

ETSI TS 138 521-2 V15.4.0 (2021-08)



**5G;
NR;
User Equipment (UE) conformance specification;
Radio transmission and reception;
Part 2: Range 2 standalone
(3GPP TS 38.521-2 version 15.4.0 Release 15)**



Reference

RTS/TSGR-0538521-2v40

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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where:

- x the first digit:
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 - 2 presented to TSG for approval;
 - 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.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

The present document is part 2 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 [13]: NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Range 1 Standalone;

3GPP TS 38.521-2: 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 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;

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 2 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.

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] to [27] (void)

[28] 3GPP TS 38.521-2 Release 16: "NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 2: Range 2 Standalone "

3 Definitions, symbols and abbreviations

Void

4 General

The requirements of the present document are provided in 3GPP TS 38.521-2 Release 16 [28].

5 to 7 Void

Annex A to M: Void

Annex N (informative): Change history

Change history							
Date	Meeting	TDoc	CR	R ev	Cat	Subject/Comment	New version
2017-08	RAN5 #76	R5-174709	-	-	-	Draft skeleton	0.0.1
2018-01	RAN5#1- 5G-NR Adhoc	R5-180002	-	-	-	Add references	0.1.0
2018-01	RAN5#1- 5G-NR Adhoc	R5-180103	-	-	-	Add definitions, symbols and abbreviations	0.1.0
2018-01	RAN5#1- 5G-NR Adhoc	R5-180104	-	-	-	Introduction of Operating bands and Channel arrangement	0.1.0
2018-01	RAN5#1- 5G-NR Adhoc	R5-180094	-	-	-	Introduction of new test case 6.3.2 Transmit OFF power	0.1.0
2018-01	RAN5#1- 5G-NR Adhoc	R5-180095	-	-	-	TP to add skeleton of 6.5.1 Occupied bandwidth to 38.521-2	0.1.0
2018-01	RAN5#1- 5G-NR Adhoc	R5-180096	-	-	-	TP to add skeleton of 6.5.2.1 SEM to 38.521-2	0.1.0
2018-01	RAN5#1- 5G-NR Adhoc	R5-180097	-	-	-	TP to add skeleton of 6.5.2.3 ACLR to 38.521-2	0.1.0
2018-03	RAN5 #78	R5-181508	-	-	-	Updated 38.521-2 to extend Annex with additional testing information	0.2.0
2018-03	RAN5 #78	R5-181680	-	-	-	TP to skeleton of 7.6.1 Inband blocking to 38.521-2	0.2.0
2018-03	RAN5 #78	R5-181681	-	-	-	5G-NR: Text Proposal to add spurious emissions test case to 38.521-2	0.2.0
2018-04	RAN5#2- 5G-NR Adhoc	R5-181978	-	-	-	Update TS 38.521-2 further to align with the latest TS 38.101-2 spec structure.	0.3.1
2018-04	RAN5#2- 5G-NR Adhoc	R5-182027	-	-	-	5G-NR Text Proposal to update spurious emissions test case to 38.521-2	0.4.0
2018-04	RAN5#2- 5G-NR Adhoc	R5-182041	-	-	-	5G-NR Text Proposal to add REFSENS test case to 38.521-2	0.4.0
2018-04	RAN5#2- 5G-NR Adhoc	R5-182009	-	-	-	General section updated to 38.521-2	0.4.0
2018-04	RAN5#2- 5G-NR Adhoc	R5-182048	-	-	-	Addition of FR2 test case 6.3.1 Minimum Output Power	0.4.0
2018-04	RAN5#2- 5G-NR Adhoc	R5-182049	-	-	-	Addition of FR2 test case 6.3.3.2 General ON/OFF time mask	0.4.0
2018-04	RAN5#2- 5G-NR Adhoc	R5-181839	-	-	-	Definitions and abbreviations updated to 38.521-2	0.4.0
2018-04	RAN5#2- 5G-NR Adhoc	R5-181840	-	-	-	Operating bands and Channel arrangement updated to 38.521-2	0.4.0
2018-04	RAN5#2- 5G-NR Adhoc	R5-182008	-	-	-	Introduction of new test case 7.4 Maximum input level	0.4.0
2018-04	RAN5#2- 5G-NR Adhoc	R5-182010	-	-	-	Common uplink configuration table for Tx test cases for TS 38.521-2 non-CA	0.4.0
2018-04	RAN5#2- 5G-NR Adhoc	R5-182011	-	-	-	TP for 6.5.1 Occupied Bandwidth in TS 38.521-2	0.4.0
2018-04	RAN5#2- 5G-NR Adhoc	R5-182029	-	-	-	TP for 6.5.2.1 Spectrum Emission Mask in TS 38.521-2	0.4.0
2018-04	RAN5#2- 5G-NR Adhoc	R5-182031	-	-	-	TP for 6.5.2.3 Adjacent Channel Leakage Ratio in TS 38.521-2	0.4.0
2018-04	RAN5#2- 5G-NR Adhoc	R5-182043	-	-	-	TP for 7.6.2 InBand Blocking in TS 38.521-2	0.4.0
2018-04	RAN5#2- 5G-NR Adhoc	R5-182046	-	-	-	TP for 7.5 Adjacent channel selectivity in TS 38.521-2	0.4.0

