



FCC RADIO TEST REPORT

FCC ID : 2AJN7-TP00130A
Equipment : Notebook Computer
Brand Name : Lenovo
Model Name : TP00130A, TP00130B
Applicant : LC Future Center Limited Taiwan Branch
7F., No. 780, Bei'an Rd., Zhongshan Dist., Taipei City 104, Taiwan
Manufacturer : LCFC (HeFei) Electronics Technology Co., Ltd.
No. 3188-1, Yungu Road (Hefei Export Processing Zone), Hefei
Economics & Technology Development Area, Anhui, CHINA
Standard : FCC 47 CFR Part 2, 22(H), 24(E), 27

Equipment: Quectel EM120R-GL tested inside of Lenovo Notebook Computer.

The product was received on Oct. 22, 2020 and testing was started from Nov. 02, 2020 and completed on Jan. 25, 2021. 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 given in ANSI / TIA-603-E 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 of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan



Table of Contents

| | |
|--|-----------|
| History of this test report..... | 3 |
| Summary of Test Result..... | 4 |
| 1 General Description | 6 |
| 1.1 Product Feature of Equipment Under Test..... | 6 |
| 1.2 Product Specification of Equipment Under Test..... | 7 |
| 1.3 Modification of EUT | 7 |
| 1.4 Testing Location | 8 |
| 1.5 Applicable Standards..... | 8 |
| 2 Test Configuration of Equipment Under Test | 9 |
| 2.1 Test Mode..... | 9 |
| 2.2 Connection Diagram of Test System..... | 10 |
| 2.3 Support Unit used in test configuration and system | 10 |
| 2.4 Frequency List of Low/Middle/High Channels | 11 |
| 3 Radiated Test Items | 13 |
| 3.1 Measuring Instruments | 13 |
| 3.2 Radiated Spurious Emission Measurement | 15 |
| 4 List of Measuring Equipment..... | 16 |
| 5 Uncertainty of Evaluation..... | 17 |
| Appendix A. Test Results of Radiated Test | |
| Appendix B. Test Setup Photographs | |



History of this test report

| Report No. | Version | Description | Issued Date |
|------------|---------|-------------------------|---------------|
| FG002238B | 01 | Initial issue of report | Feb. 02, 2021 |
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Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items | Result (PASS/FAIL) | Remark |
|---------------|---|--|--------------------|----------|
| - | §2.1046 | Conducted Output Power | - | See Note |
| | §22.913 (a)(2) | Effective Radiated Power (Band 5) (Band 26) | - | |
| | §27.50 (b)(10) §27.50 (c)(10) | Effective Radiated Power (Band 12) (Band 13) | | |
| | §24.232 (c) §27.50 (h)(2) | Equivalent Isotropic Radiated Power (Band 2) (Band 25) (Band 7) (Band 38) (Band 41) | | |
| | §27.50 (d)(4) | Equivalent Isotropic Radiated Power (Band 4) (Band 66) | | |
| - | §24.232 (d) §27.50 (d)(5) | Peak-to-Average Ratio | | - |
| - | §2.1049 | Occupied Bandwidth | - | See Note |
| - | §2.1051 §22.917 (a) §24.238 (a) §27.53 (c)(2)(4) §27.53 (g) §27.53 (h) | Conducted Band Edge Measurement (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 25) (Band 26) (Band 66) | - | See Note |
| | §2.1051 §27.53 (m)(4) | Conducted Band Edge Measurement (Band 7) (Band 38) (Band 41) | | |
| - | §2.1051 §22.917 (a) §24.238 (a) §27.53 (c)(2) §27.53 (g) §27.53 (h) | Conducted Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 25) (Band 26) (Band 66) | - | See Note |
| | §2.1051 §27.53 (m)(4) | Conducted Spurious Emission (Band 7) (Band 38) (Band 41) | | |
| - | §2.1055 §22.355 §24.235 §27.54 | Frequency Stability Temperature & Voltage | - | See Note |



| Report Clause | Ref Std. Clause | Test Items | Result (PASS/FAIL) | Remark |
|---------------|--|--|--------------------|--|
| 3.2 | §2.1053 §22.917 (a) §24.238 (a) §27.53 (c)(2) §27.53 (f) §27.53 (g) §27.53 (h) | Radiated Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 25) (Band 26) (Band 66) | Pass | Under limit 14.35 dB at 1560.000 MHz |
| | §2.1051 §27.53 (m)(4) | Radiated Spurious Emission (Band 7) (Band 38) (Band 41) | | |

Note: The module (Model: EM120R-GL) makes no difference after verifying output power, this report reuses test data from the module report.

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Wii Chang

Report Producer: Dara Chiu



1 General Description

1.1 Product Feature of Equipment Under Test

| Product Feature | |
|---------------------------------|-----------------------------|
| Equipment | Notebook Computer |
| Brand Name | Lenovo |
| Model Name | TP00130A, TP00130B |
| FCC ID | 2AJN7-TP00130A |
| EUT supports Radios application | WCDMA/HSPA/LTE/GNSS/NFC/UWB |
| EUT Stage | Production Unit |

Remark:

1. The above EUT's information was declared by manufacturer.
2. Equipment: Quectel EM120R-GL tested inside of Lenovo Notebook Computer.

| WWAN Antenna Information | | | | |
|--------------------------|--------------|-----------------------------|-----------------|------|
| Main Antenna | Manufacturer | Luxshare-ICT | Peak gain (dBi) | 1.90 |
| | Part number | DC33001R140 | Type | PIFA |
| | Manufacturer | Amphenol Taiwan Corporation | Peak gain (dBi) | 1.90 |
| | Part number | DC33001R840 | Type | PIFA |

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.
2. All test items were performed with Luxshare-ICT Antenna.



1.2 Product Specification of Equipment Under Test

| Product Specification subjective to this standard | |
|---|---|
| Tx Frequency | LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 25: 1850.7MHz ~ 1914.3 MHz LTE Band 26: 824.7MHz ~ 848.3 MHz LTE Band 38: 2572.5MHz ~ 2617.5MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz |
| Rx Frequency | LTE Band 2: 1930.7 MHz ~ 1989.3 MHz LTE Band 4: 2110.7 MHz ~ 2154.3 MHz LTE Band 5: 869.7 MHz ~ 893.3 MHz LTE Band 7: 2622.5MHz ~ 2687.5 MHz LTE Band 12: 729.7 MHz ~ 745.3 MHz LTE Band 13: 748.5 MHz ~ 753.5 MHz LTE Band 25: 1930.7MHz ~ 1994.3 MHz LTE Band 26: 869.7MHz ~ 893.3MHz LTE Band 38: 2572.5MHz ~ 2617.5MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 2110.7 MHz ~ 2199.3 MHz |
| Bandwidth | LTE Band 2: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 4: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 5: 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 7: 5MHz / 10MHz / 15MHz / 20MHz LTE Band 12: 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 13: 5MHz / 10MHz LTE Band 25: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 26: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz LTE Band 38: 5MHz / 10MHz / 15MHz / 20MHz LTE Band 41: 5MHz / 10MHz / 15MHz / 20MHz LTE Band 66: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz |
| Type of Modulation | QPSK / 16QAM / 64QAM |

1.3 Modification of EUT

No modifications are made to the EUT during all test items.



1.4 Testing Location

| | |
|--------------------|--|
| Test Site | SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory |
| Test Site Location | No.58 , Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan |
| Test Site No. | Sporton Site No. |
| | 03CH12-HY |
| Test Engineer | Jack Cheng, Lance Chiang, and Chuan Chu |
| Temperature | 22.3 ~ 26.4 °C |
| Relative Humidity | 58 ~ 66 % |

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

FCC Designation No.: TW0007

1.5 Applicable Standards

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

- ♦ ANSI C63.26-2015
- ♦ ANSI / TIA-603-E
- ♦ FCC 47 CFR Part 2, 22(H), 24(E), 27
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. The TAF code is not including all the FCC KDB listed without accreditation.



