5 Test environments for RF test

5.0 General

5.0.1 Single PDU configuration for RF testing

For RF and performance test case execution on 5G SA UE's defined in TS 38.521-1 [14], TS 38.521-2 [15], TS 38.521-4 [17], IMS shall not be considered and UE's shall be able use RRC (IDLE, CONNECTED) preambles defined in TS 38.508-1 clause 4.5. Before entering RRC_CONNECTED or RRC_IDLE state during initial conditions or test procedure, it is recommended that UE is pre-configured with 0 or 1 PDU (non-IMS).

For EN-DC settings the corresponding requirement holds that IMS shall not be considered and it is recommended that UE is pre-configured with 0PDU/0PDN or 1PDU/1 PDN.

5.1 Requirements of test equipment

5.1.1 Requirements for transmission and reception tests

5.1.1.1 Requirements common for conducted and OTA tests

No common RF test environment requirements are specified in addition to the common requirements described in clause 4.2.

5.1.1.2 Requirements for conducted tests

No common RF test environment requirements are specified in addition to the common requirements described in clause 4.2.

5.1.1.3 Requirements for OTA tests

Editor's Note:

- The UE pre-configuration mentioned below to disable UL Tx diversity schemes shall be voided once a test methodology solution to minimize spectral flatness artefacts between TE and UE over all test points is defined.
- The permitted test methods for transmission and reception test are DFF, DFF with simplification for centre of beam measurements, IFF and NFTF and are described in TR 38.810[24]. The minimum requirements for each test setup are described in the following clauses.
- For conformance testing using the OTA test environment, the UE under test shall be pre-configured with UL Tx diversity schemes disabled to account for single polarization System Simulator (SS) in the test environment. The UE under test may transmit with dual polarization.

5.1.1.3.1 DFF and DFF with simplification for centre of beam measurements

- Far-field measurement system in an anechoic chamber.
  - The minimum far-field distance R for a traditional far field anechoic chamber can be calculated based on the following equation: $R > \frac{2D^2}{\lambda}$, where D is the diameter of the smallest sphere that encloses the radiating parts of the DUT.
- A positioning system such that the angle between the dual-polarized measurement antenna and the DUT has at least two axes of freedom and maintains a polarization reference.

- For DFF(without simplification), a positioning system such that the angle between the link antenna and the DUT has at least two axes of freedom and maintains a polarization reference; this positioning system for the link antenna is in addition to the positioning system for the measurement antenna and provides for an angular relationship independently controllable from the measurement antenna.

- For setups intended for measurements of UE RF characteristics in non-standalone (NSA) mode with 1 UL configuration, an LTE link antenna is used to provide the LTE link to the DUT. The LTE link antenna provides a stable LTE signal without precise path loss or polarization control.

- For setups intended for measurements in NR CA mode with FR1 and FR2 inter-band NR CA, test setup provides NR FR1 link to the DUT. The NR FR1 link has a stable and noise-free signal without precise path loss or polarization control.

- Maximum permitted test system uncertainty is specified in Annex F in 38.521-2[15].

5.1.1.3.2 IFF

- Indirect Far field of Compact Antenna Test Range(CATR) with quiet zone diameter at least D.

- The CATR system does not require a measurement distance of $R > \frac{2D^2}{\lambda}$ to achieve a plane wave as in a standard far field range.

- A positioning system such that the angle between the dual-polarized measurement antenna and the DUT has at least two axes of freedom and maintains a polarization reference.

- For setups intended for measurements of UE RF characteristics in non-standalone (NSA) mode with 1UL configuration, an LTE link antenna is used to provide the LTE link to the DUT. The LTE link antenna provides a stable LTE signal without precise path loss or polarization control.

- For setups intended for measurements in NR CA mode with FR1 and FR2 inter-band NR CA, test setup provides NR FR1 link to the DUT. The NR FR1 link has a stable and noise-free signal without precise path loss or polarization control.

- Maximum permitted test system uncertainty is specified in Annex F in 38.521-2[15].

5.1.1.3.3 NFTF

- Radiated Near Field UE beam pattern are measured and based on the NFTF mathematical transform, the final metric such as EIRP is the same as the metric for the DFF setup

- A positioning system such as the angle between the dual-polarized measurement/link antenna and the DUT has at least two axes of freedom and maintains a polarization reference

- For setups intended for measurements of UE RF characteristics in non-standalone (NSA) mode with 1UL configuration, an LTE link antenna is used to provide the LTE link to the DUT. The LTE link antenna provides a stable LTE signal without precise path loss or polarization control.

- For setups intended for measurements in NR CA mode with FR1 and FR2 inter-band NR CA, test setup provides NR FR1 link to the DUT. The NR FR1 link has a stable and noise-free signal without precise path loss or polarization control.

- Maximum permitted test system uncertainty is specified in Annex F in 38.521-2[15].

5.1.2 Requirements for performance tests

5.1.2.1 Void

5.1.2.2 Void

5.1.2.3 Requirements for OTA test method

Editor's Note: This subclause is intended to describe the test equipment requirements which are specific to OTA test environment for performance tests.

- The UE pre-configuration mentioned below to disable UL Tx diversity schemes shall be voided once a test methodology solution to minimize spectral flatness artefacts between TE and UE over all test points is defined.

- For conformance testing using the OTA test environment, the UE under test shall be pre-configured with UL Tx diversity schemes disabled to account for single polarization System Simulator (SS) in the test environment. The UE under test may transmit with dual polarization.

5.2 Reference test conditions

5.2.1 Signal levels

5.2.1.1 Signal Levels for conducted testing

For NR FR1 cell, the downlink power settings are specified in TS 38.521-1[14] and TS 38.521-3[16].

The uncertainty value is specified in TS 38.521-1 [14] Annex F or in TS 38.521-3 [16] Annex F.

5.2.1.2 Signal Levels for OTA testing

5.2.1.2.1 Downlink Signal Levels

For E-UTRA cell in EN-DC with FR2 NR, the downlink power settings are specified in clause 4.7 of TS 38.521-3[16].

For FR2 NR cell, the downlink power settings are specified in Annex C.0 of TS 38.521-2[15] and Annex C.0 of TS 38.521-3[16].

The uncertainty value is specified in TS 38.521-2 [15] Annex F or in TS 38.521-3 [16] Annex F.

5.2.2 Test Frequencies

As defined in clause 4.3.1.1 with the following exceptions for Demodulation test cases

5.2.2.1 NR operating bands in FR1

5.2.2.1.1 Reference test frequencies for NR operating band n1

Table 5.2.2.1-1: Void

Table 5.2.2.1.1-1: Test frequencies for NR operating band n1 and SCS 15 kHz

CBW [MHz]	*carrier Band width*	Range	Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA*	*offsetToCarrier* [Carrier	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB*	k_{SSB}	Offset Carrier CORE

	[PRBs]						[ARFCN]	PRBs]			[ARFCN]		ET#0 [RBs Note
10	52	Downlink	Mid	2140	428000	2135.32	427064	0	15	5344	427490	10	1
		Uplink	Mid	1950	390000	1945.32	389064	0	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{\text{OffsetCORESET-0-Carrier}}$ in Annex C expressed in number of common RBs.

5.2.2.1.2 Reference test frequencies for NR operating band n2

Table 5.2.2.1.2-1: Test frequencies for NR operating band n2 and SCS 15 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
10	52	Downlink	Mid	1960	392000	1955.32	391064	0	15	4894	391490	10	1
		Uplink	Mid	1880	376000	1875.32	375064	0	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{\text{OffsetCORESET-0-Carrier}}$ in Annex C expressed in number of common RBs.

5.2.2.1.3 Reference test frequencies for NR operating band n3

Table 5.2.2.1.3-1: Test frequencies for NR operating band n3 and SCS 15 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
10	52	Downlink	Mid	1842.5	368500	1837.82	367564	0	15	4598	367930	2	0
		Uplink	Mid	1747.5	349500	1742.82	348564	0	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{\text{OffsetCORESET-0-Carrier}}$ in Annex C expressed in number of common RBs.

5.2.2.1.4 FFS

5.2.2.1.5 Reference test frequencies for NR operating band n5

Table 5.2.2.1.5-1: Test frequencies for NR operating band n5 and SCS 15 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
10	52	Downlink	Mid	881.5	176300	876.82	175364	0	15	2197	175730	2	0
		Uplink	Mid	836.5	167300	831.82	166364	0	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													
Note 3: This UE channel bandwidth is applicable only to downlink.													

5.2.2.1.6 FFS

5.2.2.1.7 Reference test frequencies for NR operating band n7

Table 5.2.2.1.7-1: Test frequencies for NR operating band n7 and SCS 15 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
10	52	Downlink	Mid	2655	531000	2650.32	530064	0	15	6630	530430	2	0
		Uplink	Mid	2535	507000	2530.32	506064	0	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource blocks ass subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.1.8 Reference test frequencies for NR operating band n8

Table 5.2.2.1.8-1: Test frequencies for NR operating band n8 and SCS 15 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
10	52	Downlink	Mid	942.5	188500	937.82	187564	0	15	2348	187930	2	0
		Uplink	Mid	897.5	179500	892.82	178564	0	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.1.9 – 5.2.2.1.11 FFS

5.2.2.1.12 Reference test frequencies for NR operating band n12

Table 5.2.2.1.12-1: Test frequencies for NR operating band n12 and SCS 15 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
10	52	Downlink	Mid	737.5	147500	732.82	146564	0	15	1837	146930	2	0
		Uplink	Mid	707.5	141500	702.82	140564	0	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.1.13 FFS

5.2.2.1.14 Reference test frequencies for NR operating band n14

Table 5.2.2.1.14-1: Test frequencies for NR operating band n14 and SCS 15 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
10	52	Downlink	Mid	763	152600	758.32	151664	0	15	1903	152210	2	1
		Uplink	Mid	793	158600	788.32	157664	0	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcchConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET0Carrier}$ in Annex C expressed in number of common RBs.													
Note 3: 10 MHz test channel bandwidth is tested with Low range test frequency only. Low range test frequency shall be used instea High range test frequencies.													

5.2.2.1.15 – 5.2.2.1.19 FFS

5.2.2.1.20 Reference test frequencies for NR operating band n20

Table 5.2.2.1.20-1: Test frequencies for NR operating band n20 and SCS 15 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
10	52	Downlink	Mid	806	161200	801.32	160264	0	15	2009	160810	2	1
		Uplink	Mid	847	169400	842.32	168464	0	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET-0-Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.1.21 – 5.2.2.1.23 FFS

5.2.2.1.24 Reference test frequencies for NR operating band n24

Table 5.2.2.1.24-1: Test frequencies for NR operating band n24 and SCS 15 kHz

UL/DL CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 3	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r CORE SET 0 [RB Not 2
10/10	52	Downlink	Mid	1531.0	306200	1526.32	305264	0	15	3823	305810	2	1
		Uplink	Mid	1632.5	326500	1627.82	325564	0	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													
Note 3: For symmetric CBW combinations, Low and Mid test frequencies are specified using Tx-Rx spacing of -101.5 MHz and Hig specified using Tx-Rx spacing of -120.5 MHz													
Note 4: For asymmetric CBW combination UL=10MHz and DL=5MHz, Low and Mid test frequencies are specified using Tx-Rx spa High test frequency is specified using Tx-Rx spacing of -118 MHz.													

5.2.2.1.25 Reference test frequencies for NR operating band n25

Table 5.2.2.1.25-1: Test frequencies for NR operating band n25 and SCS 15 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r CORE SET 0 [RB Not 2
10	52	Downlink	Mid	1962.5	392500	1957.82	391564	0	15	4898	391930	2	0
		Uplink	Mid	1882.5	376500	1877.82	375564	0	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.1.26 Reference test frequencies for NR operating band n26

Table 5.2.2.1.26-1: Test frequencies for NR operating band n26 and SCS 15 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs carr r COR SET 0 [RB Not 2
10	52	Downlink	Mid	876.5	175300	871.82	174364	0	15	2183	174730	2	0
		Uplink	Mid	831.5	166300	826.82	165364	0	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.

5.2.2.1.27 FFS

5.2.2.1.28 Reference test frequencies for NR operating band n28

Table 5.2.2.1.28-1: Test frequencies for NR operating band n28 and SCS 15 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 3
10	52	Downlink	Mid	780.5	156100	775.82	155164	0	15	1943	155530	2	0
		Uplink	Mid	725.5	145100	720.82	144164	0	-	-	-	-	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: Carrier centre frequency moved for Mid Range and CBW=20 MHz due to Note 7 in TS 38.101-1 [7], Table 5.3.5-1.

Note 3: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.

Note 4: No carrier centre frequency specified for Mid Range and CBW=30 MHz due to Note 7 in TS 38.101-1 [7], Table 5.3.5-1. For Mid range and CBW=30 MHz to be tested, use Low range and CBW=30 MHz instead.

5.2.2.1.29 FFS

5.2.2.1.30 Reference test frequencies for NR operating band n30

Table 5.2.2.1.30-1: Test frequencies for NR operating band n30 and SCS 15 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
10	52	Downlink	Mid	2355	471000	2350.32	470064	0	15	5880	470430	2	0
		Uplink	Mid	2310	462000	2396.04	479208	0	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.1.31 – 5.2.2.1.37 FFS

5.2.2.1.38 Reference test frequencies for NR operating band n38

Table 5.2.2.1.38-1: Test frequencies for NR operating band n38 and SCS 15 kHz

FFS

Table 5.2.2.1.38-2: Test frequencies for NR operating band n38 and SCS 30 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
40	106	Downlink & Uplink	Mid	2595	519000	2575.92	515184	0	30	6450	516030	18	0
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-4 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.1.39 Reference test frequencies for NR operating band n39

Table 5.2.2.1.39-1: Test frequencies for NR operating band n39 and SCS 15 kHz

FFS

Table 5.2.2.1.39-2: Test frequencies for NR operating band n39 and SCS 30 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
40	106	Downlink & Uplink	Mid	1900	380000	1880.92	376184	0	30	4714	377090	14	0
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.1.40 Reference test frequencies for NR operating band n40

Table 5.2.2.1.40-1: Test frequencies for NR operating band n40 and SCS 15 kHz

FFS

Table 5.2.2.1.40-2: Test frequencies for NR operating band n40 and SCS 30 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
40	106	Downlink & Uplink	Mid	2350	470000	2330.92	466184	0	30	5839	467090	14	0
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.1.41 Reference test frequencies for NR operating band n41

Table 5.2.2.1.41-1: Test frequencies for NR operating band n41, SCS 15 kHz and ΔFRaster 15 kHz

FFS

Table 5.2.2.1.41-2: Test frequencies for NR operating band n41, SCS 30 kHz and ΔFRaster 30 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
40	106	Downlink & Uplink	Mid	2592.99	518598	2573.91	514782	0	30	6444	515550	16	0

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-4 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.

5.2.2.1.42 – 5.2.2.1.47 FFS

5.2.2.1.48 Reference test frequencies for NR operating band n48

Table 5.2.2.1.48-1: Test frequencies for NR operating band n48 and SCS 15 kHz

FFS

Table 5.2.2.1.48-2: Test frequencies for NR operating band n48 and SCS 30 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
40	106	Downlink & Uplink	Mid	3624.99	641666	3605.91	640394	0	30	7923	640704	22	0

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-4 in TS 38.213 [22]. The va Index is signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expresse resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.

Note 3: For this bandwidth, the minimum requirements are restricted to operation when carrier is configured as a downl of a CA configuration. As the bandwidth is limited to SCell then absence of CORESET#0 is indicated in the MIB =31, *controlResourceSetZero*=0 and *searchSpaceZero = 0* (TS 38.213 [22], clause 13).

5.2.2.1.49 FFS

5.2.2.1.50 Reference test frequencies for NR operating band n50

Table 5.2.2.1.50-1: Test frequencies for NR operating band n50 and SCS 15 kHz

FFS

Table 5.2.2.1.50-2: Test frequencies for NR operating band n50 and SCS 30 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
40	106	Downlink & Uplink	Mid	1474.5	294900	1455.42	291084	0	30	3648	291870	22	0
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-2 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													
Note 3: This UE channel bandwidth is applicable only to downlink (TS 38.101-1 table 5.3.5-1).													

5.2.2.1.51 – 5.2.2.1.64 FFS

5.2.2.1.65 Reference test frequencies for NR operating band n65

Table 5.2.2.1.65-1: Test frequencies for NR operating band n65 and SCS 15 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
10	52	Downlink	Mid	2155	431000	2150.32	430064	0	15	5383	430610	2	1
		Uplink	Mid	1965	393000	1960.32	392064	0	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The va Index is signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expresse resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.1.66 Reference test frequencies for NR operating band n66

Table 5.2.2.1.66-1: Test frequencies for NR operating band n66, uplink and downlink channel bandwidth combinations and SCS 15 kHz

UL/DL CBW Combination (Asymmetric BCS) Note 3	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Of Ca e CO ES # [RI No
10/10	10	52	Downlink	Mid	2145	429000	2140.32	428064	0	15	5355	428430	2	
	10	52	Uplink	Mid	1745	349000	1740.32	348064	0	-	-	-	-	

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.

Note 3 Asymmetric CBW BCS refers to applicable asymmetric UL and DL channel bandwidth combination set as specified in TS 3 5.3.6-1 for NR band n66.

5.2.2.1.67 – 5.2.2.1.69 FFS

5.2.2.1.70 Reference test frequencies for NR operating band n70

Table 5.2.2.1.70-1: Test frequencies for NR operating band n70, default Tx-RX frequency separation 300MHz, uplink and downlink channel bandwidth combinations and SCS 15 kHz

UL/DL Bandwidth combination	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Of Ca e CO ES # [RI No
10/10	10	52	Downlink	Mid	2002.5	400500	1997.82	399564	0	15	5001	400110	2	
	10	52	Uplink	Mid	1702.5	340500	1697.82	339564	0	-	-	-	-	

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.

5.2.2.1.71 Reference test frequencies for NR operating band n71

Table 5.2.2.1.71-1: Test frequencies for NR operating band n71 and SCS 15 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
10	52	Downlink	Mid	634.5	126900	629.82	125964	0	15	1581	126510	2	1
		Uplink	Mid	680.5	136100	675.82	135164	0	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.1.72 – 5.2.2.1.73 FFS

5.2.2.1.74 Reference test frequencies for NR operating band n74

Table 5.2.2.1.74-1: Test frequencies for NR operating band n74 and SCS 15 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
10	52	Downlink	Mid	1496.5	299300	1491.82	298364	0	15	3736	298850	6	1
		Uplink	Mid	1448.5	289700	1443.82	288764	0	-	-	-	-	-
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.1.75 – 5.2.2.1.76 FFS

5.2.2.1.77 Reference test frequencies for NR operating band n77

Table 5.2.2.1.77-1: Test frequencies for NR operating band n77, SCS 15 kHz and ΔFRaster 15 kHz

FFS

Table 5.2.2.1.77-2: Test frequencies for NR operating band n77, SCS 30 kHz and ΔFRaster 30 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
40	106	Downlink & Uplink	Mid	3750	650000	3730.92	648728	0	30	8010	649056	16	0
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-4 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.1.78 Reference test frequencies for NR operating band n78

Table 5.2.2.1.78-1: Test frequencies for NR operating band n78, SCS 15 kHz and ΔF_{Raster} 15 kHz

FFS

Table 5.2.2.1.78-2: Test frequencies for NR operating band n78, SCS 30 kHz and ΔF_{Raster} 30 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
40	106	Downlink & Uplink	Mid	3549.99	636666	3530.91	635394	0	30	7871	635712	6	0
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-4 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.1.79 Reference test frequencies for NR operating band n79

Table 5.2.2.1.79-1: Test frequencies for NR operating band n79, SCS 15 kHz and ΔF_{Raster} 15 kHz

FFS

Table 5.2.2.1.79-2: Test frequencies for NR operating band n79, SCS 30 kHz and ΔF_{Raster} 30 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
40	106	Downlink & Uplink	Mid	4700.01	713334	4680.93	712062	0	30	8672	712608	18	8
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-6 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.2 NR operating bands in FR2

5.2.2.2.1 Reference test frequencies for NR operating band n257

Table 5.2.2.2.1-1: Test frequencies for NR operating band n257, SCS 60 kHz and ΔFRaster 60 kHz

FFS

Table 5.2.2.2.1-2: Test frequencies for NR operating band n257, SCS 120 kHz and ΔFRaster 120 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
100	66	Downlink & Uplink	Mid	27999.96	2079165	27952.44	2078373	0	120	22472	2078875	11	6
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-8 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.2.2 Reference test frequencies for NR operating band n258

Table 5.2.2.2.2-1: Test frequencies for NR operating band n258, SCS 60 kHz and ΔFRaster 60 kHz

FFS

Table 5.2.2.2.2-2: Test frequencies for NR operating band n258, SCS 120 kHz and ΔFRaster 120 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
100	66	Downlink & Uplink	Mid	25875	204374 9	25827. 48	204295 7	0	120	22349	204345 1	7	6
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-8 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.2.3 Reference test frequencies for NR operating band n259

Table 5.2.2.2.3-1: Test frequencies for NR operating band n260, SCS 60 kHz and ΔFRaster 60 kHz

FFS

Table 5.2.2.2.3-2: Test frequencies for NR operating band n260, SCS 120 kHz and ΔFRaster 120 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
100	66	Downlink & Uplink	Mid	41499. 96	230416 5	41452. 44	230337 3	102	120	23253	230380 3	11	3
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-8 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.2.4 Reference test frequencies for NR operating band n260

Table 5.2.2.2.4-1: Test frequencies for NR operating band n260, SCS 60 kHz and ΔFRaster 60 kHz

FFS

Table 5.2.2.2.4-2: Test frequencies for NR operating band n260, SCS 120 kHz and ΔFRaster 120 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
100	66	Downlink & Uplink	Mid	38499.96	2254165	38452.44	2253373	0	120	23079	2253691	3	3
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-8 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.2.2.2.5 Reference test frequencies for NR operating band n261

Table 5.2.2.2.5-1: Test frequencies for NR operating band n261, SCS 60 kHz and ΔFRaster 60 kHz

FFS

Table 5.2.2.2.5-2: Test frequencies for NR operating band n261, SCS 120 kHz and ΔFRaster 120 kHz

CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offs Carr r COR SET 0 [RB Not 2
100	66	Downlink & Uplink	Mid	27924.96	2077915	27877.44	2077123	0	120	22467	2077435	0	3
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-8 in TS 38.213 [22]. The value of CORE signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resourc kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.													
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.													

5.3 Void

Editor's Note: Reserved for future use.

5.4 Default NG-RAN RRC message and information elements contents

5.4.1 Radio resource control information elements

As defined in clause 4.6.3 with the following exceptions:

For Tx test cases in which Power Class 3 UEs verifying Power Class 3 requirements, refer to Table 5.4.1-1; For Tx test cases in which Power Class 2 UEs verifying Power Class 2 requirements, refer to Table 5.4.1-2.

Table 5.4.1-1: *P-Max-PC3*

Derivation Path: Table 4.6.3-89			
Information Element	**Value/remark**	**Comment**	**Condition**
P-Max	Not present		SA
	23		EN-DC

Table 5.4.1-2: *P-Max-PC2*

Derivation Path: Table 4.6.3-89			
Information Element	**Value/remark**	**Comment**	**Condition**
P-Max	Not present		SA
	26		EN-DC

Condition	Explanation
SA	NR standalone RF tests cases
EN-DC	EN-DC RF tests cases specified in 38.521-3

Table 5.4.1-3: Void

Table 5.4.1-4: PUSCH-Config

Derivation Path: Clause 4.6.3 Table 4.6.3-118			
Information Element	**Value/remark**	**Comment**	**Condition**
PUSCH-Config ::= SEQUENCE {			
maxRank	2		2TX_UL_MIMO
	1		ULFPTx_Mode1 or ULFPTx_Mode2 or ULFPTx_ModeFull
ul-FullPowerTransmission-r16	Not present		2TX_UL_MIMO
	fullpowerMode 1		ULFPTx_Mode1
	fullpowerMode 2		ULFPTx_Mode2
	fullpower		ULFPTx_ModeFull
}			

Condition	Explanation
2TX_UL_MIMO	UL-MIMO test cases with 2 Tx antenna ports
ULFPTx_Mode1	UL-MIMO test cases with UEs supporting UL full power transmission Mode-1
ULFPTx_Mode2	UL-MIMO test cases with UEs supporting UL full power transmission Mode-2
ULFPTx_ModeFull	UL-MIMO test cases with UEs supporting UL full power transmission Mode-full power

CSI-RS for Tracking

Table 5.4.1-5: CSI-RS-ResourceMapping for TRS

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row1	0001		TRS
}			
firstOFDMSymbolInTimeDomain	6	l_0 = 6 for CSI-RS resource 1 and 3	TRS AND FR1
	10	l_0 = 10 for CSI-RS resource 2 and 4	TRS AND FR1
	8	l_0 = 8 for CSI-RS resource 1	TRS AND FR2
	12	l_0 = 12 for CSI-RS resource 2	TRS AND FR2
nrofPorts	p1		TRS
Cdm-Type	noCDM		TRS
Density CHOICE{			
three	Null		TRS
}			
freqBand	CSI-FrequencyOccupation for TRS		TRS
}			

Condition	Explanation
TRS	Tracking-Reference Signal

Table 5.4.1-6: CSI-ResourcePeriodicityAndOffset for TRS

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
slots20	0	SCS 15kHz, CSI-RS resource 1 and 2	TRS AND FR1_15kHz
	1	SCS 15kHz, CSI-RS resource 3 and 4	TRS AND FR1_15kHz
Slots40	1	SCS 30kHz, CSI-RS resource 1 and 2	TRS AND FR1_30kHz
	2	SCS 30kHz, CSI-RS resource 3 and 4	TRS AND FR1_30kHz
Slots80	2	SCS 60kHz, FR1, CSI-RS resource 1 and 2	TRS AND FR1_60kHz
	3	SCS 60kHz, FR1, CSI-RS resource 3 and 4	TRS AND FR1_60kHz
	40	SCS 60kHz, FR2, CSI-RS resource 1 and 2	TRS AND FR2_60kHz
Slots160	80	SCS 120kHz, CSI-RS resource 1 and 2	TRS AND FR2_120kHz
}			

Condition	Explanation
FR1_15kHz	FR1 is used under the test. SCS is set to 15kHz.
FR1_30kHz	FR1 is used under the test. SCS is set to 30kHz.
FR1_60kHz	FR1 is used under the test. SCS is set to 60kHz.
FR2_60kHz	FR2 is used under the test. SCS is set to 60kHz.
FR2_120kHz	FR2 is used under the test. SCS is set to 120kHz.
TRS	Tracking-Reference Signal

Table 5.4.1-7: *CSI-MeasConfig for TRS*

Derivation Path: TS 38.508-1 Table 4.6.3-38			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-MeasConfig::= SEQUENCE {			
nzp-CSI-RS-ResourceToAddModList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-Resources)) OF NZP-CSI-RS-Resource {	2 entries in case of FR2 4 entries in case of FR1	2 entries in case of FR2 4 entries in case of FR1	
NZP-CSI-RS-Resource[1]	NZP-CSI-RS-Resource for TRS (1)	entry 1 CSI-RS resource 1	
NZP-CSI-RS-Resource[2]	NZP-CSI-RS-Resource for TRS (2)	entry 2 CSI-RS resource 2	
NZP-CSI-RS-Resource[3]	NZP-CSI-RS-Resource for TRS (3)	entry 3 CSI-RS resource 3	FR1
NZP-CSI-RS-Resource[4]	NZP-CSI-RS-Resource for TRS (4)	entry 4 CSI-RS resource 4	FR1
}			
nzp-CSI-RS-ResourceSetToAddModList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSets)) OF NZP-CSI-RS-ResourceSet {	1 entry		
NZP-CSI-RS-ResourceSet[1]	NZP-CSI-RS-ResourceSet for TRS	entry 1	
}			
csi-IM-ResourceToAddModList	Not present		
csi-IM-ResourceSetToAddModList	Not present		
csi-SSB-ResourceSetToAddModList	Not present		
csi-ResourceConfigToAddModList SEQUENCE (SIZE (1..maxNrofCSI-ResourceConfigurations)) OF CSI-ResourceConfig {	1 entry		
CSI-ResourceConfig[1]	CSI-ResourceConfig for TRS	entry 1	
}			
reportTriggerSize	Not present		
aperiodicTriggerStateList SetupRelease	Not present		
}			

Table 5.4.1-8: NZP-CSI-RS-Resource for TRS

Derivation Path: 38.508-1 Table 4.6.3-85			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-Resource ::= SEQUENCE {			
NZP-CSI-RS-ResourceId	0	CSI-RS resource 1	
	1	CSI-RS resource 2	
	2	CSI-RS resource 3	
	3	CSI-RS resource 4	
CSI-RS-ResourceMapping	CSI-RS-ResourceMapping for TRS		Content conditioned by the CSI-RS resource #
powerControlOffset	0		
powerControlOffsetSS	db0		
scramblingID	ScramblingId		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset for TRS		Content conditioned by the CSI-RS resource #
qcl-InfoPeriodicCSI-RS	TCI-StateId		
}			

Table 5.4.1-9: NZP-CSI-RS-ResourceSet for TRS

Derivation Path: Table 4.6.3-87			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-ResourceSet ::= SEQUENCE {			
nzp_CSI_ResourceSetId	0		
nzp-CSI-RS-Resources SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourcesPerSet)) OF NZP-CSI-RS-ResourceId {	2 entries in case of FR2 4 entries in case of FR1		
NZP-CSI-RS-ResourceId[1]	0	entry 1 CSI-RS resource 1	
NZP-CSI-RS-ResourceId[2]	1	entry 2 CSI-RS resource 2	
NZP-CSI-RS-ResourceId[3]	2	entry 3 CSI-RS resource 3	FR1
NZP-CSI-RS-ResourceId[4]	3	entry 4 CSI-RS resource 4	FR1
}			
repetition	off		
aperiodicTriggeringOffset	Not present		
trs_Info	true		
}			

Table 5.4.1-10: CSI-ResourceConfig for TRS

Derivation Path: TS 38.508-1 Table 4.6.3-41			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			
csi-ResourceConfigId	CSI-ResourceConfigId		
csi-RS-ResourceSetList CHOICE {			
nzp-CSI-RS-SSB SEQUENCE {			
nzp-CSI-RS-ResourceSetList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig)) OF NZP-CSI-RS-ResourceSetId {	1 entry		
NZP-CSI-RS-ResourceSetId[1]	0	entry 1	
}			
csi-SSB-ResourceSetList	Not present		
}			
}			
bwp-Id	BWP-Id		
resourceType	periodic		
}			

Table 5.4.1-11: CSI-FrequencyOccupation for TRS

Derivation Path: TS 38.508-1 Table 4.6.3-33			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-FrequencyOccupation ::= SEQUENCE {			
startingRB	0		
nrofRBs	max(4*ceil(m/4),24)	m is the bandwidth of active BWP	
}			

Table 5.4.1-12: *ServingCellConfig*

Derivation Path: Table 4.6.3-167			
Information Element	**Value/remark**	**Comment**	**Condition**
ServingCellConfig ::= SEQUENCE {			
csi-MeasConfig CHOICE {			
setup	csi-MeasConfig for TRS		TRS
}			

PDCCH Configuration

PDCCH-config

Table 5.4.1-16: PDCCH *ControlResourceSet*

Derivation Path: Table 4.6.3-28			
Information Element	**Value/remark**	**Comment**	**Condition**
frequencyDomainResources	11111111 00000000 00000000 00000000 00000	CORESET to use the least significant 48 RBs of the BWP	RFACS AND AL8
	11111111 11111111 00000000 00000000 00000	CORESET to use the least significant 96 RBs of the BWP	RFACS AND AL16

Condition	Explanation
RFACS	Used in RF Adjacent Channel Selectivity testing
AL8	PDCCH aggregationLevel 8 is configured
AL16	PDCCH aggregationLevel 16 is configured

Table 5.4.1-17: PDCCH *Search Space*

Derivation Path: Table 4.6.3-162			
Information Element	**Value/remark**	**Comment**	**Condition**
nrofCandidates SEQUENCE {			
aggregationLevel1	n2		RFACS
aggregationLevel8	n2		RFACS
aggregationLevel16	n2		RFACS
}			
}			

Condition	Explanation
RFACS	Used in RF Adjacent Channel Selectivity testing

5.4.2 Radio resource control information elements for Demodulation Performance and CSI reporting tests

As defined in clause 4.6.3 with the following exceptions: -

Table 5.4.2-1 to 5.4.2.20: Void

5.4.2.0 Parameters common to all Demod and CSI tests

Physical layer parameters

Table 5.4.2.0-1: Physical layer parameters for DCI format 1_1 and DCI format 1_0

Derivation Path: Table 4.3.6.1.2.2-1			
Parameter	**Value**	**Value in binary**	**Condition**
PUCCH resource indicator	*PUCCH-ResourceId[1]* = 0 in pucch-ResourceSetID[1] or *PUCCH-ResourceId[1]* = 8 in pucch-ResourceSetID[2] as defined in Table 4.6.3-112 (Mapping as per Table 9.2.3-2 in TS 38.213)	‘000’B	FR1
	PUCCH-ResourceId[5] = 12 in pucch-ResourceSetID[2] as defined in Table 4.6.3-112 (Mapping as per Table 9.2.3-2 in TS 38.213)	‘100’B	FR2_SCS60kHz
	PUCCH-ResourceId[7] = 14 in pucch-ResourceSetID[2] as defined in Table 4.6.3-112 (Mapping as per Table 9.2.3-2 in TS 38.213)	‘110’B	FR2_SCS120kHz
PDSCH-to-HARQ_feedback timing indicator	K_1 slots as defined in 9.2.3 in TS 38.213. K_1 value used for the test is specified in the test description of each test case in TS 38.521-4.		

