**Band 4:**

| Bandwidth (MHz) | Modulation | Channel | 99% Occupied Bandwidth (MHz) | 26 dB Emission Bandwidth (MHz) |
|---|---|---|---|---|
| 1.4 | QPSK | Low | 1.096 | 1.296 |
| | | Middle | 1.096 | 1.314 |
| | | High | 1.102 | 1.284 |
| | 16QAM | Low | 1.096 | 1.314 |
| | | Middle | 1.096 | 1.308 |
| | | High | 1.096 | 1.296 |
| 3 | QPSK | Low | 2.683 | 2.880 |
| | | Middle | 2.695 | 2.880 |
| | | High | 2.683 | 2.880 |
| | 16QAM | Low | 2.683 | 2.892 |
| | | Middle | 2.683 | 2.880 |
| | | High | 2.683 | 2.880 |
| 5 | QPSK | Low | 4.511 | 4.960 |
| | | Middle | 4.511 | 4.980 |
| | | High | 4.491 | 4.940 |
| | 16QAM | Low | 4.491 | 4.900 |
| | | Middle | 4.511 | 4.960 |
| | | High | 4.511 | 4.980 |
| 10 | QPSK | Low | 8.942 | 9.640 |
| | | Middle | 8.942 | 9.600 |
| | | High | 8.982 | 9.640 |
| | 16QAM | Low | 8.942 | 9.600 |
| | | Middle | 8.942 | 9.680 |
| | | High | 8.981 | 9.600 |
| 15 | QPSK | Low | 13.533 | 14.580 |
| | | Middle | 13.413 | 14.520 |
| | | High | 13.473 | 14.640 |
| | 16QAM | Low | 13.473 | 14.640 |
| | | Middle | 13.473 | 14.580 |
| | | High | 13.473 | 14.580 |
| 20 | QPSK | Low | 18.044 | 19.280 |
| | | Middle | 17.884 | 19.280 |
| | | High | 17.964 | 19.200 |
| | 16QAM | Low | 18.044 | 19.440 |
| | | Middle | 17.884 | 19.360 |
| | | High | 17.964 | 19.120 |

**Band 5:**

| Bandwidth (MHz) | Modulation | Channel | 99% Occupied Bandwidth (MHz) | 26 dB Emission Bandwidth (MHz) |
|---|---|---|---|---|
| 1.4 | QPSK | Low | 1.108 | 1.338 |
| | | Middle | 1.102 | 1.290 |
| | | High | 1.102 | 1.314 |
| | 16QAM | Low | 1.102 | 1.350 |
| | | Middle | 1.090 | 1.284 |
| | | High | 1.102 | 1.428 |
| 3 | QPSK | Low | 2.683 | 2.880 |
| | | Middle | 2.683 | 2.868 |
| | | High | 2.683 | 2.892 |
| | 16QAM | Low | 2.683 | 2.868 |
| | | Middle | 2.683 | 2.880 |
| | | High | 2.683 | 2.868 |
| 5 | QPSK | Low | 4.511 | 4.940 |
| | | Middle | 4.531 | 5.660 |
| | | High | 4.511 | 4.960 |
| | 16QAM | Low | 4.531 | 4.960 |
| | | Middle | 4.511 | 4.960 |
| | | High | 4.511 | 4.940 |
| 10 | QPSK | Low | 8.942 | 9.640 |
| | | Middle | 8.942 | 9.600 |
| | | High | 8.942 | 9.560 |
| | 16QAM | Low | 8.942 | 9.560 |
| | | Middle | 8.942 | 9.600 |
| | | High | 8.942 | 9.640 |

**Band 7**

| Bandwidth (MHz) | Modulation | Channel | 99% Occupied Bandwidth (MHz) | 26 dB Emission Bandwidth (MHz) |
|---|---|---|---|---|
| 5 | QPSK | Low | 4.511 | 4.960 |
| | | Middle | 4.511 | 4.960 |
| | | High | 4.491 | 4.940 |
| | 16QAM | Low | 4.491 | 4.920 |
| | | Middle | 4.511 | 4.940 |
| | | High | 4.491 | 4.980 |
| 10 | QPSK | Low | 8.942 | 9.680 |
| | | Middle | 8.942 | 9.600 |
| | | High | 8.942 | 9.680 |
| | 16QAM | Low | 8.942 | 9.600 |
| | | Middle | 8.942 | 9.600 |
| | | High | 8.942 | 9.640 |
| 15 | QPSK | Low | 13.533 | 14.640 |
| | | Middle | 13.413 | 14.580 |
| | | High | 13.473 | 14.520 |
| | 16QAM | Low | 13.473 | 14.580 |
| | | Middle | 13.533 | 14.640 |
| | | High | 13.473 | 14.640 |
| 20 | QPSK | Low | 18.044 | 19.200 |
| | | Middle | 17.884 | 19.200 |
| | | High | 17.964 | 19.360 |
| | 16QAM | Low | 18.044 | 19.280 |
| | | Middle | 17.964 | 20.000 |
| | | High | 17.964 | 19.280 |

**Band 17**

| Bandwidth (MHz) | Modulation | Channel | 99% Occupied Bandwidth (MHz) | 26 dB Emission Bandwidth (MHz) |
|---|---|---|---|---|
| 5 | QPSK | Low | 4.531 | 5.240 |
| | | Middle | 4.531 | 5.260 |
| | | High | 4.531 | 5.180 |
| | 16QAM | Low | 4.551 | 5.420 |
| | | Middle | 4.551 | 5.200 |
| | | High | 4.571 | 5.220 |
| 10 | QPSK | Low | 8.942 | 9.840 |
| | | Middle | 8.942 | 9.840 |
| | | High | 8.942 | 9.800 |
| | 16QAM | Low | 8.942 | 9.920 |
| | | Middle | 8.942 | 9.840 |
| | | High | 8.942 | 9.840 |

## LTE Band 38:

| Bandwidth (MHz) | Modulation | Channel | 99% Occupied Bandwidth (MHz) | 26 dB Emission Bandwidth (MHz) |
|---|---|---|---|---|
| 5 | QPSK | Low | 4.511 | 5.040 |
| | | Middle | 4.511 | 5.020 |
| | | High | 4.511 | 5.120 |
| | 16QAM | Low | 4.511 | 4.980 |
| | | Middle | 4.511 | 5.180 |
| | | High | 4.511 | 4.960 |
| 10 | QPSK | Low | 8.982 | 9.560 |
| | | Middle | 8.942 | 9.680 |
| | | High | 8.942 | 9.680 |
| | 16QAM | Low | 8.942 | 9.600 |
| | | Middle | 8.942 | 9.520 |
| | | High | 8.942 | 9.560 |
| 15 | QPSK | Low | 13.473 | 14.640 |
| | | Middle | 13.413 | 14.460 |
| | | High | 13.413 | 14.580 |
| | 16QAM | Low | 13.533 | 14.640 |
| | | Middle | 13.533 | 14.640 |
| | | High | 13.473 | 14.580 |
| 20 | QPSK | Low | 17.884 | 19.120 |
| | | Middle | 17.884 | 19.120 |
| | | High | 17.884 | 19.200 |
| | 16QAM | Low | 17.884 | 19.040 |
| | | Middle | 17.884 | 19.520 |
| | | High | 17.964 | 19.520 |

## LTE Band 41:

| Bandwidth (MHz) | Modulation | Channel | 99% Occupied Bandwidth (MHz) | 26 dB Emission Bandwidth (MHz) |
|---|---|---|---|---|
| 5 | QPSK | Low | 4.491 | 4.960 |
| | | Middle | 4.511 | 4.980 |
| | | High | 4.511 | 4.960 |
| | 16QAM | Low | 4.491 | 4.960 |
| | | Middle | 4.511 | 5.200 |
| | | High | 4.511 | 4.960 |
| 10 | QPSK | Low | 8.982 | 9.880 |
| | | Middle | 8.942 | 9.680 |
| | | High | 8.982 | 9.720 |
| | 16QAM | Low | 8.982 | 9.520 |
| | | Middle | 8.942 | 9.560 |
| | | High | 8.942 | 9.800 |
| 15 | QPSK | Low | 13.473 | 14.760 |
| | | Middle | 13.413 | 14.580 |
| | | High | 13.473 | 14.640 |
| | 16QAM | Low | 13.473 | 15.720 |
| | | Middle | 13.533 | 14.700 |
| | | High | 13.533 | 15.420 |
| 20 | QPSK | Low | 17.964 | 19.120 |
| | | Middle | 17.884 | 19.040 |
| | | High | 17.884 | 19.920 |
| | 16QAM | Low | 17.884 | 19.200 |
| | | Middle | 17.884 | 19.600 |
| | | High | 17.884 | 19.280 |

## LTE Band 66

| Bandwidth (MHz) | Modulation | Channel | 99% Occupied Bandwidth (MHz) | 26 dB Emission Bandwidth (MHz) |
|---|---|---|---|---|
| 1.4 | QPSK | Low | 1.102 | 1.356 |
| | | Middle | 1.108 | 1.338 |
| | | High | 1.102 | 1.290 |
| | 16QAM | Low | 1.108 | 1.332 |
| | | Middle | 1.090 | 1.284 |
| | | High | 1.096 | 1.296 |
| 3 | QPSK | Low | 2.695 | 2.892 |
| | | Middle | 2.683 | 2.880 |
| | | High | 2.683 | 2.892 |
| | 16QAM | Low | 2.683 | 2.940 |
| | | Middle | 2.683 | 2.880 |
| | | High | 2.683 | 2.868 |
| 5 | QPSK | Low | 4.551 | 5.220 |
| | | Middle | 4.531 | 5.200 |
| | | High | 4.511 | 5.180 |
| | 16QAM | Low | 4.531 | 5.120 |
| | | Middle | 4.531 | 5.200 |
| | | High | 4.551 | 5.240 |
| 10 | QPSK | Low | 8.982 | 9.960 |
| | | Middle | 8.982 | 9.800 |
| | | High | 8.982 | 9.880 |
| | 16QAM | Low | 8.942 | 9.840 |
| | | Middle | 8.982 | 9.880 |
| | | High | 8.982 | 9.920 |
| 15 | QPSK | Low | 13.593 | 14.940 |
| | | Middle | 13.473 | 14.700 |
| | | High | 13.533 | 14.820 |
| | 16QAM | Low | 13.533 | 14.820 |
| | | Middle | 13.533 | 14.760 |
| | | High | 13.533 | 14.640 |
| 20 | QPSK | Low | 18.044 | 19.600 |
| | | Middle | 17.964 | 19.520 |
| | | High | 17.884 | 19.760 |
| | 16QAM | Low | 18.044 | 19.760 |
| | | Middle | 18.044 | 19.520 |
| | | High | 17.884 | 19.440 |

The test plots of LTE band please refer to the Appendix A.

# FCC §2.1051, §22.917(a) & §24.238(a); §27.53 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

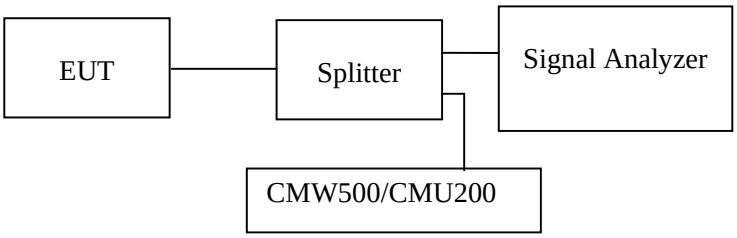
## Applicable Standard

FCC §2.1051, §22.917(a) and §24.238(a) and §27.53.

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 $10^{th}$ harmonic.




## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 25 ℃ |
| **Relative Humidity:** | 55 % |
| **ATM Pressure:** | 101.0 kPa |

