ACCREDITED
TESTING LABORATORY
CERTIFICATE # 4821.01

BACL
Bay Area Compliance Labs Corp.

# FCC PART 27

# FCC PART 22H, PART 24E

# TEST REPORT

For

## BLU Products, Inc.

10814 NW 33rd St # 100 Doral, FL 33172,USA

**FCC ID: YHLBLUC5LP21**

| **Report Type:** | **Product Type:** |
|---|---|
| Original Report | Mobile phone |

| | |
|---|---|
| **Report Number:** | SZ1210715-29262E-RF-00A |
| **Report Date:** | 2021-08-27 |
| **Reviewed By:** | Jimmy Xiao Jimmy xiao<br>RF Engineer |
| **Prepared By:** | Bay Area Compliance Laboratories Corp. (Shenzhen)<br>5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, China<br>Tel: +86-755-33320018<br>Fax: +86-755-33320008<br>www.baclcorp.com.cn |

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# GENERAL INFORMATION

## Product Description for Equipment under Test (EUT)

| | |
|---|---|
| Product | Mobile Phone |
| Tested Model | C5L+ 2021 |
| Frequency Range | GSM 850: 824-849MHz(TX); 869-894MHz(RX)<br>PCS 1900: 1850-1910MHz(TX); 1930-1990MHz(RX)<br>WCDMA Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX)<br>WCDMA Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX)<br>WCDMA Band 5: 824-849MHz(TX); 869-894MHz(RX)<br>LTE Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX)<br>LTE Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX)<br>LTE Band 5: 824-849MHz(TX); 869-894MHz(RX)<br>LTE Band 7: 2500-2570MHz(TX); 2620-2690MHz(RX)<br>LTE Band 12: 699-716MHz(TX); 729-746MHz(RX)<br>LTE Band 17: 704-716MHz(TX); 734-746MHz(RX)<br>LTE Band 66: 1710-1780MHz(TX), 2110-2180MHz(RX) |
| Modulation Technique | 2G: GMSK, 8PSK<br>3G: BPSK, QPSK, 16QAM<br>4G: QPSK, 16QAM |
| Antenna Specification* | GSM850/WCDMA Band 5/LTE Band 5: -2.0dBi<br>PCS1900/WCDMA Band 2/ LTE Band 2: 1.2dBi<br>WCDMA Band 4/ LTE Band 4/LTE Band 66: 1.2dBi<br>LTE Band 7: 1.8dBi<br>LTE Band 12/LTE Band17: -2.0dBi<br>(it was provided by the applicant) |
| Voltage Range | DC 3.8V from battery or DC 5.0V from adapter |
| Date of Test | 2021-07-16 to 2021-08-14 |
| Sample number | SZ1210715-29262E-RF-S1 (Assigned by BACL, Shenzhen) |
| Received date | 2021-07-15 |
| Sample/EUT Status | Good condition |
| Adapter information | Model: US-FC-0750<br>Input: AC 100-240V ~ 50/60Hz, 0.2A<br>Output: DC 5.0V, 750mA |

## Objective

This test report is in accordance with Part 2-Subpart J, Part 22-Subpart H and Part 24-Subpart E and 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.

## 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 22 Subpart H - Public Mobile Services
Part 24 Subpart E - Personal Communication Services
Part 27 – Miscellaneous wireless communications services

ANSI C63.26-2015: American National Standard for Compliance Testing of Transmitters Used in Licensed Radio 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.
Each test item follows test standards and with no deviation.

## Measurement Uncertainty

| Parameter | | Uncertainty |
|---|---|---|
| Occupied Channel Bandwidth | | ±5% |
| RF output power, conducted | | ±0.73dB |
| Unwanted Emission, conducted | | ±1.6dB |
| Emissions, Radiated | Below 1GHz | ±4.75dB |
| | Above 1GHz | ±4.88dB |
| Temperature | | ±1℃ |
| Humidity | | ±6% |
| Supply voltages | | ±0.4% |

*Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.*

## Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) ,6F,7F,the 3rd Phase of Wan Li Industrial Building D,Shihua Rd, FuTian Free Trade Zone, Shenzhen, 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 final qualification test was performed with the EUT operating at normal mode.

Test was performed as below table:

| Frequency band | Bandwidth (MHz) | Test Frequency(MHz) | | |
|---|---|---|---|---|
| | | Low | Middle | High |
| GSM850 | 0.25 | 824.2 | 836.6 | 848.8 |
| DCS1900 | 0.25 | 1850.2 | 1880.0 | 1909.8 |
| WCDMA B2 | 4.2 | 1852.4 | 1880.0 | 1907.6 |
| WCDMA B4 | 4.2 | 1712.4 | 1732.6 | 1752.6 |
| WCDMA B5 | 4.2 | 826.4 | 836.6 | 846.6 |
| LTE B2 | 1.4 | 1850.7 | 1880.0 | 1909.3 |
| | 3 | 1851.5 | 1880.0 | 1908.5 |
| | 5 | 1852.5 | 1880.0 | 1907.5 |
| | 10 | 1855.0 | 1880.0 | 1905.0 |
| | 15 | 1857.5 | 1880.0 | 1902.5 |
| | 20 | 1860.0 | 1880.0 | 1900.0 |
| LTE B4 | 1.4 | 1710.7 | 1732.5 | 1754.3 |
| | 3 | 1711.5 | 1732.5 | 1753.5 |
| | 5 | 1712.5 | 1732.5 | 1752.5 |
| | 10 | 1715.0 | 1732.5 | 1750.0 |
| | 15 | 1717.5 | 1732.5 | 1747.5 |
| | 20 | 1720.0 | 1732.5 | 1745.0 |
| LTE B5 | 1.4 | 824.7 | 836.5 | 848.3 |
| | 3 | 825.5 | 836.5 | 847.5 |
| | 5 | 826.5 | 836.5 | 846.5 |
| | 10 | 829.0 | 836.5 | 844.0 |
| LTE B7 | 5 | 2502.5 | 2535.0 | 2567.5 |
| | 10 | 2505.0 | 2535.0 | 2565 |
| | 15 | 2507.5 | 2535.0 | 2562.5 |
| | 20 | 2510.0 | 2535.0 | 2560.0 |
| LTE B12 | 1.4 | 699.7 | 707.5 | 715.3 |
| | 3 | 700.5 | 707.5 | 714.5 |
| | 5 | 701.5 | 707.5 | 713.5 |
| | 10 | 704.0 | 707.5 | 711.0 |
| LTE B17 | 5 | 706.5 | 710.0 | 713.5 |
| | 10 | 709.0 | 710.0 | 711.0 |

| Frequency band | Bandwidth (MHz) | Test Frequency(MHz) | | |
|---|---|---|---|---|
| | | Low | Middle | High |
| LTE B66 | 1.4 | 1710.7 | 1745.0 | 1779.3 |
| | 3 | 1711.5 | 1745.0 | 1778.5 |
| | 5 | 1712.5 | 1745.0 | 1777.5 |
| | 10 | 1705.0 | 1745.0 | 1775.0 |
| | 15 | 1707.5 | 1745.0 | 1772.5 |
| | 20 | 1710.0 | 1745.0 | 1770.0 |

## Equipment Modifications

No modification was made to the EUT.

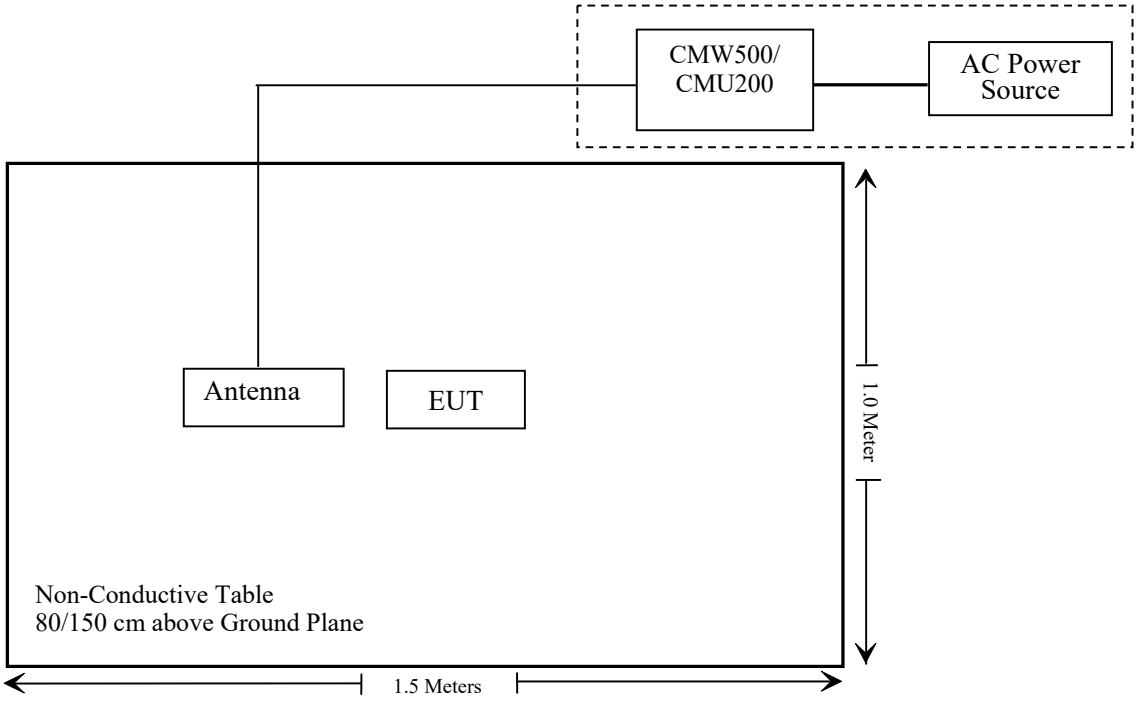
## Support Equipment List and Details

| Manufacturer | Description | Model | Serial Number |
|---|---|---|---|
| Rohde & Schwarz | Wideband Radio Communication Tester | CMW500 | 1201.002K50-116218-U |
| Rohde & Schwarz | Universal Radio Communication Tester | CMU200 | 115500 |

## Support Cable Description

| Cable Description | Length (m) | From / Port | To |
|---|---|---|---|
| Unshielded Detachable AC Cable | 1.2 | AC Mains | CMW500/ CMU200 |

## Block Diagram of Test Setup



# SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test | Result |
|---|---|---|
| § 1.1307 , §2.1093 | RF Exposure (SAR) | Compliant* |
| §2.1046; § 22.913 (a); § 24.232 (c); §27.50 (c) (d) (h) | RF Output Power | Compliant |
| § 2.1047 | Modulation Characteristics | Not Applicable |
| § 2.1049; § 22.905; § 22.917; § 24.238; §27.53 | Occupied Bandwidth | Compliant |
| § 2.1051; § 22.917 (a); § 24.238 (a); §27.53 | Spurious Emissions at Antenna Terminal | Compliant |
| § 2.1053; § 22.917 (a); § 24.238 (a); §27.53 | Field Strength of Spurious Radiation | Compliant |
| § 22.917 (a); § 24.238 (a); §27.53(c)(h) (m) | Band Edge | Compliant |
| § 2.1055; § 22.355; § 24.235; §27.54; | Frequency stability | Compliant |

Note: * Please refer to SAR report released by BACL, report number: SZ1210715-29262E-SA.

# TEST EQUIPMENT LIST

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| **Radiated Emission Test** | | | | | |
| R&S | EMI Test Receiver | ESR3 | 102455 | 2020/08/04 | 2021/08/03 |
| Sonoma instrument | Pre-amplifier | 310 N | 186238 | 2020/08/04 | 2021/08/03 |
| Sunol Sciences | Broadband Antenna | JB1 | A040904-2 | 2020/12/22 | 2023/12/21 |
| COM-POWER | Dipole Antenna | AD-100 | 721027 | NCR | NCR |
| Unknown | Cable 2 | RF Cable 2 | F-03-EM197 | 2020/11/29 | 2021/11/28 |
| Unknown | Cable | Chamber Cable 1 | F-03-EM236 | 2020/11/29 | 2021/11/28 |
| Rohde & Schwarz | Spectrum Analyzer | FSV40-N | 102259 | 2020/08/04 | 2021/08/03 |
| COM-POWER | Pre-amplifier | PA-122 | 181919 | 2020/11/29 | 2021/11/28 |
| Quinstar | Amplifier | QLW-18405536-J0 | 15964001002 | 2020/11/29 | 2021/11/28 |
| Sunol Sciences | Horn Antenna | 3115 | 9107-3694 | 2021/01/15 | 2024/01/14 |
| A.H.System | Horn Antenna | SAS-200/571 | 135 | 2018/09/01 | 2021/08/31 |
| Insulted Wire Inc. | RF Cable | SPS-2503-3150 | 02222010 | 2020/11/29 | 2021/11/28 |
| Unknown | RF Cable | W1101-EQ1 OUT | F-19-EM005 | 2020/11/29 | 2021/11/28 |
| MICRO-TRONICS | Passband filter | HPM50111 | F-19-EM006 | 2021/04/20 | 2022/04/19 |
| Unknown | High Pass filter | 1.3GHz | 101120 | 2021/04/20 | 2022/04/19 |
| Ducommun Technolagies | Horn antenna | ARH-4223-02 | 1007726-01 1304 | 2020/12/06 | 2023/12/05 |
| Ducommun Technolagies | Horn antenna | ARH-4223-02 | 1007726-02 1304 | 2020/12/06 | 2023/12/05 |
| Agilent | Signal Generator | N5183A | MY51040755 | 2020/12/29 | 2021/12/28 |
| Rohde & Schwarz | Wideband Radio Communication Tester | CMW500 | 1201.002K50-146520-wh | 2020/08/04 | 2021/08/03 |
| Rohde & Schwarz | Universal Radio Communication Tester | CMU200 | 115500 | 2020/07/31 | 2021/07/30 |

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| **RF Conducted Test** | | | | | |
| Rohde & Schwarz | Signal and Spectrum Analyzer | FSV40 | 101473 | 2021/07/06 | 2022/07/05 |
| Rohde & Schwarz | Wideband Radio Communication Tester | CMW500 | 1201.002K50-146520-wh | 2021/07/06 | 2022/07/05 |
| Unknown | RF Cable | Unknown | 2301 276 | 2020/11/29 | 2021/11/28 |
| Unknown | RF Cable | Unknown | DLO J5/W6102 | 2020/11/29 | 2021/11/28 |
| Weinschel | Power divider | 1515 | MY628 | 2020/11/29 | 2021/11/28 |
| Rohde & Schwarz | Universal Radio Communication Tester | CMU200 | 115500 | 2021/07/06 | 2022/07/05 |
| instek | DC Power Supply | GPS-3030DD | EM832096 | NCR | NCR |
| ESPEC | Temperature & Humidity Chamber | EL-10KA | 9107726 | 2021/01/05 | 2022/01/05 |
| Fluke | Digital Multimeter | 287 | 19000011 | 2021/02/22 | 2022/02/21 |

* 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) & §2.1093 - RF EXPOSURE INFORMATION

## Applicable Standard

FCC§1.1310 and §2.1093.

## Test Result

Compliance, please refer to the SAR report: SZ1210715-29262E-SA.

# FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H & 24E & 27 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

# FCC § 2.1046, § 22.913 (a) & § 24.232 (c); §27.50 (c) (d) (h) - RF OUTPUT POWER

## Applicable Standard

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (C), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

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

According to §27.50(c), Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

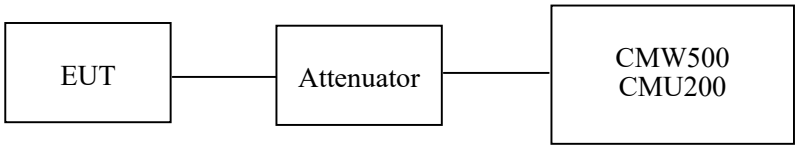
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1780MHz.

According to §27.50(h), the maximum EIRP must not exceed 2Watts (33dBm) for 2500-2570MHz & 2496-2690MHz.

## Test Procedure

*Conducted method:*

The RF output of the transmitter was connected to the CMW500/CMU200 through sufficient attenuation.




## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 25 ℃ |
| **Relative Humidity:** | 55 ~62 % |
| **ATM Pressure:** | 101.0 kPa |

*The testing was performed by Orlo Yang from 2021-07-16 to 2021-07-22.*

**Conducted Power**

**Cellular Band (Part 22H)**

| Mode | Channel | Frequency (MHz) | Average Output Power (dBm) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|
| GSM | 128 | 824.2 | 31.80 | 27.15 | 38.45 |
| | 190 | 836.6 | 31.70 | 27.05 | 38.45 |
| | 251 | 848.8 | 31.70 | 27.05 | 38.45 |

| Mode | Channel | Frequency (MHz) | Average Output Power (dBm) | | | | ERP(dBm) | | | | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 slot | 2 slots | 3 slots | 4 slots | 1 slot | 2 slots | 3 slots | 4 slots | |
| GPRS | 128 | 824.2 | 31.81 | 29.59 | 27.66 | 25.63 | 27.16 | 24.94 | 23.01 | 20.98 | 38.45 |
| | 190 | 836.6 | 31.71 | 29.59 | 27.94 | 25.76 | 27.06 | 24.94 | 23.29 | 21.11 | 38.45 |
| | 251 | 848.8 | 31.65 | 29.51 | 27.87 | 25.69 | 27.00 | 24.86 | 23.22 | 21.04 | 38.45 |

| Mode | Channel | Frequency (MHz) | Average Output Power (dBm) | | | | ERP(dBm) | | | | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 slot | 2 slots | 3 slots | 4 slots | 1 slot | 2 slots | 3 slots | 4 slots | |
| EGPRS | 128 | 824.2 | 25.19 | 24.76 | 23.29 | 20.77 | 20.54 | 20.11 | 18.64 | 16.12 | 38.45 |
| | 190 | 836.6 | 25.01 | 24.63 | 23.21 | 20.68 | 20.36 | 19.98 | 18.56 | 16.03 | 38.45 |
| | 251 | 848.8 | 24.51 | 24.23 | 22.61 | 20.22 | 19.86 | 19.58 | 17.96 | 15.57 | 38.45 |

| Mode | Test Mode | 3GPP Sub Test | Average Output Power (dBm) | | | ERP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| WCDMA (Band 5) | RMC12.2k | | 22.42 | 22.45 | 22.47 | 17.77 | 17.80 | 17.82 |
| | HSDPA | 1 | 22.67 | 22.18 | 22.45 | 18.02 | 17.53 | 17.80 |
| | | 2 | 22.19 | 21.85 | 22.12 | 17.54 | 17.20 | 17.47 |
| | | 3 | 22.19 | 21.85 | 22.12 | 17.54 | 17.20 | 17.47 |
| | | 4 | 22.19 | 21.85 | 22.12 | 17.54 | 17.20 | 17.47 |
| | HSUPA | 1 | 22.19 | 21.85 | 22.12 | 17.54 | 17.20 | 17.47 |
| | | 2 | 22.23 | 21.90 | 22.16 | 17.58 | 17.25 | 17.51 |
| | | 3 | 22.26 | 21.97 | 22.19 | 17.61 | 17.32 | 17.54 |
| | | 4 | 22.33 | 22.01 | 22.25 | 17.68 | 17.36 | 17.60 |
| | | 5 | 22.41 | 22.06 | 22.29 | 17.76 | 17.41 | 17.64 |
| | HSPA+ | 1 | 22.46 | 22.12 | 22.32 | 17.81 | 17.47 | 17.67 |

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable Loss(dB)
For GSM850/WCDMA Band5: Antenna Gain =-2.0dBi = -4.15dBd (0dBd=2.15dBi)
Cable Loss=0.5dB
The limit: ERP≤38.45dBm

**PCS Band (Part 24E)**

| Mode | Channel | Frequency (MHz) | Average Output Power (dBm) | EIRP(dBm) | Limit (dBm) |
|---|---|---|---|---|---|
| GSM | 512 | 1850.2 | 29.0 | 29.2 | 33 |
| | 661 | 1880.0 | 29.1 | 29.3 | 33 |
| | 810 | 1909.8 | 29.0 | 29.2 | 33 |

| Mode | Channel | Frequency (MHz) | Average Output Power (dBm) | | | | EIRP(dBm) | | | | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 slot | 2 slots | 3 slots | 4 slots | 1 slot | 2 slots | 3 slots | 4 slots | |
| GPRS | 512 | 1850.2 | 28.99 | 26.64 | 25.11 | 22.93 | 29.19 | 26.84 | 25.31 | 23.13 | 33 |
| | 661 | 1880.0 | 29.05 | 26.67 | 25.16 | 22.94 | 29.25 | 26.87 | 25.36 | 23.14 | 33 |
| | 810 | 1909.8 | 28.99 | 26.55 | 25.12 | 22.92 | 29.19 | 26.75 | 25.32 | 23.12 | 33 |

| Mode | Channel | Frequency (MHz) | Average Output Power (dBm) | | | | EIRP(dBm) | | | | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 slot | 2 slots | 3 slots | 4 slots | 1 slot | 2 slots | 3 slots | 4 slots | |
| EGPRS | 512 | 1850.2 | 23.81 | 23.35 | 22.34 | 20.16 | 24.01 | 23.55 | 22.54 | 20.36 | 33 |
| | 661 | 1880.0 | 24.83 | 24.67 | 23.59 | 21.37 | 25.03 | 24.87 | 23.79 | 21.57 | 33 |
| | 810 | 1909.8 | 24.29 | 23.99 | 22.66 | 20.36 | 24.49 | 24.19 | 22.86 | 20.56 | 33 |

| Mode | Test Mode | 3GPP Sub Test | Average Output Power (dBm) | | | EIRP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| WCDMA (Band 2) | RMC12.2k | | 22.02 | 22.11 | 22.14 | 22.22 | 22.31 | 22.34 |
| | HSDPA | 1 | 21.04 | 21.09 | 21.18 | 21.24 | 21.29 | 21.38 |
| | | 2 | 21.10 | 21.14 | 21.24 | 21.30 | 21.34 | 21.44 |
| | | 3 | 21.15 | 21.20 | 21.31 | 21.35 | 21.40 | 21.51 |
| | | 4 | 21.19 | 21.26 | 21.38 | 21.39 | 21.46 | 21.58 |
| | HSUPA | 1 | 21.11 | 21.05 | 21.00 | 21.31 | 21.25 | 21.20 |
| | | 2 | 21.19 | 21.12 | 21.07 | 21.39 | 21.32 | 21.27 |
| | | 3 | 21.23 | 21.15 | 21.10 | 21.43 | 21.35 | 21.30 |
| | | 4 | 21.26 | 21.20 | 21.15 | 21.46 | 21.40 | 21.35 |
| | | 5 | 21.30 | 21.26 | 21.21 | 21.50 | 21.46 | 21.41 |
| | HSPA+ | 1 | 21.33 | 21.33 | 21.27 | 21.53 | 21.53 | 21.47 |

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable loss(dB)
For PCS1900/WCDMA Band2: Antenna Gain = 1.2dBi
Cable Loss=1dB*(provided by the applicant)
Limit: EIRP≤33dBm

**AWS Band (Part 27)**

| Mode | Test Mode | 3GPP Sub Test | Average Output Power (dBm) | | | EIRP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| WCDMA (Band 4) | RMC12.2k | | 21.61 | 21.80 | 21.96 | 21.81 | 22.00 | 22.16 |
| | HSDPA | 1 | 21.21 | 21.38 | 21.08 | 21.41 | 21.58 | 21.28 |
| | | 2 | 21.28 | 21.43 | 21.12 | 21.48 | 21.63 | 21.32 |
| | | 3 | 21.31 | 21.48 | 21.16 | 21.51 | 21.68 | 21.36 |
| | | 4 | 21.39 | 21.52 | 21.22 | 21.59 | 21.72 | 21.42 |
| | HSUPA | 1 | 20.82 | 20.83 | 20.81 | 21.02 | 21.03 | 21.01 |
| | | 2 | 20.85 | 20.90 | 20.88 | 21.05 | 21.10 | 21.08 |
| | | 3 | 20.93 | 20.98 | 20.92 | 21.13 | 21.18 | 21.12 |
| | | 4 | 20.97 | 21.00 | 21.00 | 21.17 | 21.20 | 21.20 |
| | | 5 | 21.04 | 21.03 | 21.05 | 21.24 | 21.23 | 21.25 |
| | HSPA+ | 1 | 21.09 | 21.06 | 21.09 | 21.29 | 21.26 | 21.29 |

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable loss(dB)
For WCDMA Band4: Antenna Gain = 1.2dBi
Cable Loss=1dB*(provided by the applicant)
Limit: EIRP≤30dBm

**Peak-to-average ratio (PAR)**

**Cellular Band**

| Mode | Channel | PAR (dB) | Limit (dB) |
|---|---|---|---|
| GSM | Low | 3.19 | 13 |
| | Middle | 3.36 | 13 |
| | High | 3.46 | 13 |

| Mode | Channel | PAR (dB) | Limit (dB) |
|---|---|---|---|
| EGPRS | Low | 3.16 | 13 |
| | Middle | 3.10 | 13 |
| | High | 3.33 | 13 |

| Mode | Channel | PAR (dB) | Limit (dB) |
|---|---|---|---|
| RMC (BPSK) | Low | 3.20 | 13 |
| | Middle | 3.24 | 13 |
| | High | 3.36 | 13 |
| HSDPA (16QAM) | Low | 3.17 | 13 |
| | Middle | 3.46 | 13 |
| | High | 3.57 | 13 |
| HSUPA (BPSK) | Low | 3.28 | 13 |
| | Middle | 3.17 | 13 |
| | High | 3.37 | 13 |
| HSPA+ | Low | 3.16 | 13 |
| | Middle | 3.19 | 13 |
| | High | 3.39 | 13 |

**PCS Band**

| Mode | Channel | PAR (dB) | Limit (dB) |
|---|---|---|---|
| GSM | Low | 3.28 | 13 |
| | Middle | 3.19 | 13 |
| | High | 3.35 | 13 |

| Mode | Channel | PAR (dB) | Limit (dB) |
|---|---|---|---|
| EGPRS | Low | 3.14 | 13 |
| | Middle | 3.23 | 13 |
| | High | 3.52 | 13 |

| Mode | Channel | PAR (dB) | Limit (dB) |
|---|---|---|---|
| RMC (BPSK) | Low | 3.58 | 13 |
| | Middle | 3.24 | 13 |
| | High | 3.54 | 13 |
| HSDPA (16QAM) | Low | 3.32 | 13 |
| | Middle | 3.29 | 13 |
| | High | 3.66 | 13 |
| HSUPA (BPSK) | Low | 2.91 | 13 |
| | Middle | 3.32 | 13 |
| | High | 3.63 | 13 |
| HSPA+ | Low | 3.22 | 13 |
| | Middle | 3.30 | 13 |
| | High | 3.31 | 13 |

**AWS Band**

| Mode | Channel | PAR (dB) | Limit (dB) |
|---|---|---|---|
| RMC (BPSK) | Low | 3.67 | 13 |
| | Middle | 3.25 | 13 |
| | High | 3.44 | 13 |
| HSDPA (16QAM) | Low | 3.35 | 13 |
| | Middle | 3.23 | 13 |
| | High | 3.60 | 13 |
| HSUPA (BPSK) | Low | 3.05 | 13 |
| | Middle | 3.27 | 13 |
| | High | 3.69 | 13 |
| HSPA+ | Low | 3.16 | 13 |
| | Middle | 3.30 | 13 |
| | High | 3.40 | 13 |

**LTE Band 2:**

## Maximum Output Power

| Bandwidth (MHz) | Modulation | RB size/ RB Offset | Conducted Average Output Power (dBm) | | | EIRP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| 1.4 | QPSK | RB1#0 | 23.66 | 23.54 | 23.66 | 23.86 | 23.74 | 23.86 |
| | | RB1#3 | 23.61 | 23.60 | 23.61 | 23.81 | 23.8 | 23.81 |
| | | RB1#5 | 23.61 | 23.54 | 23.61 | 23.81 | 23.74 | 23.81 |
| | | RB3#0 | 23.65 | 23.72 | 23.65 | 23.85 | 23.92 | 23.85 |
| | | RB3#3 | 23.64 | 23.59 | 23.64 | 23.84 | 23.79 | 23.84 |
| | | RB6#0 | 22.55 | 22.63 | 22.55 | 22.75 | 22.83 | 22.75 |
| | 16QAM | RB1#0 | 23.21 | 23.07 | 23.21 | 23.41 | 23.27 | 23.41 |
| | | RB1#3 | 23.23 | 23.01 | 23.23 | 23.43 | 23.21 | 23.43 |
| | | RB1#5 | 23.22 | 22.97 | 23.22 | 23.42 | 23.17 | 23.42 |
| | | RB3#0 | 22.67 | 22.78 | 22.67 | 22.87 | 22.98 | 22.87 |
| | | RB3#3 | 22.73 | 22.75 | 22.73 | 22.93 | 22.95 | 22.93 |
| | | RB6#0 | 21.91 | 21.73 | 21.91 | 22.11 | 21.93 | 22.11 |
| 3.0 | QPSK | RB1#0 | 23.53 | 23.57 | 23.49 | 23.73 | 23.77 | 23.69 |
| | | RB1#8 | 23.54 | 23.57 | 23.51 | 23.74 | 23.77 | 23.71 |
| | | RB1#14 | 23.51 | 23.56 | 23.24 | 23.71 | 23.76 | 23.44 |
| | | RB6#0 | 22.55 | 22.58 | 22.49 | 22.75 | 22.78 | 22.69 |
| | | RB6#9 | 22.59 | 22.59 | 22.47 | 22.79 | 22.79 | 22.67 |
| | | RB15#0 | 22.59 | 22.63 | 22.55 | 22.79 | 22.83 | 22.75 |
| | 16QAM | RB1#0 | 23.05 | 22.87 | 22.22 | 23.25 | 23.07 | 22.42 |
| | | RB1#8 | 23.01 | 22.69 | 22.37 | 23.21 | 22.89 | 22.57 |
| | | RB1#14 | 22.99 | 22.78 | 22.22 | 23.19 | 22.98 | 22.42 |
| | | RB6#0 | 21.63 | 21.82 | 21.67 | 21.83 | 22.02 | 21.87 |
| | | RB6#9 | 21.62 | 21.70 | 21.63 | 21.82 | 21.9 | 21.83 |
| | | RB15#0 | 21.72 | 21.74 | 21.68 | 21.92 | 21.94 | 21.88 |

| Bandwidth (MHz) | Modulation | RB size/ RB Offset | Conducted Average Output Power (dBm) | | | EIRP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| 5 | QPSK | RB1#0 | 23.58 | 23.74 | 23.38 | 23.78 | 23.94 | 23.58 |
| | | RB1#13 | 23.55 | 23.70 | 23.30 | 23.75 | 23.9 | 23.5 |
| | | RB1#24 | 23.53 | 23.70 | 23.07 | 23.73 | 23.9 | 23.27 |
| | | RB15#0 | 22.56 | 22.58 | 22.53 | 22.76 | 22.78 | 22.73 |
| | | RB15#10 | 22.68 | 22.57 | 22.53 | 22.88 | 22.77 | 22.73 |
| | | RB25#0 | 22.58 | 22.58 | 22.54 | 22.78 | 22.78 | 22.74 |
| | 16QAM | RB1#0 | 21.89 | 22.66 | 22.68 | 22.09 | 22.86 | 22.88 |
| | | RB1#13 | 21.93 | 22.61 | 22.59 | 22.13 | 22.81 | 22.79 |
| | | RB1#24 | 21.85 | 22.59 | 22.60 | 22.05 | 22.79 | 22.8 |
| | | RB15#0 | 21.75 | 21.57 | 21.57 | 21.95 | 21.77 | 21.77 |
| | | RB15#10 | 21.77 | 21.52 | 21.58 | 21.97 | 21.72 | 21.78 |
| | | RB25#0 | 21.78 | 21.73 | 21.71 | 21.98 | 21.93 | 21.91 |
| | | RB1#0 | 23.58 | 23.74 | 23.38 | 23.78 | 23.94 | 23.58 |
| 10 | QPSK | RB1#0 | 23.52 | 23.52 | 23.55 | 23.72 | 23.72 | 23.75 |
| | | RB1#25 | 23.51 | 23.61 | 23.47 | 23.71 | 23.81 | 23.67 |
| | | RB1#49 | 23.60 | 23.53 | 23.43 | 23.8 | 23.73 | 23.63 |
| | | RB25#0 | 22.67 | 22.62 | 22.58 | 22.87 | 22.82 | 22.78 |
| | | RB25#25 | 22.58 | 22.50 | 22.45 | 22.78 | 22.7 | 22.65 |
| | | RB50#0 | 22.69 | 22.56 | 22.59 | 22.89 | 22.76 | 22.79 |
| | 16QAM | RB1#0 | 22.86 | 23.30 | 22.50 | 23.06 | 23.5 | 22.7 |
| | | RB1#25 | 22.85 | 23.32 | 22.46 | 23.05 | 23.52 | 22.66 |
| | | RB1#49 | 22.92 | 23.22 | 22.49 | 23.12 | 23.42 | 22.69 |
| | | RB25#0 | 21.69 | 21.77 | 21.82 | 21.89 | 21.97 | 22.02 |
| | | RB25#25 | 21.69 | 21.72 | 21.79 | 21.89 | 21.92 | 21.99 |
| | | RB50#0 | 21.69 | 21.79 | 21.64 | 21.89 | 21.99 | 21.84 |

| Bandwidth (MHz) | Modulation | RB size/ RB Offset | Conducted Average Output Power (dBm) | | | EIRP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| 15 | QPSK | RB1#0 | 23.51 | 23.45 | 23.36 | 23.71 | 23.65 | 23.56 |
| | | RB1#38 | 23.50 | 23.46 | 23.30 | 23.7 | 23.66 | 23.5 |
| | | RB1#74 | 23.50 | 23.49 | 23.28 | 23.7 | 23.69 | 23.48 |
| | | RB36#0 | 22.67 | 22.50 | 22.51 | 22.87 | 22.7 | 22.71 |
| | | RB36#39 | 22.64 | 22.53 | 22.46 | 22.84 | 22.73 | 22.66 |
| | | RB75#0 | 22.57 | 22.67 | 22.56 | 22.77 | 22.87 | 22.76 |
| | 16QAM | RB1#0 | 22.84 | 22.82 | 22.73 | 23.04 | 23.02 | 22.93 |
| | | RB1#38 | 22.85 | 22.81 | 22.62 | 23.05 | 23.01 | 22.82 |
| | | RB1#74 | 22.86 | 22.80 | 22.63 | 23.06 | 23 | 22.83 |
| | | RB36#0 | 21.79 | 21.73 | 21.62 | 21.99 | 21.93 | 21.82 |
| | | RB36#39 | 21.76 | 21.70 | 21.57 | 21.96 | 21.9 | 21.77 |
| | | RB75#0 | 21.78 | 21.75 | 21.52 | 21.98 | 21.95 | 21.72 |
| 20 | QPSK | RB1#0 | 23.67 | 23.72 | 23.48 | 23.87 | 23.92 | 23.68 |
| | | RB1#50 | 23.63 | 23.52 | 23.47 | 23.83 | 23.72 | 23.67 |
| | | RB1#99 | 23.58 | 23.51 | 23.39 | 23.78 | 23.71 | 23.59 |
| | | RB50#0 | 22.46 | 22.49 | 22.52 | 22.66 | 22.69 | 22.72 |
| | | RB50#50 | 22.49 | 22.58 | 22.50 | 22.69 | 22.78 | 22.7 |
| | | RB100#0 | 22.60 | 22.59 | 22.55 | 22.8 | 22.79 | 22.75 |
| | 16QAM | RB1#0 | 22.72 | 22.53 | 23.18 | 22.92 | 22.73 | 23.38 |
| | | RB1#50 | 22.75 | 22.57 | 23.16 | 22.95 | 22.77 | 23.36 |
| | | RB1#99 | 22.77 | 22.58 | 23.05 | 22.97 | 22.78 | 23.25 |
| | | RB50#0 | 21.69 | 21.70 | 21.61 | 21.89 | 21.9 | 21.81 |
| | | RB50#50 | 21.65 | 21.64 | 21.57 | 21.85 | 21.84 | 21.77 |
| | | RB100#0 | 21.63 | 21.68 | 21.52 | 21.83 | 21.88 | 21.72 |

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable loss(dB)
For LTE Band 2: Antenna Gain = 1.2dBi
Cable Loss=1dB*(provided by the applicant)
Limit: EIRP≤33dBm

**Peak-to-average ratio (PAR)**

**20MHz Bandwidth**

| Modulation | Low channel (dB) | Middle channel (dB) | High channel (dB) | PAR Limit (dB) | Result |
|---|---|---|---|---|---|
| QPSK (1RB Size) | 4.04 | 3.78 | 3.14 | 13 | Pass |
| QPSK (100RB Size) | 5.22 | 5.29 | 5.22 | 13 | Pass |
| 16QAM (1RB Size) | 4.52 | 4.81 | 4.26 | 13 | Pass |
| 16QAM (100RB Size) | 6.15 | 6.15 | 6.06 | 13 | Pass |

