

# ETSI TS 138 521-1 V15.4.0 (2023-01)



**5G;  
NR;  
User Equipment (UE) conformance specification;  
Radio transmission and reception;  
Part 1: Range 1 standalone  
(3GPP TS 38.521-1 version 15.4.0 Release 15)**



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Reference

RTS/TSGR-0538521-1vf40

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Keywords

5G

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# 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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- x the first digit:
  - 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.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

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: " NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Range 1 Standalone" (the present document).
- 3GPP TS 38.521-2 [13]: " NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 2: Range 2 Standalone".
- 3GPP TS 38.521-3 [14]: "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 [15]: "NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 4: Performance".
- 3GPP TS 38.522 [16]: NR; User Equipment (UE) conformance specification; Applicability of RF and RRM test cases;
- 3GPP TS 38.533 [17]: NR; User Equipment (UE) conformance specification; Radio resource management;

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# 1 Scope

The present document specifies the measurement procedures for the conformance test of the user equipment (UE) that contain RF characteristics for frequency Range 1 as part of the 5G-NR.

The requirements are listed in different clauses only if the corresponding parameters deviate. More generally, tests are only applicable to those mobiles that are intended to support the appropriate functionality. To indicate the circumstances in which tests apply, this is noted in the "*definition and applicability*" part of the test.

For example only Release 15 and later UE declared to support 5G-NR shall be tested for this functionality. In the event that for some tests different conditions apply for different releases, this is indicated within the text of the test itself.

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# 2 Reference

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.

**Editor's note: intended to capture more references**

[1] to [22] (void)

[23] 3GPP TS 38.521-1 Release 16: "NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Range 1 Standalone"

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# 3 Definitions, symbols and abbreviations

Void

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# 4 General

The requirements of the present document are provided in 3GPP TS 38.521-1 Release 16 [23].

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# 5 to 7 Void

## Annex A to H: Void

## Annex I: Change history



Change history							
Date	Meeting	TDoc	CR	R ev	Cat	Subject/Comment	New versio n
2017-08	RAN5#76	R5-175705	-	-	-	Draft skeleton	0.0.1
2018-01	RAN5#1- 5G-NR Adhoc	R5-180068 R5-180069 R5-180070 R5-180071 R5-180072 R5-180073 R5-180075 R5-180076 R5-180077 R5-180078 R5-180079	-	-	-	Implementation of pCRs to TS 38.521-1 V0.1.0	0.1.0
2018-01	RAN5#78	R5-181506 R5-181507 R5-181670 R5-181671 R5-181672 R5-181676 R5-181677 R5-181678 R5-181679 R5-181685 R5-181686 R5-181698 R5-181699 R5-181700	-	-	-	Implementation of pCRs to TS 38.521-1 V0.2.0	0.2.0
2018-03	RAN5#2- 5G-NR Adhoc	R5-181759	-	-	-	Update TS 38.521-1 to align with new structure of TS 38.101-1 based on endorsed CR R4-1802403	0.3.0
2018-04	RAN5#2- 5G-NR Adhoc	R5-81976	-	-	-	3GU mismatch	0.3.1
2018-04	RAN5#2- 5G-NR Adhoc	R5-181771 R5-181833 R5-181842 R5-182000 R5-182002 R5-182003 R5-182004 R5-182005 R5-182020 R5-182021 R5-182026	-	-	-	Implementation of pCRs to TS 38.521-1 V0.4.0 Add clause 4.4 Test point analysis	0.4.0
2018-07	RAN5#79	R5-182768 R5-182973 R5-183702 R5-183703 R5-183704 R5-183705 R5-183906 R5-183936 R5-183280 R5-183923 R5-183953 R5-183954 R5-183955 R5-183956 R5-183957 R5-183958 R5-183959 R5-183960	-	-	-	Implementation of pCRs to TS 38.521-1 V0.5.0	0.5.0
2018-07	RAN5#79	R5-183960 R5-183279	-	-	-	Corrected Table numbering issues in subclause 6.5.2.4.1.4.2 Test procedure to capture R5-183960 changes into draft TS 38.521-1 v0.5.1	0.5.1
2018-07	RAN5#79	R5-182363	-	-	-	withdrawn	1.0.0

