



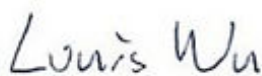
# FCC RADIO TEST REPORT

**FCC ID** : 2BEY3FCUN69M  
**Equipment** : 5G Sub-6 GHz M.2 Module  
**Brand Name** : NETPRISMA INC.  
**Model Name** : FCUN69-WWD  
**Applicant** : NETPRISMA INC.  
1301 6TH AVE, SEATTLE, WA, 98101-2304, UNITED STATES  
**Manufacturer** : Lenovo PC HK Limited  
23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry  
Bay, Hong Kong, P.R. China  
**Standard** : FCC 47 CFR Part 2, 96

Equipment: NETPRISMA INC. FCUN69-WWD tested inside of Lenovo Notebook Computer.

The product was received on Aug. 21, 2024 and testing was performed from Sep. 04, 2024 to Oct. 22, 2024. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this partial report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.



Approved by: Louis Wu

**Sporton International Inc. EMC & Wireless Communications Laboratory**



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## History of this test report

| Report No. | Version | Description                                                                                                        | Issue Date    |
|------------|---------|--------------------------------------------------------------------------------------------------------------------|---------------|
| FG482037D  | 01      | Initial issue of report                                                                                            | Nov. 18, 2024 |
| FG482037D  | 02      | Add Main Antenna in Appendix A<br>This report is an updated version, replacing the report issued on Nov. 18, 2024. | Nov. 27, 2024 |
| FG482037D  | 03      | Revise Appendix B<br>This report is an updated version, replacing the report issued on Nov. 27, 2024.              | Dec. 05, 2024 |
|            |         |                                                                                                                    |               |
|            |         |                                                                                                                    |               |
|            |         |                                                                                                                    |               |
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|            |         |                                                                                                                    |               |
|            |         |                                                                                                                    |               |
|            |         |                                                                                                                    |               |
|            |         |                                                                                                                    |               |



## Summary of Test Result

| Report Clause | Ref Std. Clause   | Test Items                                    | Result (PASS/FAIL) | Remark                                   |
|---------------|-------------------|-----------------------------------------------|--------------------|------------------------------------------|
| 3.2           | §2.1046           | Conducted Output Power                        | Pass               | -                                        |
| -             | §96.41            | Peak-to-Average Ratio                         | Pass               | See Note                                 |
| 3.3           | §96.41            | Effective Isotropic Radiated Power            | Pass               | -                                        |
| -             | §2.1049<br>§96.41 | Occupied Bandwidth                            | Pass               | See Note                                 |
| -             | §2.1051<br>§96.41 | Conducted Band Edge Measurement               | Pass               | See Note                                 |
| -             | §2.1051<br>§96.41 | Conducted Spurious Emission                   | Pass               | See Note                                 |
| -             | §2.1055           | Frequency Stability for Temperature & Voltage | Pass               | See Note                                 |
| 4.4           | §2.1053<br>§96.41 | Radiated Spurious Emission                    | Pass               | 10.92 dB under the limit at 14204.00 MHz |

**Remark:**

- For host device, Radiated Spurious Emission and Effective Isotropic Radiated Power are verified and complies with the limit in this test report.
- For host device, the Conducted Output Power is no difference after compared to module (Model: FCUN69-WWD)

**Conformity Assessment Condition:**

- The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
- The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty".

**Disclaimer:**

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

**Reviewed by: Sheng Kuo****Report Producer: Rebecca Wu**

# 1 General Description

## 1.1 Product Feature of Equipment Under Test

| Product Feature                 |                           |
|---------------------------------|---------------------------|
| Equipment                       | 5G Sub-6 GHz M.2 Module   |
| Brand Name                      | NETPRISMA INC.            |
| Model Name                      | FCUN69-WWD                |
| FCC ID                          | 2BEY3FCUN69M              |
| Sample 1                        | EUT with Host 1           |
| Sample 2                        | EUT with Host 2           |
| EUT supports Radios application | WCDMA/HSPA/LTE/5G NR/GNSS |
| EUT Stage                       | Production Unit           |

**Remark:**

1. The above EUT's information was declared by manufacturer.
2. Equipment: NETPRISMA INC. FCUN69-WWD tested inside of Lenovo Notebook Computer.

The product was installed into Notebook Computer (Brand Name: Lenovo, Model Name: TP00151B) during test, and the host information was recorded in the following table.

| Host Information |                                            |
|------------------|--------------------------------------------|
| Host 1           | Host with Amphenol Antenna                 |
| Host 2           | Host with Speed Taiwan Corporation Antenna |

| Support band and evaluated information |     |
|----------------------------------------|-----|
| Supported band                         | B48 |
| Evaluated and Tested band              | B48 |
| MIMO 2 Antenna                         | B48 |

| TDD band Power Class |     |     |
|----------------------|-----|-----|
|                      | PC3 | PC2 |
| B48                  | V   | -   |

| WWAN Antenna Information for Host |              |                          |                 |                     |
|-----------------------------------|--------------|--------------------------|-----------------|---------------------|
| Main Antenna                      | Manufacturer | Amphenol                 | Peak gain (dBi) | LTE Band 48 : 1.00  |
|                                   | Part number  | TKF436-16-000-R          | Type            | PIFA                |
|                                   | Manufacturer | Speed Taiwan Corporation | Peak gain (dBi) | LTE Band 48 : 0.97  |
|                                   | Part number  | F-0G-JV-0228-001-00      | Type            | PIFA                |
| MIMO2 Antenna                     | Manufacturer | Amphenol                 | Peak gain (dBi) | LTE Band 48 : -1.49 |
|                                   | Part number  | TKF114-16-000-R          | Type            | PIFA                |
|                                   | Manufacturer | Speed Taiwan Corporation | Peak gain (dBi) | LTE Band 48 : -1.51 |
|                                   | Part number  | F-0G-JV-0228-002-00      | Type            | PIFA                |

**Remark:** The above EUT's information was declared by manufacturer. Please refer to Disclaimer in report summary.



## 1.2 Product Specification of Equipment Under Test

| Product Specification is subject to this standard |                                                                                                                      |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Tx Frequency                                      | 3550 MHz ~ 3700 MHz                                                                                                  |
| Rx Frequency                                      | 3550 MHz ~ 3700 MHz                                                                                                  |
| Bandwidth                                         | 5 MHz / 10 MHz / 15 MHz / 20 MHz                                                                                     |
| Maximum Output Power to Antenna                   | <Main Antenna><br>LTE Band 48: 20.84 dBm<br><br><MIMO2 Antenna><br>LTE Band 48: 20.90 dBm<br>LTE Band 48C: 21.59 dBm |
| Type of Modulation                                | QPSK / 16QAM / 64QAM / 256QAM                                                                                        |

## 1.3 Modification of EUT

No modifications made to the EUT during the testing.

## 1.4 Testing Site

|                       |                                                                     |
|-----------------------|---------------------------------------------------------------------|
| Test Site             | Sporton International Inc. EMC & Wireless Communications Laboratory |
| Test Site Location    | No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333               |
| Test Site No.         | <b>Sporton Site No.</b>                                             |
|                       | TH03-HY                                                             |
| Test Engineer         | Uchun Liu                                                           |
| Temperature (°C)      | 22.3~23.7                                                           |
| Relative Humidity (%) | 50.3~55.4                                                           |

|                       |                                                                                                         |
|-----------------------|---------------------------------------------------------------------------------------------------------|
| Test Site             | Sporton International Inc. Wensan Laboratory                                                            |
| Test Site Location    | No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010                            |
| Test Site No.         | <b>Sporton Site No.</b>                                                                                 |
|                       | 03CH12-HY (TAF Code: 3786)                                                                              |
| Test Engineer         | Ken Kuo, Tim Lee, and Wilson Wu                                                                         |
| Temperature (°C)      | 20~25                                                                                                   |
| Relative Humidity (%) | 50~60                                                                                                   |
| Remark                | The Radiated Spurious Emission test item subcontracted to Sporton International Inc. Wensan Laboratory. |

**Note:** The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: TW1190 and TW3786



## 1.5 Applied Standards

According to the specifications declared by the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ ANSI C63.26-2015
- ♦ FCC 47 CFR Part 2, 96
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 940660 D01 Part 96 CBRS Eqpt v03
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01

**Remark:**

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.

## 2 Test Configuration of Equipment Under Test

### 2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in Tablet Mode (three orthogonal axis (X: flat, Y: portrait, Z: landscape)) and Notebook Mode, and adjusting the measurement antenna orientation, following C63.26 exploratory test procedures and only the worst case emissions were reported in this report..

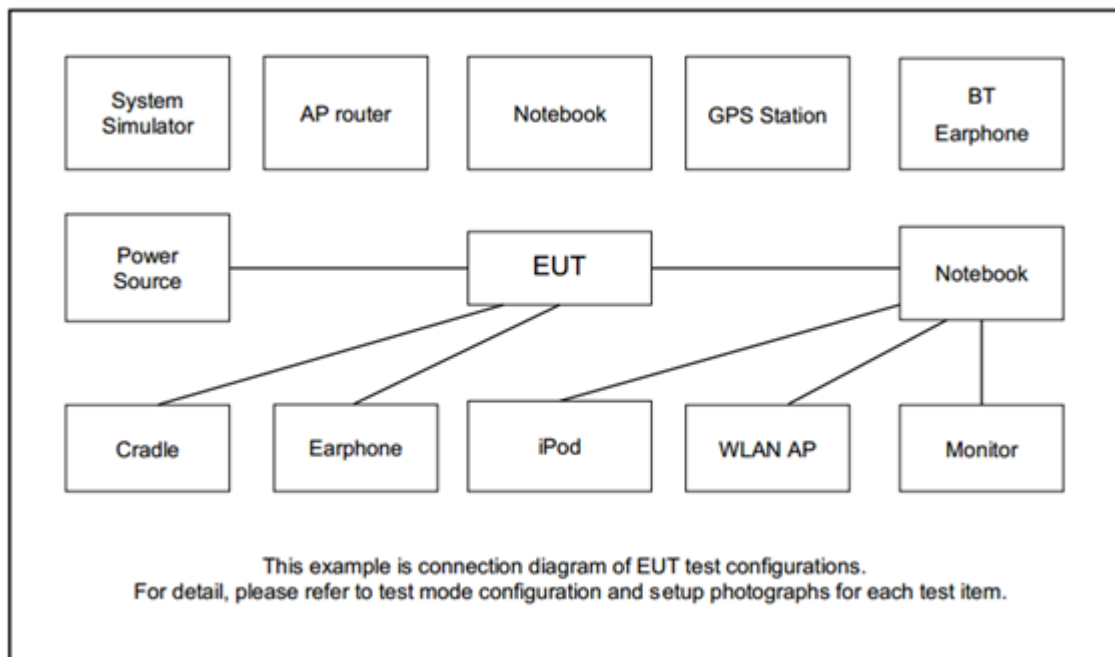
| Modulation Type | Modulation |
|-----------------|------------|
| A               | QPSK       |
| B               | 16QAM      |
| C               | 64QAM      |
| D               | 256QAM     |

| Test Item       | Modulation Type | Bandwidth      | RB Size       | Channel |
|-----------------|-----------------|----------------|---------------|---------|
| Conducted Power | A, B            | All            | 1, Half, Full | L, M, H |
| EIRP            | A, B            | All            | 1, Half, Full | L, M, H |
| RSE             | A               | 20 MHz or less | 1RB           | L, M, H |

**Remark:**

1. Evaluated all the transmitter signal and reporting worst-case configuration among all modulation types.
2. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst-case emissions are reported.
3. During the RSE preliminary test, the standalone mode and charging modes were verified. It is determined that the charging modes is the worst case for the official test.
4. For modulation of QPSK & 16QAM, the maximum power of QPSK & 16QAM is higher than other modulation (64QAM/256QAM), therefore, according to engineering evaluation, we choose higher power (QPSK & 16QAM) to perform tests and show in the report.
5. All the radiated test cases were performed with Sample 1.