**LTE Band 4**

## Maximum Output Power

| Bandwidth (MHz) | Modulation | RB size/ RB Offset | Conducted Average Output Power (dBm) | | | EIRP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| 1.4 | QPSK | RB1#0 | 23.60 | 23.49 | 23.52 | 23.8 | 23.69 | 23.72 |
| | | RB1#3 | 23.60 | 23.58 | 23.49 | 23.8 | 23.78 | 23.69 |
| | | RB1#5 | 23.63 | 23.58 | 23.54 | 23.83 | 23.78 | 23.74 |
| | | RB3#0 | 23.74 | 23.60 | 23.45 | 23.94 | 23.8 | 23.65 |
| | | RB3#3 | 23.71 | 23.53 | 23.39 | 23.91 | 23.73 | 23.59 |
| | | RB6#0 | 22.57 | 22.57 | 22.40 | 22.77 | 22.77 | 22.6 |
| | 16QAM | RB1#0 | 22.94 | 23.22 | 22.37 | 23.14 | 23.42 | 22.57 |
| | | RB1#3 | 23.01 | 23.20 | 22.30 | 23.21 | 23.4 | 22.5 |
| | | RB1#5 | 23.04 | 23.17 | 22.38 | 23.24 | 23.37 | 22.58 |
| | | RB3#0 | 22.59 | 22.36 | 22.29 | 22.79 | 22.56 | 22.49 |
| | | RB3#3 | 22.56 | 22.43 | 22.28 | 22.76 | 22.63 | 22.48 |
| | | RB6#0 | 21.75 | 21.71 | 21.72 | 21.95 | 21.91 | 21.92 |
| 3.0 | QPSK | RB1#0 | 23.52 | 23.54 | 23.55 | 23.72 | 23.74 | 23.75 |
| | | RB1#8 | 23.52 | 23.57 | 23.52 | 23.72 | 23.77 | 23.72 |
| | | RB1#14 | 23.40 | 23.53 | 23.55 | 23.6 | 23.73 | 23.75 |
| | | RB6#0 | 22.69 | 22.44 | 22.44 | 22.89 | 22.64 | 22.64 |
| | | RB6#9 | 22.54 | 22.51 | 22.43 | 22.74 | 22.71 | 22.63 |
| | | RB15#0 | 22.60 | 22.46 | 22.47 | 22.8 | 22.66 | 22.67 |
| | 16QAM | RB1#0 | 23.20 | 22.87 | 22.37 | 23.4 | 23.07 | 22.57 |
| | | RB1#8 | 23.24 | 22.83 | 22.34 | 23.44 | 23.03 | 22.54 |
| | | RB1#14 | 23.16 | 22.86 | 22.37 | 23.36 | 23.06 | 22.57 |
| | | RB6#0 | 21.92 | 21.77 | 21.73 | 22.12 | 21.97 | 21.93 |
| | | RB6#9 | 21.80 | 21.79 | 21.64 | 22 | 21.99 | 21.84 |
| | | RB15#0 | 21.86 | 21.63 | 21.52 | 22.06 | 21.83 | 21.72 |

| Bandwidth (MHz) | Modulation | RB size/ RB Offset | Conducted Average Output Power (dBm) | | | EIRP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| 5.0 | QPSK | RB1#0 | 23.51 | 23.60 | 23.22 | 23.71 | 23.8 | 23.42 |
| | | RB1#13 | 23.36 | 23.60 | 23.23 | 23.56 | 23.8 | 23.43 |
| | | RB1#24 | 23.40 | 23.64 | 23.18 | 23.6 | 23.84 | 23.38 |
| | | RB15#0 | 22.65 | 22.52 | 22.43 | 22.85 | 22.72 | 22.63 |
| | | RB15#10 | 22.52 | 22.51 | 22.39 | 22.72 | 22.71 | 22.59 |
| | | RB25#0 | 22.52 | 22.52 | 22.45 | 22.72 | 22.72 | 22.65 |
| | 16QAM | RB1#0 | 21.82 | 22.55 | 22.45 | 22.02 | 22.75 | 22.65 |
| | | RB1#13 | 21.69 | 22.57 | 22.47 | 21.89 | 22.77 | 22.67 |
| | | RB1#24 | 21.66 | 22.58 | 22.47 | 21.86 | 22.78 | 22.67 |
| | | RB15#0 | 21.81 | 21.50 | 21.44 | 22.01 | 21.7 | 21.64 |
| | | RB15#10 | 21.70 | 21.50 | 21.45 | 21.9 | 21.7 | 21.65 |
| | | RB25#0 | 21.81 | 21.55 | 21.58 | 22.01 | 21.75 | 21.78 |
| | | RB1#0 | 23.51 | 23.60 | 23.22 | 23.71 | 23.8 | 23.42 |
| 10.0 | QPSK | RB1#0 | 23.50 | 23.46 | 23.59 | 23.7 | 23.66 | 23.79 |
| | | RB1#25 | 23.46 | 23.50 | 23.51 | 23.66 | 23.7 | 23.71 |
| | | RB1#49 | 23.43 | 23.52 | 23.54 | 23.63 | 23.72 | 23.74 |
| | | RB25#0 | 22.57 | 22.49 | 22.48 | 22.77 | 22.69 | 22.68 |
| | | RB25#25 | 22.48 | 22.53 | 22.44 | 22.68 | 22.73 | 22.64 |
| | | RB50#0 | 22.41 | 22.59 | 22.53 | 22.61 | 22.79 | 22.73 |
| | 16QAM | RB1#0 | 23.11 | 23.19 | 22.29 | 23.31 | 23.39 | 22.49 |
| | | RB1#25 | 22.92 | 23.24 | 22.22 | 23.12 | 23.44 | 22.42 |
| | | RB1#49 | 22.91 | 23.24 | 22.15 | 23.11 | 23.44 | 22.35 |
| | | RB25#0 | 21.69 | 21.69 | 21.69 | 21.89 | 21.89 | 21.89 |
| | | RB25#25 | 21.73 | 21.64 | 21.73 | 21.93 | 21.84 | 21.93 |
| | | RB50#0 | 21.63 | 21.71 | 21.68 | 21.83 | 21.91 | 21.88 |

| Bandwidth (MHz) | Modulation | RB size/ RB Offset | Conducted Average Output Power (dBm) | | | EIRP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| 15.0 | QPSK | RB1#0 | 23.53 | 23.38 | 23.43 | 23.73 | 23.58 | 23.63 |
| | | RB1#38 | 23.38 | 23.46 | 23.46 | 23.58 | 23.66 | 23.66 |
| | | RB1#74 | 23.44 | 23.51 | 23.43 | 23.64 | 23.71 | 23.63 |
| | | RB36#0 | 22.47 | 22.42 | 22.58 | 22.67 | 22.62 | 22.78 |
| | | RB36#39 | 22.51 | 22.48 | 22.48 | 22.71 | 22.68 | 22.68 |
| | | RB75#0 | 22.52 | 22.51 | 22.47 | 22.72 | 22.71 | 22.67 |
| | 16QAM | RB1#0 | 23.02 | 23.18 | 22.78 | 23.22 | 23.38 | 22.98 |
| | | RB1#38 | 22.89 | 23.18 | 22.80 | 23.09 | 23.38 | 23 |
| | | RB1#74 | 22.88 | 23.27 | 22.84 | 23.08 | 23.47 | 23.04 |
| | | RB36#0 | 21.57 | 21.61 | 21.62 | 21.77 | 21.81 | 21.82 |
| | | RB36#39 | 21.55 | 21.69 | 21.67 | 21.75 | 21.89 | 21.87 |
| | | RB75#0 | 21.69 | 21.67 | 21.65 | 21.89 | 21.87 | 21.85 |
| 20.0 | QPSK | RB1#0 | 23.68 | 23.63 | 23.62 | 23.88 | 23.83 | 23.82 |
| | | RB1#50 | 23.48 | 23.77 | 23.61 | 23.68 | 23.97 | 23.81 |
| | | RB1#99 | 23.71 | 23.73 | 23.64 | 23.91 | 23.93 | 23.84 |
| | | RB50#0 | 22.60 | 22.49 | 22.65 | 22.8 | 22.69 | 22.85 |
| | | RB50#50 | 22.48 | 22.62 | 22.61 | 22.68 | 22.82 | 22.81 |
| | | RB100#0 | 22.46 | 22.59 | 22.54 | 22.66 | 22.79 | 22.74 |
| | 16QAM | RB1#0 | 22.91 | 22.58 | 23.07 | 23.11 | 22.78 | 23.27 |
| | | RB1#50 | 22.71 | 22.93 | 23.12 | 22.91 | 23.13 | 23.32 |
| | | RB1#99 | 22.84 | 22.94 | 23.10 | 23.04 | 23.14 | 23.3 |
| | | RB50#0 | 21.74 | 21.73 | 21.55 | 21.94 | 21.93 | 21.75 |
| | | RB50#50 | 21.74 | 21.87 | 21.68 | 21.94 | 22.07 | 21.88 |
| | | RB100#0 | 21.67 | 21.65 | 21.81 | 21.87 | 21.85 | 22.01 |

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable loss(dB)
For LTE Band 4: Antenna Gain = 1.2dBi
Cable Loss=1dB*(provided by the applicant)
Limit: EIRP≤33dBm

**Peak-to-average ratio (PAR)**

**20MHz Bandwidth**

| Modulation | Low channel (dB) | Middle channel (dB) | High channel (dB) | PAR Limit (dB) | Result |
|---|---|---|---|---|---|
| QPSK (1RB Size) | 4.81 | 4.52 | 3.49 | 13 | Pass |
| QPSK (100RB Size) | 5.64 | 5.35 | 5.32 | 13 | Pass |
| 16QAM (1RB Size) | 5.90 | 5.35 | 4.65 | 13 | Pass |
| 16QAM (100RB Size) | 6.41 | 6.25 | 6.19 | 13 | Pass |

**LTE Band 5:**

**Maximum Output Power**

| Bandwidth (MHz) | Modulation | RB size/ RB Offset | Conducted Average Output Power (dBm) | | | ERP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| 1.4 | QPSK | RB1#0 | 23.56 | 23.45 | 23.71 | 18.91 | 18.80 | 19.06 |
| | | RB1#3 | 23.57 | 23.53 | 23.69 | 18.92 | 18.88 | 19.04 |
| | | RB1#5 | 23.61 | 23.45 | 23.67 | 18.96 | 18.80 | 19.02 |
| | | RB3#0 | 23.68 | 23.66 | 23.59 | 19.03 | 19.01 | 18.94 |
| | | RB3#3 | 23.70 | 23.53 | 23.57 | 19.05 | 18.88 | 18.92 |
| | | RB6#0 | 22.55 | 22.52 | 22.51 | 17.90 | 17.87 | 17.86 |
| | 16QAM | RB1#0 | 23.09 | 23.39 | 22.31 | 18.44 | 18.74 | 17.66 |
| | | RB1#3 | 23.19 | 23.23 | 22.30 | 18.54 | 18.58 | 17.65 |
| | | RB1#5 | 23.09 | 23.14 | 22.34 | 18.44 | 18.49 | 17.69 |
| | | RB3#0 | 22.45 | 22.49 | 22.26 | 17.80 | 17.84 | 17.61 |
| | | RB3#3 | 22.49 | 22.41 | 22.25 | 17.84 | 17.76 | 17.60 |
| | | RB6#0 | 21.53 | 21.52 | 21.50 | 16.88 | 16.87 | 16.85 |
| 3.0 | QPSK | RB1#0 | 23.53 | 23.54 | 23.77 | 18.88 | 18.89 | 19.12 |
| | | RB1#8 | 23.51 | 23.56 | 23.72 | 18.86 | 18.91 | 19.07 |
| | | RB1#14 | 23.44 | 23.47 | 23.70 | 18.79 | 18.82 | 19.05 |
| | | RB6#0 | 22.61 | 22.59 | 22.52 | 17.96 | 17.94 | 17.87 |
| | | RB6#9 | 22.51 | 22.58 | 22.59 | 17.86 | 17.93 | 17.94 |
| | | RB15#0 | 22.65 | 22.63 | 22.51 | 18.00 | 17.98 | 17.86 |
| | 16QAM | RB1#0 | 22.71 | 23.20 | 22.23 | 18.06 | 18.55 | 17.58 |
| | | RB1#8 | 22.68 | 23.23 | 22.19 | 18.03 | 18.58 | 17.54 |
| | | RB1#14 | 22.66 | 23.16 | 22.28 | 18.01 | 18.51 | 17.63 |
| | | RB6#0 | 21.58 | 21.56 | 21.78 | 16.93 | 16.91 | 17.13 |
| | | RB6#9 | 21.55 | 21.54 | 21.66 | 16.90 | 16.89 | 17.01 |
| | | RB15#0 | 21.61 | 21.54 | 21.64 | 16.96 | 16.89 | 16.99 |

| Bandwidth (MHz) | Modulation | RB size/ RB Offset | Conducted Average Output Power (dBm) | | | ERP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| 5.0 | QPSK | RB1#0 | 23.59 | 23.72 | 23.54 | 18.94 | 19.07 | 18.89 |
| | | RB1#13 | 23.59 | 23.66 | 23.62 | 18.94 | 19.01 | 18.97 |
| | | RB1#24 | 23.54 | 23.79 | 23.56 | 18.89 | 19.14 | 18.91 |
| | | RB15#0 | 22.68 | 22.55 | 22.66 | 18.03 | 17.90 | 18.01 |
| | | RB15#10 | 22.69 | 22.56 | 22.67 | 18.04 | 17.91 | 18.02 |
| | | RB25#0 | 22.65 | 22.54 | 22.71 | 18.00 | 17.89 | 18.06 |
| | 16QAM | RB1#0 | 21.88 | 22.68 | 22.66 | 17.23 | 18.03 | 18.01 |
| | | RB1#13 | 21.85 | 22.58 | 22.62 | 17.20 | 17.93 | 17.97 |
| | | RB1#24 | 21.85 | 22.64 | 22.66 | 17.20 | 17.99 | 18.01 |
| | | RB15#0 | 21.71 | 21.59 | 21.53 | 17.06 | 16.94 | 16.88 |
| | | RB15#10 | 21.70 | 21.41 | 21.66 | 17.05 | 16.76 | 17.01 |
| | | RB25#0 | 21.78 | 21.51 | 21.89 | 17.13 | 16.86 | 17.24 |
| 10.0 | QPSK | RB1#0 | 23.63 | 23.59 | 23.55 | 18.98 | 18.94 | 18.90 |
| | | RB1#25 | 23.60 | 23.68 | 23.65 | 18.95 | 19.03 | 19.00 |
| | | RB1#49 | 23.54 | 23.77 | 23.60 | 18.89 | 19.12 | 18.95 |
| | | RB25#0 | 22.63 | 22.75 | 22.63 | 17.98 | 18.10 | 17.98 |
| | | RB25#25 | 22.62 | 22.61 | 22.67 | 17.97 | 17.96 | 18.02 |
| | | RB50#0 | 22.64 | 22.69 | 22.74 | 17.99 | 18.04 | 18.09 |
| | 16QAM | RB1#0 | 23.04 | 22.86 | 22.20 | 18.39 | 18.21 | 17.55 |
| | | RB1#25 | 22.98 | 22.83 | 22.16 | 18.33 | 18.18 | 17.51 |
| | | RB1#49 | 22.96 | 23.28 | 22.17 | 18.31 | 18.63 | 17.52 |
| | | RB25#0 | 21.66 | 21.73 | 21.79 | 17.01 | 17.08 | 17.14 |
| | | RB25#25 | 21.66 | 21.64 | 21.89 | 17.01 | 16.99 | 17.24 |
| | | RB50#0 | 21.65 | 21.56 | 21.70 | 17.00 | 16.91 | 17.05 |

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable Loss(dB)
For LTE Band5: Antenna Gain =-2.0dBi = -4.15dBd (0dBd=2.15dBi)
Cable Loss=0.5dB
The limit: ERP≤38.45dBm

**Peak-to-average ratio (PAR)**

**10MHz bandwidth**

| Modulation | Low channel (dB) | Middle channel (dB) | High channel (dB) | PAR Limit (dB) | Result |
|---|---|---|---|---|---|
| QPSK (1RB Size) | 3.65 | 4.10 | 4.29 | 13 | Pass |
| QPSK (50RB Size) | 5.26 | 5.45 | 5.29 | 13 | Pass |
| 16QAM (1RB Size) | 4.49 | 5.13 | 4.84 | 13 | Pass |
| 16QAM (50RB Size) | 6.15 | 6.28 | 6.15 | 13 | Pass |

**LTE Band 7:**

## Maximum Output Power

| Bandwidth (MHz) | Modulation | RB size/ RB Offset | Conducted Average Output Power (dBm) | | | EIRP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| 5 | QPSK | RB1#0 | 21.07 | 21.26 | 20.91 | 21.87 | 22.06 | 21.71 |
| | | RB1#13 | 21.08 | 21.23 | 20.86 | 21.88 | 22.03 | 21.66 |
| | | RB1#24 | 21.1 | 21.22 | 20.82 | 21.90 | 22.02 | 21.62 |
| | | RB15#0 | 20.21 | 20.25 | 20.14 | 21.01 | 21.05 | 20.94 |
| | | RB15#10 | 20.21 | 20.14 | 20.07 | 21.01 | 20.94 | 20.87 |
| | | RB25#0 | 20.11 | 20.11 | 20.28 | 20.91 | 20.91 | 21.08 |
| | 16QAM | RB1#0 | 19.6 | 20.28 | 20.29 | 20.40 | 21.08 | 21.09 |
| | | RB1#13 | 19.61 | 20.3 | 20.31 | 20.41 | 21.10 | 21.11 |
| | | RB1#24 | 19.58 | 20.32 | 20.24 | 20.38 | 21.12 | 21.04 |
| | | RB15#0 | 19.34 | 19.14 | 19.23 | 20.14 | 19.94 | 20.03 |
| | | RB15#10 | 19.33 | 19.19 | 19.21 | 20.13 | 19.99 | 20.01 |
| | | RB25#0 | 19.38 | 19.21 | 19.37 | 20.18 | 20.01 | 20.17 |
| 10 | QPSK | RB1#0 | 21 | 21.02 | 21.33 | 21.80 | 21.82 | 22.13 |
| | | RB1#25 | 21 | 21 | 21.28 | 21.80 | 21.80 | 22.08 |
| | | RB1#49 | 20.99 | 21.06 | 21.22 | 21.79 | 21.86 | 22.02 |
| | | RB25#0 | 20.23 | 20.14 | 20.22 | 21.03 | 20.94 | 21.02 |
| | | RB25#25 | 20.08 | 20.21 | 20.27 | 20.88 | 21.01 | 21.07 |
| | | RB50#0 | 20.18 | 20.12 | 20.26 | 20.98 | 20.92 | 21.06 |
| | 16QAM | RB1#0 | 20.44 | 20.55 | 19.79 | 21.24 | 21.35 | 20.59 |
| | | RB1#25 | 20.45 | 20.44 | 19.83 | 21.25 | 21.24 | 20.63 |
| | | RB1#49 | 20.52 | 20.51 | 19.74 | 21.32 | 21.31 | 20.54 |
| | | RB25#0 | 19.26 | 19.42 | 19.43 | 20.06 | 20.22 | 20.23 |
| | | RB25#25 | 19.27 | 19.44 | 19.43 | 20.07 | 20.24 | 20.23 |
| | | RB50#0 | 19.35 | 19.33 | 19.45 | 20.15 | 20.13 | 20.25 |

| Bandwidth (MHz) | Modulation | RB size/ RB Offset | Conducted Average Output Power (dBm) | | | EIRP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| 15 | QPSK | RB1#0 | 20.88 | 20.96 | 20.9 | 21.68 | 21.76 | 21.7 |
| | | RB1#38 | 20.91 | 20.92 | 20.99 | 21.71 | 21.72 | 21.79 |
| | | RB1#74 | 20.87 | 20.86 | 20.96 | 21.67 | 21.66 | 21.76 |
| | | RB36#0 | 20.03 | 20.06 | 20.06 | 20.83 | 20.86 | 20.86 |
| | | RB36#39 | 20.02 | 20.06 | 20.08 | 20.82 | 20.86 | 20.88 |
| | | RB75#0 | 20.02 | 20.04 | 20.04 | 20.82 | 20.84 | 20.84 |
| | 16QAM | RB1#0 | 20.26 | 20.52 | 20.46 | 21.06 | 21.32 | 21.26 |
| | | RB1#38 | 20.31 | 20.52 | 20.25 | 21.11 | 21.32 | 21.05 |
| | | RB1#74 | 20.37 | 20.5 | 20.21 | 21.17 | 21.30 | 21.01 |
| | | RB36#0 | 19.22 | 19.22 | 19.13 | 20.02 | 20.02 | 19.93 |
| | | RB36#39 | 19.24 | 19.23 | 19.24 | 20.04 | 20.03 | 20.04 |
| | | RB75#0 | 19.13 | 19.25 | 19.2 | 19.93 | 20.05 | 20.00 |
| 20 | QPSK | RB1#0 | 21.14 | 21.28 | 21.01 | 21.94 | 22.08 | 21.81 |
| | | RB1#50 | 21.10 | 20.99 | 21.00 | 21.90 | 21.79 | 21.80 |
| | | RB1#99 | 21.17 | 20.94 | 21.05 | 21.97 | 21.74 | 21.85 |
| | | RB50#0 | 20.00 | 20.13 | 20.09 | 20.80 | 20.93 | 20.89 |
| | | RB50#50 | 20.07 | 20.15 | 20.15 | 20.87 | 20.95 | 20.95 |
| | | RB100#0 | 19.99 | 20.01 | 20.06 | 20.79 | 20.81 | 20.86 |
| | 16QAM | RB1#0 | 20.03 | 20.24 | 20.67 | 20.83 | 21.04 | 21.47 |
| | | RB1#50 | 20.03 | 20.21 | 20.64 | 20.83 | 21.01 | 21.44 |
| | | RB1#99 | 20.06 | 20.24 | 20.66 | 20.86 | 21.04 | 21.46 |
| | | RB50#0 | 19.27 | 19.39 | 19.14 | 20.07 | 20.19 | 19.94 |
| | | RB50#50 | 19.22 | 19.34 | 19.22 | 20.02 | 20.14 | 20.02 |
| | | RB100#0 | 19.21 | 19.18 | 19.19 | 20.01 | 19.98 | 19.99 |

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable loss(dB)
For LTE Band 7: Antenna Gain = 1.8dBi
Cable Loss=1dB*(provided by the applicant)
Limit: EIRP≤33dBm

**Peak-to-average ratio (PAR)**

**20MHz bandwidth**

| Modulation | Low channel (dB) | Middle channel (dB) | High channel (dB) | PAR Limit (dB) | Result |
|---|---|---|---|---|---|
| QPSK (1RB Size) | 3.56 | 4.53 | 5.43 | 13 | Pass |
| QPSK (100RB Size) | 5.17 | 5.54 | 5.31 | 13 | Pass |
| 16QAM (1RB Size) | 4.84 | 6.00 | 5.96 | 13 | Pass |
| 16QAM (100RB Size) | 6.02 | 6.32 | 6.18 | 13 | Pass |

**LTE Band 12:**

**Maximum Output Power**

| Bandwidth (MHz) | Modulation | RB size/ RB Offset | Conducted Average Output Power (dBm) | | | ERP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| 1.4 | QPSK | RB1#0 | 23.50 | 23.28 | 23.07 | 18.85 | 18.63 | 18.42 |
| | | RB1#3 | 23.47 | 23.20 | 23.20 | 18.82 | 18.55 | 18.55 |
| | | RB1#5 | 23.47 | 23.21 | 23.12 | 18.82 | 18.56 | 18.47 |
| | | RB3#0 | 23.41 | 23.38 | 23.11 | 18.76 | 18.73 | 18.46 |
| | | RB3#3 | 23.46 | 23.28 | 23.22 | 18.81 | 18.63 | 18.57 |
| | | RB6#0 | 22.31 | 22.05 | 22.18 | 17.66 | 17.4 | 17.53 |
| | 16QAM | RB1#0 | 22.80 | 22.69 | 23.23 | 18.15 | 18.04 | 18.58 |
| | | RB1#3 | 22.76 | 22.57 | 23.12 | 18.11 | 17.92 | 18.47 |
| | | RB1#5 | 22.78 | 22.57 | 23.00 | 18.13 | 17.92 | 18.35 |
| | | RB3#0 | 22.48 | 22.26 | 21.97 | 17.83 | 17.61 | 17.32 |
| | | RB3#3 | 22.47 | 22.31 | 22.08 | 17.82 | 17.66 | 17.43 |
| | | RB6#0 | 21.52 | 21.29 | 21.21 | 16.87 | 16.64 | 16.56 |
| 3.0 | QPSK | RB1#0 | 23.25 | 23.17 | 23.40 | 18.6 | 18.52 | 18.75 |
| | | RB1#8 | 23.31 | 23.19 | 23.35 | 18.66 | 18.54 | 18.7 |
| | | RB1#14 | 23.30 | 23.18 | 23.37 | 18.65 | 18.53 | 18.72 |
| | | RB6#0 | 22.23 | 22.36 | 22.15 | 17.58 | 17.71 | 17.5 |
| | | RB6#9 | 22.32 | 22.22 | 22.25 | 17.67 | 17.57 | 17.6 |
| | | RB15#0 | 22.29 | 22.20 | 22.20 | 17.64 | 17.55 | 17.55 |
| | 16QAM | RB1#0 | 22.57 | 22.45 | 21.69 | 17.92 | 17.8 | 17.04 |
| | | RB1#8 | 22.34 | 22.37 | 21.63 | 17.69 | 17.72 | 16.98 |
| | | RB1#14 | 22.39 | 22.29 | 21.78 | 17.74 | 17.64 | 17.13 |
| | | RB6#0 | 21.29 | 21.27 | 21.17 | 16.64 | 16.62 | 16.52 |
| | | RB6#9 | 21.35 | 21.22 | 21.35 | 16.7 | 16.57 | 16.7 |
| | | RB15#0 | 21.24 | 21.16 | 21.00 | 16.59 | 16.51 | 16.35 |

| Bandwidth (MHz) | Modulation | RB size/ RB Offset | Conducted Average Output Power (dBm) | | | ERP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| 5.0 | QPSK | RB1#0 | 23.33 | 23.36 | 23.15 | 18.68 | 18.71 | 18.5 |
| | | RB1#13 | 23.37 | 23.29 | 23.13 | 18.72 | 18.64 | 18.48 |
| | | RB1#24 | 23.26 | 23.38 | 23.16 | 18.61 | 18.73 | 18.51 |
| | | RB15#0 | 22.30 | 22.30 | 22.27 | 17.65 | 17.65 | 17.62 |
| | | RB15#10 | 22.23 | 22.22 | 22.32 | 17.58 | 17.57 | 17.67 |
| | | RB25#0 | 22.25 | 22.23 | 22.27 | 17.6 | 17.58 | 17.62 |
| | 16QAM | RB1#0 | 21.37 | 22.27 | 22.22 | 16.72 | 17.62 | 17.57 |
| | | RB1#13 | 21.47 | 22.25 | 22.18 | 16.82 | 17.6 | 17.53 |
| | | RB1#24 | 21.49 | 22.30 | 22.33 | 16.84 | 17.65 | 17.68 |
| | | RB15#0 | 21.27 | 21.13 | 21.15 | 16.62 | 16.48 | 16.5 |
| | | RB15#10 | 21.45 | 21.04 | 21.19 | 16.8 | 16.39 | 16.54 |
| | | RB25#0 | 21.45 | 21.20 | 21.27 | 16.8 | 16.55 | 16.62 |
| 10.0 | QPSK | RB1#0 | 23.33 | 23.36 | 23.33 | 18.68 | 18.71 | 18.68 |
| | | RB1#25 | 23.29 | 23.28 | 23.31 | 18.64 | 18.63 | 18.66 |
| | | RB1#49 | 23.20 | 23.33 | 23.39 | 18.55 | 18.68 | 18.74 |
| | | RB25#0 | 22.37 | 22.39 | 22.27 | 17.72 | 17.74 | 17.62 |
| | | RB25#25 | 22.36 | 22.34 | 22.29 | 17.71 | 17.69 | 17.64 |
| | | RB50#0 | 22.32 | 22.30 | 22.29 | 17.67 | 17.65 | 17.64 |
| | 16QAM | RB1#0 | 22.61 | 22.46 | 21.95 | 17.96 | 17.81 | 17.3 |
| | | RB1#25 | 22.55 | 22.40 | 21.87 | 17.9 | 17.75 | 17.22 |
| | | RB1#49 | 22.53 | 22.49 | 21.92 | 17.88 | 17.84 | 17.27 |
| | | RB25#0 | 21.41 | 21.33 | 21.38 | 16.76 | 16.68 | 16.73 |
| | | RB25#25 | 21.25 | 21.25 | 21.41 | 16.6 | 16.6 | 16.76 |
| | | RB50#0 | 21.27 | 21.30 | 21.22 | 16.62 | 16.65 | 16.57 |

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable Loss(dB)
For LTE Band12: Antenna Gain =-2.0dBi = -4.15dBd (0dBd=2.15dBi)
Cable Loss=0.5dB
The limit: ERP≤34.77dBm

**Peak-to-average ratio (PAR)**

**10MHz bandwidth**

| Modulation | Low channel (dB) | Middle channel (dB) | High channel (dB) | PAR Limit (dB) | Result |
|---|---|---|---|---|---|
| QPSK (1RB Size) | 4.12 | 4.11 | 4.55 | 13 | Pass |
| QPSK (50RB Size) | 5.35 | 5.47 | 5.40 | 13 | Pass |
| 16QAM (1RB Size) | 5.33 | 5.01 | 5.66 | 13 | Pass |
| 16QAM (50RB Size) | 6.27 | 6.21 | 6.28 | 13 | Pass |

**LTE Band 17:**

**Maximum Output Power**

| Bandwidth (MHz) | Modulation | RB size/ RB Offset | Conducted Average Output Power (dBm) | | | ERP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| 5.0 | QPSK | RB1#0 | 23.30 | 23.35 | 23.49 | 18.65 | 18.70 | 18.84 |
| | | RB1#13 | 23.22 | 23.39 | 23.50 | 18.57 | 18.74 | 18.85 |
| | | RB1#24 | 23.18 | 23.26 | 23.56 | 18.53 | 18.61 | 18.91 |
| | | RB15#0 | 22.43 | 22.43 | 22.43 | 17.78 | 17.78 | 17.78 |
| | | RB15#10 | 22.37 | 22.28 | 22.34 | 17.72 | 17.63 | 17.69 |
| | | RB25#0 | 22.48 | 22.39 | 22.41 | 17.83 | 17.74 | 17.76 |
| | 16QAM | RB1#0 | 21.88 | 21.51 | 22.38 | 17.23 | 16.86 | 17.73 |
| | | RB1#13 | 21.90 | 21.54 | 22.34 | 17.25 | 16.89 | 17.69 |
| | | RB1#24 | 21.81 | 21.55 | 22.34 | 17.16 | 16.90 | 17.69 |
| | | RB15#0 | 21.36 | 21.26 | 21.24 | 16.71 | 16.61 | 16.59 |
| | | RB15#10 | 21.30 | 21.21 | 21.26 | 16.65 | 16.56 | 16.61 |
| 10.0 | QPSK | RB1#0 | 23.34 | 23.33 | 23.36 | 18.69 | 18.68 | 18.71 |
| | | RB1#25 | 23.17 | 23.37 | 23.36 | 18.52 | 18.72 | 18.71 |
| | | RB1#49 | 23.38 | 23.35 | 23.46 | 18.73 | 18.70 | 18.81 |
| | | RB25#0 | 22.43 | 22.27 | 22.38 | 17.78 | 17.62 | 17.73 |
| | | RB25#25 | 22.36 | 22.42 | 22.43 | 17.71 | 17.77 | 17.78 |
| | | RB50#0 | 22.29 | 22.37 | 22.25 | 17.64 | 17.72 | 17.60 |
| | 16QAM | RB1#0 | 22.31 | 23.13 | 21.93 | 17.66 | 18.48 | 17.28 |
| | | RB1#25 | 22.24 | 23.04 | 21.89 | 17.59 | 18.39 | 17.24 |
| | | RB1#49 | 22.40 | 23.02 | 22.00 | 17.75 | 18.37 | 17.35 |
| | | RB25#0 | 21.28 | 21.27 | 21.42 | 16.63 | 16.62 | 16.77 |
| | | RB25#25 | 21.39 | 21.39 | 21.43 | 16.74 | 16.74 | 16.78 |
| | | RB50#0 | 21.27 | 21.25 | 21.23 | 16.62 | 16.60 | 16.58 |

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable Loss(dB)
For LTE Band17: Antenna Gain =-2.0dBi = -4.15dBd (0dBd=2.15dBi)
Cable Loss=0.5dB
The limit: ERP≤34.77dBm

**Peak-to-average ratio (PAR)**

**10MHz bandwidth**

| Modulation | Low channel (dB) | Middle channel (dB) | High channel (dB) | PAR Limit (dB) | Result |
|---|---|---|---|---|---|
| QPSK (1RB Size) | 5.11 | 5.24 | 4.63 | 13 | Pass |
| QPSK (50RB Size) | 5.43 | 5.34 | 5.40 | 13 | Pass |
| 16QAM (1RB Size) | 6.33 | 6.30 | 5.69 | 13 | Pass |
| 16QAM (50RB Size) | 6.15 | 6.20 | 6.23 | 13 | Pass |

**LTE Band 66:**

| Bandwidth (MHz) | Modulation | RB size/ RB Offset | Conducted Average Output Power (dBm) | | | EIRP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| 1.4 | QPSK | RB1#0 | 23.86 | 23.61 | 23.61 | 24.06 | 23.81 | 23.81 |
| | | RB1#3 | 23.62 | 23.59 | 23.59 | 23.82 | 23.79 | 23.79 |
| | | RB1#5 | 23.60 | 23.54 | 23.60 | 23.8 | 23.74 | 23.8 |
| | | RB3#0 | 23.70 | 23.83 | 23.56 | 23.9 | 24.03 | 23.76 |
| | | RB3#3 | 23.64 | 23.78 | 23.50 | 23.84 | 23.98 | 23.7 |
| | | RB6#0 | 22.63 | 22.76 | 22.57 | 22.83 | 22.96 | 22.77 |
| | 16QAM | RB1#0 | 22.83 | 23.03 | 22.55 | 23.03 | 23.23 | 22.75 |
| | | RB1#3 | 22.85 | 23 | 22.1 | 23.05 | 23.2 | 22.3 |
| | | RB1#5 | 22.25 | 22.48 | 22.44 | 22.45 | 22.68 | 22.64 |
| | | RB3#0 | 22.3 | 22.42 | 22.37 | 22.5 | 22.62 | 22.57 |
| | | RB3#3 | 21.49 | 21.46 | 21.57 | 21.69 | 21.66 | 21.77 |
| | | RB6#0 | 23.55 | 23.3 | 23.3 | 23.75 | 23.5 | 23.5 |
| 3.0 | QPSK | RB1#0 | 23.56 | 23.63 | 23.53 | 23.76 | 23.83 | 23.73 |
| | | RB1#8 | 23.53 | 23.59 | 23.45 | 23.73 | 23.79 | 23.65 |
| | | RB1#14 | 23.63 | 23.66 | 23.51 | 23.83 | 23.86 | 23.71 |
| | | RB6#0 | 22.71 | 22.72 | 22.63 | 22.91 | 22.92 | 22.83 |
| | | RB6#9 | 22.62 | 22.68 | 22.60 | 22.82 | 22.88 | 22.8 |
| | | RB15#0 | 22.69 | 22.73 | 22.65 | 22.89 | 22.93 | 22.85 |
| | 16QAM | RB1#0 | 22.81 | 22.72 | 22.08 | 23.01 | 22.92 | 22.28 |
| | | RB1#8 | 22.73 | 22.62 | 22.12 | 22.93 | 22.82 | 22.32 |
| | | RB1#14 | 21.47 | 21.58 | 21.58 | 21.67 | 21.78 | 21.78 |
| | | RB6#0 | 21.62 | 21.57 | 21.56 | 21.82 | 21.77 | 21.76 |
| | | RB6#9 | 21.55 | 21.47 | 21.46 | 21.75 | 21.67 | 21.66 |
| | | RB15#0 | 23.25 | 23.32 | 23.22 | 23.45 | 23.52 | 23.42 |

| Bandwidth (MHz) | Modulation | RB size/ RB Offset | Conducted Average Output Power (dBm) | | | EIRP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| 5.0 | QP SK | RB1#0 | 23.59 | 23.83 | 23.40 | 23.79 | 24.03 | 23.6 |
| | | RB1#13 | 23.58 | 23.76 | 23.35 | 23.78 | 23.96 | 23.55 |
| | | RB1#24 | 23.62 | 23.83 | 23.37 | 23.82 | 24.03 | 23.57 |
| | | RB15#0 | 22.77 | 22.68 | 22.55 | 22.97 | 22.88 | 22.75 |
| | | RB15#10 | 22.65 | 22.64 | 22.57 | 22.85 | 22.84 | 22.77 |
| | | RB25#0 | 22.66 | 22.70 | 22.51 | 22.86 | 22.9 | 22.71 |
| | 16QAM | RB1#0 | 21.51 | 22.57 | 22.33 | 21.71 | 22.77 | 22.53 |
| | | RB1#13 | 21.5 | 22.59 | 22.33 | 21.7 | 22.79 | 22.53 |
| | | RB1#24 | 21.61 | 21.39 | 21.25 | 21.81 | 21.59 | 21.45 |
| | | RB15#0 | 21.57 | 21.4 | 21.34 | 21.77 | 21.6 | 21.54 |
| | | RB15#10 | 21.61 | 21.46 | 21.41 | 21.81 | 21.66 | 21.61 |
| | | RB25#0 | 23.28 | 23.52 | 23.09 | 23.48 | 23.72 | 23.29 |
| 10.0 | QPSK | RB1#0 | 23.53 | 23.61 | 23.41 | 23.73 | 23.81 | 23.61 |
| | | RB1#25 | 23.57 | 23.65 | 23.63 | 23.77 | 23.85 | 23.83 |
| | | RB1#49 | 23.59 | 23.70 | 23.60 | 23.79 | 23.9 | 23.8 |
| | | RB25#0 | 22.75 | 22.66 | 22.59 | 22.95 | 22.86 | 22.79 |
| | | RB25#25 | 22.70 | 22.74 | 22.57 | 22.9 | 22.94 | 22.77 |
| | | RB50#0 | 22.60 | 22.72 | 22.64 | 22.8 | 22.92 | 22.84 |
| | 16QAM | RB1#0 | 22.58 | 23.21 | 21.79 | 22.78 | 23.41 | 21.99 |
| | | RB1#25 | 22.59 | 23.17 | 21.82 | 22.79 | 23.37 | 22.02 |
| | | RB1#49 | 21.46 | 21.53 | 21.55 | 21.66 | 21.73 | 21.75 |
| | | RB25#0 | 21.52 | 21.48 | 21.55 | 21.72 | 21.68 | 21.75 |
| | | RB25#25 | 21.5 | 21.5 | 21.46 | 21.7 | 21.7 | 21.66 |
| | | RB50#0 | 23.22 | 23.3 | 23.1 | 23.42 | 23.5 | 23.3 |

| Bandwidth (MHz) | Modulation | RB size/ RB Offset | Conducted Average Output Power (dBm) | | | EIRP(dBm) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Mid | High | Low | Mid | High |
| 15.0 | QPSK | RB1#0 | 23.54 | 23.65 | 23.44 | 23.74 | 23.85 | 23.64 |
| | | RB1#38 | 23.63 | 23.61 | 23.37 | 23.83 | 23.81 | 23.57 |
| | | RB1#74 | 23.60 | 23.66 | 23.40 | 23.8 | 23.86 | 23.6 |
| | | RB36#0 | 22.56 | 22.67 | 22.68 | 22.76 | 22.87 | 22.88 |
| | | RB36#39 | 22.63 | 22.64 | 22.60 | 22.83 | 22.84 | 22.8 |
| | | RB75#0 | 22.66 | 22.67 | 22.69 | 22.86 | 22.87 | 22.89 |
| | 16QAM | RB1#0 | 22.79 | 23.21 | 22.66 | 22.99 | 23.41 | 22.86 |
| | | RB1#38 | 22.72 | 23.21 | 22.45 | 22.92 | 23.41 | 22.65 |
| | | RB1#74 | 21.49 | 21.43 | 21.56 | 21.69 | 21.63 | 21.76 |
| | | RB36#0 | 21.58 | 21.42 | 21.43 | 21.78 | 21.62 | 21.63 |
| | | RB36#39 | 21.58 | 21.46 | 21.46 | 21.78 | 21.66 | 21.66 |
| | | RB75#0 | 23.23 | 23.34 | 23.13 | 23.43 | 23.54 | 23.33 |
| 20.0 | QPSK | RB1#0 | 23.74 | 23.85 | 23.63 | 23.94 | 24.05 | 23.83 |
| | | RB1#50 | 23.65 | 23.63 | 23.66 | 23.85 | 23.83 | 23.86 |
| | | RB1#99 | 23.77 | 23.67 | 23.63 | 23.97 | 23.87 | 23.83 |
| | | RB50#0 | 22.58 | 22.60 | 22.71 | 22.78 | 22.8 | 22.91 |
| | | RB50#50 | 22.57 | 22.67 | 22.60 | 22.77 | 22.87 | 22.8 |
| | | RB100#0 | 22.68 | 22.80 | 22.72 | 22.88 | 23 | 22.92 |
| | 16QAM | RB1#0 | 22.53 | 22.3 | 23.09 | 22.73 | 22.5 | 23.29 |
| | | RB1#50 | 22.45 | 22.26 | 23.04 | 22.65 | 22.46 | 23.24 |
| | | RB1#99 | 21.56 | 21.4 | 21.53 | 21.76 | 21.6 | 21.73 |
| | | RB50#0 | 21.59 | 21.47 | 21.37 | 21.79 | 21.67 | 21.57 |
| | | RB50#50 | 21.52 | 21.4 | 21.52 | 21.72 | 21.6 | 21.72 |
| | | RB100#0 | 23.43 | 23.54 | 23.32 | 23.63 | 23.74 | 23.52 |

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable Loss(dB)
For LTE Band 66: Antenna Gain = 1.2dBi
Cable Loss=1dB*(provided by the applicant)
Limit: EIRP≤30dBm

**Peak-to-average ratio (PAR)**

**20MHz bandwidth**

| Modulation | Low channel (dB) | Middle channel (dB) | High channel (dB) | PAR Limit (dB) | Result |
|---|---|---|---|---|---|
| QPSK (1RB Size) | 3.58 | 4.15 | 4.18 | 13 | Pass |
| QPSK (100RB Size) | 5.48 | 5.27 | 5.27 | 13 | Pass |
| 16QAM (1RB Size) | 6.57 | 5.50 | 4.65 | 13 | Pass |
| 16QAM (100RB Size) | 6.27 | 6.18 | 6.35 | 13 | Pass |