2018-08	RAN#80	R5-185321 R5-184298 R5-185305 R5-185322 R5-185323 R5-185495 R5-185444 R5-185565 R5-185445 R5-185524 R5-184572 R5-185390 R5-184574 R5-185521 R5-185408 R5-184822 R5-185446 R5-185324 R5-185447 R5-185411 R5-185413 R5-185496 R5-185414 R5-185415 R5-185325 R5-185500 R5-185501 R5-185312 R5-185326 R5-185315 R5-185317 R5-185327 R5-185320	-	-	-	Implementation of pCRs to TS 38.521-1 V1.0.1	1.0.1
2018-09	RAN#81	-	-	-	-	raised to v15.0.0 with editorial changes only	15.0.0
2018-12	RAN#82	R5-186604	0072	-	F	5G_FR1 Text update for 7.3 Reference sensitivity	15.1.0
2018-12	RAN#82	R5-186605	0073	-	F	5R_FR1 Text Update for 6.5.3.1_General spurious emissions	15.1.0
2018-12	RAN#82	R5-186606	0074	-	F	5R FR1 Text Update for 6.5.3.2 Spurious emission for UE co-existence	15.1.0
2018-12	RAN#82	R5-186670	0078	-	F	Updating test case 6.2.3 UE additional maximum output power reduction	15.1.0
2018-12	RAN#82	R5-186671	0079	-	F	Updating test case 6.5.2.3 Additional spectrum emission mask	15.1.0
2018-12	RAN#82	R5-186680	0080	-	F	Update of test case 6.5.2.4.2, UTRA ACLR in 38.521-1	15.1.0
2018-12	RAN#82	R5-186736	0084	-	F	Update of FR1 Transmit OFF power	15.1.0
2018-12	RAN#82	R5-186774	0088	-	F	Addition of 6.3D.1 Minimum output power for UL-MIMO	15.1.0
2018-12	RAN#82	R5-186776	0089	-	F	Addition of 6.3D.2 Transmit OFF power for UL-MIMO	15.1.0
2018-12	RAN#82	R5-186781	0090	-	F	Addition of 6.3D.3 Transmit ON/OFF time mask for UL-MIMO	15.1.0
2018-12	RAN#82	R5-186901	0091	-	F	Update SEM requirements to TS 38.101-1 v15.3.0	15.1.0
2018-12	RAN#82	R5-186902	0092	-	F	Update ACS and inband blocking test cases in TS 38.521-1	15.1.0
2018-12	RAN#82	R5-187034	0107	-	F	Adding edge allocation into common uplink configuration in 6.1	15.1.0
2018-12	RAN#82	R5-187038	0109	-	F	Update test points for multiple FR1 test cases	15.1.0
2018-12	RAN#82	R5-187149	0111	-	F	Updated to Annexes for FR1 tests	15.1.0
2018-12	RAN#82	R5-187150	0112	-	F	General clauses updated for TS38.521-1	15.1.0
2018-12	RAN#82	R5-187376	0120	-	F	Update of 6.2.1 MOP	15.1.0
2018-12	RAN#82	R5-187378	0122	-	F	Update of 6.3.1 Minimum Output Power	15.1.0
2018-12	RAN#82	R5-187379	0123	-	F	Update of 6.3.3.2 General ON/OFF time mask	15.1.0
2018-12	RAN#82	R5-187380	0124	-	F	Addition of 6.2D.1 MOP for MIMO	15.1.0
2018-12	RAN#82	R5-187381	0125	-	F	Addition of 6.2D.2 MPR for MIMO	15.1.0
2018-12	RAN#82	R5-187382	0126	-	F	Addition of 6.2D.4 Configured Output Power for MIMO	15.1.0
2018-12	RAN#82	R5-187383	0127	-	F	Addition of 6.4D.1 Frequency error for MIMO	15.1.0
2018-12	RAN#82	R5-187384	0128	-	F	Addition of 6.4D.2.1 EVM for MIMO	15.1.0
2018-12	RAN#82	R5-187385	0129	-	F	Addition of 6.4D.2.2 Carrier Leakage for MIMO	15.1.0
2018-12	RAN#82	R5-187386	0130	-	F	Addition of 6.4D.2.3 In-band emissions for MIMO	15.1.0
2018-12	RAN#82	R5-187387	0131	-	F	Addition of 6.4D.2.4 EVM equalizer spectrum flatness for MIMO	15.1.0
2018-12	RAN#82	R5-187395	0132	-	F	Update of test case 6.2.3 UE A-MPR, general	15.1.0
2018-12	RAN#82	R5-187397	0133	-	F	Update of test case 6.2.3 UE A-MPR, NS_04	15.1.0
2018-12	RAN#82	R5-187399	0134	-	F	Update of test case test case 6.5.2.3 Additional spectrum emission mask, NS_04	15.1.0
2018-12	RAN#82	R5-187421	0136	-	F	Introduction of TC 6.5D.1 Occupied bandwidth for UL MIMO	15.1.0
2018-12	RAN#82	R5-187422	0137	-	F	Introduction of TC 6.5D.2.2 Spectrum Emission Mask for UL MIMO	15.1.0
2018-12	RAN#82	R5-187423	0138	-	F	Introduction of TC 6.5D.2.3 Additional Spectrum Emission Mask for UL MIMO	15.1.0
2018-12	RAN#82	R5-187424	0139	-	F	Introduction of TC 6.5D.2.4.1 NR ACLR for UL MIMO	15.1.0
2018-12	RAN#82	R5-187425	0140	-	F	Introduction of TC 6.5D.2.4.2 UTRA ACLR for UL MIMO	15.1.0
2018-12	RAN#82	R5-187429	0144	-	F	Introduction of TC 6.5D.4 Transmit intermodulation for UL MIMO	15.1.0

