# MEASUREMENT REPORT

## FCC PART 22 & 24 & 27

| | |
|---|---|
| **FCC ID:** | XMR2020EM120RGL |
| **Application:** | Quectel Wireless Solutions Company Limited |
| **Application Type:** | Class II Permissive Change |
| **Product:** | LTE-A Cat 12 M.2 Module |
| **Model No.:** | EM120R-GL |
| **Brand Name:** | Quectel |
| **FCC Rule Part(s):** | Part 22 Subpart H, Part 24 Subpart E, Part 27 Subpart L & H & F & M & N |
| **Test Procedure(s):** | ANSI C63.26-2015 |
| **Test Date:** | January 10 ~ 20, 2021 |

Reviewed By: Sunny Sun

Approved By: Robin Wu

# Revision History

| Report No. | Version | Description | Issue Date | Note |
|---|---|---|---|---|
| 2101RSU059-U2 | Rev. 01 | Initial Report | 02-04-2021 | Valid |
| | | | | |

# CONTENTS

# 1. GENERAL INFORMATION

## 1.1. Applicant

Quectel Wireless Solutions Company Limited
Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233

## 1.2. Manufacturer

Quectel Wireless Solutions Company Limited
Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233

## 1.3. Testing Facility

| | | |
|---|---|---|
| ☒ | **Test Site - MRT Suzhou Laboratory** | |
| | **Laboratory Location (Suzhou - Wuzhong)** | |
| | D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China | |
| | **Laboratory Location (Suzhou - SIP)** | |
| | 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China | |
| | **Laboratory Accreditations** | |
| | A2LA: 3628.01 | CNAS: L10551 |
| | FCC: CN1166 | ISED: CN0001 |
| | VCCI: R-20025, G-20034, C-20020, T-20020 | |
| ☐ | **Test Site - MRT Shenzhen Laboratory** | |
| | **Laboratory Location (Shenzhen)** | |
| | 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China | |
| | **Laboratory Accreditations** | |
| | A2LA: 3628.02 | CNAS: L10551 |
| | FCC: CN1284 | ISED: CN0105 |
| ☐ | **Test Site - MRT Taiwan Laboratory** | |
| | **Laboratory Location (Taiwan)** | |
| | No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) | |
| | **Laboratory Accreditations** | |
| | TAF: L3261-190725 | |
| | FCC: 291082, TW3261 | ISED: TW3261 |

# 2. PRODUCT INFORMATION

## 2.1. Equipment Description

| | |
|---|---|
| Product Name: | LTE-A Cat 12 M.2 Module |
| Model No.: | EM120R-GL |
| Brand Name: | Quectel |
| IMEI.: | 864292950003514 |
| Single Band: | Band 2, 4, 5, 7, 12, 13, 14, 25, 26, 30, 38, 41, 48, 66 |
| Intra-Band: | CA_41C |
| Category: | Category 16 |
| Operating Temperature: | -25 ~ 75 °C |
| Power Type: | 3.1 ~ 4.4Vdc, typical 3.7Vdc |

## 2.2. Product Specification Subjective to this Report

| | |
|---|---|
| FDD $T_X$ Frequency Range: | Band 2: 1850 ~ 1910 MHz; Band 4: 1710 ~ 1755 MHz<br>Band 5: 824 ~ 849 MHz; Band 7: 2500 ~ 2570 MHz<br>Band 12: 699 ~ 716 MHz; Band 13: 777 ~ 787 MHz<br>Band 25: 1850 ~ 1915 MHz; Band 26: 824 ~ 849 MHz<br>Band 66: 1710 ~ 1780 MHz |
| FDD $R_X$ Frequency Range: | Band 2: 1930 ~ 1990 MHz; Band 4: 2110 ~ 2155 MHz<br>Band 5: 869 ~ 894 MHz; Band 7: 2620 ~ 2690 MHz<br>Band 12: 729 ~ 746 MHz; Band 13: 746 ~ 756 MHz<br>Band 25: 1930 ~ 1995 MHz; Band 26: 869 ~ 894 MHz<br>Band 66: 2110 ~ 2200 MHz |
| TDD $T_X$ & $R_X$ Frequency Range: | Band 38: 2570 ~ 2620 MHz; Band 41: 2496 ~ 2690 MHz; |
| Uplink CA Band: | Intra-Band CA_41C |
| Type of Modulation: | QPSK, 16QAM, 64QAM, 256QAM (DL) |

Note 1: For other features of this EUT, test report will be issued separately.

