1-1808561	Discussion on the flexible starting PRB for PUSCH resource allocation in TDD	Huawei,	available	2018-08-08 15:26:30	2018-08-11 02:20:33
R1-1808562	Corrections on additional SIB1-NB transmission	Huawei	endorsed	2018-08-08 15:26:30	2018-08-11 02:20:33
R1-1808563	Discussion on NOMA Schemes for NR	NEC	available	2018-08-08 15:36:03	2018-08-10 15:59:59
R1-1808564	Considerations on NOMA related procedures	NEC	available	2018-08-08 15:36:03	2018-08-10 15:59:59
R1-1808565	UL inter UE Tx prioritization/multiplexing of eMBB and URLLC	NEC	available	2018-08-08 15:36:03	2018-08-10 15:59:59
R1-1808566	On short message transmission using DCI	Nokia, Nokia	available	2018-08-08 15:59:47	2018-08-10 21:10:46
R1-1808567	[DRAFT] Reply LS On short message transmission using DCI	Nokia, Nokia	available	2018-08-08 15:59:55	2018-08-10 21:10:46
R1-1808568	On the L1 enhancements for NR URLLC	Nokia, Nokia	available	2018-08-08 15:59:55	2018-08-10 21:04:29
R1-1808569	On UL inter-UE multiplexing between eMBB and URLLC	Nokia, Nokia	available	2018-08-08 15:59:55	2018-08-10 21:04:29
R1-1808570	On Configured Grant enhancements for NR URLLC	Nokia, Nokia	available	2018-08-08 15:59:55	2018-08-10 21:04:29
R1-1808571	On compact DCI for NR URLLC	Nokia, Nokia	available	2018-08-08 15:59:55	2018-08-10 21:04:29

R1-1808572	On PDCCH repetition for NR URLLC	Nokia, Nokia	available	2018-08-08 15:59:55	2018-08-10 21:04:29
R1-1808573	On the PDCCH limits on the number of CCEs for channel estimation and BDs for URLLC	Nokia, Nokia	available	2018-08-08 15:59:55	2018-08-10 21:04:29
R1-1808574	On enhanced HARQ-ACK feedback for URLLC	Nokia, Nokia	available	2018-08-08 15:59:55	2018-08-10 21:04:29
R1-1808575	CQI reporting mode enhancements for URLLC	Nokia, Nokia	available	2018-08-08 15:59:55	2018-08-10 21:04:29
R1-1808576	On scheduled PUSCH (& PDSCH) repetition enhancements for NR URLLC	Nokia, Nokia	available	2018-08-08 15:59:55	2018-08-10 21:04:29
R1-1808577	On the out-of-order HARQ-ACK support for URLLC	Nokia, Nokia	available	2018-08-08 15:59:55	2018-08-10 21:04:29
R1-1808578	NR support for IAB	Nokia, Nokia	noted	2018-08-08 15:59:55	2018-08-10 21:15:19
R1-1808579	Evaluation of IAB	Nokia, Nokia	available	2018-08-08 15:59:55	2018-08-10 21:15:19
R1-1808580	Resource allocation between backhaul and access link	Nokia, Nokia	available	2018-08-08 15:59:55	2018-08-10 21:15:19
R1-1808581	Measurements with IAB	Nokia, Nokia	available	2018-08-08 15:59:55	2018-08-10 21:15:19
R1-1808582	IAB Timing	Nokia, Nokia	available	2018-08-08 15:59:55	2018-08-10 21:15:19
R1-1808583	Enhancements on RACH for IAB	Nokia, Nokia	available	2018-08-08 15:59:55	2018-08-10 21:15:19
R1-1808584	Discussion on PRG size for TM9 and TM10	Huawei	noted	2018-08-08 16:29:09	2018-08-10 22:28:39
R1-1808585	Discussion on the AUL-UCI payload for FeLAA in	Huawei	noted	2018-08-08 16:29:09	2018-08-10 22:28:13
R1-1808586	Discussion on aperiodic CSI triggering for	Huawei	noted	2018-08-08 16:29:09	2018-08-10 22:28:39
R1-1808587	Discussion on the partial PUSCH mode field for FeLAA in 36.212	Huawei,	noted	2018-08-08 16:29:09	2018-08-10 22:28:13
R1-1808588	Introduction of configured PRG size for TM9 and TM10 in 36.213	Huawei,	available	2018-08-08 16:29:09	2018-08-10 22:28:39
R1-1808589	Correction on the interpretation of HARQ-ACK bitmap for FeLAA in 36.212	Huawei,	revised	2018-08-08 16:29:09	2018-08-10 22:28:13
R1-1808590	Correction on DL CP extention for FeLAA in	Huawei	revised	2018-08-08 16:29:10	2018-08-10 22:28:13
R1-1808591	Correction on RRC parameters for FeLAA in	Huawei	revised	2018-08-08 16:29:10	2018-08-10 22:28:13
R1-1808592	Correction on aperiodic CSI triggering for	Huawei	revised	2018-08-08 16:29:11	2018-08-10 22:28:39
R1-1808593	Correction on TDD HARQ-ACK reporting procedure for different UL/DL configurations	Huawei,	revised	2018-08-08 16:29:11	2018-08-10 22:28:39
R1-1808594	Correction on PUCCH format 4 HARQ-ACK procedure without adaptive codebook	Huawei,	agreed	2018-08-08 16:29:11	2018-08-10 22:28:39
R1-1808595	Correction on the AUL-UCI payload for FeLAA in	Huawei	not	2018-08-08 16:29:12	2018-08-10 22:28:13
R1-1808596	HARQ-ACK feedback for URLLC	InterDig	available	2018-08-08 19:10:14	2018-08-10 02:37:50
R1-1808597	Power scaling with transmissions associated to different MCS tables	InterDigital, Inc.	available	2018-08-08 19:10:14	2018-08-10 02:37:50
R1-1808598	URLLC UCI prioritization	InterDig	available	2018-08-08 19:10:14	2018-08-10 02:37:50
R1-1808599	Resource allocation for NR V2X	InterDig	available	2018-08-08 19:10:14	2018-08-10 02:37:50
R1-1808600	QoS Management for NR V2X	InterDig	noted	2018-08-08 19:10:14	2018-08-10 02:37:50
R1-1808601	Vehicle Platooning Use Case for NR V2X	InterDig	available	2018-08-08 19:10:14	2018-08-10 02:37:50
R1-1808602	Support of unicast, groupcast and broadcast in NR V2X	ZTE	available	2018-08-08 21:40:26	2018-08-10 20:48:35
R1-1808603	Discussion on NR Sidelink Physical layer structures	ZTE	available	2018-08-08 21:43:21	2018-08-10 20:48:35
R1-1808604	Discussion about synchronization mechanism for	ZTE	noted	2018-08-08 21:47:16	2018-08-10 20:48:35
R1-1808605	Discussion on NR Sidelink Physical resource	ZTE	available	2018-08-08 21:51:27	2018-08-10 20:48:35
R1-1808606	Discussion on LTE/NR Uu based resource allocation/configuration for NR sidelink	ZTE	available	2018-08-08 21:52:59	2018-08-10 20:48:35
R1-1808607	Discussion on NR Uu based resource allocation/configuration for LTE sidelink	ZTE	available	2018-08-08 21:56:20	2018-08-10 20:48:35
R1-1808608	Discussion on QoS Management	ZTE	available	2018-08-08 21:57:26	2018-08-10 20:48:35
R1-1808609	In device coexistence between NR sidelink and	ZTE	available	2018-08-08 21:58:58	2018-08-10 20:48:35
R1-1808610	Discussions on NR UE feature list	Apple	available	2018-08-08 23:11:28	2018-08-11 01:27:08
R1-1808611	Channel access procedures for NR-U	Apple	available	2018-08-08 23:11:28	2018-08-11 01:27:08
R1-1808612	On DL signals and channels for NR-U	Apple	available	2018-08-08 23:11:28	2018-08-11 01:27:08
R1-1808613	On UL signals and channels for NR-U	Apple	available	2018-08-08 23:11:28	2018-08-11 01:27:08
R1-1808614	NR TDD Configurations for LTE-NR co-existence	Apple Inc.	available	2018-08-08 23:11:28	2018-08-11 01:27:08

R1-1808615	Power model for evaluating UE power saving	Apple	available	2018-08-08 23:11:28	2018-08-11 01:27:08
R1-1808616	NR sidelink design	NEC	available	2018-08-08 23:45:39	2018-08-10 05:04:49
R1-1808617	Enhancements to PDCCH	NEC	available	2018-08-08 23:45:39	2018-08-10 05:04:49
R1-1808618	Numerology for NR-U	Panaso	available	2018-08-08 23:54:35	2018-08-10 08:16:41
R1-1808619	Resource allocation for NR-U UL channels	Panaso	available	2018-08-08 23:55:28	2018-08-10 08:16:41
R1-1808620	Remaining issues on physical uplink control channel	Panaso nic	available	2018-08-09 00:06:54	2018-08-10 08:18:18
R1-1808621	Discussion on enhanced UL grant-free	Panaso	available	2018-08-09 00:07:33	2018-08-10 08:18:18
R1-1808622	Remaining issue on synchronization signal	NEC Corpor	available	2018-08-09 01:09:26	2018-08-09 07:51:41
R1-1808623	Remaining collision issues for RSS transmission	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808624	Remaining issue for MTC EDT	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808625	Remaining issue for Sub-PRB allocation	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808626	Remaining issues for scheduling request	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808627	Maintenance for semi-persistence scheduling	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808628	Remaining issue for TDD DL aspects	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808629	Maintenance for TDD UL aspects	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808630	Clarification of valid subframe issue for additional SIB-NB transmission	ZTE	noted	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808631	Discussion on Wake-up signal for MTC	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808632	Support for transmission in preconfigured UL resources for MTC	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808633	Consideration on scheduling enhancement for MTC	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808634	Coexistence of LTE-MTC with NR	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808635	Specify Msg3 quality reporting at least for EDT	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808636	Consideration on MPDCCH improvement by	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808637	Discussion on CE mode A and B improvements for non-BL UEs	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808638	Discussion on use of LTE control channel region for DL transmission	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808639	Discussion on use of RSS for measurement improvement	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808640	Discussion on Wake-up signal for NB-IoT	ZTE	available	2018-08-09 01:14:28	2018-08-10 23:38:01
R1-1808641	Support for transmission in preconfigured UL resources for NB-IoT	ZTE	available	2018-08-09 01:14:29	2018-08-10 23:38:01
R1-1808642	Consideration on scheduling enhancement for NB-IoT	ZTE	available	2018-08-09 01:14:29	2018-08-10 23:38:01
R1-1808643	Discussion on coexistence of NB-IoT with NR	ZTE	available	2018-08-09 01:14:29	2018-08-10 23:38:01
R1-1808644	Support of Quality report in Msg3 for non-anchor access	ZTE	available	2018-08-09 01:14:29	2018-08-10 23:38:01
R1-1808645	NRS on non-anchor PRB	ZTE	available	2018-08-09 01:14:29	2018-08-10 23:38:01
R1-1808646	Discussion on supporting unicast, groupcast and broadcast via NR sidelink	Panaso nic	available	2018-08-09 01:41:29	2018-08-10 05:36:50
R1-1808647	Discussion on physical layer structures and procedure(s) of NR sidelink	Panaso nic	available	2018-08-09 01:41:29	2018-08-10 05:36:50
R1-1808648	Discussion on resource allocation mechanism for	Panaso	available	2018-08-09 01:41:29	2018-08-10 05:36:50
R1-1808649	Draft reply to LS on beam failure recovery	Intel	available	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808650	[DRAFT] Reply LS on Overlapping SIB1 and SI	Intel	available	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808651	[DRAFT] Reply LS on Active DL BWPs overlapping/non-overlapping with Initial DL BWP	Intel Corpor	available	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808652	Corrections to modulation signalling in MUST	Intel	revised	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808653	Correction to PDSCH RE mapping in TM10	Intel	revised	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808654	Correction to alternative 6-bit MCS	Intel	noted	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808655	UE-group wake-up signal for eMTC	Intel	available	2018-08-09 02:40:47	2018-08-11 06:46:31
R1-1808656	UL transmission in preconfigured resources for eMTC	Intel Corpor	available	2018-08-09 02:40:47	2018-08-11 08:21:12
R1-1808657	MPDCCH performance improvement	Intel	available	2018-08-09 02:40:47	2018-08-11 06:46:31
R1-1808658	Improvement for non-BL UEs in CE mode	Intel Corpor	available	2018-08-09 02:40:47	2018-08-11 06:46:31
R1-1808659	Standalone deployment for eMTC	Intel Corpor	available	2018-08-09 02:40:47	2018-08-11 06:57:20

R1-1808660	UE-group wake-up signal for NB-IoT	Intel	available	2018-08-09 02:40:47	2018-08-11 06:46:31
R1-1808661	UL transmission in preconfigured resources for NB-IoT	Intel Corpor	available	2018-08-09 02:40:47	2018-08-11 08:43:57
R1-1808662	Additional SRS symbols	Intel	available	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808663	Virtual cell ID support for SRS	Intel	available	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808664	Corrections to Initial Access DL Channels and Signals	Intel Corpor	available	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808665	Corrections to Random Access Channel and Procedures	Intel Corpor	available	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808666	Corrections to NR mobility measurements	Intel	available	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808667	Remaining Issues on Multi-antenna Scheme	Intel	available	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808668	Remaining issues on CSI reporting	Intel	available	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808669	Remaining Issues on Beam Management	Intel	available	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808670	Corrections to reference signals and QCL	Intel Corpor	available	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808671	Simultaneous Tx and Rx of channels and RS	Intel	available	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808672	Outstanding aspects on NR PDCCH	Intel Corpor	withdrawn	2018-08-09 02:40:47	
R1-1808673	Remaining details on NR PUCCH	Intel Corpor	available	2018-08-09 02:40:47	2018-08-11 06:07:31
R1-1808674	NR scheduling and HARQ procedures	Intel Corpor	revised	2018-08-09 02:40:48	2018-08-11 06:09:08
R1-1808675	Remaining issues of NR-LTE co-existence	Intel	noted	2018-08-09 02:40:48	2018-08-11 06:18:42
R1-1808676	Remaining Issues on UL Power Control	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808677	NOMA transmission scheme	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808678	NOMA receiver structure	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808679	NOMA related procedure	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808680	Performance evaluation for NOMA	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808681	On calibrating the outdoor simulation models for NR-unlicensed	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808682	On the NR-unlicensed frame structure	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808683	Enhancements to NR DL signals and channels for unlicensed operation	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808684	Enhancements to NR UL signals and channels for unlicensed operation	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808685	Enhancements to channel access mechanism for NR-unlicensed	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808686	Enhancements to initial access and mobility for NR-unlicensed	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808687	Enhancements to HARQ for NR-unlicensed	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808688	Enhancements to NR configured grants for unlicensed operation	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808689	On the consideration for spatial reuse for NR-	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808690	Initial design on technology neutral preamble for unlicensed operation	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808691	PHY layer enhancement to support NR IAB	Intel Corpor	noted	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808692	Evaluation methodology for NR IAB	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808693	Support of sidelink unicast, groupcast and broadcast modes for NR V2X communication	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808694	Sidelink Physical Layer Structure and Procedures for NR V2X Communication	Intel Corpor	noted	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808695	Sidelink synchronization for NR V2X	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808696	Sidelink resource allocation mechanisms for NR V2X communication	Intel Corpor	noted	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808697	Remaining aspects of eV2X evaluation methodology and assumptions	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808698	Analysis of NR Uu support for advanced V2X use cases	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808699	Enhancements of NR and LTE Uu link to control NR sidelink	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808700	Enhancements of NR Uu link to control LTE sidelink	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808701	QoS management for NR V2X communication	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31

R1-1808702	Coexistence mechanisms for eV2X services	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808703	Remote interference management schemes	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808704	Mechanism for identifying remote gNB interference	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808705	Views on evaluation methodology and Layer 1 enhancements for Rel-16 eURLLC	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808706	On inter-UE multiplexing in UL	Intel	noted	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808707	Enhancements to configured grant PUSCH	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808708	Evaluation Methodology for IMT-2020 Self-	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808709	Peak Data Rate and Peak Spectral Efficiency Evaluations for NR	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808710	Spectral Efficiency Evaluation for NR eMBB	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808711	Mobility Evaluation for NR eMBB	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808712	Area Traffic Capacity Evaluation for NR Indoor	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808713	User Experienced Data Rate Evaluation for NR Dense Urban eMBB	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808714	Summary of Email Discussion on NR SLS Overhead Calculation for IMT-2020 Self-	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808715	Link Budget for NR	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808716	Connection Density Evaluation for mMTC	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808717	Reliability Evaluation for URLLC	Intel	revised	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808718	On RS Enhancement to Support Multi-TRP	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808719	On UL/DL Beam Management Latency and Overhead Reduction	Intel Corpor	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808720	On SCell Beam Failure Recovery	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808721	On Interference-aware Beam Measurement and	Intel	available	2018-08-09 02:40:48	2018-08-11 06:07:31
R1-1808722	Design issues for NR V2X unicast, groupcast and broadcast	ITRI	available	2018-08-09 05:37:33	2018-08-10 04:51:38
R1-1808723	Considerations of Synchronization Enhancement for NR V2X Communication	ITRI	available	2018-08-09 05:39:03	2018-08-10 04:52:05
R1-1808724	Considering geo-based resource management techniques for NR V2X communication	ITRI	available	2018-08-09 05:40:11	2018-08-10 04:52:21
R1-1808725	Evaluations of Uu Capability in Supporting Advanced V2X Use Cases	ITRI	available	2018-08-09 05:41:18	2018-08-10 04:52:34
R1-1808726	Discussion on Uu-based sidelink resource allocation and configuration	ITRI	available	2018-08-09 05:42:37	2018-08-10 04:52:46
R1-1808727	Issues in NR Uu for Mode 3 NR Sidelink Resource Access	ITRI	available	2018-08-09 05:43:49	2018-08-10 04:53:00
R1-1808728	Discussion QoS requirement for V2X in Mode 3 like and Mode 4 like	ITRI	available	2018-08-09 05:44:55	2018-08-10 04:53:13
R1-1808729	DRAFT Reply LS on termination of contention-	Samsu	withdrawn	2018-08-09 05:45:15	
R1-1808730	UE-group wake-up signal for eMTC	Samsu	available	2018-08-09 05:45:15	2018-08-11 04:07:38
R1-1808731	Discussion on transmission in preconfigured UL reosurces for MTC	Samsu ng	available	2018-08-09 05:45:15	2018-08-11 04:07:38
R1-1808732	Discussion on scheduling of multiple TBs for MTC	Samsu ng	available	2018-08-09 05:45:15	2018-08-11 04:07:38
R1-1808733	Discussion on quality report in Msg3 for MTC	Samsu	available	2018-08-09 05:45:15	2018-08-11 04:07:38
R1-1808734	Discussion on MPDCCH performance improvement using CRS for MTC	Samsu ng	available	2018-08-09 05:45:15	2018-08-11 04:07:38
R1-1808735	Discussion on CE Mode A and Mode B improvements for non-BL UEs	Samsu ng	available	2018-08-09 05:45:15	2018-08-11 04:07:38
R1-1808736	Discussion on use of control channel region	Samsu ng	available	2018-08-09 05:45:15	2018-08-11 04:07:38
R1-1808737	UE-group wake-up signal for NB-IoT	Samsu	available	2018-08-09 05:45:15	2018-08-11 04:07:38
R1-1808738	Discussion on transmission in preconfigured UL reosurces for NB-IOT	Samsu ng	available	2018-08-09 05:45:15	2018-08-11 04:07:38
R1-1808739	Discission on scheduling of multiple TBs for NB-IoT	Samsu ng	available	2018-08-09 05:45:15	2018-08-11 04:07:38
R1-1808740	Discussion on quality report in Msg3 for NB-IoT	Samsu ng	available	2018-08-09 05:45:15	2018-08-11 04:07:38
R1-1808741	Discussion on NRS presence on non-anchor carrier	Samsu ng	available	2018-08-09 05:45:15	2018-08-11 04:07:38
R1-1808742	Discussions on additional SRS symbols	Samsu	available	2018-08-09 05:45:15	2018-08-10 06:36:12
R1-1808743	Discussions on virtual cell ID for SRS	Samsu	available	2018-08-09 05:45:16	2018-08-10 06:46:10

R1-1808744	Updates to TS 38.213	Samsung	available	2018-08-09 05:45:16	2018-08-11 01:01:11
R1-1808745	Remaining Issues on Synchronization and System information	Samsung	available	2018-08-09 05:45:16	2018-08-10 22:01:06
R1-1808746	Remaining Issues on Random Access	Samsung	available	2018-08-09 05:45:16	2018-08-11 04:07:38
R1-1808747	Remaining Issues on Measurements for Mobility	Samsu	available	2018-08-09 05:45:16	2018-08-10 08:23:42
R1-1808748	Corrections on transmission schemes	Samsu	revised	2018-08-09 05:45:16	2018-08-11 02:42:29
R1-1808749	Issues on CSI reporting	Samsu	available	2018-08-09 05:45:16	2018-08-10 20:52:49
R1-1808750	Remaining Issues on multi-beam operation	Samsu	available	2018-08-09 05:45:16	2018-08-11 03:19:36
R1-1808751	Corrections on reference signals and QCL	Samsung	available	2018-08-09 05:45:16	2018-08-10 06:36:12
R1-1808752	Simultaneous transmission and reception of physical channels and reference signals	Samsung	available	2018-08-09 05:45:16	2018-08-10 06:46:10
R1-1808753	Remaining Issues on PDCCH and Search Space Design	Samsung	available	2018-08-09 05:45:16	2018-08-10 08:18:19
R1-1808754	Remaining Issues on PUCCH	Samsung	available	2018-08-09 05:45:16	2018-08-11 01:01:11
R1-1808755	Remaining Issues on UL/DL Scheduling	Samsung	available	2018-08-09 05:45:16	2018-08-10 22:01:06
R1-1808756	Remaining Issues on BWP and CA	Samsung	available	2018-08-09 05:45:16	2018-08-10 22:01:06
R1-1808757	Remaining Issues on LTE-NR Coexistence	Samsu	noted	2018-08-09 05:45:16	2018-08-10 07:58:29
R1-1808758	Remaining Issues on UL Power Control	Samsu	available	2018-08-09 05:45:16	2018-08-10 09:28:02
R1-1808759	Remaining Issues on UE Features for Rel-15	Samsu	available	2018-08-09 05:45:16	2018-08-10 22:01:06
R1-1808760	Transmitter side signal processing schemes for NOMA	Samsung	revised	2018-08-09 05:45:16	2018-08-11 04:07:38
R1-1808761	Receivers for NOMA	Samsu	available	2018-08-09 05:45:16	2018-08-11 04:07:38
R1-1808762	Procedures related consideration to NOMA	Samsu	noted	2018-08-09 05:45:16	2018-08-11 04:07:38
R1-1808763	Performance evaluation for NoMA	Samsung	revised	2018-08-09 05:45:16	2018-08-11 04:07:38
R1-1808764	Remaining simulation methodology for NR-U	Samsung	available	2018-08-09 05:45:16	2018-08-11 02:03:35
R1-1808765	Frame structure for NR-U	Samsu	available	2018-08-09 05:45:16	2018-08-11 02:03:35
R1-1808766	Downlink signal and channel design for NR-U	Samsu	available	2018-08-09 05:45:16	2018-08-11 02:03:35
R1-1808767	Uplink signal and channel design for NR-U	Samsu	available	2018-08-09 05:45:16	2018-08-11 02:03:35
R1-1808768	Channel access procedure for NR-U	Samsu	available	2018-08-09 05:45:16	2018-08-11 02:03:35
R1-1808769	Initial access and mobility procedure for NR-U	Samsu	available	2018-08-09 05:45:16	2018-08-11 02:03:35
R1-1808770	HARQ enhancements for NR-U	Samsu	available	2018-08-09 05:45:16	2018-08-11 02:03:35
R1-1808771	Enhancements on configured grant for NR-U	Samsung	available	2018-08-09 05:45:16	2018-08-11 02:04:02
R1-1808772	Necessary Enhancements for NR IAB	Samsung	available	2018-08-09 05:45:16	2018-08-10 17:43:35
R1-1808773	Evaluation Methodology for NR IAB	Samsu	revised	2018-08-09 05:45:16	2018-08-11 00:32:34
R1-1808774	CLI Management in NR IAB	Samsu	available	2018-08-09 05:45:16	2018-08-10 17:43:35
R1-1808775	Discussion on unicast, groupcast and broadcast for NR V2X	Samsung	noted	2018-08-09 05:45:16	2018-08-11 01:15:23
R1-1808776	Discussion on physical layer structures and procedures for NR V2X	Samsung	available	2018-08-09 05:45:16	2018-08-11 01:15:23
R1-1808777	Discussion on Synchronization mechanisms for	Samsu	available	2018-08-09 05:45:16	2018-08-10 09:28:02
R1-1808778	Discussion on resource allocation mechanisms	Samsu	available	2018-08-09 05:45:16	2018-08-11 02:59:54
R1-1808779	Discussion on AGC settling issue for NR sidelink	Samsu	available	2018-08-09 05:45:16	2018-08-10 22:01:06
R1-1808780	Discussion on Uu enhancements for advanced V2X use cases	Samsung	available	2018-08-09 05:45:16	2018-08-10 22:01:06
R1-1808781	Discussion on Enhancements of LTE Uu and NR Uu to control NR sidelink	Samsung	available	2018-08-09 05:45:16	2018-08-11 01:15:23
R1-1808782	Discussion on Enhancements of NR Uu to control LTE sidelink	Samsung	available	2018-08-09 05:45:16	2018-08-11 01:15:22
R1-1808783	Discussion on QoS management for NR V2X	Samsu	available	2018-08-09 05:45:16	2018-08-10 22:01:06
R1-1808784	Discussion on Coexistence between LTE and NR	Samsu	available	2018-08-09 05:45:16	2018-08-10 22:01:06
R1-1808785	Mechanisms for improving network robustness	Samsung	available	2018-08-09 05:45:16	2018-08-11 01:15:23
R1-1808786	Mechaisms for identifying strong gNB interferers	Samsung	available	2018-08-09 05:45:16	2018-08-11 01:15:23
R1-1808787	Layer 1 enhancement for URLLC	Samsu	noted	2018-08-09 05:45:16	2018-08-11 01:01:11

R1-1808788	Uplink inter UE multiplexing/prioritization for enhanced URLLC	Samsung	available	2018-08-09 05:45:16	2018-08-10 06:50:46
R1-1808789	Potential enhancement for UL grant-free	Samsu	available	2018-08-09 05:45:16	2018-08-11 04:07:38
R1-1808790	Evaluation methodology for IMT-2020 self-	Samsu	available	2018-08-09 05:45:16	2018-08-10 22:01:06
R1-1808791	Evaluation results of peak spectral efficiency and peak data rate for IMT-2020 submission	Samsung	available	2018-08-09 05:45:16	2018-08-10 22:01:06
R1-1808792	Evaluation results of Indoor Hotspot-eMBB for IMT-2020 self-evaluation	Samsung	available	2018-08-09 05:45:16	2018-08-10 22:01:06
R1-1808793	Evaluation results of Dense Urban-eMBB for IMT-2020 self-evaluation	Samsung	available	2018-08-09 05:45:16	2018-08-10 06:46:10
R1-1808794	Evaluation results of Rural-eMBB for IMT-2020	Samsu	available	2018-08-09 05:45:16	2018-08-10 22:01:06
R1-1808795	Evaluation results of mobility for IMT-2020	Samsu	available	2018-08-09 05:45:16	2018-08-10 22:01:07
R1-1808796	Remaining issues on PDCCH	Spreadtrum	available	2018-08-09 05:49:44	2018-08-10 11:41:09
R1-1808797	Discussion on UL inter UE Tx prioritization/multiplexing	Spreadtrum	available	2018-08-09 05:49:44	2018-08-10 11:41:09
R1-1808798	Discussion on UL Signals and Channels in NR-U	Spreadtrum	available	2018-08-09 05:49:44	2018-08-10 11:41:10
R1-1808799	Remaining issues on PRB bundling for DL	Spreadtrum	available	2018-08-09 05:49:44	2018-08-10 11:41:10
R1-1808800	Remaining issues on CSI acquisition	Spreadtrum	available	2018-08-09 05:49:44	2018-08-10 11:41:10
R1-1808801	Remaining issues on Reference signals	Spreadtrum	available	2018-08-09 05:49:44	2018-08-10 11:41:10
R1-1808802	Remaining issues on UCI multiplexing	Spreadtrum	available	2018-08-09 05:49:44	2018-08-10 11:41:09
R1-1808803	Remaining issues on PDSCH rate matching	Spreadtrum	available	2018-08-09 05:49:44	2018-08-10 11:50:52
R1-1808804	Remaining issues on Physical random access channel and procedure	Spreadtrum	available	2018-08-09 05:49:44	2018-08-10 11:41:09
R1-1808805	Remaining issues on bandwidth parts and carrier aggregation	Spreadtrum	available	2018-08-09 05:49:44	2018-08-10 11:41:09
R1-1808806	Consideration on autonomous UL transmission in NR-U operation	Spreadtrum	available	2018-08-09 05:49:44	2018-08-10 11:41:09
R1-1808807	Discussion on SS_PBCH block in NR-U operation	Spreadtrum	available	2018-08-09 05:49:44	2018-08-10 11:41:09
R1-1808808	Remaining issues on DL/UL data scheduling and HARQ procedure	Spreadtrum	available	2018-08-09 05:49:44	2018-08-10 11:41:09
R1-1808809	Consideration on enhanced UL grant-free transmissions	Spreadtrum	available	2018-08-09 05:49:44	2018-08-10 11:41:09
R1-1808810	Consideration on URLLC physical layer enhancement	Spreadtrum	available	2018-08-09 05:49:44	2018-08-10 11:41:09
R1-1808811	Consideration on HARQ enhancements in NR-U	Spreadtrum	available	2018-08-09 05:49:44	2018-08-10 11:41:09
R1-1808812	Remaining issues about PUCCH	ETRI	available	2018-08-09 06:08:52	2018-08-10 22:13:18
R1-1808813	Sidelink Design for NR V2X	ETRI	revised	2018-08-09 06:08:52	2018-08-10 22:13:18
R1-1808814	Discussion on NR V2X sidelink synchronization	ETRI	available	2018-08-09 06:08:52	2018-08-10 22:13:18
R1-1808815	Discussion on PDCCH enhancements for	ETRI	available	2018-08-09 06:08:52	2018-08-10 22:13:18
R1-1808816	Simulation Methodology for NR-U operation	Nokia, Nokia	available	2018-08-09 07:46:54	2018-08-10 19:30:51
R1-1808817	Frame structure for NR-U operation	Nokia, Nokia	available	2018-08-09 07:48:18	2018-08-10 19:30:51
R1-1808818	On uplink signal and channel structures for NR-U	Nokia, Nokia	available	2018-08-09 07:49:35	2018-08-10 19:30:51
R1-1808819	Channel access and co-existence for NR-U operation	Nokia, Nokia	available	2018-08-09 07:50:43	2018-08-10 19:30:51
R1-1808820	HARQ Operation in NR-Unlicensed	Nokia, Nokia	available	2018-08-09 07:51:54	2018-08-10 19:30:51
R1-1808821	On support of UL transmission with configured grants in NR-U	Nokia, Nokia	available	2018-08-09 07:54:13	2018-08-10 19:30:51
R1-1808822	On mechanism for improving network robustness in the presence of remote interference	Ericsson	available	2018-08-09 07:56:35	2018-08-10 15:11:15
R1-1808823	On mechanism for identifying strong gNB interferers	Ericsson	noted	2018-08-09 07:56:35	2018-08-10 15:11:15

R1-1808824	Evaluation methodology and assumptions for RIM reference signal evaluations	Ericsson	available	2018-08-09 07:56:35	2018-08-10 15:11:15
R1-1808825	On Wideband Operation for NR-U	Nokia, Nokia	available	2018-08-09 07:59:39	2018-08-10 19:30:51
R1-1808826	On Maximum TX Power for UL Interlace Structures	Nokia, Nokia	available	2018-08-09 08:00:59	2018-08-10 19:30:51
R1-1808827	On NR URLLC L1 enhancements	Panasonic	available	2018-08-09 08:15:19	2018-08-10 07:33:14
R1-1808828	On BWP hopping for repetitions and retransmission in NR URLLC	Panasonic	available	2018-08-09 08:16:52	2018-08-10 07:33:14
R1-1808829	Discussion on ssb-PositionsInBurst mismatch in SIB1 and ServingcellConfigCommon	CMCC	available	2018-08-09 08:34:04	2018-08-11 02:11:10
R1-1808830	Discussion on remaining issues for beam	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808831	Discussion on remaining issues on SRS	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808832	Discussion on beam failure recovery	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808833	Discussion on remaining issues for PDCCH and search space	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808834	Discussion on NoMA transmitter schemes	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808835	Discussion on NoMA related procedures	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808836	Discussion on enhancements to support NR Backhaul links	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808837	Discussion on support of V2X unicast transmission	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808838	Discussion on consideration for V2X resource	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808839	Discussion on NR Uu control LTE sidelink	CMCC	noted	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808840	Work plan for Rel-16 SI on NR RIM	CMCC	noted	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808841	Discussion on framework for RIM	CMCC	noted	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808842	Discussion on RS design for RIM	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808843	Discussion on evaluation assumption for RIM	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808844	Discussion on out-of-order scheduling and HARQ	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808845	Discussion on UL inter UE Tx	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808846	Discussion on remaining issues of new RNTI for	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808847	Initial evaluation results for downlink eMBB spectrum efficiency	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808848	Initial system evaluation results for mobility in	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808849	Initial system evaluation results for reliability in URLLC scenario	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808850	Initial evaluation results for uplink eMBB	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808851	Initial link-level self evaluation results for reliability in URLLC scenario	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808852	Initial link-level self evaluation results for mobility in eMBB scenario	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808853	Discussion on scenarios and enhancements for NR positioning	CMCC	available	2018-08-09 08:34:05	2018-08-11 02:11:10
R1-1808854	PDCCH enhancements for URLLC	China Telecom	available	2018-08-09 08:35:19	2018-08-10 23:54:21
R1-1808855	Initial results of Dense Urban-eMBB for IMT-2020 self-evaluation	China Telecom	available	2018-08-09 08:35:19	2018-08-10 23:54:21
R1-1808856	Initial results of Rural-eMBB for IMT-2020 self-evaluation	China Telecom	available	2018-08-09 08:35:19	2018-08-10 23:54:21
R1-1808857	Updated results of Indoor Hotspot-eMBB for IMT-2020 self-evaluation	China Telecom	available	2018-08-09 08:35:19	2018-08-10 23:54:21
R1-1808858	Link level performance for LDPC coding with BP decoder	China Telecom	available	2018-08-09 08:35:19	2018-08-10 23:54:21
R1-1808859	LS on fallback interpretation of UE FeatureSetDown(Up)LinkPerCC capability fields	RAN2, Intel	treated	2018-08-09 08:43:57	2018-08-09 08:58:01
R1-1808860	LS on ssb-PositionsInBurst mismatch in SIB1 and ServingcellConfigCommon	RAN2, vivo	treated	2018-08-09 08:43:57	2018-08-09 08:58:01
R1-1808861	Evaluation results and observations of DL spectral efficiency for IMT2020 self evaluation	MediaTek Inc.	available	2018-08-09 08:49:38	2018-08-11 05:31:02
R1-1808862	Evaluation results and observations of UL spectral efficiency for IMT2020 self evaluation	MediaTek Inc.	available	2018-08-09 08:49:38	2018-08-11 05:31:02

R1-1808863	IMT-2020 Mobility Evaluation Results	Nokia, Nokia	available	2018-08-09 08:59:30	2018-08-11 01:04:34
R1-1808864	Spectral Efficiency Results for the IMT-2020 Self-Evaluation	Nokia, Nokia	available	2018-08-09 08:59:30	2018-08-11 01:04:34
R1-1808865	IMT-2020 Reliability Evaluation Results (URLLC)	Nokia, Nokia	available	2018-08-09 08:59:30	2018-08-11 01:04:34
R1-1808866	IMT-2020 Connection Density Evaluation Results (mMTC)	Nokia, Nokia	available	2018-08-09 08:59:30	2018-08-11 01:04:34
R1-1808867	IMT-2020 Link Budgets	Nokia, Nokia	available	2018-08-09 08:59:30	2018-08-10 19:08:00
R1-1808868	Discussion on Inter UE UL multiplexing	III	available	2018-08-09 09:06:24	2018-08-10 08:48:45
R1-1808869	Maintenance for physical downlink control channel	Panasonic	available	2018-08-09 09:31:02	2018-08-10 11:38:01
R1-1808870	Maintenance for DL/UL data scheduling and HARQ procedure	Panasonic	available	2018-08-09 09:33:24	2018-08-10 11:38:01
R1-1808871	TP on rate matching Subclause 5.1.4 in TS38.214	Panaso	available	2018-08-09 09:34:57	2018-08-10 11:38:01
R1-1808872	Maintenance for NR-LTE co-existence	Panaso	noted	2018-08-09 09:36:57	2018-08-10 11:38:01
R1-1808873	Text proposal to support 64-QAM in eV2X	Guangdong	noted	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808874	Text proposal to support maximum time reduction in eV2X	Guangdong OPPO	noted	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808875	Discussion of sidelink unicast, groupcast and broadcast for NR-V2X	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808876	Discussion of physical layer structure and procedure for NR-V2X	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808877	Discussion of synchronization mechanism for NR-V2X	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808878	Enhancement of LTE Uu and NR Uu to control NR sidelink	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808879	Discussion of backhaul link enhancement for IAB	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808880	Text proposals for multi-antenna scheme	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808881	Text proposals for RS and QCL	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808882	Text proposals for uplink power control	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808883	Initial evaluation results for eMBB spectral efficiency for IMT-2020	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808884	Discussion on the reply to “LS on termination of contention-free BFR”	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808885	Text proposals for CSI acquisition/reporting	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808886	Text proposals for beam management	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808887	Text proposal for DL/UL data scheduling and HARQ procedure	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808888	Resource allocation enhancements for NR URLLC	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808889	On eMBB and URLLC data differentiation	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808890	Maintenance for Downlink signals and channels	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808891	Maintenance for Physical random access channel and procedure	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808892	Remaining issues on NR RRM and RLM	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808893	Remaining issues for UL control	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808894	Text proposals for HARQ-ACK transmission	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808895	HARQ enhancements for NR-U	Guangdong	available	2018-08-09 10:15:57	2018-08-10 11:00:30
R1-1808896	Frame structure for NR-U	Guangdong	available	2018-08-09 10:15:58	2018-08-10 11:00:30

R1-1808897	DL design for NR-U	Guangdong	available	2018-08-09 10:15:58	2018-08-11 00:20:56
R1-1808898	UL design for NR-U	Guangdong	available	2018-08-09 10:15:58	2018-08-11 00:20:56
R1-1808899	Channel access mechanisms on NR-U	Guangdong	available	2018-08-09 10:15:58	2018-08-11 00:20:56
R1-1808900	Initial access procedure on NR-U	Guangdong	available	2018-08-09 10:15:58	2018-08-11 00:20:56
R1-1808901	Configured grant transmission on NR-U	Guangdong	available	2018-08-09 10:15:58	2018-08-11 00:20:56
R1-1808902	Discussion on synchronization carrier configuration	Guangdong	noted	2018-08-09 10:15:58	2018-08-10 11:00:30
R1-1808903	Discussion on necessary L1 support for mode 3 sensing and reporting	Guangdong	noted	2018-08-09 10:15:58	2018-08-10 11:00:30
R1-1808904	Utilising sidelink in IAB	Guangdong	available	2018-08-09 10:15:58	2018-08-10 11:00:30
R1-1808905	Discussion on V2X use cases and priority of work in RAN1	Guangdong	available	2018-08-09 10:15:58	2018-08-10 11:00:30
R1-1808906	Discussion on resource allocation in NR-V2X	Guangdong	available	2018-08-09 10:15:58	2018-08-10 11:00:30
R1-1808907	Enhancement of NR Uu to control LTE sidelink	Guangdong	noted	2018-08-09 10:15:58	2018-08-10 11:00:30
R1-1808908	Layer 1 enhancement for URLLC	Guangdong	available	2018-08-09 10:15:58	2018-08-10 11:00:30
R1-1808909	Consideration on UL inter UE Tx prioritization and multiplexing	Guangdong	available	2018-08-09 10:15:58	2018-08-10 11:00:30
R1-1808910	Grant free transmission enhancement	Guangdong	noted	2018-08-09 10:15:58	2018-08-10 11:00:30
R1-1808911	Consideration on UL intra UE Tx prioritization and multiplexing	Guangdong	available	2018-08-09 10:15:58	2018-08-10 11:00:30
R1-1808912	Further discussion on CFI configuration for LTE HRLLC	Guangdong	noted	2018-08-09 10:15:58	2018-08-10 11:00:30
R1-1808913	Ls on RRC parameter list for HRLLC	Guangdong	available	2018-08-09 10:15:58	2018-08-10 11:00:30
R1-1808914	List of physical layer related RRC parameters for LTE HRLLC	Guangdong	available	2018-08-09 10:15:58	2018-08-10 11:00:30
R1-1808915	Consideration on NoMA procedure	Guangdong	available	2018-08-09 10:15:58	2018-08-10 11:00:30
R1-1808916	Discussion on UL inter UE Tx multiplexing	ASUSTEK COMP	available	2018-08-09 10:39:07	2018-08-10 11:20:24
R1-1808917	On DL Signals and Channels for NR-U	Nokia, Nokia	available	2018-08-09 11:00:36	2018-08-10 15:55:52
R1-1808918	Discussion on IAB node discovery and measurement	Potevio	available	2018-08-09 11:39:06	2018-08-10 09:19:10
R1-1808919	Discussion on UL pre-emption for URLLC	Potevio	available	2018-08-09 11:39:06	2018-08-10 09:19:10
R1-1808920	Discussion on initial access for NR-U	Potevio	available	2018-08-09 11:39:06	2018-08-10 09:19:10
R1-1808921	Early UL Transmission for NB-IoT and HD-FDD eMTC	Sequans	available	2018-08-09 11:41:45	2018-08-09 11:44:20
R1-1808922	Remaining issues on downlink signals and channels	Huawei,	available	2018-08-09 11:43:58	2018-08-10 18:39:27
R1-1808923	Remaining issues on physical random access channel and procedure	Huawei,	available	2018-08-09 11:43:58	2018-08-10 18:39:27
R1-1808924	Remaining issues on mobility procedure	Huawei	available	2018-08-09 11:43:58	2018-08-10 18:39:27
R1-1808925	Correction on TA offset determination in	Huawei	available	2018-08-09 11:43:58	2018-08-10 18:39:27
R1-1808926	Simulation assumptions and preliminary results for NR unlicensed bands	Huawei,	available	2018-08-09 11:43:58	2018-08-10 18:39:27
R1-1808927	Design considerations for remote interference management	Huawei,	available	2018-08-09 11:43:59	2018-08-10 17:01:50
R1-1808928	On the number of CRC bits for PUCCH resource determination	Huawei,	withdrawn	2018-08-09 11:43:59	
R1-1808929	On RMSI PRB grid	Huawei	available	2018-08-09 11:43:59	2018-08-10 17:01:50
R1-1808930	Remaining issues on EN-DC, NE-DC, and SUL	Huawei	noted	2018-08-09 11:43:59	2018-08-11 05:29:24
R1-1808931	Summary of offline discussion on IMT-2020 self evaluation for peak spectral efficiency and peak	Huawei	available	2018-08-09 11:43:59	2018-08-10 18:50:05

R1-1808932	Summary of offline discussion on IMT-2020 self evaluation for network energy efficiency	Huawei	available	2018-08-09 11:43:59	2018-08-10 18:50:05
R1-1808933	Summary of offline discussion on IMT-2020 self evaluation for UE energy efficiency	Huawei	available	2018-08-09 11:43:59	2018-08-10 18:50:05
R1-1808934	Summary of offline discussion on IMT-2020 self evaluation for control plane latency	Huawei	available	2018-08-09 11:43:59	2018-08-10 18:50:05
R1-1808935	Summary of offline discussion on IMT-2020 self evaluation for user plane latency	Huawei	available	2018-08-09 11:43:59	2018-08-10 18:50:05
R1-1808936	Summary of offline discussion on IMT-2020 self evaluation for link budget	Huawei	available	2018-08-09 11:43:59	2018-08-10 18:50:05
R1-1808937	Sidelink control channel design of NR V2X	Huawei	available	2018-08-09 11:43:59	2018-08-10 18:39:27
R1-1808938	Sidelink data channel design of NR V2X	Huawei	available	2018-08-09 11:43:59	2018-08-10 18:39:27
R1-1808939	UE autonomous sidelink allocation for NR V2X	Huawei	available	2018-08-09 11:43:59	2018-08-10 18:39:27
R1-1808940	Preliminary system level evaluations on sidelink	Huawei	available	2018-08-09 11:43:59	2018-08-10 18:39:27
R1-1808941	Discussion on co-existence for NR V2X and LTE	Huawei	noted	2018-08-09 11:43:59	2018-08-10 18:39:27
R1-1808942	TR for Study on NR V2X	Huawei	endorsed	2018-08-09 11:43:59	2018-08-10 18:39:27
R1-1808943	Work plan for Rel-16 SI on physical layer enhancements for URLLC	Huawei,	noted	2018-08-09 11:43:59	2018-08-11 06:20:00
R1-1808944	Corrections on configured grant related	Huawei	available	2018-08-09 11:43:59	2018-08-11 00:22:28
R1-1808945	Correction on interrupted transmission indication	Huawei	available	2018-08-09 11:43:59	2018-08-11 00:22:28
R1-1808946	Preliminary link level evaluations on sidelink for	Huawei	available	2018-08-09 11:43:59	2018-08-10 18:39:27
R1-1808947	Draft reply LS on Active DL BWPs overlapping/non-overlapping with Initial DL BWP	Huawei,	available	2018-08-09 11:43:59	2018-08-10 17:01:50
R1-1808948	New Coding Scheme for NOMA with Traffic Control	Sequans	revised	2018-08-09 11:45:33	2018-08-09 11:46:52
R1-1808949	Enhancements on CSI reporting and codebook	Huawei	available	2018-08-09 12:18:16	2018-08-11 02:27:10
R1-1808950	Enhancements on Type II CSI for more than 2	Huawei	available	2018-08-09 12:18:17	2018-08-11 02:27:10
R1-1808951	On Initial Access and Mobility for NR-U	Nokia, Nokia	available	2018-08-09 12:19:58	2018-08-10 15:49:49
R1-1808952	On remaining details of DL control	Nokia, Nokia	available	2018-08-09 13:00:15	2018-08-10 15:55:52
R1-1808953	On remaining details of BWPs and CA	Nokia, Nokia	available	2018-08-09 13:00:15	2018-08-10 15:55:52
R1-1808954	On remaining details of rate-matching in NR	Nokia, Nokia	available	2018-08-09 13:00:15	2018-08-10 15:55:52
R1-1808955	Discussion on general symbol-to-resource mapping for NR-NOMA	Fraunhofer	available	2018-08-09 13:28:07	2018-08-09 13:32:25
R1-1808956	A comparison of polar and LDPC codes for	Polaran	revised	2018-08-09 14:14:42	2018-08-09 15:06:51
R1-1808957	Virtual Cell ID for SRS Capacity Enhancements	MediaT	available	2018-08-09 14:41:28	2018-08-10 13:31:13
R1-1808958	Coexistence of NB-IoT with NR	MediaT	available	2018-08-09 14:41:28	2018-08-10 13:31:42
R1-1808959	UE-Group WUS in NB-IoT	MediaT	available	2018-08-09 14:41:28	2018-08-10 13:31:42
R1-1808960	Early Data Transmission on Preconfigured UL resources in NB-IoT	MediaTek Inc.	available	2018-08-09 14:41:28	2018-08-10 13:31:42
R1-1808961	Quality report in Msg3 on non-anchor carrier	MediaTek Inc.	available	2018-08-09 14:41:28	2018-08-10 13:31:42
R1-1808962	NRS support on non-anchor carrier	MediaTek Inc.	available	2018-08-09 14:41:28	2018-08-10 13:31:42
R1-1808963	Draft Reply LS on RA preambles mapping to SSBs	Nokia, Nokia	available	2018-08-09 14:46:27	2018-08-10 22:52:57
R1-1808964	Draft Reply LS Discussion on ssb-PositionsInBurst mismatch in SIB1 and	Nokia, Nokia	revised	2018-08-09 14:46:27	2018-08-10 22:52:57
R1-1808965	Remaining details on NR Random Access	Nokia, Nokia	available	2018-08-09 14:46:27	2018-08-10 22:52:57
R1-1808966	Remaining details on NR Physical UL Control Channel	Nokia, Nokia	available	2018-08-09 14:46:27	2018-08-10 22:52:57
R1-1808967	URLLC aspects for overlapped UL transmissions of single UE	Nokia, Nokia	available	2018-08-09 14:46:27	2018-08-10 22:52:57
R1-1808968	Considerations on NOMA Transmitter	Nokia, Nokia	available	2018-08-09 14:46:27	2018-08-10 22:52:57
R1-1808969	Receiver considerations for UL NOMA	Nokia, Nokia	noted	2018-08-09 14:46:27	2018-08-10 22:52:57
R1-1808970	Procedures to be considered for NOMA operation	Nokia, Nokia	available	2018-08-09 14:46:27	2018-08-10 22:52:57
R1-1808971	Evaluations for NOCA	Nokia, Nokia	available	2018-08-09 14:46:27	2018-08-10 22:52:57

R1-1808972	Initial Link Level Simulation Results of IDMA	Nokia, Nokia	available	2018-08-09 14:46:27	2018-08-10 22:52:57
R1-1808973	Enhancements for eMBB/URLLC multiplexing in DL	Sequans	available	2018-08-09 15:29:29	2018-08-10 08:07:00
R1-1808974	On NR UE feature list	Ericsson	available	2018-08-09 16:33:46	2018-08-11 03:34:43
R1-1808975	TX schemes for NoMA	Ericsson	available	2018-08-09 16:33:46	2018-08-11 05:35:03
R1-1808976	Receiver design for NOMA	Ericsson	available	2018-08-09 16:33:46	2018-08-11 04:41:56
R1-1808977	Procedures for NoMA	Ericsson	available	2018-08-09 16:33:46	2018-08-11 04:41:56
R1-1808978	Evaluation methodology and metrics for NoMA	Ericsson	available	2018-08-09 16:33:46	2018-08-11 06:20:33
R1-1808979	DMRS design for NoMA	Ericsson	available	2018-08-09 16:33:46	2018-08-11 04:41:56
R1-1808980	Impairments model for link and system	Ericsson	available	2018-08-09 16:33:46	2018-08-11 04:51:41
R1-1808981	Link level evaluations for MU-MIMO	Ericsson	available	2018-08-09 16:33:46	2018-08-11 04:41:56
R1-1808982	Observations on NOMA traffic models	Ericsson	available	2018-08-09 16:33:46	2018-08-11 04:41:56
R1-1808983	MU-MIMO operation in NR with configured	Ericsson	available	2018-08-09 16:33:46	2018-08-11 04:41:56
R1-1808984	Maintenance issues for Resynchronization signal for Rel-15 LTE-MTC	Ericsson	available	2018-08-09 16:42:09	2018-08-10 21:24:55
R1-1808985	Maintenance issues for Early data transmission for Rel-15 LTE-MTC	Ericsson	noted	2018-08-09 16:42:09	2018-08-10 21:24:55
R1-1808986	Maintenance issues for Wake-up signal for Rel-	Ericsson	available	2018-08-09 16:42:09	2018-08-10 21:24:55
R1-1808987	Maintenance issues for PUSCH sub-PRB allocation for Rel-15 LTE-MTC	Ericsson	available	2018-08-09 16:42:09	2018-08-10 21:24:55
R1-1808988	Maintenance issues for Flexible PDSCH/PUSCH starting PRB for Rel-15 LTE-MTC	Ericsson	available	2018-08-09 16:42:09	2018-08-10 21:24:55
R1-1808989	Maintenance issues for Wake-up signal for Rel-15 NB-IoT	Ericsson	available	2018-08-09 16:42:09	2018-08-10 21:24:06
R1-1808990	Maintenance issues for TDD UL aspects for Rel-	Ericsson	available	2018-08-09 16:42:09	2018-08-10 21:24:06
R1-1808991	Maintenance issues for TDD DL/UL common aspects for Rel-15 NB-IoT	Ericsson	available	2018-08-09 16:42:09	2018-08-10 21:24:06
R1-1808992	draft CR on NPRS enhancement	Ericsson	noted	2018-08-09 16:49:28	2018-08-10 19:06:28
R1-1808993	HARQ reference configuration for SRS carrier switching	Qualcomm	revised	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1808994	Transmission of NPSS/NSSS/NPBCH	Qualcomm	noted	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1808995	PRG for eMTC	Qualcomm	revised	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1808996	Correction for HARQ-ACK delay in eMTC	Qualcomm	revised	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1808997	Rate matching for A-CSI-RS	Qualcomm	noted	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1808998	Capability for FeMBMS	Qualcomm	revised	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1808999	SRS transmission in UpPTS for special subframe configuration 10	Qualcomm	revised	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809000	Remaining details for enhanced NPRS	Qualcomm	noted	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809001	Discussion on CA capability for SRS carrier switching	Qualcomm	revised	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809002	Discussion on closed loop PUSCH antenna selection	Qualcomm	revised	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809003	Correction for interference randomization for NB-IoT	Qualcomm	revised	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809004	Correction on DCI for HARQ-ACK bundling	Qualcomm	revised	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809005	Correction on advanced CSI codebook	Qualcomm	revised	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809006	HARQ-ACK payload size determination for crs-less special subframe configuration 10	Qualcomm	revised	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809007	Aspects related to UL Data Channel	Qualcomm	noted	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809008	Maintenance for RSS	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809009	Maintenance for wake-up signal	Qualcomm	noted	2018-08-09 17:23:40	2018-08-11 02:30:35

R1-1809010	Maintenance for PUSCH subPRB allocation	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809011	Maintenance for flexible starting PRB	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809012	Maintenance for wake-up signal	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809013	Maintance for NPRACH range enhancements	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809014	Maintenance for DL aspects of TDD	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809015	Maintenance for UL aspects of TDD	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809016	Maintenance for Common aspects of TDD	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809017	Views on Rel-15 UE features	Qualcomm	noted	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809018	Correction of RRC parameter name for 1024QAM rate matching	Qualcomm	revised	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809019	Applicability of 1024QAM to SPS C-RNTI	Qualcomm	revised	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809020	Removal of R_CSI form 1024QAM CSI table	Qualcomm	revised	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809021	Remaining details for modulation enhancements	Qualcomm	revised	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809022	UE-group wake-up signal	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809023	Support for transmission in preconfigured UL resources	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809024	Scheduling of multiple DL/UL transport blocks	Qualcomm	noted	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809025	Coexistence of LTE-MTC with NR	Qualcomm	noted	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809026	Support of Quality report in msg3	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809027	Usage of CRS for MPDCCH	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809028	CE Mode A and B improvements for non-BL Ues	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809029	Use of control region for eMTC Ues	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809030	Use of RSS for RRM measurements	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809031	UE-group wake-up signal	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809032	Support for transmission in preconfigured UL resources	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809033	Scheduling of multiple DL/UL transport blocks	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809034	Coexistence of NB-IoT with NR	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809035	Support of quality report in msg3 for non-anchor	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809036	Presence of NRS on a non-anchor carrier for paging	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809037	Additional SRS symbols	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809038	Virtual cell ID for SRS	Qualcomm	available	2018-08-09 17:23:40	2018-08-11 02:30:35
R1-1809039	Discussion on beam management for NR-V2X sidelink in millimeter-wave bands	TOYOTA	available	2018-08-09 17:33:38	2018-08-11 03:34:46
R1-1809040	Latency Evaluation of Rel-15 URLLC	Ericsso	available	2018-08-09 22:00:05	2018-08-11 04:09:01
R1-1809041	Reliability Evaluation of Rel-15 URLLC	Ericsso	available	2018-08-09 22:00:05	2018-08-11 04:09:01
R1-1809042	Maintenance of Rel-15 URLLC	Ericsso	available	2018-08-09 22:00:05	2018-08-11 04:09:01
R1-1809043	Overview of NR Sidelink Design	Nokia, Nokia	available	2018-08-09 22:27:59	2018-08-11 05:42:51

R1-1809044	Initial View on Support of unicast, groupcast and broadcast for NR Sidelink	Nokia, Nokia	available	2018-08-09 22:27:59	2018-08-11 05:42:51
R1-1809045	Initial View on NR V2X Sidelink Physical Layer Structures and Procedures	Nokia, Nokia	available	2018-08-09 22:27:59	2018-08-11 05:42:51
R1-1809046	Initial View on NR V2X Sidelink Synchronization	Nokia, Nokia	noted	2018-08-09 22:27:59	2018-08-11 05:42:51
R1-1809047	Initial View on NR V2X Sidelink Resource Allocation	Nokia, Nokia	available	2018-08-09 22:27:59	2018-08-11 05:42:51
R1-1809048	Required Clarifications on Simulation Assumptions	Nokia, Nokia	available	2018-08-09 22:27:59	2018-08-11 05:42:51
R1-1809049	Initial View on Enhancements of LTE Uu and NR Uu to control NR sidelink	Nokia, Nokia	noted	2018-08-09 22:27:59	2018-08-11 05:42:51
R1-1809050	Initial View on NR V2X QoS Management	Nokia, Nokia	available	2018-08-09 22:27:59	2018-08-11 05:42:51
R1-1809051	38.214 Text Proposal to align PUSCH-AllocationList and PDSCH-AllocationList to ASN.1	SPRINT Corporation	available	2018-08-09 22:31:33	2018-08-09 22:35:50
R1-1809052	Text Proposal on MIMO Codeword Mapping	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809053	Text Proposal on Type 1 Codebook	AT&T	withdrawn	2018-08-09 23:00:04	
R1-1809054	Text Proposal on Reference Signal	AT&T	withdrawn	2018-08-09 23:00:04	
R1-1809055	Overview of Physical Layer enhancements for	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809056	On Transmitter Side signal Processing for NOMA	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809057	Receiver techniques for NOMA	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809058	On NOMA Procedures	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809059	Link Level Performance for NOMA	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809060	Remaining details on PDSCH time domain resource allocation	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809061	Frame structure for NR-U operation	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809062	NR-U design for DL signals and channels	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809063	Enhancements for the NR-U channel access	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809064	NR-U design for initial access and mobility	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809065	HARQ enhancements for NR-U	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809066	V2X sidelink design in supporting unicast, groupcast and broadcast	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809067	V2X sidelink PHY structure and procedures	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809068	Sidelink based synchronization mechanism	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809069	Resource allocation mechanism	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809070	Enhancements of LTE Uu and NR Uu to control NR sidelink	AT&T	withdrawn	2018-08-09 23:00:04	
R1-1809071	Enhancements of NR Uu to control LTE sidelink	AT&T	noted	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809072	Enhancements to support NR backhaul links	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809073	Evaluation methodology and simulation results for	AT&T	noted	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809074	Power control for Option 2 DC	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809075	Power control for Option 4 DC	AT&T	noted	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809076	Coexistence of Different V2X Services	AT&T	available	2018-08-09 23:00:04	2018-08-11 02:28:22
R1-1809077	Remaining issues on beam management	InterDigital, Inc.	available	2018-08-09 23:22:51	2018-08-11 04:15:58
R1-1809078	Discussion on Transmit Timing Offset for NOMA Evaluation	InterDigital, Inc.	revised	2018-08-09 23:24:16	2018-08-11 04:15:58
R1-1809079	Complexity Analysis of IDMA NOMA Reception	InterDigital, Inc.	available	2018-08-09 23:26:03	2018-08-11 04:15:58
R1-1809080	On NOMA Related Procedures in NR	InterDigital, Inc.	available	2018-08-09 23:26:48	2018-08-11 04:25:58
R1-1809081	System Level Simulation Methodology in mMTC Scenario	InterDigital, Inc.	available	2018-08-09 23:27:33	2018-08-11 04:16:32
R1-1809082	On the impact of timing offset in NOMA Evaluation	InterDigital, Inc.	available	2018-08-09 23:28:21	2018-08-11 04:16:32
R1-1809083	Aspects of IDMA NOMA Transmitter	InterDigital, Inc.	available	2018-08-09 23:28:58	2018-08-11 04:16:32

R1-1809084	Link Level Simulation Results on IDMA OFDM/DFT-s-OFDM	InterDigital, Inc.	available	2018-08-09 23:29:46	2018-08-11 04:16:32
R1-1809085	Simulation and calibration for NR-U outdoor sub-7GHz	InterDigital, Inc.	available	2018-08-09 23:30:31	2018-08-11 04:16:32
R1-1809086	On NR-U frame structure	InterDigital, Inc.	available	2018-08-09 23:31:22	2018-08-11 04:16:32
R1-1809087	On downlink signals and channels for NR-U	InterDigital, Inc.	available	2018-08-09 23:32:03	2018-08-11 04:16:32
R1-1809088	On uplink signals and channels for NR-U	InterDigital, Inc.	available	2018-08-09 23:32:43	2018-08-11 04:16:32
R1-1809089	Channel access procedure and coexistence in NR-U	InterDigital, Inc.	available	2018-08-09 23:33:27	2018-08-11 04:16:32
R1-1809090	On Initial Access and Mobility for NR-U	InterDigital, Inc.	available	2018-08-09 23:34:10	2018-08-11 04:25:58
R1-1809091	On HARQ enhancements for NR-U	InterDigital, Inc.	available	2018-08-09 23:34:51	2018-08-11 04:17:13
R1-1809092	Configured grant enhancements in NR-U	InterDigital, Inc.	available	2018-08-09 23:35:33	2018-08-11 04:17:13
R1-1809093	NR Sidelink Support of Unicast Groupcast and Broadcast	InterDigital, Inc.	available	2018-08-09 23:36:51	2018-08-11 04:17:13
R1-1809094	NR Sidelink Physical Layer Structures and Procedures	InterDigital, Inc.	available	2018-08-09 23:39:42	2018-08-11 04:17:13
R1-1809095	On V2X Synchronization in NR	InterDigital, Inc.	available	2018-08-09 23:40:19	2018-08-11 04:25:58
R1-1809096	Uu Interface Enhancement for NR Sidelink	InterDigital, Inc.	available	2018-08-09 23:41:20	2018-08-11 04:17:13
R1-1809097	NR Uu Interface Enhancement for LTE Sidelink	InterDigital, Inc.	available	2018-08-09 23:41:57	2018-08-11 04:17:13
R1-1809098	The Coexistence between NR V2X and LTE V2X	InterDigital, Inc.	available	2018-08-09 23:42:41	2018-08-11 04:17:13
R1-1809099	Views on potential physical layer enhancements for URLLC	InterDigital, Inc.	available	2018-08-09 23:43:27	2018-08-11 04:17:13
R1-1809100	Discussion on UL inter-UE multiplexing for URLLC	InterDigital, Inc.	available	2018-08-09 23:44:10	2018-08-11 04:17:13
R1-1809101	Views on enhanced UL grant-free transmissions for URLLC	InterDigital, Inc.	available	2018-08-09 23:44:50	2018-08-11 04:17:13
R1-1809102	MPR and A-MPR considerations in EN-DC dynamic power sharing	SPRINT Corpor	noted	2018-08-10 00:46:43	2018-08-13 07:23:06
R1-1809103	Discussion on physical layer enhancements for IAB	ZTE, Sanechi	available	2018-08-10 01:02:02	2018-08-11 03:33:31
R1-1809104	Discussion on RV determination for sub-PRB allocation	Sharp	available	2018-08-10 01:32:42	2018-08-11 01:47:11
R1-1809105	Remaining issues on OFDM baseband signal generation	Sharp	available	2018-08-10 01:32:42	2018-08-11 01:47:11
R1-1809106	Remaining issues on beam management	Sharp	available	2018-08-10 01:32:42	2018-08-11 01:47:11
R1-1809107	Remaining issues on SRS	Sharp	available	2018-08-10 01:32:42	2018-08-11 01:47:11
R1-1809108	Remaining issues on DCI format	Sharp	available	2018-08-10 01:32:42	2018-08-11 01:47:11
R1-1809109	Remaining issues on PUCCH	Sharp	revised	2018-08-10 01:32:42	2018-08-11 01:47:11
R1-1809110	Remaining issues on Msg3 PUSCH frequency resource allocation	Sharp	available	2018-08-10 01:32:42	2018-08-11 01:47:11
R1-1809111	Channel access procedures for NR unlicensed operation	Sharp	available	2018-08-10 01:32:42	2018-08-11 01:47:11
R1-1809112	PUCCH enhancements for URLLC HARQ-ACK feedback	Sharp	available	2018-08-10 01:32:42	2018-08-11 01:47:11
R1-1809113	Priority handling and multiplexing among PUSCHs with different latency and reliability	Sharp	available	2018-08-10 01:32:42	2018-08-11 01:47:11
R1-1809114	Reliability enhancements for UL configured grant	Sharp	available	2018-08-10 01:32:42	2018-08-11 01:47:11
R1-1809115	Initial evaluation results for IMT2020 self-evaluation Reliability	Sharp	revised	2018-08-10 01:32:42	2018-08-11 01:47:11
R1-1809116	Remaining issues on beam management	MTI	available	2018-08-10 01:45:01	2018-08-10 01:48:37

R1-1809117	Enhancements on multi-TRP/panel transmission	Huawei	available	2018-08-10 02:01:31	2018-08-11 02:27:10
R1-1809118	Discussion on multi-TRP/panel transmission for reliability and robustness in NR	Huawei,	available	2018-08-10 02:01:31	2018-08-11 02:27:10
R1-1809119	Beam management enhancements for latency and overhead reduction	Huawei,	available	2018-08-10 02:01:31	2018-08-11 02:27:10
R1-1809120	Discussion on BFR for Scell	Huawei	available	2018-08-10 02:01:31	2018-08-11 02:27:10
R1-1809121	Discussion on reciprocity based CSI acquisition to reduce CSI overhead	Huawei,	available	2018-08-10 02:01:31	2018-08-11 02:27:10
R1-1809122	Discussion on panel-based UL beam selection	Huawei	available	2018-08-10 02:01:31	2018-08-11 02:27:10
R1-1809123	Beam measurement and reporting using L1-	Huawei	available	2018-08-10 02:01:31	2018-08-11 02:27:10
R1-1809124	Draft reply LS on UE power class and UE capability on SRS carrier switch	Huawei	revised	2018-08-10 02:01:31	2018-08-11 02:27:10
R1-1809125	HARQ enhancement for URLLC	III	available	2018-08-10 02:08:06	2018-08-10 09:41:54
R1-1809126	Clarification on the cyclic repetition L of Early Data Transmission	NTT DOCO	available	2018-08-10 02:23:07	2018-08-10 02:52:43
R1-1809127	LTE UE features	NTT	revised	2018-08-10 02:23:07	2018-08-21 17:54:55
R1-1809128	UE-group wake-up signal for Rel.16 IoT	NTT	available	2018-08-10 02:23:07	2018-08-11 03:23:40
R1-1809129	UL transmission scheme in preconfigured resources	NTT DOCO	available	2018-08-10 02:23:07	2018-08-11 03:23:40
R1-1809130	DL transmission in LTE control channel region	NTT DOCO	available	2018-08-10 02:23:07	2018-08-11 03:23:40
R1-1809131	UE-group wake-up signal for Rel.16 IoT	NTT	available	2018-08-10 02:23:07	2018-08-11 03:23:40
R1-1809132	UL transmission scheme in preconfigured resources	NTT DOCO	available	2018-08-10 02:23:07	2018-08-11 03:23:40
R1-1809133	Draft reply LS on PDCCH common search space configurations	NTT DOCO	available	2018-08-10 02:23:07	2018-08-11 05:29:47
R1-1809134	Maintenance for NR initial access	NTT DOCO	available	2018-08-10 02:23:07	2018-08-11 01:31:52
R1-1809135	Maintenance for NR random access	NTT DOCO	available	2018-08-10 02:23:07	2018-08-10 10:35:55
R1-1809136	Maintenance for NR mobility procedure	NTT	available	2018-08-10 02:23:07	2018-08-11 01:31:52
R1-1809137	Maintenance for CSI acquisition	NTT	available	2018-08-10 02:23:07	2018-08-11 05:29:47
R1-1809138	Remaining issues on beam management	NTT	available	2018-08-10 02:23:07	2018-08-11 05:29:47
R1-1809139	Maintenance for Reference signals and QCL	NTT DOCO	available	2018-08-10 02:23:07	2018-08-11 05:29:47
R1-1809140	Simultaneous Tx/Rx of UL/DL physical channels and reference signals	NTT DOCO	available	2018-08-10 02:23:07	2018-08-11 05:29:47
R1-1809141	Maintenance for physical downlink control channel	NTT DOCO	available	2018-08-10 02:23:07	2018-08-11 05:29:47
R1-1809142	Maintenance for physical uplink control channel	NTT DOCO	available	2018-08-10 02:23:07	2018-08-11 05:29:47
R1-1809143	Maintenance for DL/UL data scheduling and HARQ procedure	NTT DOCO	available	2018-08-10 02:23:07	2018-08-11 05:29:47
R1-1809144	Maintenance for carrier aggregation and bandwidth parts	NTT DOCO	available	2018-08-10 02:23:07	2018-08-11 05:29:47
R1-1809145	Correction on EN-DC power sharing	NTT	available	2018-08-10 02:23:07	2018-08-10 07:05:46
R1-1809146	Maintenance for URLLC	NTT	available	2018-08-10 02:23:07	2018-08-11 05:29:47
R1-1809147	Remaining issues on NR UE features	NTT	available	2018-08-10 02:23:07	2018-08-11 05:05:41
R1-1809148	Transmitter design for uplink NOMA	NTT DOCO	noted	2018-08-10 02:23:07	2018-08-11 03:23:40
R1-1809149	Receiver for uplink NOMA	NTT	revised	2018-08-10 02:23:07	2018-08-11 03:23:40
R1-1809150	Extended DMRS design and NOMA related	NTT	available	2018-08-10 02:23:07	2018-08-11 03:23:40
R1-1809151	Link and system level simulation results and analysis of UL NOMA	NTT DOCO	available	2018-08-10 02:23:07	2018-08-11 03:23:40
R1-1809152	LLS evaluation results of UGMA	NTT	available	2018-08-10 02:23:07	2018-08-11 03:23:40
R1-1809153	UL Signals and Channels for NR-U operation	NTT	available	2018-08-10 02:23:07	2018-08-11 01:31:52
R1-1809154	Channel access procedures for NR-U operation	NTT	available	2018-08-10 02:23:07	2018-08-11 01:31:52
R1-1809155	Discussion on enhancements to support NR backhaul links	NTT DOCO	available	2018-08-10 02:23:07	2018-08-11 01:31:52
R1-1809156	Support of unicast, groupcast and broadcast	NTT DOCO	noted	2018-08-10 02:23:07	2018-08-10 07:05:46
R1-1809157	Physical layer structures and procedure(s)	NTT DOCO	available	2018-08-10 02:23:07	2018-08-10 07:05:46
R1-1809158	Synchronization mechanism	NTT	available	2018-08-10 02:23:07	2018-08-11 01:40:04
R1-1809159	Resource allocation mechanism	NTT	available	2018-08-10 02:23:07	2018-08-10 07:05:46

R1-1809160	Enhancements of LTE Uu and NR Uu to control NR sidelink	NTT DOCO	available	2018-08-10 02:23:07	2018-08-10 07:05:46
R1-1809161	QoS management	NTT	available	2018-08-10 02:23:07	2018-08-10 07:05:46
R1-1809162	Views on remote interference management for NR	NTT DOCO	noted	2018-08-10 02:23:07	2018-08-11 05:29:47
R1-1809163	Physical Layer Enhancements for NR URLLC	NTT	available	2018-08-10 02:23:07	2018-08-11 05:29:47
R1-1809164	Uplink transmission prioritization/multiplexing for	NTT	available	2018-08-10 02:23:07	2018-08-11 05:29:47
R1-1809165	Enhanced UL transmission with configured grant	NTT	noted	2018-08-10 02:23:07	2018-08-11 05:29:47
R1-1809166	Updated evaluation results of Indoor Hotspot-eMBB for IMT-2020 self-evaluation	NTT DOCO	available	2018-08-10 02:23:07	2018-08-10 09:14:33
R1-1809167	Updated evaluation results of dense urban-eMBB for IMT-2020 self-evaluation	NTT DOCO	available	2018-08-10 02:23:07	2018-08-10 09:14:33
R1-1809168	Updated evaluation results of rural-eMBB for IMT-2020 self-evaluation	NTT DOCO	available	2018-08-10 02:23:07	2018-08-10 09:14:33
R1-1809169	Preliminary evaluation results of mobility for IMT-2020 self-evaluation	NTT DOCO	available	2018-08-10 02:23:07	2018-08-10 09:14:33
R1-1809170	Preliminary evaluation results of connection density for IMT-2020 self-evaluation	NTT DOCO	available	2018-08-10 02:23:07	2018-08-10 09:14:33
R1-1809171	Preliminary evaluation results of reliability for IMT-2020 self-evaluation	NTT DOCO	available	2018-08-10 02:23:07	2018-08-10 09:14:33
R1-1809172	Corrections on MCS table determination	Nokia, Nokia	available	2018-08-10 02:44:18	2018-08-10 21:04:29
R1-1809173	Initial views on the use of LTE control channel region for DL transmission	Xiaomi Comm	available	2018-08-10 02:50:50	2018-08-10 11:52:15
R1-1809174	On support of sidelink unicast, groupcast and broadcast	Xiaomi Comm	available	2018-08-10 03:02:18	2018-08-10 11:52:15
R1-1809175	Discussion on physical layer structure for NR V2X	Xiaomi Comm	revised	2018-08-10 03:05:22	2018-08-10 11:52:15
R1-1809176	Discussion on NR link budget evaluation	CHTTL	available	2018-08-10 03:05:46	2018-08-10 03:22:02
R1-1809177	On synchronization for NR V2X	Xiaomi Comm	available	2018-08-10 03:09:26	2018-08-10 11:52:15
R1-1809178	On resource allocation for NR V2x sidelink communications	Xiaomi Comm	available	2018-08-10 03:13:37	2018-08-10 11:52:15
R1-1809179	SI Transmission in NR-U	Charter Comm	available	2018-08-10 03:24:21	2018-08-11 02:41:45
R1-1809180	Discussion on Receiver for NOMA	KDDI	noted	2018-08-10 03:25:30	2018-08-10 09:36:33
R1-1809181	Discussion on procedures related to NOMA	KDDI	available	2018-08-10 03:26:53	2018-08-10 09:37:20
R1-1809182	LLS evaluation results for OMA calibration	KDDI	available	2018-08-10 03:29:13	2018-08-10 09:37:52
R1-1809183	Latency due to bandwidth part switching	ITRI	available	2018-08-10 03:57:11	2018-08-10 09:09:55
R1-1809184	Discussion on SSB transmission for NR-U	ITRI	available	2018-08-10 03:57:11	2018-08-10 09:09:55
R1-1809185	Enhancement of configured grant for NR	ITRI	available	2018-08-10 03:57:11	2018-08-10 09:09:55
R1-1809186	Potential HARQ enhancements for NR-U	ITRI	available	2018-08-10 03:57:11	2018-08-10 09:09:55
R1-1809187	Evaluation results of Indoor Hotspot-eMBB spectral efficiency for IMT-2020 self-evaluation	ITRI	revised	2018-08-10 03:57:11	2018-08-10 15:04:06
R1-1809188	Evaluation results of Dense Urban-eMBB spectral efficiency for IMT-2020 self-evaluation	ITRI	available	2018-08-10 03:57:11	2018-08-10 15:04:06
R1-1809189	Evaluation results of Rural-eMBB spectral efficiency for IMT-2020 self-evaluation	ITRI	available	2018-08-10 03:57:11	2018-08-10 15:04:06
R1-1809190	Discussion on NOMA related procedures	ITRI	available	2018-08-10 03:57:11	2018-08-10 09:09:55
R1-1809191	On multi-symbol SRS enhancements	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809192	On virtual cell ID for SRS	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809193	Simulation assumptions and evaluation methodology for SRS enhancements	Ericsso n	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809194	Possible enhancements to Advanced CSI	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809195	Maintenance for Multi-antenna scheme	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809196	Maintenance for CSI acquisition	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809197	Maintenance for beam management	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809198	Maintenance for RS and QCL	Ericsso n	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809199	On simultaneous transmission and reception in	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809200	NR-U evaluation methodology	Ericsso n	noted	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809201	Frame Structure for NR-U	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809202	On DL signals and channels	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809203	On UL signals and channels	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05

R1-1809204	Channel access mechanisms for NR-U	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809205	On initial access, RRM, mobility and RLM	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809206	HARQ enhancements for NR-U	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809207	Configured UL grant for NR-U	Ericsso n	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809208	On SRS design for unlicensed operation	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809209	On interlace design for NR-U uplinks	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809210	Indoor coexistence evaluation results for NR-U	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809211	Why PAPR is important for BS transmitters	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809212	On PAPR issue for CSI-RS	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809213	On PAPR issue for DMRS	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809214	On signalling reduction for beam management	Ericsso	available	2018-08-10 04:58:21	2018-08-11 04:14:05
R1-1809215	A potential scenario for additional SRS symbols	SoftBan	available	2018-08-10 05:18:57	2018-08-10 05:24:18
R1-1809216	Aspects related to UL control channel	Qualco mm	noted	2018-08-10 05:52:02	2018-08-11 02:30:35
R1-1809217	Aspects related to DL data channel	Qualco mm	withdrawn	2018-08-10 05:53:40	
R1-1809218	Corrections on PRB determination for subslot PUCCH format 1a/1b	ZTE	noted	2018-08-10 05:54:35	2018-08-11 02:19:30
R1-1809219	Initial access in NR Unlicensed	Xiaomi	available	2018-08-10 06:11:22	2018-08-10 13:21:09
R1-1809220	Discussion on the frame structure for NR-U	Xiaomi	available	2018-08-10 06:22:24	2018-08-10 13:21:26
R1-1809221	Remote interference management for NR	Nokia, Nokia	available	2018-08-10 07:03:30	2018-08-10 09:53:36
R1-1809222	Considerations on identifying strong gNB interferers	Nokia, Nokia	available	2018-08-10 07:03:31	2018-08-10 09:53:36
R1-1809223	Wideband operation in NR unlicensed	PANAS	available	2018-08-10 07:22:53	2018-08-10 07:27:48
R1-1809224	PDCCH combining strategy	TCL Comm	withdrawn	2018-08-10 07:29:13	
R1-1809225	Remaining issues on beam management	ASUST EK COMP	available	2018-08-10 07:36:05	2018-08-10 09:57:26
R1-1809226	[draft] Response LS on Further Agreements on Paging Occasions	LG Electro	available	2018-08-10 07:37:10	2018-08-11 05:25:24
R1-1809227	Discussion on frame structure for NR-U operation	ASUST EK COMP	available	2018-08-10 07:37:12	2018-08-10 09:58:18
R1-1809228	[draft] Response LS on clarification of useServingCellTimingForSync	LG Electro	available	2018-08-10 07:38:24	2018-08-11 05:25:24
R1-1809229	Virtual cell ID for SRS	Qualco mm	withdrawn	2018-08-10 07:59:01	
R1-1809230	Maintenance issues for TDD DL aspects for Rel-	Ericsso	available	2018-08-10 08:01:27	2018-08-10 19:07:29
R1-1809231	IAB physical layer enhancements for backhaul link management	Ericsso n	available	2018-08-10 08:08:07	2018-08-10 21:29:56
R1-1809232	More details on IAB evaluation methodology	Ericsso	noted	2018-08-10 08:09:42	2018-08-10 21:29:56
R1-1809233	Transmission timing of IAB nodes	Ericsso	available	2018-08-10 08:11:03	2018-08-10 21:29:56
R1-1809234	[DRAFT] LS Response to RAN2 LS to RAN1 on LS on termination of contention-free	Nokia, Nokia	available	2018-08-10 08:18:46	2018-08-10 21:22:33
R1-1809235	Remaining issues on multi-antenna schemes	Nokia, Nokia	available	2018-08-10 08:18:46	2018-08-10 21:22:33
R1-1809236	Remaining issues on CSI acquisition	Nokia, Nokia	available	2018-08-10 08:18:46	2018-08-10 21:22:33
R1-1809237	Remaining issues on beam management	Nokia, Nokia	available	2018-08-10 08:18:46	2018-08-10 21:22:33
R1-1809238	Remaining issues on reference signals and QCL	Nokia, Nokia	available	2018-08-10 08:18:46	2018-08-10 21:22:33
R1-1809239	Correction on UL Antenna Port Indexing	Nokia, Nokia	available	2018-08-10 08:18:46	2018-08-10 21:22:33
R1-1809240	On simultaneous transmission and reception of multiplexed channels	Nokia, Nokia	available	2018-08-10 08:18:46	2018-08-10 21:22:33
R1-1809241	Correction on the starting SCCE index for an	Ericsso	endorsed	2018-08-10 08:26:10	2018-08-10 15:33:08
R1-1809242	On multiple UL SPS configuration handling for URLLC	Ericsso n	noted	2018-08-10 08:26:10	2018-08-10 15:33:08
R1-1809243	UE feature list for LTE release 15	Ericsso	withdrawn	2018-08-10 08:26:10	
R1-1809244	Correction on transmit antenna selection	CMCC	revised	2018-08-10 08:27:35	2018-08-11 02:11:10
R1-1809245	Discussion on remaining issues of SSB and RMSI	CMCC	available	2018-08-10 08:27:35	2018-08-11 02:11:10

R1-1809246	Remaining issues on downlink control channel	ASUSTEK COMP	available	2018-08-10 08:29:41	2018-08-10 10:28:56
R1-1809247	Remaining issue on BWP	ASUSTEK COMP	available	2018-08-10 08:30:45	2018-08-10 10:28:56
R1-1809248	Channel access procedure in NR-U	ASUSTEK COMP	available	2018-08-10 08:31:53	2018-08-10 10:28:56
R1-1809249	Introduction of NR-SS-SINR	Ericsson	agreed	2018-08-10 08:50:57	2018-08-10 20:20:21
R1-1809250	Discussion on Timing Alignment for IAB nodes	ASUSTEK COMP	available	2018-08-10 08:51:31	2018-08-10 09:50:25
R1-1809251	Discussion on HARQ-ACK enhancement for	LG	available	2018-08-10 08:52:10	2018-08-11 05:25:24
R1-1809252	Some Considerations on Remote Interference Management for NR	China Teleco	available	2018-08-10 08:58:01	2018-08-10 10:03:14
R1-1809253	Correction of optional antenna element patterns for vehicular UEs	Fraunhofer	revised	2018-08-10 09:00:15	2018-08-10 09:05:09
R1-1809254	Considerations on sidelink synchronization signal	ITL	available	2018-08-10 09:02:29	2018-08-11 06:14:21
R1-1809255	Draft reply LS on ssb-PositionsInBurst mismatch in SIB1 and ServingcellConfigCommon	Ericsson	revised	2018-08-10 09:08:26	2018-08-10 21:56:18
R1-1809256	Maintenance for Downlink signals and channels	Ericsson	revised	2018-08-10 09:08:26	2018-08-10 21:56:18
R1-1809257	Maintenance for Physical random access channel and procedure	Ericsson	available	2018-08-10 09:08:26	2018-08-10 21:56:18
R1-1809258	Maintenance for Mobility procedure	Ericsso	available	2018-08-10 09:08:26	2018-08-10 21:56:18
R1-1809259	IMT-2020 self-evaluation: Evaluation	Ericsso	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809260	An overview of the IMT-2020 Evaluations - LTE	Ericsso	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809261	An overview of the IMT-2020 Evaluations - NR	Ericsso	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809262	IMT-2020 self-evaluation: mMTC full buffer	Ericsso	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809263	IMT-2020 self-evaluation: mMTC non-full buffer connection density for LTE-MTC and NB-IoT	Ericsson	revised	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809264	IMT-2020 self-evaluation: Mobility evaluations for	Ericsso	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809265	IMT-2020 self-evaluation: Mobility evaluations for	Ericsso	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809266	IMT-2020 Self-Evaluation: NR Link Budgets	Ericsso	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809267	IMT-2020 self-evaluation: On eMBB spectral	Ericsso	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809268	IMT-2020 self-evaluation: On eMBB spectral	Ericsso	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809269	IMT-2020 self-evaluation: On eMBB user experienced data rate - NR	Ericsson	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809270	IMT-2020 self-evaluation: On eMBB area traffic	Ericsso	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809271	IMT-2020 self-evaluation: Peak data rate and peak spectrum efficiency evaluations for LTE	Ericsson	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809272	IMT-2020 self-evaluation: Peak data rate and peak spectrum efficiency evaluations for NR	Ericsson	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809273	IMT-2020 self-evaluation: Radio Network Energy Performance - LTE	Ericsson	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809274	IMT-2020 self-evaluation: Radio Network Energy Performance - NR	Ericsson	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809275	IMT-2020 self-evaluation: Reliability in NR	Ericsso	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809276	IMT-2020 self-evaluation: Reliability in LTE	Ericsso	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809277	IMT-2020 self-evaluation: UP latency in NR	Ericsso	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809278	IMT-2020 self-evaluation: UP latency in LTE	Ericsso	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809279	IMT-2020 self-evaluation: CP latency in NR	Ericsso	available	2018-08-10 09:08:26	2018-08-10 20:13:00
R1-1809280	Correction to determination of ending symbol for AUL transmissions	Nokia, Nokia	revised	2018-08-10 09:29:55	2018-08-10 19:30:51
R1-1809281	Correction to indication of UE-to-eNodeB COT sharing	Nokia, Nokia	merged	2018-08-10 09:33:42	2018-08-10 19:30:51
R1-1809282	Further clarification on NR PUSCH power control	Nokia, Nokia	available	2018-08-10 09:45:15	2018-08-10 21:22:33
R1-1809283	Considerations on Procedures of Non-orthogonal Multiple Access Schemes	CAICT	available	2018-08-10 09:58:51	2018-08-10 10:15:54
R1-1809284	Further LLS results of NOMA schemes	CAICT	available	2018-08-10 09:58:51	2018-08-10 10:15:54
R1-1809285	Discussions on frame structure design in NR-U	CAICT	available	2018-08-10 09:58:51	2018-08-10 10:15:54

R1-1809286	Discussions on HARQ enhancement for NR-U	CAICT	available	2018-08-10 09:58:51	2018-08-10 10:15:54
R1-1809287	Considerations on Resource Allocation of NR	CAICT	available	2018-08-10 09:58:51	2018-08-10 10:15:54
R1-1809288	Considerations on PDCCH enhancements to	CAICT	available	2018-08-10 09:58:51	2018-08-10 10:15:54
R1-1809289	Considerations on UCI transmission enhancements to support URLLC	CAICT	available	2018-08-10 09:58:51	2018-08-10 10:15:54
R1-1809290	Self evaluation on peak spectral efficiency of FR1 towards IMT-2020	CAICT	available	2018-08-10 09:58:51	2018-08-10 13:16:50
R1-1809291	Discussion on the PDCCH repetition for NR	Xiaomi	available	2018-08-10 10:03:02	2018-08-11 04:42:08
R1-1809292	[Draft] LS on RRC parameters SL_SLSS_Tx_Enabled for V2X Phase 2	Guangdong	available	2018-08-10 10:08:47	2018-08-10 11:00:30
R1-1809293	TP on collision handling for subslot-PUSCH	Guangdong OPPO	revised	2018-08-10 10:08:47	2018-08-11 00:20:56
R1-1809294	Discussion on Configured Grant Enhancements	III	available	2018-08-10 10:09:25	2018-08-11 01:03:33
R1-1809295	Remaining issues on PUSCH power control	ASUST	available	2018-08-10 10:14:22	2018-08-10 10:16:54
R1-1809296	Discussion on proposed channel access schemes for NR-Unlicensed	BROADCOM	available	2018-08-10 10:25:35	2018-08-11 05:54:57
R1-1809297	Discussion on Remaining issues on HARQ-ACK bundling and multiplexing	China Teleco	available	2018-08-10 10:35:33	2018-08-10 10:37:11
R1-1809298	Motivation for Correction to CSI reporting for 1024QAM (36.213)	Nokia, Nokia	noted	2018-08-10 10:45:04	2018-08-10 10:50:54
R1-1809299	Correction to CSI reporting for 1024QAM	Nokia, Nokia	noted	2018-08-10 10:45:04	2018-08-10 10:50:54
R1-1809300	Extensions for Channel Access Procedures	Motorola	available	2018-08-10 11:02:05	2018-08-10 23:11:02
R1-1809301	Support of unicast, groupcast and broadcast	Ericsson	available	2018-08-10 11:03:08	2018-08-10 19:26:33
R1-1809302	Physical layer design of NR sidelink	Ericsson	available	2018-08-10 11:03:08	2018-08-10 19:26:33
R1-1809303	On Synchronization for Sidelink V2X	Ericsson	available	2018-08-10 11:03:08	2018-08-10 19:26:33
R1-1809304	Radio Resource Management for NR Sidelink	Ericsson	noted	2018-08-10 11:03:08	2018-08-10 19:26:33
R1-1809305	Link level simulations of DMRS design for NR V2X	Ericsson	available	2018-08-10 11:03:08	2018-08-10 19:26:33
R1-1809306	Considerations and Design Principles for NR Sidelink	Ericsson	available	2018-08-10 11:03:08	2018-08-10 19:26:33
R1-1809307	Open issues of evaluation assumptions for NR V2X	Ericsson	revised	2018-08-10 11:03:08	2018-08-10 19:26:33
R1-1809308	Study of Uu feasibility for advanced V2X use cases	Ericsson	noted	2018-08-10 11:03:08	2018-08-10 19:26:33
R1-1809309	On Network Control of NR Sidelink	Ericsson	available	2018-08-10 11:03:08	2018-08-10 19:26:33
R1-1809310	On NR Uu controlling LTE sidelink	Ericsson	available	2018-08-10 11:03:08	2018-08-10 19:26:33
R1-1809311	On Link Selection for Unicast V2X Communications	Ericsson	available	2018-08-10 11:03:08	2018-08-10 19:26:33
R1-1809312	QoS framework for NR V2X	Ericsson	noted	2018-08-10 11:03:08	2018-08-10 19:26:33
R1-1809313	On coexistence aspects of NR V2X	Ericsson	available	2018-08-10 11:03:08	2018-08-10 19:26:33
R1-1809314	On the Objectives of NR V2X System	Ericsson	available	2018-08-10 11:03:08	2018-08-10 19:26:33
R1-1809315	Diversity in RACH transmissions	Motorola	revised	2018-08-10 11:03:22	2018-08-10 23:11:02
R1-1809316	Considerations on MA Preamble Design for	KT	available	2018-08-10 11:15:21	2018-08-10 11:38:07
R1-1809317	Considerations for DL automatic repetition	Sequans	available	2018-08-10 11:17:08	2018-08-10 16:44:18
R1-1809318	Considerations for PDCCH enhancements	Sequans	available	2018-08-10 11:19:39	2018-08-10 16:44:18
R1-1809319	Enhancements for grant free transmissions	Sequans	available	2018-08-10 11:22:25	2018-08-10 16:44:18
R1-1809320	PUCCH enhancements	Sequans	available	2018-08-10 11:24:40	2018-08-10 16:44:18
R1-1809321	Remaining issues on PUCCH	WILUS Inc.	available	2018-08-10 11:25:00	2018-08-11 05:56:26

R1-1809322	Remining issues on DL/UL data scheduling and HARQ procedure	WILUS Inc.	available	2018-08-10 11:25:00	2018-08-11 05:56:26
R1-1809323	Remaining issues on HARQ-ACK transmission on CA	WILUS Inc.	available	2018-08-10 11:25:00	2018-08-11 05:56:26
R1-1809324	Discussion on UL signals and channels for NR-U	WILUS	available	2018-08-10 11:25:00	2018-08-11 11:19:58
R1-1809325	Discussion on channel access procedure for NR-	WILUS	available	2018-08-10 11:25:00	2018-08-11 05:56:26
R1-1809326	Discussion on initial access and mobility for NR-	WILUS	available	2018-08-10 11:25:00	2018-08-11 09:45:58
R1-1809327	Considerations for UL multiplexing with different reliability requirements	Sequan s	available	2018-08-10 11:26:10	2018-08-10 16:44:18
R1-1809328	On VRB-to-PRB interleaving for SIB	Huawei	available	2018-08-10 11:29:00	2018-08-10 17:01:50
R1-1809329	Remaining issues on reserved resources and	Huawei	available	2018-08-10 11:29:00	2018-08-10 17:01:50
R1-1809330	Remaining issues on search space	Huawei	available	2018-08-10 11:29:00	2018-08-10 17:01:50
R1-1809331	Remaining issues on DCI budget for CA	Huawei	available	2018-08-10 11:29:00	2018-08-10 17:01:50
R1-1809332	Remaining issues on ECP	Huawei	available	2018-08-10 11:29:00	2018-08-10 17:01:50
R1-1809333	General considerations on UE power saving in	Huawei	available	2018-08-10 11:29:00	2018-08-11 00:22:28
R1-1809334	NR Uu support for advanced V2X use cases	Huawei	available	2018-08-10 11:29:00	2018-08-10 18:39:27
R1-1809335	LTE Uu support for advanced V2X use cases	Huawei	available	2018-08-10 11:29:00	2018-08-10 18:39:27
R1-1809336	QoS management for NR V2X	Huawei	available	2018-08-10 11:29:00	2018-08-10 18:39:27
R1-1809337	Evaluation assumptions and methodology for Rel-16 NR URLLC	Huawei ,China Souther	available	2018-08-10 11:29:00	2018-08-11 06:20:00
R1-1809338	Simulation results on the baseline performance achievable with Rel-15 URLLC for the identified	Huawei ,	available	2018-08-10 11:29:00	2018-08-11 06:37:56
R1-1809339	PDCCH enhancements for URLLC	Huawei	available	2018-08-10 11:29:00	2018-08-11 06:20:00
R1-1809340	Compact DCI for URLLC	Huawei	available	2018-08-10 11:29:00	2018-08-11 06:20:00
R1-1809341	PDCCH repetition for URLLC	Huawei	available	2018-08-10 11:29:00	2018-08-11 06:20:00
R1-1809342	HARQ-ACK enhancements for URLLC	Huawei	available	2018-08-10 11:29:00	2018-08-11 06:20:00
R1-1809343	CSI enhancements for URLLC	Huawei	available	2018-08-10 11:29:00	2018-08-11 06:20:00
R1-1809344	PUSCH enhancements for URLLC	Huawei	available	2018-08-10 11:29:00	2018-08-11 06:20:00
R1-1809345	Enhancements to scheduling/HARQ/CSI processing timeline for URLLC	Huawei ,	available	2018-08-10 11:29:00	2018-08-11 06:37:01
R1-1809346	Discussion on time synchronization impact in physical layer	Huawei , China Souther	available	2018-08-10 11:29:00	2018-08-11 06:20:00
R1-1809347	Potential RAN1 impacts on intra-UE prioritization	Huawei	available	2018-08-10 11:29:00	2018-08-11 06:37:01
R1-1809348	Considerations on NR positioning	Huawei	available	2018-08-10 11:29:00	2018-08-11 00:22:28
R1-1809349	Text proposal on physical layer mechanisms for URLLC in 38.300	Huawei ,	revised	2018-08-10 11:29:00	2018-08-11 06:37:01
R1-1809350	Corrections on UCI mapping in 36.212	Huawei , HiSilico	endorsed	2018-08-10 11:30:49	2018-08-10 22:26:42
R1-1809351	Corrections on UL power control in case of UL	Huawei	noted	2018-08-10 11:30:49	2018-08-10 22:26:42
R1-1809352	Corrections on HARQ-ACK feedback for DL SPS	Huawei	endorsed	2018-08-10 11:30:49	2018-08-10 22:26:42
R1-1809353	Remaining issues on SPS	Huawei	noted	2018-08-10 11:30:49	2018-08-10 22:26:42
R1-1809354	Correction on rate matching for SPS sPDSCH	Huawei	revised	2018-08-10 11:30:49	2018-08-10 22:26:42
R1-1809355	Text proposal to section 7.1 of TS 36.213 on the configurable HARQ process numbers	Huawei , HiSilico	noted	2018-08-10 11:30:49	2018-08-10 22:27:41
R1-1809356	Clarification on subframe-PDSCH repetition on MBSFN or non-MBSFN subframes	Huawei ,	revised	2018-08-10 11:30:49	2018-08-10 22:27:41
R1-1809357	Clarification on validation of UL SPS with repetition for one UL SPS configuration	Huawei , HiSilico n,	noted	2018-08-10 11:30:49	2018-08-10 22:27:41
R1-1809358	Clarification on UE procedure for receiving PDSCH when configured with repetition	Huawei ,	noted	2018-08-10 11:30:49	2018-08-10 22:27:41
R1-1809359	Clarification on specification impact of no more than one DCI validation for UL SPS	Huawei ,	noted	2018-08-10 11:30:49	2018-08-10 22:27:41
R1-1809360	Clarification on redundancy version determination for UL SPS with repetition	Huawei ,	endorsed	2018-08-10 11:30:49	2018-08-10 22:27:41
R1-1809361	Clarification on resource mapping for HARQ-less PDSCH repetition	Huawei ,	noted	2018-08-10 11:30:49	2018-08-10 22:27:41
R1-1809362	Clarification on resource mapping for UL SPS	Huawei	available	2018-08-10 11:30:49	2018-08-10 22:27:41
R1-1809363	Corrections on DAI timing for FS2 with sTTI	Huawei ,	endorsed	2018-08-10 11:30:49	2018-08-10 22:26:42

R1-1809364	Corrections on SFBC sPDSCH RE mapping	Huawei, HiSilicon,	endorsed	2018-08-10 11:30:49	2018-08-10 22:26:42
R1-1809365	Corrections on spreading sequence for sPDSCH DMRS	Huawei, HiSilicon, LG	endorsed	2018-08-10 11:30:49	2018-08-10 22:26:42
R1-1809366	Corrections on RV determination for sPUSCH	Huawei, HiSilicon, LG	endorsed	2018-08-10 11:30:49	2018-08-10 22:26:42
R1-1809367	Corrections on interaction between different TTI lengths	Huawei,	noted	2018-08-10 11:30:49	2018-08-10 22:26:42
R1-1809368	Views on LTE Rel-15 UE features	Huawei	noted	2018-08-10 11:30:49	2018-08-11 04:26:56
R1-1809369	Correction to AUL-UCI resource allocation in 36.213	Nokia, Nokia	revised	2018-08-10 11:36:30	2018-08-10 19:30:51
R1-1809370	On issues related to DL signals and channels	Nokia, Nokia	available	2018-08-10 11:38:59	2018-08-10 13:09:38
R1-1809371	Issues related to RRM and RLM	Nokia, Nokia	available	2018-08-10 11:38:59	2018-08-10 13:09:38
R1-1809372	[Draft] LS Reply on overlapping SIB1 and SI messages	Nokia, Nokia	available	2018-08-10 11:38:59	2018-08-10 13:09:38
R1-1809373	[Draft] LS Reply on Active DL BWPs overlapping/non-overlapping with Initial DL BWP	Nokia, Nokia	available	2018-08-10 11:38:59	2018-08-10 13:09:38
R1-1809374	[Draft] LS Reply on Further Agreements on Paging Occasions	Nokia, Nokia	available	2018-08-10 11:38:59	2018-08-10 13:09:38
R1-1809375	Draft skeleton of TR 38.866 Study on remote interference management for NR	CMCC	revised	2018-08-10 11:39:14	2018-08-11 02:11:10
R1-1809376	Discussion on introduction of additional SRS symbols	Nokia, Nokia	available	2018-08-10 12:02:41	2018-08-11 04:59:25
R1-1809377	Introduction of virtual cell id for SRS	Nokia, Nokia	available	2018-08-10 12:04:40	2018-08-11 04:59:25
R1-1809378	Clarification of number of PDSCH repetitions when R_CSI is 1 in LTE-MTC	Ericsson	noted	2018-08-10 12:06:44	2018-08-10 21:24:55
R1-1809379	Design consideration on NOMA procedure	Convid	available	2018-08-10 12:18:29	2018-08-11 05:43:38
R1-1809380	Discussion on partial slot transmission in NR-U	TCL Comm	available	2018-08-10 12:21:45	2018-08-10 12:33:08
R1-1809381	Design considerations on channel accessing	Convid	available	2018-08-10 12:22:07	2018-08-11 05:45:23
R1-1809382	Autonomous Uplink Transmission in NR Unlicensed	Convida	available	2018-08-10 12:23:46	2018-08-11 05:43:38
R1-1809383	Discussion on Sidelink Resource Allocation	Convid	available	2018-08-10 12:26:09	2018-08-11 05:43:38
R1-1809384	Corrections to CSI reporting for shorter TTI in 36.213 – TP#1	Nokia, Nokia	revised	2018-08-10 12:28:57	2018-08-10 12:33:42
R1-1809385	Correction to slot/subslot PDSCH RBG numbering/order for Resource Allocation Type 0 in 36.213 – TP#2	Nokia, Nokia Shanghai Bell,	endorsed	2018-08-10 12:28:57	2018-08-10 12:37:09
R1-1809386	Correction to PUSCH/PDSCH processing skipping in case of DCI Format 7-X reception in 36.213 – TP#4	Nokia, Nokia Shanghai Bell,	endorsed	2018-08-10 12:28:57	2018-08-10 12:48:47
R1-1809387	Correction of transport block size determination for sPUSCH in 36.213 – TP#3	Nokia, Nokia Shanghai Bell,	endorsed	2018-08-10 12:28:57	2018-08-10 13:02:16
R1-1809388	Correction of UL HARQ process definition for SPT PUSCH & sPUSCH in 36.213 – TP#5	Nokia, Nokia	noted	2018-08-10 12:28:57	2018-08-10 13:27:03
R1-1809389	Correction to sPUSCH resource allocation in 36.213 – TP#15	Nokia, Nokia Shanghai Bell,	endorsed	2018-08-10 12:28:57	2018-08-10 13:33:47
R1-1809390	On Additional TDD configuration periodicities	Nokia, Nokia Shangh	available	2018-08-10 12:39:15	2018-08-10 19:08:00

R1-1809391	DRAFT Response LS on additional TDD configuration periodicities	Nokia, Nokia Shangh	revised	2018-08-10 12:39:15	2018-08-10 19:08:00
R1-1809392	Remaining issues on resource allocation and UE processing times	Nokia, Nokia	available	2018-08-10 12:39:15	2018-08-10 19:08:00
R1-1809393	Intra-band EN-DC UE Tx power requirements	Nokia, Nokia	noted	2018-08-10 12:39:15	2018-08-10 19:08:00
R1-1809394	On selected UE features	Nokia, Nokia	revised	2018-08-10 12:39:15	2018-08-10 19:08:00
R1-1809395	Draft reply LS on termination of contention-free BFR	Motorola	available	2018-08-10 12:41:28	2018-08-11 05:58:51
R1-1809396	Draft reply LS on Active DL BWPs overlapping/non-overlapping with Initial DL BWP	Motorola	available	2018-08-10 12:41:28	2018-08-11 05:58:51
R1-1809397	Maintenance for NR-LTE co-existence	Motorola	noted	2018-08-10 12:41:28	2018-08-11 07:12:34
R1-1809398	Maintenance for UL power control	Motorola	available	2018-08-10 12:41:28	2018-08-12 14:25:21
R1-1809399	Initial access and mobility in NR-U	Motorola	withdrawn	2018-08-10 12:41:28	
R1-1809400	Layer 1 URLLC Enhancements	Motorola	available	2018-08-10 12:41:28	2018-08-11 05:58:51
R1-1809401	IMT-2020 Indoor Downlink Spectral Efficiency Results	Motorola	revised	2018-08-10 12:41:28	2018-08-11 05:58:51
R1-1809402	Discussion on initial access in NR-U	KT	available	2018-08-10 12:57:07	2018-08-10 13:03:21
R1-1809403	Considerations on HARQ operation for NR-U	KT	available	2018-08-10 12:59:01	2018-08-10 13:03:21
R1-1809404	Considerations on UL eMBB/URLLC multiplexing	KT	available	2018-08-10 13:01:07	2018-08-10 13:03:21
R1-1809405	Maintenance issues of physical downlink control channel	Ericsson	available	2018-08-10 13:06:36	2018-08-11 01:52:53
R1-1809406	Maintenance issues of physical uplink control channel	Ericsson	available	2018-08-10 13:06:36	2018-08-11 01:52:53
R1-1809407	Maintenance issues of DL/UL data scheduling and HARQ procedure	Ericsson	available	2018-08-10 13:06:36	2018-08-11 01:52:53
R1-1809408	Remaining issues related to CA and BWP operation	Ericsson	available	2018-08-10 13:06:36	2018-08-11 01:52:53
R1-1809409	Remaining issues related to LTE-NR coexistence	Ericsso	revised	2018-08-10 13:06:36	2018-08-11 05:37:32
R1-1809410	Remaining issues on Power Control	Ericsso	available	2018-08-10 13:06:36	2018-08-11 05:37:32
R1-1809411	PUSCH power scaling in UL power control	Ericsso	available	2018-08-10 13:06:36	2018-08-11 05:37:32
R1-1809412	SRS power scaling in UL power control	Ericsso	available	2018-08-10 13:06:36	2018-08-11 05:37:32
R1-1809413	UL Intra-UE Pre-emption for Rel-16	Ericsso	available	2018-08-10 13:06:36	2018-08-11 01:52:53
R1-1809414	Time synchronization	Ericsso	available	2018-08-10 13:06:36	2018-08-11 01:52:53
R1-1809415	On fast SRS precoder updation	CEWiT	available	2018-08-10 13:17:56	2018-08-10 18:42:15
R1-1809416	Link and system level performance evaluation for	THALE	available	2018-08-10 13:18:23	2018-08-10 17:25:03
R1-1809417	Maintenance for downlink signals and channels for initial access	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 02:35:44
R1-1809418	Maintenance for Physical random access channel and procedure	Qualcomm	revised	2018-08-10 13:19:47	2018-08-11 02:34:05
R1-1809419	Maintenance for mobility procedure	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 02:35:44
R1-1809420	Maintenance for TA	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 02:34:05
R1-1809421	Maintenance for multi-antenna scheme	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 05:27:28
R1-1809422	Maintenance for CSI acquisition	Qualcomm	revised	2018-08-10 13:19:47	2018-08-11 05:27:28
R1-1809423	Maintenance for beam management	Qualcomm	revised	2018-08-10 13:19:47	2018-08-11 05:27:28
R1-1809424	Maintenance for RS	Qualcomm	revised	2018-08-10 13:19:47	2018-08-11 05:27:28
R1-1809425	Details on simultaneous reception of PHY channels and RS in FR2	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 05:35:09
R1-1809426	Maintenance for physical downlink control channel	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 06:59:33
R1-1809427	Maintenance for PUCCH	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 02:30:01
R1-1809428	Maintenance for DL/UL data scheduling and HARQ procedure	Qualcomm	revised	2018-08-10 13:19:47	2018-08-11 04:58:33

R1-1809429	Maintenance for carrier aggregation and bandwidth parts	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 02:38:36
R1-1809430	Remaining issues on PDSCH rate matching in CORESET	Qualcomm	revised	2018-08-10 13:19:47	2018-08-11 09:00:25
R1-1809431	Maintenance for NR-LTE co-existence	Qualcomm	noted	2018-08-10 13:19:47	2018-08-11 08:02:22
R1-1809432	Maintenace for NR power control	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 05:35:09
R1-1809433	NR Features and Capabilities	Qualcomm	noted	2018-08-10 13:19:47	2018-08-11 06:51:19
R1-1809434	Transmitter side signaling processing schemes for NOMA	Qualcomm	noted	2018-08-10 13:19:47	2018-08-11 04:41:43
R1-1809435	Receivers for NOMA	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 04:41:43
R1-1809436	Procedures related to NOMA	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 04:41:43
R1-1809437	System level evaluation for NOMA	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 04:41:43
R1-1809438	Link level evaluation for NOMA	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 04:41:43
R1-1809439	Text Proposal for TR38.889	Qualcomm Incorpo	revised	2018-08-10 13:19:47	2018-08-11 04:41:43
R1-1809440	Email discussion summary for sub7 outdoor evalution calibration	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 04:41:43
R1-1809441	Simulation methodology for NR unlicensed	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 04:41:43
R1-1809442	Enhancements to support NR backhaul links	Qualcomm	noted	2018-08-10 13:19:47	2018-08-11 04:41:43
R1-1809443	Evaluation methodology for NR IAB	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 04:41:43
R1-1809444	IAB resource management	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 04:42:32
R1-1809445	Network synchronization for multi-hop IAB	Qualcomm	available	2018-08-10 13:19:47	2018-08-11 04:42:32
R1-1809446	Support for unicast, groupcast and broadcast	Qualcomm	available	2018-08-10 13:19:48	2018-08-11 04:42:32
R1-1809447	Design principles for physical layer aspects of NR V2X	Qualcomm	noted	2018-08-10 13:19:48	2018-08-11 04:42:32
R1-1809448	Synchronization design for NR V2X	Qualcomm	available	2018-08-10 13:19:48	2018-08-11 04:42:32
R1-1809449	Initial perspectives on resource allocation	Qualcomm	noted	2018-08-10 13:19:48	2018-08-11 04:42:32
R1-1809450	Baseline simulation assumptions and scenarios	Qualcomm	available	2018-08-10 13:19:48	2018-08-11 04:42:32
R1-1809451	Enhancements of LTE Uu and NR Uu to control NR sidelink	Qualcomm	available	2018-08-10 13:19:48	2018-08-11 04:42:32
R1-1809452	Enhancements of NR Uu to control LTE sidelink	Qualcomm	available	2018-08-10 13:19:48	2018-08-11 04:42:32
R1-1809453	Design aspects and requirements for QoS	Qualcomm	available	2018-08-10 13:19:48	2018-08-11 04:42:32
R1-1809454	Co-existence principles for NR-V2X and LTE-V2X	Qualcomm	noted	2018-08-10 13:19:48	2018-08-11 04:43:14
R1-1809455	Mechanisms for improving network robustness	Qualcomm	noted	2018-08-10 13:19:48	2018-08-11 04:43:14
R1-1809456	Mechanisms for identifying strong gNB interferers	Qualcomm	available	2018-08-10 13:19:48	2018-08-11 04:43:14
R1-1809457	L1 enhancements for eURLLC	Qualcomm	noted	2018-08-10 13:19:48	2018-08-11 04:43:14
R1-1809458	UL inter UE Tx prioritization-multiplexing	Qualcomm	available	2018-08-10 13:19:48	2018-08-11 04:43:14
R1-1809459	Enhanced SPS and grant-free transmissions	Qualcomm	available	2018-08-10 13:19:48	2018-08-11 04:43:14
R1-1809460	eURLLC Considerations for Factory Automation	Qualcomm	available	2018-08-10 13:19:48	2018-08-11 04:43:14

R1-1809461	IMT-2020 eMBB spectral efficiency evaluations	Qualcomm	revised	2018-08-10 13:19:48	2018-08-11 07:15:26
R1-1809462	Views on UE power saving	Qualcomm	available	2018-08-10 13:19:48	2018-08-11 07:21:08
R1-1809463	On remote interference management	CEWiT	available	2018-08-10 13:20:53	2018-08-10 13:43:33
R1-1809464	Discussion on enhanced UL grant-free	KDDI	available	2018-08-10 13:24:18	2018-08-10 14:06:32
R1-1809465	Rural-eMBB results for IMT-2020 self-evaluation	CEWiT	available	2018-08-10 13:28:44	2018-08-11 05:32:27
R1-1809466	IMT-2020 eMBB spectral efficiency evaluations for FR2	Qualcomm	withdrawn	2018-08-10 13:32:33	
R1-1809467	Maintenance for Physical random access channel and procedure	Qualcomm	withdrawn	2018-08-10 13:32:33	
R1-1809468	Maintenance for mobility procedure	Qualcomm	withdrawn	2018-08-10 13:32:33	
R1-1809469	DL quality reporting in Msg3 for eMTC	Intel	available	2018-08-10 13:49:05	2018-08-11 06:18:42
R1-1809470	On BWP configuration for efficient spectrum	CEWiT	available	2018-08-10 13:50:12	2018-08-11 05:34:31
R1-1809471	DL quality reporting in Msg3 for non-anchor access in NB-IoT	Intel Corpor	available	2018-08-10 13:50:25	2018-08-11 06:18:42
R1-1809472	On configurable wideband PRG size for TM9 and	Ericsso	noted	2018-08-10 13:50:34	2018-08-10 18:57:18
R1-1809473	Initial access and mobility for NR-U	ITL	available	2018-08-10 13:58:54	2018-08-11 00:51:11
R1-1809474	Correction on RACH procedure	ITL	available	2018-08-10 14:00:47	2018-08-11 00:51:11
R1-1809475	Discussion on NR V2X Synchronization	ITL	available	2018-08-10 14:02:57	2018-08-11 00:51:11
R1-1809476	Frame structure for NR-U operation	Qualcomm	available	2018-08-10 14:03:32	2018-08-11 04:43:14
R1-1809477	DL signals and channels for NR-U	Qualcomm	available	2018-08-10 14:03:32	2018-08-11 04:43:14
R1-1809478	UL signals and channels for NR-U	Qualcomm	available	2018-08-10 14:03:32	2018-08-11 04:43:14
R1-1809479	Channel access procedure for NR-U	Qualcomm	available	2018-08-10 14:03:32	2018-08-11 04:43:53
R1-1809480	Initial access and mobility for NR-U	Qualcomm	available	2018-08-10 14:03:32	2018-08-11 04:43:53
R1-1809481	Potential HARQ enhancements for NR-U	Qualcomm	available	2018-08-10 14:03:32	2018-08-11 04:43:53
R1-1809482	Potential enhancements to configured grants for NR-U	Qualcomm	available	2018-08-10 14:03:32	2018-08-11 04:43:53
R1-1809483	UE-group wake-up signal for NB-IoT	Sony	available	2018-08-10 14:15:16	2018-08-11 00:40:14
R1-1809484	[Draft] LS on IBE model for V2X	Ericsson	revised	2018-08-10 14:45:54	2018-08-10 19:26:33
R1-1809485	Configuration and signalling principles for NR sidelink	Ericsson	available	2018-08-10 14:45:54	2018-08-10 19:26:33
R1-1809486	Rel-15 NR UE feature list	Intel	noted	2018-08-10 15:57:46	2018-08-11 06:12:08
R1-1809487	NOMA Procedure Considerations	Sierra	available	2018-08-10 17:18:32	2018-08-11 00:23:02
R1-1809488	Work plan for Integrated Access and Backhaul Study Item	AT&T, KDDI,	noted	2018-08-10 22:17:56	2018-08-11 09:37:29
R1-1809489	TR38.874, Version 0.4.0	AT&T, KDDI,	noted	2018-08-10 22:17:58	2018-08-11 09:37:29
R1-1809490	Remaining issues on NR DL Control	ZTE	available	2018-08-13 09:10:15	2018-08-13 15:00:05
R1-1809491	A comparison of polar and LDPC codes for	Polaran	available	2018-08-13 10:49:33	2018-08-13 13:53:40
R1-1809492	Initial Access and Diversity in RACH transmissions	Motorola	available	2018-08-13 16:20:17	2018-08-14 08:48:05
R1-1809493	Summary for codeword mapping	Samsu	noted	2018-08-14 06:36:59	2018-08-21 09:02:04
R1-1809494	Corrections on transmission schemes	Samsu	available	2018-08-14 06:37:43	2018-08-21 09:02:04
R1-1809495	IMT-2020 Downlink Spectral Efficiency Results	Motorola	available	2018-08-14 06:39:04	2018-08-14 17:46:56
R1-1809496	Receiver for uplink NOMA	NTT	available	2018-08-14 06:40:01	2018-08-16 10:20:49
R1-1809497	Evaluation results of Indoor Hotspot-eMBB spectral efficiency for IMT-2020 self-evaluation	ITRI	available	2018-08-14 07:39:30	2018-08-14 17:46:56
R1-1809498	Sidelink Design for NR V2X	ETRI	noted	2018-08-14 07:40:38	2018-08-16 10:20:49
R1-1809499	Transmitter side signal processing schemes for NOMA	Samsung	available	2018-08-14 07:41:49	2018-08-16 10:20:49

R1-1809500	Performance evaluation for NoMA	Samsung	available	2018-08-14 07:42:18	2018-08-17 20:57:54
R1-1809501	Maintenance for CSI acquisition	Qualcomm	available	2018-08-14 08:51:04	2018-08-15 07:19:32
R1-1809502	Correction to NRS subframes and additional SIB1-NB-to-subframe mapping	LG Electro	revised	2018-08-14 14:09:09	2018-08-16 10:20:49
R1-1809503	Summary on the use of RSS for measurement improvements	Sony	noted	2018-08-14 18:01:32	2018-08-23 19:53:50
R1-1809504	Maintenance for RS	Qualcomm	available	2018-08-15 07:12:33	2018-08-16 10:20:48
R1-1809505	Remaining issues on PDSCH rate matching in CORESET	Qualcomm	available	2018-08-15 07:13:11	2018-08-16 10:20:48
R1-1809506	On Rel-15 UE features	CATT	available	2018-08-15 07:13:57	2018-08-16 10:20:48
R1-1809507	Discussion on physical layer structure for NR V2X	Xiaomi Comm	available	2018-08-15 07:14:33	2018-08-16 10:20:48
R1-1809508	Considerations and evaluation results for IMT-2020 for eMBB spectral efficiency	Huawei,	available	2018-08-15 07:15:34	2018-08-19 11:33:22
R1-1809509	Considerations and evaluation results for IMT-2020 for user experienced data rate	Huawei,	available	2018-08-15 07:16:08	2018-08-16 10:20:48
R1-1809510	Considerations and evaluation results for IMT-2020 for reliability	Huawei,	available	2018-08-15 07:16:38	2018-08-16 10:20:48
R1-1809511	Consideration on self evaluation of IMT-2020 for	Huawei	available	2018-08-15 07:17:03	2018-08-19 11:37:53
R1-1809512	Remaining issues in PRACH design and RACH procedure	MediaTek Inc.	available	2018-08-15 07:18:59	2018-08-15 10:48:01
R1-1809513	Remaining issues on PUCCH	Sharp	available	2018-08-15 10:49:23	2018-08-16 10:20:48
R1-1809514	Initial evaluation results for IMT2020 self-	Sharp	available	2018-08-15 10:49:53	2018-08-23 20:09:28
R1-1809515	New Coding Scheme for NOMA with Traffic Control	Sequans	available	2018-08-15 16:15:05	2018-08-19 11:33:22
R1-1809516	L1 enhancements for URLLC	Huawei	noted	2018-08-15 16:16:48	2018-08-21 15:22:56
R1-1809517	Summary of RAN1#94 Tdocs on maintenance for R15 NR PUCCH resource allocation	OPPO	available	2018-08-16 07:33:09	2018-08-21 09:02:04
R1-1809518	Maintenance for CSI acquisition	ZTE	available	2018-08-16 07:36:36	2018-08-16 10:20:48
R1-1809519	Summary of SRS	Sony	revised	2018-08-16 07:40:38	2018-08-21 17:54:57
R1-1809520	Summary of 6.1.4.3 Maintenance for MWUS	Qualco	noted	2018-08-16 10:28:33	2018-08-21 09:02:04
R1-1809521	Summary of 6.2.1.1 UE-group MWUS	Qualco	noted	2018-08-16 10:28:33	2018-08-21 09:02:04
R1-1809522	Summary of 6.2.2.6 Presence of NRS on a non-anchor carrier for paging	Qualcomm	noted	2018-08-16 10:28:34	2018-08-23 19:53:50
R1-1809523	Summary for scheduling of multiple DL/UL transport blocks for NB-IoT	ZTE	noted	2018-08-16 10:28:34	2018-08-21 15:22:56
R1-1809524	Summary of maintenance of DL aspects for TDD	ZTE	revised	2018-08-16 10:28:34	2018-08-21 09:02:04
R1-1809525	Summary of maintenance of UL aspects for TDD	ZTE	revised	2018-08-16 10:28:34	2018-08-21 09:02:04
R1-1809526	Summary of flexible PDSCH/PUSCH starting PRB	Samsung	noted	2018-08-16 10:28:34	2018-08-21 09:02:04
R1-1809527	Feature summary of support of quality report in	Samsu	noted	2018-08-16 10:28:35	2018-08-23 19:53:50
R1-1809528	LTE-M Preconfigured UL Resources Summary	Sierra Wireles	noted	2018-08-16 10:28:35	2018-08-21 09:02:04
R1-1809529	Rel15 MTC Sub-PRB PUSCH Maintenance Summary	Sierra Wireles	noted	2018-08-16 10:28:35	2018-08-21 09:02:04
R1-1809530	Use of LTE Control Channel Region for DL Transmission Summary	Nokia, Nokia	noted	2018-08-16 10:28:35	2018-08-23 19:53:50
R1-1809531	Feature summary of 6.1.4.1 Maintenance for Resynchronization signal	Ericsson	noted	2018-08-16 10:28:36	2018-08-21 09:02:04
R1-1809532	Feature summary of 6.2.2.1 UE-group wake-up signal for NB-IoT	Ericsson	noted	2018-08-16 10:28:36	2018-08-21 17:54:57
R1-1809533	Summary of TDD Common aspects	LG	revised	2018-08-16 10:28:36	2018-08-21 09:02:04
R1-1809534	Summary of CE mode A and B improvements for non-BL Ues	LG Electro	noted	2018-08-16 10:28:36	2018-08-23 19:53:50
R1-1809535	Correction for interference randomization for NB-IoT	Qualcomm	agreed	2018-08-16 10:28:36	2018-08-24 11:51:46
R1-1809536	Correction for interference randomization for NB-IoT	Qualcomm	agreed	2018-08-16 10:28:37	2018-08-24 11:51:46
R1-1809537	PRG for eMTC	Qualcomm	agreed	2018-08-16 10:28:37	2018-08-21 09:02:04

R1-1809538	PRG for eMTC	Qualcomm	agreed	2018-08-16 10:28:37	2018-08-21 09:02:04
R1-1809539	PRG for eMTC	Qualcomm	agreed	2018-08-16 10:28:37	2018-08-21 09:02:04
R1-1809540	Correction on DCI for HARQ-ACK bundling	Qualcomm	agreed	2018-08-16 10:28:38	2018-08-23 19:53:50
R1-1809541	Correction on DCI for HARQ-ACK bundling	Qualcomm	agreed	2018-08-16 10:28:38	2018-08-24 11:51:46
R1-1809542	Correction on TDD HARQ-ACK reporting procedure for different UL/DL configurations	Huawei,	agreed	2018-08-16 10:28:38	2018-08-21 09:02:04
R1-1809543	Correction on TDD HARQ-ACK reporting procedure for different UL/DL configurations	Huawei,	agreed	2018-08-16 10:28:38	2018-08-21 09:02:04
R1-1809544	Correction on TDD HARQ-ACK reporting procedure for different UL/DL configurations	Huawei,	agreed	2018-08-16 10:28:39	2018-08-21 09:02:04
R1-1809545	Correction on PUCCH format 4 HARQ-ACK procedure without adaptive codebook	Huawei,	agreed	2018-08-16 10:28:39	2018-08-21 09:02:04
R1-1809546	Correction on PUCCH format 4 HARQ-ACK procedure without adaptive codebook	Huawei,	agreed	2018-08-16 10:28:39	2018-08-21 09:02:04
R1-1809547	Correction to PDSCH RE mapping in TM10	Intel	agreed	2018-08-16 10:28:39	2018-08-23 20:09:28
R1-1809548	Correction to PDSCH RE mapping in TM10	Intel	agreed	2018-08-16 10:28:40	2018-08-23 20:09:28
R1-1809549	Correction to PDSCH RE mapping in TM10	Intel	agreed	2018-08-16 10:28:40	2018-08-23 20:09:28
R1-1809550	Correction on advanced CSI codebook	Qualcomm	agreed	2018-08-16 10:28:40	2018-08-21 15:22:56
R1-1809551	Correction on advanced CSI codebook	Qualcomm	agreed	2018-08-16 10:28:40	2018-08-21 15:22:56
R1-1809552	HARQ reference configuration for SRS carrier switching	Qualcomm	withdrawn	2018-08-16 10:28:41	
R1-1809553	HARQ reference configuration for SRS carrier switching	Qualcomm	withdrawn	2018-08-16 10:28:41	
R1-1809554	Corrections related to capabilities for SRS Carrier Switching	Qualcomm	agreed	2018-08-16 10:28:41	2018-08-23 19:53:50
R1-1809555	Corrections related to capabilities for SRS Carrier Switching	Qualcomm	agreed	2018-08-16 10:28:41	2018-08-24 11:51:46
R1-1809556	Capability for FeMBMS	Qualcomm	agreed	2018-08-16 10:28:41	2018-08-21 15:22:56
R1-1809557	Capability for FeMBMS	Qualcomm	agreed	2018-08-16 10:28:42	2018-08-24 11:51:46
R1-1809558	SRS transmission in UpPTS for special subframe configuration 10	Qualcomm Incorpo	agreed	2018-08-16 10:28:42	2018-08-23 19:53:50
R1-1809559	SRS transmission in UpPTS for special subframe configuration 10	Qualcomm Incorpo	agreed	2018-08-16 10:28:42	2018-08-24 11:51:46
R1-1809560	HARQ-ACK payload size determination for crs-less special subframe configuration 10	Qualcomm	agreed	2018-08-16 10:28:42	2018-08-24 11:51:46
R1-1809561	HARQ-ACK payload size determination for crs-less special subframe configuration 10	Qualcomm	agreed	2018-08-16 10:28:43	2018-08-24 11:51:46
R1-1809562	Feature lead summary Scheduling of multiple DL UL transport blocks	Ericsson	noted	2018-08-16 10:28:43	2018-08-21 09:02:04
R1-1809563	Summary of Rel15 Maintenance for NPRACH range enhanceme	Ericsson	noted	2018-08-16 10:28:43	2018-08-21 09:02:04
R1-1809564	Feature lead summary for Coexistence of LTE-	Ericsso	noted	2018-08-16 10:28:43	2018-08-21 09:02:04
R1-1809565	Feature lead summary of Maintenance for Early data transmission in eMTC	Huawei,	noted	2018-08-16 10:28:44	2018-08-21 09:02:04
R1-1809566	Feature lead summary on NB-IoT Rel-15 NWUS maintenance	Huawei,	noted	2018-08-16 10:28:44	2018-08-21 09:02:04
R1-1809567	Feature lead summary of EDT during RACH in feNB-IoT	Huawei,	noted	2018-08-16 10:28:44	2018-08-21 09:02:04
R1-1809568	Feature lead summary of physical layer SR in	Huawei	noted	2018-08-16 10:28:44	2018-08-21 09:02:04
R1-1809569	Feature lead summary of SPS in NB-IoT	Huawei	noted	2018-08-16 10:28:45	2018-08-21 09:02:04
R1-1809570	Feature lead summary of MPDCCH performance improvement	Huawei,	noted	2018-08-16 10:28:45	2018-08-21 09:02:04
R1-1809571	Feature lead summary of Support for transmission in preconfigured UL resources	Huawei,	noted	2018-08-16 10:28:45	2018-08-21 17:54:57
R1-1809572	Feature lead summary of Coexistence of NB-IoT	Huawei	noted	2018-08-16 10:28:45	2018-08-21 17:54:57

R1-1809573	Feature lead summary of Support of Quality report in Msg3 for non-anchor access	Huawei,	revised	2018-08-16 10:28:46	2018-08-21 17:54:57
R1-1809574	Views on additional symbols for SRS	Mitsubi	available	2018-08-16 10:28:46	2018-08-21 15:22:56
R1-1809575	Summary of TDD Common aspects	LG	revised	2018-08-16 10:28:46	2018-08-21 09:02:04
R1-1809576	Correction on the partial PUSCH mode field for FeLAA in 36.212	Huawei,	agreed	2018-08-16 10:28:46	2018-08-23 20:09:28
R1-1809577	Correction on the interpretation of HARQ-ACK bitmap for FeLAA in 36.212	Huawei,	agreed	2018-08-16 10:28:46	2018-08-23 20:09:28
R1-1809578	Corrections to CSI reporting for shorter TTI in 36.213 – TP#1	Nokia, Nokia	endorsed	2018-08-16 10:28:47	2018-08-23 19:53:50
R1-1809579	Correction on rate matching for SPS sPDSCH	Huawei	endorsed	2018-08-16 10:28:47	2018-08-23 19:53:50
R1-1809580	TBS Scaling for Slot TTI in UpPTS	Qualco	endorsed	2018-08-16 10:28:47	2018-08-23 19:53:50
R1-1809581	Clarification for UL Resource Allocation Type 0	Qualco	endorsed	2018-08-16 10:28:47	2018-08-23 19:53:50
R1-1809582	Clarification on subframe-PDSCH repetition on MBSFN or non-MBSFN subframes	Huawei,	endorsed	2018-08-16 10:28:48	2018-08-23 19:53:50
R1-1809583	TP to 36.211 and 36.213 on handling of CFI	Oppo	endorsed	2018-08-16 10:28:48	2018-08-23 19:53:50
R1-1809584	Feature summary on additional SRS symbols for	Huawei	noted	2018-08-16 10:28:48	2018-08-21 15:22:56
R1-1809585	Feature summary on virtual cell ID for SRS	Huawei	noted	2018-08-16 10:28:48	2018-08-21 15:22:56
R1-1809586	Correction on aperiodic CSI triggering for	Huawei	agreed	2018-08-16 10:28:49	2018-08-21 19:04:08
R1-1809587	Remaining details for modulation enhancements	Qualcomm	revised	2018-08-16 10:28:49	2018-08-23 19:53:50
R1-1809588	Correction of RRC parameter name for 1024QAM rate matching	Qualcomm	agreed	2018-08-16 10:28:49	2018-08-24 11:51:46
R1-1809589	Applicability of 1024QAM to SPS C-RNTI	Qualcomm	agreed	2018-08-16 10:28:49	2018-08-24 11:51:46
R1-1809590	Removal of R_CSI form 1024QAM CSI table	Qualcomm	agreed	2018-08-16 10:28:50	2018-08-24 11:51:46
R1-1809591	Remaining issues for 6.1.4.1 Maintenance for Resynchronization signal	Ericsson	noted	2018-08-16 10:28:50	2018-08-23 19:53:50
R1-1809592	Way forward on NPRS remaining issues	Qualcomm,	noted	2018-08-16 10:28:50	2018-08-23 19:53:50
R1-1809593	Summary of maintenance of DL aspects for TDD	ZTE	revised	2018-08-16 10:28:50	2018-08-23 19:53:50
R1-1809594	Summary of maintenance of UL aspects for TDD	ZTE	revised	2018-08-16 10:28:50	2018-08-23 19:53:50
R1-1809595	DRAFT LS on additional UE capabilities for sTTI	Ericsson	revised	2018-08-16 10:28:51	2018-08-23 19:53:50
R1-1809596	DRAFT LS on additional UE capabilities for HRLLC	Ericsson	revised	2018-08-16 10:28:51	2018-08-23 19:53:50
R1-1809597	Outcome of sTTI offline	Ericsson	noted	2018-08-16 10:28:51	2018-08-23 19:53:50
R1-1809598	Outcome of HRLLC offline	Ericsson	noted	2018-08-16 10:28:51	2018-08-23 19:53:50
R1-1809599	Correction to NPRS mapping	Huawei	revised	2018-08-16 10:28:52	2018-08-23 19:53:50
R1-1809600	Feature lead summary of Support of Quality report in Msg3 for non-anchor access	Huawei,	noted	2018-08-16 10:28:52	2018-08-23 19:53:50
R1-1809601	TP on collision handling for subslot-PUSCH	Guangdong OPPO	noted	2018-08-16 10:28:52	2018-08-23 19:53:50
R1-1809602	Correction on DL CP extention for FeLAA in	Huawei	revised	2018-08-16 10:28:52	2018-08-23 20:09:28
R1-1809603	Correction to NRS subframes and additional SIB1-NB-to-subframe mapping	LG Electro	endorsed	2018-08-16 10:28:53	2018-08-23 19:53:50
R1-1809604	[Draft] LS on Restriction of 1024QAM CSI reporting	Nokia, Nokia	revised	2018-08-16 10:28:53	2018-08-23 19:53:50
R1-1809605	Correction to NPRS mapping	Huawei,	agreed	2018-08-16 10:28:53	2018-08-23 20:09:28
R1-1809606	Correction to NPRS mapping	Huawei,	agreed	2018-08-16 10:28:53	2018-08-23 20:09:28
R1-1809607	Clarification for antenna selection	Qualcomm	revised	2018-08-16 10:28:54	2018-08-23 20:09:28
R1-1809608	Corrections related to modulation enhancements	Qualcomm	agreed	2018-08-16 10:28:54	2018-08-23 19:53:50
R1-1809609	LS on Restriction of 1024QAM CSI reporting	RAN1, Nokia,	approved	2018-08-16 10:28:54	2018-08-23 19:53:50
R1-1809610	Corrections to modulation signalling in MUST	Intel	revised	2018-08-16 10:28:54	2018-08-23 20:09:28
R1-1809611	Summary of maintenance of UL aspects for TDD	ZTE	revised	2018-08-16 10:28:55	2018-08-23 19:53:50
R1-1809612	Updated feature lead summary of Maintenance for Early data transmission in eMTC	Huawei,	revised	2018-08-16 10:28:55	2018-08-23 19:53:50