Common Serving Parameters

ServingCellConfigCommon

Table 5.4.2.0-2: ServingCellConfigCommon

Derivation Path: Table 4.6.3-168			
Information Element	**Value/remark**	**Comment**	**Condition**
ServingCellConfigCommon ::= SEQUENCE {			
physCellId	PhysCellId		
downlinkConfigCommon	DownlinkConfigCommon		
ssb-PositionsInBurst CHOICE {			
shortBitmap	1000		FR1 AND SSB#0 AND (2.4GHz<FREQ<=3GHz AND (FDD OR (TDD AND SCS15)) OR FREQ<=2.4GHz)
mediumBitmap	10000000		FR1 AND SSB#0 AND (2.4GHz<FREQ<=3GHz AND (TDD AND SCS30) OR FREQ>3GHz)
}			
ssb-periodicityServingCell	ms20		
dmrs-TypeA-Position	pos2		
subcarrierSpacing	SubcarrierSpacing according to test case id		
tdd-UL-DL-ConfigurationCommon	TDD-UL-DL-ConfigCommon		
	Not present		FR1.30-1A FR2.120-1A FR1.FDD
ss-PBCH-BlockPower	0		
}			

Condition	Explanation
FREQ<=2.4GHz	Frequency range <= 2.4GHz
2.4GHz<FREQ<=3GHz	Frequency range > 2.4GHz and <= 3GHz
FREQ>3GHz	Frequency range > 3GHz
FR1.30-1A	TDD UL-DL pattern FR1.30-1A is used. Ref Annex A.1.2 of TS 38.521-4
FR2.120-1A	TDD UL-DL pattern FR2.120-1A is used. Ref Annex A.1.3 of TS 38.521-4
SSB#N	Cell configured with SSB-Index set to N as defined in Table 4.4.2-2

TDD-UL-DL-Config

Table 5.4.2.0-3: TDD-UL-DL-Config

Derivation Path: Table 4.6.3-192			
Information Element	**Value/remark**	**Comment**	**Condition**
TDD-UL-DL-ConfigCommon ::= SEQUENCE {			
referenceSubcarrierSpacing	SubcarrierSpacing		
pattern1 SEQUENCE {			
dl-UL-TransmissionPeriodicity	ms5		FR1.15-1, FR1.30-1
	ms2p5		FR1.30-2, FR1.30-3
	ms3		FR1.30-4
	ms2		FR1.30-5
	ms1		FR1.30-6 FR2.60-1
	ms0p625		FR2.120.1
	ms0p5		FR2.120.2
nrofDownlinkSlots	7		FR1.30-1
	3		FR1.15-1 FR1.30-2 FR1.30-3 FR1.30-4 FR2.120.1
	1		FR1.30-5 FR1.30-6
	2		FR2.60-1 FR2.120.2
nrofDownlinkSymbols	6		FR1.30-1 FR1.30-4
	10		FR1.15-1 FR1.30-2 FR1.30-3 FR1.30-6 FR2.120.1
	12		FR1.30-5
	11		FR2.60-1 FR2.120.2
nrofUplinkSlots	2		FR1.30-1 FR1.30-4 FR1.30-5
	1		FR1.15-1 FR1.30-2 FR1.30-3 FR2.60-1 FR2.120.1 FR2.120.2
	0		FR1.30-6
nrofUplinkSymbols	4		FR1.30-1 FR1.30-4 FR1.30-5
	0		FR1.30-6 FR2.60-1 FR2.120.2
	2		FR1.15-1 FR1.30-2 FR1.30-3 FR2.60-1 FR2.120.1 FR2.120.2
}			

pattern2	Not present		FR1.15-1, FR1.30-1 FR1.30-2 FR1.30-5 FR2.60-1 FR2.120.1 FR2.120.2
pattern2 SEQUENCE {			
dl-UL-TransmissionPeriodicity	ms2p5		FR1.30-3
	ms2		FR1.30-4
	ms1		FR1.30-6
nrofDownlinkSlots	2		FR1.30-3
	4		FR1.30-4
	0		FR1.30-6
nrofDownlinkSymbols	10		FR1.30-3
	0		FR1.30-4
	12		FR1.30-6
nrofUplinkSlots	2		FR1.30-3
	0		FR1.30-4
	1		FR1.30-6
nrofUplinkSymbols	2		FR1.30-3
	0		FR1.30-4 FR1.30-6
}			
}			

Condition	Explanation
FR1.15-1	TDD UL-DL pattern FR1.15-1 is used. Ref Annex A.1.2 of TS 38.521-4
FR1.30-1	TDD UL-DL pattern FR1.30-1 is used. Ref Annex A.1.2 of TS 38.521-4
FR1.30-2	TDD UL-DL pattern FR1.30-2 is used. Ref Annex A.1.2 of TS 38.521-4
FR1.30-3	TDD UL-DL pattern FR1.30-3 is used. Ref Annex A.1.2 of TS 38.521-4
FR1.30-4	TDD UL-DL pattern FR1.30-4 is used. Ref Annex A.1.2 of TS 38.521-4
FR1.30-5	TDD UL-DL pattern FR1.30-5 is used. Ref Annex A.1.2 of TS 38.521-4
FR1.30-6	TDD UL-DL pattern FR1.30-6 is used. Ref Annex A.1.2 of TS 38.521-4
FR2.60-1	TDD UL-DL pattern FR2.60-1 is used. Ref Annex A.1.3 of TS 38.521-4
FR2.120-1	TDD UL-DL pattern FR2.120-1 is used. Ref Annex A.1.3 of TS 38.521-4
FR2.120-2	TDD UL-DL pattern FR2.120-2 is used. Ref Annex A.1.3 of TS 38.521-4

PDCCH Configuration

PDCCH-ConfigCommon

Table 5.4.2.0-4: *PDCCH-ConfigCommon*

Derivation Path: Table 4.6.3-96			
Information Element	**Value/remark**	**Comment**	**Condition**
PDCCH-ConfigCommon::= SEQUENCE {			
searchSpaceZero	4		FDD FR1.30-1 FR1.30-2 FR1.30-3 FR1.30-4
	2		FR1.30-5 FR1.30-6
commonSearchSpaceList SEQUENCE (SIZE (1..4)) OF SearchSpace {	1 entry	1 search space for both SA and NSA	
SearchSpace [1]	SearchSpace with condition CSS	entry 1	
}			
searchSpaceOtherSystemInformation	Not present		
}			

Condition	Explanation
CSS	Common SearchSpace

ServingCellConfig

Table 5.4.2.0-5: *ServingCellConfig*

Derivation Path: Table 4.6.3-167			
Information Element	**Value/remark**	**Comment**	**Condition**
ServingCellConfig ::= SEQUENCE {			
csi-MeasConfig CHOICE {			
setup	csi-MeasConfig		
}			

PDCCH-config

Table 5.4.2.0-6: PDCCH-ControlResourceSet

Derivation Path: Table 4.6.3-28			
Information Element	**Value/remark**	**Comment**	**Condition**
ControlResourceSet ::= SEQUENCE {			
controlResourceSetId	ControlResourceSetId		
frequencyDomainResources	Table 5.2-2 for tested channel bandwidth and subcarrier spacing		FR1
frequencyDomainResources	Table 7.2-2 for tested channel bandwidth and subcarrier spacing		FR2
Duration	2	SearchSpace duration of 2 symbols	DEMOD_FR1, CSI_FR1, CSI_FR2
	1	SearchSpace duration of 1 symbols	DEMOD_FR2, PDCCH_FR1, PDCCH_FR2
cce-REG-MappingType CHOICE {			
nonInterleaved	Null		
}			
precoderGranularity	sameAsREG-bundle		
tci-StatesPDCCH-ToAddList SEQUENCE(SIZE (1..maxNrofTCI-StatesPDCCH)) OF TCI-StateId {	1 entry		
TCI-StateId[1]	0	entry 1 TCI State #0	
	1	TCI State #1	
}			
}			

Condition	Explanation
DEMOD_FR1	DEMOD testing in FR1.
DEMOD_FR2	DEMOD testing in FR2.
PDCCH_FR1	PDCCH testing in FR1
PDCCH_FR2	PDCCH testing in FR2
CSI_FR1	CSI testing in FR1
CSI_FR2	CSI testing in FR2

Table 5.4.2.0-7: PDCCH *Search Space*

Derivation Path: Table 4.6.3-162			
Information Element	**Value/remark**	**Comment**	**Condition**
SearchSpace ::= SEQUENCE {			
monitoringSlotPeriodicityAndOffset CHOICE {			
sl1	NULL		
}			
monitoringSymbolsWithinSlot	10000000000000	Starting symbol 0	
nrofCandidates SEQUENCE {			
aggregationLevel1	n0		
aggregationLevel2	n0		
aggregationLevel4	n0		
aggregationLevel8	n1	AL8	
aggregationLevel16	n0		
}			
searchSpaceType CHOICE {			
common SEQUENCE {			
ue-Specific SEQUENCE {			
dci-Formats	formats0-1-And-1-1	DCI Format 1_1	
}			
}			
}			

Table 5.4.2.0-7a: PDCCH *Search Space Ext*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SearchSpaceExt-r16 ::= SEQUENCE {			
controlResourceSetId-r16	ControlResourceSetId		
searchSpaceType-r16	Not present		
searchSpaceGroupIdList-r16	Not present		
freqMonitorLocations-r16	Not present		
}			

NZP-CSI-RS for Tracking

NZP-CSI-RS-Resource

Table 5.4.2.0-8: NZP-CSI-RS-Resource for TRS

Derivation Path: Table 4.6.3-85			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-Resource ::= SEQUENCE {			
nzp-CSI-RS-ResourceId	0	CSI-RS resource 1	
	1	CSI-RS resource 2	
	2	CSI-RS resource 3	
	3	CSI-RS resource 4	
resourceMapping	CSI-RS-ResourceMapping for TRS		
powerControlOffset	0		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset for TRS		
qcl-InfoPeriodicCSI-RS	TCI-StateId 0		
}			

CSI-RS-ResourceMapping

Table 5.4.2.0-9: CSI-RS-ResourceMapping for TRS

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row1	0001	k_0=0 for CSI-RS resource 1,2,3,4	TRS
}			
firstOFDMSymbolInTimeDomain	6	l_0 = 6 for CSI-RS resource 1 and 3	TRS
	10	l_0 = 10 for CSI-RS resource 2 and 4	TRS
nrofPorts	p1	1 for CSI-RS resource 1,2,3,4	TRS
Cdm-Type	noCDM		TRS
Density CHOICE{			
three	Null		TRS
}			
freqBand	CSI-FrequencyOccupation		TRS
}			

CSI-ResourcePeriodicityAndOffset

Table 5.4.2.0-10: CSI-ResourcePeriodicityAndOffset for TRS

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
slots20	10	Periodicity 20 slots and offset 10 for CSI-RS resource 1 and 2	SCS 15KHz
slots20	11	Periodicity 20 slots and offset 11 for CSI-RS resource 3 and 4	SCS 15 kHz
Slots40	20	Periodicity 40 slots and offset 20 for CSI-RS resource 1 and 2	SCS 30 kHz
Slots40	21	Periodicity 40 slots and offset 21 for CSI-RS resource 3 and 4	SCS 30 kHz
Slots80	40	Periodicity 80 slots and offset 40 for CSI-RS resource 1 and 2	SCS 60 kHz
Slots80	41	Periodicity 80 slots and offset 41 for CSI-RS resource 3 and 4	SCS 60 kHz
Slots160	80	Periodicity 160 slots and offset 80 for CSI-RS resource 1 and 2	SCS 120 kHz
Slots160	81	Periodicity 160 slots and offset 81 for CSI-RS resource 3 and 4	SCS 120 kHz
}			

CSI-FrequencyOccupation

Table 5.4.2.0-11: CSI-FrequencyOccupation for TRS

Derivation Path: Table 4.6.3-33			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-FrequencyOccupation ::= SEQUENCE {			
nrofRBs	52	BW 10 MHz SCS 15kHz	TRS
	52	BW 20 MHz SCS 30kHz	TRS
	108	BW 40 MHz SCS 30kHz	TRS
	68	BW 100 MHz SCS 120 kHz	TRS
	132	BW 200 MHz SCS 120 kHz	TRS
}			

NZP-CSI-RS-ResourceSet

Table 5.4.2.0-12: NZP-CSI-RS-ResourceSet for TRS

Derivation Path: Table 4.6.3-87			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-ResourceSet ::= SEQUENCE {			
nzp_CSI_ResourceSetId	0		
nzp-CSI-RS-Resources SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourcesPerSet)) OF NZP-CSI-RS-ResourceId {	4 entries		FR1, FR2
NZP-CSI-RS-ResourceId[1]	0	entry 1 CSI-RS resource 1	
NZP-CSI-RS-ResourceId[2]	1	entry 2 CSI-RS resource 2	
NZP-CSI-RS-ResourceId[3]	2	entry 3 CSI-RS resource 3	
NZP-CSI-RS-ResourceId[4]	3	entry 4 CSI-RS resource 4	
}			
repetition	off		
aperiodicTriggeringOffset	Not present		
trs_Info	true		
}			

CSI-ResourceConfig

Table 5.4.2.0-13: CSI-ResourceConfig for TRS

Derivation Path: Table 4.6.3-41			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			
csi-ResourceConfigId	CSI-ResourceConfigId		
csi-RS-ResourceSetList CHOICE {			
nzp-CSI-RS-SSB SEQUENCE {			
nzp-CSI-RS-ResourceSetList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig)) OF NZP-CSI-RS-ResourceSetId {	1 entry		
NZP-CSI-RS-ResourceSetId[1]	0	entry 1	
}			
csi-SSB-ResourceSetList	Not present		
}			
}			
bwp-Id	BWP-Id		
resourceType	periodic		
}			

NZP CSI-RS for CSI Acquisition

NZP-CSI-RS-Resource

Table 5.4.2.0-14: NZP-CSI-RS-Resource

Derivation Path: Table 4.6.3-85			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-Resource ::= SEQUENCE {			DEMOD_FR1 DEMOD_FR2
nzp-CSI-RS-ResourceId	4	CSI-RS resource 5	
resourceMapping	CSI-RS-ResourceMapping		
powerControlOffset	0		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset		
qcl-InfoPeriodicCSI-RS	TCI-State #1		
}			

CSI-RS-ResourceMapping

Table 5.4.2.0-15: CSI-RS-ResourceMapping

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row2	000000000001	K0 = 0, 1Tx test cases	
other	000001	K0 = 0, row3, 2Tx test cases	
row4	001	K0 = 0, 4Tx test cases	
}			
nrofPorts	P2	2Tx test cases	
	P4	4Tx test cases	
	P1	1Tx test cases	
firstOFDMSymbolInTimeDomain	12	l0 = 12	
cdm-Type	fd-CDM2	2Tx and 4Tx test cases	
	noCDM	1Tx test cases	
density CHOICE {			
one	NULL		
}			
freqBand	CSI-FrequencyOccupation		
}			

CSI-ResourcePeriodicityAndOffset

Table 5.4.2.0-16: CSI-ResourcePeriodicityAndOffset

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
Slots20	0		SCS 15kHz
Slots40	0		SCS 30kHz
Slots80	0		SCS 60kHz
Slots160	0		SCS 120kHz
}			

CSI-FrequencyOccupation

Table 5.4.2.0-17: CSI-FrequencyOccupation for CSI Acquisition

Derivation Path: Table 4.6.3-33			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-FrequencyOccupation ::= SEQUENCE {			
nrofRBs	52		BW 10 MHz SCS 15kHz
	52		BW 20 MHz SCS 30kHz
	108		BW 40 MHz SCS 30kHz
	68		BW 100MHz SCS 120kHz
	132		BW 200 MHz SCS 120 kHz
}			

NZP-CSI-RS-ResourceSet

Table 5.4.2.0-18: NZP-CSI-RS-ResourceSet for CSI Acquisition

Derivation Path: Table 4.6.3-87			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-ResourceSet ::= SEQUENCE {			
nzp_CSI_ResourceSetId	1		
nzp-CSI-RS-Resources SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourcesPerSet)) OF NZP-CSI-RS-ResourceId {	1 entry		FR1, FR2
NZP-CSI-RS-ResourceId[1]	4	entry 1 CSI-RS resource 5	
}			
repetition	off		
aperiodicTriggeringOffset	Not present		
trs_Info	Not present		
}			

CSI-ResourceConfig

Table 5.4.2.0-19: CSI-ResourceConfig for CSI Acquisition

Derivation Path: Table 4.6.3-41			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			
csi-ResourceConfigId	1		
csi-RS-ResourceSetList CHOICE {			
nzp-CSI-RS-SSB SEQUENCE {			
nzp-CSI-RS-ResourceSetList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig)) OF NZP-CSI-RS-ResourceSetId {	1 entry		
NZP-CSI-RS-ResourceSetId[1]	1	entry 1	
}			
csi-SSB-ResourceSetList	Not present		
}			
}			
bwp-Id	BWP-Id		
resourceType	periodic		
}			

ZP CSI-RS for CSI Acquisition

ZP-CSI-RS-Resource

Table 5.4.2.0-20: ZP-CSI-RS-Resource

Derivation Path: Table 4.6.3-204			
Information Element	**Value/remark**	**Comment**	**Condition**
ZP-CSI-RS-Resource ::= SEQUENCE {			DEMOD_FR1 DEMOD_FR2
zp-CSI-RS-ResourceId	ZP-CSI-RS-ResourceId		
resourceMapping	ZP CSI-RS-ResourceMapping		
periodicityAndOffset	ZP CSI-ResourcePeriodicityAndOffset		
qcl-InfoPeriodicCSI-RS	TCI-State #1		
}			

CSI-RS-ResourceMapping

Table 5.4.2.0-21: ZP CSI-RS-ResourceMapping

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
other	000100	K0 = 4	
}			
nrofPorts	p4		
firstOFDMSymbolInTimeDomain	12	l0 = 12	
cdm-Type	fd-CDM2		
density CHOICE {			
one	NULL		
}			
freqBand	ZP CSI-FrequencyOccupation		
}			

CSI-ResourcePeriodicityAndOffset

Table 5.4.2.0-22: ZP CSI-ResourcePeriodicityAndOffset

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
Slots20	0		SCS 15kHz
Slots40	0		SCS 30kHz
Slots80	0		SCS 60kHz
Slots160	0		SCS 120kHz
}			

CSI-FrequencyOccupation

Table 5.4.2.0-23: ZP CSI-FrequencyOccupation

Derivation Path: Table 4.6.3-33			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-FrequencyOccupation ::= SEQUENCE {			
nrofRBs	52		BW 10 MHz SCS 15kHz
	52		BW 20 MHz SCS 30kHz
	108		BW 40 MHz SCS 30KHz
	68		BW 100 MHz SCS 120KHz
	132		BW 200 MHz SCS 120kHz
}			

PDSCH DMRS Configuration

DMRS-DownlinkConfig

Table 5.4.2.0-24: DMRS-DownlinkConfig

Derivation Path: Table 4.6.3-50			
Information Element	**Value/remark**	**Comment**	**Condition**
DMRS-DownlinkConfig ::= SEQUENCE {			
dmrs-AdditionalPosition	pos1		
phaseTrackingRS	Not present		DEMOD_FR1
phaseTrackingRS SEQUENCE {			DEMOD_FR2
epre-Ratio	0		
resourceElementOffset	Offset10		
}			
}			

PDSCH Configuration

PDSCH-ServingCellConfig

Table 5.4.2.0-25: PDSCH-ServingCellConfig

Derivation Path: Table 4.6.3-102			
Information Element	**Value/remark**	**Comment**	**Condition**
PDSCH-ServingCellConfig ::= SEQUENCE {			
codeBlockGroupTransmission	Not present		
xOverhead	Not present		
xOverhead	xOh6		DEMOD_FR2
nrofHARQ-ProcessesForPDSCH	Set according to the test id	Typically n4 for FDD, n8 for TDD	
pucch-Cell	Not present		
}			

PDSCH-Config

Table 5.4.2.0-26: *PDSCH-Config*

Derivation Path: Table 4.6.3-100			
Information Element	**Value/remark**	**Comment**	**Condition**
PDSCH-Config ::= SEQUENCE {			
dataScramblingIdentityPDSCH	0		
dmrs-DownlinkForPDSCH-MappingTypeA CHOICE {			
Setup	DMRS-DownlinkConfig		
}			
tci-StatesToAddModList SEQUENCE(SIZE (1..maxNrofTCI-States)) OF TCI-State {	2 entries		
TCI-State[1] SEQUENCE {		entry 1	
tci-StateId	TCI-StateId 0		
qcl-type1 SEQUENCE {	QCL Type is Type1		
Cell	not present		
Bwp-id	Not present	BWP ID	
referenceSignal	Ssb : 0	SSB # 0	
Qcl-Type	Type C		
}			
qcl-type2 SEQUENCE {	QCL Type is Type2		DEMOD_FR2
Cell	not present		
Bwp-id	Not present	BWP ID	
referenceSignal	Ssb : 0	SSB # 0	
Qcl-Type	Type D		
}			
}			
TCI-State[2] SEQUENCE {		entry 2	
tci-StateId	TCI-StateId 1		
qcl-type1 {	QCL Type is Type1		
Cell	Not present		
Bwp-id	0	BWP ID	
referenceSignal	csi-rs : 0	CSI-RS # 0	
Qcl-Type	Type A		
}			
qcl-type2 SEQUENCE {	QCL Type is Type2		DEMOD_FR2
Cell	Not present		
Bwp-id	0	BWP ID	
referenceSignal	csi-rs : 0	CSI-RS # 0	
Qcl-Type	Type D		
}			
}			
}			
vrb-ToPRB-Interleaver	Not present		
resourceAllocation	resourceAllocationType0		
pdsch-AggregationFactor	Not present		
rbg-Size	config2	The UE ignores this field if *resourceAllocation* is set to *resourceAllocationType1* (see TS 38.214 [21], clause 5.1.2.2.1).	
prb-BundlingType CHOICE {			
staticBundling SEQUENCE {			
bundleSize	Not present	PRB Bundling size of 2	
}			
}			
ZP-CSI-RS-ResourceToAddModList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-Resources)) OF NZP-CSI-RS-Resource {	1 entry		
ZP-CSI-RS-Resource[1]	ZP-CSI-RS-Resource	entry 1	
}			

p-ZP-CSI-RS-ResourceSet	p-ZP-CSI-RS-ResourceSet		
}			

PDSCH-TimeDomainResourceAllocationList

Table 5.4.2.0-27: PDSCH-TimeDomainResourceAllocationList

Derivation Path: Table 4.6.3-103			
Information Element	**Value/remark**	**Comment**	**Condition**
PDSCH-TimeDomainResourceAllocationList ::= SEQUENCE(SIZE(1..maxNrofDL-Allocations)) OF PDSCH-TimeDomainResourceAllocation {	2 entries		FR1
PDSCH-TimeDomainResourceAllocation[1] SEQUENCE {		entry 1	
K0	Not present		
mappingType	typeA		
startSymbolAndLength	44	Start symbol(S)=2, Length(L)=4	For Slot i, if mod(i, 10) = 7 for i from {0,…,39}
}			
PDSCH-TimeDomainResourceAllocation[2] SEQUENCE {		entry 2	
K0	Not present		
mappingType	typeA		
startSymbolAndLength	53	Start symbol(S)=2, Length(L)=12	For Slot i, if mod(i, 10) = {0,1,2,3,4,5,}) for i from {1,…,39}
}			
}			
PDSCH-TimeDomainResourceAllocationList ::= SEQUENCE(SIZE(1..maxNrofDL-Allocations)) OF PDSCH-TimeDomainResourceAllocation {	3 entries		FR2
PDSCH-TimeDomainResourceAllocation[1] SEQUENCE {		entry 1	
K0	Not present		
mappingType	typeA		
startSymbolAndLength	53	Start symbol(S)=2, Length(L)=12	
}			
PDSCH-TimeDomainResourceAllocation[2] SEQUENCE {		entry 2	
K0	Not present		
mappingType	typeA		
startSymbolAndLength	96	Start symbol(S)=1, Length(L)=9	
}			
PDSCH-TimeDomainResourceAllocation[3] SEQUENCE {		entry 3	
K0	Not present		
mappingType	typeA		
startSymbolAndLength	40	Start symbol(S)=1, Length(L)=13	
}			
}			

CRS for Rate Matching

RateMatchPatternLTE-CRS

Table 5.4.2.0-28: RateMatchPatternLTE-CRS

Derivation Path: Table 4.6.3-138			
Information Element	**Value/remark**	**Comment**	**Condition**
RateMatchPatternLTE-CRS ::= SEQUENCE {			TC 5.2.2.1.4-2 and TC 5.2.3.1.4-2 of TS 38.521-4
carrierFreqDL	LTE EARFCN		
carrierBandwidthDL	n50	10MHz	
nrofCRS-Ports	n4		
v-Shift	n0		
}			

CSI-RS for beam refinement

NZP-CSI-RS-Resource

Table 5.4.2.0-29: NZP-CSI-RS-Resource

Derivation Path: Table 4.6.3-85			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-Resource ::= SEQUENCE {			DEMOD_FR2
nzp-CSI-RS-ResourceId	5	CSI-RS resource 6	Beam refinement
	6	CSI-RS resource 7	Beam refinement
resourceMapping	CSI-RS-ResourceMapping		
powerControlOffset	0		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset		
qcl-InfoPeriodicCSI-RS	TCI-State #1		
}			

CSI-RS-ResourceMapping

Table 5.4.2.0-30: CSI-RS-ResourceMapping

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			DEMOD_FR2
frequencyDomainAllocation CHOICE {			
row1	0001	K0 = 0, row1 for resource 1 and 2	
}			
nrofPorts	p1		
firstOFDMSymbolInTimeDomain	8	I0 = 8 for resource 1	
	9	I0 = 9 for resource 2	
cdm-Type	noCDM		
density CHOICE {			
three	NULL		
}			
freqBand	CSI-FrequencyOccupation		
}			

CSI-ResourcePeriodicityAndOffset

Table 5.4.2.0-31: CSI-ResourcePeriodicityAndOffset

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			DEMOD_FR2
Slots80	0		SCS 60kHz
Slots160	0		SCS 120kHz
}			

CSI-FrequencyOccupation

Table 5.4.2.0-32: CSI-FrequencyOccupation for beam refinement

Derivation Path: Table 4.6.3-33			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-FrequencyOccupation ::= SEQUENCE {			DEMOD_FR2
nrofRBs	68		BW 100MHz SCS 120kHz
	132		BW 200MHz SCS 120kHz
}			

NZP-CSI-RS-ResourceSet

Table 5.4.2.0-33: NZP-CSI-RS-ResourceSet for beam refinement

Derivation Path: Table 4.6.3-87			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-ResourceSet ::= SEQUENCE {			DEMOD_FR2
nzp_CSI_ResourceSetId	2		
nzp-CSI-RS-Resources SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourcesPerSet)) OF NZP-CSI-RS-ResourceId {	2 entries		
NZP-CSI-RS-ResourceId[1]	5	entry 1 CSI-RS resource 6	
NZP-CSI-RS-ResourceId[2]	6	entry 1 CSI-RS resource 7	
}			
repetition	off		
aperiodicTriggeringOffset	Not present		
trs_Info	Not present		
}			

CSI-ResourceConfig

Table 5.4.2.0-34: CSI-ResourceConfig for beam refinement

Derivation Path: Table 4.6.3-41			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			
csi-ResourceConfigId	2		
csi-RS-ResourceSetList CHOICE {			
nzp-CSI-RS-SSB SEQUENCE {			
nzp-CSI-RS-ResourceSetList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig)) OF NZP-CSI-RS-ResourceSetId {	1 entry		
NZP-CSI-RS-ResourceSetId[1]	2	entry 1	
}			
csi-SSB-ResourceSetList	Not present		
}			
}			
bwp-Id	BWP-Id		
resourceType	periodic		
}			

CSI-RS for beam management

NZP-CSI-RS-Resource

Table 5.4.2.0-35: NZP-CSI-RS-Resource for beam management

Derivation Path: Table 4.6.3-85			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-Resource ::= SEQUENCE {			PDCCH_FR2
nzp-CSI-RS-ResourceId	4	CSI-RS resource 5	
	5	CSI-RS resource 6	
resourceMapping	CSI-RS-ResourceMapping for beam management		
powerControlOffset	0		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset for beam management		
qcl-InfoPeriodicCSI-RS	TCI-State #1		
}			

CSI-RS-ResourceMapping

Table 5.4.2.0-36: CSI-RS-ResourceMapping for beam management

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			PDCCH_FR2
frequencyDomainAllocation CHOICE {			
row1	0001	K0 = 0, row1 for resource 1 and 2	
}			
nrofPorts	p1		
firstOFDMSymbolInTimeDomain	8	I0 = 8 for resource 1	
	9	I0 = 9 for resource 2	
cdm-Type	noCDM		
density CHOICE {			
three	NULL		
}			
freqBand	CSI-FrequencyOccupation for beam management		
}			

CSI-ResourcePeriodicityAndOffset

Table 5.4.2.0-37: CSI-ResourcePeriodicityAndOffset for beam management

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			PDCCH_FR2
Slots80	0		SCS 60kHz
Slots160	0		SCS 120kHz
}			

CSI-FrequencyOccupation

Table 5.4.2.0-38: CSI-FrequencyOccupation for beam management

Derivation Path: Table 4.6.3-33			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-FrequencyOccupation ::= SEQUENCE {			PDCCH_FR2
nrofRBs	68		BW 100MHz SCS 120kHz
	132		BW 200MHz SCS 120kHz
}			

NZP-CSI-RS-ResourceSet

Table 5.4.2.0-39: NZP-CSI-RS-ResourceSet for beam management

Derivation Path: Table 4.6.3-87			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-ResourceSet ::= SEQUENCE {			PDCCH_FR2
nzp_CSI_ResourceSetId	1		
nzp-CSI-RS-Resources SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourcesPerSet)) OF NZP-CSI-RS-ResourceId {	2 entries		
NZP-CSI-RS-ResourceId[1]	4	entry 1 CSI-RS resource 5	
NZP-CSI-RS-ResourceId[2]	5	entry 1 CSI-RS resource 6	
}			
repetition	off		
aperiodicTriggeringOffset	Not present		
trs_Info	Not present		
}			

CSI-ResourceConfig

Table 5.4.2.0-40: CSI-ResourceConfig for beam management

Derivation Path: Table 4.6.3-41			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			
csi-ResourceConfigId	1		
csi-RS-ResourceSetList CHOICE {			
nzp-CSI-RS-SSB SEQUENCE {			
nzp-CSI-RS-ResourceSetList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig)) OF NZP-CSI-RS-ResourceSetId {	1 entry		
NZP-CSI-RS-ResourceSetId[1]	1	entry 1	
}			
csi-SSB-ResourceSetList	Not present		
}			
}			
bwp-Id	BWP-Id		
resourceType	periodic		
}			

PUCCH-Config

Table 5.4.2.0-41: PUCCH-Config

Derivation Path: Table 4.6.3-112			
Information Element	**Value/remark**	**Comment**	**Condition**
PUCCH-Config ::= SEQUENCE {			
dl-DataToUL-ACK SEQUENCE (SIZE (1..8)) OF INTEGER {	4 entries		FR1.15-1 FR1.30-2 FR2.120-1 FR2.120-1A
INTEGER[1]	2	entry 1	
INTEGER[2]	3	entry 2	
INTEGER[3]	4	entry 3	
INTEGER[4]	6	entry 4	
}			
}			
dl-DataToUL-ACK SEQUENCE (SIZE (1..8)) OF INTEGER {	7 entries		FR1.30-1 FR1.30-1A FR1.30-4
INTEGER[1]	2	entry 1	
INTEGER[2]	3	entry 2	
INTEGER[3]	4	entry 3	
INTEGER[4]	5	entry 4	
INTEGER[5]	6	entry 5	
INTEGER[6]	7	entry 6	
INTEGER[7]	8	entry 7	
}			
}			
dl-DataToUL-ACK SEQUENCE (SIZE (1..8)) OF INTEGER {	4 entries		FR1.30-3
INTEGER[1]	2	entry 1	
INTEGER[2]	3	entry 2	
INTEGER[3]	4	entry 3	
INTEGER[4]	5	entry 4	
}			
}			
dl-DataToUL-ACK SEQUENCE (SIZE (1..8)) OF INTEGER {	2 entries		FR1.30-5 FR1.30-6
INTEGER[1]	2	entry 1	
INTEGER[2]	3	entry 2	
}			
}			
dl-DataToUL-ACK SEQUENCE (SIZE (1..8)) OF INTEGER {	3 entries		FR2.60-1 FR2.120-2
INTEGER[1]	2	entry 1	
INTEGER[2]	3	entry 2	
INTEGER[3]	5	entry 3	
}			
}			
dl-DataToUL-ACK SEQUENCE (SIZE (1..8)) OF INTEGER {	2 entries		FR2.120-1_CSI
INTEGER[1]	3	entry 1	
INTEGER[2]	6	entry 2	
}			
}			
dl-DataToUL-ACK SEQUENCE (SIZE (1..8)) OF INTEGER {	3 entries		FR2.120-2_CSI
INTEGER[1]	6	entry 1	
INTEGER[2]	7	entry 2	
INTEGER[3]	11	entry 3	
}			
}			

Condition	Explanation
FR1.15-1	TDD UL-DL pattern FR1.15-1 is used. Ref Annex A.1.2 of TS 38.521-4
FR1.30-1	TDD UL-DL pattern FR1.30-1 is used. Ref Annex A.1.2 of TS 38.521-4
FR1.30-2	TDD UL-DL pattern FR1.30-2 is used. Ref Annex A.1.2 of TS 38.521-4
FR1.30-3	TDD UL-DL pattern FR1.30-3 is used. Ref Annex A.1.2 of TS 38.521-4
FR1.30-4	TDD UL-DL pattern FR1.30-4 is used. Ref Annex A.1.2 of TS 38.521-4
FR1.30-5	TDD UL-DL pattern FR1.30-5 is used. Ref Annex A.1.2 of TS 38.521-4
FR1.30-6	TDD UL-DL pattern FR1.30-6 is used. Ref Annex A.1.2 of TS 38.521-4
FR2.60-1	TDD UL-DL pattern FR2.60-1 is used. Ref Annex A.1.3 of TS 38.521-4
FR2.120-1	TDD UL-DL pattern FR2.120-1 is used. Ref Annex A.1.3 of TS 38.521-4
FR2.120-2	TDD UL-DL pattern FR2.120-2 is used. Ref Annex A.1.3 of TS 38.521-4
FR2.120-1_CSI	TDD UL-DL pattern FR2.120-1 is used for CSI reporting test cases. Ref Table 8.1.2-1 of TS 38.521-4
FR2.120-2_CSI	TDD UL-DL pattern FR2.120-2 is used for CSI reporting test cases. Ref Table 8.1.2-1 of TS 38.521-4

5.4.2.1 Message contents for PDSCH Demodulation requirements

ZP CSI-RS for CSI Acquisition

p-ZP-CSI-RS-ResourceSet

Table 5.4.2.1-0: p-ZP-CSI-RS-ResourceSet

Derivation Path: TS 38.331 [6], clause 6.3.2.			
Information Element	**Value/remark**	**Comment**	**Condition**
p-ZP-CSI-RS-ResourceSet CHOICE {			
setup	ZP-CSI-RS-ResourceSet		
}			

Table 5.4.2.1-1: ZP-CSI-RS-ResourceSet

Derivation Path: Table 4.6.3-87			
Information Element	**Value/remark**	**Comment**	**Condition**
p-ZP-CSI-RS-ResourceSet ::= SEQUENCE {			
zp_CSI-RS_ResourceSetId	0		
zp-CSI-RS-ResourceIdList SEQUENCE (SIZE (1..maxNrofZP-CSI-RS-ResourcesPerSet)) OF ZP-CSI-RS-ResourceId {		1 entry	
ZP-CSI-RS-ResourceId[1]	0	entry 1 ZP CSI-RS resource 1	
}			
}			

CSI-MeasConfig

Table 5.4.2.1-2: *CSI-MeasConfig*

Derivation Path: Table 4.6.3-38			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-MeasConfig::= SEQUENCE {			
nzp-CSI-RS-ResourceToAddModList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-Resources)) OF NZP-CSI-RS-Resource {	n entries	dependent on test condition	
NZP-CSI-RS-Resource[1]	NZP-CSI-RS-Resource for TRS (1)	entry 1 CSI-RS resource 1	
NZP-CSI-RS-Resource[2]	NZP-CSI-RS-Resource for TRS (2)	entry 2 CSI-RS resource 2	
NZP-CSI-RS-Resource[3]	NZP-CSI-RS-Resource for TRS (3)	entry 3 CSI-RS resource 3	
NZP-CSI-RS-Resource[4]	NZP-CSI-RS-Resource for TRS (4)	entry 4 CSI-RS resource 4	
NZP-CSI-RS-Resource[5]	NZP-CSI-RS-Resource for CSI Acquisition	entry 5 CSI-RS resource 5	
NZP-CSI-RS-Resource[6]	CSI-RS-Resource for beam refinement	entry 5 CSI-RS resource 6	DEMOD_FR2
NZP-CSI-RS-Resource[7]	CSI-RS-Resource for beam refinement	entry 5 CSI-RS resource 7	DEMOD_FR2
}			
nzp-CSI-RS-ResourceSetToAddModList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSets)) OF NZP-CSI-RS-ResourceSetId {	n entries	dependent on test condition	
NZP-CSI-RS-ResourceSet[1]	NZP-CSI-RS-ResourceSet for TRS	entry 1	
NZP-CSI-RS-ResourceSet[2]	NZP-CSI-RS-ResourceSet for CSI Acquisition	entry 2	
NZP-CSI-RS-ResourceSet[3]	CSI-RS-ResourceSet for beam refinement	entry 3	DEMOD_FR2
}			
csi-IM-ResourceToAddModList	Not present		
csi-IM-ResourceSetToAddModList	Not present		
csi-SSB-ResourceSetToAddModList	Not present		
csi-ResourceConfigToAddModList SEQUENCE (SIZE (1..maxNrofCSI-ResourceConfigurations)) OF CSI-ResourceConfig {	n entries	dependent on test condition	
CSI-ResourceConfig[1]	CSI-ResourceConfig for TRS	entry 1	
CSI-ResourceConfig[2]	CSI-ResourceConfig for CSI Acquisition	entry 2	
CSI-ResourceConfig[2]	CSI-ResourceConfig for beam refinement	entry 3	DEMOD_FR2
}			
}			

5.4.2.2 Message contents for PDCCH Demodulation requirements

NZP-CSI-RS for Tracking

CSI-RS-ResourceMapping

Table 5.4.2.2-1: CSI-RS-ResourceMapping for TRS

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row1	0001	k_0=0 for CSI-RS resource 1,2,3,4	TRS
}			
firstOFDMSymbolInTimeDomain	4	l_0 = 4 for CSI-RS resource 1 and 3	TRS
	8	l_0 = 8 for CSI-RS resource 2 and 4	TRS
nrofPorts	p1	1 for CSI-RS resource 1,2,3,4	TRS
Cdm-Type	noCDM		TRS
Density CHOICE{			
three	Null		TRS
}			
freqBand	CSI-FrequencyOccupation		TRS
}			

CSI-MeasConfig

Table 5.4.2.2-2: *CSI-MeasConfig*

Derivation Path: Table 4.6.3-38			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-MeasConfig::= SEQUENCE {			
nzp-CSI-RS-ResourceToAddModList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-Resources)) OF NZP-CSI-RS-Resource {	n entries	Dependent on test condition	
NZP-CSI-RS-Resource[1]	NZP-CSI-RS-Resource for TRS (1)	entry 1 CSI-RS resource 1	
NZP-CSI-RS-Resource[2]	NZP-CSI-RS-Resource for TRS (2)	entry 2 CSI-RS resource 2	
NZP-CSI-RS-Resource[3]	NZP-CSI-RS-Resource for TRS (3)	entry 3 CSI-RS resource 3	
NZP-CSI-RS-Resource[4]	NZP-CSI-RS-Resource for TRS (4)	entry 4 CSI-RS resource 4	
NZP-CSI-RS-Resource[5]	NZP-CSI-RS-Resource for beam management (5)	entry 4 CSI-RS resource 5	PDCCH_FR2
NZP-CSI-RS-Resource[6]	NZP-CSI-RS-Resource for beam management (6)	entry 4 CSI-RS resource 6	PDCCH_FR2
}			
nzp-CSI-RS-ResourceSetToAddModList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSets)) OF NZP-CSI-RS-ResourceSetId {	1 entry		
NZP-CSI-RS-ResourceSet[1]	NZP-CSI-RS-ResourceSet for TRS	entry 1	
NZP-CSI-RS-ResourceSet[2]	NZP-CSI-RS-ResourceSet for beam management	entry 1	PDCCH_FR2
}			
csi-IM-ResourceToAddModList	Not present		
csi-IM-ResourceSetToAddModList	Not present		
csi-SSB-ResourceSetToAddModList	Not present		
csi-ResourceConfigToAddModList SEQUENCE (SIZE (1..maxNrofCSI-ResourceConfigurations)) OF CSI-ResourceConfig {	1 entry		
CSI-ResourceConfig[1]	CSI-ResourceConfig	entry 1	
CSI-ResourceConfig[2]	CSI-ResourceConfig for beam management	entry 1	PDCCH_FR2
}			
}			

PDSCH Configuration

PDSCH-Config

Table 5.4.2.2-3: *PDSCH-Config*

Derivation Path: Table 4.6.3-100			
Information Element	**Value/remark**	**Comment**	**Condition**
PDSCH-Config ::= SEQUENCE {			
dataScramblingIdentityPDSCH	0		
dmrs-DownlinkForPDSCH-MappingTypeA CHOICE {			
Setup	DMRS-DownlinkConfig		
}			
tci-StatesToAddModList SEQUENCE(SIZE (1.. maxNrofTCI-States)) OF TCI-State {	2 entries		
TCI-State[1] SEQUENCE {		entry 1	
tci-StateId	TCI-StateId 0		
qcl-type1 SEQUENCE {	QCL Type is Type1		
Cell	Not Present		
Bwp-id	Not present	BWP ID	
referenceSignal	Ssb : 0	SSB # 0	
Qcl-Type	Type C		
}			
qcl-type2 SEQUENCE {	QCL Type is Type2		
Cell	Not Present		
Bwp-id	Not present	BWP ID	
referenceSignal	Ssb : 0	SSB # 0	
Qcl-Type	Type D		
}			
}			
TCI-State[2] SEQUENCE {		entry 2	
tci-StateId	TCI-StateId 1		
qcl-type1 SEQUENCE {	QCL Type is Type1		
Cell	Not Present		
Bwp-id	0	BWP ID	
referenceSignal	csi-rs : 0	CSI-RS # 0	
Qcl-Type	Type A		
}			
qcl-type2 SEQUENCE {	QCL Type is Type2		
Cell	Not Present		
Bwp-id	0	BWP ID	
referenceSignal	csi-rs : 0	CSI-RS # 0	
Qcl-Type	Type D		
}			
}			
}			
vrb-ToPRB-Interleaver	Not present		
resourceAllocation	resourceAllocationType0		
pdsch-AggregationFactor	Not present		
prb-BundlingType CHOICE {			
staticBundling SEQUENCE {			
bundleSize	Not present	PRB Bundling size of 2	
}			
}			
}			

5.4.2.3 Message contents for Sustained downlink data rate requirements

Physical layer parameters

Table 5.4.2.3-1: Physical layer parameters for DCI format 1_1

Derivation Path: Table 5.4.2.0-1

Common Serving Parameters

ServingCellConfigCommon

Table 5.4.2.3-2: ServingCellConfigCommon

Derivation Path: Table 5.4.2.0-2

TDD-UL-DL-Config

Table 5.4.2.3-3: TDD-UL-DL-Config

Derivation Path: Table 5.4.2.0-3

PDCCH Configuration

PDCCH-ConfigCommon

Table 5.4.2.3-4: *PDCCH-ConfigCommon*

Derivation Path: Table 5.4.2.0-4

ServingCellConfig

Table 5.4.2.3-5: *ServingCellConfig*

Derivation Path: Table 5.4.2.0-5

PDCCH-config

Table 5.4.2.3-6: PDCCH-ControlResourceSet

Derivation Path: Table 5.4.2.0-6			
Information Element	**Value/remark**	**Comment**	**Condition**
ControlResourceSet ::= SEQUENCE {			
controlResourceSetId	ControlResourceSetId		
frequencyDomainResources	xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxx	TS 38.521-4 Table 5.2-2 for tested channel bandwidth and subcarrier spacing	SDR_FR1
frequencyDomainResources	xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxx	TS 38.521-4 Table 7.2-2 for tested channel bandwidth and subcarrier spacing	SDR_FR2
duration	1	SearchSpace duration of 1 symbol	SDR_FR1, SDR_FR2
cce-REG-MappingType CHOICE {			
nonInterleaved	NULL		
}			
precoderGranularity	sameAsREG-bundle		
tci-StatesPDCCH-ToAddList	Not present	SearchSpace seen from all TCI states	
tci-StatesPDCCH-ToAddList SEQUENCE(SIZE (1..maxNrofTCI-StatesPDCCH)) OF TCI-StateId {	1 entry		MBWP
TCI-StateId[1]	0	QCL ssb 0	
	1	QCL csi-rs 0	
}			
}			

Condition	Explanation
SDR_FR1	SDR testing in FR1.
SDR_FR2	SDR testing in FR2.