Note 2: 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.

Note 3: LTE band 26 transmit frequency for part 90 rule is 814 ~ 824MHz and part 22 rule is 824 ~ 849MHz. ERP over 15MHz bandwidth complies the ERP limit line of part 22 rule, therefore ERP of the partial frequency spectrum which falls within part 22 also complies.

## 2.3. Device Capabilities

This device contains the following capabilities:
Working on LTE Band 2, 4, 5, 7, 12, 13, 14, 25, 26, 30, 38, 41. 66; Intra-band CA_41C LTE Module. LTE Band 66 (1710 ~ 1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 ~ 1755 MHz). Therefore, test data provided in this report covers Band 4 as well as Band 66.

LTE Band 25 (1850 ~ 1915 MHz) overlaps the entire frequency range of LTE Band 2 (1850 ~ 1910 MHz). Therefore, test data provided in this report covers Band 2 as well as Band 25.

LTE Band 26 (814 ~ 849 MHz) overlaps the entire frequency range of LTE Band 5 (824 ~ 849 MHz). Therefore, test data provided in this report covers Band 5 as well as Band 26.

LTE Band 41 (2496 ~ 2690 MHz) overlaps the entire frequency range of LTE Band 38 (2570 ~ 2620 MHz). Therefore, test data provided in this report covers Band 38 as well as Band 41.

## 2.4. Test Methodology

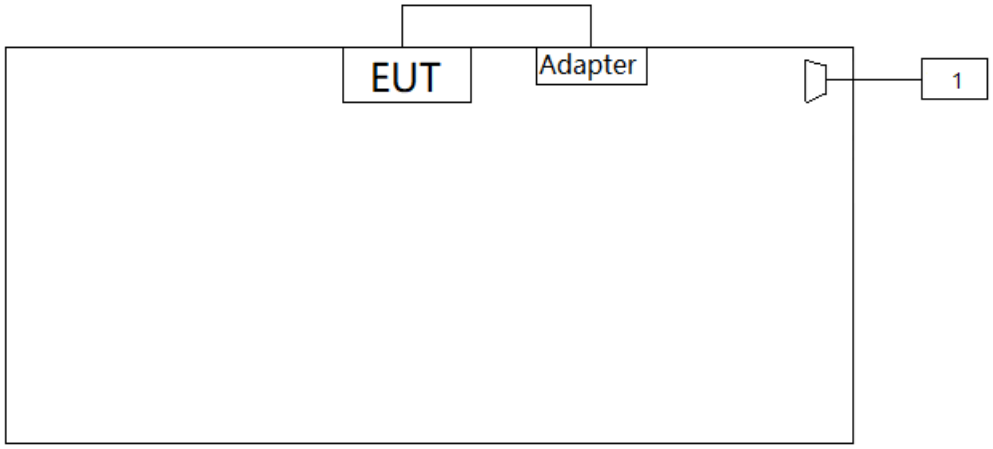
According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ANSI C63.26:2015
- FCC CFR 47 Part 2, Part 22, Part 24, Part 27
- FCC KDB 971168 D01 v03r01: Power Meas License Digital Systems
- FCC KDB 971168 D02 v02r01: Misc Rev Approv License Devices
- FCC KDB 412172 D01 v01r01: Determining ERP and EIRP

## 2.5. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

## 2.6. Configuration of Tested System




| Product | | Manufacturer | Model No. |
|---|---|---|---|
| 1 | Wideband Radio Communication Tester | R&S | CMW 500 |

## 2.7. Test Environment Condition

| | |
|---|---|
| Ambient Temperature | 15 ~ 35°C |
| Relative Humidity | 20% ~ 75%RH |

