

# TEST REPORT



**Dt&C Co., Ltd.**

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1. Report No : DRTFCC2312-0172

2. Customer

• Name (FCC) : LG Electronics USA, Inc. / Name (IC) : LG ELECTRONICS INC.

• Address (FCC) : 111 Sylvan Avenue North Building Englewood Cliffs New Jersey United States 07632

Address (IC) : 222, LG-ro, Jinwi-myeon Pyeongtaek-si, Gyeonggi-do 451-713 Korea (Republic Of)

3. Use of Report : FCC & IC Certification

4. Product Name / Model Name : Telematics(24CY DCM 5G) / TF24SENI

FCC ID : BEJTF24SENI2

IC : 2703H-TF24SENI2

5. FCC Regulation(s): Part 22, 24, 27

IC Standard(s): RSS-Gen Issue 5, 130 Issue 2, 132 Issue 4, 133 Issue 6, 139 Issue 4

Test Method used: KDB971168 D01v03, ANSI/TIA-603-E-2016, ANSI C63.26-2015

6. Date of Test : 2023.11.23 ~ 2023.12.05

7. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing

8. Testing Environment : See appended test report.

9. Test Result : Refer to the attached Test Result

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

This test report is not related to KOLAS accreditation.

|             |                                 |                               |
|-------------|---------------------------------|-------------------------------|
| Affirmation | Tested by                       | Technical Manager             |
|             | Name : SeungMin Gil (Signature) | Name : JaeJin Lee (Signature) |

2023 . 12 . 28 .

**Dt&C Co., Ltd.**

If this report is required to confirmation of authenticity, please contact to [report@dtnc.net](mailto:report@dtnc.net)

## Test Report Version

| Test Report No. | Date          | Description   | Revised by   | Reviewed by |
|-----------------|---------------|---------------|--------------|-------------|
| DRTFCC2312-0172 | Dec. 28, 2023 | Initial issue | SeungMin Gil | JaeJin Lee  |
|                 |               |               |              |             |
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## Table of Contents

|                                                                                        |           |
|----------------------------------------------------------------------------------------|-----------|
| <b>1. GENERAL INFORMATION .....</b>                                                    | <b>4</b>  |
| <b>2. INTRODUCTION .....</b>                                                           | <b>5</b>  |
| 2.1. EUT DESCRIPTION .....                                                             | 5         |
| 2.2. TESTING ENVIRONMENT .....                                                         | 5         |
| 2.3. MEASURING INSTRUMENT CALIBRATION .....                                            | 5         |
| 2.4. MEASUREMENT UNCERTAINTY .....                                                     | 5         |
| 2.5. TEST FACILITY .....                                                               | 5         |
| <b>3. DESCRIPTION OF TESTS .....</b>                                                   | <b>6</b>  |
| 3.1. ERP & EIRP (Effective Radiated Power & Equivalent Isotropic Radiated Power) ..... | 6         |
| 3.2. UNDESIRABLE EMISSIONS .....                                                       | 8         |
| <b>4. LIST OF TEST EQUIPMENT .....</b>                                                 | <b>9</b>  |
| <b>5. SUMMARY OF TEST RESULTS .....</b>                                                | <b>10</b> |
| <b>6. SAMPLE CALCULATION .....</b>                                                     | <b>11</b> |
| <b>7. TEST DATA .....</b>                                                              | <b>12</b> |
| 7.1. ERP&EIRP .....                                                                    | 12        |
| 7.1.1. NR Band n12 .....                                                               | 12        |
| 7.1.2. NR Band n5 .....                                                                | 14        |
| 7.1.3. NR Band n66 .....                                                               | 16        |
| 7.1.4. NR Band n2 .....                                                                | 19        |
| 7.2. UNDESIRABLE EMISSIONS (Radiated) .....                                            | 21        |
| 7.2.1. NR Band n12 .....                                                               | 21        |
| 7.2.2. NR Band n5 .....                                                                | 23        |
| 7.2.3. NR Band n66 .....                                                               | 25        |
| 7.2.4. NR Band n2 .....                                                                | 26        |

## 1. GENERAL INFORMATION

|                                                     |                                                                                                                    |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>FCC Classification</b>                           | PCS Licensed Transmitter (PCB)                                                                                     |
| <b>FCC ID</b>                                       | BEJTF24SENI2                                                                                                       |
| <b>IC</b>                                           | 2703H-TF24SENI2                                                                                                    |
| <b>Product Name</b>                                 | Telematics(24CY DCM 5G)                                                                                            |
| <b>Model Name</b>                                   | TF24SENI                                                                                                           |
| <b>Add Model Name</b>                               | -                                                                                                                  |
| <b>PMN(Product Marketing Name)</b>                  | TF24SENI                                                                                                           |
| <b>FVIN(Firmware Version Identification Number)</b> | N/A                                                                                                                |
| <b>EUT Serial Number</b>                            | No specified                                                                                                       |
| <b>Supplying power</b>                              | DC 12 V                                                                                                            |
| <b>Waveform</b>                                     | CP-OFDM, DFT-S-OFDM                                                                                                |
| <b>Modulation type</b>                              | $\pi/2$ BPSK, QPSK, 16QAM, 64QAM, 256QAM                                                                           |
| <b>Channel Bandwidth(MHz)</b>                       | NR Band n12: 15, 10, 5<br>NR Band n5: 20, 15, 10, 5<br>NR Band n66: 40, 20, 15, 10, 5<br>NR Band n2: 20, 15, 10, 5 |

| NR Band | Antenna Gain(dBi)                    |                                      |                                          |                                        |
|---------|--------------------------------------|--------------------------------------|------------------------------------------|----------------------------------------|
|         | Internal Antenna 1<br>(PIFA Antenna) | Internal Antenna 2<br>(PIFA Antenna) | External Antenna 1<br>(Sharkfin Antenna) | External Antenna 2<br>(Pannel Antenna) |
| n12     | -0.9                                 | -1.8                                 | -0.9                                     | -3.0                                   |
| n5      | 0.4                                  | -0.6                                 | -0.7                                     | -2.1                                   |
| n66     | 0.2                                  | -1.7                                 | 0.1                                      | 0.5                                    |
| n2      | 1.9                                  | -0.7                                 | -0.9                                     | -2.2                                   |

Note: The antenna gain was corrected for path loss from the conducted feed point to the antenna terminal.

## 2. INTRODUCTION

### 2.1. EUT DESCRIPTION

This device supports the following capabilities:

Multi-Band LTE, LTE up-link carrier aggregation, 5G NR(FR1) and ENDC

5G NR supports SCS 15 kHz for FDD Band and SCS 30 kHz for TDD Band.

This device has 4 antennas and RF switch circuit.

| 5G NR Band       | Internal antenna 1 | Internal antenna 2 | External antenna 1 | External antenna 2 |
|------------------|--------------------|--------------------|--------------------|--------------------|
| n12, n5, n66, n2 | Support            | Support            | Support            | Support            |
| n77              | Not support        | Support            | Not support        | Support            |

The device does not support MIMO technology.

### 2.2. TESTING ENVIRONMENT

| Ambient Condition   |                 |
|---------------------|-----------------|
| ▪ Temperature       | +21 °C ~ +22 °C |
| ▪ Relative Humidity | 40 % ~ 41 %     |

### 2.3. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

### 2.4. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with requirements of ANSI C 63.4-2014.

All measurement uncertainty values are shown with a coverage factor of  $k = 2$  to indicate a 95 % level of confidence.

| Parameter                                | Measurement uncertainty                               |
|------------------------------------------|-------------------------------------------------------|
| Radiated Disturbance<br>(Below 1 GHz)    | 4.8 dB (The confidence level is about 95 %, $k = 2$ ) |
| Radiated Disturbance<br>(1 GHz ~ 18 GHz) | 5.0 dB (The confidence level is about 95 %, $k = 2$ ) |
| Radiated Disturbance<br>(Above 18 GHz)   | 5.2 dB (The confidence level is about 95 %, $k = 2$ ) |

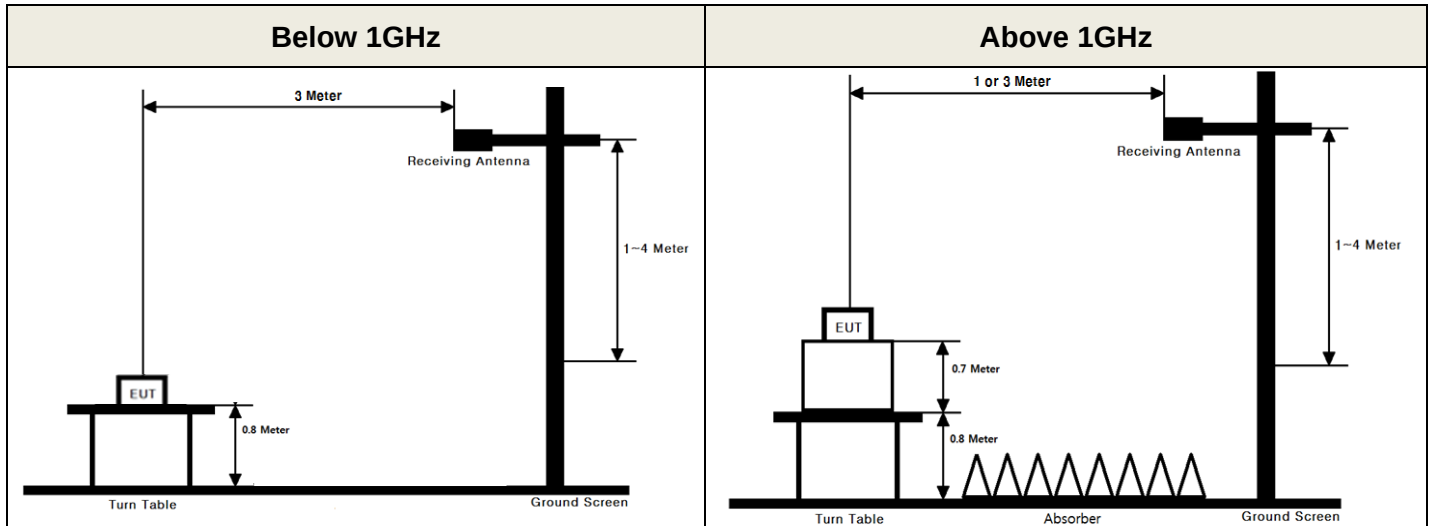
### 2.5. TEST FACILITY

|                                                                                                                                                                                      |   |                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------------|
| <b>Dt&amp;C Co., Ltd.</b>                                                                                                                                                            |   |                  |
| The 3 m test site and conducted measurement facility used to collect the radiated data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042. |   |                  |
| The test site complies with the requirements of Part 2.948 according to ANSI C63.4-2014.                                                                                             |   |                  |
| - FCC & IC MRA Designation No. : KR0034                                                                                                                                              |   |                  |
| - ISED#: 5740A                                                                                                                                                                       |   |                  |
| <a href="http://www.dtnc.net">www.dtnc.net</a>                                                                                                                                       |   |                  |
| Telephone                                                                                                                                                                            | : | + 82-31-321-2664 |
| FAX                                                                                                                                                                                  | : | + 82-31-321-1664 |

### 3. DESCRIPTION OF TESTS

#### 3.1. ERP & EIRP (Effective Radiated Power & Equivalent Isotropic Radiated Power)

##### Test Set-up



These measurements were performed at 3 m test site. The equipment under test is placed on a non-conductive table 0.8 or 1.5-meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna. For measurements above 1GHz absorbers are placed on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1 GHz, the absorbers are removed.

