**Third Generation Partnership Project (3GPP™)**

**DRAFT Meeting Report  
for  
TSG RAN WG4  
meeting: 94-e**

**Electronic Meeting, 24/02/2020 to 06/03/2020**

Report generated on Tuesday, 2020-02-18 08:25 UTC

Contents:

1 Opening of the E-meeting 12

2 Approval of the agenda 12

3 Letters / reports from other groups / meetings 12

6 Rel15 New radio access technology [NR\_newRAT] 12

6.1 Requirements for NE-DC (option 4) and NGEN-DC Maintenance [NR\_newRAT-Core] 13

6.1.1 RF requirements (38.101-3) [NR-newRAT-Core] 13

6.2 NR-NR Dual Connectivity Maintenance [NR\_newRAT-Core] 13

6.2.1 UE RF requirements for DC combinations for FR1+FR2 (38.101-3) [NR\_newRAT-Core] 13

6.3 System Parameters Maintenance [NR\_newRAT-Core] 13

6.3.1 Channel bandwidth Maintenance [NR\_newRAT-Core] 13

6.3.2 Channel Arrangement Maintenance [NR\_newRAT-Core] 13

6.3.3 Other system parameters maintenance [NR\_newRAT-Core] 16

6.4 SUL and LTE-NR co-existence maintenance [NR\_newRAT-Core] 16

6.5 UE RF requirements maintenance [NR\_newRAT] 17

6.5.1 Draft CR for editorial errors only [NR\_newRAT-Core] 18

6.5.1.1 Draft CR for 38.101-1 for editorial errors only [NR\_newRAT-Core] 18

6.5.1.2 Draft CR for 38.101-2 for editorial errors only [NR\_newRAT-Core] 21

6.5.1.3 Draft CR for 38.101-3 for editorial errors only [NR\_newRAT-Core] 23

6.5.2 DC combination including NR carrier and/or NR CA combination maintenance [NR\_newRAT-Core] 24

6.5.2.1 Maintenance for bands and band combinations for 38.101-1 [NR\_newRAT-Core] 24

6.5.2.2 Maintenance for combinations for 38.101-2 [NR\_newRAT-Core] 26

6.5.2.3 Maintenance for combinations for 38.101-3 [NR\_newRAT-Core] 28

6.5.3 [FR1] Tx and Rx common [NR\_newRAT-Core] 30

6.5.4 [FR1] Transmitter characteristics [NR\_newRAT-Core] 31

6.5.4.1 EN-DC power class and UL MIMO clarifications [NR\_newRAT-Core] 31

6.5.4.2 UE additional maximum output power reduction (A-MPR) [NR\_newRAT-Core] 33

6.5.4.3 Configured transmitted power [NR\_newRAT-Core] 34

6.5.4.4 Tx DC location [NR\_newRAT-Core] 35

6.5.4.5 Other Tx requirements [NR\_newRAT-Core] 35

6.5.5 [FR1] Receiver characteristics [NR\_newRAT-Core] 37

6.5.5.1 Out of band blocking exceptions [NR\_newRAT-Core] 37

6.5.5.2 Other Rx requirements [NR\_newRAT-Core] 37

6.5.6 [FR2] Common to Tx and Rx [NR\_newRAT-Core] 40

6.5.6.1 Regulatory Tx/Rx spurious emission limits handling [NR\_newRAT-Core] 41

6.5.7 [FR2] Transmitter characteristics [NR\_newRAT-Core] 44

6.5.7.1 Power control [NR\_newRAT-Core] 44

6.5.7.2 Beam correspondence [NR\_newRAT-Core] 46

6.5.7.3 Other Tx requirements [NR\_newRAT-Core] 46

6.5.8 [FR2] Receiver characteristics [NR\_newRAT-Core] 49

6.6 UE EMC [NR\_newRAT-Core] 51

6.7 BS RF [NR\_newRAT-Core] 51

6.7.1 General and ad-hoc meeting minutes [NR\_newRAT-Core] 51

6.7.2 Transmitter characteristics maintenance [NR\_newRAT-Core] 52

6.7.3 Receiver characteristics maintenance [NR\_newRAT-Core] 56

6.8 BS conformance testing [NR\_newRAT-Perf] 58

6.8.1 General and ad-hoc meeting minutes [NR\_newRAT-Perf] 58

6.8.2 BS specifications clean-ups (including conformance testing and core) [NR\_newRAT-Perf/Core] 58

6.8.2.1 eAAS specifications [NR\_newRAT-Perf/Core] 58

6.8.2.2 MSR specifications [NR\_newRAT-Perf/Core] 58

6.8.2.3 NR conformance testing specifications [NR\_newRAT-Perf] 59

6.8.3 Common for 38.141-1 and 38.141-2 [NR\_newRAT-Perf] 64

6.8.3.1 Test configurations [NR\_newRAT-Perf] 64

6.8.3.2 Test cases [NR\_newRAT-Perf] 67

6.8.3.3 Test models [NR\_newRAT-Perf] 67

6.8.4 Conducted conformance testing (38.141-1) [NR\_newRAT-Perf] 70

6.8.4.1 MU and TT analysis [NR\_newRAT-Perf] 71

6.8.4.2 BS Demodulation conformance testing (38.141-1) [NR\_newRAT-Perf] 71

6.8.4.2.1 Test system related MU and TT [NR\_newRAT-Perf] 71

6.8.5 Radiated conformance testing (38.141-2) [NR\_newRAT-Perf] 71

6.8.5.1 Common to FR1 and FR2 radiated conformance testing [NR\_newRAT-Perf] 72

6.8.5.2 FR1 radiated conformance testing [NR\_newRAT-Perf] 73

6.8.5.2.1 NR specific MU and TT analysis [NR\_newRAT-Perf] 73

6.8.5.3 FR2 radiated conformance testing [NR\_newRAT-Perf] 73

6.8.5.3.1 NR specific MU and TT analysis [NR\_newRAT-Perf] 73

6.8.5.4 BS Demodulation conformance testing (38.141-2) [NR\_newRAT-Perf] 73

6.9 BS EMC [NR\_newRAT-Core] 73

6.9.1 Editor input for BS EMC spec (38.113) [NR\_newRAT-Core] 73

6.9.2 Core requirements [NR\_newRAT-Core] 73

6.9.2.1 Emission requirements [NR\_newRAT-Core] 73

6.9.2.2 Immunity requirements [NR\_newRAT-Core] 73

6.9.3 Performance requirements [NR\_newRAT-Perf] 73

6.10 RRM core maintenance (38.133/36.133) [NR\_newRAT-Core] 75

6.10.1 General [NR\_newRAT-Core] 75

6.10.2 Editorial CRs [NR\_newRAT-Core] 75

6.10.3 UE measurement capability (38.133/36.133) [NR\_newRAT-Core] 77

6.10.4 RRM measurement and measurement gap (38.133/36.133) [NR\_newRAT-Core] 79

6.10.5 Idle state and inactive state mobility for SA and NSA (38.133/36.133) [NR\_newRAT-Core] 84

6.10.6 Connected state mobility (38.133/36.133) [NR\_newRAT-Core] 84

6.10.7 Timing (38.133/36.133) [NR\_newRAT-Core] 86

6.10.7.1 One shot timing adjustment requirements [NR\_newRAT-Core] 86

6.10.7.2 MTTD and MRTD requirements [NR\_newRAT-Core] 89

6.10.7.3 Other timing requirements [NR\_newRAT-Core] 89

6.10.8 Signaling characteristics (38.133/36.133) [NR\_newRAT-Core] 89

6.10.8.1 RLM [NR\_newRAT-Core] 89

6.10.8.2 SCell activation delay requirements [NR\_newRAT-Core] 90

6.10.8.3 PSCell addition/release requirements (36.133) [NR\_newRAT-Core] 91

6.10.8.4 TCI state switching requirements [NR\_newRAT-Core] 92

6.10.8.5 BWP switching requirements [NR\_newRAT-Core] 95

6.10.8.6 Other requirements [NR\_newRAT-Core] 96

6.10.9 Beam management based on SSB and/or CSI-RS (38.133) [NR\_newRAT-Core] 96

6.10.10 Requirements for NE-DC (option 4) and NGEN-DC [NR\_newRAT-Core] 97

6.10.11 Requirements for NR-NR Dual Connectivity [NR\_newRAT-Core] 98

6.10.12 Other requirements [NR\_newRAT-Core] 98

6.11 RRM perf maintenance (38.133/36.133) [NR\_newRAT-Perf] 98

6.11.1 General [NR\_newRAT-Perf] 98

6.11.2 Editorial CRs [NR\_newRAT-Perf] 100

6.11.3 RRM test cases [NR\_newRAT-Perf] 103

6.11.3.1 RRC\_IDLE state mobility test cases [NR\_newRAT-Perf] 103

6.11.3.1.1 SA idle/inactive cell reselection [NR\_newRAT-Perf] 104

6.11.3.2 RRC\_CONNECTED state mobility test cases [NR\_newRAT-Perf] 105

6.11.3.2.1 NR-NR Handovers [NR\_newRAT-Perf] 105

6.11.3.2.2 NR handovers to other RATs [NR\_newRAT-Perf] 105

6.11.3.2.3 RRC Re-establishment [NR\_newRAT-Perf] 105

6.11.3.2.4 Random access [NR\_newRAT-Perf] 105

6.11.3.2.5 RRC Release with redirection to NR/E-UTRAN [NR\_newRAT-Perf] 105

6.11.3.3 Timing test cases [NR\_newRAT-Perf] 106

6.11.3.3.1 EN-DC timing accuracy and adjustment [NR\_newRAT-Perf] 107

6.11.3.3.2 SA timing accuracy and adjustment [NR\_newRAT-Perf] 107

6.11.3.3.3 EN-DC TA accuracy [NR\_newRAT-Perf] 107

6.11.3.3.4 SA TA accuracy [NR\_newRAT-Perf] 107

6.11.3.4 RLM test cases [NR\_newRAT-Perf] 107

6.11.3.4.1 EN-DC SSB RLM for PSCell IS and OOS [NR\_newRAT-Perf] 107

6.11.3.4.2 SA SSB RLM for PCell IS and OOS [NR\_newRAT-Perf] 108

6.11.3.4.3 EN-DC CSI RLM for PSCell [NR\_newRAT-Perf] 108

6.11.3.4.4 SA CSI RLM for PCell [NR\_newRAT-Perf] 108

6.11.3.4.5 SSB RLM scheduling restriction &impact on mobility [NR\_newRAT-Perf] 108

6.11.3.5 Interruption test cases [NR\_newRAT-Perf] 108

6.11.3.5.1 EN-DC interruption due to DRX transition [NR\_newRAT-Perf] 109

6.11.3.5.2 EN-DC interruption due to deactivated SCell operations [NR\_newRAT-Perf] 109

6.11.3.5.3 SA interruptions at SCell addition/release/(de-)activation [NR\_newRAT-Perf] 109

6.11.3.5.4 SA interruptions due to measurement on deactivated SCell [NR\_newRAT-Perf] 109

6.11.3.6 SCell activation and de-activation test cases [NR\_newRAT-Perf] 109

6.11.3.6.1 EN-DC SCell activation/deactivation delay [NR\_newRAT-Perf] 109

6.11.3.6.2 SA SCell activation/deactivation [NR\_newRAT-Perf] 109

6.11.3.7 UE UL carrier RRC reconfiguration delay test cases [NR\_newRAT-Perf] 109

6.11.3.8 Beam failure detection and link recovery procedure test cases [NR\_newRAT-Perf] 109

6.11.3.8.1 EN-DC beam failure detection and recovery [NR\_newRAT-Perf] 110

6.11.3.8.2 SA beam failure detection and recovery [NR\_newRAT-Perf] 110

6.11.3.8.3 EN-DC/SA scheduling restriction for BFD [NR\_newRAT-Perf] 110

6.11.3.9 Active BWP switching test cases [NR\_newRAT-Perf] 110

6.11.3.10 Measurement procedure test cases [NR\_newRAT-Perf] 110

6.11.3.10.1 EN-DC cell search and L1 measurement period [NR\_newRAT-Perf] 111

6.11.3.10.2 SA cell search and L1 measurement period [NR\_newRAT-Perf] 111

6.11.3.10.3 Inter-frequency measurement with LTE PCell [NR\_newRAT-Perf] 111

6.11.3.10.4 EN-DC NR inter-frequency measurement [NR\_newRAT-Perf] 111

6.11.3.10.5 SA NR inter-frequency measurement [NR\_newRAT-Perf] 111

6.11.3.10.6 EN-DC SFTD measurement delay [NR\_newRAT-Perf] 112

6.11.3.10.7 Inter-RAT E-UTRA measurement (with NR PCell) [NR\_newRAT-Perf] 112

6.11.3.10.8 EN-DC L1-RSRP measurement delay [NR\_newRAT-Perf] 112

6.11.3.10.9 SA L1-RSRP measurement delay [NR\_newRAT-Perf] 112

6.11.3.11 Measurement performance test cases [NR\_newRAT-Perf] 112

6.11.3.11.1 Intra-frequency RSRP accuracy for FR1 and FR2 [NR\_newRAT-Perf] 112

6.11.3.11.2 Inter-frequency RSRP accuracy for FR1 and FR2 [NR\_newRAT-Perf] 113

6.11.3.11.3 Intra-frequency RSRQ accuracy for FR1 and FR2 [NR\_newRAT-Perf] 114

6.11.3.11.4 Inter-frequency RSRQ accuracy for FR1 and FR2 [NR\_newRAT-Perf] 114

6.11.3.11.5 SA/EN-DC SS-SINR measurement accuracies [NR\_newRAT-Perf] 115

6.11.3.11.6 Beam management: L1-RSRP reporting [NR\_newRAT-Perf] 115

6.11.3.11.7 EN-DC SFTD measurement accuracy [NR\_newRAT-Perf] 116

6.11.3.11.8 SA NR inter-RAT E-UTRAN RSRP accuracy [NR\_newRAT-Perf] 116

6.11.3.11.9 SA NR inter-RAT E-UTRAN RSRQ accuracy [NR\_newRAT-Perf] 116

6.11.3.11.10 SA NR inter-RAT E-UTRAN SINR accuracy [NR\_newRAT-Perf] 116

6.11.3.12 NR PSCell addition and release in EN-DC [NR\_newRAT-Perf] 116

6.11.3.13 TCI switching delay [NR\_newRAT-Perf] 116

6.11.3.14 E-UTRAN standalone test for NR [NR\_newRAT-Perf] 116

6.11.3.14.1 E-UTRAN cell reselection to NR target cell [NR\_newRAT-Perf] 116

6.11.3.14.2 E-UTRAN inter-RAT NR cell search and measurement delay [NR\_newRAT-Perf] 116

6.11.3.14.3 E-UTRAN inter-RAT handover [NR\_newRAT-Perf] 116

6.11.3.14.4 E-UTRAN inter-RAT NR measurement accuracy [NR\_newRAT-Perf] 116

6.12 Demodulation and CSI maintenance [NR\_newRAT-Perf] 116

6.12.1 UE demodulation and CSI (38.101-4) [NR\_newRAT-Perf] 116

6.12.2 BS demodulation (38.104) [NR\_newRAT-Perf] 118

6.13 Maintenance of the Positioning specs (36.171, 37.171 and 38.171) [NR\_newRAT-Perf or TEI] 121

7 Rel-16 Work Items for LTE 122

7.1 LTE intra-band Carrier Aggregation for x CC DL/y CC UL including contiguous and non-contiguous spectrum (x>=y) [LTE\_CA\_R16\_intra] 122

7.1.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R16\_intra-Core/Perf] 122

7.1.2 UE RF [LTE\_CA\_R16\_intra-Core] 123

7.2 LTE inter-band Carrier Aggregation for 2 bands DL with 1 band UL [LTE\_CA\_R16\_2BDL\_1BUL] 123

7.2.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R16\_2BDL\_1BUL-Core/Perf] 123

7.2.2 UE RF with harmonic, close proximity and isolation issues [LTE\_CA\_R16\_2BDL\_1BUL-Core] 124

7.2.3 UE RF without specific issues [LTE\_CA\_R16\_2BDL\_1BUL-Core] 124

7.3 LTE inter-band Carrier Aggregation for 3 bands DL with 1 band UL [LTE\_CA\_R16\_3BDL\_1BUL] 125

7.3.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R16\_3BDL\_1BUL-Core/Perf] 125

7.3.2 UE RF with harmonic, close proximity and isolation issues [LTE\_CA\_R16\_3BDL\_1BUL-Core] 125

7.3.3 UE RF without specific issues [LTE\_CA\_R16\_3BDL\_1BUL-Core] 126

7.4 LTE inter-band Carrier Aggregation for x bands DL (x=4, 5) with 1 band UL [LTE\_CA\_R16\_xBDL\_1BUL] 126

7.4.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R16\_xBDL\_1BUL-Core] 126

7.4.2 UE RF with 4 LTE bands CA [LTE\_CA\_R16\_xBDL\_1BUL-Core] 127

7.4.3 UE RF with 5 LTE bands CA [LTE\_CA\_R16\_xBDL\_1BUL-Core] 128

7.5 LTE inter-band Carrier Aggregation for 2 bands DL with 2 band UL [LTE\_CA\_R16\_2BDL\_2BUL] 128

7.5.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R16\_2BDL\_2BUL-Core] 128

7.5.2 UE RF with harmonic, close proximity and isolation issues [LTE\_CA\_R16\_2BDL\_2BUL-Core] 128

7.5.3 UE RF without specific issues [LTE\_CA\_R16\_2BDL\_2BUL-Core] 128

7.6 LTE inter-band Carrier Aggregation for x bands DL (x= 3, 4, 5) with 2 band UL [LTE\_CA\_R16\_xBDL\_2BUL] 128

7.6.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R16\_xBDL\_2BUL-Core] 128

7.6.2 UE RF with MSD [LTE\_CA\_R16\_xBDL\_2BUL-Core] 129

7.6.3 UE RF without MSD [LTE\_CA\_R16\_xBDL\_2BUL-Core] 130

7.7 RRM for LTE CA basket WI-s [LTE\_CA\_R16\_xxxx] 130

7.7.1 RRM Core (36.133) [LTE\_CA\_R16\_xxxx-Core] 130

7.7.2 RRM Perf (36.133) [LTE\_CA\_R16\_xxxx-Perf] 130

7.8 Additional LTE bands for UE category M1 and/or NB1 in Rel-16 [LTE\_bands\_R16\_M1\_NB1] 130

7.8.1 RF [LTE\_bands\_R16\_M1\_NB1-Core] 130

7.8.2 Others [LTE\_bands\_R16\_M1\_NB1-Perf] 130

7.9 Additional LTE bands for UE category M2 and/or NB2 in in Rel-16 [LTE\_bands\_R16\_M2\_NB2] 130

7.9.1 RF [LTE\_bands\_R16\_M2\_NB2-Core] 130

7.9.2 Others [LTE\_bands\_R15\_M2\_NB2-Perf] 130

7.10 Additional MTC enhancements for LTE [LTE\_eMTC5] 130

7.10.1 General [LTE\_eMTC5] 130

7.10.2 Coexistence with NR [LTE\_eMTC5] 130

7.10.3 RRM core requirements (36.133) [LTE\_eMTC5-Core] 131

7.10.3.1 DL quality report in MSG3 and connected mode [LTE\_eMTC5-Core] 131

7.10.3.2 WUS [LTE\_eMTC5-Core] 132

7.10.3.3 MPDCCH performance improvement [LTE\_eMTC5-Core] 133

7.10.3.4 PUR [LTE\_eMTC5-Core] 133

7.10.3.5 Mobility enhancement [LTE\_eMTC5-Core] 134

7.10.3.6 Others [LTE\_eMTC5-Core] 135

7.10.4 Demodulation and CSI requirements (36.101/36.104) [LTE\_eMTC5-Perf] 135

7.11 Additional enhancements for NB-IoT [NB\_IOTenh3] 137

7.11.1 General [NB\_IOTenh3] 137

7.11.2 Co-existence with NR [NB\_IOTenh3] 137

7.11.3 RRM core requirements (36.133) [NB\_IOTenh3-Core] 140

7.11.3.1 Group WUS [NB\_IOTenh3-Core] 140

7.11.3.2 PUR [NB\_IOTenh3-Core] 140

7.11.3.3 Multi-carrier operations [NB\_IOTenh3-Core] 140

7.11.3.4 Others [NB\_IOTenh3-Core] 141

7.11.4 Demodulation and CSI requirements (36.101/36.104) [NB\_IOTenh3-Perf] 141

7.12 Even further Mobility enhancement in E-UTRAN [LTE\_feMob] 143

7.12.1 RRM core requirements (36.133) [LTE\_feMob-Core] 143

7.12.1.1 Conditional handover [LTE\_feMob-Core] 143

7.12.1.2 Reduction of user data interruption [LTE\_feMob-Core] 144

7.12.1.3 Others [LTE\_feMob-Core] 145

7.13 Further performance enhancement for LTE in high speed scenario [LTE\_high\_speed\_enh2] 145

7.13.1 RRM core requirements maintenance (36.133) [LTE\_high\_speed\_enh2-Core] 145

7.13.2 RRM performance requirements (36.133) [LTE\_high\_speed\_enh2-Perf] 145

7.13.3 UE Demodulation and CSI requirements (36.101) [LTE\_high\_speed\_enh2-Perf] 145

7.13.3.1 Extension of demodulation requirements to CA [LTE\_high\_speed\_enh2-Perf] 145

7.13.3.2 HST-SFN PDSCH demodulation requirements [LTE\_high\_speed\_enh2-Perf] 146

7.13.3.3 Single tap HST PDSCH demodulation requirements [LTE\_high\_speed\_enh2-Perf] 146

7.13.4 BS Demodulation requirements (36.104) LTE\_high\_speed\_enh2-Perf] 146

7.13.4.1 PUSCH demodulation requirements [LTE\_high\_speed\_enh2-Perf] 146

7.13.4.2 PRACH requirements [LTE\_high\_speed\_enh2-Perf] 147

7.14 LTE-based 5G terrestrial broadcast [LTE\_terr\_bcast] 147

7.14.1 RRM core requirements maintenance (36.133) [LTE\_terr\_bcast -Core] 147

7.14.1.1 Interruption requirements [LTE\_terr\_bcast -Core] 147

7.14.1.2 Phase synchronization accuracy [LTE\_terr\_bcast -Core] 147

7.14.1.3 RSRP/RSRQ report mapping [LTE\_terr\_bcast -Core] 147

7.14.1.4 Other requirements [LTE\_terr\_bcast -Core] 147

7.14.2 RRM Perf requirements (36.133) [LTE\_terr\_bcast -Perf] 147

7.14.3 Demodulation and CSI requirements (36.101) [LTE\_terr\_bcast -Perf] 147

7.15 Support for NavIC Navigation Satellite System for LTE [LCS\_NAVIC-Perf] 148

7.15.1 UE perf. requirements (36.171) [LCS\_NAVIC-Perf] 148

7.16 DL MIMO efficiency enhancements for LTE [LTE\_DL\_MIMO\_EE] 148

7.16.1 UE RF requirements (36.101) [LTE\_DL\_MIMO\_EE] 149

8 Rel-16 non-spectrum related work items for NR 149

8.1 NR-based access to unlicensed spectrum [NR\_unlic] 149

8.1.1 System Parameters [NR\_unlic-Core] 149

8.1.1.1 General [NR\_unlic-Core ] 149

8.1.1.2 Wideband operations (UE and BS) [NR\_unlic-Core] 150

8.1.1.3 Channel raster [NR\_unlic-Core ] 152

8.1.1.4 Spectrum utilizations [NR\_unlic-Core] 152

8.1.1.5 Sync raster [NR\_unlic-Core] 152

8.1.2 UE RF requirements [NR\_unlic-Core] 152

8.1.2.1 Transmitter characteristics [NR\_unlic-Core] 155

8.1.2.2 Receiver characteristics [NR\_unlic-Core] 156

8.1.3 BS RF requirements [NR\_unlic-Core] 157

8.1.3.1 Transmitter characteristics [NR\_unlic-Core] 157

8.1.3.2 Receiver characteristics [NR\_unlic-Core] 157

8.1.4 RRM core requirements (38.133) [NR\_unlic-Core] 159

8.1.4.1 Cell re-selection [NR\_unlic-Core] 160

8.1.4.2 Handover [NR\_unlic-Core] 162

8.1.4.3 RRC connection mobility control [NR\_unlic-Core] 163

8.1.4.4 SCell activation/deactivation (delay and interruption) [NR\_unlic-Core] 165

8.1.4.5 PSCell addition/release (delay and interruption) [NR\_unlic-Core] 166

8.1.4.6 Active TCI state switching [NR\_unlic-Core] 167

8.1.4.7 Interruptions due to operation in non-NR-U serving cells [NR\_unlic-Core] 168

8.1.4.8 Active BWP switching [NR\_unlic-Core] 168

8.1.4.9 RLM and link recovery procedures [NR\_unlic-Core] 169

8.1.4.10 Measurement requirements [NR\_unlic-Core] 171

8.1.4.11 Measurement accuracy [NR\_unlic-Core] 176

8.1.4.12 Measurement capability and reporting criteria [NR\_unlic-Core] 176

8.1.4.13 Timing [NR\_unlic-Core] 177

8.1.4.14 Others [NR\_unlic-Core] 178

8.2 Cross Link Interference (CLI) handling and Remote Interference Management (RIM) for NR [NR\_CLI\_RIM] 179

8.2.1 General [NR\_CLI\_RIM-Core] 179

8.2.2 RRM core requirements maintenance (38.133) [NR\_CLI\_RIM-Core] 179

8.2.3 RRM perf. requirements (38.133) [NR\_CLI\_RIM-Perf] 180

8.2.3.1 CLI measurement accuracy [NR\_CLI\_RIM-Perf] 180

8.2.3.2 Test cases [NR\_CLI\_RIM-Perf] 180

8.2.3.3 Others [NR\_CLI\_RIM-Perf] 181

8.3 NR mobility enhancement [NR\_Mob\_enh] 181

8.3.1 General [NR\_Mob\_enh-Core] 181

8.3.2 RRM core requirements (38.133) [NR\_Mob\_enh-Core] 181

8.3.2.1 Handover with simultaneous Rx/Tx with source and target cells [NR\_Mob\_enh-Core] 181

8.3.2.2 Conditional handover [NR\_Mob\_enh-Core] 183

8.3.2.3 Conditional PSCell addition/change [NR\_Mob\_enh-Core] 185

8.3.2.4 Others [NR\_Mob\_enh-Core] 185

8.4 5G V2X with NR sidelink [5G\_V2X\_NRSL] 185

8.4.1 General [5G\_V2X\_NRSL] 185

8.4.2 Co-existence Study [5G\_V2X\_NRSL-Core] 187

8.4.2.1 Simulation Results [5G\_V2X\_NRSL-Core] 187

8.4.2.2 In-device coexistence [5G\_V2X\_NRSL-Core] 187

8.4.2.3 UE-to-UE coexistence [5G\_V2X\_NRSL-Core] 187

8.4.3 System parameters [5G\_V2X\_NRSL-Core] 187

8.4.3.1 Bands and bandwidth [5G\_V2X\_NRSL-Core] 188

8.4.3.2 Others [5G\_V2X\_NRSL-Core] 189

8.4.4 UE RF requirements [5G\_V2X\_NRSL-Core] 189

8.4.4.1 Transmitter characteristics [5G\_V2X\_NRSL-Core ] 190

8.4.4.2 Receiver characteristics [5G\_V2X\_NRSL-Core ] 194

8.4.5 RRM core requirements (38.133) [5G\_V2X\_NRSL-Core] 195

8.4.5.1 Transmit timing requirements [5G\_V2X\_NRSL-Core] 195

8.4.5.2 Synchronization requirements [5G\_V2X\_NRSL-Core] 195

8.4.5.3 Measurement requirements [5G\_V2X\_NRSL-Core] 196

8.4.5.4 Interruption requirements [5G\_V2X\_NRSL-Core] 198

8.4.5.5 Unicast, groupcast related [5G\_V2X\_NRSL-Core] 198

8.4.5.6 Others [5G\_V2X\_NRSL-Core] 198

8.5 Integrated Access and Backhaul for NR [NR\_IAB] 199

8.5.1 General [NR\_IAB-Core/Perf] 199

8.5.2 Co-existence study [NR\_IAB-Core] 202

8.5.3 System parameters [NR\_IAB-Core] 203

8.5.4 RF requirements [NR\_IAB-Core] 204

8.5.4.1 Conductive RF core requirements [NR\_IAB-Core] 205

8.5.4.1.1 Transmitter characteristics [NR\_IAB-Core] 205

8.5.4.1.2 Receiver characteristics [NR\_IAB-Core] 206

8.5.4.2 Radiated RF core requirements [NR\_IAB-Core] 206

8.5.4.2.1 Transmitter characteristics [NR\_IAB-Core] 206

8.5.4.2.2 Receiver characteristics [NR\_IAB-Core] 216

8.5.5 RRM core requirements (38.133) [NR\_IAB-Core] 219

8.5.5.1 RRC connection mobility control [NR\_IAB-Core] 219

8.5.5.2 MT timing related requirements [NR\_IAB-Core] 221

8.5.5.3 DU timing related requirements [NR\_IAB-Core] 222

8.5.5.4 RLM requirements [NR\_IAB-Core] 222

8.5.5.5 BFD/BFR requirements [NR\_IAB-Core] 223

8.5.5.6 Other requirements [NR\_IAB-Core] 223

8.5.6 EMC core requirements [NR\_IAB-Core] 223

8.5.7 Others [NR\_IAB-Core] 225

8.6 Multi-RAT Dual-Connectivity and Carrier Aggregation enhancements [LTE\_NR\_DC\_CA\_enh] 225

8.6.1 General [LTE\_NR\_DC\_CA\_enh-Core] 225

8.6.2 RF requirements [LTE\_NR\_DC\_CA\_enh-Core] 225

8.6.2.1 RF requirements for EN-DC [LTE\_NR\_DC\_CA\_enh-Core] 225

8.6.2.2 RF requirements for CA [LTE\_NR\_DC\_CA\_enh-Core] 225

8.6.2.3 RF requirements for NR-DC [LTE\_NR\_DC\_CA\_enh-Core] 225

8.6.3 RRM core requirements (38.133) [LTE\_NR\_DC\_CA\_enh-Core] 225

8.6.3.1 Asynchronous and synchronous NR-NR Dual Connectivity [LTE\_NR\_DC\_CA\_enh-Core] 225

8.6.3.2 Early Measurement reporting [LTE\_NR\_DC\_CA\_enh-Core] 225

8.6.3.2.1 NR measurements for EMR [LTE\_NR\_DC\_CA\_enh-Core] 226

8.6.3.2.2 LTE NR Inter-RAT EMR [LTE\_NR\_DC\_CA\_enh-Core] 227

8.6.3.3 Efficient and low latency serving cell configuration, activation and setup [LTE\_NR\_DC\_CA\_enh-Core] 227

8.6.3.3.1 Direct SCell activation [LTE\_NR\_DC\_CA\_enh-Core] 227

8.6.3.3.2 SCell dormancy [LTE\_NR\_DC\_CA\_enh-Core] 229

8.6.3.4 Interruption under EN-DC and NE-DC [LTE\_NR\_DC\_CA\_enh-Core] 230

8.6.3.5 Fast recovery [LTE\_NR\_DC\_CA\_enh-Core] 230

8.6.3.6 Cross-carrier scheduling with different numerologies on the scheduling and scheduled carriers [LTE\_NR\_DC\_CA\_enh-Core] 230

8.6.3.7 Others [LTE\_NR\_DC\_CA\_enh-Core] 230

8.7 UE power saving in NR [NR\_UE\_pow\_sav] 230

8.7.1 General [NR\_UE\_pow\_sav] 230

8.7.2 Switching and interruption time [NR\_UE\_pow\_sav] 230

8.7.3 RRM core requirements (38.133) [NR\_UE\_pow\_sav-Core] 231

8.7.3.1 RRM measurement relaxation [NR\_UE\_pow\_sav-Core] 231

8.7.3.2 Requirements for MIMO layer adaptation [NR\_UE\_pow\_sav-Core] 234

8.8 NR Positioning Support [NR\_pos] 236

8.8.1 General (Work plan, rapporteur input) [NR\_pos-Core/Perf] 236

8.8.2 RRM core requirements (38.133) [NR\_pos-Core] 236

8.8.2.1 UE requirements [NR\_pos-Core] 236

8.8.2.1.1 System-level evaluations for PRS-RSTD and PRS-RSRP [NR\_pos-Core] 237

8.8.2.1.2 PRS-RSTD measurements [NR\_pos-Core] 237

8.8.2.1.3 PRS-RSRP measurements [NR\_pos-Core] 239

8.8.2.1.4 Rx-Tx time difference measurements [NR\_pos-Core] 240

8.8.2.1.5 SSB and CSI-RS RSRP/RSRQ measurements [NR\_pos-Core] 241

8.8.2.1.6 Link-level evaluations for PRS-RSTD and PRS-RSRP [NR\_pos-Core] 242

8.8.2.2 gNB requirements [NR\_pos-Core] 244

8.8.2.3 Impact on existing RRM requirements [NR\_pos-Core] 245

8.8.2.4 Others [NR\_pos-Core] 246

8.9 Physical layer enhancements for NR URLLC [NR\_L1enh\_URLLC-Core] 246

8.9.1 Demodulation and CSI requirements [NR\_L1enh\_URLLC-Perf] 246

8.9.1.1 Test feasibility [NR\_L1enh\_URLLC-Perf] 246

8.9.1.2 UE demodulation and CSI requirements (38.101-4) [NR\_L1enh\_URLLC-Perf] 247

8.9.1.3 BS demodulation requirements (38.104) [NR\_L1enh\_URLLC-Perf] 249

8.10 Single radio voice call continuity from 5G to 3G (SRVCC) [SRVCC\_NR\_to\_UMTS-Core] 251

8.10.1 RRM core requirements maintenance (38.133) [SRVCC\_NR\_to\_UMTS-Core] 251

8.10.2 RRM perf requirements (38.133) [SRVCC\_NR\_to\_UMTS-Perf] 251

8.11 Enhancements on MIMO for NR [NR\_eMIMO] 252

8.11.1 UE RF core requirements (38.101) [NR\_eMIMO-Core] 252

8.11.1.1 DMRS enhancement with PI/2 BPSK [NR\_eMIMO-Core] 252

8.11.1.2 Uplink Tx Full Power transmission [NR\_eMIMO-Core] 253

8.11.2 RRM core requirements (38.133) [NR\_eMIMO-Core] 254

8.11.2.1 L1-SINR [NR\_eMIMO-Core] 254

8.11.2.2 SCell Beam failure recovery [NR\_eMIMO-Core] 256

8.11.2.3 DL/UL beam indication with reduced latency and overhead [NR\_eMIMO-Core] 257

8.11.2.4 Others [NR\_eMIMO-Core] 258

8.11.3 Demodulation and CSI requirements [NR\_eMIMO-Perf] 258

8.11.3.1 General [NR\_eMIMO-Perf] 258

8.11.3.2 Demodulation requirements [NR\_eMIMO-Perf] 258

8.11.3.3 CSI requirements [NR\_eMIMO-Perf] 260

8.12 Add support of NR DL 256QAM for FR2 [NR\_DL256QAM\_FR2] 261

8.12.1 General (Ad-hoc MoM/TR maintenance) [NR\_DL256QAM\_FR2] 261

8.12.2 BS RF core requirements (38.104) [NR\_DL256QAM\_FR2] 261

8.12.3 UE RF core requirements (38.101-2) [NR\_DL256QAM\_FR2] 263

8.13 RF requirements for NR frequency range 1 (FR1) [NR\_RF\_FR1] 264

8.13.1 RF core requirements [NR\_RF\_FR1] 264

8.13.1.1 Almost contiguous allocations for CP-OFDM UL for FR1 [NR\_RF\_FR1] 264

8.13.1.2 Intra-band contiguous DL CA for FR1 [NR\_RF\_FR1] 265

8.13.1.3 Intra-band non-contiguous DL CA for FR1 for generic and n77 and n78 [NR\_RF\_FR1] 266

8.13.1.4 Intra-band contiguous UL CA for FR1 power class 3 [NR\_RF\_FR1] 266

8.13.1.5 Intra-band non-contiguous UL CA for FR1 power class [NR\_RF\_FR1] 268

8.13.1.6 Switching period between case 1 and case 2 [NR\_RF\_FR1] 268

8.13.1.7 Transient period capability [NR\_RF\_FR1] 272

8.13.2 RRM core requirements (38.133) [NR\_RF\_FR1] 273

8.13.2.1 RRM requirements for Tx switching between two uplink carriers [NR\_RF\_FR1] 273

8.14 NR RF requirement enhancements for frequency range 2 (FR2) [NR\_RF\_FR2\_req\_enh] 274

8.14.1 RF core requirements [NR\_RF\_FR2\_req\_enh] 274

8.14.1.1 FR2 MPE [NR\_RF\_FR2\_req\_enh] 275

8.14.1.2 Beam Correspondence based on configured DL RS (SSB or CSI-RS) [NR\_RF\_FR2\_req\_enh] 277

8.14.1.3 Intra-band cont DL CA for aggregated BW larger than 1400 MHz [NR\_RF\_FR2\_req\_enh] 281

8.14.1.4 Intra-band non-cont DL CA for aggregated BW larger than 1400 MHz [NR\_RF\_FR2\_req\_enh] 281

8.14.1.5 Intra-band contiguous UL CA [NR\_RF\_FR2\_req\_enh] 283

8.14.1.6 Intra-band non-contiguous UL CA [NR\_RF\_FR2\_req\_enh] 283

8.14.1.7 Inter-band DL CA [NR\_RF\_FR2\_req\_enh] 285

8.14.1.8 Improvement of UE MPR [NR\_RF\_FR2\_req\_enh] 288

8.14.1.9 Improvement of spherical coverage requirements for PC3 [NR\_RF\_FR2\_req\_enh] 288

8.14.2 RRM core requirements (38.133) [NR\_RF\_FR2\_req\_enh] 290

8.14.2.1 Inter-band DL CA MRTD [NR\_RF\_FR2\_req\_enh] 290

8.15 NR RRM requirement enhancement [NR\_RRM\_Enh\_Core] 290

8.15.1 RRM core requirements (38.133) [NR\_RRM\_Enh\_Core] 290

8.15.1.1 SRS carrier switching requirements [NR\_RRM\_Enh\_Core] 290

8.15.1.2 Multiple Scell activation/deactivation [NR\_RRM\_Enh\_Core] 292

8.15.1.3 CGI reading requirements with autonomous gap [NR\_RRM\_Enh\_Core] 293

8.15.1.4 BWP switching on multiple CCs [NR\_RRM\_Enh\_Core] 296

8.15.1.5 Inter-frequency measurement requirement without MG [NR\_RRM\_Enh\_Core] 298

8.15.1.6 Mandatory MG patterns [NR\_RRM\_Enh\_Core] 300

8.15.1.7 UE-specific CBW change [NR\_RRM\_Enh\_Core] 303

8.15.1.8 Spatial relation switch for uplink [NR\_RRM\_Enh\_Core] 303

8.15.1.9 Non-simultaneous UL carrier operation in FR2 [NR\_RRM\_Enh\_Core] 304

8.15.1.10 Inter-band CA requirement for FR2 UE measurement capability of independent Rx beam and/or common beam [NR\_RRM\_Enh\_Core] 304

