

# TEST REPORT

of

FCC Part 2 Subpart J, Part 22 Subpart C/H,  
Part 24 Subpart E, Part 27 Subpart C and Part 90 Subpart S

FCC ID: YZP-GN3000

Equipment Under Test : Telematics Module  
Model Name : LTD-GN3000  
Variant Model Name(s) : -  
Applicant : LG Innotek Co., Ltd.  
Manufacturer : LG Innotek Co., Ltd.  
Date of Receipt : 2024.02.15  
Date of Test(s) : 2024.02.16 ~ 2024.08.28  
Date of Issue : 2024.08.28

In the configuration tested, the EUT complied with the standards specified above. This test report does not assure KOLAS accreditation.

- 1) The results of this test report are effective only to the items tested.
- 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.
- 3) This test report cannot be reproduced, except in full, without prior written permission of the Company.
- 4) The data marked ※ in this report was provided by the customer and may affect the validity of the test results.

We are responsible for all the information of this test report except for the data(※) provided by the customer.

Tested by:

  
\_\_\_\_\_  
Dave Kim

Technical  
Manager:

  
\_\_\_\_\_  
Patrick Kang

**SGS Korea Co., Ltd. Gunpo Laboratory**

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## 1. General Information

### 1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

- 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- Designation number: KR0150

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### 1.2. Details of Applicant

Applicant : LG Innotek Co., Ltd.

Address : 30 Magokjungang 10-ro, Gangseo-gu, seoul, Republic Of Korea, 07996

Contact Person : Jeong, In-chang

Phone No. : +82 10 2326 9972

### 1.3. Details of Manufacturer

Company : Same as applicant

Address : Same as applicant

Factory1 : PT. LG INNOTEK INDONESIA

Factory1 Address : Bekasi International Industrial Estate, Blok C8 No. 12 & 12A, Desa Cibat, Cikarang Selatan, Bekasi 17750, Jawa Barat - Indonesia

Factory2 : LG Innotek Co., Ltd.

Factory2 Address : 26, Hanamsandan 5beon-ro, Gwangsan-gu, Gwangju, Republic of Korea, 62229

### 1.4. Description of EUT

|                      |                                                                                                                                                                                                                                                                                                                                        |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Kind of Product      | Telematics Module                                                                                                                                                                                                                                                                                                                      |
| Model Name           | LTD-GN3000                                                                                                                                                                                                                                                                                                                             |
| Serial Number        | Conducted: C1<br>Radiated: R1                                                                                                                                                                                                                                                                                                          |
| Power Supply         | DC 4.00 V                                                                                                                                                                                                                                                                                                                              |
| Rated Power          | LTE Band 2, 4, 5, 7, 25, 26, 38, 41, 66 : 23 dB m                                                                                                                                                                                                                                                                                      |
| Frequency Range      | LTE Band 2: 1 850 MHz ~ 1 910 MHz<br>LTE Band 4: 1 710 MHz ~ 1 755 MHz<br>LTE Band 5: 824 MHz ~ 849 MHz<br>LTE Band 7: 2 500 MHz ~ 2 570 MHz<br>LTE Band 25: 1 850 MHz ~ 1 915 MHz<br>LTE Band 26: 814 MHz ~ 849 MHz<br>LTE Band 38: 2 570 MHz ~ 2 620 MHz<br>LTE Band 41: 2 496 MHz ~ 2 690 MHz<br>LTE Band 66: 1 710 MHz ~ 1 780 MHz |
| Uplink CA Bands      | 5B, 7C, 38C, 41C, 66B, 66C<br>2A-5A, 4A-5A, 5A-7A, 5A-25A, 5A-66A, 25A-26A                                                                                                                                                                                                                                                             |
| Modulation Technique | QPSK, 16QAM, 64QAM, 256QAM                                                                                                                                                                                                                                                                                                             |
| Antenna Type         | Dipole Antenna                                                                                                                                                                                                                                                                                                                         |
| Antenna Gain         | Refer to the clause 1.17                                                                                                                                                                                                                                                                                                               |
| H/W Version          | A.4                                                                                                                                                                                                                                                                                                                                    |
| S/W Version          | 01L_TCM                                                                                                                                                                                                                                                                                                                                |

## 1.5. Test Equipment List

| Equipment                  | Manufacturer                | Model                                | S/N                    | Cal. Date     | Cal. Interval | Cal. Due      |
|----------------------------|-----------------------------|--------------------------------------|------------------------|---------------|---------------|---------------|
| Spectrum Analyzer          | R&S                         | FSV30                                | 100955                 | Mar. 08, 2024 | Annual        | Mar. 08, 2025 |
| Spectrum Analyzer          | R&S                         | FSW43                                | 100637                 | Apr. 08, 2024 | Annual        | Apr. 08, 2025 |
| Spectrum Analyzer          | Agilent                     | N9030A                               | US51350132             | Nov. 27, 2023 | Annual        | Nov. 27, 2024 |
| Signal Generator           | R&S                         | SMA100B                              | 106887                 | Oct. 06, 2023 | Annual        | Oct. 06, 2024 |
| DC Power Supply            | R&S                         | HMP2020                              | 102133                 | Apr. 23, 2024 | Annual        | Apr. 23, 2025 |
| Communication test station | Anritsu                     | MT8000A                              | 6261867312             | Apr. 08, 2024 | Annual        | Apr. 08, 2025 |
| Communication Analyzer     | Anritsu                     | MT8821C                              | 6262192291             | Feb. 08, 2024 | Annual        | Feb. 08, 2025 |
| Temperature Chamber        | ESPEC CORP.                 | PL-2J                                | 15004184               | Jun. 03, 2024 | Annual        | Jun. 03, 2025 |
| BRIDGE COUPLER             | MARKI MICROWAVE INC         | CBR16-0012                           | 1542                   | May 13, 2024  | Annual        | May 13, 2025  |
| Directional Coupler        | KRYTAR                      | 152613                               | 140973                 | Jun. 07, 2024 | Annual        | Jun. 07, 2025 |
| Power Sensor               | Anritsu                     | MA2411B                              | 1207272                | May 29, 2024  | Annual        | May 29, 2025  |
| Power Sensor               | Anritsu                     | ML2495A                              | 1223004                | May 29, 2024  | Annual        | May 29, 2025  |
| Low Pass Filter            | Mini-Circuits               | NLP-1200+                            | V 8979400903-1         | May 17, 2024  | Annual        | May 17, 2025  |
| High Pass Filter           | Wainwright Instrument GmbH  | WHKX10-900-1000-18000-40SS           | 7                      | Feb. 27, 2024 | Annual        | Feb. 27, 2025 |
| High Pass Filter           | Wainwright Instrument GmbH  | WHKX3.0/18G-6SS                      | 21                     | Jun. 07, 2024 | Annual        | Jun. 07, 2025 |
| High Pass Filter           | Wainwright Instrument GmbH  | WHNX7.5/26.5G-6SS                    | 11                     | Oct. 17, 2023 | Annual        | Oct. 17, 2024 |
| Preamplifier               | H.P.                        | 8447F                                | 2944A03909             | Aug. 04, 2023 | Annual        | Aug. 09, 2025 |
| Preamplifier               | R&S                         | SCU 18F                              | 101058                 | Dec. 07, 2023 | Annual        | Dec. 07, 2024 |
| Preamplifier               | MITEQ Inc.                  | JS44-18004000-35-8P                  | 1546891                | Oct. 06, 2023 | Annual        | Oct. 06, 2024 |
| Test Receiver              | R&S                         | ESU26                                | 100109                 | Jan. 16, 2024 | Annual        | Jan. 16, 2025 |
| Loop Antenna               | Schwarzbeck Mess-Elektronik | FMZB 1519                            | 1519-039               | Aug. 21, 2023 | Biennial      | Aug. 21, 2025 |
| Bilog Antenna              | Schwarzbeck Mess-Elektronik | VULB9163                             | 9163-437               | May 29, 2024  | Annual        | May 29, 2025  |
| Horn Antenna               | R&S                         | HF906                                | 100326                 | Feb. 19, 2024 | Annual        | Feb. 19, 2025 |
| Horn Antenna               | Schwarzbeck Mess-Elektronik | BBHA 9170                            | 9170-540               | Dec. 05, 2023 | Annual        | Dec. 05, 2024 |
| Antenna Master             | Innco systems GmbH          | MA4640-XP-ET                         | MA4640/536/383 30516/L | N.C.R.        | N/A           | N.C.R.        |
| Turn Table                 | Innco systems GmbH          | DS 1200S                             | N/A                    | N.C.R.        | N/A           | N.C.R.        |
| Controller                 | Innco systems GmbH          | CONTROLLER CO3000-4P                 | CO3000/963/383 30516/L | N.C.R.        | N/A           | N.C.R.        |
| Anechoic Chamber           | SY Corporation              | L × W × H<br>(9.6 m × 6.4 m × 6.6 m) | N/A                    | N.C.R.        | N/A           | N.C.R.        |
| Coaxial Cable              | RADIALL                     | TESTPRO 3                            | 182287                 | Apr. 12, 2024 | Semi-Annual   | Oct. 12, 2024 |
| Coaxial Cable              | RADIALL                     | TESTPRO 3                            | 182288                 | Apr. 12, 2024 | Semi-Annual   | Oct. 12, 2024 |
| Coaxial Cable              | RADIALL                     | TESTPRO 3                            | 182291                 | Apr. 12, 2024 | Semi-Annual   | Oct. 12, 2024 |
| Coaxial Cable              | SENSORVIEW                  | NMST-13A26-NMST-5 m                  | TPC2402190004          | Apr. 03, 2024 | Semi-Annual   | Oct. 03, 2024 |
| Coaxial Cable              | SENSORVIEW                  | NMST-13A26-NMST-10 m                 | TPC2402190001          | Apr. 03, 2024 | Semi-Annual   | Oct. 03, 2024 |

### Note;

- For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.
- Equipment after the calibration due date was not used for testing.

## 1.6. Summary of Test Results

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC Part 2, 22, 24, 27 and 90                           |                                       |                        |
|---------------------------------------------------------------------------|---------------------------------------|------------------------|
| Section                                                                   | Test Item(s)                          | Result                 |
| §22.913(a)(5)<br>§24.232(c)<br>§27.50(d)(4)<br>§27.50(h)(2)<br>§90.635(b) | E.R.P. / E.I.R.P.                     | Complied <sup>1)</sup> |
| §22.917(a)<br>§24.238(a)<br>§27.53(h)(1)<br>§27.53(m)(4)<br>§90.691(a)    | Spurious Radiated Emission            | Complied               |
| §2.1046                                                                   | Conducted Output Power                | Complied <sup>1)</sup> |
| §2.1049                                                                   | Occupied Bandwidth                    | Complied <sup>1)</sup> |
| §22.913(d)<br>§24.232(d)<br>§27.50(d)(5)                                  | Peak-Average Ratio                    | Complied <sup>1)</sup> |
| §22.917(a)<br>§24.238(a)<br>§27.53(h)(1)<br>§27.53(m)(4)<br>§90.691(a)    | Spurious Emission at Antenna Terminal | Complied <sup>1)</sup> |
| §22.917(a)<br>§24.238(a)<br>§27.53(h)(1)<br>§27.53(m)(4)<br>§90.691(a)    | Band Edge and Emission Mask           | Complied <sup>1)</sup> |
| §2.1055<br>§22.355<br>§24.235<br>§27.54<br>§90.213(a)                     | Frequency Stability                   | Complied <sup>1)</sup> |

### Note;

- 1) The test items of inter band CA were covered by LTE single carrier due to the CA power is reduced according to 3GPP MPR

## 1.7. Sample Calculation for Offset

Where relevant, the following sample calculation is provided:

### 1.7.1. Conducted Test

Offset value (dB) = Directional Coupler (dB) + Cable loss (dB)

### 1.7.2. Radiation test

- E.I.R.P. (dB m) = Measured level (dB $\mu$ V) + Antenna factor (dB/m) + Cable loss (dB) + 20 Log D - 104.8;  
where D is the measurement distance in meters.
- E.R.P. (dB m) = E.I.R.P. (dB m) - 2.15 (dB)

## 1.8. Worst Case Configuration and Mode

The worst-case is based on the conducted output power measurement investigation results. All testing was performed using QPSK and 16QAM modulations. However, the spurious radiated emission and spurious at antenna terminal were only performed on bandwidth and RB offset (with RB size 1) with the highest conducted power in QPSK.

The peak to average ratio were tested only 256QAM modulation as worst case.

The radiation test of the EUT was investigated in three orthogonal orientations X, Y, and Z, and the worst case data is reported.

## 1.9. Introduction of Test Data Reuse

This report referenced from the FCC ID: YZP-GN1000.

The applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID.

### 1.10. Difference

| Model name | Description                                                                      |
|------------|----------------------------------------------------------------------------------|
| LTD-GN1000 | - Reference model<br>- Single modular                                            |
| LTD-GN3000 | - The PCB and component placement are the same, but the filter has been changed. |

### 1.11. Reference Detail

Reference applicant that contains the reused reference data in the individual test reports:

| Equipment class | Reference FCC ID | Application type | Reference test report number    | Exhibit type | Variant test report number      | Data reuse |
|-----------------|------------------|------------------|---------------------------------|--------------|---------------------------------|------------|
| PCB             | YZP-GN1000       | Original grant   | F690501-RF-RTL005195 (LTE)      | Test report  | F690501-RF-RTL005288 (LTE)      | All        |
|                 |                  |                  | F690501-RF-RTL005197 (LTE ULCA) |              | F690501-RF-RTL005289 (LTE ULCA) |            |
|                 |                  |                  | F690501-RF-RTL005199 (NR FDD)   |              | F690501-RF-RTL005290 (NR FDD)   |            |
|                 |                  |                  | F690501-RF-RTL005201 (NR TDD)   |              | F690501-RF-RTL005291 (NR TDD)   |            |

## 1.12. Spot Check Data

After confirming through in the band that the performance of the FCC ID: YZP-GN1000 remains representative of FCC ID: YZP-GN1000.