# FCC §2.1049, §22.917, §22.905 & §24.238 & §27.53 - OCCUPIED BANDWIDTH

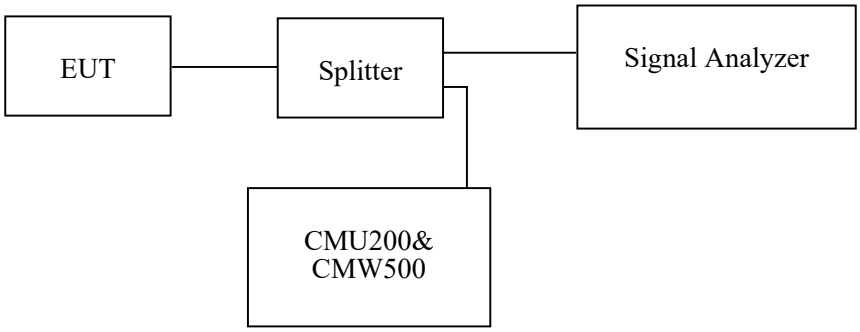
## Applicable Standard

FCC 47 §2.1049, §22.917, §22.905, §24.238 and §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 ℃ |
| **Relative Humidity:** | 55 ~62 % |
| **ATM Pressure:** | 101.0 kPa |

*The testing was performed by Orlo Yang from 2021-07-18 to 2021-07-20.*

*EUT operation mode: Transmitting*

**Test Result: Pass**

*Please refer to the following tables and plots.*

## Cellular Band (Part 22H)

| Mode | Channel | Frequency (MHz) | 99% Occupied Bandwidth (kHz) | 26 dB Emission Bandwidth (kHz) |
|---|---|---|---|---|
| GSM(GMSK) | 128 | 824.2 | 247.50 | 319.23 |
| | 190 | 836.6 | 245.19 | 314.42 |
| | 251 | 848.8 | 245.00 | 319.36 |
| EGPRS(8PSK) | 128 | 824.2 | 248.40 | 321.79 |
| | 190 | 836.6 | 250.00 | 319.87 |
| | 251 | 848.8 | 250.00 | 316.67 |

| Frequency (MHz) | | Occupied Bandwidth (MHz) | 26dB Bandwidth (MHz) |
|---|---|---|---|
| RMC | 826.4 | 4.17 | 4.71 |
| | 836.6 | 4.15 | 4.69 |
| | 846.6 | 4.17 | 4.68 |
| HSDPA | 826.4 | 4.17 | 4.73 |
| | 836.6 | 4.17 | 4.71 |
| | 846.6 | 4.18 | 4.71 |
| HSUPA | 826.4 | 4.17 | 4.70 |
| | 836.6 | 4.15 | 4.68 |
| | 846.6 | 4.17 | 4.71 |

## PCS Band (Part 24E)

| Mode | Channel | Frequency (MHz) | 99% Occupied Bandwidth (kHz) | 26 dB Emission Bandwidth (kHz) |
|---|---|---|---|---|
| GSM(GMSK) | 512 | 1850.2 | 243.59 | 314.42 |
| | 661 | 1880.0 | 246.79 | 317.63 |
| | 810 | 1909.8 | 246.79 | 319.23 |
| EGPRS(8PSK) | 512 | 1850.2 | 248.40 | 311.86 |
| | 661 | 1880.0 | 251.60 | 323.08 |
| | 810 | 1909.8 | 248.40 | 318.27 |

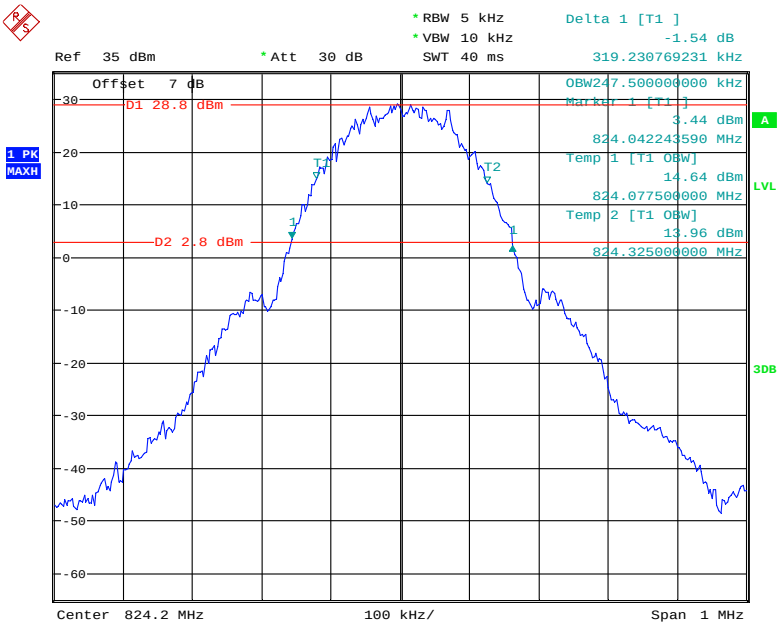
| Frequency (MHz) | | Occupied Bandwidth (MHz) | 26dB Bandwidth (MHz) |
|---|---|---|---|
| RMC | 1852.4 | 4.15 | 4.69 |
| | 1880.0 | 4.17 | 4.71 |
| | 1907.6 | 4.17 | 4.69 |
| HSDPA | 1852.4 | 4.15 | 4.69 |
| | 1880.0 | 4.15 | 4.68 |
| | 1907.6 | 4.17 | 4.70 |
| HSUPA | 1852.4 | 4.15 | 4.70 |
| | 1880.0 | 4.17 | 4.70 |
| | 1907.6 | 4.17 | 4.70 |

**AWS Band (Part 27)**

| Frequency (MHz) | | Occupied Bandwidth (MHz) | 26dB Bandwidth (MHz) |
|---|---|---|---|
| RMC | 1712.4 | 4.15 | 4.66 |
| | 1732.6 | 4.15 | 4.70 |
| | 1752.6 | 4.15 | 4.69 |
| HSDPA | 1712.4 | 4.13 | 4.72 |
| | 1732.6 | 4.15 | 4.70 |
| | 1752.6 | 4.15 | 4.68 |
| HSUPA | 1712.4 | 4.15 | 4.66 |
| | 1732.6 | 4.17 | 4.70 |
| | 1752.6 | 4.15 | 4.68 |

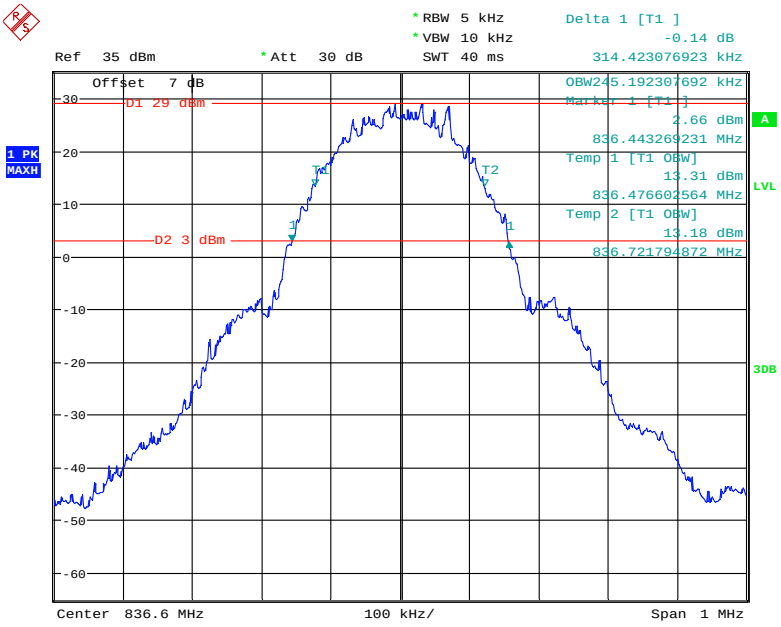
## Cellular Band (Part 22H)

### 26 dB Emissions &99% Occupied Bandwidth for GSM (GMSK) Mode, Low channel



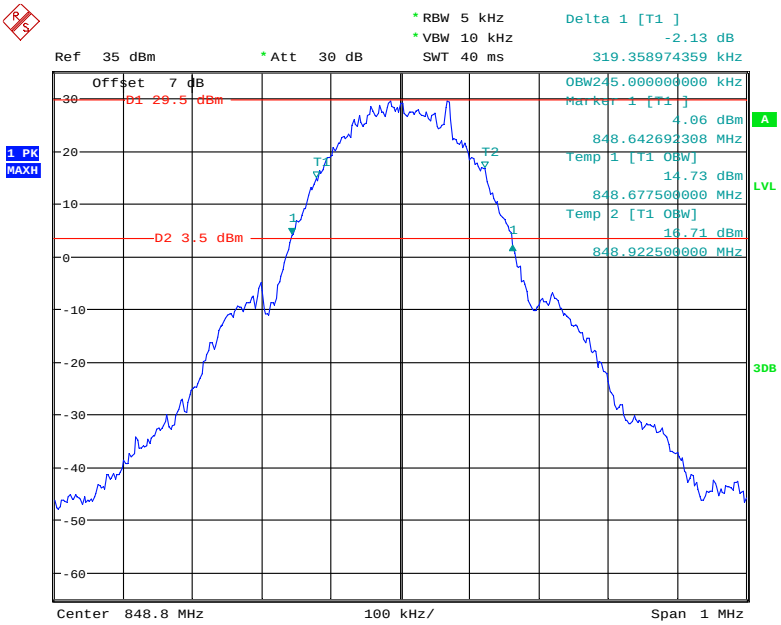

Date: 20.JUL.2021 19:59:40

### 26 dB Emissions &99% Occupied Bandwidth for GSM (GMSK) Mode, Middle channel



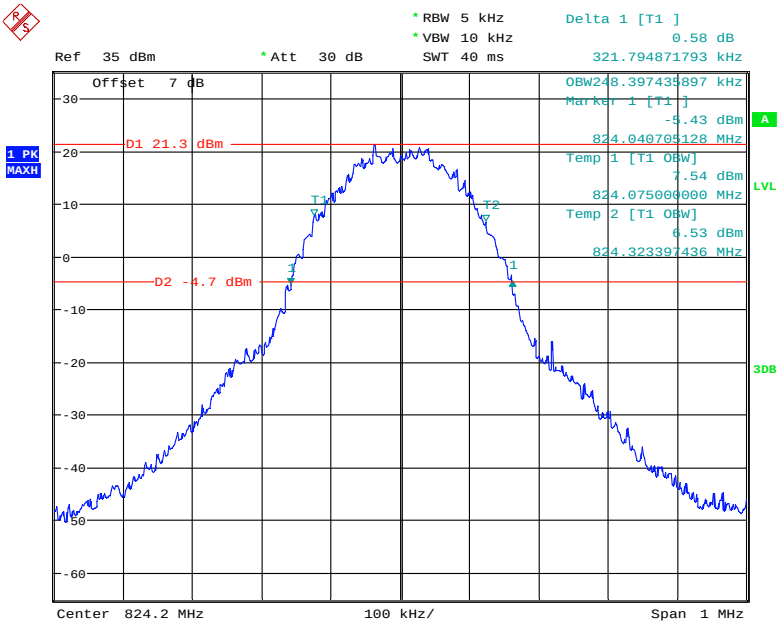

Date: 20.JUL.2021 01:32:41

**26 dB Emissions &99% Occupied Bandwidth for GSM (GMSK) Mode, High channel**



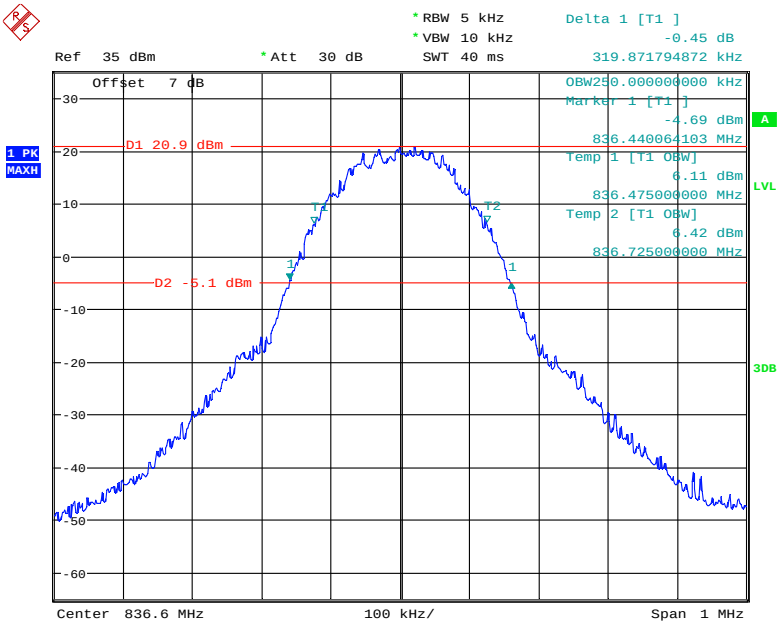

Date: 20.JUL.2021 20:02:14

**26 dB Emissions &99% Occupied Bandwidth for EGPRS (8PSK) Mode, Low channel**



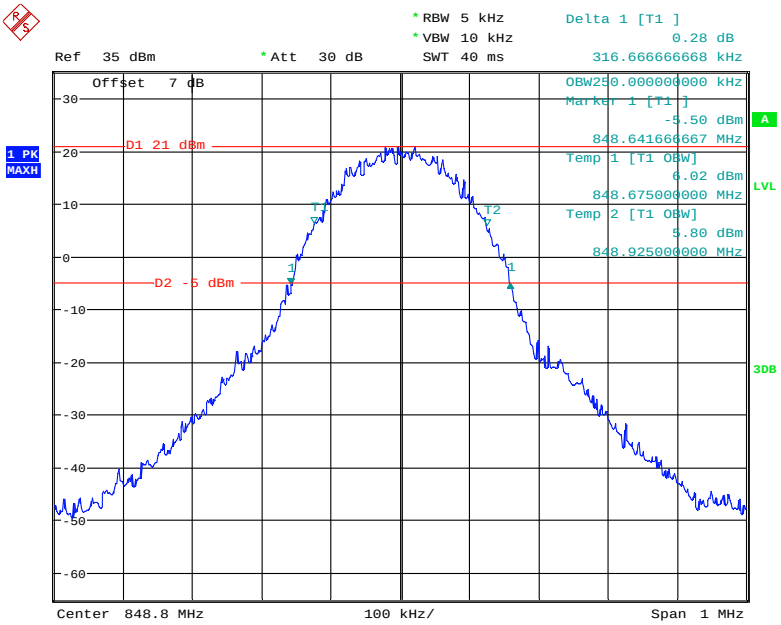

Date: 20.JUL.2021 01:20:39

**26 dB Emissions &99% Occupied Bandwidth for EGPRS (8PSK) Mode, Middle channel**



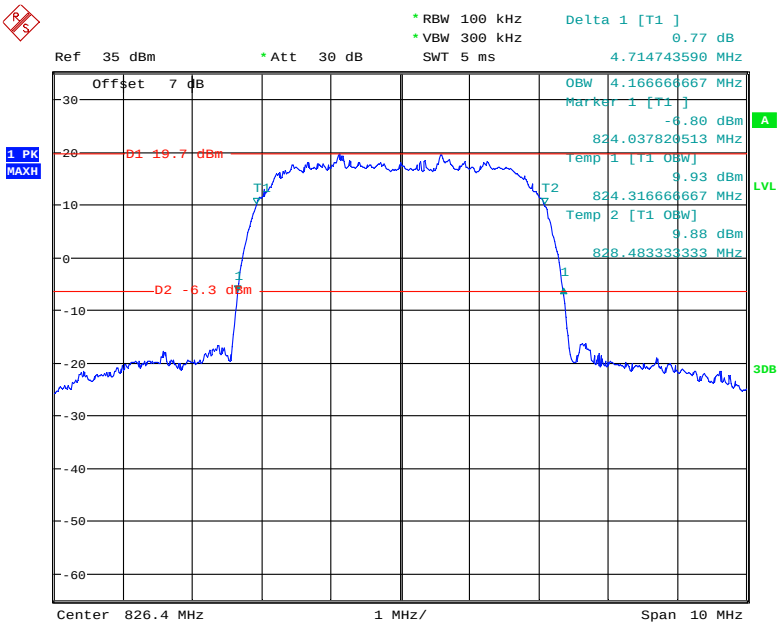

Date: 20.JUL.2021 01:24:39

**26 dB Emissions &99% Occupied Bandwidth for EGPRS (8PSK) Mode, High channel**



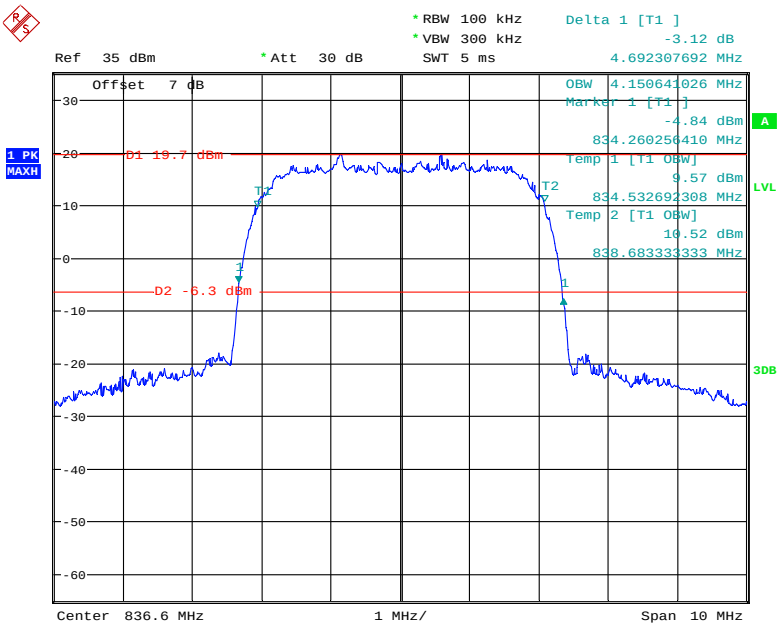

Date: 20.JUL.2021 01:26:02

**26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode, Low channel**



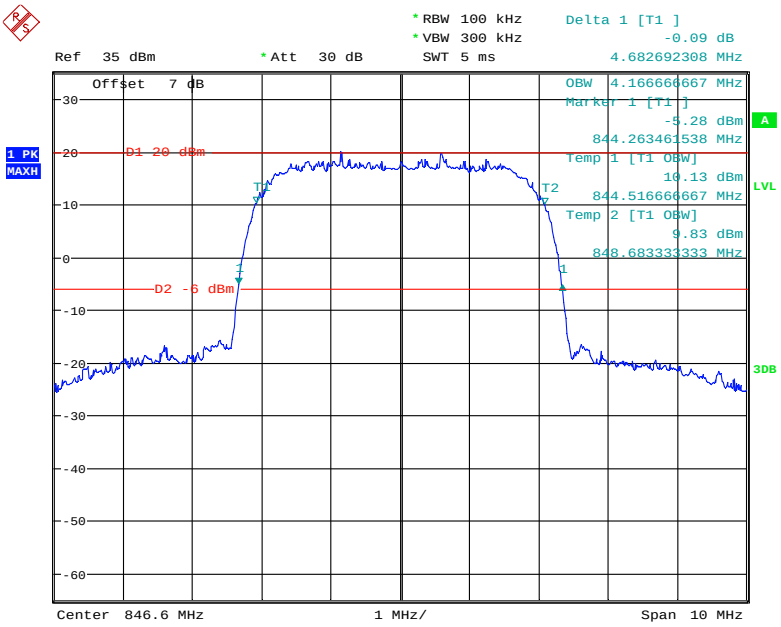

Date: 19.JUL.2021 23:54:45

**26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel**



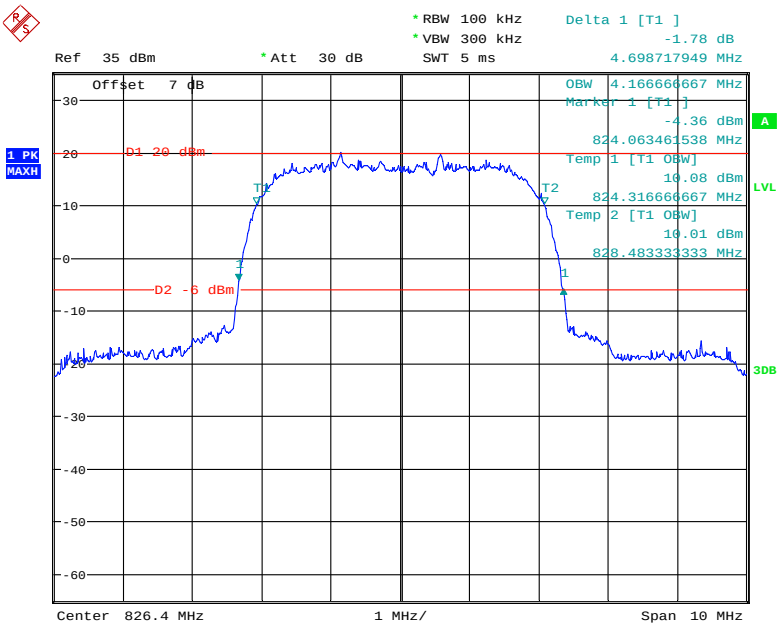

Date: 19.JUL.2021 23:56:27

**26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode, High channel**



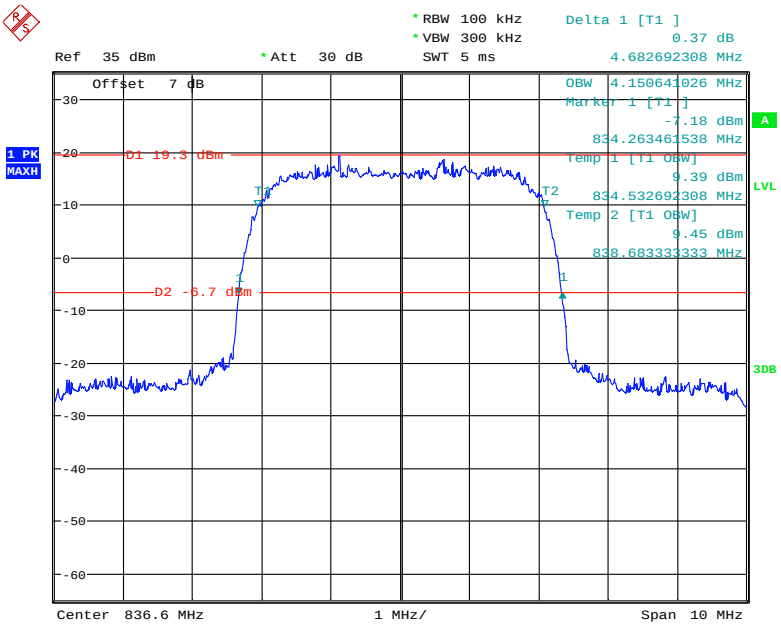

Date: 19.JUL.2021 23:57:30

**26 dB Emissions &99% Occupied Bandwidth for HSUPA (BPSK) Mode, Low channel**



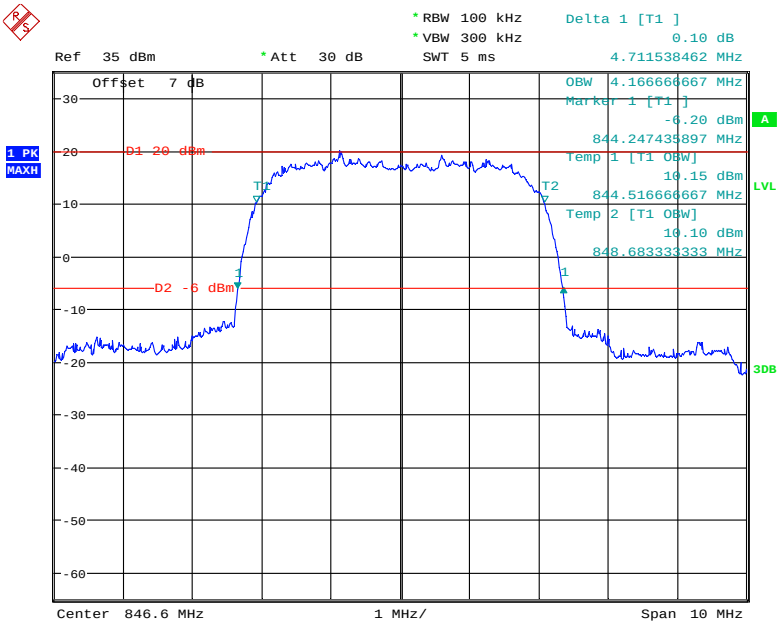

Date: 20.JUL.2021 00:03:49

**26 dB Emissions &99% Occupied Bandwidth for HSUPA (BPSK) Mode, Middle channel**



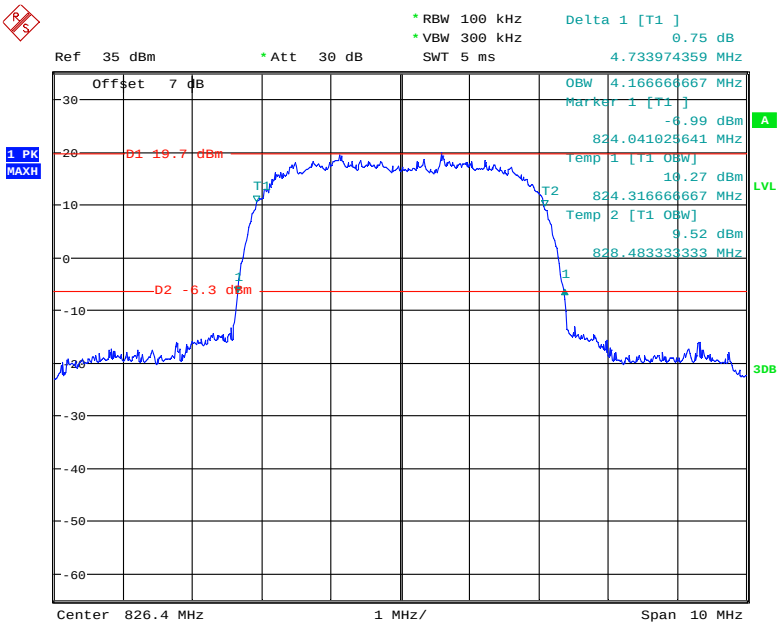

Date: 20.JUL.2021 00:02:29

**26 dB Emissions &99% Occupied Bandwidth for HSUPA (BPSK) Mode, High channel**



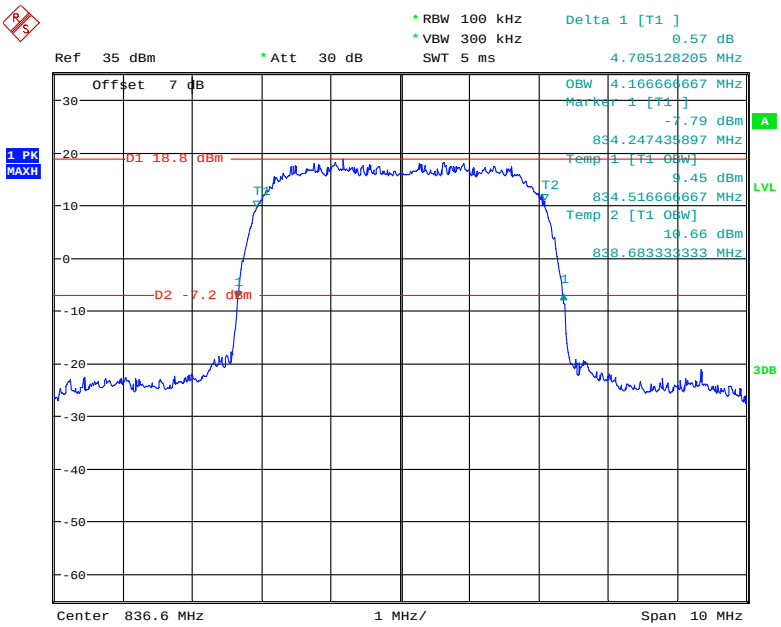

Date: 20.JUL.2021 00:01:08

**26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel**



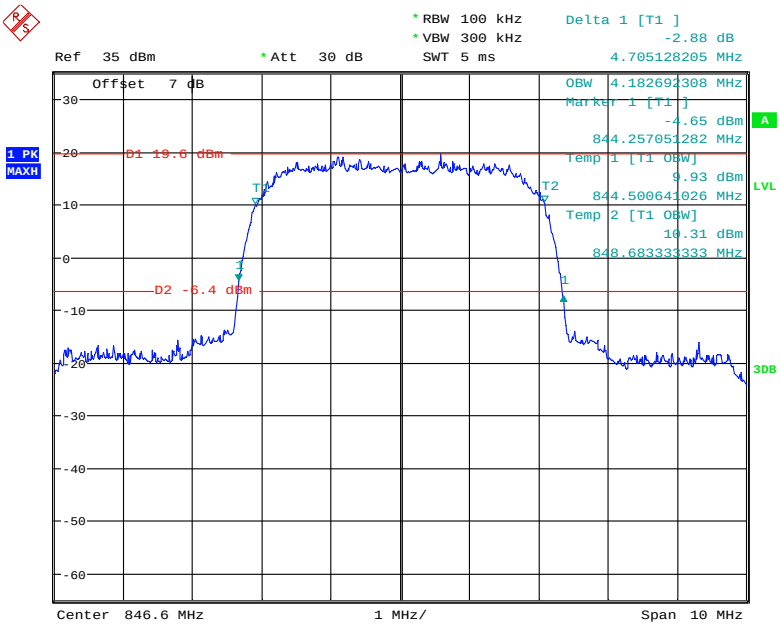

Date: 19.JUL.2021 23:09:17

**26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode, Middle channel**




Date: 19.JUL.2021 23:07:48

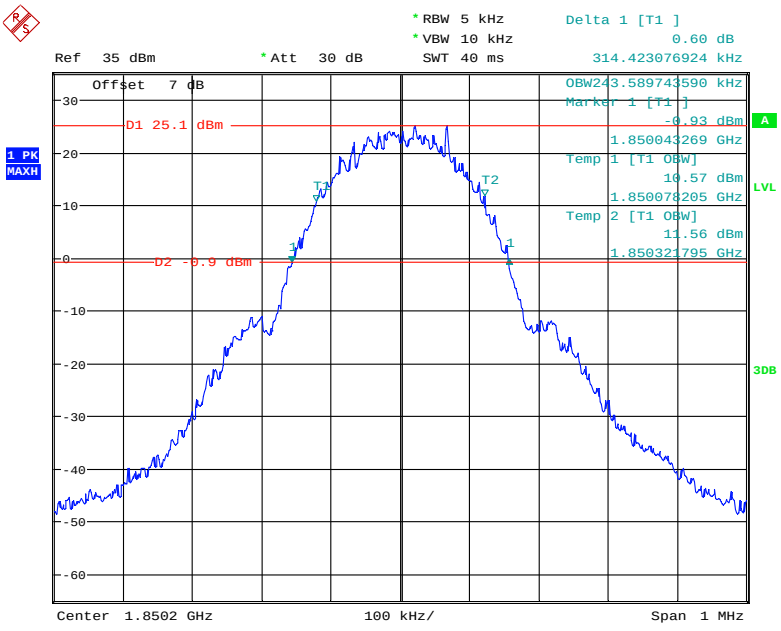
**26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel**




Date: 19.JUL.2021 23:05:47

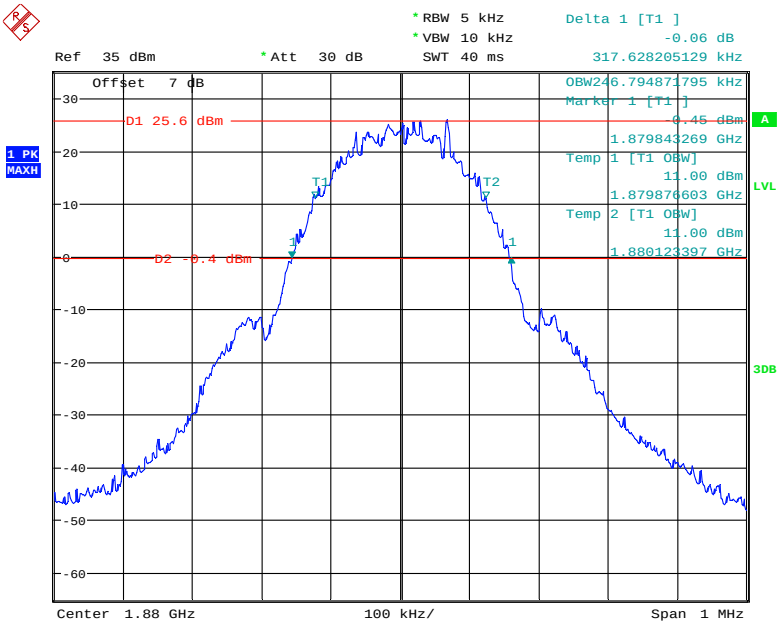
## PCS Band (Part 24E)