*The testing was performed by Gavin Guo from 2021-02-05 to 2021-03-17.*

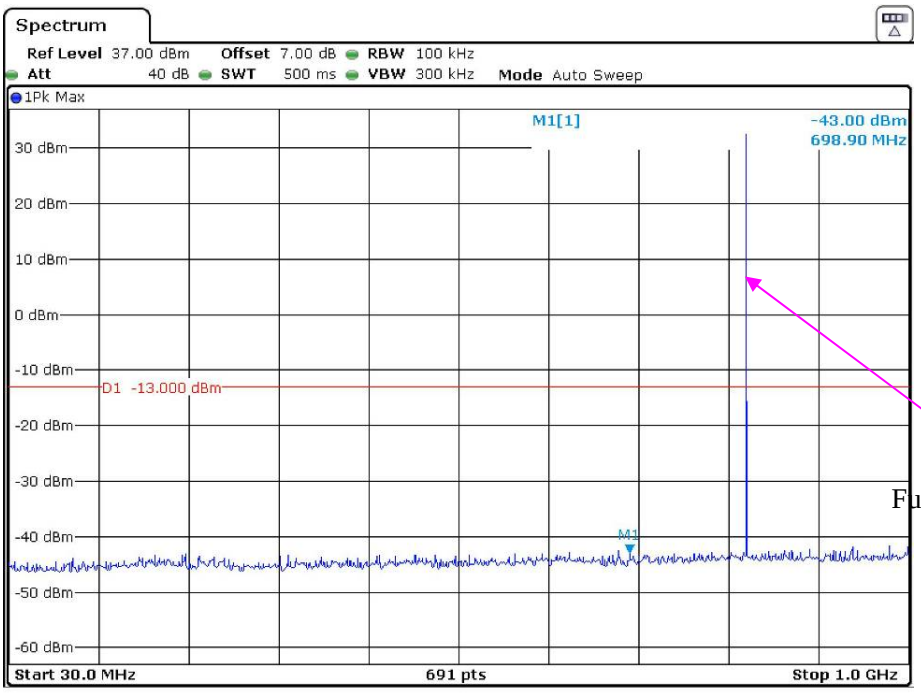
*EUT operation mode: Transmitting*

**Test result: Pass**

*Please refer to the following plots.*

**Cellular Band (Part 22H)**
**Low Channel:**

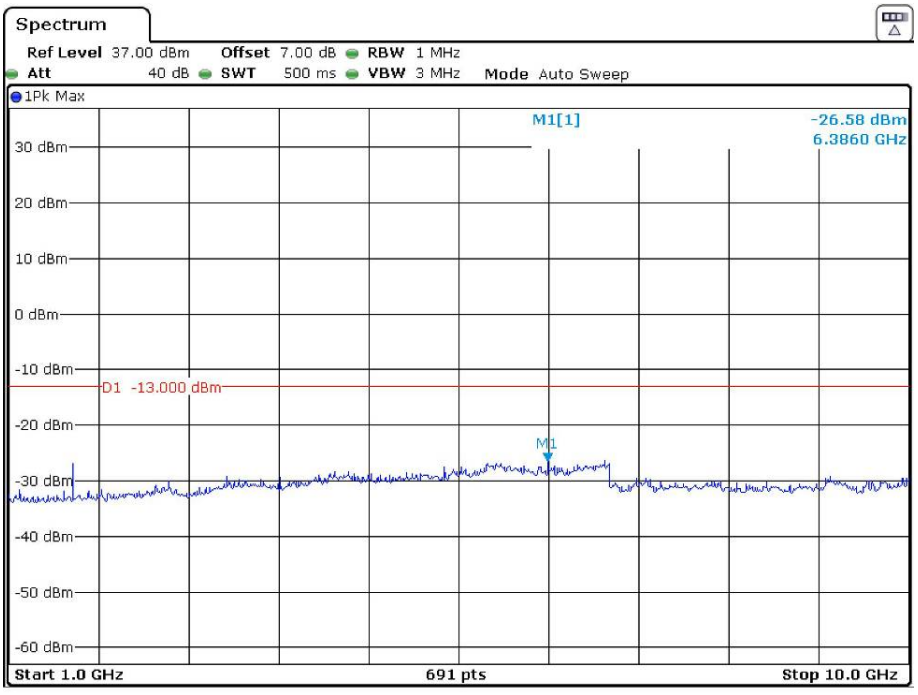
**30 MHz – 1 GHz (GSM Mode)**




Fundamental test

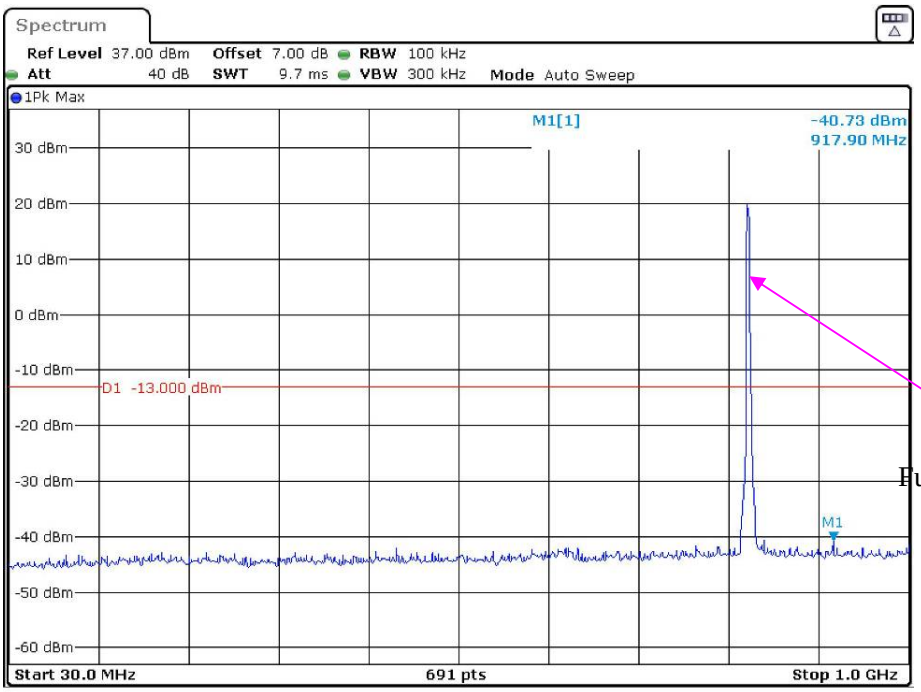
Date: 19.FEB.2021 14:43:28

**1 GHz – 10 GHz (GSM Mode)**




Date: 19.FEB.2021 14:39:39

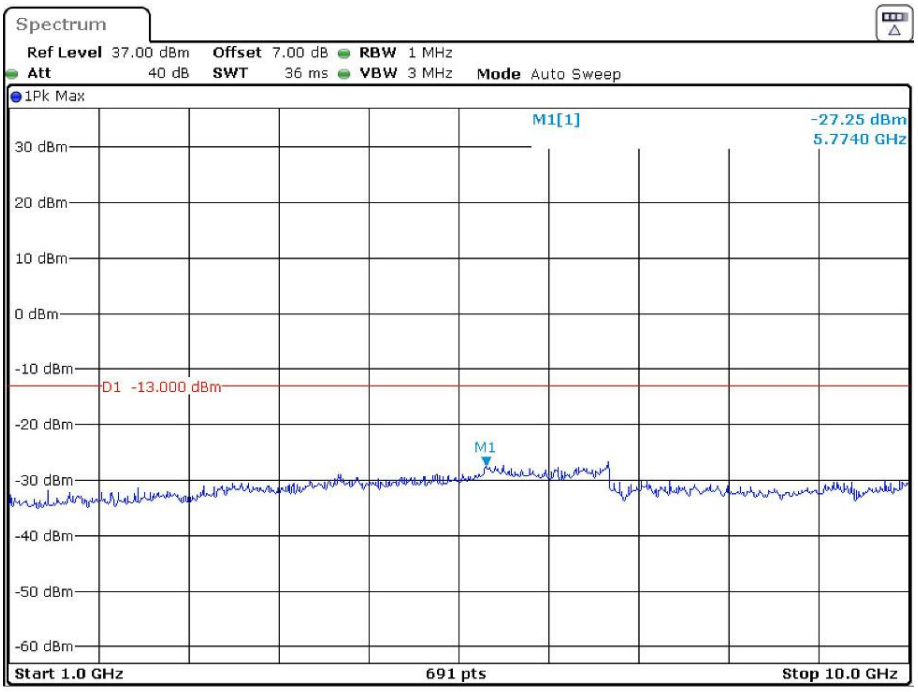
**30 MHz – 1 GHz (WCDMA Mode)**




Fundamental test

Date: 19.FEB.2021 19:54:39

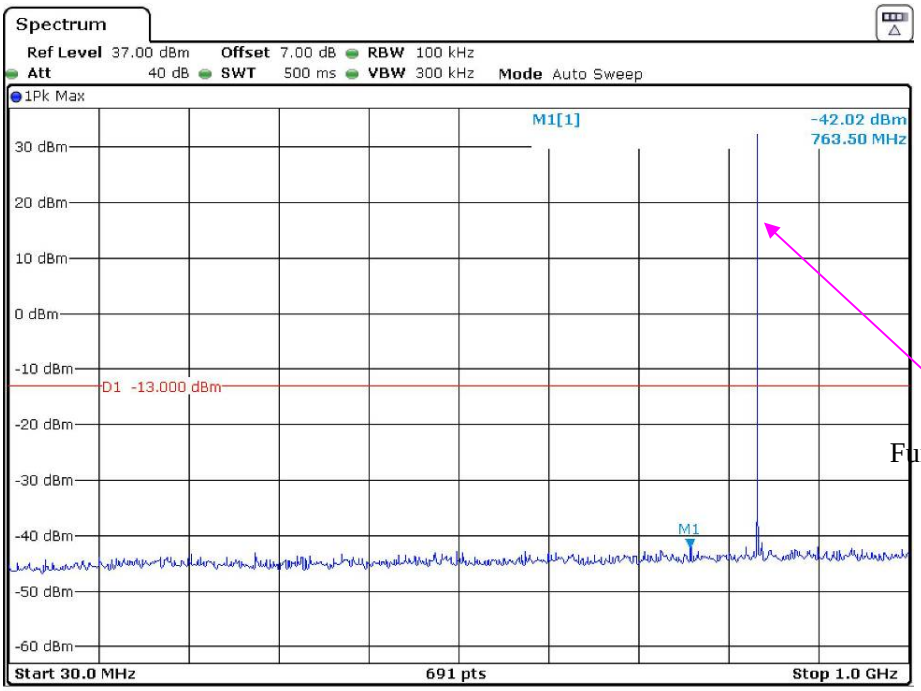
**1 GHz – 10 GHz (WCDMA Mode)**




Date: 19.FEB.2021 19:52:55

**Middle Channel:**

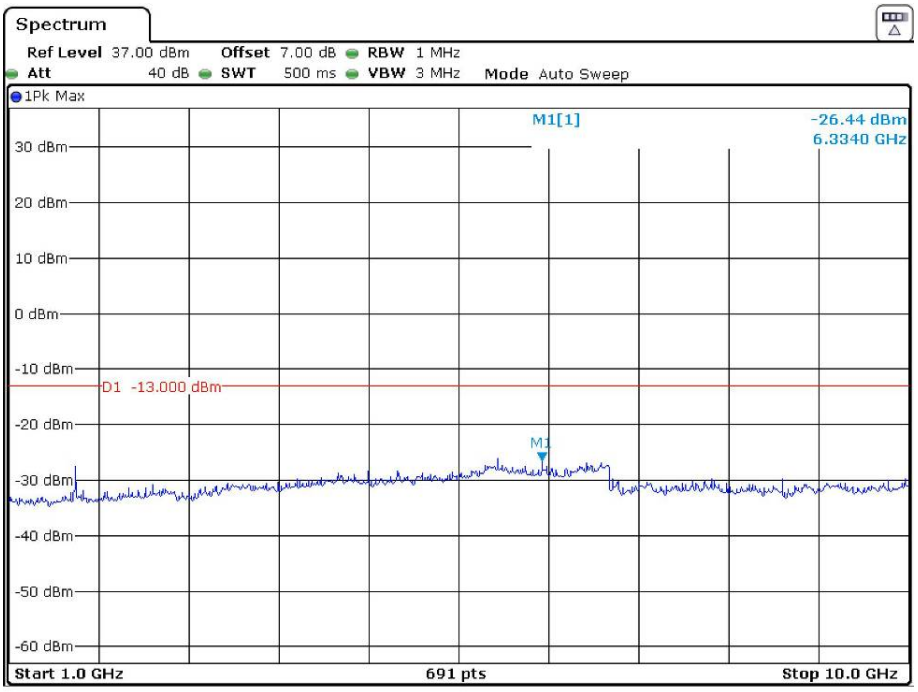
**30 MHz – 1 GHz (GSM Mode)**




Fundamental test

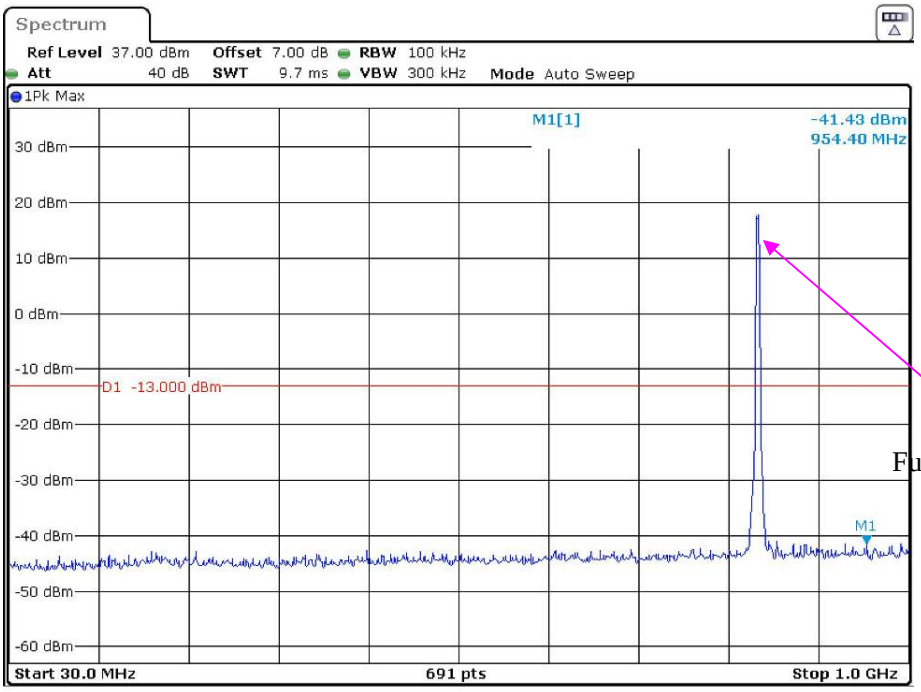
Date: 19.FEB.2021 14:42:50

**1 GHz – 10 GHz (GSM Mode)**




Date: 19.FEB.2021 14:40:05

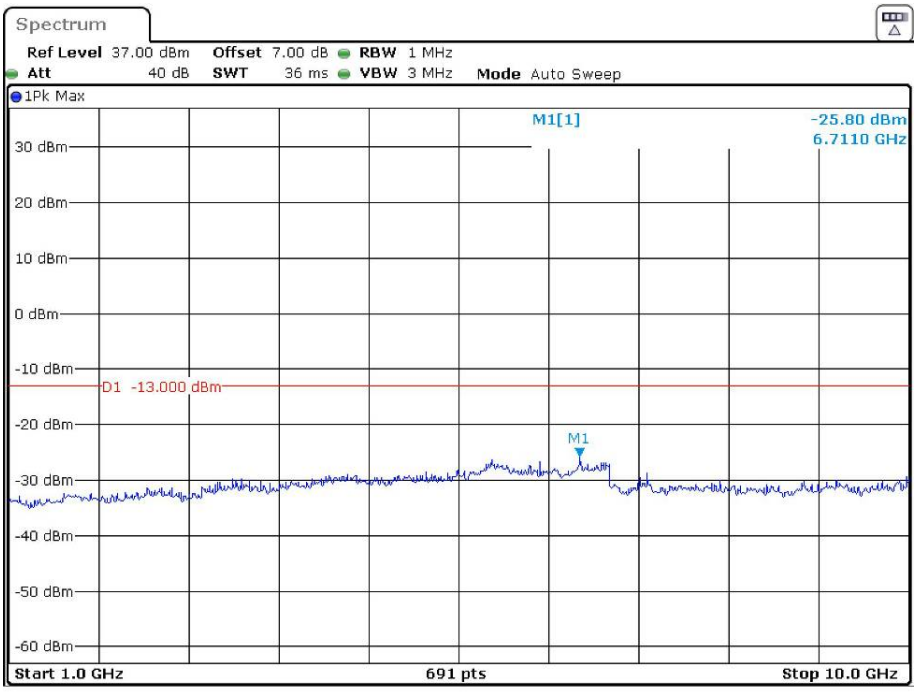
**30 MHz – 1 GHz (WCDMA Mode)**




Fundamental test

Date: 19.FEB.2021 19:55:11

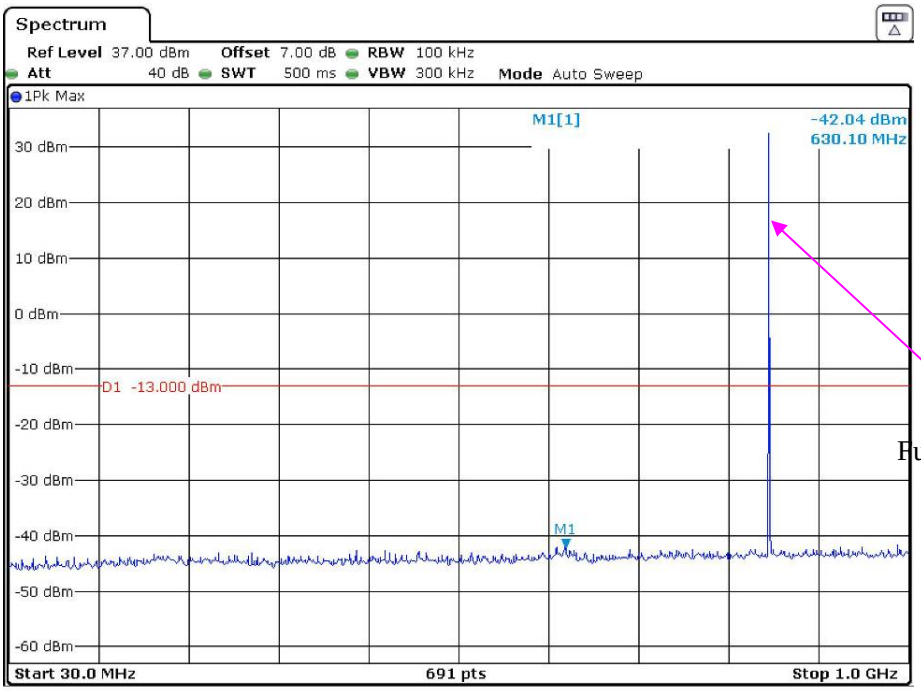
**1 GHz – 10 GHz (WCDMA Mode)**




Date: 19.FEB.2021 19:52:23

**High Channel:**

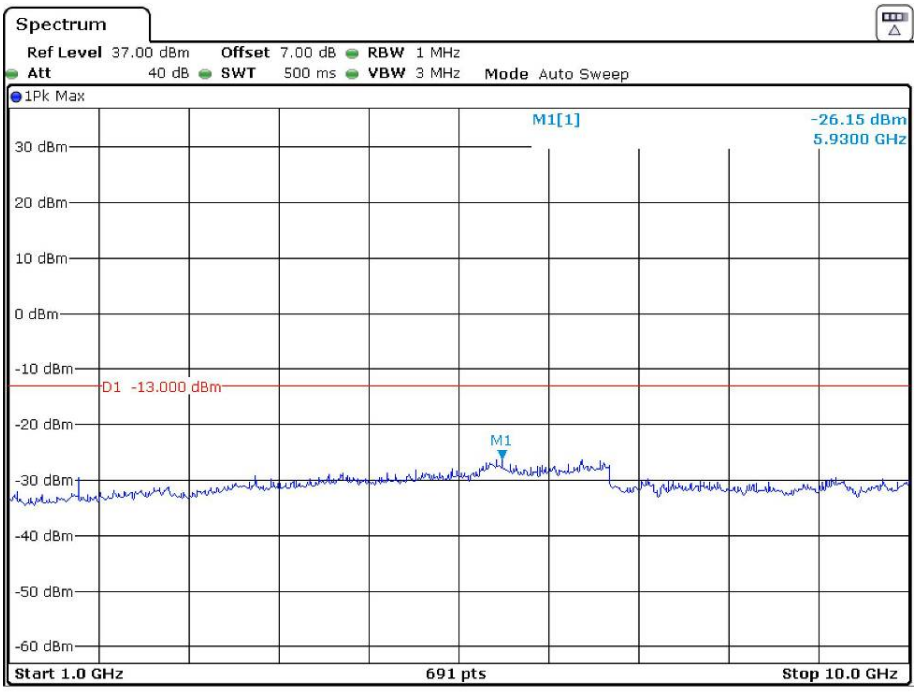
**30 MHz – 1 GHz (GSM Mode)**




Fundamental test

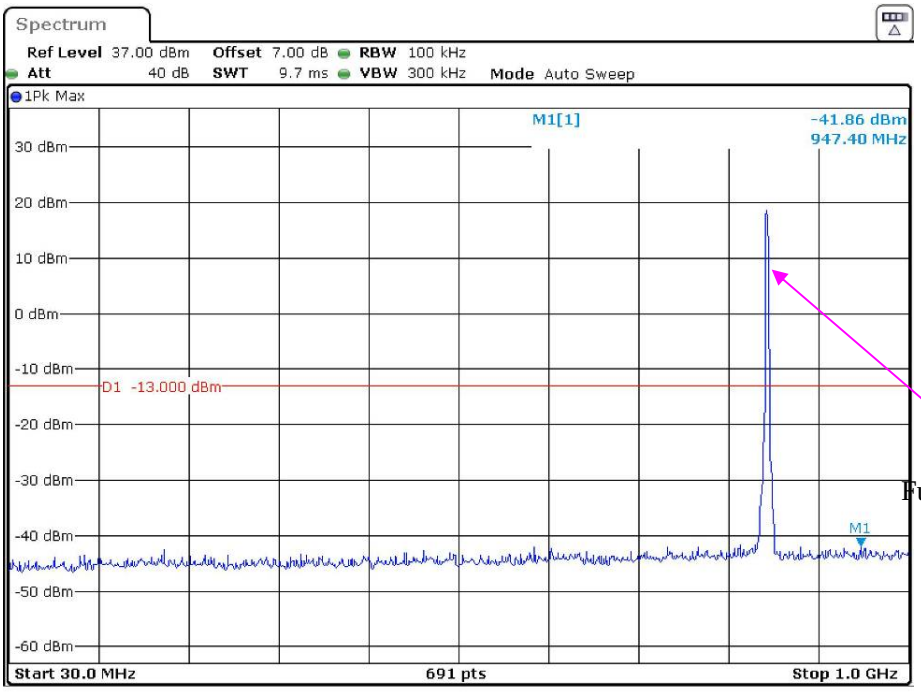
Date: 19.FEB.2021 14:42:08

**1 GHz – 10 GHz (GSM Mode)**




Date: 19.FEB.2021 14:40:31

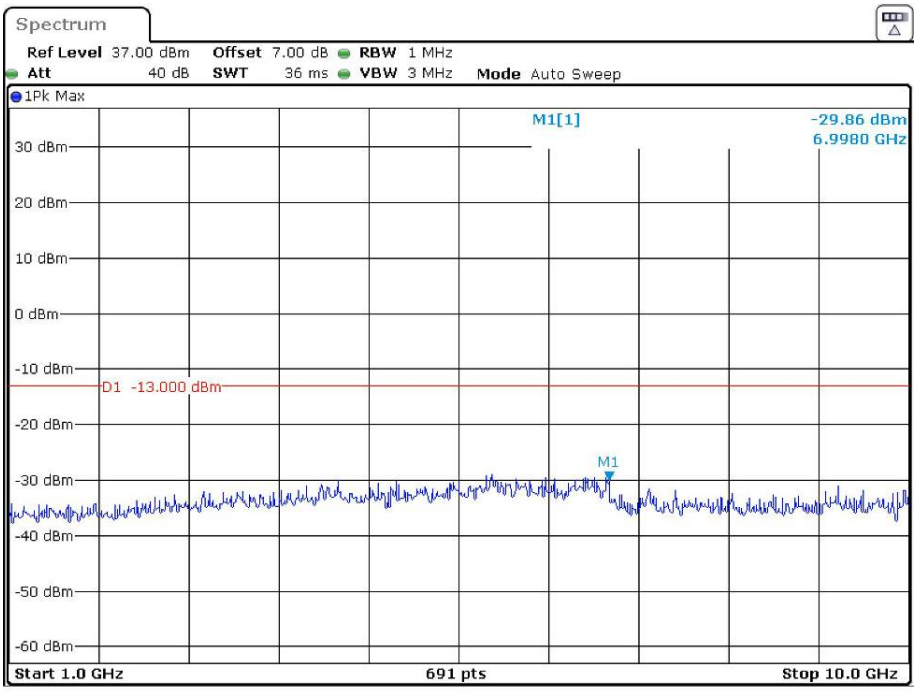
**30 MHz – 1 GHz (WCDMA Mode)**




Fundamental test

Date: 19.FEB.2021 19:55:40

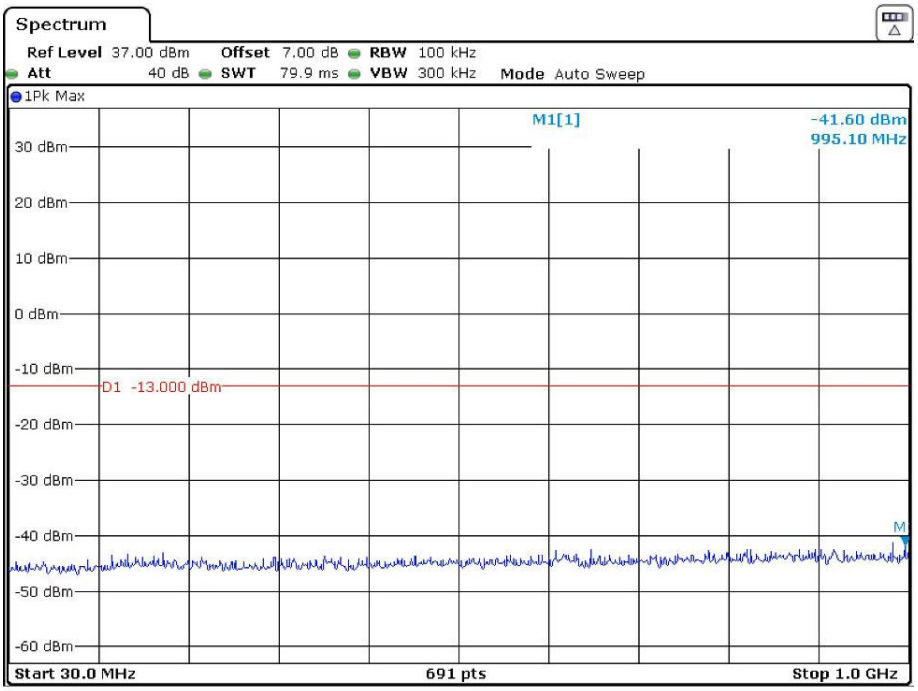
**1 GHz – 10 GHz (WCDMA Mode)**




Date: 19.FEB.2021 19:51:35

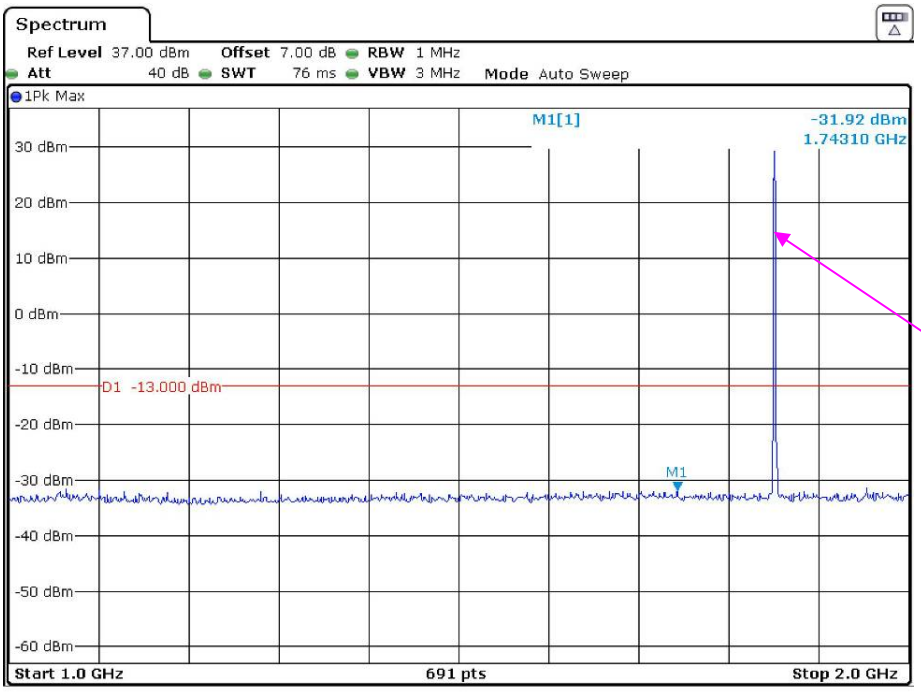
**PCS Band (Part 24E) Low Channel:**

**30 MHz – 1 GHz (GSM Mode)**




Date: 19.FEB.2021 15:32:29

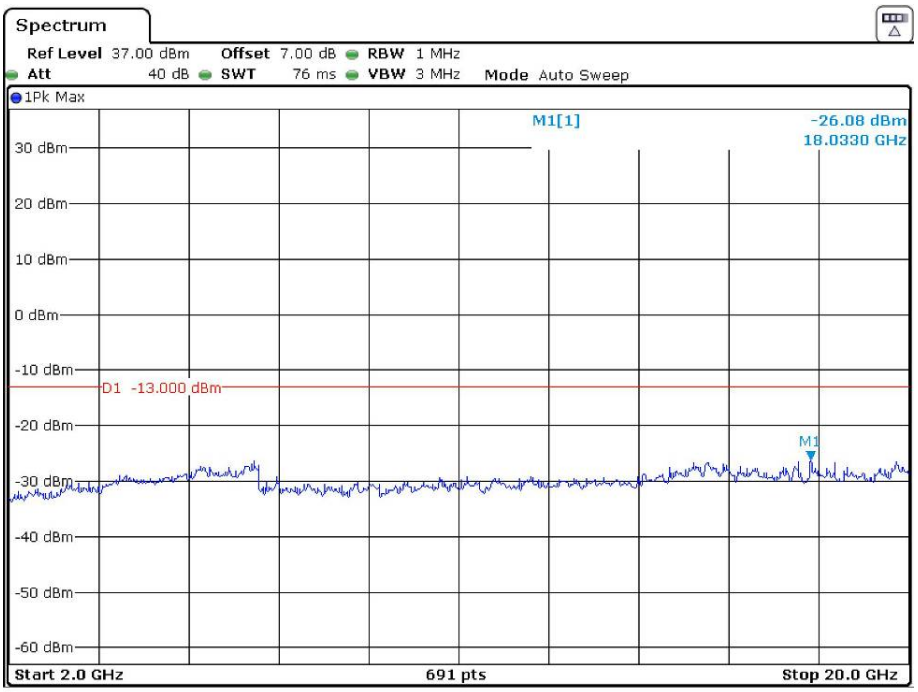
**1 GHz – 2 GHz (GSM Mode)**




Fundamental test

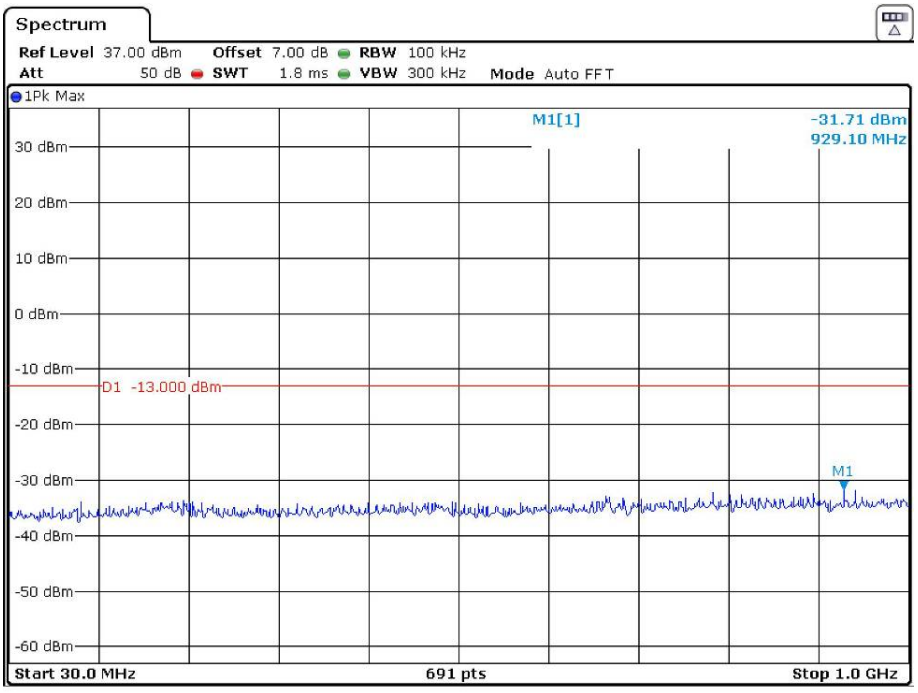
Date: 19.FEB.2021 15:31:14

**2 GHz – 2 0GHz (GSM Mode)**




Date: 19.FEB.2021 15:31:50

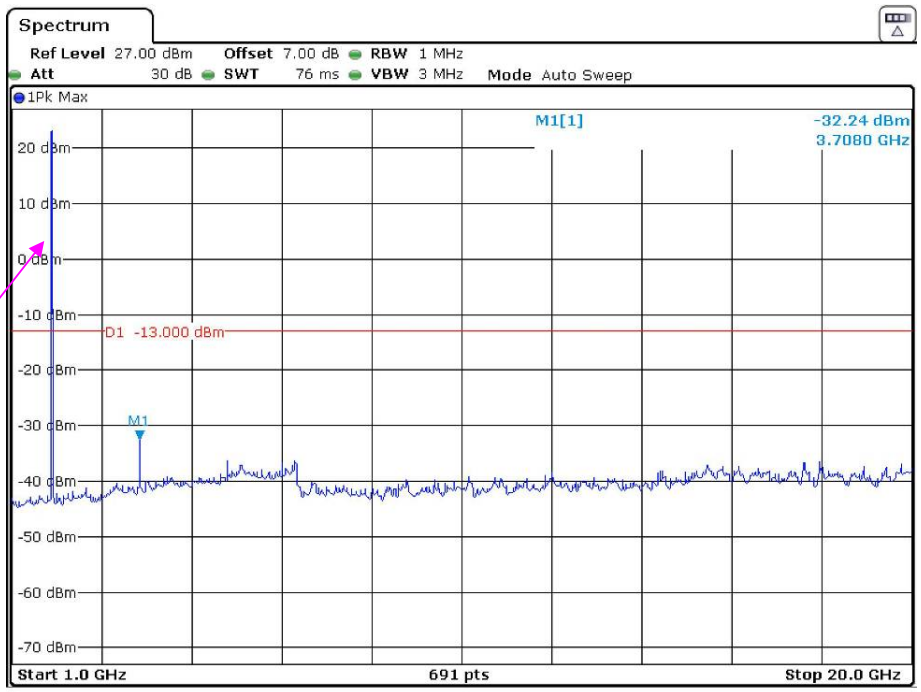
**30 MHz – 1 GHz (WCDMA Mode)**




Date: 19.FEB.2021 18:53:06

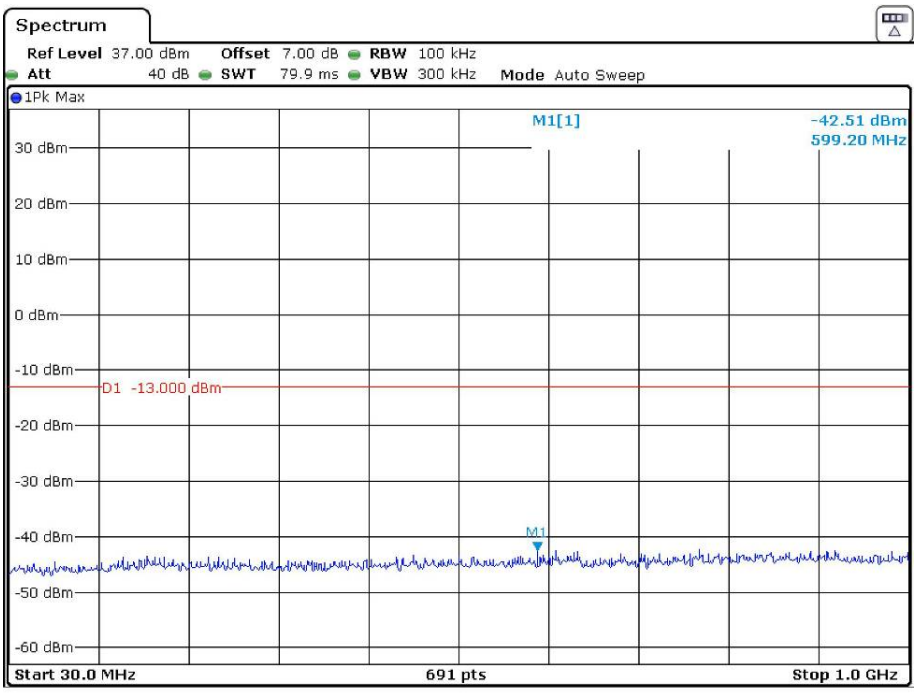
**1 GHz – 20 GHz (WCDMA Mode)**

Fundamental test

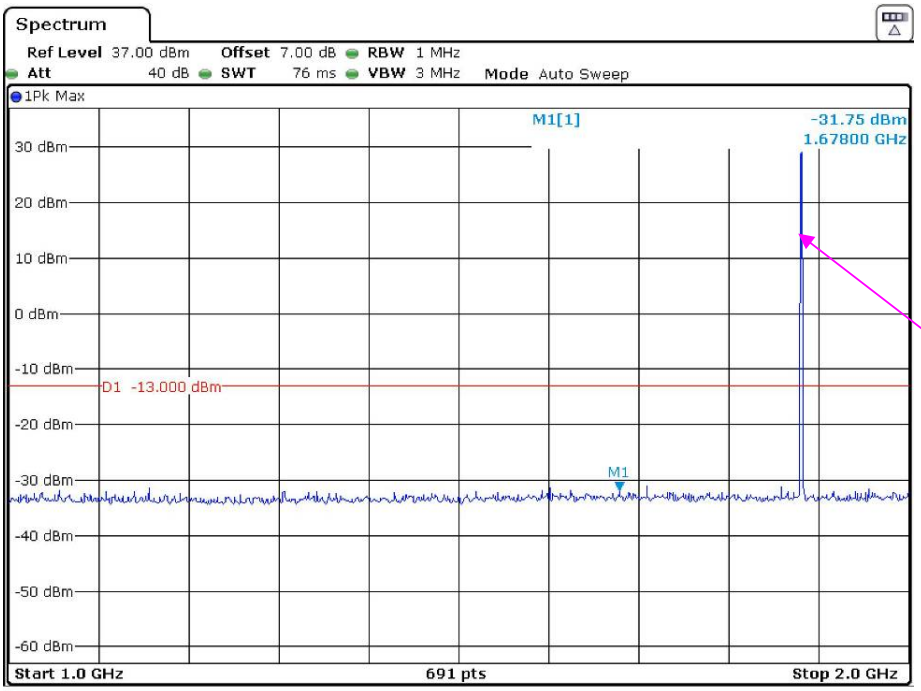



**Middle Channel:**

**30 MHz – 1 GHz (GSM Mode)**



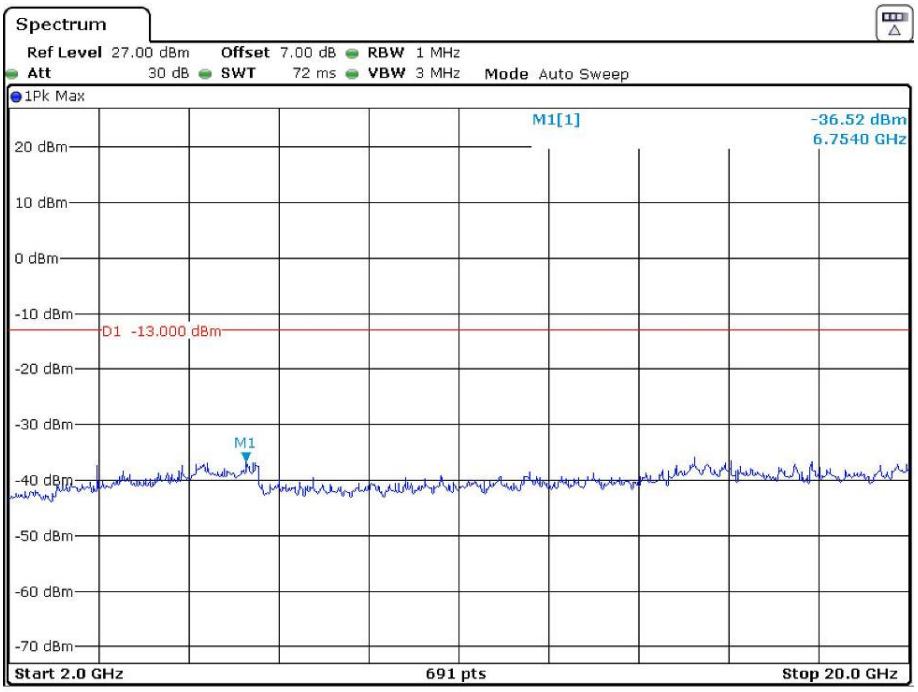
**1 GHz – 2 GHz (GSM Mode)**




Fundamental test

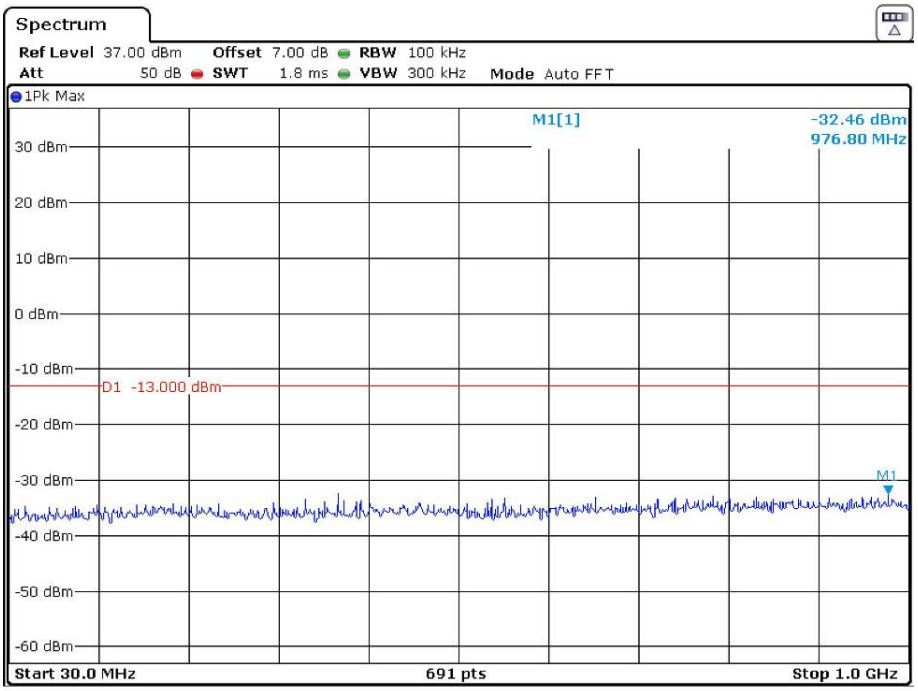
Date: 19.FEB.2021 15:30:34

**2 GHz – 20GHz (GSM Mode)**




Date: 19.FEB.2021 15:29:42

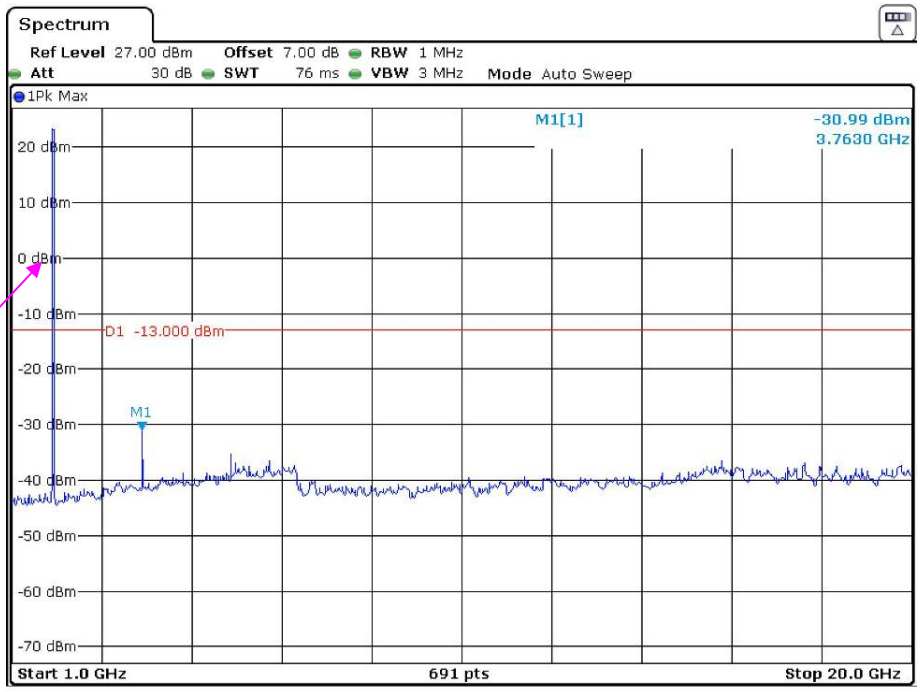
**30 MHz – 1 GHz (WCDMA Mode)**




Date: 19.FEB.2021 18:53:38

**1 GHz – 20 GHz (WCDMA Mode)**

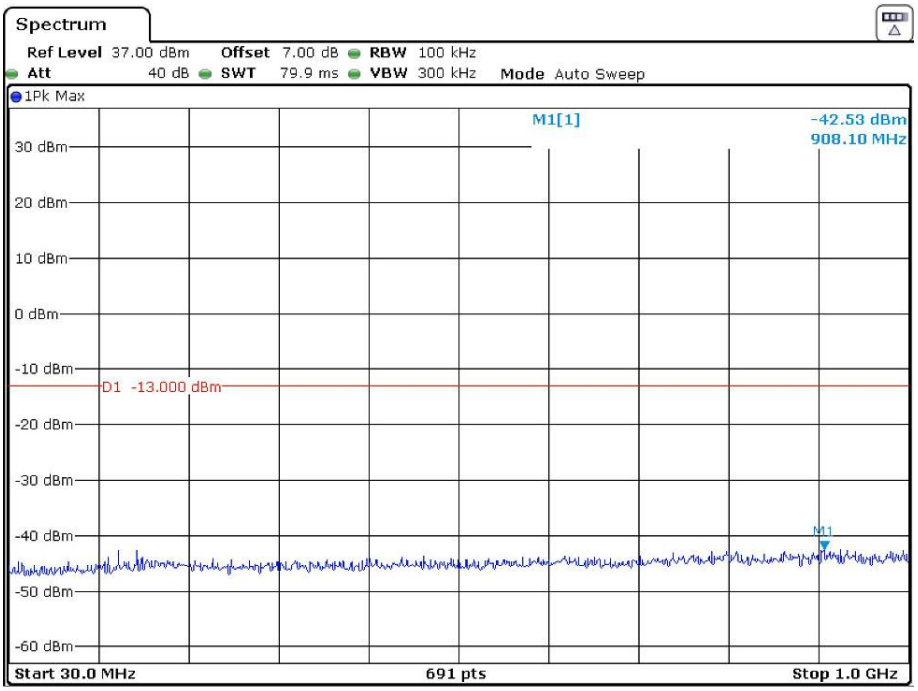
Fundamental test




Date: 19.FEB.2021 18:55:24

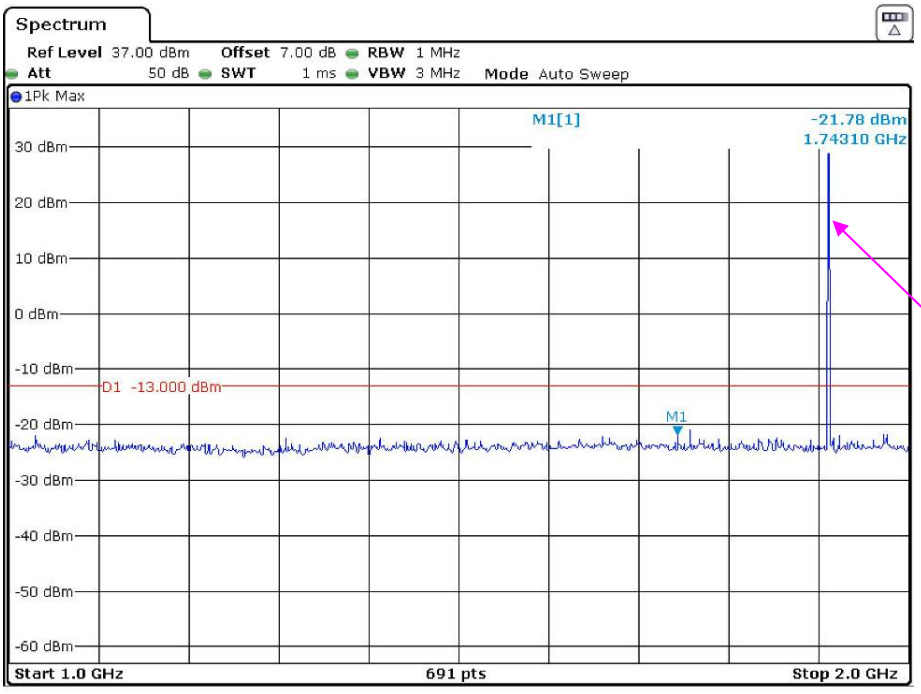
**High Channel:**

**30 MHz – 1 GHz (GSM Mode)**




Date: 19.FEB.2021 15:33:26

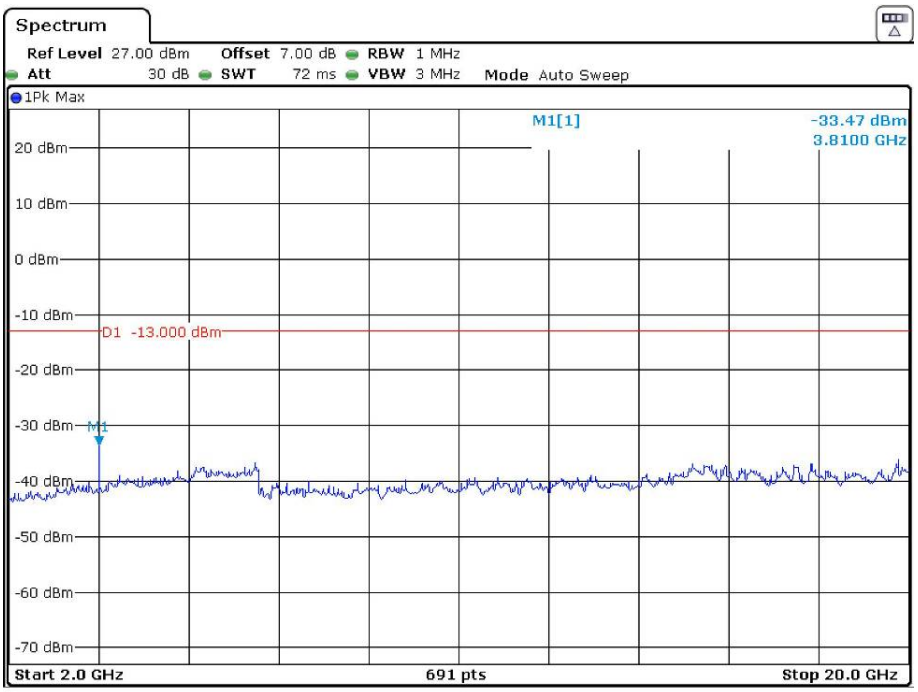
**1 GHz – 2 GHz (GSM Mode)**




Fundamental test

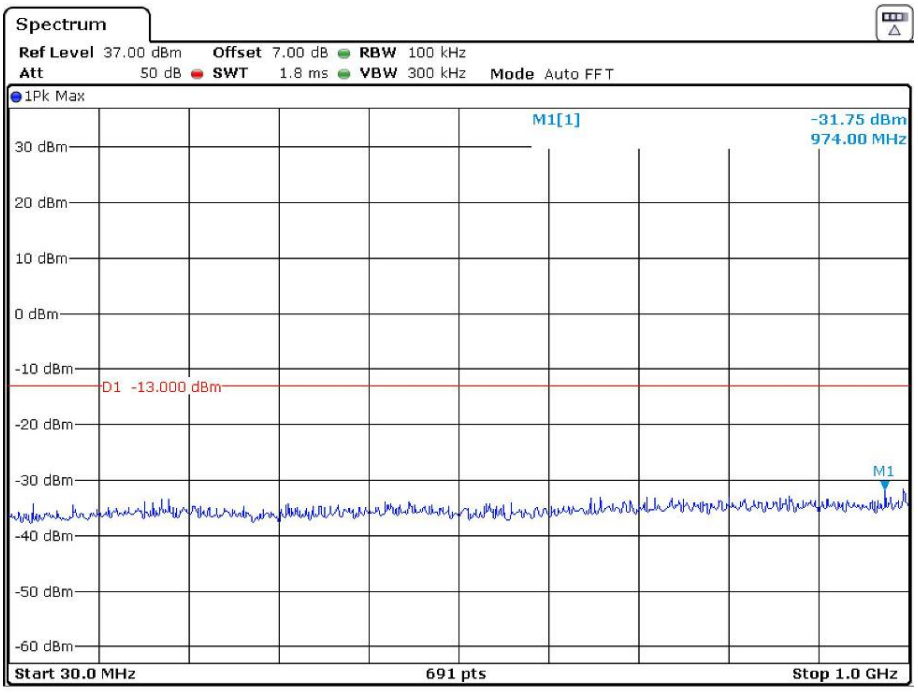
Date: 19.FEB.2021 15:28:13

**2 GHz – 20GHz (GSM Mode)**



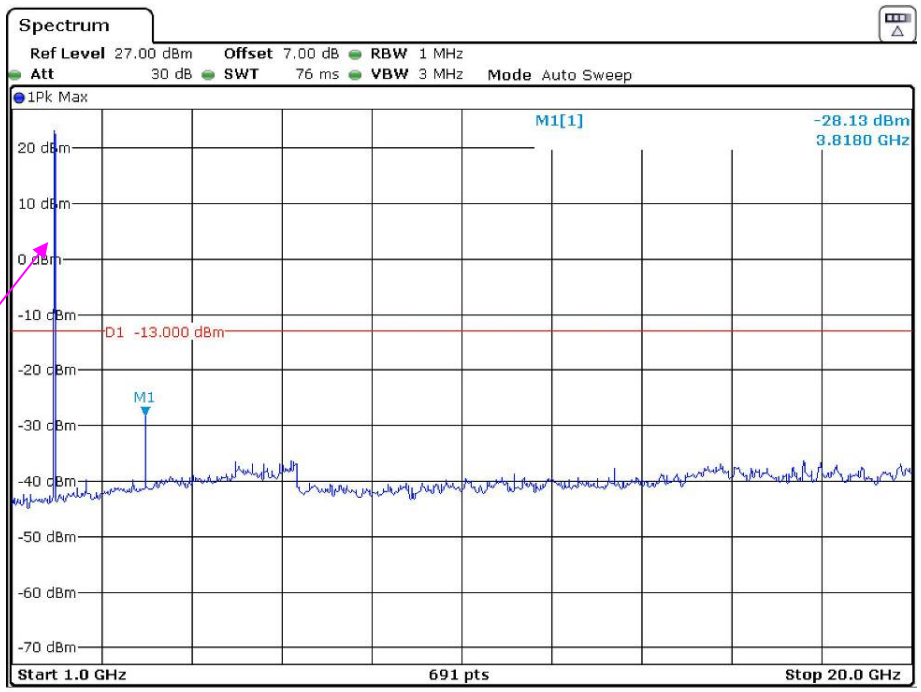

Date: 19.FEB.2021 15:29:01

**30 MHz – 1 GHz (WCDMA Mode)**




Date: 19.FEB.2021 18:54:01

**1 GHz – 20 GHz (WCDMA Mode)**

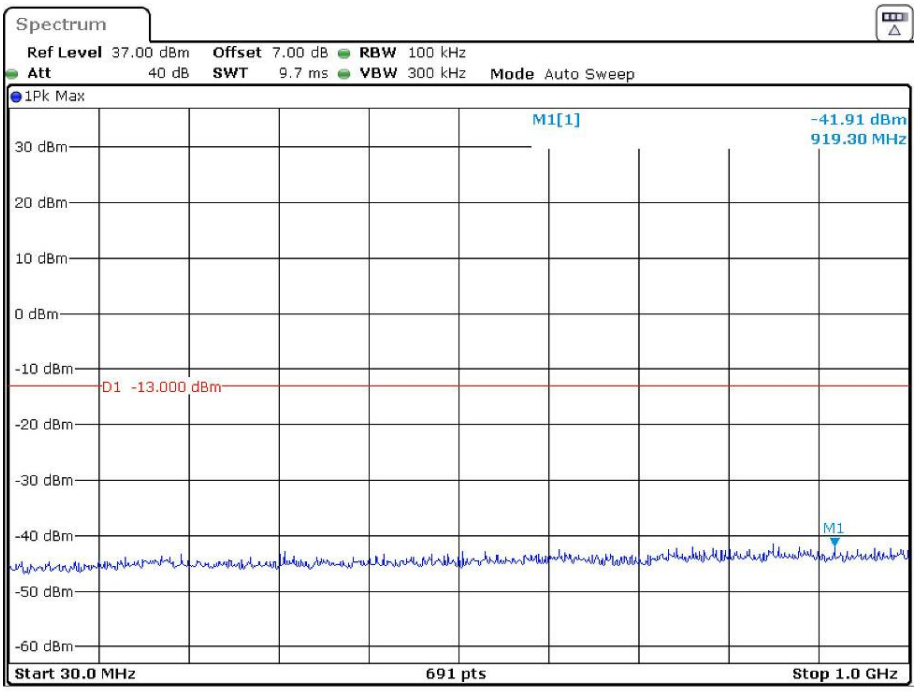



Fundamental test

Date: 19.FEB.2021 18:54:56

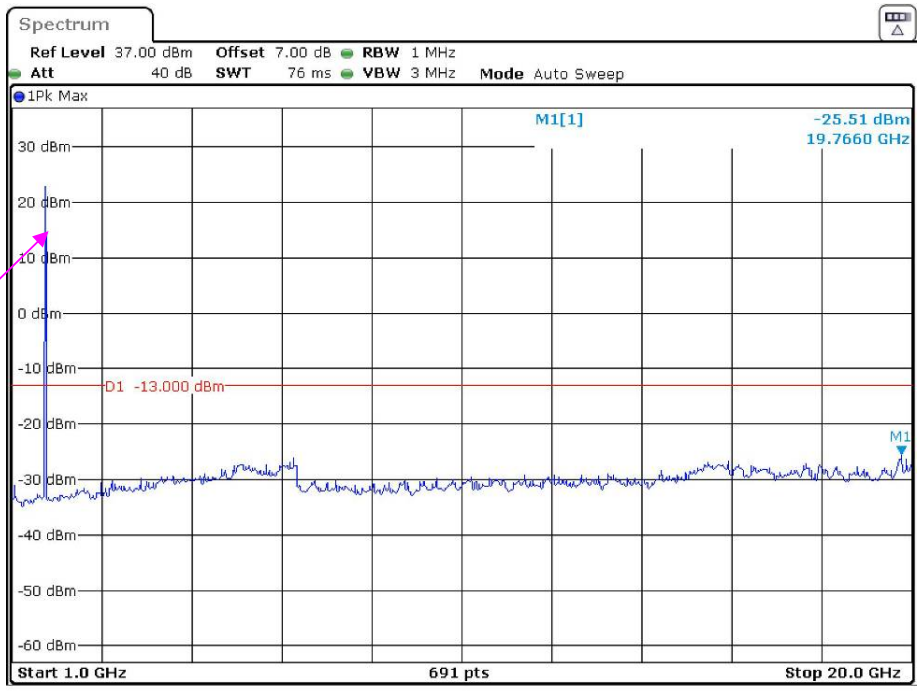
**AWS Band (Part 27)**
**Low Channel:**

**30 MHz – 1 GHz (WCDMA Mode)**




Date: 19.FEB.2021 19:46:51

**1 GHz – 20 GHz (WCDMA Mode)**

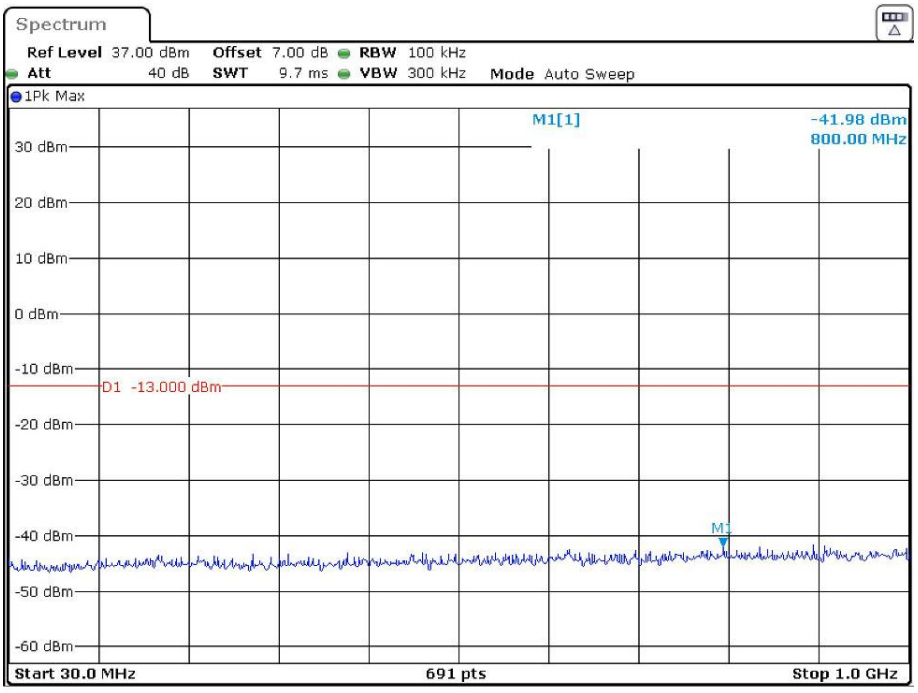



Fundamental test

Date: 19.FEB.2021 19:47:56

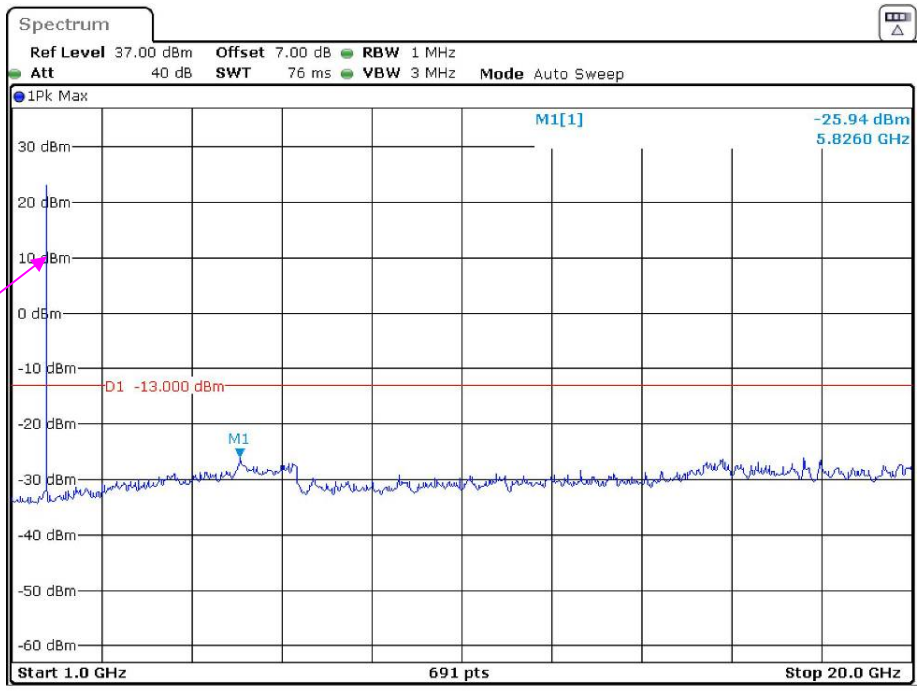
**Middle Channel**

**30 MHz – 1 GHz (WCDMA Mode)**




Date: 19.FEB.2021 19:46:32

**1 GHz – 20 GHz (WCDMA Mode)**

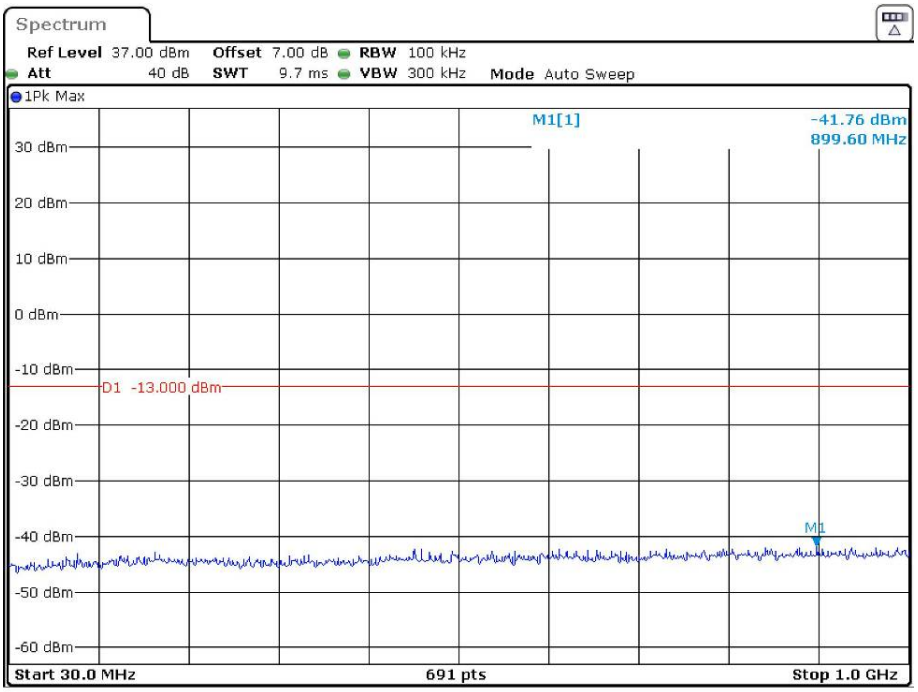



Fundamental test

Date: 19.FEB.2021 19:48:36

**High Channel:**

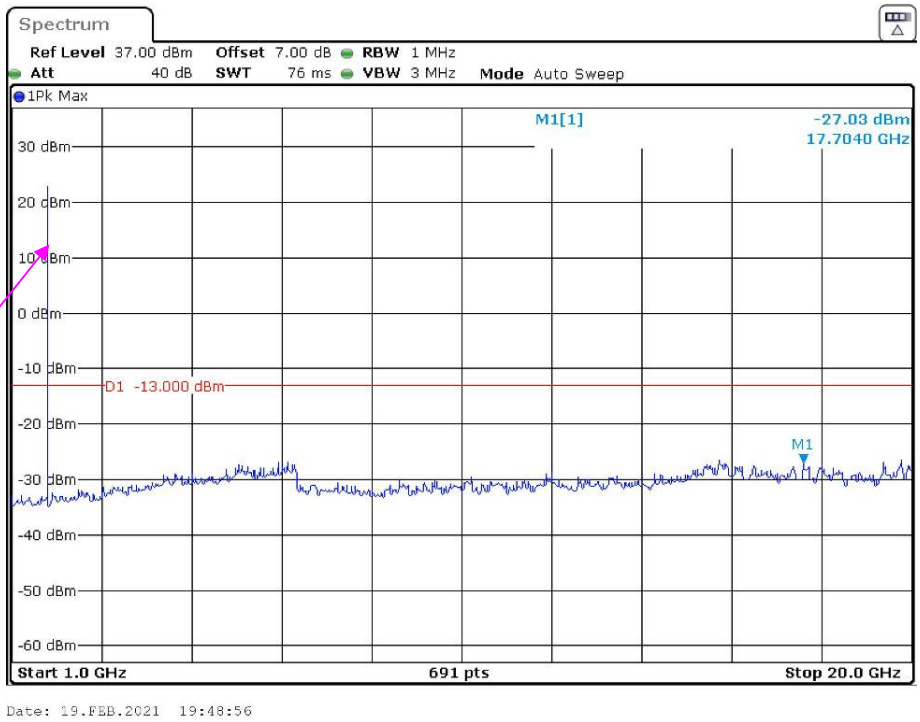
**30 MHz – 1 GHz (WCDMA Mode)**




Date: 19.FEB.2021 19:46:09

**1 GHz – 20 GHz (WCDMA Mode)**

Fundamental test




The test plots of LTE band please refer to the Appendix B.

# FCC § 2.1053; § 22.917 (a);§ 24.238 (a); §27.53 SPURIOUS RADIATED EMISSIONS

## Applicable Standard

FCC § 2.1053, §22.917(a) and § 24.238(a) and § 27.53

## 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:** | 22~25.3 ℃ |
| **Relative Humidity:** | 52~58 % |
| **ATM Pressure:** | 101.0~101.1 kPa |

*The testing was performed by Harri He from 2021-01-18 to 2021-02-24 for below 1GHz and Troy Wang and Alen He from 2021-02-24 to 2021-03-31 for above 1GHz.*

*EUT operation mode: Transmitting*