Table 5.4.2.3-7: PDCCH *Search Space*

Derivation Path: Table 5.4.2.0-7			
Information Element	**Value/remark**	**Comment**	**Condition**
SearchSpace ::= SEQUENCE {			
monitoringSlotPeriodicityAndOffset CHOICE {			
sl1	NULL		
}			
duration	Not present	1 slot per default	
monitoringSymbolsWithinSlot	10000000000000	Starting symbol 0	
nrofCandidates SEQUENCE {			
aggregationLevel1	n0		
aggregationLevel2	n2	1 for UL, 1 for DL	CORESET_ge_24_RBs
	n0		
aggregationLevel4	n2	1 for UL, 1 for DL	CORESET_ge_48_RBs
	n0		
aggregationLevel8	n2	1 for UL, 1 for DL	CORESET_ge_96_RBs
	n0		
aggregationLevel16	n0		
}			
searchSpaceType CHOICE {			
ue-Specific SEQUENCE {			USS
dci-Formats	formats0-1-And-1-1	DCI Format 1_1	
}			
}			
}			

Condition	Explanation
CORESET_ge_24_RBs	5MHz in scs15; 10MHz, 15MHz in scs30.
CORESET_ge_48_RBs	10MHz in scs15; 20MHz in scs30.
CORESET_ge_96_RBs	15MHz and above in scs15; 25MHz and above in scs30.

NZP-CSI-RS for Tracking

NZP-CSI-RS-Resource

Table 5.4.2.3-8: NZP-CSI-RS-Resource for TRS

Derivation Path: Table 5.4.2.0-8			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-Resource ::= SEQUENCE {			
nzp-CSI-RS-ResourceId	0	CSI-RS resource 1	
	1	CSI-RS resource 2	
	2	CSI-RS resource 3	
	3	CSI-RS resource 4	
resourceMapping	CSI-RS-ResourceMapping for TRS		
powerControlOffset	0		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset		
qcl-InfoPeriodicCSI-RS	TCI-StateId 0	QCL ssb 0	
}			

CSI-RS-ResourceMapping

Table 5.4.2.3-9: CSI-RS-ResourceMapping for TRS

Derivation Path: Table 5.4.2.0-9			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row1	1000	k_0=3, row1	2TX, 4TX
}			
firstOFDMSymbolInTimeDomain	6	l_0=6 for CSI-RS resource 1 and 3	
	10	l_0=10 for CSI-RS resource 2 and 4	
nrofPorts	p1	1 for CSI-RS resource 1,2,3,4	2TX, 4TX
cdm-Type	noCDM		
density CHOICE{			
three	Null		
}			
freqBand	CSI-FrequencyOccupation for TRS		
}			

CSI-ResourcePeriodicityAndOffset

Table 5.4.2.3-10: CSI-ResourcePeriodicityAndOffset for TRS

Derivation Path: Table 5.4.2.0-10

CSI-FrequencyOccupation

Table 5.4.2.3-11: CSI-FrequencyOccupation for TRS

Derivation Path: Table 5.4.2.0-11			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-FrequencyOccupation ::= SEQUENCE {			
nrofRBs	52	BW 10MHz SCS 15kHz, BW 20MHz SCS 30kHz	
	108	BW 20MHz SCS 15kHz	
	276	BW 100MHz SCS 30kHz	
}			

NZP-CSI-RS-ResourceSet

Table 5.4.2.3-12: NZP-CSI-RS-ResourceSet for TRS

Derivation Path: Table 5.4.2.0-12

CSI-ResourceConfig

Table 5.4.2.3-13: CSI-ResourceConfig for TRS

Derivation Path: Table 5.4.2.0-13

NZP CSI-RS for CSI Acquisition

NZP-CSI-RS-Resource

Table 5.4.2.3-14: NZP-CSI-RS-Resource for CSI Acquisition

Derivation Path: Table 5.4.2.0-14			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-Resource ::= SEQUENCE {			
nzp-CSI-RS-ResourceId	4	CSI-RS resource 5	
resourceMapping	CSI-RS-ResourceMapping		
powerControlOffset	0		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset		
qcl-InfoPeriodicCSI-RS	TCI-StateId 1	QCL csi-rs 0	
}			

CSI-RS-ResourceMapping

Table 5.4.2.3-15: CSI-RS-ResourceMapping for CSI Acquisition

Derivation Path: Table 5.4.2.0-15			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
other	000100	k_0=4, row3	2TX
row4	010	k_0=4, row4	4TX
}			
nrofPorts	p2		2TX
	p4		4TX
firstOFDMSymbolInTimeDomain	12	l_0=12	
cdm-Type	fd-CDM2		
density CHOICE {			
one	NULL		
}			
freqBand	CSI-FrequencyOccupation for CSI Acquisition		
}			

CSI-ResourcePeriodicityAndOffset

Table 5.4.2.3-16: CSI-ResourcePeriodicityAndOffset

Derivation Path: Table 5.4.2.0-16

CSI-FrequencyOccupation

Table 5.4.2.3-17: CSI-FrequencyOccupation for CSI Acquisition

Derivation Path: Table 5.4.2.0-17			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-FrequencyOccupation ::= SEQUENCE {			
nrofRBs	52		BW 10MHz SCS 15kHz, BW 20MHz SCS 30kHz
	108		BW 20MHz SCS 15kHz
	276		BW 100MHz SCS 30kHz
}			

NZP-CSI-RS-ResourceSet

Table 5.4.2.3-18: NZP-CSI-RS-ResourceSet for CSI Acquisition

Derivation Path: Table 5.4.2.0-18

CSI-ResourceConfig

Table 5.4.2.3-19: CSI-ResourceConfig for CSI Acquisition

Derivation Path: Table 5.4.2.0-19

ZP CSI-RS for CSI Acquisition

ZP-CSI-RS-Resource

Table 5.4.2.3-20: ZP-CSI-RS-Resource

Derivation Path: Table 5.4.2.0-20			
Information Element	**Value/remark**	**Comment**	**Condition**
ZP-CSI-RS-Resource ::= SEQUENCE {			
zp-CSI-RS-ResourceId	ZP-CSI-RS-ResourceId		
resourceMapping	ZP CSI-RS-ResourceMapping		
periodicityAndOffset	ZP CSI-ResourcePeriodicityAndOffset		
qcl-InfoPeriodicCSI-RS	TCI-StateId 1	QCL csi-rs 0	
}			

CSI-RS-ResourceMapping

Table 5.4.2.3-21: ZP CSI-RS-ResourceMapping

Derivation Path: Table 5.4.2.0-21			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row4	001	k_0=0, row4	2TX, 4TX
}			
nrofPorts	p4		2TX, 4TX
firstOFDMSymbolInTimeDomain	12	l_0=12	
cdm-Type	fd-CDM2		
density CHOICE {			
one	NULL		
}			
freqBand	ZP CSI-FrequencyOccupation		
}			

CSI-ResourcePeriodicityAndOffset

Table 5.4.2.3-22: ZP CSI-ResourcePeriodicityAndOffset

Derivation Path: Table 5.4.2.0-22

CSI-FrequencyOccupation

Table 5.4.2.3-23: ZP CSI-FrequencyOccupation

Derivation Path: Table 5.4.2.0-23			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-FrequencyOccupation ::= SEQUENCE {			
nrofRBs	52		BW 10MHz SCS 15kHz, BW 20MHz SCS 30kHz
	108		BW 20MHz SCS 15kHz
	276		BW 100MHz SCS 30kHz
}			

PDSCH DMRS Configuration

DMRS-DownlinkConfig

Table 5.4.2.3-24: DMRS-DownlinkConfig

Derivation Path: Table 5.4.2.0-24

PDSCH Configuration

PDSCH-ServingCellConfig

Table 5.4.2.3-25: PDSCH-ServingCellConfig

Derivation Path: Table 5.4.2.0-25

PDSCH-Config

Table 5.4.2.3-26: *PDSCH-Config*

Derivation Path: Table 5.4.2.0-26			
Information Element	**Value/remark**	**Comment**	**Condition**
PDSCH-Config ::= SEQUENCE {			
dataScramblingIdentityPDSCH	0		
dmrs-DownlinkForPDSCH-MappingTypeA CHOICE {			
setup	DMRS-DownlinkConfig		
}			
tci-StatesToAddModList SEQUENCE(SIZE (1..maxNrofTCI-States)) OF TCI-State {	2 entries		
TCI-State[1] SEQUENCE {		entry 1	
tci-StateId	0	TCI-StateId 0	
qcl-type1 SEQUENCE {			
cell	0		
bwp-id	Not present	BWP_ID	
referenceSignal	ssb		
ssb	0		
qcl-Type	typeC		
}			
qcl-type2 SEQUENCE {			SDR_FR2
cell	0		
bwp-id	Not present	BWP_ID	
referenceSignal	ssb		
ssb	0		
qcl-Type	typeD		
}			
}			
TCI-State[2] SEQUENCE {		entry 2	
tci-StateId	1	TCI-StateId 1	
qcl-type1 {			
cell	0		
bwp-id	0	BWP ID	
referenceSignal	csi-rs		
csi-rs	0		
qcl-Type	typeA		
}			
qcl-type2 SEQUENCE {			SDR_FR2
cell	0		
bwp-id	0	BWP ID	
referenceSignal	csi-rs		
csi-rs	0		
qcl-Type	typeD		
}			
}			
}			
vrb-ToPRB-Interleaver	Not present		
resourceAllocation	resourceAllocationType0		
pdsch-AggregationFactor	Not present		
rbg-Size	config1	The UE ignores this field if *resourceAllocation* is set to *resourceAllocation Type1* (see TS 38.214 [21], clause 5.1.2.2.1).	
prb-BundlingType CHOICE {			
staticBundling SEQUENCE {			
bundleSize	wideband		SDR_FR1, SDR_FR2
}			
}			
ZP-CSI-RS-ResourceToAddModList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-Resources)) OF NZP-CSI-RS-Resource {	1 entry		
ZP-CSI-RS-Resource[1]	ZP-CSI-RS-Resource	entry 1	

}			
p-ZP-CSI-RS-ResourceSet	p-ZP-CSI-RS-ResourceSet		
}			

PDSCH-TimeDomainResourceAllocationList

Table 5.4.2.3-27: PDSCH-TimeDomainResourceAllocationList

Derivation Path: Table 5.4.2.0-27			
Information Element	**Value/remark**	**Comment**	**Condition**
PDSCH-TimeDomainResourceAllocationList ::= SEQUENCE(SIZE(1..maxNrofDL-Allocations)) OF PDSCH-TimeDomainResourceAllocation {	2 entries		
PDSCH-TimeDomainResourceAllocation[1] SEQUENCE {		entry 1	
k0	Not present		
mappingType	typeA		
startSymbolAndLength	44	Start symbol(S)=2, Length(L)=4	SDR_FR1
	96	Start symbol(S)=1, Length(L)=9	SDR_FR2
}			
PDSCH-TimeDomainResourceAllocation[2] SEQUENCE {		entry 2	
k0	Not present		
mappingType	typeA		
	40	Start symbol(S)=1, Length(L)=13	SDR_FR1, SDR_FR2
}			
}			

– *SecurityAlgorithmConfig*

Table 5.4.2.3-A1: *SecurityAlgorithmConfig*

Derivation Path: Table 4.6.3-165			
Information Element	**Value/remark**	**Comment**	**Condition**
SecurityAlgorithmConfig ::= SEQUENCE {			
cipheringAlgorithm	nea0		SDR_FR1, SDR_FR2
integrityProtAlgorithm	nia2		
}			

– *Security mode command*

Table 5.4.2.3-A2: SECURITY MODE COMMAND

Derivation Path: Table 4.7.1-25			
Information Element	**Value/remark**	**Comment**	**Condition**
Selected NAS security algorithms			
Type of ciphering algorithm	'0000'B	5G encryption algorithm 5G EA0 (null ciphering algorithm)	SDR_FR1, SDR_FR2
Type of integrity protection algorithm	Set according to PIXIT px_NAS_5GC_IntegrityProtAlgorithm for default integrity protection algorithm	This value should not be equal to the null integrity algorithm.	
Selected EPS NAS security algorithms	Not Present		
Selected EPS NAS security algorithms			UE_S1_SUPPORTED
Type of ciphering algorithm	'0000'B	EPS encryption algorithm EEA0 (null ciphering algorithm)	SDR_FR1, SDR_FR2
Type of integrity protection algorithm	Set according to PIXIT px_NAS_IntegrityProtAlgorithmfor default integrity protection algorithm		

5.4.2.4 Message contents for CQI reporting requirements

NZP-CSI-RS for Tracking

CSI-RS-ResourceMapping

Table 5.4.2.4-1: CSI-RS-ResourceMapping for TRS

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row1	0001	k_0=0 for CSI-RS resource 1,2,3,4	TRS
}			
firstOFDMSymbolInTimeDomain	4	l_0 = 4 for CSI-RS resource 1 and 3	TRS
	8	l_0 = 8 for CSI-RS resource 2 and 4	TRS
nrofPorts	p1	1 for CSI-RS resource 1,2,3,4	TRS
Cdm-Type	noCDM		TRS
Density CHOICE{			
three	Null		TRS
}			
freqBand	CSI-FrequencyOccupation		TRS
}			

NZP CSI-RS for CSI Acquisition

CSI-RS-ResourceMapping

Table 5.4.2.4-2: CSI-RS-ResourceMapping

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
other	001000	K0 = 6, row3,	NOT 1Tx test cases
row1	0001	K0 = 0, row1	1Tx test cases
}			
nrofPorts	P2		NOT 1Tx test cases
	P1		1Tx test cases
firstOFDMSymbolInTimeDomain	13	I0 = 13	
cdm-Type	fd-CDM2		NOT 1Tx test cases
	noCDM		1Tx test cases
density CHOICE {			
one	NULL		NOT 1Tx test cases
three	NULL		1Tx test cases
}			
freqBand	CSI-FrequencyOccupation		
}			

CSI-ResourcePeriodicityAndOffset

Table 5.4.2.4-2a: NZP CSI-ResourcePeriodicityAndOffset

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
slots5	1		FR1_FDD
slot10	1		FR1_TDD
slot8	1		FR2
}			

ZP CSI-RS for CSI Acquisition

CSI-RS-ResourceMapping

Table 5.4.2.4-3: ZP CSI-RS-ResourceMapping

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
other	000100	K0 = 4	FR1
row4	100	K0=8	FR2
}			
nrofPorts	P4		
firstOFDMSymbolInTimeDomain	9	l0 = 9	FR1
	13	l0 = 13	FR2
cdm-Type	fd-CDM2		
density CHOICE {			
one	NULL		
}			
freqBand	ZP CSI-FrequencyOccupation		
}			

CSI-ResourcePeriodicityAndOffset

Table 5.4.2.4-4: ZP CSI-ResourcePeriodicityAndOffset

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
slots5	1		FR1_FDD
slot10	1		FR1_TDD
slot8	1		FR2
}			

p-ZP-CSI-RS-ResourceSet

Table 5.4.2.4-5: p-ZP-CSI-RS-ResourceSet

Derivation Path: Table 4.6.3-87			
Information Element	**Value/remark**	**Comment**	**Condition**
p-ZP-CSI-RS-ResourceSet ::= SEQUENCE {			
zp_CSI-RS_ResourceSetId	0		
zp-CSI-RS-ResourceIdList SEQUENCE (SIZE (1..maxNrofZP-CSI-RS-ResourcesPerSet)) OF ZP-CSI-RS-ResourceId{	1 entry		
ZP-CSI-RS-ResourceId[1]	0	entry 1 ZP CSI-RS resource 1	
}			
}			

CSI-IM Configuration

CSI-IM-Resource

Table 5.4.2.4-6: *CSI-IM-Resource*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-Resource ::= SEQUENCE {			
csi-IM-ResourceId	CSI-IM-ResourceId		
csi-IM-ResourceElementPattern CHOICE {			
pattern0 SEQUENCE {			FR1
subcarrierLocation-p0	s4		
symbolLocation-p0	9		
}			
pattern1 SEQUENCE {			FR2
subcarrierLocation-p1	s8		
symbolLocation-p1	13		
}			
}			
freqBand	CSI-FrequencyOccupation		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset		
}			

CSI-IM-ResourceId

Table 5.4.2.4-7: *CSI-IM-ResourceId*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-ResourceId	0		

CSI-IM-ResourceSet

Table 5.4.2.4-8: *CSI-IM-ResourceSet*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-ResourceSet ::= SEQUENCE {			
csi-IM-ResourceSetId	CSI-IM-ResourceSetId		
csi-IM-Resources SEQUENCE (SIZE(1..maxNrofCSI-IM-ResourcesPerSet)) {	1 entry		
CSI-IM-ResourceId[1]	CSI-IM-ResourceId	entry 1	
}			
}			

CSI-IM-ResourceSetId

Table 5.4.2.4-9: *CSI-IM-ResourceSetId*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-ResourceSetId	0		

CSI-IM-ResourceConfig

Table 5.4.2.4-10: *CSI-IM-ResourceConfig*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			
csi-ResourceConfigId	2		
csi-RS-ResourceSetList CHOICE {			
csi-IM-ResourceSetList SEQUENCE (SIZE (1..maxNrofCSI-IM-ResourceSetsPerConfig)) OF CSI-IM-ResourceSetId {	1 entry		
csi-IM-ResourceSetId[0]	0	entry 1	
}			
}			
bwp-Id	BWP-Id		
resourceType	periodic		
}			

CSI-MeasConfig

Table 5.4.2.4-11: *CSI-MeasConfig*

Derivation Path: Table 4.6.3-38			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-MeasConfig::= SEQUENCE {			
nzp-CSI-RS-ResourceToAddModList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-Resources)) OF NZP-CSI-RS-Resource {	n entries	n=5 for FR1 n=7 for FR2	
NZP-CSI-RS-Resource[1]	NZP-CSI-RS-Resource for TRS (1)	entry 1 CSI-RS resource 1	
NZP-CSI-RS-Resource[2]	NZP-CSI-RS-Resource for TRS (2)	entry 2 CSI-RS resource 2	
NZP-CSI-RS-Resource[3]	NZP-CSI-RS-Resource for TRS (3)	entry 3 CSI-RS resource 3	
NZP-CSI-RS-Resource[4]	NZP-CSI-RS-Resource for TRS (4)	entry 4 CSI-RS resource 4	
NZP-CSI-RS-Resource[5]	NZP-CSI-RS-Resource for CSI Acquisition	entry 5 CSI-RS resource 5	
NZP-CSI-RS-Resource[6]	CSI-RS-Resource for beam refinement	entry 6 CSI-RS resource 6	FR2
NZP-CSI-RS-Resource[7]	CSI-RS-Resource for beam refinement	entry 7 CSI-RS resource 7	FR2
}			
nzp-CSI-RS-ResourceSetToAddModList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSets)) OF NZP-CSI-RS-ResourceSet {	n entries	n=2 for FR1 n=3 for FR2	
NZP-CSI-RS-ResourceSet[1]	NZP-CSI-RS-ResourceSet for TRS	entry 1	
NZP-CSI-RS-ResourceSet[2]	NZP-CSI-RS-ResourceSet for CSI Acquisition	entry 2	
NZP-CSI-RS-ResourceSet[3]	NZP-CSI-RS-ResourceSet for beam refinement	entry 3	FR2
}			
csi-IM-ResourceToAddModList SEQUENCE (SIZE (1..maxNrofCSI-IM-Resources)) OF CSI-IM-Resource {	1 entry		
CSI-IM-Resource[1]	CSI-IM-Resource		
}			
csi-IM-ResourceSetToAddModList SEQUENCE (SIZE (1..maxNrofCSI-IM-ResourceSets)) OF CSI-IM-ResourceSet {	1 entry		
CSI-IM-ResourceSet[1]	CSI-IM-ResourceSet	entry 1	
}			
csi-SSB-ResourceSetToAddModList	Not present		
csi-ResourceConfigToAddModList SEQUENCE (SIZE (1..maxNrofCSI-ResourceConfigurations)) OF CSI-ResourceConfig {	n entries	n=3 for FR1 n=4 for FR2	
CSI-ResourceConfig[1]	CSI-ResourceConfig for TRS	entry 1	
CSI-ResourceConfig[2]	CSI-ResourceConfig for CSI Acquisition	entry 2	
CSI-ResourceConfig[3]	CSI-IM-ResourceConfig	entry 3	
CSI-ResourceConfig[4]	CSI-ResourceConfig for beam refinement	entry 4	FR2
}			
}			

CSI-ReportConfig

Table 5.4.2.4-12: *CSI-ReportConfig*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ReportConfig ::= SEQUENCE {			
reportConfigId	CSI-ReportConfigId		
carrier	ServCellIndex		
resourcesForChannelMeasurement	CSI-ResourceConfigId for CSI Acquisition		
csi-IM-ResourcesForInterference	CSI-ResourceConfigId for CSI-IM		
nzp-CSI-RS-ResourcesForInterference	not present		
reportConfigType CHOICE {			
periodic SEQUENCE {			
reportSlotConfig	CSI-ReportPeriodicityAndOffset		
pucch-CSI-ResourceList SEQUENCE (SIZE (1..maxNrofBWPs)) OF PUCCH-CSI-Resource {	2 entry		
PUCCH-CSI-Resource [1]	PUCCH-CSI-Resource	entry 1	
}			
}			
reportQuantity CHOICE {			
cri-RI-PMI-CQI	NULL		FR1, FR2
}			
reportFreqConfiguration SEQUENCE {			
cqi-FormatIndicator	widebandCQI		
pmi-FormatIndicator	widebandPMI		
csi-ReportingBand CHOICE {			
subbands7	'1111111'B		FR1
subbands9	‘111111111’B		FR2
}			
}			
timeRestrictionForChannelMeasurements	notConfigured		
timeRestrictionForInterferenceMeasurements	notConfigured		
codebookConfig	CodebookConfig		
dummy	Not present		
groupBasedBeamReporting CHOICE {			
disabled SEQUENCE {			
nrofReportedRS	not present		
}			
}			
cqi-Table	table2		FR1
	table1		FR2
subbandSize	value2		
non-PMI-PortIndication	Not present		
}			

CSI-ReportPeriodicityAndOffset

Table 5.4.2.4-13: *CSI-ReportPeriodicityAndOffset*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ReportPeriodicityAndOffset ::= CHOICE {			
slots10	9		FR1_TDD
slots5	0		FR1_FDD
slot8	3		FR2
}			

PUCCH-CSI-Resource

Table 5.4.2.4-14: PUCCH-CSI-Resource

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PUCCH-CSI-Resource ::= SEQUENCE {			
uplinkBandwidthPartId	BWP-id		FR1, FR2
pucch-Resource	8		FR1
	14		FR2
}			

CodebookConfig

Table 5.4.2.4-15: *CodebookConfig*

Derivation Path: Table 4.6.3-25			
Information Element	**Value/remark**	**Comment**	**Condition**
CodebookConfig ::= SEQUENCE {			
codebookType CHOICE {			
type1 SEQUENCE {			
subType CHOICE {			
typeI-SinglePanel SEQUENCE {			
nrOfAntennaPorts CHOICE {			
two SEQUENCE {			
twoTX-CodebookSubsetRestriction	'010000'B		
}			
}			
typeI-SinglePanel-ri-Restriction	‘11111111’B		
}			
}			
codebookMode	1		
}			
}			
}			

Physical layer parameters

Table 5.4.2.4-16: Phy sical layer parameters for DCI format 1_1

Derivation Path: Table 4.3.6.1.2.2-1			
Parameter	**Value**	**Value in binary**	**Condition**
PUCCH resource indicator	*PUCCH-ResourceId[1]* = 8 in pucch-ResourceSetID[2] as defined in Table 4.6.3-112 (Mapping as per Table 9.2.3-2 in TS 38.213)	‘110’B	SUBBAND_CQI

PUSCH-TimeDomainResourceAllocationList

Table 5.4.2.4-17: *PUSCH-TimeDomainResourceAllocationList*

Derivation Path: Table 5.4.2.0-27			
Information Element	**Value/remark**	**Comment**	**Condition**
PUSCH-TimeDomainResourceAllocationList ::= SEQUENCE (SIZE(1..maxNrofUL-Allocations)) OF PUSCH-TimeDomainResourceAllocation {	2 entries		SUBBAND_CQI
PUSCH-TimeDomainResourceAllocation[1] SEQUENCE {		entry 1	
startSymbolAndLength	55	Start symbol(S)=0, Length(L)=12	
}			
PUSCH-TimeDomainResourceAllocation[2] SEQUENCE {		entry 2	
startSymbolAndLength	55	Start symbol(S)=0, Length(L)=12	
}			
}			

Condition	Explanation
SUBBAND_CQI	For aperiodic subband CQI reporting under fading condition test cases

CSI-ResourceConfig

Table 5.4.2.4-18: CSI-ResourceConfig for CSI Acquisition

Derivation Path: Table 5.4.2.0-19			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			
csi-ResourceConfigId	1		
csi-RS-ResourceSetList CHOICE {			
nzp-CSI-RS-SSB SEQUENCE {			
nzp-CSI-RS-ResourceSetList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig)) OF NZP-CSI-RS-ResourceSetId {	1 entry		
NZP-CSI-RS-ResourceSetId[1]	1	entry 1	
}			
csi-SSB-ResourceSetList	Not present		
}			
}			
bwp-Id	BWP-Id		
resourceType	periodic		
}			

5.4.2.5 Message contents for PMI reporting requirements

NZP-CSI-RS for Tracking

CSI-RS-ResourceMapping

Table 5.4.2.5-1: CSI-RS-ResourceMapping for TRS

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row1	0001	k_0=0 for CSI-RS resource 1,2,3,4	TRS
}			
firstOFDMSymbolInTimeDomain	4	l_0 = 4 for CSI-RS resource 1 and 3	TRS
	8	l_0 = 8 for CSI-RS resource 2 and 4	TRS
nrofPorts	p1	1 for CSI-RS resource 1,2,3,4	TRS
cdm-Type	noCDM		TRS
density CHOICE{			
three	Null		TRS
}			
freqBand	CSI-FrequencyOccupation		TRS
}			

NZP CSI-RS for CSI Acquisition

CSI-RS-ResourceMapping

Table 5.4.2.5-2: CSI-RS-ResourceMapping

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row3	001000	K0 = 6, row3	2Tx
row4	001	K0 = 0, row4	4Tx
other	001100	K0 = 4, K1 = 6, row8	8Tx
	011110	K0=2, row 12	16Tx
}			
nrofPorts	p2		2Tx
	p4		4Tx
	p8		8Tx
	p16		16Tx
firstOFDMSymbolInTimeDomain	13	I0 = 13	2Tx, 4Tx
	5	I0 = 5	8Tx, 16Tx
cdm-Type	fd-CDM2		2Tx, 4Tx
	cdm4-FD2-TD2		8Tx, 16Tx
density CHOICE {			
one	NULL		
}			
freqBand	CSI-FrequencyOccupation		
}			

Condition	Explanation
2Tx	For test cases using 2 CSI-RS ports for NZP-CSI-RS for CSI acquisition.
4Tx	For test cases using 4 CSI-RS ports for NZP-CSI-RS for CSI acquisition.
8Tx	For test cases using 8 CSI-RS ports for NZP-CSI-RS for CSI acquisition.
16Tx	For test cases using 16 CSI-RS ports for NZP-CSI-RS for CSI acquisition.

ZP CSI-RS for CSI Acquisition

CSI-RS-ResourceMapping

Table 5.4.2.5-3: ZP CSI-RS-ResourceMapping

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
other	000100	K0 = 4	FR1
row4	100	K0 = 8	FR2
}			
nrofPorts	p4		
firstOFDMSymbolInTimeDomain	9	l0 = 9	FR1
	13	l0 = 13	FR2
cdm-Type	fd-CDM2		
density CHOICE {			
one	NULL		
}			
freqBand	ZP CSI-FrequencyOccupation		
}			

Table 5.4.2.5-4: Void

CSI-ResourcePeriodicityAndOffset

Table 5.4.2.5-4A: ZP CSI-ResourcePeriodicityAndOffset

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
slots5	1		FR1_FDD
slot10	1		FR1_TDD
slot8	1		FR2
}			

Table 5.4.2.5-5: Void

p-ZP-CSI-RS-ResourceSet

Table 5.4.2.5-5A: p-ZP-CSI-RS-ResourceSet

Derivation Path: Table 4.6.3-87			
Information Element	**Value/remark**	**Comment**	**Condition**
p-ZP-CSI-RS-ResourceSet ::= SEQUENCE {			
zp_CSI-RS_ResourceSetId	0		
zp-CSI-RS-ResourceIdList SEQUENCE (SIZE (1..maxNrofZP-CSI-RS-ResourcesPerSet)) OF ZP-CSI-RS-ResourceId{	1 entry		
ZP-CSI-RS-ResourceId[1]	0	entry 1 ZP CSI-RS resource 1	
}			
}			

CSI-ResourceConfig

Table 5.4.2.5-6: CSI-ResourceConfig for CSI Acquisition

Derivation Path: Table 4.6.3-41			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			
csi-ResourceConfigId	1		
csi-RS-ResourceSetList CHOICE {			
nzp-CSI-RS-SSB SEQUENCE {			
nzp-CSI-RS-ResourceSetList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig)) OF NZP-CSI-RS-ResourceSetId {	1 entry		
NZP-CSI-RS-ResourceSetId[1]	1	entry 1	
}			
csi-SSB-ResourceSetList	Not present		
}			
}			
bwp-Id	BWP-Id		
resourceType	aperiodic		
}			

CSI-IM Configuration

CSI-IM-Resource

Table 5.4.2.5-7: *CSI-IM-Resource*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-Resource ::= SEQUENCE {			
csi-IM-ResourceId	CSI-IM-ResourceId		
csi-IM-ResourceElementPattern CHOICE {			
pattern0 SEQUENCE {			FR1
subcarrierLocation-p0	s4		
symbolLocation-p0	9		
}			
pattern1 SEQUENCE {			FR2
subcarrierLocation-p1	s8		
symbolLocation-p1	13		
}			
}			
freqBand	CSI-FrequencyOccupation		
periodicityAndOffset	Not present		
}			

CSI-IM-ResourceId

Table 5.4.2.5-8: *CSI-IM-ResourceId*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-ResourceId	0		

CSI-IM-ResourceSet

Table 5.4.2.5-9: *CSI-IM-ResourceSet*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-ResourceSet ::= SEQUENCE {			
csi-IM-ResourceSetId	CSI-IM-ResourceSetId		
csi-IM-Resources SEQUENCE (SIZE(1..maxNrofCSI-IM-ResourcesPerSet)) {	1 entry		
CSI-IM-ResourceId[1]	CSI-IM-ResourceId	entry 1	
}			
}			

CSI-IM-ResourceSetId

Table 5.4.2.5-10: *CSI-IM-ResourceSetId*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-ResourceSetId	0		

CSI-IM-ResourceConfig

Table 5.4.2.5-11: *CSI-IM-ResourceConfig*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			
csi-ResourceConfigId	2		
csi-RS-ResourceSetList CHOICE {			
csi-IM-ResourceSetList SEQUENCE (SIZE (1..maxNrofCSI-IM-ResourceSetsPerConfig)) OF CSI-IM-ResourceSetId {	1 entry		
csi-IM-ResourceSetId[0]	0	entry 1	
}			
}			
bwp-Id	BWP-Id		
resourceType	aperiodic		
}			

CSI-MeasConfig

Table 5.4.2.5-12: *CSI-MeasConfig*

Derivation Path: Table 4.6.3-38			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-MeasConfig::= SEQUENCE {			
nzp-CSI-RS-ResourceToAddModList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-Resources)) OF NZP-CSI-RS-Resource {	n entries	n=5 for FR1 n=7 for FR2	
NZP-CSI-RS-Resource[1]	NZP-CSI-RS-Resource for TRS (1)	entry 1 CSI-RS resource 1	
NZP-CSI-RS-Resource[2]	NZP-CSI-RS-Resource for TRS (2)	entry 2 CSI-RS resource 2	
NZP-CSI-RS-Resource[3]	NZP-CSI-RS-Resource for TRS (3)	entry 3 CSI-RS resource 3	
NZP-CSI-RS-Resource[4]	NZP-CSI-RS-Resource for TRS (4)	entry 4 CSI-RS resource 4	
NZP-CSI-RS-Resource[5]	NZP-CSI-RS-Resource for CSI Acquisition	entry 5 CSI-RS resource 5	
NZP-CSI-RS-Resource[6]	CSI-RS-Resource for beam refinement	entry 6 CSI-RS resource 6	FR2
NZP-CSI-RS-Resource[7]	CSI-RS-Resource for beam refinement	entry 7 CSI-RS resource 7	FR2
}			
nzp-CSI-RS-ResourceSetToAddModList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSets)) OF NZP-CSI-RS-ResourceSet {	n entries	n=2 for FR1 n=3 for FR2	
NZP-CSI-RS-ResourceSet[1]	NZP-CSI-RS-ResourceSet for TRS	entry 1	
NZP-CSI-RS-ResourceSet[2]	NZP-CSI-RS-ResourceSet for CSI Acquisition	entry 2	
NZP-CSI-RS-ResourceSet[3]	NZP-CSI-RS-ResourceSet for beam refinement	entry 3	FR2
}			
csi-IM-ResourceToAddModList SEQUENCE (SIZE (1..maxNrofCSI-IM-Resources)) OF CSI-IM-Resource {	1 entry		
CSI-IM-Resource[1]	CSI-IM-Resource		
}			
csi-IM-ResourceSetToAddModList SEQUENCE (SIZE (1..maxNrofCSI-IM-ResourceSets)) OF CSI-IM-ResourceSet {	1 entry		
CSI-IM-ResourceSet[1]	CSI-IM-ResourceSet		
}			
csi-SSB-ResourceSetToAddModList	Not present		
csi-ResourceConfigToAddModList SEQUENCE (SIZE (1..maxNrofCSI-ResourceConfigurations)) OF CSI-ResourceConfig {	n entries	n=3 for FR1 n=4 for FR2	
CSI-ResourceConfig[1]	CSI-ResourceConfig for TRS	entry 1	
CSI-ResourceConfig[2]	CSI-ResourceConfig for CSI Acquisition	entry 2	
CSI-ResourceConfig[3]	CSI-IM-ResourceConfig	entry 3	
CSI-ResourceConfig[4]	CSI-ResourceConfig for beam refinement	entry 4	FR2
}			
}			

CSI-ReportConfig

Table 5.4.2.5-13: *CSI-ReportConfig*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ReportConfig ::= SEQUENCE {			
reportConfigId	CSI-ReportConfigId		
carrier	ServCellIndex		
resourcesForChannelMeasurement	CSI-ResourceConfigId for CSI Acquisition		
csi-IM-ResourcesForInterference	CSI-ResourceConfigId for CSI-IM		
nzp-CSI-RS-ResourcesForInterference	not present		
reportConfigType CHOICE {			
aperiodic SEQUENCE {			
reportSlotOffsetList SEQUENCE {	2 entries		
reportSlotOffsetList[1]	4	entry 1	FR1_FDD_4Tx, FR1_FDD_16Tx
	5		FR1_FDD_8Tx
	8		FR1_TDD
	6		FR2
reportSlotOffsetList[2]	4	entry 2	FR1_FDD_4Tx, FR1_FDD_16Tx
	5		FR1_FDD_8Tx
	8		FR1_TDD
	6		FR2
}			
}			
}			
reportQuantity CHOICE {			
cri-RI-PMI-CQI	NULL		
}			
reportFreqConfiguration SEQUENCE {			
cqi-FormatIndicator	widebandCQI		
pmi-FormatIndicator	widebandPMI		
csi-ReportingBand CHOICE {			FR1
subbands7	'1111111'B		
}			
csi-ReportingBand CHOICE {			FR2
subbands9	'111111111'B		
}			
}			
timeRestrictionForChannelMeasurements	notConfigured		
timeRestrictionForInterferenceMeasurements	notConfigured		
codebookConfig	CodebookConfig		
dummy	Not present		
groupBasedBeamReporting CHOICE {			
disabled SEQUENCE {			
nrofReportedRS	not present		
}			
}			
cqi-Table	table1		
subbandSize	value2		
non-PMI-PortIndication	Not present		
}			

CodebookConfig

Table 5.4.2.5-14: *CodebookConfig*

Derivation Path: Table 4.6.3-25			
Information Element	**Value/remark**	**Comment**	**Condition**
CodebookConfig ::= SEQUENCE {			
codebookType CHOICE {			
type1 SEQUENCE {			
subType CHOICE {			
typeI-SinglePanel SEQUENCE {			
nrOfAntennaPorts CHOICE {			
two SEQUENCE {			2Tx
twoTX-CodebookSubsetRestriction	'001111'B		
}			
moreThanTwo SEQUENCE {			4Tx, 8Tx
n1-n2 CHOICE {			
two-one-TypeI-SinglePanel-Restriction	'11111111'B		
}			
typeI-SinglePanel-codebookSubsetRestriction-i2	Not present		
}			
}			
typeI-SinglePanel-ri-Restriction	'11111111'B		2Tx
	'00000001'B		4Tx
	'00000010'B		8Tx
}			
codebookMode	1		
}			
}			
}			

CSI-AperiodicTriggerStateList

Table 5.4.2.5-15: *CSI-AperiodicTriggerStateList*

Derivation Path: Table 4.6.3-32			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-AperiodicTriggerStateList ::= SEQUENCE (SIZE (1..maxNrOfCSI-AperiodicTriggers)) OF CSI-AperiodicTriggerState {	1 entry		
CSI-AperiodicTriggerState[1] SEQUENCE {		entry 1	
associatedReportConfigInfoList SEQUENCE (SIZE(1..maxNrofReportConfigPerAperiodicTrigger)) OF CSI-AssociatedReportConfigInfo {	1 entry		
CSI-AssociatedReportConfigInfo[1] SEQUENCE {		entry 1	
reportConfigId	0		
resourcesForChannel CHOICE {			
nzp-CSI-RS SEQUENCE {			
resourceSet	1		
qcl-info SEQUENCE (SIZE(1..maxNrofAP-CSI-RS-ResourcesPerSet)) OF TCI-StateId {	1 entry		
TCI-StateId[1]	1	entry 1	
}			
}			
}			
csi-IM-ResourcesforInteference	1		
nzp-CSI-RS-ResourcesforInterference	Not present		
}			
}			
}			
}			

Physical layer parameters

Table 5.4.2.5-16: Phy sical layer parameters for DCI format 1_1

Derivation Path: Table 5.4.2.0-1			
Parameter	**Value**	**Value in binary**	**Condition**
PUCCH resource indicator	*PUCCH-ResourceId[7]* = 6 in pucch-ResourceSetID[1] or *PUCCH-ResourceId[7]* = 14 in pucch-ResourceSetID[2] as defined in Table 4.6.3-112 (Mapping as per Table 9.2.3-2 in TS 38.213)	‘110’B	

PUSCH-TimeDomainResourceAllocationList

Table 5.4.2.5-17: *PUSCH-TimeDomainResourceAllocationList*

Derivation Path: Table 5.4.2.0-27			
Information Element	**Value/remark**	**Comment**	**Condition**
PUSCH-TimeDomainResourceAllocationList ::= SEQUENCE (SIZE(1..maxNrofUL-Allocations)) OF PUSCH-TimeDomainResourceAllocation {	2 entries		
PUSCH-TimeDomainResourceAllocation[1] SEQUENCE {		entry 1	
startSymbolAndLength	55	Start symbol(S)=0, Length(L)=12	
}			
PUSCH-TimeDomainResourceAllocation[2] SEQUENCE {		entry 2	
startSymbolAndLength	55	Start symbol(S)=0, Length(L)=12	
}			
}			

5.4.2.6 Message contents for RI reporting requirements

NZP-CSI-RS for Tracking

CSI-RS-ResourceMapping

Table 5.4.2.6-1: CSI-RS-ResourceMapping for TRS

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row1	0001	k_0=0 for CSI-RS resource 1,2,3,4	TRS
}			
firstOFDMSymbolInTimeDomain	4	l_0 = 4 for CSI-RS resource 1 and 3	TRS
	8	l_0 = 8 for CSI-RS resource 2 and 4	TRS
nrofPorts	p1	1 for CSI-RS resource 1,2,3,4	TRS
cdm-Type	noCDM		TRS
density CHOICE{			
three	Null		TRS
}			
freqBand	CSI-FrequencyOccupation		TRS
}			

NZP CSI-RS for CSI Acquisition

CSI-RS-ResourceMapping

Table 5.4.2.6-2: CSI-RS-ResourceMapping

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row4	001	K0 = 0, row4	4Tx
other	001000	K0 = 6, row3	2Tx
}			
nrofPorts	p4		4Tx
	p2		2Tx
firstOFDMSymbolInTimeDomain	13	I0 = 13	2Tx, 4Tx
cdm-Type	fd-CDM2		2Tx, 4Tx
density CHOICE {			
one	NULL		
}			
freqBand	CSI-FrequencyOccupation		
}			

Condition	Explanation
2Tx	For test cases using 2 CSI-RS ports for NZP-CSI-RS for CSI acquisition.
4Tx	For test cases using 4 CSI-RS ports for NZP-CSI-RS for CSI acquisition.

