



FCC PART 27

TEST REPORT

For

Baicells Technologies Co., Ltd.

3F, Hui Yuan Development Building, No.1 Shangdi, Information Industry Base, Haidian Dist.,
Beijing, China

FCC ID: 2AG32EG7035EM1

| | |
|---|---|
| Report Type: Original Report | Product Type: LTE Outdoor CPE |
| Report Number: RSZ180629008-00B | |
| Report Date: 2018-07-27 | |
| Reviewed By: RF Engineer | Rocky Kang <i>Rocky Kang</i> |
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Baicells Technologies Co., Ltd.*'s product, model number: EG7035E-M1 (FCC ID: 2AG32EG7035EM1) or the "EUT" in this report was a *LTE Outdoor CPE*, which was measured approximately: 25.0 cm (L) × 25.0 cm (W) × 8.0 cm (H), rated with input voltage: DC24.0V from POE.

**All measurement and test data in this report was gathered from production sample serial number: 180629008 (Assigned by BAACL, Shenzhen). The EUT supplied by the applicant was received on 2018-06-29.*

Objective

This test report is prepared on behalf of *Baicells Technologies Co., Ltd.* in accordance with Part 2-Subpart J, Subpart 27 of the Federal Communication Commissions rules.

The objective is to determine the compliance of the EUT with FCC rules for output power, modulation characteristic, occupied bandwidth, and spurious emission at antenna terminal, spurious radiated emission, frequency stability and band edge.

Related Submittal(s)/Grant(s)

No Related Submittal(s)/Grant(s).

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2-Subpart J as well as the following parts:

Part 27 – Miscellaneous wireless communications services

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

| Parameter | | Uncertainty |
|------------------------------|------------|-------------|
| Occupied Channel Bandwidth | | ±5% |
| RF output power, conducted | | ±1.5dB |
| Unwanted Emission, conducted | | ±1.5dB |
| Emissions, radiated | Below 1GHz | ±4.70dB |
| | Above 1GHz | ±4.80dB |
| Temperature | | ±1 °C |
| Supply voltages | | ±0.4% |

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 342867, the FCC Designation No.: CN1221.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The EUT was configured for testing according to TIA/EIA-603-D.

The final qualification test was performed with the EUT operating at normal mode.

Equipment Modifications

No modification was made to the EUT.

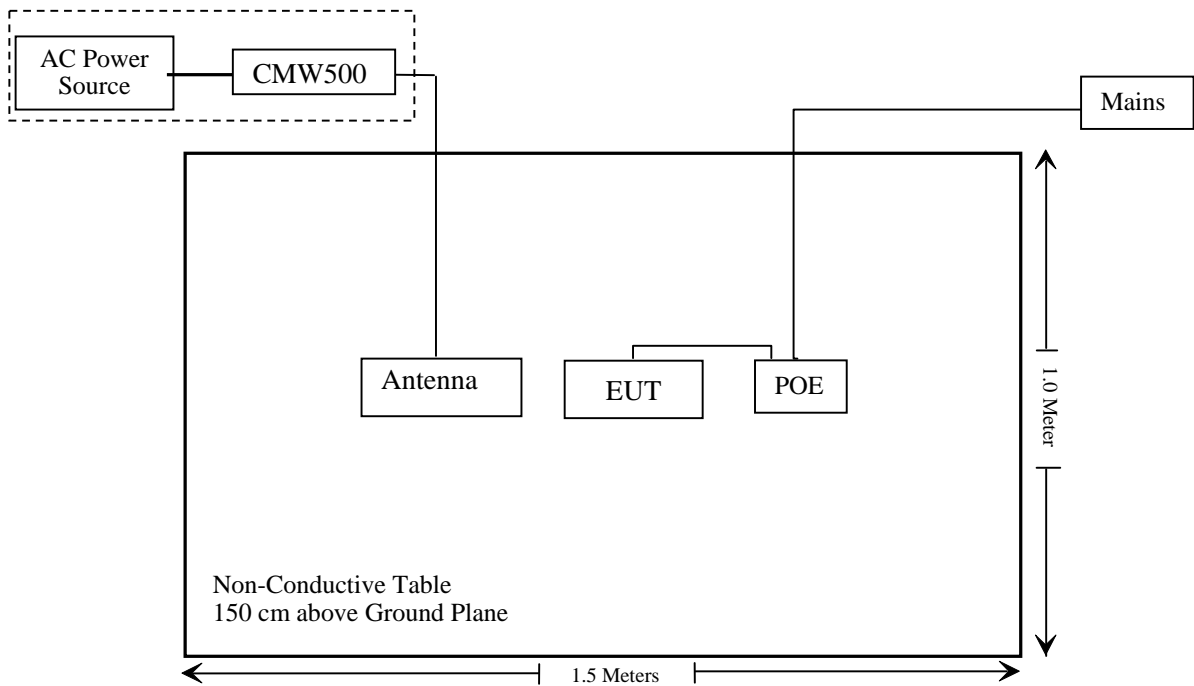
Support Equipment List and Details

| Manufacturer | Description | Model | Serial Number |
|-----------------|-------------------------------------|--------|-----------------------|
| Rohde & Schwarz | Wideband Radio Communication Tester | CMW500 | 1201.002K50-116218-UY |

External I/O Cable

| Cable Description | Length (m) | From Port | To |
|-------------------------------------|------------|-----------|-------|
| Un-shielding Un-detachable AC cable | 1.0 | POE | Mains |
| Un-shielding detachable RJ45 cable | 1.5 | POE | EUT |

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test | Result |
|-------------------------|--|----------------|
| §1.1307 (b)(1), §2.1091 | Maximum Permissible Exposure (MPE) | Compliance |
| §2.1046;§27.50 (h) | RF Output Power | Compliance |
| § 2.1047 | Modulation Characteristics | Not Applicable |
| § 2.1049;§27.53 | Occupied Bandwidth | Compliance |
| § 2.1051; §27.53 (m) | Spurious Emissions at Antenna Terminal | Compliance |
| § 2.1053;§27.53 (m) | Field Strength of Spurious Radiation | Compliance |
| §27.53 (m) | Band Edge | Compliance |
| § 2.1055; §27.54; | Frequency stability | Compliance |

TEST EQUIPMENT LIST

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|-------------------------------|-------------------------------------|-----------------------|-----------------------|------------------|----------------------|
| Radiated Emission Test | | | | | |
| Sunol Sciences | Horn Antenna | DRH-118 | A052604 | 2017-12-22 | 2020-12-21 |
| Rohde & Schwarz | Signal Analyzer | FSEM | 845987/005 | 2018-04-24 | 2019-04-24 |
| Sunol Sciences | Broadband Antenna | JB1 | A040904-1 | 2017-12-22 | 2020-12-21 |
| Mini | Pre-amplifier | ZVA-183-S+ | 5969001149 | 2018-05-21 | 2019-05-21 |
| HP | Amplifier | HP8447E | 1937A01046 | 2018-05-21 | 2018-11-19 |
| Anritsu | Signal Generator | 68369B | 004114 | 2017-12-24 | 2018-12-24 |
| Rohde & Schwarz | EMI Test Receiver | ESCI | 101120 | 2018-01-11 | 2019-01-11 |
| COM POWER | Dipole Antenna | AD-100 | 041000 | NCR | NCR |
| A.H. System | Horn Antenna | SAS-200/571 | 135 | 2015-08-18 | 2018-08-17 |
| Ducommun technologies | RF Cable | UFA210A-1-4724-30050U | MFR64369 223410-001 | 2018-05-21 | 2018-11-19 |
| Ducommun technologies | RF Cable | 104PEA | 218124002 | 2018-05-21 | 2018-11-19 |
| Ducommun technologies | RF Cable | RG-214 | 1 | 2018-05-21 | 2018-11-19 |
| Ducommun technologies | RF Cable | RG-214 | 2 | 2018-05-22 | 2018-11-22 |
| Ducommun Technologies | Horn Antenna | ARH-4223-02 | 1007726-04 | 2017-12-29 | 2020-12-28 |
| Ducommun technologies | Horn Antenna | ARH-4223-02 | 1007726-03 | 2017-12-29 | 2020-12-28 |
| Ducommun technologies | Pre-amplifier | ALN-22093530-01 | 991373-01 | 2017-08-03 | 2018-08-03 |
| RF Conducted Test | | | | | |
| Rohde & Schwarz | SPECTRUM ANALYZER | FSU26 | 200120 | 2017-12-24 | 2018-12-24 |
| ESPEC | Temperature & Humidity Chamber | EL-10KA | 09107726 | 2017-12-21 | 2018-12-21 |
| Rohde & Schwarz | Wideband Radio Communication Tester | CMW500 | 1201.002K50-146520-wh | 2018-04-24 | 2019-04-24 |
| Ducommun technologies | RF Cable | RG-214 | 3 | Each Time | |
| WEINSCHL | 10dB Attenuator | 5324 | AU 3842 | Each Time | |
| N/A | Power Splitter | N/A | N/A | 2018-05-21 | 2019-05-21 |

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC§1.1307 (b)(1) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 1.1307 (b)(1), 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm ²) | Averaging time (minutes) |
|--|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| (A) Limits for Occupational/Controlled Exposure | | | | |
| 0.3-3.0 | 614 | 1.63 | *100 | 6 |
| 3.0-30 | 1842/f | 4.89/f | *900/f ² | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1,500 | | | f/300 | 6 |
| 1,500-100,000 | | | 5 | 6 |
| (B) Limits for General Population/Uncontrolled Exposure | | | | |
| 0.3-1.34 | 614 | 1.63 | *100 | 30 |
| 1.34-30 | 824/f | 2.19/f | *180/f ² | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1,500 | | | f/1500 | 30 |
| 1,500-100,000 | | | 1.0 | 30 |

f = frequency in MHz * = Plane-wave equivalent power density

Result

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

For General Population/Uncontrolled Exposure:

| Frequency (MHz) | Antenna Gain | | Max Tune-up Power | | Evaluation Distance (cm) | Power Density (mW/cm ²) | MPE Limit (mW/cm ²) |
|-----------------|--------------|-----------|-------------------|------|--------------------------|-------------------------------------|---------------------------------|
| | (dBi) | (numeric) | (dBm) | (mW) | | | |
| 2496-2690 | 14 | 25.12 | 25 | 316 | 40 | 0.4 | 1.0 |

Radiation Exposure Statement:

To comply with FCC RF exposure requirements, a minimum separation distance of 40cm is required between the antenna and persons, and the available max antenna gain must not exceed 14 dBi.

FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 27 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

FCC § 2.1046, §27.50(h) - RF OUTPUT POWER

Applicable Standard

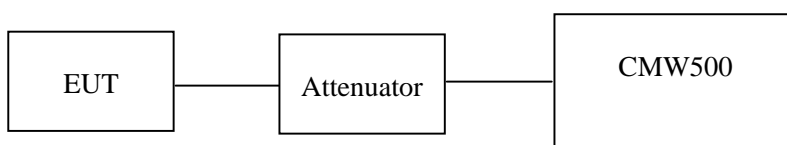
The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB.

According to §27.50(h), Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

Test Procedure

Conducted method:

The RF output of the transmitter was connected to the CMW500 through sufficient attenuation.