**30 MHz ~ 10 GHz:**

**Cellular Band (Part 22H)**

| Frequency (MHz) | Receiver Reading (dBμV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | FCC Part 22H | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (m) | Polar (H/V) | Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | Limit (dBm) | Margin (dB) |
| GSM Mode | | | | | | | | | | |
| Low channel | | | | | | | | | | |
| 952.3 | 32.43 | 28 | 1.1 | H | -64.1 | 1.36 | 0.0 | -65.46 | -13 | 52.46 |
| 952.3 | 33.14 | 104 | 1.8 | V | -60.9 | 1.36 | 0.0 | -62.26 | -13 | 49.26 |
| 1648.40 | 67.35 | 335 | 1.3 | H | -40.7 | 1.40 | 8.70 | -33.40 | -13 | 20.40 |
| 1648.40 | 61.90 | 199 | 1.7 | V | -46.0 | 1.40 | 8.70 | -38.70 | -13 | 25.70 |
| 2472.60 | 71.85 | 243 | 1.9 | H | -31.5 | 2.60 | 10.20 | -23.90 | -13 | 10.90 |
| 2472.60 | 67.44 | 309 | 2.3 | V | -35.3 | 2.60 | 10.20 | -27.70 | -13 | 14.70 |
| 3296.80 | 68.95 | 274 | 1.9 | H | -31.9 | 1.50 | 11.70 | -21.70 | -13 | 8.70 |
| 3296.80 | 63.14 | 37 | 1.2 | V | -37.8 | 1.50 | 11.70 | -27.60 | -13 | 14.60 |
| 4121.00 | 50.24 | 68 | 1.8 | H | -51.9 | 1.40 | 12.20 | -41.10 | -13 | 28.10 |
| 4121.00 | 47.83 | 315 | 1.4 | V | -53.2 | 1.40 | 12.20 | -42.40 | -13 | 29.40 |
| Middle channel | | | | | | | | | | |
| 956.6 | 32.31 | 334 | 1.7 | H | -64.2 | 1.36 | 0.0 | -65.56 | -13 | 52.56 |
| 956.6 | 33.26 | 44 | 2.0 | V | -60.8 | 1.36 | 0.0 | -62.16 | -13 | 49.16 |
| 1673.20 | 67.85 | 140 | 1.7 | H | -38.5 | 1.30 | 8.90 | -30.90 | -13 | 17.90 |
| 1673.20 | 62.18 | 246 | 1.6 | V | -43.6 | 1.30 | 8.90 | -36.00 | -13 | 23.00 |
| 2509.80 | 72.38 | 242 | 1.2 | H | -31.0 | 2.60 | 10.20 | -23.40 | -13 | 10.40 |
| 2509.80 | 68.34 | 139 | 1.1 | V | -34.4 | 2.60 | 10.20 | -26.80 | -13 | 13.80 |
| 3346.40 | 67.97 | 263 | 1.5 | H | -32.9 | 1.50 | 11.70 | -22.70 | -13 | 9.70 |
| 3346.40 | 62.58 | 151 | 1.7 | V | -38.3 | 1.50 | 11.70 | -28.10 | -13 | 15.10 |
| 4183.00 | 49.47 | 98 | 1.7 | H | -52.5 | 1.50 | 11.80 | -42.20 | -13 | 29.20 |
| 4183.00 | 46.38 | 186 | 1.3 | V | -54.8 | 1.50 | 11.80 | -44.50 | -13 | 31.50 |
| High channel | | | | | | | | | | |
| 963.8 | 32.67 | 16 | 1.4 | H | -63.8 | 1.36 | 0.0 | -65.16 | -13 | 52.16 |
| 963.8 | 33.19 | 220 | 2.2 | V | -60.9 | 1.36 | 0.0 | -62.26 | -13 | 49.26 |
| 1697.60 | 68.41 | 259 | 1.6 | H | -37.9 | 1.30 | 8.90 | -30.30 | -13 | 17.30 |
| 1697.60 | 62.37 | 87 | 1.1 | V | -43.4 | 1.30 | 8.90 | -35.80 | -13 | 22.80 |
| 2546.40 | 72.67 | 177 | 1.8 | H | -30.7 | 2.60 | 10.20 | -23.10 | -13 | 10.10 |
| 2546.40 | 67.54 | 229 | 1.3 | V | -35.2 | 2.60 | 10.20 | -27.60 | -13 | 14.60 |
| 3395.20 | 68.24 | 124 | 1.3 | H | -33.0 | 1.40 | 11.80 | -22.60 | -13 | 9.60 |
| 3395.20 | 63.05 | 196 | 1.4 | V | -38.0 | 1.40 | 11.80 | -27.60 | -13 | 14.60 |
| 4244.00 | 50.15 | 343 | 1.7 | H | -51.8 | 1.50 | 11.80 | -41.50 | -13 | 28.50 |
| 1697.60 | 68.41 | 259 | 1.6 | H | -37.9 | 1.30 | 8.90 | -30.30 | -13 | 17.30 |

| Frequency (MHz) | Receiver Reading (dBμV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | FCC Part 22H | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (m) | Polar (H/V) | Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | Limit (dBm) | Margin (dB) |
| WCDMA Mode | | | | | | | | | | |
| Low channel | | | | | | | | | | |
| 952.0 | 32.87 | 185 | 2.3 | H | -63.6 | 1.36 | 0.0 | -64.96 | -13 | 51.96 |
| 952.0 | 33.94 | 92 | 1.5 | V | -60.1 | 1.36 | 0.0 | -61.46 | -13 | 48.46 |
| 1652.80 | 44.84 | 119 | 1.7 | H | -61.5 | 1.30 | 8.90 | -53.90 | -13 | 40.90 |
| 1652.80 | 44.68 | 156 | 1.2 | V | -61.1 | 1.30 | 8.90 | -53.50 | -13 | 40.50 |
| 2479.20 | 43.95 | 50 | 1.7 | H | -59.4 | 2.60 | 10.20 | -51.80 | -13 | 38.80 |
| 2479.20 | 43.73 | 54 | 2.1 | V | -59.0 | 2.60 | 10.20 | -51.40 | -13 | 38.40 |
| 3305.60 | 42.56 | 80 | 2.2 | H | -58.3 | 1.50 | 11.70 | -48.10 | -13 | 35.10 |
| 3305.60 | 42.23 | 230 | 1.8 | V | -58.7 | 1.50 | 11.70 | -48.50 | -13 | 35.50 |
| Middle channel | | | | | | | | | | |
| 954.1 | 32.47 | 28 | 2.1 | H | -64.0 | 1.36 | 0.0 | -65.36 | -13 | 52.36 |
| 954.1 | 33.65 | 142 | 1.6 | V | -60.4 | 1.36 | 0.0 | -61.76 | -13 | 48.76 |
| 1673.20 | 44.85 | 317 | 1.9 | H | -61.5 | 1.30 | 8.90 | -53.90 | -13 | 40.90 |
| 1673.20 | 44.57 | 234 | 2.4 | V | -61.2 | 1.30 | 8.90 | -53.60 | -13 | 40.60 |
| 2509.80 | 43.92 | 49 | 1.6 | H | -59.4 | 2.60 | 10.20 | -51.80 | -13 | 38.80 |
| 2509.80 | 43.67 | 68 | 1.9 | V | -59.1 | 2.60 | 10.20 | -51.50 | -13 | 38.50 |
| 3346.40 | 42.61 | 206 | 1.9 | H | -58.3 | 1.50 | 11.70 | -48.10 | -13 | 35.10 |
| 3346.40 | 42.26 | 114 | 1.5 | V | -58.7 | 1.50 | 11.70 | -48.50 | -13 | 35.50 |
| High channel | | | | | | | | | | |