## 2.2 Connection Diagram of Test System



## 2.3 Support Unit used in test configuration and system

| Item | Equipment        | Brand Name | Model No. | FCC ID       | Data Cable        | Power Cord        |
|------|------------------|------------|-----------|--------------|-------------------|-------------------|
| 1.   | System Simulator | Anritsu    | MT8821C   | N/A          | N/A               | Unshielded, 1.8 m |
| 2.   | iPod Earphone    | Apple      | N/A       | Verification | Unshielded, 1.0 m | N/A               |

## 2.4 Frequency List of Low/Middle/High Channels

| LTE Band 48 Channel and Frequency List |                        |        |        |         |
|----------------------------------------|------------------------|--------|--------|---------|
| BW [MHz]                               | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 20                                     | Channel                | 55340  | 55990  | 56640   |
|                                        | Frequency              | 3560   | 3625   | 3690    |
| 15                                     | Channel                | 55315  | 55990  | 56665   |
|                                        | Frequency              | 3557.5 | 3625   | 3692.5  |
| 10                                     | Channel                | 55290  | 55990  | 56690   |
|                                        | Frequency              | 3555   | 3625   | 3695    |
| 5                                      | Channel                | 55265  | 55990  | 56715   |
|                                        | Frequency              | 3552.5 | 3625   | 3697.5  |

| LTE Band 48C Channel and Frequency List_CA |                        |           |        |        |         |
|--------------------------------------------|------------------------|-----------|--------|--------|---------|
| BW [MHz]                                   | Channel/Frequency(MHz) |           | Lowest | Middle | Highest |
| 20 + 20                                    | PCC                    | Channel   | 55340  | 55891  | 56442   |
|                                            |                        | Frequency | 3560   | 3615.1 | 3670.2  |
|                                            | SCC                    | Channel   | 55538  | 56089  | 56640   |
|                                            |                        | Frequency | 3579.8 | 3634.9 | 3690.0  |
| 20 + 15                                    | PCC                    | Channel   | 55340  | 55916  | 56491   |
|                                            |                        | Frequency | 3560   | 3617.6 | 3675.1  |
|                                            | SCC                    | Channel   | 55511  | 56087  | 56662   |
|                                            |                        | Frequency | 3577.1 | 3634.7 | 3692.2  |
| 15 + 20                                    | PCC                    | Channel   | 55318  | 55893  | 56469   |
|                                            |                        | Frequency | 3557.8 | 3615.3 | 3672.9  |
|                                            | SCC                    | Channel   | 55489  | 56064  | 56640   |
|                                            |                        | Frequency | 3574.9 | 3632.4 | 3690.0  |
| 20 + 10                                    | PCC                    | Channel   | 55340  | 55941  | 56541   |
|                                            |                        | Frequency | 3560   | 3620.1 | 3680.1  |
|                                            | SCC                    | Channel   | 55484  | 56085  | 56685   |
|                                            |                        | Frequency | 3574.4 | 3634.5 | 3694.5  |
| 10 + 20                                    | PCC                    | Channel   | 55295  | 55896  | 56496   |
|                                            |                        | Frequency | 3555.5 | 3615.6 | 3675.6  |
|                                            | SCC                    | Channel   | 55439  | 56040  | 56640   |
|                                            |                        | Frequency | 3569.9 | 3630   | 3690    |
| 20 + 5                                     | PCC                    | Channel   | 55340  | 55965  | 56590   |
|                                            |                        | Frequency | 3560   | 3622.5 | 3685    |
|                                            | SCC                    | Channel   | 55457  | 56082  | 56707   |
|                                            |                        | Frequency | 3571.7 | 3634.2 | 3696.7  |
| 5 + 20                                     | PCC                    | Channel   | 55273  | 55896  | 56523   |
|                                            |                        | Frequency | 3553.3 | 3615.6 | 3678.3  |
|                                            | SCC                    | Channel   | 55390  | 56015  | 56640   |
|                                            |                        | Frequency | 3565   | 3627.5 | 3690.0  |

### 3 Conducted Test Items

#### 3.1 Measuring Instruments

See list of measuring instruments of this test report.

##### 3.1.1 Test Setup

##### 3.1.2 Conducted Output Power



##### 3.1.3 Test Result of Conducted Test

Please refer to Appendix A.

## 3.2 Conducted Output Power Measurement

### 3.2.1 Description of the Conducted Output Power Measurement

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals shall be reported.

### 3.2.2 Test Procedures

1. The transmitter output port was connected to base station.
2. Set EUT at maximum power through base station.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

### 3.3 EIRP

#### 3.3.1 Description of the EIRP Measurement

The EIRP of mobile transmitters must not exceed 23 dBm /10 megahertz for LTE Band 48.

The testing follows ANSI C63.26-2015 Section 5.2.5.5.

According to KDB 412172 D01 Power Approach,

$EIRP = PT + GT - LC$ , where

$PT$  = transmitter output power in dBm

$GT$  = gain of the transmitting antenna in dBi

$LC$  = signal attenuation in the connecting cable between the transmitter and antenna in dB

| Device          | Maximum EIRP<br>(dBm/10 MHz) | Maximum PSD<br>(dBm/MHz) |
|-----------------|------------------------------|--------------------------|
| End User Device | 23                           | n/a                      |

**Remark:** Total channel power is complied with EIRP limit 23dBm/10MHz.

#### 3.3.2 Test Procedures

The testing follows procedure in Section 5.2 of ANSI C63.26-2015 and KDB 940660 D01 Part 96 CBRS Eqpt v03 Section 3.2(b)(2)

Determine the EIRP by adding the effective antenna gain to the measured average conducted power level.

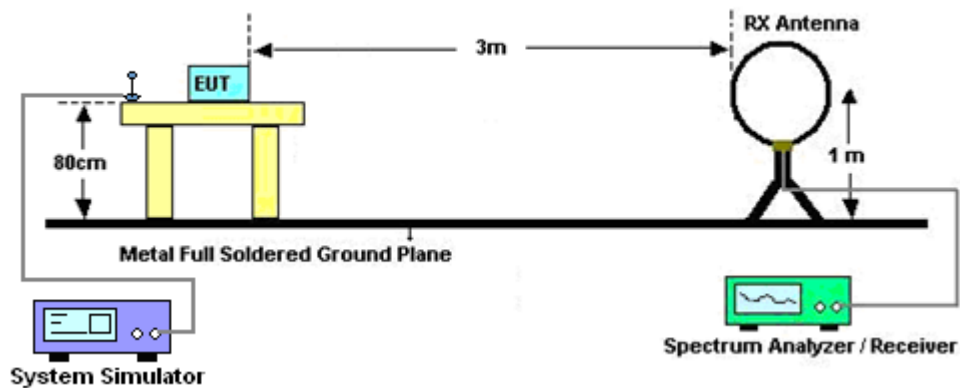
## 4 Radiated Test Items

### 4.1 Measuring Instruments

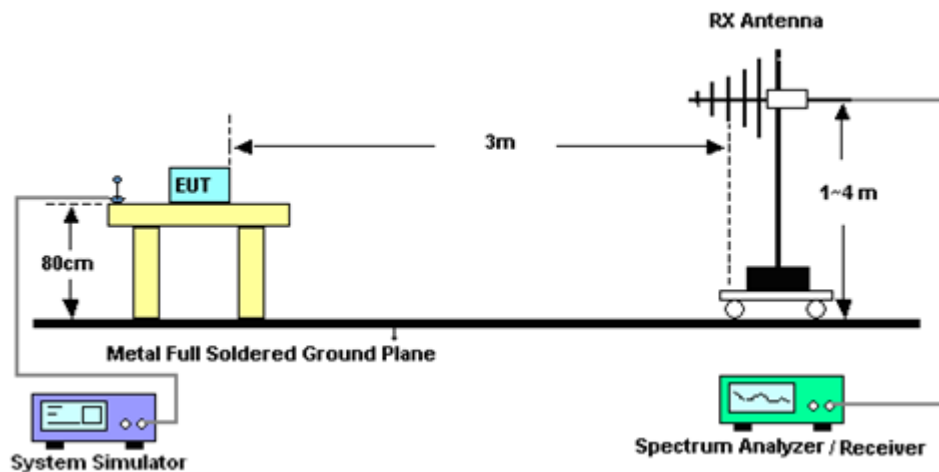
See list of measuring instruments of this test report.

### 4.2 Test Setup

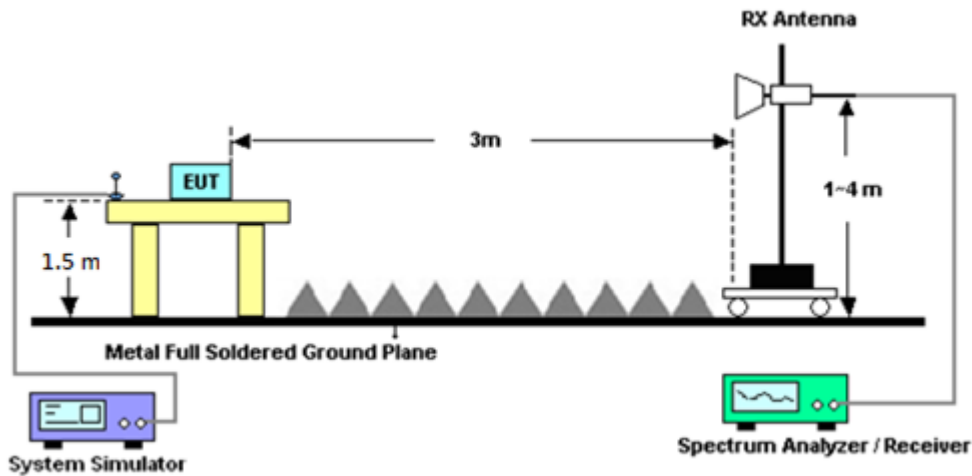
For radiated test below 30MHz



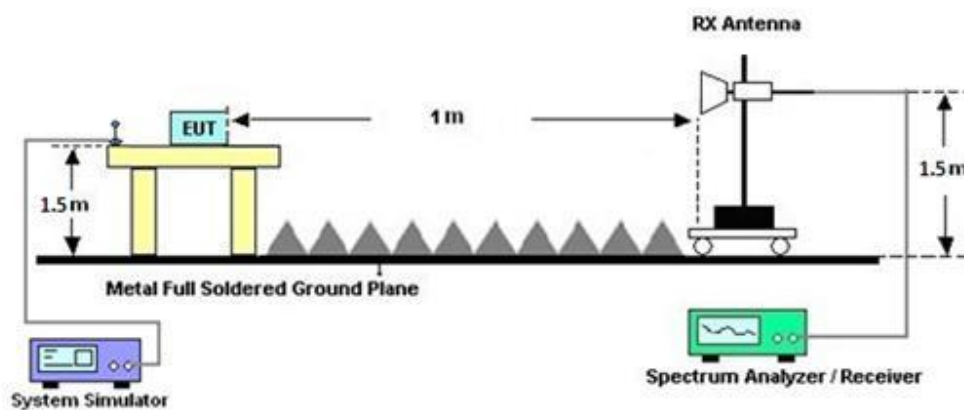
For radiated test from 30MHz to 1GHz



For radiated emissions from 1GHz to 18GHz



For radiated emissions above 18GHz



### 4.3 Test Result of Radiated Test

Please refer to Appendix B.

**Note:**

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

## 4.4 Radiated Spurious Emission

### 4.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI C63.26-2015.

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least -40dBm / MHz

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

### 4.4.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI C63.26-2015 section 5.5.4 Radiated measurement using the field strength method.

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
5. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
6. To convert spectrum reading E(dBuV/m) to EIRP(dBm)  
$$\text{EIRP(dBm)} = \text{Level (dBuV/m)} + 20\log(d) - 104.77,$$
where d is the distance at which field strength limit is specified in the rules
7. Field Strength Level (dBm) = Spectrum Reading (dBm) + Antenna Factor + Cable Loss + Read Level - Preamp Factor.
8. ERP (dBm) = EIRP (dBm) - 2.15
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.