Table 5.4.2.6-3: CSI-ResourcePeriodicityAndOffset for CSI Acquisition

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
Slots5	1		FR1_FDD
Slots10	1		FR1_TDD
}			

ZP CSI-RS for CSI Acquisition

CSI-RS-ResourceMapping

Table 5.4.2.6-4: ZP CSI-RS-ResourceMapping

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
other	000100	K0 = 4, row5	FR1
row4	100	K0 = 8, row4	FR2
}			
nrofPorts	p4		
firstOFDMSymbolInTimeDomain	9	l0 = 9	FR1
	13	l0 = 13	FR2
cdm-Type	fd-CDM2		
density CHOICE {			
one	NULL		
}			
freqBand	ZP CSI-FrequencyOccupation		
}			

CSI-ResourcePeriodicityAndOffset

Table 5.4.2.6-5: ZP CSI-ResourcePeriodicityAndOffset

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
Slots5	1		FR1 FDD
Slots10	1		FR1 TDD
Slots8	1		FR2
}			

PDSCH-Config

Table 5.4.2.6-6: *PDSCH-Config*

Derivation Path: Table 4.6.3-100			
Information Element	**Value/remark**	**Comment**	**Condition**
PDSCH-Config ::= SEQUENCE {			
p-ZP-CSI-RS-ResourceSetsToAddModList	p-ZP-CSI-RS-ResourceSet		
}			

p-ZP-CSI-RS-ResourceSet

Table 5.4.2.6-7: p-ZP-CSI-RS-ResourceSet

Derivation Path: Table 4.6.3-87			
Information Element	**Value/remark**	**Comment**	**Condition**
p-ZP-CSI-RS-ResourceSetsToAddModList ::= SEQUENCE {			
zp_CSI-RS_ResourceSetId	0		
zp-CSI-RS-ResourceIdList SEQUENCE (SIZE (1..maxNrofZP-CSI-RS-ResourcesPerSet)) OF ZP-CSI-RS-ResourceId{	1 entry		
ZP-CSI-RS-ResourceId[1]	0	entry 1 ZP CSI-RS resource 1	
}			
}			

CSI-ResourceConfig

Table 5.4.2.6-8: CSI-ResourceConfig for CSI Acquisition

Derivation Path: Table 4.6.3-41			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			
csi-ResourceConfigId	1		
csi-RS-ResourceSetList CHOICE {			
nzp-CSI-RS-SSB_SEQUENCE {			
nzp-CSI-RS-ResourceSetList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig)) OF NZP-CSI-RS-ResourceSetId {	1 entry		
NZP-CSI-RS-ResourceSetId[1]	1	entry 1	
}			
csi-SSB-ResourceSetList	Not present		
}			
}			
bwp-Id	BWP-Id		
resourceType	periodic		FR1
	aperiodic		FR2
}			

Table 5.4.2.6-8A: CSI-ResourceConfig for beam refinement

Derivation Path: Table 4.6.3-41			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			FR2
csi-ResourceConfigId	3		
csi-RS-ResourceSetList CHOICE {			
nzp-CSI-RS-SSB_SEQUENCE {			
nzp-CSI-RS-ResourceSetList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig)) OF NZP-CSI-RS-ResourceSetId {	1 entry		
NZP-CSI-RS-ResourceSetId[1]	2	entry 1	
}			
csi-SSB-ResourceSetList	Not present		
}			
}			
bwp-Id	BWP-Id		
resourceType	periodic		
}			

CSI-IM Configuration

CSI-IM-Resource

Table 5.4.2.6-9: *CSI-IM-Resource*

Derivation Path: Table 4.6.3-34			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-Resource ::= SEQUENCE {			
csi-IM-ResourceId	CSI-IM-ResourceId		
csi-IM-ResourceElementPattern CHOICE {			
Pattern0 SEQUENCE {			
subcarrierLocation-p0	s4		FR1
	s8		FR2
symbolLocation-p0	9		FR1
	13		FR2
}			
}			
freqBand	CSI-FrequencyOccupation		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset		FR1
	Not present		FR2
}			

Table 5.4.2.6-10: CSI-ResourcePeriodicityAndOffset

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
Slots5	1		FR1_FDD
Slots10	1		FR1_TDD
}			

CSI-IM-ResourceId

Table 5.4.2.6-11: *CSI-IM-ResourceId*

Derivation Path: Table 4.6.3-35			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-ResourceId	0		

CSI-IM-ResourceSet

Table 5.4.2.6-12: *CSI-IM-ResourceSet*

Derivation Path: Table 4.6.3-36			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-ResourceSet ::= SEQUENCE {			
csi-IM-ResourceSetId	CSI-IM-ResourceSetId		
csi-IM-Resources SEQUENCE (SIZE(1..maxNrofCSI-IM-ResourcesPerSet)) {	1 entry		
CSI-IM-ResourceId[1]	CSI-IM-ResourceId	entry 1	
}			
}			

CSI-IM-ResourceSetId

Table 5.4.2.6-13: *CSI-IM-ResourceSetId*

Derivation Path: Table 4.6.3-37			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-ResourceSetId	0		

CSI-IM-ResourceConfig

Table 5.4.2.6-14: *CSI-IM-ResourceConfig*

Derivation Path: Table 4.6.3-41			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			
csi-ResourceConfigId	2		
csi-RS-ResourceSetList CHOICE {			
csi-IM-ResourceSetList SEQUENCE (SIZE (1..maxNrofCSI-IM-ResourceSetsPerConfig)) OF CSI-IM-ResourceSetId {	1 entry		
csi-IM-ResourceSetId[0]	0		
}			
}			
bwp-Id	BWP-Id		
resourceType	periodic		FR1
	aperiodic		FR2
}			

CSI-MeasConfig

Table 5.4.2.6-15: *CSI-MeasConfig*

Derivation Path: Table 4.6.3-38			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-MeasConfig::= SEQUENCE {			
nzp-CSI-RS-ResourceToAddModList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-Resources)) OF NZP-CSI-RS-Resource {	n entries	n=5 for FR1 n=7 for FR2	
NZP-CSI-RS-Resource[1]	NZP-CSI-RS-Resource for TRS (1)	entry 1 CSI-RS resource 1	
NZP-CSI-RS-Resource[2]	NZP-CSI-RS-Resource for TRS (2)	entry 2 CSI-RS resource 2	
NZP-CSI-RS-Resource[3]	NZP-CSI-RS-Resource for TRS (3)	entry 3 CSI-RS resource 3	
NZP-CSI-RS-Resource[4]	NZP-CSI-RS-Resource for TRS (4)	entry 4 CSI-RS resource 4	
NZP-CSI-RS-Resource[5]	NZP-CSI-RS-Resource for CSI Acquisition	entry 5 CSI-RS resource 5	
NZP-CSI-RS-Resource[6]	NZP-CSI-RS-Resource for beam refinement	entry 6 CSI-RS resource 6	FR2
NZP-CSI-RS-Resource[7]	NZP-CSI-RS-Resource for beam refinement	entry 7 CSI-RS resource 7	FR2
}			
nzp-CSI-RS-ResourceSetToAddModList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSets)) OF NZP-CSI-RS-ResourceSet {	n entries	n=2 for FR1 n=3 for FR2	
NZP-CSI-RS-ResourceSet[1]	NZP-CSI-RS-ResourceSet for TRS	entry 1	
NZP-CSI-RS-ResourceSet[2]	NZP-CSI-RS-ResourceSet for CSI Acquisition	entry 2	
NZP-CSI-RS-ResourceSet[3]	NZP-CSI-RS-ResourceSet for beam refinement	entry 3	FR2
}			
csi-IM-ResourceToAddModList SEQUENCE (SIZE (1..maxNrofCSI-IM-Resources)) OF CSI-IM-Resource {	1 entry		
CSI-IM-Resource[1]	CSI-IM-Resource		
}			
csi-IM-ResourceSetToAddModList SEQUENCE (SIZE (1..maxNrofCSI-IM-ResourceSets)) OF CSI-IM-ResourceSet {	1 entry		
CSI-IM-ResourceSet[1]	CSI-IM-ResourceSet		
}			
csi-SSB-ResourceSetToAddModList	Not present		
csi-ResourceConfigToAddModList SEQUENCE (SIZE (1..maxNrofCSI-ResourceConfigurations)) OF CSI-ResourceConfig {	n entries	n=3 for FR1 n=4 for FR2	
CSI-ResourceConfig[1]	CSI-ResourceConfig for TRS	entry 1	
CSI-ResourceConfig[2]	CSI-ResourceConfig for CSI Acquisition	entry 2	
CSI-ResourceConfig[3]	CSI-IM-ResourceConfig	entry 3	
CSI-ResourceConfig[4]	CSI-ResourceConfig for beam refinement	entry 4	FR2
}			
}			

CSI-ReportConfig

Table 5.4.2.6-16: *CSI-ReportConfig*

Derivation Path: Table 4.6.3-39			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ReportConfig ::= SEQUENCE {			
reportConfigId	CSI-ReportConfigId		
carrier	ServCellIndex		
resourcesForChannelMeasurement	CSI-ResourceConfigId for CSI Acquisition		
csi-IM-ResourcesForInterference	CSI-ResourceConfigId for CSI-IM		
nzp-CSI-RS-ResourcesForInterference	not present		
reportConfigType CHOICE {			
periodic SEQUENCE {			FR1
reportSlotConfig	CSI-ReportPeriodicityAndOffset		
pucch-CSI-ResourceList SEQUENCE (SIZE (1..maxNrofBWPs)) OF PUCCH-CSI-Resource {			
PUCCH-CSI-Resource [1]	PUCCH-CSI-Resource		
}			
aperiodic SEQUENCE {			FR2
reportSlotOffsetList SEQUENCE {			
reportSlotOffsetList[1]	6		
reportSlotOffsetList[2]	6		
}			
}			
}			
reportQuantity CHOICE {			
cri-RI-PMI-CQI	NULL,		
}			
reportFreqConfiguration SEQUENCE {			
cqi-FormatIndicator	widebandCQI		
pmi-FormatIndicator	widebandPMI		
csi-ReportingBand CHOICE {			FR1
subbands7	'1111111'B		
}			
csi-ReportingBand CHOICE {			FR2
subbands9	'111111111'B		
}			
}			
timeRestrictionForChannelMeasurements	notConfigured		
timeRestrictionForInterferenceMeasurements	notConfigured		
codebookConfig	CodebookConfig		
dummy	Not present		
groupBasedBeamReporting CHOICE {			
disabled SEQUENCE {			
nrofReportedRS	not present		
}			
}			
cqi-Table	table2		FR1
	table1		FR2
subbandSize	value2		
non-PMI-PortIndication	Not present		
}			

CodebookConfig

Table 5.4.2.6-17: *CodebookConfig*

Derivation Path: Table 4.6.3-25			
Information Element	**Value/remark**	**Comment**	**Condition**
CodebookConfig ::= SEQUENCE {			
codebookType CHOICE {			
type1 SEQUENCE {			
subType CHOICE {			
typeI-SinglePanel SEQUENCE {			
nrOfAntennaPorts CHOICE {			
two SEQUENCE {			2Tx
twoTX-CodebookSubsetRestriction	'010000'B		Fixed rank2, 2x2, 2x4
	‘010011’B		Follow rank, 2x2, 2x4
	‘000011’B		Fixed rank1, 2x2, 2x4
}			
moreThanTwo SEQUENCE {			4Tx
n1-n2 CHOICE {			
two-one-TypeI-SinglePanel-Restriction	‘11111111’B		4x4
}			
}			
typeI-SinglePanel-ri-Restriction	‘11111111’B		2x2, 2x4
	‘00000010’B		Fixed rank2, 4x4
	‘00001111’B		Follow RI, 4x4
}			
}			
codebookMode	1		
}			
}			
}			

CSI-ReportPeriodicityAndOffset

Table 5.4.2.4-18: *CSI-ReportPeriodicityAndOffset*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ReportPeriodicityAndOffset ::= CHOICE {			
slots10	9		FR1_TDD
slots5	0		FR1_FDD
}			

PUCCH-CSI-Resource

Table 5.4.2.4-19: PUCCH-CSI-Resource

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PUCCH-CSI-Resource ::= SEQUENCE {			
uplinkBandwidthPartId	BWP-id		FR1
pucch-Resource	8		FR1
}			

5.4.3 Sidelink information elements for Demodulation Performance tests

As defined in clause 4.6.3 with the following exceptions:

SL-ResourcePool

Table 5.4.3-1: *SL-ResourcePool*

Derivation Path: Table 4.6.6-25 with condition SL_HARQ			
Information Element	**Value/remark**	**Comment**	**Condition**
SL-ResourcePool-r16 ::= SEQUENCE {			
sl-PSFCH-Config-r16 CHOICE {			
setup SEQUENCE {			
sl-PSFCH-RB-Set-r16	ones(1,50)	All "1" sequence with a length of 50 bits	BW = 20MHz
	ones(1,100)	All "1" sequence with a length of 100 bits	BW = 40MHz
sl-NumMuxCS-Pair-r16	n1		
sl-MinTimeGapPSFCH-r16	sl3		
sl-PSFCH-CandidateResourceType-r16	allocSubCH		
}			
}			
sl-NumSubchannel-r16	5		BW = 20MHz
	10		BW = 40MHz
sl-RB-Number-r16	50		BW = 20MHz
	100		BW = 40MHz
sl-TimeResource-r16	one(1,160)	All "1" sequence with a length of 160 bits	
}			

SL-Thres-RSRP-List

Table 5.4.3-2: *SL-Thres-RSRP-List*

Derivation Path: Table 4.6.6-32			
Information Element	**Value/remark**	**Comment**	**Condition**
SL-Thres-RSRP-List-r16 ::= SEQUENCE (SIZE (64)) OF INTEGER {	64 entries		
INTEGER[k, k=1..64]	66	entry k corresponds to infinity dBm	
}			

5.5 Common procedures for RF testing

5.5.1 Procedure to configure SCC for NR RF CA testing

5.5.1.1 Scope

The purpose of this procedure is to establish one or more SCC for NR CA testing.

5.5.1.2 Procedure description

5.5.1.2.1 Initial conditions

UE is operating in NR RRC_CONNECTED state on NR Cell 1 without any SCell configured.

System Simulator:

- SS configures the number of SCells used by the test case using NR parameters for NR Cell 2 for SCC1, NR Cell 3 for SCC2, NR Cell 4 for SCC3 etc. as specified in Table 4.4.2-2.
- System information combination NR-2 as defined in clause 4.4.3.1.2 is used in all NR cells.

5.5.1.2.2 Procedure sequence

Table 5.5.1.2.2-1: Procedure to configure SCC

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an RRCReconfiguration message including sCellToAddModList with SCell addition for the SCC under test.	<--	NR RRC: RRCReconfiguration	-	-
2	The UE transmits an RRCReconfigurationComplete message.	-->	NR RRC: RRCReconfigurationComplete	-	-

5.5.1.2.3 Specific message contents

Table 5.5.1.2.3-1: RRCReconfiguration-SCell(n)

Derivation Path: Table 4.6.1-13 with condition SCell_add			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcReconfiguration ::= SEQUENCE {			
nonCriticalExtension SEQUENCE {			
masterCellGroup	CellGroupConfig-SCell(n)	n is number of SCC to be added.	
}			
}			
}			
}			

Table 5.5.1.2.3-2: CellGroupConfig-SCell(n) (Table 5.5.1.2.3-1)

Derivation Path: Table 4.6.3-19 with condition SCell_add			
Information Element	**Value/remark**	**Comment**	**Condition**
CellGroupConfig ::= SEQUENCE {			
sCellToAddModList SEQUENCE (SIZE (1..maxNrofSCells)) OF SCellConfig {	n entries	n the number of SCC to be added	
SCellConfig[k, k=1..n] SEQUENCE {		entry (1..n)	
sCellIndex			
sCellConfigCommon	ServingCellConfigCommon with condition SCell_add		
}			
}			

5.5.2 Procedure to configure SCC for EN-DC RF CA testing

5.5.2.1 Scope

The purpose of this procedure is to establish one or more SCC for EN-DC CA testing.

5.5.2.2 Procedure description

5.5.2.2.1 Initial conditions

The UE is in RRC_CONNECTED state.

5.5.2.2.2 Procedure sequence

Table 5.5.2.2.2-1: Procedure to configure SCC

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message using n.	<--	RRC: *RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	RRC: *RRCConnectionReconfigurationComplete*	-	-
-	EXCEPTION: Steps 3a1 to 3a3 describe the SS sequence depending on procedure parameters; the "lower case letter" identifies a step sequence that take place if a procedure parameter has a particular value	-	-	-	-
3a1-3a3	IF E-UTRA SCC > 0, same as TS 36.508 [2] table 5.2A.4-1, steps 1-3.	-	-	-	-
Note 1: n > 0 in step 1.					

5.5.2.2.3 Specific message contents

Table 5.5.2.2.3-1: *RRCReconfiguration* (step 1, Table 5.5.2.2.2-1)

Derivation Path: Table 4.6.1-13 with condition EN-DC_SCell_add			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcReconfiguration ::= SEQUENCE {			
secondaryCellGroup	CellGroupConfig (n)	n is number of SCC to be added.	
}			
}			
}			

Table 5.5.2.2.2.3-2: CellGroupConfig (n) (Table 5.5.2.2.2.3-1)

Derivation Path: Table 4.6.1-13 with condition SCell_add			
Information Element	**Value/remark**	**Comment**	**Condition**
CellGroupConfig ::= SEQUENCE {			
sCellToAddModList SEQUENCE (SIZE (1..maxNrofSCells)) OF SCellConfig {	n entries	n is equal to the number of SCCs to be added	
SCellConfig[k, k=1..n]		entry (1..n)	
sCellIndex			
sCellConfigCommon	ServingCellConfigCommon with condition SCell_add		
sCellConfigDedicated	ServingCellConfig		
}			
}			
}			

6 Test environments for Signalling test

6.1 Requirements of test equipment

6.1.1 Requirements common for conducted and OTA tests

The requirements of test equipment specified in this subclause apply to Signalling test cases defined in TS 38.523-1 [12], in addition to the common requirements of test equipment specified in clause 4.2 of this specification.

Test equipment shall be able to simulate cells of Radio Access Technologies NR, E-UTRA, and UTRA. The number of cells to be simulated simultaneously by the test equipment shall not exceed the resources specified in Table 6.1-1

Table 6.1-1: Maximum resources in terms of number / configuration of cells to be simulated simultaneously in a test setup

Simulation of	**Max. number of cells (NR)**			**Max. number of cells (E-UTRA)**		**Max. number of cells (UTRA)**	
	Conducted	**OTA(FR1+FR2)**	**OTA(FR2)**	**Conducted**	**OTA**	**Conducted**	**OTA**
NR single-mode networks (FDD or TDD)	4 cells	4 cells	4 cells	n/a	n/a	n/a	n/a
NR dual-mode networks (FDD and TDD)	4 cells	4 cells	4 cells	n/a	n/a	n/a	n/a
NR networks involving Carrier Aggregation	4 cells	4 cells	4 cells	n/a	n/a	n/a	n/a
NR dual connectivity (NR-DC)	4 cells	4 cells	4 cells	n/a	n/a	n/a	n/a
NR dual connectivity (EN-DC)	4 cells	4 cells	4 cells	2 cells	2 cells	n/a	n/a
NR dual connectivity (EN-DC) involving Carrier Aggregation	4 cells	4 cells	4 cells	2 cells	2 cells	n/a	n/a
Mixed E-UTRA / NR networks	4 cells	4 cells	4 cells	2 cells	2 cells	n/a	n/a
Mixed UTRA / NR networks	4 cells	4 cells	4 cells	n/a	n/a	2 cells	2 cells
Note 1: No differentiation between cell configuration types (as defined in clause 6.3.1) here, because these types are only relevant to specific test cases and their TTCN-3 implementation.							
Note 2: Only network scenarios specified in clauses 4.4.1 and 6.3.2.1 have been covered.							
Note 3: In case of Carrier Aggregation, each cell can act as a SpCell, an SCell, or a standalone cell (not used as a CA component carrier).							
Note 4: In order to support test case requirements for conducted and OTA test methods, the number of active cells at any given time should be minimised in order to ensure maximum re use of SS Tx/Rx resources.							

Exceptions to the requirements outlined above are possible but need special evidence to be provided explicitly in the test case prose and should be allowed only if the test case purpose cannot be met otherwise.

Due to limited power level range for FR2 OTA test methods, when defining test cases requirements, care shall be taken to ensure that the number of active cells is minimised as this has an impact to have distinguishable power level

difference. Cells that are used in initial parts of test cases and are no longer required for the rest of the procedure shall be clearly defined as Non-suitable "Off" cell to facilitate re use of SS Tx/Rx resources.

NR FR2 signal levels are defined along with a calibration procedure as well as uncertainty. Therefore, maximum 4 FR2 OTA Cells can be configured and activated including the test cases involving idle or connected mode measurements.

NR FR1+FR2 OTA calibration procedure is undefined which does not restrict to configure maximum 4 FR1+FR2 OTA cells. However, caution must be taken as specified in clause 6.2.2.2.3.

E-UTRA OTA calibration procedure is undefined which does not restrict to configure maximum 2 E-UTRA OTA cells. However, caution must be taken as specified in clause 6.2.2.2.4.

UTRA OTA calibration procedure is undefined which does not restrict to configure maximum 2 UTRA OTA cells. However, caution must be taken as specified in clause 6.2.2.2.5.

6.1.2 Requirements for conducted test method

No requirements are specified in addition to the common requirements described in clause 4.2 and clause 6.1.1.

6.1.3 Requirements for OTA test method

6.1.3.1 General

Editor's Note: The UE pre-configuration mentioned below to disable UL Tx diversity schemes shall be voided once a test methodology solution to minimize spectral flatness artefacts between TE and UE over all test points is defined.

The DFF or IFF based OTA test methodologies, defined in Annex B.1 should be used for Signalling test.

NOTE: For single cell test cases, usage of NF test methodology is not precluded.

Clause 6.1.3.2 describes a sample OTA measurement test setup and clause 6.1.3.3 describes approaches to select a UE orientation.

For conformance testing using the OTA test environment, the UE under test shall be pre-configured with UL Tx diversity schemes disabled to account for single polarization System Simulator (SS) in the test environment. The UE under test may transmit with dual polarization. This approach also applies to calibration stage..

6.1.3.2 Sample OTA Measurement Test Setup

Please refer to Figure 6.1.3.2-1 for a sample OTA measurement test setup.

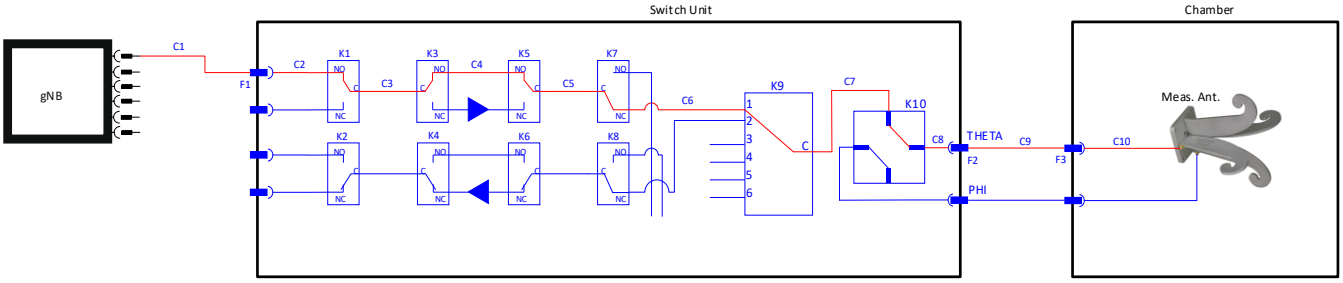

Figure 6.1.3.2-1: Sample OTA measurement setup

NOTE: Figure 6.1.3.2-1 is for illustrative purposes only.

For 5G NR signalling test cases, depending on the dynamic range of measurements the system complexity can be reduced. In the switch unit, as shown in Figure 6.1.3.2-1, the switches K7, K8, K9, K10 can be removed. The amplifier (PA/LNA) is optional. For the "single cell" and "multiple cell" test cases, the gNB emulator can be directly connected to the feed horn.

6.1.3.3 Procedure for selecting UE Orientation and for calibration

Set calibrated power level at the centre of the quiet zone for each polarization individually [FFS].

Before starting the test, the UE orientation with which the test system can provide a wide enough dynamic range to perform the test scenarios needs to be identified in order to obtain sufficient link budget.

The UE orientation can be determined by either of the approaches below:

- Approach 1: UE vendor declares the direction in which the measurement has to be made. In this case, the declaration confirms that the Rx Beam peak conditions in FR2 specified in TS 38.133 [13] Annex B are met

- Approach 2: Perform an Rx-beam peak search

For Approach 2 an Rx beam peak search needs to be performed as per the procedure in TS 38.521-2 [15] Annex K, which finds the direction in which Rx Beam peak conditions in FR2 specified in TS 38.133 [13] Annex B are met.

RSRP measurements can be configured by SS in X2NR meas configurations using FFS preambles in NSA (Ex - RRC_Connected with connectivity parameter E-UTRA with MCG Only bearer established and meas config enabled for event B1 (Ex-per TC 8.2.3.1.1 of TS 38.523-1)) and FFS preambles in SA modes.

When signal level calibrated with a reference antenna (only applicable to single-cell test cases without thresholds):

- The RSRP reported from the DUT is within [±FFSdB] of expected RSRP mentioned in Table 6.2.2.2-1.

When signal level calibrated with the RSRP-based calibration:

- Before starting the tests, Rx-beam peak directions need to be determined using Approach 1 or Approach 2 above. Rx beam peak direction may depend on the operating band under test. If Rx-beam peak directions for all the operating bands required for test scenarios are identical, three different levels in Table 6.2.2.2-2 can be used in the test scenarios.

- Rx-beam peak directions are decided to be ‘identical’, if the detected beam peak positions are direct neighbours on the measurement grid.

If Rx-beam peak directions are identical:

1. Position the UE so that the Rx beam peak direction is aligned towards the measurement antenna.

2. Make the UE report SS-RSRP at each frequency used in the test scenarios, while setting the downlink SS power at the centre of the quiet zone to -82dBm/SCS. Here, the SS-RSRP reported levels are denoted as $P_{RSRP}(f)$.

3. Calculate ‘Delta(NRf)’ for each carrier frequency used in the test case, using the equation: $Delta(NRf) = P_{RSRP}(f) + 82$.

6.1.3.4 Handling of Thresholds

Where a threshold value is specified in the test case (value identified as $TH_{test\ case}$) it is signalled to the UE with a value TH_{sig} according to table 6.1.3.4-1.

Table 6.1.3.4-1: Handling of signalled threshold values

Type of Threshold	Signalled value	Comment
Absolute	$TH_{sig}(f) = TH_{test\ case} + Delta(NRf)$	Delta(NRf) value according to the frequency of the cell being compared to the threshold
Relative, intra-frequency	$TH_{sig}(f) = TH_{test\ case}$	
Relative, inter-frequency	$a3\text{-}Offset_{sig} = a3\text{-}Offset_{test\ case} + Delta(NRf_n) - Delta(NRf_p)$	$Delta(NRf_p)$ is the Delta value for the SpCell frequency $Delta(NRf_n)$ is the Delta value for the neighbour cell frequency
Relative, inter-frequency, Event A6	$a6\text{-}Offset_{sig} = a6\text{-}Offset_{test\ case} + Delta(NRf_n) - Delta(NRf_s)$	$Delta(NRf_s)$ is the Delta value for the SCell frequency $Delta(NRf_n)$ is the Delta value for the neighbour cell frequency

6.1.4 Requirements for timer tolerances

The timer tolerances specified for the test environment in this subclause apply to all Signalling test cases defined in TS 38.523-1 [12] unless otherwise specified.

All the timers used during testing are within a tolerance margin given by the equation below. If for a specific test a different tolerance value is required, then this should be specified in the relevant test document (i.e. the document where the test is described).

Timer tolerance = 10%.

6.2 Reference test conditions

6.2.1 Physical Channel Allocations

6.2.1.1 Antennas

If the UE has two or more Rx antennas, the same downlink signal is applied to each one, except if MIMO is tested. All UE Rx antennas shall be connected.

If the UE has one Rx antenna, the downlink signal is applied to it.

6.2.1.2 Downlink physical channels and physical signals

In general for signalling test cases the power allocation for downlink physical channels and signals is specified in relation to a reference cell power.

Unless specifically specified otherwise in a signalling test case prose, all cells use only one beam.

In case of only one beam per cell this reference cell power is the EPRE of the secondary synchronization signal (SSS) and referred to as “SS/PBCH SSS EPRE”.

In case of more than one beam per cell the power levels of the different SS/PBCH blocks may be different what makes it difficult to specify the EPREs of other physical channels and signals relative to the EPRE of any SSS. Therefore for multiple beams test cases the power levels are specified relative to the reference cell power.

For single beam per cell test cases the power allocation of downlink physical channels for signalling test cases is specified in table 6.2.1.2-1, for multiple beams per cell test cases the power allocation is specified in table 6.2.1.2-2.

Table 6.2.1.2-1: Power allocation for OFDM symbols and reference signals for signalling test cases (single beam)

Parameter	Unit	Value	Comment
SSS transmit power	dBm/SCS	Test specific (Note 1)	referred to as "SS/PBCH SSS EPRE"
EPRE ratio of PSS to SSS	dB	0	
EPRE ratio of PBCH DMRS to SSS	dB	0	
EPRE ratio of PBCH to PBCH DMRS	dB	0	
EPRE ratio of PDCCH DMRS to SSS	dB	0	
EPRE ratio of PDCCH to PDCCH DMRS	dB	0	
EPRE ratio of PDSCH DMRS to SSS	dB	0	
EPRE ratio of PDSCH to PDSCH DMRS	dB	-3	To reduce interference from PDSCH of intra-frequency neighbour cells.
EPRE ratio of PTRS to PDSCH	dB	3	i.e. the EPRE ratio of PTRS to SSS is 0dB
Note 1: Power level chosen to align with cell power level as specified in clause 6.2.2.			

Table 6.2.1.2-2: Power allocation for OFDM symbols and reference signals for signalling test cases (multiple beam)

Parameter	Unit	Value	Comment
Reference cell power $EPRE_{CellRef}$	dBm/SCS	Test specific (Note 1)	
EPRE ratio of $SSS_{SSB\#N}$ to $EPRE_{CellRef}$	dB	Test specific (Note 2)	power of SSS within SSB with index N
EPRE ratio of $PSS_{SSB\#N}$ to $SSS_{SSB\#N}$	dB	0	power of PSS within SSB with index N
EPRE ratio of PBCH $DMRS_{SSB\#N}$ to $SSS_{SSB\#N}$	dB	0	power of PBCH DMRS within SSB with index N
EPRE ratio of $PBCH_{SSB\#N}$ to PBCH $DMRS_{SSB\#N}$	dB	0	power of PBCH within SSB with index N
EPRE ratio of PDCCH DMRS to $EPRE_{CellRef}$	dB	0	(Note 3)
EPRE ratio of PDCCH to PDCCH DMRS	dB	0	
EPRE ratio of PDSCH DMRS to $EPRE_{CellRef}$	dB	0	(Note 3)
EPRE ratio of PDSCH to PDSCH DMRS	dB	-3	To reduce interference from PDSCH of intra-frequency neighbour cells.
EPRE ratio of PTRS to PDSCH	dB	3	i.e. the EPRE ratio of PTRS to $EPRE_{CellRef}$ is 0dB
EPRE ratio of $CSI\text{-}RS_N$ to $EPRE_{CellRef}$	dB	Test specific (Note 2)	power of CSI-RS with index N; CSI-RS configured if required by a test case in TS 38.523-1 [12]
Note 1: Power level chosen to align with cell power level as specified in clause 6.2.2. Note 2: Test cases may specify "OFF" in which case the attenuation shall result in an absolute EPRE value being equal or less than the power level specified for a non-suitable "Off" cell in clause 6.2.2. Note 3: In general the UE cannot distinguish from which beam DL data is sent ⇒ PDCCH and PDSCH are considered as cell specific rather than beam specific.			

6.2.1.3 Sidelink physical channels and physical signals

In general for signalling test cases the power allocation for sidelink physical channels and signals is specified in relation to a reference NR-SS-UE power.

The power allocation of sidelink physical channels for signalling test cases is specified in table 6.2.1.3-1.

Table 6.2.1.3-1: Power allocation for OFDM symbols and reference signals for signalling test cases

Parameter	Unit	Value	Comment
Reference NR-SS-UE power $EPRE_{NRSSUERef}$	dBm/SCS	Test specific (Note 1)	
EPRE ratio of S-SSS to $EPRE_{NRSSUERef}$	dB	Test specific (Note 2)	Power of S-SSS within S-SSB S-SSB configured if required by a test case in TS 38.523-1 [12]
EPRE ratio of S-PSS to S-SSS	dB	0	Power of S-PSS within S-SSB S-SSB configured if required by a test case in TS 38.523-1 [12]
EPRE ratio of PSBCH DMRS to S-SSS	dB	0	Power of PSBCH DMRS within S-SSB S-SSB configured if required by a test case in TS 38.523-1 [12]
EPRE ratio of PSBCH to PSBCH DMRS	dB	0	Power of PSBCH within S-SSB S-SSB configured if required by a test case in TS 38.523-1 [12]
EPRE ratio of PSCCH DMRS to $EPRE_{NRSSUERef}$	dB	0	
EPRE ratio of PSCCH to PSCCH DMRS	dB	0	
EPRE ratio of PSSCH DMRS to $EPRE_{NRSSUERef}$	dB	0	
EPRE ratio of PSSCH to PSSCH DMRS	dB	0	
EPRE ratio of PSFCH to PSSCH	dB	0	
EPRE ratio of SL CSI-RS to $EPRE_{NRSSUERef}$	dB	Test specific (Note 2)	Power of SL CSI-RS; SL CSI-RS configured if required by a test case in TS 38.523-1 [12]
EPRE ratio of SL PT-RS to PSSCH	dB	0	

Note 1: Power level chosen to align with NR-SS-UE power level as specified in clause 6.2.2.
Note 2: Test cases may specify “OFF” in which case the attenuation shall result in an absolute EPRE value being equal or less than the power level specified for a "Off" NR-SS-UE in clause 6.2.2.

6.2.2 Signal levels

6.2.2.1 Signal Levels for conducted testing

This section applies to the test cases, which use conducted testing for each configured cell or each configured NR-SS-UE.

For NR FR1 cell, the downlink power settings in Table 6.2.2.1-1 and 6.2.2.1-2 are used unless otherwise specified in a test case.

Table 6.2.2.1-1: Default Downlink power levels for FR1 NR cell (5MHz – 25MHz)

	SCS(kHz)	Unit	Channel bandwidth				
			5MHz	10MHz	15MHz	20MHz	25MHz
Channel BW Power	15	dBm	-63	-60	-58	-57	-56
	30	dBm	-67	-63	-61	-60	-59
	60	dBm	N/A	-67	-65	-63	-62
SS/PBCH SSS EPRE	All	dBm/SCS (Note 3)	-88	-88	-88	-88	-88

Note 1: The channel bandwidth powers are informative, based on -88 dBm/ SCS(SubCarrier Spacing) SS/PBCH SSS EPRE, then scaled according to the number of RBs and rounded to the nearest integer dBm value. Full RE allocation with no boost or deboost is assumed.
Note 2: The power level is specified at each UE Rx antenna.
Note 3: DL level is applied for any of the Subcarrier Spacing configuration (μ) with the same power spectrum density of -88 dBm/SCS(SubCarrier Spacing).

Table 6.2.2.1-2: Default Downlink power levels for FR1 NR cell (30MHz – 100MHz)

	SCS(kHz)	Unit	Channel bandwidth						
			30MHz	40MHz	50MHz	60MHz	80MHz	90MHz	100MHz
Channel BW Power	15	dBm	-55	-54	-53	N/A	N/A	N/A	N/A
	30	dBm	-58	-57	-56	-55	-54	-53	-53
	60	dBm	-61	-60	-59	-58	-57	-56	-56
SS/PBCH SSS EPRE	All	dBm/SCS (Note 3)	-88	-88	-88	-88	-88	-88	-88

Note 1: The channel bandwidth powers are informative, based on -88dBm/SCS(SubCarrier Spacing) SS/PBCH SSS EPRE, then scaled according to the number of RBs and rounded to the nearest integer dBm value. Full RE allocation with no boost or deboost is assumed.
Note 2: The power level is specified at each UE Rx antenna.
Note 3: DL level is applied for any of the Subcarrier Spacing configuration (μ) with a power spectrum density of -88dBm/SCS(SubCarrier Spacing).

With simultaneous transmission of 24 RBs, a maximum of -78dBm/SCS SS/PBCH SSS EPRE can be allocated as cell power level.

The default settings of suitable cells and non-suitable cells for NR are specified in table 6.2.2.1-3.

Cells which are expected to be undetectable for UE under test shall fulfil the condition of non-suitable "Off" cell in table 6.2.2.1-3.