2 Test Configuration of Equipment Under Test

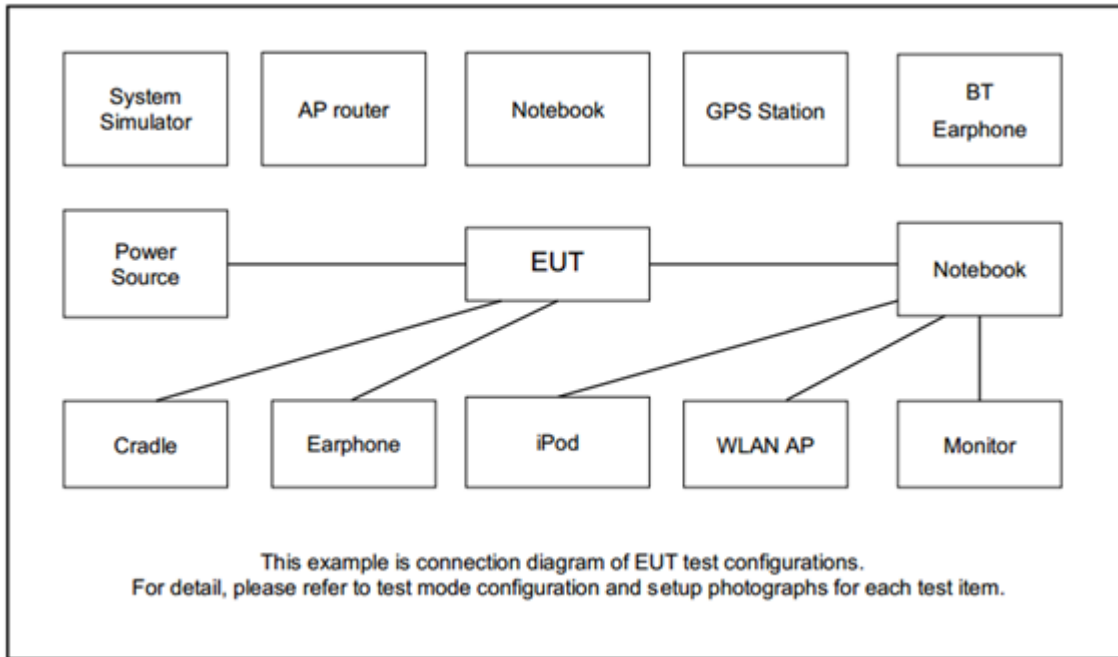
2.1 Test Mode

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.

| Test Items | Band | Bandwidth (MHz) | | | | | | Modulation | | | RB # | | | Test Channel | | |
|----------------------------|---|-----------------|---|---|----|----|----|------------|-------|-------|------|------|------|--------------|---|---|
| | | 1.4 | 3 | 5 | 10 | 15 | 20 | QPSK | 16QAM | 64QAM | 1 | Half | Full | L | M | H |
| Radiated Spurious Emission | 2 | | | | | | v | v | | | v | | | v | v | v |
| | 4 | | | | | | v | v | | | v | | | v | v | v |
| | 5 | | | | v | - | - | v | | | v | | | v | v | v |
| | 7 | - | - | | | | v | v | | | v | | | v | v | v |
| | 12 | | | | v | - | - | v | | | v | | | v | v | v |
| | 13 | - | - | v | v | - | - | v | | | v | | | v | v | v |
| | 25 | | | | | | v | v | | | v | | | v | v | v |
| | 26 | | | | | v | - | v | | | v | | | v | v | v |
| | 38 | - | - | | | | v | v | | | v | | | v | v | v |
| | 41 | - | - | | | | v | v | | | v | | | v | v | v |
| 66 | | | | | | v | v | | | v | | | v | v | v | |
| Remark | <ol style="list-style-type: none"> The mark "v" means that this configuration is chosen for testing The mark "-" means that this bandwidth is not supported. 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. All the radiated test cases were performed with Adapter 3. | | | | | | | | | | | | | | | |

| Test Items | Band | Bandwidth (MHz) | | | | | | | | | | Modulation | | | RB # | | | Test Channel | | | | |
|----------------------------|---|-----------------|-------|-------|-------|-------|------|------|-------|-------|-------|------------|-------|-------|------|------|------|--------------|---|---|---|---|
| | | 20+20 | 20+15 | 15+20 | 20+10 | 10+20 | 20+5 | 5+20 | 15+15 | 15+10 | 10+15 | QPSK | 16QAM | 64QAM | 1 | Half | Full | L | M | H | | |
| Radiated Spurious Emission | 41_CA | v | | | | | | | | | | | | v | | | v | | | v | v | v |
| Remark | <ol style="list-style-type: none"> The mark "v" means that this configuration is chosen for testing The mark "-" means that this bandwidth is not supported. 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. All the radiated test cases were performed with Adapter 3. | | | | | | | | | | | | | | | | | | | | | |

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 2 Channel and Frequency List | | | | |
|---------------------------------------|------------------------|--------|--------|---------|
| BW [MHz] | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 20 | Channel | 18700 | 18900 | 19100 |
| | Frequency | 1860 | 1880 | 1900 |

| LTE Band 4 Channel and Frequency List | | | | |
|---------------------------------------|------------------------|--------|--------|---------|
| BW [MHz] | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 20 | Channel | 20050 | 20175 | 20300 |
| | Frequency | 1720 | 1732.5 | 1745 |

| LTE Band 5 Channel and Frequency List | | | | |
|---------------------------------------|------------------------|--------|--------|---------|
| BW [MHz] | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 10 | Channel | 20450 | 20525 | 20600 |
| | Frequency | 829 | 836.5 | 844 |

| LTE Band 7 Channel and Frequency List | | | | |
|---------------------------------------|------------------------|--------|--------|---------|
| BW [MHz] | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 20 | Channel | 20850 | 21100 | 21350 |
| | Frequency | 2510 | 2535 | 2560 |

| LTE Band 12 Channel and Frequency List | | | | |
|--|------------------------|--------|--------|---------|
| BW [MHz] | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 10 | Channel | 23060 | 23095 | 23130 |
| | Frequency | 704 | 707.5 | 711 |

| LTE Band 13 Channel and Frequency List | | | | |
|--|------------------------|--------|--------|---------|
| BW [MHz] | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 10 | Channel | - | 23230 | - |
| | Frequency | - | 782 | - |
| 5 | Channel | 23205 | 23230 | 23255 |
| | Frequency | 779.5 | 782 | 784.5 |

| LTE Band 25 Channel and Frequency List | | | | |
|--|------------------------|--------|--------|---------|
| BW [MHz] | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 20 | Channel | 26140 | 26340 | 26590 |
| | Frequency | 1860 | 1880 | 1905 |



| LTE Band 26 Channel and Frequency List | | | | |
|--|------------------------|--------|--------|---------|
| BW [MHz] | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 15 | Channel | 26865 | 26915 | 26965 |
| | Frequency | 831.5 | 836.5 | 841.5 |

| LTE Band 38 Channel and Frequency List | | | | |
|--|------------------------|--------|--------|---------|
| BW [MHz] | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 20 | Channel | 37850 | 38000 | 38150 |
| | Frequency | 2580 | 2595 | 2610 |

| LTE Band 41 Channel and Frequency List | | | | |
|--|------------------------|--------|--------|---------|
| BW [MHz] | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 20 | Channel | 39750 | 40620 | 41490 |
| | Frequency | 2506 | 2593 | 2680 |

| LTE Band 66 Channel and Frequency List | | | | |
|--|------------------------|--------|--------|---------|
| BW [MHz] | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 20 | Channel | 132072 | 132322 | 132572 |
| | Frequency | 1720 | 1745 | 1770 |

| LTE Band 41C Channel and Frequency List | | | | | |
|---|------------------------|-----------|--------|---------|--------|
| BW [MHz] | Channel/Frequency(MHz) | Lowest | Middle | Highest | |
| 20 + 20 | PCC | Channel | 39750 | 40521 | 41292 |
| | | Frequency | 2506 | 2583.1 | 2660.2 |
| | SCC | Channel | 39948 | 40719 | 41490 |
| | | Frequency | 2525.8 | 2602.9 | 2680 |

