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Applicability of radio transmission, radio reception and radio resource management test cases
(3GPP TS 38.522 version 15.2.0 Release 15)

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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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1 presented to TSG for information;

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y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

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The present document is one part of a multi-part Technical Specification (TS) covering the New Radio (NR) User Equipment (UE) conformance specification, which is divided in the following parts:

3GPP TS 38.521-1 [1]: NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Range 1 Standalone;

3GPP TS 38.521-2 [2]: NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 2: Range 2 Standalone;

3GPP TS 38.521-3 [3]: NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 3: Range 1 and Range 2 Interworking operation with other radios;

3GPP TS 38.521-4 [4]: NR; User Equipment conformance specification; Radio transmission and reception; Part 4: Performance;

3GPP TS 38.522: NR; User Equipment (UE) conformance specification; Applicability of RF and RRM test cases;

3GPP TS 38.533 [5]: NR; User Equipment (UE) conformance specification; Radio resource management;

1 Scope

The present document provides the Implementation Conformance Statement (ICS) proforma for 5G New Radio (NR) User Equipment (UE), in compliance with the relevant requirements.

The present document specifies the recommended applicability statement for the test cases included in 3GPP TS 38.521-1 [1], TS 38.521-2 [2], TS 38.521-3 [3], TS 38.521-4 [4] and TS 38.533 [5]. These applicability statements are based on the features implemented in the UE.

Special conformance testing functions can be found in 3GPP TS 38.509 [6] and the common test environments are included in 3GPP TS 38.508-1 [7]. Common implementation conformance statement (ICS) proforma can be found in 3GPP TS 38.508-2 [8].

The present document is valid for UE implemented according to 3GPP releases starting from Release 15 up to the Release indicated on the cover page of the present document.

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 unless the context in which the reference is made suggests a different Release is relevant (information on the applicable release in a particular context can be found in e.g. test case title, description or applicability, message description or content).

[1] 3GPP TS 38.521-1: NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Range 1 Standalone

[2] 3GPP TS 38.521-2: NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 2: Range 2 Standalone

[3] 3GPP TS 38.521-3: NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 3: Range 1 and Range 2 Interworking operation with other radios

[4] 3GPP TS 38.521-4: NR; User Equipment conformance specification; Radio transmission and reception; Part 4: Performance

[5] 3GPP TS 38.533: NR; User Equipment (UE) conformance specification; Radio resource management

[6] 3GPP TS 38.509: 5GS; Special conformance testing functions for User Equipment (UE)

[7] 3GPP TS 38.508-1: 5GS; User Equipment (UE) conformance specification; Part 1: Common test environment

[8] 3GPP TS 38.508-2: 5GS; User Equipment (UE) conformance specification; Part 2: Common Implementation Conformance Statement (ICS) proforma

[9] 3GPP TR 21.905: Vocabulary for 3GPP Specifications

Editor’s note: More specifications need to be added.

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [9] 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 [9].

EIRP(Link=Link angle, Meas=Link angle): measurement of the UE such that the link angle is aligned with the measurement angle. EIRP (indicator to be measured) can be replaced by EIS, Frequency, EVM, carrier Leakage, In-band eission and OBW. Beam peak search grids, TX beam peak direction, and RX beam peak direction can be selected to describe Link.

EIRP(Link=Link angle, Meas=beam peak direction): measurement of the EIRP of the UE such that the measurement angle is aligned with the beam peak direction within an acceptable measurement error uncertainty.

Implementation Conformance Statement (ICS): statement made by the supplier of an implementation or system claimed to conform to a given specification, stating which capabilities have been implemented

ICS proforma: document, in the form of a questionnaire, which when completed for an implementation or system becomes an ICS

Implementation extra Information for Testing (IXIT): A statement made by a supplier or implementer of an UEUT which contains or references all of the information (in addition to that given in the ICS) related to the UEUT and its testing environment, which will enable the test laboratory to run an appropriate test suite against the UEUT

Inter-band carrier aggregation: Carrier aggregation of component carriers in different operating bands.

NOTE: Carriers aggregated in each band can be contiguous or non-contiguous.

Intra-band contiguous carrier aggregation: Contiguous carriers aggregated in the same operating band.

Intra-band non-contiguous carrier aggregation: Non-contiguous carriers aggregated in the same operating band.

IXIT proforma: A document, in the form of a questionnaire, which when completed for an UEUT becomes an IXIT

Protocol Implementation Conformance Statement (PICS): An ICS for an implementation or system claimed to conform to a given protocol specification

Protocol Implementation eXtra Information for Testing (PIXIT): An IXIT related to testing for conformance to a given protocol specification

Static conformance review: A review of the extent to which the static conformance requirements are claimed to be supported by the UEUT, by comparing the answers in the ICS(s) with the static conformance requirements expressed in the relevant specification(s)

TRP(Link=Link angle): measurement of the TRP of the UE such that the measurement angle is aligned with the beam peak direction within an acceptable measurement uncertainty. TX beam peak direction and RX beam peak direction can be selected to describe Link.

NOTE: For requirements based on EIRP/EIS, the radiated interface boundary is associated to the far-field region

3.2 Symbols

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

<symbol> <Explanation>

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [9] 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 [9].

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

CA	Carrier Aggregation
EN-DC	E-UTRA NR-Dual Connection
FR1	Frequency Range 1 (450 MHz - 6000 MHz)
FR2	Frequency Range 2 (24250 MHz - 52600 MHz)
ICS	Implementation Conformance Statement
IXIT	Implementation eXtra Information for Testing
NR	New Radio
PIXIT	Protocol Implementation eXtra Information for Testing
SCS	System Conformance Statement
SUL	Supplementary UpLink
TC	Test Case
TRP	Total Radiated Power
UEUT	User Equipment Under Test

4 Recommended test case applicability

The applicability of each individual test is identified in the tables 4.1.1-1 / 4.1.2-1 / 4.1.3-1 / 4.1.4-1 / 4.2-1. This is just a recommendation based on the purpose for which the test case was written.

The test case applicability condition of every test is formally expressed by the use of Boolean expression that are based on parameters (ICS) included in annex A of TS 38.508-2 [8] without reference.

Selection criteria of tested bands and tested CA configurations for each applicable test is formally expressed using group theory based on parameters (ICS) included in annex A of TS 38.508-2 [8] without reference.

Additional information related to the Test Case (TC), e.g. affecting its dynamic behaviour or its execution may be provided as well.

The columns in tables 4.1.1-1 / 4.1.2-1 / 4.1.3-1 / 4.1.4-1 / 4.2-1 have the following meaning:

Clause

The clause column indicates the clause number in TS 38.521-1 [1], TS 38.521-2 [2], TS 38.521-3 [3], TS 38.521-4 [4] and TS 38.533 [5] that contains the test body.

Title

The title column describes the name of the test and contains the clause title of the clause in TS 38.521-1 [1], TS 38.521-2 [2], TS 38.521-3 [3], TS 38.521-4 [4] and TS 38.533 [5] that contains the test body.

Release

The release column indicates the earliest release from which each test case is applicable. It may also indicate a range of releases or a single release to which a test case is applicable.

Applicability - Condition

The following notations are used for the applicability column:

R	recommended - the test case is recommended to all terminals supporting NR
O	optional - the test case is optional
N/A	not applicable - in the given context, the test case is not recommended.
Ci	conditional - the test is recommended ("R") or not ("N/A") depending on the support of other items. "i" is an integer identifying a unique conditional status expression which is defined immediately following the table. For nested conditional expressions, the syntax "IF ... THEN (IF ... THEN ... ELSE...) ELSE ..." is used to avoid ambiguities.