2018-04	RAN5#2-5G-NR Adhoc	R5-181844	-	-	-	Add Annex G (normative): Measurement uncertainties and Test Tolerances	0.4.0
2018-04	RAN5#2-5G-NR Adhoc	R5-181844	-	-	-	Add clause 4.4 Test point analysis	0.4.0
2018-05	RAN5 #79	R5-183908	-	-	-	Introduction of New FR2 test case 6.3.3.4 PRACH time mask	0.5.0
2018-05	RAN5 #79	R5-182769	-	-	-	General section updated to 38.521-2	0.5.0
2018-05	RAN5 #79	R5-183914	-	-	-	TP for FR2 spurious test procedure (38.521-2)	0.5.0
2018-05	RAN5 #79	R5-183925	-	-	-	Update of Refsens test procedure for FR2	0.5.0
2018-05	RAN5 #79	R5-182883	-	-	-	Definitions, symbols and abbreviations updated to 38.521-2	0.5.0
2018-05	RAN5 #79	R5-182884	-	-	-	Operating bands and Channel arrangement updated to 38.521-2	0.5.0
2018-05	RAN5 #79	R5-182890	-	-	-	Update minimum conformance requirements and test requirement for 6.3.2 Transmit OFF power	0.5.0
2018-05	RAN5 #79	R5-183926	-	-	-	Annex for test case applicability per permitted test method	0.5.0
2018-05	RAN5 #79	R5-183712	-	-	-	Corrections annexes for EIRP and TRP metric definition	0.5.0
2018-05	RAN5 #79	R5-183927	-	-	-	Clean up TBD from Occupied Bandwidth, SEM and ACLR test cases	0.5.0
2018-05	RAN5 #79	R5-183928	-	-	-	Clean up TBD from ACS and Inband Blocking test cases	0.5.0
2018-05	RAN5 #79	R5-183948	-	-	-	Statistical Testing Annex for 38.521-2	0.5.0
2018-08	RAN5 #80	R5-185348	-	-	-	Correction to FR2 Spurious TC and introduction of TRP measurement grid requirement	1.0.0
2018-08	RAN5 #80	R5-185350	-	-	-	Addition of Frequency Error test case to TS 38.521-2	1.0.0
2018-08	RAN5 #80	R5-185490	-	-	-	FR2_TxSpurious_TestConfig_38.521-2	1.0.0
2018-08	RAN5 #80	R5-185562	-	-	-	FR2_StoreTxRxBeamPeakCoordinates_38.521-2	1.0.0
2018-08	RAN5 #80	R5-184742	-	-	-	Update of FR2 test case 6.3.1	1.0.0
2018-08	RAN5 #80	R5-184743	-	-	-	Update of FR2 test case 6.3.3.2	1.0.0
2018-08	RAN5 #80	R5-184856	-	-	-	General sections updated to 38.521-2	1.0.0
2018-08	RAN5 #80	R5-185519	-	-	-	Updates of FR2 TRx MU and TT in Annex	1.0.0
2018-08	RAN5 #80	R5-185555	-	-	-	FR2_UE_BeamlockInvoke_38.521-2	1.0.0
2018-08	RAN5 #80	R5-185191	-	-	-	Update to Occupied Bandwidth, SEM and ACLR test cases in TS 38.521-2	1.0.0
2018-08	RAN5 #80	R5-185192	-	-	-	Update to ACS and inband blocking test cases in TS 38.521-2	1.0.0
2018-08	RAN5 #80	R5-185187	-	-	-	FR2_RefSens_TestConfig_38.521-2	1.0.0
2018-08	RAN5 #80	R5-185188	-	-	-	DL and UL RMC updated for FR2 tests	1.0.0
2018-08	RAN5 #80	R5-185189	-	-	-	Downlink physical channel updated for FR2 tests	1.0.0
2018-08	RAN5 #80	R5-185190	-	-	-	OCNG Patterns updated for FR2 tests	1.0.0
2018-08	RAN5 #80	R5-185194	-	-	-	Update to Test frequencies for SEM in TS 38.521-2	1.0.0
2018-08	RAN5 #80	R5-185196	-	-	-	Addition of Carrier Leakage test case to TS 38.521-2	1.0.0
2018-08	RAN5 #80	R5-185193	-	-	-	Addition of Annex Global In-Channel TX-Test to 38.521-2	1.0.0
2018-08	RAN5 #80	R5-185197	-	-	-	Introduction of maximum output power test cases	1.0.0
2018-08	RAN5 #80	R5-185195	-	-	-	Addition of EVM test case to TS 38.521-2	1.0.0
2018-09	RAN #81	-	-	-	-	raised to v15.0.0 with editorial changes only	15.0.0
2018-12	RAN #82	R5-186504	0021	-	F	FR2 RefSens test case updates	15.1.0
2018-12	RAN #82	R5-186505	0022	-	F	Update Text on Store Beam Peak Coordinate	15.1.0
2018-12	RAN #82	R5-186510	0023	-	F	Structure updates to Annex C and G	15.1.0
2018-12	RAN #82	R5-186675	0026	-	F	Updating test case 6.2.3 maximum output power with additional requirements	15.1.0
2018-12	RAN #82	R5-187151	0034	-	F	Updated to Annexes for FR2 tests	15.1.0
2018-12	RAN #82	R5-187152	0035	-	F	General Information updated for TS38.521-2	15.1.0
2018-12	RAN #82	R5-187561	0042	-	F	Update to Table 5.3.5-1 in TS 38.521-2	15.1.0
2018-12	RAN #82	R5-187619	0050	-	F	Update of Section 6.3.3.1 General	15.1.0
2018-12	RAN #82	R5-187838	0045	1	F	Update of transmit signal quality test cases in 38.521-2	15.1.0
2018-12	RAN #82	R5-187839	0046	1	F	Addition of In-band Emissions test case to TS 38.521-2	15.1.0
2018-12	RAN #82	R5-187840	0047	1	F	Addition of EVM equalizer spectral flatness test cases 6.4.2.4 and 6.4.2.5 to TS 38.521-2	15.1.0
2018-12	RAN #82	R5-187841	0048	1	F	Update of Common Uplink Configuration for FR2	15.1.0
2018-12	RAN #82	R5-187842	0029	1	F	General sections updated to 38.521-2	15.1.0
2018-12	RAN #82	R5-187843	0044	1	F	Update of Global In-channel Tx Test Annex in 38.521-2	15.1.0
2018-12	RAN #82	R5-187886	0020	1	F	FR2 Spurious Emission test case updates	15.1.0
2018-12	RAN #82	R5-187912	0038	1	F	Addition of notes to clarify test point selection into general section of TS 38.521-2	15.1.0
2018-12	RAN #82	R5-188037	0032	1	F	Removing the Editor's notes of SA messages and procedures for all FR2 test cases	15.1.0
2018-12	RAN #82	R5-188038	0036	1	F	FR2 downlink signal level(38.521-2)	15.1.0
2018-12	RAN #82	R5-188063	0027	1	F	Update of FR2 6.3.2 Transmit OFF power	15.1.0
2018-12	RAN #82	R5-188212	0040	2	F	Updates to maximum output power test cases	15.1.0
2018-12	RAN #82	R5-188213	0028	1	F	Update of FR2 test case 7.4	15.1.0
2018-12	RAN #82	R5-188214	0025	1	F	Updates of TT in TS 38.521-2 Annex F during RAN5#81	15.1.0
2018-12	RAN #82	R5-188215	0031	1	F	TDD configuration for UE Tx test in FR2	15.1.0
2018-12	RAN #82	R5-188216	0039	1	F	Core alignment CR to capture TS 38.101-2 updates during RAN4#89	15.1.0
2018-12	RAN #82	R5-188217	0041	2	F	On measurement grids	15.1.0

