

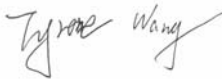
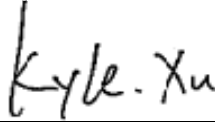
FCC PART 27  
FCC PART 22H, PART 24E  
TEST REPORT

For

SHANGHAI WANWAY DIGITAL TECHNOLOGY  
CO., LTD

FLOOR 23 NO. 1999 WENCHUAN ROAD BAOSHAN DISTRICT, SHANGHAI, China

**FCC ID: 2AWBA-GS22**

|                                        |                                                                                                                                                                                                                               |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Report Type:</b><br>Original Report | <b>Product Type:</b><br>GPS Tracker                                                                                                                                                                                           |
| <b>Project Engineer:</b>               | <u>Tyrone Wang</u>                                                                                                                        |
| <b>Report Number:</b>                  | <u>RSHE210118001-00B</u>                                                                                                                                                                                                      |
| <b>Report Date:</b>                    | <u>2021-02-20</u>                                                                                                                                                                                                             |
| <b>Reviewed By:</b>                    | <u>Kyle Xu</u>                                                                                                                           |
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## GENERAL INFORMATION

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

|                           |                                                                                                                                                                                                                                                                                                              |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Applicant:                | SHANGHAI WANWAY DIGITAL TECHNOLOGY CO., LTD                                                                                                                                                                                                                                                                  |
| Tested Model:             | GS22                                                                                                                                                                                                                                                                                                         |
| Series Model:             | GS22A, GS22E, GS22U, GS22N, GS22F, GS21, GS21A                                                                                                                                                                                                                                                               |
| Model Difference:         | See Declaration Letter                                                                                                                                                                                                                                                                                       |
| Product Type:             | GPS Tracker                                                                                                                                                                                                                                                                                                  |
| Power Supply:             | DC 9-35V/DC 3.7V from battery                                                                                                                                                                                                                                                                                |
| RF Function:              | WCDMA; LTE                                                                                                                                                                                                                                                                                                   |
| Operating Band/Frequency: | WCDMA Band II: 1850-1910 MHz(TX), 1930-1990 MHz(RX)<br>WCDMA Band IV: 1710-1755MHz(TX), 2110-2155MHz(RX)<br>WCDMA Band V: 824-849MHz(TX), 869-894MHz(RX)<br>LTE Band 2: 1850-1910MHz(TX), 1930-1990 MHz(RX)<br>LTE Band 4: 1710-1755MHz(TX), 2110-2155MHz(RX)<br>LTE Band 12: 699-716MHz(TX), 729-746MHz(RX) |
| Power Class:              | WCDMA & LTE: Class 3                                                                                                                                                                                                                                                                                         |
| Modulation Type:          | WCDMA: BPSK,QPSK,16QAM<br>LTE: QPSK,16QAM                                                                                                                                                                                                                                                                    |
| Antenna Type:             | WCDMA & LTE: FPC Antenna                                                                                                                                                                                                                                                                                     |
| *Maximum Antenna Gain:    | WCDMA: Band II: 2.71dBi; Band IV: 1.85dBi; Band V: -1.61dBi<br>LTE: Band 2: 2.71dBi; Band 4: 1.85dBi; Band 12: 0.50dBi                                                                                                                                                                                       |

*Note: The maximum antenna gain was declared by the manufacturer.*

*\*All measurement and test data in this report was gathered from production sample serial number: RSHE210118001-1. (Assigned by the BACL. The EUT supplied by the applicant was received on 2021-01-18)*

### Objective

This type approval report is prepared on behalf of SHANGHAI WANWAY DIGITAL TECHNOLOGY CO., LTD in accordance with Part 2, Part 22-Subpart H, Part 24-Subpart E, Part 27 of the Federal Communication Commission's rules.

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

### Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS submissions with FCC ID: 2AWBA-GS22.

## **Test Methodology**

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-Part 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

Applicable Standards: ANSI C63.26-2015.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

**Measurement Uncertainty**

| Item                               |             | Uncertainty |
|------------------------------------|-------------|-------------|
| AC Power Lines Conducted Emissions |             | 3.19dB      |
| RF conducted test with spectrum    |             | 0.9dB       |
| RF Output Power with Power meter   |             | 0.5dB       |
| Radiated emission                  | 30MHz~1GHz  | 5.91dB      |
|                                    | 1GHz~6GHz   | 4.68dB      |
|                                    | 6GHz~18GHz  | 4.92dB      |
|                                    | 18GHz~40GHz | 5.21dB      |
| Occupied Bandwidth                 |             | 0.5kHz      |
| Temperature                        |             | 1.0℃        |
| Humidity                           |             | 6%          |

**Test Facility**

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) Lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4323.01) and the FCC designation No. CN1185 under the FCC KDB 974614 D01 and CAB identifier CN0004 under the ISED requirement. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

## SYSTEM TEST CONFIGURATION

### Justification

The EUT was configured for testing according to ANSI C63.26-2015.

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

### Channel List

| Mode          |      | Channel |       | Frequency (MHz) |
|---------------|------|---------|-------|-----------------|
| WCDMA Band II |      | Low     | 9262  | 1852.4          |
|               |      | Middle  | 9400  | 1880.0          |
|               |      | High    | 9538  | 1907.6          |
| WCDMA Band IV |      | Low     | 1312  | 1712.4          |
|               |      | Middle  | 1413  | 1732.6          |
|               |      | High    | 1513  | 1752.6          |
| WCDMA Band V  |      | Low     | 4132  | 826.4           |
|               |      | Middle  | 4183  | 836.6           |
|               |      | High    | 4233  | 846.6           |
| LTE Band 2    | 1.4M | Low     | 18607 | 1850.7          |
|               |      | Middle  | 18900 | 1880.0          |
|               |      | High    | 19193 | 1909.3          |
|               | 3M   | Low     | 18615 | 1851.5          |
|               |      | Middle  | 18900 | 1880.0          |
|               |      | High    | 19185 | 1908.5          |
|               | 5M   | Low     | 18625 | 1852.5          |
|               |      | Middle  | 18900 | 1880.0          |
|               |      | High    | 19175 | 1907.5          |
|               | 10M  | Low     | 18650 | 1855.0          |
|               |      | Middle  | 18900 | 1880.0          |
|               |      | High    | 19150 | 1905.0          |
|               | 15M  | Low     | 18675 | 1857.5          |
|               |      | Middle  | 18900 | 1880.0          |
|               |      | High    | 19125 | 1902.5          |
|               | 20M  | Low     | 18700 | 1860.0          |
|               |      | Middle  | 18900 | 1880.0          |
|               |      | High    | 19100 | 1900.0          |

| Mode        |      | Channel |       | Frequency (MHz) |
|-------------|------|---------|-------|-----------------|
| LTE Band 4  | 1.4M | Low     | 19957 | 1710.7          |
|             |      | Middle  | 20175 | 1732.5          |
|             |      | High    | 20393 | 1754.3          |
|             | 3M   | Low     | 19965 | 1711.5          |
|             |      | Middle  | 20175 | 1732.5          |
|             |      | High    | 20385 | 1753.5          |
|             | 5M   | Low     | 19975 | 1712.5          |
|             |      | Middle  | 20175 | 1732.5          |
|             |      | High    | 20375 | 1752.5          |
|             | 10M  | Low     | 20000 | 1715.0          |
|             |      | Middle  | 20175 | 1732.5          |
|             |      | High    | 20350 | 1750.0          |
|             | 15M  | Low     | 20025 | 1717.5          |
|             |      | Middle  | 20175 | 1732.5          |
|             |      | High    | 20325 | 1747.5          |
|             | 20M  | Low     | 20050 | 1720.0          |
|             |      | Middle  | 20175 | 1732.5          |
|             |      | High    | 20300 | 1745.0          |
| LTE Band 12 | 1.4M | Low     | 23017 | 699.7           |
|             |      | Middle  | 23095 | 707.5           |
|             |      | High    | 23173 | 715.3           |
|             | 3M   | Low     | 23025 | 700.5           |
|             |      | Middle  | 23095 | 707.5           |
|             |      | High    | 23165 | 714.5           |
|             | 5M   | Low     | 23035 | 701.5           |
|             |      | Middle  | 23095 | 707.5           |
|             |      | High    | 23155 | 713.5           |
|             | 10M  | Low     | 23060 | 704.0           |
|             |      | Middle  | 23095 | 707.5           |
|             |      | High    | 23130 | 711.0           |

**Equipment Modifications**

No modifications were made to the EUT.

**Support Equipment List and Details**

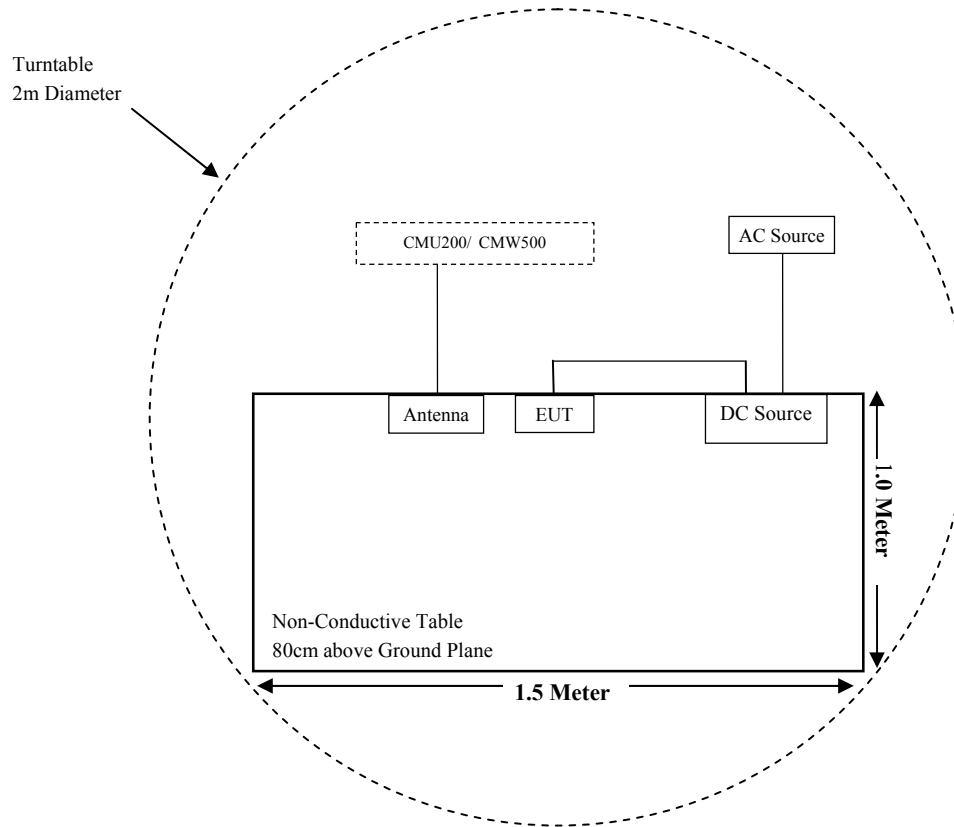
| Manufacturer        | Description                          | Model    | Serial Number |
|---------------------|--------------------------------------|----------|---------------|
| Rohde & Schwarz     | Universal Radio Communication Tester | CMU200   | 110605        |
| Aihuaxin technology | Antenna                              | /        | /             |
| ZHAOXIN             | DC Power Supply                      | RXN-605D | DC002         |
| R & S               | Wideband Radio Communication Tester  | CMW500   | 104478        |

**External I/O Cable**

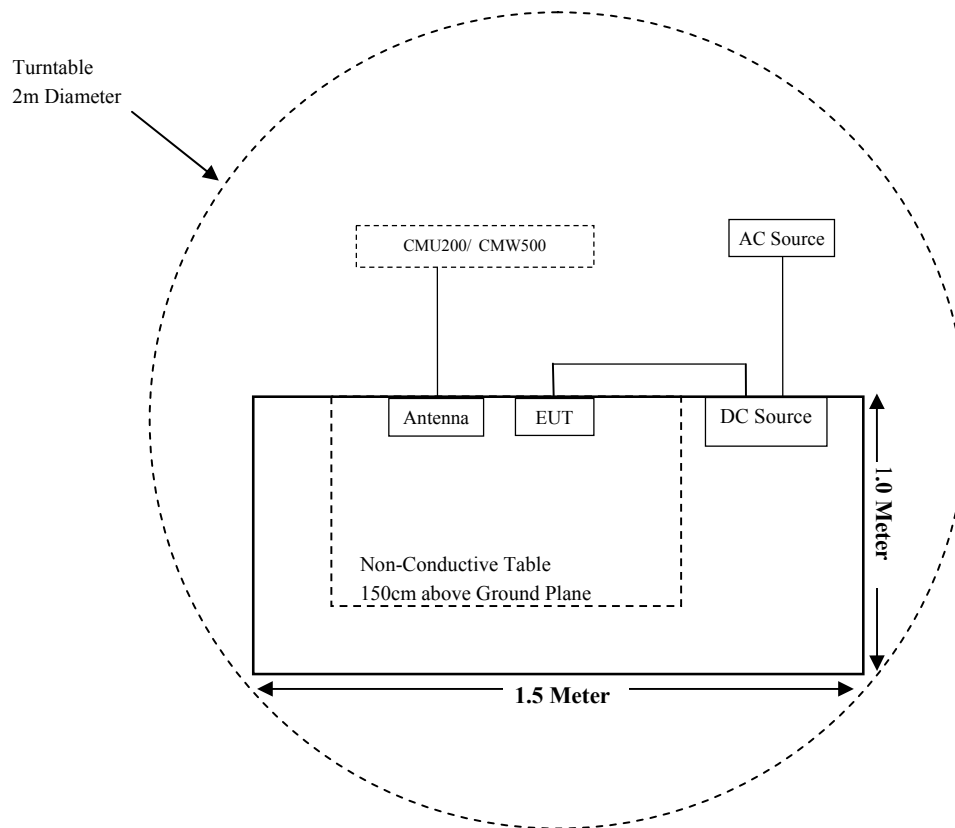
| Cable Description | Length (m) | From Port | To        |
|-------------------|------------|-----------|-----------|
| Power Cable       | 1.0        | EUT       | DC Source |
| Power Cable       | 1.0        | DC Source | AC Source |

## Block Diagram of Test Setup

For Radiated Emissions (Below 1GHz):



For Radiated Emissions (Above 1GHz):



**SUMMARY OF TEST RESULTS**

| FCC Rules                                                            | Description of Test                    | Result         |
|----------------------------------------------------------------------|----------------------------------------|----------------|
| §1.1307 & §2.1091                                                    | Maximum Permissible Exposure (MPE)     | Compliant      |
| §2.1046; § 22.913 (a);§ 24.232 (c);<br>§ 27.50 (c)(d);§27.50(h) (2); | 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 (g)(h);              | Spurious Emissions at Antenna Terminal | Compliant      |
| § 2.1053; § 22.917 (a);<br>§ 24.238 (a); §27.53 (g)(h);              | Spurious Radiated Emissions            | Compliant      |
| § 22.917 (a);<br>§ 24.238 (a); §27.53 (g)(h);                        | Band Edge                              | Compliant      |
| § 2.1055; § 22.355;<br>§ 24.235; §27.54;                             | Frequency stability                    | Compliant      |

**TEST EQUIPMENT LIST**

| Manufacturer                               | Description                          | Model     | Serial Number | Calibration Date | Calibration Due Date |
|--------------------------------------------|--------------------------------------|-----------|---------------|------------------|----------------------|
| <b>Radiated Emission Test (Chamber 1#)</b> |                                      |           |               |                  |                      |
| Rohde & Schwarz                            | EMI Test Receiver                    | ESCI      | 100195        | 2020-11-27       | 2021-11-26           |
| HP                                         | Signal Generator                     | N5183A    | MY51040755    | 2020-11-27       | 2021-11-26           |
| Sunol Sciences                             | Broadband Antenna                    | JB3       | A090314-1     | 2020-08-05       | 2023-08-04           |
| Sunol Sciences                             | Broadband Antenna                    | JB3       | A090314-2     | 2020-01-07       | 2023-01-06           |
| Sonoma Instrunent                          | Pre-amplifier                        | 310N      | 171205        | 2020-08-14       | 2021-08-13           |
| Rohde & Schwarz                            | Auto test Software                   | EMC32     | 100361        | /                | /                    |
| MICRO-COAX                                 | Coaxial Cable                        | Cable-6   | 006           | 2020-08-15       | 2021-08-14           |
| MICRO-COAX                                 | Coaxial Cable                        | Cable-8   | 008           | 2020-08-15       | 2021-08-14           |
| MICRO-COAX                                 | Coaxial Cable                        | Cable-9   | 009           | 2020-08-15       | 2021-08-14           |
| MICRO-COAX                                 | Coaxial Cable                        | Cable-10  | 010           | 2020-08-15       | 2021-08-14           |
| R & S                                      | Wideband Radio Communication Tester  | CMW500    | 104478        | 2020-08-05       | 2021-08-04           |
| Rohde & Schwarz                            | UNIVERSAL RADIO COMMUNICATION TESTER | CMU200    | 110605        | 2020-04-01       | 2021-03-31           |
| <b>Radiated Emission Test (Chamber 2#)</b> |                                      |           |               |                  |                      |
| HP                                         | Signal Generator                     | N5183A    | MY51040755    | 2020-11-27       | 2021-11-26           |
| Rohde & Schwarz                            | EMI Test Receiver                    | ESU40     | 100207        | 2020-04-01       | 2021-03-31           |
| ETS-LINDGREN                               | Horn Antenna                         | 3115      | 9207-3900     | 2020-07-15       | 2023-07-14           |
| ETS-LINDGREN                               | Horn Antenna                         | 3115      | 6229          | 2020-01-10       | 2023-01-09           |
| ETS-LINDGREN                               | Horn Antenna                         | 3116      | 00084159      | 2019-10-18       | 2022-10-17           |
| ETS-LINDGREN                               | Horn Antenna                         | 3116      | 2516          | 2020-01-07       | 2023-01-06           |
| A.H.Systems,inc                            | Amplifier                            | PAM-0118P | 512           | 2020-08-14       | 2021-08-13           |
| EM Electronics Corporation                 | Amplifier                            | EM18G40G  | 060726        | 2020-03-22       | 2021-03-21           |
| Rohde & Schwarz                            | Auto test Software                   | EMC32     | 100361        | /                | /                    |
| MICRO-COAX                                 | Coaxial Cable                        | Cable-6   | 006           | 2020-08-15       | 2021-08-14           |
| MICRO-COAX                                 | Coaxial Cable                        | Cable-11  | 011           | 2020-08-15       | 2021-08-14           |
| MICRO-COAX                                 | Coaxial Cable                        | Cable-12  | 012           | 2020-08-15       | 2021-08-14           |
| MICRO-COAX                                 | Coaxial Cable                        | Cable-13  | 013           | 2020-08-15       | 2021-08-14           |
| MICRO-COAX                                 | Coaxial Cable                        | Cable-16  | 016           | 2020-08-15       | 2021-08-14           |
| R & S                                      | Wideband Radio Communication Tester  | CMW500    | 104478        | 2020-08-05       | 2021-08-04           |
| Rohde & Schwarz                            | UNIVERSAL RADIO COMMUNICATION TESTER | CMU200    | 110605        | 2020-04-01       | 2021-03-31           |

| Manufacturer                                | Description                          | Model                                           | Serial Number | Calibration Date | Calibration Due Date |
|---------------------------------------------|--------------------------------------|-------------------------------------------------|---------------|------------------|----------------------|
| <b>RF Conducted Test</b>                    |                                      |                                                 |               |                  |                      |
| Rohde & Schwarz                             | Signal Analyzer                      | FSIQ26                                          | 836131/009    | 2020-11-27       | 2021-12-26           |
| Rohde & Schwarz                             | UNIVERSAL RADIO COMMUNICATION TESTER | CMU200                                          | 110605        | 2020-04-01       | 2021-03-31           |
| R & S                                       | Wideband Radio Communication Tester  | CMW500                                          | 104478        | 2020-08-05       | 2021-08-04           |
| Mini-Circuits                               | Power splitter                       | ZFRSC-14-S+                                     | SF019411452   | 2020-11-10       | 2021-11-09           |
| BACL                                        | Temperature & Humidity Chamber       | BTH-150                                         | 30023         | 2020-12-20       | 2021-12-19           |
| SHANGHAI WANWAY DIGITAL TECHNOLOGY CO., LTD | RF Cable                             | SHANGHAI WANWAY DIGITAL TECHNOLOGY CO., LTD C01 | C01           | Each Time        | /                    |