8.15.1.11 Others [NR\_RRM\_Enh\_Core] 305

8.16 NR RRM requirements for CSI-RS based L3 measurement [NR\_CSIRS\_L3meas] 305

8.16.1 RRM core requirements (38.133) [NR\_CSIRS\_L3meas-Core] 305

8.16.1.1 CSI-RS measurement bandwidth [NR\_CSIRS\_L3meas-Core] 305

8.16.1.2 CSI-RS based intra-frequency and inter-frequency measurements definition [NR\_CSIRS\_L3meas-Core] 306

8.16.1.3 Measurement capability [NR\_CSIRS\_L3meas-Core] 309

8.16.1.4 Intra-frequency measurement requirements [NR\_CSIRS\_L3meas-Core] 310

8.16.1.5 Inter-frequency measurement requirements [NR\_CSIRS\_L3meas-Core] 311

8.16.1.6 Others [NR\_CSIRS\_L3meas-Core] 311

8.17 NR support for high speed train scenario [NR\_HST] 312

8.17.1 RRM core requirements (38.133) [NR\_HST-Core] 312

8.17.1.1 Cell re-selection [NR\_HST-Core] 313

8.17.1.2 Cell identification delay [NR\_HST-Core] 313

8.17.1.3 RLM [NR\_HST-Core] 314

8.17.1.4 Beam management [NR\_HST-Core] 315

8.17.1.5 Inter-RAT measurement [NR\_HST-Core] 315

8.17.1.6 Network assistance and UE capability signalling [NR\_HST-Core] 316

8.17.2 Demodulation and CSI requirements (38.101-4 / 38.104) [NR\_HST-Perf] 316

8.17.2.1 UE demodulation and CSI requirements (38.101-4) [NR\_HST-Perf] 316

8.17.2.1.1 Scenarios and transmission schemes [NR\_HST-Perf] 317

8.17.2.1.2 Requirements for HST-SFN [NR\_HST-Perf] 317

8.17.2.1.3 Requirements for HST single tap [NR\_HST-Perf] 318

8.17.2.1.4 Requirements for multi-path fading channels [NR\_HST-Perf] 319

8.17.2.1.5 Network assistance and UE capability signalling [NR\_HST-Perf] 320

8.17.2.2 BS demodulation requirements (38.104) [NR\_HST-Perf] 321

8.17.2.2.1 PUSCH requirements [NR\_HST-Perf] 321

8.17.2.2.2 PRACH requirements [NR\_HST-Perf] 325

8.17.2.2.3 UL timing adjustment requirements [NR\_HST-Perf] 328

8.18 NR performance requirement enhancement [NR\_perf\_enh-Perf] 329

8.18.1 UE demodulation and CSI requirements (38.101-4) [NR\_perf\_enh-Perf] 329

8.18.1.1 NR CA PDSCH requirementS [NR\_perf\_enh-Perf] 329

8.18.1.2 PMI reporting requirements with larger number of Tx ports [NR\_perf\_enh-Perf] 332

8.18.1.3 LTE-NR co-existence for TDD [NR\_perf\_enh-Perf] 334

8.18.1.4 FR1 CA power imbalance requirements [NR\_perf\_enh-Perf] 335

8.18.2 BS demodulation requirements (38.104) [NR\_perf\_enh-Perf] 335

8.18.2.1 30% TP test point [NR\_perf\_enh-Perf] 335

8.18.2.2 Additional FR2 requirements [NR\_perf\_enh-Perf] 338

8.19 Over the air (OTA) base station (BS) testing TR [OTA\_BS\_testing-Perf] 339

8.19.1 General (such as work plan, AH minutes) [OTA\_BS\_testing-Perf] 341

8.19.2 Others [OTA\_BS\_testing-Perf] 342

8.20 2-step RACH for NR [NR\_2step\_RACH-Perf] 346

8.20.1 BS Demodulation requirements (38.104/38.141-1/38.141-2) [NR\_2step\_RACH-Perf] 346

8.20.2 Others [NR\_2step\_RACH-Perf] 347

8.21 SON/MDT Support for NR [NR\_SON\_MDT] 347

8.21.1 MDT related RRM requirements (38.133, 36.133) [NR\_SON\_MDT-Core] 347

9 Rel-16 spectrum related Work Items for NR 348

9.1 NR intra band Carrier Aggregation for xCC DL/yCC UL including contiguous and non-contiguous spectrum (x>=y) [NR\_CA\_R16\_intra] 349

9.1.1 Rapporteur Input (WID/TR/CR) [NR\_CA\_R16\_intra-Core /Perf] 349

9.1.2 UE RF for FR1 [NR\_CA\_R16\_intra-Core] 351

9.1.3 UE RF for FR2 [NR\_CA\_R16\_intra-Core] 352

9.2 NR inter-band Carrier Aggregation/Dual Connectivity for 2 bands DL with x bands UL (x=1, 2) [NR\_CADC\_R16\_2BDL\_xBUL] 352

9.2.1 Rapporteur Input (WID/TR/CR) [NR\_CADC\_R16\_2BDL\_xBUL-Core/Perf] 352

9.2.2 NR inter band CA without any FR2 band(s) [NR\_CADC\_R16\_2BDL\_xBUL-Core] 353

9.2.3 NR inter band CA with at least one FR2 band [NR\_CADC\_R16\_2BDL\_xBUL-Core] 358

9.3 EN-DC of 1 LTE band and 1 NR band [DC\_R16\_1BLTE\_1BNR\_2DL2UL] 358

9.3.1 Rapporteur Input (WID/TR/CR) [DC\_R16\_1BLTE\_1BNR\_2DL2UL-Core/Perf] 358

9.3.2 EN-DC without FR2 band [DC\_R16\_1BLTE\_1BNR\_2DL2UL-Core] 359

9.3.3 EN-DC with FR2 band [DC\_R16\_1BLTE\_1BNR\_2DL2UL-Core] 369

9.4 EN-DC of 2 LTE band and 1 NR band [DC\_R16\_2BLTE\_1BNR\_3DL2UL] 369

9.4.1 Rapporteur Input (WID/TR/CR) [DC\_R16\_2BLTE\_1BNR\_3DL2UL-Core/Perf] 369

9.4.2 EN-DC without FR2 band [DC\_R16\_2BLTE\_1BNR\_3DL2UL-Core] 369

9.4.3 EN-DC with FR2 band [DC\_R16\_2BLTE\_1BNR\_3DL2UL-Core] 384

9.5 EN-DC of 3 LTE band and 1 NR band [DC\_R16\_3BLTE\_1BNR\_4DL2UL] 386

9.5.1 Rapporteur Input (WID/TR/CR) [DC\_R16\_3BLTE\_1BNR\_4DL2UL-Core/Perf] 386

9.5.2 EN-DC without FR2 band [DC\_R16\_3BLTE\_1BNR\_4DL2UL-Core] 387

9.5.3 EN-DC with FR2 band [DC\_R16\_3BLTE\_1BNR\_4DL2UL-Core] 397

9.6 EN-DC of 4 LTE band and 1 NR band [DC\_R16\_4BLTE\_1BNR\_5DL2UL] 397

9.6.1 Rapporteur Input (WID/TR/CR) [DC\_R16\_4BLTE\_1BNR\_5DL2UL-Core/Perf] 397

9.6.2 EN-DC without FR2 band [DC\_R16\_4BLTE\_1BNR\_5DL2UL-Core] 397

9.6.3 EN-DC with FR2 band [DC\_R16\_4BLTE\_1BNR\_5DL2UL-Core] 397

9.7 EN-DC of x bands (x=1,2, 3, 4) LTE inter-band CA and 2 bands NR inter-band CA [DC\_R16\_xBLTE\_2BNR\_yDL2UL] 398

9.7.1 Rapporteur Input (WID/TR/CR) [DC\_R16\_xBLTE\_2BNR\_yDL2UL-Core/Per] 398

9.7.2 EN-DC including NR inter CA without FR2 band [DC\_R16\_xBLTE\_2BNR\_yDL2UL-Core] 398

9.7.3 EN-DC including NR inter CA with FR2 band [DC\_R16\_xBLTE\_2BNR\_yDL2UL-Core] 406

9.8 Band combinations for SA NR supplementary uplink (SUL), NSA NR SUL, NSA NR SUL with UL sharing from the UE perspective (ULSUP) [NR\_SUL\_combos\_R16] 417

9.8.1 Rapporteur Input (WID/TR/CR) [NR\_SUL\_combos\_R16-Core/Per] 417

9.8.2 UE RF [NR\_SUL\_combos\_R16-Core] 417

9.9 NR Inter-band Carrier Aggregation for 3 bands DL with 1 band UL [NR\_CA\_R16\_3BDL\_1BUL] 418

9.9.1 Rapporteur Input (WID/TR/CR) [NR\_CA\_R16\_3BDL\_1BUL-Core/Per] 418

9.9.2 UE RF [NR\_CA\_R16\_3BDL\_1BUL-Core] 419

9.10 NR Inter-band Carrier Aggregation for 4 bands DL with 1 band UL [NR\_CA\_R16\_4BDL\_1BUL] 422

9.10.1 Rapporteur Input (WID/TR/CR) [NR\_CA\_R16\_4BDL\_1BUL-Core/Per] 422

9.10.2 UE RF [NR\_CA\_R16\_4BDL\_1BUL-Core] 423

9.11 NR Inter-band Carrier Aggregation/Dual connectivity for 3 bands DL with 2 bands UL [NR\_CADC\_R16\_3BDL\_2BUL] 423

9.11.1 Rapporteur Input (WID/TR/CR) [NR\_CADC\_R16\_3BDL\_2BUL-Core/Per] 423

9.11.2 UE RF [NR\_CADC\_R16\_3BDL\_2BUL-Core] 424

9.12 Dual Connectivity (EN-DC) with 3 bands DL and 3 bands UL [DC\_R16\_LTE\_NR\_3DL3UL] 426

9.12.1 Rapporteur Input (WID/TR/CR) [DC\_R16\_LTE\_NR\_3DL3UL-Core/Per] 426

9.12.2 UE RF [DC\_R16\_LTE\_NR\_3DL3UL-Core] 426

9.13 Dual Connectivity (EN-DC) of LTE inter-band CA xDL/1UL bands (x=2,3,4) and NR FR1 1DL/1UL band and NR FR2 1DL/1UL band [DC\_R16\_xBLTE\_2BNR\_yDL3UL] 428

9.13.1 Rapporteur Input (WID/TR/CR) [DC\_R16\_xBLTE\_2BNR\_yDL3UL-Core/Per] 428

9.13.2 UE RF [DC\_R16\_xBLTE\_2BNR\_yDL3UL-Core] 429

9.14 29dBm UE Power Class for B41 and n41 [LTE\_NR\_B41\_Bn41\_PC29dBm] 436

9.14.1 Rapporteur Input (WID/TR/CR) [LTE\_NR\_B41\_Bn41\_PC29dBm] 436

9.14.2 UE RF (36.101, 38.101-1, 38.101-3) [LTE\_NR\_B41\_Bn41\_PC29dBm] 436

9.14.3 Others [LTE\_NR\_B41\_Bn41\_PC29dBm] 439

9.15 Power Class 2 UE for EN-DC (1 LTE FDD band +1 NR TDD band) [ENDC\_UE\_PC2\_FDD\_TDD-Core] 439

9.15.1 General [ENDC\_UE\_PC2\_FDD\_TDD-Core] 439

9.15.2 UE RF requirement [ENDC\_UE\_PC2\_FDD\_TDD-Core] 440

9.15.3 Signaling [ENDC\_UE\_PC2\_FDD\_TDD-Core] 441

9.16 Introduction of NR band n259 [NR\_n259] 442

9.16.1 UE RF (38.101-2) [NR\_n259-Core] 442

9.16.2 BS RF (38.104) [NR\_n259-Core] 444

9.16.3 RRM (38.133) [NR\_n259-Core] 445

9.16.4 Others [NR\_n259-Core/Perf] 446

9.17 Adding 30MHz channel bandwidth for NR band n1 [NR\_n1\_BW] 446

9.17.1 UE RF (38.101-1) [NR\_n1\_BW-Core] 446

9.17.2 BS RF (38.104) [NR\_n1\_BW-Core] 446

9.17.3 RRM (38.133) [NR\_n1\_BW] 447

9.17.4 Others [NR\_n1\_BW] 447

9.18 Addition of wider channel bandwidth in NR band n28 [NR\_n28\_BW-Core] 447

9.18.1 UE RF (38.101-1) [NR\_n28\_BW-Core] 447

9.18.2 BS RF (38.104) [NR\_n28\_BW-Core] 449

9.18.3 RRM (38.133) [NR\_n28\_BW-Core] 449

9.18.4 Others [NR\_n28\_BW-Core/Perf] 449

9.19 Introduction of NR Band n26 [NR\_n26] 449

9.19.1 UE RF (38.101-1) [NR\_n26] 449

9.19.2 BS RF (38.104) [NR\_n26] 450

9.19.3 RRM (38.133) [NR\_n26] 452

9.19.4 Others [NR\_n26] 453

9.20 Adding 25MHz and 50MHz channel bandwidth in NR band n1 [NR\_n1\_BW2] 453

9.20.1 UE RF (38.101-1) [NR\_n1\_BW2-Core] 453

9.20.2 BS RF (38.104) [NR\_n1\_BW2-Core] 454

9.20.3 RRM (38.133) [NR\_n1\_BW2-Core] 454

9.20.4 Others [NR\_n1\_BW2-Core/Perf] 454

9.21 Addition of asymmetric channel bandwidth for NR band n66 [NR\_n66\_BW] 454

9.21.1 UE RF (38.101-1) [NR\_n66\_BW] 454

9.21.2 BS RF (38.104) [NR\_n66\_BW] 455

9.21.3 RRM (38.133) [NR\_n66\_BW] 455

9.21.4 OtherS [NR\_n66\_BW] 455

9.22 Adding wider channel bandwidth to NR band n38 [NR\_n38\_BW2] 455

9.22.1 UE RF (38.101-1) [NR\_n38\_BW2] 455

9.22.2 BS RF (38.104) [NR\_n38\_BW2] 455

9.22.3 RRM (38.133) [NR\_n38\_BW2] 456

9.22.4 Others [NR\_n38\_BW2] 456

9.23 LTE/NR spectrum sharing in band 48/n48 frequency range [NR\_n48\_LTE\_48\_coex-Core] 456

9.23.1 General (such as work plan, AH minutes) [NR\_n48\_LTE\_48\_coex-Core] 456

9.23.2 Channel raster, sync raster, and UL shift [NR\_n48\_LTE\_48\_coex-Core] 456

9.24 Adding 40 MHz channel bandwidth (15, 30 and 60kHz SCS) in NR band n3 [NR\_n3\_BW] 458

9.24.1 UE RF (38.101-1) [NR\_n3\_BW] 458

9.24.2 BS RF (38.104) [NR\_n3\_BW] 458

9.24.3 RRM (38.133) [NR\_n3\_BW] 459

9.24.4 Others [NR\_n3\_BW] 459

9.25 Adding 50 MHz channel bandwidth (15, 30 and 60kHz SCS) in NR band n65 [NR\_n65\_BW] 459

9.25.1 UE RF (38.101-1) [NR\_n65\_BW] 459

9.25.2 BS RF (38.104) [NR\_n65\_BW] 460

9.25.3 RRM (38.133) [NR\_n65\_BW] 460

9.25.4 Others [NR\_n65\_BW] 460

9.26 Introduction of NR Band n53 [NR\_n53] 460

9.26.1 UE RF (38.101-1) [NR\_n53] 460

9.26.2 BS RF (38.104) [NR\_n53] 460

9.26.3 RRM (38.133) [NR\_n53] 462

9.26.4 Others [NR\_n53] 463

9.27 Closed Rel-16 NR spectrum related WIs [WI code] 463

9.27.1 UE RF [WI code] 463

9.27.2 BS RF [WI code] 465

9.27.3 RRM [WI code] 465

9.27.4 Demodulation and CSI [WI code] 466

10 Rel-16 Study Items for NR 466

10.2 Study on radiated metrics and test methodology for the verification of multi-antenna reception perf. of NR UEs [FS\_NR\_MIMO\_OTA\_test] 466

10.2.1 General [FS\_NR\_MIMO\_OTA\_test] 466

10.2.2 Performance metrics [FS\_NR\_MIMO\_OTA\_test] 466

10.2.3 Testing methodologies [FS\_NR\_MIMO\_OTA\_test] 467

10.2.3.1 FR1 test methodologies [FS\_NR\_MIMO\_OTA\_test] 467

10.2.3.2 FR2 test methodologies [FS\_NR\_MIMO\_OTA\_test] 467

10.2.4 Channel Models [FS\_NR\_MIMO\_OTA\_test] 471

10.3 Study on 7 - 24GHz frequency range [FS\_7to24GHz\_NR] 471

10.3.1 General [FS\_7to24GHz\_NR] 471

10.3.2 Regulatory survey [FS\_7to24GHz\_NR] 472

10.3.3 Boundary frequency and/or boundary conditions [FS\_7to24GHz\_NR] 473

10.3.4 NR system parameters analysis [FS\_7to24GHz\_NR] 473

10.3.5 Deployment scenarios [FS\_7to24GHz\_NR] 473

10.3.6 RF technology aspects [FS\_7to24GHz\_NR] 473

10.3.7 NR UE [FS\_7to24GHz\_NR] 473

10.3.7.1 NR UE architecture [FS\_7to24GHz\_NR] 473

10.3.7.2 TX requirements [FS\_7to24GHz\_NR] 473

10.3.7.3 RX requirements [FS\_7to24GHz\_NR] 473

10.3.8 NR BS [FS\_7to24GHz\_NR] 473

10.3.8.1 BS types, BS requirement sets [FS\_7to24GHz\_NR] 473

10.3.8.2 NR BS architecture [FS\_7to24GHz\_NR] 474

10.3.8.3 TX requirements [FS\_7to24GHz\_NR] 474

10.3.8.4 RX requirements [FS\_7to24GHz\_NR] 474

10.3.9 BS EMC [FS\_7to24GHz\_NR] 475

12 Liaison and output to other groups 475

13 Revision of the Work Plan 476

13.1 Simplification of band combinations in RAN4 specifications 476

13.2 R17 new proposals 476

13.2.1 Basket WI approach for adding existing channel bandwidth on existing NR bands 477

13.2.2 Proposals on adding “brand new” channel bandwidth 477

13.2.3 Basket WIs for LTE CA, EN-DC, NR CA and NR DC 479

13.2.4 Others 479

13.3 Others 483

14 Any other business 484

15 Close of the E-meeting 485

## 1 Opening of the E-meeting

## 2 Approval of the agenda

## 3 Letters / reports from other groups / meetings

## 6 Rel15 New radio access technology [NR\_newRAT]

### 6.1 Requirements for NE-DC (option 4) and NGEN-DC Maintenance [NR\_newRAT-Core]

#### 6.1.1 RF requirements (38.101-3) [NR-newRAT-Core]

### 6.2 NR-NR Dual Connectivity Maintenance [NR\_newRAT-Core]

#### 6.2.1 UE RF requirements for DC combinations for FR1+FR2 (38.101-3) [NR\_newRAT-Core]

### 6.3 System Parameters Maintenance [NR\_newRAT-Core]

#### 6.3.1 Channel bandwidth Maintenance [NR\_newRAT-Core]

#### 6.3.2 Channel Arrangement Maintenance [NR\_newRAT-Core]

#### 6.3.3 Other system parameters maintenance [NR\_newRAT-Core]

### 6.4 SUL and LTE-NR co-existence maintenance [NR\_newRAT-Core]

### 6.5 UE RF requirements maintenance [NR\_newRAT]

#### 6.5.1 Draft CR for editorial errors only [NR\_newRAT-Core]

##### 6.5.1.1 Draft CR for 38.101-1 for editorial errors only [NR\_newRAT-Core]

##### 6.5.1.2 Draft CR for 38.101-2 for editorial errors only [NR\_newRAT-Core]

##### 6.5.1.3 Draft CR for 38.101-3 for editorial errors only [NR\_newRAT-Core]

#### 6.5.2 DC combination including NR carrier and/or NR CA combination maintenance [NR\_newRAT-Core]

##### 6.5.2.1 Maintenance for bands and band combinations for 38.101-1 [NR\_newRAT-Core]

##### 6.5.2.2 Maintenance for combinations for 38.101-2 [NR\_newRAT-Core]

##### 6.5.2.3 Maintenance for combinations for 38.101-3 [NR\_newRAT-Core]

#### 6.5.3 [FR1] Tx and Rx common [NR\_newRAT-Core]

#### 6.5.4 [FR1] Transmitter characteristics [NR\_newRAT-Core]

##### 6.5.4.1 EN-DC power class and UL MIMO clarifications [NR\_newRAT-Core]

##### 6.5.4.2 UE additional maximum output power reduction (A-MPR) [NR\_newRAT-Core]

##### 6.5.4.3 Configured transmitted power [NR\_newRAT-Core]

##### 6.5.4.4 Tx DC location [NR\_newRAT-Core]

##### 6.5.4.5 Other Tx requirements [NR\_newRAT-Core]

#### 6.5.5 [FR1] Receiver characteristics [NR\_newRAT-Core]

##### 6.5.5.1 Out of band blocking exceptions [NR\_newRAT-Core]

##### 6.5.5.2 Other Rx requirements [NR\_newRAT-Core]

#### 6.5.6 [FR2] Common to Tx and Rx [NR\_newRAT-Core]

##### 6.5.6.1 Regulatory Tx/Rx spurious emission limits handling [NR\_newRAT-Core]

#### 6.5.7 [FR2] Transmitter characteristics [NR\_newRAT-Core]

##### 6.5.7.1 Power control [NR\_newRAT-Core]

##### 6.5.7.2 Beam correspondence [NR\_newRAT-Core]

##### 6.5.7.3 Other Tx requirements [NR\_newRAT-Core]

#### 6.5.8 [FR2] Receiver characteristics [NR\_newRAT-Core]

### 6.6 UE EMC [NR\_newRAT-Core]

### 6.7 BS RF [NR\_newRAT-Core]

#### 6.7.1 General and ad-hoc meeting minutes [NR\_newRAT-Core]

#### 6.7.2 Transmitter characteristics maintenance [NR\_newRAT-Core]

#### 6.7.3 Receiver characteristics maintenance [NR\_newRAT-Core]

### 6.8 BS conformance testing [NR\_newRAT-Perf]

#### 6.8.1 General and ad-hoc meeting minutes [NR\_newRAT-Perf]

#### 6.8.2 BS specifications clean-ups (including conformance testing and core) [NR\_newRAT-Perf/Core]

##### 6.8.2.1 eAAS specifications [NR\_newRAT-Perf/Core]

##### 6.8.2.2 MSR specifications [NR\_newRAT-Perf/Core]

##### 6.8.2.3 NR conformance testing specifications [NR\_newRAT-Perf]

#### 6.8.3 Common for 38.141-1 and 38.141-2 [NR\_newRAT-Perf]

##### 6.8.3.1 Test configurations [NR\_newRAT-Perf]

##### 6.8.3.2 Test cases [NR\_newRAT-Perf]

##### 6.8.3.3 Test models [NR\_newRAT-Perf]

#### 6.8.4 Conducted conformance testing (38.141-1) [NR\_newRAT-Perf]

##### 6.8.4.1 MU and TT analysis [NR\_newRAT-Perf]

##### 6.8.4.2 BS Demodulation conformance testing (38.141-1) [NR\_newRAT-Perf]

###### 6.8.4.2.1 Test system related MU and TT [NR\_newRAT-Perf]

#### 6.8.5 Radiated conformance testing (38.141-2) [NR\_newRAT-Perf]

##### 6.8.5.1 Common to FR1 and FR2 radiated conformance testing [NR\_newRAT-Perf]

##### 6.8.5.2 FR1 radiated conformance testing [NR\_newRAT-Perf]

###### 6.8.5.2.1 NR specific MU and TT analysis [NR\_newRAT-Perf]

##### 6.8.5.3 FR2 radiated conformance testing [NR\_newRAT-Perf]

###### 6.8.5.3.1 NR specific MU and TT analysis [NR\_newRAT-Perf]

##### 6.8.5.4 BS Demodulation conformance testing (38.141-2) [NR\_newRAT-Perf]

### 6.9 BS EMC [NR\_newRAT-Core]

#### 6.9.1 Editor input for BS EMC spec (38.113) [NR\_newRAT-Core]

#### 6.9.2 Core requirements [NR\_newRAT-Core]

##### 6.9.2.1 Emission requirements [NR\_newRAT-Core]

##### 6.9.2.2 Immunity requirements [NR\_newRAT-Core]

#### 6.9.3 Performance requirements [NR\_newRAT-Perf]

### 6.10 RRM core maintenance (38.133/36.133) [NR\_newRAT-Core]

***Email discussion summary***

================================================================================

**R4-2002164 Email discussion summary for RAN4#94e\_#41\_NR\_NewRAT\_RRM\_Core\_Part\_1**

*Type: discussion For: Information  
 Source: Moderator (Huawei, HiSilicon)*

**Abstract:**

**Discussion:**

**Decision: Revised to (from R4-2002164).**

**R4-2002290 Email discussion summary for RAN4#94e\_#41\_NR\_NewRAT\_RRM\_Core\_Part\_1**

*Type: discussion For: Information  
 Source: Moderator (Huawei, HiSilicon)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**Topic #1: General**

Issue 1-1: Clarification of QCL chain depth restriction is for a certain QCL type

Agreement: QCL chain depth restriction is for the certain QCL type.

2nd round: Capture the agreement in CRs R4-2002200 (Nokia).

Issue 1-2: Actions to RAN1 reply LS on CSI-RS measurement outside DRX active time

Agreement: No action is needed for RAN1 reply LS on CSI-RS measurement outside DRX active time.

New tdocs

|  |  |  |
| --- | --- | --- |
| R4-2002200 | CR to TS 38.133: QCL chain depth restriction (R15, Cat F) | Nokia |
| R4-2002201 | CR to TS 38.133: QCL chain depth restriction (R16, Cat A) | Nokia |

**Topic #2: Editorial**

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| [R4-2000580](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000580.zip) | Return to. |
| R4-2000581 | Return to. Cat A CR to R4-2000580 |
| [R4-2000914](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000914.zip) | Return to. |
| R4-2000915 | Return to. Cat A CR to [R4-2000914](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000914.zip). |
| [R4-2000522](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000522.zip) | Agreed |
| [R4-2000510](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000510.zip) | Agreed. Cat A CR to R4-2000522 |
| R4-2000293 | Revised to R4-2002203. Further discuss in the 2nd round |
| R4-2000294 | Return to. Changed Cat F to Cat A. Cat A CR to [R4-2000293](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000914.zip). |

**Topic #3: UE measurement capability (38.133/36.133)**

Issue 3-1: Need of coordination between MN and SN for 9×n in reporting criteria

Agreement: the component in needs to be coordinated between MN and the SN.

2nd round: Further discuss LS reply to R2-1916595. Use R4-2001332 (Nokia) as baseline.

Issue 3-2: Reporting criteria for EN-DC with more than one LTE and/or NR SCells configured

Continue discussion in the 2nd round:

Issue 3-3: Reporting criteria for NE-DC with more than one LTE and/or NR SCells configured

Continue discussion in the 2nd round:

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| [R4-2001261](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001261.zip) | Return to. Use CR as baseline to capture agreements for Issue 3-2 if any. |
| R4-2001262 | Return to. Cat A CR to R4-2001261. |
| [R4-200126](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001261.zip)0 | Return to. |
| [R4-2001920](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001920.zip) | Merged |
| R4-2001921 | Withdrawn. Cat A CR to [R4-2001920](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001920.zip) |

Revised WF/LS

|  |  |
| --- | --- |
| **Tdoc number** | **Decision** |
| R4-2001332 (Nokia) | Revised to R4-2002202. Capture agreements on LS reply to R2-1916595 |

**Topic #4: RRM measurement and measurement gap**

Issue 4-1: SMTC alignment for FR2 intra-frequency measurement

Continue discussion in the 2nd round:

Issue 4-2: Time sharing between RRM and BM measurement (P factor)

Continue discussion in the 2nd round: Further discuss how to capture the tentative agreements above for BM requirements based on CR [R4-2001407](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001407.zip) and CR [R4-2000922](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000922.zip).

Issue 4-3: modification of the layer 3 and layer 1 measurement sharing factor

2nd round: Update CR R4-2001789 to capture the comments from companies

Issue 4-4: definition of detectable cell

CR R4-2001925 agreed

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| [R4-2001407](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001407.zip) | Return to. To be discussed together with R4-2000922 in 2nd round |
| R4-2001408 | Return to. Cat A CR to R4-2001407. |
| [R4-2000922](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000922.zip) | Return to. To be discussed together with [R4-2001407](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001407.zip) in 2nd round |
| R4-2000923 | Return to. Cat A CR to [R4-2000922](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000922.zip). |
| [R4-2001607](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001607.zip) | Merged. |
| R4-2001608 | Withdrawn. Cat A CR to [R4-2001607](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001607.zip). |
| [R4-2001789](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001789.zip) | Revised. Further discuss in the 2nd round |
| R4-2001790 | Return to. Cat A CR to [R4-2001789](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001789.zip). |
| [R4-2001787](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001787.zip) | Merged. |
| R4-2001788 | Withdrawn. |
| [R4-2001925](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001925.zip) | Agreed. |
| R4-2001926 | Agreed. Cat A CR to [R4-2001925](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001925.zip). |
| [R4-2001588](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001588.zip) | Return to. Need proponent to provide the response in 2nd round. |
| R4-2001589 | Return to. Cat A CR to [R4-2001588](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001588.zip). |
| [R4-2001590](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001590.zip) | Return to. Need proponent to provide the response in 2nd round. |
| R4-2001591 | Return to. Cat A CR to [R4-2001590](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001590.zip). |
| [R4-2001791](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001791.zip) | Return to. Need proponent to provide the response in 2nd round. |
| R4-2001792 | Return to. Cat A CR [R4-2001791](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001791.zip). |

**Topic #5: Connected mobility**

Issue 5-1: Dhandover definition update

Continue discussion in the 2nd round on revised R4-2000031

Issue 5-2: Re-open discussion on TRRC\_procedure\_delay for requirements of RRC release with redirection

Continue discussion in the 2nd round:

* Whether to need change core requirement
* Whether to need change test cases
* Whether to send LS to RAN2.

Capture conclusions in WF R4-2002206 (ZTE)

Issue 5-3: removal of the statement about no requirement if UE context not contained for RRC re-establishment requirement

Continue discussion in the 2nd round

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000031 | Revised to R4-2002205 |
| R4-2000032 | Return to. Cat A CR to R4-2000031. |
| R4-2000512 | Return to |
| R4-2000513 | Return to |
| R4-2002075 | Merged. Merged into R4-2000031. |
| R4-2002076 | Withdrawn. Cat A CR to R4-2002075. |

LS

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000034 | Return to. Subject to outcome of discussion on R4-2002206. |

New tdocs

|  |  |  |
| --- | --- | --- |
| R4-2002206 | WF on TRRC\_procedure\_delay for requirements of RRC release with redirection | ZTE |

**Topic #6: Timing**

Agreement: Remove the one-shot timing adjustment requirements from Rel-15

Continue discussion in the 2nd round:

* Whether one-shot timing adjustment requirement can be removed from Rel-16 spec (CR R4-2001569).
* Discuss one-shot timing adjustment requirements. Capture conclusions in WF R4-2002217 (Huawei).

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| [R4-2001568](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001568.zip) | Agreed |
| R4-2001569 | Return to |
| [R4-2001844](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001844.zip) | Not pursued. |
| R4-2001845 | Withdrawn |
| [R4-2001265](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001265.zip) | Not pursued. |
| R4-2001266 | Withdrawn |
| [R4-2001570](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001570.zip) | Agreed. Note: Rel-16 CR. |

New tdocs

|  |  |  |
| --- | --- | --- |
| R4-2002217 | WF on one-shot timing adjustment requirement | Huawei |

**Topic #7: Beam management based on SSB and/or CSI-RS**

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| [R4-2000916](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000916.zip) | Agreed |
| R4-2000917 | Agreed. Cat A CR to [R4-2000916](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000916.zip). |
| [R4-2000918](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000918.zip) | Agreed. |
| R4-2000919 | Agreed. Cat A CR to [R4-2000918](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000918.zip) |
| [R4-2000920](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000920.zip) | Return to. Proponent should provide the response to the comments. |
| R4-2000921 | Return to. Cat A CR to [R4-2000920](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000920.zip). |

**Topic #8: Requirements for NE-DC (Option 4) and NGEN-DC**

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| [R4-2001609](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001609.zip) | Return to. The proponent should provide the response to the comments. |
| R4-2001610 | Return to. Cat A CR to [R4-2001609](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001609.zip). |

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002200 | CR to TS 38.133: QCL chain depth restriction (R15, Cat F) (Nokia). No agreement.  Session chair: CR is not available after 2nd round and withdrawn |
| R4-2002201 | Withdrawn. Cat A CR to R4-2002200. |
| [R4-2000580](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000580.zip) | Agreed. |
| R4-2000581 | Agreed. Cat A CR to [R4-2000580](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000580.zip) |
| [R4-2000914](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000914.zip) | Agreed. |
| R4-2000915 | Agreed. Cat A CR to [R4-2000914](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000914.zip) |
| R4-2002203 | Withdrawn. Revised from R4-2000293. Not available |
| R4-2000293 | Postponed. |
| R4-2000294 | Withdrawn. Cat A CR to R4-2000293 |
| R4-2002202 | Noted. |
| [R4-2001261](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001261.zip) | Postponed. |
| R4-2001262 | Withdrawn. |
| [R4-200126](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001261.zip)0 | Agreed. |
| [R4-2001407](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001407.zip) | Postponed. |
| R4-2001408 | Withdrawn. Cat A CR to [R4-2001407](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001407.zip). |
| [R4-2000922](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000922.zip) | Postponed. |
| R4-2000923 | Withdrawn. Cat A CR to [R4-2000922](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000922.zip). |
| R4-2002204 | Postponed. |
| R4-2001790 | Withdrawn. Cat A CR to R4-2002204 |
| R4-2002325 | Agreed. Revised from [R4-2001588](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001588.zip). |
| R4-2001589 | Agreed. Cat A CR to R4-2002325. |
| [R4-2001590](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001590.zip) | Postponed |
| R4-2001591 | Withdrawn. Cat A CR to R4-2001590. |
| R4-2002324 | Postponed. |
| R4-2001792 | Withdrawn. |
| R4-2002205 | Agreed. |
| R4-2002286 | Agreed. |
| R4-2002206 | Approved. |
| R4-2000034 | Noted |
| R4-2000512 | Postponed. |
| R4-2000513 | ~~Withdrawn~~.Postponed (tdoc is available) |
| R4-2001569 | Agreed |
| R4-2002217 | Approved |
| R4-2000920 | Postponed. |
| R4-2000921 | Withdrawn. Cat A CR to R4-2000920/R4-2001609 |
| [R4-2001609](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001609.zip) | Postponed. |
| R4-2001610 | Withdrawn. Cat A CR to R4-2001609. |

#### 6.10.1 General [NR\_newRAT-Core]

**R4-2001329 On QCL Chain**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this paper we discuss what is not clear in the current applicability rule and propose an update of the wording

**Discussion:**

**Decision: Noted.**

**R4-2001335 Regarding measurements outside active time**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

**Decision: Noted.**

**R4-2002200 CR to TS 38.133: QCL chain depth restriction**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-TBA Cat: F (Rel-15)  
 Source: Nokia*

**Abstract:**

**Discussion:**

Session chair: new CR allocated. Request CR # from MCC

Session chair: CR is not available after 2nd round and withdrawn

**Decision: Withdrawn.**

**R4-2002201 CR to TS 38.133: QCL chain depth restriction**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-TBA Cat: A (Rel-16)  
 Source: Nokia*

**Abstract:**

**Discussion:**

Session chair: new CR allocated. Request CR # from MCC

Session chair: CR is not available after 2nd round and withdrawn

**Decision: Withdrawn.**

**R4-2000293 CR to TS38.133 on correction for L1-RSRP measurement report (Section 9.5.3)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0433 Cat: F (Rel-15)  
 Source: Samsung*

**Discussion:**

Session chair: moved from AI 6.11

**Decision: Postponed.**

**R4-2002203 CR to TS38.133 on correction for L1-RSRP measurement report (Section 9.5.3)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0433 Cat: F (Rel-15)  
 Source: Samsung*

**Discussion:**

Session chair: moved from AI 6.11

**Decision: Withdrawn.**

**R4-2000294 CR to TS38.133 on correction for L1-RSRP measurement report (Section 9.5.3)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0434 Cat: A (Rel-16)  
 Source: Samsung*

**Discussion:**

Session chair: moved from AI 6.11. Changed Cat F to Cat A

**Decision: Withdrawn.**

#### 6.10.2 Editorial CRs [NR\_newRAT-Core]

**R4-2000522 Editorial corrections for 38.133 Core Part R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0446 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Abstract:**

As instructed by the Editor, this CR captures some spotted editorial errors in TS 38.133

**Discussion:**

.

**Decision: Agreed.**

**R4-2000510 Editorial corrections for 38.133 Core Part R16 (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0441 Cat: A (Rel-16)  
 Source: ZTE Corporation*

**Abstract:**

(Cat A) As instructed by the Editor, this CR captures some spotted editorial errors in TS 38.133

**Discussion:**

**Decision: Agreed.**

**R4-2000580 Editorial correction for active TCI state switching delay**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0453 Cat: F (Rel-15)  
 Source: CATT*

**Discussion:**

**Decision: Agreed.**

**R4-2000581 Editorial correction for active TCI state switching delay**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0454 Cat: A (Rel-16)  
 Source: CATT*

**Discussion:**

**Decision: Agreed.**

**R4-2000914 CR for reference correction on L1-RSRP measurement period (section 9.5.3)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0463 Cat: F (Rel-15)  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Agreed.**

**R4-2000915 CR for reference correction on L1-RSRP measurement period (section 9.5.3)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0464 Cat: A (Rel-16)  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Agreed.**

#### 6.10.3 UE measurement capability (38.133/36.133) [NR\_newRAT-Core]

**R4-2001332 LS on UE reporting criteria**

*Type: LS out For: Approval  
 to RAN2  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

**Decision: Revised to R4-2002202 (from R4-2001332).**

**R4-2002202 LS on UE reporting criteria**

*Type: LS out For: Approval  
 to RAN2  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

**Decision: Noted.**

**R4-2001259 Remaining issues on NR reporting criteria**

*Type: other For: Discussion  
 Source: ZTE*

**Discussion:**

**Decision: Noted.**

**R4-2001260 CR to 38.133 NR reporting criteria**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0479 Cat: F (Rel-16)  
 Source: ZTE*

**Discussion:**

**Decision: Agreed.**

**R4-2001261 CR to 36.133 on NR reporting criteria**

*Type: CR For: Agreement  
 36.133 v15.9.0 CR-6797 Cat: F (Rel-15)  
 Source: ZTE*

**Discussion:**

**Decision: Postponed.**

**R4-2001262 CR to 36.133 on NR reporting criteria**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6798 Cat: A (Rel-16)  
 Source: ZTE*

**Discussion:**

**Decision: Withdrawn.**

**R4-2001331 Reporting Criteria discussion**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this paper we discuss the RAN4 aspect of the reporting criteria

**Discussion:**

**Decision: Noted.**

**R4-2001333 Reporting Criteria in 36.133**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

clarifying the number of reporting criteria in 36.133 covering when a UE configured with EN-DC is configured with more LTE SCell’s or NR SCell’s

**Discussion:**

**Decision: Noted.**

**R4-2001920 Reporting criteria with NR**

*Type: CR For: Agreement  
 36.133 v15.9.0 CR-6822 Cat: F (Rel-15)  
 Source: Ericsson*

**Abstract:**

Reporting criteria with NR

**Discussion:**

**Decision: Merged**

**R4-2001921 Reporting criteria with NR**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6823 Cat: A (Rel-16)  
 Source: Ericsson*

**Abstract:**

Reporting criteria with NR

**Discussion:**

**Decision: Withdrawn**

**R4-2001922 On reporting criteria with NR**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

On reporting criteria with NR

**Discussion:**

**Decision: Noted.**

**R4-2001923 On measurement reporting criteria with EN-DC**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

On measurement reporting criteria with EN-DC

**Discussion:**

**Decision: Noted.**

**R4-2001924 Response LS on measurement reporting criteria for EN-DC**

*Type: LS out For: Approval  
 to RAN2  
 Source: Ericsson*

**Abstract:**

Response LS on measurement reporting criteria for EN-DC

**Discussion:**

**Decision: Noted.**

**R4-2001270 Reply LS on measurement reporting criteria for EN-DC**

*Type: LS out For: Approval  
 to RAN2  
 Source: ZTE*

**Session Chair: Moved from AI 12**

**Discussion:**

**Decision: Noted.**

**R4-2001278 Discussion on measurement reporting criteria for EN-DC**

*Type: other For: Discussion  
 Source: ZTE*

**Session Chair: Moved from AI 12**

**Discussion:**

**Decision: Noted.**

#### 6.10.4 RRM measurement and measurement gap (38.133/36.133) [NR\_newRAT-Core]

**R4-2000028 CR to correct the reference in clause 9.1.1 in 38.133 R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0402 Cat: F (Rel-15)  
 Source: ZTE Corporation*

**Discussion:**

**Decision:** The document was **withdrawn**.

**R4-2000029 CR to correct the reference in clause 9.1.1 in 38.133 R16 (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0403 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

Cat A CR

**Discussion:**

**Decision:** The document was **withdrawn**.

**R4-2001330 Discussion on SMTC configuration in FR2**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

UE complexity when performing intra-frequency measurements in FR2 and the complexity in ensuring the UE minimum requirements is discussed

**Discussion:**

**Decision: Noted.**

**R4-2001406 Requirements on measurements outside gaps for FR2**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Discusses implications of different SMTC/dual SMTC for different FR2 serving frequencies.

**Discussion:**

**Decision: Noted.**

**R4-2001407 Requirements on measurements outside gaps for FR2**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0504 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

CR to conclude on requirements for different SMTC/dual SMTC for different FR2 serving frequencies.

**Discussion:**

**Decision: Postponed.**

**R4-2001408 Requirements on measurements outside gaps for FR2**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0505 Cat: A (Rel-15)  
 Source: Ericsson*

**Abstract:**

CR to conclude on requirements for different SMTC/dual SMTC for different FR2 serving frequencies.