Applicability - Comments

This comments column contains a verbal description of the condition included in the applicability column.

Tested Bands / CA-Configurations Selection

This column defines a set of bands / CA Configurations the test is to be run for, if the test is applicable. If the set is empty, the test is considered as not applicable.

The following notations are used in the tested bands selection column:

Di	Derive the set based on Band Selection Criteria Di defined in table [FFS].
Eli	Derive the set based on CA Configurations Selection Criteria Ei defined in table [FFS].
TBD	Band selection not defined at this time, in the meantime test all Bands / CA Configurations
Text	For more complex selection criteria, or if the criteria are already specified somewhere else in the spec, text reference to the section is given.

Additional Information

This column contains indication if the test case may perform differently depending on the UE capabilities.

NOTE 1: To meet the validation requirements from certification bodies then there is a need to uniquely reference the FDD and TDD branch (i.e. different behaviour within one and the same TC) of common FDD and TDD RF test cases in table 4.1-1. The FDD and TDD branches of common FDD and TDD test cases can be referenced by amending a "FDD" or "TDD" suffix to the test case clause number.

NOTE 2: To meet the validation requirements from certification bodies then there is a need to uniquely reference the 2Rx (UE supports 2 Rx antenna ports in the tested band) and 4Rx (UE supports 4 Rx antenna ports in the tested band) branch of common 2Rx and 4Rx RRM test cases in table 4.2-1. The 2Rx and 4Rx branches of common 2Rx and 4Rx test cases can be referenced by amending a "2Rx" or "4Rx" suffix to the test case clause number. For example for test case 4.2.1 the 2Rx and 4Rx branches can be identified by "4.2.1_2Rx" and "4.2.1_4Rx".

Editor’s note: The above description will be updated when necessary, for example 1Tx and 2Tx differentiation.

4.1 RF conformance test cases

NOTE: To determine applicability of a test case, FGI support in combined or fdd-Add-UE-NR-Capabilities or tdd-Add-UE- NR-Capabilities, as well as supported CBW and SCS in the *RF-Parameters* IE (see TS 38.331) which conveys RF related capabilities for NR operation, is taken into account.

4.1.1 FR1 standalone conformance test cases

Table 4.1.1-1: Applicability of RF conformance test cases, ref. TS 38.521-1 [1]

Clause	Title	Release	Applicability		Tested Bands/ CA-Configurations Selection	Additional Information
			Condition	Comments		
	Transmitter Characteristics					
6.2.1	UE maximum output power	Rel-15	FR1_C01	UEs supporting 5GS FR1 PC3	FR1_D01	PC3 requirements applied
				UEs supporting 5GS FR1 PC2	FR1_D02	PC2 requirements applied
6.2.2	Maximum Power Reduction (MPR)	Rel-15	FR1_C01	UEs supporting 5GS FR1 PC3	FR1_D01	PC3 requirements applied Test execution not necessary if TS 38.521-1 6.5.2.4.1 is executed.
				UEs supporting 5GS FR1 PC2	FR1_D02	PC2 requirements applied Test execution not necessary if TS 38.521-1 6.5.2.4.1 is executed.
6.2.4	Configured transmitted power	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.2C.1	Configured transmitted power for SUL	Rel-15	FR1_C02	UEs supporting 5GS FR1 and SUL	FR1_D03	
6.2D.1	UE maximum output power for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
6.2D.2	UE maximum output power reduction for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
6.2D.4	Configured transmitted power for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
6.3.1	Minimum output power	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.3.2	Transmit OFF power	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	Test execution not necessary if TS 38.521-1 6.3.3.2 is executed.
6.3.3.2	General ON/OFF time mask	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.3.3.4	PRACH time mask	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.3.3.6	SRS time mask	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.3.3.7	PUSCH-PUCCH and PUSCH-SRS time masks	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.3.4.2	Absolute power tolerance	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.3.4.3	Power Control Relative power tolerance	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.3.4.4	Aggregate power tolerance	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	

Clause	Title	Release	Applicability		Tested Bands/ CA-Configurations Selection	Additional Information
			Condition	Comments		
6.3D.1	Minimum output power for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
6.3D.2	Transmit OFF power for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
6.3D.3	Transmit ON/OFF time mask for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
6.3D.4.1	Absolute power tolerance for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
6.3D.4.2	Relative power tolerance for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
6.3D.4.3	Aggregate power tolerance for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
6.4.1	Frequency error	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.4.2.1	Error Vector Magnitude	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.4.2.2	Carrier leakage	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.4.2.3	In-band emissions	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.4.2.4	EVM equalizer spectrum flatness	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.4.2.5	EVM equalizer spectrum flatness for Pi/2 BPSK	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.4A.1.1	Frequency error for CA (2UL CA)	Rel-15	FFS	UEs supporting 5GS FR1 and CA (2UL CA)	FFS	
6.4A.2.1.1	Error Vector Magnitude for CA (2UL CA)	Rel-15	FFS	UEs supporting 5GS FR1 and CA (2UL CA)	FFS	
6.4A.2.2.1	Carrier leakage for CA (2UL CA)	Rel-15	FFS	UEs supporting 5GS FR1 and CA (2UL CA)	FFS	
6.4A.2.3.1	In-band emissions for CA (2UL CA)	Rel-15	FFS	UEs supporting 5GS FR1 and CA (2UL CA)	FFS	
6.5.1	Occupied bandwidth	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.5.4	Transmit intermodulation	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.5.2.2	Spectrum Emission Mask	Rel-15	FR1_C01	UEs supporting 5GS FR1 PC3	FR1_D01	PC3 requirements applied
				UEs supporting 5GS FR1 PC2	FR1_D02	PC2 requirements applied
6.5.2.3	Additional spectrum emission mask	Rel-15	FR1_C01	UEs supporting 5GS FR1 PC3	FR1_D01	PC3 requirements applied
				UEs supporting 5GS FR1 PC2	FR1_D02	PC2 requirements applied
6.5.2.4.1	NR ACLR	Rel-15	FR1_C01	UEs supporting 5GS FR1 PC3	FR1_D01	PC3 requirements applied