Radiated method:

TIA 603-D section 2.2.17

Test Data

Environmental Conditions

| | |
|---------------------------|-----------|
| Temperature: | 25 °C |
| Relative Humidity: | 52 % |
| ATM Pressure: | 101.0 kPa |

The testing was performed by Hill He on 2018-07-18.

LTE Band 41(This is a fixed digital user station):
Maximum Output Power

| Bandwidth (MHz) | Modulation | RB size/RB Offset | Low Channel (dBm) | Middle Channel (dBm) | High Channel (dBm) |
|-----------------|------------|--------------------------|-------------------|----------------------|--------------------|
| 5.0 | QPSK | RB Size=1, RB Offset=0 | 22.72 | 22.64 | 22.79 |
| | | RB Size=1, RB Offset=12 | 22.36 | 22.51 | 22.44 |
| | | RB Size=1, RB Offset=24 | 22.25 | 22.35 | 22.26 |
| | | RB Size=12, RB Offset=0 | 21.84 | 22.20 | 22.08 |
| | | RB Size=12, RB Offset=6 | 21.59 | 22.12 | 22.15 |
| | | RB Size=12, RB Offset=11 | 22.02 | 21.95 | 22.08 |
| | | RB Size=25, RB Offset=0 | 21.38 | 21.78 | 21.80 |
| | 16QAM | RB Size=1, RB Offset=0 | 22.57 | 22.34 | 22.53 |
| | | RB Size=1, RB Offset=12 | 22.42 | 22.28 | 22.25 |
| | | RB Size=1, RB Offset=24 | 22.31 | 22.09 | 22.32 |
| | | RB Size=12, RB Offset=0 | 22.13 | 21.86 | 21.89 |
| | | RB Size=12, RB Offset=6 | 22.02 | 21.72 | 21.79 |
| | | RB Size=12, RB Offset=11 | 21.97 | 21.68 | 21.75 |
| | | RB Size=25, RB Offset=0 | 21.74 | 21.52 | 21.34 |
| 10.0 | QPSK | RB Size=1, RB Offset=0 | 22.41 | 22.55 | 22.49 |
| | | RB Size=1, RB Offset=24 | 22.33 | 22.48 | 22.36 |
| | | RB Size=1, RB Offset=49 | 22.10 | 22.11 | 22.19 |
| | | RB Size=25, RB Offset=0 | 21.94 | 22.01 | 22.09 |
| | | RB Size=25, RB Offset=12 | 21.82 | 21.93 | 21.79 |
| | | RB Size=25, RB Offset=24 | 21.76 | 21.85 | 21.65 |
| | | RB Size=50, RB Offset=0 | 21.63 | 21.78 | 21.45 |
| | 16QAM | RB Size=1, RB Offset=0 | 22.51 | 22.62 | 22.62 |
| | | RB Size=1, RB Offset=24 | 22.33 | 22.29 | 22.45 |
| | | RB Size=1, RB Offset=49 | 22.29 | 22.38 | 22.29 |
| | | RB Size=25, RB Offset=0 | 22.18 | 22.05 | 22.15 |
| | | RB Size=25, RB Offset=12 | 21.92 | 22.08 | 22.02 |
| | | RB Size=25, RB Offset=24 | 21.85 | 21.95 | 21.99 |
| | | RB Size=50, RB Offset=0 | 21.75 | 21.77 | 21.77 |

| Bandwidth (MHz) | Modulation | RB size/RB Offset | Low Channel (dBm) | Middle Channel (dBm) | High Channel (dBm) |
|-----------------|------------|--------------------------|-------------------|----------------------|--------------------|
| 15.0 | QPSK | RB Size=1, RB Offset=0 | 22.81 | 22.71 | 22.83 |
| | | RB Size=1, RB Offset=37 | 22.67 | 22.35 | 22.44 |
| | | RB Size=1, RB Offset=74 | 22.32 | 22.18 | 22.27 |
| | | RB Size=36, RB Offset=0 | 22.08 | 22.06 | 22.02 |
| | | RB Size=36, RB Offset=18 | 21.83 | 21.96 | 21.91 |
| | | RB Size=36, RB Offset=37 | 21.52 | 21.69 | 21.78 |
| | | RB Size=75, RB Offset=0 | 21.38 | 21.35 | 21.29 |
| | 16QAM | RB Size=1, RB Offset=0 | 22.51 | 22.42 | 22.77 |
| | | RB Size=1, RB Offset=37 | 22.27 | 22.40 | 22.36 |
| | | RB Size=1, RB Offset=74 | 22.12 | 22.24 | 22.15 |
| | | RB Size=36, RB Offset=0 | 22.04 | 21.93 | 22.09 |
| | | RB Size=36, RB Offset=18 | 21.91 | 21.64 | 21.73 |
| | | RB Size=36, RB Offset=37 | 21.70 | 21.81 | 21.78 |
| | | RB Size=75, RB Offset=0 | 21.36 | 21.37 | 21.32 |
| 20.0 | QPSK | RB Size=1, RB Offset=0 | 22.56 | 22.59 | 22.65 |
| | | RB Size=1, RB Offset=49 | 22.36 | 22.73 | 22.74 |
| | | RB Size=1, RB Offset=99 | 22.21 | 22.15 | 22.37 |
| | | RB Size=50, RB Offset=0 | 22.07 | 22.09 | 22.16 |
| | | RB Size=50, RB Offset=24 | 21.98 | 22.05 | 22.09 |
| | | RB Size=50, RB Offset=49 | 21.75 | 21.94 | 21.74 |
| | | RB Size=100, RB Offset=0 | 21.61 | 21.73 | 21.52 |
| | 16QAM | RB Size=1, RB Offset=0 | 22.39 | 22.53 | 22.52 |
| | | RB Size=1, RB Offset=49 | 22.18 | 22.28 | 22.37 |
| | | RB Size=1, RB Offset=99 | 22.24 | 22.31 | 22.27 |
| | | RB Size=50, RB Offset=0 | 22.08 | 22.04 | 22.14 |
| | | RB Size=50, RB Offset=24 | 22.01 | 22.05 | 22.03 |
| | | RB Size=50, RB Offset=49 | 21.76 | 21.78 | 21.79 |
| | | RB Size=100, RB Offset=0 | 21.37 | 21.64 | 21.70 |

FCC §2.1049, §27.53 - OCCUPIED BANDWIDTH

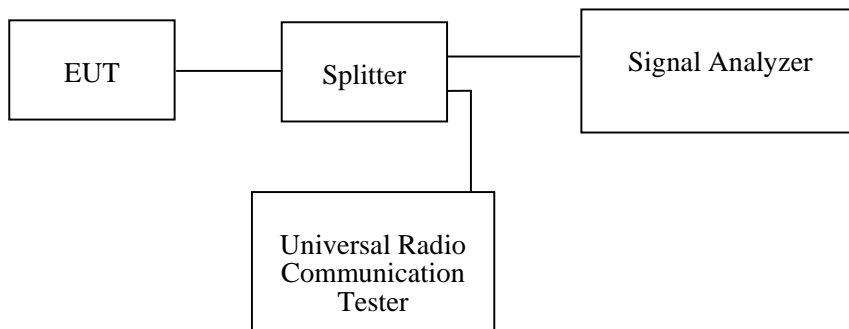
Applicable Standard

FCC 47 §2.1049, §27.53.

Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 1% to 5% of the anticipated emission bandwidth and the 26 dB & 99% bandwidth was recorded.



Test Data

Environmental Conditions

| | |
|---------------------------|-----------|
| Temperature: | 25 °C |
| Relative Humidity: | 53 % |
| ATM Pressure: | 101.2 kPa |

The testing was performed by Hill He on 2018-07-05.

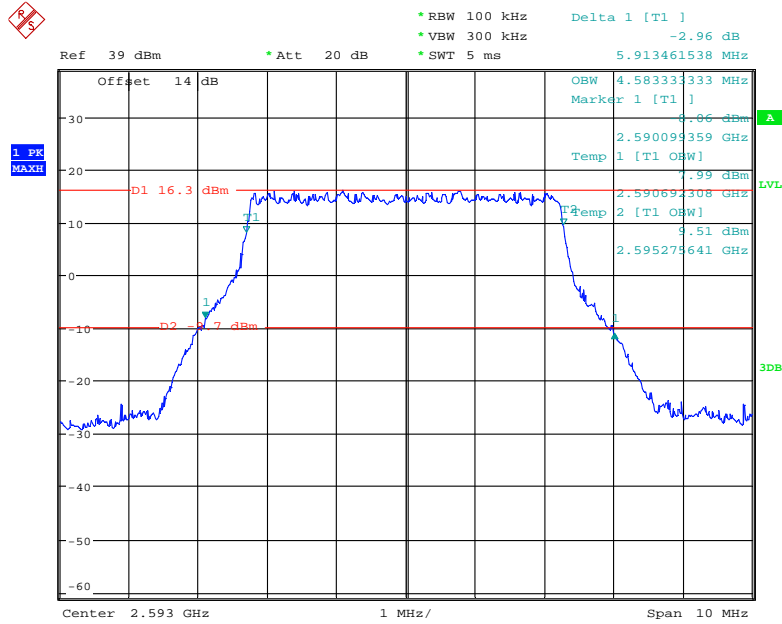
EUT operation mode: Transmitting

Test Result: Compliance. Please refer to the following tables and plots.

LTE Band 41: (Middle Channel)

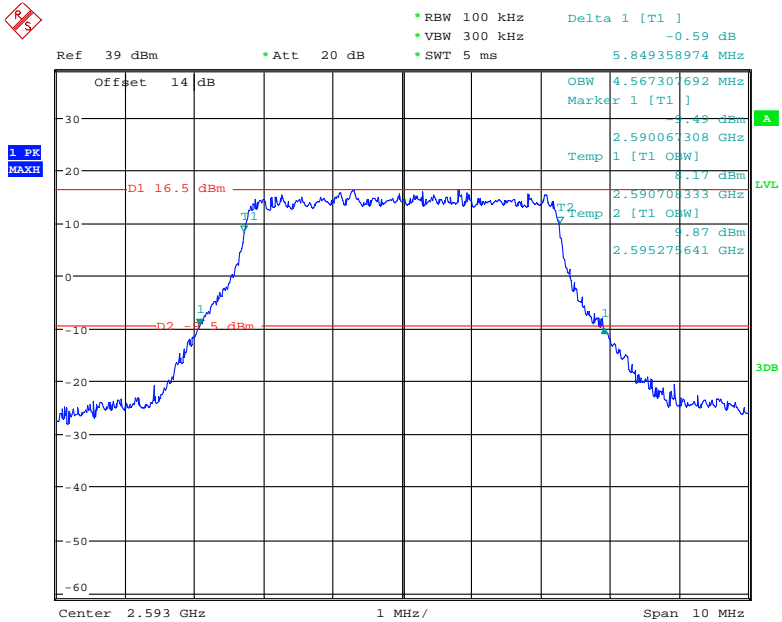
| Bandwidth (MHz) | Modulation | 99% Occupied Bandwidth (MHz) | 26 dB Emission Bandwidth (MHz) |
|------------------------|-------------------|-------------------------------------|---------------------------------------|
| 5.0 | QPSK | 4.583 | 5.913 |
| | 16QAM | 4.567 | 5.849 |
| 10.0 | QPSK | 9.120 | 11.428 |
| | 16QAM | 9.120 | 11.601 |
| 15.0 | QPSK | 13.510 | 15.833 |
| | 16QAM | 13.462 | 15.785 |
| 20.0 | QPSK | 18.000 | 20.486 |
| | 16QAM | 18.160 | 20.807 |

