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650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
Association à but non lucratif enregistrée à la
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Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

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where:

- x the first digit:
  - 1 presented to TSG for information;
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  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
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In the present document, modal verbs have the following meanings:

shall indicates a mandatory requirement to do something

shall not indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

should indicates a recommendation to do something

should not indicates a recommendation not to do something

may indicates permission to do something

need not indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

can indicates that something is possible

cannot indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

will indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

will not indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

might indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

might not indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

is (or any other verb in the indicative mood) indicates a statement of fact

is not (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

1 Scope

The present document specifies requirements for Rel-P UEs supporting release independent features like:

- additional NR operating bands and power classes on top of Rel-P of TS 38.101-1/-2/-3/-4 [2-5] and TS 38.133 [6];

Furthermore, for Rel-P UEs supporting satellite access operation, the present document specifies requirements supporting release independent features like:

- additional NR operating bands on top of Rel-P of TS 38.101-5 [8] and TS 38.133 [6].

Note that Rel-P represents the present release of this specification as defined in section 3.2.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 38.101-1: "NR; User Equipment (UE) radio transmission and reception; Part 1: Range 1 Standalone".

[3] 3GPP TS 38.101-2: "NR; User Equipment (UE) radio transmission and reception; Part 2: Range 2 Standalone".

[4] 3GPP TS 38.101-3: "NR; User Equipment (UE) radio transmission and reception; Part 3: Range 1 and Range 2 Interworking operation with other radios".

[5] 3GPP TS 38.101-4: "NR; User Equipment (UE) radio transmission and reception; Part 4: UE performance requirements".

[6] 3GPP TS 38.133: "NR; Requirements for support of radio resource management".

[7] 3GPP TS 38.306: "NR; User Equipment (UE) radio access capabilities".

[8] 3GPP TS 38.101-5: “NR; User Equipment (UE) radio transmission and reception; Part 5: Satellite access Radio Frequency (RF) and performance requirements”.

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

release independent: applicable to some frozen releases, starting from a certain release Rel-M

NOTE 1: Normally, a feature is introduced only in the latest open release Rel-N and future releases are based on the previous one so that future releases inherit the requirements of this feature. Introducing a feature "in a release independent way from Rel-M onwards" (M<N) means it was decided by TSG RAN that this feature would be also beneficial in previous, already frozen releases starting with Rel-M until Rel-(N-1). In order to avoid touching TS 38.101 [2-5] or TS 38.133 [6] of these frozen releases, the corresponding requirements are captured in TS 38.307 via pointers to [2-5] or [6] of the release in which the feature was introduced.

NOTE 2: Release independent does not mean applicable to all releases.

3.2 Symbols

For the purposes of the present document, the following symbols apply:

N	Release in which a feature is introduced into TS 38.101 [2-5, 8] or TS 38.133 [6]
M	Release from which onwards (including release M) a feature is release independent
P	Represent the present release of this specification

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

BW	Bandwidth
CA	Carrier Aggregation
CC	Component carrier
DL	Downlink
EN-DC	Dual connectivity between E-UTRA and NR
FDD	Frequency Division Duplex
FR1	Frequency range 1
FR2	Frequency range 2
NR	New radio
RedCap	Reduced Capability
REL	Release
SDL	Supplementary downlink
SUL	Supplementary uplink
TDD	Time Division Duplex
UE	User Equipment
UL	Uplink

4 General

TSG-RAN has agreed for certain features (see the following clauses) to introduce them in a "release independent way".

This means for each feature:

- it is "introduced" in a release N, i.e. TS 38.101 [2-5, 8] or TS 38.133 [6] of release N define certain UE requirements for this feature; the feature is indicated in the tables of the following clauses;
- it is "release independent" starting from a release M (M<N); M for the given feature is provided in the tables of the following clauses;
- UEs supporting this feature have to fulfil additional requirements in release M or higher which are specified in one or more Annexes of TS 38.307 of release N; the applicable Annexes for a given feature are provided in the tables of the following clauses.

The applicable UE Categories are specified in TS 38.306 [7] according to the release to which the UE conforms.

In the table of release independent features in subsequent clauses, "FDD, TDD" refers to CA or EN-DC configuration composed by only FDD bands or only TDD bands, respectively. "FDD and TDD" refers to CA or EN-DC configuration including both FDD and TDD bands. "SDL and FDD, SDL and TDD" refers to CA configuration including both SDL and FDD bands or both SDL and TDD bands, respectively. "TDD and SUL" refers to SUL configuration including both TDD and SUL bands. "FDD and TDD and SUL" refers to EN-DC configuration including both FDD, TDD and SUL bands. Unless stated otherwise, the release independent for the band combinations are from Rel-15. Configurations with BCSs other than BCS5 are release independent from Rel-15, where the BCSs for configurations are defined in TS 38.101-1 [2] and/or TS 38.101-3 [4]. Configurations with BCS5 are release independent from Rel-17, and BCS5 with signalling is allowed for early implementation from Rel-15. Note that BCS4/BCS5 is not applicable to intra-band EN-DC configurations.

When a new release independent feature is introduced, only the latest release of release independent specification shall be updated. The latest release of release independent specification refers to "release N", i.e. the release in which a feature is introduced into TS 38.101 [2-5, 8] or TS 38.133 [6]. And the common UE requirements tables are also specified from “release N” in the annexes, starting from annex B.

Editor’s note: When introducing new release independent features into this specification with non-category A CRs, the <Release> information on the CR cover page shall be aligned with the <Related_WIs> mentioned on it.

5 Release independent features for NR frequency range 1

5.1 Additional NR operating bands, UE power classes and channel bandwidths for NR frequency range 1

Requirements for additional NR operating bands and power classes of TS 38.101-1 in Rel-P [2] are introduced via this clause.

Table 5.1-1: NR operating bands

Feature	Duplex-mode	Release independent from	Requirements to be fulfilled (see TS 38.307 of the release in which the band was introduced)
Operating bands	FDD, TDD, SDL, SUL	Rel-15	Table B.4.1-1, Table B.4.3-1
Shared spectrum access operating bands	TDD	Rel-16	Table B.4.7-1
UL MIMO operating bands without ULFPTx	FDD, TDD	Rel-15	Table B.4.13-1
UL MIMO operating bands with ULFPTx	FDD, TDD	Rel-16	
UL MIMO operating bands with or without ULFPTx	SUL	Rel-17	

Table 5.1-2: NR UE power class

Feature	Duplex-mode	Release independent from	Requirements to be fulfilled (see TS 38.307 of the release in which the power class was introduced)
Power Class 1	FDD	Rel-15	Table B.4.1-1
Power Class 1.5	TDD	Rel-15	Table B.4.1-1, Table B.4.3-1
Power Class 2	FDD, TDD	Rel-15	Table B.4.1-1, Table B.4.3-1
Power Class 3	FDD, TDD, SUL	Rel-15	Table B.4.1-1, Table B.4.3-1

Table 5.1-3: NR channel bandwidths

Feature	Duplex-mode	Release independent from	Requirements to be fulfilled (see TS 38.307 of the release in which the channel bandwidth was introduced)
NR channel bandwidths, all unless otherwise stated	FDD, TDD, SDL, SUL	Rel-15	Table B.4.1-1, Table B.4.3-1
Channel bandwidth of 3 MHz	FDD	Rel-18	Table B.4.1-1

5.2 Additional NR CA configurations for NR frequency range 1

5.2.1 Intra-band CA

Requirements for additional NR intraband CA configurations within FR1 of TS 38.101-1 in Rel-P [2] are introduced via this clause.

Requirements for additional NR intraband CA configurations with UL MIMO within FR1 of TS 38.101-1 in Rel-P [2] are introduced via this clause.

Table 5.2.1-1: NR intra-band contiguous CA within FR1

Feature	DL/UL	CA BW Class	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Intra-band contiguous CA configurations within FR1	DL	B, C, D, E, M, N, O	FDD, TDD	Rel-15	Table B.4.2-1
	UL	A,B,C	FDD, TDD	Rel-15	
Intra-band contiguous CA configurations with UL MIMO within FR1	UL	C	TDD	Rel-15	Table B.4.2-2

Table 5.2.1-2: NR intra-band non-contiguous CA within FR1

Feature	DL/UL	number of sub-blocks	maximum number of CCs within a sub-block	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Intra-band non-contiguous CA configurations within FR1	DL	2	1	FDD, TDD	Rel-15	Table B.4.2-1
		3	1	FDD, TDD	Rel-15	
		4	1	TDD	Rel-15	
	UL	1	1	FDD, TDD	Rel-15	
		2	1	FDD, TDD	Rel-15	

5.2.2 Inter-band CA

Requirements for additional NR inter-band CA configurations within FR1 of TS 38.101-1 in Rel-P [2] are introduced via this clause.

Requirements for additional NR inter-band CA configurations with UL MIMO within FR1 of TS 38.101-1 in Rel-P [2] are introduced via this clause.

Requirements for additional NR inter-band CA configurations with Tx Diversity within FR1 of TS 38.101-1 in Rel-P [2] are introduced via this clause.