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

## **FCC §1.1310 & §2.1091 –MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

### **Applicable Standard**

According to subpart §2.1091 and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

| <b>(B) Limits for General Population/Uncontrolled Exposure</b> |                                      |                                      |                                          |                                 |
|----------------------------------------------------------------|--------------------------------------|--------------------------------------|------------------------------------------|---------------------------------|
| <b>Frequency Range (MHz)</b>                                   | <b>Electric Field Strength (V/m)</b> | <b>Magnetic Field Strength (A/m)</b> | <b>Power Density (mW/cm<sup>2</sup>)</b> | <b>Averaging Time (minutes)</b> |
| 0.3-1.34                                                       | 614                                  | 1.63                                 | *(100)                                   | 30                              |
| 1.34-30                                                        | 824/f                                | 2.19/f                               | *(180/f <sup>2</sup> )                   | 30                              |
| 30-300                                                         | 27.5                                 | 0.073                                | 0.2                                      | 30                              |
| 300-1500                                                       | /                                    | /                                    | f/1500                                   | 30                              |
| 1500-100,000                                                   | /                                    | /                                    | 1.0                                      | 30                              |

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

According to §1.1310 and §2.1091 RF exposure is calculated.

### **Calculated Formulary:**

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$  = power density (in appropriate units, e.g. mW/cm<sup>2</sup>);

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

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

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

**Calculated Data:****2.4G WI-FI**

| Mode         | Frequency Range (MHz) | Antenna Gain |           | Tune-up Output Power |        | Evaluation Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | MPE Limit (mW/cm <sup>2</sup> ) |
|--------------|-----------------------|--------------|-----------|----------------------|--------|--------------------------|-------------------------------------|---------------------------------|
|              |                       | (dBi)        | (numeric) | (dBm)                | (mW)   |                          |                                     |                                 |
| 802.11b      | 2412~2462             | 2.47         | 1.77      | 23.00                | 199.53 | 20                       | 0.0701                              | 1.0                             |
| 802.11g      |                       | 2.47         | 1.77      | 22.50                | 177.83 | 20                       | 0.0625                              | 1.0                             |
| 802.11n-HT20 |                       | 2.47         | 1.77      | 23.00                | 199.53 | 20                       | 0.0701                              | 1.0                             |
| 802.11n-HT40 | 2422~2452             | 2.47         | 1.77      | 22.00                | 158.49 | 20                       | 0.0557                              | 1.0                             |

**WCDMA/LTE**

| Mode          | Frequency Range (MHz) | Antenna Gain |           | Tune-up Conducted Power |        | Evaluation Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | MPE Limit (mW/cm <sup>2</sup> ) |
|---------------|-----------------------|--------------|-----------|-------------------------|--------|--------------------------|-------------------------------------|---------------------------------|
|               |                       | (dBi)        | (numeric) | (dBm)                   | (mW)   |                          |                                     |                                 |
| WCDMA Band II | 1850-1910             | 2.71         | 1.87      | 22.5                    | 177.83 | 20                       | 0.0661                              | 1.0                             |
| WCDMA Band IV | 1710-1755             | 1.85         | 1.53      | 22.5                    | 177.83 | 20                       | 0.0541                              | 1.0                             |
| WCDMA Band V  | 824-849               | -1.61        | 0.69      | 22.5                    | 177.83 | 20                       | 0.0244                              | 0.55                            |
| LTE Band 2    | 1850-1910             | 2.71         | 1.87      | 22.5                    | 177.83 | 20                       | 0.0661                              | 1.0                             |
| LTE Band 4    | 1710-1755             | 1.85         | 1.53      | 22.5                    | 177.83 | 20                       | 0.0541                              | 1.0                             |
| LTE Band 12   | 699-716               | 0.50         | 1.12      | 22.5                    | 177.83 | 20                       | 0.0396                              | 0.47                            |

**Note:**

- 1.For the above tune up power were declared by the manufacturer.
2. 2.4G Wi-Fi, WCDMA / LTE can transmit simultaneously, The worst condition is as below:

$$\sum_i \frac{S_i}{S_{Limit,i}} = 0.0701/1.00 + 0.0396/0.47 = 0.1544 < 1.0$$

**Result:** The device meet FCC MPE at 20 cm distance.

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

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

**FCC §2.1046; § 22.913 (a); § 24.232 (c); §27.50 (c) (d); - RF OUTPUT POWER****Applicable Standards**

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts (38.45dBm).

According to FCC §2.1046 and §24.232 (c), mobile and portable stations are limited to 2 watts (33dBm) EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

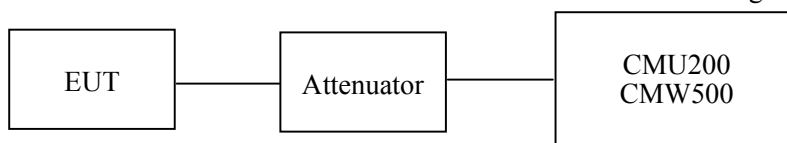
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1780MHz.

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.

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

**Test Procedure*****Conducted method:***

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

***Radiated Output Power:***

The measurements procedures specified in ANSI C63.26-2015 were applied.

a) Connect the equipment as illustrated. Mount the equipment with the manufacturer specified antenna in a vertical orientation on a manufacturer specified mounting surface located on a non-conducting rotating platform of a RF anechoic chamber (preferred) or a standard radiation site.

b) Key the transmitter, then rotate the EUT 360o azimuthally and record spectrum analyzer power level (LVL) measurements at angular increments that are sufficiently small to permit resolution of all peaks. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading at each angular increment. (Note: several batteries may be needed to offset the effect of battery voltage droop, which should not exceed 5% of the manufactured specified battery voltage during transmission).

c) Replace the transmitter under test with a vertically polarized half-wave dipole (or an antenna whose gain is known relative to an ideal half-wave dipole). The center of the antenna should be at the same location as the center of the antenna under test.

d) Connect the antenna to a signal generator with a known output power and record the path loss (in dB) as LOSS. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading.  
 $LOSS = \text{Generator Output Power (dBm)} - \text{Analyzer reading (dBm)}$

e) Determine the effective radiated output power at each angular position from the readings in steps b) and d) using the following equation:

$$ERP \text{ (dBm)} = LVL \text{ (dBm)} + LOSS \text{ (dB)}$$

f) The maximum ERP is the maximum value determined in the preceding step.

(Note: Effective Isotropic Radiated Power (EIRP) can be computed using the following:

$$EIRP \text{ (dBm)} = ERP \text{ (dBm)} + 2.15 \text{ (dB)}$$

## Test Data

### Environmental Conditions

|                           |          |
|---------------------------|----------|
| <b>Temperature:</b>       | 23.2°C   |
| <b>Relative Humidity:</b> | 51 %     |
| <b>ATM Pressure:</b>      | 101.1kPa |

The testing was performed by Tyrone Wang on 2021-02-18

### Conducted Power:

#### WCDMA Band V

| Mode           | Test Condition | Test Mode | 3GPP Sub Test | Average Output Power (dBm) |                  |                |
|----------------|----------------|-----------|---------------|----------------------------|------------------|----------------|
|                |                |           |               | Low Frequency              | Middle Frequency | High Frequency |
| WCDMA (Band V) | Normal         | Rel 99    | 1             | 21.95                      | 21.94            | 22.19          |
|                |                | HSDPA     | 1             | 21.97                      | 22.10            | 22.08          |
|                |                |           | 2             | 22.10                      | 21.99            | 22.11          |
|                |                |           | 3             | 22.02                      | 22.09            | 22.26          |
|                |                |           | 4             | 22.03                      | 22.05            | 22.11          |
|                |                | HSUPA     | 1             | 22.05                      | 22.14            | 22.15          |
|                |                |           | 2             | 22.07                      | 22.12            | 22.20          |
|                |                |           | 3             | 22.17                      | 22.13            | 22.09          |
|                |                |           | 4             | 22.00                      | 21.93            | 22.10          |
|                |                |           | 5             | 21.96                      | 21.91            | 22.26          |
|                |                | HSPA+     | 1             | 21.97                      | 21.96            | 22.07          |

**WCDMA Band II**

| Mode            | Test Condition | Test Mode | 3GPP Sub Test | Average Output Power (dBm) |                  |                |
|-----------------|----------------|-----------|---------------|----------------------------|------------------|----------------|
|                 |                |           |               | Low Frequency              | Middle Frequency | High Frequency |
| WCDMA (Band II) | Normal         | Rel 99    | 1             | 22.12                      | 22.04            | 22.07          |
|                 |                | HSDPA     | 1             | 22.21                      | 22.13            | 22.13          |
|                 |                |           | 2             | 22.28                      | 21.92            | 22.07          |
|                 |                |           | 3             | 22.25                      | 21.99            | 22.07          |
|                 |                |           | 4             | 22.16                      | 22.03            | 22.04          |
|                 |                | HSUPA     | 1             | 22.21                      | 22.10            | 22.03          |
|                 |                |           | 2             | 22.20                      | 22.07            | 22.17          |
|                 |                |           | 3             | 22.28                      | 22.17            | 22.19          |
|                 |                |           | 4             | 22.34                      | 22.00            | 22.06          |
|                 |                |           | 5             | 22.18                      | 22.04            | 22.18          |
|                 |                | HSPA+     | 1             | 22.21                      | 21.98            | 22.27          |

**WCDMA Band IV**

| Mode            | Test Condition | Test Mode | 3GPP Sub Test | Average Output Power (dBm) |                  |                |
|-----------------|----------------|-----------|---------------|----------------------------|------------------|----------------|
|                 |                |           |               | Low Frequency              | Middle Frequency | High Frequency |
| WCDMA (Band IV) | Normal         | Rel 99    | 1             | 22.12                      | 21.98            | 22.22          |
|                 |                | HSDPA     | 1             | 22.28                      | 22.05            | 22.12          |
|                 |                |           | 2             | 22.24                      | 22.10            | 22.22          |
|                 |                |           | 3             | 22.16                      | 22.11            | 22.02          |
|                 |                |           | 4             | 22.18                      | 22.11            | 22.19          |
|                 |                | HSUPA     | 1             | 22.24                      | 22.05            | 22.12          |
|                 |                |           | 2             | 22.38                      | 21.95            | 22.10          |
|                 |                |           | 3             | 22.24                      | 22.11            | 22.20          |
|                 |                |           | 4             | 22.14                      | 22.06            | 22.21          |
|                 |                |           | 5             | 22.27                      | 22.07            | 22.25          |
|                 |                | HSPA+     | 1             | 22.26                      | 22.07            | 22.07          |

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

| Test Bandwidth | Test Modulation | Resource Block & RB offset | Low Channel (dBm) | Middle Channel (dBm) | High Channel (dBm) |
|----------------|-----------------|----------------------------|-------------------|----------------------|--------------------|
| 1.4M           | QPSK            | 1#0                        | 21.65             | 22.05                | 21.69              |
|                |                 | 1#3                        | 22.18             | 21.46                | 21.85              |
|                |                 | 1#5                        | 21.52             | 22.10                | 21.13              |
|                |                 | 3#0                        | 22.02             | 21.51                | 21.22              |
|                |                 | 3#1                        | 21.79             | 21.19                | 21.41              |
|                |                 | 3#3                        | 21.65             | 21.51                | 21.23              |
|                |                 | 6#0                        | 21.29             | 21.19                | 21.18              |
|                | 16-QAM          | 1#0                        | 21.83             | 21.73                | 21.28              |
|                |                 | 1#3                        | 21.26             | 21.93                | 21.94              |
|                |                 | 1#5                        | 21.48             | 21.51                | 21.62              |
|                |                 | 3#0                        | 21.29             | 21.26                | 21.64              |
|                |                 | 3#1                        | 21.69             | 21.51                | 21.08              |
|                |                 | 3#3                        | 21.39             | 21.84                | 21.75              |
|                |                 | 6#0                        | 21.75             | 21.60                | 21.82              |
| 3M             | QPSK            | 1#0                        | 21.59             | 21.89                | 22.00              |
|                |                 | 1#7                        | 21.30             | 21.64                | 21.16              |
|                |                 | 1#14                       | 22.22             | 21.14                | 21.51              |
|                |                 | 8#0                        | 21.89             | 21.47                | 21.67              |
|                |                 | 8#4                        | 21.98             | 21.55                | 21.11              |
|                |                 | 8#7                        | 21.33             | 21.14                | 21.71              |
|                |                 | 15#0                       | 21.95             | 21.16                | 21.23              |
|                | 16-QAM          | 1#0                        | 21.56             | 22.10                | 21.74              |
|                |                 | 1#7                        | 21.31             | 21.58                | 21.03              |
|                |                 | 1#14                       | 22.00             | 21.38                | 21.57              |
|                |                 | 8#0                        | 21.29             | 21.13                | 21.24              |
|                |                 | 8#4                        | 21.74             | 22.06                | 21.95              |
|                |                 | 8#7                        | 21.99             | 21.51                | 21.61              |
|                |                 | 15#0                       | 21.63             | 21.14                | 21.78              |

| Test Bandwidth | Test Modulation | Resource Block & RB offset | Low Channel (dBm) | Middle Channel (dBm) | High Channel (dBm) |
|----------------|-----------------|----------------------------|-------------------|----------------------|--------------------|
| 5M             | QPSK            | 1#0                        | 22.11             | 22.10                | 21.82              |
|                |                 | 1#12                       | 21.36             | 21.50                | 21.28              |
|                |                 | 1#24                       | 21.66             | 21.75                | 21.32              |
|                |                 | 12#0                       | 21.45             | 21.12                | 21.10              |
|                |                 | 12#6                       | 21.29             | 21.77                | 21.40              |
|                |                 | 12#11                      | 22.26             | 21.83                | 21.21              |
|                |                 | 25#0                       | 21.90             | 21.70                | 21.48              |
|                | 16-QAM          | 1#0                        | 21.56             | 21.24                | 21.80              |
|                |                 | 1#12                       | 21.69             | 21.73                | 21.48              |
|                |                 | 1#24                       | 21.67             | 21.54                | 21.48              |
|                |                 | 12#0                       | 21.71             | 22.10                | 21.32              |
|                |                 | 12#6                       | 21.30             | 21.77                | 21.99              |
|                |                 | 12#11                      | 21.71             | 21.41                | 21.97              |
|                |                 | 25#0                       | 21.63             | 21.13                | 21.27              |
| 10M            | QPSK            | 1#0                        | 21.73             | 21.55                | 21.69              |
|                |                 | 1#24                       | 21.43             | 21.36                | 21.03              |
|                |                 | 1#49                       | 21.86             | 21.38                | 21.31              |
|                |                 | 25#0                       | 22.02             | 21.25                | 21.38              |
|                |                 | 25#12                      | 21.69             | 21.68                | 21.35              |
|                |                 | 25#24                      | 21.42             | 21.17                | 21.34              |
|                |                 | 50#0                       | 22.10             | 21.18                | 21.90              |
|                | 16-QAM          | 1#0                        | 21.77             | 21.57                | 22.00              |
|                |                 | 1#24                       | 21.68             | 21.56                | 21.72              |
|                |                 | 1#49                       | 21.41             | 21.62                | 21.73              |
|                |                 | 25#0                       | 21.63             | 21.41                | 21.91              |
|                |                 | 25#12                      | 21.51             | 21.99                | 21.50              |
|                |                 | 25#24                      | 21.91             | 21.20                | 21.60              |
|                |                 | 50#0                       | 21.87             | 21.98                | 21.47              |

| Test Bandwidth | Test Modulation | Resource Block<br>& RB offset | Low Channel<br>(dBm) | Middle<br>Channel (dBm) | High Channel<br>(dBm) |
|----------------|-----------------|-------------------------------|----------------------|-------------------------|-----------------------|
| 15M            | QPSK            | 1#0                           | 22.15                | 22.03                   | 21.69                 |
|                |                 | 1#37                          | 21.86                | 21.93                   | 21.68                 |
|                |                 | 1#74                          | 21.43                | 22.11                   | 21.34                 |
|                |                 | 36#0                          | 21.34                | 21.41                   | 21.53                 |
|                |                 | 36#17                         | 21.63                | 21.32                   | 21.99                 |
|                |                 | 36#35                         | 21.34                | 21.25                   | 21.83                 |
|                |                 | 75#0                          | 22.22                | 22.00                   | 21.85                 |
|                | 16-QAM          | 1#0                           | 21.84                | 21.82                   | 21.44                 |
|                |                 | 1#37                          | 21.96                | 21.26                   | 21.05                 |
|                |                 | 1#74                          | 21.81                | 21.74                   | 21.62                 |
|                |                 | 36#0                          | 21.57                | 21.55                   | 21.76                 |
|                |                 | 36#17                         | 21.44                | 22.03                   | 21.25                 |
|                |                 | 36#35                         | 21.41                | 21.28                   | 21.46                 |
|                |                 | 75#0                          | 21.34                | 21.13                   | 21.71                 |
| 20M            | QPSK            | 1#0                           | 21.71                | 21.88                   | 21.51                 |
|                |                 | 1#49                          | 21.61                | 21.73                   | 21.76                 |
|                |                 | 1#99                          | 21.80                | 21.41                   | 21.50                 |
|                |                 | 50#0                          | 21.78                | 21.18                   | 21.93                 |
|                |                 | 50#24                         | 21.45                | 21.89                   | 21.09                 |
|                |                 | 50#49                         | 21.50                | 21.82                   | 21.90                 |
|                |                 | 100#0                         | 22.11                | 21.44                   | 21.42                 |
|                | 16-QAM          | 1#0                           | 21.40                | 21.98                   | 21.32                 |
|                |                 | 1#49                          | 21.90                | 21.28                   | 21.33                 |
|                |                 | 1#99                          | 21.70                | 21.68                   | 21.72                 |
|                |                 | 50#0                          | 22.12                | 21.98                   | 21.31                 |
|                |                 | 50#24                         | 21.34                | 21.62                   | 21.03                 |
|                |                 | 50#49                         | 21.51                | 21.23                   | 21.58                 |
|                |                 | 100#0                         | 21.75                | 21.98                   | 21.38                 |

