**3GPP TSG-RAN WG4 Meeting #100-e R4-2115722**

Online, 16 - 27 Aug 2021

**Source:** Huawei

**Title:** WF on NR Repeater FR2 RF

**Agenda Item:** 9.5.3

**Document for:** Approval

# Introduction

During the 1st round of the discussion on the topic of the repeater RF radiated requirements it was agreed the agreements and any open issues would be captured in a WF.

In addition it was agreed that issues which are common to conducted and radiated RF requirements would 1st be discussed in the conducted work and then the same principle applied to the radiated.

# Way forward

The agreements (and highlighted in green) and the open issues (highlighted in yellow) have been captured below:

## 2.1 Transmitter issues

The following agreements have been made:

1. Radiated DL transmission power accuracy is defined as the BS with both EIRP and TRP
2. Radiated DL directional requirements:
   * If the repeater has a single fixed beam a single direction (in beam peak direction) is sufficient
   * If the repeater has multiple fixed beams one declaration per beam is required (in each beam peak direction)
3. Radiated DL transmission for WA class has no upper power limit.
4. Radiated DL transmission for MR, LA class has no upper power limit.
5. Radiated UL transmission there are 2 power classes one without a power limit and 1 with a power limit. With the following options on the power limit
   1. The power limit uses the same limit as PC1.
   2. Other options not precluded.
6. The ALC is implicit in the output power requirements and test. The output power (and hence ALC) is tested at multiple input levels,

And the following open issue has been identified:

1. the input levels for the output power (ALC) requirement are :
   1. 2 input levels, 1 which achieves maximum output power and one 10dB higher (same as existing repeaters)
   2. More power levels?
   3. FFS whether other aspects such as EVM, ACLR, OBUE in 1st MHz should be tested with higher output power. Conclusion should be aligned to FR1.

# 2.2 Emissions

A number of the emissions requirements are being discussed in both the radiated and conducted topic areas. It has been agreed for the radiated to follow the conducted when the issue is the same.

The following agreements have been made:

1. Spurious emissions will be the same as the BS spurious emissions
2. Additional spurious emissions will be the same as the BS additional spurious emissions
3. EESS protection the same as the UE requirements will be added without the NS concept.

And the following open issue has been identified:

1. ACLR – this is being discussed for conducted, the same principle will be used for radiated although FR2 values will be different and can be further discussed once the principles are agreed (for conducted)

## 2.3 Other RF Requirements

### 2.3.1 EVM

The following agreements have been made (these are aligned with the FR1 conducted agreements made in GTW for topic [309]):

1) Support for repeating signals containing 256QAM can be a declared

2) DL and UL EVM capability can be declared separately

And the following open issues have been identified:

3) EVM and modulation order - this is the same issue as conducted, the radiated requirements will follow the decision taken for conducted.

4) EVM value – will follow the same approach as for conducted

### 2.3.2 Noise floor

The following open issue has been identified:

1) The need for a noise requirement is still FFS, the principle for radiated will be the same as for conducted. Although the values for FR2 may differ.

Note. the test approach for radiated may differ from conducted this should be considered in the FR1 discussion.

### 2.3.3 RX IM

The following open issues have been identified:

1) There will be 1 CW and 1 modulated interferer

2) The BW, freq offset and levels are to be discussed next meeting – companies are encouraged to contribute.