2018-12	RAN #82	R5-188218	0043	1	F	Update to Annex K	15.1.0
2018-12	RAN #82	RP-182736	0024	2	F	Updates of MU Annex F	15.1.0
2019-03	RAN #83	R5-191091	0083	-	F	Updates of TT in TS38.521-2 Annex F during RAN5#NR4	15.2.0
2019-03	RAN #83	R5-191092	0084	-	F	Editorial correction of core alignment in TS 38.521-2	15.2.0
2019-03	RAN #83	R5-191093	0085	-	F	Editorial cleaning up of test configuration tables in TS 38.521-2	15.2.0
2019-03	RAN #83	R5-191246	0086	-	F	Update TRP measurement procedure Annex in TS38.521-2	15.2.0
2019-03	RAN #83	R5-191247	0087	-	F	Update Annex K and Annex M in TS38.521-2	15.2.0
2019-03	RAN #83	R5-191259	0088	-	F	Update to FR2 test case 6.3.3.4 PRACH time mask	15.2.0
2019-03	RAN #83	R5-191507	0090	-	F	Shared Risk clarification in TS 38.521-2	15.2.0
2019-03	RAN #83	R5-191609	0093	-	F	CR to TS 38.521-2 to add text proposal for Annex F.1	15.2.0
2019-03	RAN #83	R5-191676	0094	-	F	Addition of FR2 6.2.4 Configured transmitted power	15.2.0
2019-03	RAN #83	R5-191677	0095	-	F	Update of FR2 6.3.1 Minimum Output Power	15.2.0
2019-03	RAN #83	R5-191679	0096	-	F	Addition of FR2 6.3.4.2 Absolute power tolerance	15.2.0
2019-03	RAN #83	R5-191680	0097	-	F	Update of FR2 6.3.3.2 General ON/OFF time mask	15.2.0
2019-03	RAN #83	R5-191793	0098	-	F	Introduction of Minimum output power for 2UL CA	15.2.0
2019-03	RAN #83	R5-191809	0099	-	F	OBW test procedure update for 38.521-2	15.2.0
2019-03	RAN #83	R5-191812	0100	-	F	FR2 Spurious Emission test case updates	15.2.0
2019-03	RAN #83	R5-191824	0102	-	F	Update to Annex K and Annex L	15.2.0
2019-03	RAN #83	R5-191986	0107	-	F	Introduction of Annex on Characteristics of the Interfering Signal FR2	15.2.0
2019-03	RAN #83	R5-192092	0110	-	F	Test mode and test loop function activation in SA Tx RF test cases in TS 38.521-2	15.2.0
2019-03	RAN #83	R5-192095	0111	-	F	Test mode and test loop function activation in SA Rx RF test cases in TS 38.521-2	15.2.0
2019-03	RAN #83	R5-192122	0112	-	F	Update of Global In-channel Tx Test Annex for FR2	15.2.0
2019-03	RAN #83	R5-192450	0089	1	F	Update of test case 6.3.4.3, Relative power tolerance in 38.521-2	15.2.0
2019-03	RAN #83	R5-192451	0082	1	F	Updates of test environment for frequency error	15.2.0
2019-03	RAN #83	R5-192452	0105	1	F	FR2 SA Spurious Emission Coexistence test case	15.2.0
2019-03	RAN #83	R5-192648	0106	1	F	Introduction of Aggregate power tolerance in NR SA FR2	15.2.0
2019-03	RAN #83	R5-192649	0117	1	F	CR to add UL RMC for 60kHz SCS in Annex A.2.3	15.2.0
2019-03	RAN #83	R5-192650	0113	1	F	Update of transmit signal quality test cases for FR2	15.2.0
2019-03	RAN #83	R5-192651	0114	1	F	Update OBW test case in TS 38.521-2	15.2.0
2019-03	RAN #83	R5-192652	0115	1	F	Update SEM test case in TS 38.521-2	15.2.0
2019-03	RAN #83	R5-192653	0116	1	F	Update ACLR test case in TS 38.521-2	15.2.0
2019-03	RAN #83	R5-192654	0101	1	F	FR2 Reference Sensitivity test case updates	15.2.0