**LTE Band 4**

| Test Bandwidth | Test Modulation | Resource Block & RB offset | Low Channel (dBm) | Middle Channel (dBm) | High Channel (dBm) |
|----------------|-----------------|----------------------------|-------------------|----------------------|--------------------|
| 1.4M           | QPSK            | 1#0                        | 22.10             | 21.42                | 21.35              |
|                |                 | 1#3                        | 22.16             | 21.26                | 21.36              |
|                |                 | 1#5                        | 21.33             | 21.25                | 21.66              |
|                |                 | 3#0                        | 22.09             | 21.38                | 21.68              |
|                |                 | 3#1                        | 21.30             | 21.58                | 21.18              |
|                |                 | 3#3                        | 21.73             | 21.72                | 21.42              |
|                |                 | 6#0                        | 21.69             | 21.35                | 21.63              |
|                | 16-QAM          | 1#0                        | 22.20             | 21.17                | 21.03              |
|                |                 | 1#3                        | 21.66             | 21.78                | 21.05              |
|                |                 | 1#5                        | 22.12             | 21.91                | 21.89              |
|                |                 | 3#0                        | 21.90             | 21.20                | 21.16              |
|                |                 | 3#1                        | 21.88             | 21.58                | 21.65              |
|                |                 | 3#3                        | 21.46             | 21.15                | 21.27              |
|                |                 | 6#0                        | 22.08             | 21.52                | 21.98              |
| 3M             | QPSK            | 1#0                        | 21.41             | 21.93                | 21.41              |
|                |                 | 1#7                        | 22.07             | 22.07                | 22.01              |
|                |                 | 1#14                       | 21.76             | 21.14                | 21.36              |
|                |                 | 8#0                        | 22.10             | 21.44                | 21.61              |
|                |                 | 8#4                        | 21.33             | 21.33                | 21.57              |
|                |                 | 8#7                        | 21.72             | 22.05                | 21.12              |
|                |                 | 15#0                       | 21.74             | 21.22                | 21.78              |
|                | 16-QAM          | 1#0                        | 21.94             | 21.96                | 21.19              |
|                |                 | 1#7                        | 22.01             | 21.41                | 22.00              |
|                |                 | 1#14                       | 21.43             | 21.36                | 21.22              |
|                |                 | 8#0                        | 21.29             | 21.88                | 21.02              |
|                |                 | 8#4                        | 21.26             | 22.11                | 21.63              |
|                |                 | 8#7                        | 21.69             | 21.73                | 21.34              |
|                |                 | 15#0                       | 21.44             | 21.58                | 21.36              |

| Test Bandwidth | Test Modulation | Resource Block & RB offset | Low Channel (dBm) | Middle Channel (dBm) | High Channel (dBm) |
|----------------|-----------------|----------------------------|-------------------|----------------------|--------------------|
| 5M             | QPSK            | 1#0                        | 21.87             | 21.64                | 21.28              |
|                |                 | 1#12                       | 21.46             | 21.83                | 21.92              |
|                |                 | 1#24                       | 21.46             | 21.38                | 21.77              |
|                |                 | 12#0                       | 21.35             | 21.21                | 21.46              |
|                |                 | 12#6                       | 21.83             | 21.40                | 21.23              |
|                |                 | 12#11                      | 21.47             | 21.94                | 21.74              |
|                |                 | 25#0                       | 22.06             | 21.77                | 21.90              |
|                | 16-QAM          | 1#0                        | 21.44             | 21.52                | 21.70              |
|                |                 | 1#12                       | 21.55             | 21.56                | 21.32              |
|                |                 | 1#24                       | 21.66             | 21.32                | 21.77              |
|                |                 | 12#0                       | 21.75             | 21.78                | 21.78              |
|                |                 | 12#6                       | 21.40             | 21.75                | 21.94              |
|                |                 | 12#11                      | 21.72             | 21.76                | 21.65              |
|                |                 | 25#0                       | 22.19             | 21.84                | 21.10              |
| 10M            | QPSK            | 1#0                        | 22.16             | 21.19                | 21.55              |
|                |                 | 1#24                       | 22.25             | 22.06                | 21.76              |
|                |                 | 1#49                       | 21.86             | 21.65                | 21.95              |
|                |                 | 25#0                       | 22.11             | 21.23                | 21.50              |
|                |                 | 25#12                      | 21.88             | 21.74                | 21.56              |
|                |                 | 25#24                      | 21.74             | 22.04                | 21.85              |
|                |                 | 50#0                       | 21.30             | 21.64                | 21.57              |
|                | 16-QAM          | 1#0                        | 21.53             | 21.32                | 21.95              |
|                |                 | 1#24                       | 21.84             | 21.86                | 21.83              |
|                |                 | 1#49                       | 22.25             | 21.72                | 21.28              |
|                |                 | 25#0                       | 21.63             | 21.94                | 21.23              |
|                |                 | 25#12                      | 21.98             | 21.24                | 21.66              |
|                |                 | 25#24                      | 21.85             | 22.07                | 21.19              |
|                |                 | 50#0                       | 21.82             | 21.72                | 21.97              |

| Test Bandwidth | Test Modulation | Resource Block<br>& RB offset | Low Channel<br>(dBm) | Middle<br>Channel (dBm) | High Channel<br>(dBm) |
|----------------|-----------------|-------------------------------|----------------------|-------------------------|-----------------------|
| 15M            | QPSK            | 1#0                           | 22.21                | 22.10                   | 21.58                 |
|                |                 | 1#37                          | 21.33                | 21.59                   | 21.46                 |
|                |                 | 1#74                          | 21.39                | 21.69                   | 21.55                 |
|                |                 | 36#0                          | 21.45                | 21.12                   | 21.98                 |
|                |                 | 36#17                         | 21.52                | 21.77                   | 21.27                 |
|                |                 | 36#35                         | 21.28                | 21.97                   | 21.17                 |
|                |                 | 75#0                          | 22.24                | 21.85                   | 21.26                 |
|                | 16-QAM          | 1#0                           | 21.48                | 21.30                   | 21.44                 |
|                |                 | 1#37                          | 21.51                | 21.92                   | 21.48                 |
|                |                 | 1#74                          | 22.19                | 21.97                   | 21.26                 |
|                |                 | 36#0                          | 21.81                | 21.23                   | 21.93                 |
|                |                 | 36#17                         | 22.16                | 21.64                   | 21.56                 |
|                |                 | 36#35                         | 22.19                | 21.68                   | 21.21                 |
|                |                 | 75#0                          | 22.23                | 21.62                   | 21.43                 |
| 20M            | QPSK            | 1#0                           | 22.15                | 21.70                   | 21.68                 |
|                |                 | 1#49                          | 22.03                | 21.39                   | 21.85                 |
|                |                 | 1#99                          | 21.98                | 21.56                   | 21.06                 |
|                |                 | 50#0                          | 21.30                | 21.90                   | 21.70                 |
|                |                 | 50#24                         | 22.26                | 21.34                   | 21.72                 |
|                |                 | 50#49                         | 21.81                | 21.37                   | 21.39                 |
|                |                 | 100#0                         | 21.95                | 21.35                   | 21.94                 |
|                | 16-QAM          | 1#0                           | 21.69                | 21.60                   | 21.38                 |
|                |                 | 1#49                          | 21.69                | 21.22                   | 21.96                 |
|                |                 | 1#99                          | 22.15                | 21.86                   | 21.39                 |
|                |                 | 50#0                          | 21.72                | 22.09                   | 21.42                 |
|                |                 | 50#24                         | 21.64                | 21.62                   | 21.33                 |
|                |                 | 50#49                         | 21.79                | 21.31                   | 21.60                 |
|                |                 | 100#0                         | 21.56                | 21.31                   | 21.91                 |

**LTE Band 12**

| Test Bandwidth | Test Modulation | Resource Block & RB offset | Low Channel (dBm) | Middle Channel (dBm) | High Channel (dBm) |
|----------------|-----------------|----------------------------|-------------------|----------------------|--------------------|
| 1.4M           | QPSK            | 1#0                        | 21.85             | 21.68                | 21.93              |
|                |                 | 1#3                        | 21.85             | 21.80                | 21.04              |
|                |                 | 1#5                        | 21.59             | 21.36                | 21.73              |
|                |                 | 3#0                        | 22.10             | 21.77                | 21.88              |
|                |                 | 3#1                        | 22.21             | 21.22                | 21.53              |
|                |                 | 3#3                        | 21.98             | 21.68                | 21.58              |
|                |                 | 6#0                        | 21.85             | 21.25                | 21.81              |
|                | 16-QAM          | 1#0                        | 22.03             | 22.00                | 21.35              |
|                |                 | 1#3                        | 21.80             | 21.18                | 21.94              |
|                |                 | 1#5                        | 22.03             | 21.98                | 21.69              |
|                |                 | 3#0                        | 22.12             | 21.97                | 21.91              |
|                |                 | 3#1                        | 21.39             | 21.43                | 21.40              |
|                |                 | 3#3                        | 21.58             | 21.35                | 21.12              |
|                |                 | 6#0                        | 22.08             | 22.09                | 21.70              |
| 3M             | QPSK            | 1#0                        | 22.24             | 21.39                | 21.36              |
|                |                 | 1#7                        | 22.25             | 21.95                | 21.38              |
|                |                 | 1#14                       | 21.43             | 21.83                | 21.85              |
|                |                 | 8#0                        | 21.73             | 21.66                | 21.35              |
|                |                 | 8#4                        | 22.09             | 21.61                | 21.34              |
|                |                 | 8#7                        | 21.53             | 21.99                | 21.74              |
|                |                 | 15#0                       | 21.31             | 21.36                | 21.68              |
|                | 16-QAM          | 1#0                        | 21.63             | 21.37                | 21.89              |
|                |                 | 1#7                        | 22.09             | 21.81                | 21.95              |
|                |                 | 1#14                       | 21.60             | 21.26                | 21.97              |
|                |                 | 8#0                        | 21.65             | 21.37                | 21.10              |
|                |                 | 8#4                        | 21.27             | 21.61                | 21.73              |
|                |                 | 8#7                        | 21.91             | 21.12                | 21.38              |
|                |                 | 15#0                       | 21.31             | 21.14                | 21.45              |

| Test Bandwidth | Test Modulation | Resource Block & RB offset | Low Channel (dBm) | Middle Channel (dBm) | High Channel (dBm) |
|----------------|-----------------|----------------------------|-------------------|----------------------|--------------------|
| 5M             | QPSK            | 1#0                        | 22.11             | 21.79                | 21.63              |
|                |                 | 1#12                       | 21.88             | 21.82                | 21.60              |
|                |                 | 1#24                       | 21.80             | 21.85                | 21.12              |
|                |                 | 12#0                       | 21.77             | 21.47                | 21.73              |
|                |                 | 12#6                       | 21.75             | 21.28                | 21.94              |
|                |                 | 12#11                      | 21.63             | 21.15                | 21.09              |
|                |                 | 25#0                       | 22.22             | 21.53                | 21.92              |
|                | 16-QAM          | 1#0                        | 22.23             | 21.71                | 21.61              |
|                |                 | 1#12                       | 21.94             | 21.14                | 21.34              |
|                |                 | 1#24                       | 21.69             | 22.02                | 21.16              |
|                |                 | 12#0                       | 22.12             | 22.02                | 21.67              |
|                |                 | 12#6                       | 21.76             | 21.57                | 21.69              |
|                |                 | 12#11                      | 21.54             | 21.99                | 21.59              |
|                |                 | 25#0                       | 21.95             | 21.35                | 21.22              |
| 10M            | QPSK            | 1#0                        | 21.79             | 21.12                | 21.09              |
|                |                 | 1#24                       | 21.44             | 21.66                | 21.75              |
|                |                 | 1#49                       | 22.00             | 21.98                | 21.85              |
|                |                 | 25#0                       | 21.41             | 21.24                | 21.93              |
|                |                 | 25#12                      | 21.54             | 21.41                | 21.95              |
|                |                 | 25#24                      | 22.17             | 21.59                | 21.94              |
|                |                 | 50#0                       | 21.29             | 21.88                | 21.19              |
|                | 16-QAM          | 1#0                        | 22.19             | 21.18                | 21.27              |
|                |                 | 1#24                       | 22.08             | 22.09                | 21.08              |
|                |                 | 1#49                       | 21.87             | 22.03                | 21.20              |
|                |                 | 25#0                       | 21.45             | 21.12                | 21.81              |
|                |                 | 25#12                      | 21.38             | 21.55                | 21.50              |
|                |                 | 25#24                      | 22.15             | 21.32                | 21.99              |
|                |                 | 50#0                       | 21.72             | 21.18                | 21.37              |

**Peak-to-average ratio (PAR):****WCDMA Band V:**

| Mode          | Channel | PAR (dB) | Limit (dB) |
|---------------|---------|----------|------------|
| WCDMA (Rel99) | Low     | 2.09     | $\leq 13$  |
|               | Middle  | 2.16     | $\leq 13$  |
|               | High    | 2.14     | $\leq 13$  |
| WCDMA (HSDPA) | Low     | 2.13     | $\leq 13$  |
|               | Middle  | 1.97     | $\leq 13$  |
|               | High    | 2.06     | $\leq 13$  |
| WCDMA (HSUPA) | Low     | 2        | $\leq 13$  |
|               | Middle  | 2.01     | $\leq 13$  |
|               | High    | 2.16     | $\leq 13$  |
| WCDMA (HSPA+) | Low     | 2.17     | $\leq 13$  |
|               | Middle  | 2.1      | $\leq 13$  |
|               | High    | 1.99     | $\leq 13$  |

**WCDMA Band II**

| Mode          | Channel | PAR (dB) | Limit (dB) |
|---------------|---------|----------|------------|
| WCDMA (Rel99) | Low     | 2.06     | $\leq 13$  |
|               | Middle  | 1.97     | $\leq 13$  |
|               | High    | 2.24     | $\leq 13$  |
| WCDMA (HSDPA) | Low     | 1.96     | $\leq 13$  |
|               | Middle  | 2.27     | $\leq 13$  |
|               | High    | 2.14     | $\leq 13$  |
| WCDMA (HSUPA) | Low     | 2.09     | $\leq 13$  |
|               | Middle  | 2.17     | $\leq 13$  |
|               | High    | 2.01     | $\leq 13$  |
| WCDMA (HSPA+) | Low     | 2.08     | $\leq 13$  |
|               | Middle  | 2.06     | $\leq 13$  |
|               | High    | 2.25     | $\leq 13$  |

**WCDMA Band IV**

| Mode          | Channel | PAR (dB) | Limit (dB) |
|---------------|---------|----------|------------|
| WCDMA (Rel99) | Low     | 2.19     | ≤ 13       |
|               | Middle  | 1.99     | ≤ 13       |
|               | High    | 2.09     | ≤ 13       |
| WCDMA (HSDPA) | Low     | 2.17     | ≤ 13       |
|               | Middle  | 2.13     | ≤ 13       |
|               | High    | 2.11     | ≤ 13       |
| WCDMA (HSUPA) | Low     | 2.03     | ≤ 13       |
|               | Middle  | 2.16     | ≤ 13       |
|               | High    | 2.24     | ≤ 13       |
| WCDMA (HSPA+) | Low     | 2.24     | ≤ 13       |
|               | Middle  | 2        | ≤ 13       |
|               | High    | 2.24     | ≤ 13       |

**LTE Band 2**

| Test Modulation |        | Test Bandwidth | Low Channel (dB) | Middle Channel (dB) | High Channel (dB) | Limit (dB) |
|-----------------|--------|----------------|------------------|---------------------|-------------------|------------|
| QPSK            | 1 RB   | 20M            | 3.09             | 3.08                | 3.03              | 13         |
|                 | 100 RB |                | 5.14             | 5.07                | 5.16              | 13         |
| 16-QAM          | 1 RB   | 20M            | 4.06             | 4.11                | 4.00              | 13         |
|                 | 100 RB |                | 6.15             | 6.19                | 6.09              | 13         |

**LTE Band 4**

| Test Modulation |        | Test Bandwidth | Low Channel (dB) | Middle Channel (dB) | High Channel (dB) | Limit(dB) |
|-----------------|--------|----------------|------------------|---------------------|-------------------|-----------|
| QPSK            | 1 RB   | 20M            | 3.13             | 3.17                | 3.03              | 13        |
|                 | 100 RB |                | 5.20             | 5.04                | 5.03              | 13        |
| 16-QAM          | 1 RB   | 20M            | 4.11             | 4.12                | 4.07              | 13        |
|                 | 100 RB |                | 6.05             | 6.09                | 6.07              | 13        |

**LTE Band 12**

| Test Modulation |       | Test Bandwidth | Low Channel (dB) | Middle Channel (dB) | High Channel (dB) | Limit(dB) |
|-----------------|-------|----------------|------------------|---------------------|-------------------|-----------|
| QPSK            | 1 RB  | 10M            | 3.11             | 3.03                | 3.20              | 13        |
|                 | 50 RB |                | 5.15             | 5.03                | 5.02              | 13        |
| 16-QAM          | 1 RB  | 10M            | 4.20             | 4.12                | 4.11              | 13        |
|                 | 50 RB |                | 6.14             | 6.03                | 6.00              | 13        |