| 967.4 | 32.44 | 23 | 1.5 | H | -64.1 | 1.36 | 0.0 | -65.46 | -13 | 52.46 |
| 967.4 | 33.82 | 44 | 1.9 | V | -60.2 | 1.36 | 0.0 | -61.56 | -13 | 48.56 |
| 1693.20 | 44.93 | 176 | 1.1 | H | -61.4 | 1.30 | 8.90 | -53.80 | -13 | 40.80 |
| 1693.20 | 44.72 | 260 | 1.6 | V | -61.0 | 1.30 | 8.90 | -53.40 | -13 | 40.40 |
| 2539.80 | 43.87 | 258 | 2.5 | H | -59.5 | 2.60 | 10.20 | -51.90 | -13 | 38.90 |
| 2539.80 | 43.72 | 45 | 2.4 | V | -59.0 | 2.60 | 10.20 | -51.40 | -13 | 38.40 |
| 3386.40 | 42.68 | 217 | 2.5 | H | -58.6 | 1.40 | 11.80 | -48.20 | -13 | 35.20 |
| 3386.40 | 42.45 | 12 | 2.2 | V | -58.6 | 1.40 | 11.80 | -48.20 | -13 | 35.20 |

**30 MHz ~ 20 GHz:**

**PCS Band (Part 24E)**

| Frequency (MHz) | Receiver Reading (dBμV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | FCC Part 24E | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (m) | Polar (H/V) | Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | Limit (dBm) | Margin (dB) |
| GSM Mode | | | | | | | | | | |
| Low channel | | | | | | | | | | |
| 957.4 | 32.78 | 358 | 1.1 | H | -63.7 | 1.36 | 0.0 | -65.06 | -13 | 52.06 |
| 957.4 | 33.65 | 134 | 1.2 | V | -60.4 | 1.36 | 0.0 | -61.76 | -13 | 48.76 |
| 3700.40 | 52.95 | 229 | 2.2 | H | -48.9 | 1.60 | 11.90 | -38.60 | -13 | 25.60 |
| 3700.40 | 49.12 | 298 | 1.3 | V | -52.1 | 1.60 | 11.90 | -41.80 | -13 | 28.80 |
| Middle channel | | | | | | | | | | |
| 960.3 | 32.49 | 95 | 2.1 | H | -64.0 | 1.36 | 0.0 | -65.36 | -13 | 52.36 |
| 960.3 | 33.54 | 296 | 1.9 | V | -60.5 | 1.36 | 0.0 | -61.86 | -13 | 48.86 |
| 3760.00 | 53.32 | 154 | 2.3 | H | -48.7 | 1.50 | 11.80 | -38.40 | -13 | 25.40 |
| 3760.00 | 48.75 | 291 | 1.3 | V | -52.8 | 1.50 | 11.80 | -42.50 | -13 | 29.50 |
| High channel | | | | | | | | | | |
| 961.2 | 32.91 | 72 | 2.1 | H | -63.6 | 1.36 | 0.0 | -64.96 | -13 | 51.96 |
| 961.2 | 33.75 | 240 | 1.0 | V | -60.3 | 1.36 | 0.0 | -61.66 | -13 | 48.66 |
| 3819.60 | 52.89 | 189 | 1.1 | H | -49.2 | 1.50 | 11.80 | -38.90 | -13 | 25.90 |
| 3819.60 | 48.65 | 193 | 2.2 | V | -52.9 | 1.50 | 11.80 | -42.60 | -13 | 29.60 |
| WCDMA Mode | | | | | | | | | | |
| Low channel | | | | | | | | | | |
| 946.9 | 32.14 | 299 | 2.4 | H | -64.4 | 1.36 | 0.0 | -65.76 | -13 | 52.76 |
| 946.9 | 33.32 | 325 | 1.9 | V | -60.7 | 1.36 | 0.0 | -62.06 | -13 | 49.06 |
| 3704.80 | 56.89 | 55 | 2.4 | H | -44.9 | 1.60 | 11.90 | -34.60 | -13 | 21.60 |
| 3704.80 | 54.03 | 143 | 1.5 | V | -47.2 | 1.60 | 11.90 | -36.90 | -13 | 23.90 |
| Middle channel | | | | | | | | | | |
| 955.2 | 32.61 | 161 | 2.1 | H | -63.9 | 1.36 | 0.0 | -65.26 | -13 | 52.26 |
| 955.2 | 33.46 | 2 | 1.9 | V | -60.6 | 1.36 | 0.0 | -61.96 | -13 | 48.96 |
| 3760.00 | 57.12 | 45 | 1.9 | H | -44.9 | 1.50 | 11.80 | -34.60 | -13 | 21.60 |
| 3760.00 | 54.83 | 254 | 1.9 | V | -46.8 | 1.50 | 11.80 | -36.50 | -13 | 23.50 |
| High channel | | | | | | | | | | |
| 969.7 | 32.81 | 304 | 2.5 | H | -63.7 | 1.36 | 0.0 | -65.06 | -13 | 52.06 |
| 969.7 | 33.74 | 63 | 1.8 | V | -60.3 | 1.36 | 0.0 | -61.66 | -13 | 48.66 |
| 3815.20 | 59.84 | 207 | 1.8 | H | -42.2 | 1.50 | 11.80 | -31.90 | -13 | 18.90 |
| 3815.20 | 55.14 | 50 | 1.2 | V | -46.4 | 1.50 | 11.80 | -36.10 | -13 | 23.10 |

**30 MHz ~ 20 GHz:**

**AWS Band**

| Frequency (MHz) | Receiver Reading (dBμV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | FCC Part 27 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (m) | Polar (H/V) | Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | Limit (dBm) | Margin (dB) |
| WCDMA Mode | | | | | | | | | | |
| Low channel | | | | | | | | | | |
| 947.1 | 32.49 | 254 | 2.5 | H | -64.0 | 1.36 | 0.0 | -65.36 | -13 | 52.36 |
| 947.1 | 33.67 | 34 | 1.6 | V | -60.4 | 1.36 | 0.0 | -61.76 | -13 | 48.76 |
| 3424.80 | 55.23 | 219 | 1.2 | H | -45.6 | 1.40 | 11.80 | -35.20 | -13 | 22.20 |
| 3424.80 | 53.62 | 55 | 1.3 | V | -47.0 | 1.40 | 11.80 | -36.60 | -13 | 23.60 |
| Middle channel | | | | | | | | | | |
| 956.8 | 32.56 | 22 | 1.8 | H | -63.9 | 1.36 | 0.0 | -65.26 | -13 | 52.26 |
| 956.8 | 33.22 | 21 | 2.5 | V | -60.8 | 1.36 | 0.0 | -62.16 | -13 | 49.16 |
| 3465.20 | 55.64 | 20 | 2.0 | H | -45.1 | 1.50 | 12.00 | -34.60 | -13 | 21.60 |
| 3465.20 | 53.84 | 6 | 1.2 | V | -47.7 | 1.50 | 12.00 | -37.20 | -13 | 24.20 |
| High channel | | | | | | | | | | |
| 963.5 | 32.66 | 215 | 1.5 | H | -63.8 | 1.36 | 0.0 | -65.16 | -13 | 52.16 |
| 963.5 | 33.31 | 251 | 1.7 | V | -60.7 | 1.36 | 0.0 | -62.06 | -13 | 49.06 |
| 3505.20 | 56.14 | 286 | 1.4 | H | -44.6 | 1.50 | 12.00 | -34.10 | -13 | 21.10 |
| 3505.20 | 54.02 | 44 | 1.1 | V | -47.5 | 1.50 | 12.00 | -37.00 | -13 | 24.00 |