##### Test Procedure

- ANSI/TIA-603-E-2016 - Section 2.2.17
- KDB971168 D01v03 - Section 5.2.2
- ANSI C63.26-2015 – Section 5.2.4.4.1

##### Test setting

1. Set span to 2 x to 3 x the OBW.
2. Set RBW = 1 % to 5 % of the OBW.
3. Set VBW  $\geq$  3 x RBW.
4. Set number of points in sweep  $\geq$  2 x span / RBW.
5. Sweep time:
  - 1) Set = auto-couple, or
  - 2) Set  $\geq$   $[10 \times (\text{number of points in sweep}) \times (\text{transmission period})]$  for single sweep (automation-compatible) measurement. Transmission period is the on and off time of the transmitter.
6. Detector = power averaging (rms).
7. If the EUT can be configured to transmit continuously, then set the trigger to free run.
8. If the EUT cannot be configured to transmit continuously, then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Verify that the sweep time is less than or equal to the transmission burst duration. Time gating can also be used under similar constraints (i.e., configured such that measurement data is collected only during active full-power transmissions).

9. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over multiple symbols, it can be necessary to increase the number of traces to be averaged above 100 or, if using a manually configured sweep time, increase the sweep time.
10. Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function, with the band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

The receiver antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer.

A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminal of the substitute antenna is measured.

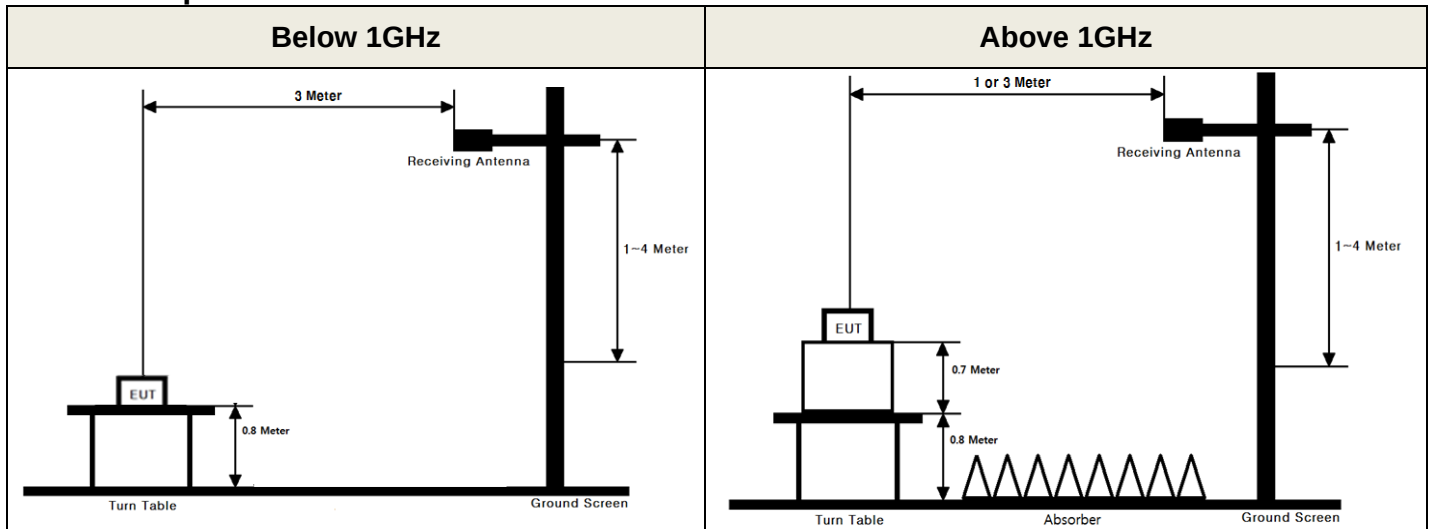
The ERP/EIRP is calculated using the following formula:

**ERP/EIRP = The conducted power at the substitute antenna's terminal [dBm] + Substitute Antenna gain [dBd for ERP , dBi for EIRP]**

For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn antenna and an isotropic antenna are taken into consideration.

### 3.2. UNDESIRABLE EMISSIONS

#### Test Set-up



These measurements were performed at 3 test site. The equipment under test is placed on a non-conductive table 0.8 or 1.5 meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna. For measurements above 1 GHz absorbers are placed on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1 GHz, the absorbers are removed.

#### Test Procedure

- KDB971168 D01v03 - Section 6
- ANSI C63.26-2015 – Section 5.5
- ANSI/TIA-603-E-2016 - Section 2.2.12

#### Test setting

1. RBW = 100 kHz for below 1 GHz and 1 MHz for above 1 GHz / VBW  $\geq 3 \times$  RBW
2. Detector = RMS & Trace mode = Max hold
3. Sweep time = Auto couple
4. Number of sweep point  $\geq 2 \times$  span / RBW
5. The trace was allowed to stabilize

The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer.

For radiated power measurements below 1 GHz, a half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading.

For radiated power measurements above 1 GHz, a Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. The difference between the gain of the horn and an isotropic antenna are taken into consideration. This measurement was performed with the EUT oriented in 3 orthogonal axis.

## 4. LIST OF TEST EQUIPMENT

| Type                         | Manufacturer         | Model                         | Cal.Date<br>(yy/mm/dd) | Next.Cal. Date<br>(yy/mm/dd) | S/N        |
|------------------------------|----------------------|-------------------------------|------------------------|------------------------------|------------|
| Spectrum Analyzer            | Agilent Technologies | N9020A                        | 22/12/16               | 23/12/16                     | MY50110097 |
| Multimeter                   | FLUKE                | 17B+                          | 22/12/16               | 23/12/16                     | 36390701WS |
| Radio Communication Analyzer | KEYSIGHT             | E7515B                        | 23/06/23               | 24/06/23                     | MY60192461 |
| Thermohygrometer             | BODYCOM              | BJ5478                        | 22/12/16               | 23/12/16                     | 120612-2   |
| Signal Generator             | Rohde Schwarz        | SMBV100A                      | 22/12/16               | 23/12/16                     | 255571     |
| Signal Generator             | ANRITSU              | MG3695C                       | 22/12/16               | 23/12/16                     | 173501     |
| Power Divider                | Weinschel            | 1515-1                        | 23/06/23               | 24/06/23                     | UB881      |
| Loop Antenna                 | ETS-Lindgren         | 6502                          | 23/11/09               | 24/11/09                     | 00060496   |
| Bilog Antenna                | Schwarzbeck          | VULB 9160                     | 22/12/16               | 23/12/16                     | 3362       |
| Dipole Antenna               | Schwarzbeck          | UHA 9105                      | 22/12/16               | 24/12/16                     | 2262       |
| HORN ANT                     | ETS                  | 3117                          | 22/12/16               | 23/12/16                     | 00140394   |
| HORN ANT                     | A.H.Systems          | SAS-574                       | 23/06/23               | 24/06/23                     | 155        |
| PreAmplifier                 | H.P                  | 8447D                         | 22/12/16               | 23/12/16                     | 2944A07774 |
| PreAmplifier                 | Agilent              | 8449B                         | 22/12/16               | 23/12/16                     | 3008A02108 |
| PreAmplifier                 | A.H.Systems Inc.     | PAM-1840VH                    | 23/06/23               | 24/06/23                     | 163        |
| Band Reject Fliter           | Wainwright           | WTRCTV5-1710-2000-20-60-40SSM | 23/06/23               | 24/06/23                     | 1          |
| High-pass filter             | Wainwright           | WHKX12-935-1000-15000-40SS    | 22/12/16               | 23/12/16                     | 7          |
| High-pass filter             | Wainwright           | WHKX10-2838-3300-18000-60SS   | 22/12/16               | 23/12/16                     | 2          |
| High-pass filter             | Wainwright           | WHKX6-6320-8000-26500-40CC    | 22/12/16               | 23/12/16                     | 2          |
| Cable                        | HUBER+SUHNER         | SUCOFLEX100                   | 23/01/04               | 24/01/04                     | M-1        |
| Cable                        | HUBER+SUHNER         | SUCOFLEX100                   | 23/01/04               | 24/01/04                     | M-2        |
| Cable                        | Junkosah             | MWX241/B                      | 23/01/04               | 24/01/04                     | M-3        |
| Cable                        | Junkosah             | MWX221                        | 23/01/04               | 24/01/04                     | M-4        |
| Cable                        | Junkosah             | MWX221                        | 23/01/04               | 24/01/04                     | M-5        |
| Cable                        | JUNFLON              | J12J101757-00                 | 23/01/04               | 24/01/04                     | M-7        |
| Cable                        | HUBER+SUHNER         | SUCOFLEX104                   | 23/01/04               | 24/01/04                     | M-8        |
| Cable                        | HUBER+SUHNER         | SUCOFLEX106                   | 23/01/04               | 24/01/04                     | M-9        |
| Cable                        | JUNFLON              | MWX315                        | 23/01/04               | 24/01/04                     | M-10       |
| Cable                        | DTNC                 | Cable                         | 23/01/04               | 24/01/04                     | RFC-44     |

Note1: The measurement antennas were calibrated in accordance to the requirements of ANSI C63.5-2017.

Note2: The cable is not a regular calibration item, so it has been calibrated by Dt&C itself.

## 5. SUMMARY OF TEST RESULTS

| FCC Part Section(s)                                      | RSS Section(s)                                                   | Test Description            | Test Limit                                                      | Test Condition | Status<br>Note 1 |
|----------------------------------------------------------|------------------------------------------------------------------|-----------------------------|-----------------------------------------------------------------|----------------|------------------|
| 27.50(c.9)                                               | RSS-130 [4.6]                                                    | Radiated Output Power (n12) | For mobile equipment:<br>< 3 Watts max. ERP                     | Radiated       | C                |
| 22.913(a.5)                                              | RSS-132 [5.4]                                                    | Radiated Output Power (n5)  | For mobile equipment:<br>< 7 Watts max. ERP                     |                | C                |
| 27.50(d.4)                                               | RSS-139 [5.5]                                                    | Radiated Output Power (B66) | For mobile equipment:<br>< 1 Watts max. EIRP                    |                | C                |
| 24.232(c)                                                | RSS-133 [6.4]                                                    | Radiated Output Power (n2)  | For mobile equipment:<br>< 2 Watts max. EIRP                    |                | C                |
| 2.1053<br>22.917(a)<br>24.238(a)<br>27.53(g)<br>27.53(h) | RSS-130 [4.7]<br>RSS-132 [5.5]<br>RSS-133 [6.5]<br>RSS-139 [5.6] | Undesirable Emissions       | > 43 + 10log <sub>10</sub> (P) dB for all out-of-band emissions |                | C                |

Note 1: C=Comply NC=Not Comply NT=Not Tested NA=Not Applicable

Note 2: This test item was performed in three orthogonal EUT positions and the worst case data was reported.

Note 3: This device uses the certified module.(FCC ID: BEJTM15FNNATY0, IC: 2703H-TM15FNNATY0)

Please refer to the module test report for conducted signal test items. The conducted output power was verified to be the same as module.