**Radiated Power:****WCDMA Mode**

| Frequency<br>(MHz)               | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|----------------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                                  |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| WCDMA Band V, Low Channel(ERP)   |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 826.4                            | 87.63                         | 248                          | 200            | H              | 22.77                       | 0.63                  | -1.17                        | 20.97                      | 38.45          | 17.48          |
| 826.4                            | 88.46                         | 289                          | 150            | V              | 23.6                        | 0.63                  | -1.17                        | 21.8                       | 38.45          | 16.65          |
| WCDMA Band II, Low Channel(EIRP) |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 1852.4                           | 84.33                         | 41                           | 200            | H              | 14.2                        | 0.84                  | 8.76                         | 22.12                      | 33             | 10.88          |
| 1852.4                           | 85.15                         | 24                           | 150            | V              | 15.02                       | 0.84                  | 8.76                         | 22.94                      | 33             | 10.06          |
| WCDMA Band IV, Low Channel(EIRP) |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 1712.4                           | 84.28                         | 201                          | 200            | H              | 11.69                       | 0.84                  | 8.57                         | 19.42                      | 30             | 10.58          |
| 1712.4                           | 85.32                         | 16                           | 150            | V              | 12.73                       | 0.84                  | 8.57                         | 20.46                      | 30             | 9.54           |

| Frequency<br>(MHz)                  | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|-------------------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                                     |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| WCDMA Band V, Middle Channel(ERP)   |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 836.6                               | 87.83                         | 266                          | 200            | H              | 22.97                       | 0.63                  | -1.14                        | 21.2                       | 38.45          | 17.25          |
| 836.6                               | 88.15                         | 106                          | 150            | V              | 23.29                       | 0.63                  | -1.14                        | 21.52                      | 38.45          | 16.93          |
| WCDMA Band II, Middle Channel(EIRP) |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 1880                                | 84.47                         | 40                           | 200            | H              | 14.34                       | 0.85                  | 8.81                         | 22.3                       | 33             | 10.7           |
| 1880                                | 85.44                         | 41                           | 150            | V              | 15.31                       | 0.85                  | 8.81                         | 23.27                      | 33             | 9.73           |
| WCDMA Band IV, Middle Channel(EIRP) |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 1732.6                              | 84.59                         | 281                          | 200            | H              | 12                          | 0.84                  | 8.57                         | 19.73                      | 30             | 10.27          |
| 1732.6                              | 85.49                         | 118                          | 150            | V              | 12.9                        | 0.84                  | 8.57                         | 20.63                      | 30             | 9.37           |

| Frequency<br>(MHz)                | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|-----------------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                                   |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| WCDMA Band V, High Channel(ERP)   |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 846.6                             | 87.06                         | 52                           | 200            | H              | 22.2                        | 0.63                  | -1.11                        | 20.46                      | 38.45          | 17.99          |
| 846.6                             | 88.98                         | 289                          | 150            | V              | 24.12                       | 0.63                  | -1.11                        | 22.38                      | 38.45          | 16.07          |
| WCDMA Band II, High Channel(EIRP) |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 1907.6                            | 84.29                         | 304                          | 200            | H              | 14.16                       | 0.85                  | 8.85                         | 22.16                      | 33             | 10.84          |
| 1907.6                            | 85.66                         | 86                           | 150            | V              | 15.53                       | 0.85                  | 8.85                         | 23.53                      | 33             | 9.47           |
| WCDMA Band IV, High Channel(EIRP) |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 1752.6                            | 84.46                         | 32                           | 200            | H              | 11.87                       | 0.84                  | 8.57                         | 19.6                       | 30             | 10.4           |
| 1752.6                            | 85.77                         | 107                          | 150            | V              | 13.18                       | 0.84                  | 8.57                         | 20.91                      | 30             | 9.09           |

**EIRP:****LTE Band 2**

| Frequency<br>(MHz)         | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method          |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|----------------------------|----------------|-------------------------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                            |                |                               | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4M BW Low Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1850.7                     | V              | 89.64                         | 14.91                       | 0.84                  | 8.76                         | 22.83                      | 33             | 10.17          |
| 1850.7                     | H              | 88.81                         | 14.08                       | 0.84                  | 8.76                         | 22                         | 33             | 11             |
| 16-QAM 1.4M BW Low Channel |                |                               |                             |                       |                              |                            |                |                |
| 1850.7                     | V              | 89.48                         | 14.75                       | 0.84                  | 8.76                         | 22.67                      | 33             | 10.33          |
| 1850.7                     | H              | 88.17                         | 13.44                       | 0.84                  | 8.76                         | 21.36                      | 33             | 11.64          |
| QPSK 3M BW Low Channel     |                |                               |                             |                       |                              |                            |                |                |
| 1851.5                     | V              | 89.14                         | 14.41                       | 0.84                  | 8.76                         | 22.33                      | 33             | 10.67          |
| 1851.5                     | H              | 88.26                         | 13.53                       | 0.84                  | 8.76                         | 21.45                      | 33             | 11.55          |
| 16-QAM 3M BW Low Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1851.5                     | V              | 89.72                         | 14.99                       | 0.84                  | 8.76                         | 22.91                      | 33             | 10.09          |
| 1851.5                     | H              | 88.8                          | 14.07                       | 0.84                  | 8.76                         | 21.99                      | 33             | 11.01          |
| QPSK 5M BW Low Channel     |                |                               |                             |                       |                              |                            |                |                |
| 1852.5                     | V              | 89.88                         | 15.15                       | 0.84                  | 8.76                         | 23.07                      | 33             | 9.93           |
| 1852.5                     | H              | 88.94                         | 14.21                       | 0.84                  | 8.76                         | 22.13                      | 33             | 10.87          |
| 16-QAM 5M BW Low Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1852.5                     | V              | 89.55                         | 14.82                       | 0.84                  | 8.76                         | 22.74                      | 33             | 10.26          |
| 1852.5                     | H              | 88.82                         | 14.09                       | 0.84                  | 8.76                         | 22.01                      | 33             | 10.99          |
| QPSK 10M BW Low Channel    |                |                               |                             |                       |                              |                            |                |                |
| 1855                       | V              | 89.14                         | 14.41                       | 0.84                  | 8.77                         | 22.34                      | 33             | 10.66          |
| 1855                       | H              | 88.63                         | 13.9                        | 0.84                  | 8.77                         | 21.83                      | 33             | 11.17          |
| 16-QAM 10M BW Low Channel  |                |                               |                             |                       |                              |                            |                |                |
| 1855                       | V              | 89.2                          | 14.47                       | 0.84                  | 8.77                         | 22.4                       | 33             | 10.6           |
| 1855                       | H              | 88.95                         | 14.22                       | 0.84                  | 8.77                         | 22.15                      | 33             | 10.85          |
| QPSK 15M BW Low Channel    |                |                               |                             |                       |                              |                            |                |                |
| 1857.5                     | V              | 89.97                         | 15.24                       | 0.84                  | 8.77                         | 23.17                      | 33             | 9.83           |
| 1857.5                     | H              | 88.67                         | 13.94                       | 0.84                  | 8.77                         | 21.87                      | 33             | 11.13          |
| 16-QAM 15M BW Low Channel  |                |                               |                             |                       |                              |                            |                |                |
| 1857.5                     | V              | 89.85                         | 15.12                       | 0.84                  | 8.77                         | 23.05                      | 33             | 9.95           |
| 1857.5                     | H              | 88.61                         | 13.88                       | 0.84                  | 8.77                         | 21.81                      | 33             | 11.19          |

| Frequency<br>(MHz)        | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method          |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------------------------|----------------|-------------------------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                           |                |                               | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 20M BW Low Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1860                      | V              | 89.65                         | 14.92                       | 0.84                  | 8.78                         | 22.86                      | 33             | 10.14          |
| 1860                      | H              | 88.06                         | 13.33                       | 0.84                  | 8.78                         | 21.27                      | 33             | 11.73          |
| 16-QAM 20M BW Low Channel |                |                               |                             |                       |                              |                            |                |                |
| 1860                      | V              | 89.83                         | 15.1                        | 0.84                  | 8.78                         | 23.04                      | 33             | 9.96           |
| 1860                      | H              | 88.23                         | 13.5                        | 0.84                  | 8.78                         | 21.44                      | 33             | 11.56          |

| Frequency<br>(MHz)            | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method          |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|-------------------------------|----------------|-------------------------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                               |                |                               | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4M BW Middle Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1880                          | V              | 89.29                         | 14.56                       | 0.85                  | 8.81                         | 22.52                      | 33             | 10.48          |
| 1880                          | H              | 88.65                         | 13.92                       | 0.85                  | 8.81                         | 21.88                      | 33             | 11.12          |
| 16-QAM 1.4M BW Middle Channel |                |                               |                             |                       |                              |                            |                |                |
| 1880                          | V              | 89.42                         | 14.69                       | 0.85                  | 8.81                         | 22.65                      | 33             | 10.35          |
| 1880                          | H              | 88.76                         | 14.03                       | 0.85                  | 8.81                         | 21.99                      | 33             | 11.01          |
| QPSK 3M BW Middle Channel     |                |                               |                             |                       |                              |                            |                |                |
| 1880                          | V              | 89.83                         | 15.1                        | 0.85                  | 8.81                         | 23.06                      | 33             | 9.94           |
| 1880                          | H              | 88.8                          | 14.07                       | 0.85                  | 8.81                         | 22.03                      | 33             | 10.97          |
| 16-QAM 3M BW Middle Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1880                          | V              | 89.45                         | 14.72                       | 0.85                  | 8.81                         | 22.68                      | 33             | 10.32          |
| 1880                          | H              | 88.66                         | 13.93                       | 0.85                  | 8.81                         | 21.89                      | 33             | 11.11          |
| QPSK 5M BW Middle Channel     |                |                               |                             |                       |                              |                            |                |                |
| 1880                          | V              | 89.02                         | 14.29                       | 0.85                  | 8.81                         | 22.25                      | 33             | 10.75          |
| 1880                          | H              | 88.28                         | 13.55                       | 0.85                  | 8.81                         | 21.51                      | 33             | 11.49          |
| 16-QAM 5M BW Middle Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1880                          | V              | 89.54                         | 14.81                       | 0.85                  | 8.81                         | 22.77                      | 33             | 10.23          |
| 1880                          | H              | 88.47                         | 13.74                       | 0.85                  | 8.81                         | 21.7                       | 33             | 11.3           |
| QPSK 10M BW Middle Channel    |                |                               |                             |                       |                              |                            |                |                |
| 1880                          | V              | 89.59                         | 14.86                       | 0.85                  | 8.81                         | 22.82                      | 33             | 10.18          |
| 1880                          | H              | 88.1                          | 13.37                       | 0.85                  | 8.81                         | 21.33                      | 33             | 11.67          |
| 16-QAM 10M BW Middle Channel  |                |                               |                             |                       |                              |                            |                |                |
| 1880                          | V              | 89.29                         | 14.56                       | 0.85                  | 8.81                         | 22.52                      | 33             | 10.48          |
| 1880                          | H              | 88.6                          | 13.87                       | 0.85                  | 8.81                         | 21.83                      | 33             | 11.17          |
| QPSK 15M BW Middle Channel    |                |                               |                             |                       |                              |                            |                |                |
| 1880                          | V              | 89.53                         | 14.8                        | 0.85                  | 8.81                         | 22.76                      | 33             | 10.24          |
| 1880                          | H              | 88.8                          | 14.07                       | 0.85                  | 8.81                         | 22.03                      | 33             | 10.97          |
| 16-QAM 15M BW Middle Channel  |                |                               |                             |                       |                              |                            |                |                |
| 1880                          | V              | 89.76                         | 15.03                       | 0.85                  | 8.81                         | 22.99                      | 33             | 10.01          |
| 1880                          | H              | 88.87                         | 14.14                       | 0.85                  | 8.81                         | 22.1                       | 33             | 10.9           |

| Frequency<br>(MHz)           | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method          |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|------------------------------|----------------|-------------------------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                              |                |                               | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 20M BW Middle Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1880                         | V              | 89.31                         | 14.58                       | 0.85                  | 8.81                         | 22.54                      | 33             | 10.46          |
| 1880                         | H              | 88.52                         | 13.79                       | 0.85                  | 8.81                         | 21.75                      | 33             | 11.25          |
| 16-QAM 20M BW Middle Channel |                |                               |                             |                       |                              |                            |                |                |
| 1880                         | V              | 89.22                         | 14.49                       | 0.85                  | 8.81                         | 22.45                      | 33             | 10.55          |
| 1880                         | H              | 88.47                         | 13.74                       | 0.85                  | 8.81                         | 21.7                       | 33             | 11.3           |

| Frequency<br>(MHz)          | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method          |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|-----------------------------|----------------|-------------------------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                             |                |                               | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4M BW High Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1909.3                      | V              | 89.92                         | 15.19                       | 0.85                  | 8.85                         | 23.19                      | 33             | 9.81           |
| 1909.3                      | H              | 88.06                         | 13.33                       | 0.85                  | 8.85                         | 21.33                      | 33             | 11.67          |
| 16-QAM 1.4M BW High Channel |                |                               |                             |                       |                              |                            |                |                |
| 1909.3                      | V              | 89.61                         | 14.88                       | 0.85                  | 8.85                         | 22.88                      | 33             | 10.12          |
| 1909.3                      | H              | 88.12                         | 13.39                       | 0.85                  | 8.85                         | 21.39                      | 33             | 11.61          |
| QPSK 3M BW High Channel     |                |                               |                             |                       |                              |                            |                |                |
| 1908.5                      | V              | 89.27                         | 14.54                       | 0.85                  | 8.85                         | 22.54                      | 33             | 10.46          |
| 1908.5                      | H              | 88.74                         | 14.01                       | 0.85                  | 8.85                         | 22.01                      | 33             | 10.99          |
| 16-QAM 3M BW High Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1908.5                      | V              | 89.2                          | 14.47                       | 0.85                  | 8.85                         | 22.47                      | 33             | 10.53          |
| 1908.5                      | H              | 88.56                         | 13.83                       | 0.85                  | 8.85                         | 21.83                      | 33             | 11.17          |
| QPSK 5M BW High Channel     |                |                               |                             |                       |                              |                            |                |                |
| 1907.5                      | V              | 89.44                         | 14.71                       | 0.85                  | 8.85                         | 22.71                      | 33             | 10.29          |
| 1907.5                      | H              | 88.8                          | 14.07                       | 0.85                  | 8.85                         | 22.07                      | 33             | 10.93          |
| 16-QAM 5M BW High Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1907.5                      | V              | 89.9                          | 15.17                       | 0.85                  | 8.85                         | 23.17                      | 33             | 9.83           |
| 1907.5                      | H              | 88.07                         | 13.34                       | 0.85                  | 8.85                         | 21.34                      | 33             | 11.66          |
| QPSK 10M BW High Channel    |                |                               |                             |                       |                              |                            |                |                |
| 1905                        | V              | 89.41                         | 14.68                       | 0.85                  | 8.85                         | 22.68                      | 33             | 10.32          |
| 1905                        | H              | 88.45                         | 13.72                       | 0.85                  | 8.85                         | 21.72                      | 33             | 11.28          |
| 16-QAM 10M BW High Channel  |                |                               |                             |                       |                              |                            |                |                |
| 1905                        | V              | 89.93                         | 15.2                        | 0.85                  | 8.85                         | 23.2                       | 33             | 9.8            |
| 1905                        | H              | 88.8                          | 14.07                       | 0.85                  | 8.85                         | 22.07                      | 33             | 10.93          |
| QPSK 15M BW High Channel    |                |                               |                             |                       |                              |                            |                |                |
| 1902.5                      | V              | 89.41                         | 14.68                       | 0.85                  | 8.84                         | 22.67                      | 33             | 10.33          |
| 1902.5                      | H              | 88.51                         | 13.78                       | 0.85                  | 8.84                         | 21.77                      | 33             | 11.23          |
| 16-QAM 15M BW High Channel  |                |                               |                             |                       |                              |                            |                |                |
| 1902.5                      | V              | 89.13                         | 14.4                        | 0.85                  | 8.84                         | 22.39                      | 33             | 10.61          |
| 1902.5                      | H              | 88.14                         | 13.41                       | 0.85                  | 8.84                         | 21.4                       | 33             | 11.6           |

| Frequency<br>(MHz)         | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method          |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|----------------------------|----------------|-------------------------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                            |                |                               | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 20M BW High Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1900                       | V              | 89.64                         | 14.91                       | 0.85                  | 8.84                         | 22.9                       | 33             | 10.1           |
| 1900                       | H              | 88.34                         | 13.61                       | 0.85                  | 8.84                         | 21.6                       | 33             | 11.4           |
| 16-QAM 20M BW High Channel |                |                               |                             |                       |                              |                            |                |                |
| 1900                       | V              | 89.64                         | 14.91                       | 0.85                  | 8.84                         | 22.9                       | 33             | 10.1           |
| 1900                       | H              | 88.05                         | 13.32                       | 0.85                  | 8.84                         | 21.31                      | 33             | 11.69          |