The test data of FCC ID: YZP-GN1000 being submitted for this application to cover LTE features.

| Test item                         | Band    | Frequency<br>(MHz) | Limit             | Original model        | Spot check model      | Deviation<br>(dB) |
|-----------------------------------|---------|--------------------|-------------------|-----------------------|-----------------------|-------------------|
|                                   |         |                    |                   | LTD-GN1000            | LTD-GN3000            |                   |
|                                   |         |                    |                   | FCC ID:<br>YZP-GN1000 | FCC ID:<br>YZP-GN3000 |                   |
| Conducted<br>Output<br>Power      | 5B      | 829.0              | 2 W<br>E.I.R.P.   | 23.21 dB m            | 23.18 dB m            | -0.03             |
|                                   |         | 836.2              |                   |                       |                       |                   |
|                                   | 7C      | 2 530.1            | 2 W<br>E.I.R.P.   | 23.52 dB m            | 23.37 dB m            | -0.15             |
|                                   |         | 2 544.5            |                   |                       |                       |                   |
|                                   | 41C     | 2 667.5            | 7 W<br>E.I.R.P.   | 23.40 dB m            | 23.45 dB m            | 0.05              |
|                                   |         | 2 682.5            |                   |                       |                       |                   |
|                                   | 66B     | 1 717.5            | 100 W<br>E.I.R.P. | 23.13 dB m            | 23.24 dB m            | 0.11              |
|                                   |         | 1 726.8            |                   |                       |                       |                   |
|                                   | 66C     | 1 720.0            | 2 W<br>E.I.R.P.   | 23.05 dB m            | 22.74 dB m            | -0.31             |
|                                   |         | 1 734.4            |                   |                       |                       |                   |
| Band edge                         | 5B      | 826.5              | -13 dB m          | -17.01 dB m           | -19.32 dB m           | -2.31             |
|                                   |         | 830.4              |                   |                       |                       |                   |
|                                   | 7C      | 2 540.2            | -25 dB m          | -28.77 dB m           | -30.63 dB m           | -1.86             |
|                                   |         | 2 560.0            |                   |                       |                       |                   |
|                                   | 41C     | 2 503.8            | -13 dB m          | -25.73 dB m           | -28.19 dB m           | -2.46             |
|                                   |         | 2 520.9            |                   |                       |                       |                   |
|                                   | 66B     | 1 715.0            | -13 dB m          | -23.96 dB m           | -25.12 dB m           | -1.16             |
|                                   |         | 1 722.2            |                   |                       |                       |                   |
|                                   | 66C     | 1 717.5            | -25 dB m          | -25.11 dB m           | -25.43 dB m           | -0.32             |
|                                   |         | 1 732.5            |                   |                       |                       |                   |
| Radiated<br>Spurious<br>Emissions | 5B      | 829.0              | -13 dB m          | -25.50 dB m           | -28.05 dB m           | -2.55             |
|                                   |         | 836.2              |                   |                       |                       |                   |
|                                   | 7C      | 2 530.1            | -25 dB m          | -37.18 dB m           | -37.73 dB m           | -0.55             |
|                                   |         | 2 544.5            |                   |                       |                       |                   |
|                                   | 41C     | 2 667.5            | -25 dB m          | -37.99 dB m           | -38.14 dB m           | -0.15             |
|                                   |         | 2 682.5            |                   |                       |                       |                   |
|                                   | 66B     | 1 717.5            | -13 dB m          | -40.71 dB m           | -43.20 dB m           | -2.49             |
|                                   |         | 1 726.8            |                   |                       |                       |                   |
|                                   | 66C     | 1 720.0            | -13 dB m          | Not detected          | Not detected          | -                 |
|                                   |         | 1 734.4            |                   |                       |                       |                   |
|                                   | 2A-5A   | 1 860.0            | -13 dB m          | -42.63 dB m           | -42.86 dB m           | -0.23             |
|                                   |         | 836.5              |                   |                       |                       |                   |
|                                   | 4A-5A   | 1 732.5            | -13 dB m          | -39.33 dB m           | -37.70 dB m           | 1.63              |
|                                   |         | 836.5              |                   |                       |                       |                   |
|                                   | 5A-7A   | 836.0              | -13 dB m          | -36.49 dB m           | -36.25 dB m           | 0.24              |
|                                   |         | 2 535.0            |                   |                       |                       |                   |
|                                   | 5A-25A  | 836.5              | -13 dB m          | -26.78 dB m           | -26.42 dB m           | 0.36              |
|                                   |         | 1 860.0            |                   |                       |                       |                   |
|                                   | 5A-66A  | 836.5              | -13 dB m          | -37.47 dB m           | -37.84 dB m           | -0.37             |
|                                   |         | 1 745.0            |                   |                       |                       |                   |
|                                   | 25A-26A | 1 860.0            | -13 dB m          | -20.58 dB m           | -20.83 dB m           | -0.25             |
|                                   |         | 831.5              |                   |                       |                       |                   |

| Test item                         | Band | Frequency<br>(MHz) | Limit    | Original model        | Spot check model      | Deviation<br>(dB)  |
|-----------------------------------|------|--------------------|----------|-----------------------|-----------------------|--------------------|
|                                   |      |                    |          | LTD-GN1000            | LTD-GN3000            |                    |
|                                   |      |                    |          | FCC ID:<br>YZP-GN1000 | FCC ID:<br>YZP-GN3000 |                    |
| Conducted<br>Spurious<br>Emission | 5B   | 829.0              | -13 dB m | -18.15 dB m           | -18.58 dB m           | -0.43              |
|                                   |      | 836.2              |          |                       |                       |                    |
|                                   | 7C   | 2 530.1            | -25 dB m | -35.02 dB m           | -35.30 dB m           | -0.28              |
|                                   |      | 2 544.5            |          |                       |                       |                    |
|                                   | 41C  | 2 667.5            | -25 dB m | -34.88 dB m           | -35.51 dB m           | -0.63              |
|                                   |      | 2 682.5            |          |                       |                       |                    |
|                                   | 66B  | 1 717.5            | -13 dB m | -18.40 dB m           | -18.22 dB m           | 0.18               |
|                                   |      | 1 726.8            |          |                       |                       |                    |
|                                   | 66C  | 1 720.0            | -13 dB m | -18.25 dB m           | -18.63 dB m           | -0.38              |
|                                   |      | 1 734.4            |          |                       |                       |                    |
| Peak-<br>Average<br>Ratio         | 5B   | 831.6              | -13 dB   | 7.30 dB               | 7.36 dB               | 0.06               |
|                                   |      | 841.5              |          |                       |                       |                    |
|                                   | 7C   | 2 525.1            |          | 7.28 dB               | 7.13 dB               | -0.15              |
|                                   |      | 2 554.9            |          |                       |                       |                    |
|                                   | 41C  | 2 585.9            |          | 7.19 dB               | 7.01 dB               | -0.18              |
|                                   |      | 2 597.9            |          |                       |                       |                    |
|                                   | 66B  | 1 750.3            |          | 7.25 dB               | 7.19 dB               | -0.06              |
|                                   |      | 1 757.5            |          |                       |                       |                    |
|                                   | 66C  | 1 747.6            |          | 7.33 dB               | 7.22 dB               | -0.11              |
|                                   |      | 1 764.7            |          |                       |                       |                    |
| Test item                         | Band | Frequency<br>(MHz) | Limit    | Original model        | Spot check model      | Deviation<br>(ppm) |
|                                   |      |                    |          | LTD-GN1000            | LTD-GN3000            |                    |
|                                   |      |                    |          | FCC ID:<br>YZP-GN1000 | FCC ID:<br>YZP-GN3000 |                    |
| Stability                         | 5B   | 834.1              | ±2.5 ppm | 0.017 98 ppm          | 0.008 14 ppm          | -0.009 84          |
|                                   |      | 838.0              |          | 0.007 46 ppm          | 0.005 63 ppm          | -0.001 83          |
|                                   | 7C   | 2 525.6            |          | -0.005 16 ppm         | 0.007 96 ppm          | 0.013 12           |
|                                   |      | 2 540.0            |          | 0.008 56 ppm          | 0.005 36 ppm          | -0.003 20          |
|                                   | 41C  | 2 583.8            |          | 0.020 38 ppm          | 0.012 40 ppm          | -0.007 98          |
|                                   |      | 2 595.5            |          | -0.004 91 ppm         | 0.008 56 ppm          | 0.013 47           |
|                                   | 66B  | 1 752.6            |          | -0.013 77 ppm         | 0.005 36 ppm          | 0.019 13           |
|                                   |      | 1 757.4            |          | 0.011 30 ppm          | 0.013 11 ppm          | 0.001 81           |
|                                   | 66C  | 1 749.9            |          | -0.011 99 ppm         | 0.006 68 ppm          | 0.018 67           |
|                                   |      | 1 759.9            |          | -0.002 94 ppm         | 0.005 36 ppm          | 0.008 30           |

| Test item          | Band | Frequency<br>(MHz) | Bandwidth         | Original model |                | Spot check model |                | Deviation |        |
|--------------------|------|--------------------|-------------------|----------------|----------------|------------------|----------------|-----------|--------|
|                    |      |                    |                   | LTD-GN1000     |                | LTD-GN3000       |                | (MHz)     |        |
|                    |      |                    |                   | QPSK<br>(MHz)  | 16QAM<br>(MHz) | QPSK<br>(MHz)    | 16QAM<br>(MHz) | QPSK      | 16QAM  |
| Occupied Bandwidth | 5B   | 835.0              | Lowest Bandwidth  | 7.473          | 7.453          | 7.453            | 7.473          | -0.020    | 0.020  |
|                    |      | 838.9              |                   |                |                |                  |                |           |        |
|                    |      | 831.6              | Highest Bandwidth | 18.781         | 18.741         | 18.781           | 18.781         | 0.000     | 0.040  |
|                    |      | 841.5              |                   |                |                |                  |                |           |        |
|                    | 7C   | 2 527.5            | Lowest Bandwidth  | 22.927         | 22.977         | 23.077           | 23.127         | 0.150     | 0.150  |
|                    |      | 2 542.5            |                   |                |                |                  |                |           |        |
|                    |      | 2 525.1            | Highest Bandwidth | 37.642         | 37.722         | 37.882           | 37.882         | 0.240     | 0.160  |
|                    |      | 2 544.9            |                   |                |                |                  |                |           |        |
|                    | 41C  | 2 588.1            | Lowest Bandwidth  | 23.176         | 23.127         | 23.176           | 23.176         | 0.000     | 0.049  |
|                    |      | 2 600.1            |                   |                |                |                  |                |           |        |
|                    |      | 2 583.1            | Highest Bandwidth | 37.802         | 37.722         | 37.882           | 37.962         | 0.080     | 0.240  |
|                    |      | 2 602.9            |                   |                |                |                  |                |           |        |
|                    | 66B  | 1 752.6            | Lowest Bandwidth  | 9.251          | 9.251          | 9.231            | 9.231          | -0.020    | -0.020 |
|                    |      | 1 757.4            |                   |                |                |                  |                |           |        |
|                    |      | 1 750.1            | Highest Bandwidth | 18.741         | 18.262         | 18.821           | 18.821         | 0.080     | 0.559  |
|                    |      | 1 760.0            |                   |                |                |                  |                |           |        |
|                    | 66C  | 1 750.1            | Lowest Bandwidth  | 23.027         | 23.077         | 23.127           | 23.127         | 0.100     | 0.050  |
|                    |      | 1 762.1            |                   |                |                |                  |                |           |        |
|                    |      | 1 745.1            | Highest Bandwidth | 37.882         | 37.562         | 37.722           | 37.802         | -0.160    | 0.240  |
|                    |      | 1 764.9            |                   |                |                |                  |                |           |        |

**Note;**

Comparison of two models, upper deviation is within 3 dB range and all test results are under FCC technical limits.

### 1.13. The Test Channel Details

The EUT supports with carrier aggregation uplink. Intra-Band contiguous specification as below

| E-UTRA Intra-Band CA configuration / Bandwidth combination set |                                           |                                           |                                          |
|----------------------------------------------------------------|-------------------------------------------|-------------------------------------------|------------------------------------------|
| E-UTRA CA Configuration                                        | Channel bandwidth<br>for carrier<br>(MHz) | Channel bandwidth<br>for carrier<br>(MHz) | Maximum aggregated<br>bandwidth<br>(MHz) |
| CA_5B                                                          | 3                                         | 5                                         | 8                                        |
|                                                                | 5                                         | 3                                         |                                          |
|                                                                | 5                                         | 10                                        |                                          |
|                                                                | 10                                        | 5                                         | 15                                       |
|                                                                | 10                                        | 10                                        | 20                                       |
| CA_7C                                                          | 10                                        | 20                                        | 30                                       |
|                                                                | 20                                        | 10                                        |                                          |
|                                                                | 15                                        | 15                                        |                                          |
|                                                                | 15                                        | 10                                        | 25                                       |
|                                                                | 15                                        | 20                                        | 35                                       |
|                                                                | 20                                        | 15                                        | 40                                       |
| CA_38C                                                         | 15                                        | 15                                        | 30                                       |
|                                                                | 20                                        | 20                                        | 40                                       |
| CA_41C                                                         | 5                                         | 20                                        | 25                                       |
|                                                                | 20                                        | 5                                         |                                          |
|                                                                | 10                                        | 15                                        |                                          |
|                                                                | 15                                        | 10                                        |                                          |
|                                                                | 10                                        | 20                                        | 30                                       |
|                                                                | 20                                        | 10                                        |                                          |
|                                                                | 15                                        | 15                                        |                                          |
|                                                                | 15                                        | 20                                        | 35                                       |
|                                                                | 20                                        | 15                                        | 40                                       |
| CA_66B                                                         | 5                                         | 5                                         | 10                                       |
|                                                                | 5                                         | 10                                        | 15                                       |
|                                                                | 10                                        | 5                                         |                                          |
|                                                                | 5                                         | 15                                        |                                          |
|                                                                | 15                                        | 5                                         | 20                                       |
|                                                                | 10                                        | 10                                        |                                          |
| CA_66C                                                         | 10                                        | 15                                        | 25                                       |
|                                                                | 15                                        | 10                                        |                                          |
|                                                                | 20                                        | 5                                         |                                          |
|                                                                | 5                                         | 20                                        |                                          |
|                                                                | 10                                        | 20                                        | 30                                       |
|                                                                | 20                                        | 10                                        |                                          |
|                                                                | 15                                        | 15                                        |                                          |
|                                                                | 15                                        | 20                                        | 35                                       |
|                                                                | 20                                        | 15                                        |                                          |
|                                                                | 20                                        | 20                                        | 40                                       |

## 1.14. Measurement Configuration

### Intra-Band

| Test Items             | Band | Test Channel |     |      | Bandwidth (MHz) |    |    |    |    |    |    |    | Modulation |       |       |        | RB # |      |      |
|------------------------|------|--------------|-----|------|-----------------|----|----|----|----|----|----|----|------------|-------|-------|--------|------|------|------|
|                        |      | Low          | Mid | High | 8               | 10 | 15 | 20 | 25 | 30 | 35 | 40 | QPSK       | 16QAM | 64QAM | 256QAM | 1    | Half | Full |
| Conducted Output Power | 5B   | V            | V   | V    | V               |    | V  | V  |    |    |    |    | V          | V     | -     | -      | V    | -    | V    |
|                        | 7C   | V            | V   | V    |                 |    |    |    | V  | V  | V  | V  | V          | V     | -     | -      | V    | -    | V    |
|                        | 38C  | V            | V   | V    |                 |    |    |    |    | V  |    | V  | V          | V     | -     | -      | V    | -    | V    |
|                        | 41C  | V            | V   | V    |                 |    |    |    | V  | V  | V  | V  | V          | V     | -     | -      | V    | -    | V    |
|                        | 66B  | V            | V   | V    |                 | V  | V  | V  |    |    |    |    | V          | V     | -     | -      | V    | -    | V    |
|                        | 66C  | V            | V   | V    |                 |    |    |    | V  | V  | V  | V  | V          | V     | -     | -      | V    | -    | V    |
| Frequency Stability    | 5B   | -            | V   | -    | V               |    | V  | V  |    |    |    |    | V          | -     | -     | -      | -    | -    | V    |
|                        | 7C   | -            | V   | -    |                 |    |    |    | V  | V  | V  | V  | V          | -     | -     | -      | -    | -    | V    |
|                        | 38C  | -            | V   | -    |                 |    |    |    |    | V  |    | V  | V          | -     | -     | -      | -    | -    | V    |
|                        | 41C  | -            | V   | -    |                 |    |    |    | V  | V  | V  | V  | V          | -     | -     | -      | -    | -    | V    |
|                        | 66B  | -            | V   | -    |                 | V  | V  | V  |    |    |    |    | V          | -     | -     | -      | -    | -    | V    |
|                        | 66C  | -            | V   | -    |                 |    |    |    | V  | V  | V  | V  | V          | -     | -     | -      | -    | -    | V    |
| Occupied Bandwidth     | 5B   | -            | V   | -    | V               |    | V  | V  |    |    |    |    | V          | V     | -     | -      | -    | -    | V    |
|                        | 7C   | -            | V   | -    |                 |    |    |    | V  | V  | V  | V  | V          | V     | -     | -      | -    | -    | V    |
|                        | 38C  | -            | V   | -    |                 |    |    |    |    | V  |    | V  | V          | V     | -     | -      | -    | -    | V    |
|                        | 41C  | -            | V   | -    |                 |    |    |    | V  | V  | V  | V  | V          | V     | -     | -      | -    | -    | V    |
|                        | 66B  | -            | V   | -    |                 | V  | V  | V  |    |    |    |    | V          | V     | -     | -      | -    | -    | V    |
|                        | 66C  | -            | V   | -    |                 |    |    |    | V  | V  | V  | V  | V          | V     | -     | -      | -    | -    | V    |
| Peak-to-Average Ratio  | 5B   | V            | V   | V    | V               |    | V  | V  |    |    |    |    | -          | -     | -     | V      | -    | -    | V    |
|                        | 7C   | V            | V   | V    |                 |    |    |    | V  | V  | V  | V  | -          | -     | -     | V      | -    | -    | V    |
|                        | 38C  | V            | V   | V    |                 |    |    |    |    | V  |    | V  | -          | -     | -     | V      | -    | -    | V    |
|                        | 41C  | V            | V   | V    |                 |    |    |    | V  | V  | V  | V  | -          | -     | -     | V      | -    | -    | V    |
|                        | 66B  | V            | V   | V    |                 | V  | V  | V  |    |    |    |    | -          | -     | -     | V      | -    | -    | V    |
|                        | 66C  | V            | V   | V    |                 |    |    |    | V  | V  | V  | V  | -          | -     | -     | V      | -    | -    | V    |