Note 4: All antenna configuration were investigated and worst case data were reported.

Note 5: The DFT-s-OFDM and CP-OFDM waveforms were investigated, and worst case(DFT-s-OFDM) configuration results are reported.

## 6. SAMPLE CALCULATION

### A. Emission Designator

- 1) The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1 GHz respectively above ground.
- 2) The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
- 3) During the test, the turn table is rotated until the maximum signal is found.
- 4) Record the field strength meter's level. (ex. Spectrum reading level is -8.5 dBm)
- 5) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 6) Increase the signal generator output till the field strength meter's level is equal to the item (4).  
(ex. Signal generator level is -18.04 dBm)
- 7) The gain of the cable and amplifier between the signal generator and terminals of substituted antenna is 46.92 dB at test frequency.
- 8) Record the level at substituted antenna terminal. (ex. 28.88dBm)
- 9) The result is calculated as below;

$$\text{EIRP(dBm)} = \text{LEVLE@ANTENNA TERMINAL} + \text{TX Antenna Gain (dBi)}$$

$$\text{ERP(dBm)} = \text{LEVLE@ANTENNA TERMINAL} + \text{TX Antenna Gain (dBd)}$$

$$\text{Where, TX Antenna Gain (dBd)} = \text{TX Antenna Gain (dBi)} - 2.15 \text{ dB}$$

## 7. TEST DATA

### 7.1. ERP&EIRP

#### - Test Notes

- 1) This is device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the below table.

#### 7.1.1. NR Band n12

##### <Test case: Internal ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | ERP (dBm) | ERP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|-----------|---------|
| 15                      | 706.5           | $\pi/2$ BPSK | 1/77            | H             | 22.70                          | -1.31                        | 21.39     | 0.138   |
|                         |                 | QPSK         |                 | H             | 22.49                          | -1.31                        | 21.18     | 0.131   |
|                         |                 | 16QAM        |                 | H             | 21.63                          | -1.31                        | 20.32     | 0.108   |
|                         |                 | 64QAM        |                 | H             | 20.29                          | -1.31                        | 18.98     | 0.079   |
|                         |                 | 256QAM       |                 | H             | 18.46                          | -1.31                        | 17.15     | 0.052   |
|                         | 708.5           | $\pi/2$ BPSK | 1/77            | H             | 22.87                          | -1.33                        | 21.54     | 0.143   |
|                         |                 | QPSK         |                 | H             | 22.68                          | -1.33                        | 21.35     | 0.136   |
|                         |                 | 16QAM        |                 | H             | 21.74                          | -1.33                        | 20.41     | 0.110   |
|                         |                 | 64QAM        |                 | H             | 20.46                          | -1.33                        | 19.13     | 0.082   |
|                         |                 | 256QAM       |                 | H             | 18.32                          | -1.33                        | 16.99     | 0.050   |
| 10                      | 704             | $\pi/2$ BPSK | 1/50            | H             | 21.73                          | -1.28                        | 20.45     | 0.111   |
|                         |                 | QPSK         |                 | H             | 21.36                          | -1.28                        | 20.08     | 0.102   |
|                         |                 | 16QAM        |                 | H             | 20.51                          | -1.28                        | 19.23     | 0.084   |
|                         |                 | 64QAM        |                 | H             | 19.28                          | -1.28                        | 18.00     | 0.063   |
|                         |                 | 256QAM       |                 | H             | 17.07                          | -1.28                        | 15.79     | 0.038   |
|                         | 711             | $\pi/2$ BPSK | 1/50            | H             | 22.95                          | -1.36                        | 21.59     | 0.144   |
|                         |                 | QPSK         |                 | H             | 22.67                          | -1.36                        | 21.31     | 0.135   |
|                         |                 | 16QAM        |                 | H             | 21.69                          | -1.36                        | 20.33     | 0.108   |
|                         |                 | 64QAM        |                 | H             | 20.26                          | -1.36                        | 18.90     | 0.078   |
|                         |                 | 256QAM       |                 | H             | 18.55                          | -1.36                        | 17.19     | 0.052   |
| 5                       | 701.5           | $\pi/2$ BPSK | 1/23            | H             | 21.19                          | -1.26                        | 19.93     | 0.098   |
|                         |                 | QPSK         |                 | H             | 20.85                          | -1.26                        | 19.59     | 0.091   |
|                         |                 | 16QAM        |                 | H             | 20.22                          | -1.26                        | 18.96     | 0.079   |
|                         |                 | 64QAM        |                 | H             | 18.77                          | -1.26                        | 17.51     | 0.056   |
|                         |                 | 256QAM       |                 | H             | 16.65                          | -1.26                        | 15.39     | 0.035   |
|                         | 707.5           | $\pi/2$ BPSK | 1/23            | H             | 22.07                          | -1.32                        | 20.75     | 0.119   |
|                         |                 | QPSK         |                 | H             | 21.96                          | -1.32                        | 20.64     | 0.116   |
|                         |                 | 16QAM        |                 | H             | 20.99                          | -1.32                        | 19.67     | 0.093   |
|                         |                 | 64QAM        |                 | H             | 19.80                          | -1.32                        | 18.48     | 0.070   |
|                         |                 | 256QAM       |                 | H             | 17.66                          | -1.32                        | 16.34     | 0.043   |
|                         | 713.5           | $\pi/2$ BPSK | 1/23            | H             | 22.91                          | -1.39                        | 21.52     | 0.142   |
|                         |                 | QPSK         |                 | H             | 22.87                          | -1.39                        | 21.48     | 0.141   |
|                         |                 | 16QAM        |                 | H             | 21.78                          | -1.39                        | 20.39     | 0.109   |
|                         |                 | 64QAM        |                 | H             | 20.27                          | -1.39                        | 18.88     | 0.077   |
|                         |                 | 256QAM       |                 | H             | 18.61                          | -1.39                        | 17.22     | 0.053   |

### <Test case: Internal ANT 2>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | ERP (dBm) | ERP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|-----------|---------|
| 10                      | 711             | $\pi/2$ BPSK | 1/50            | H             | 22.40                          | -1.36                        | 21.04     | 0.127   |
|                         |                 | QPSK         |                 | H             | 22.38                          | -1.36                        | 21.02     | 0.126   |
|                         |                 | 16QAM        |                 | H             | 21.52                          | -1.36                        | 20.16     | 0.104   |
|                         |                 | 64QAM        |                 | H             | 20.38                          | -1.36                        | 19.02     | 0.080   |
|                         |                 | 256QAM       |                 | H             | 18.26                          | -1.36                        | 16.90     | 0.049   |

### <Test case: External ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | ERP (dBm) | ERP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|-----------|---------|
| 10                      | 711             | $\pi/2$ BPSK | 1/50            | V             | 15.37                          | -1.36                        | 14.01     | 0.025   |
|                         |                 | QPSK         |                 | V             | 15.25                          | -1.36                        | 13.89     | 0.024   |
|                         |                 | 16QAM        |                 | V             | 14.49                          | -1.36                        | 13.13     | 0.021   |
|                         |                 | 64QAM        |                 | V             | 13.05                          | -1.36                        | 11.69     | 0.015   |
|                         |                 | 256QAM       |                 | V             | 11.12                          | -1.36                        | 9.76      | 0.009   |

### <Test case: External ANT 2>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | ERP (dBm) | ERP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|-----------|---------|
| 10                      | 711             | $\pi/2$ BPSK | 1/50            | H             | 18.21                          | -1.36                        | 16.85     | 0.048   |
|                         |                 | QPSK         |                 | H             | 18.20                          | -1.36                        | 16.84     | 0.048   |
|                         |                 | 16QAM        |                 | H             | 17.27                          | -1.36                        | 15.91     | 0.039   |
|                         |                 | 64QAM        |                 | H             | 15.89                          | -1.36                        | 14.53     | 0.028   |
|                         |                 | 256QAM       |                 | H             | 14.10                          | -1.36                        | 12.74     | 0.019   |

### 7.1.2. NR Band n5

#### <Test case: Internal ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | ERP (dBm) | ERP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|-----------|---------|
| 20                      | 834             | $\pi/2$ BPSK | 1/53            | H             | 22.62                          | -1.44                        | 21.18     | 0.131   |
|                         |                 | QPSK         |                 | H             | 22.53                          | -1.44                        | 21.09     | 0.129   |
|                         |                 | 16QAM        |                 | H             | 21.63                          | -1.44                        | 20.19     | 0.104   |
|                         |                 | 64QAM        |                 | H             | 20.36                          | -1.44                        | 18.92     | 0.078   |
|                         |                 | 256QAM       |                 | H             | 18.20                          | -1.44                        | 16.76     | 0.047   |
|                         | 836.5           | $\pi/2$ BPSK | 1/53            | H             | 22.43                          | -1.44                        | 20.99     | 0.126   |
|                         |                 | QPSK         |                 | H             | 22.28                          | -1.44                        | 20.84     | 0.121   |
|                         |                 | 16QAM        |                 | H             | 21.44                          | -1.44                        | 20.00     | 0.100   |
|                         |                 | 64QAM        |                 | H             | 19.66                          | -1.44                        | 18.22     | 0.066   |
|                         |                 | 256QAM       |                 | H             | 17.85                          | -1.44                        | 16.41     | 0.044   |
|                         | 839             | $\pi/2$ BPSK | 1/53            | H             | 22.39                          | -1.45                        | 20.94     | 0.124   |
|                         |                 | QPSK         |                 | H             | 22.18                          | -1.45                        | 20.73     | 0.118   |
|                         |                 | 16QAM        |                 | H             | 21.36                          | -1.45                        | 19.91     | 0.098   |
|                         |                 | 64QAM        |                 | H             | 19.83                          | -1.45                        | 18.38     | 0.069   |
|                         |                 | 256QAM       |                 | H             | 18.02                          | -1.45                        | 16.57     | 0.045   |
| 15                      | 831.5           | $\pi/2$ BPSK | 1/39            | H             | 22.49                          | -1.44                        | 21.05     | 0.127   |
|                         |                 | QPSK         |                 | H             | 22.36                          | -1.44                        | 20.92     | 0.124   |
|                         |                 | 16QAM        |                 | H             | 21.65                          | -1.44                        | 20.21     | 0.105   |
|                         |                 | 64QAM        |                 | H             | 20.21                          | -1.44                        | 18.77     | 0.075   |
|                         |                 | 256QAM       |                 | H             | 18.22                          | -1.44                        | 16.78     | 0.048   |
|                         | 836.5           | $\pi/2$ BPSK | 1/39            | H             | 22.42                          | -1.44                        | 20.98     | 0.125   |
|                         |                 | QPSK         |                 | H             | 22.33                          | -1.44                        | 20.89     | 0.123   |
|                         |                 | 16QAM        |                 | H             | 21.35                          | -1.44                        | 19.91     | 0.098   |
|                         |                 | 64QAM        |                 | H             | 19.85                          | -1.44                        | 18.41     | 0.069   |
|                         |                 | 256QAM       |                 | H             | 17.84                          | -1.44                        | 16.40     | 0.044   |
|                         | 841.5           | $\pi/2$ BPSK | 1/1             | H             | 22.67                          | -1.45                        | 21.22     | 0.132   |
|                         |                 | QPSK         |                 | H             | 22.56                          | -1.45                        | 21.11     | 0.129   |
|                         |                 | 16QAM        |                 | H             | 21.54                          | -1.45                        | 20.09     | 0.102   |
|                         |                 | 64QAM        |                 | H             | 20.27                          | -1.45                        | 18.82     | 0.076   |
|                         |                 | 256QAM       |                 | H             | 18.23                          | -1.45                        | 16.78     | 0.048   |
| 10                      | 829             | $\pi/2$ BPSK | 1/50            | H             | 22.34                          | -1.43                        | 20.91     | 0.123   |
|                         |                 | QPSK         |                 | H             | 22.27                          | -1.43                        | 20.84     | 0.121   |
|                         |                 | 16QAM        |                 | H             | 21.51                          | -1.43                        | 20.08     | 0.102   |
|                         |                 | 64QAM        |                 | H             | 20.14                          | -1.43                        | 18.71     | 0.074   |
|                         |                 | 256QAM       |                 | H             | 17.85                          | -1.43                        | 16.42     | 0.044   |
|                         | 836.5           | $\pi/2$ BPSK | 1/1             | H             | 22.43                          | -1.44                        | 20.99     | 0.126   |
|                         |                 | QPSK         |                 | H             | 22.33                          | -1.44                        | 20.89     | 0.123   |
|                         |                 | 16QAM        |                 | H             | 21.84                          | -1.44                        | 20.40     | 0.110   |
|                         |                 | 64QAM        |                 | H             | 20.27                          | -1.44                        | 18.83     | 0.076   |
|                         |                 | 256QAM       |                 | H             | 18.23                          | -1.44                        | 16.79     | 0.048   |
|                         | 844             | $\pi/2$ BPSK | 1/1             | H             | 22.40                          | -1.45                        | 20.95     | 0.124   |
|                         |                 | QPSK         |                 | H             | 22.29                          | -1.45                        | 20.84     | 0.121   |
|                         |                 | 16QAM        |                 | H             | 21.25                          | -1.45                        | 19.80     | 0.095   |
|                         |                 | 64QAM        |                 | H             | 19.78                          | -1.45                        | 18.33     | 0.068   |
|                         |                 | 256QAM       |                 | H             | 17.92                          | -1.45                        | 16.47     | 0.044   |