## 5 List of Measuring Equipment

| Instrument              | Brand Name                 | Model No.                            | Serial No.      | Characteristics                  | Calibration Date | Test Date                       | Due Date      | Remark                   |
|-------------------------|----------------------------|--------------------------------------|-----------------|----------------------------------|------------------|---------------------------------|---------------|--------------------------|
| Loop Antenna            | Rohde & Schwarz            | HFH2-Z2                              | 100315          | 9 kHz~30 MHz                     | Feb. 23, 2024    | Sep. 14, 2024~<br>Oct. 15, 2024 | Feb. 22, 2025 | Radiation<br>(03CH12-HY) |
| Bilog Antenna           | TESEQ                      | CBL 6111D &<br>00800N1D01<br>N-06    | 37059 &<br>01   | 30MHz~1GHz                       | Nov. 03, 2023    | Sep. 14, 2024~<br>Oct. 15, 2024 | Nov. 02, 2024 | Radiation<br>(03CH12-HY) |
| Horn Antenna            | SCHWARZBE<br>CK            | BBHA 9120 D                          | 9120D-021<br>14 | 1GHz~18GHz                       | Jul. 11, 2024    | Sep. 14, 2024~<br>Oct. 15, 2024 | Jul. 10, 2025 | Radiation<br>(03CH12-HY) |
| SHF-EHF Horn<br>Antenna | SCHWARZBE<br>CK            | BBHA9170                             | 00993           | 18GHz~40GHz                      | Nov. 24, 2023    | Sep. 14, 2024~<br>Oct. 15, 2024 | Nov. 23, 2024 | Radiation<br>(03CH12-HY) |
| Preamplifier            | COM-POWER                  | PA-103                               | 161075          | 10MHz~1GHz                       | Mar. 20, 2024    | Sep. 14, 2024~<br>Oct. 15, 2024 | Mar. 19, 2025 | Radiation<br>(03CH12-HY) |
| Preamplifier            | Agilent                    | 8449B                                | 3008A023<br>75  | 1GHz~26.5GHz                     | May 22, 2024     | Sep. 14, 2024~<br>Oct. 15, 2024 | May 21, 2025  | Radiation<br>(03CH12-HY) |
| Preamplifier            | E-INSTRUME<br>NT TECH LTD. | ERA-100M-18<br>G-56-01-A70           | EC190024<br>9   | 1GHz~18GHz                       | Dec. 20, 2023    | Sep. 14, 2024~<br>Oct. 15, 2024 | Dec. 19, 2024 | Radiation<br>(03CH12-HY) |
| Preamplifier            | EMEC                       | EM18G40G                             | 060715          | 18GHz~40GHz                      | Dec. 07, 2023    | Sep. 14, 2024~<br>Oct. 15, 2024 | Dec. 06, 2024 | Radiation<br>(03CH12-HY) |
| EMI Test Receiver       | Agilent                    | N9038A(MXE<br>)                      | MY532900<br>53  | 20Hz~26.5GHz                     | Sep. 09, 2024    | Sep. 14, 2024~<br>Oct. 15, 2024 | Sep. 08, 2025 | Radiation<br>(03CH12-HY) |
| Filter                  | Wainwright                 | WHKX12-900<br>-1000-15000-<br>60SS   | SN11            | 1GHz High Pass<br>Filter         | Mar. 13, 2024    | Sep. 14, 2024~<br>Oct. 15, 2024 | Mar. 12, 2025 | Radiation<br>(03CH12-HY) |
| Filter                  | Wainwright                 | WLKS1200-1<br>2SS                    | SN2             | 1.2GHz Low<br>Pass Filter        | Mar. 13, 2024    | Sep. 14, 2024~<br>Oct. 15, 2024 | Mar. 12, 2025 | Radiation<br>(03CH12-HY) |
| Filter                  | Wainwright                 | WHKX12-270<br>0-3000-18000<br>-60SS  | SN2             | 3GHz High Pass<br>Filter         | Mar. 13, 2024    | Sep. 14, 2024~<br>Oct. 15, 2024 | Mar. 12, 2025 | Radiation<br>(03CH12-HY) |
| Filter                  | Wainwright                 | WHKX8-5872.<br>5-6750-18000<br>-40ST | SN2             | 6.75GHz High<br>Pass Filter      | Mar. 13, 2024    | Sep. 14, 2024~<br>Oct. 15, 2024 | Mar. 12, 2025 | Radiation<br>(03CH12-HY) |
| RF Cable                | HUBER +<br>SUHNER          | SUCOFLEX<br>102                      | 803951/2        | 9kHz~30MHz                       | Mar. 06, 2024    | Sep. 14, 2024~<br>Oct. 15, 2024 | Mar. 05, 2025 | Radiation<br>(03CH12-HY) |
| RF Cable                | HUBER +<br>SUHNER          | SUCOFLEX<br>126E                     | 0058/126E       | 30MHz~18GHz                      | Dec. 18, 2023    | Sep. 14, 2024~<br>Oct. 15, 2024 | Dec. 17, 2024 | Radiation<br>(03CH12-HY) |
| RF Cable                | HUBER +<br>SUHNER          | SUCOFLEX<br>102                      | 505134/2        | 30MHz~40GHz                      | Dec. 18, 2023    | Sep. 14, 2024~<br>Oct. 15, 2024 | Dec. 17, 2024 | Radiation<br>(03CH12-HY) |
| RF Cable                | HUBER +<br>SUHNER          | SUCOFLEX<br>102                      | 803953/2        | 30MHz~40GHz                      | Dec. 18, 2023    | Sep. 14, 2024~<br>Oct. 15, 2024 | Dec. 17, 2024 | Radiation<br>(03CH12-HY) |
| Hygrometer              | TECPEL                     | DTM-303B                             | TP210117        | N/A                              | Oct. 19, 2023    | Sep. 14, 2024~<br>Oct. 15, 2024 | Oct. 18, 2024 | Radiation<br>(03CH12-HY) |
| Controller              | EMEC                       | EM1000                               | N/A             | Control Turn<br>table & Ant Mast | N/A              | Sep. 14, 2024~<br>Oct. 15, 2024 | N/A           | Radiation<br>(03CH12-HY) |
| Antenna Mast            | EMEC                       | AM-BS-4500-<br>B                     | N/A             | 1m~4m                            | N/A              | Sep. 14, 2024~<br>Oct. 15, 2024 | N/A           | Radiation<br>(03CH12-HY) |
| Turn Table              | EMEC                       | TT2000                               | N/A             | 0~360 Degree                     | N/A              | Sep. 14, 2024~<br>Oct. 15, 2024 | N/A           | Radiation<br>(03CH12-HY) |
| Software                | Audix                      | E3<br>6.2009-8-24                    | RK-00098<br>9   | N/A                              | N/A              | Sep. 14, 2024~<br>Oct. 15, 2024 | N/A           | Radiation<br>(03CH12-HY) |



| Instrument                   | Brand Name                           | Model No.                                                                      | Serial No.      | Characteristics                     | Calibration Date | Test Date                       | Due Date      | Remark                 |
|------------------------------|--------------------------------------|--------------------------------------------------------------------------------|-----------------|-------------------------------------|------------------|---------------------------------|---------------|------------------------|
| Radio Communication Analyzer | Anritsu                              | MT8821C                                                                        | 6262025353      | LTE FDD/TDD<br>LTE-2CC<br>DLCA/ULCA | Oct. 03, 2023    | Sep. 04, 2024~<br>Oct. 01, 2024 | Oct. 02, 2024 | Conducted<br>(TH03-HY) |
| Radio Communication Analyzer | Anritsu                              | MT8821C                                                                        | 6262025353      | LTE FDD/TDD<br>LTE-2CC<br>DLCA/ULCA | Oct. 01, 2024    | Oct. 01, 2024~<br>Oct. 22, 2024 | Sep. 30, 2025 | Conducted<br>(TH03-HY) |
| DC Power Supply              | GW Instek                            | GPP-2323                                                                       | GES906037       | 0V~64V : 0A~6A                      | Nov. 28, 2023    | Sep. 04, 2024~<br>Oct. 22, 2024 | Nov. 27, 2024 | Conducted<br>(TH03-HY) |
| Coupler+10dB+<br>RfCable     | Warison +<br>WoKen +<br>E-Instrument | 20dB 25W<br>SMA<br>Directional<br>Coupler+<br>10dB<br>18GHz 5W+<br>SFL405_1.5M | #A+#1+#1<br>+#7 | 1-18GHz                             | Jan. 02, 2024    | Sep. 04, 2024~<br>Oct. 22, 2024 | Jan. 01, 2025 | Conducted<br>(TH03-HY) |
| Power divider                | Anritsu                              | K241C                                                                          | 2143398         | 9KHz~40GHz                          | Jun. 13, 2024    | Sep. 04, 2024~<br>Oct. 22, 2024 | Jun. 12, 2025 | Conducted<br>(TH03-HY) |
| Software                     | Sporton                              | LTE<br>Conducted<br>Test Tools                                                 | N/A             | Conducted Test<br>Item              | N/A              | Sep. 04, 2024~<br>Oct. 22, 2024 | N/A           | Conducted<br>(TH03-HY) |
| Hygrometer                   | TECPEL                               | DTM-303B                                                                       | TP210073        | -10 ~ 50°C / 20<br>~ 95%RH          | Jun. 05, 2024    | Sep. 04, 2024~<br>Oct. 22, 2024 | Jun. 04, 2025 | Conducted<br>(TH03-HY) |

## 6 Measurement Uncertainty

### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

|                                                                         |          |
|-------------------------------------------------------------------------|----------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 3.291 dB |
|-------------------------------------------------------------------------|----------|

### Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

|                                                                         |          |
|-------------------------------------------------------------------------|----------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.073 dB |
|-------------------------------------------------------------------------|----------|

### Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

|                                                                         |          |
|-------------------------------------------------------------------------|----------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.082 dB |
|-------------------------------------------------------------------------|----------|



## Appendix A. Test Results of Conducted Test

### Conducted Output Power(Average power & EIRP)

#### <Main Antenna>

| LTE Band 48 Maximum Average Power [dBm] (GT - LC = 1 dB) |                    |           |        |        |        |         |            |          |
|----------------------------------------------------------|--------------------|-----------|--------|--------|--------|---------|------------|----------|
| BW [MHz]                                                 | RB Size            | RB Offset | Mod    | Lowest | Middle | Highest | EIRP (dBm) | EIRP (W) |
| 20                                                       | 1                  | 0         | QPSK   | 20.29  | 20.84  | 20.73   | 21.84      | 0.1528   |
| 20                                                       | 1                  | 0         | 16-QAM | 19.66  | 20.21  | 20.08   | 21.21      | 0.1321   |
| Limit                                                    | EIRP < 23dBm/10MHz |           |        | Result |        |         | Pass       |          |

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.

| LTE Band 48 Maximum Average Power [dBm] (GT - LC = 1 dB) |                    |           |        |        |        |         |            |          |
|----------------------------------------------------------|--------------------|-----------|--------|--------|--------|---------|------------|----------|
| BW [MHz]                                                 | RB Size            | RB Offset | Mod    | Lowest | Middle | Highest | EIRP (dBm) | EIRP (W) |
| 15                                                       | 1                  | 0         | QPSK   | 20.19  | 20.75  | 20.68   | 21.75      | 0.1496   |
| 15                                                       | 1                  | 0         | 16-QAM | 19.59  | 20.11  | 20.00   | 21.11      | 0.1291   |
| Limit                                                    | EIRP < 23dBm/10MHz |           |        | Result |        |         | Pass       |          |

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.

| LTE Band 48 Maximum Average Power [dBm] (GT - LC = 1 dB) |                    |           |        |        |        |         |            |          |
|----------------------------------------------------------|--------------------|-----------|--------|--------|--------|---------|------------|----------|
| BW [MHz]                                                 | RB Size            | RB Offset | Mod    | Lowest | Middle | Highest | EIRP (dBm) | EIRP (W) |
| 10                                                       | 1                  | 0         | QPSK   | 20.19  | 20.76  | 20.65   | 21.76      | 0.1500   |
| 10                                                       | 1                  | 0         | 16-QAM | 19.59  | 20.16  | 20.00   | 21.16      | 0.1306   |
| Limit                                                    | EIRP < 23dBm/10MHz |           |        | Result |        |         | Pass       |          |

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.

| LTE Band 48 Maximum Average Power [dBm] (GT - LC = 1 dB) |                    |           |        |        |        |         |            |          |
|----------------------------------------------------------|--------------------|-----------|--------|--------|--------|---------|------------|----------|
| BW [MHz]                                                 | RB Size            | RB Offset | Mod    | Lowest | Middle | Highest | EIRP (dBm) | EIRP (W) |
| 5                                                        | 1                  | 0         | QPSK   | 20.19  | 20.75  | 20.66   | 21.75      | 0.1496   |
| 5                                                        | 1                  | 0         | 16-QAM | 19.58  | 20.14  | 20.01   | 21.14      | 0.1300   |
| Limit                                                    | EIRP < 23dBm/10MHz |           |        | Result |        |         | Pass       |          |

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.

