# FCC Part 22H & 24E & 27
# Measurement and Test Report

**For**

**Cyrus Technology GmbH**

**Hergelsbendenstrasse 49, D-52080 Aachen, Germany**

**FCC ID: 2AI3KCS22XA**

| | |
|---|---|
| **FCC Rules:** | FCC Part 24E, FCC Part 27 |
| **Product Description:** | Rugged Phone |
| **Tested Model:** | CS22XA |
| **Report No.:** | WTX19X08058778W-2 |
| **Sample Receipt Date:** | 2019-08-23 |
| **Tested Date:** | 2019-08-23 to 2019-09-24 |
| **Issued Date:** | 2019-09-25 |
| **Tested By:** | Jason Su / Engineer |
| **Reviewed By:** | Silin Chen / EMC Manager |
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM Test Technology Co., Ltd.

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## Report version

| Version No. | Date of issue | Description |
|---|---|---|
| Rev.00 | 2019-09-25 | Original |
| / | / | / |

# 1. GENERAL INFORMATION

## 1.1 Product Description for Equipment Under Test (EUT)

**Client Information**

Applicant: Cyrus Technology GmbH
Address of applicant: Hergelsbendenstrasse 49, D-52080 Aachen, Germany

Manufacturer: Cyrus Technology GmbH
Address of manufacturer: Hergelsbendenstrasse 49, D-52080 Aachen, Germany

| **General Description of EUT:** | |
|---|---|
| Product Name: | Rugged Phone |
| Brand Name: | CYRUS |
| Model No.: | CS22XA |
| Adding Model(s): | / |
| Rated Voltage: | DC3.85V |
| Battery: | 4400mAh |
| Adapter Model: | MKC-0502000SU<br>INPUT: AC100-240V, 50/60Hz, 0.4A; Output: DC 5V, 2000mA |
| Software Version: | CS22XA_ROW_1.0.2 |
| Hardware Version: | L915-MB-V1.1 |
| IMEI: | / |
| Device Category: | Portable Device |
| | |
| *Note: The test data is gathered from a production sample provided by the manufacturer.* | |

| Technical Characteristics of EUT: Main board | |
|---|---|
| **4G** | |
| Support Networks: | FDD-LTE, TDD-LTE |
| Support Band: | FDD-LTE Band 2, 4, 5, 7, 12, 13, 17, 25, 26, 28, 30,<br>TDD-LTE Band 40, 66 |
| Uplink Frequency: | FDD-LTE Band 2: Tx: 1850-1910MHz,<br>FDD-LTE Band 4: Tx: 1710-1755MHz,<br>FDD-LTE Band 5: Tx: 824-849MHz,<br>FDD-LTE Band 7: Tx: 2500-2570MHz,<br>FDD-LTE Band 12: Tx: 699-716MHz,<br>FDD-LTE Band 13: Tx: 777-787MHz,<br>FDD-LTE Band 17: Tx: 704-716MHz,<br>FDD-LTE Band 25: Tx: 1850-1915MHz,<br>FDD-LTE Band 26: Tx: 814-849MHz,<br>FDD-LTE Band 28: Tx: 703-748MHz,<br>FDD-LTE Band 30: Tx: 2305-2315MHz,<br>TDD-LTE Band 40: Tx: 2300-2400MHz,<br>FDD-LTE Band66: Tx: 1710-1780MHz, |
| Downlink Frequency: | FDD-LTE Band 2: Rx: 1930-1990MHz,<br>FDD-LTE Band 4: Rx: 2110-2155MHz,<br>FDD-LTE Band 5: Rx: 869-894MHz,<br>FDD-LTE Band 7: Rx: 2620-2690MHz,<br>FDD-LTE Band 12: Rx: 729-746MHz,<br>FDD-LTE Band 13: Rx: 746-756MHz,<br>FDD-LTE Band 17: Rx: 734-746MHz,<br>FDD-LTE Band 25: Rx: 1930-1995MHz,<br>FDD-LTE Band 26: Rx: 859-894MHz,<br>FDD-LTE Band 28: Rx: 758-803MHz,<br>FDD-LTE Band 30: Rx:2350-2360MHz,<br>TDD-LTE Band 40: Rx: 2300-2400MHz,<br>FDD-LTE Band 66: Rx: 2110-2200MHz |
| RF Output Power: | FDD-LTE Band 2: 22.77 dBm,<br>FDD-LTE Band 4: 23.30dBm,<br>FDD-LTE Band 5: 23.45 dBm,<br>FDD-LTE Band 7: 23.28 dBm,<br>FDD-LTE Band 12: 22.91dBm,<br>FDD-LTE Band 13: 24.11dBm,<br>FDD-LTE Band 17: 23.34dBm,<br>FDD-LTE Band 25: 22.48 dBm,<br>FDD-LTE Band 26: 23.59 dBm,<br>FDD-LTE Band 28: 22.54 dBm,<br>FDD-LTE Band 30: 23.95 dBm,<br>FDD-LTE Band 40(2305-2315MHz): 22.86dBm, |

| | |
|---|---|
| | FDD-LTE Band 40(2350-2360MHz): 22.97dBm,<br>FDD-LTE Band 66: 25.47dBm |
| Type of Emission: | FDD-LTE Band 2: 17M9G7D, 17M9W7D<br>FDD-LTE Band 4: 17M9G7D, 17M9W7D<br>FDD-LTE Band 5: 8M94G7D, 8M95W7D<br>FDD-LTE Band 7: 17M9G7D, 17M9W7D<br>FDD-LTE Band 12: 8M96G7D, 8M96W7D<br>FDD-LTE Band 13: 8M94G7D, 8M93W7D<br>FDD-LTE Band 17: 8M94G7D, 8M93W7D<br>FDD-LTE Band 25: 17M8G7D, 17M8W7D<br>FDD-LTE Band 26: 8M96G7D, 8M9W7D<br>FDD-LTE Band 28: 17M9G7D, 17M9W7D<br>FDD-LTE Band 30: 8M93G7D, 8M93W7D<br>TDD-LTE Band 40(2305-2315MHz): 8M95G7D, 8M92W7D<br>TDD-LTE Band 40(2350-2360MHz): 8M94G7D, 8M93W7D<br>FDD-LTE Band 66: 17M9G7D, 17M9W7D |
| Type of Modulation: | QPSK, 16QAM |
| Antenna Type: | Integral Antenna |
| Antenna Gain: | FDD-LTE Band 2: 1.25dBi,<br>FDD-LTE Band 4: 1.28dBi,<br>FDD-LTE Band 5: 1.25dBi,<br>FDD-LTE Band 7: 1.64dBi,<br>FDD-LTE Band 12: 1.01dBi,<br>FDD-LTE Band 13: 1.23dBi,<br>FDD-LTE Band 17: 1.11dBi,<br>FDD-LTE Band 25: 1.38dBi,<br>FDD-LTE Band 26: 1.25dBi,<br>FDD-LTE Band 28: 1.16dBi,<br>FDD-LTE Band 30: 1.52dBi,<br>TDD-LTE Band 40: 1.61dBi,<br>FDD-LTE Band 66: 1.61dBi, |

## 1.2 Test Standards

The tests were performed according to following standards:

**FCC Rules Part 2:** FREQUENCY ALLOCA-TIONS AND RADIO TREATY MAT-TERS; GENERAL RULES AND REG-ULATIONS
**FCC Rules Part 22:** PRIVATE LAND MOBILE RADIO SERVICES.
**FCC Rules Part 24:** PUBLIC MOBILE SERVICES
**FCC Rules Part 27:** MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES
**TIA/EIA 603 E March 2016:** Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.
**ANSI C63.26-2015:** American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
**KDB 971168 D01 Power Meas License Digital Systems v03r01:** MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

## 1.3 Test Methodology

All measurements contained in this report were conducted with TIA/EIA 603 E/ KDB 971168/ ANSI C63.26
The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

## 1.4 Test Facility

**FCC – Registration No.: 125990**
Shenzhen SEM Test Technology Co., Ltd. Laboratory has been recognized to perform compliance testing on equipment subject to the Commissions Declaration Of Conformity (DOC). The Designation Number is CN5010, and Test Firm Registration Number is 125990.

**Industry Canada (IC) Registration No.: 11464A**
The 3m Semi-anechoic chamber of Shenzhen SEM Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

## 1.5 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, and to measure its highest possible emissions level, more detailed description as follows:

| **Test Mode List** | | |
|---|---|---|
| Test Mode | Description | Remark |
| TM1 | FDD-LTE Band 2 | Low, Middle, High Channels |
| TM2 | FDD-LTE Band 4 | Low, Middle, High Channels |
| TM3 | FDD-LTE Band 5 | Low, Middle, High Channels |
| TM4 | FDD-LTE Band 7 | Low, Middle, High Channels |
| TM5 | FDD-LTE Band 12 | Low, Middle, High Channels |
| TM6 | FDD-LTE Band 13 | Low, Middle, High Channels |
| TM7 | FDD-LTE Band 17 | Low, Middle, High Channels |
| TM8 | FDD-LTE Band 25 | Low, Middle, High Channels |
| TM9 | FDD-LTE Band 26 | Low, Middle, High Channels |
| TM10 | FDD-LTE Band 28 | Low, Middle, High Channels |
| TM11 | FDD-LTE Band 30 | Low, Middle, High Channels |
| TM12 | TDD-LTE Band 40 | Low, Middle, High Channels |
| TM13 | FDD-LTE Band 66 | Low, Middle, High Channels |

| **Test Conditions** | |
|---|---|
| Temperature: | 22~25 °C |
| Relative Humidity: | 50~55 %. |
| ATM Pressure: | 1019 mbar |

| **EUT Cable List and Details** | | | |
|---|---|---|---|
| Cable Description | Length (m) | Shielded/Unshielded | With / Without Ferrite |
| / | / | / | / |

| **Special Cable List and Details** | | | |
|---|---|---|---|
| Cable Description | Length (m) | Shielded/Unshielded | With / Without Ferrite |
| / | / | / | / |

| **Auxiliary Equipment List and Details** | | | |
|---|---|---|---|
| Description | Manufacturer | Model | Serial Number |
| / | / | / | / |

## 1.6 Measurement Uncertainty

| **Measurement uncertainty** | | |
|---|---|---|
| Parameter | Conditions | Uncertainty |
| RF Output Power | Conducted | ±0.42dB |
| Occupied Bandwidth | Conducted | ±1.5% |
| Frequency Stability | Conducted | 2.3% |
| Transmitter Spurious Emissions | Conducted | ±0.42dB |
| Transmitter Spurious Emissions | Radiated | 30-200MHz ±4.52dB |
| | | 0.2-1GHz ±5.56dB |
| | | 1-6GHz ±3.84dB |
| | | 6-18GHz ±3.92dB |

## 1.7 Test Equipment List and Details

| No. | Description | Manufacturer | Model | Serial No. | Cal Date | Due. Date |
|---|---|---|---|---|---|---|
| SEMT-1075 | Communication Tester | Rohde & Schwarz | CMW500 | 148650 | 2019-04-30 | 2020-04-29 |
| SEMT-1063 | GSM Tester | Rohde & Schwarz | CMU200 | 114403 | 2019-04-30 | 2020-04-29 |
| SEMT-1072 | Spectrum Analyzer | Agilent | E4407B | MY41440400 | 2019-04-30 | 2020-04-29 |
| SEMT-1079 | Spectrum Analyzer | Agilent | N9020A | US47140102 | 2019-04-30 | 2020-04-29 |
| SEMT-1080 | Signal Generator | Agilent | 83752A | 3610A01453 | 2019-04-30 | 2020-04-29 |
| SEMT-1081 | Vector Signal Generator | Agilent | N5182A | MY47070202 | 2019-04-30 | 2020-04-29 |
| SEMT-1028 | Power Divider | Weinschel | 1506A | PM204 | 2019-04-30 | 2020-04-29 |
| SEMT-1082 | Power Divider | RF-Lambda | RFLT4W5M18G | 14110400027 | 2019-04-30 | 2020-04-29 |
| SEMT-1031 | Spectrum Analyzer | Rohde & Schwarz | FSP30 | 836079/035 | 2019-04-30 | 2020-04-29 |
| SEMT-1007 | EMI Test Receiver | Rohde & Schwarz | ESVB | 825471/005 | 2019-04-30 | 2020-04-29 |
| SEMT-1008 | Amplifier | Agilent | 8447F | 3113A06717 | 2019-04-30 | 2020-04-29 |
| SEMT-1043 | Amplifier | C&D | PAP-1G18 | 2002 | 2019-04-30 | 2020-04-29 |
| SEMT-1069 | Loop Antenna | Schwarz beck | FMZB 1516 | 9773 | 2019-05-05 | 2021-05-04 |
| SEMT-1068 | Broadband Antenna | Schwarz beck | VULB9163 | 9163-333 | 2019-05-05 | 2021-05-04 |
| SEMT-1042 | Horn Antenna | ETS | 3117 | 00086197 | 2019-05-05 | 2021-05-04 |
| SEMT-1121 | Horn Antenna | Schwarzbeck | BBHA 9170 | BBHA9170582 | 2019-05-05 | 2021-05-04 |
| SEMT-1168 | Pre-amplifier | Direction Systems Inc. | PAP-0126 | 14141-12838 | 2019-04-30 | 2020-04-29 |
| SEMT-1169 | Pre-amplifier | Direction Systems Inc. | PAP-2640 | 14145-14153 | 2019-04-30 | 2020-04-29 |
| SEMT-1163 | Spectrum Analyzer | Rohde & Schwarz | FSP40 | 100612 | 2019-04-30 | 2020-04-29 |
| SEMT-1170 | DRG Horn Antenna | A.H. SYSTEMS | SAS-574 | 571 | 2019-05-05 | 2021-05-04 |
| SEMT-1166 | Power Limiter | Agilent | N9356B | MY45450376 | 2019-04-30 | 2020-04-29 |
| SEMT-1048 | RF Limiter | ATTEN | AT-BSF-2400~2500 | / | 2019-04-30 | 2020-04-29 |
| SEMT-1055 | RF Limiter | ATTEN | AT-BSF-0820~0920 | / | 2019-04-30 | 2020-04-29 |
| SEMT-1056 | RF Limiter | ATTEN | AT-BSF-1710~1910 | / | 2019-04-30 | 2020-04-29 |
| SEMT-1076 | RF Switcher | Top Precision | RCS03-A2 | / | 2019-04-30 | 2020-04-29 |
| SEMT-C001 | Cable | Zheng DI | LL142-07-07-10M(A) | / | 2019-03-18 | 2020-03-17 |
| SEMT-C002 | Cable | Zheng DI | ZT40-2.92J-2.92J-6M | / | 2019-03-18 | 2020-03-17 |

| | | | | | | |
|---|---|---|---|---|---|---|
| SEMT-C003 | Cable | Zheng DI | ZT40-2.92J-2.92J-2.5M | / | 2019-03-18 | 2020-03-17 |
| SEMT-C004 | Cable | Zheng DI | 2M0RFC | / | 2019-03-18 | 2020-03-17 |
| SEMT-C005 | Cable | Zheng DI | 1M0RFC | / | 2019-03-18 | 2020-03-17 |
| SEMT-C006 | Cable | Zheng DI | 1M0RFC | / | 2019-03-18 | 2020-03-17 |

| Software List | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Version** |
| EMI Test Software (Radiated Emission)* | Farad | EZ-EMC | RA-03A1 |
| EMI Test Software (Conducted Emission)* | Farad | EZ-EMC | RA-03A1 |
| LTE Test System* | Tonscend | JS1120-1 | V2.5 |

*Remark: indicates software version used in the compliance certification testing

# 2. SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test Item | Result |
|---|---|---|
| §1.1307, §2.1093 | RF Exposure | Compliant |
| §22.913(a), §24.232(c), §27.50(d) | RF Output Power | Compliant |
| §24.51, §27.50 | Peak-to-average Ratio (PAR) of Transmitter | Compliant |
| §22.917(b), §24.238(b), §27.53 | Emission Bandwidth | Compliant |
| §22.917(a), §24.238(a), §27.53(h) | Spurious Emissions at Antenna Terminal | Compliant |
| §22.917(a), §24.238(a), §27.53(h) | Spurious Radiation Emissions | Compliant |
| §2.917(a), §24.238(a), §27.53(h) | Out of Band Emissions | Compliant |
| §22.355, §24.235, §27.54 | Frequency Stability | Compliant |

# 3. RF Exposure

## 3.1 Standard Applicable

According to §1.1307 and §2.1093, the portable transmitter must comply the RF exposure requirements.

## 3.2 Test Result

This product complied with the requirement of the RF exposure, please see the SAR report.

# 4. RF Output Power

## 4.1 Standard Applicable

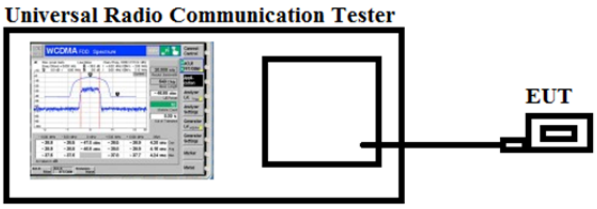
According to §24.232(c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to §27.50(d)(4), fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

According to §27.50(c)(10), portable stations (hand-held devices) in the 698-746 MHz band are limited to 3 watts ERP.

## 4.2 Test Procedure

- Conducted output power test method:




- Radiated power test method:

1. The setup of EUT is according with per ANSI/TIA Standard 603E and ANSI C63.26 measurement procedure.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.

4. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

## 4.3 Summary of Test Results/Plots

**Max. Radiated Power:**

FDD-LTE Band 2

| Channel Bandwidth: 1.4 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 21.04 | PASS |
| | MCH | 20.78 | PASS |
| | HCH | 20.96 | PASS |
| 16QAM | LCH | 20.52 | PASS |
| | MCH | 21.14 | PASS |
| | HCH | 21.11 | PASS |
| Channel Bandwidth: 3 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.74 | PASS |
| | MCH | 20.65 | PASS |
| | HCH | 20.79 | PASS |
| 16QAM | LCH | 20.43 | PASS |
| | MCH | 20.98 | PASS |
| | HCH | 20.58 | PASS |
| Channel Bandwidth: 5 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 21.14 | PASS |
| | MCH | 21.05 | PASS |
| | HCH | 21.36 | PASS |
| 16QAM | LCH | 21.42 | PASS |
| | MCH | 21.39 | PASS |
| | HCH | 21.78 | PASS |
| Channel Bandwidth: 10 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.56 | PASS |
| | MCH | 20.36 | PASS |
| | HCH | 20.72 | PASS |
| 16QAM | LCH | 20.40 | PASS |
| | MCH | 20.36 | PASS |
| | HCH | 20.69 | PASS |

| Channel Bandwidth: 15 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.57 | PASS |
| | MCH | 20.63 | PASS |
| | HCH | 20.35 | PASS |
| 16QAM | LCH | 20.45 | PASS |
| | MCH | 20.25 | PASS |
| | HCH | 20.18 | PASS |
| Channel Bandwidth: 20 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 19.65 | PASS |
| | MCH | 19.78 | PASS |
| | HCH | 20.07 | PASS |
| 16QAM | LCH | 20.26 | PASS |
| | MCH | 20.14 | PASS |
| | HCH | 20.32 | PASS |

FDD-LTE Band 4

| Channel Bandwidth: 1.4 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.36 | PASS |
| | MCH | 20.74 | PASS |
| | HCH | 20.47 | PASS |
| 16QAM | LCH | 20.36 | PASS |
| | MCH | 20.52 | PASS |
| | HCH | 20.39 | PASS |
| Channel Bandwidth: 3 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.69 | PASS |
| | MCH | 20.52 | PASS |
| | HCH | 20.47 | PASS |
| 16QAM | LCH | 20.46 | PASS |
| | MCH | 20.35 | PASS |
| | HCH | 20.47 | PASS |

| Channel Bandwidth: 5 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.76 | PASS |
| | MCH | 20.35 | PASS |
| | HCH | 20.38 | PASS |
| 16QAM | LCH | 20.78 | PASS |
| | MCH | 20.36 | PASS |
| | HCH | 20.70 | PASS |
| Channel Bandwidth: 10 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 19.75 | PASS |
| | MCH | 19.52 | PASS |
| | HCH | 19.47 | PASS |
| 16QAM | LCH | 19.38 | PASS |
| | MCH | 19.68 | PASS |
| | HCH | 19.65 | PASS |
| Channel Bandwidth: 15 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.35 | PASS |
| | MCH | 20.14 | PASS |
| | HCH | 20.43 | PASS |
| 16QAM | LCH | 19.39 | PASS |
| | MCH | 19.78 | PASS |
| | HCH | 19.35 | PASS |
| Channel Bandwidth: 20 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.31 | PASS |
| | MCH | 20.46 | PASS |
| | HCH | 19.78 | PASS |
| 16QAM | LCH | 19.61 | PASS |
| | MCH | 19.57 | PASS |
| | HCH | 19.74 | PASS |

FDD-LTE Band 5

| Channel Bandwidth: 1.4 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.57 | PASS |
| | MCH | 20.36 | PASS |
| | HCH | 20.42 | PASS |
| 16QAM | LCH | 20.35 | PASS |
| | MCH | 20.47 | PASS |
| | HCH | 20.14 | PASS |
| Channel Bandwidth: 3 MHz | | | |
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 19.37 | PASS |
| | MCH | 19.89 | PASS |
| | HCH | 19.65 | PASS |
| 16QAM | LCH | 19.42 | PASS |
| | MCH | 19.25 | PASS |
| | HCH | 19.63 | PASS |
| Channel Bandwidth: 5 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.11 | PASS |
| | MCH | 20.08 | PASS |
| | HCH | 20.35 | PASS |
| 16QAM | LCH | 20.42 | PASS |
| | MCH | 20.21 | PASS |
| | HCH | 20.14 | PASS |
| Channel Bandwidth: 10 MHz | | | |
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 20.41 | PASS |
| | MCH | 20.36 | PASS |
| | HCH | 20.49 | PASS |
| 16QAM | LCH | 19.47 | PASS |
| | MCH | 19.35 | PASS |
| | HCH | 19.36 | PASS |

FDD-LTE Band 7

| Channel Bandwidth: 5 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 19.85 | PASS |
| | MCH | 19.33 | PASS |
| | HCH | 19.41 | PASS |
| 16QAM | LCH | 19.36 | PASS |
| | MCH | 19.48 | PASS |
| | HCH | 19.62 | PASS |
| Channel Bandwidth: 10 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.18 | PASS |
| | MCH | 20.32 | PASS |
| | HCH | 20.46 | PASS |
| 16QAM | LCH | 20.32 | PASS |
| | MCH | 20.47 | PASS |
| | HCH | 20.10 | PASS |
| Channel Bandwidth: 15 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.65 | PASS |
| | MCH | 20.42 | PASS |
| | HCH | 20.31 | PASS |
| 16QAM | LCH | 20.47 | PASS |
| | MCH | 20.15 | PASS |
| | HCH | 20.98 | PASS |
| Channel Bandwidth: 20 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 19.87 | PASS |
| | MCH | 19.36 | PASS |
| | HCH | 19.25 | PASS |
| 16QAM | LCH | 20.56 | PASS |
| | MCH | 20.75 | PASS |
| | HCH | 20.31 | PASS |

FDD-LTE Band 12

| Channel Bandwidth: 1.4MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 21.00 | PASS |
| | MCH | 21.14 | PASS |
| | HCH | 21.35 | PASS |
| 16QAM | LCH | 20.58 | PASS |
| | MCH | 20.31 | PASS |
| | HCH | 20.42 | PASS |
| Channel Bandwidth: 3 MHz | | | |
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 19.21 | PASS |
| | MCH | 19.17 | PASS |
| | HCH | 19.26 | PASS |
| 16QAM | LCH | 19.45 | PASS |
| | MCH | 19.38 | PASS |
| | HCH | 19.22 | PASS |
| Channel Bandwidth: 5 MHz | | | |
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 20.15 | PASS |
| | MCH | 20.17 | PASS |
| | HCH | 20.89 | PASS |
| 16QAM | LCH | 20.65 | PASS |
| | MCH | 20.14 | PASS |
| | HCH | 20.69 | PASS |
| Channel Bandwidth: 10 MHz | | | |
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 19.89 | PASS |
| | MCH | 19.76 | PASS |
| | HCH | 19.68 | PASS |
| 16QAM | LCH | 20.23 | PASS |
| | MCH | 20.41 | PASS |
| | HCH | 20.44 | PASS |

FDD-LTE Band 13

| Channel Bandwidth: 5 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 20.13 | PASS |
| | MCH | 20.21 | PASS |
| | HCH | 20.45 | PASS |
| 16QAM | LCH | 20.36 | PASS |
| | MCH | 20.14 | PASS |
| | HCH | 20.41 | PASS |
| Channel Bandwidth: 10 MHz | | | |
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | MCH | 20.63 | PASS |
| 16QAM | MCH | 20.47 | PASS |

FDD-LTE Band 17

| Channel Bandwidth: 5 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 21.01 | PASS |
| | MCH | 21.52 | PASS |
| | HCH | 21.02 | PASS |
| 16QAM | LCH | 21.54 | PASS |
| | MCH | 20.69 | PASS |
| | HCH | 20.78 | PASS |
| Channel Bandwidth: 10 MHz | | | |
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 20.64 | PASS |
| | MCH | 20.47 | PASS |
| | HCH | 20.36 | PASS |
| 16QAM | LCH | 20.77 | PASS |
| | MCH | 20.60 | PASS |
| | HCH | 20.72 | PASS |

FDD-LTE Band 25

| Channel Bandwidth: 1.4 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.17 | PASS |
| | MCH | 20.35 | PASS |
| | HCH | 20.41 | PASS |
| 16QAM | LCH | 20.36 | PASS |
| | MCH | 20.52 | PASS |
| | HCH | 20.46 | PASS |
| Channel Bandwidth: 3 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 21.36 | PASS |
| | MCH | 21.17 | PASS |
| | HCH | 21.36 | PASS |
| 16QAM | LCH | 21.52 | PASS |
| | MCH | 21.36 | PASS |
| | HCH | 21.79 | PASS |
| Channel Bandwidth: 5 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.61 | PASS |
| | MCH | 20.42 | PASS |
| | HCH | 20.59 | PASS |
| 16QAM | LCH | 20.36 | PASS |
| | MCH | 20.47 | PASS |
| | HCH | 20.95 | PASS |
| Channel Bandwidth: 10 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 21.95 | PASS |
| | MCH | 21.32 | PASS |
| | HCH | 21.28 | PASS |
| 16QAM | LCH | 19.79 | PASS |
| | MCH | 19.61 | PASS |
| | HCH | 19.41 | PASS |

| Channel Bandwidth: 15 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 19.76 | PASS |
| | MCH | 19.62 | PASS |
| | HCH | 19.52 | PASS |
| 16QAM | LCH | 19.05 | PASS |
| | MCH | 19.25 | PASS |
| | HCH | 19.43 | PASS |
| Channel Bandwidth: 20 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 19.98 | PASS |
| | MCH | 19.73 | PASS |
| | HCH | 19.86 | PASS |
| 16QAM | LCH | 20.68 | PASS |
| | MCH | 20.25 | PASS |
| | HCH | 20.45 | PASS |

FDD-LTE Band 26 (824-849MHz)

| Channel Bandwidth: 1.4 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 20.62 | PASS |
| | MCH | 20.48 | PASS |
| | HCH | 20.32 | PASS |
| 16QAM | LCH | 20.14 | PASS |
| | MCH | 20.68 | PASS |
| | HCH | 20.69 | PASS |
| Channel Bandwidth: 3 MHz | | | |
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 20.78 | PASS |
| | MCH | 20.65 | PASS |
| | HCH | 20.22 | PASS |
| 16QAM | LCH | 20.39 | PASS |
| | MCH | 20.74 | PASS |
| | HCH | 20.62 | PASS |

| Channel Bandwidth: 5 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 19.25 | PASS |
| | MCH | 19.36 | PASS |
| | HCH | 19.47 | PASS |
| 16QAM | LCH | 19.36 | PASS |
| | MCH | 19.52 | PASS |
| | HCH | 19.69 | PASS |
| Channel Bandwidth: 10 MHz | | | |
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 20.35 | PASS |
| | MCH | 20.45 | PASS |
| | HCH | 20.32 | PASS |
| 16QAM | LCH | 20.14 | PASS |
| | MCH | 20.39 | PASS |
| | HCH | 20.42 | PASS |

FDD-LTE Band 28

| Channel Bandwidth: 3 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 20.85 | PASS |
| | MCH | 20.34 | PASS |
| | HCH | 19.58 | PASS |
| 16QAM | LCH | 19.47 | PASS |
| | MCH | 19.87 | PASS |
| | HCH | 20.69 | PASS |
| Channel Bandwidth: 5 MHz | | | |
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 19.35 | PASS |
| | MCH | 20.02 | PASS |
| | HCH | 20.31 | PASS |
| 16QAM | LCH | 19.47 | PASS |
| | MCH | 19.35 | PASS |
| | HCH | 20.21 | PASS |

| Channel Bandwidth: 10 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 20.61 | PASS |
| | MCH | 20.15 | PASS |
| | HCH | 20.32 | PASS |
| 16QAM | LCH | 19.76 | PASS |
| | MCH | 19.85 | PASS |
| | HCH | 19.36 | PASS |
| Channel Bandwidth: 15 MHz | | | |
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 19.35 | PASS |
| | MCH | 19.49 | PASS |
| | HCH | 20.41 | PASS |
| 16QAM | LCH | 20.32 | PASS |
| | MCH | 20.25 | PASS |
| | HCH | 20.47 | PASS |
| Channel Bandwidth: 20 MHz | | | |
| Modulation | Channel | E.r.p [dBm] | Verdict |
| QPSK | LCH | 19.35 | PASS |
| | MCH | 19.14 | PASS |
| | HCH | 19.85 | PASS |
| 16QAM | LCH | 20.21 | PASS |
| | MCH | 20.15 | PASS |
| | HCH | 20.35 | PASS |

FDD-LTE Band 30

| Channel Bandwidth: 5 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.r.i.p [dBm] | Verdict |
| QPSK | LCH | 20.17 | PASS |
| | MCH | 20.31 | PASS |
| | HCH | 20.56 | PASS |
| 16QAM | LCH | 19.55 | PASS |
| | MCH | 19.32 | PASS |
| | HCH | 19.47 | PASS |
| Channel Bandwidth: 10 MHz | | | |
| Modulation | Channel | E.r.i.p [dBm] | Verdict |
| QPSK | MCH | 20.21 | PASS |
| 16QAM | MCH | 20.19 | PASS |

FDD-LTE Band 40 (2305-2315MHz)

| Channel Bandwidth: 5 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.65 | PASS |
| | HCH | 20.14 | PASS |
| 16QAM | LCH | 19.44 | PASS |
| | HCH | 19.52 | PASS |
| Channel Bandwidth: 10 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | MCH | 19.36 | PASS |
| 16QAM | MCH | 19.58 | PASS |

FDD-LTE Band 40 (2350-2360MHz)

| Channel Bandwidth: 5 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 19.53 | PASS |
| | HCH | 19.35 | PASS |
| 16QAM | LCH | 19.52 | PASS |
| | HCH | 19.48 | PASS |
| Channel Bandwidth: 10 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | MCH | 20.31 | PASS |
| 16QAM | MCH | 20.35 | PASS |

FDD-LTE Band 66

| Channel Bandwidth: 1.4 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 21.02 | PASS |
| | MCH | 20.87 | PASS |
| | HCH | 21.11 | PASS |
| 16QAM | LCH | 21.15 | PASS |
| | MCH | 20.74 | PASS |
| | HCH | 20.56 | PASS |
| Channel Bandwidth: 3 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.47 | PASS |
| | MCH | 20.36 | PASS |
| | HCH | 20.18 | PASS |
| 16QAM | LCH | 20.13 | PASS |
| | MCH | 20.22 | PASS |
| | HCH | 20.26 | PASS |
| Channel Bandwidth: 5 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.28 | PASS |
| | MCH | 20.37 | PASS |
| | HCH | 20.46 | PASS |
| 16QAM | LCH | 20.21 | PASS |
| | MCH | 20.30 | PASS |
| | HCH | 20.14 | PASS |
| Channel Bandwidth: 10 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 19.35 | PASS |
| | MCH | 20.42 | PASS |
| | HCH | 20.19 | PASS |
| 16QAM | LCH | 20.55 | PASS |
| | MCH | 19.54 | PASS |
| | HCH | 19.49 | PASS |

| Channel Bandwidth: 15 MHz | | | |
|---|---|---|---|
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 19.41 | PASS |
| | MCH | 19.35 | PASS |
| | HCH | 19.52 | PASS |
| 16QAM | LCH | 20.35 | PASS |
| | MCH | 20.41 | PASS |
| | HCH | 20.25 | PASS |
| Channel Bandwidth: 20 MHz | | | |
| Modulation | Channel | E.i.r.p [dBm] | Verdict |
| QPSK | LCH | 20.11 | PASS |
| | MCH | 20.33 | PASS |
| | HCH | 20.14 | PASS |
| 16QAM | LCH | 20.25 | PASS |
| | MCH | 20.19 | PASS |
| | HCH | 20.45 | PASS |

**Max. Conducted Output Power**

Please refer to Appendix A: Average Power Output Data

Test result: Pass

# 5. Peak-to-average Ratio (PAR) of Transmitter

## 5.1 Standard Applicable

According to §24.232(d), power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51, in measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

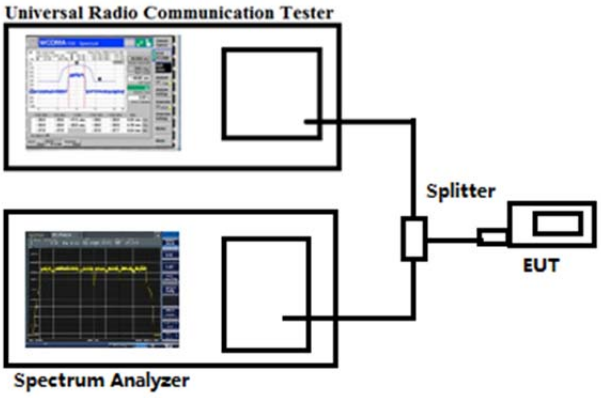
According to §27.50(B), the peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

## 5.2 Test Procedure

According with KDB 971168

1. The signal analyzer' s CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal " RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the " on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Test Configuration for the emission bandwidth testing:




## 5.3 Summary of Test Results

Please refer to Appendix B: Peak-to-Average Ratio

Test result: Pass

# 6. Emission Bandwidth

## 6.1 Standard Applicable

According to §22.917(b), the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

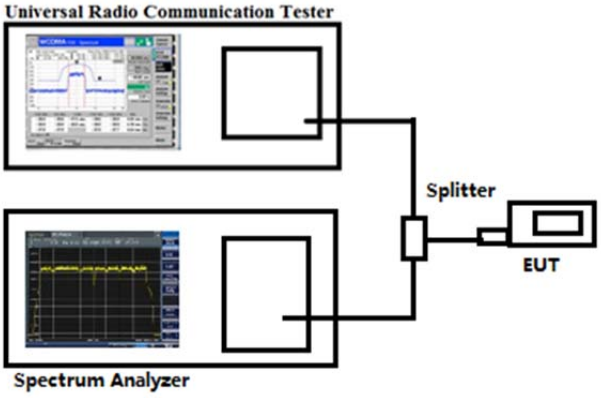
According to §24.238(b), the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

According to §27.53, the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

## 6.2 Test Procedure

According to §22.917(b), the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

Test Configuration for the emission bandwidth testing:




## 6.3 Summary of Test Results/Plots

Please refer to Appendix C: 26dB Bandwidth and Occupied Bandwidth

Test result: Pass

# 7. Out of Band Emissions at Antenna Terminal

## 7.1 Standard Applicable

According to §22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

According to §24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

According to §27.53(h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.

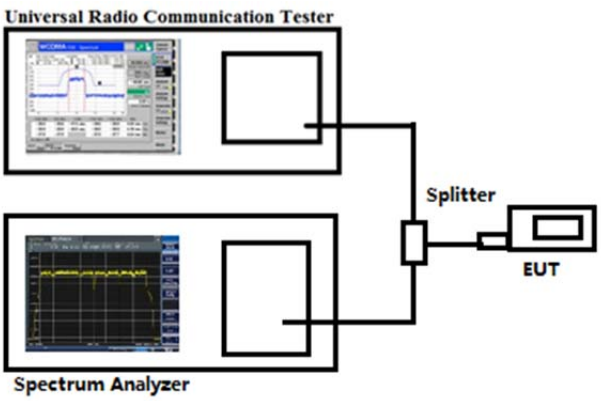
According to §27.53(g), for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB.

According to §27.53(m)(4), for mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz.

## 7.2 Test Procedure

The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 100kHz and 1MHz for the scan frequency from 30MHz to 1GHz and the scan frequency from 1GHz to up to 10$^{th}$ harmonic.

Test Configuration for the out of band emissions testing:



## 7.3 Summary of Test Results/Plots

Please refer to Appendix D & E: Band Edge & Conducted Spurious Emission

Test result: Pass

# 8. Spurious Radiated Emissions

## 8.1 Standard Applicable

According to §22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

According to §24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

According to §27.53(h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.

According to §27.53(g) the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB.

## 8.2 Test Procedure

1. The setup of EUT is according with per ANSI/TIA-603-E and ANSI C63.4-2014 measurement procedure.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious attenuation limit in dB =43+10 $Log_{10}$ (power out in Watts)

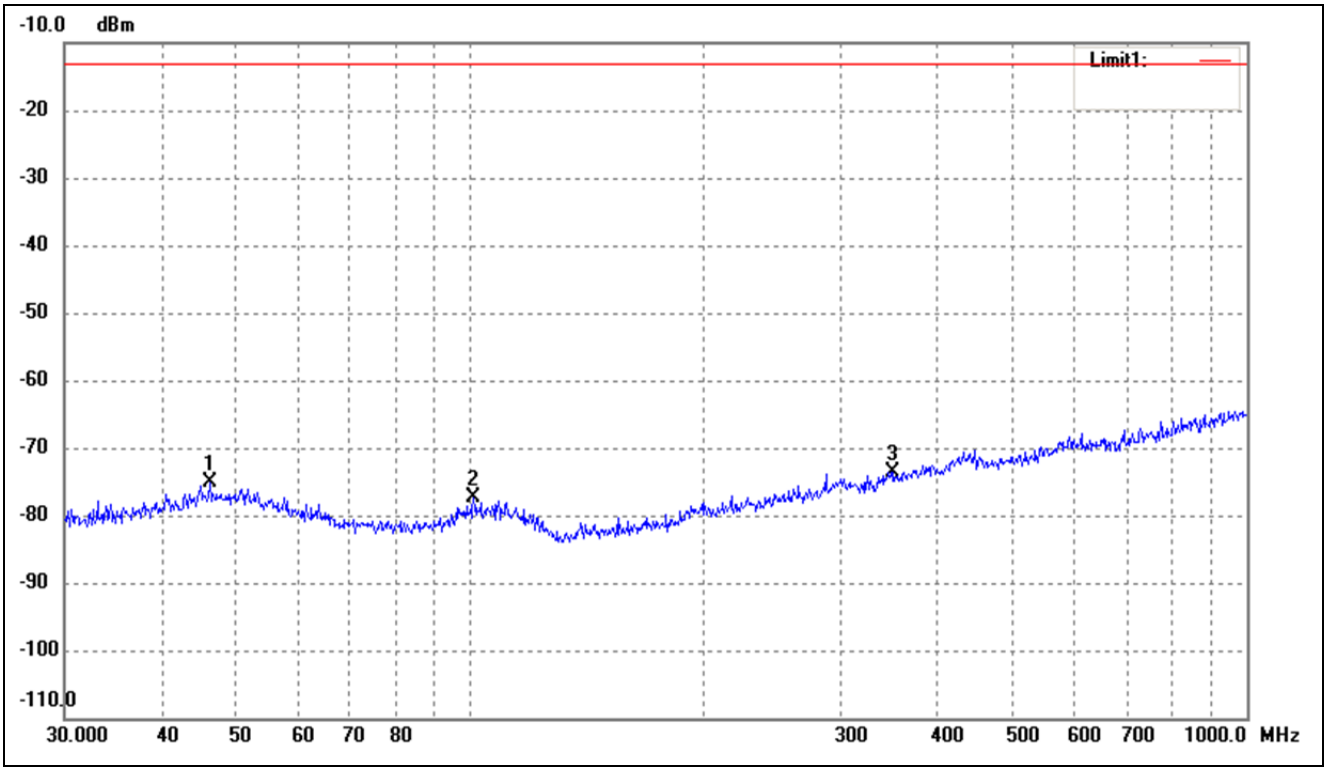
## 8.3 Summary of Test Results/Plots

*Note: 1. this EUT was tested in 3 orthogonal positions and the worst case position data was reported.*