Table 5.2.2-0: NR inter-band CA UE power class within FR1

Feature	Duplex-mode	Release independent from	Requirements to be fulfilled (see TS 38.307 of the release in which the power class was introduced)
Inter-band CA Power Class 2	TDD, FDD and TDD	Rel-15	Table B.4.2-1
Inter-band CA Power Class 3	FDD, TDD, SDL and TDD, FDD and TDD	Rel-15	
Inter-band CA Power Class 1.5	TDD, FDD and TDD	Rel-17	Table B.4.2-3, Table B.4.2-4

Table 5.2.2-1: NR inter-band CA within FR1

Feature	DL/UL	Maximum number of bands	Maximum number of CCs	CA BW Classes	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Inter-band CA configurations within NR FR1	DL	6	9	A, B, C, D, E	TDD, FDD, SDL and FDD, SDL and TDD, FDD and TDD, FDD and SDL and TDD	Rel-15	Table B.4.2-1
	UL	2	2	A	TDD, FDD, FDD and TDD	Rel-15	
		1	2	B, C, 2A			
		2	3	A, B, C			
Inter-band CA configurations with UL MIMO within FR1	DL	2	2	A	TDD, FDD and TDD	Rel-17[1]	Table B.4.2-3
	UL	2	2	A	TDD, FDD and TDD	Rel-17[1]	
Inter-band CA configurations with Tx Diversity within FR1	DL	2	2	A	FDD and TDD	Rel-17[1]	Table B.4.2-4
	UL	2	2	A	FDD and TDD	Rel-17[1]	
Inter-band CA configurations with 1Tx-2Tx switching within NR FR1	UL	2	2	A	TDD, FDD, FDD and TDD	Rel-16	Table B.4.14-1
Inter-band CA configurations with 1Tx-2Tx switching within NR FR1	UL	2	3	A, B, C	TDD, FDD, FDD and TDD	Rel-17	Table B.4.14-1
Inter-band CA configurations with 2Tx-2Tx switching within NR FR1	UL	2	2	A	TDD, FDD, FDD and TDD	Rel-17	Table B.4.14-1
		2	3	A, B, C			
NOTE 1: This is applied to FWA UE only.							

5.3 Additional NR SUL configurations for NR frequency range 1

Requirements for additional NR SUL configurations within FR1 of TS 38.101-1 in Rel-P [2] are introduced via this clause.

When a UE is configured with both NR UL and NR SUL carriers in a serving cell with active transmission either on the UL carrier or SUL carrier, the release independent features in clause 5.1 are applicable for the UL carrier and the SUL carrier, respectively.

Table 5.3-1: NR SUL within FR1

Feature	DL/UL	number of bands	number of CCs	CA BW Classes	Duplex-mode	Release independent from	requirements to be fulfilled

							(see 38.307 of the REL in which the SUL configuration was introduced)
Inter-band SUL configurations within NR FR1	DL	3	3	A, C	TDD, FDD, FDD and TDD	Rel-15	Table B.4.3-1
	UL	2	3	A, C	TDD and SUL, FDD and SUL	Rel-15	
Inter-band SUL configurations with 1Tx-2Tx switching within NR FR1	UL	2	2	A	TDD and SUL	Rel-16	Table B.4.15-1
Inter-band SUL configurations with 1Tx-2Tx switching within NR FR1	UL	2	3	A, C	TDD and SUL, FDD and SUL	Rel-17	Table B.4.15-1
Inter-band SUL configurations with 2Tx-2Tx switching within NR FR1	UL	2	2	A	TDD and SUL, FDD and SUL	Rel-17	Table B.4.15-1
		2	3	A, C			

5.4 Other release independent features for NR frequency range 1

This clause covers requirements for a Rel-P UE coming from all other release independent features that are not covered under clause 5.1, 5.2 and 5.3, e.g. generic baseband requirements or requirements that are not band/CA/SUL configuration specific.

Table 5.4-1: Additional requirements of other release independent features

Feature	Release independent from	Requirements to be fulfilled (see 38.307 of the REL when the feature was introduced)	Further information
RRM requirements for high speed train scenario	Rel-15 (NOTE 1)	Table C.1-1	Rel-16 WI NR_HST introduced band independent RRM requirements: see Table C.1-1
UE demodulation requirements for high speed train scenario	Rel-15 (NOTE 1)	Table C.2-1	Rel-16 WI NR_HST introduced band independent UE demodulation requirements: see Table C.2-1
RF requirements for 4Rx UEs	Rel-15	Table B.4.10-1, Table B.4.10-2	
Transparent Tx diversity	Rel-15	Table B.4.11-1	Rel-17 WI NR_RF_TxD introduced transparent Tx diversity requirements: see Table B.4.11-1
UE demodulation and CSI requirements for MMSE-IRC receiver for scenarios with inter cell and intra cell inter user interference	Rel-15	Table B.3.3-1	Rel-17 WI NR_demod_enh2-Perf: see Table B.3.3-1. These requirements are optional for Rel-15 and Rel-16 UEs and can be executed based on UE declaration.
RRM enhancement for FR1 high speed train scenario enhancement	Rel-16 (NOTE 2)	Table C.3-1	Rel-17 WI NR_HST_FR1_enh introduced band independent RRM enhancement: see Table C.3-1
HST-SFN CA demodulation enhancement for FR1 high speed train scenario enhancement	Rel-16 (NOTE 3)	Table C.4-1	Rel-17 WI NR_HST_FR1_enh introduced band independent HST-SFN CA demodulation enhancement: see Table C.4-1
HST-DPS CA demodulation enhancement for FR1 high speed train scenario enhancement	Rel-15 (NOTE 4)	Table C.4-1	Rel-17 WI NR_HST_FR1_enh introduced band independent HST-DPS CA demodulation enhancement: see Table C.4-1
PDSCH absolute physical layer throughput requirements with link adaptation	Rel-17	Table B.3.4-1	Rel-18 WI NR_demod_enh3-Perf: see Table B.3.4-1. These requirements are optional for Rel-17 and can be executed based on UE declaration.
RF requirements for 8Rx UE	Rel-17	Table B.4.x-1, Table B.4.x-2	
Demodulation requirements for 8Rx UE	Rel-17	Table B.3.5-1	

NOTE 1: Rel-15 UEs supporting the high speed train are assumed to read the Rel-16 high speed train scenario information, which is broadcast to all UEs.
NOTE 2: Rel-16 UEs supporting the high speed train are assumed to read the Rel-17 high speed train scenario information, which is broadcast to all UEs.
NOTE 3: Rel-16 UEs supporting the high speed train are assumed to read the Rel-17 high speed train scenario information, which is broadcast to all UEs.
NOTE 4: Rel-15 UEs supporting the high speed train are assumed to read the Rel-17 high speed train scenario information, which is broadcast to all UEs.

5.5 Additional Inter-band NR-DC configurations for NR frequency range 1

Requirements for additional NR-DC configurations within FR1 of TS 38.101-1 in Rel-P [2] are introduced via this clause.

Table 5.5.1-1: NR-DC within FR1

Feature	DL/UL	Maximum number of bands	Maximum number of CCs	CA BW Classes	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the DC configuration was introduced)
NR-DC configurations within NR FR1	DL	5	7	A, B, C, D, E, N	FDD, TDD, FDD and TDD, SDL and FDD, FDD and TDD and SDL	Rel-16	Table B.4.5a-1
	UL	2	3	A, B, C	FDD, TDD, FDD and TDD	Rel-16	

5.6 UL 7.5KHz shift for TDD band n40Requirements for UL 7.5KHz shift for TDD band n40 within FR1 of TS 38.101-1 in Rel-P [2] are introduced via this clause. For Band n40, UL shift is only applicable to uplink transmissions using a 15 kHz SCS.

Table 5.3-2: UL 7.5KHz shift for band n40 in FR1

Feature	DL/UL	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the configuration was introduced)
7.5KHz UL shift for band n40 in FR1	UL	TDD	Rel-15	Table B.4.7-1

5.6 Void

5.7 Additional Inter-band EN-DC or NR CA configurations involving shared spectrum access

Requirements for additional NR CA, EN-DC, and NR DC configurations involving shared spectrum access of TS 38.101-1 in Rel-P [2] or TS 38.101-3 in Rel-P [4] are introduced via this clause.

Table 5.7-1: NR CA, EN-DC, and NR DC configurations involving shared spectrum access

Feature	Duplex-mode	Release independent from	Requirements to be fulfilled (see 38.307 of the REL in which the NR CA, EN-DC, or NR DC configuration was introduced)
Intra-band and Inter-band NR CA configurations involving shared spectrum access	FDD and TDD, TDD	Rel-16	Table B.3.1-1, Table B.4.2-1, Table B.4.8-1
Inter-band EN-DC configurations involving shared spectrum access	FDD and TDD, TDD	Rel-16	Table B.4.6-1
Inter-band NR DC configurations involving shared spectrum access	FDD and TDD, TDD	Rel-16	Table B.4.5-1, Table B.4.5a-1

5.8 Additional V2X configurations for NR frequency range 1

Requirements for additional NR SL configurations involving V2X con-current operation of TS 38.101-1 in Rel-P [4] are introduced via this clause.

Table 5.8-1: NR V2X con-current operation within in FR1

Feature	Release independent from	Requirements to be fulfilled (see 38.307 of the REL when the feature was introduced)	Further information
Operating bands for V2X communication with con-current operation	Rel-16	Table B.4.12-1, Table B.4.12-2	NR V2X new bands, intra-band/inter-band con-current operation, SL MIMO/TxD are release independent according to requirements in Table Table B.4.12-1, Table B.4.12-2

5.9 Additional operating bands for Redcap for NR frequency range 1

Requirements for a Redcap UE for additional operating bands within FR1 of TS 38.101-1 in Rel-P [2] are introduced via this clause.

Table 5.9-1: NR RedCap operating band

Feature	Duplex-mode	Release independent from	Requirements to be fulfilled (see TS 38.307 of the release in which the band was introduced)
Redcap operating band	FDD	Rel-17	Table B.4.14-1

6 Release independent features for NR frequency range 2

6.1 Additional NR operating bands and UE power classes for NR frequency range 2

Requirements for additional NR operating bands and power classes of TS 38.101-2 in Rel-P [3] are introduced via this clause.

Table 6.1-1: NR operating bands

Feature	Duplex-mode	Release independent from	Requirements to be fulfilled (see TS 38.307 of the release in which the band was introduced)
Operating bands	TDD	Rel-15	Table B.4.1-1

Table 6.1-2: NR UE power class

Feature	Duplex-mode	Release independent from	Requirements to be fulfilled (see TS 38.307 of the release in which the band was introduced)
Power Class 1, 2, 3, 4, 5	TDD	Rel-15	Table B.4.1-1

6.2 Additional NR CA configurations for NR frequency range 2

6.2.1 Intra-band CA

Requirements for additional NR intra-band CA configurations within FR2 of TS 38.101-2 in Rel-P [3] are introduced via this clause.