**Discussion:**

**Decision: Withdrawn.**

**R4-2001588 Correction to inter-RAT measurement on LTE serving carrrier**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0517 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Revised to R4-2002325 (from R4-2001588).**

**R4-2002325 Correction to inter-RAT measurement on LTE serving carrrier**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0517 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2001589 Correction to inter-RAT measurement on LTE serving carrrier\_r16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0518 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2001590 Correction to inter-RAT measurement on NR serving carrrier**

*Type: CR For: Agreement  
 36.133 v15.9.0 CR-6804 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Postponed.**

**R4-2001591 Correction to inter-RAT measurement on NR serving carrrier\_r16**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6805 Cat: A (Rel-16) Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Withdrawn.**

**R4-2001606 Discussion on FR2 measurement outside gap**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon, MediaTek*

**Discussion:**

**Decision: Noted.**

**R4-2001607 CR on FR2 measurement requriements outside gaps R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0533 Cat: F (Rel-15) Source: Huawei, HiSilicon, MediaTek*

**Discussion:**

**Decision: Merged.**

**R4-2001608 CR on FR2 measurement requriements outside gaps R16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0534 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon, MediaTek*

**Discussion:**

**Decision: Withdrawn.**

**R4-2001787 CR on TS38.133 for known cell definition of RRM measurement requirement (Section 9.2.4.3 and 9.3.6.3)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0552 Cat: F (Rel-15)  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Merged.**

**R4-2001788 CR on TS38.133 for known cell definition of RRM measurement requirement (Section 9.2.4.3 and 9.3.6.3)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0553 Cat: A (Rel-16)  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Withdrawn.**

**R4-2001789 CR on TS38.133 for modification of the layer 3 and layer 1 measurement sharing factor when both SSB and RSSI symbol to be measured are considered (Section 9.2.5.1)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0554 Cat: F (Rel-15)  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Revised to R4-2002204 (from R4-2001789).**

**R4-2002204 CR on TS38.133 for modification of the layer 3 and layer 1 measurement sharing factor when both SSB and RSSI symbol to be measured are considered (Section 9.2.5.1)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0554 Cat: F (Rel-15) Source: MediaTek inc.*

**Discussion:**

**Decision: Postponed.**

**R4-2001790 CR on TS38.133 for modification of the layer 3 and layer 1 measurement sharing factor when both SSB and RSSI symbol to be measured are considered (Section 9.2.5.1)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0555 Cat: A (Rel-16)  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Withdrawn.**

**R4-2001791 CR on TS38.133 for modification on number of cells and number of SSB to be measured for FR2 intra-freq. measurement (Section 9.2.3)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0556 Cat: F (Rel-15)  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Revised to R4-2002324 (from R4-2001791).**

**R4-2002324 CR on TS38.133 for modification on number of cells and number of SSB to be measured for FR2 intra-freq. measurement (Section 9.2.3)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0556 Cat: F (Rel-15)  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Postponed.**

**R4-2001792 CR on TS38.133 for modification on number of cells and number of SSB to be measured for FR2 intra-freq. measurement (Section 9.2.3)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0557 Cat: A (Rel-16)  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Withdrawn.**

**R4-2001925 NR editorial correction**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0563 Cat: F (Rel-15)  
 Source: Ericsson*

**Abstract:**

NR editorial correction

**Discussion:**

**Decision: Agreed.**

**R4-2001926 NR editorial correction**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0564 Cat: A (Rel-16)  
 Source: Ericsson*

**Abstract:**

NR editorial correction

**Discussion:**

**Decision: Agreed.**

#### 6.10.5 Idle state and inactive state mobility for SA and NSA (38.133/36.133) [NR\_newRAT-Core]

#### 6.10.6 Connected state mobility (38.133/36.133) [NR\_newRAT-Core]

**R4-2002206 WF on TRRC\_procedure\_delay for requirements of RRC release with redirection**

*Type: other For: Approval  
 Source: ZTE*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2000030 Discussion on handover requirements**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000031 [CR] handover requirements 38.133 R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0404 Cat: F (Rel-15)  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Revised to R4-2002205 (from R4-2000031).**

**R4-2002205 [CR] handover requirements 38.133 R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0404 Cat: F (Rel-15)  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Agreed.**

**R4-2000032 [CR] handover requirements 38.133 R16 (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0405 Cat: A (Rel-16)  
 Source: ZTE Corporation*

**Abstract:**

Cat A CR

**Discussion:**

**Decision: Revised to R4-2002286 (from R4-2000032).**

**R4-2002286 [CR] handover requirements 38.133 R16 (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0405 Cat: A (Rel-16)  
 Source: ZTE Corporation*

**Abstract:**

Cat A CR

**Discussion:**

**Decision: Agreed.**

**R4-2000033 Discussion on RRC procedure delay in RRC release with redirection**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Decision: Noted.**

**R4-2000034 [draft] LS on RRC procedure delay in RRC release with redirection**

*Type: LS out For: Approval  
 to RAN2  
 Source: ZTE Corporation*

**Abstract:**

This LS tends to ask RAN2 to clarify the RRC procedure delay for RRC release with redirection.

**Discussion:**

**Decision: Noted.**

**R4-2000511 Discussion on RRC re-establishment requirement**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000512 CR on RRC re-establishment requirements R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0442 Cat: F (Rel-15)  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Postponed.**

**R4-2000513 CR on RRC re-establishment requirements R16 (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0443 Cat: A (Rel-16)  
 Source: ZTE Corporation*

**Abstract:**

Cat A CR

**Discussion:**

**Decision: Postponed.**

**R4-2002075 CR 38.133 (6.1.1) Correction to handover requirements**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0574 Cat: F (Rel-15)  
 Source: Ericsson*

**Abstract:**

Correcting misalignment between RRM specification and RRC specification on applicable RRC processing delay at handover.

**Discussion:**

**Decision: Merged.**

**R4-2002076 CR 38.133 (6.1.1) Correction to handover requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0575 Cat: A (Rel-16)  
 Source: Ericsson*

**Abstract:**

Mirror CR. Correcting misalignment between RRM specification and RRC specification on applicable RRC processing delay at handover.

**Discussion:**

**Decision: Withdrawn.**

#### 6.10.7 Timing (38.133/36.133) [NR\_newRAT-Core]

**R4-2002217 WF on one-shot timing adjustment requirement**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Abstract:**

**Discussion:**

**Decision: Approved.**

##### 6.10.7.1 One shot timing adjustment requirements [NR\_newRAT-Core]

**R4-2000458 UE UL timing adjustment due to Rx beam change**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001009 Discussion on one shot timing adjustment for UE UL timing adjustment**

*Type: other For: Approval  
 Source: NEC*

**Abstract:**

This paper provides our views on one shot timing adjustment

**Discussion:**

**Decision: Noted.**

**R4-2001258 Further discussion on one shot timing adjustment requirements**

*Type: other For: Discussion  
 Source: ZTE*

**Discussion:**

**Decision: Noted.**

**R4-2001265 CR to 38.133 on one shot timing adjustment requirements**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0482 Cat: F (Rel-15)  
 Source: ZTE*

**Discussion:**

**Decision: Not pursued.**

**R4-2001266 CR to 38.133 on one shot timing adjustment requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0483 Cat: A (Rel-16)  
 Source: ZTE*

**Discussion:**

**Decision: Withdrawn.**

**R4-2001328 One shot UL transmit timing adjustment**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

During a number of meetings RAN4 has been discussing the issue of UE autonomous beam change and the need for a larger one-shot adjustment of the UE UL transmit timing adjustment. In this paper we further analyse the impact on the gNB and give our view for

**Discussion:**

**Decision: Noted.**

**R4-2001567 Further discussion on UE one-shot timing adjustment requirements**

*Type: other For: (not specified)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001568 CR on removing one-shot timing adjustment requirements**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0508 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2001569 CR on removing one-shot timing adjustment requirements (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0509 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2001843 Further analysis of one shot timing adjustment requirements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Analysis of threshold (H) values for beam switch and interruption. Based on WF: R4-1907203.

**Discussion:**

**Decision: Noted.**

**R4-2001844 Threshold for one shot UE timing adjustment requirements**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0560 Cat: F (Rel-15)  
 Source: Ericsson*

**Abstract:**

The CR specifies threshold (H) values for beam switch and removal of CSI-RS side conditions.

**Discussion:**

**Decision: Not pursued.**

**R4-2001845 Threshold for one shot UE timing adjustment requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0561 Cat: A (Rel-16)  
 Source: Ericsson*

**Abstract:**

The CR specifies threshold (H) values for beam switch and removal of CSI-RS side conditions.

**Discussion:**

**Decision: Withdrawn.**

**R4-2002062 Further discussion on UL one shot timing adjustment**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

##### 6.10.7.2 MTTD and MRTD requirements [NR\_newRAT-Core]

**R4-2001570 CR on inter-band EN-DC and NE-DC synchronous requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0510 Cat: F (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

##### 6.10.7.3 Other timing requirements [NR\_newRAT-Core]

#### 6.10.8 Signaling characteristics (38.133/36.133) [NR\_newRAT-Core]

================================================================================

**R4-2002165 Email discussion summary for RAN4#94e\_#42\_NR\_NewRAT\_RRM\_Core\_Part\_2**

*Type: discussion For: Information  
 Source: Moderator (Apple)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002291 (from R4-2002165).**

**R4-2002291 Email discussion summary for RAN4#94e\_#42\_NR\_NewRAT\_RRM\_Core\_Part\_2**

*Type: discussion For: Information  
 Source: Moderator (Apple)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**Topic #1: RLM**

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2001584 | Revised. Further discuss in the 2nd round. |
| R4-2001585 | Return to. Cat A CR to R4-2001584 |

**Topic #2: SCell activation delay requirements**

Issue 2-1: activation delay requirements for cases of first unknown SCell in FR2

Agreement: The activation delay requirements for cases of first unknown SCell in FR2 are to be modified by replacing 24\*Trs with TFirstSSB + 23\*Trs, thereby aligning them with delay requirements for the other SCell activation cases

2nd round: capture agreements in CR

Issue 2-2: The end-points of the interruption windows for SCell activation

2nd round: continue discussion on how to address Nokia comments in CR

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2002078 | Revised. Capture agreements for Issue 2-1, 2-2. |
| R4-2002079 | Return to. Cat A CR |
| R4-2002080 | Agreed. Note: Rel-16 CR and no Cat A needed |

**Topic #3: PSCell addition/release requirements**

Issue 3-1: Tprocessing revision in PSCell change for EN-DC and NR-DC

Agreement:

* + Tprocessing = 20 ms if PSCell change is conducted between the cells in the same FR
  + Tprocessing = 40 ms if PSCell change is conducted between the cells in different FRs

2nd round: capture agreements in CR

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000055 | Revised. |
| R4-2000056 | Return to. Cat A CR to R4-2000055 |
| R4-2002082 | Revised. Capture agreements for Issue 3-1 |
| R4-2002083 | Return to Cat A CR to R4-2002082 |

**Topic #4: TCI state switching requirements**

Issue 4-1: Mismatch between RAN1 and RAN4 spec on MAC-CE based TCI switching delay

Continue discussion in the 2nd round. Capture agreements in CR R4-2002211

Issue 4-2: Which slot is the one to apply the new TCI after TCI switching?

Continue discussion in the 2nd round. Capture agreements in CR R4-2002211

Issue 4-3: Revision on active TCI state list update delay

2nd round: Capture agreements in CR R4-2002211

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000789 | Not pursued |
| R4-2000790 | Withdrawn |
| R4-2001015 | Return to  Session chair: Why Cat A CR is missing? Cat A CR needs to be requested if contents agreeable. |
| R4-2001026 | Revised. Capture conclusions for Issue 4-1, 4-2, 4-3  Session chair: why Cat A CR is missing? Cat A CR needs to be requested if contents agreeable. |
| R4-2001668 | Not pursued |
| R4-2001669 | Withdrawn. Cat A CR |
| R4-2002066 | Not pursued |
| R4-2002067 | Withdrawn. Cat A CR |

**Topic #5: BWP switching requirements**

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000906 | Revised. Capture 1st round comments. |
| R4-2000907 | Return to. Cat A CR to R4-2000906 |
| R4-2001586 | Revised. Further discuss in the 2nd round. |
| R4-2001587 | Return to. Cat A CR to R4-2001586 |

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002207 | Postponed |
| R4-2001585 | Withdrawn |
| R4-2002208 | Withdrawn |
| R4-2002078 | Postponed |
| R4-2002079 | Withdrawn |
| R4-2002209 | Agreed |
| R4-2000056 | Revised to R4-2002346 |
| R4-2002346 | Agreed |
| R4-2002210 | Agreed |
| R4-2002083 | Agreed |
| R4-2001015 | Not pursued |
| R4-2002339 | Agreed |
| R4-2002327 | Agreed |

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002212 | Agreed |
| R4-2000907 | Revised to R4-2002347 |
| R4-2002347 | Agreed |
| R4-2002213 | Agreed |
| R4-2001587 | Agreed |

Session chair: The following tentative agreement is postponed. In the current form it requires RAN4 to organize the work in Rel-17 which needs further endorsement from RAN4 Chair and should be further discussed. Recommend companies to further discuss in the next meeting.

Tentative agreement: TCI state mismatch issue (between gNB and UE) will be further studied in R17 timeline.

##### 6.10.8.1 RLM [NR\_newRAT-Core]

**R4-2001584 Correction on Psharingfactor**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0513 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Revised to R4-2002207**

**R4-2002207 Correction on Psharingfactor**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0513 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Postponed.**

**R4-2001585 Correction on Psharingfactor\_r16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0514 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Withdrawn.**

##### 6.10.8.2 SCell activation delay requirements [NR\_newRAT-Core]

**R4-2002077 On corrections to SCell activation delay requirements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Contribution providing justification for corrections to SCell activation delay timelines with respect to first available SSB burst, and with respect to interruption window.

**Discussion:**

**Decision: Noted.**

**R4-2002078 CR 38.133 (8.3.2) Corrections to SCell activation delay requirements**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0576 Cat: F (Rel-15)  
 Source: Ericsson*

**Abstract:**

Correcting timelines for remaining SCell activation cases in FR2 with respect to when first SSB burst is available. Correcting the interruption windows which currently are misaligned with (most) of the activation timelines.

**Discussion:**

**Decision: Postponed.**

**R4-2002208 CR 38.133 (8.3.2) Corrections to SCell activation delay requirements**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0576 Cat: F (Rel-15)  
 Source: Ericsson*

**Abstract:**

Correcting timelines for remaining SCell activation cases in FR2 with respect to when first SSB burst is available. Correcting the interruption windows which currently are misaligned with (most) of the activation timelines.

**Discussion:**

**Decision: Withdrawn.**

**R4-2002079 CR 38.133 (8.3.2) Corrections to SCell activation delay requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0577 Cat: A (Rel-16)  
 Source: Ericsson*

**Abstract:**

Mirror CR. Correcting timelines for remaining SCell activation cases in FR2 with respect to when first SSB burst is available. Correcting the interruption windows which currently are misaligned with (most) of the activation timelines.

**Discussion:**

**Decision: Withdrawn.**

**R4-2002080 CR 38.133 (8.3.2) Correction of error in Rel-16 SCell activation**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0578 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Correcting a CR implementation error specific to Rel-16 requirements for SCell activation of deactivated SCell

**Discussion:**

**Decision: Agreed.**

##### 6.10.8.3 PSCell addition/release requirements (36.133) [NR\_newRAT-Core]

**R4-2000055 [CR] SCell activation delay 38.133 R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0411 Cat: F (Rel-15)  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Revised to R4-2002209 (from R4-2000055).**

**R4-2002209 [CR] SCell activation delay 38.133 R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0411 Cat: F (Rel-15)  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Agreed.**

**R4-2000056 [CR] SCell activation delay 38.133 R16 (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0412 Cat: A (Rel-16)  
 Source: ZTE Corporation*

**Abstract:**

Cat A CR

**Discussion:**

**Decision: Revised to R4-2002346 (from R4-2000056).**

**R4-2002346 [CR] SCell activation delay 38.133 R16 (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0412 Cat: A (Rel-16)  
 Source: ZTE Corporation*

**Abstract:**

Cat A CR

**Discussion:**

**Decision: Agreed.**

**R4-2002081 On corrections to PSCell change delay requirements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Contribution providing justification for proposed changes to PSCell change delay requirements.

**Discussion:**

**Decision: Noted.**

**R4-2002082 CR 38.133 (8.11) Corrections to PSCell change delay requirements**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0579 Cat: F (Rel-15)  
 Source: Ericsson*

**Abstract:**

Correction of PSCell change requirements. Removing additional time for SW reloading for source and target PSCell in same FR.

**Discussion:**

**Decision: Revised to R4-2002210 (from R4-2002082).**

**R4-2002210 CR 38.133 (8.11) Corrections to PSCell change delay requirements**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0579 Cat: F (Rel-15)  
 Source: Ericsson*

**Abstract:**

Correction of PSCell change requirements. Removing additional time for SW reloading for source and target PSCell in same FR.

**Discussion:**

**Decision: Agreed.**

**R4-2002083 CR 38.133 (8.11) Corrections to PSCell change delay requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0580 Cat: A (Rel-16)  
 Source: Ericsson*

**Abstract:**

Correction of PSCell change requirements. Removing additional time for SW reloading for source and target PSCell in same FR.

**Discussion:**

**Decision: Agreed.**

##### 6.10.8.4 TCI state switching requirements [NR\_newRAT-Core]

**R4-2000035 CR for TCI state switch 38.133 R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0406 Cat: F (Rel-15)  
 Source: ZTE Corporation*

**Discussion:**

**Decision:** The document was **withdrawn**.

**R4-2000036 CR for TCI state switch 38.133 R16 (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0407 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Discussion:**

**Decision:** The document was **withdrawn**.

**R4-2000514 Discussion on TCI state known status mismatch**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000789 CR on RAN4 requirement of TCI change for R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0458 Cat: F (Rel-15)  
 Source: Apple*

**Discussion:**

**Decision: Not pursued.**

**R4-2000790 CR on RAN4 requirement of TCI change for R16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0459 Cat: A (Rel-16)  
 Source: Apple*

**Discussion:**

**Decision: Withdrawn.**

**R4-2001010 Problem of TCI state known status mismatch**

*Type: other For: Approval  
 Source: NEC*

**Abstract:**

Possible problem of TCI state known status mismatch at gNB and UE is discussed

**Discussion:**

**Decision: Noted.**

**R4-2001015 CR to address TCI state known status mismatch in 38.133**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0474 Cat: F (Rel-15)  
 Source: NEC*

**Abstract:**

Adding a note to point out the issue and the solution timeline for different TCI state known status at gNB and UE.

**Discussion:**

**Decision: Not pursued.**

**R4-2001026 CR on TCI state switch**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0475 Cat: F (Rel-15)  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Revised to R4-2002211 (from R4-2001026).**

**R4-2002211 CR on TCI state switch**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0475 Cat: F (Rel-15)  
 Source: MediaTek inc.*

**Discussion:**

Session chair: no Cat A CR. Needs to be requested

**Decision: Revised to R4-2002339 (from R4-2002211).**

**R4-2002339 CR on TCI state switch**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0475 Cat: F (Rel-15)  
 Source: MediaTek inc.*

**Discussion:**

Session chair: no Cat A CR. Needs to be requested

**Decision: Agreed.**

**R4-2002327 CR on TCI state switch**

*Type: CR For: Agreement  
 38.133 v16.2.0 TBA Cat: A (Rel-16)  
 Source: MediaTek inc.*

**Abstract:**

**Discussion:**

**Decision: Agreed.**

**R4-2001334 Correction to Active TCI state list update delay**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Correction of timing requirement

**Discussion:**

**Decision: Noted.**

**R4-2001668 Correction on the MAC based TCI state switching**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0549 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Not pursued.**

**R4-2001669 Correction on the MAC based TCI state switching**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0550 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Withdrawn.**

**R4-2002052 Corrections to MAC based TCI state switch**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2002066 CR for correction to MAC-CE based TCI State switch timeline (Clause 8.10.3)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0572 Cat: F (Rel-15)  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Not pursued.**

**R4-2002067 CR for correction to MAC-CE based TCI State switch timeline (Clause 8.10.3)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0573 Cat: A (Rel-16)  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Withdrawn.**

##### 6.10.8.5 BWP switching requirements [NR\_newRAT-Core]

**R4-2000906 Corrections for BWP switch delay R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0461 Cat: F (Rel-15)  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Revised to R4-2002212 (from R4-2000906).**

**R4-2002212 Corrections for BWP switch delay R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0461 Cat: F (Rel-15)  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Agreed.**

**R4-2000907 Corrections for BWP switch delay R16 (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0462 Cat: A (Rel-16)  
 Source: ZTE Corporation*

**Abstract:**

Cat A CR

**Discussion:**

Session chair: revised since wrong Cat A was uploaded

**Decision: Revised to R4-2002347 (from R4-2000907).**

**R4-2002347 Corrections for BWP switch delay R16 (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0462 Cat: A (Rel-16)  
 Source: ZTE Corporation*

**Abstract:**

Cat A CR

**Discussion:**

**Decision: Agreed.**

**R4-2001586 Correction to BWP switching delay**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0515 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Revised to R4-2002213 (from R4-2001586).**

**R4-2002213 Correction to BWP switching delay**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0515 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2001587 Correction to BWP switching delay\_r16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0516 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

##### 6.10.8.6 Other requirements [NR\_newRAT-Core]

#### 6.10.9 Beam management based on SSB and/or CSI-RS (38.133) [NR\_newRAT-Core]

**R4-2000916 CR for measurement restriction in FR2 across CCs (section 8.1.2.3, 8.1.3.3, 8.5.2.3, 8.5.3.3, 8.5.5.3, 8.5.6.3, 9.5.5.1, 9.5.5.2)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0465 Cat: F (Rel-15) Source: MediaTek inc.*

**Discussion:**

**Decision: Agreed.**

**R4-2000917 CR for measurement restriction in FR2 across CCs (section 8.1.2.3, 8.1.3.3, 8.5.2.3, 8.5.3.3, 8.5.5.3, 8.5.6.3, 9.5.5.1, 9.5.5.2)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0466 Cat: A (Rel-16) Source: MediaTek inc.*

**Discussion:**

**Decision: Agreed.**

**R4-2000918 CR for SSB based candidate beam detection (section 8.5.5.2)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0467 Cat: F (Rel-15)  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Agreed.**

**R4-2000919 CR for SSB based candidate beam detection (section 8.5.5.2)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0468 Cat: A (Rel-16)  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Agreed.**

**R4-2000920 CR for CSI-RS based L1-RSRP measurement period (section 9.5.4.2)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0469 Cat: F (Rel-15) Source: MediaTek inc.*

**Discussion:**

**Decision: Postponed.**

**R4-2000921 CR for CSI-RS based L1-RSRP measurement period (section 9.5.4.2)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0470 Cat: A (Rel-16)  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Withdrawn.**

**R4-2000922 CR on TSMTCperiod (section 8.1.2.2, 8.1.3.2, 8.5.2.2, 8.5.3.2, 8.5.5.2, 8.5.6.2, 9.5.4.1, 9.5.4.2)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0471 Cat: F (Rel-15)  
 Source: MediaTek inc., Huawei, HiSilicon*

**Discussion:**

**Decision: Postponed.**

**R4-2000923 CR on TSMTCperiod (section 8.1.2.2, 8.1.3.2, 8.5.2.2, 8.5.3.2, 8.5.5.2, 8.5.6.2, 9.5.4.1, 9.5.4.2)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0472 Cat: A (Rel-16)  
 Source: MediaTek inc., Huawei, HiSilicon*

**Discussion:**

**Decision: Withdrawn.**

#### 6.10.10 Requirements for NE-DC (option 4) and NGEN-DC [NR\_newRAT-Core]

**R4-2001609 CR to remove RSTD requirements for NE-DC in 36.133 R15**

*Type: CR For: Agreement  
 36.133 v15.9.0 CR-6806 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Postponed.**

**R4-2001610 CR to remove RSTD requirements for NE-DC in 36.133 R16**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6807 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Withdrawn.**

#### 6.10.11 Requirements for NR-NR Dual Connectivity [NR\_newRAT-Core]

#### 6.10.12 Other requirements [NR\_newRAT-Core]

**R4-2000026 CR to correct the header of Table for OTDOA 38.133 R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0400 Cat: F (Rel-15)  
 Source: ZTE Corporation*

**Discussion:**

**Decision:** The document was **withdrawn**.

**R4-2000027 CR to correct the header of Table for OTDOA 38.133 R16 (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0401 Cat: A (Rel-16)  
 Source: ZTE Corporation*

**Discussion:**

**Decision:** The document was **withdrawn**.

### 6.11 RRM perf maintenance (38.133/36.133) [NR\_newRAT-Perf]

================================================================================

***Email discussion summary***

**R4-2002166 Email discussion summary for RAN4#94e\_#43\_NR\_NewRAT\_RRM\_Perf\_Part\_1**

*Type: discussion For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002292 (from R4-2002166).**

**R4-2002292 Email discussion summary for RAN4#94e\_#43\_NR\_NewRAT\_RRM\_Perf\_Part\_1**

*Type: discussion For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**Topic #1: Correction to RRM test configuration**

Issue 1-1: new OCNG pattern

R4-2001619 agreed

Issue 1-2: correction to TRS configuration

2nd round: capture tentative agreements on TRS configuration in CR

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2001619 | Agreed |
| R4-2001620 | Agreed. Cat A CR to R4-2001619 |
| R4-2001592 | Revised. Capture agreements for issue 1-2 |
| R4-2001593 | Return to. Cat A CR for R4-2001592 |

**Topic #2: Correction to RRM tests**

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000515 | Revised. Exclude spelling mistakes |
| R4-2000294 | Return to. Cat A CR for R4-2000515 |
| R4-2001365 | Agreed |
| R4-2001366 | Agreed. Rel-16 Cat A CR to R4-2001365 |
| R4-2001367 | Agreed |
| R4-2001368 | Agreed. Rel-16 Cat A CR to R4-2001367 |
| R4-2001369 | Agreed |
| R4-2001370 | Agreed. Rel-16 Cat A CR to R4-2001369 |
| R4-2001371 | Agreed |
| R4-2001372 | Agreed. Rel-16 Cat A CR to R4-2001371 |

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002214 | Agreed |
| R4-2001593 | Agreed |
| R4-2002215 | Agreed |
| R4-2002330 | Agreed |

================================================================================

**R4-2002167 Email discussion summary for RAN4#94e\_#44\_NR\_NewRAT\_RRM\_Perf\_Part\_2**

*Type: discussion For: Information  
 Source: Moderator (Huawei, HiSilicon)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002293 (from R4-2002167).**

**R4-2002293 Email discussion summary for RAN4#94e\_#44\_NR\_NewRAT\_RRM\_Perf\_Part\_2**

*Type: discussion For: Information  
 Source: Moderator (Huawei, HiSilicon)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**Topic #1: Ilde and Connected mobility test cases**

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000082 | Agreed |
| R4-2000083 | Agreed (changed from Cat F to Cat A) |
| R4-2000163 | Agreed |
| R4-2000164 | Agreed. Rel-16 Cat A CR to R4-2000163 |
| R4-2001611 | Return to. Further discuss in the 2nd round. |
| R4-2001612 | Return to. Rel-16 Cat A CR to R4-2001611 |
| R4-2001602 | Agreed |
| R4-2001602 | Agreed. Rel-16 Cat A CR to R4-2001602 |

Session chair: Conclusions on R4-2001617, R4-2001618 are missing from the summary document. Further discuss in the 2nd round. Both tdocs marked as Return to.

**Topic #2: Timing and signalling characteristics test cases**

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000168 | Return to. Further discuss in the 2nd round |
| R4-2000169 | Return to. Rel-16 Cat A CR for R4-2000168 |
| R4-2002160 | Revised  The Draft CR is requested as Rel-16 but cover sheet has Rel-15. Proponents need to clarify the applicable release in the 2nd round and inform session chair. |
| R4-2002134 | Return to  This is Draft CR and cannot be agreed (only endorsed). The Draft CR is requested as Rel-16 but cover sheet has Rel-15. Proponents need to clarify the applicable release in the 2nd round and inform session chair. |
| R4-2001613 | Agreed |
| R4-2001614 | Agreed. Rel-16 Cat A CR |
| R4-2001615 | Agreed |
| R4-2001616 | Agreed. Rel-16 Cat A CR |
| R4-2001596 | Agreed |
| R4-2001597 | Agreed. Rel-16 Cat A CR |
| R4-2001604 | Agreed |
| R4-2001605 | Agreed. Rel-16 Cat A CR |
| R4-2001600 | Agreed |
| R4-2001601 | Agreed. Rel-16 Cat A CR |

**Topic #3: Measurement procedure and measurement accuracy test cases**

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000161 | Agreed |
| R4-2000162 | Agreed. Rel-16 Cat A CR |
| R4-2001598 | Merged |
| R4-2001599 | Withdrawn. Rel-16 Cat A CR |
| R4-2000166 | Agreed |
| R4-2000167 | Agreed. Rel-16 Cat A CR |
| R4-2000382 | Revised. Fix cover sheet issue in the 2nd round |
| R4-2000383 | Return to. Rel-16 Cat A CR |
| R4-2001594 | Agreed |
| R4-2001595 | Agreed. Rel-16 Cat A CR |
| R4-2001396 | Return to. Further discuss in the 2nd round |
| R4-2001397 | Return to. Rel-16 Cat A CR |
| R4-2001398 | Return to. Further discuss in the 2nd round |
| R4-2001399 | Return to. Rel-16 Cat A CR |
| R4-2000170 | Agreed |
| R4-2000171 | Agreed. Rel-16 Cat A CR |
| R4-2000172 | Agreed |
| R4-2000173 | Agreed. Rel-16 Cat A CR |
| R4-2001373 | Agreed |
| R4-2001374 | Agreed. Rel-16 Cat A CR |
| R4-2001565 | Merged |
| R4-2001566 | Withdrawn. Rel-16 Cat A CR |

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2001617 | Agreed |
| R4-2001618 | Agreed |
| [R4-2001611](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001611.zip) | Postponed |
| R4-2001612 | Withdraw |
| R4-2000168 | Agreed |
| R4-2000169 | Agreed |
| R4-2002160 | Not pursued |
| R4-2002227 | Withdrawn |
| R4-2002331 | Agreed |
| R4-2002332 | Agreed |
| R4-2002134 | Not pursued |
| R4-2002333 | Agreed |
| R4-2002334 | Agreed |
| R4-2002340 | Agreed |
| R4-2002341 | Agreed |
| [R4-2001396](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001396.zip) | Agreed |
| R4-2001397 | Agreed |
| [R4-2001398](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001398.zip) | Agreed |
| R4-2001399 | Agreed |

================================================================================

#### 6.11.1 General [NR\_newRAT-Perf]

**R4-2000037 CR to remove duplicated units in tables in clause 10.1**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0408 Cat: F (Rel-15)  
 Source: ZTE Corporation*

**Discussion:**

**Decision:** The document was **withdrawn**.

**R4-2000038 CR to remove duplicated units in tables in clause 10.1 (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0409 Cat: A (Rel-16)  
 Source: ZTE Corporation*

**Abstract:**

Cat A CR

**Discussion:**

**Decision:** The document was **withdrawn**.

**R4-2001592 Correction to configurations for TRS**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0519 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

.**Decision: Revised to R4-2002214 (from R4-2001592).**

**R4-2002214 Correction to configurations for TRS**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0519 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2001593 Correction to configurations for TRS\_r16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0520 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2001619 OCNG pattern for TDM-ed SSB R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0543 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2001620 OCNG pattern for TDM-ed SSB R16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0544 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

#### 6.11.2 Editorial CRs [NR\_newRAT-Perf]

**R4-2000515 Editorial corrections for 38.133 Perf Part R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0444 Cat: F (Rel-15)  
 Source: ZTE Corporation*

**Abstract:**

As instructed by the Editor, this CR captures some spotted editorial errors in TS 38.133

**Discussion:**

**Decision: Revised to R4-2002215 (from R4-2000515).**

**R4-2002215 Editorial corrections for 38.133 Perf Part R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0444 Cat: F (Rel-15)  
 Source: ZTE Corporation*

**Abstract:**

As instructed by the Editor, this CR captures some spotted editorial errors in TS 38.133

**Discussion:**

**Decision: Agreed.**

**R4-2000516 Editorial corrections for 38.133 Perf Part R16 (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0445 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

(Cat A) As instructed by the Editor, this CR captures some spotted editorial errors in TS 38.133

**Discussion:**

**Decision: Revised to R4-2002330 (from R4-2000516).**

**R4-2002330 Editorial corrections for 38.133 Perf Part R16 (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0445 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

(Cat A) As instructed by the Editor, this CR captures some spotted editorial errors in TS 38.133

**Discussion:**

**Decision: Agreed.**

**R4-2001223 Editorial corrections to make test cases appear in Table of contents**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0477 Cat: D (Rel-15) Source: ANRITSU LTD*

**Abstract:**

Many headings in Annex A RRM test case section have the wrong style, which means they do not show up in the Table of Contents. This means that many RRM test cases are invisible in the Table of Contents, giving an incorrect overview of test cases.

**Discussion:**

**Decision:** The document was **withdrawn**.

**R4-2001225 Editorial corrections to make test cases appear in Table of contents**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0478 Cat: A (Rel-16)  
 Source: ANRITSU LTD*

**Abstract:**

Many headings in Annex A RRM test case section have the wrong style, which means they do not show up in the Table of Contents. This means that many RRM test cases are invisible in the Table of Contents, giving an incorrect overview of test cases.

**Discussion:**

**Decision:** The document was **withdrawn**.

**R4-2001365 CR to TS 38.133: Corrections to FR1-FR2 event triggered test cases Annex A.5 (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0487 Cat: F (Rel-15)  
 Source: Rohde & Schwarz*

**Discussion:**

**Decision: Agreed.**

**R4-2001366 CR to TS 38.133: Corrections to FR1-FR2 event triggered test cases Annex A.5 (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0488 Cat: A (Rel-16)  
 Source: Rohde & Schwarz*

**Discussion:**

**Decision: Agreed.**

**R4-2001367 CR to TS 38.133: Corrections to FR1-FR2 event triggered test cases Annex A.7 (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0489 Cat: F (Rel-15)  
 Source: Rohde & Schwarz*

**Discussion:**

**Decision: Agreed.**

**R4-2001368 CR to TS 38.133: Corrections to FR1-FR2 event triggered test cases Annex A.7 (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0490 Cat: A (Rel-16)  
 Source: Rohde & Schwarz*

**Discussion:**

**Decision: Agreed.**

**R4-2001369 CR to TS 38.133: Clarifications to AoA setup and AoA cell assignement Annex A.5 (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0491 Cat: F (Rel-15)  
 Source: Rohde & Schwarz*

**Discussion:**

**Decision: Agreed.**

**R4-2001370 CR to TS 38.133: Clarifications to AoA setup and AoA cell assignement Annex A.5 (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0492 Cat: A (Rel-16)  
 Source: Rohde & Schwarz*

**Discussion:**

**Decision: Agreed.**

**R4-2001371 CR to TS 38.133: Clarifications to AoA setup Annex A.8 (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0493 Cat: F (Rel-15)  
 Source: Rohde & Schwarz*

**Discussion:**

**Decision: Agreed.**

**R4-2001372 CR to TS 38.133: Clarifications to AoA setup Annex A.8 (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0494 Cat: A (Rel-16)  
 Source: Rohde & Schwarz*

**Discussion:**

**Decision: Agreed.**

#### 6.11.3 RRM test cases [NR\_newRAT-Perf]

**R4-2001600 Correction to RF channels configuration**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0527 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2001601 Correction to RF channels configuration\_r16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0528 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

##### 6.11.3.1 RRC\_IDLE state mobility test cases [NR\_newRAT-Perf]

**R4-2000082 Corrections to RRM Test case A.7.1.1.2**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0416 Cat: F (Rel-15)  
 Source: ANRITSU LTD*

**Abstract:**

The Es/Noc changes in R4-1914411 were not fully implemented, and result in contradictions in dB values. This CR corrects.

Noc values should be specified per frequency.

**Discussion:**

**Decision: Agreed.**

**R4-2000083 Corrections to RRM Test case A.7.1.1.2**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0417 Cat: A (Rel-16)  
 Source: ANRITSU LTD*

**Discussion:**

**Decision: Agreed.**

**R4-2000163 Correction to FR1-E-UTRA Inter-RAT cell re-selection test cases**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0420 Cat: F (Rel-15)  
 Source: ANRITSU LTD*

**Abstract:**

The FR1 PRACH configuration indices in these test cases current cause the PRACH to fall entirely in DL portions of the cell specific TDD UL/DL configuration, so PRACH config becomes invalid. This CR changes the PRACH configuration index so that some PRACH

**Discussion:**

**Decision: Agreed.**

**R4-2000164 Correction to FR1-E-UTRA Inter-RAT cell re-selection test cases**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0421 Cat: A (Rel-16)  
 Source: ANRITSU LTD*

**Abstract:**

The FR1 PRACH configuration indices in these test cases current cause the PRACH to fall entirely in DL portions of the cell specific TDD UL/DL configuration, so PRACH config becomes invalid. This CR changes the PRACH configuration index so that some PRACH

**Discussion:**

**Decision: Agreed.**

###### 6.11.3.1.1 SA idle/inactive cell reselection [NR\_newRAT-Perf]

**R4-2001617 CR on cell reselection test cases for FR2 SA R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0541 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2001618 CR on cell reselection test cases for FR2 SA R16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0542 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

##### 6.11.3.2 RRC\_CONNECTED state mobility test cases [NR\_newRAT-Perf]

###### 6.11.3.2.1 NR-NR Handovers [NR\_newRAT-Perf]

###### 6.11.3.2.2 NR handovers to other RATs [NR\_newRAT-Perf]

###### 6.11.3.2.3 RRC Re-establishment [NR\_newRAT-Perf]

###### 6.11.3.2.4 Random access [NR\_newRAT-Perf]

**R4-2001611 CR on random access test case R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0535 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Postponed.**

**R4-2001612 CR on random access test case R16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0536 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Withdrawn.**

###### 6.11.3.2.5 RRC Release with redirection to NR/E-UTRAN [NR\_newRAT-Perf]

**R4-2001602 Correction to RRC release with redirection TCs**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0529 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2001603 Correction to RRC release with redirection TCs\_r16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0530 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

##### 6.11.3.3 Timing test cases [NR\_newRAT-Perf]

**R4-2000168 Correction to SRS periodicity and Offset for UL transit timing with DRx config**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0424 Cat: F (Rel-15)  
 Source: ANRITSU LTD*

**Abstract:**

In this test case SRS timing is configured on slot 0, which is not an UL slot. CR corrects periodicityAndOffset-p values.

**Discussion:**

**Decision: Agreed.**

**R4-2000169 Correction to SRS periodicity and Offset for UL transit timing with DRx config**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0425 Cat: A (Rel-16)  
 Source: ANRITSU LTD*

**Abstract:**

In this test case SRS timing is configured on slot 0, which is not an UL slot. CR corrects periodicityAndOffset-p values.

**Discussion:**

**Decision: Agreed.**

###### 6.11.3.3.1 EN-DC timing accuracy and adjustment [NR\_newRAT-Perf]

###### 6.11.3.3.2 SA timing accuracy and adjustment [NR\_newRAT-Perf]

###### 6.11.3.3.3 EN-DC TA accuracy [NR\_newRAT-Perf]

###### 6.11.3.3.4 SA TA accuracy [NR\_newRAT-Perf]

##### 6.11.3.4 RLM test cases [NR\_newRAT-Perf]

**R4-2002135 PRACH configurations in FR1 SSB based RLM tests**

*Type: draftCR For: Endorsement  
 38.133 v16.2.0  
 Source: Qualcomm*

**Decision:** The document was **revised to R4-2002160**.

**R4-2002160 PRACH configurations in FR1 SSB based RLM tests**

*Type: draftCR For: Endorsement  
 38.133 v16.2.0  
 Source: Qualcomm*

(Replaces R4-2002135)

**Discussion:**

Session chair: This is Rel-16 CR but cover sheet has Rel-15. Proponents need to clarify the intention (Rel-15 or Rel-16).

**Decision: Not pursued.**

**R4-2002227 PRACH configurations in FR1 SSB based RLM tests**

*Type: draftCR For: Endorsement  
 38.133 v16.2.0  
 Source: Qualcomm*

**Discussion:**

Session chair: This is Rel-16 CR but cover sheet has Rel-15. Proponents need to clarify the intention (Rel-15 or Rel-16) and update the cover sheet.