Clause	Title	Release	Applicability		Tested Bands/ CA-Configurations Selection	Additional Information
			Condition	Comments		
				UEs supporting 5GS FR1 PC2	FR1_D02	PC2 requirements applied
6.5.2.4.2	UTRA ACLR	Rel-15	FR1_C01	UEs supporting 5GS FR1 PC3	FR1_D01	PC3 requirements applied
6.5.3.1	General spurious emissions	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.5.3.2	Spurious emission for UE co-existence	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.5.3.3	Additional spurious emissions	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.5.4	Transmit intermodulation	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
6.5A.2.2.1	Spectrum emission mask for CA (2UL CA)	Rel-15	FFS	UEs supporting 5GS FR1 and CA (2UL CA)	FFS	
6.5A.2.4.1.1	NR ACLR for CA (2UL CA)	Rel-15	FFS	UEs supporting 5GS FR1 and CA (2UL CA)	FFS	
6.5A.2.4.2.1	UTRA ACLR for CA (2UL CA)	Rel-15	FFS	UEs supporting 5GS FR1 and CA (2UL CA)	FFS	
6.5A.3.1.1	General spurious emissions for CA (2UL CA)	Rel-15	FFS	UEs supporting 5GS FR1 and CA (2UL CA)	FFS	
6.5A.3.2.1	Spurious emissions for UE co-existence for CA (2UL CA)	Rel-15	FFS	UEs supporting 5GS FR1 and CA (2UL CA)	FFS	
6.5A.4.1	Transmit intermodulation for CA (2UL CA)	Rel-15	FFS	UEs supporting 5GS FR1 and CA (2UL CA)	FFS	
6.5C.1	Occupied bandwidth for SUL	Rel-15	FR1_C02	UEs supporting 5GS FR1 and SUL	FR1_D03	
6.5C.2.2	Spectrum Emission Mask for SUL	Rel-15	FR1_C02	UEs supporting 5GS FR1 and SUL	FR1_D03	
6.5C.2.3	Additional spectrum emission mask for SUL	Rel-15	FR1_C02	UEs supporting 5GS FR1 and SUL	FR1_D03	
6.5C.2.4.1	NR ACLR for SUL	Rel-15	FR1_C02	UEs supporting 5GS FR1 and SUL	FR1_D03	
6.5C.2.4.2	UTRA ACLR for SUL	Rel-15	FR1_C02	UEs supporting 5GS FR1 and SUL	FR1_D03	
6.5C.3.1	General spurious emissions for SUL	Rel-15	FR1_C02	UEs supporting 5GS FR1 and SUL	FR1_D03	
6.5C.3.2	Spurious emission for UE co-existence for SUL	Rel-15	FR1_C02	UEs supporting 5GS FR1 and SUL	FR1_D03	
6.5C.3.3	Additional spurious emissions for SUL	Rel-15	FR1_C02	UEs supporting 5GS FR1 and SUL	FR1_D03	
6.5C.4	Transmit intermodulation for SUL	Rel-15	FR1_C02	UEs supporting 5GS FR1 and SUL	FR1_D03	
6.5D.1	Occupied bandwidth for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
6.5D.2.2	Spectrum Emission Mask for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
6.5D.2.4.1	NR ACLR for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	

Clause	Title	Release	Applicability		Tested Bands/ CA-Configurations Selection	Additional Information
			Condition	Comments		
6.5D.2.4.2	UTRA ACLR for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
6.5D.3.1	General spurious emissions for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
6.5D.3.2	Spurious emission for UE co-existence for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
6.5D.3.3	Additional spurious emissions for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
6.5D.4	Transmit intermodulation for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
7.3.2	Reference sensitivity power level	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
7.3.2_1	Reference sensitivity level with 4 Rx antenna ports	Rel-15	FFS	UEs supporting 5GS FR1 with 4Rx antenna ports	FR1_D01	
7.3A.2.1	Reference sensitivity power level for 2DL CA	Rel-15	FFS	UEs supporting 5GS FR1 and 2DL CA	FFS	
7.3C.2	Reference sensitivity power level	Rel-15	FR1_C02	UEs supporting 5GS FR1 and SUL	FR1_D03	
7.3D.2	Reference sensitivity power level for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
7.4	Maximum input level	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
7.4D	Maximum input level for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
7.5	Adjacent channel selectivity	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
7.6.2	Inband Blocking	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
7.6.3	Out-of-band blocking	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
7.7A.1	Spurious response for 2DL CA	Rel-15	FFS	UEs supporting 5GS FR1 and CA (2DL CA)	FFS	
7.7A.2	Spurious response for 3DL CA	Rel-15	FFS	UEs supporting 5GS FR1 and CA (3DL CA)	FFS	
7.7A.3	Spurious response for 4DL CA	Rel-15	FFS	UEs supporting 5GS FR1 and CA (4DL CA)	FFS	
7.7D	Spurious response for UL-MIMO	Rel-15	FR1_C03	UEs supporting 5GS FR1 and UL-MIMO	FR1_D01	
7.8.2	Wide band Intermodulation	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	
7.9	Spurious emissions	Rel-15	FR1_C01	UEs supporting 5GS FR1	FR1_D01	

Table 4.1.1-1a: Applicability of RF conformance test cases Conditions

FR1_C01 IF (A.4.1-1/1 OR A.4.1-1/2) AND A.4.1-3/1 THEN R ELSE N/A
FR1_C02 IF (A.4.1-1/1 OR A.4.1-1/2) AND (A.4.1-2/3 OR A.4.1-2/5) AND A.4.1-3/1 THEN R ELSE N/A
FR1_C03 IF (A.4.1-1/1 OR A.4.1-1/2) AND (A.4.3.2-1/14 OR A.4.3.2-1/15) AND A.4.1-3/1 THEN R ELSE N/A
Note 1: The ICS proforma are defined in TS 38.508-2 [8].

Table 4.1.1-1b: Tested Bands Selection Criteria

Code	Selection	Comment
FR1_D01	A.4.3.1-1 OR A.4.3.1-2	All supported FR1 Bands
FR1_D02	A.4.3.1-4	All supported FR1 PC2 Bands
FR1_D03	A.4.3.1-5	All supported FR1 SUL Bands
Note 1: Band Selection is based on set theory. For each feature, item number shall correspond to the Band number. The result is the set of bands for which the test shall be conducted. The following operators are used: AND: Set intersection ($\cap$). {1,2} AND {2,3} = {2} OR: Set union ($\cup$). {1,2} OR {2,3} = {1,2,3} NOT: Set complement (\), full set being all bands. NOT{1} = {2 ...256} Also note that this is set without repetitions so {1} AND {1} = {1} The following basic sets are used: {1,2}: Explicitly given band set 10MHz: All bands supporting 10 MHz The following sets derived from pro-forma tables are also used: TBD		

Table 4.1.1-1c: Tested CA Configurations Selection Criteria

Code	Selection	Comment
FR1_Ex		

4.1.2 FR2 standalone conformance test cases

Table 4.1.2-1: Applicability of RF conformance test cases, ref. TS 38.521-2 [2]

Clause	Title	Release	Applicability		Tested Bands/ CA-Configurations Selection	Additional Information
			Condition	Comments		
	Transmitter Characteristics					
6.2.1.1	EIRP and TRP	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.2.1.2	UE maximum output power - Spherical coverage	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.2.3	UE maximum output power with additional requirements	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.3.1	Minimum output power	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.3.2	Transmit OFF power	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.3.3.2	General ON/OFF time mask	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.3.3.4	PRACH time mask	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.3.4.3	Relative power tolerance	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.4.1	Frequency error	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.4.2.1	Error vector magnitude	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.4.2.2	Carrier leakage	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.4.2.3	In-band emissions	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.4.2.4	EVM equalizer spectrum flatness	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.4.2.5	EVM spectral flatness for pi/2 BPSK modulation with spectrum shaping	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.5.1	Occupied bandwidth	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.5.2.1	Spectrum Emission Mask	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.5.2.3	Adjacent channel leakage ratio	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
6.5.3.1	Transmitter Spurious emissions	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
7.3.2	Reference sensitivity power level	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
7.5	Adjacent channel selectivity	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	
7.6.2	In-band Blocking	Rel-15	FR2_C01	UEs supporting 5GS FR2	FR2_D01	

Table 4.1.2-1a: Applicability of RF conformance test cases Conditions

FR2_C01 IF A.4.1-1/2 AND A.4.1-3/1 THEN R ELSE N/A
Note 1: The ICS proforma are defined in TS 38.508-2 [8].