2019-03	RAN #83	R5-192655	0104	1	F	FR2 Reference Sensitivity EIS spherical coverage	15.2.0
2019-03	RAN #83	R5-192667	0108	1	F	Update of Annex F.2	15.2.0
2019-03	RAN #83	R5-192849	0080	2	F	Updates of MU in TS38.521-2 Annex F during RAN5#82	15.2.0
2019-03	RAN #83	R5-192843	0081	2	F	Updates of TT in TS38.521-2 Annex F during RAN5#82	15.2.0
2019-03	RAN #83	R5-192680	0103	1	F	38.521-2 Editor's Note Updates	15.2.0
2019-03	RAN #83	RP-190746	0118	4	F	Updates to maximum output power test cases	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	R5-193541	0137	-	F	Alignment of scheduling of DL RMC with scheduling of UL RMC	15.3.0
2019-06	RAN#84	R5-193552	0138	-	F	Core alignment of RAN4 pending issues in TS 38.521-2	15.3.0
2019-06	RAN#84	R5-193575	0143	-	F	Correction of 38.521-2 7.4	15.3.0
2019-06	RAN#84	R5-193749	0151	-	F	Updates of ACLR test procedure	15.3.0
2019-06	RAN#84	R5-193820	0152	-	F	Correction of 38.521-2 clause 2 to 5	15.3.0
2019-06	RAN#84	R5-194009	0153	-	F	FR2 Reference Sensitivity test case updates	15.3.0
2019-06	RAN#84	R5-194243	0161	-	F	Addition FR2 blocking measurement procedure in Annex K	15.3.0
2019-06	RAN#84	R5-194264	0163	-	F	Correction to FR2 EIRP test configurations	15.3.0
2019-06	RAN#84	R5-194265	0164	-	F	Correction to FR2 EIS test configurations	15.3.0
2019-06	RAN#84	R5-194269	0165	-	F	Update FR2 ACS and Inband blocking test cases	15.3.0
2019-06	RAN#84	R5-194461	0170	-	F	Update to 6.2.3 A-MPR FR2	15.3.0
2019-06	RAN#84	R5-194618	0171	-	F	Update of Global In-channel Tx Test Annex for FR2	15.3.0
2019-06	RAN#84	R5-194958	0139	1	F	Updates of MU and TT in TS 38.521-2 Annex F during RAN5#NR5	15.3.0
2019-06	RAN#84	R5-194968	0167	1	F	Update of TC 6.3A.1.1 Minimum output power for 2UL CA	15.3.0
2019-06	RAN#84	R5-194969	0166	1	F	Clean up FR2 SA test cases	15.3.0
2019-06	RAN#84	R5-194970	0160	1	F	Introduction of beam correspondence	15.3.0
2019-06	RAN#84	R5-194971	0162	1	F	Introduction of beam correspondence for CA	15.3.0
2019-06	RAN#84	R5-194976	0173	1	F	Update of Frequency Error Test Case for FR2	15.3.0
2019-06	RAN#84	R5-194977	0175	1	F	Editorial corrections for 6.2.1 UE maximum output power	15.3.0
2019-06	RAN#84	R5-195080	0176	-	F	Update of FR2 ON_ON time mask test cases	15.3.0
2019-06	RAN#84	R5-195147	0141	1	F	Addition of new SA FR2 RF test case 6.2.2	15.3.0
2019-06	RAN#84	R5-195149	0142	1	F	Correction of 38.521-2 6.3.2	15.3.0
2019-06	RAN#84	R5-195151	0144	1	F	Introduction of MOP (SA UL CA)	15.3.0
2019-06	RAN#84	R5-195152	0145	1	F	Introduction of OFF power (SA UL CA)	15.3.0
2019-06	RAN#84	R5-195153	0146	1	F	Introduction of Frequency error (SA UL CA)	15.3.0
2019-06	RAN#84	R5-195154	0148	1	F	Introduction of SEM (SA UL CA)	15.3.0
2019-06	RAN#84	R5-195155	0149	1	F	Introduction of ACLR (SA UL CA)	15.3.0
2019-06	RAN#84	R5-195156	0150	1	F	Introduction of General Spurious (SA UL CA)	15.3.0