Table 6.2.1-1: NR intra-band contiguous CA within FR2

Feature	DL/UL	CA BW Class	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Intra-band contiguous CA configurations within FR2	DL	B, C, D, E, F, G, H, I, J, K, L, M, O, P, Q	TDD	Rel-15	Table B.4.2-1
		R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12	TDD	Rel-17	
	UL	A, B, D, E, F, G, H, I, J, K, L, M, O, P, Q	TDD	Rel-15	
		R2, R3, R4, R5	TDD	Rel-17	

Table 6.2.1-2: NR non-contiguous intra-band CA within FR2

Feature	DL/UL	number of sub-blocks	maximum number of CCs within a sub-block	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Intra-band non-contiguous CA configurations within FR2	DL	2	7	TDD	Rel-15	Table B.4.2-1
		3	4	TDD	Rel-15	
		4	4	TDD	Rel-15	
		5	4	TDD	Rel-15	
		6	4	TDD	Rel-15	
		7	3	TDD	Rel-15	
		8	3	TDD	Rel-15	
		9	2	TDD	Rel-15	
		10	2	TDD	Rel-15	
	UL	1	7	TDD	Rel-15	
		2	2	TDD	Rel-15	
		3	1	TDD	Rel-15	

Table 6.2.1-3: NR inter-band CA within FR2

Feature	DL/UL	Maximum number of bands	CA BW Classes	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Inter-band CA configurations within NR FR2	DL	2	A, G, H, I, J, K, L, M	TDD	Rel-16	Table B.4.2-1
	UL	2	A, G, H, I, J, K, L, M	TDD	Rel-16	

7 Release independent features for NR interworking between NR frequency range 1 and NR frequency range 2

7.1 Additional NR inter-band CA configurations between frequency range 1 and frequency range 2

Requirements for additional NR inter-band CA configurations between FR1 and FR2 of TS 38.101-3 in Rel-P [4] are introduced via this clause.

Table 7.1-1: NR inter-band CA between FR1 and FR2

Feature	DL/UL	maximum number of bands	maximum number of CCs	CA BW Classes	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Inter-band CA configurations for NR interworking between FR1 and FR2	DL FR1	4	5	A, B, C	FDD, TDD, FDD and TDD	Rel-15	Table B.4.4-1
	DL FR2	2	12	A, B, C, D, E, F, G, H, I, J, K, L, M, O, P, Q	TDD	Rel-15	
		1	10	R2, R3, R4, R5, R6, R7, R8, R9, R10	TDD	Rel-17	
	UL FR1	2	3	A, B, C	FDD, TDD, FDD and TDD	Rel-15	
	UL FR2	1	8	A, B, C, D, E, F, G, H, I, J, K, L, M, O, P, Q	TDD	Rel-15	
		1	4	R2, R3, R4	TDD	Rel-17	

7.2 Additional Inter-band NR-DC configurations between frequency range 1 and frequency range 2

Requirements for additional Inter-band NR-DC configurations between FR1 and FR2 of TS 38.101-3 in Rel-P [4] are introduced via this clause.

Table 7.2-1: Inter-band NR-DC between FR1 and FR2

Feature	DL/UL	maximum number of bands	maximum number of CCs	CA BW Classes	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Inter-band DC configurations for NR interworking between FR1 and FR2	DL FR1	4	5	A, B, C	FDD, TDD, FDD and TDD	Rel-15	Table B.4.5-1
	DL FR2	2	12	A, B, C, D, E, F, G, H, I, J, K, L, M, O, P, Q	TDD	Rel-15	
		1	10	R2, R3, R4, R5, R6, R7, R8, R9, R10	TDD	Rel-17	
	UL FR1	2	2	A, B	FDD, TDD, FDD and TDD	Rel-15	
	UL FR2	1	8	A, D, E, F, G, H, I, J, K, L,M, O, P, Q,	TDD	Rel-15	
		1	4	R2, R3, R4	TDD	Rel-17	

8 Release independent features for NR interworking between NR and E-UTRA

8.1 Additional EN-DC configurations

8.1.1 Intra-band EN-DC

Requirements for a Rel-P UE for additional EN-DC intra-band configurations within FR1 of TS 38.101-3 in Rel-P [4] are introduced via this clause.

Table 8.1.1-0: EN-DC intra-band UE power class

Feature	Duplex-mode	Release independent from	Requirements to be fulfilled (see TS 38.307 of the release in which the band was introduced)
Intra-band contiguous EN-DC power class 1.5	TDD	Rel-15	Table B.4.6-1
Intra-band contiguous EN-DC power class 2	TDD	Rel-15	
Intra-band contiguous EN-DC power class 3	FDD, TDD	Rel-15	
Intra-band non-contiguous EN-DC power class 1.5	TDD	Rel-15	
Intra-band non-contiguous EN-DC power class 2	TDD	Rel-15	
Intra-band non-contiguous EN-DC power class 3	FDD, TDD	Rel-15	

Table 8.1.1-1: EN-DC contiguous intra-band configurations within FR1

Feature	DL/UL	maximum number of E-UTRA CCs	maximum number of NR CCs	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Intra-band contiguous EN-DC	DL	3	2	FDD, TDD	Rel-15	Table B.3.2-1, Table B.4.6-1
	UL	1	1	FDD, TDD	Rel-15	

Table 8.1.1-2: EN-DC non-contiguous intra-band configurations within FR1

Feature	DL/UL	maximum number of sub-blocks	maximum number of E-UTRA CCs	maximum number of NR CCs	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Intra-band non-contiguous EN-DC	DL	3	3	1	FDD, TDD	Rel-15	Table B.3.2-2, Table B.4.6-1
	UL	2	1	1	FDD, TDD	Rel-15	

8.1.2 Inter-band EN-DC

8.1.2.1 Inter-band EN-DC within frequency range 1

Requirements for additional EN-DC inter-band configurations within FR1 of TS 38.101-3 in Rel-P [4] are introduced via this clause.

Requirements for additional EN-DC inter-band configurations with UL MIMO within FR1 of TS 38.101-3 in Rel-P [4] are introduced via this clause.

Requirements for additional NR inter-band CA configurations with Tx Diversity within FR1 of TS 38.101-3 in Rel-P [2] are introduced via this clause.

Table 8.1.2.1-0: EN-DC inter-band UE power class

Feature	Duplex-mode	Release independent from	Requirements to be fulfilled (see TS 38.307 of the release in which the band was introduced)
Inter-band EN-DC Power Class 2	TDD, FDD and TDD	Rel-15	Table B.4.6-1
Inter-band EN-DC Power Class 3	FDD, TDD, FDD and TDD	Rel-15	

Table 8.1.2.1-1: EN-DC inter-band configurations without SUL within FR1

Feature	DL/UL	maximum number of E-UTRA bands	maximum number of E-UTRA CCs	maximum number of NR bands	maximum number of NR CCs	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Inter-band EN-DC	DL	5	6	4	4	FDD, TDD, FDD and TDD, FDD and SDL, FDD and SDL and TDD	Rel-15	Table B.4.6-1
	UL	1	2 contiguous	1	2 contiguous	FDD, TDD, FDD and TDD	Rel-15	
Inter-band EN-DC with UL MIMO within FR1	DL	1	1	1	1	TDD, FDD and TDD	Rel-17[1]	Table B.4.6-2
	UL	1	1	1	1	TDD, FDD and TDD	Rel-17[1]	
Inter-band EN-DC with Tx Diversity within FR1	DL	1	1	1	1	FDD and TDD	Rel-17[1]	Table B.4.6-3
	UL	1	1	1	1	FDD and TDD	Rel-17[1]	
Inter-band EN-DC with 1Tx-2Tx switching	UL	1	1	1	1	TDD, FDD and TDD	Rel-16	Table B.4.16-1
NOTE 1: This is applied to FWA UE only.								

Table 8.1.2.1-2: EN-DC inter-band configurations with SUL within FR1

Feature	DL/UL	maximum number of E-UTRA bands	maximum number of E-UTRA CCs	maximum number of NR bands	maximum number of NR CCs	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Inter-band EN-DC	DL	2	3	1	1	FDD, TDD, FDD and TDD	Rel-15	Table B.4.6-1
	UL	1	1	2	2 contiguous	FDD, TDD, FDD and TDD and SUL	Rel-15	

8.1.2.2 Inter-band EN-DC including frequency range 2

Requirements for additional EN-DC inter-band configurations including FR2 of TS 38.101-3 in Rel-P [4] are introduced via this clause.

Table 8.1.2.2-1: EN-DC inter-band configurations including FR2

Feature	DL/UL	maximum number of E-UTRA bands	maximum number of E-UTRA CCs	maximum number of NR bands	maximum number of NR CCs	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Inter-band EN-DC	DL	4	6	1	15	TDD, FDD and TDD, FDD and SDL and TDD	Rel-15	Table B.4.6-1
	UL	1	4	1	8	TDD, FDD and TDD	Rel-15	

8.1.2.3 Inter-band EN-DC including frequency range 1 and frequency range 2

Requirements for additional EN-DC inter-band configurations including FR1 and FR2 of TS 38.101-3 in Rel-P [4] are introduced via this clause.

Table 8.1.2.3-1: EN-DC inter-band configurations including FR1 and FR2

Feature	DL/UL	maximum number of E-UTRA bands	maximum number of E-UTRA CCs	maximum number of NR bands	maximum number of NR CCs	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Inter-band EN-DC	DL FR1	4	6	2	2	TDD, FDD, FDD and TDD	Rel-15	Table B.4.6-1
	DL FR2			1	8	TDD	Rel-15	
	UL FR1	1	2	1	1	FDD, TDD, FDD and TDD	Rel-15	
	UL FR2			1	8	TDD,	Rel-15	

8.2 Additional NE-DC configurations

8.2.1 Interband NE-DC

8.2.1.1 Interband NE-DC within frequency range 1

Requirements for additional NE-DC interband configurations within FR1 of TS 38.101-3 in Rel-P [4] are introduced via this clause.