### 26 dB Emissions &99% Occupied Bandwidth for GSM (GMSK) Mode, Low channel



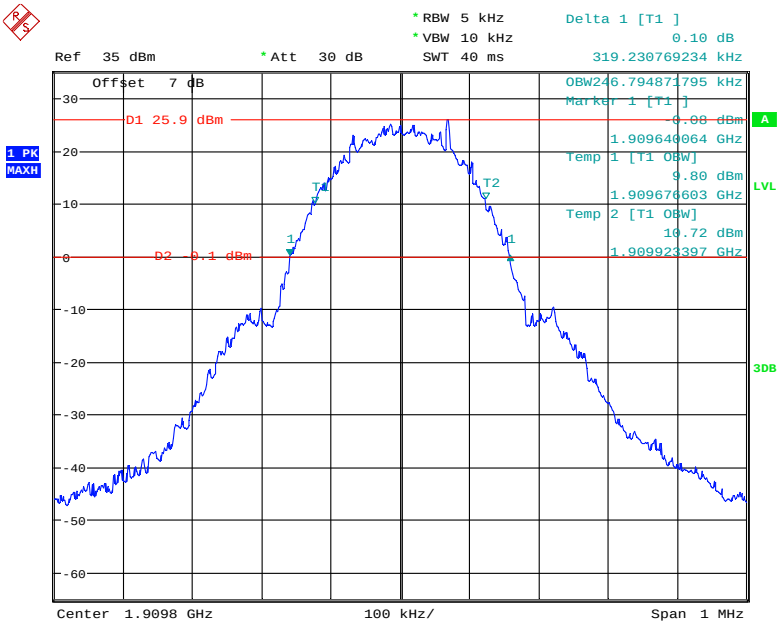

Date: 20.JUL.2021 01:05:05

### 26 dB Emissions &99% Occupied Bandwidth for GSM (GMSK) Mode, Middle channel



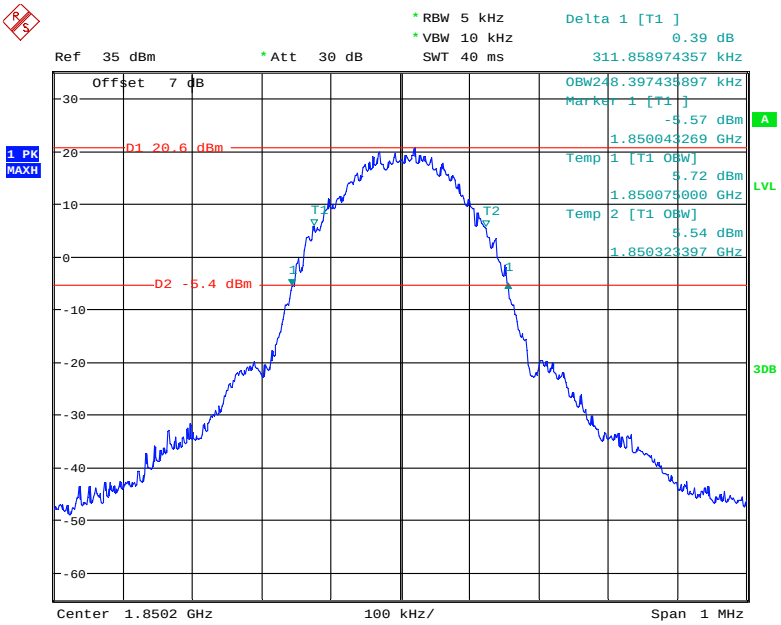

Date: 20.JUL.2021 01:06:25

**26 dB Emissions &99% Occupied Bandwidth for GSM (GMSK) Mode, High channel**



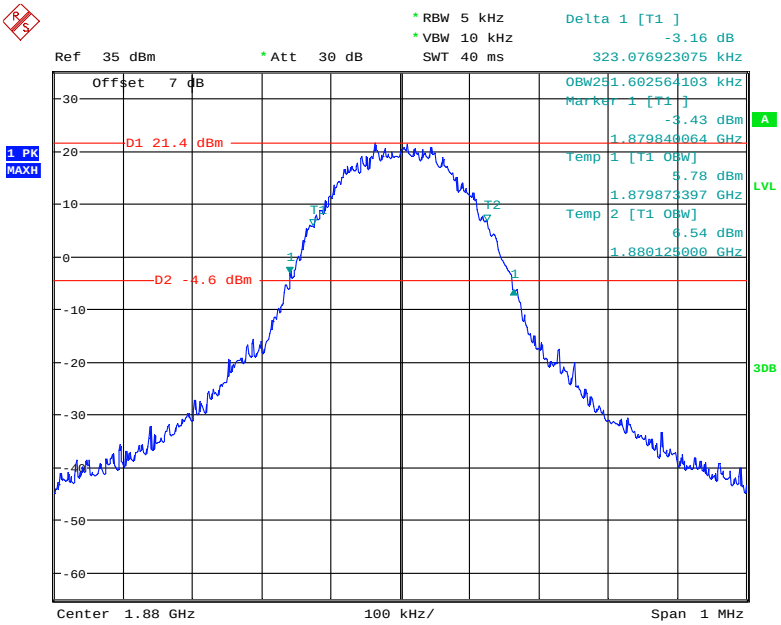

Date: 20.JUL.2021 01:08:01

**26 dB Emissions &99% Occupied Bandwidth for EGPRS (8PSK) Mode, Low channel**



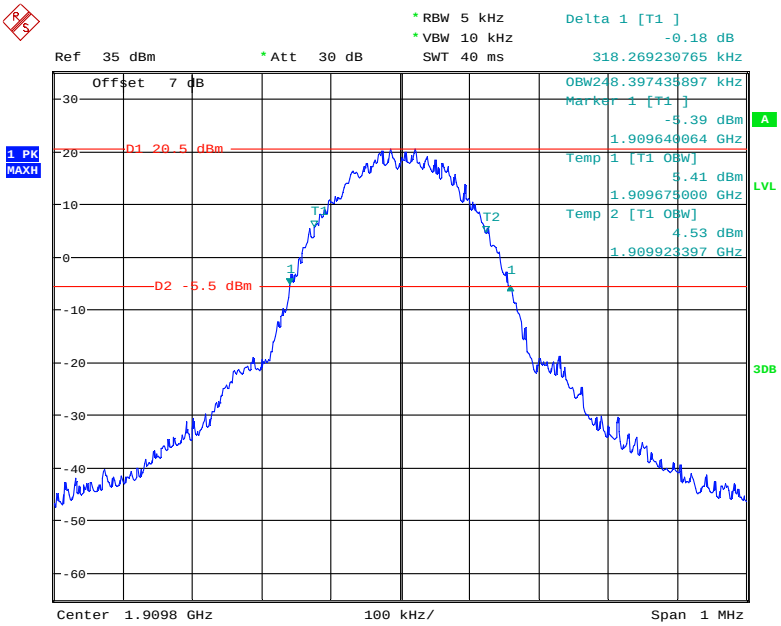

Date: 20.JUL.2021 01:14:12

**26 dB Emissions &99% Occupied Bandwidth for EGPRS (8PSK) Mode, Middle channel**



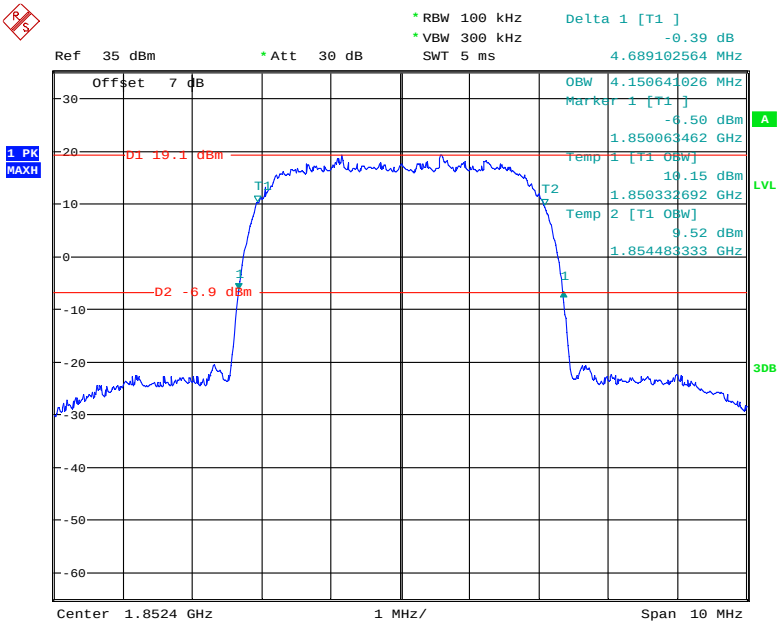

Date: 20.JUL.2021 01:12:54

**26 dB Emissions &99% Occupied Bandwidth for EGPRS (8PSK) Mode, High channel**



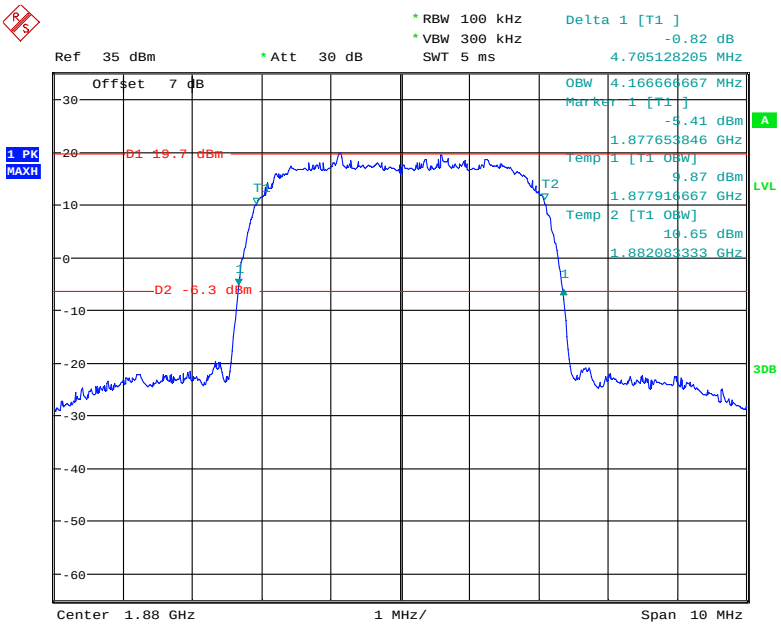

Date: 20.JUL.2021 01:10:31

**26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode, Low channel**



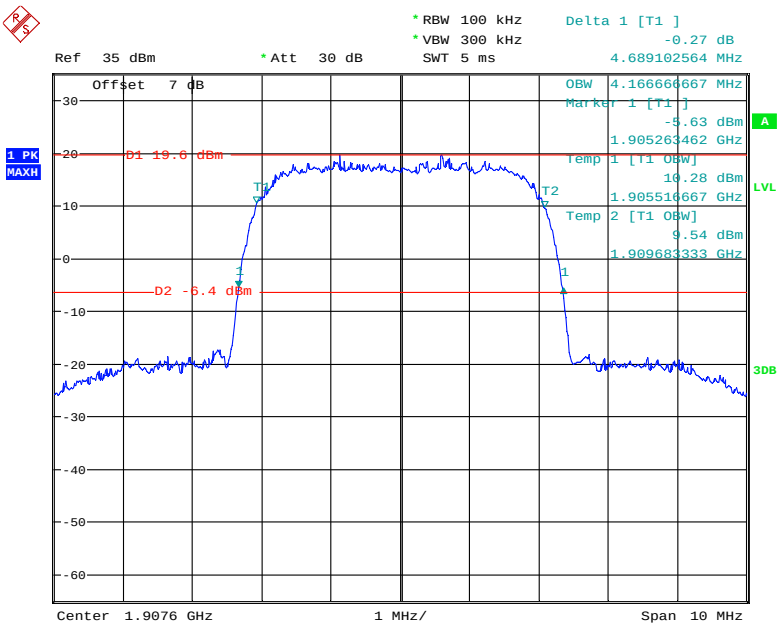

Date: 19.JUL.2021 23:20:28

**26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel**



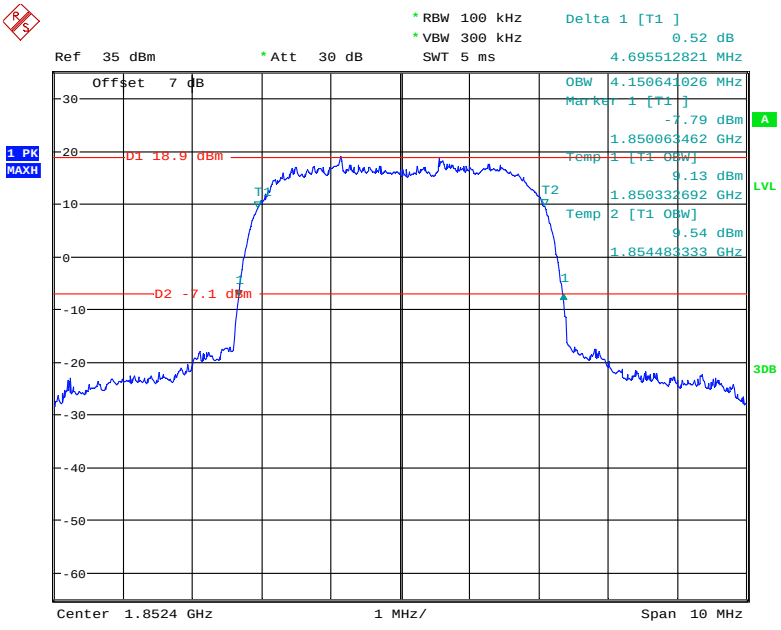

Date: 19.JUL.2021 23:23:33

**26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode, High channel**



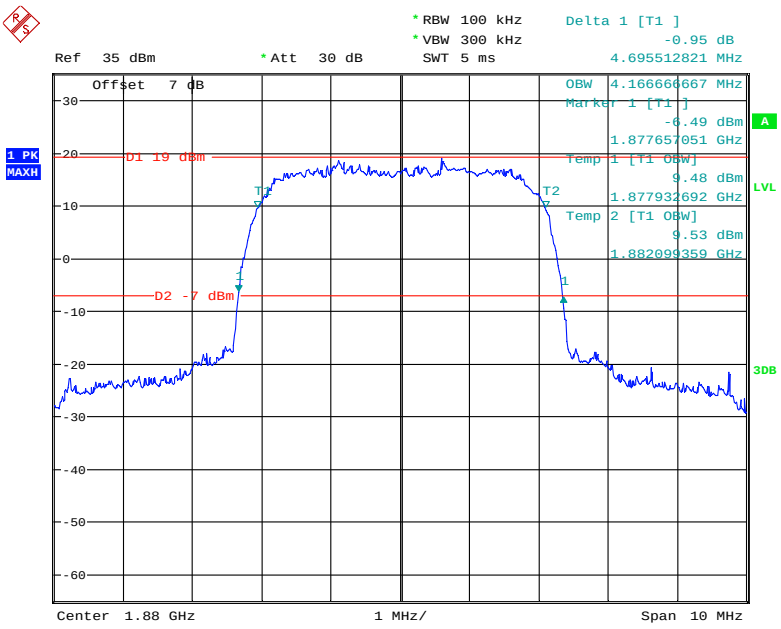

Date: 19.JUL.2021 23:24:47

**26 dB Emissions &99% Occupied Bandwidth for HSUPA (BPSK) Mode, Low channel**



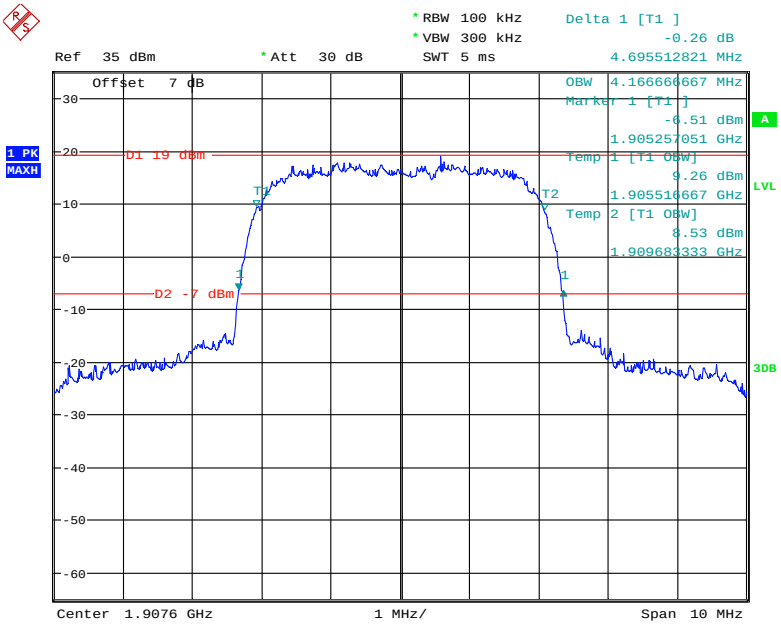

Date: 20.JUL.2021 00:14:47

**26 dB Emissions &99% Occupied Bandwidth for HSUPA (BPSK) Mode, Middle channel**



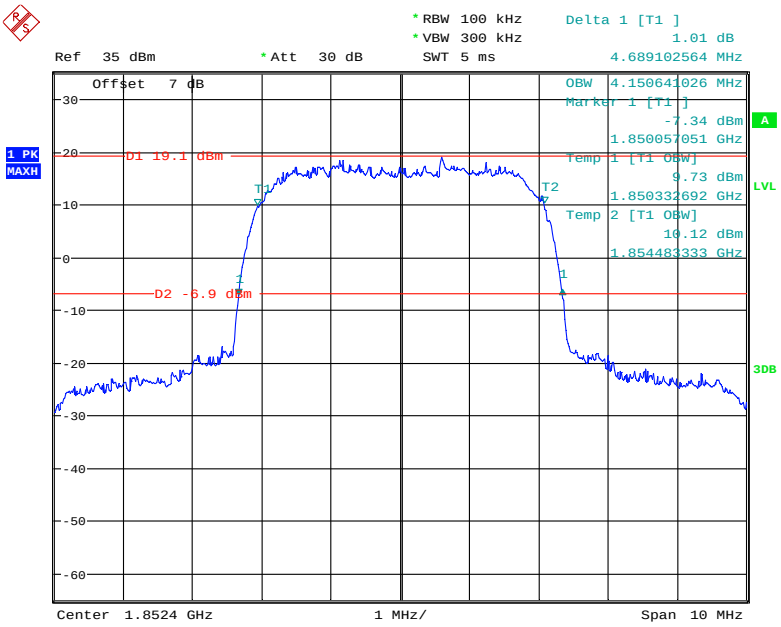

Date: 20.JUL.2021 00:13:10

**26 dB Emissions &99% Occupied Bandwidth for HSUPA (BPSK) Mode, High channel**



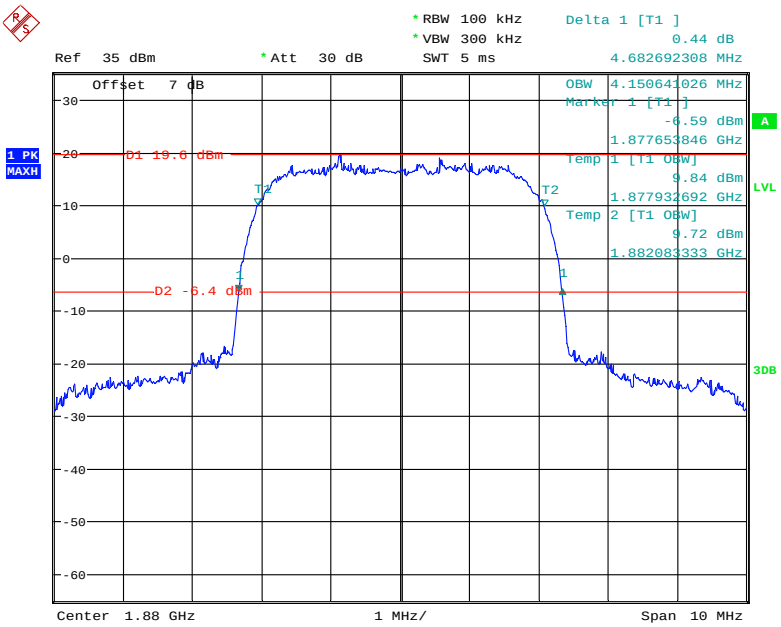

Date: 20.JUL.2021 00:11:44

**26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel**



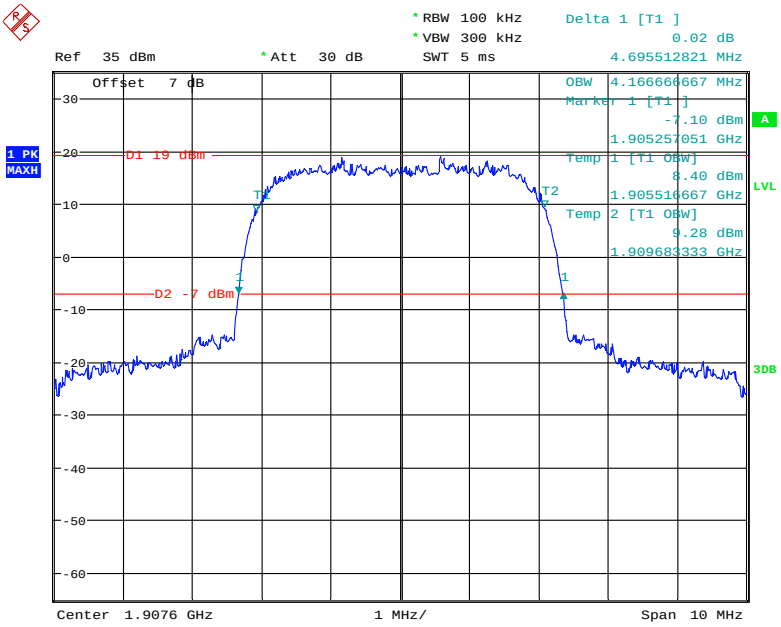

Date: 19.JUL.2021 23:19:15

**26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode, Middle channel**




Date: 19.JUL.2021 23:17:47

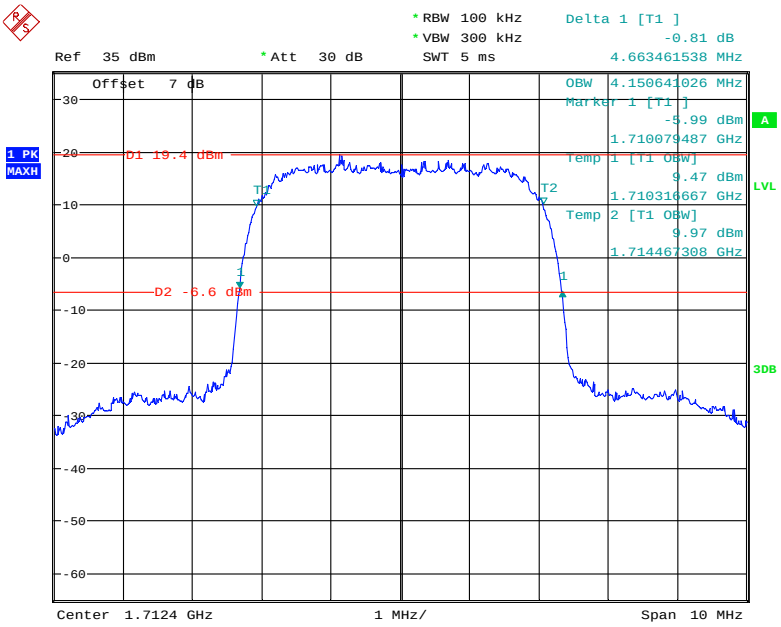
**26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel**




Date: 19.JUL.2021 23:16:29

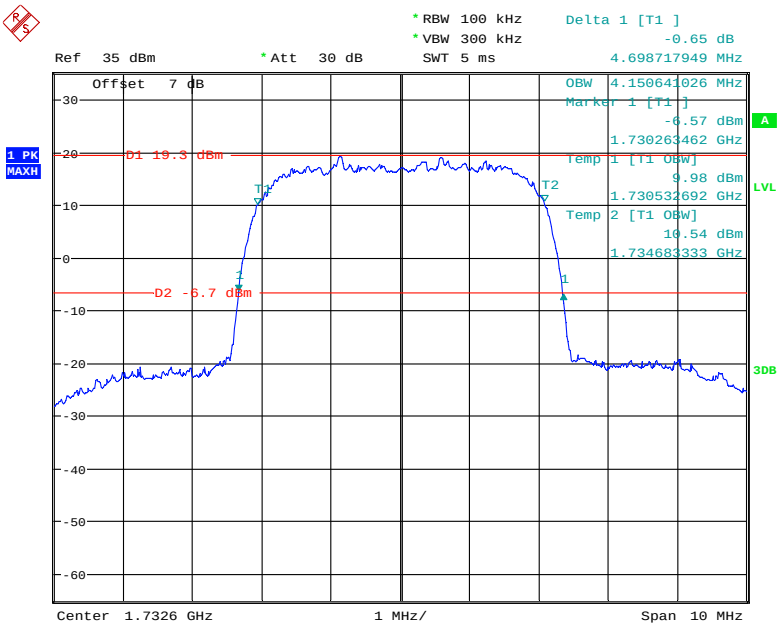
## AWS Band (Part 27)

### 26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode, Low channel



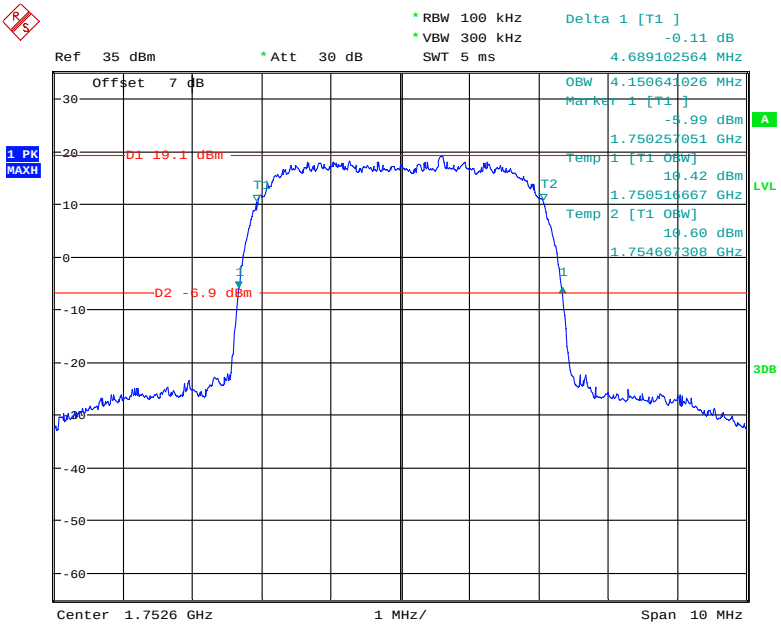

Date: 19.JUL.2021 23:50:35

### 26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel



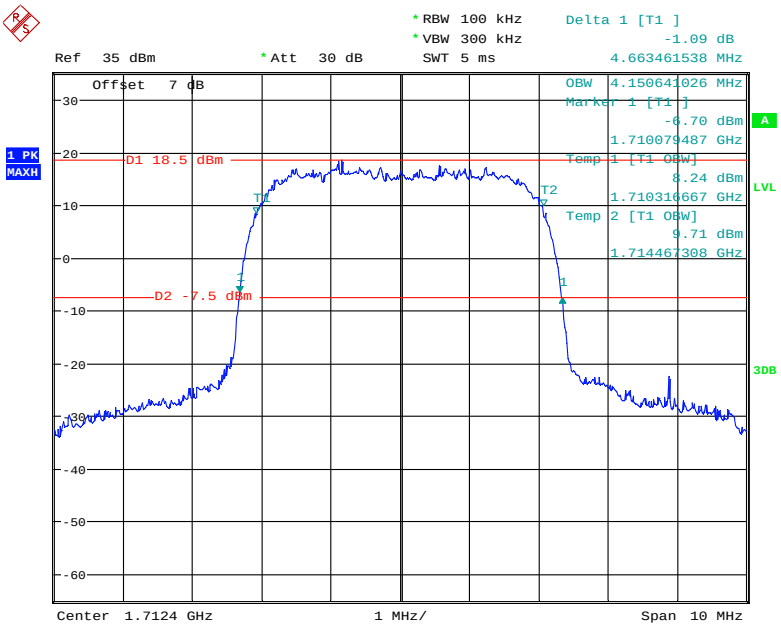

Date: 19.JUL.2021 23:52:11

**26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode, High channel**



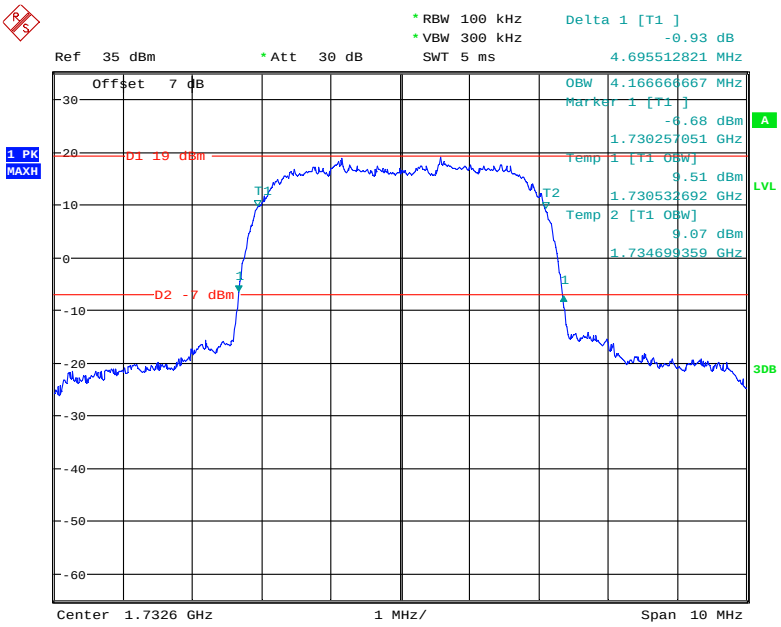

Date: 19.JUL.2021 23:53:13

**26 dB Emissions &99% Occupied Bandwidth for HSUPA (BPSK) Mode, Low channel**



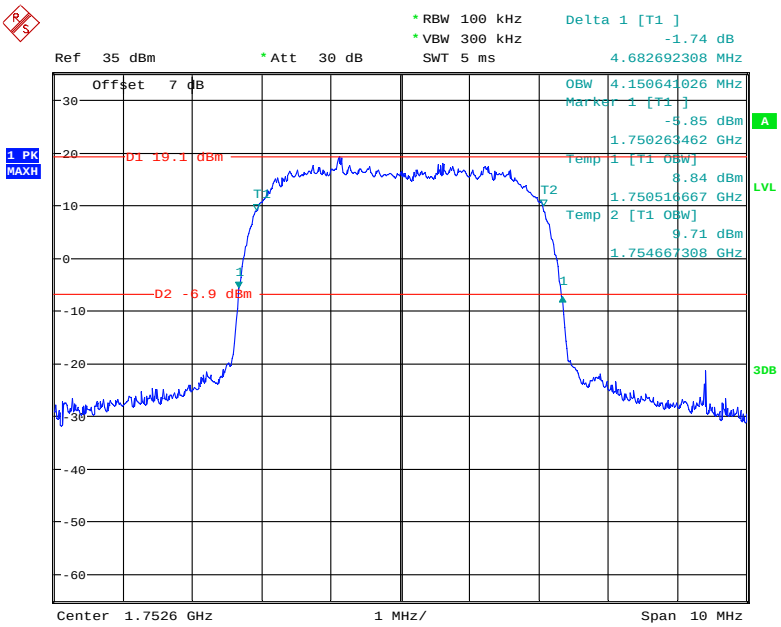

Date: 20.JUL.2021 00:09:46

**26 dB Emissions &99% Occupied Bandwidth for HSUPA (BPSK) Mode, Middle channel**



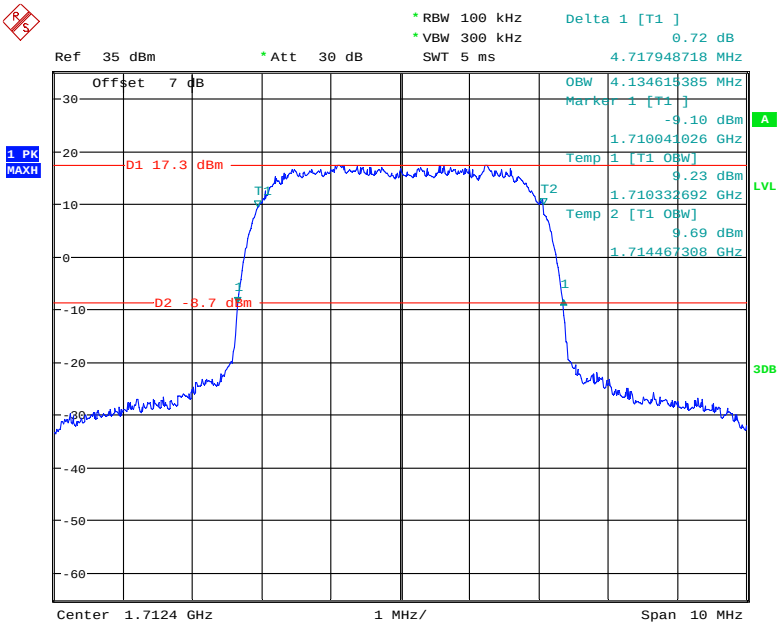

Date: 20.JUL.2021 00:07:43

**26 dB Emissions &99% Occupied Bandwidth for HSUPA (BPSK) Mode, High channel**



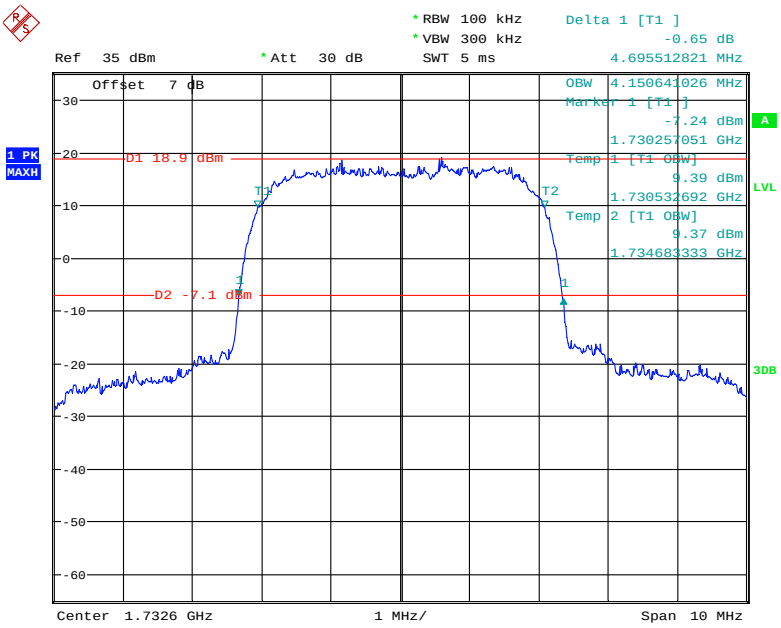

Date: 20.JUL.2021 00:05:39

**26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel**



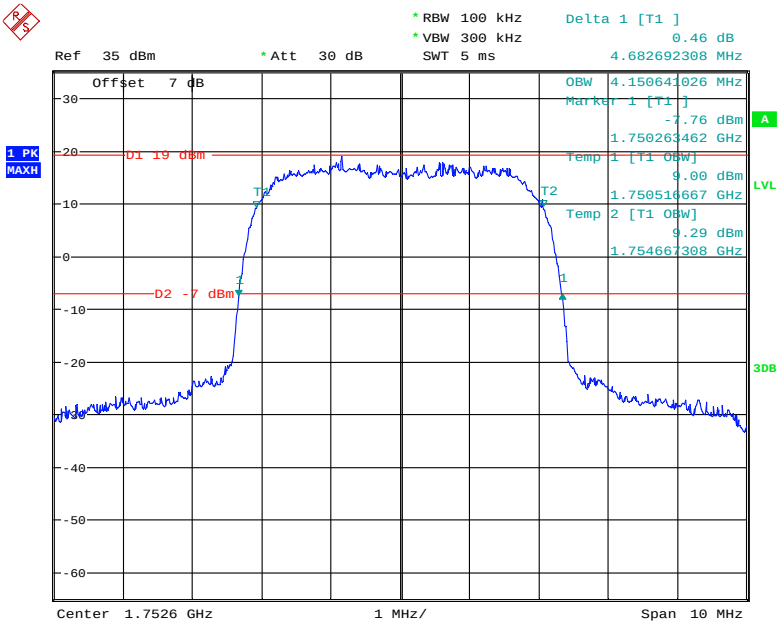

Date: 19.JUL.2021 23:13:40

**26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode, Middle channel**




Date: 19.JUL.2021 23:11:45

**26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel**




Date: 19.JUL.2021 23:10:21

## LTE Band 2:

| Bandwidth (MHz) | Modulation | Channel | 99% Occupied Bandwidth (MHz) | 26 dB Emission Bandwidth (MHz) |
|---|---|---|---|---|
| 1.4 | QPSK | Low | 1.110 | 1.260 |
| | | Middle | 1.104 | 1.260 |
| | | High | 1.110 | 1.284 |
| | 16QAM | Low | 1.116 | 1.266 |
| | | Middle | 1.098 | 1.260 |
| | | High | 1.110 | 1.278 |
| 3 | QPSK | Low | 2.700 | 3.000 |
| | | Middle | 2.700 | 3.012 |
| | | High | 2.700 | 3.048 |
| | 16QAM | Low | 2.688 | 3.012 |
| | | Middle | 2.688 | 3.012 |
| | | High | 2.700 | 3.048 |
| 5 | QPSK | Low | 4.520 | 5.000 |
| | | Middle | 4.520 | 5.020 |
| | | High | 4.520 | 5.020 |
| | 16QAM | Low | 4.520 | 5.000 |
| | | Middle | 4.540 | 5.040 |
| | | High | 4.540 | 5.040 |
| 10 | QPSK | Low | 8.960 | 9.840 |
| | | Middle | 8.960 | 9.800 |
| | | High | 9.000 | 9.720 |
| | 16QAM | Low | 8.960 | 9.760 |
| | | Middle | 8.960 | 9.840 |
| | | High | 8.960 | 9.840 |
| 15 | QPSK | Low | 13.560 | 15.180 |
| | | Middle | 13.560 | 15.060 |
| | | High | 13.620 | 15.240 |
| | 16QAM | Low | 13.500 | 15.000 |
| | | Middle | 13.560 | 15.180 |
| | | High | 13.560 | 15.060 |
| 20 | QPSK | Low | 18.000 | 19.600 |
| | | Middle | 18.080 | 19.680 |
| | | High | 18.080 | 19.920 |
| | 16QAM | Low | 18.000 | 19.600 |
| | | Middle | 18.000 | 19.840 |
| | | High | 18.080 | 19.840 |

## LTE Band 4:

| Bandwidth (MHz) | Modulation | Channel | 99% Occupied Bandwidth (MHz) | 26 dB Emission Bandwidth (MHz) |
|---|---|---|---|---|
| 1.4 | QPSK | Low | 1.104 | 1.260 |
| | | Middle | 1.104 | 1.260 |
| | | High | 1.104 | 1.260 |
| | 16QAM | Low | 1.110 | 1.266 |
| | | Middle | 1.098 | 1.260 |
| | | High | 1.110 | 1.254 |
| 3 | QPSK | Low | 2.712 | 3.012 |
| | | Middle | 2.700 | 2.988 |
| | | High | 2.700 | 3.024 |
| | 16QAM | Low | 2.700 | 3.024 |
| | | Middle | 2.700 | 3.000 |
| | | High | 2.700 | 3.024 |
| 5 | QPSK | Low | 4.520 | 4.960 |
| | | Middle | 4.540 | 5.020 |
| | | High | 4.520 | 4.860 |
| | 16QAM | Low | 4.520 | 4.980 |
| | | Middle | 4.540 | 5.020 |
| | | High | 4.520 | 5.080 |
| 10 | QPSK | Low | 8.960 | 9.800 |
| | | Middle | 8.960 | 9.720 |
| | | High | 8.960 | 9.760 |
| | 16QAM | Low | 8.960 | 9.840 |
| | | Middle | 9.000 | 9.800 |
| | | High | 8.960 | 9.760 |
| 15 | QPSK | Low | 13.620 | 15.120 |
| | | Middle | 13.560 | 14.940 |
| | | High | 13.560 | 15.060 |
| | 16QAM | Low | 13.620 | 15.120 |
| | | Middle | 13.560 | 15.000 |
| | | High | 13.560 | 15.060 |
| 20 | QPSK | Low | 18.000 | 19.600 |
| | | Middle | 18.000 | 19.520 |
| | | High | 18.080 | 19.840 |
| | 16QAM | Low | 18.000 | 19.680 |
| | | Middle | 18.000 | 19.920 |
| | | High | 18.000 | 19.760 |

**LTE Band 5:**

| Bandwidth (MHz) | Modulation | Channel | 99% Occupied Bandwidth (MHz) | 26 dB Emission Bandwidth (MHz) |
|---|---|---|---|---|
| 1.4 | QPSK | Low | 1.110 | 1.272 |
| | | Middle | 1.104 | 1.272 |
| | | High | 1.110 | 1.266 |
| | 16QAM | Low | 1.116 | 1.266 |
| | | Middle | 1.098 | 1.254 |
| | | High | 1.110 | 1.254 |
| 3 | QPSK | Low | 2.712 | 3.012 |
| | | Middle | 2.700 | 3.000 |
| | | High | 2.712 | 3.048 |
| | 16QAM | Low | 2.700 | 3.024 |
| | | Middle | 2.700 | 2.988 |
| | | High | 2.700 | 3.024 |
| 5 | QPSK | Low | 4.540 | 5.000 |
| | | Middle | 4.520 | 5.000 |
| | | High | 4.520 | 5.000 |
| | 16QAM | Low | 4.520 | 5.000 |
| | | Middle | 4.520 | 5.000 |
| | | High | 4.560 | 5.040 |
| 10 | QPSK | Low | 8.960 | 9.800 |
| | | Middle | 9.000 | 9.760 |
| | | High | 8.960 | 9.760 |
| | 16QAM | Low | 8.960 | 9.800 |
| | | Middle | 8.960 | 9.720 |
| | | High | 8.960 | 9.760 |

**LTE Band 7:**

| Bandwidth (MHz) | Modulation | Channel | 99% Occupied Bandwidth (MHz) | 26 dB Emission Bandwidth (MHz) |
|---|---|---|---|---|
| 5 | QPSK | Low | 4.540 | 5.000 |
| | | Middle | 4.520 | 5.020 |
| | | High | 4.520 | 5.000 |
| | 16QAM | Low | 4.540 | 5.000 |
| | | Middle | 4.540 | 5.020 |
| | | High | 4.560 | 5.040 |
| 10 | QPSK | Low | 9.000 | 9.800 |
| | | Middle | 9.039 | 9.840 |
| | | High | 9.000 | 9.840 |
| | 16QAM | Low | 9.000 | 9.840 |
| | | Middle | 8.960 | 9.840 |
| | | High | 8.960 | 9.840 |
| 15 | QPSK | Low | 13.500 | 14.520 |
| | | Middle | 13.560 | 15.180 |
| | | High | 13.620 | 15.360 |
| | 16QAM | Low | 13.560 | 15.060 |
| | | Middle | 13.620 | 15.060 |
| | | High | 13.620 | 15.120 |
| 20 | QPSK | Low | 18.080 | 19.760 |
| | | Middle | 18.000 | 19.680 |
| | | High | 18.160 | 20.000 |
| | 16QAM | Low | 18.080 | 19.760 |
| | | Middle | 18.000 | 19.920 |
| | | High | 18.080 | 19.840 |

## LTE Band 12

| Bandwidth (MHz) | Modulation | Channel | 99% Occupied Bandwidth (MHz) | 26 dB Emission Bandwidth (MHz) |
|---|---|---|---|---|
| 1.4 | QPSK | Low | 1.104 | 1.254 |
| | | Middle | 1.104 | 1.260 |
| | | High | 1.098 | 1.254 |
| | 16QAM | Low | 1.110 | 1.260 |
| | | Middle | 1.098 | 1.254 |
| | | High | 1.104 | 1.254 |
| 3 | QPSK | Low | 2.712 | 3.000 |
| | | Middle | 2.700 | 3.012 |
| | | High | 2.700 | 3.012 |
| | 16QAM | Low | 2.700 | 3.000 |
| | | Middle | 2.688 | 3.000 |
| | | High | 2.712 | 3.036 |
| 5 | QPSK | Low | 4.560 | 4.980 |
| | | Middle | 4.520 | 5.000 |
| | | High | 4.520 | 4.980 |
| | 16QAM | Low | 4.520 | 5.000 |
| | | Middle | 4.520 | 4.960 |
| | | High | 4.540 | 5.000 |
| 10 | QPSK | Low | 9.000 | 9.840 |
| | | Middle | 9.000 | 9.680 |
| | | High | 8.960 | 9.720 |
| | 16QAM | Low | 9.000 | 9.840 |
| | | Middle | 8.960 | 9.760 |
| | | High | 9.000 | 9.720 |

## LTE Band 17

| Bandwidth (MHz) | Modulation | Channel | 99% Occupied Bandwidth (MHz) | 26 dB Emission Bandwidth (MHz) |
|---|---|---|---|---|
| 5 | QPSK | Low | 4.540 | 5.000 |
| | | Middle | 4.520 | 4.980 |
| | | High | 4.520 | 5.000 |
| | 16QAM | Low | 4.520 | 4.960 |
| | | Middle | 4.540 | 5.020 |
| | | High | 4.540 | 5.020 |
| 10 | QPSK | Low | 8.960 | 9.720 |
| | | Middle | 8.960 | 9.720 |
| | | High | 8.960 | 9.720 |
| | 16QAM | Low | 8.960 | 9.640 |
| | | Middle | 8.960 | 9.720 |
| | | High | 8.960 | 9.800 |

**LTE Band 66:**

| Bandwidth (MHz) | Modulation | Channel | 99% Occupied Bandwidth (MHz) | 26 dB Emission Bandwidth (MHz) |
|---|---|---|---|---|
| 1.4 | QPSK | Low | 1.110 | 1.260 |
| | | Middle | 1.104 | 1.266 |
| | | High | 1.110 | 1.260 |
| | 16QAM | Low | 1.110 | 1.254 |
| | | Middle | 1.104 | 1.254 |
| | | High | 1.104 | 1.248 |
| 3 | QPSK | Low | 2.700 | 3.000 |
| | | Middle | 2.712 | 3.000 |
| | | High | 2.700 | 3.012 |
| | 16QAM | Low | 2.700 | 2.988 |
| | | Middle | 2.700 | 3.012 |
| | | High | 2.700 | 3.012 |
| 5 | QPSK | Low | 4.520 | 5.000 |
| | | Middle | 4.520 | 5.000 |
| | | High | 4.500 | 4.980 |
| | 16QAM | Low | 4.520 | 4.980 |
| | | Middle | 4.540 | 4.980 |
| | | High | 4.520 | 5.000 |
| 10 | QPSK | Low | 8.960 | 9.800 |
| | | Middle | 8.960 | 9.720 |
| | | High | 8.960 | 9.800 |
| | 16QAM | Low | 8.960 | 9.720 |
| | | Middle | 8.960 | 9.760 |
| | | High | 8.960 | 9.720 |
| 15 | QPSK | Low | 13.620 | 15.060 |
| | | Middle | 13.560 | 15.000 |
| | | High | 13.560 | 15.060 |
| | 16QAM | Low | 13.620 | 15.120 |
| | | Middle | 13.560 | 15.120 |
| | | High | 13.500 | 15.120 |
| 20 | QPSK | Low | 18.000 | 19.600 |
| | | Middle | 18.000 | 19.440 |
| | | High | 18.000 | 19.680 |
| | 16QAM | Low | 18.080 | 19.760 |
| | | Middle | 18.080 | 19.680 |
| | | High | 18.000 | 19.600 |