**Decision: Withdrawn.**

**R4-2002331 PRACH configurations in FR1 SSB based RLM tests**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0586 Cat: F (Rel-15)  
 Source: Qualcomm*

**Abstract:**

**Discussion:**

**Decision: Agreed.**

**R4-2002332 PRACH configurations in FR1 SSB based RLM tests**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0587 Cat: A (Rel-16)  
 Source: Qualcomm*

**Abstract:**

**Discussion:**

**Decision: Agreed.**

###### 6.11.3.4.1 EN-DC SSB RLM for PSCell IS and OOS [NR\_newRAT-Perf]

**R4-2001613 CR on SSB RLM test cases EN-DC R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0537 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Agreed.**

**R4-2001614 CR on SSB RLM test cases EN-DC R16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0538 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Agreed.**

###### 6.11.3.4.2 SA SSB RLM for PCell IS and OOS [NR\_newRAT-Perf]

**R4-2001615 CR on SSB RLM test cases SA R15**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0539 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2001616 CR on SSB RLM test cases SA R16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0540 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

###### 6.11.3.4.3 EN-DC CSI RLM for PSCell [NR\_newRAT-Perf]

###### 6.11.3.4.4 SA CSI RLM for PCell [NR\_newRAT-Perf]

###### 6.11.3.4.5 SSB RLM scheduling restriction &impact on mobility [NR\_newRAT-Perf]

##### 6.11.3.5 Interruption test cases [NR\_newRAT-Perf]

**R4-2001596 Correction to interruption TCs**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0523 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2001597 Correction to interruption TCs\_r16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0524 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

###### 6.11.3.5.1 EN-DC interruption due to DRX transition [NR\_newRAT-Perf]

###### 6.11.3.5.2 EN-DC interruption due to deactivated SCell operations [NR\_newRAT-Perf]

###### 6.11.3.5.3 SA interruptions at SCell addition/release/(de-)activation [NR\_newRAT-Perf]

###### 6.11.3.5.4 SA interruptions due to measurement on deactivated SCell [NR\_newRAT-Perf]

##### 6.11.3.6 SCell activation and de-activation test cases [NR\_newRAT-Perf]

###### 6.11.3.6.1 EN-DC SCell activation/deactivation delay [NR\_newRAT-Perf]

###### 6.11.3.6.2 SA SCell activation/deactivation [NR\_newRAT-Perf]

##### 6.11.3.7 UE UL carrier RRC reconfiguration delay test cases [NR\_newRAT-Perf]

**R4-2001604 Correction to UL reconfiguration delay TCs**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0531 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2001605 Correction to UL reconfiguration delay TCs\_r16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0532 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

##### 6.11.3.8 Beam failure detection and link recovery procedure test cases [NR\_newRAT-Perf]

**R4-2002134 PRACH configurations in FR1 SSB based BFR tests**

*Type: draftCR For: Endorsement  
 38.133 v16.2.0  
 Source: Qualcomm*

**Discussion:**

.

**Decision: Not pursued.**

**R4-2002333 PRACH configurations in FR1 SSB based BFR tests**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-TBD Cat: F (Rel-15)  
 Source: Qualcomm*

**Abstract:**

**Discussion:**

**Decision: Agreed.**

**R4-2002334 PRACH configurations in FR1 SSB based BFR tests**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-TBD Cat: A (Rel-16)  
 Source: Qualcomm*

**Abstract:**

**Discussion:**

**Decision: Agreed.**

###### 6.11.3.8.1 EN-DC beam failure detection and recovery [NR\_newRAT-Perf]

###### 6.11.3.8.2 SA beam failure detection and recovery [NR\_newRAT-Perf]

###### 6.11.3.8.3 EN-DC/SA scheduling restriction for BFD [NR\_newRAT-Perf]

##### 6.11.3.9 Active BWP switching test cases [NR\_newRAT-Perf]

##### 6.11.3.10 Measurement procedure test cases [NR\_newRAT-Perf]

**R4-2000161 Correction to Active UL BWP for SA intra-frequency event triggered reporting with per-UE gaps**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0418 Cat: F (Rel-15)  
 Source: ANRITSU LTD*

**Abstract:**

In some test cases the Uplink BWP is currently specified with different width from the Downlink BWP. The Cell 1 Active Uplink BWP is changed to ULBWP.1.2, matching the Downlink.

**Discussion:**

**Decision: Agreed.**

**R4-2000162 Correction to Active UL BWP for SA intra-frequency event triggered reporting with per-UE gaps**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0419 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

In some test cases the Uplink BWP is currently specified with different width from the Downlink BWP. The Cell 1 Active Uplink BWP is changed to ULBWP.1.2, matching the Downlink.

**Discussion:**

**Decision: Agreed.**

**R4-2000166 Removal of Time offset between PCell and PSCell in SA RRM Test cases**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0422 Cat: F (Rel-15)  
 Source: ANRITSU LTD*

**Abstract:**

The parameter “Time offset between PCell and PSCell” is not needed in SA mode as there is no PSCell.

**Discussion:**

**Decision: Agreed.**

**R4-2000167 Removal of Time offset between PCell and PSCell in SA RRM Test cases**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0423 Cat: A (Rel-16)  
 Source: ANRITSU LTD*

**Abstract:**

The parameter “Time offset between PCell and PSCell” is not needed in SA mode as there is no PSCell.

**Discussion:**

**Decision: Agreed.**

###### 6.11.3.10.1 EN-DC cell search and L1 measurement period [NR\_newRAT-Perf]

###### 6.11.3.10.2 SA cell search and L1 measurement period [NR\_newRAT-Perf]

**R4-2001598 Correction to intra-frequency measurement with gap TCs**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0525 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Merged.**

**R4-2001599 Correction to intra-frequency measurement with gap TCs\_r16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0526 Cat: A (Rel-16) Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Withdrawn.**

###### 6.11.3.10.3 Inter-frequency measurement with LTE PCell [NR\_newRAT-Perf]

###### 6.11.3.10.4 EN-DC NR inter-frequency measurement [NR\_newRAT-Perf]

###### 6.11.3.10.5 SA NR inter-frequency measurement [NR\_newRAT-Perf]

**R4-2000382 CR on test cases for SA FR2 inter-frequency measurement R15 (section A.7.6.2)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0438 Cat: F (Rel-15)  
 Source: Intel Corporation*

**Discussion:**

**Decision: Revised to R4-2002216 (from R4-2000382).**

**R4-2002216 CR on test cases for SA FR2 inter-frequency measurement R15 (section A.7.6.2)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0438 Cat: F (Rel-15)  
 Source: Intel Corporation*

**Discussion:**

**Decision: Revised to R4-2002340 (from R4-2002216).**

**R4-2002340 CR on test cases for SA FR2 inter-frequency measurement R15 (section A.7.6.2)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0438 Cat: F (Rel-15)  
 Source: Intel Corporation*

**Discussion:**

**Decision: Agreed.**

**R4-2000383 CR on test cases for SA FR2 inter-frequency measurement R16 (section A.7.6.2)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0439 Cat: A (Rel-16)  
 Source: Intel Corporation*

**Discussion:**

**Decision: Revised to R4-2002341 (from R4-2000383).**

**R4-2002341 CR on test cases for SA FR2 inter-frequency measurement R16 (section A.7.6.2)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0439 Cat: A (Rel-16)  
 Source: Intel Corporation*

**Discussion:**

**Decision: Agreed.**

###### 6.11.3.10.6 EN-DC SFTD measurement delay [NR\_newRAT-Perf]

###### 6.11.3.10.7 Inter-RAT E-UTRA measurement (with NR PCell) [NR\_newRAT-Perf]

**R4-2001594 Correction to FR1 SA inter-RAT measurement TCs**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0521 Cat: F (Rel-15)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2001595 Correction to FR1 SA inter-RAT measurement TCs\_r16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0522 Cat: A (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

###### 6.11.3.10.8 EN-DC L1-RSRP measurement delay [NR\_newRAT-Perf]

###### 6.11.3.10.9 SA L1-RSRP measurement delay [NR\_newRAT-Perf]

##### 6.11.3.11 Measurement performance test cases [NR\_newRAT-Perf]

###### 6.11.3.11.1 Intra-frequency RSRP accuracy for FR1 and FR2 [NR\_newRAT-Perf]

**R4-2000170 Update of Test Requirements, FR2 Intra-frequency SS-RSRP accuracy Test cases**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0426 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

Updates the Test requirements in Test cases A.5.7.1.1 and A.7.7.1.1. CR R4-1915894 on UE Gain range “G” was agreed at RAN4#93, and allows the range of absolute RSRP reported values to be calculated. The angle of arrival for each cell is now taken into acc

**Discussion:**

**Decision: Agreed.**

**R4-2000171 Update of Test Requirements, FR2 Intra-frequency SS-RSRP accuracy Test cases**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0427 Cat: A (Rel-16)  
 Source: ANRITSU LTD*

**Abstract:**

Updates the Test requirements in Test cases A.5.7.1.1 and A.7.7.1.1. CR R4-1915894 on UE Gain range “G” was agreed at RAN4#93, and allows the range of absolute RSRP reported values to be calculated. The angle of arrival for each cell is now taken into acc

**Discussion:**

**Decision: Agreed.**

###### 6.11.3.11.2 Inter-frequency RSRP accuracy for FR1 and FR2 [NR\_newRAT-Perf]

**R4-2000172 Update of Test requirements, FR2 Inter-frequency SS-RSRP accuracy Test cases**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0428 Cat: F (Rel-15)  
 Source: ANRITSU LTD*

**Abstract:**

Updates the Test requirements in Test cases A.5.7.1.2 and A.7.7.1.2. CR R4-1915894 on UE Gain range “G” was agreed at RAN4#93, and allows the range of absolute RSRP reported values to be calculated. The angle of arrival for each cell is now taken into acc

**Discussion:**

**Decision: Agreed.**

**R4-2000173 Update of Test requirements, FR2 Inter-frequency SS-RSRP accuracy Test cases**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0429 Cat: A (Rel-16)  
 Source: ANRITSU LTD*

**Abstract:**

Updates the Test requirements in Test cases A.5.7.1.2 and A.7.7.1.2. CR R4-1915894 on UE Gain range “G” was agreed at RAN4#93, and allows the range of absolute RSRP reported values to be calculated. The angle of arrival for each cell is now taken into acc

**Discussion:**

**Decision: Agreed.**

###### 6.11.3.11.3 Intra-frequency RSRQ accuracy for FR1 and FR2 [NR\_newRAT-Perf]

###### 6.11.3.11.4 Inter-frequency RSRQ accuracy for FR1 and FR2 [NR\_newRAT-Perf]

**R4-2001373 CR to TS 38.133: Addition of TC A.4.7.2.2 (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0495 Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Discussion:**

.

**Decision: Agreed.**

**R4-2001374 CR to TS 38.133: Addition of TC A.4.7.2.2 (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0496 Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

**Discussion:**

.

**Decision: Agreed.**

**R4-2001565 CR on test case in A.4.7.2.2**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0506 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Merged.**

**R4-2001566 CR on test case in A.4.7.2.2 (Cat A)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0507 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Withdrawn.**

###### 6.11.3.11.5 SA/EN-DC SS-SINR measurement accuracies [NR\_newRAT-Perf]

###### 6.11.3.11.6 Beam management: L1-RSRP reporting [NR\_newRAT-Perf]

**R4-2001396 Editorial correction of EN-DC FR1 L1-RSRP measurement for beam reporting**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0499 Cat: F (Rel-15)  
 Source: Ericsson*

**Abstract:**

Correction of EN-DC FR1 L1-RSRP measurement for beam reporting

**Discussion:**

**Decision: Agreed.**

**R4-2001397 Editorial correction of EN-DC FR1 L1-RSRP measurement for beam reporting**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0500 Cat: A (Rel-16)  
 Source: Ericsson*

**Abstract:**

Correction of EN-DC FR1 L1-RSRP measurement for beam reporting

**Discussion:**

**Decision: Agreed.**

**R4-2001398 Editorial correction of NR SA FR1 L1-RSRP measurement for beam reporting**

*Type: CR For: Agreement  
 38.133 v15.8.0 CR-0501 Cat: F (Rel-15)  
 Source: Ericsson*

**Abstract:**

Correction of NR SA FR1 L1-RSRP measurement for beam reporting

**Discussion:**

**Decision: Agreed.**

**R4-2001399 Editorial correction of NR SA FR1 L1-RSRP measurement for beam reporting**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0502 Cat: A (Rel-16)  
 Source: Ericsson*

**Abstract:**

Correction of NR SA FR1 L1-RSRP measurement for beam reporting

**Discussion:**

**Decision: Agreed.**

###### 6.11.3.11.7 EN-DC SFTD measurement accuracy [NR\_newRAT-Perf]

###### 6.11.3.11.8 SA NR inter-RAT E-UTRAN RSRP accuracy [NR\_newRAT-Perf]

###### 6.11.3.11.9 SA NR inter-RAT E-UTRAN RSRQ accuracy [NR\_newRAT-Perf]

###### 6.11.3.11.10 SA NR inter-RAT E-UTRAN SINR accuracy [NR\_newRAT-Perf]

##### 6.11.3.12 NR PSCell addition and release in EN-DC [NR\_newRAT-Perf]

##### 6.11.3.13 TCI switching delay [NR\_newRAT-Perf]

##### 6.11.3.14 E-UTRAN standalone test for NR [NR\_newRAT-Perf]

###### 6.11.3.14.1 E-UTRAN cell reselection to NR target cell [NR\_newRAT-Perf]

###### 6.11.3.14.2 E-UTRAN inter-RAT NR cell search and measurement delay [NR\_newRAT-Perf]

###### 6.11.3.14.3 E-UTRAN inter-RAT handover [NR\_newRAT-Perf]

###### 6.11.3.14.4 E-UTRAN inter-RAT NR measurement accuracy [NR\_newRAT-Perf]

### 6.12 Demodulation and CSI maintenance [NR\_newRAT-Perf]

#### 6.12.1 UE demodulation and CSI (38.101-4) [NR\_newRAT-Perf]

#### 6.12.2 BS demodulation (38.104) [NR\_newRAT-Perf]

### 6.13 Maintenance of the Positioning specs (36.171, 37.171 and 38.171) [NR\_newRAT-Perf or TEI]

================================================================================

***Email discussion summary***

**R4-2002168 Email discussion summary for RAN4#94e\_#45\_NR\_NewRAT\_Positioning**

*Type: discussion For: Information  
 Source: Moderator (Spirent Communications)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002294**

**R4-2002294 Email discussion summary for RAN4#94e\_#45\_NR\_NewRAT\_Positioning**

*Type: discussion For: Information  
 Source: Moderator (Spirent Communications)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000147 | Revised.  Chair: CR is agreeable. Need to replace TEI16 with TEI15 in the CR cover sheet in the revised version. |
| R4-2000148 | Revised.  Chair: CR is agreeable. Need to replace TEI16 with TEI15 in the CR cover sheet in the revised version. |
| R4-2000149 | Agreed |
| R4-2000150 | Agreed |
| R4-2000151 | Agreed |

2nd round email discussion conclusions

CRs R4-2002218 and R4-2002219 are agreeable.

================================================================================

**R4-2000147 Update of the Note 1 in the Power level and satellite allocation table for the Sensitivity Coarse time assistance requirements**

*Type: CR For: Agreement  
 36.171 v15.0.0 CR-0018 Cat: F (Rel-15)  
 Source: Spirent Communications*

**Discussion:**

**Decision: Revised to R4-2002218 (from R4-2000147).**

**R4-2002218 Update of the Note 1 in the Power level and satellite allocation table for the Sensitivity Coarse time assistance requirements**

*Type: CR For: Agreement  
 36.171 v15.0.0 CR-0018 Cat: F (Rel-15)  
 Source: Spirent Communications*

**Discussion:**

**Decision: Agreed.**

**R4-2000148 Update of the Note 1 in the Power level and satellite allocation table for the Sensitivity Coarse time assistance requirements**

*Type: CR For: Agreement  
 38.171 v15.2.0 CR-0009 Cat: F (Rel-15)  
 Source: Spirent Communications*

**Discussion:**

**Decision: Revised to R4-2002219 (from R4-2000148).**

**R4-2002219 Update of the Note 1 in the Power level and satellite allocation table for the Sensitivity Coarse time assistance requirements**

*Type: CR For: Agreement  
 38.171 v15.2.0 CR-0009 Cat: F (Rel-15)  
 Source: Spirent Communications*

**Discussion:**

**Decision: Agreed.**

**R4-2000149 Editorial change to TS 37.571-1 title**

*Type: CR For: Agreement  
 36.171 v15.0.0 CR-0019 Cat: F (Rel-15) Source: Spirent Communications*

**Discussion:**

**Decision: Agreed.**

**R4-2000150 Editorial change to TS 37.571-1 title**

*Type: CR For: Agreement  
 37.171 v15.2.0 CR-0032 Cat: F (Rel-15)  
 Source: Spirent Communications*

**Discussion:**

**Decision: Agreed.**

**R4-2000151 Editorial change to TS 37.571-1 title**

*Type: CR For: Agreement  
 38.171 v15.2.0 CR-0010 Cat: F (Rel-15)  
 Source: Spirent Communications*

**Discussion:**

**Decision: Agreed.**

## 7 Rel-16 Work Items for LTE

### 7.1 LTE intra-band Carrier Aggregation for x CC DL/y CC UL including contiguous and non-contiguous spectrum (x>=y) [LTE\_CA\_R16\_intra]

#### 7.1.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R16\_intra-Core/Perf]

#### 7.1.2 UE RF [LTE\_CA\_R16\_intra-Core]

### 7.2 LTE inter-band Carrier Aggregation for 2 bands DL with 1 band UL [LTE\_CA\_R16\_2BDL\_1BUL]

#### 7.2.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R16\_2BDL\_1BUL-Core/Perf]

#### 7.2.2 UE RF with harmonic, close proximity and isolation issues [LTE\_CA\_R16\_2BDL\_1BUL-Core]

#### 7.2.3 UE RF without specific issues [LTE\_CA\_R16\_2BDL\_1BUL-Core]

### 7.3 LTE inter-band Carrier Aggregation for 3 bands DL with 1 band UL [LTE\_CA\_R16\_3BDL\_1BUL]

#### 7.3.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R16\_3BDL\_1BUL-Core/Perf]

#### 7.3.2 UE RF with harmonic, close proximity and isolation issues [LTE\_CA\_R16\_3BDL\_1BUL-Core]

#### 7.3.3 UE RF without specific issues [LTE\_CA\_R16\_3BDL\_1BUL-Core]

### 7.4 LTE inter-band Carrier Aggregation for x bands DL (x=4, 5) with 1 band UL [LTE\_CA\_R16\_xBDL\_1BUL]

#### 7.4.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R16\_xBDL\_1BUL-Core]

#### 7.4.2 UE RF with 4 LTE bands CA [LTE\_CA\_R16\_xBDL\_1BUL-Core]

#### 7.4.3 UE RF with 5 LTE bands CA [LTE\_CA\_R16\_xBDL\_1BUL-Core]

### 7.5 LTE inter-band Carrier Aggregation for 2 bands DL with 2 band UL [LTE\_CA\_R16\_2BDL\_2BUL]

#### 7.5.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R16\_2BDL\_2BUL-Core]

#### 7.5.2 UE RF with harmonic, close proximity and isolation issues [LTE\_CA\_R16\_2BDL\_2BUL-Core]

#### 7.5.3 UE RF without specific issues [LTE\_CA\_R16\_2BDL\_2BUL-Core]

### 7.6 LTE inter-band Carrier Aggregation for x bands DL (x= 3, 4, 5) with 2 band UL [LTE\_CA\_R16\_xBDL\_2BUL]

#### 7.6.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R16\_xBDL\_2BUL-Core]

#### 7.6.2 UE RF with MSD [LTE\_CA\_R16\_xBDL\_2BUL-Core]

#### 7.6.3 UE RF without MSD [LTE\_CA\_R16\_xBDL\_2BUL-Core]

### 7.7 RRM for LTE CA basket WI-s [LTE\_CA\_R16\_xxxx]

#### 7.7.1 RRM Core (36.133) [LTE\_CA\_R16\_xxxx-Core]

#### 7.7.2 RRM Perf (36.133) [LTE\_CA\_R16\_xxxx-Perf]

### 7.8 Additional LTE bands for UE category M1 and/or NB1 in Rel-16 [LTE\_bands\_R16\_M1\_NB1]

#### 7.8.1 RF [LTE\_bands\_R16\_M1\_NB1-Core]

#### 7.8.2 Others [LTE\_bands\_R16\_M1\_NB1-Perf]

### 7.9 Additional LTE bands for UE category M2 and/or NB2 in in Rel-16 [LTE\_bands\_R16\_M2\_NB2]

#### 7.9.1 RF [LTE\_bands\_R16\_M2\_NB2-Core]

#### 7.9.2 Others [LTE\_bands\_R15\_M2\_NB2-Perf]

### 7.10 Additional MTC enhancements for LTE [LTE\_eMTC5]

#### 7.10.1 General [LTE\_eMTC5]

**R4-2000726 On RRM performance aspects of R16 MTC**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2001751 Discussions on performance requirements for Rel-16 MTC**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution contains initial discussions on performance requirements for MTC.

**Discussion:**

**Decision: Noted.**

#### 7.10.2 Coexistence with NR [LTE\_eMTC5]

#### 7.10.3 RRM core requirements (36.133) [LTE\_eMTC5-Core]

================================================================================

***Email discussion summary***

**R4-2002193 Email discussion summary for RAN4#94e\_#70\_LTE\_eMTC5\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002295 (from R4-2002193).**

**R4-2002295 Email discussion summary for RAN4#94e\_#70\_LTE\_eMTC5\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**General**

Continue discussion in the 2nd round on the remaining open issues for the identified topics. Capture agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002268 | WF on Rel-16 MTC RRM requirements | Ericsson |

**Topic #1: WUS**

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2001750 | Agreed |
| R4-2001651 | Not pursued |

**Topic #2: PUR**

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2001748 | Return to |
| R4-2001652 | Return to |

**Topic #3: RSS**

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2001747 | Revised |
| R4-2001749 | Revised |

**Topic #6: RRM Performance requirements**

Session chair: Focus on RRM Core requirements for the 2nd round. Consider Performance requirements with the 2nd priority.

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2001748 | Postponed |
| R4-2001652 | Postponed |
| R4-2001747 | Postponed |
| R4-2001749 | Postponed |
| R4-2001650 | Postponed |
| R4-2002268 | Approved |

================================================================================

**R4-2002268 WF on Rel-16 MTC RRM Requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

**Discussion:**

**Decision: Approved.**

##### 7.10.3.1 DL quality report in MSG3 and connected mode [LTE\_eMTC5-Core]

**R4-2001349 Discussion on the remaining issues on DL quality report for eMTC**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the open issues for DL channel quality report for eMTC.

**Discussion:**

**Decision: Noted.**

**R4-2001649 Discussion on quality reporting in Rel-16 eMTC**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001650 CR on MPDCCH parameters for quality reporting**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6810 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Postponed.**

##### 7.10.3.2 WUS [LTE\_eMTC5-Core]

**R4-2001651 CR to introduce WUS reception requirements for Rel-16 eMTC**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6811 Cat: B (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Not pursued.**

**R4-2001750 CR: WUS**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6818 Cat: B (Rel-16)  
 Source: Ericsson*

**Abstract:**

This CR contains changes related to receiving multiple sequences of WUS.

**Discussion:**

**Decision: Agreed.**

##### 7.10.3.3 MPDCCH performance improvement [LTE\_eMTC5-Core]

**R4-2000727 Simulation results for MPDCCH performance improvements of RLM tests in MTC**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2001350 Discussion on RLM with MPDCCH improvement**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution discusses the RLM requirements due to the MPDCCH performance improvement.

**Discussion:**

**Decision: Noted.**

##### 7.10.3.4 PUR [LTE\_eMTC5-Core]

**R4-2001652 CR on measurement requriements for RSRP change based TA validation**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6812 Cat: B (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Postponed.**

**R4-2001748 CR: PUR**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6816 Cat: B (Rel-16)  
 Source: Ericsson*

**Abstract:**

This CR introduces the support for transmissions using preconfigured uplink resources.

**Discussion:**

**Decision: Postponed.**

**R4-2001749 CR: RA**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6817 Cat: B (Rel-16)  
 Source: Ericsson*

**Abstract:**

This CR contains changes related to performing RA using RSS based RSRP measurements.

**Discussion:**

**Decision: Postponed.**

**R4-2002267 CR: RA**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6817 Cat: B (Rel-16)  
 Source: Ericsson*

**Abstract:**

This CR contains changes related to performing RA using RSS based RSRP measurements.

**Discussion:**

**Decision: Withdrawn.**

##### 7.10.3.5 Mobility enhancement [LTE\_eMTC5-Core]

**R4-2000728 On RSS-based measurement in connected mode in eMTC**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2001653 Discussion on remaining issues in RSS measurement**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001746 RSS based measurement simulation results and discussions**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution, we discuss the remaining issues of RSS based measurements.

**Discussion:**

**Decision: Noted.**

**R4-2001747 CR: RSS based measurement simulation results and discussions**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6815 Cat: B (Rel-16)  
 Source: Ericsson*

**Abstract:**

This CR introduces support for RSS based RSRPmeasurements for cat-M.

**Discussion:**

**Decision: Postponed.**

**R4-2002266 CR: RSS based measurement simulation results and discussions**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6815 Cat: B (Rel-16)  
 Source: Ericsson*

**Abstract:**

This CR introduces support for RSS based RSRPmeasurements for cat-M.

**Discussion:**

**Decision: Withdrawn.**

##### 7.10.3.6 Others [LTE\_eMTC5-Core]

#### 7.10.4 Demodulation and CSI requirements (36.101/36.104) [LTE\_eMTC5-Perf]

### 7.11 Additional enhancements for NB-IoT [NB\_IOTenh3]

#### 7.11.1 General [NB\_IOTenh3]

**R4-2000729 On RRM performance aspects of R16 NB-IoT**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

.

**Decision: Noted.**

#### 7.11.2 Co-existence with NR [NB\_IOTenh3]

#### 7.11.3 RRM core requirements (36.133) [NB\_IOTenh3-Core]

================================================================================

***Email discussion summary***

**R4-2002194 Email discussion summary for RAN4#94e\_#71\_NB\_IOTenh3\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Huawei, HiSilicon)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002296 (from R4-2002194).**

**R4-2002296 Email discussion summary for RAN4#94e\_#71\_NB\_IOTenh3\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Huawei, HiSilicon)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**General**

Continue discussion in the 2nd round on the remaining open issues for the identified topics. Capture agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002269 | WF on RRM requirements of R16 enhancement for NB-IoT | Huawei |

**Topic #1: RRM Core requirements**

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2001550 | Revised |
| R4-2001551 | Revised |

**Topic #2: RRM Performance requirements**

Session chair: Postpone the discussion of the performance parts to RAN4#94 bis meeting, and focus on the core requirements during RAN4#94-e meeting.

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002337 | Approved |
| CR R4-2002270 | Postponed |
| CR R4-2002271 | Postponed |

================================================================================

**R4-2002269 WF on RRM requirements of R16 enhancement for NB-IoT**

*Type: other For: Approval  
 Source: Huawei*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002337 (from R4-2002269).**

**R4-2002337 WF on RRM requirements of R16 enhancement for NB-IoT**

*Type: other For: Approval  
 Source: Huawei*

**Abstract:**

**Discussion:**

**Decision: Approved.**

##### 7.11.3.1 Group WUS [NB\_IOTenh3-Core]

##### 7.11.3.2 PUR [NB\_IOTenh3-Core]

**R4-2001550 CR on measurement requriements for RSRP change based TA validation**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6802 Cat: B (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Revised to R4-2002270 (from R4-2001550).**

**R4-2002270 CR on measurement requriements for RSRP change based TA validation**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6802 Cat: B (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Postponed.**

##### 7.11.3.3 Multi-carrier operations [NB\_IOTenh3-Core]

**R4-2000730 Remaining issues on RRM measurements in non-anchor carrier for NB-IoT**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

.

**Decision: Noted.**

**R4-2001551 CR on non-anchor RRM measurement requirements in Rel-16 NB IoT**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6803 Cat: B (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Revised to R4-2002271 (from R4-2001551).**

**R4-2002271 CR on non-anchor RRM measurement requirements in Rel-16 NB IoT**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6803 Cat: B (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Postponed.**

**R4-2001552 Discussion on the non-anchor RRM measurement requirements Rel-16 NB IoT**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001752 Remaining discussions on non-anchor carrier RRM measurements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the open issues of non-anchor carrier RRM measurements.

**Discussion:**

**Decision: Noted.**

**R4-2001917 On NRSRP processing in multicarrier operation**

*Type: other For: Agreement  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on combining and filtering of NRSRP in MC operation.

**Discussion:**

**Decision: Noted.**

##### 7.11.3.4 Others [NB\_IOTenh3-Core]

**R4-2001553 Discussion on the TA offset setting for NR and NB-IoT coexistence**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

#### 7.11.4 Demodulation and CSI requirements (36.101/36.104) [NB\_IOTenh3-Perf]

### 7.12 Even further Mobility enhancement in E-UTRAN [LTE\_feMob]

#### 7.12.1 RRM core requirements (36.133) [LTE\_feMob-Core]

================================================================================

***Email discussion summary***

**R4-2002195 Email discussion summary for RAN4#94e\_#72\_LTE\_feMob\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Nokia)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002297 (from R4-2002195).**

**R4-2002297 Email discussion summary for RAN4#94e\_#72\_LTE\_feMob\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Nokia)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**General**

Continue discussion in the 2nd round on the remaining open issues for the identified topics. Capture agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002272 | WF on LTE feMob RRM requirements | Nokia |

**Topic #1: Conditional Handover**

Issue 1-2: Reference for TDD cell is not correct in conditional handover requirements

Agreement: In Conditional handover requirements, when the target cell is a TDD cell, the references should refer to TDD requirements

Issue 1-3: Add inter-F cases in conditional handover requirements

Agreement: Inter-F cases should be introduced in conditional handover requirements

Issue 1-4: Additional requirements for PSCell addition, release or change in 36.133

Agreement: No additional requirements are needed for PSCell addition, release or change in 36.133

**Topic #2: Reduction of user data interruption (DAPS)**

Issue 2-2: Tinterruption2 for the case that bandwidth of target cell is larger than the bandwidth of source cell for in intra-frequency DAPS handover

Agreement: Tinterruption2 for the case that bandwidth of target cell is larger than the bandwidth of source cell for in intra-frequency DAPS handover is 1ms

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002272 | Approved. |
| R4-2001412 | Postponed. |
| R4-2001410 | Postponed. |
| R4-2001670 | Postponed. |
| R4-2001840 | Postponed. |
| R4-2001839 | Postponed. |

================================================================================

**R4-2002272 WF on LTE feMob RRM requirements**

*Type: other For: Approval  
 Source: Nokia*

**Abstract:**

**Discussion:**

Note: two companies supported the view that the definition of synchronous DAPS handover shall be further studied and clearly embodied in specifications.

**Decision: Approved.**

##### 7.12.1.1 Conditional handover [LTE\_feMob-Core]

**R4-2001336 Conditional handover for LTE**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

**Decision: Noted.**

**R4-2001411 Open issues for NR conditional handover**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

CR to conclude remaining open issues

**Discussion:**

**Decision: Noted.**

**R4-2001412 TP:Update to conditional handover requirements for LTE**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

TP on changes to conclude remaining open issues

**Discussion:**

**Decision: Postponed.**

**R4-2001839 Correction to HO delay requirements for conditional HO**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6819 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

This CR implements some editorial corrections and additions on the initial version

**Discussion:**

**Decision: Postponed.**

##### 7.12.1.2 Reduction of user data interruption [LTE\_feMob-Core]

**R4-2001409 Remaining open issues on DAPS handover for LTE**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Discuss remaining open issues for DAPS

**Discussion:**

**Decision: Noted.**

**R4-2001410 TP:Update to DAPS handover requirements for LTE**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

TP on changes to conclude remaining open issues

**Discussion:**

**Decision: Postponed.**

**R4-2001670 CR on DAPS handover**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6814 Cat: F (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Postponed.**

**R4-2001840 Corrections to LTE DAPS HO requirements**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6820 Cat: F (Rel-16)  
 Source: Qualcomm Incorporated*

**Abstract:**

This CR implements some editorial and technical corrections missin from the initial version

**Discussion:**

**Decision: Postponed.**

##### 7.12.1.3 Others [LTE\_feMob-Core]

### 7.13 Further performance enhancement for LTE in high speed scenario [LTE\_high\_speed\_enh2]

#### 7.13.1 RRM core requirements maintenance (36.133) [LTE\_high\_speed\_enh2-Core]

================================================================================

***Email discussion summary***

**R4-2002196 Email discussion summary for RAN4#94e\_#73\_LTE\_high\_speed\_enh2\_RRM**

*Type: discussion For: Information  
 Source: Moderator (NTT DOCOMO)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002298 (from R4-2002196).**

**R4-2002298 Email discussion summary for RAN4#94e\_#73\_LTE\_high\_speed\_enh2\_RRM**

*Type: discussion For: Information  
 Source: Moderator (NTT DOCOMO)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000641 | Revised |
| R4-2000873 | Agreed |

2nd round email discussion conclusions

R4-2002345 agreed

================================================================================

**R4-2000641 draft CR on correction of measurement delay requirements for LTE HST in TS36.133**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6794 Cat: F (Rel-16)  
 Source: vivo*

**Discussion:**

**Decision: Revised to R4-2002273 (from R4-2001336).**

**R4-2002273 CR on correction of measurement delay requirements for LTE HST in TS36.133**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6794 Cat: F (Rel-16)  
 Source: vivo*

**Discussion:**

**Decision: Revised to R4-2002345 (from R4-2002273).**

**R4-2002345 CR on correction of measurement delay requirements for LTE HST in TS36.133**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6794 Cat: F (Rel-16)  
 Source: vivo*

**Discussion:**

**Decision: Agreed.**

**R4-2000873 CR to TS 36.133: Finalization on RRM requirements for Rel-16 LTE HST**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6796 Cat: F (Rel-16)  
 Source: NTT DOCOMO, INC.*

**Discussion:**

**Decision: Agreed.**

#### 7.13.2 RRM performance requirements (36.133) [LTE\_high\_speed\_enh2-Perf]

#### 7.13.3 UE Demodulation and CSI requirements (36.101) [LTE\_high\_speed\_enh2-Perf]

##### 7.13.3.1 Extension of demodulation requirements to CA [LTE\_high\_speed\_enh2-Perf]

##### 7.13.3.2 HST-SFN PDSCH demodulation requirements [LTE\_high\_speed\_enh2-Perf]

##### 7.13.3.3 Single tap HST PDSCH demodulation requirements [LTE\_high\_speed\_enh2-Perf]

#### 7.13.4 BS Demodulation requirements (36.104) LTE\_high\_speed\_enh2-Perf]

##### 7.13.4.1 PUSCH demodulation requirements [LTE\_high\_speed\_enh2-Perf]

##### 7.13.4.2 PRACH requirements [LTE\_high\_speed\_enh2-Perf]

### 7.14 LTE-based 5G terrestrial broadcast [LTE\_terr\_bcast]

#### 7.14.1 RRM core requirements maintenance (36.133) [LTE\_terr\_bcast -Core]

##### 7.14.1.1 Interruption requirements [LTE\_terr\_bcast -Core]

##### 7.14.1.2 Phase synchronization accuracy [LTE\_terr\_bcast -Core]

##### 7.14.1.3 RSRP/RSRQ report mapping [LTE\_terr\_bcast -Core]

##### 7.14.1.4 Other requirements [LTE\_terr\_bcast -Core]

#### 7.14.2 RRM Perf requirements (36.133) [LTE\_terr\_bcast -Perf]

#### 7.14.3 Demodulation and CSI requirements (36.101) [LTE\_terr\_bcast -Perf]

### 7.15 Support for NavIC Navigation Satellite System for LTE [LCS\_NAVIC-Perf]

================================================================================

***Email discussion summary***

**R4-2002197 Email discussion summary for RAN4#94e\_#74\_LCS\_NAVIC\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Reliance Jio)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002299 (from R4-2002197).**

**R4-2002299 Email discussion summary for RAN4#94e\_#74\_LCS\_NAVIC\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Reliance Jio)*

**Abstract:**

**Discussion:**

**Decision: Return to.**

1st round email discussion conclusions

Continue discussion in the 2nd round on the draft CR contents

Confirm the proposed tentative agreement from moderator is acceptable. Capture agreements in revised version of CR R4-2000071

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000071 | Revised |

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002274 | Agreed |

Common understanding: NavIC has been added to 36.171 following the existing methodology. It is common understanding that this methodology may not effectively test regional constellations like NavIC and QZSS. RAN4 may further work to improve the methodology so that it effectively tests the regional constellation like NavIC and QZSS.

================================================================================

**R4-2000071 CR of TS 36.171 for introducing NavIC in LTE – performance part**

*Type: CR For: Agreement  
 36.171 v15.0.0 CR-0017 Cat: B (Rel-16)  
 Source: RAN4*

**Abstract:**

In RAN#85, LCS\_NAVIC work item was approved for A-GNSS suport for NavIC constellation in LTE Release-16. This change request captures the minimum performance requirements expected from GNSS receivers supporting NavIC constellation.

**Discussion:**

**Decision: Revised to R4-2002274 (from R4-2000071).**

**R4-2002274 CR of TS 36.171 for introducing NavIC in LTE – performance part**

*Type: CR For: Agreement  
 36.171 v15.0.0 CR-0017 Cat: B (Rel-16)  
 Source: Reliance Jio, CEWiT, Huawei, ISRO, Saankhya Labs Private Limited, Tejas Networks Ltd.*

**Abstract:**

In RAN#85, LCS\_NAVIC work item was approved for A-GNSS suport for NavIC constellation in LTE Release-16. This change request captures the minimum performance requirements expected from GNSS receivers supporting NavIC constellation.

**Discussion:**

Common understanding: NavIC has been added to 36.171 following the existing methodology. It is common understanding that this methodology may not effectively test regional constellations like NavIC and QZSS. RAN4 may further work to improve the methodology so that it effectively tests the regional constellation like NavIC and QZSS.

**Decision: Agreed.**

#### 7.15.1 UE perf. requirements (36.171) [LCS\_NAVIC-Perf]

### 7.16 DL MIMO efficiency enhancements for LTE [LTE\_DL\_MIMO\_EE]

#### 7.16.1 UE RF requirements (36.101) [LTE\_DL\_MIMO\_EE]

## 8 Rel-16 non-spectrum related work items for NR

### 8.1 NR-based access to unlicensed spectrum [NR\_unlic]

#### 8.1.1 System Parameters [NR\_unlic-Core]

##### 8.1.1.1 General [NR\_unlic-Core ]

##### 8.1.1.2 Wideband operations (UE and BS) [NR\_unlic-Core]

##### 8.1.1.3 Channel raster [NR\_unlic-Core ]

##### 8.1.1.4 Spectrum utilizations [NR\_unlic-Core]

##### 8.1.1.5 Sync raster [NR\_unlic-Core]

#### 8.1.2 UE RF requirements [NR\_unlic-Core]

##### 8.1.2.1 Transmitter characteristics [NR\_unlic-Core]

##### 8.1.2.2 Receiver characteristics [NR\_unlic-Core]

#### 8.1.3 BS RF requirements [NR\_unlic-Core]

##### 8.1.3.1 Transmitter characteristics [NR\_unlic-Core]

##### 8.1.3.2 Receiver characteristics [NR\_unlic-Core]

#### 8.1.4 RRM core requirements (38.133) [NR\_unlic-Core]

================================================================================

***Email discussion summary***

**R4-2002169 Email discussion summary for RAN4#94e\_#46\_NR\_unlic\_RRM\_Core\_Part\_1**

*Type: discussion For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002300 (from R4-2002169).**

**R4-2002300 Email discussion summary for RAN4#94e\_#46\_NR\_unlic\_RRM\_Core\_Part\_1**

*Type: discussion For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**General**

Continue discussion in the 2nd round on the remaining open issues for the identified topics. Capture agreements not covered in specific documents in WF

|  |  |  |
| --- | --- | --- |
| R4-2002283 | WF on NR-U RRM requirements (Part 1) | Ericsson |

**Topic #1: Specification Structure**

Issue 1-1: do you agree to add “a” in section numbers in 36.133 for NR-U sections?

Agreement: Do not add “a” in section numbers in 36.133 for NR-U sections. Follow the section naming outline earlier agreed in R4-1914628 (RAN4#93).

Issue 1-2: do you agree that R4-1914628 (agreed in RAN4#93) is enough and CR (38.133) with just NR-U section titles is unnecessary?

Continue discussion in the 2nd round: Discuss further the two options. If no agreement can be reached, the CR shall not be pursued.

* Option 1: CR R4-2000039 is not needed
* Option 2: CR R4-2000039 is needed.

**Topic #2: General Applicability Rules for NR-U Sections**

Issue 2-1: do you agree to list the sections applicable for NR-U in the applicability section of the corresponding specification (36.133 and 38.133)?

Continue discussion in the 2nd round. If no consensus, come back in the next meeting

**Topic #3: SIB Reading in Cell Reselection**

Issue 3-1: do you agree that the Rel-15 approach shall apply and SIB reading shall not be included in cell reselection requirements for NR-U?