**<MIMO2 Antenna>**

| LTE Band 48 Maximum Average Power [dBm] (GT - LC = -1.49 dB) |                    |           |        |        |        |         |            |          |
|--------------------------------------------------------------|--------------------|-----------|--------|--------|--------|---------|------------|----------|
| BW [MHz]                                                     | RB Size            | RB Offset | Mod    | Lowest | Middle | Highest | EIRP (dBm) | EIRP (W) |
| 20                                                           | 1                  | 0         | QPSK   | 20.90  | 20.71  | 20.78   | 19.41      | 0.0873   |
| 20                                                           | 1                  | 0         | 16-QAM | 19.85  | 19.72  | 19.80   | 18.36      | 0.0685   |
| Limit                                                        | EIRP < 23dBm/10MHz |           |        | Result |        |         | Pass       |          |

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.

| LTE Band 48 Maximum Average Power [dBm] (GT - LC = -1.49 dB) |                    |           |        |        |        |         |            |          |
|--------------------------------------------------------------|--------------------|-----------|--------|--------|--------|---------|------------|----------|
| BW [MHz]                                                     | RB Size            | RB Offset | Mod    | Lowest | Middle | Highest | EIRP (dBm) | EIRP (W) |
| 15                                                           | 1                  | 0         | QPSK   | 20.70  | 20.60  | 20.64   | 19.21      | 0.0834   |
| 15                                                           | 1                  | 0         | 16-QAM | 19.68  | 19.61  | 19.65   | 18.19      | 0.0659   |
| Limit                                                        | EIRP < 23dBm/10MHz |           |        | Result |        |         | Pass       |          |

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.

| LTE Band 48 Maximum Average Power [dBm] (GT - LC = -1.49 dB) |                    |           |        |        |        |         |            |          |
|--------------------------------------------------------------|--------------------|-----------|--------|--------|--------|---------|------------|----------|
| BW [MHz]                                                     | RB Size            | RB Offset | Mod    | Lowest | Middle | Highest | EIRP (dBm) | EIRP (W) |
| 10                                                           | 1                  | 0         | QPSK   | 20.74  | 20.53  | 20.66   | 19.25      | 0.0841   |
| 10                                                           | 1                  | 0         | 16-QAM | 19.67  | 19.53  | 19.63   | 18.18      | 0.0658   |
| Limit                                                        | EIRP < 23dBm/10MHz |           |        | Result |        |         | Pass       |          |

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.

| LTE Band 48 Maximum Average Power [dBm] (GT - LC = -1.49 dB) |                    |           |        |        |        |         |            |          |
|--------------------------------------------------------------|--------------------|-----------|--------|--------|--------|---------|------------|----------|
| BW [MHz]                                                     | RB Size            | RB Offset | Mod    | Lowest | Middle | Highest | EIRP (dBm) | EIRP (W) |
| 5                                                            | 1                  | 0         | QPSK   | 20.72  | 20.61  | 20.59   | 19.23      | 0.0838   |
| 5                                                            | 1                  | 0         | 16-QAM | 19.68  | 19.54  | 19.62   | 18.19      | 0.0659   |
| Limit                                                        | EIRP < 23dBm/10MHz |           |        | Result |        |         | Pass       |          |

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.



| LTE Band 48C_CA Maximum Average Power [dBm] (GT - LC = -1.49 dB) |                    |           |         |           |        |        |        |         |            |          |
|------------------------------------------------------------------|--------------------|-----------|---------|-----------|--------|--------|--------|---------|------------|----------|
| BW [MHz]                                                         | PCC                |           | SCC     |           | Mod    | Lowest | Middle | Highest | EIRP (dBm) | EIRP (W) |
|                                                                  | RB Size            | RB Offset | RB Size | RB Offset |        |        |        |         |            |          |
| 20+20                                                            | 1                  | 99        | 1       | 0         | QPSK   | 21.45  | 21.31  | 21.27   | 19.96      | 0.0991   |
| 20+20                                                            | 1                  | 99        | 1       | 0         | 16-QAM | 21.02  | 20.89  | 20.83   | 19.53      | 0.0897   |
| 20+15                                                            | 1                  | 74        | 1       | 0         | QPSK   | 21.39  | 21.27  | 21.38   | 19.90      | 0.0977   |
| 20+15                                                            | 1                  | 74        | 1       | 0         | 16-QAM | 20.98  | 20.99  | 21.06   | 19.57      | 0.0906   |
| 15+20                                                            | 1                  | 74        | 1       | 0         | QPSK   | 21.45  | 21.36  | 21.31   | 19.96      | 0.0991   |
| 15+20                                                            | 1                  | 74        | 1       | 0         | 16-QAM | 21.04  | 20.94  | 20.79   | 19.55      | 0.0902   |
| Limit                                                            | EIRP < 23dBm/10MHz |           |         |           |        | Result |        |         | Pass       |          |

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.

| LTE Band 48C_CA Maximum Average Power [dBm] (GT - LC = -1.49 dB) |                    |           |         |           |        |        |        |         |            |          |
|------------------------------------------------------------------|--------------------|-----------|---------|-----------|--------|--------|--------|---------|------------|----------|
| BW [MHz]                                                         | PCC                |           | SCC     |           | Mod    | Lowest | Middle | Highest | EIRP (dBm) | EIRP (W) |
|                                                                  | RB Size            | RB Offset | RB Size | RB Offset |        |        |        |         |            |          |
| 20+10                                                            | 1                  | 99        | 1       | 0         | QPSK   | 21.42  | 21.36  | 21.28   | 19.93      | 0.0984   |
| 20+10                                                            | 1                  | 99        | 1       | 0         | 16-QAM | 21.02  | 20.91  | 20.88   | 19.53      | 0.0897   |
| 10+20                                                            | 1                  | 49        | 1       | 0         | QPSK   | 21.49  | 21.41  | 21.33   | 20.00      | 0.1000   |
| 10+20                                                            | 1                  | 49        | 1       | 0         | 16-QAM | 21.10  | 20.91  | 20.90   | 19.61      | 0.0914   |
| 20+5                                                             | 1                  | 99        | 1       | 0         | QPSK   | 21.45  | 21.31  | 21.35   | 19.96      | 0.0991   |
| 20+5                                                             | 1                  | 99        | 1       | 0         | 16-QAM | 21.03  | 20.90  | 20.86   | 19.54      | 0.0899   |
| Limit                                                            | EIRP < 23dBm/10MHz |           |         |           |        | Result |        |         | Pass       |          |

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.

| LTE Band 48C_CA Maximum Average Power [dBm] (GT - LC = -1.49 dB) |                    |           |         |           |        |        |        |         |            |          |
|------------------------------------------------------------------|--------------------|-----------|---------|-----------|--------|--------|--------|---------|------------|----------|
| BW [MHz]                                                         | PCC                |           | SCC     |           | Mod    | Lowest | Middle | Highest | EIRP (dBm) | EIRP (W) |
|                                                                  | RB Size            | RB Offset | RB Size | RB Offset |        |        |        |         |            |          |
| 5+20                                                             | 1                  | 24        | 1       | 0         | QPSK   | 21.59  | 21.44  | 21.36   | 20.10      | 0.1023   |
| 5+20                                                             | 1                  | 24        | 1       | 0         | 16-QAM | 21.24  | 21.12  | 21.01   | 19.75      | 0.0944   |
| Limit                                                            | EIRP < 23dBm/10MHz |           |         |           |        | Result |        |         | Pass       |          |

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.



## Appendix B. Test Results of Radiated Test

### B1. Summary of each worse mode

| Mode | Part    | Band        | Ch | Freq (MHz) | Level (dBm) | Det | Ant Factor (dB) | Amp\Cbl (dB) | Filter (dB) | EIRPCF (dB) | Reading (dBuV) | Limit (dBm) | Margin (dB) | Pol | Ant   |
|------|---------|-------------|----|------------|-------------|-----|-----------------|--------------|-------------|-------------|----------------|-------------|-------------|-----|-------|
| 88   | Part 96 | LTE B48     | L  | 14204      | -50.92      | RMS | 40.99           | -45.89       | 0.45        | -95.23      | 48.76          | -40.00      | -10.92      | H   | MIMO2 |
| 89   | Part 96 | LTE CA B48C | M  | 14496      | -50.96      | RMS | 40.69           | -45.40       | 0.44        | -95.23      | 48.54          | -40.00      | -10.96      | V   | MIMO2 |
| 113  | Part 96 | LTE B48     | M  | 14204      | -52.28      | RMS | 40.99           | -48.22       | 0.45        | -95.23      | 49.73          | -40.00      | -12.28      | V   | Main  |

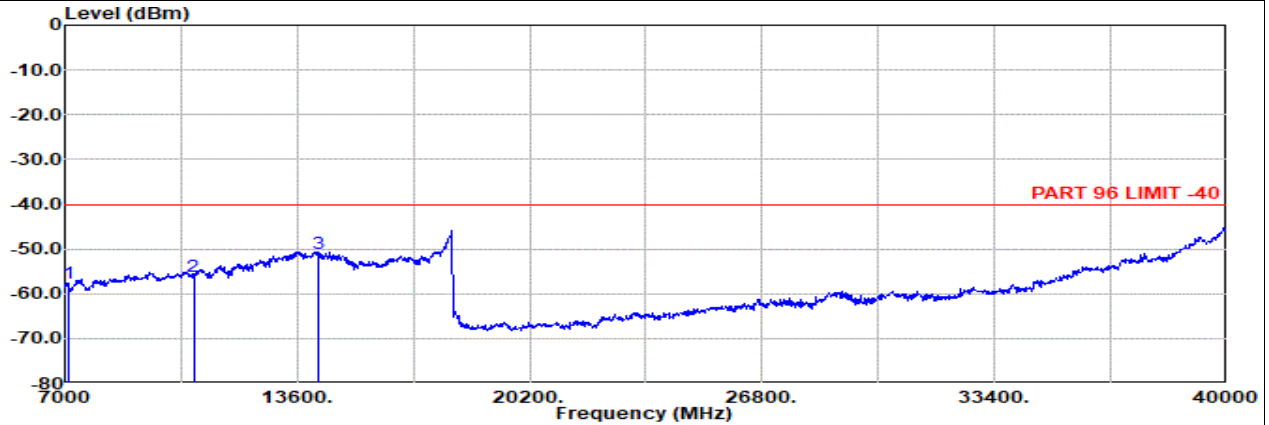


## MIMO2 Antenna

## Part 96 Mode 88

LTE B48 20M Ch55340 1RB0 QPSK

L

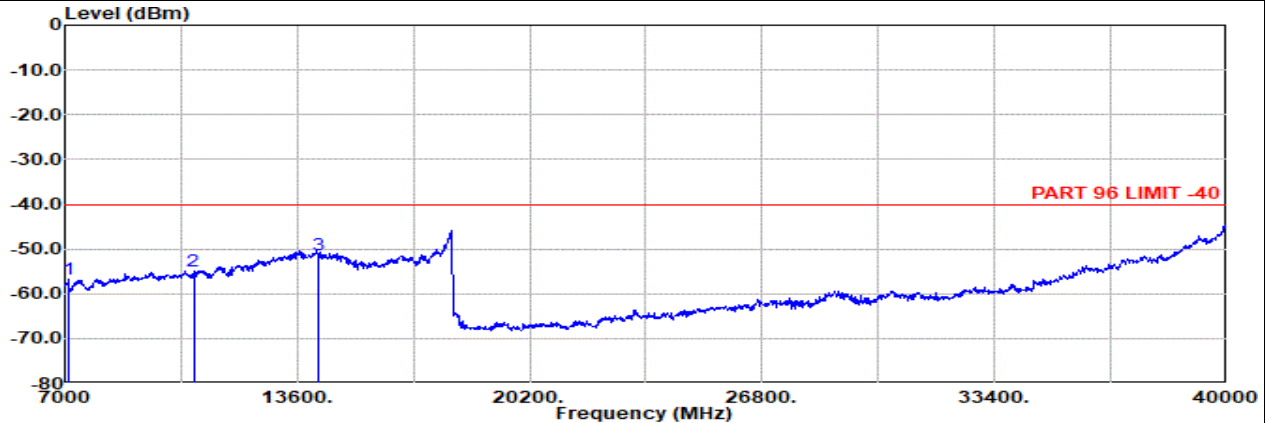


Site : 03CH12-HY

Condition: PART 96 LIMIT -40 1m SHF\_00993\_231124 Horizontal

: LTE Band 48 20M Ch55340 1RB0 QPSK

|   | Freq<br>MHz | Level<br>dBm | Detector | Ant Amp\Cb Filter |        | EIRPCF | Readin<br>g | Limit |        | Margin | Pol        |
|---|-------------|--------------|----------|-------------------|--------|--------|-------------|-------|--------|--------|------------|
|   |             |              |          | Factor            | 1      |        |             | dBm   | dB     |        |            |
| 1 | 7102.00     | -57.53       | RMS      | 36.61             | -51.91 | 0.90   | -95.23      | 52.10 | -40.00 | -17.53 | Horizontal |
| 2 | 10653.00    | -56.11       | RMS      | 39.20             | -50.06 | 0.26   | -95.23      | 49.72 | -40.00 | -16.11 | Horizontal |
| 3 | 14204.00    | -50.92       | RMS      | 40.99             | -45.89 | 0.45   | -95.23      | 48.76 | -40.00 | -10.92 | Horizontal |



Site : 03CH12-HY

Condition: PART 96 LIMIT -40 1m SHF\_00993\_231124 Vertical

: LTE Band 48 20M Ch55340 1RB0 QPSK

|   | Freq<br>MHz | Level<br>dBm | Detector | Ant Amp\Cb Filter |        | EIRPCF | Readin<br>g | Limit |        | Margin | Pol      |
|---|-------------|--------------|----------|-------------------|--------|--------|-------------|-------|--------|--------|----------|
|   |             |              |          | Factor            | 1      |        |             | dBm   | dB     |        |          |
| 1 | 7102.00     | -56.84       | RMS      | 36.61             | -51.91 | 0.90   | -95.23      | 52.79 | -40.00 | -16.84 | Vertical |
| 2 | 10653.00    | -55.06       | RMS      | 39.20             | -50.06 | 0.26   | -95.23      | 50.77 | -40.00 | -15.06 | Vertical |
| 3 | 14204.00    | -51.28       | RMS      | 40.99             | -45.89 | 0.45   | -95.23      | 48.40 | -40.00 | -11.28 | Vertical |