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

| Frequency | Receiver | Turntable | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| (MHz) | Reading (dBμV) | Angle Degree | Height (m) | Polar (H/V) | Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| Band 2 | | | | | | | | | | |
| Test frequency range: 30 MHz ~ 20 GHz | | | | | | | | | | |
| 1.4MHz, Low channel | | | | | | | | | | |
| 957.4 | 32.11 | 277 | 1.8 | H | -64.4 | 1.36 | 0.0 | -65.76 | -13 | 52.76 |
| 957.4 | 33.52 | 244 | 1.8 | V | -60.5 | 1.36 | 0.0 | -61.86 | -13 | 48.86 |
| 3701.40 | 49.41 | 268 | 1.0 | H | -52.4 | 1.60 | 11.90 | -42.10 | -13 | 29.10 |
| 3701.40 | 49.05 | 198 | 1.4 | V | -52.2 | 1.60 | 11.90 | -41.90 | -13 | 28.90 |
| 1.4MHz, Middle channel | | | | | | | | | | |
| 966.2 | 32.67 | 195 | 2.0 | H | -63.8 | 1.36 | 0.0 | -65.16 | -13 | 52.16 |
| 966.2 | 33.24 | 334 | 2.2 | V | -60.8 | 1.36 | 0.0 | -62.16 | -13 | 49.16 |
| 3760.00 | 49.35 | 2 | 1.0 | H | -52.7 | 1.50 | 11.80 | -42.40 | -13 | 29.40 |
| 3760.00 | 49.12 | 353 | 1.2 | V | -52.5 | 1.50 | 11.80 | -42.20 | -13 | 29.20 |
| 1.4MHz, High channel | | | | | | | | | | |
| 949.3 | 32.49 | 343 | 1.5 | H | -64.0 | 1.36 | 0.0 | -65.36 | -13 | 52.36 |
| 949.3 | 33.55 | 82 | 1.4 | V | -60.5 | 1.36 | 0.0 | -61.86 | -13 | 48.86 |
| 3818.60 | 49.51 | 37 | 1.0 | H | -52.5 | 1.50 | 11.80 | -42.20 | -13 | 29.20 |
| 3818.60 | 49.12 | 57 | 1.2 | V | -52.5 | 1.50 | 11.80 | -42.20 | -13 | 29.20 |
| Band 4 | | | | | | | | | | |
| Test frequency range:30 MHz ~ 20 GHz | | | | | | | | | | |
| 1.4MHz, Low channel | | | | | | | | | | |
| 962.8 | 32.68 | 3 | 1.8 | H | -63.8 | 1.36 | 0.0 | -65.16 | -13 | 52.16 |
| 962.8 | 33.26 | 226 | 1.6 | V | -60.8 | 1.36 | 0.0 | -62.16 | -13 | 49.16 |
| 3421.40 | 52.30 | 338 | 1.6 | H | -48.5 | 1.40 | 11.80 | -38.10 | -13 | 25.10 |
| 3421.40 | 49.34 | 318 | 2.1 | V | -51.3 | 1.40 | 11.80 | -40.90 | -13 | 27.90 |
| 1.4MHz, Middle channel | | | | | | | | | | |
| 952.1 | 32.49 | 118 | 1.4 | H | -64.0 | 1.36 | 0.0 | -65.36 | -13 | 52.36 |
| 952.1 | 33.55 | 240 | 1.6 | V | -60.5 | 1.36 | 0.0 | -61.86 | -13 | 48.86 |
| 3465.00 | 51.97 | 262 | 1.2 | H | -48.8 | 1.50 | 12.00 | -38.30 | -13 | 25.30 |
| 3465.00 | 48.85 | 39 | 2.4 | V | -52.7 | 1.50 | 12.00 | -42.20 | -13 | 29.20 |
| 1.4MHz, High channel | | | | | | | | | | |
| 963.0 | 32.85 | 5 | 1.9 | H | -63.7 | 1.36 | 0.0 | -65.06 | -13 | 52.06 |
| 963.0 | 33.67 | 39 | 1.5 | V | -60.4 | 1.36 | 0.0 | -61.76 | -13 | 48.76 |
| 3508.60 | 52.24 | 91 | 2.4 | H | -48.5 | 1.50 | 12.00 | -38.00 | -13 | 25.00 |
| 3508.60 | 49.17 | 342 | 1.8 | V | -52.3 | 1.50 | 12.00 | -41.80 | -13 | 28.80 |

| Frequency | Receiver | Turntable | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| (MHz) | Reading (dBμV) | Angle Degree | Height (m) | Polar (H/V) | Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| Band 5 | | | | | | | | | | |
| Test frequency range:30 MHz ~ 10 GHz | | | | | | | | | | |
| 1.4MHz, Low channel | | | | | | | | | | |
| 947.0 | 32.57 | 249 | 2.2 | H | -63.9 | 1.36 | 0.0 | -65.26 | -13 | 52.26 |
| 947.0 | 33.26 | 352 | 1.2 | V | -60.8 | 1.36 | 0.0 | -62.16 | -13 | 49.16 |
| 1649.40 | 47.86 | 170 | 1.0 | H | -60.2 | 1.40 | 8.70 | -52.90 | -13 | 39.90 |
| 1649.40 | 48.16 | 342 | 2.2 | V | -59.7 | 1.40 | 8.70 | -52.40 | -13 | 39.40 |
| 1.4MHz, Middle channel | | | | | | | | | | |
| 967.4 | 32.77 | 243 | 1.3 | H | -63.7 | 1.36 | 0.0 | -65.06 | -13 | 52.06 |
| 967.4 | 33.90 | 256 | 1.5 | V | -60.2 | 1.36 | 0.0 | -61.56 | -13 | 48.56 |
| 1673.00 | 47.51 | 225 | 1.0 | H | -58.8 | 1.30 | 8.90 | -51.20 | -13 | 38.20 |
| 1673.00 | 48.10 | 130 | 2.1 | V | -57.6 | 1.30 | 8.90 | -50.00 | -13 | 37.00 |
| 1.4MHz, High channel | | | | | | | | | | |
| 951.3 | 32.62 | 59 | 1.2 | H | -63.9 | 1.36 | 0.0 | -65.26 | -13 | 52.26 |
| 951.3 | 33.84 | 25 | 2.0 | V | -60.2 | 1.36 | 0.0 | -61.56 | -13 | 48.56 |
| 1696.60 | 47.15 | 239 | 1.0 | H | -59.2 | 1.30 | 8.90 | -51.60 | -13 | 38.60 |
| 1696.60 | 48.39 | 270 | 2.1 | V | -57.3 | 1.30 | 8.90 | -49.70 | -13 | 36.70 |
| Band 7 | | | | | | | | | | |
| Test frequency range: 30 MHz ~ 26.5 GHz | | | | | | | | | | |
| 5MHz, Low channel | | | | | | | | | | |
| 963.9 | 32.69 | 160 | 1.6 | H | -63.8 | 1.36 | 0.0 | -65.16 | -25 | 40.16 |
| 963.9 | 33.85 | 226 | 1.4 | V | -60.2 | 1.36 | 0.0 | -61.56 | -25 | 36.56 |
| 5005.00 | 52.68 | 116 | 1.9 | H | -47.9 | 1.70 | 12.00 | -37.60 | -25 | 12.60 |
| 5005.00 | 53.82 | 122 | 2.3 | V | -46.2 | 1.70 | 12.00 | -35.90 | -25 | 10.90 |
| 5MHz, Middle channel | | | | | | | | | | |
| 954.8 | 32.15 | 282 | 1.4 | H | -64.4 | 1.36 | 0.0 | -65.76 | -25 | 40.76 |
| 954.8 | 33.32 | 193 | 1.6 | V | -60.7 | 1.36 | 0.0 | -62.06 | -25 | 37.06 |
| 5070.00 | 52.85 | 270 | 1.5 | H | -47.2 | 1.60 | 12.10 | -36.70 | -25 | 11.70 |
| 5070.00 | 53.96 | 57 | 2.4 | V | -46.1 | 1.60 | 12.10 | -35.60 | -25 | 10.60 |
| 5MHz, High channel | | | | | | | | | | |
| 946.2 | 32.25 | 192 | 1.8 | H | -64.3 | 1.36 | 0.0 | -65.66 | -25 | 40.66 |
| 946.2 | 33.02 | 291 | 1.1 | V | -61.0 | 1.36 | 0.0 | -62.36 | -25 | 37.36 |
| 5135.00 | 52.72 | 80 | 1.5 | H | -47.3 | 1.60 | 12.10 | -36.80 | -25 | 11.80 |
| 5135.00 | 53.67 | 10 | 1.4 | V | -46.3 | 1.60 | 12.10 | -35.80 | -25 | 10.80 |

| Frequency | Receiver | Turntable | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| (MHz) | Reading (dBμV) | Angle Degree | Height (m) | Polar (H/V) | Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| Band 17 | | | | | | | | | | |
| Test frequency range: 30 MHz ~ 26.5 GHz | | | | | | | | | | |
| 5MHz, Low channel | | | | | | | | | | |
| 956.3 | 32.08 | 293 | 2.1 | H | -64.4 | 1.36 | 0.0 | -65.76 | -13 | 52.76 |
| 956.3 | 33.46 | 232 | 2.3 | V | -60.6 | 1.36 | 0.0 | -61.96 | -13 | 48.96 |
| 1413.00 | 52.82 | 247 | 1.0 | H | -55.4 | 1.60 | 7.90 | -49.10 | -13 | 36.10 |
| 1413.00 | 49.44 | 227 | 2.2 | V | -59.0 | 1.60 | 7.90 | -52.70 | -13 | 39.70 |
| 4945.50 | 51.37 | 312 | 1.9 | H | -48.8 | 1.60 | 12.10 | -38.30 | -13 | 25.30 |
| 4945.50 | 47.30 | 261 | 2.3 | V | -53.1 | 1.60 | 12.10 | -42.60 | -13 | 29.60 |
| 5MHz, Middle channel | | | | | | | | | | |
| 955.7 | 32.17 | 3 | 2.0 | H | -64.3 | 1.36 | 0.0 | -65.66 | -13 | 52.66 |
| 955.7 | 33.49 | 72 | 2.0 | V | -60.6 | 1.36 | 0.0 | -61.96 | -13 | 48.96 |
| 1420.00 | 52.66 | 200 | 1.0 | H | -55.5 | 1.60 | 7.90 | -49.20 | -13 | 36.20 |
| 1420.00 | 49.35 | 123 | 2.4 | V | -59.1 | 1.60 | 7.90 | -52.80 | -13 | 39.80 |
| 4970.00 | 51.16 | 114 | 1.7 | H | -47.6 | 1.70 | 12.00 | -37.30 | -13 | 24.30 |
| 4970.00 | 47.35 | 296 | 1.7 | V | -50.9 | 1.70 | 12.00 | -40.60 | -13 | 27.60 |
| 5MHz, High channel | | | | | | | | | | |
| 961.3 | 32.55 | 41 | 2.3 | H | -64.0 | 1.36 | 0.0 | -65.36 | -13 | 52.36 |
| 961.3 | 33.67 | 320 | 1.6 | V | -60.4 | 1.36 | 0.0 | -61.76 | -13 | 48.76 |
| 1427.00 | 52.73 | 268 | 1.0 | H | -55.4 | 1.60 | 7.90 | -49.10 | -13 | 36.10 |
| 1427.00 | 49.18 | 278 | 1.4 | V | -59.3 | 1.60 | 7.90 | -53.00 | -13 | 40.00 |
| 4994.50 | 51.50 | 298 | 1.8 | H | -47.3 | 1.70 | 12.00 | -37.00 | -13 | 24.00 |
| 4994.50 | 47.62 | 121 | 1.2 | V | -50.6 | 1.70 | 12.00 | -40.30 | -13 | 27.30 |
| Band 38 | | | | | | | | | | |
| Test frequency range: 30 MHz ~26.5GHz | | | | | | | | | | |
| 5MHz, Low channel | | | | | | | | | | |
| 960.5 | 32.16 | 310 | 1.3 | H | -64.3 | 1.36 | 0.0 | -65.66 | -25 | 40.66 |
| 960.5 | 33.32 | 141 | 1.8 | V | -60.7 | 1.36 | 0.0 | -62.06 | -25 | 37.06 |
| 5145.00 | 44.51 | 354 | 1.9 | H | -55.5 | 1.60 | 12.10 | -45.00 | -25 | 20.00 |
| 5145.00 | 44.76 | 242 | 1.3 | V | -55.3 | 1.60 | 12.10 | -44.80 | -25 | 19.80 |
| 5MHz, Middle channel | | | | | | | | | | |
| 965.3 | 32.85 | 231 | 1.1 | H | -63.7 | 1.36 | 0.0 | -65.06 | -25 | 40.06 |
| 965.3 | 33.94 | 276 | 1.3 | V | -60.1 | 1.36 | 0.0 | -61.46 | -25 | 36.46 |
| 5190.00 | 44.68 | 276 | 2.0 | H | -55.4 | 1.60 | 12.10 | -44.90 | -25 | 19.90 |
| 5190.00 | 44.52 | 83 | 2.0 | V | -55.1 | 1.60 | 12.10 | -44.60 | -25 | 19.60 |
| 5MHz, High channel | | | | | | | | | | |
| 947.7 | 32.76 | 242 | 1.8 | H | -63.7 | 1.36 | 0.0 | -65.06 | -25 | 40.06 |
| 947.7 | 33.85 | 181 | 2.3 | V | -60.2 | 1.36 | 0.0 | -61.56 | -25 | 36.56 |
| 5235.00 | 44.47 | 50 | 1.6 | H | -55.6 | 1.60 | 12.10 | -45.10 | -25 | 20.10 |
| 5235.00 | 44.80 | 182 | 2.0 | V | -54.8 | 1.60 | 12.10 | -44.30 | -25 | 19.30 |

| Frequency | Receiver | Turntable | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| (MHz) | Reading (dBμV) | Angle Degree | Height (m) | Polar (H/V) | Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| Band 41 | | | | | | | | | | |
| Test frequency range: 30 MHz ~26.5GHz | | | | | | | | | | |
| 5MHz, Low channel | | | | | | | | | | |
| 952.3 | 32.64 | 86 | 2.4 | H | -63.9 | 1.36 | 0.0 | -65.26 | -25 | 40.26 |
| 952.3 | 33.85 | 106 | 1.1 | V | -60.2 | 1.36 | 0.0 | -61.56 | -25 | 36.56 |
| 5075.00 | 44.56 | 77 | 1.7 | H | -55.4 | 1.60 | 12.10 | -44.90 | -25 | 19.90 |
| 5075.00 | 44.75 | 70 | 1.8 | V | -55.3 | 1.60 | 12.10 | -44.80 | -25 | 19.80 |
| 5MHz, Middle channel | | | | | | | | | | |
| 960.0 | 32.75 | 289 | 1.2 | H | -63.8 | 1.36 | 0.0 | -65.16 | -25 | 40.16 |
| 960.0 | 33.57 | 202 | 2.5 | V | -60.5 | 1.36 | 0.0 | -61.86 | -25 | 37.86 |
| 5190.00 | 44.39 | 105 | 2.3 | H | -55.7 | 1.60 | 12.10 | -45.20 | -25 | 20.20 |
| 5190.00 | 44.68 | 96 | 2.3 | V | -54.9 | 1.60 | 12.10 | -44.40 | -25 | 19.40 |
| 5 MHz, High channel | | | | | | | | | | |
| 945.1 | 32.15 | 179 | 1.3 | H | -64.4 | 1.36 | 0.0 | -65.76 | -25 | 40.76 |
| 945.1 | 33.22 | 177 | 2.3 | V | -60.8 | 1.36 | 0.0 | -62.16 | -25 | 37.16 |
| 5305.00 | 44.61 | 294 | 1.3 | H | -55.1 | 1.60 | 12.20 | -44.50 | -25 | 19.50 |
| 5305.00 | 44.86 | 9 | 1.7 | V | -54.3 | 1.60 | 12.20 | -43.70 | -25 | 18.70 |
| Band 66 | | | | | | | | | | |
| Test frequency range: 30 MHz ~ 20GHz | | | | | | | | | | |
| 1.4MHz, Low channel | | | | | | | | | | |
| 956.2 | 32.62 | 71 | 1.2 | H | -63.9 | 1.36 | 0.0 | -65.26 | -13 | 52.26 |
| 956.2 | 33.48 | 358 | 1.4 | V | -60.6 | 1.36 | 0.0 | -61.96 | -13 | 48.96 |
| 3421.40 | 51.25 | 273 | 1.5 | H | -49.5 | 1.40 | 11.80 | -39.10 | -13 | 26.10 |
| 3421.40 | 50.36 | 320 | 1.4 | V | -50.2 | 1.40 | 11.80 | -39.80 | -13 | 26.80 |
| 5132.10 | 48.76 | 56 | 1.3 | H | -51.2 | 1.60 | 12.10 | -40.70 | -13 | 27.70 |
| 5132.10 | 46.85 | 43 | 1.3 | V | -53.2 | 1.60 | 12.10 | -42.70 | -13 | 29.70 |
| 1.4MHz, Middle channel | | | | | | | | | | |
| 967.1 | 32.85 | 244 | 1.9 | H | -63.7 | 1.36 | 0.0 | -65.06 | -13 | 52.06 |
| 967.1 | 33.52 | 298 | 1.7 | V | -60.5 | 1.36 | 0.0 | -61.86 | -13 | 48.86 |
| 3490.00 | 51.87 | 186 | 1.2 | H | -48.9 | 1.50 | 12.00 | -38.40 | -13 | 25.40 |
| 3490.00 | 50.16 | 112 | 2.3 | V | -51.3 | 1.50 | 12.00 | -40.80 | -13 | 27.80 |
| 5235.00 | 48.65 | 117 | 1.7 | H | -51.4 | 1.60 | 12.10 | -40.90 | -13 | 27.90 |
| 5235.00 | 46.78 | 148 | 2.3 | V | -52.8 | 1.60 | 12.10 | -42.30 | -13 | 29.30 |
| 1.4MHz, High channel | | | | | | | | | | |
| 969.0 | 32.66 | 154 | 1.1 | H | -63.8 | 1.36 | 0.0 | -65.16 | -13 | 52.16 |
| 969.0 | 33.75 | 154 | 1.3 | V | -60.3 | 1.36 | 0.0 | -61.66 | -13 | 48.66 |
| 3558.60 | 52.03 | 23 | 2.5 | H | -49.5 | 1.50 | 12.10 | -38.90 | -13 | 25.90 |
| 3558.60 | 50.85 | 67 | 1.1 | V | -50.2 | 1.50 | 12.10 | -39.60 | -13 | 26.60 |
| 5337.90 | 48.35 | 285 | 2.3 | H | -51.4 | 1.60 | 12.20 | -40.80 | -13 | 27.80 |
| 5337.90 | 46.71 | 242 | 1.3 | V | -52.5 | 1.60 | 12.20 | -41.90 | -13 | 28.90 |

**Note:**
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level
dBd is for the ERP, dBi is for EIRP.

# FCC § 22.917 (a);§ 24.238 (a); §27.53(c) (h)(m) - BAND EDGES

## Applicable Standard

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.

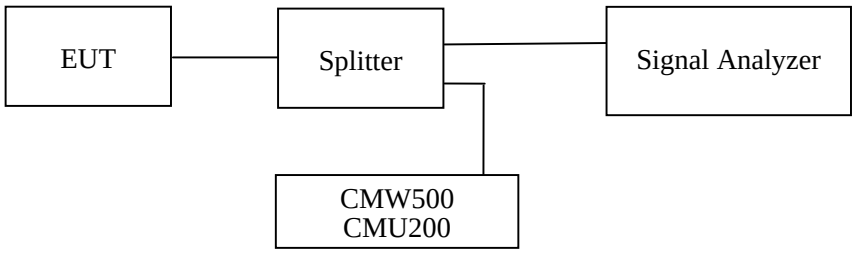
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

According to FCC §27.53 (c)(h)(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 ℃ |
| **Relative Humidity:** | 55 % |
| **ATM Pressure:** | 101.0 kPa |

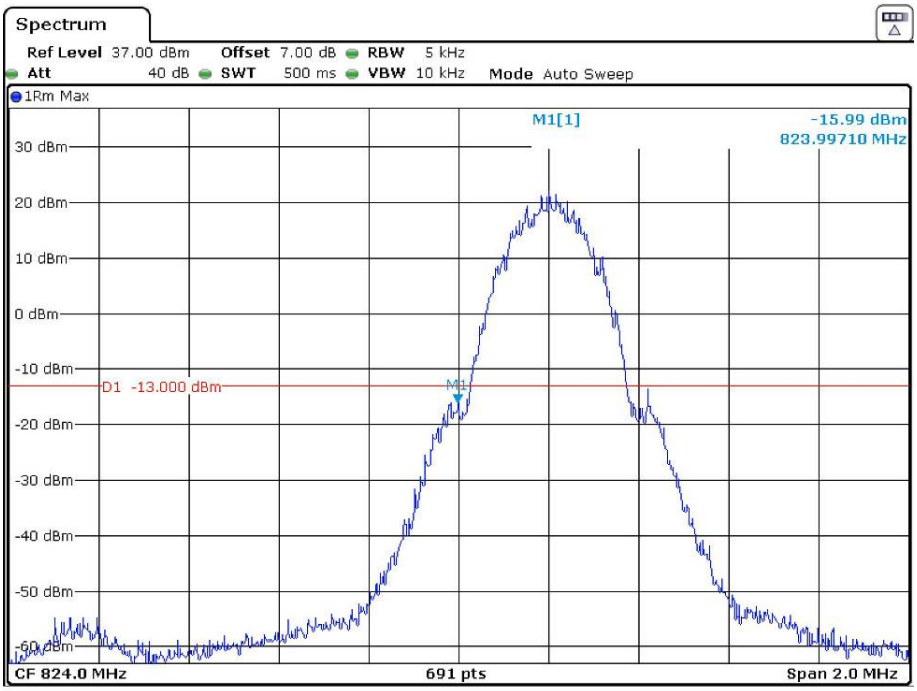
*The testing was performed by Gavin Guo from 2021-02-05 to 2021-04-06.*