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

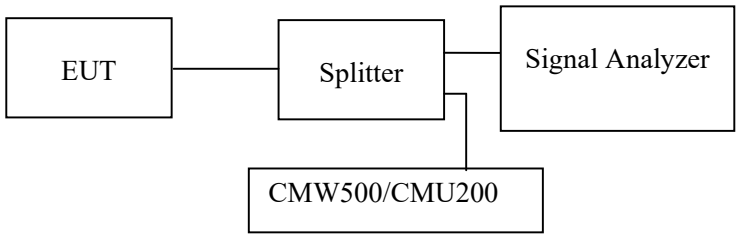
## Applicable Standard

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 ~62 % |
| **ATM Pressure:** | 101.0 kPa |

*The testing was performed by Orlo Yang from 2021-07-18 to 2021-07-20.*

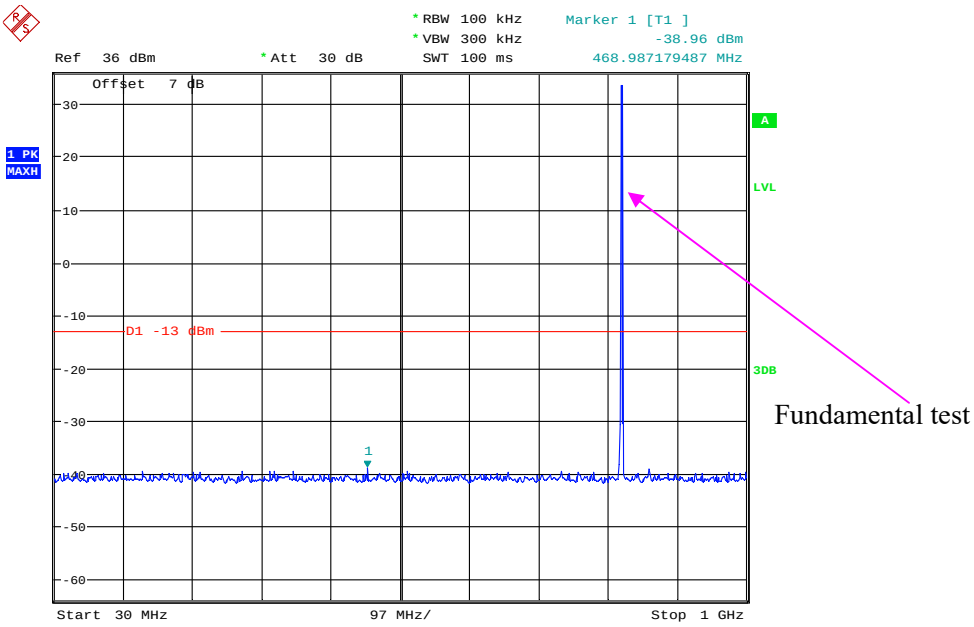
*EUT operation mode: Transmitting*

**Test result: Pass**

*Please refer to the following plots.*

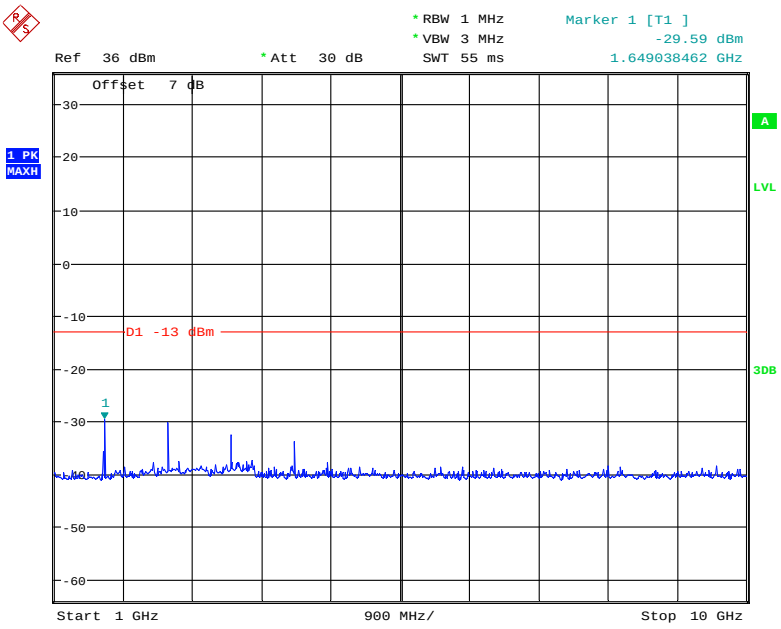
**Cellular Band (Part 22H)**
**Low Channel:**

**30 MHz – 1 GHz (GSM Mode)**



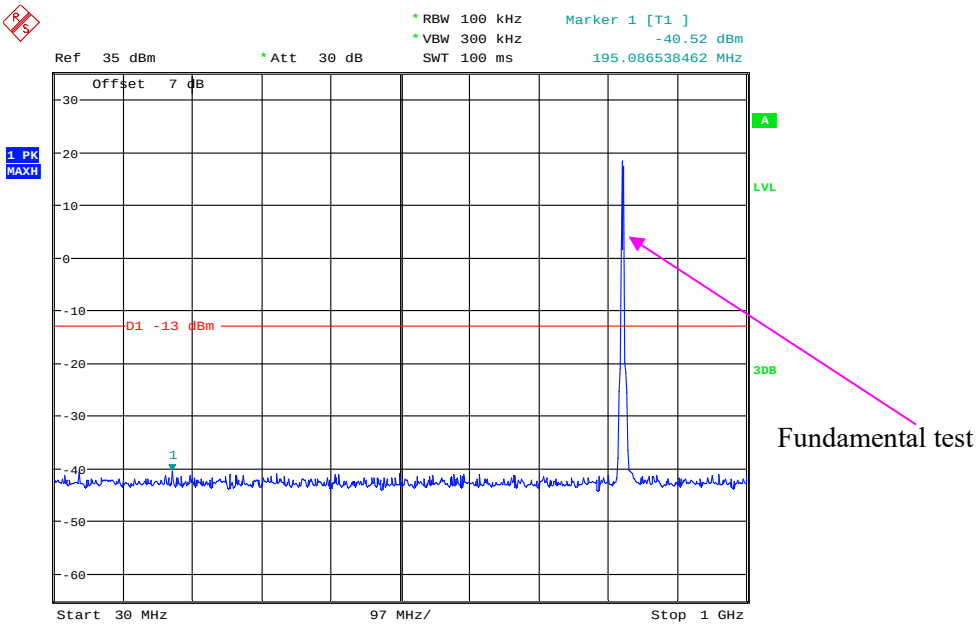

Date: 20.JUL.2021 01:39:45

**1 GHz – 10 GHz (GSM Mode)**



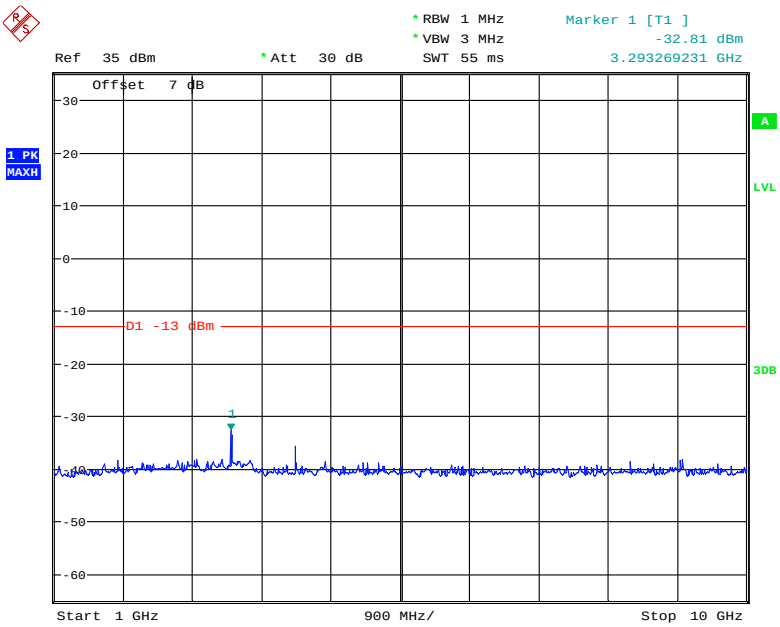

Date: 20.JUL.2021 01:43:55

## 30 MHz – 1 GHz (WCDMA Mode)




Date: 20.JUL.2021 00:25:20

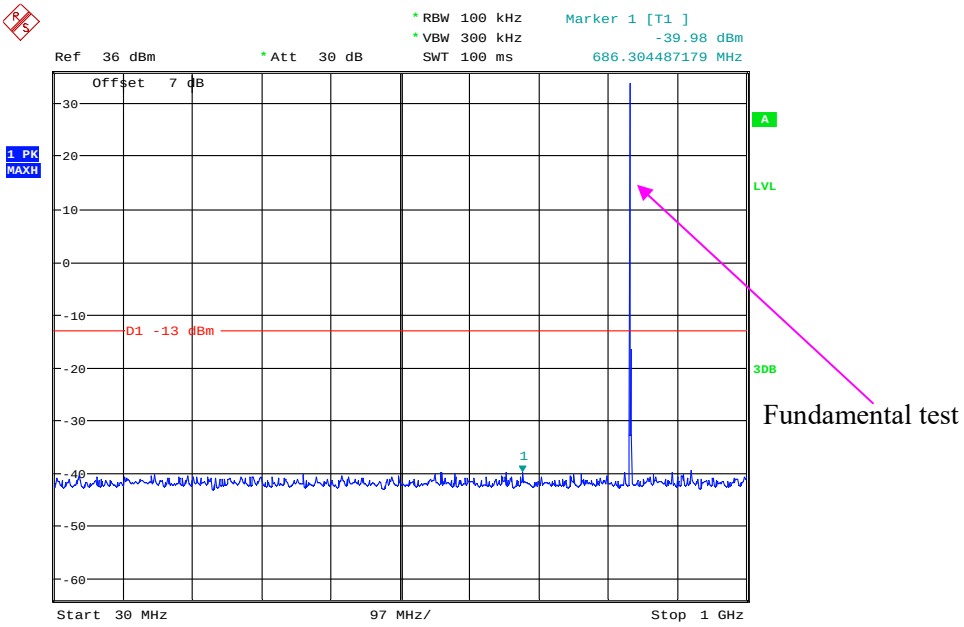
## 1 GHz – 10 GHz (WCDMA Mode)




Date: 20.JUL.2021 00:30:23

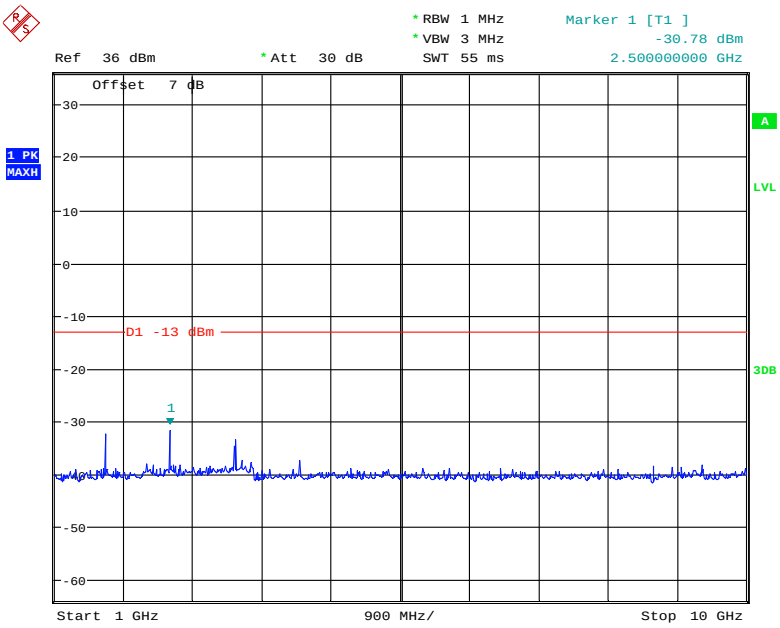
**Middle Channel:**

**30 MHz – 1 GHz (GSM Mode)**



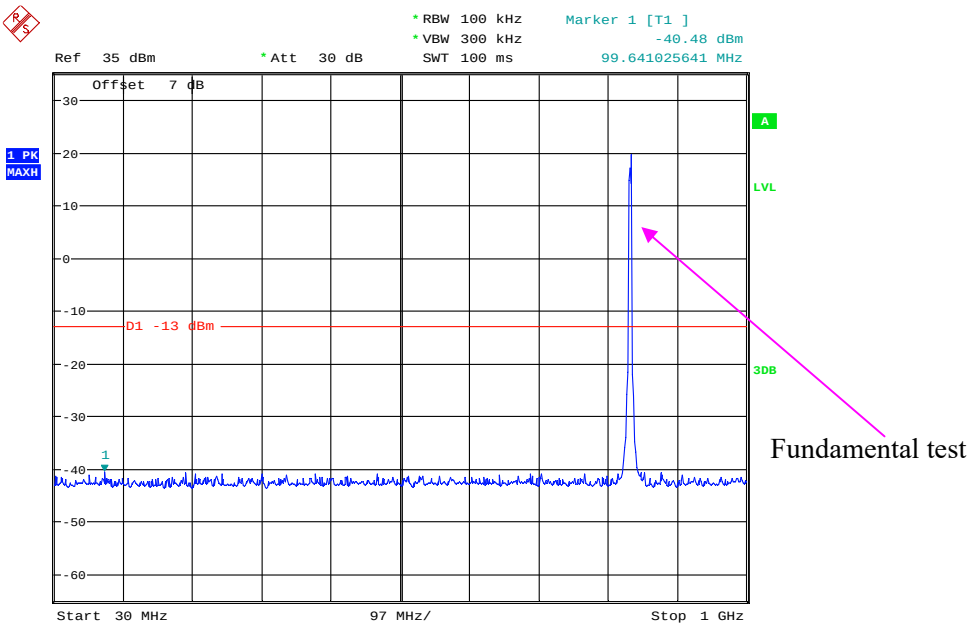

Date: 20.JUL.2021 01:40:53

**1 GHz – 10 GHz (GSM Mode)**



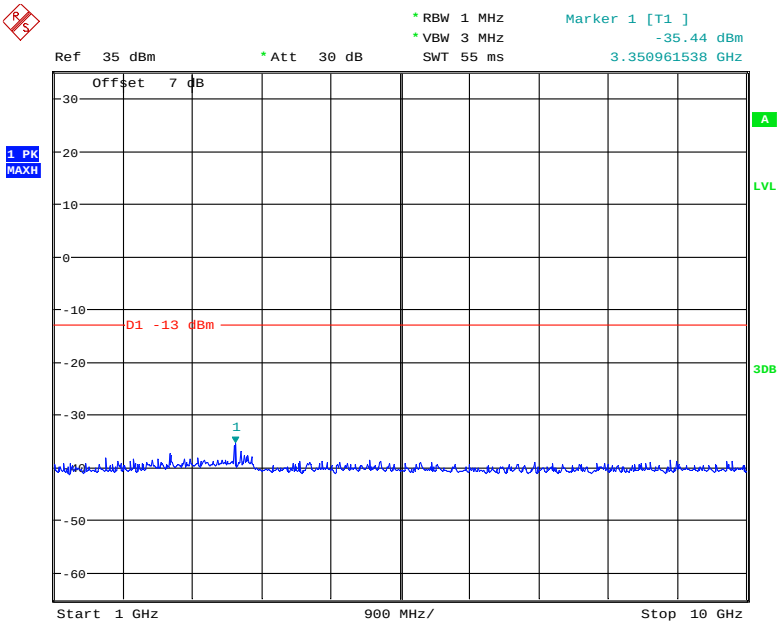

Date: 20.JUL.2021 01:43:36

## 30 MHz – 1 GHz (WCDMA Mode)




Date: 20.JUL.2021 00:26:43

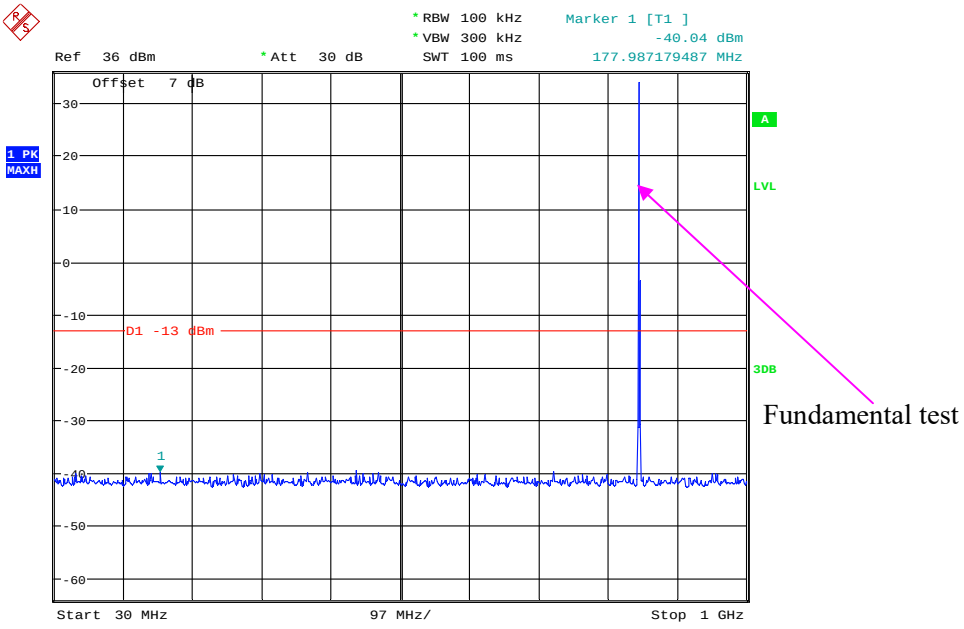
## 1 GHz – 10 GHz (WCDMA Mode)




Date: 20.JUL.2021 00:29:27

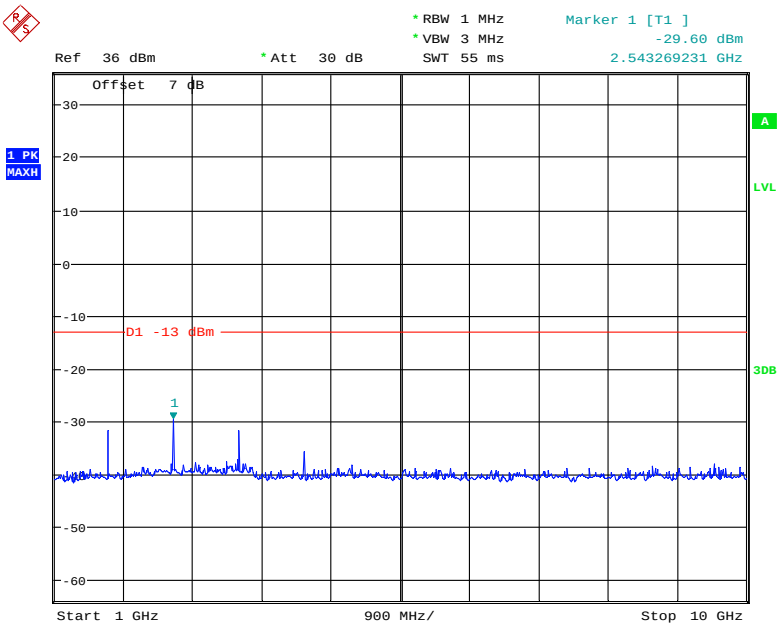
**High Channel:**

**30 MHz – 1 GHz (GSM Mode)**



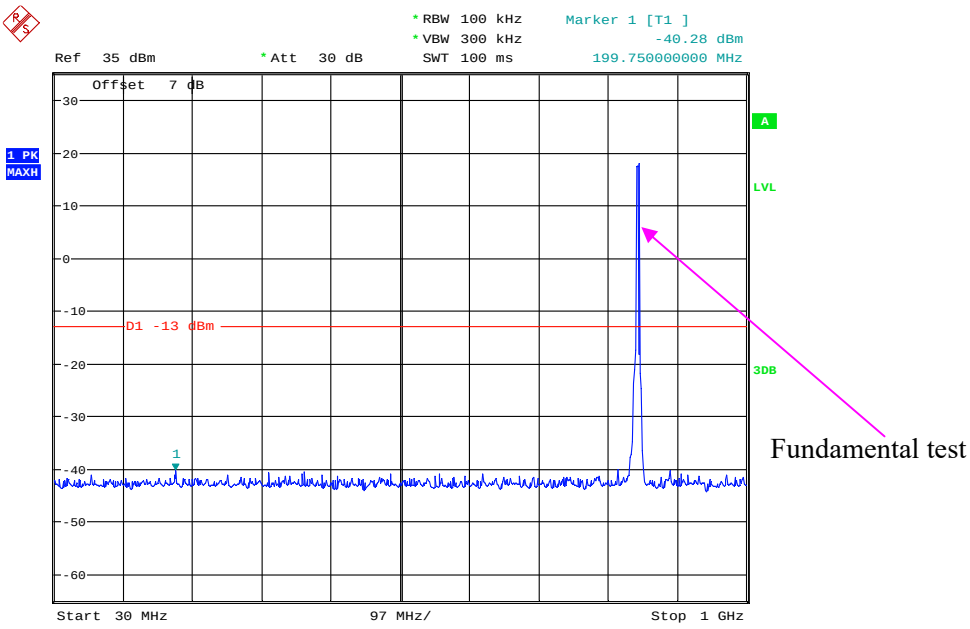

Date: 20.JUL.2021 01:41:34

**1 GHz – 10 GHz (GSM Mode)**



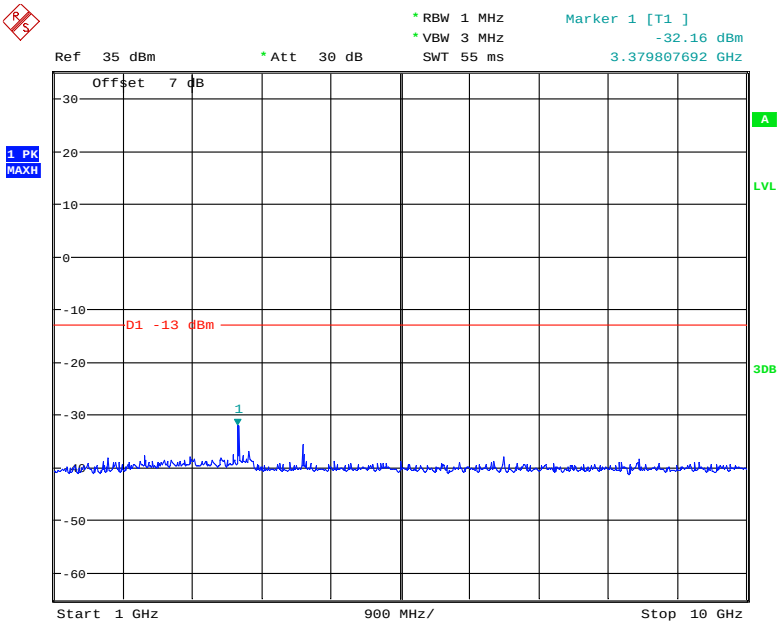

Date: 20.JUL.2021 01:43:03

## 30 MHz – 1 GHz (WCDMA Mode)




Date: 20.JUL.2021 00:27:24

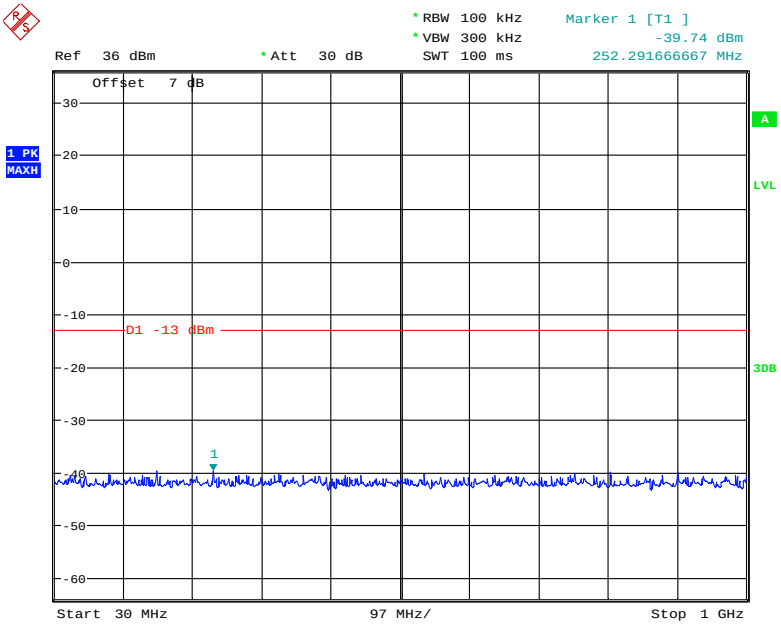
## 1 GHz – 10 GHz (WCDMA Mode)




Date: 20.JUL.2021 00:28:34

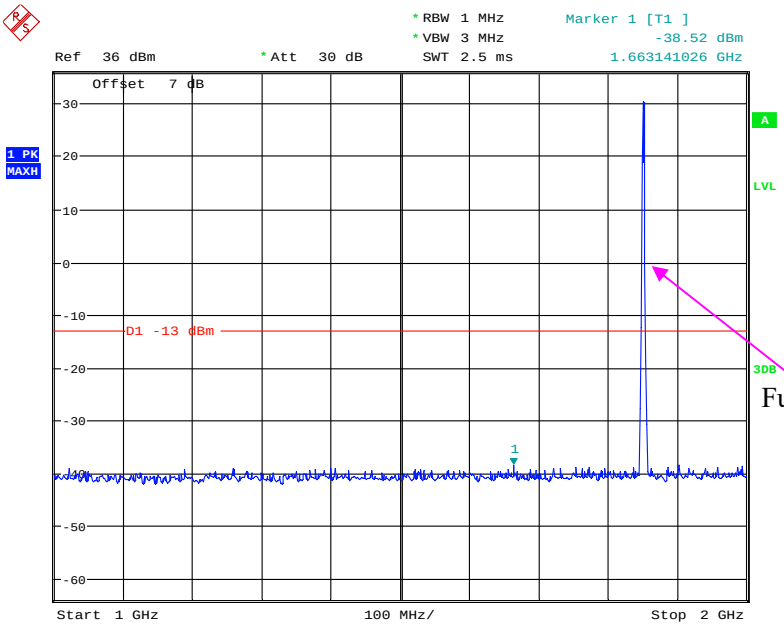
**PCS Band (Part 24E) Low Channel:**

**30 MHz – 1 GHz (GSM Mode)**




Date: 20.JUL.2021 01:47:22

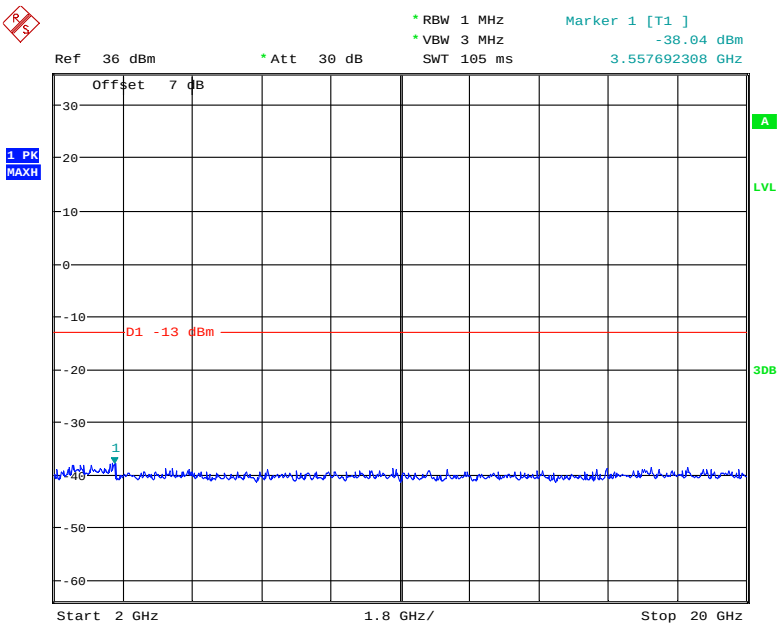
**1 GHz – 2 GHz (GSM Mode)**




Fundamental test

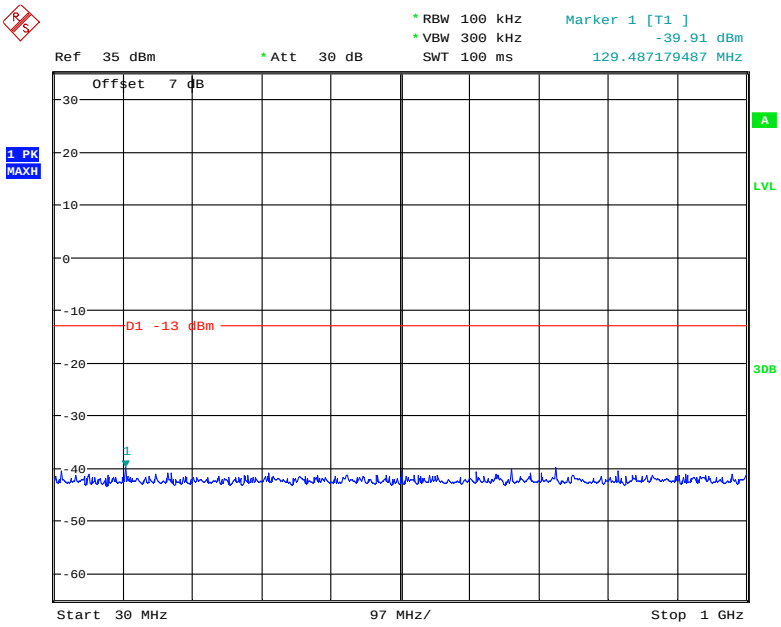
Date: 20.JUL.2021 01:54:19

## 2 GHz – 20 GHz (GSM Mode)



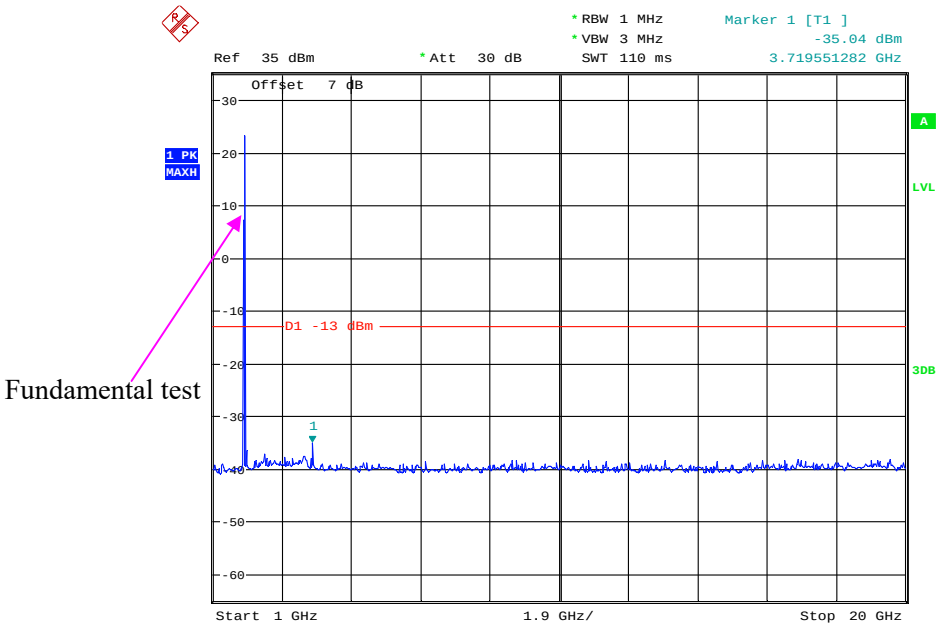

Date: 20.JUL.2021 01:52:49

## 30 MHz – 1 GHz (WCDMA Mode)




Date: 20.JUL.2021 00:19:28

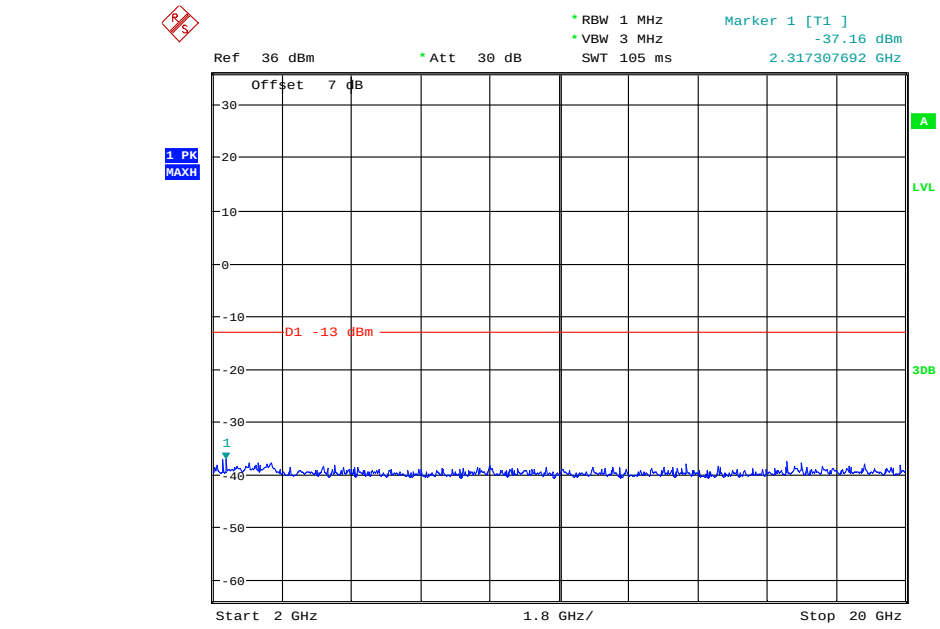
**1 GHz – 20 GHz (WCDMA Mode)**




Date: 20.JUL.2021 00:35:48

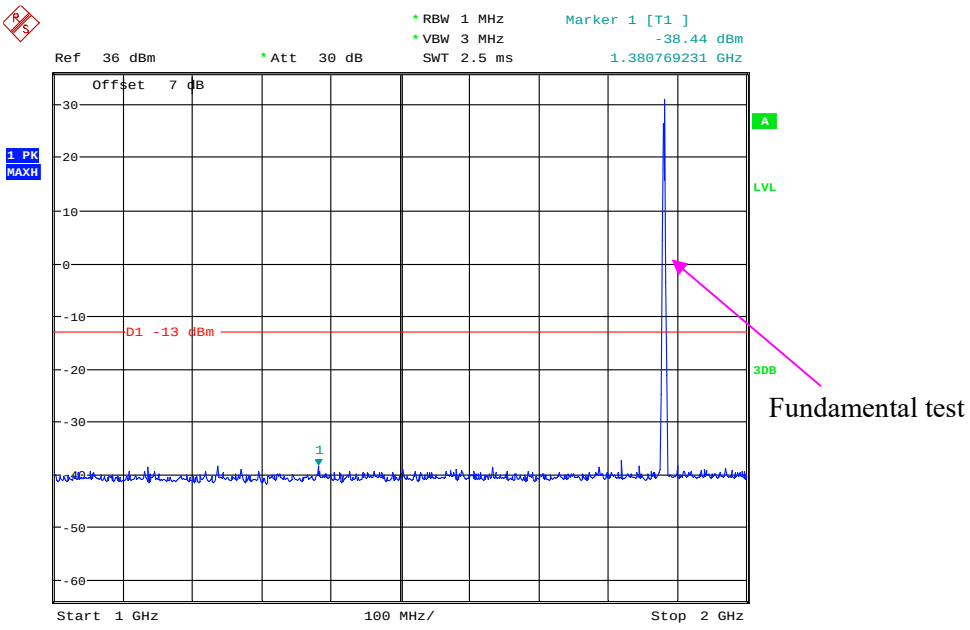
**Middle Channel:**

**30 MHz – 1 GHz (GSM Mode)**



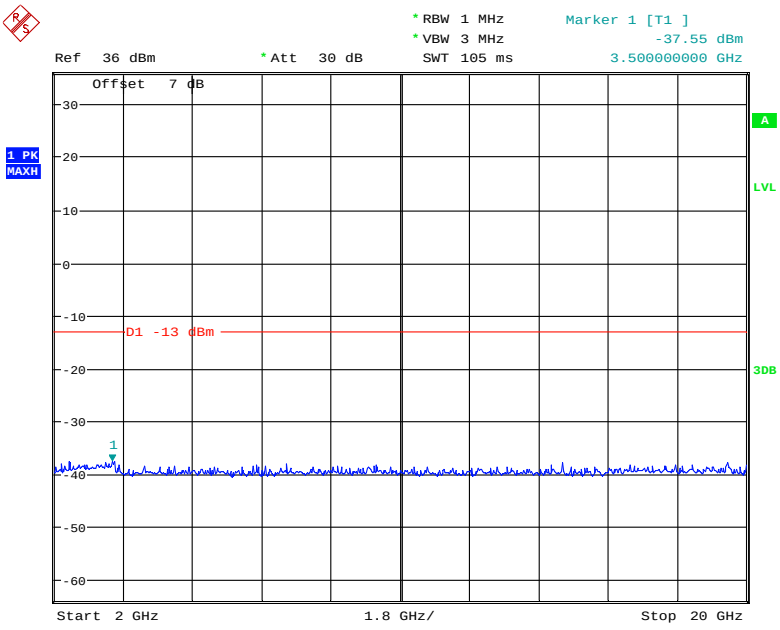

Date: 20.JUL.2021 01:51:27

## 1 GHz – 2 GHz (GSM Mode)



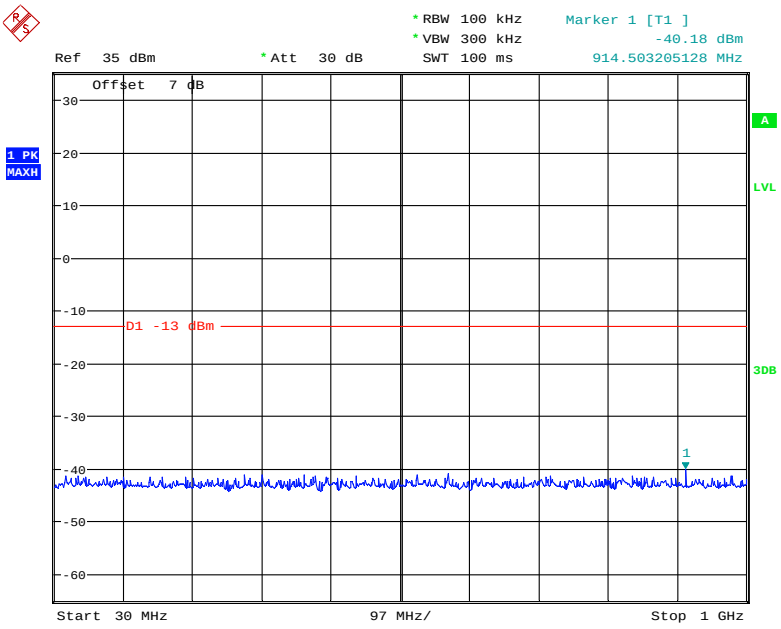

Date: 20.JUL.2021 01:53:51

## 2 GHz – 20 GHz (GSM Mode)



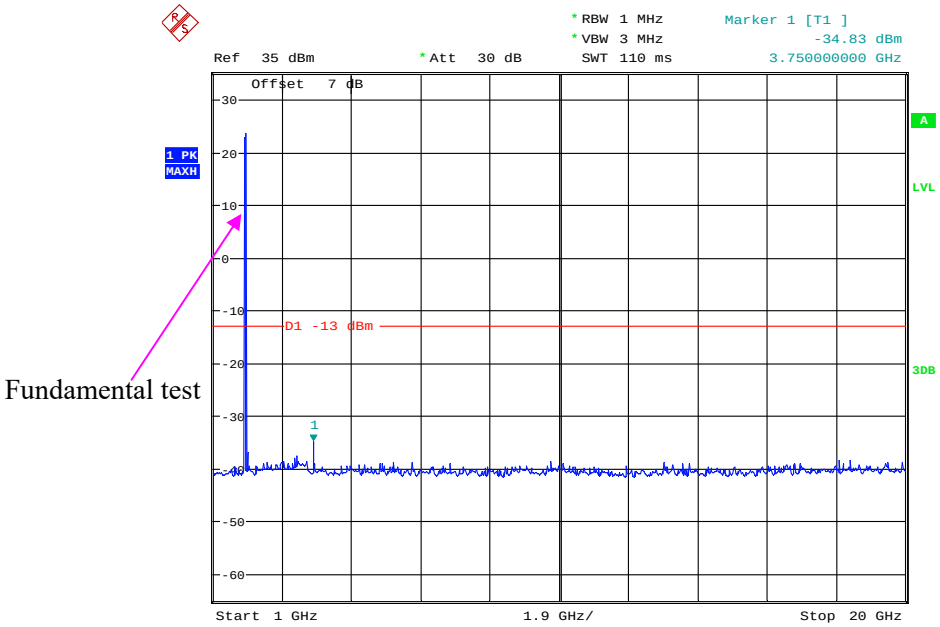

Date: 20.JUL.2021 01:52:20

## 30 MHz – 1 GHz (WCDMA Mode)




Date: 20.JUL.2021 00:20:19

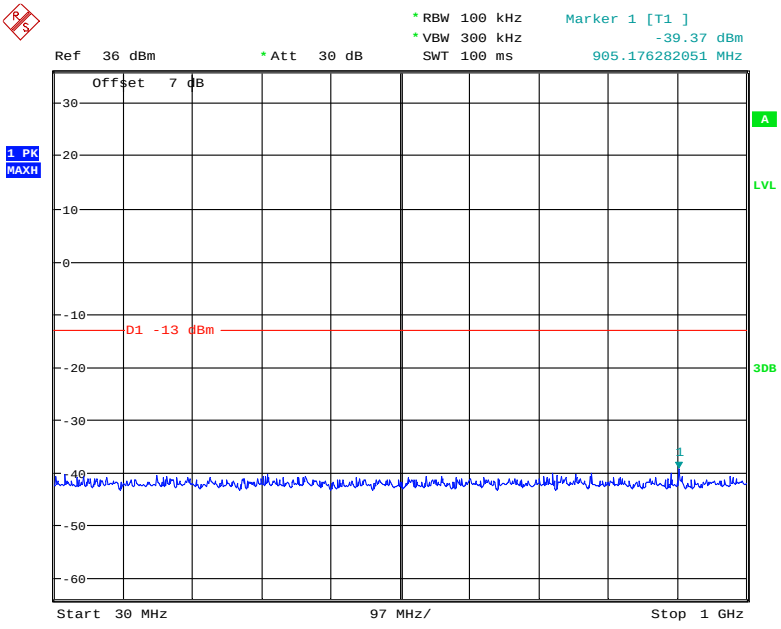
## 1 GHz – 20 GHz (WCDMA Mode)