2018-12	RAN#82	R5-187431	0146	-	F	Introduction of TC 7.4D Maximum input level for UL-MIMO	15.1.0
2018-12	RAN#82	R5-187432	0147	-	F	Updating of 6.2C.1 Configured transmitted power for SUL	15.1.0
2018-12	RAN#82	R5-187433	0148	-	F	Introduction of TC 6.5C.1 Occupied bandwidth for SUL	15.1.0
2018-12	RAN#82	R5-187434	0149	-	F	Introduction of TC 6.5C.2 Spectrum Emission Mask for SUL	15.1.0
2018-12	RAN#82	R5-187435	0150	-	F	Introduction of TC 6.5C.2.3 Additional Spectrum Emission Mask for SUL	15.1.0
2018-12	RAN#82	R5-187436	0151	-	F	Introduction of TC 6.5C.2.4.1 NR ACLR for SUL	15.1.0
2018-12	RAN#82	R5-187437	0152	-	F	Introduction of TC 6.5C.2.4.2 UTRA ACLR for SUL	15.1.0
2018-12	RAN#82	R5-187438	0153	-	F	Introduction of TC 6.5C.3.2 General spurious emissions for SUL	15.1.0
2018-12	RAN#82	R5-187439	0154	-	F	Introduction of TC 6.5C.3.3 Spurious Emission for UE co-existence for SUL	15.1.0
2018-12	RAN#82	R5-187440	0155	-	F	Introduction of TC 6.5C.3.4 Additional Spurious Emission for SUL	15.1.0
2018-12	RAN#82	R5-187455	0158	-	F	Updating test case 6.3.4.2 Absolute Power Tolerance	15.1.0
2018-12	RAN#82	R5-187456	0159	-	F	Updating test case 6.3.4.4 Aggregate Power Tolerance	15.1.0
2018-12	RAN#82	R5-187560	0162	-	F	Update to Table 5.3.5-1 in TS 38.521-1	15.1.0
2018-12	RAN#82	R5-187585	0164	-	F	Update of transmit signal quality test cases in 38.521-1	15.1.0
2018-12	RAN#82	R5-187615	0167	-	F	Introduction of TC 6.5D.3.1 General spurious emissions for UL MIMO	15.1.0
2018-12	RAN#82	R5-187616	0168	-	F	Introduction of TC 6.5D.3.2 Spurious Emission for UE co-existence for UL MIMO	15.1.0
2018-12	RAN#82	R5-187617	0169	-	F	Introduction of TC 6.5D.3.3 Additional Spurious Emission for UL MIMO	15.1.0
2018-12	RAN#82	R5-187618	0170	-	F	Updating of Uplink channel for SUL in Annex G	15.1.0
2018-12	RAN#82	R5-187804	0069	1	F	Editorial Cleaning up for description of test requirement in clause 6	15.1.0
2018-12	RAN#82	R5-187805	0063	1	F	Introduction of TC 7.7D Spurious response for UL-MIMO	15.1.0
2018-12	RAN#82	R5-187807	0113	1	F	Introduction of receiver spurious emission tests for FR1 SA	15.1.0
2018-12	RAN#82	R5-187810	0114	1	F	Introduction of wideband intermodulation tests for FR1 SA	15.1.0
2018-12	RAN#82	R5-187811	0145	1	F	Introduction of TC 7.3D Reference sensitivity for UL-MIMO	15.1.0
2018-12	RAN#82	R5-187812	0085	1	F	Update of operating bands and channel arrangement to TS 38.521-1	15.1.0
2018-12	RAN#82	R5-187888	0121	1	F	Update of 6.2.4 Configured Output Power	15.1.0
2018-12	RAN#82	R5-187890	0156	1	F	Introduction of TC 6.5C.4 Transmit intermodulation for SUL	15.1.0
2018-12	RAN#82	R5-187892	0108	1	F	Removing the Editor's notes of SA messages and procedures for all FR1 test cases	15.1.0
2018-12	RAN#82	R5-187893	0083	1	F	Update of FR1 6.2.2 MPR	15.1.0
2018-12	RAN#82	R5-187894	0086	1	F	Addition of Time alignment error for UL-MIMO to TS38.521-1	15.1.0
2018-12	RAN#82	R5-187895	0115	1	F	Introduction of New FR1 test case 6.3.3.6 SRS time mask	15.1.0
2018-12	RAN#82	R5-187896	0116	1	F	5G_FR1 Text update for 6.5.3.3 Additional Spurious emission	15.1.0
2018-12	RAN#82	R5-187897	0161	1	F	Update of test case 6.3.4.3, Power Control Relative power tolerance in 38.521-1	15.1.0
2018-12	RAN#82	R5-187898	0165	1	F	Addition of EVM equalizer spectral flatness test case 6.4.2.5 to TS 38.521-1	15.1.0
2018-12	RAN#82	R5-187899	0099	1	F	Introduction of test case for Frequency error for CA	15.1.0
2018-12	RAN#82	R5-187900	0100	1	F	Introduction of test cases for Transmit modulation quality for CA	15.1.0
2018-12	RAN#82	R5-187901	0101	1	F	Introduction of test case for Spectrum emission mask for Inter-band CA	15.1.0
2018-12	RAN#82	R5-187902	0102	1	F	Introduction of test case for NR ACLR for Inter-band CA	15.1.0
2018-12	RAN#82	R5-187903	0103	1	F	Introduction of test case for UTRA ACLR for Inter-band CA	15.1.0
2018-12	RAN#82	R5-187904	0104	1	F	Introduction of test case for General spurious emissions for Inter-band CA	15.1.0
2018-12	RAN#82	R5-187905	0105	1	F	Introduction of test case for Spurious emission for UE co-existence for CA	15.1.0
2018-12	RAN#82	R5-187906	0106	1	F	Introduction of test case for Transmit intermodulation for Inter-band CA	15.1.0
2018-12	RAN#82	R5-187911	0118	1	F	Addition of notes to clarify test point selection into general section of TS 38.521-1	15.1.0
2018-12	RAN#82	R5-187914	0163	1	F	Update of Global In-channel Tx Test Annex in 38.521-1	15.1.0
2018-12	RAN#82	R5-187915	0082	1	F	Introduction of FR1 7.4 Maximum input level	15.1.0
2018-12	RAN#82	R5-188032	0075	1	F	Addition of 6.3D.4.1 Absolute Power tolerance for UL-MIMO	15.1.0
2018-12	RAN#82	R5-188033	0076	1	F	Addition of 6.3D.4.2 Relative Power Tolerance for UL-MIMO	15.1.0
2018-12	RAN#82	R5-188034	0077	1	F	Addition of 6.3D.4.3 Aggregate Power tolerance for UL-MIMO	15.1.0
2018-12	RAN#82	R5-188035	0110	1	F	Update to FR1 test case 6.3.3.4 PRACH time mask	15.1.0
2018-12	RAN#82	R5-188206	0117	1	F	Introduction of New FR1 test case 6.3.3.7 PUSCH-PUCCH and PUSCH-SRS time masks	15.1.0
2018-12	RAN#82	R5-188207	0071	1	F	5G_FR1 Text update for 7.3A Reference sensitivity for CA	15.1.0
2018-12	RAN#82	R5-188208	0067	2	F	Updates of MU in TS 38.521-1 Annex F during RAN5#81	15.1.0
2018-12	RAN#82	R5-188209	0068	2	F	Updates of TT in TS 38.521-1 Annex F during RAN5#81	15.1.0
2018-12	RAN#82	R5-188210	0097	1	F	TDD configuration for UE Tx test in FR1	15.1.0
2018-12	RAN#82	R5-188211	0119	1	F	Core alignment CR to capture TS 38.101-1 updates during RAN4#89	15.1.0
2019-03	RAN#83	R5-191034	0228	-	F	Update Clause 2 of TS 38.521-1	15.2.0
2019-03	RAN#83	R5-191035	0229	-	F	Update Clause 3.2 of TS 38.521-1	15.2.0
2019-03	RAN#83	R5-191039	0232	-	F	Correction to TC 6.4A.2.1.1 Error Vector Magnitude for CA (2UL CA)	15.2.0

