

FCC PART 27  
FCC PART 22H, PART 24E  
TEST REPORT

For

**Exacta Digital Media Research SpA**

Canada 253 Depto E, Comuna Providencia, Santiago, Chile

**FCC ID: 2A23YV37**

|                                                                                                                                                                                                                                                                                                                     |                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| <b>Report Type:</b><br>Original Report                                                                                                                                                                                                                                                                              | <b>Product Type:</b><br>MOBILE ELECTRONIC<br>DEVICE |
| <b>Report Number:</b> SZ1210809-33446E-RF-00D                                                                                                                                                                                                                                                                       |                                                     |
| <b>Report Date:</b> 2021-09-09                                                                                                                                                                                                                                                                                      |                                                     |
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## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product                  | MOBILE ELECTRONIC DEVICE                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Tested Model             | EXACTA V37                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 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 17: 704-716MHz(TX); 734-746MHz(RX) |
| Modulation Technique     | 2G: GMSK<br>3G: BPSK, QPSK, 16QAM<br>4G: QPSK, 16QAM                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Antenna Specification*   | GSM850/WCDMA Band 5/LTE Band 5: 0.81dBi<br>PCS1900/WCDMA Band 2/ LTE Band 2: 0.93dBi<br>WCDMA Band 4/LTE Band 4: 0.92dBi<br>LTE Band 7: 0.92dBi<br>LTE Band 17: 0.69dBi(provided by the applicant)                                                                                                                                                                                                                                                                                                 |
| Voltage Range            | DC 3.8V from battery or DC 5V from adapter                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Date of Test             | 2021-08-13 to 2021-09-09                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Sample number            | SZ1210809-33446E-RF-S1(Assigned by BACL, Shenzhen)                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Received date            | 2021-08-09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Sample/EUT Status        | Good condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Normal/Extreme Condition | L.V.: Low Voltage 3.5V <sub>DC</sub><br>N.V.: Normal Voltage 3.8V <sub>DC</sub><br>H.V.: High Voltage 4.35V <sub>DC</sub><br>The extreme condition was declared by the applicant                                                                                                                                                                                                                                                                                                                   |
| Adapter information      | Input: AC 100-240V ~ 50-60Hz, 150mA<br>Output: DC 5V, 1000mA                                                                                                                                                                                                                                                                                                                                                                                                                                       |

### 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,<br>Radiated       | Below 1GHz | ±4.75dB     |
|                              | Above 1GHz | ±4.88dB     |
| Temperature                  |            | ±1 °C       |
| 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.

| Frequency band | Bandwidth (MHz) | Test Frequency(MHz) |        |        |
|----------------|-----------------|---------------------|--------|--------|
|                |                 | Low                 | Middle | High   |
| GSM850         | 0.25            | 824.2               | 836.6  | 848.8  |
| PCS1900        | 0.25            | 1850.2              | 1880   | 1909.8 |
| WCDMA B2       | 4.2             | 1852.4              | 1880   | 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   | 1909.3 |
|                | 3               | 1851.5              | 1880   | 1908.5 |
|                | 5               | 1852.5              | 1880   | 1907.5 |
|                | 10              | 1855                | 1880   | 1905   |
|                | 15              | 1857.5              | 1880   | 1902.5 |
|                | 20              | 1860                | 1880   | 1900   |
| 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                | 1732.5 | 1750   |
|                | 15              | 1717.5              | 1732.5 | 1747.5 |
|                | 20              | 1720                | 1732.5 | 1745   |
| 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                 | 836.5  | 844    |
| LTE B7         | 5               | 2502.5              | 2535   | 2567.5 |
|                | 10              | 2505                | 2535   | 2565   |
|                | 15              | 2507.5              | 2535   | 2562.5 |
|                | 20              | 2510                | 2535   | 2560   |
| LTE B17        | 5               | 706.5               | 710    | 713.5  |
|                | 10              | 709                 | 710    | 711    |

## Equipment Modifications

No modification was made to the EUT.

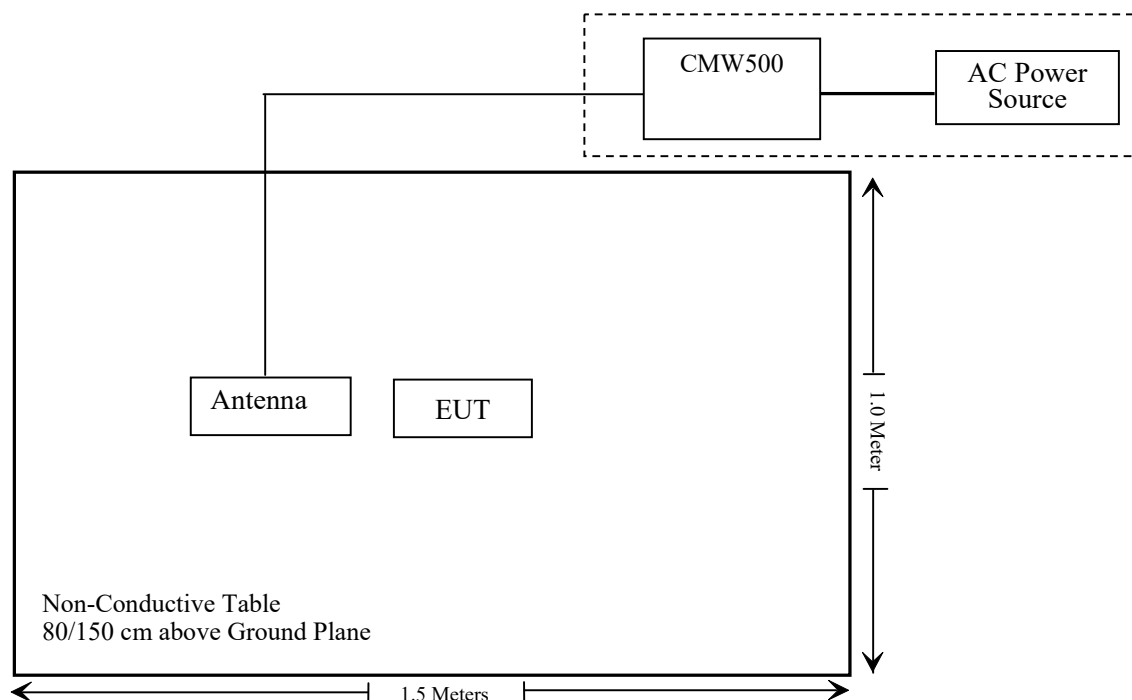
## Support Equipment List and Details

| Manufacturer    | Description                         | Model  | Serial Number |
|-----------------|-------------------------------------|--------|---------------|
| Rohde & Schwarz | Wideband Radio Communication tester | CMW500 | 146520        |

## Support Cable Description

| Cable Description | Length (m) | From / Port | To |
|-------------------|------------|-------------|----|
| /                 | /          | /           | /  |

## 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);<br>§24.232 (c); §27.50    | RF Output Power                        | Compliant      |
| §2.1047                                         | Modulation Characteristics             | Not Applicable |
| §2.1049; §22.905;<br>§22.917; §24.238; §27.53;  | Occupied Bandwidth                     | Compliant      |
| §2.1051; §22.917 (a);<br>§24.238 (a); §27.53    | Spurious Emissions at Antenna Terminal | Compliant      |
| § 2.1053; § 22.917 (a);<br>§ 24.238 (a); §27.53 | Field Strength of Spurious Radiation   | Compliant      |
| § 22.917 (a);<br>§ 24.238 (a); §27.53           | Band Edge                              | Compliant      |
| § 2.1055; § 22.355;<br>§ 24.235; §27.54         | Frequency stability                    | Compliant      |

Note: \* Please refer to SAR report released by BACL, report number: SZ1210809-33446E-SA.

**TEST EQUIPMENT LIST**

| Manufacturer                  | Description       | Model           | Serial Number   | Calibration Date | Calibration Due Date |
|-------------------------------|-------------------|-----------------|-----------------|------------------|----------------------|
| <b>Radiated Emission Test</b> |                   |                 |                 |                  |                      |
| R&S                           | EMI Test Receiver | ESR3            | 102455          | 2021/07/06       | 2022/07/05           |
| Sonoma instrument             | Pre-amplifier     | 310 N           | 186238          | 2021/08/03       | 2022/08/02           |
| 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 4 | EC-007          | 2021/08/03       | 2022/08/02           |
| Rohde & Schwarz               | Spectrum Analyzer | FSV40-N         | 102259          | 2021/07/06       | 2022/07/05           |
| COM-POWER                     | Pre-amplifier     | PA-122          | 181919          | 2020/11/29       | 2021/11/28           |
| Quinstar                      | Amplifier         | QLW-18405536-J0 | 15964001002     | 2020/11/28       | 2021/11/27           |
| Sunol Sciences                | Horn Antenna      | 3115            | 9107-3694       | 2021/01/15       | 2024/01/14           |
| A.H.System                    | Horn Antenna      | SAS-200/571     | 135             | 2021/07/14       | 2024/07/13           |
| 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           |
| Unknown                       | Signal Cable      | RG-214          | 2               | 2020/11/29       | 2021/11/28           |
| MICRO-TRONICS                 | Passband filter   | HPM50111        | F-19-EM006      | 2021/04/20       | 2022/04/20           |
| Unknown                       | High Pass filter  | 1.3GHz          | 101120          | 2021/04/20       | 2022/04/20           |
| Ducommun Technologies         | Horn antenna      | ARH-4223-02     | 1007726-02 1304 | 2020/12/06       | 2023/12/05           |
| Ducommun Technologies         | Horn antenna      | ARH-4223-02     | 1007726-01 1304 | 2020/12/06       | 2023/12/05           |
| Agilent                       | Signal Generator  | N5183A          | MY51040755      | 2020/12/29       | 2021/12/28           |

| Manufacturer      | Description                         | Model      | Serial Number         | Calibration Date | Calibration Due Date |
|-------------------|-------------------------------------|------------|-----------------------|------------------|----------------------|
| RF Conducted Test |                                     |            |                       |                  |                      |
| Rohde & Schwarz   | SPECTRUM ANALYZER                   | FSU26      | 200120                | 2021/04/02       | 2022/04/01           |
| Unknown           | RF Cable                            | Unknown    | 0501 067              | 2020/11/29       | 2021/11/28           |
| Weinschel         | Power divider                       | 1515       | RH386                 | 2021/04/20       | 2022/04/20           |
| ESPEC             | Temperature & Humidity Chamber      | EL-10KA    | 9107726               | 2021/02/23       | 2022/02/22           |
| Rohde & Schwarz   | Wideband Radio Communication Tester | CMW500     | 1201.002K50-146520-wh | 2021/07/06       | 2022/07/05           |
| instek            | DC Power Supply                     | GPS-3030DD | EM832096              | NCR              | NCR                  |
| 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).

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## **FCC §1.1307(b) & §2.1093 - RF EXPOSURE INFORMATION**

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### **Applicable Standard**

FCC§1.1310 and §2.1093.

### **Test Result**

Compliance, please refer to the SAR report: SZ1210809-33446E-SA.

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## **FCC §2.1047 - MODULATION CHARACTERISTIC**

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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 - 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.

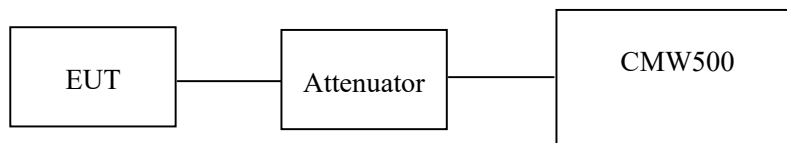
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1780MHz.

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 through sufficient attenuation.

**Test Data****Environmental Conditions**

|                           |                 |
|---------------------------|-----------------|
| <b>Temperature:</b>       | 28.5~29.2 °C    |
| <b>Relative Humidity:</b> | 51~53 %         |
| <b>ATM Pressure:</b>      | 101.0 ~102.0kPa |

*The testing was performed by Pedro Yun on 2021-08-13.*

**Conducted Power****Cellular Band (Part22H)**

| Mode | Channel | Frequency (MHz) | Average Output Power (dBm) | ERP(dBm) | Limit (dBm) |
|------|---------|-----------------|----------------------------|----------|-------------|
| GSM  | 128     | 824.2           | 32.52                      | 30.68    | 38.45       |
|      | 190     | 836.6           | 32.33                      | 30.49    | 38.45       |
|      | 251     | 848.8           | 32.17                      | 30.33    | 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           | 31.01                      | 30.15   | 27.36   | 26.24   | 29.17    | 28.31   | 25.52   | 24.40   | 38.45       |
|      | 190     | 836.6           | 30.13                      | 29.24   | 27.44   | 26.37   | 28.29    | 27.40   | 25.60   | 24.53   | 38.45       |
|      | 251     | 848.8           | 30.07                      | 29.21   | 27.43   | 26.36   | 28.23    | 27.37   | 25.59   | 24.52   | 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  |               | 21.89                      | 21.84 | 21.82 | 20.05    | 20.00 | 19.98 |
|                | HSDPA     | 1             | 21.90                      | 21.70 | 21.95 | 20.06    | 19.86 | 20.11 |
|                |           | 2             | 21.75                      | 21.61 | 21.40 | 19.91    | 19.77 | 19.56 |
|                |           | 3             | 21.76                      | 21.60 | 21.40 | 19.92    | 19.76 | 19.56 |
|                |           | 4             | 21.79                      | 21.66 | 21.48 | 19.95    | 19.82 | 19.64 |
|                | HSUPA     | 1             | 21.65                      | 19.48 | 21.69 | 19.81    | 17.64 | 19.85 |
|                |           | 2             | 20.00                      | 19.17 | 20.62 | 18.16    | 17.33 | 18.78 |
|                |           | 3             | 20.04                      | 19.23 | 20.68 | 18.20    | 17.39 | 18.84 |
|                |           | 4             | 20.04                      | 19.22 | 20.68 | 18.20    | 17.38 | 18.84 |
|                |           | 5             | 20.11                      | 19.28 | 20.70 | 18.27    | 17.44 | 18.86 |
|                | HSPA+     | 1             | 20.13                      | 19.35 | 20.73 | 18.29    | 17.51 | 18.89 |

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)-Cable loss(dB)

For GSM850/WCDMA Band5: Antenna Gain = 0.81dBi = -1.34dBd (0dBd=2.15dBi)

Cable loss=0.5dB\* (Provided by applicant)

Limit: ERP≤38.45dBm

**PCS Band (Part 24E)**

| Mode | Channel | Frequency (MHz) | Average Output Power (dBm) | EIRP(dBm) | Limit (dBm) |
|------|---------|-----------------|----------------------------|-----------|-------------|
| GSM  | 512     | 1850.2          | 30.0                       | 30.13     | 33          |
|      | 661     | 1880.0          | 29.8                       | 29.93     | 33          |
|      | 810     | 1909.8          | 28.9                       | 29.03     | 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          | 30.01                      | 29.10   | 27.30   | 26.19   | 30.14     | 29.23   | 27.43   | 26.32   | 33          |
|      | 661     | 1880.0          | 29.97                      | 29.10   | 27.30   | 26.20   | 30.10     | 29.23   | 27.43   | 26.33   | 33          |
|      | 810     | 1909.8          | 29.65                      | 28.88   | 27.10   | 26.00   | 29.78     | 29.01   | 27.23   | 26.13   | 33          |

| Mode           | Test Mode | 3GPP Sub Test | Average Output Power (dBm) |       |       | EIRP(dBm) |       |       |
|----------------|-----------|---------------|----------------------------|-------|-------|-----------|-------|-------|
|                |           |               | Low                        | Mid   | High  | Low       | Mid   | High  |
| WCDMA (Band 2) | RMC12.2k  |               | 21.70                      | 21.58 | 21.36 | 21.83     | 21.71 | 21.49 |
|                | HSDPA     | 1             | 21.31                      | 22.46 | 21.49 | 21.44     | 22.59 | 21.62 |
|                |           | 2             | 21.38                      | 22.48 | 21.52 | 21.51     | 22.61 | 21.65 |
|                |           | 3             | 21.37                      | 22.49 | 21.50 | 21.50     | 22.62 | 21.63 |
|                |           | 4             | 21.39                      | 22.54 | 21.57 | 21.52     | 22.67 | 21.70 |
|                | HSUPA     | 1             | 20.00                      | 19.15 | 20.63 | 20.13     | 19.28 | 20.76 |
|                |           | 2             | 20.01                      | 19.14 | 20.63 | 20.14     | 19.27 | 20.76 |
|                |           | 3             | 20.06                      | 19.17 | 20.71 | 20.19     | 19.30 | 20.84 |
|                |           | 4             | 20.05                      | 19.17 | 20.69 | 20.18     | 19.30 | 20.82 |
|                |           | 5             | 20.09                      | 19.23 | 20.73 | 20.22     | 19.36 | 20.86 |
|                | HSPA+     | 1             | 20.13                      | 19.30 | 20.76 | 20.26     | 19.43 | 20.89 |

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable loss(dB)

For PCS1900/WCDMA Band 2: Antenna Gain = 0.93dBi

Cable loss=0.8dB\* (Provided by 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  |               | 22.29                      | 22.33 | 22.27 | 22.41     | 22.45 | 22.39 |
|                | HSDPA     | 1             | 21.35                      | 22.27 | 22.22 | 21.47     | 22.39 | 22.34 |
|                |           | 2             | 21.39                      | 22.34 | 22.28 | 21.51     | 22.46 | 22.40 |
|                |           | 3             | 21.39                      | 22.36 | 22.24 | 21.51     | 22.48 | 22.36 |
|                |           | 4             | 21.47                      | 22.42 | 22.29 | 21.59     | 22.54 | 22.41 |
|                | HSUPA     | 1             | 22.00                      | 21.71 | 21.95 | 22.12     | 21.83 | 22.07 |
|                |           | 2             | 21.98                      | 21.68 | 21.89 | 22.10     | 21.80 | 22.01 |
|                |           | 3             | 22.03                      | 21.73 | 21.95 | 22.15     | 21.85 | 22.07 |
|                |           | 4             | 22.01                      | 21.73 | 21.94 | 22.13     | 21.85 | 22.06 |
|                |           | 5             | 22.05                      | 21.78 | 21.97 | 22.17     | 21.90 | 22.09 |
|                | HSPA+     | 1             | 22.07                      | 21.84 | 22.03 | 22.19     | 21.96 | 22.15 |

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) -Cable loss(dB)

Antenna Gain = 0.92dBi

Cable loss=0.8dB\* (Provided by applicant)

The limit: EIRP≤30dBm

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

| Mode | Channel | PAR (dB) | Limit (dB) |
|------|---------|----------|------------|
| GSM  | Low     | 3.23     | 13         |
|      | Middle  | 3.25     | 13         |
|      | High    | 3.28     | 13         |

| Mode             | Channel | PAR (dB) | Limit (dB) |
|------------------|---------|----------|------------|
| RMC<br>(BPSK)    | Low     | 4.75     | 13         |
|                  | Middle  | 4.60     | 13         |
|                  | High    | 4.74     | 13         |
| HSDPA<br>(16QAM) | Low     | 4.73     | 13         |
|                  | Middle  | 4.62     | 13         |
|                  | High    | 4.64     | 13         |
| HSUPA<br>(BPSK)  | Low     | 4.65     | 13         |
|                  | Middle  | 4.66     | 13         |
|                  | High    | 4.70     | 13         |
| HSUPA+           | Low     | 4.78     | 13         |
|                  | Middle  | 4.70     | 13         |
|                  | High    | 4.71     | 13         |

**PCS Band**

| Mode | Channel | PAR (dB) | Limit (dB) |
|------|---------|----------|------------|
| GSM  | Low     | 3.26     | 13         |
|      | Middle  | 3.34     | 13         |
|      | High    | 3.39     | 13         |

| Mode             | Channel | PAR (dB) | Limit (dB) |
|------------------|---------|----------|------------|
| RMC<br>(BPSK)    | Low     | 5.02     | 13         |
|                  | Middle  | 5.11     | 13         |
|                  | High    | 5.27     | 13         |
| HSDPA<br>(16QAM) | Low     | 5.03     | 13         |
|                  | Middle  | 4.88     | 13         |
|                  | High    | 5.01     | 13         |
| HSUPA<br>(BPSK)  | Low     | 4.92     | 13         |
|                  | Middle  | 5.38     | 13         |
|                  | High    | 4.95     | 13         |
| HSUPA+           | Low     | 4.96     | 13         |
|                  | Middle  | 4.99     | 13         |
|                  | High    | 4.96     | 13         |

**AWS Band**

| Mode             | Channel | PAR (dB) | Limit (dB) |
|------------------|---------|----------|------------|
| RMC<br>(BPSK)    | Low     | 4.67     | 13         |
|                  | Middle  | 4.63     | 13         |
|                  | High    | 4.86     | 13         |
| HSDPA<br>(16QAM) | Low     | 4.87     | 13         |
|                  | Middle  | 4.81     | 13         |
|                  | High    | 4.92     | 13         |
| HSUPA<br>(BPSK)  | Low     | 4.88     | 13         |
|                  | Middle  | 4.80     | 13         |
|                  | High    | 4.95     | 13         |
| HSUPA+           | Low     | 4.87     | 13         |
|                  | Middle  | 5.04     | 13         |
|                  | High    | 4.91     | 13         |

**LTE Band 2:****Maximum Output Power**

| Bandwidth<br>(MHz) | Modulation | RB size/<br>RB Offset | Conducted Average Output<br>Power (dBm) |       |       | EIRP(dBm) |       |       |
|--------------------|------------|-----------------------|-----------------------------------------|-------|-------|-----------|-------|-------|
|                    |            |                       | Low                                     | Mid   | High  | Low       | Mid   | High  |
| 1.4                | QPSK       | RB1#0                 | 23.16                                   | 22.94 | 22.88 | 23.29     | 23.07 | 23.01 |
|                    |            | RB1#3                 | 23.17                                   | 22.96 | 22.94 | 23.30     | 23.09 | 23.07 |
|                    |            | RB1#5                 | 23.14                                   | 22.93 | 22.90 | 23.27     | 23.06 | 23.03 |
|                    |            | RB3#0                 | 23.27                                   | 23.03 | 22.98 | 23.40     | 23.16 | 23.11 |
|                    |            | RB3#3                 | 23.24                                   | 23.02 | 23.00 | 23.37     | 23.15 | 23.13 |
|                    |            | RB6#0                 | 22.07                                   | 21.85 | 21.82 | 22.20     | 21.98 | 21.95 |
|                    | 16QAM      | RB1#0                 | 22.08                                   | 21.99 | 21.84 | 22.21     | 22.12 | 21.97 |
|                    |            | RB1#3                 | 22.11                                   | 22.03 | 21.92 | 22.24     | 22.16 | 22.05 |
|                    |            | RB1#5                 | 22.09                                   | 21.99 | 21.88 | 22.22     | 22.12 | 22.01 |
|                    |            | RB3#0                 | 22.36                                   | 21.90 | 21.96 | 22.49     | 22.03 | 22.09 |
|                    |            | RB3#3                 | 22.39                                   | 21.90 | 21.96 | 22.52     | 22.03 | 22.09 |
|                    |            | RB6#0                 | 21.11                                   | 20.91 | 20.75 | 21.24     | 21.04 | 20.88 |
| 3.0                | QPSK       | RB1#0                 | 23.11                                   | 22.88 | 22.84 | 23.24     | 23.01 | 22.97 |
|                    |            | RB1#8                 | 23.11                                   | 22.92 | 22.86 | 23.24     | 23.05 | 22.99 |
|                    |            | RB1#14                | 23.05                                   | 22.87 | 22.83 | 23.18     | 23.00 | 22.96 |
|                    |            | RB6#0                 | 22.06                                   | 21.81 | 21.78 | 22.19     | 21.94 | 21.91 |
|                    |            | RB6#9                 | 22.01                                   | 21.82 | 21.79 | 22.14     | 21.95 | 21.92 |
|                    |            | RB15#0                | 22.12                                   | 21.89 | 21.86 | 22.25     | 22.02 | 21.99 |
|                    | 16QAM      | RB1#0                 | 22.61                                   | 21.94 | 21.83 | 22.74     | 22.07 | 21.96 |
|                    |            | RB1#8                 | 22.59                                   | 21.97 | 21.83 | 22.72     | 22.10 | 21.96 |
|                    |            | RB1#14                | 22.50                                   | 21.93 | 21.81 | 22.63     | 22.06 | 21.94 |
|                    |            | RB6#0                 | 22.64                                   | 21.72 | 21.64 | 22.77     | 21.85 | 21.77 |
|                    |            | RB6#9                 | 22.49                                   | 21.47 | 21.49 | 22.62     | 21.60 | 21.62 |
|                    |            | RB15#0                | 22.35                                   | 21.49 | 21.35 | 22.48     | 21.62 | 21.48 |

| Bandwidth<br>(MHz) | Modulation | RB size/<br>RB Offset | Conducted Average Output<br>Power (dBm) |       |       | EIRP(dBm) |       |       |
|--------------------|------------|-----------------------|-----------------------------------------|-------|-------|-----------|-------|-------|
|                    |            |                       | Low                                     | Mid   | High  | Low       | Mid   | High  |
| 5.0                | QPSK       | RB1#0                 | 23.15                                   | 22.95 | 22.91 | 23.28     | 23.08 | 23.04 |
|                    |            | RB1#13                | 23.09                                   | 22.94 | 22.87 | 23.22     | 23.07 | 23.00 |
|                    |            | RB1#24                | 22.94                                   | 22.87 | 22.83 | 23.07     | 23.00 | 22.96 |
|                    |            | RB15#0                | 22.09                                   | 21.86 | 21.89 | 22.22     | 21.99 | 22.02 |
|                    |            | RB15#10               | 22.06                                   | 21.86 | 21.86 | 22.19     | 21.99 | 21.99 |
|                    |            | RB25#0                | 22.03                                   | 21.85 | 21.82 | 22.16     | 21.98 | 21.95 |
|                    | 16QAM      | RB1#0                 | 22.00                                   | 22.19 | 21.92 | 22.13     | 22.32 | 22.05 |
|                    |            | RB1#13                | 21.94                                   | 22.14 | 21.88 | 22.07     | 22.27 | 22.01 |
|                    |            | RB1#24                | 21.88                                   | 22.08 | 21.85 | 22.01     | 22.21 | 21.98 |
|                    |            | RB15#0                | 21.15                                   | 20.88 | 20.94 | 21.28     | 21.01 | 21.07 |
|                    |            | RB15#10               | 21.12                                   | 20.86 | 20.92 | 21.25     | 20.99 | 21.05 |
|                    |            | RB25#0                | 21.11                                   | 20.88 | 20.89 | 21.24     | 21.01 | 21.02 |
| 10.0               | QPSK       | RB1#0                 | 23.15                                   | 22.85 | 22.90 | 23.28     | 22.98 | 23.03 |
|                    |            | RB1#25                | 23.00                                   | 22.90 | 22.88 | 23.13     | 23.03 | 23.01 |
|                    |            | RB1#49                | 22.89                                   | 22.86 | 22.45 | 23.02     | 22.99 | 22.58 |
|                    |            | RB25#0                | 22.06                                   | 21.85 | 21.83 | 22.19     | 21.98 | 21.96 |
|                    |            | RB25#25               | 21.99                                   | 21.82 | 21.84 | 22.12     | 21.95 | 21.97 |
|                    |            | RB50#0                | 22.02                                   | 21.87 | 21.82 | 22.15     | 22.00 | 21.95 |
|                    | 16QAM      | RB1#0                 | 22.63                                   | 22.04 | 21.85 | 22.76     | 22.17 | 21.98 |
|                    |            | RB1#25                | 22.58                                   | 21.98 | 21.85 | 22.71     | 22.11 | 21.98 |
|                    |            | RB1#49                | 22.50                                   | 21.93 | 21.51 | 22.63     | 22.06 | 21.64 |
|                    |            | RB25#0                | 22.24                                   | 21.48 | 21.36 | 22.37     | 21.61 | 21.49 |
|                    |            | RB25#25               | 21.86                                   | 21.34 | 21.42 | 21.99     | 21.47 | 21.55 |
|                    |            | RB50#0                | 22.04                                   | 21.28 | 21.21 | 22.17     | 21.41 | 21.34 |

| Bandwidth<br>(MHz) | Modulation | RB size/<br>RB Offset | Conducted Average Output<br>Power (dBm) |       |       | EIRP(dBm) |       |       |
|--------------------|------------|-----------------------|-----------------------------------------|-------|-------|-----------|-------|-------|
|                    |            |                       | Low                                     | Mid   | High  | Low       | Mid   | High  |
| 15.0               | QPSK       | RB1#0                 | 23.15                                   | 22.83 | 22.88 | 23.28     | 22.96 | 23.01 |
|                    |            | RB1#38                | 22.88                                   | 22.89 | 22.88 | 23.01     | 23.02 | 23.01 |
|                    |            | RB1#74                | 22.82                                   | 22.89 | 22.64 | 22.95     | 23.02 | 22.77 |
|                    |            | RB36#0                | 22.05                                   | 21.92 | 21.85 | 22.18     | 22.05 | 21.98 |
|                    |            | RB36#39               | 21.91                                   | 21.87 | 21.87 | 22.04     | 22.00 | 22.00 |
|                    |            | RB75#0                | 21.99                                   | 21.93 | 21.88 | 22.12     | 22.06 | 22.01 |
|                    | 16QAM      | RB1#0                 | 22.60                                   | 22.01 | 22.25 | 22.73     | 22.14 | 22.38 |
|                    |            | RB1#38                | 22.49                                   | 21.99 | 22.25 | 22.62     | 22.12 | 22.38 |
|                    |            | RB1#74                | 22.47                                   | 21.95 | 22.07 | 22.60     | 22.08 | 22.20 |
|                    |            | RB36#0                | 21.07                                   | 20.94 | 20.87 | 21.20     | 21.07 | 21.00 |
|                    |            | RB36#39               | 20.95                                   | 20.88 | 20.87 | 21.08     | 21.01 | 21.00 |
|                    |            | RB75#0                | 21.04                                   | 20.93 | 20.88 | 21.17     | 21.06 | 21.01 |
| 20.0               | QPSK       | RB1#0                 | 23.20                                   | 22.92 | 22.87 | 23.33     | 23.05 | 23.00 |
|                    |            | RB1#50                | 22.93                                   | 22.94 | 22.86 | 23.06     | 23.07 | 22.99 |
|                    |            | RB1#99                | 22.90                                   | 22.93 | 22.61 | 23.03     | 23.06 | 22.74 |
|                    |            | RB50#0                | 22.04                                   | 21.89 | 21.84 | 22.17     | 22.02 | 21.97 |
|                    |            | RB50#50               | 21.90                                   | 21.82 | 21.87 | 22.03     | 21.95 | 22.00 |
|                    |            | RB100#0               | 21.96                                   | 21.86 | 21.81 | 22.09     | 21.99 | 21.94 |
|                    | 16QAM      | RB1#0                 | 22.40                                   | 22.17 | 22.38 | 22.53     | 22.30 | 22.51 |
|                    |            | RB1#50                | 22.26                                   | 22.07 | 22.43 | 22.39     | 22.20 | 22.56 |
|                    |            | RB1#99                | 22.22                                   | 22.01 | 22.24 | 22.35     | 22.14 | 22.37 |
|                    |            | RB50#0                | 21.94                                   | 21.74 | 21.86 | 22.07     | 21.87 | 21.99 |
|                    |            | RB50#50               | 21.75                                   | 21.58 | 21.61 | 21.88     | 21.71 | 21.74 |
|                    |            | RB100#0               | 21.68                                   | 21.62 | 21.42 | 21.81     | 21.75 | 21.55 |

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) -Cable loss(dB)

For Band 2: Antenna Gain =0.93dBi

Cable loss=0.8dB\* (Provided by applicant)

Limit: EIRP≤33dBm

**Peak-to-average ratio (PAR)****20MHz Bandwidth**

| <b>Modulation</b>     | <b>Low channel<br/>(dB)</b> | <b>Middle channel<br/>(dB)</b> | <b>High channel<br/>(dB)</b> | <b>PAR<br/>Limit<br/>(dB)</b> | <b>Result</b> |
|-----------------------|-----------------------------|--------------------------------|------------------------------|-------------------------------|---------------|
| QPSK<br>(1RB Size)    | 5.04                        | 5.45                           | 5.61                         | 13                            | Pass          |
| QPSK<br>(100RB Size)  | 6.86                        | 6.54                           | 6.76                         | 13                            | Pass          |
| 16QAM<br>(1RB Size)   | 5.94                        | 6.34                           | 6.20                         | 13                            | Pass          |
| 16QAM<br>(100RB Size) | 7.83                        | 7.50                           | 7.52                         | 13                            | Pass          |