Date: 20.JUL.2021 00:34:46

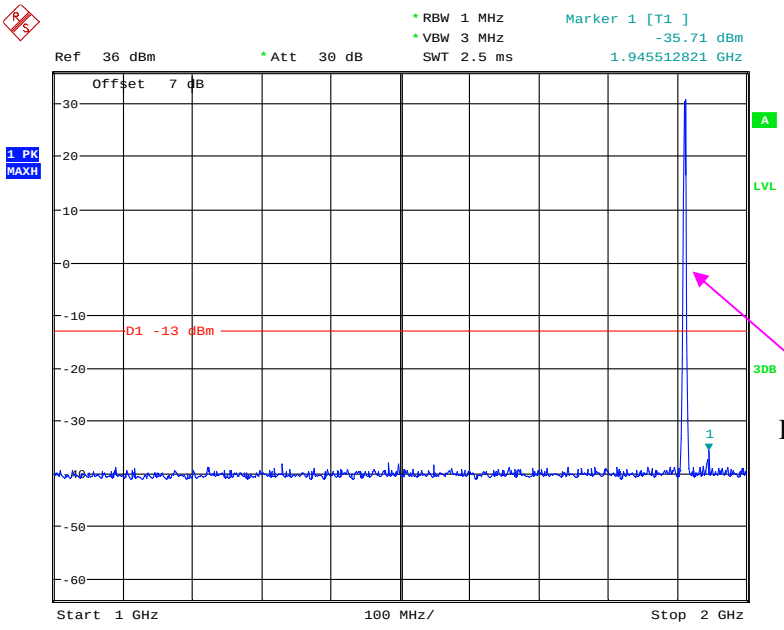
**High Channel:**

**30 MHz – 1 GHz (GSM Mode)**




Date: 20.JUL.2021 01:48:24

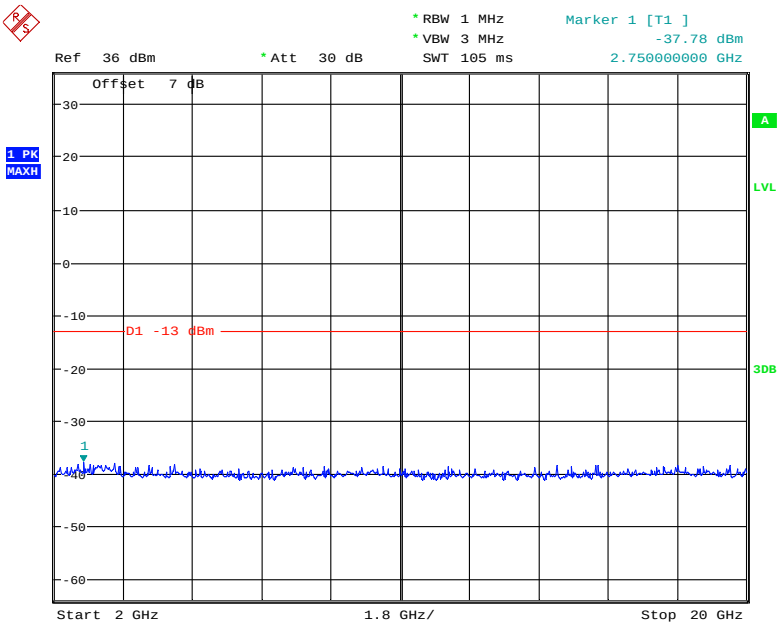
**1 GHz – 2 GHz (GSM Mode)**




Fundamental test

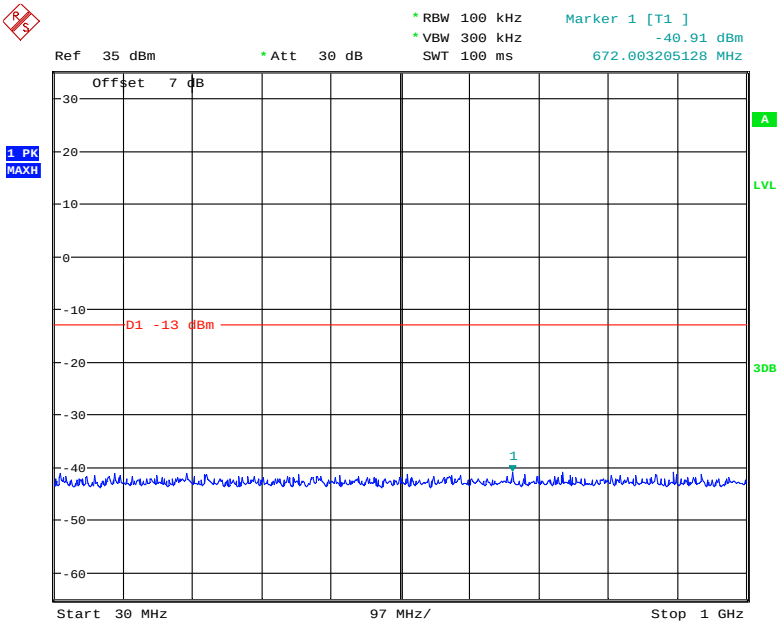
Date: 20.JUL.2021 01:49:28

## 2 GHz – 20 GHz (GSM Mode)



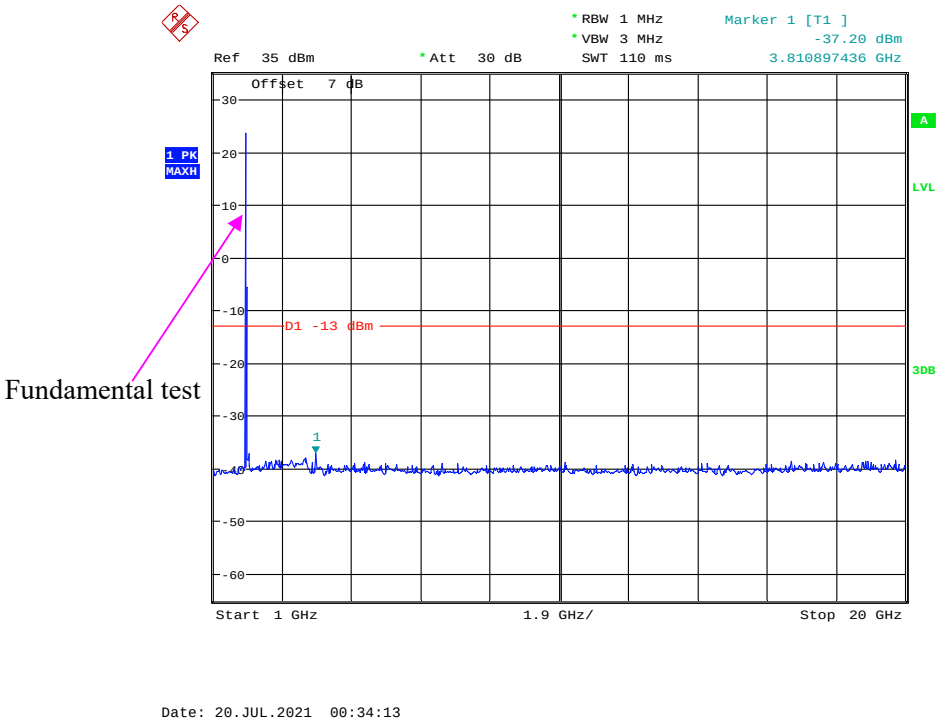

Date: 20.JUL.2021 01:53:08

## 30 MHz – 1 GHz (WCDMA Mode)



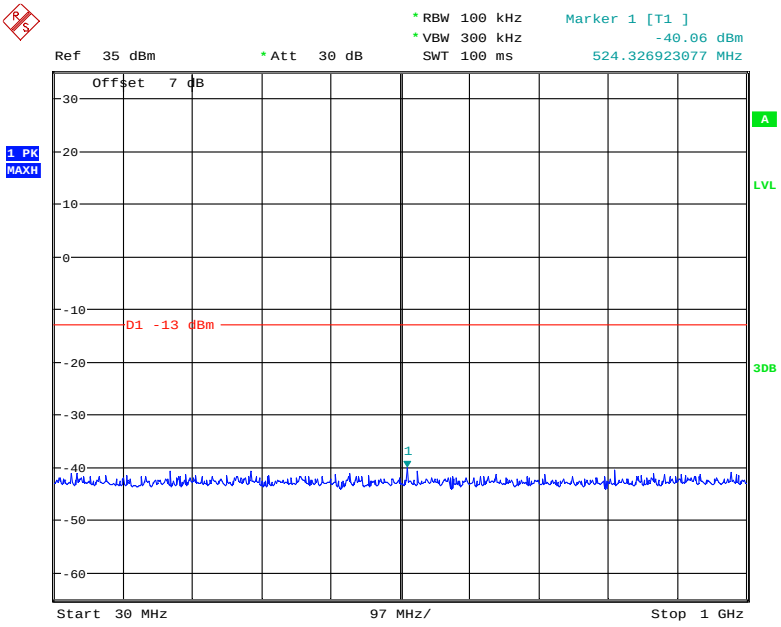

Date: 20.JUL.2021 00:21:23

**1 GHz – 20 GHz (WCDMA Mode)**



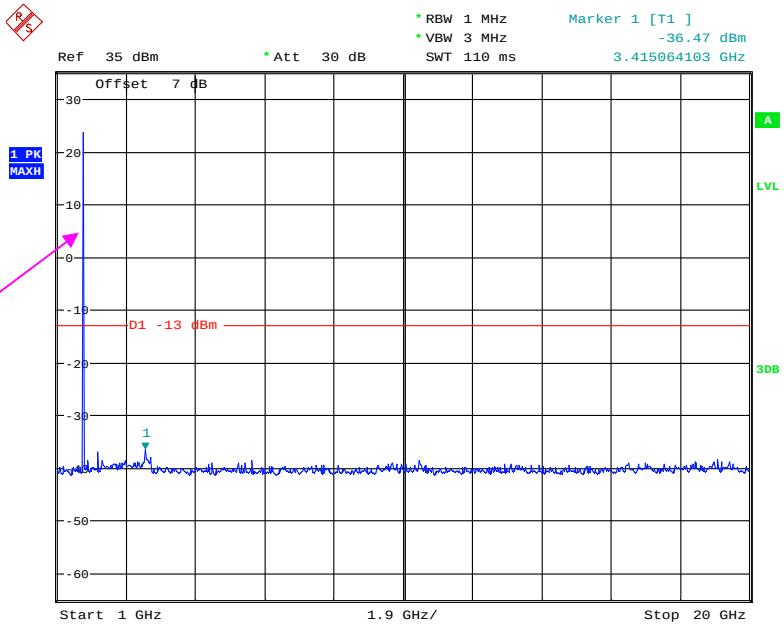
**AWS Band (Part 27)**
**Low Channel:**

**30 MHz – 1 GHz (WCDMA Mode)**




Date: 20.JUL.2021 00:22:02

**1 GHz – 20 GHz (WCDMA Mode)**

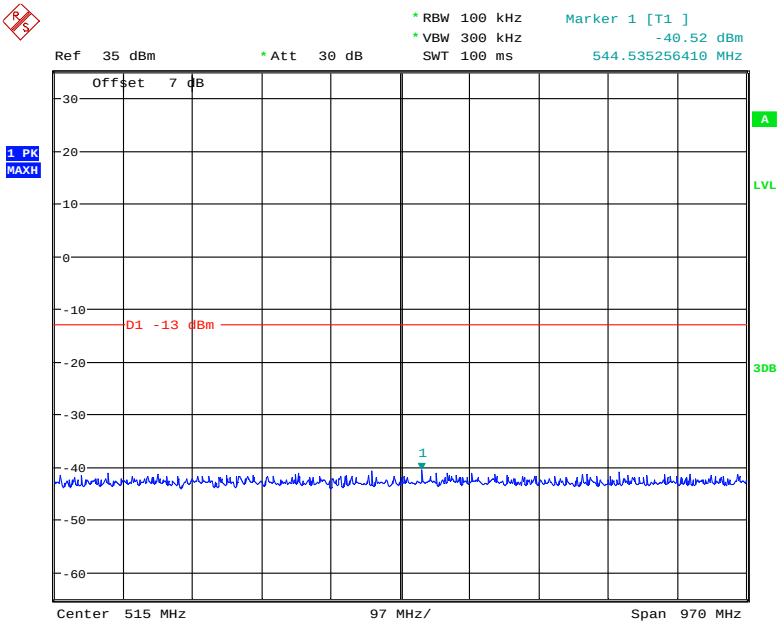



Fundamental test

Date: 20.JUL.2021 00:32:53

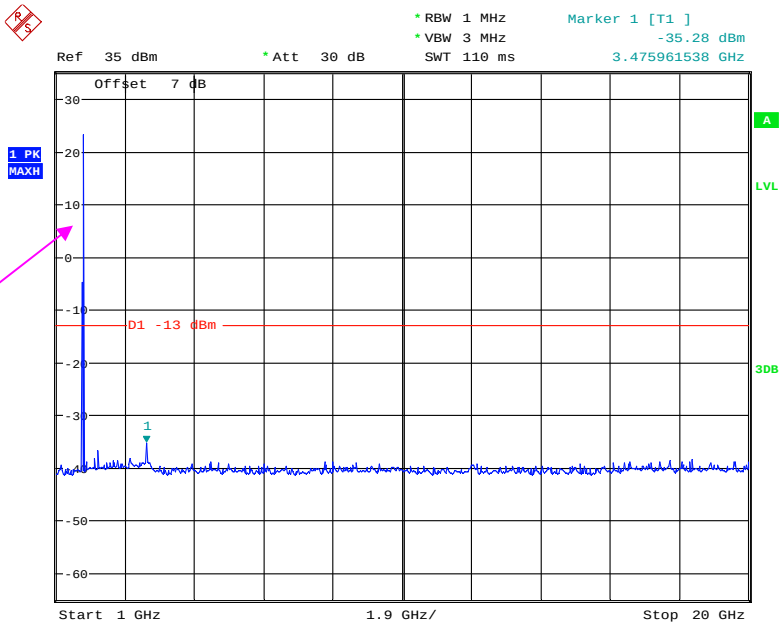
**Middle Channel**

**30 MHz – 1 GHz (WCDMA Mode)**




Date: 20.JUL.2021 00:22:58

**1 GHz – 20 GHz (WCDMA Mode)**

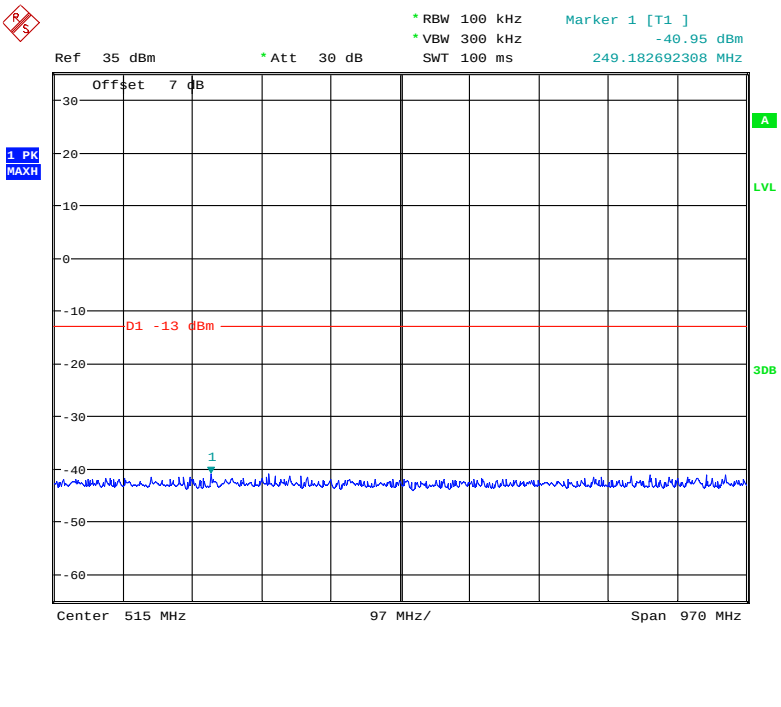



Fundamental test

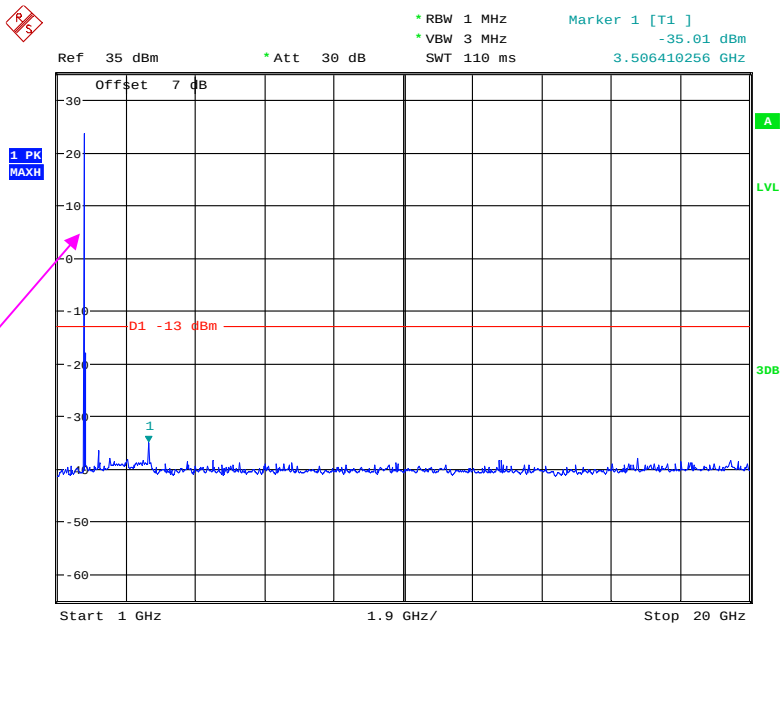
Date: 20.JUL.2021 00:32:17

**High Channel:**

**30 MHz – 1 GHz (WCDMA Mode)**




**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:** | 26 ~ 26.3 ℃ |
| **Relative Humidity:** | 50~ 56 % |
| **ATM Pressure:** | 101.0 ~101.1 kPa |

*The testing was performed by Cloud Qiu 2021-07-20 for below 1GHz, Hanic Pan on 2021-07-19 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 | | | | | | | | | | |
| 961.3 | 30.78 | 347 | 1.2 | H | -65.7 | 1.36 | 0.0 | -67.06 | -13 | 54.06 |
| 961.3 | 31.88 | 25 | 1.1 | V | -62.2 | 1.36 | 0.0 | -63.56 | -13 | 50.56 |
| 1648.40 | 50.36 | 269 | 2.4 | H | -57.7 | 1.40 | 8.70 | -50.40 | -13 | 37.40 |
| 1648.40 | 50.01 | 357 | 1.7 | V | -57.8 | 1.40 | 8.70 | -50.50 | -13 | 37.50 |
| 2472.60 | 46.33 | 181 | 1.8 | H | -57.0 | 2.60 | 10.20 | -49.40 | -13 | 36.40 |
| 2472.60 | 46.62 | 311 | 1.4 | V | -56.1 | 2.60 | 10.20 | -48.50 | -13 | 35.50 |
| 3296.80 | 45.26 | 330 | 2.4 | H | -55.6 | 1.50 | 11.70 | -45.40 | -13 | 32.40 |
| 3296.80 | 45.14 | 227 | 1.0 | V | -55.8 | 1.50 | 11.70 | -45.60 | -13 | 32.60 |
| Middle channel | | | | | | | | | | |
| 960.2 | 30.45 | 17 | 2.2 | H | -66.1 | 1.36 | 0.0 | -67.46 | -13 | 54.46 |
| 960.2 | 31.81 | 160 | 1.4 | V | -62.2 | 1.36 | 0.0 | -63.56 | -13 | 50.56 |
| 1673.20 | 52.62 | 42 | 1.1 | H | -53.7 | 1.30 | 8.90 | -46.10 | -13 | 33.10 |
| 1673.20 | 51.15 | 310 | 2.0 | V | -54.6 | 1.30 | 8.90 | -47.00 | -13 | 34.00 |
| 2509.80 | 47.18 | 306 | 2.3 | H | -56.2 | 2.60 | 10.20 | -48.60 | -13 | 35.60 |
| 2509.80 | 46.79 | 81 | 1.7 | V | -56.0 | 2.60 | 10.20 | -48.40 | -13 | 35.40 |
| 3346.40 | 44.90 | 353 | 1.6 | H | -56.0 | 1.50 | 11.70 | -45.80 | -13 | 32.80 |
| 3346.40 | 46.47 | 198 | 1.8 | V | -54.5 | 1.50 | 11.70 | -44.30 | -13 | 31.30 |
| High channel | | | | | | | | | | |
| 963.8 | 30.42 | 88 | 2.4 | H | -66.1 | 1.36 | 0.0 | -67.46 | -13 | 54.46 |
| 963.8 | 31.84 | 249 | 2.3 | V | -62.2 | 1.36 | 0.0 | -63.56 | -13 | 50.56 |
| 1695.60 | 51.74 | 208 | 2.1 | H | -54.6 | 1.30 | 8.90 | -47.00 | -13 | 34.00 |
| 1695.60 | 51.02 | 299 | 2.3 | V | -54.7 | 1.30 | 8.90 | -47.10 | -13 | 34.10 |
| 2543.40 | 47.68 | 84 | 2.4 | H | -55.7 | 2.60 | 10.20 | -48.10 | -13 | 35.10 |
| 2543.40 | 47.21 | 268 | 2.3 | V | -55.5 | 2.60 | 10.20 | -47.90 | -13 | 34.90 |
| 3391.20 | 46.32 | 20 | 1.4 | H | -54.9 | 1.40 | 11.80 | -44.50 | -13 | 31.50 |
| 3391.20 | 46.71 | 279 | 1.6 | V | -54.3 | 1.40 | 11.80 | -43.90 | -13 | 30.90 |

| 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 | | | | | | | | | | |
| 962.3 | 30.29 | 125 | 1.8 | H | -66.2 | 1.36 | 0.0 | -67.56 | -13 | 54.56 |
| 962.3 | 31.55 | 188 | 1.9 | V | -62.5 | 1.36 | 0.0 | -63.86 | -13 | 50.86 |
| 1652.80 | 51.68 | 104 | 1.2 | H | -54.7 | 1.30 | 8.90 | -47.10 | -13 | 34.10 |
| 1652.80 | 50.04 | 335 | 1.3 | V | -55.7 | 1.30 | 8.90 | -48.10 | -13 | 35.10 |
| 2479.20 | 51.42 | 186 | 1.4 | H | -51.9 | 2.60 | 10.20 | -44.30 | -13 | 31.30 |
| 2479.20 | 49.89 | 338 | 2.3 | V | -52.9 | 2.60 | 10.20 | -45.30 | -13 | 32.30 |
| 3305.60 | 46.88 | 36 | 1.3 | H | -54.0 | 1.50 | 11.70 | -43.80 | -13 | 30.80 |
| 3305.60 | 48.72 | 148 | 2.2 | V | -52.2 | 1.50 | 11.70 | -42.00 | -13 | 29.00 |
| Middle channel | | | | | | | | | | |
| 961.6 | 30.68 | 175 | 1.8 | H | -65.8 | 1.36 | 0.0 | -67.16 | -13 | 54.16 |
| 961.6 | 31.59 | 169 | 1.4 | V | -62.5 | 1.36 | 0.0 | -63.86 | -13 | 50.86 |
| 1673.20 | 52.83 | 359 | 1.4 | H | -53.5 | 1.30 | 8.90 | -45.90 | -13 | 32.90 |
| 1673.20 | 50.83 | 218 | 1.6 | V | -54.9 | 1.30 | 8.90 | -47.30 | -13 | 34.30 |
| 2509.80 | 52.45 | 81 | 1.2 | H | -50.9 | 2.60 | 10.20 | -43.30 | -13 | 30.30 |
| 2509.80 | 50.80 | 134 | 2.2 | V | -51.9 | 2.60 | 10.20 | -44.30 | -13 | 31.30 |
| 3346.40 | 47.65 | 34 | 2.2 | H | -53.2 | 1.50 | 11.70 | -43.00 | -13 | 30.00 |
| 3346.40 | 49.60 | 107 | 2.1 | V | -51.3 | 1.50 | 11.70 | -41.10 | -13 | 28.10 |
| High channel | | | | | | | | | | |
| 964.5 | 30.72 | 135 | 1.4 | H | -65.8 | 1.36 | 0.0 | -67.16 | -13 | 54.16 |
| 964.5 | 31.79 | 107 | 2.2 | V | -62.3 | 1.36 | 0.0 | -63.66 | -13 | 50.66 |
| 1693.20 | 52.05 | 322 | 2.2 | H | -54.3 | 1.30 | 8.90 | -46.70 | -13 | 33.70 |
| 1693.20 | 50.14 | 82 | 1.5 | V | -55.6 | 1.30 | 8.90 | -48.00 | -13 | 35.00 |
| 2539.80 | 51.92 | 316 | 1.7 | H | -51.4 | 2.60 | 10.20 | -43.80 | -13 | 30.80 |
| 2539.80 | 50.06 | 238 | 1.2 | V | -52.7 | 2.60 | 10.20 | -45.10 | -13 | 32.10 |
| 3386.40 | 47.33 | 118 | 1.9 | H | -53.9 | 1.40 | 11.80 | -43.50 | -13 | 30.50 |
| 3386.40 | 49.21 | 47 | 1.2 | V | -51.8 | 1.40 | 11.80 | -41.40 | -13 | 28.40 |

**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 | | | | | | | | | | |
| 962.3 | 30.57 | 348 | 2.5 | H | -65.9 | 1.36 | 0.0 | -67.26 | -13 | 54.26 |
| 962.3 | 31.65 | 231 | 2.0 | V | -62.4 | 1.36 | 0.0 | -63.76 | -13 | 50.76 |
| 3700.40 | 45.01 | 344 | 1.6 | H | -56.8 | 1.60 | 11.90 | -46.50 | -13 | 33.50 |
| 3700.40 | 44.35 | 220 | 1.2 | V | -56.9 | 1.60 | 11.90 | -46.60 | -13 | 33.60 |
| Middle channel | | | | | | | | | | |
| 963.2 | 30.33 | 136 | 1.4 | H | -66.2 | 1.36 | 0.0 | -67.56 | -13 | 54.56 |
| 963.2 | 31.69 | 330 | 1.2 | V | -62.4 | 1.36 | 0.0 | -63.76 | -13 | 50.76 |
| 3760.00 | 45.13 | 136 | 2.1 | H | -56.9 | 1.50 | 11.80 | -46.60 | -13 | 33.60 |
| 3760.00 | 44.14 | 53 | 2.3 | V | -57.4 | 1.50 | 11.80 | -47.10 | -13 | 34.10 |
| High channel | | | | | | | | | | |
| 960.5 | 30.39 | 23 | 2.2 | H | -66.1 | 1.36 | 0.0 | -67.46 | -13 | 54.46 |
| 960.5 | 31.62 | 123 | 1.5 | V | -62.4 | 1.36 | 0.0 | -63.76 | -13 | 50.76 |
| 3819.60 | 44.85 | 259 | 1.3 | H | -57.2 | 1.50 | 11.80 | -46.90 | -13 | 33.90 |
| 3819.60 | 44.12 | 276 | 1.5 | V | -57.5 | 1.50 | 11.80 | -47.20 | -13 | 34.20 |
| WCDMA Mode Band 2 | | | | | | | | | | |
| Low Channel | | | | | | | | | | |
| 959.1 | 30.48 | 244 | 2.4 | H | -66.0 | 1.36 | 0.0 | -67.36 | -13 | 54.36 |
| 959.1 | 31.61 | 326 | 1.3 | V | -62.4 | 1.36 | 0.0 | -63.76 | -13 | 50.76 |
| 3704.80 | 48.33 | 168 | 1.2 | H | -53.5 | 1.60 | 11.90 | -43.20 | -13 | 30.20 |
| 3704.80 | 55.14 | 357 | 1.6 | V | -46.1 | 1.60 | 11.90 | -35.80 | -13 | 22.80 |
| Middle channel | | | | | | | | | | |
| 960.8 | 30.41 | 294 | 2.2 | H | -66.1 | 1.36 | 0.0 | -67.46 | -13 | 54.46 |
| 960.8 | 31.68 | 49 | 2.3 | V | -62.4 | 1.36 | 0.0 | -63.76 | -13 | 50.76 |
| 3760.00 | 48.67 | 84 | 1.2 | H | -53.4 | 1.50 | 11.80 | -43.10 | -13 | 30.10 |
| 3760.00 | 55.63 | 347 | 2.1 | V | -46.0 | 1.50 | 11.80 | -35.70 | -13 | 22.70 |
| High channel | | | | | | | | | | |
| 961.2 | 30.35 | 270 | 2.4 | H | -66.2 | 1.36 | 0.0 | -67.56 | -13 | 54.56 |
| 961.2 | 31.77 | 223 | 1.2 | V | -62.3 | 1.36 | 0.0 | -63.66 | -13 | 50.66 |
| 3815.20 | 47.38 | 14 | 2.3 | H | -54.7 | 1.50 | 11.80 | -44.40 | -13 | 31.40 |
| 3815.20 | 54.22 | 187 | 1.3 | V | -47.4 | 1.50 | 11.80 | -37.10 | -13 | 24.10 |

**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 | | | | | | | | | | |
| 956.9 | 30.45 | 349 | 1.3 | H | -66.1 | 1.36 | 0.0 | -67.46 | -13 | 54.46 |
| 956.9 | 31.72 | 126 | 2.0 | V | -62.3 | 1.36 | 0.0 | -63.66 | -13 | 50.66 |
| 3424.80 | 47.59 | 33 | 1.6 | H | -53.2 | 1.40 | 11.80 | -42.80 | -13 | 29.80 |
| 3424.80 | 47.62 | 11 | 1.6 | V | -53.0 | 1.40 | 11.80 | -42.60 | -13 | 29.60 |
| Middle channel | | | | | | | | | | |
| 964.7 | 30.31 | 266 | 1.0 | H | -66.2 | 1.36 | 0.0 | -67.56 | -13 | 54.56 |
| 964.7 | 31.83 | 249 | 1.3 | V | -62.2 | 1.36 | 0.0 | -63.56 | -13 | 50.56 |
| 3465.20 | 47.93 | 111 | 1.4 | H | -52.8 | 1.50 | 12.00 | -42.30 | -13 | 29.30 |
| 3465.20 | 47.88 | 82 | 2.4 | V | -53.6 | 1.50 | 12.00 | -43.10 | -13 | 30.10 |
| High channel | | | | | | | | | | |
| 961.4 | 30.57 | 170 | 1.7 | H | -65.9 | 1.36 | 0.0 | -67.26 | -13 | 54.26 |
| 961.4 | 31.87 | 257 | 2.2 | V | -62.2 | 1.36 | 0.0 | -63.56 | -13 | 50.56 |
| 3505.20 | 47.84 | 154 | 1.1 | H | -52.9 | 1.50 | 12.00 | -42.40 | -13 | 29.40 |
| 3505.20 | 47.78 | 223 | 1.6 | V | -53.7 | 1.50 | 12.00 | -43.20 | -13 | 30.20 |