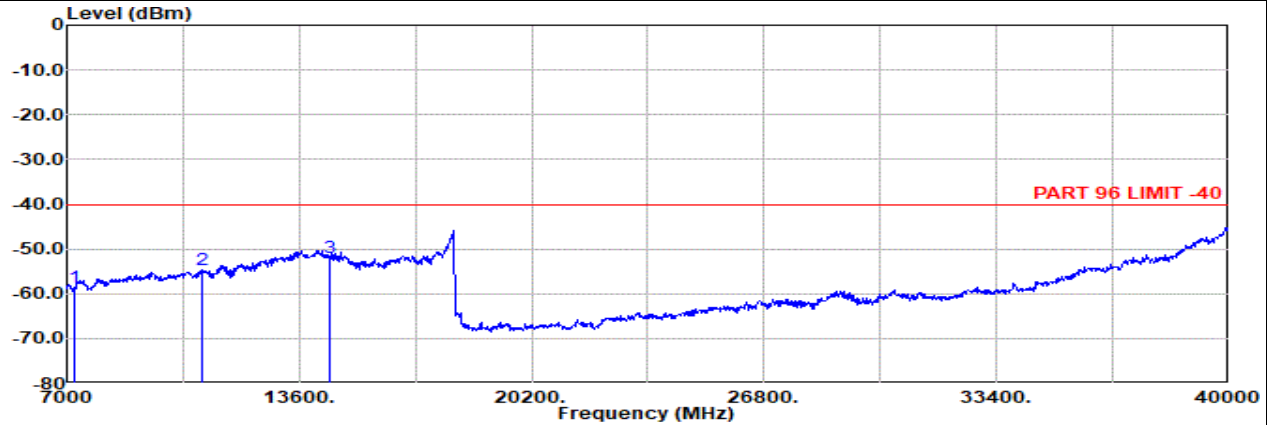


## MIMO2 Antenna

## Part 96 Mode 88

## LTE B48 20M Ch55990 1RB0 QPSK

## M

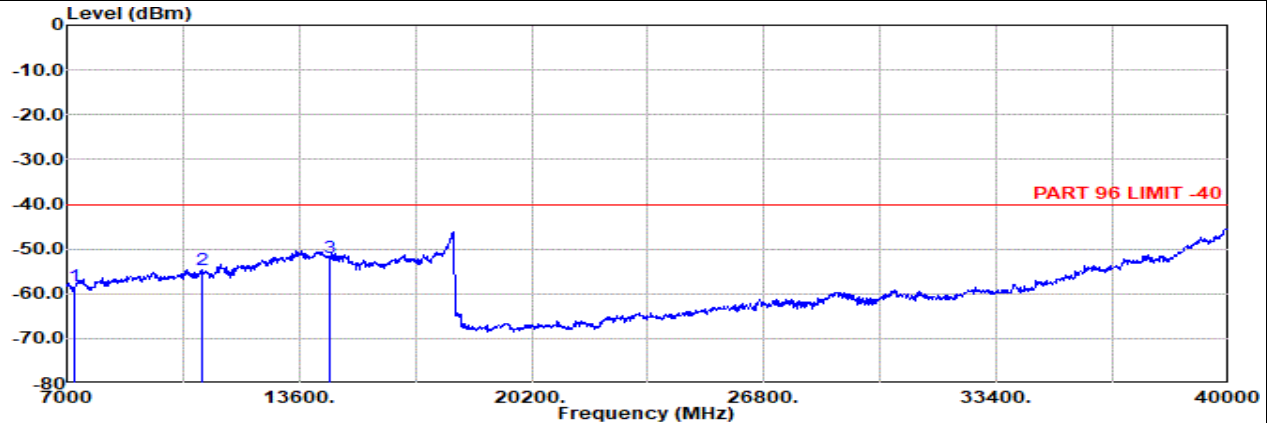


Site : 03CH12-HY

Condition: PART 96 LIMIT -40 1m SHF\_00993\_231124 Horizontal

: LTE Band 48 20M Ch55990 1RB0 QPSK

|   | Freq<br>MHz | Level<br>dBm | Detector | Ant Amp\Cb Filter |        | EIRPCF | Readin<br>g | Limit |        | Margin | Pol        |
|---|-------------|--------------|----------|-------------------|--------|--------|-------------|-------|--------|--------|------------|
|   |             |              |          | Factor            | 1      |        |             | dBm   | dB     |        |            |
| 1 | 7232.00     | -58.65       | RMS      | 37.13             | -51.93 | 0.88   | -95.23      | 50.50 | -40.00 | -18.65 | Horizontal |
| 2 | 10848.00    | -54.78       | RMS      | 39.20             | -49.81 | 0.27   | -95.23      | 50.79 | -40.00 | -14.78 | Horizontal |
| 3 | 14464.00    | -51.94       | RMS      | 40.63             | -45.45 | 0.44   | -95.23      | 47.67 | -40.00 | -11.94 | Horizontal |



Site : 03CH12-HY

Condition: PART 96 LIMIT -40 1m SHF\_00993\_231124 Vertical

: LTE Band 48 20M Ch55990 1RB0 QPSK

|   | Freq<br>MHz | Level<br>dBm | Detector | Ant Amp\Cb Filter |        | EIRPCF | Readin<br>g | Limit |        | Margin | Pol      |
|---|-------------|--------------|----------|-------------------|--------|--------|-------------|-------|--------|--------|----------|
|   |             |              |          | Factor            | 1      |        |             | dBm   | dB     |        |          |
| 1 | 7232.00     | -58.28       | RMS      | 37.13             | -51.93 | 0.88   | -95.23      | 50.87 | -40.00 | -18.28 | Vertical |
| 2 | 10848.00    | -54.73       | RMS      | 39.20             | -49.81 | 0.27   | -95.23      | 50.84 | -40.00 | -14.73 | Vertical |
| 3 | 14464.00    | -52.00       | RMS      | 40.63             | -45.45 | 0.44   | -95.23      | 47.61 | -40.00 | -12.00 | Vertical |

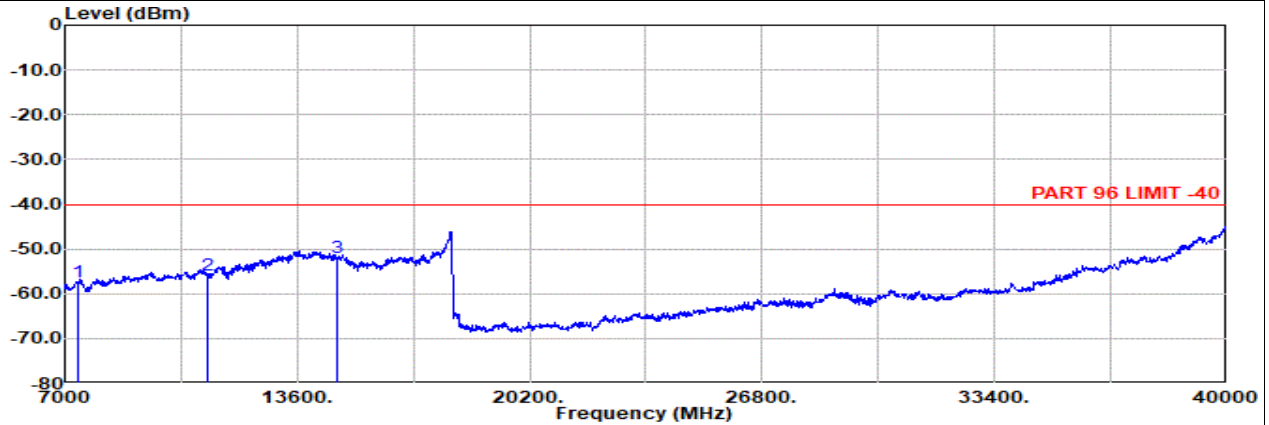


## MIMO2 Antenna

## Part 96 Mode 88

LTE B48 20M Ch56640 1RB0 QPSK

H

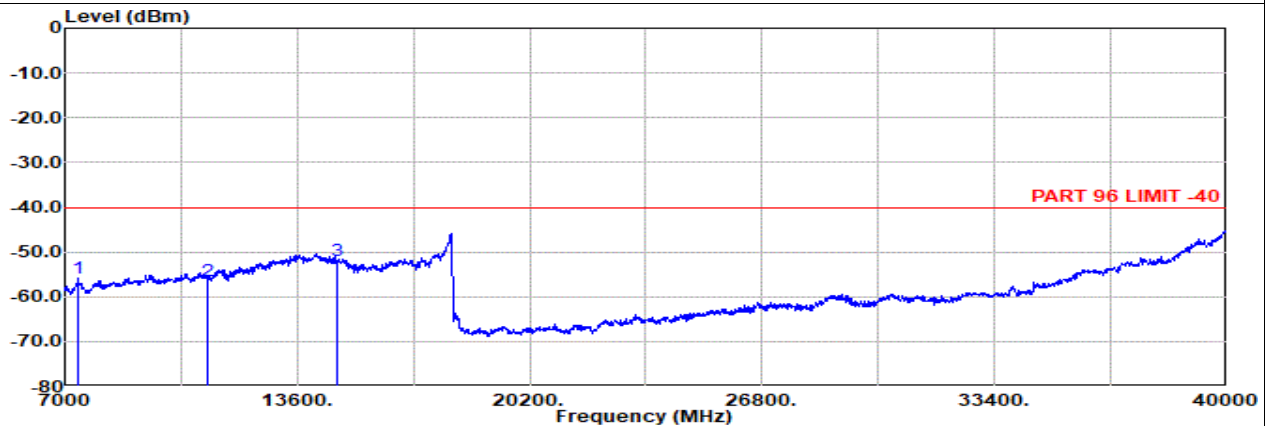


Site : 03CH12-HY

Condition: PART 96 LIMIT -40 1m SHF\_00993\_231124 Horizontal

: LTE Band 48 20M Ch56640 1RB0 QPSK

|   | Freq<br>MHz | Level<br>dBm | Detector | Ant Amp\Cb Filter |        | EIRPCF | Readin<br>g | Limit |        | Margin | Pol        |
|---|-------------|--------------|----------|-------------------|--------|--------|-------------|-------|--------|--------|------------|
|   |             |              |          | Factor            | 1      |        |             |       |        |        |            |
|   |             |              |          |                   |        |        |             |       |        |        |            |
| 1 | 7362.00     | -57.41       | RMS      | 36.83             | -51.67 | 0.83   | -95.23      | 51.83 | -40.00 | -17.41 | Horizontal |
| 2 | 11043.00    | -55.99       | RMS      | 38.90             | -49.48 | 0.28   | -95.23      | 49.54 | -40.00 | -15.99 | Horizontal |
| 3 | 14724.00    | -51.85       | RMS      | 40.65             | -45.56 | 0.42   | -95.23      | 47.87 | -40.00 | -11.85 | Horizontal |



Site : 03CH12-HY

Condition: PART 96 LIMIT -40 1m SHF\_00993\_231124 Vertical

: LTE Band 48 20M Ch56640 1RB0 QPSK

|   | Freq<br>MHz | Level<br>dBm | Detector | Ant Amp\Cb Filter |        | EIRPCF | Readin<br>g | Limit |        | Margin | Pol      |
|---|-------------|--------------|----------|-------------------|--------|--------|-------------|-------|--------|--------|----------|
|   |             |              |          | Factor            | 1      |        |             |       |        |        |          |
|   |             |              |          |                   |        |        |             |       |        |        |          |
| 1 | 7362.00     | -55.83       | RMS      | 36.83             | -51.67 | 0.83   | -95.23      | 53.41 | -40.00 | -15.83 | Vertical |
| 2 | 11043.00    | -56.48       | RMS      | 38.90             | -49.48 | 0.28   | -95.23      | 49.05 | -40.00 | -16.48 | Vertical |
| 3 | 14724.00    | -51.84       | RMS      | 40.65             | -45.56 | 0.42   | -95.23      | 47.88 | -40.00 | -11.84 | Vertical |