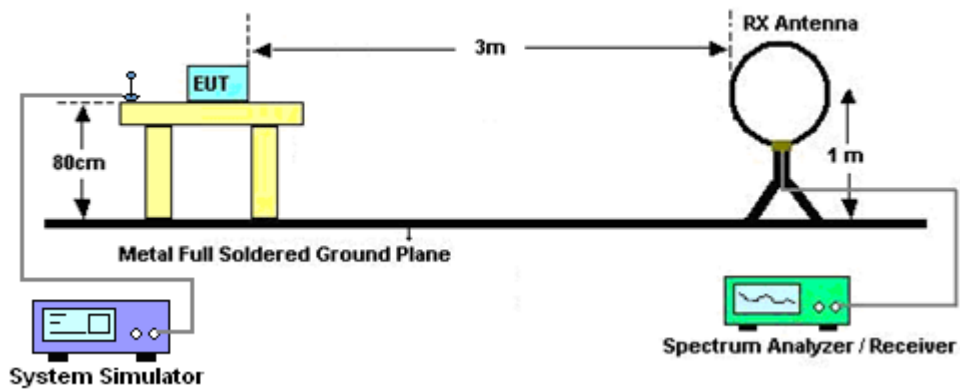
3 Radiated Test Items

3.1 Measuring Instruments

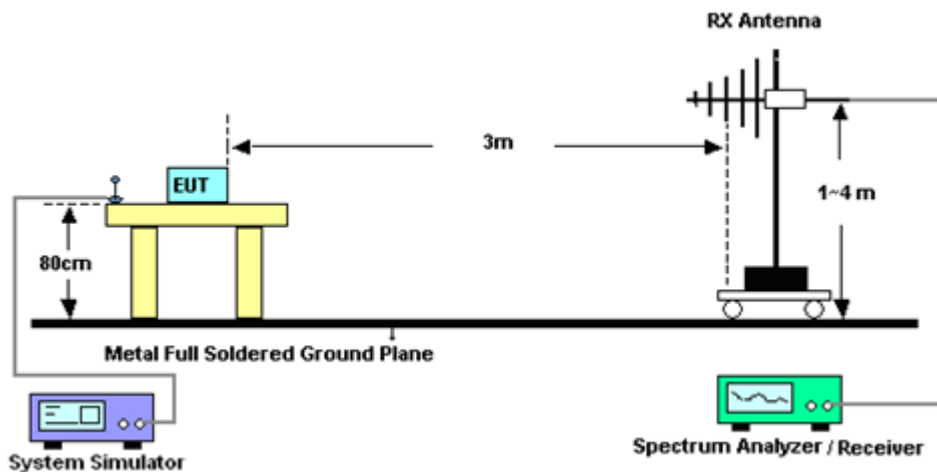
See list of measuring instruments of this test report.

3.1.1 Test Setup

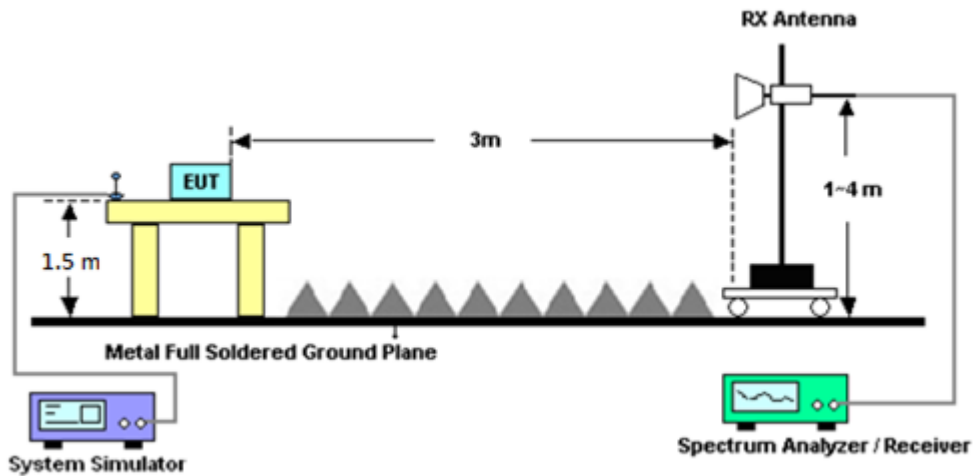
For radiated test below 30MHz



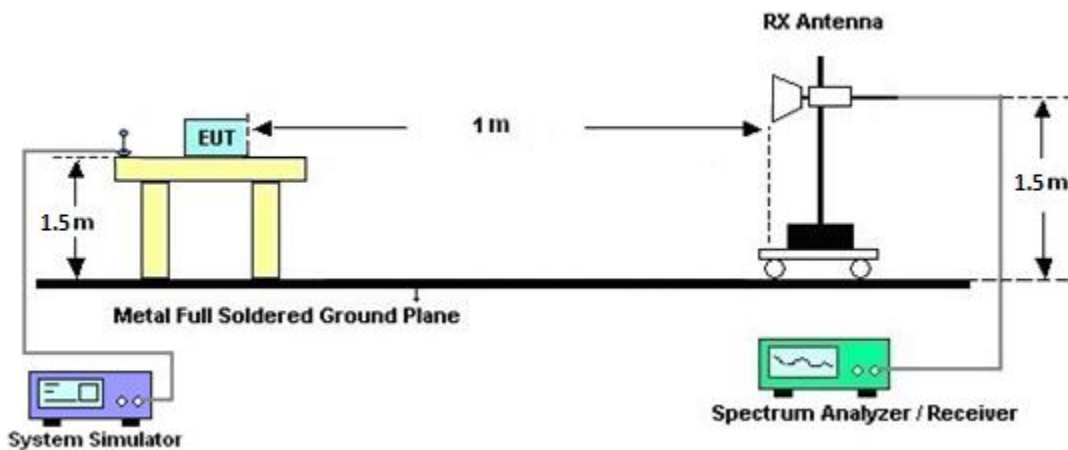
For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



For radiated test above 18GHz



3.1.2 Test Result of Radiated Test

Please refer to Appendix A.

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 a comparison data 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.



3.2 Radiated Spurious Emission Measurement

3.2.1 Description of Radiated Spurious Emission Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E. 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 $43 + 10 \log (P)$ dB.

For LTE Band 7, 38, 41

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 $55 + 10 \log (P)$ dB.

For LTE Band 13

For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

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

3.2.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI / TIA-603-E Section 2.2.12.