R1-1809613	Summary of maintenance of DL aspects for TDD	ZTE	revised	2018-08-16 10:28:55	2018-08-23 19:53:50
R1-1809614	Summary of TDD Common aspects	LG	revised	2018-08-16 10:28:55	2018-08-23 19:53:50
R1-1809615	Updated feature lead summary Scheduling of multiple DL UL transport blocks	Ericsson	noted	2018-08-16 10:28:56	2018-08-23 20:09:28
R1-1809616	[DRAFT] LS on UE feature list	NTT	revised	2018-08-16 10:28:56	2018-08-23 19:53:50
R1-1809617	LS on Rel-15 LTE UE feature list	RAN1, NTT	approved	2018-08-16 10:28:56	2018-08-23 19:53:50
R1-1809618	Text proposals for 6.1.4.1 Maintenance for Resynchronization signal	Ericsson	endorsed	2018-08-16 10:28:56	2018-08-23 20:09:28
R1-1809619	LTE UE features	NTT	agreed	2018-08-16 10:28:56	2018-08-23 19:53:49
R1-1809620	Correction to determination of ending symbol for AUL transmissions	Nokia, Nokia Shangh	revised	2018-08-16 10:28:57	2018-08-23 20:09:28
R1-1809621	Correction to AUL-UCI resource allocation in 36.213	Nokia, Nokia	revised	2018-08-16 10:28:57	2018-08-23 20:09:28
R1-1809622	Correction on RRC parameters for FeLAA in 37.213	Huawei, HiSilico	agreed	2018-08-16 10:28:57	2018-08-23 20:09:28
R1-1809623	Correction on starting position of Partial PUSCH Mode 1 for FeLAA in 37.213	Huawei,	revised	2018-08-16 10:28:57	2018-08-23 20:09:28
R1-1809624	DRAFT LS on additional UE capabilities for HRLLC	Ericsson	revised	2018-08-16 10:28:58	2018-08-23 20:09:28
R1-1809625	DRAFT LS on additional UE capabilities for sTTI	Ericsson	revised	2018-08-16 10:28:58	2018-08-23 20:09:28
R1-1809626	Correction on COT length for AUL transmission	LG	revised	2018-08-16 10:28:58	2018-08-23 20:09:28
R1-1809627	Rel15 Part II - MTC Sub-PRB PUSCH Maintenance Summary	Sierra Wireles	noted	2018-08-16 10:28:58	2018-08-23 20:09:28
R1-1809628	Summary of flexible PDSCH/PUSCH starting PRB	Samsung	noted	2018-08-16 10:28:59	2018-08-23 20:09:28
R1-1809629	Summary of TDD Common aspects	LG	noted	2018-08-16 10:28:59	2018-08-23 20:09:28
R1-1809630	Corrections on PDSCH repetition for TDD	LG Electronics	revised	2018-08-16 10:28:59	2018-08-23 20:09:28
R1-1809631	Summary of maintenance of DL aspects for TDD	ZTE	noted	2018-08-16 10:28:59	2018-08-23 20:09:28
R1-1809632	Summary of maintenance of UL aspects for TDD	ZTE	noted	2018-08-16 10:29:00	2018-08-23 20:09:28
R1-1809633	Change request on UE transmit antenna selection	CMCC	revised	2018-08-16 10:29:00	2018-08-23 20:09:28
R1-1809634	Change request on 1T2R antenna switching of	CMCC	revised	2018-08-16 10:29:00	2018-08-23 20:09:28
R1-1809635	Correction for HARQ-ACK delay in eMTC	Qualcomm	revised	2018-08-16 10:29:00	2018-08-23 20:09:28
R1-1809636	Corrections to modulation signalling in MUST	Intel	agreed	2018-08-16 10:29:01	2018-08-23 20:09:28
R1-1809637	Corrections to modulation signalling in MUST	Intel	agreed	2018-08-16 10:29:01	2018-08-23 20:09:28
R1-1809638	Clarification for antenna selection	Qualcomm	agreed	2018-08-16 10:29:01	2018-08-24 11:51:46
R1-1809639	Clarification for antenna selection	Qualcomm	agreed	2018-08-16 10:29:01	2018-08-24 11:51:46
R1-1809640	Correction on transmit antenna selection	CMCC	agreed	2018-08-16 10:29:02	2018-08-23 20:09:28
R1-1809641	Correction on transmit antenna selection	CMCC	agreed	2018-08-16 10:29:02	2018-08-23 20:09:28
R1-1809642	Correction on transmit antenna selection	CMCC	agreed	2018-08-16 10:29:02	2018-08-23 20:09:28
R1-1809643	Correction on transmit antenna selection	CMCC	agreed	2018-08-16 10:29:02	2018-08-23 20:09:28
R1-1809644	Change request on 1T2R antenna switching of	CMCC	agreed	2018-08-16 10:29:03	2018-08-23 20:09:28
R1-1809645	Updated feature lead summary of Maintenance for Early data transmission in eMTC	Huawei,	noted	2018-08-16 10:29:03	2018-08-23 20:09:28
R1-1809646	Updated Feature lead summary of EDT during RACH in feNB-IoT	Huawei,	revised	2018-08-16 10:29:03	2018-08-23 20:09:28
R1-1809647	Correction on starting position of Partial PUSCH Mode 1 for FeLAA in 37.213	Huawei,	agreed	2018-08-16 10:29:03	2018-08-23 20:09:28
R1-1809648	Correction on COT length for AUL transmission	LG	agreed	2018-08-16 10:29:04	2018-08-23 20:09:28
R1-1809649	Corrections on PDSCH repetition for TDD	LG Electronics	endorsed	2018-08-16 10:29:04	2018-08-23 20:09:28
R1-1809650	Correction on DL CP extention for FeLAA in	Huawei	agreed	2018-08-16 10:29:04	2018-08-23 20:09:28

R1-1809651	Correction to determination of ending symbol for AUL transmissions	Nokia, Nokia Shangh	agreed	2018-08-16 10:29:04	2018-08-23 20:09:28
R1-1809652	Correction to AUL-UCI resource allocation in 36.213	Nokia, Nokia	agreed	2018-08-16 10:29:05	2018-08-23 20:09:28
R1-1809653	Correction for HARQ-ACK delay in eMTC	Qualcomm	agreed	2018-08-16 10:29:05	2018-08-24 11:51:46
R1-1809654	Correction for HARQ-ACK delay in eMTC	Qualcomm	agreed	2018-08-16 10:29:05	2018-08-24 11:51:46
R1-1809655	LS on UL PRB to DL PRB center offset for TDD	Ericsson	revised	2018-08-16 10:29:05	2018-08-23 20:09:28
R1-1809656	Corrections to the PSCCH decoding capability in	CATT	not	2018-08-16 10:29:06	2018-08-23 20:09:28
R1-1809657	Remaining issues for 6.1.4.3 Maintenance for	Qualcomm	noted	2018-08-16 10:29:06	2018-08-23 20:09:28
R1-1809658	Draft LS on sTTI	Ericsson	withdrawn	2018-08-16 10:29:06	
R1-1809659	Outcome of offline discussion for additional SRS	Huawei	noted	2018-08-16 10:29:06	2018-08-23 20:09:28
R1-1809660	Draft LS on WUS transmission scheme	Qualcomm	revised	2018-08-16 10:29:07	2018-08-23 20:09:28
R1-1809661	Draft LS on WUS transmission scheme	Qualcomm	available	2018-08-16 10:29:07	2018-08-23 20:09:28
R1-1809662	Updated feature lead summary on NB-IoT Rel-15 NWUS maintenances	Huawei,	noted	2018-08-16 10:29:07	2018-08-23 20:09:28
R1-1809663	Clarification of TBS for retransmission of EDT Msg3	Sharp	available	2018-08-16 10:29:08	2018-08-23 20:09:28
R1-1809664	Chairman's notes of AI 6.1.1 Maintenance of E-UTRA Release 8 – 14	Ad-hoc chair	endorsed	2018-08-16 10:29:08	2018-08-24 14:39:55
R1-1809665	Chairman's notes of AI 6.1.2 Maintenance of Release 15 Shortened TTI and processing time	Ad-hoc chair	endorsed	2018-08-16 10:29:08	2018-08-24 14:39:55
R1-1809666	Chairman's notes of AI 6.1.3 Maintenance of Release 15 3GPP V2X Phase 2	Ad-hoc chair	endorsed	2018-08-16 10:29:08	2018-08-24 14:39:55
R1-1809667	Chairman's notes of AI 6.1.4 Maintenance of Release 15 Even further enhanced MTC for LTE	Ad-hoc chair	endorsed	2018-08-16 10:29:09	2018-08-24 14:39:55
R1-1809668	Chairman's notes of AI 6.1.5 Maintenance of Release 15 Further enhancements of NB-IoT	Ad-hoc chair	endorsed	2018-08-16 10:29:09	2018-08-24 14:39:55
R1-1809669	Chairman's notes of AI 6.1.6 Maintenance of Release 15 Ultra Reliable Low Latency	Ad-hoc chair	endorsed	2018-08-16 10:29:09	2018-08-24 14:39:55
R1-1809670	Chairman's notes of AI 6.1.7 LTE Release 15 UE feature	Ad-hoc chair	endorsed	2018-08-16 10:29:09	2018-08-24 11:51:46
R1-1809671	Chairman's notes of AI 6.1.8 Others	Ad-hoc chair	endorsed	2018-08-16 10:29:10	2018-08-24 14:39:55
R1-1809672	Chairman's notes of AI 6.2.1 Additional MTC Enhancements	Ad-hoc chair	endorsed	2018-08-16 10:29:10	2018-08-24 09:08:33
R1-1809673	Chairman's notes of AI 6.2.2 Additional Enhancements for NB-IoT	Ad-hoc chair	endorsed	2018-08-16 10:29:10	2018-08-24 09:08:33
R1-1809674	Chairman's notes of AI 6.2.3 DL MIMO efficiency enhancements for LTE	Ad-hoc chair	endorsed	2018-08-16 10:29:10	2018-08-24 09:08:33
R1-1809675	Feature lead summary of DL aspects for TDD	ZTE	noted	2018-08-16 10:29:11	2018-08-23 20:09:28
R1-1809676	DRAFT LS on additional UE capabilities for HRLLC	Ericsson	revised	2018-08-16 10:29:11	2018-08-23 20:09:28
R1-1809677	DRAFT LS on additional UE capabilities for sTTI	Ericsson	revised	2018-08-16 10:29:11	2018-08-23 20:09:28
R1-1809678	[DRAFT] LS on additional RRC parameters for Rel-15 NB-IoT	Huawei,	revised	2018-08-16 10:29:12	2018-08-23 20:24:56
R1-1809679	LS on additional RRC parameters for Rel-15 NB-IoT	RAN1, Huawei	approved	2018-08-16 10:29:12	2018-08-23 20:27:21
R1-1809680	LS on UL PRB to DL PRB center offset for TDD	Ericsson	revised	2018-08-16 10:29:12	2018-08-23 20:09:28
R1-1809681	LS on UL PRB to DL PRB center offset for TDD	RAN1,	approved	2018-08-16 10:29:12	2018-08-23 20:09:28
R1-1809682	DRAFT LS on additional UE capabilities for HRLLC	Ericsson	revised	2018-08-16 10:29:13	2018-08-24 09:08:33
R1-1809683	DRAFT LS on sTTI	Ericsson	revised	2018-08-16 10:29:13	2018-08-24 09:08:33
R1-1809684	Updated feature lead summary of EDT during RACH in feNB-IoT	Huawei,	noted	2018-08-16 10:29:13	2018-08-24 09:43:17
R1-1809685	Introduction of NPBCH based measurements	Qualcomm	endorsed	2018-08-16 10:29:13	2018-08-24 09:43:17
R1-1809686	Draft LS on RRC parameter for NPBCH based measurements	Qualcomm	revised	2018-08-16 10:29:14	2018-08-24 09:43:17

R1-1809687	LS on sTTI	RAN1, Ericsso	approved	2018-08-16 10:29:14	2018-08-24 09:43:17
R1-1809688	DRAFT LS on HRLLC	Ericsso n	revised	2018-08-16 10:29:14	2018-08-24 09:43:17
R1-1809689	LS on RRC parameter for NPBCH based measurements	RAN1, Qualco	approved	2018-08-16 10:29:14	2018-08-24 09:53:33
R1-1809690	Text proposal for DL aspects for TDD NB-IoT	Huawei	endorsed	2018-08-16 10:29:15	2018-08-24 10:15:41
R1-1809691	LS on HRLLC	RAN1, Ericsso	approved	2018-08-16 10:29:15	2018-08-24 09:54:04
R1-1809692	Reserved for LTE session	ETSI	withdrawn	2018-08-16 10:29:15	
R1-1809693	Reserved for LTE session	ETSI	withdrawn	2018-08-16 10:29:15	
R1-1809694	Reserved for LTE session	ETSI	withdrawn	2018-08-16 10:29:16	
R1-1809695	Reserved for LTE session	ETSI	withdrawn	2018-08-16 10:29:16	
R1-1809696	Reserved for LTE session	ETSI	withdrawn	2018-08-16 10:29:16	
R1-1809697	Reserved for LTE session	ETSI	withdrawn	2018-08-16 10:29:16	
R1-1809698	Reserved for LTE session	ETSI	withdrawn	2018-08-16 10:29:17	
R1-1809699	Reserved for LTE session	ETSI	withdrawn	2018-08-16 10:29:17	
R1-1809700	Maintenance for Downlink signals and channels	Ericsso n	available	2018-08-16 10:33:12	2018-08-17 08:17:56
R1-1809701	Summary of 7.1.3.1 (DCI contents and formats)	Ericsso n	noted	2018-08-16 12:25:06	2018-08-21 09:02:04
R1-1809702	Summary of 7.1.3.3 (resource allocation)	Ericsso n	noted	2018-08-16 12:26:50	2018-08-21 09:02:04
R1-1809703	Summary of synchronization signals and PBCH	Ericsso n	revised	2018-08-16 13:23:34	2018-08-21 09:02:04
R1-1809704	Multi-user advanced receivers for NOMA	ZTE	revised	2018-08-16 15:19:36	2018-08-17 11:00:09
R1-1809705	Summary on CA Aspects	Samsu ng	withdrawn	2018-08-16 15:26:36	
R1-1809706	Specification Update on HARQ-ACK Codebooks Incorporating Proposals in RAN1#94	Samsu ng	available	2018-08-16 15:26:36	2018-08-21 09:02:04
R1-1809707	Specification Update on UL Control Incorporating Proposals in RAN1#94	Samsu ng	available	2018-08-16 15:26:36	2018-08-21 09:02:04
R1-1809708	Reliability Evaluation for URLLC	Intel	revised	2018-08-16 19:28:55	2018-08-17 08:17:56
R1-1809709	Summary of Remaining RMSI Issues	CATT	revised	2018-08-16 20:21:24	2018-08-21 09:02:04
R1-1809710	Draft Reply LS Discussion on ssb-PositionsInBurst mismatch in SIB1 and	Nokia, Nokia	available	2018-08-17 07:22:44	2018-08-21 09:02:04
R1-1809711	Maintenance for beam management	Qualco mm	available	2018-08-17 07:24:28	2018-08-17 20:47:30
R1-1809712	On selected UE features	Nokia, Nokia	available	2018-08-17 07:26:43	2018-08-17 20:47:30
R1-1809713	Corrections to UCI feedback procedures	CATT	available	2018-08-17 07:28:05	2018-08-17 08:35:54
R1-1809714	Summary of Other System Information Delivery	Samsu ng	revised	2018-08-17 07:30:42	2018-08-21 09:02:04
R1-1809715	Self-evaluation on Mobility	CATT	available	2018-08-17 09:20:57	2018-08-19 11:33:22
R1-1809716	Self-evaluation on Reliability	CATT	available	2018-08-17 09:21:22	2018-08-17 20:47:30
R1-1809717	Self-evaluation on UP latency for NR	CATT	available	2018-08-17 09:22:03	2018-08-17 20:47:30
R1-1809718	Self-evaluation on UP latency for LTE	CATT	available	2018-08-17 09:22:29	2018-08-17 20:47:30
R1-1809719	Self-evaluation on Peak Data Rate and Peak Spectrum Efficiency for LTE	CATT	available	2018-08-17 09:23:01	2018-08-17 20:47:30
R1-1809720	LS on Prioritised Use Cases and Requirements for consideration in Rel-16 NR-V2X	5GAA WG1	treated	2018-08-17 09:39:04	2018-08-17 09:51:16
R1-1809721	Maintenance for Downlink signals and channels	ZTE	available	2018-08-17 10:01:13	2018-08-17 11:00:09
R1-1809722	Remaining issues on downlink signals and channels for initial access	MediaT ek Inc.	available	2018-08-17 10:02:30	2018-08-17 10:46:37
R1-1809723	Remaining issues in NR R-15 UE features	MediaT	available	2018-08-17 10:04:20	2018-08-21 09:02:04
R1-1809724	Summary of views on CSI reporting v1	Ericsso	revised	2018-08-17 20:35:06	2018-08-21 09:02:04
R1-1809725	Maintenance for Physical random access channel and procedure	Qualco mm	available	2018-08-17 20:36:30	2018-08-19 11:33:22
R1-1809726	Feature lead summary for UL signals and	Ericsso	noted	2018-08-21 08:56:48	2018-08-21 17:54:57
R1-1809727	NR-U feature summary on initial access and mobility	Charter Comm	revised	2018-08-21 08:56:49	2018-08-21 15:22:56
R1-1809728	Consideration on Evaluation methodology of IMT-2020 self-evaluation	ZTE	available	2018-08-20 17:44:56	2018-08-20 17:44:56

R1-1809729	Consideration on Evaluation of connection density of IMT-2020 self-evaluation	ZTE	available	2018-08-20 17:44:56	2018-08-20 17:44:56
R1-1809730	MPR and A-MPR considerations for EN-DC UE	MediaT	noted	2018-08-21 08:56:50	2018-08-21 09:02:04
R1-1809731	NR scheduling and HARQ procedures	Intel Corpor	available	2018-08-21 08:56:50	2018-08-21 09:02:04
R1-1809732	Summary of discussion for NR measurements	Intel	noted	2018-08-21 08:56:50	2018-08-21 09:02:04
R1-1809733	Text proposal on physical layer mechanisms for URLLC in 38.300	Huawei,	available	2018-08-21 08:56:51	2018-08-21 09:02:04
R1-1809734	Summary of 7.1.3.3 (Soft Buffer Management)	Ericsson	noted	2018-08-21 08:56:51	2018-08-21 09:02:04
R1-1809735	Summary of contributions for GC-PDCCH carrying SFI	Qualcomm	revised	2018-08-21 08:56:51	2018-08-21 09:02:04
R1-1809736	Maintenance for physical random access channel	Convida	revised	2018-08-21 08:56:52	2018-08-21 09:02:04
R1-1809737	Summary on Paging	Huawei	revised	2018-08-21 08:56:52	2018-08-21 09:02:04
R1-1809738	Summary on frame structure for NR-U	LG	noted	2018-08-21 08:56:52	2018-08-21 15:22:56
R1-1809739	Review Summary for AI 7.1.3.2 related to long PUCCH	Huawei	revised	2018-08-21 08:56:53	2018-08-21 09:02:04
R1-1809740	Summary for PRB bundling	vivo	noted	2018-08-21 08:56:53	2018-08-21 09:02:04
R1-1809741	Summary for CQI and MCS	AT&T	noted	2018-08-21 08:56:53	2018-08-21 17:54:57
R1-1809742	Summary on Codebook based UL transmission	Intel	noted	2018-08-21 08:56:54	2018-08-21 09:02:04
R1-1809743	Feature lead summary of remaining issues for RS multiplexing	Huawei,	noted	2018-08-21 08:56:54	2018-08-21 09:02:04
R1-1809744	Summary of issues on UL non-codebook based transmission	Nokia, Nokia	noted	2018-08-21 08:56:55	2018-08-21 09:02:04
R1-1809745	Summary for DL/UL data scheduling maintenance	Qualcomm	revised	2018-08-21 08:56:55	2018-08-21 09:02:04
R1-1809746	Summary of maintenance related to rate-matching in NR	Nokia, Nokia	noted	2018-08-21 08:56:55	2018-08-21 19:56:41
R1-1809747	Summary of views on the potential enhancements to configured grants	Intel	revised	2018-08-21 08:56:56	2018-08-21 17:54:57
R1-1809748	[Draft] LS on IBE model for V2X	Ericsson, Intel	revised	2018-08-21 08:56:56	2018-08-21 09:02:04
R1-1809749	Remaining issues on CSI-RS #1	Huawei,	noted	2018-08-21 08:56:56	2018-08-21 09:02:04
R1-1809750	Feature lead summary of HARQ enhancement in	Huawei	revised	2018-08-21 08:56:57	2018-08-21 17:54:57
R1-1809751	Summary of Maintenance Issues on Short PUCCH and UCI Multiplexing	Ericsson	noted	2018-08-21 08:56:57	2018-08-21 09:02:04
R1-1809752	Remaining issues on bandwidth part and CA	Huawei,	available	2018-08-20 00:00:00	2018-08-20 00:00:00
R1-1809753	Discussion on the design of SCMA	Huawei,	noted	2018-08-20 00:00:00	2018-08-20 00:00:00
R1-1809754	Further discussion on NoMA evaluations	Huawei,	available	2018-08-20 00:00:00	2018-08-20 00:00:00
R1-1809755	Feature lead summary of PT-RS	Ericsson	revised	2018-08-21 08:56:59	2018-08-21 09:02:04
R1-1809756	Summary of maintenance for PRACH procedures	Qualcomm	revised	2018-08-20 00:00:00	2018-08-20 00:00:00
R1-1809757	Summary #1 for TRS	MediaTek	noted	2018-08-21 08:56:59	2018-08-21 09:02:04
R1-1809758	Feature lead summary on QCL	Nokia, Nokia	noted	2018-08-21 08:56:59	2018-08-21 17:54:57
R1-1809759	Feature lead summary for beam management	Ericsso	available	2018-08-21 08:57:00	2018-08-23 19:53:49
R1-1809760	Reply LS on short message transmission using DCI	RAN1, Huawei	approved	2018-08-21 08:57:00	2018-08-21 17:54:57
R1-1809761	[draft] LS on search space configuration for DCI format 2_0	Qualcomm	revised	2018-08-21 08:57:01	2018-08-21 09:02:04
R1-1809762	Summary of DMRS Issues	Qualcomm	revised	2018-08-21 08:57:01	2018-08-21 09:02:04
R1-1809763	Summary of multiplexing data with different tx durations	vivo	noted	2018-08-21 08:57:01	2018-08-21 15:22:57
R1-1809764	Summary of contributions on NR-U simulation methodology	Qualcomm	noted	2018-08-21 08:57:02	2018-08-21 15:22:57
R1-1809765	Summary on CBG based retransmission	LG Electro	noted	2018-08-21 08:57:02	2018-08-21 19:56:41

R1-1809766	Offline summary for PDCCH structure and search space	NTT DOCO	revised	2018-08-21 08:57:02	2018-08-21 09:02:04
R1-1809767	Offline summary for UL data transmission procedure	NTT DOCO	noted	2018-08-21 08:57:03	2018-08-21 17:54:57
R1-1809768	Summary of simultaneous Rx and Tx	Intel	revised	2018-08-21 08:57:03	2018-08-21 17:54:57
R1-1809769	Summary of GC-PDCCH carrying SFI	Qualcomm	noted	2018-08-21 08:57:03	2018-08-21 09:02:04
R1-1809770	Summary of views on CSI reporting v2	Ericsso	revised	2018-08-21 08:57:04	
R1-1809771	Feature lead summary on CSI measurement	ZTE	noted	2018-08-21 08:57:04	2018-08-23 19:53:49
R1-1809772	Summary for AI 7.1.5 NR UL power control in	ZTE	noted	2018-08-21 08:57:04	2018-08-21 15:22:57
R1-1809773	Summary of Bandwidth Part Remaining Issues	MediaTek	revised	2018-08-21 08:57:05	2018-08-21 17:54:57
R1-1809774	LS on search space configuration for DCI format 2_0	RAN1, Qualco	approved	2018-08-21 08:57:05	2018-08-21 09:02:04
R1-1809775	Discussion on Sidelink Bi-mode Transmission in NR-V2X	Fujitsu	available	2018-08-21 08:57:05	2018-08-21 15:22:57
R1-1809776	Summary for DL/UL data scheduling maintenance	Qualcomm	revised	2018-08-21 08:57:06	2018-08-21 17:54:57
R1-1809777	Feature lead summary of PT-RS	Ericsson	noted	2018-08-21 17:54:57	2018-08-21 17:54:57
R1-1809778	Summary of NR UL power control for CA/DC	Samsu	noted	2018-08-22 05:50:05	2018-08-23 19:53:49
R1-1809779	IMT-2020 eMBB spectral efficiency evaluations	Qualcomm	withdrawn	2018-08-22 05:50:06	
R1-1809780	IMT-2020 self-evaluation: mMTC non-full buffer connection density for LTE-MTC and NB-IoT	Ericsson	available	2018-08-22 05:50:06	2018-08-23 19:53:49
R1-1809781	IMT-2020 self-evaluation: mMTC link budget	Ericsso	available	2018-08-22 05:50:06	2018-08-23 19:53:49
R1-1809782	Summary of Other System Information Delivery	Samsung	noted	2018-08-22 05:50:07	2018-08-23 19:53:49
R1-1809783	Draft LS response on overlapping SIB1 and SI messages	Samsung	revised	2018-08-22 05:50:07	2018-08-23 19:53:49
R1-1809784	Summary of 7.1.6 Maintenance for URLLC	Ericsso	noted	2018-08-22 05:50:08	2018-08-23 19:53:49
R1-1809785	Maintenance for physical random access channel	Convida	revised	2018-08-22 05:50:08	2018-08-23 19:53:49
R1-1809786	Offline summary of transmitter processing for NOMA	ZTE	noted	2018-08-22 05:50:08	2018-08-23 19:53:49
R1-1809787	Offline summary of receiver for NOMA	ZTE	noted	2018-08-22 05:50:08	2018-08-23 19:53:49
R1-1809788	Offline summary of procedures for NOMA	ZTE	noted	2018-08-22 05:50:09	2018-08-25 00:00:00
R1-1809789	Offline summary of performance evaluations for NOMA	ZTE	noted	2018-08-22 05:50:09	2018-08-23 19:53:49
R1-1809790	Email discussion on the calibration results of reference OMA single user cases	ZTE	noted	2018-08-22 05:50:10	2018-08-23 19:53:49
R1-1809791	Feature lead summary for NR-U DL Signals and Channels	Lenovo, Motorol	revised	2018-08-21 15:22:57	2018-08-21 15:22:57
R1-1809792	Summary of DMRS Issues	Qualcomm	revised	2018-08-21 17:54:57	2018-08-21 17:54:57
R1-1809793	Summary of offline discussion for NR mobility	Intel	revised	2018-08-22 05:50:11	2018-08-23 19:53:49
R1-1809794	Summary of Remaining RMSI Issues	CATT	revised	2018-08-21 17:54:57	2018-08-21 17:54:57
R1-1809795	TR 38.889 v0.0.3 Study on NR-based access to unlicensed spectrum	Qualcomm	revised	2018-08-21 17:54:57	2018-08-21 17:54:57
R1-1809796	Summary of views on CSI reporting v3	Ericsso	revised	2018-08-21 17:54:57	2018-08-21 17:54:57
R1-1809797	DRAFT Response LS on additional TDD configuration periodicities	Nokia, Nokia	revised	2018-08-21 17:54:57	2018-08-21 17:54:57
R1-1809798	Offline summary for 7.2.4.1.1 Support of unicast, groupcast and broadcast	LG Electro	noted	2018-08-22 05:50:18	2018-08-23 19:53:49
R1-1809799	Offline summary for 7.2.4.1.2 Physical layer structures and procedure(s)	LG Electro	noted	2018-08-22 05:50:18	2018-08-23 20:09:28
R1-1809800	[Draft] reply LS on active DL BWPs overlapping/non-overlapping with initial DL BWP	MediaTek	revised	2018-08-21 17:54:58	2018-08-21 17:54:58
R1-1809801	Feature Lead's Summary on Channel Access Procedures	Nokia, Nokia	noted	2018-08-22 05:50:19	2018-08-23 19:53:49
R1-1809802	Review Summary for AI 7.1.3.2 related to long PUCCH	Huawei	noted	2018-08-21 17:54:58	2018-08-21 17:54:58
R1-1809803	Open issues of evaluation assumptions for NR	Ericsso	available	2018-08-22 05:50:20	2018-08-22 07:28:22

R1-1809804	Summary of maintenance for PRACH procedures	Qualcomm	revised	2018-08-21 17:54:58	2018-08-21 17:54:58
R1-1809805	Summary #1 on Remaining issues on Beam	MediaT	noted	2018-08-22 05:50:21	2018-08-23 20:09:28
R1-1809806	Summary of offline discussions on UCI multiplexing	Ericsson	noted	2018-08-22 05:50:21	2018-08-23 20:09:28
R1-1809807	Correction of optional antenna element patterns for vehicular UEs	Fraunhofer HHI,	revised	2018-08-21 19:56:41	2018-08-21 19:56:41
R1-1809808	Summary of synchronization signals and PBCH	Ericsson	revised	2018-08-22 05:50:23	2018-08-23 19:53:49
R1-1809809	Draft LS on restrictions in k_SSB values	Ericsson	withdrawn	2018-08-22 05:50:23	
R1-1809810	Reply LS on active DL BWPs overlapping/non-overlapping with initial DL BWP	RAN1, MediaT	approved	2018-08-22 05:50:24	2018-08-23 19:53:49
R1-1809811	CA Offline Session 1	Samsung	revised	2018-08-21 19:56:41	2018-08-21 19:56:41
R1-1809812	Response LS on additional TDD configuration periodicities	RAN1, Nokia, Nokia	approved	2018-08-22 05:50:24	2018-08-22 07:28:22
R1-1809813	Draft LS on second BLER pair for RLM	Ericsso	revised	2018-08-22 05:50:25	2018-08-23 19:53:49
R1-1809814	Summary of SRS	Sony	noted	2018-08-22 05:50:25	2018-08-23 20:09:28
R1-1809815	Summary of 7.2.3.1 Enhancements to support NR backhaul links	AT&T	revised	2018-08-22 05:50:26	2018-08-23 19:53:49
R1-1809816	Summary of 7.2.3.2 Evaluation Methodology for	AT&T	noted	2018-08-22 05:50:26	2018-08-23 19:53:49
R1-1809817	Evaluation Methodology for NR IAB	Samsu	noted	2018-08-22 05:50:27	2018-08-23 19:53:49
R1-1809818	Summary of offline discussion on sidelink synchronization in NR V2X	CATT	noted	2018-08-22 11:30:06	2018-08-22 11:30:06
R1-1809819	Feature lead summary 2 for UL Signals and	Ericsso	noted	2018-08-22 19:12:30	2018-08-22 19:12:30
R1-1809820	Summary of simultaneous Rx and Tx	Intel	noted	2018-08-22 14:34:41	2018-08-22 14:34:41
R1-1809821	WF on the use of No-LBT and one-shot LBT for transmissions outside a shared COT	Broadcom, CableL	available	2018-08-22 14:34:41	2018-08-22 14:34:41
R1-1809822	Feature lead summary for NR-U DL Signals and Channels	Lenovo, Motorol	noted	2018-08-23 19:45:48	2018-08-23 20:09:28
R1-1809823	Summary on the phase continuity issue of intra-	Intel	noted	2018-08-22 14:34:41	2018-08-22 14:34:41
R1-1809824	Summary of TA related aspects	Panaso	revised	2018-08-22 19:12:30	2018-08-22 19:12:30
R1-1809825	Summary of views on the potential enhancements to configured grants	Intel	noted	2018-08-22 14:34:41	2018-08-22 14:34:41
R1-1809826	NR-U feature summary on initial access and mobility	Charter Comm	noted	2018-08-22 19:12:30	2018-08-22 19:12:30
R1-1809827	Offline summary on maintenance for R15 NR PUCCH resource allocation	OPPO	noted	2018-08-23 19:45:49	2018-08-23 20:09:28
R1-1809828	Summary of views on CSI reporting v4	Ericsso	noted	2018-08-22 19:12:30	2018-08-22 19:12:30
R1-1809829	Summary of contributions for GC-PDCCH carrying SFI	Qualcomm	revised	2018-08-22 14:34:41	2018-08-22 14:34:41
R1-1809830	Clarification for FR1-FR2 power control in EN-	Qualco	noted	2018-08-22 14:34:41	2018-08-22 14:34:41
R1-1809831	Clarifications for EN-DC power control	Qualco	available	2018-08-22 19:12:30	2018-08-22 19:12:30
R1-1809832	Limitations on EN-DC PHR	Qualco	noted	2018-08-22 15:41:36	2018-08-22 15:41:36
R1-1809833	Proposals on intra-band EN-DC MPR handing	Qualco	noted	2018-08-22 19:12:30	2018-08-22 19:12:30
R1-1809834	[Draft] LS on support of unicast, groupcast, and broadcast	LG Electro	revised	2018-08-23 15:15:31	2018-08-23 15:15:31
R1-1809835	Summary of contributions for GC-PDCCH carrying SFI	Qualcomm	noted	2018-08-22 15:41:36	2018-08-22 15:41:36
R1-1809836	Text Proposal to 38.300 for URLLC	Ericsso	revised	2018-08-22 19:12:30	2018-08-22 19:12:30
R1-1809837	Text Proposal for MCS determination	Ericsso	revised	2018-08-22 19:12:30	2018-08-22 19:12:30
R1-1809838	Summary for DL/UL data scheduling maintenance	Qualcomm	revised	2018-08-23 09:05:03	2018-08-23 09:05:03
R1-1809839	Outcome of offline discussion on 7.1.3.3 (resource allocation)	Ericsson	noted	2018-08-22 15:41:36	2018-08-22 15:41:36
R1-1809840	Offline Summary for 7.2.4.4 QoS Management FS_NR_V2X	Nokia, Nokia	noted	2018-08-23 15:15:31	2018-08-23 15:15:31
R1-1809841	Discussion on Transmit Timing Offset for NOMA Evaluation	InterDigital, Inc.	available	2018-08-22 19:12:30	2018-08-22 19:12:30
R1-1809842	Remaining issues on CSI-RS #2	Huawei,	noted	2018-08-23 19:45:55	2018-08-23 20:09:28

R1-1809843	Offline discussion on LTE sTTI for EN-DC	LG	revised	2018-08-22 19:12:30	2018-08-22 19:12:30
R1-1809844	Email discussion to collect detailed description of the NOMA schemes	ZTE	available	2018-08-23 19:45:56	2018-09-06 17:00:46
R1-1809845	Summary of maintenance for PRACH procedures	Qualcomm	revised	2018-08-22 19:12:30	2018-08-22 19:12:30
R1-1809846	Summary of offline on maintenance related to rate-matching in NR	Nokia, Nokia	noted	2018-08-23 19:45:57	2018-08-23 20:09:28
R1-1809847	Remaining issues related to LTE-NR coexistence	Ericsso	noted	2018-08-22 19:12:30	2018-08-22 19:12:30
R1-1809848	CA Offline Session 2	Samsung	noted	2018-08-22 19:12:30	2018-08-22 19:12:30
R1-1809849	Summary of Bandwidth Part Remaining Issues	MediaTek	revised	2018-08-23 09:05:03	2018-08-23 09:05:03
R1-1809850	LS response on overlapping SIB1 and SI messages	RAN1, Samsu	approved	2018-08-23 09:05:03	2018-08-23 09:05:03
R1-1809851	[DRAFT] LS on density parameter for CSI-RS-ResourceConfigMobility	Intel	revised	2018-08-23 09:05:03	2018-08-23 09:05:03
R1-1809852	Correction on UL antenna port mapping	Nokia, Nokia	available	2018-08-23 09:05:03	2018-08-23 09:05:03
R1-1809853	LS on second BLER pair for RLM	RAN1,	approved	2018-08-23 09:05:03	2018-08-23 09:05:03
R1-1809854	Summary of Remaining RMSI Issues	CATT	noted	2018-08-23 19:46:00	2018-08-23 20:09:28
R1-1809855	Offline summary for PDCCH structure and search space	NTT DOCO	noted	2018-08-22 19:12:30	2018-08-22 19:12:30
R1-1809856	Draft LS on DCI format 2_3	NTT DOCO	revised	2018-08-23 09:05:03	2018-08-23 09:05:03
R1-1809857	Summary of 7.2.3.1 Enhancements to support NR backhaul links	AT&T	revised	2018-08-23 09:05:03	2018-08-23 09:05:03
R1-1809858	Multi-user advanced receivers for NOMA	ZTE	available	2018-08-23 19:46:01	2018-08-23 20:09:27
R1-1809859	Updated offline summary of receiver for NOMA	ZTE	noted	2018-08-23 12:38:29	2018-08-23 12:38:29
R1-1809860	Updated offline summary of performance evaluations for NOMA	ZTE	noted	2018-08-23 12:38:29	2018-08-23 12:38:29
R1-1809861	Draft skeleton of TR 38.824: Study on physical layer enhancements for NR URLLC	Huawei,	endorsed	2018-08-23 12:38:29	2018-08-23 12:38:29
R1-1809862	Summary of 7.2.6.1 Layer 1 enhancements	Huawei	revised	2018-08-23 12:38:29	2018-08-23 12:38:29
R1-1809863	Text proposal on capturing specific use case and requirements for Rel-16 NR URLLC in TR	Huawei,	noted	2018-08-23 12:38:29	2018-08-23 12:38:29
R1-1809864	Feature lead summary for beam management –	Ericsso	noted	2018-08-23 12:38:29	2018-08-23 12:38:29
R1-1809865	Draft summary on Study on NR-RIM	CMCC	revised	2018-08-23 09:47:06	2018-08-23 09:47:06
R1-1809866	Offline discussion for UL inter UE Tx prioritization/multiplexing	vivo	revised	2018-08-23 12:38:29	2018-08-23 12:38:29
R1-1809867	Offline Summary for NR-V2X Agenda Item - 7.2.4.1.4 Resource Allocation Mechanism	Intel	noted	2018-08-23 15:15:32	2018-08-23 15:15:32
R1-1809868	Offline summary on CSI measurement	ZTE	noted	2018-08-23 19:46:05	2018-08-23 20:09:27
R1-1809869	Text Proposal to 38.300 for URLLC	Ericsso	endorsed	2018-08-23 19:46:06	2018-08-25 00:00:00
R1-1809870	Text Proposal for MCS determination	Ericsso	endorsed	2018-08-23 19:46:06	2018-08-25 00:00:00
R1-1809871	Text Proposal to Capture MCS-C-RNTI	Ericsso	endorsed	2018-08-23 19:46:06	2018-08-25 00:00:00
R1-1809872	Draft skeleton of TR 38.866 Study on remote interference management for NR	CMCC	endorsed	2018-08-23 09:47:06	2018-08-23 09:47:06
R1-1809873	Draft LS on power control for NR(FR1) - NR(FR2) dual connectivity	Ericsson	revised	2018-08-23 12:38:29	2018-08-23 12:38:29
R1-1809874	Issue on EN-DC Dynamic Power Sharing with LTE SPS UL Skipping	Motorola	revised	2018-08-23 15:16:52	2018-08-23 15:16:52
R1-1809875	[Draft] LS on NR-RIM frameworks	CMCC	revised	2018-08-23 19:46:08	2018-08-25 15:37:55
R1-1809876	LS on OSI acquisition	RAN2,	treated	2018-08-23 12:38:29	2018-08-23 12:38:29
R1-1809877	Reliability Evaluation for URLLC	Intel	available	2018-08-23 12:38:29	2018-08-23 12:38:29
R1-1809878	Summary of AI: 7.2.4.3 Uu-based sidelink resource allocation/configuration	Huawei,	noted	2018-08-23 15:15:32	2018-08-23 15:15:32
R1-1809879	Summary of synchronization signals and PBCH	Ericsson	noted	2018-08-23 19:46:09	2018-08-23 20:09:27
R1-1809880	Draft reply LS on ssb-PositionsInBurst mismatch in SIB1 and ServingcellConfigCommon	Ericsson	revised	2018-08-23 19:46:10	2018-08-25 15:37:55
R1-1809881	Draft LS on UE behaviour on reception of channels or RS in the same OFDM symbol	Intel Corpor	revised	2018-08-23 19:46:10	2018-08-23 20:09:27
R1-1809882	Guidance on simultaneous reception of channels	Intel	noted	2018-08-23 19:46:10	2018-08-23 20:09:27

R1-1809883	Proposal on Rel-15 UE feature group 6-23, 4-19	Intel	noted	2018-08-23 19:46:11	2018-08-25 00:00:00
R1-1809884	Remaining issues on BWP features in R15 NR	MediaT	available	2018-08-23 19:46:11	2018-08-25 00:00:00
R1-1809885	Offline discussion on LTE sTTI for EN-DC	LG	noted	2018-08-23 15:15:32	2018-08-23 15:15:32
R1-1809886	LS on power control for NR(FR1) - NR(FR2) dual connectivity	RAN1, Ericsso	approved	2018-08-23 12:38:29	2018-08-23 12:38:29
R1-1809887	Reply LS on termination of contention-free BFR	RAN1,	approved	2018-08-23 15:16:53	2018-08-23 15:16:53
R1-1809888	LS on maximum number of TCI states	RAN1,	approved	2018-08-23 19:46:13	2018-08-23 20:09:27
R1-1809889	Reply LS on UE power class and UE capability on SRS carrier switch	RAN1, Huawei	approved	2018-08-23 19:46:13	2018-08-25 15:37:55
R1-1809890	LS on UE behaviour on reception of channels or RS in the same OFDM symbol	RAN1, Intel	approved	2018-08-23 19:46:13	2018-08-25 15:37:55
R1-1809891	Summary of DMRS Issues	Qualco mm	noted	2018-08-23 19:46:14	2018-08-25 00:00:00
R1-1809892	LS on default configuration for L1 parameter	RAN2, NTT	treated	2018-08-23 12:38:29	2018-08-23 12:38:29
R1-1809893	Evaluation and enhancement of NR Uu and LTE Uu for advanced V2X use cases	Huawei ,	available	2018-08-23 15:15:32	2018-08-23 15:15:32
R1-1809894	Summary for DL/UL data scheduling maintenance	Qualco mm	revised	2018-08-23 19:46:15	2018-08-23 20:09:27
R1-1809895	Summary for further discussion on codeword	Samsu	noted	2018-08-23 19:46:15	2018-08-23 20:09:27
R1-1809896	Corrections for UL MIMO for single antenna port, DCI format, and antenna port mapping	Ericsso n,	noted	2018-08-23 12:38:29	2018-08-23 12:38:29
R1-1809897	Feature lead summary 2 of PT-RS	Ericsso n	noted	2018-08-23 19:46:16	2018-08-25 00:00:00
R1-1809898	Corrections on UL data transmission procedure	NTT DOCO	noted	2018-08-23 19:46:16	2018-08-23 20:09:27
R1-1809899	Summary on Paging	Huawei	revised	2018-08-23 15:16:53	2018-08-23 15:16:53
R1-1809900	Updated DL spectral efficiency in the eMBB usage scenario for IMT-2020 self evaluation	ZTE	available	2018-08-23 19:46:17	2018-08-23 20:09:27
R1-1809901	Updated UL spectral efficiency in the eMBB usage scenario for IMT-2020 self evaluation	ZTE	available	2018-08-23 19:46:17	2018-08-23 20:09:27
R1-1809902	Consideration on Evaluation of connection density of IMT-2020 self-evaluation	ZTE	available	2018-08-23 19:46:18	2018-08-25 00:00:00
R1-1809903	Summary of maintenance for PRACH procedures	Qualco mm	noted	2018-08-23 19:46:18	2018-08-23 20:09:27
R1-1809904	Summary of Coexistence Aspects in NR-V2X	Qualco	revised	2018-08-23 15:16:53	2018-08-23 15:16:53
R1-1809905	Remaining issues for non-MIMO features and	Qualco	noted	2018-08-23 19:46:19	2018-08-25 00:00:00
R1-1809906	Remaining issues for MIMO features and capabilities	Qualco mm	available	2018-08-23 19:46:19	2018-08-27 17:17:54
R1-1809907	LS on support of unicast, groupcast, and broadcast	RAN1, LG	approved	2018-08-23 19:46:20	2018-08-25 15:37:55
R1-1809908	Draft LS on maximum number of TCI states	Ericsso	revised	2018-08-23 19:46:20	2018-08-23 20:09:27
R1-1809909	Feature Lead Summary AI 7.2.4.2 v1	Ericsso n	revised	2018-08-23 15:16:53	2018-08-23 15:16:53
R1-1809910	Summary of TA related aspects	Panaso	noted	2018-08-23 19:46:21	2018-08-23 20:09:27
R1-1809911	Further discussions on UL non-codebook based transmission	Nokia, Nokia	noted	2018-08-23 19:46:21	2018-08-23 20:09:27
R1-1809912	Comeback issues for CSI reporting	Ericsso	noted	2018-08-23 19:46:21	2018-08-23 20:09:27
R1-1809913	Chairman's notes of AI 7.1.2 Maintenance for MIMO	Ad-hoc chair	endorsed	2018-08-23 19:46:22	2018-08-25 00:00:00
R1-1809914	Chairman's notes of AI 7.1.4 Maintenance for NR-LTE co-existence	Ad-hoc chair	endorsed	2018-08-23 19:46:22	2018-08-25 00:00:00
R1-1809915	Chairman's notes of AI 7.1.5 Maintenance for UL power control	Ad-hoc chair	endorsed	2018-08-23 19:46:22	2018-08-25 00:00:00
R1-1809916	Chairman's notes of AI 7.2.2 Study on NR-based Access to Unlicensed Spectrum	Ad-hoc chair (Ericss	endorsed	2018-08-23 19:46:23	2018-08-25 00:00:00
R1-1809917	Chairman's notes of AI 7.2.7 Study on Self Evaluation towards IMT-2020 Submission	Ad-hoc chair	endorsed	2018-08-23 19:46:23	2018-08-25 00:00:00
R1-1809918	Chairman's notes of AI 7.1.7 UE features	Ad-hoc chair	endorsed	2018-08-23 19:46:23	2018-08-25 00:00:00
R1-1809919	Maintenance for physical random access channel	Convid a	noted	2018-08-23 19:46:24	2018-08-23 20:09:27
R1-1809920	[Draft] LS on IBE model for V2X	Ericsso n, Intel	revised	2018-08-23 19:46:24	2018-08-23 20:09:27

R1-1809921	Feature lead summary of HARQ enhancement in	Huawei	noted	2018-08-23 19:46:25	2018-08-23 20:09:27
R1-1809922	New UE features list for NR	NTT	noted	2018-08-23 19:46:25	2018-08-25 00:00:00
R1-1809923	[Draft] LS on new UE features list for NR	NTT	revised	2018-08-23 19:46:25	2018-08-25 15:37:55
R1-1809924	Correction of optional antenna element patterns for vehicular UEs	Fraunhofer HHI, Fraunhofer IIS,	agreed	2018-08-23 19:46:26	2018-08-23 20:09:27
R1-1809925	Summary on Paging	Huawei	noted	2018-08-23 19:46:27	2018-08-23 20:09:27
R1-1809926	Summary #2 on Remaing issues on Beam	MediaT	noted	2018-08-23 19:46:27	2018-08-23 20:09:27
R1-1809927	Summary of PUCCH maintenance	Qualcomm	noted	2018-08-23 19:46:28	2018-08-23 20:09:27
R1-1809928	Outcome of offline discussion on 7.1.3.3 (resource allocation) – part II	Ericsson	noted	2018-08-23 19:46:28	2018-08-23 20:09:27
R1-1809929	Summary of Bandwidth Part Remaining Issues	MediaTek	revised	2018-08-23 19:46:28	2018-08-23 20:09:27
R1-1809930	[DRAFT] LS on K1 Slot Offset	Qualcomm	revised	2018-08-23 19:46:29	2018-08-25 15:37:55
R1-1809931	Draft reply LS on UE power class and UE capability on SRS carrier switch	Huawei	revised	2018-08-23 19:46:29	2018-08-23 20:09:27
R1-1809932	Summary of maintenance issues on Short PUCCH	Ericsson	noted	2018-08-23 19:46:30	2018-08-25 00:00:00
R1-1809933	Summary of offline discussion for NR mobility	Intel	revised	2018-08-23 19:46:30	2018-08-25 15:37:55
R1-1809934	Summary on discussion on IMT-2020 evaluation for peak data rate and peak spectral efficiency	Huawei,	noted	2018-08-23 19:46:30	2018-08-25 00:00:00
R1-1809935	Summary on discussion on IMT-2020 evaluation for eMBB spectral efficiency	Huawei,	noted	2018-08-23 19:46:31	2018-08-25 00:00:00
R1-1809936	Summary on discussion on IMT-2020 evaluation for eMBB user experienced data rate	Huawei,	noted	2018-08-23 19:46:31	2018-08-25 00:00:00
R1-1809937	Summary on discussion on IMT-2020 evaluation for eMBB mobility evaluation	Huawei,	noted	2018-08-23 19:46:31	2018-08-25 00:00:00
R1-1809938	Summary on discussion on IMT-2020 evaluation for energy efficiency	Huawei,	endorsed	2018-08-23 19:46:32	2018-08-25 00:00:00
R1-1809939	Summary on discussion on IMT-2020 evaluation for mMTC connection density	Huawei,	noted	2018-08-23 19:46:32	2018-08-25 00:00:00
R1-1809940	Summary on discussion on IMT-2020 evaluation	Huawei	noted	2018-08-23 19:46:33	2018-08-25 00:00:00
R1-1809941	Summary of 7.2.3.1 Enhancements to support NR backhaul links	AT&T	noted	2018-08-23 19:46:33	2018-08-25 15:37:55
R1-1809942	LS on UE capability for simultaneousTxSUL-	RAN2,	treated	2018-08-23 19:46:33	2018-08-25 00:00:00
R1-1809943	Agreements on NR-RIM frameworks	CMCC	endorsed	2018-08-23 19:46:34	2018-08-25 00:00:00
R1-1809944	Feature Lead Summary AI 7.2.4.2 v2	Ericsson	noted	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1809945	[Draft] LS on IBE model for V2X	Ericsson, Intel	revised	2018-08-25 15:29:21	2018-08-25 15:37:55
R1-1809946	Correction and confirmation of some evaluation assumption parameters	LG Electro	revised	2018-08-25 15:29:22	2018-08-25 15:37:55
R1-1809947	Summary on discussion on IMT-2020 evaluation for CP and UP latency	Huawei	noted	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1809948	LS response on NPBCH-based RRM measurement for FeNB-IoT UE	RAN4, Qualco	treated	2018-08-25 15:29:24	2018-08-25 15:37:55
R1-1809949	Proposal for Data rate and TBS	Ericsson	available	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1809950	Offline summary for remaining evaluation	LG	noted	2018-08-25 15:29:25	2018-08-25 15:37:55
R1-1809951	Offline discussion summary of 7.2.6.1 Layer 1	Huawei	noted	2018-08-25 15:29:25	2018-08-25 15:37:55
R1-1809952	Summary for DL/UL data scheduling maintenance	Qualcomm	withdrawn	2018-08-25 15:29:25	
R1-1809953	UE Processing Time and UCI Multiplexing TPs for 38.213 and 38.214	Qualcomm	noted	2018-08-25 15:29:26	2018-08-25 15:37:55
R1-1809954	Issue on EN-DC Dynamic Power Sharing with LTE SPS UL Skipping	Motorola	noted	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1809955	Draft LS on the number of CQI reports	Intel	revised	2018-08-25 15:29:26	2018-08-25 15:37:55
R1-1809956	Maintenance for DL/UL data scheduling and HARQ procedure	Qualcomm	withdrawn	2018-08-25 15:29:27	

R1-1809957	Above Peak-Rate Skip-Decoding Rule	Qualcomm	available	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1809958	Reply LS on ssb-PositionsInBurst mismatch in SIB1 and ServingcellConfigCommon	RAN1, Ericsso	approved	2018-08-25 15:29:27	2018-08-25 15:37:55
R1-1809959	[draft] Reply LS on Further Agreements on Paging Occasions	Huawei	revised	2018-08-25 15:29:28	2018-08-25 15:37:55
R1-1809960	LS on density parameter for CSI-RS-	RAN1,	approved	2018-08-25 15:29:28	2018-08-27 07:07:53
R1-1809961	Summary of Bandwidth Part Remaining Issues	MediaTek	noted	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1809962	[Draft] LS on UE capablity for NR-LTE	Intel	revised	2018-08-25 15:29:28	2018-08-25 15:37:55
R1-1809963	[DRAFT] LS on collision of RRM measurement resources with uplink transmissions in FR1 TDD	vivo	revised	2018-08-25 15:29:29	2018-08-25 15:37:55
R1-1809964	Updated offline summary for 7.2.4.1.2 Physical layer structures and procedure(s)	LG Electro	noted	2018-08-25 15:29:29	2018-08-25 15:37:55
R1-1809965	Reply LS on Further Agreements on Paging Occasions	RAN1, Huawei	approved	2018-08-25 15:29:29	2018-08-25 15:37:55
R1-1809966	LS on DCI format 2_3	RAN1, NTT	approved	2018-08-25 15:29:30	2018-08-27 07:07:53
R1-1809967	[Draft] LS on UE capablity for NR-LTE	Intel	revised	2018-08-25 15:29:30	2018-08-25 15:37:55
R1-1809968	Draft LS on cross-carrier scheduling	NTT DOCO	revised	2018-08-25 15:29:30	2018-08-25 15:37:55
R1-1809969	Draft LS on higher layer configuration for search space monitoring	NTT DOCO	revised	2018-08-25 15:29:30	2018-08-25 15:37:55
R1-1809970	Draft reply LS on PDCCH common search space configurations	NTT DOCO	revised	2018-08-25 15:29:31	2018-08-25 15:37:55
R1-1809971	Reply LS on PDCCH common search space configurations	RAN1, NTT	approved	2018-08-25 15:29:31	2018-08-25 15:37:55
R1-1809972	Summary #2 on frame structure for NR-U	LG	available	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1809973	Draft summary on Study on NR-RIM	CMCC	noted	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1809974	Updated summary of transmitter side signal processing schemes for NOMA	ZTE	noted	2018-08-25 15:29:32	2018-08-25 15:37:55
R1-1809975	Updated offline summary of performance evaluations for NOMA	ZTE	noted	2018-08-25 15:29:32	2018-08-25 15:37:55
R1-1809976	Summary of UCI multiplexing on PUSCH	Qualcomm	noted	2018-08-25 15:29:33	2018-08-25 15:37:55
R1-1809977	Outcome of offline session on data rates and TB size limitation	Ericsson	noted	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1809978	TP for 38.874 on Evaluation Methodology for NR	AT&T	noted	2018-08-25 15:29:33	2018-08-25 15:37:55
R1-1809979	Summary of 7.2.6.3 Enhanced UL grant-free	NTT	noted	2018-08-25 15:29:33	2018-08-25 15:37:55
R1-1809980	General principle of re-transmission of PUSCH with configured grant	NTT DOCO	available	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1809981	Summary of 7.2.6.1 Layer 1 enhancements	Huawei	available	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1809982	LS on K1 Slot Offset	RAN1, Qualco	approved	2018-08-25 15:29:34	2018-08-25 15:37:55
R1-1809983	On offline discussion on DCI	Ericsson	noted	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1809984	[Draft] LS on Text Proposal to 38.300 for URLLC	Ericsso	revised	2018-08-25 15:29:35	2018-08-25 15:37:55
R1-1809985	Summary of offline discussion for NR mobility	Intel	noted	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1809986	[Draft] LS on corrections for max data rate in	Intel	withdrawn	2018-08-25 15:29:36	2018-08-25 15:37:55
R1-1809987	LS on NR-RIM frameworks	RAN1, CMCC	approved	2018-08-25 15:29:36	2018-08-25 15:37:55
R1-1809988	CA Offline Session 3	Samsung	noted	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1809989	NR UE UL beam capability	Qualco	agreed	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1809990	Summary of Coexistence Aspects in NR-V2X	Qualco	noted	2018-08-25 15:29:37	2018-08-25 15:37:55
R1-1809991	LS on Text Proposal to 38.300 for URLLC	RAN1,	approved	2018-08-25 15:29:37	2018-08-25 15:37:55
R1-1809992	LS on NR-LTE coexistence	RAN1, Intel,	approved	2018-08-25 15:29:37	2018-08-25 15:37:55
R1-1809993	LS on the number of CQI reports	RAN1,	approved	2018-08-25 15:29:38	2018-08-25 15:37:55
R1-1809994	Summary of maintenance issues on frequency hopping	Ericsson	revised	2018-08-25 15:29:38	2018-08-25 15:37:55
R1-1809995	Offline discussion for UL inter UE Tx prioritization/multiplexing	vivo	noted	2018-08-25 15:29:38	2018-08-25 15:37:55
R1-1809996	Summary of NR V2X synchronization offline	CATT	noted	2018-08-25 15:29:39	2018-08-25 15:37:55

R1-1809997	Summary of offline discussion on LBRM	Ericsson	noted	2018-08-25 15:29:39	2018-08-25 15:37:55
R1-1809998	New UE features list for NR	NTT	agreed	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1809999	Draft LS on UE capability for simultaneousTxSUL-	Huawei	revised	2018-08-25 15:29:40	2018-08-25 15:37:55
R1-1810000	[Draft] LS on bandwidth configuration for initial BWP	MediaTek	revised	2018-08-25 15:29:40	2018-08-25 15:37:55
R1-1810001	Reply LS on SRS carrier switching	RAN4,	treated	2018-08-25 15:29:40	2018-08-25 15:37:55
R1-1810002	LS on bandwidth configuration for initial BWP	RAN1, MediaT	approved	2018-08-25 15:29:40	2018-08-25 15:37:55
R1-1810003	Summary of UCI multiplexing on PUSCH	Qualcomm	available	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1810004	LS on UE capability for simultaneousTxSUL-	RAN1,	approved	2018-08-25 15:29:41	2018-08-25 15:37:55
R1-1810005	LS on new UE features list for NR	RAN1, NTT	approved	2018-08-25 15:29:41	2018-08-25 15:37:55
R1-1810006	LS on IBE model for V2X	RAN1, Ericsso	approved	2018-08-25 15:29:42	2018-08-25 15:37:55
R1-1810007	Correction and confirmation of some evaluation assumption parameters	LG Electro	agreed	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1810008	LS on collision of RRM measurement resources with uplink transmissions in FR1 TDD	RAN1, vivo	approved	2018-08-25 15:29:42	2018-08-25 15:37:55
R1-1810009	LS on cross-carrier scheduling	RAN1, NTT	approved	2018-08-25 15:29:43	2018-08-25 15:37:55
R1-1810010	LS on higher layer configuration for search space monitoring	RAN1, NTT	approved	2018-08-25 15:29:43	2018-08-25 15:37:55
R1-1810011	Summary of maintenance issues on frequency hopping	Ericsson	endorsed	2018-08-25 00:00:00	2018-08-25 00:00:00
R1-1810012	Text proposal to TR37.910 for LTE peak data rate and peak spectral efficiency	Huawei	endorsed	2018-09-03 09:43:57	2018-09-06 14:18:53
R1-1810013	Text proposal to TR37.910 for NR control plane	Huawei	endorsed	2018-09-03 09:43:58	2018-09-06 14:18:53
R1-1810014	Summary of IMT-2020 evaluation results of eMBB spectral efficiency	Huawei	endorsed	2018-09-03 09:43:58	2018-10-04 21:18:43
R1-1810015	Rate matching for A-CSI-RS	Qualcomm	agreed	2018-03-09 00:00:00	2018-03-09 00:00:00
R1-1810016	Rate matching for A-CSI-RS	Qualcomm	agreed	2018-03-09 00:00:00	2018-03-09 00:00:00
R1-1810017	CR to 38.202 capturing the RAN1#94 meeting agreements	Qualcomm	agreed	2018-06-09 00:00:00	2018-06-09 00:00:00
R1-1810018	CR to 38.211 capturing the RAN1#94 meeting agreements	Ericsson	agreed	2018-09-03 09:44:06	2018-09-06 07:31:58
R1-1810019	CR to 38.212 capturing the RAN1#94 meeting agreements	Huawei	agreed	2018-09-03 09:44:09	2018-09-06 07:31:58
R1-1810020	CR to 38.213 capturing the RAN1#94 meeting agreements	Samsung	agreed	2018-09-03 09:44:11	2018-09-06 07:31:58
R1-1810021	CR to 38.214 capturing the RAN1#94 meeting agreements	Nokia	agreed	2018-09-03 09:44:13	2018-09-06 07:31:58
R1-1810022	CR to 38.215 capturing the RAN1#94 meeting agreements	Intel	agreed	2018-09-03 09:44:16	2018-09-06 07:31:58
R1-1810023	Corrections to sTTI and SPT implementation	Ericsson	agreed	2018-09-03 09:44:20	2018-09-05 16:43:18
R1-1810024	Corrections on shortened processing time and shortened TTI in 36.212	Huawei	agreed	2018-09-03 09:44:23	2018-09-05 16:43:17
R1-1810025	Corrections for shortened processing time and shortened TTI in 36.213, s00-s05	Motorola	agreed	2018-09-03 09:44:26	2018-09-05 16:43:17
R1-1810026	Corrections for shortened processing time and shortened TTI in 36.213, s06-s07	Motorola	agreed	2018-09-03 09:44:28	2018-09-05 16:43:17
R1-1810027	Corrections for shortened processing time and shortened TTI in 36.213, s08-s09	Motorola	agreed	2018-09-03 09:44:31	2018-09-05 16:43:17
R1-1810028	Corrections for shortened processing time and shortened TTI in 36.213, s10-s13	Motorola	agreed	2018-09-03 09:44:34	2018-09-05 16:43:17
R1-1810029	Correction to V2X Phase 2 based on LTE in 36.213, s14	Motorola	agreed	2018-09-03 09:44:37	2018-09-05 17:21:24
R1-1810030	Corrections to eMTC	Ericsson	agreed	2018-09-03 09:44:40	2018-09-05 19:06:33
R1-1810031	Corrections to Even further enhanced MTC for LTE	Huawei	agreed	2018-09-03 09:44:44	2018-09-05 19:06:33

R1-1810032	Corrections to even further enhanced MTC for LTE in 36.213, s00-s05	Motorola	agreed	2018-09-03 09:44:47	2018-09-05 19:06:33
R1-1810033	Corrections to even further enhanced MTC for LTE in 36.213, s06-s07	Motorola	agreed	2018-09-03 09:44:50	2018-09-05 19:06:33
R1-1810034	Corrections to even further enhanced MTC for LTE in 36.213, s08-s09	Motorola	agreed	2018-09-03 09:44:53	2018-09-05 19:06:33
R1-1810035	Corrections to NB-IoT	Ericsson	agreed	2018-09-03 09:44:55	2018-09-05 19:47:20
R1-1810036	Corrections to Further Enhancements of NB-IoT	Huawei	agreed	2018-09-03 09:44:59	2018-09-05 19:47:20
R1-1810037	Editorial corrections to Rel-15 Further NB-IoT enhancements in 36.213, s2	Motorola	agreed	2018-09-03 09:45:02	2018-09-05 19:47:20
R1-1810038	Corrections to Rel-15 Further NB-IoT enhancements in 36.213, s14	Motorola	agreed	2018-09-03 09:45:06	2018-09-05 19:47:20
R1-1810039	Introduction of NPBCH based NRSRP measurement	Ericsson	agreed	2018-09-03 09:45:09	2018-09-05 19:47:20
R1-1810040	Corrections to LTE HRLLC implementation	Ericsson	agreed	2018-09-03 09:45:13	2018-09-06 06:27:55
R1-1810041	Corrections on HRLLC in 36.212	Huawei	agreed	2018-09-03 09:45:16	2018-09-06 06:27:55
R1-1810042	Corrections to HRLLC in 36.213, s00-s05	Motorola	agreed	2018-09-03 09:45:18	2018-09-06 06:27:55
R1-1810043	Corrections to HRLLC in 36.213, s06-s07	Motorola	agreed	2018-09-03 09:45:21	2018-09-06 06:27:55
R1-1810044	Corrections to HRLLC in 36.213, s08-s09	Motorola	agreed	2018-09-03 09:45:23	2018-09-06 06:27:55
R1-1810045	Corrections to even further enhanced MTC for LTE in 36.213, s14-sxx	Motorola	agreed	2018-09-05 19:08:17	2018-09-05 19:08:37
R1-1810046	TR 38.812 (NOMA) v0.1.0	ZTE	endorsed	2018-09-06 15:43:01	2018-09-06 16:34:52
R1-1810047	TR 38.889 v0.1.0 Study on NR-based access to unlicensed spectrum	Qualcomm	endorsed	2018-09-06 19:37:37	2018-09-07 06:46:59
R1-1810048	Email discussion on the SLS calibration and template for collecting SLS evaluation results	ZTE	available	2018-09-18 09:35:05	2018-10-04 21:15:18
R1-1810049	Summary of Email discussion on additional simulation assumption for RIM	CMCC	available	2018-09-18 09:35:05	2018-10-04 21:15:18

Appendix E

3GPP TSG RAN WG1 Meeting #95 **R1-1812101**
Spokane, USA, 12th – 16th November 2018

Source: **MCC Support**

Title: **Final Report of 3GPP TSG RAN WG1 #94bis v1.0.0 (Chengdu, China, 8th – 12h October 2018)**

Document for: **Approval**



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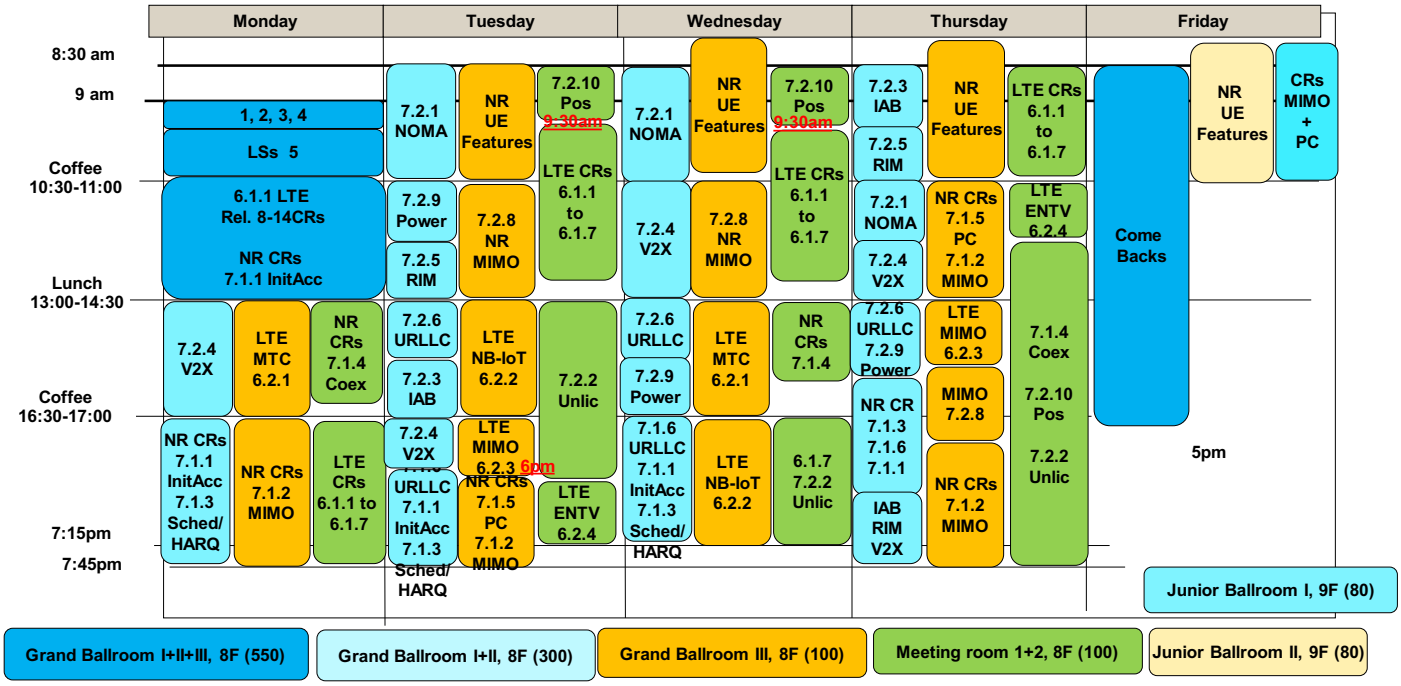
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3GPP TSG RAN WG1 Meeting #95 R1-1812101
Spokane, USA, 12th – 16th November 2018

Main facts summary

The 3GPP TSG WG RAN1#94bis meeting, hosted by the Chinese Friends of 3GPP, was held in the JW MARRIOTT Hotel Chengdu, China.
The meeting started at 9:00 on Monday 8th October and finished at 16:50 on Friday 12th October 2018.
The number of attending delegates, having confirmed their participation through the electronic check-in application, was **478.**
Note that the number of registered was 634.

The schedule of the week was as follows:



The list of action points that require RAN1 post meeting follow-up is listed in Annex F (end of document).

The number of contributions for this meeting was **1956**.

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

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

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1 Opening of the meeting

Mr Wanshi Chen (RAN1 Chairman) welcomed the participants of the RAN WG1 #94bis meeting and opened the meeting at 09:00.

Mr Fang-chen Cheng from CATT on behalf of the Chinese Friends of 3GPP, Apple Computer, BEIJING SAMSUNG TELECOM R&D CENTER, China Academy of Information and Communications Technology, China Academy of Telecommunication Technology, China Information Technology Design & Consulting Institute, China Mobile Communications Corporation, China Telecommunications Corporation, China Unicom, Guangdong OPPO Mobile Telecommunications, Huawei Technologies, Intel China, Nanjing Ericsson Panda, Qualcomm Wireless Communication Technologies (China), vivo Mobile Communication, ZTE Corporation, welcomed the delegates, and detailed the domestic arrangements for the full week.

1.1 Call for IPR

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

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

1.2 Competition law statement

The Chairman also drew Member's attention to the fact that 3GPP activities are subject to antitrust and competition laws and that compliance with said laws is therefore required of any participant of this WG meeting including the Chairman and Vice Chairmen. In case of question, please contact your legal counsel.
The present meeting will be conducted with strict impartiality and in the interests of 3GPP.
Furthermore, the Chairman reminded Members that timely submission of work items/contributions in advance of WG meetings is important to allow for full and fair consideration of such matters.

1.3 Network usage conditions

The PCG has laid down the following network usage conditions:

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

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

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

1.4 Check-in for Registered Delegates

The attention of the delegates to this meeting was drawn to the fact that it is not permitted to check in other delegates on their behalf. In the event of technical difficulties preventing check-in, delegates should present themselves in person to the Secretary.

1.5 Aspects related to RAN1 Meeting Management

Delegates are encouraged to check R1-1721392 for some thoughts on RAN1 meeting management.

RAN1 chair reminded to follow the rules laid down in the above document.

2 Approval of Agenda

R1-1810050 **Draft Agenda of RAN1#94bis meeting** **RAN1 Chair**

Wanshi Chen (RAN1 Chair) proposed the agenda for the meeting, as well the schedule of the week.

Discussion: No comments.

Mr Chair warned the group that for NR maintenance, only essential corrections should be considered. If something is "nice to have", "more flexibility", "better performance", etc. forget it for Rel-15 NR maintenance!

CATT hopes feature leads will be consistent with above warning

RAN1 chair: they have to...

Decision: The agenda is approved.

3 Highlights from RAN plenary

R1-1810052 **Highlights from RAN#81** **RAN1 Chair**

Discussion: RAN1 Ad-Hoc meeting in June'19 is cancelled.

MCC: SID of the newly approved SI on indoor IIOT channel modeling states that the outcomes should be captured in the existing under change control TR38.901. Therefore no TPs are allowed, only draft CRs /CRs can be prepared for updating the TR.

Decision: The document is noted.

4 Approval of Minutes from previous meetings

R1-1810051 **Report of RAN1#94 meeting** **ETSI**

The document was presented by Patrick Merias from MCC (ETSI Mobile Competence Center) and provides the report from last RAN1#94 meeting in Gothenburg.

Discussion: MCC recalled that any CR (including shadow CR) should be written based upon the latest version of the spec - some CRs from the last round of agreed CRs were breaking the law...

Same shall apply with the SI that are due for completion by Dec 18 - please use the latest clean version of the corresponding spec for any further updates.

Apologizes for missing "to RAN" as a recipient of the Rel-15 LTE UE features LS (R1-1809617).

Decision: The document is approved.

5 Incoming Liaison Statements

LTE

R1-1810054 **LS to RAN1 on intra-band LAA aggregation** **RAN4, Ericsson**

Decision: The document is noted.

R1-1810079 **LS regarding LTE LAA channel combinations for 5GHz** **RAN, Charter Communications**

Decision: The document is noted.

NR

//7.1.1 related

R1-1810056 **LS on Initial Active BWP for Pattern 2 and Pattern 3** **RAN4, Nokia**

RAN4 has discussed the RAN1 LS (R1-1807893) and agreed to capture the requirements in the RAN4 such that:

- UE shall be able to perform intra-frequency SSB based measurements without measurement gaps if
  - the SSB is completely contained in the downlink active BWP of the UE, or
  - the SS/PBCH block and control resource set multiplexing pattern 2 or 3 is configured in PBCH and initial DL BWP is active and the SSB and the initial DL BWP is no more than 1RB apart.

Discussion: No need to feedback to RAN4 if there is no impact for RAN1. To be further checked.

Decision: The document is noted.

R1-1810067 **LS to RAN1 on SSBs per RACH occasion** **RAN2, Huawei**

Decision: The document is noted.

R1-1810071 **LS on Preamble Power Ramping Counter RAN2, Fujitsu**
Decision: The document is noted. Reply LS is necessary. See under 7.1.1.2.
R1-1810357 Draft reply LS on preamble power ramping counter vivo
R1-1810477 Discussion on power ramping in random access procedure Fujitsu
R1-1810478 Draft reply to LS on Preamble Power Ramping Counter Fujitsu
R1-1810734 draft Reply to LS on Preamble Power Ramping Counter Intel Corporation

//7.1.2 related
R1-1810053 **Reply LS on adjacent TDM combinations of SRS for antenna switching and other UL physical channels RAN4, Huawei**
Decision: The document is noted.

R1-1810055 **LS on the beam correspondence requirement for FR2 UEs RAN4, Apple Inc.**
Decision: The document is noted.

R1-1810069 **LS on the RRC message size restriction RAN2, MediaTek**
RAN2 asks RAN1 to:
- Take the restriction of RRC message size into account in all the future work requiring RRC configuration;
- Provide typical configurations with realistic parameter values of *CSI-MeasConfig, RACH-ConfigDedicated, MeasObjectNR*, etc. for RRC message size evaluation;
- Consider if anything can be done in RAN1 specifications to deal with the over-sizes L1 configuration without change to the parameters.

Discussion: Mr Chair commented that, assuming there is no impact to RAN1 spec, this LS should not be considered as high priority. Meeting time can be spent on other things.
Decision: The document is noted. Reply LS is necessary
R1-1810420 Discussion about RAN2 LS on RRC message size restriction MediaTek Inc.

//7.1.3 related
R1-1810070 **LS on corrections to CSS configurations RAN2, Qualcomm**
Discussion: CATT --> RAN2 agreements seem contradictory with RAN1 agreements.
Decision: The document is noted. Further check offline is needed.

//7.1.4 related
R1-1810066 **Reply LS on power class for FR1 EN-DC and NR CA RAN2, Ericsson**

R1-1810068 **LS on intra-band combination for NR CA and MR-DC RAN2, NTT DOCOMO**
Decision: The document is noted. Reply LS is necessary. See under 7.1.4.
R1-1811139 [Draft] Reply LS on intra-band combination for NR CA and MR-DC Intel Corporation

// UE features
R1-1810063 **LS on UE feature list for NR RAN4, NTT DOCOMO, INC.**
Decision: The document is noted.
R1-1810064 **LS on UE feature list for LTE RAN4, NTT DOCOMO, INC.**
Decision: The document is noted.
R1-1810065 **LS on L1 capabilities RAN2, Intel**
Decision: The document is noted.
R1-1810075 **LS on RAN1 NR UE feature list RAN, NTT DOCOMO**
Decision: The document is noted.

//Rel-16
R1-1810074 **LS on TSN integration in the 5G System SA2, Qualcomm**
Decision: The document is noted. Reply LS is necessary.

Conclusion:

- Waiting for RAN2 for possible reply LS before discussing the issue as in R1-1810074 in RAN1 for RAN1 reply LS

R1-1811578 Draft LS response to TSN integration in the 5G system Huawei, HiSilicon
R1-1811579 Discussion on KPIs for TSN integration in the 5G system Huawei, HiSilicon

// The following LSs/documents are noted, and are not presented online unless requested
R1-1810057 LS to RAN2 on removing a sentence related to restriction for intra-band LAA aggregation RAN4, Ericsson
R1-1810058 LS on SFTD scenarios for late drop RAN4, Ericsson
R1-1810059 Reply LS on RAN2 progress on ANR RAN4, vivo
R1-1810060 Reply LS to IEEE 802.11 working group in relation to certain channel combinations for LAA in 5GHz RAN4, Ericsson
R1-1810061 LS reply to RAN 3 on L2 measurement SA5, Ericsson
R1-1810062 LS reply on L2 measurement SA5, Ericsson
R1-1810072 Reply LS on the transmission of video over PC5 interface RAN2, LG Electronics
R1-1810073 Reply LS on potential enhancement of DR-mode of operation RAN2, Intel
R1-1810076 Reply LS on proposed joint Coexistence Workshop RAN, Qualcomm
R1-1810077 LS on RAN4 NR UE feature list RAN, NTT DOCOMO
R1-1810078 LS on RAN4 Rel.15 LTE UE feature list RAN, NTT DOCOMO
R1-1810080 Reply LS to IEEE 802.11 working group in relation to certain channel combinations for LAA in 5GHz RAN, Charter Communications
R1-1810316 Copy of LS from RAN to RAN4 on EN-DC Power Control SPRINT Corporation
R1-1810816 Draft response LS on default configuration for L1 parameter Samsung
R1-1811023 On Default Configurations for L1 Parameters Nokia, Nokia Shanghai Bell
R1-1811476 [Draft] LS on Agreements on Paging monitoring Nokia, Nokia Shanghai Bell
R1-1811477 [Draft] Reply LS on OSI acquisition Nokia, Nokia Shanghai Bell

The following LSs were received during the week:
R1-1811923 Reply LS on bandwidth configuration for initial BWP RAN2, Ericsson
RAN2 discussed that there are cases in which the UE is not configured with a CORESET#0. In those cases, the UE cannot determine the DCI size from the size of CORESET#0. RAN2 discussed different options how to resolve this problem and agreed that RAN1 should resolve this case in the L1 specifications e.g. by determining the DCI-size from the size of the initial BWP if a CORESET#0 is not configured.
Decision: The document is noted. See 7.1.3.4.

R1-1811922 LS on sensing and reporting for Mode 3 RAN2, Huawei
Not treated - to be resubmitted in RAN1#95.

R1-1811921 LS to RAN1 on PHR and SUL RAN2, Samsung
Decision: The document is noted. Treated under 7.1.5.

R1-1812067 Reply LS on Further Agreements on Paging Occasions RAN2, Huawei
Decision: The document is noted. Treated under 7.1.1.1.

6 E-UTRA

6.1 Maintenance of E-UTRA Releases 8 – 15

Friday: Editors to prepare the consolidated CRs incorporating the TPs/agreements approved for Rel-15 eMTC & NB-IoT by Oct 19th, for comments and endorsement by Oct 26th

6.1.1 Maintenance of E-UTRA Release 8 – 14

R1-1811671 Chairman's notes of AI 6.1.1 Maintenance of E-UTRA Release 8 – 14 Ad-hoc chair (Ericsson)
Decision: The document is endorsed, content is incorporated below.

EPDCCH

R1-1810602 **Discussion on case determination of EPDCCH USS when enabling CSI-RS frequency domain density reduction MediaTek Inc.**

R1-1811643 CR 36.211-Correction on nEPDCCH for EPDCCH USS case determination MediaTek Inc.
Revision of R1-1810603

R1-1811644 CR 36.213 - Correction on nEPDCCH for EPDCCH USS case determination MediaTek Inc.
Revision of R1-1810604

R1-1810817 **Draft CR on EPDCCH RE mapping Samsung**
Discuss further offline – come back later

R1-1811683 **EPDCCH RE mapping with CSI-RS density 1/2 or 1/3 Samsung, MediaTek**

R1-1811684 **EPDCCH RE mapping with CSI-RS density 1/2 or 1/3 Samsung, MediaTek**

Rel-13 MIMO

R1-1810166 **Corrections on TBS determination for PDSCH of TM9 and TM10 Huawei, HiSilicon**
Discuss further offline – come back later
Conclusion:
For DMRS based PDSCH, when it is overlapped with transmission of PBCH or primary synchronization signal or secondary synchronization signal in the same subframe for a pdsch-CollisionHandling capable UE, the TBS is determined by PRBs indicated in associated DCI.

R1-1810895 **Correction for type 6 report for FD-MIMO Qualcomm Incorporated**
The draft CR in R1-1810895 is endorsed. Final CR is agreed in R1-1811667 (Rel-13, CR1172).

R1-1810897 **Correction for type 6 report for FD-MIMO Qualcomm Incorporated**
The draft CR in R1-1810897 is endorsed. Final CRs are agreed in R1-1811668 (Rel-14, CR1173) and in R1-1811669 (Rel-15, CR1174)

Rel-14 MIMO

R1-1810167 **Correction on aperiodic CSI-RS resource mapping in 36.211 Huawei, HiSilicon**
The draft CR in R1-1810167 is endorsed (by adding a space between "*csi-RS-ConfigZP-ApList*shall"). Final CRs are agreed in R1-1811700 (Rel-14, CR0464), and R1-1811701 (Rel-15, CR0465)

R1-1810168 **Correction on aperiodic CSI-RS in 36.212Huawei, HiSilicon**
The draft CR in R1-1810168 is endorsed. Final CRs are agreed in R1-1811702 (Rel-14, CR0308), and R1-1811703 (Rel-15, CR0309)

R1-1810735 **Draft CR: Correction to non-precoded NZP CSI-RS resource configurations Intel Corporation**
The draft CR is endosed in principle – with the following additional discussion points: de-color the changes; italtic the parameter name; check whether or not to have "respectively" – come back later
Final CRs are agreed in R1-1811718 (TS36.211, Rel-14, CR466) and R1-1811719 (TS36.211, Rel-15, CR467) with the following modifications to the added text:
NZP-ResourceConfig-r13 from an aggregated list consisting of *nzp-resourceConfigList-r13* followed by *nzp-resourceConfigListExt-r14* (if configured),

R1-1811056 **Correction on PDSCH RE mapping around aperiodic zero power CSI-RS in 36.213 Huawei, HiSilicon**
The draft CR in R1-1811056 is endorsed (by also de-underlining the sentences in the previous paragraphs). Final CRs are agreed in R1-1811704 (Rel-14, CR1175), and R1-1811709 (Rel-15, CR1176)

eMTC

R1-1810896 **Correction for SPS PUSCH collision with PDSCH Qualcomm Incorporated**
Discuss further offline – come back later

R1-1811130 **Clarification on RV determination** **Intel Corporation**

Conclusion:

- The "Redundancy version" bit-field in the DCI formats 6-0A and 6-1A is interpreted as the rv_{DCI} parameter (left column in Table 7.1.7.1-2)
  - No spec change is necessary

NB-IOT

R1-1810352 **Correction on NB-IoT DL subframe definition on non-anchor carriers** **Huawei, HiSilicon**
R1-1810353 **Correction on NB-IoT DL subframe definition on non-anchor carriers** **Huawei, HiSilicon**
Both the above draft CRs are endorsed. Final CRs are agreed in R1-1811705 (Rel-14, CR1177), R1-1811706 (Rel-15, CR1178)

SRS Carrier Switching

R1-1810898 **HARQ reference configuration for SRS carrier switching** **Qualcomm Incorporated**
The draft CR is endorsed. Final CRs are agreed in R1-1811707 (Rel-14, CR1179), R1-1811708 (Rel-15, CR1180)

R1-1810899 Discussion on CA capability for SRS carrier switching Qualcomm Incorporated
Discuss further offline – come back later
Decision: Companies are encouraged to consider the following proposal for discussion in RAN1#95
Proposal:
When operating with SRS carrier switching, the antenna switching capability is the one for the switched band combination.

- If the UE does not indicate support for the switched band combination, eNB shall assume that the UE does not support antenna switching in that band combination.

R1-1810902 **Correction for SRS triggering for SRS carrier switching** **Qualcomm Incorporated**
Discuss further offline – come back later

UL Capacity Enh

R1-1810900 **Aperiodic CSI report for PUSCH in UpPTS** **Qualcomm Incorporated**
Discuss further offline – come back later
Final CRs are agreed in R1-1811710 (Rel-14, CR1181, TS36.213) and R1-1811711 (Rel-15, CR1182, TS36.213)

R1-1810901 **CSI reference resource with crs-less-ssp10** **Qualcomm Incorporated**
Discuss further offline – come back later
Final CRs are agreed in R1-1811722 (Rel-14, TS36.213, CR1188) and R1-1811723 (Rel-15, TS36.213, CR1189)

6.1.2 Maintenance of Release 15 Shortened TTI and processing time for LTE

LTE_sTTIandPT-Core; WID in RP-171468.

R1-1811672 **Chairman's notes of AI 6.1.2 Maintenance of Release 15 Shortened TTI and processing time for LTE** **Ad-hoc chair (Ericsson)**
Decision: The document is endorsed, content is incorporated below.

R1-1810160 **Discussion on UL power control in case of UL DMRS sharing** **Huawei, HiSilicon**
R1-1811570 Correction on UL power control in case of UL DMRS sharing Huawei, HiSilicon

R1-1810225 **Corrections related to CSI update capability for sTTI** **LG Electronics**
R1-1811714 **Corrections related to CSI update capability for sTTI** **LG Electronics**
Final CR is agreed in R1-1811715 (CR1184, Rel-15, TS36.213)

R1-1811556 **Discussion on UL SPS DMRS** **Huawei, HiSilicon**
R1-1811571 Corrections on UL SPS DMRS Huawei, HiSilicon

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Conclusion:
No additional restrictions are necessary for the operation of DMRS sharing along with UL SPS in subslot TTI with periodicity of one sTTI

R1-1811569 **Correction on DL/UL SPS for MIMO related Modes** **Huawei, HiSilicon**

Conclusion:
Further MIMO-related transmission scheme enhancements for sTTI DL/UL SPS are not considered in Rel-15

R1-1811572 **Correction on pathloss update for subslot-PUSCH with DMRS sharing** **Huawei, HiSilicon**

R1-1811573 **Correction on subslot-SPUCCH resource for formats 1a and 1b** **Huawei, HiSilicon, LG Electronics**
Final CR is agreed in R1-1811712 (TS36.213, Rel-15, CR1183)

6.1.3 Maintenance of Release 15 3GPP V2X Phase 2

LTE_eV2X-Core; WID in RP-171740.

R1-1811673 **Chairman's notes of AI 6.1.3 Maintenance of Release 15 3GPP V2X Phase 2** **Ad-hoc chair (Ericsson)**
Decision: The document is endorsed, content is incorporated below.

R1-1810226 **Discussion on synchronization parameter on RRC** **LG Electronics**

Conclusion:
- RAN1 concludes that UE behaviour related to parameter slss-TxDisabled should be discussed in RAN2

6.1.4 Maintenance of Release 15 Even further enhanced MTC for LTE

LTE_eMTC4-Core; WID in RP-172811.

No individual CRs are allowed. Only text proposals are allowed.
- ***Later on editors will aggregate all endorsed text proposals for a jumbo CR per spec***

R1-1811674 **Chairman's notes of AI 6.1.4 Maintenance of Release 15 Even further enhanced MTC for LTE** **Ad-hoc chair (Ericsson)**
Decision: The document is endorsed, content is incorporated below.

6.1.4.1 Maintenance for Resynchronization signal

R1-1810493 Remaining collision issue for RSS transmission ZTE
R1-1810903 **Maintenance for RSS** **Qualcomm Incorporated**
R1-1811532 Maintenance issues for Resynchronization signal for Rel-15 LTE-MTC Ericsson

R1-1811663 **Feature summary of Maintenance for Resynchronization signal** **Ericsson**
Decision: The text proposal in Section 2.1.1 of R1-1811663 is endorsed.

6.1.4.2 Maintenance for Early data transmission

None

6.1.4.3 Maintenance for Wake-up signal

R1-1810227 Maintenance for wake-up signal in MTC LG Electronics
R1-1810498 Discussion on WUS for Enhanced Coverage Restricted UE for eMTC ZTE
R1-1810904 Maintenance for WUS Qualcomm Incorporated
R1-1811533 Maintenance issues for Wake-up signal for Rel-15 LTE-MTC Ericsson

R1-1811657 Summary of 6.1.4.3 Maintenance for MWUS Qualcomm Incorporated

6.1.4.4 Maintenance for PUSCH sub-PRB allocation

R1-1810905 Maintenance for PUSCH subPRB allocation Qualcomm Incorporated
Decision: The text proposal in Section 2.2 of R1-1810905 is endorsed.

R1-1811688 Maintenance issues for PUSCH sub-PRB allocation for Rel-15 LTE-MTC Ericsson
R1-1811677 Maintenance issues for PUSCH sub-PRB allocation for Rel-15 LTE-MTC Ericsson
Note: The interpretation in R1-1811677 is consistent with the specification

R1-1811534 Maintenance issues for PUSCH sub-PRB allocation for Rel-15 LTE-MTC Ericsson
Decision: The text proposals in R1-1811534 are endorsed with the parameter 'pusch-maxNumRepetitionCEmodeA' italicized and inserted without quotation marks.

6.1.4.5 Maintenance for Flexible PDSCH/PUSCH starting PRB

R1-1810482 Corrections on flexible starting PRB Huawei Technologies Co. Ltd.
R1-1810494 Frequency hopping for PUSCH with flexible starting PRB in CE mode A ZTE
R1-1810906 Maintenance for flexible starting PRB Qualcomm Incorporated
R1-1811535 Maintenance for Flexible PDSCH/PUSCH starting PRB Ericsson

R1-1811692 Summary of Flexible PDSCH/PUSCH starting PRB Samsung
Decision: The text proposal in Sections 2, 5 and 6 of R1-1811692 are endorsed.

Agreement:
For 1.4 MHz system bandwidth, flexible starting PRB resource allocation is not supported.
- Note: RAN1 assumes that RAN2 can capture this in TS36.331.

Agreement:
- The PUSCH frequency hop for a BL/CE UE with flexible starting PUSCH PRB is calculated similarly as for legacy BL/CE UEs in the sense that it minimizes collision between the two (for all system bandwidths).
- Frequency hopping for PUSCH CEModeA with flexible RA is allowed except for the following cases
  - The allocated RBs include the center PRB, which is outside the NBs in case of for BW=3MHz, 5MHz, 15MHz. But the starting RB(s) including $\mathbf{RB_{START}}$ and the ending RB(s) including $(\mathbf{RB_{START}} + \mathbf{L_{CRBs}} - \mathbf{1})$ are inside different NBs.
  - The allocated RB(s) is(are) totally outside the NBs, i.e., two edges or center RB.
- If a frequency hop would result in a split PUSCH resource allocation for a BL/CE UE in a subframe, where some PRB(s) are on one edge of the system bandwidth and some PRB(s) are on the other edge of the system bandwidth, the transmission is dropped in that subframe.

Friday
Note: for the above agreements, there is no endorsed TP yet; editor can use R1-1810906 as a reference

6.1.4.6 Other

R1-1810907 Corrections for 64-QAM Qualcomm Incorporated
Decision: The text proposals in R1-1810907 are endorsed with a note to the editor to ensure that the indentation of the TP in Section 1 is consistent with other parts of the specification.

R1-1810908 Corrections for HARQ-ACK feedback Qualcomm Incorporated
R1-1811720 Corrections for HARQ-ACK feedback Qualcomm Incorporated
Decision: The text proposal in R1-1811720 is endorsed.

6.1.5 Maintenance of Release 15 Further enhancements of NB-IoT

NB_IOTenh2-Core; WID in RP-182114.

No individual CRs are allowed. Only text proposals are allowed.

- *Later on editors will aggregate all endorsed text proposals for a jumbo CR per spec*

R1-1811675 **Chairman's notes of AI 6.1.5 Maintenance of Release 15 Further enhancements of NB-IoT Ad-hoc chair (Ericsson)**

Decision: The document is endorsed, content is incorporated below.

6.1.5.1 Maintenance for Latency and power consumption reduction

R1-1810228 **Correction to additional SIB1-NB-to-subframe mapping LG Electronics**

6.1.5.1.1 Power consumption reduction for paging and connected-mode DRX

R1-1810229 Maintenance for wake-up signal in NB-IoT LG Electronics
R1-1810497 Discussion on WUS for Enhanced Coverage Restricted UE for NB-IoT ZTE
R1-1810909 Maintenance for WUS Qualcomm Incorporated
R1-1811536 Maintenance issues for Wake-up signal for Rel-15 NB-IoT Ericsson

R1-1811694 **NWUS maintenance feature lead summary Huawei, HiSilicon**

The text proposal in Section 2.3 of R1-1811694 is endorsed with the following modification to the added sentence. "A UE may assume that the ratio of NWUS EPRE to NRS EPRE is 0 dB ~~for an NB-IoT cell with one NRS antenna port and -3 dB for an NB-IoT cell with two NRS antenna ports~~"

6.1.5.1.2 Data transmission during the random access procedure

None

6.1.5.1.3 Physical layer scheduling request

R1-1810495 Clarification for physical layer scheduling request ZTE
R1-1810910 **Maintenance for physical layer SR Qualcomm Incorporated**
To be revisited in RAN1#95

R1-1811616 Maintenance issues for Physical layer SR for Rel-15 NB-IoT Ericsson

R1-1811659 **Summary for physical layer scheduling request for NB-IoT ZTE**

Conclusion:
Handling of the following cases is up to UE implementation

- Collision between SR without HARQ-ACK resources and DL scheduling delay between NPDCCH and NPDSCH.
- Collision between SR without HARQ-ACK resources and DL transmission gap for NPDSCH repetitions.
- Collision between SR without HARQ-ACK resources and HARQ delay between NPDSCH and NPUSCH format 2.

6.1.5.1.4 Semi-persistent scheduling

R1-1810496 **Clarification for semi-persistence scheduling ZTE**

Conclusion:
Handling of the following cases is up to UE implementation

- Collision between UL SPS for BSR and DL scheduling delay between NPDCCH and NPDSCH.
- Collision between UL SPS for BSR and DL transmission gap for NPDSCH repetitions.
- Collision between UL SPS for BSR and HARQ delay between NPDSCH and NPUSCH format 2.

R1-1810911 **Maintenance for semi-persistent scheduling Qualcomm Incorporated**
To be revisited in RAN1#95

6.1.5.2 Maintenance for NPRACH range enhancements

R1-1810354 **Corrections on NPRACH range enhancements Huawei, HiSilicon**

Decision: The text proposal in R1-1810354 is endorsed

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6.1.5.3 Maintenance for TDD

6.1.5.3.1 Downlink aspects

R1-1810355 Corrections on interference randomization of NPBCH for TDD Huawei, HiSilicon
Decision: The text proposal in R1-1810355 is endorsed.

R1-1811618 Maintenance issues for TDD DL aspects for Rel-15 NB-IoT Ericsson India Private Limited

6.1.5.3.2 Uplink aspects

R1-1810912 Maintenance for UL aspects of TDD Qualcomm Incorporated
R1-1811687 Maintenance for Uplink Aspects of TDD NB-IoT Qualcomm Incorporated
Decision: The text proposal in R1-1811687 is endorsed.

6.1.5.3.3 Common aspects

R1-1811515 Maintenance issues for TDD DL/UL common aspects for Rel-15 NB-IoT Ericsson
Late submission
Decision: The following text proposal is endorsed:

- In TS36.201, delete the sentence, "NB-IoT does not support TDD operation in this release."

6.1.5.4 Other

R1-1810356 Corrections on additional SIB1-NB transmission Huawei, HiSilicon
Decision: The text proposal in R1-1810356 is endorsed.

R1-1810913 Discussion on collision of NPUSCH and Rel-15 NPRACH resources Qualcomm Incorporated

6.1.6 Maintenance of Release 15 Ultra Reliable Low Latency Communication for LTE

LTE_HRLLC-Core; WID in RP-181259.

R1-1811676 Chairman's notes of AI 6.1.6 Maintenance of Release 15 Ultra Reliable Low Latency Communication for LTE Ad-hoc chair (Ericsson)
Decision: The document is endorsed, content is incorporated below.

R1-1810230 Corrections on PDSCH repetition with eIMTA configuration LG Electronics
Decision: The text proposal for option 1 in R1-1810230 is endorsed.

R1-1811732 Corrections on subframe-PDSCH repetition with eIMTA LG Electronics
Decision: Final CR is agreed in R1-1811733 (TS36.213, Rel-15, CR1190) with "*subframe i*" modified to *"a subframe"*

R1-1810732 On UL SPS configuration for TDD ZTE
R1-1811685 Draft CR for activation of UL SPS configuration ZTE
Decision: Final CR is agreed in R1-1811721 (TS36.213, Rel-15, CR1187) with a modification to change all occurrences of "receive DCI format" to "receive a DCI of format".

R1-1811690 UL SPS repetition counting ZTE, LG Electronics,Nokia, Nokia Shanghai Bell
Decision: Final CR is agreed in R1-1811716 (TS36.213, CR1185, Rel-15)

R1-1811557 Clarification on validation of UL SPS with repetition for one UL SPS configuration Huawei, HiSilicon
R1-1811564 Correction on validation of UL SPS with repetition for one UL SPS configuration Huawei, HiSilicon

Agreement:
UE is not expected to be configured with multiple UL SPS configurations without configuration of repetition. RAN2 should take this into account.

R1-1811713 Draft CR for validation of SPS for one UL SPS configuration Huawei, HiSilicon

Decision: Final CR is agreed in R1-1811717 (TS36.213, Rel-15, CR1186) without the addition of the text, "is configured with higher layer parameter *totalNumberPUSCH-SPS-STTI-UL-Repetitions* or *totalNumberPUSCH-SPS-UL-Repetitions* and".

R1-1811558 Clarification on resource mapping for HARQ-less PDSCH repetition Huawei, HiSilicon
R1-1811565 Correction on resource mapping for HARQ-less PDSCH repetition Huawei, HiSilicon
Note: As per the specification, PDSCH resource mapping in each subframe/slot/subslot within the repetition window is performed independently when UE is configured with *blindSubframePDSCH-Repetitions* or *blindSlotSubslotPDSCH-Repetitions*.

R1-1811559 Clarification on resource mapping for UL SPS with repetition Huawei, HiSilicon
R1-1811566 Correction on resource mapping for UL SPS with repetition Huawei, HiSilicon
Note: As per the specification, PUSCH resource mapping in each subframe/slot/subslot within the repetition window is performed independently when UE is configured with PUSCH SPS repetition.

R1-1811560 Clarification on rate-matching around SPDCCH resources for PDSCH repetition Huawei, HiSilicon
R1-1811567 Correction on rate-matching around SPDCCH resources for PDSCH repetition Huawei, HiSilicon
R1-1811568 Correction on rate-matching around SPDCCH resources for PDSCH repetition Huawei, HiSilicon

R1-1811562 Correction on UE procedure for receiving PDSCH when configured with repetition Huawei, HiSilicon

R1-1811563 Correction on specification impact of no more than one DCI validation for UL SPS Huawei, HiSilicon
R1-1811670 On DCI validation for UL SPS Huawei, HiSilicon
R1-1811730 [Draft] LS to RAN2 on draft CR to TS 36.302 on DCI validation of UL SPS Huawei, HiSilicon

6.1.7 Other

Including any potential CRs for Rel-15 Enhancements to LTE operation in unlicensed spectrum, Enhancements for high capacity stationary wireless link and introduction of 1024 QAM for LTE, Further enhancements to Coordinated Multi-Point (CoMP) Operation for LTE, Enhanced LTE Support for Aerial Vehicles, Enhancing CA Utilization, modulation enhancements, 2Tx/4Tx SRS switching, CP latency reduction, LTE Rel-15 UE features, etc

R1-1811724 Chairman's notes of AI 6.1.7 Others Ad-hoc chair (Ericsson)
Decision: The document is endorsed, content is incorporated below.

R1-1810164 Introduction of configured PRG size for TM9 and TM10 in 36.213 Huawei, HiSilicon
R1-1810165 Discussion on PRG size for TM9 and TM10 Huawei, HiSilicon

R1-1810818 Discussion on the AUL-UCI coded modulaion symbols in 36.212 Samsung
R1-1810819 Correction on the AUL-UCI coded modulaion symbols in 36.212 Samsung

R1-1811631 Discussion on the AUL-UCI coded modulaion symbols in 36.212 Samsung
R1-1811632 Correction on the AUL-UCI coded modulaion symbols in 36.212 Samsung

6.2 LTE Release 16

6.2.1 Additional MTC Enhancements

LTE_eMTC5-Core; WID in RP-181878. Please refer to the WID for detailed scoping

R1-1811725 Chairman's notes of AI 6.2.1 Additional MTC Enhancements Ad-hoc chair (Samsung)
Decision: The document is endorsed, content is incorporated below.

R1-1810184 WI work plan for Rel-16 LTE-MTC Ericsson

6.2.1.1 UE-group wake-up signal

R1-1811658 Summary of 6.2.1.1 UE group MWUS Qualcomm

Agreement
UE grouping is based on at least UE ID or some function of UE ID

Agreement
The legacy UE should not be prevented from using legacy WUS even in the case of Rel-16 group WUS is enabled
- Performance impact on legacy WUS should be carefully considered

Agreement
Group WUS is based on at least legacy WUS and UE-group ID.

Agreement
Configuration of group WUS is at least signaled in SI

Agreement
A Rel-16 group WUS capable UE shall also be capable of Rel-15 legacy WUS

R1-1810088	Support of sub-groups for MWUS	Huawei, HiSilicon
R1-1810185	UE-group wake-up signal in LTE-MTC	Ericsson
R1-1810231	Discussion on UE-grouping wake up signal in MTC	LG Electronics
R1-1810358	Multiplexing methods for UE-group wake-up signal of eMTC	vivo
R1-1810499	Discussion on Wake-up signal for MTC	ZTE
R1-1810648	On supporting UE-group wake-up signal for MTC	Sony
R1-1810736	UE-group wake-up signal for eMTC	Intel Corporation
R1-1810820	UE-group wake-up signal for eMTC	Samsung
R1-1810914	UE-group wake-up signal	Qualcomm Incorporated
R1-1811057	UE-group wake-up signal for MTC	Nokia, Nokia Shanghai Bell
R1-1811385	UE-group wake-up signal for Rel.16 IoT	NTT DOCOMO, INC.
R1-1811621	Group Wake-Up Signal for MTC	Fraunhofer IIS, Fraunhofer HHI

6.2.1.2 Support for transmission in preconfigured UL resources

R1-1810491 LTE-M Preconfigured UL Resources Summary RAN1 #94-bis Sierra Wireless, S.A.

Agreement
In idle mode, the UE will at least consider one or more of the following attributes when validating TA (combination of multiple attributes is allowed):
- Serving cell changes (serving cell refers the cell that the UE is camping on)
- Time Alignment Timer for idle mode
- Serving cell RSRP changes (serving cell refers the cell that the UE is camping on)
- FFS Other attributes:
  - Neighbour cell RSRP change
  - TDOA of >=2 eNBs
  - TA History
  - Subscription based UE differentiation
  - Others not precluded (for example, attributes that need to be considered for high mobility UEs)

Note that UE power consumption should be taken into account for the FFS attributes

Agreement
Dedicated preconfigured UL resource is defined as an PUSCH resource used by a single UE
- PUSCH resource is time-frequency resource
- Dedicated PUR is contention-free

Contention-free shared preconfigured UL resource (CFS PUR) is defined as an PUSCH resource simultaneously used by more than one UE
- PUSCH resource is at least time-frequency resource
- CFS PUR is contention-free

Contention-based shared preconfigured UL resource (CBS PUR) is defined as an PUSCH resource simultaneously used by more than one UE
- PUSCH resource is at least time-frequency resource
- CBS PUR is contention-based (CBS PUR may require contention resolution)

Agreement
In IDLE mode, HARQ is supported for transmission in dedicated PUR
- A single HARQ process is supported,
  - FFS whether more than one HARQ processes are supported
- FFS: The design of the corresponding MPDCCH search space

Agreement
In idle mode, dedicated PUR is supported.
- Support for CFS PUR is FFS.
- Support for CBS PUR is FFS.

Agreement
For UL transmission in preconfigured resource, fallback mechanism to RACH/EDT procedures is supported.

Agreement
For transmission in preconfigured UL resources, an RRC idle UE may use the latest TA that passed the validation criteria

Agreement
Pre-configured UL resources for transmission of data are indicated by RRC signaling. At least UE-specific RRC signaling is supported.

R1-1810089	UL transmission in preconfigured resource	Huawei, HiSilicon
R1-1810186	Support for transmission in preconfigured UL resources in LTE-MTC	Ericsson
R1-1810232	Discussion on preconfigured UL resources in MTC	LG Electronics
R1-1810489	LTE-M Pre-configured UL Resources Design Considerations	Sierra Wireless, S.A.
R1-1810500	Support for transmission in preconfigured UL resources for MTC	ZTE
R1-1810649	Considerations for Preconfigured UL Resources in A-MTC	Sony
R1-1810737	UL transmission in preconfigured resources for eMTC	Intel Corporation
R1-1810821	Discussion on transmission in preconfigured UL reosurces for MTC	Samsung
R1-1810915	Support for transmission in preconfigured UL resources	Qualcomm Incorporated
R1-1811058	Transmission in preconfigured UL resources	Nokia, Nokia Shanghai Bell
R1-1811387	UL transmission scheme in preconfigured resources	NTT DOCOMO, INC.
R1-1811589	Uplink transmission on pre-allocated resources for LTE-MTC	Orange Spain

6.2.1.3 Scheduling of multiple DL/UL transport blocks

R1-1811693 Feature lead summary Scheduling of multiple DL UL transport blocks Ericsson

Agreement
Confirm the working assumption that
- For unicast, when multiple DL/UL transport blocks are assigned by a single DCI, each transport block corresponds to a unique HARQ process.

Agreement
For CE mode A, the maximum number of scheduled transport blocks with one single DCI is [8] for CE mode A for UL.
For CE mode A, the maximum number of scheduled transport blocks with one single DCI is [8] for CE mode A for DL.

Agreement
The maximum number of scheduled transport blocks with one single DCI for CE mode A for either UL or DL is fixed to [8]

Working Assumption
For CE mode B, the maximum number of scheduled transport blocks with one single DCI is 4 in the UL, and 4 for the DL.

Agreement
The maximum number of scheduled transport blocks with one single DCI for CE mode B for either UL or DL is fixed to 4 (working assumption)

For further study until next meeting:
How to efficiently handle retransmissions when scheduling multiple DL/UL transport blocks.

Agreement
The UE should only monitor one DCI size in the UE specific search space

For further consideration:
Optimization of the DCI size and the impact of aspects including number of transport blocks, scheduling pattern (interleaving and scheduling gap), resource assignment, modulation and coding scheme, retransmissions.

Agreement
Using one DCI to schedule multiple TBs for SC-MTCH is supported, and it is configured and enabled per SC-MTCH via SC-PTM configuration message in SC-MCCH. FFS the maximum number of TBs can be scheduled by one DCI.

Agreement
For CE mode A, HARQ ACK/NACK feedback bundling or multiplexing on PUCCH can be enabled or disabled by [RRC and/or DCI], when multiple DL transport blocks are assigned by a single DCI. If the network does not enable it, each TB has its own separately encoded HARQ ACK/NACK feedback, i.e., no HARQ ACK/NACK feedback bundling or multiplexing.

- RAN1 further compare the performance between HARQ ACK/NACK feedback bundling and multiplexing and down-select between the two options.

For CE mode B, further study if there is a benefit for HARQ ACK/NACK feedback bundling or multiplexing on PUCCH. If there is a benefit identified, same configuration principle as CE mode A can be applied, i.e., this feature can be enabled or disabled by [RRC and/or DCI].

R1-1811680 **Updated Feature lead summary Scheduling of multiple DL UL transport** **Ericsson**

R1-1810090 Scheduling of multiple transport blocks Huawei, HiSilicon
R1-1810187 Scheduling of multiple DL/UL transport blocks in LTE-MTCEricsson
R1-1810233 Discussion on multiple transport blocks scheduling in MTC LG Electronics
R1-1810487 LTE-M Multiple Transport Block Grant Design Sierra Wireless, S.A.
R1-1810501 Consideration on scheduling enhancement for MTC ZTE
R1-1810582 Design of scheduling of multiple DL/UL TB for Rel.16 MTC Lenovo, Motorola Mobility
R1-1810650 Support of scheduling of multiple DL / UL transport blocks for MTC Sony
R1-1810813 Discussion on the scheduling of multiple DL/UL TBs Beijing Xiaomi Software Tech
R1-1810822 Scheduling of multiple transport blocks for MTC Samsung
R1-1810916 Scheduling of multiple DL/UL transport blocks Qualcomm Incorporated
R1-1811059 Scheduling of multiple DL/UL transport blocks Nokia, Nokia Shanghai Bell

6.2.1.4 Coexistence of LTE-MTC with NR

R1-1811665 **Feature lead summary for Coexistence of LTE-MTC with NR** **Ericsson**

For further study:
Until the next meeting, invite companies to evaluate the potential performance gains (e.g. in terms of reduced NR resource reservation) from performance improvements of subcarrier and resource block alignment to help determine whether the gains are significant enough to motivate the impacts.

For further study:
Until the next meeting, invite companies to evaluate the potential performance gains (e.g. in terms of reduced NR resource reservation) from performance improvements of resource configuration (e.g. reservation of LTE-MTC resources) to help determine whether the gains are significant enough to motivate the impacts.

Agreement
RAN1 clarifies that the enhancements introduced by the WI objective on usage of the LTE DL control channel region for MPDCCH/PDSCH transmissions to LTE-MTC UEs do not only apply to LTE-MTC stand-alone deployments but also to the case when LTE-MTC is deployed within an NR carrier.

For further study:
Until the next meeting, invite companies to evaluate the potential performance gains (e.g. in terms of reduced NR resource reservation) from performance improvements through CRS reduction to help determine whether the gains are significant enough to motivate the impacts.
- Also consider backwards compatibility aspects.

For further study:
Until the next meeting, invite companies to evaluate the potential performance gains (e.g. in terms of reduced NR resource reservation) from performance improvements of frequency hopping to help determine whether the gains are significant enough to motivate the impacts.
- Also consider backwards compatibility aspects.

R1-1810188	Coexistence of LTE-MTC with NR	Ericsson
R1-1810234	Discussion on coexistence of LTE-MTC with NR	LG Electronics
R1-1810502	Performance improvement for coexistence of LTE-MTC with NR	ZTE
R1-1810651	Whether RAN1 enhancements are required for LTE-M / NR coexistence	Sony
R1-1810733	On eMTC co-existence with NR	Huawei Technologies Co. Ltd.
R1-1810917	Coexistence of LTE-MTC with NR	Qualcomm Incorporated
R1-1811060	Coexistence of eMTC with NR	Nokia, Nokia Shanghai Bell

6.2.1.5 Support of Quality report in Msg3

R1-1811691 **Feature summary of 6.2.1.5 Support of quality report in Msg3** **Samsung**

Agreement
For CE mode A (PRACH CE level 0, 1), the downlink channel quality is down-selected among the following in RAN1#95:
- CQI
- The repetition number and/or aggregation level that the UE needs to decode hypothetical MPDCCH with BLER of 1%
- Support both CQI and repetition number and/or aggregation level that the UE needs to decode hypothetical MPDCCH with BLER of 1%

Agreement
For CE Mode B, the downlink channel quality reported in Msg3 is denoted as the repetition number that the UE recommends to achieve a hypothetical MPDCCH decoding BLER of 1%

Agreement
CRS may be used as the reference signal for measurement of DL quality metric for measurement report in Msg3.

Agreement
Enabling of DL quality report is indicated in SIB.

R1-1810091	Channel quality reporting in Msg3	Huawei, HiSilicon

R1-1810189 Support of quality report in Msg3 in LTE-MTC Ericsson
R1-1810235 Downlink channel quality report during random access procedure LG Electronics
R1-1810503 Specify Msg3 quality reporting at least for EDT ZTE
R1-1810652 Quality reporting via Msg3 in A-MTC Sony
R1-1810738 DL quality reporting in Msg3 for eMTC Intel Corporation
R1-1810823 Discussion on quality report in Msg3 for MTC Samsung
R1-1810918 Support of Quality report in msg3 Qualcomm Incorporated
R1-1811061 Support of Quality report in Msg3 Nokia, Nokia Shanghai Bell

6.2.1.6 MPDCCH performance improvement

R1-1811682 Feature lead summary of MPDCCH performance improvement Huawei, HiSilicon

Agreement
CRS for improving channel estimation on MPDCCH in idle mode is supported. FFS the details.

Agreement
For localized MPDCCH, the following mappings are supported between CRS and DMRS:
- Predefined mapping
- Mapping based on CSI report

FFS the details.

Agreement
For distributed MPDCCH, mapping between CRS and DMRS is defined in specifications.
- FFS the details (e.g. number of PRBs over which mapping applies, fixed or configurable)

Agreement
Power offset between CRS and DMRS antenna ports of MPDCCH is signaled by eNB. FFS the signaling details (e.g. provisioning for default power offset value).

R1-1810092 On MPDCCH performance improvement Huawei, HiSilicon
R1-1810190 MPDCCH performance improvement in LTE-MTC Ericsson
R1-1810236 Discussion on MPDCCH performance improvement LG Electronics
R1-1810504 Discussion on MPDCCH performance improvement ZTE
R1-1810653 On MPDCCH performance improvement Sony
R1-1810739 MPDCCH performance improvement Intel Corporation
R1-1810824 Discussion on MPDCCH performance improvement for MTC Samsung
R1-1810919 Usage of CRS for MPDCCH Qualcomm Incorporated
R1-1811062 MPDCCH performance improvement Nokia, Nokia Shanghai Bell

6.2.1.7 CE mode A and B improvements for non-BL UEs

R1-1811666 Summary of CE mode A and B improvements for non-BL UEs LG Electronics

Agreement
Dual-layer transmission is not supported for non-BL UEs in CE mode B

Email discussion for evaluation parameters for dual layer transmission simulations
- Until 22nd ~~19th~~ of October (Changhwan Park, LGE)

Agreement
CSI-RS based CSI feedback is not supported for non-BL UEs at least in CE mode B

R1-1810093 Coverage enhancement for Non-BL UE Huawei, HiSilicon

R1-1810191 CE mode A and B improvements for LTE-MTC non-BL UEs Ericsson
R1-1810237 CE mode improvements for non-BL Ues LG Electronics
R1-1810505 On CE mode A and B improvements for non-BL UE ZTE
R1-1810825 CE Mode A and Mode B improvements for non-BL UEs Samsung
R1-1810920 CE Mode A and B improvements for non-BL Ues Qualcomm Incorporated
R1-1811070 CE mode A and B improvements for non-BL UEs Nokia, Nokia Shanghai Bell
R1-1811619 Improvement for non-BL UEs in CE mode Intel Corporation

6.2.1.8 Use of LTE Control Channel Region for DL Transmission

R1-1811695 Summary of Use of LTE Control Channel Region for DL Transmission Nokia, Nokia Shanghai Bell

Agreement
Support PDSCH broadcast transmission in LTE control channel region

Agreement
PDSCH are rate-matched in a backward compatible manner on all available OFDM symbols. FFS on RE mapping details.

R1-1810094 DL transmission on LTE control channel region Huawei, HiSilicon
R1-1810192 Use of LTE control channel region for DL transmission in LTE-MTC Ericsson
R1-1810238 On the use of LTE control channel region for LTE-MTC DL transmission LG Electronics
R1-1810506 Use of LTE control channel region for DL transmission ZTE
R1-1810583 Design of Use of LTE Control Channel Region Lenovo, Motorola Mobility
R1-1810654 MTC DL transmission in the LTE control channel region Sony
R1-1810740 Standalone deployment for eMTC Intel Corporation
R1-1810814 Discussion on the use of LTE control channel region for DL transmission Beijing Xiaomi Software Tech
R1-1810826 Discussion on use of control channel region Samsung
R1-1810921 Use of control region for eMTC Ues Qualcomm Incorporated
R1-1811071 Consideration on the usage of LTE control channel region Nokia, Nokia Shanghai Bell
R1-1811389 DL transmission in LTE control channel region NTT DOCOMO, INC.

6.2.1.9 Use of RSS for measurement improvements

R1-1811641 Summary on the use of RSS for measurement improvements Sony

Agreement
In using RSS for measuring RSRP of neighbour cells, the following parameters are signalled to the UE for each cell:

- ce-rss-periodicity-config: RSS periodicity {160, 320, 640, 1280} ms
- ce-rss-duration-config : RSS duration {8, 16, 32, 40} subframes
- ce-rss-freqPos-config: RSS frequency location (lowest physical resource block number)
- ce-rss-timeOffset-config: RSS time offset in number of radio frames
- ce-rss-powerBoost-config : RSS power offset relative to LTE CRS {0, 3, 4.8, 6} dB

Agreement
The parameters related in the use of RSS for measuring RSRP of cells are signalled in the SI.

Agreement
Send an LS to RAN4:

- Request to evaluate the benefits and feasilibity of using RSS for RSRP measurements compared to using LTE CRS
- For measurement purposes, assess the benefits and feasibility of linking RSS to CRS

R1-1811933 [Draft] LS on RSRP measurements using RSS for Rel-16 LTE-MTC Ericsson
Decision: The LS is approved in R1-1811934.

R1-1810095 Considerations on improving DL measurement accuracy Huawei, HiSilicon

R1-1810193 Use of RSS for measurement improvements in LTE-MTC Ericsson
R1-1810239 Discussion on the use of RSS for measurement improvement LG Electronics
R1-1810507 Use of RSS for measurement improvement ZTE
R1-1810655 Considerations on using RSS for measurements Sony
R1-1810922 Use of RSS for RRM measurements Qualcomm Incorporated
R1-1811072 Use of RSS for measurement improvements Nokia, Nokia Shanghai Bell

6.2.2 Additional Enhancements for NB-IoT

NB_IOTenh3-Core; WID in RP-181674. Please refer to the WID for detailed scoping

R1-1811726 Chairman's notes of AI 6.2.2 Additional Enhancements for NB-IoT Ad-hoc chair (Samsung)
Decision: The document is endorsed, content is incorporated below.

R1-1810081 Additional enhancements for NB-IoT workplan Huawei, HiSilicon

6.2.2.1 UE-group wake-up signal

R1-1811664 Feature summary of UE-group wake-up signal for NB-IoT Ericsson

Agreement
UE-group NWUS is supported based on eNB's and UE's capability.
Whether the network supports UE-group NWUS is done by higher layer signaling.
FFS: The number of UE groups is configured by SIB.
Note that the UE-group NWUS is UE optional

Agreement
From a RAN1, perspective, UE grouping is based on at least UE ID or some function of UE ID.

Agreement
The legacy UE should not be prevented from using legacy WUS even in the case of Rel-16 group WUS is enabled
- Performance impact on legacy WUS should be carefully considered

Agreement
Group WUS is based on at least legacy WUS and UE-group ID.

Agreement
Configuration of group WUS is at least signaled in SI

R1-1811679 Further topics for UE-group wake-up signal for NB-IoT Ericsson

Agreement
A Rel-16 group WUS capable UE shall also be capable of Rel-15 legacy WUS

Agreement
Rel-16 UE-groups WUS with same DRX/eDRX gap configuration are multiplexed with TDM and/or single sequence CDM
- FFS: Whether single sequence CDM can include legacy WUS
- FFS: Multiplexing between Rel-15 and Rel-16 UE groups
- Note: Single sequence CDM is where different sequences share the same resource and only one sequence is transmitted at a given time

R1-1810082 On support for UE-group wake-up signal Huawei, HiSilicon
R1-1810194 UE-group wake-up signal in NB-IoT Ericsson
R1-1810240 Discussion on UE-grouping wake up signal in NB-IoT LG Electronics
R1-1810359 Multiplexing methods for UE-group wake-up signal of NB-IoT vivo
R1-1810508 Discussion on Wake-up signal for NB-IoT ZTE
R1-1810606 UE-Group WUS in NB-IoT MediaTek Inc.
R1-1810741 UE-group wake-up signal for NB-IoT Intel Corporation
R1-1810827 UE-group wake-up signal for NB-IoT Samsung

R1-1810923	UE-group wake-up signal	Qualcomm Incorporated
R1-1811073	UE group wake-up signal for NB-IoT	Nokia, Nokia Shanghai Bell
R1-1811386	UE-group wake-up signal for Rel.16 IoT	NTT DOCOMO, INC.
R1-1811576	Group Wake-Up Signal for NB-IoT	Fraunhofer IIS, Fraunhofer HHI

6.2.2.2 Support for transmission in preconfigured UL resources

R1-1811697 Feature lead summary of Support for transmission in preconfigured UL resources Huawei, HiSilicon

Agreement
In idle mode, the UE will at least consider one or more of the following attributes when validating TA (combination of multiple attributes is allowed):
- Serving cell changes (serving cell refers the cell that the UE is camping on)
- Time Alignment Timer for idle mode
- Serving cell NRSRP changes (serving cell refers the cell that the UE is camping on)
- FFS Other attributes:
  - Neighbour cell NRSRP change
  - TDOA of >=2 eNBs
  - TA History
  - Subscription based UE differentiation
  - Others not precluded (for example, attributes that need to be considered for high mobility UEs)

Note that UE power consumption should be taken into account for the FFS attributes

Agreement
For transmission in preconfigured UL resources, an RRC idle UE may use the latest TA that passed the validation criteria

Agreement
Pre-configured UL resources for transmission of data are indicated by RRC signaling. At least UE-specific RRC signaling is supported.

Agreement
The resource configuration includes at least the following
- Time domain resources including periodicity(s)
- Frequency domain resources
- TBS(s)/MCS(s)

Agreement
For UL transmission in preconfigured resource, fallback mechanism to RACH/EDT procedures is supported.

R1-1811678 Summary of offline discussions on PUR for eMTC and NB-IoT Huawei, HiSilicon

Agreement
Dedicated preconfigured UL resource is defined as an NPUSCH resource used by a single UE
- NPUSCH resource is time-frequency resource
- Dedicated PUR is contention-free

Contention-free shared preconfigured UL resource (CFS PUR) is defined as an NPUSCH resource simultaneously used by more than one UE
- NPUSCH resource is at least time-frequency resource
- CFS PUR is contention-free

Contention-based shared preconfigured UL resource (CBS PUR) is defined as an NPUSCH resource simultaneously used by more than one UE
- NPUSCH resource is at least time-frequency resource
- CBS PUR is contention-based (CBS PUR may require contention resolution)

Agreement
In IDLE mode, HARQ is supported for transmission in dedicated PUR
- A single HARQ process is supported,
  - FFS whether two HARQ processes are supported
- FFS: The design of the corresponding NPDCCH search space

Agreement

In idle mode, dedicated PUR is supported.

- Support for CFS PUR is FFS.
- Support for CBS PUR is FFS.

R1-1810083	On support for transmission in preconfigured UL resources	Huawei, HiSilicon
R1-1810180	Considerations on transmission in preconfigured UL resources	Hisense
R1-1810195	Support for transmission in preconfigured UL resources in NB-IoT	Ericsson
R1-1810241	Discussion on preconfigured UL resources in NB-IoT	LG Electronics
R1-1810490	NB-IOT Pre-configured UL Resources Design Considerations	Sierra Wireless, S.A.
R1-1810509	Support for transmission in preconfigured UL resources for NB-IoT	ZTE
R1-1810607	Early Transmission on Preconfigured UL resources in NB-IoT	MediaTek Inc.
R1-1810742	UL transmission in preconfigured resources for NB-IoT	Intel Corporation
R1-1810828	Discussion on transmission in preconfigured UL reosurces for NB-IoT	Samsung
R1-1810924	Support for transmission in preconfigured UL resources	Qualcomm Incorporated
R1-1811074	Preconfigured Grant for Uplink transmission	Nokia, Nokia Shanghai Bell
R1-1811388	UL transmission scheme in preconfigured resources	NTT DOCOMO, INC.
R1-1811555	Discussion on transmission in preconfigured UL resources	III

6.2.2.3 Scheduling of multiple DL/UL transport blocks

R1-1811660 Summary on Multiple TB scheduling enhancement for NB-IoT ZTE

Agreement
The UE should only monitor one DCI size in the UE specific search space.

Working Assumption
For UE supporting multiple TBs, the soft buffer size stays the same as that of the legacy UE

Agreement
Individual feedback for each HARQ process is supported.
FFS if HARQ bundling/multiplexing can be optionally supported.

Agreement
Using one DCI to schedule multiple TBs for SC-MTCH is supported, and it is configured and enabled per SC-MTCH via SC-PTM configuration message in SC-MCCH.

R1-1810084	Scheduling multiple DL/UL transport blocks for SC-PTM and unicast	Huawei, HiSilicon
R1-1810196	Scheduling of multiple DL/UL transport blocks in NB-IoT	Ericsson
R1-1810242	Discussion on multiple transport blocks scheduling in NB-IoT	LG Electronics
R1-1810488	NB-IOT Multiple Transport Block Grant Design	Sierra Wireless, S.A.
R1-1810510	Consideration on scheduling enhancement for NB-IoT	ZTE
R1-1810584	Design of scheduling of multiple DL/UL TB for Rel.16 NBIoT	Lenovo, Motorola Mobility
R1-1810610	Scheduling of multiple DL/UL transport blocks	MediaTek Inc.
R1-1810829	Scheduling of multiple transport blocks for NB-IoT	Samsung
R1-1810925	Scheduling of multiple DL/UL transport blocks	Qualcomm Incorporated
R1-1811075	Scheduling of multiple DL/UL transport blocks	Nokia, Nokia Shanghai Bell

6.2.2.4 Coexistence of NB-IoT with NR

R1-1811698 Feature lead summary of Coexistence of NB-IoT with NR Huawei, HiSilicon

Agreement
The following aspects are studied to improve the performance of coexistence of NB-IoT with NR

- Resource reservation in NB-IoT

- Overlap of NR SSB with NB-IoT

R1-1810085	Discussion on NB-IoT coexistence with NR	Huawei, HiSilicon
R1-1810197	Coexistence of NB-IoT with NR	Ericsson
R1-1810243	Discussion on coexistence of NB-IoT with NR	LG Electronics
R1-1810472	On Coexistence of NB-IoT with NR	Dish Network
R1-1810511	Performance improvement for coexistence of NB-IoT with NR	ZTE
R1-1810605	Coexistence of NB-IoT with NR	MediaTek Inc.
R1-1810926	Coexistence of NB-IoT with NR	Qualcomm Incorporated
R1-1811076	Coexistence of NB-IoT with NR	Nokia, Nokia Shanghai Bell
Withdrawn		
R1-1811079	Coexistence of NB-IoT with NR	Nokia, Nokia Shanghai Bell

6.2.2.5 Support of Quality report in Msg3 for non-anchor access

R1-1811699 Feature lead summary of support of quality report in Msg3 for non-anchor access Huawei, HiSilicon

Agreement
RAN1 does not define search space for hypothetical NPDCCH for channel quality report in Msg3 on non-anchor access.

Agreement
From RAN1 point of view, specification support for measurement period for non-anchor access in RAN1 specifications is not needed

Agreement
RAN1 does not define measurement reference resource for non-anchor access.

For further study:
The following scenarios with regards to downlink channel quality reporting in msg3 for non-anchor carrier access.
- For EDT/non-EDT, msg3 associated with PDCCH order PRACH, IDLE
- PUR

R1-1810086	On support of Msg3 quality reporting for non-anchor access	Huawei, HiSilicon
R1-1810198	Support of quality report in Msg3 for non-anchor access in NB-IoT	Ericsson
R1-1810244	Downlink channel quality report during random access procedure on a non-anchor carrier	LG Electronics
R1-1810512	Support of Quality report in Msg3 for non-anchor access	ZTE
R1-1810608	Quality report in Msg3 on non-anchor carrier	MediaTek Inc.
R1-1810743	DL quality reporting in Msg3 for non-anchor access in NB-IoT	Intel Corporation
R1-1810830	Discussion on quality report in Msg3 for NB-IoT	Samsung
R1-1810927	Support of quality report in msg3 for non-anchor	Qualcomm Incorporated
R1-1811077	Support of Quality report in Msg3 on non-anchor carrier	Nokia, Nokia Shanghai Bell

6.2.2.6 Presence of NRS on a non-anchor carrier for paging

R1-1811326 Presence of NRS on a non-anchor for paging (feature lead summary) Qualcomm Europe Inc. (Spain)

Agreement
The presence of NRS on subframes which will contain NRS even when no paging NPDCCH is transmitted is enabled by SIB.

Agreement
Subframes which will contain NRS even when no paging NPDCCH is transmitted are associated to a PO.
- FFS: Whether PO is from UE perspective or NW perspective

Agreement
A subset of the POs have associated subframes which will contain NRS even when no paging NPDCCH is transmitted.
- FFS: Details of the subset, whether it depends on some existing parameters such as DRX cycle or new parameters by configuration
- FFS: Whether the subset can be the whole set of POs by configuration.

For next meeting:
- Companies are encouraged to consider increased network power consumption and interference, decreased chance for dynamic sharing with other RATs (e.g. NR), paging performance, reduced UE power consumption in the setting of presence of NRS when no paging is sent on a non-anchor carrier

R1-1810087 NRS presence on non-anchor carriers for paging Huawei, HiSilicon
R1-1810199 Presence of NRS on a non-anchor carrier for paging in NB-IoT Ericsson
R1-1810245 Discussion on NRS on an a non-anchor carrier LG Electronics
R1-1810513 Presense of NRS on non-anchor PRB ZTE
R1-1810609 NRS presence on non-anchor carrier MediaTek Inc.
R1-1810831 NRS presence on non-anchor carrier Samsung
R1-1810928 Presence of NRS on a non-anchor carrier for paging Qualcomm Incorporated
R1-1811078 Presence of NRS on a non-anchor carrier for paging Nokia, Nokia Shanghai Bell

6.2.2.7 Other

R1-1811681 WF on Support of DL quality report in connected mode in NB-IoT Ericsson, CMCC, Qualcomm, LG, ZTE, Lenovo, Nokia, NSB, SoftBank, MediaTek, NTT Docomo, AT&T, Sharp

R1-1811590 Support of DL quality report in connected mode in NB-IoT Ericsson

6.2.3 DL MIMO efficiency enhancements for LTE

LTE_DL_MIMO_EE-Core; WID in RP-181485. Please refer to the WID for detailed scoping

R1-1811727 Chairman's notes of AI 6.2.3 DL MIMO efficiency enhancements for LTE Ad-hoc chair (Samsung)
Decision: The document is endorsed, content is incorporated below.

6.2.3.1 Support of enhancing SRS capacity and coverage

6.2.3.1.1 Additional SRS symbols

R1-1811689 Feature summary on additional SRS symbols for LTE Huawei, HiSilicon

Conclusion
At least for low downlink SINR region, the support of additional SRS symbols per UE in normal subframes can bring gain for downlink performance.
- The above observation is for full reciprocity based evaluation results

Agreement
Aperiodic SRS transmission for additional SRS symbol(s) is supported. FFS on periodic SRS transmission for additional SRS symbol(s).

For the next meeting
Companies are encouraged to provide evaluation results and technical details related to the support of antenna switching for additional SRS symbol(s)

R1-1811734 Outcome of offline discussion for additional SRS symbols for LTE Huawei, HiSilicon

Agreement

The time location of possible additional SRS symbols in one normal UL subframe for a cell is down-selected from following options (down-selection to be made in RAN1#95):

- Option 1: All symbols in only one slot of one subframe can be used for SRS from cell perspective
- Option 2: All symbols in one subframe can be used for SRS from cell perspective.
- FFS whether cell-specific configuration of SRS resources in slot-level granularity is required or not

Agreement

For a UE configured with additional SRS symbols within one UL subframe, the SRS transmission is down-selected from following options

- Option 1: Frequency hopping within one UL subframe is supported.
- Option 2: Repetition within one UL subframe is supported
- Option 3: Both frequency hopping and repetition within one UL subframe is supported.
- FFS the maximum number of SRS symbol within one subframe/slot that can be allocated to a UE.

R1-1810161	Discussion on additional SRS symbols of normal UL subframe	Huawei, HiSilicon
R1-1810210	**Discussion on additional SRS symbols**	**ZTE**
R1-1810246	**Enhancements on SRS resource allocation**	**LG Electronics**
R1-1810360	Further discussion on SRS enhancements	vivo
R1-1810568	Discussion of additional SRS symbols	Lenovo, Motorola Mobility
R1-1810601	Additional SRS Symbols for SRS Capacity and Coverage Enhancements	MediaTek Inc.
R1-1810744	Additional SRS symbols	Intel Corporation
R1-1810832	View on additional SRS symbols	Samsung
R1-1811656	**Additional SRS symbols**	**Qualcomm Incorporated** (Revision of R1-1810929)
R1-1810946	Discussion on introduction of additional SRS symbols	Nokia, Nokia Shanghai Bell
R1-1811134	Necessity of PUCCH/PUSCH enhancements for additional SRS symbols	SoftBank Corp.
R1-1811167	**On Rel-16 LTE SRS enhancements**	**Ericsson**
R1-1811485	Views on SRS designs for LTE MIMO	Mitsubishi Electric Co.