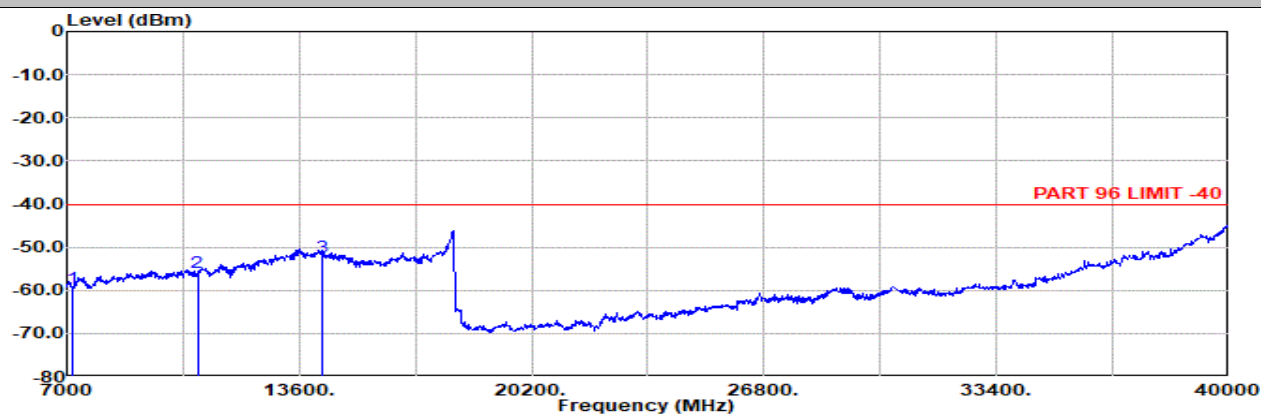


## MIMO2 Antenna

## Part 96 Mode 89

LTE CA B48C 20M + 20M Ch55340 1RB99 QPSK + Ch55538 1RB0 QPSK

L



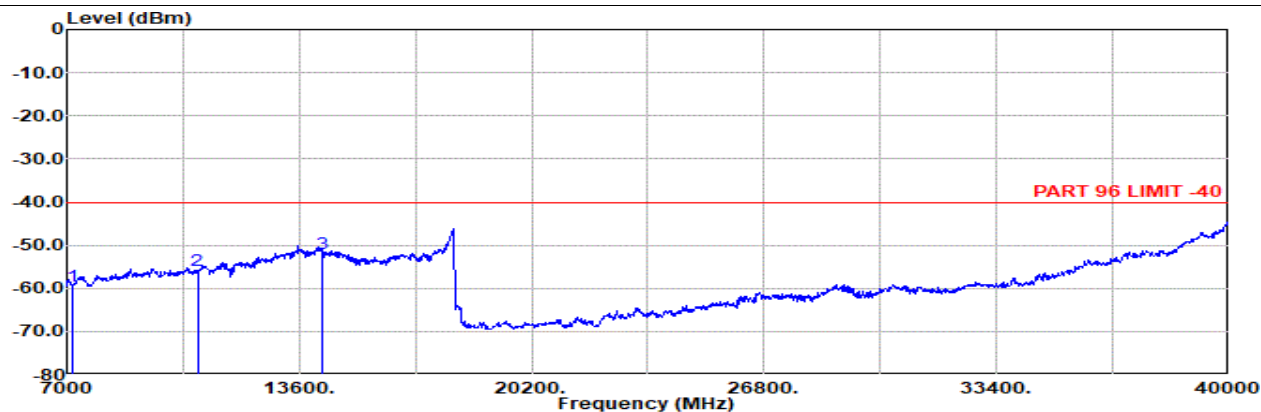
Site : 03CH12-HY

Condition: PART 96 LIMIT -40 1m SHF\_00993\_231124 Vertical

: LTE Band 48 20M Ch55340 1RB99 QPSK

: LTE Band 48 20M Ch55538 1RB0 QPSK

|   | Freq Level |        | Detector | Ant Amp\Cb Filter |        | Factor | Filter |       | EIRPCF | Readin g | Limit      |     | Margin | Pol |
|---|------------|--------|----------|-------------------|--------|--------|--------|-------|--------|----------|------------|-----|--------|-----|
|   | MHz        | dBm    |          | dB/m              | dB     |        | dB     | dB    |        |          | dBuV       | dBm | dB     |     |
| 1 | 7138.00    | -59.54 | RMS      | 36.75             | -51.94 | 0.90   | -95.23 | 49.98 | -40.00 | -19.54   | Horizontal |     |        |     |
| 2 | 10707.00   | -55.77 | RMS      | 39.19             | -49.99 | 0.26   | -95.23 | 50.00 | -40.00 | -15.77   | Horizontal |     |        |     |
| 3 | 14276.00   | -52.17 | RMS      | 40.90             | -45.77 | 0.45   | -95.23 | 47.48 | -40.00 | -12.17   | Horizontal |     |        |     |



Site : 03CH12-HY

Condition: PART 96 LIMIT -40 1m SHF\_00993\_231124 Horizontal

: LTE Band 48 20M Ch55340 1RB99 QPSK

: LTE Band 48 20M Ch55538 1RB0 QPSK

|   | Freq Level |        | Detector | Ant Amp\Cb Filter |        | Factor | Filter |       | EIRPCF | Readin g | Limit    |     | Margin | Pol |
|---|------------|--------|----------|-------------------|--------|--------|--------|-------|--------|----------|----------|-----|--------|-----|
|   | MHz        | dBm    |          | dB/m              | dB     |        | dB     | dB    |        |          | dBuV     | dBm | dB     |     |
| 1 | 7138.00    | -59.34 | RMS      | 36.75             | -51.94 | 0.90   | -95.23 | 50.18 | -40.00 | -19.34   | Vertical |     |        |     |
| 2 | 10707.00   | -55.84 | RMS      | 39.19             | -49.99 | 0.26   | -95.23 | 49.93 | -40.00 | -15.84   | Vertical |     |        |     |
| 3 | 14276.00   | -51.85 | RMS      | 40.90             | -45.77 | 0.45   | -95.23 | 47.80 | -40.00 | -11.85   | Vertical |     |        |     |

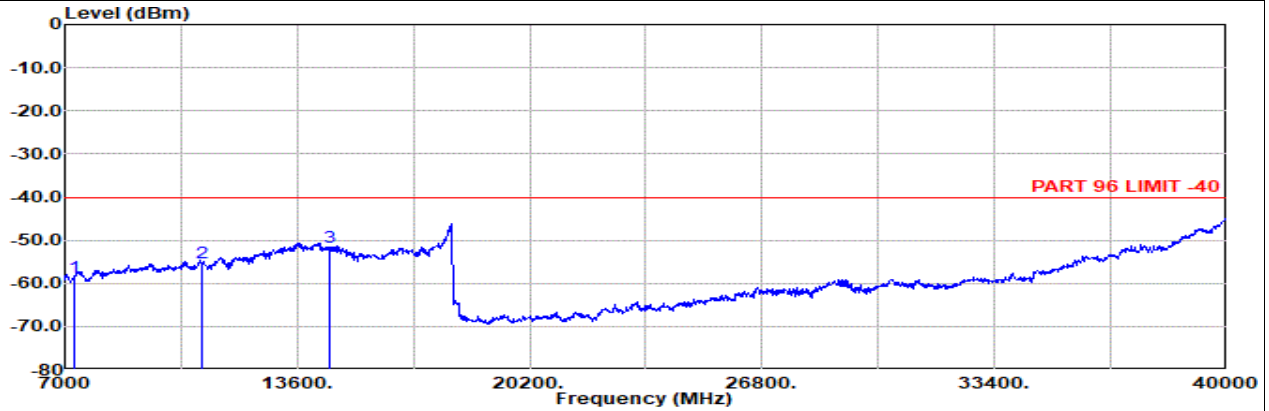


## MIMO2 Antenna

## Part 96 Mode 89

LTE CA B48C 20M + 20M Ch55891 1RB99 QPSK + Ch56089 1RB0 QPSK

## M



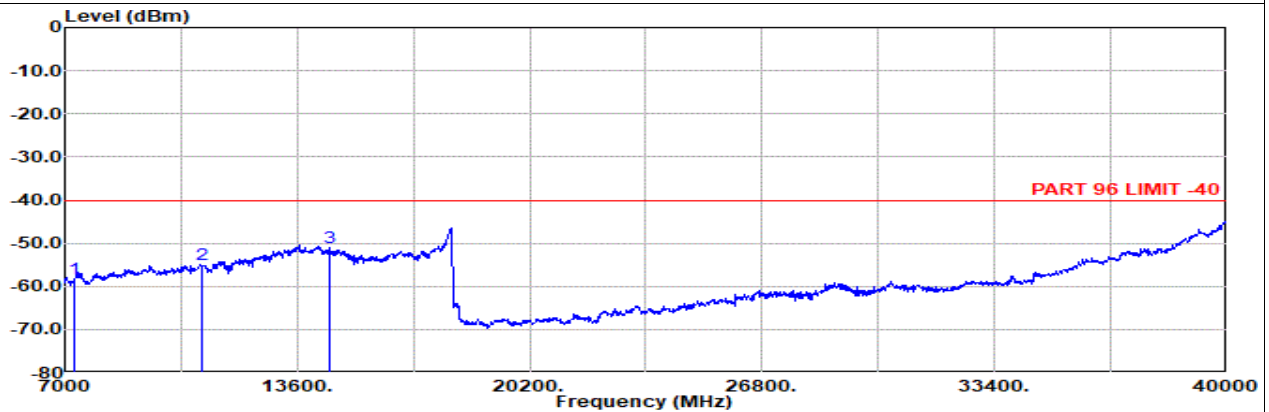
Site : 03CH12-HY

Condition: PART 96 LIMIT -40 1m SHF\_00993\_231124 Horizontal

: LTE Band 48 20M Ch55891 1RB99 QPSK

: LTE Band 48 20M Ch56089 1RB0 QPSK

|   | Freq Level |        | Detector | Ant Amp\Cb Filter |        | Factor | EIRPCF |       | Readin g | Limit  |            | Margin | Pol |
|---|------------|--------|----------|-------------------|--------|--------|--------|-------|----------|--------|------------|--------|-----|
|   | MHz        | dBm    |          | dB/m              | dB     |        | dB     | dB    |          | dBuV   | dBm        | dB     |     |
| 1 | 7248.00    | -58.46 | RMS      | 37.19             | -51.89 | 0.87   | -95.23 | 50.60 | -40.00   | -18.46 | Horizontal |        |     |
| 2 | 10872.00   | -55.14 | RMS      | 39.16             | -49.78 | 0.27   | -95.23 | 50.44 | -40.00   | -15.14 | Horizontal |        |     |
| 3 | 14496.00   | -51.59 | RMS      | 40.69             | -45.40 | 0.44   | -95.23 | 47.91 | -40.00   | -11.59 | Horizontal |        |     |



Site : 03CH12-HY

Condition: PART 96 LIMIT -40 1m SHF\_00993\_231124 Vertical

: LTE Band 48 20M Ch55891 1RB99 QPSK

: LTE Band 48 20M Ch56089 1RB0 QPSK

|   | Freq Level |        | Detector | Ant Amp\Cb Filter |        | Factor | EIRPCF |       | Readin g | Limit  |          | Margin | Pol |
|---|------------|--------|----------|-------------------|--------|--------|--------|-------|----------|--------|----------|--------|-----|
|   | MHz        | dBm    |          | dB/m              | dB     |        | dB     | dB    |          | dBuV   | dBm      | dB     |     |
| 1 | 7248.00    | -58.36 | RMS      | 37.19             | -51.89 | 0.87   | -95.23 | 50.70 | -40.00   | -18.36 | Vertical |        |     |
| 2 | 10872.00   | -54.98 | RMS      | 39.16             | -49.78 | 0.27   | -95.23 | 50.60 | -40.00   | -14.98 | Vertical |        |     |
| 3 | 14496.00   | -50.96 | RMS      | 40.69             | -45.40 | 0.44   | -95.23 | 48.54 | -40.00   | -10.96 | Vertical |        |     |