# 3. TEST EQUIPMENT CALIBRATION DATE

Radiated Emission (WZ-AC1)

| Instrument | Manufacturer | Type No. | Asset No. | Cali. Interval | Cali. Due Date |
|---|---|---|---|---|---|
| EMI Test Receiver | R&S | ESR7 | MRTSUE06001 | 1 year | 2021/08/01 |
| Wideband Radio Communication Tester | R&S | CMW 500 | MRTSUE06243 | 1 year | 2021/11/07 |
| PXA Signal Analyzer | Keysight | 9030B | MRTSUE06395 | 1 year | 2021/09/03 |
| Loop Antenna | Schwarzbeck | FMZB 1519 | MRTSUE06025 | 1 year | 2021/11/10 |
| Bilog Period Antenna | Schwarzbeck | VULB 9168 | MRTSUE06172 | 1 year | 2021/03/31 |
| Broad Band Horn Antenna | Schwarzbeck | BBHA 9120D | MRTSUE06023 | 1 year | 2021/10/13 |
| Broad Band Horn Antenna | Schwarzbeck | BBHA 9170 | MRTSUE06597 | 1 year | 2021/02/23 |
| Microwave System Amplifier | Agilent | 83017A | MRTSUE06076 | 1 year | 2021/11/15 |
| Preamplifier | Schwarzbeck | BBV 9721 | MRTSUE06121 | 1 year | 2021/06/11 |
| Thermohygrometer | Testo | 608-H1 | MRTSUE06403 | 1 year | 2021/08/08 |
| Anechoic Chamber | TDK | Chamber-AC1 | MRTSUE06212 | 1 year | 2021/04/30 |

Radiated Emission (WZ-AC2)

| Instrument | Manufacturer | Type No. | Asset No. | Cali. Interval | Cali. Due Date |
|---|---|---|---|---|---|
| Spectrum Analyzer | Keysight | N9038A | MRTSUE06125 | 1 year | 2021/08/01 |
| Wideband Radio Communication Tester | R&S | CMW 500 | MRTSUE06243 | 1 year | 2021/11/07 |
| Loop Antenna | Schwarzbeck | FMZB 1519 | MRTSUE06025 | 1 year | 2021/11/10 |
| Bilog Period Antenna | Schwarzbeck | VULB 9162 | MRTSUE06022 | 1 year | 2021/10/13 |
| Horn Antenna | Schwarzbeck | BBHA9120D | MRTSUE06171 | 1 year | 2021/10/27 |
| Broad Band Horn Antenna | Schwarzbeck | BBHA 9170 | MRTSUE06597 | 1 year | 2021/02/23 |
| Broad Band Coaxial Preamplifier | Schwarzbeck | BBV 9718 | MRTSUE06176 | 1 year | 2021/11/15 |
| Preamplifier | Schwarzbeck | BBV 9721 | MRTSUE06121 | 1 year | 2021/06/11 |
| Temperature/Humidity Meter | Minggao | ETH529 | MRTSUE06170 | 1 year | 2021/12/15 |
| Anechoic Chamber | RIKEN | Chamber-AC2 | MRTSUE06213 | 1 year | 2021/04/30 |

| Software | Version | Function |
|---|---|---|
| EMI Software | V3 | EMI Test Software |

# 4. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

| Radiated Emission Measurement |
| --- |
| Measurement Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):<br>Horizontal: 9kHz~300MHz: 5.04dB<br>300MHz~1GHz: 4.95dB<br>1GHz~40GHz: 6.40dB<br>Vertical: 9kHz~300MHz: 5.24dB<br>300MHz~1GHz: 6.03dB<br>1GHz~40GHz: 6.40dB |

# 5. TEST RESULT

## 5.1. Summary

| FCC Part Section(s) | Test Description | Test Limit | Test Condition | Test Result | Reference |
|---|---|---|---|---|---|
| 2.1053, 22.917(a) 24.238(a), 27.53(c) (f) (g) (h) | Spurious Emissions (Band 2/25, 4/66, 5/26, 12, 13) | > 43 + 10log10 (P[Watts]) | Radiated | Pass | Section 5.2 |
| 27.53(m) | Spurious Emissions (Band 7, 38/41) | 27.53(m)(4) | | | |

**Notes:**

1) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
2) All supported modulation types were evaluated. The worst-case emission of modulation was selected. Therefore, the Frequency Stability, Channel Band Edge, Radiated & Conducted Spurious Emission were presented in the test report.
3) This report is supplemented to MRT Original “2101RSU060-U2” Report, FCC ID: XMR2020EM160RGL updating product name and model number.