Table 8.2.1.1-0: NE-DC interband UE power class

Feature	Duplex-mode	Release independent from	Requirements to be fulfilled (see TS 38.307 of the release in which the band was introduced)
Interband NE-DC Power Class 3	FDD, TDD, FDD and TDD	Rel-15	Table B.4.6-1

Table 8.2.1.1-1: NE-DC interband configurations without SUL within FR1

Feature	DL/UL	maximum number of E-UTRA bands	maximum number of E-UTRA CCs	maximum number of NR bands	maximum number of NR CCs	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Interband NE-DC	DL	4	5	1	2	FDD, TDD, FDD and TDD	Rel-15	Table B.4.6-1
	UL	1	1	1	1	FDD, TDD, FDD and TDD	Rel-15	

8.2.1.2 Interband NE-DC including frequency range 2

Requirements for additional NE-DC interband configurations including FR2 of TS 38.101-3 in Rel-P [4] are introduced via this clause.

Table 8.2.1.2-1: NE-DC interband configurations including FR2

Feature	DL/UL	maximum number of E-UTRA bands	maximum number of E-UTRA CCs	maximum number of NR bands	maximum number of NR CCs	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Interband NE-DC	DL	4	5	1	8	FDD and TDD	Rel-15	Table B.4.6-1
	UL	1	2	1	8	FDD and TDD	Rel-15	

8.2.2 Intra-band NE-DC

Requirements for additional NE-DC interband configurations within FR1 of TS 38.101-3 in Rel-P [4] are introduced via this clause.

Table 8.2.2-0: NE-DC intra-band UE power class

Feature	Duplex-mode	Release independent from	Requirements to be fulfilled (see TS 38.307 of the release in which the band was introduced)
Intra-band contiguous NE-DC power class 3	FDD	Rel-15	Table B.4.6-1
NOTE 1: Only single switched UL is supported.			

Table 8.2.2-1: NE-DC contiguous intra-band configurations within FR1

Feature	DL/UL	maximum number of E-UTRA CCs	maximum number of NR CCs	Duplex-mode	Release independent from	requirements to be fulfilled (see 38.307 of the REL in which the CA configuration was introduced)
Intra-band contiguous NE-DC	DL	3	1	FDD	Rel-15	Table B.4.6-1
	UL[1]	1	1	FDD	Rel-15	
NOTE 1: Only single switched UL is supported.						

9 Release independent features for NR UE supporting satellite access operation

9.1 Additional NR operating bands for NR NTN in frequency range 1

Requirements for NR UE supporting satellite access operation, for additional NTN operating bands of TS 38.101-5 in Rel-P [8] are introduced via this clause.

Table 9.1-1: Additional NR operating bands for NR NTN in FR1-NTN

Feature	Duplex-mode	Release independent from	Requirements to be fulfilled (see TS 38.307 of the release in which the band was introduced)
NTN operating bands	FDD	Rel-17	Table F.1.1-1, Table F.1.2-1, Table F.1.3-1

Table 9.1-2: NR NTN UE power class in FR1-NTN

Feature	Duplex-mode	Release independent from	Requirements to be fulfilled (see TS 38.307 of the release in which the power class was introduced)
Power Class 3	FDD	Rel-17	Table F.1.1-1

Table 9.1-3: NR NTN UE channel bandwidth in FR1-NTN

Feature	Duplex-mode	Release independent from	Requirements to be fulfilled (see TS 38.307 of the release in which the UE channel bandwidth was introduced)
UE channel bandwidth	FDD	Rel-17	Table F.1.1-1

Annex A :
Frequency arrangement for overlapping operating bands

The following information is provided in order to assist a UE derive the DL NR-ARFCN and UL NR-ARFCN in a multi-band environment, in which multiple overlapping operating bands may be indicated in the fields *freqBandIndicatorNR* and *MultiFrequencyBandListNR-SIB*.

The overlapping bands, independent of release, which may be indicated in a cell are shown in Table A-1 for applicable NR operating bands. The DL NR-ARFCN and UL NR-ARFCN are derived according to TS 38.101-1 and TS 38.101-2.

Table A-1: Overlapping bands (multi-band environments) for each NR band

NR Operating Band	Overlapping NR operating bands	Duplex Mode
n2	n25	FDD
n5	n18, n26	FDD
n8	n106	FDD
n18	n5, n26	FDD
n12	n85	FDD
n25	n2	FDD
n26	n5, n18	FDD
n31	n72	FDD
n38	n41, n90	TDD
n41	n38, n90	TDD
n48	n78, n77	TDD
n72	n31	FDD
n78	n48, n77	TDD
n77	n48, n78	TDD
n80	n86	SUL
n85	n12	FDD
n86	n80	SUL
n96	n102	TDD
n102	n96	TDD
n106	n8	FDD
n257	n258	TDD
n257	n261	TDD
n259	n260	TDD

Annex B (normative): Common Requirements for bands, CA, SUL or DC

B.1 Purpose of annex

The purpose of Annex B is to group the requirements that are common for several bands or CA configurations in this specification and use the common tables as references.

B.2 Common RRM requirements

B.3 Common UE performance requirements

B.3.1 Common UE performance requirements for different CA configurations and combination sets

The requirements and test cases listed in Table B.3.1-1 are specified in Rel-P version of TS 38.101-4 [5].

Table B.3.1-1: Common UE performance requirements for different CA configurations and combination sets

Section / Clause	Description
5.2A.2.1	PDSCH 2RX demodulation requirements for NR FR1 CA configurations (Note 1)
5.2A.3.1	PDSCH 4RX demodulation requirements for NR FR1 CA configurations (Note 1)
7.2A.2	PDSCH 2RX demodulation requirements for NR FR2 CA configurations (Note 1)
5.2A.2.2	PDSCH 2RX demodulation requirements for NR FR1 intra-band contiguous CA with power imbalance (Note 2)
5.2A.3.2	PDSCH 4RX demodulation requirements for NR FR1 intra-band contiguous CA with power imbalance (Note 2)
6.2A	Channel Quality Indicator (CQI) reporting requirements for NR FR1 CA (Note 3)
8.2A	Channel Quality Indicator (CQI) reporting requirements for NR FR2 CA (Note 3)
NOTE 1: The applicability of requirements for different CA configurations and bandwidth combination sets is specified in Section 5.1.1.5 and 7.1.1.5. NOTE 2: The applicability of PDSCH performance requirements with power imbalance for intra-band contiguous CA is specified in Section 5.1.1.6. NOTE 3: The applicability of Channel Quality Indicator (CQI) reporting requirements for CA specified in Section 6.1.1.5 and 8.1.1.5.	

B.3.2 Common UE performance requirements for interworking between NR and E-UTRA

The requirements and test cases listed in Table B.3.2-1 and Table B.3.2-2 are specified in Rel-P version of TS 38.101-4 [5].

Table B.3.2-1: Common UE performance requirements for intra-band contiguous EN-DC within FR1

Section / Clause	Description
9.5B.1.1	PDSCH demodulation for FR1 intra-band contiguous EN-DC with power imbalance (Note 1)
NOTE 1: The requirements applicability for UE supporting FR1 intra-band and inter-band EN-DC is specified in Section 9.1.1.	

Table B.3.2-2: Common UE performance requirements for intra-band non-contiguous EN-DC within FR1

Section / Clause	Description
9.5B.1.2	PDSCH demodulation for FR1 intra-band non-contiguous EN-DC with power imbalance (Note 1)
NOTE 1: The requirements applicability for UE supporting FR1 intra-band and inter-band EN-DC is specified in Section 9.1.1.	

B.3.3 Common PDSCH demodulation and CSI requirements with inter cell interference and intra cell inter user interference

The requirements and test cases listed in Table B.3.3-1 are specified in Rel-P version of TS 38.101-4 [5].

Table B.3.3-1: UE PDSCH demodulation and CSI requirements with MMSE-IRC receiver for scenarios with inter cell interference and intra cell inter user interference

Section / Clause	Description
5.2.2.1.15	PDSCH demodulation requirements with inter cell interference for 2RX FDD
5.2.3.1.15	PDSCH demodulation requirements with inter cell interference for 4RX FDD
5.2.2.2.16	PDSCH demodulation requirements with inter cell interference for 2RX TDD
5.2.3.2.16	PDSCH demodulation requirements with inter cell interference for 4RX TDD
5.2.2.1.16	PDSCH demodulation requirements with intra cell inter user interference for 2RX FDD[Note1] Test 1-1
5.2.3.1.16	PDSCH demodulation requirements with intra cell inter user interference for 4RX FDD[Note1] Test 1-1, 2-1
5.2.2.2.17	PDSCH demodulation requirements with intra cell inter user interference for 2RX TDD[Note1] Test 1-1
5.2.3.2.17	PDSCH demodulation requirements with intra cell inter user interference for 4RX TDD[Note1] Test 1-1, 2-1
6.2.2.1.2.3	CQI requirements with inter cell interference for 2RX FDD
6.2.3.1.2.3	CQI requirements with inter cell interference for 4RX FDD
6.2.2.2.2.2	CQI requirements with inter cell interference for 2RX TDD
6.2.3.2.2.2	CQI requirements with inter cell interference for 4RX TDD
Note1: Only the specified test cases under the sub-clause are release independent.	

B.3.4 Common PDSCH absolute physical layer throughput requirements with link adaptation

The requirements and test cases listed in Table B.3.4-1 are specified in Rel-P version of TS 38.101-4 [5].