*EUT operation mode: Transmitting (Worst case)*

**Test Result: Pass**

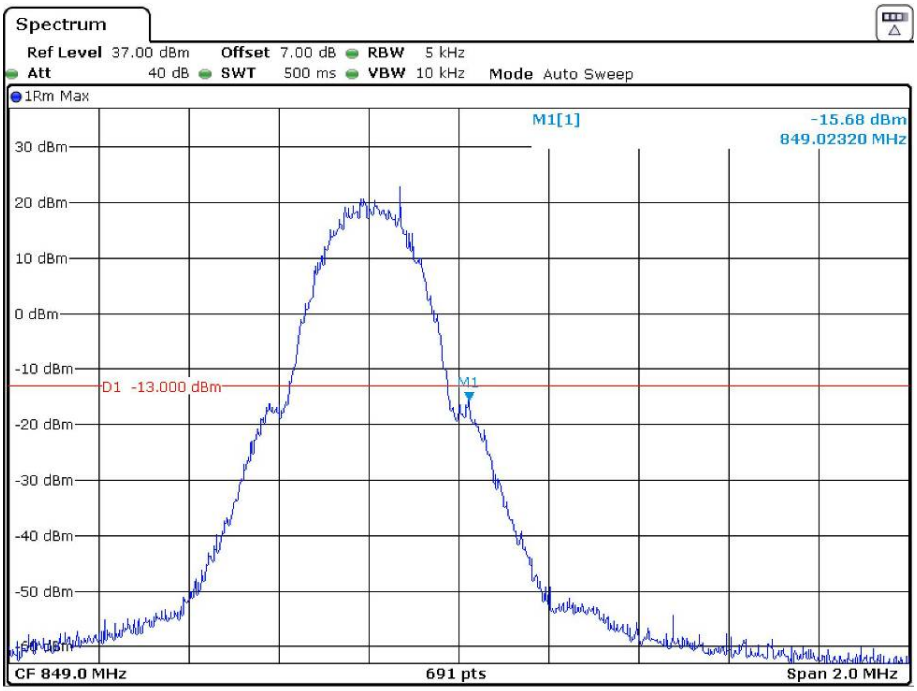
*Please refer to the following plots.*

**Cellular Band, Left Band Edge for GSM (GMSK) Mode**



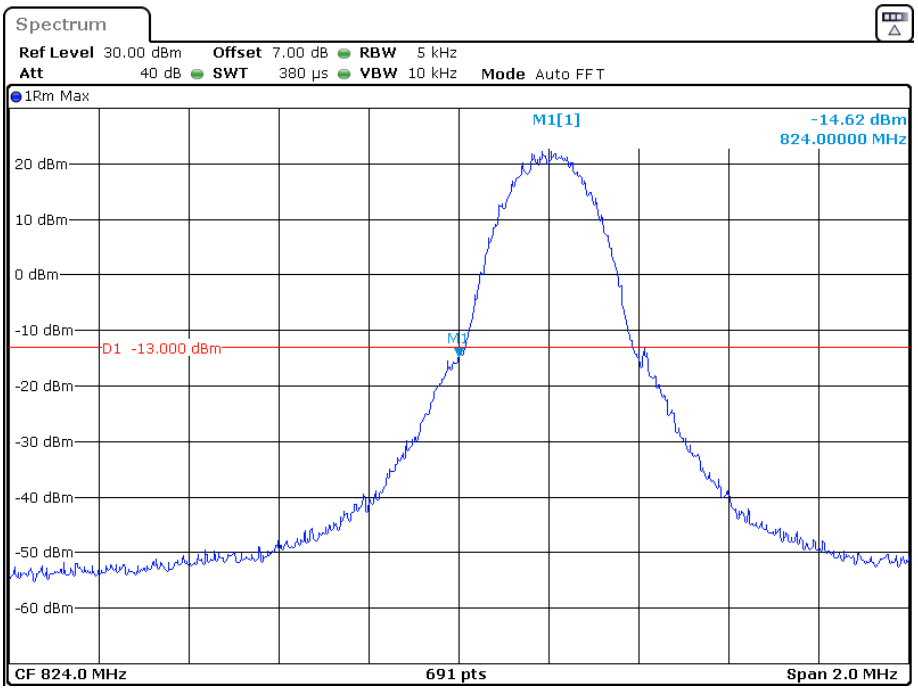

Date: 19.FEB.2021 14:27:36

**Cellular Band, Right Band Edge for GSM (GMSK) Mode**



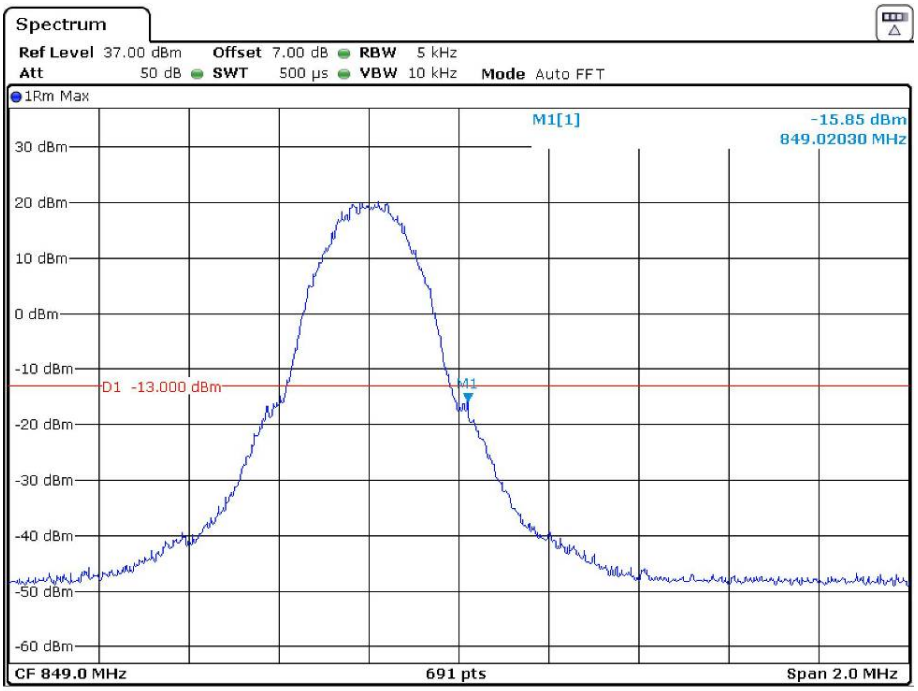

Date: 19.FEB.2021 14:28:55

**Cellular Band, Left Band Edge for EGPRS (GMSK) Mode**



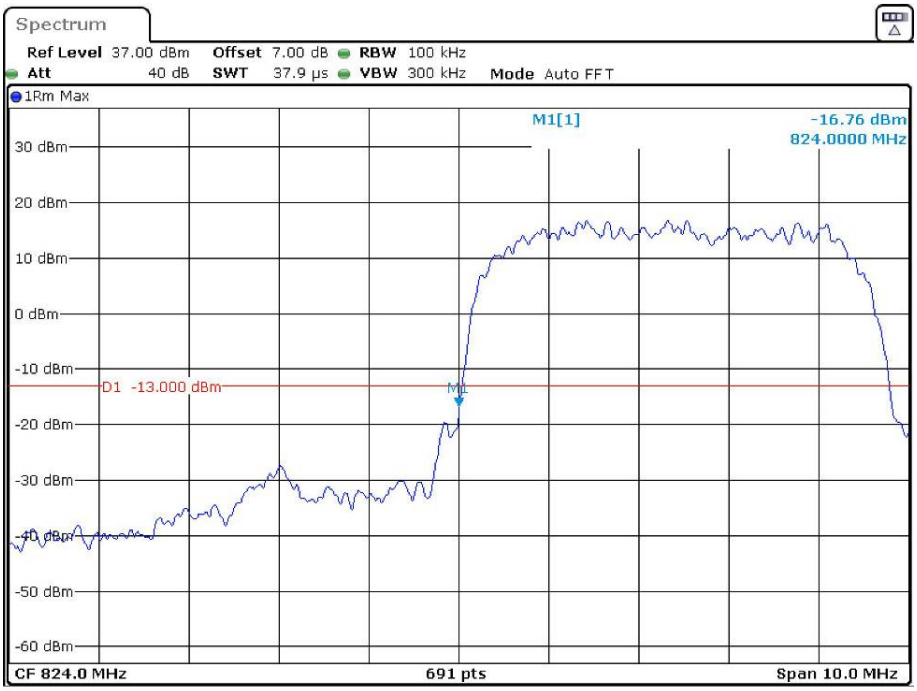

Date: 6.APR.2021 14:41:23

**Cellular Band, Right Band Edge for EGPRS (GMSK) Mode**



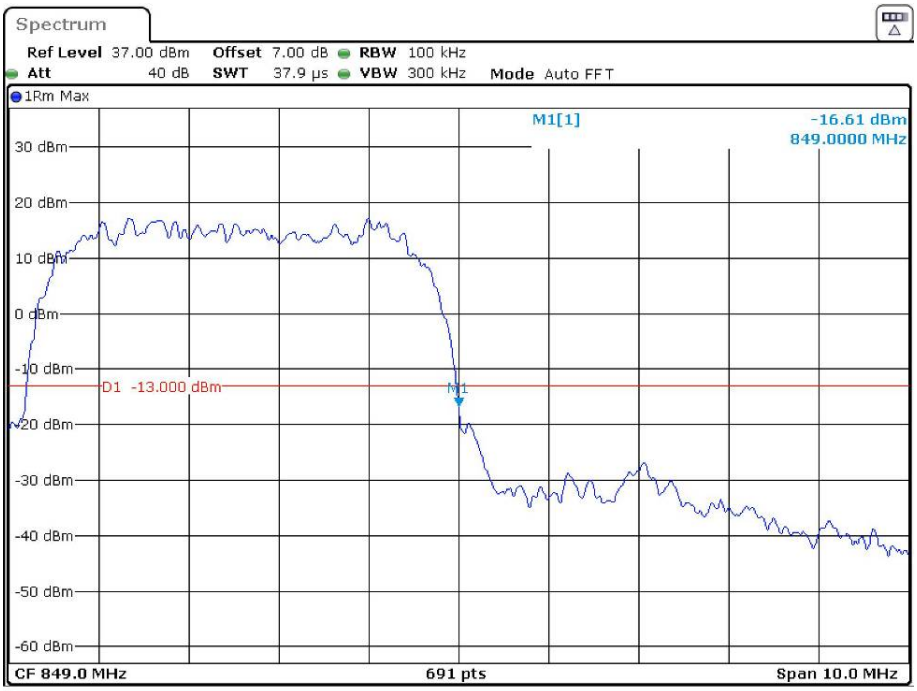

Date: 19.FEB.2021 15:05:30

**Cellular Band, Left Band Edge for WCDMA (BPSK) Mode**



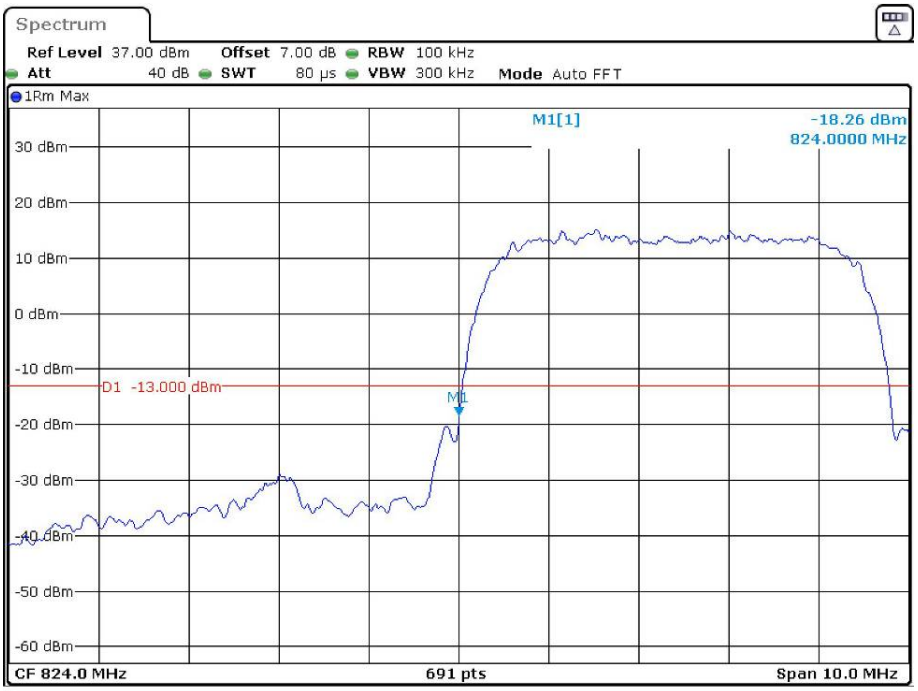

Date: 19.FEB.2021 19:57:42

**Cellular Band, Right Band Edge for WCDMA (BPSK) Mode**



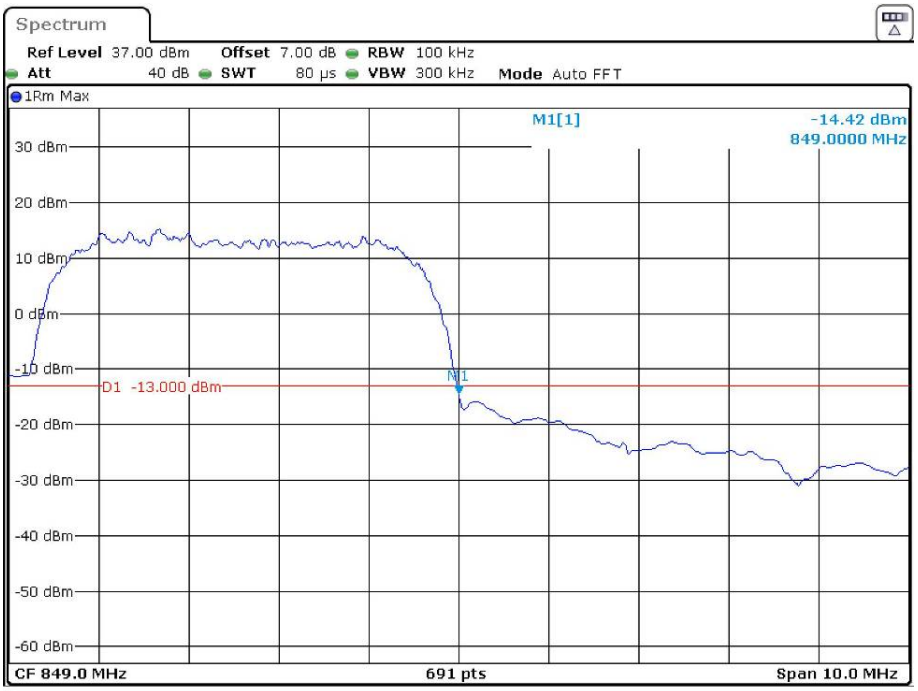

Date: 19.FEB.2021 19:57:09

**Cellular Band, Left Band Edge for HSDPA (16QAM) Mode**



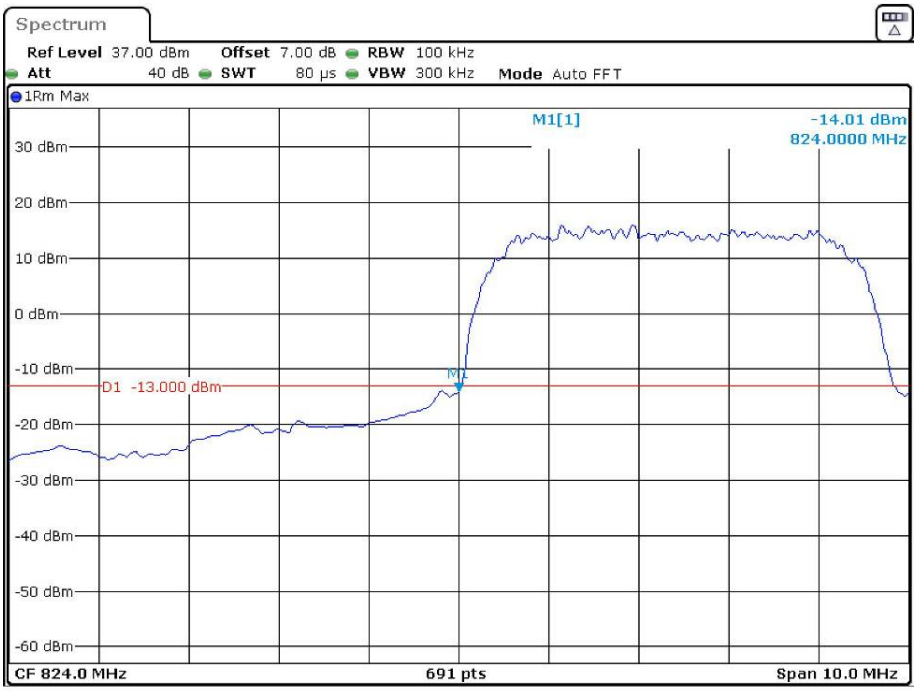

Date: 19.FEB.2021 20:03:18

**Cellular Band, Right Band Edge for HSDPA (16QAM) Mode**



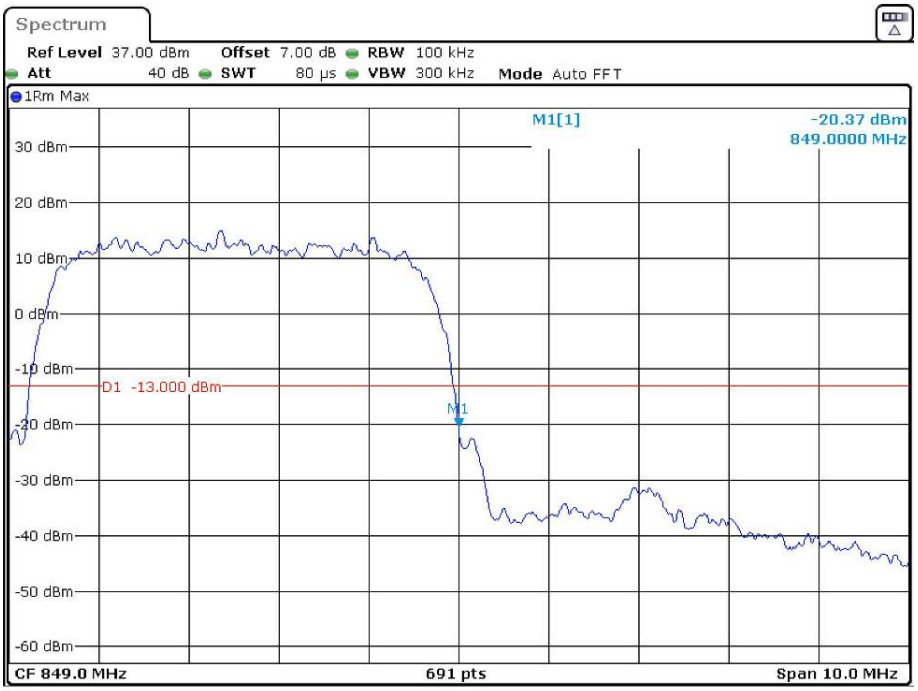

Date: 19.FEB.2021 20:01:23

**Cellular Band, Left Band Edge for HSUPA (BPSK) Mode**



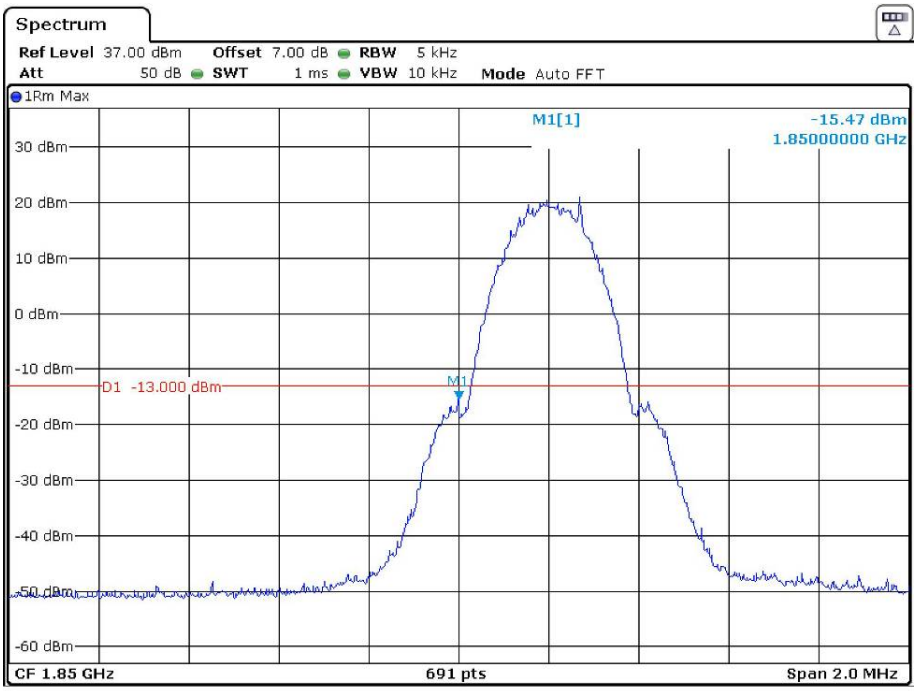

Date: 19.FEB.2021 19:59:36

**Cellular Band, Right Band Edge for HSUPA (BPSK) Mode**



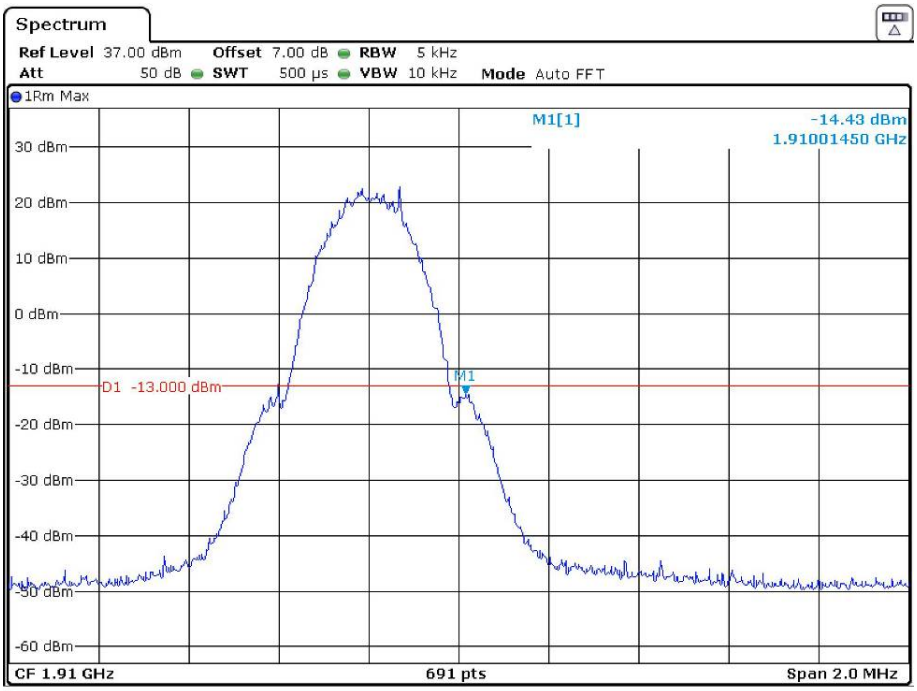

Date: 19.FEB.2021 20:00:14

**PCS Band, Left Band Edge for GSM (GMSK) Mode**



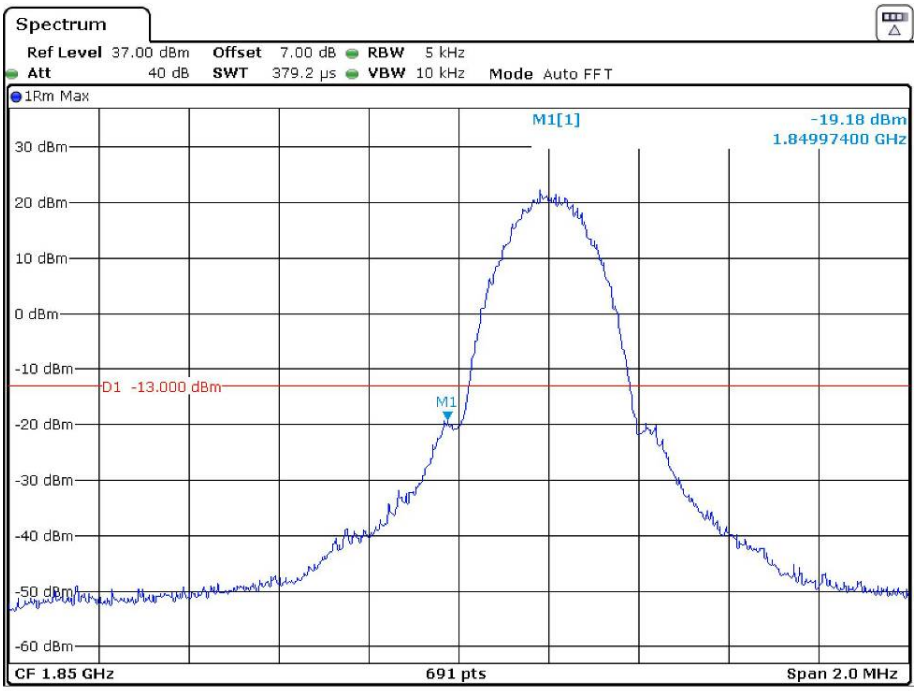

Date: 19.FEB.2021 15:14:11

**PCS Band, Right Band Edge for GSM (GMSK) Mode**



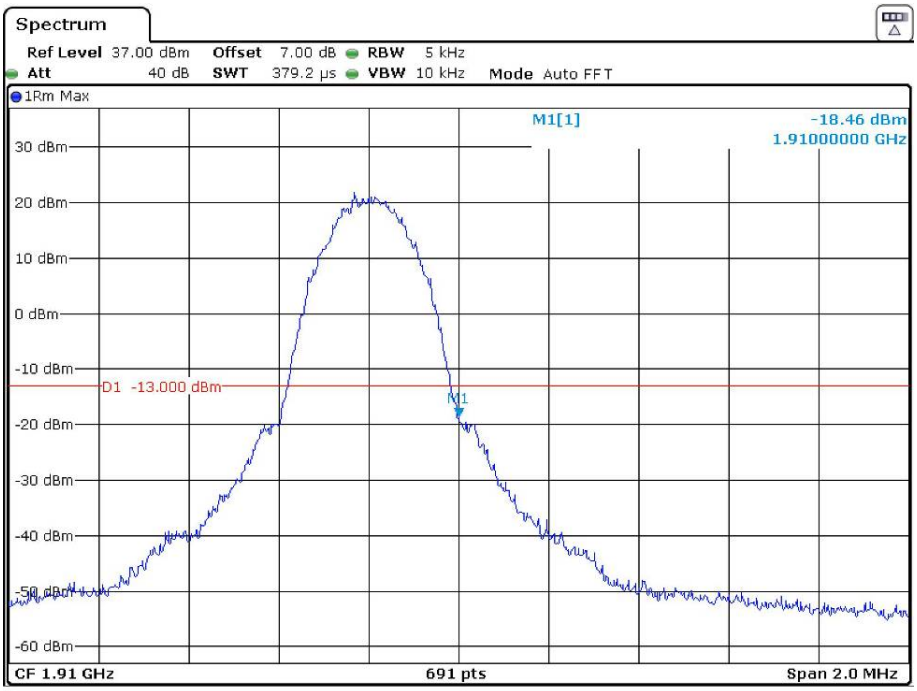

Date: 19.FEB.2021 15:12:57