Continue discussion in the 2nd round on whether to include side conditions on PCI collision for neighbor cells in cell reselection and HO requirements. Capture agreements in WF.

|  |  |  |
| --- | --- | --- |
| R4-2002281 | WF on SIB reading in cell reselection and HO requirements for NR-U | Intel |

**Topic #4: SI Reading in RRC Release with Redirection, RRC Re-establishment, and Paging Interruption Requirements**

Issue 4-1: SI Acquisition Time

Agreement: RAN4 to further discuss the maximum SI acquisition time in paging interruption, RRC re-direction and RRC re-establishment in NR-U

**Topic #5: Cell Reselection (Excluding SI Reading and Paging)**

Issue 5-1: Mm,max for other DRX cycles (0.64 sec and 1.28 sec)

Agreement:

Mm,max = [8] for DRX cycle = 0.64 seconds,

Mm,max = [4] for DRX cycle = 1.28 seconds

Issue 5-2: X dB offset condition for the at least one cell to be checked by the UE

Agreement: Do not specify the X dB offset condition for the at least one cell to be checked by the UE

**Topic #6: SIB Reading in HO Requirements**

Same conclusion as Topic 3

**Topic #7: HO Requirements (Excluding SIB Reading)**

Issue 7-1: UE behaviour when UL LBT failure recovery is not configured or not supported

Continue discussion in 2nd round.

Issue 7-2: UE behaviour when UL LBT failure recovery is configured in HO command

Discuss if LS to RAN2 shall be sent

|  |  |  |
| --- | --- | --- |
| R4-2002282 | LS to RAN2 on UL LBT failure recovery for the target cell | Ericsson |

**Topic #8: RRC Release with Redirection**

Continue discussion in 2nd round.

**Topic #9: RRC Re-Establishment**

Issue 9-2: UE behaviour upon exceeding K3,max

Agreement: do not specify K3,max

**Topic #10: SCell activation**

Issue 10-1: known SCell definition

Agreement: do not extend the time period in the known SCell condition

Issue 10-7: SCell activation delay, X, Y, Z (see the agreement in RAN4#93)

Agreement:

* + X=5 ms
  + Y=5 ms
  + Z=5 ms

Issue 10-8: Does the interruption window length at SCell activation depend on DL LBT failures?

Conclusion: postpone discussion till R15 get agreed

**Topic #11: PSCell Addition**

Issue 11-1: known PSCell definition

Agreement: do not extend the time in the known cell condition in PSCell addition delay requirement

**Topic #12: Active TCI State Switching**

Issue 12-1: known state definition

Agreement: do not extend the time in the known cell condition in active TCI switching delay requirement

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2000039 | Not pursued |
| R4-2001393 | Postponed |
| R4-2001394 | Postponed |
| R4-2002281 | Noted |
| R4-2001742 | Postponed |
| R4-2001914 | Postponed |
| R4-2002282 | Approved |
| R4-2001841 | Postponed |
| R4-2001842 | Postponed |
| R4-2002283 | Approved |

================================================================================

**R4-2002170 Email discussion summary for RAN4#94e\_#47\_NR\_unlic\_RRM\_Core\_Part\_2**

*Type: discussion For: Information  
 Source: Moderator (MediaTek)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002301 (from R4-2002170).**

**R4-2002301 Email discussion summary for RAN4#94e\_#47\_NR\_unlic\_RRM\_Core\_Part\_2**

*Type: discussion For: Information  
 Source: Moderator (MediaTek)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**General**

Continue discussion in the 2nd round on the remaining open issues for the identified topics. Capture agreements not covered in specific documents in WF

|  |  |  |
| --- | --- | --- |
| R4-2002284 | WF on NR-U RRM requirements (Part 2) | MediaTek |

**Topic #1: Interruptions**

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2001395 | Agreed |

**Topic #2: Active BWP switching**

Issue 2-1-1: Whether to introduce UL BWP switch requirements (delay and interruption) triggered by consistent UL LBT failures

Agreement: Introduce UL BWP switch requirements (delay and interruption) triggered by consistent UL LBT failures

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2001849 | Postponed |
| R4-2001850 | Postponed |

**Topic #3: RLM**

Issue 3-2-2: Conclude the values for Lin,max.

Agreement: For RLM in-sync

* *Lin,max = 7 for Max(TDRX,TSSB)≤40 where TDRX=0 for non-DRX*
* *Lin,max = 5 for 40<Max(TDRX,TSSB)≤320*
* *Lin,max = 3 for TDRX>320*

Issue 3-2-3: Whether to specify additional requirement due to consecutively missing SSBs

Agreement: No additional requirements for consecutively missing SSBs due to SSB-based RLM INS

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2001934 | Postponed |

**Topic #4: Timing**

Issue 4-1-1: Whether to allow one shot timing adjustment when UE changes its DL timing reference cell to any activated SCell if SpCell is unavailable to UE for a certain number of DL SSB detection attempts

Agreement: One shot timing adjustment is not allowed when UE changes its DL timing reference cell to any activated SCell if SpCell is unavailable to UE for a certain number of DL SSB detection attempts.

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002335 | Approved |
| R4-2001710 | Postponed |
|  |  |

================================================================================

**R4-2002171 Email discussion summary for RAN4#94e\_#48\_NR\_unlic\_RRM\_Core\_Part\_3**

*Type: discussion For: Information  
 Source: Moderator (Nokia)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002302 (from R4-2002171).**

**R4-2002302 Email discussion summary for RAN4#94e\_#48\_NR\_unlic\_RRM\_Core\_Part\_3**

*Type: discussion For: Information  
 Source: Moderator (Nokia)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**General**

Continue discussion in the 2nd round on the remaining open issues for the identified topics. Capture agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002278 | WF on NR-U RRM requirements (Part 3) | Nokia |

**Topic #1: L1-RSRP measurements**

Issue 1-1: Value of L1,max when timeRestrictionForChannelMeasurement is configured

Agreement:

L1,max = 0 when timeRestrictionForChannelMeasurement is configured and the table is updated as:

|  |  |
| --- | --- |
| Configuration | TL1-RSRP\_Measurement\_Period\_SSB (ms) |
| non-DRX | max(TReport, ceil((M+L1)\*P)\*TSSB) |
| DRX cycle ≤ 320ms | max(TReport, ceil(1.5\*(M+L1)\*P)\*max(TDRX,TSSB)) |
| DRX cycle > 320ms | ceil((M+L1)\*P)\*TDRX |
| Note 1: TSSB is the periodicity of the SSB-Index configured for L1-RSRP measurement. TDRX is the DRX cycle length. TReport is configured periodicity for reporting.  Note 2: L1=0 if higher layer parameter timeRestrictionForChannelMeasurement is configured. Otherwise L1 is the number of SSBs not available at the UE during TL1-RSRP\_Measurement\_Period\_SSB where L1 ≤ L1max.  Note 3: L1,max=7 for Max(TDRX,TSSB) ≤ 40ms where TDRX=0 for non-DRX, L1,max=5 for 40ms < Max(TDRX, TSSB) ≤ 320ms, and L1,max=3 for TDRX > 320ms. | |

Issue 1-2: Periodic and aperiodic L1-RSRP reporting delay

Agreement: Periodic and aperiodic L1-RSRP reporting delay reuses Rel-15 reporting delay

**Topic #2: SFTD measurements**

Issue 2-1: UE behaviour when exceeding Tmeasure\_SFTD\_LBT\_max

Agreement: It is RAN4 understanding that the UE behavior when exceeding Tmeasure\_SFTD\_LBT\_max is that the UE shall not report the measurement and abandon the inter-RAT SFTD measurement. The exact wording can be aligned with RAN2.

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000041 | Postponed |
| R4-2000043 | Postponed |
| R4-2002087 | Merged |

**Topic #4: PBCH payload reading at SSB Index Detection**

Issue 4-1: Additional time for PBCH payload reading for SSB index identification

* + Agreement: There is no need to specify additional time for PBCH reading during SSB index identification in FR1 NR-U, if Q is known to the UE.

**Topic #5: RSSI and Channel Occupancy measurements**

Issue 5-4: Need for measurement Gaps

Agreement: No measurement report mapping is defined for Channel Occupancy measurements in NR-U.

Issue 5-6: RSSI/CO measurement reporting requirements

Agreement: Measurement reporting requirements are to be specified for periodic RSSI and CO.

Note: this agreement can be reviewed in case further agreements are made in RAN2.

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002278 | Approved |
| R4-2002285 | Agreed |
|  |  |

================================================================================

**R4-2002281 WF on SIB reading in cell reselection and HO requirements for NR-U**

*Type: other For: Approval  
 Source: Intel*

**Abstract:**

**Discussion:**

**Decision: Noted.**

**R4-2002282 LS to RAN2 on UL LBT failure recovery for the target cell**

*Type: LSout For: Approval  
 To: RAN2  
 Source: Ericsson*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002283 WF on NR-U RRM requirements (Part 1)**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002336 (from R4-2002283).**

**R4-2002336 WF on NR-U RRM requirements (Part 1)**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002284 WF on NR-U RRM requirements (Part 2)**

*Type: other For: Approval  
 Source: MediaTek*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002335 (from R4-2002284).**

**R4-2002335 WF on NR-U RRM requirements (Part 2)**

*Type: other For: Approval  
 Source: MediaTek*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002278 WF on NR-U RRM requirements (Part 3)**

*Type: other For: Approval  
 Source: Nokia*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2000039 CR for spec structure to address NR-U in 38.133 v2**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0410 Cat: B (Rel-16)  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Not pursued.**

**R4-2000040 Discussion on approaches to address NR-U in 36.133 and 38.133 v2**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Noted.**

##### 8.1.4.1 Cell re-selection [NR\_unlic-Core]

**R4-2000392 Discussion on SIB reading impacts on cell reselection requirements of NR-U**

*Type: other For: Discussion  
 Source: Intel Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000714 Remaining issues on cell reselection in NR-U**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2000924 Discussion on cell reselection requirement for NR-U**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2000925 Simulation results for SI reading**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001438 On Cell-reselection requirements in NR-U**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Remaining issues on cell-reselection in NR-U

**Discussion:**

**Decision: Noted.**

**R4-2001554 Discussion on cell re-selection for NR-U**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001741 Remaining discussions on IDLE mode cell re-selection requirements for NR-U standalone**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution, we discuss the cell re-selection requirements for standalone, and more specifically how (if) they are affected by the LBT by taking into account the above agreements.

**Discussion:**

**Decision: Noted.**

**R4-2001742 Draft CR: NR-U requirements for IDLE/INACTIVE states**

*Type: draftCR For: Endorsement  
 38.133 v16.2.0  
 Source: Ericsson*

**Abstract:**

Draft CR showing how the new IDLE mode agreements are to be captured.

**Discussion:**

**Decision: Postponed.**

**R4-2001743 NR-U inter-RAT requirements for IDLE/INACTIVE states**

*Type: other For: Approval  
 38.133 v..  
 Source: Ericsson*

**Abstract:**

CR for capturing the inter-RAT requirements in IDLE/INACTIVE states.

**Discussion:**

**Decision:** The document was **withdrawn**.

**R4-2001744 Remaining discussions on serving cell evaluations for NR-U standalone**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution, we discuss the serving cell requirements for standalone, and more specifically how (if) they are affected by the LBT.

**Discussion:**

**Decision: Noted.**

**R4-2001745 Discussions on paging interruptions for NR-U**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution, we discuss the handover requirements for NR-U.

**Discussion:**

**Decision: Noted.**

**R4-2001914 NR-U inter-RAT requirements for IDLE/INACTIVE states**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0562 Cat: B (Rel-16)  
 Source: Ericsson*

**Abstract:**

CR for capturing the inter-RAT requirements in IDLE/INACTIVE states.

**Discussion:**

**Decision: Postponed.**

##### 8.1.4.2 Handover [NR\_unlic-Core]

**R4-2000393 Further discussion on HO requirements of NR-U**

*Type: other For: Discussion  
 Source: Intel Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2001440 Discussion on HO requirements in NR-U**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This document discusses HO requirements in NR-U.

**Discussion:**

**Decision: Noted.**

**R4-2001555 Discussion on handover in NR-U**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2002132 Discussion regarding NR-U handover**

*Type: other For: (not specified)  
 Source: Qualcomm*

**Discussion:**

**Decision: Noted.**

##### 8.1.4.3 RRC connection mobility control [NR\_unlic-Core]

**R4-2000047 Discussion on UE behavior in RRC release with re-direction in NR-U**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000048 Discussion on UE behavior in RRC re-establishment in NR-U**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000049 Discussion on SIB reading in RRC procedures NR-U**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000926 Discussion on RRC Re-establishment requirement for NR-U**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001359 SIB1 acquisition time in NR-U**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses SIB1 acquisition delay.

**Discussion:**

**Decision: Noted.**

**R4-2001442 Discussion on the SI acquisition time in NR-U**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This document discusses the SI acquisition time in NR-U.

**Discussion:**

**Decision: Noted.**

**R4-2001556 Discussion on RRC connection mobility control in NR-U**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001846 Analysis of open issues in RRC re-establishment in NR-U**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper addresses open issues for maximum allowed CCA failures in RRC re-estabishment

**Discussion:**

**Decision: Noted.**

**R4-2001847 Analysis of open issues in RRC re-direction in NR-U**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper addresses open issues for maximum allowed CCA failures in RRC re-redirection

**Discussion:**

**Decision: Noted.**

**R4-2002133 Discussion regarding NR-U RRC Mobility Control**

*Type: other For: (not specified)  
 Source: Qualcomm*

**Discussion:**

**Decision: Noted.**

##### 8.1.4.4 SCell activation/deactivation (delay and interruption) [NR\_unlic-Core]

**R4-2000057 Discussion on SCell activation delay in NR-U**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000715 On Scell activation and deactivation requirements in NR-U**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2001557 Discussion on SCell activation in NR-U**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001841 Introduction of activation and deactivation delay requirements for SCells operating with CCA**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0559 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

This CR introduces Scell activation/deactivation requirements for NR-U

**Discussion:**

**Decision: Postponed.**

**R4-2001930 On SCell activation delay in NR-U**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

On SCell activation delay in NR-U

**Discussion:**

**Decision: Noted.**

##### 8.1.4.5 PSCell addition/release (delay and interruption) [NR\_unlic-Core]

**R4-2000058 Discussion on PSCell addition delay in NR-U**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000716 On PSCell addition and release requirements in NR-U**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2000927 Discussion on PSCell addition for NR-U**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2001558 Discussion on PSCell addition and release in NR-U**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001842 Introduction of addition and release of NR PSCell operating with CCA in EN-DC**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6821 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

This CR introduces PSCell addition/release requirements for NR-U

**Discussion:**

**Decision: Postponed.**

**R4-2001932 On PSCell addition/release requirements in NR-U**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

On PSCell addition/release requirements in NR-U

**Discussion:**

**Decision: Noted.**

##### 8.1.4.6 Active TCI state switching [NR\_unlic-Core]

**R4-2000717 On active TCI switching requirements in NR-U**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2000928 Discussion on TCI switch requirement for NR-U**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001559 Discussion on Active TCI state switching in NR-U**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001931 On active TCI state switching requirements in NR-U**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

On active TCI state switching requirements in NR-U

**Discussion:**

**Decision: Noted.**

##### 8.1.4.7 Interruptions due to operation in non-NR-U serving cells [NR\_unlic-Core]

**R4-2001395 Updates to SA NR interruption requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0498 Cat: B (Rel-16)  
 Source: Ericsson*

**Abstract:**

CR to update SA interruption requirements

**Discussion:**

**Decision: Agreed.**

##### 8.1.4.8 Active BWP switching [NR\_unlic-Core]

**R4-2001560 Discussion on Active BWP switching in NR-U**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001848 Analysis of BWP switching requirement due to consistent UL failure**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper provides analysis of requirements for BWP switching in NR-U under consistent LBT failures

**Discussion:**

**Decision: Noted.**

**R4-2001849 BWP switching requirement due to consistent UL failure in 38.133**

*Type: draftCR For: Endorsement  
 38.133 v16.2.0  
 Source: Ericsson*

**Abstract:**

Draft CR on requirements for BWP switching in NR-U under consistent LBT failures

**Discussion:**

**Decision: Postponed.**

**R4-2001850 Interruption due to BWP switching at consistent UL failure in 36.133**

*Type: draftCR For: Endorsement  
 36.133 v16.4.0  
 Source: Ericsson*

**Abstract:**

Draft CR on interruption requirements for BWP switching in NR-U under consistent LBT failures

**Discussion:**

**Decision: Postponed.**

##### 8.1.4.9 RLM and link recovery procedures [NR\_unlic-Core]

**R4-2000050 Discussion on RLM in NR-U**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000929 Discussion on RLM requirement for NR-U**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2000987 On RLM requirement for NR-U**

*Type: other For: Approval  
 Source: OPPO*

**Discussion:**

**Decision: Noted.**

**R4-2001360 Beam management in NR-U**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the BFD and CBD requirements in NR-U.

**Discussion:**

**Decision: Noted.**

**R4-2001439 On RLM requirements in NR-U**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Remaining issues on RLM requirements in NR-U

**Discussion:**

**Decision: Noted.**

**R4-2001561 Discussion on RLM and link recovery in NR-U**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001933 On RLM in NR-U**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

On RLM in NR-U

**Discussion:**

**Decision: Noted.**

**R4-2001934 Introduction of RLM requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0566 Cat: B (Rel-16)  
 Source: Ericsson*

**Abstract:**

Introduction of RLM requirements for NR-U

**Discussion:**

**Decision: Postponed.**

**R4-2002130 RLM and Link Recovery Procedure in NR-U**

*Type: other For: (not specified)  
 Source: Qualcomm*

**Discussion:**

**Decision: Noted.**

##### 8.1.4.10 Measurement requirements [NR\_unlic-Core]

**R4-2000041 CR to address NR-U in EN-DC SFTD measurements in 36.133 v2**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6792 Cat: B (Rel-16)  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Postponed.**

**R4-2000042 Discussion on inter-RAT SFTD measurement towards NR-U**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Abstract:**

This paper discusses some pending issues in inter-RAT SFTD measurement in NR-U.

**Discussion:**

.

**Decision: Noted.**

**R4-2000043 CR to address NR-U in inter-RAT SFTD measurements in 36.133**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6793 Cat: B (Rel-16)  
 Source: ZTE Corporation*

**Abstract:**

This CR needs to be revised according to outcome of online discussion in Athens meeting.

**Discussion:**

**Decision: Postponed.**

**R4-2000044 [draft] LS on inter-RAT SFTD delay for NR-U**

*Type: LS out For: Approval  
 to RAN2  
 Source: ZTE Corporation*

**Abstract:**

This LS tends to inform RAN2 the potential issues on inter-RAT SFTD reporting delay requirement for NR-U.

**Discussion:**

.

**Decision:** The document was **withdrawn**.

**R4-2000718 Remaining issues on measurement requirements in NR-U**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

.

**Decision: Noted.**

**R4-2000719 Draft LS on RSSI measurements in NR-U**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

.

**Decision: Noted.**

**R4-2000720 On RSSI and CO measurements in NR-U**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

.

**Decision: Noted.**

**R4-2000780 Remaining issues on cell detection and serving cell measurement for NR-U**

*Type: other For: Discussion  
 38.133 v..  
 Source: Apple*

**Discussion:**

.

**Decision: Noted.**

**R4-2000930 Discussion on measurement on QCL-ed SSBs and measurement capability for NR-U**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2000931 Discussion on SFTD measurements towards NR-U with LBT**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2001361 L1-RSRP measurements in NR-U**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the L1-RSRP measurement requirements in NR-U.

**Discussion:**

.

**Decision: Noted.**

**R4-2001437 On SSB index identification time in NR-U**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this document, we discuss the SSB index identification time in NR-U.

**Discussion:**

.

**Decision: Noted.**

**R4-2001441 On The impact of UL LBT failure in measurement reporting in NR-U**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This document discusses the impact of UL LBT railures in measurement reporting

**Discussion:**

.

**Decision: Noted.**

**R4-2001443 On L1-RSRP measurement requirements in NR-U**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This document discusses remaining issues in L1-RSRP measurement requirements in NR-U.

**Discussion:**

.

**Decision: Noted.**

**R4-2001562 Discussion on measurement requirement in NR-U**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Noted.**

**R4-2001804 CR to 38.133 to address NR-U inter-RAT measurements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0558 Cat: B (Rel-16)  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This CR addresses the introduction of requirements for NR-U inter-RAT measurements in 38.133

**Discussion:**

**Decision: Revised to R4-2002285 (from R4-2001804).**

**R4-2002285 CR to 38.133 to address NR-U inter-RAT measurements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0558 Cat: B (Rel-16)  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This CR addresses the introduction of requirements for NR-U inter-RAT measurements in 38.133

**Discussion:**

**Decision: Agreed.**

**R4-2001929 On RSSI and channel occupancy measurement requirements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

On RSSI and channel occupancy measurement requirements

**Discussion:**

.

**Decision: Noted.**

**R4-2001935 On the impact of UL LBT failures on measurement reporting delay**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

On the impact of UL LBT failures on measurement reporting delay

**Discussion:**

.

**Decision: Noted.**

**R4-2001936 On intra-frequency measurements in NR-U**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

On intra-frequency measurements in NR-U

**Discussion:**

.

**Decision: Noted.**

**R4-2001937 On inter-frequency measurements in NR-U**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

On inter-frequency measurements in NR-U

**Discussion:**

.

**Decision: Noted.**

**R4-2002086 On inter-RAT SFTD under CCA**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Contribution addressing remaining issues for inter-RAT SFTD measurement under CCA.

**Discussion:**

.

**Decision: Noted.**

**R4-2002087 CR 36.133 (8.1.2.4) Inter-RAT SFTD under CCA**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6824 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Adding inter-RAT SFTD measurement requirements when CCA is used.

**Discussion:**

**Decision: Merged.**

##### 8.1.4.11 Measurement accuracy [NR\_unlic-Core]

**R4-2000721 On measurements accuracy requirements in NR-U**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

.

**Decision: Noted.**

##### 8.1.4.12 Measurement capability and reporting criteria [NR\_unlic-Core]

**R4-2000045 Discussion on RSSI and CO report mapping for NR-U v2**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Abstract:**

This paper discusses report mapping for RSSI and CO.

**Discussion:**

.

**Decision: Noted.**

**R4-2000722 On measurement capabilities and reporting criteria**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

.

**Decision: Noted.**

**R4-2000932 Discussion on measurement reporting criteria in NR-U**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2001563 Discussion on measurement capability in NR-U**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Noted.**

**R4-2001938 On measurement reporting criteria for NR-U**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

On measurement reporting criteria for NR-U

**Discussion:**

.

**Decision: Noted.**

##### 8.1.4.13 Timing [NR\_unlic-Core]

**R4-2000046 Discussion on timing reference cell adjustment for NR-U**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

.

**Decision: Noted.**

**R4-2000933 Discussion on synchronization assumption and SSB index detection in NR-U**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2000934 Discussion on timing requirements in NR-U**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2001710 Draft CR on UE transmit timing accuracy and timing reference cell under DL LBT failure**

*Type: draftCR For: Endorsement  
 38.133 v16.2.0  
 Source: Ericsson*

**Abstract:**

It has been agreed in RAN4#92bis that [R4-1912846], “UE behavior: The UE is allowed to transmit if the UE meets the existing (Rel-15) UL Tx timing requirements (even if no SSB is available during the last 160 ms), otherwise the UE shall not transmit”.

Thi

**Discussion:**

.

**Decision: Postponed.**

**R4-2001711 On the timing reference cell adaptation under DL LBT failure in reference cell**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In DL, the BS may experience CCA failure in a carrier and not able to transmit, thus the UE will not be able to see the carrier anymore. In case of PCell or PScell, since these cells are used as timing reference for UL transmissions, if these carriers are

**Discussion:**

.

**Decision: Noted.**

**R4-2002131 Discussion regarding NR-U UL timing**

*Type: other For: (not specified)  
 Source: Qualcomm*

**Discussion:**

.

**Decision: Noted.**

##### 8.1.4.14 Others [NR\_unlic-Core]

**R4-2001393 Updates to clause 1-3 (General) for NR-U in 36.133**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0497 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

CR for applicability and abberviations in NR-U for 38.133 according to work split

**Discussion:**

.

**Decision: Postponed.**

**R4-2001394 Updates to clause 1-3 (General) for NR-U in 38.133**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6800 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

CR for applicability and abberviations in NR-U for 36.133 according to work split

**Discussion:**

.

**Decision: Postponed.**

**R4-2001564 Discussion on SI reading in NR-U**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Noted.**

### 8.2 Cross Link Interference (CLI) handling and Remote Interference Management (RIM) for NR [NR\_CLI\_RIM]

================================================================================

***Email discussion summary***

**R4-2002172 Email discussion summary for RAN4#94e\_#49\_NR\_CLI\_RIM\_RRM**

*Type: discussion For: Information  
 Source: Moderator (LG Electronics)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002303 (from R4-2002172).**

**R4-2002303 Email discussion summary for RAN4#94e\_#49\_NR\_CLI\_RIM\_RRM**

*Type: discussion For: Information  
 Source: Moderator (LG Electronics)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**Topic #1: CLI core requirement maintenance**

Issue 1-1-1: Conflicting UE behaviour between RAN2 and RAN4

Agreement: *Option 2 (keep RAN4 agreements and send LS to RAN2)*

2nd round: Discuss the LS reply to RAN2 based on R4-2001622 (Huawei)

|  |  |
| --- | --- |
| **Tdoc number** | **Decision** |
| R4-2001622 (Huawei) | Revised. Capture agreements on issue 1-1-1 |

Issue 1-1-2: Scheduling restriction based on UE capabilities

2nd round: Further confirm tentative agreement. Capture the contents of R4-2000960 to Huawei CR (R4-2001623)

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2001623 | Revised |

**Topic #2: CLI performance requirements**

Continue discussion in the 2nd round. Capture agreements in WF R4-2002222 (LGE)

|  |  |  |
| --- | --- | --- |
| R4-2002222 | WF on CLI RRM Performance Requirements | LGE |

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2001624 | Revised |
| R4-2002255 | New CR allocated  Title : CR for conditions for cross link interference measurements (section B)  Source to WG: LG Electronics  Work item code: NR\_CLI\_RIM-Perf  Category: B  Release: Rel-16 |

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002221 | Approved |
| R4-2002220 | Agreed |
| R4-2002254 | Agreed |
| R4-2002255 | Agreed |
| R4-2002222 | Approved |

================================================================================

#### 8.2.1 General [NR\_CLI\_RIM-Core]

#### 8.2.2 RRM core requirements maintenance (38.133) [NR\_CLI\_RIM-Core]

**R4-2000653 Discussion on scheduling restriction for CLI measurements**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

.

**Decision: Noted.**

**R4-2000960 Discussion on scheduling restriction update**

*Type: other For: Discussion  
 Source: LG Electronics Inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2001621 Discussion on accuracy requirements for CLI measurements**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Noted.**

**R4-2001622 [draft] reply LS on CLI measurement capability**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Revised to R4-2002221 (from R4-2001622).**

**R4-2002221 Reply LS on CLI measurement capability**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Approved.**

**R4-2001623 CR on CLI measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0545 Cat: F (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Revised to R4-2002220 (from R4-2001623).**

**R4-2002220 CR on CLI measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0545 Cat: F (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

#### 8.2.3 RRM perf. requirements (38.133) [NR\_CLI\_RIM-Perf]

**R4-2002222 WF on CLI RRM Performance Requirements**

*Type: other For: Approval  
 Source: LGE*

**Abstract:**

**Discussion:**

**Decision: Approved.**

##### 8.2.3.1 CLI measurement accuracy [NR\_CLI\_RIM-Perf]

**R4-2000654 Measurement accuracy for CLI SRS-RSRP measurement**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

.

**Decision: Noted.**

**R4-2000962 SRS-RSRP measurement accuracy**

*Type: other For: Discussion  
 Source: LG Electronics Inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2001624 CR on CLI measurement accuracy requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0546 Cat: F (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Revised to R4-2002254 (from R4-2001624).**

**R4-2002254 CR on CLI measurement accuracy requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0546 Cat: F (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2002343 CR on CLI measurement accuracy requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0546 Cat: F (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Withdrawn.**

**R4-2002255 CR for conditions for cross link interference measurements (section B)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-TBA Cat: B (Rel-16)  
 Source: LGE*

**Abstract:**

**Discussion:**

Session chair: new CR allocated. Request CR # from MCC

**Decision: Agreed.**

##### 8.2.3.2 Test cases [NR\_CLI\_RIM-Perf]

**R4-2000961 Discussion on CLI performance test**

*Type: other For: Discussion  
 Source: LG Electronics Inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001625 Discussion on RRM test cases for CLI**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Noted.**

##### 8.2.3.3 Others [NR\_CLI\_RIM-Perf]

**R4-2000958 Discussion on minimum SRS RP level**

*Type: other For: Discussion  
 Source: LG Electronics Inc.*

**Discussion:**

.

**Decision: Noted.**

### 8.3 NR mobility enhancement [NR\_Mob\_enh]

================================================================================

***Email discussion summary***

**R4-2002173 Email discussion summary for RAN4#94e\_#50\_NR\_Mob\_enh\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Intel Corporation)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002304 (from R4-2002173).**

**R4-2002304 Email discussion summary for RAN4#94e\_#50\_NR\_Mob\_enh\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Intel Corporation)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**General**

Continue discussion in the 2nd round on the remaining open issues for the identified topics. Capture agreements in WF R4-2002224 (Intel)

|  |  |  |
| --- | --- | --- |
| R4-2002224 | WF on NR Mobility Enhancements RRM requirement | Intel |

**Topic #1: DAPS handover**

Issue 1-3: When CBW relationship is different from that of BWP

Agreement: no requirements for CBW relationship is different from that of BWP

Issue 1-4: Restriction on BWP for inter-frequency DAPS HO:

Agreement: For inter-frequency DAPS HO, the BWP of target cell is non-overlapped with the BWP of source cell in frequency domain.

Continue discussion in the 2nd round to clarify the definitions of intra-freq. DAPS handover

Issue 1-5: Requirement for inter-FR DAPS HO:

Agreement: Both FR1-FR2 and FR2-FR1 DAPS handover requirements need to be standardized..

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2001572 | Revised |

**Topic #2: Conditional handover**

Issue 2-1: TRRC\_2/TCHO\_execution

Agreement

* Option 1: [10] ms
* Option 2: [5] ms

Continue discussion in the 2nd round to down select one option

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2001338 | Revised |

**Topic #3: Conditional PSCell addition/change**

Issue 3-1: Conditional PSCell addition/release:

Agreement: Do not define requirements for conditional PSCell addition/release in the scope of WI

Issue 3-2: Where to capture conditional PSCell change

Agreement: Define NR PSCell change requirement in TS38.133 only

Issue 3-3: Conditional PSCell change delay:

Agreement

*Tconfig\_PSCell\_Conditional = TRRC\_processing + Tmeasure + TUE\_preparation + Tprocessing + T∆ + TPSCell\_ DU + 2 ms*

*Where*

***TRRC\_processing****: is the RRC processing to process the conditional PSCell addition command which is not larger than currently defined TRRC\_processing in TS 36.133 and TS 38.133 and begins when UE receives the RRC command for conditional PSCell change.*

***Tmeasure****: [is the from the end of RRC processing time to when until UE realizes the condition(s) for at least one of the PSCell candidates is/are met. For intra-frequency PSCell change, the measurement period is bounded by Tidentify\_intra\_with\_index as defined in clause 9.2.4 of TS 38.133. For inter-frequency PSCell change, the measurement period is bounded by Tidentify\_inter\_with\_index as defined in clause 9.3.4 of TS 38.133.]*

***TUE\_preparation****: is the UE preparation time for conditional PSCell change and starts after UE realizes the condition is met and identity of new PSCell is determined. Its value is FFS and it may include some RRC processing related to release of the existing PSCell.*

***T∆:*** *is the time for fine time tracking and acquiring full timing information of the target PSCell as in existing requirements.*

***Tprocessing:*** *is the SW processing time needed by UE as in existing requirements*

***TPSCell\_ DU:*** *is the delay uncertainty in acquiring first available PRACH occasion in the NR PSCell as in existing requirements.*

Continue discussion in the 2nd round on Tmeasure definition

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000380 | Revised |

**Topic #4: performance part**

Defer discussion to RAN4 #94bis

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002223 | Agreed |
| R4-2002224 | Approved |
| R4-2002226 | Agreed |
| R4-2001338 | postponed |
| R4-2002225 | withdrawn |

================================================================================

#### 8.3.1 General [NR\_Mob\_enh-Core]

#### 8.3.2 RRM core requirements (38.133) [NR\_Mob\_enh-Core]

**R4-2002224 WF on NR Mobility Enhancements RRM requirements**

*Type: other For: Approval  
 Source: Intel*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2001417 Testcases for LTE and NR mobility enhancements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Test cases for mobility enhancement

**Discussion:**

.

**Decision: Noted.**

##### 8.3.2.1 Handover with simultaneous Rx/Tx with source and target cells [NR\_Mob\_enh-Core]

**R4-2000375 Discussion on remaining issues on DAPS handover**

*Type: other For: Discussion  
 Source: Intel Corporation*

**Discussion:**

.

**Decision: Noted.**

**R4-2000376 CR for DAPS handover RRM requirement**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0435 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Discussion:**

**Decision: Postponed.**

**R4-2000723 Remaining issues on DAPS HO**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

.

**Decision: Noted.**

**R4-2001413 Remaining open issues on DAPS handover for NR**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Discuss remaining open issues for DAPS

**Discussion:**

**Decision: Noted.**

**R4-2001414 TP: Updates to DAPS handover requirements for NR**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

TP on changes to conclude remaining open issues

**Discussion:**

**Decision: Postponed.**

**R4-2001571 Further discussion on remaining issues on DAPS handover**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001572 CR on DAPS handover requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0511 Cat: B (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Revised to R4-2002223 (from R4-2001572).**

**R4-2002223 CR on DAPS handover requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0511 Cat: B (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2001797 Discussion on dual active protocol stack handover**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

##### 8.3.2.2 Conditional handover [NR\_Mob\_enh-Core]

**R4-2000377 Discussion on remaining issues on CHO**

*Type: other For: Discussion  
 Source: Intel Corporation*

**Discussion:**

.

**Decision: Noted.**

**R4-2000378 CR for CHO RRM requirement**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0436 Cat: B (Rel-16)  
 Source: Intel Corporation*

**Discussion:**

**Decision: Postponed.**

**R4-2000724 Remaining issues on conditional HO**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2001337 Conditional handover for NR**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

**Decision: Noted.**

**R4-2001338 CR Introduction of handover delay requirements for conditional handover (section 6.1)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0485 Cat: B (Rel-16)  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

**Decision: Postponed.**

**R4-2002225 CR Introduction of handover delay requirements for conditional handover (section 6.1)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0485 Cat: B (Rel-16)  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

**Decision: Withdrawn.**

**R4-2001415 Open issues for NR conditional handover**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

CR to conclude remaining open issues

**Discussion:**

**Decision: Noted.**

**R4-2001416 TP:Update to conditional handover requirements for NR**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

TP on changes to conclude remaining open issues

**Discussion:**

**Decision: Postponed.**

**R4-2001573 Further discussion on remaining issues on conditional handover**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001798 Discussion on requirement of conditional handover**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

##### 8.3.2.3 Conditional PSCell addition/change [NR\_Mob\_enh-Core]

**R4-2000379 Discussion on conditional PSCell addition/change**

*Type: other For: Discussion  
 Source: Intel Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000380 CR for Conditional PSCell addition/change RRM requirement**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0437 Cat: B (Rel-16)  
 Source: Intel Corporation*

**Discussion:**

**Decision: Revised to R4-2002226 (from R4-2000380).**

**R4-2002226 CR for Conditional PSCell addition/change RRM requirement**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0437 Cat: B (Rel-16)  
 Source: Intel Corporation*

**Discussion:**

**Decision: Agreed.**

**R4-2000725 On conditional PSCell addition and change**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2001574 Discussion on conditional PSCell addition/change requirements**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

##### 8.3.2.4 Others [NR\_Mob\_enh-Core]

### 8.4 5G V2X with NR sidelink [5G\_V2X\_NRSL]

#### 8.4.1 General [5G\_V2X\_NRSL]

#### 8.4.2 Co-existence Study [5G\_V2X\_NRSL-Core]

##### 8.4.2.1 Simulation Results [5G\_V2X\_NRSL-Core]

##### 8.4.2.2 In-device coexistence [5G\_V2X\_NRSL-Core]

##### 8.4.2.3 UE-to-UE coexistence [5G\_V2X\_NRSL-Core]

#### 8.4.3 System parameters [5G\_V2X\_NRSL-Core]

##### 8.4.3.1 Bands and bandwidth [5G\_V2X\_NRSL-Core]

##### 8.4.3.2 Others [5G\_V2X\_NRSL-Core]

#### 8.4.4 UE RF requirements [5G\_V2X\_NRSL-Core]

##### 8.4.4.1 Transmitter characteristics [5G\_V2X\_NRSL-Core ]

##### 8.4.4.2 Receiver characteristics [5G\_V2X\_NRSL-Core ]

#### 8.4.5 RRM core requirements (38.133) [5G\_V2X\_NRSL-Core]

================================================================================

***Email discussion summary***

**R4-2002174 Email discussion summary for RAN4#94e\_#51\_5G\_V2X\_NRSL\_RRM\_Part\_1**

*Type: discussion For: Information  
 Source: Moderator (LG Electronics)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002305 (from R4-2002174).**

**R4-2002305 Email discussion summary for RAN4#94e\_#51\_5G\_V2X\_NRSL\_RRM\_Part\_1**

*Type: discussion For: Information  
 Source: Moderator (LG Electronics)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**General**

Continue discussion in the 2nd round on the remaining open issues for the identified topics. Capture all agreements in WF R4-2002230 (LGE, MediaTek).

Based on moderator suggestion the agreements from both email threads can be merged into R4-2002230. Please use separate threads to discuss the contents for Part 1 and Part 2 and merge the documents once they are stable.

|  |  |  |
| --- | --- | --- |
| R4-2002230 | WF on NR V2X RRM requirements | LGE, MediaTek |

**Topic #1: Transmit timing requirements**

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2001575 | Agreed |
| R4-2000943 | Revised |

**Topic #2: Synchronization requirements**

**Issue 2-1: Rx drop rate for selection/reselection of NR V2X synchronization reference source**

Agreement

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | X (slots) | Y(%) | SCS(kHz) | Tdetect,SyncRef UE\_V2X(sec) |
| Option 1 | 2 | 0.3 | 15/30/60 | 8/8/8 |
| Option 2 | 2 | 0.3 | 15/30/60 | 8/4/2 |

Continue discussion in the 2nd round. Downselect between option 1 and 2

Issue 2-3-1: Side condition of S-RSRP measurement for initiation/cease SLSS transmissions

Agreement: -6dB

Issue 2-3-2: Terminology ‘S-RSRP’ vs ‘PSBCH-RSRP’

Postpone discussion till RAN4 #94bis

Issue 2-4: Terminology ‘V2X’ vs ‘SideLink’ in Rel-16 RAN4’s all requirements

Postpone discussion till RAN4 #94bis

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2001032 | Revised |

**Topic #3: Unicast, groupcast related**

Issue 3-1: Distance-based HARQ feedback option 1

Postpone discussion to the WI Performance part

Issue 3-2: Sidelink RLM requirement

Postpone discussion till RAN4 94bis

Conclusion: Do not to define sidelink RLM requirement in R16 if sidelink RLM procedure is not finalized before RAN4 94bis

**Topic #4: Others**

Issue 4-1: Annex.B.4 for NR V2X RRM side conditions

Agreement: Specify Annex B.4 for NR V2X RRM side conditions. Exact values are FFS and further discuss after RF REFSENS is decided.

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002342 | Agreed |
| R4-2002228 | Agreed |
| R4-2002230 | Approved |

================================================================================

**R4-2002175 Email discussion summary for RAN4#94e\_#52\_5G\_V2X\_NRSL\_RRM\_Part\_2**

*Type: discussion For: Information  
 Source: Moderator (MediaTek)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002306 (from R4-2002175).**

**R4-2002306 Email discussion summary for RAN4#94e\_#52\_5G\_V2X\_NRSL\_RRM\_Part\_2**

*Type: discussion For: Information  
 Source: Moderator (MediaTek)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**General**

Continue discussion in the 2nd round on the remaining open issues for the identified topics. Based on moderator suggestion the agreements can be merged into R4-2002230. Please use separate threads to discuss the contents and merge the documents once they are stable.

**Topic #1: Measurement**

Issue 1-1-1: Whether to define dedicated requirement for pre-emption behavior

Continue discussion in the 2nd round based on tentative agreement proposal. Discuss how to capture pre-emption behaviour “together with other procedure in autonomous resource reselection.”