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, which was 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 one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)

For LTE Band 7, 38, 41

The limit line is derived from $55 + 10\log(P)$ dB below the transmitter power P(Watts)

EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain

ERP (dBm) = EIRP - 2.15



4 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 | 100488 | 9 kHz~30 MHz | Jul. 14, 2020 | Nov. 02, 2020 ~ Jan. 25, 2021 | Jul. 13, 2021 | Radiation (03CH12-HY) |
| Bilog Antenna | TESEQ | CBL 6111D & 00800N1D01N-06 | 40103 & 07 | 30MHz~1GHz | Apr. 29, 2020 | Nov. 02, 2020 ~ Jan. 25, 2021 | Apr. 28, 2021 | Radiation (03CH12-HY) |
| Horn Antenna | SCHWARZBECK | BBHA 9120D | 9120D-1212 | 1GHz~18GHz | May 20, 2020 | Nov. 02, 2020 ~ Jan. 25, 2021 | May 19, 2021 | Radiation (03CH12-HY) |
| Horn Antenna | SCHWARZBECK | BBHA 9120D | 9120D-02037 | 1GHz ~ 18GHz | Oct. 23, 2020 | Nov. 02, 2020 ~ Jan. 25, 2021 | Oct. 22, 2021 | Radiation (03CH12-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK | BBHA 9170 | BBHA9170576 | 18GHz~40GHz | May 22, 2020 | Nov. 02, 2020 ~ Jan. 25, 2021 | May 21, 2021 | Radiation (03CH12-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK | BBHA9170 | 00991 | 18GHz~40GHz | May 08, 2020 | Nov. 02, 2020 ~ Jan. 25, 2021 | May 07, 2021 | Radiation (03CH12-HY) |
| Preamplifier | COM-POWER | PA-103 | 161075 | 10MHz~1GHz | Mar. 25, 2020 | Nov. 02, 2020 ~ Jan. 25, 2021 | Mar. 24, 2021 | Radiation (03CH12-HY) |
| Preamplifier | Keysight | 83017A | MY57280120 | 1GHz~26.5GHz | Jul. 20, 2020 | Nov. 02, 2020 ~ Jan. 25, 2021 | Jul. 19, 2021 | Radiation (03CH12-HY) |
| Preamplifier | Jet-Power | JPA0118-55-303A | 1910001800055002 | 1GHz~18GHz | Feb. 17, 2020 | Nov. 02, 2020 ~ Jan. 25, 2021 | Feb. 16, 2021 | Radiation (03CH12-HY) |
| Preamplifier | EMEC | EM18G40G | 060801 | 18GHz~40GHz | Jun. 15, 2020 | Nov. 02, 2020 ~ Jan. 25, 2021 | Jun. 14, 2021 | Radiation (03CH12-HY) |
| Spectrum Analyzer | Agilent | N9010A | MY54200485 | 10Hz~44GHz | Feb. 10, 2020 | Nov. 02, 2020 ~ Jan. 25, 2021 | Feb. 09, 2021 | Radiation (03CH12-HY) |
| Signal Generator | Anritsu | MG3694C | 163401 | 0.1Hz~40GHz | Feb. 15, 2020 | Nov. 02, 2020 ~ Jan. 25, 2021 | Feb. 14, 2021 | Radiation (03CH12-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | MY9837/4PE | 9kHz~30MHz | Mar. 12, 2020 | Nov. 02, 2020 ~ Jan. 25, 2021 | Mar. 11, 2021 | Radiation (03CH12-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 126E | 0058/126E | 30MHz~18GHz | Dec. 12, 2019 | Nov. 02, 2020 ~ Jan. 25, 2021 | Dec. 11, 2020 | Radiation (03CH12-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 126E | 0058/126E | 30MHz~18GHz | Dec. 11, 2020 | Nov. 02, 2020 ~ Jan. 25, 2021 | Dec. 10, 2021 | Radiation (03CH12-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | 505134/2 | 30MHz~40GHz | Feb. 25, 2020 | Nov. 02, 2020 ~ Jan. 25, 2021 | Feb. 24, 2021 | Radiation (03CH12-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | 800740/2 | 30MHz~40GHz | Feb. 25, 2020 | Nov. 02, 2020 ~ Jan. 25, 2021 | Feb. 24, 2021 | Radiation (03CH12-HY) |
| Controller | EMEC | EM1000 | N/A | Control Turn table & Ant Mast | N/A | Nov. 02, 2020 ~ Jan. 25, 2021 | N/A | Radiation (03CH12-HY) |
| Antenna Mast | EMEC | AM-BS-4500-B | N/A | 1m~4m | N/A | Nov. 02, 2020 ~ Jan. 25, 2021 | N/A | Radiation (03CH12-HY) |
| Turn Table | EMEC | TT2000 | N/A | 0~360 Degree | N/A | Nov. 02, 2020 ~ Jan. 25, 2021 | N/A | Radiation (03CH12-HY) |
| Software | Audix | E3 6.2009-8-24 | RK-000989 | N/A | N/A | Nov. 02, 2020 ~ Jan. 25, 2021 | N/A | Radiation (03CH12-HY) |



5 Uncertainty of Evaluation

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

| | |
|---|------|
| Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$) | 3.07 |
|---|------|

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

| | |
|---|------|
| Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$) | 3.21 |
|---|------|

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

| | |
|---|------|
| Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$) | 3.80 |
|---|------|



Appendix A. Test Results of Radiated Test

LTE Band 26

| LTE Band 26 / 15MHz / QPSK | | | | | | | | | |
|----------------------------|-------------------|-------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel | Frequency (MHz) | ERP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Lowest | 1649 | -56.22 | -13 | -43.22 | -64.67 | -61.82 | 0.92 | 8.67 | H |
| | 2474 | -58.48 | -13 | -45.48 | -72 | -65.85 | 1.14 | 10.66 | H |
| | 3299 | -57.61 | -13 | -44.61 | -72.94 | -66.15 | 1.32 | 12.02 | H |
| | | | | | | | | | H |
| | 1649 | -59.17 | -13 | -46.17 | -67.09 | -64.77 | 0.92 | 8.67 | V |
| | 2474 | -58.38 | -13 | -45.38 | -72.05 | -65.75 | 1.14 | 10.66 | V |
| | 3299 | -56.97 | -13 | -43.97 | -72.77 | -65.51 | 1.32 | 12.02 | V |
| | | | | | | | | | V |
| Middle | 1659 | -55.10 | -13 | -42.10 | -63.59 | -60.73 | 0.92 | 8.70 | H |
| | 2489 | -58.75 | -13 | -45.75 | -72.3 | -66.14 | 1.15 | 10.68 | H |
| | 3319 | -56.99 | -13 | -43.99 | -72.26 | -65.58 | 1.33 | 12.07 | H |
| | | | | | | | | | H |
| | 1659 | -58.74 | -13 | -45.74 | -66.65 | -64.37 | 0.92 | 8.70 | V |
| | 2489 | -58.47 | -13 | -45.47 | -72.21 | -65.86 | 1.15 | 10.68 | V |
| | 3319 | -56.46 | -13 | -43.46 | -72.19 | -65.05 | 1.33 | 12.07 | V |
| | | | | | | | | | V |
| Highest | 1669 | -54.26 | -13 | -41.26 | -62.78 | -59.92 | 0.93 | 8.74 | H |
| | 2504 | -58.54 | -13 | -45.54 | -72.11 | -65.94 | 1.15 | 10.70 | H |
| | 3339 | -57.57 | -13 | -44.57 | -72.78 | -66.20 | 1.33 | 12.11 | H |
| | | | | | | | | | H |
| | 1669 | -58.66 | -13 | -45.66 | -66.57 | -64.32 | 0.93 | 8.74 | V |
| | 2504 | -58.66 | -13 | -45.66 | -72.44 | -66.06 | 1.15 | 10.70 | V |
| | 3339 | -56.95 | -13 | -43.95 | -72.62 | -65.58 | 1.33 | 12.11 | V |
| | | | | | | | | | V |