*2. All test modes (different bandwidth and different modulation) are performed, but only the worst case is recorded in this report.*

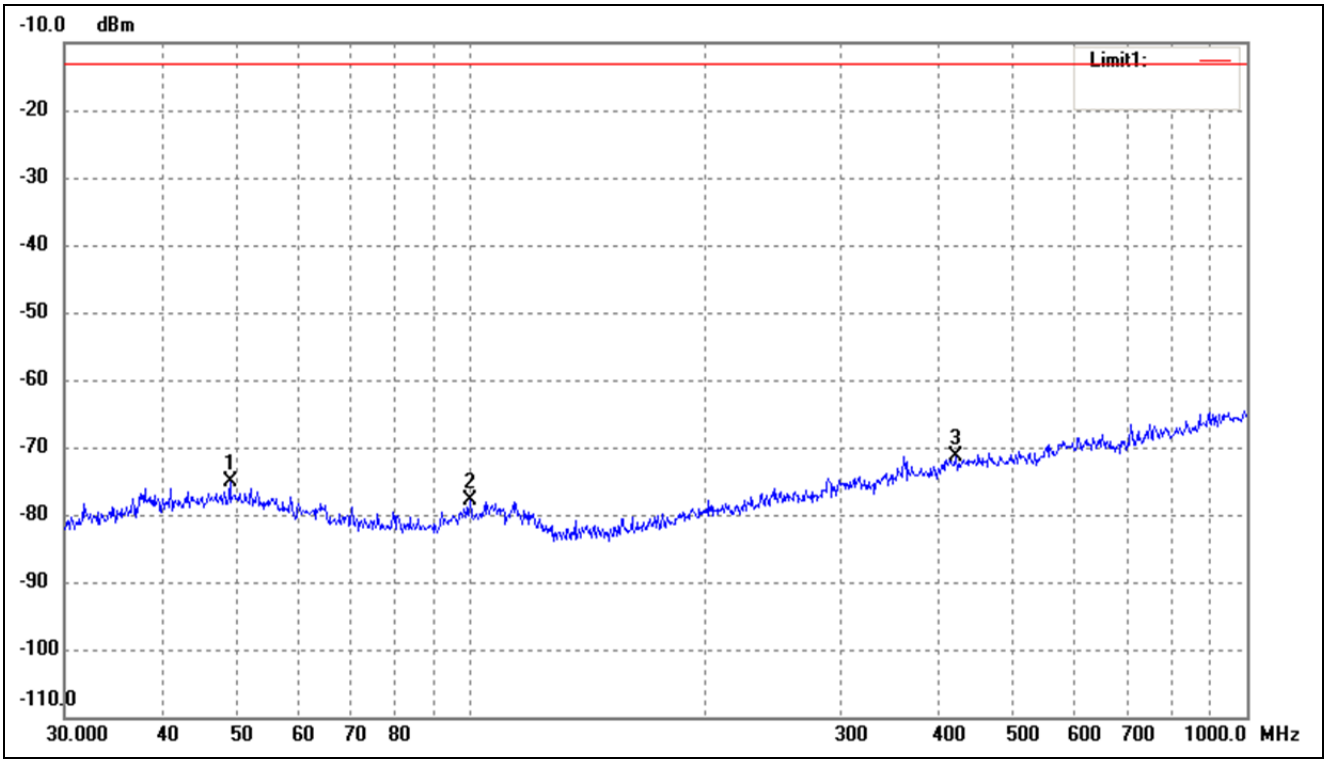
➢ Spurious Emissions Below 1GHz

| Test Mode | FDD_LTE Band 2 | Polarity: | Horizontal |
|---|---|---|---|



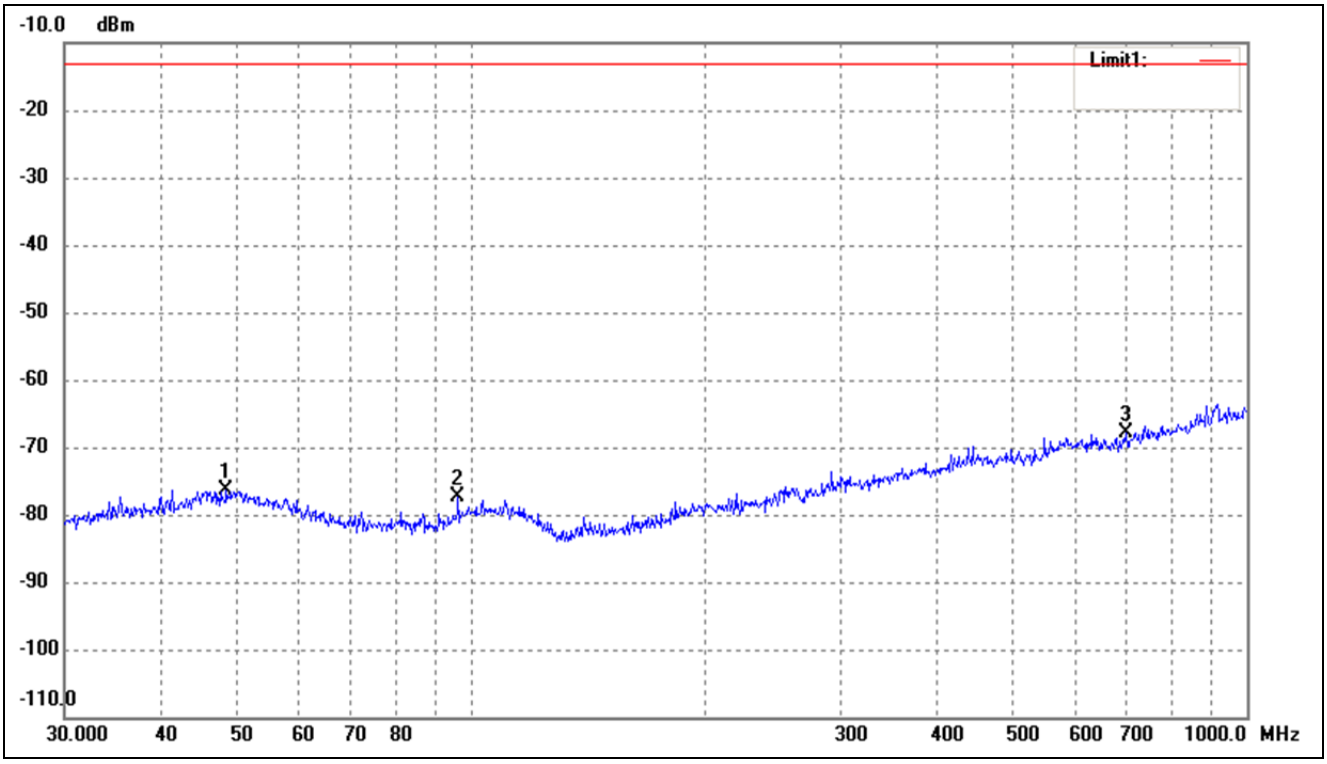

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 46.1780 | -75.70 | 0.54 | -75.16 | -13.00 | -62.16 | ERP |
| 2 | 100.9340 | -76.04 | -1.37 | -77.41 | -13.00 | -64.41 | ERP |
| 3 | 350.4768 | -77.28 | 3.75 | -73.53 | -13.00 | -60.53 | ERP |

| Test Mode | FDD_LTE Band 2 | Polarity: | Vertical |
|---|---|---|---|



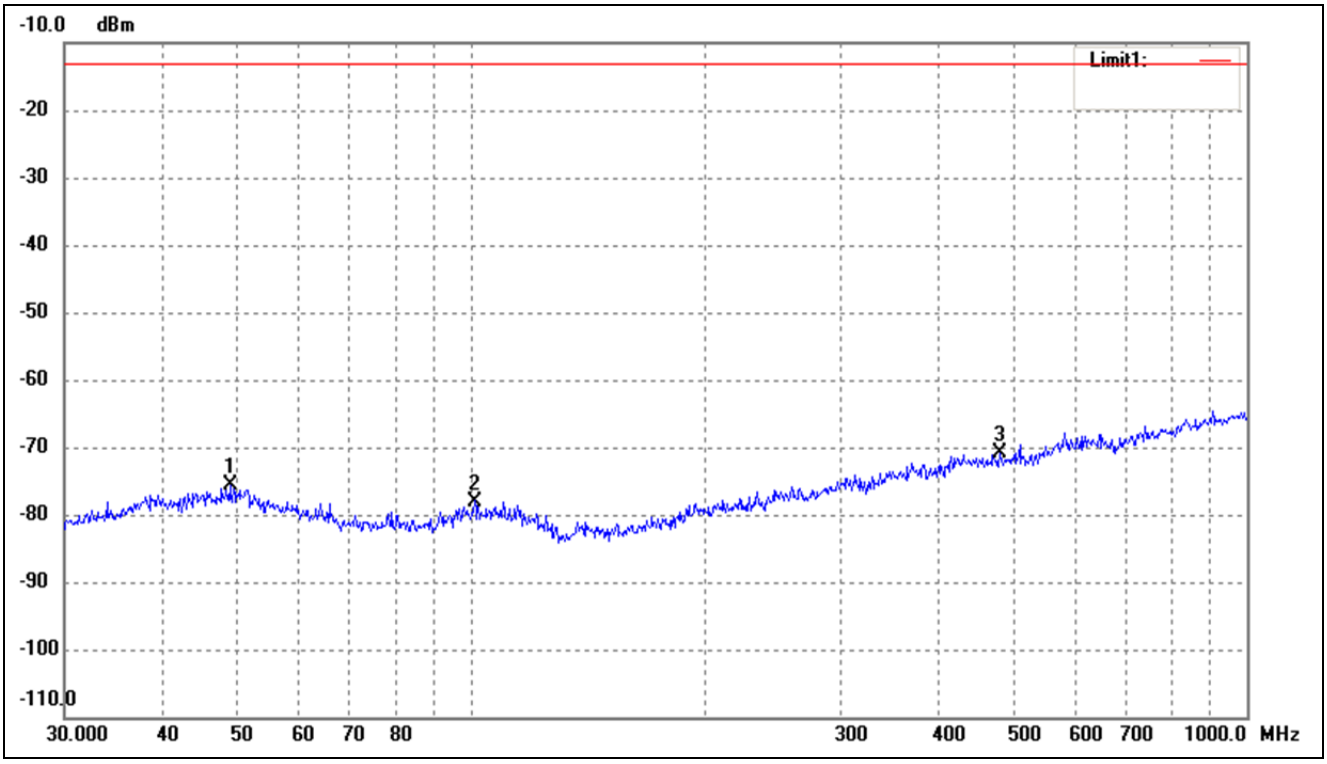

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 49.0145 | -75.77 | 0.74 | -75.03 | -13.00 | -62.03 | ERP |
| 2 | 99.8777 | -76.51 | -1.41 | -77.92 | -13.00 | -64.92 | ERP |
| 3 | 422.0577 | -76.95 | 5.51 | -71.44 | -13.00 | -58.44 | ERP |

| Test Mode | FDD_LTE Band 4 | Polarity: | Horizontal |
|---|---|---|---|



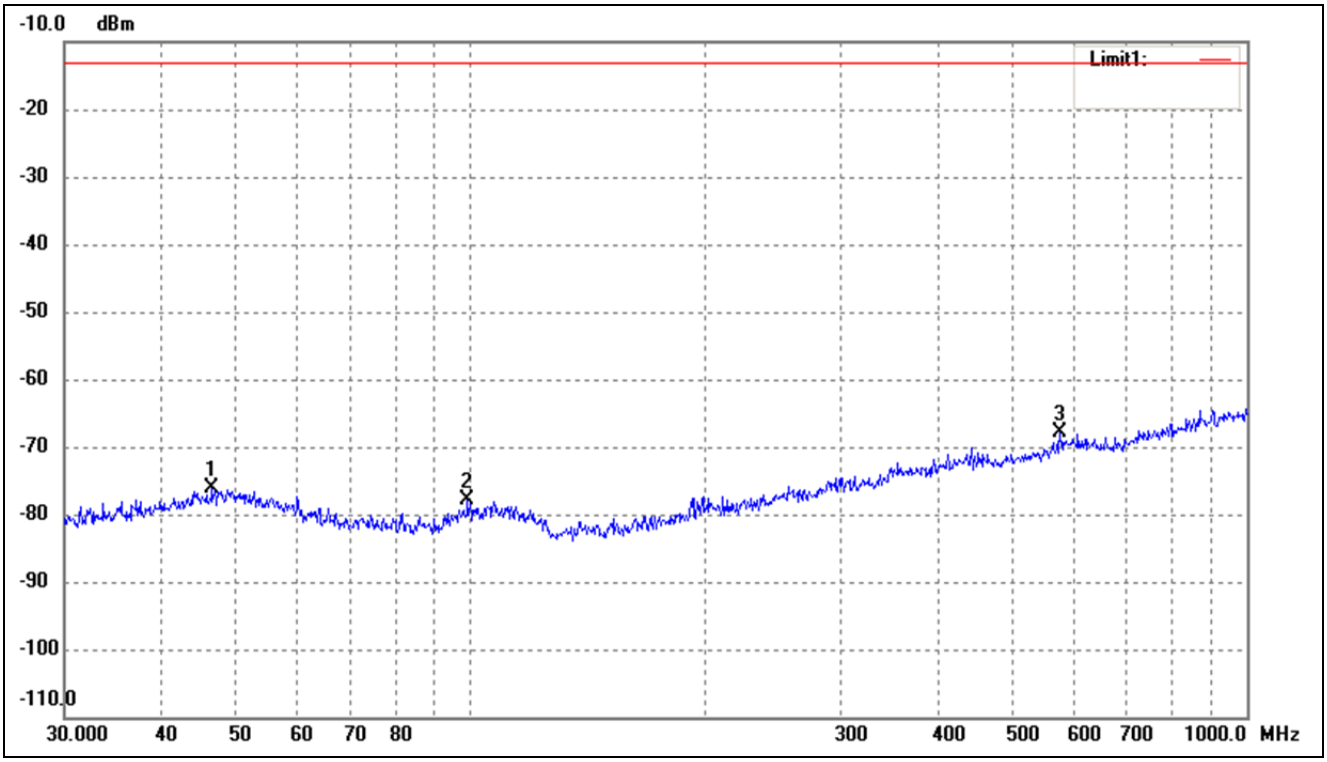

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 48.5016 | -77.02 | 0.71 | -76.31 | -13.00 | -63.31 | ERP |
| 2 | 96.4362 | -75.09 | -2.19 | -77.28 | -13.00 | -64.28 | ERP |
| 3 | 699.3046 | -75.81 | 7.89 | -67.92 | -13.00 | -54.92 | ERP |

| Test Mode | FDD_LTE Band 4 | Polarity: | Vertical |
|---|---|---|---|



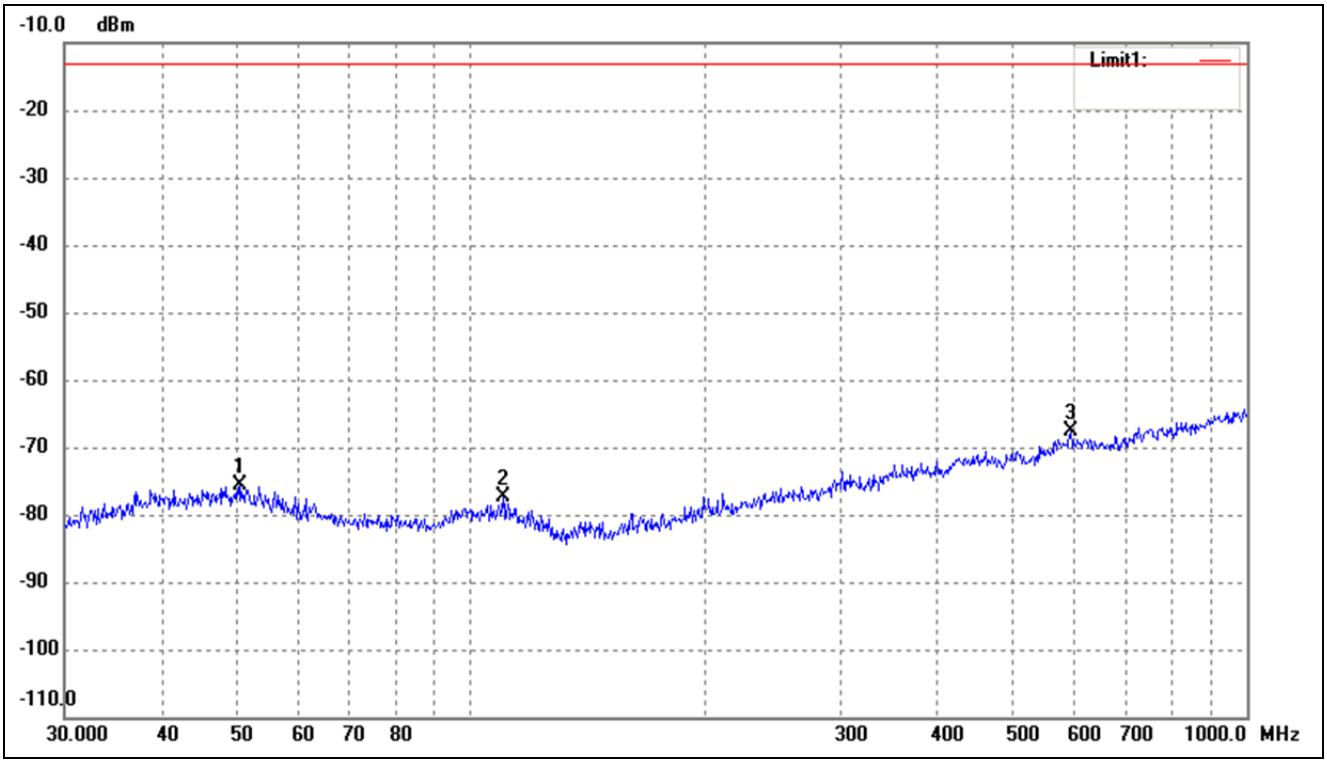

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 49.0145 | -76.27 | 0.74 | -75.53 | -13.00 | -62.53 | ERP |
| 2 | 101.2885 | -76.63 | -1.37 | -78.00 | -13.00 | -65.00 | ERP |
| 3 | 480.5276 | -76.33 | 5.35 | -70.98 | -13.00 | -57.98 | ERP |

| Test Mode | FDD_LTE Band 5 | Polarity: | Horizontal |
|---|---|---|---|



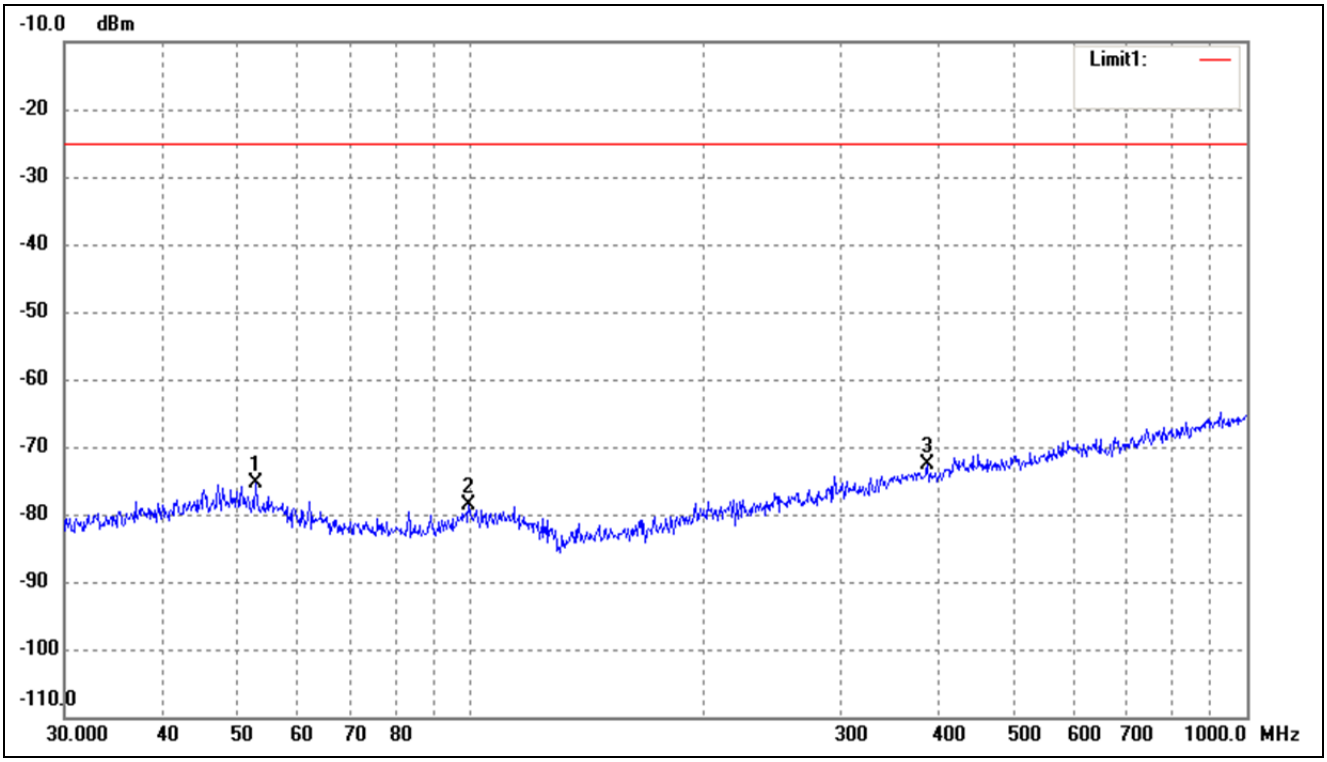

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 46.5030 | -76.64 | 0.57 | -76.07 | -13.00 | -63.07 | ERP |
| 2 | 99.1797 | -76.21 | -1.56 | -77.77 | -13.00 | -64.77 | ERP |
| 3 | 574.6258 | -75.42 | 7.51 | -67.91 | -13.00 | -54.91 | ERP |