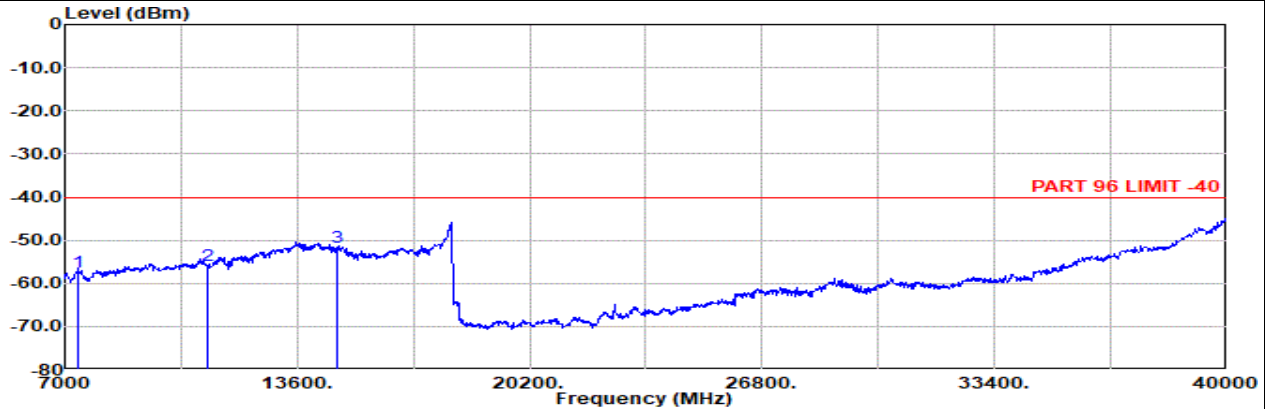


## MIMO2 Antenna

## Part 96 Mode 89

LTE CA B48C 20M + 20M Ch56442 1RB99 QPSK + Ch56640 1RB0 QPSK

## H



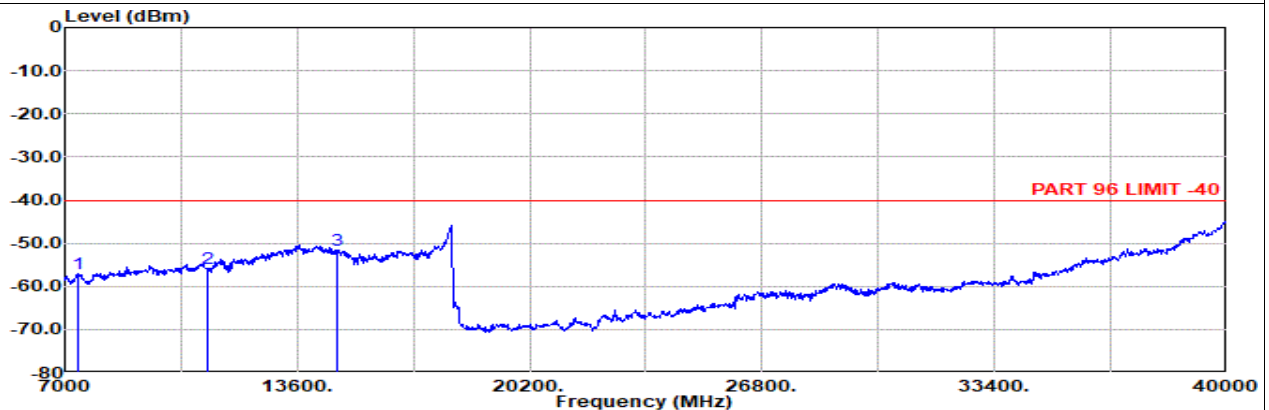
Site : 03CH12-HY

Condition: PART 96 LIMIT -40 1m SHF\_00993\_231124 Horizontal

: LTE Band 48 20M Ch56442 1RB99 QPSK

: LTE Band 48 20M Ch56640 1RB0 QPSK

|   | Freq Level |        | Detector | Ant Amp\Cb Filter |        | Factor | Filter |       | EIRPCF | Readin g | Limit      |     | Margin | Pol |
|---|------------|--------|----------|-------------------|--------|--------|--------|-------|--------|----------|------------|-----|--------|-----|
|   | MHz        | dBm    |          | dB/m              | dB     |        | dB     | dB    |        |          | dBuV       | dBm | dB     |     |
| 1 | 7358.00    | -57.30 | RMS      | 36.85             | -51.68 | 0.83   | -95.23 | 51.93 | -40.00 | -17.30   | Horizontal |     |        |     |
| 2 | 11037.00   | -55.94 | RMS      | 38.90             | -49.50 | 0.28   | -95.23 | 49.61 | -40.00 | -15.94   | Horizontal |     |        |     |
| 3 | 14716.00   | -51.70 | RMS      | 40.67             | -45.55 | 0.42   | -95.23 | 47.99 | -40.00 | -11.70   | Horizontal |     |        |     |



Site : 03CH12-HY

Condition: PART 96 LIMIT -40 1m SHF\_00993\_231124 Vertical

: LTE Band 48 20M Ch56442 1RB99 QPSK

: LTE Band 48 20M Ch56640 1RB0 QPSK

|   | Freq Level |        | Detector | Ant Amp\Cb Filter |        | Factor | Filter |       | EIRPCF | Readin g | Limit    |     | Margin | Pol |
|---|------------|--------|----------|-------------------|--------|--------|--------|-------|--------|----------|----------|-----|--------|-----|
|   | MHz        | dBm    |          | dB/m              | dB     |        | dB     | dB    |        |          | dBuV     | dBm | dB     |     |
| 1 | 7358.00    | -57.13 | RMS      | 36.85             | -51.68 | 0.83   | -95.23 | 52.10 | -40.00 | -17.13   | Vertical |     |        |     |
| 2 | 11037.00   | -55.76 | RMS      | 38.90             | -49.50 | 0.28   | -95.23 | 49.79 | -40.00 | -15.76   | Vertical |     |        |     |
| 3 | 14716.00   | -51.68 | RMS      | 40.67             | -45.55 | 0.42   | -95.23 | 48.01 | -40.00 | -11.68   | Vertical |     |        |     |

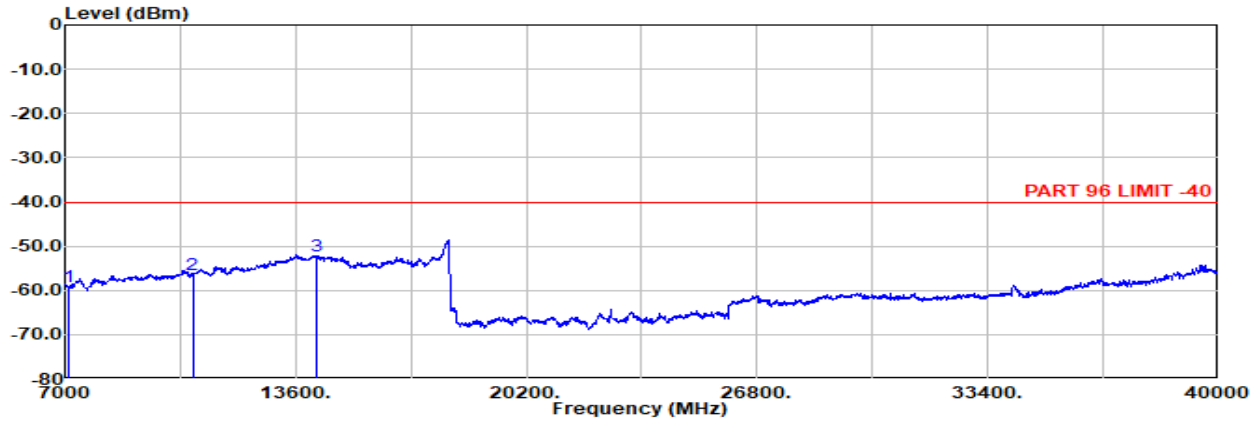


## Main Antenna

## Part 96 Mode 113

LTE B48 20M Ch55340 1RB0 QPSK

L

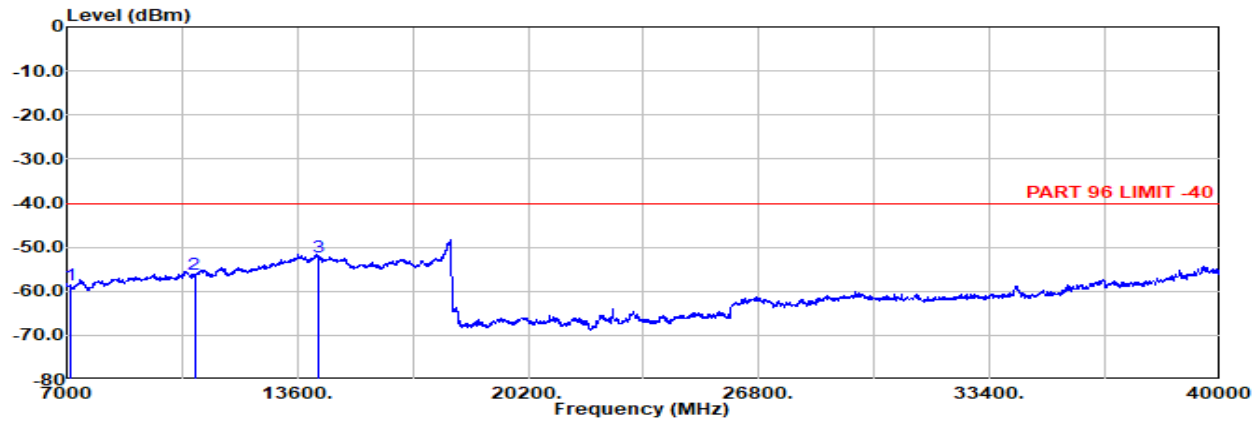


Site : 03CH12-HY

Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Horizontal

: LTE Band 48 20M Ch55340 1RB0 QPSK

|   | Freq     | Level  | Detector | Ant Factor | Amp\Cb 1 | Filter | EIRPCF | Reading | Limit  | Margin | Pol        |
|---|----------|--------|----------|------------|----------|--------|--------|---------|--------|--------|------------|
|   | MHz      | dBm    |          | dB/m       | dB       | dB     | dB     | dBuV    | dBm    | dB     |            |
| 1 | 7102.00  | -59.07 | RMS      | 36.61      | -53.00   | 0.90   | -95.23 | 51.65   | -40.00 | -19.07 | Horizontal |
| 2 | 10653.00 | -56.52 | RMS      | 39.20      | -51.32   | 0.26   | -95.23 | 50.57   | -40.00 | -16.52 | Horizontal |
| 3 | 14204.00 | -52.37 | RMS      | 40.99      | -48.22   | 0.45   | -95.23 | 49.64   | -40.00 | -12.37 | Horizontal |



Site : 03CH12-HY

Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Vertical

: LTE Band 48 20M Ch55340 1RB0 QPSK

|   | Freq     | Level  | Detector | Ant Factor | Amp\Cb<br>1 | Filter | EIRPCF | Reading | Limit  | Margin | Pol      |
|---|----------|--------|----------|------------|-------------|--------|--------|---------|--------|--------|----------|
|   | MHz      | dBm    |          | dB/m       | dB          | dB     | dB     | dBuV    | dBm    | dB     |          |
| 1 | 7102.00  | -58.62 | RMS      | 36.61      | -53.00      | 0.90   | -95.23 | 52.10   | -40.00 | -18.62 | Vertical |
| 2 | 10653.00 | -56.23 | RMS      | 39.20      | -51.32      | 0.26   | -95.23 | 50.86   | -40.00 | -16.23 | Vertical |
| 3 | 14204.00 | -52.28 | RMS      | 40.99      | -48.22      | 0.45   | -95.23 | 49.73   | -40.00 | -12.28 | Vertical |

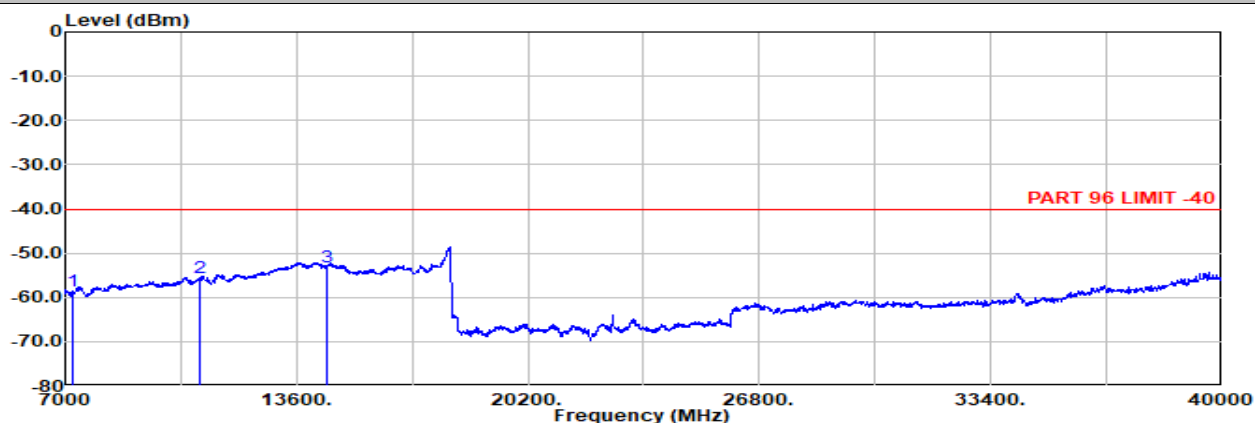


## Main Antenna

## Part 96 Mode 113

LTE B48 20M Ch55990 1RB0 QPSK

M

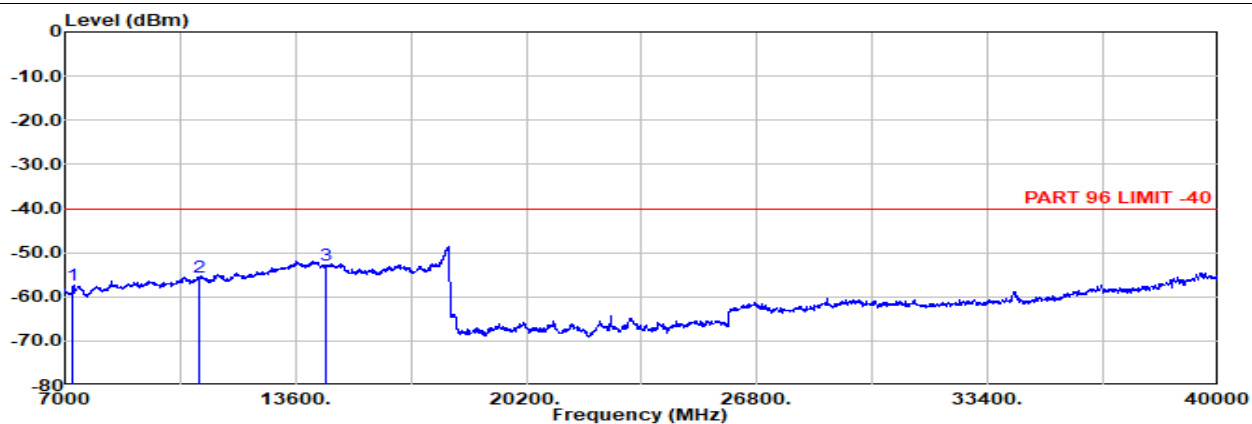


Site : 03CH12-HY

Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Horizontal

: LTE Band 48 20M Ch55990 1RB0 QPSK

|   | Freq     | Level  | Detector | Ant Factor | Amp\Cb 1 | Filter | EIRPCF | Reading | Limit  | Margin | Pol        |
|---|----------|--------|----------|------------|----------|--------|--------|---------|--------|--------|------------|
|   | MHz      | dBm    |          | dB/m       | dB       | dB     | dB     | dBuV    | dBm    | dB     |            |
| 1 | 7232.00  | -58.65 | RMS      | 37.13      | -52.95   | 0.88   | -95.23 | 51.52   | -40.00 | -18.65 | Horizontal |
| 2 | 10848.00 | -55.46 | RMS      | 39.20      | -51.08   | 0.27   | -95.23 | 51.38   | -40.00 | -15.46 | Horizontal |
| 3 | 14464.00 | -53.25 | RMS      | 40.63      | -47.72   | 0.44   | -95.23 | 48.63   | -40.00 | -13.25 | Horizontal |