| Test Items                                                 | Band | Test Channel |     |      | Bandwidth (MHz) |    |    |    |    |    |    |    | Modulation |       |       |        | RB # |      |      |
|------------------------------------------------------------|------|--------------|-----|------|-----------------|----|----|----|----|----|----|----|------------|-------|-------|--------|------|------|------|
|                                                            |      | Low          | Mid | High | 8               | 10 | 15 | 20 | 25 | 30 | 35 | 40 | QPSK       | 16QAM | 64QAM | 256QAM | 1    | Half | Full |
| Band edge                                                  | 5B   | V            | -   | V    | V               |    | V  | V  |    |    |    |    | V          | V     | -     | -      | -    | -    | V    |
|                                                            | 7C   | V            | -   | V    |                 |    |    |    | V  | V  | V  | V  | V          | V     | -     | -      | -    | -    | V    |
|                                                            | 38C  | V            | -   | V    |                 |    |    |    |    | V  |    | V  | V          | V     | -     | -      | -    | -    | V    |
|                                                            | 41C  | V            | -   | V    |                 |    |    |    | V  | V  | V  | V  | V          | V     | -     | -      | -    | -    | V    |
|                                                            | 66B  | V            | -   | V    |                 | V  | V  | V  |    |    |    |    | V          | V     | -     | -      | -    | -    | V    |
|                                                            | 66C  | V            | -   | V    |                 |    |    |    | V  | V  | V  | V  | V          | V     | -     | -      | -    | -    | V    |
| Spurious at antenna terminal & Radiated Spurious Emissions | 5B   | V            | V   | V    | Worst Case      |    |    |    |    |    |    |    |            |       |       |        |      |      |      |
|                                                            | 7C   | V            | V   | V    | Worst Case      |    |    |    |    |    |    |    |            |       |       |        |      |      |      |
|                                                            | 38C  | V            | V   | V    | Worst Case      |    |    |    |    |    |    |    |            |       |       |        |      |      |      |
|                                                            | 41C  | V            | V   | V    | Worst Case      |    |    |    |    |    |    |    |            |       |       |        |      |      |      |
|                                                            | 66B  | V            | V   | V    | Worst Case      |    |    |    |    |    |    |    |            |       |       |        |      |      |      |
|                                                            | 66C  | V            | V   | V    | Worst Case      |    |    |    |    |    |    |    |            |       |       |        |      |      |      |

## Inter-Band

| Test Items                  | Band    | Test Channel |     |      | Bandwidth (MHz) |   |   |    |    |    | Modulation |       |       |        | RB # |      |      |
|-----------------------------|---------|--------------|-----|------|-----------------|---|---|----|----|----|------------|-------|-------|--------|------|------|------|
|                             |         | Low          | Mid | High | 1.4             | 3 | 5 | 10 | 15 | 20 | QPSK       | 16QAM | 64QAM | 256QAM | 1    | Half | Full |
| Radiated Spurious Emissions | 2A-5A   | V            | V   | V    | Worst Case      |   |   |    |    |    |            |       |       |        |      |      |      |
|                             | 4A-5A   | V            | V   | V    | Worst Case      |   |   |    |    |    |            |       |       |        |      |      |      |
|                             | 5A-7A   | V            | V   | V    | Worst Case      |   |   |    |    |    |            |       |       |        |      |      |      |
|                             | 5A-25A  | V            | V   | V    | Worst Case      |   |   |    |    |    |            |       |       |        |      |      |      |
|                             | 5A-66A  | V            | V   | V    | Worst Case      |   |   |    |    |    |            |       |       |        |      |      |      |
|                             | 25A-26A | V            | V   | V    | Worst Case      |   |   |    |    |    |            |       |       |        |      |      |      |

### 1.15. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| Parameter                          | Uncertainty |         |
|------------------------------------|-------------|---------|
| Conducted Output Power             | 0.33 dB     |         |
| Occupied Bandwidth                 | 0.05 MHz    |         |
| Conducted Spurious Emissions       | 0.99 dB     |         |
| Peak to Average Ratio              | 0.66 dB     |         |
| Frequency Stability                | 116 Hz      |         |
| Radiated Emission, 9 kHz to 30 MHz | H           | 3.60 dB |
|                                    | V           | 3.60 dB |
| Radiated Emission, below 1 GHz     | H           | 4.60 dB |
|                                    | V           | 4.90 dB |
| Radiated Emission, above 1 GHz     | H           | 3.90 dB |
|                                    | V           | 3.80 dB |

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

### 1.16. Test Report Revision

| Revision | Report Number        | Date of Issue | Description |
|----------|----------------------|---------------|-------------|
| 0        | F690501-RF-RTL005289 | 2024.08.20    | Initial     |

### 1.17. Antenna Designation

| Ant. Type      | Ant. No | Support Band                   |                             |
|----------------|---------|--------------------------------|-----------------------------|
|                |         | LTE                            | NR                          |
| Dipole Antenna | Ant.1   | 2, 4, 5, 7, 25, 26, 38, 41, 66 | 2, 5, 7, 25, 26, 38, 41, 66 |
|                | Ant.2   |                                | 77, 78                      |

| Band                                      | Operating Frequency (MHz) | Antenna Peak Gain (dB i) |        |
|-------------------------------------------|---------------------------|--------------------------|--------|
|                                           |                           | Ant. 1                   | Ant. 2 |
| LTE 25/2<br>NR 25/2<br>GSM 1 900          | 1 850 ~ 1 915             | 1.90                     |        |
| LTE 66/4<br>NR 66                         | 1 710 ~ 1 780             | 4.20                     |        |
| LTE 26/5<br>NR 26/5<br>WCDMA V<br>GSM 850 | 824 ~ 849                 | 1.99                     |        |
| LTE 26<br>NR 26                           | 814 ~ 824                 | 0.72                     |        |
| LTE 7<br>NR 7                             | 2 500 ~ 2 570             | 4.43                     |        |
| LTE 38<br>NR 38                           | 2 570 ~ 2 620             | 3.35                     |        |
| LTE 41<br>NR 41                           | 2 496 ~ 2 690             | 4.43                     |        |
| NR 77                                     | 3 450 ~ 3 550             |                          | 4.69   |
|                                           | 3 700 ~ 3 980             |                          | 4.90   |
| NR 78                                     | 3 450 ~ 3 550             |                          | 4.69   |
|                                           | 3 700 ~ 3 800             |                          | 4.90   |

### 1.18. Emission Designator and Max Power

| Band   | Band width (MHz) | Modulation | Low Freq. (MHz) | Upper Freq. (MHz) | Conducted Average (dB m) | Ant. Gain (dB i) | E.R.P. / E.I.R.P. Average (dB m) | E.R.P. / E.I.R.P. Average (W) | Emission Designator |
|--------|------------------|------------|-----------------|-------------------|--------------------------|------------------|----------------------------------|-------------------------------|---------------------|
| CA_5B  | 3+5              | QPSK       | 825.6           | 846.5             | 23.11                    | 1.99             | 22.95                            | 0.197                         | 7M47G7D             |
|        |                  | 16QAM      |                 |                   | 22.69                    |                  | 22.53                            | 0.179                         | 7M43D7D             |
|        | 5+3              | QPSK       | 826.5           | 847.4             | 23.15                    |                  | 22.99                            | 0.199                         | 7M47G7D             |
|        |                  | 16QAM      |                 |                   | 22.78                    |                  | 22.62                            | 0.183                         | 7M45D7D             |
|        | 5+10             | QPSK       | 826.8           | 844.0             | 23.12                    |                  | 22.96                            | 0.198                         | 13M8G7D             |
|        |                  | 16QAM      |                 |                   | 22.68                    |                  | 22.52                            | 0.179                         | 14M0D7D             |
|        | 10+5             | QPSK       | 829.0           | 846.2             | 23.21                    |                  | 23.05                            | 0.202                         | 13M9G7D             |
|        |                  | 16QAM      |                 |                   | 22.79                    |                  | 22.63                            | 0.183                         | 13M8D7D             |
|        | 10+10            | QPSK       | 829.0           | 844.0             | 23.16                    |                  | 23.00                            | 0.200                         | 18M8G7D             |
|        |                  | 16QAM      |                 |                   | 22.92                    |                  | 22.76                            | 0.189                         | 18M7D7D             |
| CA_7C  | 10+20            | QPSK       | 2 505.5         | 2 560.0           | 23.41                    | 4.43             | 27.84                            | 0.608                         | 27M9G7D             |
|        |                  | 16QAM      |                 |                   | 23.05                    |                  | 27.48                            | 0.560                         | 27M9D7D             |
|        | 20+10            | QPSK       | 2 510.0         | 2 564.5           | 23.52                    |                  | 27.95                            | 0.624                         | 27M9G7D             |
|        |                  | 16QAM      |                 |                   | 22.89                    |                  | 27.32                            | 0.540                         | 27M9D7D             |
|        | 15+15            | QPSK       | 2 507.5         | 2 562.5           | 23.31                    |                  | 27.74                            | 0.594                         | 28M5G7D             |
|        |                  | 16QAM      |                 |                   | 22.87                    |                  | 27.30                            | 0.537                         | 28M5D7D             |
|        | 15+10            | QPSK       | 2 507.5         | 2 564.7           | 23.45                    |                  | 27.88                            | 0.614                         | 22M9G7D             |
|        |                  | 16QAM      |                 |                   | 23.11                    |                  | 27.54                            | 0.568                         | 23M0D7D             |
|        | 15+20            | QPSK       | 2 507.8         | 2 560.0           | 23.33                    |                  | 27.76                            | 0.597                         | 32M9G7D             |
|        |                  | 16QAM      |                 |                   | 22.94                    |                  | 27.37                            | 0.546                         | 32M7D7D             |
|        | 20+15            | QPSK       | 2 510.0         | 2 562.2           | 23.34                    |                  | 27.77                            | 0.598                         | 32M6G7D             |
|        |                  | 16QAM      |                 |                   | 23.05                    |                  | 27.48                            | 0.560                         | 32M8D7D             |
|        | 20+20            | QPSK       | 2 510.0         | 2 560.0           | 23.43                    |                  | 27.86                            | 0.611                         | 37M6G7D             |
|        |                  | 16QAM      |                 |                   | 23.02                    |                  | 27.45                            | 0.556                         | 37M7D7D             |
| CA_38C | 15+15            | QPSK       | 2 577.5         | 2 612.5           | 22.73                    | 3.35             | 26.08                            | 0.406                         | 28M7G7D             |
|        |                  | 16QAM      |                 |                   | 22.36                    |                  | 25.71                            | 0.372                         | 28M7D7D             |
|        | 20+20            | QPSK       | 2 580.0         | 2 610.0           | 22.69                    |                  | 26.04                            | 0.402                         | 37M6G7D             |
|        |                  | 16QAM      |                 |                   | 22.33                    |                  | 25.68                            | 0.370                         | 37M8D7D             |

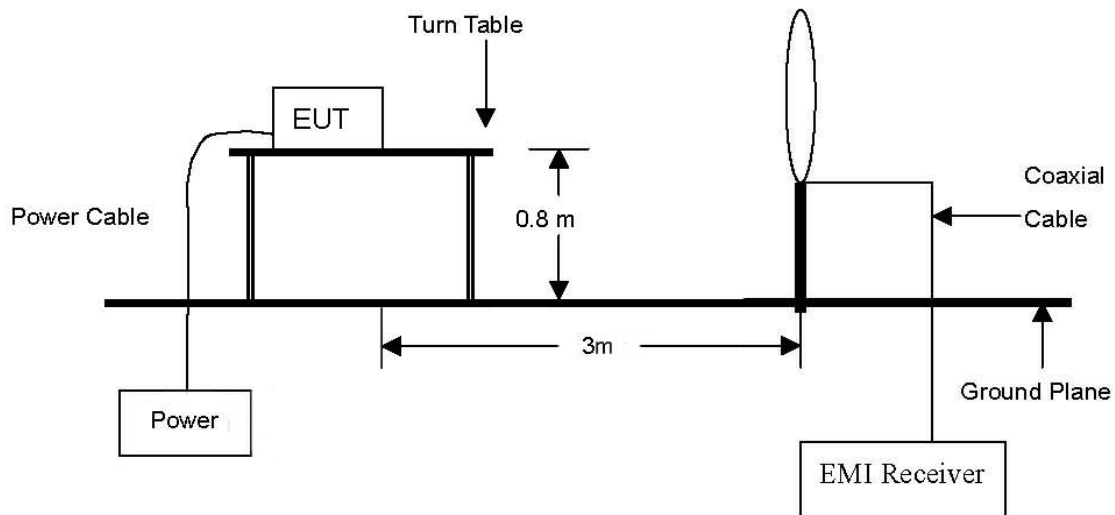
| Band   | Band width (MHz) | Modulation | Low Freq. (MHz) | Upper Freq. (MHz) | Conducted Average (dB m) | Ant. Gain (dB i) | E.R.P. / E.I.R.P. Average (dB m) | E.R.P. / E.I.R.P. Average (W) | Emission Designator |
|--------|------------------|------------|-----------------|-------------------|--------------------------|------------------|----------------------------------|-------------------------------|---------------------|
| CA_41C | 5+20             | QPSK       | 2 499.3         | 2 680.0           | 23.38                    | 4.43             | 27.81                            | 0.604                         | 22M9G7D             |
|        |                  | 16QAM      |                 |                   | 22.45                    |                  | 26.88                            | 0.488                         | 22M8D7D             |
|        | 20+5             | QPSK       | 2 506.0         | 2 686.7           | 23.31                    |                  | 27.74                            | 0.594                         | 22M8G7D             |
|        |                  | 16QAM      |                 |                   | 22.32                    |                  | 26.75                            | 0.473                         | 22M8D7D             |
|        | 10+15            | QPSK       | 2 501.3         | 2 682.5           | 23.13                    |                  | 27.56                            | 0.570                         | 23M1G7D             |
|        |                  | 16QAM      |                 |                   | 22.21                    |                  | 26.64                            | 0.461                         | 23M0D7D             |
|        | 15+10            | QPSK       | 2 503.5         | 2 684.7           | 23.18                    |                  | 27.61                            | 0.577                         | 23M2G7D             |
|        |                  | 16QAM      |                 |                   | 22.15                    |                  | 26.58                            | 0.455                         | 23M1D7D             |
|        | 10+20            | QPSK       | 2 501.5         | 2 680.0           | 23.39                    |                  | 27.82                            | 0.605                         | 28M1G7D             |
|        |                  | 16QAM      |                 |                   | 22.08                    |                  | 26.51                            | 0.448                         | 28M1D7D             |
|        | 20+10            | QPSK       | 2 506.0         | 2 684.5           | 23.23                    |                  | 27.66                            | 0.583                         | 28M1G7D             |
|        |                  | 16QAM      |                 |                   | 22.09                    |                  | 26.52                            | 0.449                         | 28M1D7D             |
|        | 15+15            | QPSK       | 2 503.5         | 2 682.5           | 23.40                    |                  | 27.83                            | 0.607                         | 28M8G7D             |
|        |                  | 16QAM      |                 |                   | 22.05                    |                  | 26.48                            | 0.445                         | 28M6D7D             |
|        | 15+20            | QPSK       | 2 503.8         | 2 680.0           | 23.32                    |                  | 27.75                            | 0.596                         | 32M9G7D             |
|        |                  | 16QAM      |                 |                   | 22.12                    |                  | 26.55                            | 0.452                         | 33M0D7D             |
|        | 20+15            | QPSK       | 2 506.0         | 2 682.2           | 23.21                    |                  | 27.64                            | 0.581                         | 32M9G7D             |
|        |                  | 16QAM      |                 |                   | 22.05                    |                  | 26.48                            | 0.445                         | 33M0D7D             |
|        | 20+20            | QPSK       | 2 506.0         | 2 680.0           | 23.16                    |                  | 27.59                            | 0.574                         | 37M8G7D             |
|        |                  | 16QAM      |                 |                   | 22.45                    |                  | 26.88                            | 0.488                         | 37M7D7D             |