6.2.3.1.2 Virtual cell ID for SRS

R1-1811735	**Feature summary on virtual cell ID for SRS**	**Huawei, HiSilicon**

Agreement

A single virtual cell ID is configured per UE per CC

R1-1810162	On virtual cell ID for SRS sequence generation	Huawei, HiSilicon
R1-1810211	Discussion on virtual cell ID for SRS	ZTE
R1-1810247	Discussion on VCID for SRS sequence	LG Electronics
R1-1810569	Discussion of virtual cell ID for SRS	Lenovo, Motorola Mobility
R1-1810600	Virtual Cell ID for SRS Capacity Enhancements	MediaTek Inc.
R1-1810745	Virtual cell ID support for SRS	Intel Corporation
R1-1810833	Discussions on virtual cell ID for SRS	Samsung
R1-1810930	**Virtual cell ID for SRS**	**Qualcomm Incorporated**
R1-1810947	Configuration of virtual cell ID for SRS	Nokia, Nokia Shanghai Bell
R1-1811168	Virtual cell ID configuration for SRS	Ericsson

6.2.3.1.3 Other

R1-1810163	**Evaluation of additional SRS symbols for LTE**	**Huawei, HiSilicon**
R1-1811169	Evaluation assumptions for SRS enhancements	Ericsson
R1-1811561	Discussion on power control for additional SRS	Huawei, HiSilicon

6.2.4 Study on LTE-based 5G Terrestrial Broadcast

FS_LTE_terr_bcast; SID in RP-181706. Please refer to the SID for detailed scoping

R1-1811728 **Chairman's notes of AI 6.2.4 Study on LTE-based 5G Terrestrial Broadcast Ad-hoc chair (Ericsson)**
Decision: The document is endorsed, content is incorporated below.

R1-1810170 **Techniques for networks supporting TV services Huawei, HiSilicon, Shanghai Jiao Tong University, ABS**

Agreement:
"Gap analysis" can be based on all available techniques in Rel-14 and focuses on MBSFN and SC-PTM.

R1-1810931 Skeleton TR for 36.776 Qualcomm Incorporated
R1-1811661 **Skeleton TR for 36.776 Qualcomm Incorporated**
Decision: R1-1811661 is endorsed as TR36.776 v0.0.3

R1-1810932 **Work plan for LTE-based 5G terrestrial broadcast Qualcomm Incorporated**

6.2.4.1 Identifying relevant broadcast requirements in TR 38.913 and evaluation methodology

R1-1810169 **Relevant requirements for dedicated broadcast networks and evaluation methodology Huawei, HiSilicon, Shanghai Jiao Tong University, ABS**

Agreement:
Spectral efficiency is one of performance metrics to be used for evaluation.

Agreement:
Pathloss model of ITU-R P.1546-5 is to be used for evaluation.

Agreement:
Full buffer traffic model is to be used for evaluation.

R1-1810319 **Public service broadcaster requirements and background information relevant to LTE-based 5G Terrestrial Broadcast EBU, BBC. IRT**
R1-1810933 **Requirements and evaluation methodology Qualcomm Incorporated**

Agreement:
The first step in the evaluation of a requirement should be to determine whether the requirement is already met by LTE or not. If the requirement is partially met, the remaining gaps should be identified.

Agreement:
Only Req.7 and Req.8 involve simulation work. All the other requirements are to be verified based on analysis of current specifications.

R1-1811318 5G Broadcast Requirements Analysis for LTE Charter Communications

Email approval to collect input on requirements not requiring simulations and update TR with the collected input until October 25th, 2018. Alberto (Qualcomm)

6.2.4.2 Scenarios for evaluation and simulation assumptions

R1-1810171 **Scenarios and simulation assumptions for "gap analysis" Huawei, HiSilicon, Shanghai Jiao Tong University, ABS**
R1-1810320 Scenarios and simulation assumptions for the LTE based terrestrial broadcast gap analysis EBU, BBC, IRT
Withdrawn

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R1-1810934 Scenarios for evaluation and simulation assumptions Qualcomm Incorporated

Agreement:
CAS evaluation should be included in the simulations.

R1-1811588 Scenarios and simulation assumptions for the LTE based terrestrial broadcast gap analysis EBU, BBC, IRT

R1-1811731 Summary of offline discussion on simulation assumptions Qualcomm Incorporated

Agreement:
The following table provides the general parameters for system level simulations.

- Note: Potential enhancements, including evaluations, can be presented to RAN1#95

Parameter	MPMT	HPHT-1	HPHT-2	LPLT
ISD	50km	125km	173.2km	15km
BS Power	60dBm	70dBm	70dBm	46 dBm
BS effective antenna height	[100m]	300m	300m	35m
CPs/Numerologies	CAS/SC-PTM: 4.7 us, 16.6us PMCH: 15kHz/7.5kHz/1.25kHz as baseline.			
Carrier frequency	700MHz			
Channel BW	10MHz as baseline			
BS antenna gain	10.5dBi	13dBi	13dBi	15dBi
BS antenna pattern	1Tx: rooftop and non-rooftop 2Tx: non-rooftop (FFS for rooftop)	1Tx: rooftop and non-rooftop 2Tx: non-rooftop (FFS for rooftop)	1Tx: rooftop and non-rooftop 2Tx: non-rooftop (FFS for rooftop)	3 sector antenna pattern Each sector has a horizontal and vertical pattern as defined in: 3GPP TR36.814, Table A.1.1: 3GPP Case 1 and Case 3 (Macro Cell) 2Tx for non-rooftop (FFS for rooftop)
Cellular Layout	Hexagonal grid, 61 cell sites, 1 sector per site	Hexagonal grid, 61 cell sites, 1 sector per site	Hexagonal grid, 61 cell sites, 1 sector per site	Hexagonal grid, 61 cell sites,3 sector per site
Tx EVM	[8%]			8%

Agreement:
The following table provides the channel characteristics for system level simulations.

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Parameter	Rooftop	Car-mounted	Indoor
Propagation model	ITU-R P.1546-5 50% / 1% (serving / interfering)	ITU-R P.1546-5 50% / 1% (serving / interfering)	ITU-R P.1546-5 50% / 1% (serving / interfering)
Fast fading channel type	FFS	FFS	FFS
Receiver velocity	0	Up to 250km/h	3km/h
Receiving antenna height	10m	1.5m	1.5m
Height Loss: The difference between the signal level at 10m and the actual receiving antenna height	0dB	16.5dB for rural 23.5 dB for urban	16.5dB for rural 23.5 dB for urban
Building penetration loss	0dB	0dB	20dB for urban 10dB for rural
Shadowing standard deviation	5.5dB	5.5dB	8dB for rural 6dB for urban
Shadowing correlation	1 for same site	1 for same site	1 for same site

Agreement:
The following table provides the receiver characteristics for system level simulations.

Parameter	Rooftop	Car-mounted	Indoor
Receiver noise figure	6dB	6dB	9dB
Receiver noise bandwidth	9MHz	9MHz	9MHz
Receiver antenna (gain & pattern)	13.15 dBi Discrimination pattern according to ITU-R BT.419-3 band IV, V	3.0 dBi Non-directional	-7.5dBi
Antenna Cable Loss	4dB	0dB	0dB
2-Rx Diversity	No (FFS for 2Tx)	Yes	Yes
Implementation Margin	1dB		
Body loss at receiver	0		
Rx EVM	4%		

Email approval on (Alberto, Qualcomm)

- Fast fading channel type parameters for system level simulations (until October 16, 2018)
- Parameters for link level simulations (until October 16, 2018)
- A potential in-car scenario and its associated parameters. (until October 21, 2018)
- Potential prioritization of combinations of scenarios and receiver types (until October 16, 2018)

Agreement:

- One of the following two options (to be declared by company) is used for rooftop antenna alignment:
  - Opt1: Strongest transmitter (based on pathloss and shadowing).
  - Opt2: Closest transmitter
- X% pre-processing SINR (to be mapped to X% tput by LLS) is used as a performance metric
  - Reporting points: 95% SINR. Other percentiles may also be reported

Agreement:
The following options may be used for the distribution of UEs in the system level simulations:

- Uniform in all cells as a baseline
- "Worst case" (i.e., drop all UEs in the geographical point with worse coverage) as an additional option

Agreement:
The synchronization method used (e.g., max SINR, max energy) should be reported with the evaluations

6.2.5 Other

R1-1811729 **Chairman's notes of AI 6.2.5 Others** **Ad-hoc chair (Ericsson)**
Decision: The document is endorsed, content is incorporated below.

R1-1811191 On configurable wideband PRG size for TM9 and TM10 Ericsson

R1-1811686 **WF on PRG size for LTE TM9 and TM10 Huawei, HiSilicon, China Telecommunications, Deutsche Telekom**

Agreement:
- Introduce a higher layer parameter to indicate whether the PRG size is the whole scheduled bandwidth.
- Introduce an optional UE capability to indicate whether it can support PRG size of whole scheduled bandwidth.
  - FFS: Details of UE capability
- Note: This does not introduce any new or additional RAN4 UE requirements

7 NR

Limit to maximum 1 contribution per 1 company/organization/university for each agenda item, except for Other and where noted otherwise.

7.1 Maintenance of Release 15 NR

NR_newRAT; WID in RP-181726

Only essential corrections. Notes:
- No individual CRs are allowed. Only text proposals are allowed.
  - Later on editors will aggregate all endorsed text proposals for a jumbo CR per spec
- Editors are encouraged to submit editor's CR before the meeting reflecting additional comments received after the endorsed & frozen NR specifications. If submitted, please submit under agenda 7.

R1-1810109 Corrections for TR38.811 Chapter 6 (Non-Terrestrial Networks channel models) Huawei, HiSilicon, Nokia, Nokia Shanghai Bell, Thales
R1-1810599 Draft CR to 38.211 Ericsson

Friday: Editors to prepare CRs to capture all agreements/working assumptions/TPs by Oct 19th, for comments and endorsements by Oct 26th

7.1.1 Maintenance for Initial access and mobility

7.1.1.1 Maintenance for Downlink signals and channels

Including sync, PBCH, RMSI, OSI, and Paging.
Please use separate sections for each of the respective sub-topic to facilitate reviews and summary.

R1-1811805 **Summary of synchronization signals and PBCH** **Ericsson**
Decision: The document is noted.

Conclusion:
- Editors to discuss and address how to align specification regarding rate matching around SS/PBCH in 38.211, 38.213 and 38.214
  - To be included in editors' CRs for endorsement over email
- Editors to harmonize the notation for the maximum number of SS/PBCH beams in an SS/PBCH period in 38.211, 38.212 and 38.213 (currently as 38.211(L_{max}), 38.212(L_{SSB}) and 38.213(L))

Discuss further offline regarding SSB SCS for FR1Carrier Aggregation
Discuss further offline regarding rate matching around OSI as raised by Intel

Thursday session

R1-1811967 Summary of synchronization signals and PBCH Ericsson

Decision: The document is noted.

Agreements:

- Agree on the text proposal to section 4.1 of 38.213

----- Start of TP -----

For a UE configured to operate with carrier aggregation over a set of cells in a frequency band of frequency range 2 or with frequency-contiguous carrier aggregation over a set of cells in a frequency band of frequency range 1, if the UE is provided values of subcarrier spacings by higher layer parameter *subcarrierSpacing* for receptions of SS/PBCH blocks on any cells from the set of cells, the UE expects the values to be same.

----- End of TP -----

Friday session

R1-1812034

Decision: The document is noted.

Agreements:

- Agree on below text proposal to 38.214, section 5.1.4

----- Start of TP -----

When receiving the PDSCH scheduled with SI-RNTI ~~in PDCCH Type0 common search space~~ and system information indicator in DCI set to 0, the UE shall assume that no SS/PBCH block is transmitted in REs used by the UE for a reception of the PDSCH.

When receiving the PDSCH scheduled with SI-RNTI ~~in PDCCH Type0a common search space~~ and system information indicator in DCI set to 1, RA-RNTI, P-RNTI or TC-RNTI, the UE assumes SS/PBCH block transmission according to *ssb-PositionsInBurst*, and if the PDSCH resource allocation overlaps with PRBs containing SS/PBCH block transmission resources the UE shall assume that the PRBs containing SS/PBCH block are not available for PDSCH in the OFDM symbols where SS/PBCH block is transmitted.

----- End of TP -----

R1-1811817 Summary of Remaining NR RMSI Issues CATT

Decision: The document is noted.

Agreements:

- To adopt the following TP to 4.4.4.2 of 38.211:

----- Start of TP -----

Point A serves as a common reference point for resource block grids and is obtained from:

- *offsetToPointA* for a PCell downlink represents the frequency offset between point A and the lowest subcarrier of the lowest resource block, which has the subcarrier spacing provided by the higher-layer parameter *subCarrierSpacingCommon* and overlap~~sping~~ with the SS/PBCH block used by the UE for initial cell selection~~.~~, *offsetToPointA* is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2;

----- End of TP -----

R1-1811804 Summary of Other System Information Delivery Samsung

Decision: The document is noted.

OSI: Association between SS/PBCH block and PDCCH monitoring occasion (to be further discussed with control session)
OSI: Useful PDCCH monitoring occasions (to be further discussed with Paging)
OSI: discuss further detailed mechanism on SI message re-transmission (to be further discussed with scheduling/HARQ)

Wednesday

R1-1811901 Summary of Other System Information Delivery Samsung

Decision: The document is noted.

R1-1811830 **Offline summary for Paging** **Huawei**
Decision: The document is noted.

Proposals:

- When the search space ID configured by pagingSearchSpace is equal to 0, UE assumes that default association is applied as defined Section 13 of 38.213. If the search space ID configured by pagingSearchSpace is not equal to 0, UE applies the non-default association.
    - Discuss further offline especially w.r.t. association with CORESET ID 0

Discuss further offline for the non-default association, clarfying the valid PDCCH monitoring occasion associated to which SSB index to limit the UE monitoring time → aim to have detailed text for RAN1 common understanding including checking whether or not to have RAN1 spec update

Proposals:

- Valid paging PDCCH monitoring occasion as a monitoring occasion is not expected to conflict with UL slots/symbols configured by higher-layer parameter 'tdd-UL-DL-ConfigCommon' or 'tdd-UL-DL-ConfigCommon2'
    - i.e. it can only occur in DL only and flexible symbols
    - Check offline for the above whether it is restricted w.r.t. configuration or w.r.t. operation (meaning such confliciting configuration is still allowed, but UE will handle it appropriately)
    - Check offline for potential spec update

Proposals:

- RAN1 has the following observations on the usage of Ns:
    - The lack of configurability of Ns in the case of simultaneous support of default and non-default association in a cell. For example, in default association, Ns = 2 is only possible for SS/PBCH block and CORESET multiplexing pattern 2/3 and SSB periodicity of 5 ms, and in all other cases, Ns has to be configured with a value of 1.
    - RAN2 should consider the case of supporting a PO that can be in the first or the second half radio frame of the PF for the case of RMSI periodicity of 5ms and Ns=1.

Wednesday
R1-1811900 **Offline summary for Paging** **Huawei**
Decision: The document is noted.

R1-1810181	Maintenance for Downlink signals and channels	ZTE
R1-1810248	Maintenance for Downlink signals and channels	LG Electronics
R1-1810361	Remaining issues on broadcast signals and channels	vivo
R1-1810423	Remaining issues on downlink signals and channels for initial access	MediaTek Inc.
R1-1810746	Maintenance of downlink signals and channels	Intel Corporation
R1-1810834	Remaining Issues on Synchronization and System information	Samsung
R1-1810996	Downlink signals and channels for initial access	Guangdong OPPO Mobile Telecom.
R1-1811140	Remaining issues on paging	Sharp
R1-1811227	Maintenance for downlink signals and channels for initial access	Qualcomm Incorporated
R1-1811290	Remaining issues on NR paging	Motorola Mobility, Lenovo
R1-1811356	Maintenance for Downlink signals and channels	NTT DOCOMO, INC.
R1-1811474	On issues related to DL signals and channels	Nokia, Nokia Shanghai Bell
R1-1811580	Maintenance for Downlink signals and channels	Ericsson
R1-1811831	Remaining issues on downlink signals and channels	Huawei, HiSilicon (rev of R1-1810096)

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7.1.1.2 Maintenance for Physical random access channel and procedure

Please use separate sections for each of the respective sub-topic to facilitate reviews and summary.

R1-1811832 **Maintenance for physical access random channel Convida Wireless**
Decision: The document is noted.

Proposals:
- For inter frequency handover purposes in unpaired spectrum where the target cell uses L=4, the UE may assume the absolute value of the time difference between radio frame i in the current cell and radio frame i in the target cell is less than 153600T_s if the association pattern period in Section 8.1 of [38.213] is not equal to 10ms.

Proposals:
- To adopt the following TP of Section 8.1 of 38.213:

A preamble is transmitted using the selected PRACH format with transmission power $P_{\mathrm{PRACH},b,f,c}(i)$, as described in Subclause 7.4, on the indicated PRACH resource.
UE is not expected to receive a configuration for PRACH transmission where the PRACH transmission bandwidth is greater than the maximum allowed transmission bandwidth, as defined in table 5.3.2-1 of 38.101-1, for the combination of Msg1 SCS and channel bandwidth.

Wednesday session
R1-1811956 **Maintenance for physical access random channel Convida Wireless**
Decision: The document is noted.

Agreements:
- To adopt the following TP to Section 6.3.3.2 of 38.211

----- Start of TP -----
For handover purposes to a target cell in paired or unpaired spectrum where the target cell uses $L = 4$, the UE may assume the absolute value of the time difference between radio frame i in the current cell and radio frame i in the target cell is less than 153600T_s if the association pattern period in Section 8.1 of [38.213] is not equal to 10ms
~~For handover purposes within the same frequency range in paired spectrum with $L = 4$, the UE may assume the absolute value of the time difference between radio frame i in the current cell and radio frame i in the target cell is less than~~ 153600T_s ~~if any of the following conditions are fulfilled:~~
- ~~the entries in Tables 6.3.3.2-2 and 6.3.3.2-3 where x≠1~~
- ~~the entries in Tables 6.3.3.2-2 and 6.3.3.2-3 where x=1 and and the association period in Table 8.1-1 of [38.213] is not equal to 1~~

----- End of TP -----

Proposals:
For inter frequency handover purposes where the source cell is either in paired or unpaired spectrum and the target cell is in unpaired spectrum and uses L=8, the UE may assume the absolute value of the time difference between radio frame i in the current cell and radio frame i in the target cell is less than 76800T_s
Also L=64

Conclusion:
- It is RAN1's understanding that UE is not expected to receive a PRACH configuration where any part of the PRACH preamble transmission bandwidth would occur outside the allowed transmission bandwidth, as defined in table 5.3.2-1 of 38.101-1, for the combination of Msg1 SCS and channel bandwidth.
  - No spec change is necessary

Agreement: The following typo is to be handled in the next release of 38.211.
- The CP length for preamble format 1, table 6.3.3.1-1 in 38.211 shall be 21024

Thursday session
R1-1811991 **Maintenance for physical access random channel Convida Wireless**
Decision: The document is noted.

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Proposals:

- L = 8, adopt the following text proposal in section 6.3.3.2 in 38.211:
  - For inter frequency handover purposes where the source cell is either in paired or unpaired spectrum and the target cell is in unpaired spectrum and uses $L = 8$, the UE may assume the absolute value of the time difference between radio frame i in the current cell and radio frame i in the target cell is less than $76800T_s$
- For L=64
  - For intra frequency handover to a target cell in FR2 in same frequency layer, the UE can determine the start of the frame and the SFN based on the timing of the source cell or a cell on the same frequency as the target cell.
    - UE can always assume that the cells are synchronized as per RAN4 agreement
  - For inter frequency handover to a target cell in FR2, it is up to UE implementation to determine the start of the frame and the SFN on the target cell.

Send an LS to RAN2 about the agreements for L=4, 8, and 64, and

- From the specification text in 38.331 (to add the quote of the text), it seems that a UE is mandated to read PBCH upon handover and before sending RACH. If it is confirmed by RAN2 to be the case, the above RAN1 agreements will be cancelled, which will also be reflected in RAN1 specifications.
- In addition, RAN1 would like to ask RAN2 the following question:
  - Is it so that a UE in RRC connected mode is expected to receive the higher layer UE specific configuration of a NZP-CSI-RS-ResourceSet configured with higher layer parameter trs-Info in the "handover command"?
- Action to RAN2:
  - RAN1 respectfully asks RAN2 to confirm or inform RAN1 the understandings of the the first issue to provide an answer to the second question

LS to be drafted in R1-1812027 (Asbjorn, Ericsson)

Friday session: Above proposals are taken as working assumption

Agreement:

- (working assumption) L = 8, adopt the following text proposal in section 6.3.3.2 in 38.211:
  - For inter frequency handover purposes where the source cell is either in paired or unpaired spectrum and the target cell is in unpaired spectrum and uses $L = 8$, the UE may assume the absolute value of the time difference between radio frame i in the current cell and radio frame i in the target cell is less than $76800T_s$
- For L=64
  - For intra frequency handover to a target cell in FR2 in same frequency layer, the UE can determine the start of the frame and the SFN based on the timing of the source cell or a cell on the same frequency as the target cell.
    - UE can always assume that the cells are synchronized as per RAN4 agreement
  - For inter frequency handover to a target cell in FR2, it is up to UE implementation to determine the start of the frame and the SFN on the target cell.

Note: the above agreement is not be captured in the Oct. RAN1 spec update, and is to be confirmed (or otherwise) by Nov. meeting depending on RAN2's reply LS.

- If no RAN2 LS received by the end of RAN1#95, the above agreement will be captured in RAN1 spec.

Send an LS to RAN2 about the agreements for L=4, 8, and 64, and

- From the specification text in 38.331 (to add the quote of the text), there was discussion in RAN1 that a UE is mandated to read PBCH upon handover and before sending RACH. However, there was also discussion in RAN1 that in some other parts of RAN2 specifications, the above procedure may not be the case. RAN1 would like to ask RAN2 to provide a clear answer regarding whether or not a UE is mandated to read PBCH upon handover and before sending RACH.
- Action to RAN2:
  - RAN1 respectfully asks RAN2 to answer the above issue at the earliest convenience as RAN1 plans to conclude the issue by RAN1#95

R1-1812027 **[Draft] LS on network synchronization for handover purposes** **Ericsson**

Decision: The draft LS is endorsed and final LS is approved in R1-1812074.

R1-1811841 **Summary of maintenance for PRACH procedure Qualcomm**
Decision: The document is noted.

Agreements:
- Regarding RAN2's LS on Power Ramping: For case (C), UE is allowed to increment the power ramping counter; for case (D)(E)(F), the power ramping counter remains unchanged.
  - Reply LS to be drafted in R1-1811866

R1-1811866 **[Draft] Reply to LS on Preamble Power Ramping Counter Fujitsu**
Decision: The draft LS is endorsed and final LS is approved in R1-1811964.

Proposals:
- To adopt the following TP to Section 8.1 of 38.213:

For the indicated preamble index, the ordering of the PRACH occasions is
- First, in increasing order of frequency resource indexes for frequency multiplexed PRACH occasions
- Second, in increasing order of time resource indexes for time multiplexed PRACH occasions within a PRACH slot
- Third, in increasing order of indexes for PRACH slots

For a PRACH transmission triggered by higher layer, the *ra-OccasionList* [x, TS 38.331], if the value of the Random Access Preamble index field is not zero, indicates the list of PRACH occasions for the PRACH transmission where the PRACH occasions are associated with the CSI-RS index indicated by *csi-RS* field of the higher layer signaling. The indexing of the PRACH occasions indicated by the *ra-OccasionList* is reset per association period and for the indicated preamble index, the ordering of the PRACH occasions is
- First, in increasing order of frequency resource indexes for frequency multiplexed PRACH occasions
- Second, in increasing order of time resource indexes for time multiplexed PRACH occasions within a PRACH slot
- Third, in increasing order of indexes for PRACH slots

Check further offline especially w.r.t. aligning or merging with the text associated with SSB

Proposals:
- To adopt the following TP:

---------- Start of Text Proposal for Sec. 10.1 of TS 38.213 ----------
For single cell operation or for operation with carrier aggregation in a same frequency band, a UE does not expect to monitor a PDCCH in a Type0/0A/2/3-PDCCH common search space or in a UE-specific search space if the SS/PBCH block or the CSI-RS the UE selects for PRACH association, as described in Subclause 8.1, does not have same QCL-TypeD [6, TS 38.214] with a DM-RS for monitoring the PDCCH, and if the PDCCH or an associated PDSCH overlaps in at least one symbol with a PDCCH the UE monitors in a Type1-PDCCH common search space or with an associated PDSCH.
---------- End of Text Proposal for Sec. 10.1 of TS 38.213 ----------

Proposals:
---------- Start of Text proposal for 38.213 ----------
If a UE has received higher layer parameter *TCI-States* for PDCCH receptions containing a single TCI state, the UE assumes that the DM-RS antenna port associated with PDCCH receptions is quasi co-located with the one or more DL RS configured by the TCI state. If the UE receives PDCCH order and the active TCI state for PDCCH includes two RS, the UE expects that one RS has QCL-TypeD and the UE uses the one RS for determining *powerControlOffsetSS*.
---------- End of Text proposal for 38.213----------

Agreements:
- To adopt the following TP to 38.213:

----- Start of TP -----
7.4 Physical random access channel

A UE determines a transmission power for a physical random access channel (PRACH), $P_{\text{PRACH},b,f,c}(i)$, on active UL BWP b of carrier f of serving cell c based on DL RS for serving cell c in transmission occasion i as

$$P_{\text{PRACH},b,f,c}(i) = \min\left\{P_{\text{CMAX},f,c}(i), P_{\text{PRACH,target},f,c} + PL_{b,f,c}\right\} \text{ [dBm]},$$

where $P_{\text{CMAX},f,c}(i)$ is the configured UE transmission power defined in [8-1, TS 38.101-1] and [8-2, TS38.101-2] for carrier f of serving cell c within transmission occasion i, $P_{\text{PRACH,target},f,c}$ is the PRACH target reception power *PREAMBLE_RECEIVED_TARGET_POWER* provided by higher layers [11, TS 38.321] for the active UL BWP b of carrier f of serving cell c, and $PL_{b,f,c}$ is a pathloss for the active UL BWP b of carrier f based on the DL RS associated with the PRACH transmission on the active DL BWP of serving cell c and calculated by the UE in dB as *referenceSignalPower* – higher layer filtered RSRP, where RSRP is defined in [7, TS 38.215] and the higher layer filter configuration is defined in [12, TS 38.331]. If the active DL BWP is the initial DL BWP and for SS/PBCH block and control resource set multiplexing pattern 2 or 3, as described in Subclause 13, $PL_{b,f,c}$ is a pathloss for the active UL BWP b of carrier f based on the associated SS/PBCH block with the PRACH transmission.

----- End of TP -----

Proposals:

- To adopt the following TP to Section 10.1 of 38.213:

A set of PDCCH candidates for a UE to monitor is defined in terms of PDCCH search space sets. A search space set can be a common search space set or a UE-specific search space set. A UE monitors PDCCH candidates in one or more of the following search spaces sets

- a Type0-PDCCH common search space set configured by *pdcch-ConfigSIB1* in *MasterInformationBlock* or by *searchSpaceSIB1* in *PDCCH-ConfigCommon* or by *searchSpaceZero* in *PDCCH-ConfigCommon* for a DCI format with CRC scrambled by a SI-RNTI on the primary cell;
- a Type0A-PDCCH common search space set configured by *searchSpaceOtherSystemInformation* in *PDCCH-ConfigCommon* for a DCI format with CRC scrambled by a SI-RNTI on the primary cell;
- a Type1-PDCCH common search space set configured by *ra-SearchSpace* in *PDCCH-ConfigCommon* for a DCI format with CRC scrambled by a RA-RNTI, C-RNTI or a TC-RNTI on the primary cell;
- a Type2-PDCCH common search space set configured by *pagingSearchSpace* in *PDCCH-ConfigCommon* for a DCI format with CRC scrambled by a P-RNTI on the primary cell

Wednesday session

R1-1811931 **Summary of maintenance for PRACH procedure Qualcomm**

Decision: The document is noted.

Agreements:

- To adopt the following TP, Section 10.1 of 38.213:

----- Start of TP -----

For single cell operation or for operation with carrier aggregation in a same frequency band, a UE does not expect to monitor a PDCCH in a Type0/0A/2/3-PDCCH common search space or in a UE-specific search space if the SS/PBCH block or the CSI-RS the UE selects for PRACH association, as described in Subclause 8.1, does not have same QCL-TypeD [6, TS 38.214] with a DM-RS for monitoring the PDCCH, and if the PDCCH or an associated PDSCH overlaps in at least one symbol with a PDCCH the UE monitors in a Type1-PDCCH common search space or with an associated PDSCH.

----- End of TP -----

Agreements:

- To adopt the following TP, Section 10.1 of 38.213:

----- Start of TP -----

If a UE has received higher layer parameter *TCI-States* for PDCCH receptions containing a single TCI state, the UE assumes that the DM-RS antenna port associated with PDCCH receptions is quasi co-located with the one or more DL RS configured by the TCI state. If the UE receives PDCCH order and the active TCI state for PDCCH includes two RS, the UE expects that one RS has QCL-TypeD and the UE uses the one RS for determining *powerControlOffsetSS*.

----- End of TP -----

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Agreements:

- Adopt the following TP in 38.331. Change shown in red color.
- Send an LS to RAN2 to add that ss-PBCH-BlockPower is the transmit power of SSS REs and that unit is dBm.

ServingCellConfigCommon field descriptions
ss-PBCH-BlockPower   Average EPRE of the resources elements that carry secondary synchronization signal, in dBm, ~~TX power~~ that the NW used for SSB transmission. The UE uses it to estimate the RA preamble TX power. (see 38.213, section 7.4)

The corresponding LS is in:
R1-1811913 **[Draft] LS on ss-PBCH-BlockPower definition** **Intel Corp.**
Decision: The draft LS is endorsed and final LS is approved in R1-1811965.

Agreements:

- To adopt the following TPs to Section 7.5 and 7.6 in TS38.213.

7.5 Prioritizations for transmission power reductions
~

In case of same priority order and for operation with carrier aggregation, the UE prioritizes power allocation for transmissions on the primary cell of the MCG or the SCG over transmissions on a secondary cell and prioritizes power allocation for transmissions on the PCell over transmissions on the PSCell. In case of same priority order and for operation with two UL carriers, the UE prioritizes power allocation for transmissions on the carrier where the UE is configured to transmit PUCCH. If PUCCH is not configured for any of the two UL carriers, the UE prioritizes power allocation for transmissions on the non-supplementary UL carrier.

If the UE drops the PRACH transmission, Layer 1 notifies higher layers to suspend the power ramping counter as described in [11, TS 38.321]. If the UE adjusts the power of PRACH transmission, Layer 1 may notify higher layers to suspend the power ramping counter as described in [11, TS 38.321].

7.6 Dual connectivity
7.6.1 EN-DC
~

- If the UE does not indicate a capability for dynamic power sharing between E-UTRA and NR, the UE expects to be configured with reference TDD configuration for E-UTRA (by higher layer parameter *tdm-PatternConfig-r15* in [13, TS 36.213]).

If the UE drops the PRACH transmission, Layer 1 notifies higher layers to suspend the power ramping counter as described in [11, TS 38.321]. If the UE adjusts the power of PRACH transmission, Layer 1 may notify higher layers to suspend the power ramping counter as described in [11, TS 38.321].

~

Agreement:

- To adopt the following TP to Section 7.4 of 38.213:

----- Start of TP -----
……the PRACH transmission on the active DL BWP of serving cell c and calculated by the UE in dB as *referenceSignalPower* – higher layer filtered RSRP in dBm, where RSRP is defined in [7, TS 38.215] and the higher layer filter configuration is defined in [12, TS 38.331].
----- End of TP -----

Proposal: Regarding the following question:

- *Q: Whether it is allowed to configure UEs with CSI-RS based RA and send the RAR on CORESET #0 (associated with SSBs)?*

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- Yes (with the specific text): It is allowed to configure UEs with CSI-RS based RA and send the RAR on CORESET #0, the QCL source of CORESET#0 is determined by the CSI-RS used for PRACH preamble transmission.
  - Supported by: Vivo, Nokia, Qualcomm
- No:
  - Supported by: NTT DOCOMO

R1-1810097	Remaining issues on physical random access channel and procedure	Huawei, HiSilicon
R1-1810182	Maintenance for Physical random access channel and procedure	ZTE
R1-1810249	Maintenance for Physical random access channel and procedure	LG Electronics
R1-1810362	Remaining issues on RACH procedure	vivo
R1-1810422	Remaining issues in RACH procedure	MediaTek Inc.
R1-1810514	Remaining issues of NR PRACH procedure	CATT
R1-1810747	Maintenance of PRACH and related procedures	Intel Corporation
R1-1810835	Remaining Issues on Random Access	Samsung
R1-1810989	Maintenance for Physical random access channel and procedure	Guangdong OPPO Mobile Telecom.
R1-1811099	Remaining details on NR Random Access	Nokia, Nokia Shanghai Bell
R1-1811228	Maintenance for Physical random access channel and procedure	Qualcomm Incorporated
R1-1811381	Maintenance for NR random access	NTT DOCOMO, INC.
R1-1811435	Correction on RACH procedure	ITL
R1-1811581	Maintenance for Physical random access channel and procedure	Ericsson

7.1.1.3 Maintenance for Mobility procedure

Including RRM and RLM

Please use separate sections for each of the respective sub-topic to facilitate reviews and summary.

R1-1811652 Summary of discussion for Rel-15 NR mobility Intel

Decision: The document is noted.

Proposals:

==== Start of Text Proposal (1) for TS38.215 section 5.1.3 ======

If indicated by higher-layers, the NR Carrier RSSI is measured in slots within a half frame with SS/PBCH blocks that are indicated by the higher layer parameter *measurementSlots* and in OFDM symbols given by Table 5.1.3-1 if measurement gap is not used, and, the NR Carrier RSSI is measured in slots within a half frame with SS/PBCH blocks that are indicated by the higher layer parameter *measurementSlots* and in OFDM symbols given by Table 5.1.3-1 which is overlapped with the minimum measurement time within the measurement gap if measurement gap is used.

======= End of Text Proposal (1) =======

==== Start of Text Proposal (2) for TS38.215 section 5.1.3 ======

- For intra-frequency measurements, NR Carrier RSSI is measured with timing reference corresponding to the serving cell in the frequency layer
- For inter-frequency measurements, NR Carrier RSSI is measured on OFDM symbols with timing reference corresponding to any cell in the target frequency layer, where the OFDM symbols are completely overlapping with the configured SS-RSSI time domain resource with timing reference corresponding to the primary serving cell

======= End of Text Proposal (2) =======

==== Start of Text Proposal (3) for TS38.215 section 5.1.3 ======

Otherwise, if measurement gap is not used, NR Carrier RSSI is measured from all OFDM symbols within SMTC window duration and, if measurement gap is used, NR Carrier RSSI is measured from all OFDM symbols corresponding to overlapped time span between SMTC window duration and minimum measurement time within the measurement gap.

======= End of Text Proposal (3) =======

Agreements:

- To adopt the following TP to section 5 of 38.213:

----- Start of TP -----

If the active DL BWP is the initial DL BWP and for SS/PBCH block and control resource set multiplexing pattern 2 or 3, as described in Subclause 13, the UE is expected to perform RLM using the associated SS/PBCH block when the associated SS/PBCH block index is provided by higher layer parameter *RadioLinkMonitoringRS*.

----- End of TP -----

Proposals:

- Agree to the following text proposal of Section 5 of 38.214

If the UE is not provided higher layer parameter *RadioLinkMonitoringRS* and the UE is ~~provided by higher layer parameter *TCI-states*~~ configured with TCI states for PDCCH receptions that ~~one or more RSs that include one or more of a CSI-RS and/or a SS/PBCH block~~ include one or more CSI-RSs

- the UE uses for radio link monitoring the RS provided for the active TCI state for PDCCH reception if the active TCI state for PDCCH reception includes only one RS

Agreements:

- Agree to the following text proposal to 38.215 section 5.1.1

----- Start of TP -----

- SS reference signal received power (SS -RSRP) is defined as the linear average over the power contributions (in [W]) of the resource elements that carry secondary synchronization signals ~~(SS)~~.

----- End of TP -----

Conclusion:

- Send an LS to RAN2 clarifying that UE is not expected to be configured more than one SSB subcarrier spacing in the ~~one or more~~ MO configuration~~(s)~~ for a given SSB frequency in NR Rel-15
  - Draft LS in R1-1811868 (including previous RAN1 agreements in the LS for context)

R1-1811868 **[DRAFT] LS on MO configuration with multiple SSB SCS for a given SSB frequency** **Intel Corp.**

Decision: The draft LS is endorsed assuming the following updates:

- To reflect the above updates in red
- The above agreements ~~is~~are

Final LS is approved in R1-1811966.

Proposals:

==== Start of Text Proposal for TS38.213 section 5 ======

<omitted>

- the UE is not required to use for radio link monitoring an aperiodic or semi-persistent RS

If the UE is not provided higher layer parameter *RadioLinkMonitoringRS* and the UE is configured to monitor the PDCCH candidate in *ControlResourceSetZero*, the UE uses for radio link monitoring the SS/PBCH block corresponding to the control resource set configured by *ControlResourceSetZero* that the UE is monitoring. The UE expects that the UE is provided higher layer parameter *RadioLinkMonitoringRS* if the UE is not configured to monitor PDCCH candidate in *ControlResourceSetZero* and the UE is not provided by higher layer parameter *TCI-states* for PDCCH receptions on the primary cell and the PSCell.

======= End of Text Proposal =======

Wednesday session

R1-1811912 **Summary of offline discussion for Rel-15 NR mobility** **Intel Corp.**

Decision: The document is noted.

Proposals:

If indicated by higher-layers, the NR Carrier RSSI is measured in slots within a half frame with SS/PBCH blocks that are indicated by the higher layer parameter *measurementSlots* and in OFDM symbols given by Table 5.1.3-1 if measurement gap is not used, and, the NR Carrier RSSI is measured in slots within a half frame with SS/PBCH blocks that are indicated by the higher layer parameter *measurementSlots* and in OFDM symbols given by Table 5.1.3-1 which is overlapped with the minimum measurement time within the measurement gap if measurement gap is used.

The issue of no configuration at all

If maximum number of candidate SS/PBCH blocks, L, is equal to 4 and UE has been configured with 3 control resource sets each with activated TCI states,

Thursday (from offline)

Agreements:

- To adopt the following TP for TS38.215 section 5.1.3

----- Start of TP -----

If indicated by higher-layers, if measurement gap is not used, the NR Carrier RSSI is measured in slots within a half frame with SS/PBCH blocks that are indicated by the higher layer parameter *measurementSlots* and in OFDM symbols given by Table 5.1.3-1 and, if measurement gap is used, the NR Carrier RSSI is measured in slots within a half frame with SS/PBCH blocks that are indicated by the higher layer parameter *measurementSlots* and in OFDM symbols given by Table 5.1.3-1 that are overlapped with the measurement gap, which is defined in 3GPP TS38.133 [12].

- For intra-frequency measurements, NR Carrier RSSI is measured with timing reference corresponding to the serving cell in the frequency layer
- For inter-frequency measurements, NR Carrier RSSI is measured with timing reference corresponding to any cell in the target frequency layer

Otherwise not indicated by higher-layers, if measurement gap is not used, NR Carrier RSSI is measured from OFDM symbols within SMTC window duration and, if measurement gap is used, NR Carrier RSSI is measured from OFDM symbols corresponding to overlapped time span between SMTC window duration and ~~minimum measurement time within~~ the measurement gap.

----- End of TP -----

Agreements:

- Adopt the following proposal to Section 5 of 38.213

----- Start of TP -----

- the UE is not required to use for radio link monitoring an aperiodic or semi-persistent RS
- For L = 4, the UE selects the N_{RLM} RS provided for active TCI states for PDCCH reception in the CORESETs associated with the search spaces with shortest monitoring periodicity. If more than one CORESETs are associated with search spaces with same periodicity, the UE selects the CORESETs with the highest CORESET ID.

----- End of TP -----

Two TPs in section 2.5 of the latest draft of RRM/RLM summary

Friday

R1-1812033 Summary of offline discussion for Rel-15 NR mobility Intel Corp.

Decision: The document is noted. Revisit in next meeting.

R1-1810098	Remaining issues on mobility procedure	Huawei, HiSilicon
R1-1810183	Maintenance for Mobility procedure	ZTE
R1-1810250	Maintenance for Mobility procedure	LG Electronics
R1-1810363	Remaining issues on mobility procedure	vivo
R1-1810424	Dicussion on maintenance for Mobility procedure	MediaTek Inc.
R1-1810515	Remaining issues of NR mobility procedure	CATT
R1-1810748	Maintenance of mobility measurements	Intel Corporation
R1-1810836	Remaining Issues on Measurements for Mobility Management	Samsung
R1-1810990	Maintenance for NR RRM and RLM	Guangdong OPPO Mobile Telecom.
R1-1811357	Maintenance for NR mobility procedure	NTT DOCOMO, INC.
R1-1811475	Issues related to RRM and RLM	Nokia, Nokia Shanghai Bell
R1-1811582	Maintenance for mobility procedure	Ericsson

7.1.1.4 Other

R1-1811358	Maintenance for TA	NTT DOCOMO, INC.

7.1.2 Maintenance for MIMO

R1-1811982 Chairman's notes of AI 7.1.2 Maintenance for MIMO Ad-Hoc Chair (Samsung)

Decision: The document is endorsed, content is incorporated below.

7.1.2.1 Maintenance for Multi-antenna scheme

Including codeword mapping, codebook & non-codebook based tx for UL, PRB bundling for DL, etc.
Please use separate sections for each of the respective sub-topic to facilitate reviews and summary.

R1-1811840 **Summary of issues on UL non-codebook based transmission** **Nokia, Nokia Shanghai Bell**

Agreement
Adopt the TP to Section 6.1.1.2 of 38.214
----------Start of TP ----------
6.1.1.2 Non-Codebook based UL transmission
For non-codebook based transmission, PUSCH can be scheduled by DCI format 0_0, DCI format 0_1 or semi-statically configured to operate according to Subclause 6.1.2.3. The UE can determine its PUSCH precoder and transmission rank based on the ~~wideband~~ SRI when multiple SRS resources are configured, where the SRI is given by the SRS resource indicator in DCI according to subclause 7.3.1.1.2 of [5, 38.212], or the SRI is given by *srs-ResourceIndicator* according to subclause 6.1.2.3.
…
For non-codebook based transmission, the UE can calculate the precoder used for the transmission of ~~precoded~~ SRS based on measurement of an associated NZP CSI-RS resource. A UE can be configured with only one NZP CSI-RS resource for the SRS resource set with higher layer parameter usage in *SRS-ResourceSet* set to 'nonCodebook' if configured.
…
----------End of TP ----------

Agreement
Agree the TP to Section 6.1.1.2 of 38.214
----------Start of TP ----------
6.1.1.2 Non-Codebook based UL transmission
<----------Unchanged Text Omitted----------→
The UE shall perform one-to-one mapping from the indicated SRI(s) to the indicated DM-RS ports(s) and their corresponding PUSCH layers {0 … *v*-1} given by DCI format 0_1 or by *ConfiguredGrantConfig* according to subclause 6.1.2.3 in increasing order.
----------End of TP ----------

Agreement
Agree this TP to 38.214
----------Start of TP ----------
6.1.1.2 Non-Codebook based UL transmission
For non-codebook based transmission, PUSCH can be scheduled by DCI format 0_0, DCI format 0_1 or semi-statically configured to operate according to Subclause 6.1.2.3. The UE can determine its PUSCH precoder and transmission rank based on the wideband SRI when multiple SRS resources are configured, where the SRI is given by the SRS resource indicator in DCI according to subclause 7.3.1.1.2 of [5, 38.212], or the SRI is given by *srs-ResourceIndicator* according to subclause 6.1.2.3. The UE shall use one or multiple SRS resources for SRS transmission, where the number of SRS resources which can be configured to the UE for simultaneously transmission in the same RBs is a UE capability. Only one SRS port for each SRS resource is configured. Only one SRS resource set can be configured with higher layer parameter *usage* in *SRS-ResourceSet* set to 'nonCodebook'. The maximum number of SRS resources that can be configured for non-codebook based uplink transmission is 4. The indicated SRI in slot *n* is associated with the most recent transmission of SRS resource(s) identified by the SRI, where the SRS transmission is prior to the PDCCH carrying the SRI ~~before slot *n*~~.
----------End of TP ----------

Agreement
Adopt the following TP on joint CSI-RS/SRS triggering for 38.214.
----------Start of TP ----------
6.1.1.2 Non-Codebook based UL transmission

<Unrelated part omitted>

For non-codebook based transmission, the UE can calculate the precoder used for the transmission of precoded SRS based on measurement of an associated NZP CSI-RS resource. A UE can be configured with only one NZP CSI-RS resource for the SRS resource set with higher layer parameter usage in *SRS-ResourceSet* set to 'nonCodebook'.

- If aperiodic SRS resource set is configured, the associated NZP-CSI-RS is indicated via SRS request field in DCI format 0_1 and 1_1, where *AperiodicSRS-ResourceTrigger* (indicating the association between aperiodic SRS triggering state and SRS resource sets), triggered SRS resource(s) *srs-ResourceSetId*, *csi-RS (*indicating the associated *NZP-CSI-RS-ResourceId)* are higher layer configured in *SRS-ResourceSet*. A UE is not expected to update the SRS precoding information if the gap from the last symbol of the reception of the aperiodic NZP-CSI-RS resource and the first symbol of the aperiodic SRS transmission is less than 42 OFDM symbols.
- If the UE configured with aperiodic SRS associated with aperiodic NZP CSI-RS resource, the presence of the associated CSI-RS is indicated by the SRS request field if the value of the SRS request field is not '00' as in Table 7.3.1.1.2-24 of [5, TS 38.212] **and if the scheduling DCI is not used for cross carrier or cross bandwidth part scheduling**. The CSI-RS is located in the same slot as the SRS request field. If the UE configured with aperiodic SRS associated with aperiodic NZP CSI-RS resource, any of the TCI states configured in the scheduled CC shall not be configured with 'QCL-TypeD'.

----------End of TP ----------

R1-1811828 **Summary of PRB Bundling for DL** **vivo**

R1-1811975 **Offline Summary of PRB Bundling for DL** **vivo**

Agreement

Text proposal for section 5.1.2.3 of 38.214:

----------Start of TP ----------

For PDSCH carrying SIB1 scheduled by PDCCH with CRC scrambled by SI-RNTI, PRG is partitioned from the lowest numbered resource block of ~~the~~ CORESET #0 ~~signaled in PBCH.~~ if the corresponding PDCCH is associated with CORESET 0 and Type0-PDCCH common search space and is addressed to SI-RNTI; otherwise, PRG is partitioned from common resource block 0.

----------End of TP ----------

Note: for other parts in 38.214 which is in conflict with 38.211, the similar update is also necessary (up to editor)

Agreement

- A UE does not expect the precoding of the potential co-scheduled UE(s) in other DMRS ports of the same CDM group to be different in the PRG-level grid configured to this UE with PRG=2 or 4.
- A UE does not expect the resource allocation of the potential co-scheduled UE(s) in other DMRS ports of the same CDM group to be misaligned in the PRG-level grid configured to this UE with PRG=2 or 4.

R1-1811852 **Summary on Codebook based UL Transmission** **Intel**

Agreement

Adopt the following TP for 38.214

----------Start of TP ----------

6.1.1.1 Codebook based UL transmission

For codebook based transmission, PUSCH can be scheduled by DCI format 0_0, DCI format 0_1 or semi-statically configured to operate according to Subclause 6.1.2.3. If this PUSCH is scheduled by DCI format 0_1, the UE determines its PUSCH transmission precoder based on SRI, TPMI and the transmission rank from the DCI, given by DCI fields of SRS resource indicator and Precoding information and number of layers in subclause 7.3.1.1.2 of [TS 38.212]. The TPMI is used to indicate the precoder to be applied over the ~~antenna ports~~ **layers** {0…*v*-1} and that corresponds to the SRS resource selected by the SRI when multiple SRS resources are configured, or if a single SRS resource is configured TPMI is used to indicate the precoder to be applied over the ~~antenna ports~~ **layers** {0…*v*-1} and that corresponds to the SRS resource. The transmission precoder is selected from the uplink codebook that has a number of antenna ports equal to higher layer parameter *nrofSRS-Ports* in SRS-Config, as defined in Subclause 6.3.1.5 of [4, TS 38.211]. When the UE is configured with the higher layer parameter *txConfig* set to 'codebook', the UE is configured with at least one SRS resource. The indicated SRI in slot *n* is associated with the most recent transmission of SRS resource identified by the SRI, where the SRS resource is prior to the PDCCH carrying the SRI before slot *n*.

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----------End of TP ----------

Agreement
Adopt the following TP for 38.214
----------Start of TP ----------

6.1.1.1 Codebook based UL transmission

For codebook based transmission, PUSCH can be scheduled by DCI format 0_0, DCI format 0_1 or semi-statically configured to operate according to Subclause 6.1.2.3. If this PUSCH is scheduled by DCI format 0_1 or semi-statically configured to operate according to Subclause 6.1.2.3, the UE determines its PUSCH transmission precoder based on SRI, TPMI and the transmission rank ~~from the DCI~~, where the SRI, TPMI and the transmission rank are given by DCI fields of SRS resource indicator and Precoding information and number of layers in subclause 7.3.1.1.2 of [TS 38.212] or given by *srs-ResourceIndicator* and *precodingAndNumberOfLayers* according to subclause 6.1.2.3. The TPMI is used to indicate the precoder to be applied over the antenna ports {0…ν-1} and that corresponds to the SRS resource selected by the SRI when multiple SRS resources are configured, or if a single SRS resource is configured TPMI is used to indicate the precoder to be applied over the antenna ports {0…ν-1} and that corresponds to the SRS resource. The transmission precoder is selected from the uplink codebook that has a number of antenna ports equal to higher layer parameter *nrofSRS-Ports* in SRS-Config, as defined in Subclause 6.3.1.5 of [4, TS 38.211]. When the UE is configured with the higher layer parameter *txConfig* set to 'codebook', the UE is configured with at least one SRS resource. The indicated SRI in slot n is associated with the most recent transmission of SRS resource identified by the SRI, where the SRS resource is prior to the PDCCH carrying the SRI ~~before slot n~~.

----------End of TP ----------

Agreement
Adopt the following TP for 38.211
----------Start of TP ----------

6.3.1.5 Precoding

<unrelated part omitted>

For non-codebook-based transmission, the precoding matrix W equals the identity matrix.

For codebook-based transmission, the precoding matrix W is given by $W=1$ for single-layer transmission on a single antenna port, otherwise by Tables 6.3.1.5-1 to 6.3.1.5-7 with the TPMI index obtained from the DCI scheduling the uplink transmission or the higher layer parameters according to the procedure in [6, TS 38.214].

When the higher layer parameter txConfig is not configured, the precoding matrix W equals to 1.

----------End of TP ----------

Agreement
Adopt the following TP for 38.214
----------Start of TP ----------

6.1.1.1 Codebook based UL transmission

For codebook based transmission, PUSCH can be scheduled by DCI format 0_0, DCI format 0_1 or semi-statically configured to operate according to Subclause 6.1.2.3. If this PUSCH is scheduled by DCI format 0_1, the UE determines its PUSCH transmission precoder based on SRI, TPMI and the transmission rank from the DCI, given by DCI fields of SRS resource indicator and Precoding information and number of layers in subclause 7.3.1.1.2 of [5, TS 38.212]. The TPMI is used to indicate the precoder to be applied over the antenna ports {0…ν-1} and that corresponds to the SRS resource selected by the SRI when multiple SRS resources are configured, or if a single SRS resource is configured TPMI is used to indicate the precoder to be applied over the antenna ports {0…ν-1} and that corresponds to the SRS resource. The transmission precoder is selected from the uplink codebook that has a number of antenna ports equal to higher layer parameter *nrofSRS-Ports* in SRS-Config, as defined in Subclause 6.3.1.5 of [4, TS 38.211]. When the UE is configured with the higher layer parameter *txConfig* set to 'codebook', the UE is configured with at least one SRS resource. The indicated SRI in slot n is associated with the most recent transmission of SRS resource identified by the SRI, where the SRS resource is prior to the PDCCH carrying the SRI before slot n.

<Unrelated part omitted>

For codebook based transmission, the UE may be configured with a single *SRS-ResourceSet* with *usage* set to 'codebook' and only one SRS resource can be indicated based on the SRI from within the SRS resource set. The maximum number of

configured SRS resources for codebook based transmission is 2. If aperiodic SRS is configured for a UE, the SRS request field in DCI triggers the transmission of ~~aperiodic~~aperiodic SRS resources.
<Unrelated part omitted>
----------End of TP ----------

R1-1810212	Maintenance for Multi-antenna scheme	ZTE
R1-1810251	Text proposals on multi-antenna scheme	LG Electronics
Withdrawn		
R1-1810364	Maintenance for multi-antenna scheme	vivo
R1-1810425	Maintenance for multi-antenna schemes	MediaTek Inc.
R1-1810479	Corrections on Codebook based UL transmission	Fujitsu
R1-1810516	Remaining issues on multi-antenna scheme	CATT
R1-1810570	Maintenance for codebook and non-codebook based UL transmission	Lenovo, Motorola Mobility
R1-1810705	Maintenance for multi-antenna scheme	Huawei, HiSilicon
R1-1810749	Remaining Issues for multi-antenna scheme	Intel Corporation
R1-1810837	Corrections and clarification on transmission scheme	Samsung
R1-1810962	Maintenance for multi-antenna scheme	Guangdong OPPO Mobile Telecom.
R1-1810998	Remaining issues on PRB bundling for DL	Spreadtrum Communications
R1-1811170	Maintenance for multi-antenna scheme	Ericsson
R1-1811229	Maintenance for multi-antenna scheme	Qualcomm Incorporated
R1-1811402	Maintenance for multi-antenna schemes	Nokia, Nokia Shanghai Bell

7.1.2.2 Maintenance for CSI acquisition

Including CSI measurement & reporting, CQI & MCS, etc.
Please use separate sections for each of the respective sub-topic to facilitate reviews and summary.

R1-1811858 Feature lead summary on CSI measurement ZTE

Agreement
Adopt one of the following TPs for section 5.2.1.4 of TS 38.214:
----------Start of TP ----------
The *reportFreqConfiguration* contained in a *CSI-ReportConfig* indicates the frequency granularity of the CSI Report. A CSI reporting setting configuration defines a CSI reporting band as a subset of subbands of the bandwidth part, where the *reportFreqConfiguration* indicates:

- the *csi-ReportingBand* as a contiguous or non-contiguous subset of subbands in the bandwidth part for which CSI shall be reported. ~~The UE is not expected to be configured with a CSI reporting band which contains subbands where reference signals for channel and interference are not present.~~
  - A UE is not expected to be configured with csi-ReportingBand which contains a subband where a CSI-RS resource linked to the CSI Report setting has the frequency density of each CSI-RS port per PRB in the subband less than the configured density of the CSI-RS resource.
  - If a CSI-IM resource is linked to the CSI Report Setting, a UE is not expected to be configured with csi-ReportingBand which contains a subband where not all PRBs in the subband have the CSI-IM REs present.

----------End of TP ----------

Agreement
A UE does not expect to be configured with different TCI-State-Ids for the same aperiodic CSI-RS resource ID configured in multiple aperiodic CSI-RS resource sets with the same triggering offset in the same aperiodic trigger state.

Conclusion
Triggering A-CSI reports whose measurement resources are with different numerology from that with PDCCH is not supported in Rel-15.

Agreement: Capture in TS 38.214 that the UE can only report RI corresponding to the configured fields of portIndex.

Agreement

Text proposal for TS38.214

----------Start of TP ----------

5.2.1.2 Resource settings

---------- omitted ----------

The UE may assume that the NZP CSI-RS resource(s) for channel measurement and the CSI-IM resource(s) for interference measurement configured for one CSI reporting are resource-wise QCLed with respect to 'QCL-TypeD'. When NZP CSI-RS resource(s) is used for interference measurement, the UE may assume that the NZP CSI-RS resource for channel measurement and the CSI-~~RS-~~IM resource and/or NZP CSI-RS resource(s) for interference measurement configured for one CSI reporting are QCLed with respect to 'QCL-TypeD'.

----------End of TP ----------

Agreement

Text proposal for TS38.214

----------Start of TP ----------

5.2.1.4.1 Resource Setting Configuration

<Unchanged parts omitted>

For semi-persistent or periodic CSI, each *CSI-ReportConfig* is linked to periodic or semi-persistent Resource Setting(s):

- When one Resource Setting (given by higher layer parameter *resourcesForChannelMeasurement*) is configured, the Resource Setting is for channel measurement for L1-RSRP computation.
- When two Resource Settings are configured, the first Resource Setting (given by higher layer parameter *resourcesForChannelMeasurement*) is for channel measurement and the second Resource Setting (given by higher layer parameter *csi-IM-ResourcesForInterference*) is used for interference measurement performed on CSI-IM.

A UE is not expected to be configured with more than one CSI-RS resource in resource set for channel measurement for a *CSI-ReportConfig* with the higher layer parameter *codebookType* set to 'typeII' or to 'typeII-PortSelection'. A UE is not expected to be configured with more than 64 NZP CSI-RS resources in resource setting for channel measurement for a CSI-ReportConfig with the higher layer parameter *reportQuantity* set to 'none', ~~'eqi-RI-CQI'~~ 'cri-RI-CQI', 'cri-RSRP' or 'ssb-Index-RSRP'. If interference measurement is performed on CSI-IM, each CSI-RS resource for channel measurement is resource-wise associated with a CSI-IM resource by the ordering of the CSI-RS resource and CSI-IM resource in the corresponding resource sets. The number of CSI-RS resources for channel measurement equals to the number of CSI-IM resources.

----------End of TP ----------

Agreement

Text proposal for TS38.214, section 5.2.2.3.1

----------Start of TP ----------

<Unchanged parts omitted>

- *trs-Info* in *NZP-CSI-RS-ResourceSet* is associated with a CSI-RS resource set and for which the UE can assume that the antenna port with the same port index of the configured NZP CSI-RS resources in the *NZP-CSI-RS-ResourceSet* is the same as described in Subclause 5.1.6.1.1 and can be configured when reporting setting is not configured or when the higher layer parameter *reportQuantity* associated with all the reporting settings linked with the CSI-RS resource set is ~~unconfigured or~~ set to 'none'.

All CSI-RS resources within one set are configured with ~~same *bwp-Id*,~~ same *density* and same *nrofPorts*, except for the NZP CSI-RS resources used for interference measurement.

----------End of TP ----------

Agreement

Text proposal for TS38.214

----------Start of TP ----------

5.2.1.2 Resource settings

<Unchanged parts omitted>

The time domain behavior of the CSI-RS resources within a CSI Resource Setting are indicated by the higher layer parameter *resourceType* and can be set to aperiodic, periodic, or semi-persistent. For periodic and semi-persistent CSI Resource Settings, the number of CSI-RS Resource Sets configured is limited to S=1. For periodic and semi-persistent CSI Resource Settings, the configured periodicity and slot offset is given in the numerology of its associated DL BWP, as given by *bwp-id.* When a UE is configured with multiple *CSI-ResourceConfigs* consisting the same NZP CSI-RS resource ID, the same time domain behavior shall be configured for the *CSI-ResourceConfigs*. When a UE is configured with multiple *CSI-ResourceConfigs* consisting the same CSI-IM resource ID, the same time-domain behavior shall be configured for the *CSI-ResourceConfigs*. All CSI Resource Settings linked to a CSI Report Setting shall have the same time domain behavior.

----------End of TP ----------

R1-1811943 Summary of views on CSI reporting v3 Ericsson

Agreement
Agree to the following text proposal to 38.214 Section 5.2.2.1.1
----------Start of TP ----------
<Unchanged parts omitted>
A slot in a serving cell shall be considered to be a valid downlink slot if:
- it comprises at least one higher layer configured downlink or flexible symbol, and
- it does not fall within a configured measurement gap for that UE~~, and~~.
- ~~the active DL BWP in the slot is the same as the DL BWP for which the CSI reporting is performed, and~~
- ~~there is at least one CSI-RS transmission occasion for channel measurement and CSI-RS and/or CSI-IM occasion for interference measurement in DRS Active Time no later than CSI reference resource for which the CSI reporting is performed.~~

If there is no valid downlink slot for the CSI reference resource corresponding to a CSI Report Setting in a serving cell, CSI reporting is omitted for the serving cell in uplink slot n'.
After the CSI report (re)configuration, serving cell activation, BWP change, or activation of SP-CSI, the UE reports a CSI report only after receiving at least one CSI-RS transmission occasion for channel measurement and CSI-RS and/or CSI-IM occasion for interference measurement no later than CSI reference resource and drops the report otherwise.
When DRX is configured, the UE reports a CSI report only if receiving at least one CSI-RS transmission occasion for channel measurement and CSI-RS and/or CSI-IM occasion for interference measurement in DRX Active Time no later than CSI reference resource and drops the report otherwise.
----------End of TP ----------

Agreement
- Adopt the below TPs to generalize the definition of CSI reference resource
- 38.214 editor to move the updated section on "5.2.2.1.1 CSI reference resource definition" outside the section on "5.2.2.1 CQI"

----------Start of TP ----------
5.2.1.6 CSI processing criteria
<Unchanged parts omitted>
The UE is not required to update a periodic or semi-persistent CSI report if $N_{CPU} - L < O_{CPU}$ on the earliest one of the first symbol of the latest CSI-RS/CSI-IM~~RS~~/SSB resource ~~earlier~~ no later than than the corresponding CSI reference resource of the CSI report.
<Unchanged parts omitted>
The CPU(s) are occupied for a number of OFDM symbols as follows:
- A periodic or semi-persistent CSI report ~~used with periodic or semi-persistent CSI-RS~~ occupies CPU(s) from the first symbol of the earliest one of each CSI-RS/CSI-IM/SSB resource for channel or interference measurement, respective latest CSI-RS/CSI-IM/SSB occasion no later than the corresponding CSI reference resource~~, if applicable,~~ until the last symbol of the PUSCH/PUCCH carrying the report.
- An aperiodic CSI report ~~used with periodic, or semi-persistent or aperiodic CSI-RS~~ occupies ~~a~~ CPU(s) from the first symbol after the PDCCH triggering the CSI report until the last symbol of the PUSCH carrying the report.

<Unchanged parts omitted>
5.2.2.1.1 CSI reference resource definition
The CSI reference resource for a serving cell is defined as follows:
- In the frequency domain, the CSI reference resource is defined by the group of downlink physical resource blocks corresponding to the band to which the derived ~~CQI value~~CSI relates.
- In the time domain, the CSI reference resource for a CSI reporting in uplink slot n' is defined by a single downlink slot $n-n_{CSI\_ref}$,
  - where $n = \left\lfloor n' \cdot \frac{2^{\mu_{DL}}}{2^{\mu_{UL}}} \right\rfloor$ and μ_{DL} and μ_{UL} are the subcarrier spacing configurations for DL and UL, respectively
  - where for periodic and semi-persistent CSI reporting
    - if a single CSI-RS resource is configured for channel measurement n_{CSI_ref} is the smallest value greater than or equal to $4 \cdot 2^{\mu_{DL}}$, such that it corresponds to a valid downlink slot, or
    - if multiple CSI-RS resources are configured for channel measurement n_{CSI_ref} is the smallest value greater than or equal to $5 \cdot 2^{\mu_{DL}}$, such that it corresponds to a valid downlink slot.

- where for aperiodic CSI reporting, if the UE is indicated by the DCI to report CSI in the same slot as the CSI request, n_{CQSI_ref} is such that the reference resource is in the same valid downlink slot as the corresponding CSI request, otherwise n_{CSQI_ref} is the smallest value greater than or equal to $\lfloor Z' / N_{symb}^{slot} \rfloor$, such that slot n-n_{CQSI_ref} corresponds to a valid downlink slot, where Z' corresponds to the delay requirement as defined in Subclause 5.4.
- when periodic or semi-persistent CSI-RS/CSI-IM, or SSB, is used for channel/interference measurements, the UE is not expected to measure channel/interference on the CSI-RS/CSI-IM/SSB whose last OFDM symbol is received up to Z' symbols before transmission time of the first OFDM symbol of the aperiodic CSI reporting.

<Unchanged parts omitted>

If configured to report CQI, in~~In~~ the CSI reference resource, the UE shall assume the following for the purpose of deriving the CQI index, and if also configured, for deriving PMI and RI:

- The first 2 OFDM symbols are occupied by control signaling.

…

----------End of TP ----------

R1-1812015 Summary of views on CSI reporting v4

Agreement

Adopt the following TP to 38.214 Section 5.4:

- Note: Additional timing requirement on aperiodic CSI-RS reception when QCL Type D is conveyed (according to FG 2-28) is applied, ais captured in the specification by:
  - "If the scheduling offset between the last symbol of the PDCCH carrying the triggering DCI and the first symbol of the aperiodic CSI-RS resources in a *NZP-CSI-RS-ResourceSet* configured without higher layer parameter *trs-Info* and without the higher layer parameter *repetition* is smaller than the UE reported threshold the UE applies a default QCL assumption."

----------Start of TP ----------

Z and Z' are defined as:

$Z = \max_{m=0,\ldots,M-1}(Z(m))$ and $Z' = \max_{m=0,\ldots,M-1}(Z'(m))$, where M is the number of updated CSI report(s) according to Subclause 5.2.1.6, $(Z(m), Z'(m))$ corresponds to the m-th updated CSI report and is defined as

- (Z_1, Z_1') of the table 5.4-1 if the CSI is triggered without a PUSCH with either transport block or HARQ-ACK or both when L = 0 CPUs are occupied (according to Subclause 5.2.1.6) and the CSI to be transmitted in a single CSI and corresponds to wideband frequency-granularity where the CSI corresponds to at most 4 CSI-RS ports in a single resource without CRI report and where *CodebookType* is set to 'TypeI-SinglePanel' or where *reportQuantity* is set to 'cri-RI-CQI', or
- (Z_1, Z_1') of the table 5.4-2 if the CSI to be transmitted corresponds to wideband frequency-granularity where the CSI corresponds to at most 4 CSI-RS ports in a single resource without CRI report and where *CodebookType* is set to 'TypeI-SinglePanel' or where *reportQuantity* is set to 'cri-RI-CQI', or

  (Z_3, Z_3') of table 5.4-2, ~~I~~if *reportQuantity* is set to 'cri-RSRP' or 'ssb-Index-RSRP', where X_μ is according to UE reported capability [FG 2-25] and KB_l is according to UE reported capability [FG 2-28] ~~and Z_m is FFS~~, or
- (Z_2, Z_2') of table 5.4-2 otherwise.
- μ of table 5.4-1 and table 5.4-2 corresponds to the min (μ_{PDCCH}, $\mu_{CSI\text{-}RS}$, μ_{UL}) where the μ_{PDCCH} corresponds to the subcarrier spacing of the PDCCH with which the DCI was transmitted and μ_{UL} corresponds to the subcarrier spacing of the PUSCH with which the CSI report is to be transmitted and $\mu_{CSI\text{-}RS}$ corresponds to the minimum subcarrier spacing of the aperiodic CSI-RS triggered by the DCI

Table 5.4-1: CSI computation delay requirement 1

μ	Z_1 [symbols]	
	Z_1	Z'_1
0	10	8

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1	13	11
2	25	21
3	43	36

Table 5.4-2: CSI computation delay requirement 2

μ	Z_1 [symbols]		Z_2 [symbols]		Z_3 [symbols]	
	Z_1	Z'_1	Z_2	Z'_2	Z_1	Z'_1
0	22	16	40	37	22	X_1
1	33	30	72	69	33	X_2
2	44	42	141	140	min(44, X_3+ KB_1)	X_3
3	97	85	152	140	min(97, X_4+ KB_2)	X_4

----------End of TP ----------

Agreement
Refine the CPU occupation for the initial SP-CSI report after the trigger as starting from the first symbol after the PDCCH triggering the report until the last symbol of the PUSCH carrying the report.

Agreement
Adopt the following TP for TS38.214:

----------Start of TP ----------

5.2.1.6 CSI processing criteria

The UE indicates the number of supported simultaneous CSI calculations N_{CPU}. If a UE supports N_{CPU} simultaneous CSI calculations it is said to have N_{CPU} CSI processing units for processing CSI reports across all configured cells. If L CPUs are occupied for calculation of CSI reports in a given OFDM symbol, the UE has $N_{CPU} - L$ unoccupied CPUs. ~~If a UE receives an aperiodic CSI request for N CSI reports, on an OFDM symbol with $N_{CPU} - L$ unoccupied CPUs~~If N CSI reports start occupying their respective CPUs on the same OFDM symbol on which $N_{CPU} - L$ CPUs are unoccupied, where each CSI report $n=0, \ldots, N-1$ corresponds to $O_{CPU}^{(n)}$, the UE is not required to update the $N-M$ requested CSI reports with lowest priority (according to Subclause 5.2.5), where $0 \le M \le N$ is the largest value such that $\sum_{n=0}^{M} O_{CPU}^{(n)} \le N_{CPU} - L$ holds.

~~The UE is not required to update a periodic or semi-persistent CSI report if $N_{CPU} - L < O_{CPU}$ on the earliest one of the first symbol of the latest CSI-RS/CSI-RS resource earlier than the corresponding CSI reference resource of the CSI report.~~

----------End of TP ----------

Agreement
Adopt the following TP:

----------Start of TP ----------

5.2.1.4 Reporting configurations

<Unchanged parts omitted>

~~When a UE is configured with higher layer parameter *codebookType* set to 'TypeI-SinglePanel' and *pmi-FormatIndicator* is configured for single PMI reporting, the UE may be configured with *reportQuantity* to report:~~

- ~~RI (if reported), CRI (if reported), and a PMI consisting of a single wideband indication (i_1 in Subclause 5.2.2.2.1) for the entire CSI reporting band, or~~
- ~~RI (if reported), CRI (if reported), CQI, and a PMI consisting of a single wideband indication (i_1 in Subclause 5.2.2.2.1) for the entire CSI reporting band. The CQI is calculated conditioned on the reported i_1 assuming PDSCH transmission with~~

$N_p \geq 1$ ~~precoders (corresponding to the same~~ i_1 ~~but different~~ i_2 ~~in sub-clause 5.2.2.2.1), where the UE assumes that one precoder is randomly selected from the set of~~ N_p ~~precoders for each PRG on PDSCH, where the PRG size for CQI calculation is configured by the higher layer parameter~~ *~~pdsch-BundleSizeForCSI~~*

If a UE is configured with semi-persistent CSI reporting, the UE shall report CSI when both CSI-IM and NZP CSI-RS resources are configured as periodic or semi-persistent. If a UE is configured with aperiodic CSI reporting, the UE shall report CSI when both CSI-IM and NZP CSI-RS resources are configured as periodic, semi-persistent or aperiodic.
A UE configured with DCI 0_1 does not expect to be triggered with multiple CSI reports with the same *CSI-ReportConfigId*.

<Unchanged parts omitted>

~~5.2.1.4.2 Report Quantity Configurations~~

A UE may be configured with a *CSI-ReportConfig* with the higher layer parameter *reportQuantity* set to either 'none', 'cri-RI-PMI-CQI ', 'cri-RI-i1', 'cri-RI-i1-CQI', 'cri-RI-CQI', 'cri-RSRP', 'ssb-Index-RSRP' or 'cri-RI-LI-PMI-CQI'.
~~If~~ If the UE is configured with a *CSI-ReportConfig* ~~CSI-RS resource is configured~~ with the higher layer parameter *reportQuantity* set to 'none', then the UE shall not report any quantity for the *CSI-ReportConfig* ~~associated with the *reportQuantity*. Otherwise, the UE shall report the quantity for the *CSI-ReportConfig* as configured by the associated *reportQuantity*.~~
If the UE is configured with a *CSI-ReportConfig* with the higher layer parameter *reportQuantity* set to 'cri-RI-PMI-CQI', or 'cri-RI-LI-PMI-CQI', the UE shall report a preferred precoder matrix for the entire reporting band, or a preferred precoder matrix per subband, according to Subclause 5.2.2.2.
If the UE is configured with a *CSI-ReportConfig* with the higher layer parameter *reportQuantity* set to 'cri-RI-i1',
- the UE expects, for that *CSI-ReportConfig*, to be configured with higher layer parameter *codebookType* set to 'TypeI-SinglePanel' and *pmi-FormatIndicator* configured for wideband PMI reporting, and,
- the UE shall report a PMI consisting of a single wideband indication (i_1 in Subclause 5.2.2.2.1) for the entire CSI reporting band.

If the UE is configured with a *CSI-ReportConfig* with the higher layer parameter *reportQuantity* set to 'cri-RI-CQI-i1',
- the UE expects, for that *CSI-ReportConfig*, to be configured with higher layer parameter *codebookType* set to 'TypeI-SinglePanel' and *pmi-FormatIndicator* configured for wideband PMI reporting, and,
- the UE shall report a PMI consisting of a single wideband indication (i_1 in Subclause 5.2.2.2.1) for the entire CSI reporting band. The CQI is calculated conditioned on the reported i_1 assuming PDSCH transmission with $N_p \geq 1$ precoders (corresponding to the same i_1 but different i_2 in sub-clause 5.2.2.2.1), where the UE assumes that one precoder is randomly selected from the set of N_p precoders for each PRG on PDSCH, where the PRG size for CQI calculation is configured by the higher layer parameter *pdsch-BundleSizeForCSI*.

If the UE is configured with a *CSI-ReportConfig* with the higher layer parameter *reportQuantity* set to 'cri-RI-CQI':
- if the UE is configured with higher layer parameter *non-PMI-PortIndication* contained in a *CSI-ReportConfig*, *r* ports are indicated in the order of layer ordering for rank *r* and each CSI-RS resource in the CSI resource setting is linked to the *CSI-ReportConfig* based on the order of the associated *NZP-CSI-RS-ResourceId* in the linked CSI resource setting for channel measurement given by higher layer parameter *resourcesForChannelMeasurement*. The configured higher layer parameter *non-PMI-PortIndication* contains a sequence $p_0^{(1)}, p_0^{(2)}, p_1^{(2)}, p_0^{(3)}, p_1^{(3)}, p_2^{(3)}, ..., p_0^{(R)}, p_1^{(R)}, ..., p_{R-1}^{(R)}$ of port indices, where $p_0^{(\nu)}, ..., p_{\nu-1}^{(\nu)}$ are the CSI-RS port indices associated with rank ν and $R \in \{1,2,..., \min(8, P)\}$ where $P \in \{1,2,4,8\}$ is the number of ports in the CSI-RS resource.
- if the UE is not configured with higher layer parameter *non-PMI-PortIndication*, the UE assumes, for each CSI-RS resource in the CSI resource setting linked to the *CSI-ReportConfig*, that the CSI-RS port indices $p_0^{(\nu)}, ..., p_{\nu-1}^{(\nu)} = \{0, ..., \nu-1\}$ are associated with ranks $\nu = 1, 2, ..., \min(8, P)$ where $P \in \{1,2,4,8\}$ is the number of ports in the CSI-RS resource.
- When calculating the CQI for a rank, the UE shall use the ports indicated for that rank for the selected CSI-RS resource. The precoder for the indicated ports shall be assumed to be the identity matrix scaled by $\frac{1}{\sqrt{\nu}}$.

If the UE is configured with a *CSI-ReportConfig* with the higher layer parameter *reportQuantity* set to 'cri-RSRP' or 'ssb-Index-RSRP'

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- if the UE is configured with the higher layer parameter *groupBasedBeamReporting* set to 'disabled', the UE is not required to update measurements for more than 64 CSI-RS and/or SSB resources, and the UE shall report in a single report *nrofReportedRS* (higher layer configured) different CRI or SSBRI for each report setting.
- if the UE is configured with the higher layer parameter *groupBasedBeamReporting* set to 'enabled', the UE is not required to update measurements for more than 64 CSI-RS and/or SSB resources, and the UE shall report in a single reporting instance two different CRI or SSBRI for each report setting, where CSI-RS and/or SSB resources can be received simultaneously by the UE either with a single spatial domain receive filter, or with multiple simultaneous spatial domain receive filters.

If the UE is configured with a *CSI-ReportConfig* with the higher layer parameter *reportQuantity* set to 'cri-RSRP', 'cri-RI-PMI-CQI ', 'cri-RI-i1', 'cri-RI-i1-CQI', 'cri-RI-CQI' or 'cri-RI-LI-PMI-CQI', and $K_s>1$ resources are configured in the corresponding resource set for channel measurement, then the UE shall derive the CSI parameters other than CRI conditioned on the reported CRI, where CRI k ($k \geq 0$) corresponds to the configured (k+1)-th entry of associated *nzp-CSI-RSResource* in the corresponding *nzp-CSI-RS-ResourceSet* for channel measurement, and (k+1)-th entry of associated *csi-IM-Resource* in the corresponding *csi-IM-ResourceSet* (if configured) If $K_s=2$ CSI-RS resources are configured, each resource shall contain at most 16 CSI-RS ports. If $2<K_s\leq 8$ CSI-RS resources are configured, each resource shall contain at most 8 CSI-RS ports.

~~If the UE is configured with a *CSI-ReportConfig* with the higher layer parameter *reportQuantity* set to 'cri-RSRP' or 'ssb-Index-RSRP'~~

- ~~if the UE is configured with the higher layer parameter *groupBasedBeamReporting* set to 'disabled', the UE is not required to update measurements for more than 64 CSI-RS and/or SSB resources, and the UE shall report in a single report *nrofReportedRS* (higher layer configured) different CRI or SSBRI for each report setting.~~
- ~~if the UE is configured with the higher layer parameter *groupBasedBeamReporting* set to 'enabled', the UE is not required to update measurements for more than 64 CSI-RS and/or SSB resources, and the UE shall report in a single reporting instance two different CRI or SSBRI for each report setting, where CSI-RS and/or SSB resources can be received simultaneously by the UE either with a single spatial domain receive filter, or with multiple simultaneous spatial domain receive filters.~~

If the UE is configured with a *CSI-ReportConfig* with the higher layer parameter *reportQuantity* set to 'cri-RI-PMI-CQI', ' cri-RI-i1', 'cri-RI-i1-CQI', 'cri-RI-CQI' or 'cri-RI-LI-PMI-CQI', then the UE is not expected to be configured with more than 8 CSI-RS resources in a CSI-RS resource set contained within a resource setting that is linked to the *CSI-ReportConfig*.
If the UE is configured with a *CSI-ReportConfig* with higher layer parameter *reportQuantity* set to 'cri-RSRP' or 'none' and the *CSI-ReportConfig* is linked to a resource setting configured with the higher layer parameter *resourceType* set to 'aperiodic', then the UE is not expected to be configured with more than 16 CSI-RS resources in a CSI-RS resource set contained within the resource setting.

~~If the UE is configured with a *CSI-ReportConfig* with the higher layer parameter *reportQuantity* set to 'cri-RI-PMI-CQI', or 'cri-RI-LI-PMI-CQI', the UE shall report a preferred precoder matrix for the entire reporting band, or a preferred precoder matrix per subband, according to Subclause 5.2.2.2.~~

~~If the UE is configured with a *CSI-ReportConfig* with the higher layer parameter *reportQuantity* set to 'cri-RI-CQI':~~

- ~~if the UE is configured with higher layer parameter *non-PMI-PortIndication* contained in a *CSI-ReportConfig*, r ports are indicated in the order of layer ordering for rank r and each CSI-RS resource in the CSI resource setting is linked to the *CSI-ReportConfig* based on the order of the associated *NZP-CSI-RS-ResourceId* in the linked CSI resource setting for channel measurement given by higher layer parameter *resourcesForChannelMeasurement*. The configured higher layer parameter *non-PMI-PortIndication* contains a sequence $p_0^{(1)}, p_0^{(2)}, p_1^{(2)}, p_0^{(3)}, p_1^{(3)}, p_2^{(3)}, \ldots, p_0^{(R)}, p_1^{(R)}, \ldots, p_{R-1}^{(R)}$ of port indices, where $p_0^{(\nu)}, \ldots, p_{\nu-1}^{(\nu)}$ are the CSI-RS port indices associated with rank ν and $R \in \{1,2,\ldots,\min(8,P)\}$ where $P \in \{1,2,4,8\}$ is the number of ports in the CSI-RS resource.~~
- ~~if the UE is not configured with higher layer parameter *non-PMI-PortIndication*, the UE assumes, for each CSI-RS resource in the CSI resource setting linked to the *CSI-ReportConfig*, that the CSI-RS port indices $p_0^{(\nu)}, \ldots, p_{\nu-1}^{(\nu)} = \{0,\ldots,\nu-1\}$ are associated with ranks $\nu = 1,2,\ldots,\min(8,P)$ where $P \in \{1,2,4,8\}$ is the number of ports in the CSI-RS resource.~~
- ~~When calculating the CQI for a rank, the UE shall use the ports indicated for that rank for the selected CSI-RS resource. The precoder for the indicated ports shall be assumed to be the identity matrix scaled by $\frac{1}{\sqrt{\nu}}$.~~

~~If the UE is configured with a CSI-RS resource is configured with the higher layer parameter *reportQuantity* set to 'none', then the UE shall not report any quantity for the *CSI-ReportConfig* associated with the *reportQuantity*. Otherwise, the UE shall report the quantity for the *CSI-ReportConfig* as configured by the associated *reportQuantity*.~~

The LI indicates which column of the precoder matrix of the reported PMI corresponds to the strongest layer of the codeword corresponding to the largest reported wideband CQI. If two wideband CQIs are reported and have equal value, the LI corresponds to strongest layer of the first codeword.

----------End of TP ----------

Agreement

Adopt the following TP:

----------Start of TP ----------

5.2.1.5.1 Aperiodic CSI Reporting/Aperiodic CSI-RS

<Unchanged parts omitted>

- When all the bits of *CSI request* field in DCI are set to zero, no CSI is requested.
- When the number of configured CSI triggering states in *CSI-AperiodicTriggerStateList* is greater than $2^{N_{TS}}-1$, where N_{TS} is the number of bits in the DCI *CSI request* field, the UE receives a selection command [10, TS 38.321] used to map up to $2^{N_{TS}}-1$ trigger states to the codepoints of the *CSI request* field in DCI. N_{TS} is configured by the higher layer parameter *reportTriggerSize* where $N_{TS} \in \{0,1,2,3,4,5,6\}$. When the HARQ/ACK corresponding to the PDSCH carrying the selection command is transmitted in the slot *n*, the corresponding action in [10, TS 38.321] and UE assumption on the mapping of the selected CSI trigger state(s) to the codepoint(s) of DCI CSI request field shall be applied starting from slot $n+3N_{slot}^{subframe,\mu}+1$.
- When the number of CSI triggering states in *CSI-AperiodicTriggerStateList* is less than or equal to $2^{N_{TS}}-1$, the *CSI request* field in DCI directly indicates the triggering state and the UE's quasi co-location assumption.
- For each aperiodic CSI-RS resource in a CSI-RS resource set associated with each CSI triggering state, the UE is indicated the quasi co-location configuration of quasi co-location RS source(s) and quasi co-location type(s), as described in Subclause 5.1.5, through higher layer signaling of *qcl-info* which contains a list of references to *TCI-State's* for the aperiodic CSI-RS resources associated with the CSI triggering state. If a *State* referred to in the list is configured with a reference to an RS associated with '*QCL-TypeD*', that RS may be an SS/PBCH block located in the same or different CC/DL BWP or a CSI-RS resource configured as periodic or semi-persistent located in the same or different CC/DL BWP. If the scheduling offset between the last symbol of the PDCCH carrying the triggering DCI and the first symbol of the aperiodic CSI-RS resources in a *NZP-CSI-RS-ResourceSet* configured without higher layer parameter *trs-Info* and without the higher layer parameter *repetition* is smaller than the UE reported threshold the UE applies a default QCL assumption.
- A non-zero codepoint of the CSI request field in the DCI is mapped to a CSI triggering state according to the order of the ~~CSI triggering state ID~~ associated positions of ~~in~~ the up to $2^{N_{TS}}-1$ trigger states in *CSI-AperiodicTriggerStateList* with codepoint '1' mapped to the triggering state ~~having the smallest triggering state ID~~ in the first position

<Unchanged parts omitted>

----------End of TP ----------

----------Start of TP ----------

5.2.1.5.2 Semi-persistent CSI/Semi-persistent CSI-RS

<Unchanged parts omitted>

A codepoint of the CSI request field in the DCI is mapped to a SP-CSI triggering state according to the order of ~~the CSI triggering state ID~~ the positions of the configured trigger states in `CSI-SemiPersistentOnPUSCH-TriggerStateList`, with codepoint '0' mapped to the triggering state ~~having the smallest triggering state ID~~ in the first position. A UE validates, for semi-persistent CSI activation or release, a DL semi-persistent assignment PDCCH on a DCI only if the following conditions are met:

- the CRC parity bits of the DCI format are scrambled with a SP-CSI-RNTI provided by higher layer parameter *sp-csi-RNTI*
- Special fields for the DCI format are set according to Table 5.2.1.5.2-1 or Table 5.2.1.5.2-2.

If validation is achieved, the UE considers the information in the DCI format as a valid activation or valid release of semi-persistent CSI transmission on PUSCH, and the UE activates or deactivates a CSI reporting setting indicated by CSI request field in the DCI. If validation is not achieved, the UE considers the DCI format as having been detected with a non-matching CRC.

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<Unchanged parts omitted>

----------End of TP ----------

Agreement

Adopt the following TP to 38.214:

----------Start of TP ----------

5.2.3 CSI reporting using PUSCH

<Unchanged parts omitted>

When CSI reporting on PUSCH comprises two parts, the UE may omit a portion of the Part 2 CSI. Omission of Part 2 CSI is according to the priority order shown in Table 5.2.3-1, where N_{Rep} is the number of CSI reports configured to be carried on the PUSCH. Priority 0 is the highest priority and priority $2N_{\text{Rep}}$ is the lowest priority and the CSI report n corresponds to the CSI report with the nth smallest $\text{Pri}_{i,\text{CSI}}(y,k,c,s)$ value among the N_{Rep} CSI reports as defined in Subclause 5.2.5. The subbands for given CSI report n indicated by the higher layer parameter *csi-ReportingBand* are numbered continuously in the increasing order with the lowest subband of *csi-ReportingBand* as subband 0. When omitting Part 2 CSI information for a particular priority level, the UE shall omit all of the information at that priority level.

Table 5.2.3-1: Priority reporting levels for Part 2 CSI

Priority 0: Part 2 wideband CSI for CSI reports 1 to N_{Rep}
Priority 1: Part 2 subband CSI of even subbands for CSI report 1
Priority 2: Part 2 subband CSI of odd subbands for CSI report 1
Priority 3: Part 2 subband CSI of even subbands for CSI report 2
Priority 4: Part 2 subband CSI of odd subbands for CSI report 2
⋮
Priority : Part 2 subband CSI of even subbands for CSI report N_{Rep}
Priority $2N_{\text{Rep}}$: Part 2 subband CSI of odd subbands for CSI report N_{Rep}

----------End of TP ----------

Agreement

Adopt the following TPs to 38.212:

----------Start of TP ----------

6.3.1.1.2 CSI only

<Unchanged parts omitted>

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Table 6.3.1.1.2-11: Mapping order of CSI fields of one CSI report, CSI part 2 subband, *pmi-FormatIndicator= subbandPMI* or *cqi-FormatIndicator=subbandCQI*

CSI report #n Part 2 subband	Subband differential CQI for the second TB of all even subbands with increasing order of subband number, as in Tables 6.3.1.1.2-3/4/5, if *cqi-FormatIndicator=subbandCQI* and if reported
	PMI subband information fields X_2 of all even subbands with increasing order of subband number, from left to right as in Tables 6.3.1.1.2-1/2, if *pmi-FormatIndicator= subbandPMI* and if reported
	Subband differential CQI for the second TB of all odd subbands with increasing order of subband number, as in Tables 6.3.1.1.2-3/4/5, if *cqi-FormatIndicator=subbandCQI* and if reported
	PMI subband information fields X_2 of all odd subbands with increasing order of subband number, from left to right as in Tables 6.3.1.1.2-1/2, if *pmi-FormatIndicator= subbandPMI* and if reported

where subbands for given CSI report *n* indicated by the higher layer parameter *csi-ReportingBand* are numbered continuously in the increasing order with the lowest subband of *csi-ReportingBand* as subband 0.

----------End of TP ----------

----------Start of TP ----------

6.3.2.1.2 CSI only

<Unchanged parts omitted>

Table 6.3.2.1.2-5: Mapping order of CSI fields of one CSI report, CSI part 2 subband

CSI report #n Part 2 subband	Subband differential CQI for the second TB of all even subbands with increasing order of subband number, as in Tables 6.3.1.1.2-3/4/5, if *cqi-FormatIndicator=subbandCQI* and if reported
	PMI subband information fields X_2 of all even subbands with increasing order of subband number, from left to right as in Tables 6.3.1.1.2-1/2 or 6.3.2.1.2-1/2, if *pmi-FormatIndicator= subbandPMI* and if reported
	Subband differential CQI for the second TB of all odd subbands with increasing order of subband number, as in Tables 6.3.1.1.2-3/4/5, if *cqi-FormatIndicator=subbandCQI* and if reported
	PMI subband information fields X_2 of all odd subbands with increasing order of subband number, from left to right as in Tables 6.3.1.1.2-1/2 or 6.3.2.1.2-1/2, if *pmi-FormatIndicator= subbandPMI* and if reported

where subbands for given CSI report *n* indicated by the higher layer parameter *csi-ReportingBand* are numbered continuously in the increasing order with the lowest subband of *csi-ReportingBand* as subband 0.

----------End of TP ----------

Agreement

Adopt the below TP:

----------Start of TP ----------

The UE indicates the number of supported simultaneous CSI calculations N_{CPU}. If a UE supports N_{CPU} simultaneous CSI calculations it is said to have N_{CPU} CSI processing units for processing CSI reports across all configured cells. If L CPUs are occupied for calculation of CSI reports in a given OFDM symbol, the UE has $N_{CPU}-L$ unoccupied CPUs. If a UE receives an aperiodic CSI request for N CSI reports, on an OFDM symbol with $N_{CPU}-L$ unoccupied CPUs, where each CSI report n=0,…, N-1 corresponds to $O_{CPU}^{(n)}$ the UE is not required to update the N-M requested CSI reports with lowest priority (according to Subclause 5.2.5), where $0 \le M \le N$ is the largest value such that $\sum_{n=0}^{M-1} O_{CPU}^{(n)} \le N_{CPU} - L$ holds.

The UE is not required to update a periodic or semi-persistent CSI report if $N_{CPU} - L < O_{CPU}$ on the earliest one of the first symbol of the latest CSI-RS/CSI-RS resource earlier than the corresponding CSI reference resource of the CSI report.

A UE is not expected to be configured with an aperiodic CSI trigger state containing more than N_{CPU} Reporting Settings.

Processing of a CSI report occupies a number of CPUs for a number of symbols as follows:

- $O_{CPU} = 0$ for a CSI report with CSI-ReportConfig with higher layer parameter *reportQuantity* set to 'none' and *CSI-RS-ResourceSet* with high layer parameter *trs-Info* configured
- $O_{CPU} = 1$ for a CSI report with *CSI-ReportConfig* with higher layer parameter *reportQuantity* set to 'cri-RSRP', 'ssb-Index-RSRP' or 'none' (and *CSI-RS-ResourceSet* with high layer parameter *trs-Info* not configured).

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- ~~$O_{CPU} = K_s$~~ for a CSI report with *CSI-ReportConfig* with higher layer parameter *reportQuantity* set to 'cri-RI-PMI-CQI', 'cri-RI-i1', 'cri-RI-i1-CQI', 'cri-RI-CQI', or 'cri-RI-LI-PMI-CQI', ~~where K_s is the number of CSI-RS resources in the CSI-.RS resource set for channel measurement.~~
  - if a CSI report is aperiodically triggered without transmitting a PUSCH with either transport block or HARQ-ACK or both when $L = 0$ CPUs are occupied, where the CSI corresponds to a single CSI with wideband frequency-granularity and to at most 4 CSI-RS ports in a single resource without CRI report and where *codebookType* is set to 'TypeI-SinglePanel' or where *reportQuantity* is set to 'cri-RI-CQI', $O_{CPU} = N_{CPU}$,
  - otherwise, $O_{CPU} = K_s$, where K_s is the number of CSI-RS resources in the CSI-.RS resource set for channel measurement.
- ~~$O_{CPU} = N_{CPU}$ for a CSI report aperiodically triggered without transmitting a PUSCH with either transport block or HARQ-ACK or both when $L = 0$ CPUs are occupied, where the CSI corresponds to a single CSI with wideband frequency-granularity and to at most 4 CSI-RS ports in a single resource without CRI report and where *codebookType* is set to 'TypeI-SinglePanel' or where *reportQuantity* is set to 'cri-RI-CQI'.~~

----------End of TP ----------

Agreement
Adopt the following TP to Section 5.2.1.6 in TS38.214
----------Start of TP ----------

<Unchanged parts omitted>

In any slot, the UE is not expected to have more active CSI-RS ports or active CSI-RS resources than reported as capability.

NZP CSI-RS resource is active in a duration of time defined as follows. For aperiodic CSI-RS, starting from the end of the PDCCH containing the request and ending at the end of the PUSCH containing the report associated with this aperiodic CSI-RS. For semi-persistent CSI-RS, starting from the end of when the activation command is applied, and ending at the end of when the deactivation command is applied. For periodic CSI-RS, starting when the periodic CSI-RS is configured by higher layer signalling, and ending when the periodic CSI-RS configuration is released. If a CSI-RS resource is referred by NCSI reporting settings, the CSI-RS resource and the CSI-RS ports within the CSI-RS resource are counted Ntimes.

----------End of TP ----------

Agreement
Adopt the following TP to Section 5.2.3 in TS38.214
----------Start of TP ----------

5.2.3 CSI reporting using PUSCH

…

For Type I and Type II CSI feedback on PUSCH, a CSI report comprises of two parts. Part 1 has a fixed payload size and is used to identify the number of information bits in Part 2. Part 1 shall be transmitted in its entirety before Part 2 and may be used to identify the number of information bits in Part 2.

- For Type I CSI feedback, Part 1 contains RI (if reported), CRI (if reported), CQI for the first codeword. Part 2 contains PMI (if reported) and contains the CQI for the second codeword when RI (if reported) ~~>~~ is larger than 4.
- For Type II CSI feedback, Part 1 ~~has a fixed payload size and~~ contains RI (if reported), CQI, and an indication of the number of non-zero wideband amplitude coefficients per layer for the Type II CSI (see sub-clause 5.2.2). The fields of Part 1 – RI (if reported), CQI, and the indication of the number of non-zero wideband amplitude coefficients for each layer – are separately encoded. Part 2 contains the PMI of the Type II CSI. Part 1 and 2 are separately encoded.

…

----------End of TP ----------

R1-1811849 **Summary of CQI/MCS AT&T**

R1-1810099 Maintenance for CSI acquisition Huawei, HiSilicon

R1-1810213	Maintenance for CSI acquisition	ZTE
R1-1810252	Text proposals on CSI acquisition	LG Electronics
R1-1810365	Maintenance for CSI acquisition	vivo
R1-1810426	Maintenance for CSI acquisition	MediaTek Inc.
R1-1810517	Remaining issues on CSI acquisition for Rel-15	CATT
R1-1810750	Remaining issues for CSI reporting	Intel Corporation
R1-1810838	Corrections and clarification on CSI reporting	Samsung
R1-1810936	Remaining issues on CSI acquisition	MTI
R1-1810969	Text proposals for CSI acquisition	Guangdong OPPO Mobile Telecom.
R1-1811011	Remaining issues on CSI acquisition	Spreadtrum Communications
R1-1811141	Remaining issues on CSI reporting	Sharp
R1-1811192	Maintenance for CSI acquisition	Ericsson
R1-1811230	Maintenance for CSI acquisition	Qualcomm Incorporated
R1-1811351	Maintenance for CSI acquisition	NTT DOCOMO, INC.
R1-1811403	Maintenance for CSI acquisition	Nokia, Nokia Shanghai Bell

7.1.2.3 Maintenance for beam management

Including measurement, reporting, beam failure recovery, etc.
Please use separate sections for each of the respective sub-topic to facilitate reviews and summary.

R1-1811867 Summary on Beam Failure Recovery MediaTek

Working Assumption
K symbols after successfully receiving BFR gNB response, the PUCCH transmissions shall use the same spatial filter as the PRACH transmission until the UE receives an activation or reconfiguration of spatial relation of corresponding PUCCH resource(s)

- Note: The latency of RRC or MAC CE configuration is included as part of time duration for applying the same spatial filter as the PRACH transmission
- The above applies for all BWP(s) corresponding PCell or PSCell
- FFS: value of K
- FFS: whether to apply this for CBRA

R1-1811996 Summary of views on beam measurement and reporting – v3 Ericsson

Agreement:
Capture the agreement on the spatial QCL assumptions between initial configuration of TCI states and MAC CE activation in 38.214.

Agreement
For the aperiodic CSI-RS triggering, at least the three lowest values of threshold FG 2-28 is used, where there is support in the RRC specification for corresponding triggering slot offsets. The UE is expected to apply the QCL assumptions in the indicated TCI states if the scheduling delay exceeds the threshold advertised in FG 2-28.

Agreement
Send an LS to RAN2 to inform of the following:

- RAN1 observed that the two values 224 and 336 from UE capability (FG 2-28) are larger than the existing *aperiodicTriggeringOffset*
- RAN2 to consider the RAN1 input and if possible, consider making the specification change

Friday: Above values from UE capability (FG 2-28) are confirmed.
LS to RAN2 is approved in R1-1811936.

Agreement
The default QCL assumption the UE applies in case the scheduling delay is smaller than a threshold:

- After successful decoding of DCI scheduling the PDSCH, if there is only PDSCH transmitted in the same symbols as the CSI-RS, the default QCL assumption of AP CSI-RS follows the QCL assumption of the PDSCH.
  - Note: Scheduling offset of the PDSCH is larger than or equal to the threshold in this case
- If there is no PDSCH transmitted in the same symbols as the CSI-RS, the default QCL assumption of AP CSI-RS is derived from CORESET with lowest CORESET Id.
  - FFS: When there is other downlink signal in the same symbols as the CSI-RS

R1-1810100	Maintenance for beam management	Huawei, HiSilicon
R1-1810214	Maintenance for beam management	ZTE
R1-1810253	Text proposals on BM and BFR	LG Electronics
R1-1810366	Maintenance for beam management	vivo
R1-1810427	Maintenance for beam management	MediaTek Inc.
R1-1810480	Remaining PUCCH spatial filtering issues on beam failure recovery	Fujitsu
R1-1810518	Remaining issues on beam management	CATT
R1-1810628	Remaining issues on Rel.15 beam management	Sony
R1-1810686	On CSI Reference resources for NR	AT&T
R1-1810689	Report configuration with CSI-RS repetition ON	AT&T
R1-1810751	Remaining issues for beam management	Intel Corporation
R1-1810839	Remaining issues on beam management	Samsung
R1-1810937	Remaining issues on Beam Management	MTI
R1-1811634	Text proposals for Beam management	Guangdong OPPO Mobile Telecom. (Revision of R1-1810970)
R1-1811031	Discussions on beam failure recovery	CMCC
R1-1811142	Remaining issues on beam management	Sharp
R1-1811187	Maintenance for beam management	Ericsson
R1-1811633	Maintenance for beam management	Qualcomm Incorporated (Revision of R1-1811231)
R1-1811352	Remaining issues on beam management	NTT DOCOMO, INC.
R1-1811404	Maintenance for beam management	Nokia, Nokia Shanghai Bell
R1-1811471	Remaining issues on beam management	ASUSTEK COMPUTER (SHANGHAI)

7.1.2.4 Maintenance for Reference signals and QCL

Including CSI-RS, DM-RS, PT-RS, SRS, TRS, QCL, multiplexing of different types of RSs, etc.
Please use separate sections for each of the respective sub-topic to facilitate reviews and summary.

R1-1811842	**Feature lead summary of remaining issues for RS multiplexing**	**Huawei, HiSilicon**
R1-1811856	**Maintenance for CSI-RS #1**	**Huawei, HiSilicon**
R1-1812045	**Maintenance for CSI-RS #2**	**Huawei, HiSilicon**

Agreement
Text proposal for Section 5.2.1.5.1 in 38.214:
----------Start of TP ----------
~~The REs corresponding to aperiodic NZP CSI-RS triggered by the *CSI request* are available for PDSCH.~~
----------End of TP ----------
Text proposal for Section 7.3.1.5 in 38.211:
----------Start of TP ----------

- not used for non-zero-power CSI-RS according to clause 7.4.1.5, except for non-zero-power CSI-RSs configured by the higher-layer parameter *CSI-RS-Resource-Mobility* in the *MeasObjectNR* IE, and aperiodic non-zero-power CSI-RS resources

----------End of TP ----------

Agreement
Text proposal for Section 5.2.2.3.1 in 38.214:
----------Start of TP ----------

The following parameters for which the UE shall assume non-zero transmission power for CSI-RS resource are configured via the higher layer parameter *NZP-CSI-RS-Resource, CSI-ResourceConfig and NZP-CSI-RS-ResourceSet* for each CSI-RS resource configuration:

<Unchanged parts omitted>

- ~~*CSI-RS-*~~*resourceMapping* defines the number of ports, CDM-type, and OFDM symbol and subcarrier occupancy of the CSI-RS resource within a slot that are given in Subclause 7.4.1.5 of [4, TS 38.211].
- *nrofPorts* in ~~*CSI-RS-R*~~*resourceMapping* defines the number of CSI-RS ports, where the allowable values are given in Subclause 7.4.1.5 of [4, TS 38.211].
- *density* in ~~*CSI-RS-R*~~*resourceMapping* defines CSI-RS frequency density of each CSI-RS port per PRB, and CSI-RS PRB offset in case of the density value of 1/2, where the allowable values are given in Subclause 7.4.1.5 of [4, TS 38.211]. For density 1/2, the odd/even PRB allocation indicated in *density* is with respect to the common resource block grid.
- *cdm-Type* in ~~*CSI-RS-R*~~*esourceMapping* defines CDM values and pattern, where the allowable values are given in Subclause 7.4.1.5 of [4, TS 38.211].

----------End of TP ----------

Agreement

Text proposal for Section 4.1 in 38.214:

----------Start of TP ----------

- ~~-~~ *trs-Info* in *NZP-CSI-RS-ResourceSet* is associated with a CSI-RS resource set and for which the UE can assume that the antenna port with the same port index of the configured NZP CSI-RS resources in the *NZP-CSI-RS-ResourceSet* is the same as described in Subclause 5.1.6.1.1 and can be configured when reporting setting is not configured or when the higher layer parameter *reportQuantity* associated with all the reporting settings linked with the CSI-RS resource set is ~~unconfigured or~~ set to 'none'.

----------End of TP ----------

Agreement

Text proposal for Section 7.4.1.5.3 in 38.211:

----------Start of TP ----------

~~T~~he frequency-domain location is given by a bitmap provided by the higher-layer parameter *frequencyDomainAllocation* in the *CSI-RS-ResourceMapping* IE or the *CSI-RS-ResourceConfigMobility* IE with the bitmap and value of k_{i-1} k_i ~~-~~ in Table 7.4.1.5.3-1 given by

- $[b_3 \cdots b_0]$, ~~-~~ $k_{i-1} = f(i)$ $k_i = f(i)$ ~~-~~ for row 1 of Table 7.4.1.5.3-1
- $[b_{11} \cdots b_0]$, $k_{i-1} = f(i)$ $k_i = f(i)$ ~~-~~ for row 2 of Table 7.4.1.5.3-1
- $[b_2 \cdots b_0]$, $k_{i-1} = 4f(i)$ $k_i = 4f(i)$ ~~-~~ for row 4 of Table 7.4.1.5.3-1
- $[b_5 \cdots b_0]$, $k_{i-1} = 2f(i)$ $k_i = 2f(i)$ ~~-~~ for all other cases

where $f(i)$ is the bit number of the ith ~~-bit in the~~ bitmap set to one, repeated across every $1/\rho$ of the resource blocks configured for CSI-RS reception by the UE when $\rho \leq 1$. The starting position and number of the resource blocks in which the UE shall assume that CSI-RS is transmitted are given by the higher-layer parameters *freqBand* and *density* in the *CSI-RS-ResourceMapping* IE for the bandwidth part given by the higher-layer parameter *bwp-Id* in the *CSI-ResourceConfig* IE or given by the higher-layer parameters *csi-rs-MeasurementBW* in the *CSI-RS-CellMobility* IE where the the *startPRB* given by *csi-rs-MeasurementBW* is relative to common resource block 0.

----------End of TP ----------

R1-1811838 **Summary of DMRS Issues** **Qualcomm**

Working Assumption

For PDSCH mapping Type A, when *lte-CRS-ToMatchAround* is configured and *dmrs-AdditionalPosition='pos1',* and single-symbol DMRS, and if any DMRS symbol and any symbol containing common RS as indicated by *lte-CRS-ToMatchAround* is the same:

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- then the DM-RS positions for PDSCH duration (as measured from the beginning of the slot) of 13 and 14 are l_0,12 instead of the default l_0, 11. The PDSCH processing time in Table 5.3-1 is increased from 13 to 14 in this case
- l_0=3

This feature is UE optional

R1-1812056 **Summary of DMRS Issues** **Qualcomm**

Agreement

Text proposal for TS38.211

----------Start of TP ----------

6.4.1.1.1.2 Sequence generation when transform precoding is enabled

If transform precoding for PUSCH is enabled, the reference-signal sequence $r(n)$ shall be generated according to

$$r(n) = r_{u,v}^{(\alpha,\delta)}(n)$$
$$n = 0,1,\ldots,M_{sc}^{PUSCH}/2^{\delta}-1$$

where $r_{u,v}^{(\alpha,\delta)}(m)$ is given by clause 5.2.2 with $\delta = 1$ and $\alpha = 0$ for a PUSCH transmission dynamically scheduled by DCI.

The sequence group $u = (f_{gh} + n_{ID}^{RS}) \bmod 30$, where n_{ID}^{RS} is given by

- $n_{ID}^{RS} = n_{ID}^{PUSCH}$ if n_{ID}^{PUSCH} is configured by the higher-layer parameter *nPUSCH-Identity* in the *DMRS-UplinkConfig* IE and the PUSCH is not a msg3 PUSCH according to clause 8.3 in [5, TS 38.213].
- $n_{ID}^{RS} = N_{ID}^{cell}$ otherwise

where f_{gh} and the sequence number v are given by:

- if both *sequenceGroupHopping* and *sequenceHopping* equal 'disabled', neither group, nor sequence hopping shall be used
  $f_{gh} = 0$
  $v = 0$
- if *sequenceGroupHopping* equals 'enabled' and *sequenceHopping* equals 'disabled', group hopping but not sequence hopping shall be used
  $f_{gh} = \left(\sum_{m=0}^{7} 2^m c\left(8\left(N_{symb}^{slot} n_{s,f}^{\mu} + l\right) + m\right)\right) \bmod 30$
  $v = 0$
  where the pseudo-random sequence $c(i)$ is defined by clause 5.2.1 and shall be initialized with $c_{init} = \lfloor n_{ID}^{RS}/30 \rfloor$ at the beginning of each radio frame
- if *sequenceGroupHopping* equals 'disabled' and *sequenceHopping* equals ' enabled', sequence hopping but not group hopping shall be used
  $f_{gh} = 0$
  $$v = \begin{cases} c\left(N_{symb}^{slot} n_{s,f}^{\mu} + l\right) & \text{if } M_{ZC} \geq 6N_{sc}^{RB} \\ 0 & \text{otherwise} \end{cases}$$
  where the pseudo-random sequence $c(i)$ is defined by clause 5.2.1 and shall be initialized with $c_{init} = n_{ID}^{RS}$ at the beginning of each radio frame

UE does not expect both *sequenceGroupHopping* and *sequenceHopping* to be configured as 'enabled'

The quantity l above is the OFDM symbol number except for the case of double-symbol DMRS in which case l is the OFDM symbol number of the first symbol of the double-symbol DMRS

----------End of TP ----------

Conclusion

The parameter '*groupHoppingEnabledTransformPrecoding*' is not used in RAN1.

R1-1811848 **Feature lead summary of PT-RS** **Ericsson**

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Agreement

Text Proposal for 38.214:

----------Start of TP ----------

5.1.6.3 PT-RS reception procedure

<Unchanged parts omitted>

- otherwise, if neither of the additional higher layer parameters *timeDensity* and *frequencyDensity* are configured and the RNTI equals MCS-C-RNTI, C-RNTI or CS-RNTI, the UE shall assume the PT-RS is present with $L_{PT\text{-}RS}$= 1, $K_{PT\text{-}RS}$ = 2, and the UE shall assume PT-RS is not present when
  - the scheduled MCS from Table 5.1.3.1-1 is smaller than 10, or
  - the scheduled MCS from Table 5.1.3.1-2 is smaller than 5, or
  - the scheduled MCS from Table 5.1.3.1-3 is smaller than 15, or
  - the number of scheduled RBs is smaller than 3, or
- otherwise, if the RNTI equals RA-RNTI, SI-RNTI, or P-RNTI, the UE shall assume PT-RS is not present

----------End of TP ----------

Agreement

Text Proposal for Section 6.2.3.1 of 38.214.

----------Start of TP ----------

6.2.3.1 UE PT-RS transmission procedure when transform precoding is not enabled

<Unchanged parts omitted>

When a UE is scheduled to transmit PUSCH with allocation duration of 2 symbols with mapping type B ~~A~~, and if $L_{PT\text{-}RS}$ is set to 2 or 4, the UE shall not transmit PT-RS. When a UE is scheduled to transmit PUSCH with allocation duration of 4 symbols with mapping type B ~~A~~, and if $L_{PT\text{-}RS}$ is set to 4, the UE shall not transmit PT-RS.

----------End of TP ----------

Agreement

Text Proposal for Section 5.1.6.3 of 38.214.

----------Start of TP ----------

5.1.6.3 PT-RS reception procedure

<Unchanged parts omitted>

if either or both of the additional higher layer parameters *timeDensity* and *frequencyDensity* are configured, and the RNTI equals MCS-C-RNTI, C-RNTI or CS-RNTI, the UE shall assume the PT-RS antenna port~~s~~' presence and pattern is ~~are~~ a function of the corresponding scheduled MCS of the corresponding codeword and scheduled bandwidth in corresponding bandwidth part as shown in Table 5.1.6.3-1, Table 5.1.6.3-2 and Table 5.1.6.3-3

<Unchanged parts omitted>

The DL DM-RS port(s) associated with a PT-RS port are assumed to be quasi co-located with respect to {QCL-TypeA' and QCL-TypeD'}.

----------End of TP ----------

Agreement

Text Proposal for Section 6.2.3 of 38.214.

----------Start of TP ----------

6.2.3 UE PT-RS transmission procedure

If a UE is not configured with the higher layer parameter *phaseTrackingRS* in *DMRS-UplinkConfig*, the UE shall not transmit PT-RS. The PTRS may only be present if RNTI equals MCS-C-RNTI, C-RNTI, CS-RNTI, SP-CSI-RNTI.

6.2.3.1 UE PT-RS transmission procedure when transform precoding is not enabled

<Unchanged parts omitted>

If either or both of the parameters PT-RS time density ($L_{PT\text{-}RS}$) and PT-RS frequency density ($K_{PT\text{-}RS}$), shown in Table 6.2.3.1-1 and Table 6.2.3.1-2, indicates that are configured as 'PT-RS not present', the UE shall assume that PT-RS is not present.

~~If a UE is configured with the higher layer parameters *phaseTrackingRS* in *DMRS-UplinkConfig* and the number of configured PT-RS ports is 1, the UE is indicated a DM-RS port to be associated with the PT-RS by UL DCI.~~

When a UE is scheduled to transmit PUSCH with allocation duration of 2 symbols with mapping type A, and if $L_{PT\text{-}RS}$ is set to 2 or 4, the UE shall not transmit PT-RS. When a UE is scheduled to transmit PUSCH with allocation duration of 4 symbols with mapping type A, and if $L_{PT\text{-}RS}$ is set to 4, the UE shall not transmit PT-RS.

<Unchanged parts omitted>

For codebook or non-codebook based UL transmission, the association between UL PT-RS port(s) and DM-RS port(s) is signalled by *PTRS-DMRS association* field in DCI format 0_1 ~~as described in Subclause 7.3.1.1.2 of [5, TS 38.212].~~

For non-codebook based UL transmission, the actual number of UL PT-RS port(s) to transmit is determined based on SRI(s). A UE may be configured with the PT-RS port index for each configured SRS resource by the higher layer parameter *ptrs-PortIndex* configured by *SRS-Config*. If the PT-RS port index associated with different SRIs are the same, the corresponding UL DM-RS ports are associated to the one UL PT-RS port.

----------End of TP ----------

Agreement

----------Start of TP ----------

6.2.3.1 UE PT-RS transmission procedure when transform precoding is not enabled

<Unchanged parts omitted>

For non-codebook based UL transmission, the actual number of UL PT-RS port(s) to transmit is determined based on SRI(s). A UE~~may be~~ is configured with the PT-RS port index for each configured SRS resource by the higher layer parameter *ptrs-PortIndex* configured by *SRS-Config* if the UE is configured with the higher layer parameter phaseTrackingRS in DMRS-UplinkConfig.

----------End of TP ----------

R1-1812035 **Feature lead summary 2 of PT-RS** **Ericsson**

Agreement

TP for section 6.2.3.1 of 38.214

----------Start of TP ----------

<Unchanged parts omitted>

When a UE is scheduled to transmit PUSCH with allocation duration of 2 symbols or less ~~with mapping type A~~, and if $L_{PT\text{-}RS}$ is set to 2 or 4, the UE shall not transmit PT-RS. When a UE is scheduled to transmit PUSCH with allocation duration of 4 symbols or less ~~with mapping type A~~, and if $L_{PT\text{-}RS}$ is set to 4, the UE shall not transmit PT-RS.

----------End of TP ----------

TP for section 5.1.6.3 of 38.214

----------Start of TP ----------

<Unchanged parts omitted>

When the UE is receiving a PDSCH with allocation duration of 2 symbols ~~with mapping type B~~ as defined in sub-clause 7.4.1.1.2 of [4, TS 38.211] and if $L_{PT\text{-}RS}$ is set to 2 or 4, the UE shall assume PT-RS is not transmitted.

When the UE is receiving a PDSCH with allocation duration of 4 symbols ~~with mapping type B~~, and if $L_{PT\text{-}RS}$ is set to 4, the UE shall assume PT-RS is not transmitted.

----------End of TP ----------

R1-1811808 **Summary of SRSSony**

Agreement

Text proposal for 38.214

----------Start of TP ----------

6.2.1 UE sounding procedure

<Unchanged parts omitted>

- Defining frequency domain position and configurable shift ~~to align SRS allocation to 4 PRB grid~~, as defined by the higher layer parameters *freqDomainPosition* and *freqDomainShift, respectively,* and described in Subclause 6.4.1.4 of [4, TS 38.211].

----------End of TP ----------

Agreement

Text proposal for 38.211

----------Start of TP ----------

6.4.1.4.3 Mapping to physical resources

<Unchanged parts omitted>

The frequency-domain starting position $k_0^{(p_i)}$ is defined by

$$k_0^{(p_i)} = \bar{k}_0^{(p_i)} + \sum_{b=0}^{B_{\mathrm{SRS}}} K_{\mathrm{TC}} M_{\mathrm{sc},b}^{\mathrm{SRS}} n_b$$

where

$$\bar{k}_0^{(p_i)} = n_{\mathrm{shift}} N_{\mathrm{sc}}^{\mathrm{RB}} + k_{\mathrm{TC}}^{(p_i)}$$

$$k_{\mathrm{TC}}^{(p_i)} = \begin{cases} \left(\bar{k}_{\mathrm{TC}} + K_{\mathrm{TC}}/2\right) \bmod K_{\mathrm{TC}} & \text{if } n_{\mathrm{SRS}}^{\mathrm{cs}} \in \left\{n_{\mathrm{SRS}}^{\mathrm{cs,max}}/2, \ldots, n_{\mathrm{SRS}}^{\mathrm{cs,max}} - 1\right\} \text{ and } N_{\mathrm{ap}}^{\mathrm{SRS}} = 4 \text{ and } p_i \in \{1001, 1003\} \\ \bar{k}_{\mathrm{TC}} & \text{otherwise} \end{cases}$$

The frequency domain shift value n_{shift} adjusts the SRS allocation with respect to the common resource block grid and is contained in the higher-layer parameter *freqDomainShift* in the *SRS-Config* IE. The transmission comb offset $\bar{k}_{\mathrm{TC}} \in \{0, 1, \ldots, K_{\mathrm{TC}} - 1\}$ is contained in the higher-layer parameter *transmissionComb* in the *SRS-Config* IE and n_{b} is a frequency position index.

The reference point for $k_0^{(p_i)} = 0$ is subcarrier 0 in common resource block 0.

----------End of TP ----------

Agreement

Text proposal for 38.214

----------Start of TP ----------

6.2.1 UE sounding procedure

<Unchanged parts omitted>

In case a SRS resource with SRS- resourceType set as 'aperiodic' is triggered on the OFDM symbol configured with periodic/semi-persistent SRS transmission, the UE shall transmit the aperiodic SRS resource and not transmit the periodic/semi-persistent SRS resource(s) overlapping within the [symbol(s)]. In case a SRS resource with SRS- resourceType set as 'semi-persistent' is triggered on the OFDM symbol configured with periodic SRS transmission, the UE shall transmit the semi-persistent SRS resource and not transmit the periodic SRS resource(s) overlapping within the [symbol(s)]. In case a SRS resource with SRS- resourceType set as 'aperiodic' is triggered on the OFDM symbol configured with periodic SRS transmission, the UE shall transmit the aperiodic SRS resource and not transmit the periodic SRS resource(s) overlapping within the [symbol(s)].

----------End of TP ----------

Agreement

Text proposal for TS 38.214 V15.3.0 (2018-09)

----------Start of TP ----------

6.2.1 UE sounding procedure

<Unchanged parts omitted>

In case a SRS resource with *SRS- resourceType* set as 'aperiodic' is triggered on the OFDM symbol configured with periodic/semi-persistent SRS transmission, the UE shall transmit the aperiodic SRS resource and not transmit the periodic/semi-persistent SRS resource(s) overlapping within the [symbol]. In case a SRS resource with *SRS- resourceType* set as 'semi-persistent' is triggered on the OFDM symbol configured with periodic SRS transmission, the UE shall transmit the semi-persistent SRS resource and not transmit the periodic SRS resource(s) overlapping within the [symbol]. ~~In case a SRS resource with *SRS- resourceType* set as 'aperiodic' is triggered on the OFDM symbol configured with periodic SRS transmission, the UE shall transmit the aperiodic SRS resource and not transmit the periodic SRS resource(s) overlapping within the [symbol].~~

----------End of TP ----------

Agreement

Text proposal in 38.214

----------Start of TP ----------

6.2.1 UE sounding procedure

<Unchanged parts omitted>

In case of intra-band carrier aggregation or in inter-band CA band-band combination where simultaneous SRS~~/PUCCH/PUSCH~~ and ~~PRACH~~PUCCH/PUSCH transmissions are not allowed, a UE is not expected to be configured with SRS and PUSCH/UL DM-RS/UL PT-RS/PUCCH formats in the same symbol.

In case of intra-band carrier aggregation or in inter-band CA band-band combination where simultaneous SRS and ~~PUCCH/PUSCH~~PRACH transmissions are not allowed, a UE shall not transmit simultaneously SRS resource(s) and PRACH.

----------End of TP ----------

Agreement

----------Start of TP for 38.214----------

6.2.1 UE sounding procedure

…

The following SRS parameters are semi-statically configurable by higher layer parameter *SRS-Resource*.

- …
- The configuration of the spatial relation between a reference RS and the target SRS, where the higher layer parameter *spatialRelationInfo*, if configured, contains the ID of the reference RS. The reference RS can be an SS/PBCH block, CSI-RS configured on serving cell indicated by higher layer parameter *servingCellId* if present, same serving cell as the target SRS otherwise, or an SRS configured on serving cell and uplink bandwidth part indicated by higher layer parameters *servingCellId* and/or *uplinkBWP* if present, ~~the~~ same ~~or different component carrier~~ serving cell and/or bandwidth part as the target SRS otherwise.

…

For a UE configured with one or more SRS resource configuration(s), and when the higher layer parameter *resourceType* in *SRS-Resource* is set to 'semi-persistent':

- when a UE receives an activation command [10, TS 38.321] for an SRS resource, and when the HARQ-ACK corresponding to the PDSCH carrying the selection command is transmitted in slot n, the corresponding actions in [10, TS 38.321] and the UE assumptions on SRS transmission corresponding to the configured SRS resource set shall be applied starting from slot $n+3N_{slot}^{subframe,\mu}+1$. The activation command also contains spatial relation assumptions provided by a list of references to reference signal IDs, one per element of the activated SRS resource set. Each ID in the list refers to a reference SS/PBCH block, NZP CSI-RS resource configured on serving cell indicated by *Resource Serving Cell ID* field in the activation command if present, same serving cell as the SRS resource set otherwise, or SRS resource configured on serving cell and uplink bandwidth part indicated by *Resource Serving Cell ID* field and *Resource BWP ID* field in the activation command if present, ~~the~~ same ~~or different component carrier~~ serving cell and bandwidth part as the ~~SRS resource(s) in the~~ SRS resource set otherwise.
- if an SRS resource in the activated resource set is configured with the higher layer parameter *spatialRelationInfo*, the UE shall assume that the ID of the reference signal in the activation command overrides the one configured in *spatialRelationInfo.*
- …

----------End of TP for 38.214----------

Agreement

Text proposal for section 6.2.1 in 38.214:

----------Start of TP ----------

The 2-bit SRS request field [5 TS38.212] in DCI format 0_1, 1_1 indicates the triggered SRS resource set given in Table 7.3.1.1.2-24 of [5, TS 38212]. The 2-bit SRS request field [5, TS38.212] in DCI format 2_3 indicates the triggered SRS resource set given in Subclause 11.4 of [6, TS 38.213] if the UE is configured with higher layer parameter *srs-TPC-PDCCH-Group* set to 'typeB', or indicates the SRS transmission on a set of serving cells configured by higher layers if the UE is configured with higher layer parameter *srs-TPC-PDCCH-Group* set to 'typeA'.

----------End of TP ----------

Text proposal for section 7.3.1.1.2 in 38.212:

----------Start of TP ----------

Table 7.3.1.1.2-24: SRS request

Value of SRS request field	Triggered aperiodic SRS resource set(s) for DCI format 0_1, 1_0 and 2_3 configured with higher layer parameter *srs-TPC-PDCCH-Group* set to 'typeB'	Triggered aperiodic SRS resource set(s) for DCI format 2_3 configured with higher layer parameter *srs-TPC-PDCCH-Group* set to 'typeA'
00	No aperiodic SRS resource set triggered	No aperiodic SRS resource set triggered for a 1st set of serving cells configured by higher layers
01	SRS resource set(s) configured with higher layer parameter *aperiodicSRS-ResourceTrigger* set to 1	SRS resource set(s) configured with higher layer parameter SRS-SetUse set to 'antenna switching' and resourceType in SRS-ResourceSet set to 'aperiodic' for a 1st set of serving cells configured by higher layers
10	SRS resource set(s) configured with higher layer parameter *aperiodicSRS-ResourceTrigger* set to 2	SRS resource set(s) configured with higher layer parameter SRS-SetUse set to 'antenna switching' and resourceType in SRS-ResourceSet set to 'aperiodic' for a 2nd set of serving cells configured by higher layers
11	SRS resource set(s) configured with higher layer parameter *aperiodicSRS-ResourceTrigger* set to 3	SRS resource set(s) configured with higher layer parameter SRS-SetUse set to 'antenna switching' and resourceType in SRS-ResourceSet set to 'aperiodic' for a 3rd set of serving cells configured by higher layers

----------End of TP ----------

R1-1811880 **Summary of SRS Sony**

Agreement
For collision between SRS and long PUCCH on a given carrier, the same rules for collision between SRS and short PUCCH on a given carrier are applied.

TP for Section 6.2.1 of 38.214:

----------Start of TP ----------
For PUCCH and SRS on the same carrier ~~formats 0 and 2~~, a UE shall not transmit SRS when semi-persistent and periodic SRS are configured in the same symbol(s) with PUCCH carrying only CSI report(s), or only L1-RSRP report(s).
----------End of TP ----------

Agreement
Text proposal in 38.214
----------Start of TP ----------

6.2.1 UE sounding procedure

<Unchanged parts omitted>

In case of intra-band carrier aggregation or in inter-band CA band-band combination where simultaneous SRS and PUCCH/PUSCH transmissions are not allowed, a UE is not expected to be configured with SRS from a carrier and PUSCH/UL DM-RS/UL PT-RS/PUCCH formats from a different carrier in the same symbol.
In case of intra-band carrier aggregation or in inter-band CA band-band combination where simultaneous SRS and PRACH transmissions are not allowed, a UE shall not transmit simultaneously SRS resource(s) from a carrier and PRACH from a different carrier.
----------End of TP ----------
Text proposal for 6.2.1.3 in 38.214
----------Start of TP ----------
In case of inter-band carrier aggregation, a UE can simultaneously transmit SRS and PUCCH/PUSCH across component carriers in different bands subject to the UE's capability.
In case of inter-band carrier aggregation, a UE can simultaneously transmit PRACH and SRS~~/PUCCH/PUSCH~~ across component carriers in different bands subject to UE's capability.
----------End of TP ----------

Agreement
Text proposal for 38.213 Section 11.4.
----------Start of TP ----------

11.4 SRS switching

DCI format 2_3 is applicable for serving cells where a UE is not configured for PUSCH/PUCCH transmission or for a serving cell where higher layer parameter *srs-pcadjustment-state-config* indicates a separate power control adjustment state between SRS transmissions and PUSCH transmissions. And also, the higher layer parameter *srs-TPC-RNTI* should be aligned with TS38.331.

A UE configured by higher layers with parameter *SRS-CarrierSwitching* is provided with

- a TPC-SRS-RNTI for a DCI format 2_3 by higher layer parameter *tpc-SRS-RNTI~~srs-TPC-RNTI~~*
- an index of a serving cell where the UE interrupts transmission in order to transmit SRS on one or more other serving cells by higher layer parameter *srs-SwitchFromServCellIndex*
- a DCI format 2_3 field configuration type by higher layer parameter *typeA* or higher layer parameter *typeB*
  - for higher layer parameter *typeA*, an index for a set of serving cells is provided by higher layer parameter *cc-SetIndex*, indexes of serving cells in the set of serving cells are provided by higher layer parameter *cc-IndexInOneCC-Set*, and a DCI format 2_3 field includes a TPC command for each serving cell from the set of serving cells and can also include a SRS request for SRS transmission on the set of serving cells
  - for higher layer parameter *typeB*, DCI format 2_3 field includes a TPC command for a serving cell index and can also include a SRS request for SRS transmission on the serving cell~~– a mapping between a serving cell index for SRS transmission and a DCI format 2_3 field is provided by higher layer parameter *srs-CellToSFI*~~
- an indication for a serving cell for whether or not a field in DCI format 2_3 includes a SRS request by higher layer parameter *fieldTypeFormat2-3* where a value of 0/1 indicates absence/presence of the SRS request – a mapping for a 2 bit SRS request to SRS resource sets is as provided in [6, TS 38.214]
- an index for a location in DCI format 2_3 of a first bit for a field by higher layer parameter *startingBitOfFormat2-3*

…

----------End of TP ----------

Agreement

Text Proposal for 38.214 Section 6.2.1.2.

----------Start of TP ----------

6.2.1.2 UE sounding procedure for DL CSI acquisition

When the UE is configured with the higher layer parameter *usage* in *SRS-ResourceSet* set as 'antennaSwitching', the UE may be configured with one of the following configurations depending on the indicated UE capability ('1T2R', '2T4R', '1T4R', '1T4R/2T4R', or 'T=R'):

- For 1T2R, up to two SRS resource sets configured with a different value for the higher layer parameter *resourceType* in *SRS-ResourceSet* set, where each set has two SRS resources transmitted in different symbols, each SRS resource in a given set consisting of a single SRS port, and the SRS port of the second resource in the set is associated with a different UE antenna port than the SRS port of the first resource in the same set, or
- For 2T4R, up to two SRS resource sets configured with a different value for the higher layer parameter *resourceType* in *SRS-ResourceSet* set, where each SRS resource set has two SRS resources transmitted in different symbols, each SRS resource in a given set consisting of two SRS ports, and the SRS port pair of the second resource is associated with a different UE antenna port pair than the SRS port pair of the first resource, or
- For 1T4R, zero or one SRS resource set configured with higher layer parameter *resourceType* in *SRS-ResourceSet* set to 'periodic' or 'semi-persistent' with four SRS resources transmitted in different symbols, each SRS resource in a given set consisting of a single SRS port, and the SRS port of each resource is associated with a different UE antenna port, and
- For 1T4R, zero or two SRS resource sets each configured with higher layer parameter *resourceType* in *SRS-ResourceSet* set to 'aperiodic' and with a total of four SRS resources transmitted in different symbols of two different slots, and where the SRS port of each SRS resource in given two sets is associated with a different UE antenna port. The two sets are each configured with two SRS resources, or one set is configured with one SRS resource and the other set is configured with three SRS resources. The UE shall expect that the two sets are both configured with the same values of the higher layer parameters *alpha*, *p0*, *pathlossReferenceRS*, and *srs-PowerControlAdjustmentStates* in *SRS-ResourceSet*. The UE shall expect that the value(s) of the higher layer parameter *aperiodicSRS-ResourceTrigger* in each *SRS-ResourceSet* are the same, and the value of the higher layer parameter *slottOffset* in each *SRS-ResourceSet* is different. Or,
- For T=R, up to two SRS resource sets each with one SRS resource, where the number of SRS ports for each resource is equal to 1, 2, or 4.

----------End of TP ----------

Agreement

Text proposal for 38.214 Section 6.2.1.2

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----------Start of TP ----------

…

If the indicated UE capability is '1T2R', '2T4R', '1T4R', '1T4R/2T4R', the UE shall not expect to be configured or triggered with more than one SRS resource set with higher layer parameter *usage* set as "antenna switching" in the same slot. If the indicated UE capability is 'T=R,' the UE shall not expect to be configured or triggered with more than one SRS resource set with higher layer parameter *usage* set as "antenna switching" in the same symbol.

----------End of TP ----------

R1-1811857 **Summary #1 for TRS maintenance** **MediaTek**

Agreement

Text proposal for 5.1.6.1.1 in 38.214

----------Start of TP ----------

The UE shall expect that the periodic CSI-RS resource set and aperiodic CSI-RS resource set are configured with the same number of CSI-RS resources, and with same number of CSI-RS resources in a slot

----------End of TP ----------

----------Start of TP ----------

Each CSI-RS resource, defined in Subclause 7.4.1.5.3 of [4, TS 38.211], is configured by the higher layer parameter *NZP-CSI-RS-Resource* with the following restrictions:

- the time-domain locations of the two ~~periodic~~ CSI-RS resources in a slot, or of the four ~~periodic~~ CSI-RS resources in two consecutive slots (which are the same across two consecutive slots), as defined by higher layer parameter *CSI-RS-resourceMapping*, is given by one of
  - $l \in \{4,8\}$, $l \in \{5,9\}$, or $l \in \{6,10\}$ for frequency range 1 and frequency range 2,
  - $l \in \{0,4\}$, $l \in \{1,5\}$, $l \in \{2,6\}$, $l \in \{3,7\}$, $l \in \{7,11\}$, $l \in \{8,12\}$ or $l \in \{9,13\}$ for frequency range 2.
- a single port CSI-RS resource with density $\rho = 3$ given by Table 7.4.1.5.3-1 from [4, TS 38.211] and higher layer parameter *density* configured by *CSI-RS-ResourceMapping*.
- the bandwidth of the CSI-RS resource, as given by the higher layer parameter *freqBand* configured by *CSI-RS-ResourceMapping*, is the minimum of 52 and $N_{\mathrm{RB}}^{\mathrm{BWP},i}$ resource blocks, or is equal to $N_{\mathrm{RB}}^{\mathrm{BWP},i}$ resource blocks
- the UE is not expected to be configured with the periodicity of $2^{\mu} \times 10$ slots if the bandwidth of CSI-RS resource is larger than 52 resource blocks.
- the periodicity and slot offset for periodic NZP CSI-RS resources, as given by the higher layer parameter *periodicityAndOffset* configured by *NZP-CSI-RS-Resource*, is one of $2^{\mu} X_p$ slots where X_p =10, 20, 40, or 80 and where μ is defined in Subclause 4.3 of [4, TS 38.211].

----------End of TP ----------

R1-1811903 **Feature lead summary on QCL** **Nokia**

Agreement: Send a LS to RAN2 that:

Currently, *typeC* cannot be configured in *QCL-Info* when the reference signal is not in the same serving cell in which the *TCI-State* is configured. So RAN1 respectfully requests RAN2 to update the description of *cell* configured in *QCL-Info* in order to support typeC configuration in this case, i.e. the RS configured in *QCL-Info* can be located on a serving cell other than the serving cell in which the *TCI-State* is configured if the *qcl-Type* is configured as *typeD* or *typeC*.

R1-1811937 **LS on description of QCL** **RAN1, Intel**

Decision: The LS is approved in R1-1811937.