QPSK (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



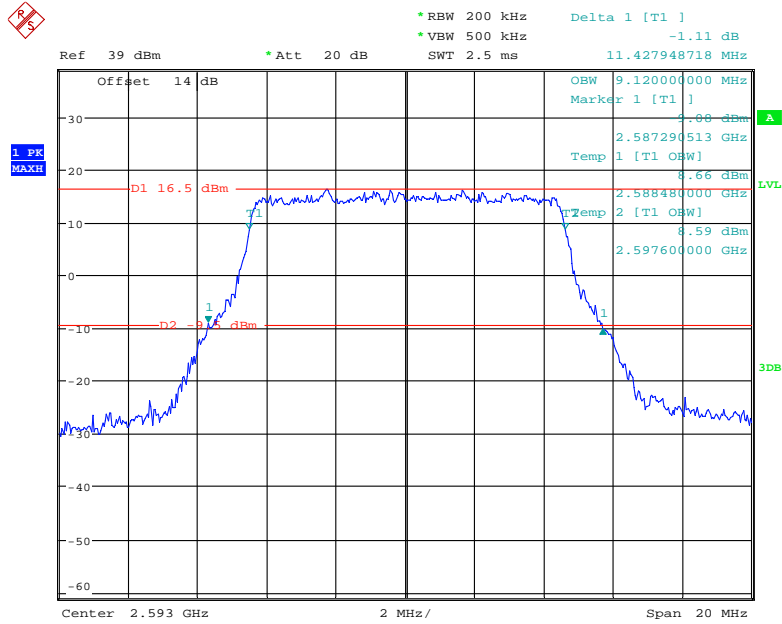
Date: 5.JUL.2018 09:42:24

16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



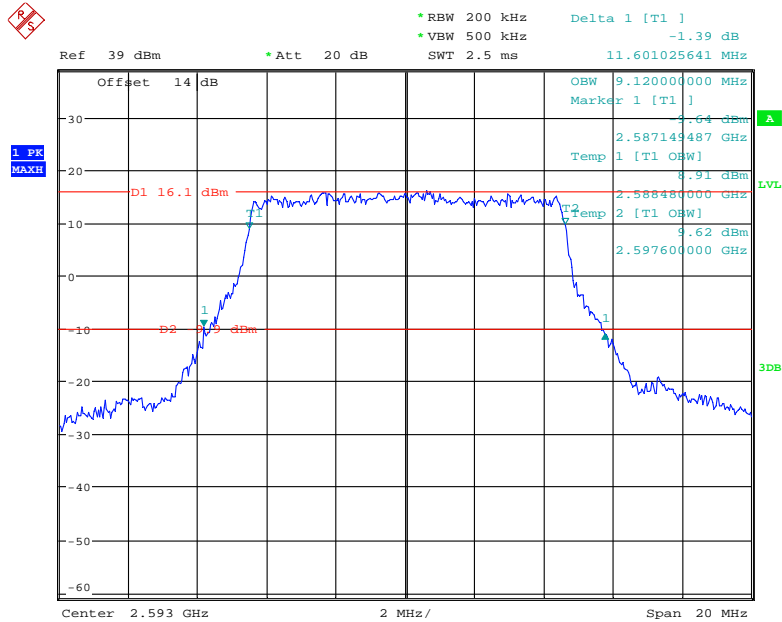
Date: 5.JUL.2018 09:44:41

QPSK (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



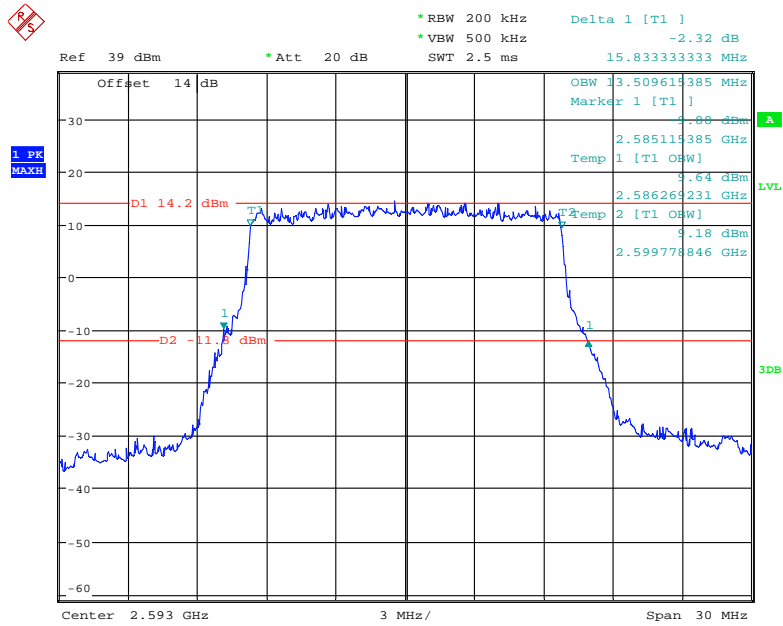
Date: 5.JUL.2018 17:07:47

16-QAM (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



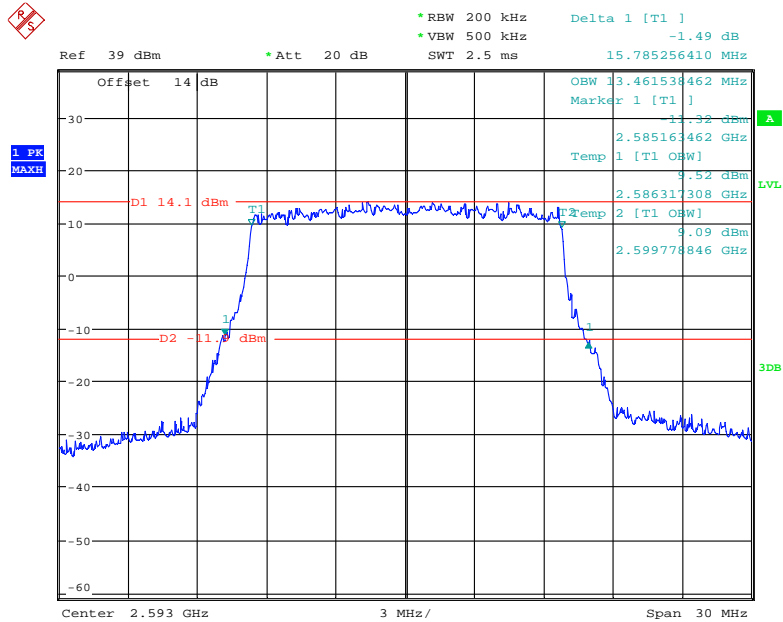
Date: 5.JUL.2018 17:09:49

QPSK (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



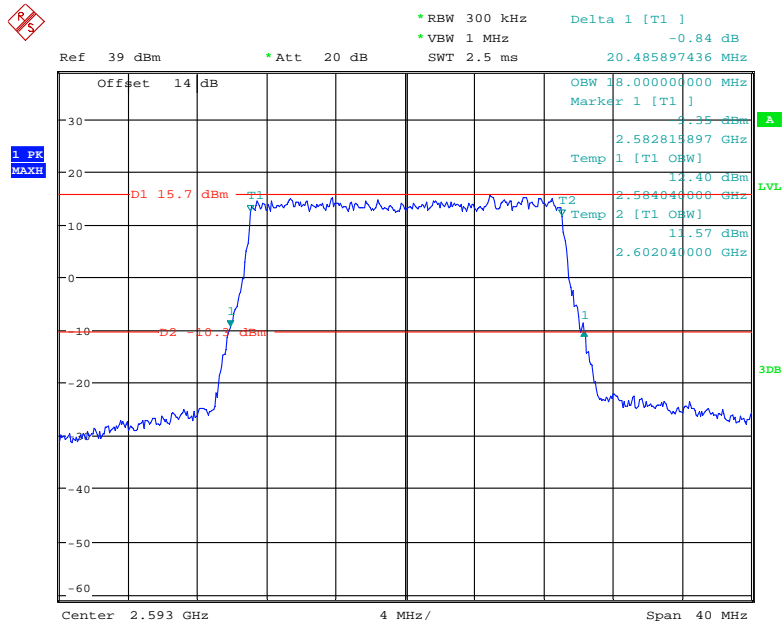
Date: 5.JUL.2018 09:54:22

16-QAM (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



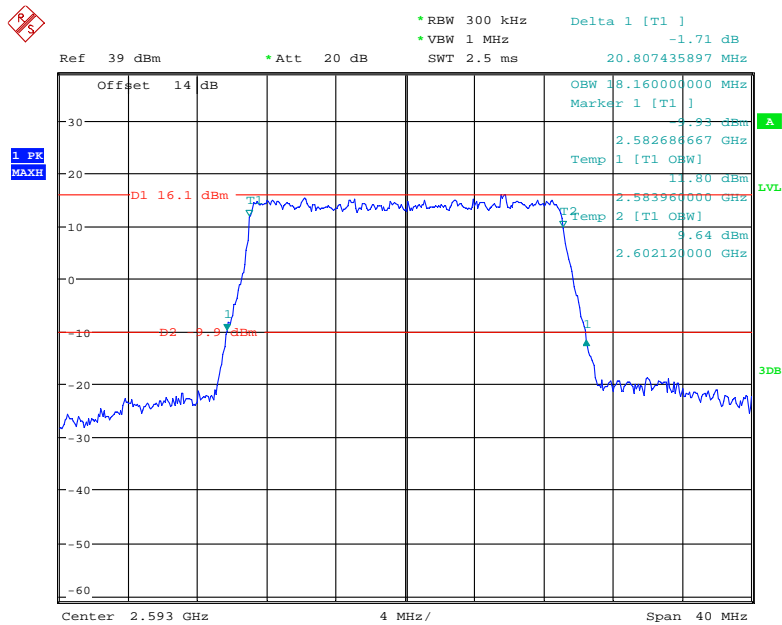
Date: 5.JUL.2018 09:55:23

QPSK (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



Date: 5.JUL.2018 17:13:18

16-QAM (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



Date: 5.JUL.2018 17:15:32

FCC §2.1051, §27.53 (m) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

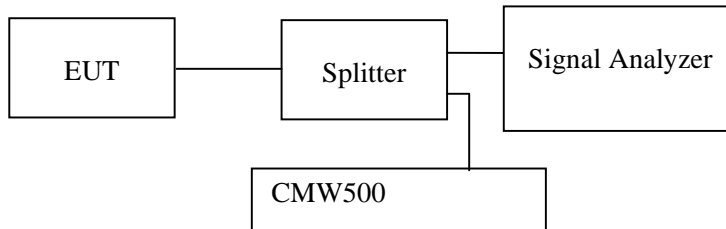
Applicable Standard

FCC §2.1051, §27.53 (m).