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | ERP (dBm) | ERP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|-----------|---------|
| 5                       | 826.5           | $\pi/2$ BPSK | 1/1             | H             | 22.67                          | -1.43                        | 21.24     | 0.133   |
|                         |                 | QPSK         |                 | H             | 22.59                          | -1.43                        | 21.16     | 0.131   |
|                         |                 | 16QAM        |                 | H             | 21.48                          | -1.43                        | 20.05     | 0.101   |
|                         |                 | 64QAM        |                 | H             | 20.12                          | -1.43                        | 18.69     | 0.074   |
|                         |                 | 256QAM       |                 | H             | 18.09                          | -1.43                        | 16.66     | 0.046   |
|                         | 836.5           | $\pi/2$ BPSK | 1/1             | H             | 22.49                          | -1.44                        | 21.05     | 0.127   |
|                         |                 | QPSK         |                 | H             | 22.41                          | -1.44                        | 20.97     | 0.125   |
|                         |                 | 16QAM        |                 | H             | 21.70                          | -1.44                        | 20.26     | 0.106   |
|                         |                 | 64QAM        |                 | H             | 20.36                          | -1.44                        | 18.92     | 0.078   |
|                         |                 | 256QAM       |                 | H             | 18.44                          | -1.44                        | 17.00     | 0.050   |
|                         | 846.5           | $\pi/2$ BPSK | 1/1             | H             | 21.94                          | -1.46                        | 20.48     | 0.112   |
|                         |                 | QPSK         |                 | H             | 21.75                          | -1.46                        | 20.29     | 0.107   |
|                         |                 | 16QAM        |                 | H             | 20.89                          | -1.46                        | 19.43     | 0.088   |
|                         |                 | 64QAM        |                 | H             | 19.73                          | -1.46                        | 18.27     | 0.067   |
|                         |                 | 256QAM       |                 | H             | 17.70                          | -1.46                        | 16.24     | 0.042   |

#### <Test case: Internal ANT 2>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | ERP (dBm) | ERP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|-----------|---------|
| 5                       | 826.5           | $\pi/2$ BPSK | 1/1             | H             | 21.69                          | -1.43                        | 20.26     | 0.106   |
|                         |                 | QPSK         |                 | H             | 21.49                          | -1.43                        | 20.06     | 0.101   |
|                         |                 | 16QAM        |                 | H             | 20.76                          | -1.43                        | 19.33     | 0.086   |
|                         |                 | 64QAM        |                 | H             | 19.21                          | -1.43                        | 17.78     | 0.060   |
|                         |                 | 256QAM       |                 | H             | 17.52                          | -1.43                        | 16.09     | 0.041   |

#### <Test case: External ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | ERP (dBm) | ERP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|-----------|---------|
| 5                       | 826.5           | $\pi/2$ BPSK | 1/1             | V             | 16.68                          | -1.43                        | 15.25     | 0.033   |
|                         |                 | QPSK         |                 | V             | 16.58                          | -1.43                        | 15.15     | 0.033   |
|                         |                 | 16QAM        |                 | V             | 15.83                          | -1.43                        | 14.40     | 0.028   |
|                         |                 | 64QAM        |                 | V             | 14.25                          | -1.43                        | 12.82     | 0.019   |
|                         |                 | 256QAM       |                 | V             | 12.71                          | -1.43                        | 11.28     | 0.013   |

#### <Test case: External ANT 2>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | ERP (dBm) | ERP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|-----------|---------|
| 5                       | 826.5           | $\pi/2$ BPSK | 1/1             | H             | 19.13                          | -1.43                        | 17.70     | 0.059   |
|                         |                 | QPSK         |                 | H             | 19.03                          | -1.43                        | 17.60     | 0.058   |
|                         |                 | 16QAM        |                 | H             | 18.15                          | -1.43                        | 16.72     | 0.047   |
|                         |                 | 64QAM        |                 | H             | 16.67                          | -1.43                        | 15.24     | 0.033   |
|                         |                 | 256QAM       |                 | H             | 14.62                          | -1.43                        | 13.19     | 0.021   |

### 7.1.3. NR Band n66

#### <Test case: Internal ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBi) | EIRP (dBm) | EIRP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|------------|----------|
| 40                      | 1 730           | $\pi/2$ BPSK | 1/1             | H             | 20.95                          | 5.75                         | 26.70      | 0.468    |
|                         |                 | QPSK         |                 | H             | 20.69                          | 5.75                         | 26.44      | 0.441    |
|                         |                 | 16QAM        |                 | H             | 19.76                          | 5.75                         | 25.51      | 0.356    |
|                         |                 | 64QAM        |                 | H             | 18.33                          | 5.75                         | 24.08      | 0.256    |
|                         |                 | 256QAM       |                 | H             | 16.60                          | 5.75                         | 22.35      | 0.172    |
|                         | 1 745           | $\pi/2$ BPSK | 1/1             | H             | 20.03                          | 5.60                         | 25.63      | 0.366    |
|                         |                 | QPSK         |                 | H             | 19.89                          | 5.60                         | 25.49      | 0.354    |
|                         |                 | 16QAM        |                 | H             | 19.23                          | 5.60                         | 24.83      | 0.304    |
|                         |                 | 64QAM        |                 | H             | 17.78                          | 5.60                         | 23.38      | 0.218    |
|                         |                 | 256QAM       |                 | H             | 15.87                          | 5.60                         | 21.47      | 0.140    |
|                         | 1 760           | $\pi/2$ BPSK | 1/107           | H             | 20.37                          | 5.42                         | 25.79      | 0.379    |
|                         |                 | QPSK         |                 | H             | 20.18                          | 5.42                         | 25.60      | 0.363    |
|                         |                 | 16QAM        |                 | H             | 19.33                          | 5.42                         | 24.75      | 0.299    |
|                         |                 | 64QAM        |                 | H             | 17.94                          | 5.42                         | 23.36      | 0.217    |
|                         |                 | 256QAM       |                 | H             | 15.87                          | 5.42                         | 21.29      | 0.135    |
| 20                      | 1 720           | $\pi/2$ BPSK | 1/1             | H             | 20.40                          | 5.86                         | 26.26      | 0.423    |
|                         |                 | QPSK         |                 | H             | 20.15                          | 5.86                         | 26.01      | 0.399    |
|                         |                 | 16QAM        |                 | H             | 19.34                          | 5.86                         | 25.20      | 0.331    |
|                         |                 | 64QAM        |                 | H             | 17.74                          | 5.86                         | 23.60      | 0.229    |
|                         |                 | 256QAM       |                 | H             | 16.08                          | 5.86                         | 21.94      | 0.156    |
|                         | 1 745           | $\pi/2$ BPSK | 1/1             | H             | 20.59                          | 5.60                         | 26.19      | 0.416    |
|                         |                 | QPSK         |                 | H             | 20.42                          | 5.60                         | 26.02      | 0.400    |
|                         |                 | 16QAM        |                 | H             | 19.80                          | 5.60                         | 25.40      | 0.347    |
|                         |                 | 64QAM        |                 | H             | 18.10                          | 5.60                         | 23.70      | 0.234    |
|                         |                 | 256QAM       |                 | H             | 16.08                          | 5.60                         | 21.68      | 0.147    |
|                         | 1 770           | $\pi/2$ BPSK | 1/1             | H             | 21.60                          | 5.29                         | 26.89      | 0.489    |
|                         |                 | QPSK         |                 | H             | 21.55                          | 5.29                         | 26.84      | 0.483    |
|                         |                 | 16QAM        |                 | H             | 20.72                          | 5.29                         | 26.01      | 0.399    |
|                         |                 | 64QAM        |                 | H             | 19.44                          | 5.29                         | 24.73      | 0.297    |
|                         |                 | 256QAM       |                 | H             | 17.26                          | 5.29                         | 22.55      | 0.180    |
| 15                      | 1 717.5         | $\pi/2$ BPSK | 1/1             | H             | 20.54                          | 5.89                         | 26.43      | 0.440    |
|                         |                 | QPSK         |                 | H             | 20.48                          | 5.89                         | 26.37      | 0.434    |
|                         |                 | 16QAM        |                 | H             | 19.47                          | 5.89                         | 25.36      | 0.344    |
|                         |                 | 64QAM        |                 | H             | 17.79                          | 5.89                         | 23.68      | 0.233    |
|                         |                 | 256QAM       |                 | H             | 15.96                          | 5.89                         | 21.85      | 0.153    |
|                         | 1 745           | $\pi/2$ BPSK | 1/1             | H             | 20.13                          | 5.60                         | 25.73      | 0.374    |
|                         |                 | QPSK         |                 | H             | 20.04                          | 5.60                         | 25.64      | 0.366    |
|                         |                 | 16QAM        |                 | H             | 18.97                          | 5.60                         | 24.57      | 0.286    |
|                         |                 | 64QAM        |                 | H             | 17.45                          | 5.60                         | 23.05      | 0.202    |
|                         |                 | 256QAM       |                 | H             | 15.88                          | 5.60                         | 21.48      | 0.141    |
|                         | 1 772.5         | $\pi/2$ BPSK | 1/1             | H             | 20.81                          | 5.26                         | 26.07      | 0.405    |
|                         |                 | QPSK         |                 | H             | 20.73                          | 5.26                         | 25.99      | 0.397    |
|                         |                 | 16QAM        |                 | H             | 19.33                          | 5.26                         | 24.59      | 0.288    |
|                         |                 | 64QAM        |                 | H             | 18.12                          | 5.26                         | 23.38      | 0.218    |
|                         |                 | 256QAM       |                 | H             | 16.20                          | 5.26                         | 21.46      | 0.140    |