Table 6.2.2.1-3: Default settings of suitable / non-suitable cells

Power level type	NR (Note 1-3)		E-UTRAN	UTRAN
	Unit	Power level		
Serving cell	dBm/SCS	-88	Table 6.2.2.1-1 [2]	Table 6.1.1 (FDD) [52]
Suitable neighbour intra-frequency cell	dBm/SCS	-94	Table 6.2.2.1-1 [2]	Table 6.1.2 (FDD) [52]
Suitable neighbour inter-frequency cell	dBm/SCS	-99	Table 6.2.2.1-1 [2]	Table 6.1.2 (FDD) [52]
Non-suitable cell	dBm/SCS	-115	Table 6.2.2.1-1 [2]	Table 6.1.3 (FDD) [52]
Non-suitable "Off" cell	dBm/SCS	≤ -145	Table 6.2.2.1-1 [2]	Table 6.1.4 (FDD) [52]

Note 1: The power level is specified in terms of SS/PBCH SSS EPRE instead of RSRP as RSRP is a measured value and cannot be directly controlled by the Full RE allocation with no boost or deboost is assumed. SS.
Note 2: The power level is specified at each UE Rx antenna.
Note 3: DL level is applied for any of the Subcarrier Spacing configuration (μ) with the same power spectrum density of -88dBm/SCS.
Note 4: The default settings assume that the UE is making relative measurements of neighbour cells compared to the serving cell.

The default signal level uncertainty is specified in table 6.2.2.1-4 for any level specified, unless a tighter uncertainty is specified by a test case in TS 38.523-1 [12].

Table 6.2.2.1-4: SS signal level uncertainty

	Absolute signal level uncertainty for each cell	Relative signal level uncertainty between multiple cells
Intra-frequency	+/-3 dB at each test port	+/-3 dB
Inter-frequency	+/-3 dB at each test port	See Note 1
Note 1: For Inter-frequency cells the relative signal level uncertainty between multiple cells is determined by the absolute uncertainty of each cell, and does not have any additional constraint.		

SS/PBCH SSS EPRE setting should be equal to or higher than -115 dBm except for Non-suitable "Off" cell. The figure is chosen to ensure that for all bands the DL signal is within the RSRP measurement range specified in TS 38.133 [13], taking into account the SS default absolute signal level uncertainty.

NOTE: (The power spectral density of a white noise source; specified in TS 38.133 [13]) can be assumed to be -Infinity [dBm/SCS] for all intra and inter frequency test cases. It is applicable to both idle mode and connected mode in TS 38.523-1 [12], unless otherwise specified in specific test cases.

For NR-SS-UE, the sidelink power settings in Table 6.2.2.1-5 is used unless otherwise specified in a test case.

Table 6.2.2.1-5: Default settings of NR-SS-UE power and signal level uncertainty

Power level type	NR-SS-UE (Note 1)		Absolute signal level uncertainty for each NR-SS-UE
	Unit	Power level	
NR-SS-UE (default value)	dBm/15kHz	-85	+/-3 dB
NR-SS-UE ("Off")	dBm/15kHz	≤ -145	+/-3 dB
Note 1: The power level is specified at each Rx antenna of the UE under test.			

6.2.2.1.1 Measurement accuracy and side conditions

RSRP measurement accuracy in RRC_CONNECTED state is specified in table 6.2.2.1.1-1, derived from TS 38.133 [13] clauses 10.1.2 and 10.1.4 selecting Normal condition with maximum Io less than -50 dBm/$BW_{Channel}$. The ranges and side conditions in TS 38.133 [13] clauses 10.1.2 and 10.1.4 apply. This measurement accuracy is applicable to connected mode test cases specified in TS 38.523-1 [12]. For the serving cell and suitable neighbour cells, the following side conditions shall be satisfied including the effect of signal level uncertainty.

- RSRP ≥ -124 dBm
- RSRP Ês/Iot > -6 dB
- Io: 117.5 dBm/SCS for 15kHz SCS and -114.5 dBm/SCS for 15kHz SCS dBm/SCS … -50 dBm/BWChannel (for absolute and relative RSRP measurement accuracy).

RSRP measurement accuracy in RRC_CONNECTED state is specified in table 6.2.2.1.1-1, derived from TS 38.133 [13] clauses 10.1.2 and 10.1.4 selecting Normal condition.

Table 6.2.2.1.1-1: RSRP measurement accuracy in RRC_CONNECTED state

	Absolute RSRP measurement accuracy	Relative RSRP measurement accuracy
Intra-frequency	+/-8 dB	+/-3 dB
Inter-frequency	+/-8 dB	+/-4.5 dB

6.2.2.2 Signal Levels for OTA testing

6.2.2.2.1 General

This section applies to the test cases, which require at least one of the configured cells to be a FR2 NR cell.

The following assumption is made for OTA testing:

- AWGN is not configured in the test case

6.2.2.2.2 Signal Levels for FR2 OTA NR cells

For NR FR2 cell, the downlink power settings in Table 6.2.2.2.2-1 are used unless otherwise specified in a test case.

Table 6.2.2.2.2-1: Default Downlink power levels for FR2 NR cell (50MHz - 400MHz)

	SCS(kHz)	Unit	Channel bandwidth			
			50MHz	100MHz	200MHz	400MHz
Channel BW Power	60	dBm	FFS	FFS	FFS	FFS
	120	dBm	-57	-57	-57	-57
SS/PBCH SSS EPRE	All	dBm/SCS	-82	-82	-82	-82
Note 1: The channel bandwidth powers are informative, based on -82 dBm/SCS SS/PBCH SSS EPRE, then scaled according to the number of RBs and rounded to the nearest integer dBm value. A maximumRE allocation of 24 simultaneously transmitted RBs with no boost or deboost is assumed. Note 2: The power level is specified at the centre of quiet zone.						

The default settings of suitable cells and non-suitable cells for NR FR2 are specified in table 6.2.2.2.2-2.

NR FR2 cells which are expected to be undetectable for UE under test shall fulfil the condition of non-suitable "Off" cell in table 6.2.2.2.2-2.

Table 6.2.2.2.2-2: Default settings of suitable / non-suitable FR2 NR cells

Power level type	NR (Note 1-3)	
	Unit	Power level
Serving cell	dBm/SCS	-82
Suitable neighbour intra-frequency cell	dBm/SCS	-91
Suitable neighbour inter-frequency cell	dBm/SCS	-91
Non-suitable cell	dBm/SCS	-100
Non-suitable "Off" cell	dBm/SCS	≤-139
Note 1: The power level is specified in terms of SS/PBCH SSS EPRE instead of RSRP as RSRP is a measured value and cannot be directly controlled by the SS. Note 2: The power level is specified at the centre of quiet zone. Note 3: DL level is applied for any of the Subcarrier Spacing configuration (μ) with the same power spectrum density in dBm/SCS (SubCarrier Spacing).		

The test system default signal level uncertainty is specified in tables 6.2.2.2.2-3 and 6.2.2.2.2-4 for any level specified, unless a tighter uncertainty is specified by a test case in TS 38.523-1 [12].

Table 6.2.2.2.2-3: SS Absolute FR2 NR signal level uncertainty

	Absolute signal level uncertainty
At each frequency	+/-6 dB at centre of the quiet zone

Table 6.2.2.2.2-4: SS Relative FR2 NR signal level uncertainty

	Relative signal level uncertainty between any two SS EPRE levels at the same frequency
At each frequency	+/-2.0 dB

6.2.2.2.3 Signal Levels for FR1 OTA NR cell(s) with FR2 OTA NR cell(s)

For NR cell in FR1 with FR2 NR, since the NR FR1 OTA link is uncalibrated in the signalling test setup, -88dBm/SCS should be applied as defined in the table 6.2.2.1-1 and table 6.2.2.1-2. -88dBm/SCS is suggested value and it is left to the TE vendor to ensure that NR cell power level fulfils the cell selection criteria.

The default settings of suitable cells and non-suitable cells for NR in FR1 with FR2 NR are specified in table 6.2.2.2-7.

NR Cells in FR1 with FR2 NR which are expected to be undetectable for UE under test shall fulfil the condition of non-suitable "Off" cell in table 6.2.2.2.3-1.

Table 6.2.2.2.3-1: Default settings of suitable / non-suitable NR cells in FR1 with NR FR2

Power level type	NR (Note 1-2)	
	Unit	Power level
Serving cell	dBm/SCS	-88
Non-suitable "Off" cell	dBm/SCS	≤-156
Note 1: The power level is specified in terms of SS/PBCH SSS EPRE instead of RSRP as RSRP is a measured value and cannot be directly controlled by the SS. Note 2: The power level is specified at the centre of quiet zone.		

The following assumptions are considered for the test cases configuring at least one FR1 OTA NR cell:

- Multiple inter-frequency FR1 OTA NR cells can be configured.
- Only two power levels are allowed: Serving cell power level or Non-suitable "Off" cell power level (as defined in Table 6.2.2.2.3-1)
- If FR1 OTA NR cell does not require:
  - Cell Reselection measurements and
  - Connected Mode measurements and
  - Cell Selection between two active cells and
  - Multiple Signal Levels
    - Multiple FR1 OTA NR cells can be activated.
- Else
    - No more than one FR1 OTA NR cell is activated.

6.2.2.2.4 Signal Levels for OTA E-UTRA cell(s) with FR2 OTA NR cell(s)

For E-UTRA cell with FR2 NR, since the LTE OTA link is uncalibrated in the signalling test setup, the table 6.2.2.2.4-1 provides only suggestive value. It is left to the TE vendor to ensure that LTE cell power level fulfils the cell selection criteria.

Table 6.2.2.2.4-1: Default Downlink power levels for E-UTRA cells with NR FR2

	Unit	Channel bandwidth					
		1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
Number of RBs		6	15	25	50	75	100
Channel BW Power	dBm	-77	-73	-71	-68	-66	-65
RS EPRE	dBm/15kHz	-96	-96	-96	-96	-96	-96
Note 1: The channel bandwidth powers are informative, based on -96 dBm/15kHz RS_EPRE, then scaled according to the number of RBs and rounded to the nearest integer dBm value. Full RE allocation with no boost or deboost is assumed. Note 2: The power level is specified at the centre of quiet zone.							

The default setting of suitable cells for E-UTRA with FR2 NR are specified in table 6.2.2.2.4-2.

E-UTRA Cells with FR2 NR which are expected to be undetectable for UE under test shall fulfil the condition of non-suitable "Off" cell in table 6.2.2.2.4-2.

Table 6.2.2.2.4-2: Default settings of suitable / non-suitable E-UTRA cells with NR FR2

Power level type	E-UTRAN (Note 1-2)	
	Unit	Power level
Serving cell	dBm/15KHz	-96
Non-suitable "Off" cell	dBm/15KHz	≤-156
Note 1: The power level is specified in terms ofcell-specific RS EPRE instead of RSRP as RSRP is a measured value and cannot be directly controlled by the SS. Note 2: The power level is specified at the centre of quiet zone.		

The following assumptions are considered for the test cases configuring at least one OTA E-UTRA cell:

- Multiple inter-frequency OTA E-UTRA cells can be configured.
- Only two power levels are allowed: Serving cell power level or Non-suitable "Off" cell power level (as defined in Table 6.2.2.2.4-2)
- If OTA E-UTRA cell does not require:
  - Cell Reselection measurements and
  - Connected Mode measurements and
  - Cell Selection between two active cells and
  - Multiple Signal Levels,
    - Multiple OTA E-UTRA cells can be activated.
- Else
  - No more than one OTA E-UTRA cell is activated.

6.2.2.2.5 Signal Levels for OTA UTRA cell(s) with FR2 OTA NR cell(s)

For UTRA OTA cell with FR2 NR, the UTRA OTA link is uncalibrated in the signalling test setup.

UTRA Cells with FR2 NR which are expected to be undetectable for UE under test shall fulfil the condition of non-suitable "Off" cell in table 6.2.2.2.5-1.

Table 6.2.2.2.5-1: Default settings of suitable / non-suitable UTRA cells with NR FR2

Power level type	UTRAN (Note 1-2)	
	Unit	Power level
Serving cell	dBm/3.84 MHz	-60
Non-suitable "Off" cell	dBm/3.84 MHz	≤-132
Note 1: The power level is specified in terms of CPICH_Ec instead of CPICH_RSCP as RSCP is a receiver measurement and only CPICH_Ec can be directly controlled by the SS. Note 2: The power level is specified at the centre of quiet zone.		

The following assumptions are considered for the test cases configuring at least one OTA UTRA cell:

- Multiple inter-frequency OTA UTRA cells can be configured.
- Only two power levels are allowed: Serving cell power level or Non-suitable "Off" cell power level (as defined in Table 6.2.2.2.5-1)
- If OTA UTRA cell does not require:
  - Cell Reselection measurements and
  - Connected Mode measurements and
  - Cell Selection between two active cells and
  - Multiple Signal Levels,
    - Multiple OTA UTRA cells can be activated.
- Else
  - No more than one OTA UTRA cell is activated.

6.2.3 Default test frequencies

Editor's note: For FR2 test frequencies using 100 MHz default channel bandwidth it is FFS if 100MHz channel bandwidth can be used for FR2 multicell protocol testing.

6.2.3.1 Test frequencies for NR standalone signalling testing

The default channel bandwidth for signalling test is specified per NR band. The test frequencies are defined so that no frequency overlapping takes place, in order to avoid unnecessary inter-frequency interference.

For signalling test cases, the mapping of frequency ranges to NR test frequencies are as follows:

- for band with only one test frequency (e.g. n51): Low Range (NRf1);
- for band with up to two test frequencies: Low Range (NRf1) and High Range (NRf2);
- for band with up to three test frequencies: Low Range (NRf1), Mid Range (NRf2) and High Range (NRf3);
- for band with up to four test frequencies: Low Range (NRf1), Mid Low Range (NRf2), Mid High Range (NRf3) and High Range (NRf4);

The signalling test frequencies NRf5, NRf6, NRf7 are mapped respectively as NRf1, NRf2, NRf3 on the operating band for inter-band.

The test frequencies, subcarrier spacing, default channel bandwidth, SS/PBCH block and CORESET#0 parameters for signalling is specified in Table 6.2.3.1-1 (FDD FR1 BW 5MHz), Table 6.2.3.1-2 (FDD FR1 BW 10MHz), Table 6.2.3.1-3 (TDD FR1 BW 5MHz), Table 6.2.3.1-4 (TDD FR1 BW 10MHz), Table 6.2.3.1-4A (TDD FR1 BW 60MHz), Table 6.2.3.1-4B (TDD FR1 BW 20MHz for RedCap UE), Table 6.2.3.1-5 (TDD FR1 BW 100MHz), Table 6.2.3.1-5A

(TDD FR1 BW 20MHz for RedCap UE),Table 6.2.3.1-6 (TDD FR2 BW 100MHz) and Table 6.2.3.1-7 (NR FDD FR1 SUL bands).

Table 6.2.3.1-1: Test frequencies for NR FDD FR1 bands using 5 MHz channel bandwidth

NR Band	SCS [kHz]	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs]) Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n5	15	5	25	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.15 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	878.2	175640	873.79	174758	12	15	2197	175730	0	1	2 (4)	17
					Mid-High	884.8	176960	878.23	175646	24		2212	176930	8	1	0 (0)	25
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.5 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	833.2	166640	824.47	164894	36	-	-	-	-	-	-	-
					Mid-High	839.8	167960	817.03	163406	114	-	-	-	-	-	-	-
n8	15	5	25	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.8 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	937.5	187500	933.09	186618	12	15	2343	187470	8	1	0 (0)	13
					Mid-High	947.5	189500	940.93	188186	24		2368	189410	0	0	0 (0)	24
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.8 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	892.5	178500	883.77	176754	36	-	-	-	-	-	-	-
					Mid-High	902.5	180500	879.73	175946	114	-	-	-	-	-	-	-
n12	15	5	25	Downlink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.12 for bandwidth=5 MHz and SCS=15 kHz.											
				Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.12 for bandwidth=5 MHz and SCS=15 kHz.											
n14	15	5	25	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.14 for bandwidth=5 MHz and SCS=15 kHz.											
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.14 for bandwidth=5 MHz and SCS=15 kHz.											
n20	15	5	25	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.20 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	801.8	160360	797.39	159478	12	15	2003	160330	8	1	0 (0)	13
					Mid-High	810.2	162040	803.63	160726	24		2024	162010	8	1	0 (0)	25
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.20 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	842.8	168560	834.07	166814	36	-	-	-	-	-	-	-
					Mid-High	851.2	170240	828.43	165686	114	-	-	-	-	-	-	-
n24	15	5	25	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.24 for DL bandwidth=5 MHz, UL bandwidth=5 MHz and SCS=15 kHz											
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.24 for DL bandwidth=5 MHz, UL bandwidth=5 MHz and SCS=15 kHz											
n26	15	5	25	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.26 for bandwidth=5 MHz and SCS=15 kHz.											

					Mid-Low	871.5	174300	867.09	173418	12	15	2178	174270	8	1	0 (0)	13
					Mid-High	881.5	176300	874.93	174986	24		2203	176210	0	0	0 (0)	24
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.26 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	826.5	165300	817.77	163554	36	-	-	-	-	-	-	-
					Mid-High	836.5	167300	813.73	162746	114		-	-	-	-	-	-
n29	15	5	25	Downlink (SDL)	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.29 for bandwidth=5 MHz and SCS=15 kHz.											
n30	15	5	25	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.30 for bandwidth=5 MHz and SCS=15 kHz.											
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.30 for bandwidth=5 MHz and SCS=15 kHz.											
n70	15	5	25	Downlink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.70 for DL bandwidth=5 MHz, UL bandwidth=5 MHz and SCS=15 kHz.											
				Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.70 for DL bandwidth=5 MHz, UL bandwidth=5 MHz and SCS=15 kHz.											
n71	15	5	25	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.71 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	629.5	125900	625.09	125018	12	15	1573	125810	0	0	0 (0)	12
					Mid-High	639.5	127900	632.93	126586	24		1598	127930	4	1	1 (2)	27
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.71 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	675.5	135100	666.77	133354	36	-	-	-	-	-	-	-
					Mid-High	685.5	137100	662.73	132546	114	-	-	-	-	-	-	-
n76	15	5	25	Downlink (SDL)	Low	Same values as for Low range in clause 4.3.1.1.1.76 for bandwidth=5 MHz and SCS=15 kHz.											

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 6.2.3.1-2: Test frequencies for NR FDD FR1 bands using 10 MHz channel bandwidth

NR Band	SCS [kHz]	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs]) Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n1	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.1 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	2131.7	426340	2124.86	424972	12	15	5321	425770	2	0	0 (0)	12
					Mid-High	2148.3	429660	2139.3	427860	24		5364	429150	10	1	0 (0)	25
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.1 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	1941.7	388340	1930.54	386108	36	-	-	-	-	-	-	-
					Mid-High	1958.3	391660	1933.1	386620	114	-	-	-	-	-	-	-
n2	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.2 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	1951.7	390340	1944.86	388972	12	15	4871	389770	2	0	0 (0)	12
					Mid-High	1968.3	393660	1959.3	391860	24		4914	393150	10	1	0 (0)	25
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.2 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	1871.7	374340	1860.54	372108	36	-	-	-	-	-	-	-
					Mid-High	1888.3	377660	1863.1	372620	114	-	-	-	-	-	-	-
n3	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.3 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	1831.7	366340	1824.86	364972	12	15	4571	365770	2	0	0 (0)	12
					Mid-High	1853.3	370660	1844.3	368860	24		4625	370090	2	0	0 (0)	24
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.3 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	1736.7	347340	1725.54	345108	36	-	-	-	-	-	-	-
					Mid-High	1758.3	351660	1733.1	346620	114	-	-	-	-	-	-	-
n7	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.7 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	2645	529000	2638.16	527632	12	15	6605	528490	10	1	0 (0)	13
					Mid-High	2665	533000	2656	531200	24		6658	532610	2	1	2 (4)	29
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.7 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	2525	505000	2513.84	502768	36	-	-	-	-	-	-	-
					Mid-High	2545	509000	2519.8	503960	114	-	-	-	-	-	-	-
n25	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.25 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	1953.3	390660	1946.46	389292	12	15	4878	390270	2	1	2 (4)	17
					Mid-High	1971.7	394340	1962.7	392540	24		4924	393890	6	1	1 (2)	27
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.25 for bandwidth=10 MHz and SCS=15 kHz.											

					Mid-Low	1873.3	374660	1862.14	372428	36	-	-	-	-	-	-	-
					Mid-High	1891.7	378340	1866.5	373300	114	-	-	-	-	-	-	-
n28	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.28 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	774.7	154940	767.86	153572	12	15	1930	154370	2	0	0 (0)	12
					Mid-High	786.3	157260	777.3	155460	24		1959	156750	10	1	0 (0)	25
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.28 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	719.7	143940	708.54	141708	36	-	-	-	-	-	-	-
					Mid-High	731.3	146260	706.1	141220	114	-	-	-	-	-	-	-
n65	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.65 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	2141.7	428340	2134.86	426972	12	15	5349	427950	2	1	2 (4)	17
					Mid-High	2168.3	433660	2159.3	431860	24		5414	433210	6	1	1 (2)	27
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.65 for bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	1951.7	390340	1940.54	388108	36	-	-	-	-	-	-	-
					Mid-High	1978.3	395660	1953.1	390620	114	-	-	-	-	-	-	-
n66	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.66 for DL bandwidth=10 MHz, UL bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	2141.7	428340	2134.86	426972	12	15	5349	427950	2	1	2 (4)	17
					Mid-High	2168.3	433660	2159.3	431860	24		5414	433210	6	1	1 (2)	27
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.66 for DL bandwidth=10 MHz, UL bandwidth=10 MHz and SCS=15 kHz.											
					Mid-Low	1741.7	348340	1730.54	346108	36	-	-	-	-	-	-	-
					Mid-High	1768.3	353660	1743.1	348620	114	-	-	-	-	-	-	-
n74	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.74 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	1491	298200	1484.16	296832	12	15	3720	297630	2	0	0 (0)	12
					Mid-High	1502	300400	1493	298600	24		3749	300010	2	1	2 (4)	29
				Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.74 for bandwidth=5 MHz and SCS=15 kHz.											
					Mid-Low	1443	288600	1431.84	286368	36	-	-	-	-	-	-	-
					Mid-High	1454	290800	1428.8	285760	114	-	-	-	-	-	-	-
n75	15	10	52	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.75 for bandwidth=10 MHz and SCS=15 kHz.											
				(SDL) Note 2	Mid-Low	1462	292400	1455.16	291032	12	15	-	291824	31	-	0	-
					Mid-High	1487	297400	1478	295600	24		-	296824	31	-	0	-

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: FR1 carrier without any coreset is indicated in the MIB by setting k_{SSB} =31, *controlResourceSetZero*=0 and *searchSpaceZero = 0* (TS 38.213 [22], clause 13).

Table 6.2.3.1-3: Test frequencies for NR TDD FR1 bands using 5 MHz channel bandwidth

NR Band	SCS [kHz]	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs]) Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n34	15	5	25	Downlink & Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.34 for bandwidth=5 MHz and SCS=15 kHz.											
n51	15	5	25	Downlink & Uplink	Low	Same values as for Low range in clause 4.3.1.1.1.51 for bandwidth=5 MHz and SCS=15 kHz.											
n53	15	5	25	Downlink & Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.53 for bandwidth=5 MHz and SCS=15 kHz.											
Note 1: For TDD FR1 bands typically the default SCS=30kHz is chosen. For n34 and n53 where SCS=30kHz would limit test coverage to one cell scenarios, SCS=15kHz and 5MHz CBW have been chosen to enable testing of scenarios with up to two cells.																	

Table 6.2.3.1-4: Test frequencies for NR TDD FR1 bands using 10 MHz channel bandwidth

NR Band	SCS [kHz]	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs]) Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n38	30	10	24	Downlink & Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.38 for bandwidth=10 MHz and SCS=30 kHz.											
					Mid-Low	2588.3	517660	2579.66	515932	12	30	6470	517690	10	0	2 (2)	28
					Mid-High	2601.7	520340	2588.74	517748	24		6505	520370	10	0	2 (2)	52
n39	30	10	24	Downlink & Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.39 for bandwidth=10 MHz and SCS=30 kHz.											
					Mid-Low	1895	379000	1886.36	377272	12	30	4736	378970	14	0	1 (1)	26
					Mid-High	1905	381000	1892.04	378408	24		4761	380910	18	0	0 (0)	48
n40	30	10	24	Downlink & Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.40 for bandwidth=10 MHz and SCS=30 kHz.											
					Mid-Low	2335	467000	2326.36	465272	12	30	5839	467090	6	0	3 (3)	30
					Mid-High	2365	473000	2352.04	470408	24		5914	473090	6	0	3 (3)	54
n48	30	10	24	Downlink & Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.48 for bandwidth=10 MHz and SCS=30 kHz.											
					Mid-Low	3601.65	640110	3593.01	639534	12	30	7917	640128	18	0	2 (2)	28
					Mid-High	3648.33	643222	3635.37	642358	24		7949	643200	2	0	1 (1)	50
n50	30	10	24	Downlink & Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.50 for bandwidth=10 MHz and SCS=30 kHz.											
					Mid-Low	1462	292400	1453.36	290672	12	30	3655	292370	14	0	1 (1)	26
					Mid-High	1487	297400	1474.04	294808	24		3716	297370	14	0	1 (1)	50

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-4 in TS 38.213 [22] for all bands in the table. The value of CORESET#0 Index is signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 6.2.3.1-4A: Test frequencies for NR TDD FR1 bands using 60 MHz channel bandwidth for non-RedCap UE

NR Band	SCS [kHz]	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs]) Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n41	30	60	162	Downlink & Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.41 for bandwidth=60 MHz and SCS=30 kHz.											

Table 6.2.3.1-4B: Test frequencies for NR TDD FR1 bands using 20 MHz channel bandwidth for RedCap UE

NR Band	SCS [kHz]	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs]) Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n41	30	20	51	Downlink & Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.41 for bandwidth=20 MHz and SCS=30 kHz.											

Table 6.2.3.1-5: Test frequencies for NR TDD FR1 bands using 100 MHz channel bandwidth for non-RedCap UE

NR Band	SCS [kHz]	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs]) Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n77	30	100	273	Downlink & Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.77 for bandwidth=100 MHz and SCS=30 kHz.											
					Mid-Low	3616.68	641112	3563.22	637548	12	30	7896	638112	12	0	1 (1)	26
					Mid-High	3883.32	658888	3825.54	655036	24		8081	655872	20	0	0 (0)	48
n78	30	100	273	Downlink & Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.78 for bandwidth=100 MHz and SCS=30 kHz.											
					Mid-Low	3483.33	632222	3429.87	628658	12	30	7804	629280	22	0	3 (3)	30
					Mid-High	3616.68	641112	3558.9	637260	24		7896	638112	12	0	1 (1)	50
n79	30	100	273	Downlink & Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.79 for bandwidth=100 MHz and SCS=30 kHz.											
					Mid-Low	4616.67	707778	4563.21	704214	12	30	8592	704928	18	6	1 (4)	38
					Mid-High	4783.35	718890	4725.57	715038	24		8720	717216	18	54	1 (4)	160

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-4 in TS 38.213 [22] for all bands in the table except for band n79 where Table 13-6 apply. The value of CORESET#0 Index is signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 6.2.3.1-5A: Test frequencies for NR TDD FR1 bands using 20 MHz channel bandwidth for RedCap UE

NR Band	SCS [kHz]	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs]) Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n77	30	20	51	Downlink & Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.77 for bandwidth=20 MHz and SCS=30 kHz.											
					Mid-Low	3603.33	640222	3589.83	639322	12	30	7915	639936	14	0	3 (3)	30
					Mid-High	3896.67	659778	3878.85	658590	24		8118	659424	18	0	0 (0)	48
n78	30	20	51	Downlink & Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.78 for bandwidth=20 MHz and SCS=30 kHz.											
					Mid-Low	3470.01	631334	3456.51	630434	12	30	7822	631008	22	0	1 (1)	26
					Mid-High	3630	642000	3612.18	640812	24		7933	641664	12	0	1 (1)	50
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-4 in TS 38.213 [22] for all bands in the table except for band n79 where Table 13-6 apply. The value of CORESET#0 Index is signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.																	

Table 6.2.3.1-6: Test frequencies for NR TDD FR2 bands using 100 MHz channel bandwidth

NR Band	SCS [kHz]	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs]) Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n257	120	100	66	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.2.1.1 for bandwidth=100 MHz and SCS=120 kHz.											
				&	Mid-Low	27516.6	2071109	27451.8	2070029	12	120	22444	2070811	7	6	1 (4)	44
				Uplink	Mid-High	28483.32	2087221	28401.24	2085853	24		22500	2086939	3	7	1 (4)	70
n258	120	100	66	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.2.1.2 for bandwidth=100 MHz and SCS=120 kHz.											
				&	Mid-Low	25350	2034999	25285.2	2033919	12	120	22318	2034523	2	3	0 (0)	30
				Uplink	Mid-High	26400	2052499	26317.92	2051131	24		22379	2052091	0	2	1 (4)	60
n259	120	100	66	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.2.1.3 for bandwidth=100 MHz and SCS=120 kHz.											
				&	Mid-Low	40850.04	2293333	40785.24	2292253	12	120	23215	2292859	3	3	0 (0)	30
				Uplink	Mid-High	42150	2314999	42067.92	2313631	24		23290	2314459	6	0	0 (0)	48
n260	120	100	66	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.2.1.4 for bandwidth=100 MHz and SCS=120 kHz.											
				&	Mid-Low	38016.6	2246109	37951.8	2245029	12	120	23051	2245627	11	2	0 (0)	28
				Uplink	Mid-High	38983.32	2262221	38901.24	2260853	24		23107	2261755	7	3	0 (0)	54
n261	120	100	66	Downlink	Low, High	Same values as for Low and High range in clause 4.3.1.2.1.5 for bandwidth=100 MHz and SCS=120 kHz.											
				&	Mid-Low	27800.04	2075833	27735.24	2074753	12	120	22460	2075419	9	1	1 (4)	34
				Uplink	Mid-High	28050	2079999	27967.92	2078631	24		22474	2079451	2	0	0 (0)	48

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-8 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Table 6.2.3.1-7: Test frequencies for NR FDD FR1 SUL bands

NR Band	SCS [kHz]	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*AbsoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]
n80	15	10	52	Uplink	Low, Mid, High	Same values as for Low, Mid and High range in table 4.3.1.1.1.80-1 for bandwidth=10 MHz and SCS=15 kHz.				
n81	15	10	52	Uplink	Low, Mid, High	Same values as for Low, Mid and High range in table 4.3.1.1.1.81-1 for bandwidth=10 MHz and SCS=15 kHz.				
n82	15	10	52	Uplink	Low, Mid, High	Same values as for Low, Mid and High range in table 4.3.1.1.1.82-1 for bandwidth=10 MHz and SCS=15 kHz.				
n83	15	10	52	Uplink	Low, Mid, High	Same values as for Low, Mid and High range in table 4.3.1.1.1.83-1 for bandwidth=10 MHz and SCS=15 kHz.				
n84	15	10	52	Uplink	Low, Mid, High	Same values as for Low, Mid and High range in table 4.3.1.1.1.84-1 for bandwidth=10 MHz and SCS=15 kHz.				
n86	15	10	52	Uplink	Low, Mid, High	Same values as for Low, Mid and High range in table 4.3.1.1.1.86-1 for bandwidth=10 MHz and SCS=15 kHz.				
n97	15	10	52	Uplink	Low, Mid, High	Same values as for Low, Mid and High range in table 4.3.1.1.1.97-1 for bandwidth=10 MHz and SCS=15 kHz.				
n99	15	10	52	Uplink	Low, High	Same values as for Low and High range in clause 4.3.1.1.1.99-1 for bandwidth=10 MHz and SCS=15 kHz.				

6.2.3.2 Test frequencies for EN-DC band combinations for signalling testing

6.2.3.2.1 General

The default channel bandwidths for EN-DC signalling test are specified per NR and E-UTRA band. The test frequencies are defined so that no frequency overlapping takes place, in order to avoid unnecessary inter-frequency interference.

6.2.3.2.2 E-UTRA 1CC and NR 1CC

For EN-DC Inter-band case with E-UTRA 1CC and NR 1CC (one E-UTRA band and one NR band) the EN-DC configurations are specified in clause 4.3.1.4.1.2 for EN-DC with NR FR1 and 4.3.1.5.1.2 for EN-DC with NR FR2.

The E-UTRA and NR test frequencies are specified in TS 36.508 [2], clause 6.2.3.1 for the E-UTRA band (E-UTRA f1, f2, f3 and f4); and in clause 6.2.3.1 for the NR band (NRf1, NRf2, NRf3, NRf4) and for the secondary NR band (NRf5, NRf6, NRf7) of the secondary EN-DC inter-band configuration.

For EN-DC Intra-band Contiguous case with E-UTRA 1CC and NR 1CC the EN-DC configurations and the test frequencies are specified in Table 6.2.3.2-1.

For EN-DC Intra-band Non-Contiguous with E-UTRA 1CC and NR 1CC case the EN-DC configurations and test frequencies are specified in Table 6.2.3.2-2.

For EN-DC Intra-Band Contiguous and EN-DC Intra-Band Non-Contiguous cases with E-UTRA 1CC and NR 1CC the mapping of frequency ranges to NR test frequencies NRf1, NRf2, NRf3, and NRf4 to PSCell; and to E-UTRA test frequencies f1, f2, f3, and f4 for PCell are as follows:

- for band combinations with only one test frequency: Low Range (NRf1, f1);
- for band combinations with up to two frequencies: Low Range (NRf1, f1), High Range (NRf2, f2);
- for band combinations with up to three frequencies: Mid Range (NRf3, f3), Low Range (NRf1, f1) and High Range (NRf2, f2);
- for band combinations with up to four frequencies: Mid-Low Range (NRf3, f3), High Range (NRf2, f2), Low Range (NRf1, f1) and Mid-High Range (NRf4, f4).

Table 6.2.3.2.2-1: Test frequencies for EN-DC Intra-band Contiguous configurations with E-UTRA 1CC and NR 1CC

EN-DC channel bandwidth combination	CC	Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs])	offsetToPointA (SIB1) [PRBs]
DC_(n)41AA	E-UTRA CC1	20	100	Downlink & Uplink	Low, High	Same values as for Low and High range values in Table 4.3.1.4.2.41.1-2 (SCS 30 kHz, 30 kHz NR raster and NR CC at the band edges) and EN-DC channel bandwidth combination “E-UTRA: 20MHz + NR: 60MHz”.											
	NR CC1	60	162	Downlink & Uplink	Low, High												
DC_(n)71AA	E-UTRA CC1	5	25	Downlink	Low, Mid, High	Same values as for Low, Mid and High range values in Table 4.3.1.4.2.71.1-1 (SCS 15 kHz, 100 kHz NR raster and NR CC at the band edges) and EN-DC channel bandwidth combination “E-UTRA: 5MHz + NR: 5MHz”.											
				Uplink	Low, Mid, High												
	NR CC1	5	25	Downlink	Low, Mid, High												
				Uplink	Low, Mid, High												

Table 6.2.3.2.2-2: Test frequencies for EN-DC Intra-Band Non-Contiguous configurations with E-UTRA 1CC and NR 1CC

EN-DC channel bandwidth combination	CC	Bandwidth [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs])	offsetToPointA (SIB1) [PRBs]
DC_41A_n41A	E-UTRA CC1	20	100	Downlink & Uplink	Low	Same values as for Test Frequency ID = ”Low with maxWgap (NR – E-UTRA)” in Table 4.3.1.4.41.1-1 with NR SCS=30 kHz and CBW=60MHz; and E-UTRA CBW=20 MHz.											
	NR CC1	60	162	Downlink & Uplink	Low												

6.2.3.2.3 E-UTRA 1CC and NR CA 2CC

For EN-DC Inter-band case with E-UTRA 1CC and NR CA 2CC the EN-DC configurations are specified in clauses 4.3.1.4.1.2 (two bands) and 4.3.1.4.1.3 (three bands) for EN-DC and NR CA 2CC with FR1 bands, 4.3.1.5.1.2 (two bands) and 4.3.1.5.1.3 (three bands) for EN-DC with NR CA 2CC with FR2 bands and 4.3.1.6.1.2 for EN-DC and NR CA 2CC´with FR1 and FR2 bands.

For EN-DC Inter-band case (3 bands), the E-UTRA test frequencies are specified in TS 36.508 [2], clause 6.2.3.1 for the E-UTRA band (E-UTRA f1) and the NR test frequencies are specified in clause 6.2.3.1 for the NR band used as PSCell (NRf1, NRf2, NRf3, NRf4) and for the NR band used as SCell (NRf5, NRf6, NRf7).

For EN-DC Inter-band case (2 bands) with NR Intra-band contiguous CA 2CC and NR Intra-band non-contiguous CA 2CC, the E-UTRA test frequencies are specified in TS 36.508 [2], clause 6.2.3.1 for the E-UTRA band (E-UTRA f1) and the NR test frequencies are specified in clause 6.2.3.4 for the NR CA CC1 used as PSCell (NRf1, NRf3) and for the NR CA CC2 used as SCell (NRf2, NRf4,).

For EN-DC Intra-band Contiguous case with E-UTRA 1CC and NR CA 2CC the EN-DC configurations and the test frequencies are specified in Table 6.2.3.2.3-1.

For EN-DC Intra-band Non-Contiguous case with E-UTRA 1CC and NR 2CC the EN-DC configurations and test frequencies are specified in Table 6.2.3.2.3-2.

For EN-DC Intra-Band Contiguous and EN-DC Intra-Band Non-Contiguous cases with E-UTRA 1CC and NR CA 2CC the mapping of frequency ranges to NR test frequencies NRf1 for PSCell (CC1) and NRf2 for SCell (CC2); and to E-UTRA test frequency f1 for PCell is:

- for band combinations with only one test frequency: Low Range (NRf1=CC1, NRf2=CC2, f1); and
- for band combinations with up to two frequencies: Low Range (NRf1=CC1, NRf2=CC2, f1), High Range (NRf3=CC1, NRf4=CC2, f2).

Editor's note: No EN-DC Intra-band Contiguous configurations with NR CA 2CC have yet been introduced in TS 38.101-3.

Table 6.2.3.2.3-1: Test frequencies for EN-DC Intra-band Contiguous configurations with E-UTRA 1CC and NR CA 2CC

FFS

Editor's note: No EN-DC Intra-band Non-Contiguous configurations with NR CA 2CC have yet been introduced in TS 38.101-3.

Table 6.2.3.2.3-2: Test frequencies for EN-DC Intra-Band Non-Contiguous configurations with E-UTRA 1CC and NR CA 2CC

FFS

6.2.3.2a Test frequencies for NE-DC band combinations for signalling testing

6.2.3.2a.1 General

The default channel bandwidths for NE-DC signalling test are specified per NR and E-UTRA band. The test frequencies are defined so that no frequency overlapping takes place, in order to avoid unnecessary inter-frequency interference.

6.2.3.2a.2 NR 1CC and E-UTRA 1CC

For NE-DC Inter-band case with NR 1CC and E-UTRA 1CC (one NR band and one E-UTRA band) the NE-DC configurations are specified in clause 4.3.1.4a.1.2 for NE-DC with NR FR1.

The NR and E-UTRA test frequencies are specified in clause 6.2.3.1 for the NR band (NRf1, NRf2, NRf3, NRf4) and for the secondary NR band (NRf5, NRf6, NRf7) of the secondary NE-DC inter-band configuration; and in TS 36.508 [2], clause 6.2.3.1 for the E-UTRA band (E-UTRA f1, f2, f3 and f4).

6.2.3.3 Test frequencies for NR and E-UTRA Inter-RAT signalling testing

For NR and E-UTRA Inter-RAT testing, it is assumed that the NR and E-UTRA bands under test are different in order to avoid unnecessary interferences:

- for NR bands, the frequencies NRf1, NRf2, NRf3 and NRf4 are mapped as per clause 6.2.3.1
- for E-UTRA bands, the signalling test frequencies E-UTRA f1, E-UTRA f2, E-UTRA f3 and E-UTRA f4 are mapped respectively on f1, f2, f3 and f4 as per TS 36.508 [2] clause 6.2.3.1.