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Test Data

Environmental Conditions

| | |
|---------------------------|-----------|
| Temperature: | 25 °C |
| Relative Humidity: | 53 % |
| ATM Pressure: | 101.2 kPa |

The testing was performed by Hill He on 2018-07-05.

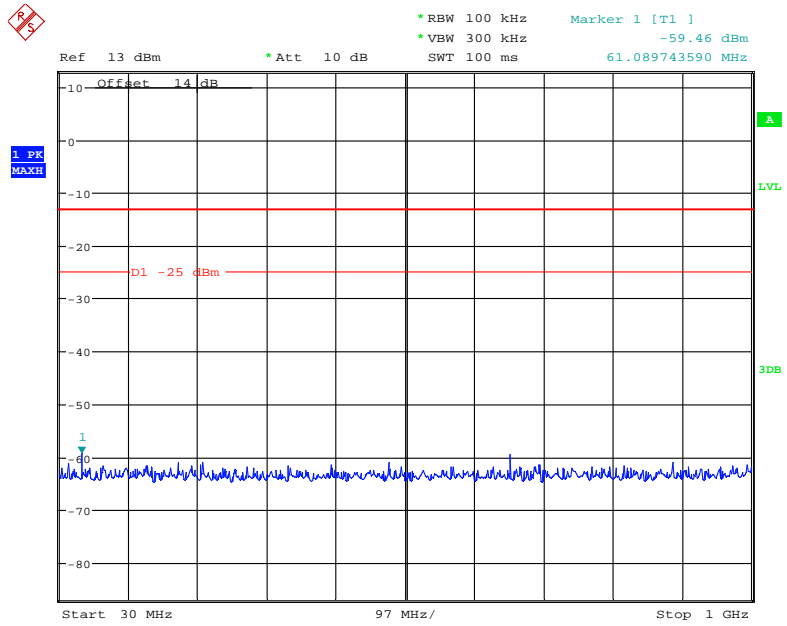
Test result: Compliance.

EUT operation mode: transmitting(testing with QPSK mode which the worst case)

Please refer to the following plots.

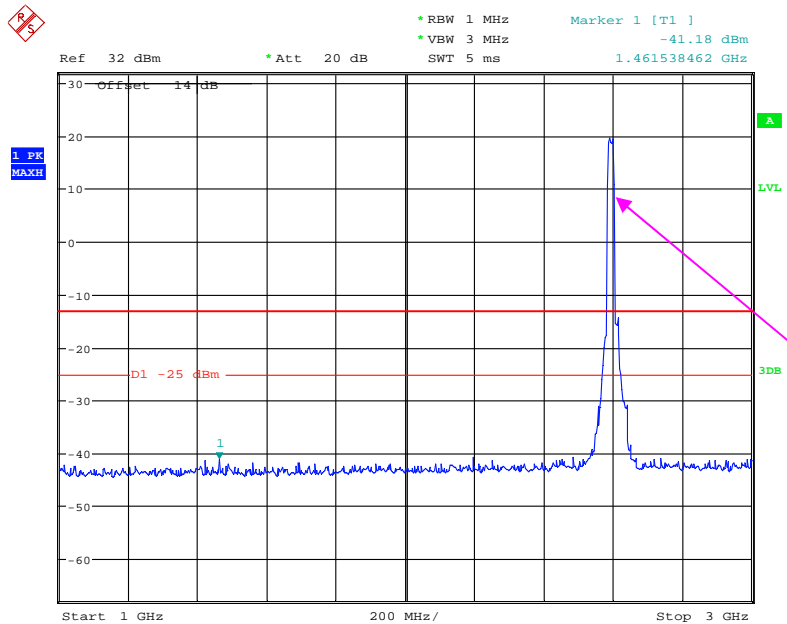
LTE Band 41:

30 MHz - 1 GHz (5.0 MHz, Middle Channel)



Date: 5.JUL.2018 10:04:35

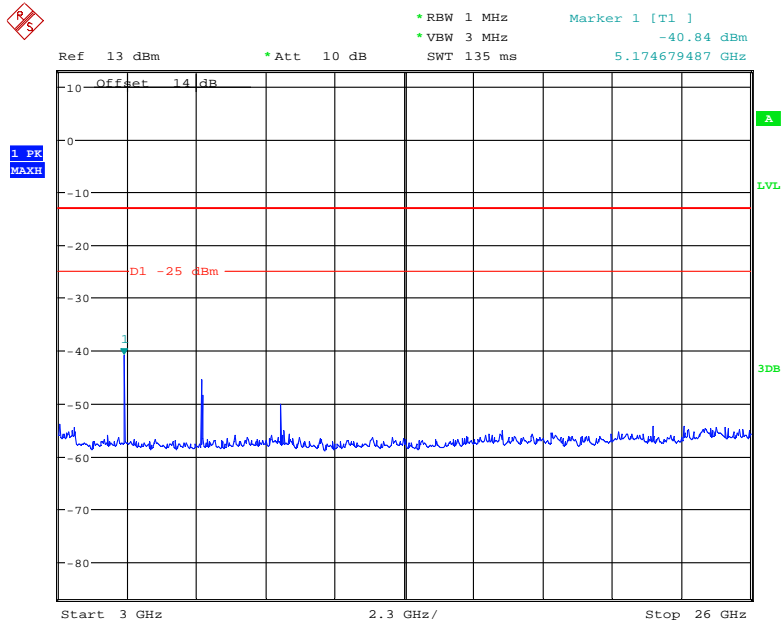
1 GHz - 3 GHz (5.0 MHz, Middle Channel)