2019-03	RAN#83	R5-191088	0244	-	F	Editorial cleaning up of test configuration tables in TS 38.521-1	15.2.0
2019-03	RAN#83	R5-191089	0245	-	F	Editorial correction of core alignment in TS 38.521-1	15.2.0
2019-03	RAN#83	R5-191090	0246	-	F	Updates of TT in TS38.521-1 Annex F during RAN5#NR4	15.2.0
2019-03	RAN#83	R5-191156	0247	-	F	General clauses updated for TS38.521-1	15.2.0
2019-03	RAN#83	R5-191244	0249	-	F	Editorial change in 6.5.2.1 general section	15.2.0
2019-03	RAN#83	R5-191245	0250	-	F	Update ACS and Inband Blocking test cases in TS38.521-1	15.2.0
2019-03	RAN#83	R5-191258	0251	-	F	Update to FR1 test case 6.5.4 Transmit intermodulation	15.2.0
2019-03	RAN#83	R5-191262	0252	-	F	Update of TC 7.6.3 Out-of-band blocking	15.2.0
2019-03	RAN#83	R5-191264	0253	-	F	Introduction of TC 7.6.4 Narrow-band blocking	15.2.0
2019-03	RAN#83	R5-191265	0254	-	F	Introduction of TC 7.7 Spurious response	15.2.0
2019-03	RAN#83	R5-191338	0256	-	F	Update of test case 6.3.4.3, Power Control Relative power tolerance in 38.521-1	15.2.0
2019-03	RAN#83	R5-191465	0257	-	F	Correction of FR1 6.2.2 Maximum Power Reduction (MPR)	15.2.0
2019-03	RAN#83	R5-191506	0262	-	F	Shared Risk clarification in TS 38.521-1	15.2.0
2019-03	RAN#83	R5-191526	0263	-	F	Update to FR1 test case 6.3.3.6 SRS time mask	15.2.0
2019-03	RAN#83	R5-191675	0267	-	F	Addition of MU and TT for NR FR1 UL-MIMO test cases	15.2.0
2019-03	RAN#83	R5-191815	0272	-	F	OBW test procedure update for 38.521-1	15.2.0
2019-03	RAN#83	R5-191846	0277	-	F	FR1 Text update for 6.5.3.1 General spurious emission	15.2.0
2019-03	RAN#83	R5-191848	0278	-	F	Correction of errors in Table 6.1-1 of 38.521-1	15.2.0
2019-03	RAN#83	R5-191849	0279	-	F	FR1 Text update for 7.3C Reference sensitivity power level for SUL	15.2.0
2019-03	RAN#83	R5-191852	0280	-	F	FR1 Text update for 6.5.3.2 Spurious emission for UE co-existence	15.2.0
2019-03	RAN#83	R5-191854	0281	-	F	FR1 Text update for 7.3.2 Reference sensitivity power level	15.2.0
2019-03	RAN#83	R5-192088	0317	-	F	Test mode and test loop function activation in SA Tx RF test cases in TS 38.521-1	15.2.0
2019-03	RAN#83	R5-192089	0318	-	F	Test mode and test loop function activation in SA Rx RF test cases in TS 38.521-1	15.2.0
2019-03	RAN#83	R5-192121	0320	-	F	Update of Global In-channel Tx Test Annex for FR1	15.2.0
2019-03	RAN#83	R5-192402	0266	1	F	Update of FR1 6.2.4 Configured transmitted power	15.2.0
2019-03	RAN#83	R5-192407	0294	1	F	Update of time alignment error for UL MIMO FR1 6.4D.3	15.2.0
2019-03	RAN#83	R5-192408	0295	1	F	Introduction of TC 6.4D.4	15.2.0
2019-03	RAN#83	R5-192409	0309	1	F	Update of FR1 6.2.1 MOP	15.2.0
2019-03	RAN#83	R5-192411	0310	1	F	Update of FR1 6.3.1 Minimum Output Power	15.2.0
2019-03	RAN#83	R5-192412	0311	1	F	Addition of FR1 6.3A.1 minimum output power for CA	15.2.0
2019-03	RAN#83	R5-192413	0321	1	F	Update of transmit signal quality test cases for FR1	15.2.0
2019-03	RAN#83	R5-192414	0231	1	F	Introduction of TC 7.7A.0 Minimum conformance requirements	15.2.0
2019-03	RAN#83	R5-192416	0240	1	F	Update to Wideband Intermodulation for SA FR1	15.2.0