**EIRP:****LTE Band 4**

| Frequency<br>(MHz)         | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method          |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|----------------------------|----------------|-------------------------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                            |                |                               | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4M BW Low Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1710.7                     | V              | 89.1                          | 13.35                       | 0.84                  | 8.54                         | 21.05                      | 30             | 8.95           |
| 1710.7                     | H              | 88.3                          | 12.55                       | 0.84                  | 8.54                         | 20.25                      | 30             | 9.75           |
| 16-QAM 1.4M BW Low Channel |                |                               |                             |                       |                              |                            |                |                |
| 1710.7                     | V              | 89.34                         | 13.59                       | 0.84                  | 8.54                         | 21.29                      | 30             | 8.71           |
| 1710.7                     | H              | 88.57                         | 12.82                       | 0.84                  | 8.54                         | 20.52                      | 30             | 9.48           |
| QPSK 3M BW Low Channel     |                |                               |                             |                       |                              |                            |                |                |
| 1711.5                     | V              | 89.66                         | 13.91                       | 0.84                  | 8.54                         | 21.61                      | 30             | 8.39           |
| 1711.5                     | H              | 88.36                         | 12.61                       | 0.84                  | 8.54                         | 20.31                      | 30             | 9.69           |
| 16-QAM 3M BW Low Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1711.5                     | V              | 89.76                         | 14.01                       | 0.84                  | 8.54                         | 21.71                      | 30             | 8.29           |
| 1711.5                     | H              | 88.05                         | 12.3                        | 0.84                  | 8.54                         | 20                         | 30             | 10             |
| QPSK 5M BW Low Channel     |                |                               |                             |                       |                              |                            |                |                |
| 1712.5                     | V              | 89.71                         | 13.96                       | 0.84                  | 8.54                         | 21.66                      | 30             | 8.34           |
| 1712.5                     | H              | 88.08                         | 12.33                       | 0.84                  | 8.54                         | 20.03                      | 30             | 9.97           |
| 16-QAM 5M BW Low Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1712.5                     | V              | 89.46                         | 13.71                       | 0.84                  | 8.54                         | 21.41                      | 30             | 8.59           |
| 1712.5                     | H              | 88.99                         | 13.24                       | 0.84                  | 8.54                         | 20.94                      | 30             | 9.06           |
| QPSK 10M BW Low Channel    |                |                               |                             |                       |                              |                            |                |                |
| 1715                       | V              | 89.68                         | 13.93                       | 0.84                  | 8.54                         | 21.63                      | 30             | 8.37           |
| 1715                       | H              | 88.04                         | 12.29                       | 0.84                  | 8.54                         | 19.99                      | 30             | 10.01          |
| 16-QAM 10M BW Low Channel  |                |                               |                             |                       |                              |                            |                |                |
| 1715                       | V              | 89.96                         | 14.21                       | 0.84                  | 8.54                         | 21.91                      | 30             | 8.09           |
| 1715                       | H              | 88.57                         | 12.82                       | 0.84                  | 8.54                         | 20.52                      | 30             | 9.48           |
| QPSK 15M BW Low Channel    |                |                               |                             |                       |                              |                            |                |                |
| 1717.5                     | V              | 89.89                         | 14.14                       | 0.84                  | 8.55                         | 21.85                      | 30             | 8.15           |
| 1717.5                     | H              | 88.16                         | 12.41                       | 0.84                  | 8.55                         | 20.12                      | 30             | 9.88           |
| 16-QAM 15M BW Low Channel  |                |                               |                             |                       |                              |                            |                |                |
| 1717.5                     | V              | 89.74                         | 13.99                       | 0.84                  | 8.55                         | 21.7                       | 30             | 8.3            |
| 1717.5                     | H              | 88.58                         | 12.83                       | 0.84                  | 8.55                         | 20.54                      | 30             | 9.46           |

| Frequency<br>(MHz)        | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method          |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------------------------|----------------|-------------------------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                           |                |                               | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 20M BW Low Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1720                      | V              | 89.61                         | 13.86                       | 0.84                  | 8.55                         | 21.57                      | 30             | 8.43           |
| 1720                      | H              | 88.89                         | 13.14                       | 0.84                  | 8.55                         | 20.85                      | 30             | 9.15           |
| 16-QAM 20M BW Low Channel |                |                               |                             |                       |                              |                            |                |                |
| 1720                      | V              | 89.03                         | 13.28                       | 0.84                  | 8.55                         | 20.99                      | 30             | 9.01           |
| 1720                      | H              | 88.22                         | 12.47                       | 0.84                  | 8.55                         | 20.18                      | 30             | 9.82           |

| Frequency<br>(MHz)            | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method          |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|-------------------------------|----------------|-------------------------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                               |                |                               | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4M BW Middle Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1732.5                        | V              | 89.48                         | 13.73                       | 0.84                  | 8.57                         | 21.46                      | 30             | 8.54           |
| 1732.5                        | H              | 88.31                         | 12.56                       | 0.84                  | 8.57                         | 20.29                      | 30             | 9.71           |
| 16-QAM 1.4M BW Middle Channel |                |                               |                             |                       |                              |                            |                |                |
| 1732.5                        | V              | 89.7                          | 13.95                       | 0.84                  | 8.57                         | 21.68                      | 30             | 8.32           |
| 1732.5                        | H              | 88.12                         | 12.37                       | 0.84                  | 8.57                         | 20.1                       | 30             | 9.9            |
| QPSK 3M BW Middle Channel     |                |                               |                             |                       |                              |                            |                |                |
| 1732.5                        | V              | 89.36                         | 13.61                       | 0.84                  | 8.57                         | 21.34                      | 30             | 8.66           |
| 1732.5                        | H              | 88.04                         | 12.29                       | 0.84                  | 8.57                         | 20.02                      | 30             | 9.98           |
| 16-QAM 3M BW Middle Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1732.5                        | V              | 89.07                         | 13.32                       | 0.84                  | 8.57                         | 21.05                      | 30             | 8.95           |
| 1732.5                        | H              | 88.34                         | 12.59                       | 0.84                  | 8.57                         | 20.32                      | 30             | 9.68           |
| QPSK 5M BW Middle Channel     |                |                               |                             |                       |                              |                            |                |                |
| 1732.5                        | V              | 89.47                         | 13.72                       | 0.84                  | 8.57                         | 21.45                      | 30             | 8.55           |
| 1732.5                        | H              | 88.08                         | 12.33                       | 0.84                  | 8.57                         | 20.06                      | 30             | 9.94           |
| 16-QAM 5M BW Middle Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1732.5                        | V              | 89.41                         | 13.66                       | 0.84                  | 8.57                         | 21.39                      | 30             | 8.61           |
| 1732.5                        | H              | 88.12                         | 12.37                       | 0.84                  | 8.57                         | 20.1                       | 30             | 9.9            |
| QPSK 10M BW Middle Channel    |                |                               |                             |                       |                              |                            |                |                |
| 1732.5                        | V              | 89.2                          | 13.45                       | 0.84                  | 8.57                         | 21.18                      | 30             | 8.82           |
| 1732.5                        | H              | 88.35                         | 12.6                        | 0.84                  | 8.57                         | 20.33                      | 30             | 9.67           |
| 16-QAM 10M BW Middle Channel  |                |                               |                             |                       |                              |                            |                |                |
| 1732.5                        | V              | 89.21                         | 13.46                       | 0.84                  | 8.57                         | 21.19                      | 30             | 8.81           |
| 1732.5                        | H              | 88.93                         | 13.18                       | 0.84                  | 8.57                         | 20.91                      | 30             | 9.09           |
| QPSK 15M BW Middle Channel    |                |                               |                             |                       |                              |                            |                |                |
| 1732.5                        | V              | 89.4                          | 13.65                       | 0.84                  | 8.57                         | 21.38                      | 30             | 8.62           |
| 1732.5                        | H              | 88.07                         | 12.32                       | 0.84                  | 8.57                         | 20.05                      | 30             | 9.95           |
| 16-QAM 15M BW Middle Channel  |                |                               |                             |                       |                              |                            |                |                |
| 1732.5                        | V              | 89.46                         | 13.71                       | 0.84                  | 8.57                         | 21.44                      | 30             | 8.56           |
| 1732.5                        | H              | 88.36                         | 12.61                       | 0.84                  | 8.57                         | 20.34                      | 30             | 9.66           |

| Frequency<br>(MHz)           | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method          |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|------------------------------|----------------|-------------------------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                              |                |                               | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 20M BW Middle Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1732.5                       | V              | 89.64                         | 13.89                       | 0.84                  | 8.57                         | 21.62                      | 30             | 8.38           |
| 1732.5                       | H              | 88.09                         | 12.34                       | 0.84                  | 8.57                         | 20.07                      | 30             | 9.93           |
| 16-QAM 20M BW Middle Channel |                |                               |                             |                       |                              |                            |                |                |
| 1732.5                       | V              | 89.44                         | 13.69                       | 0.84                  | 8.57                         | 21.42                      | 30             | 8.58           |
| 1732.5                       | H              | 88.25                         | 12.5                        | 0.84                  | 8.57                         | 20.23                      | 30             | 9.77           |

| Frequency<br>(MHz)          | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method          |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|-----------------------------|----------------|-------------------------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                             |                |                               | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4M BW High Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1754.3                      | V              | 89.52                         | 13.77                       | 0.84                  | 8.61                         | 21.54                      | 30             | 8.46           |
| 1754.3                      | H              | 88.85                         | 13.1                        | 0.84                  | 8.61                         | 20.87                      | 30             | 9.13           |
| 16-QAM 1.4M BW High Channel |                |                               |                             |                       |                              |                            |                |                |
| 1754.3                      | V              | 89.45                         | 13.7                        | 0.84                  | 8.61                         | 21.47                      | 30             | 8.53           |
| 1754.3                      | H              | 88.15                         | 12.4                        | 0.84                  | 8.61                         | 20.17                      | 30             | 9.83           |
| QPSK 3M BW High Channel     |                |                               |                             |                       |                              |                            |                |                |
| 1753.5                      | V              | 89.95                         | 14.2                        | 0.84                  | 8.6                          | 21.96                      | 30             | 8.04           |
| 1753.5                      | H              | 88.87                         | 13.12                       | 0.84                  | 8.6                          | 20.88                      | 30             | 9.12           |
| 16-QAM 3M BW High Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1753.5                      | V              | 89.75                         | 14                          | 0.84                  | 8.6                          | 21.76                      | 30             | 8.24           |
| 1753.5                      | H              | 88.12                         | 12.37                       | 0.84                  | 8.6                          | 20.13                      | 30             | 9.87           |
| QPSK 5M BW High Channel     |                |                               |                             |                       |                              |                            |                |                |
| 1752.5                      | V              | 89.05                         | 13.3                        | 0.84                  | 8.6                          | 21.06                      | 30             | 8.94           |
| 1752.5                      | H              | 88.63                         | 12.88                       | 0.84                  | 8.6                          | 20.64                      | 30             | 9.36           |
| 16-QAM 5M BW High Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1752.5                      | V              | 89.36                         | 13.61                       | 0.84                  | 8.6                          | 21.37                      | 30             | 8.63           |
| 1752.5                      | H              | 88.26                         | 12.51                       | 0.84                  | 8.6                          | 20.27                      | 30             | 9.73           |
| QPSK 10M BW High Channel    |                |                               |                             |                       |                              |                            |                |                |
| 1750                        | V              | 89.78                         | 14.03                       | 0.84                  | 8.6                          | 21.79                      | 30             | 8.21           |
| 1750                        | H              | 88.88                         | 13.13                       | 0.84                  | 8.6                          | 20.89                      | 30             | 9.11           |
| 16-QAM 10M BW High Channel  |                |                               |                             |                       |                              |                            |                |                |
| 1750                        | V              | 89.14                         | 13.39                       | 0.84                  | 8.6                          | 21.15                      | 30             | 8.85           |
| 1750                        | H              | 88.59                         | 12.84                       | 0.84                  | 8.6                          | 20.6                       | 30             | 9.4            |
| QPSK 15M BW High Channel    |                |                               |                             |                       |                              |                            |                |                |
| 1747.5                      | V              | 89.19                         | 13.44                       | 0.84                  | 8.6                          | 21.2                       | 30             | 8.8            |
| 1747.5                      | H              | 88.05                         | 12.3                        | 0.84                  | 8.6                          | 20.06                      | 30             | 9.94           |
| 16-QAM 15M BW High Channel  |                |                               |                             |                       |                              |                            |                |                |
| 1747.5                      | V              | 89.6                          | 13.85                       | 0.84                  | 8.6                          | 21.61                      | 30             | 8.39           |
| 1747.5                      | H              | 88.5                          | 12.75                       | 0.84                  | 8.6                          | 20.51                      | 30             | 9.49           |

| Frequency<br>(MHz)         | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method          |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|----------------------------|----------------|-------------------------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                            |                |                               | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 20M BW High Channel   |                |                               |                             |                       |                              |                            |                |                |
| 1745                       | V              | 89.1                          | 13.35                       | 0.84                  | 8.59                         | 21.1                       | 30             | 8.9            |
| 1745                       | H              | 88.78                         | 13.03                       | 0.84                  | 8.59                         | 20.78                      | 30             | 9.22           |
| 16-QAM 20M BW High Channel |                |                               |                             |                       |                              |                            |                |                |
| 1745                       | V              | 89.09                         | 13.34                       | 0.84                  | 8.59                         | 21.09                      | 30             | 8.91           |
| 1745                       | H              | 88.6                          | 12.85                       | 0.84                  | 8.59                         | 20.6                       | 30             | 9.4            |

**ERP:****LTE Band 12**

| Frequency<br>(MHz)         | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method          |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|----------------------------|----------------|-------------------------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                            |                |                               | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4M BW Low Channel   |                |                               |                             |                       |                              |                            |                |                |
| 699.7                      | V              | 88.88                         | 25.24                       | 0.62                  | -1.75                        | 22.87                      | 34.77          | 11.9           |
| 699.7                      | H              | 86.09                         | 22.45                       | 0.62                  | -1.75                        | 20.08                      | 34.77          | 14.69          |
| 16-QAM 1.4M BW Low Channel |                |                               |                             |                       |                              |                            |                |                |
| 699.7                      | V              | 88.43                         | 24.79                       | 0.62                  | -1.75                        | 22.42                      | 34.77          | 12.35          |
| 699.7                      | H              | 86.35                         | 22.71                       | 0.62                  | -1.75                        | 20.34                      | 34.77          | 14.43          |
| QPSK 3M BW Low Channel     |                |                               |                             |                       |                              |                            |                |                |
| 700.5                      | V              | 88.28                         | 24.64                       | 0.62                  | -1.75                        | 22.27                      | 34.77          | 12.5           |
| 700.5                      | H              | 86.47                         | 22.83                       | 0.62                  | -1.75                        | 20.46                      | 34.77          | 14.31          |
| 16-QAM 3M BW Low Channel   |                |                               |                             |                       |                              |                            |                |                |
| 700.5                      | V              | 88.68                         | 25.04                       | 0.62                  | -1.75                        | 22.67                      | 34.77          | 12.1           |
| 700.5                      | H              | 86.99                         | 23.35                       | 0.62                  | -1.75                        | 20.98                      | 34.77          | 13.79          |
| QPSK 5M BW Low Channel     |                |                               |                             |                       |                              |                            |                |                |
| 701.5                      | V              | 88.69                         | 25.05                       | 0.62                  | -1.74                        | 22.69                      | 34.77          | 12.08          |
| 701.5                      | H              | 86.69                         | 23.05                       | 0.62                  | -1.74                        | 20.69                      | 34.77          | 14.08          |
| 16-QAM 5M BW Low Channel   |                |                               |                             |                       |                              |                            |                |                |
| 701.5                      | V              | 88.25                         | 24.61                       | 0.62                  | -1.74                        | 22.25                      | 34.77          | 12.52          |
| 701.5                      | H              | 86.4                          | 22.76                       | 0.62                  | -1.74                        | 20.4                       | 34.77          | 14.37          |
| QPSK 10M BW Low Channel    |                |                               |                             |                       |                              |                            |                |                |
| 704                        | V              | 88.03                         | 24.39                       | 0.62                  | -1.73                        | 22.04                      | 34.77          | 12.73          |
| 704                        | H              | 86.59                         | 22.95                       | 0.62                  | -1.73                        | 20.6                       | 34.77          | 14.17          |
| 16-QAM 10M BW Low Channel  |                |                               |                             |                       |                              |                            |                |                |
| 704                        | V              | 88.36                         | 24.72                       | 0.62                  | -1.73                        | 22.37                      | 34.77          | 12.4           |
| 704                        | H              | 86.93                         | 23.29                       | 0.62                  | -1.73                        | 20.94                      | 34.77          | 13.83          |

| Frequency<br>(MHz)            | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method          |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|-------------------------------|----------------|-------------------------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                               |                |                               | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4M BW Middle Channel   |                |                               |                             |                       |                              |                            |                |                |
| 707.5                         | V              | 88.64                         | 25.15                       | 0.62                  | -1.71                        | 22.82                      | 34.77          | 11.95          |
| 707.5                         | H              | 86.87                         | 23.38                       | 0.62                  | -1.71                        | 21.05                      | 34.77          | 13.72          |
| 16-QAM 1.4M BW Middle Channel |                |                               |                             |                       |                              |                            |                |                |
| 707.5                         | V              | 88.78                         | 25.29                       | 0.62                  | -1.71                        | 22.96                      | 34.77          | 11.81          |
| 707.5                         | H              | 86.78                         | 23.29                       | 0.62                  | -1.71                        | 20.96                      | 34.77          | 13.81          |
| QPSK 3M BW Middle Channel     |                |                               |                             |                       |                              |                            |                |                |
| 707.5                         | V              | 88.91                         | 25.42                       | 0.62                  | -1.71                        | 23.09                      | 34.77          | 11.68          |
| 707.5                         | H              | 86.41                         | 22.92                       | 0.62                  | -1.71                        | 20.59                      | 34.77          | 14.18          |
| 16-QAM 3M BW Middle Channel   |                |                               |                             |                       |                              |                            |                |                |
| 707.5                         | V              | 88.68                         | 25.19                       | 0.62                  | -1.71                        | 22.86                      | 34.77          | 11.91          |
| 707.5                         | H              | 86.94                         | 23.45                       | 0.62                  | -1.71                        | 21.12                      | 34.77          | 13.65          |
| QPSK 5M BW Middle Channel     |                |                               |                             |                       |                              |                            |                |                |
| 707.5                         | V              | 88.2                          | 24.71                       | 0.62                  | -1.71                        | 22.38                      | 34.77          | 12.39          |
| 707.5                         | H              | 86.17                         | 22.68                       | 0.62                  | -1.71                        | 20.35                      | 34.77          | 14.42          |
| 16-QAM 5M BW Middle Channel   |                |                               |                             |                       |                              |                            |                |                |
| 707.5                         | V              | 88.49                         | 25                          | 0.62                  | -1.71                        | 22.67                      | 34.77          | 12.1           |
| 707.5                         | H              | 86.21                         | 22.72                       | 0.62                  | -1.71                        | 20.39                      | 34.77          | 14.38          |
| QPSK 10M BW Middle Channel    |                |                               |                             |                       |                              |                            |                |                |
| 707.5                         | V              | 88.7                          | 25.21                       | 0.62                  | -1.71                        | 22.88                      | 34.77          | 11.89          |
| 707.5                         | H              | 86.96                         | 23.47                       | 0.62                  | -1.71                        | 21.14                      | 34.77          | 13.63          |
| 16-QAM 10M BW Middle Channel  |                |                               |                             |                       |                              |                            |                |                |
| 707.5                         | V              | 88.91                         | 25.42                       | 0.62                  | -1.71                        | 23.09                      | 34.77          | 11.68          |
| 707.5                         | H              | 86.58                         | 23.09                       | 0.62                  | -1.71                        | 20.76                      | 34.77          | 14.01          |