**LTE Band 4****Maximum Output Power**

| Bandwidth<br>(MHz) | Modulation | RB size/<br>RB Offset | Conducted Average Output<br>Power (dBm) |       |       | EIRP(dBm) |       |       |
|--------------------|------------|-----------------------|-----------------------------------------|-------|-------|-----------|-------|-------|
|                    |            |                       | Low                                     | Mid   | High  | Low       | Mid   | High  |
| 1.4                | QPSK       | RB1#0                 | 23.65                                   | 23.93 | 23.85 | 23.77     | 24.05 | 23.97 |
|                    |            | RB1#3                 | 23.68                                   | 23.94 | 23.91 | 23.80     | 24.06 | 24.03 |
|                    |            | RB1#5                 | 23.71                                   | 23.94 | 23.86 | 23.83     | 24.06 | 23.98 |
|                    |            | RB3#0                 | 23.78                                   | 24.07 | 23.92 | 23.90     | 24.19 | 24.04 |
|                    |            | RB3#3                 | 23.79                                   | 24.07 | 23.92 | 23.91     | 24.19 | 24.04 |
|                    |            | RB6#0                 | 22.67                                   | 22.85 | 22.75 | 22.79     | 22.97 | 22.87 |
|                    | 16QAM      | RB1#0                 | 22.72                                   | 23.04 | 22.77 | 22.84     | 23.16 | 22.89 |
|                    |            | RB1#3                 | 22.75                                   | 23.05 | 22.86 | 22.87     | 23.17 | 22.98 |
|                    |            | RB1#5                 | 22.73                                   | 23.04 | 22.79 | 22.85     | 23.16 | 22.91 |
|                    |            | RB3#0                 | 23.00                                   | 23.00 | 22.92 | 23.12     | 23.12 | 23.04 |
|                    |            | RB3#3                 | 23.07                                   | 23.02 | 22.91 | 23.19     | 23.14 | 23.03 |
|                    |            | RB6#0                 | 21.74                                   | 21.92 | 21.71 | 21.86     | 22.04 | 21.83 |
| 3.0                | QPSK       | RB1#0                 | 23.63                                   | 23.90 | 23.86 | 23.75     | 24.02 | 23.98 |
|                    |            | RB1#8                 | 23.70                                   | 23.94 | 23.90 | 23.82     | 24.06 | 24.02 |
|                    |            | RB1#14                | 23.69                                   | 23.93 | 23.85 | 23.81     | 24.05 | 23.97 |
|                    |            | RB6#0                 | 22.67                                   | 22.83 | 22.76 | 22.79     | 22.95 | 22.88 |
|                    |            | RB6#9                 | 22.70                                   | 22.85 | 22.77 | 22.82     | 22.97 | 22.89 |
|                    |            | RB15#0                | 22.79                                   | 22.93 | 22.84 | 22.91     | 23.05 | 22.96 |
|                    | 16QAM      | RB1#0                 | 23.27                                   | 23.02 | 22.81 | 23.39     | 23.14 | 22.93 |
|                    |            | RB1#8                 | 23.32                                   | 23.02 | 22.83 | 23.44     | 23.14 | 22.95 |
|                    |            | RB1#14                | 23.28                                   | 23.03 | 22.78 | 23.40     | 23.15 | 22.90 |
|                    |            | RB6#0                 | 21.79                                   | 21.89 | 21.74 | 21.91     | 22.01 | 21.86 |
|                    |            | RB6#9                 | 21.83                                   | 21.95 | 21.74 | 21.95     | 22.07 | 21.86 |
|                    |            | RB15#0                | 21.92                                   | 21.96 | 21.94 | 22.04     | 22.08 | 22.06 |

| Bandwidth<br>(MHz) | Modulation | RB size/<br>RB Offset | Conducted Average Output<br>Power (dBm) |       |       | EIRP(dBm) |       |       |
|--------------------|------------|-----------------------|-----------------------------------------|-------|-------|-----------|-------|-------|
|                    |            |                       | Low                                     | Mid   | High  | Low       | Mid   | High  |
| 5.0                | QPSK       | RB1#0                 | 23.73                                   | 24.00 | 23.91 | 23.85     | 24.12 | 24.03 |
|                    |            | RB1#13                | 23.74                                   | 23.73 | 23.90 | 23.86     | 23.85 | 24.02 |
|                    |            | RB1#24                | 23.85                                   | 23.83 | 23.88 | 23.97     | 23.95 | 24.00 |
|                    |            | RB15#0                | 22.64                                   | 22.96 | 22.88 | 22.76     | 23.08 | 23.00 |
|                    |            | RB15#10               | 22.87                                   | 22.66 | 22.86 | 22.99     | 22.78 | 22.98 |
|                    |            | RB25#0                | 22.76                                   | 22.88 | 22.83 | 22.88     | 23.00 | 22.95 |
|                    | 16QAM      | RB1#0                 | 22.65                                   | 23.23 | 22.92 | 22.77     | 23.35 | 23.04 |
|                    |            | RB1#13                | 22.57                                   | 22.98 | 22.90 | 22.69     | 23.10 | 23.02 |
|                    |            | RB1#24                | 22.70                                   | 23.21 | 22.85 | 22.82     | 23.33 | 22.97 |
|                    |            | RB15#0                | 21.61                                   | 21.97 | 21.96 | 21.73     | 22.09 | 22.08 |
|                    |            | RB15#10               | 21.88                                   | 21.62 | 21.93 | 22.00     | 21.74 | 22.05 |
|                    |            | RB25#0                | 21.77                                   | 21.88 | 21.91 | 21.89     | 22.00 | 22.03 |
| 10.0               | QPSK       | RB1#0                 | 23.17                                   | 24.01 | 23.91 | 23.29     | 24.13 | 24.03 |
|                    |            | RB1#25                | 23.89                                   | 23.60 | 23.92 | 24.01     | 23.72 | 24.04 |
|                    |            | RB1#49                | 23.73                                   | 22.79 | 23.93 | 23.85     | 22.91 | 24.05 |
|                    |            | RB25#0                | 22.71                                   | 22.91 | 22.88 | 22.83     | 23.03 | 23.00 |
|                    |            | RB25#25               | 22.83                                   | 22.34 | 22.82 | 22.95     | 22.46 | 22.94 |
|                    |            | RB50#0                | 22.87                                   | 22.71 | 22.88 | 22.99     | 22.83 | 23.00 |
|                    | 16QAM      | RB1#0                 | 22.72                                   | 23.08 | 22.84 | 22.84     | 23.20 | 22.96 |
|                    |            | RB1#25                | 23.41                                   | 22.81 | 22.86 | 23.53     | 22.93 | 22.98 |
|                    |            | RB1#49                | 23.34                                   | 21.96 | 22.81 | 23.46     | 22.08 | 22.93 |
|                    |            | RB25#0                | 21.70                                   | 22.01 | 22.04 | 21.82     | 22.13 | 22.16 |
|                    |            | RB25#25               | 21.97                                   | 21.37 | 21.97 | 22.09     | 21.49 | 22.09 |
|                    |            | RB50#0                | 21.94                                   | 21.73 | 21.98 | 22.06     | 21.85 | 22.10 |

| Bandwidth<br>(MHz) | Modulation | RB size/<br>RB Offset | Conducted Average Output<br>Power (dBm) |       |       | EIRP(dBm) |       |       |
|--------------------|------------|-----------------------|-----------------------------------------|-------|-------|-----------|-------|-------|
|                    |            |                       | Low                                     | Mid   | High  | Low       | Mid   | High  |
| 15.0               | QPSK       | RB1#0                 | 23.34                                   | 23.96 | 23.50 | 23.46     | 24.08 | 23.62 |
|                    |            | RB1#38                | 23.76                                   | 23.64 | 23.96 | 23.88     | 23.76 | 24.08 |
|                    |            | RB1#74                | 23.92                                   | 23.14 | 23.99 | 24.04     | 23.26 | 24.11 |
|                    |            | RB36#0                | 22.87                                   | 22.96 | 22.94 | 22.99     | 23.08 | 23.06 |
|                    |            | RB36#39               | 22.88                                   | 22.31 | 22.93 | 23.00     | 22.43 | 23.05 |
|                    |            | RB75#0                | 22.87                                   | 22.80 | 22.95 | 22.99     | 22.92 | 23.07 |
|                    | 16QAM      | RB1#0                 | 22.96                                   | 23.05 | 22.88 | 23.08     | 23.17 | 23.00 |
|                    |            | RB1#38                | 23.38                                   | 22.83 | 23.32 | 23.50     | 22.95 | 23.44 |
|                    |            | RB1#74                | 23.43                                   | 22.33 | 23.22 | 23.55     | 22.45 | 23.34 |
|                    |            | RB36#0                | 21.91                                   | 22.01 | 21.93 | 22.03     | 22.13 | 22.05 |
|                    |            | RB36#39               | 21.92                                   | 21.34 | 21.94 | 22.04     | 21.46 | 22.06 |
|                    |            | RB75#0                | 21.92                                   | 21.87 | 21.97 | 22.04     | 21.99 | 22.09 |
| 20.0               | QPSK       | RB1#0                 | 23.39                                   | 23.98 | 23.57 | 23.51     | 24.10 | 23.69 |
|                    |            | RB1#50                | 23.82                                   | 23.86 | 23.96 | 23.94     | 23.98 | 24.08 |
|                    |            | RB1#99                | 23.80                                   | 23.30 | 23.94 | 23.92     | 23.42 | 24.06 |
|                    |            | RB50#0                | 22.85                                   | 22.95 | 22.56 | 22.97     | 23.07 | 22.68 |
|                    |            | RB50#50               | 22.93                                   | 22.33 | 22.92 | 23.05     | 22.45 | 23.04 |
|                    |            | RB100#0               | 22.88                                   | 22.93 | 22.94 | 23.00     | 23.05 | 23.06 |
|                    | 16QAM      | RB1#0                 | 22.78                                   | 23.09 | 23.16 | 22.90     | 23.21 | 23.28 |
|                    |            | RB1#50                | 23.14                                   | 23.04 | 23.50 | 23.26     | 23.16 | 23.62 |
|                    |            | RB1#99                | 23.24                                   | 22.61 | 23.41 | 23.36     | 22.73 | 23.53 |
|                    |            | RB50#0                | 21.91                                   | 22.03 | 21.53 | 22.03     | 22.15 | 21.65 |
|                    |            | RB50#50               | 21.99                                   | 21.36 | 21.98 | 22.11     | 21.48 | 22.10 |
|                    |            | RB100#0               | 21.96                                   | 21.94 | 22.01 | 22.08     | 22.06 | 22.13 |

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) -Cable loss(dB)

For Band 4: Antenna Gain =0.92dBi

Cable loss=0.8dB\* (Provided by applicant)

Limit: EIRP≤30dBm

**Peak-to-average ratio (PAR)****20MHz Bandwidth**

| <b>Modulation</b>     | <b>Low channel<br/>(dB)</b> | <b>Middle channel<br/>(dB)</b> | <b>High channel<br/>(dB)</b> | <b>PAR Limit<br/>(dB)</b> | <b>Result</b> |
|-----------------------|-----------------------------|--------------------------------|------------------------------|---------------------------|---------------|
| QPSK<br>(1RB Size)    | 5.46                        | 5.71                           | 5.63                         | 13                        | Pass          |
| QPSK<br>(100RB Size)  | 6.68                        | 7.21                           | 6.69                         | 13                        | Pass          |
| 16QAM<br>(1RB Size)   | 6.09                        | 6.61                           | 6.63                         | 13                        | Pass          |
| 16QAM<br>(100RB Size) | 8.00                        | 8.14                           | 7.92                         | 13                        | Pass          |

**LTE Band 5:****Maximum Output Power**

| Bandwidth<br>(MHz) | Modulation | RB size/<br>RB Offset | Conducted Average Output<br>Power (dBm) |       |       | ERP(dBm) |       |       |
|--------------------|------------|-----------------------|-----------------------------------------|-------|-------|----------|-------|-------|
|                    |            |                       | Low                                     | Mid   | High  | Low      | Mid   | High  |
| 1.4                | QPSK       | RB1#0                 | 23.74                                   | 23.43 | 23.43 | 21.90    | 21.59 | 21.59 |
|                    |            | RB1#3                 | 23.77                                   | 23.48 | 23.45 | 21.93    | 21.64 | 21.61 |
|                    |            | RB1#5                 | 23.73                                   | 23.42 | 23.45 | 21.89    | 21.58 | 21.61 |
|                    |            | RB3#0                 | 23.83                                   | 23.51 | 23.55 | 21.99    | 21.67 | 21.71 |
|                    |            | RB3#3                 | 23.79                                   | 23.54 | 23.55 | 21.95    | 21.70 | 21.71 |
|                    |            | RB6#0                 | 22.74                                   | 22.42 | 22.45 | 20.90    | 20.58 | 20.61 |
|                    | 16QAM      | RB1#0                 | 22.91                                   | 22.48 | 22.50 | 21.07    | 20.64 | 20.66 |
|                    |            | RB1#3                 | 22.93                                   | 22.54 | 22.50 | 21.09    | 20.70 | 20.66 |
|                    |            | RB1#5                 | 22.89                                   | 22.50 | 22.51 | 21.05    | 20.66 | 20.67 |
|                    |            | RB3#0                 | 22.85                                   | 22.63 | 22.74 | 21.01    | 20.79 | 20.90 |
|                    |            | RB3#3                 | 22.84                                   | 22.62 | 22.79 | 21.00    | 20.78 | 20.95 |
|                    |            | RB6#0                 | 21.81                                   | 21.42 | 21.49 | 19.97    | 19.58 | 19.65 |
| 3.0                | QPSK       | RB1#0                 | 23.66                                   | 23.44 | 23.38 | 21.82    | 21.60 | 21.54 |
|                    |            | RB1#8                 | 23.65                                   | 23.44 | 23.45 | 21.81    | 21.60 | 21.61 |
|                    |            | RB1#14                | 23.41                                   | 23.36 | 23.44 | 21.57    | 21.52 | 21.60 |
|                    |            | RB6#0                 | 22.73                                   | 22.45 | 22.38 | 20.89    | 20.61 | 20.54 |
|                    |            | RB6#9                 | 22.69                                   | 22.39 | 22.44 | 20.85    | 20.55 | 20.60 |
|                    |            | RB15#0                | 22.78                                   | 22.50 | 22.51 | 20.94    | 20.66 | 20.67 |
|                    | 16QAM      | RB1#0                 | 23.30                                   | 22.61 | 22.46 | 21.46    | 20.77 | 20.62 |
|                    |            | RB1#8                 | 23.33                                   | 22.59 | 22.49 | 21.49    | 20.75 | 20.65 |
|                    |            | RB1#14                | 23.19                                   | 22.54 | 22.49 | 21.35    | 20.70 | 20.65 |
|                    |            | RB6#0                 | 21.83                                   | 21.50 | 21.38 | 19.99    | 19.66 | 19.54 |
|                    |            | RB6#9                 | 21.82                                   | 21.47 | 21.43 | 19.98    | 19.63 | 19.59 |
|                    |            | RB15#0                | 21.89                                   | 21.51 | 21.60 | 20.05    | 19.67 | 19.76 |

| Bandwidth<br>(MHz) | Modulation | RB size/<br>RB Offset | Conducted Average Output<br>Power (dBm) |       |       | ERP(dBm) |       |       |
|--------------------|------------|-----------------------|-----------------------------------------|-------|-------|----------|-------|-------|
|                    |            |                       | Low                                     | Mid   | High  | Low      | Mid   | High  |
| 5.0                | QPSK       | RB1#0                 | 23.68                                   | 23.55 | 23.42 | 21.84    | 21.71 | 21.58 |
|                    |            | RB1#13                | 23.17                                   | 23.49 | 23.15 | 21.33    | 21.65 | 21.31 |
|                    |            | RB1#24                | 23.24                                   | 23.42 | 23.45 | 21.40    | 21.58 | 21.61 |
|                    |            | RB15#0                | 22.39                                   | 22.53 | 22.07 | 20.55    | 20.69 | 20.23 |
|                    |            | RB15#10               | 22.21                                   | 22.49 | 22.28 | 20.37    | 20.65 | 20.44 |
|                    |            | RB25#0                | 22.32                                   | 22.50 | 22.13 | 20.48    | 20.66 | 20.29 |
|                    | 16QAM      | RB1#0                 | 22.71                                   | 22.86 | 22.42 | 20.87    | 21.02 | 20.58 |
|                    |            | RB1#13                | 22.22                                   | 22.82 | 22.25 | 20.38    | 20.98 | 20.41 |
|                    |            | RB1#24                | 22.32                                   | 22.74 | 22.57 | 20.48    | 20.90 | 20.73 |
|                    |            | RB15#0                | 21.53                                   | 21.54 | 21.23 | 19.69    | 19.70 | 19.39 |
|                    |            | RB15#10               | 21.33                                   | 21.49 | 21.44 | 19.49    | 19.65 | 19.60 |
|                    |            | RB25#0                | 21.45                                   | 21.53 | 21.33 | 19.61    | 19.69 | 19.49 |
| 10.0               | QPSK       | RB1#0                 | 23.06                                   | 23.73 | 23.42 | 21.22    | 21.89 | 21.58 |
|                    |            | RB1#25                | 22.34                                   | 23.52 | 23.15 | 20.50    | 21.68 | 21.31 |
|                    |            | RB1#49                | 22.62                                   | 23.43 | 23.47 | 20.78    | 21.59 | 21.63 |
|                    |            | RB25#0                | 21.81                                   | 22.58 | 22.41 | 19.97    | 20.74 | 20.57 |
|                    |            | RB25#25               | 21.65                                   | 22.49 | 22.37 | 19.81    | 20.65 | 20.53 |
|                    |            | RB50#0                | 21.76                                   | 22.55 | 22.47 | 19.92    | 20.71 | 20.63 |
|                    | 16QAM      | RB1#0                 | 22.79                                   | 22.90 | 22.47 | 20.95    | 21.06 | 20.63 |
|                    |            | RB1#25                | 22.12                                   | 22.68 | 22.19 | 20.28    | 20.84 | 20.35 |
|                    |            | RB1#49                | 22.44                                   | 22.60 | 22.53 | 20.60    | 20.76 | 20.69 |
|                    |            | RB25#0                | 20.95                                   | 21.66 | 21.57 | 19.11    | 19.82 | 19.73 |
|                    |            | RB25#25               | 20.81                                   | 21.54 | 21.61 | 18.97    | 19.70 | 19.77 |
|                    |            | RB50#0                | 20.90                                   | 21.59 | 21.53 | 19.06    | 19.75 | 19.69 |

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable loss(dB)

For Band5: Antenna Gain = 0.81dBi = -1.34dBd (0dBd = 2.15dBi)

Cable loss = 0.5dB\* (Provided by applicant)

Limit: ERP ≤ 38.45dBm

**Peak-to-average ratio (PAR)****10MHz bandwidth**

| <b>Modulation</b>    | <b>Low channel<br/>(dB)</b> | <b>Middle channel<br/>(dB)</b> | <b>High channel<br/>(dB)</b> | <b>PAR Limit<br/>(dB)</b> | <b>Result</b> |
|----------------------|-----------------------------|--------------------------------|------------------------------|---------------------------|---------------|
| QPSK<br>(1RB Size)   | 6.39                        | 5.47                           | 6.24                         | 13                        | Pass          |
| QPSK<br>(50RB Size)  | 7.05                        | 6.64                           | 7.62                         | 13                        | Pass          |
| 16QAM<br>(1RB Size)  | 7.21                        | 6.06                           | 6.94                         | 13                        | Pass          |
| 16QAM<br>(50RB Size) | 7.78                        | 7.82                           | 8.29                         | 13                        | Pass          |

**LTE Band 7:****Maximum Output Power**

| Bandwidth<br>(MHz) | Modulation | RB size/<br>RB Offset | Conducted Average Output<br>Power (dBm) |       |       | EIRP(dBm) |       |       |
|--------------------|------------|-----------------------|-----------------------------------------|-------|-------|-----------|-------|-------|
|                    |            |                       | Low                                     | Mid   | High  | Low       | Mid   | High  |
| 5.0                | QPSK       | RB1#0                 | 23.27                                   | 23.28 | 22.61 | 23.39     | 23.40 | 22.73 |
|                    |            | RB1#13                | 23.29                                   | 23.27 | 22.58 | 23.41     | 23.39 | 22.70 |
|                    |            | RB1#24                | 23.26                                   | 23.21 | 22.53 | 23.38     | 23.33 | 22.65 |
|                    |            | RB15#0                | 22.39                                   | 22.31 | 21.71 | 22.51     | 22.43 | 21.83 |
|                    |            | RB15#10               | 22.39                                   | 22.28 | 21.69 | 22.51     | 22.40 | 21.81 |
|                    |            | RB25#0                | 22.35                                   | 22.29 | 21.66 | 22.47     | 22.41 | 21.78 |
|                    | 16QAM      | RB1#0                 | 22.22                                   | 22.61 | 21.73 | 22.34     | 22.73 | 21.85 |
|                    |            | RB1#13                | 22.25                                   | 22.59 | 21.71 | 22.37     | 22.71 | 21.83 |
|                    |            | RB1#24                | 22.23                                   | 22.54 | 21.66 | 22.35     | 22.66 | 21.78 |
|                    |            | RB15#0                | 21.41                                   | 21.27 | 20.71 | 21.53     | 21.39 | 20.83 |
|                    |            | RB15#10               | 21.41                                   | 21.22 | 20.67 | 21.53     | 21.34 | 20.79 |
|                    |            | RB25#0                | 21.39                                   | 21.28 | 20.63 | 21.51     | 21.40 | 20.75 |
| 10.0               | QPSK       | RB1#0                 | 23.29                                   | 23.37 | 22.67 | 23.41     | 23.49 | 22.79 |
|                    |            | RB1#25                | 23.32                                   | 23.22 | 22.58 | 23.44     | 23.34 | 22.70 |
|                    |            | RB1#49                | 23.25                                   | 23.23 | 22.63 | 23.37     | 23.35 | 22.75 |
|                    |            | RB25#0                | 22.37                                   | 22.37 | 21.74 | 22.49     | 22.49 | 21.86 |
|                    |            | RB25#25               | 22.51                                   | 22.31 | 21.59 | 22.63     | 22.43 | 21.71 |
|                    |            | RB50#0                | 22.50                                   | 22.34 | 21.66 | 22.62     | 22.46 | 21.78 |
|                    | 16QAM      | RB1#0                 | 23.04                                   | 22.49 | 21.74 | 23.16     | 22.61 | 21.86 |
|                    |            | RB1#25                | 23.00                                   | 22.42 | 21.53 | 23.12     | 22.54 | 21.65 |
|                    |            | RB1#49                | 23.07                                   | 22.40 | 21.63 | 23.19     | 22.52 | 21.75 |
|                    |            | RB25#0                | 21.44                                   | 21.34 | 20.78 | 21.56     | 21.46 | 20.90 |
|                    |            | RB25#25               | 21.48                                   | 21.30 | 20.72 | 21.60     | 21.42 | 20.84 |
|                    |            | RB50#0                | 21.44                                   | 21.32 | 20.70 | 21.56     | 21.44 | 20.82 |

| Bandwidth<br>(MHz) | Modulation | RB size/<br>RB Offset | Conducted Average Output<br>Power (dBm) |       |       | EIRP(dBm) |       |       |
|--------------------|------------|-----------------------|-----------------------------------------|-------|-------|-----------|-------|-------|
|                    |            |                       | Low                                     | Mid   | High  | Low       | Mid   | High  |
| 15.0               | QPSK       | RB1#0                 | 23.62                                   | 23.35 | 22.79 | 23.74     | 23.47 | 22.91 |
|                    |            | RB1#38                | 23.42                                   | 23.28 | 22.61 | 23.54     | 23.40 | 22.73 |
|                    |            | RB1#74                | 23.45                                   | 23.24 | 22.60 | 23.57     | 23.36 | 22.72 |
|                    |            | RB36#0                | 22.55                                   | 22.43 | 21.75 | 22.67     | 22.55 | 21.87 |
|                    |            | RB36#39               | 22.53                                   | 22.34 | 21.67 | 22.65     | 22.46 | 21.79 |
|                    |            | RB75#0                | 22.58                                   | 22.42 | 21.72 | 22.70     | 22.54 | 21.84 |
|                    | 16QAM      | RB1#0                 | 22.98                                   | 22.52 | 22.28 | 23.10     | 22.64 | 22.40 |
|                    |            | RB1#38                | 23.07                                   | 22.41 | 22.07 | 23.19     | 22.53 | 22.19 |
|                    |            | RB1#74                | 23.07                                   | 22.46 | 22.04 | 23.19     | 22.58 | 22.16 |
|                    |            | RB36#0                | 21.50                                   | 21.30 | 20.69 | 21.62     | 21.42 | 20.81 |
|                    |            | RB36#39               | 21.51                                   | 21.32 | 20.45 | 21.63     | 21.44 | 20.57 |
|                    |            | RB75#0                | 21.50                                   | 21.36 | 20.62 | 21.62     | 21.48 | 20.74 |
| 20.0               | QPSK       | RB1#0                 | 23.45                                   | 23.43 | 22.94 | 23.57     | 23.55 | 23.06 |
|                    |            | RB1#50                | 23.48                                   | 23.36 | 22.66 | 23.60     | 23.48 | 22.78 |
|                    |            | RB1#99                | 23.47                                   | 23.26 | 22.63 | 23.59     | 23.38 | 22.75 |
|                    |            | RB50#0                | 22.58                                   | 22.44 | 21.92 | 22.70     | 22.56 | 22.04 |
|                    |            | RB50#50               | 22.58                                   | 22.35 | 21.76 | 22.70     | 22.47 | 21.88 |
|                    |            | RB100#0               | 22.56                                   | 22.38 | 21.82 | 22.68     | 22.50 | 21.94 |
|                    | 16QAM      | RB1#0                 | 22.80                                   | 22.65 | 22.60 | 22.92     | 22.77 | 22.72 |
|                    |            | RB1#50                | 22.85                                   | 22.53 | 22.31 | 22.97     | 22.65 | 22.43 |
|                    |            | RB1#99                | 22.85                                   | 22.52 | 22.26 | 22.97     | 22.64 | 22.38 |
|                    |            | RB50#0                | 21.54                                   | 21.41 | 20.89 | 21.66     | 21.53 | 21.01 |
|                    |            | RB50#50               | 21.55                                   | 21.26 | 20.70 | 21.67     | 21.38 | 20.82 |
|                    |            | RB100#0               | 21.54                                   | 21.32 | 20.78 | 21.66     | 21.44 | 20.90 |

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) -Cable loss(dB)

For Band 7: Antenna Gain =0.92dBi

Cable loss=0.8dB\* (Provided by applicant)

Limit: EIRP≤33dBm

**Peak-to-average ratio (PAR)****20MHz bandwidth**

| Modulation            | Low channel<br>(dB) | Middle channel<br>(dB) | High channel<br>(dB) | PAR Limit<br>(dB) | Result |
|-----------------------|---------------------|------------------------|----------------------|-------------------|--------|
| QPSK<br>(1RB Size)    | 4.26                | 6.93                   | 5.17                 | 13                | Pass   |
| QPSK<br>(100RB Size)  | 6.79                | 7.01                   | 6.64                 | 13                | Pass   |
| 16QAM<br>(1RB Size)   | 5.11                | 5.26                   | 6.20                 | 13                | Pass   |
| 16QAM<br>(100RB Size) | 8.05                | 7.94                   | 7.56                 | 13                | Pass   |

**LTE Band 17****Maximum Output Power**

| Bandwidth<br>(MHz) | Modulation | RB size/<br>RB Offset | Conducted Average Output<br>Power (dBm) |       |       | ERP(dBm) |       |       |
|--------------------|------------|-----------------------|-----------------------------------------|-------|-------|----------|-------|-------|
|                    |            |                       | Low                                     | Mid   | High  | Low      | Mid   | High  |
| 5.0                | QPSK       | RB1#0                 | 22.70                                   | 23.86 | 23.75 | 20.74    | 21.90 | 21.79 |
|                    |            | RB1#13                | 22.98                                   | 23.49 | 23.21 | 21.02    | 21.53 | 21.25 |
|                    |            | RB1#24                | 23.62                                   | 23.70 | 23.24 | 21.66    | 21.74 | 21.28 |
|                    |            | RB15#0                | 21.81                                   | 22.58 | 22.47 | 19.85    | 20.62 | 20.51 |
|                    |            | RB15#10               | 22.27                                   | 22.54 | 22.18 | 20.31    | 20.58 | 20.22 |
|                    |            | RB25#0                | 22.08                                   | 22.57 | 22.31 | 20.12    | 20.61 | 20.35 |
|                    | 16QAM      | RB1#0                 | 21.81                                   | 23.16 | 22.83 | 19.85    | 21.20 | 20.87 |
|                    |            | RB1#13                | 22.07                                   | 22.99 | 22.35 | 20.11    | 21.03 | 20.39 |
|                    |            | RB1#24                | 22.69                                   | 23.04 | 22.33 | 20.73    | 21.08 | 20.37 |
|                    |            | RB15#0                | 21.07                                   | 21.67 | 21.61 | 19.11    | 19.71 | 19.65 |
|                    |            | RB15#10               | 21.56                                   | 21.65 | 21.34 | 19.60    | 19.69 | 19.38 |
|                    |            | RB25#0                | 21.35                                   | 21.72 | 21.49 | 19.39    | 19.76 | 19.53 |
| 10.0               | QPSK       | RB1#0                 | 22.88                                   | 23.30 | 23.52 | 20.92    | 21.34 | 21.56 |
|                    |            | RB1#25                | 23.41                                   | 23.37 | 23.33 | 21.45    | 21.41 | 21.37 |
|                    |            | RB1#49                | 22.97                                   | 22.80 | 22.70 | 21.01    | 20.84 | 20.74 |
|                    |            | RB25#0                | 22.28                                   | 22.45 | 22.56 | 20.32    | 20.49 | 20.60 |
|                    |            | RB25#25               | 22.36                                   | 22.28 | 22.16 | 20.40    | 20.32 | 20.20 |
|                    |            | RB50#0                | 22.33                                   | 22.38 | 22.40 | 20.37    | 20.42 | 20.44 |
|                    | 16QAM      | RB1#0                 | 22.59                                   | 22.51 | 22.60 | 20.63    | 20.55 | 20.64 |
|                    |            | RB1#25                | 23.26                                   | 22.75 | 22.49 | 21.30    | 20.79 | 20.53 |
|                    |            | RB1#49                | 22.75                                   | 22.09 | 21.85 | 20.79    | 20.13 | 19.89 |
|                    |            | RB25#0                | 21.45                                   | 21.61 | 21.76 | 19.49    | 19.65 | 19.80 |
|                    |            | RB25#25               | 21.59                                   | 21.47 | 21.44 | 19.63    | 19.51 | 19.48 |
|                    |            | RB50#0                | 21.51                                   | 21.56 | 21.57 | 19.55    | 19.60 | 19.61 |

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable loss(dB)

Antenna Gain = 0.69dBi = -1.46dBd (0dBd=2.15dBi)

Cable loss=0.5dB\* (Provided by applicant)

Limit: ERP≤34.77dBm

**Peak-to-average ratio (PAR)****10MHz bandwidth**

| Modulation           | Low channel<br>(dB) | Middle channel<br>(dB) | High channel<br>(dB) | PAR Limit<br>(dB) | Result |
|----------------------|---------------------|------------------------|----------------------|-------------------|--------|
| QPSK<br>(1RB Size)   | 6.87                | 6.34                   | 6.47                 | 13                | Pass   |
| QPSK<br>(50RB Size)  | 6.93                | 6.75                   | 7.21                 | 13                | Pass   |
| 16QAM<br>(1RB Size)  | 7.80                | 6.73                   | 7.22                 | 13                | Pass   |
| 16QAM<br>(50RB Size) | 7.97                | 7.99                   | 8.50                 | 13                | Pass   |

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

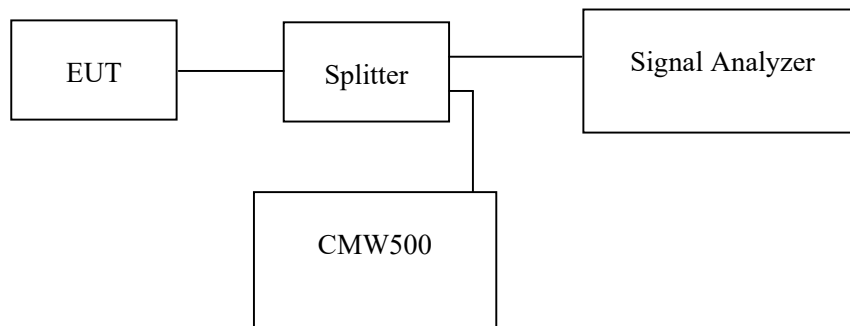
### Applicable Standard

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:       | 28.5~29.2 °C    |
| Relative Humidity: | 51~53 %         |
| ATM Pressure:      | 101.0 ~102.0kPa |

*The testing was performed by Pedro Yun on 2021-08-12 and 2021-08-13.*

*EUT operation mode: Transmitting*

**Test Result: Pass**

*Please refer to the following tables and plots.*

**Cellular Band (Part 22H)**

| Mode      | Frequency (MHz) | 99% Occupied Bandwidth (kHz) | 26 dB Emission Bandwidth (kHz) |
|-----------|-----------------|------------------------------|--------------------------------|
| GSM(GMSK) | 824.2           | 245.19                       | 324.04                         |
|           | 836.6           | 245.19                       | 320.19                         |
|           | 848.8           | 245.19                       | 316.35                         |

| Frequency (MHz) |       | Occupied Bandwidth (MHz) | 26dB Bandwidth (MHz) |
|-----------------|-------|--------------------------|----------------------|
| RMC             | 826.4 | 4.21                     | 4.90                 |
|                 | 836.6 | 4.20                     | 4.87                 |
|                 | 846.6 | 4.20                     | 4.88                 |
| HSDPA           | 826.4 | 4.21                     | 4.87                 |
|                 | 836.6 | 4.20                     | 4.87                 |
|                 | 846.6 | 4.21                     | 4.88                 |
| HSUPA           | 826.4 | 4.23                     | 4.89                 |
|                 | 836.6 | 4.21                     | 4.86                 |
|                 | 846.6 | 4.21                     | 4.86                 |

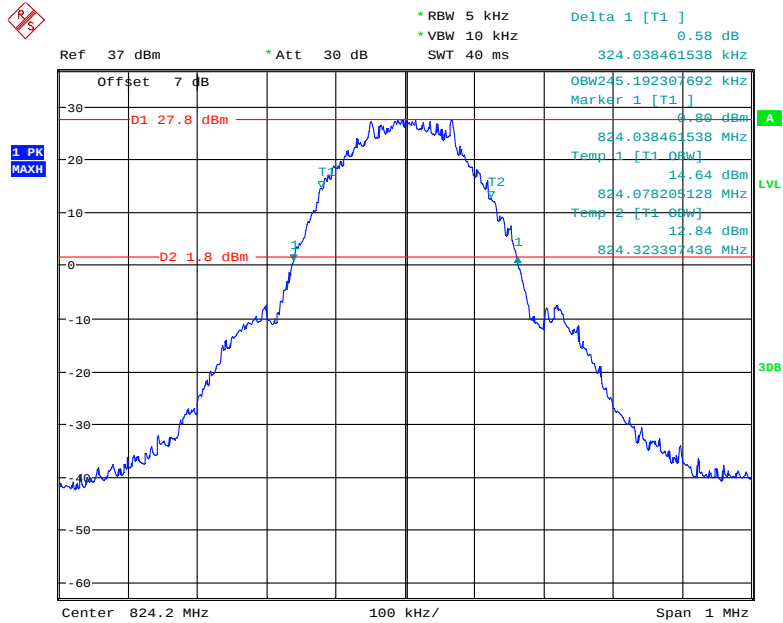
**PCS Band (Part 24E)**

| Mode      | Frequency (MHz) | 99% Occupied Bandwidth (kHz) | 26 dB Emission Bandwidth (kHz) |
|-----------|-----------------|------------------------------|--------------------------------|
| GSM(GMSK) | 1850.2          | 245.19                       | 315.38                         |
|           | 1880.0          | 245.19                       | 322.44                         |
|           | 1909.8          | 243.59                       | 316.03                         |