Table 4.1.2-1b: Tested Bands Selection Criteria

Code	Selection	Comment
FR2_D01	A.4.3.1-3	All supported FR2 Bands
Note 1:	Band Selection is based on set theory. For each feature, item number shall correspond to the Band number. The result is the set of bands for which the test shall be conducted. The following operators are used: AND: Set intersection (∩). {1,2} AND {2,3} = {2} OR: Set union (∪). {1,2} OR {2,3} = {1,2,3} NOT: Set complement (\), full set being all bands. NOT{1} = {2 ...256} Also note that this is set without repetitions so {1} AND {1} = {1} The following basic sets are used: {1,2}: Explicitly given band set 10MHz: All bands supporting 10 MHz The following sets derived from pro-forma tables are also used: TBD	

Table 4.1.2-1c: Tested CA Configurations Selection Criteria

Code	Selection	Comment
FR2_Ex		

4.1.3 NR interworking between NR FR1 and NR FR2 and between NR and LTE conformance test cases

Table 4.1.3-1: Applicability of RF conformance test cases, ref. TS 38.521-3 [3]

Clause	Title	Release	Applicability		Tested Bands/ CA-Configurations Selection	Additional Information
			Condition	Comments		
	Transmitter Characteristics					
6.2B.1.1	UE Maximum Output Power for Intra-Band Contiguous EN-DC	Rel-15	C01	UEs supporting Intra-Band Contiguous EN-DC	D01	
6.2B.1.3	UE Maximum Output Power for Inter-Band EN-DC within FR1	Rel-15	C03	UEs supporting Inter-Band EN-DC within FR1	D01	Execute TS 38.521-1 TC 6.2.1 and skip TC 6.2B.1.3 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.2B.2.1	UE Maximum Output Power reduction for Intra-Band Contiguous EN-DC	Rel-15	C01	UEs supporting Intra-Band Contiguous EN-DC	D01	
6.2B.2.2	UE Maximum Output Power reduction for Intra-Band Non-Contiguous EN-DC	Rel-15	C07	UEs supporting Intra-Band non-contiguous EN-DC within FR1	D01	
6.2B.2.3	UE Maximum Output Power reduction for Inter-Band EN-DC within FR1	Rel-15	C03	UEs supporting Inter-Band EN-DC within FR1	D01	Execute TS 38.521-1 TC 6.2.2 and skip TC 6.2B.2.3 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.2B.2.4	UE Maximum Output Power reduction for Inter-Band EN-DC including FR2	Rel-15	C04	UEs supporting Inter-Band EN-DC including FR2	D02	
6.2B.4.1.1	Configured Output Power for Intra-Band Contiguous EN-DC	Rel-15	C01	UEs supporting Intra-Band Contiguous EN-DC	D01	
6.2B.4.1.2	Configured Output Power for Intra-Band Non-Contiguous EN-DC	Rel-15	C02	UEs supporting Intra-Band Non-Contiguous EN-DC	D01	
6.2B.4.1.3	Configured Output Power for Inter-Band EN-DC within FR1	Rel-15	C03	UEs supporting Inter-Band EN-DC within FR1	D01	Execute TS 38.521-1 6.2.4 and skip 6.2B.4.1.3 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1

Clause	Title	Release	Applicability		Tested Bands/ CA-Configurations Selection	Additional Information
			Condition	Comments		
6.2B.4.1.4	Configured Output Power for Inter-Band EN-DC including FR2	Rel-15	C04	UEs supporting Inter-Band EN-DC including FR2	D02	Execute TS 38.521-2 6.2.1.1 and skip 6.2B.4.1.4 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.2B.4.1.5	Configured Output Power for Inter-Band EN-DC including both FR1 and FR2	Rel-15	C05	UEs supporting Inter-Band EN-DC including both FR1 and FR2	D03	
6.3B.1.1	Minimum Output power for intra-band contiguous EN-DC	Rel-15	C01	UEs supporting intra-band contiguous EN-DC	D01	
6.3B.1.2	Minimum output power for intra-band non-contiguous EN-DC	Rel-15	C02	UEs supporting intra-band non-contiguous EN-DC	D01	
6.3B.1.3	Minimum output power for inter-band EN-DC within FR1	Rel-15	C03	UEs supporting inter-band EN-DC within FR1	D01	Execute TS 38.521-1 6.3.1 and skip 6.3B.1.3 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.3B.3.1	Tx ON/OFF time mask for intra-band contiguous EN-DC	Rel-15	C01	UEs supporting intra-band contiguous EN-DC	D01	
6.3B.3.2	Tx ON/OFF time mask for intra-band non-contiguous EN-DC	Rel-15	C02	UEs supporting intra-band non-contiguous EN-DC	D01	
6.3B.3.3	Tx ON/OFF time mask for inter-band EN-DC within FR1	Rel-15	C03	UEs supporting inter-band EN-DC within FR1	D01	Execute TS 38.521-1 TC 6.3.3.2 and skip TC 6.3B.3.3 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.4B.2.1.2	Carrier Leakage for intra-band contiguous EN-DC	Rel-15	C01	UEs supporting intra-band contiguous EN-DC	D01	
6.4B.2.1.3	In-band Emissions for intra-band contiguous EN-DC	Rel-15	C01	UEs supporting intra-band contiguous EN-DC	D01	
6.4B.2.2.1	Error Vector Magnitude for intra-band non-contiguous EN-DC	Rel-15	C02	UEs supporting intra-band non-contiguous EN-DC	D01	
6.4B.2.2.2	Carrier Leakage for intra-band non-contiguous EN-DC	Rel-15	C02	UEs supporting intra-band non-contiguous EN-DC	D01	

Clause	Title	Release	Applicability		Tested Bands/ CA-Configurations Selection	Additional Information
			Condition	Comments		
6.4B.2.2.3	In-band Emissions for intra-band non-contiguous EN-DC	Rel-15	C02	UEs supporting intra-band non-contiguous EN-DC	D01	
6.4B.2.3.1	Error Vector Magnitude for inter-band EN-DC within FR1	Rel-15	C03	UEs supporting inter-band EN-DC within FR1	D01	Execute TS 38.521-1 TC 6.4.2.1 and skip TC 6.4B.2.3.1 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.4B.2.3.2	Carrier Leakage for inter-band EN-DC within FR1	Rel-15	C03	UEs supporting inter-band EN-DC within FR1	D01	Execute TS 38.521-1 TC 6.4.2.2 and skip TC 6.4B.2.3.2 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.4B.2.3.3	In-band Emissions for inter-band EN-DC within FR1	Rel-15	C03	UEs supporting inter-band EN-DC within FR1	D01	Execute TS 38.521-1 TC 6.4.2.3 and skip TC 6.4B.2.3.3 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.4B.2.4.1	Error Vector Magnitude for inter-band EN-DC including FR2	Rel-15	C04	UEs supporting Inter-band including FR2	D02	Execute TS 38.521-2 6.4.2.1 and skip 6.4B.2.4.1 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.4B.2.4.2	Carrier Leakage for inter-band EN-DC including FR2	Rel-15	C04	UEs supporting Inter-band including FR2	D02	Execute TS 38.521-2 6.4.2.2 and skip 6.4B.2.4.2 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1