| Frequency<br>(MHz)          | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method          |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|-----------------------------|----------------|-------------------------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                             |                |                               | Submitted<br>Level<br>(dBm) | Cable<br>loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4M BW High Channel   |                |                               |                             |                       |                              |                            |                |                |
| 715.3                       | V              | 88.89                         | 24.97                       | 0.62                  | -1.67                        | 22.68                      | 34.77          | 12.09          |
| 715.3                       | H              | 86.21                         | 22.29                       | 0.62                  | -1.67                        | 20                         | 34.77          | 14.77          |
| 16-QAM 1.4M BW High Channel |                |                               |                             |                       |                              |                            |                |                |
| 715.3                       | V              | 88.11                         | 24.19                       | 0.62                  | -1.67                        | 21.9                       | 34.77          | 12.87          |
| 715.3                       | H              | 86.86                         | 22.94                       | 0.62                  | -1.67                        | 20.65                      | 34.77          | 14.12          |
| QPSK 3M BW High Channel     |                |                               |                             |                       |                              |                            |                |                |
| 714.5                       | V              | 88.03                         | 24.11                       | 0.62                  | -1.68                        | 21.81                      | 34.77          | 12.96          |
| 714.5                       | H              | 86.69                         | 22.77                       | 0.62                  | -1.68                        | 20.47                      | 34.77          | 14.3           |
| 16-QAM 3M BW High Channel   |                |                               |                             |                       |                              |                            |                |                |
| 714.5                       | V              | 88.38                         | 24.46                       | 0.62                  | -1.68                        | 22.16                      | 34.77          | 12.61          |
| 714.5                       | H              | 86.93                         | 23.01                       | 0.62                  | -1.68                        | 20.71                      | 34.77          | 14.06          |
| QPSK 5M BW High Channel     |                |                               |                             |                       |                              |                            |                |                |
| 713.5                       | V              | 88.67                         | 24.75                       | 0.62                  | -1.68                        | 22.45                      | 34.77          | 12.32          |
| 713.5                       | H              | 86.43                         | 22.51                       | 0.62                  | -1.68                        | 20.21                      | 34.77          | 14.56          |
| 16-QAM 5M BW High Channel   |                |                               |                             |                       |                              |                            |                |                |
| 713.5                       | V              | 88.59                         | 24.67                       | 0.62                  | -1.68                        | 22.37                      | 34.77          | 12.4           |
| 713.5                       | H              | 86.53                         | 22.61                       | 0.62                  | -1.68                        | 20.31                      | 34.77          | 14.46          |
| QPSK 10M BW High Channel    |                |                               |                             |                       |                              |                            |                |                |
| 711                         | V              | 88.15                         | 24.23                       | 0.62                  | -1.7                         | 21.91                      | 34.77          | 12.86          |
| 711                         | H              | 86                            | 22.08                       | 0.62                  | -1.7                         | 19.76                      | 34.77          | 15.01          |
| 16-QAM 10M BW High Channel  |                |                               |                             |                       |                              |                            |                |                |
| 711                         | V              | 88.08                         | 24.16                       | 0.62                  | -1.7                         | 21.84                      | 34.77          | 12.93          |
| 711                         | H              | 86.33                         | 22.41                       | 0.62                  | -1.7                         | 20.09                      | 34.77          | 14.68          |

**Note:**

All above data were tested without amplifier.

Absolute Level (dBm) = Submitted Level (dBm) - Cable loss (dB) + Antenna Gain (dBd/dBi)

Margin (dB) = Limit (dBm) - Absolute Level (dBm)

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

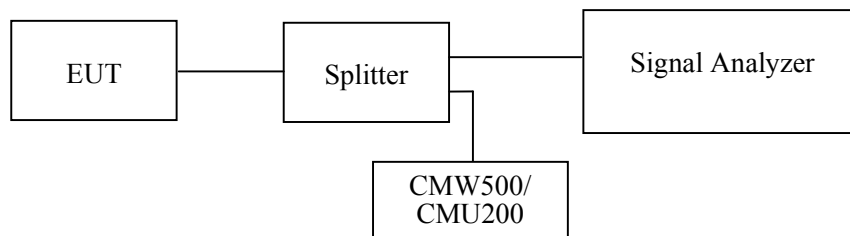
### Applicable Standards

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 50 kHz (WCDMA)&30/100/300kHz(LTE), and the 26 dB & 99% bandwidth was recorded.



### Test Data

#### Environmental Conditions

|                    |                   |
|--------------------|-------------------|
| Temperature:       | 23.2°C-23.5°C     |
| Relative Humidity: | 51 %-53%          |
| ATM Pressure:      | 101.1kPa-103.3kPa |

The testing was performed by Tyrone Wang from 2021-01-28 to 2021-02-18.

EUT operation mode: Transmitting

Test Result: Compliance.

**WCDMA Band V**

| Mode           | 26 dB Emission Bandwidth (MHz) |                |              | 99% Occupied Bandwidth (MHz) |                |              |
|----------------|--------------------------------|----------------|--------------|------------------------------|----------------|--------------|
|                | Low Channel                    | Middle Channel | High Channel | Low Channel                  | Middle Channel | High Channel |
| WCDMA (Rel 99) | 4.71                           | 4.71           | 4.73         | 4.15                         | 4.15           | 4.15         |
| WCDMA (HSDPA)  | 4.71                           | 4.71           | 4.73         | 4.13                         | 4.13           | 4.13         |
| WCDMA (HSUPA)  | 4.71                           | 4.70           | 4.73         | 4.15                         | 4.15           | 4.13         |
| WCDMA (HSPA+)  | 4.71                           | 4.70           | 4.71         | 4.15                         | 4.15           | 4.13         |

**WCDMA Band II**

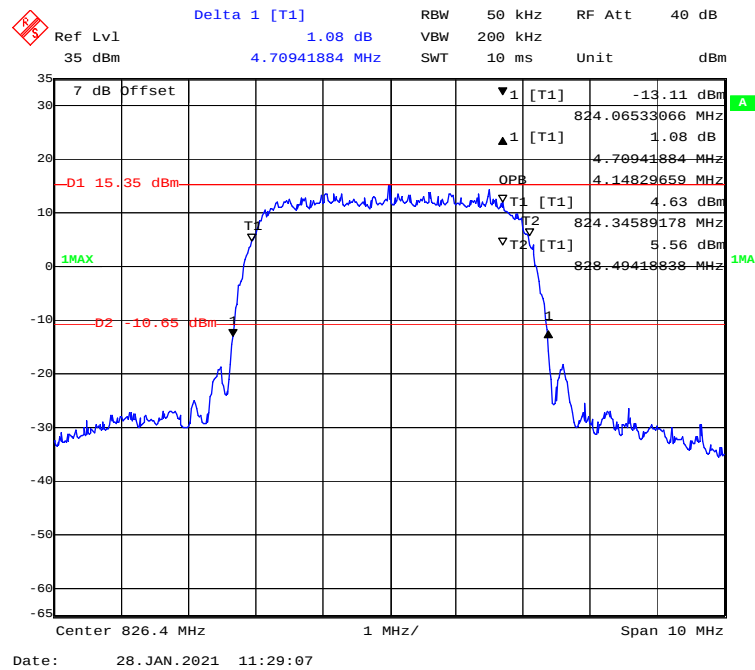
| Mode           | 26 dB Emission Bandwidth (MHz) |                |              | 99% Occupied Bandwidth (MHz) |                |              |
|----------------|--------------------------------|----------------|--------------|------------------------------|----------------|--------------|
|                | Low Channel                    | Middle Channel | High Channel | Low Channel                  | Middle Channel | High Channel |
| WCDMA (Rel 99) | 4.71                           | 4.73           | 4.69         | 4.15                         | 4.15           | 4.13         |
| WCDMA (HSDPA)  | 4.73                           | 4.75           | 4.69         | 4.13                         | 4.15           | 4.13         |
| WCDMA (HSUPA)  | 4.73                           | 4.73           | 4.71         | 4.13                         | 4.15           | 4.15         |
| WCDMA (HSPA+)  | 4.71                           | 4.73           | 4.73         | 4.11                         | 4.13           | 4.15         |

**WCDMA Band IV**

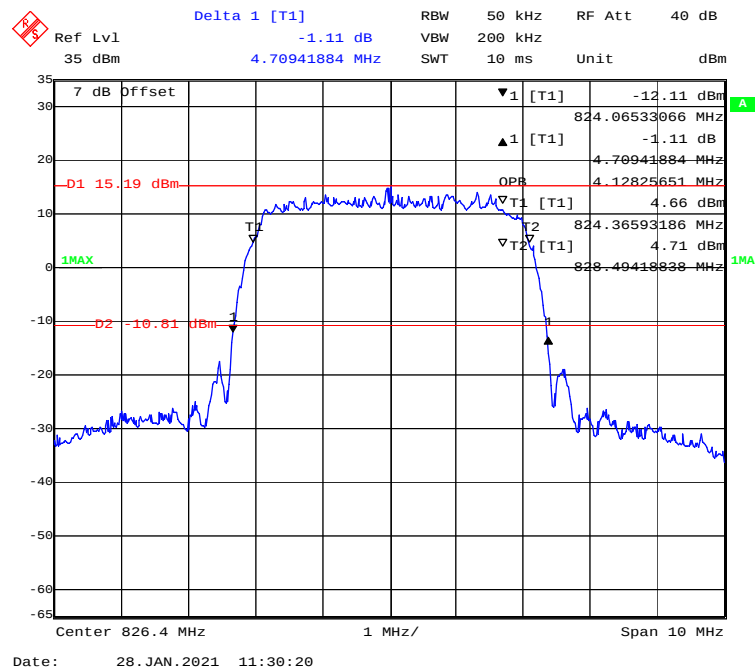
| Mode           | 26 dB Emission Bandwidth (MHz) |                |              | 99% Occupied Bandwidth (MHz) |                |              |
|----------------|--------------------------------|----------------|--------------|------------------------------|----------------|--------------|
|                | Low Channel                    | Middle Channel | High Channel | Low Channel                  | Middle Channel | High Channel |
| WCDMA (Rel 99) | 4.81                           | 4.75           | 4.73         | 4.17                         | 4.17           | 4.13         |
| WCDMA (HSDPA)  | 4.77                           | 4.77           | 4.73         | 4.15                         | 4.15           | 4.15         |
| WCDMA (HSUPA)  | 4.73                           | 4.77           | 4.77         | 4.17                         | 4.15           | 4.15         |
| WCDMA (HSPA+)  | 4.75                           | 4.77           | 4.77         | 4.17                         | 4.17           | 4.17         |

## WCDMA Band V

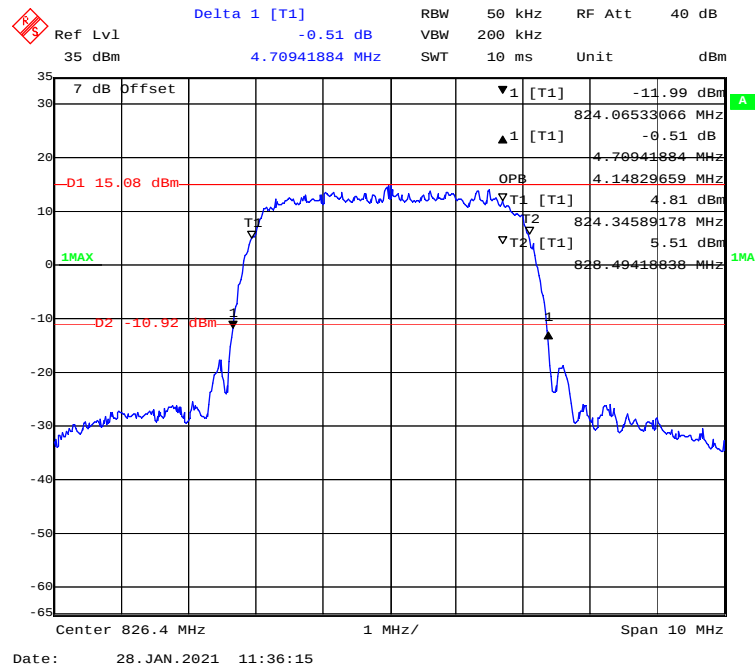
## 99% Occupied &amp; 26 dB Emissions Bandwidth for WCDMA (Rel 99) Mode, Low Channel



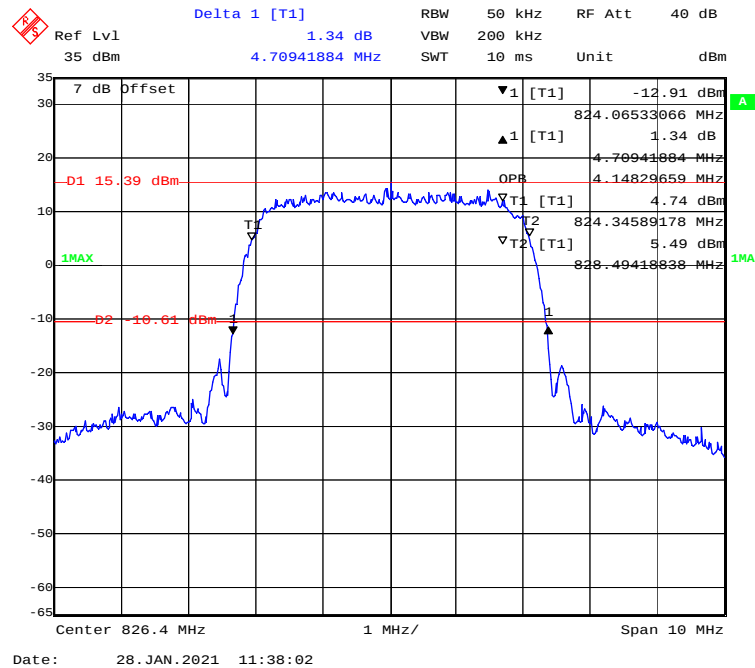
## 99% Occupied &amp; 26 dB Emissions Bandwidth for WCDMA (HSDPA) Mode, Low Channel



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



### 99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode, Low Channel



Delta 1 [T1] 0.16 dB

Ref Lvl 35 dBm

RBW 50 kHz

VBW 200 kHz

SWT 10 ms

RF Att 40 dB

Unit dBm

7 dB Offset

D1 14.99 dBm

D2 -11.01 dBm

IMAX

IMIN

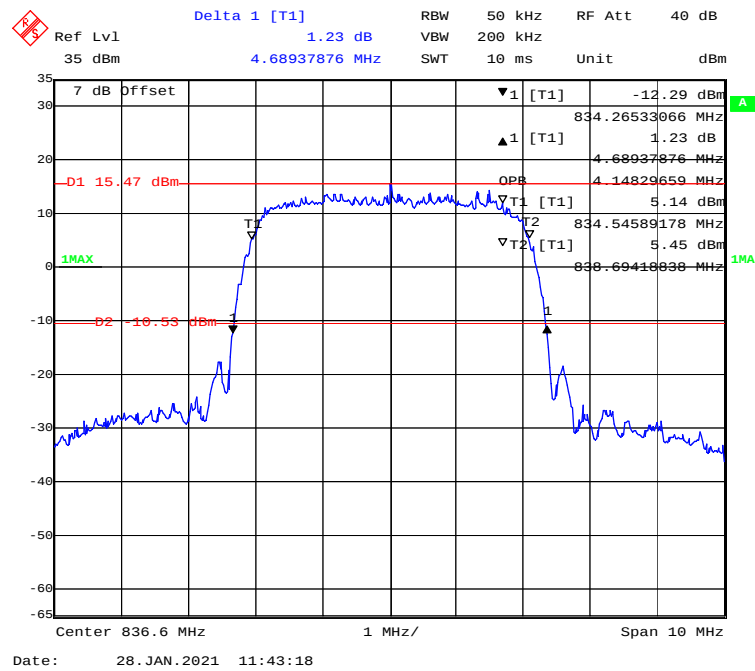
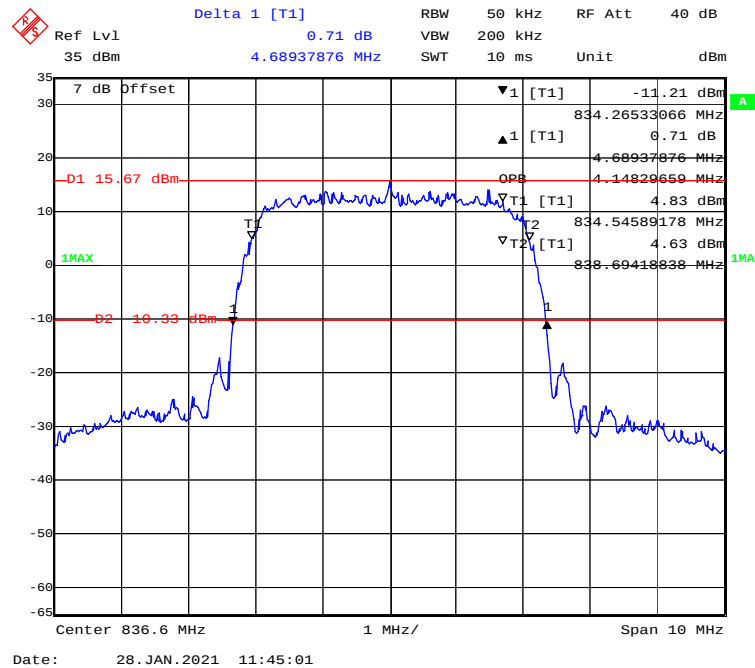
Center 836.6 MHz