| Test Mode | FDD_LTE Band 5 | Polarity: | Vertical |
|---|---|---|---|



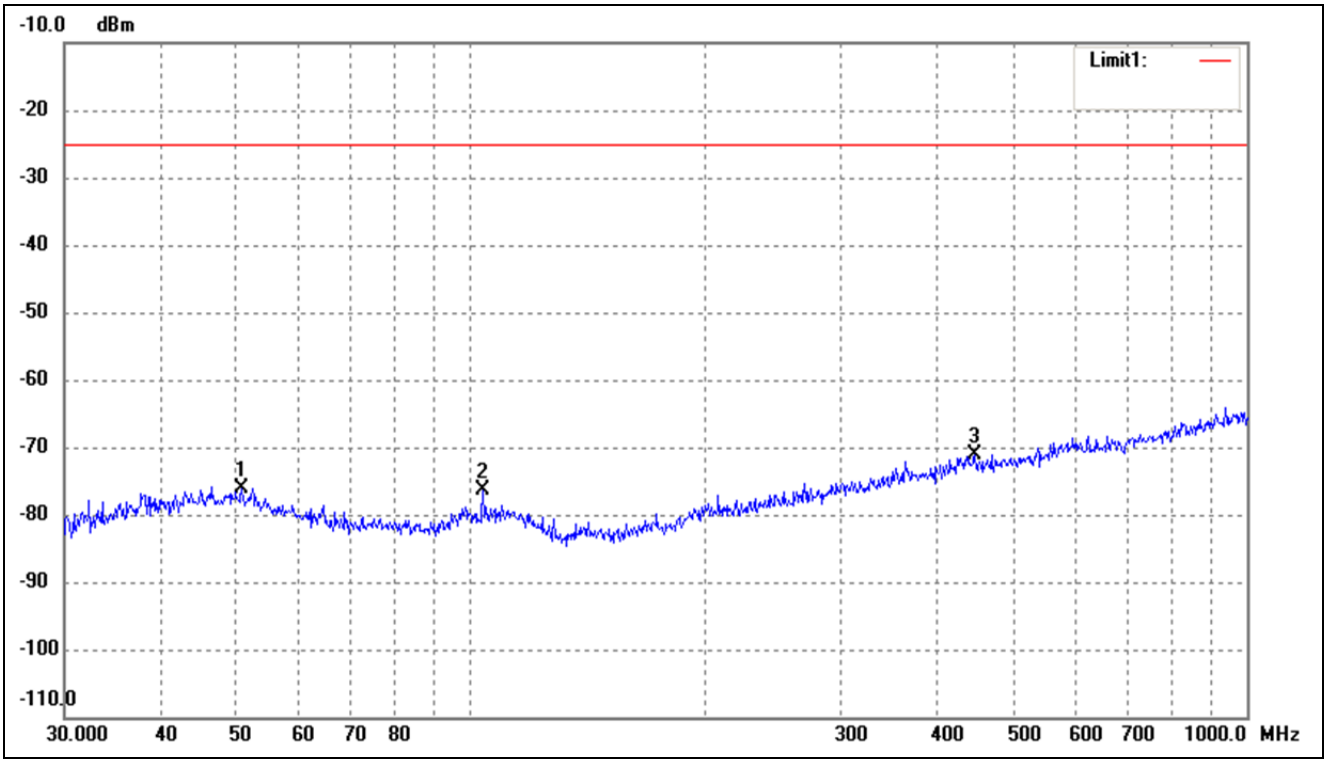

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 50.5860 | -76.31 | 0.67 | -75.64 | -13.00 | -62.64 | ERP |
| 2 | 110.1816 | -76.25 | -1.23 | -77.48 | -13.00 | -64.48 | ERP |
| 3 | 593.0497 | -75.32 | 7.71 | -67.61 | -13.00 | -54.61 | ERP |

| Test Mode | FDD_LTE Band 7 | Polarity: | Horizontal |
|---|---|---|---|



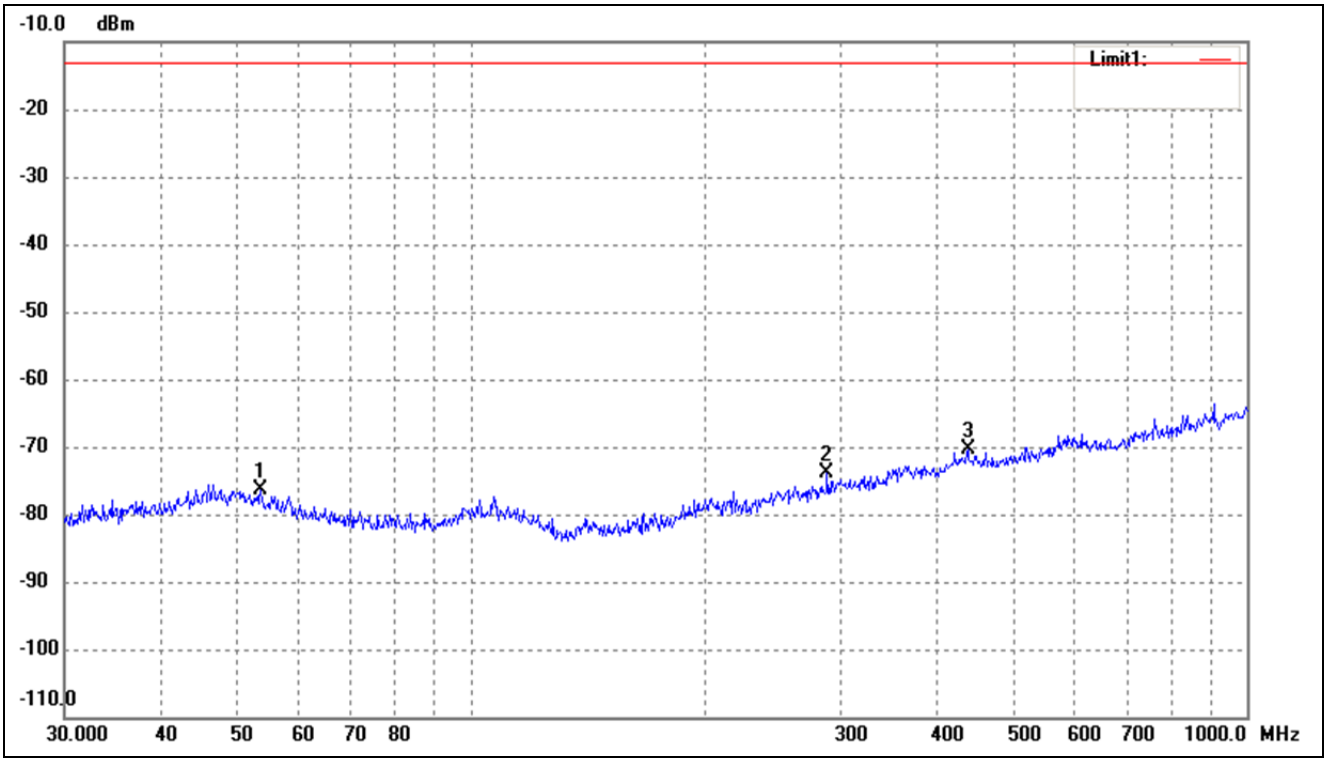

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 52.9453 | -75.58 | 0.12 | -75.46 | -25.00 | -50.46 | ERP |
| 2 | 99.5281 | -77.07 | -1.49 | -78.56 | -25.00 | -53.56 | ERP |
| 3 | 387.9920 | -76.90 | 4.18 | -72.72 | -25.00 | -47.72 | ERP |

| Test Mode | FDD_LTE Band 7 | Polarity: | Vertical |
|---|---|---|---|



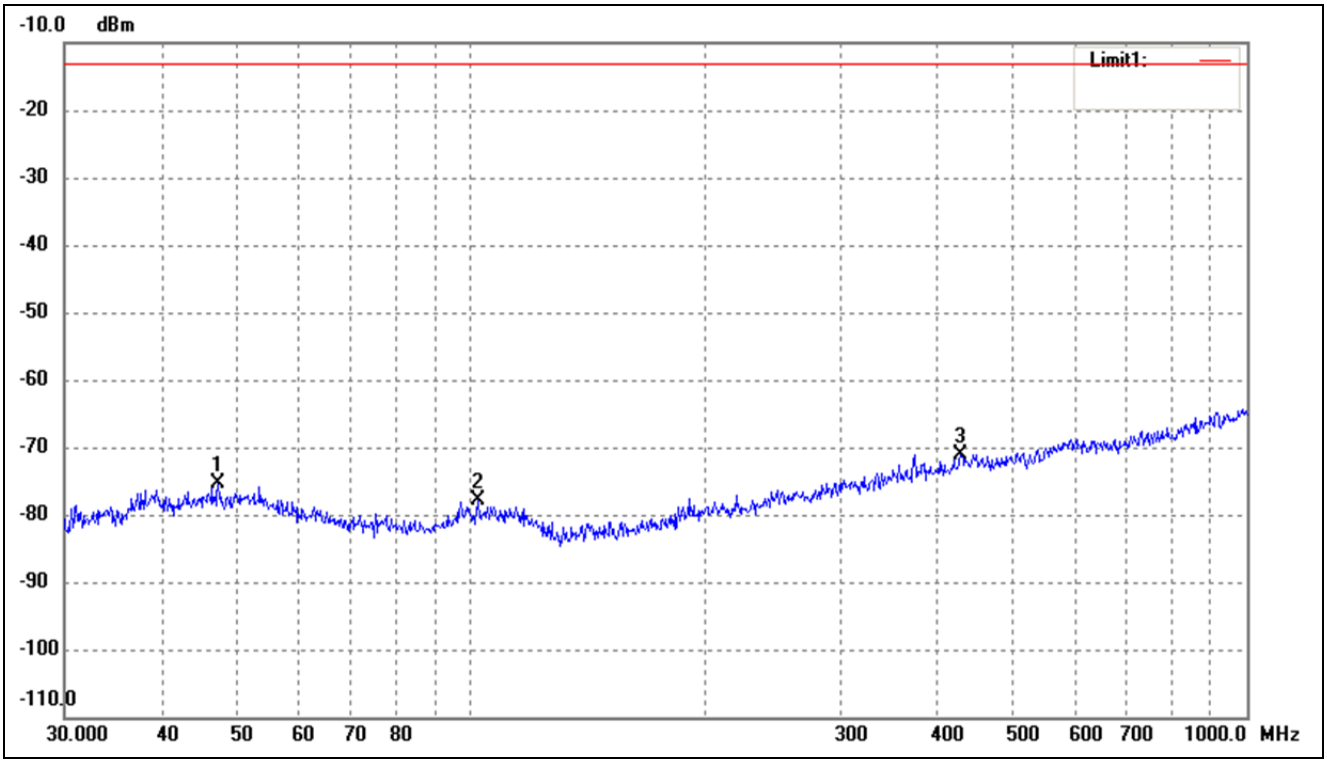

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 50.7637 | -76.68 | 0.63 | -76.05 | -25.00 | -51.05 | ERP |
| 2 | 103.8055 | -75.09 | -1.32 | -76.41 | -25.00 | -51.41 | ERP |
| 3 | 446.4141 | -76.62 | 5.49 | -71.13 | -25.00 | -46.13 | ERP |
| 4 | 50.7637 | -76.68 | 0.63 | -76.05 | -25.00 | -51.05 | ERP |

| Test Mode | FDD_LTE Band 12 | Polarity: | Horizontal |
|---|---|---|---|



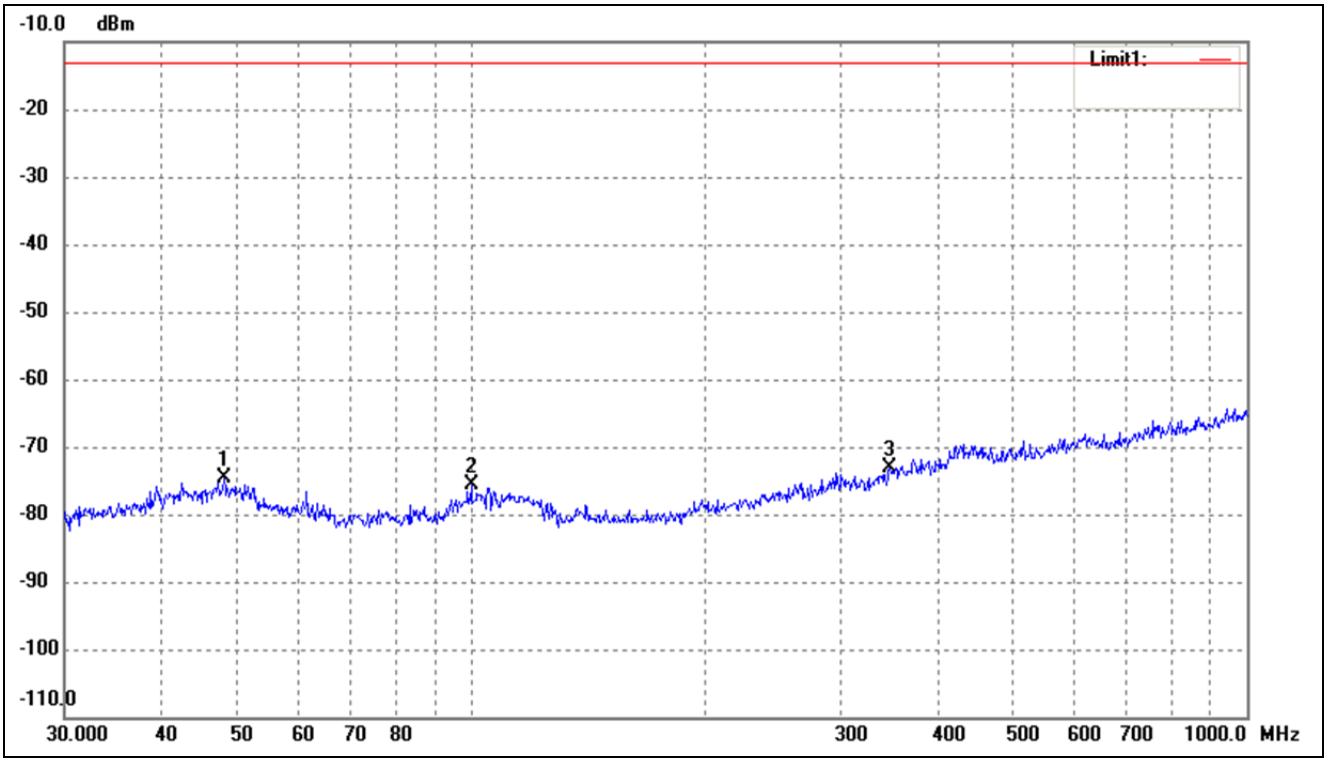

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 53.6932 | -76.23 | -0.05 | -76.28 | -13.00 | -63.28 | ERP |
| 2 | 287.9904 | -75.69 | 1.93 | -73.76 | -13.00 | -60.76 | ERP |
| 3 | 437.1199 | -76.00 | 5.61 | -70.39 | -13.00 | -57.39 | ERP |

| Test Mode | FDD_LTE Band 12 | Polarity: | Vertical |
|---|---|---|---|



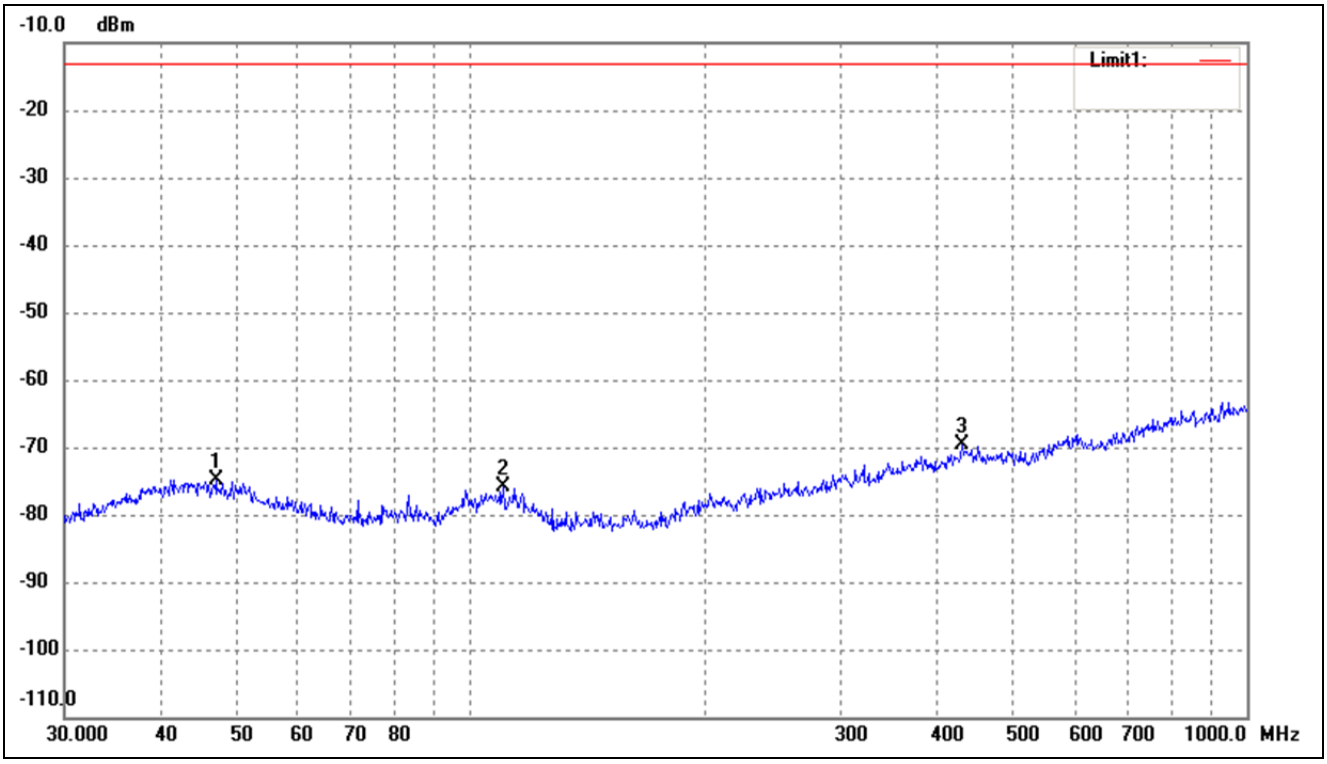

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 47.3255 | -75.88 | 0.62 | -75.26 | -13.00 | -62.26 | ERP |
| 2 | 102.3597 | -76.45 | -1.34 | -77.79 | -13.00 | -64.79 | ERP |
| 3 | 428.0193 | -76.63 | 5.61 | -71.02 | -13.00 | -58.02 | ERP |

