**3GPP TSG-RAN WG4 Meeting #** **95-e R4-2008729**

**Electronic Meeting, 25 May – 5 June, 202**0

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **38.113** | **CR** | **0020** | **rev** | **1** | **Current version:** | **15.9.0** |  |
|  |
| *For* ***[HELP](http://www.3gpp.org/3G_Specs/CRs.htm%22%20%5Cl%20%22_blank)*** *on using this form: comprehensive instructions can be found at <http://www.3gpp.org/Change-Requests>.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network |  |

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| ***Title:***  | CR to TS 38.113: Add the reverberation chamber for radiated immunity testing (clause 2 & subclause 9.2.2) |
|  |  |
| ***Source to WG:*** | ZTE, Ericsson |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_newRAT-Perf |  | ***Date:*** | 2020-05-05 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-15 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | This is the re-submission of endorsed draftCR in RAN4#94-bis-e:R4-2005564.There is no reverberation chamber test site for radiated immunity testing. |
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| ***Summary of change:*** | Added the reverberation chamber as an alternative test site for radiated immunity testing. |
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| ***Consequences if not approved:*** | Miss a rapid and economic test site for radiated immunity testing. |
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| ***Clauses affected:*** | 2, 9.2.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |

|  |  |
| --- | --- |
| ***This CR's revision history:*** |  |

**--------------Start of text change-------------**

# 2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

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

[2] 3GPP TS 38.104: "NR; Base Station (BS) radio transmission and reception".

[3] 3GPP TS 38.141-1: "NR; Base Station (BS) conformance testing Part 1: Conducted conformance testing".

[4] 3GPP TS 38.141-2: "NR; Base Station (BS) conformance testing Part 2: Radiated conformance testing".

[5] 3GPP TS 37.113: "E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) Electromagnetic Compatibility (EMC)".

[6] 3GPP TS 37.114: "Active Antenna System (AAS) Base Station (BS) Electromagnetic Compatibility (EMC)".

[7] IEC 61000-6-1: "Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments".

[8] IEC 61000-6-3: "Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments".

[9] IEC 60050-161: "International Electrotechnical Vocabulary (IEV) - Part 161: Electromagnetic compatibility".

[10] 3GPP TR 38.817-02 "NR: General aspects for Base Station (BS) Radio Frequency (RF) for NR".

[11] CISPR 32: "Electromagnetic compatibility of multimedia equipment - Emission requirements".

[12] void

[13] IEC 61000-3-2: "Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)".

[14] IEC 61000-3-12: "Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage system with input current >16 A and ≤ 75 A per phase".

[15] IEC 61000-3-3: "Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection".

[16] IEC 61000-3-11: "Electromagnetic compatibility (EMC) - Part 3-11: Limits – Limitation of voltage changes, voltage fluctuations and flicker in low-voltage supply systems - Equipment with rated current ≤ 75 A and subject to conditional connections".

[17] IEC 61000-4-2: "Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test".

[18] IEC 61000-4-3: "Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test".

[19] IEC 61000-4-4: "Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test".

[20] IEC 61000-4-5: "Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test".

[21] IEC 61000-4-6: "Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio frequency fields".

[22] IEC 61000-4-11: "Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests".

[23] ETSI EN 301 489-1: "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU".

[24] Recommendation ITU-R SM.329-12: "Unwanted emissions in the spurious domain".

[25] 3GPP TS 37.105: "Active Antenna System (AAS) Base Station (BS) transmission and reception".

[26] Recommendation ITU-R SM.1539-1: "Variation of the boundary between the out-of-band and spurious domains required for the application of Recommendations ITU-R SM.1541 and ITU-R SM.329".

[27] 3GPP TS 38.101-4: "NR; User Equipment (UE) radio transmission and reception; Part 4: Performance requirements".

[28] ETSI EN 301 489-50: "Electromagnetic compatibility (EMC) standard for radio equipment and services; Part 50: Specific conditions for cellular communication base station (BS), repeater and ancillary equipment; Harmonised standard covering the essential requirements of article 3.1(b) of the Directive 2014/53/EU".

[29] IEC 61000-4-21: "Electromagnetic compatibility (EMC) - Part 4-21: Testing and measurement techniques - Reverberation chamber test methods".

**--------------End of first change-------------**

**--------------Start of second change-------------**

### 9.2.2 Test method and level

The test method shall be in accordance with IEC 61000‑4‑3 [18]. The use of reverberation chamber test method according to IEC 61000-4-21 [29], clause 6.1 and Annex D as alternative method is allowed.

- For transmitters, receivers and transceivers the following requirements shall apply:

- The test level shall be 3 V/m amplitude modulated to a depth of 80 % by a sinusoidal audio signal of 1 kHz;

- The stepped frequency increments shall be 1 % of the momentary frequency;

- The test shall be performed over the frequency range 80 MHz - 6000 MHz; with the exception of the exclusion band for receivers (see subclause 4.4);

- Responses in stand-alone receivers or receivers which are part of transceivers occurring at discrete frequencies which are narrow band responses, shall be disregarded, see subclause 4.3;

- The frequencies selected during the test shall be recorded in the test report.

- For the test method in accordance with IEC 61000-4-3[18], the following *spatial exclusion zone* can be choosen to protect the base station receiver. In the range of angles except the operational range of angles of the *BS type 1-O* and *BS type 2-O* antenna (i.e. except for the half sphere around the EUT radiating direction as depicted on figure 9.2.2-1) and for the frequency range above 690 MHz (according to the test method in ETSI EN 301 489-50 [28]), the EMC RF electromagnetic field immunity requirement applies.



Figure 9.2.2-1: EMC RF electromagnetic field immunity requirement testing directions for *BS type 1-O* and *BS type 2-O* (horizontal plane depicted) with the *spatial exclusion zone* applied

**-------------End of change-------------**