Site : 03CH12-HY

Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Vertical

: LTE Band 48 20M Ch55990 1RB0 QPSK

|   | Freq     | Level  | Detector | Ant Factor | Amp\Cb 1 | Filter | EIRPCF | Reading | Limit  | Margin | Pol      |
|---|----------|--------|----------|------------|----------|--------|--------|---------|--------|--------|----------|
|   | MHz      | dBm    |          | dB/m       | dB       | dB     |        | dBuV    | dBm    |        |          |
| 1 | 7232.00  | -57.25 | RMS      | 37.13      | -52.95   | 0.88   | -95.23 | 52.92   | -40.00 | -17.25 | Vertical |
| 2 | 10848.00 | -55.62 | RMS      | 39.20      | -51.08   | 0.27   | -95.23 | 51.22   | -40.00 | -15.62 | Vertical |
| 3 | 14464.00 | -52.72 | RMS      | 40.63      | -47.72   | 0.44   | -95.23 | 49.16   | -40.00 | -12.72 | Vertical |

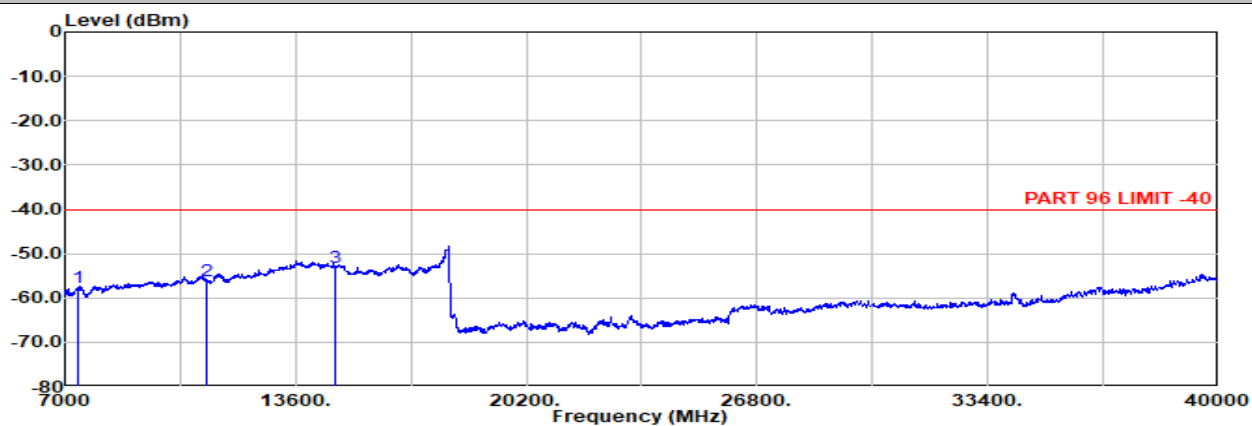


## Main Antenna

## Part 96 Mode 113

LTE B48 20M Ch56640 1RB0 QPSK

H

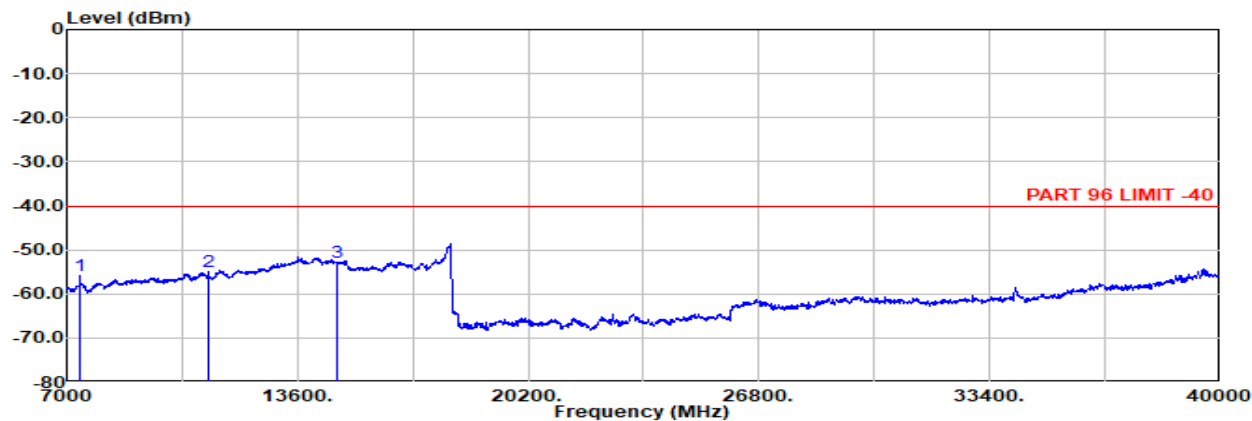


Site : 03CH12-HY

Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Horizontal

: LTE Band 48 20M Ch56640 1RB0 QPSK

|   | Freq     | Level  | Detector | Ant Factor | Amp\Cb | Filter 1 | EIRPCF | Readin g | Limit  | Margin | Pol        |
|---|----------|--------|----------|------------|--------|----------|--------|----------|--------|--------|------------|
|   | MHz      | dBm    |          |            |        |          |        |          | dBm    | dB     |            |
| 1 | 7362.00  | -57.61 | RMS      | 36.83      | -52.78 | 0.83     | -95.23 | 52.74    | -40.00 | -17.61 | Horizontal |
| 2 | 11043.00 | -56.06 | RMS      | 38.90      | -50.80 | 0.28     | -95.23 | 50.79    | -40.00 | -16.06 | Horizontal |
| 3 | 14724.00 | -53.12 | RMS      | 40.65      | -47.77 | 0.42     | -95.23 | 48.81    | -40.00 | -13.12 | Horizontal |



Site : 03CH12-HY

Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Vertical

: LTE Band 48 20M Ch56640 1RB0 QPSK

|   | Freq     | Level  | Detector | Ant Factor | Amp\Cb | Filter 1 | EIRPCF | Readin g | Limit  | Margin | Pol      |
|---|----------|--------|----------|------------|--------|----------|--------|----------|--------|--------|----------|
|   | MHz      | dBm    |          |            |        |          |        |          | dBm    | dB     |          |
| 1 | 7362.00  | -55.94 | RMS      | 36.83      | -52.78 | 0.83     | -95.23 | 54.41    | -40.00 | -15.94 | Vertical |
| 2 | 11043.00 | -55.00 | RMS      | 38.90      | -50.80 | 0.28     | -95.23 | 51.85    | -40.00 | -15.00 | Vertical |
| 3 | 14724.00 | -52.69 | RMS      | 40.65      | -47.77 | 0.42     | -95.23 | 49.24    | -40.00 | -12.69 | Vertical |

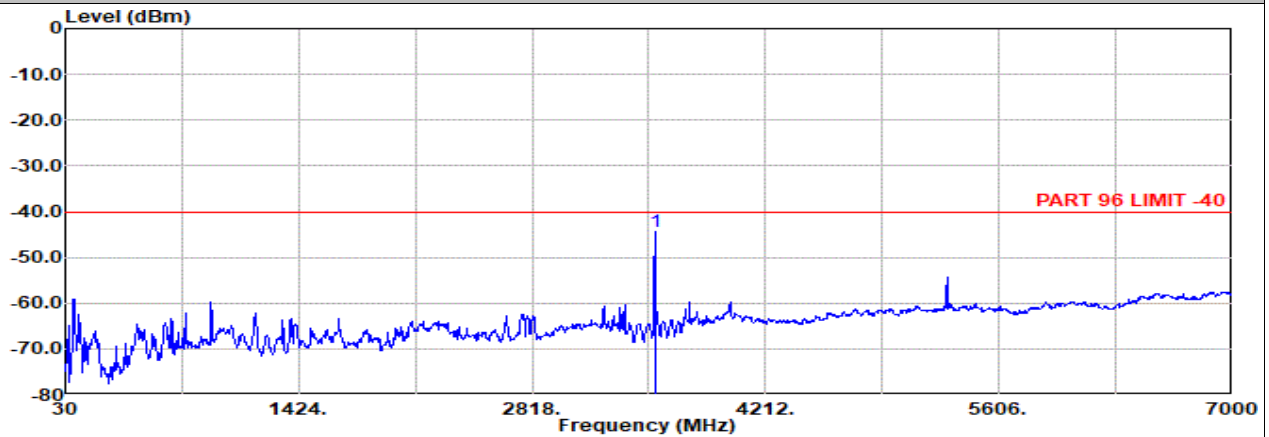


## MIMO2 Antenna

Part 96 Mode 88

LTE B48 20M Ch55340 1RB0 QPSK

L



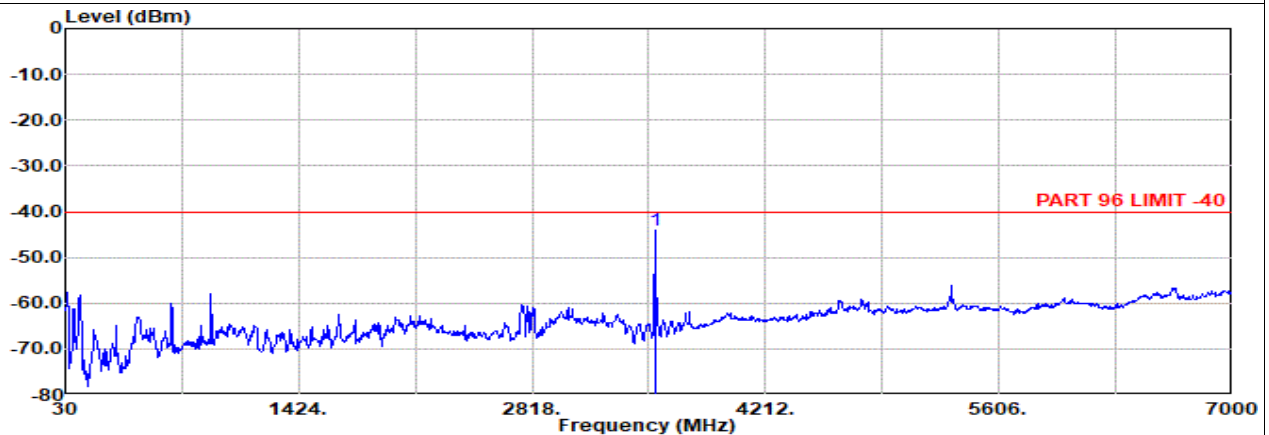
Site : 03CH12-HY

Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Horizontal

: LTE Band 48 20M Ch55340 1RB0 QPSK

: #1 is fundamental signal which can be ignored.

|   | Freq    | Level  | Detector | Ant Amp\Cb Filter |        | EIRPCF | Readin | Limit | Margin Pol |                  |
|---|---------|--------|----------|-------------------|--------|--------|--------|-------|------------|------------------|
|   |         |        |          | Factor            | 1      |        |        |       |            |                  |
|   | MHz     | dBm    |          | dB/m              | dB     | dB     | dB     | dBuV  | dBm        | dB               |
| 1 | 3551.00 | -44.24 | RMS      | 29.60             | -57.17 | 0.54   | -95.23 | 78.02 | -40.00     | -4.24 Horizontal |



Site : 03CH12-HY

Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Vertical

: LTE Band 48 20M Ch55340 1RB0 QPSK

: #1 is fundamental signal which can be ignored.

|   | Freq    | Level  | Detector | Ant Amp\Cb Filter |        | EIRPCF | Readin | Limit | Margin Pol |                |
|---|---------|--------|----------|-------------------|--------|--------|--------|-------|------------|----------------|
|   |         |        |          | Factor            | 1      |        |        |       |            |                |
|   | MHz     | dBm    |          | dB/m              | dB     | dB     | dB     | dBuV  | dBm        | dB             |
| 1 | 3556.00 | -43.94 | RMS      | 29.60             | -57.16 | 0.54   | -95.23 | 78.31 | -40.00     | -3.94 Vertical |

Remark: #1 is fundamental signal which can be ignored.