Agreement

For the DM-RS of PDCCH, the UE should only expect the following three configurations of the higher layer parameter *TCI-State* while the fourth configuration is valid as default, before TRS is configured:

Valid TCI state Configuration	DL RS 1	*qcl-Type1*	DL RS 2 (if configured)	*qcl-Type2* (if configured)
1	TRS	QCL-TypeA	TRS	QCL-TypeD
2	TRS	QCL-TypeA	CSI-RS (BM)	QCL-TypeD
3**	CSI-RS (CSI)	QCL-TypeA	CSI-RS (CSI)	QCL-TypeD
4*	SS/PBCH Block*	QCL-TypeA	SS/PBCH Block*	QCL-TypeD

* Before TRS configured. Note: this is not a TCI state, rather a valid QCL assumption
** Note: QCL parameters may not be derived directly from CSI-RS (CSI)

R1-1810101	Maintenance for reference signals and QCL	Huawei, HiSilicon	
R1-1810215	Maintenance for Reference signals and QCL	ZTE	
R1-1810254	Text proposals on reference signals	LG Electronics	
R1-1810367	Maintenance for reference signals and QCL	vivo	
R1-1810428	Maintenance for reference signals and QCL	MediaTek Inc.	
R1-1810519	Remaining issues on reference signals for Rel-15	CATT	
R1-1810565	Maintenance on UL reference signals	NEC Corporation	
R1-1811647	Remaining issues for reference signals and QCL	Intel Corporation	(Revision of R1-1810752)
R1-1810840	Remaining issues on reference signals	Samsung	
R1-1810963	Maintenance for RS and QCL	Guangdong OPPO Mobile Telecom.	
R1-1811000	Remaining issues on reference signals	Spreadtrum Communications	
R1-1811030	Discussion on remaining issues on SRS	CMCC	
R1-1811171	Maintenance for RS and QCL	Ericsson	
R1-1811232	Maintenance for RS	Qualcomm Incorporated	
R1-1811291	Maintenance for SRS	Motorola Mobility, Lenovo	
R1-1811405	Maintenance for reference signals and QCL	Nokia, Nokia Shanghai Bell	
R1-1811484	Views on SRS for NR MIMO	Mitsubishi Electric Co.	
R1-1811890	[Draft] LS on UL DMRS sequence hopping	ZTE	
R1-1812032	Draft TP for PTRS for non-slot transmission	vivo	

7.1.2.5 Other

Including handling simultaneous transmission and reception of different channels and reference signals

R1-1812004 Summary of simultaneous Rx and Tx Intel

Agreement
Text proposal for TS38.214:
----------Start of TP ----------
If the offset between the reception of the DL DCI and the corresponding PDSCH is less than the threshold *Threshold-Sched-Offset*, the UE may assume that the DM-RS ports of PDSCH of a serving cell are quasi co-located with the RS(s) in the TCI state with respect to the QCL parameter(s) used for PDCCH quasi co-location indication of the lowest *CORESET-ID* in the latest slot in which one or more CORESETs within the active BWP of the serving cell are configured for the UE. In this case, if the QCL type D of the PDSCH DMRS is different from those of the PDCCH DMRS with which they overlap in at least one symbol, the UE is expected to prioritize the reception of PDCCH associated with that CORESET. This also applies to the intra-band CA case (PDSCH and CORESET are in different CCs).
----------End of TP ----------
Editor can further make refinements for clarification

R1-1810102	Remaining issues on simultaneous reception or transmission over CC/BWP(s)	Huawei, HiSilicon
R1-1810216	Simultaneous transmission and reception of channels/signals	ZTE
R1-1810255	Remaining issues on simultaneous Tx/Rx	LG Electronics
R1-1810368	Maintenance for simultaneous reception of DL/UL physical channels and RSs	vivo
R1-1810753	Simultaneous Tx and Rx of channels and RS	Intel Corporation
R1-1810841	Simultaneous transmission and reception of physical channels and reference signals	Samsung

R1-1811233 Details on simultaneous reception of PHY channels and RS in FR2 Qualcomm Incorporated
R1-1811353 Simultaneous Tx/Rx for physical channels NTT DOCOMO, INC.
R1-1811549 On simultaneous transmission and reception in FR2 Ericsson

7.1.3 Maintenance for Scheduling/HARQ aspects

7.1.3.1 Maintenance for physical downlink control channel

Including PDCCH structure, search space, GC-PDCCH, DCI contents and formats, etc.
Please use separate sections for each of the respective sub-topic to facilitate reviews and summary.

R1-1811820 **Offline summary for PDCCH structure and search space NTT DOCOMO**
Discussion: Mr Chair recalled that his priority is to get stable NR specs by Dec18 - 17 remaining issues i s definitley out of the scope - requested focusing on non-controversial and essential enhancements
Decision: The document is noted.

Agreements:

- For cross-carrier scheduling with the same numerology between scheduling cell and scheduled cell(s) but different numerologies between scheduling cell(s), and the number of DL-CCs is up to 4 or with up to T DL-CCs where the UE reports BD capability of y >= T, the limit of BDs/CCEs per scheduling CC per slot is (the number of CCs schedulable by the scheduling CC) x (the limit of BDs/CCEs for non-CA case)
- For cross-carrier scheduling with the same numerology between scheduling cell and scheduled cell(s) but different numerologies between scheduling cell(s), and the number of DL-CCs is more than 4 and with up to T DL-CCs where the UE reports BD capability of y < T, the limit of BDs/CCEs per numerology per slot is Floor{Xi / (X0 + X1 + X2 + X3) * (Mi or Ni) * y)}, where;
  - Xi (i=0, 1, 2, 3) denotes the number of DL-CCs per numerology i
  - Mi and Ni denote the number of BDs and CCEs per slot specified for non-CA case for numerology i, respectively
- Discuss further offline per CC limit for the above two cases

Friday

- per CC limit for the above two cases should be revisited in RAN1#95
  - Take into account the number of search spaces (i.e., up to 10 per BWP in RAN1 spec)
    - Especially for cross-carrier scheduling.

Check further offline regarding TP of 3.4 of R1-1811820

Tuesday
R1-1811926 **Offline summary for PDCCH structure and search space part 2 NTT DOCOMO**
Decision: The document is noted.

Conclusion:

- It is re-confirmed that a UE is not expected to decode for a DCI format with CRC scrambled by SI/P/RA-RNTI in CSS Type-3
  - Note: the above is already captured in RAN1 specs.
  - Send an LS to RAN2 to update RRC spec by removing the relevant text regarding PDCCH monitoring (to provide the actual TP to 38.331)

R1-1811925 **[DRAFT] LS on field description for SearchSpace NTT DOCOMO**
Decision: The draft LS is endorsed (by removing the yellow highlight), and final LS is approved in R1-1811969.

Agreement:

- For the CORESET#0 configured by MIB or by SIB1, only NCP is used.
  - Editor will capture the agreement.

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Agreements:

- Note: Previously it was agreed that for IDLE/INACTIVE state, if Type-0/0A/2-CSS is SS#0, the UE monitors the common search space on the PDCCH monitoring occasions determined based on the association between an SSB index and PDCCH monitoring occasions according to Section 13 of TS38.213 (which is called default association).
- Note: Previously it was agreed that IDLE/INACTIVE state, if Type-0A/2-CSS is other than SS#0, the UE monitors the common search space on the PDCCH monitoring occasions determined based on the association between an actually transmitted SSB and PDCCH monitoring occasions according to Section 7.1 of TS38.304 and Section 5 of TS38.331 (which is called non-default association).
- For CONNECTED state, if Type0/0A/2-CSS is SS#0, the UE monitors the common search space on the PDCCH monitoring occasions determined based on the association between an SSB index and PDCCH monitoring occasions according to Section 13 of TS38.213 (which is called default association).
    - To capture in 38.213
- For CONNECTED state, if Type0/0A/2-CSS is other than SS#0,
    - Regardless of whether TCI-state is configured/indicated or not, the UE monitors the common search space based on the PDCCH monitoring occasions according to the configuration of *SearchSpace* RRC IE.
        - To capture in 38.213

Proposals:

- To adopt the following TP to 10.1 of 38.213:
  For a BWP, i~~I~~f a UE is not provided higher layer parameter *searchSpace-SIB1* for Type0-PDCCH common search space set by *PDCCH-ConfigCommon*, the UE does not monitor the PDCCH candidate for a Type0-PDCCH common search space on the BWP~~determines a control resource set and PDCCH monitoring occasions for Type0-PDCCH common search space set as described in Subclause 13~~.

~

  For a BWP, i~~I~~f the UE is not provided higher layer parameter *searchSpaceOtherSystemInformation* for Type0A-PDCCH common search space set, the UE does not monitor the PDCCH candidate for a Type0A-PDCCH common search space on the BWP~~the Type0A-PDCCH common search space set is same as the Type0-PDCCH common search space set~~.

~

  For a BWP, i~~I~~f a UE is not provided higher layer parameter *pagingSearchSpace* for Type2-PDCCH common search space set, the UE does not monitor the PDCCH candidate for a Type2-PDCCH common search space on the BWP~~the Type2-PDCCH common search space set is same as the Type0-PDCCH common search space set~~.

Proposals:

- For a UE monitors multiple search spaces associated with different CORESETs, for single cell operation or for operation with carrier aggregation in a same frequency band,
    - If the monitoring occasions of the search space are overlapped in time and the search spaces are associated with different CORESETs having different QCL-TypeD properties, the UE monitors search spaces associated with a CORESET containing a CSS in the active DL BWP in the serving cell with the lowest serving cell index.
        - If two or more CORESETs are respectively containing CSS, the UE selects the CORESET containing the search space having the lowest ID in the monitoring occasions in the active DL BWP in the serving cell with the lowest serving cell index.
            - Any overlapped search space(s) associated with CORESET(s) having the same QCL-TypeD are monitored.
        - If none of the CORESETs contains CSS, the UE selects the CORESET containing the search space having the lowest ID in the monitoring occasions in the active DL BWP in the serving cell with the lowest serving cell index.
            - Any overlapped search space(s) associated with CORESET(s) having the same QCL-TypeD are monitored.
- BFR search space monitoring follows the random access procedure.

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- For single cell operation or for operation with carrier aggregation in a same frequency band, a UE is not expected to monitor a PDCCH for a search space, if ~~the SS/PBCH block or~~ the CSI-RS the UE selects for BFR PRACH association does not have same the QCL-TypeD [6, TS 38.214] with a DM-RS for monitoring the PDCCH for the search space, and if the reception of the PDCCH or PDSCH scrambled by the RNTIs associated for the search space overlapped with PDCCH or PDSCH scrambled by the RNTIs associated with BFR-search space in at least one symbol.

Conclusion:
- No specific prioritization rule for BFR-search space is defined in Rel-15.

R1-1811837 **Feature lead summary for GC-PDCCH carrying SFI** **Qualcomm**
Decision: The document is noted.

Agreements:
To adopt the following TP of 11.1.1. of 38.213:
------ Start of TP -----
- a UE does not expect to detect an SFI-index field value in DCI format 2_0 indicating the set of symbols of the slot as downlink or flexible if the set of symbols of the slot includes symbols corresponding to ~~a first repetition of~~ a first PUSCH transmission or any repetition of the PUSCH activated by an UL Type 2 grant PDCCH as described in Subclause 10.2

----- End of TP ------

Conclusion:
- UE is not expected to receive a slot format combination comprising number of slot format value(s) not divisable by $2^{(\mu_{SFI,DL}-\mu_{SFI,UL})}+1$ or $2^{(\mu_{SFI,UL}-\mu_{SFI,DL})}+1$
  - Check further offline whether or not to reflect the above in the specs explicitly or to be covered by something more general

Proposal:
- The UE is not expected to monitor DCI format 2_0 on a cell with occasions not falling on the slot boundary of any configured BWP for the UE

Agreements:
- Send an LS to RAN2 asking them to capture in 38.331 the previous RAN1 agreements – draft LS in R1-1811876
  - The configured DCI format 2_0 monitoring occasions are only from the following values: {1, 2, 4, 5, 8, 10, 16, 20} slots
    - Note: there is no RRC signalling impact

R1-1811876 **[Draft] LS on PDCCH monitoring periodicities for DCI format 2_0Intel**
Decision: The draft LS is endorsed and final LS is approved in R1-1811968.

Friday session
R1-1811907 **Feature lead summary for GC-PDCCH carrying SFI** **Qualcomm**
Decision: The document is noted.

Conclusion:
- It is clarified that only the first 3 bits of monitoringSymbolsWithinSlot will apply for DCI format 2_0 configuration
  - If the length of the coreset is 3 symbols, only the first bit of monitoringSymbolsWithinSlot applies
  - If the length of the coreset is 2 symbols, only the first two bits of monitoringSymbolsWithinSlot apply
  - If the length of the coreset is 1 symbols, only the first three bits of monitoringSymbolsWithinSlot apply
- FFS: LTE-NR coexistence case

Conclusion:
- It is clarified that the "duration" configuration for SearchSpace does not apply for DCI format 2_0

To send an LS to RAN2 for the above two conclusions (including previous RAN1 agreements)
R1-1812071 **[Draft] LS on search space configuration for DCI format 2_0 monitoring** **Qualcomm**
Decision: The draft LS is endorsed and final LS is approved in R1-1812075.

Agreements:
- The UE is only expected to be configured to monitor DCI format 2_0 on a cell only in slots where the slots are defined based on the configured DL BWP with the smallest SCS for the UE
  - No spec impact

R1-1811864 **Summary of 7.1.3.1 (DCI contents and formats)** **Ericsson**
Decision: The document is noted.

Wednesday session
R1-1811957 **Summary of 7.1.3.1 (DCI contents and formats)** **Ericsson**
Decision: The document is noted.

Agreements:
- If DCI format 0-1 (format 1-1) have the same size as 0-0/1-0, add one bit of padding to DCI format 0-1 (format 1-1) to ensure different DCI sizes. The corresponding TP to 38.212 is as below:
  - Note: DCI size budget is counted after adding the padding bit.

----- Start of TP -----
7.3.1.1.2 Format 0_1
[…text omitted…]
For a UE configured with SUL in a cell, if PUSCH is configured to be transmitted on both the SUL and the non-SUL of the cell and if the number of information bits in format 0_1 for the SUL is not equal to the number of information bits in format 0_1 for the non-SUL, zeros shall be appended to smaller format 0_1 until the payload size equals that of the larger format 0_1.
If the payload size of DCI format 0_1 equals that of DCI formats 0_0/1_0 in a UE-specific search space, a zero shall be appended to DCI format 0_1.
[…text omitted…]
7.3.1.2.2 Format 1_1
[…text omitted…]
If DCI formats 1_1 are monitored in multiple search spaces associated with multiple CORESETs in a BWP, zeros shall be appended until the payload size of the DCI formats 1_1 monitored in the multiple search spaces equal to the maximum payload size of the DCI format 1_1 monitored in the multiple search spaces.
If the payload size of DCI format 1_1 equals that of DCI formats 0_0/1_0 in a UE-specific search space, a zero shall be appended to DCI format 1_1.
----- End of TP -----

Agreement:
- TCI state ID field for in the "TCI State Indication for UE-specific PDCCH MAC CE" indicates information of QCL-source for the CORESET#0 when the CORESET-ID field in the MAC CE indicates ID=0

Agreements:
- To delete "for DCI formats with different size and/or different corresponding DM-RS scrambling sequences" from TS38.213 Section 10.1.
  - Editor to take care of it
  - Note: to avoid duplication in specs

Agreements:

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- To adopt the following TP to 10.1 of 38.213:

----- Start of TP -----

a UE-specific search space set configured by *SearchSpace* in *PDCCH-Config* with *searchSpaceType* = *ue-Specific* for DCI formats with CRC scrambled by C-RNTI, MCS-C-RNTI, SP-CSI-RNTI, or CS-RNTI(s).

----- End of TP -----

Agreements:

- To adopt the following TP (TS38.213 Section 10.1)

----- Start of TP -----

…..

For each control resource set in a DL BWP of a serving cell, a respective higher layer parameter *frequencyDomainResources* provides a bitmap. The bits of the bitmap have a one-to-one mapping with non-overlapping groups of 6 consecutive PRBs, in ascending order of the PRB index in the DL BWP bandwidth of $N_{\text{RB}}^{\text{BWP}}$ PRBs with starting CRB position $N_{\text{BWP}}^{\text{start}}$ where the first common RB of the first group of 6 PRBs mapped to the MSB of the bitmap has CRB index $6 \cdot \lceil N_{\text{BWP}}^{\text{start}} / 6 \rceil$. A group of 6 PRBs is allocated to a control resource set if a corresponding bit value in the bitmap is 1; else, if a corresponding bit value in the bitmap is 0, the group of 6 PRBs is not allocated to the control resource set.

----- End of TP -----

Proposals:

- To adopt the following TP to 7.3.2.2 of 38.211:

where $R \in \{2,3,6\}$ is given by the higher-layer parameter *interleaverSize* and where

- $n_{\text{shift}} = N_{\text{ID}}^{\text{cell}}$ for a PDCCH transmitted in a CORESET configured by *controlResourceSetZero* in the PBCH or *PDCCH-ConfigCommon* ~~SIB1~~, and
- otherwise $n_{\text{shift}} \in \{0,1,...,274\}$ is given by the higher-layer parameter *shiftIndex*.

Agreements:

- To adopt the following TP to Section 10 of TS 38.213:

----- Start of TP -----

- a Type0-PDCCH common search space set configured by *pdcch-ConfigSIB1* in *MasterInformationBlock* or by *searchSpaceSIB1* in *PDCCH-ConfigCommon* or by *searchSpaceZero* in *PDCCH-ConfigCommon* for a DCI format with CRC scrambled by a SI-RNTI on the primary cell of the MCG;
- a Type0A-PDCCH common search space set configured by *searchSpaceOtherSystemInformation* in *PDCCH-ConfigCommon* for a DCI format with CRC scrambled by a SI-RNTI on the primary cell of the MCG;

[…]

- a Type2-PDCCH common search space set configured by *pagingSearchSpace* in *PDCCH-ConfigCommon* for a DCI format with CRC scrambled by a P-RNTI on the primary cell of the MCG;

----- End of TP -----

Conclusion:

- In RAN1 specs, to clarify how the UE determines Type0-CSS in the case of handover, in addition to the initial-access
  - Edtior to take care of it

Proposal:

- If consistent control information of DCI format is not detected in a PDCCH, the DCI in the PDCCH is discarded.

Friday: Email discussion regarding above proposal till Oct 26th – Suzuki (Panasonic)

From Thursday offline

Agreements:

- For a UE monitors multiple search spaces associated with different CORESETs, for single cell operation or for operation with carrier aggregation in a same frequency band,

- If the monitoring occasions of the search space are overlapped in time and the search spaces are associated with different CORESETs having different QCL-TypeD properties, the UE monitors search spaces associated with a given CORESET containing a CSS in the active DL BWP in the serving cell with the lowest serving cell index and any other CORESET associated with the same QCL-TypeD properties as the given CORESET
  - If two or more CORESETs are respectively containing CSS, the UE selects the CORESET containing the search space having the lowest ID in the monitoring occasions in the active DL BWP in the serving cell with the lowest serving cell index.
    - Any overlapped search space(s) associated with CORESET(s) having the same QCL-TypeD are monitored.
  - If none of the CORESETs contains CSS, the UE selects the CORESET containing the search space having the lowest ID in the monitoring occasions in the active DL BWP in the serving cell with the lowest serving cell index.
    - Any overlapped search space(s) associated with CORESET(s) having the same QCL-TypeD are monitored.
  - For this purpose, QCL TypeD with respect to a SSB and QCL TypeD with respect to a CSI-RS (or TRS) are considered as different QCL TypeD, even if the CSI-RS is sourced from the same SSB.
- BD/CCE counting should be based on before search space dropping due to QCL TypeD conflicts.
- The number of configured active TCI states of CORESET should be upper bounded by the UE capability without considering the dropping due to QCL TypeD conflicts.
- Non-selected search spaces due to QCL TypeD conflicts is considered to be dropped, not punctured.

Conclusion:

- It is understood that UE expects to have C-RNTI when the UE is configured with CS-RNTI and/or MCS-C-RNTI.
  - No RAN1 spec impact is intended

Agreements:

Adopt the following TP in TS38.213 Section 10.1:

----- Start of TP -----

When a UE is performing RRC connection establishment and UE is provided with Type 1 common search space set, after a UE receives the C-RNTI, the UE shall monitor PDCCH candidates for DCI format 0_0 and DCI format 1_0 with the C-RNTI in the Type 1 common search space set until at least UE starts monitoring PDCCH candidates for DCI format 0_0 and DCI format 1_0 with the C-RNTI in at least one of a user-specific search space set or a Type 3 common search space set.

----- End of TP -----

Agreement:

- Update the RAN1#94 conclusion as following:

Conclusion:

- ~~At least f~~For self-scheduling and for cross-carrier scheduling with the same numerology for all the DL serving cells and for cross-carrier scheduling with the same numerology between scheduling cell and scheduled cell(s) but different numerologies between scheduling cell(s), total number of CCEs or BDs corresponding to the remaining PDCCH candidates after PDCCH candidates are dropped based on the non-CA limit for the PCell (PSCell) and the configured PDCCH candidates for SCells is guaranteed by network to be no more than the CA limit.

Agreement:

- A UE configured with *precoderGranularity* = *allContiguousRBs* for a CORESET does not expect that any RE of the CORESET overlaps with LTE-CRS or SSB

Agreements:

- To adopt the following TP to 10.1 of 38.213:

----- Start of TP -----

For a BWP, i~~I~~f a UE is not provided higher layer parameter *searchSpace-SIB1* for Type0-PDCCH common search space set by *PDCCH-ConfigCommon*, the UE does not monitor the PDCCH candidate for a Type0-PDCCH common search

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space on the BWP~~determines a control resource set and PDCCH monitoring occasions for Type0-PDCCH common search space set as described in Subclause 13~~.

~

For a BWP, i~~I~~f the UE is not provided higher layer parameter *searchSpaceOtherSystemInformation* for Type0A-PDCCH common search space set, the UE does not monitor the PDCCH candidate for a Type0A-PDCCH common search space on the BWP~~the Type0A-PDCCH common search space set is same as the Type0-PDCCH common search space set~~.

~

For a BWP, i~~I~~f a UE is not provided higher layer parameter *pagingSearchSpace* for Type2-PDCCH common search space set, the UE does not monitor the PDCCH candidate for a Type2-PDCCH common search space on the BWP~~the Type2-PDCCH common search space set is same as the Type0-PDCCH common search space set~~.

----- End of TP -----

Agreements:

- To adopt the following TP to 7.3.2.2 of 38.211:

----- Start of TP -----

where $R \in \{2,3,6\}$ is given by the higher-layer parameter *interleaverSize* and where

- $n_{\text{shift}} = N_{\text{ID}}^{\text{cell}}$ for a PDCCH transmitted in a CORESET configured by *controlResourceSetZero* in the PBCH or *PDCCH-ConfigCommon* ~~SIB1~~, and
- otherwise $n_{\text{shift}} \in \{0,1,..,274\}$ is given by the higher-layer parameter *shiftIndex*.

----- End of TP -----

Friday session

R1-1812029 Offline summary for PDCCH structure and search space part 4 NTT DOCOMO

Conclusion:

- It is understood that the BD/CCE limit is based on the current active DL BWP
  - Editor to update the spec if necessary

Companies are encouraged to check current RAN1 specification w.r.t. Rel-15 NR-NR DC (e.g., PDCCH blind decode limit, etc) – revisit in RAN1#95

Agreements:

- To adopt the following Text proposal in TS 38.213 Section 10.1:

----- Start of TP ------

After RRC connection is established, i~~I~~f a UE is provided one or more search space sets by corresponding one or more higher layer parameters *searchSpaceZero, searchSpaceSIB1*, *searchSpaceOtherSystemInformation*, *pagingSearchSpace*, *ra-SearchSpace*, and the UE is provided with a C-RNTI or a CS-RNTI, the UE monitors PDCCH candidates for DCI format 0_0 and DCI format 1_0 with the C-RNTI or the CS-RNTI in the one or more search space sets in a slot where at least one DCI format 0_0 or 1_0 with CRC scrambled by SI-RNTI, RA-RNTI or P-RNTI is monitored.

----- End of TP -----

Proposals:

Option 1: When the CORESET ID field is 0, the TCI state ID field in the MAC-CE indicates a TCI-state in the *PDSCH-Config*.

- For CORESET#0,
  - A UE follows the indicated TCI state or the QCL-D of the SSB which is selected through the random access procedure, whichever comes the recent.
  - A UE is expected to be configured only with TCI state of CSI-RS/TRS for which SSB source exists.
  - It is up to NW whether to indicate the TCI-state for the CORESET#0 by the MAC-CE.
    - If the TCI-state for the CORESET#0 is not indicated by the MAC-CE, the UE can receive any PDCCH with any RNTI on the CORESET#0
  - Note: In RRC connected mode, for CORESET other than #0, MAC-CE indicates a TCI-state in the *PDSCH-Config* RRC IE with the restriction of the TCI-state indexes configured for the *CORESET* RRC IE
  - Note: it is gNB responsibility whether/how to ensure the performance of broadcast PDCCH whose QCL-TypeD is TRS
  - Note: The active TCI state for the CORESET#0 is counted as 1 in the UE capability signalling

Supported by: Ericsson, Nokia, LG, vivo, Huawei, CATT, Intel, Panasonic, ZTE, DOCOMO, CMCC

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Objected by: Qualcomm, Samsung, MTK,

Option 2: When the CORESET ID field is 0, the TCI state ID field in the MAC-CE indicates an SSB index. A UE follows the indicated SSB or an SSB which is selected through the random access procedure, whichever comes the recent. When the ra-SearchSpace is associated to the CORESET#0, CSI-RS based RA is not supported, as the consequence of this option. BFD of CORESET#0 is not required.
It is up to NW whether to use the same beam as for SSB or narrower beam to transmit a PDCCH on the CORESET#0.
If an indicated SSB has an associated TRS/CSI-RS, it is up to UE whether to use the associated TRS/CSI-RS as the QCL source for the CORESET#0.
Supported by: Qualcomm, Samsung, CMCC, NTT DOCOMO, MediaTek
Objected by: Nokia, LGE, Ericsson, ZTE, Huawei
Email discussion between Option 1 and 2 till Oct 26th – Fred (NTT DOCOMO)

R1-1812011 **Summary of 7.1.3.1 (DCI contents and formats)** **Ericsson**
Decision: the document is noted.

Agreements: (regarding the issue of section 2.2 in R1-1812011)
- To adopt the following TP to 38.213, 10.1

----- Start of TP -----
When two PDCCH candidates in CORESET#0 satisfy all the following conditions, the UE only decodes the DCI associated with the PDCCH candidate in the common search space. The UE does not decode the DCI associated with the PDCCH candidate in the UE-specific search space.
- DCI 0_0 and DCI 1_0 are configured to be monitored in both the common search space and the UE-specific search space and they have the same size
- Both the common search space and the UE-specific search space are configured to be monitored by the UE in CORESET#0
- PDCCH candidate of common search space and PDCCH candidate of UE-specific search space are transmitted in the same set of CCEs
- The two PDCCH candidates have identical scrambling.
- The two PDCCH candidates correspond to same RNTI type C-RNTI, MCS-C-RNTI, or CS-RNTI

---- End of TP -----

R1-1812066 **Updated summary of 7.1.3.1 (DCI contents and formats)** **Ericsson**
Issue 2.6 (DCI size matching) of R1-1812066 - to be revisited in RAN1#95

R1-1812059 On DCI size matching Ericsson

R1-1810111 Remaining issues for physical downlink control channel Huawei, HiSilicon
R1-1810256 Remaining issues on downlink control channel LG Electronics
R1-1810339 Remaining issues on NR physical downlink control channel ZTE
R1-1810369 Remaining issues on physical downlink control channel vivo
R1-1810421 Maintenance for physical downlink control channel MediaTek Inc.
R1-1810520 Open issues and corrections for NR PDCCH CATT
R1-1810619 On maintenance for DL control Nokia, Nokia Shanghai Bell
R1-1810754 Remaining issues on NR PDCCH Intel Corporation
R1-1811234 Maintenance for physical downlink control channel Qualcomm Incorporated
R1-1811373 Maintenance for physical downlink control channel NTT DOCOMO, INC.
R1-1811397 Maintenance for physical downlink control channel Panasonic Corporation
R1-1811423 Remaining issues on downlink control channel ASUSTEK COMPUTER (SHANGHAI)
R1-1811488 Maintenance issues of physical downlink control channel Ericsson
R1-1811640 Remaining Issues on PDCCH and Search Space Design Samsung (rev of R1-1810842)

7.1.3.2 Maintenance for physical uplink control channel

Including short/long PUCCH, UCI multiplexing, resource allocation, etc.
Please use separate sections for each of the respective sub-topic to facilitate reviews and summary.

R1-1811878 **Summary of UCI multiplexing on PUSCH** **Qualcomm**
Decision: The document is noted.

Agreement:
- If a UE would transmit multiple PUCCHs in a slot that include HARQ-ACK information and CSI report(s) for a PUCCH resource, UE is expected to be provided with the same "simultaneousHARQ-ACK-CSI" configuration for PUCCH format 2, 3, and 4.

Agreement:
- In the pseudo code in 38.213 Section 9.2.5 to decide PUCCH resource set and PUCCH resource(s) in UCI multiplexing procedure, UE assumes rank 1 for CSI-part2.

Conclusion:
- It is clarified at least the following cases are error cases for Rel-15. How to handle the error cases is up to UE implementation.
  - PUCCH overlaps with 1-symbol PUSCH
  - PUCCH overlaps with 2-symbol or 3-symbol PUSCH with frequency hopping enabled
  - HARQ-ACK on PUCCH overlaps with 4-symbol PUSCH with DMRS on the last symbol without frequency hopping enabled for PUSCH
    - FFS the case of frequency hopping enabled (**Friday**: for conclusion in RAN1#95)
  - No spec update is necessary for the above

Tuesday session
R1-1811918 **Review Summary for Al 7.1.3.2 related to long PUCCH** **Huawei, HiSilicon**
Decision: The document is noted.

Proposal: 38.213 and 38.214 editors should align their description to clarify that k refers to the numerology for PUCCH
Conclusion:
- Editors to check 38.213 and 38.214 to make the spec consistent on the description of timing relation between DL and UL with different numerologies and timing relation between DL and DL with different numerologies.

Conclusion:
- UE is not expected to multiplex UCI in set Q into a single PUCCH resource if set Q consists of only negative SR resources.
  - Editor chooses to capture that in clauses 9.2.5 or 9.2.5.1 in 38.213

Proposals:
When multi-slot PUCCH with repetition overlap with single-slot PUCCH (after resolving multiplexing among two or more single-slot PUCCH resources, if applicable) within the same PUCCH group
- The UE is not expected to have the multi-slot PUCCH and single-slot PUCCH overlapping with the same starting slot and carrying UCI with the same priority
- For UCI with the same priority, the PUCCH that starts in an earlier slot is transmitted.
- For UCI with different priority, the UCI PUCCH with higher priority is transmitted in overlapping slot if timeline requirement is met.
- Priority is defined as follows: HARQ-ACK > SR > CSI with higher priority >CSI with lower priority
- In overlapping slot, the de-prioritized UCI is dropped without any postponing of the transmission
- There is no impact on the transmission of the de-prioritized UCI in the remaining non-overlapping slots

R1-1811917 **Summary of UCI multiplexing on PUSCH** **Qualcomm**
Decision: The document is noted.

Conclusion:

- For the previous agreements regarding "for the determination of the number of PRBs in Subclauses 9.2.5.1 and 9.2.5.2, O_{CRC}=11 if the number of respective UCI bits is larger than or equal to 360; otherwise, O_{CRC} is the number of CRC bits calculated based on the number of respective UCI bits as described in TS 38.212", it also applies to 9.2.3.
  - Editor to update accordingly

Wednesday session

R1-1811970 Review summary for related to long PUCCH Huawei, HiSilicon

Decision: The document is noted.

Agreements:

If two or more PUCCH resources overlap with each other in a slot within the same PUCCH group, and at least one of them is multi-slot PUCCH(s)

- The UE is not expected to have the multi-slot PUCCH and single-slot PUCCH overlapping with the same starting slot and carrying UCI with the same priority
- For UCI with the same priority, the PUCCH that starts in an earlier slot is transmitted.
- For UCI with different priority, the PUCCH with highest UCI priority is transmitted in overlapping slot if timeline requirement is met.
- Priority is defined as follows: HARQ-ACK > SR > CSI with higher priority >CSI with lower priority
- In overlapping slot, the de-prioritized UCI is dropped without any postponing of the transmission
- There is no impact on the transmission of the de-prioritized UCI in the remaining non-overlapping slots
- UE is not expected to have a group of overlapping single-slot PUCCH(s) that do not overlap with multi-slot PUCCH to be multiplexed into a single-slot PUCCH resource that overlap with multi-slot PUCCH.

Conclusion:

- Editor to check to include timeline check in clause 9.2.6 for overlapping between multi-slot PUCCH(s) in 38.213

R1-1811951 Offline summary on maintenance for R15 NR PUCCH resource allocation OPPO

Decision: The document is noted.

Proposals:

- Adopt the following TP for TS 38.213, 9.2.1:

If a UE does not have dedicated PUCCH resource configuration provided by higher layer parameter *PUCCH-ResourceSet* in *PUCCH-Config*, a PUCCH resource set is provided by higher layer parameter *pucch-ResourceCommon* ~~in *SystemInformationBlockType1*~~ through an index to a row of Table 9.2.1-1 for transmission of HARQ-ACK information on PUCCH in an ~~initial~~ active UL BWP of N_{BWP}^{size} PRBs ~~provided by *SystemInformationBlockType1*~~.

Thursday session

R1-1812009 Maintenance Issues on Short PUCCH and UCI Multiplexing Ericsson

Decision: The document is noted.

Agreements:

Adopt the following TP in section 9.2.5 of 38.213.

----- Start of TP -----

If a UE is configured with multiple PUCCH resources in a slot to transmit only semi-persistent or periodic CSI reports

- if the UE is not provided higher layer parameter *multi-CSI-PUCCH-ResourceList*, or if none of the CSI PUCCH resources overlap in the slot, the UE determines a first resource corresponding to a CSI report with the highest priority [6, TS38.214]

----- End of TP -----

Agreements:

- Adopt the following changes in Subclause 9 and 9.3 of TS 38.213.

----- Start of TP -----

9 UE procedure for reporting control information

<unchanged parts omitted>

If a UE would transmit on a serving cell a PUSCH without UL-SCH that overlaps with a PUCCH transmission on the serving cell that includes positive SR information, the UE does not transmit the PUSCH.

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If a UE would transmit CSI reports on the physical channels that overlap, the UE applies the priority rules for CSI reports in Subclause 5.2.5 in TS 38 .214.

If a UE multiplexes aperiodic CSI or semi-persistent CSI in a PUSCH and the UE would multiplex UCI that includes HARQ-ACK information in a PUCCH that overlaps with the PUSCH and the timing conditions for overlapping PUCCHs and PUSCHs in Subclause 9.2.5 are fulfilled, the UE multiplexes only the HARQ-ACK information in the PUSCH and does not transmit the PUCCH.

If a UE would multiplex UCI in a PUCCH transmission that overlaps with a PUSCH transmission, and the PUSCH and PUCCH transmissions fulfill the conditions in Subclause 9.2.5 for UCI multiplexing, the UE multiplexes the UCI in the PUSCH transmission and does not transmit the PUCCH.

~~If a UE multiplexes aperiodic CSI or semi-persistent CSI in a PUSCH and the UE would multiplex UCI that includes HARQ-ACK information in a PUCCH that overlaps with the PUSCH and the timing conditions for overlapping PUCCHs and PUSCHs in Subclause 9.2.5 are fulfilled, the UE multiplexes only the HARQ-ACK information in the PUSCH and does not transmit the PUCCH.~~

<unchanged parts omitted>

9.3 UCI reporting in physical uplink shared channel

~~If a UE would transmit on a serving cell a PUSCH without UL-SCH that overlaps with a PUCCH transmission on the serving cell that includes positive SR information, the UE does not transmit the PUSCH.~~

~~If a UE has a PUSCH transmission that overlaps with a PUCCH transmission that includes HARQ-ACK information and/or semi-persistent/periodic CSI reports and the conditions in Subclause 9.2.5 for multiplexing the UCI in the PUSCH are satisfied, the UE multiplexes the HARQ-ACK information and/or the semi-persistent/periodic CSI reports in the PUSCH.~~

----- End of TP -----

Friday session

R1-1812021 Summary of UCI multiplexing on PUSCHQualcomm

Decision: The document is noted.

Agreements:

- To adopt the following TP for TS38.213 Section 9.2.5.1:

----- Start of TP -----

If a UE would transmit a PUCCH with HARQ-ACK information bits in a resource using PUCCH format 2 or PUCCH format 3 or PUCCH format 4 in a slot, as described in Subclause 9.2.3, $\lceil \log_2(K+1) \rceil$ bits representing a negative or positive SR, in ascending order of the values of *schedulingRequestResourceId*, are appended to the HARQ-ACK information bits and the UE transmits the combined UCI bits in a PUCCH using a resource with PUCCH format 2 or PUCCH format 3 or PUCCH format 4 ~~for transmission of HARQ-ACK information bits~~ where

- the UE determines the PUCCH resource using the PUCCH resource indicator field [5, TS 38.212] in a last DCI format 1_0 or DCI format 1_1, from DCI formats 1_0 or DCI formats 1_1 that have a value of a PDSCH-to-HARQ_feedback timing indicator field indicating a same slot for the PUCCH transmission, from a PUCCH resource set provided to the UE for HARQ-ACK transmission, and
- the UE determines the PUCCH resource set as described in Subclause 9.2.1 and Subclause 9.2.3 for N_{UCI} UCI bits

An all-zero value for the $\lceil \log_2(K+1) \rceil$ bits represents a negative SR value across all K SRs

----- End of TP -----

Sections 2.5/2.8 of R1-1812021 – to revisit in RAN1#95

R1-1812030 Offline summary on maintenance for R15 NR PUCCH resource allocation OPPO

Decision: The document is noted.

Agreements:

- Adopt the following TP for Section 9.2.1 of TS 38.213:

----- Start of TP -----

If a UE does not have dedicated PUCCH resource configuration provided by higher layer parameter *PUCCH-ResourceSet* in *PUCCH-Config*, a PUCCH resource set is provided by higher layer parameter *pucch-ResourceCommon* ~~in *SystemInformationBlockType1*~~ through an index to a row of Table 9.2.1-1 for transmission of HARQ-ACK information on PUCCH in the~~an~~ initial ~~active~~ UL BWP of N_{BWP}^{size} PRBs ~~provided by *SystemInformationBlockType1*~~.

----- End of TP -----

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R1-1810110	Remaining issues for physical uplink control channel	Huawei, HiSilicon
R1-1810257	Correction on PUCCH and UCI multiplexing for NR	LG Electronics
R1-1810340	Remaining issues on NR PUCCH	ZTE
R1-1810370	Remaining issues on PUCCH	vivo
R1-1810481	Corrections on HARQ-ACK transmission	Fujitsu
R1-1810521	Open issues and corrections to UCI feedback	CATT
R1-1810730	Remaining issues on physical uplink control channel	Panasonic Corporation
R1-1810755	Remaining details on NR PUCCH	Intel Corporation
R1-1810843	Remaining Issues on PUCCH	Samsung
R1-1810948	Remaining issues about PUCCH regarding UCI multiplexing	ETRI
R1-1810983	Text proposals for HARQ-ACK timing	Guangdong OPPO Mobile Telecom.
R1-1811022	Remaining issues on PUCCH and UCI multiplexing	Spreadtrum Communications
R1-1811100	Remaining details on NR Physical UL Control Channel	Nokia, Nokia Shanghai Bell
R1-1811143	Remaining issues on PUCCH	Sharp
R1-1811235	Maintenance for PUCCH	Qualcomm Incorporated
R1-1811313	Correction on Type-1 HARQ-ACK codebook determination	ITRI
R1-1811374	Maintenance for physical uplink control channel	NTT DOCOMO, INC.
R1-1811450	Remaining issues on PUCCH	WILUS Inc.
R1-1811489	Maintenance issues of physical uplink control channel	Ericsson
R1-1811803	Summary of RAN1#94bis Tdocs on maintenance for R15 NR PUCCH resource allocation	OPPO

7.1.3.3 Maintenance for DL/UL data scheduling and HARQ procedure

Including DL/UL resource allocation, DL/UL scheduling and HARQ management, CBG, UL data transmission procedure, soft-buffer management, multiplexing data with different tx durations, etc.

Please use separate sections for each of the respective sub-topic to facilitate reviews and summary.

R1-1811891 Summary for Rel-15 DL/UL data scheduling and HARQ procedure Qualcomm

Decision: The document is noted.

Agreement:

- To adopt the following TP to Section 5.1 of 38.214

----- Start of TP -----

A UE shall upon detection of a PDCCH with a configured DCI format 1_0 or 1_1 decode the corresponding PDSCHs as indicated by that DCI. The UE is not expected to receive another PDSCH for a given HARQ process until after the end of the expected transmission of HARQ-ACK for that HARQ process, where the timing is given by Subclause 9.2.3 of [6]. The UE is not expected to receive a PDSCH in slot i, with the corresponding HARQ-ACK assigned to be transmitted in slot j, and another PDSCH in slot after slot i with its corresponding HARQ-ACK assigned to be transmitted in a slot before slot j. For any two HARQ process IDs in a given scheduled cell, if the UE is scheduled to start receiving a first PDSCH starting in symbol j by a PDCCH ~~starting~~ ending in symbol i, the UE is not expected to be scheduled to receive a PDSCH starting earlier than the ending symbol of the first PDSCH ~~j~~ with a PDCCH ~~starting later~~ that does not end earlier than symbol i.

----- End of TP -----

Agreement:

- To adopt the following TP to Section 6.1 of 38.214

----- Start of TP -----

A UE shall upon detection of a PDCCH with a configured DCI format 0_0 or 0_1 transmit the corresponding PUSCH as indicated by that DCI. For any two HARQ process IDs in a given scheduled cell, if the UE is scheduled to start a first PUSCH transmission starting in symbol *j* by a PDCCH ending in symbol *i*, the UE is not expected to be scheduled to transmit a PUSCH starting earlier than ~~symbol *j*~~the ending symbol of the first PUSCH by a PDCCH ~~starting later~~that does not end earlier than symbol *i*.

----- End of TP -----

Agreements:

- RAN1 clarifies operation by adopting the TP to 6.1 of 38.214 below, which corresponds to updating a previous agreement (copied below)

----- Start of TP -----

A UE shall upon detection of a PDCCH with a configured DCI format 0_0 or 0_1 transmit the corresponding PUSCH as indicated by that DCI. For any two HARQ process IDs in a given cell, if the UE is scheduled to start a PUSCH transmission in symbol *j* by a PDCCH in symbol *i*, the UE is not expected to be scheduled to transmit a PUSCH starting earlier than symbol *j* by a PDCCH starting later than symbol *i*. The UE is not expected to be scheduled to transmit another PUSCH by DCI format 0_0 or 0_1 scrambled by C-RNTI or MCS-C-RNTI for a given HARQ process until after the end of the expected transmission of the last PUSCH for that HARQ process.

----- End of TP -----

Copy of previous agreements as in RAN1#88:

For UE configured with K repetitions for a TB transmission **with/without grant**, the UE can continue repetitions (FFS can be different RV versions, FFS different MCS) for the TB until one of the following conditions is met

- If an UL grant is successfully received for a slot/mini-slot for the same TB
  - FFS: How to determine the grant is for the same TB
- FFS: An acknowledgement/indication of successful receiving of that TB from gNB
- The number of repetitions for that TB reaches K
- FFS: Whether it is possible to determine if the grant is for the same TB

Note that this does not assume that UL grant is scheduled based on the slot whereas grant free allocation is based on mini-slot (vice versa)

Agreements

- RAN1 confirms the working assumption regarding DCI buffering and adopts the following TP to 10.1 of 38.213:

----- Start of TP -----

For a ~~serving~~ scheduled cell and at any time, a UE expects to have received at most 16 PDCCHs with DCI formats 1_0 or 1_1 and scrambled with either C-RNTI, CS-RNTI, MCS-RNTI scheduling 16 PDSCH receptions for which the UE has not received any corresponding PDSCH symbol and at most 16 PDCCHs with DCI formats 0_0 or 0_1 and scrambled with either C-RNTI, CS-RNTI, MCS-RNTI scheduling 16 PUSCH transmissions for which the UE has not transmitted any corresponding PUSCH symbol.

----- End of TP -----

Agreement:

- Adopt the following TP (38.213, Section 10.1)

----- Start of TP -----

Additionally, if a UE is configured with $N_{cells}^{DL} > 4$ downlink cells, and the UE indicates through *pdcch-BlindDetectionCA* a capability to monitor PDCCH candidates for $N_{cells}^{cap} \geq 4$ downlink cells, then a UE expects to have received at most X PDCCHs with DCI formats 1_0 or 1_1 and scrambled with either C-RNTI, CS-RNTI, MCS-RNTI scheduling X PDSCH receptions for which the UE has not received any corresponding PDSCH symbol, where $X = 16 \times N_{cells}^{cap}$ over all aggregated downlink cells.

Additionally, if a UE is configured with $N_{cells}^{UL} > 4$ uplink cells, and the UE indicates through *pdcch-BlindDetectionCA* a capability to monitor PDCCH candidates for $N_{cells}^{cap} \geq 4$ downlink cells, then a UE expects to have received at most X PDCCHs with DCI formats 0_0 or 0_1 and scrambled with either C-RNTI, CS-RNTI, MCS-RNTI scheduling X PUSCH transmissions for which the UE has not transmitted any corresponding PUSCH symbol, where $X = 16 \times N_{cells}^{cap}$ over all aggregated uplink cells.

----- End of TP -----

Proposals:

- Introduce the following additional description to the following existing UE features:
  - FG #3-5b:
    - *For type 1 CSS with dedicated RRC configuration, type 3 CSS, and UE-SS, monitoring occasion can be any OFDM symbol(s) of a slot for Case 2 with a span gap*
    - *For the set of monitoring occasions which have the same starting symbol,*
      - *Processing one unicast DCI scheduling DL and one unicast DCI scheduling UL per scheduled CC across this set of monitoring occasions for FDD*
      - *Processing one unicast DCI scheduling DL and two unicast DCI scheduling UL per scheduled CC across this set of monitoring occasions for TDD*
      - *[To confirm on Wed. morning] Processing two unicast DCI scheduling DL and one unicast DCI scheduling UL per scheduled CC across this set of monitoring occasions for TDD*

Agreements:

- To adopt the following TP to 38.211, 4.3.2.

----- Start of TP -----

A UE not capable of full-duplex communication among a group of cells is not expected to transmit in the uplink in one cell within the group of cells earlier than $N_{Rx\text{-}Tx}T_c$ after the end of the last received downlink symbol in the same or a different cell within the group of cells where $N_{Rx\text{-}Tx}$ is given by Table 4.3.2-3.

A UE not capable of full-duplex communication among a group of cells is not expected to receive in the downlink in one cell within the group of cells earlier than $N_{Tx\text{-}Rx}T_c$ after the end of the last transmitted uplink symbol in the same or a different cell within the group of cells where $N_{Tx\text{-}Rx}$ is given by Table 4.3.2-3.

----- End of TP -----

Proposals:

- To adopt the following TP to 5.1 of 38.214:

A UE shall upon detection of a PDCCH with a configured DCI format 1_0 or 1_1 decode the corresponding PDSCHs as indicated by that DCI. The UE is not expected to receive another PDSCH for a given HARQ process until after the end of the expected transmission of HARQ-ACK for that HARQ process, where the timing is given by Subclause 9.2.3 of [6]. The UE is not expected to receive a PDSCH in slot *i*, with the corresponding HARQ-ACK assigned to be transmitted in slot *j*, and another PDSCH in slot after slot *i* with its corresponding HARQ-ACK assigned to be transmitted in a slot before slot *j*. For any two HARQ process IDs in a given cell, if the UE is scheduled to start receiving a PDSCH in symbol *j* by a PDCCH starting in symbol *i*, the UE is not expected to be scheduled to receive a PDSCH starting earlier than symbol *j* with a PDCCH starting later than symbol *i*. For any PDSCH corresponding to SI-RNTI, the UE does not expect the same transport block for the same SS/PBCH block to be repeated with a starting symbol less than 14 symbols after the last symbol of that PDSCH.

R1-1811821 **Offline summary for UL data transmission procedure** **NTT DOCOMO**
Decision: The document is noted. Continue offline regarding TP in Section 2.1.2 of R1-1811821.

Wednesday session
R1-1811932 **Offline summary for UL data transmission procedure** **NTT DOCOMO**
Decision: The document is noted.

Agreement: Adopt the TPs in Section 2.1.2 of R1-1811932 for subclause 8.2 and 8.3 of TS38.213.

Agreement: Align the description between the TS 38.213 and TS 38.214 for the case of RAR and Msg3 PUSCH having different numerologies.

- Editors to take care of it.

Agreement: Adopt following TP for 38.213 subclause 10.2.

Table 10.2-2: Special fields for DL SPS and UL grant Type 2 scheduling release PDCCH validation

	DCI format 0_0	DCI format 1_0
HARQ process number	set to all '0's	set to all '0's
Redundancy version	set to '00'	set to '00'
Modulation and coding scheme	set to all '1's	set to all '1's
~~Resource block assignment~~ Frequency domain resource assignment	set to all '1's	set to all '1's

Agreement: Adopt following TPs for TS38.214 Subclause 6.1.2.1

----- Start of TP -----

~~When the~~ If a UE is configured with the higher layer parameter *pusch-AggregationFactor* ~~> 1~~, for a PUSCH transmission scheduled by a DCI format 0_0 or 0_1 with CRC scrambled by C-RNTI, the same symbol allocation is applied across the *pusch-AggregationFactor* ~~*aggregationFactorUL*~~ consecutive slots and the PUSCH is limited to a single transmission layer. The UE shall repeat the TB across the *pusch-AggregationFactor* ~~*aggregationFactorUL*~~ consecutive slots applying the same symbol allocation in each slot. The redundancy version to be applied on the nth transmission occasion of the TB is determined according to table 6.1.2.1-2.

Table 6.1.2.1-2: Redundancy version when *pusch-AggregationFactor* is present ~~*aggregationFactorUL* > 1~~

rv_{id} indicated by the DCI scheduling the PUSCH	rv_{id} to be applied to n^{th} transmission occasion			
	n mod 4 = 0	n mod 4 = 1	n mod 4 = 2	n mod 4 = 3
0	0	2	3	1
2	2	3	1	0
3	3	1	0	2
1	1	0	2	3

[…]
----- End of TP -----

Agreements:Adopt following TPs for TS38.214 Subclause 6.1.2.3.1.
----- Start of TP -----
The higher layer configured parameters *repK* and *repK-RV* define the *K* repetitions to be applied to the transmitted transport block, and the redundancy version pattern to be applied to the repetitions. If the parameter *repK* is not provided in the *ConfiguredGrantConfig*, the redundancy version for uplink transmissions with a configured grant shall be set to 0. Otherwise, ~~F~~for the nth transmission occasion among *K* repetitions, n=1, 2, …, *K*, it is associated with $(mod(n-1,4)+1)^{th}$ value in the configured RV sequence. The initial transmission of a transport block may start at …
----- End of TP -----

Agreements:
- For configured grant, the required parameters which are not defined in the *ConfiguredGrantConfig* but defined in *PUSCH-Config* shall follow the parameters in the *PUSCH-Config*
  - Prepare a TP – Lihui (DCM)

Thursday - from offline summary in R1-1812018.
Agreements: To adopt the following TP to 6.1 of 38.214
----- Start of TP -----
PUSCH transmission(s) can be dynamically scheduled by an UL grant in a DCI, or semi-statically configured to operate ~~according to Subclause 6.1.2.3 and according to Subclause 5.8.2 of [10, TS 38.321]~~ upon the reception of higher layer parameter of *configuredGrantConfig* including *rrc-ConfiguredUplinkGrant* without the detection of an UL grant in a DCI, or *configurdGrantConfig* not including *rrc-ConfiguredUplinkGrant* semi-persistently scheduled by an UL grant in a DCI after the reception of higher layer parameter *configurdGrantConfig* not including *rrc-ConfiguredUplinkGrant*.
For the PUSCH transmission corresponding to the configured grant triggered, the parameters applied for the transmission are according to Subclause 6.1.2.3, Subclause 5.8.2 of [10, TS 38.321] and *dataScramblingIdentityPUSCH, txConfig, codebookSubset, maxRank, scaling* of *UCI-OnPUSCH* of *PUSCH-Config*.
----- End of TP -----

Proposal:
- for a retransmission of a TB scheduled by a DCI that was previously transmitted on a configured grant PUSCH, UE follows the parameters defined and/or configured in *ConfiguredGrantConfig IE*.

Proposals:
- Adopt following TP for TS 38.212 Subclause 7.3.1.1.1

If DCI format 0_0 is monitored in common search space and if the number of information bits in the DCI format 0_0 prior to padding is larger than the payload size of the DCI format 1_0 monitored in common search space for scheduling the same serving cell, the bitwidth of the frequency domain resource allocation field in the DCI format 0_0 is reduced by truncating the first few most significant bits such that the size of DCI format 0_0 equals to the size of the DCI format 1_0. If PUSCH hopping with resource allocation type 1 is enabled, and if the number of truncating bit equal or greater than N_{UL_hop}, non-PUSCH hopping is indicated. If PUSCH hopping with resource allocation type 1 is enabled, and if the number of truncating bit is one and *frequencyHoppingOffsetLists* contains four offset values, $N_{UL\_hop}=1$ to indicate the first two offset values among *frequencyHoppingOffsetLists*.

If DCI format 0_0 is monitored in UE specific search space but does not satisfy at least one of the following
- the total number of different DCI sizes configured to monitor is no more than 4 for the cell, and
- the total number of different DCI sizes with C-RNTI configured to monitor is no more than 3 for the cell

and if the number of information bits in the DCI format 0_0 prior to padding is less than the payload size of the DCI format 1_0 monitored in common search space for scheduling the same serving cell, zeros shall be appended to the DCI format 0_0 until the payload size equals that of the DCI format 1_0.

If DCI format 0_0 is monitored in UE specific search space but does not satisfy at least one of the following

- the total number of different DCI sizes configured to monitor is no more than 4 for the cell, and
- the total number of different DCI sizes with C-RNTI configured to monitor is no more than 3 for the cell

and if the number of information bits in the DCI format 0_0 prior to padding is larger than the payload size of the DCI format 1_0 monitored in common search space for scheduling the same serving cell, the bitwidth of the frequency domain resource allocation field in the DCI format 0_0 is reduced by truncating the first few most significant bits such that the size of DCI format 0_0 equals to the size of the DCI format 1_0. If PUSCH hopping with resource allocation type 1 is enabled, and if the number of truncating bit equal or greater than N_{UL_hop}, non-PUSCH hopping is indicated. If PUSCH hopping with resource allocation type 1 is enabled, and if the number of truncating bit is one and *frequencyHoppingOffsetLists* contains four offset values, $N_{UL\_hop}=1$ to indicate the first two offset values among *frequencyHoppingOffsetLists*.

Proposals:

- Adopt following TP for 38.214 subclause 6.1.3.

For Msg3 PUSCH transmission, the UE shall consider the transform precoding either 'enabled' or 'disabled' according to the higher layer configured parameter *msg3-transformPrecoding*.

For PUSCH transmission scheduled with a DCI with CRC scrambled by C-RNTI, MCS-C-RNTI, TC-RNTI, or SP-CSI-RNTI:

- If the DCI with the scheduling grant was received with DCI format 0_0 in a common search space, the UE shall, for this PUSCH transmission, consider the transform precoding either enabled or disabled according to the higher layer configured parameter *msg3-transformPrecoding*.
- If the DCI with the scheduling grant was ~~not~~ received with DCI format 0_0 or 0_1 in a UE-specific search space
  - If the UE is configured with the higher layer parameter *transformPrecoder* in the *PUSCH-Config* [~~*transform precoding scheduled*~~], the UE shall, for this PUSCH transmission, consider the transform precoding either enabled or disabled according to this parameter.
  - If the UE is not configured with the higher layer parameter *transformPrecoder* in the *PUSCH-Config* [~~*transform precoding scheduled*~~], the UE shall, for this PUSCH transmission, consider the transform precoding either enabled or disabled according to the higher layer configured parameter *msg3-transformPrecoding*.

For PUSCH transmission ~~without grant~~ with configured grant using CS-RNTI:

- If the UE is configured with the higher layer parameter *transformPrecoder* in the *ConfiguredGrantConfig* [~~transform precoding TWG~~], the UE shall, for this PUSCH transmission, consider the transform precoding either enabled or disabled according to this parameter.
- If the UE is not configured with the higher layer parameter *transformPrecoder* in the *ConfiguredGrantConfig* [~~transform precoding TWG~~], the UE shall, for this PUSCH transmission, consider the transform precoding either enabled or disabled according to the higher layer configured parameter *msg3-transformPrecoding*.

R1-1811851 Summary on CBG based retransmission LG Electronics
Decision: The document is noted, further revised online in R1-1811960.

Agreement: The TP in R1-1811960 for Section 5.1.7.2 of 38.214 is adopted.

R1-1811958 Summary for Rel-15 DL/UL data scheduling and HARQ procedureQualcomm
Decision: The document is noted.

Agreement: To adopt the TP in Section 3 of R1-1811958 TS38.213, Section 9.2.3

Thursday session
Agreements:

- Adopt the following TP to 5.1 of 38.214:.

----- Start of TP -----

A UE shall upon detection of a PDCCH with a configured DCI format 1_0 or 1_1 decode the corresponding PDSCHs as indicated by that DCI. The UE is not expected to receive another PDSCH for a given HARQ process until after the end of the expected transmission of HARQ-ACK for that HARQ process, where the timing is given by Subclause 9.2.3 of [6]. The UE is not expected to receive a PDSCH in slot *i*, with the corresponding HARQ-ACK assigned to be transmitted in slot *j*, and another PDSCH in slot after slot *i* with its corresponding HARQ-ACK assigned to be transmitted in a slot before slot *j*. For any two HARQ process IDs in a given cell, if the UE is scheduled to start receiving a PDSCH in symbol *j* by a PDCCH starting in symbol *i*, the UE is not expected to be scheduled to receive a PDSCH starting earlier than symbol *j* with a PDCCH starting later than symbol *i*. For any PDSCH corresponding to SI-RNTI, the UE is not expected to decode a re-transmission of an earlier PDSCH with a starting symbol less than N symbols after the last symbol of that PDSCH, where the value of N depends on the PDSCH subcarrier spacing configuration μ, with N=13 for μ=0, N=13 for μ=1, N=20 for μ=2, and N=24 for μ=3.

----- End of TP -----

For further offline:
Soft buffer issue – related to the working assumption from last meeting, data rate issues

R1-1812010 **Summary of 7.1.3.3 (resource allocation) Ericsson** (rev of R1-1811865)
Decision: The document is noted.

Agreements:
- To adopt the following TP to 5.1.2.1 of 38.214

----- Start of TP -----

When receiving PDSCH scheduled by PDCCH with CRC scrambled by C-RNTI, MCS-C-RNTI, CS-RNTI, or PDSCH scheduled without corresponding PDCCH transmission using *SPS-config*, if ~~When~~ the UE is configured with *pdsch-AggregationFactor* ~~*aggregationFactorDL*~~ > 1, the same symbol allocation is applied across the *pdsch-AggregationFactor* ~~*aggregationFactorDL*~~ consecutive slots. The UE may expect that the TB is repeated within each symbol allocation among each of the *pdsch-AggregationFactor* ~~*aggregationFactorDL*~~ consecutive slots and the PDSCH is limited to a single transmission layer. The redundancy version to be applied on the nth transmission occasion of the TB is determined according to table 5.1.2.1-2.

Table 5.1.2.1-2: Applied redundancy version when *pdsch-AggregationFactor* is present ~~*aggregationFactorDL* > 1~~

----- End of TP -----

Agreements:
- To adopt the following TP to 6.1.2.1 of 38.214

----- Start of TP -----

When transmitting PUSCH scheduled by PDCCH with CRC scrambled with C-RNTI, MCS-C-RNTI, if ~~When~~ the UE is configured with *pusch-AggregationFactor* ~~*aggregationFactorUL*~~ > 1, the same symbol allocation is applied across the *pusch-AggregationFactor* ~~*aggregationFactorUL*~~ consecutive slots and the PUSCH is limited to a single transmission layer. The UE shall repeat the TB across the *pusch-AggregationFactor* ~~*aggregationFactorUL*~~ consecutive slots applying the same symbol allocation in each slot. The redundancy version to be applied on the nth transmission occasion of the TB is determined according to table 6.1.2.1-2.

Table 6.1.2.1-2: **Redundancy version when *pusch-AggregationFactor* is present ~~*aggregationFactorUL* > 1~~**

----- End of TP -----

R1-1812018 **Remaining issues for UL data transmission procedure** NTT DOCOMO
Decision: The document is noted.

For further offline:
Issue of re-transmission of PUSCH with config grant
TP of VRB to PRB mapping for msg 3

Friday session
R1-1812063 **Summary of Soft buffer and Peak rate Ericsson**

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Decision: The document is noted.

Agreements:

- Proposal 1 in R1-1812063 is agreed
  - The approved TP is for 5.1.3, 38.214
- Proposal 2 in R1-1812063 is agreed
  - The approved TP is for 5.1.3, 38.214
- Proposal 3 in R1-1812063 is agreed
  - The approved TP is for 6.1.4, 38.214
- Updated proposal 4 in R1-1812063 is agreed
  - The approved TP is for 5.1.3, 38.214
- Updated proposal 5 in R1-1812063 is agreed
  - The approved TP is for 6.1.4, 38.214
- Proposal 6 in R1-1812063 is agreed
  - The approved TP is for 5.1.3, 38.214
- Proposal 7 in R1-1812063 is agreed
  - The approved TP is for 6.1.4, 38.214

Agreement:

- For the updated proposals 4 & 5 in R1-1812063, take f_0=0.75 as a working assumption

Agreements:

- The TP (to clarify Max Data Rate in Subclause 4.1.2 of 38.306) as in proposal 8 in R1-1812063 is endorsed

Send an LS to RAN2 informing the endorsed TP

R1-1812053 [Draft] LS on clarification to Max Data Rate in TS38.306 Ericsson

Decision: The draft LS is endorsed and final LS is approved in R1-1812072.

R1-1812054 Discussion on remaining issues for UL data transmission procedure NTT DOCOMO

Decision: The document is noted.

Agreement:

- Adopt the TP in 3.1.2 of R1-1812054 for subclause 6.3.1.7 of TS38.211.

Email discussion on the issue 2.1 (Clarifications for UL transmission with configured grant) of R1-182054 till Oct.26th – Lihui (NTT DOCOMO)

R1-1810113	Corrections on scheduling and HARQ	Huawei, HiSilicon
R1-1810258	Discussion on DL/UL data scheduling and HARQ procedure	LG Electronics
R1-1810341	Remaining issues for resource allocation	ZTE
R1-1810371	Remaining issues on scheduling and HARQ	vivo
R1-1810431	RRC parameters for retransmission of a grant-free	MediaTek Inc.
R1-1810522	Remaining issues on scheduling and UL transmission procedures	CATT
R1-1810756	Remaining issues on NR scheduling & HARQ	Intel Corporation
R1-1810844	Remaining Issues on UL/DL Scheduling	Samsung
R1-1810973	Text proposal for DL/UL data scheduling and HARQ procedure	Guangdong OPPO Mobile Telecom.
R1-1811024	Remaining issues on resource allocation	Nokia, Nokia Shanghai Bell
R1-1811145	Remaining issues on DL/UL data scheduling	Sharp
R1-1811236	Maintenance for DL/UL data scheduling and HARQ procedure	Qualcomm Incorporated
R1-1811375	Maintenance for DL/UL data scheduling and HARQ procedure	NTT DOCOMO, INC.
R1-1811398	Maintenance for DL/UL data scheduling and HARQ procedure	Panasonic Corporation
R1-1811490	Maintenance issues of DL/UL data scheduling and HARQ procedure	Ericsson
R1-1811553	Remaining issues on DL/UL scheduling and HARQ management	III
R1-1811829	Summary of 7.1.3.3 (Soft Buffer Management)	Ericsson

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R1-1811999 Correction on MSG3 FDRA description Ericsson

7.1.3.4 Maintenance for carrier aggregation and bandwidth parts

Please use separate sections for each of the respective sub-topic to facilitate reviews and summary.

R1-1811651 Summary on CA Topics Samsung
Decision: The document is noted.

R1-1811893 Summary of Bandwidth Part Remaining Issues MediaTek
Decision: The document is noted.

Agreements:

- Modify the agreements in RAN1#94 as follows.
  - If CORESET#0 is configured for a cell,
    - When monitoring for DCI in a BWP, the size of DCI format 0-0/1-0 is given by
      - For format 0-0/1-0 (regardless of RNTI) in CSS, the size is given by ~~the initial DL BWP~~CORESET#0
      - For format 0-0/1-0 in USS, the size is given by the active BWP as long as the DCI size budget is fulfilled
        - Otherwise, for format 0-0/1-0, the size is given by ~~the initial DL BWP~~CORESET#0
    - For DCI format 1-0 in CSS with P-RNTI, SI-RNTI, RA-RNTI, C-RNTI, CS-RNTI, or TC-RNTI:
      - the RB numbering for the scheduled PDSCH starts from the lowest RB in the CORESET the DCI is received in
      - the maximum number of RBs possible to indicate in the DCI is given by the size of ~~the initial DL BWP~~CORESET#0.
    - Payload sizes for 2-2 and 2-3 are padded (if needed) to match the size of formats 0-0/1-0 ~~as defined by the initial BWP~~ in CSS
  - If CORESET#0 is not configured for a cell,
    - When monitoring for DCI in a BWP, the size of DCI format 0-0/1-0 is given by
      - For format 0-0/1-0 (regardless of RNTI) in CSS, the size is given by the initial DL BWP
      - For format 0-0/1-0 in USS, the size is given by the active BWP as long as the DCI size budget is fulfilled
        - Otherwise, for format 0-0/1-0, the size is given by the initial DL BWP
    - For DCI format 1-0 in CSS with P-RNTI, SI-RNTI, RA-RNTI, C-RNTI, CS-RNTI, or TC-RNTI:
      - the RB numbering for the scheduled PDSCH starts from the lowest RB in the CORESET the DCI is received in
      - the maximum number of RBs possible to indicate in the DCI is given by the size of the initial DL BWP.
    - Payload sizes for 2-2 and 2-3 are padded (if needed) to match the size of formats 0-0/1-0 in CSS

Agreements:
Adopt the following TP in Section 7.3.1.2.2 of TS 38.212.
----- Start of TP -----
<Omitted>

- Transmission configuration indication – 0 bit if higher layer parameter *tci-PresentInDCI* is not enabled; otherwise 3 bits as defined in Subclause 5.1.5 of [6, TS38.214].
  If "Bandwidth part indicator" field indicates a bandwidth part other than the active bandwidth part, ~~and the "Transmission configuration indication" field is not present in the DCI format 1_1, the UE assumes *tci-PresentInDCI* is not enabled for the indicated bandwidth part.~~
  - If higher layer parameter *tci-PresentInDCI* is not enabled for the CORESET used for the PDCCH carrying the DCI format 1_1,
    - the UE assumes *tci-PresentInDCI* is not enabled for all CORESETs in the indicated bandwidth part.
  - Otherwise,
    - the UE assumes *tci-PresentInDCI* is enabled for all CORESETs in the indicated bandwidth part.

----- End of TP -----

Thursday session

R1-1812019 **Offline Summary on CA Topics Samsung**

Decision: The document is noted.

Agreements:

- At least for FR1, when a UE receives an activation command for an SCell in slot n , the UE applies the activation command no earlier than slot $n+k$ where k = K1 + $3N_{slot}^{subframe,\mu}$ + 1
  - μ is the SCS configuration for the Pcell
  - k & K1 are the number of PUCCH slots
  - Note: With K1 expressed in msec, the above is equivalent to k = K1 + 4 msec

Offline discussion to check the case of FR2 (Aris & Joseph) - **Friday:** to be revisited in RAN1#95

Conclusion:

- Editor to provide update to the pseudo-code incorporating support for different SCS configuration for PUCCH and PDSCH
  - Companies are encouraged to the word file attached in R1-1812019 (slide 3)

Agreements:

- In case of semi-static HARQ-ACK codebook, UE does not expect to detect a DCI format switching DL BWP within N3 (or N2) symbols before the time the UE would multiplex a HARQ-ACK codebook in a PUCCH (or a PUSCH)
  - Note: N3 as defined in 38.213 while N2 as defined in 38.214

Agreement:

- A UE does not expect to detect a DCI format scheduling a PDSCH or a SPS PDSCH release and indicating a PUCCH resource for transmission of a HARQ-ACK codebook in a slot if the UE previously detects an UL grant scheduling a PUSCH transmission in the slot and if the UE multiplexes the HARQ-ACK codebook in the PUSCH

Agreement:

- A UE does not expect to multiplex in a PUSCH transmission in one slot UCI of same type that the UE would transmit in PUCCHs in different slots

Agreements:

- Note: For Type 1 HARQ-ACK codebook, if a UE receives only SPS PDSCH(s) (up to two SPS PDSCHs for an association set as agreed earlier), the UE is expected to provide HARQ-ACK for the whole codebook – but there is no PUCCH resource because the UE has not detected any DCI format – the only PUCCH resource is for the HARQ-ACK of the SPS PDSCH
- Include, in section 9.1.2 together with the remaining fallback conditions for the HARQ-ACK codebook, the case that the UE receives only SPS PDSCH

Agreements:

- For the duplicated description in section 9.1.1 and 9.1.2.1/9.1.3.1 for HARQ-ACK generation in case of CBG and DCI 1_0/SPS release/SPS PDSCH, to remove respective paragraph from 9.1.1

Conclusion:

- For semi-static HARQ-ACK codebook, clarify that location of HARQ-ACK for SPS PDSCH release is same as for the SLIV of SPS PDSCH
  - Editor to check if clarification is needed in the spec

Conclusion:

- Editor to fix SPS PDSCH release is counted both in $N_{m,c}^{received}$ and $N_{SPS,c}$ - remove from latter

Conclusion:

- To add a Table in section 9.1.2.2 of 38.213 to capture the mapping of the 1-bit DAI in UL grant to the value of $V_{T\text{-}DAI}$
  - Note that for the dynamic codebook, the mapping of the 2-bit DAI to $V_{T\text{-}DAI}$ is already captured

Editor check the 1st and 3rd bullets of slide 6 of R1-1812009 to see whether or not any spec update is necessary

R1-1811955 **Summary of Bandwidth Part Remaining Issues** **MediaTek**
Decision: The document is noted.

Agreements:

- If a UE is provided with the higher layer parameters *controlResourceSetZero* and *searchSpaceZero* in *PDCCH-ConfigSIB1 or PDCCH-ConfigCommon* on the initial DL BWP, the UE determines the corresponding control resource set and search space set according to the procedure described in Subclause 13 of TS 38.213
    - For a search space set configured for the active DL BWP other than the initial DL BWP,
        - The UE monitors PDCCH candidates in the search space set associated with *controlResourceSetZero* only if the bandwidth determined for *controlResourceSetZero* in Subclause 13 of TS 38.213 is contained in the active DL BWP and the active DL BWP is configured with the same SCS and CP as *controlResourceSetZero*
        - The UE does not expect to be configured with more than 2 CORESETs in a DL BWP if the UE is required to monitor PDCCH candidates in the search space set associated with *controlResourceSetZero* in the DL BWP

Agreements:

- To adopt the following TP for 7.3.1.1.2 & 7.3.1.2.2, 38.212 (two occurrences, one for Format 0_1 & the other for Format 1_1)

----- Start of TP -----

- $n_{BWP} = n_{BWP,RRC} + 1$ if $n_{BWP,RRC} \leq 3$, in which case the bandwidth part indicator is equivalent to the ascending order of the higher layer parameter *BWP-Id*;

----- End of TP -----

Agreements:

- To adopt the following TP to 12 of 38.213

----- Start of TP -----

For each DL BWP or UL BWP in a set of DL BWPs or UL BWPs, respectively, the UE is provided the following parameters for the serving cell as defined in [4, TS 38.211] or [6, TS 38.214]:

- a subcarrier spacing by higher layer parameter *subcarrierSpacing*
- a cyclic prefix by higher layer parameter *cyclicPrefix*
- a ~~first~~ common ~~P~~RB N_{BWP}^{start}=*offsetToCarrier*+RB^{start} and a number of contiguous PRBs $N_{BWP}^{size}=L_{RB}$ by higher layer parameter *locationAndBandwidth* that indicates ~~is interpreted~~ an offset *RBstart* and length L_{RBs} as RIV according to [4, TS 38.214], setting $N_{BWP}^{size} = 275$, and ~~the first common PRB is a PRB offset relative to the PRB indicated~~ by higher layer parameters *offsetToCarrier* ~~and~~for the *subcarrierSpacing*

----- End of TP -----

Issue #4 (center frequency vs. BWP) in R1-1811955- **Friday:** to be revisited in RAN1#95
Issue #6 (simulation active BWP switching across CCs) in R1-1811955- **Friday:** to be revisited in RAN1#95

R1-1810112	Corrections on bandwidth part and CA	Huawei, HiSilicon
R1-1810342	Remaining issues on BWP	ZTE
R1-1810372	Remaining issues on bandwidth parts	vivo
R1-1810467	Remaining Issues on Bandwidth Part in R15 NR	MediaTek Beijing Inc.
R1-1810523	Remaining issues on CA and BWP operation	CATT
R1-1810620	On maintenance for BWPs and CA	Nokia, Nokia Shanghai Bell
R1-1810845	Remaining Issues on BWP and CA	Samsung
R1-1810982	Text proposals for HARQ-ACK transmission	Guangdong OPPO Mobile Telecom.
R1-1811004	Remaining issues on carrier aggregation and bandwidth part	Spreadtrum Communications
R1-1811144	Remaining issues on BWP	Sharp

R1-1811237 Maintenance for carrier aggregation and bandwidth parts Qualcomm Incorporated
R1-1811376 Maintenance for carrier aggregation and bandwidth parts NTT DOCOMO, INC.
R1-1811424 Remaining details on BWP ASUSTEK COMPUTER (SHANGHAI)
R1-1811451 Remaining issues on HARQ-ACK multiplexing WILUS Inc.
R1-1811491 Maintenance issues of CA and BWP Ericsson

7.1.3.5 Other

Including rate matching, TA, etc.

R1-1811906 Summary of offline on maintenance related to rate-matching in NR Nokia, Nokia Shanghai Bell
Decision: The document is noted.

Section 2.3 TP in R1-1811906
Proposal:

- For higher-layer parameter periodicityAndPattern, the first symbol in every 40ms/P period is a first symbol satisfying SFN mod 4 = 0

Section 3 TP in R1-1811906

Friday session

Agreements:

- For periodicity P of bitmap 3 configured by higher-layer parameter periodicityAndPattern in higher layer parameter RateMatchPattern, the first symbol every 40ms/P period is a first symbol in an SFN mod 4 = 0.

Agreements:

- To align with 5.1.4.1, adopt the following TP 5.1.4.2 of 38.214:

----- Start of TP -----
~~To decode PDSCH according to a decoded PDCCH, a UE may be configured with any of higher layer parameters~~ A UE may be configured with any of the following higher layer parameters indicating REs declared as not available for PDSCH:
----- End of TP -----

R1-1810343 Remaining issues for ratematching ZTE
R1-1810471 Discussion on collision between SSB and CSS vivo
Withdrawn
R1-1810621 On maintenance for rate-matching Nokia, Nokia Shanghai Bell
R1-1810706 Corrections on reserved resources and rate-matching Huawei, HiSilicon
R1-1811238 Maintenance for PDSCH rate matching and TA Qualcomm Incorporated
R1-1811399 TP on rate matching Subclause 5.1.4.2 in TS38.214 Panasonic Corporation
R1-1811492 On issues of other topics Ericsson
R1-1811493 On higher layer configuration for search space monitoring Ericsson
R1-1811494 Maintenance issues of rate matching Ericsson
R1-1811495 OH value assumption for NR Peak Data Rate Ericsson
R1-1811825 On TYPE-1 HARQ-ACK CB supporting mixed numerology Nokia, Nokia Shanghai Bell

7.1.4 Maintenance for NR-LTE co-existence

*Including architecture option 4 related issues for **both NR and LTE**, if any (please refer to RP-182083 for detailed scoping)*

R1-1811983 Chairman's notes of AI 7.1.4 Maintenance for NR-LTE co-existence Ad-Hoc Chair (Ericsson)
Decision: The document is endorsed, content is incorporated below.

R1-1810114 Remaining issues on LTE-NR coexistenceHuawei, HiSilicon
R1-1810259 Remaining issues on NR LTE coexistence LG Electronics

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R1-1810446 UE considerations for NE-DC power control and sharing MediaTek Inc.
R1-1810524 Remaining issues of LTE-NR Co-existence CATT
R1-1810757 Remaining issues of NR-LTE co-existence Intel Corporation
R1-1810846 Remaining Issues on LTE-NR Coexistence Samsung
R1-1811117 Power Sharing in NE-DC InterDigital, Inc.
Withdrawn
R1-1811122 Discussions on EN-DC power control Apple Inc.
R1-1811239 Maintenance for NR-LTE co-existence Qualcomm Incorporated
R1-1811292 Maintenance for NR-LTE co-existence Motorola Mobility, Lenovo
R1-1811457 EN-DC and NE-DC power control Nokia, Nokia Shanghai Bell
R1-1811496 Remaining issues related to LTE-NR coexistence Ericsson

R1-1811146 RB alignment with LTE in case of 7.5 kHz frequency shift for a NR UL carrier Sharp

R1-1811413 Maintenance for LTE-NR co-existence ZTE, Sanechips

R1-1811945 On power control SUO case 1 operation for NE-DC Huawei, HiSilicon, MediaTek

Agreement:
Rel-15 NE-DC supports the following cases that have been defined for EN-DC:
- SUO case 1 and case 2 operation
- Semi-static power allocation
- Dynamic power sharing
  - Type 1 and Type 2 defined for EN-DC are also defined for NE-DC

Agreement:
For SUO Case 1, functionality for EN_DC can be reused

Agreement:
For NE-DC, the parameters P_LTE and P_NR specified for EN_DC power sharing can be reused.

R1-1811948 Summary of NE-DC Dynamic Power Sharing MediaTek Inc.

Reuse 38.213 dynamic power sharing design for EN-DC but set MCG to NR and SCG to LTE

Agreement:
For NE-DC dynamic power sharing, different maximum transmit power for LTE in subframes where there is a possible overlap and there is not an overlap with NR UL symbol(s) is supported.
- Note: Whether there is a possible overlap or not between LTE and NR UL is assumed to be known on a semi-static basis.
- Note: LTE power is not assumed to vary in a subframe
- FFS: Option 1a, 1b below or some combination of these
- Options 1.5, 2 and 3 below as well as other enhancements to option 1a and 1b can be further discussed

Option 1a: For NE-DC dynamic power sharing, the following are specified:
- UE is configured with p_LTE for LTE, r(<=1), and with p_NR for NR
- For an LTE subframe that overlaps with any possible NR UL symbol(s), set LTE power limit Pcmax<=p_LTE*r; otherwise, set power LTE limit Pcmax<=p_LTE.
  - A possible NR UL symbol is identified as an NR symbol configured as flexible or UL based on cell-specific or UE-specific (if configured) tdd_UL_DL_Configuration_Common/dedicated.
- The remaining power up to p_NR is allocated to NR by setting NR power limit as Pcmax<= min(p_NR, p_total-p_lte_actual) where p_lte_actual is the power allocated to LTE.
  - Implications:

- MCG power is scaled
- Pcmax for LTE power control needs to be modified

Option 1b: For NE-DC dynamic power sharing, the following are specified:
- UE is configured with p_LTE for LTE, and with p_NR for NR
- For an LTE subframe that overlaps with any possible NR UL symbol(s), set LTE power limit Pcmax<=p_LTE; otherwise, set power LTE limit to Pcmax (p_LTE not considered).
    - A possible NR UL symbol is identified as an NR symbol configured as flexible or UL based on cell-specific or UE-specific (if configured) tdd_UL_DL_Configuration_Common/dedicated.
- The remaining power up to p_NR is allocated to NR by setting NR power limit as Pcmax<= min(p_NR, p_total-p_lte_actual) where p_lte_actual is the power allocated to LTE.
    - Implications:
- MCG power is scaled
- P_cmax for LTE power control needs to be modified and possibly other restrictions
- No capability to keep power same across all subframes if p_LTE is less than Pcmax.

Option 1.5: For NE-DC dynamic power sharing, the following are specified:
- UE is configured with p_LTE for LTE, and with p_NR for NR
- Set LTE power limit Pcmax=p_LTE;
- The remaining power up to p_NR is allocated to NR by setting NR power limit as Pcmax= min(p_NR, p_total-p_lte_actual) where p_lte_actual is the power allocated to LTE.
    - Implications:
- MCG power is scaled
- P_cmax for LTE power control needs to be modified
- LTE power is always limited regardless of overlapped subframes or not

Option 2: Fast LTE power adjustment as fast as NR for NE-DC with an associated UE capability with the following implications is supported
- PHR for LTE is not adjusted based on this fast power adjustment
- HARQ processing timeline is not changed, and therefore grant can be sent based on a different power assumption than is true for the actual transmission
- LTE will have the same power during a subframe or the subframe will be dropped
- LTE will have potentially significant number of subframes dropped for asynchronous NE-DC
- There is significant impact to the LTE power control procedure

Option 3: The threshold on the time difference from the end of the last symbol of NR PDCCH carrying NR UL scheduling to the start of the first overlapping LTE UL above which UE can scale LTE power is reported by the UE from the following candidate values:
- N_2 NR symbols
- $(2^{\mu} \cdot 14 \cdot [1] - 3)$ NR symbols (corresponding to ~[1] ms time difference)
- $(2^{\mu} \cdot 14 \cdot 3 - 3)$ NR symbols (corresponding to ~3 ms time difference)

  where $\mu = 0/1/2$ for 15/30/60 kHz SCS, respectively
- Note: 3ms is the scheduling delay for LTE sTTI
    - Implications:
- PHR for LTE is not adjusted based on this fast power adjustment
- HARQ processing timeline is not changed, and therefore grant can be sent based on a different power assumption than is true for the actual transmission
- There is significant impact to the LTE power control procedure

R1-1811939 **[DRAFT] Reply LS on intra-band combination for NR CA and MR-DC** **Intel**
R1-1812008 **[DRAFT] Reply LS on intra-band combination for NR CA and MR-DC** **Intel**

Decision: The draft LS is endorsed with the following modifications:

For the first question, RAN1 believes that it is beneficial to make the Case 1 vs. Case 2 configuration explicit and not made a sole function of the amount of guard-band between carriers. It is RAN1's understanding that one of the major reasons for distinction would be potential RF architecture implementation choices for case 1 and 2. Depending on UE implementation choice, different limitations of UE transmit/receive operations would need to be considered.

As an example, carriers with the same frequency separation could be configured, in some cases, as either Case 1 or Case 2, based on which requirement is expected to be followed, corresponding to the respective RF architecture.

For the second question, from a UE transmission perspective, ~~RAN1 believes that~~the same timing (considering allowed tolerances) is necessary ~~same value of TA should be applicable~~ for both LTE and NR (except for RACH) ~~from the UE transmission perspective~~ for some RF architectures in synchronous intra-band MR-DC scenarios. RAN1 is currently discussing ~~on the~~ solutions that will achieve this functionality, including the aspect of "single UL timing adjustment across the two RATs or parallel UL timing adjustments in the two RATs". RAN1 plans to provide further information once it is concluded.

Final LS is approved in R1-1812028.

R1-1811953 **Intra-band EN-DC power control** **Qualcomm**

To be resolved in RAN1#95

R1-1812001 **WF on Inter-band EN-DC Power Control** **Apple**

- Option 1: Define additional RRC signaling to support configuration of 3 separate power scaling thresholds, including
  - X1-dB for PUSCH
  - X2-dB for PUCCH
  - X3-dB for SRS
- Option 2: Clarify that X-dB threshold only applies to PUSCH
- Option 3: X-dB threshold applies to all channels
- Option 4: Use of X-dB is TBD (by RAN1 and/or RAN4), only impacts RAN4 specification, no impact to RAN1 specs

To be resolved in RAN1#95

R1-1811944 **On NGEN-DC (option 7)Huawei, HiSilicon, MediaTek**

Agreement

- From RAN1 perspective, UE behaviors for NGEN-DC (Option 7) are the same as the UE behaviors that have been specified for EN-DC in RAN1 specifications.

7.1.5 Maintenance for UL power control

Including both non-CA and CA aspects, NR-NR DC related power control issues (if any) (please refer to RP-182083 for detailed scoping), etc.

Please use separate sections for each of the respective sub-topic to facilitate reviews and summary.

R1-1811984 **Chairman's notes of AI 7.1.5 Maintenance for UL power control** **Ad-Hoc Chair (Samsung)**

Decision: The document is endorsed, content is incorporated below.

R1-1811859 **Summary for Al 7.1.5 NR UL power control in non-CA aspects** **ZTE**

Agreement

RAN1 spec should be aligned with description in 38.331. Exact changes to 38.213 can be left to editor.

- Higher layer parameter *tpc-Accumulation* for PUSCH
- Higher layer parameter *tpc-Accumulation* for SRS

Agreement

Clarify Rel-15 NR PUSCH power scaling specifications such that per-PA full power capacity for all PAs in the UE is NOT required for any MIMO UE capability.

Agreement:

All the text proposals except the last one in 2.11.2 of R1-1811859 are agreed

R1-1811889 **Summary of NR UL power control – CA/DC aspects** **Samsung**

Agreement
Send an LS to RAN2 and CC RAN4 with the following content:

RAN1 thanks RAN2 of their LS about UE power class and power scaling. Regarding the applicability of the power restriction values for FR1, RAN1 would like to inform RAN2 that RAN1 agreed to the attached changes to the TS38.213 (changes attached) in the August meeting, and the changes were implemented to the TS38.213 V15.3.0. It is RAN1 understanding that these changes are in-line with the signalling specified in RAN2.

Also, regarding "*it is RAN2's understanding that the UE uses dynamic power sharing if "p-LTE + p-NR-FR1 > min {p-UE-FR1, power class}*", RAN1 understanding is that RAN2 is referring to the condition "If a UE is configured with $\hat{P}_{LTE} + \hat{P}_{NR} > \hat{P}_{Total}^{EN-DC}$,…" in subclause 7.6.1 of 38.213. For this condition, the definition of the term $\hat{P}_{Total}^{EN-DC}$ (along with the definition of $P_{CMAX,f,c}(i)$ which is configured maximum transmit power for UE transmission on serving cell c) are being discussed in RAN4.

RAN1 would like kindly ask RAN2 to consider the above in their further work.

The LS is approved in R1-1811935.
MCC post meeting: Source should be read as RAN1.

Agreement
Following working assumption is confirmed with additional details that in case *PUCCH-SpatialRelationInfo* is not configured, *pathlossReferenceLinking* can be used

Cross-carrier indication for power control parameters

- For PUCCH, if higher layer parameters "*cell*" and "*bwp-Id*" are included in the *PUCCH-SpatialRelationInfo* configuration:
  - The reference signal corresponding to pathloss index '*q_d*' included in *PUCCH-SpatialRelationInfo* is from the serving cell and active BWP indicated by the higher layer parameters "*cell*" and "*bwp-Id*".

Note: No RRC specification impact.

Agreement
For SRS cross carrier indication, if the UE is provided with *pathlossReferenceLinking* in *servingCellConfig,* it uses the reference signals in the indicated serving cell to measure the pathloss

Agreement
For PUSCH cross carrier indication, if the UE is provided with *pathlossReferenceLinking* in *servingCellConfig,* it uses the reference signals in the indicated serving cell to measure the pathloss

Agreement
For virtual Type-1 PHR calculation, UE assumes that $P_{0\_NOMINAL\_PUSCH,f,c}(0)$ is used

Working Assumption

- Capture in TS 38.213 the below text from TS 36.213 with the change of *phr-ModeOtherCG-r12* to *phr-ModeOtherCG*
  - If the UE is configured with a SCG, and if the higher layer parameter *phr-ModeOtherCG-r12* for a CG indicates 'virtual', for power headroom reports transmitted on that CG, the UE shall compute PH assuming that it does not transmit PUSCH/PUCCH on any serving cell of the other CG.

R1-1812031 Summary3 for Al 7.1.5 NR UL power control in non-CA aspects ZTE

Agreement
To determine $\Delta_{TF,b,f,c}$ (i) for UCI-only PUSCH, correct BPRE = O_{CSI}/N_{RE} to BPRE = $Q_m \cdot R / X$ where R is the code rate of the PUSCH, determined according to Subclause 6.1.4.1 of [6, TS38.214], and Q_m is the modulation order of the PUSCH.

- FFS: X=1 or X=beta_CSI

Working Assumption
After successfully receiving BFR gNB response, until the UE receives an activation or reconfiguration of spatial relation of PUCCH resource(s), and when a corresponding PUCCH transmission uses a same spatial filter as a PRACH transmission for BFR, the corresponding PUCCH transmission shall use the following UL power control parameters.

- P0 is given by the values corresponding *p0setindex =0 of p0-pucch-set (i.e., q_u=0)*

- $PL_{b,f,c}(q_d)$ is calculated according to one DL RS associated with the PRACH transmission.
- Closed loop index *l*=0
- FFS: whether to apply this for CBRA
- Notes: The above applies to PCell or PSCell.

For further discussion in RAN1#95
Whether specification clarification is needed on the number of closed-loop PC processes maintained at the physical layer.

Agreement
- If P0_nominal is not configured for PUSCH with grant, PUSCH without grant or SRS,
  - P0_nominal for PUSCH with grant, PUSCH without grant or SRS is P0_nominal for msg3
- If P0_nominal is not configured for PUCCH
  - P0_nominal for PUCCH is 0dBm

R1-1812041 Proposals from offline discussion of clarification of Rel-15 UL MIMO power scaling Ericsson

For RAN1#95 (with Friday's update as shown in red)
Consider at least the alternatives listed in R1-1812041 for finalization of power scaling issues for ~~non-codebook based~~ UL MIMO operation in RAN1#95
Check if clarification is needed for Rel-15 NR SRS power scaling specifications such that per-PA full power capacity for all PAs in the UE is not required for any MIMO UE capability.

Agreements
- If a UE is configured with two UL carriers for a serving cell and if the UE reports a UE capability *simultaneousTxSUL-NonSUL* for the serving cell, and if the UE determines that Type 1 power headroom report for the serving cell is based on a reference PUSCH transmission and Type 3 power headroom report for the serving cell is based on a reference SRS transmission, the UE provides the Type-1 PHR.
- If a UE is configured with two UL carriers for a serving cell and if the UE reports a UE capability *simultaneousTxSUL-NonSUL* for the serving cell, and if the UE determines that a power headroom for only one of the two UL carriers of the serving cell is based on an actual transmission, the UE provides a Type-1 PHR when the actual transmission is a PUSCH transmission, or provides a Type-3 PHR when the actual transmission is an SRS transmission.
- FFS: Whether the above also applies for the case UE doesn't report a UE capability *simultaneousTxSUL-NonSUL* for the serving cell. This aspect will be finalized in RAN1#95.

Send a reply LS to RAN2 to inform them of these two agreements (LS is approved in R1-1812062)

R1-1810115 Discussion on UE power control Huawei, HiSilicon
R1-1810217 Maintenance for UL power control ZTE
R1-1810373 Maintenance for UL power control vivo
R1-1810525 Remaining issues of NR power control CATT
R1-1810847 Remaining Issues on UL Power Control Samsung
R1-1810964 Maintenance for UL power control Guangdong OPPO Mobile Telecom.
R1-1811240 Maintenance for NR power control Qualcomm Incorporated
R1-1811293 Maintenance for UL power control Motorola Mobility, Lenovo
R1-1811456 Remaining issues on PUSCH power control ASUSTEK COMPUTER (SHANGHAI)
R1-1811497 Remaining issues on Power Control Ericsson
R1-1811833 Remained issues on NR uplink power control Nokia, Nokia Shanghai Bell (rev of R1-1811622)

7.1.6 Maintenance for URLLC

Focusing on CQI/MCS aspects

R1-1811863 Summary of 7.1.6 (Maintenance for URLLC) Ericsson
Decision: The document is noted.

Proposals:
- To adopt the following TP to 6.1.4.1 of 38.214:

For a PUSCH scheduled by RAR UL grant or for a PUSCH scheduled by a DCI format 0_0/0_1 with CRC scrambled by C-RNTI, MCS-C-RNTI, TC-RNTI, CS-RNTI, or SP-CSI-RNTI, or for a PUSCH with configured grant using CS-RNTI,

if transform precoding is disabled for this PUSCH transmission according to Subclause 6.1.3

- if *mcs-Table* in *PUSCH-Config* is set to 'qam256', ~~and PUSCH is scheduled with C-RNTI or SP-CSI-RNTI,~~ and PUSCH is ~~assigned~~ scheduled by a PDCCH with DCI format 0_1 with CRC scrambled by C-RNTI or SP-CSI-RNTI,
  - the UE shall use I_{MCS} and Table 5.1.3.1-2 to determine the modulation order (Q_m) and Target code rate (R) used in the physical uplink shared channel.
- elseif the UE is not configured with MCS-C-RNTI, *mcs-Table* in *PUSCH-Config* is set to 'qam64LowSE', ~~the PUSCH is scheduled with C-RNTI, or SP-CSI-RNTI,~~ and the PUSCH is ~~assigned~~ scheduled by a PDCCH in a UE-specific search space with CRC scrambled by C-RNTI or SP-CSI-RNTI,
  - the UE shall use I_{MCS} and Table 5.1.3.1-3 to determine the modulation order (Q_m) and Target code rate (R) used in the physical uplink shared channel.
- elseif the UE is configured with MCS-C-RNTI, and the PUSCH is scheduled by a PDCCH with CRC scrambled by MCS-C-RNTI,
  - the UE shall use I_{MCS} and Table 5.1.3.1-3 to determine the modulation order (Q_m) and Target code rate (R) used in the physical uplink shared channel.
- elseif *mcs-Table* in *ConfiguredGrantConfig* is set to 'qam256', ~~and PUSCH is scheduled with CS-RNTI~~
  - if PUSCH is scheduled by a PDCCH with CRC scrambled by CS-RNTI or
  - if PUSCH is semi-statically configured,
    - the UE shall use I_{MCS} and Table 5.1.3.1-2 to determine the modulation order (Q_m) and Target code rate (R) used in the physical uplink shared channel.
- elseif *mcs-Table* in *ConfiguredGrantConfig* is set to 'qam64LowSE', ~~and PUSCH is scheduled with CS-RNTI~~
  - if PUSCH is scheduled by a PDCCH with CRC scrambled by CS-RNTI or
  - if PUSCH is semi-statically configured,
    - the UE shall use I_{MCS} and Table 5.1.3.1-3 to determine the modulation order (Q_m) and Target code rate (R) used in the physical uplink shared channel.
- else
  - the UE shall use I_{MCS} and Table 5.1.3.1-1 to determine the modulation order (Q_m) and Target code rate (R) used in the physical uplink shared channel.

else

- if *mcs-TableTransformPrecoder* in *PUSCH-Config* is set to 'qam256', ~~and the PUSCH is scheduled with C-RNTI or SP-CSI-RNTI,~~ and PUSCH is ~~assigned~~ scheduled by a PDCCH with DCI format 0_1 with CRC scrambled by C-RNTI or SP-CSI-RNTI,
  - the UE shall use I_{MCS} and Table 5.1.3.1.-2 to determine the modulation order (Q_m) and Target code rate (R) used in the physical uplink shared channel.
- elseif the UE is not configured with MCS-C-RNTI, *mcs-TableTransformPrecoder* in *PUSCH-Config* is set to 'qam64LowSE', ~~and the PUSCH is scheduled with C-RNTI, or SP-CSI-RNTI,~~ and the PUSCH is ~~assigned~~ scheduled by a PDCCH in a UE-specific search space with CRC scrambled by C-RNTI or SP-CSI-RNTI,
  - the UE shall use I_{MCS} and Table 6.1.4.1-2 to determine the modulation order (Q_m) and Target code rate (R) used in the physical uplink shared channel.
- elseif the UE is configured with MCS-C-RNTI, and the PUSCH is scheduled by a PDCCH with CRC scrambled by MCS-C-RNTI,
  - the UE shall use I_{MCS} and Table 6.1.4.1-2 to determine the modulation order (Q_m) and Target code rate (R) used in the physical uplink shared channel.
- elseif *mcs-TableTransformPrecoder* in *ConfiguredGrantConfig* is set to 'qam256', ~~and PUSCH is scheduled with CS-RNTI,~~
  - if PUSCH is scheduled by a PDCCH with CRC scrambled by CS-RNTI or
  - if PUSCH is semi-statically configured,
    - the UE shall use I_{MCS} and Table 5.1.3.1-2 to determine the modulation order (Q_m) and Target code rate (R) used in the physical uplink shared channel.
- elseif *mcs-TableTransformPrecoder* in *ConfiguredGrantConfig* is set to 'qam64LowSE', ~~and PUSCH is scheduled with CS-RNTI,~~
  - if PUSCH is scheduled by a PDCCH with CRC scrambled by CS-RNTI or
  - if PUSCH is semi-statically configured,
    - the UE shall use I_{MCS} and Table 6.1.4.1-2 to determine the modulation order (Q_m) and Target code rate (R) used in the physical uplink shared channel.
- else

- the UE shall use I_{MCS} and Table 6.1.4.1-1to determine the modulation order (Q_m) and Target code rate (R) used in the physical uplink shared channel.

----- End of TP -----

Agreement:

- To adopt the following TP to 5.1 of 38.214:

----- Start of TP -----

On a frequency range 1 cell, the UE shall be able to decode a PDSCH scheduled with C-RNTI, MCS-C-RNTI, or CS-RNTI and, during a process of P-RNTI triggered SI acquisition, another PDSCH scheduled with SI-RNTI that partially or fully overlap in time in non-overlapping PRBs, unless the PDSCH scheduled with C-RNTI, MCS-C-RNTI, or CS-RNTI requires Capability 2 processing time according to subclause 5.3 in which case the UE may skip decoding of the scheduled PDSCH with C-RNTI, MCS-C-RNTI or CS-RNTI.

----- End of TP -----

Friday session

R1-1811961 **Text Proposal for MCS Determination of PUSCH** **Ericsson**

Decision: The document is noted.

Agreement:

- To adopt the TP in R1-1811961 (38.214 Section 6.1.4.1)

R1-1810172 Maintenance of Rel-15 URLLC Ericsson
R1-1810260 Discussion on MCS table selection for URLLC LG Electronics
R1-1810430 Corrections on MCS table determination MediaTek Inc.
R1-1810719 Correction on rate matching in URLLC due to the ambiguity between PDCCH AL8 and AL16 Huawei, HiSilicon
R1-1811241 RRC configuration for retransmission DCI of configured grants Qualcomm Incorporated

7.1.7 Other

Including Rel-15 UE features

R1-1811994 **Chairman's notes of AI 7.1.7 NR UE features update** **NTT DOCOMO, AT&T**

Decision: The document is endorsed, content is incorporated below.

R1-1810218 Remaining issues on Rel-15 NR UE features ZTE
R1-1810374 Views on Remaining Rel-15 UE features vivo
R1-1811811 Remaining Issues in R-15 UE Features MediaTek Inc. (Revision of R1-1810429)
R1-1810707 Remaining issues on Rel-15 UE features Huawei, HiSilicon
R1-1810758 Rel-15 NR UE feature list Intel Corporation
R1-1810848 UE Features for Rel-15 Samsung
R1-1811025 On selected NR Rel-15 MIMO/beam management UE features Nokia, Nokia Shanghai Bell
R1-1811026 On selected NR Rel-15 non-MIMO UE features Nokia, Nokia Shanghai Bell
R1-1811118 Discussions on Rel-15 NR UE feature list Apple Inc.
R1-1811172 NR UE feature list Ericsson
R1-1811173 Highlights on NR UE feature list Ericsson
R1-1811242 NR Features and Capabilities Qualcomm Incorporated
R1-1811372 Views on Rel-15 NR UE features NTT DOCOMO, INC.
R1-1811400 On UE features supporting beam management in FR1 Nokia, Nokia Shanghai Bell
R1-1811498 PUSCH power scaling in UL power control Ericsson
R1-1811499 SRS power scaling in UL power control Ericsson

R1-1811886 Proposals on UE feature for NCB UL LGE

R1-1812023 Remaining issues for non-MIMO NR UE Capabilities Qualcomm

Agreement
With deletion of 0-12, the following TP for TS38.214 is agreed.
----- Start of TP ------
In frequency range 1, only 'almost contiguous allocation' defined in TS38.101-1 is allowed as non-contiguous allocation per CC for UL RB allocation for CP-OFDM.

In frequency range 2, non-contiguous allocation per CC for UL RB allocation for CP-OFDM is not supported.
----- End of TP ------

R1-1812052 RAN1 NR UE features NTT DOCOMO, AT&T

Proposal:
Add the following component to FG4-1
10) One group of overlapping channels per slot per cell group for control multiplexing

Proposal:

5-32	Separation of two unicast PDSCHs and two unicast PUSCHs with a gap	Minimum time separation (including the cross-slot boundary case) between starting time of two unicast PDSCHs, and between starting time of two unicast PUSCHs	Any of 5-11, 5-11b, 5-12, 5-12b, 9, 11, 12, 14	Yes		Type 3	No need	No need				Candidate value set: {125} us If the UE does not report this UE capability, there is no restriction on the minimum time separation between start time of two unicast PDSCHs and start time of two unicast PUSCH. Detailed signaling design up to RAN2

Friday session

R1-1812064 RAN1 NR UE features list NTT DOCOMO, AT&T (rev of R1-1812052)
Decision: The document is agreed.

R1-1812051 Remaining issues for non-MIMO NR UE Capabilities Qualcomm
Decision: The document is agreed.

Agreements:
- To adopt the following:

4-1	Basic UL control channel	[…] 10) One group of overlapping channels per slot per cell group for control multiplexing		Yes		N.A.	N.A.	N.A.		RAN4 to check feasibility of frequency hopping for PUCCH formats for FR2		Mandatory without capability signaling
[…]												
4-27	More than one group of overlapping channels for control multiplexing	More than one group of overlapping channels per slot per cell group for control multiplexing		Yes		Type 4	No	Yes				Optional with capability signaling

R1-1812073 NR UE feature 5-32/5-33 Huawei

Decision: The document is noted.

Agreements:

- Rows 5-32 & 5-33 as in R1-1812073 are agreed with the following updates (to 2nd column)
  - Separation of two unicast PDSCHs with a gap
  - Separation of two unicast PUSCHs with a gap

R1-1811916 **[Draft] Reply LS on L1 capabilities** **AT&T, NTT DOCOMO**
Decision: The draft LS is endorsed and final LS is approved in R1-1812065.

R1-1812036 **[Draft] LS on RAN1 NR UE features update** **NTT DOCOMO, AT&T**
Decision: The draft LS is endorsed with the following update:

- Action to RAN4: RAN1 respectfully asks RAN4 to take into account in their future work, and to check 2-20 to provide feedback if any
- To update the tdoc # for the attachement (R1-1812064)

Final LS is approved in R1-1812037.

7.2 NR in Release 16

7.2.1 Study on non-orthogonal multiple access for NR

FS_NR_NOMA; SID in RP-181403. Please refer to the SID for detailed scoping

R1-1811875 **Text proposal to capture agreements made in RAN1#94 to TR 38.812 (NOMA)** **ZTE** (rev of R1-1810200)
Discussion: This version doesn't seem to be aligned with the latest agreements.
Section 5 structure has been changed according to Huawei
Decision: The document is noted. Further offline is needed.

R1-1810201 **Text proposal for various sections of TR 38.812** **ZTE**
Discussion: Ericsson suggested rephrasing section 4.1 to indicate that further study is needed to determine the benefits of NOMA
Decision: The document is noted. Discuss further offline.

Wednesday
R1-1811902 **Updated text proposal to TR 38.812 (NOMA)** **ZTE**
Discussion: Ericsson requested extra time to review it - has provided comments over the reflector
Decision: The document is noted. Discuss further offline.

Thursday
R1-1811976 **Updated text proposal to TR 38.812 (NOMA)** **ZTE**
Decision: The document is agreed.

R1-1811977 **Text proposal for various sections of TR 38.812** **ZTE**
Decision: The document is noted. Discuss further offline.

Friday
R1-1812046 **Updated text proposal for various sections of TR 38.812** **ZTE**
Decision: The document is noted, further revised in:
R1-1812076 **Updated text proposal for various sections of TR 38.812** **ZTE**
Decision: The document is noted.

Agreements:

- The TP in R1-1812076 is approved (except the Annex parts)
- Email approval of the TP in R1-1812076 for the Annex parts till Oct 26th – Li (ZTE) (including possibility of adding/updating additional abstraction methods)

Email discussion for more observations based on LLS t ill Oct 26th – Li (ZTE)

7.2.1.1 Transmitter side signal processing schemes for NOMA

R1-1810261 **Transmitter side signal processing schemes for NCMA** **LG Electronics**

Observation 1: Grassmannian sequence provides lower cross-correlation compared to other non-orthogonal spreading sequences.
Proposal 1: The spreading based NCMA based on MQAM-quantized Grassmannian Sequence is considered for the NOMA design in NR.
Proposal 2: PAPR at the transmitter side need to be considered as one of major performance metrics for the NOMA design in NR.

Decision: The document is noted.

R1-1811860 **NOMA transmitter side signal processing CATT** (rev of R1-1810526)

Observation 1: PDMA can support flexible MA signature pool design to achieve large MA signature pool, low PAPR etc.
Observation 2: For CP-OFDM waveform, distributed RE mapping outperforms localized RE mapping.
Proposal 1: For DFT-s-OFDM, each modulated symbol is spread by the spreading sequence sequentially.
Proposal 2: For CP-OFDM waveform, symbol-level spreading on an OFDM symbol basis is supported. Symbol-level spreading is performed such that all the modulated symbols are spread by each element of the spreading sequence sequentially.

Decision: The document is noted.

R1-1811648 **Transmitter side signaling processing schemes for NOMA Qualcomm Incorporated** (Revision of R1-1811243)

- Proposal 1: NR NOMA solutions achieving performance gains over NR Rel-15 MU-MIMO should be prioritized in the study and evaluation.
- Proposal 2: For normal cell coverage and DL synchronized UE, solutions capable of achieving a better tradeoff than 4-step RACH and CP extension in performance, latency and complexity should be studied for asynchronized NOMA.
- Proposal 3: The asynchronized NOMA transmission scheme in normal cell coverage, such as two-step RACH, should be studied, wherein MSG1 carries MA signature and small data, and UE does not need to perform timing advance prior to MSG1 transmission.
- Proposal 4: For grant-based UL transmission, the degree of freedom can be defined as the number of orthogonal physical resource units in time, frequency and space domains, which is measured for a given TTI, a given transmission bandwidth and a given number of transceiver antennas.
- Proposal 5: For UL synchronized NOMA transmission, TX solutions incapable of UE overloading and/or unsuitable for scalable configuration should be deprioritized and FFS whether they have significant performance gains over OMA or MU-MIMO with the same transceiver complexity.
- Proposal 6: NR NOMA should re-use linear modulations compliant with NR Rel-15. NR NOMA should consider the use of group or cell-specific scrambling at symbol level, multi-branch transmission and power domain multiplexing to optimize the tradeoff in performance and transceiver complexity.
- Proposal 7: NOMA transmission scheme should provide flexibility and scalability to support different spectral efficiencies and overloading factors. To reduce the description complexity and memory size of transceivers, it should consider:
  - a closed form design for the short spreading codes that achieves Welch bound equality (WBE) for arbitrary spreading factor (K) and overloading ratio (N/K>1);
  - a closed from design for the long scrambling codes that is compliant with NR Rel-15;
  - reuse the same spreading codes and scrambling codes for both DFT-s-OFDM and CF-OFDM waveforms;
  - reuse linear modulations compliant with NR Rel-15 Tx chain.
- Proposal 8: Intra-cell and inter-cell interference in NOMA transmission can be mitigated by UE grouping, power control, symbol-level scrambling, and the hopping of MA signatures. Specifically:
  - NOMA UEs within the same cell can be partitioned into multiple groups. Same or different short spreading codes achieving WBE can be applied to each group. Group-specific scrambling and power domain multiplexing can be applied to each UE group, wherein the configuration of scrambling codes can be made as a function of cell ID and UE group ID.
  - To average the intra-cell and inter-cell interference, the use of short spreading codes and long scrambling codes can be hopping in time domain.

Decision: The document is noted.

R1-1810116 Discussion on the design of SCMA Huawei, HiSilicon
R1-1810202 Transmitter side designs for NOMA ZTE
R1-1810375 Discussion on NOMA transmitters vivo

Samsung Exhibit 1029, Page 508 of 684

R1-1810623	Transmitter side signal processing of ACMA	HUGHES Network Systems Ltd
R1-1810759	NOMA transmission scheme	Intel Corporation
R1-1810849	Transmitter side signal processing schemes for NOMA	Samsung
R1-1811032	Considerations on NoMA Transmitter Scheme Design	CMCC
R1-1811098	UE-specific regular-sparse RE mapping for NR-NOMA	Fraunhofer HHI
R1-1811101	Considerations on NOMA Transmitter	Nokia, Nokia Shanghai Bell
R1-1811174	TX schemes for NoMA	Ericsson
R1-1811194	Details of IDMA Transmitter Processing	InterDigital, Inc.
R1-1811360	Transmitter design for uplink NOMA	NTT DOCOMO, INC.

7.2.1.2 Receivers for NOMA

R1-1811881 Discussion on the design of NOMA receiver Huawei, HiSilicon (rev of R1-1810117)

Observation 1: MPA receiver reaches a near-ML performance with numeric stability. Its intrinsic divider-and-conquer scheme allows a high parallelism message-passing architecture.
Observation 2: EPA can achieve similar performance as MPA in many cases of interest with much lower complexity which grows linear with the number of UEs multiplexed together.
Observation 3: Chip MMSE is equivalent to the traditional MMSE-IRC if without outer-loop and it is a special case of EPA with inner iteration equals to one.
Observation 4: chip-wise MUDs can be implemented using a flexible Tandem solution within one common architecture and be used in an adaptive way.
Observation 5: Sparsity can reduce the complexity of the chip-wise MUD.
Observation 6: The inner-loop iterations in EPA helps to enhance the BLER performance compared with chip-MMSE without inner-loop iterations.
Observation 7: Chip-wise MUDs have the following properties
- Chip-wise MUD can be applied for all proposed NOMA transmission schemes
- Chip-wise MUD can improve the performance of legacy UEs and potential future UEs operating MU-MIMO
- Chip-wise MUD can be common for both CP-OFDM and DFT-s-OFDM waveforms
- The complexity of chip-wise MUD grows moderately with the increasing of number of receiving antennas and spreading block length.

Observation 8: A block-MMSE has higher complexity than a chip-MMSE and is less stable from numeric implementation aspect.
Observation 9: Block-MMSE has the following properties
- Block-MMSE cannot be used to improve the MU-MIMO performance of legacy UEs and UEs not supporting NOMA.
- Block-MMSE cannot be used even for linear spreading schemes in the DFT-s-OFDM case.
- The complexity of block-MMSE increases sharply with the increasing of number of receiving antennas and the extending of spreading block length.

Observation 10: The averaging operations to reduce the complexity of block-MMSE will degrade its BLER performance by several dBs.
Observation 11: Hybrid IC can take advantages of both pure soft and pure hard IC schemes and achieves the best performance with low-complexity implementations.
Observation 12: Compared with SIC, PIC has much lower decoding latency and can avoid the impact of error propagation problem caused by inaccurate SINR sorting.
Observation 13: Hybrid PIC archives the best performances among different combinations of IC implementations.
Observation 14: For a given NOMA scheme, the number of FEC decoding needed per UE with hybrid PIC is similar to that of the Hard PIC and also that of enhanced SIC case.
Observation 15: Chip-wise MU detectors, including chip MMSE, MPA, EPA and ESE provide better tradeoff between flexibility, hardware resource efficiency, processing latency and numerical stability compared to block wise MU detectors like block MMSE.
Proposal 1: A NOMA receiver shall follow the design principles below:
- To be able to benefit non-NOMA UEs, e.g. legacy or future UEs operating MU-MIMO
- To be able to operate with CP-OFDM and DFT-s-OFDM waveforms while achieving the intended performance enhancement originated from the NOMA receiver

Proposal 2: Chip-wise multi-user detector family should be adopted for performing and comparing NOMA transmission schemes.

Decision: The document is noted.

R1-1810203 Complexity analysis of NOMA receivers ZTE

Observation 1 MMSE-hard IC receiver is preferred for NOMA due to its compatibility to the architecture of legacy MMSE-IRC receiver and the moderate complexity.

Proposal 1: to prioritize schemes with MMSE-hard IC as the typical receiver, if similar performance can be obtained between MMSE-hard IC receiver and ESE/EPA + SISO receivers.

Decision: The document is noted.

R1-1811175 **Receiver design for NOMA** **Ericsson**

Proposals:

NOMA system designs should target transmission schemes that can employ receiver architectures where non-negligible performance gains are attained with a limited processing overhead compared to conventional MU-MIMO reception.

NOMA schemes that can work with a variety of receiver types/complexities are preferred.

The complexity of candidate schemes and their associated receiver structures should be evaluated relative to an L-MMSE receiver.

The LDPC configurations considered for complexity analysis should focus on min-sum based decoder implementations.

Take into account relative SINR/INR values that reflect those observed in a cell used when evaluating receiver complexity-performance tradeoffs.

Decision: The document is noted.

Wednesday session

R1-1811870 **Offline summary of receiver for NOMA ZTE**

Discussion: Nokia suggested adding a note that comparison of different receiver architectures should be performed based on the same evaluation assumptions for fair comparison.

Huawei/CATT have concern with the example calculation table 9, do not understand how the numbers should be used - would not like to capture it into TR38.812.

RAN1 Chair: they are only numbers, whether to take them into account or not is up to each company - does not pretend to exclude anything else

Decision: The document is noted and updated in R1-1811938.

Agreements:

- Table 8 (and its subtables & notes) and Table 9 in R1-1811938 are agreed
  - To be captured in 38.812

Huawei still confirmed their concern with the conclusion to capture table 9 in the TR.

R1-1810262 Discussion on the receiver types LG Electronics
R1-1810376 Receiver design considerations for NOMA vivo
R1-1810527 Discussion on NOMA receivers CATT
R1-1810625 Receiver signal processing of ACMA HUGHES Network Systems Ltd
R1-1810760 NOMA receiver structure and complexity analysis Intel Corporation
R1-1810850 Receivers for NOMA Samsung
R1-1811102 Receiver considerations for UL NOMA Nokia, Nokia Shanghai Bell
R1-1811195 Complexity Evaluation of ESE-based IDMA Receivers InterDigital, Inc.
R1-1811649 Receivers for NOMA Qualcomm Incorporated (rev of R1-1811244)
R1-1811361 Receiver for uplink NOMA NTT DOCOMO, INC.

7.2.1.3 Procedures related to NOMA

R1-1810687 **On NOMA Procedures AT&T**

Proposal 1: For grant based transmissions, spreading factor should be indicated in the downlink control channel for smooth transition between NOMA and OMA

Proposal 2: RAN1 should study techniques for finding the approximate expression SINR for NOAM receivers for performing LA in NOMA scenarios

Decision: The document is noted.

R1-1810761 **NOMA related procedure** **Intel Corporation**

Proposal 1:

- Multiple physical resources in time and frequency for configured grant UL NOMA can be configured for support of various MCS and TBS.
- MA signature can be randomly selected or conveyed by one or a combination of different signals and transmission components/parameters that can help the gNB to distinguish UEs.

Proposal 2: Appropriate UE identification mechanisms should be considered for configured grant UL NOMA.
Proposal 3: DMRS enhancement can be considered for UL NOMA to support massive number of devices and reliable channel estimation performance.
Proposal 4: Retransmissions of configured grant UL transmissions are based on an ACK response mechanism.
Proposal 5: A preamble based NOMA transmission scheme can be considered for grant-free UL NOMA transmissions without UL synchronization.

Decision: The document is noted.

R1-1811103 **Procedures to be considered for NOMA operation** **Nokia, Nokia Shanghai Bell**

Observation 1: When MA signature pool size is larger than # of simultaneous transmission, random MA signature selection will cause more collision than MA signature pre-configuration.
Proposal 1. Pre-configured MA signature is considered as baseline and random MA signature selection could be considered for limited cases if there is a necessity.
Proposal 2: HARQ procedure within grant-free UL transmission should be considered in rel-15 NOMA SI
Proposal 3: Benefits of collision avoidance by adaptive HARQ transmission or repeated transmission should be studied before the introduction of other MA signature collision avoidance algorithm. Following examples can be considered.

- MA signatures are randomly changed per slot per repetition
- MA signature hopping pattern is configured/defined per slot for repeated transmission
- etc

Proposal 4: If link adaption or support of relatively high spectral efficiency is considered, multi-layer transmission should be considered as one of the candidate method.

- Multiple of MA signature or signature set can be configured per UE

Proposal 5: For the evaluation of each NOMA scheme, no collision on DMRS needs to be considered
Proposal 6: Necessity of modification/enhancement of DMRS for NOMA would be discussed after evaluation of NOMA without DMRS collision
Proposal 7: As a scenario of NOMA UL transmission in RRC idle/inactive mode, asynchronous reception of NOMA signals needs to be evaluated at least via LLS, but without introduction of additional features to support data transmission in RRC idle/inactive mode.

- Data transmission with preamble would be needed, but not with further optimization

Decision: The document is noted.

Wednesday session

R1-1811871 **Offline summary of procedures for NOMA** **ZTE**

Discussion: Debate on 2-step RACH following RAN decision in RP-182126 (Way forward of 2-step RACH)
Huawei's understanding is that no L1 work on 2-step RACH will be carried out.
Decision: The document is noted.

Agreements:

- Channel structure consisting of preamble and data can be considered for supporting the asynchronous transmission:
  - Preamble in Rel-15 can be considered as the starting point.
  - Additional components can be included if necessary, e.g., the UL channel for assisting the UE detection or GP.

Proposals:

- Pool-based MA/Resource allocation for UE(s) with more than one set of resource should be considered.
  - FFS principle for MA/resource selection among MA/resource belong same/different set(s).
  - FFS signaling

Thursday session

R1-1811979 **Summary of 7.2.1.3 on procedures for NOMA** **ZTE**

Decision: The document is noted.

Agreements:

- Study further the case when a UE is configured with one or more set(s) of MA signature/resource
  - FFS principle for MA signature/resource configuration/selection among MA signature/resource belonging to same/different set(s).
    - e.g. different MA signatures/resources may be considered for different TBSs/MCSs/retransmissions/UE grouping/measurements, etc.
  - FFS signaling
  - FFS how to handle the collision of MA signature/resource
  - FFS the mapping between RS and other MA signatures

R1-1810118	Discussion on NOMA related procedures	Huawei, HiSilicon
R1-1810204	Procedures related to NOMA	ZTE
R1-1810263	Discussion on procedures related to NOMA	LG Electronics
R1-1810377	Discussion on NOMA procedures	vivo
R1-1810528	Discussion on NOMA procedures	CATT
R1-1810585	Considerations on procedures related to NOMA	Fujitsu
R1-1810629	Considerations on NOMA related procedures	Sony
R1-1810656	Considerations on NOMA related procedures	NEC
R1-1810851	Procedures related consideration to NOMA	Samsung
R1-1810995	Consideration on NoMA procedure	Guangdong OPPO Mobile Telecom.
R1-1811033	Considerations on NoMA related procedures	CMCC
R1-1811097	On ARQ/HARQ-related procedures for NOMA grant-free random access	Fraunhofer HHI
R1-1811176	Procedures for NoMA	Ericsson
R1-1811197	On Non-orthogonal Multiple Access Procedures	InterDigital, Inc.
R1-1811245	Procedures related to NOMA	Qualcomm Incorporated
R1-1811362	NOMA related procedures	NTT DOCOMO, INC.
R1-1811390	Discussion on NOMA UL Grant-free procedure	III
R1-1811486	Discussion on procedures related to NOMA	KDDI Corporation
R1-1811516	Considerations on Procedures of Non-orthogonal Multiple Access Schemes	CAICT

7.2.1.4 Link and system level performance evaluation for NOMA

R1-1810205 Link and system simulation results summary for NOMA ZTE

Observation 1: Schemes based on symbol-level spreading and legacy modulation have the similar link-level performance, in particular if the sequences meet WBE.

Observation 2: Low code rate is beneficial when the overloading is not very high, while low inter-user interference is beneficial for high overloading cases.

Observation 3: NOMA schemes by using soft-input-soft-output receiver can achieve better performance when the total spectral efficiency is high, with the cost of receiver complexity.

Observation 4: "Preamble + data" channel structure performs reasonably well in async operation with random selection of MA signature.

Observation 5: For mMTC configured grant scenario, the supported packet arrival rate (PAR) at packet drop rate (PDR) = 1% for NOMA is the double of that for baseline with MMSE-IRC receiver, and is about 50% higher than that for baseline with MMSE-PIC receiver.

Observation 6: For mMTC grant free with random selection scenario, the supported PAR at PDR = 1% for DMRS based NOMA is the double of that for baseline, and data-only based NOMA has better performance at low traffic load.

Observation 7: For URLLC configured grant scenario, the supported PAR at target percentage of users satisfying requirements = 95% for NOMA would be almost 2~3 times of that for baseline, even with MMSE-IRC receiver. And the performances with 200 bytes packet size are decreased relative to that with 60bytes packet size.

Observation 8: For eMBB configured grant scenario, the supported PAR at PDR = 1% for NOMA is more than 2 times of that for baseline with MMSE-IRC receiver, and is more than 50% higher than that for baseline with MMSE-PIC receiver.

Observation 9: DMRS enhancement is necessary to support more users transmitted on the same resources by NOMA.

Proposal 1: The design principle for the spreading sequences should be prioritized in the NOMA SI

- Target to achieve WBE criterion

- ETF criterion has less impact

Proposal 2: Symbol-level spreading based NOMA schemes should be prioritized in the NOMA SI

- Configurable spreading factor should be considered.
- Non-spreading can be considered as a special case with spreading factor = 1.

Proposal 3: Both time-domain (OFDM-symbol level) and frequency-domain (RE level) spreading can be considered for the power limited cases.

- Cell-specific scrambling/interleaving can be applied in case of frequency-domain symbol-level spreading.

Proposal 4: Performance comparison should be based on the same receiver or at same level of receiver complexity.

Proposal 5: Async operation with random selection of MA signature should be

- "Preamble + data" channel structure should be considered
- Preamble compatible with current NR design as the starting point.

Decision: The document is noted.

R1-1810852 **Performance evaluation for NoMA** **Samsung**

Observation 1: IGMA can well-adapt to various non-ideal cases, including power imbalance, timing offset, and frequency offset.

Observation 2: IGMA could provide 2~3 times better performance than OFDMA in terms of PDR vs PAR.

Observation 3: Performance degradation caused by the channel coding gain loss in linear spreading based schemes can be observed in SLS.

Decision: The document is noted.

R1-1811034 **Discussion on number of admissible users in NOMA** **CMCC**

Observation 1: For same SE configuration in NoMA, smaller TBS has worse BLER performance due to the CRC overhead. For same code rate configuration in NoMA, smaller TBS has slightly worse BLER performance probably due to the worse coding performance with smaller code size.

Observation 2: It provides better performance for a number of users(>12) multiplexing on the same resources compared with half of users multiplexing on half of the resources.

Observation 3: 10 Bytes@6PRBs has nearly no coverage performance loss for up to 24 connection number; 20 Bytes@6PRBs has some coverage loss [<5dB] especially for large user number (>12); 40 Bytes@6PRBs has much coverage loss with user number.

Proposal: Additional orthogonal DMRS pattern for NoMA needs to be designed for supporting 24 users.

Decision: The document is noted.

R1-1811363 **Link and system level simulation results of UL NOMA** **NTT DOCOMO, INC.**

Observation 1: GWBE sequences achieve similar performance with WBE under small TBS and better performance than WBE under large TBS.

Observation 2: User grouping can enhance the performance of uplink NOMA.

Proposal 1: GWBE sequences and user grouping should be considered as candidates for uplink NOMA.

Decision: The document is noted.

Thursday session

R1-1811872 **Offline summary of performance evaluations for NOMA** **ZTE**

Decision: The document is noted.

Agreements:

- Observation 1: with ideal channel estimation, the LLS results for Case 1 with 12 or 24 UEs show a similar performance for most of curves provided, at target BLER = 0.1, with appropriate configurations.
- Observation 2: with ideal channel estimation, the LLS results for Case 2 with 6 or 12 UEs show a similar performance for most of curves provided for coding rates no more than 0.2, at target BLER = 0.1.
- Observation 2.1: with ideal channel estimation, the LLS results for Case 2 with 6 or 12 UEs show a similar performance for most of curves provided for coding rate ~0.4, at target BLER = 0.1.

Agreements:

- Capture the evaluation results as summarized in R1-1811872 in TR38.812

    - Except the results shown using split of receivers
- Further discussion offline regarding adding conditions for evaluations for further results to be captured in the TR

Agreement:
- For NOMA SLS, companies to report how HARQ re-transmissions are performed (e.g., non-adaptive, adaptive, etc.)

Friday session

R1-1812047 **Updated summary of 7.2.1.4 on performance evaluations for NOMA** **ZTE**

Discussion: Huawei questioned whether below observations could be revised in future if new results show potential issues?
RAN1 chair: of course, any updates / new results with RAN1 consensus shall be considered
Decision: The document is noted.

Agreement:
- Observation: with ideal channel estimation, the LLS results for Case 3 with 6 UEs show a similar performance for most of curves provided with code rate up to 0.4, at target BLER = 0.1, even when different receiver types are used.

Agreements:
Observation: for Case 3 with 10 UEs and ideal channel estimation,
- the LLS results for simulated schemes with the Chip EPA hybrid PIC or MMSE-hybrid IC receiver or ESE-SISO receiver show a similar performance for most of curves provided with code rate up to 0.4, at target BLER = 0.1.
- the LLS results for simulated schemes with the MMSE-hard IC receiver show a similar performance for most of curves provided with code rate up to 0.4, at target BLER = 0.1.
- the LLS results with the Chip EPA hybrid PIC or MMSE-hybrid IC receiver or ESE-SISO receiver show better performance than the results with the MMSE-hard IC receiver.

Agreements
Observation: for Case 4 with 6 UEs and ideal channel estimation,
- the LLS results for simulated schemes with the Chip EPA hybrid PIC or MMSE-hybrid IC receiver show a similar performance for most of curves provided with code rate up to 0.6, at target BLER = 0.1.
- the LLS results for simulated schemes with the MMSE-hard IC receiver or ESE-SISO receiver show a similar performance for most of curves provided with code rate up to 0.6, at target BLER = 0.1.
- the LLS results with the Chip EPA hybrid PIC or MMSE-hybrid IC receiver show better performance than the results with the MMSE-hard IC receiver or ESE-SISO receiver.

Agreements:
Observation: for Case 5 with 4 UEs and ideal channel estimation,
- when the code rate is similar, the LLS results for simulated schemes with the Chip EPA hybrid PIC or MMSE-hybrid IC receiver show a similar performance for most of curves provided, at target BLER = 0.1.
- the LLS results for simulated schemes with the MMSE-hard IC receiver and ESE-SISO receiver show a similar performance for most of curves provided, at target BLER = 0.1.
- When the code rate is round 0.36, the LLS results with the Chip EPA hybrid PIC or MMSE-hybrid IC receiver show better performance than the results with the MMSE-hard IC receiver or ESE-SISO receiver.

When the code rate is round 0.71, the LLS results with the Chip EPA hybrid PIC or MMSE-hybrid IC receiver show similar performance to the results with the MMSE-hard IC receiver or ESE-SISO receiver

Agreements:
Observation: for Case 5 with 6 UEs and ideal channel estimation,
- the LLS results for linear-spreading based schemes (SF>1) with the MMSE-hard IC receiver show a similar performance, at target BLER = 0.1.

R1-1812038 **Link level simulation setups with modeled power differences** **Ericsson**
Decision: The document is noted.
R1-1812077 **NOMA cases with modeled power differences** **Ericsson**
Decision: The document is noted.

Agreement:
- The last 4 rows in R1-1812077 are endorsed for template 1 LLS, along with the note at the end

R1-1810119 Further discussion on NOMA evaluations Huawei, HiSilicon
R1-1810264 Further LLS evaluation for NOMA LG Electronics
R1-1810378 Evaluations for NOMA vivo
R1-1811861 Link level and system level evaluation results of NOMA CATT (rev of R1-1810529)
R1-1810626 Link-level performance results for ACMA with Multi-branch transmission HUGHES Network Systems Ltd
R1-1810630 Link level evaluation result of IDMA Sony
R1-1810762 Performance evaluation for NOMA Intel Corporation
R1-1811104 Evaluations for NOCA Nokia, Nokia Shanghai Bell
R1-1811940 Evaluation methodology and metrics for NoMA Ericsson (rev of R1-1811177)
R1-1811198 Preliminary System Level Evaluation of IDMA NOMA InterDigital, Inc.
R1-1811517 Evaluation of Timing Offset Impact on NOMA Schemes CAICT
R1-1811812 Link and system level evaluation for NOMA Qualcomm Incorporated (rev of R1-1811246)

7.2.1.5 Other

R1-1810120 Evaluation results for the mMTC scenario Huawei, HiSilicon
R1-1810121 Evaluation results for the URLLC scenario Huawei, HiSilicon
R1-1810122 Evaluation results for the eMBB scenario Huawei, HiSilicon
R1-1811806 Detailed link-level simulation results for NOMA ZTE (rev of R1-1810206)
R1-1810207 Detailed system-level simulation results for NOMA ZTE
R1-1810208 Physical layer abstraction for NOMA SLS ZTE
R1-1811131 Complexity Analysis of MMSE-based Hard IC Receiver Nokia, Nokia Shanghai Bell
R1-1811132 Complexity Analysis of ESE-based Soft IC Receiver Nokia, Nokia Shanghai Bell
R1-1811920 Link level evaluations for MU-MIMO Ericsson (rev of R1-1811178)
R1-1811179 MU-MIMO operation in NR with configured grants Ericsson
R1-1811180 Impairments model for link and system evaluations Ericsson
R1-1811181 DMRS design for NoMA Ericsson
R1-1811199 Link Level Evaluation of NOMA InterDigital, Inc.
R1-1811200 Further updates on Link Level Simulation Results on IDMA OFDM/DFT-s-OFDM InterDigital, Inc.
R1-1811364 Clarifications of UGMA design NTT DOCOMO, INC.
R1-1811365 Calibration results of system level simulation NTT DOCOMO, INC.
R1-1811538 Link performance of NOMA with non-AWGN interference Ericsson
R1-1811539 Link level evaluations for mMTC and eMBB Ericsson
Withdrawn
R1-1811540 Near-Far impacts on link performance Ericsson
R1-1811541 Observations on NOMA traffic models Ericsson
R1-1811855 NOMA Link Level Results; Templates 1-3 InterDigital

7.2.2 Study on NR-based Access to Unlicensed Spectrum

FS_NR_unlic; SID in RP-181339. Please refer to the SID for detailed scoping

R1-1811985 Chairman's notes of AI 7.2.2 Study on NR-based Access to Unlicensed Spectrum Ad-Hoc Chair (Ericsson)
Decision: The document is endorsed, content is incorporated below.

R1-1810473 A New Deployment Scenario for NR Unlicensed Dish Network
R1-1811247 TR38.889 v0.0.3 Qualcomm Incorporated
R1-1811910 TR38.889 v0.1.0 Qualcomm Incorporated
R1-1811910 is endorsed as TR38.889 v0.1.1

Friday

R1-1812049 **TP for TR38.889 v0.1.1 Qualcomm**

Decision: The document is endorsed.

MCC post meeting: Clean-up of the version endorsed in RAN1#94bis and creation of v0.2.0 as baseline for further update (R1-1812080).

7.2.2.1 Evaluation results for NR-U operation

Including any remaining simulation assumptions

R1-1810265	Simulation methodology for NR unlicensed operation	LG Electronics
R1-1810322	Evaluation Results for NR-U	ZTE
R1-1810438	Evaluation results for NR-U operation	MediaTek Inc.
R1-1810612	Initial Evaluation Results for NR-U	Nokia, Nokia Shanghai Bell
R1-1810708	SLS evaluation of NR unlicensed bands	Huawei, HiSilicon
R1-1810856	Initial evaluation result for NR-U	Samsung
R1-1811248	Coexistence evaluation results for NR unlicensed	Qualcomm Incorporated
R1-1811297	Coexistence evaluation results for NR-U and WiFi	Ericsson
R1-1811460	Evaluation of NR-U – Wi-Fi coexistence in the NR-U Indoor Sub 7GHz topology	BROADCOM

R1-1811836 **Feature lead summary for Evaluation results for NR-U operation Qualcomm**

Conclusion:
For evaluation purpose, the previous agreement on dropping 5 UEs per gNB is interpreted as exactly 5 UEs are associated with each cell.

Agreement:
When submitting the evaluation result, the following has to be provided as well

- the TxOP assumptions of WiFi and NR-U
- Is RTS/CTS enabled for WiFi
- PD/ED threshold assumptions
- Max modulation order supported in each technology
- MIMO scheme and number of MIMO layers used for both technologies
- WiFi MAC layer A-MPDU/A-MSDU aggregation level, MPDU size
- NR-U SCS,
- WiFi guard interval
- NR UE processing time capability (#1 or #2)
- NR PDSCH/PUSCH mapping type, PDCCH monitoring configuration
- Link adaptation assumptions
- NR assumption on self scheduling or using cross carrier scheduling

Agreement:
For the coexistence evaluation of sub-7GHz bands other than 5GHz band, previously agreed to use technology neutral assumptions. Companies are encouraged to provide simulation results together with assumption on the technology neutral channel access mechanism.

Agreement:
The template in Annex B of TR 38.889 v0.1.1 is used to capture results in the TR at least for 5 GHz.

7.2.2.2 Frame structure for NR-U operation

Including general numerology aspects, COT structure, potential impact of channel access procedures on frame structure, wideband operation including CA and BWP(s), etc.