Clause	Title	Release	Applicability		Tested Bands/ CA-Configurations Selection	Additional Information
			Condition	Comments		
6.4B.2.4.3	In-band Emissions for inter-band EN-DC including FR2	Rel-15	C04	UEs supporting Inter-band including FR2	D02	Execute TS 38.521-2 6.4.2.3 and skip 6.4B.2.4.3 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.4B.2.4.4	EVM Equalizer Flatness for inter-band EN-DC including FR2	Rel-15	C04	UEs supporting Inter-band including FR2	D02	Execute TS 38.521-2 6.4.2.4 and skip 6.4B.2.4.4 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.5B.1.1	Occupied bandwidth for Intra-Band Contiguous EN-DC	Rel-15	C01	UEs supporting intra-band contiguous EN-DC	D01	
6.5B.1.2	Occupied bandwidth for Intra-Band Non-Contiguous EN-DC	Rel-15	C02	UEs supporting intra-band non-contiguous EN-DC	D01	
6.5B.1.3	Occupied bandwidth for Inter-Band EN-DC within FR1	Rel-15	C03	UEs supporting inter-band EN-DC within FR1	D01	Execute TS 38.521-1 6.5.1 and skip 6.5B.1.3 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.5B.1.4	Occupied bandwidth for Inter-Band EN-DC including FR2	Rel-15	C04	UEs supporting Inter-band including FR2	D02	Execute TS 38.521-2 6.5.1 and skip 6.5B.1.4 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.5B.2.1.1	Spectrum emissions mask for intra-band contiguous EN-DC	Rel-15	C01	UEs supporting intra-band contiguous EN-DC	D01	
6.5B.2.1.2	Additional spectrum emissions mask for intra-band contiguous EN-DC	Rel-15	C01	UEs supporting intra-band contiguous EN-DC	D01	
6.5B.2.1.3	Adjacent channel leakage ratio for intra-band contiguous EN-DC	Rel-15	C01	UEs supporting intra-band contiguous EN-DC	D01	
6.5B.2.2.3	Adjacent channel leakage ratio for intra-band non-contiguous EN-DC	Rel-15	C02	UEs supporting intra-band non-contiguous EN-DC	D01	

Clause	Title	Release	Applicability		Tested Bands/ CA-Configurations Selection	Additional Information
			Condition	Comments		
6.5B.2.3.1	Spectrum emissions mask for Inter-band EN-DC within FR1	Rel-15	C03	UEs supporting Inter-band EN-DC within FR1	D01	Execute TS 38.521-1 6.5.2.2 and skip 6.5B.2.3 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.5B.2.3.3	Adjacent channel leakage ratio for inter-band EN-DC within FR1	Rel-15	C03	UEs supporting Inter-band EN-DC within FR1	D01	Execute TS 38.521-1 6.5.2.4.1 and skip 6.5B.2.3.3 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.5B.2.4.1	Spectrum emissions mask for Inter-band EN-DC including FR2	Rel-15	C04	UEs supporting Inter-band including FR2	D02	Execute TS 38.521-2 6.5.2.1 and skip 6.5B.1.4 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.5B.2.4.3	Adjacent channel leakage ratio for Inter-band EN-DC including FR2	Rel-15	C04	UEs supporting Inter-band including FR2	D02	Execute TS 38.521-2 6.5.2.3 and skip 6.5B.1.4 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.5B.3.1.1	General spurious emissions for intra-band contiguous EN-DC	Rel-15	C01	UEs supporting intra-band contiguous EN-DC	D01	
6.5B.3.1.2	Spurious emission band UE co-existence for intra-band contiguous EN-DC	Rel-15	C01	UEs supporting intra-band contiguous EN-DC	D01	
6.5B.3.2.1	General spurious emissions for intra-band non-contiguous EN-DC	Rel-15	C02	UEs supporting intra-band non-contiguous EN-DC	D01	

Clause	Title	Release	Applicability		Tested Bands/ CA-Configurations Selection	Additional Information
			Condition	Comments		
6.5B.3.3.1	General spurious emissions for Inter-band EN-DC within FR1	Rel-15	C03	UEs supporting Inter-band EN-DC within FR1	D01	Execute TS 38.521-1 6.5.3.1 and skip 6.5B.3.3.1 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.5B.3.3.2	Spurious emission band UE co-existence for Inter-band within FR1	Rel-15	C03	UEs supporting Inter-band EN-DC within FR1	D01	Execute TS 38.521-1 TC 6.5.3.2 and skip TC 6.5B.3.3.2 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.5B.3.4.1	General Spurious Emissions for Inter-band including FR2	Rel-15	C04	UEs supporting Inter-band including FR2	D02	Execute TS 38.521-2 6.5.3.1 and skip 6.5B.3.4 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
6.5B.3.4.2	Spurious emission band UE co-existence for Inter-band including FR2	Rel-15	C04	UEs supporting Inter-band including FR2	D02	
6.5B.4.1	Additonal Spurious Emissions for Intra-band contiguous EN-DC	Rel-15	C01	UEs supporting intra-band contiguous EN-DC	D01	
6.5B.4.2	Additonal Spurious Emissions for Intra-band non-contiguous EN-DC	Rel-15	C02	UEs supporting intra-band non-contiguous EN-DC	D01	
6.5B.4.3	Additonal Spurious Emissions for Inter-band EN-DC	Rel-15	C03	UEs supporting inter-band EN-DC within FR1	D01	
7.3B.2.1	Reference sensitivity for intra-band contiguous EN-DC	Rel-15	C01	UEs supporting intra-band contiguous EN-DC	D01	
7.3B.2.2	Reference sensitivity for Intra-band non-contiguous EN-DC	Rel-15	C02	UEs supporting intra-band non-contiguous EN-DC	D01	

Clause	Title	Release	Applicability		Tested Bands/ CA-Configurations Selection	Additional Information
			Condition	Comments		
7.3B.2.3	Reference sensitivity for Inter-band EN-DC within FR1	Rel-15	C03	UEs supporting inter-band EN-DC within FR1	D01	Execute TS 38.521-1 7.3.2 and skip 7.3B.2.3 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
7.3B.2.4	Reference sensitivity for inter-band EN-DC including FR2	Rel-15	C04	UEs supporting inter-band EN-DC within FR2	D01	Execute TS 38.521-2 7.3.2 and skip 7.3B.2.4 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
7.4B.1	Maximum Input Level for Intra-Band Contiguous EN-DC	Rel-15	C01	UEs supporting Intra-Band Contiguous EN-DC	D01	
7.4B.2	Maximum Input Level for Intra-Band Non-Contiguous EN-DC	Rel-15	C02	UEs supporting Intra-Band Non-Contiguous EN-DC	D01	
7.4B.3	Maximum Input Level for Inter-band EN-DC within FR1	Rel-15	C03	UEs supporting Inter-band EN-DC within FR1	D01	Execute TS 38.521-1 7.4 and skip 7.4B.3 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
7.5B.1	Adjacent Channel Selectivity for intra-band contiguous EN-DC	Rel-15	C01	UEs supporting intra-band contiguous EN-DC	D01	
7.5B.2	Adjacent Channel Selectivity for intra-band non-contiguous EN-DC	Rel-15	C02	UEs supporting intra-band non-contiguous EN-DC	D01	
7.5B.3	Adjacent Channel Selectivity for inter-band EN-DC within FR1	Rel-15	C03	UEs supporting inter-band EN-DC within FR1	D01	Execute TS 38.521-1 7.5 and skip 7.5B.3 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1