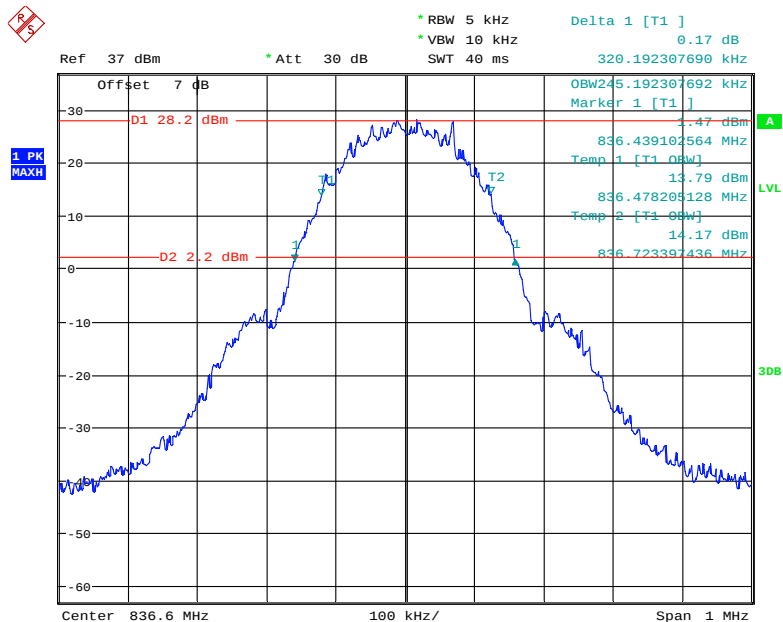
| Frequency (MHz) |        | Occupied Bandwidth (MHz) | 26dB Bandwidth (MHz) |
|-----------------|--------|--------------------------|----------------------|
| RMC             | 1852.4 | 4.20                     | 4.87                 |
|                 | 1880.0 | 4.21                     | 4.88                 |
|                 | 1907.6 | 4.20                     | 4.84                 |
| HSDPA           | 1852.4 | 4.23                     | 4.89                 |
|                 | 1880.0 | 4.23                     | 4.88                 |
|                 | 1907.6 | 4.21                     | 4.85                 |
| HSUPA           | 1852.4 | 4.23                     | 4.88                 |
|                 | 1880.0 | 4.21                     | 4.87                 |
|                 | 1907.6 | 4.21                     | 4.87                 |

**AWS Band (Part 27)**

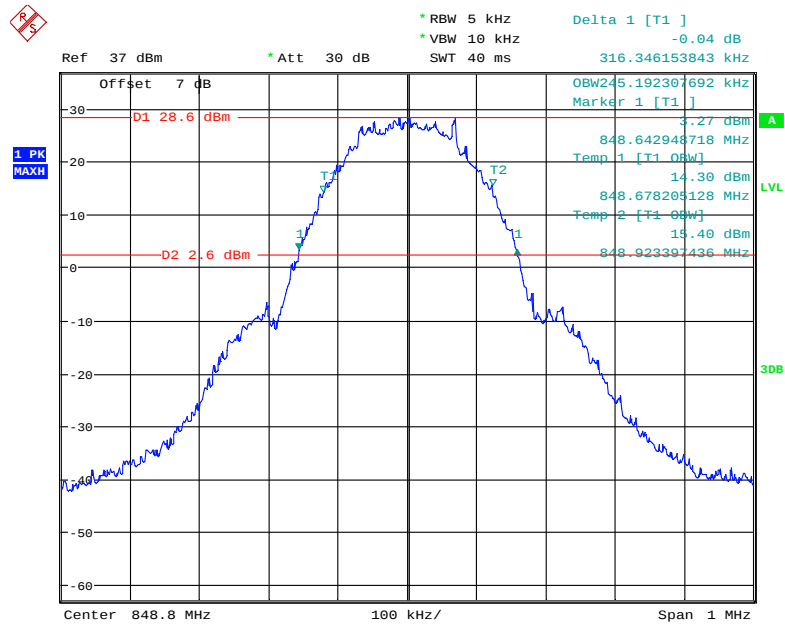
| Frequency<br>(MHz) |        | Occupied Bandwidth<br>(MHz) | 26dB Bandwidth<br>(MHz) |
|--------------------|--------|-----------------------------|-------------------------|
| RMC                | 1712.4 | 4.20                        | 4.86                    |
|                    | 1732.6 | 4.21                        | 4.86                    |
|                    | 1752.6 | 4.20                        | 4.86                    |
| HSDPA              | 1712.4 | 4.23                        | 4.86                    |
|                    | 1732.6 | 4.21                        | 4.89                    |
|                    | 1752.6 | 4.25                        | 5.02                    |
| HSUPA              | 1712.4 | 4.21                        | 4.86                    |
|                    | 1732.6 | 4.21                        | 4.87                    |
|                    | 1752.6 | 4.23                        | 4.86                    |

**Cellular Band (Part 22H)****26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Low channel**

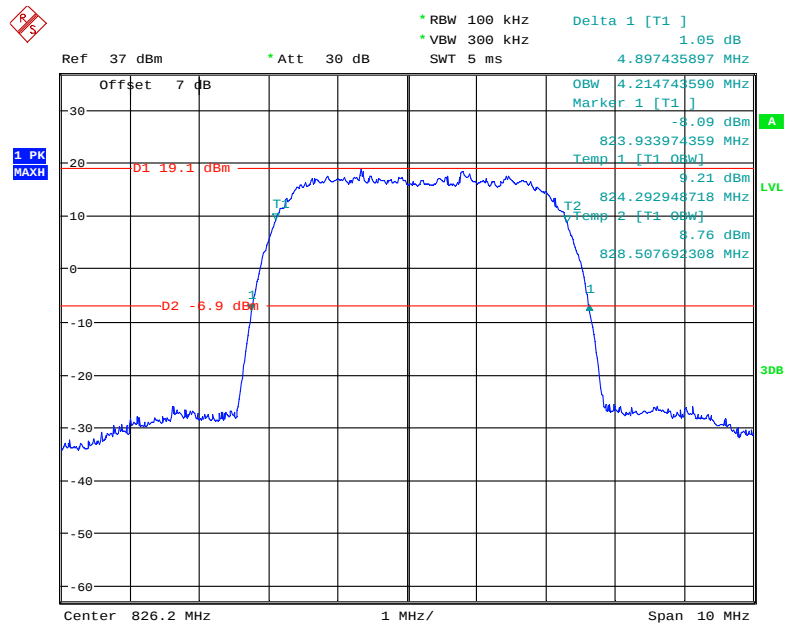
Date: 12.AUG.2021 21:42:46

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

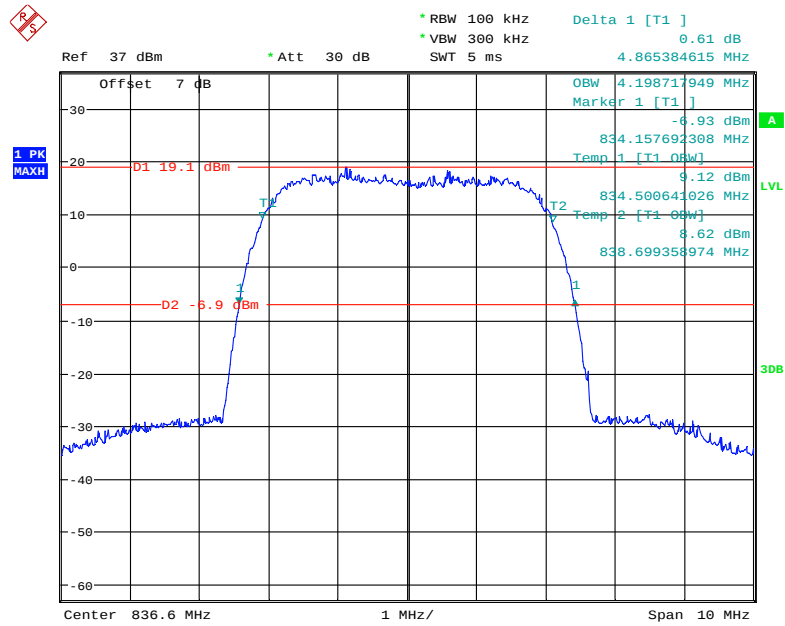
Date: 12.AUG.2021 21:44:56

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

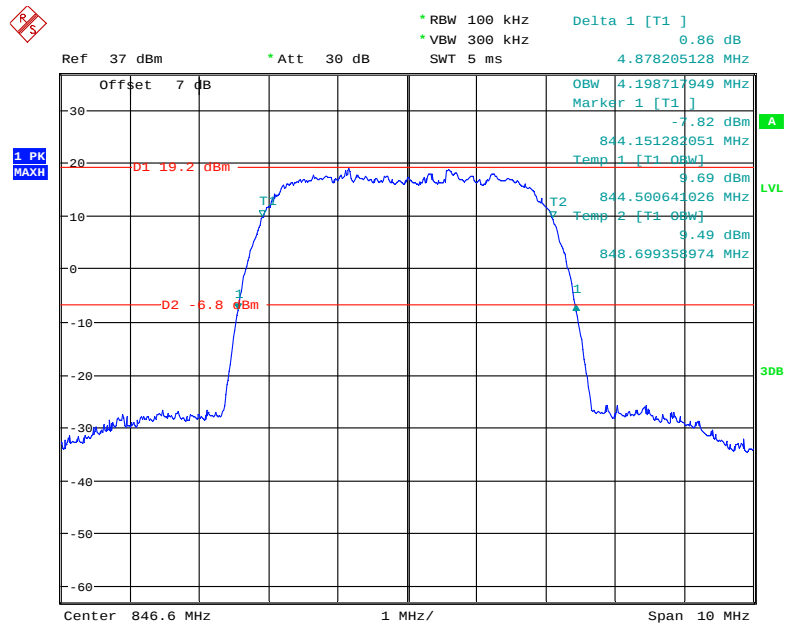
Date: 12.AUG.2021 21:40:08

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

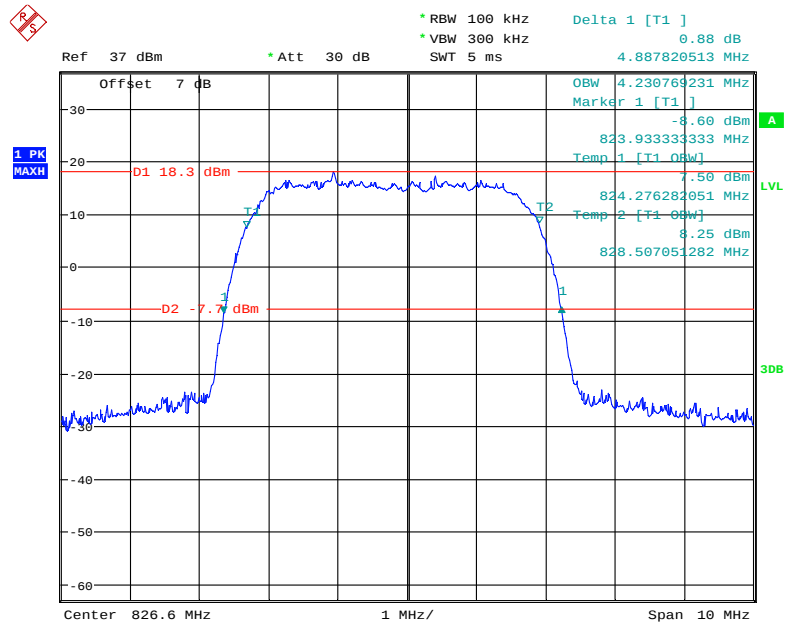
Date: 12.AUG.2021 20:10:22

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

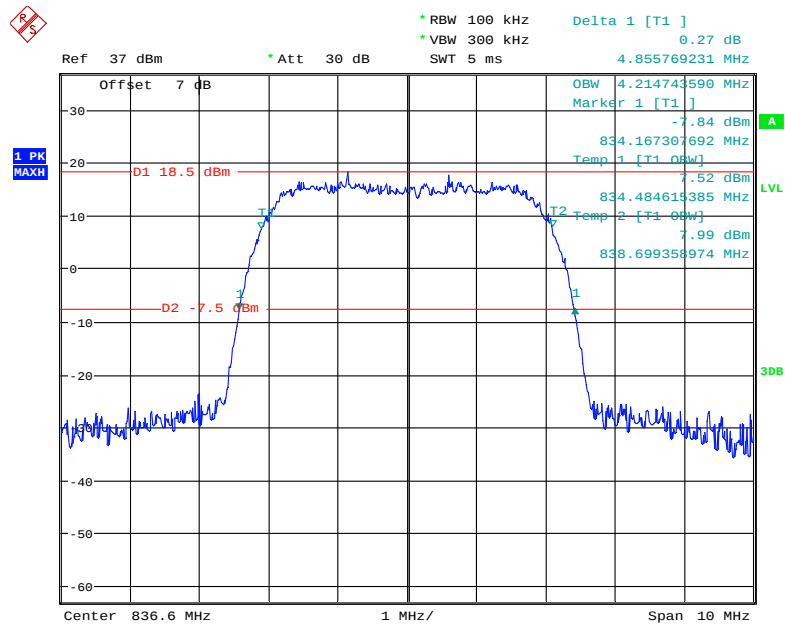
Date: 12.AUG.2021 20:12:34

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

Date: 12.AUG.2021 20:08:06

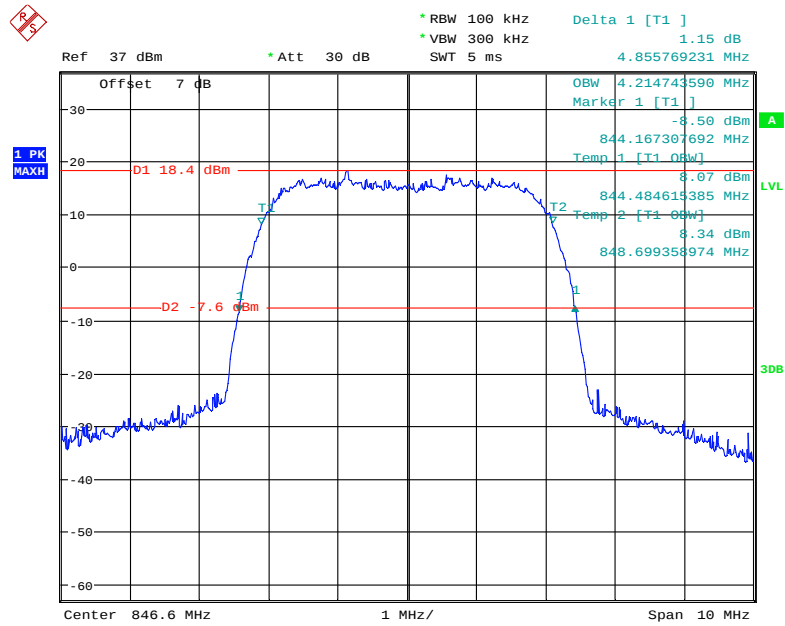
**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Low channel**

Date: 12.AUG.2021 20:57:07

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

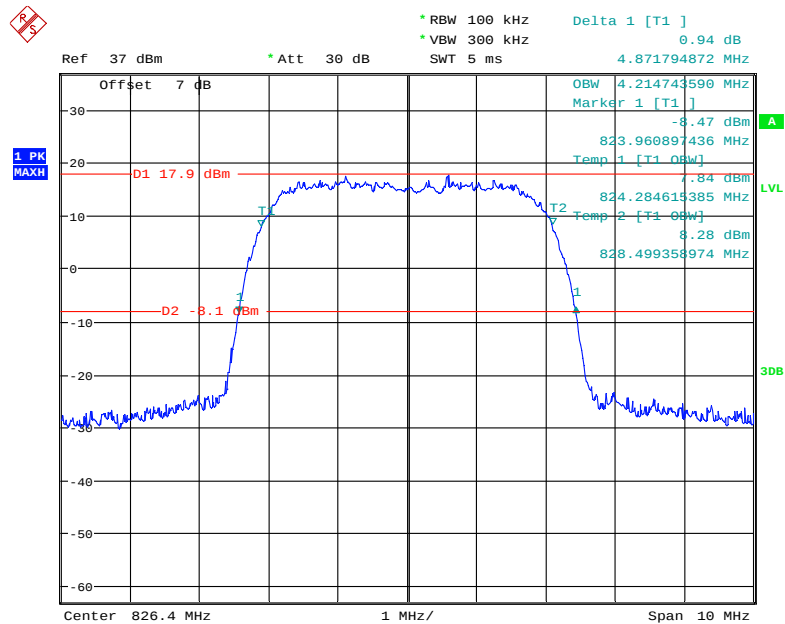
Date: 12.AUG.2021 20:58:43

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



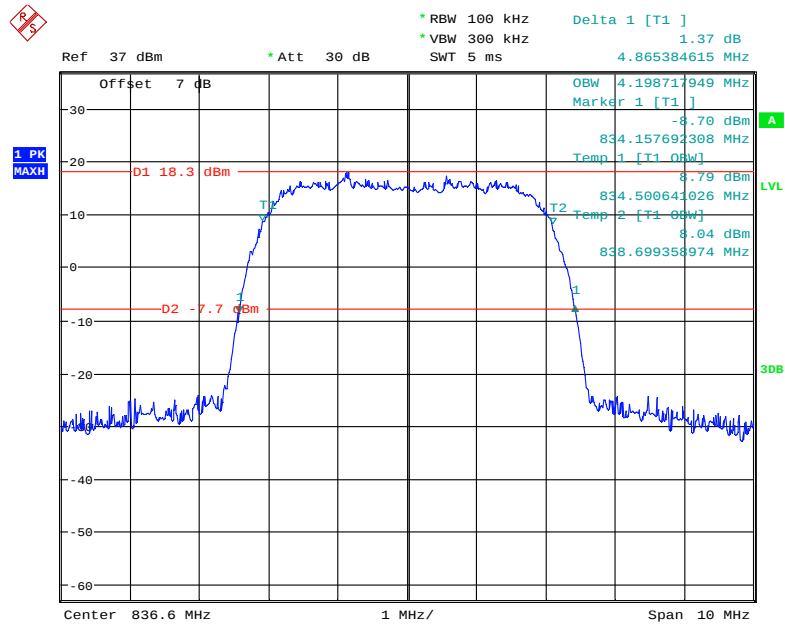
Date: 12.AUG.2021 20:54:36

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



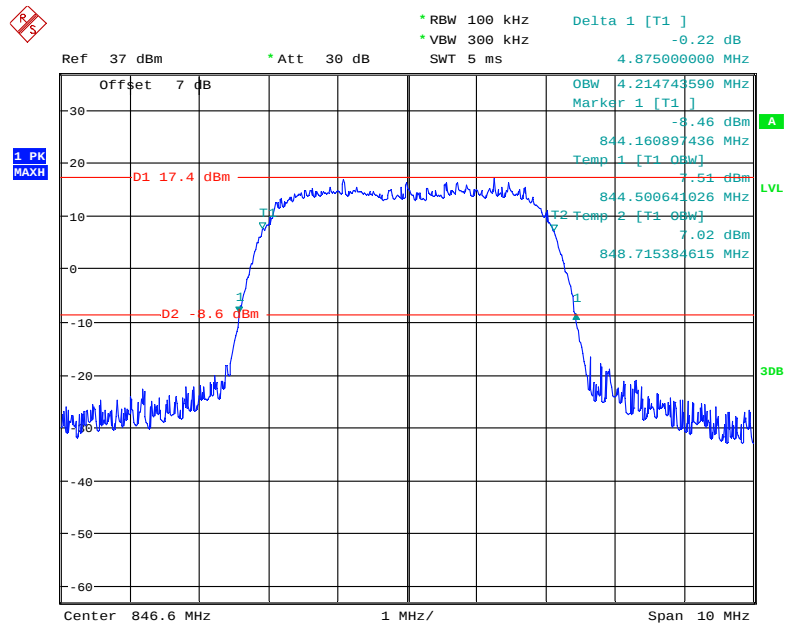
Date: 12.AUG.2021 20:36:00

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



Date: 12.AUG.2021 20:39:15

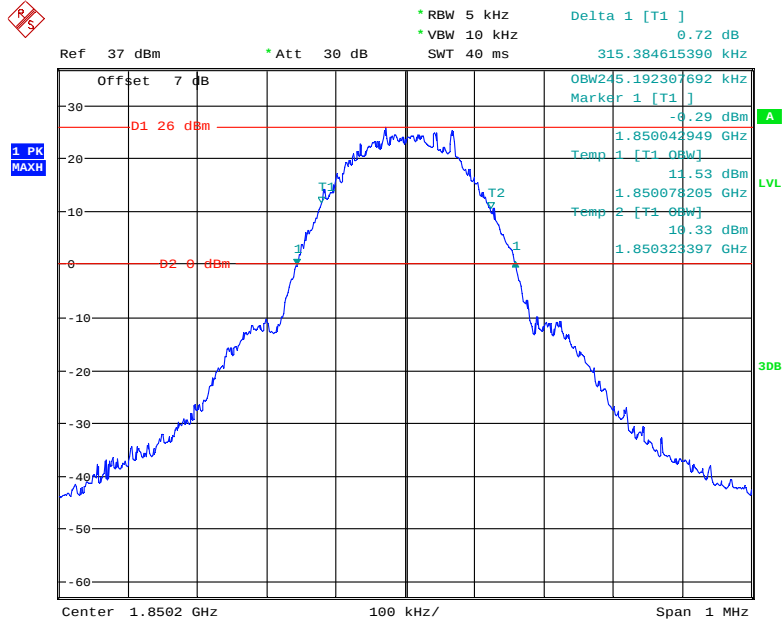
### 26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel



Date: 12.AUG.2021 20:32:33

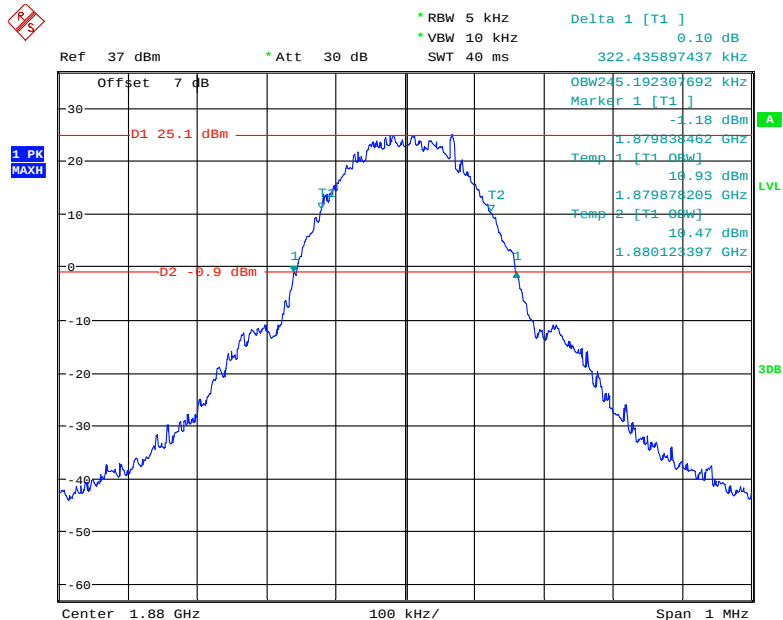
## PCS Band (Part 24E)

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

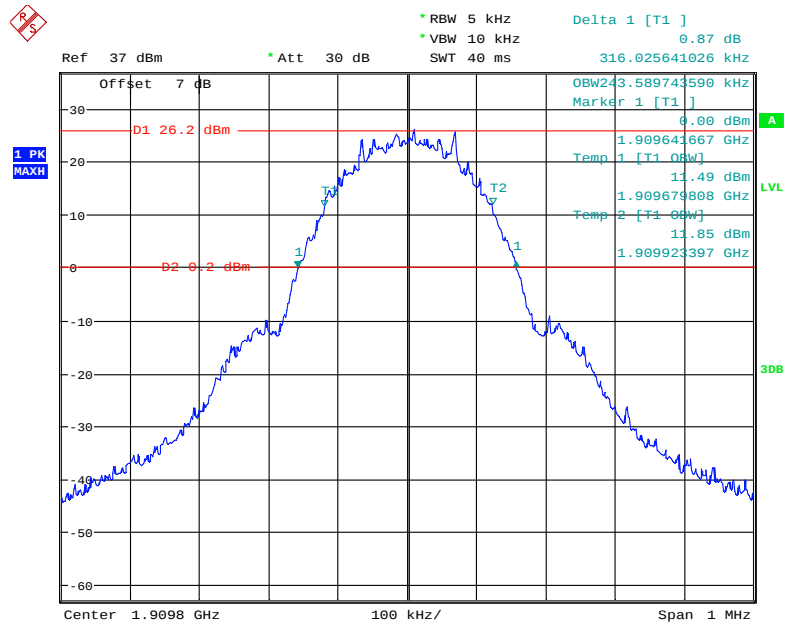


Date: 12.AUG.2021 21:54:58

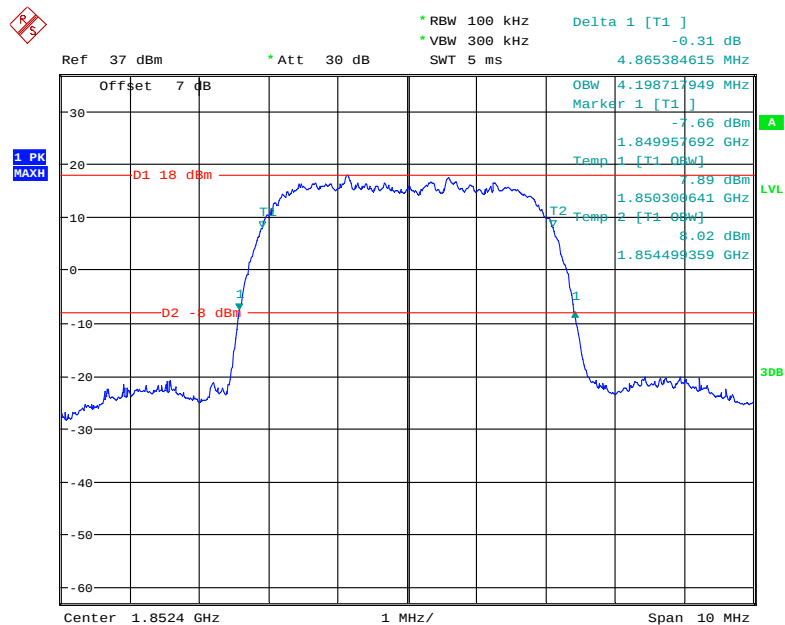
## 26 dB Emissions &amp; 99% Occupied Bandwidth for GSM (GMSK) Mode, Middle channel



Date: 12.AUG.2021 21:56:52

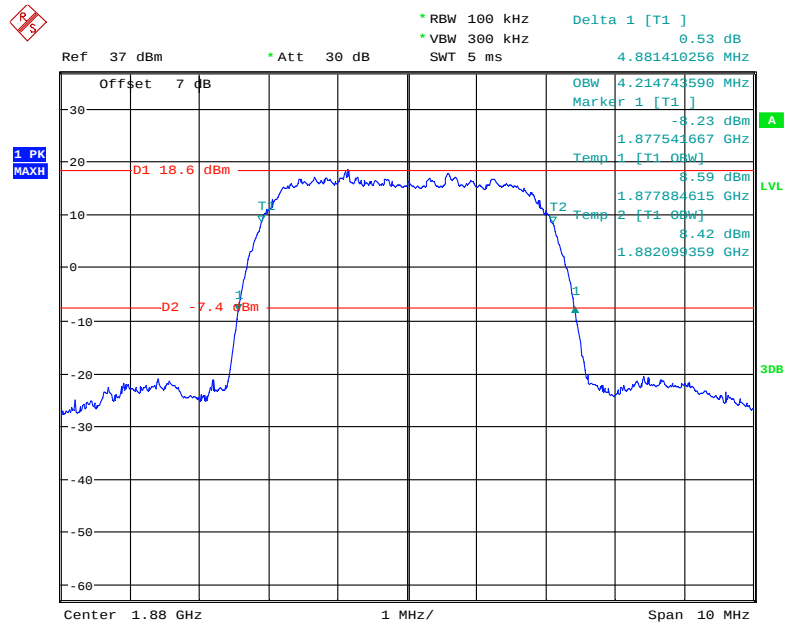
**26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, High channel**

Date: 12.AUG.2021 21:51:17

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

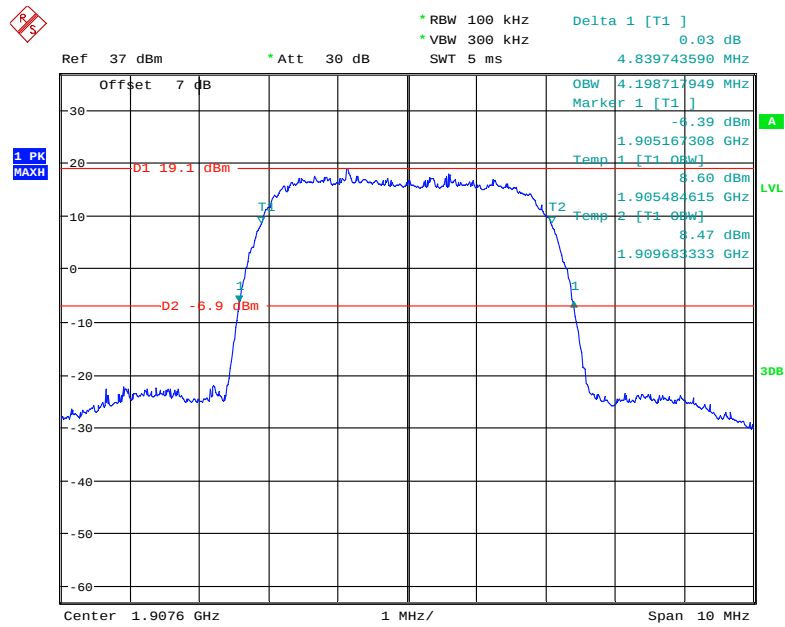
Date: 12.AUG.2021 19:54:02

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

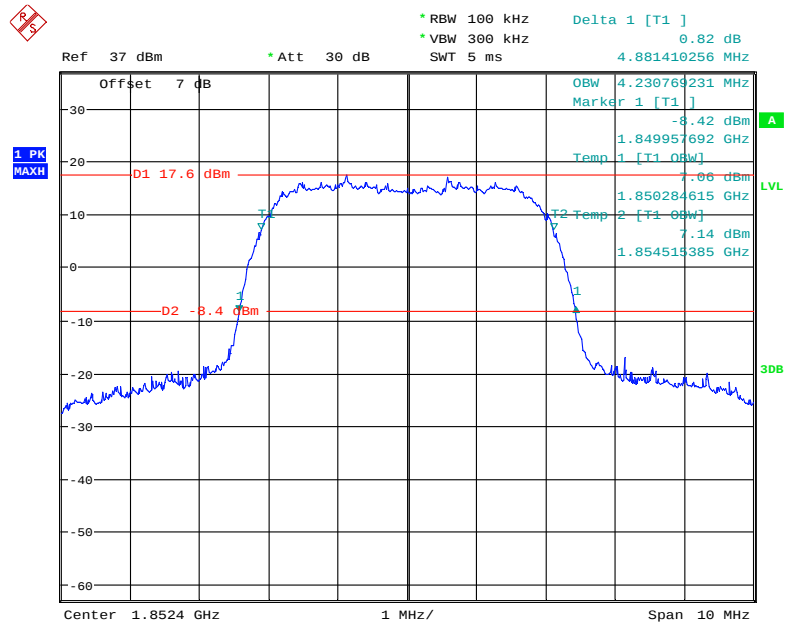


Date: 12.AUG.2021 19:55:39

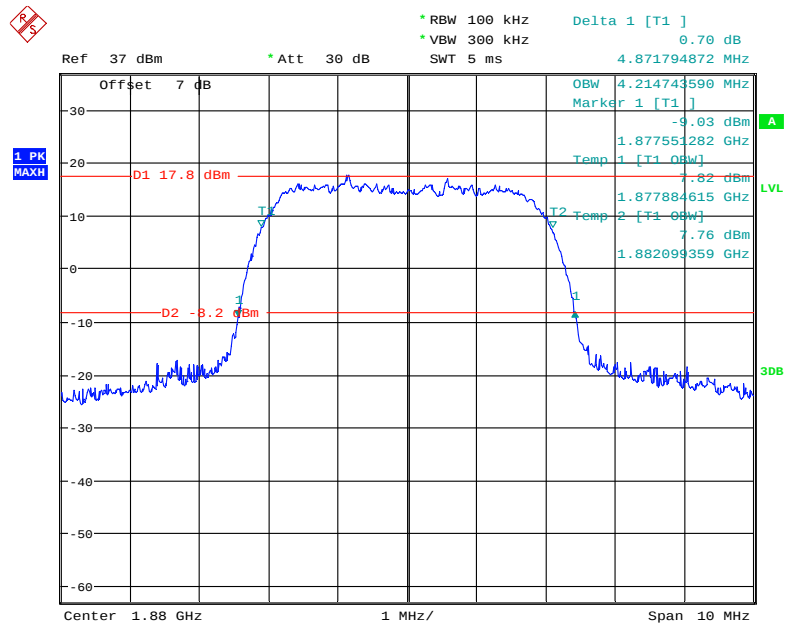
### 26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel



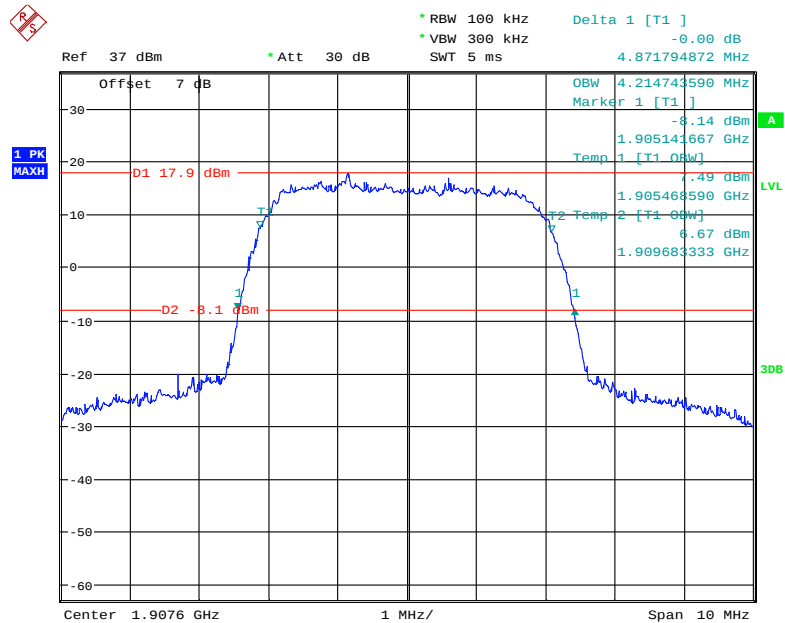
Date: 12.AUG.2021 19:51:51

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

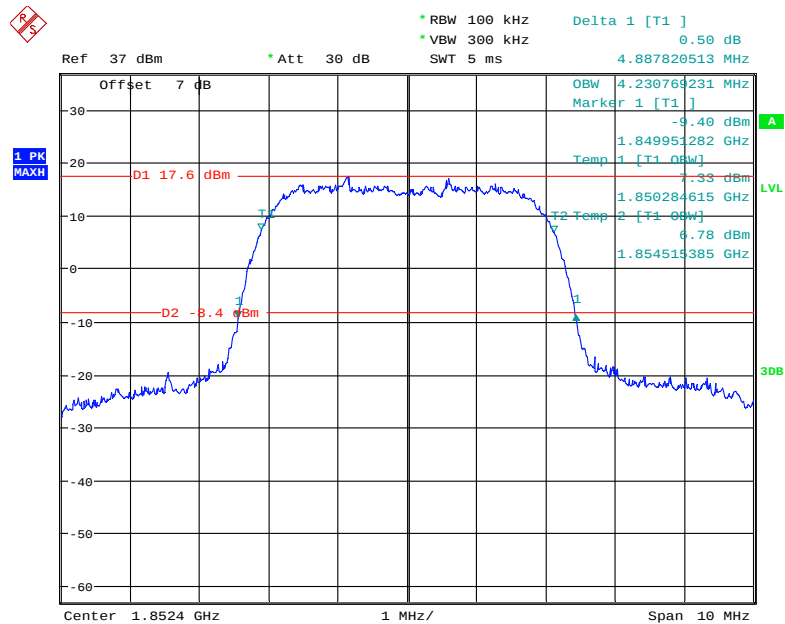
Date: 12.AUG.2021 20:44:31

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

Date: 12.AUG.2021 20:46:13

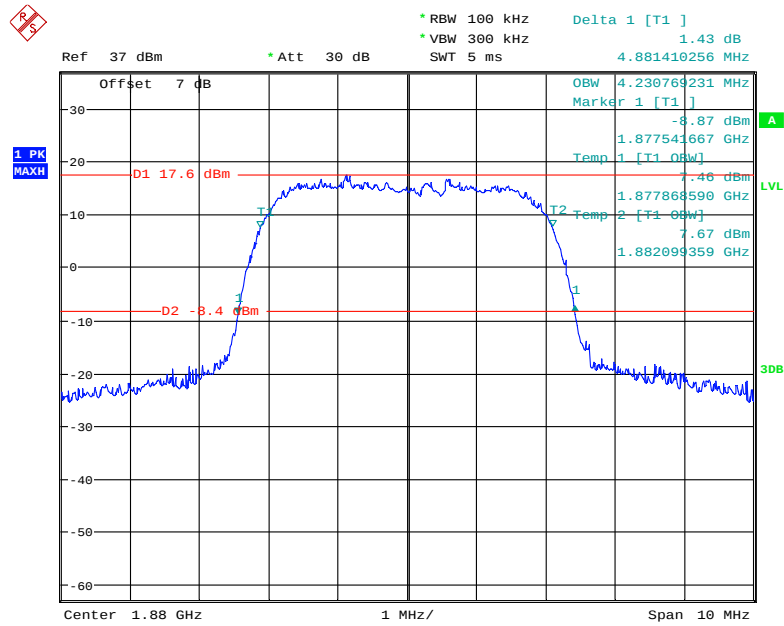
**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, High channel**

Date: 12.AUG.2021 20:42:26

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

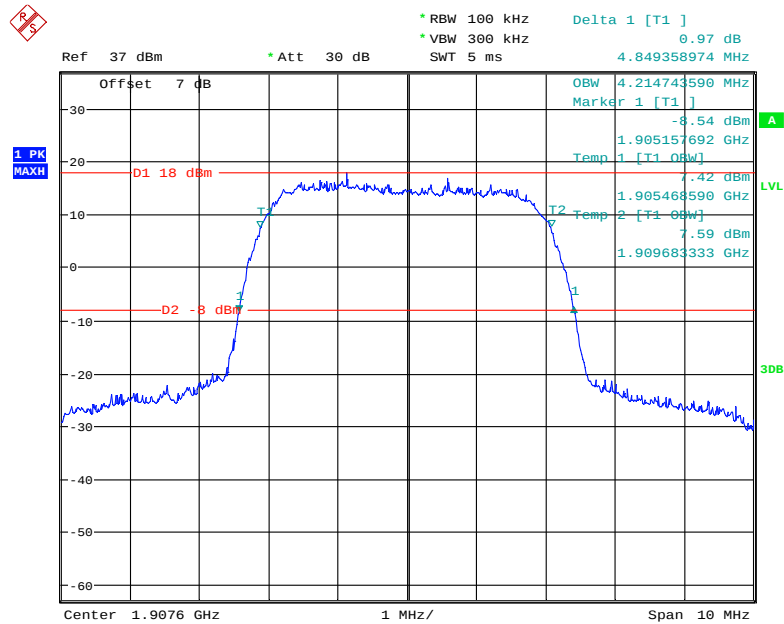
Date: 12.AUG.2021 20:18:33

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



Date: 12.AUG.2021 20:20:15

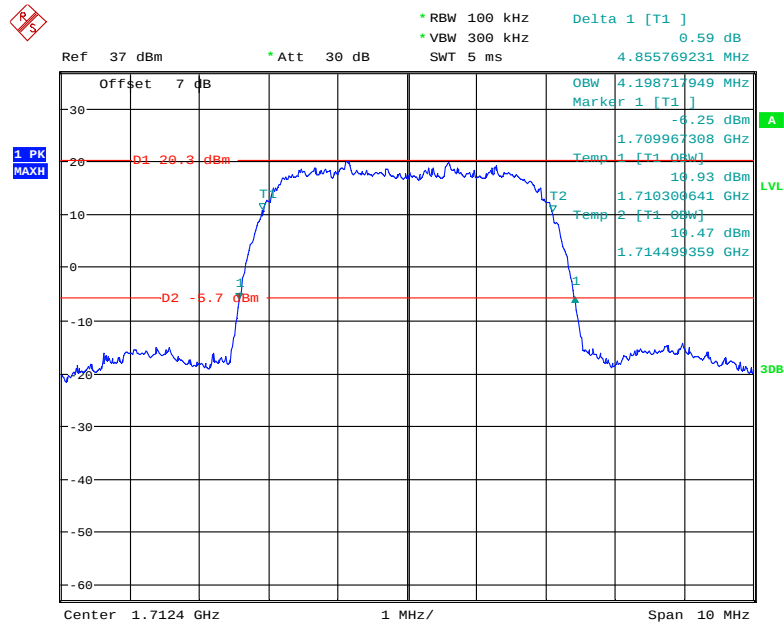
### 26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel



Date: 12.AUG.2021 20:16:24

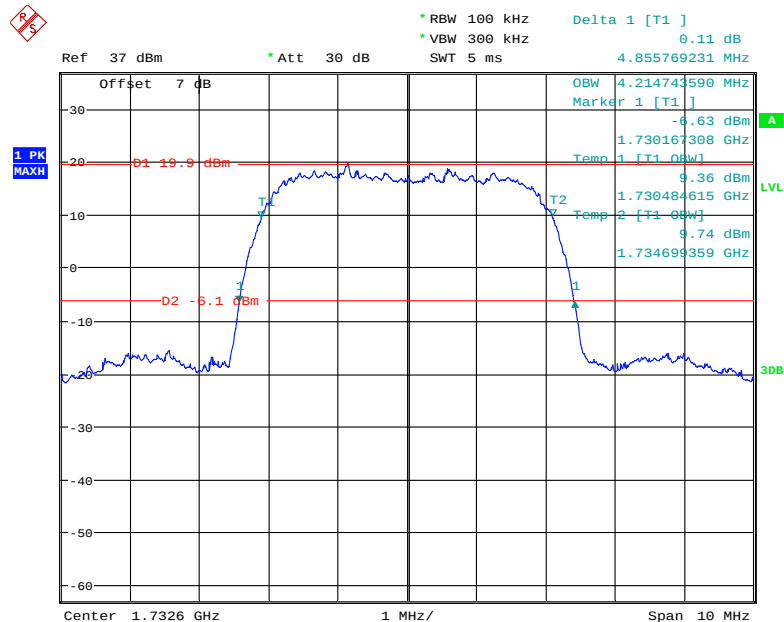
## AWS Band (Part 27)

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



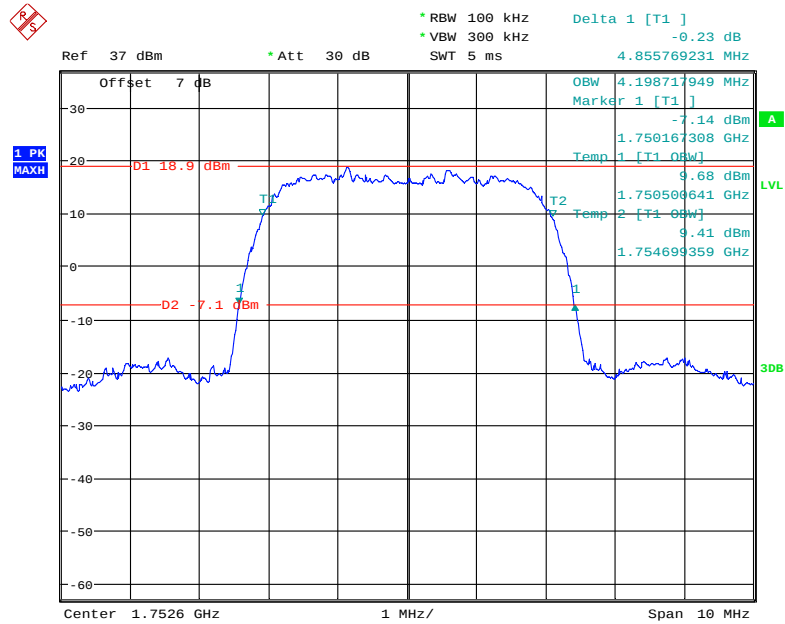
Date: 12.AUG.2021 20:01:35

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



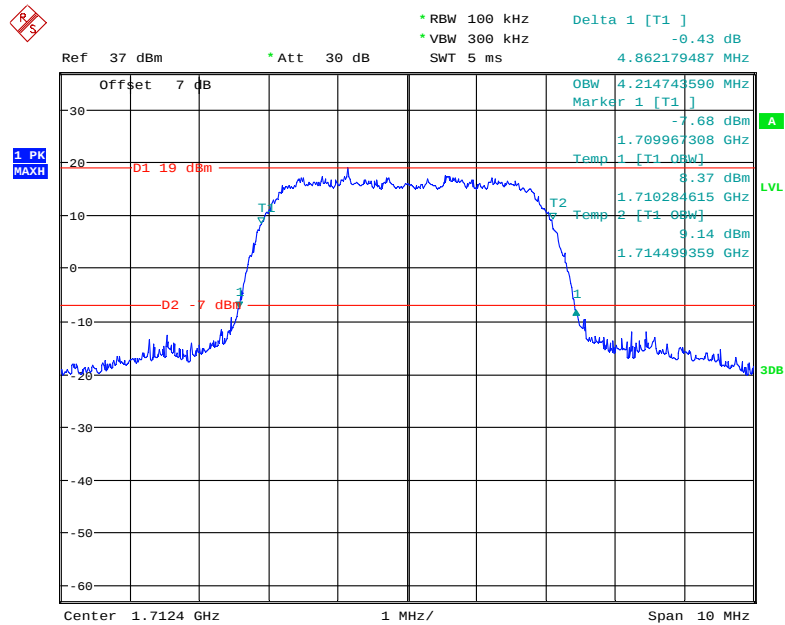
Date: 12.AUG.2021 20:04:13

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



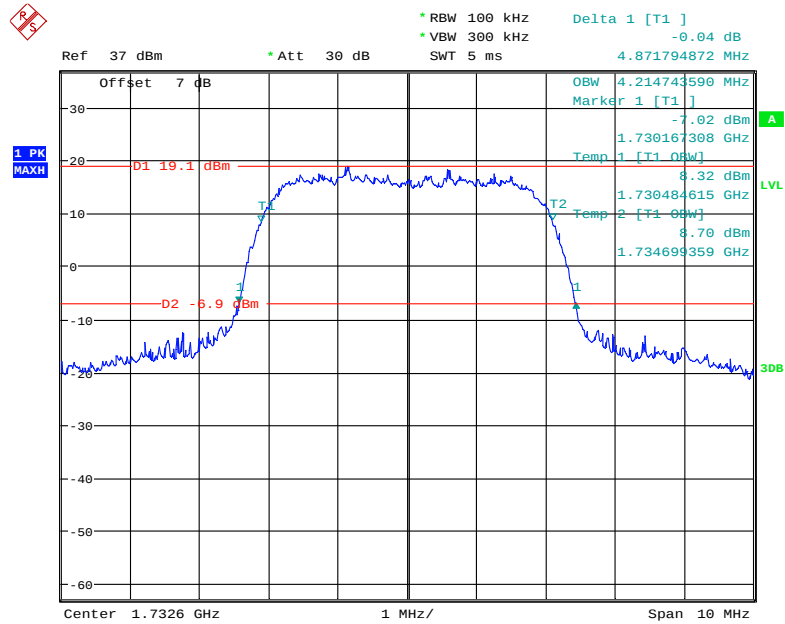
Date: 12.AUG.2021 19:58:53

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



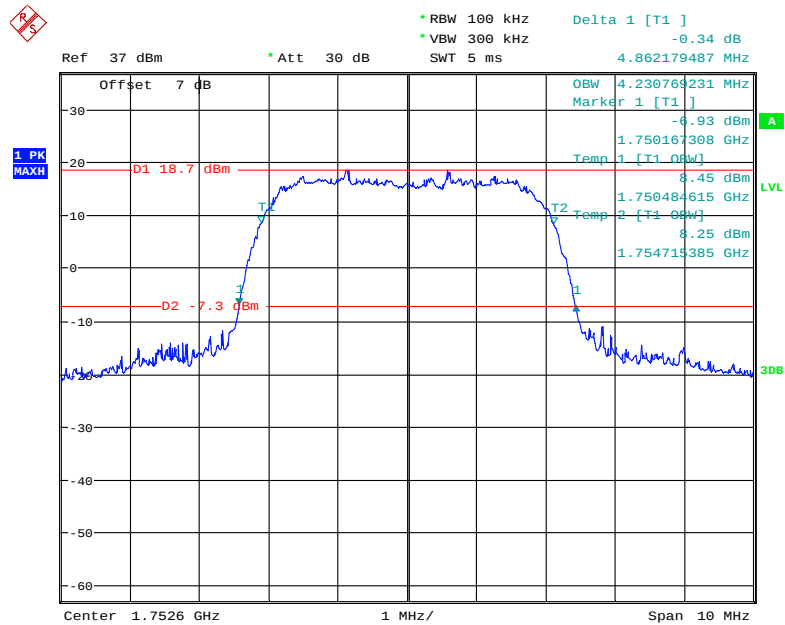
Date: 12.AUG.2021 20:50:48

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

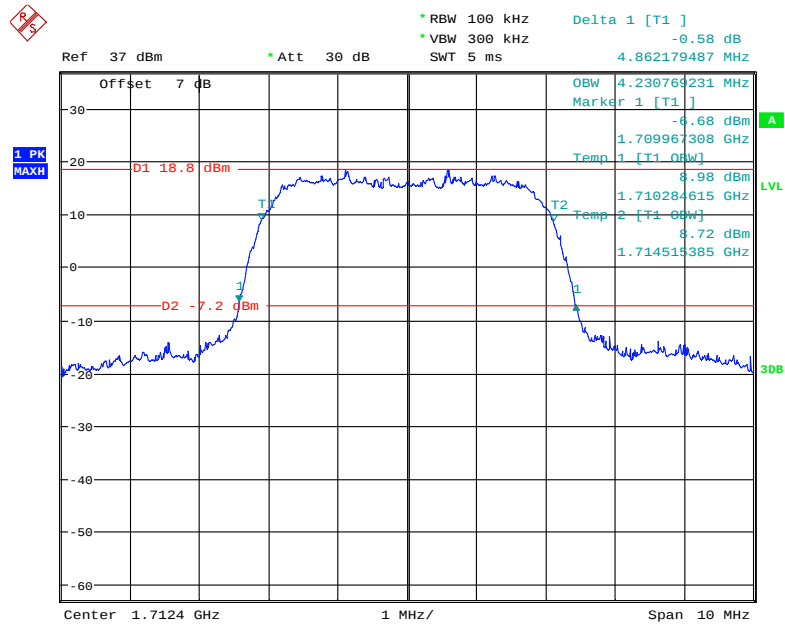


Date: 12.AUG.2021 20:52:12

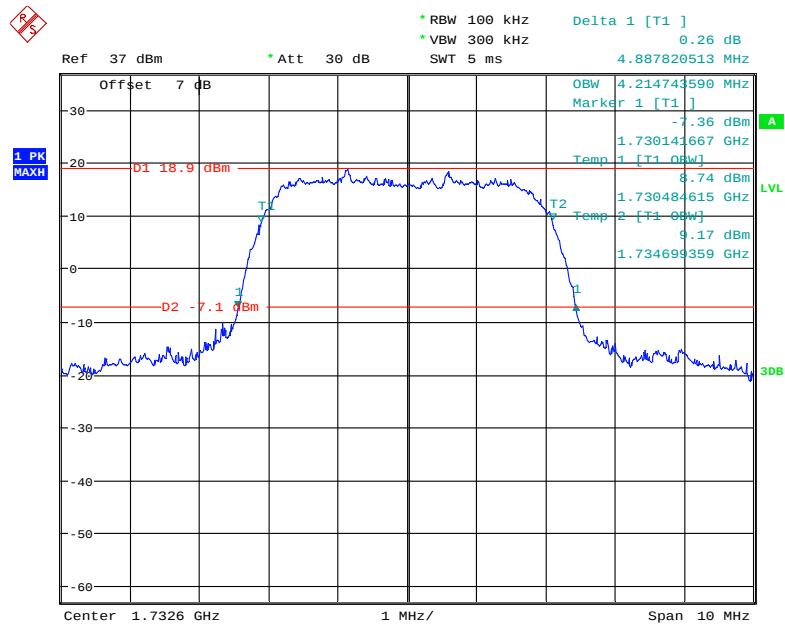
### 26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, High channel



Date: 12.AUG.2021 20:48:26

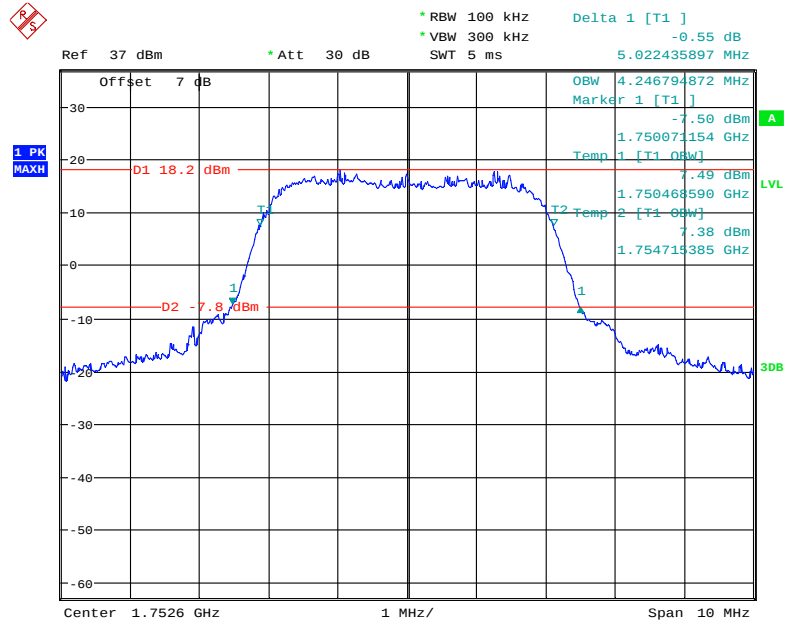
**26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel**

Date: 12.AUG.2021 20:27:25

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

Date: 12.AUG.2021 20:29:48

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



Date: 12.AUG.2021 20:20:47

**LTE Band 2:**

| Bandwidth | Modulation | Low channel |                | Middle channel |                | High channel |                |
|-----------|------------|-------------|----------------|----------------|----------------|--------------|----------------|
|           |            | OBW (MHz)   | 26dB EBW (MHz) | OBW (MHz)      | 26dB EBW (MHz) | OBW (MHz)    | 26dB EBW (MHz) |
| 1.4 MHz   | QPSK       | 1.098       | 1.284          | 1.104          | 1.296          | 1.104        | 1.284          |
|           | 16QAM      | 1.110       | 1.284          | 1.098          | 1.278          | 1.098        | 1.278          |
| 3 MHz     | QPSK       | 2.700       | 2.928          | 2.688          | 2.928          | 2.688        | 2.928          |
|           | 16QAM      | 2.700       | 2.952          | 2.688          | 2.952          | 2.688        | 2.916          |
| 5 MHz     | QPSK       | 4.540       | 5.080          | 4.540          | 5.100          | 4.520        | 5.000          |
|           | 16QAM      | 4.520       | 5.040          | 4.560          | 5.100          | 4.540        | 5.080          |
| 10 MHz    | QPSK       | 8.960       | 9.760          | 8.960          | 9.640          | 8.960        | 9.720          |
|           | 16QAM      | 8.960       | 9.720          | 8.960          | 9.720          | 8.960        | 9.760          |
| 15 MHz    | QPSK       | 13.620      | 15.000         | 13.500         | 14.880         | 13.500       | 15.060         |
|           | 16QAM      | 13.560      | 15.000         | 13.500         | 14.940         | 13.560       | 15.000         |
| 20 MHz    | QPSK       | 18.000      | 19.520         | 18.000         | 19.520         | 17.920       | 19.520         |
|           | 16QAM      | 18.000      | 19.600         | 17.920         | 19.520         | 18.000       | 19.680         |

**LTE Band 4:**

| Bandwidth | Modulation | Low channel |                | Middle channel |                | High channel |                |
|-----------|------------|-------------|----------------|----------------|----------------|--------------|----------------|
|           |            | OBW (MHz)   | 26dB EBW (MHz) | OBW (MHz)      | 26dB EBW (MHz) | OBW (MHz)    | 26dB EBW (MHz) |
| 1.4 MHz   | QPSK       | 1.098       | 1.284          | 1.104          | 1.290          | 1.110        | 1.266          |
|           | 16QAM      | 1.110       | 1.296          | 1.098          | 1.290          | 1.104        | 1.290          |
| 3 MHz     | QPSK       | 2.688       | 2.928          | 2.700          | 2.928          | 2.688        | 2.940          |
|           | 16QAM      | 2.688       | 2.952          | 2.688          | 2.940          | 2.688        | 2.928          |
| 5 MHz     | QPSK       | 4.560       | 5.100          | 4.540          | 5.080          | 4.520        | 5.080          |
|           | 16QAM      | 4.540       | 5.040          | 4.540          | 5.100          | 4.560        | 5.120          |
| 10 MHz    | QPSK       | 8.960       | 9.840          | 8.960          | 9.720          | 8.960        | 9.680          |
|           | 16QAM      | 8.960       | 9.760          | 8.960          | 9.720          | 8.960        | 9.760          |
| 15 MHz    | QPSK       | 13.620      | 15.180         | 13.500         | 14.940         | 13.560       | 15.060         |
|           | 16QAM      | 13.560      | 15.000         | 13.500         | 14.940         | 13.560       | 15.000         |
| 20 MHz    | QPSK       | 18.000      | 19.600         | 18.000         | 19.520         | 18.080       | 19.680         |
|           | 16QAM      | 18.080      | 19.600         | 18.000         | 19.600         | 18.000       | 19.600         |

**LTE Band 5:**

| Bandwidth | Modulation | Low channel |                | Middle channel |                | High channel |                |
|-----------|------------|-------------|----------------|----------------|----------------|--------------|----------------|
|           |            | OBW (MHz)   | 26dB EBW (MHz) | OBW (MHz)      | 26dB EBW (MHz) | OBW (MHz)    | 26dB EBW (MHz) |
| 1.4 MHz   | QPSK       | 1.098       | 1.278          | 1.110          | 1.278          | 1.110        | 1.266          |
|           | 16QAM      | 1.110       | 1.284          | 1.098          | 1.266          | 1.104        | 1.278          |
| 3 MHz     | QPSK       | 2.688       | 2.928          | 2.688          | 2.916          | 2.688        | 2.940          |
|           | 16QAM      | 2.688       | 2.940          | 2.688          | 2.928          | 2.688        | 2.916          |
| 5 MHz     | QPSK       | 4.560       | 5.060          | 4.540          | 5.060          | 4.540        | 5.020          |
|           | 16QAM      | 4.540       | 5.060          | 4.520          | 5.100          | 4.540        | 5.100          |
| 10 MHz    | QPSK       | 9.000       | 9.800          | 8.960          | 9.640          | 9.000        | 9.680          |
|           | 16QAM      | 8.960       | 9.760          | 8.960          | 9.680          | 9.000        | 9.840          |

**LTE Band 7:**

| Bandwidth | Modulation | Low channel |                | Middle channel |                | High channel |                |
|-----------|------------|-------------|----------------|----------------|----------------|--------------|----------------|
|           |            | OBW (MHz)   | 26dB EBW (MHz) | OBW (MHz)      | 26dB EBW (MHz) | OBW (MHz)    | 26dB EBW (MHz) |
| 5 MHz     | QPSK       | 4.540       | 5.040          | 4.540          | 5.060          | 4.520        | 5.060          |
|           | 16QAM      | 4.520       | 5.080          | 4.560          | 5.080          | 4.540        | 5.160          |
| 10 MHz    | QPSK       | 8.960       | 9.720          | 8.960          | 9.640          | 8.960        | 9.720          |
|           | 16QAM      | 8.960       | 9.600          | 8.960          | 9.800          | 8.960        | 9.800          |
| 15 MHz    | QPSK       | 13.560      | 15.000         | 13.500         | 14.940         | 13.500       | 15.000         |
|           | 16QAM      | 13.500      | 15.000         | 13.500         | 14.940         | 13.500       | 14.940         |
| 20 MHz    | QPSK       | 18.000      | 19.600         | 18.000         | 19.600         | 18.000       | 19.680         |
|           | 16QAM      | 18.000      | 19.600         | 18.000         | 19.520         | 18.000       | 19.680         |

**LTE Band 17**

| Bandwidth | Modulation | Low channel |                | Middle channel |                | High channel |                |
|-----------|------------|-------------|----------------|----------------|----------------|--------------|----------------|
|           |            | OBW (MHz)   | 26dB EBW (MHz) | OBW (MHz)      | 26dB EBW (MHz) | OBW (MHz)    | 26dB EBW (MHz) |
| 5 MHz     | QPSK       | 4.540       | 5.120          | 4.520          | 5.060          | 4.520        | 5.080          |
|           | 16QAM      | 4.520       | 5.000          | 4.520          | 5.060          | 4.560        | 5.100          |
| 10 MHz    | QPSK       | 8.960       | 9.800          | 8.960          | 9.680          | 8.960        | 9.840          |
|           | 16QAM      | 8.960       | 9.680          | 8.960          | 9.720          | 8.960        | 9.800          |

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

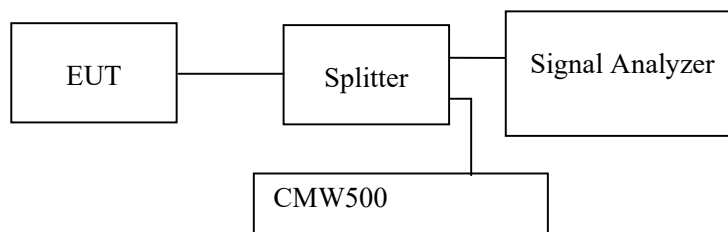
### Applicable Standard

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<sup>th</sup> harmonic.



### Test Data

#### Environmental Conditions

|                    |                 |
|--------------------|-----------------|
| Temperature:       | 28.5~29.2 °C    |
| Relative Humidity: | 51~53 %         |
| ATM Pressure:      | 101.0 ~102.0kPa |

*The testing was performed by Pedro Yun on 2021-08-12 and 2021-08-13.*

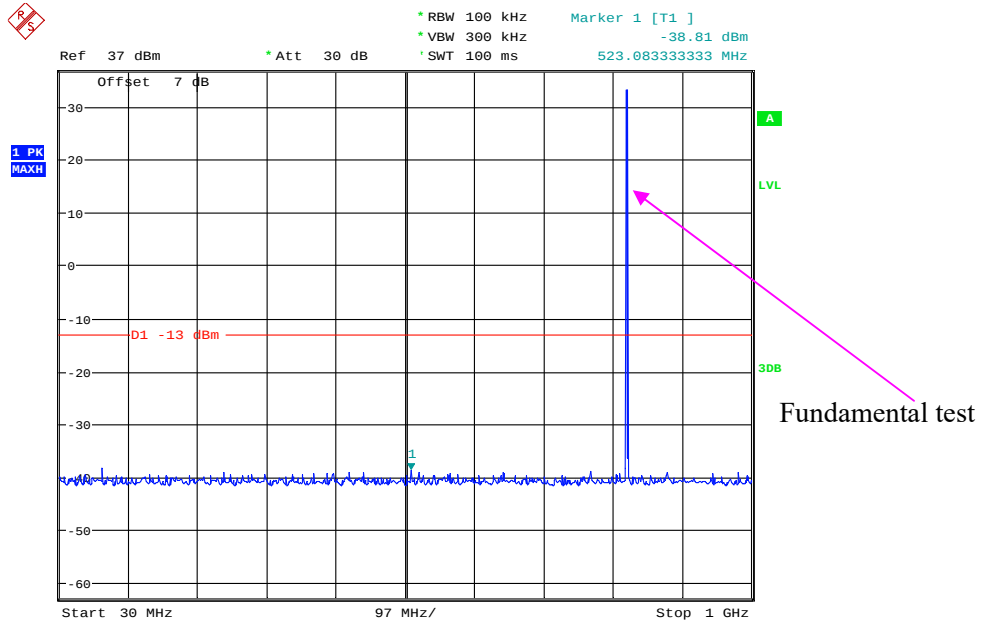
*EUT operation mode: Transmitting*

**Test result: Pass**

*Please refer to the following plots.*

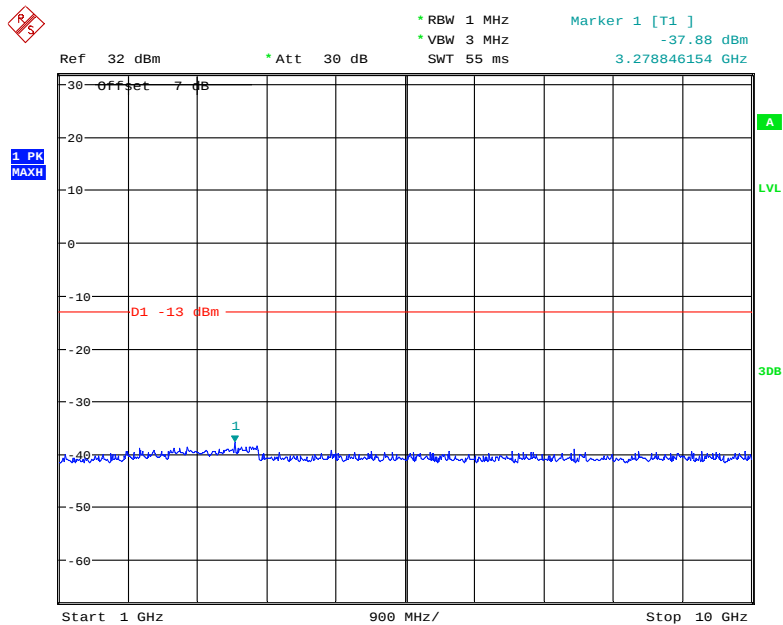
**Cellular Band (Part 22H)**  
**Low Channel:**