2019-06	RAN#84	R5-195157	0157	1	F	Introduction of New test case 6.5A.1.1 Occupied bandwidth for CA (2UL CA)	15.3.0
2019-06	RAN#84	R5-195158	0156	1	F	Update Out of band emission test cases in TS 38.521-2	15.3.0
2019-06	RAN#84	R5-195160	0159	1	F	Introduction of SRS time mask for UL-MIMO	15.3.0
2019-06	RAN#84	R5-195404	0172	1	F	Update of transmit signal quality test cases for FR2	15.3.0
2019-06	RAN#84	R5-195417	0154	1	F	38.521-2 implementation of FR2 UL demod OTA tests using single pol Rx TE	15.3.0
2019-06	RAN#84	R5-195432	0168	2	F	Update to 6.2.1.1 UE maximum output power - EIRP and TRP	15.3.0
2019-06	RAN#84	R5-195433	0169	2	F	Update to 6.2.1.2 UE maximum output power - Spherical coverage	15.3.0
2019-06	RAN#84	R5-195434	0140	1	F	Updates of MU and TT in TS 38.521-2	15.3.0
2019-06	RAN#84	R5-195435	0155	1	F	Core alignment with TS 38.101-2	15.3.0
2021-06	RAN#92	R5-212169	0494	-	F	Removal of technical content in 38.521-2 v15.3.0 and substitution with pointer to the next Release	15.4.0

History

Document history		
V15.0.0	October 2018	Publication
V15.1.0	April 2019	Publication
V15.2.0	May 2019	Publication
V15.3.0	July 2019	Publication
V15.4.0	August 2021	Publication