Issue 1-1-2: Whether to define dedicated requirement for re-evaluation behaviour

Agreement: Do not define dedicated requirement for re-evaluation behavior

Issue 1-2-1: Scope of L1 SL-RSRP measurement requirement

Agreement: RAN4 to evaluate both of PSSCH DMRS and PSCCH DMRS measurement accuracy based on the simulation. Whether to define both of them or only the worst case can be decided after the evaluation.

Issue 1-2-2: Number of slots for L1 SL-RSRP measurement requirement

Agreement: Consider only 1 shot when defining the accuracy requirement for L1 SL-RSRP

Issue 1-2-4: PSCCH-DMRS measurement accuracy

Agreement: Define PSCCH measurement requirement based on 10 PRBs and 2 symbols

Issue 1-2-7: PSSCH-DMRS multiple antennas configuration

Continue discussion in the 2nd round on the possible LS to RAN1 to ask further clarification on the definition on PSSCH RSRP

Note: New tdoc R4-2002231 allocated and can be withdrawn in case of no consensus.

Issue 1-4-1: S-RSSI in autonomous resource reselection

Agreement: Do not define S-RSSI in autonomous resource reselection.

New tdocs

|  |  |  |
| --- | --- | --- |
| R4-2002231 | LS to RAN1 on PSSCH RSRP definition | MediaTek |
| R4-2002232 | Simulation assumption of PSSCH-RSRP and PSCCH-RSRP measurement | LGE |

**Topic #2: Interruption**

Issue 2-1-2: LTE/NR switch interruption

Conclusion: Defer discussion on LTE/NR switch interruption till RAN4 RF session concludes on switching between LTE SL and NR SL.

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000579 | Revised |

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002231 | Withdrawn |
| R4-2002232 | Approved |
| R4-2002256 | Agreed |

================================================================================

**R4-2002230 WF on NR V2X RRM requirements**

*Type: other For: Approval  
 Source: LGE, MediaTek*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002231 LS to RAN1 on PSSCH RSRP definition**

*Type: LS out For: Approval  
 Source: MediaTek*

**Abstract:**

**Discussion:**

**Decision: Withdrawn.**

**R4-2002232 Simulation assumption of PSSCH-RSRP and PSCCH-RSRP measurement**

*Type: other For: Approval  
 Source: LGE*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2000939 Discussion of remaining issues for NR V2X**

*Type: other For: Discussion  
 Source: LG Electronics Inc.*

**Abstract:**

It discusses remaining issues for NR V2X RRM requirements based on the agreed WF in last meeting.

**Discussion:**

**Decision: Noted.**

**R4-2000943 CR of NR V2X RRM(introduction & reliability of GNSS signal)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0473 Cat: B (Rel-16)  
 Source: LG Electronics Inc.*

**Abstract:**

It is CR on introduction and reliability of GNSS signal for NR V2X RRM requirements.

**Discussion:**

**Decision: Revised to R4-2002228 (from R4-2000943).**

**R4-2002228 CR of NR V2X RRM(introduction & reliability of GNSS signal)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0473 Cat: B (Rel-16)  
 Source: LG Electronics Inc.*

**Abstract:**

It is CR on introduction and reliability of GNSS signal for NR V2X RRM requirements.

**Discussion:**

**Decision: Agreed.**

##### 8.4.5.1 Transmit timing requirements [5G\_V2X\_NRSL-Core]

**R4-2001575 CR on introducing UE sidelink timing requirements for NR V2X**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0512 Cat: B (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

##### 8.4.5.2 Synchronization requirements [5G\_V2X\_NRSL-Core]

**R4-2000768 On NR V2X Synchronization Source Selection Requirement**

*Type: other For: Discussion  
 Source: Qualcomm, Inc.*

**Abstract:**

Rx dropping rate requirement proposal

**Discussion:**

**Decision: Noted.**

**R4-2000770 On NR V2X Initiation/cease SLSS Tx with gNB/eNB as synchronization source Requirement**

*Type: other For: Discussion  
 Source: Qualcomm, Inc.*

**Abstract:**

NR V2X Initiation/cease SLSS Tx with gNB/eNB as synchronization source Requirement

**Discussion:**

**Decision: Noted.**

**R4-2001027 Discussion on NR V2X synchronization requirement**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001032 CR on NR V2X initiation SLSS 38.133 -R16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0476 Cat: B (Rel-16)  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Revised to R4-2002229 (from R4-2001032).**

**R4-2002229 CR on NR V2X initiation SLSS 38.133 -R16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0476 Cat: B (Rel-16)  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Revised to R4-2002342 (from R4-2002229).**

**R4-2002342 CR on NR V2X initiation SLSS 38.133 -R16**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0476 Cat: B (Rel-16)  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Agreed.**

**R4-2001576 Discussion on synchronization remaining issues for NR V2X**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

##### 8.4.5.3 Measurement requirements [5G\_V2X\_NRSL-Core]

**R4-2000771 On NR V2X Resource Selection requirement**

*Type: other For: Discussion  
 Source: Qualcomm, Inc.*

**Abstract:**

Resource pre-emption and SL-RSRP measurement requirement

**Discussion:**

**Decision: Noted.**

**R4-2000940 Discussion of measurement accuracy for NR V2X**

*Type: other For: Discussion  
 Source: LG Electronics Inc.*

**Abstract:**

It discusses NR V2X measurement accuracy for PSBCH-RSRP, PSSCH-RSRP, PSCCH-RSRP and SL RSSI.

**Discussion:**

**Decision: Noted.**

**R4-2000941 Simulation assumption of PSSCH-RSRP and PSCCH-RSRP measurement**

*Type: other For: Approval  
 Source: LG Electronics Inc.*

**Abstract:**

It provides simulation assumption for PSSCH-RSRP and PSCCH-RSRP measurements.

**Discussion:**

**Decision: Noted.**

**R4-2001028 Discussion on NR V2X measurement requirement**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001031 Link-level simulation assumptions for NR SL L1-RSRP measurement**

*Type: other For: Approval  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001577 Discussion on measurement remaining issues for NR V2X**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

##### 8.4.5.4 Interruption requirements [5G\_V2X\_NRSL-Core]

**R4-2000579 CR on interruption requirements for NR V2X**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0452 Cat: B (Rel-16)  
  
 Source: CATT*

**Discussion:**

**Decision: Revised to R4-2002256 (from R4-2000579).**

**R4-2002256 CR on interruption requirements for NR V2X**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0452 Cat: B (Rel-16)  
 Source: CATT*

**Discussion:**

**Decision: Agreed.**

**R4-2001029 Discussion on NR V2X interruption requirement**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

##### 8.4.5.5 Unicast, groupcast related [5G\_V2X\_NRSL-Core]

**R4-2000769 On NR V2X Distance-Based HARQ For Groupcast**

*Type: other For: Discussion  
 Source: Qualcomm, Inc.*

**Abstract:**

NR V2X Distance-Based HARQ For Groupcast requirement and test proposal

**Discussion:**

**Decision: Noted.**

**R4-2001030 Discussion on NR V2X unicast-groupcast related requirement**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

##### 8.4.5.6 Others [5G\_V2X\_NRSL-Core]

**R4-2000942 Discussion of Annex.B for NR V2X side conditions**

*Type: other For: Discussion  
 Source: LG Electronics Inc.*

**Abstract:**

It discusses to introduce Annex.B for NR V2X RRM side condition.

**Discussion:**

**Decision: Noted.**

### 8.5 Integrated Access and Backhaul for NR [NR\_IAB]

#### 8.5.1 General [NR\_IAB-Core/Perf]

#### 8.5.2 Co-existence study [NR\_IAB-Core]

#### 8.5.3 System parameters [NR\_IAB-Core]

#### 8.5.4 RF requirements [NR\_IAB-Core]

##### 8.5.4.1 Conductive RF core requirements [NR\_IAB-Core]

###### 8.5.4.1.1 Transmitter characteristics [NR\_IAB-Core]

###### 8.5.4.1.2 Receiver characteristics [NR\_IAB-Core]

##### 8.5.4.2 Radiated RF core requirements [NR\_IAB-Core]

###### 8.5.4.2.1 Transmitter characteristics [NR\_IAB-Core]

###### 8.5.4.2.2 Receiver characteristics [NR\_IAB-Core]

#### 8.5.5 RRM core requirements (38.133) [NR\_IAB-Core]

================================================================================

***Email discussion summary***

**R4-2002176 Email discussion summary for RAN4#94e\_#53\_NR\_IAB\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Qualcomm)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002307 (from R4-2002176).**

**R4-2002307 Email discussion summary for RAN4#94e\_#53\_NR\_IAB\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Qualcomm)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**General**

Continue discussion in the 2nd round on the remaining open issues. Capture agreements in WF R4-2002233 (QC).

|  |  |  |
| --- | --- | --- |
| R4-2002233 | WF on NR IAB RRM requirements | Qualcomm |

**Topic #1: Introduction of Additional RRM Requirements**

Issue 1-1: Introduction of HO related core requirements for IAB-MTs

Agreement: Do not introduce HO related requirements for IAB-MTs in Rel-16

Issue 1-2: Introduction of MT timer related core requirements for IAB-MTs

Conclusion: No consensus during this meeting to define timer accuracy requirements for IAB-MTs

**Topic #2: Definition of macro and micro IAB nodes**

Issue 2-1: Definition of macro and micro IAB nodes, as mentioned in R4-2000051

Conclusion: IAB-MTs classes shall be in the scope of RF session discussion.

**Topic #3: Details of RRC mobility control requirements**

Issue 3-2: Necessity of defining RRC re-establishment requirement when the SSB transmission periodicity is larger than 160 ms.

Agreement: There is no requirement for RRC re-establishment for IAB-MTs if the SSB transmission periodicity is larger than 160 ms.

Issue 3-3: Necessity of defining RRC release with re-direction requirement when the periodicity of SSB is greater than 160 ms

Agreement: There is no requirement for RRC release with re-direction when the periodicity of SSB is greater than 160 ms.

**Topic #4: Details of MT Timing Related Requirements**

Issue 4-1: TA adjustment accuracy requirement

Agreement: The MT timing related requirements in terms of TA adjustment accuracy (Te) reuse the current requirements defined in TS 38.133.

Issue 4-2: Transmit timing requirement

Agreement: The MT timing related requirements in terms of transmit timing (Tp and Tq) reuse the current requirements defined in TS 38.133.

Issue 4-3: Applicability of UL transmission in the presence of SSB

Agreement: IAB MT shall only transmit in uplink if it can meet Te requirement.

**Topic #6: RLM requirements**

Agreement: RLM requirements for IAB-MTs are defined for no-DRX mode only.

**Topic #7: Link recovery requirements**

Agreement: BFD/CBD requirements for IAB-MTs are defined for no-DRX mode only.

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002128 | Postponed |
| R4-2001853 | Postponed |
| R4-2001854 | Postponed |
| R4-2001855 | Postponed |
| R4-2001856 | Postponed |
| R4-2001857 | Postponed |
| R4-2001955 | Postponed |
| R4-2001858 | Approved |
| R4-2002125 | Postponed |
| R4-2001852 | Approved |
| R4-2002233 | Noted. Session chair: WF noted since tdoc is for information and distributed late. |

Agreement: Rel-15 RLM OOS and IS BLER levels are reused for IAB-MTs. Rel-15 BFD OOS and IS BLER levels are reused for IAB-MTs.

================================================================================

**R4-2002233 WF on NR IAB RRM requirements**

*Type: other For: Information  
 Source: Qualcomm*

**Abstract:**

**Discussion:**

**Decision: Noted.**

**R4-2001852 TP to TS 38.174 v0.0.1: Applicability of RRM requirements for different IAB classes**

*Type: pCR For: Approval  
 38.174 v0.0.1  
 Source: Ericsson*

**Abstract:**

This TP provides rules for RRM requirements applicability for different IAB classes. It is based on agreement in RP-193199

**Session Chair: Moved from AI 8.5.1**

**Discussion:**

**Decision: Approved.**

**R4-2000051 Definition of macro and micro IAB nodes from RRM perspective**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2001339 RRM requirements for IAB**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

**Decision: Noted.**

##### 8.5.5.1 RRC connection mobility control [NR\_IAB-Core]

**R4-2001549 Discussion on RRC connection mobility control for IAB**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001853 TP to TS 38.174 v0.0.1: RRC re-establishment requirements for IAB MT**

*Type: pCR For: Approval  
 38.174 v0.0.1  
 Source: Ericsson*

**Abstract:**

This TP defines RRC re-establishment requirements for IAB MT

**Discussion:**

**Decision: Postponed.**

**R4-2001854 TP to TS 38.174 v0.0.1: RRC re-direction requirements for IAB MT**

*Type: pCR For: Approval  
 38.174 v0.0.1  
 Source: Ericsson*

**Abstract:**

This TP defines RRC re-direction requirements for IAB MT

**Discussion:**

**Decision: Postponed.**

**R4-2001855 TP to TS 38.174 v0.0.1: PRACH requirements for IAB MT**

*Type: pCR For: Approval  
 38.174 v0.0.1  
 Source: Ericsson*

**Abstract:**

This TP defines PRACH requirements for IAB MT

**Discussion:**

**Decision: Postponed.**

**R4-2002128 RRC Connection Mobility Control in IAB Networks**

*Type: other For: (not specified)  
 Source: Qualcomm*

**Discussion:**

**Decision: Noted.**

##### 8.5.5.2 MT timing related requirements [NR\_IAB-Core]

**R4-2000052 MT timing requirements for IAB**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2001856 TP to TS 38.174 v0.0.1: IAB MT transmit timing requirements**

*Type: pCR For: Approval  
 38.174 v0.0.1  
 Source: Ericsson*

**Abstract:**

This TP defines transmit transmit timing requirements for IAB MT including initial transmit timing accuracy

**Discussion:**

**Decision: Postponed.**

**R4-2001857 TP to TS 38.174 v0.0.1: IAB MT TA accuracy requirements**

*Type: pCR For: Approval  
 38.174 v0.0.1  
 Source: Ericsson*

**Abstract:**

This TP defines timing advance requirements for IAB MT including TA adjustment accuracy

**Discussion:**

**Decision: Postponed.**

**R4-2001954 Discussion on MT timing for IAB**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Noted.**

**R4-2001955 TP to TS 38.174 MT Timing**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Postponed.**

**R4-2002126 IAB-MT timing related requirements**

*Type: other For: (not specified)  
 Source: Qualcomm*

**Discussion:**

**Decision: Noted.**

##### 8.5.5.3 DU timing related requirements [NR\_IAB-Core]

**R4-2001858 TP to TS 38.174 v0.0.1: Cell phase sync requirements for IAB DU**

*Type: pCR For: Approval  
 38.174 v0.0.1  
 Source: Ericsson*

**Abstract:**

This TP defines cell phase sync requirements for IAB DU

**Discussion:**

**Decision: Approved.**

**R4-2002125 IAB-DU timing related requirements**

*Type: other For: (not specified)  
 Source: Qualcomm*

**Discussion:**

**Decision: Noted.**

##### 8.5.5.4 RLM requirements [NR\_IAB-Core]

**R4-2000053 RLM requirements for IAB MT**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000652 Discussion on RLM requirement for IAB-MT**

*Type: other For: Discussion  
 Source: Samsung Electronics Co., Ltd*

**Discussion:**

**Decision: Noted.**

**R4-2000889 Discussion on RLM requirement for IAB-MT**

*Type: other For: Discussion  
 Source: Samsung*

**Discussion:**

**Decision: Noted.**

**R4-2002127 IAB-MT RLM requirements**

*Type: other For: (not specified)  
 Source: Qualcomm*

**Discussion:**

**Decision: Noted.**

##### 8.5.5.5 BFD/BFR requirements [NR\_IAB-Core]

**R4-2000890 Discussion on BFD and CBD requirement for IAB-MT**

*Type: other For: Discussion  
 Source: Samsung*

**Discussion:**

**Decision: Noted.**

**R4-2002124 IAB-MT BFD/BFR requirements**

*Type: other For: (not specified)  
 Source: Qualcomm*

**Discussion:**

**Decision: Noted.**

##### 8.5.5.6 Other requirements [NR\_IAB-Core]

#### 8.5.6 EMC core requirements [NR\_IAB-Core]

#### 8.5.7 Others [NR\_IAB-Core]

### 8.6 Multi-RAT Dual-Connectivity and Carrier Aggregation enhancements [LTE\_NR\_DC\_CA\_enh]

#### 8.6.1 General [LTE\_NR\_DC\_CA\_enh-Core]

#### 8.6.2 RF requirements [LTE\_NR\_DC\_CA\_enh-Core]

##### 8.6.2.1 RF requirements for EN-DC [LTE\_NR\_DC\_CA\_enh-Core]

##### 8.6.2.2 RF requirements for CA [LTE\_NR\_DC\_CA\_enh-Core]

##### 8.6.2.3 RF requirements for NR-DC [LTE\_NR\_DC\_CA\_enh-Core]

#### 8.6.3 RRM core requirements (38.133) [LTE\_NR\_DC\_CA\_enh-Core]

================================================================================

***Email discussion summary***

**R4-2002177 Email discussion summary for RAN4#94e\_#54\_LTE\_NR\_DC\_CA\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Nokia)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002308 (from R4-2002177).**

**R4-2002308 Email discussion summary for RAN4#94e\_#54\_LTE\_NR\_DC\_CA\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Nokia)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**Topic #2: Early Measurement reporting**

Continue discussion in the 2nd round on all issues (follow moderator recommendation for topics).

* Issues 2-1 to 2-11: Capture all agreements in WF R4-2002234 (Nokia).
* Issues 2-50 to 2-54: Capture all agreements in WF R4-2002235 (TBA).

New tdocs

|  |  |  |
| --- | --- | --- |
| R4-2002234 | WF on MR-DC RRM requirements | Nokia, Nokia Shanghai Bell |
| R4-2002235 | WF on NR Inter-RAT EMR requirements | TBA |
| R4-2002264 | Running CR to 36.133 for Multi-RAT Dual-Connectivity and Carrier Aggregation enhancements | Nokia, Nokia Shanghai Bell |
| R4-2002265 | Running CR to 38.133 for Multi-RAT Dual-Connectivity and Carrier Aggregation enhancements | TBA |

Note: moderator to provide list of companies to lead unassigned WF/Draft CRs

**Topic #3: Efficient and low latency serving cell configuration, activation and setup**

Continue discussion in the 2nd round on all issues

* Issues 3-1 to 3-3: Capture agreements in revised CRs
* Issues 3-10 to 3-11: Capture all agreements in WF R4-2002238

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2002085 | Revised |
| R4-2001630 | Revised |

New tdocs

|  |  |  |
| --- | --- | --- |
| R4-2002238 | WF on UE RRM requirements for dormancy SCell | Nokia, Nokia Shanghai Bell |

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002265 | Withdrawn (tdocs not available) |
| R4-2002234 | Approved |
| R4-2002264 | Withdrawn (tdocs not available) |
| R4-2002235 | Approved |
| R4-2002238 | Approved |
| R4-2002236 | Withdrawn |
| R4-2002085 | Postponed |
| R4-2002237 | Agreed |

================================================================================

**R4-2002234 WF on RRM Requirements for MR-DC**

*Type: other For: Approval  
 Source:* Nokia, Nokia Shanghai Bell

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002235 WF on NR Inter-RAT EMR requirements**

*Type: other For: Approval  
 Source: TBA*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002238 WF on UE RRM requirements for dormancy SCell**

*Type: other For: Approval  
 Source:* Nokia, Nokia Shanghai Bell

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002264 Running CR to 36.133 for Multi-RAT Dual-Connectivity and Carrier Aggregation enhancements**

*Type: draftCR For: Endorsement  
 36.133 v16.4.0  
 Source: TBA*

**Abstract:**

**Discussion:**

**Decision: Withdrawn.**

**R4-2002265 Running CR to 38.133 for Multi-RAT Dual-Connectivity and Carrier Aggregation enhancements**

*Type: draftCR For: Endorsement  
 38.133 v16.2.0  
 Source: TBA*

**Abstract:**

**Discussion:**

**Decision: Withdrawn.**

##### 8.6.3.1 Asynchronous and synchronous NR-NR Dual Connectivity [LTE\_NR\_DC\_CA\_enh-Core]

**R4-2001626 CR on Interruptions at SCell activation/deactivation in async NR-DC**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0547 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Postponed.**

##### 8.6.3.2 Early Measurement reporting [LTE\_NR\_DC\_CA\_enh-Core]

**R4-2000988 On MR-DC Early Measurement reporting**

*Type: other For: Approval  
 Source: OPPO*

**Discussion:**

**Decision: Noted.**

**R4-2002056 Further discussion on early measurement reporting in MR-DC**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

###### 8.6.3.2.1 NR measurements for EMR [LTE\_NR\_DC\_CA\_enh-Core]

**R4-2001340 Early measurements and reporting in NR**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this paper we discuss NR measurements for EMR while serving cell is in NR

**Discussion:**

**Decision: Noted.**

**R4-2001627 Discussion on early measurement in NR**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001795 Discussion on LTE CRS based and NR SSB based measurement in NR IDLE/INACTIVE mode**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001927 Further details on early measurement reporting requirements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Further details on early measurement reporting requirements

**Discussion:**

**Decision: Noted.**

**R4-2001928 Early measurement reporting requirements structure**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0565 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Early measurement reporting requirements structure

**Discussion:**

**Decision: Postponed.**

###### 8.6.3.2.2 LTE NR Inter-RAT EMR [LTE\_NR\_DC\_CA\_enh-Core]

**R4-2001341 NR Inter-RAT measurements for early measurement reporting**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

**Decision: Noted.**

**R4-2001628 Discussion on LTE – NR inter-RAT EMR**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001796 Discussion on NR SSB based measurement in LTE IDLE/INACTIVE mode**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

##### 8.6.3.3 Efficient and low latency serving cell configuration, activation and setup [LTE\_NR\_DC\_CA\_enh-Core]

###### 8.6.3.3.1 Direct SCell activation [LTE\_NR\_DC\_CA\_enh-Core]

**R4-2000059 On delay requirements for direct SCell activation in resume**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000060 [CR] Add delay requirements for direct SCell activation in resume**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0413 Cat: B (Rel-16)  
  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Postponed.**

**R4-2000061 [CR] Add delay requirements for direct SCell activation in resume**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0414 Cat: B (Rel-16)  
  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Postponed.**

**R4-2000062 [CR] Delay requirements for direct SCell activation**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0415 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Postponed.**

**R4-2001011 Direct SCell activation interruption requirements**

*Type: other For: Approval  
 Source: NEC*

**Abstract:**

Provided possible modification for delay requirements of direct SCell activation upon addition and handover and also provided our views on direct SCell activation interruption requirements.

**Discussion:**

**Decision: Noted.**

**R4-2001629 Discussion on remaining issues for direct SCell activation**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001630 CR on direct SCell activation delay**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0548 Cat: F (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Revised to R4-2002237 (from R4-2001630).**

**R4-2002237 CR on direct SCell activation delay**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0548 Cat: F (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

**R4-2002084 On direct SCell activation**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Contribution providing background to proposals on correction of activation time line and definition of interruption window.

**Discussion:**

**Decision: Noted.**

**R4-2002085 CR 38.133 (8.3.4-5) Corrections to Direct SCell activation**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0581 Cat: F (Rel-16)  
 Source: Ericsson*

**Abstract:**

Corrections to activation timeline with respect to usage of TFirstSSB. Addition of interruption windows.

**Discussion:**

**Decision: Postponed.**

**R4-2002236 CR 38.133 (8.3.4-5) Corrections to Direct SCell activation**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0581 Cat: F (Rel-16)  
 Source: Ericsson*

**Abstract:**

Corrections to activation timeline with respect to usage of TFirstSSB. Addition of interruption windows.

**Discussion:**

**Decision: Withdrawn.**

###### 8.6.3.3.2 SCell dormancy [LTE\_NR\_DC\_CA\_enh-Core]

**R4-2001342 UE Requirements for Dormancy Scell**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this paper we take an initial look at the agreements and which UE requirements RAN4 would need to define

**Discussion:**

**Decision: Noted.**

**R4-2002059 Discussion on Scell BWP dormancy**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2001631 Discussion on RRM requirements for SCell dormancy**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Session Chair: Moved from AI 8.6.3.3.2**

**Discussion:**

**Decision: Noted.**

##### 8.6.3.4 Interruption under EN-DC and NE-DC [LTE\_NR\_DC\_CA\_enh-Core]

##### 8.6.3.5 Fast recovery [LTE\_NR\_DC\_CA\_enh-Core]

##### 8.6.3.6 Cross-carrier scheduling with different numerologies on the scheduling and scheduled carriers [LTE\_NR\_DC\_CA\_enh-Core]

##### 8.6.3.7 Others [LTE\_NR\_DC\_CA\_enh-Core]

### 8.7 UE power saving in NR [NR\_UE\_pow\_sav]

#### 8.7.1 General [NR\_UE\_pow\_sav]

#### 8.7.2 Switching and interruption time [NR\_UE\_pow\_sav]

#### 8.7.3 RRM core requirements (38.133) [NR\_UE\_pow\_sav-Core]

***Email discussion summary***

================================================================================

**R4-2002178 Email discussion summary for RAN4#94e\_#55\_NR\_UE\_pow\_sav\_RRM**

*Type: discussion For: Information  
 Source: Moderator (CATT)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002198**

**R4-2002198 Email discussion summary for RAN4#94e\_#55\_NR\_UE\_pow\_sav\_RRM**

*Type: discussion For: Information  
 Source: Moderator (CATT)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002309 (from R4-2002198).**

**R4-2002309 Email discussion summary for RAN4#94e\_#55\_NR\_UE\_pow\_sav\_RRM**

*Type: discussion For: Information  
 Source: Moderator (CATT)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**Topic #1: RRM measurement relaxation**

Continue discussion in the 2nd round on the remaining open issues. Capture agreements in WF R4-2002239 (CATT).

|  |  |  |
| --- | --- | --- |
| R4-2002239 | WF on RRM measurement relaxation for power saving | CATT |

Issue 1-3: RRM measurement relaxation for scenario#2 (Not in cell-edge scenario)

Agreement: *Option 1: RRM measurement relaxation with longer intervals*

2nd round: Discuss additional clarifications to Option 1 to address companies comments on intra/inter-frequency measurements, scaling factor, transition period.

Issue 1-7: RRM measurement relaxation by reducing the number of frequency layer to be measured

2nd round: Continue discussion to confirm following tentative agreement

Tentative agreement: No consensus to introduce the RRM measurement relaxation by reducing the number of frequency layer in RAN4 94e. Interested companies are encouraged to provide analysis on achievable power saving from reducing number of frequency layers for intra/inter-frequency measurements in RAN4 94bis

**Topic #2: Impact on demod requirement due to MIMO layer adaption**

Conclusion: Postpone discussion on Demod requirement impacts due to MIMO layer adaption to the WI performance part

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002338 | Approved |
| R4-2002326 | Postponed |
|  |  |
|  |  |
|  |  |

================================================================================

##### 8.7.3.1 RRM measurement relaxation [NR\_UE\_pow\_sav-Core]

**R4-2002239 WF on RRM measurement relaxation for power saving**

*Type: other For: Approval  
 Source: CATT*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002338 (from R4-2002239).**

**R4-2002338 WF on RRM measurement relaxation for power saving**

*Type: other For: Approval  
 Source: CATT, vivo*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2000152 Remaining issues on NR UE power saving**

*Type: other For: Approval  
 38.133 v..  
 Source: vivo*

**Discussion:**

**Decision: Noted.**

**R4-2000157 Draft LS on introducing thresholds for inter-frequency RRM relaxation for UE Power Saving**

*Type: LS out For: Approval  
 to RAN2  
 Source: vivo*

**Discussion:**

.

**Decision: Noted.**

**R4-2000158 Evaluation of RRM relaxation for power saving**

*Type: other For: Discussion  
 38.133 v..  
 Source: vivo*

**Discussion:**

.

**Decision: Noted.**

**R4-2000575 Further discussion on RRM measurement relaxation for NR power saving**

*Type: other For: Discussion  
 Source: CATT*

**Discussion:**

.

**Decision: Noted.**

**R4-2000576 CR on measurement relaxation in IDLE mode for UE power saving**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0449 Cat: B (Rel-16)  
 Source: CATT*

**Discussion:**

**Decision: Revised to R4-2002326 (from R4-2000576).**

**R4-2002326 CR on measurement relaxation in IDLE mode for UE power saving**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0449 Cat: B (Rel-16)  
 Source: CATT*

**Discussion:**

**Decision: Postponed.**

**R4-2000577 CR for DCI based TCI state switch delay due to cross slot scheduling**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0450 Cat: B (Rel-16)  
 Source: CATT*

**Discussion:**

**Decision: Postponed.**

**R4-2000578 CR for DCI based BWP switch delay due to cross slot scheduling**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0451 Cat: B (Rel-16) Source: CATT*

**Discussion:**

**Decision: Postponed.**

**R4-2000642 RRM measurement relaxation for UE power saving**

*Type: other For: Discussion  
 Source: CMCC*

**Discussion:**

**Decision: Noted.**

**R4-2000963 Measurement relaxation for power saving**

*Type: other For: Discussion  
 Source: LG Electronics Inc.*

**Discussion:**

**Decision: Noted.**

**R4-2000989 On RRM measurement relaxation for power saving**

*Type: other For: Approval  
 Source: OPPO*

**Discussion:**

**Decision: Noted.**

**R4-2001343 UE RRM Core requirements when applying UE power saving**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

we discuss how the RRM measurement relaxation can be facilitated for RRC\_IDLE/INACTIVE UEs and the related UE requirements

**Discussion:**

**Decision: Noted.**

**R4-2001344 LS on introduction of carrier specific thresholds for UE Power Saving schemes**

*Type: LS out For: Approval  
 to RAN2  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

**Decision: Noted.**

**R4-2001654 Discussion on measurement relaxation in power saving**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001754 Discussions on RRM impact of NR UE power saving**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution, we continue the discussions on RRM measurement relaxations based on latest agreements.

**Discussion:**

**Decision: Noted.**

**R4-2001794 Discussion on RRM measurement relaxation in IDLE/INACTIVE mode**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2002137 RRM measurement relaxation for power saving**

*Type: other For: (not specified)  
 Source: Qualcomm*

**Discussion:**

**Decision: Noted.**

##### 8.7.3.2 Requirements for MIMO layer adaptation [NR\_UE\_pow\_sav-Core]

Session chair: Remove all tdoc from report. Documents discussed as a part of RF email thread. Conclusions are captured in Main session chairman notes

### 8.8 NR Positioning Support [NR\_pos]

================================================================================

***Email discussion summary***

**R4-2002179 Email discussion summary for RAN4#94e\_#56\_NR\_pos\_RRM\_Part\_1**

*Type: discussion For: Information  
 Source: Moderator (Qualcomm)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002310 (from R4-2002179).**

**R4-2002310 Email discussion summary for RAN4#94e\_#56\_NR\_pos\_RRM\_Part\_1**

*Type: discussion For: Information  
 Source: Moderator (Qualcomm)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**General**

Capture conclusions in WF

|  |  |  |
| --- | --- | --- |
| R4-2002277 | WF on NR Positioning UE requirements | Qualcomm |

**Topic# 1: PRS-RSTD Side conditions**

Issue #1-1: Reference cell side condition in FR1

Agreements: Side condition for FR1 PRS-RTD reference cell to be PRS Es/Iot = -6 dB.

**Topic# 2: PRS-RSTD report mapping table**

2-1: Uniform vs. Non-uniform granularity

Further discuss if Option 1 can be agreed

2-5: Minimum granularity in report mapping table (i.e, smallest step size)

Further discuss in 2nd round. Split discussion into FR1 and FR2. Aim to down-select options.

**Topic# 3: Inter-frequency vs. Intra-frequency PRS-RSTD**

Issue #3-1: Whether definition of intra-frequency and inter-frequency RSTD measurement is needed

Agreements: RAN4 to define intra-frequency and inter-frequency RSTD measurements and the corresponding requirements.

**Topic #10: PRS-RSRP report mapping tables**

Agreements: RAN4 to use absolute SS-RSRP report mapping table in TS 38.133 for absolute PRS-RSRP report mapping table.

**Topic #10: Non-DRX requirements for PRS-RSRP**

Non-DRX only requirements

Agreements: PRS-RSRP measurement requirements will be defined for only non-DRX regardless of whether and which DRX configuration is configured for the UE.

**Topic #19: Non-DRX requirements for Rx-Tx time difference**

Non-DRX only requirements

Agreements: Rx-Tx time difference measurement requirements will be defined for only non-DRX regardless of whether and which DRX configuration is configured for the UE.

**Topic #25: E-CID positioning method**

Agreements:

R15 core measurement requirements, measurement report mapping, and measurement accuracy requirements for SS-RSRP, SS-RSRQ, CSI-RS-RSRP and CSI-RS-RSRQ are applicable to E-CID positioning technique without any modification.

All existing measurement gap configurations in R15 applicable to RRM measurements to be applicable for E-CID measurements.

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002328 | Approved |
| R4-2002289 | Postponed |
| R4-2002288 | Agreed |
| R4-2001950 | Postponed |
| R4-2002287 | Approved |

Session chair: “Interested companies can bring optional TOA simulation results in the next meeting to assess the accuracy of UE Rx-Tx time difference. TOA is not expected to be included as the requirement in 38.133.”

================================================================================

**R4-2002180 Email discussion summary for RAN4#94e\_#57\_NR\_pos\_RRM\_Part\_2**

*Type: discussion For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002311 (from R4-2002180).**

**R4-2002311 Email discussion summary for RAN4#94e\_#57\_NR\_pos\_RRM\_Part\_2**

*Type: discussion For: Information  
 Source: Moderator (Ericsson)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**General**

Capture conclusions and candidate options on Topic #1 and Topic #2 in WF.

|  |  |  |
| --- | --- | --- |
| R4-2002275 | WF on NR Positioning gNB measurement requirements and report mapping | Ericsson |

Capture RAN4 #94e conclusions on gNB measurements report mapping

|  |  |  |
| --- | --- | --- |
| R4-2002280 | LS on gNB measurements report mapping for NR Positioning | Ericsson |

**Topic #1: gNB measurement accuracy requirements**

Issue 1-1: Selection of option for gNB measurement accuracy requirements

Continue discussion in the 2nd round: There are no objections to define “Rx-Tx timing difference” and “UL SRS-RSRP” requirements in the 1st round. Further confirm if where are any objections to the tentative agreement below.

* Tentative agreement:
  + Define accuracy requirements for “Rx-Tx timing difference” and “UL SRS-RSRP” measurements.
  + FFS whether to define gNB accuracy requirements for “UL RTOA” and/or “AoA / ZoA” measurements. Companies encouraged to bring analysis in RAN4 #94bis.

**Topic #2: gNB measurement report mapping (AI 8.8.2)**

Issue 2-1: Report mapping for SRS-RSRP measurement

Agreements:

* SRS-RSRP reporting granularity = 1dB. Maximum and minimum values are FFS until next meeting.
* SRS-RSRP minimum value:
  + Option 1: SRS-RSRP min value = SS-RSRP min value.
  + Option 2: SRS-RSRP min value ≠ SS-RSRP min value.
* SRS-RSRP maximum value:
  + Option 1: SRS-RSRP max value = SS-RSRP max value.
  + Option 2: SRS-RSRP max value ≠ SS-RSRP max value.

Issue 2-4: Report mapping for AoA and ZoA

Agreements:

AoA and ZoA report mappings:

* AoA: from -180 to +180 degrees with granularity = 0.1 degree.
* ZoA: from 0 to +180 degrees with granularity = 0.1 degree.

**Topic #3: Positioning measurement impact on RRM (AI 8.8.3)**

Move issue 3-1 to thread #56

Continue discussion in the 2nd round on the rest of issues. Capture conclusions on Topic #3 in WF

|  |  |  |
| --- | --- | --- |
| R4-2002276 | WF on NR Positioning measurement impact on RRM requirements | Qualcomm |

**Topic #4: UE-based positioning performance requirements**

Issue 4-1: Requirements for UE based positioning

Continue discussion in the 2nd round: If no consensus reached, deprioritize requirements for UE based positioning in the scope of Rel-16 WI due to limited timelines.

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002275 | Approved |
| R4-2002280 | Approved |
| R4-2002276 | Approved |

================================================================================

**R4-2002277 WF on NR Positioning UE requirements**

*Type: other For: Approval  
 Source: Qualcomm*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002328 (from R4-2002277).**

**R4-2002328 WF on NR Positioning UE requirements**

*Type: other For: Approval  
 Source: Qualcomm*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002275 WF on NR Positioning gNB measurement requirements and report mapping**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002276 WF on NR Positioning measurement impact on RRM requirements**

*Type: other For: Approval  
 Source: Qualcomm*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002280 LS on gNB measurements report mapping for NR Positioning**

*Type: LSout For: Approval  
 To: RAN2, RAN3  
 cc: RAN1  
 Source: Ericsson*

**Abstract:**

**Discussion:**

**Decision: Approved.**

#### 8.8.1 General (Work plan, rapporteur input) [NR\_pos-Core/Perf]

**R4-2001947 LS on UE measurement report mapping for UE positioning measurements in NR**

*Type: LS out For: Approval  
 to RAN2  
 Source: Ericsson*

**Abstract:**

LS on UE measurement report mapping for UE positioning measurements in NR

**Discussion:**

**Decision: Noted.**

#### 8.8.2 RRM core requirements (38.133) [NR\_pos-Core]

**R4-2001632 On report mapping for UE/gNB positioning measurement**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001633 [draft] reply LS on agreements related to NR Positioning**

*Type: LS out For: Approval  
 to RAN1, RAN2, RAN3  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

##### 8.8.2.1 UE requirements [NR\_pos-Core]

**R4-2000388 Discussion on UE PRS processing behavior**

*Type: other For: Discussion  
 Source: Intel Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2001918 UE behaviour for processing DL PRS without measurement gap**

*Type: other For: Agreement  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Disussion on one of the open issues raised in RAN1 LS.

**Discussion:**

**Decision: Noted.**

###### 8.8.2.1.1 System-level evaluations for PRS-RSTD and PRS-RSRP [NR\_pos-Core]

###### 8.8.2.1.2 PRS-RSTD measurements [NR\_pos-Core]

**R4-2000389 Further Discussion on NR PRS RSTD Requirements for UE**

*Type: other For: Discussion  
 Source: Intel Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000589 Discussion on RSTD measurement requirements**

*Type: other For: Discussion  
 Source: CATT*

**Discussion:**

**Decision: Noted.**

**R4-2000731 On PRS-RSTD measurements for NR positioning**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2000783 On RSTD measurement report mapping for NR positioning**

*Type: other For: Discussion  
 38.133 v..  
 Source: Apple*

**Discussion:**

**Decision: Noted.**

**R4-2000784 LS on RSTD measurement report mapping for NR positioning**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: Apple*

**Discussion:**

**Decision: Noted.**

**R4-2000998 Discussion on PRS-RSTD measurement**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001637 Discussion on RSTD measurement**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001941 On PRS RSTD measurements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

On PRS RSTD measurements

**Discussion:**

**Decision: Noted.**

**R4-2001942 On PRS RSTD measurement report mapping**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

On PRS RSTD measurement report mapping

**Discussion:**

**Decision: Noted.**

**R4-2001943 Measurement report mapping for PRS RSTD**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0567 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Measurement report mapping for PRS RSTD

**Discussion:**

**Decision: Postponed.**

###### 8.8.2.1.3 PRS-RSRP measurements [NR\_pos-Core]

**R4-2000590 Discussion on PRS-RSRP measurement requirements**

*Type: other For: Discussion  
 Source: CATT*

**Discussion:**

**Decision: Noted.**

**R4-2000732 On PRS-RSRP measurements for NR positioning**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2000999 Discussion on PRS-RSRP measurement**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001638 Discussion on PRS-RSRP measurement**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001944 On PRS-RSRP measurements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

On PRS-RSRP measurements

**Discussion:**

**Decision: Noted.**

**R4-2001945 On PRS-RSRP measurement report mapping**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

On PRS-RSRP measurement report mapping

**Discussion:**

**Decision: Noted.**

**R4-2001946 Measurement report mapping for PRS-RSRP**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0568 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Measurement report mapping for PRS-RSRP

**Discussion:**

**Decision: Revised to R4-2002289 (from R4-2001946).**

**R4-2002289 Measurement report mapping for PRS-RSRP**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0568 Cat: B (Rel-16)  
 Source: Ericsson*

**Abstract:**

Measurement report mapping for PRS-RSRP

**Discussion:**

**Decision: Postponed.**

###### 8.8.2.1.4 Rx-Tx time difference measurements [NR\_pos-Core]

**R4-2000603 Discussion on Rx-Tx timing difference measurement**

*Type: other For: Discussion  
 Source: CATT*

**Discussion:**

**Decision: Noted.**

**R4-2000604 Discussion on definition of Rx-Tx timing difference measurement**

*Type: other For: Discussion  
 Source: CATT*

**Discussion:**

.