Table B.3.4-1: UE PDSCH absolute physical layer throughput requirements with link adaptation

Section / Clause	Description
5.6.2.1.1	FR1 PDSCH absolute physical layer throughput requirements with link adaptation for 2RX FDD
5.6.3.1.1	FR1 PDSCH absolute physical layer throughput requirements with link adaptation for 4RX FDD
5.6.2.2.1	FR1 PDSCH absolute physical layer throughput requirements with link adaptation for 2RX TDD
5.6.3.2.1	FR1 PDSCH absolute physical layer throughput requirements with link adaptation for 4RX TDD
7.6.2.2.1	FR2 PDSCH absolute physical layer throughput requirements with link adaptation for 2RX TDD

B.3.5 Common PDSCH demodulation and CQI requirements with 8Rx

The requirements and test cases listed in Table B.3.5-1 are specified in Rel-P version of TS 38.101-4 [5].

Table B.3.5-1: UE PDSCH demodulation requirements with 8Rx

Section / Clause	Description
5.2.4.1	PDSCH demodulation requirements for 8Rx FDD
5.2.4.2	PDSCH demodulation requirements for 8Rx TDD
5.2A.4	PDSCH CA demodulation requirements for 8Rx
6.2.4	CQI requirements with 8Rx

B.4 Common UE RF requirements

B.4.1 Common UE RF requirements for a release independent band

The requirements and test cases listed in Table B.4.1-1 are specified in REL-P version of TS 38.101-1 [2] or TS 38.101-2 [3].

Table B.4.1-1: Common UE RF requirements for a release independent band

Clause / Clause	Description
5.2	Operating bands
5.3	UE Channel bandwidth
5.4	Channel arrangement
6.2	Transmitter power
6.3	Output power dynamics
6.4	Transmit signal quality
6.5	Output RF spectrum emissions
6.6 of [3]	Beam correspondence
7.3	Reference sensitivity
7.4	Maximum input level
7.5	Adjacent Channel Selectivity
7.6	Blocking characteristics
7.7 of [2]	Spurious response
7.8 of [2]	Intermodulation characteristics
7.9	Spurious emissions
L.1	Indication of modified MPR behavior
NOTE: A UE which supports any FR2 band introduced in release N, where N > 15, shall meet the requirements according to the FR2 UE multi-band relaxation factors defined in Table 6.2.1.3-4 of the release N version of [3] for all FR2 bands which it supports.	

B.4.2 Common UE RF requirements for CA configurations within NR frequency range 1 or NR frequency range 2

The requirements and test cases listed in Table B.4.2-1 are specified in in REL-P version of TS 38.101-1 [2] or TS 38.101-2 [3].

Table B.4.2-1: Common UE RF requirements for a release independent CA configurations within NR frequency range 1 or NR frequency range 2

Clause	Description
5.2A	Operating bands for CA
5.3A	UE channel bandwidth for CA
5.4A	Channel arrangement for CA
5.5A	Configurations for CA
6.2A	Transmitter power for CA
6.3A	Output power dynamics for CA
6.4A	Transmit signal quality for CA
6.5A	Output RF spectrum emissions for CA
6.6A of [3]	Beam correspondence for CA
7.3A	Reference sensitivity for CA
7.4A	Maximum input level for CA
7.5A	Adjacent Channel Selectivity for CA
7.6A	Blocking characteristics for CA
7.7A of [2]	Spurious response for CA
7.8A of [2]	Intermodulation characteristics for CA
7.9A of [2]	Spurious emissions for CA

The requirements and test cases listed in Table B.4.2-2 are specified in in REL-P version of TS 38.101-1 [2].

Table B.4.2-2: Common UE RF requirements for a release independent intra-band contiguous UL CA configurations with UL MIMO within NR frequency range 1

Clause	Description
6.2H	Transmitter power for CA with UL MIMO
6.2H.1	Transmitter power for intra-band UL contiguous CA for UL MIMO
6.3H	Output power dynamics for intra-band UL contiguous CA for UL MIMO
6.4H	Transmit signal quality for CA with UL MIMO
6.4H.1	Transmit signal quality for intra-band UL contiguous CA for UL MIMO
6.5H	Output RF spectrum emissions for CA with UL MIMO
6.5H.1	Output RF spectrum emissions for intra-band UL contiguous CA for UL MIMO

The requirements and test cases listed in Table B.4.2-3 are specified in REL-P version of TS 38.101-1 [2].

Table B.4.2-3: Common UE RF requirements for a release independent inter-band UL CA configurations with UL MIMO within NR frequency range 1

Clause	Description
6.2H.3	Transmitter power for inter-band UL CA with UL MIMO
6.3H.3	Output power dynamics for inter-band UL CA with UL MIMO
6.4H.3	Transmit signal quality for inter-band UL CA with UL MIMO
6.5H.3	Output RF spectrum emissions for inter-band UL CA with UL MIMO
7.3A.2.3	Reference sensitivity power level for Inter-band CA

The requirements and test cases listed in Table B.4.2-4 are specified in REL-P version of TS 38.101-1 [2].

Table B.4.2-4: Common UE RF requirements for a release independent inter-band UL CA configurations with Tx Diversity within NR frequency range 1

Clause	Description
6.2L.3	Transmitter power for inter-band UL CA with Tx Diversity
6.3L.3	Output power dynamics for inter-band UL CA with Tx Diversity
6.4L.3	Transmit signal quality for inter-band UL CA with Tx Diversity
6.5L.3	Output RF spectrum emissions for inter-band UL CA with Tx Diversity
7.3A.2.3	Reference sensitivity power level for Inter-band CA

B.4.3 Common UE RF requirements for SUL

The requirements and test cases listed in Table B.4.3-1 are specified in REL-P version of TS 38.101-1 [2].

Table B.4.3-1: Common UE RF requirements for a release independent SUL

Clause	Description
5.2	Operating bands
5.2C	Operating band combination for SUL
5.4.2.1	NR-ARFCN and channel raster (7.5kHz frequency shift for SUL)
5.5C	Configurations for SUL
6.2C	Transmitter power for SUL
6.4.2.2	Carrier leakage (7.5 kHz shift with the carrier frequency.)
7.3.3	ΔRIB,c
7.3C	Reference sensitivity for SUL
7.6C	Blocking characteristics for SUL

B.4.4 Common UE RF requirements for interband CA configurations between NR frequency range 1 and NR frequency range 2

The requirements and test cases listed in Table B.4.4-1 are specified in in REL-P version of TS 38.101-3 [4].

Table B.4.4-1: Common UE RF requirements for a release independent interband CA configurations between NR frequency range 1 and NR frequency range 2

Clause	Description
5.2A	Operating bands for CA
5.3A	UE channel bandwidth for CA
5.4A	Channel arrangement for CA
5.5A	Configurations for CA
6.2A	Transmitter power for CA
6.3A	Output power dynamics for CA
6.4A	Transmit signal quality for CA
6.5A	Output RF spectrum emissions for CA
7.3A	Reference sensitivity for CA
7.4A	Maximum input level for CA
7.5A	Adjacent Channel Selectivity for CA
7.6A	Blocking characteristics for CA
7.7A	Spurious response for CA
7.8A	Intermodulation characteristics for CA
7.9A	Spurious emissions for CA

B.4.5 Common UE RF requirements for Inter-band NR-DC configurations between frequency range 1 and frequency range 2

The requirements and test cases listed in Table B.4.5-1 are specified in in REL-P version of TS 38.101-3 [4].

Table B.4.5-1: Common UE RF requirements for a release independent Inter-band NR-DC configurations between frequency range 1 and frequency range 2

Clause	Description
4.2	Applicability of minimum requirements
5.2B	Operating bands for DC
5.5B	Configuration for DC
6.2B.5	Configured output power for NR-DC

B.4.5a Common UE RF requirements for Inter-band NR-DC configurations within frequency range 1

The requirements and test cases listed in Table B.4.5a-1 are specified in REL-P version of TS 38.101-1 [2].

Table B.4.5a-1: Common UE RF requirements for release independent Inter-band NR-DC configurations within frequency range 1

Clause	Description
5.2B	Operating bands for DC
5.5B	Configurations for DC
6.2B	Transmitter power for NR-DC
6.3B	Output power dynamics for NR-DC
6.4B	Transmit signal quality for NR-DC
6.5B	Output RF spectrum emissions for NR-DC
7.3B	Reference sensitivity for NR-DC
7.4B	Maximum input level for NR-DC
7.5B	Adjacent channel selectivity for NR-DC
7.6B	Blocking characteristics for NR-DC
7.7B	Spurious response for NR-DC
7.8B	Intermodulation characteristics for NR-DC
7.9B	Spurious emissions for NR-DC

B.4.6 Common UE RF requirements for NR interworking between NR and E-UTRA

The requirements and test cases listed in Table B.4.6-1 are specified in REL-P version of TS 38.101-3 [4].

Table B.4.6-1: Common UE RF requirements for a release independent NR interworking between NR and E-UTRA

Clause	Description
4.2	Applicability of minimum requirements
5.2B	Operating bands for DC
5.3B	UE channel bandwidth for DC
5.4B	Channel arrangement for DC
5.5B	Configuration for DC
6.2B	Transmitter power for DC
6.3B	Output power dynamics for DC
6.4B	Transmit signal quality for DC
6.5B	Output RF spectrum emissions for DC
6.6B	Beam correspondence for DC
7.3B	Reference sensitivity level for DC
7.4B	Maximum input level for DC in FR1
7.5B	Adjacent Channel Selectivity for DC in FR1
7.6B	Blocking characteristics for DC in FR1
7.7B	Spurious response for DC in FR1
7.8B	Intermodulation characteristics for DC in FR1
7.9A	Spurious emissions for CA in FR1

The requirements and test cases listed in Table B.4.6-2 are specified in REL-P version of TS 38.101-3 [4].

Table B.4.6-2: Common UE RF requirements for a release independent NR interworking between NR with UL MIMO within FR1 and E-UTRA

Clause	Description
6.2H	Transmitter power for DC with UL MIMO
6.3H	Output power dynamics for DC with UL MIMO
6.4H	Transmit signal quality for DC with UL MIMO
6.5H	Output RF spectrum emissions for DC with UL MIMO
7.3B.2.3	Inter-band EN-DC within FR1

The requirements and test cases listed in Table B.4.6-3 are specified in REL-P version of TS 38.101-3 [4].