| Test Mode | FDD_LTE Band 13 | Polarity: | Horizontal |
|---|---|---|---|



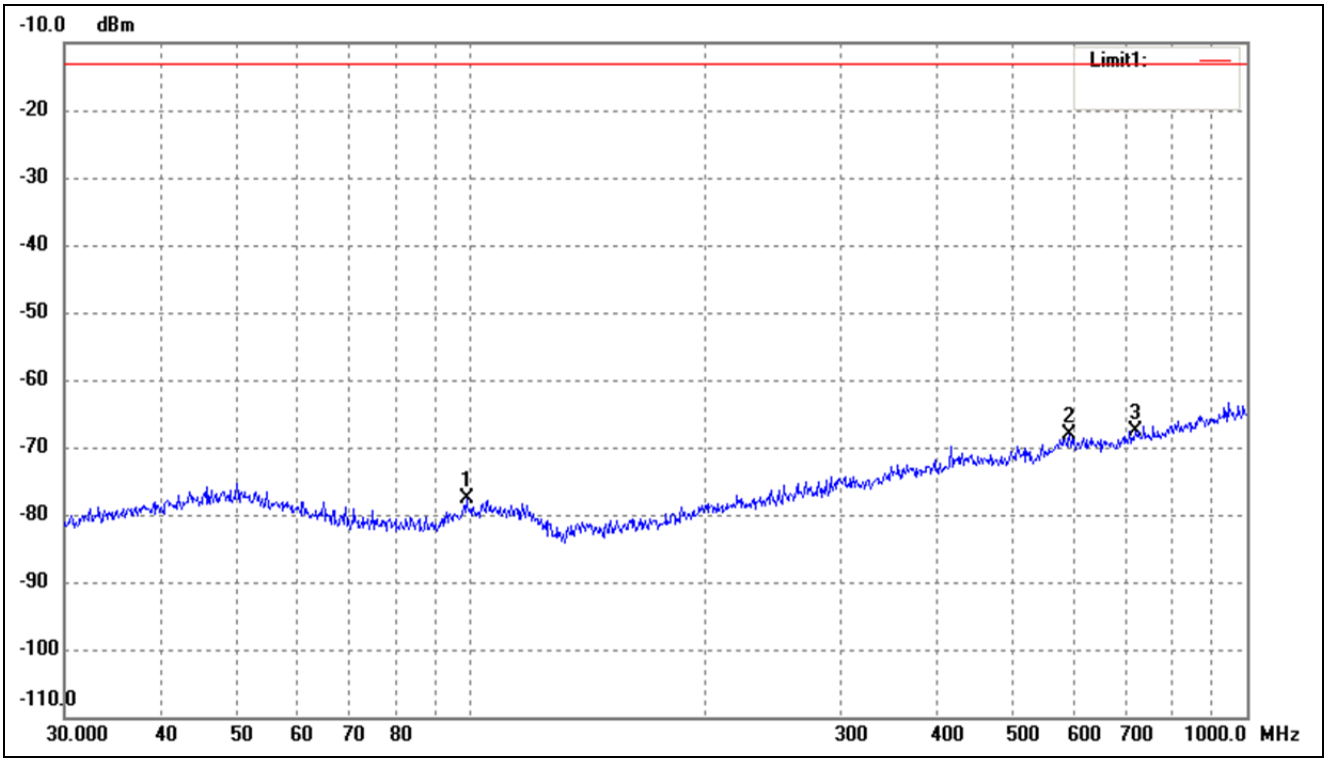

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 48.1625 | -75.26 | 0.68 | -74.58 | -13.00 | -61.58 | ERP |
| 2 | 100.2286 | -74.36 | -1.38 | -75.74 | -13.00 | -62.74 | ERP |
| 3 | 346.8091 | -76.74 | 3.56 | -73.18 | -13.00 | -60.18 | ERP |

| Test Mode | FDD_LTE Band 13 | Polarity: | Vertical |
|---|---|---|---|



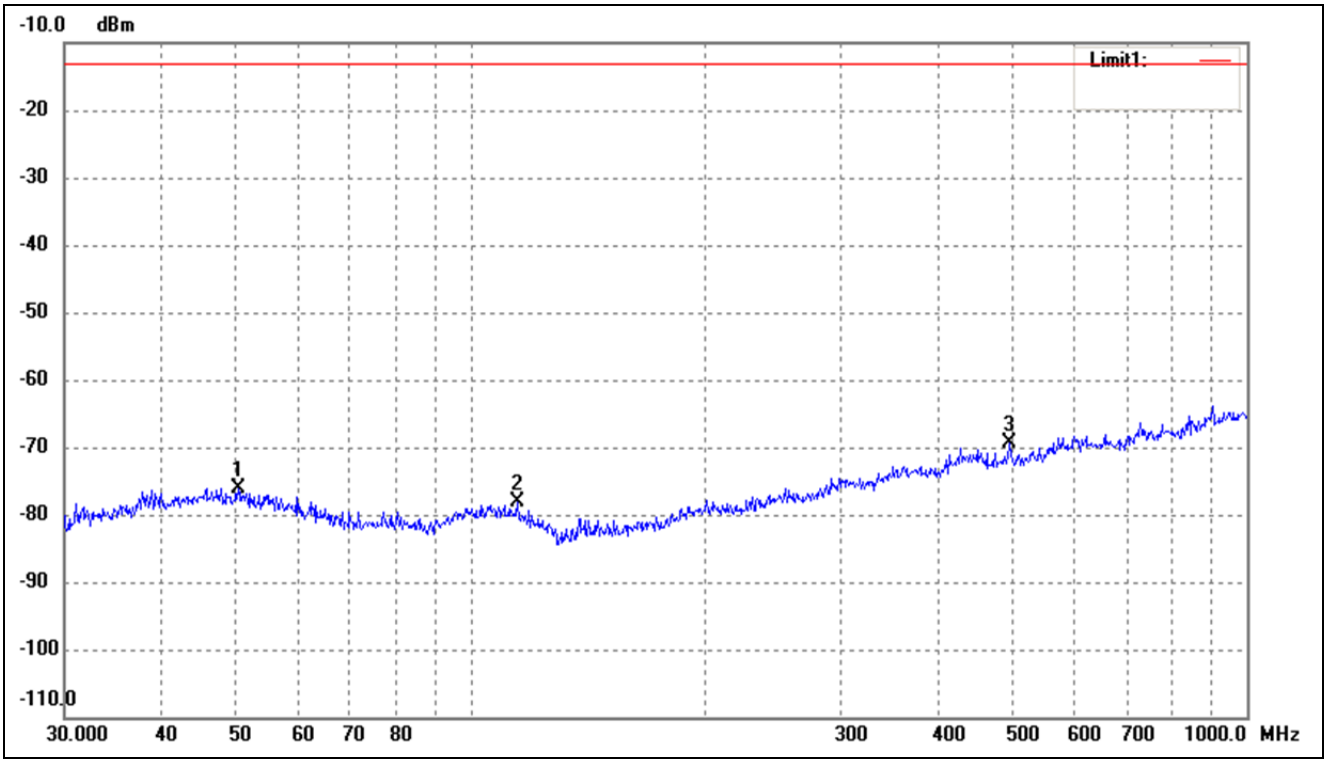

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 46.9947 | -75.41 | 0.60 | -74.81 | -13.00 | -61.81 | ERP |
| 2 | 110.1816 | -74.55 | -1.23 | -75.78 | -13.00 | -62.78 | ERP |
| 3 | 429.5228 | -75.22 | 5.62 | -69.60 | -13.00 | -56.60 | ERP |

| Test Mode | FDD_LTE Band 17 | Polarity: | Horizontal |
|---|---|---|---|



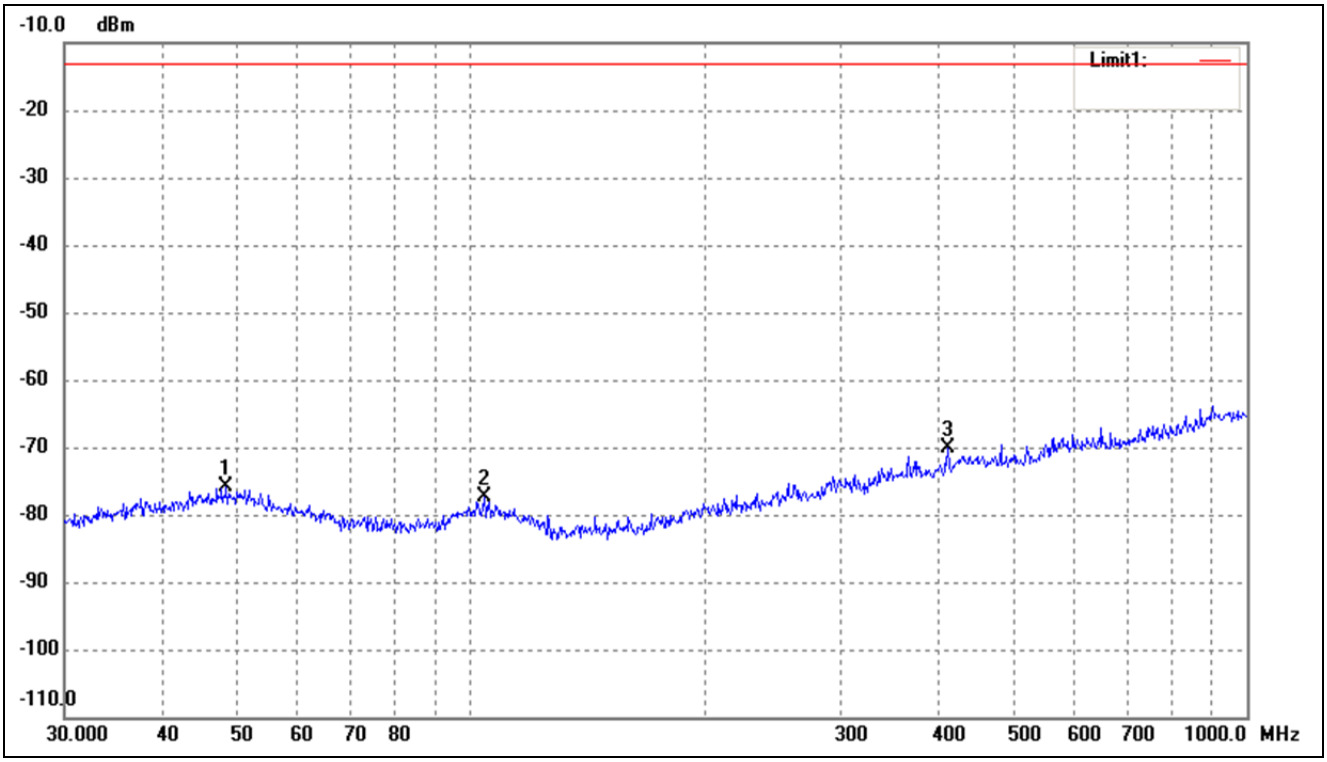

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 98.8326 | -75.92 | -1.65 | -77.57 | -13.00 | -64.57 | ERP |
| 2 | 590.9737 | -75.90 | 7.69 | -68.21 | -13.00 | -55.21 | ERP |
| 3 | 719.1995 | -76.19 | 8.60 | -67.59 | -13.00 | -54.59 | ERP |

| Test Mode | FDD_LTE Band 17 | Polarity: | Vertical |
|---|---|---|---|



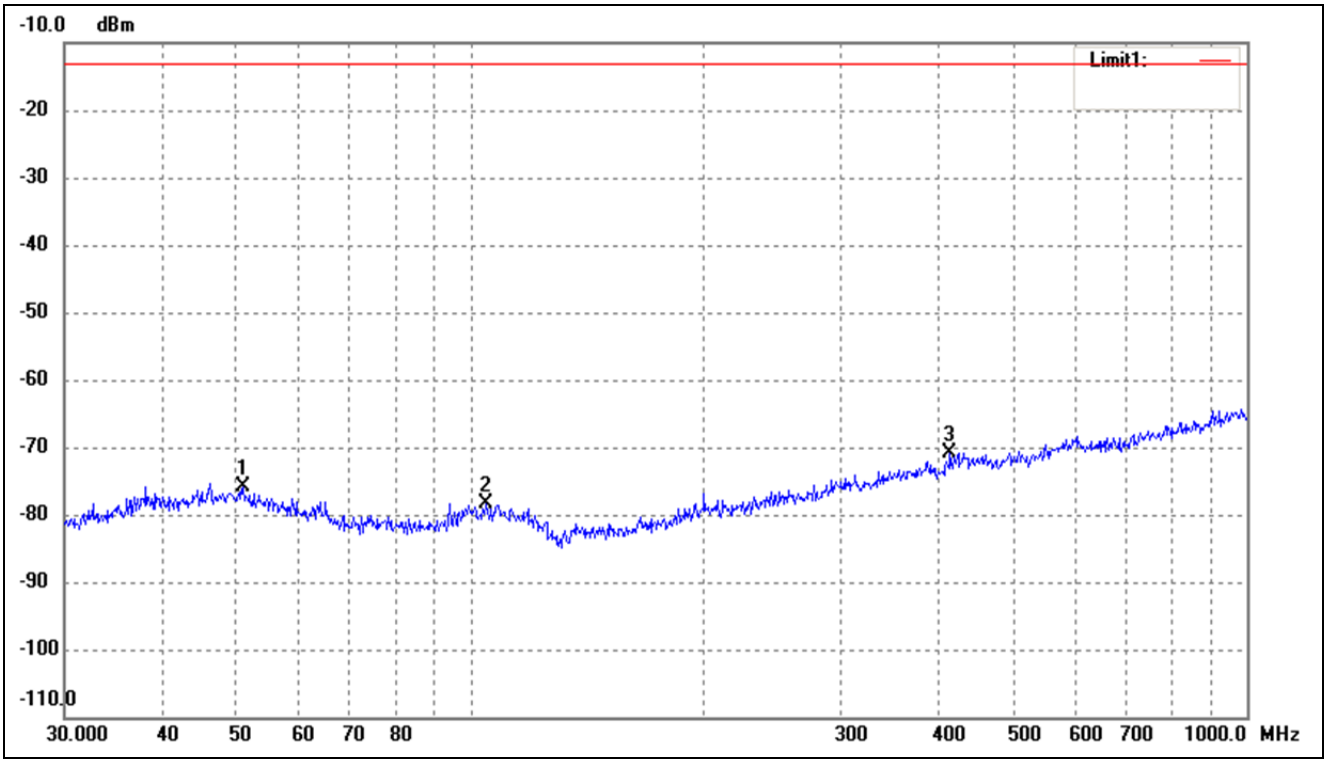

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 50.2325 | -76.98 | 0.76 | -76.22 | -13.00 | -63.22 | ERP |
| 2 | 114.9169 | -76.45 | -1.78 | -78.23 | -13.00 | -65.23 | ERP |
| 3 | 494.1984 | -74.83 | 5.54 | -69.29 | -13.00 | -56.29 | ERP |

| Test Mode | FDD_LTE Band 25 | Polarity: | Horizontal |
|---|---|---|---|



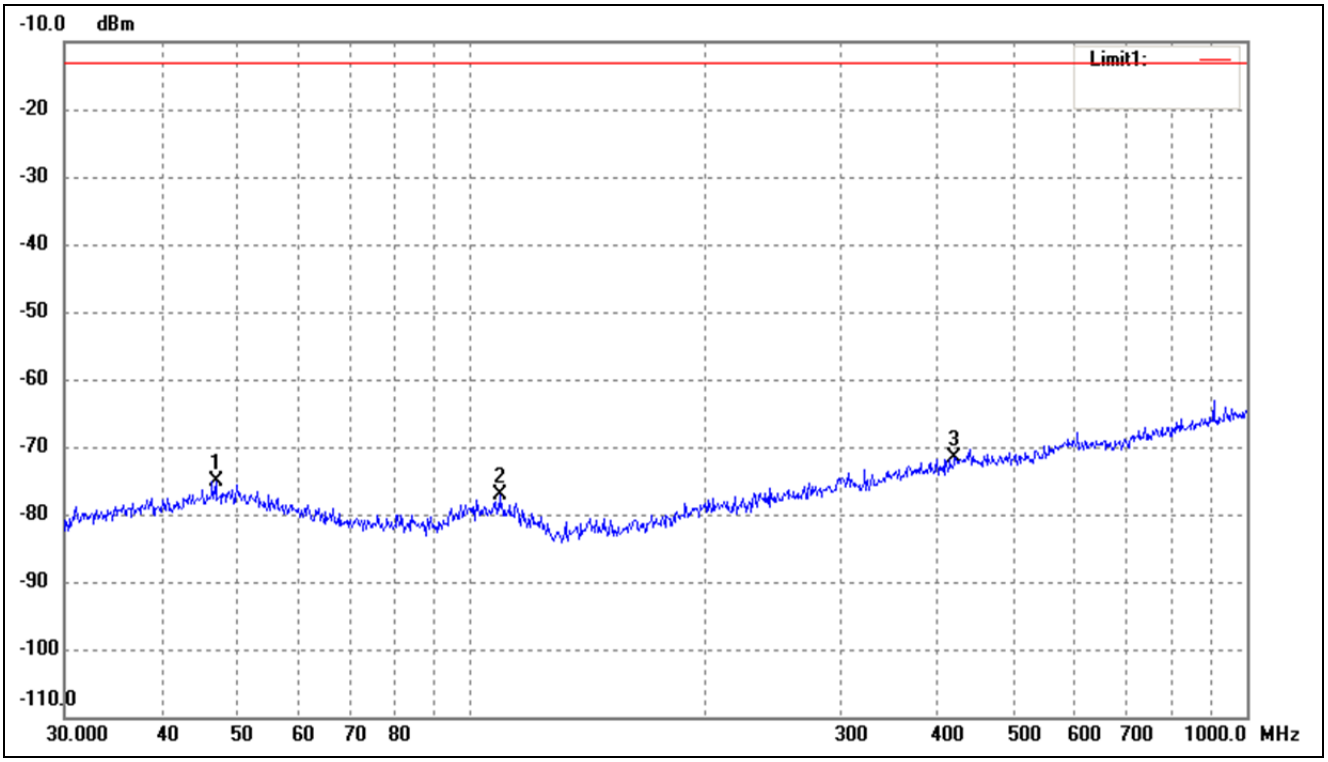

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 48.5016 | -76.58 | 0.71 | -75.87 | -13.00 | -62.87 | ERP |
| 2 | 104.1701 | -76.08 | -1.32 | -77.40 | -13.00 | -64.40 | ERP |
| 3 | 411.8240 | -74.98 | 4.88 | -70.10 | -13.00 | -57.10 | ERP |

| Test Mode | FDD_LTE Band 25 | Polarity: | Vertical |
|---|---|---|---|



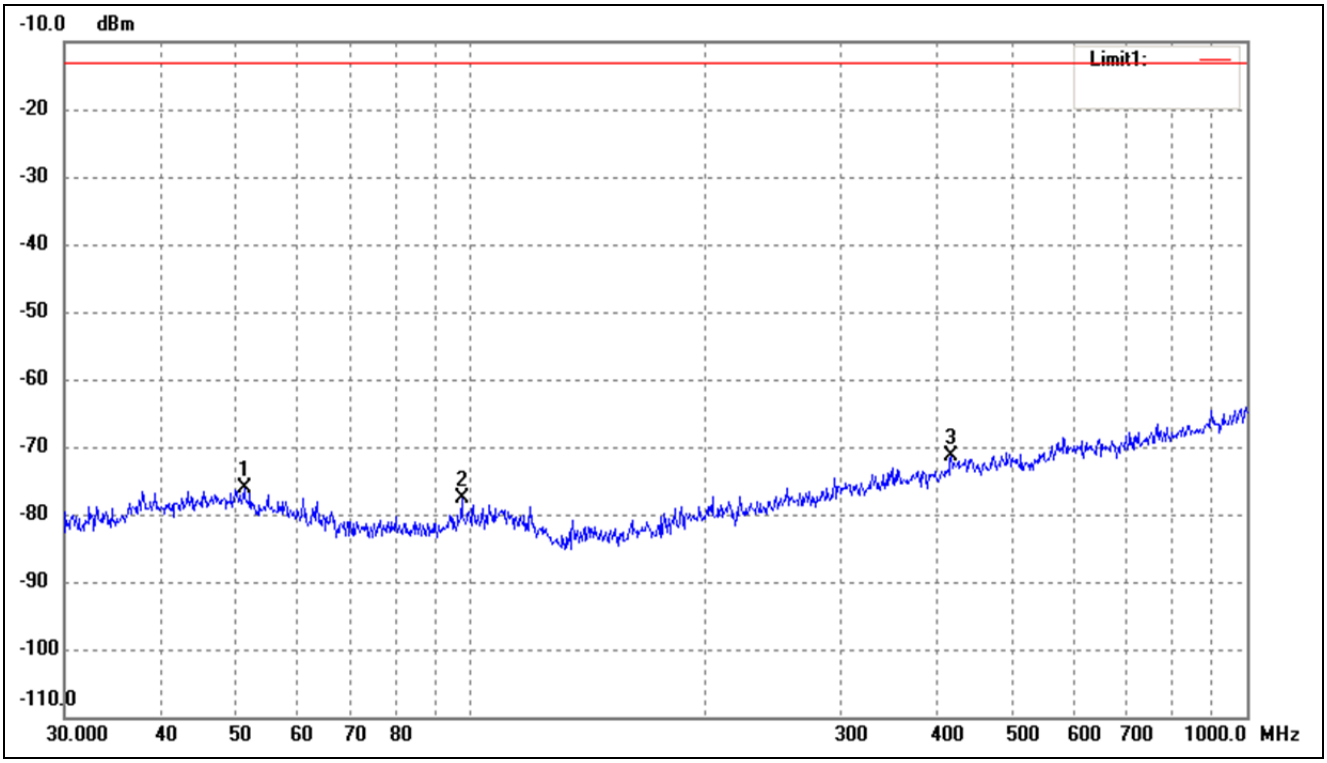

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 50.9420 | -76.42 | 0.59 | -75.83 | -13.00 | -62.83 | ERP |
| 2 | 104.9033 | -77.01 | -1.30 | -78.31 | -13.00 | -65.31 | ERP |
| 3 | 414.7223 | -75.88 | 5.09 | -70.79 | -13.00 | -57.79 | ERP |

| Test Mode | FDD_LTE Band 26(824-824MHz) | Polarity: | Horizontal |
|---|---|---|---|