| Band   | Band width (MHz) | Modulation | Low Freq. (MHz) | Upper Freq. (MHz) | Conducted Average (dB m) | Ant. Gain (dB i) | E.R.P. / E.I.R.P. Average (dB m) | E.R.P. / E.I.R.P. Average (W) | Emission Designator |
|--------|------------------|------------|-----------------|-------------------|--------------------------|------------------|----------------------------------|-------------------------------|---------------------|
| CA_66B | 5+5              | QPSK       | 1 712.5         | 1 777.5           | 23.06                    | 4.20             | 27.26                            | 0.532                         | 9M25G7D             |
|        |                  | 16QAM      |                 |                   | 22.67                    |                  | 26.87                            | 0.486                         | 9M25D7D             |
|        | 5+10             | QPSK       | 1 712.8         | 1 775.0           | 22.76                    |                  | 26.96                            | 0.497                         | 13M9G7D             |
|        |                  | 16QAM      |                 |                   | 22.31                    |                  | 26.51                            | 0.448                         | 13M8D7D             |
|        | 10+5             | QPSK       | 1 715.0         | 1 777.2           | 23.11                    |                  | 27.31                            | 0.538                         | 13M9G7D             |
|        |                  | 16QAM      |                 |                   | 22.69                    |                  | 26.89                            | 0.489                         | 14M0D7D             |
|        | 5+15             | QPSK       | 1 713.0         | 1 772.5           | 23.12                    |                  | 27.32                            | 0.540                         | 18M1G7D             |
|        |                  | 16QAM      |                 |                   | 22.71                    |                  | 26.91                            | 0.491                         | 18M1D7D             |
|        | 15+5             | QPSK       | 1 717.5         | 1 777.0           | 23.13                    |                  | 27.33                            | 0.541                         | 18M3G7D             |
|        |                  | 16QAM      |                 |                   | 22.74                    |                  | 26.94                            | 0.494                         | 18M3D7D             |
|        | 10+10            | QPSK       | 1 715.0         | 1 775.0           | 22.98                    |                  | 27.18                            | 0.522                         | 18M7G7D             |
|        |                  | 16QAM      |                 |                   | 22.49                    |                  | 26.69                            | 0.467                         | 18M3D7D             |
| CA_66C | 10+15            | QPSK       | 1 715.3         | 1 772.5           | 22.75                    | 4.20             | 26.95                            | 0.495                         | 23M0G7D             |
|        |                  | 16QAM      |                 |                   | 22.43                    |                  | 26.63                            | 0.460                         | 23M1D7D             |
|        | 15+10            | QPSK       | 1 717.5         | 1 774.7           | 22.56                    |                  | 26.76                            | 0.474                         | 23M0G7D             |
|        |                  | 16QAM      |                 |                   | 22.09                    |                  | 26.29                            | 0.426                         | 23M1D7D             |
|        | 10+20            | QPSK       | 1 715.5         | 1 770.0           | 22.59                    |                  | 26.79                            | 0.478                         | 27M9G7D             |
|        |                  | 16QAM      |                 |                   | 22.34                    |                  | 26.54                            | 0.451                         | 28M0D7D             |
|        | 20+10            | QPSK       | 1 720.0         | 1 774.5           | 23.05                    |                  | 27.25                            | 0.531                         | 28M1G7D             |
|        |                  | 16QAM      |                 |                   | 22.54                    |                  | 26.74                            | 0.472                         | 28M1D7D             |
|        | 15+15            | QPSK       | 1 717.5         | 1 772.5           | 22.73                    |                  | 26.93                            | 0.493                         | 28M6G7D             |
|        |                  | 16QAM      |                 |                   | 22.23                    |                  | 26.43                            | 0.440                         | 28M6D7D             |
|        | 15+20            | QPSK       | 1 717.8         | 1 770.0           | 22.67                    |                  | 26.87                            | 0.486                         | 32M8G7D             |
|        |                  | 16QAM      |                 |                   | 22.32                    |                  | 26.52                            | 0.449                         | 32M9D7D             |
|        | 20+15            | QPSK       | 1 720.0         | 1 772.2           | 22.84                    |                  | 27.04                            | 0.506                         | 33M1G7D             |
|        |                  | 16QAM      |                 |                   | 22.11                    |                  | 26.31                            | 0.428                         | 32M9D7D             |
|        | 20+5             | QPSK       | 1 720.0         | 1 776.7           | 22.80                    |                  | 27.00                            | 0.501                         | 22M8G7D             |
|        |                  | 16QAM      |                 |                   | 22.32                    |                  | 26.52                            | 0.449                         | 22M8D7D             |
|        | 5+20             | QPSK       | 1 713.3         | 1 770.0           | 22.78                    |                  | 26.98                            | 0.499                         | 22M7G7D             |
|        |                  | 16QAM      |                 |                   | 22.32                    |                  | 26.52                            | 0.449                         | 22M8D7D             |
|        | 20+20            | QPSK       | 1 720.0         | 1 770.0           | 22.79                    |                  | 26.99                            | 0.500                         | 37M9G7D             |
|        |                  | 16QAM      |                 |                   | 22.31                    |                  | 26.51                            | 0.448                         | 37M6D7D             |

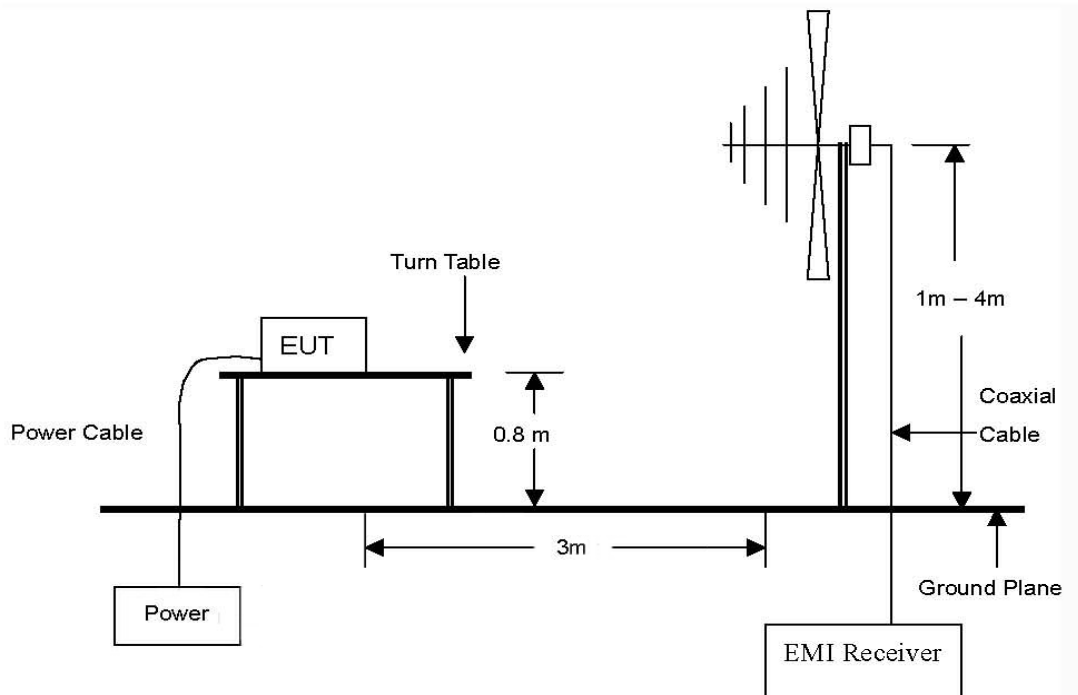
## 2. E.R.P. / E.I.R.P. & Radiated Spurious Emissions

### 2.1. Test setup

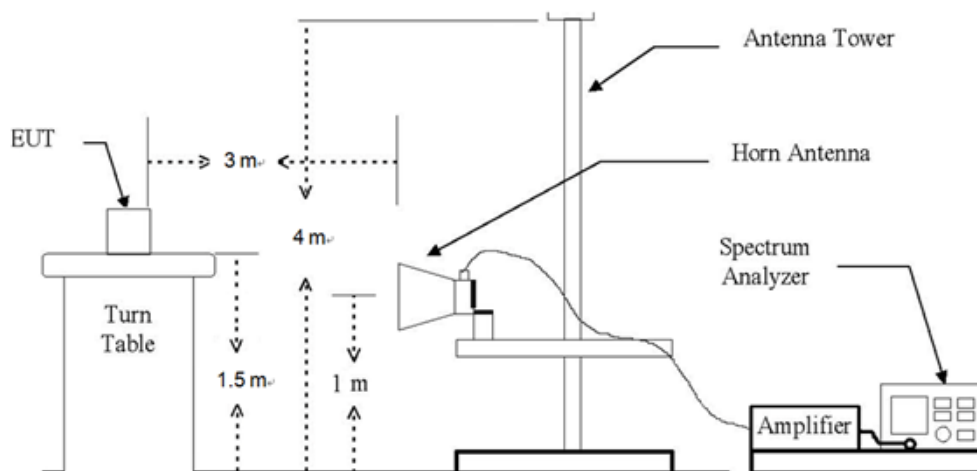
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz.



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to 26 GHz Emissions.



## 2.2. Limit

### 2.2.1. Limit of E.R.P. / E.I.R.P.

- §22.913(a)(5), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.
- §24.232(c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.
- §27.50(d)(4), fixed, mobile, and portable (hand-held) stations operating in the 1 710-1 755 MHz band and mobile and portable stations operating in the 1 695-1 710 MHz and 1 755-1 780 MHz bands are limited to 1 watt EIRP.
- §27.50(h)(2), Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.
- §90.635(b), the maximum output power of the transmitter for mobile stations is 100 watts (20 dBW).

### 2.2.2. Limit of Spurious Radiated Emission

- §22.917(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10\log(P)$  dB.
- §24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.
- §27.53(h)(1), for operations in the 1 695-1 710 MHz, 1 710-1 755 MHz, 1 755-1 780 MHz, 1 915-1 920 MHz, 1 995-2 000 MHz, 2 000-2 020 MHz, 2 110-2 155 MHz, 2 155-2 180 MHz, and 2 180-2 200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10} (P)$  dB.
- §27.53(m)(4), for mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log_{10} (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log_{10} (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log_{10} (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10 \log_{10} (P)$  dB on all frequencies between 2 490.5 MHz and 2 496 MHz and  $55 + 10 \log_{10} (P)$  dB at or below 2 490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2 495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
- §90.691(a), out-of-band emission requirement shall apply only to the "outer" channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:
  - (1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $116 \log_{10} (f / 6.1)$  decibels or  $50 + 10 \log_{10} (P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.
  - (2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10} (P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

## 2.3. Test Procedure

### 2.3.1. E.R.P. or E.I.R.P. from conducted RF output power

According to subclause 5.2.5.5 of ANSI C63.26-2015 E.R.P. and E.I.R.P. are defined as the product of the power supplied to the antenna and its gain.

The relevant equation for determining the E.R.P. or E.I.R.P. from the conducted RF output power measured using the guidance provided above is:

$$\text{E.R.P. or E.I.R.P.} = P_{\text{Meas}} + G_T$$

where:

E.R.P. or E.I.R.P. = effective radiated power or equivalent isotropically radiated power, respectively  
(expressed in the same units as  $P_{\text{Meas}}$ , typically dBW or dBm);

$P_{\text{Meas}}$  = measured transmitter output power or PSD, in dBm or dBW;

$G_T$  = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

### 2.3.2. Radiated Spurious Emissions

The test based on ANSI/TIA 603E: 2016 and ANSI C63.26-2015 and KDB 971168 D01 Power Meas License Digital Systems v03r01.

1. On a test site, the EUT shall be placed at 0.8 m or 1.5 m height on a turn table, and in the position close to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3 m from EUT to correspond to the fundamental frequency of the transmitter.
3. The output of the test antenna shall be connected to the measuring receiver and the peak detector is used for the measurement.
4. Radiated spurious emissions measurement method was set as follows:  
RBW = 100 kHz for emissions below 1 GHz and 1 MHz for emissions above 1 GHz, VBW  $\geq 3 \times$  RBW,  
Detector = RMS, trace mode = max hold, per the guidelines of KDB 971168 D01 Power Meas License Digital Systems v03r01.
5. The transmitter shall be switched on, the measuring receiver shall be tuned to the frequency of the transmitter under test.
6. The test antenna shall be raised and lowered through the specified range of height until the maximum signal level is detected by the measuring receiver.
7. The transmitter shall be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
8. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.
9. The maximum signal level detected by the measuring receiver shall be noted.
10. In necessary, the input attenuator setting on the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
11. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
12. The measurement shall be repeated with the test antenna orientated for horizontal polarization.

## 2.4. Test results

Ambient temperature : (23 ± 1) °C  
Relative humidity : 47 % R.H.

### 2.4.1. E.R.P. / E.I.R.P.

| Band | Frequency (MHz) | Maximum Conducted Power (dB m) | Maximum Conducted Power (W) | Antenna Gain (dB i) | Maximum E.I.R.P. (dB m) | Maximum E.I.R.P. (W) | Maximum E.R.P. (dB m) | Maximum E.R.P. (W) | Limit        |
|------|-----------------|--------------------------------|-----------------------------|---------------------|-------------------------|----------------------|-----------------------|--------------------|--------------|
| 5B   | 824 ~ 849       | 23.21                          | 0.209                       | 1.99                | 25.20                   | 0.331                | 23.05                 | 0.202              | 7 W E.R.P.   |
| 7C   | 2 500 ~ 2 570   | 23.52                          | 0.225                       | 4.43                | 27.95                   | 0.624                |                       |                    | 2 W E.I.R.P. |
| 38C  | 2 570 ~ 2 620   | 22.73                          | 0.187                       | 3.35                | 26.08                   | 0.406                |                       |                    | 2 W E.I.R.P. |
| 41C  | 2 496 ~ 2 690   | 23.40                          | 0.219                       | 4.43                | 27.83                   | 0.607                |                       |                    | 2 W E.I.R.P. |
| 66B  | 1 710 ~ 1 755   | 23.13                          | 0.206                       | 4.20                | 27.33                   | 0.541                |                       |                    | 1 W E.I.R.P. |
| 66C  | 1 710 ~ 1 755   | 23.05                          | 0.202                       | 4.20                | 27.25                   | 0.531                |                       |                    | 1 W E.I.R.P. |

#### Remark;

1. E.I.R.P. (dB m) = Maximum Conducted Power (dB m) + Antenna Gain (dB i)
2. E.R.P. (dB m) = E.I.R.P. (dB m) - 2.15 (dB); where E.R.P. and E.I.R.P. are expressed in consistent units.