**30 MHz – 1 GHz (GSM Mode)**



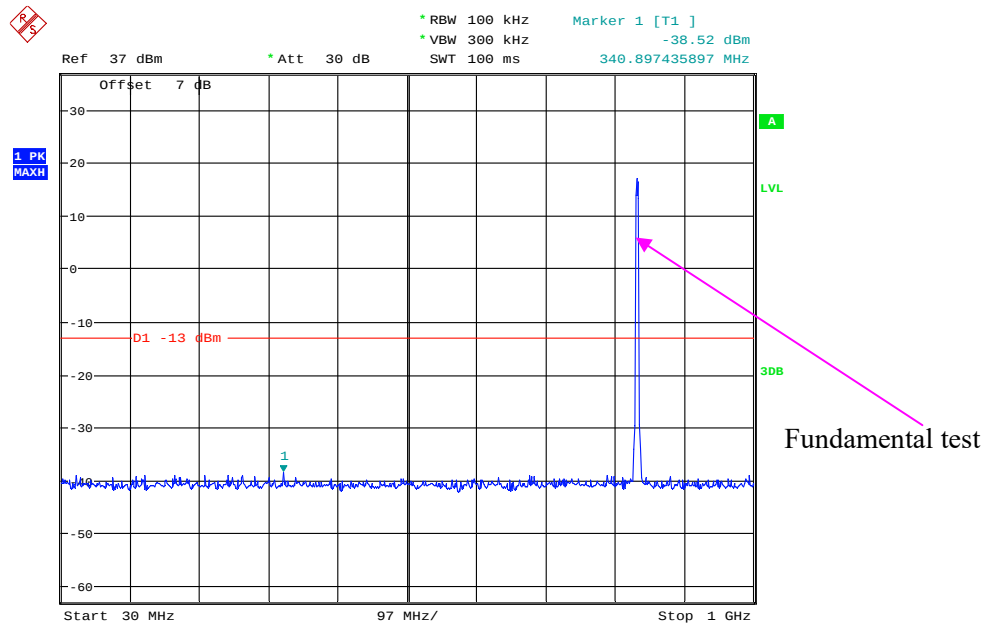
Date: 12.AUG.2021 23:08:32

**1 GHz – 10 GHz (GSM Mode)**



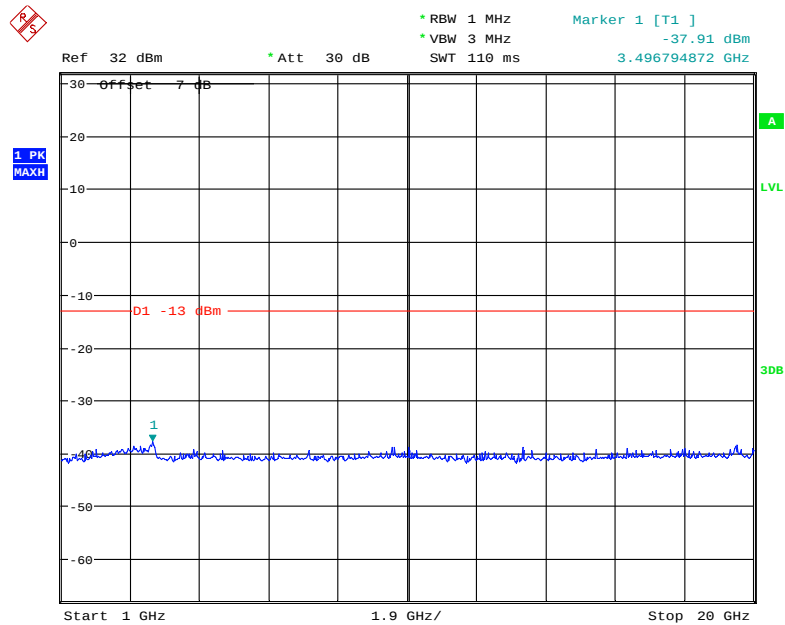
Date: 11.AUG.2021 23:08:04

### 30 MHz – 1 GHz (WCDMA Mode)



Date: 12.AUG.2021 21:29:09

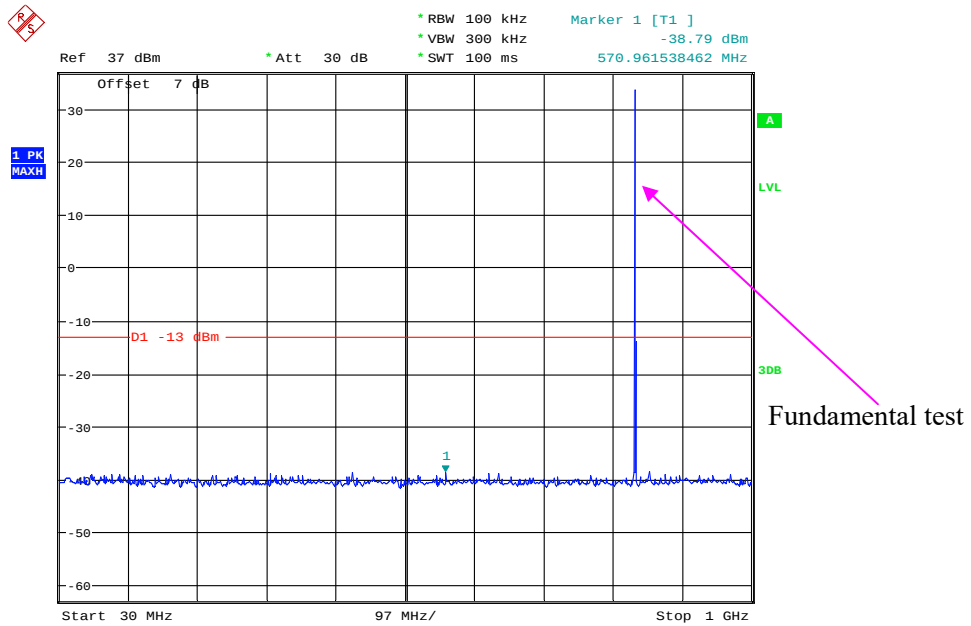
### 1 GHz – 20 GHz (WCDMA Mode)



Date: 12.AUG.2021 02:57:03

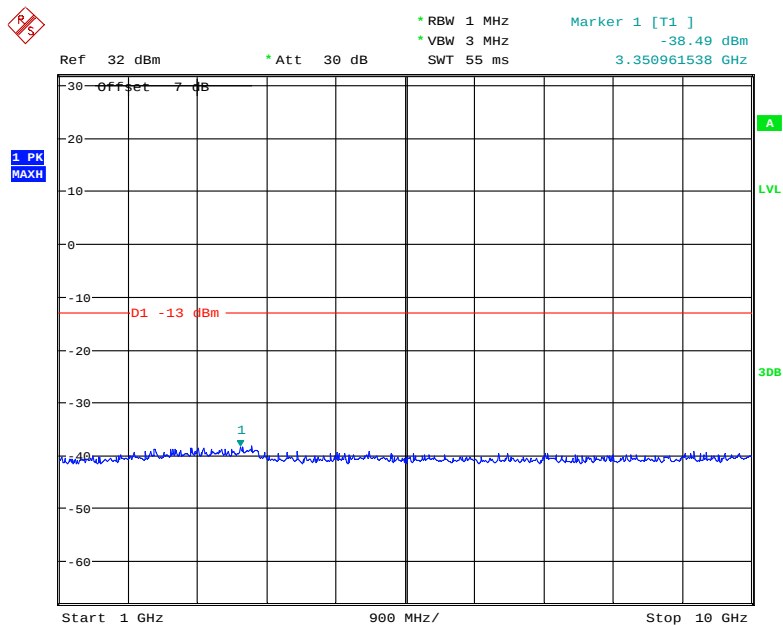
**Middle Channel:**

**30 MHz – 1 GHz (GSM Mode)**



Date: 12.AUG.2021 23:04:40

**1 GHz – 10 GHz (GSM Mode)**



Date: 11.AUG.2021 23:11:58

Ref 37 dBm      \* Att 30 dB      \* RBW 100 kHz      \* VBW 300 kHz      Marker 1 [T1]      -38.43 dBm      875.951923077 MHz

Offset 7 dB

1 PK MAXH

D1 -13 dBm

30dB

1

Fundamental test

Start 30 MHz      97 MHz/      Stop 1 GHz

Ref 32 dBm      \* Att 30 dB      \* RBW 1 MHz      \* VBW 3 MHz      SWT 110 ms      Marker 1 [T1] -37.93 dBm      3.222756410 GHz

Offset 7 dB

1 PK MAXH

D1 -13 dBm

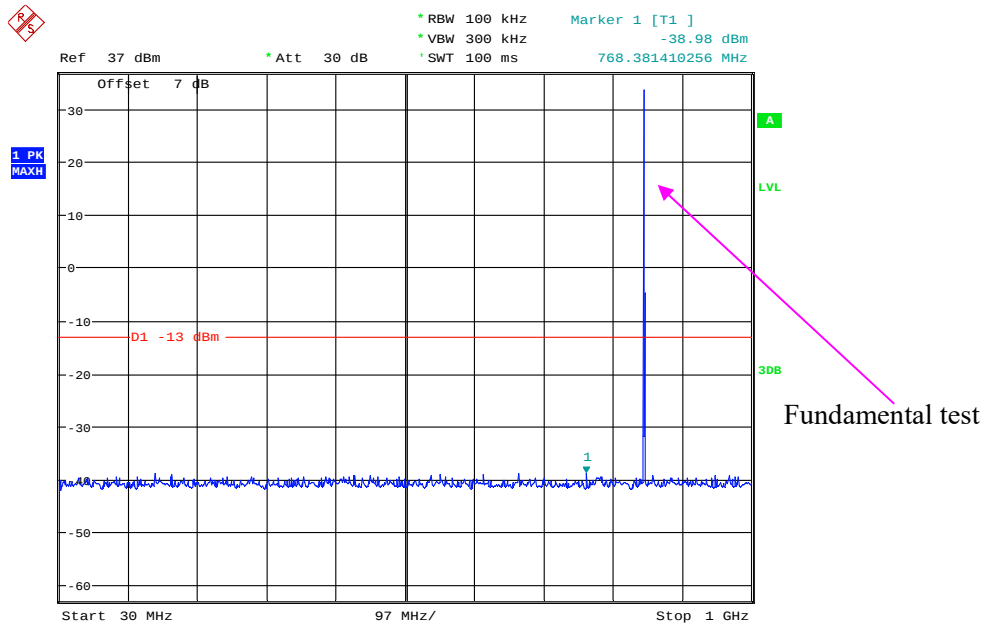
1

Start 1 GHz      1.9 GHz/      Stop 20 GHz

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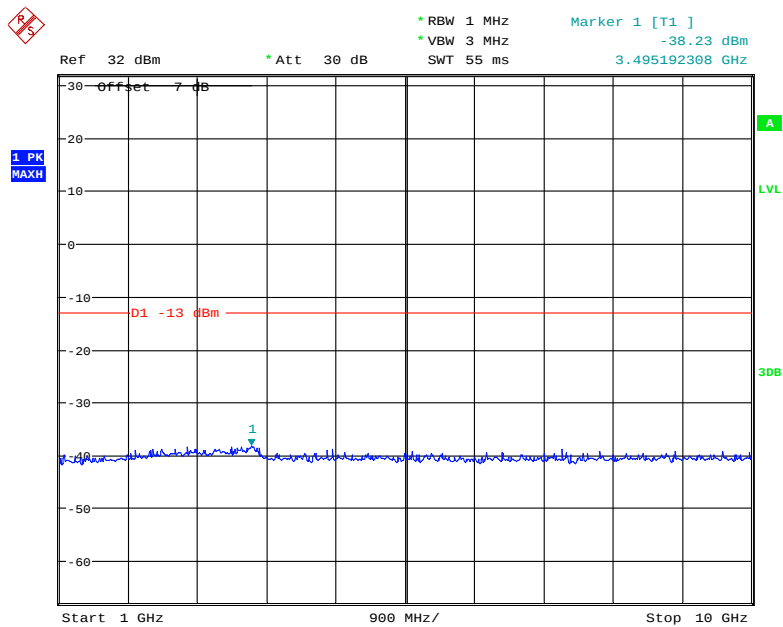
**High Channel:**

**30 MHz – 1 GHz (GSM Mode)**



Date: 12.AUG.2021 23:07:37

**1 GHz – 10 GHz (GSM Mode)**



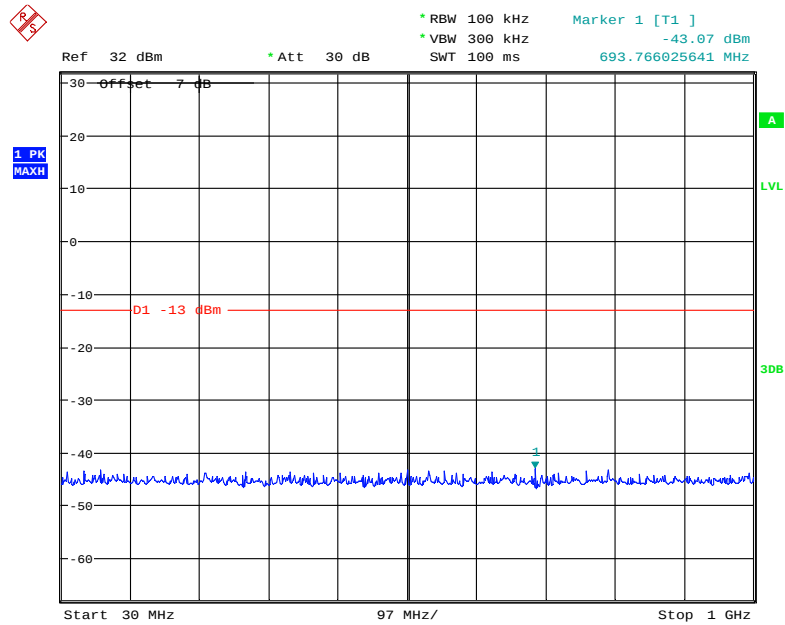
Date: 11.AUG.2021 23:05:43



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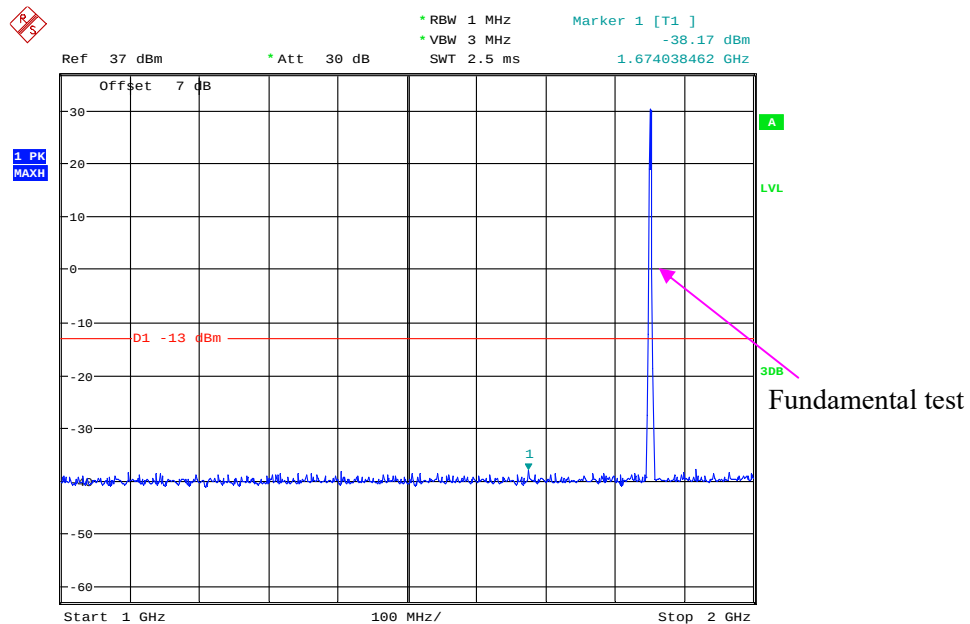
**PCS Band (Part 24E) Low Channel:**

**30 MHz – 1 GHz (GSM Mode)**



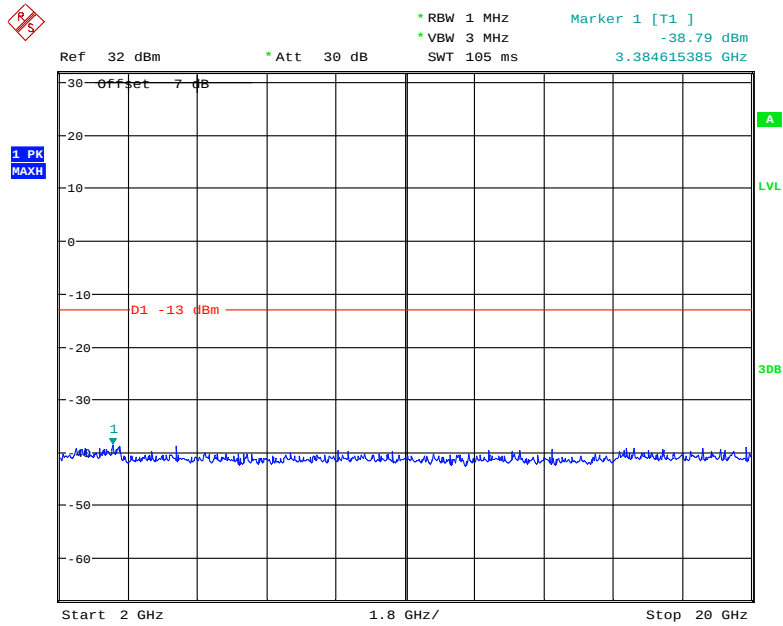
Date: 11.AUG.2021 23:50:44

**1 GHz – 2 GHz (GSM Mode)**



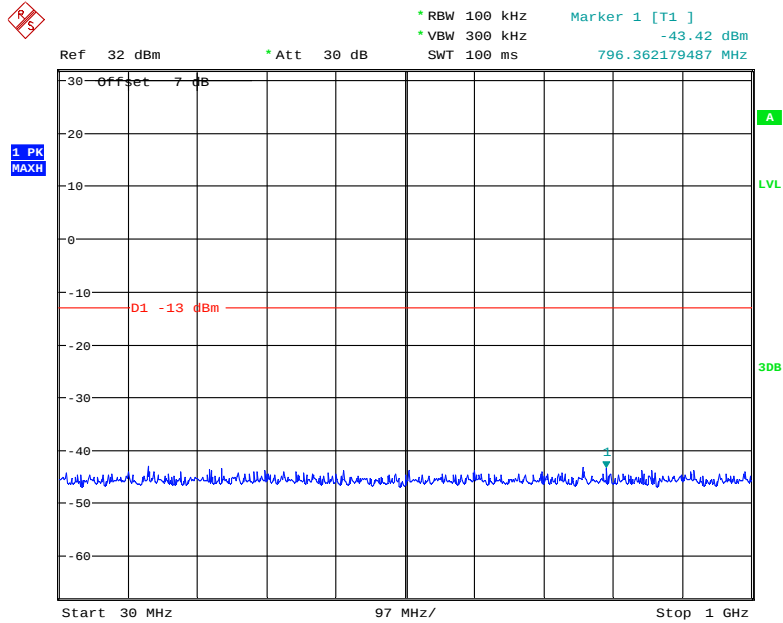
Date: 12.AUG.2021 22:01:39

### 2 GHz – 20 GHz (GSM Mode)

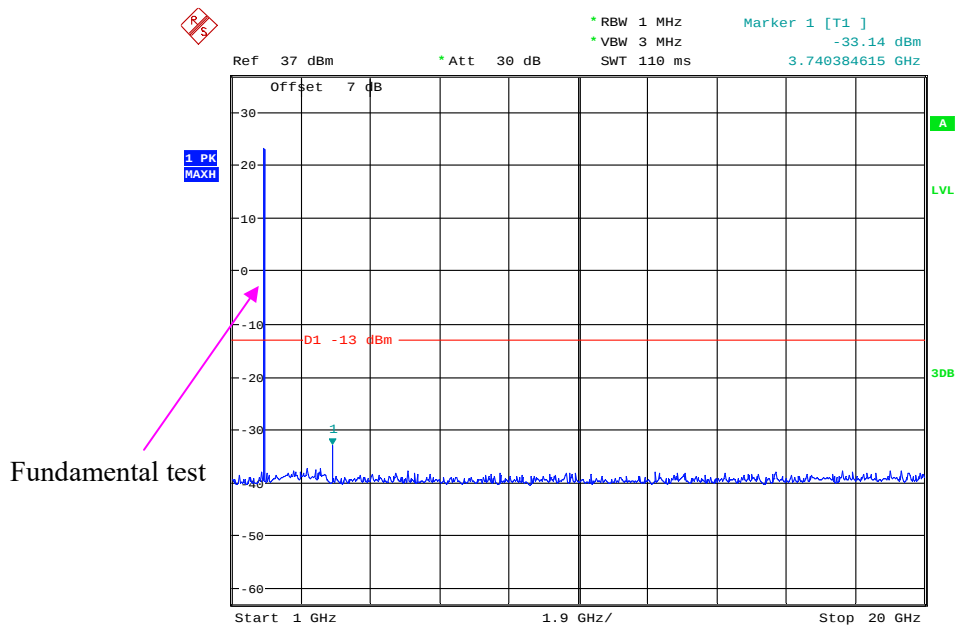


Date: 11.AUG.2021 23:49:24

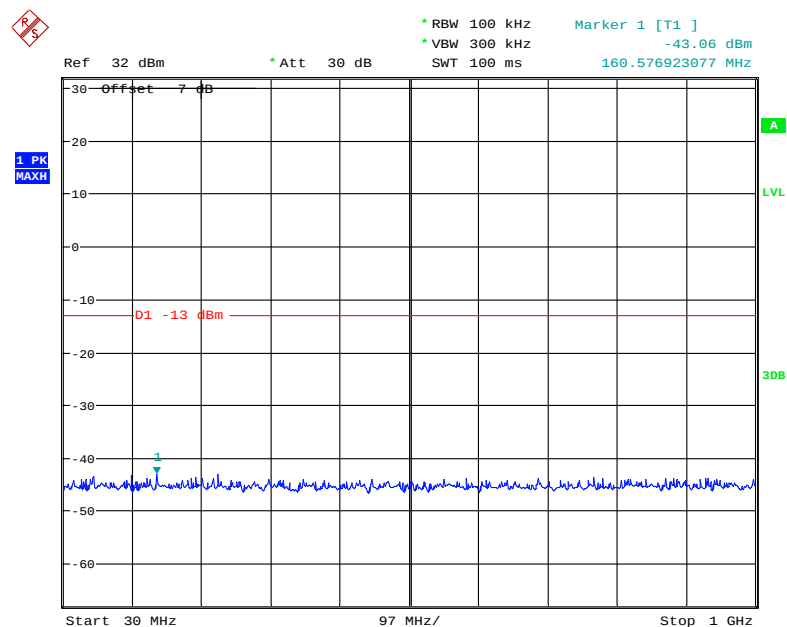
### 30 MHz – 1 GHz (WCDMA Mode)



Date: 12.AUG.2021 02:43:19

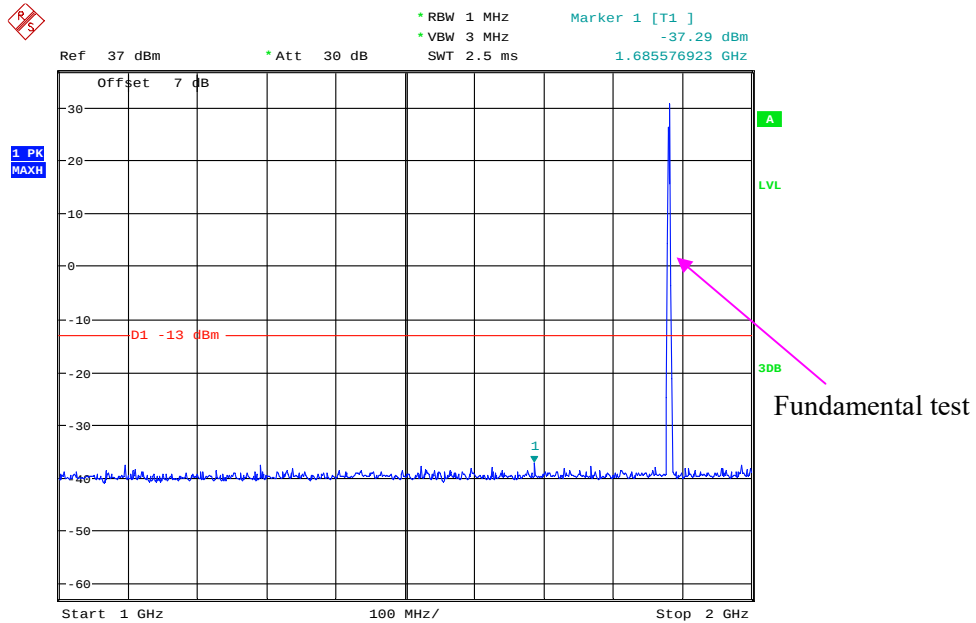
**1 GHz – 20 GHz (WCDMA Mode)**

Date: 12.AUG.2021 21:21:42

**Middle Channel:****30 MHz – 1 GHz (GSM Mode)**

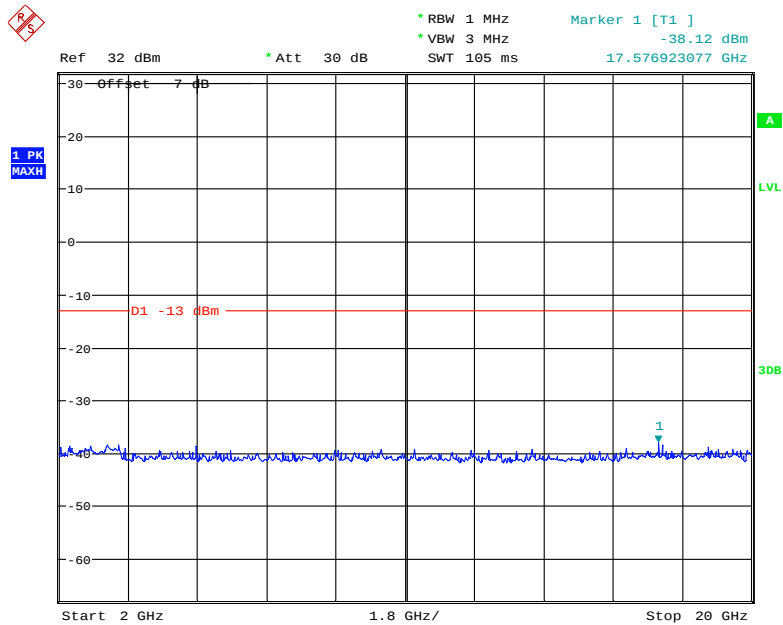
Date: 11.AUG.2021 23:52:57

### 1 GHz – 2 GHz (GSM Mode)



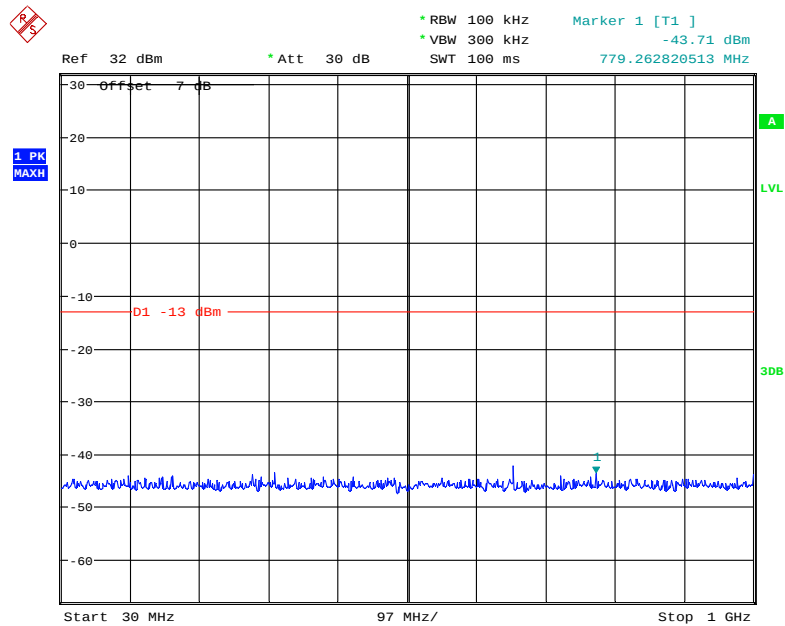
Date: 12.AUG.2021 22:03:20

### 2 GHz – 20 GHz (GSM Mode)



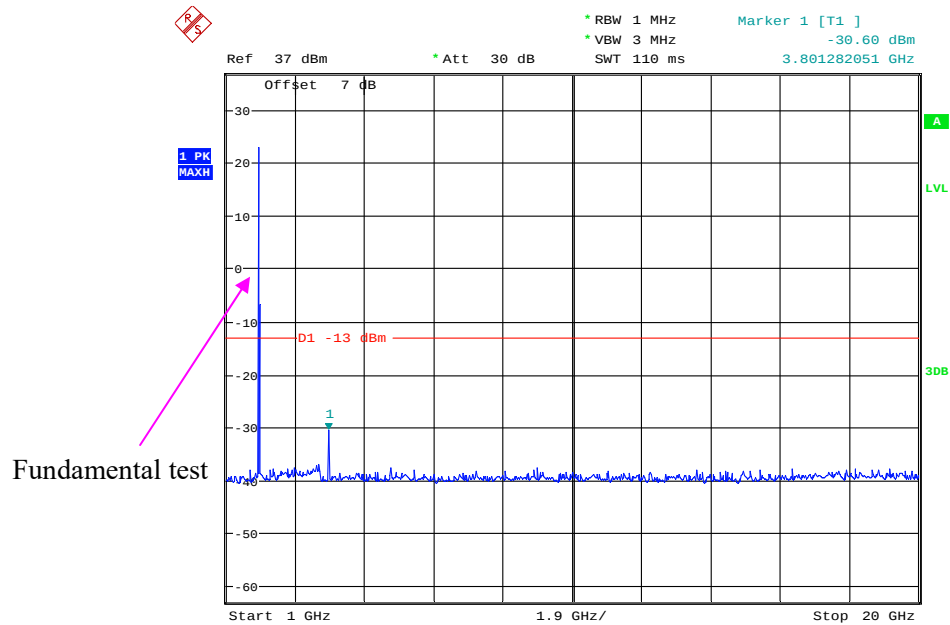
Date: 11.AUG.2021 23:52:11

### 30 MHz – 1 GHz (WCDMA Mode)



Date: 12.AUG.2021 02:44:59

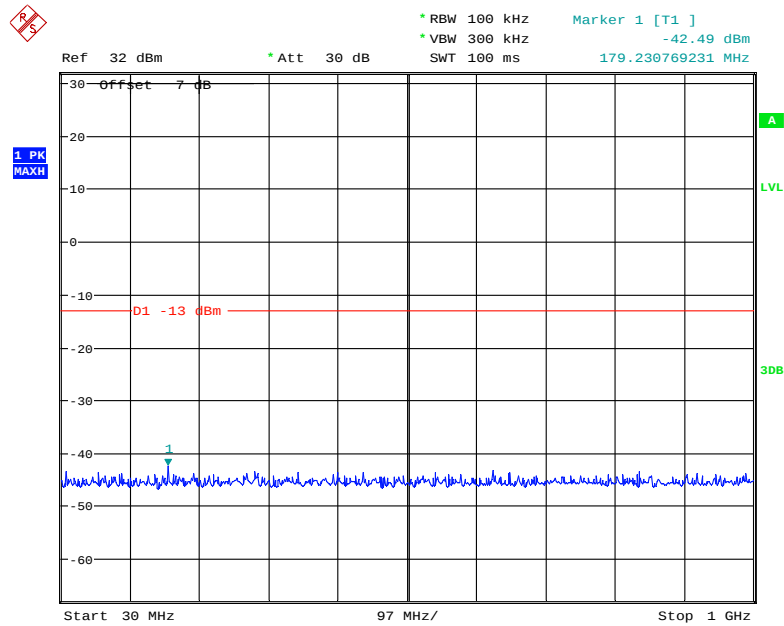
### 1 GHz – 20 GHz (WCDMA Mode)



Date: 12.AUG.2021 21:22:32

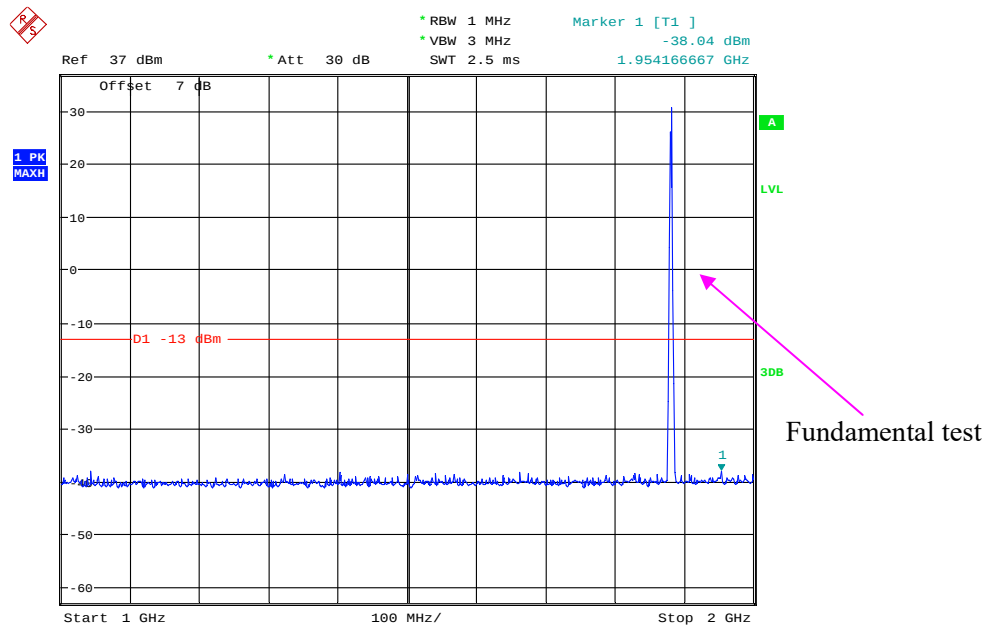
# High Channel:

## 30 MHz – 1 GHz (GSM Mode)

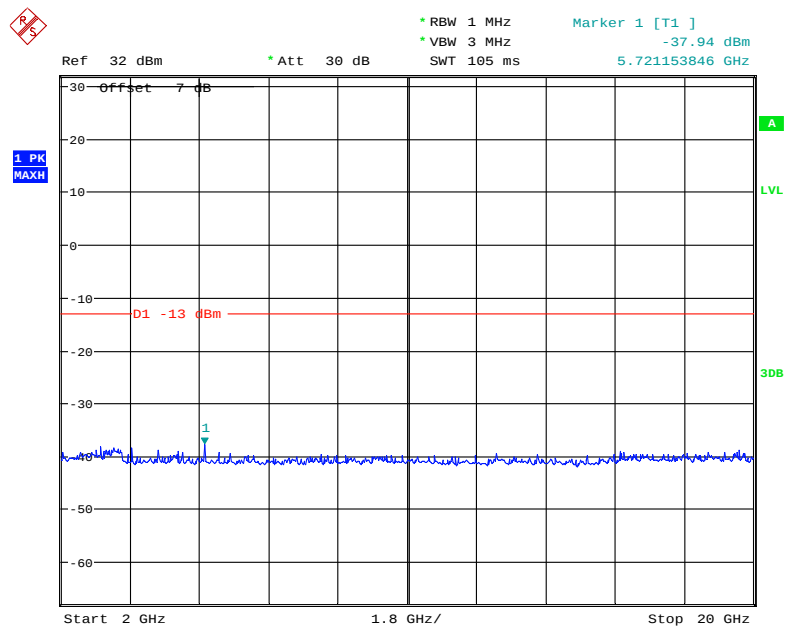


Date: 11.AUG.2021 23:47:29

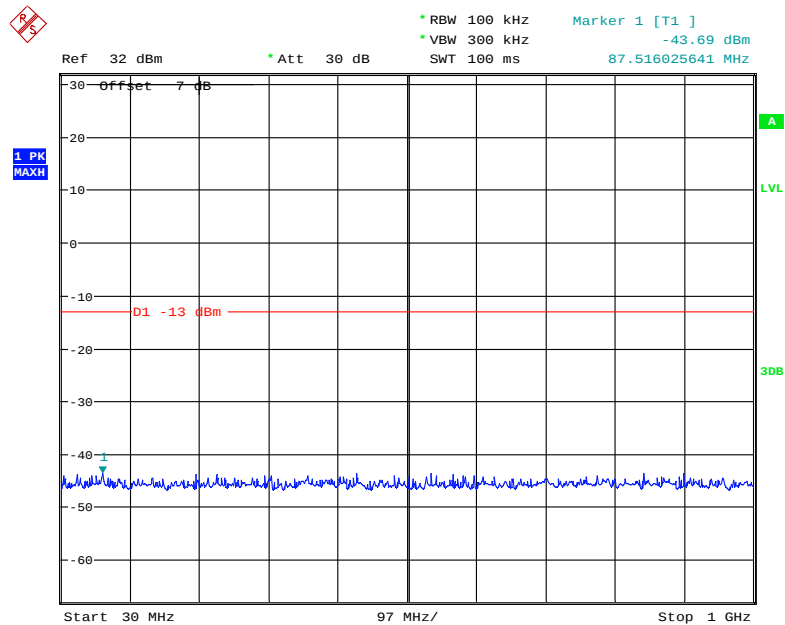
## 1 GHz – 2 GHz (GSM Mode)