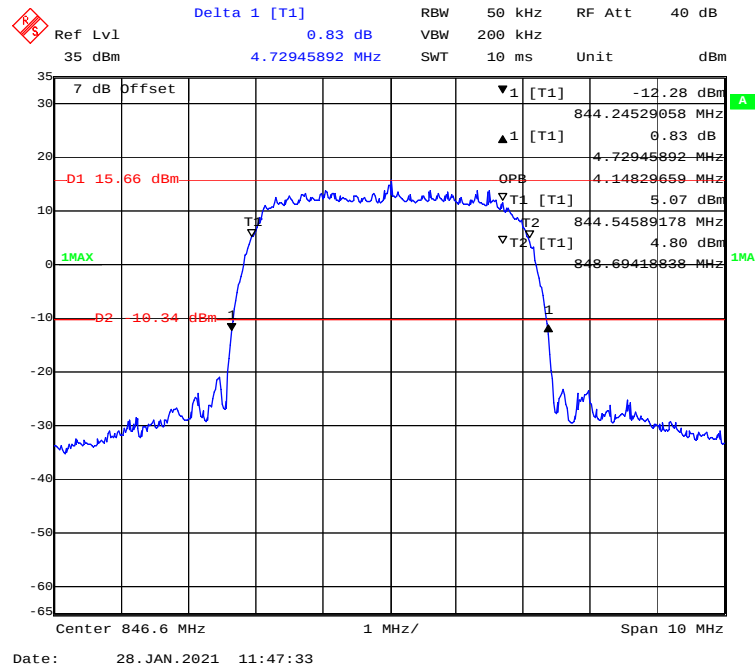
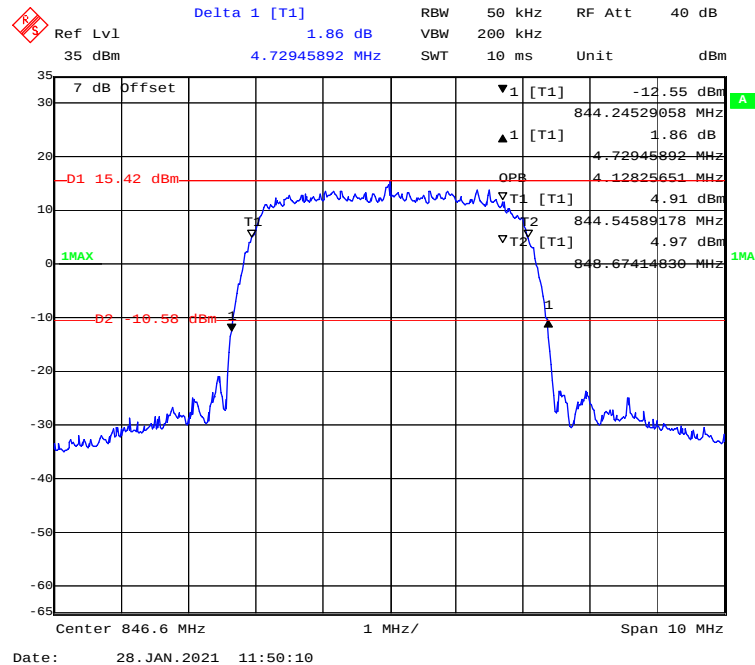
1 MHz/

Span 10 MHz

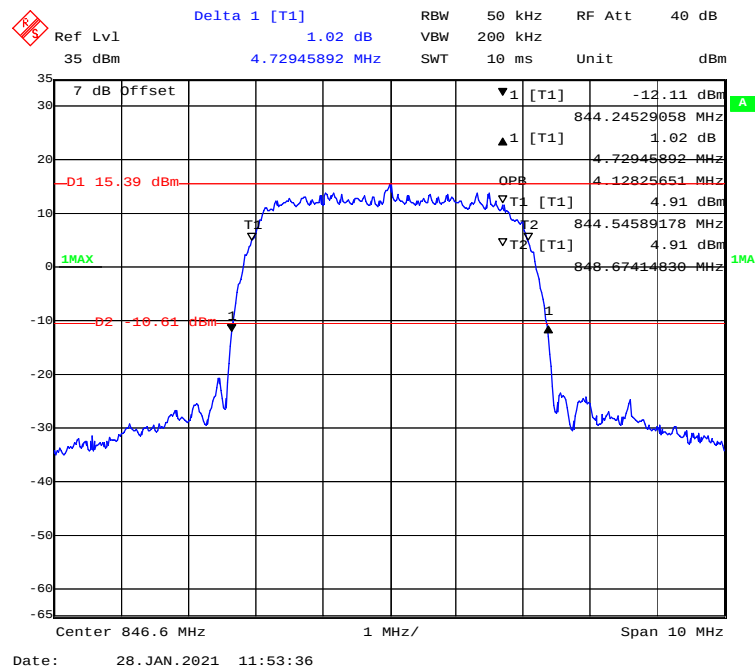
Date: 28. JAN. 2021 11:39:20

[illegible]

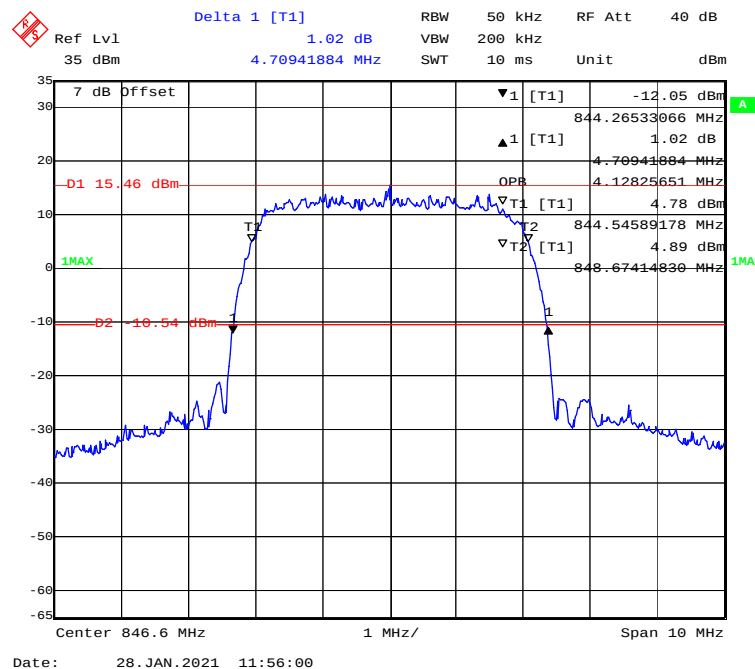
**99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSUPA) Mode, Middle Channel****99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode, Middle Channel**

**99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Mode, High Channel****99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) Mode, High Channel**

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

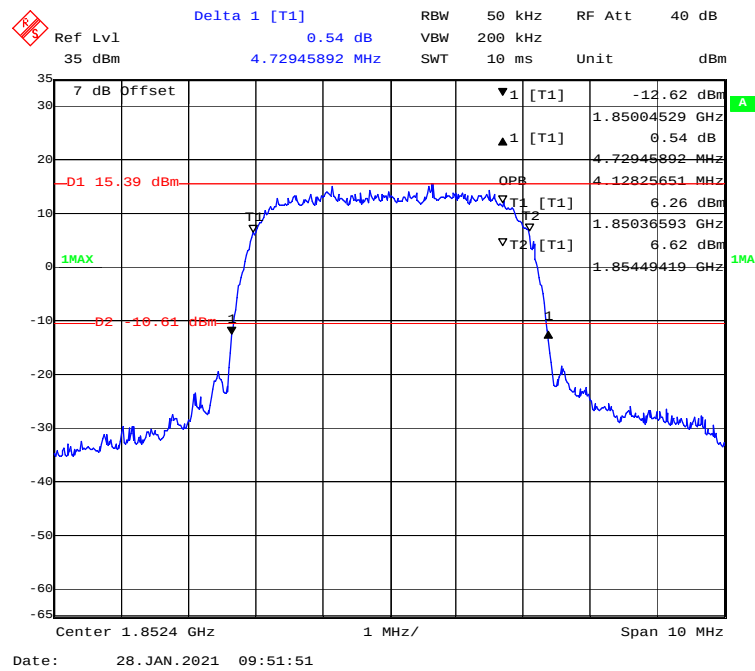
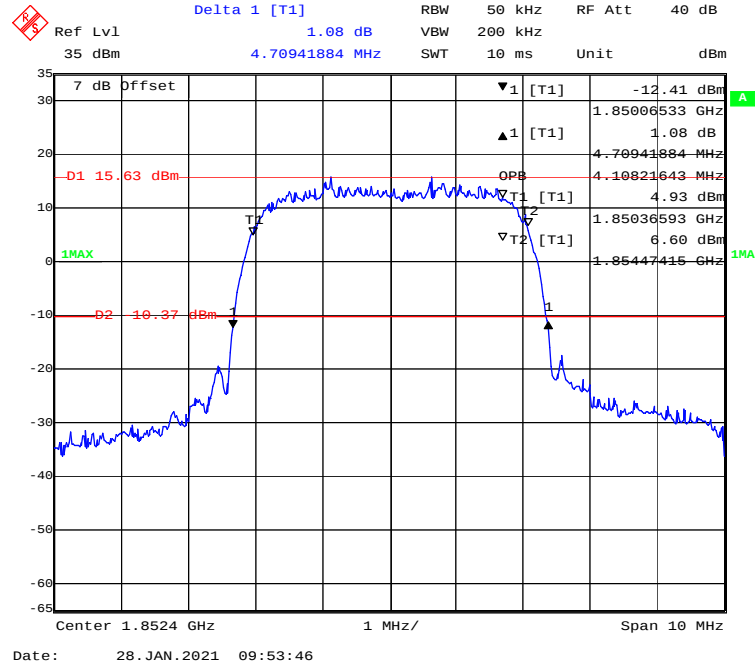


### 99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode, High Channel

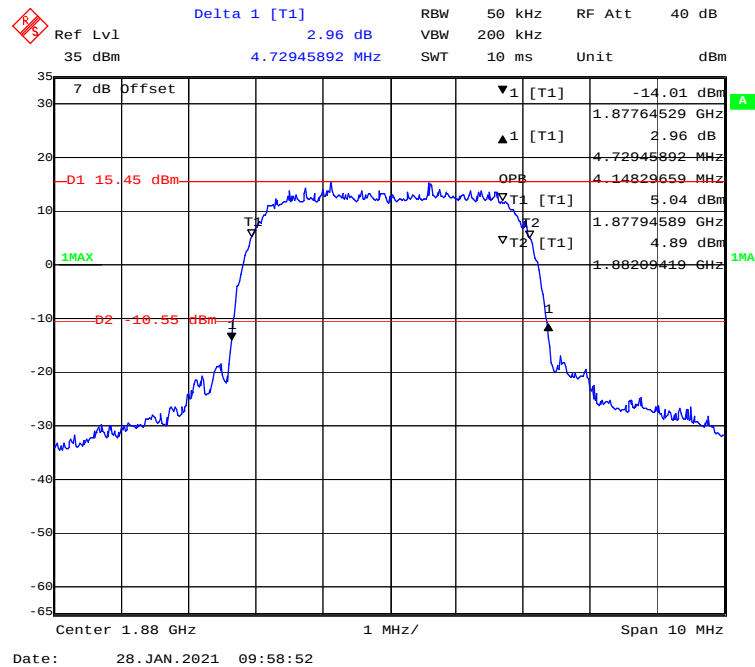


### 99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Mode, Low Channel

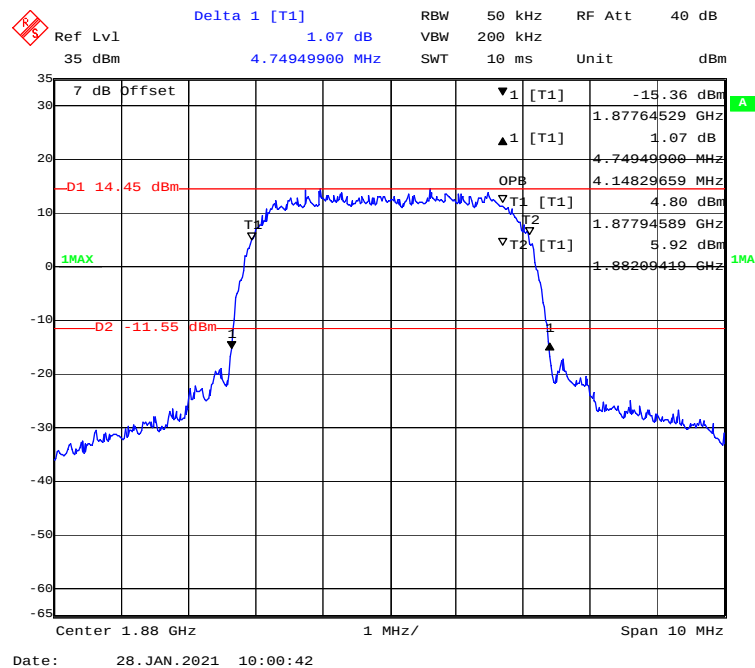


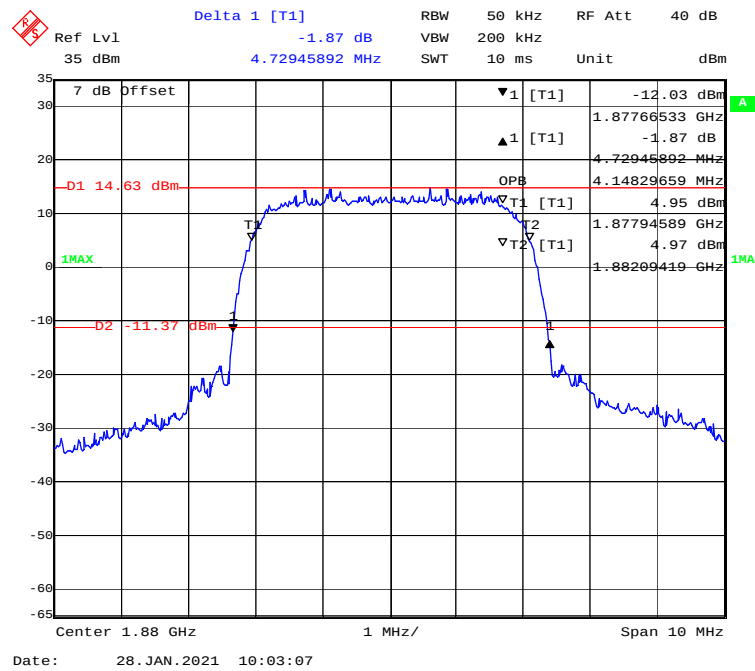
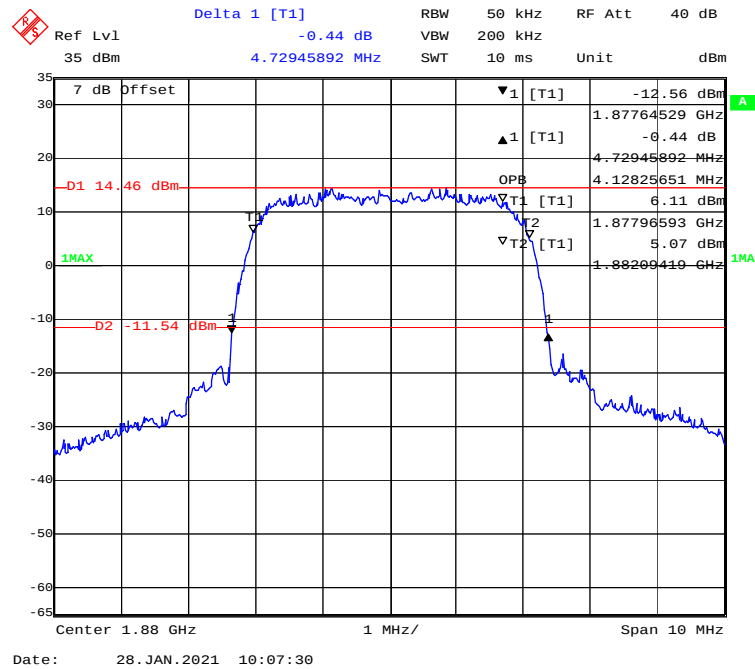
**99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSUPA) Mode, Low Channel****99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode, Low Channel**

### 99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Mode, Middle Channel

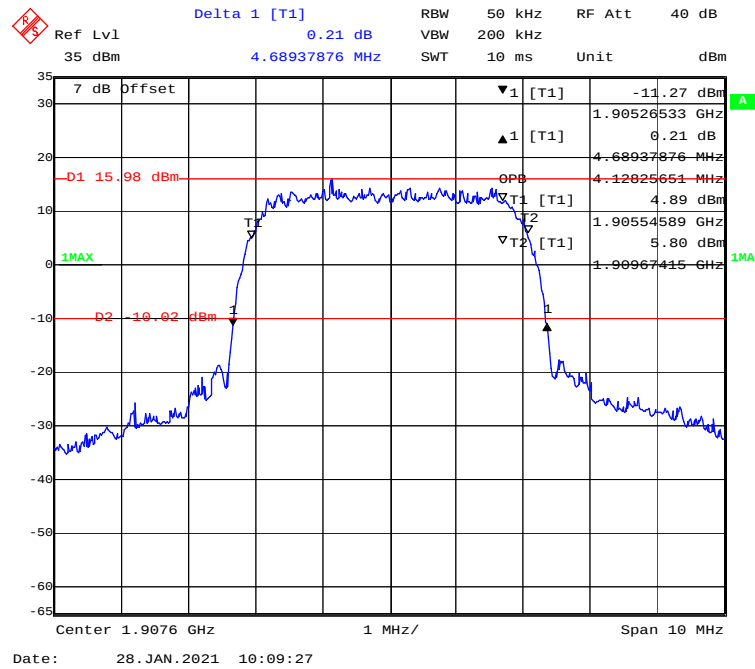


### 99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) Mode, Middle Channel

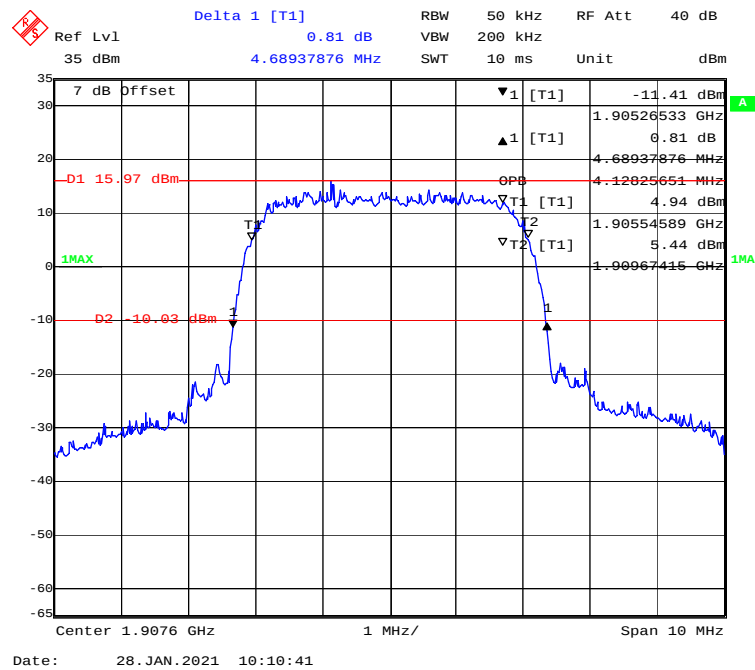


**99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSUPA) Mode, Middle Channel****99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode, Middle Channel**