Table B.4.6-3: Common UE RF requirements for a release independent NR interworking between NR with Tx Diversity within FR1 and E-UTRA

Clause	Description
6.2L	Transmitter power for DC with Tx Diversity
6.3L	Output power dynamics for DC with Tx Diversity
6.4L	Transmit signal quality for DC with Tx Diversity
6.5L	Output RF spectrum emissions for DC with Tx Diversity
7.3B.2.3	Inter-band EN-DC within FR1

B.4.7 Common UE RF requirements for UL 7.5KHz shift for TDD band n40

The requirements and test cases listed in Table B.4.7-1 are specified in REL-P version of TS 38.101-1 [2]. For Band n40, UL shift is only applicable to uplink transmissions using a 15 kHz SCS.

Table B.4.7-1: Common UE RF requirements for UL 7.5KHz shift for TDD Band n40

Clause	Description
5.4.2.1	NR-ARFCN and channel raster (7.5kHz frequency shift for TDD band n40)

B.4.8 Common UE RF requirements shared spectrum access

The requirements and test cases listed in Table B.4.8-1 are specified in REL-P version of TS 38.101-1 [2].

Table B.4.8-1: Common UE RF requirements for shared spectrum access

Clause	Description
5.2A	Operating bands for CA
5.3A	UE channel bandwidth for CA
5.4A	Channel arrangement for CA
5.5A	Configurations for CA
6.2F	Transmitter power for shared spectrum channel access
6.3F	Output power dynamics for shared spectrum channel access
6.4F	Transmit signal quality for shared spectrum channel access
6.5F	Output RF spectrum emissions
7.3F	Reference sensitivity for shared spectrum channel access
7.4	Maximum input level
7.5F	Adjacent channel selectivity
7.6F	Blocking characteristics
7.7F	Spurious response for shared spectrum channel access
7.8F	Intermodulation characteristics for shared spectrum channel access
7.9	Spurious emissions

B.4.9 Common UE RF requirements for Intra-band and Inter-band NR CA configurations involving shared spectrum access

The requirements and test cases listed in Table B.4.9-1 are specified in REL-P version of TS 38.101-1 [2].

Table B.4.9-1: Common UE RF requirements for Intra-band and Inter-band NR CA configurations involving shared spectrum access

Clause	Description
6.2F.1A.1	UE maximum output power for inter-band CA
6.2F.2A.1	UE maximum output power reduction for inter-band CA
6.2F.3A.1	UE additional maximum output power reduction for inter-band CA
6.3F.3A.1	General ON/OFF mask for inter-band CA
6.4F.2A.1	Transmit modulation quality for inter-band CA
7.3F.3	$\Delta R_{IB,c}$
7.3F.4	Intra-band contiguous shared spectrum channel access CA
7.3G.5	Inter-band CA with shared spectrum channel access
7.5F.2	Intra-band contiguous shared spectrum channel access CA
7.7F.2	Intra-band contiguous shared spectrum channel access CA

B.4.10 Common UE RF requirements for 4Rx

The requirements and test cases listed in Table B.4.10-1 are specified in REL-P version of TS 38.101-1 [2].

Table B.4.10-1: Common UE RF requirements for 4Rx for single band in FR1

Clause	Description
6.2.4	Configured transmitted power
7.3	Reference sensitivity
7.4	Maximum input level
7.5	Adjacent Channel Selectivity
7.6	Blocking characteristics
7.7	Spurious response
7.8	Intermodulation characteristics
7.9	Spurious emissions

The requirements and test cases listed in Table B.4.10-2 are specified in REL-P version of TS 38.101-1 [2].

Table B.4.10-2: Common UE RF requirements for 4Rx for CA in FR1

Clause	Description
6.2A.4	Configured output power for CA
7.3A	Reference sensitivity for CA
7.4A	Maximum input level for CA
7.5A	Adjacent Channel Selectivity for CA
7.6A	Blocking characteristics for CA
7.7A	Spurious response for CA
7.8A	Intermodulation characteristics for CA
7.9A	Spurious emissions for CA

B.4.11 Common UE RF requirements for transparent Tx diversity

The requirements and test cases listed in Table B.4.11-1 are specified in in REL-P version of TS 38.101-1 [2].

Table B.4.11-1: Common UE RF requirements for a release independent transparent Tx diversity

Clause	Description
6.2G	Transmitter power for Tx Diversity
6.2G.1	UE maximum output power for Tx Diversity
6.2G.2	UE maximum output power reduction for Tx Diversity
6.2G.3	UE additional maximum output power reduction for Tx Diversity
6.2G.4	Configured transmitted power for Tx Diversity
6.3G	Output power dynamics for Tx Diversity
6.3G.1	Minimum output power for Tx Diversity
6.3G.2	Transmit OFF power for Tx Diversity
6.3G.3	Transmit ON/OFF time mask for Tx Diversity
6.3G.4	Power control for Tx Diversity
6.4G	Transmit signal quality for Tx Diversity
6.4G.1	Frequency error for Tx Diversity
6.4G.2	Transmit modulation quality for Tx Diversity
6.4G.2.1	Error Vector Magnitude
6.4G.2.2	Carrier leakage
6.4G.2.3	In-band emissions
6.4G.2.4	EVM equalizer spectrum flatness for Tx Diversity
6.5G	Output RF spectrum emissions for Tx Diversity
6.5G.1	Occupied bandwidth for Tx Diversity
6.5G.2	Out of band emission for Tx Diversity
6.5G.3	Spurious emission for Tx Diversity
6.5G.4	Transmit intermodulation for Tx Diversity
7.3G	Reference sensitivity for Tx Diversity
F.8	EVM measurement for dual Tx

B.4.12 Common UE RF requirements for NR V2X

The requirements and test cases listed in Table B.4.12-1 are specified in REL-P version of TS 38.101-1 [2].

Table B.4.12-1: Common UE RF requirements for release independent operating bands and con-current operation for NR V2X

Clause	Description
5.2E	Operating band for V2X
5.2E.1	V2X operating bands
5.2E.2	V2X operating bands for con-current operation
5.3E	Channel bandwidth for V2X
5.4E	Channel arrangement for V2X
6.2E	Transmitter power for V2X
6.3E	Output power dynamics for V2X
6.4E	Transmit signal quality for V2X
6.5E	Output RF spectrum emissions for V2X
7.3E	Reference sensitivity for V2X
7.4E	Maximum input level for V2X
7.5E	Adjacent channel selectivity for V2X
7.6E	Blocking characteristics for V2X
7.7E	Spurious response for V2X
7.8E	Intermodulation characteristics for V2X

The requirements and test cases listed in Table B.4.12-2 are specified in REL-P version of TS 38.101-3 [2].

Table B.4.12-2: Common UE RF requirements for release independent intra-band and inter-band concurrent operation for NR V2X

Clause	Description
5.2E	Operating bands for V2X
5.3E	UE Channel bandwidth for V2X
5.5E	Configuration for V2X operation
6.2E	Transmitter power for V2X in FR1
6.3E	Output power dynamics for V2X
6.4E	Transmit signal quality for V2X operation in FR1
6.5E	Output RF spectrum emissions for V2X operation in FR1
7.3E	Reference sensitivity for V2X operation in FR1
7.4E	Maximum input level for V2X operation in FR1
7.5E	Adjacent channel selectivity for V2X operation in FR1
7.6E	Blocking characteristics for V2X in FR1
7.7E	Spurious response for V2X in FR1
7.8E	Intermodulation characteristics for V2X operation in FR1

B.4.13 Common UE RF requirements for UL MIMO bands in FR1

The requirements and test cases listed in Table B.4.13-1 and Table B.4.13-2 are specified in REL-P version of TS 38.101-1 [2].

Table B.4.13-1: Common UE RF requirements for UL MIMO band in FR1

Clause	Description
6.2D	Transmitter power for UL MIMO
6.3D	Output power dynamics for UL MIMO
6.4D	Transmit signal quality for UL MIMO
6.5D	Output RF spectrum emissions for UL MIMO
7.3D	Reference sensitivity for UL MIMO
7.4D	Maximum input level for UL MIMO
7.5D	Adjacent channel selectivity for UL MIMO
7.6D	Blocking characteristics for UL MIMO
7.7D	Spurious response for UL MIMO
7.8D	Intermodulation characteristics for UL MIMO

Table B.4.13-2: Common UL MIMO requirements for shared spectrum channel access in FR1

Clause	Description
6.2F.1D	UE maximum output power for UL MIMO
6.2F.2D	UE maximum output power reduction for UL MIMO
6.2F.3D	UE additional maximum output power reduction for UL MIMO
6.2F.4D	Configured transmitted power UL MIMO

B.4.14 Common UE RF requirements for Inter-band CA configurations with Tx switching within NR FR1

The requirements and test cases listed in Table B.4.14-1 are specified in Rel-P version of TS 38.101-1 [2].

Table B.4.14-1: Common UE RF requirements for Inter-band CA configurations with Tx switching within NR FR1

Clause	Description
5.2A.2	Operating bands for inter-band CA
5.5A.3	Configurations for inter-band CA
6.3A.3.3	Transmit ON/OFF time mask for inter-band CA

B.4.15 Common UE RF requirements for SUL configurations with Tx switching within NR FR1

The requirements and test cases listed in Table B.4.15-1 are specified in Rel-P version of TS 38.101-1 [2].

Table B.4.15-1: Common UE RF requirements for SUL configurations with Tx switching within NR FR1

Clause	Description
6.3C.3	Transmit ON/OFF time mask for SUL

B.4.16 Common UE RF requirements for Inter-band EN-DC with tx switching

The requirements and test cases listed in Table B.4.16-1 are specified in REL-P version of TS 38.101-3 [4].