Date: 12.AUG.2021 22:00:15

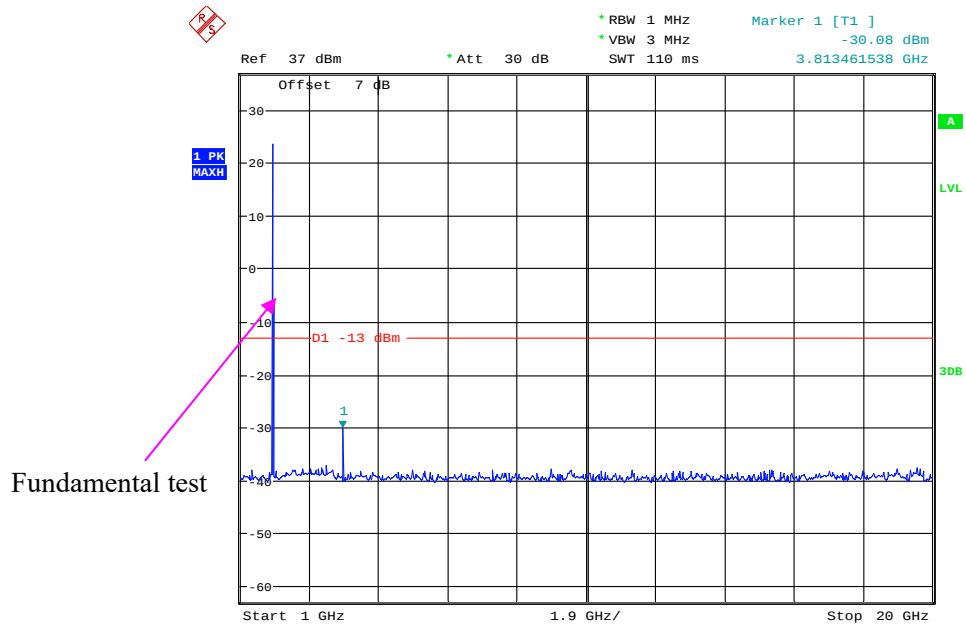
**2 GHz – 20 GHz (GSM Mode)**

Date: 11.AUG.2021 23:46:43

**30 MHz – 1 GHz (WCDMA Mode)**

Date: 12.AUG.2021 02:41:26

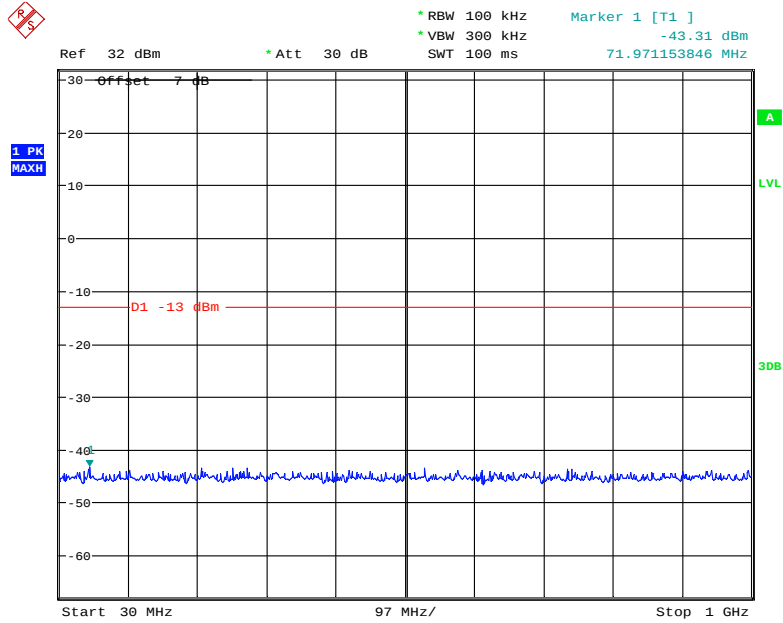
# 1 GHz – 20 GHz (WCDMA Mode)



Date: 12.AUG.2021 21:19:16

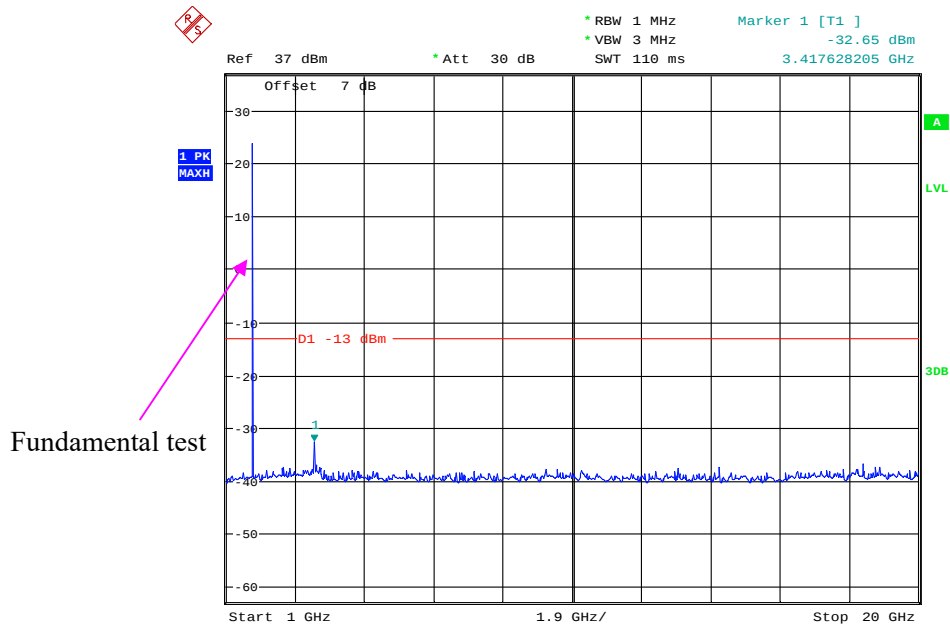
**AWS Band (Part 27)**  
**Low Channel:**

**30 MHz – 1 GHz (WCDMA Mode)**



Date: 12.AUG.2021 02:51:03

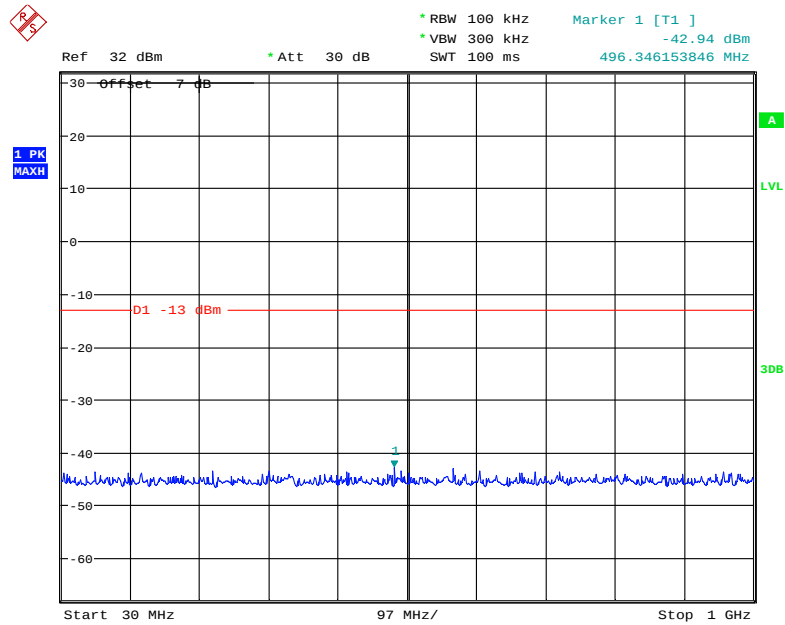
**1 GHz – 20 GHz (WCDMA Mode)**



Date: 12.AUG.2021 21:25:03

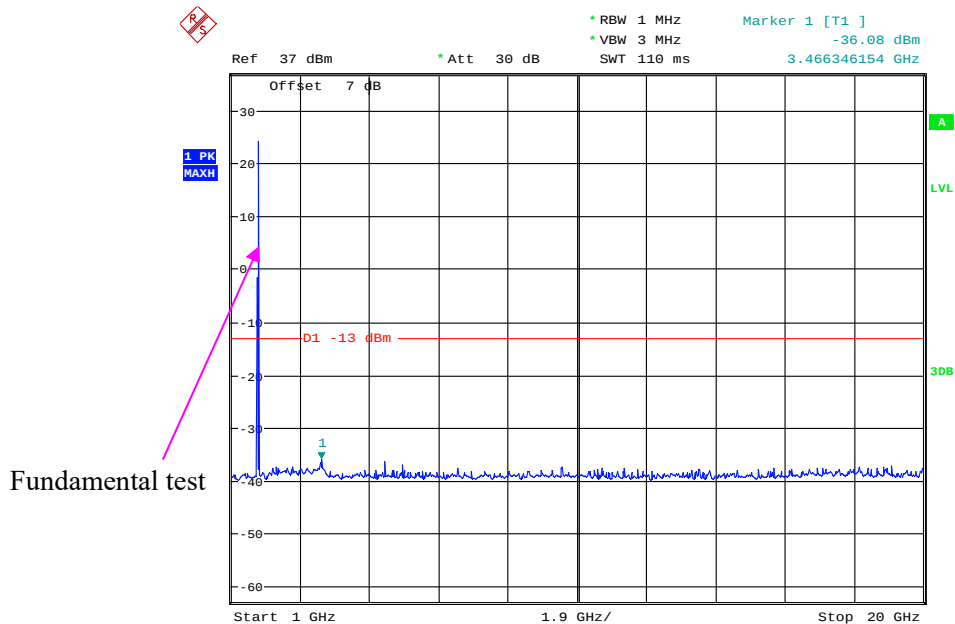
# Middle Channel

## 30 MHz – 1 GHz (WCDMA Mode)

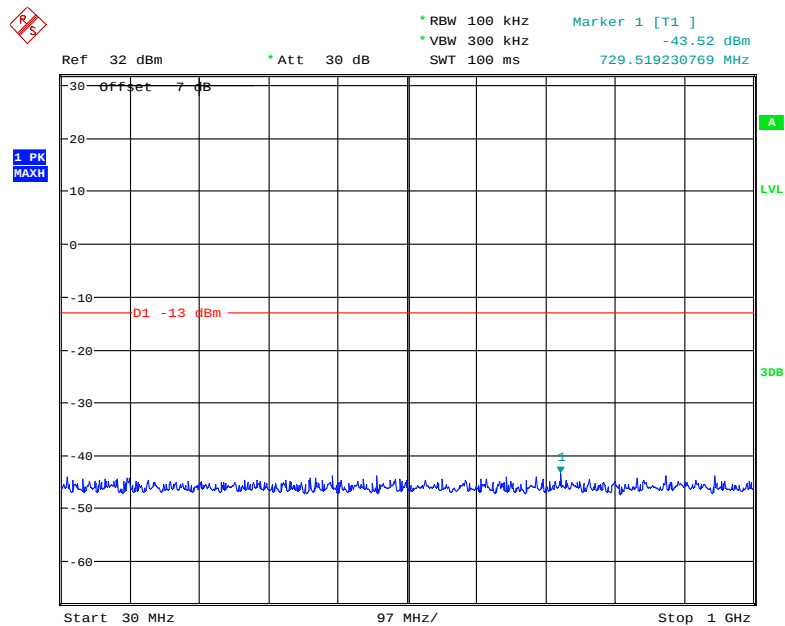


Date: 12.AUG.2021 02:53:12

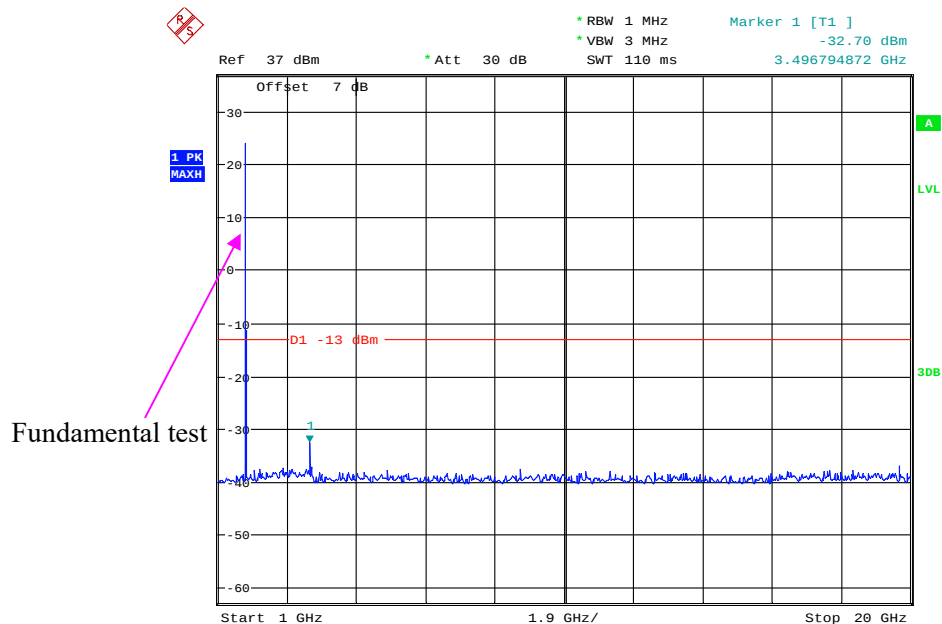
## 1 GHz – 20 GHz (WCDMA Mode)



Date: 12.AUG.2021 21:24:03

**High Channel:****30 MHz – 1 GHz (WCDMA Mode)**

Date: 12.AUG.2021 02:48:58

**1 GHz – 20 GHz (WCDMA Mode)**

Date: 12.AUG.2021 21:25:51

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**

|                           |                 |
|---------------------------|-----------------|
| <b>Temperature:</b>       | 26~28.8 °C      |
| <b>Relative Humidity:</b> | 51~56 %         |
| <b>ATM Pressure:</b>      | 101.0~101.2 kPa |

*The testing was performed by Cloud Qiu on 2021-08-17 for below 1GHz and Bruce Lin from 2021-08-26 to 2021-08-29 for above 1GHz.*

*EUT operation mode: Transmitting*

**30 MHz ~ 10 GHz:****Cellular Band**

| Frequency<br>(MHz) | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna    |                | Substituted    |                       |                              | Absolute<br>Level<br>(dBm) | FCC Part 22H   |                |
|--------------------|-------------------------------|------------------------------|---------------|----------------|----------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                    |                               |                              | Height<br>(m) | Polar<br>(H/V) | Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            | Limit<br>(dBm) | Margin<br>(dB) |
| GSM Mode           |                               |                              |               |                |                |                       |                              |                            |                |                |
| Low channel        |                               |                              |               |                |                |                       |                              |                            |                |                |
| 956.3              | 31.27                         | 4                            | 1.0           | H              | -65.2          | 1.36                  | 0.0                          | -66.56                     | -13            | 53.56          |
| 956.3              | 32.22                         | 61                           | 1.1           | V              | -61.8          | 1.36                  | 0.0                          | -63.16                     | -13            | 50.16          |
| 1648.40            | 57.72                         | 76                           | 2.3           | H              | -50.4          | 1.40                  | 8.70                         | -43.10                     | -13            | 30.10          |
| 1648.40            | 56.83                         | 150                          | 1.9           | V              | -51.0          | 1.40                  | 8.70                         | -43.70                     | -13            | 30.70          |
| 2472.60            | 61.92                         | 278                          | 1.3           | H              | -41.4          | 2.60                  | 10.20                        | -33.80                     | -13            | 20.80          |
| 2472.60            | 64.79                         | 296                          | 2.4           | V              | -38.0          | 2.60                  | 10.20                        | -30.40                     | -13            | 17.40          |
| 3296.80            | 45.07                         | 88                           | 1.8           | H              | -55.8          | 1.50                  | 11.70                        | -45.60                     | -13            | 32.60          |
| 3296.80            | 48.27                         | 41                           | 2.0           | V              | -52.7          | 1.50                  | 11.70                        | -42.50                     | -13            | 29.50          |
| Middle channel     |                               |                              |               |                |                |                       |                              |                            |                |                |
| 960.6              | 31.33                         | 31                           | 1.6           | H              | -65.2          | 1.36                  | 0.0                          | -66.56                     | -13            | 53.56          |
| 960.6              | 32.27                         | 127                          | 1.3           | V              | -61.8          | 1.36                  | 0.0                          | -63.16                     | -13            | 50.16          |
| 1673.20            | 58.42                         | 8                            | 1.9           | H              | -47.9          | 1.30                  | 8.90                         | -40.30                     | -13            | 27.30          |
| 1673.20            | 58.40                         | 3                            | 1.4           | V              | -47.3          | 1.30                  | 8.90                         | -39.70                     | -13            | 26.70          |
| 2509.80            | 64.55                         | 93                           | 1.5           | H              | -38.8          | 2.60                  | 10.20                        | -31.20                     | -13            | 18.20          |
| 2509.80            | 63.13                         | 145                          | 2.2           | V              | -39.6          | 2.60                  | 10.20                        | -32.00                     | -13            | 19.00          |
| 3346.40            | 48.01                         | 152                          | 2.2           | H              | -52.9          | 1.50                  | 11.70                        | -42.70                     | -13            | 29.70          |
| 3346.40            | 47.57                         | 346                          | 1.5           | V              | -53.3          | 1.50                  | 11.70                        | -43.10                     | -13            | 30.10          |
| High channel       |                               |                              |               |                |                |                       |                              |                            |                |                |
| 957.8              | 31.18                         | 221                          | 2.0           | H              | -65.3          | 1.36                  | 0.0                          | -66.66                     | -13            | 53.66          |
| 957.8              | 32.31                         | 299                          | 1.8           | V              | -61.7          | 1.36                  | 0.0                          | -63.06                     | -13            | 50.06          |
| 1697.60            | 58.22                         | 160                          | 2.1           | H              | -48.1          | 1.30                  | 8.90                         | -40.50                     | -13            | 27.50          |
| 1697.60            | 58.31                         | 125                          | 1.1           | V              | -47.4          | 1.30                  | 8.90                         | -39.80                     | -13            | 26.80          |
| 2546.40            | 60.72                         | 32                           | 1.4           | H              | -42.6          | 2.60                  | 10.20                        | -35.00                     | -13            | 22.00          |
| 2546.40            | 66.28                         | 82                           | 2.3           | V              | -36.5          | 2.60                  | 10.20                        | -28.90                     | -13            | 15.90          |
| 3395.20            | 45.97                         | 240                          | 2.0           | H              | -55.3          | 1.40                  | 11.80                        | -44.90                     | -13            | 31.90          |
| 3395.20            | 47.23                         | 96                           | 2.5           | V              | -53.8          | 1.40                  | 11.80                        | -43.40                     | -13            | 30.40          |

| Frequency<br>(MHz) | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna    |                | Substituted    |                       |                              | Absolute<br>Level<br>(dBm) | FCC Part 22H   |                |
|--------------------|-------------------------------|------------------------------|---------------|----------------|----------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                    |                               |                              | Height<br>(m) | Polar<br>(H/V) | Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            | Limit<br>(dBm) | Margin<br>(dB) |
| WCDMA Mode         |                               |                              |               |                |                |                       |                              |                            |                |                |
| Low channel        |                               |                              |               |                |                |                       |                              |                            |                |                |
| 952.7              | 31.16                         | 261                          | 1.4           | H              | -65.3          | 1.36                  | 0.0                          | -66.66                     | -13            | 53.66          |
| 952.7              | 32.15                         | 273                          | 1.0           | V              | -61.9          | 1.36                  | 0.0                          | -63.26                     | -13            | 50.26          |
| 1652.80            | 50.11                         | 113                          | 2.2           | H              | -56.2          | 1.30                  | 8.90                         | -48.60                     | -13            | 35.60          |
| 1652.80            | 49.37                         | 124                          | 2.0           | V              | -56.4          | 1.30                  | 8.90                         | -48.80                     | -13            | 35.80          |
| 2479.20            | 69.25                         | 30                           | 2.3           | H              | -34.1          | 2.60                  | 10.20                        | -26.50                     | -13            | 13.50          |
| 2479.20            | 58.69                         | 290                          | 1.3           | V              | -44.1          | 2.60                  | 10.20                        | -36.50                     | -13            | 23.50          |
| 3305.60            | 44.14                         | 127                          | 1.0           | H              | -56.8          | 1.50                  | 11.70                        | -46.60                     | -13            | 33.60          |
| 3305.60            | 44.08                         | 354                          | 2.5           | V              | -56.8          | 1.50                  | 11.70                        | -46.60                     | -13            | 33.60          |
| Middle channel     |                               |                              |               |                |                |                       |                              |                            |                |                |
| 957.6              | 31.19                         | 174                          | 2.0           | H              | -65.3          | 1.36                  | 0.0                          | -66.66                     | -13            | 53.66          |
| 957.6              | 32.34                         | 274                          | 1.5           | V              | -61.7          | 1.36                  | 0.0                          | -63.06                     | -13            | 50.06          |
| 1673.20            | 52.67                         | 250                          | 2.2           | H              | -53.7          | 1.30                  | 8.90                         | -46.10                     | -13            | 33.10          |
| 1673.20            | 48.76                         | 253                          | 1.8           | V              | -57.0          | 1.30                  | 8.90                         | -49.40                     | -13            | 36.40          |
| 2509.80            | 70.24                         | 354                          | 1.1           | H              | -33.1          | 2.60                  | 10.20                        | -25.50                     | -13            | 12.50          |
| 2509.80            | 57.28                         | 283                          | 2.2           | V              | -45.5          | 2.60                  | 10.20                        | -37.90                     | -13            | 24.90          |
| 3346.40            | 43.97                         | 49                           | 1.7           | H              | -56.9          | 1.50                  | 11.70                        | -46.70                     | -13            | 33.70          |
| 3346.40            | 43.27                         | 354                          | 1.9           | V              | -57.7          | 1.50                  | 11.70                        | -47.50                     | -13            | 34.50          |
| High channel       |                               |                              |               |                |                |                       |                              |                            |                |                |
| 956.2              | 31.07                         | 134                          | 1.1           | H              | -65.4          | 1.36                  | 0.0                          | -66.76                     | -13            | 53.76          |
| 956.2              | 32.31                         | 22                           | 1.6           | V              | -61.7          | 1.36                  | 0.0                          | -63.06                     | -13            | 50.06          |
| 1693.20            | 52.14                         | 57                           | 2.3           | H              | -54.2          | 1.30                  | 8.90                         | -46.60                     | -13            | 33.60          |
| 1693.20            | 48.67                         | 187                          | 1.7           | V              | -57.1          | 1.30                  | 8.90                         | -49.50                     | -13            | 36.50          |
| 2539.80            | 71.69                         | 117                          | 1.1           | H              | -31.7          | 2.60                  | 10.20                        | -24.10                     | -13            | 11.10          |
| 2539.80            | 60.58                         | 192                          | 1.7           | V              | -42.2          | 2.60                  | 10.20                        | -34.60                     | -13            | 21.60          |
| 3386.40            | 44.85                         | 332                          | 2.0           | H              | -56.4          | 1.40                  | 11.80                        | -46.00                     | -13            | 33.00          |
| 3386.40            | 43.17                         | 68                           | 1.2           | V              | -57.9          | 1.40                  | 11.80                        | -47.50                     | -13            | 34.50          |

**30 MHz ~ 20 GHz:****PCS Band**

| Frequency<br>(MHz) | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna    |                | Substituted    |                       |                              | Absolute<br>Level<br>(dBm) | FCC Part 24E   |                |
|--------------------|-------------------------------|------------------------------|---------------|----------------|----------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                    |                               |                              | Height<br>(m) | Polar<br>(H/V) | Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            | Limit<br>(dBm) | Margin<br>(dB) |
| GSM Mode           |                               |                              |               |                |                |                       |                              |                            |                |                |
| Low channel        |                               |                              |               |                |                |                       |                              |                            |                |                |
| 959.1              | 31.14                         | 157                          | 1.9           | H              | -65.4          | 1.36                  | 0.0                          | -66.76                     | -13            | 53.76          |
| 959.1              | 32.35                         | 326                          | 1.6           | V              | -61.7          | 1.36                  | 0.0                          | -63.06                     | -13            | 50.06          |
| 3700.40            | 46.51                         | 101                          | 1.3           | H              | -55.6          | 1.60                  | 11.90                        | -45.30                     | -13            | 32.30          |
| 3700.40            | 47.26                         | 35                           | 1.8           | V              | -54.2          | 1.60                  | 11.90                        | -43.90                     | -13            | 30.90          |
| Middle channel     |                               |                              |               |                |                |                       |                              |                            |                |                |
| 960.2              | 31.25                         | 183                          | 2.3           | H              | -65.3          | 1.36                  | 0.0                          | -66.66                     | -13            | 53.66          |
| 960.2              | 32.39                         | 218                          | 1.7           | V              | -61.7          | 1.36                  | 0.0                          | -63.06                     | -13            | 50.06          |
| 3760.00            | 47.10                         | 336                          | 1.2           | H              | -55.3          | 1.50                  | 11.80                        | -45.00                     | -13            | 32.00          |
| 3760.00            | 46.62                         | 147                          | 2.3           | V              | -55.3          | 1.50                  | 11.80                        | -45.00                     | -13            | 32.00          |
| High channel       |                               |                              |               |                |                |                       |                              |                            |                |                |
| 957.5              | 31.29                         | 200                          | 1.7           | H              | -65.2          | 1.36                  | 0.0                          | -66.56                     | -13            | 53.56          |
| 957.5              | 32.36                         | 349                          | 2.0           | V              | -61.7          | 1.36                  | 0.0                          | -63.06                     | -13            | 50.06          |
| 3819.60            | 46.73                         | 162                          | 1.1           | H              | -55.7          | 1.50                  | 11.80                        | -45.40                     | -13            | 32.40          |
| 3819.60            | 48.63                         | 171                          | 1.3           | V              | -53.3          | 1.50                  | 11.80                        | -43.00                     | -13            | 30.00          |
| WCDMA Mode         |                               |                              |               |                |                |                       |                              |                            |                |                |
| Low Channel        |                               |                              |               |                |                |                       |                              |                            |                |                |
| 954.9              | 31.22                         | 96                           | 1.8           | H              | -65.3          | 1.36                  | 0.0                          | -66.66                     | -13            | 53.66          |
| 954.9              | 32.38                         | 138                          | 1.8           | V              | -61.7          | 1.36                  | 0.0                          | -63.06                     | -13            | 50.06          |
| 3704.80            | 47.35                         | 208                          | 1.3           | H              | -54.5          | 1.60                  | 11.90                        | -44.20                     | -13            | 31.20          |
| 3704.80            | 48.39                         | 116                          | 2.4           | V              | -52.8          | 1.60                  | 11.90                        | -42.50                     | -13            | 29.50          |
| Middle channel     |                               |                              |               |                |                |                       |                              |                            |                |                |
| 956.7              | 31.25                         | 53                           | 1.9           | H              | -65.3          | 1.36                  | 0.0                          | -66.66                     | -13            | 53.66          |
| 956.7              | 32.32                         | 295                          | 1.3           | V              | -61.7          | 1.36                  | 0.0                          | -63.06                     | -13            | 50.06          |
| 3760.00            | 47.82                         | 157                          | 1.3           | H              | -54.2          | 1.50                  | 11.80                        | -43.90                     | -13            | 30.90          |
| 3760.00            | 46.52                         | 189                          | 1.5           | V              | -55.1          | 1.50                  | 11.80                        | -44.80                     | -13            | 31.80          |
| High channel       |                               |                              |               |                |                |                       |                              |                            |                |                |
| 952.2              | 31.29                         | 219                          | 2.3           | H              | -65.2          | 1.36                  | 0.0                          | -66.56                     | -13            | 53.56          |
| 952.2              | 32.18                         | 3                            | 2.2           | V              | -61.9          | 1.36                  | 0.0                          | -63.26                     | -13            | 50.26          |
| 3818.60            | 48.70                         | 218                          | 1.8           | H              | -53.4          | 1.50                  | 11.80                        | -43.10                     | -13            | 30.10          |
| 3818.60            | 47.33                         | 54                           | 1.2           | V              | -54.3          | 1.50                  | 11.80                        | -44.00                     | -13            | 31.00          |

**30 MHz ~ 20 GHz:****AWS Band**

| Frequency<br>(MHz) | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna    |                | Substituted    |                       |                              | Absolute<br>Level<br>(dBm) | FCC Part 27    |                |
|--------------------|-------------------------------|------------------------------|---------------|----------------|----------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                    |                               |                              | Height<br>(m) | Polar<br>(H/V) | Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            | Limit<br>(dBm) | Margin<br>(dB) |
| WCDMA Mode         |                               |                              |               |                |                |                       |                              |                            |                |                |
| Low channel        |                               |                              |               |                |                |                       |                              |                            |                |                |
| 952.8              | 31.09                         | 264                          | 2.2           | H              | -65.4          | 1.36                  | 0.0                          | -66.76                     | -13            | 53.76          |
| 952.8              | 32.25                         | 87                           | 2.4           | V              | -61.8          | 1.36                  | 0.0                          | -63.16                     | -13            | 50.16          |
| 3424.80            | 45.87                         | 20                           | 1.4           | H              | -54.9          | 1.40                  | 11.80                        | -44.50                     | -13            | 31.50          |
| 3424.80            | 45.65                         | 286                          | 2.2           | V              | -55.0          | 1.40                  | 11.80                        | -44.60                     | -13            | 31.60          |
| Middle channel     |                               |                              |               |                |                |                       |                              |                            |                |                |
| 958.6              | 31.17                         | 289                          | 1.3           | H              | -65.3          | 1.36                  | 0.0                          | -66.66                     | -13            | 53.66          |
| 958.6              | 32.21                         | 255                          | 2.1           | V              | -61.8          | 1.36                  | 0.0                          | -63.16                     | -13            | 50.16          |
| 3480.00            | 46.85                         | 34                           | 1.5           | H              | -53.9          | 1.50                  | 12.00                        | -43.40                     | -13            | 30.40          |
| 3480.00            | 45.27                         | 167                          | 2.1           | V              | -56.2          | 1.50                  | 12.00                        | -45.70                     | -13            | 32.70          |
| High channel       |                               |                              |               |                |                |                       |                              |                            |                |                |
| 954.5              | 31.32                         | 234                          | 1.2           | H              | -65.2          | 1.36                  | 0.0                          | -66.56                     | -13            | 53.56          |
| 954.5              | 32.11                         | 179                          | 2.3           | V              | -61.9          | 1.36                  | 0.0                          | -63.26                     | -13            | 50.26          |
| 3505.20            | 46.27                         | 155                          | 2.0           | H              | -54.5          | 1.50                  | 12.00                        | -44.00                     | -13            | 31.00          |
| 3505.20            | 46.27                         | 155                          | 2.0           | H              | -54.5          | 1.50                  | 12.00                        | -44.00                     | -13            | 31.00          |