Clause	Title	Release	Applicability		Tested Bands/ CA-Configurations Selection	Additional Information
			Condition	Comments		
7.8B.2.3	Inter-band EN-DC in FR1	Rel-15	C03	UEs supporting inter-band EN-DC within FR1	D01	Execute TS 38.521-1 TC 7.8.2 and skip TC 7.8B.2.3 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1
7.9B.3	Spurious Emissions for inter-band EN-DC within FR1	Rel-15	C03	UEs supporting inter-band EN-DC within FR1	D01	Execute TS 38.521-1 TC 7.9 and skip TC 7.9B.3 if UE supports SA. E-UTRA is tested standalone using TS 36.521-1

Table 4.1.3-1a: Applicability of RF conformance test cases Conditions

C01 IF (A.4.1-1/1 OR A.4.1-1/2) AND A.4.1-3/2 AND A.4.1-4/1 THEN R ELSE N/A
C02 IF (A.4.1-1/1 OR A.4.1-1/2) AND A.4.1-3/2 AND A.4.1-4/2 THEN R ELSE N/A
C03 IF (A.4.1-1/1 OR A.4.1-1/2) AND A.4.1-3/2 AND A.4.1-4/3 THEN R ELSE N/A
C04 IF (A.4.1-1/1 OR A.4.1-1/2) AND A.4.1-3/2 AND A.4.1-4/4 THEN R ELSE N/A
C05 IF (A.4.1-1/1 OR A.4.1-1/2) AND A.4.1-3/2 AND (A.4.1-4/3 OR A.4.1-4/4) THEN R ELSE N/A
C06 IF (A.4.1-1/1 OR A.4.1-1/2) AND A.4.1-3/2 AND (A.4.1-4/1 OR A.4.1-4/2 OR A.4.1-4/3 OR A.4.1-4/4) THEN R ELSE N/A
C07 IF (A.4.1-1/1 OR A.4.1-1/2) AND A.4.1-3/2 AND A.4.1-4/2 AND A.4.3.2-1/17 THEN R ELSE N/A
Note 1: The ICS proforma are defined in TS 38.508-2 [8].

Table 4.1.3-1b: Tested Bands Selection Criteria

Code	Selection	Comment
D01	A.4.3.1-1 OR A.4.3.1-2	All supported FR1 Bands
D02	A.4.3.1-3	All supported FR2 Bands
D03	A.4.3.1-1 OR A.4.3.1-2 OR A.4.3.1-3	All supported NR Bands
Note 1: Band Selection is based on set theory. For each feature, item number shall correspond to the Band number. The result is the set of bands for which the test shall be conducted. The following operators are used: AND: Set intersection ($\cap$). {1,2} AND {2,3} = {2} OR: Set union ($\cup$). {1,2} OR {2,3} = {1,2,3} NOT: Set complement (\), full set being all bands. NOT{1} = {2 ...256} Also note that this is set without repetitions so {1} AND {1} = {1} The following basic sets are used: {1,2}: Explicitly given band set 10MHz: All bands supporting 10 MHz The following sets derived from pro-forma tables are also used: TBD		

Table 4.1.3-1c: Tested CA Configurations Selection Criteria

Code	Selection	Comment
Exy		

4.1.4 Performance conformance test cases

Table 4.1.4-1: Applicability of performance test cases, ref. TS 38.521-4 [4]

Clause	Title	Release	Applicability		Tested Bands/ CA-Configurations Selection	Additional Information
			Condition	Comments		
	Performance Requirement					
5.2.2.2.1_1	2Rx TDD FR1 PDSCH mapping Type A performance – 2x2 MIMO with baseline receiver for both SA and NSA	Rel-15	C02	UEs supporting 5GS FR1	D03	
5.2.2.2.1_2	2Rx TDD FR1 PDSCH mapping Type A performance – 2x2 MIMO with enhanced receiver type X for both SA and NSA	Rel-15	C02	UEs supporting 5GS FR1	D03	
5.2.2.1.2_1	2Rx FDD FR1 PDSCH mapping Type A and CSI-RS overlapped with PDSCH performance - 2x2 MIMO with baseline receiver for both SA and NSA	Rel-15	C01	UEs supporting 5GS FR1	D01	
	Reporting of Channel State Information					
6.2.2.1.2.1	2Rx FDD FR1 periodic wideband CQI reporting under fading conditions for both SA and NSA	Rel-15	C01	UEs supporting 5GS FR1	D01	

Table 4.1.4-1a: Applicability of RF conformance test cases Conditions

C01	IF A.4.1-1/1 AND (A.4.1-3/1 OR A.4.1-3/2 OR A.4.1-3/3 OR A.4.1-3/5) THEN R ELSE N/A
C02	IF A.4.1-1/2 AND (A.4.1-3/1 OR A.4.1-3/2 OR A.4.1-3/3 OR A.4.1-3/5) THEN R ELSE N/A
Note 1: The ICS proforma are defined in TS 38.508-2 [8].	

Table 4.1.4-1b: Tested Bands Selection Criteria

Code	Selection	Comment
D01	ANY((A.4.3.1-1 OR A.4.3.1-2) AND 10MHz)	Any band within the set supporting 10 MHz UE Channel BW
D02	ANY((A.4.3.1-1 OR A.4.3.1-2) AND 20MHz)	Any band within the set supporting 20 MHz UE Channel BW
D03	ANY((A.4.3.1-1 OR A.4.3.1-2) AND 40MHz)	Any band within the set supporting 40 MHz UE Channel BW

Note 1: Band Selection is based on set theory. For each feature, item number shall correspond to the Band number. The result is the set of bands for which the test shall be conducted. The following operators are used:

- AND: Set intersection ($\cap$). {1,2} AND {2,3} = {2}
- OR: Set union ($\cup$). {1,2} OR {2,3} = {1,2,3}
- NOT: Set complement (\), full set being all bands. NOT{1} = {2 ...256}
  Also note that this is set without repetitions so {1} AND {1} = {1}

The following basic sets are used:

- {1,2}: Explicitly given band set
- 10MHz: All bands supporting 10 MHz

The following derived sets are also used:

- ANY(): Arbitrarily select a band within set

4.2 RRM conformance test cases

NOTE: To determine applicability of a test case, FGI support in combined or fdd-Add-UE-NR-Capabilities or tdd-Add-UE- NR-Capabilities is taken into account.