2019-03	RAN#83	R5-192417	0241	1	F	Updates to 7.9 spurious emission for SA in FR1	15.2.0
2019-03	RAN#83	R5-192418	0259	1	F	Introduction of FR1 7.6D.3 Out-of-band blocking for UL-MIMO	15.2.0
2019-03	RAN#83	R5-192419	0260	1	F	Introduction of FR1 7.6D.4 Narrow band blocking for UL-MIMO	15.2.0
2019-03	RAN#83	R5-192420	0261	1	F	Introduction of FR1 7.8D.2 Wide band Intermodulation for UL-MIMO	15.2.0
2019-03	RAN#83	R5-192421	0276	1	F	Correction of FR1 7.4 Maximum input level	15.2.0
2019-03	RAN#83	R5-192510	0322	1	F	Asymmetric CH BWs test configuration for Reference Sensitivity	15.2.0
2019-03	RAN#83	R5-192544	0230	1	F	Correction to TC 6.4A.2.2 Carrier leakage for CA	15.2.0
2019-03	RAN#83	R5-192545	0248	1	F	Update of test case 6.5.2.4.2, UTRA ACLR in 38.521-1	15.2.0
2019-03	RAN#83	R5-192547	0273	1	F	Update of FR1 6.2D.1 MOP for MIMO	15.2.0
2019-03	RAN#83	R5-192548	0275	1	F	Update of 6.2D.4 Configured Output Power for MIMO	15.2.0
2019-03	RAN#83	R5-192549	0284	1	F	Update of FR1 test case 6.3D.1 Minimum output power for UL-MIMO	15.2.0
2019-03	RAN#83	R5-192550	0296	1	F	Update of TC 6.5D.1	15.2.0
2019-03	RAN#83	R5-192551	0297	1	F	Update of TC 6.5D.2.2	15.2.0
2019-03	RAN#83	R5-192553	0298	1	F	Introduction of TC 6.5D.2.3	15.2.0
2019-03	RAN#83	R5-192554	0299	1	F	Update of TC 6.5D.2.4.1	15.2.0
2019-03	RAN#83	R5-192555	0300	1	F	Update of TC 6.5D.2.4.2	15.2.0
2019-03	RAN#83	R5-192556	0301	1	F	Update of 6.5D.3.1	15.2.0
2019-03	RAN#83	R5-192557	0302	1	F	Update of 6.5D.3.2	15.2.0
2019-03	RAN#83	R5-192558	0303	1	F	Update of 6.5D.3.3	15.2.0
2019-03	RAN#83	R5-192559	0304	1	F	Update of 6.5D.4	15.2.0
2019-03	RAN#83	R5-192561	0313	1	F	Addition of FR1 6.3A.3 Transmit ON/OFF time mask for CA	15.2.0
2019-03	RAN#83	R5-192562	0325	1	F	Update of FR1 6.2D.2 MPR for MIMO	15.2.0
2019-03	RAN#83	R5-192563	0233	1	F	Introduction of TC 7.7A.1 Spurious response for 2DL CA	15.2.0
2019-03	RAN#83	R5-192564	0234	1	F	Introduction of TC 7.7A.2 Spurious response for 3DL CA	15.2.0
2019-03	RAN#83	R5-192565	0235	1	F	Introduction of TC 7.7A.3 Spurious response for 4DL CA	15.2.0
2019-03	RAN#83	R5-192566	0258	1	F	Introduction of FR1 7.6D.2 Inband blocking for UL-MIMO	15.2.0
2019-03	RAN#83	R5-192567	0285	1	F	Update on TC 6.4A.1.1 Frequency error for CA	15.2.0
2019-03	RAN#83	R5-192570	0286	1	F	Update on TCs in section 6.4A.2 Transmit modulation quality for CA	15.2.0
2019-03	RAN#83	R5-192576	0287	1	F	Update on TC 6.5A.2.2.1 Spectrum emission mask for CA	15.2.0
2019-03	RAN#83	R5-192577	0288	1	F	Update on TC 6.5A.2.4.1.1 NR ACLR for CA	15.2.0
2019-03	RAN#83	R5-192578	0289	1	F	Update on TC 6.5A.2.4.2.1 UTRA ACLR for CA	15.2.0
2019-03	RAN#83	R5-192579	0290	1	F	Update on TC 6.5A.3.1.1 General spurious emissions for CA	15.2.0
2019-03	RAN#83	R5-192580	0291	1	F	Update on TC 6.5A.3.2.1 Spurious emissions for UE co-existence for CA	15.2.0
2019-03	RAN#83	R5-192581	0292	1	F	Update on TC 6.5A.4.1 TX IM for CA	15.2.0
2019-03	RAN#83	R5-192583	0268	1	F	Addition of 7.5A.0 Minimum conformance requirements	15.2.0