## 2.4.2. Radiated spurious emissions

### Intra-Band

#### ULCA\_5B

| Frequency (MHz)                                               | Measured Level (dB $\mu$ V) | Ant. Pol. | AF (dB/m) | AMP+CL (dB) | E (dB $\mu$ V/m) | CF (dB) | E.R.P. (dB m) | Limit (dB m) | Margin (dB) |
|---------------------------------------------------------------|-----------------------------|-----------|-----------|-------------|------------------|---------|---------------|--------------|-------------|
| PCC 10 MHz + SCC 5 MHz_Low Channel (829.0 MHz + 836.2 MHz)    |                             |           |           |             |                  |         |               |              |             |
| 1 666.85                                                      | 52.43                       | H         | 26.10     | -36.32      | 42.21            | -97.41  | -55.21        | -13          | 42.21       |
| 1 666.63                                                      | 57.25                       | V         | 26.10     | -36.33      | 47.02            | -97.41  | -50.39        | -13          | 37.39       |
| 2 500.40                                                      | 72.97                       | H         | 28.40     | -34.40      | 66.97            | -97.41  | -30.44        | -13          | 17.44       |
| 2 500.10                                                      | 77.92                       | V         | 28.40     | -34.40      | 71.92            | -97.41  | <b>-25.50</b> | -13          | 12.50       |
| 4 167.00                                                      | 55.41                       | H         | 32.10     | -31.06      | 56.45            | -97.41  | -40.96        | -13          | 27.96       |
| 4 167.08                                                      | 59.01                       | V         | 32.10     | -31.06      | 60.05            | -97.41  | -37.36        | -13          | 24.36       |
| 5 833.98                                                      | 49.92                       | H         | 34.37     | -28.83      | 55.46            | -97.41  | -41.95        | -13          | 28.95       |
| 5 833.80                                                      | 53.90                       | V         | 34.37     | -28.83      | 59.44            | -97.41  | -37.97        | -13          | 24.97       |
| Above 5 900.00                                                | Not detected                | -         | -         | -           | -                | -       | -             | -            | -           |
| PCC 10 MHz + SCC 5 MHz_Middle Channel (834.0 MHz + 841.2 MHz) |                             |           |           |             |                  |         |               |              |             |
| 1 676.83                                                      | 50.68                       | H         | 26.28     | -36.19      | 40.77            | -97.41  | -56.64        | -13          | 43.64       |
| 1 676.82                                                      | 55.17                       | V         | 26.28     | -36.19      | 45.26            | -97.41  | -52.15        | -13          | 39.15       |
| 2 515.40                                                      | 68.41                       | H         | 28.46     | -34.35      | 62.52            | -97.41  | -34.89        | -13          | 21.89       |
| 2 515.26                                                      | 68.42                       | V         | 28.46     | -34.35      | 62.53            | -97.41  | -34.89        | -13          | 21.89       |
| 4 192.12                                                      | 52.96                       | H         | 32.10     | -31.20      | 53.86            | -97.41  | -43.55        | -13          | 30.55       |
| 4 192.10                                                      | 58.97                       | V         | 32.10     | -31.20      | 59.87            | -97.41  | -37.54        | -13          | 24.54       |
| 5 868.86                                                      | 48.94                       | H         | 34.48     | -28.60      | 54.82            | -97.41  | -42.59        | -13          | 29.59       |
| 5 869.04                                                      | 52.38                       | V         | 34.48     | -28.60      | 58.26            | -97.41  | -39.15        | -13          | 26.15       |
| Above 5 900.00                                                | Not detected                | -         | -         | -           | -                | -       | -             | -            | -           |
| PCC 10 MHz + SCC 5 MHz_High Channel (839.0 MHz + 846.2 MHz)   |                             |           |           |             |                  |         |               |              |             |
| 1 686.85                                                      | 50.68                       | H         | 26.46     | -36.23      | 40.91            | -97.41  | -56.50        | -13          | 43.50       |
| 1 686.78                                                      | 55.17                       | V         | 26.46     | -36.23      | 45.40            | -97.41  | -52.01        | -13          | 39.01       |
| 2 530.34                                                      | 68.41                       | H         | 28.52     | -34.18      | 62.75            | -97.41  | -34.66        | -13          | 21.66       |
| 2 530.18                                                      | 68.42                       | V         | 28.52     | -34.19      | 62.75            | -97.41  | -34.67        | -13          | 21.67       |
| 4 216.88                                                      | 49.10                       | H         | 32.10     | -29.53      | 51.67            | -97.41  | -45.74        | -13          | 32.74       |
| 4 217.04                                                      | 54.72                       | V         | 32.10     | -29.51      | 57.31            | -97.41  | -40.10        | -13          | 27.10       |
| 5 903.80                                                      | 47.13                       | H         | 34.60     | -26.73      | 55.00            | -97.41  | -42.41        | -13          | 29.41       |
| 5 903.86                                                      | 49.17                       | V         | 34.60     | -26.73      | 57.04            | -97.41  | -40.37        | -13          | 27.37       |
| Above 6 000.00                                                | Not detected                | -         | -         | -           | -                | -       | -             | -            | -           |

**ULCA\_7C**

| Frequency<br>(MHz)                                                 | Measured<br>Level<br>(dBμV) | Ant.<br>Pol. | AF<br>(dB/m) | AMP+CL<br>(dB) | E<br>(dBμV/m) | CF<br>(dB) | E.I.R.P.<br>(dB m) | Limit<br>(dB m) | Margin<br>(dB) |
|--------------------------------------------------------------------|-----------------------------|--------------|--------------|----------------|---------------|------------|--------------------|-----------------|----------------|
| PCC 20 MHz + SCC 10 MHz_Low Channel (2 510.0 MHz + 2 524.4 MHz)    |                             |              |              |                |               |            |                    |                 |                |
| 5 037.48                                                           | 51.58                       | V            | 33.40        | -28.59         | 56.39         | -95.26     | -38.87             | -25             | 13.87          |
| 7 556.66                                                           | 42.54                       | V            | 36.00        | -27.05         | 51.49         | -95.26     | -43.77             | -25             | 18.77          |
| Above<br>7 600.00                                                  | Not<br>detected             | -            | -            | -              | -             | -          | -                  | -               | -              |
| PCC 20 MHz + SCC 10 MHz_Middle Channel (2 530.1 MHz + 2 544.5 MHz) |                             |              |              |                |               |            |                    |                 |                |
| 5 077.90                                                           | 54.55                       | V            | 33.46        | -29.93         | 58.08         | -95.26     | <b>-37.18</b>      | -25             | 12.18          |
| 7 617.05                                                           | 42.96                       | V            | 36.00        | -27.56         | 51.40         | -95.26     | -43.86             | -25             | 18.86          |
| Above<br>7 700.00                                                  | Not<br>detected             | -            | -            | -              | -             | -          | -                  | -               | -              |
| PCC 20 MHz + SCC 10 MHz_High Channel (2 550.1 MHz + 2 564.5 MHz)   |                             |              |              |                |               |            |                    |                 |                |
| 5 118.20                                                           | 52.39                       | V            | 33.54        | -29.96         | 55.97         | -95.26     | -39.29             | -25             | 14.29          |
| 7 676.95                                                           | 38.85                       | V            | 35.95        | -26.46         | 48.34         | -95.26     | -46.93             | -25             | 21.93          |
| Above<br>7 700.00                                                  | Not<br>detected             | -            | -            | -              | -             | -          | -                  | -               | -              |

**ULCA\_38C**

| Frequency<br>(MHz)                                                 | Measured<br>Level<br>(dB $\mu$ V) | Ant.<br>Pol. | AF<br>(dB/m) | AMP+CL<br>(dB) | E<br>(dB $\mu$ V/m) | CF<br>(dB) | E.R.P.<br>(dB m) | Limit<br>(dB m) | Margin<br>(dB) |
|--------------------------------------------------------------------|-----------------------------------|--------------|--------------|----------------|---------------------|------------|------------------|-----------------|----------------|
| PCC 15 MHz + SCC 15 MHz_Low Channel (2 577.5 MHz + 2 592.5 MHz)    |                                   |              |              |                |                     |            |                  |                 |                |
| Below<br>1 000.00                                                  | Not<br>detected                   | -            | -            | -              | -                   | -          | -                | -               | -              |
| Above<br>1 000.00                                                  | Not<br>detected                   | -            | -            | -              | -                   | -          | -                | -               | -              |
| PCC 15 MHz + SCC 15 MHz_Middle Channel (2 587.5 MHz + 2 602.5 MHz) |                                   |              |              |                |                     |            |                  |                 |                |
| Below<br>1 000.00                                                  | Not<br>detected                   | -            | -            | -              | -                   | -          | -                | -               | -              |
| Above<br>1 000.00                                                  | Not<br>detected                   | -            | -            | -              | -                   | -          | -                | -               | -              |
| PCC 15 MHz + SCC 15 MHz_High Channel (2 597.5 MHz + 2 612.5 MHz)   |                                   |              |              |                |                     |            |                  |                 |                |
| Below<br>1 000.00                                                  | Not<br>detected                   | -            | -            | -              | -                   | -          | -                | -               | -              |
| Above<br>1 000.00                                                  | Not<br>detected                   | -            | -            | -              | -                   | -          | -                | -               | -              |

**ULCA\_41C**

| Frequency<br>(MHz)                                                 | Measured<br>Level<br>(dBμV) | Ant.<br>Pol. | AF<br>(dB/m) | AMP+CL<br>(dB) | E<br>(dBμV/m) | CF<br>(dB) | E.I.R.P.<br>(dB m) | Limit<br>(dB m) | Margin<br>(dB) |
|--------------------------------------------------------------------|-----------------------------|--------------|--------------|----------------|---------------|------------|--------------------|-----------------|----------------|
| PCC 15 MHz + SCC 15 MHz_Low Channel (2 503.5 MHz + 2 518.5 MHz)    |                             |              |              |                |               |            |                    |                 |                |
| 5 020.44                                                           | 36.74                       | V            | 33.40        | -28.82         | 41.32         | -95.26     | -53.94             | -25             | 28.94          |
| 7 530.52                                                           | 39.13                       | H            | 36.04        | -27.41         | 47.76         | -95.26     | -47.50             | -25             | 22.50          |
| 7 530.16                                                           | 44.23                       | V            | 36.04        | -27.42         | 52.85         | -95.26     | -42.41             | -25             | 17.41          |
| Above<br>7 600.00                                                  | Not<br>detected             | -            | -            | -              | -             | -          | -                  | -               | -              |
| PCC 15 MHz + SCC 15 MHz_Middle Channel (2 585.5 MHz + 2 600.5 MHz) |                             |              |              |                |               |            |                    |                 |                |
| 5 184.20                                                           | 38.42                       | V            | 33.67        | -29.47         | 42.62         | -95.26     | -52.64             | -25             | 27.64          |
| 7 773.12                                                           | 34.65                       | H            | 36.00        | -26.30         | 44.35         | -95.26     | -50.91             | -25             | 25.91          |
| 7 776.34                                                           | 39.08                       | V            | 36.00        | -26.16         | 48.92         | -95.26     | -46.34             | -25             | 21.34          |
| Above<br>7 800.00                                                  | Not<br>detected             | -            | -            | -              | -             | -          | -                  | -               | -              |
| PCC 15 MHz + SCC 15 MHz_High Channel (2 667.5 MHz + 2 682.5 MHz)   |                             |              |              |                |               |            |                    |                 |                |
| 5 348.20                                                           | 40.48                       | V            | 34.00        | -28.65         | 45.83         | -95.26     | -49.43             | -25             | 24.43          |
| 8 022.42                                                           | 43.24                       | H            | 36.20        | -26.76         | 52.68         | -95.26     | -42.58             | -25             | 17.58          |
| 8 022.64                                                           | 47.82                       | V            | 36.20        | -26.75         | 57.27         | -95.26     | <b>-37.99</b>      | -25             | 12.99          |
| Above<br>8 100.00                                                  | Not<br>detected             | -            | -            | -              | -             | -          | -                  | -               | -              |

**ULCA\_66B**

| Frequency<br>(MHz)                                                 | Measured<br>Level<br>(dBμV) | Ant.<br>Pol. | AF<br>(dB/m) | AMP+CL<br>(dB) | E<br>(dBμV/m) | CF<br>(dB) | E.I.R.P.<br>(dB m)   | Limit<br>(dB m) | Margin<br>(dB) |
|--------------------------------------------------------------------|-----------------------------|--------------|--------------|----------------|---------------|------------|----------------------|-----------------|----------------|
| PCC 15 MHz + SCC 5 MHz_ Low Channel (1 717.5 MHz + 1 726.8 MHz)    |                             |              |              |                |               |            |                      |                 |                |
| 5 172.68                                                           | 39.06                       | V            | 33.65        | -29.26         | 43.45         | -95.26     | -51.81               | -13             | 38.81          |
| Above<br>5 200.00                                                  | Not<br>detected             | -            | -            | -              | -             | -          | -                    | -               | -              |
| PCC 15 MHz + SCC 5 MHz_ Middle Channel (1 752.6 MHz + 1 761.9 MHz) |                             |              |              |                |               |            |                      |                 |                |
| 5 277.99                                                           | 44.17                       | V            | 33.91        | -29.08         | 49.00         | -95.26     | -46.26               | -13             | 33.26          |
| Above<br>5 300.00                                                  | Not<br>detected             | -            | -            | -              | -             | -          | -                    | -               | -              |
| PCC 15 MHz + SCC 5 MHz_ High Channel (1 767.7 MHz + 1 777.0 MHz)   |                             |              |              |                |               |            |                      |                 |                |
| 5 323.00                                                           | 49.11                       | V            | 34.00        | -28.56         | 54.55         | -95.26     | <b><u>-40.71</u></b> | -13             | 27.71          |
| Above<br>5 400.00                                                  | Not<br>detected             | -            | -            | -              | -             | -          | -                    | -               | -              |

**ULCA 66C**

| Frequency<br>(MHz)                                                  | Measured<br>Level<br>(dB $\mu$ V) | Ant.<br>Pol. | AF<br>(dB/m) | AMP+CL<br>(dB) | E<br>(dB $\mu$ V/m) | CF<br>(dB) | E.I.R.P.<br>(dB m) | Limit<br>(dB m) | Margin<br>(dB) |
|---------------------------------------------------------------------|-----------------------------------|--------------|--------------|----------------|---------------------|------------|--------------------|-----------------|----------------|
| PCC 20 MHz + SCC 10 MHz_ Low Channel (1 720.0 MHz + 1 734.4 MHz)    |                                   |              |              |                |                     |            |                    |                 |                |
| Below<br>1 000.00                                                   | Not<br>detected                   | -            | -            | -              | -                   | -          | -                  | -               | -              |
| Above<br>1 000.00                                                   | Not<br>detected                   | -            | -            | -              | -                   | -          | -                  | -               | -              |
| PCC 20 MHz + SCC 10 MHz_ Middle Channel (1 750.1 MHz + 1 764.5 MHz) |                                   |              |              |                |                     |            |                    |                 |                |
| Below<br>1 000.00                                                   | Not<br>detected                   | -            | -            | -              | -                   | -          | -                  | -               | -              |
| Above<br>1 000.00                                                   | Not<br>detected                   | -            | -            | -              | -                   | -          | -                  | -               | -              |
| PCC 20 MHz + SCC 10 MHz_ High Channel (1 760.1 MHz + 1 774.5 MHz)   |                                   |              |              |                |                     |            |                    |                 |                |
| Below<br>1 000.00                                                   | Not<br>detected                   | -            | -            | -              | -                   | -          | -                  | -               | -              |
| Above<br>1 000.00                                                   | Not<br>detected                   | -            | -            | -              | -                   | -          | -                  | -               | -              |