Table 4.2-1: Applicability of RRM EN-DC FR1 conformance test cases, ref. TS 38.533 [5]

Clause	Title	Release	Applicability		Additional Information	
			Condition	Description	Comments	Branch
4.4	**Timing**					
4.4.1	**UE Transmit Timing**					
4.4.1.1	EN-DC FR1 UE transmit timing accuracy	Rel-15	RE1_C001	UE supporting EN-DC		
4.4.3	**Timing Advance**					
4.4.3.1	EN-DC timing advance adjustment accuracy	Rel-15	RE1_C001	UE supporting EN-DC		
4.6	**Measurement procedures**					
4.6.1	**Intra-frequency measurements**					
4.6.2	**Inter-frequency measurements**					
4.6.2.1	EN-DC FR1-FR1 event-triggered reporting in non-DRX	Rel-15	RE1_C001	UE supporting EN-DC		
4.6.2.2	EN-DC FR1-FR1 event-triggered reporting in DRX	Rel-15	RE1_C001	UE supporting EN-DC		
4.6.2.3	EN-DC FR1-FR2 event-triggered reporting in non-DRX	Rel-15	FFS	UE supporting EN-DC		
4.6.2.4	EN-DC FR1-FR2 event-triggered reporting in DRX	Rel-15	FFS	UE supporting EN-DC		
4.6.2.5	EN-DC FR1-FR1 event-triggered reporting in non-DRX with SSB time index detection	Rel-15	RE1_C001	UE supporting EN-DC		
4.6.2.6	EN-DC FR1-FR1 event-triggered reporting in DRX with SSB time index detection	Rel-15	RE1_C001	UE supporting EN-DC		
4.6.2.7	EN-DC FR1-FR2 event-triggered reporting in non-DRX with SSB time index detection	Rel-15	FFS	UE supporting EN-DC		
4.6.2.8	EN-DC FR1-FR2 event-triggered reporting in DRX with SSB time index detection	Rel-15	FFS	UE supporting EN-DC		
4.7	**Measurement performance requirements**					
4.7.1	**SS-RSRP**					
4.7.1.1	**Intra-frequency measurements**					
4.7.1.1.1	EN-DC FR1 SS-RSRP absolute measurement accuracy	Rel-15	RE1_C001	UE supporting EN-DC		
4.7.1.1.2	EN-DC FR1 SS-RSRP relative measurement accuracy	Rel-15	RE1_C001	UE supporting EN-DC		
4.7.1.2	**Inter-frequency measurements**					
4.7.1.2.1	EN-DC FR1-FR1 SS-RSRP absolute measurement accuracy	Rel-15	RE1_C001	UE supporting EN-DC		
4.7.1.2.2	EN-DC FR1-FR1 SS-RSRP relative measurement accuracy	Rel-15	RE1_C001	UE supporting EN-DC		

Table 4.2-1a: Applicability of RRM EN-DC FR1 conformance test cases Conditions

RE1_C001 IF (A.4.1-4/1 OR A.4.1-4/2 OR A.4.1-4/3) AND A.4.1-3/2 THEN R ELSE N/A
Note 1: The ICS proforma are defined in TS 38.508-2 [8].

Table 4.2-2: Applicability of RRM EN-DC FR2 conformance test cases, ref. TS 38.533 [5]

Clause	Title	Release	Applicability		Additional Information	
			Condition	Description	Comments	Branch
5.6	**Measurement procedures**					
5.6.1	**Intra-frequency measurements**					
5.6.2	**Inter-frequency measurements**					
5.6.2.1	EN-DC FR2-FR2 event-triggered reporting in non-DRX	Rel-15	RE2_C002	UE supporting EN-DC FR2-FR2		
5.6.2.2	EN-DC FR2-FR2 event-triggered reporting in DRX	Rel-15	RE2_C002	UE supporting EN-DC FR2-FR2		
5.6.2.3	EN-DC FR2-FR2 event-triggered reporting in non-DRX with SSB time index detection	Rel-15	RE2_C002	UE supporting EN-DC FR2-FR2		
5.6.2.4	EN-DC FR2-FR2 event-triggered reporting in DRX with SSB time index detection	Rel-15	RE2_C002	UE supporting EN-DC FR2-FR2		
5.7	**Measurement performance requirements**					
5.7.1	**SS-RSRP**					

Table 4.2-2a: Applicability of RRM EN-DC FR2 conformance test cases Conditions

RE2_C001 IF A.4.1-4/4 AND A.4.1-3/2 THEN R ELSE N/A
RE2_C002 IF A.4.1-4/5 AND A.4.1-3/2 THEN R ELSE N/A
Note 1: The ICS proforma are defined in TS 38.508-2 [8].

Table 4.2-3: Applicability of RRM NR SA FR1 conformance test cases, ref. TS 38.533 [5]

Clause	Title	Release	Applicability		Additional Information	
			Condition	Description	Comments	Branch
6.5	**Signalling characteristics**					
6.5.5	**Beam failure detecion and link recovery procedures**					
6.5.5.3	NR SA FR1 CSI-RS-based beam failure detection and link recovery in non-DRX	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.5.5.4	NR SA FR1 CSI-RS-based beam failure detection and link recovery in DRX	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.6	**Measurement procedures**					
6.6.1	**Intra-frequency measurements**					
6.6.1.1	SA event triggered reporting tests without gap under non-DRX	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.6.1.2	SA event triggered reporting tests without gap under DRX	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.6.1.3	SA event triggered reporting tests with per-UE gaps under non-DRX	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.6.1.4	SA event triggered reporting tests with per-UE gaps under DRX	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.6.1.5	SA event triggered reporting tests without gap under non-DRX with SSB index reading	Rel-15	RS1_C002	UE supporting 5GS FR1		
6.6.1.6	SA event triggered reporting tests with per-UE gaps under non-DRX with SSB index reading	Rel-15	RS1_C002	UE supporting 5GS FR1		
6.6.2	**Inter-frequency measurements**					
6.6.2.1	NR SA FR1-FR1 event-triggered reporting in non-DRX	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.6.2.2	NR SA FR1-FR1 event-triggered reporting in DRX	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.6.2.3	NR SA FR1-FR1 event-triggered reporting in non-DRX with SSB time index detection	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.6.2.4	NR SA FR1-FR1 event-triggered reporting in DRX with SSB time index detection	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.7	**Measurement performance requirements**					
6.7.1	**SS-RSRP**					
6.7.1.1	**Intra-frequency measurements**					
6.7.1.1.1	NR SA FR1 SS-RSRP absolute measurement accuracy	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.7.1.1.2	NR SA FR1 SS-RSRP relative measurement accuracy	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.7.1.2	**Inter-frequency measurements**					
6.7.1.2.1	NR SA FR1-FR1 SS-RSRP absolute measurement accuracy	Rel-15	RS1_C001	UE supporting 5GS FR1		

Clause	Title	Release	Applicability		Additional Information	
			Condition	Description	Comments	Branch
6.5	**Signalling characteristics**					
6.5.5	**Beam failure detecion and link recovery procedures**					
6.5.5.3	NR SA FR1 CSI-RS-based beam failure detection and link recovery in non-DRX	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.5.5.4	NR SA FR1 CSI-RS-based beam failure detection and link recovery in DRX	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.6	**Measurement procedures**					
6.6.1	**Intra-frequency measurements**					
6.6.1.1	SA event triggered reporting tests without gap under non-DRX	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.6.1.2	SA event triggered reporting tests without gap under DRX	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.6.1.3	SA event triggered reporting tests with per-UE gaps under non-DRX	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.6.1.4	SA event triggered reporting tests with per-UE gaps under DRX	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.6.1.5	SA event triggered reporting tests without gap under non-DRX with SSB index reading	Rel-15	RS1_C002	UE supporting 5GS FR1		
6.6.1.6	SA event triggered reporting tests with per-UE gaps under non-DRX with SSB index reading	Rel-15	RS1_C002	UE supporting 5GS FR1		
6.6.2	**Inter-frequency measurements**					
6.6.2.1	NR SA FR1-FR1 event-triggered reporting in non-DRX	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.6.2.2	NR SA FR1-FR1 event-triggered reporting in DRX	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.6.2.3	NR SA FR1-FR1 event-triggered reporting in non-DRX with SSB time index detection	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.6.2.4	NR SA FR1-FR1 event-triggered reporting in DRX with SSB time index detection	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.7	**Measurement performance requirements**					
6.7.1	**SS-RSRP**					
6.7.1.1	**Intra-frequency measurements**					
6.7.1.2.2	NR SA FR1-FR1 SS-RSRP relative measurement accuracy	Rel-15	RS1_C001	UE supporting 5GS FR1		
6.7.1.3	**Inter-frequency measurements between FR1 and FR2**					
6.7.1.3.1	NR SA FR1-FR2 SS-RSRP absolute measurement accuracy	Rel-15	RS1_C001	UE supporting 5GS FR1 and FR2		
6.7.1.3.2	NR SA FR1-FR2 SS-RSRP relative measurement accuracy	Rel-15	RS1_C001	UE supporting 5GS FR1 and FR2		