**Decision: Noted.**

**R4-2000733 On UE Rx-Tx time difference measurement for NR positioning**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2001000 Discussion on UE Rx-Tx time difference measurements**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2001639 Discussion on Rx-Tx time difference measurement**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Noted.**

**R4-2001859 UE Rx-Tx Measurement Report Mapping in NR**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This paper provides UE Rx-Tx measurement report mappings in NR

**Discussion:**

.

**Decision: Noted.**

**R4-2001940 On UE Rx-Tx measurements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

On UE Rx-Tx measurements

**Discussion:**

.

**Decision: Noted.**

###### 8.8.2.1.5 SSB and CSI-RS RSRP/RSRQ measurements [NR\_pos-Core]

**R4-2000734 On positioning requirements for E-CID**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

.

**Decision: Noted.**

**R4-2001948 NR E-CID measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0569 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

NR E-CID measurement requirements

**Discussion:**

.

**Decision: Revised to R4-2002288 (from R4-2001948).**

**R4-2002288 NR E-CID measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0569 Cat: B (Rel-16)  
 Source: Ericsson*

**Abstract:**

NR E-CID measurement requirements

**Discussion:**

**Decision: Agreed.**

**R4-2001949 NR E-CID reporting criteria requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0570 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

NR E-CID reporting criteria requirements

**Discussion:**

.

**Decision: Postponed.**

**R4-2001950 LS on NR E-CID measurements**

*Type: LS out For: Approval  
 to RAN2  
 Source: Ericsson*

**Abstract:**

LS on NR E-CID measurements

**Discussion:**

**Decision: Noted.**

###### 8.8.2.1.6 Link-level evaluations for PRS-RSTD and PRS-RSRP [NR\_pos-Core]

**R4-2000391 Link-level simulation results for RSTD measurement**

*Type: other For: Discussion  
 Source: Intel Corporation*

**Discussion:**

.

**Decision: Noted.**

**R4-2000591 Link-level simulation results of PRS RSRP**

*Type: other For: Discussion  
 Source: CATT*

**Discussion:**

.

**Decision: Noted.**

**R4-2000592 Link-level simulation results of PRS RSTD**

*Type: other For: Discussion  
 Source: CATT*

**Discussion:**

.

**Decision: Noted.**

**R4-2000735 Link-level PRS-RSTD simulation results**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

.

**Decision: Noted.**

**R4-2001001 Link level evaluation on PRS-RSRP and PRS-RSTD**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2001635 Link level simulation results for PRS measurement**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Noted.**

**R4-2001636 Updated link level simulation assumption for RSTD and RSRP**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Revised to R4-2002287.**

**R4-2002287 Updated link level simulation assumption for RSTD and RSRP**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Approved.**

**R4-2001939 Link simulation results for NR RSTD**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Link simulation results for NR RSTD

**Discussion:**

**Decision: Noted.**

##### 8.8.2.2 gNB requirements [NR\_pos-Core]

**R4-2000054 Discussion on gNB requirements and report mapping**

*Type: other For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000390 Considerations on gNB measurement requirements for NR positioning**

*Type: other For: Discussion  
 Source: Intel Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000736 on gNB requirements for NR positioning**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2001196 Views on gNB measurement for NR positioning**

*Type: other For: Approval  
 Source: NTT DOCOMO, INC.*

**Discussion:**

**Decision: Noted.**

**R4-2001496 On gNB measurement requirements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper analyzes the possible opportunities and take a look on the need of additional requirements in the gNB.

**Discussion:**

**Decision: Noted.**

**R4-2001634 Discussion on gNB requirements for NR positioning**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon, CMCC*

**Discussion:**

**Decision: Noted.**

**R4-2001919 On gNB measurement requirements for NR positioning**

*Type: other For: Agreement  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on gNB measurement requirements for NR positioning.

**Discussion:**

**Decision: Noted.**

##### 8.8.2.3 Impact on existing RRM requirements [NR\_pos-Core]

**R4-2000605 Further discussion on impact of positioning measurement on RRM requirements**

*Type: other For: Discussion  
 Source: CATT*

**Discussion:**

**Decision: Noted.**

**R4-2000737 On Impact of NR positioning on existing RRM requirements**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2001640 Impact of PRS measurement on existing RRM requirements**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

##### 8.8.2.4 Others [NR\_pos-Core]

**R4-2000593 Discussion on frequency layer and measurement gap**

*Type: other For: Discussion  
 Source: CATT*

**Discussion:**

**Decision: Noted.**

**R4-2000738 On UE-based positioning requirements**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

### 8.9 Physical layer enhancements for NR URLLC [NR\_L1enh\_URLLC-Core]

#### 8.9.1 Demodulation and CSI requirements [NR\_L1enh\_URLLC-Perf]

##### 8.9.1.1 Test feasibility [NR\_L1enh\_URLLC-Perf]

##### 8.9.1.2 UE demodulation and CSI requirements (38.101-4) [NR\_L1enh\_URLLC-Perf]

##### 8.9.1.3 BS demodulation requirements (38.104) [NR\_L1enh\_URLLC-Perf]

### 8.10 Single radio voice call continuity from 5G to 3G (SRVCC) [SRVCC\_NR\_to\_UMTS-Core]

================================================================================

***Email discussion summary***

**R4-2002181 Email discussion summary for RAN4#94e\_#58\_SRVCC\_NR\_to\_UMTS\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Huawei, HiSilicon)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002312 (from R4-2002181).**

**R4-2002312 Email discussion summary for RAN4#94e\_#58\_SRVCC\_NR\_to\_UMTS\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Huawei, HiSilicon)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

**Topic #1: SRVCC core part**

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2001673 | Revised |

**Topic #2: SRVCC test case list**

Agreement: Do not define the tests in the direction of 3G to NR mobility.t

Continue discussion in the 2nd round. Capture agreements in WF R4-2002239 (Huawei).

|  |  |  |
| --- | --- | --- |
| R4-2002241 | WF on SRVCC RRM test cases | Huawei |

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002240 | Agreed |
| R4-2002241 | Approved |

================================================================================

#### 8.10.1 RRM core requirements maintenance (38.133) [SRVCC\_NR\_to\_UMTS-Core]

**R4-2001673 Correction on handover requirements for SRVCC**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0551 Cat: F (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Revised to R4-2002240 (from R4-2001673).**

**R4-2002240 Correction on handover requirements for SRVCC**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0551 Cat: F (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Agreed.**

#### 8.10.2 RRM perf requirements (38.133) [SRVCC\_NR\_to\_UMTS-Perf]

**R4-2002241 WF on SRVCC RRM test cases**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2001418 Test aspects of sRVCC for NR**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Discuss the necessary tests for sRVCC to WCDMA

**Discussion:**

**Decision: Noted.**

**R4-2001672 Test case list for SRVCC**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

### 8.11 Enhancements on MIMO for NR [NR\_eMIMO]

#### 8.11.1 UE RF core requirements (38.101) [NR\_eMIMO-Core]

##### 8.11.1.1 DMRS enhancement with PI/2 BPSK [NR\_eMIMO-Core]

##### 8.11.1.2 Uplink Tx Full Power transmission [NR\_eMIMO-Core]

#### 8.11.2 RRM core requirements (38.133) [NR\_eMIMO-Core]

================================================================================

***Email discussion summary***

**R4-2002182 Email discussion summary for RAN4#94e\_#59\_NR\_eMIMO\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Samsung)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002313 (from R4-2002182).**

**R4-2002313 Email discussion summary for RAN4#94e\_#59\_NR\_eMIMO\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Samsung)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**General**

Continue discussion in the 2nd round on the remaining open issues. Capture all agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002242 | WF on NR eMIMO RRM requirements | Samsung |

**Topic #1: L1-SINR Measurement**

Issue 1-1-1: Applicable condition(s) for one-shot L1-SINR measurement report for CMR only scenario:

Agreement: Applicable condition(s) for one-shot L1-SINR measurement report for CMR only scenario:

* M=1 shall be applied if
  + aperiodic CSI-RS resource is configured for channel measurement, or
  + periodic or semi-persistent CSI-RS resource is configured for channel measurement and higher layer parameter *timeRestrictionForChannelMeasurements* is configured.

Issue 1-1-2: Restriction between measurement time restriction on IMR and CMR:

Continue discussion in the 2nd round: confirm whether Option 1 is agreeable.

Issue 1-1-3: Applicable condition(s) for one-shot L1-SINR measurement report for CMR+IMR scenario:

Continue discussion in the 2nd round: confirm whether Option 1a is agreeable

Issue 1-1-4: Measurement period for SSB-based CMR+IMR scenario:

Continue discussion in the 2nd round: Check if Option 1c can be accepted as a compromise approach.

Issue 1-1-5: Measurement period for CSI-RS-based CMR+IMR scenario:

Continue discussion in the 2nd round: Check if Option 1c can be accepted as a compromise approach.

Issue 1-1-7: Number of Samples for L1-SINR Measurement:

Continue discussion in the 2nd round: confirm whether tentative agreement is acceptable and captures companies comments.

Issue 1-3-1: L1-SINR measurement side condition for Es/Iot for CMR+ZP-IMR

Agreement: Es/Iot on CMR:

* + Option 1: SSB or CSI-RS Es/Iot >= -3dB and <=25dB

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000997 | Endorsed |
| R4-2000288 | Return to |

**Topic #2: SCell Beam Failure Recovery**

Issue 2-1-4: RS within a deactivated SCC is implicitly configured as the BFD-RS for another activated SCell

Agreement: UE is not required to perform BFD on RS within a deactivated SCC which is implicitly configured as the BFD-RS for another activated SCell

Issue 2-1-5: RS within an activated SCC is implicitly configured as the BFD-RS for another deactivated SCell

Agreement: UE is not required to perform BFD on RS within an activated SCC which is implicitly configured as the BFD-RS for another deactivated SCell.

Issue 2-1-7: RAN1 specification and RAN4 agreement mismatch for SSB-based BFD on SCell

Agreement: RAN4 revert previous agreement by only allowing CSI-RS based BFD for SCell, to align with RAN1 specification.

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000290 | Return to |
| R4-2000291 | Return to |

**Topic #3: DL/UL beam indication with reduced latency and overhead**

Issue 3-2: RAN4 RRM requirement impact due to MAC-CE based spatial relation update for aperiodic SRS

Conclusion: The decision on whether to define MAC-CE based spatial relationship update for AP-SRS should be made in ‘NR RRM core requirement enhancement WI’ scope. Postpone discussion in the scope of NR eMIMO WI scope and wait for respective conclusions.

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002242 | Approved |
| R4-2000288 | Postponed |
| R4-2000287 | Withdrawn |
| R4-2001578 | Noted |
| R4-2000290 | Postponed |
| R4-2000291 | Postponed |

================================================================================

**R4-2002242 WF on NR eMIMO RRM requirements**

*Type: other For: Approval  
 Source: Samsung*

**Abstract:**

**Discussion:**

**Decision: Approved.**

##### 8.11.2.1 L1-SINR [NR\_eMIMO-Core]

**R4-2000285 On the Remaining Issues for L1-SINR Measurement Requirement**

*Type: other For: Approval  
 Source: Samsung*

**Discussion:**

**Decision: Noted.**

**R4-2000286 Simulation Results for L1-SINR Measurement Accuracy**

*Type: other For: Discussion  
 Source: Samsung*

**Discussion:**

**Decision: Noted.**

**R4-2000287 Simulation Results Summary for L1-SINR Measurement Accuracy**

*Type: other For: Information  
 Source: Samsung*

**Discussion:**

**Decision: Withdrawn.**

**R4-2000288 CR to TS38.133 on L1-SINR Measurement Requirement (Section 3.3 and 9)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0430 Cat: B (Rel-16)  
  
 Source: Samsung*

**Discussion:**

**Decision: Postponed.**

**R4-2000384 Discussion about L1-SINR measurement requirements**

*Type: other For: Discussion  
 Source: Intel Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000635 Simulation results on L1-SINR**

*Type: other For: Discussion  
 Source: CMCC*

**Discussion:**

**Decision: Noted.**

**R4-2000935 Discussion on RRM requirements for L1-SINR**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2000936 Discussion on L1-SINR delay requirement**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2000937 Discussion on L1-SINR accuracy requirement**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2000997 CR on SS-SINR and CSI-SINR measurement report mapping (section 10.1.16.1)**

*Type: draftCR For: Endorsement  
 38.133 v16.2.0  
 Source: OPPO*

**Discussion:**

**Decision: Endorsed.**

**R4-2001362 L1-SINR measurement period**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the L1-SINR measurements period.

**Discussion:**

**Decision: Noted.**

**R4-2001578 Discussion on L1-SINR measurement requirements for NR eMIMO**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001579 Discussion on measurement restrictions for L1-SINR measurement**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2002120 RRM requirements for L1-SINR estimation**

*Type: other For: (not specified)  
 Source: Qualcomm*

**Discussion:**

**Decision: Noted.**

##### 8.11.2.2 SCell Beam failure recovery [NR\_eMIMO-Core]

**R4-2000289 On the Remaining Issues for SCell Beam Failure Recovery RRM Requirement**

*Type: other For: Approval  
 Source: Samsung*

**Discussion:**

**Decision: Noted.**

**R4-2000290 CR to TS38.133 on SCell BFD and CBD (Section 8.5)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0431 Cat: B (Rel-16)  
 Source: Samsung*

**Discussion:**

**Decision: Postponed.**

**R4-2000291 CR to TS38.133 on SCell BFRQ Procedure (Section 8.5)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0432 Cat: B (Rel-16)  
 Source: Samsung*

**Discussion:**

**Decision: Postponed.**

**R4-2000938 Discussion on RRM requirements for BFR on Scell**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001580 discussion on SCell BFR requiremetns for NR eMIMO**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2002121 RRM requirements for SCell BFD, CBD and BFR**

*Type: other For: (not specified)  
 Source: Qualcomm*

**Discussion:**

**Decision: Noted.**

##### 8.11.2.3 DL/UL beam indication with reduced latency and overhead [NR\_eMIMO-Core]

**R4-2000292 On the Remaining Issues for Enhancement on UL/DL Transmit Beam Selection with Reduced Latency and Overhead**

*Type: other For: Approval  
 Source: Samsung*

**Discussion:**

**Decision: Noted.**

**R4-2002122 DL/UL beam indication with reduced latency and overhead**

*Type: other For: (not specified)  
 Source: Qualcomm*

**Discussion:**

**Decision: Noted.**

##### 8.11.2.4 Others [NR\_eMIMO-Core]

#### 8.11.3 Demodulation and CSI requirements [NR\_eMIMO-Perf]

##### 8.11.3.1 General [NR\_eMIMO-Perf]

##### 8.11.3.2 Demodulation requirements [NR\_eMIMO-Perf]

##### 8.11.3.3 CSI requirements [NR\_eMIMO-Perf]

### 8.12 Add support of NR DL 256QAM for FR2 [NR\_DL256QAM\_FR2]

#### 8.12.1 General (Ad-hoc MoM/TR maintenance) [NR\_DL256QAM\_FR2]

#### 8.12.2 BS RF core requirements (38.104) [NR\_DL256QAM\_FR2]

#### 8.12.3 UE RF core requirements (38.101-2) [NR\_DL256QAM\_FR2]

### 8.13 RF requirements for NR frequency range 1 (FR1) [NR\_RF\_FR1]

#### 8.13.1 RF core requirements [NR\_RF\_FR1]

##### 8.13.1.1 Almost contiguous allocations for CP-OFDM UL for FR1 [NR\_RF\_FR1]

##### 8.13.1.2 Intra-band contiguous DL CA for FR1 [NR\_RF\_FR1]

##### 8.13.1.3 Intra-band non-contiguous DL CA for FR1 for generic and n77 and n78 [NR\_RF\_FR1]

##### 8.13.1.4 Intra-band contiguous UL CA for FR1 power class 3 [NR\_RF\_FR1]

##### 8.13.1.5 Intra-band non-contiguous UL CA for FR1 power class [NR\_RF\_FR1]

##### 8.13.1.6 Switching period between case 1 and case 2 [NR\_RF\_FR1]

##### 8.13.1.7 Transient period capability [NR\_RF\_FR1]

#### 8.13.2 RRM core requirements (38.133) [NR\_RF\_FR1]

================================================================================

***Email discussion summary***

**R4-2002183 Email discussion summary for RAN4#94e\_#60\_NR\_RF\_FR1\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Huawei, HiSilicon)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002314 (from R4-2002183).**

**R4-2002314 Email discussion summary for RAN4#94e\_#60\_NR\_RF\_FR1\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Huawei, HiSilicon)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**Topic #1: RRM requirements for Tx switching between two uplink carriers**

Sub-topic 1-1 DL Interruptions due to UL TX switching

Conclusion: Defer discussion on DL Interruptions due to UL TX switching till RF room reaches conclusions

Sub-topic 1-2: Where to capture the interruption requirements

2nd round: Check if tentative agreement is acceptable.

Continue discussion in the 2nd round on the remaining open issues. Capture all agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002243 | WF on RRM requirements for Tx switching between two uplink carriers | Huawei |

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002243 | Approved |

================================================================================

**R4-2002243 WF on RRM requirements for Tx switching between two uplink carriers** *Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Abstract:**

**Discussion:**

**Decision: Approved.**

##### 8.13.2.1 RRM requirements for Tx switching between two uplink carriers [NR\_RF\_FR1]

Session chair: Include relevant proposals from AI 8.13.1.6 into email discussion on RRM requirements

**R4-2000065 Views on DL interruptions during UE switching between 1Tx carrier and 2Tx carrier**

*Type: other For: Decision  
 Source: Huawei, HiSilicon*

**Session chair: Moved from AI 8.13.1.6**

**Discussion:**

.

**Decision: Noted.**

**R4-2000068 Draft LS to RAN1 on DL reception interruption due to switching between 1Tx carrier and 2Tx carrier**

*Type: LS out For: Approval  
 to RAN1, cc RAN2  
 Source: Huawei, HiSilicon*

**Session chair: Moved from AI 8.13.1.6**

**Discussion:**

**Decision: Noted.**

**R4-2000640 Discussion on DL interruption Tx switching between two uplink carriers**

*Type: other For: Discussion  
 38.101-1 v..  
 Source: vivo*

**Session chair: Moved from AI 8.13.1.6**

**Discussion:**

**Decision: Noted.**

**R4-2000793 On RRM impact of Tx switching**

*Type: other For: Discussion  
 Source: Apple*

**Session chair: Moved from AI 8.13.1.6**

**Discussion:**

**Decision: Noted.**

**R4-2000135 View on RRM interruption and delay requirement for switching between two uplink carriers**

*Type: other For: Discussion  
 Source: China Telecom*

**Discussion:**

**Decision: Noted.**

**R4-2000457 Interruption for Tx switching between two uplink carriers**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2000991 On RRM requirements for Tx switching between two uplink carriers**

*Type: other For: Approval  
 Source: OPPO*

**Session chair: Moved from AI 8.1.4.9**

**Discussion:**

**Decision: Noted.**

### 8.14 NR RF requirement enhancements for frequency range 2 (FR2) [NR\_RF\_FR2\_req\_enh]

#### 8.14.1 RF core requirements [NR\_RF\_FR2\_req\_enh]

##### 8.14.1.1 FR2 MPE [NR\_RF\_FR2\_req\_enh]

##### 8.14.1.2 Beam Correspondence based on configured DL RS (SSB or CSI-RS) [NR\_RF\_FR2\_req\_enh]

##### 8.14.1.3 Intra-band cont DL CA for aggregated BW larger than 1400 MHz [NR\_RF\_FR2\_req\_enh]

##### 8.14.1.4 Intra-band non-cont DL CA for aggregated BW larger than 1400 MHz [NR\_RF\_FR2\_req\_enh]

##### 8.14.1.5 Intra-band contiguous UL CA [NR\_RF\_FR2\_req\_enh]

##### 8.14.1.6 Intra-band non-contiguous UL CA [NR\_RF\_FR2\_req\_enh]

##### 8.14.1.7 Inter-band DL CA [NR\_RF\_FR2\_req\_enh]

##### 8.14.1.8 Improvement of UE MPR [NR\_RF\_FR2\_req\_enh]

##### 8.14.1.9 Improvement of spherical coverage requirements for PC3 [NR\_RF\_FR2\_req\_enh]

#### 8.14.2 RRM core requirements (38.133) [NR\_RF\_FR2\_req\_enh]

================================================================================

***Email discussion summary***

**R4-2002184 Email discussion summary for RAN4#94e\_#61\_NR\_RF\_FR2\_req\_enh\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Apple)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002315 (from R4-2002184).**

**R4-2002315 Email discussion summary for RAN4#94e\_#61\_NR\_RF\_FR2\_req\_enh\_RRM**

*Type: discussion For: Information  
 Source: Moderator (Apple)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

Continue discussion in the 2nd round on the remaining open issues. Capture all agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002279 | WF on RRM requirements for FR2 inter-band DL CA | Apple |

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002279 | Withdrawn |

Agreement: If the DL symbols are SSB symbols or CSI-RS symbols or RSSI symbols for mobility measurement, the R15 FR2 scheduling restriction requirement shall apply, and those DL symbols shall be prioritized than the UL transmission to serving cell.

================================================================================

**R4-2002279 WF on RRM requirements for FR2 inter-band DL CA**

*Type: other For: Approval  
 Source: Apple*

**Abstract:**

**Discussion:**

**Decision: Withdrawn.**

##### 8.14.2.1 Inter-band DL CA MRTD [NR\_RF\_FR2\_req\_enh]

**R4-2000456 MRTD requirements for FR2 inter-band DL CA**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2000786 On MRTD requirement for FR2 inter-band CA**

*Type: other For: Discussion  
 38.133 v..  
 Source: Apple*

**Discussion:**

.

**Decision: Noted.**

**R4-2001581 Discussion on MRTD requirements for FR2 inter-band DL CA**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Noted.**

### 8.15 NR RRM requirement enhancement [NR\_RRM\_Enh\_Core]

#### 8.15.1 RRM core requirements (38.133) [NR\_RRM\_Enh\_Core]

================================================================================

***Email discussion summary***

**R4-2002185 Email discussion summary for RAN4#94e\_#62\_NR\_RRM\_Enh\_RRM\_Part\_1**

*Type: discussion For: Information  
 Source: Moderator (Intel Corporation)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002316 (from R4-2002185).**

**R4-2002316 Email discussion summary for RAN4#94e\_#62\_NR\_RRM\_Enh\_RRM\_Part\_1**

*Type: discussion For: Information  
 Source: Moderator (Intel Corporation)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**Topic #1: BWP Switching on multiple CCs**

Continue discussion in the 2nd round on the remaining open issues. Capture agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002244 | WF on R16 NR RRM enhancements - BWP switching on multiple CCs | Intel |

Issue 1-1-1: RRC based simultaneous triggering for NR-DC operation

Agreement: RRC based simultaneous triggering for BWP switch on multiple CCs for NR-DC operation is not considered

Issue 1-1-2: Delay requirements for DCI/timer based BWP switch

Agreement: *; N: Number of CCs with simultaneous BWP switch; K is number of CCs that can be processed simultaneously; D is incremental delay for BWP switch processing on additional CCs*

Issue 1-1-4: Interruption requirements for simultaneous BWP switch

Agreement: Consider interruption on each CC separately

Further discuss interruption length in the 2nd round

Issue 1-2-4: Interruption requirements for partial overlap BWP switch

Agreement: Consider interruption on each CC separately

Further discuss interruption length in the 2nd round

**Topic #2: UL Spatial Relation Info Switching**

Continue discussion in the 2nd round on the remaining open issues. Capture agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002245 | WF on R16 NR RRM enhancements - UL spatial relation info switching | MediaTek |

Issue 2-2-1: Applicability of RRC based spatial relation info switching delay

Agreement: RRC based spatial relation info switch requirements are defined for P-SRS

Issue 2-3: DCI based spatial relation info switch

Agreement: DCI based spatial relation info switch requirements are defined for A-SRS. For DCI based spatial relation info switch no requirements for unknown TCI state; refer to RAN1 requirement for known TCI state

Issue 2-4-1: Spatial relation info switching for PUSCH

Agreement: No requirements are defined for spatial relation info switching for PUSCH

Issue 2-4-2: When PUCCH-SpatialRelationInfo is not configured

Agreement: No requirements are defined for spatial relation info switching for PUCCH when PUCCH-SpatialRelationInfo is not configured

**Topic #3: Non-simultaneous UL carrier operation in FR2**

Issue 3-1-1: RRM plan

Conclusion: RRM requirements can be discussed after RF session has conclusion on the topic. RAN1/2 input could be considered based on RF session agreement.

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002244 | Approved |
| R4-2002245 | Noted  Session chair: Objection raised in the 2nd round discussion. WF is noted. WF is recommended to be used as a starting point for further discussion in the next meeting. |

================================================================================

**R4-2002186 Email discussion summary for RAN4#94e\_#63\_NR\_RRM\_Enh\_RRM\_Part\_2**

*Type: discussion For: Information  
 Source: Moderator (ZTE)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002317 (from R4-2002186).**

**R4-2002317 Email discussion summary for RAN4#94e\_#63\_NR\_RRM\_Enh\_RRM\_Part\_2**

*Type: discussion For: Information  
 Source: Moderator (ZTE)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**Topic #1: SRS carrier switching requirements**

Continue discussion in the 2nd round based on moderator proposed tentative agreements Capture all agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002246 | WF on R16 NR RRM enhancements – SRS carrier switching | ZTE |

**Topic #2: CGI reading requirements with autonomous gap**

Agreement

* MIB decoding delay for FR1
  + [5] \* TSMTC, where TSMTC is SMTC periodicity of target cell
* Updated simulation assumptions in R4-2001271 agreed

Continue discussion in the 2nd round based on moderator proposed tentative agreements. Capture all agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002247 | WF on R16 NR RRM enhancements – CGI reading | ZTE |

**Topic #3: Mandatory MG patterns**

Continue discussion in the 2nd round based on moderator proposed tentative agreements

Prioritize discussion on LS to RAN2 on UE capability and mandatory measurement gap patterns based on RAN4 #93 agreements (focus on signalling aspects). LS R4-2001269 revised to R4-2002252

Capture agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002248 | WF on R16 NR RRM enhancements – Mandatory MG patterns | ZTE |

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002246 | Approved |
| [R4-2001267](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001267.zip) | Postponed |
| [R4-2001268](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001268.zip) | Postponed |
| [R4-2001662](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001662.zip) | Postponed |
| R4-2002247 | Revised to R4-2002329 |
| R4-2002329 | Approved |
| [R4-2001263](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001263.zip) | Postponed |
| [R4-2001264](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001264.zip) | Postponed |
| [R4-2001404](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001404.zip) | Postponed |
| [R4-2001405](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001405.zip) | Postponed |
| [R4-2001645](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001645.zip) | Postponed |
| [R4-2001646](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001646.zip) | Postponed |
| R4-2002248 | Approved |
| R4-2002252 | Noted |

================================================================================

**R4-2002187 Email discussion summary for RAN4#94e\_#64\_NR\_RRM\_Enh\_RRM\_Part\_3**

*Type: discussion For: Information  
 Source: Moderator (Apple)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002318 (from R4-2002187).**

**R4-2002318 Email discussion summary for RAN4#94e\_#64\_NR\_RRM\_Enh\_RRM\_Part\_3**

*Type: discussion For: Information  
 Source: Moderator (Apple)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

**Topic #1: Multiple Scell activation/deactivation**

Continue discussion in the 2nd round based on moderator proposals. Capture agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002249 | WF on R16 NR RRM enhancements – Multiple Scell activation/deactivation and UE-specific CBW change | Apple |

**Topic #2: Inter-frequency measurement requirement without MG**

Continue discussion in the 2nd round based on moderator proposals. Capture agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002250 | WF on R16 NR RRM enhancements – Inter-frequency measurement without MG | CMCC |

**Topic #3: UE-specific CBW change**

Continue discussion in the 2nd round based on moderator proposals. Capture agreements in WF R4-2002249

**Topic #4: Inter-band CA requirement for FR2 UE measurement capability of independent Rx beam and/or common beam**

Continue discussion in the 2nd round based on moderator proposals. Capture agreements in WF R4-2002249

|  |  |  |
| --- | --- | --- |
| R4-2002251 | WF on R16 NR RRM enhancements – FR2 inter-band CA requirement | Huawei |

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002249 | Approvable |
| R4-2002250 | Approvable |
| R4-2002251 | Approved |

================================================================================

**R4-2002244 WF on R16 NR RRM enhancements - BWP switching on multiple CCs**

*Type: other For: Approval  
 Source: Intel*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002245 WF on R16 NR RRM enhancements - WF on UL spatial relation info switching**

*Type: other For: Approval  
 Source: MediaTek*

**Abstract:**

**Discussion:**

**Decision: Noted.**

**R4-2002246 WF on R16 NR RRM enhancements – SRS carrier switching**

*Type: other For: Approval  
 Source: ZTE*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002247 WF on R16 NR RRM enhancements – CGI reading**

*Type: other For: Approval  
 Source: ZTE*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002329 (from R4-2002247).**

**R4-2002329 WF on R16 NR RRM enhancements – CGI reading**

*Type: other For: Approval  
 Source: ZTE*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002248 WF on R16 NR RRM enhancements – Mandatory MG patterns**

*Type: other For: Approval  
 Source: ZTE*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002249 WF on R16 NR RRM enhancements – Multiple Scell activation/deactivation and UE-specific CBW change**

*Type: other For: Approval  
 Source: Apple*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002250 WF on R16 NR RRM enhancements – Inter-frequency measurement without MG**

*Type: other For: Approval  
 Source: CMCC*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002251 WF on R16 NR RRM enhancements – FR2 inter-band CA requirement**

*Type: other For: Approval  
 Source: Huawei*

**Abstract:**

**Discussion:**

**Decision: Approved.**

##### 8.15.1.1 SRS carrier switching requirements [NR\_RRM\_Enh\_Core]

**R4-2000658 Interruption requirements due to SRS carrier switching**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

.

**Decision: Noted.**

**R4-2001033 Discussion on Interruption at SRS carrier switch**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2001267 CR to 38.133 on SRS carrier switching interruption requirements**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0484 Cat: B (Rel-16)  
 Source: ZTE*

**Discussion:**

**Decision: Postponed.**

**R4-2001268 CR to 36.133 on SRS carrier switching interruption requirements**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6799 Cat: B (Rel-16)  
 Source: ZTE*

**Discussion:**

**Decision: Postponed.**

**R4-2001275 Further discussion on SRS carrier switching RRM requirements**

*Type: other For: Discussion  
 Source: ZTE*

**Discussion:**

**Decision: Noted.**

**R4-2001661 Discussion on SRS carrier switching interruption**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001662 CR on NR SRS carrier switching interruption in TS 36.133**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6813 Cat: B (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Postponed.**

**R4-2002058 Discussion on remaining issues in SRS carrier switching**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

##### 8.15.1.2 Multiple Scell activation/deactivation [NR\_RRM\_Enh\_Core]

**R4-2000785 On remaining issues for activation delay extension due to multiple SCell**

*Type: other For: Discussion  
 38.133 v..  
 Source: Apple*

**Discussion:**

**Decision: Noted.**

**R4-2001012 On remaining open issues in delay extension of multiple SCell activation**

*Type: other For: Approval  
 Source: NEC*

**Abstract:**

Delay extension requirements for SCell activation during multiple SCell activation is discussed

**Discussion:**

**Decision: Noted.**

**R4-2001034 Discussion on Multiple SCell activation**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001641 Discussion on multiple SCell activation**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2002061 Discussion on Multiple SCell activation in NR**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2002089 On activation of multiple SCells**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Contribution on requirements for activation of multiple SCells.

**Discussion:**

**Decision: Noted.**

##### 8.15.1.3 CGI reading requirements with autonomous gap [NR\_RRM\_Enh\_Core]

**R4-2001035 Discussion on CGI reading requirement for NR**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001263 CR to 38.133 on CGI reading of NR cell**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0480 Cat: B (Rel-16)  
 Source: ZTE*

**Discussion:**

**Decision: Postponed.**

**R4-2001264 CR to 38.133 on interruption requirements for CGI reading**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0481 Cat: B (Rel-16)  
 Source: ZTE*

**Discussion:**

**Decision: Postponed.**

**R4-2001271 Updated simulation assumption on SIB1 decoding for NR CGI reading**

*Type: other For: Approval  
 Source: ZTE*

**Discussion:**

.

**Decision: Agreed.**

**R4-2001272 Simulation results of SIB1 decoding for NR CGI reading**

*Type: other For: Discussion  
 Source: ZTE*

**Discussion:**

**Decision: Noted.**

**R4-2001273 Further discussion on NR CGI reading with autonomous gaps**

*Type: other For: Discussion  
 Source: ZTE*

**Discussion:**

**Decision: Noted.**

**R4-2001364 PDSCH simulation result for SI reading**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the number of PDSCH samples for SI reading.

**Discussion:**

**Decision: Noted.**

**R4-2001403 Further considerations on CGI reading for NR**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Paper addressing open issues for NR CGI reading

**Discussion:**

**Decision: Noted.**

**R4-2001404 LTE CGI measurements with autonomous gaps for 36.133**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6801 Cat: B (Rel-16)  
 Source: Ericsson*

**Abstract:**

Requirements to read LTE CR in 38.133 according to work spluit

**Discussion:**

**Decision: Postponed.**

**R4-2001405 NR CGI measurements with autonomous gaps for 38.133**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0503 Cat: B (Rel-16)  
 Source: Ericsson*

**Abstract:**

Requirements to read NR CR in 38.133 according to work split

**Discussion:**

**Decision: Postponed.**

**R4-2001642 Discussion on NR CGI reading requirements**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001643 Simulation results for SIB1 decoding in CGI requirements**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001644 Discussion on LTE CGI reading requirements**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001645 CR to 36.133 on interruption requirements for CGI reading**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6808 Cat: B (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Postponed.**

**R4-2001646 CR to 36.133 on CGI reading of LTE cell**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6809 Cat: B (Rel-16)  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Postponed.**

**R4-2002046 discussion on CGI reading with autonomous gap**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

discussion on CGI reading with autonomous gap

**Discussion:**

**Decision: Noted.**

**R4-2002053 Discussion on interruption requirements for autonomous gaps for CGI reading**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

##### 8.15.1.4 BWP switching on multiple CCs [NR\_RRM\_Enh\_Core]

**R4-2000155 BWP switching delay requirement on multiple CCs**

*Type: other For: Approval  
 38.133 v..  
 Source: vivo*

**Discussion:**

**Decision: Noted.**

**R4-2000156 Interruption time of BWP switching delay on multiple CCs**

*Type: other For: Discussion  
 38.133 v..  
 Source: vivo*

**Discussion:**

**Decision: Noted.**

**R4-2000372 RRM requirements for BWP switching on multiple CCs**

*Type: other For: Discussion  
 Source: Intel Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000459 Discussion on BWP requirements for multiple CCs**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001013 Requirements for BWP switch delay on multiple CC**

*Type: other For: Approval  
 Source: NEC*

**Abstract:**

Delay requirements for BWP switching on multiple CC is discussed

**Discussion:**

**Decision: Noted.**

**R4-2001548 Discussion on BWP switching on multiple CCs**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001851 Analysis of partially overlapped BWP triggering on multiple CCs**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This paper provides further analysis of non-smultaneous BWP switching delay on multiple CCs

**Discussion:**

**Decision: Noted.**

**R4-2002047 discussion on Interruption requirements with BWP switch on multiple CCs**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on interruption requirements for RRC-based BWP switch considering multiple CCs.

**Discussion:**

**Decision: Noted.**

**R4-2002054 Discussion on timeline for BWP switch for multiple cells**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2002090 On simultaneously triggered BWP switching on multiple CCs**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Contribution on simultaneously triggered BWP switching on multiple component carriers.

**Discussion:**

**Decision: Noted.**

##### 8.15.1.5 Inter-frequency measurement requirement without MG [NR\_RRM\_Enh\_Core]

**R4-2000154 Remaining issues on inter-frequency measurement without gap**

*Type: other For: Discussion  
 38.133 v..  
 Source: vivo*

**Discussion:**

**Decision: Noted.**

**R4-2000385 Discussion about inter-frequency measurement without gap**

*Type: other For: Discussion  
 Source: Intel Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000460 Inter-frequency measurement requirement without gap**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2000644 RRM requirements on inter-frequency measurement without gap**

*Type: other For: Discussion  
 Source: CMCC*

**Discussion:**

**Decision: Noted.**

**R4-2000645 TP on introducing inter-frequency measurements without measurement gap**

*Type: other For: Discussion  
 Source: CMCC*

**Discussion:**

**Decision: Noted.**

**R4-2000646 LS on inter-frequency measurement without gap**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: CMCC*

**Discussion:**

**Decision: Noted.**

**R4-2000992 Further discussion on inter-frequency measurement requirement**

*Type: other For: Approval  
 Source: OPPO*

**Discussion:**

**Decision: Noted.**

**R4-2001663 [Draft] LS on inter-frequency measurement requirement without MG**

*Type: LS out For: Approval  
 to RAN2, RAN1  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001664 Discussion on inter-frequency without gap**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2002057 Discussion on inter-frequency measurements without gaps**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

##### 8.15.1.6 Mandatory MG patterns [NR\_RRM\_Enh\_Core]

**R4-2001269 LS on mandatory of measurement gap patterns**

*Type: LS out For: Approval  
 to RAN2  
 Source: ZTE*

**Discussion:**

**Decision: Revised to R4-2002252 (from R4-2001269).**

**R4-2002252 LS on mandatory of measurement gap patterns**

*Type: LS out For: Approval  
 to RAN2  
 Source: ZTE*

**Discussion:**

**Decision: Noted.**

**R4-2000561 Discussion on mandatory MG patterns for FR2**

*Type: other For: (not specified)  
 Source: NTT DOCOMO INC.*

**Discussion:**

**Decision: Noted.**

**R4-2000638 Further discussion on mandating gap patterns for Rel-16 NR**

*Type: other For: Approval  
 Source: CMCC*

**Discussion:**

**Decision: Noted.**

**R4-2000993 Discussion on mandatory measurement gap patterns and applicability**

*Type: other For: Approval  
 Source: OPPO*

**Discussion:**

**Decision: Noted.**

**R4-2001274 Further discussion on mandatary of measurement gap patterns**

*Type: other For: Discussion  
 Source: ZTE*

**Discussion:**

**Decision: Noted.**

**R4-2001345 Discussion on Mandatory GPs for NR Rel-16**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this paper we give proposal how a new conditional mandatory GP can be introduced and the needed conditions

**Discussion:**

**Decision: Noted.**

**R4-2001400 Considerations on mandatory gap patterns for NR only measurements in release 16**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on how to handle "NR only" measurement within release 16

**Discussion:**

**Decision: Noted.**

**R4-2001401 Mandatory gap patterns in NR RRM enhancement**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on which gap patterns should be mandated in release 16

**Discussion:**

**Decision: Noted.**

**R4-2001402 LS on mandatory gap patterns for release 16**

*Type: LS out For: Approval  
 to RAN WG2  
 Source: Ericsson*

**Abstract:**

LS to provide necessary info for RAN2 to work on signalling for NR only gaps in release 16

**Discussion:**

**Decision: Noted.**

**R4-2001665 Discussion on mandatory gap pattern in R-16**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001666 LS on mandatory gap patterns in R16**

*Type: LS out For: Approval  
 to RAN2  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001799 Discussion on mandatory MG patterns in Rel-16**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001800 LS on new capability for NR measurement and mandatory MG patterns in Rel-16**

*Type: LS out For: Approval  
 to RAN2  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2002063 Further discussion on mandatory measurement gaps**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

##### 8.15.1.7 UE-specific CBW change [NR\_RRM\_Enh\_Core]

**R4-2000461 Delay requirement for UE-specific channel bandwidth change**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2002065 Discussion on UE specific channel BW change**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

##### 8.15.1.8 Spatial relation switch for uplink [NR\_RRM\_Enh\_Core]

**R4-2000373 Discussion on requirements for spatial relation info switch for uplink**

*Type: other For: Discussion  
 Source: Intel Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2001036 Discussion on active spatial relation switch**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

**Decision: Noted.**

**R4-2001667 Discussion on spatial relation switch for uplink channels and SRS**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2002060 Discussion on requirements for spatial relation switch**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

**R4-2002088 On spatial relation switching delay requirements**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Contribution on spatial relation switching delay requirements.