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBi) | EIRP (dBm) | EIRP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|------------|----------|
| 10                      | 1 715           | $\pi/2$ BPSK | 1/1             | H             | 20.47                          | 5.91                         | 26.38      | 0.435    |
|                         |                 | QPSK         |                 | H             | 20.32                          | 5.91                         | 26.23      | 0.420    |
|                         |                 | 16QAM        |                 | H             | 19.40                          | 5.91                         | 25.31      | 0.340    |
|                         |                 | 64QAM        |                 | H             | 18.17                          | 5.91                         | 24.08      | 0.256    |
|                         |                 | 256QAM       |                 | H             | 15.94                          | 5.91                         | 21.85      | 0.153    |
|                         | 1 745           | $\pi/2$ BPSK | 1/1             | H             | 20.14                          | 5.60                         | 25.74      | 0.375    |
|                         |                 | QPSK         |                 | H             | 20.09                          | 5.60                         | 25.69      | 0.371    |
|                         |                 | 16QAM        |                 | H             | 18.99                          | 5.60                         | 24.59      | 0.288    |
|                         |                 | 64QAM        |                 | H             | 17.62                          | 5.60                         | 23.22      | 0.210    |
|                         |                 | 256QAM       |                 | H             | 15.65                          | 5.60                         | 21.25      | 0.133    |
|                         | 1 775           | $\pi/2$ BPSK | 1/1             | H             | 21.02                          | 5.23                         | 26.25      | 0.422    |
|                         |                 | QPSK         |                 | H             | 20.92                          | 5.23                         | 26.15      | 0.412    |
|                         |                 | 16QAM        |                 | H             | 19.98                          | 5.23                         | 25.21      | 0.332    |
|                         |                 | 64QAM        |                 | H             | 18.51                          | 5.23                         | 23.74      | 0.237    |
|                         |                 | 256QAM       |                 | H             | 16.39                          | 5.23                         | 21.62      | 0.145    |
| 5                       | 1 712.5         | $\pi/2$ BPSK | 1/1             | H             | 20.20                          | 5.94                         | 26.14      | 0.411    |
|                         |                 | QPSK         |                 | H             | 20.11                          | 5.94                         | 26.05      | 0.403    |
|                         |                 | 16QAM        |                 | H             | 19.25                          | 5.94                         | 25.19      | 0.330    |
|                         |                 | 64QAM        |                 | H             | 17.81                          | 5.94                         | 23.75      | 0.237    |
|                         |                 | 256QAM       |                 | H             | 16.04                          | 5.94                         | 21.98      | 0.158    |
|                         | 1 745           | $\pi/2$ BPSK | 1/1             | H             | 20.41                          | 5.60                         | 26.01      | 0.399    |
|                         |                 | QPSK         |                 | H             | 20.33                          | 5.60                         | 25.93      | 0.392    |
|                         |                 | 16QAM        |                 | H             | 19.37                          | 5.60                         | 24.97      | 0.314    |
|                         |                 | 64QAM        |                 | H             | 18.12                          | 5.60                         | 23.72      | 0.236    |
|                         |                 | 256QAM       |                 | H             | 15.98                          | 5.60                         | 21.58      | 0.144    |
|                         | 1 777.5         | $\pi/2$ BPSK | 1/1             | H             | 20.50                          | 5.20                         | 25.70      | 0.372    |
|                         |                 | QPSK         |                 | H             | 20.38                          | 5.20                         | 25.58      | 0.361    |
|                         |                 | 16QAM        |                 | H             | 19.57                          | 5.20                         | 24.77      | 0.300    |
|                         |                 | 64QAM        |                 | H             | 18.18                          | 5.20                         | 23.38      | 0.218    |
|                         |                 | 256QAM       |                 | H             | 16.52                          | 5.20                         | 21.72      | 0.149    |

### <Test case: Internal ANT 2>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | EIRP (dBm) | EIRP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|------------|----------|
| 20                      | 1 770           | $\pi/2$ BPSK | 1/1             | H             | 20.21                          | 5.29                         | 25.50      | 0.355    |
|                         |                 | QPSK         |                 | H             | 20.17                          | 5.29                         | 25.46      | 0.352    |
|                         |                 | 16QAM        |                 | H             | 19.41                          | 5.29                         | 24.70      | 0.295    |
|                         |                 | 64QAM        |                 | H             | 17.96                          | 5.29                         | 23.25      | 0.211    |
|                         |                 | 256QAM       |                 | H             | 16.14                          | 5.29                         | 21.43      | 0.139    |

### <Test case: External ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | EIRP (dBm) | EIRP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|------------|----------|
| 20                      | 1 770           | $\pi/2$ BPSK | 1/1             | V             | 13.40                          | 5.29                         | 18.69      | 0.074    |
|                         |                 | QPSK         |                 | V             | 13.20                          | 5.29                         | 18.49      | 0.071    |
|                         |                 | 16QAM        |                 | V             | 12.30                          | 5.29                         | 17.59      | 0.057    |
|                         |                 | 64QAM        |                 | V             | 10.93                          | 5.29                         | 16.22      | 0.042    |
|                         |                 | 256QAM       |                 | V             | 8.96                           | 5.29                         | 14.25      | 0.027    |

### <Test case: External ANT 2>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | EIRP (dBm) | EIRP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|------------|----------|
| 20                      | 1 770           | $\pi/2$ BPSK | 1/1             | H             | 18.62                          | 5.29                         | 23.91      | 0.246    |
|                         |                 | QPSK         |                 | H             | 18.57                          | 5.29                         | 23.86      | 0.243    |
|                         |                 | 16QAM        |                 | H             | 18.05                          | 5.29                         | 23.34      | 0.216    |
|                         |                 | 64QAM        |                 | H             | 15.89                          | 5.29                         | 21.18      | 0.131    |
|                         |                 | 256QAM       |                 | H             | 14.19                          | 5.29                         | 19.48      | 0.089    |

### 7.1.4. NR Band n2

#### <Test case: Internal ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBi) | EIRP (dBm) | EIRP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|------------|----------|
| 20                      | 1 860           | $\pi/2$ BPSK | 1/53            | V             | 21.85                          | 4.31                         | 26.16      | 0.413    |
|                         |                 | QPSK         |                 | V             | 21.76                          | 4.31                         | 26.07      | 0.405    |
|                         |                 | 16QAM        |                 | V             | 20.90                          | 4.31                         | 25.21      | 0.332    |
|                         |                 | 64QAM        |                 | V             | 19.59                          | 4.31                         | 23.90      | 0.245    |
|                         |                 | 256QAM       |                 | V             | 17.42                          | 4.31                         | 21.73      | 0.149    |
|                         | 1 880           | $\pi/2$ BPSK | 1/53            | V             | 22.07                          | 4.26                         | 26.33      | 0.430    |
|                         |                 | QPSK         |                 | V             | 21.89                          | 4.26                         | 26.15      | 0.412    |
|                         |                 | 16QAM        |                 | V             | 21.00                          | 4.26                         | 25.26      | 0.336    |
|                         |                 | 64QAM        |                 | V             | 19.53                          | 4.26                         | 23.79      | 0.239    |
|                         |                 | 256QAM       |                 | V             | 17.72                          | 4.26                         | 21.98      | 0.158    |
|                         | 1 900           | $\pi/2$ BPSK | 1/53            | V             | 21.50                          | 4.20                         | 25.70      | 0.372    |
|                         |                 | QPSK         |                 | V             | 21.31                          | 4.20                         | 25.51      | 0.356    |
|                         |                 | 16QAM        |                 | V             | 20.22                          | 4.20                         | 24.42      | 0.277    |
|                         |                 | 64QAM        |                 | V             | 19.01                          | 4.20                         | 23.21      | 0.209    |
|                         |                 | 256QAM       |                 | V             | 16.83                          | 4.20                         | 21.03      | 0.127    |
| 15                      | 1 857.5         | $\pi/2$ BPSK | 1/39            | V             | 22.01                          | 4.32                         | 26.33      | 0.430    |
|                         |                 | QPSK         |                 | V             | 21.89                          | 4.32                         | 26.21      | 0.418    |
|                         |                 | 16QAM        |                 | V             | 21.15                          | 4.32                         | 25.47      | 0.352    |
|                         |                 | 64QAM        |                 | V             | 19.59                          | 4.32                         | 23.91      | 0.246    |
|                         |                 | 256QAM       |                 | V             | 17.76                          | 4.32                         | 22.08      | 0.161    |
|                         | 1 880           | $\pi/2$ BPSK | 1/39            | V             | 21.97                          | 4.26                         | 26.23      | 0.420    |
|                         |                 | QPSK         |                 | V             | 21.90                          | 4.26                         | 26.16      | 0.413    |
|                         |                 | 16QAM        |                 | V             | 21.03                          | 4.26                         | 25.29      | 0.338    |
|                         |                 | 64QAM        |                 | V             | 19.47                          | 4.26                         | 23.73      | 0.236    |
|                         |                 | 256QAM       |                 | V             | 17.64                          | 4.26                         | 21.90      | 0.155    |
|                         | 1 902.5         | $\pi/2$ BPSK | 1/39            | V             | 22.15                          | 4.21                         | 26.36      | 0.433    |
|                         |                 | QPSK         |                 | V             | 22.08                          | 4.21                         | 26.29      | 0.426    |
|                         |                 | 16QAM        |                 | V             | 21.37                          | 4.21                         | 25.58      | 0.361    |
|                         |                 | 64QAM        |                 | V             | 19.27                          | 4.21                         | 23.48      | 0.223    |
|                         |                 | 256QAM       |                 | V             | 17.84                          | 4.21                         | 22.05      | 0.160    |
| 10                      | 1 855           | $\pi/2$ BPSK | 1/26            | V             | 21.73                          | 4.33                         | 26.06      | 0.404    |
|                         |                 | QPSK         |                 | V             | 21.56                          | 4.33                         | 25.89      | 0.388    |
|                         |                 | 16QAM        |                 | V             | 20.46                          | 4.33                         | 24.79      | 0.301    |
|                         |                 | 64QAM        |                 | V             | 19.19                          | 4.33                         | 23.52      | 0.225    |
|                         |                 | 256QAM       |                 | V             | 17.12                          | 4.33                         | 21.45      | 0.140    |
|                         | 1 880           | $\pi/2$ BPSK | 1/26            | V             | 21.74                          | 4.26                         | 26.00      | 0.398    |
|                         |                 | QPSK         |                 | V             | 21.59                          | 4.26                         | 25.85      | 0.385    |
|                         |                 | 16QAM        |                 | V             | 20.69                          | 4.26                         | 24.95      | 0.313    |
|                         |                 | 64QAM        |                 | V             | 19.23                          | 4.26                         | 23.49      | 0.223    |
|                         |                 | 256QAM       |                 | V             | 17.45                          | 4.26                         | 21.71      | 0.148    |
|                         | 1 905           | $\pi/2$ BPSK | 1/26            | V             | 21.46                          | 4.22                         | 25.68      | 0.370    |
|                         |                 | QPSK         |                 | V             | 21.40                          | 4.22                         | 25.62      | 0.365    |
|                         |                 | 16QAM        |                 | V             | 20.96                          | 4.22                         | 25.18      | 0.330    |
|                         |                 | 64QAM        |                 | V             | 19.04                          | 4.22                         | 23.26      | 0.212    |
|                         |                 | 256QAM       |                 | V             | 17.08                          | 4.22                         | 21.30      | 0.135    |