**Inter-Band  
ULCA\_2A-5A**

| Frequency<br>(MHz)                                                | Measured<br>Level<br>(dB $\mu$ V) | Ant.<br>Pol. | AF<br>(dB/m) | AMP+CL<br>(dB) | E<br>(dB $\mu$ V/m) | CF<br>(dB) | E.I.R.P.<br>(dB m) | Limit<br>(dB m) | Margin<br>(dB) |
|-------------------------------------------------------------------|-----------------------------------|--------------|--------------|----------------|---------------------|------------|--------------------|-----------------|----------------|
| PCC 20 MHz + SCC 10 MHz_ Low Channel (1 860.0 MHz + 829.0 MHz)    |                                   |              |              |                |                     |            |                    |                 |                |
| 3 533.01                                                          | 54.00                             | V            | 31.17        | -32.53         | 52.64               | -95.26     | <b>-42.63</b>      | -13             | 29.63          |
| 4 562.25                                                          | 45.66                             | V            | 32.00        | -29.96         | 47.70               | -95.26     | -47.56             | -13             | 34.56          |
| 5 606.63                                                          | 44.10                             | H            | 34.10        | -27.40         | 50.80               | -95.26     | -44.46             | -13             | 31.46          |
| 5 606.90                                                          | 44.32                             | V            | 34.10        | -27.36         | 51.06               | -95.26     | -44.20             | -13             | 31.20          |
| Above<br>5 700.00                                                 | Not<br>detected                   | -            | -            | -              | -                   | -          | -                  | -               | -              |
| PCC 20 MHz + SCC 10 MHz_ Middle Channel (1 880.0 MHz + 836.5 MHz) |                                   |              |              |                |                     |            |                    |                 |                |
| 3 552.95                                                          | 51.72                             | V            | 31.21        | -32.45         | 50.48               | -95.26     | -44.78             | -13             | 31.78          |
| 4 609.96                                                          | 45.53                             | V            | 32.02        | -29.72         | 47.83               | -95.26     | -47.43             | -13             | 34.43          |
| 5 666.78                                                          | 42.09                             | H            | 34.10        | -29.07         | 47.12               | -95.26     | -48.14             | -13             | 35.14          |
| 5 666.81                                                          | 40.69                             | V            | 34.10        | -29.07         | 45.72               | -95.26     | -49.55             | -13             | 36.55          |
| Above<br>5 700.00                                                 | Not<br>detected                   | -            | -            | -              | -                   | -          | -                  | -               | -              |
| PCC 20 MHz + SCC 10 MHz_ High Channel (1 900.0 MHz + 844.0 MHz)   |                                   |              |              |                |                     |            |                    |                 |                |
| 3 573.20                                                          | 48.68                             | V            | 31.29        | -31.69         | 48.28               | -95.26     | -46.98             | -13             | 33.98          |
| 4 657.26                                                          | 44.69                             | V            | 32.13        | -30.09         | 46.73               | -95.26     | -48.53             | -13             | 35.53          |
| 5 726.91                                                          | 39.86                             | H            | 34.15        | -28.77         | 45.24               | -95.26     | -50.02             | -13             | 37.02          |
| 5 726.90                                                          | 39.29                             | V            | 34.15        | -28.77         | 44.67               | -95.26     | -50.60             | -13             | 37.60          |
| Above<br>5 800.00                                                 | Not<br>detected                   | -            | -            | -              | -                   | -          | -                  | -               | -              |

**ULCA\_4A-5A**

| Frequency<br>(MHz)                                                | Measured<br>Level<br>(dBμV) | Ant.<br>Pol. | AF<br>(dB/m) | AMP+CL<br>(dB) | E<br>(dBμV/m) | CF<br>(dB) | E.I.R.P.<br>(dB m) | Limit<br>(dB m) | Margin<br>(dB) |
|-------------------------------------------------------------------|-----------------------------|--------------|--------------|----------------|---------------|------------|--------------------|-----------------|----------------|
| PCC 20 MHz + SCC 10 MHz_ Low Channel (1 720.0 MHz + 829.0 MHz)    |                             |              |              |                |               |            |                    |                 |                |
| 3 360.07                                                          | 50.32                       | H            | 31.00        | -32.75         | 48.57         | -95.26     | -46.69             | -13             | 33.69          |
| 3 360.23                                                          | 50.60                       | V            | 31.00        | -32.76         | 48.84         | -95.26     | -46.42             | -13             | 33.42          |
| 4 246.64                                                          | 45.94                       | H            | 32.10        | -30.11         | 47.93         | -95.26     | -47.33             | -13             | 34.33          |
| 4 246.92                                                          | 47.86                       | V            | 32.10        | -30.13         | 49.83         | -95.26     | -45.43             | -13             | 32.43          |
| 5 133.41                                                          | 40.94                       | V            | 33.57        | -29.87         | 44.64         | -95.26     | -50.62             | -13             | 37.62          |
| Above<br>5 200.00                                                 | Not<br>detected             | -            | -            | -              | -             | -          | -                  | -               | -              |
| PCC 20 MHz + SCC 10 MHz_ Middle Channel (1 732.5 MHz + 836.5 MHz) |                             |              |              |                |               |            |                    |                 |                |
| 3 387.78                                                          | 51.35                       | H            | 31.00        | -32.48         | 49.87         | -95.26     | -45.39             | -13             | 32.39          |
| 3 387.79                                                          | 53.33                       | V            | 31.00        | -32.48         | 51.85         | -95.26     | -43.41             | -13             | 30.41          |
| 4 279.28                                                          | 53.75                       | H            | 32.10        | -30.78         | 55.07         | -95.26     | -40.19             | -13             | 27.19          |
| 4 279.33                                                          | 54.61                       | V            | 32.10        | -30.78         | 55.93         | -95.26     | <b>-39.33</b>      | -13             | 26.33          |
| 5 170.74                                                          | 42.36                       | V            | 33.64        | -29.30         | 46.70         | -95.26     | -48.56             | -13             | 35.56          |
| Above<br>5 200.00                                                 | Not<br>detected             | -            | -            | -              | -             | -          | -                  | -               | -              |
| PCC 20 MHz + SCC 10 MHz_ High Channel (1 745.0 MHz + 844.0 MHz)   |                             |              |              |                |               |            |                    |                 |                |
| 3 415.38                                                          | 52.30                       | H            | 31.00        | -31.60         | 51.70         | -95.26     | -43.56             | -13             | 30.56          |
| 3 415.38                                                          | 53.82                       | V            | 31.00        | -31.60         | 53.22         | -95.26     | -42.04             | -13             | 29.04          |
| 4 311.85                                                          | 56.15                       | H            | 32.10        | -30.69         | 57.56         | -95.26     | -37.70             | -13             | 24.70          |
| 4 311.80                                                          | 53.87                       | V            | 32.10        | -30.69         | 55.28         | -95.26     | -39.99             | -13             | 26.99          |
| 5 207.99                                                          | 41.12                       | V            | 33.72        | -30.00         | 44.84         | -95.26     | -50.42             | -13             | 37.42          |
| Above<br>5 300.00                                                 | Not<br>detected             | -            | -            | -              | -             | -          | -                  | -               | -              |

**ULCA\_5A-7A**

| Frequency<br>(MHz)                                                | Measured<br>Level<br>(dBμV) | Ant.<br>Pol. | AF<br>(dB/m) | AMP+CL<br>(dB) | E<br>(dBμV/m) | CF<br>(dB) | E.I.R.P.<br>(dB m) | Limit<br>(dB m) | Margin<br>(dB) |
|-------------------------------------------------------------------|-----------------------------|--------------|--------------|----------------|---------------|------------|--------------------|-----------------|----------------|
| PCC 10 MHz + SCC 20 MHz_ Low Channel (829.0 MHz + 2 510.0 MHz)    |                             |              |              |                |               |            |                    |                 |                |
| 4 212.99                                                          | 56.58                       | V            | 32.10        | -29.91         | 58.77         | -95.26     | <b>-36.49</b>      | -25             | 11.49          |
| 5 907.64                                                          | 46.75                       | H            | 34.60        | -26.88         | 54.47         | -95.26     | -40.80             | -25             | 15.80          |
| 5 907.60                                                          | 47.66                       | V            | 34.60        | -26.88         | 55.38         | -95.26     | -39.88             | -25             | 14.88          |
| Above<br>6 000.00                                                 | Not<br>detected             | -            | -            | -              | -             | -          | -                  | -               | -              |
| PCC 10 MHz + SCC 20 MHz_ Middle Channel (836.5 MHz + 2 535.0 MHz) |                             |              |              |                |               |            |                    |                 |                |
| 4 255.80                                                          | 56.14                       | V            | 32.10        | -30.44         | 57.80         | -95.26     | -37.46             | -25             | 12.46          |
| 5 919.95                                                          | 49.13                       | H            | 34.60        | -27.39         | 56.34         | -95.26     | -38.92             | -25             | 13.92          |
| 5 967.81                                                          | 48.93                       | V            | 34.64        | -28.49         | 55.08         | -95.26     | -40.18             | -25             | 15.18          |
| Above<br>6 000.00                                                 | Not<br>detected             | -            | -            | -              | -             | -          | -                  | -               | -              |
| PCC 10 MHz + SCC 20 MHz_ High Channel (844.0 MHz + 2 560.0 MHz)   |                             |              |              |                |               |            |                    |                 |                |
| 4 298.07                                                          | 54.63                       | V            | 32.10        | -30.61         | 56.12         | -95.26     | -39.14             | -25             | 14.14          |
| 5 977.40                                                          | 42.48                       | H            | 34.65        | -28.97         | 48.16         | -95.26     | -47.10             | -25             | 22.10          |
| 5 977.36                                                          | 50.44                       | V            | 34.65        | -28.97         | 56.12         | -95.26     | -39.14             | -25             | 14.14          |
| Above<br>6 000.00                                                 | Not<br>detected             | -            | -            | -              | -             | -          | -                  | -               | -              |

**ULCA\_5A-25A**

| Frequency<br>(MHz)                                                | Measured<br>Level<br>(dBμV) | Ant.<br>Pol. | AF<br>(dB/m) | AMP+CL<br>(dB) | E<br>(dBμV/m) | CF<br>(dB) | E.I.R.P.<br>(dB m) | Limit<br>(dB m) | Margin<br>(dB) |
|-------------------------------------------------------------------|-----------------------------|--------------|--------------|----------------|---------------|------------|--------------------|-----------------|----------------|
| PCC 10 MHz + SCC 20 MHz_ Low Channel (829.0 MHz + 1 860.0 MHz)    |                             |              |              |                |               |            |                    |                 |                |
| 3 078.60                                                          | 53.60                       | H            | 30.16        | -32.82         | 50.94         | -95.26     | -44.33             | -13             | 31.33          |
| 3 078.53                                                          | 57.15                       | V            | 30.16        | -32.82         | 54.49         | -95.26     | -40.77             | -13             | 27.77          |
| 3 518.05                                                          | 57.08                       | H            | 31.14        | -32.51         | 55.71         | -95.26     | -39.56             | -13             | 26.56          |
| 3 517.96                                                          | 69.85                       | V            | 31.14        | -32.51         | 68.48         | -95.26     | <b>-26.78</b>      | -13             | 13.78          |
| 4 122.91                                                          | 61.92                       | H            | 32.10        | -29.31         | 64.71         | -95.26     | -30.55             | -13             | 17.55          |
| 4 123.12                                                          | 63.72                       | V            | 32.10        | -29.32         | 66.50         | -95.26     | -28.76             | -13             | 15.76          |
| 4 562.26                                                          | 51.31                       | V            | 32.00        | -29.96         | 53.35         | -95.26     | -41.91             | -13             | 28.91          |
| 5 167.38                                                          | 48.81                       | V            | 33.63        | -29.38         | 53.06         | -95.26     | -42.21             | -13             | 29.21          |
| 5 772.06                                                          | 50.42                       | H            | 34.24        | -28.84         | 55.82         | -95.26     | -39.44             | -13             | 26.44          |
| 6 816.36                                                          | 48.08                       | V            | 35.43        | -27.30         | 56.21         | -95.26     | -39.05             | -13             | 26.05          |
| 7 421.34                                                          | 41.37                       | V            | 36.26        | -27.72         | 49.91         | -95.26     | -45.35             | -13             | 32.35          |
| 8 026.02                                                          | 37.60                       | V            | 36.20        | -26.70         | 47.10         | -95.26     | -48.16             | -13             | 35.16          |
| 8 465.66                                                          | 40.48                       | V            | 36.40        | -27.57         | 49.31         | -95.26     | -45.95             | -13             | 32.95          |
| Above<br>8 500.00                                                 | Not<br>detected             | -            | -            | -              | -             | -          | -                  | -               | -              |
| PCC 10 MHz + SCC 20 MHz_ Middle Channel (836.5 MHz + 1 882.5 MHz) |                             |              |              |                |               |            |                    |                 |                |
| 3 100.94                                                          | 53.92                       | H            | 30.20        | -31.84         | 52.28         | -95.26     | -42.98             | -13             | 29.98          |
| 3 101.22                                                          | 58.52                       | V            | 30.20        | -31.84         | 56.88         | -95.26     | -38.38             | -13             | 25.38          |
| 3 555.70                                                          | 61.04                       | H            | 31.22        | -32.34         | 59.92         | -95.26     | -35.34             | -13             | 22.34          |
| 3 555.68                                                          | 68.00                       | V            | 31.22        | -32.34         | 66.88         | -95.26     | -28.38             | -13             | 15.38          |
| 4 160.36                                                          | 63.78                       | H            | 32.10        | -30.87         | 65.01         | -95.26     | -30.26             | -13             | 17.26          |
| 4 160.42                                                          | 65.48                       | V            | 32.10        | -30.87         | 66.71         | -95.26     | -28.55             | -13             | 15.55          |
| 4 614.96                                                          | 48.25                       | V            | 32.03        | -29.43         | 50.85         | -95.26     | -44.41             | -13             | 31.41          |
| 5 219.62                                                          | 47.92                       | V            | 33.74        | -30.09         | 51.57         | -95.26     | -43.69             | -13             | 30.69          |
| 5 824.62                                                          | 52.37                       | H            | 34.35        | -28.78         | 57.94         | -95.26     | -37.32             | -13             | 24.32          |
| 6 884.25                                                          | 48.20                       | V            | 35.50        | -27.24         | 56.46         | -95.26     | -38.80             | -13             | 25.80          |
| 7 488.84                                                          | 43.71                       | V            | 36.12        | -27.59         | 52.24         | -95.26     | -43.02             | -13             | 30.02          |
| 8 093.48                                                          | 40.24                       | V            | 36.29        | -27.01         | 49.52         | -95.26     | -45.74             | -13             | 32.74          |
| 8 547.74                                                          | 42.54                       | V            | 36.50        | -26.32         | 52.72         | -95.26     | -42.54             | -13             | 29.54          |
| Above<br>8 600.00                                                 | Not<br>detected             | -            | -            | -              | -             | -          | -                  | -               | -              |

