3GPP TSG-RAN WG4 Meeting #111 R4-240xxxx

Fukuoka City, Fukuoka, Japan, 20th – 24th May, 2024

**Title:** WF on MU/TT values for OTA conformance testing of NCR

**Agenda Item:** 7.18.3

**Source:** Huawei, HiSilicon

**Document for:** Approval

# Introduction

MU/TT values for the conducted requirements were already decided to be reuse from related legacy specifications, and no further issues were identified.

MU/TT values were further discussed for the radiated NCR requirements testing. Due to DUT size and required OTA chamber (and quiet zone) dimensions, it was identified that there is some restriction in the reuse of the UE-specific MU/TT values for the MT-related requirements. While NCR is composed of NCR-Fwd and NCR-MT, during OTA testing of NCR device it would need to fit within quite zone of the OTA chamber for radiated requirements testing. Therefore, the following WF was formulated:

According to RAN5 specification TS 38.521-2 annex F.3, the MU/TT values were defined for the EUT with max device size≤ 30 cm for FR2 subranges (FR2a, FR2b, FR2c, FR2d).

|  |  |
| --- | --- |
| Frequency sub-range designation | Corresponding frequency range |
| FR2a | 23.45 GHz ≤ f < 32.125 GHz |
| FR2b | 32.125 GHz ≤ f < 40.8 GHz |
| FR2c1 | 40.8GHz ≤ f < 44.3GHz |
| FR2d | 44.3 GHz ≤ f < 49.0 GHz |
| NOTE 1: MTSU/TT/relaxation for FR2c is applied to all over the frequency range of n259. | |

# Way forward on MU/TT values for OTA NCR testing

General principle for OTA testing for Fwd as well as for MT requirements is that due to DUT size, reuse MU/TT values from legacy network nodes specifications (i.e. BS, NR repeater, or IAB) if related requirement-specific MU/TT values are available.

More specifically:

1. OTA repeater output power requirement for Fwd of the *NCR type 1-H:* Reuse from Reuse from FR1 OTA.

| Test | Core requirement | MU | Test Tolerance | Test requirement |
| --- | --- | --- | --- | --- |
| OTA repeater output power (Fwd) | EIRP: Normal condition:  ±3.4 dB  EIRP: Extreme condition:  ±4.5 dB  TRP: Normal condition: ±4.5 dB | Reuse from FR1 OTA | Reuse from FR1 OTA | Reuse from FR1 OTA |

1. OTA repeater output power requirement for MT of the *NCR type 1-H*

Reuse MU/TT values from TS 38.176-2 (OTA IAB), following core requirement reuse from TS 38.174.

| Test | Core requirement | MU | Test Tolerance | Test requirement |
| --- | --- | --- | --- | --- |
| OTA repeater output power (MT) | EIRP: Normal condition:  ±2.2 dB  EIRP: Extreme condition:  ±2.7 dB | Normal condition:  ±1.1 dB, f ≤ 3 GHz  ±1.3 dB, 3 GHz < f ≤ 6 GHz  Extreme condition:  ±2.5 dB, f ≤ 3 GHz  ±2.6 dB, 3 GHz < f ≤ 6 GHz | Normal conditions:  1.1 dB, f ≤ 3.0 GHz  1.3 dB, 3.0 GHz < f ≤ 4.2 GHz  1.3 dB, 4.2 GHz < f ≤ 6.0 GHz  Extreme conditions:  2.5 dB, f ≤ 3.0 GHz  2.6 dB, 3.0 GHz < f ≤ 4.2 GHz  2.6 dB, 4.2 GHz < f ≤ 6.0 GHz | Formula:  Upper limit + TT, Lower limit – TT |

1. OTA requirements for MT of the *NCR type 2-O*

For *NCR type 2-O* MU/TT values for the radiated MT-specific requirements, due to NCR size, reuse MU/TT values from legacy network nodes specifications (i.e. BS, NR repeater, or IAB) if related requirement-specific MU/TT values **are available**.

For the case of MT-specific OTA requirements for *NCR type 2-O* when there are no MU/TT values to be reused from legacy network node specifications), apply the following approach:

1. For EUT size ≤ 30 cm: Reuse MU/TT values from specification TS 38.521-2 (UE FR2 conformance testing),
2. For EUT size > 30 cm: Reuse of 38.521-2 TT values for radiated conformance testing MT requirements of the *NCR type 2-O* may not be justified for some products due to too large NCR dimensions. Reuse of MU/TT values from UE specification TS 38.521-2 is only allowed under the following disclaimer, which is to be added in TS 38.115-2 clause 4, saying the following:

*The test tolerances for selected MT-specific OTA test requirements were reused from TS 38.521-2 [x]. Reuse of those values for NCR radiated conformance testing is subject to the following condition:*

*Environmental test conditions and measurement methodology (i.e. DFF, or IFF) assumed for EUT testing in TS 38.521-2 [x].*

1. The above proposed MU/TT values are to be confirmed and implemented by next RAN4 meeting.
2. All the OTA test requirements for NCR type 2-O are to be kept in [] this meeting, and to be completed based on the above TT values by next RAN4 meeting.

# References

[1] R4-2409793 Proposal on MU/TT handling for OTA measurements Huawei, HiSilicon