Table B.4.16-1: Common UE RF requirements for Inter-band EN-DC with tx switching

Clause	Description
5.5B.4	Configuration for Inter-band EN-DC within FR1
6.3B.4	Output power dynamics for switching between two uplink carriers

B.4.17 Common UE RF requirements for 8Rx

The requirements and test cases listed in Table B.4.17-1 are specified in REL-P version of TS 38.101-1 [2].

Table B.4.17-1: Common UE RF requirements for 8Rx for single band in FR1

Clause	Description
6.2.4	Configured output power
7.3	Reference sensitivity
7.4	Maximum input level
7.5	Adjacent Channel Selectivity
7.6	Blocking characteristics
7.7	Spurious response
7.8	Intermodulation characteristics
7.9	Spurious emissions

The requirements and test cases listed in Table B.4.17-2 are specified in REL-P version of TS 38.101-1 [2].

Table B.4.17-2: Common UE RF requirements for 8Rx for CA in FR1

Clause	Description
6.2A.4	Configured output power for CA
7.3A	Reference sensitivity for CA
7.4A	Maximum input level for CA
7.5A	Adjacent Channel Selectivity for CA
7.6A	Blocking characteristics for CA
7.7A	Spurious response for CA
7.8A	Intermodulation characteristics for CA
7.9A	Spurious emissions for CA

B.4.18 Common UE RF requirements for RedCap

The requirements and test cases listed in Table B.4.18-1 are specified in REL-P version of TS 38.101-1 [2].

Table B.4.18-1: Common UE RF requirements for RedCap UE in FR1

Clause	Description
5.3	UE channel bandwidth
5.3I	Channel bandwidth for RedCap
5.4	Channel arrangement
6.1	General
6.2	Transmitter power
6.2I	Transmitter power for RedCap
6.3	Output power dynamics
6.4	Transmit signal quality
6.5	Output RF spectrum emissions
7.1	General
7.1I	General
7.2	Diversity characteristics
7.3I	Reference sensitivity for RedCap
7.4	Maximum input level
7.5	Adjacent channel selectivity
7.6	Blocking characteristics
7.7	Spurious response
7.8	Intermodulation characteristics
7.9	Spurious emissions

Annex C (normative): Common Requirements for high speed train scenario

C.1 Common RRM requirements for high speed train scenario

The requirements and test cases listed in Table C.1-1 are specified in TS 38.133 Rel-P and TS 36.133 Rel-P.

Table C.1-1: RRM requirements for high speed train scenario

Clause	Description
4.2.2.2 in TS 38.133	Cell Re-selection requirements for intra-frequency NR cells for high speed train scenario
9.2.5 in TS 38.133	NR intra-frequency measurements without measurement gaps for high speed train scenario
9.2.6 in TS 38.133	NR intra-frequency measurements with measurement gaps for high speed train scenario
4.2.2.5 in TS 38.133	Cell Re-selection measurements of inter-RAT E-UTRAN cells for high speed train scenario
9.4.2 in TS 38.133	NR − E-UTRAN FDD measurements for high speed train scenario
9.4.3 in TS 38.133	NR − E-UTRAN TDD measurements for high speed train scenario
9.5.4 in TS 38.133	L1-RSRP measurement requirements for high speed train scenario
4.2.2.5.6 in TS 36.133	Cell Re-selection measurements of inter-RAT NR cells for high speed train scenario
8.1.2.4.21 in TS 36.133	E-UTRAN FDD – NR measurements for high speed train scenario
8.1.2.4.22 in TS 36.133	E-UTRAN TDD – NR measurements for high speed train scenario

C.2 Common UE demodulation requirements for high speed train scenario

The requirements and test cases listed in Table C.2-1 are specified in TS 38.101-4 Rel-P.

Table C.2-1: UE demodulation requirements for high speed train scenario

Clause	Description
5.2.2.2.9 test 1-1	TDD PDSCH requirements for HST-SFN for high speed train scenario with 2RX
5.2.3.2.9 test 1-1	TDD PDSCH requirements for HST-SFN for high speed train scenario with 4RX
5.2.2.1.9 test 1-1	FDD PDSCH requirements for HST-SFN for high speed train scenario with 2RX
5.2.3.1.9 test 1-1	FDD PDSCH requirements for HST-SFN for high speed train scenario with 4RX
5.2.2.2.1 test 1-10, 1-11	TDD PDSCH requirements for HST single tap and multi-path for high speed train scenario with 2RX
5.2.3.2.1 test 1-10, 1-11	TDD PDSCH requirements for HST single tap and multi-path for high speed train scenario with 4RX
5.2.2.1.1 test 1-6, 1-7	FDD PDSCH requirements for HST single tap and multi-path for high speed train scenario with 2RX
5.2.3.1.1 test 1-6, 1-7	FDD PDSCH requirements for HST single tap and multi-path for high speed train scenario with 4RX
5.2.2.1.10 test 1-1, test 1-2	FDD PDSCH requirements for HST DPS for high speed train scenario with 2RX
5.2.2.2.10 test 1-1, test 1-2	TDD PDSCH requirements for HST DPS for high speed train scenario with 2RX
5.2.3.1.10 test 1-1, test 1-2	FDD PDSCH requirements for HST DPS for high speed train scenario with 4RX
5.2.3.2.10 test 1-1, test 1-2	TDD PDSCH requirements for HST DPS for high speed train scenario with 4RX

C.3 Common RRM requirements for FR1 high speed train scenario enhancement

The requirements and test cases listed in Table C.3-1 are specified in TS 38.133 Rel-P.

Table C.3-1: RRM requirements for FR1 high speed train scenario enhancement

Clause	Description
4.2.2.4 in TS 38.133	Cell Re-selection requirements for inter-frequency NR cells for FR1 high speed train scenario
9.2.5 in TS 38.133	NR intra-frequency measurements without measurement gaps for activated SCell and deactivated SCell for FR1 high speed train scenario
9.2.6 in TS 38.133	NR intra-frequency measurements with measurement gaps for active SCell for FR1 high speed train scenario
9.3.4 in TS 38.133	Inter-frequency measurement with measurement gaps for FR1 high speed train scenario
9.3.5 in TS 38.133	Inter-frequency measurement with measurement gaps for FR1 high speed train scenario
9.3.9 in TS 38.133	Inter frequency measurements without measurement gaps for FR1 high speed train scenario
9.5.4 in TS 38.133	L1-RSRP measurement requirements for FR1 high speed train scenario

C.4 Common UE demodulation requirements for FR1 high speed train scenario enhancement

The requirements and test cases listed in Table C.4-1 are specified in TS 38.101-4 Rel-P.

Table C.4-1: CA demodulation requirements for FR1 high speed train scenario enhancement

Clause	Description
5.2A.2.4	PDSCH requirements for HST-SFN CA for FR1 high speed train scenario with 2RX
5.2A.3.4	PDSCH requirements for HST-SFN CA for FR1 high speed train scenario with 4RX
5.2A.2.5	PDSCH requirements for HST-DPS CA for FR1 high speed train scenario with 2RX
5.2A.3.5	PDSCH requirements for HST-DPS CA for FR1 high speed train scenario with 4RX

Annex D (normative): Common PMI reporting requirements for 16TX and 32TX

D.1 Common UE PMI reporting requirements for 16TX and 32TX TypeI-SinglePanel Codebook

The requirements and test cases listed in Table D.1-1 are specified in Rel-P version of TS 38.101-4 [5].

Table D.1-1: UE PMI reporting requirements for 16TX and 32TX TypeI-SinglePanel Codebook

Section / Clause	Description
6.3.2.1.3	Multiple PMI with 16TX TypeI-SinglePanel Codebook for 2Rx FDD
6.3.2.1.4	Single PMI with 32TX TypeI-SinglePanel Codebook for 2Rx FDD
6.3.2.2.3	Multiple PMI with 16TX TypeI-SinglePanel Codebook for 2Rx TDD
6.3.2.2.4	Single PMI with 32TX TypeI-SinglePanel Codebook for 2Rx TDD
6.3.3.1.3	Multiple PMI with 16TX TypeI-SinglePanel Codebook for 4Rx FDD
6.3.3.1.4	Single PMI with 32TX TypeI-SinglePanel Codebook for 4Rx FDD
6.3.3.2.3	Multiple PMI with 16TX TypeI-SinglePanel Codebook for 4Rx TDD
6.3.3.2.4	Single PMI with 32TX TypeI-SinglePanel Codebook for 4Rx TDD

D.2 Common UE PMI reporting requirements for 16TX TypeII Codebook

The requirements and test cases listed in Table D.2-1 are specified in Rel-P version of TS 38.101-4 [5].

Table D.2-1: UE PMI reporting requirements for 16TX TypeII Codebook

Section / Clause	Description
6.3.2.1.5	Multiple PMI with 16TX TypeII Codebook for 2Rx FDD
6.3.2.2.5	Multiple PMI with 16TX TypeII Codebook for 2Rx TDD
6.3.3.1.5	Multiple PMI with 16TX TypeII Codebook for 4Rx FDD
6.3.3.2.5	Multiple PMI with 16TX TypeII Codebook for 4Rx TDD

Annex E (normative): Common PDSCH demodulation requirements with LTE CRS rate matching

E.1 Common PDSCH demodulation requirements with LTE CRS rate matching

The requirements and test cases listed in Table E.1-1 are specified in Rel-P version of TS 38.101-4 [5].

Table E.1-1: UE PDSCH demodulation requirements with LTE CRS rate matching for TDD band

Section / Clause	Description
5.2.2.2.4	PDSCH demodulation requirements with LTE CRS rate matching for 2Rx TDD
5.2.3.2.4	PDSCH demodulation requirements with LTE CRS rate matching for 4Rx TDD

Annex F (normative): Common requirements for UEs supporting satellite access operation

F.1 Common requirements for UEs supporting satellite access operation in FR1-NTN

F.1.1 Common UE RF requiremets for a release independent NR NTN band in FR1-NTN

The requirements and test cases listed in Table F.1.1-1 are specified in Rel-P version of TS 38.101-5 [8].