Fundamental test

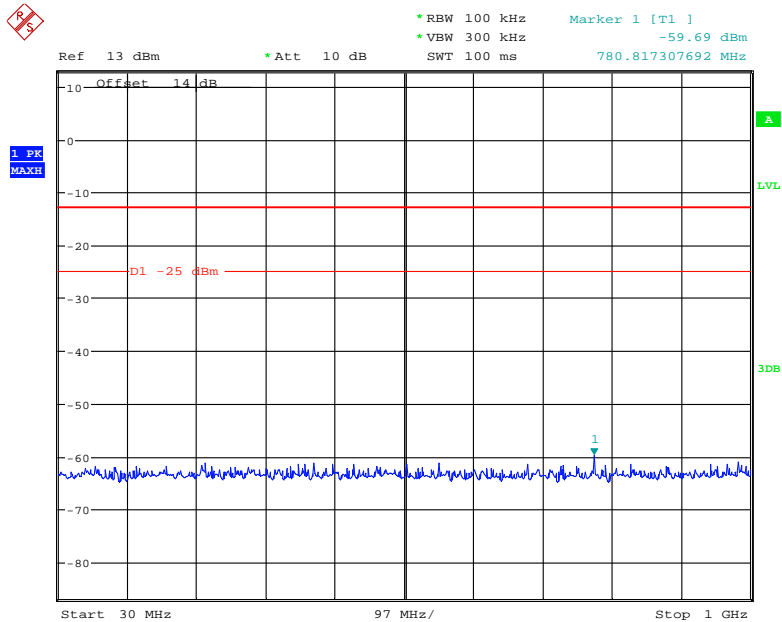
Date: 5.JUL.2018 10:07:06

3 GHz – 26 GHz (5.0 MHz, Middle Channel)



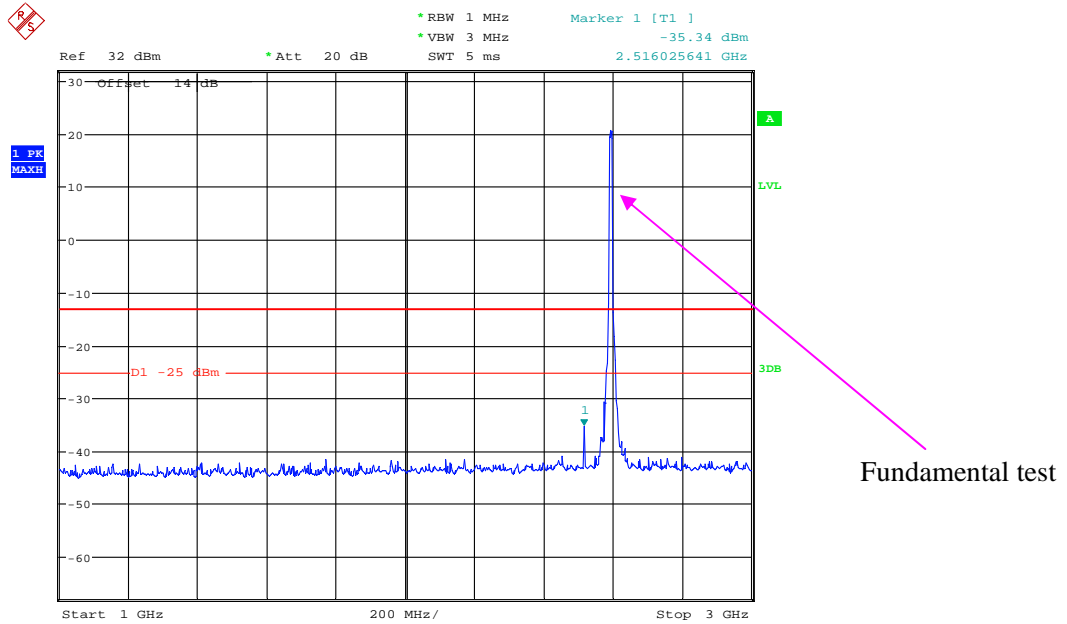
Date: 5.JUL.2018 11:27:34

30 MHz - 1 GHz (10.0 MHz, Middle Channel)



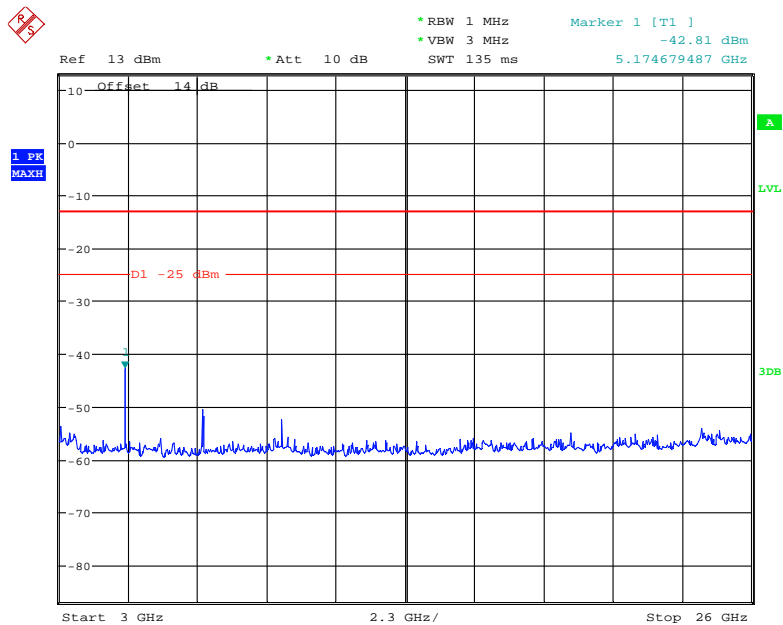
Date: 5.JUL.2018 10:04:20

1 GHz – 3 GHz (10.0 MHz, Middle Channel)



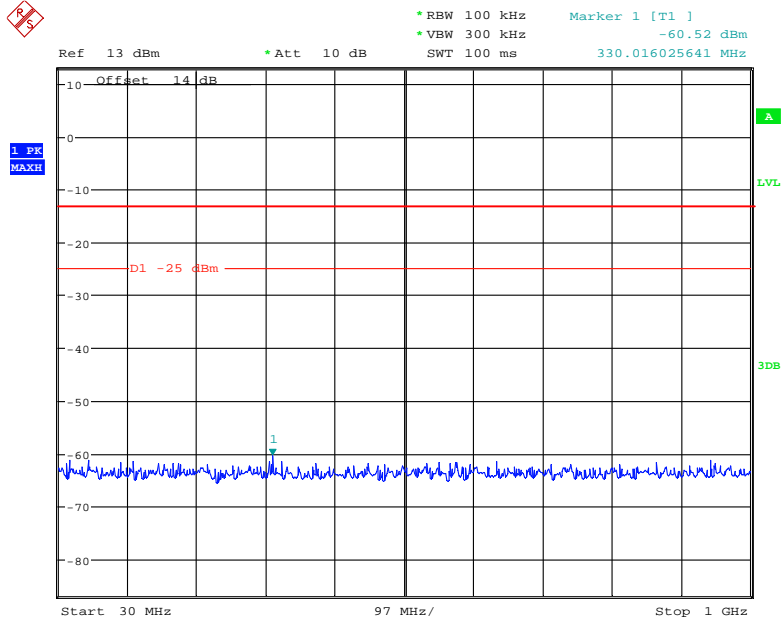
Date: 5.JUL.2018 10:13:19

3 GHz – 26 GHz (10.0 MHz, Middle Channel)



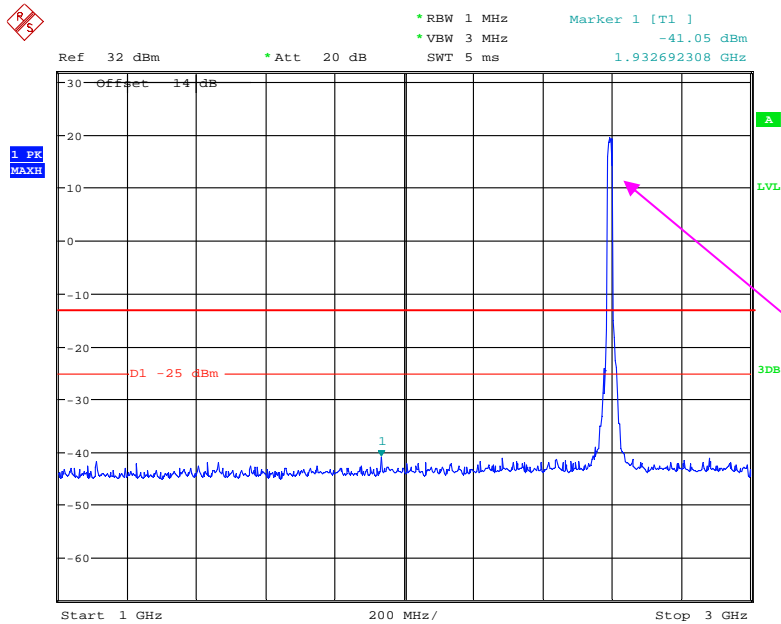
Date: 5.JUL.2018 11:28:43

30 MHz - 1 GHz (15.0 MHz, Middle Channel)



Date: 5.JUL.2018 10:03:59

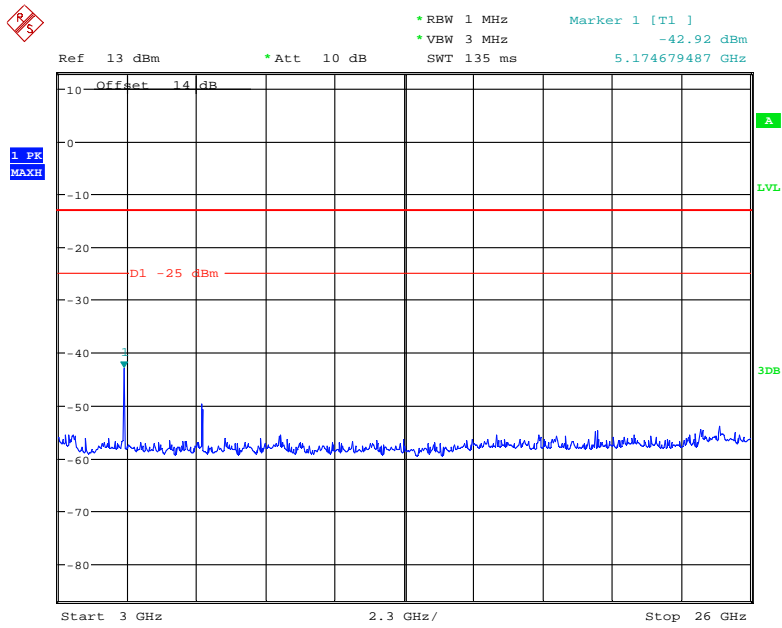
1 GHz - 3 GHz (15.0 MHz, Middle Channel)



Fundamental test

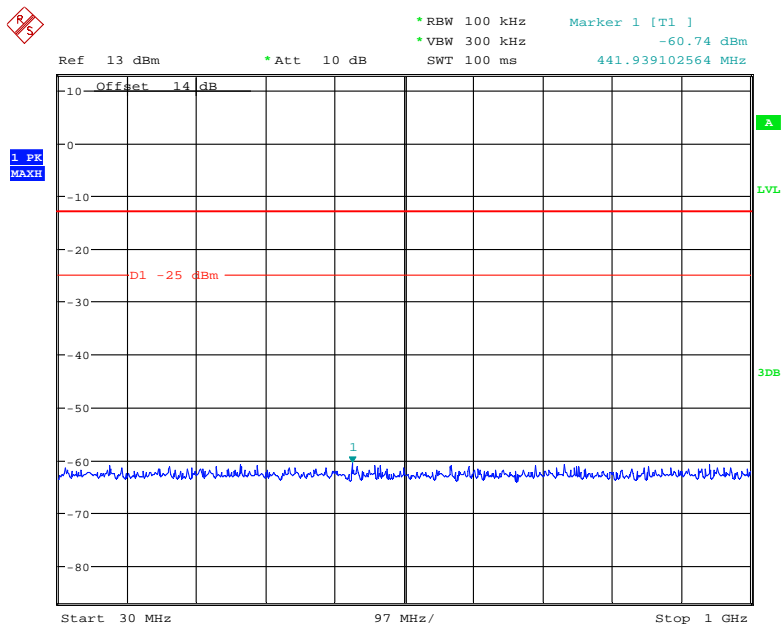
Date: 5.JUL.2018 10:13:52

3 GHz – 26 GHz (15.0 MHz, Middle Channel)



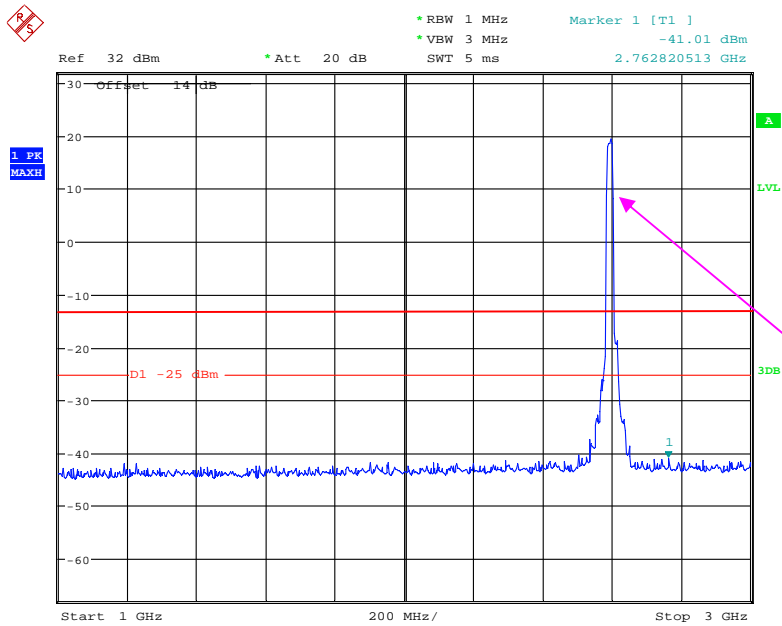
Date: 5.JUL.2018 11:28:58

30 MHz - 1 GHz (20.0 MHz, Middle Channel)



Date: 5.JUL.2018 10:03:14

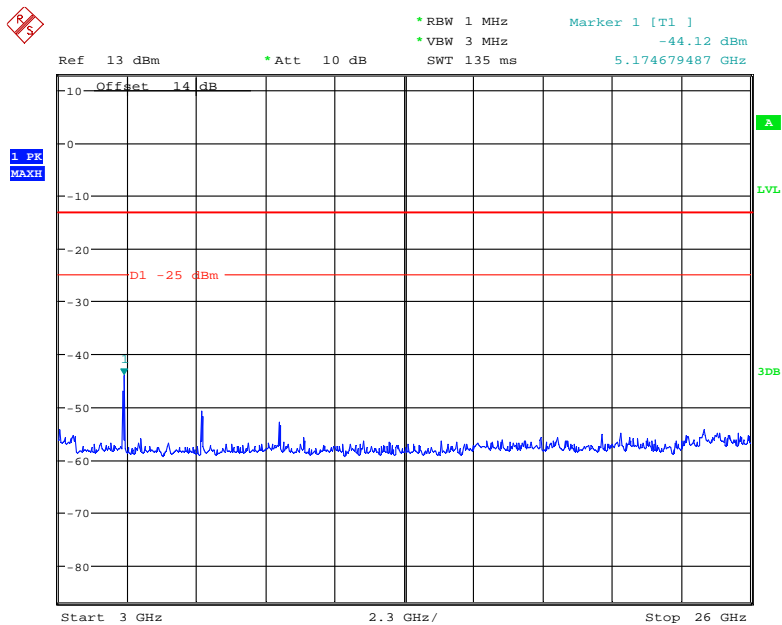
1 GHz – 3 GHz (20.0 MHz, Middle Channel)



Fundamental test

Date: 5.JUL.2018 10:14:24

3 GHz – 26 GHz (20.0 MHz, Middle Channel)



Date: 5.JUL.2018 11:29:15

FCC § 2.1053; §27.53 (m) SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC § 2.1053, § 27.53 (m)

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the receiving 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.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Test Data

Environmental Conditions

| | |
|---------------------------|-----------|
| Temperature: | 25 °C |
| Relative Humidity: | 52 % |
| ATM Pressure: | 101.0 kPa |

The testing was performed by Hill He on 2018-07-17.