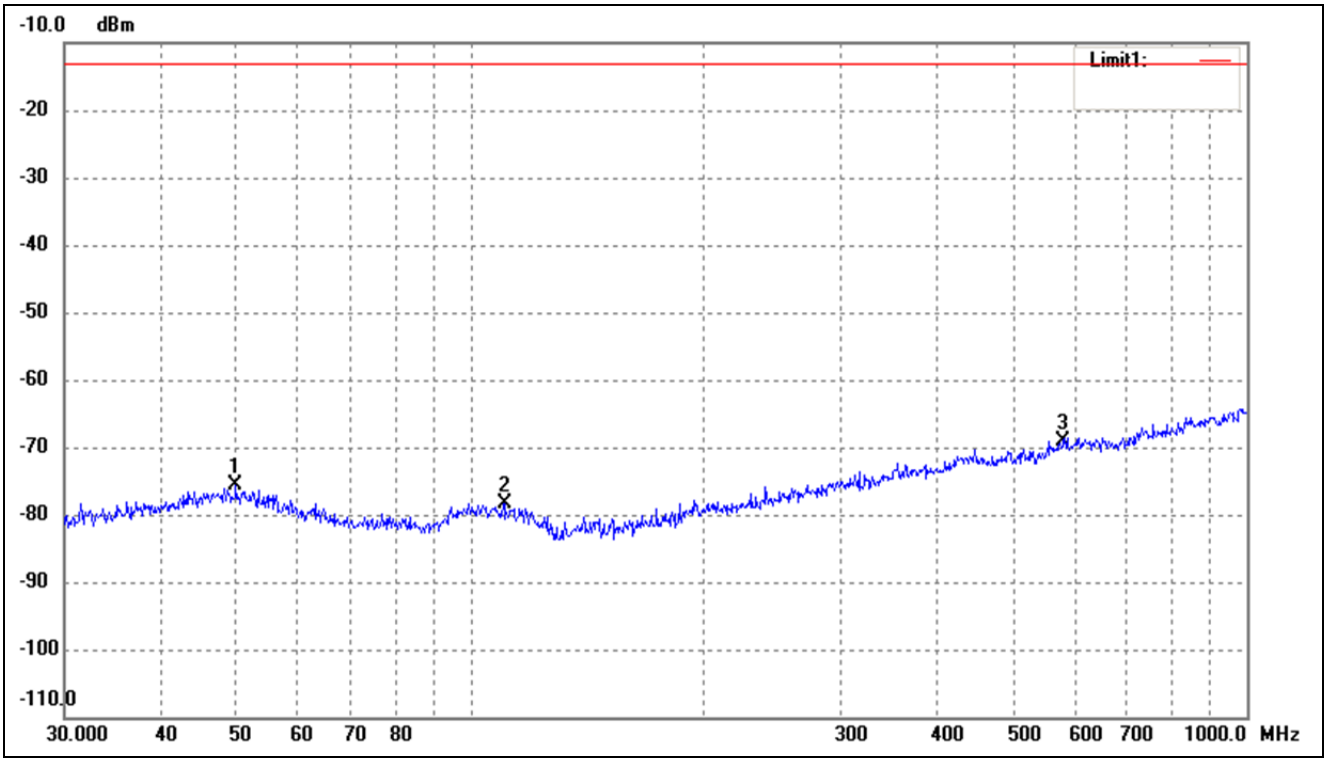

| No. | Frequency (MHz) | Reading (dBm) | Correct dB | Result (dBm) | Limit (dBm) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|
| 1 | 46.9948 | -75.67 | 0.60 | -75.07 | -13.00 | -62.07 | ERP |
| 2 | 109.0286 | -75.80 | -1.23 | -77.03 | -13.00 | -64.03 | ERP |
| 3 | 420.5803 | -77.02 | 5.47 | -71.55 | -13.00 | -58.55 | ERP |

| Test Mode | FDD_LTE Band 26(824-824MHz) | Polarity: | Vertical |
|---|---|---|---|



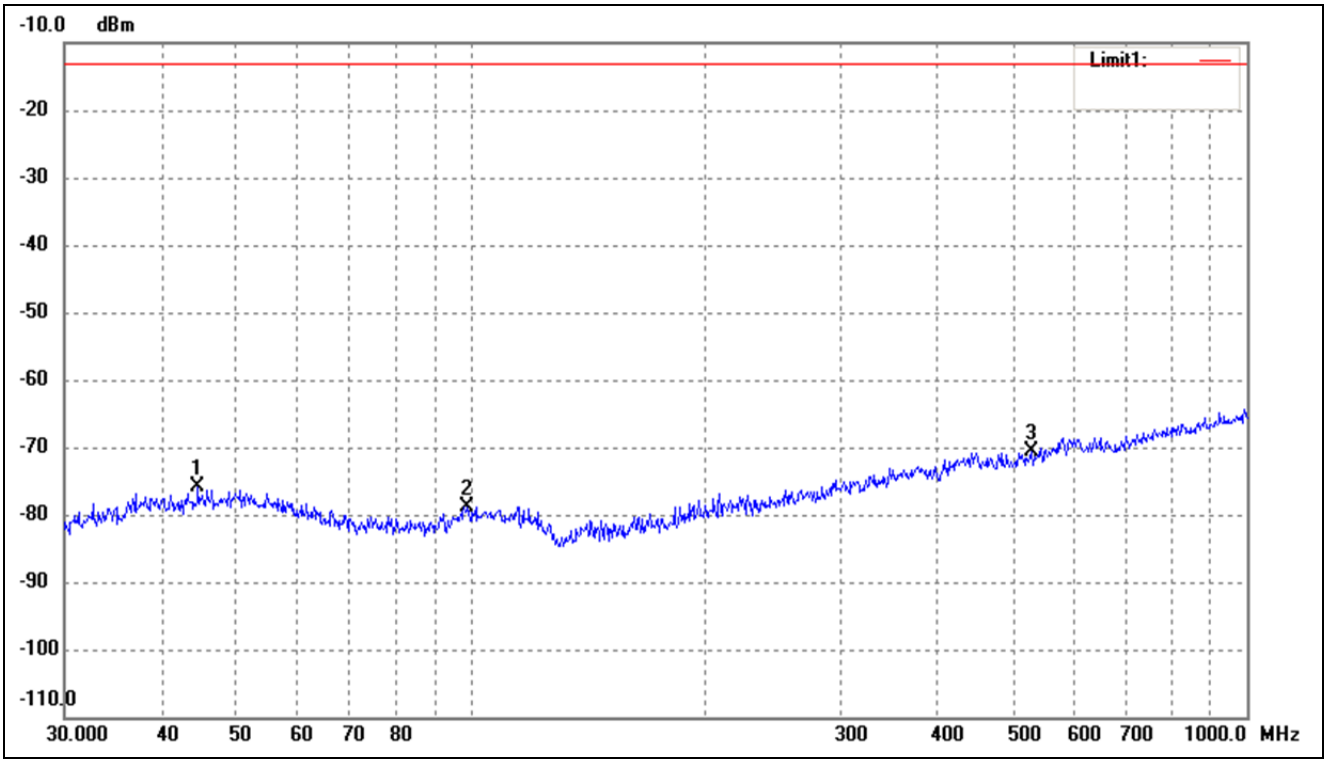

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 51.1209 | -76.65 | 0.55 | -76.10 | -13.00 | -63.10 | ERP |
| 2 | 97.4560 | -75.78 | -1.96 | -77.74 | -13.00 | -64.74 | ERP |
| 3 | 416.1791 | -76.63 | 5.18 | -71.45 | -13.00 | -58.45 | ERP |

| Test Mode | FDD_LTE Band 28 | Polarity: | Horizontal |
|---|---|---|---|



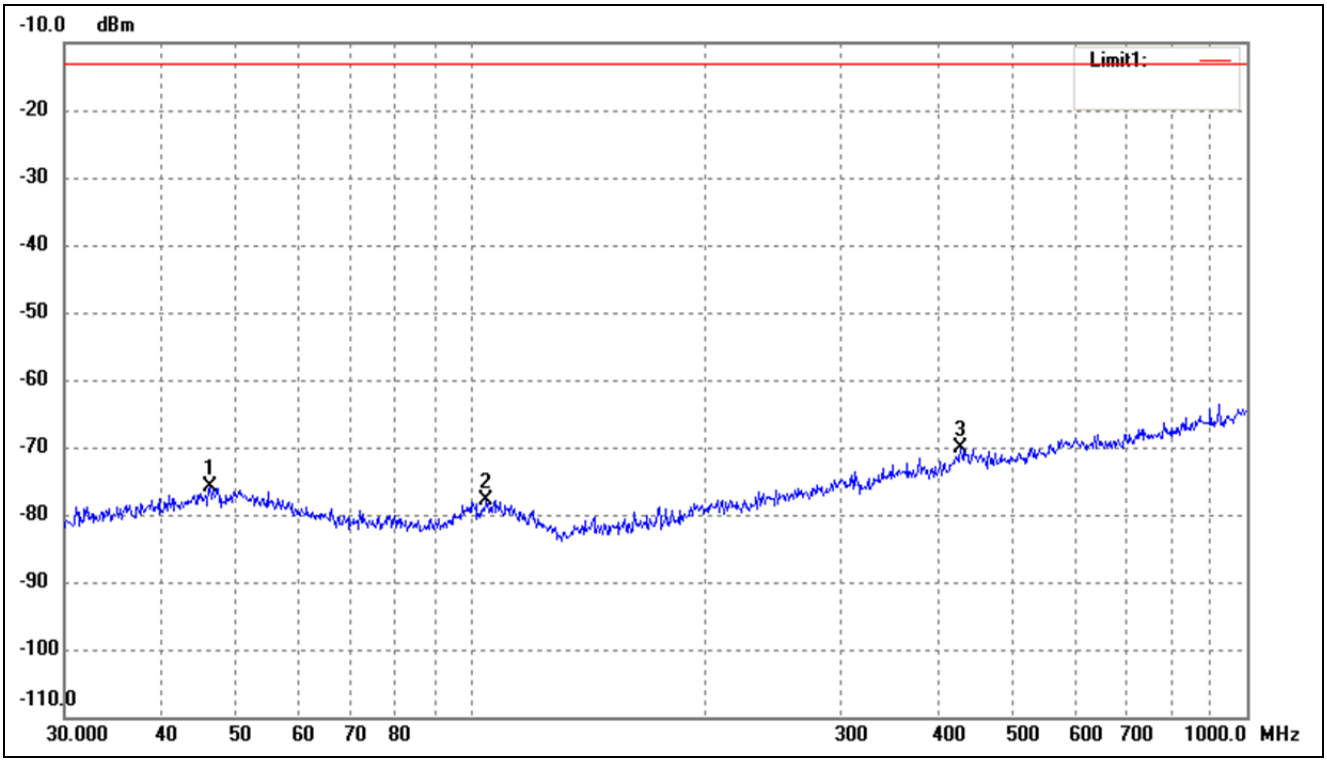

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 49.8814 | -76.36 | 0.80 | -75.56 | -13.00 | -62.56 | ERP |
| 2 | 110.5687 | -77.05 | -1.28 | -78.33 | -13.00 | -65.33 | ERP |
| 3 | 580.7026 | -76.63 | 7.60 | -69.03 | -13.00 | -56.03 | ERP |

| Test Mode | FDD_LTE Band 28 | Polarity: | Vertical |
|---|---|---|---|



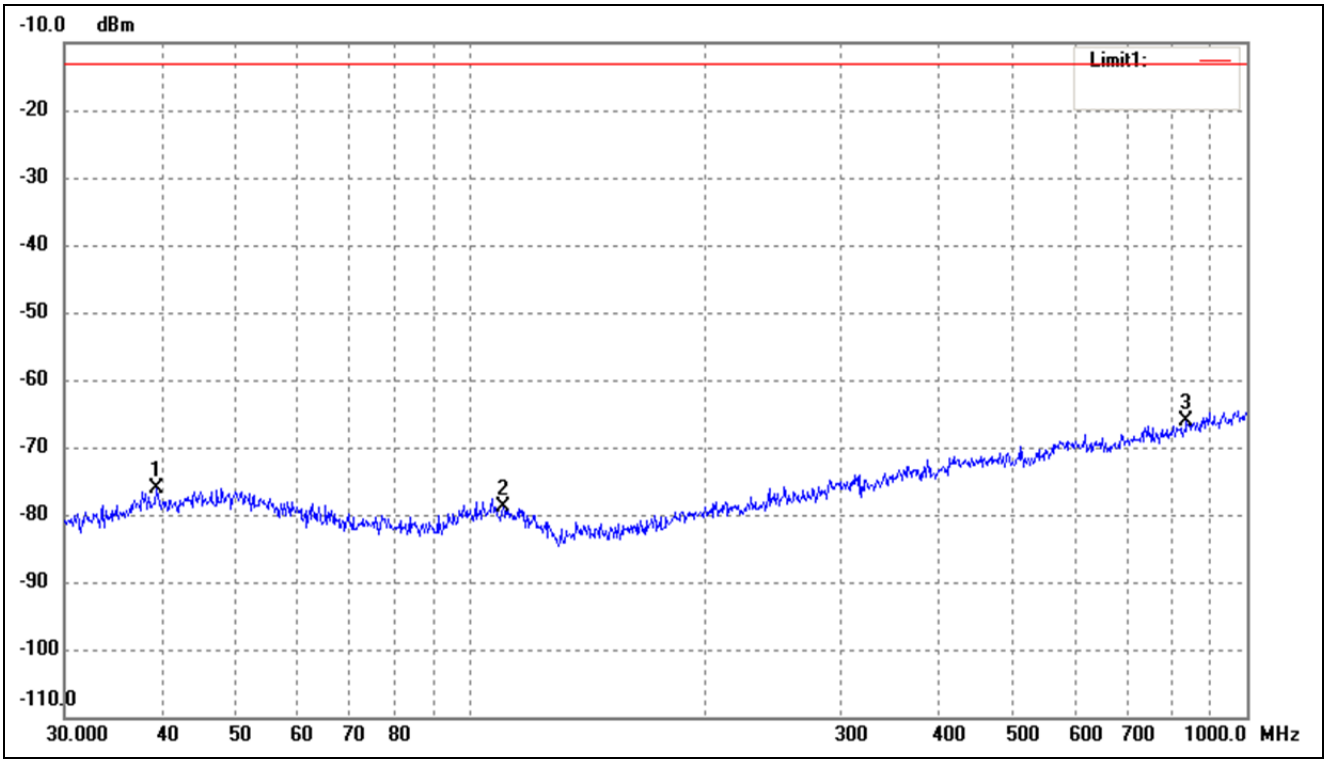

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 44.5868 | -76.32 | 0.37 | -75.95 | -13.00 | -62.95 | ERP |
| 2 | 98.8326 | -77.15 | -1.65 | -78.80 | -13.00 | -65.80 | ERP |
| 3 | 528.2458 | -76.47 | 5.74 | -70.73 | -13.00 | -57.73 | ERP |

| Test Mode | FDD_LTE Band 30 | Polarity: | Horizontal |
|---|---|---|---|



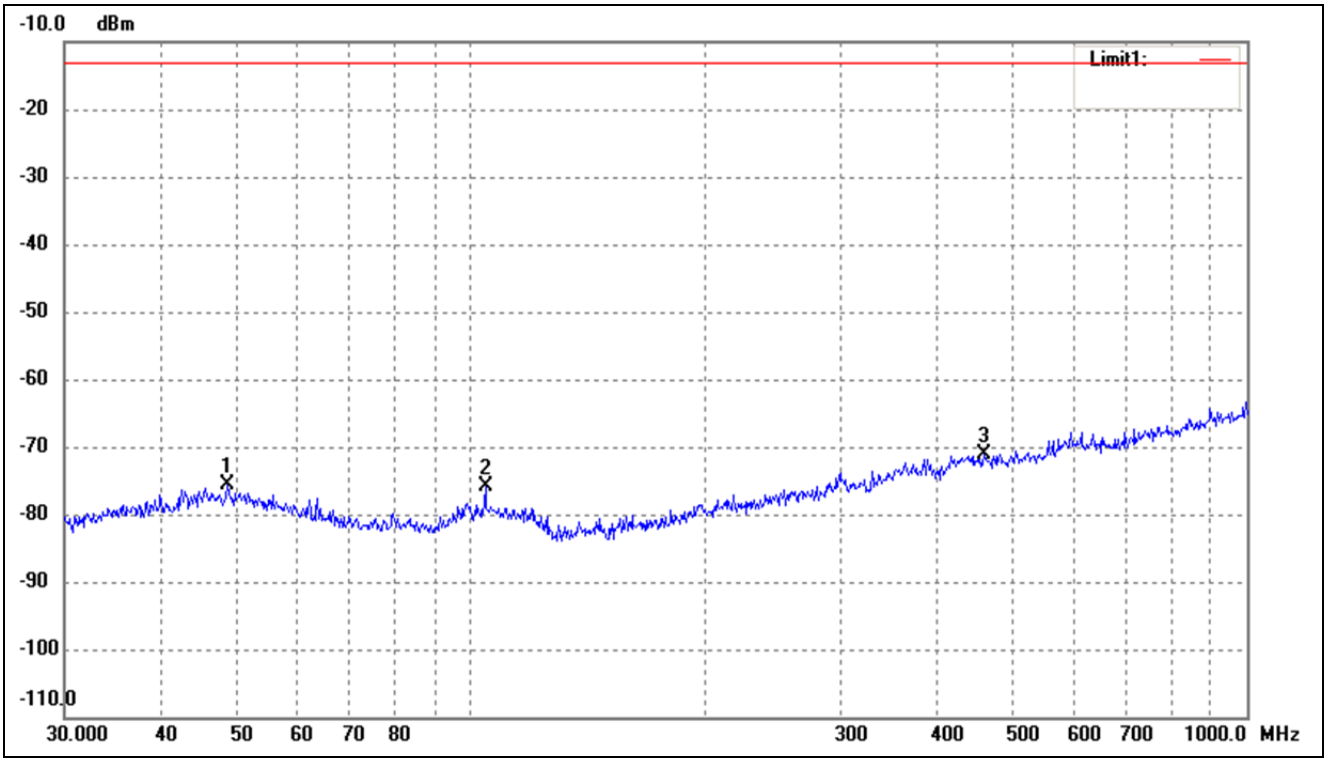

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 46.1780 | -76.45 | 0.54 | -75.91 | -13.00 | -62.91 | ERP |
| 2 | 104.9033 | -76.52 | -1.30 | -77.82 | -13.00 | -64.82 | ERP |
| 3 | 428.0193 | -75.85 | 5.61 | -70.24 | -13.00 | -57.24 | ERP |

