**3GPP TSG-RAN WG4 Meeting #104-e *R4-2212224***

**Electronic Meeting,August 15-26, 2022**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **38.114** | **CR** | Draft | **rev** |  | **Current version:** | **17.0.1** |  |
|  |
| *For* ***[HE](http://www.3gpp.org/3G_Specs/CRs.htm%22%20%5Cl%20%22_blank)******[LP](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:***  | Draft CR to TS38.114 Clauses 4.1, 4.2 and 9.1. |
|  |  |
| ***Source to WG:*** | ZTE |
| ***Source to TSG:*** | R4 |
|  |  |
| ***Work item code:*** | NR\_repeaters-Core/Perf |  | ***Date:*** | 2022-7-18 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-17 |
|  | *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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
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| ***Reason for change:*** | During the RAN4 103-e meeting, the work split for the remaining empty clauses were carried out in R4-2210506. This CR fills the following clauses 4.1, 4.2 and 9.1. |
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| ***Summary of change:*** | The empty clauses 4.1, 4.2 and 9.1 has been added by this draft CR. |
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| ***Consequences if not approved:*** | Empty clauses would remain. |
|  |  |
| ***Clauses affected:*** | 4.1, 4.2, 9.1 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  |  |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  |  |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  |  |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

**--------------Start of text changes -------------**

4 Test conditions

4.1 General

Requirements throughout the EMC specifications are in some cases defined separately for different frequency ranges (FR). The frequency ranges FR1 and FR2 are defined in clause 5.1 of TS 38.106 [x].

The equipment shall be tested in normal test environment defined in the corresponding NR Repeater conformance testing specification TS 38.115-1 [x] for *NR Repeater type 1-C* or TS 38.115-2 [x] for *NR Repeater type 2-O.* The test conditions shall be recorded in the test report.

For Repeater capable of multi-band operation, the requirements in the present document apply for each supported *operating band* unless otherwise stated. *Operating bands* shall be activated according to the test configuration in clause 4.5. Tests shall be performed relating to each type of port and all *operating bands* shall be assessed during the tests.

The manufacturer shall declare the supported *operating band(s)* according to the list of NR repeater *operating bands* defined in TS 38.106 [x].

NOTE 1: NR *operating bands* for *repeater type 1-C*, are declared by the manufacturer according to the declaration D.3 specified in TS 38.115-1 [x], table [x].

NOTE 2: NR *operating bands* for *repeater type 2-O,* are declared by the manufacturer according to the declaration D.4 specified in TS 38.115-2 [x], table [x].

4.2 Arrangements for establishing a communication link

The wanted RF input signal nominal frequency shall be selected by setting the NR Absolute Radio Frequency Channel Number (NR-ARFCN) to an appropriate number, as defined in TS 38.106 [x], clause 5.3.1.2.

A communication link shall be set up with a suitable test system capable of evaluating the required performance criteria (hereafter called "the test system") at the radio interface and *telecommunication port(s)* (the BS interface). The test system shall be located outside of the test environment.

When the EUT is required to be in the uplink/downlink operation, the following conditions shall be met:

- For the *repeater type 1-C* , the EUT shall be commanded to operate at maximum rated output power;

- For the r*epeater type 2-O* testing, the EUT output power shall be configured as stated in clause 8.1 for emission test and clause 9.1 for immunity test accordingly;

- Adequate measures shall be taken to avoid the effect of the unwanted signal on the measuring equipment;

For immunity tests clause 4.3 shall apply and the conditions shall be as follows.

**--------------Next text changes -------------**

9 Immunity

9.1 Test configurations

This clause defines the configurations for immunity tests as follows:

- the equipment shall be tested under normal test conditions as specified in the functional standards;

- during the test, the RF output power may be reduced to a power level sufficient for establishing and maintaining the required communication link;

- the test configuration shall be as close to normal intended use as possible;

- if the equipment is part of a system, or can be connected to *ancillary equipment*, then it shall be acceptable to test the equipment while connected to the minimum configuration of *ancillary equipment* necessary to exercise the ports;

- if the equipment has a large number of ports, then a sufficient number shall be selected to simulate actual operation conditions and to ensure that all the different types of termination are tested;

- the test conditions, test configuration and mode of operation shall be recorded in the test report;

- ports which in normal operation are connected shall be connected to an *ancillary equipment* or to a representative piece of cable correctly terminated to simulate the input/output characteristics of the *ancillary equipment*. In case of *repeater type 1-C*, *antenna ports* shall be correctly terminated;

- ports which are not connected to cables during normal operation, shall not be connected to any cables for the purpose of EMC testing. Where cables have to be connected to these ports, or interconnecting cables have to be extended in length in order to exercise the EUT, precautions shall be taken to ensure that the evaluation of the EUT is not affected by the addition or extension of these cables;

- immunity tests on the entire NR repeater shall be performed by establishing communication links at the radio interface (e.g. with the mobile simulator) and the BS interface (e.g. with a BS simulator) and evaluating the [power accuracy/gain];

- immunity tests shall be performed on both the uplink and downlink paths. The tests shall also include both the radio interface and the BS interface. [Power accuracy/Gain] evaluation may be carried out at either interface, where appropriate, and the measurements for the uplink and downlink paths may be carried out as a single path looped at either the radio interface or BS interface. In case of looping is used care have to be taken that the [power accuracy/gain] doesn't change due to looping;

- for NR repeater capable of multi-band operation, communication links shall be established in such a way that all *operating band*(s) are activated during the test according to the applicable test configurations in clause 4.5. Performance assessment may be done separately for each *operating band*.



**Figure 9.1-1: Communication link set up for *repeater type 1-C* immunity measurement**



**Figure 9.1-2: Communication link set up for *repeater type 2-O* immunity measurement**

 **-------------End of changes -------------**