**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 | | | | | | | | | | |
| 960.6 | 30.63 | 8 | 1.6 | H | -65.9 | 1.36 | 0.0 | -67.26 | -13 | 54.26 |
| 960.6 | 31.78 | 224 | 1.7 | V | -62.3 | 1.36 | 0.0 | -63.66 | -13 | 50.66 |
| 3701.40 | 58.86 | 196 | 1.9 | H | -42.9 | 1.60 | 11.90 | -32.60 | -13 | 19.60 |
| 3701.40 | 58.37 | 258 | 2.4 | V | -42.9 | 1.60 | 11.90 | -32.60 | -13 | 19.60 |
| 1.4MHz, Middle channel | | | | | | | | | | |
| 961.1 | 30.54 | 57 | 1.2 | H | -66.0 | 1.36 | 0.0 | -67.36 | -13 | 54.36 |
| 961.1 | 31.61 | 108 | 1.9 | V | -62.4 | 1.36 | 0.0 | -63.76 | -13 | 50.76 |
| 3760.00 | 59.86 | 288 | 1.8 | H | -42.2 | 1.50 | 11.80 | -31.90 | -13 | 18.90 |
| 3760.00 | 59.63 | 135 | 1.5 | V | -42.0 | 1.50 | 11.80 | -31.70 | -13 | 18.70 |
| 1.4MHz, High channel | | | | | | | | | | |
| 958.4 | 30.51 | 313 | 1.1 | H | -66.0 | 1.36 | 0.0 | -67.36 | -13 | 54.36 |
| 958.4 | 31.69 | 136 | 1.4 | V | -62.4 | 1.36 | 0.0 | -63.76 | -13 | 50.76 |
| 3818.60 | 59.12 | 125 | 1.0 | H | -42.9 | 1.50 | 11.80 | -32.60 | -13 | 19.60 |
| 3818.60 | 58.96 | 87 | 1.2 | V | -42.6 | 1.50 | 11.80 | -32.30 | -13 | 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 4 | | | | | | | | | | |
| Test frequency range:30 MHz ~ 20 GHz | | | | | | | | | | |
| 1.4MHz, Low channel | | | | | | | | | | |
| 963.2 | 30.34 | 4 | 2.0 | H | -66.2 | 1.36 | 0.0 | -67.56 | -13 | 54.56 |
| 963.2 | 31.65 | 299 | 1.9 | V | -62.4 | 1.36 | 0.0 | -63.76 | -13 | 50.76 |
| 3421.40 | 54.23 | 3 | 1.3 | H | -46.6 | 1.40 | 11.80 | -36.20 | -13 | 23.20 |
| 3421.40 | 56.14 | 356 | 2.3 | V | -44.5 | 1.40 | 11.80 | -34.10 | -13 | 21.10 |
| 1.4MHz, Middle channel | | | | | | | | | | |
| 956.6 | 30.46 | 27 | 1.9 | H | -66.0 | 1.36 | 0.0 | -67.36 | -13 | 54.36 |
| 956.6 | 31.76 | 63 | 1.1 | V | -62.3 | 1.36 | 0.0 | -63.66 | -13 | 50.66 |
| 3465.00 | 54.12 | 281 | 1.3 | H | -46.6 | 1.50 | 12.00 | -36.10 | -13 | 23.10 |
| 3465.00 | 55.97 | 116 | 2.0 | V | -45.5 | 1.50 | 12.00 | -35.00 | -13 | 22.00 |
| 1.4MHz, High channel | | | | | | | | | | |
| 959.3 | 30.58 | 126 | 1.1 | H | -65.9 | 1.36 | 0.0 | -67.26 | -13 | 54.26 |
| 959.3 | 31.83 | 191 | 2.2 | V | -62.2 | 1.36 | 0.0 | -63.56 | -13 | 50.56 |
| 3508.60 | 53.26 | 129 | 1.3 | H | -47.5 | 1.50 | 12.00 | -37.00 | -13 | 24.00 |
| 3508.60 | 55.74 | 161 | 2.5 | V | -45.8 | 1.50 | 12.00 | -35.30 | -13 | 22.30 |

| 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 5 | | | | | | | | | | |
| Test frequency range:30 MHz ~ 10 GHz | | | | | | | | | | |
| 1.4MHz, Low channel | | | | | | | | | | |
| 955.8 | 30.53 | 294 | 2.4 | H | -66.0 | 1.36 | 0.0 | -67.36 | -13 | 54.36 |
| 955.8 | 31.88 | 217 | 1.9 | V | -62.2 | 1.36 | 0.0 | -63.56 | -13 | 50.56 |
| 1649.40 | 43.36 | 350 | 1.3 | H | -64.7 | 1.40 | 8.70 | -57.40 | -13 | 44.40 |
| 1649.40 | 43.48 | 295 | 2.5 | V | -64.4 | 1.40 | 8.70 | -57.10 | -13 | 44.10 |
| 2474.10 | 45.03 | 9 | 2.3 | H | -58.3 | 2.60 | 10.20 | -50.70 | -13 | 37.70 |
| 2474.10 | 45.15 | 133 | 1.6 | V | -57.6 | 2.60 | 10.20 | -50.00 | -13 | 37.00 |
| 3298.80 | 57.33 | 44 | 2.5 | H | -43.6 | 1.50 | 11.70 | -33.40 | -13 | 20.40 |
| 3298.80 | 59.17 | 124 | 2.0 | V | -41.8 | 1.50 | 11.70 | -31.60 | -13 | 18.60 |
| 1.4MHz, Middle channel | | | | | | | | | | |
| 961.7 | 30.41 | 243 | 2.2 | H | -66.1 | 1.36 | 0.0 | -67.46 | -13 | 54.46 |
| 961.7 | 31.85 | 111 | 1.4 | V | -62.2 | 1.36 | 0.0 | -63.56 | -13 | 50.56 |
| 1673.00 | 43.19 | 191 | 1.8 | H | -63.1 | 1.30 | 8.90 | -55.50 | -13 | 42.50 |
| 1673.00 | 43.35 | 184 | 1.9 | V | -62.4 | 1.30 | 8.90 | -54.80 | -13 | 41.80 |
| 2509.50 | 44.85 | 206 | 1.8 | H | -58.5 | 2.60 | 10.20 | -50.90 | -13 | 37.90 |
| 2509.50 | 44.75 | 337 | 1.9 | V | -58.0 | 2.60 | 10.20 | -50.40 | -13 | 37.40 |
| 3346.00 | 57.29 | 309 | 2.0 | H | -43.6 | 1.50 | 11.70 | -33.40 | -13 | 20.40 |
| 3346.00 | 59.12 | 149 | 1.9 | V | -41.8 | 1.50 | 11.70 | -31.60 | -13 | 18.60 |
| 1.4MHz, High channel | | | | | | | | | | |
| 964.2 | 30.38 | 356 | 2.4 | H | -66.1 | 1.36 | 0.0 | -67.46 | -13 | 54.46 |
| 964.2 | 31.77 | 143 | 1.9 | V | -62.3 | 1.36 | 0.0 | -63.66 | -13 | 50.66 |
| 1696.60 | 43.52 | 352 | 2.3 | H | -62.8 | 1.30 | 8.90 | -55.20 | -13 | 42.20 |
| 1696.60 | 43.61 | 199 | 2.1 | V | -62.1 | 1.30 | 8.90 | -54.50 | -13 | 41.50 |
| 2544.90 | 44.85 | 119 | 1.9 | H | -58.5 | 2.60 | 10.20 | -50.90 | -13 | 37.90 |
| 2544.90 | 44.93 | 248 | 1.8 | V | -57.8 | 2.60 | 10.20 | -50.20 | -13 | 37.20 |
| 3393.20 | 56.88 | 174 | 2.0 | H | -44.4 | 1.40 | 11.80 | -34.00 | -13 | 21.00 |
| 3393.20 | 58.93 | 225 | 1.6 | V | -42.1 | 1.40 | 11.80 | -31.70 | -13 | 18.70 |

| 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 7 | | | | | | | | | | |
| Test frequency range: 30 MHz ~ 26.5 GHz | | | | | | | | | | |
| 5MHz, Low channel | | | | | | | | | | |
| 957.8 | 30.55 | 185 | 2.5 | H | -66.0 | 1.36 | 0.0 | -67.36 | -25 | 42.36 |
| 957.8 | 31.65 | 297 | 2.2 | V | -62.4 | 1.36 | 0.0 | -63.76 | -25 | 38.76 |
| 5005.00 | 47.85 | 107 | 2.1 | H | -51.0 | 1.70 | 12.00 | -40.70 | -25 | 15.70 |
| 5005.00 | 45.99 | 84 | 2.0 | V | -52.3 | 1.70 | 12.00 | -42.00 | -25 | 17.00 |
| 7507.50 | 46.69 | 268 | 1.1 | H | -48.0 | 1.90 | 10.70 | -39.20 | -25 | 14.20 |
| 7507.50 | 49.75 | 56 | 1.8 | V | -44.5 | 1.90 | 10.70 | -35.70 | -25 | 10.70 |
| 10010.0 | 53.22 | 292 | 1.8 | H | -43.9 | 2.40 | 10.80 | -35.50 | -25 | 10.50 |
| 10010.0 | 52.09 | 13 | 1.1 | V | -45.2 | 2.40 | 10.80 | -36.80 | -25 | 11.80 |
| 12512.5 | 50.31 | 269 | 2.0 | H | -43.5 | 2.60 | 12.50 | -33.60 | -25 | 8.60 |
| 12512.5 | 49.17 | 268 | 1.4 | V | -45.3 | 2.60 | 12.50 | -35.40 | -25 | 10.40 |
| 5MHz, Middle channel | | | | | | | | | | |
| 958.6 | 30.52 | 161 | 2.4 | H | -66.0 | 1.36 | 0.0 | -67.36 | -25 | 42.36 |
| 958.6 | 31.63 | 220 | 1.6 | V | -62.4 | 1.36 | 0.0 | -63.76 | -25 | 38.76 |
| 5070.00 | 46.14 | 264 | 1.3 | H | -51.5 | 1.60 | 12.10 | -41.00 | -25 | 16.00 |
| 5070.00 | 46.46 | 91 | 1.5 | V | -51.2 | 1.60 | 12.10 | -40.70 | -25 | 15.70 |
| 7605.00 | 46.46 | 314 | 2.5 | H | -47.1 | 2.10 | 10.50 | -38.70 | -25 | 13.70 |
| 7605.00 | 48.38 | 36 | 1.9 | V | -44.9 | 2.10 | 10.50 | -36.50 | -25 | 11.50 |
| 10140.0 | 51.41 | 225 | 1.8 | H | -45.7 | 2.40 | 10.80 | -37.30 | -25 | 12.30 |
| 10140.0 | 53.99 | 308 | 1.5 | V | -43.3 | 2.40 | 10.80 | -34.90 | -25 | 9.90 |
| 12675.0 | 49.36 | 108 | 1.9 | H | -43.6 | 2.70 | 12.60 | -33.70 | -25 | 8.70 |
| 12675.0 | 50.14 | 308 | 1.6 | V | -43.6 | 2.70 | 12.60 | -33.70 | -25 | 8.70 |
| 5MHz, High channel | | | | | | | | | | |
| 966.4 | 30.45 | 107 | 1.2 | H | -66.1 | 1.36 | 0.0 | -67.46 | -25 | 42.46 |
| 966.4 | 31.81 | 297 | 1.9 | V | -62.2 | 1.36 | 0.0 | -63.56 | -25 | 38.56 |
| 5135.00 | 45.79 | 280 | 1.2 | H | -51.8 | 1.60 | 12.10 | -41.30 | -25 | 16.30 |
| 5135.00 | 47.55 | 44 | 2.3 | V | -50.1 | 1.60 | 12.10 | -39.60 | -25 | 14.60 |
| 7702.50 | 48.91 | 352 | 2.5 | H | -44.6 | 2.10 | 10.50 | -36.20 | -25 | 11.20 |
| 7702.50 | 47.33 | 355 | 2.3 | V | -46.0 | 2.10 | 10.50 | -37.60 | -25 | 12.60 |
| 10270.0 | 50.64 | 24 | 2.2 | H | -46.3 | 2.60 | 10.60 | -38.30 | -25 | 13.30 |
| 10270.0 | 54.79 | 64 | 2.4 | V | -41.5 | 2.60 | 10.60 | -33.50 | -25 | 8.50 |
| 12837.5 | 52.66 | 230 | 2.4 | H | -41.5 | 2.70 | 12.60 | -31.60 | -25 | 6.60 |
| 12837.5 | 52.87 | 26 | 1.8 | V | -42.8 | 2.70 | 12.60 | -32.90 | -25 | 7.90 |

| 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 12 | | | | | | | | | | |
| Test frequency range: 30 MHz ~ 10 GHz | | | | | | | | | | |
| 1.4MHz, Low channel | | | | | | | | | | |
| 962.9 | 30.39 | 345 | 1.5 | H | -66.1 | 1.36 | 0.0 | -67.46 | -13 | 54.46 |
| 962.9 | 31.66 | 84 | 2.4 | V | -62.4 | 1.36 | 0.0 | -63.76 | -13 | 50.76 |
| 1399.40 | 42.25 | 216 | 2.3 | H | -65.9 | 1.60 | 7.90 | -59.60 | -13 | 46.60 |
| 1399.40 | 42.39 | 277 | 1.6 | V | -66.0 | 1.60 | 7.90 | -59.70 | -13 | 46.70 |
| 2099.10 | 43.27 | 300 | 2.4 | H | -57.9 | 1.30 | 9.70 | -49.50 | -13 | 36.50 |
| 2099.10 | 43.06 | 329 | 1.4 | V | -58.9 | 1.30 | 9.70 | -50.50 | -13 | 37.50 |
| 2798.80 | 61.33 | 258 | 1.8 | H | -42.6 | 1.80 | 10.50 | -33.90 | -13 | 20.90 |
| 2798.80 | 61.05 | 155 | 1.9 | V | -42.6 | 1.80 | 10.50 | -33.90 | -13 | 20.90 |
| 1.4MHz, Middle channel | | | | | | | | | | |
| 965.7 | 30.34 | 317 | 1.6 | H | -66.2 | 1.36 | 0.0 | -67.56 | -13 | 54.56 |
| 965.7 | 31.63 | 76 | 1.1 | V | -62.4 | 1.36 | 0.0 | -63.76 | -13 | 50.76 |
| 1415.00 | 43.22 | 4 | 2.3 | H | -65.0 | 1.60 | 7.90 | -58.70 | -13 | 45.70 |
| 1415.00 | 43.11 | 93 | 1.8 | V | -65.3 | 1.60 | 7.90 | -59.00 | -13 | 46.00 |
| 2122.50 | 42.13 | 42 | 2.4 | H | -59.0 | 1.30 | 9.70 | -50.60 | -13 | 37.60 |
| 2122.50 | 42.45 | 316 | 1.4 | V | -59.5 | 1.30 | 9.70 | -51.10 | -13 | 38.10 |
| 2830.00 | 62.25 | 75 | 1.9 | H | -41.7 | 1.80 | 10.50 | -33.00 | -13 | 20.00 |
| 2830.00 | 61.65 | 114 | 1.9 | V | -42.0 | 1.80 | 10.50 | -33.30 | -13 | 20.30 |
| 1.4MHz, High channel | | | | | | | | | | |
| 957.6 | 30.31 | 238 | 1.3 | H | -66.2 | 1.36 | 0.0 | -67.56 | -13 | 54.56 |
| 957.6 | 31.52 | 347 | 2.1 | V | -62.5 | 1.36 | 0.0 | -63.86 | -13 | 50.86 |
| 1430.60 | 43.14 | 0 | 1.2 | H | -65.0 | 1.60 | 7.90 | -58.70 | -13 | 45.70 |
| 1430.60 | 43.26 | 53 | 2.0 | V | -65.2 | 1.60 | 7.90 | -58.90 | -13 | 45.90 |
| 2145.90 | 42.33 | 9 | 1.3 | H | -58.8 | 1.30 | 9.70 | -50.40 | -13 | 37.40 |
| 2145.90 | 42.54 | 348 | 2.2 | V | -59.4 | 1.30 | 9.70 | -51.00 | -13 | 38.00 |
| 2861.20 | 62.07 | 40 | 1.8 | H | -42.6 | 1.70 | 10.70 | -33.60 | -13 | 20.60 |
| 2861.20 | 61.35 | 234 | 2.3 | V | -43.4 | 1.70 | 10.70 | -34.40 | -13 | 21.40 |

| 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 ~ 10GHz | | | | | | | | | | |
| 5MHz, Low channel | | | | | | | | | | |
| 962.3 | 30.55 | 48 | 2.4 | H | -66.0 | 1.36 | 0.0 | -67.36 | -13 | 54.36 |
| 962.3 | 31.44 | 96 | 1.1 | V | -62.6 | 1.36 | 0.0 | -63.96 | -13 | 50.96 |
| 1413.00 | 57.23 | 223 | 1.5 | H | -50.9 | 1.60 | 7.90 | -44.60 | -13 | 31.60 |
| 1413.00 | 56.02 | 209 | 2.5 | V | -52.4 | 1.60 | 7.90 | -46.10 | -13 | 33.10 |
| 2119.50 | 48.79 | 6 | 1.8 | H | -52.3 | 1.30 | 9.70 | -43.90 | -13 | 30.90 |
| 2119.50 | 54.66 | 351 | 1.4 | V | -47.3 | 1.30 | 9.70 | -38.90 | -13 | 25.90 |
| 2826.00 | 63.81 | 189 | 1.9 | H | -40.1 | 1.80 | 10.50 | -31.40 | -13 | 18.40 |
| 2826.00 | 60.19 | 276 | 1.4 | V | -43.4 | 1.80 | 10.50 | -34.70 | -13 | 21.70 |
| 3532.50 | 59.47 | 41 | 2.5 | H | -41.4 | 1.50 | 12.00 | -30.90 | -13 | 17.90 |
| 3532.50 | 56.33 | 274 | 2.2 | V | -45.3 | 1.50 | 12.00 | -34.80 | -13 | 21.80 |
| 4239.00 | 56.18 | 3 | 2.0 | H | -45.8 | 1.50 | 11.80 | -35.50 | -13 | 22.50 |
| 4239.00 | 52.67 | 144 | 1.4 | V | -48.5 | 1.50 | 11.80 | -38.20 | -13 | 25.20 |
| 5MHz, Middle channel | | | | | | | | | | |
| 959.3 | 30.42 | 337 | 1.7 | H | -66.1 | 1.36 | 0.0 | -67.46 | -13 | 54.46 |
| 959.3 | 31.62 | 131 | 2.0 | V | -62.4 | 1.36 | 0.0 | -63.76 | -13 | 50.76 |
| 1420.00 | 56.74 | 39 | 2.0 | H | -51.4 | 1.60 | 7.90 | -45.10 | -13 | 32.10 |
| 1420.00 | 55.66 | 99 | 1.8 | V | -52.8 | 1.60 | 7.90 | -46.50 | -13 | 33.50 |
| 2130.00 | 59.34 | 220 | 2.3 | H | -41.8 | 1.30 | 9.70 | -33.40 | -13 | 20.40 |
| 2130.00 | 53.94 | 93 | 1.5 | V | -48.0 | 1.30 | 9.70 | -39.60 | -13 | 26.60 |
| 2840.00 | 62.60 | 106 | 1.4 | H | -41.4 | 1.80 | 10.50 | -32.70 | -13 | 19.70 |
| 2840.00 | 58.94 | 342 | 2.4 | V | -44.7 | 1.80 | 10.50 | -36.00 | -13 | 23.00 |
| 3550.00 | 60.66 | 261 | 2.3 | H | -41.1 | 1.50 | 12.10 | -30.50 | -13 | 17.50 |
| 3550.00 | 57.71 | 92 | 2.1 | V | -43.5 | 1.50 | 12.10 | -32.90 | -13 | 19.90 |
| 4260.00 | 54.92 | 289 | 1.6 | H | -46.5 | 1.50 | 11.70 | -36.30 | -13 | 23.30 |
| 4260.00 | 53.13 | 153 | 1.5 | V | -47.6 | 1.50 | 11.70 | -37.40 | -13 | 24.40 |
| 5MHz, High channel | | | | | | | | | | |
| 960.3 | 30.53 | 108 | 2.1 | H | -66.0 | 1.36 | 0.0 | -67.36 | -13 | 54.36 |
| 960.3 | 31.83 | 274 | 1.6 | V | -62.2 | 1.36 | 0.0 | -63.56 | -13 | 50.56 |
| 1427.00 | 56.27 | 132 | 2.4 | H | -51.9 | 1.60 | 7.90 | -45.60 | -13 | 32.60 |
| 1427.00 | 53.88 | 324 | 1.8 | V | -54.6 | 1.60 | 7.90 | -48.30 | -13 | 35.30 |
| 2140.50 | 60.19 | 267 | 1.2 | H | -40.9 | 1.30 | 9.70 | -32.50 | -13 | 19.50 |
| 2140.50 | 53.24 | 0 | 1.7 | V | -48.7 | 1.30 | 9.70 | -40.30 | -13 | 27.30 |
| 2854.00 | 61.92 | 208 | 2.5 | H | -42.8 | 1.70 | 10.70 | -33.80 | -13 | 20.80 |
| 2854.00 | 56.84 | 9 | 2.0 | V | -47.9 | 1.70 | 10.70 | -38.90 | -13 | 25.90 |
| 3567.50 | 61.29 | 325 | 1.5 | H | -40.4 | 1.50 | 12.10 | -29.80 | -13 | 16.80 |
| 3567.50 | 58.47 | 145 | 1.4 | V | -42.7 | 1.50 | 12.10 | -32.10 | -13 | 19.10 |
| 4281.00 | 53.12 | 324 | 1.7 | H | -48.3 | 1.50 | 11.70 | -38.10 | -13 | 25.10 |
| 4281.00 | 50.64 | 118 | 1.1 | V | -50.0 | 1.50 | 11.70 | -39.80 | -13 | 26.80 |

| 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 66 | | | | | | | | | | |
| Test frequency range: 30 MHz ~ 20GHz | | | | | | | | | | |
| 1.4MHz, Low channel | | | | | | | | | | |
| 963.2 | 30.26 | 273 | 2.0 | H | -66.2 | 1.36 | 0.0 | -67.56 | -13 | 54.56 |
| 963.2 | 31.41 | 115 | 1.2 | V | -62.6 | 1.36 | 0.0 | -63.96 | -13 | 50.96 |
| 3421.40 | 53.79 | 198 | 1.3 | H | -47.0 | 1.40 | 11.80 | -36.60 | -13 | 23.60 |
| 3421.40 | 51.66 | 236 | 1.9 | V | -48.9 | 1.40 | 11.80 | -38.50 | -13 | 25.50 |
| 5132.10 | 44.19 | 42 | 1.6 | H | -55.8 | 1.60 | 12.10 | -45.30 | -13 | 32.30 |
| 5132.10 | 45.07 | 61 | 2.0 | V | -54.9 | 1.60 | 12.10 | -44.40 | -13 | 31.40 |
| 1.4MHz, Middle Channel | | | | | | | | | | |
| 962.1 | 30.38 | 245 | 2.2 | H | -66.1 | 1.36 | 0.0 | -67.46 | -13 | 54.46 |
| 962.1 | 31.48 | 21 | 1.9 | V | -62.6 | 1.36 | 0.0 | -63.96 | -13 | 50.96 |
| 3490.00 | 52.95 | 233 | 2.2 | H | -47.8 | 1.50 | 12.00 | -37.30 | -13 | 24.30 |
| 3490.00 | 53.21 | 335 | 2.4 | V | -48.3 | 1.50 | 12.00 | -37.80 | -13 | 24.80 |
| 5235.00 | 44.31 | 120 | 2.4 | H | -55.8 | 1.60 | 12.10 | -45.30 | -13 | 32.30 |
| 5235.00 | 44.43 | 318 | 1.0 | V | -55.2 | 1.60 | 12.10 | -44.70 | -13 | 31.70 |
| 1.4MHz, High Channel | | | | | | | | | | |
| 964.5 | 30.52 | 208 | 1.6 | H | -66.0 | 1.36 | 0.0 | -67.36 | -13 | 54.36 |
| 964.5 | 31.59 | 219 | 2.1 | V | -62.5 | 1.36 | 0.0 | -63.86 | -13 | 50.86 |
| 3558.60 | 53.87 | 244 | 1.6 | H | -47.7 | 1.50 | 12.10 | -37.10 | -13 | 24.10 |
| 3558.60 | 53.46 | 98 | 2.3 | V | -47.6 | 1.50 | 12.10 | -37.00 | -13 | 24.00 |
| 5337.90 | 45.07 | 56 | 2.0 | H | -54.7 | 1.60 | 12.20 | -44.10 | -13 | 31.10 |
| 5337.90 | 44.32 | 206 | 2.0 | V | -54.8 | 1.60 | 12.20 | -44.20 | -13 | 31.20 |

**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.

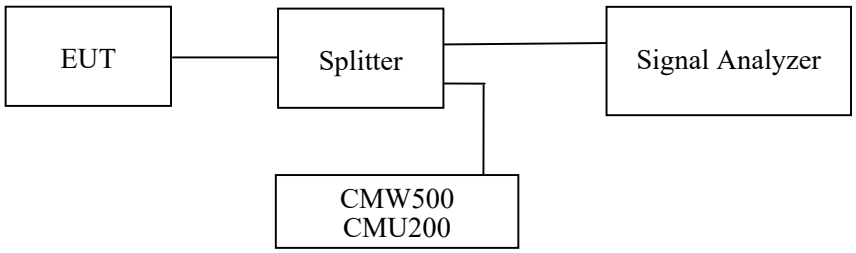
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

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 ~62 % |
| **ATM Pressure:** | 101.0 kPa |

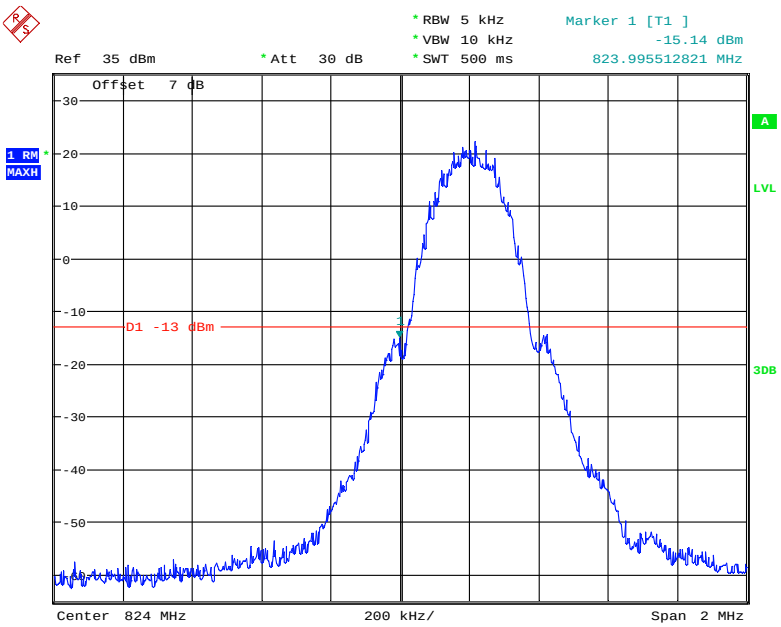
*The testing was performed by Orlo Yang from 2021-07-18 to 2021-08-14.*