2019-03	RAN#83	R5-192584	0269	1	F	Addition of 7.5A.1 Adjacent channel selectivity for 2DL CA	15.2.0
2019-03	RAN#83	R5-192585	0270	1	F	Addition of 7.5A.2 Adjacent channel selectivity for 3DL CA	15.2.0
2019-03	RAN#83	R5-192586	0271	1	F	Addition of 7.5A.3 Adjacent channel selectivity for 4DL CA	15.2.0
2019-03	RAN#83	R5-192587	0282	1	F	FR1 Text update for 7.3A.2 Reference sensitivity power level for CA	15.2.0
2019-03	RAN#83	R5-192588	0283	1	F	FR1 Text update for 7.3.2_1 Reference sensitivity level with 4 Rx antenna ports	15.2.0
2019-03	RAN#83	R5-192589	0305	1	F	Update of 7.3D.2	15.2.0
2019-03	RAN#83	R5-192590	0306	1	F	Update of TC 7.4D	15.2.0
2019-03	RAN#83	R5-192591	0307	1	F	Introduction of TC 7.5D	15.2.0
2019-03	RAN#83	R5-192592	0324	1	F	Update of TC 7.7D Spurious response for UL-MIMO	15.2.0
2019-03	RAN#83	R5-192593	0243	1	F	Updates of TT in TS38.521-1 Annex F during RAN5#82	15.2.0
2019-03	RAN#83	R5-192594	0265	1	F	Correction of HARQ-ACK transmission timing for DL RMC for FR1 TDD SCS=60kHz	15.2.0
2019-03	RAN#83	R5-192597	0319	1	F	Updating test case 7.3.2 Reference sensitivity power level Table 7.3.2.4.1-3	15.2.0
2019-03	RAN#83	R5-192598	0323	1	F	Update OBW, SEM and ACLR in TS 38.521-1	15.2.0
2019-03	RAN#83	R5-192682	0236	1	F	Introduction of TC 7.9A.0 Minimum conformance requirements	15.2.0
2019-03	RAN#83	R5-192683	0237	1	F	Introduction of TC 7.9A.1 Spurious emission for 2DL CA	15.2.0
2019-03	RAN#83	R5-192685	0312	2	F	Addition of FR1 6.3A.2 Transmit OFF power for CA	15.2.0
2019-03	RAN#83	R5-192693	0293	1	F	Introduction of Annex on Characteristics of the Interfering Signal FR1	15.2.0
2019-03	RAN#83	R5-192837	0326	1	F	Update of operating bands and channel arrangement to TS 38.521-1	15.2.0
2019-03	RAN#83	-	-	-	-	Editorial correction of references to TS 38.508-1 clause 4.6 tables	15.2.0
2019-06	RAN#84	R5-193535	0389	-	F	Update of test case 6.5.2.4.2, UTRA ACLR in 38.521-1	15.3.0
2019-06	RAN#84	R5-193536	0390	-	F	Update of test case 6.3.4.3, Power Control Relative power tolerance	15.3.0
2019-06	RAN#84	R5-193567	0394	-	F	Correction of 38.521-1 7.6D.2	15.3.0
2019-06	RAN#84	R5-193569	0395	-	F	Correction of 38.521-1 7.6D.3	15.3.0
2019-06	RAN#84	R5-193571	0396	-	F	Correction of 38.521-1 7.6D.4	15.3.0
2019-06	RAN#84	R5-193573	0397	-	F	Correction of 38.521-1 7.8D.2	15.3.0
2019-06	RAN#84	R5-193574	0398	-	F	Correction of 38.521-1 6.2.2	15.3.0
2019-06	RAN#84	R5-193585	0400	-	F	Update of TC 7.7A.0 Spurious response for CA	15.3.0
2019-06	RAN#84	R5-193586	0401	-	F	Correction of section number for UE diagram in Initial conditions of 38.521-1 Clause 6	15.3.0
2019-06	RAN#84	R5-193589	0404	-	F	Correction of section number for UE diagram in Initial conditions of 38.521-1 Clause 7	15.3.0
2019-06	RAN#84	R5-193593	0405	-	F	Unify Outer_1RB and Edge_1RB in Test Configuration Table of 38.521-1	15.3.0
2019-06	RAN#84	R5-193753	0413	-	F	Update of 6.3D Output power dynamics for UL-MIMO	15.3.0