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBi) | EIRP (dBm) | EIRP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|------------|----------|
| 5                       | 1 852.5         | $\pi/2$ BPSK | 1/12            | V             | 21.44                          | 4.33                         | 25.77      | 0.378    |
|                         |                 | QPSK         |                 | V             | 21.39                          | 4.33                         | 25.72      | 0.373    |
|                         |                 | 16QAM        |                 | V             | 20.67                          | 4.33                         | 25.00      | 0.316    |
|                         |                 | 64QAM        |                 | V             | 19.01                          | 4.33                         | 23.34      | 0.216    |
|                         |                 | 256QAM       |                 | V             | 17.18                          | 4.33                         | 21.51      | 0.142    |
|                         | 1 880           | $\pi/2$ BPSK | 1/12            | V             | 22.30                          | 4.26                         | 26.56      | 0.453    |
|                         |                 | QPSK         |                 | V             | 22.22                          | 4.26                         | 26.48      | 0.445    |
|                         |                 | 16QAM        |                 | V             | 21.18                          | 4.26                         | 25.44      | 0.350    |
|                         |                 | 64QAM        |                 | V             | 19.76                          | 4.26                         | 24.02      | 0.252    |
|                         |                 | 256QAM       |                 | V             | 17.85                          | 4.26                         | 22.11      | 0.163    |
|                         | 1 907.5         | $\pi/2$ BPSK | 1/12            | V             | 22.09                          | 4.23                         | 26.32      | 0.429    |
|                         |                 | QPSK         |                 | V             | 22.04                          | 4.23                         | 26.27      | 0.424    |
|                         |                 | 16QAM        |                 | V             | 21.19                          | 4.23                         | 25.42      | 0.348    |
|                         |                 | 64QAM        |                 | V             | 19.62                          | 4.23                         | 23.85      | 0.243    |
|                         |                 | 256QAM       |                 | V             | 17.77                          | 4.23                         | 22.00      | 0.158    |

#### <Test case: Internal ANT 2>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | EIRP (dBm) | EIRP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|------------|----------|
| 5                       | 1 880           | $\pi/2$ BPSK | 1/12            | V             | 21.22                          | 4.26                         | 25.48      | 0.353    |
|                         |                 | QPSK         |                 | V             | 21.08                          | 4.26                         | 25.34      | 0.342    |
|                         |                 | 16QAM        |                 | V             | 20.14                          | 4.26                         | 24.40      | 0.275    |
|                         |                 | 64QAM        |                 | V             | 19.04                          | 4.26                         | 23.30      | 0.214    |
|                         |                 | 256QAM       |                 | V             | 17.73                          | 4.26                         | 21.99      | 0.158    |

#### <Test case: External ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | EIRP (dBm) | EIRP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|------------|----------|
| 5                       | 1 880           | $\pi/2$ BPSK | 1/12            | V             | 14.55                          | 4.26                         | 18.81      | 0.076    |
|                         |                 | QPSK         |                 | V             | 14.51                          | 4.26                         | 18.77      | 0.075    |
|                         |                 | 16QAM        |                 | V             | 13.50                          | 4.26                         | 17.76      | 0.060    |
|                         |                 | 64QAM        |                 | V             | 12.36                          | 4.26                         | 16.62      | 0.046    |
|                         |                 | 256QAM       |                 | V             | 10.59                          | 4.26                         | 14.85      | 0.031    |

#### <Test case: External ANT 2>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB Size/ Offset | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | EIRP (dBm) | EIRP (W) |
|-------------------------|-----------------|--------------|-----------------|---------------|--------------------------------|------------------------------|------------|----------|
| 5                       | 1 880           | $\pi/2$ BPSK | 1/12            | H             | 16.66                          | 4.26                         | 20.92      | 0.124    |
|                         |                 | QPSK         |                 | H             | 16.54                          | 4.26                         | 20.80      | 0.120    |
|                         |                 | 16QAM        |                 | H             | 15.54                          | 4.26                         | 19.80      | 0.095    |
|                         |                 | 64QAM        |                 | H             | 14.11                          | 4.26                         | 18.37      | 0.069    |
|                         |                 | 256QAM       |                 | H             | 12.10                          | 4.26                         | 16.36      | 0.043    |

## 7.2. UNDESIRABLE EMISSIONS (Radiated)

### - Test Notes

- 1) The frequency spectrum is examined from 9 kHz to the 10th harmonic of the fundamental frequency of the transmitter.  
No other spurious and harmonic emissions were reported greater than listed emissions.
- 2) EN-DC mode operation were investigated and the worst case configuration results are reported.
- 3) Limit Calculation for  $n2/66/12/5 = -13$  dBm

### 7.2.1. NR Band n12

#### <Test case: Internal ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation | RB size/offset | Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | Result (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|------------|----------------|------------|---------------|--------------------------------|------------------------------|--------------|-------------|-------------|
| 15                      | 706.5           | π/2 BPSK   | 1/77           | 1 426.66   | V             | -66.36                         | 3.26                         | -63.10       | -13.00      | 50.10       |
|                         |                 |            |                | 2 139.85   | V             | -63.40                         | 3.16                         | -60.24       | -13.00      | 47.24       |
|                         |                 | QPSK       |                | 1 426.74   | V             | -66.06                         | 3.26                         | -62.80       | -13.00      | 49.80       |
|                         |                 |            |                | 2 139.97   | V             | -62.84                         | 3.16                         | -59.68       | -13.00      | 46.68       |
|                         |                 | 16QAM      |                | 1 426.79   | V             | -66.68                         | 3.26                         | -63.42       | -13.00      | 50.42       |
|                         |                 |            |                | 2 139.97   | V             | -63.87                         | 3.16                         | -60.71       | -13.00      | 47.71       |
|                         |                 | 64QAM      |                | 1 426.78   | V             | -67.83                         | 3.26                         | -64.57       | -13.00      | 51.57       |
|                         |                 |            |                | 2 140.03   | V             | -64.77                         | 3.16                         | -61.61       | -13.00      | 48.61       |
|                         | 256QAM          | 1 426.67   | V              | -68.71     | 3.26          | -65.45                         | -13.00                       | 52.45        |             |             |
|                         |                 | 2 140.14   | V              | -65.98     | 3.16          | -62.82                         | -13.00                       | 49.82        |             |             |
|                         | 708.5           | π/2 BPSK   | 1/77           | 1 430.82   | V             | -66.35                         | 3.29                         | -63.06       | -13.00      | 50.06       |
|                         |                 |            |                | 2 146.01   | V             | -62.11                         | 3.15                         | -58.96       | -13.00      | 45.96       |
|                         |                 | QPSK       |                | 1 430.61   | V             | -66.39                         | 3.29                         | -63.10       | -13.00      | 50.10       |
|                         |                 |            |                | 2 145.96   | V             | -61.71                         | 3.15                         | -58.56       | -13.00      | 45.56       |
|                         |                 | 16QAM      |                | 1 430.57   | V             | -66.53                         | 3.29                         | -63.24       | -13.00      | 50.24       |
|                         |                 |            |                | 2 146.01   | V             | -62.75                         | 3.15                         | -59.60       | -13.00      | 46.60       |
|                         |                 | 64QAM      |                | 1 430.59   | V             | -67.31                         | 3.29                         | -64.02       | -13.00      | 51.02       |
|                         |                 |            |                | 2 146.07   | V             | -64.22                         | 3.15                         | -61.07       | -13.00      | 48.07       |
|                         |                 | 256QAM     |                | 1 430.74   | V             | -68.17                         | 3.29                         | -64.88       | -13.00      | 51.88       |
|                         |                 |            |                | 2 146.06   | V             | -65.40                         | 3.15                         | -62.25       | -13.00      | 49.25       |

### <Test case: Internal ANT 2>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation | RB size/offset | Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | Result (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|------------|----------------|------------|---------------|--------------------------------|------------------------------|--------------|-------------|-------------|
| 10                      | 711             | π/2 BPSK   | 1/50           | 1 430.84   | V             | -60.12                         | 3.29                         | -56.83       | -13.00      | 43.83       |
|                         |                 |            |                | 2 146.14   | H             | -62.03                         | 3.15                         | -58.88       | -13.00      | 45.88       |
|                         |                 | QPSK       |                | 1 430.83   | V             | -60.14                         | 3.29                         | -56.85       | -13.00      | 43.85       |
|                         |                 |            |                | 2 146.37   | H             | -61.82                         | 3.15                         | -58.67       | -13.00      | 45.67       |
|                         |                 | 16QAM      |                | 1 430.76   | V             | -60.53                         | 3.29                         | -57.24       | -13.00      | 44.24       |
|                         |                 |            |                | 2 146.34   | H             | -62.31                         | 3.15                         | -59.16       | -13.00      | 46.16       |
|                         |                 | 64QAM      |                | 1 430.78   | V             | -62.42                         | 3.29                         | -59.13       | -13.00      | 46.13       |
|                         |                 |            |                | 2 145.96   | H             | -64.24                         | 3.15                         | -61.09       | -13.00      | 48.09       |
|                         |                 | 256QAM     |                | 1 430.72   | V             | -65.23                         | 3.29                         | -61.94       | -13.00      | 48.94       |
|                         |                 |            |                | 2 146.26   | H             | -65.77                         | 3.15                         | -62.62       | -13.00      | 49.62       |

### <Test case: External ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB size/offset | Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | Result (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|--------------|----------------|------------|---------------|--------------------------------|------------------------------|--------------|-------------|-------------|
| 10                      | 711             | $\pi/2$ BPSK | 1/50           | 1 431.68   | V             | -68.54                         | 3.29                         | -65.25       | -13.00      | 52.25       |
|                         |                 | QPSK         |                | 1 432.18   | V             | -68.26                         | 3.30                         | -64.96       | -13.00      | 51.96       |
|                         |                 | 16QAM        |                | 1 432.11   | V             | -68.27                         | 3.30                         | -64.97       | -13.00      | 51.97       |
|                         |                 | 64QAM        |                | 1 432.30   | V             | -68.26                         | 3.30                         | -64.96       | -13.00      | 51.96       |
|                         |                 | 256QAM       |                | 1 431.29   | V             | -68.37                         | 3.29                         | -65.08       | -13.00      | 52.08       |

### <Test case: External ANT 2>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB size/offset | Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | Result (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|--------------|----------------|------------|---------------|--------------------------------|------------------------------|--------------|-------------|-------------|
| 10                      | 711             | $\pi/2$ BPSK | 1/50           | 1 431.80   | V             | -68.33                         | 3.30                         | -65.03       | -13.00      | 52.03       |
|                         |                 | QPSK         |                | 1 432.10   | V             | -68.29                         | 3.30                         | -64.99       | -13.00      | 51.99       |
|                         |                 | 16QAM        |                | 1 431.88   | V             | -68.30                         | 3.30                         | -65.00       | -13.00      | 52.00       |
|                         |                 | 64QAM        |                | 1 431.25   | V             | -68.27                         | 3.29                         | -64.98       | -13.00      | 51.98       |
|                         |                 | 256QAM       |                | 1 432.05   | V             | -68.25                         | 3.30                         | -64.95       | -13.00      | 51.95       |