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 5

| LTE Band 5 / 10MHz / QPSK | | | | | | | | | |
|---------------------------|-------------------|-------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel | Frequency (MHz) | ERP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Lowest | 1648 | -57.84 | -13 | -44.84 | -66.29 | -63.43 | 0.92 | 8.66 | H |
| | 2472 | -56.00 | -13 | -43.00 | -69.51 | -63.37 | 1.14 | 10.66 | H |
| | 3298 | -57.12 | -13 | -44.12 | -72.45 | -65.66 | 1.32 | 12.02 | H |
| | | | | | | | | | H |
| | 1648 | -58.78 | -13 | -45.78 | -66.7 | -64.37 | 0.92 | 8.66 | V |
| | 2472 | -53.78 | -13 | -40.78 | -67.44 | -61.15 | 1.14 | 10.66 | V |
| | 3298 | -56.75 | -13 | -43.75 | -72.56 | -65.29 | 1.32 | 12.02 | V |
| | | | | | | | | | V |
| Middle | 1664 | -56.76 | -13 | -43.76 | -65.26 | -62.41 | 0.93 | 8.72 | H |
| | 2496 | -56.29 | -13 | -43.29 | -69.85 | -63.69 | 1.15 | 10.69 | H |
| | 3328 | -57.03 | -13 | -44.03 | -72.27 | -65.64 | 1.33 | 12.09 | H |
| | | | | | | | | | H |
| | 1664 | -58.17 | -13 | -45.17 | -66.08 | -63.82 | 0.93 | 8.72 | V |
| | 2496 | -55.34 | -13 | -42.34 | -69.11 | -62.74 | 1.15 | 10.69 | V |
| | 3328 | -56.71 | -13 | -43.71 | -72.41 | -65.32 | 1.33 | 12.09 | V |
| | | | | | | | | | V |
| Highest | 1680 | -56.67 | -13 | -43.67 | -65.21 | -62.37 | 0.93 | 8.78 | H |
| | 2518 | -59.02 | -13 | -46.02 | -72.59 | -66.44 | 1.15 | 10.72 | H |
| | 3358 | -57.53 | -13 | -44.53 | -72.69 | -66.20 | 1.33 | 12.16 | H |
| | | | | | | | | | H |
| | 1680 | -60.21 | -13 | -47.21 | -68.1 | -65.91 | 0.93 | 8.78 | V |
| | 2518 | -58.20 | -13 | -45.20 | -71.94 | -65.62 | 1.15 | 10.72 | V |
| | 3358 | -57.01 | -13 | -44.01 | -72.61 | -65.68 | 1.33 | 12.16 | V |
| | | | | | | | | | V |

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 2

| LTE Band 2 / 20MHz / QPSK | | | | | | | | | |
|---------------------------|-------------------|--------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel | Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Lowest | 3702 | -53.86 | -13 | -40.86 | -71.79 | -65.07 | 1.41 | 12.62 | H |
| | 5553 | -50.98 | -13 | -37.98 | -74.14 | -62.54 | 1.74 | 13.30 | H |
| | 7404 | -47.32 | -13 | -34.32 | -74.13 | -56.64 | 1.94 | 11.25 | H |
| | | | | | | | | | H |
| | 3702 | -52.74 | -13 | -39.74 | -70.82 | -63.95 | 1.41 | 12.62 | V |
| | 5553 | -51.37 | -13 | -38.37 | -74.06 | -62.93 | 1.74 | 13.30 | V |
| | 7404 | -47.29 | -13 | -34.29 | -73.95 | -56.61 | 1.94 | 11.25 | V |
| | | | | | | | | | V |
| Middle | 3742 | -53.97 | -13 | -40.97 | -72.08 | -65.19 | 1.42 | 12.65 | H |
| | 5613 | -51.16 | -13 | -38.16 | -74.24 | -62.72 | 1.74 | 13.30 | H |
| | 7484 | -47.25 | -13 | -34.25 | -73.69 | -56.39 | 1.98 | 11.13 | H |
| | | | | | | | | | H |
| | 3742 | -54.60 | -13 | -41.60 | -72.91 | -65.82 | 1.42 | 12.65 | V |
| | 5613 | -51.64 | -13 | -38.64 | -74.38 | -63.20 | 1.74 | 13.30 | V |
| | 7484 | -47.48 | -13 | -34.48 | -73.87 | -56.62 | 1.98 | 11.13 | V |
| | | | | | | | | | V |
| Highest | 3782 | -53.64 | -13 | -40.64 | -71.93 | -63.85 | 2.02 | 12.23 | H |
| | 5673 | -51.00 | -13 | -38.00 | -74.39 | -61.33 | 2.12 | 12.44 | H |
| | 7564 | -47.31 | -13 | -34.31 | -73.35 | -55.43 | 2.11 | 10.23 | H |
| | | | | | | | | | H |
| | 3782 | -52.81 | -13 | -39.81 | -71.35 | -63.02 | 2.02 | 12.23 | V |
| | 5673 | -51.99 | -13 | -38.99 | -74.89 | -62.32 | 2.12 | 12.44 | V |
| | 7564 | -47.97 | -13 | -34.97 | -73.96 | -56.09 | 2.11 | 10.23 | V |
| | | | | | | | | | V |

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 25

| LTE Band 25 / 20MHz / QPSK | | | | | | | | | |
|----------------------------|-------------------|--------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel | Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Lowest | 3702 | -55.68 | -13 | -42.68 | -73.61 | -66.89 | 1.41 | 12.62 | H |
| | 5553 | -51.06 | -13 | -38.06 | -74.22 | -62.62 | 1.74 | 13.30 | H |
| | 7404 | -47.19 | -13 | -34.19 | -74 | -56.51 | 1.94 | 11.25 | H |
| | | | | | | | | | H |
| | 3702 | -52.28 | -13 | -39.28 | -70.36 | -63.49 | 1.41 | 12.62 | V |
| | 5553 | -51.73 | -13 | -38.73 | -74.42 | -63.29 | 1.74 | 13.30 | V |
| | 7404 | -47.53 | -13 | -34.53 | -74.19 | -56.85 | 1.94 | 11.25 | V |
| | | | | | | | | | V |
| Middle | 3742 | -53.08 | -13 | -40.08 | -71.19 | -64.30 | 1.42 | 12.65 | H |
| | 5613 | -51.10 | -13 | -38.10 | -74.18 | -62.66 | 1.74 | 13.30 | H |
| | 7484 | -47.31 | -13 | -34.31 | -73.75 | -56.45 | 1.98 | 11.13 | H |
| | | | | | | | | | H |
| | 3742 | -54.05 | -13 | -41.05 | -72.36 | -65.27 | 1.42 | 12.65 | V |
| | 5613 | -51.29 | -13 | -38.29 | -74.03 | -62.85 | 1.74 | 13.30 | V |
| | 7484 | -47.36 | -13 | -34.36 | -73.75 | -56.50 | 1.98 | 11.13 | V |
| | | | | | | | | | V |
| Highest | 3792 | -53.64 | -13 | -40.64 | -71.97 | -64.88 | 1.44 | 12.68 | H |
| | 5688 | -50.98 | -13 | -37.98 | -74.45 | -62.55 | 1.73 | 13.30 | H |
| | 7584 | -48.06 | -13 | -35.06 | -73.98 | -57.18 | 2.00 | 11.12 | H |
| | | | | | | | | | H |
| | 3792 | -53.66 | -13 | -40.66 | -72.25 | -64.90 | 1.44 | 12.68 | V |
| | 5688 | -51.92 | -13 | -38.92 | -74.86 | -63.49 | 1.73 | 13.30 | V |
| | 7584 | -48.39 | -13 | -35.39 | -74.27 | -57.51 | 2.00 | 11.12 | V |
| | | | | | | | | | V |