| Test Mode | FDD_LTE Band 30 | Polarity: | Vertical |
|---|---|---|---|



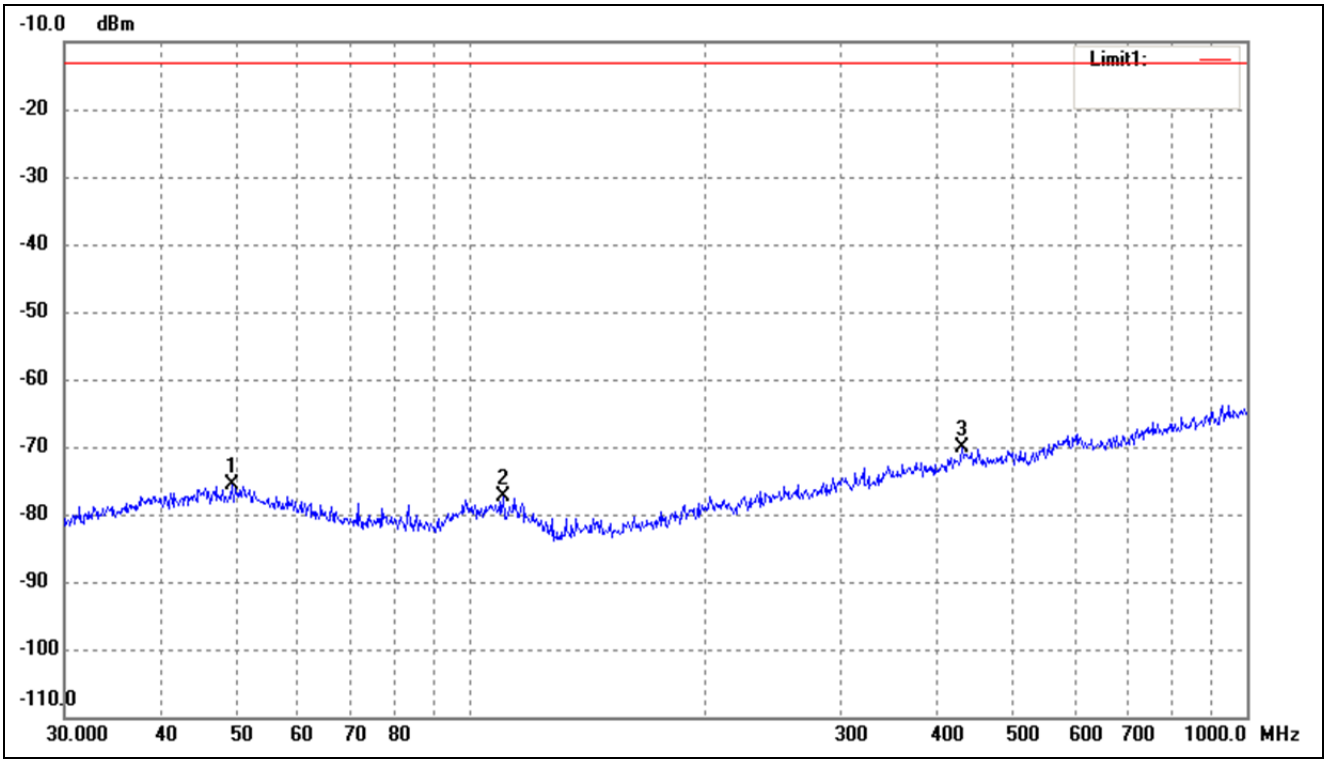

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 39.4372 | -75.26 | -0.81 | -76.07 | -13.00 | -63.07 | ERP |
| 2 | 110.1816 | -77.53 | -1.23 | -78.76 | -13.00 | -65.76 | ERP |
| 3 | 836.2443 | -76.46 | 10.32 | -66.14 | -13.00 | -53.14 | ERP |

| Test Mode | TDD_LTE Band 40(2305-2315MHz) | Polarity: | Horizontal |
|---|---|---|---|



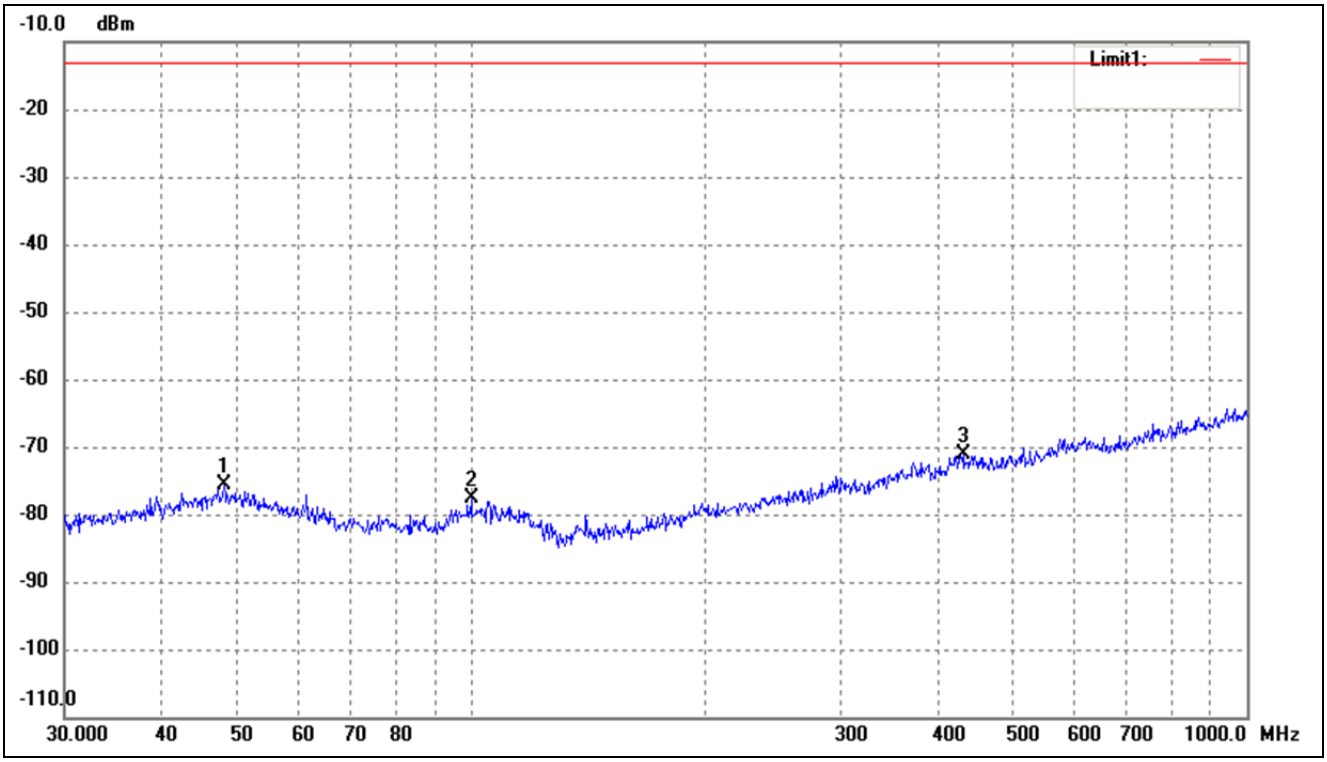

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 48.6719 | -76.39 | 0.72 | -75.67 | -13.00 | -62.67 | ERP |
| 2 | 104.5361 | -74.53 | -1.30 | -75.83 | -13.00 | -62.83 | ERP |
| 3 | 459.1144 | -76.40 | 5.22 | -71.18 | -13.00 | -58.18 | ERP |

| Test Mode | TDD_LTE Band 40(2305-2315MHz) | Polarity: | Vertical |
|---|---|---|---|



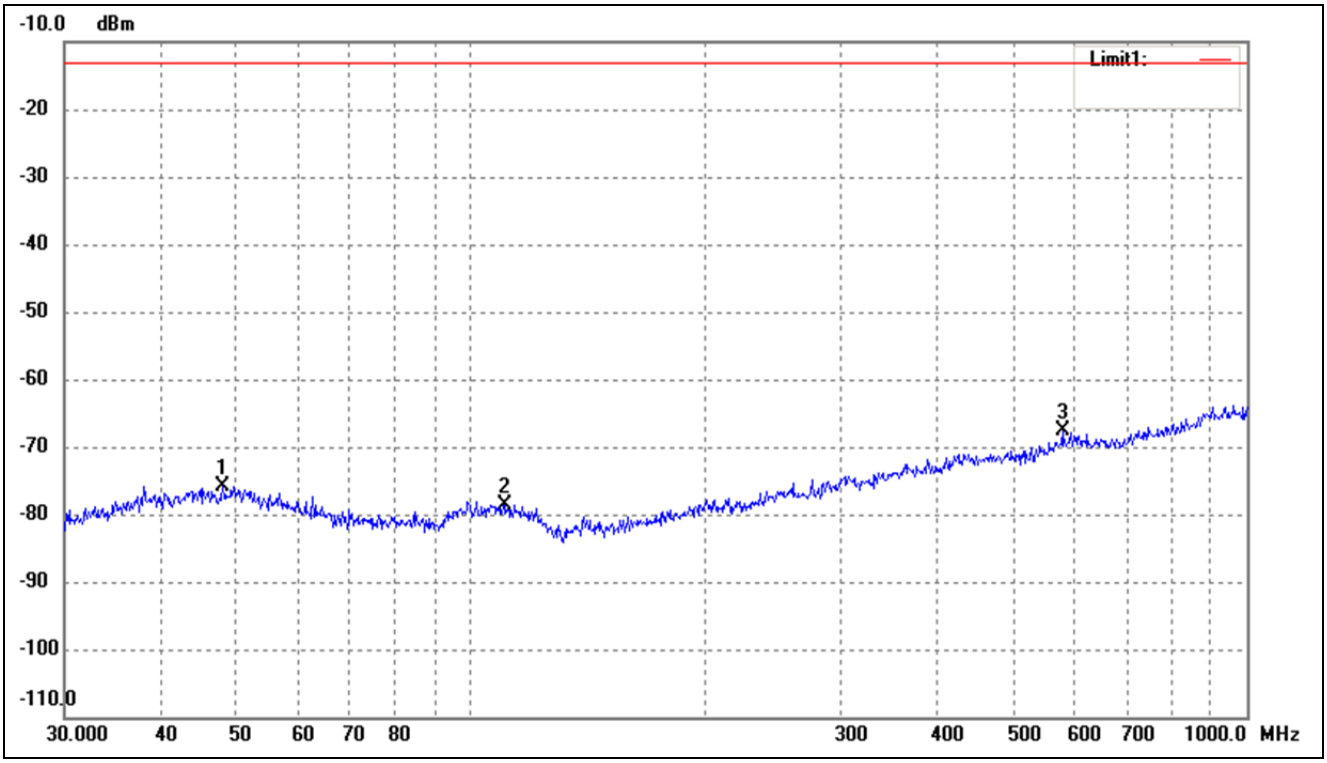

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 49.3594 | -76.39 | 0.76 | -75.63 | -13.00 | -62.63 | ERP |
| 2 | 110.1816 | -76.05 | -1.23 | -77.28 | -13.00 | -64.28 | ERP |
| 3 | 429.5228 | -75.72 | 5.62 | -70.10 | -13.00 | -57.10 | ERP |

| Test Mode | TDD_LTE Band 40 (2350-2360MHz) | Polarity: | Horizontal |
|---|---|---|---|



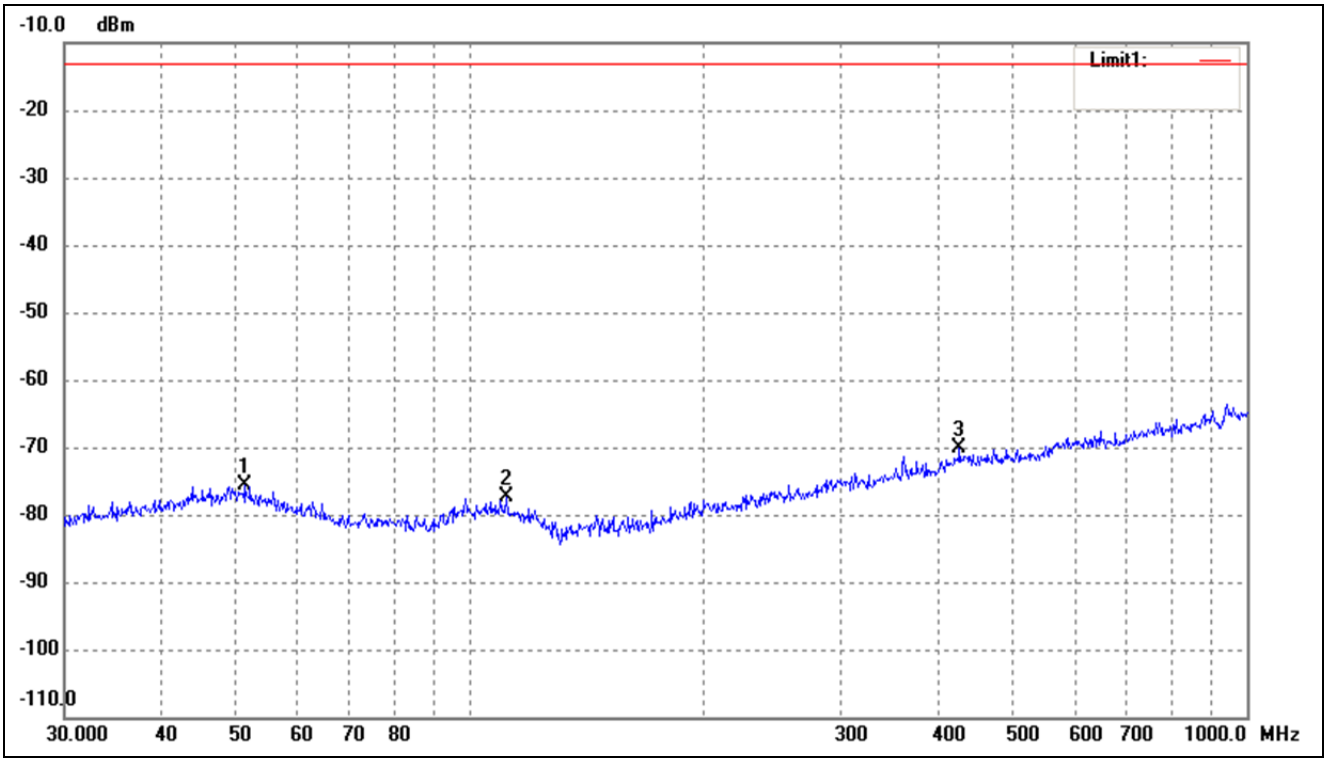

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 48.1626 | -76.26 | 0.68 | -75.58 | -13.00 | -62.58 | ERP |
| 2 | 100.2286 | -76.36 | -1.38 | -77.74 | -13.00 | -64.74 | ERP |
| 3 | 431.0316 | -76.63 | 5.61 | -71.02 | -13.00 | -58.02 | ERP |

| Test Mode | TDD_LTE Band 40 (2350-2360MHz) | Polarity: | Vertical |
|---|---|---|---|



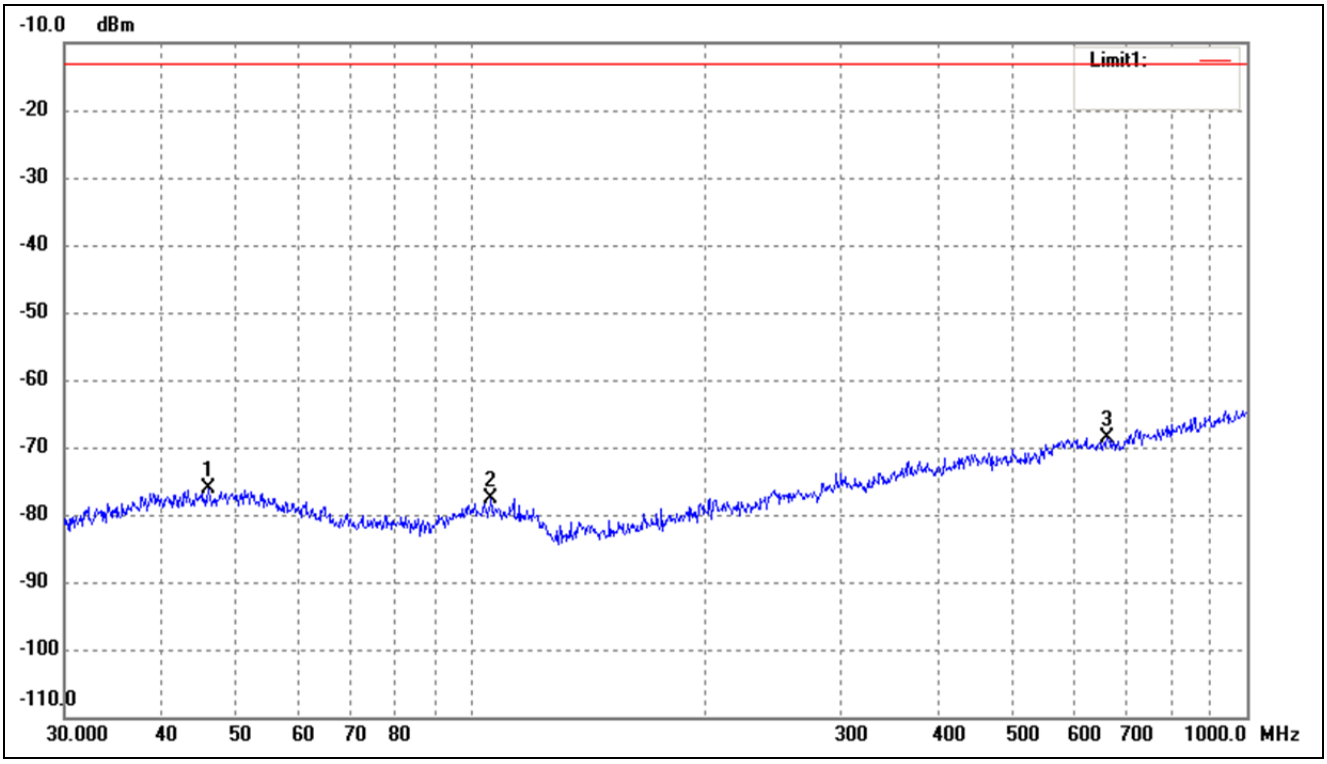

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 47.9940 | -76.49 | 0.67 | -75.82 | -13.00 | -62.82 | ERP |
| 2 | 110.9571 | -77.23 | -1.32 | -78.55 | -13.00 | -65.55 | ERP |
| 3 | 578.6699 | -75.20 | 7.57 | -67.63 | -13.00 | -54.63 | ERP |

| Test Mode | FDD_LTE Band 66 | Polarity: | Horizontal |
|---|---|---|---|




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 51.3005 | -76.16 | 0.51 | -75.65 | -13.00 | -62.65 | ERP |
| 2 | 111.3468 | -75.99 | -1.37 | -77.36 | -13.00 | -64.36 | ERP |
| 3 | 426.5210 | -75.70 | 5.61 | -70.09 | -13.00 | -57.09 | ERP |

| Test Mode | FDD_LTE Band 66 | Polarity: | Vertical |
|---|---|---|---|




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|---|---|
| | (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | |
| 1 | 46.0164 | -76.61 | 0.53 | -76.08 | -13.00 | -63.08 | ERP |
| 2 | 106.3850 | -76.27 | -1.28 | -77.55 | -13.00 | -64.55 | ERP |
| 3 | 661.1505 | -76.07 | 7.55 | -68.52 | -13.00 | -55.52 | ERP |