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

| Frequency                             | Receiver       | Turntable    | Rx Antenna |             | Substituted |                 |                        | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---------------------------------------|----------------|--------------|------------|-------------|-------------|-----------------|------------------------|----------------------|-------------|-------------|
| (MHz)                                 | Reading (dBμV) | Angle Degree | Height (m) | Polar (H/V) | Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) |                      |             |             |
| Band 2                                |                |              |            |             |             |                 |                        |                      |             |             |
| Test frequency range: 30 MHz ~ 20 GHz |                |              |            |             |             |                 |                        |                      |             |             |
| 1.4MHz, Low channel                   |                |              |            |             |             |                 |                        |                      |             |             |
| 958.6                                 | 31.17          | 234          | 1.9        | H           | -65.3       | 1.36            | 0.0                    | -66.66               | -13         | 53.66       |
| 958.6                                 | 32.32          | 214          | 1.2        | V           | -61.7       | 1.36            | 0.0                    | -63.06               | -13         | 50.06       |
| 3701.40                               | 49.53          | 170          | 2.1        | H           | -52.3       | 1.60            | 11.90                  | -42.00               | -13         | 29.00       |
| 3701.40                               | 48.63          | 40           | 2.5        | V           | -52.6       | 1.60            | 11.90                  | -42.30               | -13         | 29.30       |
| 1.4MHz, Middle channel                |                |              |            |             |             |                 |                        |                      |             |             |
| 956.3                                 | 31.12          | 280          | 2.5        | H           | -65.4       | 1.36            | 0.0                    | -66.76               | -13         | 53.76       |
| 956.3                                 | 32.35          | 310          | 2.3        | V           | -61.7       | 1.36            | 0.0                    | -63.06               | -13         | 50.06       |
| 3760.00                               | 48.88          | 32           | 1.5        | H           | -53.2       | 1.50            | 11.80                  | -42.90               | -13         | 29.90       |
| 3760.00                               | 48.82          | 182          | 1.2        | V           | -52.8       | 1.50            | 11.80                  | -42.50               | -13         | 29.50       |
| 1.4MHz, High channel                  |                |              |            |             |             |                 |                        |                      |             |             |
| 958.4                                 | 31.08          | 212          | 1.1        | H           | -65.4       | 1.36            | 0.0                    | -66.76               | -13         | 53.76       |
| 958.4                                 | 32.27          | 317          | 1.2        | V           | -61.8       | 1.36            | 0.0                    | -63.16               | -13         | 50.16       |
| 3818.60                               | 50.14          | 148          | 1.2        | H           | -51.9       | 1.50            | 11.80                  | -41.60               | -13         | 28.60       |
| 3818.60                               | 50.93          | 251          | 2.2        | V           | -50.7       | 1.50            | 11.80                  | -40.40               | -13         | 27.40       |
| Band 4                                |                |              |            |             |             |                 |                        |                      |             |             |
| Test frequency range:30 MHz ~ 20 GHz  |                |              |            |             |             |                 |                        |                      |             |             |
| 1.4MHz, Low channel                   |                |              |            |             |             |                 |                        |                      |             |             |
| 953.9                                 | 31.13          | 359          | 2.4        | H           | -65.4       | 1.36            | 0.0                    | -66.76               | -13         | 53.76       |
| 953.9                                 | 32.24          | 178          | 1.7        | V           | -61.8       | 1.36            | 0.0                    | -63.16               | -13         | 50.16       |
| 3421.40                               | 46.85          | 349          | 2.3        | H           | -53.9       | 1.40            | 11.80                  | -43.50               | -13         | 30.50       |
| 3421.40                               | 46.57          | 343          | 2.1        | V           | -54.0       | 1.40            | 11.80                  | -43.60               | -13         | 30.60       |
| 1.4MHz, Middle channel                |                |              |            |             |             |                 |                        |                      |             |             |
| 958.2                                 | 31.19          | 132          | 1.5        | H           | -65.3       | 1.36            | 0.0                    | -66.66               | -13         | 53.66       |
| 958.2                                 | 32.21          | 286          | 1.7        | V           | -61.8       | 1.36            | 0.0                    | -63.16               | -13         | 50.16       |
| 3465.00                               | 47.20          | 97           | 1.0        | H           | -53.5       | 1.50            | 12.00                  | -43.00               | -13         | 30.00       |
| 3465.00                               | 46.27          | 13           | 1.9        | V           | -55.2       | 1.50            | 12.00                  | -44.70               | -13         | 31.70       |
| 1.4MHz, High channel                  |                |              |            |             |             |                 |                        |                      |             |             |
| 959.7                                 | 31.27          | 111          | 1.8        | H           | -65.2       | 1.36            | 0.0                    | -66.56               | -13         | 53.56       |
| 959.7                                 | 32.26          | 52           | 1.5        | V           | -61.8       | 1.36            | 0.0                    | -63.16               | -13         | 50.16       |
| 3508.60                               | 48.67          | 337          | 2.2        | H           | -52.1       | 1.50            | 12.00                  | -41.60               | -13         | 28.60       |
| 3508.60                               | 47.05          | 275          | 2.5        | V           | -54.5       | 1.50            | 12.00                  | -44.00               | -13         | 31.00       |

| 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                  |                |              |            |             |             |                 |                        |                      |             |             |
| 956.8                                | 31.35          | 284          | 1.9        | H           | -65.2       | 1.36            | 0.0                    | -66.56               | -13         | 53.56       |
| 956.8                                | 32.36          | 36           | 1.7        | V           | -61.7       | 1.36            | 0.0                    | -63.06               | -13         | 50.06       |
| 1649.40                              | 63.85          | 283          | 2.0        | H           | -44.2       | 1.40            | 8.70                   | -36.90               | -13         | 23.90       |
| 1649.40                              | 57.24          | 298          | 2.5        | V           | -50.6       | 1.40            | 8.70                   | -43.30               | -13         | 30.30       |
| 2474.10                              | 71.88          | 217          | 1.7        | H           | -31.5       | 2.60            | 10.20                  | -23.90               | -13         | 10.90       |
| 2474.10                              | 61.28          | 149          | 1.4        | V           | -41.5       | 2.60            | 10.20                  | -33.90               | -13         | 20.90       |
| 3298.80                              | 44.77          | 225          | 1.7        | H           | -56.1       | 1.50            | 11.70                  | -45.90               | -13         | 32.90       |
| 3298.80                              | 43.86          | 281          | 1.5        | V           | -57.1       | 1.50            | 11.70                  | -46.90               | -13         | 33.90       |
| 1.4MHz, Middle channel               |                |              |            |             |             |                 |                        |                      |             |             |
| 960.7                                | 31.24          | 88           | 1.6        | H           | -65.3       | 1.36            | 0.0                    | -66.66               | -13         | 53.66       |
| 960.7                                | 32.39          | 71           | 1.8        | V           | -61.7       | 1.36            | 0.0                    | -63.06               | -13         | 50.06       |
| 1673.00                              | 61.34          | 166          | 2.3        | H           | -45.0       | 1.30            | 8.90                   | -37.40               | -13         | 24.40       |
| 1673.00                              | 56.44          | 237          | 2.1        | V           | -49.3       | 1.30            | 8.90                   | -41.70               | -13         | 28.70       |
| 2509.50                              | 73.04          | 142          | 1.6        | H           | -30.3       | 2.60            | 10.20                  | -22.70               | -13         | 9.70        |
| 2509.50                              | 60.25          | 152          | 1.3        | V           | -42.5       | 2.60            | 10.20                  | -34.90               | -13         | 21.90       |
| 3346.00                              | 44.82          | 238          | 1.1        | H           | -56.1       | 1.50            | 11.70                  | -45.90               | -13         | 32.90       |
| 3346.00                              | 43.78          | 131          | 2.1        | V           | -57.1       | 1.50            | 11.70                  | -46.90               | -13         | 33.90       |
| 1.4MHz, High channel                 |                |              |            |             |             |                 |                        |                      |             |             |
| 961.2                                | 31.13          | 123          | 1.5        | H           | -65.4       | 1.36            | 0.0                    | -66.76               | -13         | 53.76       |
| 961.2                                | 32.16          | 12           | 1.9        | V           | -61.9       | 1.36            | 0.0                    | -63.26               | -13         | 50.26       |
| 1696.60                              | 62.79          | 226          | 1.6        | H           | -43.5       | 1.30            | 8.90                   | -35.90               | -13         | 22.90       |
| 1696.60                              | 58.34          | 307          | 1.4        | V           | -47.4       | 1.30            | 8.90                   | -39.80               | -13         | 26.80       |
| 2544.90                              | 72.71          | 187          | 2.0        | H           | -30.6       | 2.60            | 10.20                  | -23.00               | -13         | 10.00       |
| 2544.90                              | 62.78          | 193          | 1.3        | V           | -40.0       | 2.60            | 10.20                  | -32.40               | -13         | 19.40       |
| 3393.20                              | 44.67          | 246          | 2.2        | H           | -56.6       | 1.40            | 11.80                  | -46.20               | -13         | 33.20       |
| 3393.20                              | 43.95          | 308          | 2.0        | V           | -57.1       | 1.40            | 11.80                  | -46.70               | -13         | 33.70       |

| 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                       |                |              |            |             |             |                 |                        |                      |             |             |
| 957.1                                   | 31.05          | 346          | 1.1        | H           | -65.5       | 1.36            | 0.0                    | -66.86               | -25         | 41.86       |
| 957.1                                   | 32.35          | 10           | 2.0        | V           | -61.7       | 1.36            | 0.0                    | -63.06               | -25         | 38.06       |
| 5005.00                                 | 44.85          | 354          | 1.4        | H           | -55.7       | 1.70            | 12.00                  | -45.40               | -25         | 20.40       |
| 5005.00                                 | 43.75          | 148          | 1.9        | V           | -56.3       | 1.70            | 12.00                  | -46.00               | -25         | 21.00       |
| 5MHz, Middle channel                    |                |              |            |             |             |                 |                        |                      |             |             |
| 957.5                                   | 31.12          | 257          | 1.3        | H           | -65.4       | 1.36            | 0.0                    | -66.76               | -25         | 41.76       |
| 951.5                                   | 32.33          | 202          | 2.3        | V           | -61.7       | 1.36            | 0.0                    | -63.06               | -25         | 38.06       |
| 5070.00                                 | 44.25          | 133          | 2.5        | H           | -55.8       | 1.60            | 12.10                  | -45.30               | -25         | 20.30       |
| 5070.00                                 | 44.31          | 298          | 1.6        | V           | -55.7       | 1.60            | 12.10                  | -45.20               | -25         | 20.20       |
| 5MHz, High channel                      |                |              |            |             |             |                 |                        |                      |             |             |
| 961.8                                   | 31.26          | 132          | 1.8        | H           | -65.2       | 1.36            | 0.0                    | -66.56               | -25         | 41.56       |
| 961.8                                   | 32.42          | 303          | 2.4        | V           | -61.6       | 1.36            | 0.0                    | -62.96               | -25         | 37.96       |
| 5135.00                                 | 44.08          | 327          | 1.2        | H           | -55.9       | 1.60            | 12.10                  | -45.40               | -25         | 20.40       |
| 5135.00                                 | 43.84          | 40           | 1.4        | V           | -56.2       | 1.60            | 12.10                  | -45.70               | -25         | 20.70       |
| Band 17                                 |                |              |            |             |             |                 |                        |                      |             |             |
| Test frequency range: 30 MHz ~ 10 GHz   |                |              |            |             |             |                 |                        |                      |             |             |
| 5MHz, Low channel                       |                |              |            |             |             |                 |                        |                      |             |             |
| 962.5                                   | 31.12          | 267          | 2.3        | H           | -65.4       | 1.36            | 0.0                    | -66.76               | -13         | 53.76       |
| 962.5                                   | 32.26          | 84           | 2.4        | V           | -61.8       | 1.36            | 0.0                    | -63.16               | -13         | 50.16       |
| 1413.00                                 | 66.87          | 202          | 2.1        | H           | -41.3       | 1.60            | 7.90                   | -35.00               | -13         | 22.00       |
| 1413.00                                 | 69.57          | 0            | 1.5        | V           | -38.9       | 1.60            | 7.90                   | -32.60               | -13         | 19.60       |
| 2119.50                                 | 73.21          | 46           | 2.2        | H           | -27.9       | 1.30            | 9.70                   | -19.50               | -13         | 6.50        |
| 2119.50                                 | 70.14          | 295          | 2.2        | V           | -31.8       | 1.30            | 9.70                   | -23.40               | -13         | 10.40       |
| 2826.00                                 | 50.17          | 176          | 1.6        | H           | -53.8       | 1.80            | 10.50                  | -45.10               | -13         | 32.10       |
| 2826.00                                 | 52.74          | 253          | 2.4        | V           | -50.9       | 1.80            | 10.50                  | -42.20               | -13         | 29.20       |
| 5MHz, Middle channel                    |                |              |            |             |             |                 |                        |                      |             |             |
| 955.7                                   | 31.01          | 300          | 1.3        | H           | -65.5       | 1.36            | 0.0                    | -66.86               | -13         | 53.86       |
| 955.7                                   | 32.37          | 201          | 1.3        | V           | -61.7       | 1.36            | 0.0                    | -63.06               | -13         | 50.06       |
| 1420.00                                 | 70.25          | 334          | 2.4        | H           | -37.9       | 1.60            | 7.90                   | -31.60               | -13         | 18.60       |
| 1420.00                                 | 66.96          | 113          | 1.3        | V           | -41.5       | 1.60            | 7.90                   | -35.20               | -13         | 22.20       |
| 2130.00                                 | 74.21          | 53           | 1.5        | H           | -26.9       | 1.30            | 9.70                   | -18.50               | -13         | 5.50        |
| 2130.00                                 | 71.28          | 244          | 1.3        | V           | -30.7       | 1.30            | 9.70                   | -22.30               | -13         | 9.30        |
| 2840.00                                 | 49.36          | 211          | 1.9        | H           | -54.6       | 1.80            | 10.50                  | -45.90               | -13         | 32.90       |
| 2840.00                                 | 49.44          | 351          | 2.0        | V           | -54.2       | 1.80            | 10.50                  | -45.50               | -13         | 32.50       |
| 5MHz, High channel                      |                |              |            |             |             |                 |                        |                      |             |             |
| 953.8                                   | 31.11          | 158          | 1.4        | H           | -65.4       | 1.36            | 0.0                    | -66.76               | -13         | 53.76       |
| 953.8                                   | 32.22          | 139          | 1.3        | V           | -61.8       | 1.36            | 0.0                    | -63.16               | -13         | 50.16       |
| 1427.00                                 | 72.89          | 3            | 1.5        | H           | -35.3       | 1.60            | 7.90                   | -29.00               | -13         | 16.00       |
| 1427.00                                 | 68.82          | 64           | 2.0        | V           | -39.6       | 1.60            | 7.90                   | -33.30               | -13         | 20.30       |
| 2140.50                                 | 73.33          | 345          | 2.4        | H           | -27.8       | 1.30            | 9.70                   | -19.40               | -13         | 6.40        |
| 2140.50                                 | 70.57          | 138          | 1.6        | V           | -31.4       | 1.30            | 9.70                   | -23.00               | -13         | 10.00       |
| 2854.00                                 | 52.84          | 244          | 2.2        | H           | -51.8       | 1.70            | 10.70                  | -42.80               | -13         | 29.80       |
| 2854.00                                 | 50.11          | 246          | 1.9        | V           | -54.6       | 1.70            | 10.70                  | -45.60               | -13         | 32.60       |

**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 - 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.

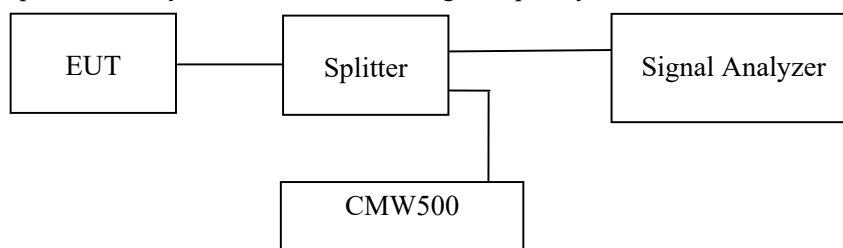
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

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:       | 28.5~29.2 °C    |
| Relative Humidity: | 51~53 %         |
| ATM Pressure:      | 101.0 ~102.0kPa |

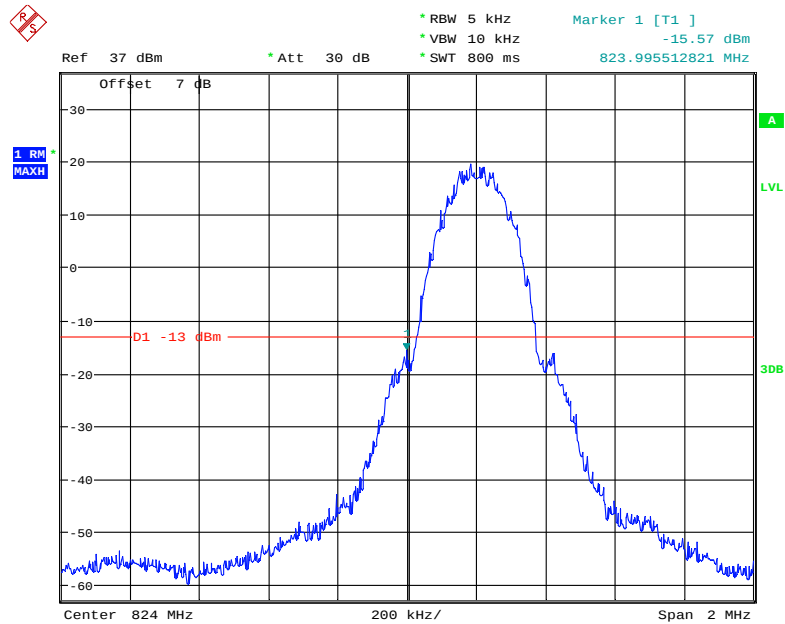
*The testing was performed by Pedro Yun from 2021-08-12 to 2021-09-09.*