*EUT operation mode: Transmitting (Worst case)*

**Test Result: Pass**

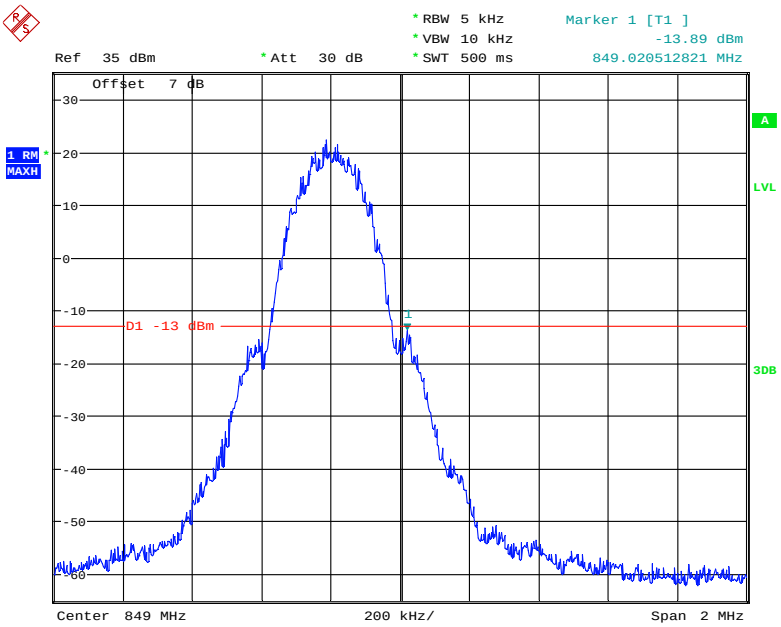
*Please refer to the following plots.*

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



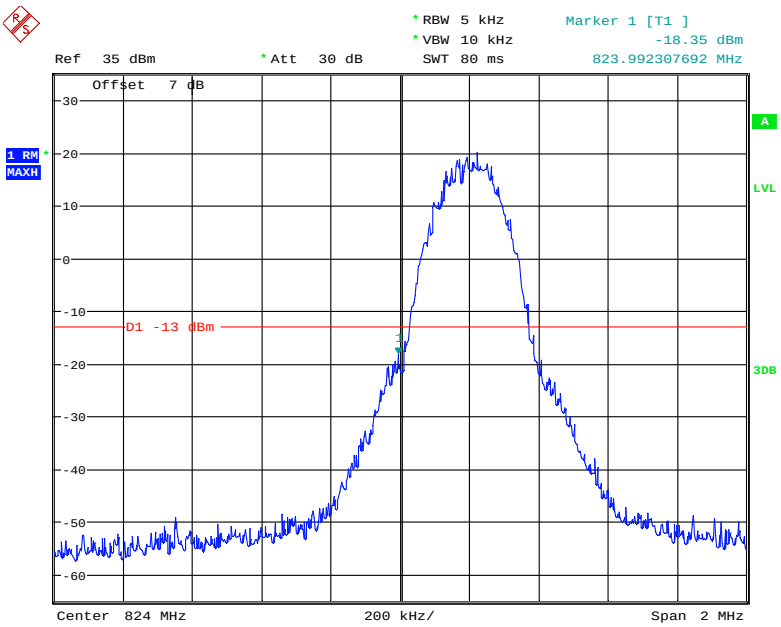

Date: 20.JUL.2021 00:41:51

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



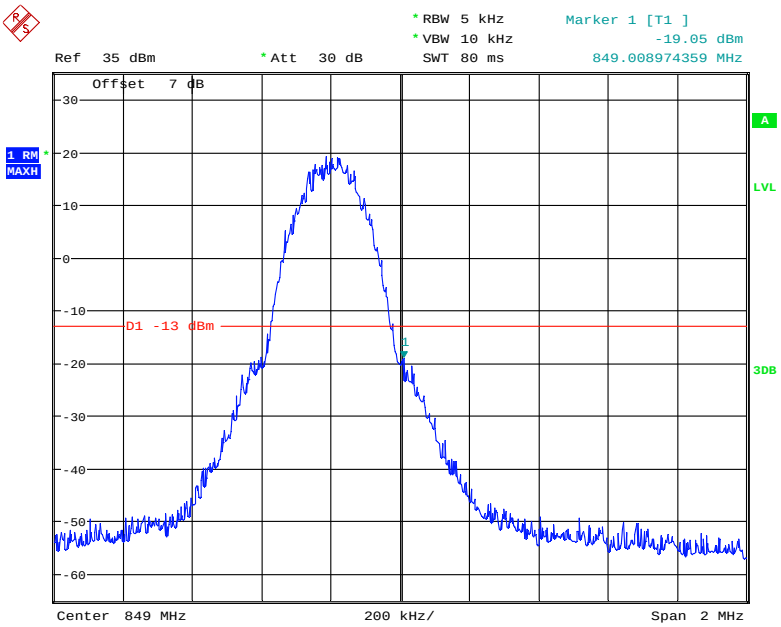

Date: 20.JUL.2021 00:45:10

## Cellular Band, Left Band Edge for EGPRS (8PSK) Mode



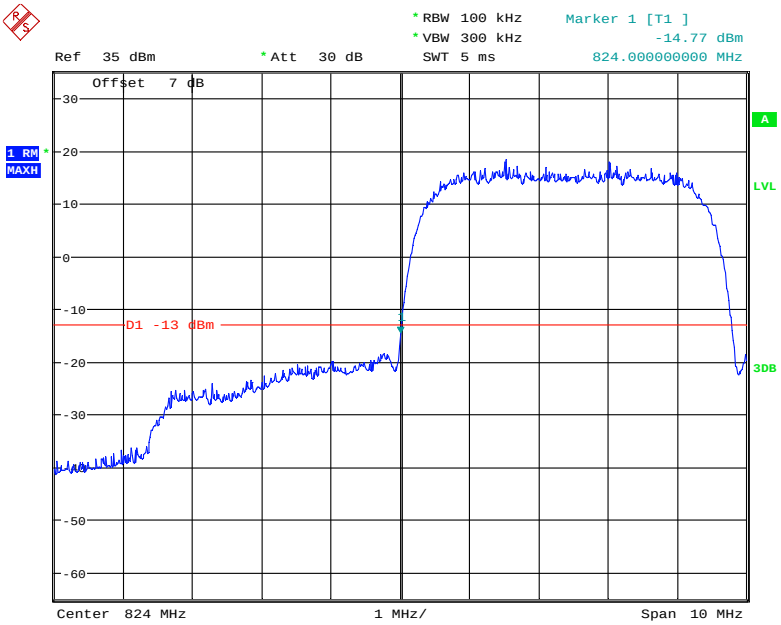

Date: 20.JUL.2021 00:48:13

## Cellular Band, Right Band Edge for EGPRS (8PSK) Mode



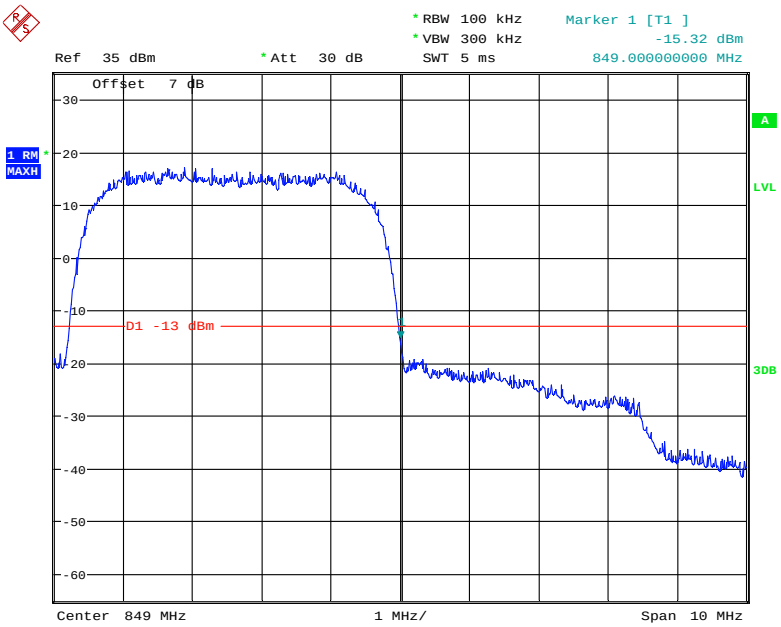

Date: 20.JUL.2021 00:50:16

## Cellular Band, Left Band Edge for RMC (BPSK) Mode



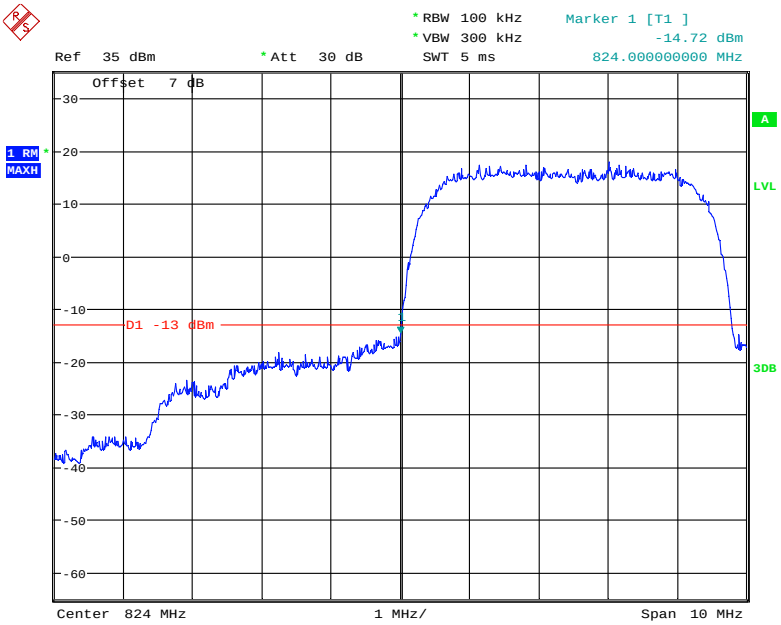

Date: 19.JUL.2021 22:36:57

## Cellular Band, Right Band Edge for RMC (BPSK) Mode



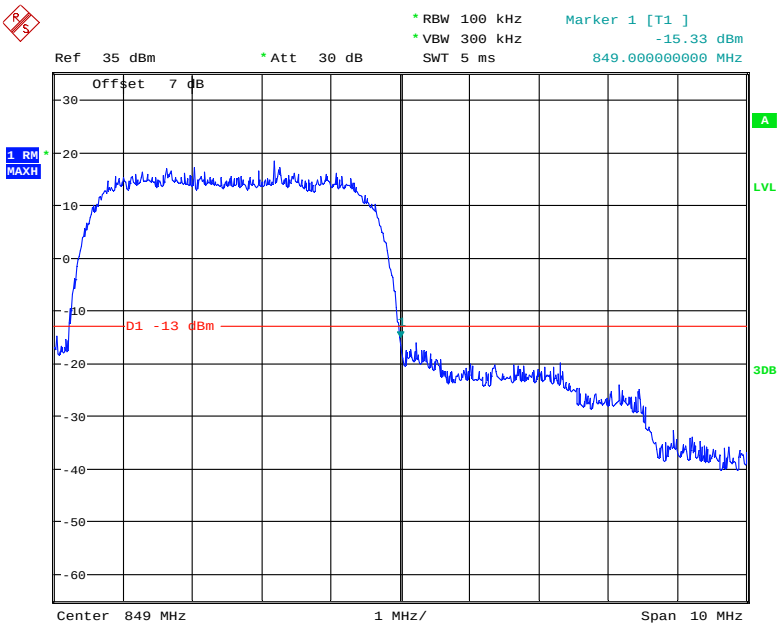

Date: 19.JUL.2021 22:36:14

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



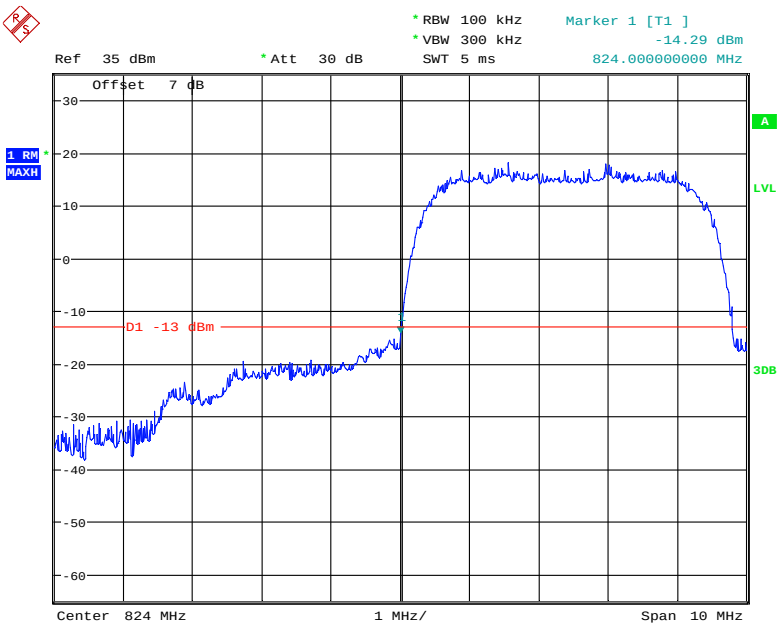

Date: 19.JUL.2021 22:59:29

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



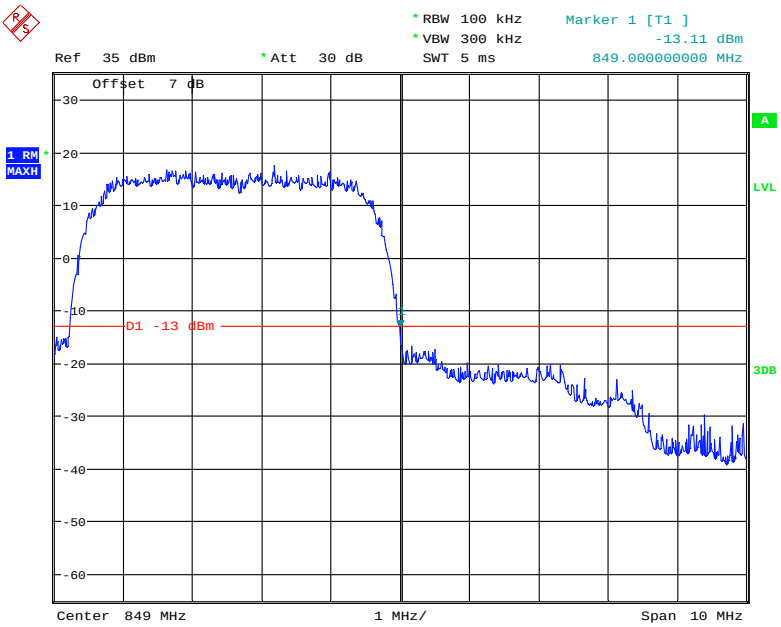

Date: 19.JUL.2021 23:00:39

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



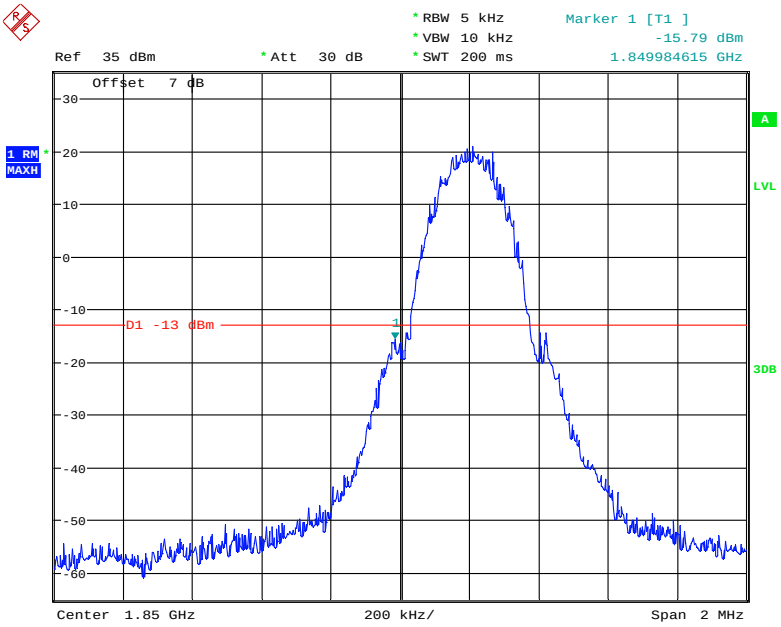

Date: 19.JUL.2021 22:42:21

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



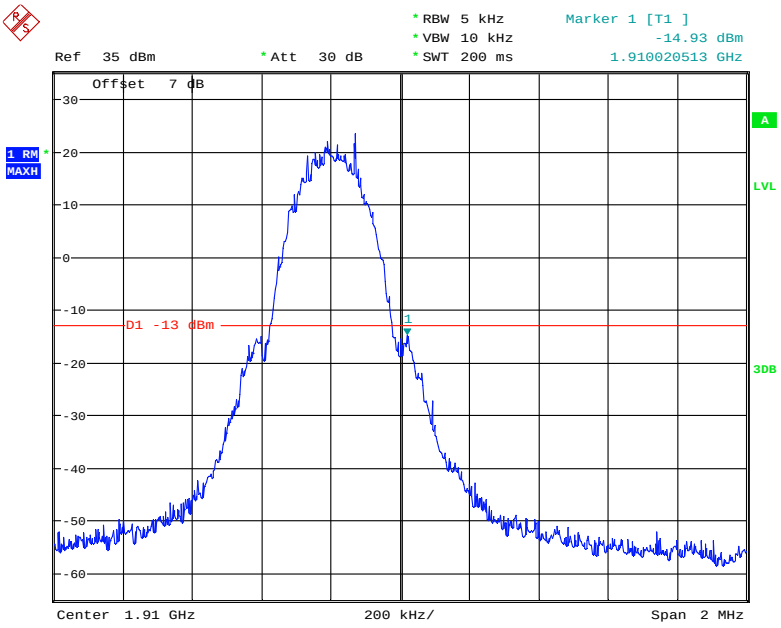

Date: 19.JUL.2021 22:43:28

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



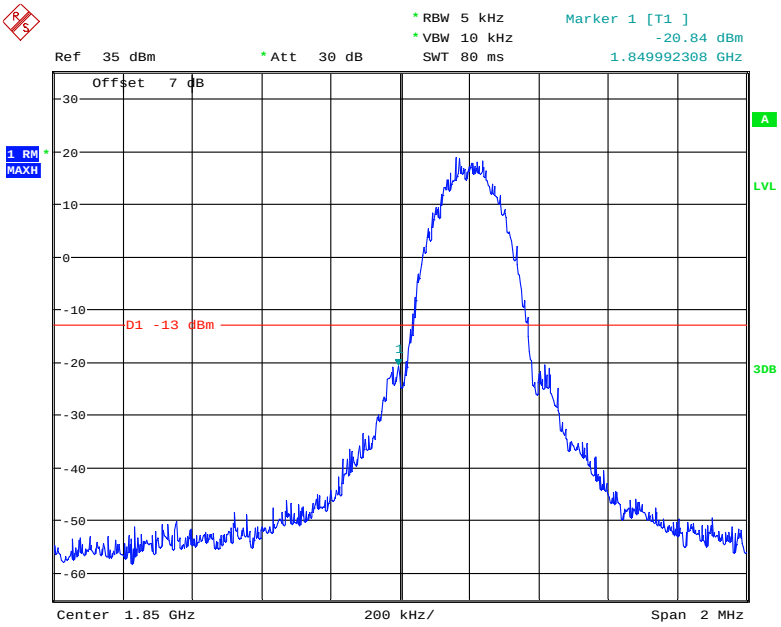

Date: 20.JUL.2021 01:02:39

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



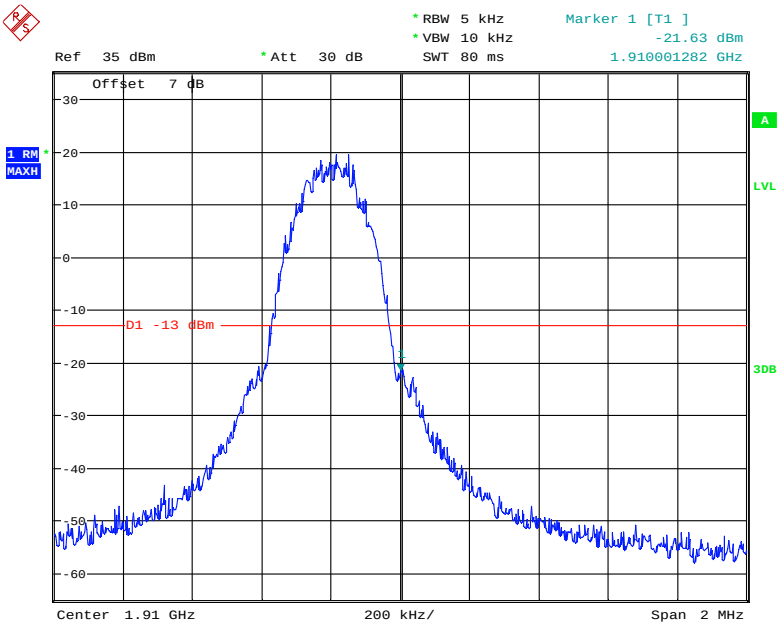

Date: 20.JUL.2021 01:01:05

## PCS Band, Left Band Edge for EGPRS (8PSK) Mode



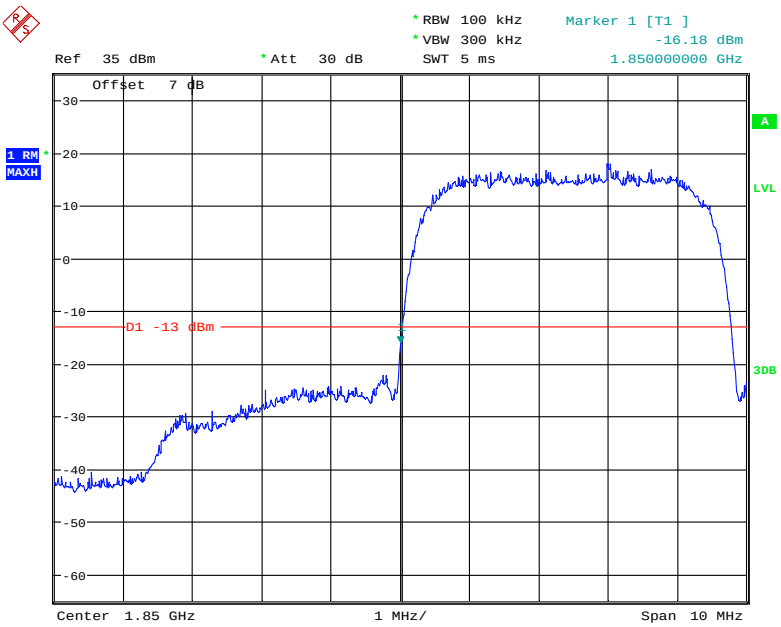

Date: 20.JUL.2021 00:54:06

## PCS Band, Right Band Edge for EGPRS (8PSK) Mode



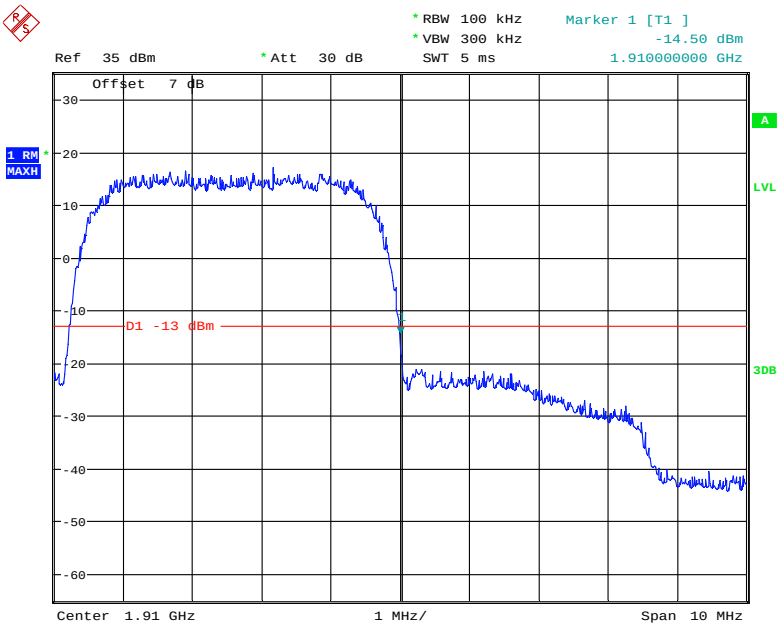

Date: 20.JUL.2021 00:55:10

## PCS Band, Left Band Edge for RMC (BPSK) Mode



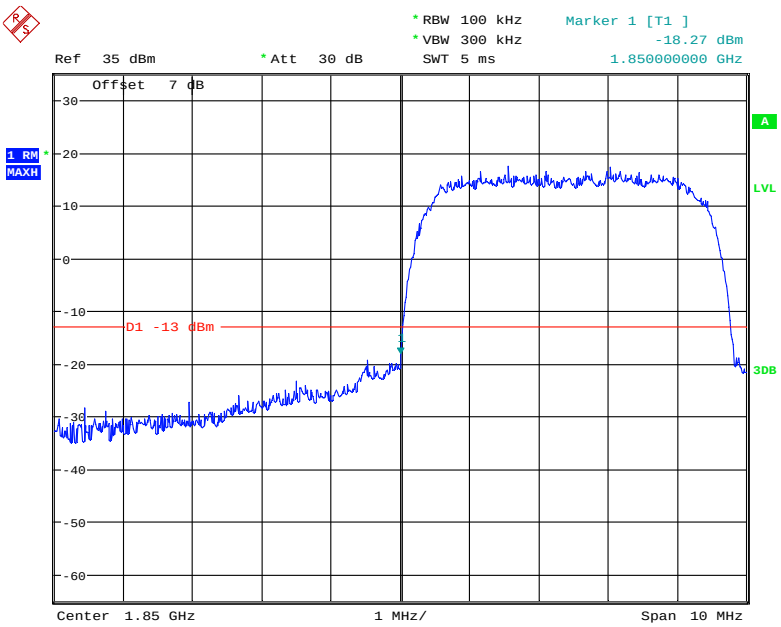

Date: 19.JUL.2021 22:31:32

## PCS Band, Right Band Edge for RMC (BPSK) Mode



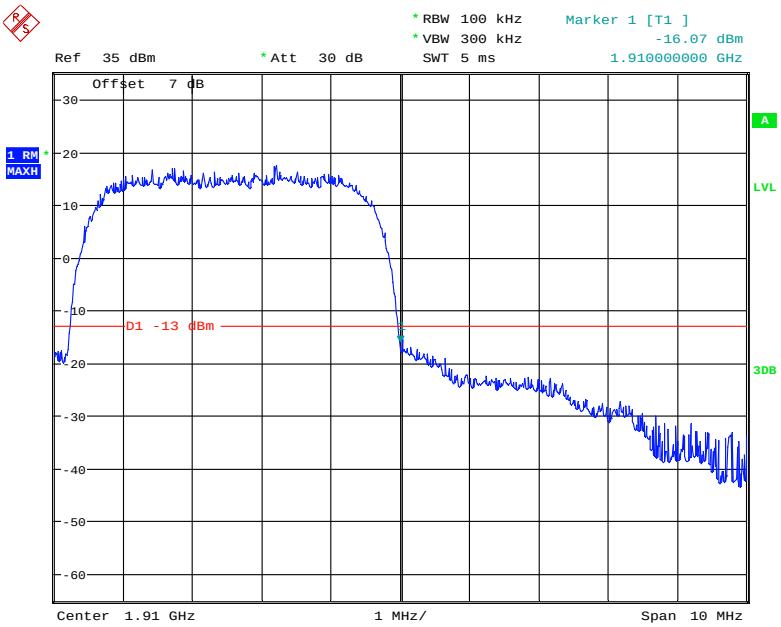

Date: 19.JUL.2021 22:32:45

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



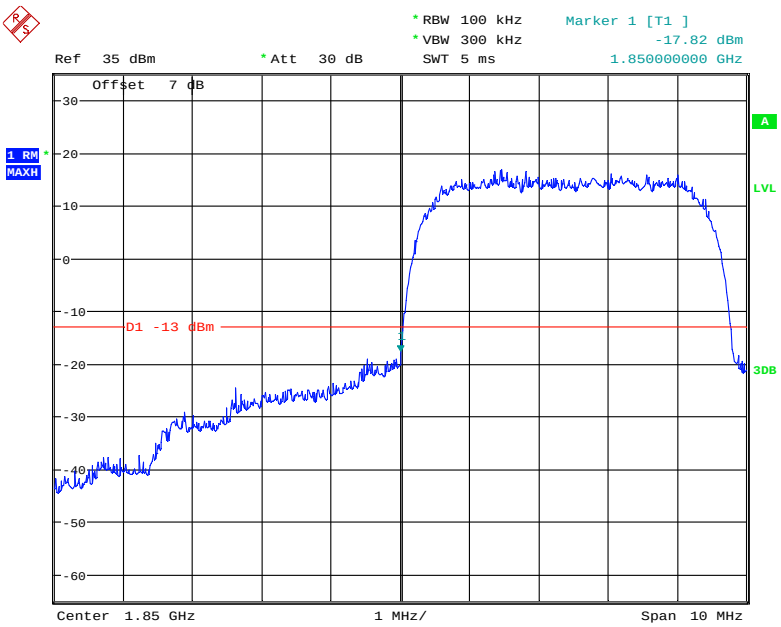

Date: 19.JUL.2021 22:52:11

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



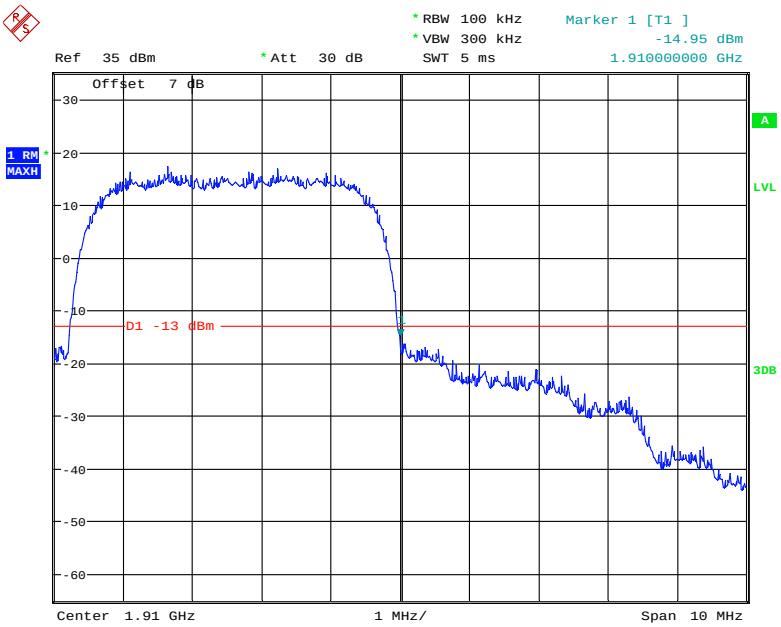

Date: 19.JUL.2021 22:53:47

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



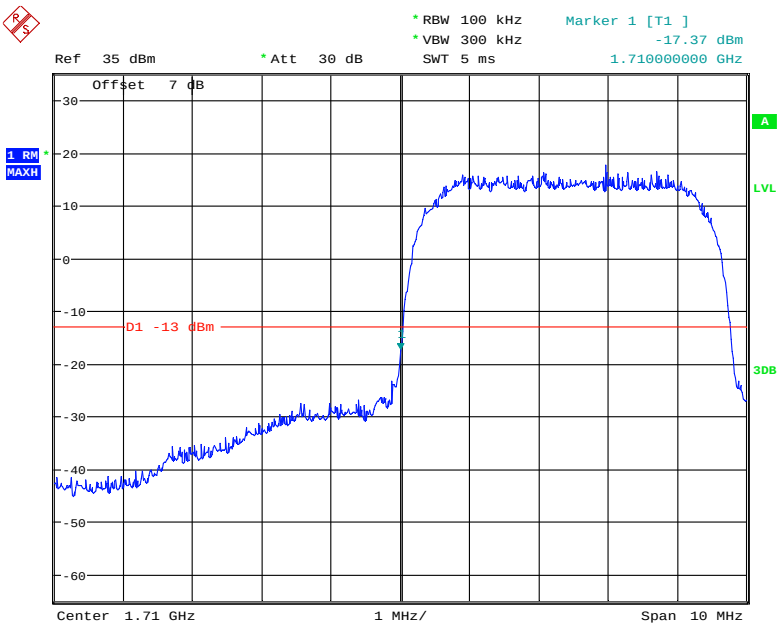

Date: 19.JUL.2021 22:49:16

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



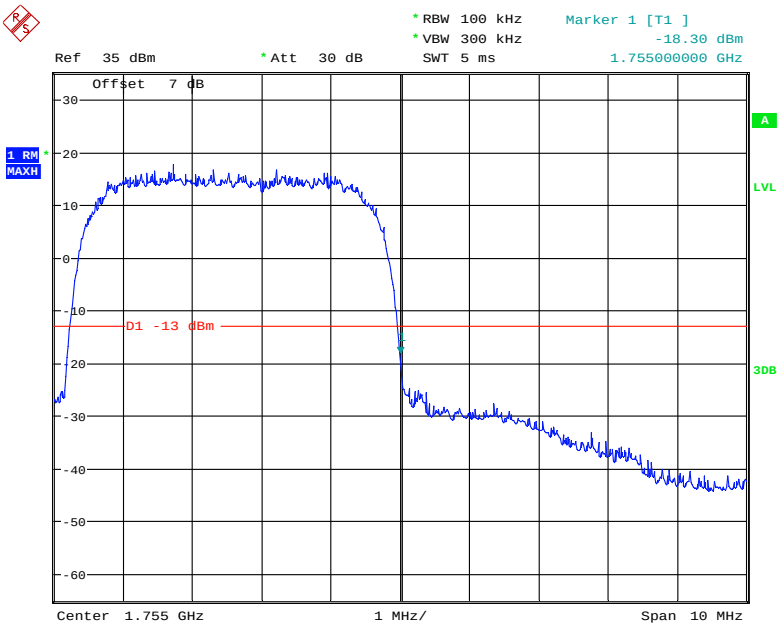

Date: 19.JUL.2021 22:48:04

## AWS Band, Left Band Edge for RMC (BPSK) Mode



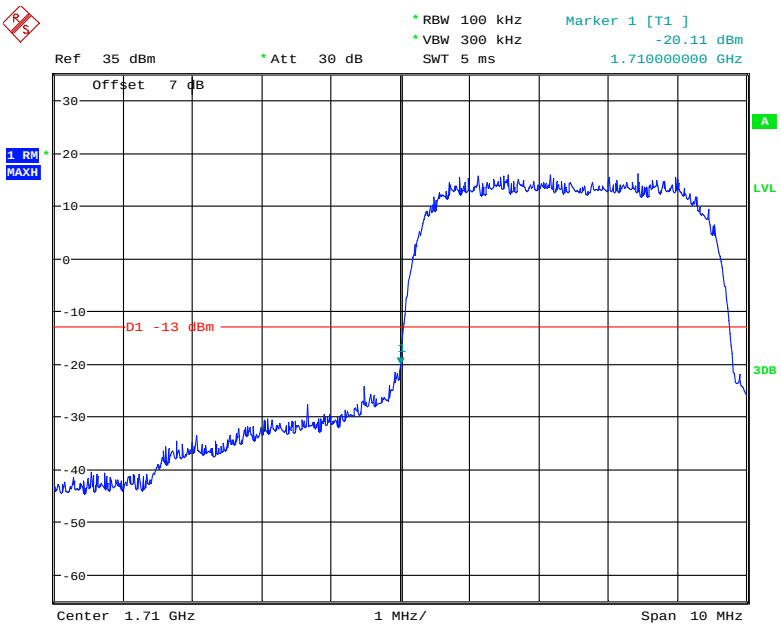

Date: 19.JUL.2021 22:34:42

## AWS Band, Right Band Edge for RMC (BPSK) Mode



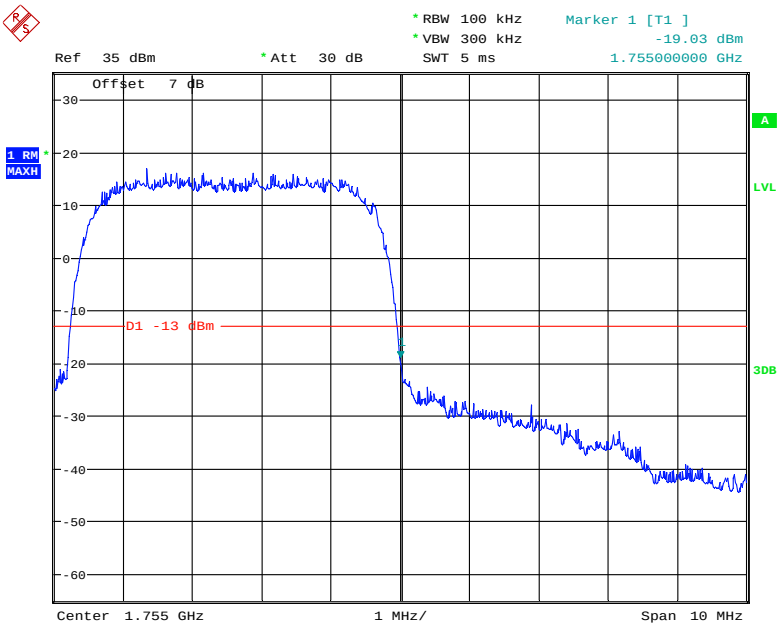

Date: 19.JUL.2021 22:33:43

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



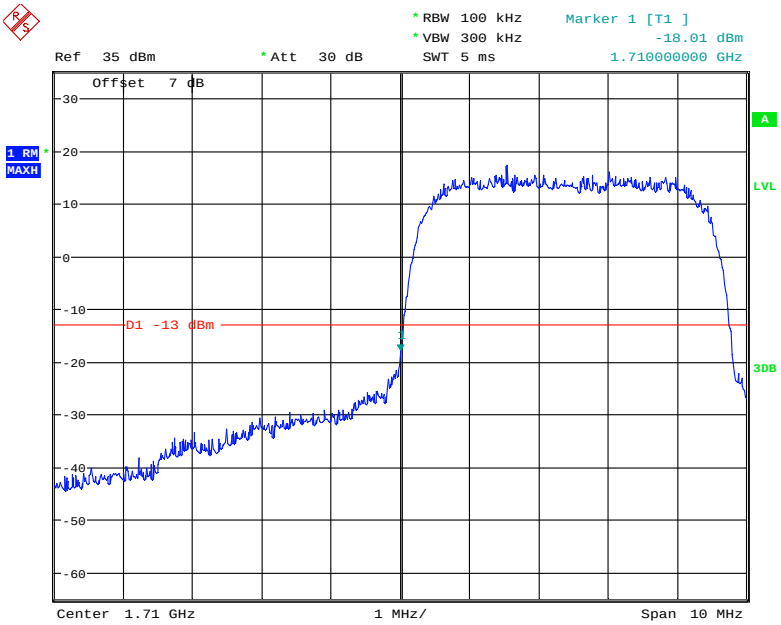

Date: 19.JUL.2021 22:56:02

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

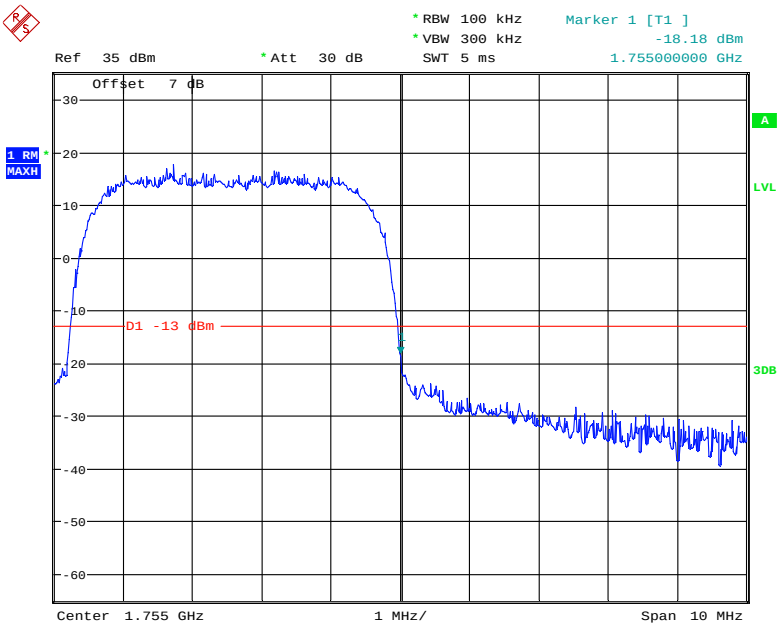



Date: 19.JUL.2021 22:56:49

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




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




The test plots of LTE bands 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 |

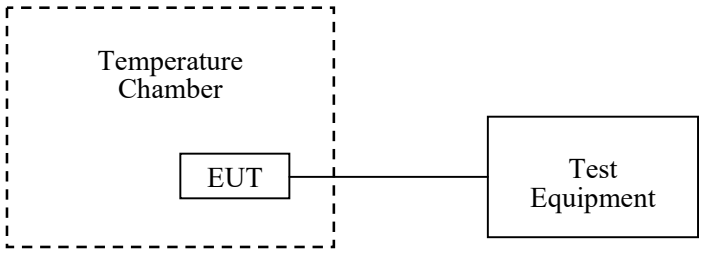
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

## 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 ~62 % |
| **ATM Pressure:** | 101.0 kPa |

*The testing was performed by Orlo Yang from 2021-07-16 to 2021-07-22*

*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 | 3.8 | -8 | -0.0096 | 2.5 |
| -20 | | -5 | -0.0060 | 2.5 |
| -10 | | -3 | -0.0036 | 2.5 |
| 0 | | -2 | -0.0024 | 2.5 |
| 10 | | 1 | 0.0012 | 2.5 |
| 20 | | 6 | 0.0072 | 2.5 |
| 30 | | 5 | 0.0060 | 2.5 |
| 40 | | 7 | 0.0084 | 2.5 |
| 50 | | 9 | 0.0108 | 2.5 |
| 20 | 3.55 | 11 | 0.0131 | 2.5 |
| | 4.35 | 14 | 0.0167 | 2.5 |

**EDGE Mode**

| Middle Channel, $f_o$ =836.6MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Voltage Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Limit (ppm)** |
| -30 | 3.8 | 7 | 0.0084 | 2.5 |
| -20 | | 8 | 0.0096 | 2.5 |
| -10 | | 10 | 0.0120 | 2.5 |
| 0 | | 5 | 0.0060 | 2.5 |
| 10 | | 7 | 0.0084 | 2.5 |
| 20 | | 9 | 0.0108 | 2.5 |
| 30 | | 5 | 0.0060 | 2.5 |
| 40 | | 8 | 0.0096 | 2.5 |
| 50 | | 9 | 0.0108 | 2.5 |
| 20 | 3.55 | 7 | 0.0084 | 2.5 |
| | 4.35 | 3 | 0.0036 | 2.5 |

**WCDMA Mode**

| Middle Channel, $f_o$ =836.6MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Voltage Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Limit (ppm)** |
| -30 | 3.8 | 5 | 0.0060 | 2.5 |
| -20 | | 6 | 0.0072 | 2.5 |
| -10 | | -8 | -0.0096 | 2.5 |
| 0 | | 4 | 0.0048 | 2.5 |
| 10 | | 5 | 0.0060 | 2.5 |
| 20 | | 7 | 0.0084 | 2.5 |
| 30 | | -3 | -0.0036 | 2.5 |
| 40 | | 6 | 0.0072 | 2.5 |
| 50 | | 7 | 0.0084 | 2.5 |
| 20 | 3.55 | 5 | 0.0060 | 2.5 |
| | 4.35 | 6 | 0.0072 | 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 | 3.8 | 5 | 0.0027 | Pass |
| -20 | | -4 | -0.0021 | Pass |
| -10 | | 3 | 0.0016 | Pass |
| 0 | | 2 | 0.0011 | Pass |
| 10 | | -4 | -0.0021 | Pass |
| 20 | | 5 | 0.0027 | Pass |
| 30 | | 6 | 0.0032 | Pass |
| 40 | | 8 | 0.0043 | Pass |
| 50 | | 9 | 0.0048 | Pass |
| 20 | 3.55 | 10 | 0.0053 | Pass |
| | 4.35 | 7 | 0.0037 | Pass |

### EDGE Mode

| Middle Channel, $f_o$ =1880.0 MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Voltage Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Result** |
| -30 | 3.8 | 7 | 0.0037 | Pass |
| -20 | | 4 | 0.0021 | Pass |
| -10 | | 5 | 0.0027 | Pass |
| 0 | | -4 | -0.0021 | Pass |
| 10 | | 3 | 0.0016 | Pass |
| 20 | | 7 | 0.0037 | Pass |
| 30 | | 8 | 0.0043 | Pass |
| 40 | | 9 | 0.0048 | Pass |
| 50 | | -5 | -0.0027 | Pass |
| 20 | 3.55 | 6 | 0.0032 | Pass |
| | 4.35 | 9 | 0.0048 | Pass |

**WCDMA Mode**

| Middle Channel, $f_o$ =1880.0 MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Voltage Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Result** |
| -30 | 3.8 | 5 | 0.0027 | Pass |
| -20 | | 2 | 0.0011 | Pass |
| -10 | | 3 | 0.0016 | Pass |
| 0 | | -6 | -0.0032 | Pass |
| 10 | | 2 | 0.0011 | Pass |
| 20 | | 5 | 0.0027 | Pass |
| 30 | | -5 | -0.0027 | Pass |
| 40 | | 7 | 0.0037 | Pass |
| 50 | | 6 | 0.0032 | Pass |
| 20 | 3.55 | 4 | 0.0021 | Pass |
| | 4.35 | 7 | 0.0037 | 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 | 3.8 | 1710.0374 | 1754.9069 | 1710 | 1755 |
| -20 | | 1710.0053 | 1754.9919 | 1710 | 1755 |
| -10 | | 1710.0574 | 1754.9850 | 1710 | 1755 |
| 0 | | 1710.0391 | 1754.9804 | 1710 | 1755 |
| 10 | | 1710.0319 | 1754.9772 | 1710 | 1755 |
| 20 | | 1710.0207 | 1754.9637 | 1710 | 1755 |
| 30 | | 1710.0253 | 1754.9817 | 1710 | 1755 |
| 40 | | 1710.0109 | 1754.9615 | 1710 | 1755 |
| 50 | | 1710.0205 | 1754.9775 | 1710 | 1755 |
| 20 | 3.55 | 1710.0106 | 1754.9733 | 1710 | 1755 |
| | 4.35 | 1710.0325 | 1754.9940 | 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 | 3.8 | 4.47 | 0.0024 | Pass |
| -20 | | 0.36 | 0.0002 | Pass |
| -10 | | 3.59 | 0.0019 | Pass |
| 0 | | 6.31 | 0.0034 | Pass |
| 10 | | 7.15 | 0.0038 | Pass |
| 20 | | 6.44 | 0.0034 | Pass |
| 30 | | 3.24 | 0.0017 | Pass |
| 40 | | 7.37 | 0.0039 | Pass |
| 50 | | 0.75 | 0.0004 | Pass |
| 20 | 3.55 | 1.29 | 0.0007 | Pass |
| | 4.35 | 2.72 | 0.0014 | 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 | 3.8 | 1710.0223 | 1754.6013 | 1710 | 1755 |
| -20 | | 1710.1467 | 1754.6510 | 1710 | 1755 |
| -10 | | 1710.2176 | 1754.6220 | 1710 | 1755 |
| 0 | | 1710.2100 | 1754.7634 | 1710 | 1755 |
| 10 | | 1710.4203 | 1754.6300 | 1710 | 1755 |
| 20 | | 1710.2771 | 1754.6709 | 1710 | 1755 |
| 30 | | 1710.3760 | 1754.4369 | 1710 | 1755 |
| 40 | | 1710.0578 | 1754.6006 | 1710 | 1755 |
| 50 | | 1710.2456 | 1754.7213 | 1710 | 1755 |
| 20 | 3.55 | 1710.5415 | 1754.7311 | 1710 | 1755 |
| | 4.35 | 1710.2034 | 1754.4277 | 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 | 3.8 | -6.64 | -0.0079 | 2.5 |
| -20 | | 6.27 | 0.0075 | 2.5 |
| -10 | | 8.23 | 0.0098 | 2.5 |
| 0 | | -5.29 | -0.0063 | 2.5 |
| 10 | | -3.40 | -0.0041 | 2.5 |
| 20 | | 9.21 | 0.0110 | 2.5 |
| 30 | | -3.86 | -0.0046 | 2.5 |
| 40 | | 7.54 | 0.0090 | 2.5 |
| 50 | | 8.53 | 0.0102 | 2.5 |
| 20 | 3.55 | 9.17 | 0.0110 | 2.5 |
| | 4.35 | 5.60 | 0.0067 | 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 | 3.8 | 2500.2273 | 2569.8025 | 2500 | 2570 |
| -20 | | 2500.1085 | 2569.6236 | 2500 | 2570 |
| -10 | | 2500.0570 | 2569.5174 | 2500 | 2570 |
| 0 | | 2500.0384 | 2569.6301 | 2500 | 2570 |
| 10 | | 2500.1927 | 2569.4115 | 2500 | 2570 |
| 20 | | 2500.3209 | 2569.6243 | 2500 | 2570 |
| 30 | | 2500.0982 | 2569.7493 | 2500 | 2570 |
| 40 | | 2500.2390 | 2569.6621 | 2500 | 2570 |
| 50 | | 2500.2579 | 2569.6722 | 2500 | 2570 |
| 20 | 3.55 | 2500.1144 | 2569.6438 | 2500 | 2570 |
| | 4.35 | 2500.0712 | 2569.6330 | 2500 | 2570 |

**Band 12:**

| 10 MHz Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
| -30 | 3.8 | 699.0769 | 715.6463 | 699 | 716 |
| -20 | | 699.0559 | 715.4793 | 699 | 716 |
| -10 | | 699.2166 | 715.4860 | 699 | 716 |
| 0 | | 699.2322 | 715.5834 | 699 | 716 |
| 10 | | 699.2380 | 715.5019 | 699 | 716 |
| 20 | | 699.2637 | 715.6701 | 699 | 716 |
| 30 | | 699.1958 | 715.6786 | 699 | 716 |
| 40 | | 699.1618 | 715.6414 | 699 | 716 |
| 50 | | 699.2384 | 715.7637 | 699 | 716 |
| 20 | 3.55 | 699.1968 | 715.6100 | 699 | 716 |
| | 4.35 | 699.0525 | 715.5764 | 699 | 716 |

**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 | 3.8 | 704.4263 | 715.6788 | 704 | 716 |
| -20 | | 704.5028 | 715.7191 | 704 | 716 |
| -10 | | 704.4639 | 715.6613 | 704 | 716 |
| 0 | | 704.4193 | 715.7067 | 704 | 716 |
| 10 | | 704.3801 | 715.6990 | 704 | 716 |
| 20 | | 704.3683 | 715.6788 | 704 | 716 |
| 30 | | 704.4964 | 715.7483 | 704 | 716 |
| 40 | | 704.4914 | 715.6124 | 704 | 716 |
| 50 | | 704.4288 | 715.6477 | 704 | 716 |
| 20 | 3.55 | 704.3816 | 715.7128 | 704 | 716 |
| | 4.35 | 704.3991 | 715.6196 | 704 | 716 |

**Band 66**

| 10 MHz Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Temperature (°C)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
| -30 | 3.8 | 1710.1786 | 1779.6274 | 1710 | 1780 |
| -20 | | 1710.1901 | 1779.7060 | 1710 | 1780 |
| -10 | | 1710.2145 | 1779.6768 | 1710 | 1780 |
| 0 | | 1710.0388 | 1779.5452 | 1710 | 1780 |
| 10 | | 1710.1685 | 1779.5493 | 1710 | 1780 |
| 20 | | 1710.0580 | 1779.7035 | 1710 | 1780 |
| 30 | | 1710.1014 | 1779.7001 | 1710 | 1780 |
| 40 | | 1710.2318 | 1779.6859 | 1710 | 1780 |
| 50 | | 1710.2498 | 1779.6665 | 1710 | 1780 |
| 20 | 3.55 | 1710.1947 | 1779.5300 | 1710 | 1780 |
| | 4.35 | 1710.0300 | 1779.5476 | 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 | 3.8 | 4.47 | 0.0024 | Pass |
| -20 | | 0.34 | 0.0002 | Pass |
| -10 | | 3.56 | 0.0019 | Pass |
| 0 | | 6.29 | 0.0033 | Pass |
| 10 | | 7.13 | 0.0038 | Pass |
| 20 | | 6.41 | 0.0034 | Pass |
| 30 | | 3.21 | 0.0017 | Pass |
| 40 | | 7.37 | 0.0039 | Pass |
| 50 | | 0.74 | 0.0004 | Pass |
| 20 | 3.55 | 1.29 | 0.0007 | Pass |
| | 4.35 | 2.69 | 0.0014 | 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 | 3.8 | 1710.0740 | 1754.6641 | 1710 | 1755 |
| -20 | | 1710.2831 | 1754.6969 | 1710 | 1755 |
| -10 | | 1710.2997 | 1754.5635 | 1710 | 1755 |
| 0 | | 1710.1604 | 1754.5847 | 1710 | 1755 |
| 10 | | 1710.3808 | 1754.4956 | 1710 | 1755 |
| 20 | | 1710.1599 | 1754.7586 | 1710 | 1755 |
| 30 | | 1710.1775 | 1754.6330 | 1710 | 1755 |
| 40 | | 1710.1965 | 1754.5665 | 1710 | 1755 |
| 50 | | 1710.2103 | 1754.5082 | 1710 | 1755 |
| 20 | 3.55 | 1710.0557 | 1754.4830 | 1710 | 1755 |
| | 4.35 | 1710.0286 | 1754.6421 | 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 | 3.8 | -6.66 | -0.0080 | 2.5 |
| -20 | | 6.25 | 0.0075 | 2.5 |
| -10 | | 8.23 | 0.0098 | 2.5 |
| 0 | | -5.29 | -0.0063 | 2.5 |
| 10 | | -3.42 | -0.0041 | 2.5 |
| 20 | | 9.20 | 0.0110 | 2.5 |
| 30 | | -3.86 | -0.0046 | 2.5 |
| 40 | | 7.51 | 0.0090 | 2.5 |
| 50 | | 8.52 | 0.0102 | 2.5 |
| 20 | 3.55 | 9.17 | 0.0110 | 2.5 |
| | 4.35 | 2.69 | 0.0032 | 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 | 3.8 | 2500.0170 | 2569.7415 | 2500 | 2570 |
| -20 | | 2500.0189 | 2569.7034 | 2500 | 2570 |
| -10 | | 2500.1708 | 2569.6815 | 2500 | 2570 |
| 0 | | 2500.2058 | 2569.6693 | 2500 | 2570 |
| 10 | | 2500.2421 | 2569.7014 | 2500 | 2570 |
| 20 | | 2500.1016 | 2569.7956 | 2500 | 2570 |
| 30 | | 2500.0623 | 2569.6647 | 2500 | 2570 |
| 40 | | 2500.0490 | 2569.7132 | 2500 | 2570 |
| 50 | | 2500.1491 | 2569.7460 | 2500 | 2570 |
| 20 | 3.55 | 2500.1705 | 2569.6463 | 2500 | 2570 |
| | 4.35 | 2500.2996 | 2569.6643 | 2500 | 2570 |

**Band 12:**

| 10 MHz Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
| -30 | 3.8 | 699.0546 | 715.7144 | 699 | 716 |
| -20 | | 699.3028 | 715.5576 | 699 | 716 |
| -10 | | 699.2661 | 715.6894 | 699 | 716 |
| 0 | | 699.0544 | 715.7192 | 699 | 716 |
| 10 | | 699.2668 | 715.6042 | 699 | 716 |
| 20 | | 699.1491 | 715.6710 | 699 | 716 |
| 30 | | 699.2262 | 715.7776 | 699 | 716 |
| 40 | | 699.1750 | 715.6471 | 699 | 716 |
| 50 | | 699.1439 | 715.5846 | 699 | 716 |
| 20 | 3.55 | 699.0946 | 715.6306 | 699 | 716 |
| | 4.35 | 699.1291 | 715.6382 | 699 | 716 |

**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 | 3.8 | 704.3831 | 715.5819 | 704 | 716 |
| -20 | | 704.3893 | 715.5366 | 704 | 716 |
| -10 | | 704.3769 | 715.5565 | 704 | 716 |
| 0 | | 704.3823 | 715.5394 | 704 | 716 |
| 10 | | 704.4545 | 715.5406 | 704 | 716 |
| 20 | | 704.3876 | 715.4973 | 704 | 716 |
| 30 | | 704.4575 | 715.5540 | 704 | 716 |
| 40 | | 704.5006 | 715.6230 | 704 | 716 |
| 50 | | 704.4040 | 715.6476 | 704 | 716 |
| 20 | 3.55 | 704.3888 | 715.6051 | 704 | 716 |
| | 4.35 | 704.4074 | 715.5811 | 704 | 716 |

**Band 66**

| 10 MHz Bandwidth | | | | | |
|---|---|---|---|---|---|
| **Temperature (°C)** | **Power Supplied ($V_{DC}$)** | **$F_L$ (MHz)** | **$F_H$ (MHz)** | **$F_L$ Limit (MHz)** | **$F_H$ Limit (MHz)** |
| -30 | 3.8 | 1710.2250 | 1779.6817 | 1710 | 1780 |
| -20 | | 1710.0327 | 1779.4920 | 1710 | 1780 |
| -10 | | 1710.1335 | 1779.7289 | 1710 | 1780 |
| 0 | | 1710.0584 | 1779.7914 | 1710 | 1780 |
| 10 | | 1710.8167 | 1779.5659 | 1710 | 1780 |
| 20 | | 1710.0179 | 1779.4910 | 1710 | 1780 |
| 30 | | 1710.1823 | 1779.4931 | 1710 | 1780 |
| 40 | | 1710.1986 | 1779.7767 | 1710 | 1780 |
| 50 | | 1710.1713 | 1779.6855 | 1710 | 1780 |
| 20 | 3.55 | 1710.0333 | 1779.5640 | 1710 | 1780 |
| | 4.35 | 1710.1110 | 1779.6318 | 1710 | 1780 |

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