6.2.3.4 Test frequencies for NR CA configurations for signalling testing

The default channel bandwidths for NR CA signalling test are specified per NR band. The test frequencies are defined so that no frequency overlapping takes place, in order to avoid unnecessary inter-frequency interference.

For NR CA Inter-band case (2 bands) the NR CA configurations are specified in clause 4.3.1.1.2 for NR CA within FR1, in clause 4.3.1.2.2 for NR CA within FR2 and in clause 4.3.1.3.1 for NR CA between FR1and FR2. NR test frequencies are specified in clause 6.2.3.1 for the NR band used as PCell (NRf1, NRf2, NRf3, NRf4) and for the NR band used as Scell (NRf5, NRf6, NRf7).

For NR CA Intra-band Contiguous case (2 CCs) the NR CA configurations and the test frequencies are specified in Table 6.2.3.4-1 for FR1 and in Table 6.2.3.4-2 for FR2. For NR CA Intra-band Non-Contiguous (2 CCs) case the NR CA configurations and test frequencies are specified in Table 6.2.3.4-3 for FR1 and in Table 6.2.3.4-4 for FR2.

For NR CA Intra-Band Contiguous case (2 CCs) and NR CA Intra-Band Non-Contiguous case (2 CCs) the mapping of frequency ranges to NR test frequencies NRf1, NRf2, NRf3, and NRf4 and PCell (CC1) and SCell (CC2) are as follows:

- for Intra-band configurations with only one test frequency: Low Range (NRf1=CC1 and NRf2=CC2); and
- for Intra-band configurations with up to two frequencies: Low Range (NRf1=CC1 and NRf2=CC2), High Range (NRf3=CC1 and NRf4=CC2)

For NR CA Intra-band Contiguous case (3 CCs) the NR CA configurations and the test frequencies are specified in Table 6.2.3.4-2a for FR2.

For NR CA Intra-Band Contiguous case (3CCs) the mapping of frequency ranges to NR test frequencies NRf1, NRf2, and NRf3 and PCell (CC1) and SCell (CC2, CC3) are as follows:

- For Intra-band configurations with up to three frequencies: Low Range (NRf1=CC1, NRf2=CC2, NRf3=CC3)

Table 6.2.3.4-1: Test frequencies for NR CA Intra-band Contiguous configurations with FR1

NR CA configuration	CC	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [CarrierPRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs])	offsetToPointA (SIB1 [PRBs
CA_n41C	CC1	60	162+162	Downlink & Uplink	Low	Same values as for Low range in Table 4.3.1.1.3.41.1-1 for CBW combination 60+60 and SCS=30 kHz.											
	CC2	60	162														
CA_n48B	CC1	10	24	Downlink & Uplink	Low	Same values as for Low and High ranges in Table 4.3.1.1.3.48.1-2 for CBW combination 10+10 and SCS=30 kHz.											
	CC2	10	24		High												
CA_n66B	CC1	10	52	Downlink & Uplink	Low	Same values as for Low and High ranges in Table 4.3.1.1.3.66.1-1 for CBW combination 10+15 and SCS=15 kHz.											
	CC2	15	79		High												
CA_n77C	CC1	100	273	Downlink & Uplink	Low	Same values as for Low and High ranges in Table 4.3.1.1.3.77.1-1 for CBW combination 100+100 and SCS=30 kHz.											
	CC2	100	273		High												
CA_n78C	CC1	100	273	Downlink & Uplink	Low	Same values as for Low and High ranges in Table 4.3.1.1.3.78.1-1 for CBW combination 100+100 and SCS=30 kHz.											
	CC2	100	273		High												

Table 6.2.3.4-2: Test frequencies for NR CA Intra-band Contiguous configurations with FR2

NR CA configuration	CC	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [CarrierPRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs])	offsetToPointA (SIB1) [PRBs]
CA_n257G	CC1, CC2	100+100	66+66	Downlink & Uplink	Low	Same values as for Low and High ranges in Table 4.3.1.2.3.1.6-4 for CBW combination 100+100 and SCS=120 kHz.											
					High												
CA_n258G	CC1, CC2	100+100	66+66	Downlink & Uplink	Low	Same values as for Low and High ranges in Table 4.3.1.2.3.2.6-2 for CBW combination 100+100 and SCS=120 kHz.											
					High												
CA_n260G	CC1, CC2	100+100	66+66	Downlink & Uplink	Low	Same values as for Low and High ranges in Table 4.3.1.2.3.4.6-2 for CBW combination 100+100 and SCS=120 kHz.											
					High												
CA_n261G	CC1, CC2	100+100	66+66	Downlink & Uplink	Low	Same values as for Low and High ranges in Table 4.3.1.2.3.5.6-2 for CBW combination 100+100 and SCS=120 kHz.											
					High												

Table 6.2.3.4-2a: Test frequencies for NR CA Intra-band Contiguous configurations with FR2 (3CC)

NR CA configuration	CC	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs])	offsetToPointA (SIB1) [PRBs]
CA_n257H	CC1, CC2, CC3	100+100+100	66+66+66	Downlink & Uplink	Low	Same values as for Low range in Table 4.3.1.2.3.1.7-4 for CBW combination 100+100+100 and SCS=120 kHz.											
CA_n258H	CC1, CC2, CC3	100+100+100	66+66+66	Downlink & Uplink	Low	Same values as for Low range in Table 4.3.1.2.3.2.7-2 for CBW combination 100+100+100 and SCS=120 kHz.											
CA_n260H	CC1, CC2, CC3	100+100+100	66+66+66	Downlink & Uplink	Low	Same values as for Low range in Table 4.3.1.2.3.4.7-1 for CBW combination 100+100+100 and SCS=120 kHz.											
CA_n261H	CC1, CC2, CC3	100+100+100	66+66+66	Downlink & Uplink	Low	Same values as for Low range in Table 4.3.1.2.3.5.7-2 for CBW combination 100+100+100 and SCS=120 kHz.											

Table 6.2.3.4-3: Test frequencies for NR CA Intra-Band Non-Contiguous configurations with FR1

NR CA configuration	SB	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs])	offsetToPointA (SIB1 [PRBs
CA_n48(2A)	SB1 SB2	10+10	24+24	Downlink & Uplink	Low High	Same values as for Low and High ranges in Table 4.3.1.1.5.48-2 for CBW combination 10+10 and SCS=30 kHz.											
CA_n66(2A)	SB1 SB2	10+10	52+52	Downlink & Uplink	Low High	Same values as for Low and High ranges in Table 4.3.1.1.5.66-1 for CBW combination 10+10 and SCS=15 kHz.											
CA_n71(2A)	SB1, SB2	10+10	52+52	Downlink & Uplink	Low High	Same values as for Low and High ranges in Table 4.3.1.1.5.71-1 for CBW combination 10+10 and SCS=15 kHz.											
CA_n78(2A)	SB1 SB2	50+50	133+133	Downlink & Uplink	Low High	Same values as for Low and High ranges in Table 4.3.1.1.5.78-2 for CBW combination 50+50 and SCS=30 kHz.											

Table 6.2.3.4-4: Test frequencies for NR CA Intra-Band Non-Contiguous configurations with FR2

NR CA configuration	CC	CBW [MHz]	*carrierBandwidth* [PRBs]	Range		Carrier centre [MHz] Note 2	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs])	offsetToPointA (SIB1 [PRBs
CA_n261(2A)	CC1 CC2	100 100	66 66	Downlink & Uplink	Low High	Same values as for Low and High ranges in Table 4.3.1.2.4.5.1-1 for CBW combination 100+100 and SCS=120 kHz.											

6.2.3.5 Test frequencies for MFBI signalling testing

For signalling test cases, the mapping of MFBI frequency ranges to NR test frequencies are as follows: Low Range (NRf1), Mid Range (NRf2) and High Range (NRf3).

The test frequencies, subcarrier spacing, default channel bandwidth, SS/PBCH block and CORESET#0 parameters for signalling are specified in Table 6.2.3.5-1 and Table 6.2.3.5-1A(for RedCap UE).

Table 6.2.3.5-1: Test frequencies for MFBI NR bands in FR1 for non-RedCap UE

NR Band	MFBI overlapping NR Band	SCS [kHz]	Bandwidth [MHz]	carrierBandwidth [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET#0 Index (Offset [RBs])	offsetToPointA (SIB1) [PRBs]
n2	n25	15	10	52	Downlink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.2 for bandwidth=10 MHz and SCS=15 kHz.											
					Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.2 for bandwidth=10 MHz and SCS=15 kHz.											
n25	n2	15	10	52	Downlink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.2 for bandwidth=10 MHz and SCS=15 kHz.											
					Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.2 for bandwidth=10 MHz and SCS=15 kHz.											
n38	n41	15	10	52	Downlink & Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.38 for bandwidth=10 MHz and SCS=15 kHz.											
n41	n38	15	10	52	Downlink & Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.38 for bandwidth=10 MHz and SCS=15 kHz.											
n77	n78	30	100	273	Downlink & Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.78 for bandwidth=100 MHz and SCS=30 kHz.											
n78	n77	30	100	273	Downlink & Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.78 for bandwidth=100 MHz and SCS=30 kHz.											

Table 6.2.3.5-1A: Test frequencies for MFBI NR bands in FR1 for RedCap UE

NR Band	MFBI overlapping NR Band	SCS [kHz]	Bandwidth [MHz]	carrierBandwidth [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET#0 [RBs]	CORESET #0 Index (Offset [RBs])	offsetToPointA (SIB1) [PRBs]
n2	n25	Same values as in Table 6.2.3.5-1																
n25	n2	Same values as in Table 6.2.3.5-1																
n38	n41	Same values as in Table 6.2.3.5-1																
n41	n38	Same values as in Table 6.2.3.5-1																
n77	n78	30	20	51	Downlink & Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.78 for bandwidth=20 MHz and SCS=30 kHz.											
n78	n77	30	20	51	Downlink & Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.1.1.78 for bandwidth=20 MHz and SCS=30 kHz.											

Table 6.2.3.5-2: Test frequencies for MFBI NR bands in FR2

NR Band	MFBI overlapping NR Band	SCS [kHz]	Bandwidth [MHz]	carrierBandwidth [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absoluteFrequencyPointA* [ARFCN]	*offsetToCarrier* [CarrierPRBs]	SSblockSCS [kHz]	GSCN	*absoluteFrequencySSB* [ARFCN]	k_{SSB}	Offset Carrier CORESET #0 [RBs] Note 2	CORESET #0 Index (Offset [RBs]) Note 1	offsetToPointA (SIB1) [PRBs] Note 1
n257	n258	120	100	66	Downlink & Uplink	Low	26557.08	2055117	26509.56	2054325	0	120	22388	2054683	0	1 (4)	1	8
						Mid	27006.36	2062605	26811.96	2059365	102		22414	2062171	0	1 (4)	1	212
						High	27438.36	2069805	26665.08	2056917	504		22439	2069371	0	1 (4)	1	1016
n257	n261	120	100	66	Downlink & Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.2.1.5 for bandwidth=100 MHz and SCS=120 kHz.											
n258	n257	120	100	66	Downlink & Uplink	Low	26557.08	2055117	26509.56	2054325	0	120	22388	2054683	11	0	1 (4)	8
						Mid	27006.36	2062605	26811.96	2059365	102		22414	2062171	11	0	1 (4)	212
						High	27438.36	2069805	26665.08	2056917	504		22439	2069371	11	0	1 (4)	1016
n261	n257	120	100	66	Downlink & Uplink	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.2.1.5 for bandwidth=100 MHz and SCS=120 kHz.											

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-1 in TS 38.213 [22]. The value of CORESET#0 Index is signalled in controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource blocks assuming 15 kHz subcarrier spacing for FR1 and 60 kHz subcarrier spacing for FR2.

Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subcarrier of CORESET#0. It corresponds to the parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.

6.2.3.6 Test frequencies for NR DC configurations for signalling testing

The default channel bandwidths for NR DC signalling test are specified per NR band. The test frequencies are defined so that no frequency overlapping takes place, in order to avoid unnecessary inter-frequency interference.

For NR DC in FR1 (2 bands, 2CC) the NR DC configurations are specified in clause 4.3.1.1.7.1 for 1CC FR1 and 1CC FR1. NR test frequencies are specified in clause 6.2.3.1 for the NR band used as PCell (NRf1, NRf2, NRf3, NRf4) and for the NR band used as PSCell (NRf5, NRf6, NRf7).

For NR DC between FR1 and FR2 (2 bands, 2CC) the NR DC configurations are specified in clause 4.3.1.3.2.1 for 1CC FR1 and 1CC FR2. NR test frequencies are specified in clause 6.2.3.1 for the NR band used as PCell (NRf1, NRf2, NRf3, NRf4) and for the NR band used as PSCell (NRf5, NRf6, NRf7).

For NR DC between FR1 and FR2 with NR intra-band contiguous CA (2 bands, 3CC) the NR DC configurations are specified in clause 4.3.1.3.2.1 for 1CC FR1 and 2CC FR2. NR test frequencies are specified in clause 6.2.3.1 for the NR FR1 band used as PCell (NRf1) and in Table 6.2.3.4-2 for NR intra-band contiguous CA as PSCell (CC1, NRf5) and SCell (CC2, NRf6).

6.2.3.7 Test frequencies for NR sidelink configurations for signalling testing

The default channel bandwidths for NR sidelink signalling test are specified per NR sidelink operation band. The test frequencies are defined so that no frequency overlapping takes place, in order to avoid unnecessary inter-frequency interference.

For signalling test cases, the mapping of frequency ranges to NR sidelink test frequencies are as follows:

- for band with only one test frequency: Low Range (NRf1);
- for band with up to two test frequencies: Low Range (NRf1) and High Range (NRf2);
- for band with up to three test frequencies: Low Range (NRf1), Mid Range (NRf2) and High Range (NRf3);

The test frequencies, subcarrier spacing, default channel bandwidth and S-SSBparameters for signalling is specified in Table 6.2.3.7-1 for PC5-only operations.

For concurrent operation case the operation configurations are specified in clause 4.3.1.8.2.1 for inter-band concurrent cases. The test frequencies for signalling are specified in Table 6.2.3.7-1 for PC5 carrier and in clause 6.2.3.1 for Uu carrier.

For tests which need NR PC5 carrier and NR Uu carrier but not concurrent operation case, the test frequencies for signalling are specified in Table 6.2.3.7-1 for PC5 carrier in clause 6.2.3.1 for Uu carrier.

Table 6.2.3.7-1: Test frequencies for NR Sidelink operating bands using 10 MHz channel bandwidth

NR Band	SCS [kHz]	CBW [MHz]	*carrier Bandwidth* [PRBs]	Range	Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*sl-absoluteFrequency PointA* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	*sl-absoluteFrequency SSB* [ARFCN]
n47	15	10	52	Low, Mid, High	Same values as for Low, Mid and High range in clause 4.3.1.8.1.2 for bandwidth=10 MHz and SCS=15 kHz. For *sl-absoluteFrequencySSB*, same value as for S-SSB Low in clause 4.3.1.8.1.2 for bandwidth=10 MHz and SCS=15 kHz is used.					

6.3 Reference system configurations

6.3.1 Default System Information configurations

6.3.1.1 Intra-frequency neighbouring cell list in SIB3 for NR cells

Intra-frequency neighbouring cell list for signalling test cases is defined in table 6.3.1.1-1. This table is referred to in the default contents of IE *intraFreqNeighCellList* in *SIB3* defined in table 4.6.2-2.

Table 6.3.1.1-1: Intra-frequency neighbouring cell lists for NR cells

cell ID	Test Frequency	intra-frequency neighbouring cell list			
		number of entries	physCellId[*n*]		
			1	1	3
NR Cell 1	NRf1	3	NR Cell 2	NR Cell 4	NR Cell 11
NR Cell 2	NRf1	3	NR Cell 1	NR Cell 4	NR Cell 11
NR Cell 4	NRf1	3	NR Cell 1	NR Cell 2	NR Cell 11
NR Cell 11	NRf1	3	NR Cell 1	NR Cell 2	NR Cell 4
NR Cell 3	NRf2	1	NR Cell 23	-	-
NR Cell 23	NRf2	1	NR Cell 3	-	-

Editor's Note: The intra-frequency NR neighbouring cell list for signalling NAS test cases when cells are on same PLMN is FFS.

6.3.1.2 Inter-frequency carrier frequency list in SIB4 for NR cells

Inter-frequency NR carrier frequency list for signalling test cases is defined in table 6.3.1.2-1. This table is referred to in the default contents of IE *interFreqCarrierFreqList* in *SIB4* defined in table 4.6.2-3.

Table 6.3.1.2-1: Inter-frequency carrier frequency lists for NR cells

cell ID	Test Frequency	interFreqCarrierFreqList			
		number of entries	dl-CarrierFreq[*n*]		
			1	2	3
NR Cell 1 NR Cell 2 NR Cell 4 NR Cell 11	NRf1 (Note 2)	3	NRf2	NRf3	NRf5
NR Cell 3 NR Cell 23	NRf2 (Note 2)	3	NRf1	NRf3	NRf5
NR Cell 6	NRf3 (Note 2)	3	NRf1	NRf2	NRf5
NR Cell 10	NRf5 (Note 3)	3	NRf1	NRf2	NRf3
Note 1: Depending on the Band under test, NRf3 may not be applicable. Note 2: In case of Test frequency NRf1, NRf2 and NRf3, dl-CarrierFreq NRf5 as part of inter-frequency list is applicable only in case of multi-band scenarios. Note 3: Test frequency NRf5 is applicable only in case of multi-band scenarios.					

Editor's Note: The inter-frequency NR carrier frequency list for signalling NAS test cases when cells are on same PLMN is FFS.

6.3.1.3 E-UTRA carrier frequency list in SIB5 for NR cells

The frequency mapping of E-UTRA cells are defined as per TS 36.508 [2] clause 4.4.2 and TS 36.508 [2] clause 6.3.2 for NGC NAS test cases, E-UTRA frequency mapping is according to clause 6.2.3.3. E-UTRA carrier frequency list for signalling test cases is defined in table 6.3.1.3-1. This table is referred to in the default contents of IE *carrierFreqListEUTRA* in *SIB5* defined in table 4.6.2-4.

Table 6.3.1.3-1: E-UTRA carrier frequency lists for NR cells

interFreqCarrierFreqList	
number of entries	carrierFreq[*n*]
	1
1	E-UTRA f1
2	E-UTRA f2
3	E-UTRA f3
4	E-UTRA f4
Note 1: E-UTRAf1, E-UTRAf2, E-UTRAf3, E-UTRAf4 are according to clause 6.2.3.3 Note 2: Depending on the Band under test, E-UTRA f2 or E-UTRA f3 or E-UTRA f4 may not be applicable.	

Table 6.3.1.3-2: Void

6.3.2 Default configurations for NAS test cases

The default configurations specified in this subclause apply only to NAS test cases. They apply to all NAS test cases unless otherwise specified.

6.3.2.1 Simulated network scenarios for NAS test cases

Simulated network scenarios for NAS test cases to be tested are specified in the pre-test conditions of each individual test case.

Any combination is allowed with the following restrictions:

- a maximum 3 cells on the same frequency can be used, i.e. only 3 cells out of NGC Cell A, NGC Cell B, NGC Cell C and NGC Cell D may be used simultaneously in each individual test case when cells in the test case are in different PLMNs (refer to Table 6.3.2.2-3).

6.3.2.2 Simulated NAS cells

Simulated NAS cells and default NAS parameters are specified in Table 6.3.2.2-1. Unless otherwise specified in a test case, default radio parameters of the NAS cells are specified as per Table 6.3.2.2-2.

Unless otherwise specified, the default parameters specified in clause 4.4.2 will also apply to all NAS cells.

Table 6.3.2.2-1: Default NAS parameters for simulated NAS cells

NAS cell ID	Tracking Area				TA# list (Note 1)	5G-GUTI (Note 2)			5G-TMSI
	TA#	PLMN		TAC		AMF Identifier			
		MCC	MNC			AMF Region ID	AMF Set ID	AMF Pointer	
NGC Cell A	TAI-1	(Note 3)		1	TAI-1	254	1	1	Arbitrarily selected according to TS 23.003 subclause 2.10.1 [26].
NGC Cell B	TAI-2	(Note 3)		2	TAI-2	254	1	1	
NGC Cell C	TAI-3	(Note 3)		3	TAI-3	252	1	1	
NGC Cell D	TAI-4	(Note 3)		4	TAI-4	252	1	1	
NGC Cell E	TAI-12	002	101	3	TAI-12	244	1	1	
NGC Cell F	TAI-11	003	101	2	TAI-11	239	1	1	
NGC Cell G	TAI-7	(Note 4)	02	1	TAI-7	238	1	1	
NGC Cell H	TAI-8	(Note 4)	02	2	TAI-8	237	1	1	
NGC Cell I	TAI-9	002	101	1	TAI-9	244	1	1	
NGC Cell J	TAI-10	003	101	1	TAI-10	236	1	1	

Note 1: The value(s) in the column TA# list indicates TAI(s) included in the response messages of the registration procedure for initial access or mobility (REGISTRATION ACCEPT) when the UE performs the registration procedure on a corresponding cell.
Note 2: The value in the column 5G-GUTI indicates GUTI included in the response messages of the registration procedure (REGISTRATION ACCEPT) when the UE performs the registration procedure on a corresponding cell.
Note 3: Set to the same Mobile Country Code and Mobile Network Code stored in EF_{IMSI} on the test USIM card (subclause 4.8.3).
Note 4: Set to the same Mobile Country Code stored in EF_{IMSI} on the test USIM card (subclause 4.8.3).

Table 6.3.2.2-2: Default radio parameters for simulated NAS cells when cells are in same PLMN and access stratum is NR

NAS cell ID	Frequency	NR cell ID (Note 1)
NGC Cell A	NRf1	NR Cell 1
NGC Cell B	NRf1	NR Cell 2
NGC Cell C	NRf1	NR Cell 4
NGC Cell D	NRf1	NR Cell 11
NGC Cell E	NA	NA
NGC Cell F	NRf2	NR Cell 3
NGC Cell G	NA	NA
NGC Cell H	NA	NA
NGC Cell I	NA	NA
NGC Cell J	NRf2	NR Cell 12

Note 1: Default NR parameters for simulated NR cells are as specified in Table 4.4.2-2.
Note 2: Simultaneous co-existence of active NGC cells defined on the same frequency and same SSB-Index is not recommended (in line with Table 4.4.2-2 Note 3).

Table 6.3.2.2-3: Default PLMN and radio parameters for simulated NAS cells when cells are in different PLMNs and access stratum is NR

NAS cell ID	PLMN	Frequency	NR cell ID (Note 1)
NGC Cell A	MCC/MNC=MCC/MNC in USIM	NRf1	NR Cell 1
NGC Cell B	MCC/MNC=MCC/MNC in USIM	NRf1	NR Cell 2
NGC Cell C	MCC/MNC=MCC/MNC in USIM	NRf1	NR Cell 4
NGC Cell D	MCC/MNC=MCC/MNC in USIM	NRf1	NR Cell 11
NGC Cell E	MCC=002 MNC=101	NRf2	NR Cell 3
NGC Cell F	MCC=003 MNC=101	NRf4	NR Cell 14
NGC Cell G	MCC = MCC in USIM MNC=02	NRf2	NR Cell 12
NGC Cell H	MCC = MCC in USIM MNC=02	NRf2	NR Cell 23
NGC Cell I	MCC=002 MNC=101	NRf3	NR Cell 6
NGC Cell J	MCC=002 MNC=101	NRf3	NR Cell 13
Note 1: Default NR parameters for simulated NR cells are as specified in Table 4.4.2-2 Note 2: Simultaneous co-existence of active NGC cells defined on the same frequency and same SSB-Index is not recommended (in line with Table 4.4.2-2 Note 3).			

6.3.3 Cell configuration types

6.3.3.1 Introduction

For the purpose of test equipment resource management, different types of cell configurations are defined with different capabilities.

For E-UTRA cells, please refer to TS 36.508 [2] clauses 6.3.3 and 6.3.4.

The default NR cell configuration type is Full Cell: this NR cell configuration has, in minimum, all DL and UL physical channels and physical signals configured, as defined in subclause 4.2.2.

When not mentioned explicitly in a test case prose, an NR cell is of type Full Cell. The following subclauses define different NR cell types with lower capabilities than the Full Cell.

6.3.3.2 SCell types

When testing NR CA, the following NR SCell types may be specifically mentioned in the test case prose:

- Active SCell: An NR cell that may become an SCell at any point of time during the test case and which, while being an SCell, may be activated.

- Inactive SCell: An NR cell that may become an SCell at any point of time during the test case but is never activated while being an SCell.

SCell activation is defined as SS sending an SCell Activation/Deactivation MAC CE to the UE to activate the SCell.

Note that an Active SCell will not become an Inactive SCell if the SCell is deactivated via an SCell Activation/Deactivation MAC CE or after the *sCellDeactivationTimer* timer expires.

6.4 Signalling Test Case specific USIM Configurations

6.4.1 General

The default USIM fields are specified in section 4.8.3. Specific USIM fields are set according to the USIM configuration specified in the tables below. PLMN settings are defined in TS 36.523-1 [42] Table 6.0.1-1.

Note: Changes to any existing USIM configuration can be done only if the change WILL NOT HAVE IMPACT on any of the tests which are referring to the configuration! To establish whether this might be the case, the test case author needs to review all tests in all RAN5 test specifications, which refer to the particular USIM configuration e.g. all test cases in TS 38.523-1 [12].

Table 6.4.1-1: USIM Configuration 1

USIM field	Priority	Value	Access Technology Identifier
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN1.	
$EF_{PLMNwAcT}$	1 2 3	Default PLMN17 PLMN16 Remaining mandatory entries use default values	Default All specified NG-RAN
$EF_{OPLMNwACT}$	1	PLMN15 Remaining defined entries use default values	All specified
$EF_{HPLMNwAcT}$	1	PLMN1	NG-RAN
EF_{UST}		Services 20, 42, 43 and 74 are supported. Service 71 is not supported (there is no EHPLMN list).	
EF_{HPPLMN}		1 (6 minutes)	

Table 6.4.1-2: USIM Configuration 2

USIM field	Priority	Value	Access Technology Identifier
$EF_{5GS3GPPLOCI}$		PLMN4	
$EF_{PLMNwAcT}$		Empty	
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN1.	
EF_{UST}		Service n°71 and n°74 are "available"	
EF_{EHPLMN}	1 2	PLMN15 PLMN1	
$EF_{LRPLMNSI}$		01	

Table 6.4.1-3: USIM Configuration 3

USIM field	Priority	Value	Access Technology Identifier
$EF_{5GS3GPPLOCI}$		PLMN4	
$EF_{PLMNwAcT}$		Empty	
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN1.	
EF_{UST}		Service n°74 is "available"	
EF_{EHPLMN}		Empty	
$EF_{LRPLMNSI}$		01	

Table 6.4.1-4: USIM configuration 4

USIM field	Priority	Value	Access Technology Identifier
EF_{EHPLMN}	1	PLMN1	
		Remaining mandatory entries use default values	
$EF_{PLMNwAcT}$	1	PLMN2 Remaining mandatory entries use default values	NG-RAN
$EF_{OPLMNwACT}$	1	PLMN3 Remaining mandatory entries use default values	NG-RAN
EF_{UST}		Services 20, 42 and 71 are supported.	
$EF_{5GS3GPPLOCI}$		FF FF…FF FE 01 (20 Bytes)	
$EF_{EPSLOCI}$		FF FF…FF FE 01 (18 Bytes)	
EF_{PSLOCI}		FF FF…FE FF 01 (14 Bytes)	
EF_{LOCI}		FF FF…FE FF 01 (11 Bytes)	
Note: LOCI fields of this USIM configuration may get overwritten upon execution of test cases using a UICC loaded with this USIM configuration. The test operator shall ensure that USIM contents are as per this table before each execution of a test case that requires this USIM configuration.			

Table 6.4.1-5: USIM configuration 5

USIM field	Priority	Value	Access Technology Identifier
$EF_{5GS3GPPLOCI}$		PLMN4 (See preamble)	
$EF_{PLMNwAcT}$		Empty	
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN1.	
EF_{UST}		Service 71 is not supported Service 74 is supported.	
$EF_{LRPLMNSI}$		00	
EF_{EHPLMN}		0xFF..FF	

Table 6.4.1-6: USIM configuration 6

USIM field	Priority	Value	Access Technology Identifier
$EF_{5GS3GPPLOCI}$		PLMN1 (See preamble)	
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN3.	
$EF_{PLMNwAcT}$	1	PLMN1 Remaining mandatory entries use default values	NG-RAN
$EF_{OPLMNwACT}$	1 2	PLMN2 PLMN4 Remaining defined entries use default values	NG-RAN NG-RAN
EF_{UST}		Service 71 is not supported	

Table 6.4.1-7: USIM configuration 7

USIM field	Priority	Value	Access technology	Comment
E.F$_{PLMNwAcT}$	1 2	PLMN13 PLMN13	NG-RAN E-UTRAN	
EF$_{OPLMNwAcT}$	1 2 3	PLMN2 PLMN14 PLMN13	All E-UTRAN NG-RAN	
EF$_{5GS3GPPLOCI}$		FF FF…FF FE 01 (20 Bytes)		
EF$_{EPSLOCI}$		FF FF…FF FE 01 (18 Bytes)		
EF$_{PSLOCI}$		FF FF…FE FF 01 (14 Bytes)		
EF$_{LOCI}$		FF FF…FE FF 01 (11 Bytes)		
Note: LOCI fields of this USIM configuration may get overwritten upon execution of test cases using a UICC loaded with this USIM configuration. The test operator shall ensure that USIM contents are as per this table before each execution of a test case that requires this USIM configuration.				

Table 6.4.1-8: USIM configuration 8

USIM field	Priority	Value	Access technology	Comment
EF$_{OPLMNwAcT}$	1 2 3 4	PLMN15 PLMN15 PLMN17 PLMN16	NG-RAN E-UTRAN E-UTRAN NG-RAN	
EF$_{5GS3GPPLOCI}$		FF FF…FF FE 01 (20 Bytes)		
EF$_{EPSLOCI}$		FF FF…FF FE 01 (18 Bytes)		
EF$_{PSLOCI}$		FF FF…FE FF 01 (14 Bytes)		
EF$_{LOCI}$		FF FF…FE FF 01 (11 Bytes)		
EF$_{UST}$		Service n°127 is not"available"		
Note: LOCI fields of this USIM configuration may get overwritten upon execution of test cases using a UICC loaded with this USIM configuration. The test operator shall ensure that USIM contents are as per this table before each execution of a test case that requires this USIM configuration.				

Table 6.4.1-9: USIM configuration 9

USIM field	Priority	Value	Access technology	Comment
EF$_{PLMNwAcT}$	1 2	PLMN1 PLMN15	NG-RAN E-UTRAN	
EF$_{HPPLMN}$		1(=6 min)		The HPLMN Search Period on the USIM shall be set to 6 minutes.

Table 6.4.1-10: USIM configuration 10

USIM field	Priority	Value	Access Technology Identifier
$EF_{OPLMNwACT}$	1 2 3 Remaining defined entries use default values	PLMN14 PLMN13 PLMN2	NG-RAN NG-RAN NG-RAN
EF_{UST}		Service n°127 is "available"	
EF_{HPPLMN}		1(=6 min)	
$EF_{5GS3GPPLOCI}$		FF FF…FF FE 01 (20 Bytes)	
$EF_{EPSLOCI}$		FF FF…FF FE 01 (18 Bytes)	
EF_{PSLOCI}		FF FF…FE FF 01 (14 Bytes)	
EF_{LOCI}		FF FF…FE FF 01 (11 Bytes)	
Note: LOCI fields of this USIM configuration may get overwritten upon execution of test cases using a UICC loaded with this USIM configuration. The test operator shall ensure that USIM contents are as per this table before each execution of a test case that requires this USIM configuration.			

Table 6.4.1-11: USIM configuration 11

USIM field	Priority	Value	Access Technology Identifier
$EF_{5GS3GPPLOCI}$		PLMN15 (See preamble)	
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN1	
$EF_{PLMNwAcT}$	1	Default	Default
	2	PLMN16	NG-RAN
		Remaining defined entries use default values	Default
$EF_{OPLMNwACT}$	1	PLMN15	NG-RAN
		Remaining defined entries use default values	Default
$EF_{HPLMNwAcT}$	1	PLMN1	NG-RAN
EF_{UST}		Services 20, 42, 43, 74 and 96 are supported. Service 71 is not supported (there is no EHPLMN list)	
EF_{HPPLMN}		1 (6 minutes)	
$EF_{NASCONFIG}$		MinimumPeriodicSearchTimer set to 7 minutes	

Table 6.4.1-12: USIM configuration 12

USIM field	Priority	Value	Access technology	Comment
$EF_{PLMNwAcT}$		3GPP TS 31.102, Annex E		The EF is empty.
$EF_{OPLMNwAcT}$	1 2 3	PLMN2 PLMN13 PLMN13	NG-RAN E-UTRAN NG-RAN	
EF_{UST}		Service n°127 is not"available"		
$EF_{5GS3GPPLOCI}$		FF FF…FF FE 01 (20 Bytes)		
$EF_{EPSLOCI}$		FF FF…FF FE 01 (18 Bytes)		
EF_{PSLOCI}		FF FF…FE FF 01 (14 Bytes)		
EF_{LOCI}		FF FF…FE FF 01 (11 Bytes)		
Note: LOCI fields of this USIM configuration may get overwritten upon execution of test cases using a UICC loaded with this USIM configuration. The test operator shall ensure that USIM contents are as per this table before each execution of a test case that requires this USIM configuration.				

Table 6.4.1-13: USIM configuration 13

USIM field	Priority	Value	Access technology	Comment
$EF_{OPLMNwAcT}$	1 2 3	PLMN2 PLMN2 PLMN13	NG-RAN E-UTRAN NG-RAN	

Table 6.4.1-14: Void

Table 6.4.1-15: USIM Configuration 15

USIM field	Priority	Value	Access Technology Identifier
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN1.	
EF_{FPLMN}		PLMN2	

Table 6.4.1-16: Void

Table 6.4.1-17: USIM Configuration 17

USIM field	Priority	Value	Access Technology Identifier
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN1.	
$EF_{PLMNwAcT}$	1	PLMN1	NG-RAN
EF_{UST}		Service n°126 is "available".	
EF_{EHPLMN}		PLMN1	
EF_{UAC_AIC} and EF_{ACC}		For Bits b4 and b8 in byte 1 of EF_{ACC} (defined in TS 31.102 clause 4.2.15), only single bit is set to 1. Bits b1 and b2 in byte 1 of EF_{UAC_AIC} (defined in TS 31.102 clause 4.4.11.7), and all remaining bits of EF_{ACC} and EF_{UAC_AIC} are set to 0.	

Table 6.4.1-18: USIM Configuration 18

USIM field	Priority	Value	Access Technology Identifier
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN1.	
$EF_{PLMNwAcT}$	1	PLMN2	NG-RAN
$EF_{HPLMNwAcT}$	1	PLMN1	NG-RAN
EF_{UST}		Service n°126 (for UAC Access Identities Configuration) defined in TS 31.102 clause 4.2.8 is declared "available"	
EF_{UAC_AIC}		Bit b1 in byte 1 defined in TS 31.102 clause 4.4.11.7 is set to 1 and bit b2 in byte 1 is set to 0.	

Table 6.4.1-19: USIM Configuration 19

USIM field	Priority	Value	Access Technology Identifier
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN1.	
$EF_{PLMNwAcT}$	1	PLMN2	NG-RAN
$EF_{HPLMNwAcT}$	1	PLMN1	NG-RAN
EF_{UST}		Service n°126 (for UAC Access Identities Configuration) defined in TS 31.102 clause 4.2.8 is declared "available"	
EF_{UAC_AIC}		Bit b2 in byte 1 defined in TS 31.102 clause 4.4.11.7 is set to 1 and bit b1 in byte 1 is set to 0.	

Table 6.4.1-20: USIM Configuration 20

USIM field	Priority	Value	Access Technology Identifier
EF_{ECC}		144, 117	

Table 6.4.1-21: USIM configuration 21

USIM field	Priority	Value	Access Technology Identifier
$EF_{OPLMNwACT}$	1 2 3	PLMN14 PLMN13 PLMN2 Remaining defined entries use default values	NG-RAN NG-RAN NG-RAN
EF_{UST}		Service n°127 is not "available"	
EF_{HPPLMN}		1(=6 min)	
$EF_{5GS3GPPLOCI}$		FF FF…FF FE 01 (20 Bytes)	
$EF_{EPSLOCI}$		FF FF…FF FE 01 (18 Bytes)	
EF_{PSLOCI}		FF FF…FE FF 01 (14 Bytes)	
EF_{LOCI}		FF FF…FE FF 01 (11 Bytes)	
Note: LOCI fields of this USIM configuration may get overwritten upon execution of test cases using a UICC loaded with this USIM configuration. The test operator shall ensure that USIM contents are as per this table before each execution of a test case that requires this USIM configuration.			

Table 6.4.1-22: USIM Configuration 22

USIM field	Priority	Value	Access Technology Identifier
EF_{UST}		Service n°19 and n°51 defined in TS 31.102 clause 4.2.8 is declared "service not available"	

Table 6.4.1-23: USIM Configuration 23

USIM field	Priority	Value	Access Technology Identifier
EFUST		Service n°4 Service Dialling Numbers (SDN), Service n°99 URI support by UICC, Service n°89 eCall Data and Service n°112 eCall Data over IMS are available	
EF_{EST}		Services n°1 Fixed Dialling Numbers (FDN) is disabled	
EF_{SDN}		Two entries of SDNs, eCall Test Number (123456) and eCall reconfiguration number (345678)	
EF_{SDNURI}		Two entries of SDNs, eCall Test Number (tel:123456) and eCall reconfiguration number (tel:345678)	

Table 6.4.1-24: USIM Configuration 24

USIM field	Priority	Value	Access Technology Identifier
EFUST		Service n°2 Fixed Dialling Numbers (FDN), Service n°99 URI support by UICC, Service n°89 eCall Data and Service n°112 eCall Data over IMS are available	
EF_{EST}		Service n°1 Fixed Dialling Numbers (FDN) is enabled	
EF_{FDN}		Two entries of FDNs, eCall Test Number (123456) and eCall reconfiguration number (345678)	
EF_{FDNURI}		Two entries of FDNs, eCall Test Number (tel:123456) and eCall reconfiguration number (tel:345678)	

Table 6.4.1-25: USIM Configuration 25

USIM field	Priority	Value	Access Technology Identifier
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN15.	

Table 6.4.1-26: USIM Configuration 26

USIM field	Priority	Value	Access Technology Identifier
EFUST		Service n°2 Fixed Dialling Numbers (FDN), Service n°99 URI support by UICC, Service n°89 eCall Data and Service n°112 eCall Data over IMS are available	
EF_{EST}		Service n°1 Fixed Dialling Numbers (FDN) is enabled	
EF_{FDN}		Two entries of FDNs, eCall Test Number (123456) and eCall reconfiguration number (345678)	
EF_{FDNURI}		Two entries of FDNs, eCall Test Number (tel:123456) and eCall reconfiguration number (tel:345678)	
EF_{FPLMN}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN4.	