R1-1810123 NR numerology and frame structure for unlicensed bands Huawei, HiSilicon

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R1-1810266	Frame structure for NR unlicensed operation	LG Electronics
R1-1810323	Discussion on Frame Structure for NR-U	ZTE
R1-1810379	Frame structure for NR-U operation	vivo
R1-1810439	On frame structure for NR-U operation	MediaTek Inc.
R1-1810579	Frame structure for NR-U operation	Lenovo, Motorola Mobility
R1-1810586	On flexible starting positions and related PDCCH monitoring for NR-U	Fujitsu
R1-1810613	On Frame Structure and Wideband Operation for NR-U	Nokia, Nokia Shanghai Bell
R1-1810631	Considerations on frame structure for NR-U operations	Sony
R1-1810657	Considerations on frame structure design for NR-U operation	NEC
R1-1810692	Frame structure for NR-U operation	AT&T
R1-1810763	On the NR-unlicensed frame structure	Intel Corporation
R1-1810857	Frame structure for NR-U	Samsung
R1-1810955	Frame structure for NR-U	Guangdong OPPO Mobile Telecom.
R1-1811017	Discussion on frame structure for NR-U operation	Spreadtrum Communications
R1-1811095	Wideband operation in NR unlicensed	PANASONIC
R1-1811147	Frame structures for NR unlicensed operation	Sharp
R1-1811201	NR-U frame structure design	InterDigital, Inc.
R1-1811249	Frame structure for NR-U operation	Qualcomm Incorporated
R1-1811298	Frame Structure for NR-U	Ericsson
R1-1811366	Frame structure for NR-U operation	NTT DOCOMO, INC.
R1-1811414	Discussion on the frame structure for NR-U	Beijing Xiaomi Mobile Software
R1-1811473	Discussion on frame structure for NR-U operation	ASUSTEK COMPUTER (SHANGHAI)

R1-1811877 Summary on frame structure for NR-U LG Electronics

Working assumption:
Extended CP for SS/PBCH block is not supported for NR-U operation.

- Note: This working assumption will be confirmed if there is no issue identified in terms of coverage and delay spread

Agreement:
It has been identified that support of different numerology candidates at least has the following specification impacts.

Item	15/30 kHz SCS	60 kHz SCS
UL Interlace Design	PRB-based interlacing has following spec impacts. • Number of interlaces • Number of PRBs per interlace • Resource allocation • Channel estimation aspects (e.g., impact on PRG)	PRB-based interlacing has following spec impacts, • Number of interlaces • Number of PRBs per interlace • Resource allocation • Channel estimation aspects (e.g., impact on PRG) In addition to above impacts, sub-PRB-based interlacing has following spec impacts, • Reference signal design (e.g., DMRS) • Resource allocation
NR-U DRS Design	• SS/PBCH block time domain pattern is already supported in Rel-15	• SS/PBCH block time domain pattern is not supported in Rel-15 o FFS for scaling Rel-15 design or new design • SS/PBCH block – CORESET configuration tables (38.213, Section 13) is not supported in Rel-15

Agreement:

- NR-U should support that a serving cell can be configured with bandwidth larger than 20 MHz.
  - For DL operation, the following options for BWP-based operation within a carrier with bandwidth larger than 20 MHz can be considered.

        - Option 1a: Multiple BWPs configured, multiple BWPs activated, transmission of PDSCH on one or more BWPs
        - Option 1b: Multiple BWPs configured, multiple BWPs activated, transmission of PDSCH on single BWP
        - Option 2: Multiple BWPs can be configured, single BWP activated, gNB transmits PDSCH on a single BWP if CCA is successful at gNB for the whole BWP
        - Option 3: Multiple BWPs can be configured, single BWP activated, gNB transmits PDSCH on parts or whole of single BWP where CCA is successful at gNB
    - Note: CCA is declared to be successful or not in multiples of 20 MHz.
    - FFS for UL operation including some or all of above options can be applied
- Note: Capture the following in TR only after further discussion for down-selecting from the options in RAN1#95.

Agreement:
Send LS to RAN4 on at least the following issues related to single wideband carrier operation, i.e., greater than 20 MHz:
- Potential need for new requirements within a carrier when the carrier spans multiple LBT bandwidth pieces
- Effect on UE receiver of interference from transmitters transmitting on parts of the same carrier
- Note: Other aspects can be included in the LS if necessary
- Note: RAN1 assumes that RAN4 will define requirements for carrier aggregation of 20 MHz carriers operating in unlicensed spectrum

R1-1812020 **Draft LS to RAN4 on wideband carrier operation for NR-U** **Ericsson**
Final LS is approved in R1-1812026 with the title modified to "LS on wideband carrier operation for NR-U".

R1-1812012 **Summary #2 on frame structure for NR-U** **LG Electronics**

Agreement:
For unlicensed PCell, the UE assumes single SSB numerology per band.

Agreement:
It has been identified to be beneficial for the NR-U design to not require the gNB to change a pre-determined TBS for a PDSCH transmission depending on the LBT outcome, at least when the PDSCH is transmitted at the beginning of the gNB's COT.

Agreement:
The following options have been identified as possible candidates for PDSCH transmission in the partial slot at least for the first PDSCH(s) transmitted in the DL transmission burst.
- Option 1: PDSCH(s) as in Rel-15 NR
- Option 2: Punctured PDSCH depending on LBT outcome
- Option 3: PDSCH mapping type B with durations other than 2/4/7 symbols
- Option 4: PDSCH across slot boundary
- FFS for signalling details, specification impact, implementation complexity
- Note: Above options are not mutually exclusive.

Agreement:
In addition to the functionalities provided by DCI format 2_0 in Rel-15 NR, indication of the COT structure in the time domain has been identified as being beneficial.

Agreement:
- It has been identified that FBE operation for the scenario where it is guaranteed that LBE nodes are absent on a long term basis (e.g., by level of regulation) and FBE gNBs are synchronized can achieve the following.
    - Ability to use frequency reuse factor 1
    - Lower complexity for channel access due to lack of necessity to perform random backoff
- FFS requirement of synchronization accuracy
- FFS specification impact
- Note: This does not imply that LBE does not have benefits in similar scenarios although there are differences between the two modes of operation

- Note: FBE may also have some disadvantages compared to other modes of operation such as LBE, e.g., a fixed overhead for idle time during a frame.

7.2.2.3 Potential physical layer channel design

7.2.2.3.1 DL Signals and Channels

Including DL data channel, DL control channel, DL RS, Sync channel, etc.

R1-1810124 DL channels and signals in NR unlicensed band Huawei, HiSilicon
R1-1810267 Physical layer design of DL signals and channels for NR unlicensed operation LG Electronics
R1-1810324 Considerations on DL Reference Signals and Channels Design for NR-U ZTE
R1-1810380 Discussion on physical DL channel design in unlicensed spectrum vivo
R1-1810440 On DL signals and channels in NR-U MediaTek Inc.
R1-1810534 DL Physical Channel and Signal Design for NR Unlicensed Operations CATT
R1-1810622 On DL Signals and Channels for NR-U Nokia, Nokia Shanghai Bell
R1-1810632 Considerations on DL Signals and Channels for NR unlicensed operation Sony
R1-1810693 NR-U design for DL signals and channels AT&T
R1-1810764 Enhancements to NR DL signals and channels for unlicensed operation Intel Corporation
R1-1811800 Downlink signal and channel design for NR-U Samsung (Revision of R1-1810858)
R1-1810956 Considerations on DL signals and channels for NR-U Guangdong OPPO Mobile Telecom.
R1-1811013 Disscussion on DRS in NR-U Spreadtrum Communications
Withdrawn
R1-1811120 On DL signals and channels for NR-U Apple Inc.
R1-1811148 DL channels and signals for NR unlicensed operation Sharp
R1-1811202 On design of downlink signals and channels for NR-U InterDigital, Inc.
R1-1811250 DL signals and channels for NR-U Qualcomm Incorporated
R1-1811299 On DL signals and channels Ericsson
R1-1811321 Initial Signal Design for NR-U Charter Communications
R1-1811325 DRS Framework and Multiplexing Charter Communications
R1-1811367 DL Signals and Channels for NR-U operation NTT DOCOMO, INC.
R1-1811395 Discussion on DRS in NR-U Spreadtrum Communications
R1-1811415 Discussion on DL signals for NR-U Beijing Xiaomi Mobile Software
R1-1811620 Technology Neutral DL Preamble CableLabs

R1-1811911 Feature lead summary for NR-U DL Signals and Channels Motorola Mobility, Lenovo

R1-1811947 WF on initial signal that facilitates power saving and fair coexistence Broadcom, CableLabs, Cisco, HPE (Aruba), BlackBerry

7.2.2.3.2 UL Signals and Channels

Including UL data channel, UL control channel, UL RS, PRACH, etc.

R1-1811815 Feature lead summary for UL Signals and Channels Ericsson
R1-1810125 UL PHY channels for NR unlicensed Huawei, HiSilicon
R1-1810268 Physical layer design of UL signals and channels for NR unlicensed operation LG Electronics
R1-1810325 Considerations on UL Reference Signals and Channels Design for NR-U ZTE
R1-1810381 Discussion on physical UL channel design in unlicensed spectrum vivo
R1-1810441 On UL signals and channels in NR-U MediaTek Inc.
R1-1810535 UL Physical Channel and Signal Design for NR Unlicensed Operations CATT
R1-1810580 UL signals and channels for NR-U operation Lenovo, Motorola Mobility
R1-1810587 On UL signals and channels design for NR-U Fujitsu
R1-1810611 NR-U UL channels Panasonic Corporation
R1-1810614 On uplink signal and channel structures for NR-U Nokia, Nokia Shanghai Bell
R1-1810765 Enhancements to NR UL signals and channels for unlicensed operation Intel Corporation
R1-1810811 Discussion on UL Signals and Channels in NR-U NEC

R1-1810859 Uplink signal and channel design for NR-U Samsung
R1-1810957 Considerations on UL signals and channels for NR-U Guangdong OPPO Mobile Telecom.
R1-1811021 Discussion on UL signals and channels in NR-U Spreadtrum Communications
R1-1811121 On UL signals and channels for NR-U Apple Inc.
R1-1811149 UL channel and signal design for NR unlicensed operation Sharp
R1-1811203 Design aspects of NR-U uplink signals and channels InterDigital, Inc.
R1-1811251 UL signals and channels for NR-U Qualcomm Incorporated
R1-1811989 On UL signals and channels Ericsson (rev of R1-1811300)
R1-1811368 UL Signals and Channels for NR-U operation NTT DOCOMO, INC.
R1-1811452 Consideration on UL channel design for NR-U operation WILUS Inc.

R1-1811815 Feature lead summary for UL Signals and Channels Ericsson

R1-1811973 Feature lead summary 2 for UL Signals and Channels Ericsson

Agreement:

- Within a 20 MHz bandwidth, the following candidate PRB-based interlace designs have been identified where M is the number of interlaces and N is the number of PRBs per interlace in a 20 MHz bandwidth. Where two values are listed for N, it means that some interlaces have one more PRB than others (non-uniform interlace design):
  - 15 kHz:
    - M = 12, N = 8 or 9
    - M = 10, N = 10 or 11
    - M = 8, N = 13 or 14
  - 30 kHz:
    - M = 6, N = 8 or 9
    - M = 5, N = 10 or 11
    - M = 4, N = 12 or 13
  - 60 kHz:
    - M = 4, N = 6
    - M = 3, N = 8
    - M = 2, N = 12
  - 60 kHz (assuming 26 PRBs is agreed by RAN4 in a 20 MHz bandwidth):
    - M = 4, N = 6 or 7
    - M = 2, N = 13
    - M = 3, N = 8 or 9
- It is up to RAN4 to investigate whether or not the non-uniform interlace structure has an impact on MPR/A-MPR requirements for PUSCH

Agreement: Capture the following in TR 38.889

- Both PRB and sub-PRB interlacing for 60 kHz have been studied. For sub-PRB interlacing the following aspects have been considered:
  - Power boosting potential depending on resource allocation size
  - PUSCH DMRS configuration aspects
  - Channel estimation performance
  - Number of REs per interlace unit

Agreement: For carriers with bandwidth larger than 20 MHz, two candidate interlace designs have been identified.

- Alt-1: Same interlace spacing for all interlaces regardless of carrier BW.
  - This alternative uses Point A as a reference for the interlace definition
- Alt-2: Interlacing defined on a sub-band (20 MHz) basis. (Note: Possible interlace spacing discontinuity at edges of sub-band).

7.2.2.4 Potential physical layer procedures

7.2.2.4.1 Channel access procedures

R1-1810126 Coexistence and channel access for NR unlicensed band operations Huawei, HiSilicon
R1-1810269 Channel access procedure for NR unlicensed operation LG Electronics

R1-1810326 Discussion on Channel Access Mechanism for NR-U ZTE
R1-1810382 Discussion on the channel access procedures vivo
R1-1810442 On channel access procedure in NR-U MediaTek Inc.
R1-1810536 Channel Access Procedures for NR Unlicensed Operations CATT
R1-1810588 On channel access procedure for NR-U Fujitsu
R1-1810615 Channel access and co-existence for NR-U operation Nokia, Nokia Shanghai Bell
R1-1810633 Considerations on channel access procedures for NR unlicensed operations Sony
R1-1810694 Enhancements for the NR-U channel access procedure AT&T
R1-1810766 Enhancements to channel access mechanism for NR-unlicensed Intel Corporation
R1-1810860 Channel access procedure for NR-U Samsung
R1-1810958 Channel access procedures for NR-U Guangdong OPPO Mobile Telecom.
R1-1811054 Extensions for Channel Access Procedures Motorola Mobility, Lenovo
R1-1811081 Receiver assissted channel access procedure in NR-U TCL Communication Ltd.
R1-1811119 Channel access procedures for NR-U Apple Inc.
R1-1811150 Channel access procedures for NR unlicensed operation Sharp
R1-1811204 Channel access procedure and coexistence in NR-U InterDigital, Inc.
R1-1811252 Channel access procedure for NR-U Qualcomm Incorporated
R1-1811301 Channel access mechanisms for NR-U Ericsson
R1-1811314 Discussion on channel access procedure for NR-U ITRI
R1-1811324 Channel access for UL Transmissions Charter Communications
R1-1811369 Channel access procedures for NR-U operation NTT DOCOMO, INC.
R1-1811453 Channel access procedure for NR-U operation WILUS Inc.
R1-1811625 Design consideration on channel accessing Convida Wireless
R1-1811908 WF on the use of No-LBT and fixed LBT for transmissions outside a shared COT Broadcom, HPE (Aruba), Cisco, BlackBerry, Ruckus

R1-1811959 Feature Lead's Summary on Channel Access Procedures Nokia, Nokia Shanghai Bell

7.2.2.4.2 Initial access and mobility

R1-1810127 Initial access in NR unlicensed Huawei, HiSilicon
R1-1810270 Initial access and mobility for NR unlicensed operation LG Electronics
R1-1810327 Discussion on Initial Access and Mobility for NR-U ZTE
R1-1810383 Discussion on initial access for NR-U vivo
R1-1810443 On initial access and mobility in NR-U MediaTek Inc.
R1-1810537 Initial Access and Mobiity for NR Unlicensed Operations CATT
R1-1810624 On Initial Access and Mobility for NR-U Nokia, Nokia Shanghai Bell
R1-1810634 Considerations on initial access and mobility for NR unlicensed operations Sony
R1-1810695 NR-U design for initial access and mobility AT&T
R1-1810767 Enhancements to initial access and mobility for NR-unlicensed Intel Corporation
R1-1810861 Initial access and mobility procedure for NR-U Samsung
R1-1810959 Initial access and mobility for NR-U Guangdong OPPO Mobile Telecom.
R1-1811014 Discussion on initial access and mobility in NR-U Spreadtrum Communications
R1-1811055 Initial Access and Diversity in RACH transmissions Motorola Mobility, Lenovo
R1-1811205 Initial Access and Mobility Procedures in NR-U InterDigital, Inc.
R1-1811253 Initial access and mobility for NR-U Qualcomm Incorporated
R1-1811302 On initial access, RRM, mobility and RLM Ericsson
R1-1811315 Study on the impact of RACH procedure for NR-U ITRI
R1-1811319 SSB Transmission Principles Charter Communications
R1-1811323 Four-step and two-step RA Charter Communications
R1-1811416 On SSB transmission in NR unlicensed Beijing Xiaomi Mobile Software
R1-1811443 Initial access and mobility for NR-U ITL
R1-1811446 On initial access procedure for NR-U Potevio
R1-1811454 On initial access and mobility for NR-U operation WILUS Inc.
R1-1811574 Initial access in NR-U KT Corp.

R1-1811885 **Feature lead summary #1 of initial access and mobility** **Charter Communications**

Agreement:
For SSB transmissions as part of DRS:

- It is considered beneficial to expand the maximum number of candidate SSB positions within DRS transmission window to [Y], for e.g., Y = [64]
  - FFS: How to derive frame timing from detected SS/PBCH block
- Transmitted SSBs do not overlap
  - FFS: Shift granularity between candidate SSBs positions/candidate groups of SSBs
  - Maximum number of transmitted SSBs is [X] within DRS transmission window. X <= 8
  - FFS: Duration of DRS transmission window
  - FFS: Duration of the transmitted DRS within the window, including SSBs and other multiplexed signals/channels
- FFS: relationship between transmitted SSB index and QCL assumption at UE
- FFS: If and how to support beam repetition for soft combining of SSBs within the same DRS transmission

Agreement:
Following options have been identified for potential RACH resource enhancements in NR-U beyond the flexibility already available in Rel-15:

- **Frequency-domain enhancement**
  - Multiple PRACH resources across multiple LBT sub-bands/carriers for both contention-free and contention-based RA
- **Time-domain enhancements**
  - For connected mode UE, scheduling of PRACH resources via DCI.
    - Triggered PRACH within TXOP can use a new resource
  - For idle mode UE, scheduling of PRACH resources via paging
    - Note: potential inefficiency in network resource due to paging across multiple cells
  - Additional, new RACH resources are used immediately following detection of DRS transmission
  - Multiple PRACH transmissions before Msg2 reception in RAR window for initial access
    - Number of allowed transmissions is pre-defined or indicated, e.g., in RMSI
    - FFS: How to handle potential multiple RARs to same UE
  - Group wise SSB-to-RO mapping by frequency first-time second manner, where grouping is in time domain

Agreement:

- It is considered beneficial to configure DMTC(s) (DRS Measurement Time Configuration) in which UEs can perform measurements.
- DRS-based RRM measurements are performed inside the DMTC(s)
  - FFS: Similarity with Rel-15 SMTC
  - CSI-RS-based measurements may be performed outside the DMTC(s)
- DRS-based RLM for unlicensed SpCell is performed inside the DMTC(s)
  - RLM DMTC may coincide with DRS transmission window
  - CSI-RS-based RLM may be performed outside of DMTC(s)
- FFS: Explicit indication is provided by gNB to indicate whether or not DRS and/or CSI-RS transmissions occurred
- FFS: If DMTCs for RRM measurements and RLM are the same or can be different

7.2.2.4.3 Potential HARQ enhancements

R1-1810128	HARQ enhancement in NR unlicensed	Huawei, HiSilicon
R1-1810271	HARQ procedure for NR unlicensed operation	LG Electronics
R1-1810328	Discussion on Scheduling and HARQ for NR-U	ZTE
R1-1810384	Discussion on HARQ operation for NR-U	vivo
R1-1810444	Enhancements on HARQ for NR-U operation	MediaTek Inc.
R1-1810581	HARQ-ACK enhancement for NR-U	Lenovo, Motorola Mobility
R1-1810616	On HARQ Enhancements for NR-U	Nokia, Nokia Shanghai Bell
R1-1810635	Considerations on HARQ enhancements for NR unlicensed operation	Sony

R1-1810696 HARQ enhancements for NR-U AT&T
R1-1810768 Enhancements to HARQ for NR-unlicensed Intel Corporation
R1-1810862 HARQ enhancements for NR-U Samsung
R1-1810960 HARQ enhancements for NR-U Guangdong OPPO Mobile Telecom.
R1-1811005 Discussion on HARQ enhancement in NR-U Spreadtrum Communications
R1-1811151 HARQ enhancement for NR unlicensed operation Sharp
R1-1811206 HARQ enhancements for NR-U InterDigital, Inc.
R1-1811254 Potential HARQ enhancements for NR-U Qualcomm Incorporated
R1-1811303 Potential HARQ enhancements Ericsson
R1-1811316 Potential HARQ enhancements for NR-U ITRI
R1-1811322 HARQ Feedback Enhancements Charter Communications
R1-1811370 HARQ enhancements for NR-U NTT DOCOMO, INC.
R1-1811417 Discussion on the HARQ enhancement for NR-U Beijing Xiaomi Mobile Software
R1-1811518 Discussions on HARQ enhancements for NR-U CAICT
R1-1811577 Discussion on HARQ enhancements for NR-U KT Corp.

R1-1811883 Feature lead summary of HARQ enhancement in NR-U Huawei, HiSilicon
Further revised in R1-1812003.

Agreement:
A gap of up to 16 us should be allowed between the end of the DL transmission and the immediate transmission of feedback to accommodate for the hardware turnaround time.

7.2.2.4.4 Potential enhancements to configured grants

R1-1811653 Summary of Potential Enhancement to Configured Grants Intel
R1-1810129 Transmission with configured grant in NR unlicensed band Huawei, HiSilicon
R1-1810272 Discussion on configured grant for NR unlicensed operation LG Electronics
R1-1810329 Discussion on Configured Grant for NR-U ZTE
R1-1810385 Discussion on the enhancements to configured grants vivo
R1-1810445 Discussion on NR-U configured grant MediaTek Inc.
R1-1810617 On support of UL transmission with configured grants in NR-U Nokia, Nokia Shanghai Bell
R1-1810636 Considerations on potential enhancements to NR-U configured grant Sony
R1-1810769 Enhancements to NR configured grants for unlicensed operation Intel Corporation
R1-1810810 Discussion on configured grants in NR-U NEC
R1-1810863 Enhancements on configured grant for NR-U Samsung
R1-1810961 Considerations on configured grant for NR-U Guangdong OPPO Mobile Telecom.
R1-1811018 Consideration on configured grant transmission in NR-U operation Spreadtrum Communications
R1-1811082 Discussion on COT sharing for configured grants TCL Communication Ltd.
R1-1811152 Potential enhancements to configured scheduling for NR unlicensed operation Sharp
R1-1811207 Configured grant enhancements in NR-U InterDigital, Inc.
R1-1811255 Potential enhancements to configured grants for NR-U Qualcomm Incorporated
R1-1811304 Potential enhancements to configured grants Ericsson
R1-1811320 UL BWP Management in NR-U Charter Communications
R1-1811371 Enhancements to configured grants for NR-U operation NTT DOCOMO, INC.
R1-1811626 Potential Enhancements to Configured Grants Convida Wireless

R1-1811653 Summary of Potential Enhancement to Configured Grants Intel Corporation

7.2.2.4.5 Other

R1-1811083 Discussion on synchronized user multiplexing for NR-U TCL Communication Ltd.

7.2.2.5 Other

R1-1810386 Discussion on sub-PRB interlace structure vivo
R1-1810618 On Maximum TX Power for UL Interlace Structures Nokia, Nokia Shanghai Bell

R1-1811084 Wideband carrier usage for NR-U TCL Communication Ltd.
R1-1811085 Discussion on Frequency Reuse for NR-U TCL Communication Ltd.
R1-1811305 On interlace design for NR-U uplink Ericsson
R1-1811306 On SRS design for unlicensed operation Ericsson
R1-1811307 ACLR aspects of wideband carrier operation Ericsson
R1-1811308 Draft LS to RAN4 on CACLR requirements for NR-U Ericsson
See AI 7.2.2.2
R1-1811309 TP for 38.889 on numerology for NR-U Ericsson
R1-1811814 On the use of a preamble for NR-U Ericsson (Revision of R1-1811310)

7.2.3 Study on Integrated Access and Backhaul for NR

FS_NR_IAB; SID in RP_181349. Please refer to the SID for detailed scoping (RAN2 lead)

R1-1811311 TR38.874, Version 0.5.0 AT&T, KDDI, Qualcomm, Samsung
Decision: The document is endorsed.

Friday
Email approval for the TP capturing all agreements till Oct19th – Thomas (AT&T)

7.2.3.1 Enhancements to support NR backhaul links

R1-1810130 Physical layer design for NR IAB Huawei, HiSilicon

Proposal 1: For the SSB-based IAB node discovery, use the SSBs which are orthogonal (TDM and/or FDM) with the ones used for access UE.
Proposal 2: For IAB node discovery and measurement, overlapping of SSB transmission among IAB nodes should be supported in order to save the measurement overhead.
Proposal 3: For a given IAB node, its SSB transmission should be muted to facilitate the measurement for other IAB nodes if its measurement window (SMTC) is overlapped with its SSB transmission.
Proposal 4: A notification mechanism of parent backhaul link condition from an IAB node DU to its child IAB node MT should be supported via MAC-CE or L1 signaling.
Proposal 5: For the MT at a given IAB node, its parent backhaul link transmission occasions should be configured in semi-static manner.
Proposal 6: For the DU at a given IAB node, its child link transmission occasions should be configured in semi-static manner.
Proposal 7: For a given IAB node, the resource configuration for the MT and DU should take the resource multiplexing between the parent link and the child link into account.
Proposal 8: Mechanism for dynamic TDM/FDM/SDM resource sharing between MT and DU, should be supported, and at least the following options should be further studied
- Introducing additional L1 signaling to indicate the usage of configured backhaul slots
- Reusing Rel-15 dynamic scheduling mechanism

Proposal 9: In order to support dynamic resource sharing between MT and DU, the following processing time constraint should be considered:
- The MT's PDCCH should be ahead of its associated PDSCH/PUSCH
- The MT's PDCCH should be ahead of the DU's PDCCH for its child link.

Proposal 10: To support FDM and SDM between backhaul and access links, enhanced downlink power control scheme on backhaul link should be studied in order to solve the power imbalance issue between backhaul and access links.
Proposal 11: For FR1, it should be studied how to improve the OTA synchronization accuracy in order to multi-hop topology.
Proposal 12: It should be studied how the DL Tx timing adjustment value of IAB node can be acquired in an accurately and timely manner to avoid timing error propagation and system performance degradation.
Proposal 13: It should be studied how to maintain IAB node local DL Tx timing in case of route switching.
Proposal 14: Case #6 should be supported to achieve transmission timing alignment between MT and DU.
Proposal 15: Case#7 should be supported to achieve reception timing alignment between MT and DU.
Proposal 16: In addition to timing alignment, other mechanisms to interference mitigation between MT and DU in case of SDM, should also be studied, including:
- Orthogonal DMRS configuration between MT's parent backhaul link and DU's child link
- Interference mitigation receiver

Proposal 17: Timing alignment between MT and DU should be studied for both intra-panel and inter-panel FDM/SDM.
Proposal 18: RAN1 should study and define the slot pattern of the parent backhaul slot, i.e., the starting and ending OFDM symbol location.

Proposal 19: The DU-to-MT CLI measurement should adopt the inter-cell interference measurement mechanism in NR Rel-15.
Proposal 20: For MT-to-DU, MT-to-MT and DU-to-DU CLI, RAN1 should study a unified inter-IAB node CLI measurement framework, following the DU-to-MT CLI measurement, including:
- Unified CSI-RS for the CLI measurement
- Unified CLI measurement timing with the uniform IAB DL Tx timing as assumption

Proposal 21: Both distributed and centralized interference management schemes should be studied for inter-IAB CLI management.
Proposal 22: RAN1 should study the enabling mechanisms to support the inter-IAB node CLI mitigation method, at least including
- Time/frequency coordination
- Beam coordination
- Power control

Proposal 23: Up to 1024QAM should be considered for backhaul link.
Proposal 24: Phase noise compensation performance improvement on backhaul link should be investigated to support higher order modulation above 64QAM.

Decision: The document is noted.

R1-1810690 **Enhancements to support NR backhaul links** **AT&T**

Proposal 1: IAB should support the configuration and coordination of orthogonal time/frequency resources and introduce new periodicities and time-domain mapping patterns for SSB transmissions (i.e. SMTC) and CSI-RS resources intended for backhaul link discovery and maintenance across multiple backhaul hops taking into account the IAB topology.
Proposal 2: The use of aperiodic out-of-sync and in-sync indications based on the beam failure recovery procedure should be supported to assist the RLF procedure for IAB-nodes.
Proposal 3: A MT triggered beam management procedure should be studied for overhead reduction in IAB.
Proposal 4: In addition to TDM partitioning of parent and child links, IAB should support frame structure coordination mechanisms which enable alignment of DL transmissions of the IAB node's DU with UL transmission slots of the IAB node's MT as well as alignment of DL reception slots of the IAB nodes' MT with UL reception slots at the IAB node's DU.
Proposal 5: IAB should support dynamic frame structure coordination between a parent IAB node and child IAB node which enables flexible utilization of either DL or UL resources within a semi-statically coordinated and configured DL/UL resource pattern.
Proposal 6: IAB supports Case 3 where DL and UL reception timing is aligned within an IAB-node
Proposal 7: Beam measurement and reporting based on L1-SINR is needed to mitigate CLI in IAB
Proposal 8: IAB should support short term and long term CLI measurement and coordination of measurement occasions across multiple backhaul hops, which can enable load measurement, identification of the level of coupling between interfering nodes, and take into account multiple antenna and beamforming techniques at the transmitter and receiver.
Proposal 9: DL and UL transmit power coordination between IAB nodes should be supported, including mechanisms for DL power control between a parent and child IAB node.

Decision: The document is noted.

R1-1810864 **Necessary Enhancements for NR IAB** **Samsung**

Proposal 1: SSB based IAB node discovery and measurement should be supported as the baseline solution.
Proposal 2: SSB TDM pattern should depend on hop order and different TDM patterns can be configured for different hop order.
Proposal 3: SSB muting pattern should depend on hop order and different TDM patterns should be configured across IAB nodes with the same or different hop order.
Proposal 4: Following Alts can be considered for SSB muting
- Alt1: Predefined muting;
- Alt2: Semi-persistent or dynamic SSB muting.
  - FFS: Signaling procedure

Proposal 5: To guarantee required guard periods within an IAB node, a priority rule between BH transmission and BH reception, BH and Access, Access DL and Access UL can be further discussed.
Proposal 6: Information on the SRS/DMRS of interfering IAB nodes should be exchanged between coordinated gNBs.

Proposal 7: NR should consider multiple sets of RACH parameters for RACH multiplexing and a flag signal can be considered to indicate such configuration and broadcasted in system information.
Proposal 8: IAB should consider new preamble formats to support longer coverage compared to NR phase 1.
Proposal 9: The following solutions can be considered for IAB node power control with higher priority given to backhaul links

- Always reducing transmission power from IAB considering access link,
- Having time durations to protect access link from higher transmission power of IAB node,
- Introducing closed loop power control for backhaul link.

Proposal 10: Multiplexing should take the enhancements made for IAB node discovery and measurement into consideration. E.g., slots with SSBs for IAB node discovery should be avoided when scheduling UL.
Proposal 11: Both symbol-level and slot-level granularity can be supported and for adaptation period, its duration should be configurable, where within each adaptation period, a bitmap can be used to indicate the active link.
Proposal 12: An IAB node should wait until its child IAB nodes finish their own configuration for multiplexing pattern before issuing a new multiplexing pattern configuration command and a confirmation signaling can be used for notification.

Decision: The document is noted.

R1-1811256 **Enhancements to support NR backhaul links** **Qualcomm Incorporated**

Proposal 1.1: NR allows network to configure the periodicity and radio frame location of backhaul RACH resources differently from the Rel-15 configurations to reduce backhaul RACH overhead and to orthogonalize backhaul RACH resources across adjacent hops.
Proposal 2.1: to address the half-duplex constraint in the IAB-node discovery and measurements, support different TX/RX coordination patterns. The patterns may be (pseudo-)random, semi-persistent/periodic, or dynamically configured.
Proposal 2.2: support configuring the TX/RX pattern both centrally (baseline) and in a distributed manner.

- FFS the required signaling.

Proposal 2.3: simple modifications to the NR R15 RRM framework should be considered to make it more suitable for backhaul operations, such as

- configuring new values for CSI-RS/SMTC periodicity (e.g. larger than 160 msec),
- increasing the maximum number of SMTC configured per frequency,
- supporting more flexible time-domain location of the SSBs within a SMTC,
- leveraging SMTC design to configure transmission windows (STTC).

Proposal 2.4: support both solution 1-B (using off-raster SSBs TDMed with SSBs used by access UEs) and solution 2 (in case of synchronous network operation only) for IAB discovery.
Proposal 2.5: adopt the proposed framework in **Error! Reference source not found.** for initial acquisition, inter-IAB-node discovery and measurements.

Proposal 3.1: To tighten the OTA timing error, especially in lower bands, RAN1 should consider the following solutions:

- Using wider band signals (UL and DL) to achieve more accurate timing estimation
- Enhancing TA, e.g. by reducing its granularity and increasing the number of bits

Proposal 3.2: IAB TR to mention TA-based OTA synchronization may support up to [5] hops in MMW bands.
Proposal 3.3: it should be further studied how timing adjustment of an IAB-node (following OTA synchronization) impacts the operation of its child IAB-nodes and UEs.
Proposal 4.1: TR to capture the comparison of various timing alignment cases.
Proposal 5.1: The indication of resource partition pattern shall provide support to differentiate resources that are dedicated for child access links only, or dedicated for child backhaul links only, or shared among child access links and child backhaul links.
Proposal 5.2: RAN1 shall consider the following two options for indication of resource partition pattern:

- Option1: Keep Rel15 TDD DL/UL slot configuration unchanged and define a separate signaling message, e.g. a F1-AP signaling message, to indicate resource partition pattern.
- Option2: Extend Rel15 TDD DL/UL slot configuration messages with new fields to indicate resource partition pattern together with DL/UL directions.

Proposal 5.3: Interaction between resource partition pattern and Rel15 resource allocation shall be further studied, including confliction resolution rules.
Proposal 5.4: A dynamic coordination approach shall be supported with new signalling messages required at NR Uu interface for IAB-node:

- Extended SFI with a new “NULL” state for an IAB-node to indicate non-schedulable resources to its child IAB-node.
- A new message from child IAB-node to request adjustment of NULL resources of the IAB-node.

Proposal 6.1: the power of the concurrent parent BH link and access/child BH link (multiplexed in frequency or spatial)

- should be controlled semi-statically – at least for the transmissions that cannot dynamically change the power (like DL RS for RRM, periodic CSI-RS)
- can be determined dynamically for the remaining transmissions.
- FFS: enhancements to allow more efficient SDM/FDM of the access and backhaul links.

Proposal 7.1: IAB CLI study should be unified with other CLI scenarios and worked out in the CLI WI.
- IAB SI should identify IAB-specific aspects of CLI and provide an input to CLI WI to investigate such aspects.

Proposal 8.1: NR supports success of beam recovery procedure stopping the T310 timer and preventing IAB UEF to declare RLF.
Proposal 8.2: NR supports DCI-based QCL indication for PDCCH, to enable faster beam switching.
Proposal 8.3: RAN2 should discuss whether and how an IAB-node provides notification to its children about the condition of its parent BH link.
Decision: The document is noted.

Tuesday conclusion: Continue discussion offline – Erik (Ericsson)

Thursday session
R1-1811972 **Updated summary of 7.2.3.1 Enhancements to support NR backhaul links Ericsson**
Decision: The document is noted.

Agreements:
- Solution 1-B means SSB, that may get muted, for inter-IAB cell search and measurement in stage 2 is not on the currently defined sync raster for a SA frequency layer, while for a NSA frequency layer the SSBs are transmitted outside of the SMTC configured for access UEs
- Solution 1-A means SSB for inter-IAB cell search in stage 2 is on the currently defined sync raster for a SA frequency layer, while for a NSA frequency layer the SSBs are transmitted inside of the SMTC configured for access UEs

Agreements:
An IAB node should not mute SSB transmissions targeting UE cell search and measurement when doing inter-IAB cell search in stage 2
- For SA, means that SSBs transmitted on the currently defined sync raster follows the currently defined periodicity for initial access
- Means that Solution 1-B implies SSB, that may get muted, for inter-IAB stage 2 cell search is at least TDM with SSB used for UE cell search and measurements

Agreements:
- Solution 1-A and Solution 1-B are both supported
  - Enhancements for off-raster SSB, e.g. new periodicities and time-domain mapping can be considered

Agreements:
- CSI-RS can be used for inter-IAB detection in synchronous network
  - Extended CSI-RS periodicities can be considered.

Agreements:
- For IAB node random access support
  - Longer RACH periodicity
  - Additional preamble formats allowing for longer RTT
  - Details left for WI phase

Agreement:
- Based on Rel-15 PRACH configurations, NR allows network to configure offset(s) for PRACH occasions for MT IAB node(s), to TDM backhaul RACH resources across adjacent hops. The detailed granularity of the offset (e.g., radio frame, subframe, slot, etc.) is left for WI phase

Agreements:

- For Timing and Synchronization
  - For case #1 & case #7, if DL TX and UL RX are not well aligned at the parent node, additional information about the alignment is needed for the child node to properly set its DL TX timing for OTA based timing & synchronization
  - Case #7 to be supported if and only if compatible with release 15 Ues
    - Further check w.r.t. compatibility
  - Support of case #6 is FFS
  - No other cases are supported

R1-1812024 **Updated summary of 7.2.3.1 Enhancements to support NR backhaul links Ericsson**
Decision: The document is noted.

Agreements:
From an MT point-of-view, the following time-domain resources can be indicated for the parent link:
- Downlink time resource,
- uplink time resource,
- flexible time resource

as in release 15.
From a DU point-of-view, the child link has the following types of time resources
- Downlink time resource,
- uplink time resource,
- flexible time resource
- not available time resources (not to be used for communication on the DU child links)

Exact configuration for DU is FFS

Proposals:
- There are four flavors of non-available resources:
  - Soft-DL: Can temporarily be made available for child DL by parent (FFS implicitly and/or explicitly)
  - Soft-UL: Can temporarily be made available for child UL by parent (FFS implicitly and/or explicitly)
  - Soft-F: Can temporarily be made available for child F by parent (FFS implicitly and/or explicitly)
  - Hard: Non-available resources that are not Soft-DL/UL/F
    - This is configurable by the CU

Friday session
R1-1812042 **Updated summary of 7.2.3.1 Enhancements to support NR backhaul links Ericsson**
Decision: The document is noted.

Agreements:
- For each of the downlink, uplink and flexible time-resource types of the DU child link there are two flavors, hard and soft:
  - Hard: The corresponding time resource is always available for the DU child link
  - Soft: The availability of the corresponding time resource for the DU child link is explicitly and/or implicitly controlled by the parent node.

R1-1812050 TP for 38.874 on Initial Access Enhancements for NR IAB AT&T

R1-1810273 Discussions on mechanisms to support NR IAB scenarios LG Electronics
R1-1810387 Enhancements to support NR backhaul links vivo
R1-1810538 NR Physical Layer design for IAB backhual link CATT
R1-1810577 Discussion on resource partitioning for IAB network Lenovo, Motorola Mobility
R1-1810673 NR enhancements to support IAB Nokia, Nokia Shanghai Bell
R1-1810770 PHY enhancements on NR IAB Intel Corporation
R1-1810806 Discussion on IAB NEC
R1-1811035 Discussions on enhancements to support NR Backhaul links CMCC
R1-1811135 Discussion on Enhancements to support NR backhaul links Sony
R1-1811160 Discussion on physical layer enhancements for NR IAB ZTE, Sanechips
R1-1811166 Discussion on Timing Alignment for IAB nodes ASUSTEK COMPUTER (SHANGHAI)

R1-1811208 On Integrated Access Link and Backhaul in NR InterDigital, Inc.
R1-1811359 Discussion on enhancements to support NR backhaul links NTT DOCOMO, INC.
R1-1811512 Physical layer aspects of IAB Ericsson
R1-1811519 Discussion on enhancement of IAB discovery and Resource allocation CAICT

7.2.3.2 Evaluation methodology for NR IAB

Including remaining details on deployment scenarios and evaluation assumptions, evaluation results, etc.

R1-1810771 Evalutation methodology and results on NR IAB Intel Corporation

Observation 1: For the initial network topology formation in IAB performance evaluation, two metrics, "RSRP" and "min RSRP", have identical performance in both heterogeneous and homogeneous scenarios.
Observation 2: For the initial network topology formation in IAB performance evaluation, "RSRP" metric achieves smaller number of hops than "H-mean RSRP", and the resulting H-mean RSRP values from "RSRP" metric are very close to "H-mean RSRP".
Observation 3: SDM between backhaul and access links show minor performance improvement in DL end-to-end UPT. SDM is beneficial to cell-edge UEs for UL end-to-end UPT.
Proposal 1: Use the following steps in generating IAB network.

Step 0: Deploy a serving node set A with L DNs and an unassociated node set B with M RNs in the network area.
Step 1: Calculate the metric values Q of size $|A|\times|B|\times N$ between the node in A and the node in B for N channel realizations.
Step 2: Sort Q(l, m, n) and pick $(l^*, m^*, n^*) = \text{argmax}\{Q(l, m, n)\}$.
Step 3: Associate nodes l^* and m^*. The associated and non-associated channels between the node m^* and the nodes in the set A are determined using n^*-th channel realization.
Step 4: Add node m^* into set A and remove node m^* from set B.
Step 5: Repeat Steps 1-4 until all RNs are associated (i.e., until the set B is empty).

Proposal 2: For the initial network topology formation in IAB performance evaluation, "RSRP" metric can be used.

Decision: The document is noted.

R1-1811196 IAB evaluations based on different topology constructions ZTE, Sanechips

- Observation1: The deployment of IAB nodes in the evaluated scenario can provide geometry gain for nearly 10dB for ISD=200m and nearly 20dB for ISD=500m.
- Observation2: The topology construction method tested in the evaluation results in small RSRP degradation but obvious improvements on hop number and load, which suggests the important role that the topology construction plays in the IAB evaluation.

Decision: The document is noted.

Tuesday conclusion: Continue discussion offline – Erik (Ericsson)

R1-1810131 System performance evaluation in multi-hop topology IAB network Huawei, HiSilicon
R1-1810674 Evaluation of IAB Nokia, Nokia Shanghai Bell
R1-1810691 Evaluation results for NR IAB AT&T
R1-1811813 Evaluation Methodology for NR IAB Samsung (rev of R1-1810865)
R1-1811257 System Level Simulation Results for IAB Networks Qualcomm Incorporated
R1-1811514 Evaluation of topology formation for IAB Ericsson
R1-1811954 TP for 38.874 on Evaluation Results for NR IAB AT&T

7.2.3.3 Other

R1-1810132 On frame structure of IAB Huawei, HiSilicon
R1-1810133 Further consideration on timing alignment for IAB nodes Huawei, HiSilicon
R1-1810134 On cross-link interference in IAB Huawei, HiSilicon
R1-1810135 On high order modulation for backhaul link Huawei, HiSilicon
R1-1810274 Discussions on detection and measurement among IAB nodes LG Electronics
R1-1810275 Discussions on access and backhaul link multiplexing and timing LG Electronics

R1-1810276 Power control in IAB scenario LG Electronics
R1-1810277 Measurement enhancement for stage 2 in IAB scenario LG Electronics
R1-1810278 Discussions on node behavior for IAB link management LG Electronics
R1-1810279 Discussions on HARQ-ACK transmission for NR IAB LG Electronics
R1-1810578 Discussion on discovery and measurement for IAB network Lenovo, Motorola Mobility
R1-1810675 Resource allocation/coordination between parent BH and child links Nokia, Nokia Shanghai Bell
R1-1810676 Enhacements on RACH for IAB Nokia, Nokia Shanghai Bell
Withdrawn
R1-1810677 Discovery and measurements for IAB Nokia, Nokia Shanghai Bell
R1-1810678 IAB Timing Nokia, Nokia Shanghai Bell
R1-1810679 Cross-link interference management Nokia, Nokia Shanghai Bell
R1-1810680 Considerations of single panel vs. multi-panel operation for IAB node Nokia, Nokia Shanghai Bell
R1-1810866 CLI management in NR IAB Samsung
R1-1811161 Further consideration on CLI ZTE, Sanechips
R1-1811258 IAB resource management Qualcomm Incorporated
R1-1811259 Network Synchronization for Multi-hop IAB Networks Qualcomm Incorporated
R1-1811449 Timing of IAB-node transmissions Ericsson
R1-1811455 What is uplink in the context of IAB nodes Ericsson
R1-1811513 Resource allocation and scheduling of IAB networks Ericsson
R1-1811554 On IAB timing alignment CEWiT

7.2.4 Study on NR V2X

FS_NR_V2X; SID in RP-182111. Please refer to the SID for detailed scoping

R1-1811096 TR38.885 v0.0.1 for Study on NR Vehicle-to-Everything (V2X) Huawei, HiSilicon
Decision: The document is endorsed as basis for further update.
MCC post meeting: Clean-up of the version endorsed in RAN1#94bis and creation of v0.1.0 as baseline for further update (R1-1812081).

7.2.4.1 Sidelink design

7.2.4.1.1 Support of unicast, groupcast and broadcast

R1-1810539 Support of unicast, groupcast and broadcast in NR sidelink CATT

Observation 1: It is necessary to define a discovery procedure.
Observation 2: There are at least two type of discovery: advertising its presence and services it offered ("Self-Declaration") or to determine whether a use can offer certain service ("Target Search"), the content of discovery message is up to the higher layer.
Proposal 1: Discovery may be handled at application layer or RAN layer, and RAN layer discovery procedure would be a preferred choice.
Proposal 2: PSDCH or PSCCH& PSSCH are preferred to carry the discovery message.
Proposal 3: There are two roles for PC5 connection setup procedure: selection of proximity-UE and parameter negotiation.
Proposal 4: The following information should be exchanged in connection establishment procedure, including sidelink capability, communication ID, HARQ ACK/NACK parameters, CSI parameters and the resource allocation mode.
Proposal 5: RAN1 should distinguish unicast, groupcast and broadcast.
Proposal 6: There are two options for vehicle determining a specific unicast/groupcast link:

- Option 1: Vehicles identify the target receiver and the transmitter, where the receiver filtering function is implemented at RAN1, and the source UE identifying function is implemented at RAN2. Sidelink Control Information should contain the destination ID（destination group ID for groupcast and destination ID for unicast）, but no source ID.
- Option 2: Vehicles identify the session (association with the receiver and the source), SCI should contain session /communication ID negotiated in connection establishment procedure.

Proposal 7: Whether and how to introduce the HARQ feedback mechanism in mode 1 shall be further investigated due to the latency and complex signaling interaction with network.

Proposal 8: HARQ feedback mechanism in mode 2 shall be support in NR sidelink design.
Proposal 9: For unicast, the preference is to have the dedicated control channel for carrying HARQ feedback messages, and multiple feedback information could be multiplexed in code domain within the same time-frequency resource.
Proposal 10: For groupcast, the preference is also to have the dedicated control channel for carrying HARQ feedback messages, there are two methods to coordinate and handle the feedback information among group members: signal detection and energy detection.
Proposal 11: The CSI acquisition through channel reciprocity should be considered for the link adaptation gain of sidelink unicast/groupcast communication.
Proposal 12: The power control is used to control the Tx power in compensating the pathloss between the transmitting and receiving UEs to achieve the target SINR and limiting the interference to the neighboring cluster. Whether the power control mechanism for sidelink unicast/groupcast communication can reduce the interference for all configurations, it needs to be carefully investigated.
Proposal 13: AMC should be supported for unicast and groupcast communication along with CSI acquisition and HARQ operation.
Proposal 14: For FR2, beamforming is an efficient way to enlarge the coverage.
Proposal 15: For unicast requiring high data rate, multi-antenna transmission scheme, such as beamforming and spatial multiplexing, may be considered to meet the data rate requirements.
Proposal 16: Adaptive repetition transmission should be considered for broadcast.

Decision: The document is noted.

R1-1810697 **V2X sidelink design in supporting unicast, groupcast and broadcast** **AT&T**

Proposal-1: NR sidelink should target to work on both peer-2-peer and hierarchical network structure.
Proposal-2: NR sidelink design should be based on access link and target to have common PHY procedures as much as possible.
Proposal-3: NR sidelink must be able to operate on wireless licensed spectrum and co-exist with wireless service.
Proposal-4: NR sidelink should support vehicle UE serves as a local manager to coordinate resource for the communication between other UEs within a local area. Local manager is granted with a resource pool from the cellular network.
Proposal-5: NR sidelink support broadcast with and without cellular assistance.
Proposal-6: NR sidelink support unicast and group-cast with cellular assistance. Cellular network is responsible to authenticate vehicle UE and assign the RNTI for every vehicle UE.
Proposal-7: The DCI-T and/or DCI-R transmitted on PSCCH should be scrambled using the RNTI for the UE receiving such message.
Proposal-8: In unicast service, DCI-R is used to indicate one or a group of UEs to receive a certain data packet.
Proposal-9: When the Node-R is within the range of local manager, DCI-R is signaled directly by local manager. Otherwise, DCI-R is signaled by Node-T before the data packet transmission.
Proposal-10: The connection between local manager and UE or between two UEs is a “diet” connection

Decision: The document is noted.

Monday conclusion: Continue discussion offline – Hanbyul (LGE)

Wednesday session

R1-1811834 **Feature lead summary for agenda item 7.2.4.1.1 Support of unicast, groupcast and broadcast** **LG Electronics**

Decision: The document is noted.

Agreements:

- Layer-1 destination ID is conveyed via PSCCH.
  - FFS how many bits are conveyed.
  - FFS details for each of the unicast/groupcast/broadcast cases
- Additional Layer-1 ID(s) is conveyed via PSCCH at least for the purpose of identifying which transmissions can be combined in reception when HARQ feedback is in use.
  - FFS whether this ID can be used for other HARQ feedback related operation.

    - FFS other purpose
    - FFS how many bits are conveyed.
- FFS details including how to convey the ID(s), e.g., whether the ID(s) is conveyed in the SCI or used for CRC scrambling.

Suggested proposal
- From RAN1 perspective, the functionality of groupcast and multicast is the same.
- For unicast and groupcast, sidelink HARQ feedback and HARQ combining in the physical layer are supported.
    - FFS details

Functionality of groupcast:

Sharp expressed concern regarding latency and overhead it may imply. How the feedback should be supported is unclear

Majority of companies believe it is feasible

RAN1 Chair: do we need HARQ feedback for groupcast?

Agreements:
- For unicast, sidelink HARQ feedback and HARQ combining in the physical layer are supported.
    - FFS details, including the possibility of disabling HARQ in some scenarios
- For groupcast, sidelink HARQ feedback and HARQ combining in the physical layer are supported.
    - FFS details, including the possibility of disabling HARQ in some scenarios

Conclusion:
- To update the TR 37.885 by replacing “multicast” by “groupcast”

Friday session

R1-1812016 **Updated feature lead summary for agenda item 7.2.4.1.1 Support of unicast, groupcast and broadcast** **LG Electronics**

Decision: The document is noted.

Agreements:
- In the context of sidelink CSI, RAN1 to study further which of the following information is useful in sidelink operation when it is available at the transmitter.
    - Information representing the channel between the transmitter and receiver
    - Information representing the interference at receiver
    - Examples for this information are
        - CQI, PMI, RI, RSRP, RSRQ, pathgain/pathloss, SRI, CRI, interference condition, vehicle motion
    - FFS including
        - Such information can be acquired using reciprocity or feedback
        - Time scale of the information
        - Which information is useful in which operation and scenario

R1-1810137 Support for sidelink unicast, groupcast, and broadcast Huawei, HiSilicon
R1-1811645 Discussion on support of unicast, groupcast and broadcast for NR sidelink LG Electronics (rev of R1-1810280)
R1-1810388 Support of unicast, groupcast and broadcast vivo
R1-1810452 Discussion on support of unicast, groupcast and broadcast MediaTek Inc.
R1-1810483 Sidelink Design for Unicast and Groupcast Fraunhofer HHI
R1-1810573 Support of unicast, groupcast and broadcast Lenovo, Motorola Mobility
R1-1810589 Considerations on unicast, groupcast and broadcast for NR V2X Fujitsu
R1-1810637 Discussion on enhancement to support uni/groupcast for NR V2X communication Sony
R1-1810721 Support of unicast, groupcast, and broadcast in NR V2X ZTE
R1-1811807 Support of sidelink unicast, groupcast and broadcast modes for NR V2X communication Intel Corporation

(rev of R1-1810772)

R1-1810807 Support of unicast, groupcast and broadcast in NR V2X NEC
R1-1810867 Discussion on unicast, groupcast and broadcast for NR V2X Samsung
R1-1810939 Considerations on Design issues for NR V2X unicast, groupcast ITRI
R1-1810951 Discussion on supporting unicast, groupcast and broadcast via NR sidelink Panasonic
R1-1810984 Discussion of sidelink unicast, groupcast and broadcast for NR-V2X Guangdong OPPO Mobile Telecom.
R1-1811009 Consideration on sidelink unicast, groupcast, and broadcast Spreadtrum Communications
R1-1811036 Discussion on channel design of HARQ and CSI feedback for V2X CMCC
R1-1811092 Discussion on support of unicast, groupcast and broadcast in NR V2X China Unicom
R1-1811162 Initial view on enhancements of unicast and groupcast communication KDDI Corporation
R1-1811163 Discussion on supporting HARQ combining ASUSTEK COMPUTER (SHANGHAI)
R1-1811209 Support of NR Sidelink Unicast and Groupcast InterDigital, Inc.
R1-1811260 Procedures and use cases for groupcast and unicast transmissions Qualcomm Incorporated
R1-1811332 Support of unicast, groupcast and broadcast in sidelink NTT DOCOMO, INC.
R1-1811420 On support of HARQ for V2x communications Xiaomi Communications
R1-1811426 On Sidelink Unicast, Groupcast and Broadcast Nokia, Nokia Shanghai Bell
R1-1811520 Discussion on supporting V2X unicast, groupcast and broadcast CAICT
R1-1811591 Support of Unicast, Groupcast and Broadcast on the NR Sidelink Ericsson
R1-1811615 Discussion on NR V2X HARQ mechanism ITL

7.2.4.1.2 Physical layer structures and procedure(s)

R1-1810281 Discussion on physical layer structure and procedures for NR sidelink LG Electronics

Proposal 1: OFDM and SC-FDM can be further studied for NR sidelink waveforms. If OFDM can guarantee coverage over LTE V2X, OFDM can only be supported in NR sidelink.
Proposal 2: NR sidelink supports the flexible numerology supported by NR and it is preferred that only the numerologies supported in NR Uu link are supported in NR sidelink.
Proposal 3: It is preferred that only the CP lengths supported in NR Uu link is supported in NR sidelink.
Proposal 4: The DMRS structure for NR sidelink could be (pre)configured by higher layer signalling.
Proposal 5: RAN1 needs to discuss whether the purpose of the CSI-RS is to measure CSI for currently used resources or to measure CSI for resources that may be used in the future.
Observation 1: When the payload size of control channel is small, TBCC has better performance than the polar code.
Proposal 6: For data channel, LDPC can be used in NR V2X sidelink. For control channel, it can be decided whether to use TBCC or polar code depending on the discussion of payload size of the control channel.
Proposal 7: In NR V2X, same modulation schemes of NR Uu can be used. In addition, Pi/2 BPSK scheme can be used for the control and/or data signal modulation to improve high Doppler Effect and enhance coverage of transmission.
Proposal 8: The comb type RE mapping on AGC and/or Tx/Rx switching symbol or placing AGC and switching period within one symbol can be considered to enhance efficiency.
Proposal 9: For multiplexing PSCCH and the associated PSSCH, Option 1b or 3 can be baseline. When the control and data are transmitted in different slots, Option 2 in which the PSCCH/PSSCH occupies one slot entirely can also be considered.
Proposal 10: RAN1 needs to study on pros/cons of introducing multiple SCI formats or multiple aggregation level of SCI.
Proposal 11: Diversity techniques such as SFBC, FSTD, CDD, beam cycling can be considered in NR V2X sidelink.
Proposal 12: mmwave beam management is lower priority due to the description of SID and the limited time schedule of SI.
Proposal 13: MIMO specific enhancement can be studied in other items.
Proposal 14: Long/short PUCCH or PSCCH of NR structure are the starting point for feedback channel of NR V2X sidelink.

Decision: The document is noted.

R1-1810868 Discussion on physical layer structures and procedure(s) for NR V2X Samsung

Proposal 1: It is preferred to support CP-OFDM waveform only in NR V2X.
Proposal 2:

- NR V2X consider the following SCS as start point:
  - FR1: 30 kHz, 60 kHz, FFS 15 kHz

- FR2: 60 kHz, 120 kHz
- Further study on the impact of normal CP length of SCS 60/120 KHz;
- Further study is needed on whether to use different SCS/slot length simultaneously.

Proposal 3:
- NR V2X supports 64QAM, FFS 256QAM;
- NR V2X uses polar code for control channel and LDPC for data channel;
- A physical layer ID is used for randomization of scrambling code and DMRS generation.

Proposal 4: Further discussion on whether logical slot indexing or physical slot indexing is used in NR sidelink.

Proposal 5:
- Concept of resource pool is introduced in NR V2X since it provides a super set of resource allocation than BWP.
- Supporting of BW limited UE needs further study.

Proposal 6:
- NR design of SS/PBCH block and burst set can be a starting point for designing NR V2X synchronization channels.
- Further study enhancement on signal and channel design for improving the one-shot detection performance.
- Further study the mechanism to support multi-beam operation for NR V2X synchronization channels.

Proposal 7: NR already supports a large range of density for DMRS. A proper DMRS pattern could be reused for NR V2X.

Proposal 8:
- An issue is to decide whether a SA and its associated data channel are within the same slot or not.
- Study the 3 options from RAN1#94 for the multiplexing of a SA and a data channel within a slot, no matter the SA and data channel are for same or different UEs.

Proposal 9: Further discussion on Option 1B, 2 and 3.

Proposal 10:
- It is preferred to identify use cases of different channels, HARQ-ACK, CSI or discovery to get an insight on the design choices
- FFS on the channels and sidelink reference signals for various new functionalities in NR sidelink.

Decision: The document is noted.

Monday conclusion: Continue discussion offline – Hanbyul (LGE)

Wednesday session

R1-1811835 **Feature lead summary for agenda item 7.2.4.1.2 Physical layer structures and procedure(s) LG Electronics**

Decision: The document is noted.

Agreements:
- NR sidelink supports the SCSs supported by Uu in a given frequency range, i.e., {15, 30, 60 kHz} in FR1 and {60, 120 kHz} in FR2.
  - FFS the supported CP length
  - Baseline is that a UE is not required to receive sidelink transmissions using different SCSs simultaneously in a given carrier.
    - FFS if this applies to sidelink synchronization signals/channels
  - Baseline is that a UE is not required to transmit sidelink transmissions using different SCSs simultaneously in a given carrier.
    - FFS if this applies to sidelink synchronization signals/channels

Continue discussion on the wavefom till next meeting – companies are encouraged to perform more analysis/evaluations.

Agreements:

For PSCCH and associated PSSCH multiplexing
- At least one of Option 1A, 1B, and 3 is supported.
  - FFS whether some options require transient period between PSCCH and PSSCH.
- FFS whether to support Option 2

Proposals:

BWP is supported for NR sidelink

FFS the details of BWP configurations, including the possibility of restricting the number of BWPs
Note: there is at most one activated sidelink BWP for a UE as in the Uu case
Resource pool is defined for NR sidelink on a per BWP basis
FFS details, including but not restricted to:
Multiplexing of resource pools (e.g., TDM or FDM of the resource pools of PSCCH and PSSCH)
Numerology used in a resource pool
Signalling principle for resource pool (e.g., cell-specific or UE-specific for in-coverage UEs, pre-configuration for out-coverage UEs)
Note that more details of in-coverage signalling need to be discussed in the agenda item 7.2.4.3.
Whether multiple resource pools need to be configured to a single UE

Proposals:
A sidelink control channel is used to convery HARQ feedback for the associated PSSCH
For now, it's called PSCCH Format 2

Friday session
R1-1812017 **Updated feature lead summary for agenda item 7.2.4.1.2 Physical layer structures and procedure(s) LG ElectronicsDecision:** The document is noted.

Agreements:
- Sidelink control information (SCI) is defined.
  - SCI is transmitted in PSCCH.
  - SCI includes at least one SCI format which includes the information necessary to decode the corresponding PSSCH.
    - NDI, if defined, is a part of SCI.
- Sidelink feedback control information (SFCI) is defined.
  - SFCI includes at least one SFCI format which includes HARQ-ACK for the corresponding PSSCH.
    - FFS whether a solution will use only one of "ACK," "NACK," "DTX," or use a combination of them.
  - FFS how to include other feedback information (if supported) in SFCI.
  - FFS how to convey SFCI on sidelink in PSCCH, and/or PSSCH, and/or a new physical sidelink channel
- FFS in the context of Mode 1:
  - whether/how to convey information for SCI on downlink
  - whether/how to convey information of SFCI on uplink

Agreements:
- At least resource pool is supported for NR sidelink
  - Resource pool is a set of time and frequency resources that can be used for sidelink transmission and/or reception.
    - FFS whether a resource pool consists of contiguous resources in time and/or frequency.
    - A resource pool is inside the RF bandwidth of the UE.
    - FFS how gNB and other UEs know the RF bandwidth of the UE
  - FFS if BWP (if defined) can be used to in defining at least part of resource pool
  - FFS if the numerology of a resource pool is indicated as a part of (pre-)configuration for resource pool, carrier, band, or BWP (if defined)
  - UE assumes a single numerology in using a resource pool.
  - Multiple resource pools can be configured to a single UE in a given carrier.
    - FFS how to use multiple resource pools when (pre-)configured.
- FFS BWP is supported for NR sidelink
  - FFS whether RAN1 can assume that at most one BWP is configured in a carrier from the system perspective.
  - It is RAN1 understanding that, in some cases, the entire system bandwidth is covered by a single BWP.
  - FFS the details of BWP configurations, including the possibility of restricting the number of BWPs
  - FFS whether BWP for TX and RX is separated or a common BWP applied to both TX and RX
  - There is at most one activated sidelink BWP for a UE in a given carrier as in the Uu case
    - Further study the feasibility, benefit, and impact of sidelink BWP switching
  - Aim to conclude in RAN1#95

- Companies are encouraged to provide more analysis, including checking current Rel-15 specification regarding BWP related text

R1-1810138	Sidelink PHY structure and procedure for NR V2X	Huawei, HiSilicon
R1-1810389	Discussion on physical layer structure and procedure for NR sidelink	vivo
R1-1810453	Physical layer structure for NR sidelink	MediaTek Inc.
R1-1810476	On physical layer sidelink design for NR V2X	Mitsubishi Electric RCE
R1-1810484	Design for NR V2X Physical Channels	Fraunhofer HHI
R1-1810540	Considerations on physical layer structure and procedures in NR V2X	CATT
R1-1810574	Physical layer structures and procedure(s)	Lenovo, Motorola Mobility
R1-1810590	Considerations on sidelink physical layer structures	Fujitsu
R1-1810698	V2X sidelink PHY structure and procedures	AT&T
R1-1810722	Discussion on NR Sidelink Physical layer structure	ZTE
R1-1810773	Sidelink Physical Layer Structure and Procedures for NR V2X Communication	Intel Corporation
R1-1810952	Discussion on physical layer structures and procedure(s) of NR sidelink	Panasonic
R1-1810985	Discussion of physical layer structure and procedure for NR-V2X	Guangdong OPPO Mobile Telecom.
R1-1811010	Discussion on sidelink physical layer structures and procedure(s)	Spreadtrum Communications
R1-1811153	Views on physical layer structures and procedures for NR V2X	Sharp
R1-1811164	Discussion on resource pool and bandwidth part	ASUSTEK COMPUTER (SHANGHAI)
R1-1811213	NR Sidelink Physical Layer Structures and Procedures	InterDigital, Inc.
R1-1811261	Considerations on Physical Layer aspects of NR V2X	Qualcomm Incorporated
R1-1811333	Sidelink physical layer structures	NTT DOCOMO, INC.
R1-1811427	Discussions on NR V2X Sidelink Physical Layer Structures and Procedures	Nokia, Nokia Shanghai Bell
R1-1811448	Considerations on sidelink physical layer measurement for NR V2X	Sony Europe Limited
R1-1811592	Physical layer structures of NR V2X	Ericsson

7.2.4.1.3 Synchronization mechanism

R1-1810390 NR sidelink synchronization mechanism vivo

- **Error! Reference source not found.Error! Reference source not found.**
- **Error! Reference source not found.**
- **Error! Reference source not found.**
  - **Error! Reference source not found.Error! Reference source not found.**Multiple SCS
  - Multiple beams
  - Block structure
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- **Error! Reference source not found.**
- **Error! Reference source not found.**
  - Identification of SL-SSB with the same SLSSID
  - Feasibility of SL-SSB based RLM, BFD and BM
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- **Error! Reference source not found.**
  - A sidelink UE should be able to identify different sync sources through the synchronization resources
  - Decoding PSBCH should be avoided when determining the sync source

Decision: The document is noted.

R1-1811262 Synchronization design for NR V2X Qualcomm Incorporated

Proposal 1: Study the design of NR V2X sidelink synchronization signals and channel(s) once general agreements on NR V2X waveform are achieved in the SI phase.

Proposal 2: Study support of using time/frequency synchronization derived from LTE V2X on a given sidelink carrier to use for transmission and/or reception of NR V2X on a different sidelink carrier.

Proposal 3: Study the time/frequency error requirements for NR V2X data/control and synchronization signal transmissions.

Proposal 4: Study reduced complexity synchronization procedure for NR V2X to address the scenario wherein the UE was synchronized to GNSS/eNB/gNB/SyncRef UE at a prior time and has not drifted significantly (e.g. can still receive packets from other synchronized UEs).
Proposal 5: Study non-SLSS based synchronization enhancements.

Decision: The document is noted.

Monday conclusion: Continue discussion offline – Fang-chen (CATT)

Wednesday

R1-1811895 **Summary of offline discussion on V2X synchronization CATT**

Discussion: RAN1 Chair asked feature lead to include what the issues are in future summaries, otherwise it is difficult to understand from where the proposals come from...

Decision: The document is noted.

Agreements:

- At least GNSS, gNB, NR UE, and eNB are supported as the synchronization source for NR V2X.
  - eNB as a synchronization source for NR V2X UEs supporting LTE Uu/PC5 or Uu only (no change to the eNB behaviour)
  - Whether a source is supported is for further NR V2X UE capability consideration

Agreements:

- NR V2X sidelink operation includes the following cases:
  - NR V2X sidelink is synchronized with LTE V2X sidelink
  - NR V2X sidelink synchronization procedure operates independently to the LTE V2X sidelink synchronization procedure

Friday session

R1-1812068 **Summary of offline discussion on NR V2X synchronization CATT**

Decision: The document is noted.

Working assumption:

- For the purpose of evaluation, the initial frequency error should be within ±[5] ppm with the assumption of uniform distribution [-5, 5] for NR V2X sidelink synchronization.
  - Note: This is the error of the local oscillator for the Tx and Rx with respect to the absolute carrier frequency.

Agreements:

- The design of NR V2X sidelink synchronization signals and PSBCH uses NR SSB structure as the starting point with the following properties,
  - NR V2X synchronization signals include sidelink PSS (S-PSS) and sidelink SSS (S-SSS) and are structured with PSBCH in a block format (S-SSB)

Agreements:

- Periodic transmission of S-SSB in NR V2X is supported
  - FFS: whether one/more S-SSB is transmitted in a period

R1-1810139 Sidelink synchronization mechanisms for NR V2X Huawei, HiSilicon
R1-1810282 Discussion on NR sidelink synchronization LG Electronics
R1-1810454 Sidelink synchronization mechanism MediaTek Inc.
R1-1810541 Discussion on synchronization mechanism for NR V2X Sidelink CATT
R1-1810575 Synchronization mechanism Lenovo, Motorola Mobility
R1-1810699 Sidelink based synchronization mechanism AT&T
R1-1810723 Discussion about Synchronization mechanism ZTE
R1-1810774 Sidelink synchronization for NR V2X communication Intel Corporation
R1-1810808 Synchronization mechanism for NR V2X NEC
R1-1810869 Discussion on Synchronization mechanismtion Samsung
R1-1810940 Considerations on Sidelink Synchronization Enhancement for NR V2X ITRI

R1-1810986	Discussion of synchronization mechanism for NR-V2X	Guangdong OPPO Mobile Telecom.
R1-1811008	Discussion on NR sidelink synchronization mechanisms	Spreadtrum Communications
R1-1811214	On Sidelink Synchronization for NR V2X	InterDigital, Inc.
R1-1811334	Sidelink synchronization mechanism	NTT DOCOMO, INC.
R1-1811412	Considerations on sidelink synchronization for NR V2X	Sequans Communications
R1-1811421	Synchronization mechanism for NR V2X	Xiaomi Communications
R1-1811425	Discussion on NR V2X Synchronization mechanism	ITL
R1-1811428	Discussion on NR V2X Sidelink Synchronization	Nokia, Nokia Shanghai Bell
R1-1811444	Considerations on sidelink synchronization signal design for NR V2X	ITL
R1-1811593	On Synchronization for NR Sidelink	Ericsson
R1-1811623	Design Considerations for NR SL synchronization	Convida Wireless

7.2.4.1.4 Resource allocation mechanism

R1-1810591 Orthogonal Resource Scheduling based Multicast NR-V2X Transmission Fujitsu

Observation-1: Due to the half-duplex limitation, the PRR requirement cannot be fulfilled even assuming that all data packets are correctly received by other vehicle UEs.
Observation-2: With orthogonal resource scheduling, each vehicle UE enables to make at least one reception from any other vehicle UE; either the initial transmission or repetition.
Observation-3: Vehicle UEs in multicast with either periodic traffic or aperiodic traffic can be served by the orthogonal resource scheduling based V2X grouping.
Observation-4: The randomization procedure makes orthogonal resource scheduling fairer, but does not collapse the property that each vehicle UE makes at least one reception from any other vehicle UE.
Observation-5: Orthogonal scheduling in conjunction with frequency reuse performs much better performance than non-orthogonal scheduling, and completely guarantees the PRR within the vehicle-to-vehicle distance of 120m.
Proposal-1: The orthogonal resource scheduling should be further studied for both mode-1 and mode-2 in NR-V2X, in order to maximize the PRR when vehicle UE only equips half-duplex system.

Decision: The document is noted.

R1-1811263 Sidelink Resource Allocation Mechanism for NR V2X Qualcomm Incorporated

Proposal 1: Sidelink resource allocation solutions for NR-V2X should satisfy the following design objectives:
- Dynamic sidelink resource allocation
- Support varying packet sizes with similar link budgets
- Support random packet arrival by performing slot-based resource selection
- Improved reliability by minimizing collisions

Proposal 2: Slot level per-packet dynamic resource allocation is defined for NR V2X.
Proposal 3: Sub-channel based resource pool design is used for NR-V2X sidelink.
Proposal 4: Slot Aggregation is used in NR V2X.
Proposal 5: CR Sequences are used to indicate frequency allocation sizes of the resources.
Proposal 6: Number of aggregated slots is indicated to the receiver UEs for data decoding and for collision avoidance.
Proposal 7: Slot based short term sensing is used for candidate resource selection in NR V2X.
Proposal 8: Counter-Based Collison Avoidance(CCA) is used as part of SL resource allocation in NR V2X.

Decision: The document is noted.

R1-1811335 Sidelink resource allocation mechanism NTT DOCOMO, INC.

- Proposal 1: Support semi-static SL resource configuration in NR V2X.
  - If configured on NR licensed band, time domain SL resource configuration granularity is TDD-UL-DL configuration period.
- Proposal 2: Support on-demand SL resource pool configuration in NR V2X.
- Proposal 3: Study whether to support dynamic SL resource configuration, if SL resource is configured on NR licensed band.
- Observation 1: Following outstanding issues need to be considered for resource allocation mode 2-d.
  - Formulation of UE group.
  - Determination of resource(s)/resource set(s) used per UE group.
  - Resource allocation within a UE group.
  - Mobility issue of UE/UE group.
- Proposal 4: For mode 2-d, study how UE formulates UE group autonomously, including header-UE and member-UE determination.

- Proposal 5: For mode 2-d, study orthogonal resources/resource sets configuration/selection for UE groups in proximity.
  - Independent scheduler per header-UE is assumed.
- Proposal 6: For mode 2-d, study scheduling signalling and procedure design in NR SL.
- Proposal 7: For mode 2-d, study mechanism to cope with UE/UE group mobility, including UE re-grouping and/or resource set(s) re-configuration/re-selection per UE group
- Proposal 8: At least support resource allocation mode 2-d in NR V2X.
  - FFS: co-existence of multiple (sub)modes.
- Proposal 9: Study to strive for having a unified resource allocation mechanism for FR1 and FR2.
- Observation 2: Blockage will deteriorate sensing accuracy, if sensing is performed in FR2 which will impact the effectiveness of sensing-based resource scheduling/selection for FR2.
- Proposal 10: Study resource preemption mechanism for URLLC and eMBB traffic multiplexing in PHY layer.

Decision: The document is noted.

Monday conclusion: Continue discussion offline – Alexey (Intel)

Thursday session

R1-1811963 **Summary of offline discussion on NR-V2X AI - 7.2.4.1.4 Resource Allocation Mechanism Intel Corp.**

Decision: The document is noted.

Agreements:

- Sidelink sensing and resource selection procedures are studied for Mode-2(a)
  - The following techniques are studied to identify occupied sidelink resources
    - decoding of sidelink control channel transmissions
    - sidelink measurements
    - detection of sidelink transmissions
    - other options are not precluded, including combination of the above options
  - The following aspects are studied for sidelink resource selection
    - how a UE selects resource for PSCCH and PSSCH transmission (or other sidelink physical channel/signal, if it is introduced)
    - which information is used by UE for resource selection procedure

Agreements:

- The following aspects about assistance information are studied for Mode 2(b)
  - Which assistance information is used and how it is acquired
  - Which UE sends assistance information
  - How to deliver assistance information, including physical channel and UE behavior
  - How assistance information is taken into account in determination of sidelink resource for transmission
- RAN1 to further study whether some or all of Mode-2(b) functionality is a part of Mode-2(a)(c)(d)

Agreements:

- The following aspects are studied for Mode 2(c)
  - How to assign resource(s) for UE sidelink transmission to mitigate collisions and half-duplex impacts
  - Whether any sensing or resource selection procedure is used on top of configured grant(s)
  - Whether and how to use any granted but unused resources
  - How to adapt to traffic variation
  - How it is different from Mode-1 operation for in-coverage scenario
  - How it is different from Mode-2(a), when Mode-2(a) uses dedicated resource pool with dedicated sidelink resource pool configuration
  - Whether and how this mode operates out of network coverage
- RAN1 to further study whether some or all of Mode-2(c) functionality is a part of Mode-2(a)(b)(d)

Agreements:

- The following aspects are studied for Mode 2(d)
  - In which use cases/scenarios this mode is applicable
  - What is the overall architecture for Mode-2(d) operation
  - How to decide which UE schedules which other UE(s) and how to maintain this relationship
  - What is the procedure of UE(s) when the scheduling UE disappears

- What is the scheduling UE behavior and signaling mechanism to schedule sidelink resources for transmission/reception for other UEs
- Which resources can be used to schedule other UEs
- Inter- and intra-UE collision handling and sidelink resource allocation mechanisms across groups

- RAN1 to further study whether or not some or all of the above aspects are applicable to 2(b)

R1-1811904	Sidelink resource allocation mechanism for NR V2X	Huawei, HiSilicon	(rev of R1-1810140)
R1-1810179	Views on Resource Allocation of NR V2X	Hisense	
R1-1810283	Discussion on sidelink resource allocation mechanism	LG Electronics	
R1-1810391	Discussion on resource allocation mechanism for NR V2X	vivo	
R1-1810455	On sidelink resource allocation mechanism	MediaTek Inc.	
R1-1810485	Design for NR V2X Groupcast Resource Allocation	Fraunhofer HHI	
R1-1810542	Discussion on resource allocation mechanism in NR V2X	CATT	
R1-1810576	Resource allocation mechanism	Lenovo, Motorola Mobility	
R1-1810638	Discussion on mode 2 resource allocation for NR V2X communication	Sony	
R1-1810700	Resource allocation mechanism	AT&T	
R1-1810724	NR Sidelink resource schemes	ZTE	
R1-1810775	Sidelink resource allocation mechanisms for NR V2X communication	Intel Corporation	
R1-1810809	Resource allocation mechanism for NR V2X	NEC	
R1-1810870	Discussion on resource allocation mechanisms for NR V2X	Samsung	
R1-1810941	Considerations on Sidelink resource management techniques for NR V2X communication	ITRI	
R1-1810953	Discussion on resource allocation mechanism for NR sidelink	Panasonic	
R1-1810977	Discussion on mode 2 resource allocation in NR-V2X	Guangdong OPPO Mobile Telecom.	
R1-1811007	Discussion on resource allocation for Mode 2	Spreadtrum Communications	
R1-1811037	Discussion on resource allocation mechnism for NR V2X	CMCC	
R1-1811093	Discussion on the resource allocation for NR-V2X	China Unicom	
R1-1811115	Resource allocation for NR V2X	InterDigital, Inc.	
R1-1811123	Resource allocation for V2X Broadcast and Group-cast communication	Apple Inc.	
R1-1811154	Views on resource allocation for NR V2X	Sharp	
R1-1811165	Consideration on Mode 2 NR-V2X sidelink communication	ASUSTEK COMPUTER (SHANGHAI)	
R1-1811422	On resource allocation of V2x communications	Xiaomi Communications	
R1-1811429	On Sidelink Resource Allocation	Nokia, Nokia Shanghai Bell	
R1-1811521	Discussions on Transmission Collisions in the Sidelink Resource Allocation	CAICT	
R1-1811594	On Mode 2 Resource Allocation for NR Sidelink	Ericsson	
R1-1811624	Design Considerations for NR V2X Resource Allocation	Convida Wireless	
R1-1811847	Summary for NR-V2X Resource allocation mechanisms	Intel Corp.	

7.2.4.1.5 Other

Including any remaining aspects of simulation assumptions

R1-1810284 Summary of email discussion [94-NR-04] on NR V2X simulation assumptions LG Electronics
Decision: The document is noted.

Proposals:

- For NR V2X evualation, the traffic scenario for unicast, groupcast, or broadcast is separately performed
  - May revisit if significant issues are found
  - Note: this is not intended to have any impact on analysis regarding co-existence cases

Proposals:

- The transmitter-receiver association model in TR 37.885 is used (copied below), with setting X and Y to [150 meters for Urban and 320 meters for Freeway] as baseline
  - Other values of X and Y are not precluded.

Proposals:

- For unicast and multicast, Z % of vehicles generate messages with setting Z to 100 % as baseline.

- Other values of Z are not precluded.

Discuss further offline to identify baseline simulaton profile(s) for unicast, groupcast, and/or broadcast:

- Note: this is not intended to perform calibration of evaluations

Proposal:

- As in the case of periodic traffic model 1, the first packet arrival time is also randomized for other traffic models in TR 37.885 (i.e., with a random starting point for each UE")

Wednesday session

R1-1811915 Summary of offline discussions on NR V2X simulation assumptions LG Electronics

Decision: The document is noted.

Agreements:

- The following table is used as the simulation profile.

	Unicast	Multicast	Broadcast	Mixture
Sidelink frequency (GHz)	6, 30	6, 30	6, 30	6, 30
Traffic models	Periodic: Medium intensity; [50] ms inter-packet arrival, [50]% vehicles generate packets. Aperiodic: Medium intensity, 100% vehicles generate packets. Periodic and aperiodic traffic are simulated separately.	Periodic: Medium intensity; [50] ms inter-packet arrival, [50]% vehicles generate packets. Aperiodic: Medium intensity, 100% vehicles generate packets. Periodic and aperiodic traffic are simulated separately.	Periodic: Medium intensity; [50] ms inter-packet arrival, [50]% vehicles generate packets Aperiodic: Medium intensity, 100% vehicles generate packets. Periodic and aperiodic traffic are simulated separately.	33%, 33%, 34% vehicles generate unicast, multicast, broadcast packets, respectively. For each traffic type, 50% is periodic and 50% is aperiodic. Periodic: Medium intensity; 100 ms inter-packet arrival Aperiodic: Medium intensity
Simulation environment, UE drop and mobility	Highway: Option A Urban: Option A	Highway: Option A Urban: Option A	Highway: Option A Urban: Option A	Highway: Option A Urban: Option A
Number of Tx/Rx antenna elements for vehicle UE*	2Tx/4Rx for 6 GHz FFS for 30 GHz	2Tx/4Rx for 6 GHz FFS for 30 GHz	2Tx/4Rx for 6 GHz FFS for 30 GHz	2Tx/4Rx for 6 GHz FFS for 30 GHz
Antenna model for vehicle UE	Option 1	Option 1	Option 1	Option 1
Channel model	As defined	As defined	As defined	As defined
SL simulation bandwidth (MHz)	20 MHz for 6 GHz 100 MHz for 30 GHz	20 MHz for 6 GHz 100 MHz for 30 GHz	20 MHz for 6 GHz 100 MHz for 30 GHz	20 MHz for 6 GHz 100 MHz for 30 GHz
* Note: The number of antennas can be increased for the evaluations for transmissions using more than 2 layers.				

Agreements:

- The transmitter-receiver association model in TR 37.885 is used, with setting X and Y to [150 meters for Urban and 320 meters for Freeway] as baseline.
  - Other values of X and Y are not precluded.
- When evaluating V2I based on Uu, it is assumed that the packet is generated at the location where UE-type RSU is placed.

Agreement:

- As in the case of periodic traffic model 1, the first packet arrival time is also randomized in a uniform manner for other periodic traffic models in TR 37.885 (i.e., with a random starting point for each UE")

Agreements: Update the previous agreements as follows:

When a V2V link is in NLOSv, additional vehicle blockage loss is added as follows:

- The blocker height is the vehicle height which is randomly selected out of the three vehicle types according to the portion of the vehicle types in the simulated scenario.
- The additional blockage loss is max {0 dB, a log-normal random variable}.
- Case 1: Minimum antenna height value of TX and RX > Blocker height
  - No additional blockage loss
- Case 2: Maximum antenna height value of TX and RX < Blocker height
  - Mean: ~~12.5~~ 9+ max(0, 15*log10(d)-41) dB, standard deviation: 4.5 dB
- Case 3: Otherwise
  - Mean: 5+ max(0, 15*log10(d)-41) dB, standard deviation: 4 dB

Thursday: following draftCR for correcting the NLOSv vehicle blockage loss in TR37.885 shall be resubmitted in next meeting.

R1-1811950 Correction on vehicle blockage loss in NLOSv Huawei

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Agreements:

- It is noted that the link performance in current NLOS model has error floor due to the unbounded delay spread of the current fast fading channel in NLOS
- To use CDL models for link level simulations
  - FFS the detailed CDL parameters – Arjun (Qualcomm)

Friday session

R1-1812043 CDL Model for V2X NLOS Channel Qualcomm

Decision: The document is noted.

Email discussion/approval on the CDL model parameters till 10/22 – Arjun (Qualcomm)

- The CDL model parameters in Table below are adopted for the Urban NLOS Channel and captured in the TR.

Table 1: CDL model for Urban NLOS channel

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Cluster #	Delay (ns)	Power in [dB]	AOD in [°]	AOA in [°]	ZOD in [°]	ZOA in [°]
1	0.0000	-4.8	-53	144	79.7	12.5
2	17.4207	-0.8	-2.7	17.5	89.3	73.3
3	31.5007	-3	-2.7	17.5	89.3	73.3
4	45.5807	-4.8	-2.7	17.5	89.3	73.3
5	52.5285	0	-30.3	93	93.6	73.7
6	55.6282	-0.8	-28	100.3	85.3	121.2
7	104.3839	-0.9	28.3	91.4	96	119.6
8	131.3486	-0.8	0.5	-36.4	91.3	92.9
9	145.4286	-3	0.5	-36.4	91.3	92.9
10	159.5086	-4.8	0.5	-36.4	91.3	92.9
11	167.5438	-6.3	-80	-173.7	79.8	175.1
12	185.1252	-4	60	121.8	81.1	29.4
13	189.4979	-8.1	-75.7	160.1	102.9	159
14	200.6032	-8	-76.8	-157	103.2	168.3
15	285.4477	-7	59.4	151.3	77.5	6.9
16	317.6425	-8.3	72.6	174.6	77.2	168
17	369.2818	-1.7	42.3	97.2	95.5	134.6
18	567.1619	-7.6	57.3	157.6	100.5	21.4
19	589.5252	-16.2	-93.9	-123.8	111.2	84.2
20	625.6057	-4.2	-37.8	-147.1	80	171
21	780.3489	-18.2	106.7	123	64.3	110.2
22	963.9129	-21.8	107.5	76.7	119.9	39.6
23	1024.3905	-19.9	-95	-111.6	117	127.9

Per-Cluster Parameters					
Parameter	c_{ASD} in [°]	c_{ASA} in [°]	c_{ZSD} in [°]	c_{ZSA} in [°]	XPR in [dB]
Value	10	22		7	μ_{XPR} = 8dB; σ_{XPR} = 3dB

R1-1810701 Field trial results from 39GHz vehicle to vehicle communication AT&T
R1-1810592 Efficient Sidelink CSI Feedback Mechanism for Groupcast NR-V2X Fujitsu
R1-1810593 Resource Allocation for NR V2X Sidelink Communication considering low latency requirement Fujitsu
R1-1811639 Preliminary system level evaluations on sidelink for NR V2X vivo (rev of R1-1810627)
R1-1810710 Discussion on reference signal for sidelink control and data channel design Huawei, HiSilicon
R1-1810711 System level evaluations on sidelink for NR V2X Huawei, HiSilicon
R1-1810712 Link level evaluations on sidelink for NR V2X Huawei, HiSilicon
R1-1810776 Remaining aspects of eV2X evaluation methodology and assumptions Intel Corporation
R1-1811003 Considerations on beam-based transmission for sidelink Spreadtrum Communications
R1-1811106 Discussion on remaining aspects of simulation assumptions TOYOTA InfoTechnology Center
R1-1811264 Discussion on NLOS Channel Model Qualcomm Incorporated
R1-1811467 Discussion on remaining aspects of simulation assumptions for sidelink Huawei, HiSilicon
R1-1811595 On the NR Sidelink Discovery Procedures Ericsson
R1-1811603 On remaining aspects of simulation assumptions Ericsson
R1-1811605 Link level simulations of DMRS design for NR V2X Ericsson
R1-1811607 On 2-stage PSCCH-I design Ericsson

7.2.4.2 Evaluation of Uu for advanced V2X use cases

R1-1810141 NR Uu and LTE Uu support and enhancement for advanced V2X use cases Huawei, HiSilicon

- Proposal 1: NR Uu should support multicast service transmission via PDCCH/PDSCH and Group-RNTI.
- Proposal 2: NR Uu should support scheduling multiple groups of multicast services in the same slot.
- Proposal 3: HARQ and CSI reporting should be supported in NR Uu multicast services.
- Proposal 4: To support multi-cell multicast service in NR Uu V2X, QCL associations of PDSCH DMRS port groups should be revisited.
- Proposal 5: To reduce NR V2X mobility latency, UL mobility measurement should be considered.
- Proposal 6: Study the feasibility of reducing DCI size for HARQ-less transmission to support the advanced V2X service of remote driving over LTE Uu.
- Proposal 7: Study the feasibility of disabling downlink HARQ-ACK feedback in order to support the advanced V2X service of remote driving over LTE Uu.

- Observation 1: DL RRM measurement needs to be improved to meet 0 ms interruption requirement.
- Observation 2: LTE Uu evaluations show 62.5% and 48.3% UEs could be supported at the 99.999% reliability level for downlink for highway and urban grid scenario, respectively.
- Observation 3: LTE Uu evaluations show 60% and 40% UEs could be supported at the 99.999% reliability level for uplink for highway and urban grid scenario, respectively.

Decision: The document is noted.

R1-1811604 **Study of Uu feasibility for advanced V2X use cases** **Ericsson**

- Proposal 1: RAN1 monitors the enhancements considered in the URLLC SI.
- Proposal 2: RAN1 studies enhancements to adapt configured grants to V2X traffic characteristics.
- Proposal 3: RAN1 studies UE reports of traffic characteristics for enhanced RRM at the gNB.

Decision: The document is noted.

Tuesday conclusion: Continue discussion offline – Ricardo (Ericsson)

Thursday session

R1-1811998 **Feature Lead Summary AI 7.2.4.2 v2** **Ericsson**

Decision: The document is noted.

Proposed Conclusion:

- Companies are strongly encouraged to provide results on feasibility of NR for V2X.

Huawei objected the above conclusion - simply make a note to study mobility enhancements in V2X SI

Agreements:

- For Uu for advanced V2X use cases, NR supports having multiple active UL configured grants in a given BWP in a given cell.
  - Details FFS
  - Draft LS to send to RAN2 in R1-1812002 (Ricardo)

R1-1812002 **[Draft] LS on Multiple active configured UL grants for NR V2X** **Ericsson**

Decision: The draft LS is endorsed and final LS is approved in R1-1812058.

Proposals

RAN1 concludes that having UE reports containing assistance information sent to the gNB is beneficial. This includes at least reports of:

UE-related geographic information (e.g., position).

Reports of (packet) Uu and SL traffic-related information (at least for periodic traffic).

RAN1 to further discuss the contents of reports containing position-related information and reports of (packet) traffic-related information, as well as the need and benefits of other types of reports.

Friday

Agreements:

- NR supports that UE reports assistance information to the gNB, consisting of at least (with details FFS):
  - UE-related geographic information (e.g., position).
  - Reports of Uu V2X traffic-related information (at least for periodic traffic)

R1-1810285	Consideration on NR Uu for advanced V2X use cases	LG Electronics
R1-1810543	Evaluation of Uu for advanced V2X use cases	CATT
R1-1810725	Evaluation of Uu for advanced V2X use cases	ZTE
R1-1810777	Analysis of NR Uu support for advanced V2X use cases	Intel Corporation
R1-1810871	Discussion on Uu for advanced V2X use cases	Samsung

R1-1810942 Discussion on Uu Capability in Supporting Advanced V2X Use Cases ITRI
R1-1811336 NR Uu enhancements for advanced V2X use cases NTT DOCOMO, INC.
R1-1811430 On Uu for advanced V2X use cases Nokia, Nokia Shanghai Bell

7.2.4.3 Uu-based sidelink resource allocation/configuration

7.2.4.3.1 Enhancements of LTE Uu and NR Uu to control NR sidelink

R1-1810456 UU-based enhancements to control NR sidelink MediaTek Inc.

- Proposal 1: NR sidelink design should consider sharing carrier with NR-Uu only on uplink carrier in FDD, and similarly only on uplink resources in TDD.
- Proposal 2: Interference mitigation techniques should be investigated to support shared licensed carrier between NR-Uu and NR sidelink interfaces.
- Proposal 3: In Mode-1 resource allocation, resource allocation techniques similar to the techniques available in Rel-15 NR (i.e., dynamic grant, Type-2 SPS, and Type-1 GF) can be supported via the NR-Uu interface.
- Proposal 4: In Mode-2 resource allocation, a Type-1 GF-like technique and a Type-2 SPS-like technique should be supported.
  - Whether dynamic grants in Mode-2 are limited only for re-transmissions needs to be studied further.
  - Alternatively, a single technique that can offer both Type-1 GF-like and Type-2 SPS-like configurations can be considered if feasible.
- Proposal 5: Type-2 SPS-like technique in sidelink should support some level of re-configurability via SCI
  - The exact parameters to be studied further.
- Proposal 6: Network should be able to configure UE with a resource allocation mode irrespectively of the coverage conditions.
  - To be decided: allow Mode-1 when out-of-coverage, or allow Mode-2 when in-coverage, or both.
- Proposal 7: In mode-1 resource allocation, gNB provides all of the configuration parameters, including transmission resources, MCS, HARQ, CSI parameters (i.e., full network control).
- Proposal 8: In mode-2 resource allocation, gNB provides some of the configuration parameters whereas UE has some level of autonomous selection
  - gNB can pre-configure the resources/resource pool
  - UE can autonomously select some of the link adaptation parameters and resources by sensing
  - Details to be studied further
- Proposal 9: All of the sidelink configuration parameters defined for NR-Uu should be supported by LTE-Uu to minimize UE design complexity.
- Proposal 10: Receiving NR sidelink configuration from LTE-Uu interface should be defined as a UE capability.
- Proposal 11: Introduce a new DCI format (e.g., DCI format 5B) for LTE-Uu with the objective of supporting all available NR sidelink configuration parameters.

Decision: The document is noted.

R1-1811337 Enhancements of LTE Uu and NR Uu to control NR sidelink NTT DOCOMO, INC.

- Proposal 1: Support TDD slot structure consisting of SL and Uu, sharing some part of resources(s), so that SL can accommodate in case of Uu licensed band operation
- Observation 1: It is beneficial to use both NR and LTE Uu for NR SL configuration
- Proposal 2: Support at least semi-static and dynamic SL resource allocation/scheduling
  - FFS: whether dynamic allocation/scheduling can override semi-static allocation
- Proposal 3: Reuse NR Uu scheduling method for NR SL scheduling as much as possible
- Observation 2: Feasibility of using LTE Uu for NR SL scheduling should be carefully studied
- Proposal 4: Support gNB/eNB to configure both LTE and NR RSs for out-of-coverage detection on NR SL

Decision: The document is noted.

Tuesday conclusion: Continue offline discussion – Phillippe (Huawei)

Wednesday session

R1-1811946 Summary of AI: 7.2.4.3 Uu-based sidelink resource allocation/configuration Huawei, HiSilicon

Decision: The document is noted.

Agreements:

- It is supported that LTE Uu provides at least necessary semi-static configuration for NR mode-2 SL communications
  - FFS details
- Further study impact and benefits of LTE Uu managing NR mode-1 SL communications

Thursday session

R1-1811995 Summary of AI: 7.2.4.3 Uu-based sidelink resource allocation/configuration Huawei, HiSilicon

Decision: The document is noted.

Agreements:

- It is supported that NR Uu provides necessary semi-static configuration for mode-4 LTE SL communications
  - From RAN1 perspective, signalling should be similar to LTE in terms of UE-specific or cell-specific
  - Signalling details up to RAN2
- Further study feasibility, benefits (others than ones already identified for LTE) and impact of NR Uu managing LTE mode-3 SL communications.

Conclusion:

- Send LS to RAN2 informing them the above two agreements:
  - For the 2nd agreements, ask RAN2 to work on signalling
  - For the 1st agreements, RAN1 is continuing working on identifying necessary details, including parameters
- Draft LS in R1-1812005 (Phillippe, Huawei)

R1-1812005 [DRAFT] LS on Uu control of NR sidelink Huawei

Decision: The draft LS is endorsed and final LS is approved in R1-1812057.

R1-1810143	Discussion on NR sidelink resource allocation by NR Uu and LTE Uu	Huawei, HiSilicon
R1-1810286	Consideration on enhancements of LTE Uu and NR Uu to control NR sidelink	LG Electronics
R1-1810392	Enhancements of NR and LTE Uu link to control NR sidelink	vivo
R1-1810544	Discussion On LTE Uu and NR Uu control NR sidelink in NR V2X	CATT
R1-1810594	Discussion on Uu-based NR sidelink resource allocation	Fujitsu
R1-1810702	Enhancements of LTE Uu and NR Uu to control NR sidelink	AT&T
R1-1810726	Discussion on LTE/NR Uu based resource allocation/configuration for NR Sidelink	ZTE
R1-1810778	Enhancements of NR and LTE Uu link to control NR sidelink	Intel Corporation
R1-1810872	Discussion on Enhancements of LTE Uu and NR Uu to control NR sidelink	Samsung
R1-1810943	Design Issues of NR Uu for Resource Configuration on NR sidelink	ITRI
R1-1810987	Enhancement of LTE Uu and NR Uu to control NR sidelink	Guangdong OPPO Mobile Telecom.
R1-1811215	Enhancement of Uu Interface for NR Sidelink	InterDigital, Inc.
R1-1811265	Enhancements of LTE Uu and NR Uu to control NR sidelink	Qualcomm Incorporated
R1-1811431	On Enhancements of LTE Uu and NR Uu to control NR sidelink	Nokia, Nokia Shanghai Bell
R1-1811597	On Network Control of NR Sidelink	Ericsson

7.2.4.3.2 Enhancements of NR Uu to control LTE sidelink

R1-1810978 On NR Uu to control LTE sidelink Guangdong OPPO Mobile Telecom.

- Proposal 1: Define a timing relationship rule when NR Uu is not synchronised with LTE sidelink on an unlicensed carrier or when the two interfaces have different SCS.
- Proposal 2: Flexible scheduling of LTE sidelink by NR Uu in time domain should continue be supported.
- Proposal 3: For NR Uu to schedule a UE on LTE sidelink, a Tx start timing indicator can be added to the new DCI format (for NR Uu) to allow a NR capable UE to transmit earlier than n+4 subframe.
- Proposal 4: A single DCI format that can be dynamically used for scheduling resources on either NR sidelink or LTE sidelink should be considered for NR Uu to reduce UE processing complexity, time and power consumption of blind decoding of different SL scheduling grants (DCIs).

Decision: The document is noted.

R1-1811038 Discussion on design for NR Uu control LTE sidelink CMCC

- Proposal 1: It's necessary to study the case of NR Uu control LTE sidelink in NR V2X.
- Proposal 2: In NR-V2X, a new NR DCI format including the content of LTE DCI format 5A needs to be designed.
- Proposal 3: In NR-V2X, new NR RRC parameters including the content of LTE SIB21 need to be specified.

Decision: The document is noted.

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Tuesday conclusion: Continue offline discussion – Phillippe (Huawei)

Thursday session

R1-1811995 **Summary of AI: 7.2.4.3 Uu-based sidelink resource allocation/configuration** **Huawei, HiSilicon**

Decision: The document is noted.

Agreements:

Continue studying NR sidelink resource allocation techniques by NR Uu for mode-1:

- Dynamic resource allocation
- Semi-persistent scheduling allocation or NR grant type-2 (activation/de-activation by physical layer signaling)
- Grant free transmission i.e., configured NR grant type-1

Agreement:

- Study further which resources to use for SL transmission and other network-control sidelink issues (e.g., power control) in the case of shared carrier

R1-1810144	Discussion on NR Uu to control LTE PC5	Huawei, HiSilicon
R1-1810287	Consideration on enhancements of NR Uu to control LTE sidelink	LG Electronics
R1-1810393	Enhancements of NR Uu link to control LTE sidelink	vivo
R1-1810457	On the feasibility of NR-Uu to control LTE sidelink	MediaTek Inc.
R1-1810545	Discussion On NR Uu control LTE sidelink in NR V2X	CATT
R1-1810727	Discussion on NR Uu based resource allocation/configuration for LTE Sidelink	ZTE
R1-1810779	Enhancements of NR Uu link to control LTE sidelink	Intel Corporation
R1-1810873	Discussion on Enhancements of NR Uu to control LTE sidelink	Samsung
R1-1811216	Enhancement of NR Uu Interface for LTE Sidelink	InterDigital, Inc.
R1-1811266	Enhancements of NR Uu to control LTE sidelink	Qualcomm Incorporated
R1-1811338	Enhancements of NR Uu to control LTE sidelink	NTT DOCOMO, INC.
R1-1811432	On Enhancements of NR Uu to control LTE sidelink	Nokia, Nokia Shanghai Bell
R1-1811598	On NR Uu controlling LTE sidelink	Ericsson

7.2.4.3.3 Other

R1-1810595	Discussion on Sidelink Bi-mode Transmission in NR-V2X	Fujitsu
R1-1810979	Discussion on dual-connectivity for NR-V2X	Guangdong OPPO Mobile Telecom.

7.2.4.4 QoS management

R1-1810546 **QoS management in NR V2X** **CATT**

- Proposal 1: The NR QoS characteristics for V2X physical layer include the traffic types, priority level, latency, BLER and Data Rate
- Proposal 2: LTE resource allocation and distributed scheduling strategy needs to be enhanced for NR V2X QoS management in PC5 in order to support high reliability, low latency, and high data rate V2X services

Decision: The document is noted.

R1-1810780 **QoS management for NR V2X communication** **Intel Corporation**

- Proposal 1: The NR V2X QoS model, i.e. per-packet QoS (PPPP and PPPR) or concept of QoS flows is to be decided by RAN2/SA2
- Proposal 2: Ask SA2 whether upper layers can provide information to represent minimum required communication range and provide additional data on transmission rate (e.g. period / packet size or statistical information) for NR–V2X communication
- Proposal 3: Do not introduce additional physical layer support to handle QoS for eV2X services on NR Uu link
  - FFS if additional UE assistance information is needed to characterize eV2X UL traffic (e.g. unicast/groupcast or broadcast)
- Proposal 4:
  - Priority information is used to handle intra and inter UE transmission conflicts
  - Priority information signaled over the air and utilized in channel access and resource selection procedures
- Proposal 5: Latency budget information is used in channel access and resource selection procedures at the transmitter side (e.g. to determine window for resource selection)

- Proposal 6: Reliability information is used to derive number of retransmissions, MCS level / transmission format for sidelink shared and control channel as well as to guide resource selection decisions and transmit power decisions (e.g. to ensure minimum energy per information bit)
  - For instance, minimum bounds on values for certain transmission parameters can be set
- Proposal 7: Ask SA2 if traffic characteristics such as packet size and packet arrival statistics can be provided for eV2X services
- Proposal 8: UE reports QoS traffic information to gNB in order to facilitate proper scheduling of gNB controlled sidelink transmissions
- Proposal 9: Introduce sidelink radio-layer measurements to facilitate QoS adaptation and congestion control

Decision: The document is noted.

Tuesday conclusion: Continue discussion offline – Torsten (Nokia)

Thursday

No offline happened so far - Review below summary to recall what need to be further discussed.

R1-1811874 **Feature Lead Summary for 7.2.4.4 QoS Management** **Nokia, Nokia Shanghai Bell**

Decision: The document is noted.

Friday

R1-1812044 **Feature Lead Summary for 7.2.4.4 QoS Management** **Nokia, Nokia Shanghai Bell**

Decision: The document is noted.

Agreements:

RAN1 studies further how to use

- priority,
- latency,
- reliability,
- minimum required communication range (as defined by higher layers) if agreed to use

in the physical layer aspects of at least

- resource allocation and
- congestion control and
- resolution of in-device coexistence issues and
- power control

R1-1810145 QoS management for NR V2X Huawei, HiSilicon
R1-1810288 Discussion on QoS management for NR V2X LG Electronics
R1-1810728 Discussion on QoS management ZTE
R1-1810874 Discussion on QoS management for NR V2X Samsung
R1-1810944 Discussion on resource sharing among different QoS levels ITRI
R1-1810980 Discussion on QoS management in NR-V2X Guangdong OPPO Mobile Telecom.
R1-1811116 QoS Management for NR V2X InterDigital, Inc.
R1-1811267 Design aspects and requirements for QoS Qualcomm Incorporated
R1-1811312 Discussion on QoS-related Fragmentation Metric in NR-V2X Fujitsu Limited
R1-1811339 Sidelink QoS management NTT DOCOMO, INC.
R1-1811433 On QoS Management Nokia, Nokia Shanghai Bell
R1-1811601 NR sidelink QoS handling Ericsson

7.2.4.5 Coexistence

Including feasibility of coexistence mechanisms & advanced V2X services provided by NR V2X under co-existence

R1-1810146 **Discussion on co-existence for NR V2X and LTE V2X** **Huawei, HiSilicon**

- Proposal 1: Coexistence between NR-V2X and LTE-V2X assumes a static configuration of non-cochannel carriers.
- Proposal 2: When LTE-V2X and NR V2X share the same band but not the same carrier, do not support FDM coexistence.

- Proposal 3: Send an LS to RAN4 to ask them to study the necessary frequency separation between an NR-V2X and LTE-V2X channel in order to support FDM coexistence.
- Proposal 4: The sidelink timing between NR-V2X and LTE-V2X is aligned when the two systems coexist in a TDM manner.

Decision: The document is noted.

R1-1811434 **Discussion on coexistence between NR sidelink and LTE sidelink Nokia, Nokia Shanghai Bell**

- Proposal 1: Availability of common synchronization source and synchronization accuracy need to be taken into account when considering coexistence of LTE SL and NR SL. It should be decided if specification supports in-device coexistence of LTE SL and NR SL transmission in the case that the transmissions are unsynchronized
- Proposal 2: Coexistence studies need to consider the case when numerologies/slot lengths are different in LTE SL and NR SL.
- Proposal 3: Tx power prioritization/allocation between NR SL and LTE SL needs to be considered.
- Proposal 4: NR SL should support both basic and advanced use cases.

Decision: The document is noted.

Tuesday conclusion: Continue offline discussion – Arjun (Qualcomm)

Thursday session

R1-1812000 **Summary of Coexistence Aspects in NR-V2X Study Qualcomm**

Decision: The document is noted.

Agreements:

- In the context of in-device coexistence between NR and LTE V2X sidelinks (not co-channel),
  - TDM solutions are those that prevent overlapping or simultaneous NR and LTE V2X sidelink transmissions.
  - FDM solutions are those that involve simultaneous transmissions of NR and LTE V2X sidelink transmissions and defining mechanisms for sharing the total device power between the two.

Agreements:

- For TDM solutions, LTE and NR V2X sidelinks are assumed to be synchronized
  - FFS accuracy of time alignment/synchronization
  - FFS alignment whether slot level and/or DFN based alignment is needed

Agreements:

- For TDM solutions, the following aspects are studied in RAN1:
  - Long term time-scale coordination
    - Potential transmissions in time of LTE and NR V2X are statically/quasi-statically determined
    - UE behaviour when LTE and NR V2X sidelink transmissions overlap in time is FFS
  - Short time-scale coordination
    - Transmissions in time of LTE and NR V2X are known to each RAT (details FFS)
    - UE behaviour when LTE and NR V2X sidelink transmissions overlap in time is FFS
  - FFS coordination details
  - FFS UE assistance for coordination

Remaining issues in R1-1812000 - to be addressed in RAN1#95

R1-1810289 Discussion on coexistence mechanisms LG Electronics
R1-1810394 Discussion on coexistence between LTE and NR V2X vivo
R1-1810458 Design options for in-device coexistence MediaTek Inc.
R1-1810547 Discussion on coexistence of LTE sidelink and NR sidelink CATT
R1-1810729 Coexistence between NR V2X and LTE V2X ZTE
R1-1810781 Coexistence mechanisms for eV2X services Intel Corporation
R1-1810875 Discussion on Coexistence between LTE and NR PC5 Samsung
R1-1810954 Discussion on coexistence mechanisms for LTE sidelink and NR sidelink Panasonic
R1-1810981 Discussion on coexistence in NR-V2X Guangdong OPPO Mobile Telecom.

R1-1811217 Discussion on Coexistence between NR V2X and LTE V2X InterDigital, Inc.
R1-1811268 Co-existence aspects for NR-V2X and LTE-V2X Qualcomm Incorporated
R1-1811340 LTE and NR sidelink coexistence NTT DOCOMO, INC.
R1-1811602 On coexistence of NR SL and LTE SL for V2X Ericsson

7.2.4.6 Other

R1-1810142 LTE Uu support for advanced V2X use cases Huawei, HiSilicon
R1-1811596 On sidelink resources in NR Ericsson
R1-1811599 On Link/Interface Selection for Unicast V2X Communications Ericsson
R1-1811600 Clustering and Cluster Head Election Schemes Ericsson
R1-1811606 Configuration and signaling principles for NR sidelink Ericsson

7.2.5 Study on Remote Interference Management for NR

FS_NR_RIM; SID in RP-181832. Please refer to the SID for detailed scoping

R1-1811039 Updated Work plan for Rel-16 SI on NR RIM CMCC
Decision: The document is noted.

R1-1811091 Update for TR 38.866 Study on remote interference management for NR CMCC
Decision: The document is endorsed.
MCC post meeting: Clean-up of the version endorsed in RAN1#94bis and creation of v0.1.0 as baseline for further update (R1-1812082).

R1-1810147 Design considerations for RIM framework Huawei, HiSilicon
R1-1811440 On mechanisms for gNB coordination Ericsson
R1-1812061 Collection of RIM simulation results CMCC

7.2.5.1 Remaining details on evaluation methodology

Including any evaluation results

R1-1810330 Evaluation Methodology and Preliminary Results for RIM ZTE
Observation 1: The more reference signals with same sequence arrived in the detection window, the lower the SNR required.
Observation 2: The more reference signals with same sequence arrived in the detection window, the lower the SNR required.
Decision: The document is noted.

R1-1811210 On evaluation of RIM Nokia, Nokia Shanghai Bell
Observation 1: Reference SINR point is useful for RIM-RS evaluation, to avoid over-optimization.
Proposal 1: For single RS case, use the reference SNR for RIM-RS evaluation as [-6] dB with 1T2R antennas.
- Performance Metric: 90% Detection rate with 1% FA rate @[-6dB] with 1T2R in gNB

Observation 2: For RIM-RS, to use wider BW is helpful to achieving higher SINR and larger multiplexing gain thanks to its extension to longer sequence.
Observation 3: Using PSS/SSS for RIM-RS may cause impact to legacy UE when initial synchronization.
Observation 4: CSI-RS for mobility can be configured with high flexibility in time/frequency resources and sequence domain, and providing self-repetition in time-domain which is useful in timing acquisition.
Observation 5: Following trade-off exists according to the length of RIM-RS
- Detection performance and easy timing acquisition
- Overhead in DL resource
- Interference to other RIM-RS and DL UE in aggressive cells
- Timing requirement for DL/UL switching,

Observation 6: two-symbol patterns shows better SNR performance of 3.3~3.5 dB (3 detection windows) or 1.3~1.6 dB (5 detection windows).
Observation 7: Single-symbol pattern with 1T2R (minimum gNB configuration in practical deployment) provides comparable performance to two-symbol pattern without generating big negative impacts to the network and UEs
Decision: The document is noted.

R1-1811819 **Evaluation results for RIM RS and remaining issues on evaluation methodology for RS evaluations**
Ericsson (rev of R1-1811436)

Proposal 1: Change the agreement from RAN1#94 related to detection window simulation assumption to: *Length of detection window* W_{det}~~L_{symbol}~~*:* to be provided

Proposal 2: Change the agreement from RAN1#94 related to RS delay model to: *Delay of received RS:* ~~When multiple RSs arrive in the detection window, t~~The arrival time of the *i*-th RS respect to the start of the detection window, Δ_i, is uniformly distributed within [-L_{symbol}, L_{symbol}], where L_{symbol} is the length of UL symbol based on the numerology of RS

Proposal 3: The power of the received RS in case of single RS (Case 1) is set to the reference power P0 and hence is not varying over time.

Proposal 4: Apply a one-shot 90% detection probability for the multi-RS case (aligning the metrics between single-RS and multi-RS cases). As for the single-RS case, the metric is the minimum SNR required where detection probability and false alarm requirements are fulfilled

Decision: The document is noted.

Tuesday conclusion: Continue offline discussion – Dan (CMCC)

Thursday session

R1-1812025 **Updated Summary for NR RIM CMCC**

Decision: The document is noted.

Agreements:

- Change the agreement from RAN1#94 related to detection window simulation assumption to: Length of detection window W_{det}~~L_{symbol}~~: to be provided
- Change the agreement from RAN1#94 related to RS delay model to: Delay of received RS: When one or multiple RSs arrive in the detection window, t~~T~~he arrival time of the i-th RS respect to the start of the detection window, $\triangle_i$, is uniformly distributed within [-L_{symbol}, L_{symbol}], where L_{symbol} is the length of UL symbol based on the numerology of RS.
- Clarify that the power of the received RS in case of single RS (Case 1) is set to the reference power P0 and hence is not varying over time.

Agreements:

- For fair comparison of evaluation results, more evaluations assumptions need to be aligned.
  - Performance metrics are evaluated at reference SNR, the reference SNR is defined as follows:
    - $SNR_{ref}(dB)=P_0(dBm)-N(dBm)$
  - where P_0 is the reference receiver power and N is the noise power both within the length of 1 OFDM symbol.
  - False alarm is defined based on detecting any sequences transmitted in the same time-frequency resource in the network with only AWGN input, i.e. only thermal noise is input to the receiver, and should be limited under [1]% over 2 symbols
    - For simulation, the detector (window length and sliding granularity) should be consistent when calculating false alarm and detection probability
    - For different detectors, the false alarm rate will be scaled proportionally over the detection duration
      - For symbol-level detector, the detection duration is the length of the detection window
        - E.g. For 1 OS symbol-level detection window, the false alarm rate is [0.5%]
      - For sample-level detector, the detection duration is the number of symbols that the detection window is sliding over plus detection window length.
        - E.g. For 1 OS sample-level detection window sliding from symbol 0 to 1, the false alarm rate is [1%]

Agreements:

- Clarify that the detection probability is defined as the probability of detecting a sequence in a detection window given that the sequence is present in the detection window, i.e,
  Pd_k = Prob{sequence k is detected in a detection window | sequence k is **present in** the detection window}.
  - For symbol-level detection, only sequences present in the detection window are counted for detection probability. "Sequence k is **present in** the detection window" means that the power of at least one RS copy using sequence k captured in the detection window is no less than that captured in other detection windows

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- For sample-level sliding detection, all sequences arrived should be counted.
- Note that symbol-level detection requires less complexity at the expense of lower detection probability
- For case 2-1, the metric is the minimum SNR required for one-shot detection with 90% detection probability under 1% false alarm requirement.
- For case 2-2A and 2-2B, the metric is the minimum SNR required for one-shot detection with [90]% detection probability under [1]% false alarm and [1]% error detection requirement.

- Detection algorithm should be declared, at least including
  - Symbol-level or sample-level sliding detection window, etc
  - how decision variable is calculated (e.g. PAPR or max peak, etc)

Agreements:

- Add Case 2-2B as simulation case, and provide results under various number of copies per sequence to reflect the impact of number of gNBs that share the same set ID on detection probability.
  - Case 2-2B (Multiple sequences and multiple RSs): The number of distinctive sequences received within the window is smaller than the number of RS copies. Multiple RSs copies may use the same sequence. Number of total RS sequences is more than 1.
- Modify the Table 7-1 in TR

Table 7-1 Simulation cases for RIM RS design

	Total number of sequences used in the same time-frequency resource in the network (N_{seq})	**Number of sequences arriving within the window (n)**	**Number of RS copies using the same sequence (m)**	**Number of total RSs arriving within the window (S)**
Case 1	1	1	1	1
Case 2-1	1	1	10 as starting point , other values are encouraged to be provided	m*n
Case 2-2A	8 as starting point	1,2,4,8 [1]	1	m*n
Case 2-2B	8 as starting point	1,2,4,8 [1]	10 as a starting point, other values are encouraged to be provided	m*n
NOTE 1: Separate simulation runs				

Agreements:

- Add "Error detection probability", which is defined as the detected sequence IDs do not match with the sequence IDs actually arrived within the detection window, as the other metric for RIM RS evaluation.
  - The metric is counted as follows: $P_e=\max_n\{1,2,4\}P_{err,n}$, where $P_{err,n}$ is the probability of detecting at least one sequence different from all the one(s) that actually **arrived** within the detection window, and n is the number of sequences arriving within the window given in Table 7.1 in the TR.

Agreement:

- The pseudo-random sequence (length-31 Gold sequence) specified in NR is adopted as the RIM RS sequence

Agreements:

- Time-domain circular characteristics should be satisfied for NR-RIM design. The following alternatives are used for further evaluation.
  - Alt 1: 1 symbol RS using existing CSI-RS with comb-like structure in frequency-domain;
    - Comb factor = 2 and 4;
  - Alt 2: 2 symbol RS, where two copies of the RS sequence are concatenated and one CP is attached at the beginning the concatenated sequences;
  - Alt 3: 2 symbol RS, where the CP is separately added to the front of each OFDM symbol, but in frequency domain, the RIM-RS in different OFDM symbols need to be multiplied with different linear phase rotation factors.

- Note that Alt 2 and Alt 3 may be identical in terms of performance. It is claimed that Alt 3 can use the same FFT as PDSCH generation. Under proper CP design, Alt 2 can also use the same FFT as PDSCH generation.

R1-1810290 Discussion on evaluations for NR RIM support LG Electronics
R1-1810713 Evaluation of reference signals in RIM Huawei, HiSilicon
R1-1810782 Further considerations on RIM frameworks Intel Corporation
R1-1811638 Discussion on remaining evaluation assumptions and initial evaluation results for RIMCMCC (rev of R1-1811040)
R1-1811269 Remaining details on evaluation methodology Qualcomm Incorporated

7.2.5.2 Mechanisms for improving network robustness

R1-1810148 Discussion on remote interference mitigation mechanisms Huawei, HiSilicon
Proposal 1: Interference mitigation schemes at both aggressor and victim sides shall be supported.
Proposal 2: Consider interference mitigation schemes including time/frequency resource configuration, power control and beam management.
Decision: The document is noted.

R1-1811270 Mechanisms for improving network robustness Qualcomm Incorporated
Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.Decision: The document is noted.

Tuesday conclusion: Continue offline discussion – Dan (CMCC)

Thursday session
R1-1811981 Updated Summary for NR RIM CMCC
Decision: The document is noted.

Agreements:
- Capture the following updated structure in TR 38.866 to include time-domain, frequency-domain, spatial domain and power-domain solutions.
  - 6.1.1 Solutions by network implementation
  - 6.1.1.1 Time-domain based solutions
  - 6.1.1.2 Frequency-domain based solutions
  - 6.1.1.3 Spatial-domain based solutions
  - 6.1.1.4 Power-domain based solutions
  - 6.1.2 Solutions with specification impact
  - 6.1.2.1 Time-domain based solutions
  - 6.1.2.2 Frequency-domain based solutions
  - 6.1.2.3 Spatial-domain based solutions
  - 6.1.2.4 Power-domain based solutions

Agreements:
- Time domain RIM mitigation include the following:
  - Time-domain Aggressor-side RIM mitigation solutions at least include: DL symbols backoff, i.e., muting DL symbol(s) that cause interference to the Victim.
    - Note that this sacrifices downlink throughput of the aggressor gNB
    - FFS details
  - Time-domain Victim-side RIM mitigation solutions at least include Victim gNB avoids scheduling on UL symbol(s) that are interfered
    - Note that this sacrifices uplink throughput of the victim gNB
    - FFS details
  - Note: frequency domain migitation schemes are separate

Proposals:

- Frequency domain RIM mitigation solutions include the following.
  - Partial muting in frequency domain at either aggressor gNB or victim gNB
  - Utilizing different frequency bands between aggressor gNBs and victim gNBs by scheduling or activating different BWPs or sub-bands with no overlapped bandwidth between them.
  - Note that if the victim UL and the aggressor DL use non-overlapped bandwidths all the time (as in a static manner), the spectral efficiency and UL/DL capacity will be reduced

Additional issues for network robustness
Remaining issues for framework

Friday session

R1-1812060 **Updated Summary for NR RIM CMCC**

Decision: The document is noted.

Agreements**:**

- Frequency domain RIM mitigation solutions for study at least include the following. Discuss further on whether they are network implementation solutions or have potential spec impact
  - Partial muting in frequency domain at either aggressor gNB or victim gNB
  - Utilizing different frequency band between aggressor gNBs and victim gNBs by scheduling or activating different BWPs or sub-bands with no overlapped bandwidth between them.
- Note that if the victim UL and the aggressor DL use non-overlapped bandwidths all the time (as in a static manner), the spectral efficiency and UL/DL capacity will be reduced

Agreements:

- Spatial domain RIM mitigation solutions for study at least include the following. Discuss further on whether they are network implementation solutions or have potential spec impact
  - Receive beam nulling at victim gNB, to suppress the remote interference in spatial domain.
  - Scheduling UE transmission that will be received in spatial directions that are less interfered at Victim gNB
  - Controlling transmit beam (e.g., down-tilting) at aggressor gNB
  - Use different beam directions on different DL positions (e.g. choose the beam direction which experiences minimal interference, then according to reciprocity, use this beam to perform transmission in DL resources adjacent to GP)
  - Mounting antennas at lower height, electrical/mechanical down-tilt.
- Note that adjusting the down-tilting or height of the antenna at Aggressor or Victim gNB may reduce corresponding cell coverage.

Agreements:

- Power control mechanism for RIM mitigation for study at least include the following. Discuss further on whether they are network implementation solutions or have potential spec impact
  - Increase UE transmission power at Victim gNB
  - Reduce the DL transmission power of Aggressor gNB

Agreements:

- Further study PRACH enhancement for RIM mitigation
  - FFS network enhancement and/or UE enhancements
    - Network enhancements include multiple PRACH configurations or PRACH reconfiguration by gNB
    - UE PRACH enhancement include UE adopts autonomous RACH enhancement based on multiple PRACH configurations

Agreements:

- Modify in framework 1 in step 3,
  - Note: it is clarified the victim continues RS-1 transmission if RS-2 is detected.
  - the victim may stop RS-1 transmission if RS-2 is not detected and the IoT going back to certain level.

Agreements:

- Further study the following:
  - OAM enhancements:

        - For NR-RIM framework- 1, 2.1 and 2.2, when atmospheric duct interference is detected by victim gNB, victim gNB reports the remote interference to OAM, OAM indicates the potential aggressor gNBs to start the RIM-RS monitoring.
        - When RS-1 is detected at aggressor, aggressor gNB reports to OAM, OAM may configure mitigation schemes at Victim
        - Note that this depends whether the OAM can support such indication in the whole network
    - Timer-based schemes for terminating RS monitoring/transmission
    - Asymmetric channel conditions between a pair of aggressor-victim gNBs

R1-1810291 Discussion on mechanism for NR RIM support LG Electronics
R1-1810331 Consideration on Mechanisms for Improving Network Robustness ZTE
R1-1810548 On remote interference management mechanism CATT
R1-1811816 RIM-RS design and evaluation Intel Corporation (rev of R1-1810783)
R1-1810876 Discussion on remote interference management Samsung
R1-1811041 Discussion on improving network robustness for RIM CMCC
R1-1811211 Remote interference management for NR Nokia, Nokia Shanghai Bell
R1-1811437 On mechanisms for increasing network robustness Ericsson

7.2.5.3 Mechanisms for identifying strong gNB interferers

R1-1811042 Discussion on RS design for RIM CMCC

- Proposal 1: The gNB is not expected to receive RS before the DL transmission boundary, and not expected to transmit RS after the UL reception boundary.
- Proposal 2: The detection performance of the RS (false alarm rate, detection probability, target identification…) should be guaranteed under certain channel conditions.
- Proposal 3: The overhead caused by reference signal transmission should be kept as low as possible.
- Proposal 4: Consider minimizing the number of reference signals that one gNB needs to detect in one DL-UL transmission period to reduce detection overhead.
- Proposal 5: The reference signal for RIM should be well designed to counter large path delay, i.e., the RS is detectable without OFDM symbol alignment.
- Proposal 6: The reference signal for RIM should not cause confusion with existing reference signals used for other purposes or detection issues to UE.
- Proposal 7: Three kinds of RS can be studied for NR-RIM, where
    - For Framework-1
        - RS-1 to assist the aggressor to identify how many UL OFDM symbols at victim it impacted;
        - RS-2 to provide information whether the atmospheric ducting phenomenon exists;
    - For Framework 2.1 and 2.2
        - RS to both assist the aggressor to identify how many UL OFDM symbols at victim it impacted, and carry enough information to enable the information exchange through backhaul (e.g.: set ID).
- Proposal 8: In order to reduce the NR-RIM standardization workload, strive for a unified RS design if multiple reference signals are needed. FFS: RS sequence, OCC, time/frequency pattern, OFDM baseband signal generation method.
- Proposal 9: A dedicated RIM-RS which is transparent to UE should be supported in RIM, however, whether the dedicated RIM-RS is an existing RS with new parameters/configuration or a totally new designed signal should be further discussed.
- Proposal 10: 2 symbol PRACH-like RS can be starting point for RIM-RS design.
- Proposal 11: Pseudo-random sequence in NR as the starting point for NR-RIM sequence design.
- Proposal 12: For the time-domain pattern for RIM RS, an RS transmission period with multiple DL-UL transmission periodicities is defined. The starting DL-UL transmission periodicity offset within the RS transmission period can be used to distinguish RIM-RS resources or convey set ID information.
- Proposal 13: Support time-domain repetition with DL-UL transmission periodicity granularity in RIM-RS time pattern to enhance detection performance.
- Proposal 14: To assist the aggressor to identify how many UL OFDM symbols at victim it impacted, RIM-RS transmission position within the DL-UL transmission periodicity should be fixed,
    - as the last [2] DL symbols to transmit RIM-RS, wherein, the ending boundary of the transmitted RIM-RS aligns with the 1st reference point (i.e., DL transmission boundary);
      It is also beneficial to fixed the RIM-RS detection windows within a DL-UL transmission periodicity, e.g.,
    - as the whole UL symbols as RS detection windows, wherein, the starting boundary of the first RS detection window aligns with the 2nd reference point (i.e., UL reception boundary).

- Proposal 15: Allow the frequency location of NR-RIM RS to be flexible with limitation on the frequency location candidates, such as the sync raster of the carrier, or even a sub-set of the sync-raster of the carrier.
- Proposal 16: The starting frequency offset within system bandwidth can be used to distinguish RIM-RS resources or convey set ID information.
- Proposal 17: Frequency-domain OCC is supported for RIM-RS design.
- Proposal 18: TDM, FDM and CDM methods can be combined to distinguish RIM-RS resources, where,
  - TDM method means using different starting DL-UL transmission periodicity offset within RS transmission period;
  - FDM method means using different starting frequency offset within system bandwidth;
  - CDM method means using different sequence (e.g., using different initialization of PN sequence) and using different resource element in frequency-domain OCC group.
- Proposal 19: The capacity of distinguishable RIM-RS resources, as well as the related parameters, such as, sequence number, frequency OCC group size, RIM-RS bandwidth, system bandwidth which can be used to allocate RIM-RS, the number of all possible DL-UL periodicity offset, the time-domain repetition number with DL-UL transmission periodicity granularity, the RS transmission periodicity, needs to be configurable.

Decision: The document is noted.

R1-1811419 **Discussion on procedure for RIM framework** **Hisense Co., Ltd.**

Observation 1: Two simultaneous RS links double the cost of the RS.
Proposal 1: Two simultaneous RS links should be avoided.
Observation 2: The RS transmitted from the aggressor to the victim is of more accuracy in reflecting the remote interference.
Proposal 2: The RS transmitted from the aggressor to the victim is of substantial significance.
Proposal 3: The RIM Framework-3 shall be further studied.

Decision: The document is noted.

Tuesday conclusion: Continue offline discussion – Dan (CMCC)

Thursday session

R1-1811981 **Updated Summary for NR RIM** **CMCC**

Decision: The document is noted.

Agreement:

- The gNB is not expected to receive RS before the DL transmission boundary, and not expected to transmit RS after the UL reception boundary.

Agreements:

- The following requirements are at least considered in the RIM RS design
  - The RIM RS should be distinguished from existing RSs used for other purposes, by resource configurations and/or RS sequence design.
  - The RIM RS should be well designed to handle large path delay

Agreements:

- Strive for unified design of RIM RS to convey information for gNB (or gNB group) identification, irrespective of framework chosen, in terms of sequence type, time and frequence transmission pattern
  - Note that the information conveyed in different frameworks does not need to be the same
- Under unified RS design, FFS whether RS-1 and RS-2 in framework 1 are the same RS or distinguish from each other.

Agreements:

- At least one of the following methods is supported to distinguish RIM-RS resources:
  - TDM method: different time-domain occasions are used to distinguish RIM-RS resource
  - FDM method: different frequency positions are used to distinguish RIM-RS resource
    - FFS: comb offsets if comb-like frequency structure is adopted;
  - CDM method: different RS sequences are used to distinguish RIM-RS resource
    - FFS: the number of sequences transmitted on the same time-frequency resource;

        - FFS: OCC index if frequency-domain OCC is adopted.
    - Other methods are not precluded.

Agreements:
- Transmission position of RIM RS-1 in framework 1 and RS in framework 2 is fixed in the last X symbols before the DL transmission boundary, i.e., the ending boundary of the transmitted RIM-RS aligns with the 1st reference point
    - X is the number of symbols that RIM RS(s) are mapped to.
    - FFS for transmission position of RS-2 in framework 1

Agreements:
- For the time-domain pattern for RIM RS, an RS transmission periodicity is defined
    - The transmission periodicity can be semi-statically configured per network.
    - Within the transmission periodicity, multiple time-domain RIM RS transmission occasions are defined. One or multiple transmission occasions can be semi-statically configured to distinguish one RIM-RS resources or convey set ID information per network
        - FFS details (especially w.r.t. X symbols)

Thursday Note: Companies are encouraged to check 2.4.5 of R1-1812025 for illustration of RIM RS transmission time-domain patterns.

Agreements:
- Study further potential enhancement to improve RS detection performance including potential spec impact (if any):
    - FFS. power boosting (e.g., symbol-level, etc.)
    - FFS. time-domain repetition including granularity of repetitions
    - FFS. whether additional signaling is necessary

Agreement:
- RIM RS for a given functionality transmitted by a gNB or a gNB set are configured with frequency location(s) known to the receiving gNB

Agreements:
- The bandwidth of RIM-RS can be smaller than the carrier bandwidth.
    - FFS. [20MHz, 10MHz, 5MHz, 20 PRB] as a starting point.
- The RIM RS SCS can be configured by the network.
    - FFS: The candidate set of the RIM RS SCS.

R1-1810149 Discussion on reference signal design for identifying remote interference Huawei, HiSilicon
R1-1810292 Discussion on reference signal design for NR RIM support LG Electronics
R1-1810332 Consideration on Mechanisms for Identifying Strong gNB Interference ZTE
R1-1810549 On identification of gNB interferers CATT
R1-1810877 Discussion on reference signal for remote interference identification Samsung
R1-1811212 Considerations on identifying strong gNB interferers Nokia, Nokia Shanghai Bell
R1-1811271 Mechanisms for identifying strong gNB interferers Qualcomm Incorporated
R1-1811438 On RIM reference signal design Ericsson
R1-1811537 On remote interference management reference signal design CEWiT
R1-1811608 Discussion on Reference Signal Design for RIM China Telecommunications
R1-1811609 to R1-1811612 Discussion on Reference Signal Design for RIM China Telecommunications Withdrawn

7.2.5.4 Other

R1-1811439 On encoding of gNB set ID in RIM-RS Ericsson
R1-1811441 System assessments for RIM Ericsson
R1-1811442 PRACH improvements for network robustness Ericsson

7.2.6 Study on Physical Layer Enhancements for NR URLLC

FS_NR_L1enh_URLLC; SID in RP-182089. Please refer to the SID for detailed scoping

R1-1811105 **TR 38.824 v0.0.1 for Study on physical layer enhancements for NR ultra-reliable low latency communication (URLLC) Huawei**

Decision: The document is endorsed with the following update:

- Remove 7.2.3

R1-1811909 TR 38.824 v0.0.2 for Study on physical layer enhancements for NR ultra-reliable low latency communication (URLLC) Huawei

7.2.6.1 Remaining details on evaluation methodology

R1-1810173 **Evaluation Methodology and Simulation Assumptions for Rel-16 NR URLLC Ericsson**

Proposal 1: Factory automation use case is prioritized in Rel-16 URLLC study item.
Proposal 2: Use reliability and latency requirements, TB size, of Table 1 in the simulation study.
Proposal 3: Use Table 2 for system level evaluation of factory automation use case.
Proposal 4: Use Table 3 for system level evaluation of power distribution use case.
Proposal 5: Use Table 3 for system level evaluation of transport industry use case, with changes to inter-BS distance and UE speed only.
Proposal 6: Use Table 4 for link level simulation of factory automation use case.
Proposal 7: Use Table 5 for link level simulation of power distribution use case.
Proposal 8: Use Table 5 for link level simulation of transport industry use case, with changes to UE speed only.
Proposal 9: Companies report the modified URLLC capacity using system-level simulation.
Proposal 10: Companies evaluate physical layer channel performance using link-level simulation and Q value.

Decision: The document is noted.

R1-1810784 **Remaining details on evaluation methodologies for eURLLC Intel Corporation**

Proposal 1
- In case of modelling of service mix, the eMBB service is modelled as FTP model 3 with 0.5 Mb file size or as a full buffer.
- It is up to companies to describe details of service mix modelling including eMBB UE dropping and eMBB service loading

Proposal 2
- Adopt both performance metrics and let companies decide which metric to report in a given scenario
- Additionally, CDF of PERs per UE, subject to a given target latency, may be collected for a given loading condition

Proposal 3: RAN1 should focus on modelling of DL and UL traffic independently
Proposal 4: Adopt 2 TX and 4 RX as a baseline UE antenna configuration
Proposal 5
- RAN1 to agree on Urban grid for eV2X from TR 37.885 as a single remote driving scenario
- The number of UEs should not be fixed for the remote driving scenario
- Two air-interface latency targets are defined for remote driving: 2 ms for extreme case and 17 ms for regular case
- Traffic model should adopt scaling of DL and UL data rate according to UE speed

Proposal 6
- For factory automation, aperiodic traffic is modelled by FTP model 2
- For factory automation, two periodic traffic types are adopted for evaluations:
  - Periodic Type-1: With independent uniformly distributed random offset for a UE
  - Periodic Type-2: With pre-planned offset distribution for a UE
- RAN1 to agree on 40 UEs per InH area for factory automation
- Remove the assumption of 20m for inter-BS distance

Proposal 7
- For the generic use case, adopt the same layout as the power distribution changing the ratio of indoor and outdoor to 20% and 80% respectively
- Indoor penetration loss is modelled according to low loss

Decision: The document is noted.

Tuesday conclusion: Continue offline discussion – Chengyan (Huawei)

Wednesday session

R1-1811949 **Summary of 7.2.6.1 Remaining details on evaluation methodology Huawei, HiSilicon**

Decision: The document is noted.