*Note: Margin= (Reading+ Correct)- Limit*

➢ Spurious Emissions Above 1GHz

*For FDD_LTE Band 2 Mode*

| Frequency (MHz) | Reading (dBm) | Correct dB | Result (dBm) | Limit (dBm) | Margin (dB) | Polar H/V |
|---|---|---|---|---|---|---|
| Low Channel (1852.5MHz) | | | | | | |
| 3705.00 | -34.57 | 10.17 | -24.4 | -13 | -11.4 | H |
| 5557.50 | -41.65 | 14.69 | -26.96 | -13 | -13.96 | H |
| 3705.00 | -34.05 | 10.17 | -23.88 | -13 | -10.88 | V |
| 5557.50 | -41.15 | 14.69 | -26.46 | -13 | -13.46 | V |
| Middle Channel (1880.0MHz) | | | | | | |
| 3760.00 | -36.45 | 10.26 | -26.19 | -13 | -13.19 | H |
| 5640.00 | -43.46 | 14.78 | -28.68 | -13 | -15.68 | H |
| 3760.00 | -37.57 | 10.26 | -27.31 | -13 | -14.31 | V |
| 5640.00 | -43.87 | 14.78 | -29.09 | -13 | -16.09 | V |
| High Channel (1907.5MHz) | | | | | | |
| 3815.00 | -35.45 | 10.59 | -24.86 | -13 | -11.86 | H |
| 5722.50 | -42.12 | 15.03 | -27.09 | -13 | -14.09 | H |
| 3815.00 | -37.14 | 10.59 | -26.55 | -13 | -13.55 | V |
| 5722.50 | -41.43 | 15.03 | -26.4 | -13 | -13.4 | V |

*For FDD_LTE Band 4 Mode*

| Frequency (MHz) | Reading (dBm) | Correct dB | Result (dBm) | Limit (dBm) | Margin (dB) | Polar H/V |
|---|---|---|---|---|---|---|
| Low Channel (1712.5MHz) | | | | | | |
| 3425.00 | -34.27 | 8.65 | -25.62 | -13 | -12.62 | H |
| 5137.50 | -43.52 | 12.03 | -31.49 | -13 | -18.49 | H |
| 3425.00 | -35.03 | 8.65 | -26.38 | -13 | -13.38 | V |
| 5137.50 | -42.13 | 12.03 | -30.1 | -13 | -17.1 | V |
| Middle Channel (1732.5MHz) | | | | | | |
| 3465.00 | -36.22 | 8.91 | -27.31 | -13 | -14.31 | H |
| 5197.50 | -42.58 | 12.29 | -30.29 | -13 | -17.29 | H |
| 3465.00 | -35.1 | 8.91 | -26.19 | -13 | -13.19 | V |
| 5197.50 | -41.3 | 12.29 | -29.01 | -13 | -16.01 | V |
| High Channel (1752.5MHz) | | | | | | |
| 3505.00 | -35.13 | 9.11 | -26.02 | -13 | -13.02 | H |
| 5257.50 | -42.79 | 12.56 | -30.23 | -13 | -17.23 | H |
| 3505.00 | -36.79 | 9.11 | -27.68 | -13 | -14.68 | V |
| 5257.50 | -42.9 | 12.56 | -30.34 | -13 | -17.34 | V |

*For FDD_LTE Band 5 Mode*

| Frequency (MHz) | Reading (dBm) | Correct dB | Result (dBm) | Limit (dBm) | Margin (dB) | Polar H/V |
|---|---|---|---|---|---|---|
| Low Channel (824.7MHz) | | | | | | |
| 1649.40 | -35.19 | 4.94 | -30.25 | -13 | -17.25 | H |
| 2474.10 | -43.69 | 8.46 | -35.23 | -13 | -22.23 | H |
| 1649.40 | -37.1 | 4.94 | -32.16 | -13 | -19.16 | V |
| 2474.10 | -41.29 | 8.46 | -32.83 | -13 | -19.83 | V |
| Middle Channel (836.5MHz) | | | | | | |
| 1673.00 | -34.32 | 5.11 | -29.21 | -13 | -16.21 | H |
| 2509.50 | -43.71 | 8.54 | -35.17 | -13 | -22.17 | H |
| 1673.00 | -37.96 | 5.11 | -32.85 | -13 | -19.85 | V |
| 2509.50 | -43.86 | 8.54 | -35.32 | -13 | -22.32 | V |
| High Channel (848.3MHz) | | | | | | |
| 1696.60 | -35.03 | 5.25 | -29.78 | -13 | -16.78 | H |
| 2544.90 | -42.92 | 8.57 | -34.35 | -13 | -21.35 | H |
| 1696.60 | -36.35 | 5.25 | -31.1 | -13 | -18.1 | V |
| 2544.90 | -41.87 | 8.57 | -33.3 | -13 | -20.3 | V |

*For FDD_LTE Band 7 Mode*

| Frequency (MHz) | Reading (dBm) | Correct dB | Result (dBm) | Limit (dBm) | Margin (dB) | Polar H/V |
|---|---|---|---|---|---|---|
| Low Channel (2502.5MHz) | | | | | | |
| 5005.00 | -37.47 | 11.66 | -25.81 | -13 | -12.81 | H |
| 7507.50 | -44.97 | 15.09 | -29.88 | -13 | -16.88 | H |
| 5005.00 | -38.24 | 11.66 | -26.58 | -13 | -13.58 | V |
| 7507.50 | -44.98 | 15.09 | -29.89 | -13 | -16.89 | V |
| Middle Channel (2535MHz) | | | | | | |
| 5070.00 | -38.85 | 11.78 | -27.07 | -13 | -14.07 | H |
| 7605.00 | -44.97 | 15.21 | -29.76 | -13 | -16.76 | H |
| 5070.00 | -36.54 | 11.78 | -24.76 | -13 | -11.76 | V |
| 7605.00 | -42.49 | 15.21 | -27.28 | -13 | -14.28 | V |
| High Channel (2567.5MHz) | | | | | | |
| 5135.00 | -38.62 | 11.89 | -26.73 | -13 | -13.73 | H |
| 7702.50 | -41.97 | 15.32 | -26.65 | -13 | -13.65 | H |
| 5135.00 | -38.13 | 11.89 | -26.24 | -13 | -13.24 | V |
| 7702.50 | -44.2 | 15.32 | -28.88 | -13 | -15.88 | V |

*For FDD_LTE Band 12 Mode*

| Frequency | Reading | Correct | Result | Limit | Margin | Polar |
|---|---|---|---|---|---|---|
| (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | H/V |
| Low Channel (669.7MHz) | | | | | | |
| 1339.40 | -28.94 | 4.01 | -24.93 | -13 | -11.93 | H |
| 2009.10 | -29.55 | 7.32 | -22.23 | -13 | -9.23 | H |
| 1339.40 | -29.16 | 4.01 | -25.15 | -13 | -12.15 | V |
| 2009.10 | -32.56 | 7.32 | -25.24 | -13 | -12.24 | V |
| Middle Channel (707.5MHz) | | | | | | |
| 1415.00 | -31.72 | 4.11 | -27.61 | -13 | -14.61 | H |
| 2122.50 | -29.11 | 7.54 | -21.57 | -13 | -8.57 | H |
| 1415.00 | -30.88 | 4.11 | -26.77 | -13 | -13.77 | V |
| 2122.50 | -31.7 | 7.54 | -24.16 | -13 | -11.16 | V |
| High Channel (715.3MHz) | | | | | | |
| 1430.6 | -30.49 | 4.35 | -26.14 | -13 | -13.14 | H |
| 2145.9 | -30.43 | 7.88 | -22.55 | -13 | -9.55 | H |
| 1430.6 | -28.41 | 4.35 | -24.06 | -13 | -11.06 | V |
| 2145.9 | -30.1 | 7.88 | -22.22 | -13 | -9.22 | V |

*For FDD_LTE Band 13 Mode*

| Frequency | Reading | Correct | Result | Limit | Margin | Polar |
|---|---|---|---|---|---|---|
| (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | H/V |
| Low Channel (779.5MHz) | | | | | | |
| 1559.00 | -30.62 | 4.52 | -26.1 | -13 | -13.1 | H |
| 2338.50 | -31.79 | 7.96 | -23.83 | -13 | -10.83 | H |
| 1559.00 | -28.33 | 4.52 | -23.81 | -13 | -10.81 | V |
| 2338.5 | -31.13 | 7.96 | -23.17 | -13 | -10.17 | V |
| Middle Channel (782.0MHz) | | | | | | |
| 1564.00 | -28.75 | 4.68 | -24.07 | -13 | -11.07 | H |
| 2346.00 | -32.51 | 8.02 | -24.49 | -13 | -11.49 | H |
| 1564.00 | -29.87 | 4.68 | -25.19 | -13 | -12.19 | V |
| 2346.00 | -31.33 | 8.05 | -23.28 | -13 | -10.28 | V |
| High Channel (784.5MHz) | | | | | | |
| 1569.00 | -29.07 | 4.85 | -24.22 | -13 | -11.22 | H |
| 2353.5 | -30.31 | 8.26 | -22.05 | -13 | -9.05 | H |
| 1569.00 | -29.68 | 4.85 | -24.83 | -13 | -11.83 | V |
| 2353.5 | -30.45 | 8.26 | -22.19 | -13 | -9.19 | V |

*For FDD_LTE Band 17 Mode*

| Frequency | Reading | Correct | Result | Limit | Margin | Polar |
|---|---|---|---|---|---|---|
| (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | H/V |
| Low Channel (706.5MHz) | | | | | | |
| 1413.00 | -29.98 | 4.22 | -25.76 | -13 | -12.76 | H |
| 2119.50 | -30.18 | 7.42 | -22.76 | -13 | -9.76 | H |
| 1413.00 | -28.14 | 4.22 | -23.92 | -13 | -10.92 | V |
| 2119.50 | -32.41 | 7.42 | -24.99 | -13 | -11.99 | V |
| Middle Channel (710.0MHz) | | | | | | |
| 1420.00 | -29.25 | 4.58 | -24.67 | -13 | -11.67 | H |
| 2130.00 | -30.9 | 7.69 | -23.21 | -13 | -10.21 | H |
| 1420.00 | -29 | 4.58 | -24.42 | -13 | -11.42 | V |
| 2130.00 | -29.33 | 7.69 | -21.64 | -13 | -8.64 | V |
| High Channel (713.5MHz) | | | | | | |
| 1427.00 | -29.68 | 4.69 | -24.99 | -13 | -11.99 | H |
| 2140.50 | -31.31 | 7.87 | -23.44 | -13 | -10.44 | H |
| 1427.00 | -28.37 | 4.69 | -23.68 | -13 | -10.68 | V |
| 2140.50 | -32.92 | 7.87 | -25.05 | -13 | -12.05 | V |

*For FDD_LTE Band 25 Mode*

| Frequency | Reading | Correct | Result | Limit | Margin | Polar |
|---|---|---|---|---|---|---|
| (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | H/V |
| Low Channel (1850.7MHz) | | | | | | |
| 3701.40 | -38.16 | 9.98 | -28.18 | -13 | -15.18 | H |
| 5552.10 | -44.7 | 13.49 | -31.21 | -13 | -18.21 | H |
| 3701.40 | -36.17 | 9.98 | -26.19 | -13 | -13.19 | V |
| 5552.10 | -44.26 | 13.49 | -30.77 | -13 | -17.77 | V |
| Middle Channel (1882.5MHz) | | | | | | |
| 3765.00 | -38.68 | 10.11 | -28.57 | -13 | -15.57 | H |
| 5647.50 | -41.05 | 13.55 | -27.5 | -13 | -14.5 | H |
| 3765.00 | -36.31 | 10.11 | -26.2 | -13 | -13.2 | V |
| 5647.50 | -44.45 | 13.55 | -30.9 | -13 | -17.9 | V |
| High Channel (1914.3MHz) | | | | | | |
| 3828.60 | -36.64 | 9.99 | -26.65 | -13 | -13.65 | H |
| 5742.90 | -41.69 | 13.51 | -28.18 | -13 | -15.18 | H |
| 3828.60 | -38.4 | 9.99 | -28.41 | -13 | -15.41 | V |
| 5742.90 | -41.11 | 13.51 | -27.6 | -13 | -14.6 | V |

*For FDD_LTE Band 26(824-849MHZ) Mode*

| Frequency | Reading | Correct | Result | Limit | Margin | Polar |
|---|---|---|---|---|---|---|
| (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | H/V |
| Low Channel (824.7MHz) | | | | | | |
| 1649.40 | -34.83 | 4.94 | -29.89 | -13 | -16.89 | H |
| 2474.10 | -38.65 | 8.46 | -30.19 | -13 | -17.19 | H |
| 1649.40 | -35.3 | 4.94 | -30.36 | -13 | -17.36 | V |
| 2474.10 | -37.02 | 8.46 | -28.56 | -13 | -15.56 | V |
| Middle Channel (836.5MHz) | | | | | | |
| 1673.00 | -35.78 | 5.11 | -30.67 | -13 | -17.67 | H |
| 2509.50 | -38.68 | 8.54 | -30.14 | -13 | -17.14 | H |
| 1673.00 | -34.44 | 5.11 | -29.33 | -13 | -16.33 | V |
| 2509.50 | -39.13 | 8.54 | -30.59 | -13 | -17.59 | V |
| High Channel (848.3MHz) | | | | | | |
| 1696.60 | -35.04 | 5.25 | -29.79 | -13 | -16.79 | H |
| 2544.90 | -38.55 | 8.57 | -29.98 | -13 | -16.98 | H |
| 1696.60 | -35.19 | 5.25 | -29.94 | -13 | -16.94 | V |
| 2544.90 | -38.86 | 8.57 | -30.29 | -13 | -17.29 | V |

*For FDD_LTE Band 28Mode*

| Frequency | Reading | Correct | Result | Limit | Margin | Polar |
|---|---|---|---|---|---|---|
| (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | H/V |
| Low Channel (704.5.MHz) | | | | | | |
| 1409.0 | -28.98 | 4.05 | -24.93 | -13 | -11.93 | H |
| 2113.5 | -30.6 | 7.32 | -23.28 | -13 | -10.28 | H |
| 1409.0 | -29.15 | 4.05 | -25.1 | -13 | -12.1 | V |
| 2113.5 | -29.32 | 7.32 | -22 | -13 | -9 | V |
| Middle Channel (725.0.MHz) | | | | | | |
| 1450.0 | -28.5 | 4.21 | -24.29 | -13 | -11.29 | H |
| 2175.0 | -30.66 | 7.42 | -23.24 | -13 | -10.24 | H |
| 1450.0 | -30.71 | 4.21 | -26.5 | -13 | -13.5 | V |
| 2175.0 | -31.63 | 7.42 | -24.21 | -13 | -11.21 | V |
| High Channel (746.5MHz) | | | | | | |
| 1493.0 | -30.73 | 4.36 | -26.37 | -13 | -13.37 | H |
| 2239.5 | -30.36 | 7.68 | -22.68 | -13 | -9.68 | V |
| 1493.0 | -29.51 | 4.36 | -25.15 | -13 | -12.15 | H |
| 2239.5 | -29.06 | 7.68 | -21.38 | -13 | -8.38 | V |

*For FDD_LTE Band 30Mode*

| Frequency | Reading | Correct | Result | Limit | Margin | Polar |
|---|---|---|---|---|---|---|
| (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | H/V |
| Low Channel (2307.5MHz) | | | | | | |
| 4615.00 | -36.53 | 9.18 | -27.35 | -13 | -14.35 | H |
| 6922.50 | -42.79 | 12.51 | -30.28 | -13 | -17.28 | H |
| 4615.00 | -39.73 | 9.18 | -30.55 | -13 | -17.55 | V |
| 6922.50 | -43.37 | 12.51 | -30.86 | -13 | -17.86 | V |
| Middle Channel (2310.0MHz) | | | | | | |
| 4620.00 | -38.2 | 9.21 | -28.99 | -13 | -15.99 | H |
| 6930.00 | -42.04 | 12.79 | -29.25 | -13 | -16.25 | H |
| 4620.00 | -38.86 | 9.21 | -29.65 | -13 | -16.65 | V |
| 6930.00 | -44.2 | 12.79 | -31.41 | -13 | -18.41 | V |
| High Channel (2312.5MHz) | | | | | | |
| 4625.00 | -36.55 | 9.32 | -27.23 | -13 | -14.23 | H |
| 6937.50 | -44.64 | 13.05 | -31.59 | -13 | -18.59 | H |
| 4625.00 | -37.25 | 9.32 | -27.93 | -13 | -14.93 | V |
| 6937.50 | -42.59 | 13.05 | -29.54 | -13 | -16.54 | V |

*For FDD_LTE Band 40(2305-2315MHZ)Mode*

| Frequency | Reading | Correct | Result | Limit | Margin | Polar |
|---|---|---|---|---|---|---|
| (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | H/V |
| Low Channel (2307.5MHz) | | | | | | |
| 4615.00 | -36.12 | 9.18 | -26.94 | -13 | -13.94 | H |
| 6922.50 | -41.81 | 12.51 | -29.3 | -13 | -16.3 | H |
| 4615.00 | -37.41 | 9.18 | -28.23 | -13 | -15.23 | V |
| 6922.50 | -41.32 | 12.51 | -28.81 | -13 | -15.81 | V |
| High Channel (2312.5MHz) | | | | | | |
| 4625.00 | -37.07 | 9.32 | -27.75 | -13 | -14.75 | H |
| 6937.50 | -44.65 | 13.05 | -31.6 | -13 | -18.6 | H |
| 4625.00 | -39.61 | 9.32 | -30.29 | -13 | -17.29 | V |
| 6937.50 | -42.7 | 13.05 | -29.65 | -13 | -16.65 | V |

*For FDD_LTE Band 40(2350-2360MHZ)Mode*

| Frequency | Reading | Correct | Result | Limit | Margin | Polar |
|---|---|---|---|---|---|---|
| (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | H/V |
| Low Channel (2352.5MHz) | | | | | | |
| 4705.00 | -37.25 | 9.98 | -27.27 | -13 | -14.27 | H |
| 7057.50 | -41.01 | 14.02 | -26.99 | -13 | -13.99 | H |
| 4705.00 | -36.06 | 9.98 | -26.08 | -13 | -13.08 | V |
| 7057.50 | -43.94 | 14.02 | -29.92 | -13 | -16.92 | V |
| High Channel (2357.5MHz) | | | | | | |
| 4715.00 | -37.21 | 10.52 | -26.69 | -13 | -13.69 | H |
| 7072.50 | -44.83 | 15.21 | -29.62 | -13 | -16.62 | H |
| 4715.00 | -39.75 | 10.52 | -29.23 | -13 | -16.23 | V |
| 7072.50 | -44.28 | 15.21 | -29.07 | -13 | -16.07 | V |

*For FDD_LTE Band 66Mode*

| Frequency | Reading | Correct | Result | Limit | Margin | Polar |
|---|---|---|---|---|---|---|
| (MHz) | (dBm) | dB | (dBm) | (dBm) | (dB) | H/V |
| Low Channel (1710.7MHz) | | | | | | |
| 3420.77 | -37.64 | 9.22 | -28.42 | -13 | -15.42 | H |
| 5131.47 | -41.96 | 11.35 | -30.61 | -13 | -17.61 | H |
| 3420.77 | -38.68 | 9.22 | -29.46 | -13 | -16.46 | V |
| 5131.47 | -41.32 | 11.35 | -29.97 | -13 | -16.97 | V |
| Middle Channel (1745MHz) | | | | | | |
| 3490.00 | -37.28 | 9.53 | -27.75 | -13 | -14.75 | H |
| 5235.00 | -41.9 | 11.98 | -29.92 | -13 | -16.92 | H |
| 3490.00 | -37.09 | 9.53 | -27.56 | -13 | -14.56 | V |
| 5235.00 | -42.98 | 11.98 | -31 | -13 | -18.00 | V |
| High Channel (1779.3MHz) | | | | | | |
| 3558.60 | -36.57 | 9.82 | -26.75 | -13 | -13.75 | H |
| 5337.90 | -44.73 | 12.35 | -32.38 | -13 | -19.38 | H |
| 3558.60 | -36.74 | 9.82 | -26.92 | -13 | -13.92 | V |
| 5337.90 | -42.47 | 12.35 | -30.12 | -13 | -17.12 | V |

*Note: Result=Reading+ Correct, Margin= Result- Limit*

*Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*

# 9. Frequency Stability

## 9.1 Standard Applicable

According to §22.355, §24.235, §27.54 the limit is 2.5ppm.

## 9.2 Test Procedure

According to §2.1055, the following test procedure was performed.
The Frequency Stability is measured directly with a Frequency Domain Analyzer. Frequency Deviation in ppm is calculated from the measured peak to peak value.
The Carrier Frequency Stability over Power Supply Voltage and over Temperature is measured with a Frequency Domain Analyzer in histogram mode

## 9.3 Summary of Test Results/Plots

Note: 1.Normal Voltage NV=DC3.85V; Low Voltage LV=DC3.5V; High Voltage HV=DC4.35V

Please refer to Appendix F: Frequency Stability

Test result: Pass

******* END OF REPORT *******