Table 4.2-3a: Applicability of RRM NR SA FR1 conformance test cases Conditions

RS1_C001 IF (A.4.1-1/1 or A.4.1-1/2) AND A.4.1-3/1 THEN R ELSE N/A
RS1_C002 IF A.4.1-1/2 AND A.4.1-3/1 THEN R ELSE N/A
Note 1: The ICS proforma are defined in TS 38.508-2 [8].

Table 4.2-4: Applicability of RRM NR SA FR2 conformance test cases, ref. TS 38.533 [5]

Clause	Title	Release	Applicability		Additional Information	
			Condition	Description	Comments	Branch
7.5	**Signalling characteristics**					
7.5.5	**Beam failure detecion and link recovery procedures**					
7.5.5.1	NR SA FR2 SSB-based beam failure detection and link recovery in non-DRX	Rel-15	FFS	UE supporting 5GS FR2		
7.5.5.2	NR SA FR2 SSB-based beam failure detection and link recovery in DRX	Rel-15	FFS	UE supporting 5GS FR2		
7.5.5.3	NR SA FR2 CSI-RS-based beam failure detection and link recovery in non-DRX	Rel-15	FFS	UE supporting 5GS FR2		
7.5.5.4	NR SA FR2 CSI-RS-based beam failure detection and link recovery in DRX	Rel-15	FFS	UE supporting 5GS FR2		
7.6	**Measurement procedures**					
7.6.1	**Intra-frequency measurements**					
7.6.2	**Inter-frequency measurements**					
7.6.2.1	NR SA FR2-FR2 event-triggered reporting in non-DRX	Rel-15	FFS	UE supporting 5GS FR2		
7.6.2.2	NR SA FR2-FR2 event-triggered reporting in DRX	Rel-15	FFS	UE supporting 5GS FR2		
7.6.2.3	NR SA FR2-FR2 event-triggered reporting in non-DRX with SSB time index detection	Rel-15	FFS	UE supporting 5GS FR2		
7.6.2.4	NR SA FR2-FR2 event-triggered reporting in DRX with SSB time index detection	Rel-15	FFS	UE supporting 5GS FR2		
7.6.2.5	NR SA FR1-FR2 event-triggered reporting in non-DRX	Rel-15	FFS	UE supporting 5GS FR2		
7.6.2.6	NR SA FR1-FR2 event-triggered reporting in DRX	Rel-15	FFS	UE supporting 5GS FR2		
7.6.2.7	NR SA FR1-FR2 event-triggered reporting in DRX	Rel-15	FFS	UE supporting 5GS FR2		
7.6.2.8	NR SA FR1-FR2 event-triggered reporting in DRX with SSB time index detection	Rel-15	FFS	UE supporting 5GS FR2		
7.7	**Measurement performance requirements**					
7.7.1	**SS-RSRP**					

Table 4.2-4a: Applicability of RRM NR SA FR2 conformance test cases Conditions

FFS IF (FFS) THEN R ELSE N/A
Note 1: The ICS proforma are defined in TS 38.508-2 [8].

Annex A (informative): FFS

Annex B (informative): Change history

Change history							
Date	**Meeting**	**TDoc**	**CR**	**Rev**	**Cat**	**Subject/Comment**	**New version**
2017-08	RAN5#76	R5-173911	-	-	-	Draft skeleton	0.0.1
2018-01	RAN5#1-5G-NR Adhoc	R5-180107	-	-	-	Updated after RAN5#1-5G-NR Adhoc: - Foreword, scope, references, definitions, symbols and abbreviations, recommended test case applicability updated - Sub-clause 4.1.1, 4.1.2, 4.1.3 and 4.1.4 added - Change history added	0.1.0
2018-03	RAN5 #78	R5-181687	-	-	-	TP for Clause 4.1.1 Range 1 standalone conformance test cases	0.2.0
2018-03	RAN5 #78	R5-181688	-	-	-	TP for Clause 4.1.2 Range 2 standalone conformance test cases	0.2.0
2018-03	RAN5 #78	R5-181689	-	-	-	TP for Clause 4.1.3 NR interworking between NR range1 and NR range2 and between NR and LTE conformance test cases	0.2.0
2018-04	RAN5#2-5G-NR Adhoc	R5-182013	-	-	-	TP for Clause 3 Definitions, symbols and abbreviations	0.3.0
2018-04	RAN5#2-5G-NR Adhoc	R5-182047	-	-	-	TP for Clause 4 Recommended test case applicability	0.3.0
2018-08	RAN5#80	R5-185209	-	-	-	TP for Clause 4.1.1 of TS 38.522	1.0.1
2018-08	RAN5#80	R5-185210	-	-	-	TP for Clause 4.1.2 of TS 38.522	1.0.1
2018-08	RAN5#80	R5-185211	-	-	-	TP for Clause 4.1.3 of TS 38.522	1.0.1
2018-09	RAN#81	-	-	-	-	raised to v15.0.0 with editorial changes only	15.0.0
2018-12	RAN#82	R5-186501	0013	-	F	Applicability rules implementation in 38.522	15.1.0
2018-12	RAN#82	R5-188223	0015	-	F	Applicability for RRM NR tests	15.1.0
2018-12	RAN#82	R5-187566	0016	-	F	Update note in section 4.1 to include CBW and SCS in RF test applicability	15.1.0
2018-12	RAN#82	R5-187849	0014	1	F	Adding applicability for new 38.521-1 CA TCs	15.1.0
2018-12	RAN#82	R5-187881	0008	1	F	Update Clause 1 Scope of TS 38.522	15.1.0
2018-12	RAN#82	R5-187884	0011	1	F	TP for Clause 4.1.2 of TS 38.522	15.1.0
2018-12	RAN#82	R5-187922	0017	-	F	Removing FR2 test case 7.4 from TS 38.522 due to testability issue	15.1.0
2019-01	RAN#82	R5-187882	0009	1	F	Update Clause 3 of TS 38.522	15.1.1
2019-01	RAN#82	R5-187883	0010	1	F	TP for Clause 4.1.1 of TS 38.522	15.1.1
2019-01	RAN#82	R5-187885	0012	1	F	TP for Clause 4.1.3 of TS 38.522	15.1.1
2019-03	RAN#83	R5-191722	0021	-	F	addition of applicability for BFD and measurement	15.2.0
2019-03	RAN#83	R5-192507	0020	1	F	TP for TS 38.522	15.2.0
2019-03	RAN#83	R5-192508	0022	1	F	Addition of RRM Test Cases Applicability	15.2.0

History

Document history		
V15.0.0	October 2018	Publication
V15.1.1	April 2019	Publication
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