## 7.2.2. NR Band n5

### <Test case: Internal ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation | RB size/offset | Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | Result (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|------------|----------------|------------|---------------|--------------------------------|------------------------------|--------------|-------------|-------------|
| 20                      | 834             | π/2 BPSK   | 1/53           | 1 667.80   | H             | -70.05                         | 4.03                         | -66.02       | -13.00      | 53.02       |
|                         |                 |            |                | 2 502.27   | V             | -60.57                         | 3.58                         | -56.99       | -13.00      | 43.99       |
|                         |                 | QPSK       |                | 1 667.78   | H             | -69.65                         | 4.03                         | -65.62       | -13.00      | 52.62       |
|                         |                 |            |                | 2 502.28   | V             | -59.96                         | 3.58                         | -56.38       | -13.00      | 43.38       |
|                         |                 | 16QAM      |                | 1 667.62   | H             | -69.65                         | 4.03                         | -65.62       | -13.00      | 52.62       |
|                         |                 |            |                | 2 502.25   | V             | -60.98                         | 3.58                         | -57.40       | -13.00      | 44.40       |
|                         |                 | 64QAM      |                | 1 667.89   | H             | -69.87                         | 4.03                         | -65.84       | -13.00      | 52.84       |
|                         |                 |            |                | 2 502.14   | V             | -62.86                         | 3.58                         | -59.28       | -13.00      | 46.28       |
|                         |                 | 256QAM     |                | 1 668.17   | H             | -69.80                         | 4.02                         | -65.78       | -13.00      | 52.78       |
|                         |                 |            |                | 2 502.28   | V             | -64.67                         | 3.58                         | -61.09       | -13.00      | 48.09       |
|                         | 836.5           | π/2 BPSK   | 1/53           | 1 672.62   | H             | -70.33                         | 4.01                         | -66.32       | -13.00      | 53.32       |
|                         |                 |            |                | 2 509.66   | V             | -60.67                         | 3.64                         | -57.03       | -13.00      | 44.03       |
|                         |                 | QPSK       |                | 1 672.74   | H             | -70.38                         | 4.01                         | -66.37       | -13.00      | 53.37       |
|                         |                 |            |                | 2 509.72   | V             | -60.22                         | 3.64                         | -56.58       | -13.00      | 43.58       |
|                         |                 | 16QAM      |                | 1 673.23   | H             | -70.28                         | 4.01                         | -66.27       | -13.00      | 53.27       |
|                         |                 |            |                | 2 509.71   | V             | -60.86                         | 3.64                         | -57.22       | -13.00      | 44.22       |
|                         |                 | 64QAM      |                | 1 672.88   | H             | -70.36                         | 4.01                         | -66.35       | -13.00      | 53.35       |
|                         |                 |            |                | 2 509.78   | V             | -62.88                         | 3.64                         | -59.24       | -13.00      | 46.24       |
|                         |                 | 256QAM     |                | 1 673.23   | H             | -70.32                         | 4.01                         | -66.31       | -13.00      | 53.31       |
|                         |                 |            |                | 2 509.60   | V             | -64.64                         | 3.64                         | -61.00       | -13.00      | 48.00       |
|                         | 839             | π/2 BPSK   | 1/53           | 1 678.17   | H             | -70.72                         | 3.99                         | -66.73       | -13.00      | 53.73       |
|                         |                 |            |                | 2 517.14   | V             | -60.28                         | 3.70                         | -56.58       | -13.00      | 43.58       |
|                         |                 | QPSK       |                | 1 678.14   | H             | -70.49                         | 3.99                         | -66.50       | -13.00      | 53.50       |
|                         |                 |            |                | 2 517.13   | V             | -59.09                         | 3.70                         | -55.39       | -13.00      | 42.39       |
|                         |                 | 16QAM      |                | 1 678.26   | H             | -70.65                         | 3.99                         | -66.66       | -13.00      | 53.66       |
|                         |                 |            |                | 2 517.35   | V             | -60.53                         | 3.70                         | -56.83       | -13.00      | 43.83       |
|                         |                 | 64QAM      |                | 1 677.68   | H             | -70.60                         | 3.99                         | -66.61       | -13.00      | 53.61       |
|                         |                 |            |                | 2 517.30   | V             | -62.42                         | 3.70                         | -58.72       | -13.00      | 45.72       |
|                         |                 | 256QAM     |                | 1 678.18   | H             | -70.37                         | 3.99                         | -66.38       | -13.00      | 53.38       |
|                         |                 |            |                | 2 517.26   | V             | -64.26                         | 3.70                         | -60.56       | -13.00      | 47.56       |

### <Test case: Internal ANT 2>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation | RB size/offset | Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | Result (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|------------|----------------|------------|---------------|--------------------------------|------------------------------|--------------|-------------|-------------|
| 5                       | 826.5           | π/2 BPSK   | 1/1            | 1 649.06   | H             | -64.05                         | 4.09                         | -59.96       | -13.00      | 46.96       |
|                         |                 |            |                | 2 473.40   | V             | -60.80                         | 3.74                         | -57.06       | -13.00      | 44.06       |
|                         |                 | QPSK       |                | 1 649.12   | H             | -63.92                         | 4.09                         | -59.83       | -13.00      | 46.83       |
|                         |                 |            |                | 2 473.58   | V             | -60.71                         | 3.73                         | -56.98       | -13.00      | 43.98       |
|                         |                 | 16QAM      |                | 1 648.98   | H             | -64.65                         | 4.09                         | -60.56       | -13.00      | 47.56       |
|                         |                 |            |                | 2 473.42   | V             | -60.60                         | 3.74                         | -56.86       | -13.00      | 43.86       |
|                         |                 | 64QAM      |                | 1 649.10   | H             | -66.02                         | 4.09                         | -61.93       | -13.00      | 48.93       |
|                         |                 |            |                | 2 473.56   | V             | -62.54                         | 3.73                         | -58.81       | -13.00      | 45.81       |
|                         |                 | 256QAM     |                | 1 649.16   | H             | -67.92                         | 4.09                         | -63.83       | -13.00      | 50.83       |
|                         |                 |            |                | 2 473.68   | V             | -64.29                         | 3.73                         | -60.56       | -13.00      | 47.56       |

### <Test case: External ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB size/offset | Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | Result (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|--------------|----------------|------------|---------------|--------------------------------|------------------------------|--------------|-------------|-------------|
| 5                       | 826.5           | $\pi/2$ BPSK | 1/1            | 1 649.53   | V             | -68.45                         | 4.09                         | -64.36       | -13.00      | 51.36       |
|                         |                 | QPSK         |                | 1 650.09   | V             | -68.26                         | 4.09                         | -64.17       | -13.00      | 51.17       |
|                         |                 | 16QAM        |                | 1 650.55   | V             | -68.05                         | 4.09                         | -63.96       | -13.00      | 50.96       |
|                         |                 | 64QAM        |                | 1 651.36   | V             | -67.93                         | 4.09                         | -63.84       | -13.00      | 50.84       |
|                         |                 | 256QAM       |                | 1 651.02   | V             | -68.19                         | 4.09                         | -64.10       | -13.00      | 51.10       |

### <Test case: External ANT 2>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB size/offset | Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | Result (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|--------------|----------------|------------|---------------|--------------------------------|------------------------------|--------------|-------------|-------------|
| 5                       | 826.5           | $\pi/2$ BPSK | 1/1            | 1 649.22   | V             | -68.50                         | 4.09                         | -64.41       | -13.00      | 51.41       |
|                         |                 | QPSK         |                | 1 650.37   | V             | -68.32                         | 4.09                         | -64.23       | -13.00      | 51.23       |
|                         |                 | 16QAM        |                | 1 650.72   | V             | -67.98                         | 4.09                         | -63.89       | -13.00      | 50.89       |
|                         |                 | 64QAM        |                | 1 651.33   | V             | -68.17                         | 4.09                         | -64.08       | -13.00      | 51.08       |
|                         |                 | 256QAM       |                | 1 651.14   | V             | -68.19                         | 4.09                         | -64.10       | -13.00      | 51.10       |

### 7.2.3. NR Band n66

#### <Test case: Internal ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB size/offset | Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBi) | Result (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|--------------|----------------|------------|---------------|--------------------------------|------------------------------|--------------|-------------|-------------|
| 40                      | 1 730           | $\pi/2$ BPSK | 1/1            | 3 421.58   | V             | -66.36                         | 8.17                         | -58.19       | -13.00      | 45.19       |
|                         |                 | QPSK         |                | 3 421.56   | V             | -66.44                         | 8.17                         | -58.27       | -13.00      | 45.27       |
|                         |                 | 16QAM        |                | 3 421.62   | V             | -66.56                         | 8.17                         | -58.39       | -13.00      | 45.39       |
|                         |                 | 64QAM        |                | 3 421.85   | V             | -66.05                         | 8.17                         | -57.88       | -13.00      | 44.88       |
|                         |                 | 256QAM       |                | 3 421.76   | V             | -66.52                         | 8.17                         | -58.35       | -13.00      | 45.35       |
|                         | 1 745           | $\pi/2$ BPSK | 1/1            | 3 451.23   | V             | -67.15                         | 8.28                         | -58.87       | -13.00      | 45.87       |
|                         |                 | QPSK         |                | 3 451.44   | V             | -67.08                         | 8.28                         | -58.80       | -13.00      | 45.80       |
|                         |                 | 16QAM        |                | 3 451.53   | V             | -67.05                         | 8.28                         | -58.77       | -13.00      | 45.77       |
|                         |                 | 64QAM        |                | 3 451.57   | V             | -67.11                         | 8.28                         | -58.83       | -13.00      | 45.83       |
|                         |                 | 256QAM       |                | 3 450.79   | V             | -67.14                         | 8.27                         | -58.87       | -13.00      | 45.87       |
|                         | 1 760           | $\pi/2$ BPSK | 1/107          | 3 519.95   | V             | -66.65                         | 8.47                         | -58.18       | -13.00      | 45.18       |
|                         |                 | QPSK         |                | 3 519.53   | V             | -66.63                         | 8.47                         | -58.16       | -13.00      | 45.16       |
|                         |                 | 16QAM        |                | 3 519.86   | V             | -66.66                         | 8.47                         | -58.19       | -13.00      | 45.19       |
|                         |                 | 64QAM        |                | 3 520.32   | V             | -66.73                         | 8.47                         | -58.26       | -13.00      | 45.26       |
|                         |                 | 256QAM       |                | 3 519.25   | V             | -66.59                         | 8.47                         | -58.12       | -13.00      | 45.12       |