2019-06	RAN#84	R5-193915	0417	-	F	Update of NR FR1 6.2.3 A-MPR NS_04	15.3.0
2019-06	RAN#84	R5-193917	0418	-	F	Update of SA FR1 RF 6.5D.2.3	15.3.0
2019-06	RAN#84	R5-193918	0419	-	F	Update of SA FR1 RF 6.5D.2.4.2	15.3.0
2019-06	RAN#84	R5-193920	0420	-	F	Update of SA FR1 RF 6.5D.3.3	15.3.0
2019-06	RAN#84	R5-193930	0421	-	F	Addition of NR FR1 6.2D.3 A-MPR for UL-MIMO	15.3.0
2019-06	RAN#84	R5-193955	0423	-	F	Update of clause 5 to TS 38.521-1	15.3.0
2019-06	RAN#84	R5-194125	0425	-	F	Update Out of band emission test cases in TS 38.521-1	15.3.0
2019-06	RAN#84	R5-194126	0426	-	F	Update ACS and Inband blocking interferer definition in TS 38.521-1	15.3.0
2019-06	RAN#84	R5-194161	0428	-	F	Update of test case 6.2.3 UE A-MPR, NS_35	15.3.0
2019-06	RAN#84	R5-194162	0429	-	F	Update of test case 6.5.2.3; Additional spectrum emission mask	15.3.0
2019-06	RAN#84	R5-194226	0435	-	F	Correction to In-band emission test case	15.3.0
2019-06	RAN#84	R5-194228	0437	-	F	Correction to PRACH configurations	15.3.0
2019-06	RAN#84	R5-194256	0439	-	F	Correction to FR1 Reference Sensitivity	15.3.0
2019-06	RAN#84	R5-194268	0440	-	F	Update of 7.5A.0 Minimum conformance requirements	15.3.0
2019-06	RAN#84	R5-194304	0442	-	F	Correction to time domain allocation of DMRS	15.3.0
2019-06	RAN#84	R5-194305	0443	-	F	Updating 7.8.2 Wide band Intermodulation	15.3.0
2019-06	RAN#84	R5-194307	0445	-	F	Correction to ON/OFF time mask test	15.3.0
2019-06	RAN#84	R5-194308	0446	-	F	Correction to carrier leakage and in-band emission tests	15.3.0
2019-06	RAN#84	R5-194312	0447	-	F	FR1 Update for 7.3A Reference sensitivity for CA	15.3.0
2019-06	RAN#84	R5-194313	0448	-	F	FR1 Update for 7.3.2 Reference sensitivity power level	15.3.0
2019-06	RAN#84	R5-194314	0449	-	F	FR1 Update for 7.3.3 Ref sensitivity ?RIB,c	15.3.0
2019-06	RAN#84	R5-194315	0450	-	F	FR1 Update for 7.3C Reference sensitivity for SUL	15.3.0
2019-06	RAN#84	R5-194316	0451	-	F	FR1 Update for 6.5.3.2 Spurious emission for UE co-existence	15.3.0
2019-06	RAN#84	R5-194377	0454	-	F	FR1 Update for 6.5.3.3 Additional spurious emissions	15.3.0
2019-06	RAN#84	R5-194383	0455	-	F	Update of 7.5A.2 Adjacent channel selectivity for 3DL CA	15.3.0
2019-06	RAN#84	R5-194905	0414	1	F	Update of 6.3D.4.1 Absolute Power tolerance for UL-MIMO	15.3.0
2019-06	RAN#84	R5-194906	0415	1	F	Update of 6.3D.4.2 Relative Power Tolerance for UL-MIMO	15.3.0
2019-06	RAN#84	R5-194908	0465	1	F	Update of TC 6.3A.3 Transmit ON/OFF time mask for CA	15.3.0
2019-06	RAN#84	R5-194910	0463	1	F	Update of TC 6.3A.1 Minimum output power for CA FR1	15.3.0
2019-06	RAN#84	R5-194911	0434	1	F	Update of 6.2.3 for UE additional maximum output power reduction	15.3.0
2019-06	RAN#84	R5-194912	0430	1	F	Update of test case 6.2.3 UE A-MPR FR1, general part and minimum requirements	15.3.0
2019-06	RAN#84	R5-194915	0438	1	F	Correction to SRS time mask test	15.3.0