EUT operation mode: Transmitting

Pre-scan with Low, Middle and High channel, the worst case as below:

LTE Band: *(Pre-scan with all the bandwidth, and worse case as below)*

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|-------------------------------|------------------------------|---------------|----------------|----------------|-----------------------|-------------------------|----------------------------|----------------|----------------|
| | | | Height (m) | Polar (H/V) | Level (dBm) | Cable Loss (dB) | Antenna Gain (dB) | | | |
| Band 41-QPSK middle channel | | | | | | | | | | |
| Test frequency range: 30 MHz ~ 26GHz | | | | | | | | | | |
| 280.26 | 36.07 | 356 | 1.6 | H | -60.9 | 0.34 | 0 | -61.24 | -13 | 48.24 |
| 280.26 | 37.82 | 118 | 1.2 | V | -59.2 | 0.34 | 0 | -59.54 | -13 | 46.54 |
| 5186.00 | 51.24 | 20 | 2.3 | H | -47.4 | 1.60 | 12.10 | -36.90 | -13 | 23.90 |
| 5186.00 | 49.87 | 289 | 2.0 | V | -48.3 | 1.60 | 12.10 | -37.80 | -13 | 24.80 |
| 7779.00 | 47.25 | 312 | 1.5 | H | -46.9 | 2.00 | 10.50 | -38.40 | -13 | 25.40 |
| 7779.00 | 46.85 | 9 | 2.4 | V | -47.2 | 2.00 | 10.50 | -38.70 | -13 | 25.70 |

Note:

- 1) Absolute Level = Substituted Level - Cable loss + Antenna Gain
- 2) Margin = Limit- Absolute Level

FCC §27.53 (m) - BAND EDGES

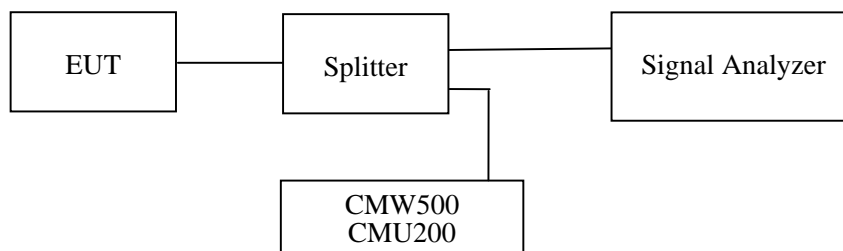
Applicable Standard

According to FCC §27.53 (m), 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.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency



Test Data

Environmental Conditions

| | |
|---------------------------|-----------|
| Temperature: | 25 °C |
| Relative Humidity: | 53 % |
| ATM Pressure: | 101.2 kPa |

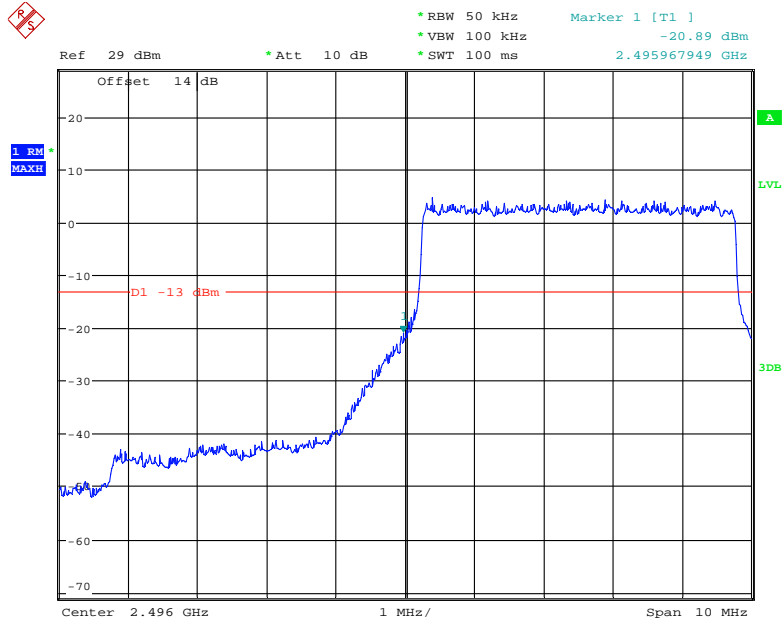
The testing was performed by Hill He on 2018-07-05.

EUT operation mode: Transmitting

Test Result: Compliance. Please refer to the following plots.

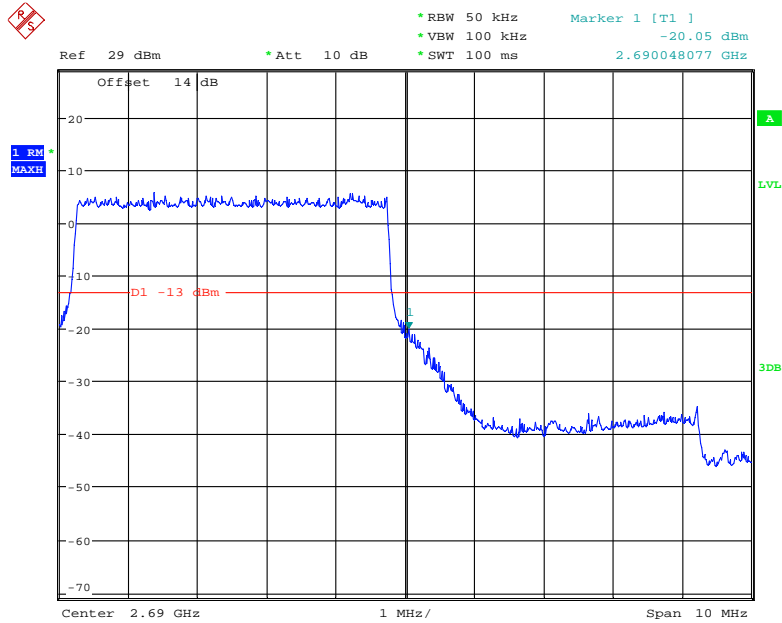
Band 41:

QPSK (5.0 MHz, FULL RB) - Left Band Edge



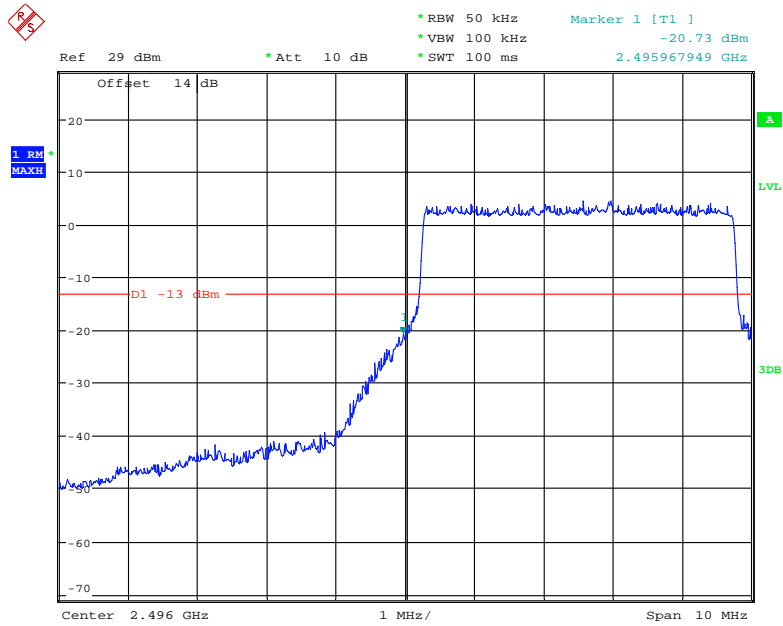
Date: 5.JUL.2018 11:37:18

QPSK (5.0 MHz, FULL RB) - Right Band Edge



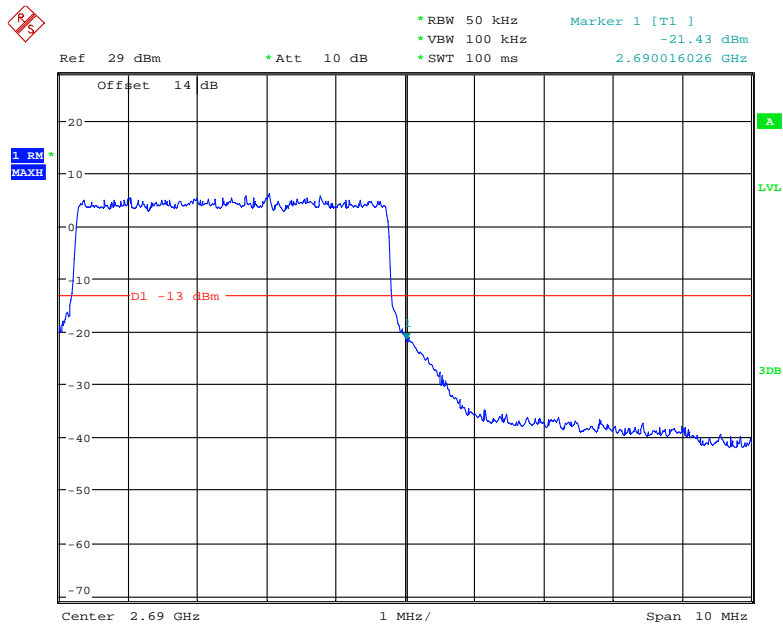
Date: 5.JUL.2018 11:40:08

16-QAM (5.0 MHz, FULL RB) - Left Band Edge



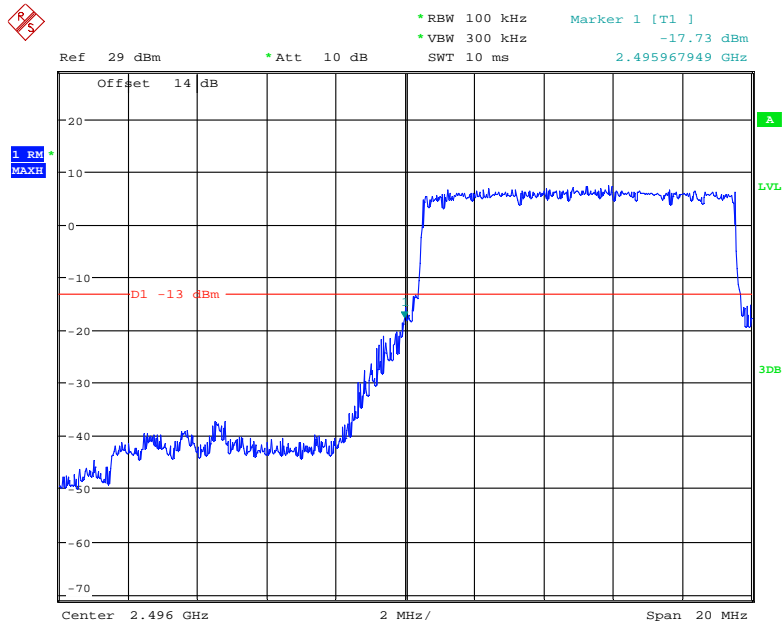
Date: 5.JUL.2018 11:38:22

16-QAM (5.0 MHz, FULL RB) - Right Band Edge



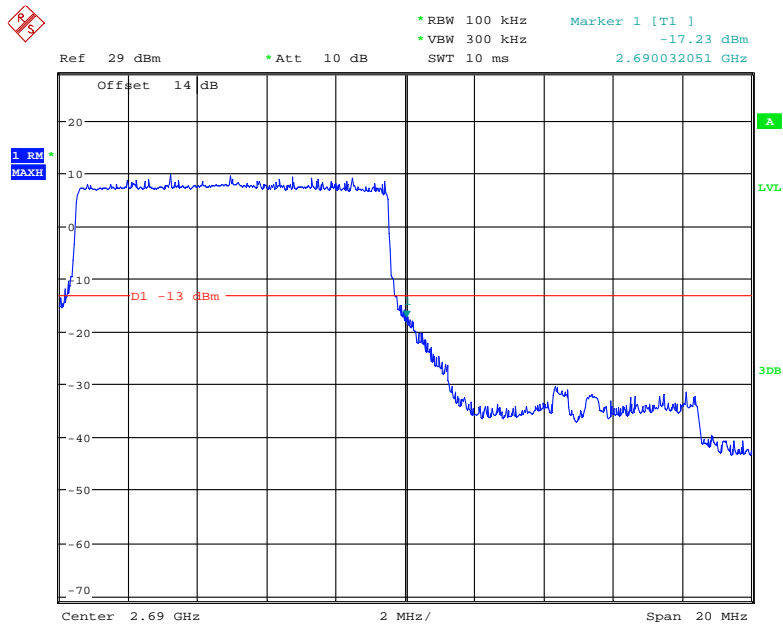
Date: 5.JUL.2018 11:39:42

QPSK (10.0 MHz, FULL RB) - Left Band Edge



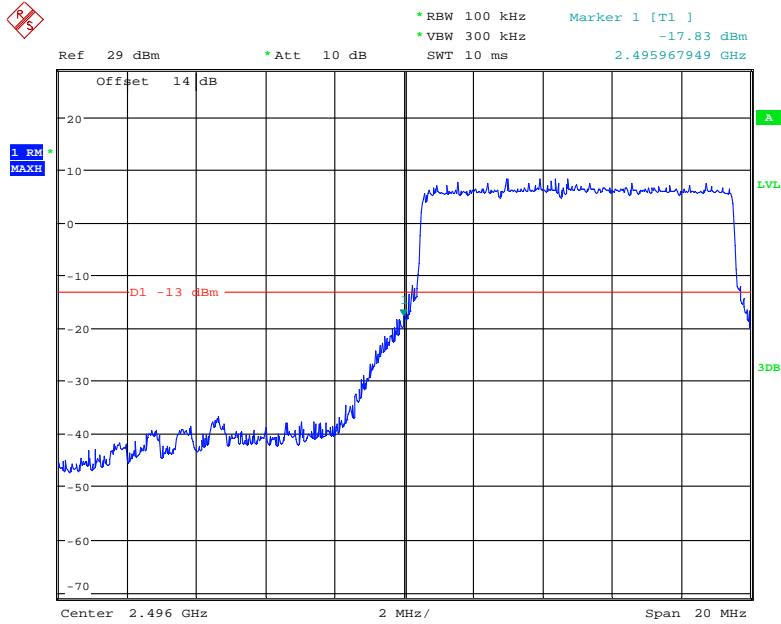
Date: 5.JUL.2018 11:43:48

QPSK (10.0 MHz, FULL RB) - Right Band Edge



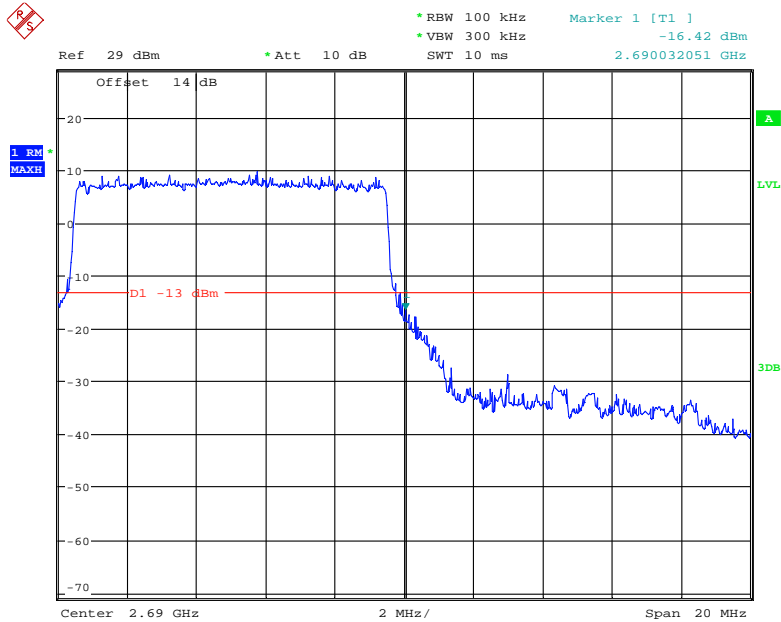
Date: 5.JUL.2018 11:41:40

16-QAM (10.0 MHz, FULL RB) - Left Band Edge



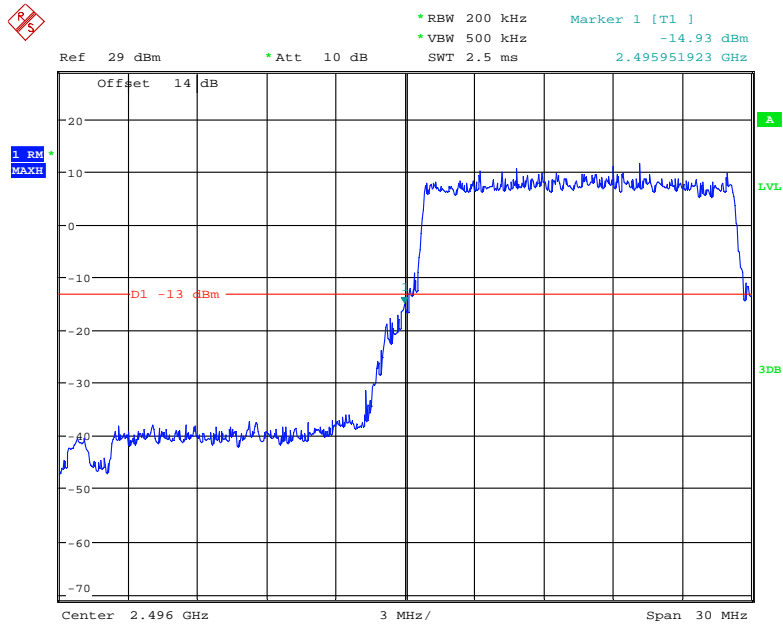
Date: 5.JUL.2018 11:43:26

16-QAM (10.0 MHz, FULL RB) - Right Band Edge



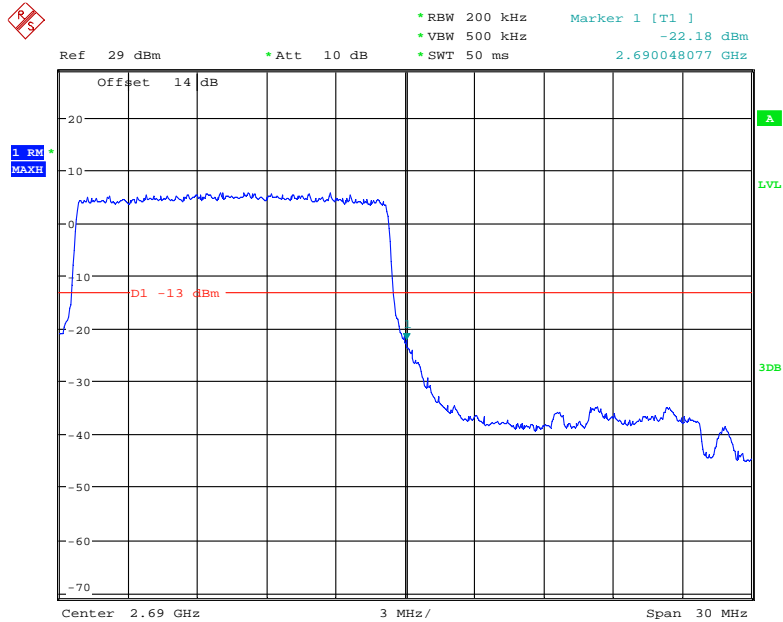
Date: 5.JUL.2018 11:42:37

QPSK (15.0 MHz, FULL RB) - Left Band Edge



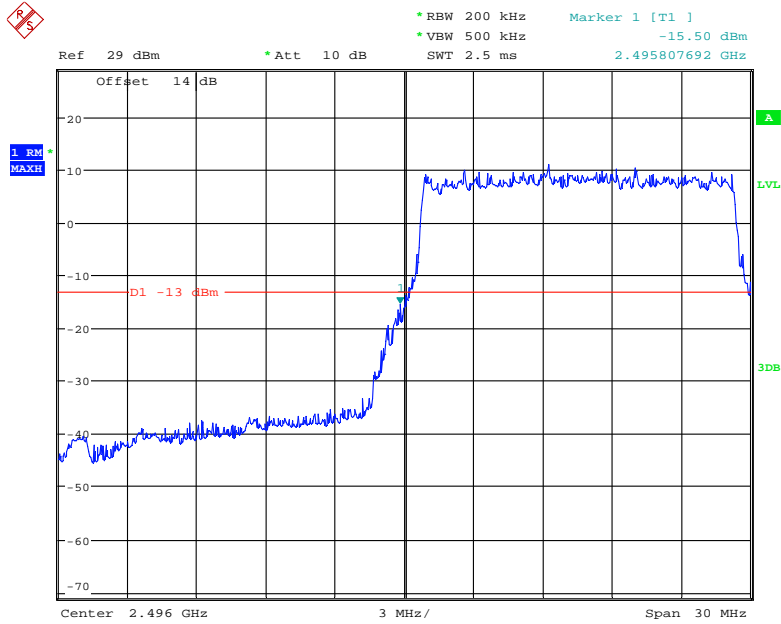
Date: 5.JUL.2018 11:45:37

QPSK (15.0 MHz, FULL RB) - Right Band Edge



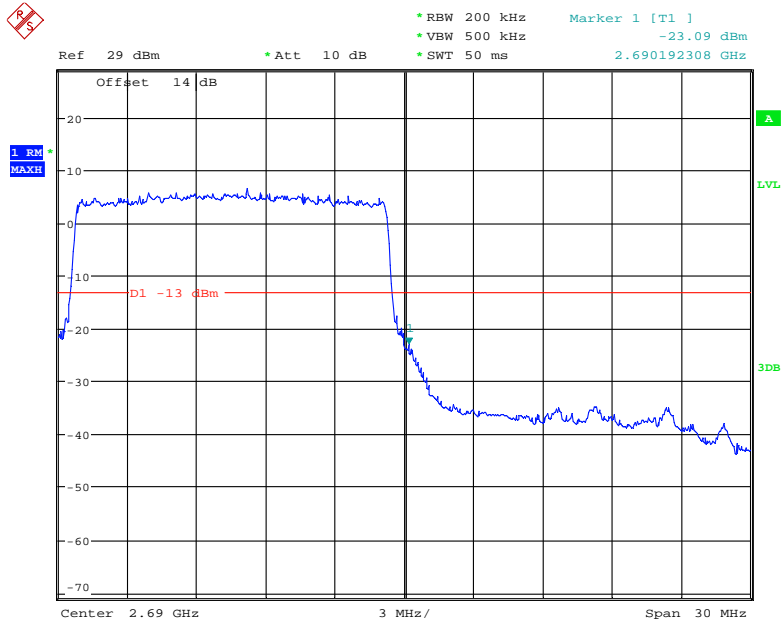
Date: 5.JUL.2018 11:47:08

16-QAM (15.0 MHz, FULL RB) - Left Band Edge



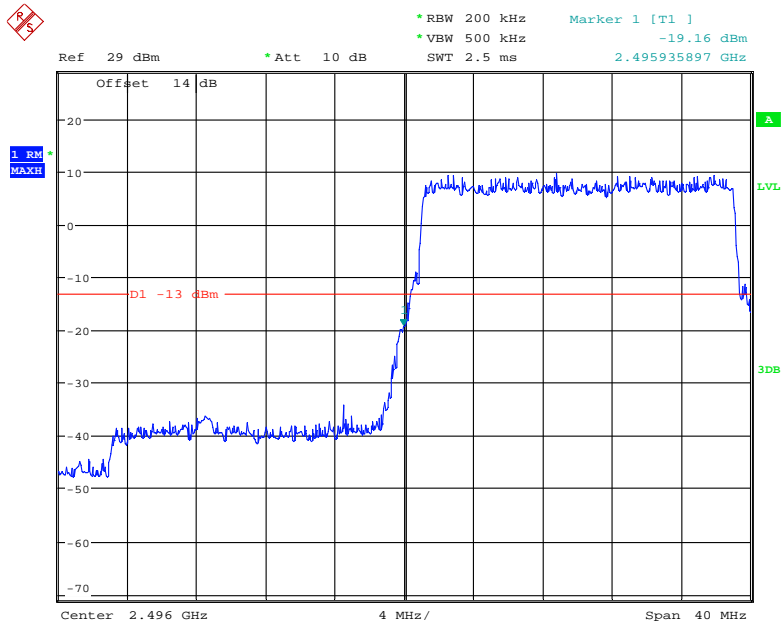
Date: 5.JUL.2018 11:44:47

16-QAM (15.0 MHz, FULL RB) - Right Band Edge



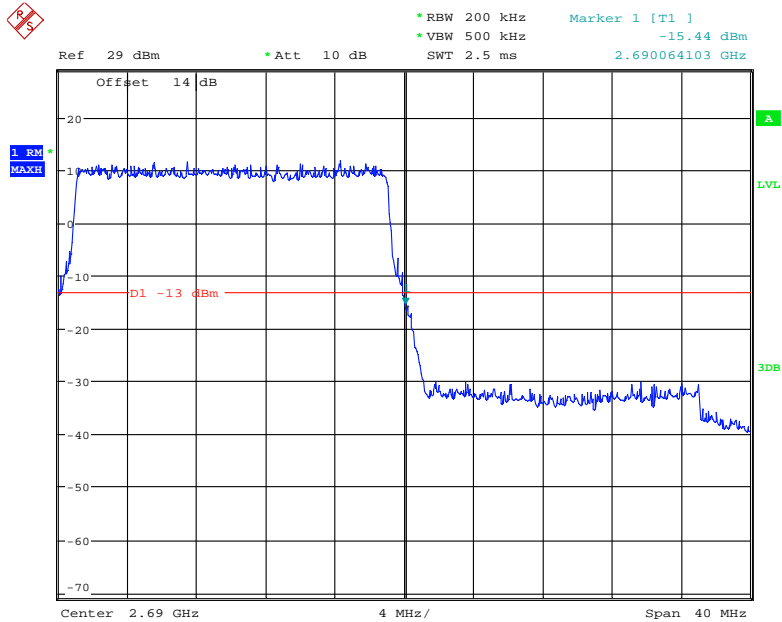
Date: 5.JUL.2018 11:47:43

QPSK (20.0 MHz, FULL RB) - Left Band Edge



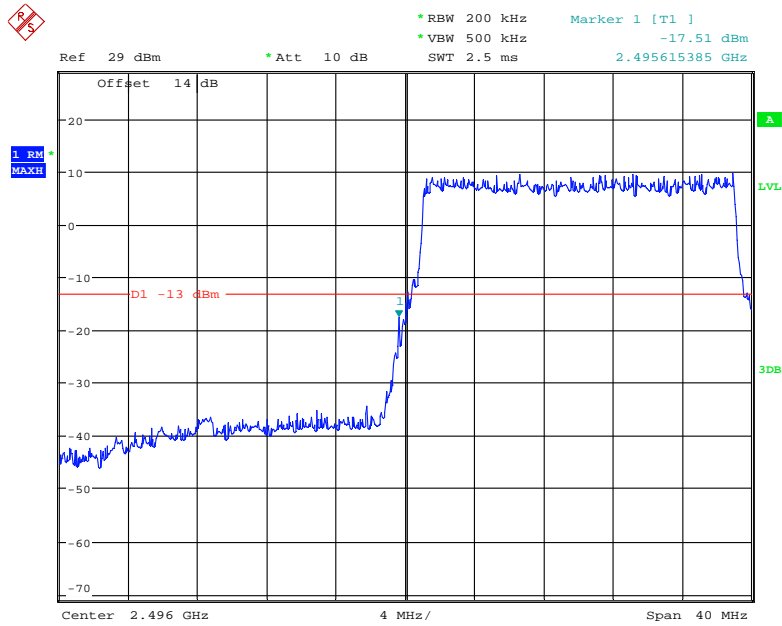
Date: 5.JUL.2018 11:57:22

QPSK (20.0 MHz, FULL RB) - Right Band Edge



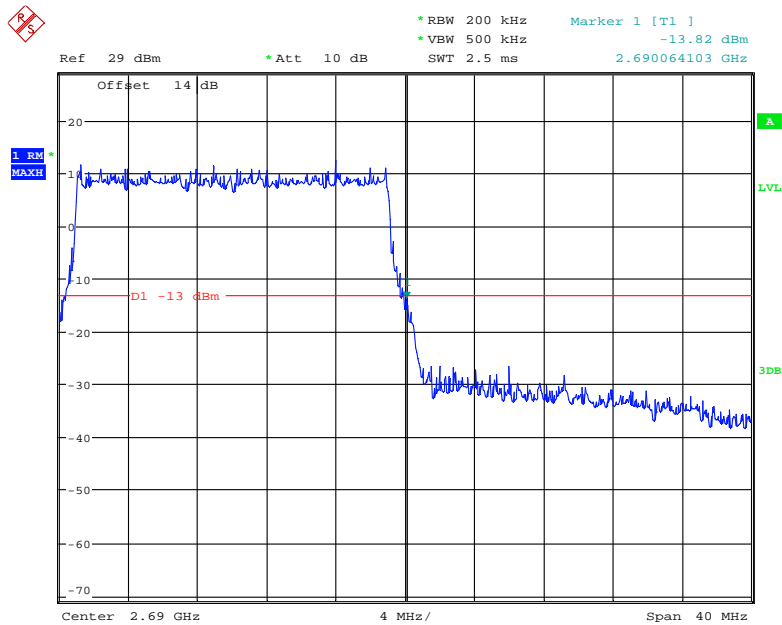
Date: 5.JUL.2018 11:53:58

16-QAM (20.0 MHz, FULL RB) - Left Band Edge



Date: 5.JUL.2018 11:55:58

16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 5.JUL.2018 11:54:56

FCC § 2.1055; §27.54 - FREQUENCY STABILITY

Applicable Standard

FCC § 2.1055, §27.54.

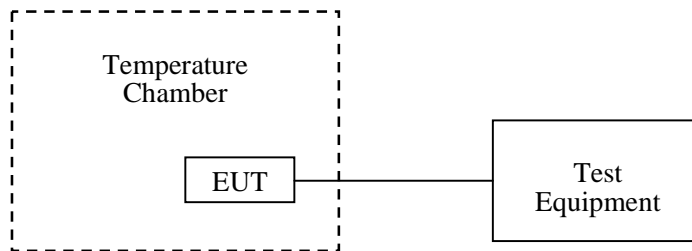
According to FCC §2.1055, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: For hand carried, battery powered equipment; reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