#### <Test case: Internal ANT 2>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB size/offset | Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBi) | Result (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|--------------|----------------|------------|---------------|--------------------------------|------------------------------|--------------|-------------|-------------|
| 20                      | 1 770           | $\pi/2$ BPSK | 1/1            | 3 521.27   | H             | -66.39                         | 8.47                         | -57.92       | -13.00      | 44.92       |
|                         |                 | QPSK         |                | 3 521.24   | H             | -66.39                         | 8.47                         | -57.92       | -13.00      | 44.92       |
|                         |                 | 16QAM        |                | 3 521.62   | H             | -66.31                         | 8.47                         | -57.84       | -13.00      | 44.84       |
|                         |                 | 64QAM        |                | 3 521.36   | H             | -66.34                         | 8.47                         | -57.87       | -13.00      | 44.87       |
|                         |                 | 256QAM       |                | 3 521.25   | H             | -66.56                         | 8.47                         | -58.09       | -13.00      | 45.09       |

#### <Test case: External ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB size/offset | Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBi) | Result (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|--------------|----------------|------------|---------------|--------------------------------|------------------------------|--------------|-------------|-------------|
| 20                      | 1 770           | $\pi/2$ BPSK | 1/1            | 3 521.56   | H             | -66.54                         | 8.47                         | -58.07       | -13.00      | 45.07       |
|                         |                 | QPSK         |                | 3 521.45   | H             | -66.42                         | 8.47                         | -57.95       | -13.00      | 44.95       |
|                         |                 | 16QAM        |                | 3 521.82   | H             | -66.22                         | 8.47                         | -57.75       | -13.00      | 44.75       |
|                         |                 | 64QAM        |                | 3 521.40   | H             | -66.30                         | 8.47                         | -57.83       | -13.00      | 44.83       |
|                         |                 | 256QAM       |                | 3 521.27   | H             | -66.43                         | 8.47                         | -57.96       | -13.00      | 44.96       |

#### <Test case: External ANT 2>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB size/offset | Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBi) | Result (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|--------------|----------------|------------|---------------|--------------------------------|------------------------------|--------------|-------------|-------------|
| 20                      | 1 770           | $\pi/2$ BPSK | 1/1            | 3 522.77   | H             | -66.83                         | 8.47                         | -58.36       | -13.00      | 45.36       |
|                         |                 | QPSK         |                | 3 521.89   | H             | -66.78                         | 8.47                         | -58.31       | -13.00      | 45.31       |
|                         |                 | 16QAM        |                | 3 524.17   | H             | -66.91                         | 8.47                         | -58.44       | -13.00      | 45.44       |
|                         |                 | 64QAM        |                | 3 519.10   | H             | -66.92                         | 8.47                         | -58.45       | -13.00      | 45.45       |
|                         |                 | 256QAM       |                | 3 523.30   | H             | -66.81                         | 8.47                         | -58.34       | -13.00      | 45.34       |

## 7.2.4. NR Band n2

### <Test case: Internal ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB size/offset | Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBi) | Result (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|--------------|----------------|------------|---------------|--------------------------------|------------------------------|--------------|-------------|-------------|
| 20                      | 1 860           | $\pi/2$ BPSK | 1/53           | 3 720.24   | H             | -67.24                         | 8.32                         | -58.92       | -13.00      | 45.92       |
|                         |                 | QPSK         |                | 3 720.35   | H             | -67.50                         | 8.32                         | -59.18       | -13.00      | 46.18       |
|                         |                 | 16QAM        |                | 3 720.26   | H             | -67.58                         | 8.32                         | -59.26       | -13.00      | 46.26       |
|                         |                 | 64QAM        |                | 3 720.26   | H             | -67.65                         | 8.32                         | -59.33       | -13.00      | 46.33       |
|                         |                 | 256QAM       |                | 3 720.46   | H             | -67.58                         | 8.32                         | -59.26       | -13.00      | 46.26       |
|                         | 1 880           | $\pi/2$ BPSK | 1/53           | 3 760.05   | H             | -66.25                         | 8.32                         | -57.93       | -13.00      | 44.93       |
|                         |                 | QPSK         |                | 3 760.14   | H             | -66.22                         | 8.32                         | -57.90       | -13.00      | 44.90       |
|                         |                 | 16QAM        |                | 3 760.06   | H             | -66.12                         | 8.32                         | -57.80       | -13.00      | 44.80       |
|                         |                 | 64QAM        |                | 3 760.10   | H             | -66.51                         | 8.32                         | -58.19       | -13.00      | 45.19       |
|                         |                 | 256QAM       |                | 3 760.08   | H             | -66.79                         | 8.32                         | -58.47       | -13.00      | 45.47       |
|                         | 1 900           | $\pi/2$ BPSK | 1/53           | 3 800.11   | H             | -66.60                         | 8.48                         | -58.12       | -13.00      | 45.12       |
|                         |                 | QPSK         |                | 3 799.99   | H             | -66.45                         | 8.48                         | -57.97       | -13.00      | 44.97       |
|                         |                 | 16QAM        |                | 3 800.22   | H             | -66.69                         | 8.48                         | -58.21       | -13.00      | 45.21       |
|                         |                 | 64QAM        |                | 3 800.18   | H             | -66.68                         | 8.48                         | -58.20       | -13.00      | 45.20       |
|                         |                 | 256QAM       |                | 3 800.14   | H             | -66.77                         | 8.48                         | -58.29       | -13.00      | 45.29       |

### <Test case: Internal ANT 2>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB size/offset | Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBi) | Result (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|--------------|----------------|------------|---------------|--------------------------------|------------------------------|--------------|-------------|-------------|
| 5                       | 1 880           | $\pi/2$ BPSK | 1/12           | 3 760.17   | H             | -66.44                         | 8.32                         | -58.12       | -13.00      | 45.12       |
|                         |                 | QPSK         |                | 3 760.19   | H             | -66.53                         | 8.32                         | -58.21       | -13.00      | 45.21       |
|                         |                 | 16QAM        |                | 3 760.43   | H             | -66.61                         | 8.32                         | -58.29       | -13.00      | 45.29       |
|                         |                 | 64QAM        |                | 3 759.90   | H             | -66.61                         | 8.32                         | -58.29       | -13.00      | 45.29       |
|                         |                 | 256QAM       |                | 3 759.57   | H             | -67.00                         | 8.32                         | -58.68       | -13.00      | 45.68       |

### <Test case: External ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB size/offset | Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBi) | Result (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|--------------|----------------|------------|---------------|--------------------------------|------------------------------|--------------|-------------|-------------|
| 5                       | 1 880           | $\pi/2$ BPSK | 1/12           | 3 758.80   | V             | -67.30                         | 8.32                         | -58.98       | -13.00      | 45.98       |
|                         |                 | QPSK         |                | 3 760.72   | V             | -67.40                         | 8.32                         | -59.08       | -13.00      | 46.08       |
|                         |                 | 16QAM        |                | 3 761.54   | V             | -67.33                         | 8.33                         | -59.00       | -13.00      | 46.00       |
|                         |                 | 64QAM        |                | 3 760.93   | V             | -67.31                         | 8.32                         | -58.99       | -13.00      | 45.99       |
|                         |                 | 256QAM       |                | 3 760.20   | V             | -67.35                         | 8.32                         | -59.03       | -13.00      | 46.03       |

### <Test case: External ANT 1>

| Channel Bandwidth (MHz) | Frequency (MHz) | Modulation   | RB size/offset | Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBi) | Result (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|--------------|----------------|------------|---------------|--------------------------------|------------------------------|--------------|-------------|-------------|
| 5                       | 1 880           | $\pi/2$ BPSK | 1/12           | 3 760.41   | V             | -67.48                         | 8.32                         | -59.16       | -13.00      | 46.16       |
|                         |                 | QPSK         |                | 3 761.16   | V             | -67.30                         | 8.32                         | -58.98       | -13.00      | 45.98       |
|                         |                 | 16QAM        |                | 3 759.61   | V             | -67.42                         | 8.32                         | -59.10       | -13.00      | 46.10       |
|                         |                 | 64QAM        |                | 3 761.85   | V             | -67.46                         | 8.33                         | -59.13       | -13.00      | 46.13       |
|                         |                 | 256QAM       |                | 3 761.47   | V             | -67.41                         | 8.33                         | -59.08       | -13.00      | 46.08       |

<Test case: Internal ANT 1>  
ENDC MODE

| Band   | Channel Bandwidth (MHz) | Frequency (MHz) | Modulation | RB size/offset |
|--------|-------------------------|-----------------|------------|----------------|
| NR n2  | 5                       | 1 880           | QPSK       | 1/12           |
| LTE B5 | 10                      | 829             | QPSK       | 1/25           |

| Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | Substitute Antenna Gain(dBi) | Result (dBm) | Limit (dBm) | Margin (dB) |
|------------|---------------|--------------------------------|------------------------------|------------------------------|--------------|-------------|-------------|
| 1 658.30   | H             | -67.26                         | 4.06                         | -                            | -63.20       | -13.00      | 50.20       |
| 3 759.86   | H             | -66.85                         | -                            | 8.32                         | -58.53       | -13.00      | 45.53       |
| -          | -             | -                              | -                            | -                            | -            | -           | -           |
| -          | -             | -                              | -                            | -                            | -            | -           | -           |
| -          | -             | -                              | -                            | -                            | -            | -           | -           |
| -          | -             | -                              | -                            | -                            | -            | -           | -           |

| Band   | Channel Bandwidth (MHz) | Frequency (MHz) | Modulation | RB size/offset |
|--------|-------------------------|-----------------|------------|----------------|
| NR n5  | 5                       | 826.5           | QPSK       | 1/1            |
| LTE B2 | 15                      | 1 857.5         | QPSK       | 1/36           |

| Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | Substitute Antenna Gain(dBi) | Result (dBm) | Limit (dBm) | Margin (dB) |
|------------|---------------|--------------------------------|------------------------------|------------------------------|--------------|-------------|-------------|
| 1 648.94   | H             | -68.88                         | 4.09                         | -                            | -64.79       | -13.00      | 51.79       |
| 2 473.45   | V             | -64.83                         | 3.74                         | -                            | -61.09       | -13.00      | 48.09       |
| 3 715.69   | H             | -68.30                         | -                            | 8.32                         | -59.98       | -13.00      | 46.98       |
| -          | -             | -                              | -                            | -                            | -            | -           | -           |
| -          | -             | -                              | -                            | -                            | -            | -           | -           |
| -          | -             | -                              | -                            | -                            | -            | -           | -           |

| Band    | Channel Bandwidth (MHz) | Frequency (MHz) | Modulation | RB size/offset |
|---------|-------------------------|-----------------|------------|----------------|
| NR n66  | 20                      | 1 770           | QPSK       | 1/1            |
| LTE B14 | 10                      | 793             | QPSK       | 1/0            |

| Freq.(MHz) | Ant Pol (H/V) | Level at Antenna Terminal(dBm) | Substitute Antenna Gain(dBd) | Substitute Antenna Gain(dBi) | Result (dBm) | Limit (dBm) | Margin (dB) |
|------------|---------------|--------------------------------|------------------------------|------------------------------|--------------|-------------|-------------|
| 1 577.17   | H             | -70.02                         | 3.90                         | -                            | -66.12       | -40.00      | 26.12       |
| 2 365.71   | V             | -62.36                         | 3.81                         | -                            | -58.55       | -13.00      | 45.55       |
| 3 523.59   | V             | -67.06                         | -                            | 8.47                         | -58.59       | -13.00      | 45.59       |
| -          | -             | -                              | -                            | -                            | -            | -           | -           |
| -          | -             | -                              | -                            | -                            | -            | -           | -           |
| -          | -             | -                              | -                            | -                            | -            | -           | -           |