Table F.1.1-1: UE RF requirements for a release independent NTN band in FR1-NTN

Clause	Description
5.2	Operating bands
5.3	UE Channel bandwidth
5.4	Channel arrangement
6.2	Transmitter power
6.3	Output power dynamics
6.4	Transmit signal quality
6.5	Output RF spectrum emissions
7.3	Reference sensitivity
7.4	Maximum input level
7.5	Adjacent Channel Selectivity
7.6	Blocking characteristics
7.7	Spurious response
7.8	Intermodulation characteristics
7.9	Spurious emissions

F.1.2 Common RRM requirements for NR NTN in FR1-NTN

The requirements and test cases listed in Table F.1.2-1 are specified in Rel-P version of TS 38.133 [6].

Table F.1.2-1: RRM requirements for NR NTN in FR1-NTN

Clause	Description
4.2C	Cell Re-selection for NR UE for Satellite Access
4.3C	Minimization of Drive Tests (MDT) for Satellite Access
5.1C	Cell Re-selection
5.3C	Minimization of Drive Tests (MDT) for Satellite Access
6.1C	Handover for SAN
6.2C	RRC Connection Mobility Control for Satellite Access
7.1C	UE transmit timing for Satellite Access
7.2C	UE timer accuracy for satellite access
7.3C	Timing advance for satellite access
8.1C	Radio Link Monitoring for Satellite Access
8.5C	Link Recovery Procedures for Satellite Access
8.6C	Active BWP switch delay for satellite access
8.10C	Active TCI state switching delay for satellite access
8.14C	Pathloss reference signal switching delay for satellite access
9.1C	General measurement requirement for SAN
9.2C	NR intra-frequency measurements for SAN
9.3C	NR inter-frequency measurements for SAN
9.5C	L1-RSRP measurements for Reporting for satellite access
10.1.2C	Intra-frequency RSRP accuracy requirements for FR1 SAN
10.1.4C	Inter-frequency RSRP accuracy requirements for FR1 SAN
10.1.7C	Intra-frequency RSRQ accuracy requirements for FR1 SAN
10.1.9C	Inter-frequency RSRQ accuracy requirements for FR1 SAN
10.1.12C	Intra-frequency SINR accuracy requirements for FR1 SAN
10.1.14C	Inter-frequency SINR accuracy requirements for FR1 SAN
10.1.19C	L1-RSRP accuracy requirements for FR1 SAN
A.14	NR standalone tests for Satellite access

F.1.3 Common UE demodulation requirements for NR NTN in FR1-NTN

The requirements and test cases listed in Table F.1.3-1 are specified in Rel-P version of TS 38.101-5 [8].

Table F.1.3-1: Demodulation requirements for NR NTN in FR1-NTN

Clause	Description
8.2	Demodulation performance requirements

Annex F (Informative): Change history

Change history							
Date	**Meeting**	**TDoc**	**CR**	**Rev**	**Cat**	**Subject/Comment**	**New version**
2017-09	RAN4#85	R4-1712166				Skeleton TS	0.0.1
2018-03	RAN4#86	R4-1802107				TS 38.307 v0.1.0	0.1.0
2018-06	RAN#80	RP-180988				v1.0.0 submitted for plenary approval	1.0.0
2018-06	RAN#80					Approved by plenary – Rel-15 spec under change control	15.0.0
2018-09	RAN#81	RP-181896	0001		F	CR for FR2 Power Classes in TS38.307	15.1.0
2018-12	RAN#82	RP-182362	0002	2	B	CR for TS 38.307	15.2.0
2019-06	RAN#84	RP-191237	0005		B	Addition of missing features for TS 38.307	15.3.0
2019-09	RAN#85	RP-192046	0007	1	B	REL-16 TS 38.307 addition of Annexes for UE RF requirements	16.0.0
2019-12	RAN#86	RP-193019	0009		B	CR for REL-16 TS 38.307 for PC2 EN-DC TDD+TDD	16.1.0
2019-12	RAN#86	RP-193018	0012		B	CR for TS 38.307: additional UE channel bandwidth	16.1.0
2019-12	RAN#86	RP-193036	0014		A	Adding SDL to 38.307	16.1.0
2020-03	RAN#87	RP-200404	0016		A	38.307 CR power class	16.2.0
2020-06	RAN#88	RP-201046	0018		F	CR to 38.307 on clarification of the FR2 multi-band requirement framework	16.3.0
2020-06	RAN#88	RP-200986	0022		A	Maintenance CR to 38307 on a reference spec number R16	16.3.0
2020-06	RAN#88	RP-200959	0023		F	Endorsed CR to 38307 on applicable SUL requirements	16.3.0
2020-06	RAN#88	RP-200965	0019	1	B	CR for 38.307: Introduction of Power Class 1.5	16.3.0
2020-09	RAN#89	RP-201503	0028		B	CR for 38.307: Introduction of Power Class 1.5	16.4.0
2020-12	RAN#90	RP-202485	0032	1	F	CR on adding NR ovelapping bands list in TS38.307 in Rel-16	16.5.0
2020-12	RAN#90	RP-202428	0040	1	B	CR to TS 38.307 on release independent update for the Rel.16 EN-DC and NR CA/DC	16.5.0
2020-12	RAN#90	RP-202429	0041		B	CR to TS 38.307 on Release independence of FDD-TDD EN-DC High Power UE	16.5.0
2020-12	RAN#90	RP-202422	0035	1	B	CR on release independent for Rel.16 NR HST RRM requirements	16.5.0
2020-12	RAN#90	RP-202422	0036	1	B	CR on release independent for Rel.16 NR HST UE demodulation requirements	16.5.0
2020-12	RAN#90		0024	3	B	LTE/NR spectrum sharing in Band 40/n40	17.0.0
2021-03	RAN#91	RP-210093	0042		B	CR for 38.307: introduction of power class 5 for FR2	17.1.0
2021-03	RAN#91	RP-210065	0045		A	Draft CR for TS 38.307 on UE demodulation performance requirements (Rel-17)	17.1.0
2021-03	RAN#91	RP-210078	0048		A	CR on release independent for Rel-16 NR HST UE demodulation requirements	17.1.0
2021-03	RAN#91	RP-210098	0051	1	B	CR to 38.807 Release independent for UE power class 2 NR inter-band CA and SUL configurations (R17)	17.1.0
2021-06	RAN#92	RP-211104	0062		A	CR to 38.307 to add interband CA R17 CATA	17.2.0
2021-09	RAN#93	RP-211921	0071		A	CR to TS 38.307 on the definition of the duplex-mode for the band configurations	17.3.0
2021-09	RAN#93	RP-211922	0077		A	CR Correction of common UE RF requirement 38.307 Annex tables R17	17.3.0
2021-12	RAN#94	RP-212828	0080	1	B	CR for REL-17 TS 38.307 for FR1 NE-DC	17.4.0
2021-12	RAN#94	RP-212837	0085		F	Big CR for TS 38.307 Maintenance (Rel-17)	17.4.0
2022-03	RAN#95	RP-220353	0087	1	B	CR to TS 38.307 on Release independence of BCS4 and BCS5	17.5.0
2022-03	RAN#95	RP-220343	0088		B	CR to TS38.307: Release independent for PC2 FDD bands	17.5.0
2022-03	RAN#95	RP-220349	0090	1	B	Big CR for TS 38.307: release independent requirements for TxD	17.5.0
2022-03	RAN#95	RP-220337	0093		A	Big CR for TS 38.307 Maintenance (Rel-17)	17.5.0
2022-03	RAN#95	RP-220352	0096		F	CR for release independent for 4Rx support for NR band	17.5.0
2022-06	RAN#96	RP-221685	0098		B	CR for release independent of Rel.17 NE-DC FR1 and FR2 combinations	17.6.0
2022-06	RAN#96	RP-221686	0099		B	CR for 38.307 to update the release independence for R17 SUL band combinations	17.6.0
2022-06	RAN#96	RP-221670	0100	1	B	Big CR for TS 38.307: release independent for UL MIMO bands (R17)	17.6.0
2022-06	RAN#96	RP-221661	0101	1	B	Big CR to TS 38.307: intra-band CA with MIMO requirements (R17)	17.6.0
2022-06	RAN#96	RP-221677	0102	1	F	CR to TS 38.307: SL requirements (R17)	17.6.0
2022-06	RAN#96	RP-221663	0104		A	Big CR for TS 38.307 Maintenance (Rel-17)	17.6.0
2022-06	RAN#96	RP-221680	0106		B	CR to 38.307: release independent for FR1 HST demodulation (Rel-17)	17.6.0
2022-09	RAN#97	RP-222036	0107		F	CR to R17 38307 to add UL configurations for inter-band combinations and overlapping bands	17.7.0
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2022-12	RAN#98-e	RP-223310	0112		F	CR on release independent for FR1 HST demodulation	17.8.0
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2023-06	RAN#100	RP-231350	0119		F	CR on 38.307: Cleanup the brackets of section number in UE PDSCH requirements with inter cell interference	17.10.0
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2023-12	RAN#102	RP-233363	0132		B	CR for 38.307: Release independece of NR 3 MHz channel bandwidth	18.0.0
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2023-12	RAN#102	RP-233363	0134		B	TS 38.307 big CR for NR_ENDC_RF_FR1_enh2	18.0.0
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2024-04	RAN#103	RP-240597	0161		F	(NR_CA_R18_Intra-Core) Rel-18 Cat F CR for 38.307 Correct and update the requirements for EN-DC and NR-CA	18.1.0
2024-06	RAN#104	RP-241439	0163		A	Clarification of release independence requirements for intra-cell inter-user interference cases	18.2.0
2024-06	RAN#104	RP-241444	0168	1	B	CR for TS 38.307: Updates for new type of NE-DC configurations in Rel.18	18.2.0
2024-06	RAN#104	RP-241433	0169	1	B	CR on 8Rx demodulation requirements release independence	18.2.0

History

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