7 Test environments for RRM tests

7.0 General

7.0.1 Single PDU configuration for RRM testing

For RRM test case execution on 5G SA UEs defined in TS 38.533 [18]7.1 Requirements, IMS shall not be considered and UE's shall be able use RRC (IDLE, CONNECTED) preambles defined in TS 38.508-1 Section 4.5. Before entering RRC_CONNECTED or RRC_IDLE state during initial conditions or test procedure, it is recommended that UE is pre-configured with 0 or 1 PDU (non-IMS).

For EN-DC settings the corresponding requirement holds that IMS shall not be considered and it is recommended that UE is pre-configured with 0PDU/0PDN or 1PDU/1 PDN.

7.1 Test equipment requirements

7.1.1 Void

7.1.2 Void

7.1.3 Requirements for OTA test method

7.1.3.1 General

Editor's Note:

- The UE pre-configuration mentioned below to disable UL Tx diversity schemes shall be voided once a test methodology solution to minimize spectral flatness artefacts between TE and UE over all test points is defined.

For conformance testing using the OTA test environment, the UE under test shall be pre-configured with UL Tx diversity schemes disabled to account for single polarization System Simulator (SS) in the test environment. The UE under test may transmit with dual polarization.

7.1.3.2 RRM baseline setup

The RRM baseline setup shall fulfil the capabilities detailed in this section.

The following permitted test setups are considered for OTA RRM testing:

- DFF test setup as described in Clause B.2.2.
- Simplified DFF test setup as described in Clause B.2.3.
- IFF test setup as described in Clause B.2.4.
- Enhanced IFF test setup based in the IFF test setup described in Clause B.2.6, with the enhancements described in this clause.
- IFF+DFF Hybrid test setup as described in Clause B.7.2, with the enhancements described in this clause.

7.1.3.2.1 General description

TRxPs and Cells:

- Up to 2 NR transmission reception points TRxPs are emulated.

Support of interworking scenarios

- For test scenarios involving both, LTE and NR FR2 carriers, the test setup shall be capable to provide LTE link to the DUT. The emulated LTE cell provides a stable LTE signal without precise propagation modelling or path loss control between it and the DUT. No performance verification for and relative to LTE carriers is supported.

- For test scenarios involving both, NR FR1 and NR FR2 carriers, the test setup shall be capable to provide NR FR1 link to the DUT. The NR FR1 link has a stable and noise-free signal without precise path loss or polarization control. No performance verification for and relative to NR FR1 carriers is supported.

Antennas, polarization, simultaneously active AoAs:

- N dual-polarized antennas transmitting the signals from the emulated gNB sources to the DUT.

- The antennas transmit into the test zone in such a way that signal polarization does not prevent the DUT receiving a consistent, predictable power level.

- $N \geq N_{MAX\_AoAs}$, where N_{MAX_AoAs} is the maximum number of simultaneously active (emulating signal) angles of arrival AoAs. The N_{MAX_AoAs} for the different permitted test methods is:

  - For UE RRM baseline measurement setup based on DFF, the supported $N_{MAX\_AoAs} = 2$.

  - For UE RRM baseline measurement setup based on simplified DFF, the supported $N_{MAX\_AoAs} = 1$.

  - For UE RRM baseline measurement setup based on IFF, the supported $N_{MAX\_AoAs} = 1$.

  - For UE RRM baseline measurement setup based on enhanced IFF, the supported $N_{MAX\_AoAs} = 2$.

  - For UE RRM baseline measurement setup based on IFF+DFF, the supported $N_{MAX\_AoAs} = 2$.

Angular Relationship:

- A positioning system such that an angular relationship with two axes of freedom is provided between the DUT and the test system antennas (or the setup should provide equivalent functionality).

- For $N_{MAX\_AoAs} = 2$ the setup shall enable following relative angular relationships between the N_{MAX_AoAs} simultaneously active AoAs: 30°, 60°, 90°, 120° and 150°.

- For single active probe scenarios, in case that step change of AoA is required, the setup shall enable following relative angular change between initial and target AoA: 30°, 60°, 90°, 120° and 150°.

Wanted and noise (AWGN) signals can be transmitted from one or both active probes. Test description will define the exact signal/noise/SNR/SINR level per TRxP at the reference point.

Multiple DL transmission antenna ports:

- In case of multiple DL transmission antenna ports are required for RRM testing, the different antenna ports are mapped to different polarizations.

Measurement Uncertainty:

- The threshold MU for the equivalence framework for RRM will be based on direct far field (DFF) test method for $D \leq 5$ cm and on indirect far field (IFF) test method for $D > 5$ cm. If the MTSU for the IFF test method for $D \leq 5$ cm is finalized before DFF, the IFF MTSU shall be used as provisional threshold MU until DFF is completed.

7.1.3.2.2 Applicability criteria

The applicability criteria for the RRM measurement setup based on DFF is described in B.2.2.1.

The applicability criteria for the RRM measurement setup based on simplified DFF is described in B.2.3.1.

The applicability criteria for the RRM measurement setup based on IFF is described in B.2.4.1.

The applicability criteria for the RRM measurement setup based on enhanced IFF is described in B.2.6.1:

The applicability criteria for the RRM measurement setup based on IFF+DFF follows DFF as described in B.2.7.1:

7.1.3.2.3 Measurement distance and quiet zone

For RRM baseline measurement setup based on DFF:

- The measurement distance defined for the DFF UE RF test method described in B.2.2.4 applies.
- A DFF measurement setup has the centre of the Quiet Zone (QZ) located at the centre of the rotational axes (of DUT and measurement antenna). For the RRM measurement baseline setup based on DFF, the vertices of the N probes have to be aligned to the resulting centre of the QZ. The centre of the QZ is taken as the reference point for MU definition for each probe. The same QZ size as for DFF UE RF test method described in B.2.2.2 applies.

For RRM baseline measurement setup based on simplified DFF:

- The measurement distance defined for the simplified DFF UE RF test method described in B.2.3.4 applies.
- The same QZ size and definition as for simplified DFF UE RF test method described in B.2.3.2 applies.

For RRM baseline measurement setup based on IFF:

- The measurement distance defined for the IFF UE RF test method described in B.2.4.4 applies.
- The Quiet Zone definition for the IFF UE RF test method described in B.2.4.2 applies.

For RRM baseline measurement setup based on enhanced IFF:

- The measurement distance defined for the IFF UE RF test method described in B.2.6.4 applies.
- An IFF measurement setup has the centre of the Quiet Zone (QZ) located at the centre of the rotational axes (of DUT). For the RRM measurement baseline setup based on IFF, the reflectors have to be aligned to transmit a plane wave to the resulting centre of the QZ. The centre of the QZ is taken as the reference point for MU definition for each reflector. The QZ is a sphere of radius R. The size of the QZ defined in B.2.6.2 applies.

For RRM baseline measurement setup based on IFF+DFF:

- For IFF TRxPs, the measurement distance defined for the IFF UE RF test method described in B.2.4.4 applies.
- For DFF TRxPs, the measurement distance defined for the DFF UE RF test method described in B.2.2.4 applies.
- An IFF+DFF measurement setup has the centre of the Quiet Zone (QZ) located at the centre of the rotational axes (of DUT). For the RRM measurement baseline setup based on IFF+DFF, IFF reflectors have to be aligned to transmit a plane wave to the resulting centre of the QZ, and the vertices of the DFF probes have to be aligned to the resulting centre of the QZ. The centre of the QZ is taken as the reference point for MU definition for each reflector or probe. The QZ is a sphere of radius R. The size of the QZ is defined in B.2.7.2.

7.1.3.2.4 Quality of the quiet zone

For RRM, the quality of the quiet zone validation defined in Annex O of TS 38.521-2 [15] needs to assess only the single-directional EIRP and EIS metrics. For measurement setups with multiple probes, the QoQZ procedure needs to be performed with all probes present and in the conditions used for RRM testing.

The quality of the quiet zone for the RRM measurement setup based on DFF is described in B.2.2.3. The QoQZ validation needs to be performed only with the reference probe P0.

The quality of the quiet zone for the RRM measurement setup based on simplified DFF is described in B.2.3.3.

The quality of the quiet zone for the RRM measurement setup based on IFF is described in B.2.4.3.

The quality of the quiet zone for the RRM measurement setup based on enhanced IFF is described in B.2.6.3. The QoQZ validation needs to be performed only with the reference reflector, P0, if same sized IFF reflectors are used..

The quality of the quiet zone for the RRM measurement setup based on IFF+DFF is described in B.2.7.3. The QoQZ validation needs to be performed only with the one probe among all DFF probes and one probe among all IFF probes.

7.2 Reference test conditions

7.2.1 Signal levels

7.2.1.1 Void

7.2.1.2 Void

7.2.2 Physical layer parameters

7.2.2.1 Downlink physical layer parameters

As defined in clause 4.3.6 with the following exceptions:

Table 7.2.2.1-1: Physical layer parameters for DCI format 1_1

Derivation Path: Table 4.3.6.1.2.2-1			
Parameter	**Value**	**Value in binary**	**Condition**
PUCCH resource indicator	*PUCCH-ResourceId[1]* = 0 in pucch-ResourceSetID[1] as defined in Table 4.6.3-112 (Mapping as per Table 9.2.3-2 in TS 38.213 [22])	"000"	
PDSCH-to-HARQ_feedback timing indicator	corresponding to K1 slots as per Table 9.2.3-1 in TS 38.213 [22] and dl-DataToUL-ACK in Table 4.6.3-112 For 120KHz SCS K1 = 4 if mod(i,5) = 0 K1 = 3 if mod(i,5) = 1 K1 = 7 if mod(i,5) = 2 where i is slot index per frame; i = {0,…,79}	-	FR2
PDSCH-to-HARQ_feedback timing indicator	corresponding to K1 slots as per Table 9.2.3-1 in TS 38.213 [22] and dl-DataToUL-ACK in Table 4.6.3-112 K1 = 6 if mod(i,10) = 8 K1 = 5 if mod(i,10) = 0 K1 = 5 if mod(i,10) = 1 K1 = 5 if mod(i,10) = 2 K1 = 5 if mod(i,10) = 9 where i is slot index per frame; i = {0,…,19}		TDDConf.2.1

Condition	Explanation
TDDConf.2.1	TDD UL/DL configuration for SCS=30kHz

7.2.3 Default test frequencies

7.2.3.1 Default test frequencies FR1 NR operating bands

For FR1 NR operating bands the test frequencies for RRM testing are specified in clause 4.3.1.1.

7.2.3.2 Default test frequencies FR2 operating bands

7.2.3.2.1 Reference test frequencies for NR operating band n257

Table 7.2.3.2.1-1: Test frequencies for NR operating band n257 (SCS 120 kHz, ΔF_{Raster} 120 kHz, SSB SCS=120kHz, kSSB=0 and Offset(RBs)=0)

CBW [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absolute FrequencyPoint A* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN
100	66	Downlink & Uplink	Mid	28015.68	2079427	27968.16	2078635	0	120	2247
100	66	Downlink & Uplink	Adjacent inter-frequency cell	28119.36	2081155	28071.84	2080363	0	120	2247
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-8 in TS 38.213 [22]. The valu controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource 60 kHz subcarrier spacing for FR2. Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lo parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.										

Table 7.2.3.2.1-2: Test frequencies for NR operating band n257 (SCS 120 kHz, ΔF_{Raster} 120 kHz, SSB SCS=240kHz, kSSB=0 and Offset(RBs)=0)

CBW [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absolute FrequencyPoint A* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN
100	66	Downlink & Uplink	Mid	28001.28	2079187	27953.76	2078395	0	240	2247
100	66	Downlink & Uplink	Adjacent inter-frequency cell	28104.96	2080915	28057.44	2080123	0	240	2247
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-10 in TS 38.213 [22]. The va controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource 60 kHz subcarrier spacing for FR2. Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lo parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.										

7.2.3.2.2 Reference test frequencies for NR operating band n258

Table 7.2.3.2.2-1: Test frequencies for NR operating band n258 (SCS 120 kHz, ΔF_{Raster} 120 kHz SSB SCS=120kHz, kSSB=0 and Offset(RBs)=0)

CBW [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absolute FrequencyPoint A* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySS* [ARFCN]
100	66	Downlink & Uplink	Mid	25890.24	2044003	25842.72	2043211	0	120	22349	20434
100	66	Downlink & Uplink	Adjacent inter-frequency cell	25993.92	2045731	25946.4	2044939	0	120	22355	20451
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-8 in TS 38.213 [22]. The value of CORE controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource blocks ass 60 kHz subcarrier spacing for FR2.											
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.											

Table 7.2.3.2.2-2: Test frequencies for NR operating band n258 (SCS 120 kHz, ΔF_{Raster} 120 kHz, SSB SCS=240kHz, kSSB=0 and Offset(RBs)=0)

CBW [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absolute FrequencyPoint A* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absoluteFrequencySS* [ARFCN]
100	66	Downlink & Uplink	Mid	25893.12	2044051	25845.6	2043259	0	240	22350	20437
100	66	Downlink & Uplink	Adjacent inter-frequency cell	25996.8	2045779	25949.28	2044987	0	240	22356	20454
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-10 in TS 38.213 [22]. The value of COR controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource blocks ass 60 kHz subcarrier spacing for FR2.											
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.											

7.2.3.2.3 Reference test frequencies for NR operating band n259

Table 7.2.3.2.3-1: Test frequencies for NR operating band n259 (SCS 120 kHz, ΔF_{Raster} 120 kHz SSB SCS=120kHz, kSSB=0 and Offset(RBs)=0)

CBW [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absolute FrequencyPoint A* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absol Frequ cySS* [ARF
100	66	Downlink & Uplink	Mid	41511.36	2304355	41463.84	2303563	0	120	23253	23038
100	66	Downlink & Uplink	Adjacent inter-frequency cell	41615.04	2306083	41567.52	2305291	0	120	23259	23055
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-8 in TS 38.213 [22]. The value of CORE controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource blocks ass 60 kHz subcarrier spacing for FR2.											
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.											

Table 7.2.3.2.3-2: Test frequencies for NR operating band n259 (SCS 120 kHz, ΔF_{Raster} 120 kHz, SSB SCS=240kHz, kSSB=0 and Offset(RBs)=0)

CBW [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absolute FrequencyPoint A* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absol Frequ cySS* [ARF
100	66	Downlink & Uplink	Mid	41514.24	2304403	41466.72	2303611	0	240	23254	23040
100	66	Downlink & Uplink	Adjacent inter-frequency cell	41617.92	2306131	41570.4	2305339	0	240	23260	23058
Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-10 in TS 38.213 [22]. The value of COR controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource blocks ass 60 kHz subcarrier spacing for FR2.											
Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.											

7.2.3.2.4 Reference test frequencies for NR operating band n260

Table 7.2.3.2.4-1: Test frequencies for NR operating band n260 (SCS 120 kHz, ΔF_{Raster} 120 kHz SSB SCS=120kHz, kSSB=0 and Offset(RBs)=0)

CBW [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absolute FrequencyPoint A* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absol Frequ cySS* [ARF
100	66	Downlink & Uplink	Mid	38504.64	2254243	38457.12	2253451	0	120	23079	2253
100	66	Downlink & Uplink	Adjacent inter-frequency cell	38608.32	2255971	38560.8	2255179	0	120	23085	2255

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-8 in TS 38.213 [22]. The value of CORE controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource blocks ass 60 kHz subcarrier spacing for FR2.

Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.

Table 7.2.3.2.4-2: Test frequencies for NR operating band n260 (SCS 120 kHz, ΔF_{Raster} 120 kHz, SSB SCS=240kHz, kSSB=0 and Offset(RBs)=0)

CBW [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absolute FrequencyPoint A* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absol Frequ cySS* [ARF
100	66	Downlink & Uplink	Mid	38507.52	2254291	38460	2253499	0	240	23080	2253
100	66	Downlink & Uplink	Adjacent inter-frequency cell	38611.2	2256019	38563.68	2255227	0	240	23086	2255

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-10 in TS 38.213 [22]. The value of COR controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource blocks ass 60 kHz subcarrier spacing for FR2.

Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.

7.2.3.2.5 Reference test frequencies for NR operating band n261

Table 7.2.3.2.5-1: Test frequencies for NR operating band n261 (SCS 120 kHz, ΔF_{Raster} 120 kHz SSB SCS=120kHz, kSSB=0 and Offset(RBs)=0)

CBW [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absolute FrequencyPoint A* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absol Frequ cySS* [ARF
100	66	Downlink & Uplink	Mid	27929.28	2077987	27881.76	2077195	0	120	22467	2077
100	66	Downlink & Uplink	Adjacent inter-frequency cell	28032.96	2079715	27985.44	2078923	0	120	22473	2079

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-8 in TS 38.213 [22]. The value of CORE controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource blocks ass 60 kHz subcarrier spacing for FR2.

Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.

Table 7.2.3.2.5-2: Test frequencies for NR operating band n261 (SCS 120 kHz, ΔF_{Raster} 120 kHz, SSB SCS=240kHz, kSSB=0 and Offset(RBs)=0)

CBW [MHz]	*carrier Bandwidth* [PRBs]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	point A [MHz]	*absolute FrequencyPoint A* [ARFCN]	*offsetToCarrier* [Carrier PRBs]	SS block SCS [kHz]	GSCN	*absol Frequ cySS* [ARF
100	66	Downlink & Uplink	Mid	27932.16	2078035	27884.64	2077243	0	240	22468	2077
100	66	Downlink & Uplink	Adjacent inter-frequency cell	28035.84	2079763	27988.32	2078971	0	240	22474	2079

Note 1: The CORESET#0 Index and the associated CORESET#0 Offset refers to Table 13-10 in TS 38.213 [22]. The value of COR controlResourceSetZero (pdcch-ConfigSIB1) in the MIB. The offsetToPointA IE is expressed in units of resource blocks ass 60 kHz subcarrier spacing for FR2.

Note 2: The parameter Offset Carrier CORESET#0 specifies the offset from the lowest subcarrier of the carrier and the lowest subc parameter $\Delta F_{OffsetCORESET\text{-}0\text{-}Carrier}$ in Annex C expressed in number of common RBs.

7.3 Default NG-RAN RRC message and information elements contents for RRM

7.3.0 General definitions

This section defines general concepts and conditions used in the RRM message contents in clause 7.3:

- CSI-RS for Tracking, CSI reporting and beam management

Table 7.3.0-1: Definitions of CSI-RS for Tracking, CSI reporting and beam management

Type	Short version	Explanation
CSI-RS for tracking	TRS	Corresponds to TRS.X.Y FDD/TDD RMCs in TS 38.533 [18]
CSI-RS for BM	BM	Corresponds to CSI-RS.X.2 FDD/TDD RMCs in TS 38.533 [18]
CSI-RS for CSI reporting	CSI	Corresponds to CSI-RS.X.1 FDD/TDD RMCs in TS 38.533 [18]
CSI-RS for IM	CSI-IM	CSI-IM resources for CSI reporting. Needed when CSI-RS.X.1 FDD/TDD RMCs are configured.

Editor's Note: The message contents for CSI-RS.X.3/4 FDD/TDD RMCs in TS 38.533 [18] are not yet defined.

7.3.1 Radio resource control information elements for RRM

As defined in clause 4.6.3 with the following exceptions:

– *TDD-UL-DL-ConfigCommon*

Table 7.3.1-1: TDD-UL-DL-ConfigCommon

Derivation Path: Table 4.6.3-192			
Information Element	**Value/remark**	**Comment**	**Condition**
TDD-UL-DL-ConfigCommon ::= SEQUENCE {			
referenceSubcarrierSpacing	SubcarrierSpacing		
pattern1 SEQUENCE {			
dl-UL-TransmissionPeriodicity	ms0p625		TDDConf.3.1
nrofDownlinkSlots	3		TDDConf.2.1, TDDConf.3.1
	1		TDDConf.1.1
nrofDownlinkSymbols	10		TDDConf.1.1, TDDConf.3.1
	6		TDDConf.2.1
nrofUplinkSlots	2		TDDConf.1.1
	1		TDDConf.3.1
	4		TDDConf.2.1
nrofUplinkSymbols	4		TDDConf.2.1
	2		TDDConf.1.1, TDDConf.3.1
dl-UL-TransmissionPeriodicity-v1530	Not present		
	ms4		TDDConf.1.1, TDDConf.2.1
}			
pattern2	Not present		
pattern2 SEQUENCE {			TDDConf.1.1, TDDConf.2.1
dl-UL-TransmissionPeriodicity	ms1		TDDConf.1.1, TDDConf.2.1
nrofDownlinkSlots	1		TDDConf.1.1
	2		TDDConf.2.1
nrofDownlinkSymbols	0		TDDConf.1.1, TDDConf.2.1
nrofUplinkSlots	0		TDDConf.1.1, TDDConf.2.1
nrofUplinkSymbols	0		TDDConf.1.1, TDDConf.2.1
}			
}			

Condition	Explanation
TDDConf.1.1	TDD UL/DL configuration for SCS=15kHz
TDDConf.2.1	TDD UL/DL configuration for SCS=30kHz
TDDConf.3.1	TDD UL/DL configuration for SCS=120kHz

– *FilterCoefficient*

Table 7.3.1-2: FilterCoefficient

Derivation Path: Table 4.6.3-57			
Information Element	**Value/remark**	**Comment**	**Condition**
FilterCoefficient	fc0	L3 filtering is not used	

– *SSB-MTC*

Table 7.3.1-3: *SSB-MTC*

Derivation Path: Table 4.6.3-185			
Information Element	**Value/remark**	**Comment**	**Condition**
SSB-MTC ::= SEQUENCE {			
periodicityAndOffset CHOICE {			
sf20	0		SMTC.1, SMTC.2
	10		SMTC.4, SMTC.5
	17		SMTC.6
sf160	0		SMTC.3
}			
duration	sf1		SMTC.1, SMTC.3, SMTC.4
	sf5		SMTC.2, SMTC.5 SMTC.6
}			

Condition	Explanation
SMTC.n	SMTC pattern n as defined in 38.533 Annex A.4

– *SubcarrierSpacing*

Table 7.3.1-3a: *SubcarrierSpacing*

Derivation Path: Table 4.6.3-188			
Information Element	**Value/remark**	**Comment**	**Condition**
ssbSubcarrierSpacing	kHz15		SSB.1 FR1, SSB.3 FR1 or SSB.5 FR1
	kHz30		SSB.2 FR1, SSB.4 FR1 or SSB.6 FR1
	kHz120		SSB.1 FR2, SSB.3 FR2, SSB.5 FR2 or SSB.7 FR2
	kHz240		SSB.2 FR2, SSB.4 FR2, SSB.6 FR2 or SSB.8 FR2

Condition	Explanation
SSB.n FR1	SSB RMC n for FR1 as defined in 38.533 Annex A.3.1
SSB.n FR2	SSB RMC n for FR2 as defined in 38.533 Annex A.3.2

– *ServingCellConfigCommon*

Table 7.3.1-4: *ServingCellConfigCommon*

Derivation Path: Table 4.6.3-168			
Information Element	**Value/remark**	**Comment**	**Condition**
ServingCellConfigCommon ::= SEQUENCE {			
ssb-PositionsInBurst CHOICE {			
shortBitmap	1000	1 SS Block in low FR1 frequencies	LOW_FREQ
	1100	2 SS Blocks in low FR1 frequencies	2SSB AND LOW_FREQ
mediumBitmap	10000000	1 SS Block in high FR1 frequencies	HIGH_FREQ
	11000000	2 SS Blocks in high FR1 frequencies	2SSB AND HIGH_FREQ
longBitmap	10000000000000000000000000000000000000000000000000000000000000000000000000000000	1 SS Block in FR2	FR2
	11000000000000000000000000000000000000000000000000000000000000000000000000000000	2 SS Blocks in FR2	2SSB AND FR2
}			
ssb-periodicityServingCell	ms20		
ssbSubcarrierSpacing	kHz15		
	kHz30		SCS30kHz
	kHz120		FR2
}	kHz240		FR2 AND SCS240kHz

Condition	Explanation
LOW_FREQ	Frequency <= 2.4 GHz for TDD or Frequency <= 3 GHz for FDD
HIGH_FREQ	FR1 and (Frequency > 2.4 GHz for TDD or Frequency > 3 GHz for FDD or CASE_C)
2SSB	The SSB pattern as defined in TS 38.533 [18] Annex A.3.1 contain 2 SSBs within a burst
SCS30kHz	The SSB pattern as defined in TS 38.533 [18] Annex A.3.1 is for 30 kHz SCS
SCS240kHz	The SSB pattern as defined in TS 38.533 [18] Annex A.3.1 is for 240 kHz SCS

– *ServingCellConfigCommonSIB*

Table 7.3.1-5: *ServingCellConfigCommonSIB-RRM*

Derivation Path: Table 4.6.3-169			
Information Element	**Value/remark**	**Comment**	**Condition**
ServingCellConfigCommonSIB ::= SEQUENCE {			
ssb-PositionsInBurst SEQUENCE {			
inOneGroup	’1000 0000’B	When carrier frequency <= 3 GHz for FDD or <= 2.4 GHz for TDD, only the 4 leftmost bits are valid;	
	’1100 0000’B		2SSB
groupPresence	Not present		
	’1000 0000’B		FR2
}			
}			

Condition	Explanation
FR2	Frequency range 2
2SSB	For configuration with 2 SS Blocks

- CSI-MeasConfig

Table 7.3.1-6: *CSI-MeasConfig for RRM*

Derivation Path: Table 4.6.3-38			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-MeasConfig::= SEQUENCE {			
nzp-CSI-RS-ResourceToAddModList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-Resources)) OF NZP-CSI-RS-Resource {	$n_1+n_2+n_3+n_4+n_5$ entries	n_1=1 if CSI-RS for CSI is configured in test case, n_1=0 otherwise; n_2=0 if CSI-RS for BM is not configured in the test case. If CSI-RS for BM is configured in the test case, n_2 = 2 if 2SSB, n_2 = 1 otherwise n_3=4 if TRS is configured in test case, n_3=0 otherwise; n_4=4 if second resource set of TRS is configured in test case, n_4=0 otherwise; n_5=2 if aperiodic CSI-RS for BM is configured in test case, n_5=0 otherwise;	
NZP-CSI-RS-Resource[k, k=1..n_1]	NZP-CSI-RS-Resource for CSI	entry 1	n_1>0
NZP-CSI-RS-Resource[k, k=n_1+1.. n_1+n_2]	NZP-CSI-RS-Resource for BM (k-n_1-1)	entry ...	n_2>0
NZP-CSI-RS-Resource[k, k= n_1+n_2+1.. $n_1+n_2+n_3$]	NZP-CSI-RS-Resource for TRS (k-n_1-n_2)	entry ...	n_3>0
NZP-CSI-RS-Resource[k, k= $n_1+n_2+n_3$+1.. $n_1+n_2+n_3+n_4$]	NZP-CSI-RS-Resource for TRS (k-n_1-n_2-n_3) with condition SECOND_SET	entry ...	n_4>0
NZP-CSI-RS-Resource[k, k= $n_1+n_2+n_3+n_4$+1.. $n_1+n_2+n_3+n_4+n_5$]	NZP-CSI-RS-Resource for BM (k-n_1-n_2-n_3-n_4) with condition APERIODIC	entry ...	n_5>0
}			
nzp-CSI-RS-ResourceSetToAddModList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSets)) OF NZP-CSI-RS-ResourceSet {	$m_1+m_2+m_3+m_4+m_5$ entries	m_i=1 if n_i>0, m_i=0 otherwise	
NZP-CSI-RS-ResourceSet[k, k=1..m_1]	NZP-CSI-RS-ResourceSet for CSI	entry 1	n_1>0
NZP-CSI-RS-ResourceSet[k, k=m_1+1.. m_1+m_2]	NZP-CSI-RS-ResourceSet for BM	entry ...	n_2>0
NZP-CSI-RS-ResourceSet[k, k= m_1+m_2+1.. $m_1+m_2+m_3$]	NZP-CSI-RS-ResourceSet for TRS	entry ...	n_3>0
NZP-CSI-RS-ResourceSet[k, k= $m_1+m_2+m_3$+1.. $m_1+m_2+m_3+m_4$]	NZP-CSI-RS-ResourceSet for TRS with condition SECOND_SET	entry ...	n_4>0
NZP-CSI-RS-ResourceSet[k, k= $m_1+m_2+m_3+m_4$+1.. $m_1+m_2+m_3+m_4+m_5$]	NZP-CSI-RS-ResourceSet for BM with condition APERIODIC	entry ...	n_5>0
}			
csi-IM-ResourceToAddModList SEQUENCE (SIZE (1..maxNrofCSI-IM-Resources)) OF CSI-IM-Resource {	1 entry		n_1>0

CSI-IM-Resource[1]	CSI-IM-Resource-RRM	entry 1	
}			
csi-IM-ResourceToAddModList	Not present		n_1=0
csi-IM-ResourceSetToAddModList SEQUENCE (SIZE (1..maxNrofCSI-IM-ResourceSets)) OF CSI-IM-ResourceSet {	1 entry		n_1>0
CSI-IM-ResourceSet[1]	CSI-IM-ResourceSet-RRM	entry 1	
}			
csi-IM-ResourceSetToAddModList	Not present		n_1=0
csi-SSB-ResourceSetToAddModList SEQUENCE (SIZE (1..maxNrofCSI-SSB-ResourceSets)) OF CSI-SSB-ResourceSet {			
CSI-SSB-ResourceSet[1]	CSI-SSB-ResourceSet-RRM	entry 1	
}			
csi-ResourceConfigToAddModList SEQUENCE (SIZE (1..maxNrofCSI-ResourceConfigurations)) OF CSI-ResourceConfig {	p_1+m_2+m_3+m_5 entries	p_1=m_1+1 if n_1>0, p_1=0 otherwise.	
CSI-ResourceConfig[k, k=1..m_1]	CSI-ResourceConfig for CSI	entry 1	n_1>0
CSI-ResourceConfig[k, k=p_1]	CSI-ResourceConfig for CSI-IM	entry ...	n_1>0
CSI-ResourceConfig[k, k=p_1+1.. p_1+m_2]	CSI-ResourceConfig for BM	entry ...	n_2>0
CSI-ResourceConfig[k, k= p_1+m_2+1.. p_1+m_2+m_3]	CSI-ResourceConfig for TRS	entry ...	n_3>0 and n_4=0
	CSI-ResourceConfig for TRS with condition SECOND_SET		n_4>0
CSI-ResourceConfig[k, k= p_1+m_2+m_3+1.. p_1+m_2+m_3+m_5]	CSI-ResourceConfig for BM with condition APERIODIC	entry ...	n_5>0
}			
csi-ReportConfigToAddModList SEQUENCE (SIZE (1..maxNrofCSI-ReportConfigurations)) OF CSI-ReportConfig {	r_1+r_2+r_5+s_1 entries	r1 = 1 if CSI Reporting for CSI is configured in test case, r1 = 0 otherwise; r2 = 1 if CSI Reporting for BM is configured in test case, r2 = 0 otherwise; r5 = 1 if aperiodic CSI Reporting for BM is configured in test case, r5 = 0 otherwise; s_1 = 1 if: - this CSI-MeasConfig is configured on NR SpCell, and, - CSI-RS for CSI is configured on SCell in TC, and, - SCell is not a PUCCH-SCell Otherwise s_1 = 0.	
CSI-ReportConfig[k, k=1..r_1]	CSI-ReportConfig for CSI	entry 1	r_1>0
CSI-ReportConfig[k, k=r_1+1.. r_1+r_2]	CSI-ReportConfig for BM	entry ...	r_2>0

CSI-ReportConfig[k, k=r_1+r_2+1.. r_1+r_2+r_5]	CSI-ReportConfig for BM with condition APERIODIC	entry ...	r_5>0
CSI-ReportConfig[k, k=r_1+r_2+r_5+1.. r_1+r_2+r_5+s_1+1]	CSI-ReportConfig for CSI with condition SCELL_CSI_ON_SPCELL	entry ...	s_1>0
}			
reportTriggerSize	Not present		
	1		n_5>0
aperiodicTriggerStateList CHOICE {	Not present		
setup	CSI-AperiodicTriggerStateList		n_5>0
}			
}			

Condition	Explanation
2SSB	For configuration with 2 SS Blocks

– *NZP-CSI-RS-Resource for TRS*

Table 7.3.1-7: NZP-CSI-RS-Resource for TRS(Id)

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-Resource ::= SEQUENCE {			
NZP-CSI-RS-ResourceId	NZP-CSI-RS-ResourceId for TRS(Id)		
	NZP-CSI-RS-ResourceId for TRS(Id) with Condition SECOND_SET		SECOND_SET
CSI-RS-ResourceMapping	CSI-RS-ResourceMapping for TRS(Id)		
	CSI-RS-ResourceMapping for TRS(Id) with condition SECOND_SET		SECOND_SET
powerControlOffset	0		
powerControlOffsetSS	db0		
scramblingID	PhysCellId	PCI of the cell sending the TRS	
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset for TRS(Id)		
qcl-InfoPeriodicCSI-RS	TCI-StateId-RRM(0)		
	TCI-StateId-RRM(1)		SECOND_SET
}			

Condition	Explanation
SECOND_SET	For resource belong to the second resource set for TRS, only applies to FR2 test

– *NZP-CSI-RS-Resource for CSI*

Table 7.3.1-7A: NZP-CSI-RS-Resource for CSI

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-Resource ::= SEQUENCE {			
nzp-CSI-RS-ResourceId	NZP-CSI-RS-ResourceId for CSI		
resourceMapping	CSI-RS-ResourceMapping for CSI		
powerControlOffset	0		
powerControlOffsetSS	db0		
scramblingID	0		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset for CSI		
qcl-InfoPeriodicCSI-RS	TCI-StateId-RRM(0)		
}			

– *NZP-CSI-RS-Resource for BM*

Table 7.3.1-7B: NZP-CSI-RS-Resource for BM(Id)

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-Resource ::= SEQUENCE {			
nzp-CSI-RS-ResourceId	NZP-CSI-RS-ResourceId for BM (Id)		
	NZP-CSI-RS-ResourceId for BM (Id) with condition APERIODIC		APERIODIC
resourceMapping	CSI-RS-ResourceMapping for BM (Id)		
powerControlOffset	0		
powerControlOffsetSS	db0		
scramblingID	0		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset for BM		
	Not present		APERIODIC
qcl-InfoPeriodicCSI-RS	TCI-StateId-RRM(Id)		
	Not present		APERIODIC
}			

Condition	Explanation
APERIODIC	For apeiodic CSI-RS resources

– *NZP-CSI-RS-Resource for TRS*

Table 7.3.1-7C: NZP-CSI-RS-ResourceId for TRS(Id)

Derivation Path: Table 4.6.3-86			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-ResourceId	n+Id-1	n is the first NZP-CSI-RS-ResourceId allocated for TRS resource set. Value of n is left to internal implementation Id = 1,2,3,4	
	n+Id+3		SECOND_SET

Condition	**Explanation**
SECOND_SET	For the second TRS resource set configured in test, only applies to FR2 test

– *NZP-CSI-RS-ResourceId for CSI*

Table 7.3.1-7D: NZP-CSI-RS-ResourceId for CSI

Derivation Path: Table 4.6.3-86			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-ResourceId	n	n is the NZP-CSI-RS-ResourceId allocated for CSI-RS for CSI report. Value of n is left to internal implementation	

– *NZP-CSI-RS-ResourceId for BM*

Table 7.3.1-7E: NZP-CSI-RS-ResourceId for BM(Id)

Derivation Path: Table 4.6.3-86			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-ResourceId	n+Id	n is the first NZP-CSI-RS-ResourceId allocated for CSI-RS for BM. Value of n is left to internal implementation Id = 0,1	
	m+Id	m is the first NZP-CSI-RS-ResourceId allocated for aperiodic CSI-RS for BM. Value of m is left to internal implementation Id = 0,1	APERIODIC

Condition	**Explanation**
APERIODIC	For apeiodic CSI-RS resources

– *CSI-RS-ResourceMapping for TRS*

Table 7.3.1-8: CSI-RS-ResourceMapping for TRS(Id)

Derivation Path: Table 4.6.3-45 with condition TRS			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row1	0001	k_0=0 for CSI-RS resource 1,2,3,4	
}			
firstOFDMSymbolInTimeDomain	5	l_0 = 5 for CSI-RS resource 1 and 3	(Id = 1 or 3) AND FR1
	9	l_0 = 9 for CSI-RS resource 2 and 4	(Id = 2 or 4) AND FR1
	1		(Id = 1 or 3) AND FR2
	2		(Id = 1 or 3) AND FR2 AND SECOND_SET
	5		(Id = 2 or 4) AND FR2
	6		(Id = 1 or 3) AND FR2 AND SECOND_SET
nrofPorts	p1	1 for CSI-RS resource 1,2,3,4	
freqBand	CSI-FrequencyOccupation-RRM		
}			

Condition	Explanation
SECOND_SET	For the second resource set for TRS configured in test, only applies to FR2 test

– *CSI-RS-ResourceMapping for CSI*

Table 7.3.1-8A: CSI-RS-ResourceMapping for CSI

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
other	000001		
}			
nrofPorts	p2		
firstOFDMSymbolInTimeDomain	5		NOT SCS15
	4		SCS15
freqBand	CSI-FrequencyOccupation-RRM		
}			

– *CSI-RS-ResourceMapping for BM*

Table 7.3.1-8B: CSI-RS-ResourceMapping for BM (Id)

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row1	0001		
}			
nrofPorts	p1		
firstOFDMSymbolInTimeDomain	6		Id = 0
	10		Id = 1
cdm-Type	noCDM		
density CHOICE {			
three	NULL		
}			
freqBand	CSI-FrequencyOccupation-RRM		
}			

– *CSI-RS-ResourceMapping for ZP-CSI-RS*

Table 7.3.1-8C: CSI-RS-ResourceMapping-ZP-CSI-RS

Derivation Path: Table 4.6.3-45			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-RS-ResourceMapping ::= SEQUENCE {			
frequencyDomainAllocation CHOICE {			
row4	100	$k_0 = 8$	
}			
nrofPorts	p4		
firstOFDMSymbolInTimeDomain	4		
cdm-Type	fd-CDM2		
density CHOICE {			
one	NULL		
}			
freqBand	CSI-FrequencyOccupation-RRM		
}			

– *CSI-ResourcePeriodicityAndOffset for TRS*

Table 7.3.1-9: CSI-ResourcePeriodicityAndOffset for TRS(Id)

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
slots80	40		(Id = 1 or 2) AND SCS120
	41		(Id = 3 or 4) AND SCS120
slots40	20	Periodicity 40 slots and offset 20 for CSI-RS resource 1 and 2	(Id = 1 or 2) AND SCS30
	21	Periodicity 40 slots and offset 21 for CSI-RS resource 3 and 4	(Id = 3 or 4) AND SCS30
slots20	10	Periodicity 20 slots and offset 10 for CSI-RS resource 1 and 2	(Id = 1 or 2) AND SCS15
	11	Periodicity 20 slots and offset 11 for CSI-RS resource 3 and 4	(Id = 3 or 4) AND SCS15
}			

– *CSI-ResourcePeriodicityAndOffset for CSI*

Table 7.3.1-9A: CSI-ResourcePeriodicityAndOffset for CSI

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
slots5	1		SCS15
slots10	2		SCS30
slots40	8		SCS120
}			

– *CSI-ResourcePeriodicityAndOffset for BM*

Table 7.3.1-9B: CSI-ResourcePeriodicityAndOffset for BM

Derivation Path: Table 4.6.3-43			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourcePeriodicityAndOffset ::= CHOICE {			
slots10	1		SCS15
slots20	2		SCS30
slots80	16		SCS120
}			