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 12

| LTE Band 12 / 10MHz / QPSK | | | | | | | | | |
|----------------------------|-------------------|-------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel | Frequency (MHz) | ERP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Lowest | 1400 | -52.31 | -13 | -39.31 | -61.88 | -56.96 | 0.84 | 7.64 | H |
| | 2098 | -55.61 | -13 | -42.61 | -68.25 | -62.54 | 1.06 | 10.14 | H |
| | 2798 | -57.33 | -13 | -44.33 | -71.74 | -65.02 | 1.22 | 11.06 | H |
| | | | | | | | | | H |
| | 1400 | -56.48 | -13 | -43.48 | -64.82 | -61.13 | 0.84 | 7.64 | V |
| | 2098 | -51.03 | -13 | -38.03 | -62.53 | -57.96 | 1.06 | 10.14 | V |
| | 2798 | -57.58 | -13 | -44.58 | -71.94 | -65.27 | 1.22 | 11.06 | V |
| | | | | | | | | | V |
| Middle | 1408 | -50.27 | -13 | -37.27 | -59.81 | -54.95 | 0.85 | 7.68 | H |
| | 2112 | -49.17 | -13 | -36.17 | -62.06 | -56.11 | 1.06 | 10.16 | H |
| | 2812 | -57.60 | -13 | -44.60 | -72.07 | -65.30 | 1.22 | 11.07 | H |
| | | | | | | | | | H |
| | 1408 | -55.98 | -13 | -42.98 | -64.30 | -60.66 | 0.85 | 7.68 | V |
| | 2112 | -49.81 | -13 | -36.81 | 61.58 | -56.75 | 1.06 | 10.16 | V |
| | 2812 | -57.53 | -13 | -44.53 | -71.93 | -65.23 | 1.22 | 11.07 | V |
| | | | | | | | | | V |
| Highest | 1416 | -50.54 | -13 | -37.54 | -60.05 | -55.26 | 0.85 | 7.71 | H |
| | 2124 | -56.38 | -13 | -43.38 | -69.49 | -63.34 | 1.07 | 10.17 | H |
| | 2832 | -57.29 | -13 | -44.29 | -71.83 | -65.01 | 1.23 | 11.10 | H |
| | | | | | | | | | H |
| | 1416 | -57.43 | -13 | -44.43 | -65.73 | -62.15 | 0.85 | 7.71 | V |
| | 2124 | -52.00 | -13 | -39.00 | -63.98 | -58.96 | 1.07 | 10.17 | V |
| | 2832 | -57.09 | -13 | -44.09 | -71.60 | -64.81 | 1.23 | 11.10 | V |
| | | | | | | | | | V |

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 13

| LTE Band 13 / 5MHz / QPSK | | | | | | | | | |
|---------------------------|-------------------|-------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel | Frequency (MHz) | ERP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Lowest | 1552 | -55.10 | -13 | -42.10 | -63.81 | -60.36 | 0.89 | 8.30 | H |
| | 2328 | -51.25 | -13 | -38.25 | -65.04 | -58.45 | 1.11 | 10.46 | H |
| | 3112 | -57.47 | -13 | -44.47 | -72.90 | -65.60 | 1.29 | 11.57 | H |
| | | | | | | | | | H |
| | 1552 | -57.15 | -13 | -44.15 | -65.15 | -62.41 | 0.89 | 8.30 | V |
| | 2328 | -45.62 | -13 | -32.62 | -58.94 | -52.82 | 1.11 | 10.46 | V |
| | 3112 | -57.06 | -13 | -44.06 | -72.83 | -65.19 | 1.29 | 11.57 | V |
| | | | | | | | | | V |
| Middle | 1560 | -56.50 | -42.15 | -14.35 | -65.14 | -61.79 | 0.89 | 8.33 | H |
| | 2336 | -58.06 | -13 | -45.06 | -71.81 | -65.27 | 1.11 | 10.47 | H |
| | 3120 | -57.07 | -13 | -44.07 | -72.52 | -65.22 | 1.29 | 11.59 | H |
| | | | | | | | | | H |
| | 1560 | -57.00 | -42.15 | -14.85 | -65.00 | -62.29 | 0.89 | 8.33 | V |
| | 2336 | -58.82 | -13 | -45.82 | -72.14 | -66.03 | 1.11 | 10.47 | V |
| | 3120 | -57.09 | -13 | -44.09 | -72.90 | -65.24 | 1.29 | 11.59 | V |
| | | | | | | | | | V |
| Highest | 1568 | -57.40 | -42.15 | -15.25 | -65.98 | -62.72 | 0.89 | 8.36 | H |
| | 2344 | -56.85 | -13 | -43.85 | -70.54 | -64.07 | 1.12 | 10.48 | H |
| | 3128 | -57.57 | -13 | -44.57 | -73.03 | -65.73 | 1.29 | 11.61 | H |
| | | | | | | | | | H |
| | 1568 | -58.88 | -42.15 | -16.73 | -66.87 | -64.20 | 0.89 | 8.36 | V |
| | 2344 | -57.26 | -13 | -44.26 | -70.58 | -64.48 | 1.12 | 10.48 | V |
| | 3128 | -56.96 | -13 | -43.96 | -72.80 | -65.12 | 1.29 | 11.61 | V |
| | | | | | | | | | V |

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



| LTE Band 13 / 10MHz / QPSK | | | | | | | | | |
|----------------------------|-------------------|-------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel | Frequency (MHz) | ERP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Middle | 1552 | -56.58 | -13 | -43.58 | -65.29 | -61.84 | 0.89 | 8.30 | H |
| | 2336 | -50.31 | -13 | -37.31 | -64.06 | -57.52 | 1.11 | 10.47 | H |
| | 3112 | -57.25 | -13 | -44.25 | -72.68 | -65.38 | 1.29 | 11.57 | H |
| | | | | | | | | | H |
| | 1552 | -57.78 | -13 | -44.78 | -65.78 | -63.04 | 0.89 | 8.30 | V |
| | 2336 | -56.84 | -13 | -43.84 | -70.16 | -64.05 | 1.11 | 10.47 | V |
| | 3112 | -56.96 | -13 | -43.96 | -72.73 | -65.09 | 1.29 | 11.57 | V |
| | | | | | | | | | V |

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 7

| LTE Band 7 / 20MHz / QPSK | | | | | | | | | |
|---------------------------|-------------------|--------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel | Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Lowest | 5004 | -50.10 | -25 | -25.10 | -72.12 | -61.09 | 1.61 | 12.61 | H |
| | 7503 | -47.38 | -25 | -22.38 | -73.73 | -56.49 | 1.99 | 11.10 | H |
| | 10008 | -44.28 | -25 | -19.28 | -73.85 | -53.17 | 2.40 | 11.29 | H |
| | | | | | | | | | H |
| | 5004 | -49.63 | -25 | -24.63 | -71.21 | -60.62 | 1.61 | 12.61 | V |
| | 7503 | -47.39 | -25 | -22.39 | -73.73 | -56.50 | 1.99 | 11.10 | V |
| | 10008 | -43.30 | -25 | -18.30 | -73.65 | -52.19 | 2.40 | 11.29 | V |
| | | | | | | | | | V |
| Middle | 5052 | -51.27 | -25 | -26.27 | -73.27 | -62.32 | 1.62 | 12.67 | H |
| | 7578 | -48.24 | -25 | -23.24 | -74.2 | -57.35 | 2.00 | 11.12 | H |
| | 10107 | -44.59 | -25 | -19.59 | -74.41 | -53.41 | 2.40 | 11.21 | H |
| | | | | | | | | | H |
| | 5052 | -52.66 | -25 | -27.66 | -74.29 | -63.71 | 1.62 | 12.67 | V |
| | 7578 | -48.02 | -25 | -23.02 | -73.94 | -57.13 | 2.00 | 11.12 | V |
| | 10107 | -43.63 | -25 | -18.63 | -74.02 | -52.45 | 2.40 | 11.21 | V |
| | | | | | | | | | V |
| Highest | 5100 | -52.33 | -25 | -27.33 | -74.31 | -63.43 | 1.64 | 12.74 | H |
| | 7653 | -47.51 | -25 | -22.51 | -73.38 | -56.63 | 2.01 | 11.13 | H |
| | 10206 | -43.60 | -25 | -18.60 | -73.67 | -52.34 | 2.40 | 11.14 | H |
| | | | | | | | | | H |
| | 5100 | -52.84 | -25 | -27.84 | -74.51 | -63.94 | 1.64 | 12.74 | V |
| | 7653 | -47.20 | -25 | -22.20 | -72.95 | -56.32 | 2.01 | 11.13 | V |
| | 10206 | -43.54 | -25 | -18.54 | -73.96 | -52.28 | 2.40 | 11.14 | V |
| | | | | | | | | | V |