Samsung Exhibit 1029, Page 558 of 684

Agreements:

- For periodic traffic model for factory automation, it is assumed that the data for UEs in a group will arrive simultaneously in the evaluations.
  - Data for UEs in different groups can arrive at different time either in a random manner or in a pre-planned manner
    - Companies report what manner used in the evaluations
  - Companies can report the number of groups and the number of users in each group used in the evaluations
    - The number of users in a group can be one or more, up to companies to report

Agreements:

The performance metric for Rel-16 NR URLLC evaluation is either option 1 or option 2 below:

- Option 1: Percentage of users satisfying reliability and latency requirements
  - Intend for the case with fixed number of UEs and fixed traffic model per UE
- Option 2: URLLC capacity as defined in TR 38.802 with the modification as below:

- URLLC capacity and URLLC / eMBB multiplexing capacity - Definition: URLLC system capacity is calculated as follows: - C(L, R) is the maximum offered cell load under which Y% of URLLC UEs in a cell operate with target link reliability R under L latency bound - X = (100 – Y) % is the percentage of UEs in outage - A UE in outage is defined as the UE can not meet both latency L and link reliability R bound - Companies report their assumption on X (e.g. 5% or 0%) - Companies report their assumption on the number of eMBB UEs deployed together with the URLLC UEs

  - Intend for the case that the number of UEs and/or the data arrival rate is adjustable
    - Adjusting the number of UEs should be applied to periodic deterministic traffic model
  - The value of X can be revisited in the next meeting

Agreements:

- For evaluation for 4GHz for at least the case of power distribution, adopt the following:

BS antenna configuration	4 Tx/4 Rx antenna ports and 8 Tx/8 Rx antenna ports dH = 0.5λ, dV = 0.8λ; Companies report the antenna tilt Note: Higher BS antenna configurations for evaluation are not precluded. Detailed antenna configuration parameters are FFS
UE antenna configuration	2 Tx/4 Rx antenna ports Panel model 1: Mg=1, Ng=1, P=2, d_H=0.5 Note: Higher UE antenna configurations for evaluation are not precluded Detailed antenna configuration parameters are FFS

Note: for other cases, to be further discussed, including the possibility of having each company to report the assumed antenna configurations in the evaluation

Agreements:

- For evaluation for 4GHz for the case of factory automation, adopt the following BS antenna configuration:

BS antenna configuration	4 Tx/4 Rx antenna ports and 8 Tx/8 Rx antenna ports Note: Other values are not precluded for evaluation For 4 Tx/4 Rx antenna ports: (M, N, P, Mg, Ng; Mp, Np) = (1, 2, 2, 1, 1; 1, 2) For 8 Tx/8 Rx antenna ports: (M, N, P, Mg, Ng; Mp, Np) = (2, 2, 2, 1, 1; 2, 2)

Agreements:

- Take the following table as the table of representative use cases for selection for Rel-16 NR URLLC evaluation.

Samsung Exhibit 1029, Page 559 of 684

Use case (Clause #)	Reliability (%)	Latency (ms)	Data packet size and traffic model	Description
Power distribution (22.804:5.6.4 &5.6.6)	99.9999	5(end to end latency) Note: 2-3 ms air interface latency	DL & UL: 100 bytes ftp model 3 with arrival interval 100 ms	Power distribution grid fault and outage management
	99.999	15(end to end latency) Note: 6-7 ms air interface latency	DL & UL: 250 bytes Periodic and deterministic with arrival interval 0.833 ms Random offset between UEs	Differential protection
Factory automation	99.9999	2(end to end latency) Note: 1 ms air interface latency	DL & UL: 32 bytes Periodic deterministic traffic model with data arrival interval 2 ms	Motion control
Rel-15 enabled use case (e.g. AR/VR)	99.999	1ms (air interface delay) for 32 bytes 1 ms and 4 ms (air interface delay) for 200 bytes	DL & UL: 32 and 200 bytes FTP model 3 or periodic with different arrival rates	
	99.9	7ms (air interface delay)	DL & UL: 4096, 10 K FTP model 3 or periodic with different arrival rates	
Transport Industry (22.186: 5.5)	99.999	5 (end to end latency) Note: 3ms air interface latency	For UL: 2.5 Mpbs; Packet size 5220 bytes For DL: 1Mbps; Packet size 2083 bytes Note: Data arrival rate 60 packets per second for periodic traffic model	Remote driving
Transport Industry (23.501, 22.261)	99.999	10(end to end latency) Note: 7ms air interface latency	UL&DL: 1.1 Mbps, Packet size 1370 bytes Note: Data arrival rate 100 packets per second for periodic traffic model	Intelligent transport system (ITS)

  - Note: The above packet size already includes header overhead.
- FFS whether or not to additionally simulate aperiodic traffic model for factor automation, and if so, details (latency, packet sizes, etc.)
- ~~FFS whether or not to additionally simulate the case of transport industry, and if so, detailed parameters~~
- Note: UL and DL simulation is independent

Conclusion:
- PDCP duplication is not evaluated in RAN1 in this study item.
- PDCP duplication is not always available/applicable.
- Rel-15 higher layer mechanisms PDCP duplication may be applicable for improving reliability.

Thursday session

R1-1812006 **Summary of 7.2.6.1 Remaining details on evaluation methodology Huawei, HiSilicon**

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Decision: The document is noted.

Agreements:

- For evaluation for 4GHz for at least the case of power distribution, adopt the following antenna configuration parameters for BS antenna:
  - For 4 Tx/4 Rx antenna ports: (M, N, P, Mg, Ng; Mp, Np) = (8, 4, 2, 1, 1; 1, 2)
  - For 8 Tx/8 Rx antenna ports: (M, N, P, Mg, Ng; Mp, Np) = (8, 4, 2, 1, 1; 1, 4)
- For evaluation for 4GHz for at least the case of power distribution, adopt the following antenna configuration parameters for UE antenna:
  - For 4 Rx: (M, N, P, Mg, Ng; Mp, Np) = (1, 2, 2, 1, 1; 1, 2)
  - For 2 Tx: (M, N, P, Mg, Ng; Mp, Np) = (1, 1, 2, 1, 1; 1, 1)

Agreement:

- For evaluation for 4GHz for the case of factory automation, reuse the UE antenna configuration for 4 GHz for power distribution.

Agreements:

- Reuse the gNB/UE Tx/Rx antenna ports number for power distribution use case for all urban macro use cases evaluated at 4 GHz.
  - If 16Tx/16Rx antenna ports are additionally used, adopt the following configuration (working assumption): (M, N, P, Mg, Ng; Mp, Np) = (8, 8, 2, 1, 1; 1, 8)

Agreements:

- Update UE distribution for power distribution as below:

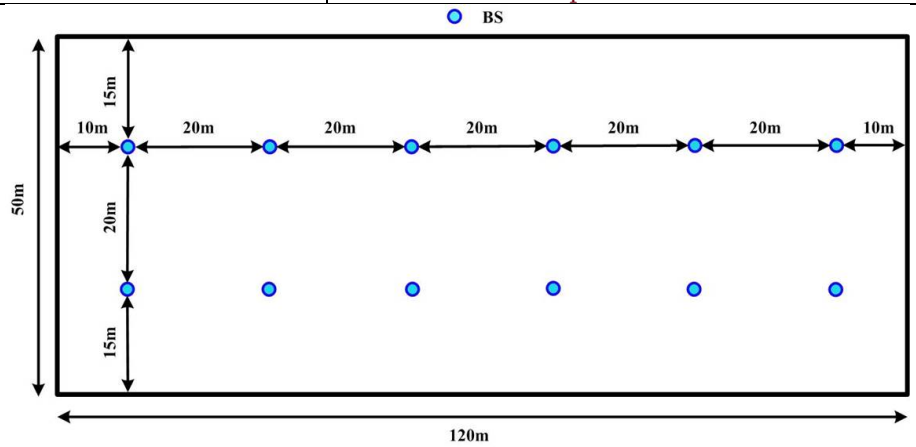
Parameters	Value
UE distribution	100% of users are outdoors Use 3km/h for modeling fading channel

- Update the BS antenna height for factory automation as below:

BS antenna height	10 m Note: Other value (e.g. 3 m) is not precluded for evaluation

- Update the layout for factory automation as below:

Layout	Single layer as defined in 38.802 Indoor floor: 12 BSs per 120 m x 50 m



Agreements:

- Reuse the simulation settings for power distribution use case for Rel-15 enabled use case with urban macro (applicable data packet size 32 bytes and 200 bytes) with the following modification:

Number of UEs per cell	Up to [20]

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	Companies to report the value used in the evaluations Note: Example of the number of users can be 5, 10, 15, 20
UE distribution	80% of users are outdoors and 20% of users are indoors Indoor penetration loss is modelled according to low loss model

Agreements:

- Reuse the simulation settings for factory automation use case for Rel-15 enabled use case with indoor hotspot with the following modification:

Number of UEs per cell	Up to [20] Companies to report the value used in the evaluations Note: Example of the number of users can be 5, 10, 15, 20
UE distribution	100% of users are indoor: 3 km/h UE-speed
BS antenna height	3 m
Channel model	ITU InH for 4 GHz

Further discussion offline the number of UEs in the above two agreements (i.e., pure URLLC UEs, or a total of eMBB & URLLC UEs) in the case of mixed traffic, including possibility of updating the total number of UEs depending on further offline discussion

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From R1-1812039

Agreements:

- The number of UEs in the above two agreements is the number of pure URLLC UEs.
- For the case of evaluating multiplexing of eMBB and URLLC UEs sharing the same carrier, companies report the number of eMBB UEs used in the evaluations.

Agreements:

- Update the number of users per cell for factory automation in the table of simulation assumptions for evaluation as below:

Number of UEs per cell	Up to 40 Note: Example of the number of users can be 5, 10, 20, 30, 40

Note: The number of UEs in the above table is the number of pure URLLC UEs

Agreements:

- Update the number of users per cell for power distribution in the table of simulation assumptions for evaluation as below:

Number of UEs per cell	Up to 10 Note: Example of the number of users can be 5, 10

Note: The number of UEs in the above table is the number of pure URLLC UEs

Note: the number of UEs per cell for all simulated cases are for evaluation purpose only and are not intended to reflect or to meet any requirements

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Agreements:

For evaluating multiplexing of eMBB and URLLC UEs sharing the same carrier,

- Take FTP model 3 with 0.5 Mb file size or full buffer as the traffic model for eMBB
- Companies describe eMBB UE dropping
- Evaluate spectral efficiency for eMBB UEs
- Use cases with aperiodic traffics are prioritized for the evaluation of inter-UE multiplexing. Periodic traffic is not precluded for evaluation.
- A certain ratio(s) of UEs that is not capable of the enhanced schemes can be assumed in the evaluation and company should report the ratio(s).

- Performance impact to eMBB and URLLC UEs will be studied for inter-UE multiplexing.
- Evaluating URLLC UEs following the agreed performance metric for URLLC UEs in Rel-16
- ~~FFS eMBB UEs and URLLC UEs can have the same and/or different subcarrier spacing – aim to conclude by Friday~~
- eMBB UEs and URLLC UEs have the same subcarrier spacing (for evaluation purpose only)

Friday: Agreement is updated as above based upon R1-1812039.
Huawei: This does not prohibit bringing results and capturing in the TR for different subcarrier spacing?
Chairman: Of course, you can bring. TR will be decided later.

Agreements:
Companies describes the following assumptions for evaluation:

- Duplex mode: FDD or TDD (DL/UL configuration)
- Blockage due to moving metal parts for channel model for factory automation
- Other assumptions like TTI size, gNB/UE processing time, CSI measurement and reporting
- Detailed assumptions for carrier frequency 700 MHz and 2 GHz if evaluation is performed based on these carrier frequencies
- If any, details on re-dropping or discarding UEs which do not satisfy certain channel quality

Send the LS R1-1811980 on remote driving to SA1.
R1-1811980 **[Draft] LS on remote driving traffic model** **Huawei**
Decision: The document is noted. Discuss offline the need for Q4. **Friday:** No need sending the LS

Friday session
R1-1812039 **Summary of 7.2.6.1 Remaining details on evaluation methodology Huawei, HiSilicon**
Decision: The document is noted.

R1-1812069 **Summary of 7.2.6.1 Remaining details on evaluation methodology Huawei, HiSilicon**
Decision: The document is noted.

Agreements:

- Evaluate aperiodic traffic model (FTP model 3) for DL for remote driving and ITS.
  - Companies report the packet size, data arrival rate and data rate
  - Aim to conclude the packet size, data arrival rate and data rate in RAN1#95 meeting

Agreements:

- For URLLC evaluation for 30 GHz for factory automation, adopt the following BS/UE antenna configuration:

BS antenna configuration	2 TX/Rx antenna ports (M, N, P, Mg, Ng; Mp, Np)=(4,4,2,1,1; 1,1) dH = dV = 0.5 λ Note: Other antenna configurations are not precluded
UE antenna configuration	2 Tx/Rx antenna ports (M, N, P, Mg, Ng; Mp, Np) = (2, 4, 2, 1, 2; 1,1), (dH,dV)=(0.5,0.5)λ Static panel selection Note: Other antenna configurations are not precluded

- For evaluation for 30 GHz for factory automation, other than the antenna configuration above, reuse the assumptions for 4 GHz with the following modifications:

Carrier frequency	30GHz
BS receiver noise figure	7dB as defined in TR 38.802
UE antenna gain	5dBi (Table 2.1-8 in TR38.802)
UE receiver noise figure	10dB
BS Tx power	23dBm for 80MHz bandwidth
Channel model	5GCM office for 30 GHz Companies report the modification of the channel model

Simulation bandwidth	160MHz
SCS	120kHz Note: Other values for evaluation are not precluded.

Agreements:

- In addition to existing agreements, reuse the simulation settings for power distribution use case for transport industry with the following modification:

Parameters	Value
Layout	Single layer - Macro layer: Road configuration in Figure 6.1.9-1 in 38.913 and BS placement as depicted in Figure A.1.3-1 in 36.885.
UE antenna height	3.0 m

Agreements:

- Take the simulation settings in the following table for link-level simulation for all cases with urban macro:

Parameter	Value
Carrier frequency for evaluation	4GHz
Channel model	TDL-C (delay spread: 300ns) as in 38.901
UE speed	3 km/h for power distribution and Rel-15 enabled use case; 60 km/h for remote driving and ITS;
BS antenna configuration	4 Tx/4 Rx antenna ports and 8 Tx/8 Rx antenna ports Higher BS antenna configurations for evaluation are not precluded
UE antenna configuration	2 Tx/4 Rx antenna ports Higher UE antenna configurations for evaluation are not precluded
System bandwidth	40 MHz
Sub-carrier spacing	30 kHz Note: Other values for evaluation are not precluded.
Channel estimation	Practical
Receiver type	MMSE
Q value (i.e. SINR range)	Companies report the 5% Q value

  - Evaluation of 700 MHz and 2 GHz carrier frequency are not precluded.

Agreements:

- Take the simulation settings in the following table for link-level simulation applicable for all cases with indoor hot-spot and factory automation for 4 GHz:

Parameter	Value
Carrier frequency for evaluation	4GHz
Channel model	TDL-D (delay spread: 30ns) as in 38.901 TDL-C (delay spread: 100ns) as in 38.901 Note: Companies report the modification of the channel model if any
UE speed	3 km/h, 30 km/h
BS antenna configuration	4 Tx/4 Rx antenna ports and 8 Tx/8 Rx antenna ports Higher BS antenna configurations for evaluation are not precluded
UE antenna configuration	2 Tx/4 Rx antenna ports Higher UE antenna configurations for evaluation are not precluded
System bandwidth	40 MHz
Sub-carrier spacing	30 kHz Note: Other values for evaluation are not precluded.
Channel estimation	Practical
Receiver type	MMSE
Q value (i.e. SINR range)	Companies report the 5% Q value

Agreements:

- Take the simulation settings in the following table for link-level simulation applicable for all cases with indoor hot-spot and factory automation for 30 GHz:

Parameter	Value
Carrier frequency for evaluation	30 GHz
Channel model	(working assumption) CDL-A (delay spread: 20 ns) as in 38.901
UE speed	3 km/h, 30 km/h
BS antenna configuration	2 Tx/2 Rx antenna ports
UE antenna configuration	2 Tx/2 Rx antenna ports
System bandwidth	160 MHz
Sub-carrier spacing	120 kHz Note: Other values for evaluation are not precluded.
Channel estimation	Practical
Receiver type	MMSE
Q value (i.e. SINR range)	Companies report the 5% Q value

Agreements:

- The number of users per cell for remote driving/ITS is up to 10.
  - Examples for evaluation 2, 6, 10

Agreement:

- For evaluating remote driving and ITS, UE speed of 60 km/h is assumed for urban macro

R1-1810224 Summary of email discussion [94-NR-06] on additional simulation assumptions for Rel-16 NR URLLC Huawei
R1-1810293 Remaining issues on evaluation methodology for NR URLLC LG Electronics
R1-1811637 Discussion on evaluation methodology ZTE (Revision of R1-1810344)
R1-1810462 Remaining details on URLLC evaluation methodology MediaTek Inc.
R1-1810470 Remaining details on URLLC Evaluation Methodology Idaho National Laboratory
R1-1810550 On evaluation methodology for URLLC CATT
R1-1810659 Field Measurement Results from an Operational Factory Floor at 3.5 GHz and 28 GHz Nokia, Nokia Shanghai Bell
R1-1810716 Evaluation assumptions and methodology for Rel-16 NR URLLC Huawei,China Southern Power Grid, HiSilicon
R1-1810878 Remaining details on evaluation methodology for eURLLC Samsung
R1-1811377 Remaining details on evaluation methodology NTT DOCOMO, INC.

7.2.6.2 Layer 1 enhancements

Including necessary evaluations and potential enhancements to PDCCH, UCI, PUSCH, & scheduling/HARQ/CSI processing timeline

R1-1810294 **Discussion on layer 1 enhancements for URLLC LG Electronics**

- Proposal 1: A UE supports the case where multiple PDCCHs schedule the same PDSCH or PUSCH.
  - For PDSCH, a UE shall discard PDCCH(s) scheduling PDSCH for previously scheduled HARQ process until the transmission of HARQ-ACK for that HARQ process.
  - For PUSCH, a UE shall discard PDCCH(s) scheduling PUSCH for previously scheduled HARQ process with the same resource allocation as that HARQ process until the PUSCH transmission for that HARQ process.
    - FFS: UE behavior when UE receives PDCCH scheduling PUSCH for the previously scheduled HARQ process with different resource allocation from that HARQ process.
- Proposal 2: PDCCH repetition can be prioritized over design of compact DCI.
- Proposal 3: UE capability on the maximum BD limits per monitoring occasion can be defined with the maximum number of monitoring occasions within a slot.
- Proposal 4: A UE can be configured with USS set(s) with higher priority for URLLC.
- Proposal 5: PDCCH candidates are mapped to USS sets until either BD limit or CCE limit is met with the following rule:
  - Candidates are selected in a round-robin fashion based on SS index and/or AL and/or candidate index.
    - Lower indexed SS set and candidate can be selected first.
    - Higher AL can be selected first.
- Proposal 6: Instead of skipping of monitoring PDCCH candidates with higher priority, it can be considered to monitor such candidates with partial available CCEs or to shift search space set/candidates.
- Proposal 7: It is necessary to investigate how to reduce channel estimation (e.g., front-loaded DMRS transmission regardless of presence of PDCCH candidate).
- Proposal 8: When designing a DCI format for URLLC, considerations on UE limit on DCI sizes should be also taken into account.
- Proposal 9: A UE is allowed to transmit more than two PUCCHs on a serving cell in different symbols within a slot.
- Proposal 10: A UE is allowed to transmit more than one PUCCH with HARQ-ACK information within a slot.
- Proposal 11: If NR supports multiple PUCCH transmissions with HARQ-ACK feedback, the following aspects need to be further investigated:
  - How to determine HARQ-ACK codebook of multiple PUCCH with HARQ-ACK information within a slot
  - How to determine PUCCH resources within a slot
  - UCI multiplexing/dropping
- Proposal 12: Symbol-granularity of k1 needs to be taken into account.
- Proposal 13: For supporting URLLC, CA configurations inducing no support of capability#2 processing time should be avoided.
- Proposal 14: For URLLC PUSCH transmission, non-slot PUSCH repetition within a slot should be supported.
- Proposal 15: For supporting non-slot repetition, the following options can be considered:
  - Option 1: repeating non-slot PUSCH over consecutive symbol in a slot
  - Option 2: repeating non-slot PUSCH with certain periodicity
    - 1 and 2 symbol non-slot scheduling shall be repeated with 2 symbol periodicity
      - Time-domain resource allocation should be in [2N-1th symbol, 2Nth symbol] when N=1, 2, …, 7
    - From 3 to 7 symbol non-slot scheduling shall be repeated with 7 symbol periodicity
      - Time-domain resource allocation should be in [1st symbol, 7th symbol] or [8th symbol, 14th symbol]
- Proposal 16: For non-slot repetition across slots, the same time-domain resource allocation is assumed for the first transmission occasion in each slot.
- Proposal 17: For URLLC, the number of repetitions can be indicated by a L1 signalling

Decision: The document is noted.

R1-1810463 **Evaluations and enhancements of NR control channels for URLLCMediaTek Inc.**

Proposal 1: If PDCCH repetition is used, then it is allowed only to generate ALs higher than 16 (e.g. AL24 by using 3 x AL8).

Proposal 2: Further studies of PDCCH repetition options is required to evaluate performance in terms of reliability, blocking probability, UE complexity, latency, and specification effort.

Proposal 3: For NR Rel-16, study the support of compact DCI that has a smaller DCI payload size than DCI format 0-0 and DCI format 1-0.

Proposal 4: The increased complexity of blind detection by having a new DCI format should be taken into account when evaluating the advantage of the compact DCI.
Proposals to enhance the latency:
Proposal 5: The UE is to be configured with two PDCCH monitoring configurations where the secondary configuration has more PDCCH monitoring occasions and it is triggered when the SR is transmitted.
Proposals to enable multiple HARQ codebooks per slot:
Proposal 6: Multiple HARQ-feedback transmissions per slot using separate PUCCH resources should be allowed.
Proposal 7: To avoid double reporting and other forms of redundancy, Type-2 HARQ codebook determination should be amended so as to restrict the set of PDCCH monitoring occasions to disjoint sets in the case where multiple HARQ codebooks are transmitted in the same slot.
Proposal 8: Type-2 (and possibly Type-1) HARQ codebook determination should be applicable to sub-slots as an option, and K1 time offset should be interpreted as the number of sub-slot boundaries overlapped. Appropriate partitioning of slots into sub-slots, and the respective configuration and PUCCH resource assignment methods should be studied.
Proposal 9: Channelization of HARQ feedback onto separate HARQ codebooks of independent type should be enabled by defining two (or more) HARQ procedures, which have separate configurations and PUCCH resources assigned, as well as intra-UE multiplexing and prioritization rules. Means for HARQ channel selection per downlink transmission should be studied.

Decision: The document is noted.

Tuesday conclusion: Continue offline discussion – Chengyan (Huawei)

Friday

R1-1811888 Summary of 7.2.6.2 Layer 1 enhancements Huawei, HiSilicon

Decision: The document is noted.

Proposal:

- Mini-slot based repetition within one slot for grant based PUSCH has benefits to reduce latency compared to Rel-15 slot-based repetition.

R1-1812070 Summary of 7.2.6.2 Layer 1 enhancements Huawei, HiSilicon

Decision: The document is noted.

Agreement:

- One PUSCH transmission instance is not allowed to cross the slot boundary at least for grant-based PUSCH.

R1-1810157 L1 enhancements for URLLC Huawei, HiSilicon
R1-1810174 Enhancements to Uplink and Downlink Physical Channels for NR URLLC Ericsson
R1-1810209 Achieving ultra-low latency in SR-based URLLC UL transmission with minimum overhead Idaho National Laboratory
R1-1810345 On URLLC Layer 1 enhancements ZTE
R1-1810351 On Physical Layer Enhancements for NR URLLC CEWiT
Late submission
R1-1810395 Layer 1 enhancements for URLLC vivo
R1-1810474 On NR URLLC L1 enhancements Panasonic
R1-1810486 Scheduling/HARQ Processing Timeline Enhancements for NR URLLC Fraunhofer HHI
R1-1810551 On PHY enhancements for Rel-16 URLLC CATT
R1-1810596 Discussion on HARQ-ACK feedback over PUCCH and PUSCH Fujitsu
R1-1810639 L1 enhancement for URLLC Sony
R1-1810660 On the L1 enhancements for NR URLLC Nokia, Nokia Shanghai Bell
R1-1810685 Overview of Physical Layer Enhancements for eURLLC AT&T
R1-1810785 Layer 1 enhancements for eURLLC Intel Corporation
R1-1810879 Layer 1 enhancement for URLLC Samsung

R1-1810949 Discussion on L1 enhancements for URLLC ETRI
R1-1810991 Layer 1 enhancement for URLLC Guangdong OPPO Mobile Telecom.
R1-1811020 Consideration on URLLC physical layer enhancement Spreadtrum Communications
Withdrawn
R1-1811044 Discussion on out-of-order scheduling and HARQ CMCC, China Southern Power Grid
R1-1811107 On PDCCH enhancements for URLLC Mitsubishi Electric RCE
R1-1811218 On potential physical layer enhancements for URLLC InterDigital, Inc.
R1-1811272 Layer 1 enhancements for eURLLC Qualcomm Incorporated
R1-1811289 Discussion on PUCCH Resource Allocation and HARQ Codebook Determination in URLLC China Telecommunications
R1-1811294 Discussion on L1 enhancements for URLLC Motorola Mobility, Lenovo
R1-1811378 Layer 1 enhancements for NR URLLC NTT DOCOMO, INC.
R1-1811391 HARQ-ACK feedback enhancement for URLLC III
R1-1811396 Consideration on URLLC physical layer enhancement Spreadtrum Communications
R1-1811401 Discussion on the PDCCH repetition for NR URLLC Xiaomi
R1-1811461 L1 enhancements for URLLC Sequans Communications
R1-1811522 L1 enhancements to support URLLC CAICT
R1-1811613 On VRB-to-PRB interleaving for URLLC KT Corp.

7.2.6.3 UL inter UE Tx prioritization/multiplexing

R1-1811892 UL inter-UE transmission prioritization and multiplexing Huawei, HiSilicon (rev of R1-1810158)

Proposal 1: In order to support inter UE multiplexing between eMBB and URLLC, an enhanced power control mechanisms for the URLLC UE shall be studied, e.g.
- Dynamic indication of power control parameters
- Enhanced TPC signaling

Observation 1: The benefits of UL PI are questionable.
- How to guarantee that the eMBB detects UL PI and can shut-off the transmission as expected?
- UL PI is not a unified solution, it does not work together with UL GF transmission
- If there is a mix of eMBB UEs in a cell, where some support UL PI and some others don't, then it is questionable how much can be gained
- UE complexity for eMBB UEs will increase significantly due to frequent UL PI monitoring
- UL PI "Cancelation" and "Re-scheduling" mechanism could cause eMBB transmission failure under certain URLLC services with high packet arrival rate and large packet size

Observation 2: The UL PI mechanism can give very low link efficiency and could cause eMBB transmission failure.
- UL PI could not use the "Pausing" mechanism due to the phase continuity problem caused by dynamic power control
- UL PI should only be evaluated as canceling the whole transmission after the indicated period

Proposal 2: UL PI should not be supported in R16.

Proposal 3: UL inter UE multiplexing between grant based eMBB and grant free URLLC on shared resource shall be supported.
- Dynamic power control mechanisms can be applied for the URLLC UE(s)

Decision: The document is noted.

R1-1811273 UL inter UE Tx prioritization-multiplexing Qualcomm Incorporated

Observation 1: Uplink pre-emption indication maximizes the URLLC performance by muting eMBB transmissions that interfere with the URLLC ones. Compared to semi-static power control, the eMBB performance is improved since eMBB transmissions are only suspended when URLLC transmission is present.
Observation 2: As compared to an eMBB UE that is not able to suspend its transmission, the eMBB user supporting ULPI experiences an enhanced performance since it can be allocated a larger bandwidth.
Proposal 1: To reduce the ULPI timeline, its PDCCH can be configured with a small number of candidates and non-overlapping CCEs for channel estimation.
Proposal 2: ULPI can be sent via a group-common DCI.
Proposal 3: The support for ULPI is based on a UE capability for Rel. 16 eMBB users.
Observation 3: The Rel. 16 eMBB users capable of UL pre-emption are not required to always monitor the ULPI channel.
Observation 4: ULPI can be implemented with different monitoring and processing timeline capabilities for different deployment scenarios.
Observation 5: Even when GF is used for URLLC, the retransmission performance can be enhanced by reducing eMBB interference via monitoring ULPI.

Observation 6: The monitoring and reaction to ULPI, per UE capability, takes less processing time than the processing time N2 during which URLLC UEs monitor UL grants and prepare uplink data transmissions.
Observation 7: ULPI PDCCH reliability can be achieved with a relatively small AL.
Observation 8: The timing alignment of UEs with different TAs for ULPI processing can be done in the same way as SFI which is signalled by GC-PDCCH.
Observation 9: Boosting transmission power of URLLC UEs is infeasible for cell-edge UEs with limited power headroom and is ineffective in the interference-limited regime for all URLLC UEs.
Observation 10: For eMBB UEs, semi-static transmission power reduction to maintain satisfactory URLLC performance significantly impacts the eMBB performance. Fully dynamic transmission power reduction to portions of eMBB PUSCHs that collide with URLLC PUSCHs is infeasible because phase continuity cannot be maintained.
Observation 11: In intra-cell eMBB and URLLC multiplexing on the uplink, semi-static power control of eMBB UEs significantly degrades the URLLC performance, unless the target received data SNR of eMBB is very low, resulting in significantly degraded eMBB performance.

Decision: The document is noted.

Tuesday conclusion: Continue offline discussion – Xueming (vivo)

Thursday session

R1-1811905 **Summary of UL inter UE TX prioritization/multiplexing vivo**

Decision: The document is noted.

Agreements:

- Potential UL power control enhancements are to be studied further:
  - Enhanced dynamic power boost for URLLC UE
    - Dynamic change of power control parameters, e.g. P0, alpha without SRI configured
    - Enhanced TPC, e.g. increased TPC range, finer granularity
    - Currently, the need of URLLC UE power change during one transmission instance is not envisioned
  - Study the Enhanced dynamic power boost for URLLC UE, including at least the following aspects
    - Feasibility of boosting UE power in power limited or interference limited scenarios
    - Physical channel/signal used for the signalling
    - UE Processing timeline for the signalling
    - UE monitoring behaviours for the signalling
    - UE PDCCH monitoring capability, if the signalling is by PDCCH
    - Methods to ensure the reliability of the signalling
    - Type of gNB receiver should be reported
- Note:
  - Other power control enhancements are not precluded.
  - No change of eMBB UE power control scheme is assumed in this study.

R1-1810175	Inter-UE Prioritization and Multiplexing of UL Transmissions	Ericsson
R1-1810295	Discussion on UL inter UE Tx prioritization	LG Electronics
R1-1810346	On UL inter UE Tx prioritization/multiplexing	ZTE
R1-1810396	UL inter UE Tx prioritization for URLLC	vivo
R1-1810464	Feasibility analysis and SLS results for UL multiplexing between eMBB and URLLC	MediaTek Inc.
R1-1810475	On NR URLLC UL inter UE Tx prioritization/multiplexing	Panasonic
R1-1810552	Discussion on inter-UE UL multiplexing	CATT
R1-1810597	Discussion on UL preemption indication	Fujitsu
R1-1810640	Considerations in UL Inter UE Pre-emption	Sony
R1-1810658	UL Pre-emption and multiplexing of eMBB and URLLC	NEC
R1-1810661	Solution for UL inter-UE multiplexing between eMBB and URLLC	Nokia, Nokia Shanghai Bell
R1-1810786	On inter-UE prioritization/multiplexing in the UL	Intel Corporation
R1-1810880	Uplink inter UE multiplexing/prioritization for enhanced URLLC	Samsung
R1-1810935	UL inter-UE multiplexing between eMBB and URLLC	China Telecommunications
R1-1810992	Consideration on UL inter UE Tx prioritization and multiplexing	Guangdong OPPO Mobile Telecom.

R1-1811019 Discussion on UL inter UE Tx prioritization/multiplexing Spreadtrum Communications
R1-1811043 Discussion on UL inter UE Tx prioritization/multiplexing CMCC
R1-1811087 Discussion on power control mechanism for UL inter UE Tx multiplexing ASUSTEK COMPUTER (SHANGHAI)
R1-1811094 Discussion on UL inter UE Tx multiplexing China Unicom
R1-1811155 Multiplexing among PUSCHs with different latency and reliability requirements Sharp
R1-1811219 On UL inter-UE multiplexing for URLLC InterDigital, Inc.
R1-1811379 Uplink transmission prioritization/multiplexing for NR URLLC NTT DOCOMO, INC.
R1-1811445 Discussion on UL inter UE Tx prioritization/multiplexing Potevio
R1-1811447 Discussion on UL Inter UE Tx prioritization/multiplexing III
R1-1811462 Considerations on UL inter-UE multiplexing for URLLC Sequans Communications
R1-1811482 Discussions on UL inter UE multiplexing Mitsubishi Electric Co.
R1-1811575 Views on UL inter UE Tx prioritization/multiplexing KT Corp.

7.2.6.4 Enhanced UL grant-free transmissions

R1-1810881 Potential enhancement for UL grant-free transmission Samsung

Proposal #1: Support multiple configured grants in a BWP
- Different time domain offset is configured in each configuration for Type 1 grant free
- Time domain offset between different configured grants is created for Type 2 grant free. FFS on use one or separated DCI to acrivate multiple configured grants
- At least resource allocation and antenna port are separately configured for each configuration
- Some parameters are shared for multiple configured grant:
  - At least periodicity, repetition number K
- The uplink transmission starts at the first transmission occasion for each configuration

Proposal #2: If multiple configured grants in a BWP is supported, there is no need to further consider repetitions across the boundary of a period P.
Proposal #3: Consider mini-slot level repetition for grant-free UL transmission.
Proposal #4: For mini-slot level repetition, further study the hopping methods according to different repetition methods with two hops as a baseline.
Proposal #5: Study if there is any reliability or latency issue with existing HARQ-ACK mechanism.

Decision: The document is noted.

R1-1811380 Enhanced UL transmission with configured grant for URLLC NTT DOCOMO, INC.

- Proposal 1: Make a common understanding as following:
  - It is beneficial to support multiple active configured grant configurations for a given BWP of a serving cell for different service/traffic types supported simultaneously at the UE side (use-case 1).
    - E.g., low-latency traffic + high-reliability traffic, voice traffic + sporadic emergency message traffic, etc.
  - It is beneficial to support multiple active grant-free configurations for a given BWP of a serving cell to reduce the latency and ensure the reliability for traffic with a given characters and requirements (use-case 2).
- Proposal 2:
  - For use-case 1 (multiple configurations for multiple different service/traffic types), study further detailed mechanisms with the following:
    - Both Type 1 and Type 2 configured grant configurations can be configured simultaneously for a given BWP of a serving cell.
    - Independent parameter configurations and/or independent activation/deactivation for multiple configurations.
    - The initial transmission of a TB for different grant-free configurations is not necessarily on different TTIs.
    - Different HARQ process IDs are used for different grant-free configurations.
  - For use-case 2 (multiple configurations for a service/traffic type with a given characters/requirements), study further detailed mechanisms with the following:
    - It is not necessary to configure both Type 1 and Type 2 grant-free configurations simultaneously for a given BWP of a serving cell.
    - Signalling overhead reduction can be studied for both higher layer and physical layer since many parameters are common among multiple configured grant configurations in this case.
    - The initial transmission of a TB for different grant-free configurations is on different TTIs.
    - Different HARQ process IDs are used for different grant-free configurations.

- Proposal 3: Detailed mechanisms of ensuring K repetitions to be further studied from the following:
  - Option 2: support multiple configurations for a given BWP of a serving cell.
    - Note: multiple configurations to ensure K repetitions is the use-case 2 (multiple configurations for a service/traffic type with a given characters/requirements).
  - Option 3: switch from grant-free to grant-based transmissions.
- Proposal 4: Study mini-slot repetitions as the promising candidates for URLLC enhancements and capture the benefits and advantages of them in the TR.
  - PUSCH repetitions shorter than one repetition per slot (e.g., repetitions within a slot).
  - PUSCH repetitions with precoder/QCL (or SRI)-cycling across repetitions.
- Proposal 5: Study further detailed options of PUSCH repetition.
  - Frequency-hopping
    - E.g., the number of repetitions in the first hop is floor(N/2), the number of repetitions in the 2nd hop is ceiling (N/2) where N is the number of repetitions within a slot
  - Time-domain resource allocation
    - Option 1: any repetition cannot cross slot boundary and each repetition has same transmission length.
    - Option 2: any repetition cannot cross slot boundary and repetitions can have different transmission length.
    - Option 3: any repetitions can cross slot boundary and each repetition has same transmission length.
- Proposal 6:
  - Unless strong benefit is identified, explicit positive HARQ-ACK feedback from gNB to UE is not supported.
    - UL grant scrambled by C-RNTI or new-RNTI scheduling the new TB transmission of the same HARQ process can indicate "ACK"
    - UL grant scrambled by CS-RNTI scheduling the same TB initially transmitted without grant can indicate "NACK"
      - Above UL grant scheduling the new transmission or retransmission can be used during and after the K repetition
  - If strong benefit is identified, explicit positive HARQ-ACK feedback from gNB to UE is realized by a PDCCH.

Decision: The document is noted.

Tuesday conclusion: Continue offline discussion – Lihui (NTT DOCOMO)

Friday session

R1-1812055 **Enhanced UL grant-free transmissions for URLLC** **NTT DOCOMO**

Decision: The document is noted.

Agreements:

- To study further from at least the following:
  - Option 1: multiple active configured grant configurations for a BWP of a serving cell
  - Option 2: repetition(s) across the boundary of a period P
  - Option 3: one transmission cross boundary of a period P
  - FFS the UE behavior when repetitions are collided with the resource which are not available for UL transmissions
  - Note: Switch grant free to grant based retransmission which is available in Rel.15

R1-1811822	Summary of 7.2.6.4 Enhanced UL grant-free transmissions	NTT DOCOMO
R1-1810159	Enhanced UL configured grant transmissions	Huawei, HiSilicon
R1-1810176	Enhancements to UL Grant-free Transmission for NR URLLC	Ericsson
R1-1810296	Discussion on enhancement for grant-free transmission	LG Electronics
R1-1810347	Enhancement for UL grant-free transmissions	ZTE
R1-1810397	Enhanced UL grant-free transmissions for URLLC	vivo
R1-1810465	Study and evaluation of configured-grant enhancements for URLLC	MediaTek Inc.
R1-1810553	On enhancements to configured UL grant operation	CATT
R1-1810641	Discussion on enhanced UL grant-free transmissions	Sony
R1-1810662	On Configured Grant enhancements for NR URLLC	Nokia, Nokia Shanghai Bell
R1-1810731	URLLC enhanced grant-free transmission	Panasonic Corporation
R1-1810787	Enhancements to configured grant PUSCH	Intel Corporation
R1-1810993	Grant free transmission enhancement	Guangdong OPPO Mobile Telecom.
R1-1811006	Discussion on UL grant-free transmission enhancement	Spreadtrum Communications
R1-1811156	Reliability enhancements for UL configured grant	Sharp

R1-1811220 Enhanced UL configured grant transmissions for URLLC InterDigital, Inc.
R1-1811274 Enhanced SPS and grant-free transmissions Qualcomm Incorporated
R1-1811463 Enhancements for grant free transmissions Sequans Communications
R1-1811511 Discussion on enhanced UL grant-free transmissions KDDI Corporation
R1-1811523 Enhanced UL grant-free transmissions- CAICT
R1-1811552 Discussion on Configured Grant Enhancements III

7.2.6.5 Other

R1-1810136 HARQ-ACK enhancements for URLLC Huawei, HiSilicon
R1-1810177 Latency Evaluation of Rel-15 URLLC Ericsson
R1-1810178 Reliability Evaluation of Rel-15 Enabled URLLC Use Cases Ericsson
R1-1810297 Discussion on differentiation of eMBB and URLLC services LG Electronics
R1-1810298 PDCCH performance evaluation for URLLC LG Electronics
Late submission
R1-1810299 Discussions on PUCCH performance for NR URLLC LG Electronics
R1-1810300 Discussion on HARQ-ACK enhancement for URLLC LG Electronics
R1-1810317 Intra-UE Prioritization and Multiplexing of UL Transmissions Ericsson
R1-1810318 Triggered A-CSI on PUCCH Ericsson
R1-1810348 Further issues related to URLLC enhancement ZTE
R1-1810349 PUSCH and PUCCH time line for URLLC ZTE
R1-1810350 Issues on URLLC resource allocation ZTE
Withdrawn
R1-1810398 Other enhancements for URLLC vivo
R1-1810399 UL intra UE Tx prioritization for URLLC vivo
R1-1810400 DL intra UE Tx prioritization for URLLC vivo
R1-1810466 Further enhancements of NR PUCCH for URLLC MediaTek Inc.
R1-1810642 Multiple active BWPs Sony
R1-1810663 URLLC downlink system-level performance evaluation Nokia, Nokia Shanghai Bell
R1-1810664 On compact DCI for NR URLLC Nokia, Nokia Shanghai Bell
R1-1810665 On PDCCH repetition for NR URLLC Nokia, Nokia Shanghai Bell
R1-1810666 On the PDCCH limits on the maximum number of CCEs for channel estimation and BDs for URLLC Nokia, Nokia Shanghai Bell
R1-1810667 On enhanced HARQ-ACK feedback for URLLC Nokia, Nokia Shanghai Bell
R1-1810668 On CSI feedback enhancements for URLLC Nokia, Nokia Shanghai Bell
R1-1810669 On scheduled PUSCH (& PDSCH) repetition enhancements for NR URLLC Nokia, Nokia Shanghai Bell
R1-1810670 Enhancements to scheduling/HARQ/CSI processing timeline for NR URLLC Nokia, Nokia Shanghai Bell
R1-1810671 Work Plan for NR Industrial IoT SI Nokia
R1-1810672 Draft skeleton of TR 38.825: Study on NR Industrial Internet of Things (IoT) Nokia
R1-1810709 PDCCH enhancements for URLLC Huawei, HiSilicon
R1-1810717 Simulation results on the baseline performance achievable with Rel-15 URLLC for the identified use cases Huawei, HiSilicon
R1-1810718 DL/UL intra-UE transmission prioritization and multiplexing Huawei, HiSilicon
R1-1810720 CSI enhancements for URLLC Huawei, HiSilicon
R1-1810974 Resource allocation enhancements for NR URLLC Guangdong OPPO Mobile Telecom.
R1-1810975 On eMBB and URLLC data differentiation Guangdong OPPO Mobile Telecom.
R1-1810994 Consideration on UL intra UE Tx prioritization and multiplexing Guangdong OPPO Mobile Telecom.
R1-1811108 Reliability Evaluation of URLLC Factory Automation Scenario Ericsson
R1-1811109 Performance Evaluation of PDCCH for URLLC Ericsson
R1-1811110 Channel Model for Factory Automation Scenario Ericsson
R1-1811111 Uplink Power Control Enhancement for NR URLLC Ericsson
R1-1811112 Alignment Delay Study For URLLC Latency Ericsson
R1-1811113 HARQ-ACK feedback for URLLC InterDigital, Inc.
R1-1811114 URLLC UCI prioritization InterDigital, Inc.
R1-1811221 On downlink data reception with configured scheduling InterDigital, Inc.

R1-1811275 eURLLC Considerations for Factory Automation Qualcomm Incorporated
R1-1811468 PUSCH enhancements for URLLC Huawei, HiSilicon
R1-1811469 Enhancements to scheduling/HARQ/CSI processing timeline for URLLC Huawei, HiSilicon
R1-1811617 Transmit Diversity for Rel-16 URLLC Ericsson Inc.

7.2.7 Study on Self Evaluation towards IMT-2020 Submission

FS_5G_eval; SID in RP-181318. Please refer to the SID for detailed scoping (RAN lead)

7.2.7.1 Evaluation methodology

R1-1810715 Evaluation method of LTE peak spectral efficiency Huawei, HiSilicon
R1-1810788 Considerations for IMT Evaluations Intel Corporation
R1-1810882 Discussion on evaluation methodology for Dense Urban eMBB scenario Samsung
R1-1811066 Consideration on Evaluation methodology of IMT-2020 self-evaluation ZTE
R1-1811583 IMT-2020 self evaluation: mMTC link budget Ericsson

7.2.7.2 Other

Including evaluation results

R1-1811045 Updated evaluation results for downlink eMBB spectrum efficiency CMCC
R1-1811046 Initial evaluation results for uplink eMBB spectrum efficiency CMCC
R1-1811047 Initial link-level self evaluation results for reliability in URLLC scenario CMCC
R1-1811063 Updated UMi calibration results for user experience data rate in the multi-layer network deployment ZTE
R1-1811064 Updated DL spectral efficiency in the eMBB usage scenario for IMT-2020 self evaluation ZTE
R1-1811065 Updated UL spectral efficiency in the eMBB usage scenario for IMT-2020 self evaluation ZTE
R1-1811067 Consideration on Evaluation of Mobility of IMT-2020 self-evaluation ZTE
R1-1811068 Consideration on Evaluation of Connection density of IMT-2020 self-evaluation ZTE
R1-1811069 Consideration on Evaluation of Peak data rate and Peak spectral efficiency of IMT-2020 self-evaluation ZTE
R1-1811157 Evaluation Results of Spectral efficiency in InH eMBB for IMT-2020 self-evaluation Sharp
R1-1811158 Evaluation Results of Area traffic capacity for IMT-2020 self-evaluation Sharp
R1-1811159 Evaluation Results of Mobility in InH eMBB for IMT-2020 self-evaluation Sharp
R1-1811341 Updated evaluation results of Indoor Hotspot-eMBB for IMT-2020 self-evaluation NTT DOCOMO, INC.
R1-1811342 Updated evaluation results of dense urban-eMBB for IMT-2020 self-evaluation NTT DOCOMO, INC.
R1-1811343 Updated evaluation results of rural-eMBB for IMT-2020 self-evaluation NTT DOCOMO, INC.
R1-1811344 Preliminary evaluation results of mobility for IMT-2020 self-evaluation NTT DOCOMO, INC.
R1-1811345 Updated evaluation results of connection density for IMT-2020 self-evaluation NTT DOCOMO, INC.
R1-1811346 Updated evaluation results of reliability for IMT-2020 self-evaluation NTT DOCOMO, INC.
R1-1811418 Evaluation results of Area Traffic Capacity in IMT-2020 self-evaluation ZTE
R1-1811584 IMT-2020 self-evaluation - Reliability in NR Ericsson
R1-1811628 IMT-2020 self-evaluation: UP latency in LTE Ericsson
R1-1811629 Updated DL spectral efficiency in the eMBB usage scenario for IMT-2020 self evaluation ZTE
Late submission
R1-1811630 Evaluation results of Area Traffic Capacity in IMT-2020 self-evaluation ZTE
Late submission

7.2.8 Enhancements on MIMO for NR

NR_eMIMO-Core; WID in RP-182067. Please refer to the WID for detailed scoping
Evaluation methodology, if necessary, can be discussed in each respective sub-agenda.

R1-1811986 Chairman's notes of AI 7.2.8 Enhancements on MIMO for NR Ad-Hoc Chair (Samsung)
Decision: The document is endorsed, content is incorporated below.

R1-1811801 Proposed work plan for Rel.16 NR MIMO Samsung
Revision of R1-1810883

7.2.8.1 CSI Enhancement for MU-MIMO Support

R1-1811654 Summary of CSI enhancement for MU-MIMO support Samsung

Agreement
On the issue of Type II overhead reduction (rank 1, 2), to further progress, interested companies are to submit evaluation results (especially performance-overhead tradeoff) in RAN1#95 once the evaluation methodology is finalized in RAN1#94B.

- Focus on proposals based on linear combination codebook as in Rel-15
- Also investigate potential common ground between frequency domain and time domain approaches, e.g. merging these two into one category

Agreement
The study and, if needed, work on Type II higher rank extension is performed as follows:

- Only for rank 3 and 4 by taking into account the outcome of Type II overhead reduction for rank 1-2
- Simple extension of Rel.15 Type II without any additional optimization (which results in ~3-4x overhead over rank-1) is ruled out

Proposed guideline for CSI enhancement:

94B (10/18)	95 (11/18)	AH (01/19)	96 (02/19)
1. Finalize evaluation methodology, establish baseline schemes 2. Categorize candidate schemes for Type II overhead reduction (rank 1-2)	1. Detailed proposals from all companies are submitted. 2. SLS comparison and discussion for Type II overhead reduction (rank 1-2) (*) 3. Attempt to narrow down candidate schemes (*)	1. Agree on the adopted scheme for Type II overhead reduction (rank 1-2) 2. Identify components to be finalized for the adopted overhead reduction scheme	Agree on solutions for the components of Type II overhead reduction (rank 1-2)

…

96B (04/19)	97 (05/19)	98 (08/19)	98B (10/19)	99 (11/19)
1. Maintenance on Type II overhead reduction (rank 1-2) 2. SLS comparison and discussion for Type II rank >2 extension	1. Agree if Type II rank>2 extension should be specified 2. Attempt to narrow down candidate schemes on Type II rank >2 extension – detailed proposals are made available followed by evaluation (**) 3. Maintenance on Type II overhead reduction (rank 1-2)	1. Agree on the adopted scheme for Type II rank >2 extension 2. Identify components to be finalized for the adopted rank>2 scheme 3. Maintenance on Type II overhead reduction (rank 1-2)	1. Agree on solutions for the components of Type II rank>2 extension 2. Maintenance on Type II overhead reduction (rank 1-2)	Maintenance (remaining details) on Type II overhead reduction (rank 1-2) and rank>2 extension → MU-MIMO CSI is completed

(*) Type II overhead reduction: Since each interested company will submit their detailed proposal in RAN1#95, final evaluation results will not be due in RAN1#95. A deadline for submitting evaluation results for Type II overhead reduction will be decided

(e.g. ~3-4 weeks after the end of RAN1#95). The results will be compiled for further discussion in RAN1 AH (01/2019) where the adopted scheme(s) will be selected.
(**) Type II higher rank extension: If Type II higher rank extension is agreed in RAN1#97 (based on the evaluation results to date – for the purpose of assessing whether specification work should commence), detailed proposals from all interested companies will be finalized in RAN1#97 as well. Similar to (*), a deadline for submitting evaluation results for Type II higher rank extension (for the purpose of scheme selection) will be decided (e.g. ~3-4 weeks after the end of RAN1#97). The results will be compiled for further discussion in RAN1#98 (08/2019) where the adopted scheme(s) will be selected.

R1-1810103	Discussion on CSI enhancement for MU-MIMO	Huawei, HiSilicon
R1-1810219	Type II CSI enhancements for MU-MIMO	ZTE
R1-1810301	Discussions on CSI Enhancement for MU-MIMO Support	LG Electronics
R1-1810401	Discussion on CSI enhancement for MU-MIMO support	vivo
R1-1810432	Evaluation methodology for MIMO	MediaTek Inc.
Withdrawn		
R1-1810433	CSI enhancement for MU-MIMO support	MediaTek Inc.
Late submission		
R1-1810554	Considerations on Type II CSI enhancement	CATT
R1-1810681	CSI Enhancements for eMIMO	AT&T
R1-1810789	Discussion on CSI enhancements	Intel Corporation
R1-1810804	Discussion on CSI Reporting	NEC
R1-1810884	CSI enhancement for MU-MIMO	Samsung
R1-1810965	Enhancements on type II CSI feedback for MU-MIMO	Guangdong OPPO Mobile Telecom.
R1-1811088	Enhancements on Type-II CSI reporting	Fraunhofer IIS, Fraunhofer HHI
R1-1811193	On CSI Enhancements for MU-MIMO support	Ericsson
R1-1811276	CSI enhancement for MU-MIMO support	Qualcomm Incorporated
R1-1811295	Type II CSI overhead reduction	Motorola Mobility, Lenovo
R1-1811347	Type II CSI feedback enhancement	NTT DOCOMO, INC.
R1-1811406	CSI Enhancements for MU-MIMO	Nokia, Nokia Shanghai Bell

7.2.8.2 Enhancements on Multi-TRP/Panel Transmission

R1-1811882 Summary of AI: 7.2.8.2 Enhancements on Multi-TRP/Panel Transmission Huawei, HiSilicon

Agreement
For eMBB multi-TRP/panel transmission down-select among the following in RAN1#95:

- Alt0: Support only single PDCCH design
  - FFS: Whether multiple PDCCH design is also needed
- Alt1: Support only multiple PDCCH design
  - FFS: Whether single PDCCH design is also needed
- Alt2: Support both multiple PDCCH and single PDCCH design
- FFS: PDCCH design for URLLC

Aspects to be considered in the down-selection: backhaul latency, downlink control overhead, specification impact (including RAN2 specs), UE complexity (related to power control, timing adjustment, and blind dection), DCI/UCI design, scheduler flexibility, intra-UE PUCCH/PUSCH transmission, Rel-15 PDCCH blockage probability, CSI feedback, etc.

R1-1810104	Enhancements on multi-TRP/panel transmission	Huawei, HiSilicon
R1-1810220	Enhancements on Multi-TRP/Panel Transmission	ZTE
R1-1810302	Enhancements on multi-TRP/panel transmission	LG Electronics
R1-1810402	Discussion on enhancements on Multi-TRP/Panel transmission	vivo
R1-1810434	Enhancements on multi-TRP/panel transmission	MediaTek Inc.
R1-1810555	Considerations on mult-TRP/panel transmission for Rel-16	CATT
R1-1810571	Discussion of enhancement for multi-TRP/multi-panel transmission	Lenovo, Motorola Mobility
R1-1810643	Considerations on Multi-TRP/Panel Transmission	Sony
R1-1810682	Overview of Multi-TRP/Panel Enhancements	AT&T

R1-1810790 Discussion on multi-TRP/multi-panel transmission Intel Corporation
R1-1810803 Discussion on multi-TRP transmission NEC
R1-1810815 Discussion on Multi-TRP/Panel transmission enhancements CHTTL
R1-1810885 Enhancements on multi-TRP/panel transmission Samsung
R1-1810966 Enhancements on multi-TRP and multi-panel transmission Guangdong OPPO Mobile Telecom.
R1-1811001 Discussion on multi-TRP transmission Spreadtrum Communications
R1-1811048 Discussion on DL multi-TRP transmission CMCC
R1-1811124 Considerations on PDCCH design for NCJT Apple Inc.
R1-1811182 Multi-TRP transmssion in NR Ericsson
R1-1811222 Perspectives on Multi-TRP Transmission InterDigital, Inc.
R1-1811277 Multi-TRP Enhancements Qualcomm Incorporated
R1-1811348 Enhancements on multi-TRP/panel transmission NTT DOCOMO, INC.
R1-1811407 Enhancements on Multi-TRP/Panel Transmission Nokia, Nokia Shanghai Bell
R1-1811483 Views on multi-panel/TRP MIMO transmission Mitsubishi Electric Co.
R1-1811510 Discussion on multi-TRP/panel transmission for reliability and robustness in NR KDDI Corporation

7.2.8.3 Enhancements on Multi-beam Operation

R1-1811898 Feature lead summary of Enhancements on Multi-beam Operations LG Electronics

For next meeting:
Companies are encouraged to evaluate and study further mechanism(s) to support multiple UL Tx panel/beam indication for PUSCH

- FFS on how to support the indication, e.g., by multiple SRI fields, an extension of the existing SRI field, an indication of selected panel(s), single SRS resource transmitted associated with multiple panels etc.
- FFS on relation to TPMI/TRI fields, PC/TA mechanisms
- Companies to consider specification implications of multiple UL Tx panel/beam support

R1-1811853 Summary on SCell BFR and Beam Measurement Intel

Agreement

- L1-SINR is supported. L1-RSRQ is not supported.
  - Companies to study and provide definition of L1-SINR
- Study the reporting content, e.g.
  - Whether CRI/SSBRI is reported
  - Whether differential group/non-group reporting is applied
  - Whether L1-RSRP is reported
- Study the interference measurement mechanism

R1-1810221 Enhancements on Multi-beam Operation ZTE
R1-1810303 Discussion on multi-beam based operations and enhancements LG Electronics
R1-1810403 Discussion on enhancements on Multi-beam operation vivo
R1-1810435 Enhancements on Multi-beam Operation MediaTek Inc.
R1-1810556 Consideration on multi-beam operation enhancements CATT
R1-1810572 Discussion of enhancement for multi-beam operation Lenovo, Motorola Mobility
R1-1810598 Discussion on beam failure recovery for SCell Fujitsu
R1-1810644 Considerations on Multi-beam Operation Sony
R1-1810688 Multi-beam Operation Enhancements AT&T
R1-1810791 On beam management enhancement Intel Corporation
R1-1810805 Discussion on Beam Failure Recovery NEC
R1-1810886 Enhancements on multi-beam operation Samsung
R1-1810938 Non-uniform quantization for differential L1-RSRP measurement MTI
R1-1811635 Discussion on Multi-beam Operation Enhancement Guangdong OPPO Mobile Telecom.
Revision of R1-1810971
R1-1811002 Discussion on multi-beam operation Spreadtrum Communications
R1-1811049 Consideration on measurement and reporting of L1-RSRQ/L1-SINR CMCC

R1-1811086 Discussion on signaling of beam correspondence Fraunhofer IIS, Fraunhofer HHI
R1-1811125 Consideration of beam measurement and reporting enhancement Apple Inc.
R1-1811188 Enhancements on Multi-beam Operation Ericsson
R1-1811223 Discussion on multi-beam operation enhancements InterDigital, Inc.
R1-1811278 Enhancements on Multi-beam Operation Qualcomm Incorporated
R1-1811349 Discussion on multi-beam enhancement NTT DOCOMO, INC.
R1-1811393 Enhancements on beam management Beijing Xiaomi Electronics
R1-1811408 Enhancements on Multi-beam Operation Nokia, Nokia Shanghai Bell
R1-1811470 Enhancement on multi-beam operation Huawei, HiSilicon
R1-1811472 Discussion on enhancements on multi-beam operation ASUSTEK COMPUTER (SHANGHAI)
R1-1811526 On fast SRS precoder updation CEWiT

7.2.8.4 Full TX Power UL transmission

R1-1811843 Feature lead summary on Full TX Power UL transmission vivo

Agreement
Consider the following potential solutions and other solutions (such as combination of the solutions below) for UL full power transmission. Decision will be made in RAN1#95:

- Option 1: Refinement/adjustment of UL codebook is supported
  - 1-1: Support a new codebookSubset for non-coherent and partial-coherent transmission capable UEs
  - 1-2: Introduce additional scaling factor for uplink codebook
- Option 2: UE transparently apply a small cyclic or linear delay
- Option 3: Power control mechanism to be modified to support UL full power transmission without precluding the use of full rated PA(s)
  - Note: Full rated PA refers to a PA having power not lower than that of the power class
- Option 4: Up to UE implementation (no specification impact)

R1-1810222 Discussion on full power scheme for UL transmission ZTE
R1-1810304 Discussions on full Tx power uplink transmission LG Electronics
R1-1810404 Discussion on full TX power UL transmission vivo
R1-1811646 Full Tx power UL transmission MediaTek Inc. (Revision of R1-1810436)
R1-1810557 Consideration on full transmission power of UL CATT
R1-1810684 On Full Transmit Power for UL Tranmission AT&T
R1-1810704 Potential enhancement to allow full power transmission for UL MIMO with multiple PAs Huawei, HiSilicon
R1-1810792 On full power uplink transmissionIntel Corporation
R1-1810887 View on full power UL transmission Samsung
R1-1810972 Discussion on the Full TX power UL transmission Guangdong OPPO Mobile Telecom.
R1-1810999 Discussion on power imbalance issue for DMRS Spreadtrum Communications
Withdrawn
R1-1811930 Full TX Power UL transmission Ericsson (rev of R1-1811183)
R1-1811279 Full Tx power for UL transmissions Qualcomm Incorporated
R1-1811350 Full TX Power UL transmission NTT DOCOMO, INC.
R1-1811409 On the Full TX Power UL transmission Nokia, Nokia Shanghai Bell

7.2.8.5 Low PAPR RS

R1-1811894 **Feature lead summary of low PAPR RS Ericsson**

R1-1812022 **Feature lead proposal on low PAPR DMRS Ericsson**

Working Assumption

- For PDSCH DMRS and PUSCH DMRS for CP-OFDM, DMRS enhancements are specified in Rel.16 to reduce the PAPR to the same level as for data symbols for all port combinations given by 38.212
  - For the Rel-16 DMRS enhancement, each CDM group can be configured with different c_{init}

        - For Type 1, the two c_{init} (configured by n_{SCID}=0,1, respectively) in Rel-15 are used for port(s) in each of the two CDM groups, respectively
        - For Type 2, introduce the CDM group index in c_{init}
            - FFS: How CDM group index is derived?
    - For Type 1 and Type 2, simultaneously use dynamic TRP selection (or MU-MIMO pairing with different n_{SCID}) and CDM group specific c_{init} is supported
    - The following solution categories are precluded
        - Modification of OCC
        - Modification to PN sequence generation, such as subsampling a longer sequence
        - Note: Concerns raised by MediaTek that preclusion of the above solutions will negatively impact power imbalance issue
    - Carefully consider backward compatibility issues and the total number of c_{init} configured per UE
- For PUSCH/PUCCH DMRS for pi/2 modulation, new DMRS sequences are specified in Rel.16 to reduce the PAPR to the same level as for data symbols
    - Carefully consider channel estimation performance and cross correlation performance
- For the next meeting:
    - CSI-RS PAPR reduction
        - Whether to specify a solution to reduce the PAPR to the same level as for data symbols for all CSI-RS configurations given by 38.211
    - Power imbalance issues
        - Power imbalance between PAs, between OFDM symbols, between RE in same OFDM symbol
        - Whether is it in scope of WI and if so, whether to specify a solution

R1-1810223	**Discussion on Low PAPR RS**	**ZTE**
R1-1810305	Discussions on low PAPR RS	LG Electronics
R1-1810405	Discussion on low PAPR RS	vivo
R1-1810437	Low PAPR RS	MediaTek Inc.
R1-1810558	Discussion on RS PAPR issue	CATT
R1-1810683	Analysis of PAPR Issue in NR	AT&T
R1-1810703	Discussion on PAPR for CSI-RS and DMRS	Huawei, HiSilicon
R1-1810793	Low PAPR reference signals	Intel Corporation
R1-1810888	View on Low PAPR RS	Samsung
R1-1810967	Discussion on RS enhancement for PAPR reduction	Guangdong OPPO Mobile Telecom.
R1-1811184	**Conclusion on the need for DMRS and CSI-RS PAPR reduction**	**Ericsson**
R1-1811941	Lower PAPR reference signals	Qualcomm Incorporated (rev of R1-1811280)
R1-1811410	Discussion on Low PAPR RS	Nokia, Nokia Shanghai Bell

7.2.8.6 Other

R1-1811929	**Feature Lead summary on Evaluation Methodologies for NR-eMIMO**	**Nokia, Nokia Shanghai Bell**

Agreement
Existing EVM (Table A.2.1-1 of TS38.802 or NR phase 2 EVM) can be a starting point with additional updates.
Proposal 2-0: Use the table 2-1 with the following additional updates

Table 2-1. SLS assumptions for CSI enhancement

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Parameter		Value
Duplex, Waveform		FDD (TDD is not precluded), OFDM
Multiple access		OFDMA
Scenario		Dense Urban (Macro only) is a baseline. Other scenarios (e.g. UMi@4GHz 2GHz, Urban Macro) are not precluded.
Frequency Range		FR1 only, 4GHz.
Inter-BS distance		200m
Channel model		According to the TR 38.901
Antenna setup and port layouts at gNB		Companies need to report which option(s) are used between • 32 ports: (8,8,2,1,1,2,8), (dH,dV) = (0.5, 0.8)λ • 16 ports: (8,4,2,1,1,2,4), (dH,dV) = (0.5, 0.8)λ Other configurations are not precluded.
Antenna setup and port layouts at UE		4RX: (1,2,2,1,1,1,2), (dH,dV) = (0.5, 0.5)λ for rank > 2 2RX: (1,1,2,1,1,1,1), (dH,dV) = (0.5, 0.5)λ for (rank 1,2) Type II overhead reduction Other configuration is not precluded.
BS Tx power		41 dBm
BS antenna height		25m
UE antenna height & gain		Follow TR36.873
UE receiver noise figure		9dB
Modulation		Up to 256QAM
Coding on PDSCH		LDPC Max code-block size=8448bit
Numerology	Slot/non-slot	14 OFDM symbol slot
	SCS	15kHz
Number of RBs		52 for 15 kHz SCS
Simulation bandwidth		10 MHz for 15kHz as a baseline, and configurations which emulate larger BW, e.g., same sub-band size as 40/100 MHz with 30kHz, may be optionally considered.
Frame structure		Slot Format 0 (all downlink) for all slots
MIMO scheme		SU/MU-MIMO with rank adaptation is a baseline for overhead reduction. For low RU, SU-MIMO or SU/MU-MIMO with rank adaptation are assumed for higher rank extension. For medium/high RU, SU/MU-MIMO with rank adaptation is assumed for higher rank extension.
MIMO layers		For all evaluation, companies to provide the assumption on the maximum MU layers (e.g. 8 or 12)
CSI feedback		Feedback assumption at least for baseline scheme • CSI feedback periodicity (full CSI feedback) : 5 ms, • Scheduling delay (from CSI feedback to time to apply in scheduling) : 4 ms
Overhead		Companies shall provide the downlink overhead assumption
Traffic model		FTP model 1 with packet size 0.5 Mbytes Other FTP model is not precluded.
Traffic load (Resource utilization)		• 50/70 % for CSI overhead reduction • 20/50 % for high rank extension Companies are encouraged to report the MU-MIMO utilization.

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UE distribution	- 80% indoor (3km/h), 20% outdoor (30km/h)
UE receiver	MMSE-IRC as the baseline receiver
Feedback assumption	Realistic
Channel estimation	Realistic
Evaluation Metric	Throughput and CSI feedback overhead as baseline metrics. Additional metrics, e.g., ratio between throughput and CSI feedback overhead, can be used. Maximum overhead (payload size for CSI feedback)for each rank at one feedback instance is the baseline metric for CSI feedback overhead, and companies can provide other metrics.
Baseline for performance evaluation	Rel-15 Type II Codebook is the baseline for performance and overhead evaluation for overhead reduction. (Type I Codebook can be considered at least for performance evaluation) • Companies are encouraged to compare the proposed overhead reduction scheme with Rel-15 overhead reduction scheme, Rel-15 Type I Codebook is the baseline for performance and overhead evaluation for higher rank codebook.

Agreement
For multi-TRP/panel performance evaluation:
- For eMBB in FR1, 10MHz BW and 15kHz SCS are baseline.
- For eMBB in FR1, 20MHz BW and 30kHz SCS are optional.
- For eMBB in FR2, 80MHz BW and 120kHz SCS are baseline.

Agreement
For URLLC multi-TRP/panel performance evaluation, choose a subset of evaluation scenarios/assumptions agreed in the URLLC agenda item

Agreement
For eMBB multi-TRP/panel performance evaluation, FTP traffic model 1 with packet size 0.5Mbytes as a baseline, and other traffic model is not precluded. RU=20/40/60% are baseline, and optional low RU (e.g. 5/10) can be considered.

Agreement
For eMBB multi-TRP/panel performance evaluation, MMSE IRC is the baseline, and advanced receiver is not precluded. Practical channel estimation and feedback model are used.

Agreement
- For eMBB multi-TRP performance evaluation, ideal and non-ideal backhaul are considered, the following delay values are assumed:
  - Ideal backhaul: 0ms
  - Non-ideal backhaul: 2ms, 5ms, 50ms(optional)
- For URLLC multi-TRP performance evaluation, ideal and non-ideal backhaul are considered, the following delay values are assumed:
  - Ideal backhaul: 0ms
  - Non-ideal backhaul: 2ms, 5ms(FFS, optional)
- Companies to provide the delay values used in their evaluations

Agreement:

Table 1 SLS assumption for eMBB multi-TRP/panel enhancement

Parameters	Dense urban (Macro Only)	Indoor hotspot
Carrier frequency	2GHz/4GHz is baseline (each company to choose 1 or more) 30GHz is optional	4GHz is baseline, 30GHz is optional
Channel model	TR38.901	
TP antenna configuration	4 ports: (M, N, P, M_g, N_g, M_p, N_p) = (8,2,2,1,1,1,2) 16 ports: (M, N, P, M_g, N_g M_p, N_p) = (8,4,2,1,1,2,4) (d_H, d_V) = (0.5, 0.8)λ for FR1 2 ports (8,8,2,1,1) and 8 ports (4,8,2,2,2) for 30GHz Other antenna configurations is not precluded (such as 32 ports)	2 ports: (M, N, P, M_g, N_g) = (1,1,2,1,1) for 4GHz 2 ports: (4,4,2,1,1) for 30GHz Other antenna configurations is not precluded.
UE antenna configuration	4Rx Port: (Baseline) (M,N,P,Mg,Ng,Mp,Np) = =(1,2,2,1,1,1,2), (dH,dV) = (0.5, 0.5)λ for FR1 For 30 GHz: (M, N, P, M_g, N_g) = (2, 4, 2, 1, 2); (d_V, d_H) = (0.5, 0.5)λ. ($d_{g,V}$, $d_{g,H}$) = (0, 0)λ. * $\Theta_{mg,ng}$=90°; $\Omega_{0,1}$=$\Omega_{0,0}$+180	4Rx Port: (Baseline) (M,N,P,Mg,Ng,Mp,Np) = =(1,2,2,1,1,1,2), (dH,dV) = (0.5, 0.5)λ for 4GHz For 30 GHz: (M, N, P, M_g, N_g) = (2, 4, 2, 1, 2); (d_V, d_H) = (0.5, 0.5)λ. ($d_{g,V}$, $d_{g,H}$) = (0, 0)λ. * $\Theta_{mg,ng}$=90°; $\Omega_{0,1}$=$\Omega_{0,0}$+180
Coordination assumptions	Each company to provide details on cluster size, coordination scheme, etc	

Agreement

Baseline scheme to evaluate eMBB multi-TRP enhancements is DPS or single TRP

- Each company to provide the details on backhaul delay, CSI reporting, transmission scheme, scheduling, etc

Agreement

The LLS/SLS simulation assumptions list in the following 2 tables below are agreed except for the red entries which will be discussed over email ~~until Oct 19th (Youngsoo, Nokia)~~

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Table 2. Simulation assumptions for beam management. (LLS)

Parameters	Values
Carrier Frequency	30 GHz
Subcarrier Spacing for data	For 30 GHz: 120kHz
Data allocation	8 RBs (baseline), Larger # of PRB (e.g. 32) can be considered. First 2 OFDM symbols for PDCCH, and following 12 OFDM symbols for data channel
Channel Model	CDL-A model - delay spread =30ns - UE speed=3km/h. (baseline) 30, 60km/h (optional) - The angles of BS, i.e., AoD, ZoD, are uniformly distributed within [-60, 60] degrees in azimuth domain and [90, 135] degrees in zenith domain, and those of UE, i.e., AoA, ZoA, are uniformly distributed within [-180, 180] degrees in azimuth domain and [45, 90] in zenith domain, via applying uniform-distribution desired mean angle in subclause 7.7.5.1 in TR 38.901 accordingly.
TXRU mapping to antenna elements	Companies explain details of the using TXRU mapping to antenna elements. Notes: 2D DFT based beam per polarization as a baseline;
TXRU mapping weights	Companies to provide details on TXRU mapping weights.
Procedure of beam sweeping	Companies to provide details on procedure of beam sweeping.
Criteria for beam selection	Companies to provide details on criteria for beam selection.
UE reporting	Companies to provide details on criteria for UE reporting.
BS antenna configurations	For 30 GHz: $(M, N, P, M_g, N_g) = (4, 8, 2, 2, 2)$. $(d_V, d_H) = (0.5, 0.5)\lambda$. $(d_{g,V}, d_{g,H}) = (2.0, 4.0)\lambda$ or $(M, N, P, M_g, N_g) = (4, 8, 2, 1, 1)$. $(d_V, d_H) = (0.5, 0.5)\lambda$. $(d_{g,V}, d_{g,H}) = (2.0, 4.0)\lambda$ Other Antenna configuration is not precluded.
BS antenna element radiation pattern	For 30 GHz: According to TR38.802
UE antenna configurations	For 30 GHz: $(M, N, P, M_g, N_g) = (2, 4, 2, 1, 2)$ or $(M, N, P, M_g, N_g) = (2, 4, 2, 1, 1)$ $(d_V, d_H) = (0.5, 0.5)\lambda$. $(d_{g,V}, d_{g,H}) = (0, 0)\lambda$. * $\Theta_{mg,ng}=90°$; $\Omega_{0,1}=\Omega_{0,0}+180°$; Other Antenna configuration is not precluded.
BS array orientation	azimuth 0 degree; mechanic downtilt: 0 degree
UE array orientation	$\Omega_{UT,a}$ uniformly distributed on [0, 360] degree, $\Omega_{UT,b} = 0°$, $\Omega_{UT,g} = 0°$ (baseline)
UE antenna element radiation pattern	See Table A.2.1-8 in TR 38.802
Transmission scheme	Multi-antenna port transmission schemes Note: Companies explain details of the using transmission scheme.
MIMO mode	SU-MIMO
UE receiver type	MMSE-IRC as baseline; other advanced receiver is not precluded.
Link adaptation	Based on CSI-RS

Table 3. Evaluation assumptions for beam management (SLS)

1 Parameters	2 Values
Scenarios	Indoor hotspot Dense Urban Micro layer only
Mode	DL SU-MIMO/ MU-MIMO
Simulation bandwidth	80MHz (DL+UL), TDD
Subcarrier Spacing for data	120kHz, (Other subcarrier spacings can be considered)
Channel Model	Following related assumption in TR 38.802/38.901
TXRU mapping to antenna elements	Companies explain the details of TXRU mapping to antenna elements. Notes: 2D DFT based beam per polarization as a baseline;
TXRU mapping weights	Companies explain the details of TXRU mapping weights.
Criteria for selection for serving TRP	Companies explain the details of criteria for selection for serving TRP.
Criteria for beam selection for serving TRP	Companies explain the details of criteria for beam selection for serving TRP.
Constraints for the range of selective beams per TRP sector	Companies explain what scheme is used
Scheduling algorithm	Companies explain what scheme is used
Link adaptation	Based on CSI-RS.
Traffic Model	FTP model 3 with packet size 0.5Mbytes (other value is not precluded). Other traffic models including the full buffer are not precluded.
BS antenna configurations	$(M, N, P, M_g, N_g) = (4, 8, 2, 2, 2)$. $(d_V, d_H) = (0.5, 0.5)\ \lambda$. $(d_{g,V}, d_{g,H}) = (2.0, 4.0)\ \lambda$ Note: important to consider also other antenna configurations to maintain flexibility
BS antenna element radiation pattern	According to TR38.802
UE antenna configurations	$(M, N, P, M_g, N_g) = (2, 4, 2, 1, 2)$; $(d_V, d_H) = (0.5, 0.5)\ \lambda$. $(d_{g,V}, d_{g,H}) = (0, 0)\ \lambda$. $*\Theta_{mg,ng}=90°$; $\Omega_{0,1}=\Omega_{0,0}+180°$; Note: important to consider also other antenna configurations to maintain flexibility
UE antenna element radiation pattern	See Table A.2.1-8 in TR 38.802
Inter-panel calibration for UE	Ideal, non-ideal following 38.802 (optional)
Beam correspondence	Companies report details of the assumptions
Control and RS overhead	Companies report details of the assumptions
Control channel decoding	Ideal or Non-ideal (Companies explain how is modeled)
UE receiver type	MMSE-IRC as the baseline, other advanced receiver is not precluded
BF scheme	Companies explain what scheme is used
Transmission scheme	Multi-antenna port transmission schemes Note: Companies explain details of the using transmission scheme.
UE mobility feature	Companies to provide details on add-on features including UE mobility, rotation, blockage, etc.

Friday:

Email discussion until Oct 19th on potential simplification of SLS for beam management (Youngsoo Yuk, Nokia)

R1-1811990	Feature Lead summary 2 on Evaluation Methodologies for NR-eMIMO	Nokia, Nokia Shanghai Bell
R1-1810105	Beam management enhancements for latency and overhead reduction	Huawei, HiSilicon
R1-1810106	Beam failure recovery for SCell	Huawei, HiSilicon
R1-1810107	Panel-based UL beam selection	Huawei, HiSilicon
R1-1810108	Beam measurement and reporting using L1-RSRQ or SINR	Huawei, HiSilicon
R1-1810406	Consideration on multi-TRP transmission for URLLC	vivo
R1-1810407	Discussion on UL non-coherent transmission for URLLC	vivo
R1-1810408	Discussion on beam measurement and reporting	vivo

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R1-1810409 Discussion on Scell BFR vivo
R1-1810410 Discussion on UL multi-beam transmission vivo
R1-1810411 Discussion on beam management latency and overhead reduction vivo
R1-1810812 Details and evaluation on enhanced beam reporting ZTE
R1-1810889 Preliminary SLS evaluation on Type II overhead reduction Samsung
R1-1810890 Preliminary SLS evaluation on Type II rank 3-4 extension Samsung
R1-1810968 Evaluation on CSI-RS and DMRS for PAPR reduction Guangdong OPPO Mobile Telecom.
R1-1811080 L1-RSRQ/L1-SINR versus L1-RSRP for beam measurement and reporting Fraunhofer IIS, Fraunhofer HHI
R1-1811090 Enhancements on Type-II CSI: Doppler Approach Fraunhofer IIS, Fraunhofer HHI
R1-1811185 Type 1 mapping of half pi by two BPSK DFTS DMRS Ericsson
R1-1811186 On subsampling of Gold sequences Ericsson
R1-1811189 Link recovery on SCell Ericsson
R1-1811317 Discussion on UL MU-MIMO ITRI
R1-1811394 Discussion on power imbalance issue for DMRS Spreadtrum Communications
R1-1811411 Discussion of Evaluation Methodologies for NR-eMIMO Nokia, Nokia Shanghai Bell
R1-1811542 On specifications based solutions to the DMRS PAPR issue Ericsson
R1-1811543 On specifications based solutions to the CSI-RS PAPR issue Ericsson
R1-1811544 Why PAPR is important for BS transmitters Ericsson
R1-1811545 Additional simulation results related to RS PAPR reduction Ericsson
R1-1811546 Enabling full TX power UL transmission for PUSCH Ericsson
R1-1811547 Enabling full TX power UL transmission for SRS Ericsson
R1-1811548 Initial simulation results for UL multi-panel transmission Ericsson
R1-1811826 Performance of NC-JT with large number of antenna ports Ericsson (rev of R1-1811550)
R1-1811827 Performance of NC-JT with different clustering approaches Ericsson (rev of R1-1811551)

7.2.9 Study on UE Power Saving for NR

FS_NR_UE_pow_sav; SID in RP-181463. Please refer to the SID for detailed scoping

R1-1810559 Work plan for UE Power Saving CATT
Decision: The document is noted.

R1-1810560 Skeleton of TR38.840 UE Power Saving CATT
Decision: The skeleton is endorsed with the following update:
- Adaptation to ~~number of~~ antenna

R1-1811896 TR38.840 v0.0.0 Study on UE Power Saving CATT

7.2.9.1 Evaluation Methodology

General assumption for analysis and evaluation including UE power consumption modelling, deployment scenarios, link-level/system-level evaluation assumptions, etc

R1-1811281 UE Power Saving Evaluation Methodology Qualcomm Incorporated

Observation 1: "Deep sleep" and "light sleep" defined for Rel-16 UE power saving study item are different from the ones defined for LTE eMTC / NB-IOT due to very different requirements of NR EMBB applications vs LTE MTC/IOT type of applications.
Observation 2: DDR memory content has to be retented throughout the DRX cycles for NR EMBB applications, and the power consumption for retention puts a lower bound on the lowest deep sleep power level.
Observation 3: When a smartphone is in standby (i.e. no user interactions but the apps are running in the background and intermittently perform small data sync with the servers), approximately half of the power consumption is due to intermittent RRC connections.
Observation 4: To extend smartphone standby time, it is important to consider optimizations for intermittent RRC connections.
Proposal 1: Discuss and adopt the parameter selection guidelines and UE power modeling approach recommended in Section 2.4.1.

Proposal 2: Consider the power modeling parameters described in Section 2.4.2
Proposal 3: Consider the power formulations described in Section 2.4.3 to 2.4.5.
Proposal 4: Discuss and adopt the applications and respective traffic models recommended in Section 3.1 for UE power saving proposal evaluation.
Proposal 5: Discuss and adopt the power model evaluation flow described in Section 3.3
Proposal 6: Consider the DRX scenarios described in Section 5 for power evaluation

Decision: The document is noted.

R1-1810447 **Evaluation methodology for NR UE power saving study** **MediaTek Inc.**

Decision: The document is noted.

Tuesday conclusion: Continue offline discussion – Peter (Qualcomm)

Wednesday session

R1-1811952 **Summary on UE Power Saving evaluation methodology** **Qualcomm**

Decision: The document is noted.

Agreement:

- The baseline for UE power saving evaluation is NR Rel-15 including support for DRX, BWP adaptation, cross-slot scheduling, PDCCH monitoring parameters, etc.

Agreements:

- At least dense urban (with single layer) deployment scenario should be included for evaluation. Indoor hotspot and rural macro can be additionally considered.
  - Note: For RRM measurement evaluation, UE power consumption contributed by inter-frequency and/or inter-RAT measurement can be considered.

Agreements:

- The following frequency ranges with the respective carrier frequency and reference sub-carrier spacing should be included for evaluation if a proposed scheme intends to be used for the respective frequency range(s):
  - FR1: 4GHz, 30kHz SCS
  - FR2: 30GHz, 120kHz SCS

Agreement:

- At least TDD should be included for evaluation. FDD can be optionally considered.

Agreements:

- The following reference configuration should be considered for evaluation:
  - Downlink: TDD, FR1, 30 kHz SCS, 100 MHz CC BW, PDCCH region of 2 symbols at beginning of a slot, PDSCH up to 256QAM 4x4 MIMO, #RB for TRS = 52, max 4RX, UE Capability 1
  - Uplink: TDD, FR1, 30 kHz SCS, 100MHz CC BW, 1TX
- Different and/or additional parameter assumptions used for evaluation should be clearly stated.

Agreements:

- Percentage power consumption reduction from the baseline scheme will be used to express the power saving gain
  - FFS: For the case multiple applications are evaluated, whether power consumption is the overall DoU power across the applications
- Latency of packet or scheduling delay, user throughput, system throughput and/or resource utilization/overhead (if applicable) should be reported as the result of the evaluation, in addition to power saving gain.
- If a new signal/channel is introduced, performance, complexity, & overhead for reception of the signal/channel should be evaluated. If the new signal is used for detection, false alarm rate and misdetection rate should be evaluated.

- Numerical analysis, system level simulation, and link level simulation are included as evaluation methods for power saving proposals. At least one of the methods should be selected and used for evaluation of a specific power saving proposal.
    - FFS: Criteria for selection of the methods, including the possibility of up to each company

Agreements:
- FTP model 3 should be included in the evaluation for at least FTP application. Modification to the parameters is not precluded. Other bursty traffic arrival models can be considered.
- Applications including FTP, web-browsing, video streaming, instant messaging, VoIP, gaming, background app sync can be considered for traffic modelling for power saving proposal evaluation.

Agreements:
- Simulation assumptions as specified in Table A1.5-1 in TR38.802 should be the basis for link-level simulation evaluation.
    - Antenna configuration may use IMT-2020 as reference. Companies to state assumptions different from the reference if any
- Simulation assumptions as specified in Table A2.1-1 in TR38.802 should be the basis for system-level simulation evaluation.
    - Antenna configuration may use IMT-2020 as reference. Companies to state assumptions different from the reference if any

R1-1811897 **Summary of Power Model for NR Power Saving MediaTek**
Decision: The document is noted.

Agreements:
- The following power states and relative power values for the reference configuration are adopted as working assumption for power saving SI.
    - FFS: Power modeling/scaling for the case more than one power states in a slot.
    - FFS: Power saving signal processing power and transition energy.
    - FFS: Power scaling for other configurations from the reference configuration

Reference Configuration	Power State	Characteristics	Relative Power
Downlink: TDD, FR1, 30 kHz SCS, 1CC, 100 MHz BW, PDCCH region of 2 symbol at beginning of a slot, k0 = 0, max. #CCE = 56, 36 PDCCH blind decoding, PDSCH of max data rate with 256QAM 4x4 MIMO, #RB for TRS = 52, 4RX, Capability 1 Uplink: TDD, FR1, 30 kHz SCS, 1CC, 100MHz BW, 1TX, 2 power levels 0dBm and 23dBm Power values are averaged over the operations within a slot.	Deep Sleep	Time interval for the sleep should be larger than the total transition time entering and leaving this state. Accurate timing may not be maintained.	1 (Optional: 0.5)
	Light Sleep	Time interval for the sleep should be larger than the total transition time entering and leaving this state.	20
	Micro sleep	Immediate transition is assumed for power saving study purpose from or to a non-sleep state	45
	PDCCH-only	No PDSCH and same-slot scheduling; this includes time for PDCCH decoding and any micro-sleep within the slot.	100
	SSB or CSI-RS proc.	SSB can be used for fine time-frequency sync. and RSRP measurement of the serving/camping cell. FFS the power scaling for RRM of neighbor cells . TRS is the considered CSI-RS for sync. FFS the power scaling for processing other configurations of CSI-RS.	100
	PDCCH + PDSCH	PDCCH + PDSCH. ACK/NACK in long PUCCH is modeled by UL power state. FFS the power scaling for PDSCH-only slot.	300
	UL	Long PUCCH or PUSCH. FFS the power scaling for short PUCCH and SRS.	250 (0 dBm) 700 (23 dBm)

Agreement:
- For evaluation, slide 3 of R1-1811897 is agreed.

Thursday session

R1-1812014 **Summary on UE Power Saving evaluation methodology** **Qualcomm**

Decision: The document is noted.

Agreements:

The following DRX scenarios can be considered as reference for evaluation:

- C-DRX cycle 320msec, inactivity timer {200, 80} msec
  - FR1 On duration: 10 msec
  - FR2 On duration: 5 msec
- C-DRX cycle 160msec, inactivity timer {100, 40} msec
  - FR1 On duration: 8 msec
  - FR2 On duration: 4 msec
- C-DRX cycle 40msec, inactivity timer {25, 10} msec
  - FR1 On duration: 4 msec
  - FR2 On duration: 2 msec
- I-DRX cycle 1.28 sec
  - Group paging rate (for a PO): [10%]
    - P-RNTI is detected but PDSCH decoding results in no match
    - Note: Statistics for the matching case may be further considered based on use case

Note: Companies may select and report the settings for short DRX cycle, short DRX cycle timer, drx-RetransmissionTimerDL, drx-RetransmissionTimerUL, drx-HARQ-RTT-TimerDL, and/or drx-HARQ-RTT-TimerUL.

Agreement:

- It is clarified that user throughput measured from system level simulation does not preclude user perceived throughput taking into account TCP slow start if applicable

Agreements:

- For system level impact evaluation, IMT-2020 simulation assumptions can be adopted.
- For system level simulation, whether to apply DRX depends on the particular power saving proposal being evaluated and the purpose of the simulation. Companies may justify if DRX is not applied in the simulation.

Agreements:

- Power scaling scheme for at least FR1 power states:

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Scaling for FR1	Proposal	Comment
BWP Bandwidth (DL)	Scaling of X MHz = 0.4 + 0.6 * (X - 20) / 80. Linear interpolation for intermediate bandwidths. Valid only for X = 10, 20, 40, 80, and 100.	For 10MHz BW, only AL up to 8 can be used for PDCCH The transition time is the same as DCI-based BWP switching delay for Rel-15. FFS: transition energy for BWP switching
BWP Bandwidth (UL)	No scaling at 0dBm or 23dBm	
CA (DL)	2CC is 1.7x1CC	Higher CA is FFS Activation/deactivation delay follows RAN4 specification; FFS transition energy
CA (UL)	As downlink at 0dBm. No scaling at 23dBm	
Antenna scaling (DL)	2Rx power is 0.7x 4Rx power	Other antenna counts are FFS
Antenna scaling (UL)	2Tx power is 1.4x 1Tx power at 0dBm. [No scaling] at 23dBm	Other antenna counts are FFS
PDCCH-only	Power of cross-slot scheduling is 0.7x same-slot scheduling FFS for the scaling w.r.t. #blinding decoding	
SSB	FFS for #SSB to be processed in one slot (Note 2 SSBs in a slot for the ref. config.) FFS for neighbor cell measurement including cell detection FFS for #measured cells/SSBs	
PDSCH-only slot	[280]	
CSI-RS	FFS for scaling w.r.t. #symbols for CSI-RS FFS for neighbor cell measurement FFS for #measured cells	
Short PUCCH	Short PUCCH power = [0.6] x uplink power	
SRS	SRS power = [0.6] x uplink power	

Note: Scaling applies only to non-sleep power states.
FFS: Rule for generating the power values for combination of more than one power states within one slot.
Note: latency involved in antenna scaling is FFS

Agreements: Reference configuration for FR2:

- Downlink: TDD, FR2, 120 kHz SCS, 1CC, 100 MHz BW, PDCCH region of 2 symbol at beginning of a slot, k0 = 0, max. #CCE = 32, 20 PDCCH blind decoding, PDSCH of max data rate with [64QAM] 2x2 MIMO, #RB for TRS = TBD, 2RX, UE Capability 1
- Uplink: TDD, FR2, 120 kHz SCS, 1CC, 100MHz BW, 1TX, power levels [FFS dBm]
- Power values are averaged over the operations within a slot.

Power State	Characteristics	Relative Power	
		FR1	FR2 (for reference only)

PDCCH-only	No PDSCH and same-slot scheduling; this includes time for PDCCH decoding and any micro-sleep within the slot.	100	[175]
SSB or CSI-RS proc.	SSB can be used for fine time-frequency sync. and RSRP measurement of the serving/camping cell. FFS the power scaling for RRM of neighbor cells . TRS is the considered CSI-RS for sync. FFS the power scaling for processing other configurations of CSI-RS. (Note 2 SSBs in a slot for the ref. config.)	100	[175]
PDCCH + PDSCH	PDCCH + PDSCH. ACK/NACK in long PUCCH is modeled by UL power state. FFS the power scaling for PDSCH-only slot.	300	[300]
UL	Long PUCCH or PUSCH. FFS the power scaling for short PUCCH and SRS.	250 (0 dBm) 700 (23 dBm)	[300] (FFS Tx power level)

Sleep states power level, energy overhead, and transitions are same as FR1.
Other scaling relationships for FR2: FFS

Agreements:
Power scaling scheme for PDCCH candidates processing reduction:

- Scaling for the power reduction due to PDCCH candidates processing (e.g. AL/CCE/BD) reduction is modelled solely based on its effect on microsleep portion of the PDCCH-only slot
- It is assumed that for PDCCH-only state baseline agreed for FR1, some portion of the slot is in microsleep
  - For scaling determination, companies can report the portion that is assumed
- Companies may state their assumption on how much portion of PDCCH processing time can scale in accordance to PDCCH candidates (e.g. AL/CCE/BD) reduction
  - Note: In the reference configuration, the first two symbols are PDCCH symbols.

Friday session
R1-1812048 **Summary on UE Power Saving evaluation methodology Qualcomm**
Decision: The document is noted.

Agreements:
For the purpose of basic calibration of traffic modeling, FTP model 3 (use 0.1 Mbytes packet size, mean inter-arrival time 200msec) and VoIP model (as defined in R1-070674) should be used to generate time distribution for different power states, for the following scenarios

1. No C-DRX configured
   - For both VoIP and FTP
2. C-DRX cycle 40msec for VoIP
   - 10 msec inactivity timer
   - Assume max two packets bundled
3. C-DRX cycle 160msec for FTP
   - 100 msec inactivity timer

The time distribution for different power states shall be reported (e.g. x% in PDCCH-only, y% in PDCCH+PDSCH, z% in microsleep, etc), as a result of the calibration exercise.
The following simplifying assumptions can be made: Power modelling reference configuration for FR1. Peak throughput. 100MHz DL BWP. 10-symbol PDSCH (one symbol occupied by DMRS), capable of carrying 868584 information bits per slot (Note: a packet can fit within a PDSCH transmission). All packets can be successfully decoded on the first transmission. No HARQ retransmission. No UL slot. Single user. Short DRX is not configured.

Email discussion for power modelling for RRM measurement /search till Oct 18th, with the expectation to have firm numbers (i.e. without brackets) - Peter (Qualcomm)

R1-1810153 Evaluation methodology for UE power saving Huawei, HiSilicon
R1-1810306 Discussion on evaluation methodology for UE power saving LG Electronics
R1-1810336 Discussion on UE power consumption model and simulation assumptions ZTE Corporation
R1-1810412 Evaluation methodology for NR UE power saving vivo
R1-1810561 Evaluation Methodology for UE Power Saving Scheme CATT
R1-1810794 Evaluation methodology for UE power saving techniques Intel Corporation
R1-1810891 Evaluation Methodology Samsung
R1-1811016 Study on modeling of UE power consumption Spreadtrum Communications
R1-1811126 Power model and evaluation assumptoins for UE power saving mechanism evaluation Apple Inc.
R1-1811136 Power state model and IDLE mode evaluation assumptions for NR power consumption study Sony
R1-1811224 On evaluation methodology for power saving InterDigital, Inc.
R1-1811478 Evaluation methodology for UE power consumption estimation Nokia, Nokia Shanghai Bell
R1-1811500 Evaluation Methodology for NR UE power saving techniques Ericsson

7.2.9.2 Potential Techniques for UE Power Saving

R1-1810337 Consideration on potential techniques for UE power saving ZTE Corporation
R1-1811524 Overall views on Potential Techniques for UE Power SavingCAICT

7.2.9.2.1 UE adaptation to the traffic and UE power consumption characteristics

R1-1811050 Considerations for UE power saving CMCC

Proposal 1: Power saving for CA mode needs to be studied.
Proposal 2: It is necessary to carefully study on what conditions that decrease number of Tx/Rx chains can reducing the power consumption without loss of network's spectral efficiency.
Proposal 3: For PDCCH monitoring reduction, both reduction of unnecessary PDCCH monitoring and PDCCH monitoring complexity can be considered.
Proposal 4: A power saving signal is introduced to reduce PDCCH monitoring power consumption.

Decision: The document is noted.

R1-1811127 Network-indication based Approaches for UE power saving Apple Inc.

Observation 1: It was noted that power saving for CONNECTED mode is more effective than that for IDLE mode.
Proposal 1: NR UE power saving SI should focus on UE power saving technique in CONNECTED mode.
Observation 2: The explicit signal-based sleep mechanism is very effective in adapting to dynamic traffic arrivals for UE power saving.
Proposal 2: NR supports explicit-signal based sleep indication for UE power saving.
Observation 3: If UE performs periodic PDCCH monitoring with periodicity P, then the UE's throughput is limited by a factor of P.
Observation 4: In order for UE to overcome throughput limitation and quickly adapt to traffic arrival, UE needs more flexible PDCCH monitoring mechanism.
Proposal 3: NR supports dynamic PDCCH monitoring based tx/rx activity, where by dynamic PDCCH monitoring UE can make additional PDCCH monitoring occasion in a next slot following a slot with tx/rx activity (PDSCH/PUSCH/PUCCH).
Proposal 4: NR supports MAC CE which can temporarily limit K0 range for current BWP, so that power saving from cross-slot scheduling can be achieved on any BWP.
Proposal 5: NR supports limiting the maximum number of MIMO layers to be supported. The possible maximum number ranges from 1 to 4 for single codeword and 1 to 8 for dual codeword.
Proposal 6: NR supports the scheduling DCI-based carrier activation mechanism.

Decision: The document is noted.

Tuesday conclusion: Continue discussion offline – Fang-chen (CATT)

Wednesday session

R1-1811942 Summary of offline discussion on UE power saving scheme CATT

Decision: The document is noted.

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Agreements:

At least the following power saving techniques are to be further studied (including detailed scheme, performance, complexity, overhead, etc.)

- Time domain
  - Cross-slot scheduling – enhancement from Rel-15
  - Multi-slot scheduling
  - Slot aggregation– enhancement from Rel-15
- DRX configuration – C-DRX enhancement
  - Dynamic Adaptation in configuration
  - Adaptive parameters
- Frequency domain
  - BWP – enhancement of dynamic switching from Rel-15
    - RS (including SRS) configuration for channel tracking, CSI measurements etc.
    - Efficient configuration/switching
    - Association with DRX
  - CA/DC
    - Quick activation/de-activation (e.g.,L1 signaling, MAC signaling)
    - Efficient configuration of SCell
      - E.g., Power saving with CSI/RRM measurements and beam management only but no PDCCH monitoring before activation (SCell dormancy)
- Antenna domain
  - Antenna adaptation
    - Adaptation of number of panels/antenna with consideration of aspects, such as CSI measurements (for both Rx/Tx)
    - Adaptation multi-antenna processing
- UE processing time
  - Adaptation in UE processing time
  - Timeline relaxing of UE processing
- Reduce PDCCH Monitoring
  - Reduced number of PDCCH processing
    - Further reduce the number of PDCCH blind decoding
    - Adaptation in CORESET, search space, PDCCH candidate, AL, CCE, DCI formats/RNTI monitoring
    - UE/Network Assistant Information
    - Adaptive configured parameters
    - Association with C-DRX
  - Network assistance
    - Decoupling of DL and UL grant
    - Configured RS for channel tracking and estimation
- Assistant information for adaptation
  - UE assistance: UE assistant information/feedback used for adaptation in some domains
  - Adaptation profile

R1-1810154	Power consumption reduction based on time/frequency/antenna adaptation	Huawei, HiSilicon
R1-1810307	Discussion on UE power saving in NR	LG Electronics
R1-1810338	Consideration on UE adaptation to the traffic and UE power consumption characteristics	ZTE Corporation
R1-1810413	Techniques on UE adaptation to the traffic and UE power consumption characteristics	vivo
R1-1810448	UE adaptation to the traffic and UE power consumption characteristics	MediaTek Inc.
R1-1810468	Discussion on UE traffic adaptation and power consumption characteristics	PANASONIC
R1-1810562	UE Power saving schemes with multi-dimensional adaptation	CATT
R1-1810795	UE adaptation to the traffic and UE power consumption characteristics	Intel Corporation
R1-1810892	Discussion on UE adaptation schemes	Samsung
R1-1810976	UE adaptation to the traffic for UE power saving	Guangdong OPPO Mobile Telecom.
R1-1811137	Enhancements of NR power saving feature	Sony
R1-1811225	On UE power consumption characteristics	InterDigital, Inc.
R1-1811282	UE Adaptation to the Traffic and UE Power Consumption Characteristics	Qualcomm Incorporated

R1-1811382 Discussion on UE adaptation to the traffic and UE power consumption characteristics NTT DOCOMO, INC.
R1-1811392 Initial views on the PDCCH monitoring for power saving Xiaomi Communications
R1-1811458 PDSCH resource allocation restriction for power saving ASUSTEK COMPUTER (SHANGHAI)
R1-1811479 On UE adaptation to the traffic Nokia, Nokia Shanghai Bell
R1-1811501 Adaptation aspects of NR UE power saving Ericsson

7.2.9.2.2 Triggering adaptation of UE power consumption characteristics

R1-1810155 Signaling based mechanisms for UE power saving Huawei, HiSilicon

Observation 1: It is observed from LTE deployment data that there is no DL/UL scheduling in a large percentage of DRX cycles.
Observation 2: In C-DRX active time, there exists a number of consecutive slots during which there is no PDSCH/PUSCH scheduled.
Proposal 1: Study solutions for power saving signaling to indicate to a UE to wake-up or go to sleep for the associated C-DRX 'on-duration'.
Proposal 2: Study RS-based solution and DCI-based solution as candidates for power saving signal considering
- Power consumption gain;
- Performance of signalling design, including BLER/miss-detection and false alarm probability;
- Resource overhead due to the transmission of the power saving signal;
- Other aspects, e.g. the impact on the legacy C-DRX timers, the number of C-DRX cycles corresponding to a power saving signal, etc.

Proposal 3: Consider the indication of skipping PDCCH monitoring in Rel-16.
Proposal 4: Study the DCI based signaling to skip PDCCH monitoring from the following aspects:
- Power consumption gain;
- Performance of signalling design, including BLER/miss-detection and false alarm probability;
- Resource overhead due to the transmission of the proposed signalling.

Decision: The document is noted.

R1-1810563 UE Power saving schemes with power saving signal/channel/procedures CATT

Observation1: Power saving signal is not only used to trigger UE to wake up at the upcoming DRX ON period but also used to trigger the PDCCH monitoring.
Observation2: When the power saving signal is used for aperiodic DRX configuration, UE will only wake up to decode PDCCH and PDSCH when the UE has data to receive
Proposal 1: The power saving signal should be supported for connected and idle modes.
Proposal 2: The following should be considered for the power saving signal design:
- Receiver complexity and sensitivity for the energy detection,
- Flexibility system overhead,
- Power consumption of the power saving signal detection

Proposal 3: Sequence based power saving signal should be supported for waking up receiver.
Proposal 4: Signaling based power saving signal shoul be supported for triggering the receiver sleep.
Proposal 5: Power saving gain should be evaluated for justify the power saving gain of any power saving scheme and identifying effectiveness of different power saving signal candidates.

Decision: The document is noted.

Tuesday conclusion: Continue discussion offline – Fang-chen (CATT)

Wednesday session

R1-1811942 Summary of offline discussion on UE power saving scheme CATT

Decision: The document is noted.

Summary of the power saving signal/channel/procedure triggering adaptation of UE power consumption characteristics

Thursday session

R1-1812007 Summary of offline discussion on Triggering Adaptation of UE Power consumption CATT

Decision: The document is noted.

Agreements:
- Study further the following for Triggering adaptation of UE power consumption characteristics

- Existing signal/channel based approach
  - Signals based on PDCCH channel
  - Signals based on RS
  - MAC signalling
  - RRC signalling
- New power saving signal/channel
- Performance metrics based on the agreements in the evalution methodology

Agreements: Study further:

- Triggering for UE time domain processing adaptation
  - Trigger UE adaptation to DRX operation
    - UE DRX PDCCH monitoring and efficient UE wakeup
      - Constraint on scheduling DCI during DRX ON
    - Performing CSI measurement/feedbacks and RRM measurements
    - Reducing power consumption during DRX ON
      - e.g., go-to-sleep signalling to assist UE to the sleep state
    - Triggering dynamic adaptation among multiple DRX configurations
  - Trigger UE adaptation in reducing PDCCH monitoring
    - Indication to change PDCCH monitoring behaviour, e.g., to monitor, to skip, to adapt to different PDCCH parameters
- Triggering for UE frequency domain processing adaptation
  - Trigger for the adaptation of BWP
    - State transition during BWP switching
      - Pre-processing information, e.g., CSI measurement/feedback, before switching/activation for gNB to use after switching to the new BWP
    - UE assistance approach for network configuration
      - UE initiates the request to the network
      - Network trigger UE feedback for the adaptation
  - Trigger for the carrier adaptation in CA/DC
    - State transition in CA/DC activation/deactivation
      - Pre-processing information, e.g., CSI measurement/feedback, before switching/activation for gNB to use after carrier activation
    - Adaptation among different cells with different power consumption charateristics
      - Bundle adaptation among different cells
    - UE assistance approach for network configuration
      - UE initiates the request to the network
      - Network trigger UE feedback for the adaptation
- Triggering UE processing adaptation
  - Trigger for adaptation in number of Tx/Rx antenna and/or maximum number of MIMO layers and/or number of antenna panels
    - UE assistance approach for network configuration
      - UE initiates the request to the network
      - Network trigger UE feedback for the adaptation
    - Network instructed
  - Trigger for adaptation in UE processing time
    - UE assistance information, e.g., k0, k1, k2 value
    - Network instructed
  - Trigger for adaptation of UE processing e.g., in maximum modulation orders, TB sizes, HARQ operation
- Triggering in reducing PDCCH blind decoding

Conclusion:

- Proposal of UE power schemes not listed or FFS in the UE power consumption model should also include the proposal of modeling of UE power consumption for the discussion at the next meeting.

R1-1810308	Discussions on triggering signaling for UE power saving	LG Electronics
R1-1810414	Discussion on triggering adaptation of UE power consumption characteristics	vivo
R1-1810449	Considerations on triggering adaptation and the potential power saving benefit	MediaTek Inc.
R1-1810469	Discussion on UE traffic adaptation procedures	PANASONIC

R1-1810645 Channels and procedures for adapting UE power consumption characteristics Sony
R1-1810796 Triggering adaptation of UE power consumption characteristics Intel Corporation
R1-1810893 Discussion on triggering adaptation schemes Samsung
R1-1810997 Triggering adaptation to the traffic for UE power saving Guangdong OPPO Mobile Telecom.
R1-1811015 Discussion on triggering adaptation for UE power saving Spreadtrum Communications
R1-1811051 Discussion on CSI report enhancement for CDRX CMCC
R1-1811089 Triggering adaptation of UE power consumption ASUSTEK COMPUTER (SHANGHAI)
R1-1811128 UE-assisted Approaches for UE power saving Apple Inc.
R1-1811226 On UE adaptation for power saving InterDigital, Inc.
R1-1811283 Triggering Adaptation of UE Power Consumption Characteristics Qualcomm Incorporated
R1-1811480 On UE Power Saving Triggering Mechanisms for Rel-16 NR Nokia, Nokia Shanghai Bell
R1-1811502 Triggering aspects of adaptation of NR UE power saving Ericsson
R1-1811627 Triggering Adaptation of UE Power Consumption Characteristics Convida Wireless

7.2.9.3 UE power Consumption Reduction in RRM Measurements

R1-1810415 On UE power Consumption Reduction in RRM Measurements vivo

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Table 1. The power models for RRM measurements

Operating mode	Power [unit per slot]	Notes
Serving cell measurements (inc. sync)		
Neighbor cell measurements (inc. sync)		Further refinement to model the power consumption due to different number of measured neighbor cells
Sleep		
Power ramping up and down		

Decision: The document is noted.

R1-1811481 UE Power Consumption Reduction in RRM Measurements Nokia, Nokia Shanghai Bell

Observation 1: Reducing the UE power consumption by reducing the RRM measurements should not impact negatively on the mobility performance
Observation 2: In FR1 in bands where 4 RX is mandatory, the UE may use 2 RX for measurements.
Observation 3: In connected mode, S-measure can be configured for UE to reduce RRM measurements when the current serving cell is in good condition
Observation 4: In IDLE mode, whe configured, UE cell search measurements are reduced when the current serving cell quality fullfills specific criterias
Observation 5: SMTC window configuration can provide power saving opportunities for UE.
Observation 6: UE RRM measurement requirements are relaxed in DRX mode and with relation to the DRX cycle length. Any further relaxtions for power saving purposes should be evaluated from mobility performance point of view.
Proposal 1: When analyzing the feasibility of a feature providing reduced power consumption the effect on moblity performance need to be considered as well.
Proposal 2: Study further the power saving potential of reducing Mobility CSI-RS measurements with and without association to SS/PBCH blocks.

Decision: The document is noted.

Tuesday conclusion: Continue offline discussion – Xiaodong (vivo)

Wednesday session

R1-1811914 Summary of UE power Consumption Reduction in RRM Measurements vivo

Decision: The document is noted.

Agreement:

- RRM power saving study should consider RRC IDLE, INACTIVE and CONNECTED states.

Agreements:
- Further study on relaxing/adapting RRM measurement for UE power saving,
  - Relaxing/adapting the number of RRM measurements in time domain for serving cell and neighbor cells based on certain conditions, e.g., number of SSB/CSI-RS/measurement occasions.
  - Relaxing/adapting the number of measured cells/frequencies for neighbor cells based on different conditions
  - Schemes considered should disclose the mechanism used to determine the mobility/speed assumed
  - FFS conditions, e.g., channel condition, UE location, UE speed, measurement configuration, measurement results, cell type, etc.
  - FFS impact on measurement/mobility performance
  - Relaxed/adapting measurement report (if any)
  - Other solutions are not precluded.

Agreements:
- Further study on the benefit/impact for additional resource for RRM measurements for power saving for mobility performance not inferior to that of Rel-15
  - The schemes proposed should at least include the following aspects:
    - The signals/channels used as additional resource
    - Procedure on how to use additional resources.
    - Overhead from network perspective should be considered.

Proposals:
- Scenarios with slowly moving or stationary UEs are prioritized for further studies when considering UE power saving techniques for RRM measurements,
  - Other scenarios, e.g., up to 120km/h, can also be studied for UE power saving for RRM measurements.
- Further studies UE power saving for RRM measurement by considering the following issues
  - Multi-beam/multi-cell related RRM measurement issues.
  - Potential power consumption increase due to sparse SSB density.

Thursday session

R1-1811962 **Offline outcome of UE power Consumption Reduction in RRM Measurements** **vivo**

Decision: The document is noted.

Agreements:
- Focus on stationary (e.g., 0km/h), pedestrian (e.g., 3km/h) and vehicular (e.g., 30km/h) scenarios for further studies when considering UE power saving techniques for RRM measurements,
- Further studies UE power saving for RRM measurement by considering the following issues
  - Multi-beam/multi-cell related RRM measurement issues.
  - Possible misalignment between SSB(s)/SMTC and DRX ON duration

R1-1810156	UE power consumption reduction in RRM measurements	Huawei, HiSilicon
R1-1810309	Considerations on RRM measurements to reduce UE power consumption	LG Electronics
R1-1810450	Considerations on NR RRM power saving	MediaTek Inc.
R1-1810564	UE Power saving scheme for RRM measurements	CATT
R1-1810797	UE power Consumption Reduction in RRM Measurements	Intel Corporation
R1-1810894	Discussion on UE power consumption reduction in RRM measurement	Samsung
R1-1810988	UE power Consumption Reduction in RRM Measurements	Guangdong OPPO Mobile Telecom.
R1-1811012	NR power saving on RRM measurement	Spreadtrum Communications
R1-1811138	Reducing UE power consumption in RRM measurements	Sony
R1-1811284	UE Power Consumption Reduction in RRM Measurements	Qualcomm Incorporated
R1-1811383	Discussion on UE power Consumption Reduction in RRM Measurements	NTT DOCOMO, INC.
R1-1811503	RRM aspects of NR UE power saving	Ericsson

7.2.9.4 Other

R1-1810310 Discussion on power saving for DRX operation LG Electronics
R1-1810311 Discussion on power saving for PDCCH monitoring LG Electronics
R1-1810312 Discussion on power saving for CA operation LG Electronics
R1-1810416 Considerations on traffic modelling for UE power saving vivo
R1-1810451 More aspects for NR UE power saving MediaTek Inc.
R1-1810714 UE Power saving in RRC_IDLE mode Huawei, HiSilicon
R1-1811296 Optimizing power consumption of connected mode UE during RACH Motorola Mobility, Lenovo
R1-1811504 Network impact of NR UE power saving Ericsson
R1-1811505 NR UE power consumption modeling details Ericsson
R1-1811506 Uplink aspects of NR UE power saving Ericsson
R1-1811507 Higher layer aspects of NR UE power saving Ericsson
Withdrawn

7.2.10 Study on NR positioning support

FS_NR_POS; SID in RP-182155. Please refer to the SID for detailed scoping

R1-1811987 Chairman's notes of AI 7.2.10 Study on NR positioning support Ad-Hoc Chair (Ericsson)
Decision: The document is endorsed, content is incorporated below.

R1-1810566 Co-Band TBS Technology and Scenario BUPT
Withdrawn
R1-1810567 Co-Band TBS Technology and Scenario BUPT
R1-1810798 Work plan for NR positioning study item Intel Corporation, Ericsson
R1-1811846 Intermediate Summary of Offline Discussion on NR Positioning Intel Corporation (Revision of R1-1811129)
R1-1811527 TR 38.855 skeleton for study of NR positioning support Ericsson,Intel
Endorsed as TR 38.855 v0.0.1
R1-1811614 Text Proposal for sections 2, 3 and 4 of TR 38.855 Ericsson,Intel
The text proposal in R1-1811614 is endorsed.

R1-1811927 Outcome of offline discussion on NR positioning evaluation Intel

7.2.10.1 Requirements for NR Positioning

R1-1810150 Considerations on NR positioning Huawei, HiSilicon
R1-1810313 Discussions on Requirement for NR Positioning design LG Electronics
R1-1810333 Requirement to synchronization error ZTE Corporation
R1-1810417 Considerations on requirement for NR positioning vivo
R1-1810459 Views on requirements for NR positioning MediaTek Inc.
R1-1810530 Discussion of NR Positioning Requirements CATT
R1-1810646 Considerations on NR Positioning Requirements Sony
R1-1810799 On target requirements for NR positioning Intel Corporation
R1-1810853 Requirements for NR Positioning Samsung
R1-1811027 Discussion on NR Positioning Requirements Nokia, Nokia Shanghai Bell
R1-1811052 Discussion on requirements and scenarios on NR positioning CMCC
R1-1811285 Requirements and Performance Metrics for Positioning Evaluations Qualcomm Incorporated
R1-1811354 Discussion on requirements for NR positioning NTT DOCOMO, INC.
R1-1811464 NR positioning requirements for commercial use cases Fraunhofer IIS
R1-1811529 Requirements for NR positioning Ericsson

Agreement:
- Regulatory requirements are considered as a minimum performance targets for NR Positioning studies
- Additional requirements based on commercial use cases can be used as input performance targets that are subject to further analysis in terms of performance / complexity tradeoffs in different evaluation scenarios

Agreement:

- For regulatory use cases, the following requirements are considered as a minimum performance targets for NR positioning
  - Horizontal positioning error <= 50m for 80% of UEs
  - Vertical positioning error [<5 m] for [80%] of UEs
    - Note: The regulatory requirements refer to floor level vertical accuracy
  - End to end latency and TTFF < 30 seconds
- As a starting point for commercial use cases, the following requirements are considered as performance targets for RAT dependent solutions, which are subject to further analysis in terms of performance / complexity tradeoffs of NR positioning radio-layer solutions
  - Horizontal positioning error < [3]m for [80]% of UEs in indoor deployment scenarios
  - Horizontal positioning error < [10]m for [80]% of UEs in outdoor deployments scenarios
  - Vertical positioning error < [3]m for [80]% of UEs in indoor deployment scenarios
  - Vertical positioning error < [3]m for [80]% of UEs in outdoor deployment scenarios
  - End to end latency < [1]s
- Note: This does not eliminate more or less demanding commercial use cases.

Agreement:

- At least CDFs of horizontal and vertical (vertical error not necessarily applicable to all solutions and/or scenarios) positioning errors are used as a performance metrics in NR positioning evaluations
  - At least the following percentiles of positioning error are analyzed 50%, 67%, 80%, 90%
- Physical layer latency, UE power consumption, scalability/capacity, network deployment complexity, availability, UE and gNB complexity can be considered as important design factors for NR positioning solutions and can be evaluated analytically for proposed solutions

7.2.10.2 Evaluation Methodology

Including evaluation scenarios

R1-1810151	Evaluation methodology for NR positioning	Huawei, HiSilicon
R1-1810314	Discussions on Evaluation Methodology for NR Positioning	LG Electronics
R1-1810321	Considerations on evaluation for NR positioning	ZTE Corporation
R1-1810334	Considerations on coverage of NR positioning	ZTE Corporation
R1-1810335	Ray-tracing based channel simulation model in virtual space	ZTE Corporation
R1-1810418	Considerations on evaluation methodology for NR positioning	vivo
R1-1810460	Views on evaluation methodology	MediaTek Inc.
R1-1810531	NR positioning evaluation scenarios and methodology	CATT
R1-1810800	Evaluation assumptions for NR positioning studies	Intel Corporation
R1-1810854	NR Positioning Evaluation Methodology	Samsung
R1-1811028	Evaluation Scenarios and Methodologies for Positioning Solutions in NR	Nokia, Nokia Shanghai Bell
R1-1811286	Simulation Scenarios and Assumptions for Positioning Evaluations	Qualcomm Incorporated
R1-1811465	Evaluation scenarios and methodologies for NR positioning	Fraunhofer IIS
R1-1811528	Evaluation methodologies and scenarios for NR positioning	Ericsson

Agreement:

- The following evaluation scenarios are defined for NR positioning studies
  - Scenario 1. Indoor Office for FR1 and FR2 (Open office and Mixed Office)
  - Scenario 2. UMi street canyon for FR1 and FR2 (ISD 200m)
  - Scenario 3. UMa (ISD 500m, TBD: ISD > 500m) for FR1 only (Macro cell only deployment scenario)
- FFS if other evaluation scenarios are introduced (e.g. IIoT)
- Note: Specific parameters of evaluation scenarios are to be finalized at the RAN1#94bis based on assumptions defined in 3GPP TRs 38.901 / 38.802 / 37.857

Agreement:

Common parameters provided in Table 1 and Table 2 below are agreed for NR Positioning evaluations and captured in the 3GPP TR 38.855

Table 1: Parameters common for all evaluation scenarios

Parameters	FR1 Specific Values	FR2 Specific Values
System parameters		
Carrier Frequency, GHz	4 GHz, 2GHz [TR 38.802]	30 GHz [TR 38.802]
Bandwidth, MHz	5MHz, 100 and 50MHz for 4 and 2 GHz respectively	100, 400 MHz
Subcarrier spacing, kHz	15 kHz (for 5 and 50 MHz), 30kHz (for 100 MHz)	120 kHz
gNB model parameters		
gNB Noise Figure, dB	5dB	7dB
UE model parameters		
UE Max. TX Power, dBm	23dBm [TR 38.802]	23dBm [TR 38.802], EIRP should not exceed 43 dBm (*)
UE Noise Figure, dB	9dB [TR 38.802]	13dB [TR 38.802]
UE Antenna Configuration	Panel model 1 [TR 38.802], Mg = 1, Ng = 1, P = 2, dH = 0.5λ, (M, N, P, Mg, Ng) = (1, 2, 2, 1, 1)	Baseline: Multi-panel Configuration 1 and Panel Configuration a [TR 38.802] ○ Multi-panel Configuration 1: (Mg, Ng) = (1, 2); Θmg,ng=90°; Ω0,1=Ω0,0+180°; (dg,H, dg,V)=(0,0) ○ Panel Configuration a: ○ - Each antenna array has shape dH=dV=0.5λ ○ - Config a: (M, N, P) = (2, 4, 2), the polarization angles are 0° and 90° ○ - The antenna elements of the same polarization of the same panel is virtualized into one TXRU ○ Optional: Provided by company
UE Antenna Radiation Pattern	Omni, 0dBi	Antenna model in Table 2
PHY/Link Level abstraction	Explicit simulation of all links, individual parameters estimation is applied. Companies to provide description of applied algorithms for estimation of signal location parameters. For future study whether a common algorithm is to be agreed upon.	
Network Synchronization assumption	Network synchronization error. Network sync error, per UE dropping, is defined as a truncated Gaussian distribution of (T1 ns) rms values between an gNB and a timing reference source which is assumed to have perfect timing, subject to a largest timing difference of T2 ns, the range of timing errors is [-T2, T2], T2 = 2*T1. T1 = 0 (perfectly synchronized) and T1 =50 ns are evaluated	

Table 2: UE antenna radiation pattern model 1 (FR2) (same as Table A.2.1-8 in TR 38.802)

Parameter	Values
Antenna element radiation pattern in θ'' dim (dB)	$A_{E,V}(\theta'') = -\min\left[12\left(\frac{\theta''-90^0}{\theta_{3dB}}\right)^2, SLA_V\right], \theta_{3dB}=90^0, SLA_V=25$
Antenna element radiation pattern in φ'' dim (dB)	$A_{E,H}(\varphi'') = -\min\left[12\left(\frac{\varphi''}{\varphi_{3dB}}\right)^2, A_m\right], \varphi_{3dB}=90^0, A_m=25$
Combining method for 3D antenna element pattern (dB)	$A''(\theta'',\varphi'') = -\min\left\{-\left[A_{E,V}(\theta'')+A_{E,H}(\varphi'')\right], A_m\right\}$
Maximum directional gain of an antenna element GE,max	5dBi
	Note: (θ'',φ'') are in local coordinate system.

Agreement:

- Indoor Office parameters captured in the following Table are agreed for NR positioning evaluations and captured in the 3GPP TR 38.855
  - Note: companies are not precluded to provide analysis for additional scenarios of interest
- Modifications to the table for 2 GHz should be further discussed

Summary of Evaluation Parameters for Indoor Office Scenario applicable at least for 4 GHz

Parameters	FR1 Specific Values	FR2 Specific Values
gNB model parameters		
Total gNB TX Power, dBm	24dBm	24 dBm, EIRP should not exceed 58 dBm
gNB Antenna Configuration	(M, N, P, Mg, Ng) = (4, 4, 2, 1, 1), dH = dV = 0.5 λ, [TR 38.802]	(M, N, P, Mg, Ng) = (4, 8, 2, 1, 1), dH = dV = 0.5 λ, [TR 38.802] One TXRU per polarization per panel is assumed
gNB Antenna Radiation Pattern	Single sector [TR 38.802]	3-sector antenna configuration [TR 38.802]
Propagation characteristics		
Channel Model	According to 3GPP TR 38.901 (Indoor Open Office)	According to 3GPP TR 38.901 (Indoor Open Office)
Penetration Loss	0dB	0dB
Layout considerations		
Layout	Indoor floor: (12BSs per 120m x 50m), TRP number per floor:12, [TR 38.901] Inter-gNB distance = 20m	Indoor floor: (12BSs per 120m x 50m), TRP number per floor:12, [TR 38.901] Inter-gNB distance = 20m
Number of floors, (floor height)	1	
UE drop procedure	100% indoor, uniformly distributed over the horizontal area	
UE mobility	3 km/h	
UE antenna height	1.5m	
Min. gNB - UE distance (2D), m	0m	
gNB antenna height	3m	

R1-1811992 **Outcome of offline discussion on UMi and UMa evaluation scenarios for NR positioning studies** **Intel**

Agreement:
UMi street canyon parameters captured in Tables 1 and X below provide the evaluation parameters for NR positioning evaluations and should be captured in the 3GPP TR 38.855

Table 1: Summary of Evaluation Parameters for UMi Street Canyon Scenario

Parameters	FR1 Specific Values	FR2 Specific Values
gNB model parameters		
Total gNB TX Power, dBm	**44 dBm**	**37 dBm per panel, EIRP should not exceed 73 dBm**
gNB Antenna Configuration	(M, N, P, Mg, Ng) = (8, 8, 2, 1, 1), (dH, dV) = (0.5, 0.8)λ, [TR 38.802]	(M, N, P, Mg, Ng) = (4, 8, 2, 2, 2), (dH, dV) = (0.5, 0.5)λ, (dg,H,dg,V) = (4.0, 2.0)λ, [TR 38.802]
gNB Antenna Radiation Pattern	Directional, 8dBi [TR 38.802], Please refer to Table X	Directional, 8dBi [TR 38.802], Please refer to Table X
Propagation characteristics		
Channel Model	According to 3GPP TR 38.901 (UMi Street Canyon)	According to 3GPP TR 38.901 (UMi Street Canyon)
Penetration Loss	For outdoor UEs: 0 dB,	For outdoor UEs: 0 dB,
Layout considerations		
Layout	Hexagonal grid, 19 or 7 macro sites, 3 sectors per site, ISD = 200m, [TR 38.802] Wrap-around is applied Note: in case if interference considerations are not properly taken into account for 7 sites companies are encouraged to provide results for 19 sites	Hexagonal grid, 19 or 7 macro sites, 3 sectors per site, ISD = 200m, [TR 38.802], Wrap-around is applied Note: in case if interference considerations are not properly taken into account for 7 sites companies are encouraged to provide results for 19 sites
Number of floors, (floor height)	**All users are on the ground**	
UE drop procedure	100% outdoor uniformly distributed over the horizontal area	100% outdoor uniformly distributed over the horizontal area
UE mobility	Outdoor: 3km/h Only for modelling of Doppler effects	Outdoor: 3km/h Only for modelling of Doppler effects
UE antenna height	1.5 m	
Min. gNB - UE distance (2D), m	10 m	
gNB antenna height	10 m by default. Companies can bring results with uniform distribution [5-20]m Default assumption can be revisited if benefits from using uniform distribution is shown	

Table X: 3-Sector BS antenna radiation pattern (same as Table A.2.1-6: in TR 38.802)

Parameter	Values
Antenna element vertical radiation pattern (dB)	$A_{E,V}(\theta'') = -\min\left[12\left(\frac{\theta''-90^0}{\theta_{3dB}}\right)^2, SLA_V\right], \theta_{3dB} = 65^0, SLA_V = 30$
Antenna element horizontal radiation pattern (dB)	$A_{E,H}(\varphi'') = -\min\left[12\left(\frac{\varphi''}{\varphi_{3dB}}\right)^2, A_m\right], \varphi_{3dB} = 65^0, A_m = 30$
Combining method for 3D antenna element pattern (dB)	$A''(\theta'',\varphi'') = -\min\{-[A_{E,V}(\theta'') + A_{E,H}(\varphi'')], A_m\}$
Maximum directional gain of an antenna element GE,max	8dBi

Agreement:
UMa parameters captured in the Table below are agreed for NR positioning evaluations and captured in the 3GPP TR 38.855

Table: Summary of Evaluation Parameters for UMa Scenario

Parameters	FR1 Specific Values
gNB model parameters	
Total gNB TX Power, dBm	49 dBm
gNB Antenna Configuration	(M, N, P, Mg, Ng) = (8, 8, 2, 1, 1), (dH, dV) = (0.5, 0.8)λ, [TR 38.802] Apllicable for 2GHz and 4 GHz carrier frequency. Could be reconsidered for 2GHz
gNB Antenna Radiation Pattern	Directional, 8dBi [TR 38.802], Please refer to Table X
Propagation characteristics	
Channel Model	According to 3GPP TR 38.901 (UMa scenario)
Penetration Loss	For outdoor UEs: 0 dB, For indoor UEs: 20 dB + 0.5 d2D-in, [TR 38.901]
Layout considerations	
Layout	Hexagonal grid, 19 or 7 macro sites, 3 sectors per site, ISD = 500m, [TR 38.802] Wrap-around is applied Note: in case if interference considerations are not properly taken into account for 7 sites companies are encouraged to provide results for 19 sites
Number of floors, (floor height)	8, (3m), [TR 37.857]
UE drop procedure	50% indoor and 50% outdoor uniformly distributed over the horizontal area (separate statistic)
UE mobility (for modelling Doppler effects)	Indoor: 3km/h / Outdoor: 60km/h
UE antenna height	1.5 m [TR 37.857]
Min. gNB - UE distance (2D), m	35m [TR 37.857]
gNB antenna height	Uniformly distributed [20-50] m

7.2.10.3 Potential Techniques for NR Positioning

R1-1810152 Details of NR positioning techniques Huawei, HiSilicon
R1-1810315 Discussions on Possible Techniques for NR Positioning LG Electronics
R1-1810419 Considerations on techniques for NR positioning vivo
R1-1810461 "Views on potential techniques for NR positioning" MediaTek Inc.
R1-1810492 UE Positioning using AoA+ZoA+TA Polaris Wireless
R1-1810532 Discussion of Potential Techniques for NR Positioning CATT
R1-1810647 Discussion on OTDOA NR Positioning Sony
R1-1810801 Techniques for NR positioning Intel Corporation
R1-1810855 Potential Techniques for NR Positioning Samsung
R1-1810945 Discussion on Potential Techniques for NR Positioning ITRI
R1-1811029 Potential techniques for NR positioning Nokia, Nokia Shanghai Bell
R1-1811053 Discussion on enhancements for NR positioning CMCC
R1-1811133 Using barometric pressure for altitude estimation Polaris Wireless
Withdrawn
R1-1811287 Considerations on NR Positioning using PRS Qualcomm Incorporated
R1-1811355 Discussion potential techniques for NR positioning NTT DOCOMO, INC.
R1-1811459 Overview of Potential NR Positioning Technologies Fraunhofer IIS
R1-1811487 Views on NR positioning techniques Mitsubishi Electric Co.
R1-1811525 Co-Band TBS Technology and Scenario BUPT, ZTE, China Unicom
R1-1811530 RAT dependent NR positioning solutions Ericsson

R1-1811993 Outcome of offline email discussion on Potential Techniques for NR positioning Ericsson

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Agreement:
The RAT dependent solutions considered for study include
- Downlink based solutions
- Downlink and uplink based solutions
- Uplink based solutions

7.2.10.4 Other

R1-1810533	NR Positioning Reference Signals for OTDOA	CATT
R1-1810802	Preliminary Evaluation Results for NR Positioning	Intel Corporation
R1-1811466	Channel model considerations for NR positioning	Fraunhofer IIS
R1-1811531	RAT independent and hybrid NR positioning solutions	Ericsson

7.2.11 Other

R1-1811190	On OFDM symbol level PDSCH power boosting	Ericsson
R1-1811327	NTN Overview	Ericsson
R1-1811328	On UL transmission timing for NTN	Ericsson
R1-1811329	On adapting random access procedures for NTN	Ericsson
R1-1811330	On adapting HARQ procedures for NTN	Ericsson
R1-1811331	On UL power control for NTN	Ericsson
R1-1811384	Scenarios and simulation assumptions for NTN	Ericsson
R1-1811508	Fast failure recovery	Ericsson
R1-1811509	L1-RSRP reporting on non-serving cells	Ericsson
R1-1811585	Work plan for the SI on Channel Modeling for Indoor Industrial Scenarios	Ericsson
R1-1811586	Skeleton TP for updates to TR 38.901	Ericsson
R1-1811587	Expected input for RAN1#95 for the SI on Channel Modeling for Indoor Industrial Scenarios	Ericsson

7.3 Other

R1-1810950	Editorial corrections of 38.811 for NR-NTN	ETRI
R1-1811288	Enhanced NR features	Qualcomm Incorporated

Withdrawn

8 Closing of the meeting

RAN1 chair reminded the group that the priority number one to the next meeting should (and will) be making sure the NR Rel-15 specs are complete, stable and ready for implementation. Keep that objective in mind when preparing companies'contributions to RAN1#95.
Then RAN1 chair thanked all for the very good week where good progress has been achieved on both Rel-15 and Rel-16 work.
He highlighted how important the offline sessions are to progress even faster, though the conditions and logistic are not always as they should be. With that regard, all can see how the role of feature leads is essential, and make the life of all much easier by providing clear and concise summaries.
As always, thanks to Vice-chairmen, including Kazuaki-san and Xiaoyi for chairing the parallel sessions, MCC for support and CF3 for hosting facilities.
Relax after the long & busy week, and enjoy the local specials of Chengdu.
Meeting was closed at 16:50.
See you all in Spokane.