*EUT operation mode: Transmitting (Worst case)*

**Test Result: Pass**

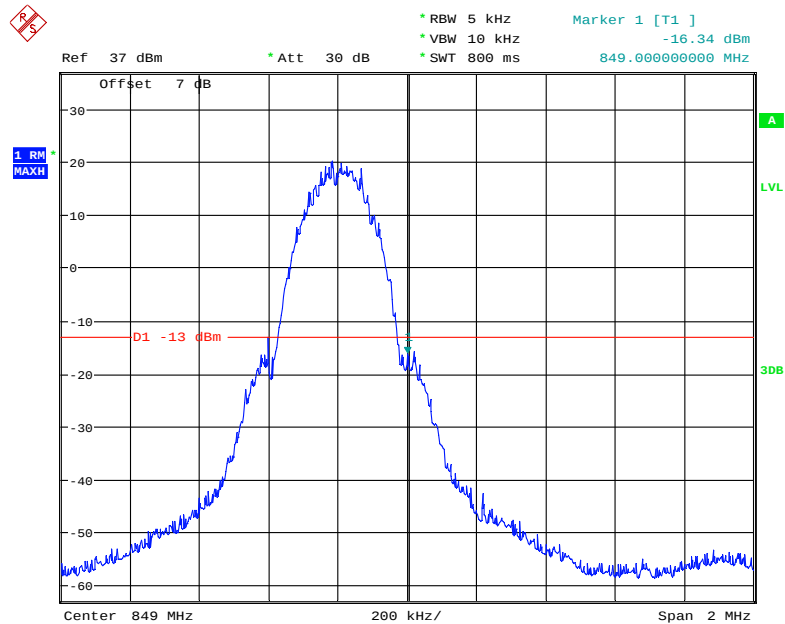
*Please refer to the following plots.*

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



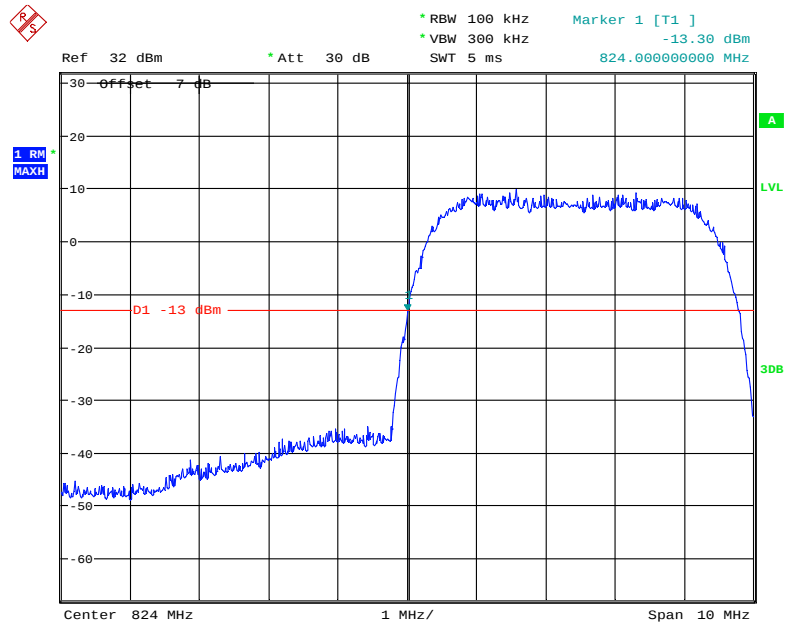
Date: 12.AUG.2021 22:36:34

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



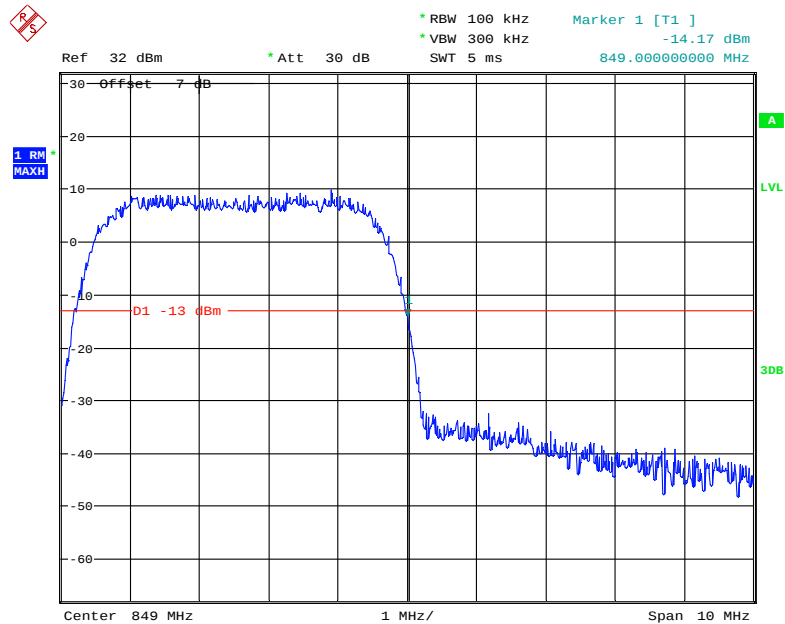
Date: 12.AUG.2021 22:35:26

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



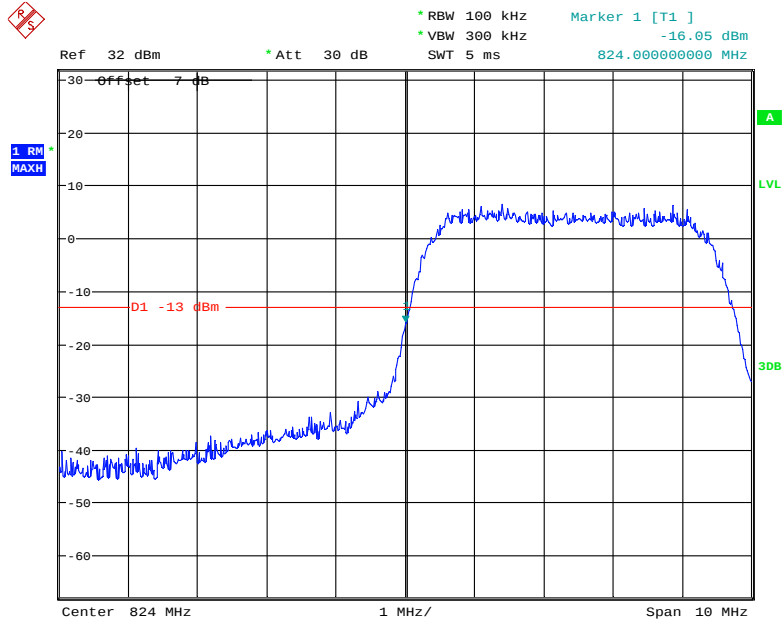
Date: 12.AUG.2021 00:39:04

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



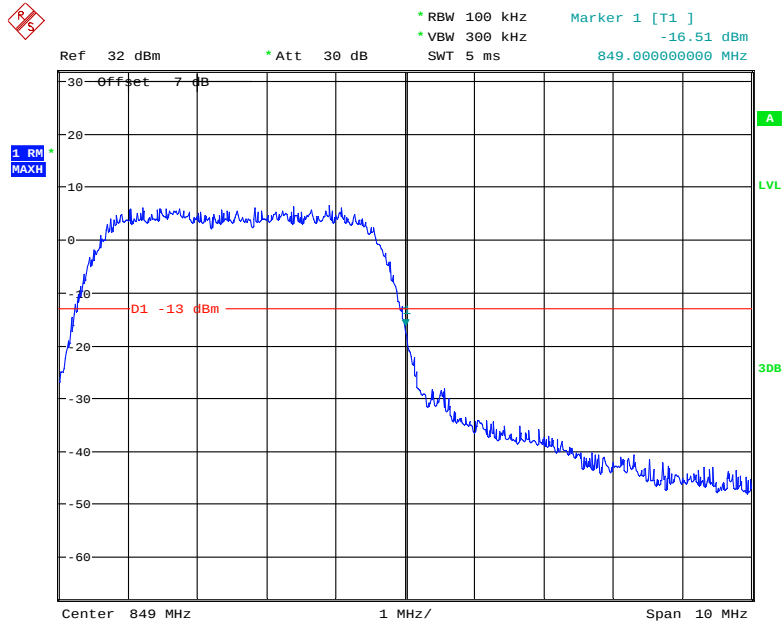
Date: 12.AUG.2021 00:37:17

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



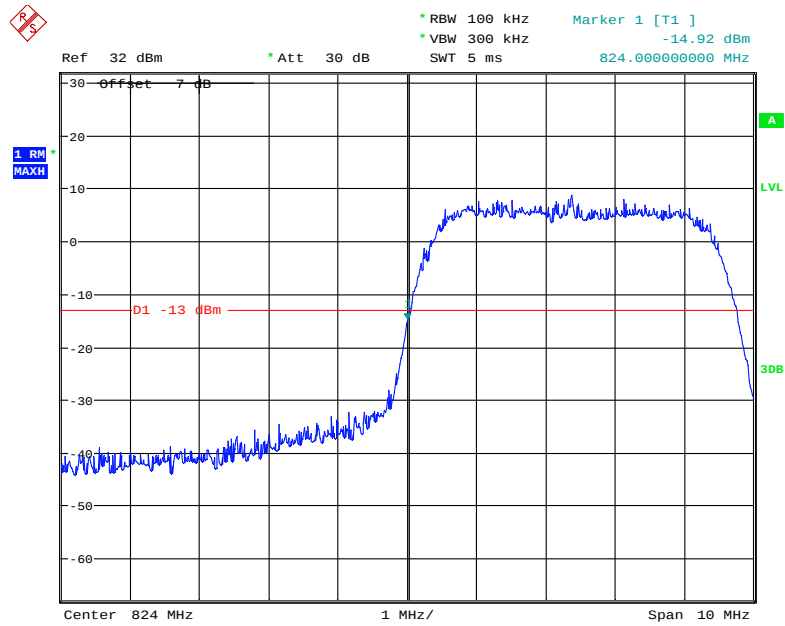
Date: 12.AUG.2021 00:34:06

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



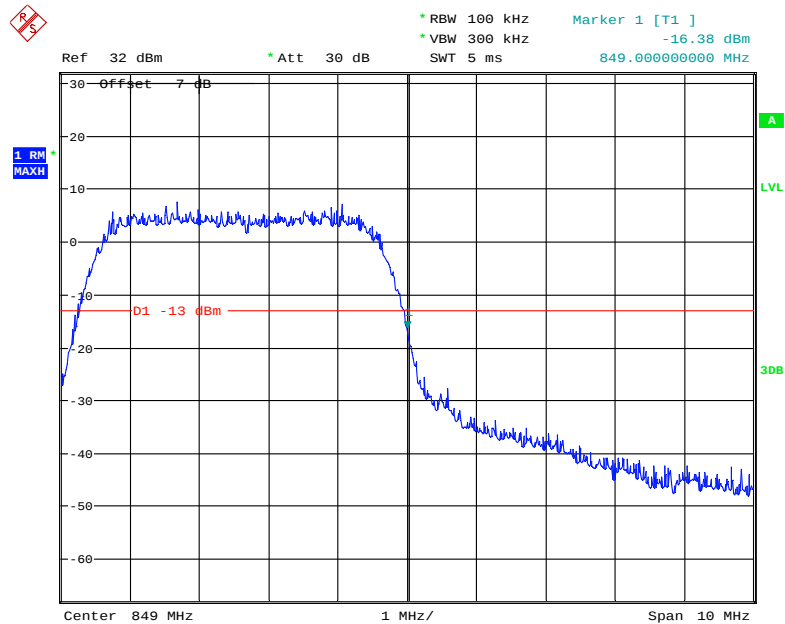
Date: 12.AUG.2021 00:34:44

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



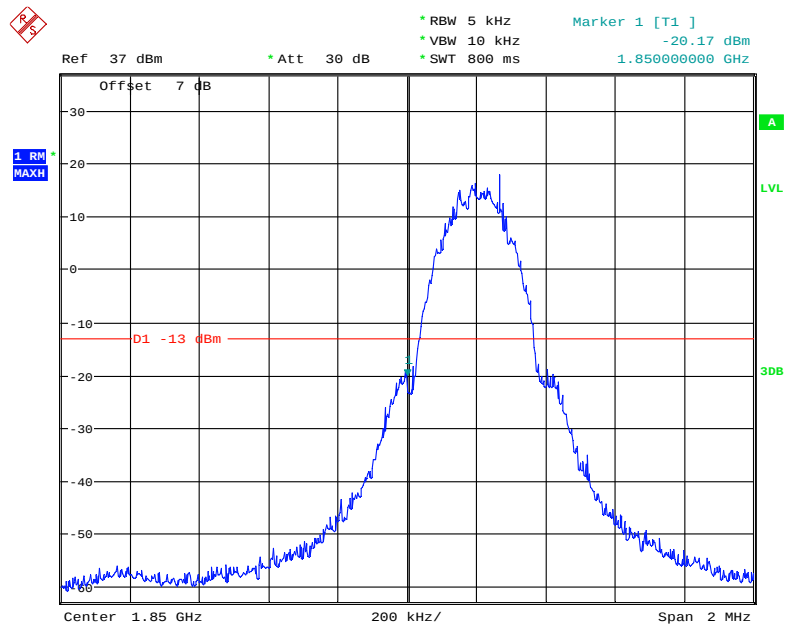
Date: 12.AUG.2021 00:32:40

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



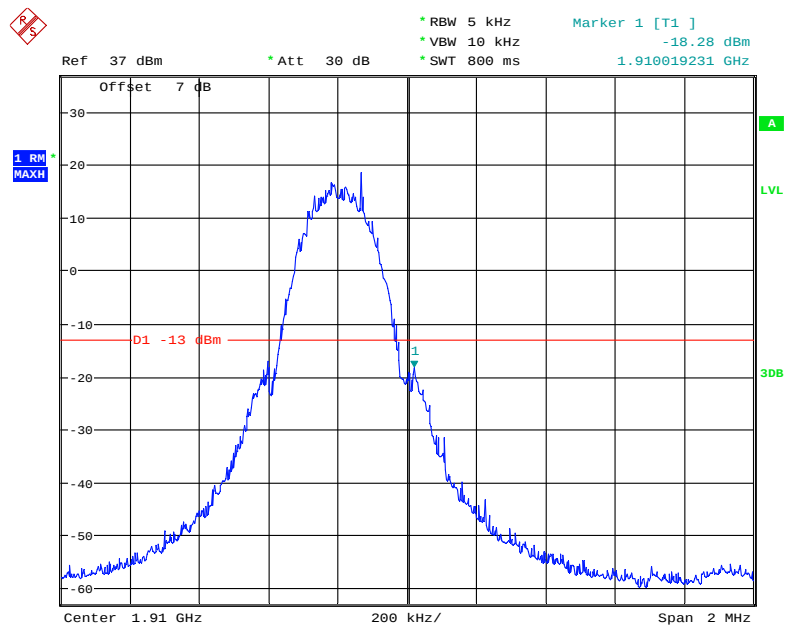
Date: 12.AUG.2021 00:33:29

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



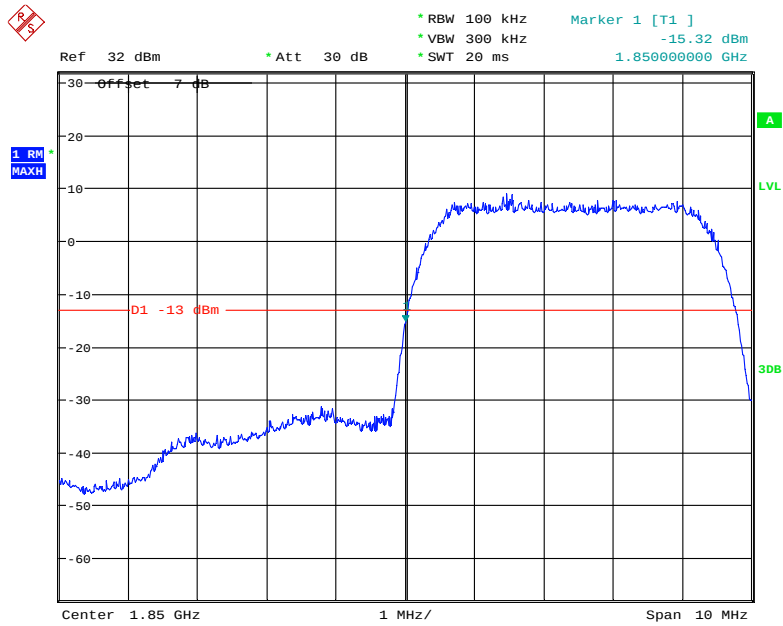
Date: 12.AUG.2021 22:30:58

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



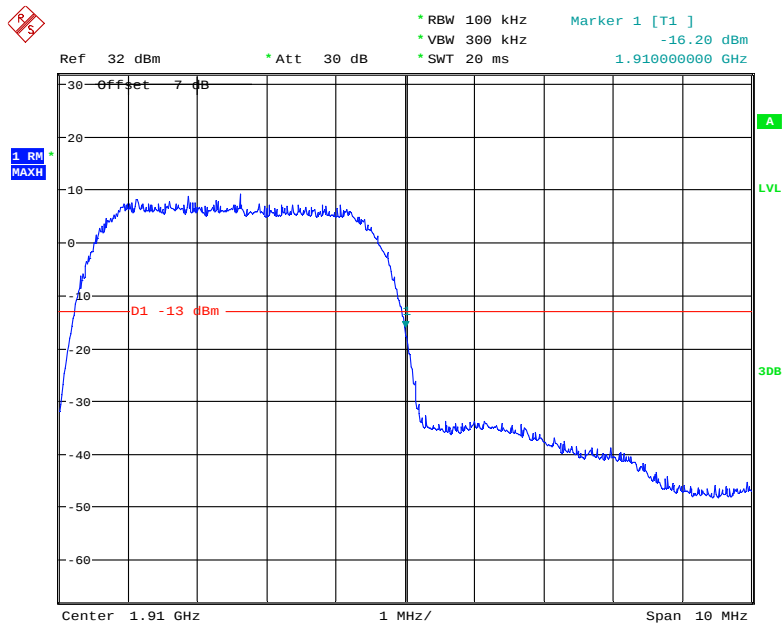
Date: 12.AUG.2021 22:40:48

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



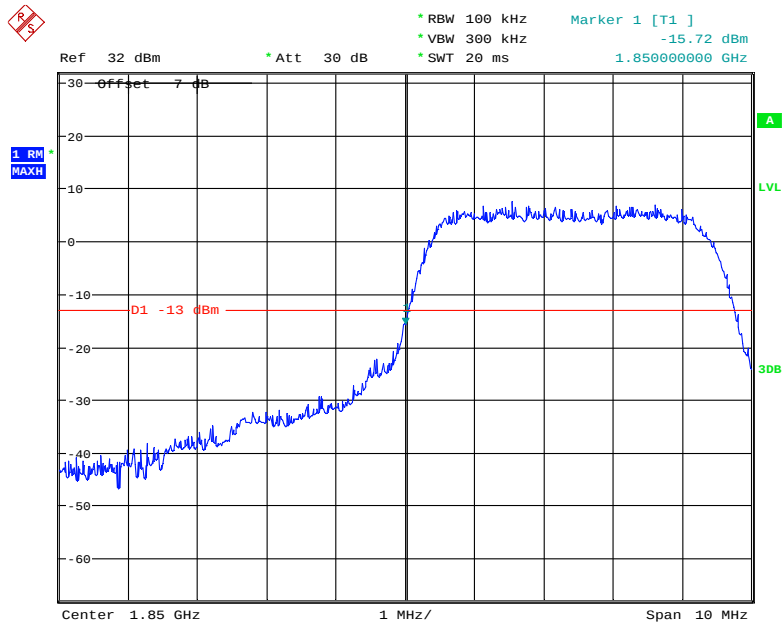
Date: 12.AUG.2021 01:14:13

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



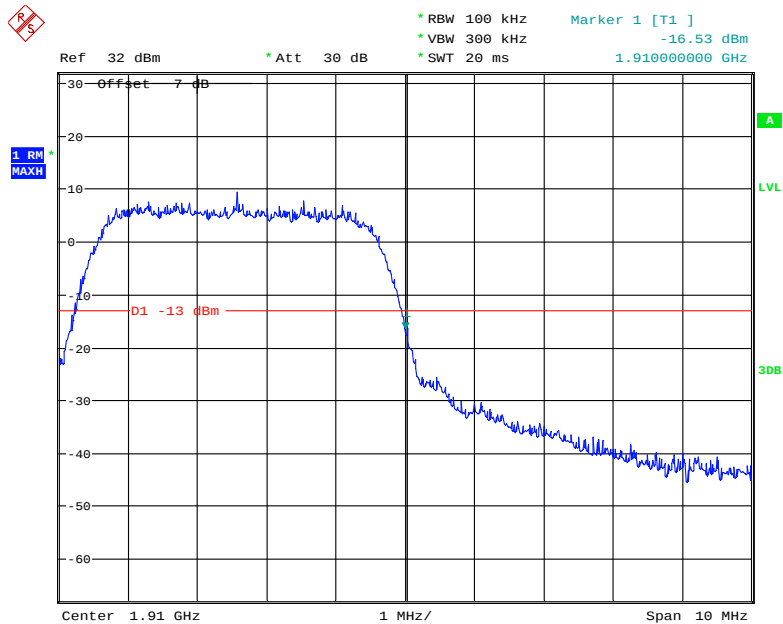
Date: 12.AUG.2021 01:15:01

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



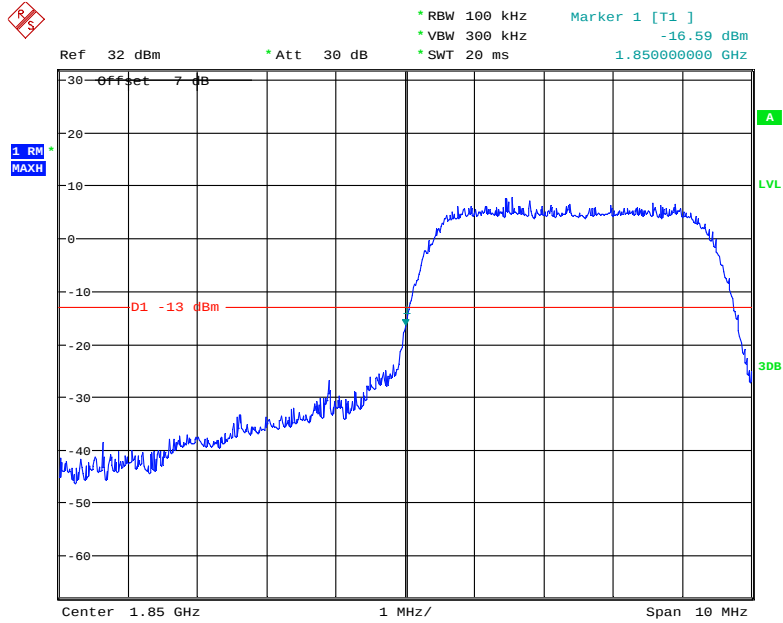
Date: 12.AUG.2021 00:23:36

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



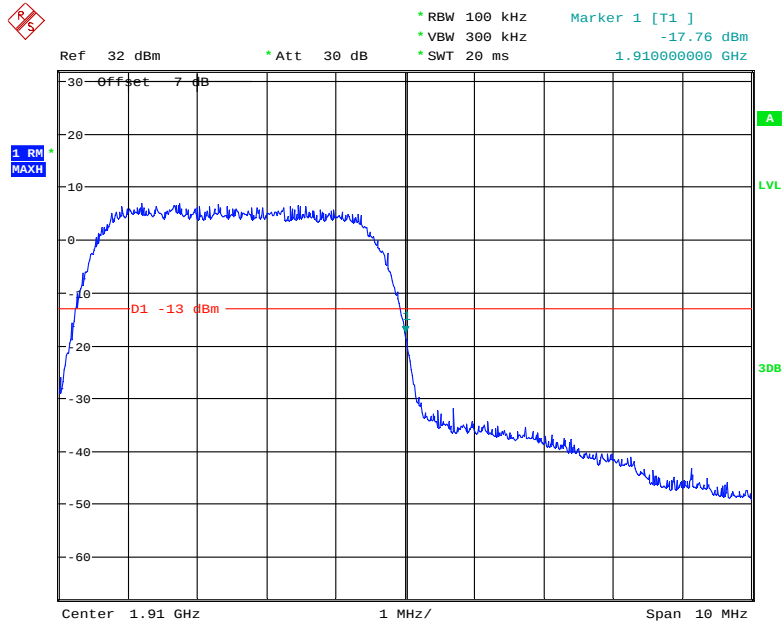
Date: 12.AUG.2021 00:25:07

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



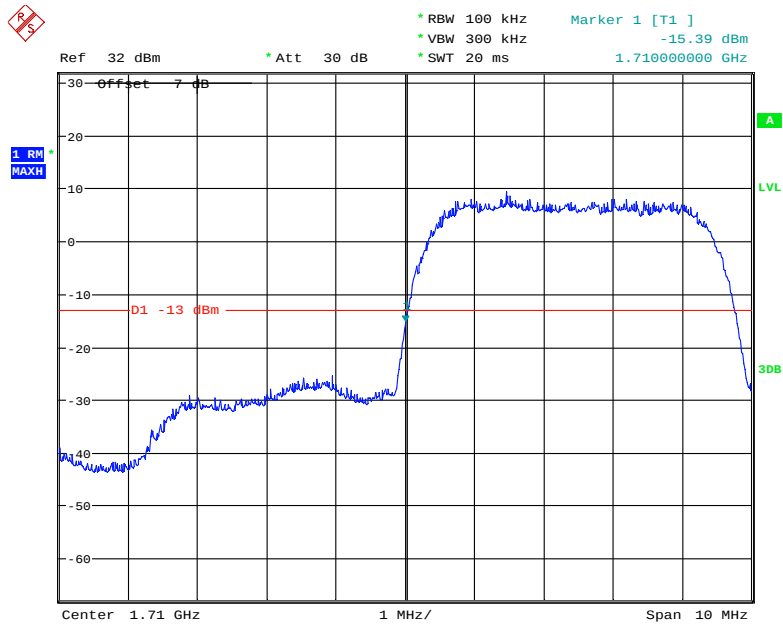
Date: 12.AUG.2021 01:09:56

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



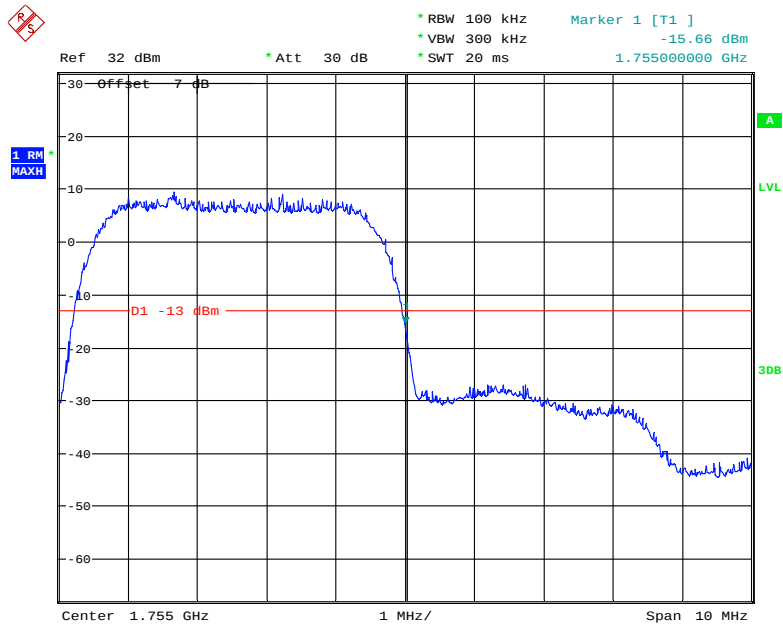
Date: 12.AUG.2021 01:07:33

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



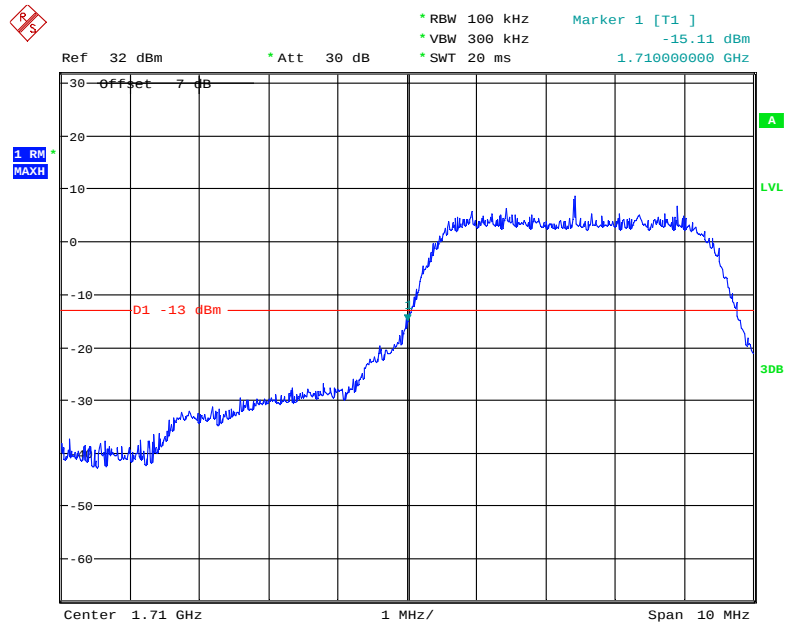
Date: 12.AUG.2021 01:16:40

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



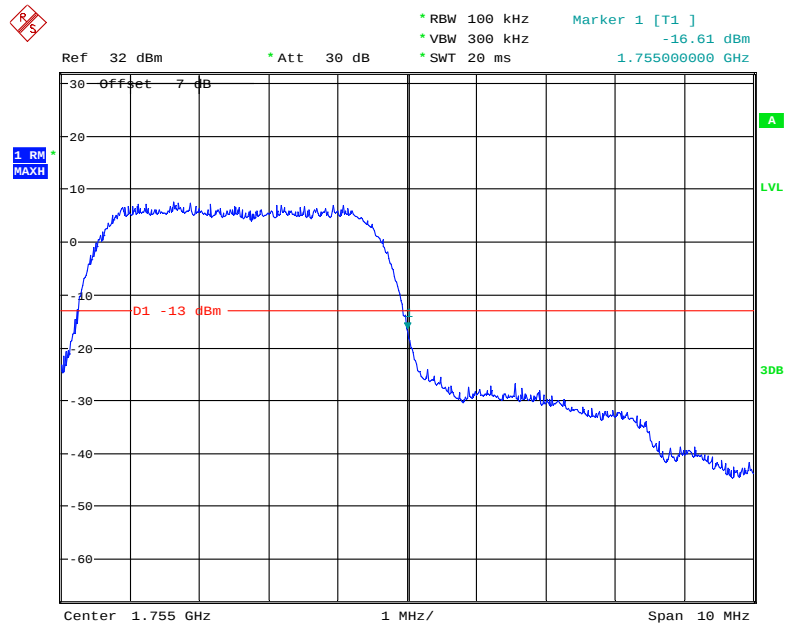
Date: 12.AUG.2021 01:15:54

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



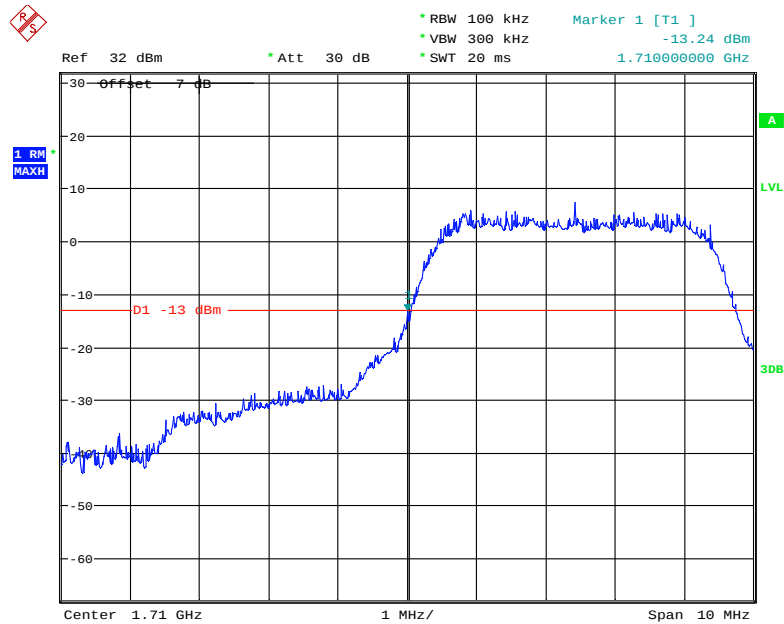
Date: 12.AUG.2021 00:29:54

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



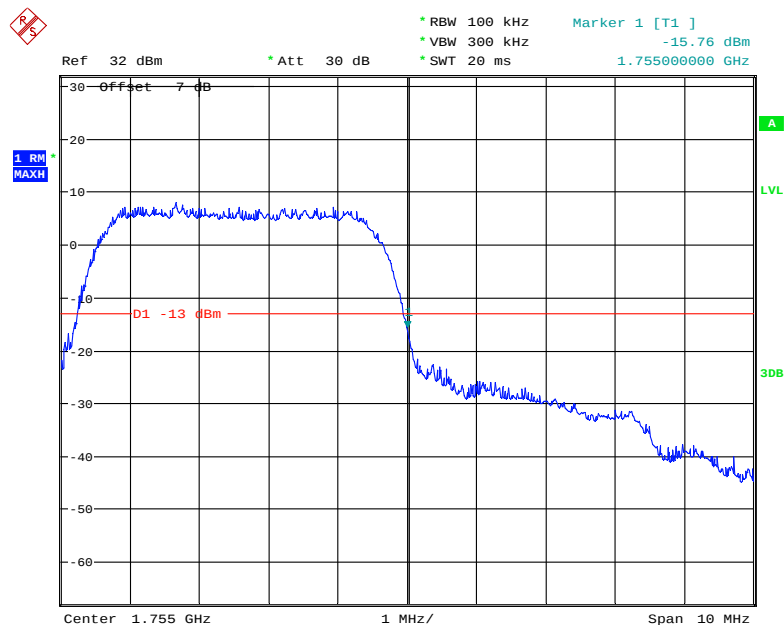
Date: 12.AUG.2021 00:57:20

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



Date: 12.AUG.2021 00:30:24

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



Date: 12.AUG.2021 01:06:33

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                    |

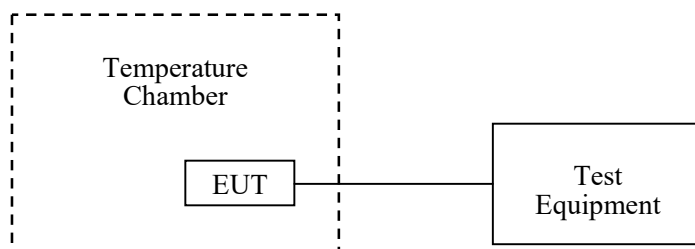
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

### 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**

|                           |                 |
|---------------------------|-----------------|
| <b>Temperature:</b>       | 28.5~29.2 °C    |
| <b>Relative Humidity:</b> | 51~53 %         |
| <b>ATM Pressure:</b>      | 101.0 ~102.0kPa |

The testing was performed by Pedro Yun on 2021-08-13.

EUT operation mode: Transmitting (Worst case)

**Test Result: Pass**

Please refer to the following tables.

**Cellular Band (Part 22H)****GSM Mode**

| Middle Channel, $f_0 = 836.6\text{MHz}$ |                                     |                      |                       |             |
|-----------------------------------------|-------------------------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                        | Voltage Supplied (V <sub>DC</sub> ) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| -30                                     | N.V.                                | -5                   | -0.0060               | 2.5         |
| -20                                     |                                     | -4                   | -0.0048               | 2.5         |
| -10                                     |                                     | -3                   | -0.0036               | 2.5         |
| 0                                       |                                     | -2                   | -0.0024               | 2.5         |
| 10                                      |                                     | -2                   | -0.0024               | 2.5         |
| 20                                      |                                     | -4                   | -0.0048               | 2.5         |
| 30                                      |                                     | 4                    | 0.0048                | 2.5         |
| 40                                      |                                     | 5                    | 0.0060                | 2.5         |
| 50                                      |                                     | -4                   | -0.0048               | 2.5         |
| 20                                      | L.V.                                | 5                    | 0.0060                | 2.5         |
|                                         | H.V.                                | -3                   | -0.0036               | 2.5         |

**WCDMA Mode**

| <b>Middle Channel, <math>f_0=836.6\text{MHz}</math></b> |                                                  |                                     |                                      |                        |
|---------------------------------------------------------|--------------------------------------------------|-------------------------------------|--------------------------------------|------------------------|
| <b>Temperature<br/>(°C)</b>                             | <b>Voltage<br/>Supplied<br/>(V<sub>DC</sub>)</b> | <b>Frequency<br/>Error<br/>(Hz)</b> | <b>Frequency<br/>Error<br/>(ppm)</b> | <b>Limit<br/>(ppm)</b> |
| -30                                                     | N.V.                                             | 8                                   | 0.0096                               | 2.5                    |
| -20                                                     |                                                  | 6                                   | 0.0072                               | 2.5                    |
| -10                                                     |                                                  | 7                                   | 0.0084                               | 2.5                    |
| 0                                                       |                                                  | 4                                   | 0.0048                               | 2.5                    |
| 10                                                      |                                                  | 5                                   | 0.0060                               | 2.5                    |
| 20                                                      |                                                  | 6                                   | 0.0072                               | 2.5                    |
| 30                                                      |                                                  | 7                                   | 0.0084                               | 2.5                    |
| 40                                                      |                                                  | 4                                   | 0.0048                               | 2.5                    |
| 50                                                      |                                                  | 5                                   | 0.0060                               | 2.5                    |
| 20                                                      | L.V.                                             | 6                                   | 0.0072                               | 2.5                    |
|                                                         | H.V.                                             | 7                                   | 0.0084                               | 2.5                    |

**PCS Band (Part 24E)****GSM Mode**

| Middle Channel, $f_0 = 1880.0$ MHz |                                     |                      |                       |        |
|------------------------------------|-------------------------------------|----------------------|-----------------------|--------|
| Temperature (°C)                   | Voltage Supplied (V <sub>DC</sub> ) | Frequency Error (Hz) | Frequency Error (ppm) | Result |
| -30                                | N.V.                                | 6                    | 0.0032                | Pass   |
| -20                                |                                     | 7                    | 0.0037                | Pass   |
| -10                                |                                     | 6                    | 0.0032                | Pass   |
| 0                                  |                                     | 3                    | 0.0016                | Pass   |
| 10                                 |                                     | 4                    | 0.0021                | Pass   |
| 20                                 |                                     | 5                    | 0.0027                | Pass   |
| 30                                 |                                     | 6                    | 0.0032                | Pass   |
| 40                                 |                                     | 8                    | 0.0043                | Pass   |
| 50                                 |                                     | 5                    | 0.0027                | Pass   |
| 20                                 | L.V.                                | 4                    | 0.0021                | Pass   |
|                                    | H.V.                                | 5                    | 0.0027                | Pass   |

**WCDMA Mode**

| Middle Channel, $f_0 = 1880.0$ MHz |                                     |                      |                       |        |
|------------------------------------|-------------------------------------|----------------------|-----------------------|--------|
| Temperature (°C)                   | Voltage Supplied (V <sub>DC</sub> ) | Frequency Error (Hz) | Frequency Error (ppm) | Result |
| -30                                | N.V.                                | -4                   | -0.0021               | Pass   |
| -20                                |                                     | -3                   | -0.0016               | Pass   |
| -10                                |                                     | 6                    | 0.0032                | Pass   |
| 0                                  |                                     | 4                    | 0.0021                | Pass   |
| 10                                 |                                     | 5                    | 0.0027                | Pass   |
| 20                                 |                                     | -4                   | -0.0021               | Pass   |
| 30                                 |                                     | -5                   | -0.0027               | Pass   |
| 40                                 |                                     | -4                   | -0.0021               | Pass   |
| 50                                 |                                     | -7                   | -0.0037               | Pass   |
| 20                                 | L.V.                                | -6                   | -0.0032               | Pass   |
|                                    | H.V.                                | -5                   | -0.0027               | Pass   |

**AWS Band (Part 27)**

| Temperature (°C) | Power Supplied (V <sub>DC</sub> ) | F <sub>L</sub> (MHz) | F <sub>H</sub> (MHz) | F <sub>L</sub> Limit (MHz) | F <sub>H</sub> Limit (MHz) |
|------------------|-----------------------------------|----------------------|----------------------|----------------------------|----------------------------|
| -30              | N.V.                              | 1710.0475            | 1754.6716            | 1710                       | 1755                       |
| -20              |                                   | 1710.0283            | 1754.3322            | 1710                       | 1755                       |
| -10              |                                   | 1710.0395            | 1754.5403            | 1710                       | 1755                       |
| 0                |                                   | 1710.3763            | 1754.4425            | 1710                       | 1755                       |
| 10               |                                   | 1710.0419            | 1754.2533            | 1710                       | 1755                       |
| 20               |                                   | 1710.1085            | 1754.5881            | 1710                       | 1755                       |
| 30               |                                   | 1710.0518            | 1754.4473            | 1710                       | 1755                       |
| 40               |                                   | 1710.2347            | 1754.5685            | 1710                       | 1755                       |
| 50               |                                   | 1710.2800            | 1754.3375            | 1710                       | 1755                       |
| 20               | L.V.                              | 1710.0278            | 1754.5930            | 1710                       | 1755                       |
|                  | H.V.                              | 1710.0198            | 1754.3809            | 1710                       | 1755                       |

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

**Band 2:**

| 10.0 MHz Middle Channel, $f_o=1880\text{MHz}$ |                                     |                      |                       |        |
|-----------------------------------------------|-------------------------------------|----------------------|-----------------------|--------|
| Temperature (°C)                              | Voltage Supplied (V <sub>DC</sub> ) | Frequency Error (Hz) | Frequency Error (ppm) | Result |
| -30                                           | NV                                  | -5.69                | -0.0030               | Pass   |
| -20                                           |                                     | -9.97                | -0.0053               | Pass   |
| -10                                           |                                     | -6.12                | -0.0033               | Pass   |
| 0                                             |                                     | 6.15                 | 0.0033                | Pass   |
| 10                                            |                                     | 7.88                 | 0.0042                | Pass   |
| 20                                            |                                     | 6.54                 | 0.0035                | Pass   |
| 30                                            |                                     | -6.46                | -0.0034               | Pass   |
| 40                                            |                                     | 7.18                 | 0.0038                | Pass   |
| 50                                            |                                     | -9.61                | -0.0051               | Pass   |
| 20                                            | LV                                  | -8.13                | -0.0043               | Pass   |
|                                               | HV                                  | -7.08                | -0.0038               | Pass   |

**Band 4:**

| 10 MHz Bandwidth |                                   |                      |                      |                            |                            |
|------------------|-----------------------------------|----------------------|----------------------|----------------------------|----------------------------|
| Temperature (°C) | Power Supplied (V <sub>DC</sub> ) | F <sub>L</sub> (MHz) | F <sub>H</sub> (MHz) | F <sub>L</sub> Limit (MHz) | F <sub>H</sub> Limit (MHz) |
| -30              | NV                                | 1710.3128            | 1754.0718            | 1710                       | 1755                       |
| -20              |                                   | 1710.0519            | 1754.0715            | 1710                       | 1755                       |
| -10              |                                   | 1710.3975            | 1754.0281            | 1710                       | 1755                       |
| 0                |                                   | 1710.3333            | 1754.0623            | 1710                       | 1755                       |
| 10               |                                   | 1710.4430            | 1754.5951            | 1710                       | 1755                       |
| 20               |                                   | 1710.0723            | 1754.2535            | 1710                       | 1755                       |
| 30               |                                   | 1710.1327            | 1754.1306            | 1710                       | 1755                       |
| 40               |                                   | 1710.3029            | 1754.4006            | 1710                       | 1755                       |
| 50               |                                   | 1710.3472            | 1754.0327            | 1710                       | 1755                       |
| 20               | LV                                | 1710.2835            | 1754.4537            | 1710                       | 1755                       |
|                  | HV                                | 1710.2460            | 1754.2222            | 1710                       | 1755                       |

**Band 5:**

| 10.0 MHz Middle Channel, $f_0=836.5\text{MHz}$ |                                     |                      |                       |             |
|------------------------------------------------|-------------------------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                               | Voltage Supplied (V <sub>DC</sub> ) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| -30                                            | NV                                  | -5.88                | -0.007                | 2.5         |
| -20                                            |                                     | -6.97                | -0.0083               | 2.5         |
| -10                                            |                                     | -5.50                | -0.0066               | 2.5         |
| 0                                              |                                     | 6.06                 | 0.0072                | 2.5         |
| 10                                             |                                     | 9.80                 | 0.0117                | 2.5         |
| 20                                             |                                     | 5.03                 | 0.006                 | 2.5         |
| 30                                             |                                     | -6.62                | -0.0079               | 2.5         |
| 40                                             |                                     | -8.73                | -0.0104               | 2.5         |
| 50                                             |                                     | -7.05                | -0.0084               | 2.5         |
| 20                                             | LV                                  | 8.99                 | 0.0107                | 2.5         |
|                                                | HV                                  | -7.17                | -0.0086               | 2.5         |

**Band 7:**

| 10 MHz Bandwidth |                                   |                      |                      |                            |                            |
|------------------|-----------------------------------|----------------------|----------------------|----------------------------|----------------------------|
| Temperature (°C) | Power Supplied (V <sub>DC</sub> ) | F <sub>L</sub> (MHz) | F <sub>H</sub> (MHz) | F <sub>L</sub> Limit (MHz) | F <sub>H</sub> Limit (MHz) |
| -30              | NV                                | 2500.0864            | 2569.0839            | 2500                       | 2570                       |
| -20              |                                   | 2500.5664            | 2569.0525            | 2500                       | 2570                       |
| -10              |                                   | 2500.4729            | 2569.0763            | 2500                       | 2570                       |
| 0                |                                   | 2500.0483            | 2569.2082            | 2500                       | 2570                       |
| 10               |                                   | 2500.0614            | 2569.0683            | 2500                       | 2570                       |
| 20               |                                   | 2500.0881            | 2569.1044            | 2500                       | 2570                       |
| 30               |                                   | 2500.2511            | 2569.0154            | 2500                       | 2570                       |
| 40               |                                   | 2500.1806            | 2569.1223            | 2500                       | 2570                       |
| 50               |                                   | 2500.4674            | 2569.2134            | 2500                       | 2570                       |
| 20               | LV                                | 2500.1777            | 2569.1365            | 2500                       | 2570                       |
|                  | HV                                | 2500.0196            | 2569.0397            | 2500                       | 2570                       |

**Band 17:**

| 10 MHz Bandwidth |                                   |                      |                      |                            |                            |
|------------------|-----------------------------------|----------------------|----------------------|----------------------------|----------------------------|
| Temperature (°C) | Power Supplied (V <sub>DC</sub> ) | F <sub>L</sub> (MHz) | F <sub>H</sub> (MHz) | F <sub>L</sub> Limit (MHz) | F <sub>H</sub> Limit (MHz) |
| -30              | NV                                | 704.2343             | 715.2650             | 704                        | 716                        |
| -20              |                                   | 704.0195             | 715.0560             | 704                        | 716                        |
| -10              |                                   | 704.0721             | 715.0749             | 704                        | 716                        |
| 0                |                                   | 704.0220             | 715.3543             | 704                        | 716                        |
| 10               |                                   | 704.0070             | 715.3718             | 704                        | 716                        |
| 20               |                                   | 704.2318             | 715.4764             | 704                        | 716                        |
| 30               |                                   | 704.1424             | 715.2484             | 704                        | 716                        |
| 40               |                                   | 704.0737             | 715.3161             | 704                        | 716                        |
| 50               |                                   | 704.0809             | 715.0862             | 704                        | 716                        |
| 20               | LV                                | 704.2015             | 715.0839             | 704                        | 716                        |
|                  | HV                                | 704.0814             | 715.2184             | 704                        | 716                        |

**16QAM:****Band 2:**

| 10.0 MHz Middle Channel, f <sub>0</sub> =1880MHz |                                     |                      |                       |        |
|--------------------------------------------------|-------------------------------------|----------------------|-----------------------|--------|
| Temperature (°C)                                 | Voltage Supplied (V <sub>DC</sub> ) | Frequency Error (Hz) | Frequency Error (ppm) | Result |
| -30                                              | NV                                  | -5.55                | -0.0030               | Pass   |
| -20                                              |                                     | -9.88                | -0.0053               | Pass   |
| -10                                              |                                     | -6.03                | -0.0032               | Pass   |
| 0                                                |                                     | 6.22                 | 0.0033                | Pass   |
| 10                                               |                                     | 7.95                 | 0.0042                | Pass   |
| 20                                               |                                     | 6.90                 | 0.0037                | Pass   |
| 30                                               |                                     | -6.40                | -0.0034               | Pass   |
| 40                                               |                                     | 7.37                 | 0.0039                | Pass   |
| 50                                               |                                     | -9.32                | -0.0050               | Pass   |
| 20                                               | LV                                  | -7.76                | -0.0041               | Pass   |
|                                                  | HV                                  | -6.87                | -0.0037               | Pass   |

**Band 4:**

| 10 MHz Bandwidth |                                   |                      |                      |                            |                            |
|------------------|-----------------------------------|----------------------|----------------------|----------------------------|----------------------------|
| Temperature (°C) | Power Supplied (V <sub>DC</sub> ) | F <sub>L</sub> (MHz) | F <sub>H</sub> (MHz) | F <sub>L</sub> Limit (MHz) | F <sub>H</sub> Limit (MHz) |
| -30              | NV                                | 1710.5018            | 1754.5865            | 1710                       | 1755                       |
| -20              |                                   | 1710.2690            | 1754.5195            | 1710                       | 1755                       |
| -10              |                                   | 1710.3975            | 1754.5281            | 1710                       | 1755                       |
| 0                |                                   | 1710.1224            | 1754.6900            | 1710                       | 1755                       |
| 10               |                                   | 1710.5100            | 1754.7475            | 1710                       | 1755                       |
| 20               |                                   | 1710.3811            | 1754.4755            | 1710                       | 1755                       |
| 30               |                                   | 1710.1447            | 1754.5536            | 1710                       | 1755                       |
| 40               |                                   | 1710.5071            | 1754.5129            | 1710                       | 1755                       |
| 50               |                                   | 1710.3607            | 1754.8362            | 1710                       | 1755                       |
| 20               | LV                                | 1710.3998            | 1754.6197            | 1710                       | 1755                       |
|                  | HV                                | 1710.2446            | 1754.8029            | 1710                       | 1755                       |

**Band 5:**

| 10.0 MHz Middle Channel, f <sub>o</sub> =836.5MHz |                                     |                      |                       |             |
|---------------------------------------------------|-------------------------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                                  | Voltage Supplied (V <sub>DC</sub> ) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| -30                                               | NV                                  | -9.00                | -0.0108               | 2.5         |
| -20                                               |                                     | 9.17                 | 0.0110                | 2.5         |
| -10                                               |                                     | 8.51                 | 0.0102                | 2.5         |
| 0                                                 |                                     | -7.18                | -0.0086               | 2.5         |
| 10                                                |                                     | -5.22                | -0.0062               | 2.5         |
| 20                                                |                                     | 7.12                 | 0.0085                | 2.5         |
| 30                                                |                                     | -5.79                | -0.0069               | 2.5         |
| 40                                                |                                     | 5.41                 | 0.0065                | 2.5         |
| 50                                                |                                     | 6.81                 | 0.0081                | 2.5         |
| 20                                                | LV                                  | 9.75                 | 0.0117                | 2.5         |
|                                                   | HV                                  | 9.79                 | 0.0117                | 2.5         |

**Band 7:**

| 10 MHz Bandwidth |                                   |                      |                      |                            |                            |
|------------------|-----------------------------------|----------------------|----------------------|----------------------------|----------------------------|
| Temperature (°C) | Power Supplied (V <sub>DC</sub> ) | F <sub>L</sub> (MHz) | F <sub>H</sub> (MHz) | F <sub>L</sub> Limit (MHz) | F <sub>H</sub> Limit (MHz) |
| -30              | NV                                | 2500.4632            | 2569.3974            | 2500                       | 2570                       |
| -20              |                                   | 2500.3828            | 2569.3787            | 2500                       | 2570                       |
| -10              |                                   | 2500.4729            | 2569.5763            | 2500                       | 2570                       |
| 0                |                                   | 2500.5172            | 2569.5383            | 2500                       | 2570                       |
| 10               |                                   | 2500.4325            | 2569.6837            | 2500                       | 2570                       |
| 20               |                                   | 2500.4504            | 2569.5244            | 2500                       | 2570                       |
| 30               |                                   | 2500.3489            | 2569.3272            | 2500                       | 2570                       |
| 40               |                                   | 2500.4419            | 2569.7474            | 2500                       | 2570                       |
| 50               |                                   | 2500.5695            | 2569.5820            | 2500                       | 2570                       |
| 20               | LV                                | 2500.5758            | 2569.3541            | 2500                       | 2570                       |
|                  | HV                                | 2500.2450            | 2569.3867            | 2500                       | 2570                       |

**Band 17:**

| 10 MHz Bandwidth |                                   |                      |                      |                            |                            |
|------------------|-----------------------------------|----------------------|----------------------|----------------------------|----------------------------|
| Temperature (°C) | Power Supplied (V <sub>DC</sub> ) | F <sub>L</sub> (MHz) | F <sub>H</sub> (MHz) | F <sub>L</sub> Limit (MHz) | F <sub>H</sub> Limit (MHz) |
| -30              | NV                                | 704.0763             | 715.1677             | 704                        | 716                        |
| -20              |                                   | 704.4561             | 715.1868             | 704                        | 716                        |
| -10              |                                   | 704.4721             | 715.0749             | 704                        | 716                        |
| 0                |                                   | 704.4393             | 715.2261             | 704                        | 716                        |
| 10               |                                   | 704.5019             | 715.1493             | 704                        | 716                        |
| 20               |                                   | 704.2955             | 715.8214             | 704                        | 716                        |
| 30               |                                   | 704.1982             | 715.2434             | 704                        | 716                        |
| 40               |                                   | 704.7212             | 715.0119             | 704                        | 716                        |
| 50               |                                   | 704.2321             | 715.5777             | 704                        | 716                        |
| 20               | LV                                | 704.3589             | 715.2179             | 704                        | 716                        |
|                  | HV                                | 704.3973             | 715.3657             | 704                        | 716                        |

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