**Discussion:**

**Decision: Noted.**

##### 8.15.1.9 Non-simultaneous UL carrier operation in FR2 [NR\_RRM\_Enh\_Core]

**R4-2002163 On RRM impact of Non-simultaneous UL for non-contiguous UL CA in FR2**

*Type: other For: Discussion  
 Source: Apple Inc.*

**Discussion:**

**Decision: Noted.**

##### 8.15.1.10 Inter-band CA requirement for FR2 UE measurement capability of independent Rx beam and/or common beam [NR\_RRM\_Enh\_Core]

**R4-2000381 RRM impact on inter-band CA in FR2**

*Type: other For: Discussion  
 Source: Intel Corporation*

**Discussion:**

**Decision: Noted.**

**R4-2000560 Discussion on inter-band CA requirement for FR2**

*Type: other For: (not specified)  
 Source: NTT DOCOMO INC.*

**Discussion:**

**Decision: Noted.**

**R4-2001582 Discussion on RRM impacts of FR2 inter-band CA**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2002064 RRM requirements with common and independent beams in FR2**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

**Decision: Noted.**

##### 8.15.1.11 Others [NR\_RRM\_Enh\_Core]

### 8.16 NR RRM requirements for CSI-RS based L3 measurement [NR\_CSIRS\_L3meas]

#### 8.16.1 RRM core requirements (38.133) [NR\_CSIRS\_L3meas-Core]

================================================================================

***Email discussion summary***

**R4-2002188 Email discussion summary for RAN4#94e\_#65\_NR\_CSIRS\_L3meas\_RRM\_Part\_1**

*Type: discussion For: Information  
 Source: Moderator (CATT)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002319 (from R4-2002188).**

**R4-2002319 Email discussion summary for RAN4#94e\_#65\_NR\_CSIRS\_L3meas\_RRM\_Part\_1**

*Type: discussion For: Information  
 Source: Moderator (CATT)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

Continue discussion in the 2nd round on the remaining open issues. Capture all agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002257 | WF on CSI-RS configuration and intra/inter-frequency measurements definition for CSI-RS based L3 measurement | CATT |

**Topic #1: CSI-RS measurement configuration**

Session chair: The RAN4 #93 agreements are as follows

* *Define requirements at least for 1 set of configurations*
  + *Option 1: 48PRBs and D = 1*
  + *Option 2: 48PRBs and D = 3*
* *FFS whether to define requirements for additional configurations*
  + *48PRBs and D = 1*
  + *48PRBs and D = 3*
  + *96PRBs and D = 1*
  + *96PRBs and D = 3*

Based on current email summary status there is no consensus to introduce additional configurations.

For the 2nd round discuss Issue 1-2 (down-selection between Option 1 and Option 2 for 1 set of configurations). Discussion on additional configurations (>1) can continue in RAN4 #94bis.

**Topic #2: Intra-frequency and inter-frequency measurement definition**

Issue 2-1: Whether define RRM requirement for case 2 in MO configuration?

Further discuss a compromise proposal from moderator in the 2nd round.

Issue 2-2: When CSI-RS resource of serving cell is available, a measurement is defined as CSI-RS based intra-frequency measurement provided

Further discuss a compromise proposal from moderator in the 2nd round.

Decision on Intra-frequency and inter-frequency measurement definition shall be made no later than in RAN4 #94bis.

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002257 | Approved |

================================================================================

**R4-2002189 Email discussion summary for RAN4#94e\_#66\_NR\_CSIRS\_L3meas\_RRM\_Part\_2**

*Type: discussion For: Information  
 Source: Moderator (OPPO)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002199**

**R4-2002199 Email discussion summary for RAN4#94e\_#66\_NR\_CSIRS\_L3meas\_RRM\_Part\_2**

*Type: discussion For: Information  
 Source: Moderator (OPPO)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002320 (from R4-2002199).**

**R4-2002320 Email discussion summary for RAN4#94e\_#66\_NR\_CSIRS\_L3meas\_RRM\_Part\_2**

*Type: discussion For: Information  
 Source: Moderator (OPPO)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

Continue discussion in the 2nd round on the remaining open issues. Capture all agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002258 | WF on CSI-RS based L3 measurement capability and requirements | OPPO |

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002258 | Approved |

================================================================================

**R4-2002257** **WF on CSI-RS configuration and intra/inter-frequency measurements definition for CSI-RS based L3 measurement**

*Type: other For: Approval  
 Source: CATT*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2002258 WF on CSI-RS based L3 measurement capability and requirements**

*Type: other For: Approval  
 Source: OPPO*

**Abstract:**

**Discussion:**

**Decision: Approved.**

##### 8.16.1.1 CSI-RS measurement bandwidth [NR\_CSIRS\_L3meas-Core]

**R4-2000386 Discussion about CSI-RS L3 measurement bandwidth**

*Type: other For: Discussion  
 Source: Intel Corporation*

**Discussion:**

.

**Decision: Noted.**

**R4-2000462 Simulation results for CSI-RS measurement BW**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2000582 Further discussion on CSI-RS measurement configuration for RRM**

**measurement requirement**

*Type: other For: Discussion  
 Source: CATT*

**Discussion:**

.

**Decision: Noted.**

**R4-2000636 Discussion on CSI-RS measurement bandwidth**

*Type: other For: Approval  
 Source: CMCC*

**Discussion:**

.

**Decision: Noted.**

**R4-2000655 Discussion on CSI-RS measurement bandwidth**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

.

**Decision: Noted.**

**R4-2000945 Discussion on CSI-RS parameters on RRM core requirements**

*Type: other For: Discussion  
 Source: NTT DOCOMO, INC.*

**Discussion:**

.

**Decision: Noted.**

**R4-2001583 Further discussion on CSI-RS based L3 measurement requirements**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Noted.**

##### 8.16.1.2 CSI-RS based intra-frequency and inter-frequency measurements definition [NR\_CSIRS\_L3meas-Core]

**R4-2000387 Discussion about CSI-RS L3 measurement definition**

*Type: other For: Discussion  
 Source: Intel Corporation*

**Discussion:**

.

**Decision: Noted.**

**R4-2000463 Definition of Intra and inter frequency for CSI-RS RRM**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2000583 Further discussion on definition of CSI-RS based intra-frequency and inter-frequency measurement**

*Type: other For: Discussion  
 Source: CATT*

**Discussion:**

.

**Decision: Noted.**

**R4-2000584 LS on CSI-RS based intra-frequency and inter-frequency Measurement definition**

*Type: LS out For: Approval  
 to RAN2  
 Source: CATT*

**Discussion:**

.

**Decision: Noted.**

**R4-2000637 Discussion on CSI-RS based intra-frequency measurements definition**

*Type: other For: Approval  
 Source: CMCC*

**Discussion:**

.

**Decision: Noted.**

**R4-2000656 CSI-RS based intra-f and inter-f measurement definition**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

.

**Decision: Noted.**

**R4-2000792 On the definition of CSI-RS based intra-frequency and inter-frequency layers**

*Type: other For: Discussion  
 Source: Apple*

**Discussion:**

.

**Decision: Noted.**

**R4-2000946 Definition of intra-frequency measurement for CSI-RS based L3 measurement**

*Type: other For: Discussion  
 Source: NTT DOCOMO, INC.*

**Discussion:**

.

**Decision: Noted.**

**R4-2000994 On definition of CSI-RS based intra-frequency and inter-frequency measurements**

*Type: other For: Approval  
 Source: OPPO*

**Discussion:**

.

**Decision: Noted.**

**R4-2001014 Definition of Intra and Inter-frequency CSI-RS based L3 measurements**

*Type: other For: Approval  
 Source: NEC*

**Abstract:**

Provided our views on the definition of Intra and Inter-frequency CSI-RS based L3 measurements

**Discussion:**

.

**Decision: Noted.**

**R4-2001277 Further discussion on definition of CSI-RS based RRM measurements**

*Type: other For: Discussion  
 Source: ZTE*

**Discussion:**

.

**Decision: Noted.**

**R4-2001656 Definition for the CSI-RS based intra-frequency and inter-frequency measurement**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Noted.**

**R4-2001657 [DRAFT] Reply LS on clarification about CSI-RS measurement**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Noted.**

**R4-2002055 Discussion on definition for intra and inter-frequency for CSI-RS based RRM measurements**

*Type: other For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

.

**Decision: Noted.**

##### 8.16.1.3 Measurement capability [NR\_CSIRS\_L3meas-Core]

**R4-2000464 Discussion on measurement capability for CSI-RS RRM**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2000585 Further discussion on CSI-RS based UE measurement capabilities**

*Type: other For: Discussion  
 Source: CATT*

**Discussion:**

.

**Decision: Noted.**

**R4-2000995 On Measurement capability for CSI-RS L3 measurement**

*Type: other For: Approval  
 Source: OPPO*

**Discussion:**

.

**Decision: Noted.**

**R4-2001276 Further discussion on UE measurement capability of CSI-RS based RRM measurements**

*Type: other For: Discussion  
 Source: ZTE*

**Discussion:**

.

**Decision: Noted.**

**R4-2001647 On synchronization assumption for CSI-RS measurement requirements**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Noted.**

##### 8.16.1.4 Intra-frequency measurement requirements [NR\_CSIRS\_L3meas-Core]

**R4-2000465 Cell identification requirements for CSI-RS RRM**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2000586 Discussion on CSI-RS based measurement requirements**

*Type: other For: Discussion  
 Source: CATT*

**Discussion:**

.

**Decision: Noted.**

**R4-2000947 QCL assumptions for CSI-RS based L3 measurement**

*Type: other For: Discussion  
 Source: NTT DOCOMO, INC.*

**Discussion:**

.

**Decision: Noted.**

**R4-2000996 On measurement requirement for CSI-RS based L3 measurements**

*Type: other For: Approval  
 Source: OPPO*

**Discussion:**

.

**Decision: Noted.**

**R4-2001658 Discussion on CSI-RS based L3 measurement requirements and scheduling restriction**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Noted.**

##### 8.16.1.5 Inter-frequency measurement requirements [NR\_CSIRS\_L3meas-Core]

##### 8.16.1.6 Others [NR\_CSIRS\_L3meas-Core]

**R4-2000466 Discussion on pre-emption on CSI-RS for L3 measurement**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2000467 Draft LS on pre-emption on CSI-RS for L3 measurement**

*Type: other For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

.

**Decision: Noted.**

**R4-2000657 Simulation results for CSI-RS based measurements**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

.

**Decision: Noted.**

**R4-2001648 On CSI-RS measurement capability**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

.

**Decision: Noted.**

### 8.17 NR support for high speed train scenario [NR\_HST]

#### 8.17.1 RRM core requirements (38.133) [NR\_HST-Core]

================================================================================

***Email discussion summary***

**R4-2002190 Email discussion summary for RAN4#94e\_#67\_NR\_HST\_RRM**

*Type: discussion For: Information  
 Source: Moderator (CMCC)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002321 (from R4-2002190).**

**R4-2002321 Email discussion summary for RAN4#94e\_#67\_NR\_HST\_RRM**

*Type: discussion For: Information  
 Source: Moderator (CMCC)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

Continue discussion in the 2nd round on the remaining open issues. Capture agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002253 | WF on NR HST RRM requirements | CMCC |

**Topic #2: Cell identification delay**

Issue 2-1: Whether Rel-15 SSB index acquiring delay requirements can be reused for NR HST

Agreement: Rel-15 SSB index acquiring delay requirements for non-DRX case is reused for NR HST

Issue 2-3: For DRX <= 320ms, whether 3 or 5 samples shall be used for measurement period

Agreement: In connected mode, for measurement delay with DRX cycle < 320ms, [5] samples are used.

**Topic #4: Beam management**

Issue 4-1: Whether Rel-15 CBD requirements (including delay and accuracy) based on SSB/CSI-RS can be reused for NR HST

Agreement: Rel-15 CBD requirements (including delay and accuracy) based on SSB/CSI-RS are reused for NR HST.

Issue 4-4: Whether Rel-15 L1-RSRP requirements (including delay and accuracy) based on SSB can be reused for NR HST

Agreement: Reuse Rel-15 SSB based L1-RSRP measurement requirements, including the measurement accuracy and measurement delay except the 1.5x scaling factor, for NR HST. FFS for whether to keep or remove 1.5x scaling factor

Issue 4-5: Whether Rel-15 L1-RSRP requirements (including delay and accuracy) based on CSI-RS can be reused for NR HST

Agreement: Reuse Rel-15 CSI-RS based L1-RSRP measurement requirements, including the measurement accuracy and measurement delay except the 1.5x scaling factor, for NR HST. FFS for whether to keep or remove 1.5x scaling factor

**Topic #5: Whether to enhance the NR- EUTRA inter-RAT measurement (SA) to support HST**

Agreement: Enhance NR- EUTRA inter-RAT measurement requirements to support HST.

Agreement: Enhance EUTRA-NR inter-RAT measurement requirements to support HST.

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002253 | Approved |
| [R4-2000573](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000573.zip) | Postponed |
| [R4-2000639](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000639.zip) | Postponed |
| [R4-2001390](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001390.zip) | Postponed |
| [R4-2000574](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2000573.zip) | Postponed |
| [R4-2001391](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001391.zip) | Postponed |
| [R4-2001392](http://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_94_e/Docs/R4-2001392.zip) | Postponed |

================================================================================

**R4-2002253 WF on NR HST RRM requirements**

*Type: other For: Approval  
 Source: CMCC*

**Abstract:**

**Decision: Approved.**

**R4-2000572 Further discussion on RRM requirements in NR HST scenarios**

*Type: other For: Discussion  
 Source: CATT*

**Discussion:**

**Decision: Noted.**

**R4-2000632 Discussion on RRM for NR high speed scenario**

*Type: other For: Approval  
 Source: CMCC*

**Discussion:**

**Decision: Noted.**

**R4-2000772 On NR HST RRM Requirements**

*Type: other For: Discussion  
 Source: Qualcomm, Inc.*

**Abstract:**

NR HST RRM Requirements

**Discussion:**

**Decision: Noted.**

**R4-2001346 System simulation results and RRM Requirements NR HST**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this paper we provide new additional system simulation results using a fully dynamic system simulator, for analyzing connected mode RRM performance under high speed train scenarios

**Discussion:**

**Decision: Noted.**

**R4-2001389 Considerations on high speed requirements for NR**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on open issues remaining

**Discussion:**

**Decision: Noted.**

**R4-2001659 Discussion on the RRM requirements in NR HST**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

##### 8.17.1.1 Cell re-selection [NR\_HST-Core]

**R4-2000573 CR on cell re-selection requirements for NR HST**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0447 Cat: B (Rel-16)  
 Source: CATT*

**Discussion:**

**Decision: Postponed.**

**R4-2000639 38.133 CR on cell re-selection requirements for Rel-16 NR HST**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0456 Cat: B (Rel-16)  
 Source: CMCC*

**Discussion:**

**Decision: Postponed.**

**R4-2001390 TP:High speed enhancements for NR idle mode**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Text proposal for idle mode high speed requirements in 38.133

**Discussion:**

**Decision: Noted.**

##### 8.17.1.2 Cell identification delay [NR\_HST-Core]

**R4-2000159 Discussion on cell identification delay for connected mode UE in NR HST**

*Type: other For: Discussion  
 38.133 v..  
 Source: vivo*

**Discussion:**

**Decision: Noted.**

**R4-2000574 CR on cell identification requirements for NR HST**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0448 Cat: B (Rel-16)  
 Source: CATT*

**Discussion:**

**Decision: Postponed.**

**R4-2000859 Cell identification delay requirements for DRX case in HST scenario**

*Type: other For: Discussion  
 38.133 v..  
 Source: NTT DOCOMO, INC.*

**Discussion:**

**Decision: Noted.**

**R4-2001391 TP:High speed enhancements for NR RRC connected mode**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

TP for connected mode high speed in 38.133

**Discussion:**

**Decision: Postponed.**

**R4-2001660 Discussion on SS-SINR in NR HST**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

##### 8.17.1.3 RLM [NR\_HST-Core]

**R4-2001355 RLM for NR HST**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the impact of NR RLM in HST.

**Discussion:**

**Decision: Noted.**

##### 8.17.1.4 Beam management [NR\_HST-Core]

**R4-2001356 Beam management for high speed train scenario**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the impact of beam management in HST.

**Discussion:**

**Decision: Noted.**

**R4-2001721 L1-RSRP measurement accuracy and delay for Rel-16 high speed train**

*Type: other For: Discussion  
 38.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The document has presented link simulation results for SSB and CSI-RS based L1-RSRP measurement accuracy.

From the simulation results and observations, the following proposals are made:

Proposal 1: SSB-based L1-RSRP measurement accuracy for Rel-15 NR can

**Discussion:**

**Decision: Noted.**

##### 8.17.1.5 Inter-RAT measurement [NR\_HST-Core]

**R4-2000160 Discussion on inter-RAT measurment requirements in NR HST**

*Type: other For: Discussion  
 38.133 v..  
 Source: vivo*

**Discussion:**

**Decision: Noted.**

**R4-2000631 Discussion on inter-RAT measurement requirements for NR HST**

*Type: other For: Approval  
 Source: CMCC*

**Discussion:**

**Decision: Noted.**

**R4-2001392 TP: interRAT NR high speed updates in 36.133**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

TP for interRAT high speed in 36.133

**Discussion:**

**Decision: Postponed.**

##### 8.17.1.6 Network assistance and UE capability signalling [NR\_HST-Core]

#### 8.17.2 Demodulation and CSI requirements (38.101-4 / 38.104) [NR\_HST-Perf]

##### 8.17.2.1 UE demodulation and CSI requirements (38.101-4) [NR\_HST-Perf]

###### 8.17.2.1.1 Scenarios and transmission schemes [NR\_HST-Perf]

###### 8.17.2.1.2 Requirements for HST-SFN [NR\_HST-Perf]

###### 8.17.2.1.3 Requirements for HST single tap [NR\_HST-Perf]

###### 8.17.2.1.4 Requirements for multi-path fading channels [NR\_HST-Perf]

###### 8.17.2.1.5 Network assistance and UE capability signalling [NR\_HST-Perf]

##### 8.17.2.2 BS demodulation requirements (38.104) [NR\_HST-Perf]

###### 8.17.2.2.1 PUSCH requirements [NR\_HST-Perf]

###### 8.17.2.2.2 PRACH requirements [NR\_HST-Perf]

###### 8.17.2.2.3 UL timing adjustment requirements [NR\_HST-Perf]

### 8.18 NR performance requirement enhancement [NR\_perf\_enh-Perf]

#### 8.18.1 UE demodulation and CSI requirements (38.101-4) [NR\_perf\_enh-Perf]

##### 8.18.1.1 NR CA PDSCH requirementS [NR\_perf\_enh-Perf]

##### 8.18.1.2 PMI reporting requirements with larger number of Tx ports [NR\_perf\_enh-Perf]

##### 8.18.1.3 LTE-NR co-existence for TDD [NR\_perf\_enh-Perf]

##### 8.18.1.4 FR1 CA power imbalance requirements [NR\_perf\_enh-Perf]

#### 8.18.2 BS demodulation requirements (38.104) [NR\_perf\_enh-Perf]

##### 8.18.2.1 30% TP test point [NR\_perf\_enh-Perf]

##### 8.18.2.2 Additional FR2 requirements [NR\_perf\_enh-Perf]

### 8.19 Over the air (OTA) base station (BS) testing TR [OTA\_BS\_testing-Perf]

#### 8.19.1 General (such as work plan, AH minutes) [OTA\_BS\_testing-Perf]

#### 8.19.2 Others [OTA\_BS\_testing-Perf]

### 8.20 2-step RACH for NR [NR\_2step\_RACH-Perf]

**R4-2000802 2-step RACH workplan**

*Type: other For: Approval  
 Source: ZTE Wistron Telecom AB*

**Session chair: include RRM part into discussion  
Discussion:**

.

**Decision: Noted.**

#### 8.20.1 BS Demodulation requirements (38.104/38.141-1/38.141-2) [NR\_2step\_RACH-Perf]

#### 8.20.2 Others [NR\_2step\_RACH-Perf]

================================================================================

***Email discussion summary***

**R4-2002191 Email discussion summary for RAN4#94e\_#68\_NR\_2step\_RACH\_RRM**

*Type: discussion For: Information  
 Source: Moderator (ZTE)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002322 (from R4-2002191).**

**R4-2002322 Email discussion summary for RAN4#94e\_#68\_NR\_2step\_RACH\_RRM**

*Type: discussion For: Information  
 Source: Moderator (ZTE)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

Continue discussion in the 2nd round on the remaining open issues. Capture agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002259 | WF on 2-step RACH RRM requirements | ZTE |

Work plan for 2-step RACH RRM requirements

The work plan for RRM part cannot be approved since the RRM objectives are not included in the WID objectives. The work plan discussion can be postponed.

RRM requirements for 2-step RACH

1. The exact WI objectives and WID revisions are in RAN scope.
2. Focus the discussion on candidate RRM requirements which can be discussed in RAN4 in case the WID objectives are revised to include RRM objectives to facilitate fast ramp up of RAN4 discussions in RAN4 #94bis if objectives are revised.

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002259 | Approved |

================================================================================

**R4-2002259 WF on 2-step RACH RRM requirements**

*Type: other For: Approval  
 Source: ZTE*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2001279 Discussion on RRM requirements for 2-step RACH**

*Type: other For: Discussion  
 Source: ZTE*

**Discussion:**

.

**Decision: Noted.**

**R4-2001492 On RRM core requirements for 2-step RACH**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This paper presents the initial discussion on RRM core requirements for 2-step RACH.

**Discussion:**

**Decision: Noted.**

**R4-2002129 Impact of Two Step RACH WI in RRM requirements**

*Type: other For: (not specified)  
 Source: Qualcomm*

**Discussion:**

**Decision: Noted.**

### 8.21 SON/MDT Support for NR [NR\_SON\_MDT]

#### 8.21.1 MDT related RRM requirements (38.133, 36.133) [NR\_SON\_MDT-Core]

================================================================================

***Email discussion summary***

**R4-2002192 Email discussion summary for RAN4#94e\_#69\_NR\_SON\_MDT\_RRM**

*Type: discussion For: Information  
 Source: Moderator (CMCC)*

**Abstract:**

**Discussion:**

**Decision: Revised to R4-2002323 (from R4-2002192).**

**R4-2002323 Email discussion summary for RAN4#94e\_#69\_NR\_SON\_MDT\_RRM**

*Type: discussion For: Information  
 Source: Moderator (CMCC)*

**Abstract:**

**Discussion:**

**Decision: Noted.**

1st round email discussion conclusions

Continue discussion in the 2nd round on the remaining open issues. Capture agreements in WF

|  |  |  |
| --- | --- | --- |
| R4-2002260 | WF on MDT RRM requirements | CMCC |

Response LS to RAN2:

Continue discussion based on R4-2001952 (revised to R4-2002261)

CRs/TPs

|  |  |
| --- | --- |
| **CR/TP number** | **Decision** |
| R4-2000649 | Revised |
| R4-2000650 | Revised |

2nd round email discussion conclusions

|  |  |
| --- | --- |
| **Tdoc** | **Decision** |
| R4-2002261 | Noted |
| R4-2002262 | Agreed |
| R4-2002344 | Agreed |
| R4-2002260 | Approved |

================================================================================

**R4-2002260 WF on MDT RRM requirements**

*Type: other For: Approval  
 Source: CMCC*

**Abstract:**

**Discussion:**

**Decision: Approved.**

**R4-2001952 Response LS on MDT Measurements**

*Type: LS out For: Approval  
 to RAN2  
 Source: Ericsson*

**Abstract:**

Response LS on MDT Measurements

**Discussion:**

**Decision: Revised to R4-2002261 (from R4-2001952).**

**R4-2002261 Response LS on MDT Measurements**

*Type: LS out For: Approval  
 to RAN2  
 Source: Ericsson*

**Abstract:**

Response LS on MDT Measurements

**Discussion:**

**Decision: Noted.**

**R4-2000648**

**Discussion on RRM requirements for Rel-16 MDT**

*Type: other For: Discussion  
 Source: CMCC*

**Discussion:**

**Decision: Noted.**

**R4-2000649 CR on logged MDT requirements (2, 3.3, 4.3, 5.3)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0457 Cat: B (Rel-16)  
 Source: CMCC, Ericsson*

**Discussion:**

**Decision: Revised to R4-2002262 (from R4-2000649).**

**R4-2002262 CR on logged MDT requirements (2, 3.3, 4.3, 5.3)**

*Type: CR For: Agreement  
 38.133 v16.2.0 CR-0457 Cat: B (Rel-16)  
 Source: CMCC, Ericsson*

**Discussion:**

**Decision: Agreed.**

**R4-2000650 CR on logged MDT requirements (2, 4.3)**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6795 Cat: B (Rel-16)  
 Source: CMCC, Ericsson*

**Discussion:**

**Decision: Revised to R4-2002263 (from R4-2000650).**

**R4-2002263 CR on logged MDT requirements (2, 4.3)**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6795 Cat: B (Rel-16)  
 Source: CMCC, Ericsson*

**Discussion:**

**Decision: Revised to R4-2002344 (from R4-2002263).**

**R4-2002344 CR on logged MDT requirements (2, 4.3)**

*Type: CR For: Agreement  
 36.133 v16.4.0 CR-6795 Cat: B (Rel-16)  
 Source: CMCC, Ericsson*

**Discussion:**

**Decision: Agreed.**

**R4-2001671 Discussion on SON/MDT support for NR on RRM impact**

*Type: other For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

**Decision: Noted.**

**R4-2001951 On UE requirements for NR MDT**

*Type: other For: Discussion  
 Source: Ericsson, CMCC*

**Abstract:**

On UE requirements for NR MDT

**Discussion:**

**Decision: Noted.**

## 9 Rel-16 spectrum related Work Items for NR

### 9.1 NR intra band Carrier Aggregation for xCC DL/yCC UL including contiguous and non-contiguous spectrum (x>=y) [NR\_CA\_R16\_intra]

#### 9.1.1 Rapporteur Input (WID/TR/CR) [NR\_CA\_R16\_intra-Core /Perf]

#### 9.1.2 UE RF for FR1 [NR\_CA\_R16\_intra-Core]

#### 9.1.3 UE RF for FR2 [NR\_CA\_R16\_intra-Core]

### 9.2 NR inter-band Carrier Aggregation/Dual Connectivity for 2 bands DL with x bands UL (x=1, 2) [NR\_CADC\_R16\_2BDL\_xBUL]

#### 9.2.1 Rapporteur Input (WID/TR/CR) [NR\_CADC\_R16\_2BDL\_xBUL-Core/Perf]

#### 9.2.2 NR inter band CA without any FR2 band(s) [NR\_CADC\_R16\_2BDL\_xBUL-Core]

#### 9.2.3 NR inter band CA with at least one FR2 band [NR\_CADC\_R16\_2BDL\_xBUL-Core]

### 9.3 EN-DC of 1 LTE band and 1 NR band [DC\_R16\_1BLTE\_1BNR\_2DL2UL]

#### 9.3.1 Rapporteur Input (WID/TR/CR) [DC\_R16\_1BLTE\_1BNR\_2DL2UL-Core/Perf]

#### 9.3.2 EN-DC without FR2 band [DC\_R16\_1BLTE\_1BNR\_2DL2UL-Core]

#### 9.3.3 EN-DC with FR2 band [DC\_R16\_1BLTE\_1BNR\_2DL2UL-Core]

### 9.4 EN-DC of 2 LTE band and 1 NR band [DC\_R16\_2BLTE\_1BNR\_3DL2UL]

#### 9.4.1 Rapporteur Input (WID/TR/CR) [DC\_R16\_2BLTE\_1BNR\_3DL2UL-Core/Perf]

#### 9.4.2 EN-DC without FR2 band [DC\_R16\_2BLTE\_1BNR\_3DL2UL-Core]

#### 9.4.3 EN-DC with FR2 band [DC\_R16\_2BLTE\_1BNR\_3DL2UL-Core]

### 9.5 EN-DC of 3 LTE band and 1 NR band [DC\_R16\_3BLTE\_1BNR\_4DL2UL]

#### 9.5.1 Rapporteur Input (WID/TR/CR) [DC\_R16\_3BLTE\_1BNR\_4DL2UL-Core/Perf]

#### 9.5.2 EN-DC without FR2 band [DC\_R16\_3BLTE\_1BNR\_4DL2UL-Core]

#### 9.5.3 EN-DC with FR2 band [DC\_R16\_3BLTE\_1BNR\_4DL2UL-Core]

### 9.6 EN-DC of 4 LTE band and 1 NR band [DC\_R16\_4BLTE\_1BNR\_5DL2UL]

#### 9.6.1 Rapporteur Input (WID/TR/CR) [DC\_R16\_4BLTE\_1BNR\_5DL2UL-Core/Perf]

#### 9.6.2 EN-DC without FR2 band [DC\_R16\_4BLTE\_1BNR\_5DL2UL-Core]

#### 9.6.3 EN-DC with FR2 band [DC\_R16\_4BLTE\_1BNR\_5DL2UL-Core]

### 9.7 EN-DC of x bands (x=1,2, 3, 4) LTE inter-band CA and 2 bands NR inter-band CA [DC\_R16\_xBLTE\_2BNR\_yDL2UL]

#### 9.7.1 Rapporteur Input (WID/TR/CR) [DC\_R16\_xBLTE\_2BNR\_yDL2UL-Core/Per]

#### 9.7.2 EN-DC including NR inter CA without FR2 band [DC\_R16\_xBLTE\_2BNR\_yDL2UL-Core]

#### 9.7.3 EN-DC including NR inter CA with FR2 band [DC\_R16\_xBLTE\_2BNR\_yDL2UL-Core]

### 9.8 Band combinations for SA NR supplementary uplink (SUL), NSA NR SUL, NSA NR SUL with UL sharing from the UE perspective (ULSUP) [NR\_SUL\_combos\_R16]

#### 9.8.1 Rapporteur Input (WID/TR/CR) [NR\_SUL\_combos\_R16-Core/Per]

#### 9.8.2 UE RF [NR\_SUL\_combos\_R16-Core]

### 9.9 NR Inter-band Carrier Aggregation for 3 bands DL with 1 band UL [NR\_CA\_R16\_3BDL\_1BUL]

#### 9.9.1 Rapporteur Input (WID/TR/CR) [NR\_CA\_R16\_3BDL\_1BUL-Core/Per]

#### 9.9.2 UE RF [NR\_CA\_R16\_3BDL\_1BUL-Core]

### 9.10 NR Inter-band Carrier Aggregation for 4 bands DL with 1 band UL [NR\_CA\_R16\_4BDL\_1BUL]

#### 9.10.1 Rapporteur Input (WID/TR/CR) [NR\_CA\_R16\_4BDL\_1BUL-Core/Per]

#### 9.10.2 UE RF [NR\_CA\_R16\_4BDL\_1BUL-Core]

### 9.11 NR Inter-band Carrier Aggregation/Dual connectivity for 3 bands DL with 2 bands UL [NR\_CADC\_R16\_3BDL\_2BUL]

#### 9.11.1 Rapporteur Input (WID/TR/CR) [NR\_CADC\_R16\_3BDL\_2BUL-Core/Per]

#### 9.11.2 UE RF [NR\_CADC\_R16\_3BDL\_2BUL-Core]

### 9.12 Dual Connectivity (EN-DC) with 3 bands DL and 3 bands UL [DC\_R16\_LTE\_NR\_3DL3UL]

#### 9.12.1 Rapporteur Input (WID/TR/CR) [DC\_R16\_LTE\_NR\_3DL3UL-Core/Per]

#### 9.12.2 UE RF [DC\_R16\_LTE\_NR\_3DL3UL-Core]

### 9.13 Dual Connectivity (EN-DC) of LTE inter-band CA xDL/1UL bands (x=2,3,4) and NR FR1 1DL/1UL band and NR FR2 1DL/1UL band [DC\_R16\_xBLTE\_2BNR\_yDL3UL]

#### 9.13.1 Rapporteur Input (WID/TR/CR) [DC\_R16\_xBLTE\_2BNR\_yDL3UL-Core/Per]

#### 9.13.2 UE RF [DC\_R16\_xBLTE\_2BNR\_yDL3UL-Core]

### 9.14 29dBm UE Power Class for B41 and n41 [LTE\_NR\_B41\_Bn41\_PC29dBm]

#### 9.14.1 Rapporteur Input (WID/TR/CR) [LTE\_NR\_B41\_Bn41\_PC29dBm]

#### 9.14.2 UE RF (36.101, 38.101-1, 38.101-3) [LTE\_NR\_B41\_Bn41\_PC29dBm]

#### 9.14.3 Others [LTE\_NR\_B41\_Bn41\_PC29dBm]

### 9.15 Power Class 2 UE for EN-DC (1 LTE FDD band +1 NR TDD band) [ENDC\_UE\_PC2\_FDD\_TDD-Core]

#### 9.15.1 General [ENDC\_UE\_PC2\_FDD\_TDD-Core]

#### 9.15.2 UE RF requirement [ENDC\_UE\_PC2\_FDD\_TDD-Core]

#### 9.15.3 Signaling [ENDC\_UE\_PC2\_FDD\_TDD-Core]

### 9.16 Introduction of NR band n259 [NR\_n259]

#### 9.16.1 UE RF (38.101-2) [NR\_n259-Core]

#### 9.16.2 BS RF (38.104) [NR\_n259-Core]

#### 9.16.3 RRM (38.133) [NR\_n259-Core]

#### 9.16.4 Others [NR\_n259-Core/Perf]

### 9.17 Adding 30MHz channel bandwidth for NR band n1 [NR\_n1\_BW]

#### 9.17.1 UE RF (38.101-1) [NR\_n1\_BW-Core]

#### 9.17.2 BS RF (38.104) [NR\_n1\_BW-Core]

#### 9.17.3 RRM (38.133) [NR\_n1\_BW]

#### 9.17.4 Others [NR\_n1\_BW]

### 9.18 Addition of wider channel bandwidth in NR band n28 [NR\_n28\_BW-Core]

#### 9.18.1 UE RF (38.101-1) [NR\_n28\_BW-Core]

#### 9.18.2 BS RF (38.104) [NR\_n28\_BW-Core]

#### 9.18.3 RRM (38.133) [NR\_n28\_BW-Core]

#### 9.18.4 Others [NR\_n28\_BW-Core/Perf]

### 9.19 Introduction of NR Band n26 [NR\_n26]

#### 9.19.1 UE RF (38.101-1) [NR\_n26]

#### 9.19.2 BS RF (38.104) [NR\_n26]

#### 9.19.3 RRM (38.133) [NR\_n26]

#### 9.19.4 Others [NR\_n26]

### 9.20 Adding 25MHz and 50MHz channel bandwidth in NR band n1 [NR\_n1\_BW2]

#### 9.20.1 UE RF (38.101-1) [NR\_n1\_BW2-Core]

#### 9.20.2 BS RF (38.104) [NR\_n1\_BW2-Core]

#### 9.20.3 RRM (38.133) [NR\_n1\_BW2-Core]

#### 9.20.4 Others [NR\_n1\_BW2-Core/Perf]

### 9.21 Addition of asymmetric channel bandwidth for NR band n66 [NR\_n66\_BW]

#### 9.21.1 UE RF (38.101-1) [NR\_n66\_BW]

#### 9.21.2 BS RF (38.104) [NR\_n66\_BW]

#### 9.21.3 RRM (38.133) [NR\_n66\_BW]

#### 9.21.4 OtherS [NR\_n66\_BW]

### 9.22 Adding wider channel bandwidth to NR band n38 [NR\_n38\_BW2]

#### 9.22.1 UE RF (38.101-1) [NR\_n38\_BW2]

#### 9.22.2 BS RF (38.104) [NR\_n38\_BW2]

#### 9.22.3 RRM (38.133) [NR\_n38\_BW2]

#### 9.22.4 Others [NR\_n38\_BW2]

### 9.23 LTE/NR spectrum sharing in band 48/n48 frequency range [NR\_n48\_LTE\_48\_coex-Core]

#### 9.23.1 General (such as work plan, AH minutes) [NR\_n48\_LTE\_48\_coex-Core]

#### 9.23.2 Channel raster, sync raster, and UL shift [NR\_n48\_LTE\_48\_coex-Core]

### 9.24 Adding 40 MHz channel bandwidth (15, 30 and 60kHz SCS) in NR band n3 [NR\_n3\_BW]

#### 9.24.1 UE RF (38.101-1) [NR\_n3\_BW]

#### 9.24.2 BS RF (38.104) [NR\_n3\_BW]

#### 9.24.3 RRM (38.133) [NR\_n3\_BW]

#### 9.24.4 Others [NR\_n3\_BW]

### 9.25 Adding 50 MHz channel bandwidth (15, 30 and 60kHz SCS) in NR band n65 [NR\_n65\_BW]

#### 9.25.1 UE RF (38.101-1) [NR\_n65\_BW]

#### 9.25.2 BS RF (38.104) [NR\_n65\_BW]

#### 9.25.3 RRM (38.133) [NR\_n65\_BW]

#### 9.25.4 Others [NR\_n65\_BW]

### 9.26 Introduction of NR Band n53 [NR\_n53]

#### 9.26.1 UE RF (38.101-1) [NR\_n53]

#### 9.26.2 BS RF (38.104) [NR\_n53]

#### 9.26.3 RRM (38.133) [NR\_n53]

#### 9.26.4 Others [NR\_n53]

### 9.27 Closed Rel-16 NR spectrum related WIs [WI code]

#### 9.27.1 UE RF [WI code]

#### 9.27.2 BS RF [WI code]

#### 9.27.3 RRM [WI code]

#### 9.27.4 Demodulation and CSI [WI code]

## 10 Rel-16 Study Items for NR

### 10.2 Study on radiated metrics and test methodology for the verification of multi-antenna reception perf. of NR UEs [FS\_NR\_MIMO\_OTA\_test]

#### 10.2.1 General [FS\_NR\_MIMO\_OTA\_test]

#### 10.2.2 Performance metrics [FS\_NR\_MIMO\_OTA\_test]

#### 10.2.3 Testing methodologies [FS\_NR\_MIMO\_OTA\_test]

##### 10.2.3.1 FR1 test methodologies [FS\_NR\_MIMO\_OTA\_test]

##### 10.2.3.2 FR2 test methodologies [FS\_NR\_MIMO\_OTA\_test]

#### 10.2.4 Channel Models [FS\_NR\_MIMO\_OTA\_test]

### 10.3 Study on 7 - 24GHz frequency range [FS\_7to24GHz\_NR]

#### 10.3.1 General [FS\_7to24GHz\_NR]

#### 10.3.2 Regulatory survey [FS\_7to24GHz\_NR]

#### 10.3.3 Boundary frequency and/or boundary conditions [FS\_7to24GHz\_NR]

#### 10.3.4 NR system parameters analysis [FS\_7to24GHz\_NR]

#### 10.3.5 Deployment scenarios [FS\_7to24GHz\_NR]

#### 10.3.6 RF technology aspects [FS\_7to24GHz\_NR]

#### 10.3.7 NR UE [FS\_7to24GHz\_NR]

##### 10.3.7.1 NR UE architecture [FS\_7to24GHz\_NR]

##### 10.3.7.2 TX requirements [FS\_7to24GHz\_NR]

##### 10.3.7.3 RX requirements [FS\_7to24GHz\_NR]

#### 10.3.8 NR BS [FS\_7to24GHz\_NR]

##### 10.3.8.1 BS types, BS requirement sets [FS\_7to24GHz\_NR]

##### 10.3.8.2 NR BS architecture [FS\_7to24GHz\_NR]

##### 10.3.8.3 TX requirements [FS\_7to24GHz\_NR]

##### 10.3.8.4 RX requirements [FS\_7to24GHz\_NR]

#### 10.3.9 BS EMC [FS\_7to24GHz\_NR]

## 12 Liaison and output to other groups

***LS reply on secondary DRX group***

Session chair: Email discussion deferred to RAN4 #94bis

**R4-2000781 On secondary DRX group for FR1+FR2 CA**

*Type: other For: Discussion  
 38.133 v..  
 Source: Apple*

**Discussion:**

.

**Decision:** The document was **not treated**.

**R4-2000782 LS on secondary DRX group for FR1+FR2 CA**

*Type: LS out For: Approval  
 to RAN2, RAN1  
 Source: Apple*

**Discussion:**

.

**Decision:** The document was **not treated**.

**R4-2001753 Discussions on RRM impact due to secondary DRX group**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution, we discuss the RRM impact of introducing a secondary DRX.

**Session Chair: Moved from AI 8.7.3**

**Discussion:**

.

**Decision:** The document was **not treated**.

**R4-2001755 Draft Reply LS on secondary DRX group**

*Type: LS out For: Approval  
 to RAN2  
 Source: Ericsson*

**Abstract:**

This contribution contains draft LS response related to RRM impact of introducing a secondary DRX.

**Session Chair: Moved from AI 8.7.3**

**Discussion:**

.

**Decision:** The document was **not treated**.

## 13 Revision of the Work Plan

### 13.1 Simplification of band combinations in RAN4 specifications

### 13.2 R17 new proposals

#### 13.2.1 Basket WI approach for adding existing channel bandwidth on existing NR bands

#### 13.2.2 Proposals on adding “brand new” channel bandwidth

#### 13.2.3 Basket WIs for LTE CA, EN-DC, NR CA and NR DC

### 13.3 Others

## 14 Any other business

## 15 Close of the E-meeting

Report prepared by: Kai-Erik Sunell