Annex A: List of Tdocs at RAN1 #94 bis

Please see excel file attached to this report

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Annex B: List of CRs agreed at RAN1 #94 bis

TS/TR	CR	rev	Rel	Title	Cat	Vsn	@ Mtg	TD#	Source to WG	Work Item
36.211	0464	-	Rel-14	Correction on aperiodic CSI-RS resource mapping in 36.211	F	14.8.0	R1#94bis	R1-1811700	Huawei, HiSilicon	LTE_eFDMIMO-Core
36.211	0465	-	Rel-15	Correction on aperiodic CSI-RS resource mapping in 36.211	A	15.3.0	R1#94bis	R1-1811701	Huawei, HiSilicon	LTE_eFDMIMO-Core
36.211	0466	-	Rel-14	Correction to non-precoded NZP CSI-RS resource configurations	F	14.8.0	R1#94bis	R1-1811718	Intel Corporation	LTE_eFDMIMO-Core
36.211	0467	-	Rel-15	Correction to non-precoded NZP CSI-RS resource configurations	A	15.3.0	R1#94bis	R1-1811719	Intel Corporation	LTE_eFDMIMO-Core
36.212	0308	-	Rel-14	Correction on aperiodic CSI-RS in 36.212	F	14.7.0	R1#94bis	R1-1811702	Huawei, HiSilicon	LTE_eFDMIMO-Core
36.212	0309	-	Rel-15	Correction on aperiodic CSI-RS in 36.212	A	15.3.0	R1#94bis	R1-1811703	Huawei, HiSilicon	LTE_eFDMIMO-Core
36.213	1172	-	Rel-13	Correction for Type 6 report for FD-MIMO	F	13.11.0	R1#94bis	R1-1811667	Qualcomm Incorporated	LTE_EBF_FDMIMO-Core
36.213	1173	-	Rel-14	Correction for Type 6 report for FD-MIM	F	14.8.0	R1#94bis	R1-1811668	Qualcomm Incorporated	LTE_EBF_FDMIMO-Core
36.213	1174	-	Rel-15	Correction for Type 6 report for FD-MIMO	A	15.3.0	R1#94bis	R1-1811669	Qualcomm Incorporated	LTE_EBF_FDMIMO-Core
36.213	1175	-	Rel-14	Correction on PDSCH RE mapping around aperiodic zero power CSI-RS	F	14.8.0	R1#94bis	R1-1811704	Huawei, HiSilicon	LTE_eFDMIMO-Core
36.213	1176	-	Rel-15	Correction on PDSCH RE mapping around aperiodic zero power CSI-RS	A	15.3.0	R1#94bis	R1-1811709	Huawei, HiSilicon	LTE_eFDMIMO-Core
36.213	1177	-	Rel-14	Correction on NB-IoT DL subframe definition on non-anchor carriers	F	14.8.0	R1#94bis	R1-1811705	Huawei, HiSilicon	NB_IOTenh-Core
36.213	1178	-	Rel-15	Correction on NB-IoT DL subframe definition on non-anchor carriers	A	15.3.0	R1#94bis	R1-1811706	Huawei, HiSilicon	NB_IOTenh-Core
36.213	1179	-	Rel-14	HARQ reference configuration for SRS carrier switching	F	14.8.0	R1#94bis	R1-1811707	Qualcomm Incorporated	LTE_SRS_switch-Core
36.213	1180	-	Rel-15	HARQ reference configuration for SRS carrier switching	A	15.3.0	R1#94bis	R1-1811708	Qualcomm Incorporated	LTE_SRS_switch-Core
36.213	1181	-	Rel-14	Aperiodic CSI report for PUSCH in UpPTS	F	14.8.0	R1#94bis	R1-1811710	Qualcomm Incorporated	LTE_UL_CAP_enh-Core
36.213	1182	-	Rel-15	Aperiodic CSI report for PUSCH in UpPTS	A	15.3.0	R1#94bis	R1-1811711	Qualcomm Incorporated	LTE_UL_CAP_enh-Core
36.213	1183	-	Rel-15	Correction on subslot-SPUCCH resource for formats 1a and 1b	F	15.3.0	R1#94bis	R1-1811712	Huawei, HiSilicon, LG Electronics	LTE_sTTIandPT-Core
36.213	1184	-	Rel-15	Corrections related to CSI update capability for sTTI	F	15.3.0	R1#94bis	R1-1811715	LG Electronics	LTE_sTTIandPT-Core
36.213	1185	-	Rel-15	UL SPS repetition counting	F	15.3.0	R1#94bis	R1-1811716	ZTE, LG Electronics,Nokia, Nokia Shanghai Bell	LTE_HRLLC-Core

TS/TR	CR	rev	Rel	Title	Cat	Vsn	@ Mtg	TD#	Source to WG	Work Item
36.213	1186	-	Rel-15	Validation of SPS for one UL SPS configuration	F	15.3.0	R1#94bis	R1-1811717	Huawei, HiSilicon	LTE_HRLLC-Core
36.213	1187	-	Rel-15	On activation of UL SPS configuration	F	15.3.0	R1#94bis	R1-1811721	ZTE	LTE_HRLLC-Core
36.213	1188	-	Rel-14	CSI reference resource with crs-less-ssp10	F	14.8.0	R1#94bis	R1-1811722	Qualcomm Incorporated	LTE_UL_CAP_enh-Core
36.213	1189	-	Rel-15	CSI reference resource with crs-less-ssp10	A	15.3.0	R1#94bis	R1-1811723	Qualcomm Incorporated	LTE_UL_CAP_enh-Core
36.213	1190	-	Rel-15	Corrections on subframe-PDSCH repetition with eIMTA	F	15.3.0	R1#94bis	R1-1811733	LG Electronics	LTE_HRLLC-Core

Annex C-1: List of Outgoing LSs from RAN1 #94 bis

TDoc #	Title	Source	Release	Related WIs	Reply to	To	Cc	Original LS	Reply in
R1-1811934	LS on RSRP measurements using RSS for Rel-16 LTE-MTC	RAN1, Ericsson	Rel-16	LTE_eMTC5-Core		RAN4			
R1-1811935	Reply LS on power class for FR1 EN-DC and NR CA	RAN1, Samsung	Rel-15	NR_newRAT-Core	R2-1813401	RAN2	RAN4		
R1-1811936	LS on aperiodicTriggeringOffset	RAN1, Ericsson	Rel-15	NR_newRAT-Core		RAN2			
R1-1811937	LS on description of QCL	RAN1, Intel	Rel-15	NR_newRAT-Core		RAN2			
R1-1811964	Reply to LS on Preamble Power Ramping Counter	RAN1, Fujitsu	Rel-15	NR_newRAT-Core	R2-1813493	RAN2	RAN4		
R1-1811965	LS on ss-PBCH-BlockPower definition	RAN1, Intel Corp.	Rel-15	NR_newRAT-Core		RAN2			
R1-1811966	LS on MO configuration with multiple SSB SCS for a given SSB frequency	RAN1, Intel Corp.	Rel-15	NR_newRAT-Core		RAN2	RAN4		
R1-1811968	LS on PDCCH monitoring periodicities for DCI format 2_0	RAN1, Intel	Rel-15	NR_newRAT-Core		RAN2			
R1-1811969	LS on field description for SearchSpace	RAN1, NTT DOCOMO	Rel-15	NR_newRAT-Core		RAN2			
R1-1812026	LS on wideband carrier operation for NR-U	RAN1, Ericsson	Rel-16	FS_NR_unlic		RAN4, RAN2			
R1-1812028	Reply LS on intra-band combination for NR CA and MR-DC	RAN1, Intel Corp.	Rel-15	NR_newRAT-Core	R2-1813442	RAN2	RAN4		
R1-1812037	LS on RAN1 NR UE features update	RAN1, NTT DOCOMO, INC., AT&T	Rel-15	NR_newRAT-Core		RAN2, RAN4			
R1-1812057	LS on Uu control of NR sidelink	RAN1, Huawei	Rel-16	FS_NR_V2X		RAN2			
R1-1812058	LS on Multiple active configured UL grants for NR V2X	RAN1, Ericsson	Rel-16	FS_NR_V2X		RAN2			
R1-1812062	Reply LS on PHR and SUL	RAN1, Huawei	Rel-15	NR_newRAT-Core	R2-1815646	RAN2			
R1-1812065	Reply LS on L1 capabilities	RAN1, AT&T, NTT DOCOMO	Rel-15	NR_newRAT-Core	R2-1813356	RAN2			
R1-1812072	LS on clarification to Max Data Rate in TS38.306	RAN1, Ericsson	Rel-15	NR_newRAT-Core		RAN2			
R1-1812074	LS on network synchronization for handover purposes	RAN1, Ericsson	Rel-15	NR_newRAT-Core		RAN2			
R1-1812075	LS on search space configuration for DCI format 2_0 monitoring	RAN1, Qualcomm	Rel-15	NR_newRAT-Core		RAN2			

Annex C-2: List of Incoming LSs from RAN1 #94 bis

TDoc #	Title	Source	Release	Related WIs	Reply to	To	Cc	Original LS	Reply in
R1-1810053	Reply LS on adjacent TDM combinations of SRS for antenna switching and other UL physical channels	RAN4, Huawei	Rel-15	NR_newRAT-Core	R1-1807722	RAN1		R4-1811533	
R1-1810054	LS to RAN1 on intra-band LAA aggregation	RAN4, Ericsson	Rel-13	LTE_LAA		RAN1		R4-1811563	
R1-1810055	LS on the beam correspondence requirement for FR2 UEs	RAN4, Apple Inc.	Rel-15	NR_newRAT-Core		RAN1		R4-1811804	
R1-1810056	LS on Initial Active BWP for Pattern 2 and Pattern 3	RAN4, Nokia	Rel-15	NR_newRAT-Core		RAN1		R4-1811870	
R1-1810057	LS to RAN2 on removing a sentence related to restriction for intra-band LAA aggregation	RAN4, Ericsson	Rel-13	LTE_LAA		RAN2	RAN1	R4-1811562	
R1-1810058	LS on SFTD scenarios for late drop	RAN4, Ericsson	Rel-15	NR_newRAT-Core	R2-1804119	RAN2	RAN1	R4-1811714	
R1-1810059	Reply LS on RAN2 progress on ANR	RAN4, vivo	Rel-15	NR_newRAT-Core	R2-1809226	RAN2	RAN1, RAN3, SA5	R4-1811851	
R1-1810060	Reply LS to IEEE 802.11 working group in relation to certain channel combinations for LAA in 5GHz	RAN4, Ericsson	Rel-13	LTE_LAA	2018-07-13-LS from IEEE 802.11 to 3GPP RAN4	IEEE 802.11 working group	RAN1, RAN	R4-1811880	
R1-1810061	LS reply to RAN 3 on L2 measurement	SA5, Ericsson	Rel-15	NETSLICE-ADPM5G	R3-185114	RAN3	RAN1, RAN2	S5-185560	
R1-1810062	LS reply on L2 measurement	SA5, Ericsson	Rel-15	NETSLICE-ADPM5G	R2-1810957	RAN2	RAN1, RAN3	S5-185585	
R1-1810063	LS on UE feature list for NR	RAN4, NTT DOCOMO, INC.	Rel-15	NR_newRAT-Core		RAN, RAN1, RAN2	RAN3	R4-1811531	
R1-1810064	LS on UE feature list for LTE	RAN4, NTT DOCOMO, INC.	Rel-15	NR_newRAT-Core		RAN, RAN1, RAN2	RAN3	R4-1811904	
R1-1810065	LS on L1 capabilities	RAN2, Intel	Rel-15	NR_newRAT-Core		RAN1, RAN4		R2-1813356	
R1-1810066	Reply LS on power class for FR1 EN-DC and NR CA	RAN2, Ericsson	Rel-15	NR_newRAT-Core	R4-1805929	RAN4, RAN1		R2-1813401	

TDoc #	Title	Source	Release	Related WIs	Reply to	To	Cc	Original LS	Reply in
R1-1810067	LS to RAN1 on SSBs per RACH occasion	RAN2, Huawei	Rel-15	NR_newRAT-Core		RAN1		R2-1813411	
R1-1810068	LS on intra-band combination for NR CA and MR-DC	RAN2, NTT DOCOMO	Rel-15	NR_newRAT-Core		RAN1, RAN4		R2-1813442	
R1-1810069	LS on the RRC message size restriction	RAN2, MediaTek	Rel-15	NR_newRAT-Core		RAN1	RAN4	R2-1813462	
R1-1810070	LS on corrections to CSS configurations	RAN2, Qualcomm	Rel-15	NR_newRAT-Core		RAN1		R2-1813467	
R1-1810071	LS on Preamble Power Ramping Counter	RAN2, Fujitsu	Rel-15	NR_newRAT-Core		RAN1	RAN4	R2-1813493	
R1-1810072	Reply LS on the transmission of video over PC5 interface	RAN2, LG Electronics	Rel-15	FS_mV2X	S4-180633	SA4	RAN1	R2-1813199	
R1-1810073	Reply LS on potential enhancement of DR-mode of operation	RAN2, Intel	Rel-15	NR_newRAT-Core	S2-187629	SA2	RAN1, RAN4	R2-1813461	
R1-1810074	LS on TSN integration in the 5G System	SA2, Qualcomm	Rel-16	FS_Vertical_LAN		RAN1, RAN2, RAN3	RAN, SA1	S2-189051	
R1-1810075	LS on RAN1 NR UE feature list	RAN, NTT DOCOMO	Rel-15	NR_newRAT-Core		RAN1, RAN2	RAN4	RP-182143	
R1-1810076	Reply LS on proposed joint Coexistence Workshop	RAN, Qualcomm	Rel-16	FS_NR_unlic	IEEE_802.11_LS_180713 = RP-181515	IEEE 802.11	IEEE-SA, IEEE 802 LMSC, RAN1	RP-182168	
R1-1810077	LS on RAN4 NR UE feature list	RAN, NTT DOCOMO	Rel-15	NR_newRAT-Core		RAN4, RAN2	RAN1	RP-182173	
R1-1810078	LS on RAN4 Rel.15 LTE UE feature list	RAN, NTT DOCOMO	Rel-15			RAN4, RAN2	RAN1	RP-182174	
R1-1810079	LS regarding LTE LAA channel combinations for 5GHz	RAN, Charter Communications	Rel-13	LTE_LAA		RAN4, RAN1, RAN2		RP-182177	
R1-1810080	Reply LS to IEEE 802.11 working group in relation to certain channel combinations for LAA in 5GHz	RAN, Charter Communications	Rel-13	LTE_LAA	IEEE_802.11_LS_180713b = RP-181524	IEEE 802.11	RAN4, RAN2, RAN1	RP-182178	
R1-1811921	LS to RAN1 on PHR and SUL	RAN2, Samsung	Rel-15	NR_newRAT-Core		RAN1		R2-1815646	
R1-1811922	LS on sensing and reporting for Mode 3	RAN2, Huawei	Rel-15	LTE_eV2X-Core		RAN1		R2-1815668	

TDoc #	Title	Source	Release	Related WIs	Reply to	To	Cc	Original LS	Reply in
R1-1811923	Reply LS on bandwidth configuration for initial BWP	RAN2, Ericsson	Rel-15	NR_newRAT-Core	R1-1810002	RAN1		R2-1815861	
R1-1812067	Reply LS on Further Agreements on Paging Occasions	RAN2, Huawei	Rel-15	NR_newRAT-Core	R1-1809965	RAN1		R2-1816006	

Annex D: List of Approved updated WIDs

None

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Annex E: List of draft TSs/TRs agreed at RAN1 #94 bis

Tdoc Number	Title	Source	Conclusion/Decision
R1-1811661	Skeleton TR 36.776 Study on LTE-based 5G terrestrial broadcast	Qualcomm Incorporated	Endorsed as basis for further updates
R1-1811896	TR38.840 v0.0.0 Study on UE Power Saving	CATT	Endorsed as basis for further updates
R1-1811909	TR 38.824 v0.0.2 for Study on physical layer enhancements for NR ultra-reliable low latency communication (URLLC)	Huawei	Endorsed as basis for further updates
R1-1812080	TR38.889 v0.2.0 Study on NR-based Access to Unlicensed Spectrum	Qualcomm	Endorsed as basis for further updates
R1-1812081	TR38.885 v0.1.0 for Study on NR Vehicle-to-Everything (V2X)	Huawei, HiSilicon	Endorsed as basis for further updates
R1-1812082	TR 38.866 v0.1.0 Study on remote interference management for NR	CMCC	Endorsed as basis for further updates

Annex F: List of actions

- **Outgoing LS**

- **CR approval**

[94b-LTE-01-spec#]
Editors to prepare the consolidated CR incorporating the TPs/agreements approved for Rel-15 eMTC & NB-IoT by Oct 19th, for comments and endorsement by Oct 26th
Done: The following set of CRs is agreed.

R1-1812084	Corrections to LTE-MTC	Ericsson	36.211	15.3.0	LTE_eMTC4-Core	CR0468, F
R1-1812086	Corrections to Even further enhanced MTC for LTE	Huawei	36.212	15.3.0	LTE_eMTC4-Core	CR0310, F
R1-1812087	Corrections to even further enhanced MTC for LTE in 36.213, s06-s07	Motorola mobility	36.213	15.3.0	LTE_eMTC4-Core	CR1191, F
R1-1812088	Corrections to even further enhanced MTC for LTE in 36.213, s08-s09	Motorola mobility	36.213	15.3.0	LTE_eMTC4-Core	CR1192, F
R1-1812085	Corrections to NB-IoT	Ericsson	36.211	15.3.0	NB_IOTenh2-Core	CR0469, F
R1-1812089	Corrections to Rel-15 Further NB-IoT enhancements in 36.213, s14	Motorola mobility	36.213	15.3.0	NB_IOTenh2-Core	CR1193, F

[94b-NR-01-spec#]
Editors to prepare CRs to capture all agreements/working assumptions/TPs by Oct 19th, for comments and endorsement by Oct 26th
Done: The following set of CRs is agreed.

R1-1812090	CR to 38.211 capturing the RAN1#94bis meeting agreements	Ericsson	38.211	15.3.0	NR_newRAT-Core	CR0004, F
R1-1812091	CR to 38.212 capturing the RAN1#94bis meeting agreements	Huawei	38.212	15.3.0	NR_newRAT-Core	CR0005, F
R1-1812092	CR to 38.213 capturing the RAN1#94bis meeting agreements	Samsung	38.213	15.3.0	NR_newRAT-Core	CR0007, F
R1-1812093	CR to 38.214 capturing the RAN1#94bis meeting agreements	Nokia	38.214	15.3.0	NR_newRAT-Core	CR0006, F
R1-1812094	CR to 38.215 capturing the RAN1#94bis meeting agreements	Intel	38.215	15.3.0	NR_newRAT-Core	CR0005, F

- **Miscellaneous**

[94b-LTE-02] - Changhwan Park (LGE)
Rel-16 eMTC: Email discussion for evaluation parameters for dual layer transmission simulations until Oct 22nd
Done: According to email's decision posted on Oct.25th, the following is agreed:

Agreements:

- **T-put performance metric based on Rank 1 and Rank 2 will be shown by Hull-curve against SNR according to the simulation parameters given in Table 1**
  - **The SNR range is to be discussed, aiming to conclude in RAN1#95**
    - **In proposing the SNR range, companies are encouraged to check the WID and perform appropriate analysis considering relevant aspects related to non-BL & CE mode A**

Table 1. Link-level simulation parameters for Dual-layer transmission for non-BL UEs in CE mode A

Parameter	Value
Frequency	700MHz
Channel	EPA with low correlation according to Table B.5.2-2 in TS 36.104
eNB Antenna configurations	4 Tx, Cross-polarization: +/-45 degrees
UE configurations	Speed: 1km/h
	2 Rx with X-polarized: 0/+90 degrees
Traffic load	Full Buffer
Transmission scheme	TM9 with fixed rank
PDSCH	6 RBs with 1, 2, 4, and 8 repetitions
corReceiver	Non-Ideal DMRS channel estimation and interference estimation
	LMMSE-IRC receiver
Overhead	2 symbols for DL CCHs, 2 CRS ports and 2 DM-RS ports
CSI/Precoding	No rank adaptation (Rank 1 and Rank 2) Fixed CQI and feedback wideband PMI with periodicity of 10msec (Channel reciprocity property in TDD system can be used for DL PMI adjustment)
Rate control	Target 10% BLER after 1st transmission
Cyclic prefix	Normal CP

[94b-LTE-03] - Alberto (Qualcomm)

Rel-16 EN-TV: Email approval to collect input on requirements not requiring simulations and update TR with the collected inputs until Oct 25th

Done: According to email's decision posted on Nov.1st, the following is agreed:

Agreements:

- **All proposals & TPs in R1-1811738 are agreed, except:**

- FFS proposal 5 & TP4
- Replacing Rel-15 by Rel-14 in the proposals & TPs

R1-1811738 Email discussion on requirements not requiring simulations Qualcomm Incorporated
R1-1811739 LS on 5G requirements for dedicated broadcast networks RAN1, Qualcomm
Decision: LS to SA2 is approved.

[94b-LTE-04] - Alberto (Qualcomm)
Rel-16 EN-TV: Email approval on

- Fast fading channel type parameters for system level simulations (until Oct 16th)
- Parameters for link level simulations (until Oct 16th)
- A potential in-car scenario and its associated parameters. (until Oct 21st)
- Potential prioritization of combinations of scenarios and receiver types (until Oct 16th)

Done: According to email's decision posted on Oct.22nd, the following is agreed:
Agreements:

- For fast fading generation,
  - For RAN1#95
    - Delay spread and path delay profile: adopt UMA/RMA model (according to TR 38.901 sc. 7.5 step 5 and 6 and ITU-R M.2412 sc. 4.3 step 5 and 6), all scenarios
    - Fading distribution: Rayleigh except for the first path of rooftop (Rice). For rooftop, used fixed K=10dB
      - NOTE: this intends to describe the following procedure:
        - Run up to step 6 to obtain the delay coefficients per cluster (e.g. for RMa LOS, 11 clusters)
        - Normalized as described
        - Instead of generating the rays per cluster, simply take each of the delay coefficients for each cluster and generate a Gaussian random variable with the variance according to the power of the cluster. This is equivalent to using step 10b in ITU-R M.2135 and assuming uncorrelated antennas.
    - These initial evaluations can be used for evaluating the baseline and for proposing potential enhancements, to be further verified in RAN1#96.
  - For RAN1#96
    - Discuss whether to keep RAN1#95 modelling or move to complete UMa/RMa 2D/3D with ITU-T P.1546 50/1 for all scenarios. FFS:
      - tx/rx horizontal/vertical antenna patterns
      - number of tx/rx antenna elements and antenna configuration
      - 3D vs. 2D for each scenario
      - To be discussed during RAN1#95
- LLS parameters are given by Table 1.

Table 1 LLS parameters

Parameter	Values
System BW	10 MHz
Carrier frequency	700 MHz
CP/Numerology	CAS/SC-PTM: 4.7 us, 16.6us PMCH: 15kHz/7.5kHz/1.25kHz as baseline.
Doppler frequency	1Hz (rooftop antenna), Up to 120km/h and 250km/h for car-mounted/in-car, up to 3km/h for Indoor
Reference signal pattern	For existing numerologies, use existing reference signal patterns as baseline.
Channel estimation	Realistic based on RS design
Channel model	To be determined from system level evaluations for different ISDs. TDL-i for NLOS and TDL-v for LOS with the scaled delay spread derived from system level simulations.
Number of Rx antennas at the UE	Rooftop: 1 (baseline) /2 Mobile/car receiver: 2
MCS	Fixed MCS, selected by proponent
NOTE: Potential enhancements, including evaluations, can be presented to RAN1#95	

- For in-car scenario, use μ = 9dB, and σ = 5dB for I2O loss, shadowing standard deviation of 8dB (rural) and 6dB (urban), and receiver antenna gain of -7.35dBi
- Prioritize the scenarios highlighted in Table 4. RAN1 should strive towards providing the complete set of simulation results

Table 4 Scenarios for prioritization

	MPMT	HPHT-1	HPHT-2	LPLT
Rooftop	QC, BBC, ABS, HW	QC, BBC	ABS, HW	ABS, HW
Car-Mounted	QC, BBC, ABS, HW	BBC	HW	BBC, ABS, HW
In-Car Handset	BBC, ABS, HW		HW	QC, BBC, ABS, HW
Indoor	ABS, HW		ABS, HW	ABS, HW

QC: Qualcomm; BBC: British Broadcasting Corp.; ABS: Academy of Broadcasting Science; HW: Huawei

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[94b-NR-02] – Suzuki (Panasonic)
Re-15 CR email discussion till Oct 26th
Proposal: If consistent control information of DCI format is not detected in a PDCCH, the DCI in the PDCCH is discarded.
Done: According to email's decision posted on Nov. 1st, the following is agreed:

Agreements:

- **If a UE detects a DCI format with inconsistent information, the UE discards all the information in the DCI format.**
  - **The inconsistent information detection is not "process" in UE feature list. (Not to be captured in the spec).**
  - **The similar wording is applied for revising "non-matching CRC" in TS38.213 10.2. (Up to editor).**

[94b-NR-03] – Fred (NTT DOCOMO)
Re-15 CR email discussion till Oct 26th
Proposals:

Option 1: When the CORESET ID field is 0, the TCI state ID field in the MAC-CE indicates a TCI-state in the *PDSCH-Config*.

- For CORESET#0,
  - A UE follows the indicated TCI state or the QCL-D of the SSB which is selected through the random access procedure, whichever comes the recent.
  - A UE is expected to be configured only with TCI state of CSI-RS/TRS for which SSB source exists.
  - It is up to NW whether to indicate the TCI-state for the CORESET#0 by the MAC-CE.
    - If the TCI-state for the CORESET#0 is not indicated by the MAC-CE, the UE can receive any PDCCH with any RNTI on the CORESET#0
  - Note: In RRC connected mode, for CORESET other than #0, MAC-CE indicates a TCI-state in the *PDSCH-Config* RRC IE with the restriction of the TCI-state indexes configured for the *CORESET* RRC IE
  - Note: it is gNB responsibility whether/how to ensure the performance of broadcast PDCCH whose QCL-TypeD is TRS
  - Note: The active TCI state for the CORESET#0 is counted as 1 in the UE capability signalling

Option 2: When the CORESET ID field is 0, the TCI state ID field in the MAC-CE indicates an SSB index. A UE follows the indicated SSB or an SSB which is selected through the random access procedure, whichever comes the recent. When the ra-SearchSpace is associated to the CORESET#0, CSI-RS based RA is not supported, as the consequence of this option. BFD of CORESET#0 is not required.
It is up to NW whether to use the same beam as for SSB or narrower beam to transmit a PDCCH on the CORESET#0.
If an indicated SSB has an associated TRS/CSI-RS, it is up to UE whether to use the associated TRS/CSI-RS as the QCL source for the CORESET#0.

Done: According to email's decision posted on Nov. 3rd, RAN1 didn't reach any conclusion regarding the existing two options – to be further discussed in RAN1#95. A summary of the email thread will be produced as input to next RAN1 meeting and treated as the first topic for NR maintenance.

[94b-NR-04] – Lihui (NTT DOCOMO)
Rel-15 CR email discussion on the issue 2.1 of R1-182054 till Oct 26th
Done: According to email's decision posted on Nov. 1st, the following is agreed:

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Agreements:

- **For a configured grant PUSCH, *tp-pi2BPSK* in the *PUSCH-Config* is applied if the *transformPrecoder* is enabled in *ConfiguredGantConfig*.**
- **For a PUSCH transmitted on a Type1/Type2 configured grant, all parameters in the *ConfiguredGrantConfig* are applied for the PUSCH.**
- **For Type2 configured grant PUSCH triggered by a DCI format 0_1 with NDI=0:**
  - **All parameters in the *ConfiguredGrantConfig* are applied for the PUSCH.**
- **For Type2 configured grant PUSCH triggered by a DCI format 0_0 with NDI=0:**
  - **At least when the DCI is detected in USS, all parameters in the *ConfiguredGrantConfig* are applied for the PUSCH.**
  - **Conclude whether the application of *transformPrecoder* in the *RACH-ConfigCommon* is based on CSS or USS for configured grant at RAN1#95 meeting.**
- **For Type1/Type2 configured grant PUSCH triggered by a DCI format 0_1 with NDI=1:**
  - **All parameters in the *PUSCH-Config* are applied for the PUSCH except parameters *mcs-Table/mcs-TableTransformPrecoder, P0-PUSCH-Alpha* and *powerControlLoopToUse* which provided by *ConfiguredGrantConfig* are applied.**
- **For Type1/Type2 configured grant PUSCH triggered by a DCI format 0_0 with NDI=1:**
  - **All parameters in the *PUSCH-Config* are applied for the PUSCH except following:**
    - ***P0-PUSCH-Alpha*, and *powerControlLoopToUse* are from the *ConfiguredGrantConfig*.**
    - **Conclude at RAN1 #95 meeting that whether the application of *transformPrecoder* in the *RACH-ConfigCommon* or *PUSCH-Config* and *mcs-Table/mcs-TableTransformPrecoder* depends on whether the DCI is detected in CSS or USS.**
- **At least align the bit widths of Frequency domain resource assignment and Frequency hopping flag field in DCI format 0_1 between the DCI with CRC scrambled by CS-RNTI with NDI=0 and the DCI with CRC scrambled by CS-RNTI with NDI=1 to avoid the ambiguity of NDI filed position in the DCI.**
- **Conclude at RAN1 #95 meeting on how to align the total size of DCI format 0_1 with CRC scrambled by CS-RNTI and DCI format 0_1 with CRC scrambled by C-RNTI.**

[94b-NR-05] – Li (ZTE)
Rel-16 NOMA: Email approval of the TP in R1-1812076 for the Annex parts till Oct 26th (including possibility of adding/updating additional abstraction methods)
Done: According to email's decision posted on Oct.31st, the following is agreed:
Agreements:

- **Capture the link-to-system mapping methods in R1-1812096 to the Annex of TR38.812, except section 2.1.3.**
- **The text in section 2.1.3 in R1-1812096 is agreed in principle**
  - **Further refine the text in RAN1#95**
  - **Further discuss whether or not to capture it in the TP in RAN1#95.**

R1-1812096 **Email discussion on the PHY abstraction methods for NOMA SLS ZTE**

[94b-NR-06] – Li (ZTE)
Rel-16 NOMA: Email discussion for more observations based on LLS till Oct 26th
Done: According to email's decision posted on Oct.31st, the following is agreed:

Agreements:

- **Proposal 1, Individual observations for more simulated cases, & General observations in R1-1812095 are agreed, with the following update:**
  - **Under general observations for case 32-35**
    - **Opt 2: update 5dB to [9dB] for case 32 and 34**

R1-1812095 Email discussion of more observations on LLS results ZTE

[94b-NR-07] – Thomas (ATT)

Rel-16 IAB: Email approval for the TP capturing all agreements, till Oct 19th

Done: According to email's decision posted on Oct.20th, TP is endorsed as:

R1-1812078 TP for 38.874 on PHY Enhancements for NR IAB AT&T Rel-16 38.874 FS_NR_IAB

[94b-NR-08] – Arjun (Qualcomm)

Email discussion/approval on the CDL model parameters till Oct 22nd

Done: According to email's decision posted on Oct.25th, proposals 1 and 2 in R1-1812083 are agreed.

R1-1812083 Link Level CDL Models for NR-V2X Channels Qualcomm

[94b-NR-09] - Youngsoo Yuk (Nokia)

Email discussion until Oct 19th on potential simplification of SLS for beam management

Done: According to email's decision posted on Oct.23rd, the following is agreed:

Agreements: Adopt the following simulation assumptions in the table 1 and table 2 for evaluating techniques on multi-beam enhancement

Table 1: Simulation assumptions for multi-beam enhancement. (LLS)

Parameters	Values
Carrier Frequency	30 GHz
Subcarrier Spacing for data	For 30 GHz: 120kHz
Data allocation	Each company to provide details on the assumption for the “data allocation”
Channel Model	CDL-A /B/C model (LOS model e.g. CDL-D/E as optional) - delay spread =30ns, 100ns - UE speed=3km/h. (baseline), 30, 60km/h (optional) - The angles of BS, i.e., AoD, ZoD, are uniformly distributed within [-60, 60] degrees in azimuth domain and [90, 135] degrees in zenith domain, and those of UE, i.e., AoA, ZoA, are uniformly distributed within [-180, 180] degrees in azimuth domain and [45, 90] in zenith domain, via applying uniform-distribution desired mean angle in subclause 7.7.5.1 in TR 38.901 accordingly. Companies to report phase noise modelling and PTRS considerations if used.
TXRU mapping to antenna elements	Companies explain details of the using TXRU mapping to antenna elements. Notes: 2D DFT based beam per polarization as a baseline;
TXRU mapping weights	Companies to provide details on TXRU mapping weights.
Procedure of beam sweeping	Companies to provide details on procedure of beam sweeping.
Criteria for beam selection	Companies to provide details on criteria for beam selection.
UE reporting	Companies to provide details on criteria for UE reporting.
BS antenna configurations	Either Options can be considered as baseline. Option 1: $(M, N, P, M_g, N_g; M_p, N_p) = (4, 8, 2, 2, 2; 1, 1)$. $((d_V, d_H) = (0.5, 0.5)\ \lambda$. $(d_{g,V}, d_{g,H}) = (2.0, 4.0)\ \lambda$ Option 2: $(M, N, P, M_g, N_g; M_p, N_p) = (4, 8, 2, \underline{1, 1}; 1, 1)$. $(d_V, d_H) = (0.5, 0.5)\ \lambda$ Other Antenna configuration is not precluded.
BS antenna element radiation pattern	For 30 GHz: According to TR38.802
UE antenna configurations	*$(M, N, P, M_g, N_g; M_p, N_p) = (2, 4, 2, 1, 2; 1, 1)$; baseline for UL panel-specific beam selection* *$(d_V, d_H) = (0.5, 0.5)\lambda$. $(d_{g,V}, d_{g,H}) = (0, 0)\lambda$.* *$(M, N, P, M_g, N_g; M_p, N_p) = (2, 4, 2, 1, 1; 1, 1)$; also can be used except for evaluating UL panel-specific beam selection* ** $\Theta_{mg,ng}=90°$; $\Omega_{0,1}=\Omega_{0,0}+180°$;* *Other Antenna configuration is not precluded.*
BS array orientation	azimuth 0 degree; mechanic downtilt: 0 degree

UE array orientation	$\Omega_{UT,a}$ uniformly distributed on [0, 360] degree, $\Omega_{UT,b}$ = 0°, $\Omega_{UT,g}$ = 0° (baseline)
UE antenna element radiation pattern	See Table A.2.1-8 in TR 38.802
UE mobility feature	Add-on features including UE mobility, rotation, blockage, etc. can be optionally considered. Note: Companies explain whether or which model is used in simulation evaluation. If used, the configuration details should be explained Note: companies are encouraged to apply UE mobility/rotation/blockage in evaluations and report the related details
Transmission scheme	Multi-antenna port transmission schemes Note: Companies explain details of the using transmission scheme.
MIMO mode	SU-MIMO
UE receiver type	MMSE-IRC as baseline; other advanced receiver is not precluded.
Link adaptation	Based on CSI-RS

Table 2: Evaluation assumptions for multi-beam enhancement (SLS)

Parameters	Values
Scenarios	Indoor hotspot Dense Urban Micro layer only (Either options below can be considered.) Option 1: 2 tier (7 sites with 21 cells) or Option 2: 3 tier (19 sites with 57 cells)
Mode	DL SU-MIMO/ MU-MIMO
Simulation bandwidth	80MHz (DL+UL), TDD
Subcarrier Spacing for data	120kHz, (Other subcarrier spacings can be considered)
Channel Model	Following related assumption in TR 38.802/38.901
TXRU mapping to antenna elements	Companies explain the details of TXRU mapping to antenna elements. Notes: 2D DFT based beam per polarization as a baseline;
TXRU mapping weights	Companies explain the details of TXRU mapping weights.
Criteria for selection for serving TRP	Companies explain the details of criteria for selection for serving TRP.
Criteria for beam selection for serving TRP	Companies explain the details of criteria for beam selection for serving TRP.
Constraints for the range of selective beams per TRP sector	Companies explain what scheme is used
Scheduling algorithm	Companies explain what scheme is used
Link adaptation	Based on CSI-RS.
Traffic Model	FTP model 1 with packet size 0.5Mbytes as baseline, and FTP mode 3 and/or other packet size (e.g. 2Mbyte) can be considered.
BS antenna configurations	Either Options can be considered as baseline. Option 1: $(M, N, P, M_g, N_{g;} M_{p,} N_p) = (4, 8, 2, 2, 2; 1 , 1)$. $((d_V, d_H) = (0.5, 0.5) \lambda$. $(d_{g,V}, d_{g,H}) = (2.0, 4.0) \lambda$ Option 2: $(M, N, P, M_g, N_{g;} M_{p,} N_p) = (4, 8, 2, \underline{1, 1;} 1, 1)$. $(d_V, d_H) = (0.5, 0.5) \lambda$ Other Antenna configuration is not precluded. Example of other options. $(M, N, P, M_g, N_{g;} M_{p,} N_p) = (8, 8, 2, 1, 2; 1 , 1)$. $((d_V, d_H) = (0.5, 0.5) \lambda$. $(d_{g,V}, d_{g,H}) = (2.0, 4.0) \lambda$ or $(M, N, P, M_g, N_{g;} M_{p,} N_p) = (4, 16, 2, 2, 2; 1, 1)$. $(d_V, d_H) = (0.5, 0.5) \lambda$ $(d_{g,V}, d_{g,H}) = (2.0, 4.0) \lambda$
BS antenna element radiation pattern	According to TR38.802
UE antenna configurations	$(M, N, P, M_g, N_{g;} M_{p,} N_p) = (2, 4, 2, 1, 2; 1, 1)$; $(d_V, d_H) = (0.5, 0.5) \lambda$. $(d_{g,V}, d_{g,H}) = (0, 0) \lambda$. $*\Theta_{mg,ng}=90°$; $\Omega_{0,1}=\Omega_{0,0}+180°$; as baseline Other configuration is not precluded.
UE antenna element radiation pattern	See Table A.2.1-8 in TR 38.802

Inter-panel calibration for UE	Ideal or non-ideal calibration, companies to report the selected assumption
Beam correspondence	Companies report details of the assumptions
Control and RS overhead	Companies report details of the assumptions
Control channel decoding	Ideal or Non-ideal (Companies explain how is modelled)
UE receiver type	MMSE-IRC as the baseline, other advanced receiver is not precluded
BF scheme	Companies explain what scheme is used
Transmission scheme	Multi-antenna port transmission schemes Note: Companies explain details of the using transmission scheme.
UE mobility feature	Add-on features including UE mobility, rotation, blockage, etc. can be optionally considered. Note: Companies explain whether or which model is used in simulation evaluation. If used, the configuration details should be explained Note: companies are encouraged to apply UE mobility/rotation/blockage in evaluations and report the related details

[94b-NR-10] - Peter (Qualcomm)

Email discussion for power modelling for RRM measurement /search till Oct 18th, with the expectation to have firm numbers (i.e. without brackets)

Done: According to email's decision posted on Oct.22nd, section 1.1.1.1 of R1-1812079 is agreed. As to section 1.1.1.2, it can be used as a starting point for further discussion in RAN1#95.

R1-1812079 [94b-NR-10] Power modelling for RRM measurement /search Qualcomm

Annex G: List of participants at RAN1 #94 bis

Please see excel file attached to this report

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Annex H: TSG RAN WG1 meetings in 2018 – 2019

TITLE	TYPE	DATES	LOCATION	CTRY
3GPPRAN1#95	WG	12 – 16 Nov 2018	Spokane	US
3GPPRAN1-AH-1901	AH	21 - 25 Jan 2019	Taipei	Taiwan
3GPPRAN1#96	WG	25 Feb - 1 Mar 2019	Athens	Greece
3GPPRAN1#96bis	WG	8 - 12 Apr 2019	China	China
3GPPRAN1#97	WG	13 - 17 May 2019	US	US
3GPPRAN1-AH-1906-TBC	AH	24 - 28 Jun 2019	Cancelled	-
3GPPRAN1#98	WG	26 - 30 Aug 2019	Prague	CZ
3GPPRAN1#98bis	WG	14 - 18 Oct 2019	China	China
3GPPRAN1#99	WG	18 - 22 Nov 2019	US	US

MEETING TYPES		
AH = Ad Hoc	ST = Startup Meeting	RG = Rapporteurs Group
JM = Joint	WG = Working Group	SG = Steering Group
PM = Preparatory Meeting	CM = Chairmen's meeting	TG = Task Group
RM = Resolution Meeting	OR = Ordinary	XO = Extraordinary

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Appendix F

TDoc	Title	Source	TDoc Status	Reservation date	Uploaded
R1-1810050	Draft Agenda of RAN1#94bis meeting	RAN1	approved	2018-09-17 12:44:32	2018-09-25 06:02:43
R1-1810051	Report of RAN1#94 meeting	ETSI	approved	2018-09-17 12:44:32	2018-10-04 21:28:35
R1-1810052	Highlights from RAN#81	RAN1	noted	2018-09-17 12:44:32	2018-09-25 06:02:43
R1-1810053	Reply LS on adjacent TDM combinations of SRS for antenna switching and other UL physical	RAN4, Huawei	treated	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810054	LS to RAN1 on intra-band LAA aggregation	RAN4,	treated	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810055	LS on the beam correspondence requirement for	RAN4,	treated	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810056	LS on Initial Active BWP for Pattern 2 and	RAN4,	treated	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810057	LS to RAN2 on removing a sentence related to restriction for intra-band LAA aggregation	RAN4, Ericsson	noted	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810058	LS on SFTD scenarios for late drop	RAN4,	noted	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810059	Reply LS on RAN2 progress on ANR	RAN4,	noted	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810060	Reply LS to IEEE 802.11 working group in relation to certain channel combinations for LAA	RAN4, Ericsson	noted	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810061	LS reply to RAN 3 on L2 measurement	SA5,	noted	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810062	LS reply on L2 measurement	SA5,	noted	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810063	LS on UE feature list for NR	RAN4, NTT	treated	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810064	LS on UE feature list for LTE	RAN4, NTT	treated	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810065	LS on L1 capabilities	RAN2,	treated	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810066	Reply LS on power class for FR1 EN-DC and	RAN2,	treated	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810067	LS to RAN1 on SSBs per RACH occasion	RAN2,	treated	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810068	LS on intra-band combination for NR CA and MR-DC	RAN2, NTT	treated	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810069	LS on the RRC message size restriction	RAN2,	treated	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810070	LS on corrections to CSS configurations	RAN2,	treated	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810071	LS on Preamble Power Ramping Counter	RAN2,	treated	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810072	Reply LS on the transmission of video over PC5	RAN2,	noted	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810073	Reply LS on potential enhancement of DR-mode	RAN2,	noted	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810074	LS on TSN integration in the 5G System	SA2,	treated	2018-09-17 12:44:32	2018-09-17 16:10:30
R1-1810075	LS on RAN1 NR UE feature list	RAN,	treated	2018-09-18 20:01:46	2018-09-18 20:06:53
R1-1810076	Reply LS on proposed joint Coexistence Workshop	RAN, Qualcom	noted	2018-09-18 20:01:46	2018-09-18 20:06:53
R1-1810077	LS on RAN4 NR UE feature list	RAN,	noted	2018-09-18 20:01:46	2018-09-18 20:06:53
R1-1810078	LS on RAN4 Rel.15 LTE UE feature list	RAN,	noted	2018-09-18 20:01:46	2018-09-18 20:06:53
R1-1810079	LS regarding LTE LAA channel combinations for 5GHz	RAN, Charter	treated	2018-09-18 20:01:46	2018-09-18 20:06:53
R1-1810080	Reply LS to IEEE 802.11 working group in relation to certain channel combinations for LAA	RAN, Charter	noted	2018-09-18 20:01:46	2018-09-18 20:06:53
R1-1810081	Additional enhancements for NB-IoT workplan	Huawei,	noted	2018-09-20 00:02:12	2018-09-29 04:53:48
R1-1810082	On support for UE-group wake-up signal	Huawei,	available	2018-09-20 00:02:12	2018-09-29 04:53:48
R1-1810083	On support for transmission in preconfigured UL resources	Huawei, HiSilicon	available	2018-09-20 00:02:12	2018-09-29 04:53:48
R1-1810084	Scheduling multiple DL/UL transport blocks for SC-PTM and unicast	Huawei, HiSilicon	available	2018-09-20 00:02:12	2018-09-29 04:53:48
R1-1810085	Discussion on NB-IoT coexistence with NR	Huawei,	available	2018-09-20 00:02:12	2018-09-29 04:53:48
R1-1810086	On support of Msg3 quality reporting for non-anchor access	Huawei, HiSilicon	available	2018-09-20 00:02:12	2018-09-29 04:53:48
R1-1810087	NRS presence on non-anchor carriers for paging	Huawei, HiSilicon	available	2018-09-20 00:02:12	2018-09-29 04:53:48
R1-1810088	Support of sub-groups for MWUS	Huawei,	available	2018-09-20 00:02:12	2018-09-29 04:12:59
R1-1810089	UL transmission in preconfigured resource	Huawei, HiSilicon	available	2018-09-20 00:02:12	2018-09-29 04:12:59
R1-1810090	Scheduling of multiple transport blocks	Huawei, HiSilicon	available	2018-09-20 00:02:12	2018-09-29 04:12:59
R1-1810091	Channel quality reporting in Msg3	Huawei,	available	2018-09-20 00:02:12	2018-09-29 04:12:59
R1-1810092	On MPDCCH performance improvement	Huawei,	available	2018-09-20 00:02:12	2018-09-29 04:12:59
R1-1810093	Coverage enhancement for Non-BL UE	Huawei, HiSilicon	available	2018-09-20 00:02:12	2018-09-29 04:12:59

R1-1810094	DL transmission on LTE control channel region	Huawei, HiSilicon	available	2018-09-20 00:02:12	2018-09-29 04:12:59
R1-1810095	Considerations on improving DL measurement accuracy	Huawei, HiSilicon	available	2018-09-20 00:02:12	2018-09-29 04:12:59
R1-1810096	Remaining issues on downlink signals and channels	Huawei, HiSilicon	revised	2018-09-20 00:14:53	2018-09-29 03:56:01
R1-1810097	Remaining issues on physical random access channel and procedure	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 03:56:01
R1-1810098	Remaining issues on mobility procedure	Huawei,	available	2018-09-20 00:14:53	2018-09-29 03:56:01
R1-1810099	Maintenance for CSI acquisition	Huawei,	available	2018-09-20 00:14:53	2018-09-29 03:55:13
R1-1810100	Maintenance for beam management	Huawei,	available	2018-09-20 00:14:53	2018-09-29 03:56:01
R1-1810101	Maintenance for reference signals and QCL	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 03:56:01
R1-1810102	Remaining issues on simultaneous reception or transmission over CC/BWP(s)	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 03:56:01
R1-1810103	Discussion on CSI enhancement for MU-MIMO	Huawei,	available	2018-09-20 00:14:53	2018-09-29 03:56:01
R1-1810104	Enhancements on multi-TRP/panel transmission	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 03:56:01
R1-1810105	Beam management enhancements for latency and overhead reduction	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 03:56:01
R1-1810106	Beam failure recovery for SCell	Huawei,	available	2018-09-20 00:14:53	2018-09-29 03:56:01
R1-1810107	Panel-based UL beam selection	Huawei,	available	2018-09-20 00:14:53	2018-09-29 03:56:01
R1-1810108	Beam measurement and reporting using L1-	Huawei,	available	2018-09-20 00:14:53	2018-09-29 03:56:01
R1-1810109	Corrections for TR38.811 Chapter 6 (Non-Terrestrial Networks channel models)	Huawei, HiSilicon, Nokia,	available	2018-09-20 00:14:53	2018-09-29 01:43:00
R1-1810110	Remaining issues for physical uplink control channel	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 01:43:00
R1-1810111	Remaining issues for physical downlink control channel	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 01:43:00
R1-1810112	Corrections on bandwidth part and CA	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 03:55:14
R1-1810113	Corrections on scheduling and HARQ	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 03:55:14
R1-1810114	Remaining issues on LTE-NR coexistence	Huawei,	noted	2018-09-20 00:14:53	2018-09-29 03:55:13
R1-1810115	Discussion on UE power control	Huawei,	noted	2018-09-20 00:14:53	2018-09-29 03:55:13
R1-1810116	Discussion on the design of SCMA	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 06:21:17
R1-1810117	Discussion on the design of NOMA receiver	Huawei,	revised	2018-09-20 00:14:53	2018-09-29 07:05:46
R1-1810118	Discussion on NOMA related procedures	Huawei,	available	2018-09-20 00:14:53	2018-09-29 06:21:17
R1-1810119	Further discussion on NOMA evaluations	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 06:21:17
R1-1810120	Evaluation results for the mMTC scenario	Huawei,	available	2018-09-20 00:14:53	2018-09-29 06:21:17
R1-1810121	Evaluation results for the URLLC scenario	Huawei,	available	2018-09-20 00:14:53	2018-09-29 06:21:17
R1-1810122	Evaluation results for the eMBB scenario	Huawei,	available	2018-09-20 00:14:53	2018-09-29 06:21:17
R1-1810123	NR numerology and frame structure for	Huawei,	available	2018-09-20 00:14:53	2018-09-29 01:43:00
R1-1810124	DL channels and signals in NR unlicensed band	Huawei,	available	2018-09-20 00:14:53	2018-09-29 01:43:00
R1-1810125	UL PHY channels for NR unlicensed	Huawei,	available	2018-09-20 00:14:53	2018-09-29 01:43:00
R1-1810126	Coexistence and channel access for NR unlicensed band operations	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 01:43:00
R1-1810127	Initial access in NR unlicensed	Huawei,	available	2018-09-20 00:14:53	2018-09-29 01:43:00
R1-1810128	HARQ enhancement in NR unlicensed	Huawei,	available	2018-09-20 00:14:53	2018-09-29 01:43:00
R1-1810129	Transmission with configured grant in NR unlicensed band	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 01:43:00
R1-1810130	Physical layer design for NR IAB	Huawei, HiSilicon	noted	2018-09-20 00:14:53	2018-09-29 03:55:13
R1-1810131	System performance evaluation in multi-hop topology IAB network	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 03:55:13
R1-1810132	On frame structure of IAB	Huawei,	available	2018-09-20 00:14:53	2018-09-29 03:55:13
R1-1810133	Further consideration on timing alignment for	Huawei,	available	2018-09-20 00:14:53	2018-09-29 03:55:13
R1-1810134	On cross-link interference in IAB	Huawei,	available	2018-09-20 00:14:53	2018-09-29 03:55:13
R1-1810135	On high order modulation for backhaul link	Huawei,	available	2018-09-20 00:14:53	2018-09-29 03:55:14
R1-1810136	HARQ-ACK enhancements for URLLC	Huawei,	available	2018-09-20 00:14:53	2018-09-29 04:16:37
R1-1810137	Support for sidelink unicast, groupcast, and broadcast	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 01:43:00

R1-1810138	Sidelink PHY structure and procedure for NR V2X	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 01:43:00
R1-1810139	Sidelink synchronization mechanisms for NR	Huawei,	available	2018-09-20 00:14:53	2018-09-29 01:43:00
R1-1810140	Sidelink resource allocation mechanism for NR	Huawei,	revised	2018-09-20 00:14:53	2018-09-29 01:43:00
R1-1810141	NR Uu and LTE Uu support and enhancement for advanced V2X use cases	Huawei, HiSilicon	noted	2018-09-20 00:14:53	2018-09-29 01:43:00
R1-1810142	LTE Uu support for advanced V2X use cases	Huawei,	available	2018-09-20 00:14:53	2018-09-29 01:43:00
R1-1810143	Discussion on NR sidelink resource allocation by NR Uu and LTE Uu	Huawei, HiSilicon	available	2018-09-20 00:14:53	2018-09-29 01:43:00
R1-1810144	Discussion on NR Uu to control LTE PC5	Huawei, HiSilicon	available	2018-09-20 00:14:54	2018-09-29 01:43:00
R1-1810145	QoS management for NR V2X	Huawei,	available	2018-09-20 00:14:54	2018-09-29 01:43:00
R1-1810146	Discussion on co-existence for NR V2X and LTE	Huawei,	noted	2018-09-20 00:14:54	2018-09-29 01:43:00
R1-1810147	Design considerations for RIM framework	Huawei, HiSilicon	available	2018-09-20 00:14:54	2018-09-29 03:55:13
R1-1810148	Discussion on remote interference mitigation mechanisms	Huawei, HiSilicon	noted	2018-09-20 00:14:54	2018-09-29 03:55:13
R1-1810149	Discussion on reference signal design for identifying remote interference	Huawei, HiSilicon	available	2018-09-20 00:14:54	2018-09-29 03:55:13
R1-1810150	Considerations on NR positioning	Huawei,	available	2018-09-20 00:14:54	2018-09-29 01:43:00
R1-1810151	Evaluation methodology for NR positioning	Huawei,	available	2018-09-20 00:14:54	2018-09-29 01:43:00
R1-1810152	Details of NR positioning techniques	Huawei,	available	2018-09-20 00:14:54	2018-09-29 01:43:00
R1-1810153	Evaluation methodology for UE power saving	Huawei,	available	2018-09-20 00:14:54	2018-09-29 01:43:00
R1-1810154	Power consumption reduction based on time/frequency/antenna adaptation	Huawei, HiSilicon	available	2018-09-20 00:14:54	2018-09-29 01:43:00
R1-1810155	Signaling based mechanisms for UE power saving	Huawei, HiSilicon	noted	2018-09-20 00:14:54	2018-09-29 01:43:00
R1-1810156	UE power consumption reduction in RRM measurements	Huawei, HiSilicon	available	2018-09-20 00:14:54	2018-09-29 01:43:00
R1-1810157	L1 enhancements for URLLC	Huawei,	available	2018-09-20 00:14:54	2018-09-29 04:16:37
R1-1810158	UL inter-UE transmission prioritization and	Huawei,	revised	2018-09-20 00:14:54	2018-09-29 04:16:37
R1-1810159	Enhanced UL configured grant transmissions	Huawei,	available	2018-09-20 00:14:54	2018-09-29 04:16:37
R1-1810160	Discussion on UL power control in case of UL DMRS sharing	Huawei, HiSilicon	noted	2018-09-20 00:53:33	2018-09-29 04:18:26
R1-1810161	Discussion on additional SRS symbols of normal UL subframe	Huawei, HiSilicon	available	2018-09-20 00:53:34	2018-09-29 04:18:26
R1-1810162	On virtual cell ID for SRS sequence generation	Huawei,	available	2018-09-20 00:53:34	2018-09-29 05:08:10
R1-1810163	Evaluation of additional SRS symbols for LTE	Huawei,	noted	2018-09-20 00:53:34	2018-09-29 04:18:26
R1-1810164	Introduction of configured PRG size for TM9 and TM10 in 36.213	Huawei, HiSilicon	available	2018-09-20 00:53:34	2018-09-29 04:18:26
R1-1810165	Discussion on PRG size for TM9 and TM10	Huawei,	noted	2018-09-20 00:53:34	2018-09-29 04:18:26
R1-1810166	Corrections on TBS determination for PDSCH of TM9 and TM10	Huawei, HiSilicon	noted	2018-09-20 00:53:34	2018-09-29 05:08:10
R1-1810167	Correction on aperiodic CSI-RS resource	Huawei,	revised	2018-09-20 00:53:34	2018-09-29 05:16:49
R1-1810168	Correction on aperiodic CSI-RS in 36.212	Huawei,	revised	2018-09-20 00:53:34	2018-09-29 05:16:49
R1-1810169	Relevant requirements for dedicated broadcast networks and evaluation methodology	Huawei, HiSilicon, Shanghai	noted	2018-09-20 00:53:34	2018-09-29 04:18:26
R1-1810170	Techniques for networks supporting TV services	Huawei, HiSilicon, Shanghai	noted	2018-09-20 00:53:34	2018-09-29 04:18:26
R1-1810171	Scenarios and simulation assumptions for "gap analysis"	Huawei, HiSilicon, Shanghai	noted	2018-09-20 00:53:34	2018-09-29 04:18:26
R1-1810172	Maintenance of Rel-15 URLLC	Ericsson	available	2018-09-20 04:43:52	2018-09-29 06:34:21
R1-1810173	Evaluation Methodology and Simulation Assumptions for Rel-16 NR URLLC	Ericsson	noted	2018-09-20 04:43:52	2018-09-29 06:34:21
R1-1810174	Enhancements to Uplink and Downlink Physical Channels for NR URLLC	Ericsson	available	2018-09-20 04:43:52	2018-09-29 06:34:21
R1-1810175	Inter-UE Prioritization and Multiplexing of UL	Ericsson	available	2018-09-20 04:43:52	2018-09-29 06:34:21
R1-1810176	Enhancements to UL Grant-free Transmission	Ericsson	available	2018-09-20 04:43:52	2018-09-29 06:34:21
R1-1810177	Latency Evaluation of Rel-15 URLLC	Ericsson	available	2018-09-20 04:43:52	2018-09-29 06:34:21
R1-1810178	Reliability Evaluation of Rel-15 Enabled URLLC	Ericsson	available	2018-09-20 04:43:52	2018-09-29 06:34:21
R1-1810179	Views on Resource Allocation of NR V2X	Hisense	available	2018-09-20 06:07:30	2018-09-28 06:37:28

R1-1810180	Considerations on transmission in preconfigured UL resources	Hisense	available	2018-09-20 06:12:37	2018-09-28 08:02:51
R1-1810181	Maintenance for Downlink signals and channels	ZTE	available	2018-09-20 06:30:28	2018-09-28 09:12:08
R1-1810182	Maintenance for Physical random access channel and procedure	ZTE	available	2018-09-20 06:30:29	2018-09-28 09:12:08
R1-1810183	Maintenance for Mobility procedure	ZTE	available	2018-09-20 06:30:29	2018-09-28 09:12:08
R1-1810184	WI work plan for Rel-16 LTE-MTC	Ericsson	available	2018-09-20 11:40:07	2018-09-29 02:34:08
R1-1810185	UE-group wake-up signal in LTE-MTC	Ericsson	available	2018-09-20 11:40:07	2018-09-29 02:34:08
R1-1810186	Support for transmission in preconfigured UL resources in LTE-MTC	Ericsson	available	2018-09-20 11:40:07	2018-09-29 02:34:08
R1-1810187	Scheduling of multiple DL/UL transport blocks in LTE-MTC	Ericsson	available	2018-09-20 11:40:07	2018-09-29 02:34:08
R1-1810188	Coexistence of LTE-MTC with NR	Ericsson	available	2018-09-20 11:40:07	2018-09-29 02:34:08
R1-1810189	Support of quality report in Msg3 in LTE-MTC	Ericsson	available	2018-09-20 11:40:07	2018-09-29 02:34:08
R1-1810190	MPDCCH performance improvement in LTE-	Ericsson	available	2018-09-20 11:40:07	2018-09-29 02:34:08
R1-1810191	CE mode A and B improvements for LTE-MTC non-BL UEs	Ericsson	available	2018-09-20 11:40:07	2018-09-29 02:34:08
R1-1810192	Use of LTE control channel region for DL transmission in LTE-MTC	Ericsson	available	2018-09-20 11:40:07	2018-09-29 02:34:08
R1-1810193	Use of RSS for measurement improvements in LTE-MTC	Ericsson	available	2018-09-20 11:40:07	2018-09-29 02:38:49
R1-1810194	UE-group wake-up signal in NB-IoT	Ericsson	available	2018-09-20 11:40:07	2018-09-29 02:42:36
R1-1810195	Support for transmission in preconfigured UL resources in NB-IoT	Ericsson	available	2018-09-20 11:40:07	2018-09-29 02:42:36
R1-1810196	Scheduling of multiple DL/UL transport blocks in NB-IoT	Ericsson	available	2018-09-20 11:40:07	2018-09-29 02:42:36
R1-1810197	Coexistence of NB-IoT with NR	Ericsson	available	2018-09-20 11:40:07	2018-09-29 03:01:20
R1-1810198	Support of quality report in Msg3 for non-anchor access in NB-IoT	Ericsson	available	2018-09-20 11:40:07	2018-09-29 02:42:36
R1-1810199	Presence of NRS on a non-anchor carrier for paging in NB-IoT	Ericsson	available	2018-09-20 11:40:07	2018-09-29 02:42:36
R1-1810200	Text proposal to capture agreements made in RAN1#94 to TR 38.812 (NOMA)	ZTE	revised	2018-09-20 13:09:51	2018-09-29 05:51:03
R1-1810201	Text proposal for various sections of TR 38.812	ZTE	noted	2018-09-20 13:09:51	2018-09-29 05:51:03
R1-1810202	Transmitter side designs for NOMA	ZTE	available	2018-09-20 13:09:51	2018-09-29 05:51:03
R1-1810203	Complexity analysis of NOMA receivers	ZTE	noted	2018-09-20 13:09:51	2018-09-29 05:51:03
R1-1810204	Procedures related to NOMA	ZTE	available	2018-09-20 13:09:51	2018-09-29 05:51:03
R1-1810205	Link and system simulation results summary for NOMA	ZTE	noted	2018-09-20 13:09:51	2018-09-29 05:51:03
R1-1810206	Detailed link-level simulation results for NOMA	ZTE	revised	2018-09-20 13:09:51	2018-09-29 05:51:03
R1-1810207	Detailed system-level simulation results for	ZTE	available	2018-09-20 13:09:51	2018-09-29 05:51:03
R1-1810208	Physical layer abstraction for NOMA SLS	ZTE	available	2018-09-20 13:09:51	2018-09-29 05:51:03
R1-1810209	Achieving ultra-low latency in SR-based URLLC UL transmission with minimum overhead	Idaho National	available	2018-09-20 22:55:31	2018-09-28 18:41:03
R1-1810210	Discussion on additional SRS symbols	ZTE	noted	2018-09-21 03:18:45	2018-09-29 05:51:36
R1-1810211	Discussion on virtual cell ID for SRS	ZTE	available	2018-09-21 03:18:45	2018-09-29 05:51:36
R1-1810212	Maintenance for Multi-antenna scheme	ZTE	available	2018-09-21 03:18:45	2018-09-29 05:51:36
R1-1810213	Maintenance for CSI acquisition	ZTE	available	2018-09-21 03:18:45	2018-09-29 05:56:45
R1-1810214	Maintenance for beam management	ZTE	available	2018-09-21 03:18:45	2018-09-29 05:51:36
R1-1810215	Maintenance for Reference signals and QCL	ZTE	available	2018-09-21 03:18:45	2018-09-29 05:51:36
R1-1810216	Simultaneous transmission and reception of	ZTE	available	2018-09-21 03:18:45	2018-09-29 05:51:36
R1-1810217	Maintenance for UL power control	ZTE	available	2018-09-21 03:18:45	2018-09-29 05:51:36
R1-1810218	Remaining issues on Rel-15 NR UE features	ZTE	noted	2018-09-21 03:18:45	2018-09-29 05:51:36
R1-1810219	Type II CSI enhancements for MU-MIMO	ZTE	available	2018-09-21 03:18:45	2018-09-29 05:51:36
R1-1810220	Enhancements on Multi-TRP/Panel Transmission	ZTE	available	2018-09-21 03:18:45	2018-09-29 05:51:36
R1-1810221	Enhancements on Multi-beam Operation	ZTE	available	2018-09-21 03:18:45	2018-09-29 05:51:36
R1-1810222	Discussion on full power scheme for UL	ZTE	available	2018-09-21 03:18:45	2018-09-29 05:51:36
R1-1810223	Discussion on Low PAPR RS	ZTE	noted	2018-09-21 03:18:45	2018-09-29 05:51:36

R1-1810224	Summary of email discussion [94-NR-06] on additional simulation assumptions for Rel-16 NR	Huawei	available	2018-09-21 08:21:03	2018-09-29 04:16:01
R1-1810225	Corrections related to CSI update capability for sTTI	LG Electroni	revised	2018-09-21 10:23:39	2018-09-29 05:21:07
R1-1810226	Discussion on synchronization parameter on RRC	LG Electroni	noted	2018-09-21 10:23:42	2018-09-29 05:57:59
R1-1810227	Maintenance for wake-up signal in MTC	LG	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810228	Correction to additional SIB1-NB-to-subframe mapping	LG Electroni	noted	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810229	Maintenance for wake-up signal in NB-IoT	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810230	Corrections on PDSCH repetition with eIMTA configuration	LG Electroni cs	noted	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810231	Discussion on UE-grouping wake up signal in	LG	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810232	Discussion on preconfigured UL resources in MTC	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810233	Discussion on multiple transport blocks scheduling in MTC	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810234	Discussion on coexistence of LTE-MTC with	LG	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810235	Downlink channel quality report during random access procedure	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810236	Discussion on MPDCCH performance	LG	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810237	CE mode improvements for non-BL Ues	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810238	On the use of LTE control channel region for LTE-MTC DL transmission	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810239	Discussion on the use of RSS for measurement improvement	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810240	Discussion on UE-grouping wake up signal in	LG	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810241	Discussion on preconfigured UL resources in NB-IoT	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810242	Discussion on multiple transport blocks scheduling in NB-IoT	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810243	Discussion on coexistence of NB-IoT with NR	LG	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810244	Downlink channel quality report during random access procedure on a non-anchor carrier	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810245	Discussion on NRS on an a non-anchor carrier	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810246	Enhancements on SRS resource allocation	LG	noted	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810247	Discussion on VCID for SRS sequence	LG	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810248	Maintenance for Downlink signals and channels	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810249	Maintenance for Physical random access channel and procedure	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810250	Maintenance for Mobility procedure	LG	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810251	Text proposals on multi-antenna scheme	LG	withdrawn	2018-09-21 10:23:42	
R1-1810252	Text proposals on CSI acquisition	LG	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810253	Text proposals on BM and BFR	LG	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810254	Text proposals on reference signals	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810255	Remaining issues on simultaneous Tx/Rx	LG	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810256	Remaining issues on downlink control channel	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810257	Correction on PUCCH and UCI multiplexing for NR	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810258	Discussion on DL/UL data scheduling and HARQ procedure	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810259	Remaining issues on NR LTE coexistence	LG	noted	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810260	Discussion on MCS table selection for URLLC	LG	available	2018-09-21 10:23:42	2018-09-29 05:21:07
R1-1810261	Transmitter side signal processing schemes for NCMA	LG Electroni	noted	2018-09-21 10:23:42	2018-09-29 05:23:48
R1-1810262	Discussion on the receiver types	LG	available	2018-09-21 10:23:42	2018-09-29 05:23:48
R1-1810263	Discussion on procedures related to NOMA	LG	available	2018-09-21 10:23:42	2018-09-29 05:23:48
R1-1810264	Further LLS evaluation for NOMA	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:23:48

R1-1810265	Simulation methodology for NR unlicensed	LG	available	2018-09-21 10:23:42	2018-09-29 05:23:48
R1-1810266	Frame structure for NR unlicensed operation	LG	available	2018-09-21 10:23:42	2018-09-29 05:23:48
R1-1810267	Physical layer design of DL signals and channels for NR unlicensed operation	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:23:48
R1-1810268	Physical layer design of UL signals and channels for NR unlicensed operation	LG Electroni	available	2018-09-21 10:23:42	2018-09-29 05:23:48
R1-1810269	Channel access procedure for NR unlicensed	LG	available	2018-09-21 10:23:42	2018-09-29 05:23:48
R1-1810270	Initial access and mobility for NR unlicensed	LG	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810271	HARQ procedure for NR unlicensed operation	LG	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810272	Discussion on configured grant for NR unlicensed operation	LG Electroni	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810273	Discussions on mechanisms to support NR IAB scenarios	LG Electroni	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810274	Discussions on detection and measurement	LG	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810275	Discussions on access and backhaul link multiplexing and timing	LG Electroni	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810276	Power control in IAB scenario	LG	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810277	Measurement enhancement for stage 2 in IAB	LG	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810278	Discussions on node behavior for IAB link	LG	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810279	Discussions on HARQ-ACK transmission for	LG	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810280	Discussion on support of unicast, groupcast and broadcast for NR sidelink	LG Electroni	revised	2018-09-21 10:23:43	2018-09-29 06:00:59
R1-1810281	Discussion on physical layer structure and procedures for NR sidelink	LG Electroni	noted	2018-09-21 10:23:43	2018-09-29 05:57:59
R1-1810282	Discussion on NR sidelink synchronization	LG	available	2018-09-21 10:23:43	2018-09-29 05:57:59
R1-1810283	Discussion on sidelink resource allocation	LG	available	2018-09-21 10:23:43	2018-09-29 06:43:15
R1-1810284	Summary of email discussion [94-NR-04] on NR V2X simulation assumptions	LG Electroni	noted	2018-09-21 10:23:43	2018-10-08 14:50:33
R1-1810285	Consideration on NR Uu for advanced V2X use cases	LG Electroni	available	2018-09-21 10:23:43	2018-09-29 05:57:59
R1-1810286	Consideration on enhancements of LTE Uu and NR Uu to control NR sidelink	LG Electroni	available	2018-09-21 10:23:43	2018-09-29 05:57:59
R1-1810287	Consideration on enhancements of NR Uu to control LTE sidelink	LG Electroni	available	2018-09-21 10:23:43	2018-09-29 05:57:59
R1-1810288	Discussion on QoS management for NR V2X	LG	available	2018-09-21 10:23:43	2018-09-29 05:57:59
R1-1810289	Discussion on coexistence mechanisms	LG	available	2018-09-21 10:23:43	2018-09-29 05:57:59
R1-1810290	Discussion on evaluations for NR RIM support	LG Electroni	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810291	Discussion on mechanism for NR RIM support	LG Electroni	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810292	Discussion on reference signal design for NR RIM support	LG Electroni	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810293	Remaining issues on evaluation methodology for NR URLLC	LG Electroni	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810294	Discussion on layer 1 enhancements for URLLC	LG	noted	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810295	Discussion on UL inter UE Tx prioritization	LG	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810296	Discussion on enhancement for grant-free	LG	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810297	Discussion on differentiation of eMBB and	LG	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810298	PDCCH performance evaluation for URLLC	LG	withdrawn	2018-09-21 10:23:43	
R1-1810299	Discussions on PUCCH performance for NR	LG	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810300	Discussion on HARQ-ACK enhancement for	LG	available	2018-09-21 10:23:43	2018-09-29 05:23:48
R1-1810301	Discussions on CSI Enhancement for MU-	LG	available	2018-09-21 10:23:43	2018-09-29 05:24:56
R1-1810302	Enhancements on multi-TRP/panel transmission	LG Electroni	available	2018-09-21 10:23:43	2018-09-29 05:24:56
R1-1810303	Discussion on multi-beam based operations and enhancements	LG Electroni	available	2018-09-21 10:23:43	2018-09-29 05:24:56
R1-1810304	Discussions on full Tx power uplink	LG	available	2018-09-21 10:23:43	2018-09-29 05:24:56
R1-1810305	Discussions on low PAPR RS	LG	available	2018-09-21 10:23:43	2018-09-29 05:24:56
R1-1810306	Discussion on evaluation methodology for UE	LG	available	2018-09-21 10:23:43	2018-09-29 05:24:56
R1-1810307	Discussion on UE power saving in NR	LG Electroni	available	2018-09-21 10:23:43	2018-09-29 05:24:56
R1-1810308	Discussions on triggering signaling for UE power saving	LG Electroni	available	2018-09-21 10:23:43	2018-09-29 05:24:56
R1-1810309	Considerations on RRM measurements to reduce UE power consumption	LG Electroni	available	2018-09-21 10:23:43	2018-09-29 05:24:56
R1-1810310	Discussion on power saving for DRX operation	LG	available	2018-09-21 10:23:43	2018-09-29 05:24:56

R1-1810311	Discussion on power saving for PDCCH	LG	available	2018-09-21 10:23:43	2018-09-29 05:24:56
R1-1810312	Discussion on power saving for CA operation	LG	available	2018-09-21 10:23:43	2018-09-29 05:24:56
R1-1810313	Discussions on Requirement for NR Positioning	LG	available	2018-09-21 10:23:43	2018-09-29 05:24:56
R1-1810314	Discussions on Evaluation Methodology for NR	LG	available	2018-09-21 10:23:43	2018-09-29 05:24:56
R1-1810315	Discussions on Possible Techniques for NR	LG	available	2018-09-21 10:23:43	2018-09-29 05:24:56
R1-1810316	Copy of LS from RAN to RAN4 on EN-DC Power Control	SPRINT Corporation	noted	2018-09-21 14:21:02	2018-09-26 17:50:55
R1-1810317	Intra-UE Prioritization and Multiplexing of UL	Ericsson	available	2018-09-21 23:49:38	2018-09-29 06:34:21
R1-1810318	Triggered A-CSI on PUCCH	Ericsson	available	2018-09-21 23:49:39	2018-09-29 06:34:21
R1-1810319	Public service broadcaster requirements and background information relevant to LTE-based 5G Terrestrial Broadcast	EBU, BBC. IRT	noted	2018-09-22 10:16:12	2018-09-28 10:15:24
R1-1810320	Scenarios and simulation assumptions for the LTE based terrestrial broadcast gap analysis	EBU, BBC, IRT	withdrawn	2018-09-22 11:31:32	2018-09-28 13:38:57
R1-1810321	Considerations on evaluation for NR positioning	ZTE	available	2018-09-23 08:28:05	2018-09-29 03:35:39
R1-1810322	Evaluation Results for NR-U	ZTE	available	2018-09-24 00:51:58	2018-09-29 03:53:35
R1-1810323	Discussion on Frame Structure for NR-U	ZTE	available	2018-09-24 00:51:58	2018-09-29 03:53:35
R1-1810324	Considerations on DL Reference Signals and Channels Design for NR-U	ZTE	available	2018-09-24 00:51:58	2018-09-29 03:53:35
R1-1810325	Considerations on UL Reference Signals and Channels Design for NR-U	ZTE	available	2018-09-24 00:51:58	2018-09-29 03:53:35
R1-1810326	Discussion on Channel Access Mechanism for	ZTE	available	2018-09-24 00:51:58	2018-09-29 03:53:35
R1-1810327	Discussion on Initial Access and Mobility for NR-	ZTE	available	2018-09-24 00:51:58	2018-09-29 03:53:35
R1-1810328	Discussion on Scheduling and HARQ for NR-U	ZTE	available	2018-09-24 00:51:58	2018-09-29 03:53:35
R1-1810329	Discussion on Configured Grant for NR-U	ZTE	available	2018-09-24 00:51:58	2018-09-29 03:53:35
R1-1810330	Evaluation Methodology and Preliminary Results for RIM	ZTE	noted	2018-09-24 00:51:58	2018-09-29 03:53:35
R1-1810331	Consideration on Mechanisms for Improving Network Robustness	ZTE	available	2018-09-24 00:51:58	2018-09-29 03:53:35
R1-1810332	Consideration on Mechanisms for Identifying Strong gNB Interference	ZTE	available	2018-09-24 00:51:58	2018-09-29 03:53:35
R1-1810333	Requirement to synchronization error	ZTE	available	2018-09-24 08:17:53	2018-09-29 03:35:39
R1-1810334	Considerations on coverage of NR positioning	ZTE	available	2018-09-24 08:19:54	2018-09-29 03:35:39
R1-1810335	Ray-tracing based channel simulation model in	ZTE	available	2018-09-24 08:22:33	2018-09-29 03:35:39
R1-1810336	Discussion on UE power consumption model and simulation assumptions	ZTE Corporati	available	2018-09-24 09:06:25	2018-09-29 04:35:51
R1-1810337	Consideration on potential techniques for UE power saving	ZTE Corporati	available	2018-09-24 09:10:25	2018-09-29 04:35:51
R1-1810338	Consideration on UE adaptation to the traffic and UE power consumption characteristics	ZTE Corporati	available	2018-09-24 09:13:14	2018-09-29 04:35:51
R1-1810339	Remaining issues on NR physical downlink control channel	ZTE	available	2018-09-24 15:07:28	2018-09-29 06:21:21
R1-1810340	Remaining issues on NR PUCCH	ZTE	available	2018-09-24 15:07:28	2018-09-29 06:21:21
R1-1810341	Remaining issues for resource allocation	ZTE	available	2018-09-24 15:07:28	2018-09-29 06:21:21
R1-1810342	Remaining issues on BWP	ZTE	available	2018-09-24 15:07:28	2018-09-29 06:21:21
R1-1810343	Remaining issues for ratematching	ZTE	available	2018-09-24 15:07:28	2018-09-29 06:21:21
R1-1810344	Discussion on evaluation methodology	ZTE	revised	2018-09-24 15:07:28	2018-09-29 06:21:21
R1-1810345	On URLLC Layer 1 enhancements	ZTE	revised	2018-09-24 15:07:28	2018-09-29 06:21:21
R1-1810346	On UL inter UE Tx prioritization/multiplexing	ZTE	available	2018-09-24 15:07:28	2018-09-29 06:21:21
R1-1810347	Enhancement for UL grant-free transmissions	ZTE	available	2018-09-24 15:07:28	2018-09-29 06:21:21
R1-1810348	Further issues related to URLLC enhancement	ZTE	available	2018-09-24 15:07:28	2018-09-29 06:21:21

R1-1810349	PUSCH and PUCCH time line for URLLC	ZTE	available	2018-09-24 15:07:28	2018-09-29 06:21:21
R1-1810350	Issues on URLLC resource allocation	ZTE	withdrawn	2018-09-24 15:07:28	
R1-1810351	On Physical Layer Enhancements for NR URLLC	CEWiT	available	2018-09-24 18:18:53	2018-10-04 21:15:54
R1-1810352	Correction on NB-IoT DL subframe definition on non-anchor carriers	Huawei, HiSilicon	revised	2018-09-24 18:34:12	2018-09-29 03:50:04
R1-1810353	Correction on NB-IoT DL subframe definition on non-anchor carriers	Huawei, HiSilicon	revised	2018-09-24 18:34:12	2018-09-29 03:50:04
R1-1810354	Corrections on NPRACH range enhancements	Huawei, HiSilicon	endorsed	2018-09-24 18:34:12	2018-09-29 03:50:04
R1-1810355	Corrections on interference randomization of	Huawei,	endorsed	2018-09-24 18:34:12	2018-09-29 03:50:04
R1-1810356	Corrections on additional SIB1-NB transmission	Huawei,	endorsed	2018-09-24 18:34:12	2018-09-29 03:50:04
R1-1810357	Draft reply LS on preamble power ramping	vivo	available	2018-09-25 04:05:16	2018-09-29 02:53:38
R1-1810358	Multiplexing methods for UE-group wake-up	vivo	available	2018-09-25 04:05:16	2018-09-29 04:56:01
R1-1810359	Multiplexing methods for UE-group wake-up	vivo	available	2018-09-25 04:05:16	2018-09-29 04:56:01
R1-1810360	Further discussion on SRS enhancements	vivo	available	2018-09-25 04:05:16	2018-09-29 02:53:38
R1-1810361	Remaining issues on broadcast signals and channels	vivo	available	2018-09-25 04:05:16	2018-09-29 03:10:32
R1-1810362	Remaining issues on RACH procedure	vivo	available	2018-09-25 04:05:16	2018-09-29 03:10:32
R1-1810363	Remaining issues on mobility procedure	vivo	available	2018-09-25 04:05:16	2018-09-29 03:10:32
R1-1810364	Maintenance for multi-antenna scheme	vivo	available	2018-09-25 04:05:16	2018-09-29 02:53:38
R1-1810365	Maintenance for CSI acquisition	vivo	available	2018-09-25 04:05:16	2018-09-29 02:53:38
R1-1810366	Maintenance for beam management	vivo	available	2018-09-25 04:05:16	2018-09-29 02:53:38
R1-1810367	Maintenance for reference signals and QCL	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810368	Maintenance for simultaneous reception of DL/UL physical channels and RSs	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810369	Remaining issues on physical downlink control channel	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810370	Remaining issues on PUCCH	vivo	available	2018-09-25 04:05:17	2018-09-29 04:51:15
R1-1810371	Remaining issues on scheduling and HARQ	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810372	Remaining issues on bandwidth parts	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810373	Maintenance for UL power control	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810374	Views on Remaining Rel-15 UE features	vivo	noted	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810375	Discussion on NOMA transmitters	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810376	Receiver design considerations for NOMA	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810377	Discussion on NOMA procedures	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810378	Evaluations for NOMA	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810379	Frame structure for NR-U operation	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810380	Discussion on physical DL channel design in unlicensed spectrum	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810381	Discussion on physical UL channel design in unlicensed spectrum	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810382	Discussion on the channel access procedures	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810383	Discussion on initial access for NR-U	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810384	Discussion on HARQ operation for NR-U	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810385	Discussion on the enhancements to configured grants	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810386	Discussion on sub-PRB interlace structure	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810387	Enhancements to support NR backhaul links	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810388	Support of unicast, groupcast and broadcast	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810389	Discussion on physical layer structure and procedure for NR sidelink	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810390	NR sidelink synchronization mechanism	vivo	noted	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810391	Discussion on resource allocation mechanism	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810392	Enhancements of NR and LTE Uu link to control NR sidelink	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32

R1-1810393	Enhancements of NR Uu link to control LTE sidelink	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810394	Discussion on coexistence between LTE and NR	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810395	Layer 1 enhancements for URLLC	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810396	UL inter UE Tx prioritization for URLLC	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810397	Enhanced UL grant-free transmissions for	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810398	Other enhancements for URLLC	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810399	UL intra UE Tx prioritization for URLLC	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810400	DL intra UE Tx prioritization for URLLC	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810401	Discussion on CSI enhancement for MU-MIMO	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810402	Discussion on enhancements on Multi-TRP/Panel transmission	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810403	Discussion on enhancements on Multi-beam	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810404	Discussion on full TX power UL transmission	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810405	Discussion on low PAPR RS	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810406	Consideration on multi-TRP transmission for	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810407	Discussion on UL non-coherent transmission for	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810408	Discussion on beam measurement and reporting	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810409	Discussion on Scell BFR	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810410	Discussion on UL multi-beam transmission	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810411	Discussion on beam management latency and overhead reduction	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810412	Evaluation methodology for NR UE power	vivo	available	2018-09-25 04:05:17	2018-09-29 04:56:01
R1-1810413	Techniques on UE adaptation to the traffic and UE power consumption characteristics	vivo	available	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810414	Discussion on triggering adaptation of UE power consumption characteristics	vivo	available	2018-09-25 04:05:17	2018-09-29 04:56:01
R1-1810415	On UE power Consumption Reduction in RRM Measurements	vivo	noted	2018-09-25 04:05:17	2018-09-29 03:10:32
R1-1810416	Considerations on traffic modelling for UE power	vivo	available	2018-09-25 04:05:17	2018-09-29 04:56:01
R1-1810417	Considerations on requirement for NR	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810418	Considerations on evaluation methodology for	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810419	Considerations on techniques for NR positioning	vivo	available	2018-09-25 04:05:17	2018-09-29 02:53:38
R1-1810420	Discussion about RAN2 LS on RRC message	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810421	Maintenance for physical downlink control channel	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810422	Remaining issues in RACH procedure	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810423	Remaining issues on downlink signals and channels for initial access	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:55:43
R1-1810424	Dicussion on maintenance for Mobility	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810425	Maintenance for multi-antenna schemes	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810426	Maintenance for CSI acquisition	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810427	Maintenance for beam management	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810428	Maintenance for reference signals and QCL	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810429	Remaining Issues in R-15 UE Features	MediaTe	revised	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810430	Corrections on MCS table determination	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810431	RRC parameters for retransmission of a grant-free	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810432	Evaluation methodology for MIMO	MediaTe	withdrawn	2018-09-25 04:21:39	
R1-1810433	CSI enhancement for MU-MIMO support	MediaTe	available	2018-09-25 04:21:39	2018-10-03 05:57:48
R1-1810434	Enhancements on multi-TRP/panel transmission	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810435	Enhancements on Multi-beam Operation	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810436	Full Tx power UL transmission	MediaTe	revised	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810437	Low PAPR RS	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810438	Evaluation results for NR-U operation	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810439	On frame structure for NR-U operation	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810440	On DL signals and channels in NR-U	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810441	On UL signals and channels in NR-U	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810442	On channel access procedure in NR-U	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810443	On initial access and mobility in NR-U	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810444	Enhancements on HARQ for NR-U operation	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810445	Discussion on NR-U configured grant	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:40:05

R1-1810446	UE considerations for NE-DC power control and	MediaTe	noted	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810447	Evaluation methodology for NR UE power	MediaTe	noted	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810448	UE adaptation to the traffic and UE power consumption characteristics	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810449	Considerations on triggering adaptation and the potential power saving benefit	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810450	Considerations on NR RRM power saving	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810451	More aspects for NR UE power saving	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810452	Discussion on support of unicast, groupcast and broadcast	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810453	Physical layer structure for NR sidelink	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810454	Sidelink synchronization mechanism	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810455	On sidelink resource allocation mechanism	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810456	UU-based enhancements to control NR sidelink	MediaTe k Inc.	noted	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810457	On the feasibility of NR-Uu to control LTE sidelink	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810458	Design options for in-device coexistence	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810459	Views on requirements for NR positioning	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810460	Views on evaluation methodology	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810461	Views on potential techniques for NR positioning	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810462	Remaining details on URLLC evaluation methodology	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810463	Evaluations and enhancements of NR control channels for URLLC	MediaTe k Inc.	noted	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810464	Feasibility analysis and SLS results for UL multiplexing between eMBB and URLLC	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810465	Study and evaluation of configured-grant enhancements for URLLC	MediaTe k Inc.	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810466	Further enhancements of NR PUCCH for	MediaTe	available	2018-09-25 04:21:39	2018-09-29 05:40:05
R1-1810467	Remaining Issues on Bandwidth Part in R15 NR	MediaTe k Beijing	available	2018-09-25 05:56:07	2018-09-29 05:40:05
R1-1810468	Discussion on UE traffic adaptation and power consumption characteristics	PANASO NIC	available	2018-09-25 09:01:00	2018-09-28 11:59:03
R1-1810469	Discussion on UE traffic adaptation procedures	PANASO NIC	available	2018-09-25 09:13:25	2018-09-28 11:59:03
R1-1810470	Remaining details on URLLC Evaluation Methodology	Idaho National	available	2018-09-25 12:08:24	2018-09-28 18:41:03
R1-1810471	Discussion on collision between SSB and CSS	vivo	withdrawn	2018-09-25 12:57:41	
R1-1810472	On Coexistence of NB-IoT with NR	Dish	available	2018-09-25 13:03:38	2018-09-29 00:16:26
R1-1810473	A New Deployment Scenario for NR Unlicensed	Dish Network	available	2018-09-25 13:08:21	2018-09-29 00:25:12
R1-1810474	On NR URLLC L1 enhancements	Panasoni	available	2018-09-25 14:21:41	2018-09-28 10:57:26
R1-1810475	On NR URLLC UL inter UE Tx	Panasoni	available	2018-09-25 14:23:14	2018-09-28 10:57:26
R1-1810476	On physical layer sidelink design for NR V2X	Mitsubish i Electric	available	2018-09-25 14:29:18	2018-09-28 20:11:06
R1-1810477	Discussion on power ramping in random access	Fujitsu	available	2018-09-25 15:21:59	2018-09-28 15:24:31
R1-1810478	Draft reply to LS on Preamble Power Ramping	Fujitsu	available	2018-09-25 15:21:59	2018-09-28 15:24:31
R1-1810479	Corrections on Codebook based UL	Fujitsu	available	2018-09-25 15:21:59	2018-09-28 15:24:31
R1-1810480	Remaining PUCCH spatial filtering issues on beam failure recovery	Fujitsu	available	2018-09-25 15:21:59	2018-09-28 15:24:31
R1-1810481	Corrections on HARQ-ACK transmission	Fujitsu	available	2018-09-25 15:21:59	2018-09-28 15:24:31
R1-1810482	Corrections on flexible starting PRB	Huawei Technolo	available	2018-09-25 16:56:51	2018-09-29 03:50:04
R1-1810483	Sidelink Design for Unicast and Groupcast	Fraunhof er HHI	available	2018-09-25 17:31:10	2018-09-28 15:46:13
R1-1810484	Design for NR V2X Physical Channels	Fraunhof er HHI	available	2018-09-25 17:32:45	2018-09-28 15:46:27
R1-1810485	Design for NR V2X Groupcast Resource	Fraunhof	available	2018-09-25 17:35:52	2018-09-28 15:46:02
R1-1810486	Scheduling/HARQ Processing Timeline Enhancements for NR URLLC	Fraunhof er HHI	available	2018-09-25 17:38:31	2018-09-28 15:45:51

R1-1810487	LTE-M Multiple Transport Block Grant Design	Sierra Wireless,	revised	2018-09-25 19:04:43	2018-09-28 22:56:55
R1-1810488	NB-IOT Multiple Transport Block Grant Design	Sierra Wireless,	available	2018-09-25 19:07:11	2018-09-28 22:56:55
R1-1810489	LTE-M Pre-configured UL Resources Design Considerations	Sierra Wireless,	available	2018-09-25 19:08:56	2018-09-28 22:56:55
R1-1810490	NB-IOT Pre-configured UL Resources Design Considerations	Sierra Wireless,	available	2018-09-25 19:11:00	2018-09-28 22:56:55
R1-1810491	LTE-M Preconfigured UL Resources Summary RAN1 #94-bis	Sierra Wireless,	noted	2018-09-25 19:14:40	2018-10-08 14:50:33
R1-1810492	UE Positioning using AoA+ZoA+TA	Polaris Wireless	available	2018-09-25 20:46:36	2018-09-29 01:09:04
R1-1810493	Remaining collision issue for RSS transmission	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810494	Frequency hopping for PUSCH with flexible starting PRB in CE mode A	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810495	Clarification for physical layer scheduling	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810496	Clarification for semi-persistence scheduling	ZTE	noted	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810497	Discussion on WUS for Enhanced Coverage Restricted UE for NB-IoT	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810498	Discussion on WUS for Enhanced Coverage Restricted UE for eMTC	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810499	Discussion on Wake-up signal for MTC	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810500	Support for transmission in preconfigured UL resources for MTC	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810501	Consideration on scheduling enhancement for MTC	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810502	Performance improvement for coexistence of LTE-MTC with NR	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810503	Specify Msg3 quality reporting at least for EDT	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810504	Discussion on MPDCCH performance	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810505	On CE mode A and B improvements for non-BL UE	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810506	Use of LTE control channel region for DL transmission	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810507	Use of RSS for measurement improvement	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810508	Discussion on Wake-up signal for NB-IoT	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810509	Support for transmission in preconfigured UL resources for NB-IoT	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810510	Consideration on scheduling enhancement for NB-IoT	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810511	Performance improvement for coexistence of	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810512	Support of Quality report in Msg3 for non-anchor access	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810513	Presense of NRS on non-anchor PRB	ZTE	available	2018-09-26 00:56:26	2018-09-29 04:04:07
R1-1810514	Remaining issues of NR PRACH procedure	CATT	available	2018-09-26 01:42:59	2018-09-29 05:39:47
R1-1810515	Remaining issues of NR mobility procedure	CATT	available	2018-09-26 01:42:59	2018-09-29 05:39:47
R1-1810516	Remaining issues on multi-antenna scheme	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810517	Remaining issues on CSI acquisition for Rel-15	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810518	Remaining issues on beam management	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810519	Remaining issues on reference signals for Rel-15	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810520	Open issues and corrections for NR PDCCH	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810521	Open issues and corrections to UCI feedback	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810522	Remaining issues on scheduling and UL transmission procedures	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47

R1-1810523	Remaining issues on CA and BWP operation	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810524	Remaining issues of LTE-NR Co-existence	CATT	noted	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810525	Remaining issues of NR power control	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810526	NOMA transmitter side signal processing	CATT	revised	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810527	Discussion on NOMA receivers	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810528	Discussion on NOMA procedures	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810529	Link level and initial system level evaluation results of NOMA	CATT	revised	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810530	Discussion of NR Positioning Requirements	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810531	NR positioning evaluation scenarios and	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810532	Discussion of Potential Techniques for NR	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810533	NR Positioning Reference Signals for OTDOA	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810534	DL Physical Channel and Signal Design for NR Unlicensed Operations	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810535	UL Physical Channel and Signal Design for NR Unlicensed Operations	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810536	Channel Access Procedures for NR Unlicensed	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810537	Initial Access and Mobiity for NR Unlicensed	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810538	NR Physical Layer design for IAB backhual link	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810539	Support of unicast, groupcast and broadcast in NR sidelink	CATT	noted	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810540	Considerations on physical layer structure and procedures in NR V2X	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810541	Discussion on synchronization mechanism for NR V2X Sidelink	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810542	Discussion on resource allocation mechanism in	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810543	Evaluation of Uu for advanced V2X use cases	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810544	Discussion On LTE Uu and NR Uu control NR sidelink in NR V2X	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810545	Discussion On NR Uu control LTE sidelink in NR V2X	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810546	QoS management in NR V2X	CATT	noted	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810547	Discussion on coexistence of LTE sidelink and	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810548	On remote interference management mechanism	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810549	On identification of gNB interferers	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810550	On evaluation methodology for URLLC	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810551	On PHY enhancements for Rel-16 URLLC	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810552	Discussion on inter-UE UL multiplexing	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810553	On enhancements to configured UL grant	CATT	available	2018-09-26 01:43:00	2018-09-29 05:51:01
R1-1810554	Considerations on Type II CSI enhancement	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810555	Considerations on mult-TRP/panel transmission for Rel-16	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810556	Consideration on multi-beam operation	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810557	Consideration on full transmission power of UL	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810558	Discussion on RS PAPR issue	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810559	Work plan for UE Power Saving	CATT	noted	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810560	Skeleton of TR38.840 UE Power Saving	CATT	revised	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810561	Evaluation Methodology for UE Power Saving	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810562	UE Power saving schemes with multi-dimensional adaptation	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810563	UE Power saving schemes with power saving signal/channel/procedures	CATT	noted	2018-09-26 01:43:00	2018-09-29 05:39:47
R1-1810564	UE Power saving scheme for RRM measurements	CATT	available	2018-09-26 01:43:00	2018-09-29 05:39:47

R1-1810565	Maintenance on UL reference signals	NEC Corporati	available	2018-09-26 06:46:12	2018-09-28 06:06:25
R1-1810566	Co-Band TBS Technology and Scenario	BUPT	withdrawn	2018-09-26 08:51:44	
R1-1810567	Co-Band TBS Technology and Scenario	BUPT	revised	2018-09-26 09:01:02	2018-09-28 07:34:39
R1-1810568	Discussion of additional SRS symbols	Lenovo, Motorola	available	2018-09-26 09:21:02	2018-09-28 11:49:36
R1-1810569	Discussion of virtual cell ID for SRS	Lenovo, Motorola	available	2018-09-26 09:21:07	2018-09-28 11:49:36
R1-1810570	Maintenance for codebook and non-codebook based UL transmission	Lenovo, Motorola	available	2018-09-26 09:21:07	2018-09-28 11:49:36
R1-1810571	Discussion of enhancement for multi-TRP/multi-panel transmission	Lenovo, Motorola	available	2018-09-26 09:21:08	2018-09-28 11:49:36
R1-1810572	Discussion of enhancement for multi-beam operation	Lenovo, Motorola	available	2018-09-26 09:21:08	2018-09-28 11:49:36
R1-1810573	Support of unicast, groupcast and broadcast	Lenovo, Motorola	available	2018-09-26 09:21:08	2018-09-28 11:49:36
R1-1810574	Physical layer structures and procedure(s)	Lenovo, Motorola	available	2018-09-26 09:21:08	2018-09-28 11:49:36
R1-1810575	Synchronization mechanism	Lenovo, Motorola	available	2018-09-26 09:21:08	2018-09-28 11:49:36
R1-1810576	Resource allocation mechanism	Lenovo, Motorola	available	2018-09-26 09:21:08	2018-09-28 11:49:36
R1-1810577	Discussion on resource partitioning for IAB network	Lenovo, Motorola	available	2018-09-26 09:21:08	2018-09-28 11:49:36
R1-1810578	Discussion on discovery and measurement for IAB network	Lenovo, Motorola	available	2018-09-26 09:21:08	2018-09-28 11:49:36
R1-1810579	Frame structure for NR-U operation	Lenovo, Motorola	available	2018-09-26 09:21:08	2018-09-28 11:49:36
R1-1810580	UL signals and channels for NR-U operation	Lenovo, Motorola	available	2018-09-26 09:21:08	2018-09-28 11:49:36
R1-1810581	HARQ-ACK enhancement for NR-U	Lenovo, Motorola	available	2018-09-26 09:21:08	2018-09-28 11:49:36
R1-1810582	Design of scheduling of multiple DL/UL TB for Rel.16 MTC	Lenovo, Motorola	available	2018-09-26 09:21:08	2018-09-28 11:49:36
R1-1810583	Design of Use of LTE Control Channel Region	Lenovo, Motorola	available	2018-09-26 09:21:08	2018-09-28 11:49:36
R1-1810584	Design of scheduling of multiple DL/UL TB for Rel.16 NBIoT	Lenovo, Motorola	available	2018-09-26 09:21:08	2018-09-28 11:49:36
R1-1810585	Considerations on procedures related to NOMA	Fujitsu	available	2018-09-26 09:46:27	2018-09-28 09:19:57
R1-1810586	On flexible starting positions and related PDCCH monitoring for NR-U	Fujitsu	available	2018-09-26 09:46:27	2018-09-28 09:19:57
R1-1810587	On UL signals and channels design for NR-U	Fujitsu	available	2018-09-26 09:46:27	2018-09-28 09:19:57
R1-1810588	On channel access procedure for NR-U	Fujitsu	available	2018-09-26 09:46:27	2018-09-28 09:19:57
R1-1810589	Considerations on unicast, groupcast and broadcast for NR V2X	Fujitsu	available	2018-09-26 09:46:27	2018-09-28 09:19:57
R1-1810590	Considerations on sidelink physical layer structures	Fujitsu	available	2018-09-26 09:46:27	2018-09-28 09:19:57
R1-1810591	Orthogonal Resource Scheduling based Multicast NR-V2X Transmission	Fujitsu	noted	2018-09-26 09:46:27	2018-09-28 09:19:57
R1-1810592	Efficient Sidelink CSI Feedback Mechanism for Groupcast NR-V2X	Fujitsu	available	2018-09-26 09:46:27	2018-09-28 09:19:57
R1-1810593	Resource Allocation for NR V2X Sidelink Communication considering low latency	Fujitsu	available	2018-09-26 09:46:27	2018-09-28 09:19:57
R1-1810594	Discussion on Uu-based NR sidelink resource allocation	Fujitsu	available	2018-09-26 09:46:27	2018-09-28 09:19:57
R1-1810595	Discussion on Sidelink Bi-mode Transmission in NR-V2X	Fujitsu	available	2018-09-26 09:46:27	2018-09-28 09:19:57
R1-1810596	Discussion on HARQ-ACK feedback over PUCCH and PUSCH	Fujitsu	available	2018-09-26 09:46:27	2018-09-28 13:40:17
R1-1810597	Discussion on UL preemption indication	Fujitsu	available	2018-09-26 09:46:27	2018-09-28 09:19:57

R1-1810598	Discussion on beam failure recovery for SCell	Fujitsu	available	2018-09-26 09:46:27	2018-09-28 09:19:57
R1-1810599	Draft CR to 38.211	Ericsson	available	2018-09-26 10:09:58	2018-09-28 14:10:09
R1-1810600	Virtual Cell ID for SRS Capacity Enhancements	MediaTe	available	2018-09-26 10:10:04	2018-09-28 14:49:31
R1-1810601	Additional SRS Symbols for SRS Capacity and Coverage Enhancements	MediaTe k Inc.	available	2018-09-26 10:10:04	2018-09-28 14:49:31
R1-1810602	Discussion on case determination of EPDCCH USS when enabling CSI-RS frequency domain	MediaTe k Inc.	noted	2018-09-26 10:10:04	2018-09-28 14:49:31
R1-1810603	CR 36.211-Correction on nEPDCCH for EPDCCH USS case determination	MediaTe k Inc.	revised	2018-09-26 10:10:04	2018-09-28 14:49:31
R1-1810604	CR 36.213 - Correction on nEPDCCH for EPDCCH USS case determination	MediaTe k Inc.	revised	2018-09-26 10:10:04	2018-09-28 14:49:31
R1-1810605	Coexistence of NB-IoT with NR	MediaTe	available	2018-09-26 10:10:04	2018-09-28 14:49:31
R1-1810606	UE-Group WUS in NB-IoT	MediaTe	available	2018-09-26 10:10:04	2018-09-28 14:49:31
R1-1810607	Early Transmission on Preconfigured UL resources in NB-IoT	MediaTe k Inc.	available	2018-09-26 10:10:04	2018-09-28 14:49:31
R1-1810608	Quality report in Msg3 on non-anchor carrier	MediaTe k Inc.	available	2018-09-26 10:10:05	2018-09-28 14:49:31
R1-1810609	NRS presence on non-anchor carrier	MediaTe k Inc.	available	2018-09-26 10:10:05	2018-09-28 14:49:31
R1-1810610	Scheduling of multiple DL/UL transport blocks	MediaTe k Inc.	available	2018-09-26 10:10:05	2018-09-28 14:49:31
R1-1810611	NR-U UL channels	Panasoni	available	2018-09-26 11:15:43	2018-09-28 09:57:13
R1-1810612	Initial Evaluation Results for NR-U	Nokia, Nokia	available	2018-09-26 11:30:46	2018-09-29 06:05:43
R1-1810613	On Frame Structure and Wideband Operation for NR-U	Nokia, Nokia	available	2018-09-26 11:33:33	2018-09-28 20:06:04
R1-1810614	On uplink signal and channel structures for NR-U	Nokia, Nokia	available	2018-09-26 11:34:22	2018-09-28 20:06:04
R1-1810615	Channel access and co-existence for NR-U operation	Nokia, Nokia	available	2018-09-26 11:35:22	2018-09-28 20:06:04
R1-1810616	On HARQ Enhancements for NR-U	Nokia, Nokia	available	2018-09-26 11:36:04	2018-09-28 20:06:04
R1-1810617	On support of UL transmission with configured grants in NR-U	Nokia, Nokia	available	2018-09-26 11:37:40	2018-09-28 20:06:04
R1-1810618	On Maximum TX Power for UL Interlace Structures	Nokia, Nokia	available	2018-09-26 11:38:55	2018-09-28 20:06:04
R1-1810619	On maintenance for DL control	Nokia, Nokia	available	2018-09-26 12:16:53	2018-09-28 15:12:39
R1-1810620	On maintenance for BWPs and CA	Nokia, Nokia	available	2018-09-26 12:16:53	2018-09-28 15:12:39
R1-1810621	On maintenance for rate-matching	Nokia, Nokia	available	2018-09-26 12:16:53	2018-09-28 15:12:39
R1-1810622	On DL Signals and Channels for NR-U	Nokia, Nokia	available	2018-09-26 12:16:53	2018-09-28 15:12:39
R1-1810623	Transmitter side signal processing of ACMA	HUGHES Network Systems Ltd	available	2018-09-26 12:56:42	2018-09-28 19:28:14
R1-1810624	On Initial Access and Mobility for NR-U	Nokia, Nokia	available	2018-09-26 12:57:55	2018-09-28 21:16:28
R1-1810625	Receiver signal processing of ACMA	HUGHES Network	available	2018-09-26 13:03:14	2018-09-28 19:28:14

R1-1810626	Link-level performance results for ACMA with Multi-branch transmission	HUGHES Network Systems Ltd	available	2018-09-26 13:23:35	2018-09-28 19:28:14
R1-1810627	Preliminary system level evaluations on sidelink	vivo	revised	2018-09-26 13:52:49	2018-09-29 04:51:15
R1-1810628	Remaining issues on Rel.15 beam management	Sony	available	2018-09-26 14:01:23	2018-09-28 23:49:30
R1-1810629	Considerations on NOMA related procedures	Sony	available	2018-09-26 14:01:23	2018-09-28 23:49:30
R1-1810630	Link level evaluation result of IDMA	Sony	available	2018-09-26 14:01:23	2018-09-28 23:49:30
R1-1810631	Considerations on frame structure for NR-U	Sony	available	2018-09-26 14:01:23	2018-09-28 23:49:30
R1-1810632	Considerations on DL Signals and Channels for NR unlicensed operation	Sony	available	2018-09-26 14:01:23	2018-09-28 23:49:30
R1-1810633	Considerations on channel access procedures for NR unlicensed operations	Sony	available	2018-09-26 14:01:23	2018-09-28 23:49:30
R1-1810634	Considerations on initial access and mobility for NR unlicensed operations	Sony	available	2018-09-26 14:01:23	2018-09-28 23:49:30
R1-1810635	Considerations on HARQ enhancements for NR unlicensed operation	Sony	available	2018-09-26 14:01:23	2018-09-28 23:49:30
R1-1810636	Considerations on potential enhancements to NR-U configured grant	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810637	Discussion on enhancement to support uni/groupcast for NR V2X communication	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810638	Discussion on mode 2 resource allocation for NR V2X communication	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810639	L1 enhancement for URLLC	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810640	Considerations in UL Inter UE Pre-emption	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810641	Discussion on enhanced UL grant-free	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810642	Multiple active BWPs	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810643	Considerations on Multi-TRP/Panel Transmission	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810644	Considerations on Multi-beam Operation	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810645	Channels and procedures for adapting UE power consumption characteristics	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810646	Considerations on NR Positioning Requirements	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810647	Discussion on OTDOA NR Positioning	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810648	On supporting UE-group wake-up signal for	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810649	Considerations for Preconfigured UL Resources in A-MTC	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810650	Support of scheduling of multiple DL / UL transport blocks for MTC	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810651	Whether RAN1 enhancements are required for LTE-M / NR coexistence	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810652	Quality reporting via Msg3 in A-MTC	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810653	On MPDCCH performance improvement	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810654	MTC DL transmission in the LTE control channel region	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810655	Considerations on using RSS for measurements	Sony	available	2018-09-26 14:01:24	2018-09-28 23:49:30
R1-1810656	Considerations on NOMA related procedures	NEC	available	2018-09-26 16:07:35	2018-09-28 15:20:33
R1-1810657	Considerations on frame structure design for NR	NEC	available	2018-09-26 16:07:35	2018-09-28 15:20:33
R1-1810658	UL Pre-emption and multiplexing of eMBB and	NEC	available	2018-09-26 16:07:35	2018-09-28 15:20:33
R1-1810659	Field Measurement Results from an Operational Factory Floor at 3.5 GHz and 28 GHz	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:55
R1-1810660	On the L1 enhancements for NR URLLC	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:55
R1-1810661	Solution for UL inter-UE multiplexing between eMBB and URLLC	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:55
R1-1810662	On Configured Grant enhancements for NR URLLC	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:55
R1-1810663	URLLC downlink system-level performance evaluation	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:55
R1-1810664	On compact DCI for NR URLLC	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:55

R1-1810665	On PDCCH repetition for NR URLLC	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:55
R1-1810666	On the PDCCH limits on the maximum number of CCEs for channel estimation and BDs for	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:55
R1-1810667	On enhanced HARQ-ACK feedback for URLLC	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:55
R1-1810668	On CSI feedback enhancements for URLLC	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:55
R1-1810669	On scheduled PUSCH (& PDSCH) repetition enhancements for NR URLLC	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:55
R1-1810670	Enhancements to scheduling/HARQ/CSI processing timeline for NR URLLC	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:55
R1-1810671	Work Plan for NR Industrial IoT SI	Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:55
R1-1810672	Draft skeleton of TR 38.825: Study on NR Industrial Internet of Things (IoT)	Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:55
R1-1810673	NR enhancements to support IAB	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:20
R1-1810674	Evaluation of IAB	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:20
R1-1810675	Resource allocation/coordination between parent BH and child links	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:20
R1-1810676	Enhacements on RACH for IAB	Nokia, Nokia	withdrawn	2018-09-26 17:26:24	
R1-1810677	Discovery and measurements for IAB	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:20
R1-1810678	IAB Timing	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:20
R1-1810679	Cross-link interference management	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:20
R1-1810680	Considerations of single panel vs. multi-panel operation for IAB node	Nokia, Nokia	available	2018-09-26 17:26:24	2018-09-28 19:00:20
R1-1810681	CSI Enhancements for eMIMO	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810682	Overview of Multi-TRP/Panel Enhancements	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810683	Analysis of PAPR Issue in NR	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810684	On Full Transmit Power for UL Tranmission	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810685	Overview of Physical Layer Enhancements for	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810686	On CSI Reference resources for NR	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810687	On NOMA Procedures	AT&T	noted	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810688	Multi-beam Operation Enhancements	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810689	Report configuration with CSI-RS repetition ON	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810690	Enhancements to support NR backhaul links	AT&T	noted	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810691	Evaluation results for NR IAB	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810692	Frame structure for NR-U operation	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810693	NR-U design for DL signals and channels	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810694	Enhancements for the NR-U channel access	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810695	NR-U design for initial access and mobility	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810696	HARQ enhancements for NR-U	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810697	V2X sidelink design in supporting unicast, groupcast and broadcast	AT&T	noted	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810698	V2X sidelink PHY structure and procedures	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810699	Sidelink based synchronization mechanism	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810700	Resource allocation mechanism	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810701	Field trial results from 39GHz vehicle to vehicle communication	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810702	Enhancements of LTE Uu and NR Uu to control NR sidelink	AT&T	available	2018-09-26 17:37:14	2018-09-29 03:42:57
R1-1810703	Discussion on PAPR for CSI-RS and DMRS	Huawei,	available	2018-09-26 20:19:47	2018-09-29 03:56:01
R1-1810704	Potential enhancement to allow full power transmission for UL MIMO with multiple PAs	Huawei, HiSilicon	available	2018-09-26 20:19:47	2018-09-29 03:56:01
R1-1810705	Maintenance for multi-antenna scheme	Huawei,	available	2018-09-26 20:19:47	2018-09-29 03:56:01
R1-1810706	Corrections on reserved resources and rate-	Huawei,	available	2018-09-26 20:19:47	2018-09-29 03:55:14
R1-1810707	Remaining issues on Rel-15 UE features	Huawei,	noted	2018-09-26 20:19:47	2018-09-29 03:55:13
R1-1810708	SLS evaluation of NR unlicensed bands	Huawei,	available	2018-09-26 20:19:47	2018-09-29 01:43:00

R1-1810709	PDCCH enhancements for URLLC	Huawei,	available	2018-09-26 20:19:47	2018-09-29 04:16:37
R1-1810710	Discussion on reference signal for sidelink control and data channel design	Huawei, HiSilicon	available	2018-09-26 20:19:47	2018-09-29 01:43:00
R1-1810711	System level evaluations on sidelink for NR V2X	Huawei,	available	2018-09-26 20:19:47	2018-09-29 01:43:00
R1-1810712	Link level evaluations on sidelink for NR V2X	Huawei,	available	2018-09-26 20:19:47	2018-09-29 01:43:00
R1-1810713	Evaluation of reference signals in RIM	Huawei, HiSilicon	available	2018-09-26 20:19:47	2018-09-29 03:55:13
R1-1810714	UE Power saving in RRC_IDLE mode	Huawei,	available	2018-09-26 20:19:47	2018-09-29 01:43:00
R1-1810715	Evaluation method of LTE peak spectral	Huawei,	available	2018-09-26 20:19:47	2018-09-29 01:43:00
R1-1810716	Evaluation assumptions and methodology for Rel-16 NR URLLC	Huawei, China Southern	available	2018-09-26 20:19:47	2018-09-29 04:16:37
R1-1810717	Simulation results on the baseline performance achievable with Rel-15 URLLC for the identified	Huawei, HiSilicon	available	2018-09-26 20:19:47	2018-09-29 04:17:04
R1-1810718	DL/UL intra-UE transmission prioritization and	Huawei,	available	2018-09-26 20:19:47	2018-09-29 04:17:04
R1-1810719	Correction on rate matching in URLLC due to the ambiguity between PDCCH AL8 and AL16	Huawei, HiSilicon	available	2018-09-26 20:19:47	2018-09-29 05:28:34
R1-1810720	CSI enhancements for URLLC	Huawei,	available	2018-09-26 20:19:47	2018-09-29 04:16:37
R1-1810721	Support of unicast, groupcast, and broadcast in NR V2X	ZTE	available	2018-09-26 22:28:03	2018-09-28 22:48:02
R1-1810722	Discussion on NR Sidelink Physical layer structure	ZTE	available	2018-09-26 22:29:55	2018-09-28 22:48:02
R1-1810723	Discussion about Synchronization mechanism	ZTE	available	2018-09-26 22:32:25	2018-09-28 22:48:02
R1-1810724	NR Sidelink resource schemes	ZTE	available	2018-09-26 22:34:17	2018-09-28 22:48:02
R1-1810725	Evaluation of Uu for advanced V2X use cases	ZTE	available	2018-09-26 22:36:19	2018-09-28 22:48:02
R1-1810726	Discussion on LTE/NR Uu based resource allocation/configuration for NR Sidelink	ZTE	available	2018-09-26 22:37:50	2018-09-28 22:48:02
R1-1810727	Discussion on NR Uu based resource allocation/configuration for LTE Sidelink	ZTE	available	2018-09-26 22:39:51	2018-09-29 01:23:09
R1-1810728	Discussion on QoS management	ZTE	available	2018-09-26 22:41:47	2018-09-29 01:42:12
R1-1810729	Coexistence between NR V2X and LTE V2X	ZTE	available	2018-09-26 22:43:02	2018-09-28 22:48:02
R1-1810730	Remaining issues on physical uplink control channel	Panasonic	available	2018-09-27 00:13:22	2018-09-28 09:14:04
R1-1810731	URLLC enhanced grant-free transmission	Panasoni	available	2018-09-27 00:14:07	2018-09-28 10:12:52
R1-1810732	On UL SPS configuration for TDD	ZTE	noted	2018-09-27 01:13:07	2018-09-29 03:05:57
R1-1810733	On eMTC co-existence with NR	Huawei Technolo	available	2018-09-27 01:45:22	2018-09-29 04:12:59
R1-1810734	[Draft] Reply to LS on Preamble Power Ramping	Intel	available	2018-09-27 02:01:51	2018-09-29 06:24:02
R1-1810735	Draft CR: Correction to non-precoded NZP CSI-RS resource configurations	Intel Corporati	revised	2018-09-27 02:01:51	2018-09-29 06:24:02
R1-1810736	UE-group wake-up signal for eMTC	Intel	available	2018-09-27 02:01:51	2018-09-29 06:32:28
R1-1810737	UL transmission in preconfigured resources for eMTC	Intel Corporati	available	2018-09-27 02:01:51	2018-09-29 06:32:28
R1-1810738	DL quality reporting in Msg3 for eMTC	Intel	available	2018-09-27 02:01:51	2018-09-29 06:32:28
R1-1810739	MPDCCH performance improvement	Intel	available	2018-09-27 02:01:51	2018-09-29 06:32:28
R1-1810740	Standalone deployment for eMTC	Intel Corporati	available	2018-09-27 02:01:51	2018-09-29 06:32:28
R1-1810741	UE-group wake-up signal for NB-IoT	Intel	available	2018-09-27 02:01:51	2018-09-29 06:32:28
R1-1810742	UL transmission in preconfigured resources for NB-IoT	Intel Corporati	available	2018-09-27 02:01:51	2018-09-29 06:32:28
R1-1810743	DL quality reporting in Msg3 for non-anchor access in NB-IoT	Intel Corporati	available	2018-09-27 02:01:51	2018-09-29 06:32:28
R1-1810744	Additional SRS symbols	Intel	available	2018-09-27 02:01:51	2018-09-29 06:24:01
R1-1810745	Virtual cell ID support for SRS	Intel	available	2018-09-27 02:01:51	2018-09-29 06:24:01
R1-1810746	Maintenance of downlink signals and channels	Intel Corporati	available	2018-09-27 02:01:51	2018-09-29 06:24:01
R1-1810747	Maintenance of PRACH and related procedures	Intel Corporati	available	2018-09-27 02:01:51	2018-09-29 06:24:01
R1-1810748	Maintenance of mobility measurements	Intel	available	2018-09-27 02:01:51	2018-09-29 06:24:01
R1-1810749	Remaining Issues for multi-antenna scheme	Intel	available	2018-09-27 02:01:51	2018-09-29 06:24:01
R1-1810750	Remaining issues for CSI reporting	Intel	available	2018-09-27 02:01:51	2018-09-29 06:24:01
R1-1810751	Remaining issues for beam management	Intel	available	2018-09-27 02:01:51	2018-09-29 06:24:01
R1-1810752	Remaining issues for reference signals and QCL	Intel Corporati	revised	2018-09-27 02:01:52	2018-09-29 06:24:01

R1-1810753	Simultaneous Tx and Rx of channels and RS	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810754	Remaining issues on NR PDCCH	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 07:11:28
R1-1810755	Remaining details on NR PUCCH	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810756	Remaining issues on NR scheduling & HARQ	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 07:11:27
R1-1810757	Remaining issues of NR-LTE co-existence	Intel	noted	2018-09-27 02:01:52	2018-09-29 07:11:27
R1-1810758	Rel-15 NR UE feature list	Intel	noted	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810759	NOMA transmission scheme	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810760	NOMA receiver structure and complexity	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810761	NOMA related procedure	Intel	noted	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810762	Performance evaluation for NOMA	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810763	On the NR-unlicensed frame structure	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810764	Enhancements to NR DL signals and channels for unlicensed operation	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810765	Enhancements to NR UL signals and channels for unlicensed operation	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810766	Enhancements to channel access mechanism for NR-unlicensed	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810767	Enhancements to initial access and mobility for NR-unlicensed	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810768	Enhancements to HARQ for NR-unlicensed	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810769	Enhancements to NR configured grants for unlicensed operation	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810770	PHY enhancements on NR IAB	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810771	Evalutation methodology and results on NR IAB	Intel	noted	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810772	Support of sidelink unicast, groupcast and broadcast modes for NR V2X communication	Intel Corporati	revised	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810773	Sidelink Physical Layer Structure and Procedures for NR V2X Communication	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810774	Sidelink synchronization for NR V2X	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810775	Sidelink resource allocation mechanisms for NR V2X communication	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810776	Remaining aspects of eV2X evaluation methodology and assumptions	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810777	Analysis of NR Uu support for advanced V2X use cases	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810778	Enhancements of NR and LTE Uu link to control NR sidelink	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810779	Enhancements of NR Uu link to control LTE sidelink	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810780	QoS management for NR V2X communication	Intel	noted	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810781	Coexistence mechanisms for eV2X services	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810782	Further considerations on RIM frameworks	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810783	RIM-RS design and evaluation	Intel Corporati	revised	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810784	Remaining details on evaluation methodologies for eURLLC	Intel Corporati	noted	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810785	Layer 1 enhancements for eURLLC	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810786	On inter-UE prioritization/multiplexing in the UL	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810787	Enhancements to configured grant PUSCH	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810788	Considerations for IMT Evaluations	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810789	Discussion on CSI enhancements	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810790	Discussion on multi-TRP/multi-panel transmission	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810791	On beam management enhancement	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810792	On full power uplink transmission	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:01
R1-1810793	Low PAPR reference signals	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:02
R1-1810794	Evaluation methodology for UE power saving	Intel	available	2018-09-27 02:01:52	2018-09-29 07:11:28
R1-1810795	UE adaptation to the traffic and UE power consumption characteristics	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 07:11:28

R1-1810796	Triggering adaptation of UE power consumption characteristics	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 07:11:28
R1-1810797	UE power Consumption Reduction in RRM Measurements	Intel Corporati	available	2018-09-27 02:01:52	2018-09-29 07:11:28
R1-1810798	Work plan for NR positioning study item	Intel Corporati	noted	2018-09-27 02:01:52	2018-09-29 06:24:02
R1-1810799	On target requirements for NR positioning	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:02
R1-1810800	Evaluation assumptions for NR positioning	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:02
R1-1810801	Techniques for NR positioning	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:02
R1-1810802	Preliminary Evaluation Results for NR	Intel	available	2018-09-27 02:01:52	2018-09-29 06:24:02
R1-1810803	Discussion on multi-TRP transmission	NEC	available	2018-09-27 02:36:06	2018-09-28 07:37:47
R1-1810804	Discussion on CSI Reporting	NEC	available	2018-09-27 02:36:06	2018-09-28 07:37:47
R1-1810805	Discussion on Beam Failure Recovery	NEC	available	2018-09-27 02:36:06	2018-09-28 07:37:47
R1-1810806	Discussion on IAB	NEC	available	2018-09-27 02:36:06	2018-09-28 07:37:47
R1-1810807	Support of unicast, groupcast and broadcast in NR V2X	NEC	available	2018-09-27 02:36:06	2018-09-28 07:37:47
R1-1810808	Synchronization mechanism for NR V2X	NEC	available	2018-09-27 02:36:06	2018-09-28 07:37:48
R1-1810809	Resource allocation mechanism for NR V2X	NEC	available	2018-09-27 02:36:06	2018-09-28 07:37:48
R1-1810810	Discussion on configured grants in NR-U	NEC	available	2018-09-27 02:36:06	2018-09-28 07:37:48
R1-1810811	Discussion on UL Signals and Channels in NR-	NEC	available	2018-09-27 02:36:06	2018-09-28 07:37:48
R1-1810812	Details and evaluation on enhanced beam	ZTE	available	2018-09-27 02:55:41	2018-09-29 05:51:36
R1-1810813	Discussion on the scheduling of multiple DL/UL TBs	Beijing Xiaomi	available	2018-09-27 03:35:34	2018-09-28 09:28:13
R1-1810814	Discussion on the use of LTE control channel region for DL transmission	Beijing Xiaomi	available	2018-09-27 03:39:42	2018-09-28 09:29:09
R1-1810815	Discussion on Multi-TRP/Panel transmission enhancements	CHTTL	available	2018-09-27 03:59:00	2018-09-28 05:34:03
R1-1810816	Draft response LS on default configuration for L1	Samsung	available	2018-09-27 05:01:06	2018-09-28 08:51:51
R1-1810817	Draft CR on EPDCCH RE mapping	Samsung	noted	2018-09-27 05:01:06	2018-09-28 05:55:44
R1-1810818	Discussion on the AUL-UCI coded modulaion symbols in 36.212	Samsung	available	2018-09-27 05:01:06	2018-09-29 02:45:44
R1-1810819	Correction on the AUL-UCI coded modulaion symbols in 36.212	Samsung	available	2018-09-27 05:01:06	2018-09-29 02:45:44
R1-1810820	UE-group wake-up signal for eMTC	Samsung	available	2018-09-27 05:01:06	2018-09-29 05:19:44
R1-1810821	Discussion on transmission in preconfigured UL reosurces for MTC	Samsung	available	2018-09-27 05:01:06	2018-09-29 05:19:44
R1-1810822	Scheduling of multiple transport blocks for MTC	Samsung	available	2018-09-27 05:01:06	2018-09-29 05:19:44
R1-1810823	Discussion on quality report in Msg3 for MTC	Samsung	available	2018-09-27 05:01:06	2018-09-29 05:19:44
R1-1810824	Discussion on MPDCCH performance	Samsung	available	2018-09-27 05:01:06	2018-09-29 05:19:44
R1-1810825	CE Mode A and Mode B improvements for non-BL UEs	Samsung	available	2018-09-27 05:01:06	2018-09-29 05:19:44
R1-1810826	Discussion on use of control channel region	Samsung	available	2018-09-27 05:01:06	2018-09-29 05:19:44
R1-1810827	UE-group wake-up signal for NB-IoT	Samsung	available	2018-09-27 05:01:06	2018-09-29 05:19:44
R1-1810828	Discussion on transmission in preconfigured UL reosurces for NB-IoT	Samsung	available	2018-09-27 05:01:06	2018-09-29 05:19:44
R1-1810829	Scheduling of multiple transport blocks for NB-IoT	Samsung	available	2018-09-27 05:01:06	2018-09-29 05:19:44
R1-1810830	Discussion on quality report in Msg3 for NB-IoT	Samsung	available	2018-09-27 05:01:06	2018-09-29 05:19:44
R1-1810831	NRS presence on non-anchor carrier	Samsung	available	2018-09-27 05:01:06	2018-09-29 05:19:44
R1-1810832	View on additional SRS symbols	Samsung	available	2018-09-27 05:01:06	2018-09-28 05:55:44
R1-1810833	Discussions on virtual cell ID for SRS	Samsung	available	2018-09-27 05:01:06	2018-09-28 04:50:31
R1-1810834	Remaining Issues on Synchronization and System information	Samsung	available	2018-09-27 05:01:06	2018-09-29 01:28:00
R1-1810835	Remaining Issues on Random Access	Samsung	available	2018-09-27 05:01:06	2018-09-29 05:19:44
R1-1810836	Remaining Issues on Measurements for Mobility	Samsung	available	2018-09-27 05:01:06	2018-09-28 07:55:39
R1-1810837	Corrections and clarification on transmission	Samsung	available	2018-09-27 05:01:06	2018-09-28 22:00:09
R1-1810838	Corrections and clarification on CSI reporting	Samsung	available	2018-09-27 05:01:06	2018-09-28 22:00:09
R1-1810839	Remaining issues on beam management	Samsung	available	2018-09-27 05:01:06	2018-09-29 00:48:02

R1-1810840	Remaining issues on reference signals	Samsung	available	2018-09-27 05:01:06	2018-09-28 05:55:44
R1-1810841	Simultaneous transmission and reception of physical channels and reference signals	Samsung	available	2018-09-27 05:01:06	2018-09-28 04:50:31
R1-1810842	Remaining Issues on PDCCH and Search Space Design	Samsung	revised	2018-09-27 05:01:06	2018-09-29 00:56:40
R1-1810843	Remaining Issues on PUCCH	Samsung	available	2018-09-27 05:01:06	2018-09-29 00:56:40
R1-1810844	Remaining Issues on UL/DL Scheduling	Samsung	available	2018-09-27 05:01:06	2018-09-28 07:42:22
R1-1810845	Remaining Issues on BWP and CA	Samsung	available	2018-09-27 05:01:06	2018-09-28 08:51:51
R1-1810846	Remaining Issues on LTE-NR Coexistence	Samsung	noted	2018-09-27 05:01:06	2018-09-28 07:33:54
R1-1810847	Remaining Issues on UL Power Control	Samsung	available	2018-09-27 05:01:06	2018-09-28 08:42:58
R1-1810848	UE Features for Rel-15	Samsung	noted	2018-09-27 05:01:06	2018-09-28 07:42:22
R1-1810849	Transmitter side signal processing schemes for NOMA	Samsung	available	2018-09-27 05:01:06	2018-09-29 05:19:44
R1-1810850	Receivers for NOMA	Samsung	available	2018-09-27 05:01:06	2018-09-29 05:19:44
R1-1810851	Procedures related consideration to NOMA	Samsung	available	2018-09-27 05:01:06	2018-09-29 05:19:44
R1-1810852	Performance evaluation for NoMA	Samsung	noted	2018-09-27 05:01:07	2018-09-29 05:19:44
R1-1810853	Requirements for NR Positioning	Samsung	available	2018-09-27 05:01:07	2018-09-28 17:30:52
R1-1810854	NR Positioning Evaluation Methodology	Samsung	available	2018-09-27 05:01:07	2018-09-28 17:30:52
R1-1810855	Potential Techniques for NR Positioning	Samsung	available	2018-09-27 05:01:07	2018-09-28 17:30:52
R1-1810856	Initial evaluation result for NR-U	Samsung	available	2018-09-27 05:01:07	2018-09-29 01:23:10
R1-1810857	Frame structure for NR-U	Samsung	available	2018-09-27 05:01:07	2018-09-29 01:28:00
R1-1810858	Downlink signal and channel design for NR-U	Samsung	revised	2018-09-27 05:01:07	2018-09-29 01:28:00
R1-1810859	Uplink signal and channel design for NR-U	Samsung	available	2018-09-27 05:01:07	2018-09-29 02:45:44
R1-1810860	Channel access procedure for NR-U	Samsung	available	2018-09-27 05:01:07	2018-09-29 01:23:10
R1-1810861	Initial access and mobility procedure for NR-U	Samsung	available	2018-09-27 05:01:07	2018-09-29 01:28:00
R1-1810862	HARQ enhancements for NR-U	Samsung	available	2018-09-27 05:01:07	2018-09-29 02:45:44
R1-1810863	Enhancements on configured grant for NR-U	Samsung	available	2018-09-27 05:01:07	2018-09-29 01:28:00
R1-1810864	Necessary Enhancements for NR IAB	Samsung	noted	2018-09-27 05:01:07	2018-09-28 17:30:35
R1-1810865	Evaluation Methodology for NR IAB	Samsung	revised	2018-09-27 05:01:07	2018-09-29 05:10:25
R1-1810866	CLI management in NR IAB	Samsung	available	2018-09-27 05:01:07	2018-09-28 17:30:35
R1-1810867	Discussion on unicast, groupcast and broadcast for NR V2X	Samsung	available	2018-09-27 05:01:07	2018-09-29 00:48:02
R1-1810868	Discussion on physical layer structures and procedure(s) for NR V2X	Samsung	noted	2018-09-27 05:01:07	2018-09-29 02:45:44
R1-1810869	Discussion on Synchronization mechanismtion	Samsung	available	2018-09-27 05:01:07	2018-09-28 08:42:58
R1-1810870	Discussion on resource allocation mechanisms	Samsung	available	2018-09-27 05:01:07	2018-09-29 02:40:48
R1-1810871	Discussion on Uu for advanced V2X use cases	Samsung	available	2018-09-27 05:01:07	2018-09-28 08:42:58
R1-1810872	Discussion on Enhancements of LTE Uu and NR Uu to control NR sidelink	Samsung	available	2018-09-27 05:01:07	2018-09-29 02:45:44
R1-1810873	Discussion on Enhancements of NR Uu to control LTE sidelink	Samsung	available	2018-09-27 05:01:07	2018-09-29 02:45:44
R1-1810874	Discussion on QoS management for NR V2X	Samsung	available	2018-09-27 05:01:07	2018-09-29 01:28:00
R1-1810875	Discussion on Coexistence between LTE and	Samsung	available	2018-09-27 05:01:07	2018-09-29 01:28:00
R1-1810876	Discussion on remote interference management	Samsung	available	2018-09-27 05:01:07	2018-09-29 02:45:44
R1-1810877	Discussion on reference signal for remote interference identification	Samsung	available	2018-09-27 05:01:07	2018-09-29 02:45:44
R1-1810878	Remaining details on evaluation methodology for eURLLC	Samsung	available	2018-09-27 05:01:07	2018-09-28 07:21:22
R1-1810879	Layer 1 enhancement for URLLC	Samsung	available	2018-09-27 05:01:07	2018-09-29 00:56:40
R1-1810880	Uplink inter UE multiplexing/prioritization for enhanced URLLC	Samsung	available	2018-09-27 05:01:07	2018-09-28 07:21:22
R1-1810881	Potential enhancement for UL grant-free	Samsung	noted	2018-09-27 05:01:07	2018-09-29 05:19:44
R1-1810882	Discussion on evaluation methodology for Dense Urban eMBB scenario	Samsung	available	2018-09-27 05:01:07	2018-09-28 07:22:38
R1-1810883	Proposed work plan for Rel.16 NR MIMO	Samsung	revised	2018-09-27 05:01:07	2018-09-28 22:00:09
R1-1810884	CSI enhancement for MU-MIMO	Samsung	available	2018-09-27 05:01:07	2018-09-28 21:23:05

R1-1810885	Enhancements on multi-TRP/panel transmission	Samsung	available	2018-09-27 05:01:07	2018-09-28 05:55:44
R1-1810886	Enhancements on multi-beam operation	Samsung	available	2018-09-27 05:01:07	2018-09-28 22:00:09
R1-1810887	View on full power UL transmission	Samsung	available	2018-09-27 05:01:07	2018-09-28 21:23:05
R1-1810888	View on Low PAPR RS	Samsung	available	2018-09-27 05:01:07	2018-09-28 05:55:44
R1-1810889	Preliminary SLS evaluation on Type II overhead	Samsung	available	2018-09-27 05:01:07	2018-09-28 21:23:05
R1-1810890	Preliminary SLS evaluation on Type II rank 3-4	Samsung	available	2018-09-27 05:01:07	2018-09-28 21:23:05
R1-1810891	Evaluation Methodology	Samsung	available	2018-09-27 05:01:07	2018-09-28 08:51:51
R1-1810892	Discussion on UE adaptation schemes	Samsung	available	2018-09-27 05:01:07	2018-09-28 20:47:59
R1-1810893	Discussion on triggering adaptation schemes	Samsung	available	2018-09-27 05:01:07	2018-09-28 20:47:59
R1-1810894	Discussion on UE power consumption reduction in RRM measurement	Samsung	available	2018-09-27 05:01:07	2018-09-28 08:51:51
R1-1810895	Correction for type 6 report for FD-MIMO	Qualcomm	revised	2018-09-27 05:26:10	2018-09-29 02:10:44
R1-1810896	Correction for SPS PUSCH collision with PDSCH	Qualcomm	noted	2018-09-27 05:26:10	2018-09-29 02:10:44
R1-1810897	Correction for type 6 report for FD-MIMO	Qualcomm	revised	2018-09-27 05:26:10	2018-09-29 02:10:44
R1-1810898	HARQ reference configuration for SRS carrier switching	Qualcomm	revised	2018-09-27 05:26:10	2018-09-29 02:10:44
R1-1810899	Discussion on CA capability for SRS carrier switching	Qualcomm	noted	2018-09-27 05:26:10	2018-09-29 02:10:44
R1-1810900	Aperiodic CSI report for PUSCH in UpPTS	Qualcomm	revised	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810901	CSI reference resource with crs-less-ssp10	Qualcomm	revised	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810902	Correction for SRS triggering for SRS carrier switching	Qualcomm	noted	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810903	Maintenance for RSS	Qualcomm	noted	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810904	Maintenance for WUS	Qualcomm	available	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810905	Maintenance for PUSCH subPRB allocation	Qualcomm Incorpora	noted	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810906	Maintenance for flexible starting PRB	Qualcomm	available	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810907	Corrections for 64-QAM	Qualcomm	endorsed	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810908	Corrections for HARQ-ACK feedback	Qualcomm	revised	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810909	Maintenance for WUS	Qualcomm	available	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810910	Maintenance for physical layer SR	Qualcomm	noted	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810911	Maintenance for semi-persistent scheduling	Qualcomm	noted	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810912	Maintenance for Uplink Aspects of TDD NB-IoT	Qualcomm	revised	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810913	Discussion on collision of NPUSCH and Rel-15 NPRACH resources	Qualcomm	noted	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810914	UE-group wake-up signal	Qualcomm	available	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810915	Support for transmission in preconfigured UL resources	Qualcomm	available	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810916	Scheduling of multiple DL/UL transport blocks	Qualcomm	available	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810917	Coexistence of LTE-MTC with NR	Qualcomm	available	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810918	Support of Quality report in msg3	Qualcomm	available	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810919	Usage of CRS for MPDCCH	Qualcomm	available	2018-09-27 05:26:10	2018-09-29 02:10:43

R1-1810920	CE Mode A and B improvements for non-BL Ues	Qualcomm	available	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810921	Use of control region for eMTC Ues	Qualcomm	available	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810922	Use of RSS for RRM measurements	Qualcomm	available	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810923	UE-group wake-up signal	Qualcomm	available	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810924	Support for transmission in preconfigured UL resources	Qualcomm	available	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810925	Scheduling of multiple DL/UL transport blocks	Qualcomm	available	2018-09-27 05:26:10	2018-09-29 02:10:43
R1-1810926	Coexistence of NB-IoT with NR	Qualcomm	available	2018-09-27 05:26:11	2018-09-29 02:10:43
R1-1810927	Support of quality report in msg3 for non-anchor	Qualcomm	available	2018-09-27 05:26:11	2018-09-29 02:10:43
R1-1810928	Presence of NRS on a non-anchor carrier for paging	Qualcomm	available	2018-09-27 05:26:11	2018-09-29 02:10:43
R1-1810929	Additional SRS symbols	Qualcomm	revised	2018-09-27 05:26:11	2018-09-29 02:10:43
R1-1810930	Virtual cell ID for SRS	Qualcomm	noted	2018-09-27 05:26:11	2018-09-29 02:10:43
R1-1810931	Skeleton TR for 36.776	Qualcomm	revised	2018-09-27 05:26:11	2018-09-29 02:10:44
R1-1810932	Work plan for LTE-based 5G terrestrial broadcast	Qualcomm	noted	2018-09-27 05:26:11	2018-09-29 02:10:44
R1-1810933	Requirements and evaluation methodology	Qualcomm Incorpora	noted	2018-09-27 05:26:11	2018-09-29 02:10:44
R1-1810934	Scenarios for evaluation and simulation assumptions	Qualcomm	noted	2018-09-27 05:26:11	2018-09-29 02:10:44
R1-1810935	UL inter-UE multiplexing between eMBB and URLLC	China Telecom	available	2018-09-27 06:00:37	2018-09-27 23:40:28
R1-1810936	Remaining issues on CSI acquisition	MTI	available	2018-09-27 06:06:58	2018-09-28 06:00:12
R1-1810937	Remaining issues on Beam Management	MTI	available	2018-09-27 06:09:11	2018-09-28 06:04:24
R1-1810938	Non-uniform quantization for differential L1-RSRP measurement	MTI	available	2018-09-27 06:10:52	2018-09-28 06:05:18
R1-1810939	Considerations on Design issues for NR V2X unicast, groupcast	ITRI	available	2018-09-27 06:10:55	2018-09-28 08:38:12
R1-1810940	Considerations on Sidelink Synchronization Enhancement for NR V2X	ITRI	available	2018-09-27 06:11:41	2018-09-28 08:38:13
R1-1810941	Considerations on Sidelink resource management techniques for NR V2X	ITRI	available	2018-09-27 06:12:35	2018-09-28 08:38:13
R1-1810942	Discussion on Uu Capability in Supporting Advanced V2X Use Cases	ITRI	available	2018-09-27 06:13:29	2018-09-28 08:38:13
R1-1810943	Design Issues of NR Uu for Resource Configuration on NR sidelink	ITRI	available	2018-09-27 06:14:42	2018-09-28 08:38:13
R1-1810944	Discussion on resource sharing among different	ITRI	available	2018-09-27 06:15:33	2018-09-28 08:38:13
R1-1810945	Discussion on Potential Techniques for NR	ITRI	available	2018-09-27 06:16:15	2018-09-28 08:38:13
R1-1810946	Discussion on introduction of additional SRS symbols	Nokia, Nokia	available	2018-09-27 06:26:08	2018-09-29 04:49:01
R1-1810947	Configuration of virtual cell ID for SRS	Nokia, Nokia	available	2018-09-27 06:27:32	2018-09-29 04:49:01
R1-1810948	Remaining issues about PUCCH regarding UCI multiplexing	ETRI	available	2018-09-27 07:01:58	2018-09-28 22:49:42
R1-1810949	Discussion on L1 enhancements for URLLC	ETRI	available	2018-09-27 07:01:58	2018-09-28 22:49:42
R1-1810950	Editorial corrections of 38.811 for NR-NTN	ETRI	available	2018-09-27 07:01:58	2018-09-29 04:09:38
R1-1810951	Discussion on supporting unicast, groupcast and broadcast via NR sidelink	Panasonic	available	2018-09-27 07:13:21	2018-09-28 07:47:49
R1-1810952	Discussion on physical layer structures and procedure(s) of NR sidelink	Panasonic	available	2018-09-27 07:13:21	2018-09-28 07:47:49
R1-1810953	Discussion on resource allocation mechanism	Panasoni	available	2018-09-27 07:13:21	2018-09-28 07:47:49
R1-1810954	Discussion on coexistence mechanisms for LTE sidelink and NR sidelink	Panasonic	available	2018-09-27 07:13:21	2018-09-28 07:47:49
R1-1810955	Frame structure for NR-U	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31