| Frequency<br>(MHz)                                              | Measured<br>Level<br>(dB $\mu$ V) | Ant.<br>Pol. | AF<br>(dB/m) | AMP+CL<br>(dB) | E<br>(dB $\mu$ V/m) | CF<br>(dB) | E.I.R.P.<br>(dB m) | Limit<br>(dB m) | Margin<br>(dB) |
|-----------------------------------------------------------------|-----------------------------------|--------------|--------------|----------------|---------------------|------------|--------------------|-----------------|----------------|
| PCC 10 MHz + SCC 20 MHz_ High Channel (844.0 MHz + 1 905.0 MHz) |                                   |              |              |                |                     |            |                    |                 |                |
| 3 123.61                                                        | 54.38                             | H            | 30.25        | -31.79         | 52.84               | -95.26     | -42.42             | -13             | 29.42          |
| 3 123.77                                                        | 54.45                             | V            | 30.25        | -31.79         | 52.91               | -95.26     | -42.35             | -13             | 29.35          |
| 3 593.04                                                        | 62.84                             | H            | 31.37        | -31.08         | 63.13               | -95.26     | -32.13             | -13             | 19.13          |
| 3 593.12                                                        | 64.72                             | V            | 31.37        | -31.08         | 65.01               | -95.26     | -30.25             | -13             | 17.25          |
| 4 197.97                                                        | 59.49                             | H            | 32.10        | -31.17         | 60.42               | -95.26     | -34.84             | -13             | 21.84          |
| 4 197.71                                                        | 65.07                             | V            | 32.10        | -31.17         | 66.00               | -95.26     | -29.26             | -13             | 16.26          |
| 4 667.28                                                        | 46.38                             | V            | 32.17        | -30.01         | 48.54               | -95.26     | -46.72             | -13             | 33.72          |
| 5 272.27                                                        | 48.14                             | V            | 33.89        | -29.19         | 52.84               | -95.26     | -42.42             | -13             | 29.42          |
| 5 877.13                                                        | 45.80                             | H            | 34.51        | -28.37         | 51.94               | -95.26     | -43.32             | -13             | 30.32          |
| 6 951.39                                                        | 48.88                             | V            | 35.60        | -27.58         | 56.90               | -95.26     | -38.36             | -13             | 25.36          |
| 7 556.38                                                        | 41.64                             | V            | 36.00        | -27.05         | 50.59               | -95.26     | -44.67             | -13             | 31.67          |
| 8 161.21                                                        | 40.42                             | V            | 36.40        | -26.13         | 50.69               | -95.26     | -44.57             | -13             | 31.57          |
| 8 630.68                                                        | 45.98                             | V            | 36.60        | -27.30         | 55.28               | -95.26     | -39.98             | -13             | 26.98          |
| Above<br>8 700.00                                               | Not<br>detected                   | -            | -            | -              | -                   | -          | -                  | -               | -              |

**ULCA\_5A-66A**

| Frequency<br>(MHz)                                                | Measured<br>Level<br>(dB $\mu$ V) | Ant.<br>Pol. | AF<br>(dB/m) | AMP+CL<br>(dB) | E<br>(dB $\mu$ V/m) | CF<br>(dB) | E.I.R.P.<br>(dB m) | Limit<br>(dB m) | Margin<br>(dB) |
|-------------------------------------------------------------------|-----------------------------------|--------------|--------------|----------------|---------------------|------------|--------------------|-----------------|----------------|
| PCC 10 MHz + SCC 20 MHz_ Low Channel (829.0 MHz + 1 720.0 MHz)    |                                   |              |              |                |                     |            |                    |                 |                |
| 3 360.13                                                          | 48.71                             | H            | 31.00        | -32.75         | 46.96               | -95.26     | -48.30             | -13             | 35.30          |
| 3 360.12                                                          | 52.40                             | V            | 31.00        | -32.75         | 50.65               | -95.26     | -44.61             | -13             | 31.61          |
| 4 246.75                                                          | 45.18                             | H            | 32.10        | -30.12         | 47.16               | -95.26     | -48.10             | -13             | 35.10          |
| 4 246.62                                                          | 53.02                             | V            | 32.10        | -30.11         | 55.01               | -95.26     | -40.25             | -13             | 27.25          |
| Above<br>4 300.00                                                 | Not<br>detected                   | -            | -            | -              | -                   | -          | -                  | -               | -              |
| PCC 10 MHz + SCC 20 MHz_ Middle Channel (836.5 MHz + 1 745.0 MHz) |                                   |              |              |                |                     |            |                    |                 |                |
| 3 400.25                                                          | 48.88                             | H            | 31.00        | -32.15         | 47.73               | -95.26     | -47.54             | -13             | 34.54          |
| 3 400.36                                                          | 53.71                             | V            | 31.00        | -32.15         | 52.56               | -95.26     | -42.70             | -13             | 29.70          |
| 4 304.37                                                          | 54.52                             | H            | 32.10        | -30.63         | 55.99               | -95.26     | -39.28             | -13             | 26.28          |
| 4 304.65                                                          | 52.53                             | V            | 32.10        | -30.63         | 54.00               | -95.26     | -41.26             | -13             | 28.26          |
| Above<br>4 400.00                                                 | Not<br>detected                   | -            | -            | -              | -                   | -          | -                  | -               | -              |
| PCC 10 MHz + SCC 20 MHz_ High Channel (844.0 MHz + 1 770.0 MHz)   |                                   |              |              |                |                     |            |                    |                 |                |
| 3 440.39                                                          | 52.19                             | H            | 31.00        | -31.91         | 51.28               | -95.26     | -43.98             | -13             | 30.98          |
| 3 440.28                                                          | 54.42                             | V            | 31.00        | -31.91         | 53.51               | -95.26     | -41.75             | -13             | 28.75          |
| 4 361.73                                                          | 55.86                             | H            | 32.10        | -30.17         | 57.79               | -95.26     | <b>-37.47</b>      | -13             | 24.47          |
| 4 361.47                                                          | 55.83                             | V            | 32.10        | -30.19         | 57.74               | -95.26     | -37.52             | -13             | 24.52          |
| Above<br>4 400.00                                                 | Not<br>detected                   | -            | -            | -              | -                   | -          | -                  | -               | -              |

**ULCA\_25A-26A**

| Frequency<br>(MHz)                                                | Measured<br>Level<br>(dBμV) | Ant.<br>Pol. | AF<br>(dB/m) | AMP+CL<br>(dB) | E<br>(dBμV/m) | CF<br>(dB) | E.I.R.P.<br>(dB m) | Limit<br>(dB m) | Margin<br>(dB) |
|-------------------------------------------------------------------|-----------------------------|--------------|--------------|----------------|---------------|------------|--------------------|-----------------|----------------|
| PCC 20 MHz + SCC 10 MHz_ Low Channel (1 860.0 MHz + 829.0 MHz)    |                             |              |              |                |               |            |                    |                 |                |
| 3 080.28                                                          | 60.35                       | V            | 30.16        | -32.74         | 57.77         | -95.26     | -37.49             | -13             | 24.49          |
| 3 518.26                                                          | 76.05                       | H            | 31.14        | -32.51         | 74.68         | -95.26     | <b>-20.58</b>      | -13             | 7.58           |
| 3 518.52                                                          | 67.72                       | V            | 31.14        | -32.51         | 66.35         | -95.26     | -28.91             | -13             | 15.91          |
| 4 124.00                                                          | 58.54                       | H            | 32.10        | -29.35         | 61.29         | -95.26     | -33.97             | -13             | 20.97          |
| 4 124.34                                                          | 65.39                       | V            | 32.10        | -29.36         | 68.13         | -95.26     | -27.13             | -13             | 14.13          |
| 4 562.61                                                          | 52.12                       | H            | 32.00        | -29.98         | 54.14         | -95.26     | -41.13             | -13             | 28.13          |
| 4 562.69                                                          | 53.00                       | V            | 32.00        | -29.98         | 55.02         | -95.26     | -40.24             | -13             | 27.24          |
| 5 168.34                                                          | 48.66                       | H            | 33.64        | -29.36         | 52.94         | -95.26     | -42.33             | -13             | 29.33          |
| 5 168.28                                                          | 53.93                       | V            | 33.64        | -29.36         | 58.21         | -95.26     | -37.05             | -13             | 24.05          |
| 6 212.65                                                          | 45.72                       | V            | 34.80        | -27.38         | 53.14         | -95.26     | -42.12             | -13             | 29.12          |
| 6 818.12                                                          | 50.43                       | V            | 35.44        | -27.22         | 58.65         | -95.26     | -36.61             | -13             | 23.61          |
| Above<br>6 900.00                                                 | Not<br>detected             | -            | -            | -              | -             | -          | -                  | -               | -              |
| PCC 20 MHz + SCC 10 MHz_ Middle Channel (1 882.5 MHz + 836.5 MHz) |                             |              |              |                |               |            |                    |                 |                |
| 3 057.65                                                          | 58.99                       | V            | 30.12        | -31.75         | 57.36         | -95.26     | -37.90             | -13             | 24.90          |
| 3 540.94                                                          | 74.73                       | H            | 31.18        | -32.54         | 73.37         | -95.26     | -21.89             | -13             | 8.89           |
| 3 541.13                                                          | 64.58                       | V            | 31.18        | -32.55         | 63.21         | -95.26     | -32.05             | -13             | 19.05          |
| 4 124.23                                                          | 58.61                       | H            | 32.10        | -29.36         | 61.35         | -95.26     | -33.91             | -13             | 20.91          |
| 4 124.06                                                          | 65.09                       | V            | 32.10        | -29.35         | 67.84         | -95.26     | -27.42             | -13             | 14.42          |
| 4 607.93                                                          | 49.74                       | H            | 32.02        | -29.83         | 51.93         | -95.26     | -43.33             | -13             | 30.33          |
| 4 607.74                                                          | 49.68                       | V            | 32.02        | -29.84         | 51.86         | -95.26     | -43.40             | -13             | 30.40          |
| 5 190.87                                                          | 47.14                       | H            | 33.68        | -29.67         | 51.15         | -95.26     | -44.12             | -13             | 31.12          |
| 5 190.72                                                          | 51.32                       | V            | 33.68        | -29.67         | 55.33         | -95.26     | -39.93             | -13             | 26.93          |
| 6 257.28                                                          | 43.94                       | V            | 34.80        | -28.35         | 50.39         | -95.26     | -44.87             | -13             | 31.87          |
| 6 840.07                                                          | 48.06                       | V            | 35.48        | -27.79         | 55.75         | -95.26     | -39.52             | -13             | 26.52          |
| Above<br>6 900.00                                                 | Not<br>detected             | -            | -            | -              | -             | -          | -                  | -               | -              |

| Frequency<br>(MHz)                                              | Measured<br>Level<br>(dB $\mu$ V) | Ant.<br>Pol. | AF<br>(dB/m) | AMP+CL<br>(dB) | E<br>(dB $\mu$ V/m) | CF<br>(dB) | E.I.R.P.<br>(dB m) | Limit<br>(dB m) | Margin<br>(dB) |
|-----------------------------------------------------------------|-----------------------------------|--------------|--------------|----------------|---------------------|------------|--------------------|-----------------|----------------|
| PCC 20 MHz + SCC 10 MHz_ High Channel (1 905.0 MHz + 844.0 MHz) |                                   |              |              |                |                     |            |                    |                 |                |
| 3 034.80                                                        | 56.32                             | V            | 30.10        | -32.44         | 53.98               | -95.26     | -41.28             | -13             | 28.28          |
| 3 563.74                                                        | 70.79                             | H            | 31.25        | -32.04         | 70.00               | -95.26     | -25.26             | -13             | 12.26          |
| 3 563.66                                                        | 62.81                             | V            | 31.25        | -32.05         | 62.01               | -95.26     | -33.25             | -13             | 20.25          |
| 4 124.11                                                        | 56.70                             | H            | 32.10        | -29.35         | 59.45               | -95.26     | -35.81             | -13             | 22.81          |
| 4 124.06                                                        | 64.28                             | V            | 32.10        | -29.35         | 67.03               | -95.26     | -28.23             | -13             | 15.23          |
| 4 652.86                                                        | 50.56                             | H            | 32.11        | -30.13         | 52.54               | -95.26     | -42.72             | -13             | 29.72          |
| 4 652.80                                                        | 49.55                             | V            | 32.11        | -30.13         | 51.53               | -95.26     | -43.73             | -13             | 30.73          |
| 5 213.24                                                        | 44.80                             | H            | 33.73        | -30.04         | 48.49               | -95.26     | -46.77             | -13             | 33.77          |
| 5 213.36                                                        | 51.28                             | V            | 33.73        | -30.04         | 54.97               | -95.26     | -40.29             | -13             | 27.29          |
| 6 302.34                                                        | 42.04                             | V            | 34.80        | -27.71         | 49.13               | -95.26     | -46.13             | -13             | 33.13          |
| 6 863.05                                                        | 48.84                             | V            | 35.50        | -27.80         | 56.54               | -95.26     | -38.73             | -13             | 25.73          |
| Above<br>6 900.00                                               | Not<br>detected                   | —            | —            | —              | —                   | —          | —                  | —               | —              |

**Remark;**

1. AF = Antenna Factor, CL = Cable Loss, CF = Conversion Factor.
2. E (dB $\mu$ V/m) = Measured Level (dB $\mu$ V) + Antenna Factor (dB/m) + AMP (dB) + Cable Loss (dB).
3. E.I.R.P. (dB m) = E (dB $\mu$ V/m) + CF (dB).
4. E.R.P. (dB m) = E (dB $\mu$ V/m) + CF (dB) - 2.15 (dB); where E.R.P. and E.I.R.P. are expressed in consistent units.
5. CF (dB) = 20 log D - 104.8; where D is the measurement distance in meters, According to KDB 971168 D01 v03r01 5.8.4.
6. The frequency spectrum is examined from 9 kHz to the 10<sup>th</sup> harmonic of the fundamental frequency of the transmitter. No other spurious and harmonic emissions were reported greater than listed emissions above table.

### 3. Conducted Output Power

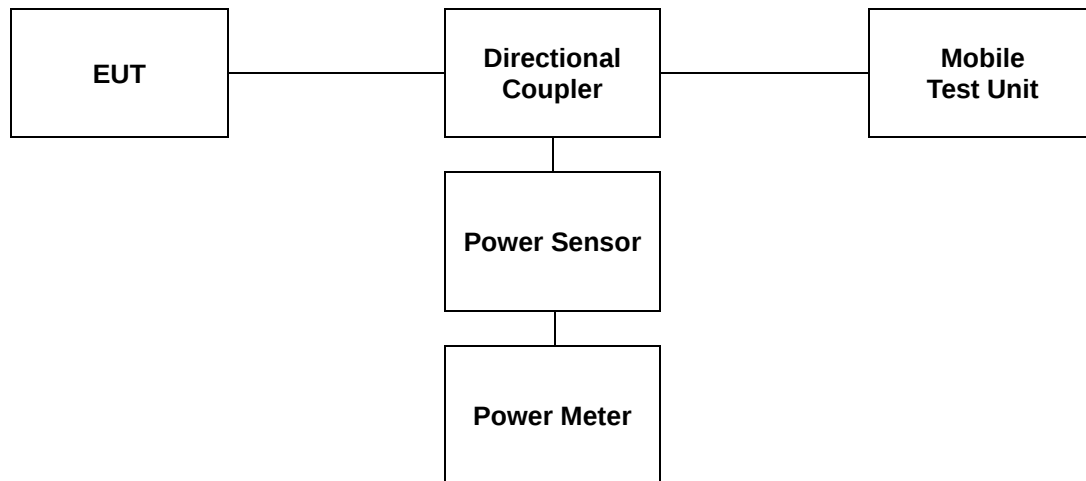
#### 3.1. Limit

CFR 47, Section FCC §2.1046

#### 3.2. Test Procedure

Output power shall be measured at the RF output terminals for all configurations.

1. The RF output of the transmitter was connected to the input of the mobile test unit in order to establish communication with the EUT.
2. The EUT was set up for the max. output power with pseudo random data modulation by using mobile test unit parameters.
3. The measurement performed using a wideband RF power meter.
4. This EUT was tested under all configurations and the highest power was investigated and reported.