## 5.2. Radiated Spurious Emissions Measurements

### 5.2.1.Test Limit

Out of band emissions: The powerof any emission outside of theauthorized operating frequency ranges must be attenuated below the transmitting power (P) by a factorof at least 43 + 10 log(P) dB. The emission limit equal to -13dBm.

For Band 7, 38/41, the powerof any emission outside of theauthorized operating frequency ranges must be attenuated below the transmitting power (P) by a factorof at least 55 + 10 log(P) dB. The emission limit equal to -25dBm.

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 (-40dBm/MHz) equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW (-50dBm) EIRP for discrete emissions of less than 700 Hz bandwidth.

E (dBμV/m) = EIRP (dBm) - 20 log D + 104.8; where D is the measurement distance in meters. The emission limit equal to 82.3dBμV/m or 70.3dBμV/m.

### 5.2.2.Test Procedure Used

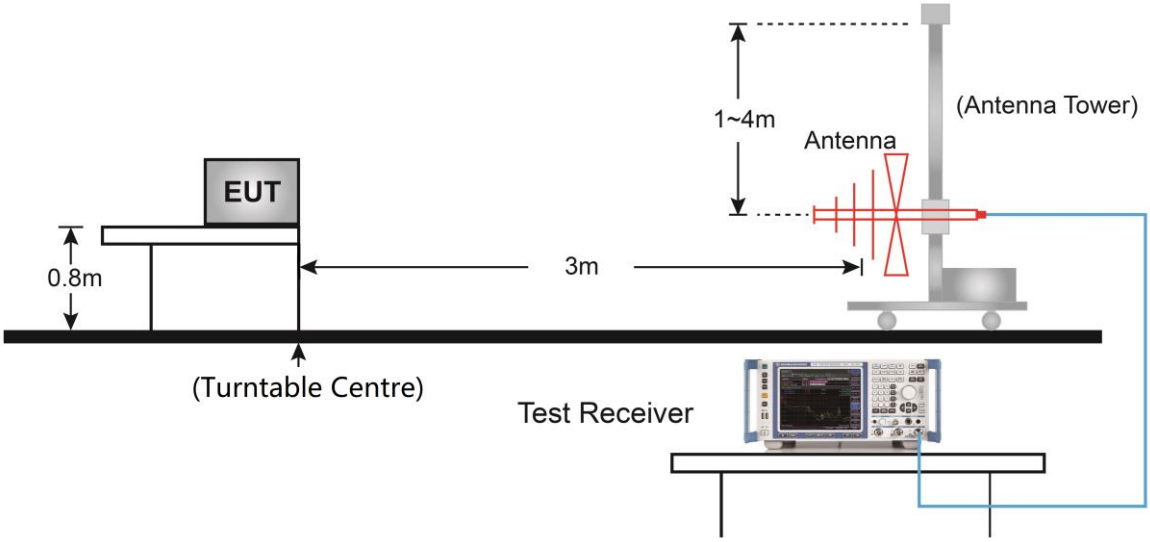
ANSI C63.26-2015 - Section 5.2.7 & 5.5

### 5.2.3.Test Setting

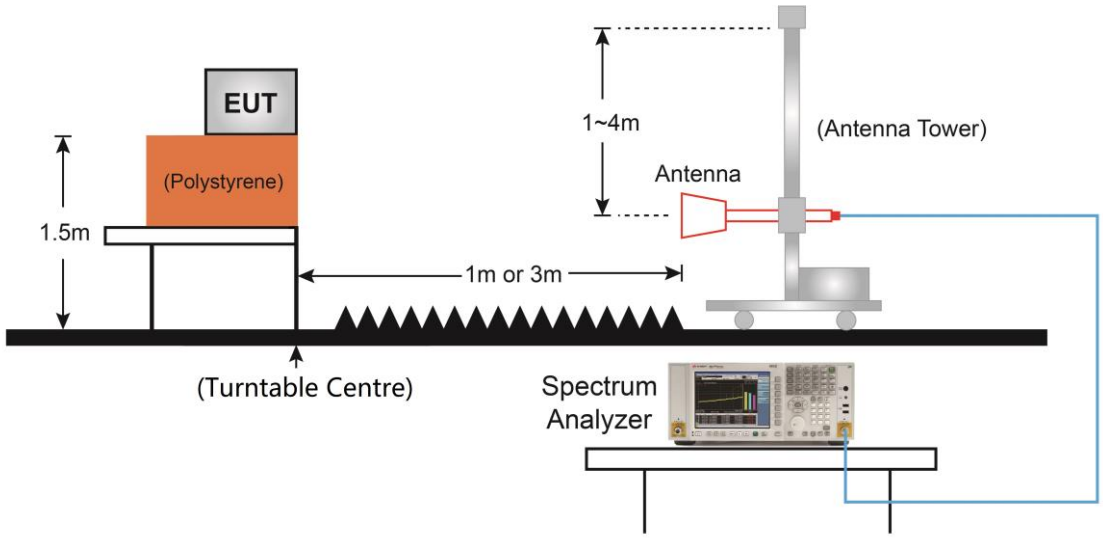
1. RBW = 1MHz
2. VBW≥ 3*RBW
3. Sweep time ≥ 10 × (number of points in sweep) × (transmission symbol period)
4. Detector = Peak
5. Trace mode = max hold
6. The trace was allowed to stabilize

### 5.2.4.Test Setup

Below 1GHz Test Setup:




Above 1GHz Test Setup:



### 5.2.5.Test Result

| Product | LTE-A Cat 12 M.2 Module | Test Site | WZ-AC2 |
|---|---|---|---|