R1-1810956	Considerations on DL signals and channels for NR-U	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810957	Considerations on UL signals and channels for NR-U	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810958	Channel access procedures for NR-U	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810959	Initial access and mobility for NR-U	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810960	HARQ enhancements for NR-U	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810961	Considerations on configured grant for NR-U	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810962	Maintenance for multi-antenna scheme	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810963	Maintenance for RS and QCL	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810964	Maintenance for UL power control	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810965	Enhancements on type II CSI feedback for MU-MIMO	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810966	Enhancements on multi-TRP and multi-panel transmission	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810967	Discussion on RS enhancement for PAPR reduction	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810968	Evaluation on CSI-RS and DMRS for PAPR reduction	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810969	Text proposals for CSI acquisition	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810970	Text proposals for Beam management	Guangdong OPPO	revised	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810971	Discussion on Multi-beam Operation Enhancement	Guangdong OPPO	revised	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810972	Discussion on the Full TX power UL transmission	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810973	Text proposal for DL/UL data scheduling and HARQ procedure	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810974	Resource allocation enhancements for NR URLLC	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810975	On eMBB and URLLC data differentiation	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810976	UE adaptation to the traffic for UE power saving	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810977	Discussion on mode 2 resource allocation in NR-V2X	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810978	On NR Uu to control LTE sidelink	Guangdong OPPO	noted	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810979	Discussion on dual-connectivity for NR-V2X	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810980	Discussion on QoS management in NR-V2X	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810981	Discussion on coexistence in NR-V2X	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810982	Text proposals for HARQ-ACK transmission	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810983	Text proposals for HARQ-ACK timing	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810984	Discussion of sidelink unicast, groupcast and broadcast for NR-V2X	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810985	Discussion of physical layer structure and procedure for NR-V2X	Guangdong OPPO	available	2018-09-27 07:27:08	2018-09-29 02:01:31
R1-1810986	Discussion of synchronization mechanism for NR-V2X	Guangdong OPPO	available	2018-09-27 07:27:09	2018-09-29 02:01:31
R1-1810987	Enhancement of LTE Uu and NR Uu to control NR sidelink	Guangdong OPPO	available	2018-09-27 07:27:09	2018-09-29 02:01:31
R1-1810988	UE power Consumption Reduction in RRM Measurements	Guangdong OPPO	available	2018-09-27 07:27:09	2018-09-29 02:01:31

R1-1810989	Maintenance for Physical random access channel and procedure	Guangdong OPPO	available	2018-09-27 07:27:09	2018-09-29 02:01:31
R1-1810990	Maintenance for NR RRM and RLM	Guangdong OPPO	available	2018-09-27 07:27:09	2018-09-29 02:01:31
R1-1810991	Layer 1 enhancement for URLLC	Guangdong OPPO	available	2018-09-27 07:27:09	2018-09-29 02:01:31
R1-1810992	Consideration on UL inter UE Tx prioritization and multiplexing	Guangdong OPPO	available	2018-09-27 07:27:09	2018-09-29 02:01:31
R1-1810993	Grant free transmission enhancement	Guangdong OPPO	available	2018-09-27 07:27:09	2018-09-29 02:01:31
R1-1810994	Consideration on UL intra UE Tx prioritization and multiplexing	Guangdong OPPO	available	2018-09-27 07:27:09	2018-09-29 02:01:31
R1-1810995	Consideration on NoMA procedure	Guangdong OPPO	available	2018-09-27 07:27:09	2018-09-29 02:01:31
R1-1810996	Downlink signals and channels for initial access	Guangdong OPPO	available	2018-09-27 07:27:09	2018-09-29 02:01:31
R1-1810997	Triggering adaptation to the traffic for UE power saving	Guangdong OPPO	available	2018-09-27 07:27:09	2018-09-29 02:01:31
R1-1810998	Remaining issues on PRB bundling for DL	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 01:49:39
R1-1810999	Discussion on power imbalance issue for DMRS	Spreadtrum	withdrawn	2018-09-27 07:33:30	
R1-1811000	Remaining issues on reference signals	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 01:49:39
R1-1811001	Discussion on multi-TRP transmission	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 01:49:39
R1-1811002	Discussion on multi-beam operation	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 01:49:39
R1-1811003	Considerations on beam-based transmission for sidelink	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 02:43:48
R1-1811004	Remaining issues on carrier aggregation and bandwidth part	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 01:49:39
R1-1811005	Discussion on HARQ enhancement in NR-U	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 02:07:57
R1-1811006	Discussion on UL grant-free transmission enhancement	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 01:49:39
R1-1811007	Discussion on resource allocation for Mode 2	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 02:07:57
R1-1811008	Discussion on NR sidelink synchronization mechanisms	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 03:20:17
R1-1811009	Consideration on sidelink unicast, groupcast, and broadcast	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 02:07:57
R1-1811010	Discussion on sidelink physical layer structures and procedure(s)	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 02:43:48
R1-1811011	Remaining issues on CSI acquisition	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 01:49:39
R1-1811012	NR power saving on RRM measurement	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 01:49:39
R1-1811013	Disscussion on DRS in NR-U	Spreadtrum	withdrawn	2018-09-27 07:33:30	
R1-1811014	Discussion on initial access and mobility in NR-U	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 01:49:39
R1-1811015	Discussion on triggering adaptation for UE power saving	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 02:43:48
R1-1811016	Study on modeling of UE power consumption	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 03:20:17
R1-1811017	Discussion on frame structure for NR-U operation	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 01:49:39
R1-1811018	Consideration on configured grant transmission in NR-U operation	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 01:49:39
R1-1811019	Discussion on UL inter UE Tx prioritization/multiplexing	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 01:49:39
R1-1811020	Consideration on URLLC physical layer enhancement	Spreadtrum	withdrawn	2018-09-27 07:33:30	
R1-1811021	Discussion on UL signals and channels in NR-U	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 01:49:39

R1-1811022	Remaining issues on PUCCH and UCI multiplexing	Spreadtrum	available	2018-09-27 07:33:30	2018-09-29 01:49:39
R1-1811023	On Default Configurations for L1 Parameters	Nokia, Nokia	available	2018-09-27 08:00:08	2018-09-28 19:13:54
R1-1811024	Remaining issues on resource allocation	Nokia, Nokia	available	2018-09-27 08:00:08	2018-09-28 19:13:54
R1-1811025	On selected NR Rel-15 MIMO/beam management UE features	Nokia, Nokia	noted	2018-09-27 08:00:08	2018-09-28 19:13:54
R1-1811026	On selected NR Rel-15 non-MIMO UE features	Nokia, Nokia	noted	2018-09-27 08:00:08	2018-09-28 19:13:54
R1-1811027	Discussion on NR Positioning Requirements	Nokia, Nokia	available	2018-09-27 08:00:08	2018-09-28 19:13:54
R1-1811028	Evaluation Scenarios and Methodologies for Positioning Solutions in NR	Nokia, Nokia	available	2018-09-27 08:00:08	2018-09-28 19:13:54
R1-1811029	Potential techniques for NR positioning	Nokia, Nokia	available	2018-09-27 08:00:08	2018-09-28 19:13:54
R1-1811030	Discussion on remaining issues on SRS	CMCC	available	2018-09-27 08:50:51	2018-09-29 03:36:43
R1-1811031	Discussions on beam failure recovery	CMCC	available	2018-09-27 08:50:51	2018-09-29 03:36:43
R1-1811032	Considerations on NoMA Transmitter Scheme Design	CMCC	available	2018-09-27 08:50:51	2018-09-29 03:36:43
R1-1811033	Considerations on NoMA related procedures	CMCC	available	2018-09-27 08:50:51	2018-09-29 03:36:43
R1-1811034	Discussion on number of admissible users in NOMA	CMCC	noted	2018-09-27 08:50:51	2018-09-29 03:36:43
R1-1811035	Discussions on enhancements to support NR Backhaul links	CMCC	available	2018-09-27 08:50:51	2018-09-29 03:36:43
R1-1811036	Discussion on channel design of HARQ and CSI feedback for V2X	CMCC	available	2018-09-27 08:50:51	2018-09-29 03:36:43
R1-1811037	Discussion on resource allocation mechnism for	CMCC	available	2018-09-27 08:50:51	2018-09-29 03:36:43
R1-1811038	Discussion on design for NR Uu control LTE sidelink	CMCC	noted	2018-09-27 08:50:51	2018-09-29 03:36:43
R1-1811039	Updated Work plan for Rel-16 SI on NR RIM	CMCC	noted	2018-09-27 08:50:51	2018-09-29 03:36:43
R1-1811040	Discussion on remaining evaluation assumptions and initial evaluation results for	CMCC	revised	2018-09-27 08:50:51	2018-09-29 03:36:43
R1-1811041	Discussion on improving network robustness for RIM	CMCC	available	2018-09-27 08:50:51	2018-09-29 03:36:43
R1-1811042	Discussion on RS design for RIM	CMCC	noted	2018-09-27 08:50:51	2018-09-29 04:25:29
R1-1811043	Discussion on UL inter UE Tx	CMCC	available	2018-09-27 08:50:51	2018-09-29 03:36:43
R1-1811044	Discussion on out-of-order scheduling and HARQ	CMCC, China	available	2018-09-27 08:50:52	2018-09-29 03:36:43
R1-1811045	Updated evaluation results for downlink eMBB spectrum efficiency	CMCC	available	2018-09-27 08:50:52	2018-09-29 03:36:43
R1-1811046	Initial evaluation results for uplink eMBB	CMCC	available	2018-09-27 08:50:52	2018-09-29 03:36:43
R1-1811047	Initial link-level self evaluation results for reliability in URLLC scenario	CMCC	available	2018-09-27 08:50:52	2018-09-29 03:36:43
R1-1811048	Discussion on DL multi-TRP transmission	CMCC	available	2018-09-27 08:50:52	2018-09-29 03:36:43
R1-1811049	Consideration on measurement and reporting of L1-RSRQ/L1-SINR	CMCC	available	2018-09-27 08:50:52	2018-09-29 03:36:43
R1-1811050	Considerations for UE power saving	CMCC	noted	2018-09-27 08:50:52	2018-09-29 03:36:43
R1-1811051	Discussion on CSI report enhancement for CDRX	CMCC	available	2018-09-27 08:50:52	2018-09-29 03:36:43
R1-1811052	Discussion on requirements and scenarios on	CMCC	available	2018-09-27 08:50:52	2018-09-29 03:36:43
R1-1811053	Discussion on enhancements for NR positioning	CMCC	available	2018-09-27 08:50:52	2018-09-29 03:36:43
R1-1811054	Extensions for Channel Access Procedures	Motorola Mobility,	available	2018-09-27 09:00:47	2018-09-28 21:26:06
R1-1811055	Initial Access and Diversity in RACH transmissions	Motorola Mobility,	available	2018-09-27 09:02:29	2018-09-28 21:26:06
R1-1811056	Correction on PDSCH RE mapping around aperiodic zero power CSI-RS in 36.213	Huawei, HiSilicon	revised	2018-09-27 09:29:11	2018-09-29 05:16:49
R1-1811057	UE-group wake-up signal for MTC	Nokia, Nokia	available	2018-09-27 09:30:42	2018-09-28 15:36:34

R1-1811058	Transmission in preconfigured UL resources	Nokia, Nokia	available	2018-09-27 09:31:52	2018-09-28 13:14:03
R1-1811059	Scheduling of multiple DL/UL transport blocks	Nokia, Nokia	available	2018-09-27 09:32:48	2018-09-28 12:57:12
R1-1811060	Coexistence of eMTC with NR	Nokia, Nokia	available	2018-09-27 09:34:00	2018-09-28 12:57:12
R1-1811061	Support of Quality report in Msg3	Nokia, Nokia	available	2018-09-27 09:35:04	2018-09-28 13:14:03
R1-1811062	MPDCCH performance improvement	Nokia, Nokia	noted	2018-09-27 09:36:00	2018-09-28 12:57:12
R1-1811063	Updated UMi calibration results for user experience data rate in the multi-layer network	ZTE	available	2018-09-27 09:36:41	2018-09-27 10:00:59
R1-1811064	Updated DL spectral efficiency in the eMBB usage scenario for IMT-2020 self evaluation	ZTE	available	2018-09-27 09:36:49	2018-09-28 07:51:49
R1-1811065	Updated UL spectral efficiency in the eMBB usage scenario for IMT-2020 self evaluation	ZTE	available	2018-09-27 09:36:49	2018-09-28 07:52:15
R1-1811066	Consideration on Evaluation methodology of IMT-2020 self-evaluation	ZTE	available	2018-09-27 09:36:49	2018-09-29 02:57:02
R1-1811067	Consideration on Evaluation of Mobility of IMT-2020 self-evaluation	ZTE	available	2018-09-27 09:36:49	2018-09-28 07:52:15
R1-1811068	Consideration on Evaluation of Connection density of IMT-2020 self-evaluation	ZTE	available	2018-09-27 09:36:49	2018-09-29 03:10:15
R1-1811069	Consideration on Evaluation of Peak data rate and Peak spectral efficiency of IMT-2020 self-	ZTE	available	2018-09-27 09:36:49	2018-09-29 02:57:02
R1-1811070	CE mode A and B improvements for non-BL UEs	Nokia, Nokia	available	2018-09-27 09:36:54	2018-09-28 15:36:34
R1-1811071	Consideration on the usage of LTE control channel region	Nokia, Nokia	available	2018-09-27 09:38:05	2018-09-28 12:57:12
R1-1811072	Use of RSS for measurement improvements	Nokia, Nokia	available	2018-09-27 09:39:02	2018-09-28 13:14:03
R1-1811073	UE group wake-up signal for NB-IoT	Nokia, Nokia	available	2018-09-27 09:47:33	2018-09-28 15:36:34
R1-1811074	Preconfigured Grant for Uplink transmission	Nokia, Nokia	available	2018-09-27 09:48:29	2018-09-28 12:57:12
R1-1811075	Scheduling of multiple DL/UL transport blocks	Nokia, Nokia	available	2018-09-27 09:49:32	2018-09-28 12:57:12
R1-1811076	Coexistence of NB-IoT with NR	Nokia, Nokia	withdrawn	2018-09-27 09:50:44	
R1-1811077	Support of Quality report in Msg3 on non-anchor carrier	Nokia, Nokia	available	2018-09-27 09:51:59	2018-09-28 13:14:03
R1-1811078	Presence of NRS on a non-anchor carrier for paging	Nokia, Nokia	available	2018-09-27 09:52:52	2018-09-28 12:57:12
R1-1811079	Coexistence of NB-IoT with NR	Nokia, Nokia	available	2018-09-27 09:55:29	2018-09-28 12:57:12
R1-1811080	L1-RSRQ/L1-SINR versus L1-RSRP for beam measurement and reporting	Fraunhofer IIS,	available	2018-09-27 09:57:54	2018-09-28 16:02:43
R1-1811081	Receiver assissted channel access procedure in NR-U	TCL Commun	available	2018-09-27 09:59:24	2018-09-28 15:22:46
R1-1811082	Discussion on COT sharing for configured grants	TCL Commun	available	2018-09-27 09:59:28	2018-09-28 15:22:46
R1-1811083	Discussion on synchronized user multiplexing for NR-U	TCL Commun	available	2018-09-27 09:59:28	2018-09-28 15:22:46
R1-1811084	Wideband carrier usage for NR-U	TCL Commun	available	2018-09-27 09:59:28	2018-09-28 15:22:46
R1-1811085	Discussion on Frequency Reuse for NR-U	TCL Commun	available	2018-09-27 09:59:28	2018-09-28 15:22:46
R1-1811086	Discussion on signaling of beam correspondence	Fraunhofer IIS,	available	2018-09-27 10:03:02	2018-09-28 16:02:43
R1-1811087	Discussion on power control mechanism for UL inter UE Tx multiplexing	ASUSTEK COMPU	available	2018-09-27 10:06:57	2018-09-28 10:04:06
R1-1811088	Enhancements on Type-II CSI reporting	Fraunhofer IIS,	available	2018-09-27 10:08:07	2018-09-28 16:02:43
R1-1811089	Triggering adaptation of UE power consumption	ASUSTEK COMPU	available	2018-09-27 10:08:24	2018-09-28 10:04:25

R1-1811090	Enhancements on Type-II CSI: Doppler Approach	Fraunhofer IIS,	available	2018-09-27 10:09:54	2018-09-28 16:02:43
R1-1811091	Update for TR 38.866 Study on remote interference management for NR	CMCC	revised	2018-09-27 13:33:20	2018-09-29 03:59:21
R1-1811092	Discussion on support of unicast, groupcast and broadcast in NR V2X	China Unicom	available	2018-09-27 14:13:46	2018-09-28 09:55:31
R1-1811093	Discussion on the resource allocation for NR-	China	available	2018-09-27 14:16:04	2018-09-28 09:55:58
R1-1811094	Discussion on UL inter UE Tx multiplexing	China	available	2018-09-27 14:19:33	2018-09-28 09:55:58
R1-1811095	Wideband operation in NR unlicensed	PANASO	available	2018-09-27 15:33:41	2018-09-28 15:30:19
R1-1811096	TR38.885 v0.0.1 for Study on NR Vehicle-to-Everything (V2X)	Huawei, HiSilicon	endorsed	2018-09-27 15:41:18	2018-09-28 15:45:33
R1-1811097	On ARQ/HARQ-related procedures for NOMA grant-free random access	Fraunhofer HHI	available	2018-09-27 15:48:36	2018-09-28 14:03:24
R1-1811098	UE-specific regular-sparse RE mapping for NR-NOMA	Fraunhofer HHI	available	2018-09-27 15:50:51	2018-09-28 13:47:05
R1-1811099	Remaining details on NR Random Access	Nokia, Nokia	available	2018-09-27 15:53:41	2018-09-29 02:18:32
R1-1811100	Remaining details on NR Physical UL Control Channel	Nokia, Nokia	available	2018-09-27 15:53:41	2018-09-29 02:18:32
R1-1811101	Considerations on NOMA Transmitter	Nokia, Nokia	available	2018-09-27 15:53:41	2018-09-29 02:19:21
R1-1811102	Receiver considerations for UL NOMA	Nokia, Nokia	available	2018-09-27 15:53:41	2018-09-29 02:19:21
R1-1811103	Procedures to be considered for NOMA operation	Nokia, Nokia	noted	2018-09-27 15:53:41	2018-09-29 02:19:21
R1-1811104	Evaluations for NOCA	Nokia, Nokia	available	2018-09-27 15:53:41	2018-09-29 02:46:38
R1-1811105	TR 38.824 v0.0.1 for Study on physical layer enhancements for NR ultra-reliable low latency communication (URLLC)	Huawei	revised	2018-09-27 16:24:33	2018-09-29 03:55:47
R1-1811106	Discussion on remaining aspects of simulation assumptions	TOYOTA InfoTechn	available	2018-09-27 16:43:57	2018-09-29 01:09:10
R1-1811107	On PDCCH enhancements for URLLC	Mitsubishi Electric	available	2018-09-27 17:15:47	2018-09-28 20:43:50
R1-1811108	Reliability Evaluation of URLLC Factory	Ericsson	available	2018-09-27 17:55:18	2018-09-29 06:34:21
R1-1811109	Performance Evaluation of PDCCH for URLLC	Ericsson	available	2018-09-27 17:55:18	2018-09-29 06:34:21
R1-1811110	Channel Model for Factory Automation Scenario	Ericsson	available	2018-09-27 17:55:18	2018-09-29 06:34:21
R1-1811111	Uplink Power Control Enhancement for NR	Ericsson	available	2018-09-27 17:55:18	2018-09-29 06:34:21
R1-1811112	Alignment Delay Study For URLLC Latency	Ericsson	available	2018-09-27 17:55:18	2018-09-29 06:34:21
R1-1811113	HARQ-ACK feedback for URLLC	InterDigit	available	2018-09-27 19:17:47	2018-09-29 00:04:28
R1-1811114	URLLC UCI prioritization	InterDigit	available	2018-09-27 19:17:47	2018-09-29 00:04:28
R1-1811115	Resource allocation for NR V2X	InterDigit	available	2018-09-27 19:17:47	2018-09-29 00:04:28
R1-1811116	QoS Management for NR V2X	InterDigit	available	2018-09-27 19:17:48	2018-09-29 00:04:28
R1-1811117	Power Sharing in NE-DC	InterDigit	withdrawn	2018-09-27 19:17:48	
R1-1811118	Discussions on Rel-15 NR UE feature list	Apple Inc.	available	2018-09-27 19:26:19	2018-09-29 03:44:57
R1-1811119	Channel access procedures for NR-U	Apple Inc.	available	2018-09-27 19:26:23	2018-09-29 03:44:57
R1-1811120	On DL signals and channels for NR-U	Apple Inc.	available	2018-09-27 19:26:23	2018-09-29 03:44:57
R1-1811121	On UL signals and channels for NR-U	Apple Inc.	available	2018-09-27 19:26:23	2018-09-29 03:44:57
R1-1811122	Discussions on EN-DC power control	Apple Inc.	noted	2018-09-27 19:26:23	2018-09-29 03:44:57
R1-1811123	Resource allocation for V2X Broadcast and Group-cast communication	Apple Inc.	available	2018-09-27 19:26:23	2018-09-29 03:44:57
R1-1811124	Considerations on PDCCH design for NCJT	Apple Inc.	available	2018-09-27 19:26:23	2018-09-29 03:44:57
R1-1811125	Consideration of beam measurement and reporting enhancement	Apple Inc.	available	2018-09-27 19:26:23	2018-09-29 03:44:57
R1-1811126	Power model and evaluation assumptoins for UE power saving mechanism evaluation	Apple Inc.	available	2018-09-27 19:26:23	2018-09-29 03:44:57
R1-1811127	Network-indication based Approaches for UE power saving	Apple Inc.	noted	2018-09-27 19:26:23	2018-09-29 03:44:57
R1-1811128	UE-assisted Approaches for UE power saving	Apple Inc.	available	2018-09-27 19:26:23	2018-09-29 03:44:57
R1-1811129	Intermediate Summary of Offline Discussion on NR Positioning	Intel Corporati	revised	2018-09-27 19:52:56	2018-09-29 06:24:02
R1-1811130	Clarification on RV determination	Intel	noted	2018-09-27 20:03:07	2018-09-29 06:32:28

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R1-1811132	Complexity Analysis of ESE-based Soft IC Receiver	Nokia, Nokia	available	2018-09-27 21:05:45	2018-09-29 02:19:21
R1-1811133	Using barometric pressure for altitude	Polaris	withdrawn	2018-09-27 22:21:47	
R1-1811134	Necessity of PUCCH/PUSCH enhancements for additional SRS symbols	SoftBank Corp.	available	2018-09-27 23:11:40	2018-09-28 01:50:11
R1-1811135	Discussion on Enhancements to support NR backhaul links	Sony	available	2018-09-27 23:13:04	2018-09-28 23:49:30
R1-1811136	Power state model and IDLE mode evaluation assumptions for NR power consumption study	Sony	available	2018-09-27 23:13:04	2018-09-28 23:49:30
R1-1811137	Enhancements of NR power saving feature	Sony	available	2018-09-27 23:13:04	2018-09-28 23:49:30
R1-1811138	Reducing UE power consumption in RRM measurements	Sony	available	2018-09-27 23:13:04	2018-09-28 23:49:30
R1-1811139	[Draft] Reply LS on intra-band combination for NR CA and MR-DC	Intel Corporati	revised	2018-09-28 00:30:44	2018-09-29 06:24:02
R1-1811140	Remaining issues on paging	Sharp	available	2018-09-28 00:39:58	2018-09-28 22:05:04
R1-1811141	Remaining issues on CSI reporting	Sharp	available	2018-09-28 00:39:58	2018-09-28 22:05:04
R1-1811142	Remaining issues on beam management	Sharp	available	2018-09-28 00:39:58	2018-09-28 22:05:04
R1-1811143	Remaining issues on PUCCH	Sharp	available	2018-09-28 00:39:58	2018-09-28 22:05:04
R1-1811144	Remaining issues on BWP	Sharp	available	2018-09-28 00:39:58	2018-09-28 22:05:04
R1-1811145	Remaining issues on DL/UL data scheduling	Sharp	available	2018-09-28 00:39:58	2018-09-28 23:39:31
R1-1811146	RB alignment with LTE in case of 7.5 kHz frequency shift for a NR UL carrier	Sharp	noted	2018-09-28 00:39:58	2018-09-28 22:05:04
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R1-1811149	UL channel and signal design for NR unlicensed operation	Sharp	available	2018-09-28 00:39:58	2018-09-28 22:05:04
R1-1811150	Channel access procedures for NR unlicensed operation	Sharp	available	2018-09-28 00:39:58	2018-09-28 22:05:04
R1-1811151	HARQ enhancement for NR unlicensed operation	Sharp	available	2018-09-28 00:39:58	2018-09-28 22:05:04
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R1-1811153	Views on physical layer structures and procedures for NR V2X	Sharp	available	2018-09-28 00:39:58	2018-09-28 22:05:04
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R1-1811157	Evaluation Results of Spectral efficiency in InH eMBB for IMT-2020 self-evaluation	Sharp	available	2018-09-28 00:39:58	2018-09-28 22:05:04
R1-1811158	Evaluation Results of Area traffic capacity for IMT-2020 self-evaluation	Sharp	available	2018-09-28 00:39:58	2018-09-28 22:05:04
R1-1811159	Evaluation Results of Mobility in InH eMBB for IMT-2020 self-evaluation	Sharp	available	2018-09-28 00:39:58	2018-09-28 22:05:04
R1-1811160	Discussion on physical layer enhancements for NR IAB	ZTE, Sanechip	available	2018-09-28 00:53:18	2018-09-29 03:18:51
R1-1811161	Further consideration on CLI	ZTE,	available	2018-09-28 00:55:18	2018-09-29 03:18:51
R1-1811162	Initial view on enhancements of unicast and groupcast communication	KDDI Corporati	available	2018-09-28 01:05:45	2018-09-28 09:46:58
R1-1811163	Discussion on supporting HARQ combining	ASUSTEK COMPU	available	2018-09-28 01:24:50	2018-09-28 09:58:17

R1-1811164	Discussion on resource pool and bandwidth part	ASUSTEK COMPU	available	2018-09-28 01:26:39	2018-09-28 09:58:17
R1-1811165	Consideration on Mode 2 NR-V2X sidelink communication	ASUSTEK COMPU	available	2018-09-28 01:28:03	2018-09-28 09:58:17
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R1-1811167	On Rel-16 LTE SRS enhancements	Ericsson	noted	2018-09-28 02:13:50	2018-09-29 05:38:59
R1-1811168	Virtual cell ID configuration for SRS	Ericsson	available	2018-09-28 02:13:50	2018-09-29 05:38:59
R1-1811169	Evaluation assumptions for SRS enhancements	Ericsson	available	2018-09-28 02:13:50	2018-09-29 05:38:59
R1-1811170	Maintenance for multi-antenna scheme	Ericsson	available	2018-09-28 02:13:50	2018-09-29 05:38:59
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R1-1811175	Receiver design for NOMA	Ericsson	noted	2018-09-28 02:13:50	2018-09-29 05:38:59
R1-1811176	Procedures for NoMA	Ericsson	available	2018-09-28 02:13:50	2018-09-29 05:38:59
R1-1811177	Evaluation methodology and metrics for NoMA	Ericsson	revised	2018-09-28 02:13:50	2018-09-29 05:38:59
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R1-1811181	DMRS design for NoMA	Ericsson	available	2018-09-28 02:13:50	2018-09-29 05:38:59
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R1-1811184	Conclusion on the need for DMRS and CSI-RS PAPR reduction	Ericsson	noted	2018-09-28 02:13:50	2018-09-29 05:38:59
R1-1811185	Type 1 mapping of half pi by two BPSK DFTS	Ericsson	available	2018-09-28 02:13:50	2018-09-29 05:38:59
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R1-1811187	Maintenance for beam management	Ericsson	available	2018-09-28 02:13:50	2018-09-29 05:46:23
R1-1811188	Enhancements on Multi-beam Operation	Ericsson	available	2018-09-28 02:13:50	2018-09-29 05:46:23
R1-1811189	Link recovery on SCell	Ericsson	available	2018-09-28 02:13:50	2018-09-29 05:46:23
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R1-1811193	On CSI Enhancements for MU-MIMO support	Ericsson	available	2018-09-28 02:13:50	2018-09-29 05:46:23
R1-1811194	Details of IDMA Transmitter Processing	InterDigital, Inc.	available	2018-09-28 02:33:36	2018-09-29 04:23:36
R1-1811195	Complexity Evaluation of ESE-based IDMA Receivers	InterDigital, Inc.	available	2018-09-28 02:34:47	2018-09-29 04:23:36
R1-1811196	IAB evaluations based on different topology	ZTE,	noted	2018-09-28 02:35:33	2018-09-29 03:18:51
R1-1811197	On Non-orthogonal Multiple Access Procedures	InterDigital, Inc.	available	2018-09-28 02:35:44	2018-09-29 04:23:36
R1-1811198	Preliminary System Level Evaluation of IDMA NOMA	InterDigital, Inc.	available	2018-09-28 02:36:38	2018-09-29 04:23:36
R1-1811199	Link Level Evaluation of NOMA	InterDigital, Inc.	available	2018-09-28 02:37:25	2018-09-29 04:23:36
R1-1811200	Further updates on Link Level Simulation Results on IDMA OFDM/DFT-s-OFDM	InterDigital, Inc.	available	2018-09-28 02:38:27	2018-09-29 04:23:36
R1-1811201	NR-U frame structure design	InterDigital, Inc.	available	2018-09-28 02:39:24	2018-09-29 04:23:36
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R1-1811203	Design aspects of NR-U uplink signals and channels	InterDigital, Inc.	available	2018-09-28 02:41:11	2018-09-29 04:23:36
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R1-1811205	Initial Access and Mobility Procedures in NR-U	InterDigital, Inc.	available	2018-09-28 02:42:56	2018-09-29 04:24:21
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R1-1811210	On evaluation of RIM	Nokia, Nokia	noted	2018-09-28 02:47:35	2018-09-28 11:03:26
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R1-1811213	NR Sidelink Physical Layer Structures and Procedures	InterDigital, Inc.	available	2018-09-28 02:48:06	2018-09-29 04:24:21
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R1-1811224	On evaluation methodology for power saving	InterDigital, Inc.	available	2018-09-28 03:06:02	2018-09-29 04:24:51
R1-1811225	On UE power consumption characteristics	InterDigital, Inc.	available	2018-09-28 03:06:57	2018-09-29 04:24:51
R1-1811226	On UE adaptation for power saving	InterDigital, Inc.	available	2018-09-28 03:07:49	2018-09-29 04:24:51
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R1-1811228	Maintenance for Physical random access channel and procedure	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:50:40
R1-1811229	Maintenance for multi-antenna scheme	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:50:40
R1-1811230	Maintenance for CSI acquisition	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:50:40
R1-1811231	Maintenance for beam management	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 15:35:40
R1-1811232	Maintenance for RS	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:50:39
R1-1811233	Details on simultaneous reception of PHY channels and RS in FR2	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:50:39
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R1-1811236	Maintenance for DL/UL data scheduling and HARQ procedure	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:50:39
R1-1811237	Maintenance for carrier aggregation and bandwidth parts	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:50:39
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R1-1811255	Potential enhancements to configured grants for NR-U	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:51:42
R1-1811256	Enhancements to support NR backhaul links	Qualcomm	noted	2018-09-28 03:13:14	2018-09-29 05:53:04
R1-1811257	System Level Simulation Results for IAB Networks	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:53:04
R1-1811258	IAB resource management	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:53:04
R1-1811259	Network Synchronization for Multi-hop IAB Networks	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:53:04
R1-1811260	Procedures and use cases for groupcast and unicast transmissions	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:53:04
R1-1811261	Considerations on Physical Layer aspects of NR V2X	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:53:04
R1-1811262	Synchronization design for NR V2X	Qualcomm	noted	2018-09-28 03:13:14	2018-09-29 05:53:04
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R1-1811264	Discussion on NLOS Channel Model	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:53:04
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R1-1811266	Enhancements of NR Uu to control LTE sidelink	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:53:04
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R1-1811269	Remaining details on evaluation methodology	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:54:00
R1-1811270	Mechanisms for improving network robustness	Qualcomm	noted	2018-09-28 03:13:14	2018-09-29 05:54:00
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R1-1811273	UL inter UE Tx prioritization-multiplexing	Qualcomm	noted	2018-09-28 03:13:14	2018-09-29 05:54:00
R1-1811274	Enhanced SPS and grant-free transmissions	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:54:00
R1-1811275	eURLLC Considerations for Factory Automation	Qualcomm	available	2018-09-28 03:13:14	2018-09-29 05:54:00
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R1-1811277	Multi-TRP Enhancements	Qualcomm	available	2018-09-28 03:13:15	2018-09-29 05:54:00
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R1-1811281	UE Power Saving Evaluation Methodology	Qualcomm	noted	2018-09-28 03:13:15	2018-09-29 05:54:42
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R1-1811285	Requirements and Performance Metrics for Positioning Evaluations	Qualcomm	available	2018-09-28 03:13:15	2018-09-29 05:54:42
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R1-1811289	Discussion on PUCCH Resource Allocation and HARQ Codebook Determination in URLLC	China Telecom	available	2018-09-28 03:22:39	2018-09-28 03:26:09
R1-1811290	Remaining issues on NR paging	Motorola Mobility,	available	2018-09-28 03:30:59	2018-09-29 06:00:00
R1-1811291	Maintenance for SRS	Motorola Mobility,	available	2018-09-28 03:31:00	2018-09-29 06:00:00
R1-1811292	Maintenance for NR-LTE co-existence	Motorola Mobility,	available	2018-09-28 03:31:00	2018-09-29 06:00:00
R1-1811293	Maintenance for UL power control	Motorola Mobility,	available	2018-09-28 03:31:00	2018-09-29 06:00:00
R1-1811294	Discussion on L1 enhancements for URLLC	Motorola Mobility,	available	2018-09-28 03:31:00	2018-09-29 06:00:00
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R1-1811296	Optimizing power consumption of connected mode UE during RACH	Motorola Mobility,	available	2018-09-28 03:31:00	2018-09-29 06:13:56
R1-1811297	Coexistence evaluation results for NR-U and	Ericsson	available	2018-09-28 03:33:33	2018-09-29 04:58:09
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R1-1811301	Channel access mechanisms for NR-U	Ericsson	available	2018-09-28 03:33:33	2018-09-29 04:58:09
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R1-1811307	ACLR aspects of wideband carrier operation	Ericsson	available	2018-09-28 03:33:33	2018-09-29 04:58:09
R1-1811308	Draft LS to RAN4 on CACLR requirements for	Ericsson	revised	2018-09-28 03:33:33	2018-09-29 04:58:09
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R1-1811310	On the use of a preamble for NR-U	Ericsson	revised	2018-09-28 03:33:33	2018-09-29 04:58:09

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R1-1811313	Correction on Type-1 HARQ-ACK codebook determination	ITRI	available	2018-09-28 04:48:41	2018-09-28 08:51:31
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R1-1811319	SSB Transmission Principles	Charter Commun	available	2018-09-28 05:02:42	2018-09-29 02:07:23
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R1-1811325	DRS Framework and Multiplexing	Charter Commun	available	2018-09-28 05:02:42	2018-09-29 02:07:23
R1-1811326	Presence of NRS on a non-anchor carrier for paging	Qualcomm Europe	noted	2018-09-28 05:12:15	2018-10-10 11:36:41
R1-1811327	NTN Overview	Ericsson	available	2018-09-28 05:21:02	2018-09-29 04:21:07
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R1-1811347	Type II CSI feedback enhancement	NTT	available	2018-09-28 05:32:53	2018-09-29 04:21:59
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R1-1811404	Maintenance for beam management	Nokia, Nokia	available	2018-09-28 07:01:31	2018-09-29 00:04:42
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R1-1811407	Enhancements on Multi-TRP/Panel Transmission	Nokia, Nokia	available	2018-09-28 07:01:31	2018-09-29 00:04:42
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R1-1811422	On resource allocation of V2x communications	Xiaomi Commun	available	2018-09-28 07:48:24	2018-09-28 11:21:38
R1-1811423	Remaining issues on downlink control channel	ASUSTEK COMPU	available	2018-09-28 08:38:54	2018-09-28 10:15:18
R1-1811424	Remaining details on BWP	ASUSTEK COMPU	available	2018-09-28 08:42:12	2018-09-28 10:15:18
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R1-1811429	On Sidelink Resource Allocation	Nokia, Nokia	available	2018-09-28 08:52:43	2018-09-29 06:02:00
R1-1811430	On Uu for advanced V2X use cases	Nokia, Nokia	available	2018-09-28 08:52:43	2018-09-29 06:02:00

R1-1811431	On Enhancements of LTE Uu and NR Uu to control NR sidelink	Nokia, Nokia	available	2018-09-28 08:52:43	2018-09-29 06:02:00
R1-1811432	On Enhancements of NR Uu to control LTE sidelink	Nokia, Nokia	available	2018-09-28 08:52:43	2018-09-29 06:02:00
R1-1811433	On QoS Management	Nokia, Nokia	available	2018-09-28 08:52:43	2018-09-29 06:02:00
R1-1811434	Discussion on coexistence between NR sidelink and LTE sidelink	Nokia, Nokia	noted	2018-09-28 08:52:43	2018-09-29 06:02:00
R1-1811435	Correction on RACH procedure	ITL	available	2018-09-28 08:53:06	2018-09-29 00:20:34
R1-1811436	Evaluation results for RIM RS and remaining issues on evaluation methodology for RS	Ericsson	revised	2018-09-28 08:55:15	2018-09-28 18:01:02
R1-1811437	On mechanisms for increasing network robustness	Ericsson	available	2018-09-28 08:55:17	2018-09-28 18:01:02
R1-1811438	On RIM reference signal design	Ericsson	available	2018-09-28 08:55:17	2018-09-28 18:01:02
R1-1811439	On encoding of gNB set ID in RIM-RS	Ericsson	available	2018-09-28 08:55:17	2018-09-28 18:01:02
R1-1811440	On mechanisms for gNB coordination	Ericsson	available	2018-09-28 08:55:17	2018-09-28 18:01:02
R1-1811441	System assessments for RIM	Ericsson	available	2018-09-28 08:55:17	2018-09-28 18:01:02
R1-1811442	PRACH improvements for network robustness	Ericsson	available	2018-09-28 08:55:18	2018-09-28 18:01:02
R1-1811443	Initial access and mobility for NR-U	ITL	available	2018-09-28 08:56:40	2018-09-29 00:20:34
R1-1811444	Considerations on sidelink synchronization signal design for NR V2X	ITL	available	2018-09-28 08:57:08	2018-09-29 06:03:20
R1-1811445	Discussion on UL inter UE Tx	Potevio	available	2018-09-28 09:02:24	2018-09-28 09:13:26
R1-1811446	On initial access procedure for NR-U	Potevio	available	2018-09-28 09:02:24	2018-09-28 09:13:26
R1-1811447	Discussion on UL Inter UE Tx	III	available	2018-09-28 09:19:49	2018-09-28 09:22:59
R1-1811448	Considerations on sidelink physical layer measurement for NR V2X	Sony Europe	available	2018-09-28 09:32:43	2018-09-28 23:49:30
R1-1811449	Timing of IAB-node transmissions	Ericsson	available	2018-09-28 09:45:50	2018-09-28 21:22:57
R1-1811450	Remaining issues on PUCCH	WILUS Inc.	available	2018-09-28 09:46:56	2018-09-29 04:40:40
R1-1811451	Remaining issues on HARQ-ACK multiplexing	WILUS Inc.	available	2018-09-28 09:46:56	2018-09-29 04:40:40
R1-1811452	Consideration on UL channel design for NR-U	WILUS	available	2018-09-28 09:46:56	2018-09-29 04:40:41
R1-1811453	Channel access procedure for NR-U operation	WILUS	available	2018-09-28 09:46:56	2018-09-29 04:40:40
R1-1811454	On initial access and mobility for NR-U	WILUS	available	2018-09-28 09:46:56	2018-09-29 04:40:40
R1-1811455	What is uplink in the context of IAB nodes	Ericsson	available	2018-09-28 09:48:33	2018-09-28 21:22:57
R1-1811456	Remaining issues on PUSCH power control	ASUSTEK COMPU	available	2018-09-28 09:48:35	2018-09-28 10:16:41
R1-1811457	EN-DC and NE-DC power control	Nokia, Nokia	noted	2018-09-28 09:48:38	2018-09-28 19:13:54
R1-1811458	PDSCH resource allocation restriction for power saving	ASUSTEK COMPU	available	2018-09-28 09:52:10	2018-09-28 10:16:41
R1-1811459	Overview of Potential NR Positioning	Fraunhof	available	2018-09-28 09:53:38	2018-09-28 20:07:17
R1-1811460	Evaluation of NR-U – Wi-Fi coexistence in the NR-U Indoor Sub 7GHz topology	BROADCOM	available	2018-09-28 09:55:12	2018-09-29 05:14:59
R1-1811461	L1 enhancements for URLLC	Sequans Commun	available	2018-09-28 09:56:32	2018-09-28 13:00:47
R1-1811462	Considerations on UL inter-UE multiplexing for URLLC	Sequans Commun	available	2018-09-28 09:58:09	2018-09-28 13:00:47
R1-1811463	Enhancements for grant free transmissions	Sequans Commun	available	2018-09-28 09:59:25	2018-09-28 13:00:47
R1-1811464	NR positioning requirements for commercial	Fraunhof	available	2018-09-28 10:01:15	2018-09-28 20:07:17
R1-1811465	Evaluation scenarios and methodologies for NR	Fraunhof	available	2018-09-28 10:02:25	2018-09-28 20:07:17
R1-1811466	Channel model considerations for NR	Fraunhof	available	2018-09-28 10:05:19	2018-09-28 20:07:17
R1-1811467	Discussion on remaining aspects of simulation assumptions for sidelink	Huawei, HiSilicon	available	2018-09-28 10:17:29	2018-09-29 01:43:53
R1-1811468	PUSCH enhancements for URLLC	Huawei,	available	2018-09-28 10:17:29	2018-09-29 04:16:37
R1-1811469	Enhancements to scheduling/HARQ/CSI processing timeline for URLLC	Huawei, HiSilicon	available	2018-09-28 10:17:29	2018-09-29 04:16:37
R1-1811470	Enhancement on multi-beam operation	Huawei,	available	2018-09-28 10:17:29	2018-09-29 03:56:01

R1-1811471	Remaining issues on beam management	ASUSTEK COMPU	available	2018-09-28 10:21:26	2018-09-28 10:30:16
R1-1811472	Discussion on enhancements on multi-beam operation	ASUSTEK COMPU	available	2018-09-28 10:22:24	2018-09-28 10:30:34
R1-1811473	Discussion on frame structure for NR-U operation	ASUSTEK COMPU	available	2018-09-28 10:23:28	2018-09-28 10:30:46
R1-1811474	On issues related to DL signals and channels	Nokia, Nokia	available	2018-09-28 10:35:21	2018-09-28 14:21:20
R1-1811475	Issues related to RRM and RLM	Nokia, Nokia	available	2018-09-28 10:35:21	2018-09-28 14:21:20
R1-1811476	[Draft] LS on Agreements on Paging monitoring	Nokia, Nokia	available	2018-09-28 10:35:21	2018-09-28 14:21:20
R1-1811477	[Draft] Reply LS on OSI acquisition	Nokia, Nokia	available	2018-09-28 10:35:21	2018-09-28 14:21:20
R1-1811478	Evaluation methodology for UE power consumption estimation	Nokia, Nokia	available	2018-09-28 10:35:21	2018-09-28 14:21:48
R1-1811479	On UE adaptation to the traffic	Nokia, Nokia	available	2018-09-28 10:35:21	2018-09-28 14:21:48
R1-1811480	On UE Power Saving Triggering Mechanisms for Rel-16 NR	Nokia, Nokia	available	2018-09-28 10:35:21	2018-09-28 14:21:48
R1-1811481	UE Power Consumption Reduction in RRM Measurements	Nokia, Nokia	noted	2018-09-28 10:35:21	2018-09-28 14:21:48
R1-1811482	Discussions on UL inter UE multiplexing	Mitsubish	available	2018-09-28 10:42:14	2018-09-28 12:07:21
R1-1811483	Views on multi-panel/TRP MIMO transmission	Mitsubishi Electric	available	2018-09-28 10:44:02	2018-09-28 12:07:21
R1-1811484	Views on SRS for NR MIMO	Mitsubishi Electric	available	2018-09-28 10:46:39	2018-09-28 12:07:21
R1-1811485	Views on SRS designs for LTE MIMO	Mitsubish	available	2018-09-28 10:48:25	2018-09-28 12:07:21
R1-1811486	Discussion on procedures related to NOMA	KDDI	available	2018-09-28 10:50:10	2018-09-28 11:00:42
R1-1811487	Views on NR positioning techniques	Mitsubish	available	2018-09-28 10:51:09	2018-09-28 12:07:21
R1-1811488	Maintenance issues of physical downlink control channel	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:30:35
R1-1811489	Maintenance issues of physical uplink control channel	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:30:35
R1-1811490	Maintenance issues of DL/UL data scheduling and HARQ procedure	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:30:35
R1-1811491	Maintenance issues of CA and BWP	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:30:35
R1-1811492	On issues of other topics	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:30:35
R1-1811493	On higher layer configuration for search space	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:30:35
R1-1811494	Maintenance issues of rate matching	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:30:35
R1-1811495	OH value assumption for NR Peak Data Rate	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:30:35
R1-1811496	Remaining issues related to LTE-NR	Ericsson	noted	2018-09-28 10:52:37	2018-09-29 05:30:35
R1-1811497	Remaining issues on Power Control	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:30:35
R1-1811498	PUSCH power scaling in UL power control	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:30:35
R1-1811499	SRS power scaling in UL power control	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:30:35
R1-1811500	Evaluation Methodology for NR UE power	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:56:32
R1-1811501	Adaptation aspects of NR UE power saving	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:56:32
R1-1811502	Triggering aspects of adaptation of NR UE power saving	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:56:32
R1-1811503	RRM aspects of NR UE power saving	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:56:32
R1-1811504	Network impact of NR UE power saving	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:56:32
R1-1811505	NR UE power consumption modeling details	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:56:32
R1-1811506	Uplink aspects of NR UE power saving	Ericsson	available	2018-09-28 10:52:37	2018-09-29 05:56:32
R1-1811507	Higher layer aspects of NR UE power saving	Ericsson	withdrawn	2018-09-28 10:52:37	
R1-1811508	Fast failure recovery	Ericsson	available	2018-09-28 10:52:37	2018-09-28 11:29:45
R1-1811509	L1-RSRP reporting on non-serving cells	Ericsson	available	2018-09-28 10:52:37	2018-09-28 11:29:45
R1-1811510	Discussion on multi-TRP/panel transmission for reliability and robustness in NR	KDDI Corporati	available	2018-09-28 10:52:50	2018-09-28 11:01:09
R1-1811511	Discussion on enhanced UL grant-free	KDDI	available	2018-09-28 10:55:57	2018-09-28 15:19:13

R1-1811512	Physical layer aspects of IAB	Ericsson	available	2018-09-28 11:03:04	2018-09-28 21:22:57
R1-1811513	Resource allocation and scheduling of IAB	Ericsson	available	2018-09-28 11:04:39	2018-09-28 21:22:57
R1-1811514	Evaluation of topology formation for IAB	Ericsson	available	2018-09-28 11:05:52	2018-09-28 21:22:57
R1-1811515	Maintenance issues for TDD DL/UL common aspects for Rel-15 NB-IoT	Ericsson Limited	noted	2018-09-28 11:48:42	2018-09-30 13:27:23
R1-1811516	Considerations on Procedures of Non-orthogonal Multiple Access Schemes	CAICT	available	2018-09-28 11:56:57	2018-09-28 12:14:39
R1-1811517	Evaluation of Timing Offset Impact on NOMA Schemes	CAICT	available	2018-09-28 11:56:59	2018-09-28 12:14:39
R1-1811518	Discussions on HARQ enhancements for NR-U	CAICT	available	2018-09-28 11:56:59	2018-09-28 12:14:39
R1-1811519	Discussion on enhancement of IAB discovery and Resource allocation	CAICT	available	2018-09-28 11:56:59	2018-09-28 12:14:39
R1-1811520	Discussion on supporting V2X unicast, groupcast and broadcast	CAICT	available	2018-09-28 11:56:59	2018-09-28 12:14:39
R1-1811521	Discussions on Transmission Collisions in the Sidelink Resource Allocation	CAICT	available	2018-09-28 11:56:59	2018-09-28 12:14:39
R1-1811522	L1 enhancements to support URLLC	CAICT	available	2018-09-28 11:56:59	2018-09-28 12:14:39
R1-1811523	Enhanced UL grant-free transmissions-	CAICT	available	2018-09-28 11:56:59	2018-09-28 12:14:39
R1-1811524	Overall views on Potential Techniques for UE Power Saving	CAICT	available	2018-09-28 11:56:59	2018-09-28 12:14:39
R1-1811525	Co-Band TBS Technology and Scenario	BUPT, ZTE,	available	2018-09-28 11:57:01	2018-09-28 12:23:24
R1-1811526	On fast SRS precoder updation	CEWiT	available	2018-09-28 12:23:08	2018-09-28 13:15:00
R1-1811527	TR 38.855 skeleton for study of NR positioning support	Ericsson, Intel	endorsed	2018-09-28 12:28:04	2018-09-28 22:00:51
R1-1811528	Evaluation methodologies and scenarios for NR	Ericsson	available	2018-09-28 12:28:04	2018-09-28 22:00:51
R1-1811529	Requirements for NR positioning	Ericsson	available	2018-09-28 12:28:05	2018-09-28 22:00:51
R1-1811530	RAT dependent NR positioning solutions	Ericsson	available	2018-09-28 12:28:05	2018-09-28 22:00:51
R1-1811531	RAT independent and hybrid NR positioning	Ericsson	available	2018-09-28 12:28:05	2018-09-28 22:00:51
R1-1811532	Maintenance issues for Resynchronization signal for Rel-15 LTE-MTC	Ericsson	available	2018-09-28 12:41:44	2018-09-29 02:34:08
R1-1811533	Maintenance issues for Wake-up signal for Rel-	Ericsson	available	2018-09-28 12:41:44	2018-09-29 02:34:08
R1-1811534	Maintenance issues for PUSCH sub-PRB allocation for Rel-15 LTE-MTC	Ericsson	endorsed	2018-09-28 12:41:44	2018-09-29 02:34:08
R1-1811535	Maintenance for Flexible PDSCH/PUSCH starting PRB	Ericsson	available	2018-09-28 12:41:44	2018-09-29 02:36:27
R1-1811536	Maintenance issues for Wake-up signal for Rel-15 NB-IoT	Ericsson	available	2018-09-28 12:41:44	2018-09-29 02:47:28
R1-1811537	On remote interference management reference signal design	CEWiT	available	2018-09-28 12:42:13	2018-09-28 13:53:03
R1-1811538	Link performance of NOMA with non-AWGN	Ericsson	available	2018-09-28 12:49:09	2018-09-29 05:46:23
R1-1811539	Link level evaluations for mMTC and eMBB	Ericsson	withdrawn	2018-09-28 12:49:09	
R1-1811540	Near-Far impacts on link performance	Ericsson	available	2018-09-28 12:49:09	2018-09-29 05:46:23
R1-1811541	Observations on NOMA traffic models	Ericsson	available	2018-09-28 12:49:09	2018-09-29 05:46:23
R1-1811542	On specifications based solutions to the DMRS	Ericsson	available	2018-09-28 12:49:09	2018-09-29 05:46:23
R1-1811543	On specifications based solutions to the CSI-RS	Ericsson	available	2018-09-28 12:49:09	2018-09-29 05:46:23
R1-1811544	Why PAPR is important for BS transmitters	Ericsson	available	2018-09-28 12:49:09	2018-09-29 05:46:23
R1-1811545	Additional simulation results related to RS PAPR	Ericsson	available	2018-09-28 12:49:09	2018-09-29 05:46:23
R1-1811546	Enabling full TX power UL transmission for	Ericsson	available	2018-09-28 12:49:09	2018-09-29 05:46:23
R1-1811547	Enabling full TX power UL transmission for SRS	Ericsson	available	2018-09-28 12:49:09	2018-09-29 05:46:23
R1-1811548	Initial simulation results for UL multi-panel	Ericsson	revised	2018-09-28 12:49:09	2018-09-29 05:46:23
R1-1811549	On simultaneous transmission and reception in	Ericsson	available	2018-09-28 12:49:09	2018-09-29 05:46:23
R1-1811550	Performance of NC-JT with large number of	Ericsson	revised	2018-09-28 12:49:09	2018-09-29 05:46:58
R1-1811551	Performance of NC-JT with different clustering	Ericsson	revised	2018-09-28 12:49:09	2018-09-29 05:46:23
R1-1811552	Discussion on Configured Grant Enhancements	III	available	2018-09-28 12:49:17	2018-09-29 03:00:16
R1-1811553	Remaining issues on DL/UL scheduling and HARQ management	III	available	2018-09-28 12:52:24	2018-09-29 03:00:16
R1-1811554	On IAB timing alignment	CEWiT	available	2018-09-28 12:52:43	2018-09-29 03:47:04
R1-1811555	Discussion on transmission in preconfigured UL resources	III	available	2018-09-28 12:55:33	2018-09-29 03:00:16

R1-1811556	Discussion on UL SPS DMRS	Huawei, HiSilicon	noted	2018-09-28 13:07:12	2018-09-29 04:18:26
R1-1811557	Clarification on validation of UL SPS with repetition for one UL SPS configuration	Huawei, HiSilicon	noted	2018-09-28 13:07:12	2018-09-29 04:18:26
R1-1811558	Clarification on resource mapping for HARQ-less PDSCH repetition	Huawei, HiSilicon	noted	2018-09-28 13:07:12	2018-09-29 04:18:26
R1-1811559	Clarification on resource mapping for UL SPS with repetition	Huawei, HiSilicon	noted	2018-09-28 13:07:12	2018-09-29 04:18:26
R1-1811560	Clarification on rate-matching around SPDCCH resources for PDSCH repetition	Huawei, HiSilicon	noted	2018-09-28 13:07:12	2018-09-29 04:18:26
R1-1811561	Discussion on power control for additional SRS	Huawei,	available	2018-09-28 13:07:12	2018-09-29 04:18:26
R1-1811562	Correction on UE procedure for receiving PDSCH when configured with repetition	Huawei, HiSilicon	noted	2018-09-28 13:07:12	2018-09-29 04:18:26
R1-1811563	Correction on specification impact of no more than one DCI validation for UL SPS	Huawei, HiSilicon	noted	2018-09-28 13:07:12	2018-09-29 04:18:26
R1-1811564	Correction on validation of UL SPS with repetition for one UL SPS configuration	Huawei, HiSilicon	noted	2018-09-28 13:07:12	2018-09-29 04:18:26
R1-1811565	Correction on resource mapping for HARQ-less PDSCH repetition	Huawei, HiSilicon	noted	2018-09-28 13:07:12	2018-09-29 04:18:26
R1-1811566	Correction on resource mapping for UL SPS with repetition	Huawei, HiSilicon	available	2018-09-28 13:07:12	2018-09-29 04:18:26
R1-1811567	Correction on rate-matching around SPDCCH resources for PDSCH repetition	Huawei, HiSilicon	available	2018-09-28 13:07:12	2018-09-29 04:18:26
R1-1811568	Correction on rate-matching around SPDCCH resources for PDSCH repetition	Huawei, HiSilicon	available	2018-09-28 13:07:12	2018-09-29 04:18:26
R1-1811569	Correction on DL/UL SPS for MIMO related Modes	Huawei, HiSilicon	noted	2018-09-28 13:07:12	2018-09-29 05:11:31
R1-1811570	Correction on UL power control in case of UL DMRS sharing	Huawei, HiSilicon	available	2018-09-28 13:07:12	2018-09-29 05:08:10
R1-1811571	Corrections on UL SPS DMRS	Huawei, HiSilicon	available	2018-09-28 13:07:12	2018-09-29 05:08:10
R1-1811572	Correction on pathloss update for subslot-PUSCH with DMRS sharing	Huawei, HiSilicon	noted	2018-09-28 13:07:12	2018-09-29 05:08:10
R1-1811573	Correction on subslot-SPUCCH resource for formats 1a and 1b	Huawei, HiSilicon,	revised	2018-09-28 13:07:12	2018-09-29 05:08:10
R1-1811574	Initial access in NR-U	KT Corp.	available	2018-09-28 13:13:18	2018-09-28 13:18:01
R1-1811575	Views on UL inter UE Tx	KT Corp.	available	2018-09-28 13:15:08	2018-09-28 13:18:01
R1-1811576	Group Wake-Up Signal for NB-IoT	Fraunhofer IIS,	available	2018-09-28 13:15:27	2018-09-28 16:17:06
R1-1811577	Discussion on HARQ enhancements for NR-U	KT Corp.	available	2018-09-28 13:16:30	2018-09-28 13:18:01
R1-1811578	Draft LS response to TSN integration in the 5G	Huawei,	available	2018-09-28 13:18:21	2018-09-29 04:16:37
R1-1811579	Discussion on KPIs for TSN integration in the 5G	Huawei,	available	2018-09-28 13:18:21	2018-09-29 04:16:37
R1-1811580	Maintenance for Downlink signals and channels	Ericsson	available	2018-09-28 13:34:41	2018-09-28 20:54:50
R1-1811581	Maintenance for Physical random access channel and procedure	Ericsson	available	2018-09-28 13:34:41	2018-09-28 20:54:50
R1-1811582	Maintenance for mobility procedure	Ericsson	available	2018-09-28 13:34:41	2018-09-28 20:54:50
R1-1811583	IMT-2020 self evaluation: mMTC link budget	Ericsson	available	2018-09-28 13:34:41	2018-09-28 18:20:50
R1-1811584	IMT-2020 self-evaluation - Reliability in NR	Ericsson	available	2018-09-28 13:34:41	2018-09-28 21:00:41
R1-1811585	Work plan for the SI on Channel Modeling for Indoor Industrial Scenarios	Ericsson	available	2018-09-28 13:34:41	2018-09-28 18:19:56
R1-1811586	Skeleton TP for updates to TR 38.901	Ericsson	available	2018-09-28 13:34:41	2018-09-28 18:19:56
R1-1811587	Expected input for RAN1#95 for the SI on Channel Modeling for Indoor Industrial Scenarios	Ericsson	available	2018-09-28 13:34:41	2018-09-28 18:19:56
R1-1811588	Scenarios and simulation assumptions for the LTE based terrestrial broadcast gap analysis	EBU, BBC, IRT	noted	2018-09-28 13:46:10	2018-09-28 13:48:51
R1-1811589	Uplink transmission on pre-allocated resources for LTE-MTC	Orange Spain	available	2018-09-28 13:48:32	2018-09-28 20:51:31
R1-1811590	Support of DL quality report in connected mode	Ericsson	available	2018-09-28 13:54:52	2018-09-28 17:58:56
R1-1811591	Support of Unicast, Groupcast and Broadcast on the NR Sidelink	Ericsson	available	2018-09-28 14:03:30	2018-09-28 18:53:15
R1-1811592	Physical layer structures of NR V2X	Ericsson	available	2018-09-28 14:03:30	2018-09-28 18:53:15

R1-1811593	On Synchronization for NR Sidelink	Ericsson	available	2018-09-28 14:03:30	2018-09-28 18:53:15
R1-1811594	On Mode 2 Resource Allocation for NR Sidelink	Ericsson	available	2018-09-28 14:03:30	2018-09-28 18:53:15
R1-1811595	On the NR Sidelink Discovery Procedures	Ericsson	available	2018-09-28 14:03:30	2018-09-28 18:53:15
R1-1811596	On sidelink resources in NR	Ericsson	available	2018-09-28 14:03:30	2018-09-28 18:53:15
R1-1811597	On Network Control of NR Sidelink	Ericsson	available	2018-09-28 14:03:30	2018-09-28 18:53:15
R1-1811598	On NR Uu controlling LTE sidelink	Ericsson	available	2018-09-28 14:03:30	2018-09-28 18:53:15
R1-1811599	On Link/Interface Selection for Unicast V2X Communications	Ericsson	available	2018-09-28 14:03:30	2018-09-28 18:53:15
R1-1811600	Clustering and Cluster Head Election Schemes	Ericsson	available	2018-09-28 14:03:30	2018-09-28 18:53:15
R1-1811601	NR sidelink QoS handling	Ericsson	available	2018-09-28 14:03:30	2018-09-28 18:53:15
R1-1811602	On coexistence of NR SL and LTE SL for V2X	Ericsson	available	2018-09-28 14:03:30	2018-09-28 18:53:15
R1-1811603	On remaining aspects of simulation assumptions	Ericsson	available	2018-09-28 14:03:30	2018-09-28 18:53:15
R1-1811604	Study of Uu feasibility for advanced V2X use cases	Ericsson	noted	2018-09-28 14:03:30	2018-09-28 18:53:15
R1-1811605	Link level simulations of DMRS design for NR V2X	Ericsson	available	2018-09-28 14:03:30	2018-09-28 18:53:15
R1-1811606	Configuration and signaling principles for NR sidelink	Ericsson	available	2018-09-28 14:03:30	2018-09-28 18:53:15
R1-1811607	On 2-stage PSCCH-I design	Ericsson	available	2018-09-28 14:03:30	2018-09-28 18:53:15
R1-1811608	Discussion on Reference Signal Design for RIM	China Telecom	available	2018-09-28 14:08:39	2018-09-29 01:30:30
R1-1811609	Discussion on Reference Signal Design for RIM	China Telecom	withdrawn	2018-09-28 14:08:41	
R1-1811610	Discussion on Reference Signal Design for RIM	China Telecom	withdrawn	2018-09-28 14:08:46	
R1-1811611	Discussion on Reference Signal Design for RIM	China Telecom	withdrawn	2018-09-28 14:09:02	
R1-1811612	Discussion on Reference Signal Design for RIM	China Telecom	withdrawn	2018-09-28 14:09:15	
R1-1811613	On VRB-to-PRB interleaving for URLLC	KT Corp.	available	2018-09-28 14:18:57	2018-09-28 14:27:04
R1-1811614	Text Proposal for sections 2, 3 and 4 of TR 38.855	Ericsson, Intel	endorsed	2018-09-28 14:26:16	2018-09-28 22:00:51
R1-1811615	Discussion on NR V2X HARQ mechanism	ITL	available	2018-09-28 14:29:16	2018-09-29 00:20:34
R1-1811616	Maintenance issues for Physical layer SR for	Ericsson	available	2018-09-28 14:48:33	2018-09-28 17:58:56
R1-1811617	Transmit Diversity for Rel-16 URLLC	Ericsson	available	2018-09-28 14:49:54	2018-09-29 06:34:21
R1-1811618	Maintenance issues for TDD DL aspects for Rel-15 NB-IoT	Ericsson India	noted	2018-09-28 14:50:28	2018-09-28 17:58:56
R1-1811619	Improvement for non-BL UEs in CE mode	Intel Corporati	available	2018-09-28 14:51:45	2018-09-29 07:13:46
R1-1811620	Technology Neutral DL Preamble	CableLabs	available	2018-09-28 15:21:34	2018-09-29 04:35:25
R1-1811621	Group Wake-Up Signal for MTC	Fraunhofer IIS,	available	2018-09-28 16:04:34	2018-09-28 17:24:02
R1-1811622	Remained issues on NR uplink power control	Nokia, Nokia	revised	2018-09-28 16:33:21	2018-09-28 16:35:37
R1-1811623	Design Considerations for NR SL	Convida	available	2018-09-28 16:56:43	2018-09-29 07:32:30
R1-1811624	Design Considerations for NR V2X Resource	Convida	available	2018-09-28 16:56:44	2018-09-29 07:32:30
R1-1811625	Design consideration on channel accessing	Convida	available	2018-09-28 16:56:44	2018-09-29 07:32:30
R1-1811626	Potential Enhancements to Configured Grants	Convida Wireless	available	2018-09-28 16:56:44	2018-09-29 07:32:30

R1-1811627	Triggering Adaptation of UE Power Consumption Characteristics	Convida Wireless	available	2018-09-28 16:56:44	2018-09-29 07:32:30
R1-1811628	IMT-2020 self-evaluation: UP latency in LTE	Ericsson	available	2018-09-28 17:03:44	2018-09-28 21:00:41
R1-1811629	Updated DL spectral efficiency in the eMBB usage scenario for IMT-2020 self evaluation	ZTE	available	2018-09-29 07:29:23	2018-10-09 12:02:04
R1-1811630	Evaluation results of Area Traffic Capacity in IMT-2020 self-evaluation	ZTE	available	2018-09-29 07:30:09	2018-10-09 12:02:04
R1-1811631	Discussion on the AUL-UCI coded modulaion symbols in 36.212	Samsung	noted	2018-09-29 07:38:02	2018-09-29 12:17:54
R1-1811632	Correction on the AUL-UCI coded modulaion symbols in 36.212	Samsung	available	2018-09-29 07:38:39	2018-09-29 12:17:54
R1-1811633	Maintenance for beam management	Qualcomm	available	2018-09-29 22:01:58	2018-09-30 13:27:23
R1-1811634	Text proposals for Beam management	Guangdong OPPO	available	2018-09-30 13:39:38	2018-10-01 08:02:29
R1-1811635	Discussion on Multi-beam Operation Enhancement	Guangdong OPPO	available	2018-09-30 13:40:10	2018-10-01 08:02:29
R1-1811636	On URLLC Layer 1 enhancements	ZTE	withdrawn	2018-09-30 13:41:50	
R1-1811637	Remaining details on evaluation methodology	ZTE	noted	2018-09-30 13:42:38	2018-10-04 16:50:55
R1-1811638	Discussion on remaining evaluation assumptions and initial evaluation results for	CMCC	available	2018-09-30 13:43:36	2018-10-01 07:17:28
R1-1811639	Preliminary system level evaluations on sidelink	vivo	available	2018-09-30 13:44:21	2018-09-30 17:24:56
R1-1811640	Remaining Issues on PDCCH and Search Space Design	Samsung	available	2018-10-01 07:19:27	2018-10-04 16:50:55
R1-1811641	Summary on the use of RSS for measurement improvements	Sony	noted	2018-10-01 16:01:52	2018-10-10 08:58:09
R1-1811642	Summary of views on CSI reporting v1	Ericsson	revised	2018-10-01 16:03:50	2018-10-09 13:45:12
R1-1811643	Correction on nEPDCCH for EPDCCH USS case determination	MediaTek Inc.	available	2018-10-01 17:51:36	2018-10-02 07:25:35
R1-1811644	Correction on nEPDCCH for EPDCCH USS case determination	MediaTek Inc.	available	2018-10-01 17:53:21	2018-10-02 07:25:35
R1-1811645	Discussion on support of unicast, groupcast and broadcast for NR sidelink	LG Electroni	available	2018-10-02 07:18:06	2018-10-08 14:50:38
R1-1811646	Full Tx power UL transmission	MediaTe	available	2018-10-02 07:18:38	2018-10-03 05:57:48
R1-1811647	Remaining issues for reference signals and QCL	Intel Corporati	available	2018-10-02 07:19:05	2018-10-02 17:13:25
R1-1811648	Transmitter Side Signal Processing Schemes for NOMA	Qualcomm	noted	2018-10-02 19:31:34	2018-10-08 14:50:38
R1-1811649	Receivers for NOMA	Qualcomm	available	2018-10-02 19:32:00	2018-10-08 14:50:38
R1-1811650	Procedures related to NOMA	Qualcomm	withdrawn	2018-10-02 19:32:20	
R1-1811651	Summary on CA Topics	Samsung	noted	2018-10-02 20:03:02	2018-10-08 14:50:38
R1-1811652	Summary of discussion for Rel-15 NR mobility	Intel	noted	2018-10-03 06:29:51	2018-10-08 14:50:38
R1-1811653	Summary of Potential Enhancement to Configured Grants	Intel	noted	2018-10-03 06:32:03	2018-10-09 12:02:04
R1-1811654	Summary of CSI enhancement for MU-MIMO	Samsung	noted	2018-10-03 06:33:49	2018-10-09 12:02:04
R1-1811655	Initial simulation results for UL multi-panel	Ericsson	withdrawn	2018-10-03 08:54:11	2018-10-13 00:11:08
R1-1811656	Additional SRS symbols	Qualcomm	noted	2018-10-03 21:09:56	2018-10-08 14:50:38
R1-1811657	Summary of 6.1.4.3 Maintenance for MWUS	Qualcom	noted	2018-10-03 21:09:56	2018-10-08 14:50:38
R1-1811658	Summary of 6.2.1.1 UE group MWUS	Qualcom	noted	2018-10-03 21:09:56	2018-10-08 14:50:38
R1-1811659	Summary for physical layer scheduling request	ZTE	noted	2018-10-03 21:09:56	2018-10-08 14:50:38
R1-1811660	Summary on Multiple TB scheduling enhancement for NB-IoT	ZTE	noted	2018-10-03 21:09:56	2018-10-09 12:02:04
R1-1811661	Skeleton TR 36.776 Study on LTE-based 5G terrestrial broadcast	Qualcomm	endorsed	2018-10-03 21:09:56	2018-10-09 13:45:12
R1-1811662	LTE-M Multiple Transport Block Grant Design	Sierra Wireless,	withdrawn	2018-10-03 21:09:56	
R1-1811663	Feature summary of Maintenance for Resynchronization signal	Ericsson	noted	2018-10-03 21:09:56	2018-10-09 00:17:53
R1-1811664	Feature summary of UE-group wake-up signal	Ericsson	noted	2018-10-03 21:09:56	2018-10-09 12:02:04
R1-1811665	Feature lead summary for Coexistence of LTE-	Ericsson	noted	2018-10-03 21:09:56	2018-10-08 14:50:38

R1-1811666	Summary of CE mode A and B improvements for non-BL Ues	LG Electroni	noted	2018-10-03 21:09:56	2018-10-10 08:58:09
R1-1811667	Correction for type 6 report for FD-MIMO	Qualcom m	agreed	2018-10-03 21:09:56	2018-10-10 08:58:09
R1-1811668	Correction for type 6 report for FD-MIMO	Qualcom m	agreed	2018-10-03 21:09:56	2018-10-10 08:58:09
R1-1811669	Correction for type 6 report for FD-MIMO	Qualcom m	agreed	2018-10-03 21:09:56	2018-10-10 08:58:09
R1-1811670	Draft CR to TS 36.302 on DCI validation for UL SPS	Huawei, HiSilicon	noted	2018-10-03 21:09:56	2018-10-11 07:40:53
R1-1811671	Chairman's notes of AI 6.1.1 Maintenance of E-UTRA Release 8 – 14	Ad-hoc chair	endorsed	2018-10-03 21:09:56	2018-10-11 07:40:53
R1-1811672	Chairman's notes of AI 6.1.2 Maintenance of Release 15 Shortened TTI and processing time	Ad-hoc chair	endorsed	2018-10-03 21:09:56	2018-10-11 07:40:53
R1-1811673	Chairman's notes of AI 6.1.3 Maintenance of Release 15 3GPP V2X Phase 2	Ad-hoc chair	endorsed	2018-10-03 21:09:56	2018-10-11 07:40:53
R1-1811674	Chairman's notes of AI 6.1.4 Maintenance of Release 15 Even further enhanced MTC for LTE	Ad-hoc chair	endorsed	2018-10-03 21:09:56	2018-10-11 07:40:53
R1-1811675	Chairman's notes of AI 6.1.5 Maintenance of Release 15 Further enhancements of NB-IoT	Ad-hoc chair	endorsed	2018-10-03 21:09:56	2018-10-11 07:40:53
R1-1811676	Chairman's notes of AI 6.1.6 Maintenance of Release 15 Ultra Reliable Low Latency	Ad-hoc chair	endorsed	2018-10-03 21:09:56	2018-10-11 07:40:53
R1-1811677	Maintenance issues for PUSCH sub-PRB allocation for Rel-15 LTE-MTC	Ericsson	noted	2018-10-03 21:09:56	2018-10-11 07:40:53
R1-1811678	Summary of offline discussions on PUR for eMTC and NB-IoT	Huawei, HiSilicon	noted	2018-10-03 21:09:56	2018-10-11 01:49:40
R1-1811679	Further topics for UE-group wake-up signal for	Ericsson	noted	2018-10-03 21:09:56	2018-10-11 01:49:40
R1-1811680	Updated Feature lead summary Scheduling of multiple DL UL transport blocks in LTE MTC	Ericsson	noted	2018-10-03 21:09:56	2018-10-10 11:36:42
R1-1811681	WF on Support of DL quality report in connected mode in NB-IoT	Ericsson, CMCC, Qualcom m, LG, ZTE, Lenovo,	noted	2018-10-03 21:09:56	2018-10-10 11:36:42
R1-1811682	Feature lead summary of MPDCCH performance improvement	Huawei, HiSilicon	noted	2018-10-03 21:09:56	2018-10-10 08:58:09
R1-1811683	EPDCCH RE mapping with CSI-RS density 1/2	Samsung	noted	2018-10-03 21:09:56	2018-10-10 08:58:09
R1-1811684	EPDCCH RE mapping with CSI-RS density 1/2	Samsung	noted	2018-10-03 21:09:57	2018-10-10 08:58:09
R1-1811685	Draft CR for activation of UL SPS configuration	ZTE	revised	2018-10-03 21:09:57	2018-10-10 08:58:09
R1-1811686	WF on PRG size for LTE TM9 and TM10	Huawei, HiSilicon, China Telecom	noted	2018-10-03 21:09:57	2018-10-10 08:58:09
R1-1811687	Maintenance for Uplink Aspects of TDD NB-IoT	Qualcom m	endorsed	2018-10-03 21:09:57	2018-10-10 08:58:09
R1-1811688	Maintenance issues for PUSCH sub-PRB allocation for Rel-15 LTE-MTC	Ericsson	noted	2018-10-03 21:09:57	2018-10-10 08:58:09
R1-1811689	Feature summary on additional SRS symbols	Huawei,	noted	2018-10-03 21:09:57	2018-10-09 12:02:04
R1-1811690	UL SPS repetition counting	ZTE, LG Electroni	revised	2018-10-03 21:09:57	2018-10-09 12:02:04
R1-1811691	Feature summary of support of quality report in	Samsung	noted	2018-10-03 21:09:57	2018-10-10 08:58:09
R1-1811692	Summary of flexible PDSCH/PUSCH starting PRB	Samsung	noted	2018-10-03 21:09:57	2018-10-09 12:02:04
R1-1811693	Feature lead summary Scheduling of multiple DL UL transport blocks	Ericsson	noted	2018-10-03 21:09:57	2018-10-08 14:50:38
R1-1811694	NWUS maintenance feature lead summary	Huawei, HiSilicon	noted	2018-10-03 21:09:57	2018-10-08 14:50:38
R1-1811695	Summary of Use of LTE Control Channel Region for DL Transmission	Nokia, Nokia	noted	2018-10-03 21:09:57	2018-10-10 08:58:09

R1-1811696	Feature lead summary of MPDCCH performance improvement	Huawei	withdrawn	2018-10-03 21:09:57	
R1-1811697	Feature lead summary of Support for transmission in preconfigured UL resources	Huawei	noted	2018-10-03 21:09:57	2018-10-09 12:02:04
R1-1811698	Feature lead summary of Coexistence of NB-IoT	Huawei	noted	2018-10-03 21:09:57	2018-10-09 12:02:04
R1-1811699	Feature lead summary of Support of Quality report in Msg3 for non-anchor access	Huawei	noted	2018-10-03 21:09:57	2018-10-10 11:36:42
R1-1811700	Correction on aperiodic CSI-RS resource	Huawei,	agreed	2018-10-03 21:09:57	2018-10-09 00:17:53
R1-1811701	Correction on aperiodic CSI-RS resource	Huawei,	agreed	2018-10-03 21:09:57	2018-10-09 00:17:53
R1-1811702	Correction on aperiodic CSI-RS in 36.212	Huawei,	agreed	2018-10-03 21:09:57	2018-10-09 00:17:53
R1-1811703	Correction on aperiodic CSI-RS in 36.212	Huawei,	agreed	2018-10-03 21:09:57	2018-10-09 00:17:53
R1-1811704	Correction on PDSCH RE mapping around aperiodic zero power CSI-RS in 36.213	Huawei, HiSilicon	agreed	2018-10-03 21:09:57	2018-10-09 00:17:53
R1-1811705	Correction on NB-IoT DL subframe definition on non-anchor carriers	Huawei, HiSilicon	agreed	2018-10-03 21:09:57	2018-10-08 14:50:38
R1-1811706	Correction on NB-IoT DL subframe definition on non-anchor carriers	Huawei, HiSilicon	agreed	2018-10-03 21:09:57	2018-10-08 14:50:38
R1-1811707	HARQ reference configuration for SRS carrier switching	Qualcomm	agreed	2018-10-03 21:09:57	2018-10-12 09:30:08
R1-1811708	HARQ reference configuration for SRS carrier switching	Qualcomm	agreed	2018-10-03 21:09:57	2018-10-12 09:30:08
R1-1811709	Correction on PDSCH RE mapping around aperiodic zero power CSI-RS in 36.213	Huawei, HiSilicon	agreed	2018-10-03 21:09:57	2018-10-09 00:17:53
R1-1811710	Aperiodic CSI report for PUSCH in UpPTS	Qualcomm	agreed	2018-10-03 21:09:57	2018-10-12 09:30:08
R1-1811711	Aperiodic CSI report for PUSCH in UpPTS	Qualcomm	agreed	2018-10-03 21:09:57	2018-10-12 09:30:08
R1-1811712	Correction on subslot-SPUCCH resource for formats 1a and 1b	Huawei, HiSilicon,	agreed	2018-10-03 21:09:57	2018-10-08 14:50:38
R1-1811713	Validation of SPS for one UL SPS configuration	Huawei, HiSilicon	revised	2018-10-03 21:09:57	2018-10-09 12:02:04
R1-1811714	Corrections related to CSI update capability for sTTI	LG Electroni	revised	2018-10-03 21:09:57	2018-10-09 12:02:04
R1-1811715	Corrections related to CSI update capability for sTTI	LG Electroni	agreed	2018-10-03 21:09:57	2018-10-10 11:36:42
R1-1811716	UL SPS repetition counting	ZTE, LG Electroni	agreed	2018-10-03 21:09:57	2018-10-11 07:40:53
R1-1811717	Validation of SPS for one UL SPS configuration	Huawei, HiSilicon	agreed	2018-10-03 21:09:57	2018-10-09 12:02:04
R1-1811718	Correction to non-precoded NZP CSI-RS resource configurations	Intel Corporati	agreed	2018-10-03 21:09:57	2018-10-10 08:58:09
R1-1811719	Correction to non-precoded NZP CSI-RS resource configurations	Intel Corporati	agreed	2018-10-03 21:09:57	2018-10-10 08:58:09
R1-1811720	Corrections for HARQ-ACK feedback	Qualcomm	endorsed	2018-10-03 21:09:57	2018-10-10 08:58:09
R1-1811721	CR for activation of UL SPS configuration	ZTE	agreed	2018-10-03 21:09:57	2018-10-11 07:40:53
R1-1811722	CSI reference resource with crs-less-ssp10	Qualcomm	agreed	2018-10-03 21:09:57	2018-10-12 09:30:08
R1-1811723	CSI reference resource with crs-less-ssp10	Qualcomm	agreed	2018-10-03 21:09:57	2018-10-12 09:30:08
R1-1811724	Chairman's notes of AI 6.1.7 Others	Ad-hoc chair	endorsed	2018-10-03 21:09:57	2018-10-11 07:40:53
R1-1811725	Chairman's notes of AI 6.2.1 Additional MTC Enhancements	Ad-hoc chair	endorsed	2018-10-03 21:09:57	2018-10-11 10:32:38
R1-1811726	Chairman's notes of AI 6.2.2 Additional Enhancements for NB-IoT	Ad-hoc chair	endorsed	2018-10-03 21:09:57	2018-10-11 10:32:38
R1-1811727	Chairman's notes of AI 6.2.3 DL MIMO efficiency enhancements for LTE	Ad-hoc chair	endorsed	2018-10-03 21:09:57	2018-10-11 10:32:38
R1-1811728	Chairman's notes of AI 6.2.4 Study on LTE-based 5G Terrestrial Broadcast	Ad-hoc chair	endorsed	2018-10-03 21:09:57	2018-10-11 07:40:53
R1-1811729	Chairman's notes of AI 6.2.5 Others	Ad-hoc chair	endorsed	2018-10-03 21:09:57	2018-10-11 07:40:53
R1-1811730	Draft LS to RAN2 on draft CR to TS 36.302 on DCI validation of UL SPS	Huawei, HiSilicon	noted	2018-10-03 21:09:57	2018-10-11 07:40:53

R1-1811731	Summary of offline discussion on simulation assumptions	Qualcomm	noted	2018-10-03 21:09:57	2018-10-11 07:40:53
R1-1811732	Corrections on subframe-PDSCH repetition with eIMTA	LG Electroni	revised	2018-10-03 21:09:57	2018-10-11 07:40:53
R1-1811733	Corrections on subframe-PDSCH repetition with eIMTA	LG Electroni	agreed	2018-10-03 21:09:57	2018-10-11 07:40:53
R1-1811734	Outcome of offline discussion for additional SRS symbols for LTE	Huawei, HiSilicon	noted	2018-10-03 21:09:57	2018-10-11 08:59:57
R1-1811735	Feature summary on virtual cell ID for SRS	Huawei,	noted	2018-10-03 21:09:57	2018-10-11 08:59:57
R1-1811736	Agreement summary for Rel-16 Additional MTC Enhancements for LTE	Ericsson	available	2018-10-03 21:09:57	2018-10-16 07:58:55
R1-1811737	RAN1 agreements for Rel-16 Additional Enhancements for NB-IoT	Huawei	available	2018-10-03 21:09:57	2018-10-18 06:37:54
R1-1811738	Email discussion on requirements not requiring simulations	Qualcomm Incorpora	noted	2018-10-03 21:09:57	2018-11-02 07:33:03
R1-1811739	LS on 5G requirements for dedicated broadcast networks	RAN1, Qualcomm	approved	2018-10-03 21:09:57	2018-11-02 07:33:03
R1-1811740	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811741	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811742	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811743	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811744	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811745	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811746	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811747	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811748	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811749	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811750	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811751	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811752	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811753	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811754	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811755	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811756	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811757	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811758	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811759	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811760	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811761	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811762	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811763	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811764	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
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R1-1811766	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811767	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811768	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811769	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811770	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811771	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811772	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811773	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811774	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811775	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811776	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811777	LTE session	MCC	withdrawn	2018-10-03 21:09:58	
R1-1811778	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811779	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811780	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811781	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811782	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811783	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811784	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811785	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811786	LTE session	MCC	withdrawn	2018-10-03 21:09:59	

R1-1811787	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811788	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811789	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811790	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811791	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811792	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811793	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811794	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811795	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811796	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811797	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811798	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811799	LTE session	MCC	withdrawn	2018-10-03 21:09:59	
R1-1811800	Downlink signal and channel design for NR-U	Samsung	available	2018-10-04 05:58:13	2018-10-04 16:50:55
R1-1811801	Proposed work plan for Rel.16 NR MIMO	Samsung	noted	2018-10-04 05:58:54	2018-10-09 12:02:04
R1-1811802	Summary of views on beam measurement and	Ericsson	revised	2018-10-04 15:54:38	2018-10-05 08:46:02
R1-1811803	Summary of RAN1#94bis Tdocs on maintenance for R15 NR PUCCH resource	OPPO	available	2018-10-04 15:58:13	2018-10-08 14:50:38
R1-1811804	Summary of Other System Information Delivery	Samsung	noted	2018-10-04 16:02:32	2018-10-08 14:50:38
R1-1811805	Summary of synchronization signals and PBCH	Ericsson	noted	2018-10-04 16:04:02	2018-10-08 14:50:38
R1-1811806	Detailed link-level simulation results for NOMA	ZTE	available	2018-10-04 16:04:45	2018-10-08 14:50:38
R1-1811807	Support of sidelink unicast, groupcast and broadcast modes for NR V2X communication	Intel Corporati	available	2018-10-04 16:05:14	2018-10-04 16:50:55
R1-1811808	Summary of SRS - v1	Sony	noted	2018-10-04 16:07:01	2018-10-08 14:50:38
R1-1811809	Summary of 7.1.3.1 (DCI contents and formats)	Ericsson	revised	2018-10-04 16:08:31	2018-10-08 14:50:38
R1-1811810	Summary of 7.1.3.3 (resource allocation)	Ericsson	revised	2018-10-04 16:09:46	2018-10-08 14:50:38
R1-1811811	Remaining Issues in R-15 UE Features	MediaTe	noted	2018-10-05 06:37:25	2018-10-08 14:50:38
R1-1811812	Link and system level evaluation for NOMA	Qualcom m	available	2018-10-05 06:37:56	2018-10-08 14:50:38
R1-1811813	Evaluation Methodology for NR IAB	Samsung	available	2018-10-06 04:37:25	2018-10-08 14:50:38
R1-1811814	On the use of a preamble for NR-U	Ericsson	noted	2018-10-06 04:41:12	2018-10-09 12:02:04
R1-1811815	Feature lead summary for UL Signals and	Ericsson	noted	2018-10-06 04:43:44	2018-10-11 01:49:41
R1-1811816	RIM-RS design and evaluation	Intel Corporati	available	2018-10-06 04:49:06	2018-10-08 14:50:38
R1-1811817	Summary of Remaining NR RMSI Issues	CATT	noted	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811818	Remaining details on evaluation methodology	ZTE	withdrawn	2018-10-09 00:08:31	
R1-1811819	Evaluation results for RIM RS and remaining issues on evaluation methodology for RS	Ericsson	noted	2018-10-09 00:08:31	2018-10-09 12:02:04
R1-1811820	Offline summary for PDCCH structure and search space	NTT DOCOM	noted	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811821	Offline summary for UL data transmission procedure	NTT DOCOM	noted	2018-10-09 00:08:32	2018-10-09 13:45:13
R1-1811822	Summary of 7.2.6.4 Enhanced UL grant-free	NTT	available	2018-10-09 00:08:32	2018-10-10 09:50:56
R1-1811823	Feature Lead Summary AI 7.2.4.2 v1	Ericsson	revised	2018-10-09 00:08:32	2018-10-11 07:40:53
R1-1811824	Summary of offline on maintenance related to rate-matching in NR	Nokia, Nokia	withdrawn	2018-10-09 00:08:33	
R1-1811825	On TYPE-1 HARQ-ACK CB supporting mixed numerology	Nokia, Nokia	available	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811826	Performance of NC-JT with large number of	Ericsson	available	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811827	Performance of NC-JT with different clustering	Ericsson	available	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811828	Summary of PRB Bundling for DL	vivo	noted	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811829	Summary of 7.1.3.3 (Soft Buffer Management)	Ericsson	available	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811830	Offline summary for Paging	Huawei	noted	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811831	Remaining issues on downlink signals and channels	Huawei, HiSilicon	available	2018-10-08 14:50:38	2018-10-08 14:50:38

R1-1811832	Maintenance for physical access random channel	Convida Wireless	revised	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811833	Remained issues on NR uplink power control	Nokia, Nokia	available	2018-10-09 00:08:36	2018-10-12 09:30:08
R1-1811834	Feature lead summary for agenda item 7.2.4.1.1 Support of unicast, groupcast and broadcast	LG Electroni	noted	2018-10-09 00:08:36	2018-10-10 08:58:09
R1-1811835	Feature lead summary for agenda item 7.2.4.1.2 Physical layer structures and procedure(s)	LG Electroni	noted	2018-10-09 00:08:36	2018-10-10 08:58:09
R1-1811836	Feature lead summary for Evaluation results for NR-U operation	Qualcom m	noted	2018-10-09 00:08:37	2018-10-09 12:02:04
R1-1811837	Feature lead summary for GC-PDCCH carrying SFI	Qualcom m	noted	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811838	Summary of DMRS Issues	Qualcom m	noted	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811839	Summary of simultaneous Rx and Tx,	Intel	revised	2018-10-09 00:08:38	2018-10-09 13:45:13
R1-1811840	Summary of issues on UL non-codebook based transmission	Nokia, Nokia	noted	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811841	Summary of maintenance for PRACH procedure	Qualcom m	noted	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811842	Feature lead summary of remaining issues for RS multiplexing	Huawei, HiSilicon	noted	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811843	Feature lead summary on Full TX Power UL	vivo	noted	2018-10-09 00:08:39	2018-10-09 12:02:04
R1-1811844	Summary of 7.2.3.1 Enhancements to support NR backhaul links	Ericsson	revised	2018-10-09 00:08:39	2018-10-09 00:17:54
R1-1811845	Feature lead summary on QCL	Nokia, Nokia	revised	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811846	Intermediate Summary of Offline Discussion on NR Positioning	Intel Corporati	noted	2018-10-09 00:08:40	2018-10-09 12:02:04
R1-1811847	Summary for NR-V2X Resource allocation	Intel	available	2018-10-09 00:08:40	2018-10-10 08:58:09
R1-1811848	Feature lead summary of PT-RS	Ericsson	noted	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811849	Summary for CQI and MCS	AT&T	noted	2018-10-09 00:08:41	2018-10-09 12:02:04
R1-1811850	Summary of Bandwidth Part Remaining Issues	MediaTe k	revised	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811851	Summary on CBG based retransmission	LG Electroni	noted	2018-10-09 00:08:42	2018-10-09 12:02:04
R1-1811852	Summary on Codebook based UL Transmission	Intel	noted	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811853	Summary on SCell BFR and Beam	Intel	noted	2018-10-09 00:08:43	2018-10-10 08:58:09
R1-1811854	Summary for Rel-15 DL/UL data scheduling and HARQ procedure	Qualcom m	revised	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811855	NOMA Link Level Results; Templates 1-3	InterDigit	available	2018-10-09 00:08:43	2018-10-09 12:02:04
R1-1811856	Maintenance for CSI-RS #1	Huawei, HiSilicon	noted	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811857	Summary #1 for TRS maintenance	MediaTe k	noted	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811858	Feature lead summary on CSI measurement	ZTE	noted	2018-10-09 00:08:44	2018-10-09 13:45:13
R1-1811859	Summary for AI 7.1.5 NR UL power control in	ZTE	noted	2018-10-09 00:08:45	2018-10-09 12:02:04
R1-1811860	NOMA transmitter side signal processing	CATT	noted	2018-10-09 00:08:45	2018-10-09 12:02:04
R1-1811861	Link level and system level evaluation results of NOMA	CATT	available	2018-10-09 00:08:45	2018-10-12 09:30:08
R1-1811862	Maintenance Issues on Short PUCCH and UCI Multiplexing	Ericsson	revised	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811863	Summary of 7.1.6 (Maintenance for URLLC)	Ericsson	noted	2018-10-09 00:08:46	2018-10-09 12:02:04
R1-1811864	Summary of 7.1.3.1 (DCI contents and formats)	Ericsson	noted	2018-10-08 14:50:38	2018-10-08 14:50:38
R1-1811865	Summary of 7.1.3.3 (resource allocation)	Ericsson	revised	2018-10-09 00:08:47	2018-10-09 13:45:13
R1-1811866	[Draft] Reply to LS on Preamble Power Ramping Counter	Fujitsu	revised	2018-10-09 00:08:47	2018-10-09 12:02:05
R1-1811867	Summary on Beam Failure Recovery	MediaTe	noted	2018-10-09 00:08:48	2018-10-09 13:45:13
R1-1811868	[DRAFT] LS on MO configuration with multiple SSB SCS for a given SSB frequency	Intel Corp.	revised	2018-10-09 00:08:48	2018-10-11 01:49:41
R1-1811869	Offline summary of transmitter processing for NOMA	ZTE	withdrawn	2018-10-09 00:08:48	
R1-1811870	Offline summary of receiver for NOMA	ZTE	revised	2018-10-09 00:08:49	2018-10-10 08:58:09

R1-1811871	Offline summary of procedures for NOMA	ZTE	noted	2018-10-09 00:08:49	2018-10-10 08:58:09
R1-1811872	Offline summary of performance evaluations for NOMA	ZTE	noted	2018-10-09 00:08:49	2018-10-11 07:40:53
R1-1811873	Summary of views on CSI reporting v2	Ericsson	revised	2018-10-09 00:08:49	2018-10-09 13:45:13
R1-1811874	Feature Lead Summary for 7.2.4.4 QoS Management	Nokia, Nokia	revised	2018-10-09 00:08:50	2018-10-11 07:40:54
R1-1811875	Text proposal to capture agreements made in RAN1#94 to TR 38.812 (NOMA)	ZTE	noted	2018-10-09 00:08:50	2018-10-09 12:02:05
R1-1811876	[Draft] LS on PDCCH monitoring periodicities for DCI format 2_0	Intel	revised	2018-10-09 00:08:50	2018-10-09 13:45:13
R1-1811877	Summary on frame structure for NR-U	LG	noted	2018-10-09 00:08:51	2018-10-09 12:02:05
R1-1811878	Summary of UCI multiplexing on PUSCH	Qualcomm	noted	2018-10-09 00:08:51	2018-10-09 00:17:54
R1-1811879	Maintenance for physical access random channel	Convida Wireless	revised	2018-10-09 13:45:13	2018-10-09 13:45:13
R1-1811880	Summary of SRS - v1	Sony	noted	2018-10-09 23:42:32	2018-10-12 09:30:08
R1-1811881	Discussion on the design of NOMA receiver	Huawei,	noted	2018-10-09 12:02:05	2018-10-09 12:02:05
R1-1811882	Summary of AI: 7.2.8.2 Enhancements on Multi-TRP/Panel Transmission	Huawei, HiSilicon	noted	2018-10-09 23:42:33	2018-10-10 08:58:09
R1-1811883	Feature lead summary of HARQ enhancement	Huawei,	revised	2018-10-09 23:42:33	2018-10-10 11:36:42
R1-1811884	Draft Summary for NR RIM	CMCC	revised	2018-10-09 12:02:05	2018-10-09 12:02:05
R1-1811885	NR-U feature summary on initial access and mobility	Charter Commun	noted	2018-10-09 23:42:34	2018-10-10 11:36:42
R1-1811886	Proposals on UE feature for NCB UL	LG	available	2018-10-09 12:02:05	2018-10-09 12:02:05
R1-1811887	Summary of 7.2.6.1 Remaining details on evaluation methodology	Huawei, HiSilicon	revised	2018-10-09 12:02:05	2018-10-09 12:02:05
R1-1811888	Summary of 7.2.6.2 Layer 1 enhancements	Huawei,	noted	2018-10-09 12:02:05	2018-10-09 12:02:05
R1-1811889	Summary of NR UL power control – CA/DC	Samsung	noted	2018-10-09 23:42:35	2018-10-11 07:40:54
R1-1811890	[Draft] LS on UL DMRS sequence hopping	ZTE	available	2018-10-09 12:02:05	2018-10-09 12:02:05
R1-1811891	Summary for Rel-15 DL/UL data scheduling and HARQ procedure	Qualcomm	noted	2018-10-09 13:45:13	2018-10-09 13:45:13
R1-1811892	UL inter-UE transmission prioritization and	Huawei,	noted	2018-10-09 12:02:05	2018-10-09 12:02:05
R1-1811893	Summary of Bandwidth Part Remaining Issues	MediaTek	noted	2018-10-09 13:45:13	2018-10-09 13:45:13
R1-1811894	Feature lead summary of low PAPR RS	Ericsson	noted	2018-10-09 12:02:05	2018-10-09 12:02:05
R1-1811895	Summary of offline discussion on V2X	CATT	noted	2018-10-09 12:02:05	2018-10-09 12:02:05
R1-1811896	TR38.840 v0.0.0 Study on UE Power Saving	CATT	endorsed	2018-10-09 12:02:05	2018-10-09 12:02:05
R1-1811897	Summary of Power Model for NR Power Saving	MediaTe	noted	2018-10-09 23:42:39	2018-10-10 08:58:09
R1-1811898	Feature lead summary of Enhancements on Multi-beam Operations	LG Electroni	noted	2018-10-09 23:42:40	2018-10-10 08:58:09
R1-1811899	Updated summary of 7.2.3.1 Enhancements to support NR backhaul links	Ericsson	revised	2018-10-09 23:42:40	2018-10-10 08:58:09
R1-1811900	Offline summary for Paging	Huawei	noted	2018-10-09 23:42:40	2018-10-10 11:36:42
R1-1811901	Summary of Other System Information Delivery	Samsung	noted	2018-10-09 23:42:41	2018-10-10 11:36:42
R1-1811902	Updated text proposal to TR 38.812 (NOMA)	ZTE	noted	2018-10-09 23:42:41	2018-10-10 08:58:09
R1-1811903	Feature lead summary on QCL	Nokia, Nokia	noted	2018-10-09 13:45:13	2018-10-09 13:45:13
R1-1811904	Sidelink resource allocation mechanism for NR	Huawei,	available	2018-10-09 23:42:42	2018-10-10 08:58:09
R1-1811905	Summary of UL inter UE TX	vivo	noted	2018-10-09 23:42:42	2018-10-10 08:58:09
R1-1811906	Summary of offline on maintenance related to rate-matching in NR	Nokia, Nokia	noted	2018-10-09 13:45:13	2018-10-09 13:45:13
R1-1811907	Feature lead summary for GC-PDCCH carrying SFI	Qualcomm	noted	2018-10-09 23:42:43	2018-10-10 08:58:09

R1-1811908	WF on the use of No-LBT and fixed LBT for transmissions outside a shared COT	Broadcom, HPE (Aruba),	available	2018-10-09 12:02:05	2018-10-09 12:02:05
R1-1811909	TR 38.824 v0.0.2 for Study on physical layer enhancements for NR ultra-reliable low latency communication (URLLC)	Huawei	endorsed	2018-10-09 23:42:43	2018-10-11 01:49:41
R1-1811910	Text Proposal for TR38.889	Qualcomm Incorpora	endorsed	2018-10-09 12:02:05	2018-10-09 12:02:05
R1-1811911	Feature lead summary for NR-U DL Signals and Channels	Motorola Mobility,	noted	2018-10-09 23:42:46	2018-10-10 11:36:43
R1-1811912	Summary of offline discussion for Rel-15 NR	Intel	noted	2018-10-09 23:42:47	2018-10-11 01:49:41
R1-1811913	[Draft] LS on ss-PBCH-BlockPower definition	Intel Corp.	revised	2018-10-09 23:42:47	2018-10-10 09:50:57
R1-1811914	Summary of UE power Consumption Reduction in RRM Measurements	vivo	noted	2018-10-09 23:42:47	2018-10-10 11:36:43
R1-1811915	Summary of offline discussions on NR V2X simulation assumptions	LG Electroni	noted	2018-10-09 23:42:48	2018-10-10 08:58:09
R1-1811916	[Draft] Reply LS on L1 capabilities	AT&T,	revised	2018-10-09 23:42:48	2018-10-12 09:30:09
R1-1811917	Summary of UCI multiplexing on PUSCH	Qualcomm	noted	2018-10-09 13:45:13	2018-10-09 13:45:13
R1-1811918	Review Summary for AI 7.1.3.2 related to long PUCCH	Huawei, HiSilicon	noted	2018-10-09 13:45:13	2018-10-09 13:45:13
R1-1811919	Summary of maintenance for PRACH procedure	Qualcomm	revised	2018-10-09 13:45:13	2018-10-09 13:45:13
R1-1811920	Link level evaluations for MU-MIMO	Ericsson	available	2018-10-09 23:42:49	2018-10-10 11:36:43
R1-1811921	LS to RAN1 on PHR and SUL	RAN2,	treated	2018-10-09 13:45:13	2018-10-09 13:45:13
R1-1811922	LS on sensing and reporting for Mode 3	RAN2, Huawei	postponed	2018-10-09 13:45:13	2018-10-09 13:45:13
R1-1811923	Reply LS on bandwidth configuration for initial	RAN2,	treated	2018-10-09 13:45:13	2018-10-09 13:45:13
R1-1811924	Feature lead summary for beam management –	Ericsson	revised	2018-10-09 23:42:51	2018-10-10 08:58:09
R1-1811925	[DRAFT] LS on field description for SearchSpace	NTT DOCOM	revised	2018-10-09 23:42:51	2018-10-11 01:49:41
R1-1811926	Offline summary for PDCCH structure and search space part 2	NTT DOCOM	noted	2018-10-09 13:45:13	2018-10-09 13:45:13
R1-1811927	Outcome of offline discussion on NR positioning evaluation methodology	Intel Corp.	noted	2018-10-09 23:42:52	2018-10-10 08:58:09
R1-1811928	Input to online discussion on remaining open aspects of NR positioning evaluation	Intel Corp.	available	2018-10-09 23:42:52	2018-10-10 08:58:09
R1-1811929	Feature Lead summary on Evaluation Methodologies for NR-eMIMO	Nokia, Nokia	noted	2018-10-09 23:42:53	2018-10-10 08:58:09
R1-1811930	Full TX Power UL transmission	Ericsson	available	2018-10-09 23:42:53	2018-10-10 08:58:09
R1-1811931	Summary of maintenance for PRACH procedure	Qualcomm	noted	2018-10-09 23:42:54	2018-10-10 09:50:57
R1-1811932	Offline summary for UL data transmission procedure	NTT DOCOM	noted	2018-10-09 23:42:54	2018-10-10 11:36:43
R1-1811933	[Draft] LS on RSRP measurements using RSS for Rel-16 LTE-MTC	Ericsson	revised	2018-10-10 23:56:57	2018-10-11 01:49:41
R1-1811934	LS on RSRP measurements using RSS for Rel-16 LTE-MTC	RAN1, Ericsson	approved	2018-10-10 23:56:58	2018-10-11 01:49:41
R1-1811935	Reply LS on power class for FR1 EN-DC and NR CA	RAN1, Samsung	approved	2018-10-10 23:56:58	2018-10-11 13:37:31
R1-1811936	LS on aperiodicTriggeringOffset	RAN1,	approved	2018-10-10 23:56:58	2018-10-12 09:30:09
R1-1811937	LS on description of QCL	RAN1, Intel	approved	2018-10-10 23:56:59	2018-10-12 09:30:09
R1-1811938	Offline summary of receiver for NOMA	ZTE	noted	2018-10-10 08:58:09	2018-10-10 08:58:09
R1-1811939	[Draft] Reply LS on intra-band combination for NR CA and MR-DC	Intel Corp.	revised	2018-10-10 09:50:57	2018-10-10 09:50:57
R1-1811940	Evaluation methodology and metrics for NoMA	Ericsson	available	2018-10-10 11:36:43	2018-10-10 11:36:43
R1-1811941	Lower PAPR reference signals	Qualcomm	available	2018-10-10 08:58:09	2018-10-10 08:58:09
R1-1811942	Summary of offline discussion on UE power saving scheme	CATT	noted	2018-10-10 08:58:09	2018-10-10 08:58:09
R1-1811943	Summary of views on CSI reporting v3	Ericsson	noted	2018-10-10 23:57:01	2018-10-11 07:40:54

R1-1811944	On NGEN-DC (option 7)	Huawei, HiSilicon,	noted	2018-10-10 08:58:09	2018-10-10 08:58:09
R1-1811945	On power control SUO case 1 operation for NE-DC	Huawei, HiSilicon,	noted	2018-10-10 08:58:09	2018-10-10 08:58:09
R1-1811946	Summary of AI: 7.2.4.3 Uu-based sidelink resource allocation/configuration	Huawei, HiSilicon	noted	2018-10-10 08:58:09	2018-10-10 08:58:09
R1-1811947	WF on initial signal that facilitates power saving and fair coexistence	Broadcom, CableLab	noted	2018-10-10 11:36:43	2018-10-10 11:36:43
R1-1811948	Summary of NE-DC Dynamic Power Sharing	MediaTe	noted	2018-10-10 08:58:09	2018-10-10 08:58:09
R1-1811949	Summary of 7.2.6.1 Remaining details on evaluation methodology	Huawei, HiSilicon	noted	2018-10-10 08:58:09	2018-10-10 08:58:09
R1-1811950	Correction on vehicle blockage loss in NLOSv	Huawei	available	2018-10-10 23:57:04	2018-10-11 01:49:41
R1-1811951	Offline summary on maintenance for R15 NR PUCCH resource allocation	OPPO	noted	2018-10-10 23:57:04	2018-10-11 12:31:35
R1-1811952	Summary on UE Power Saving evaluation	Qualcom	noted	2018-10-10 09:50:57	2018-10-10 09:50:57
R1-1811953	Intra-band EN-DC power control	Qualcom	noted	2018-10-10 23:57:05	2018-10-11 07:40:54
R1-1811954	TP for 38.874 on Evaluation Results for NR IAB	AT&T	available	2018-10-10 23:57:06	2018-10-12 09:30:09
R1-1811955	Summary of Bandwidth Part Remaining Issues	MediaTek	noted	2018-10-10 23:57:06	2018-10-11 10:32:39
R1-1811956	Maintenance for physical access random channel	Convida Wireless	noted	2018-10-10 11:36:43	2018-10-10 11:36:43
R1-1811957	Summary of 7.1.3.1 (DCI contents and formats)	Ericsson	noted	2018-10-10 23:57:07	2018-10-11 01:49:41
R1-1811958	Summary for Rel-15 DL/UL data scheduling and HARQ procedure	Qualcomm	noted	2018-10-10 23:57:07	2018-10-11 01:49:41
R1-1811959	Feature Lead's Summary on Channel Access Procedures	Nokia, Nokia	noted	2018-10-10 23:57:07	2018-10-11 01:49:41
R1-1811960	Summary on CBG based retransmission	LG Electroni	noted	2018-10-10 23:57:08	2018-10-11 01:49:41
R1-1811961	Text Proposal for MCS Determination of	Ericsson	endorsed	2018-10-10 23:57:08	2018-10-11 10:32:39
R1-1811962	Offline outcome of UE power Consumption Reduction in RRM Measurements	vivo	noted	2018-10-10 23:57:09	2018-10-11 07:40:54
R1-1811963	Summary of offline discussion on NR-V2X AI - 7.2.4.1.4 Resource Allocation Mechanism	Intel Corp.	noted	2018-10-10 23:57:09	2018-10-11 07:40:54
R1-1811964	Reply to LS on Preamble Power Ramping Counter	RAN1, Fujitsu	approved	2018-10-10 23:57:09	2018-10-11 01:49:41
R1-1811965	LS on ss-PBCH-BlockPower definition	RAN1, Intel	approved	2018-10-10 23:57:10	2018-10-11 01:49:41
R1-1811966	LS on MO configuration with multiple SSB SCS for a given SSB frequency	RAN1, Intel	approved	2018-10-10 23:57:10	2018-10-11 01:49:41
R1-1811967	Summary of synchronization signals and PBCH	Ericsson	noted	2018-10-10 23:57:10	2018-10-11 12:31:35
R1-1811968	LS on PDCCH monitoring periodicities for DCI format 2_0	RAN1, Intel	approved	2018-10-10 23:57:11	2018-10-11 01:49:41
R1-1811969	LS on field description for SearchSpace	RAN1, NTT	approved	2018-10-10 23:57:11	2018-10-12 09:30:09
R1-1811970	Review summary for related to long PUCCH	Huawei, HiSilicon	noted	2018-10-10 23:57:12	2018-10-11 01:49:41
R1-1811971	Summary of Potential Enhancement to Configured Grants	Intel	withdrawn	2018-10-10 23:57:12	
R1-1811972	Updated summary of 7.2.3.1 Enhancements to support NR backhaul links	Ericsson	noted	2018-10-11 07:40:54	2018-10-11 07:40:54
R1-1811973	Feature lead summary 2 for UL Signals and	Ericsson	noted	2018-10-11 12:31:35	2018-10-11 12:31:35
R1-1811974	Summary2 for AI 7.1.5 NR UL power control in non-CA aspects	ZTE	revised	2018-10-11 07:40:54	2018-10-11 07:40:54
R1-1811975	Offline Summary for PRB bundling	vivo	noted	2018-10-11 10:32:39	2018-10-11 10:32:39
R1-1811976	Updated text proposal to TR 38.812 (NOMA)	ZTE	agreed	2018-10-11 07:40:54	2018-10-11 07:40:54
R1-1811977	Text proposal for various sections of TR 38.812	ZTE	revised	2018-10-11 07:40:54	2018-10-11 07:40:54
R1-1811978	Summary of 7.2.1.4 on performance evaluations for NOMA	ZTE	revised	2018-10-11 23:43:47	
R1-1811979	Summary of 7.2.1.3 on procedures for NOMA	ZTE	noted	2018-10-11 07:40:54	2018-10-11 07:40:54

R1-1811980	[Draft] LS on remote driving traffic model	Huawei	noted	2018-10-11 07:40:54	2018-10-11 07:40:54
R1-1811981	Updated Summary for NR RIM	CMCC	noted	2018-10-11 07:40:54	2018-10-11 07:40:54
R1-1811982	Chairman's notes of AI 7.1.2 Maintenance for MIMO	Ad-Hoc Chair	endorsed	2018-10-11 23:43:49	2018-10-12 09:30:09
R1-1811983	Chairman's notes of AI 7.1.4 Maintenance for NR-LTE co-existence	Ad-Hoc Chair	endorsed	2018-10-11 23:43:49	2018-10-12 03:38:09
R1-1811984	Chairman's notes of AI 7.1.5 Maintenance for UL power control	Ad-Hoc Chair	endorsed	2018-10-11 23:43:50	2018-10-12 09:30:09
R1-1811985	Chairman's notes of AI 7.2.2 Study on NR-based Access to Unlicensed Spectrum	Ad-Hoc Chair (Ericsson	endorsed	2018-10-11 23:43:50	2018-10-12 03:38:09
R1-1811986	Chairman's notes of AI 7.2.8 Enhancements on MIMO for NR	Ad-Hoc Chair	endorsed	2018-10-11 23:43:50	2018-10-12 09:30:09
R1-1811987	Chairman's notes of AI 7.2.10 Study on NR positioning support	Ad-Hoc Chair	endorsed	2018-10-11 23:43:51	2018-10-12 03:38:09
R1-1811988	Feature lead proposal on low PAPR DMRS	Ericsson	revised	2018-10-11 12:31:35	2018-10-11 12:31:35
R1-1811989	On UL signals and channels	Ericsson	available	2018-10-11 23:43:51	2018-10-11 23:47:53
R1-1811990	Feature Lead summary 2 on Evaluation Methodologies for NR-eMIMO	Nokia, Nokia	available	2018-10-11 10:32:39	2018-10-11 10:32:39
R1-1811991	Maintenance for physical access random channel	Convida Wireless	noted	2018-10-11 07:40:54	2018-10-11 07:40:54
R1-1811992	Outcome of offline discussion on UMi and UMa evaluation scenarios for NR positioning studies	Intel Corp.	noted	2018-10-11 08:59:58	2018-10-11 08:59:58
R1-1811993	Outcome of offline discussion on Potential Techniques for NR Positioning	Ericsson	noted	2018-10-11 10:32:39	2018-10-11 10:32:39
R1-1811994	Chairman's notes of AI 7.1.7 NR UE features	NTT	endorsed	2018-10-11 23:43:53	2018-10-12 09:30:09
R1-1811995	Summary of AI: 7.2.4.3 Uu-based sidelink resource allocation/configuration	Huawei, HiSilicon	noted	2018-10-11 07:40:54	2018-10-11 07:40:54
R1-1811996	Feature lead summary for beam management –	Ericsson	noted	2018-10-11 12:31:35	2018-10-11 12:31:35
R1-1811997	Summary of DMRS Issues	Qualcomm	revised	2018-10-11 23:43:54	2018-10-12 03:38:09
R1-1811998	Feature Lead Summary AI 7.2.4.2 v2	Ericsson	noted	2018-10-11 07:40:54	2018-10-11 07:40:54
R1-1811999	Correction on MSG3 FDRA description	Ericsson	available	2018-10-11 23:43:55	2018-10-12 03:38:09
R1-1812000	Summary of Coexistence Aspects in NR-V2X	Qualcom	noted	2018-10-11 07:40:54	2018-10-11 07:40:54
R1-1812001	WF on inter-band EN-DC power	Apple Inc	noted	2018-10-11 07:40:54	2018-10-11 07:40:54
R1-1812002	[Draft] LS on Multiple active configured UL grants for NR V2X	Ericsson	revised	2018-10-11 23:43:56	2018-10-12 03:38:09
R1-1812003	Feature lead summary of HARQ enhancement	Huawei,	available	2018-10-11 12:31:35	2018-10-11 12:31:35
R1-1812004	Summary of simultaneous Rx and Tx,	Intel	noted	2018-10-11 23:43:57	2018-10-12 03:38:09
R1-1812005	[DRAFT] LS on Uu control of NR sidelink	Huawei	revised	2018-10-11 13:37:31	2018-10-11 13:37:31
R1-1812006	Summary of 7.2.6.1 Remaining details on evaluation methodology	Huawei, HiSilicon	noted	2018-10-11 08:59:58	2018-10-11 08:59:58
R1-1812007	Summary of offline discussion on Triggering Adaptation of UE Power consumption	CATT	noted	2018-10-11 08:59:58	2018-10-11 08:59:58
R1-1812008	[Draft] Reply LS on intra-band combination for NR CA and MR-DC	Intel Corp.	revised	2018-10-11 10:32:39	2018-10-11 10:32:39
R1-1812009	Maintenance Issues on Short PUCCH and UCI Multiplexing	Ericsson	noted	2018-10-11 10:32:39	2018-10-11 10:32:39
R1-1812010	Summary of 7.1.3.3 (resource allocation)	Ericsson	noted	2018-10-11 10:32:39	2018-10-11 10:32:39
R1-1812011	Summary of 7.1.3.1 (DCI contents and formats)	Ericsson	noted	2018-10-11 12:31:35	2018-10-11 12:31:35
R1-1812012	Summary #2 on frame structure for NR-U	LG	noted	2018-10-11 10:32:39	2018-10-11 10:32:39
R1-1812013	[Draft] LS on Minimum Measurement Time within measurement gap	Huawei	withdrawn	2018-10-11 23:44:00	
R1-1812014	Summary on UE Power Saving evaluation	Qualcom	revised	2018-10-11 10:32:39	2018-10-11 10:32:39
R1-1812015	Summary of views on CSI reporting v4	Ericsson	noted	2018-10-11 12:31:35	2018-10-11 12:31:35
R1-1812016	Updated feature lead summary for agenda item 7.2.4.1.1 Support of unicast, groupcast and	LG Electroni	noted	2018-10-11 23:44:02	2018-10-12 09:30:09

R1-1812017	Updated feature lead summary for agenda item 7.2.4.1.2 Physical layer structures and	LG Electroni	noted	2018-10-11 13:37:31	2018-10-11 13:37:31
R1-1812018	Remaining issues for UL data transmission procedure	NTT DOCOM	noted	2018-10-11 10:32:39	2018-10-11 10:32:39
R1-1812019	Offline Summary on CA Topics	Samsung	noted	2018-10-11 10:32:39	2018-10-11 10:32:39
R1-1812020	[Draft] LS to RAN4 on wideband carrier	Ericsson	revised	2018-10-11 12:31:35	2018-10-11 12:31:35
R1-1812021	Summary of UCI multiplexing on PUSCH	Qualcom m	noted	2018-10-11 12:31:35	2018-10-11 12:31:35
R1-1812022	Feature lead proposal on low PAPR DMRS	Ericsson	noted	2018-10-11 12:31:35	2018-10-11 12:31:35
R1-1812023	Remaining issues for non-MIMO NR UE	Qualcom	noted	2018-10-11 23:44:16	2018-10-12 03:38:09
R1-1812024	Updated summary of 7.2.3.1 Enhancements to support NR backhaul links	Ericsson	revised	2018-10-11 13:37:31	2018-10-11 13:37:31
R1-1812025	Updated Summary for NR RIM	CMCC	noted	2018-10-11 13:37:31	2018-10-11 13:37:31
R1-1812026	LS on wideband carrier operation for NR-U	RAN1,	approved	2018-10-11 13:37:31	2018-10-11 13:37:31
R1-1812027	[Draft] LS on network synchronization for handover purposes	Ericsson	revised	2018-10-11 23:44:18	2018-10-12 16:08:23
R1-1812028	Reply LS on intra-band combination for NR CA	RAN1,	approved	2018-10-11 13:37:31	2018-10-11 13:37:31
R1-1812029	Offline summary for PDCCH structure and search space part 4	NTT DOCOM	noted	2018-10-11 13:37:31	2018-10-11 13:37:31
R1-1812030	Offline summary on maintenance for R15 NR PUCCH resource allocation	OPPO	noted	2018-10-11 23:44:19	2018-10-12 09:30:09
R1-1812031	Summary3 for AI 7.1.5 NR UL power control in non-CA aspects	ZTE	noted	2018-10-11 23:44:19	2018-10-12 09:30:09
R1-1812032	Draft TP for PTRS for non-slot transmission	vivo	available	2018-10-11 23:44:20	2018-10-12 03:38:09
R1-1812033	Summary of offline discussion for Rel-15 NR	Intel	noted	2018-10-11 23:44:20	2018-10-12 09:30:09
R1-1812034	Summary of synchronization signals and PBCH	Ericsson	noted	2018-10-11 23:44:20	2018-10-12 03:38:09
R1-1812035	Feature lead summary 2 of PT-RS	Ericsson	noted	2018-10-11 23:44:21	2018-10-12 03:38:09
R1-1812036	[Draft] LS on RAN1 NR UE features update	NTT	revised	2018-10-11 23:44:21	2018-10-12 09:30:09
R1-1812037	LS on RAN1 NR UE features update	RAN1, NTT DOCOM	approved	2018-10-11 23:44:22	2018-10-12 16:08:23
R1-1812038	Link level simulation setups with modeled power differences	Ericsson	noted	2018-10-11 23:44:22	2018-10-12 03:38:09
R1-1812039	Summary of 7.2.6.1 Remaining details on evaluation methodology	Huawei, HiSilicon	noted	2018-10-11 23:44:22	2018-10-12 03:38:09
R1-1812040	Summary of Soft buffer and Peak rate	Ericsson	revised	2018-10-11 23:44:23	2018-10-12 09:30:09
R1-1812041	Proposals from offline discussion of clarification of Rel-15 UL MIMO power scaling	Ericsson	noted	2018-10-11 23:44:23	2018-10-12 09:30:09
R1-1812042	Updated summary of 7.2.3.1 Enhancements to support NR backhaul links	Ericsson	noted	2018-10-12 03:38:09	2018-10-12 03:38:09
R1-1812043	CDL Model for V2X NLOS Channel	Qualcom	noted	2018-10-12 03:38:09	2018-10-12 03:38:09
R1-1812044	Feature Lead Summary for 7.2.4.4 QoS Management	Nokia, Nokia	noted	2018-10-12 03:38:09	2018-10-12 03:38:09
R1-1812045	Maintenance for CSI-RS #2	Huawei, HiSilicon	noted	2018-10-12 03:38:09	2018-10-12 03:38:09
R1-1812046	Updated text proposal for various sections of TR 38.812	ZTE	revised	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812047	Updated summary of 7.2.1.4 on performance evaluations for NOMA	ZTE	noted	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812048	Summary on UE Power Saving evaluation	Qualcom	noted	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812049	TP for TR38.889 v0.1.1	Qualcom m	endorsed	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812050	TP for 38.874 on Initial Access Enhancements for NR IAB	AT&T	available	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812051	Remaining issues for non-MIMO NR UE	Qualcom	noted	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812052	RAN1 NR UE features list	NTT	revised	2018-10-12 09:30:09	2018-10-12 09:30:09

R1-1812053	[Draft] LS on clarification to Max Data Rate in TS38.306	Ericsson	revised	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812054	Discussion on remaining issues for UL data transmission procedure	NTT DOCOM	noted	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812055	Enhanced UL grant-free transmissions for	NTT	noted	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812056	Summary of DMRS Issues	Qualcomm	noted	2018-10-12 03:38:09	2018-10-12 03:38:09
R1-1812057	LS on Uu control of NR sidelink	RAN1, Huawei	approved	2018-10-12 16:08:23	2018-10-12 16:08:23
R1-1812058	LS on Multiple active configured UL grants for NR V2X	RAN1, Ericsson	approved	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812059	On DCI size matching	Ericsson	available	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812060	Updated Summary for NR RIM	CMCC	noted	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812061	Collection of RIM simulation results	CMCC	available	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812062	Reply LS on PHR and SUL	RAN1,	approved	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812063	Summary of Soft buffer and Peak rate	Ericsson	noted	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812064	RAN1 NR UE features list	NTT	agreed	2018-10-12 16:08:23	2018-10-12 16:08:23
R1-1812065	Reply LS on L1 capabilities	RAN1, AT&T,	approved	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812066	Updated summary of 7.1.3.1 (DCI contents and formats)	Ericsson	noted	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812067	Reply LS on Further Agreements on Paging	RAN2,	treated	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812068	Summary of offline discussion on NR V2X	CATT	noted	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812069	Summary of 7.2.6.1 Remaining details on evaluation methodology	Huawei, HiSilicon	noted	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812070	Summary of 7.2.6.2 Layer 1 enhancements	Huawei,	noted	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812071	[Draft] LS on search space configuration for DCI format 2_0 monitoring	Qualcomm	revised	2018-10-12 09:30:09	2018-10-12 09:30:09
R1-1812072	LS on clarification to Max Data Rate in TS38.306	RAN1, Ericsson	approved	2018-10-12 16:08:23	2018-10-12 16:08:23
R1-1812073	NR UE feature 5-32/5-33	Huawei	noted	2018-10-12 16:08:23	2018-10-12 16:08:23
R1-1812074	LS on network synchronization for handover purposes	RAN1, Ericsson	approved	2018-10-12 16:08:23	2018-10-12 16:08:23
R1-1812075	LS on search space configuration for DCI format 2_0 monitoring	RAN1, Qualcom	approved	2018-10-12 16:08:23	2018-10-12 16:08:23
R1-1812076	Updated text proposal for various sections of TR 38.812	ZTE	noted	2018-10-12 16:08:23	2018-10-12 16:08:23
R1-1812077	NOMA cases with modeled power differences	Ericsson	noted	2018-10-12 16:08:23	2018-10-12 16:08:23
R1-1812078	TP for 38.874 on PHY Enhancements for NR IAB	AT&T	endorsed	2018-10-24 14:42:37	2018-10-25 05:59:18
R1-1812079	[94b-NR-10] Power modelling for RRM	Qualcom	noted	2018-10-24 14:42:38	2018-10-25 05:59:18
R1-1812080	TR38.889 v0.2.0 Study on NR-based Access to Unlicensed Spectrum	Qualcomm	endorsed	2018-10-24 14:42:38	2018-10-24 15:27:58
R1-1812081	TR38.885 v0.1.0 for Study on NR Vehicle-to-Everything (V2X)	Huawei, HiSilicon	endorsed	2018-10-24 15:21:20	2018-10-24 15:27:58
R1-1812082	TR 38.866 v0.1.0 Study on remote interference management for NR	CMCC	endorsed	2018-10-25 06:45:00	2018-10-25 13:36:53
R1-1812083	Link Level CDL Models for NR-V2X Channels	Qualcom	agreed	2018-10-25 06:45:03	2018-10-25 13:38:14
R1-1812084	Corrections to LTE-MTC	Ericsson	endorsed	2018-10-25 06:45:03	2018-11-02 07:33:03
R1-1812085	Corrections to NB-IoT	Ericsson	endorsed	2018-10-25 06:45:06	2018-11-02 07:33:03
R1-1812086	Corrections to Even further enhanced MTC for LTE	Huawei	endorsed	2018-10-25 06:45:09	2018-10-29 20:02:26
R1-1812087	Corrections to even further enhanced MTC for LTE in 36.213, s06-s07	Motorola mobility	endorsed	2018-10-25 06:45:13	2018-11-02 07:33:03

R1-1812088	Corrections to even further enhanced MTC for LTE in 36.213, s08-s09	Motorola mobility	**endorsed**	2018-10-25 06:45:16	2018-11-02 07:33:03
R1-1812089	Corrections to Rel-15 Further NB-IoT enhancements in 36.213, s14	Motorola mobility	**endorsed**	2018-10-25 06:45:19	2018-11-02 07:33:03
R1-1812090	CR to 38.211 capturing the RAN1#94bis meeting	Ericsson	**endorsed**	2018-10-25 06:45:22	2018-11-02 07:33:03
R1-1812091	CR to 38.212 capturing the RAN1#94bis meeting	Huawei	**endorsed**	2018-10-25 06:45:25	2018-10-29 20:02:26
R1-1812092	CR to 38.213 capturing the RAN1#94bis meeting	Samsung	**endorsed**	2018-10-25 06:45:28	2018-10-29 20:02:26
R1-1812093	CR to 38.214 capturing the RAN1#94bis meeting	Nokia	**endorsed**	2018-10-25 06:45:31	2018-10-29 20:02:26
R1-1812094	CR to 38.215 capturing the RAN1#94bis meeting	Intel	**endorsed**	2018-10-25 06:45:34	2018-10-29 20:02:26
R1-1812095	Email discussion of more observations on LLS results	ZTE	**agreed**	2018-11-02 07:34:29	2018-11-02 07:34:48
R1-1812096	Email discussion on the PHY abstraction methods for NOMA SLS	ZTE	**noted**	2018-11-02 00:00:00	2018-11-02 00:00:00

Appendix G

3GPP_TSG_RAN_WG1 Archives
October 2018, Week 1

3GPP_TSG_RAN_WG1@LIST.ETSI.ORG

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Subject: RAN1#94b: Update of contributions
From: 史志华 <szh@OPPO.COM>
Reply To: 史志华 <szh@OPPO.COM>
Date: Mon, 1 Oct 2018 15:58:51 +0800
Content-Type: multipart/mixed
Parts/Attachments: text/html (13 kB) , R1-1811634.zip (61 kB) , R1-1811635.zip (51 kB)

Dear all:

Attached please find two updated contributions as follows

Agenda item	Tdoc	Title	Source	Replaces
7.1.2.3	R1-1811634	Text proposals for Beam management	OPPO	R1-1810970
7.2.8.3	R1-1811635	Discussion on Multi-beam Operation Enhancements	OPPO	R1-1810971

These two contributions were submitted with wrong tdoc numbers by mistake and categorized to the wrong agenda items. Thus we update them with new tdoc numbers.

Additionally, R1–1811635 is revised by removing the first proposal of Section 2.2.

szh
szh@oppo.com

ATOM RSS1 RSS2

Appendix H

3GPP_TSG_RAN_WG2 Archives
September 2018, Week 4

3GPP_TSG_RAN_WG2@LIST.ETSI.ORG

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Topic: [<< First] [< Prev] [Next >] [Last >>]
Author: [<< First] [< Prev] [Next >] [Last >>]

Subject: RAN2 CR implementation status, post-RAN#81, (v7)
From: Juha Korhonen <Juha.Korhonen@ETSI.ORG>
Reply To: Juha Korhonen <Juha.Korhonen@ETSI.ORG>
Date: Tue, 25 Sep 2018 10:38:02 +0000
Content-Type: multipart/alternative
Parts/Attachments: text/plain (1447 bytes) , text/html (35 kB)

Dear All,

I have uploaded two new draft versions for review:
Draft_38304-f10
Draft_38331-f30_v4 (addition of “MobilityFromNRCommand" to "DL-DCCH-Message".

I have also uploaded three final spec versions to 3GU:
37324-f10
37340-f30
38321-f30

BR,
Juha

****

Overview of RAN2 CR implementation status after RAN#81 - 25.09.2018

Spec	REL-13	REL-14	REL-15	CRs	Rapporteur
36.300		1	13	14	Tero Henttonen (Nokia)
36.304		1	8	9	Jarkko Koskela (Nokia)
36.305			1	1	Masato Kitazoe (Qualcomm)
36.306		1	16	17	Ravi Kuchibhotla (Motorola Mobility)
36.321		3	17	20	Mats Folke (Ericsson)
36.323			3	3	SeungJune Yi (LGE)
36.331	3	12	42	57	Himke van der Velde (Samsung)
36.355		2	7	9	Masato Kitazoe (Qualcomm)
37.324			3 (OK)	3	Hao Bi (Huawei)
37.340			10 (v2) (OK)	10	Sergio Parolari (ZTE)
38.300			17	17	Benoist Sebire (Nokia)
38.304			1	1	Ozcan Oztruk (Qualcomm)
38.305			2	2	Sven Fischer (Qualcomm)
38.306			3	3	Kyeongin Jeong (Intel)
38.321			48 (v2) (OK)	48	Jaehyuk Jang (Samsung)
38.322			1 (OK)	1	Pavan Nuggehalli (MediaTek)
38.323			1	1	SeungJune Yi (LGE)
38.331			1 (v4)	1	Håkan Palm (Ericsson)
total	**3**	**20**	**194**	**217**	

blue: draft spec is available for review
yellow: updated draft spec (based on review comments) is available for review
green: the final version is uploaded and available via 3GU and ftp.
OK = The rapporteur has approved this version.

The draft specifications for review will be available here:
ftp://ftp.3gpp.org/tsg_ran/WG2_RL2/Specifications/201809_draft_specs_after_RAN_81/

All draft specs were implemented with revision marks.

Appendix I

LISTSERV
friedhelm.rodermund@iotecc.com
Subscriber Options
LISTSERV Archives
Search Archives
Subscriptions
Preferences
Change Password
Log Out

3GPP_TSG_RAN_WG2@LIST.ETSI.ORG

Options: Use Proportional Font
Show Text Part by Default
Show All Mail Headers

Message: [<< First] [< Prev] [Next >] [Last >>]
Topic: [<< First] [< Prev] [Next >] [Last >>]
Author: [<< First] [< Prev] [Next >] [Last >>]

Subject: RAN2 CR implementation status, post-RAN#81, (v10)
From: Juha Korhonen <Juha.Korhonen@ETSI.ORG>
Reply To: Juha Korhonen <Juha.Korhonen@ETSI.ORG>
Date: Wed, 26 Sep 2018 23:15:27 +0000
Content-Type: multipart/alternative
Parts/Attachments: text/plain (1593 bytes) , text/html (36 kB)

Dear All,

I have uploaded for review the draft versions of 36.300 (Rel-14 & Rel-15), 36.304 (Rel-14 & Rel-15) and 36.305 (Rel-15):
Draft_36300-e80
Draft_36300-f30
Draft_36304-e70
Draft_36304-f10
Draft_36305-f10

ftp://ftp.3gpp.org/tsg_ran/WG2_RL2/Specifications/201809_draft_specs_after_RAN_81/

I have also uploaded the final versions of 38.300 and 38.331 to 3GU.

BR,
Juha

****

Overview of RAN2 CR implementation status after RAN#81 - 27.09.2018

Spec	REL-13	REL-14	REL-15	CRs	Rapporteur
36.300		1	13	14	Tero Henttonen (Nokia)
36.304		1	8	9	Jarkko Koskela (Nokia)
36.305			1	1	Masato Kitazoe (Qualcomm)
36.306		1	16	17	Ravi Kuchibhotla (Motorola Mobility)
36.321		3	17	20	Mats Folke (Ericsson)
36.323			3	3	SeungJune Yi (LGE)
36.331	3	12	42	57	Himke van der Velde (Samsung)
36.355		2	7	9	Masato Kitazoe (Qualcomm)
37.324			3 (OK)	3	Hao Bi (Huawei)
37.340			10 (v2) (OK)	10	Sergio Parolari (ZTE)
38.300			17 (v2) (OK)	17	Benoist Sebire (Nokia)
38.304			1	1	Ozcan Oztruk (Qualcomm)
38.305			2 (OK)	2	Sven Fischer (Qualcomm)
38.306			3	3	Kyeongin Jeong (Intel)
38.321			48 (v2) (OK)	48	Jaehyuk Jang (Samsung)
38.322			1 (OK)	1	Pavan Nuggehalli (MediaTek)
38.323			1	1	SeungJune Yi (LGE)
38.331			1 (v6) (OK)	1	Håkan Palm (Ericsson)
total	**3**	**20**	**194**	**217**	

blue: draft spec is available for review
yellow: updated draft spec (based on review comments) is available for review
green: the final version is uploaded and available via 3GU and ftp.
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The draft specifications for review will be available here:
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All draft specs were implemented with revision marks.

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