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 38

| LTE Band 38 / 20MHz / QPSK | | | | | | | | | |
|----------------------------|-------------------|--------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel | Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Lowest | 5142 | -52.66 | -25 | -27.66 | -74.62 | -63.81 | 1.65 | 12.80 | H |
| | 7713 | -47.44 | -25 | -22.44 | -73.34 | -56.56 | 2.02 | 11.14 | H |
| | 10287 | -43.64 | -25 | -18.64 | -73.92 | -52.32 | 2.39 | 11.07 | H |
| | | | | | | | | | H |
| | 5142 | -53.09 | -25 | -28.09 | -74.8 | -64.24 | 1.65 | 12.80 | V |
| | 7713 | -46.03 | -25 | -21.03 | -71.74 | -55.15 | 2.02 | 11.14 | V |
| | 10287 | -43.38 | -25 | -18.38 | -73.83 | -52.06 | 2.39 | 11.07 | V |
| | | | | | | | | | V |
| Middle | 5172 | -52.34 | -25 | -27.34 | -74.29 | -63.53 | 1.65 | 12.84 | H |
| | 7758 | -47.30 | -25 | -22.30 | -73.21 | -56.43 | 2.03 | 11.15 | H |
| | 10341 | -43.49 | -25 | -18.49 | -73.91 | -52.12 | 2.39 | 11.03 | H |
| | | | | | | | | | H |
| | 5172 | -52.55 | -25 | -27.55 | -74.3 | -63.74 | 1.65 | 12.84 | V |
| | 7758 | -45.91 | -25 | -20.91 | -71.57 | -55.04 | 2.03 | 11.15 | V |
| | 10341 | -43.47 | -25 | -18.47 | -73.94 | -52.10 | 2.39 | 11.03 | V |
| | | | | | | | | | V |
| Highest | 5202 | -53.04 | -25 | -28.04 | -74.98 | -64.26 | 1.66 | 12.88 | H |
| | 7803 | -47.66 | -25 | -22.66 | -73.61 | -56.79 | 2.03 | 11.16 | H |
| | 10404 | -43.16 | -25 | -18.16 | -73.75 | -51.74 | 2.39 | 10.98 | H |
| | | | | | | | | | H |
| | 5202 | -52.73 | -25 | -27.73 | -74.5 | -63.95 | 1.66 | 12.88 | V |
| | 7803 | -47.12 | -25 | -22.12 | -72.75 | -56.25 | 2.03 | 11.16 | V |
| | 10404 | -43.28 | -25 | -18.28 | -73.79 | -51.86 | 2.39 | 10.98 | V |
| | | | | | | | | | V |

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 41

| LTE Band 41 / 20MHz / QPSK | | | | | | | | | |
|----------------------------|-------------------|--------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel | Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Lowest | 4994 | -50.93 | -25 | -25.93 | -72.93 | -61.92 | 1.61 | 12.60 | H |
| | 7491 | -47.35 | -25 | -22.35 | -73.75 | -56.48 | 1.99 | 11.11 | H |
| | 9988 | -43.89 | -25 | -18.89 | -73.47 | -52.80 | 2.40 | 11.30 | H |
| | | | | | | | | | H |
| | 4994 | -48.16 | -25 | -23.16 | -69.71 | -59.15 | 1.61 | 12.60 | V |
| | 7491 | -47.14 | -25 | -22.14 | -73.51 | -56.27 | 1.99 | 11.11 | V |
| | 9988 | -43.39 | -25 | -18.39 | -73.74 | -52.30 | 2.40 | 11.30 | V |
| | | | | | | | | | V |
| Middle | 5166 | -52.44 | -25 | -27.44 | -74.39 | -63.62 | 1.65 | 12.83 | H |
| | 7752 | -47.63 | -25 | -22.63 | -73.54 | -56.76 | 2.03 | 11.15 | H |
| | 10332 | -43.79 | -25 | -18.79 | -74.18 | -52.43 | 2.39 | 11.03 | H |
| | | | | | | | | | H |
| | 5166 | -52.90 | -25 | -27.90 | -74.64 | -64.08 | 1.65 | 12.83 | V |
| | 7752 | -47.44 | -25 | -22.44 | -73.11 | -56.57 | 2.03 | 11.15 | V |
| | 10332 | -43.60 | -25 | -18.60 | -74.07 | -52.24 | 2.39 | 11.03 | V |
| | | | | | | | | | V |
| Highest | 5340 | -51.77 | -25 | -26.77 | -74.19 | -63.15 | 1.70 | 13.08 | H |
| | 8013 | -45.17 | -25 | -20.17 | -72.33 | -54.34 | 2.06 | 11.23 | H |
| | 10683 | -43.25 | -25 | -18.25 | -74.11 | -51.66 | 2.49 | 10.90 | H |
| | | | | | | | | | H |
| | 5340 | -52.55 | -25 | -27.55 | -74.63 | -63.93 | 1.70 | 13.08 | V |
| | 8013 | -44.62 | -25 | -19.62 | -71.67 | -53.79 | 2.06 | 11.23 | V |
| | 10683 | -43.31 | -25 | -18.31 | -73.93 | -51.72 | 2.49 | 10.90 | V |
| | | | | | | | | | V |

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 41 (HPUE)

| LTE Band 41 / 20MHz / QPSK | | | | | | | | | |
|----------------------------|-------------------|--------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel | Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Lowest | 4994 | -52.27 | -25 | -27.27 | -74.27 | -63.26 | 1.61 | 12.60 | H |
| | 7491 | -46.91 | -25 | -21.91 | -73.31 | -56.04 | 1.99 | 11.11 | H |
| | 9988 | -44.46 | -25 | -19.46 | -74.04 | -53.37 | 2.40 | 11.30 | H |
| | | | | | | | | | H |
| | 4994 | -52.55 | -25 | -27.55 | -74.1 | -63.54 | 1.61 | 12.60 | V |
| | 7491 | -46.82 | -25 | -21.82 | -73.19 | -55.95 | 1.99 | 11.11 | V |
| | 9988 | -43.78 | -25 | -18.78 | -74.13 | -52.69 | 2.40 | 11.30 | V |
| | | | | | | | | | V |
| Middle | 5166 | -52.68 | -25 | -27.68 | -74.63 | -63.86 | 1.65 | 12.83 | H |
| | 7752 | -47.45 | -25 | -22.45 | -73.36 | -56.58 | 2.03 | 11.15 | H |
| | 10332 | -43.85 | -25 | -18.85 | -74.24 | -52.49 | 2.39 | 11.03 | H |
| | | | | | | | | | H |
| | 5166 | -52.88 | -25 | -27.88 | -74.62 | -64.06 | 1.65 | 12.83 | V |
| | 7752 | -47.19 | -25 | -22.19 | -72.86 | -56.32 | 2.03 | 11.15 | V |
| | 10332 | -43.71 | -25 | -18.71 | -74.18 | -52.35 | 2.39 | 11.03 | V |
| | | | | | | | | | V |
| Highest | 5340 | -52.04 | -25 | -27.04 | -74.46 | -63.42 | 1.70 | 13.08 | H |
| | 8016 | -46.19 | -25 | -21.19 | -73.35 | -55.36 | 2.06 | 11.23 | H |
| | 10683 | -43.00 | -25 | -18.00 | -73.86 | -51.41 | 2.49 | 10.90 | H |
| | | | | | | | | | H |
| | 5340 | -52.32 | -25 | -27.32 | -74.5 | -63.70 | 1.70 | 13.08 | V |
| | 8016 | -46.30 | -25 | -21.30 | -73.35 | -55.47 | 2.06 | 11.23 | V |
| | 10683 | -43.31 | -25 | -18.31 | -73.93 | -51.72 | 2.49 | 10.90 | V |
| | | | | | | | | | V |