Test Data

Environmental Conditions

| | |
|---------------------------|-----------|
| Temperature: | 25 °C |
| Relative Humidity: | 53 % |
| ATM Pressure: | 101.2 kPa |

The testing was performed by Hill He on 2018-07-05.

EUT operation mode: Transmitting

Test Result: Compliance. Please refer to the following tables.

**LTE:
QPSK-20MHz:**

Band41:

| Temperature (°C) | Power Supplied (V _{AC}) | F _L (MHz) | F _H (MHz) | F _L Limit (MHz) | F _H Limit (MHz) |
|------------------|-----------------------------------|----------------------|----------------------|----------------------------|----------------------------|
| -30 | 120 | 2496.822 | 2689.333 | 2496 | 2690 |
| -20 | | 2496.754 | 2689.254 | 2496 | 2690 |
| -10 | | 2496.830 | 2689.350 | 2496 | 2690 |
| 0 | | 2496.824 | 2689.234 | 2496 | 2690 |
| 10 | | 2496.845 | 2689.211 | 2496 | 2690 |
| 20 | | 2496.858 | 2689.308 | 2496 | 2690 |
| 30 | | 2496.838 | 2689.303 | 2496 | 2690 |
| 40 | | 2496.876 | 2689.330 | 2496 | 2690 |
| 50 | | 2496.782 | 2689.299 | 2496 | 2690 |
| 20 | | V min.= 102 | 2496.842 | 2689.210 | 2496 |
| | V max.= 138 | 2496.790 | 2689.213 | 2496 | 2690 |

16QAM-20MHz:

Band 41:

| Temperature (°C) | Power Supplied (V _{AC}) | F _L (MHz) | F _H (MHz) | F _L Limit (MHz) | F _H Limit (MHz) |
|------------------|-----------------------------------|----------------------|----------------------|----------------------------|----------------------------|
| -30 | 120 | 2496.834 | 2689.289 | 2496 | 2690 |
| -20 | | 2496.791 | 2689.237 | 2496 | 2690 |
| -10 | | 2496.826 | 2689.301 | 2496 | 2690 |
| 0 | | 2496.825 | 2689.160 | 2496 | 2690 |
| 10 | | 2496.799 | 2689.204 | 2496 | 2690 |
| 20 | | 2496.792 | 2689.331 | 2496 | 2690 |
| 30 | | 2496.816 | 2689.318 | 2496 | 2690 |
| 40 | | 2496.843 | 2689.337 | 2496 | 2690 |
| 50 | | 2496.868 | 2689.259 | 2496 | 2690 |
| 20 | | V min.= 102 | 2496.853 | 2689.256 | 2496 |
| | V max.= 138 | 2496.772 | 2689.258 | 2496 | 2690 |

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