| Test Engineer | Buter Shi | Test Date | 2021/01/16 |
| Test Band | LTE Band 2/25 - 1.4MHz Bandwidth, 1RB, QPSK | | |

| Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level(dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|---|---|---|---|---|---|---|---|
| Bottom CH 26047 (1850.7MHz) | | | | | | | |
| 3703.0 | 56.9 | 1.0 | 57.9 | 82.3 | -24.4 | Peak | Horizontal |
| 9908.0 | 33.2 | 15.6 | 48.8 | 82.3 | -33.5 | Peak | Horizontal |
| 3703.0 | 60.8 | 1.0 | 61.8 | 82.3 | -20.5 | Peak | Vertical |
| 10605.0 | 31.4 | 17.8 | 49.2 | 82.3 | -33.1 | Peak | Vertical |
| Middle CH 26365 (1882.5MHz) | | | | | | | |
| 3762.5 | 46.8 | 0.7 | 47.5 | 82.3 | -34.8 | Peak | Horizontal |
| 9219.5 | 32.0 | 14.9 | 46.9 | 82.3 | -35.4 | Peak | Horizontal |
| 3762.5 | 48.8 | 0.7 | 49.5 | 82.3 | -32.8 | Peak | Vertical |
| 7392.0 | 31.6 | 12.3 | 43.9 | 82.3 | -38.4 | Peak | Vertical |
| Top CH 26683 (1914.3MHz) | | | | | | | |
| 3830.5 | 48.1 | 0.7 | 48.8 | 82.3 | -33.5 | Peak | Horizontal |
| 6652.5 | 34.2 | 9.3 | 43.5 | 82.3 | -38.8 | Peak | Horizontal |
| 3830.5 | 49.4 | 0.7 | 50.1 | 82.3 | -32.2 | Peak | Vertical |
| 9568.0 | 36.6 | 14.8 | 51.4 | 82.3 | -30.9 | Peak | Vertical |
| Note: Measure Level (dBm) = Reading Level (dBm) + Factor (dB). | | | | | | | |

| Product | LTE-A Cat 12 M.2 Module | Test Site | WZ-AC2 |
|---|---|---|---|
| Test Engineer | Buter Shi | Test Date | 2021/01/16 |
| Test Band | LTE Band 4/66 - 1.4MHz Bandwidth, 1RB, QPSK | | |

| Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level(dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|---|---|---|---|---|---|---|---|
| Bottom CH 131979 (1710.7MHz) | | | | | | | |
| 9185.5 | 33.0 | 15.1 | 48.1 | 82.3 | -34.2 | Peak | Horizontal |
| 10953.5 | 32.3 | 18.8 | 51.1 | 82.3 | -31.2 | Peak | Horizontal |
| 4034.5 | 36.3 | 1.5 | 37.8 | 82.3 | -44.5 | Peak | Vertical |
| 10248.0 | 33.4 | 16.5 | 49.9 | 82.3 | -32.4 | Peak | Vertical |
| Middle CH 132322 (1745.0MHz) | | | | | | | |
| 8004.0 | 32.4 | 12.6 | 45.0 | 82.3 | -37.3 | Peak | Horizontal |
| 13894.5 | 30.5 | 23.7 | 54.2 | 82.3 | -28.1 | Peak | Horizontal |
| 3490.5 | 40.7 | 0.3 | 41.0 | 82.3 | -41.3 | Peak | Vertical |
| 4034.5 | 37.5 | 1.5 | 39.0 | 82.3 | -43.3 | Peak | Vertical |
| Top CH 132665 (1779.3MHz) | | | | | | | |
| 3558.5 | 47.7 | 0.5 | 48.2 | 82.3 | -34.1 | Peak | Horizontal |
| 7043.5 | 32.6 | 11.4 | 44.0 | 82.3 | -38.3 | Peak | Horizontal |
| 3558.5 | 53.1 | 0.5 | 53.6 | 82.3 | -28.7 | Peak | Vertical |
| 7604.5 | 32.3 | 12.3 | 44.6 | 82.3 | -37.7 | Peak | Vertical |
| Note: Measure Level (dBm) = Reading Level (dBm) + Factor (dB). | | | | | | | |

| Product | LTE-A Cat 12 M.2 Module | Test Site | WZ-AC2 |
|---|---|---|---|
| Test Engineer | Buter Shi | Test Date | 2021/01/16 |
| Test Band | LTE Band 5/26 - 1.4MHz Bandwidth, 1RB, QPSK | | |

| Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level(dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|---|---|---|---|---|---|---|---|
| Bottom CH 26697 (814.7MHz) | | | | | | | |
| 7536.5 | 31.7 | 12.2 | 43.9 | 82.3 | -38.4 | Peak | Horizontal |
| 12194.5 | 30.6 | 20.5 | 51.1 | 82.3 | -31.2 | Peak | Horizontal |
| 6644.0 | 33.5 | 9.2 | 42.7 | 82.3 | -39.6 | Peak | Vertical |
| 10724.0 | 31.6 | 18.3 | 49.9 | 82.3 | -32.4 | Peak | Vertical |
| Middle CH 26865 (831.5MHz) | | | | | | | |
| 7681.0 | 32.3 | 12.2 | 44.5 | 82.3 | -37.8 | Peak | Horizontal |
| 12237.0 | 30.7 | 20.9 | 51.6 | 82.3 | -30.7 | Peak | Horizontal |
| 8029.5 | 32.4 | 12.6 | 45.0 | 82.3 | -37.3 | Peak | Vertical |
| 12228.5 | 30.4 | 21.4 | 51.8 | 82.3 | -30.5 | Peak | Vertical |
| Top CH 27033 (848.3MHz) | | | | | | | |
| 2411.0 | 37.7 | -0.8 | 36.9 | 82.3 | -45.4 | Peak | Horizontal |
| 7757.5 | 32.3 | 12.2 | 44.5 | 82.3 | -37.8 | Peak | Horizontal |
| 7162.5 | 32.4 | 11.8 | 44.2 | 82.3 | -38.1 | Peak | Vertical |
| 10885.5 | 31.0 | 18.4 | 49.4 | 82.3 | -32.9 | Peak | Vertical |
| Note: Measure Level (dBm) = Reading Level (dBm) + Factor (dB). | | | | | | | |

| Product | LTE-A Cat 12 M.2 Module | Test Site | WZ-AC2 |
|---|---|---|---|
| Test Engineer | Buter Shi | Test Date | 2021/01/16 |
| Test Band | LTE Band 7 - 5MHz Bandwidth, 1RB, QPSK | | |

| Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level(dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|---|---|---|---|---|---|---|---|
| Bottom CH 20775 (2502.5MHz) | | | | | | | |
| 4102.5 | 36.3 | 1.9 | 38.2 | 70.3 | -32.1 | Peak | Horizontal |
| 8624.5 | 32.8 | 13.4 | 46.2 | 70.3 | -24.1 | Peak | Horizontal |
| 5573.0 | 34.7 | 5.2 | 39.9 | 70.3 | -30.4 | Peak | Vertical |
| 11752.5 | 31.4 | 20.0 | 51.4 | 70.3 | -18.9 | Peak | Vertical |
| Middle CH 21100 (2535.0MHz) | | | | | | | |
| 5607.0 | 35.4 | 5.0 | 40.4 | 70.3 | -29.9 | Peak | Horizontal |
| 12636.5 | 32.0 | 20.1 | 52.1 | 70.3 | -18.2 | Peak | Horizontal |
| 7035.0 | 32.7 | 11.5 | 44.2 | 70.3 | -26.1 | Peak | Vertical |
| 12279.5 | 31.9 | 21.0 | 52.9 | 70.3 | -17.4 | Peak | Vertical |
| Top CH 21425 (2567.5MHz) | | | | | | | |
| 5573.0 | 34.6 | 5.2 | 39.8 | 70.3 | -30.5 | Peak | Horizontal |
| 12636.5 | 32.4 | 20.1 | 52.5 | 70.3 | -17.8 | Peak | Horizontal |
| 5377.5 | 37.4 | 4.5 | 41.9 | 70.3 | -28.4 | Peak | Vertical |
| 10953.5 | 32.4 | 18.8 | 51.2 | 70.3 | -19.1 | Peak | Vertical |
| Note: Measure Level (dBm) = Reading Level (dBm) + Factor (dB). | | | | | | | |

| Product | LTE-A Cat 12 M.2 Module | Test Site | WZ-AC2 |
|---|---|---|---|
| Test Engineer | Buter Shi | Test Date | 2021/01/16 |
| Test Band | LTE Band 12 - 1.4MHz Bandwidth, 1RB, QPSK | | |

| Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level(dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|---|---|---|---|---|---|---|---|
| Bottom CH 23017 (699.7MHz) | | | | | | | |
| 6015.0 | 33.6 | 7.0 | 40.6 | 82.3 | -41.7 | Peak | Horizontal |
| 11693.0 | 31.3 | 20.5 | 51.8 | 82.3 | -30.5 | Peak | Horizontal |
| 2411.0 | 40.0 | -0.8 | 39.2 | 82.3 | -43.1 | Peak | Vertical |
| 7553.5 | 32.3 | 12.3 | 44.6 | 82.3 | -37.7 | Peak | Vertical |
| Bottom CH 23095 (707.5MHz) | | | | | | | |
| 7672.5 | 32.4 | 12.1 | 44.5 | 82.3 | -37.8 | Peak | Horizontal |
| 12271.0 | 30.8 | 21.4 | 52.2 | 82.3 | -30.1 | Peak | Horizontal |
| 2411.0 | 38.6 | -0.8 | 37.8 | 82.3 | -44.5 | Peak | Vertical |
| 8046.5 | 32.5 | 12.7 | 45.2 | 82.3 | -37.1 | Peak | Vertical |
| Bottom CH 23173 (715.3MHz) | | | | | | | |
| 2411.0 | 37.5 | -0.8 | 36.7 | 82.3 | -45.6 | Peak | Horizontal |
| 7995.5 | 32.9 | 12.5 | 45.4 | 82.3 | -36.9 | Peak | Horizontal |
| 2411.0 | 38.7 | -0.8 | 37.9 | 82.3 | -44.4 | Peak | Vertical |
| 6652.5 | 33.2 | 9.3 | 42.5 | 82.3 | -39.8 | Peak | Vertical |
| Note: Measure Level (dBm) = Reading Level (dBm) + Factor (dB). | | | | | | | |

| Product | LTE-A Cat 12 M.2 Module | Test Site | WZ-AC2 |
|---|---|---|---|
| Test Engineer | Buter Shi | Test Date | 2021/01/16 |
| Test Band | LTE Band 13 - 5MHz Bandwidth, 1RB, QPSK | | |

| Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level(dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|---|---|---|---|---|---|---|---|
| Bottom CH 2305 (779.5MHz) | | | | | | | |
| 2411.0 | 37.7 | -0.8 | 36.9 | 82.3 | -45.4 | Peak | Horizontal |
| 7562.0 | 32.8 | 12.2 | 45.0 | 82.3 | -37.3 | Peak | Horizontal |
| 2411.0 | 39.5 | -0.8 | 38.7 | 82.3 | -43.6 | Peak | Vertical |
| 14005.0 | 31.2 | 23.3 | 54.5 | 82.3 | -27.8 | Peak | Vertical |
| Middle CH 23230 (782.0MHz) | | | | | | | |
| 9109.0 | 31.3 | 14.9 | 46.2 | 82.3 | -36.1 | Peak | Horizontal |
| 14285.5 | 30.6 | 24.5 | 55.1 | 82.3 | -27.2 | Peak | Horizontal |
| 2411.0 | 38.7 | -0.8 | 37.9 | 82.3 | -44.4 | Peak | Vertical |
| 5802.5 | 33.0 | 5.9 | 38.9 | 82.3 | -43.4 | Peak | Vertical |
| Top CH 23255 (784.5MHz) | | | | | | | |
| 3397.0 | 37.2 | -0.1 | 37.1 | 82.3 | -45.2 | Peak | Horizontal |
| 7137.0 | 32.2 | 11.6 | 43.8 | 82.3 | -38.5 | Peak | Horizontal |
| 7545.0 | 32.9 | 12.3 | 45.2 | 82.3 | -37.1 | Peak | Vertical |
| 12194.5 | 31.1 | 20.5 | 51.6 | 82.3 | -30.7 | Peak | Vertical |
| Note: Measure Level (dBm) = Reading Level (dBm) + Factor (dB). | | | | | | | |

| Product | LTE-A Cat 12 M.2 Module | Test Site | WZ-AC2 |
|---|---|---|---|
| Test Engineer | Buter Shi | Test Date | 2021/01/16 |
| Test Band | LTE Band 38/41 For HPUE - 5MHz Bandwidth, 1RB, QPSK | | |

| Frequency (MHz) | Reading Level (dBμV) | Factor (dB) | Measure Level(dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|---|---|---|---|---|---|---|---|
| Bottom CH 39675 (2498.5MHz) | | | | | | | |
| 5564.5 | 35.0 | 5.1 | 40.1 | 70.3 | -30.2 | Peak | Horizontal |
| 10273.5 | 32.6 | 17.0 | 49.6 | 70.3 | -20.7 | Peak | Horizontal |
| 5573.0 | 35.2 | 5.2 | 40.4 | 70.3 | -29.9 | Peak | Vertical |
| 12211.5 | 30.7 | 21.0 | 51.7 | 70.3 | -18.6 | Peak | Vertical |
| Middle CH 40620 (2593.0MHz) | | | | | | | |
| 9194.0 | 32.7 | 15.2 | 47.9 | 70.3 | -22.4 | Peak | Horizontal |
| 14345.0 | 32.0 | 24.3 | 56.3 | 70.3 | -14.0 | Peak | Horizontal |
| 4723.0 | 34.0 | 4.0 | 38.0 | 70.3 | -32.3 | Peak | Vertical |
| 9109.0 | 31.4 | 14.9 | 46.3 | 70.3 | -24.0 | Peak | Vertical |
| Top CH 40565 (2687.5MHz) | | | | | | | |
| 7494.0 | 32.7 | 12.2 | 44.9 | 70.3 | -25.4 | Peak | Horizontal |
| 13903.0 | 30.3 | 24.0 | 54.3 | 70.3 | -16.0 | Peak | Horizontal |
| 5233.0 | 35.4 | 4.1 | 39.5 | 70.3 | -30.8 | Peak | Vertical |
| 10681.5 | 32.6 | 18.0 | 50.6 | 70.3 | -19.7 | Peak | Vertical |
| Note: Measure Level (dBm) = Reading Level (dBm) + Factor (dB). | | | | | | | |

# 6. CONCLUSION

The data collected relate only the item(s) tested and show that unit is compliance with FCC Rules.

The End

# Appendix A - Test Setup Photograph

Refer to “2101RSU059-UT” file.

# Appendix B - EUT Photograph

Refer to “2101RSU059-UE” file.