**PCS Band, Left Band Edge for EGPRS (GMSK) Mode**



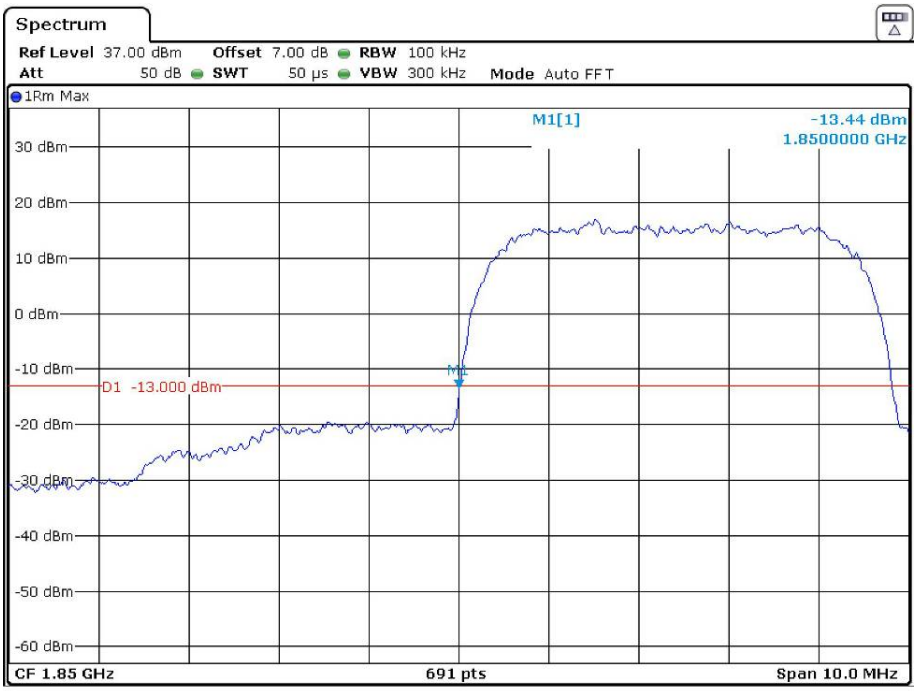

Date: 19.FEB.2021 15:45:55

**PCS Band, Right Band Edge for EGPRS (GMSK) Mode**



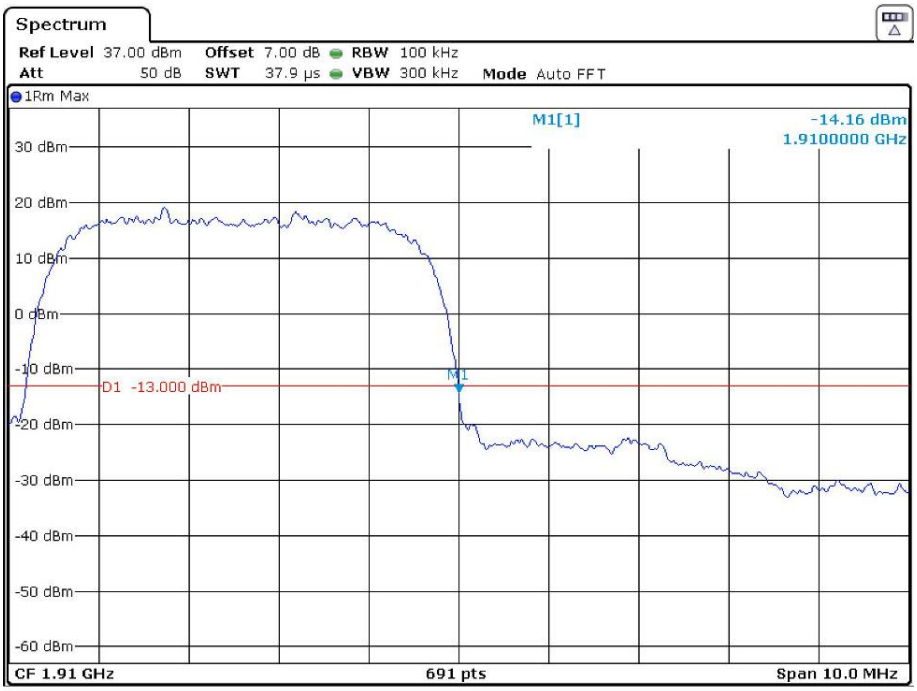

Date: 19.FEB.2021 15:46:46

**PCS Band, Left Band Edge for WCDMA (BPSK) Mode**



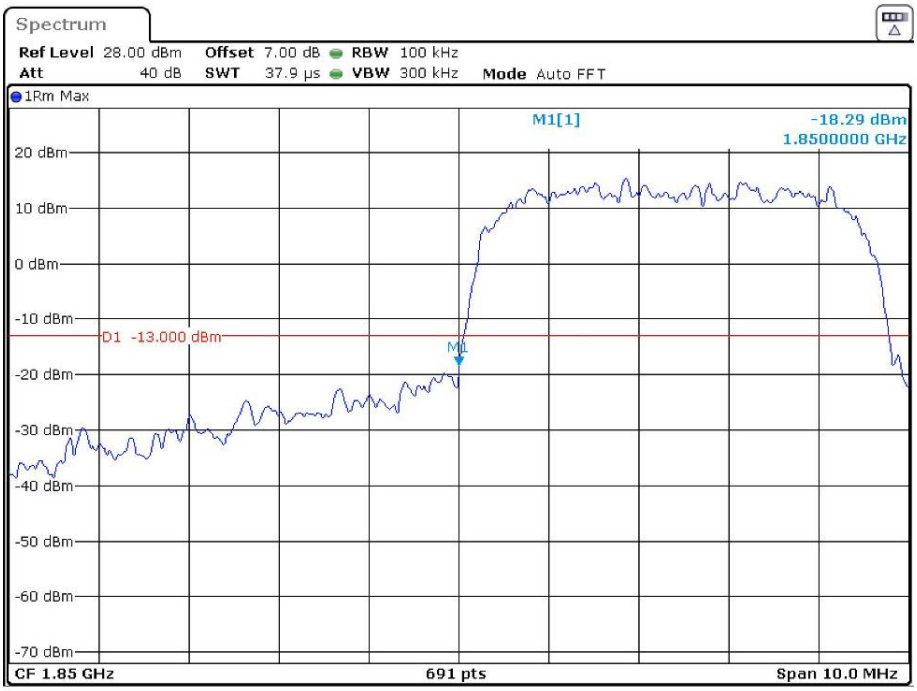

Date: 19.FEB.2021 18:52:03

**PCS Band, Right Band Edge for WCDMA (BPSK) Mode**



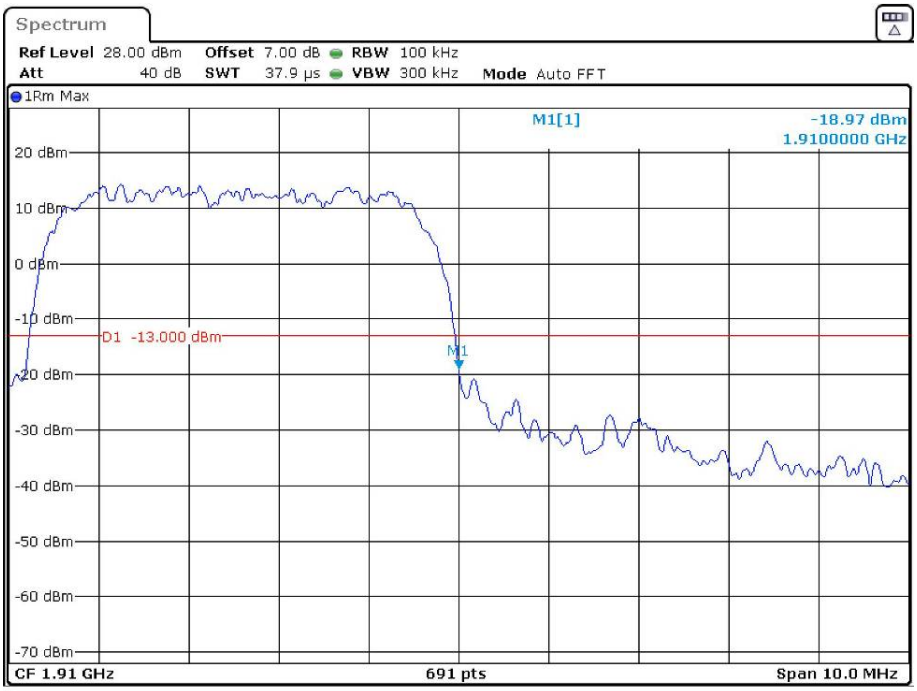

Date: 19.FEB.2021 18:50:59

**PCS Band, Left Band Edge for HSDPA (16QAM) Mode**



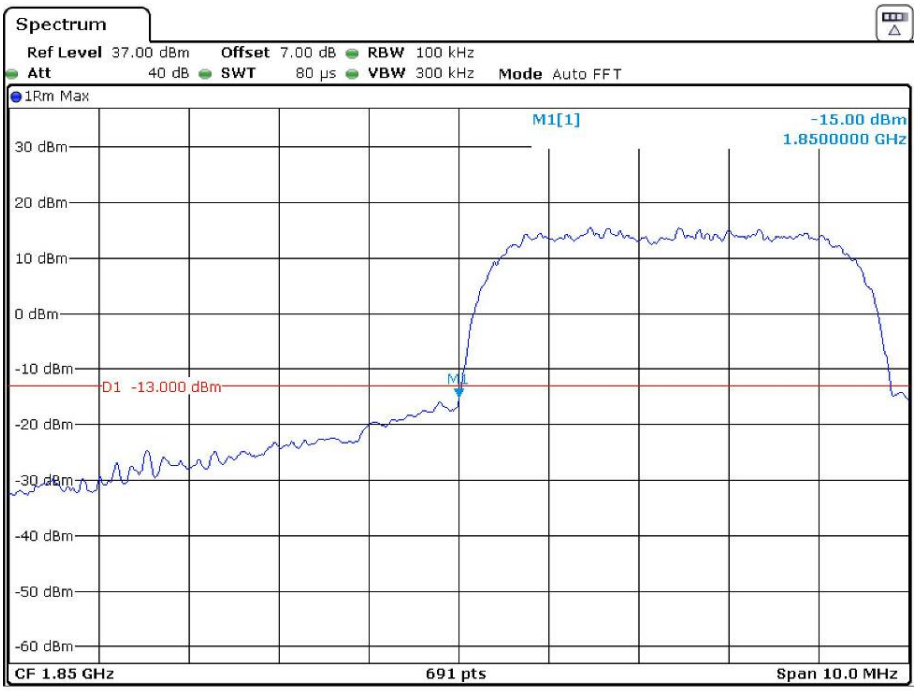

Date: 19.FEB.2021 19:08:54

**PCS Band, Right Band Edge for HSDPA (16QAM) Mode**



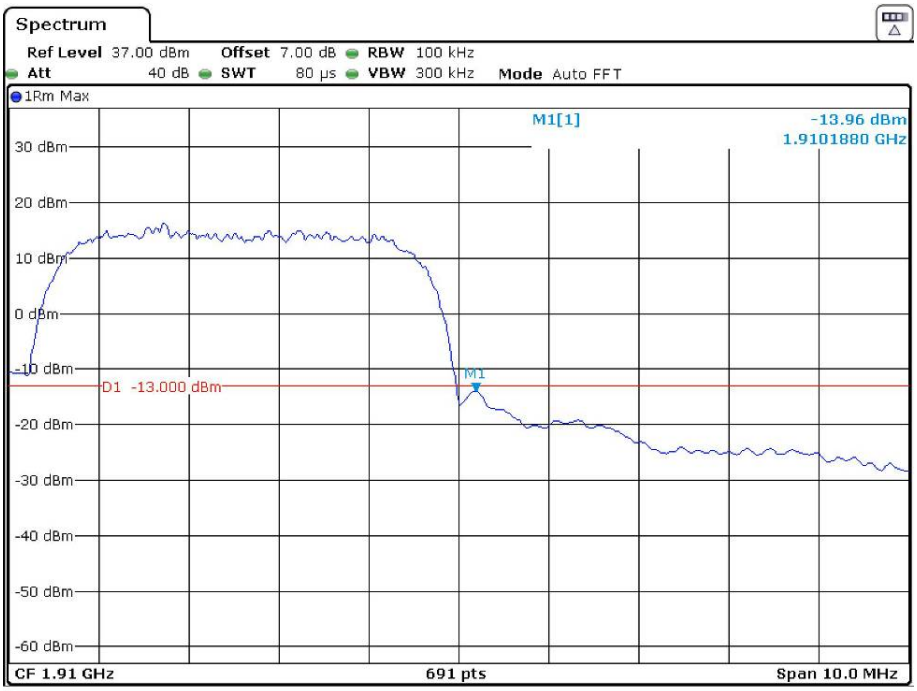

Date: 19.FEB.2021 19:09:38

**PCS Band, Left Band Edge for HSUPA (BPSK) Mode**



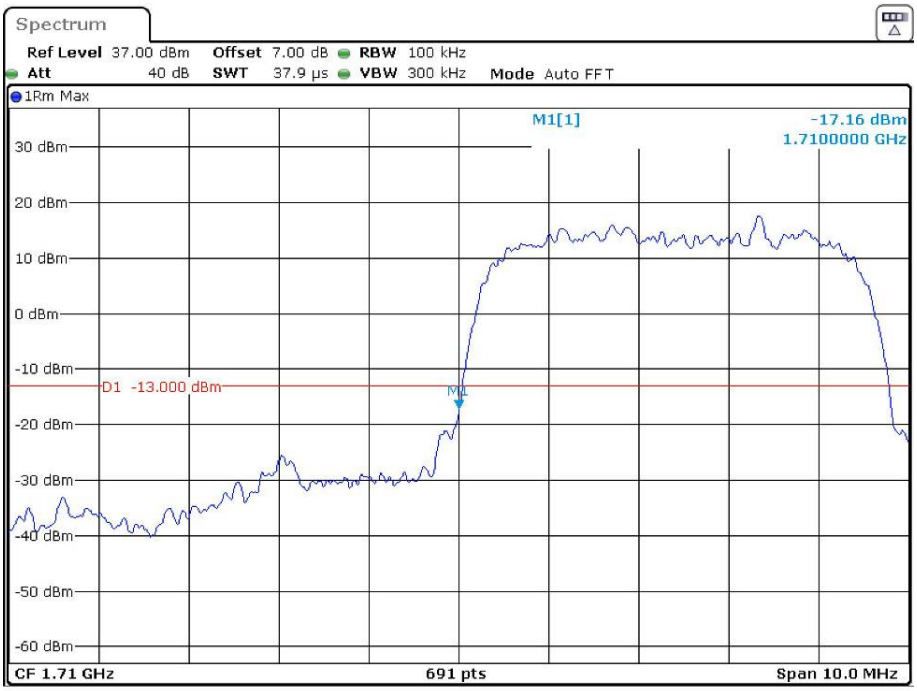

Date: 20.FEB.2021 16:42:07

**PCS Band, Right Band Edge for HSUPA (BPSK) Mode**



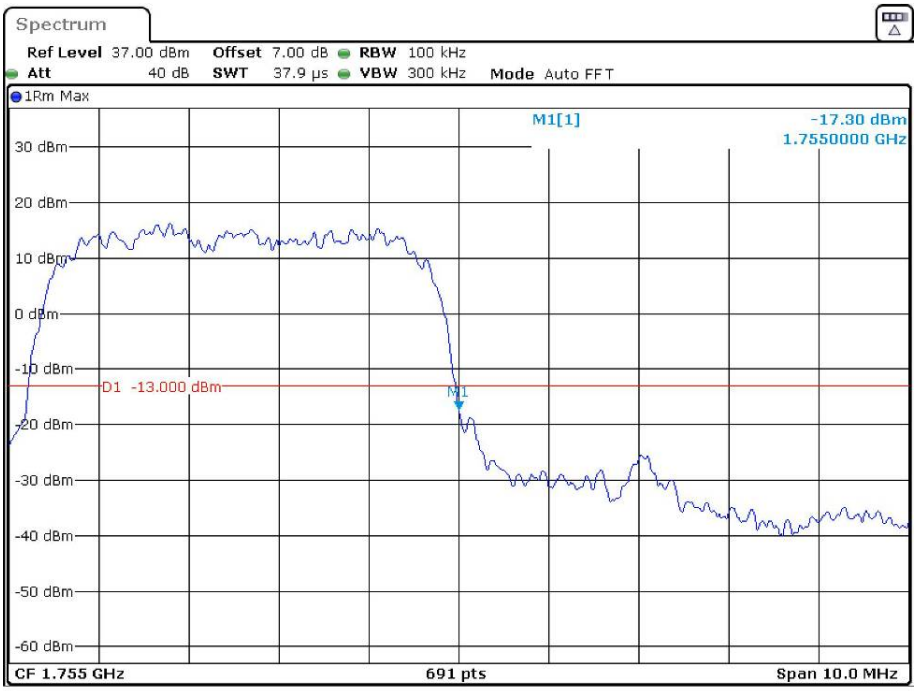

Date: 20.FEB.2021 16:42:34

**AWS Band, Left Band Edge for WCDMA (BPSK) Mode**



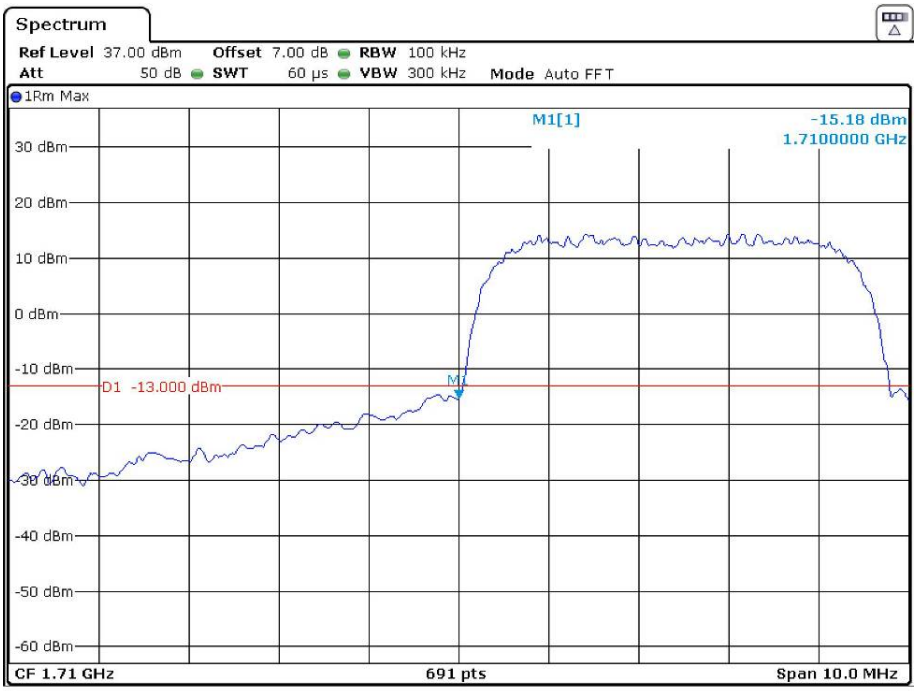

Date: 19.FEB.2021 19:44:16

**AWS Band, Right Band Edge for WCDMA (BPSK) Mode**



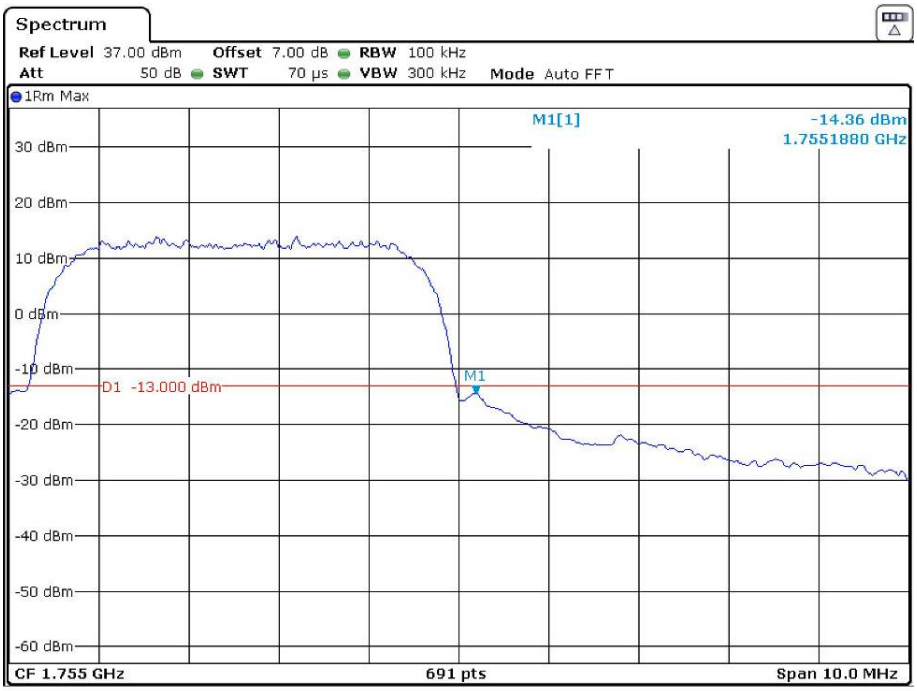

Date: 19.FEB.2021 19:44:51

**AWS Band, Left Band Edge for HSDPA (16QAM) Mode**



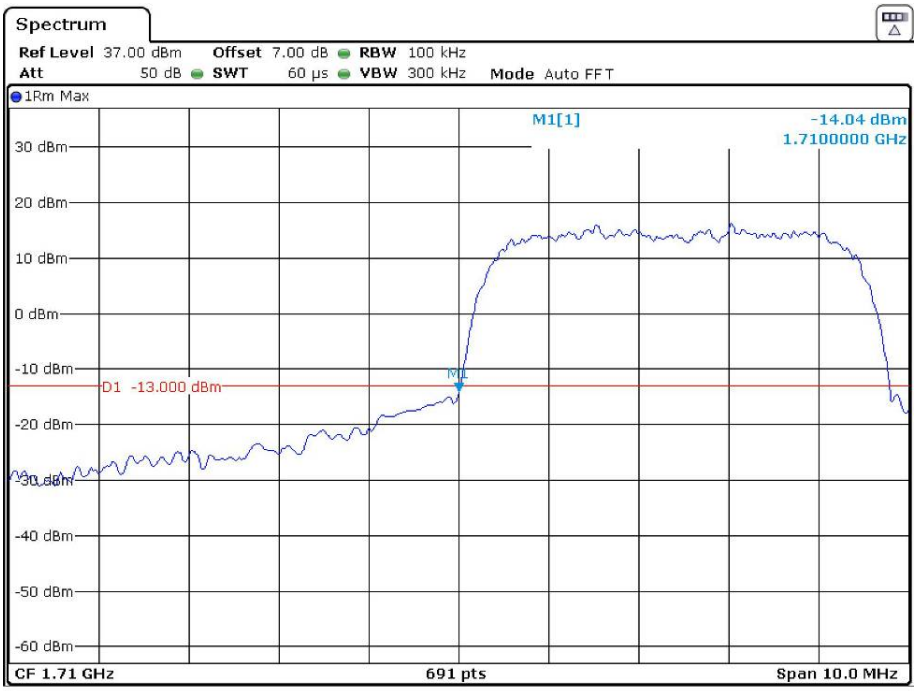

Date: 20.FEB.2021 13:46:27

**AWS Band, Right Band Edge for HSDPA (16QAM) Mode**

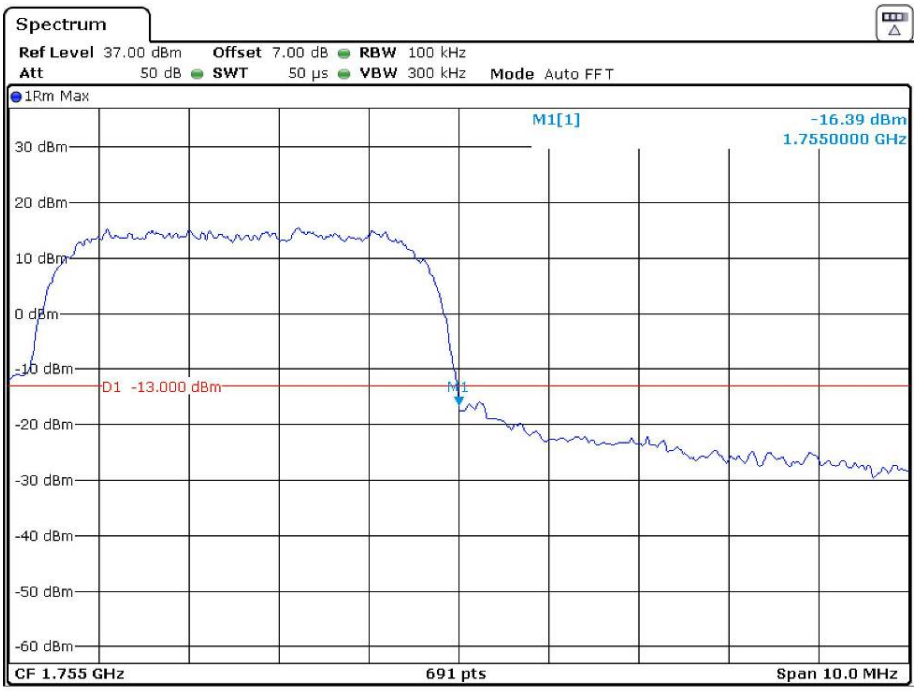



Date: 20.FEB.2021 13:48:36

**AWS Band, Left Band Edge for HSUPA (BPSK) Mode**




**AWS Band, Right Band Edge for HSUPA (BPSK) Mode**




The test plot of LTE band please refer to the Appendix C.