– *CSI-FrequencyOccupation*

Table 7.3.1-10: CSI-FrequencyOccupation-RRM

Derivation Path: Table 4.6.3-33			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-FrequencyOccupation ::= SEQUENCE {			
startingRB	4*floor(n/4)	n is the start RB of active BWP floor() means rounding down to the nearest integer startingRB can only be multiple of 4	
nrofRBs	max(4*ceil(n/4-floor(n/4)+m/4),24)	m is the bandwidth of active BWP ceil() means rounding up to the nearest integer Bandwidth of CSI-RS used in RRM test is required to be same as active BWP according to 38.133. nrofRBs shall be no less than 24 and shall be multiple of 4	
}			

– *NZP-CSI-RS-ResourceSet for TRS*

Table 7.3.1-11: NZP-CSI-RS-ResourceSet for TRS

Derivation Path: Table 4.6.3-87 with Condition TRS			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-Resource ::= SEQUENCE {			
nzp_CSI_ResourceSetId	NZP-CSI-RS-ResourceSetId-TRS		
	NZP-CSI-RS-ResourceSetId-TRS with condition SECOND_SET		SECOND_SET
nzp-CSI-RS-Resources SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourcesPerSet)) OF NZP-CSI-RS-ResourceId {	4 entries		
NZP-CSI-RS-ResourceId[1]	NZP-CSI-RS-ResourceId for TRS(1)	entry 1	
NZP-CSI-RS-ResourceId[2]	NZP-CSI-RS-ResourceId for TRS(2)	entry 2	
NZP-CSI-RS-ResourceId[3]	NZP-CSI-RS-ResourceId for TRS(3)	entry 3	
NZP-CSI-RS-ResourceId[4]	NZP-CSI-RS-ResourceId for TRS(4)	entry 4	
}			
nzp-CSI-RS-Resources SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourcesPerSet)) OF NZP-CSI-RS-ResourceId {	4 entries		SECOND_SET
NZP-CSI-RS-ResourceId[1]	NZP-CSI-RS-ResourceId for TRS(1) with condition SECOND_SET	entry 1	
NZP-CSI-RS-ResourceId[2]	NZP-CSI-RS-ResourceId for TRS(2) with condition SECOND_SET	entry 2	
NZP-CSI-RS-ResourceId[3]	NZP-CSI-RS-ResourceId for TRS(3) with condition SECOND_SET	entry 3	
NZP-CSI-RS-ResourceId[4]	NZP-CSI-RS-ResourceId for TRS(4) with condition SECOND_SET	entry 4	
}			
}			

Condition	Explanation
SECOND_SET	For the second TRS resource set configured in test, only applies to FR2 test

– *NZP-CSI-RS-ResourceSet for CSI*

Table 7.3.1-11A: NZP-CSI-RS-ResourceSet for CSI

Derivation Path: Table 4.6.3-87			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-Resource ::= SEQUENCE {			
nzp_CSI_ResourceSetId	NZP-CSI-RS-ResourceSetId-CSI		
nzp-CSI-RS-Resources SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourcesPerSet)) OF NZP-CSI-RS-ResourceId {	1 entry		
NZP-CSI-RS-ResourceId[1]	NZP-CSI-RS-ResourceId for CSI	entry 1	
}			
repetition	Not present		
}			

– *NZP-CSI-RS-ResourceSet for BM*

Table 7.3.1-11B: NZP-CSI-RS-ResourceSet for BM

Derivation Path: Table 4.6.3-87			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-ResourceSet ::= SEQUENCE {			
nzp-CSI-ResourceSetId	NZP-CSI-RS-ResourceSetId-BM		
	NZP-CSI-RS-ResourceSetId-BM with condition APERIODIC		APERIODIC
nzp-CSI-RS-Resources SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourcesPerSet)) OF NZP-CSI-RS-ResourceId {	2 entries		
NZP-CSI-RS-ResourceId[1]	NZP-CSI-RS-ResourceId for BM (0)	entry 1	
	NZP-CSI-RS-ResourceId for BM (0) with condition APERIODIC		APERIODIC
NZP-CSI-RS-ResourceId[2]	NZP-CSI-RS-ResourceId for BM (1)	entry 2	
	NZP-CSI-RS-ResourceId for BM (1) with condition APERIODIC		APERIODIC
}			
aperiodicTriggeringOffset	4		APERIODIC
}			

Condition	Explanation
APERIODIC	For apeiodic CSI-RS resources

– *NZP-CSI-RS-ResourceSetId for TRS*

Table 7.3.1-11C: NZP-CSI-RS-ResourceSetId-TRS

Derivation Path: Table 4.6.3-88			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-ResourceSetId	n	n is the first NZP-CSI-RS-ResourceSetId allocated for TRS resource set. Value of n is left to internal implementation	
	n+1		SECOND_SET

Condition	Explanation
SECOND_SET	For the second TRS resource set configured in test, only applies to FR2 test

– *NZP-CSI-RS-ResourceSetId for CSI*

Table 7.3.1-11D: NZP-CSI-RS-ResourceSetId-CSI

Derivation Path: Table 4.6.3-88			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-ResourceSetId	n	n is the NZP-CSI-RS-ResourceSetId allocated for resource set of CSI-RS for CSI reporting. Value of n is left to internal implementation	

– *NZP-CSI-RS-ResourceSetId for BM*

Table 7.3.1-11E: NZP-CSI-RS-ResourceSetId-BM

Derivation Path: Table 4.6.3-88			
Information Element	**Value/remark**	**Comment**	**Condition**
NZP-CSI-RS-ResourceSetId	n	n is the NZP-CSI-RS-ResourceSetId allocated for resource set of CSI-RS for BM. Value of n is left to internal implementation	
	m	m is the NZP-CSI-RS-ResourceSetId allocated for resource set of aperiodic CSI-RS for BM. Value of m is left to internal implementation	APERIODIC

Condition	**Explanation**
APERIODIC	For apeiodic CSI-RS resources

– *CSI-ResourceConfig for TRS*

Table 7.3.1-12: CSI-ResourceConfig for TRS

Derivation Path: TS 38.508-1 Table 4.6.3-41			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			
csi-ResourceConfigId	CSI-ResourceConfigId-TRS		
csi-RS-ResourceSetList CHOICE {			
nzp-CSI-RS-SSB SEQUENCE {			
nzp-CSI-RS-ResourceSetList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig)) OF NZP-CSI-RS-ResourceSetId {	1 entry		
NZP-CSI-RS-ResourceSetId[1]	NZP-CSI-RS-ResourceSetId-TRS		
}			
nzp-CSI-RS-ResourceSetList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig)) OF NZP-CSI-RS-ResourceSetId {	2 entries		SECOND_SET
NZP-CSI-RS-ResourceSetId[1]	NZP-CSI-RS-ResourceSetId-TRS	entry 1	
NZP-CSI-RS-ResourceSetId[2]	NZP-CSI-RS-ResourceSetId-TRS with condition SECOND_SET	entry 2	
}			
}			
bwp-Id	BWP-Id of active BWP		
}			
}			

Condition	Explanation
SECOND_SET	For the second resource set for TRS configured in test, only applies to FR2 test

– *CSI-ResourceConfig for CSI*

Table 7.3.1-12A: CSI-ResourceConfig for CSI

Derivation Path: TS 38.508-1 Table 4.6.3-41			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			
csi-ResourceConfigId	CSI-ResourceConfigId-CSI		
csi-RS-ResourceSetList CHOICE {			
nzp-CSI-RS-SSB SEQUENCE {			
nzp-CSI-RS-ResourceSetList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig)) OF NZP-CSI-RS-ResourceSetId {	1 entry		
NZP-CSI-RS-ResourceSetId[1]	NZP-CSI-RS-ResourceSetId-CSI	entry 1	
}			
}			
}			
bwp-Id	BWP-Id of active BWP		
}			

– *CSI-ResourceConfig for BM*

Table 7.3.1-12B: CSI-ResourceConfig for BM

Derivation Path: Table 4.6.3-41			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			
csi-ResourceConfigId	CSI-ResourceConfigId-BM		
	CSI-ResourceConfigId-BM with condition APERIODIC		APERIODIC
csi-RS-ResourceSetList CHOICE {			
nzp-CSI-RS-SSB SEQUENCE {			
nzp-CSI-RS-ResourceSetList SEQUENCE (SIZE (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig)) OF NZP-CSI-RS-ResourceSetId {	1 entry		
NZP-CSI-RS-ResourceSetId[1]	NZP-CSI-RS-ResourceSetId-BM		
	NZP-CSI-RS-ResourceSetId-BM with condition APERIODIC		APERIODIC
}			
}			
}			
bwp-Id	BWP-Id of active BWP		
resourceType	aperiodic		APERIODIC
	periodic		PERIODIC
}			

Condition	**Explanation**
APERIODIC	For apeiodic CSI-RS resources
PERIODIC	For periodic CSI-RS resources

– *CSI-ResourceConfig for CSI-IM*

Table 7.3.1-12BA: CSI-ResourceConfig for CSI-IM

Derivation Path: Table 4.6.3-41			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfig ::= SEQUENCE {			
csi-ResourceConfigId	CSI-ResourceConfigId-CSI-IM		
csi-RS-ResourceSetList CHOICE {			
csi-IM-ResourceSetList SEQUENCE (SIZE (1..maxNrofCSI-IM-ResourceSetsPerConfig)) OF CSI-IM-ResourceSetId {	1 entry		
CSI-IM-ResourceSetId[1]	CSI-IM-ResourceSetId-RRM	entry 1	
}			
}			
bwp-Id	BWP-Id		
resourceType	periodic		
}			

– *CSI-ResourceConfigId for TRS*

Table 7.3.1-12C: CSI-ResourceConfigId-TRS

Derivation Path: Table 4.6.3-42			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfigId	n	n is the CSI-ResourceConfigId allocated for resource config of TRS. Value of n is left to internal implementation	

– *CSI-ResourceConfigId for CSI*

Table 7.3.1-12D: CSI-ResourceConfigId-CSI

Derivation Path: Table 4.6.3-42			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfigId	n	n is the CSI-ResourceConfigId allocated for resource config of CSI-RS for CSI reporting. Value of n is left to internal implementation	

– *CSI-ResourceConfigId for BM*

Table 7.3.1-12E: CSI-ResourceConfigId-BM

Derivation Path: Table 4.6.3-42			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfigId	n	n is the CSI-ResourceConfigId allocated for resource config of CSI-RS for BM. Value of n is left to internal implementation	
	m	m is the CSI-ResourceConfigId allocated for resource config of aperiodic CSI-RS for BM. Value of m is left to internal implementation	APERIODIC

Condition	Explanation
APERIODIC	For apeiodic CSI-RS resources

– *CSI-ResourceConfigId-CSI-IM*

Table 7.3.1-12EA: CSI-ResourceConfigId-CSI-IM

Derivation Path: Table 4.6.3-42			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ResourceConfigId	n	n is the first CSI-ResourceConfigId allocated for CSI-IM resource configuration Value of n is left to internal implementation	

– *CSI-ReportConfig for CSI*

Table 7.3.1-12F: CSI-ReportConfig for CSI

Derivation Path: Table 4.6.3-39			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ReportConfig ::= SEQUENCE {			
reportConfigId	CSI-ReportConfigId-CSI		
	CSI-ReportConfigId-CSI with condition SCELL_CSI_ON_SPCELL		SCELL_CSI_ON_SPCELL
carrier	Not present	indicates the same serving cell as this report configuration	
	ServCellIndex of the SCell		SCELL_CSI_ON_SPCELL
resourcesForChannelMeasurement	CSI-ResourceConfigId-CSI		
csi-IM-ResourcesForInterference	CSI-ResourceConfigId-CSI-IM		
nzp-CSI-RS-ResourcesForInterference	Not present		
reportConfigType CHOICE {			
periodic SEQUENCE {			
reportSlotConfig CHOICE {			
slots5	2		SCS15
slots10	4		SCS30
slots40	4		SCS120
}			
pucch-CSI-ResourceList SEQUENCE (SIZE (1..maxNrofBWPs)) OF PUCCH-CSI-Resource {	1 entry		
PUCCH-CSI-Resource [1] SEQUENCE {		entry 1	
uplinkBandwidthPartId	BWP-Id of active UL BWP		
pucch-Resource	8	The first format 2 PUCCH resource configured in Table 4.6.3-112 is used	
	8	The first format 2 PUCCH resource configured in Table 4.6.3-112 is used	SCELL_CSI_ON_SPCELL
}			
}			
}			
}			
reportQuantity CHOICE {			
cri-RI-PMI-CQI	null		
}			
codebookConfig	CodebookConfig-CSI		
}			

Condition	Explanation
SCELL_CSI_ON_SPCELL	For SCell CSI reporting on NR SpCell

– *CSI-ReportConfig for BM*

Table 7.3.1-12G: CSI-ReportConfig for BM

Derivation Path: Table 4.6.3-39			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ReportConfig ::= SEQUENCE {			
reportConfigId	CSI-ReportConfigId-BM		
	CSI-ReportConfigId-BM with condition APERIODIC		APERIODIC
carrier	Not present		
resourcesForChannelMeasurement	CSI-ResourceConfigId-BM		
	CSI-ResourceConfigId-BM with condition APERIODIC		APERIODIC
csi-IM-ResourcesForInterference	Not present		
nzp-CSI-RS-ResourcesForInterference	Not present		
reportConfigType CHOICE {			
periodic			
reportSlotConfig ::= CHOICE {			
slots80	2		SCS15
slots80	4		SCS30 OR SCS120
}			
pucch-CSI-ResourceList SEQUENCE (SIZE (1..maxNrofBWPs)) OF{			
PUCCH_CSI_Resource[0] SEQUENCE {			
uplinkBandwidthPartId	BWP-Id		
pucch_Resource	9		
}			
}			
}			
aperiodic SEQUENCE {			APERIODIC
reportSlotOffsetList SEQUENCE (SIZE (1..maxNrofUL-Allocations)) OF {	1 entry		
INTEGER[1]	8		
}			
}			
reportQuantity CHOICE {			
cri-RSRP	NULL		
}			
codebookConfig	Not present		
}			

Condition	Explanation
APERIODIC	For aperiodic CSI-RS resources

– *CSI-ReportConfigId for CSI*

Table 7.3.1-12H: CSI-ReportConfigId-CSI

Derivation Path: Table 4.6.3-40			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ReportConfigId	n	n is the CSI-ReportConfigId allocated for report config of CSI-RS for CSI. Value of n is left to internal implementation	
	m	m is the CSI-ReportConfigId allocated for report config of SCell CSI on SpCell. Value of m is left to internal implementation	SCELL_CSI_ON_SPCELL

Condition	Explanation
SCELL_CSI_ON_SPCELL	For SCell CSI reporting on NR SpCell

– *CSI-ReportConfigId for BM*

Table 7.3.1-12I: CSI-ReportConfigId-BM

Derivation Path: Table 4.6.3-40			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-ReportConfigId	n	n is the CSI-ReportConfigId allocated for report config of CSI-RS for BM. Value of n is left to internal implementation	
	m	m is the CSI-ReportConfigId allocated for report config of aperiodic CSI-RS for BM. Value of m is left to internal implementation	APERIODIC

Condition	Explanation
APERIODIC	For apeiodic CSI-RS resources

– *CSI-AperiodicTriggerStateList*

Table 7.3.1-12J: *CSI-AperiodicTriggerStateList*

Derivation Path: Table 4.6.3-32			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-AperiodicTriggerStateList ::= SEQUENCE (SIZE (1..maxNrOfCSI-AperiodicTriggers)) OF SEQUENCE {	1 entry		
associatedReportConfigInfoList[1] SEQUENCE (SIZE(1..maxNrofReportConfigPerAperiodicTrigger)) OF SEQUENCE {	1 entry		
reportConfigId[1]	CSI-ReportConfigId-BM with condition APERIODIC		
resourcesForChannel[1] CHOICE {			
nzp-CSI-RS SEQUENCE {			
resourceSet	NZP-CSI-RS-ResourceSetId-BM with condition APERIODIC		
qcl-info SEQUENCE (SIZE(1..maxNrofAP-CSI-RS-ResourcesPerSet)) OF {	2 entries		
TCI-StateId[1]	TCI-StateId-RRM(0)	QCL Type C+D to SSB #0	
TCI-StateId[2]	TCI-StateId-RRM(1)	QCL Type C+D to SSB #1	
}			
}			
}			
csi-IM-ResourcesForInterference[1]	Not present		
nzp-CSI-RS-ResourcesForInterference[1]	Not present		
}			
}			

– *RACH-ConfigCommon*

Table 7.3.1-13: *RACH-ConfigCommon*

Derivation Path: TS 38.508-1 Table 4.6.3-128			
Information Element	**Value/remark**	**Comment**	**Condition**
RACH-ConfigCommon::= SEQUENCE {			
rach-ConfigGeneric	RACH-ConfigGeneric		
totalNumberOfRA-Preambles	48		
ssb-perRACH-OccasionAndCB-PreamblesPerSSB CHOICE {			
oneFourth	n48		
}			
groupBconfigured	Not present		
ra-ContentionResolutionTimer	sf48		
rsrp-ThresholdSSB	51		
rsrp-ThresholdSSB-SUL	Not present		
prach-RootSequenceIndex CHOICE {			
l139	0		
}			
msg1-SubcarrierSpacing	SubcarrierSpacing		
restrictedSetConfig	unrestrictedSet		
msg3-transformPrecoder	Not present	transform precoding is disabled for Msg3 PUSCH transmission and any PUSCH transmission scheduled with DCI format 0_0	
}			

– *RACH-ConfigGeneric*

Table 7.3.1-14: *RACH-ConfigGeneric*

Derivation Path: TS 38.508-1 Table 4.6.3-130			
Information Element	**Value/remark**	**Comment**	**Condition**
RACH-ConfigGeneric ::= SEQUENCE {			
prach-ConfigurationIndex	102		FR1
	190		FR2
msg1-FDM	one		
msg1-FrequencyStart	0		
zeroCorrelationZoneConfig	11		
preambleReceivedTargetPower	-120		
preambleTransMax	n6		
	n200		PRACH.4 FR1 or PRACH.4 FR2
powerRampingStep	dB2		
ra-ResponseWindow	sl10		
	sl1		PRACH.4 FR1 or
	sl40		PRACH.4 FR2
}			

Condition	Explanation
PRACH.4 FR1	When PRACH reference configuration PRACH.4 FR1 is used in test case
PRACH.4 FR2	When PRACH reference configuration PRACH.4 FR2 is used in test case

– ControlResourceSet

Table 7.3.1-15: ControlResourceSet

Derivation Path: Table 4.6.3-28			
Information Element	**Value/remark**	**Comment**	**Condition**
ControlResourceSet ::= SEQUENCE {			
controlResourceSetId	ControlResourceSetId		
frequencyDomainResources	11111111 00000000 00000000 00000000 00000000 00000		CCR.3.7 OR SCS240
duration	1		CCR.3.x
cce-REG-MappingType CHOICE {			
interleaved ::= SEQUENCE {			CCR.X.Y
reg-BundleSize	n6		
interleaverSize	n2		
shiftIndex	0		
}			
tci-StatesPDCCH-ToAddList	Not present		
tci-StatesPDCCH-ToAddList SEQUENCE(SIZE (1..maxNrofTCI-StatesPDCCH)) OF TCI-StateId {	1 entry		
TCI-StateId[1]	TCI-StateId-RRM(2)	TCI State #2, QCLed to TRS resource #4 in the first resource set entry 1	TRS
}			
}			

Condition	Explanation
CCR.x.y	Refers to CCR.x.y as defined in A.1.3 of TS 38.533 [18]
TRS	When at least one TRS resource set is configured.

- *SchedulingRequestResourceConfig*

Table 7.3.1-16: *SchedulingRequestResourceConfig*

Derivation Path: Table 4.6.3-157			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequestResourceConfig ::= SEQUENCE {			
periodicityAndOffset CHOICE {			
sl10	7	With SCS = kHz15 results in repetition every 10 ms	SCS_15kHz
sl20	7	With SCS = kHz30 results in repetition every 10 ms	SCS_30kHz
}			
}			

Condition	Explanation
SCS_15kHz	SCS=15kHz for frequency of the cell according to clause 6.2.3 for signalling test cases and clause 4.3.1 otherwise
SCS_30kHz	SCS=30kHz for frequency of the cell according to clause 6.2.3 for signalling test cases and clause 4.3.1 otherwise

- *SearchSpace*

Table 7.3.1-17: *SearchSpace*

Derivation Path: Table 4.6.3-162			
Information Element	**Value/remark**	**Comment**	**Condition**
SearchSpace ::= SEQUENCE {			
monitoringSlotPeriodicityAndOffset CHOICE {			
sl10	1		SISS
sl160	0		(CCR.3.1 OR CCR.3.2 OR CCR.3.4 OR CCR.3.5 OR CCR.3.7) AND NOT_CONT_PDCCH
	80		(CCR.3.3 OR CCR.3.6) AND NOT_CONT_PDCCH
}			
monitoringSymbolsWithinSlot	11000000000000		(CCR.3.1 OR CCR.3.3 OR CCR.3.4 OR CCR.3.6 OR CCR.3.7) AND NOT_CONT_PDCCH
	00110000000000		(CCR.3.2 OR CCR.3.5) AND NOT_CONT_PDCCH
}			

Condition	Explanation
SISS	SearchSpace for SI
CCR.x.y	Refers to CCR.x.y as defined in A.1.3 of TS 38.533 [18]
NOT_CONT_PDCCH	The cell shall be configured with the default CCR.3.x settings and not transmit PDCCH continuously

– PDSCH-Config

Table 7.3.1-18: PDSCH-Config

Derivation Path: Table 4.6.3-100			
Information Element	**Value/remark**	**Comment**	**Condition**
PDSCH-Config ::= SEQUENCE {			
tci-StatesToAddModList SEQUENCE(SIZE (1.. maxNrofTCI-States)) OF TCI-State {	1+n_1+n_2+n_3 entries	n_1 = 1 if SSB configuration used in test case contains two SSBs in a burst, n_1 = 0 otherwise n_2 = 1 if TRS is configured in test case, n_1 = 0 otherwise n_3 = 1 if two resource sets of TRS are configured in test case, n_3 = 0 otherwise	
TCI-State[1]	TCI-State(0)	entry 1 QCLed to SSB index #0	
TCI-State[k, k=2..1+n_1]	TCI-State(1)	entry ... QCLed to SSB index #1	SECOND_SSB
TCI-State[k, k=2+n_1..1+n_1+n_2]	TCI-State(2)	entry ... QCLed to TRS resource #4 in the first resource set	TRS
TCI-State[k, k=2+n_1+n_2..1+n_1+n_2+n_3]	TCI-State(3)	entry ... QCLed to TRS resource #4 in the second resource set	SECOND_SET
}			
zp-CSI-RS-ResourceToAddModList SEQUENCE (SIZE (1..maxNrofZP-CSI-RS-Resources)) OF ZP-CSI-RS-Resource {	1 entry		
ZP-CSI-RS-Resource[1]	ZP-CSI-RS-Resource-RRM	entry 1	
}			
p-ZP-CSI-RS-ResourceSet CHOICE {			CSI
setup	ZP-CSI-RS-ResourceSet-RRM		
}			
}			

Condition	Explanation
SECOND_SSB	SSB configuration used in test case contain two SSBs in a burst
TRS	One resource set for TRS is configured in test case
SECOND_SET	Two resource sets for TRS are configured in test case, only applies to FR2.
CSI	CSI-RS for CSI reporting are configured in test case

– *TCI-State*

Table 7.3.1-19: *TCI-State(Id)*

Derivation Path: Table 4.6.3-190			
Information Element	**Value/remark**	**Comment**	**Condition**
TCI-State ::= SEQUENCE {			
tci-StateId	TCI-StateId-RRM(Id)		
qcl-Type1 SEQUENCE {			
bwp-Id	BWP-Id of the active BWP		Id = 2 or 3
referenceSignal CHOICE {			
ssb	SSB-Index of SSB #0		Id = 0
	SSB-Index of SSB #1		Id = 1
csi-rs	NZP-CSI-RS-ResourceId for TRS (4)		Id = 2
	NZP-CSI-RS-ResourceId for TRS (4) with condition SECOND SET		Id = 3
}			
qcl-Type	typeC		Id = 0 or 1
	typeA		Id = 2 or 3
}			
qcl-Type2	Not present		
qcl-Type2 SEQUENCE {			FR2
cell	Not present		
bwp-Id	Not present		Id = 0 or 1
	BWP-Id of the active BWP		Id = 2 or 3
referenceSignal CHOICE {			
ssb	SSB-Index of SSB #0		Id = 0
	SSB-Index of SSB #1		Id = 1
csi-rs	NZP-CSI-RS-ResourceId for TRS (4)		Id = 2
	NZP-CSI-RS-ResourceId for TRS (4) with condition SECOND SET		Id = 3
}			
qcl-Type	typeD		
}			
}			

– *TCI-StateId*

Table 7.3.1-20: *TCI-StateId(Id)*

Derivation Path: Table 4.6.3-191			
Information Element	**Value/remark**	**Comment**	**Condition**
TCI-StateId	n+Id	n is the first TCI-StateId allocated for TCI-State configured in RRM test. Value of n is left to internal implementation Id = 0,1,2,3	

– *PUSCH-Config*

Table 7.3.1-21: *PUSCH-Config*

Derivation Path: Table 4.6.3-118			
Information Element	**Value/remark**	**Comment**	**Condition**
PUSCH-Config ::= SEQUENCE {			
pusch-TimeDomainAllocationList CHOICE {			APERIODIC
setup	PUSCH-TimeDomainResourceAllocationList-BM		
}			
}			
}			

Condition	Explanation
APERIODIC	For apeiodic CSI-RS resources

– *PUSCH-TimeDomainResourceAllocationList*

Table 7.3.1-22: *PUSCH-TimeDomainResourceAllocationList-BM*

Derivation Path: Table 4.6.3-122			
Information Element	**Value/remark**	**Comment**	**Condition**
PUSCH-TimeDomainResourceAllocationList ::= SEQUENCE (SIZE(1..maxNrofUL-Allocations)) OF PUSCH-TimeDomainResourceAllocation {	1 entriy	same number of entries as reportSlotOffsetList in Table 7.3.1-12G	
PUSCH-TimeDomainResourceAllocation[1] SEQUENCE {		entry 1	
k2	4	Same with k2 configrued in reportSlotOffsetList in Table 7.3.1-12G	
mappingType	typeA		
startSymbolAndLength	27	Start symbol(S)=0, Length(L)=14	
}			
}			

– ServingCellConfig

Table 7.3.1-23: *ServingCellConfig*

Derivation Path: Table 4.6.3-167			
Information Element	**Value/remark**	**Comment**	**Condition**
ServingCellConfig ::= SEQUENCE {			
csi-MeasConfig CHOICE {			
setup	csi-MeasConfig		
}			

– *CSI-IM-Resource-RRM*

Table 7.3.1-24: CSI-IM-Resource-RRM

Derivation Path: Table 4.6.3-34			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-Resource ::= SEQUENCE {			
csi-IM-ResourceId	CSI-IM-ResourceId-RRM		
csi-IM-ResourceElementPattern CHOICE {			
pattern1 SEQUENCE {			
subcarrierLocation-p1	s8		
symbolLocation-p1	4		
}			
}			
freqBand	CSI-FrequencyOccupation-RRM		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset for CSI		
}			

– *CSI-IM-ResourceId-RRM*

Table 7.3.1-25: CSI-IM-ResourceId-RRM

Derivation Path: Table 4.6.3-35			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-ResourceId	n	n is the first CSI-IM-ResourceId allocated for CSI-IM resource. Value of n is left to internal implementation	

– *CSI-IM-ResourceSet-RRM*

Table 7.3.1-26: CSI-IM-ResourceSet-RRM

Derivation Path: Table 4.6.3-36			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-ResourceSet ::= SEQUENCE {			
csi-IM-ResourceSetId	CSI-IM-ResourceSetId-RRM		
csi-IM-Resources SEQUENCE (SIZE (1..maxNrofCSI-IM-ResourcesPerSet)) OF CSI-IM-ResourceId {	1 entry		
CSI-IM-ResourceId[1]	CSI-IM-ResourceId-RRM	entry 1	
}			
}			

– *CSI-IM-ResourceSetId-RRM*

Table 7.3.1-27: CSI-IM-ResourceSetId-RRM

Derivation Path: Table 4.6.3-37			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-IM-ResourceSetId	n	n is the first CSI-IM-ResourceSetId allocated for CSI-IM resource set. Value of n is left to internal implementation	

– *SSB-Index*

Table 7.3.1-28: *SSB-Index*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SSB-Index	0		
	1		SECOND_SSB

Condition	Explanation
SECOND_SSB	SSB configuration used in test case contain two SSBs in a burst

– *CSI-SSB-ResourceSet*

Table 7.3.1-29: *CSI-SSB-ResourceSet*

Derivation Path: Table 4.6.3-47			
Information Element	**Value/remark**	**Comment**	**Condition**
CSI-SSB-ResourceSet ::= SEQUENCE {			
csi-SSB-ResourceSetId	CSI-SSB-ResourceSetId		
csi-SSB-Resource SEQUENCE (SIZE (1..maxNrofCSI-SSB-ResourcePerSet)) OF SSB-Index {	1 entry		
SSB-Index[1]	SSB-Index	entry 1	
}			
csi-SSB-Resource SEQUENCE (SIZE (1..maxNrofCSI-SSB-ResourcePerSet)) OF SSB-Index {	2 entries		SECOND_SSB
SSB-Index[1]	SSB-Index	entry 1	
SSB-Index[2]	SSB-Index with condition SECOND_SSB	entry 2	
}			
}			

Condition	Explanation
SECOND_SSB	SSB configuration used in test case contain two SSBs in a burst

– *SCS-SpecificCarrier*

Table 7.3.1-30: *SCS-SpecificCarrier*

Derivation Path: Table 4.6.3-160			
Information Element	**Value/remark**	**Comment**	**Condition**
SCS-SpecificCarrier ::= SEQUENCE {			
offsetToCarrier	offsetToCarrier as defined for the DL frequency of the cell	See 7.2.3.2	FR2 and DL_PointA
	offsetToCarrier as defined for the UL frequency of the cell	See 7.2.3.2	FR2 and UL_PointA
	offsetToCarrier as defined for the SL frequency	See 7.2.3.2	FR2 and SL_PointA
subcarrierSpacing	SubcarrierSpacing		
carrierBandwidth	carrierBandwidth as defined for the frequency of the cell	See 7.2.3.2	FR2
	24		Reduced_BW and SCS120 (for SSB)
	48		Reduced_BW and SCS240 (for SSB)
}			

Condition	Explanation
DL_PointA	IE absoluteFrequencyPointA for downlink
UL_PointA	IE absoluteFrequencyPointA for uplink
SL_PointA	IE absoluteFrequencyPointA for sidelink
Reduced_BW	Reduced RB allocation

– *SSB-ToMeasure*

Table 7.3.1-31: *SSB-ToMeasure*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SSB-ToMeasure ::= CHOICE {			
shortBitmap	1000		2.3GHz<FREQ<=3GHz AND (FDD OR (TDD AND SCS15)) OR FREQ<=2.3GHZ
	1100		SECOND_SSB AND (2.3GHz<FREQ<=3GHz AND (FDD OR (TDD AND SCS15)) OR FREQ<=2.3GHZ)
mediumBitmap	10000000		
	11000000		SECOND_SSB
longBitmap	10000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000		FR2
	11000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000		FR2 AND SECOND_SSB
}			

Condition	Explanation
FREQ<=2.3GHz	Frequency range <= 2.4GHz
2.3GHz<FREQ<=3GHz	Frequency range > 2.3GHz and <= 3GHz
FREQ>3GHz	Frequency range > 3GHz
SECOND_SSB	SSB configuration used in test case contain two SSBs in a burst

– *CodebookConfig-CSI*

Table 7.3.1-32: *CodebookConfig-CSI*

Derivation Path: Table 4.6.3-25			
Information Element	**Value/remark**	**Comment**	**Condition**
CodebookConfig ::= SEQUENCE {			
codebookType CHOICE {			
type1 SEQUENCE {			
subType CHOICE {			
typeI-SinglePanel SEQUENCE {			
nrOfAntennaPorts CHOICE {			
two SEQUENCE {			
twoTX-CodebookSubsetRestriction	111111		
}			
}			
}			
}			
}			
}			

– *PRB-Id*

Table 7.3.1-33: *PRB-Id*

Derivation Path: TS 38.331 [6], clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PRB-Id	0		
	Set to value of the *L_RBs - nrofPRBs* where *L_RBs* is the Bandwidth of the UL BWP specified in the test, and *nrofPRBs* is defined for the corresponding *PUCCH-Resource* (1 otherwise).	UL BWP configurations are defined in TS 38.533 Annex A.8.2	secondHop PRB

Condition	**Explanation**
secondHopPRB	The IE secondHopPRB in PUCCH-Resource is now set.

– *ZP-CSI-RS-Resource-RRM*

Table 7.3.1-34: *ZP-CSI-RS-Resource-RRM*

Derivation Path: Table 4.6.3-204			
Information Element	**Value/remark**	**Comment**	**Condition**
ZP-CSI-RS-Resource ::= SEQUENCE {			
zp-CSI-RS-ResourceId	ZP-CSI-RS-ResourceId-RRM		
resourceMapping	CSI-RS-ResourceMapping-ZP-CSI-RS		
periodicityAndOffset	CSI-ResourcePeriodicityAndOffset for CSI		
}			

Table 7.3.1-35: ZP-CSI-RS-ResourceId-RRM

Derivation Path: Table 4.6.3-204A			
Information Element	**Value/remark**	**Comment**	**Condition**
ZP-CSI-RS-ResourceId	n	n is the first ZP-CSI-RS-ResourceId allocated for ZP CSI-RS resource. Value of n is left to internal implementation	

– *ZP-CSI-RS-ResourceSet-RRM*

Table 7.3.1-36: ZP-CSI-RS-ResourceSet-RRM

Derivation Path: Table 4.6.3-205			
Information Element	**Value/remark**	**Comment**	**Condition**
ZP-CSI-RS-ResourceSet ::= SEQUENCE {			
zp-CSI-RS-ResourceSetId	ZP-CSI-RS-ResourceSetId-RRM		
zp-CSI-RS-ResourceIdList SEQUENCE (SIZE(1..maxNrofZP-CSI-RS-ResourcesPerSet)) OF ZP-CSI-RS-ResourceId {	1 entry		
ZP-CSI-RS-ResourceId[1]	ZP-CSI-RS-ResourceId-RRM	entry 1	
}			
}			

– *ZP-CSI-RS-ResourceSetId-RRM*

Table 7.3.1-37: ZP-CSI-RS-ResourceSetId-RRM

Derivation Path: Table 4.6.3-206			
Information Element	**Value/remark**	**Comment**	**Condition**
ZP-CSI-RS-ResourceSetId	n	n is the first ZP-CSI-RS-ResourceSetId allocated for ZP-CSI-RS resource set. Value of n is left to internal implementation	

7.3.2 Sidelink information elements for RRM

As defined in clause 4.6.6 with the following exceptions:

– *SL-BWP-ConfigCommon*

Table 7.3.2-1: *SL-BWP-ConfigCommon*

Derivation Path: Table 4.6.6-2			
Information Element	**Value/remark**	**Comment**	**Condition**
SL-BWP-ConfigCommon-r16 ::= SEQUENCE {			
sl-BWP-PoolConfigCommon-r16	SL-BWP-PoolConfigCommon-r16	Table 7.3.2-2	
}			

– *SL-BWP-PoolConfigCommon*

Table 7.3.2-2: *SL-BWP-PoolConfigCommon*

Derivation Path: Table 4.6.6-4 with condition RXPOOL and SELECTED			
Information Element	**Value/remark**	**Comment**	**Condition**
SL-BWP-PoolConfigCommon-r16 ::= SEQUENCE {			
sl-RxPool-r16 SEQUENCE (SIZE (1..maxNrofRXPool-r16)) OF SL-ResourcePool-r16 {	1 entry		
SL-ResourcePool-r16[1]	SL-ResourcePool-r16	entry 1 Table 7.3.2-3	
}			
sl-TxPoolSelectedNormal-r16 SEQUENCE (SIZE (1..maxNrofTXPool-r16)) OF SL-ResourcePoolConfig-r16 {	1 entry		
SL-ResourcePoolConfig-r16[1] SEQUENCE {		entry 1	
sl-ResourcePool-r16	SL-ResourcePool-r16	Table 7.3.2-3	
}			
}			
}			

– *SL-ResourcePool*

Table 7.3.2-3: *SL-ResourcePool*

Derivation Path: Table 4.6.6-25			
Information Element	**Value/remark**	**Comment**	**Condition**
SL-ResourcePool-r16 ::= SEQUENCE {			
sl-NumSubchannel-r16	1		
sl-UE-SelectedConfigRP-r16 SEQUENCE {			
sl-ThresPSSCH-RSRP-List-r16	Set according to the configuration in specific test cases		
sl-SelectionWindowList-r16 SEQUENCE (SIZE (8)) OF SL-SelectionWindowConfig-r16 {	8 entries		
SL-SelectionWindowConfig-r16[k, k=1..8] SEQUENCE {		entry k	
sl-Priority-r16	k		
sl-SelectionWindow-r16	n20		
}			
}			
}			
sl-PreemptionEnable-r16	enabled		
sl-MinMaxMCS-List-r16 SEQUENCE (SIZE (1..3)) OF SL-MinMaxMCS-Config-r16 {	1 entry		
SL-MinMaxMCS-Config-r16[1] SEQUENCE {		entry 1	
sl-MCS-Table-r16	qam64		
sl-MinMCS-PSSCH-r16	0		
sl-MaxMCS-PSSCH-r16	28		
}			
sl-TimeResource-r16	1111111111111111111		
}			

– *SL-PSSCH-TxConfigList*

Table 7.3.2-4: *SL-PSSCH-TxConfigList*

Derivation Path: Table 4.6.6-19			
Information Element	**Value/remark**	**Comment**	**Condition**
SL-PSSCH-TxConfigList-r16 ::= SEQUENCE (SIZE (1..maxPSSCH-TxConfig-r16)) OF SL-PSSCH-TxConfig-r16 {	1 entry		
sl-ThresUE-Speed-r16	kmph200		
sl-ParametersAboveThres-r16 SEQUENCE {			
sl-MaxSubchannelNumPSSCH-r16	1		
sl-MaxTxTransNumPSSCH-r16	1		
}			
sl-ParametersBelowThres-r16 SEQUENCE {			
sl-MinMCS-PSSCH-r16	4		
sl-MaxMCS-PSSCH-r16	25		
sl-MaxSubchannelNumPSSCH-r16	1		
sl-MaxTxTransNumPSSCH-r16	1		
}			
}			

– *SL-UE-SelectedConfig*

Table 7.3.2-5: *SL-UE-SelectedConfig*

Derivation Path: Table 4.6.6-35			
Information Element	**Value/remark**	**Comment**	**Condition**
SL-UE-SelectedConfig-r16 ::= SEQUENCE {			
sl-PSSCH-TxConfigList-r16	SL-PSSCH-TxConfigList-r16	Table 7.3.2-4	
sl-ProbResourceKeep-r16	v0dot8		
sl-ReselectAfter-r16	n1		
}			

7.4 FFS

Void.

7.5 Common procedures for RRM testing

7.5.1 Procedure to configure SCC(s) for NR RRM CA testing

Same procedure as described in clause 5.5.1.

7.5.2 Procedure to configure SCC(s) for EN-DC RRM CA testing

Same procedure as described in clause 5.5.1.