2019-06	RAN#84	R5-194916	0444	1	F	Correction to transmit signal quality test cases	15.3.0
2019-06	RAN#84	R5-194917	0461	1	F	Introduction of 6.2A.4.0.2 TIB for CA into Rel-15	15.3.0
2019-06	RAN#84	R5-194918	0468	1	F	Update of transmit signal quality test cases for FR1	15.3.0
2019-06	RAN#84	R5-194919	0407	1	F	Update of TC 7.9A.1 Spurious emissions for 2DL CA	15.3.0
2019-06	RAN#84	R5-194920	0456	1	F	Update of 7.5A.3 Adjacent channel selectivity for 4DL CA	15.3.0
2019-06	RAN#84	R5-194921	0469	1	F	Correction to FR1 Reference Sensitivity test configurations with n70	15.3.0
2019-06	RAN#84	R5-194922	0431	1	F	Update of clause 3 to TS 38.521-1	15.3.0
2019-06	RAN#84	R5-194923	0432	1	F	Update of clause 4 to TS 38.521-1	15.3.0
2019-06	RAN#84	R5-194924	0433	1	F	Update of clause 5 for operating bands and channel arrangement	15.3.0
2019-06	RAN#84	R5-194925	0452	1	F	General clause updated for FR1 spec	15.3.0
2019-06	RAN#84	R5-194926	0467	1	F	Update of Global In-channel Tx Test Annex for FR1	15.3.0
2019-06	RAN#84	R5-194957	0392	1	F	Updates of MU and TT in TS 38.521-1 Annex F during RAN5#NR5	15.3.0
2019-06	RAN#84	R5-194973	0402	1	F	Update of TC 7.9A.0 Spurious emissions for CA	15.3.0
2019-06	RAN#84	R5-194974	0403	1	F	Update of TC 7.7D Spurious response for UL-MIMO	15.3.0
2019-06	RAN#84	R5-195090	0470	1	F	Update of FR1 ON_ON time mask test cases	15.3.0
2019-06	RAN#84	R5-195092	0441	1	F	Update of 7.5A.1 Adjacent channel selectivity for 2DL CA	15.3.0
2019-06	RAN#84	R5-195140	0416	1	F	Update of 6.3D.4.3 Aggregate Power tolerance for UL-MIMO	15.3.0
2019-06	RAN#84	R5-195142	0422	1	F	Addition of TT values for NR FR1 UL-MIMO test cases	15.3.0
2019-06	RAN#84	R5-195143	0457	1	F	Introduction of Occupied bandwidth for Inter-band CA in NR SA FR1	15.3.0
2019-06	RAN#84	R5-195144	0458	1	F	Update of 6.4D.3 Time alignment error for UL-MIMO FR1	15.3.0
2019-06	RAN#84	R5-195145	0464	1	F	Update of TC 6.3A.2 Transmit OFF power for CA FR1	15.3.0
2019-06	RAN#84	R5-195198	0436	1	F	Correction to power control test cases	15.3.0
2019-06	RAN#84	R5-195403	0459	1	F	Addition of 6.2A.1.3 FR1 MOP for inter-band CA	15.3.0
2019-06	RAN#84	R5-195430	0393	1	F	Updates of MU and TT in TS 38.521-1	15.3.0
2019-06	RAN#84	R5-195431	0424	1	F	Core alignment with TS 38.101-1	15.3.0
2022-12	RAN#98	R5-225990	1912	-	F	Removal of technical content in 38.521-1 v15.3.0 and substitution with pointer to the next Release	15.4.0

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# History

<b>Document history</b>		
V15.0.0	October 2018	Publication
V15.1.0	April 2019	Publication
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