# FCC § 2.1055; § 22.355; § 24.235; §27.54 - FREQUENCY STABILITY

## Applicable Standard

FCC § 2.1055, §22.355, §24.235 and & §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.

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

| Frequency Range (MHz) | Base, fixed (ppm) | Mobile ≤ 3 watts (ppm) | Mobile > 3 watts (ppm) |
|---|---|---|---|
| 25 to 50 | 20.0 | 20.0 | 50.0 |
| 50 to 450 | 5.0 | 5.0 | 50.0 |
| 450 to 512 | 2.5 | 5.0 | 5.0 |
| 821 to 896 | 1.5 | 2.5 | 2.5 |
| 928 to 929. | 5.0 | N/A | N/A |
| 929 to 960. | 1.5 | N/A | N/A |
| 2110 to 2220 | 10.0 | N/A | N/A |

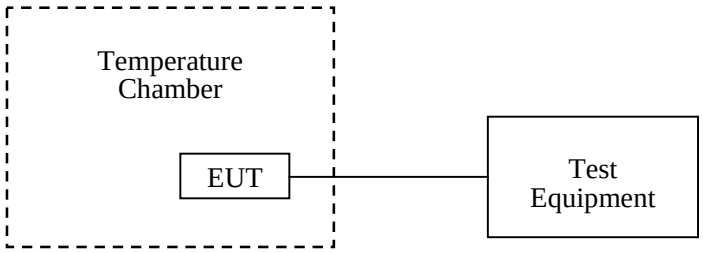
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

## 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 ℃ |
| **Relative Humidity:** | 55 % |
| **ATM Pressure:** | 101.0 kPa |

*The testing was performed by Gavin Guo from 2021-02-05 to 2021-03-22.*

*EUT operation mode: Transmitting*

**Test Result: Pass**

*Please refer to the following tables.*

**Cellular Band (Part 22H)**

**GSM Mode**

| Middle Channel, $f_o$ =836.6MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Voltage Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Limit (ppm)** |
| -30 | 3.87 | 7 | 0.0084 | 2.5 |
| -20 | | 7 | 0.0084 | 2.5 |
| -10 | | 10 | 0.0120 | 2.5 |
| 0 | | 3 | 0.0036 | 2.5 |
| 10 | | 8 | 0.0096 | 2.5 |
| 20 | | 9 | 0.0108 | 2.5 |
| 30 | | 8 | 0.0096 | 2.5 |
| 40 | | 7 | 0.0084 | 2.5 |
| 50 | | 8 | 0.0096 | 2.5 |
| 20 | 3.45 | 10 | 0.0120 | 2.5 |
| | 4.4 | 5 | 0.0060 | 2.5 |

**EDGE Mode**

| Middle Channel, $f_o$ =836.6MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Voltage Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Limit (ppm)** |
| -30 | 3.87 | 3 | 0.0036 | 2.5 |
| -20 | | 6 | 0.0072 | 2.5 |
| -10 | | 7 | 0.0084 | 2.5 |
| 0 | | 4 | 0.0048 | 2.5 |
| 10 | | 9 | 0.0108 | 2.5 |
| 20 | | 7 | 0.0084 | 2.5 |
| 30 | | 10 | 0.0120 | 2.5 |
| 40 | | 8 | 0.0096 | 2.5 |
| 50 | | 7 | 0.0084 | 2.5 |
| 20 | 3.45 | 9 | 0.0108 | 2.5 |
| | 4.4 | 7 | 0.0084 | 2.5 |

**WCDMA Mode**

| Middle Channel, $f_o$ =836.6MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Voltage Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Limit (ppm)** |
| -30 | 3.87 | 2 | 0.0024 | 2.5 |
| -20 | | 3 | 0.0036 | 2.5 |
| -10 | | -1 | -0.0012 | 2.5 |
| 0 | | 6 | 0.0072 | 2.5 |
| 10 | | 7 | 0.0084 | 2.5 |
| 20 | | 8 | 0.0096 | 2.5 |
| 30 | | 8 | 0.0096 | 2.5 |
| 40 | | 2 | 0.0024 | 2.5 |
| 50 | | 5 | 0.0060 | 2.5 |
| 20 | 3.45 | 6 | 0.0072 | 2.5 |
| | 4.4 | 1 | 0.0012 | 2.5 |

## PCS Band (Part 24E)

### GSM Mode

| Middle Channel, $f_o$ =1880.0 MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Voltage Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Result** |
| -30 | 3.87 | -4 | -0.0021 | pass |
| -20 | | 6 | 0.0032 | pass |
| -10 | | 6 | 0.0032 | pass |
| 0 | | 8 | 0.0043 | pass |
| 10 | | -2 | -0.0011 | pass |
| 20 | | 5 | 0.0027 | pass |
| 30 | | -2 | -0.0011 | pass |
| 40 | | 8 | 0.0043 | pass |
| 50 | | 6 | 0.0032 | pass |
| 20 | 3.45 | 6 | 0.0032 | pass |
| | 4.4 | -2 | -0.0011 | pass |

### EDGE Mode

| Middle Channel, $f_o$ =1880.0 MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Voltage Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Result** |
| -30 | 3.87 | -5 | -0.0027 | pass |
| -20 | | -3 | -0.0016 | pass |
| -10 | | 2 | 0.0011 | pass |
| 0 | | 1 | 0.0005 | pass |
| 10 | | -5 | -0.0027 | pass |
| 20 | | 1 | 0.0005 | pass |
| 30 | | -1 | -0.0005 | pass |
| 40 | | 1 | 0.0005 | pass |
| 50 | | -5 | -0.0027 | pass |
| 20 | 3.45 | 1 | 0.0005 | pass |
| | 4.4 | 0 | 0 | pass |

**WCDMA Mode**

| Middle Channel, $f_o$ =1880.0 MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Voltage Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Result** |
| -30 | 3.87 | 9 | 0.0048 | pass |
| -20 | | 6 | 0.0032 | pass |
| -10 | | 9 | 0.0048 | pass |
| 0 | | 7 | 0.0037 | pass |
| 10 | | 9 | 0.0048 | pass |
| 20 | | 4 | 0.0021 | pass |
| 30 | | 6 | 0.0032 | pass |
| 40 | | 5 | 0.0027 | pass |
| 50 | | 4 | 0.0021 | pass |
| 20 | 3.45 | 3 | 0.0016 | pass |
| | 4.4 | 6 | 0.0032 | pass |

**AWS Band (Part 27)**

| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
|---|---|---|---|---|---|
| -30 | 3.87 | 1710.0657 | 1754.9365 | 1710 | 1755 |
| -20 | | 1710.0655 | 1754.9328 | 1710 | 1755 |
| -10 | | 1710.0643 | 1754.9309 | 1710 | 1755 |
| 0 | | 1710.0602 | 1754.9367 | 1710 | 1755 |
| 10 | | 1710.0623 | 1754.9335 | 1710 | 1755 |
| 20 | | 1710.0612 | 1754.9351 | 1710 | 1755 |
| 30 | | 1710.0625 | 1754.9353 | 1710 | 1755 |
| 40 | | 1710.0649 | 1754.9343 | 1710 | 1755 |
| 50 | | 1710.0601 | 1754.9320 | 1710 | 1755 |
| 20 | 3.45 | 1710.0654 | 1754.9348 | 1710 | 1755 |
| | 4.4 | 1710.0606 | 1754.9312 | 1710 | 1755 |

**LTE:**
**QPSK:**

**Band 2:**

| 10.0 MHz Middle Channel, $f_o$ =1880MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Voltage Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Result** |
| -30 | 3.87 | -5.64 | -0.003 | pass |
| -20 | | -9.97 | -0.0053 | pass |
| -10 | | -6.13 | -0.0033 | pass |
| 0 | | 6.17 | 0.0033 | pass |
| 10 | | 7.92 | 0.0042 | pass |
| 20 | | 6.46 | 0.0034 | pass |
| 30 | | -6.52 | -0.0035 | pass |
| 40 | | 7.18 | 0.0038 | pass |
| 50 | | -9.69 | -0.0052 | pass |
| 20 | 3.45 | -8.17 | -0.0043 | pass |
| | 4.4 | -7.05 | -0.0038 | pass |

**Band 4:**

| 10 MHz Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
| -30 | 3.87 | 1710.4005 | 1754.5615 | 1710 | 1755 |
| -20 | | 1710.4171 | 1754.5347 | 1710 | 1755 |
| -10 | | 1710.3989 | 1754.5299 | 1710 | 1755 |
| 0 | | 1710.3808 | 1754.5883 | 1710 | 1755 |
| 10 | | 1710.4662 | 1754.5599 | 1710 | 1755 |
| 20 | | 1710.3992 | 1754.4956 | 1710 | 1755 |
| 30 | | 1710.4002 | 1754.4626 | 1710 | 1755 |
| 40 | | 1710.4384 | 1754.5112 | 1710 | 1755 |
| 50 | | 1710.3886 | 1754.5532 | 1710 | 1755 |
| 20 | 3.45 | 1710.4346 | 1754.5284 | 1710 | 1755 |
| | 4.4 | 1710.4657 | 1754.5903 | 1710 | 1755 |

**Band 5:**

| 10.0 MHz Middle Channel, $f_o$=836.5MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Voltage Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Limit (ppm)** |
| -30 | 3.87 | -9.03 | -0.0108 | 2.5 |
| -20 | | 9.11 | 0.0109 | 2.5 |
| -10 | | 8.51 | 0.0102 | 2.5 |
| 0 | | -7.15 | -0.0085 | 2.5 |
| 10 | | -5.29 | -0.0063 | 2.5 |
| 20 | | 7.24 | 0.0087 | 2.5 |
| 30 | | -5.81 | -0.0069 | 2.5 |
| 40 | | 5.59 | 0.0067 | 2.5 |
| 50 | | 6.87 | 0.0082 | 2.5 |
| 20 | 3.45 | 9.94 | 0.0119 | 2.5 |
| | 4.4 | 9.99 | 0.0119 | 2.5 |

**Band 7:**

| 10 MHz Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
| -30 | 3.87 | 2500.4078 | 2569.5484 | 2500 | 2570 |
| -20 | | 2500.5082 | 2569.4884 | 2500 | 2570 |
| -10 | | 2500.4724 | 2569.5752 | 2500 | 2570 |
| 0 | | 2500.4902 | 2569.5205 | 2500 | 2570 |
| 10 | | 2500.4685 | 2569.5281 | 2500 | 2570 |
| 20 | | 2500.4648 | 2569.5680 | 2500 | 2570 |
| 30 | | 2500.5106 | 2569.4452 | 2500 | 2570 |
| 40 | | 2500.4246 | 2569.5354 | 2500 | 2570 |
| 50 | | 2500.4701 | 2569.5584 | 2500 | 2570 |
| 20 | 3.45 | 2500.4109 | 2569.5146 | 2500 | 2570 |
| | 4.4 | 2500.4323 | 2569.4945 | 2500 | 2570 |

**Band 17:**

| 10 MHz Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
| -30 | 3.87 | 704.4087 | 715.5471 | 704 | 716 |
| -20 | | 704.5083 | 715.4891 | 704 | 716 |
| -10 | | 704.4721 | 715.5749 | 704 | 716 |
| 0 | | 704.4889 | 715.5209 | 704 | 716 |
| 10 | | 704.4673 | 715.5278 | 704 | 716 |
| 20 | | 704.4650 | 715.5685 | 704 | 716 |
| 30 | | 704.5109 | 715.4454 | 704 | 716 |
| 40 | | 704.4240 | 715.5364 | 704 | 716 |
| 50 | | 704.4704 | 715.5599 | 704 | 716 |
| 20 | 3.45 | 704.4106 | 715.5146 | 704 | 716 |
| | 4.4 | 704.4327 | 715.4944 | 704 | 716 |

**Band 38:**

| 10 MHz Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
| -30 | 3.87 | 2570.0292 | 2619.9135 | 2570 | 2620 |
| -20 | | 2570.0539 | 2619.9189 | 2570 | 2620 |
| -10 | | 2570.0734 | 2619.9157 | 2570 | 2620 |
| 0 | | 2570.0475 | 2619.9017 | 2570 | 2620 |
| 10 | | 2570.0112 | 2619.9582 | 2570 | 2620 |
| 20 | | 2570.0991 | 2619.9035 | 2570 | 2620 |
| 30 | | 2570.0171 | 2619.9341 | 2570 | 2620 |
| 40 | | 2570.0842 | 2619.9974 | 2570 | 2620 |
| 50 | | 2570.0067 | 2619.9457 | 2570 | 2620 |
| 20 | 3.45 | 2570.0834 | 2619.9023 | 2570 | 2620 |
| | 4.4 | 2570.1002 | 2619.9826 | 2570 | 2620 |

**Band 41:**

| 10 MHz Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
| -30 | 3.87 | 2535.0741 | 2654.9232 | 2535 | 2655 |
| -20 | | 2535.0501 | 2654.9877 | 2535 | 2655 |
| -10 | | 2535.0388 | 2654.9084 | 2535 | 2655 |
| 0 | | 2535.0272 | 2654.9034 | 2535 | 2655 |
| 10 | | 2535.0151 | 2654.9472 | 2535 | 2655 |
| 20 | | 2535.0700 | 2654.9044 | 2535 | 2655 |
| 30 | | 2535.0475 | 2654.9648 | 2535 | 2655 |
| 40 | | 2535.0417 | 2654.9917 | 2535 | 2655 |
| 50 | | 2535.0924 | 2654.9792 | 2535 | 2655 |
| 20 | 3.45 | 2535.0310 | 2654.9552 | 2535 | 2655 |
| | 4.4 | 2535.0261 | 2654.9785 | 2535 | 2655 |

Note: The applicant declared the operating frequency range is 2535-2655MHz.

**Band 66:**

| 10 MHz Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
| -30 | 3.87 | 1710.3736 | 1779.6231 | 1710 | 1780 |
| -20 | | 1710.3506 | 1779.6872 | 1710 | 1780 |
| -10 | | 1710.3384 | 1779.6086 | 1710 | 1780 |
| 0 | | 1710.3267 | 1779.6029 | 1710 | 1780 |
| 10 | | 1710.3148 | 1779.6459 | 1710 | 1780 |
| 20 | | 1710.3700 | 1779.6046 | 1710 | 1780 |
| 30 | | 1710.3480 | 1779.6638 | 1710 | 1780 |
| 40 | | 1710.3408 | 1779.6918 | 1710 | 1780 |
| 50 | | 1710.3928 | 1779.6791 | 1710 | 1780 |
| 20 | 3.45 | 1710.3311 | 1779.6550 | 1710 | 1780 |
| | 4.4 | 1710.3263 | 1779.6787 | 1710 | 1780 |

**16QAM:**

**Band 2:**

| 10.0 MHz Middle Channel, $f_o$ =1880MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Voltage Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Result** |
| -30 | 3.87 | -7 | -0.0037 | pass |
| -20 | | -4 | -0.0021 | pass |
| -10 | | 15 | 0.0080 | pass |
| 0 | | -2 | -0.0011 | pass |
| 10 | | 9 | 0.0048 | pass |
| 20 | | -10 | -0.0053 | pass |
| 30 | | -6 | -0.0032 | pass |
| 40 | | -4 | -0.0021 | pass |
| 50 | | 11 | 0.0059 | pass |
| 20 | 3.45 | 11 | 0.0059 | pass |
| | 4.4 | 11 | 0.0059 | pass |

**Band 4:**

| 10 MHz Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
| -30 | 3.87 | 1710.3578 | 1754.5234 | 1710 | 1755 |
| -20 | | 1710.4046 | 1754.5070 | 1710 | 1755 |
| -10 | | 1710.5067 | 1754.5631 | 1710 | 1755 |
| 0 | | 1710.3410 | 1754.5772 | 1710 | 1755 |
| 10 | | 1710.4146 | 1754.5563 | 1710 | 1755 |
| 20 | | 1710.4100 | 1754.5087 | 1710 | 1755 |
| 30 | | 1710.4145 | 1754.5495 | 1710 | 1755 |
| 40 | | 1710.4410 | 1754.4748 | 1710 | 1755 |
| 50 | | 1710.4575 | 1754.6369 | 1710 | 1755 |
| 20 | 3.45 | 1710.4287 | 1754.5996 | 1710 | 1755 |
| | 4.4 | 1710.4474 | 1754.5462 | 1710 | 1755 |

**Band 5:**

| 10.0 MHz Middle Channel, $f_o$=836.5MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Voltage Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Limit (ppm)** |
| -30 | 3.87 | -3.60 | -0.0043 | 2.5 |
| -20 | | 6.80 | 0.0081 | 2.5 |
| -10 | | -9.52 | -0.0114 | 2.5 |
| 0 | | -8.15 | -0.0097 | 2.5 |
| 10 | | -8.88 | -0.0106 | 2.5 |
| 20 | | -9.82 | -0.0117 | 2.5 |
| 30 | | 8.38 | 0.01 | 2.5 |
| 40 | | 6.75 | 0.0081 | 2.5 |
| 50 | | -5.89 | -0.007 | 2.5 |
| 20 | 3.45 | 8.98 | 0.0107 | 2.5 |
| | 4.4 | -7.83 | -0.0094 | 2.5 |

**Band 7:**

| 10 MHz Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
| -30 | 3.87 | 2500.4812 | 2569.4722 | 2500 | 2570 |
| -20 | | 2500.5114 | 2569.5651 | 2500 | 2570 |
| -10 | | 2500.5091 | 2569.5379 | 2500 | 2570 |
| 0 | | 2500.4794 | 2569.5780 | 2500 | 2570 |
| 10 | | 2500.5073 | 2569.5504 | 2500 | 2570 |
| 20 | | 2500.4451 | 2569.5266 | 2500 | 2570 |
| 30 | | 2500.4972 | 2569.4916 | 2500 | 2570 |
| 40 | | 2500.4728 | 2569.5320 | 2500 | 2570 |
| 50 | | 2500.4406 | 2569.5691 | 2500 | 2570 |
| 20 | 3.45 | 2500.4132 | 2569.5514 | 2500 | 2570 |
| | 4.4 | 2500.4530 | 2569.4974 | 2500 | 2570 |

**Band 17:**

| 10 MHz Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
| -30 | 3.87 | 704.4132 | 715.5465 | 704 | 716 |
| -20 | | 704.5078 | 715.4901 | 704 | 716 |
| -10 | | 704.4669 | 715.5746 | 704 | 716 |
| 0 | | 704.4902 | 715.5166 | 704 | 716 |
| 10 | | 704.4680 | 715.5367 | 704 | 716 |
| 20 | | 704.4651 | 715.5744 | 704 | 716 |
| 30 | | 704.5062 | 715.4458 | 704 | 716 |
| 40 | | 704.4272 | 715.5410 | 704 | 716 |
| 50 | | 704.4726 | 715.5522 | 704 | 716 |
| 20 | 3.45 | 704.4149 | 715.5175 | 704 | 716 |
| | 4.4 | 704.4289 | 715.4895 | 704 | 716 |

**Band 38:**

| 10 MHz Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
| -30 | 3.87 | 2570.0329 | 2619.9313 | 2570 | 2620 |
| -20 | | 2570.0290 | 2619.9348 | 2570 | 2620 |
| -10 | | 2570.0345 | 2619.9314 | 2570 | 2620 |
| 0 | | 2570.0335 | 2619.9401 | 2570 | 2620 |
| 10 | | 2570.0297 | 2619.9353 | 2570 | 2620 |
| 20 | | 2570.0303 | 2619.9403 | 2570 | 2620 |
| 30 | | 2570.0283 | 2619.9274 | 2570 | 2620 |
| 40 | | 2570.0317 | 2619.9226 | 2570 | 2620 |
| 50 | | 2570.0264 | 2619.9343 | 2570 | 2620 |
| 20 | 3.45 | 2570.0393 | 2619.9361 | 2570 | 2620 |
| | 4.4 | 2570.0290 | 2619.9317 | 2570 | 2620 |

**Band 41:**

| 10 MHz Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
| -30 | 3.87 | 2535.0756 | 2654.9163 | 2535 | 2655 |
| -20 | | 2535.0558 | 2654.9875 | 2535 | 2655 |
| -10 | | 2535.0326 | 2654.9122 | 2535 | 2655 |
| 0 | | 2535.0308 | 2654.9042 | 2535 | 2655 |
| 10 | | 2535.0125 | 2654.9529 | 2535 | 2655 |
| 20 | | 2535.0703 | 2654.9080 | 2535 | 2655 |
| 30 | | 2535.0451 | 2654.9659 | 2535 | 2655 |
| 40 | | 2535.0464 | 2654.9948 | 2535 | 2655 |
| 50 | | 2535.0899 | 2654.9716 | 2535 | 2655 |
| 20 | 3.45 | 2535.0318 | 2654.9522 | 2535 | 2655 |
| | 4.4 | 2535.0212 | 2654.9776 | 2535 | 2655 |

Note: The applicant declared the operating frequency range is 2535-2655MHz.

**Band 66:**

| 10 MHz Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
| -30 | 3.87 | 1710.3768 | 1779.6278 | 1710 | 1780 |
| -20 | | 1710.3508 | 1779.6841 | 1710 | 1780 |
| -10 | | 1710.3306 | 1779.6086 | 1710 | 1780 |
| 0 | | 1710.3257 | 1779.6023 | 1710 | 1780 |
| 10 | | 1710.3201 | 1779.6530 | 1710 | 1780 |
| 20 | | 1710.3695 | 1779.6111 | 1710 | 1780 |
| 30 | | 1710.3417 | 1779.6642 | 1710 | 1780 |
| 40 | | 1710.3448 | 1779.6872 | 1710 | 1780 |
| 50 | | 1710.3899 | 1779.6798 | 1710 | 1780 |
| 20 | 3.45 | 1710.3321 | 1779.6570 | 1710 | 1780 |
| | 4.4 | 1710.3304 | 1779.6709 | 1710 | 1780 |

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