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 41C

| LTE Band 41 / 20+20MHz / QPSK | | | | | | | | | |
|-------------------------------|-------------------|--------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel | Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Lowest | 5028 | -49.94 | -25 | -24.94 | -71.94 | -60.96 | 1.62 | 12.64 | H |
| | 7548 | -47.49 | -25 | -22.49 | -73.61 | -56.60 | 2.00 | 11.11 | H |
| | 10062 | -44.31 | -25 | -19.31 | -74.02 | -53.16 | 2.40 | 11.25 | H |
| | | | | | | | | | H |
| | 5028 | -50.31 | -25 | -25.31 | -71.9 | -61.33 | 1.62 | 12.64 | V |
| | 7548 | -47.41 | -25 | -22.41 | -73.49 | -56.52 | 2.00 | 11.11 | V |
| | 10062 | -43.74 | -25 | -18.74 | -74.11 | -52.59 | 2.40 | 11.25 | V |
| | | | | | | | | | V |
| Middle | 5184 | -52.22 | -25 | -27.22 | -74.16 | -63.42 | 1.66 | 12.86 | H |
| | 7776 | -47.91 | -25 | -22.91 | -73.83 | -57.04 | 2.03 | 11.16 | H |
| | 10368 | -43.50 | -25 | -18.50 | -73.99 | -52.11 | 2.39 | 11.01 | H |
| | | | | | | | | | H |
| | 5184 | -48.88 | -25 | -23.88 | -70.64 | -60.08 | 1.66 | 12.86 | V |
| | 7776 | -47.81 | -25 | -22.81 | -73.46 | -56.94 | 2.03 | 11.16 | V |
| | 10368 | -43.37 | -25 | -18.37 | -73.86 | -51.98 | 2.39 | 11.01 | V |
| | | | | | | | | | V |
| Highest | 5340 | -50.99 | -25 | -25.99 | -73.41 | -62.37 | 1.70 | 13.08 | H |
| | 8010 | -46.43 | -25 | -21.43 | -73.61 | -55.59 | 2.06 | 11.22 | H |
| | 10674 | -42.89 | -25 | -17.89 | -73.76 | -51.31 | 2.48 | 10.90 | H |
| | | | | | | | | | H |
| | 5340 | -46.74 | -25 | -21.74 | -68.82 | -58.12 | 1.70 | 13.08 | V |
| | 8010 | -46.53 | -25 | -21.53 | -73.59 | -55.69 | 2.06 | 11.22 | V |
| | 10674 | -43.13 | -25 | -18.13 | -73.75 | -51.55 | 2.48 | 10.90 | V |
| | | | | | | | | | V |

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 66

| LTE Band 66 / 20MHz / QPSK | | | | | | | | | |
|----------------------------|-------------------|--------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel | Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Lowest | 3422 | -57.04 | -13 | -44.04 | -72.98 | -68.01 | 1.35 | 12.31 | H |
| | 5133 | -52.71 | -13 | -39.71 | -74.66 | -63.85 | 1.64 | 12.79 | H |
| | 6844 | -48.68 | -13 | -35.68 | -74.05 | -59.06 | 1.74 | 12.12 | H |
| | | | | | | | | | H |
| | 3422 | -56.31 | -13 | -43.31 | -72.67 | -67.28 | 1.35 | 12.31 | V |
| | 5133 | -52.66 | -13 | -39.66 | -74.36 | -63.80 | 1.64 | 12.79 | V |
| | 6844 | -49.34 | -13 | -36.34 | -74.32 | -59.72 | 1.74 | 12.12 | V |
| | | | | | | | | | V |
| Middle | 3472 | -56.33 | -13 | -43.33 | -72.75 | -67.41 | 1.35 | 12.43 | H |
| | 5208 | -52.80 | -13 | -39.80 | -74.76 | -64.03 | 1.66 | 12.89 | H |
| | 6944 | -48.20 | -13 | -35.20 | -74.08 | -58.45 | 1.73 | 11.98 | H |
| | | | | | | | | | H |
| | 3472 | -55.97 | -13 | -42.97 | -72.77 | -67.05 | 1.35 | 12.43 | V |
| | 5208 | -52.95 | -13 | -39.95 | -74.74 | -64.18 | 1.66 | 12.89 | V |
| | 6944 | -48.54 | -13 | -35.54 | -73.96 | -58.79 | 1.73 | 11.98 | V |
| | | | | | | | | | V |
| Highest | 3522 | -54.70 | -13 | -41.70 | -71.57 | -65.85 | 1.37 | 12.51 | H |
| | 5283 | -51.91 | -13 | -38.91 | -74.14 | -63.22 | 1.68 | 13.00 | H |
| | 7044 | -47.56 | -13 | -34.56 | -73.86 | -57.65 | 1.74 | 11.83 | H |
| | | | | | | | | | H |
| | 3522 | -55.17 | -13 | -42.17 | -72.32 | -66.32 | 1.37 | 12.51 | V |
| | 5283 | -52.28 | -13 | -39.28 | -74.24 | -63.59 | 1.68 | 13.00 | V |
| | 7044 | -48.16 | -13 | -35.16 | -74.01 | -58.25 | 1.74 | 11.83 | V |
| | | | | | | | | | V |

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 4

| LTE Band 4 / 20MHz / QPSK | | | | | | | | | |
|---------------------------|-------------------|--------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel | Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Over Limit (dB) | SPA Reading (dBm) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Lowest | 3422 | -54.40 | -13 | -41.40 | -70.34 | -65.37 | 1.35 | 12.31 | H |
| | 5133 | -52.69 | -13 | -39.69 | -74.64 | -63.83 | 1.64 | 12.79 | H |
| | 6844 | -48.83 | -13 | -35.83 | -74.2 | -59.21 | 1.74 | 12.12 | H |
| | | | | | | | | | H |
| | 3422 | -56.39 | -13 | -43.39 | -72.75 | -67.36 | 1.35 | 12.31 | V |
| | 5133 | -53.33 | -13 | -40.33 | -75.03 | -64.47 | 1.64 | 12.79 | V |
| | 6844 | -49.00 | -13 | -36.00 | -73.98 | -59.38 | 1.74 | 12.12 | V |
| | | | | | | | | | V |
| Middle | 3447 | -54.95 | -13 | -41.95 | -71.14 | -61.13 | 1.59 | 7.77 | H |
| | 5170 | -52.51 | -13 | -39.51 | -74.46 | -59.78 | 2.43 | 9.70 | H |
| | 6894 | -48.21 | -13 | -35.21 | -73.84 | -56.26 | 2.62 | 10.67 | H |
| | | | | | | | | | H |
| | 3447 | -56.02 | -13 | -43.02 | -72.6 | -62.20 | 1.59 | 7.77 | V |
| | 5170 | -52.65 | -13 | -39.65 | -74.39 | -59.92 | 2.43 | 9.70 | V |
| | 6894 | -48.63 | -13 | -35.63 | -73.83 | -56.68 | 2.62 | 10.67 | V |
| | | | | | | | | | V |
| Highest | 3472 | -56.13 | -13 | -43.13 | -72.55 | -67.21 | 1.35 | 12.43 | H |
| | 5208 | -52.65 | -13 | -39.65 | -74.61 | -63.88 | 1.66 | 12.89 | H |
| | 6944 | -47.71 | -13 | -34.71 | -73.59 | -57.96 | 1.73 | 11.98 | H |
| | | | | | | | | | H |
| | 3472 | -55.63 | -13 | -42.63 | -72.43 | -66.71 | 1.35 | 12.43 | V |
| | 5208 | -52.52 | -13 | -39.52 | -74.31 | -63.75 | 1.66 | 12.89 | V |
| | 6944 | -48.15 | -13 | -35.15 | -73.57 | -58.40 | 1.73 | 11.98 | V |
| | | | | | | | | | V |

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.