### 3.3. Test Result

Ambient temperature : (23 ± 1) °C  
 Relative humidity : 47 % R.H.

| ULCA 5B |          |             |       |    |           |          |             |       |    |           |              |              |
|---------|----------|-------------|-------|----|-----------|----------|-------------|-------|----|-----------|--------------|--------------|
| Ch.     | PCC      |             |       |    |           | SCC      |             |       |    |           | Power        |              |
|         | BW [MHz] | Freq. [MHz] | Ch.   | RB | RB Offset | BW [MHz] | Freq. [MHz] | Ch.   | RB | RB Offset | (dB m)       | (W)          |
| Low     | 3        | 825.6       | 20416 | 1  | 14        | 5        | 825.6       | 20455 | 1  | 0         | 23.05        | 0.202        |
|         | 5        | 826.5       | 20425 | 1  | 24        | 3        | 830.4       | 20464 | 1  | 0         | 23.15        | 0.207        |
|         | 5        | 826.8       | 20428 | 1  | 24        | 10       | 834.0       | 20500 | 1  | 0         | 23.12        | 0.205        |
|         | 10       | 829.0       | 20450 | 1  | 49        | 5        | 836.2       | 20522 | 1  | 0         | <b>23.21</b> | <b>0.209</b> |
|         | 10       | 829.0       | 20450 | 1  | 49        | 10       | 838.9       | 20549 | 1  | 0         | 23.16        | 0.207        |
| Middle  | 3        | 834.1       | 20501 | 1  | 14        | 5        | 838.0       | 20540 | 1  | 0         | 23.11        | 0.205        |
|         | 5        | 835.0       | 20510 | 1  | 24        | 3        | 838.9       | 20549 | 1  | 0         | 23.14        | 0.206        |
|         | 5        | 831.8       | 20478 | 1  | 24        | 10       | 839.0       | 20550 | 1  | 0         | 23.10        | 0.204        |
|         | 10       | 834.0       | 20500 | 1  | 49        | 5        | 841.2       | 20572 | 1  | 0         | 23.17        | 0.207        |
|         | 10       | 831.6       | 20476 | 1  | 49        | 10       | 841.5       | 20575 | 1  | 0         | 23.11        | 0.205        |
| High    | 3        | 842.6       | 20586 | 1  | 14        | 5        | 846.5       | 20625 | 1  | 0         | 23.10        | 0.204        |
|         | 5        | 843.5       | 20595 | 1  | 24        | 3        | 847.4       | 20634 | 1  | 0         | 23.05        | 0.202        |
|         | 5        | 836.8       | 20528 | 1  | 24        | 10       | 844.0       | 20600 | 1  | 0         | 23.03        | 0.201        |
|         | 10       | 839.0       | 20550 | 1  | 49        | 5        | 846.2       | 20622 | 1  | 0         | 23.09        | 0.204        |
|         | 10       | 834.1       | 20501 | 1  | 49        | 10       | 844.0       | 20600 | 1  | 0         | 23.14        | 0.206        |

Note;

QPSK Modulation with 1 RB

| ULCA 5B |             |                |       |    |              |             |                |       |    |              |              |              |
|---------|-------------|----------------|-------|----|--------------|-------------|----------------|-------|----|--------------|--------------|--------------|
| Ch.     | PCC         |                |       |    |              | SCC         |                |       |    |              | Power        |              |
|         | BW<br>[MHz] | Freq.<br>[MHz] | Ch.   | RB | RB<br>Offset | BW<br>[MHz] | Freq.<br>[MHz] | Ch.   | RB | RB<br>Offset | (dB m)       | (W)          |
| Low     | 3           | 825.6          | 20416 | 1  | 14           | 5           | 825.6          | 20455 | 1  | 0            | 22.68        | 0.185        |
|         | 5           | 826.5          | 20425 | 1  | 24           | 3           | 830.4          | 20464 | 1  | 0            | 22.72        | 0.187        |
|         | 5           | 826.8          | 20428 | 1  | 24           | 10          | 834.0          | 20500 | 1  | 0            | 22.62        | 0.183        |
|         | 10          | 829.0          | 20450 | 1  | 49           | 5           | 836.2          | 20522 | 1  | 0            | 22.51        | 0.178        |
|         | 10          | 829.0          | 20450 | 1  | 49           | 10          | 838.9          | 20549 | 1  | 0            | 22.45        | 0.176        |
| Middle  | 3           | 834.1          | 20501 | 1  | 14           | 5           | 838.0          | 20540 | 1  | 0            | 22.69        | 0.186        |
|         | 5           | 835.0          | 20510 | 1  | 24           | 3           | 838.9          | 20549 | 1  | 0            | 22.78        | 0.190        |
|         | 5           | 831.8          | 20478 | 1  | 24           | 10          | 839.0          | 20550 | 1  | 0            | 22.68        | 0.185        |
|         | 10          | 834.0          | 20500 | 1  | 49           | 5           | 841.2          | 20572 | 1  | 0            | 22.69        | 0.186        |
|         | 10          | 831.6          | 20476 | 1  | 49           | 10          | 841.5          | 20575 | 1  | 0            | <b>22.92</b> | <b>0.196</b> |
| High    | 3           | 842.6          | 20586 | 1  | 14           | 5           | 846.5          | 20625 | 1  | 0            | 22.57        | 0.181        |
|         | 5           | 843.5          | 20595 | 1  | 24           | 3           | 847.4          | 20634 | 1  | 0            | 22.65        | 0.184        |
|         | 5           | 836.8          | 20528 | 1  | 24           | 10          | 844.0          | 20600 | 1  | 0            | 22.46        | 0.176        |
|         | 10          | 839.0          | 20550 | 1  | 49           | 5           | 846.2          | 20622 | 1  | 0            | 22.79        | 0.190        |
|         | 10          | 834.1          | 20501 | 1  | 49           | 10          | 844.0          | 20600 | 1  | 0            | 22.51        | 0.178        |

Note;

16QAM Modulation with 1 RB

| ULCA 5B |             |                |       |    |              |             |                |       |    |              |              |              |
|---------|-------------|----------------|-------|----|--------------|-------------|----------------|-------|----|--------------|--------------|--------------|
| Ch.     | PCC         |                |       |    |              | SCC         |                |       |    |              | Power        |              |
|         | BW<br>[MHz] | Freq.<br>[MHz] | Ch.   | RB | RB<br>Offset | BW<br>[MHz] | Freq.<br>[MHz] | Ch.   | RB | RB<br>Offset | (dB m)       | (W)          |
| Low     | 3           | 825.6          | 20416 | 15 | 0            | 5           | 825.6          | 20455 | 25 | 0            | 21.85        | 0.153        |
|         | 5           | 826.5          | 20425 | 25 | 0            | 3           | 830.4          | 20464 | 15 | 0            | 22.41        | 0.174        |
|         | 5           | 826.8          | 20428 | 25 | 0            | 10          | 834.0          | 20500 | 50 | 0            | 22.30        | 0.170        |
|         | 10          | 829.0          | 20450 | 50 | 0            | 5           | 836.2          | 20522 | 25 | 0            | 22.35        | 0.172        |
|         | 10          | 829.0          | 20450 | 50 | 0            | 10          | 838.9          | 20549 | 50 | 0            | 22.35        | 0.172        |
| Middle  | 3           | 834.1          | 20501 | 15 | 0            | 5           | 838.0          | 20540 | 25 | 0            | 22.25        | 0.168        |
|         | 5           | 835.0          | 20510 | 25 | 0            | 3           | 838.9          | 20549 | 15 | 0            | 22.40        | 0.174        |
|         | 5           | 831.8          | 20478 | 25 | 0            | 10          | 839.0          | 20550 | 50 | 0            | 22.07        | 0.161        |
|         | 10          | 834.0          | 20500 | 50 | 0            | 5           | 841.2          | 20572 | 25 | 0            | <b>22.51</b> | <b>0.178</b> |
|         | 10          | 831.6          | 20476 | 50 | 0            | 10          | 841.5          | 20575 | 50 | 0            | 22.40        | 0.174        |
| High    | 3           | 842.6          | 20586 | 15 | 0            | 5           | 846.5          | 20625 | 25 | 0            | 22.20        | 0.166        |
|         | 5           | 843.5          | 20595 | 25 | 0            | 3           | 847.4          | 20634 | 15 | 0            | 22.09        | 0.162        |
|         | 5           | 836.8          | 20528 | 25 | 0            | 10          | 844.0          | 20600 | 50 | 0            | 22.25        | 0.168        |
|         | 10          | 839.0          | 20550 | 50 | 0            | 5           | 846.2          | 20622 | 25 | 0            | 22.08        | 0.161        |
|         | 10          | 834.1          | 20501 | 50 | 0            | 10          | 844.0          | 20600 | 50 | 0            | 22.45        | 0.176        |

Note;

QPSK Modulation with Full RB

| ULCA 5B |             |                |       |    |              |             |                |       |    |              |              |              |
|---------|-------------|----------------|-------|----|--------------|-------------|----------------|-------|----|--------------|--------------|--------------|
| Ch.     | PCC         |                |       |    |              | SCC         |                |       |    |              | Power        |              |
|         | BW<br>[MHz] | Freq.<br>[MHz] | Ch.   | RB | RB<br>Offset | BW<br>[MHz] | Freq.<br>[MHz] | Ch.   | RB | RB<br>Offset | (dB m)       | (W)          |
| Low     | 3           | 825.6          | 20416 | 15 | 0            | 5           | 825.6          | 20455 | 25 | 0            | 21.12        | 0.129        |
|         | 5           | 826.5          | 20425 | 25 | 0            | 3           | 830.4          | 20464 | 15 | 0            | 21.73        | 0.149        |
|         | 5           | 826.8          | 20428 | 25 | 0            | 10          | 834.0          | 20500 | 50 | 0            | 21.54        | 0.143        |
|         | 10          | 829.0          | 20450 | 50 | 0            | 5           | 836.2          | 20522 | 25 | 0            | 21.72        | 0.149        |
|         | 10          | 829.0          | 20450 | 50 | 0            | 10          | 838.9          | 20549 | 50 | 0            | 21.60        | 0.145        |
| Middle  | 3           | 834.1          | 20501 | 15 | 0            | 5           | 838.0          | 20540 | 25 | 0            | 21.56        | 0.143        |
|         | 5           | 835.0          | 20510 | 25 | 0            | 3           | 838.9          | 20549 | 15 | 0            | 21.81        | 0.152        |
|         | 5           | 831.8          | 20478 | 25 | 0            | 10          | 839.0          | 20550 | 50 | 0            | 21.72        | 0.149        |
|         | 10          | 834.0          | 20500 | 50 | 0            | 5           | 841.2          | 20572 | 25 | 0            | <b>21.96</b> | <b>0.157</b> |
|         | 10          | 831.6          | 20476 | 50 | 0            | 10          | 841.5          | 20575 | 50 | 0            | 21.92        | 0.156        |
| High    | 3           | 842.6          | 20586 | 15 | 0            | 5           | 846.5          | 20625 | 25 | 0            | 21.53        | 0.142        |
|         | 5           | 843.5          | 20595 | 25 | 0            | 3           | 847.4          | 20634 | 15 | 0            | 21.81        | 0.152        |
|         | 5           | 836.8          | 20528 | 25 | 0            | 10          | 844.0          | 20600 | 50 | 0            | 21.72        | 0.149        |
|         | 10          | 839.0          | 20550 | 50 | 0            | 5           | 846.2          | 20622 | 25 | 0            | 21.89        | 0.155        |
|         | 10          | 834.1          | 20501 | 50 | 0            | 10          | 844.0          | 20600 | 50 | 0            | 21.73        | 0.149        |

Note;

16QAM Modulation with Full RB

| ULCA 7C |             |                |       |    |              |             |                |       |    |              |              |              |
|---------|-------------|----------------|-------|----|--------------|-------------|----------------|-------|----|--------------|--------------|--------------|
| Ch.     | PCC         |                |       |    |              | SCC         |                |       |    |              | Power        |              |
|         | BW<br>[MHz] | Freq.<br>[MHz] | Ch.   | RB | RB<br>Offset | BW<br>[MHz] | Freq.<br>[MHz] | Ch.   | RB | RB<br>Offset | (dB m)       | (W)          |
| Low     | 10          | 2 505.5        | 20805 | 1  | 49           | 20          | 2 519.9        | 20949 | 1  | 0            | 23.35        | 0.216        |
|         | 20          | 2 510.0        | 20850 | 1  | 99           | 10          | 2 524.4        | 20994 | 1  | 0            | 23.02        | 0.200        |
|         | 15          | 2 507.5        | 20825 | 1  | 74           | 15          | 2 522.5        | 20975 | 1  | 0            | 23.31        | 0.214        |
|         | 15          | 2 507.5        | 20825 | 1  | 74           | 10          | 2 519.5        | 20945 | 1  | 0            | 23.45        | 0.221        |
|         | 15          | 2 507.8        | 20828 | 1  | 74           | 20          | 2 524.9        | 20999 | 1  | 0            | 23.27        | 0.212        |
|         | 20          | 2 510.0        | 20850 | 1  | 99           | 15          | 2 527.1        | 21021 | 1  | 0            | 23.34        | 0.216        |
|         | 20          | 2 510.0        | 20850 | 1  | 99           | 20          | 2 529.8        | 21048 | 1  | 0            | 23.43        | 0.220        |
| Middle  | 10          | 2 525.6        | 21006 | 1  | 49           | 20          | 2 540.0        | 21150 | 1  | 0            | 23.41        | 0.219        |
|         | 20          | 2 530.1        | 21051 | 1  | 99           | 10          | 2 544.5        | 21195 | 1  | 0            | <b>23.52</b> | <b>0.225</b> |
|         | 15          | 2 527.5        | 21025 | 1  | 74           | 15          | 2 542.5        | 21175 | 1  | 0            | 23.27        | 0.212        |
|         | 15          | 2 530.1        | 21051 | 1  | 74           | 10          | 2 542.1        | 21171 | 1  | 0            | 23.36        | 0.217        |
|         | 15          | 2 525.3        | 21003 | 1  | 74           | 20          | 2 542.4        | 21174 | 1  | 0            | 23.33        | 0.215        |
|         | 20          | 2 527.6        | 21026 | 1  | 99           | 15          | 2 544.7        | 21197 | 1  | 0            | 23.21        | 0.209        |
|         | 20          | 2 525.1        | 21001 | 1  | 99           | 20          | 2 544.9        | 21199 | 1  | 0            | 23.16        | 0.207        |
| High    | 10          | 2 545.6        | 21206 | 1  | 49           | 20          | 2 560.0        | 21350 | 1  | 0            | 22.98        | 0.199        |
|         | 20          | 2 550.1        | 21251 | 1  | 99           | 10          | 2 564.5        | 21395 | 1  | 0            | 22.86        | 0.193        |
|         | 15          | 2 547.5        | 21225 | 1  | 74           | 15          | 2 562.5        | 21375 | 1  | 0            | 23.15        | 0.207        |
|         | 15          | 2 552.7        | 21277 | 1  | 74           | 10          | 2 564.7        | 21397 | 1  | 0            | 23.05        | 0.202        |
|         | 15          | 2 542.9        | 21179 | 1  | 74           | 20          | 2 560.0        | 21350 | 1  | 0            | 22.97        | 0.198        |
|         | 20          | 2 545.1        | 21201 | 1  | 99           | 15          | 2 562.2        | 21372 | 1  | 0            | 23.07        | 0.203        |
|         | 20          | 2 540.2        | 21152 | 1  | 99           | 20          | 2 560.0        | 21350 | 1  | 0            | 23.11        | 0.205        |

Note;

QPSK Modulation with 1 RB