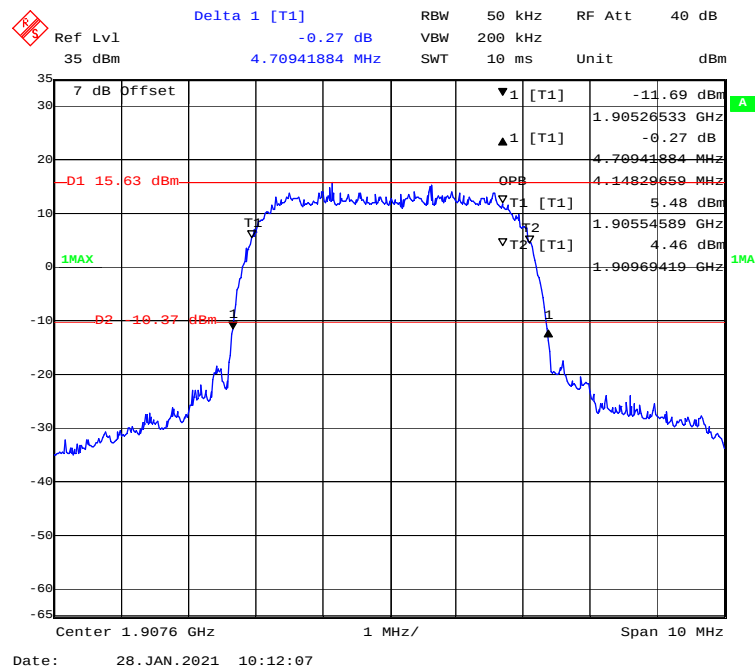
### 99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Mode, High Channel



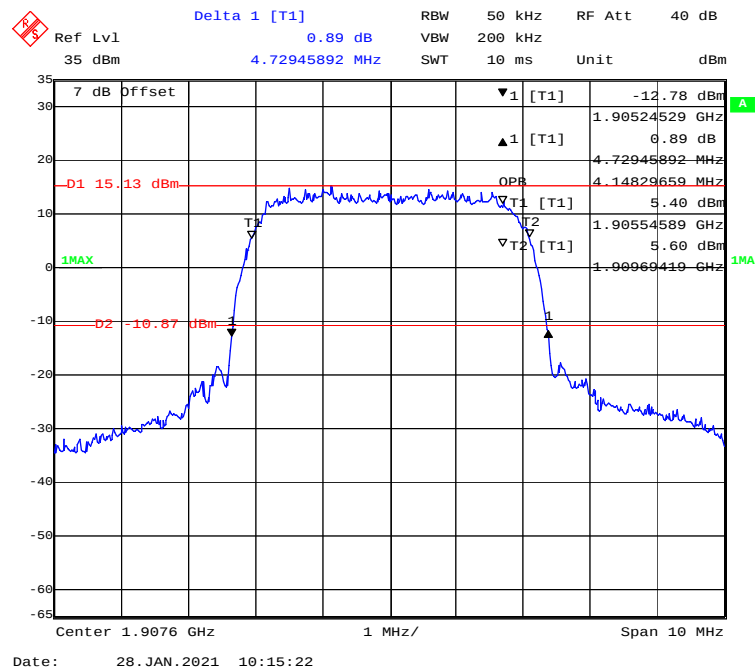
### 99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) Mode, High Channel



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

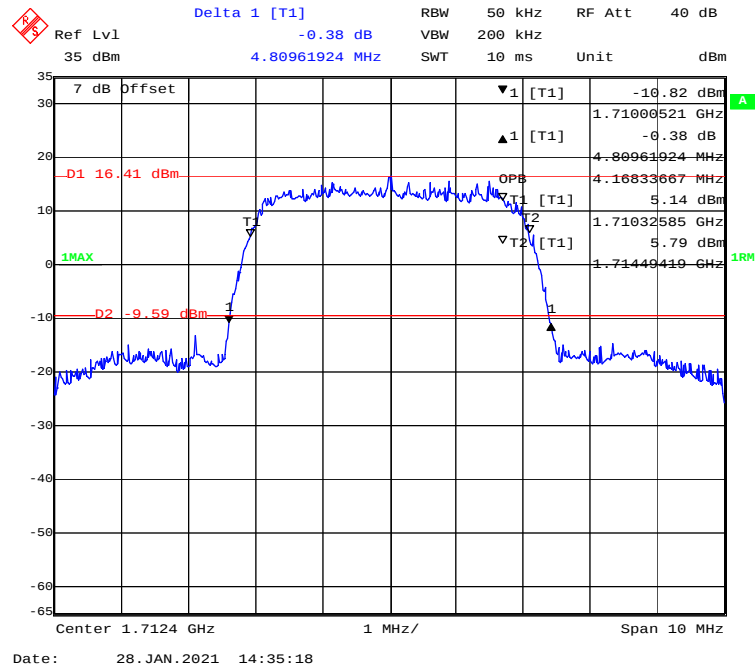


### 99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode, High Channel

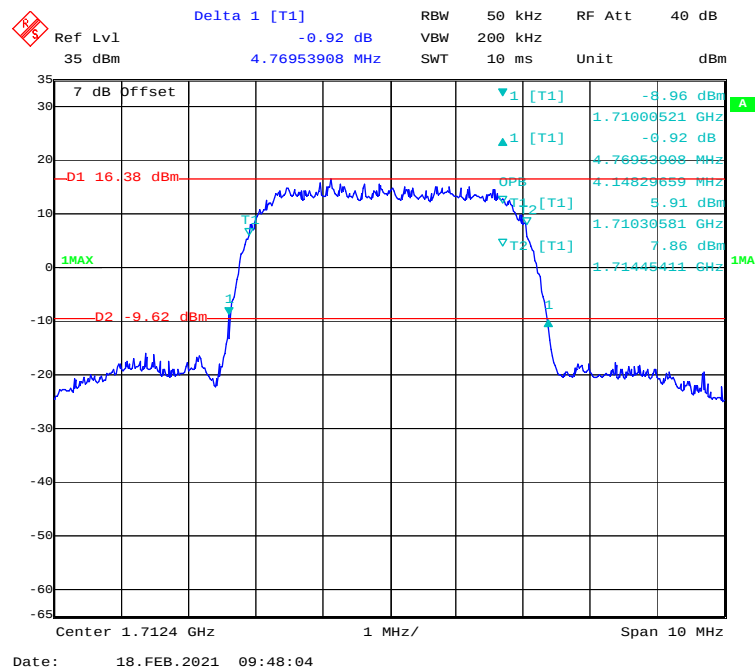


## WCDMA Band IV

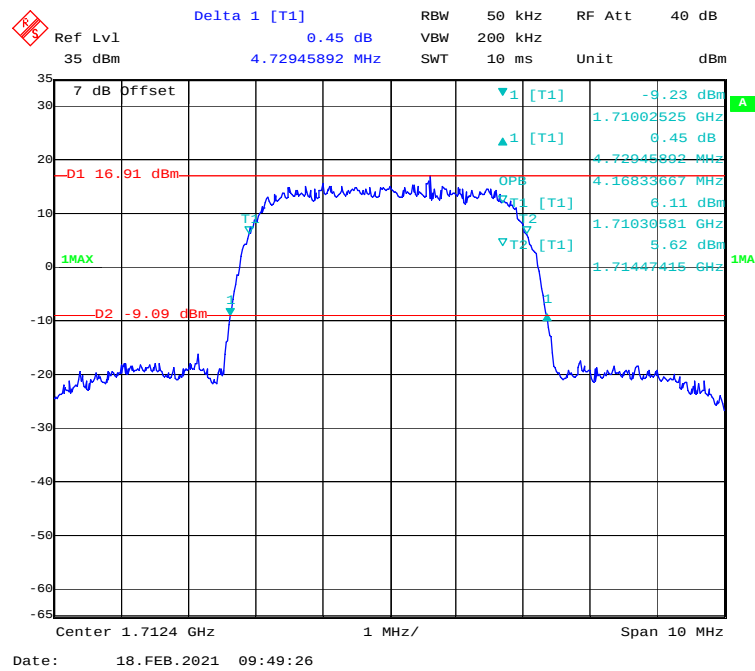
## 99% Occupied &amp; 26 dB Emissions Bandwidth for WCDMA (Rel 99) Mode, Low Channel



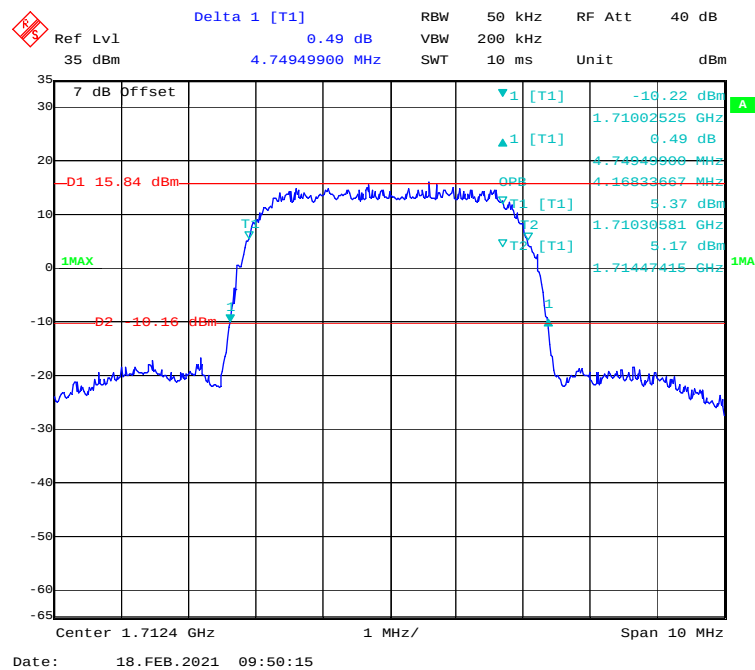
## 99% Occupied &amp; 26 dB Emissions Bandwidth for WCDMA (HSDPA) Mode, Low Channel



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

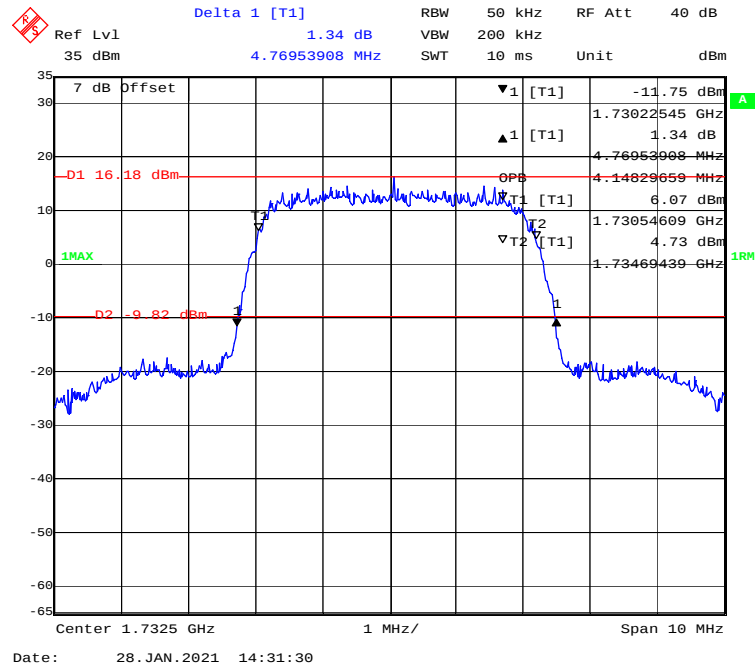


### 99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode, Low Channel

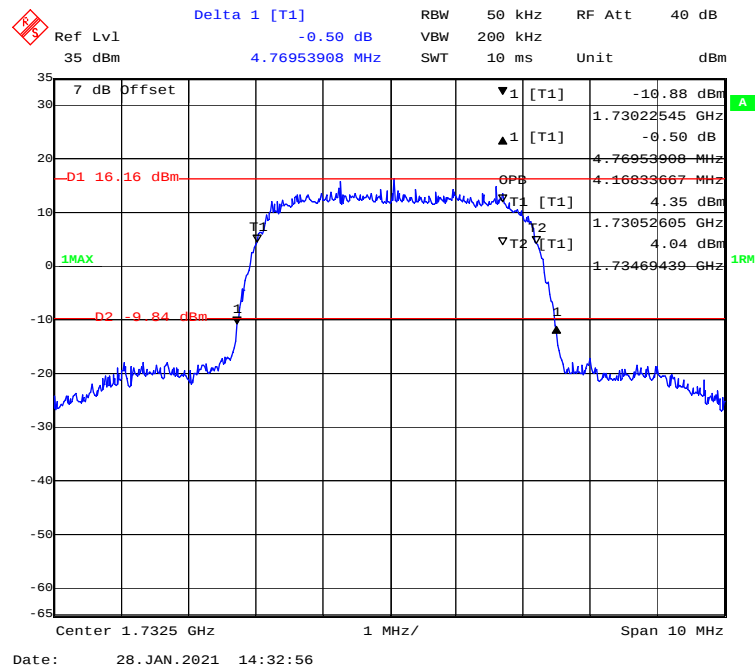


[illegible]

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



### 99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode, Middle Channel



Delta 1 [T1]  
-0.43 dB

RBW 50 kHz  
SWT 10 ms

Ref Lvl 35 dBm  
RF Att 40 dB

Unit dBm

Center 1.7526 GHz  
1 MHz/  
Span 10 MHz

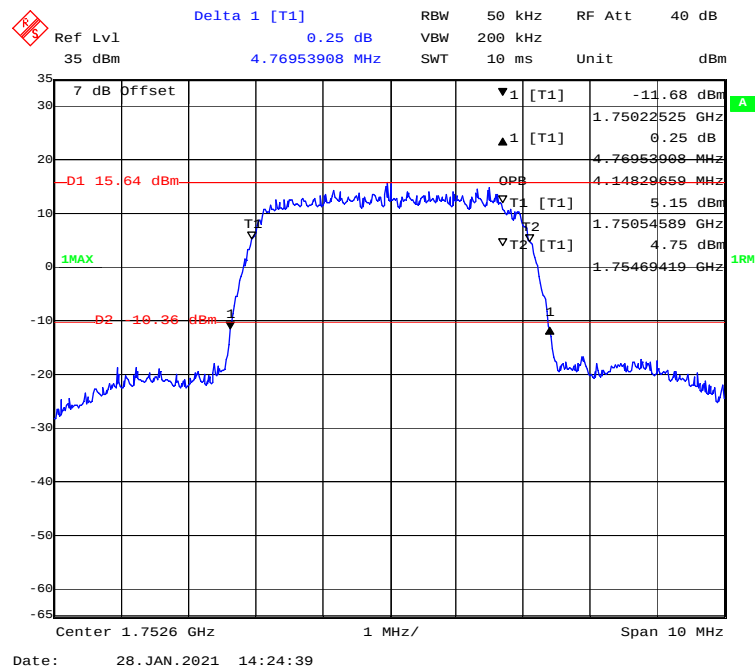
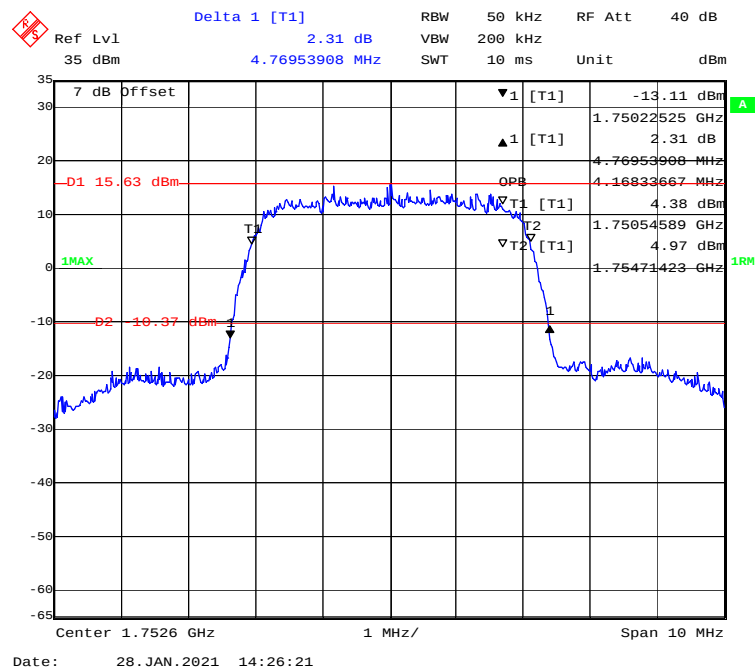
Date: 28. JAN. 2021 14:20:51

Delta 1 [T1] -0.11 dB  
 RBW 50 kHz RF Att 40 dB  
 Ref Lvl 35 dBm VBW 200 kHz  
 4.72945892 MHz SWT 10 ms Unit dBm

7 dB Offset  
 D1 16.44 dBm  
 D2 -9.56 dBm  
 1MAX  
 1RM

Center 1.7526 GHz 1 MHz/  
 Span 10 MHz

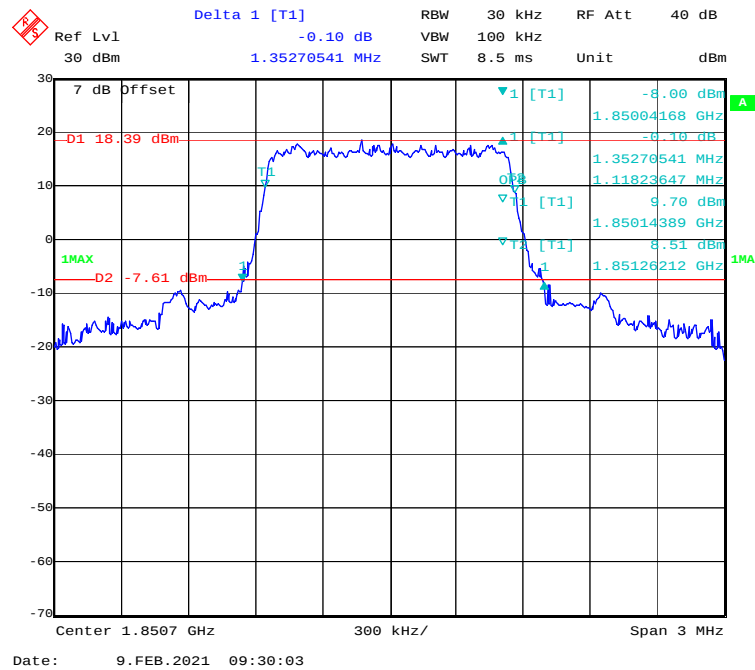
Date: 28. JAN. 2021 14:22:54

**99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSUPA) Mode, High Channel****99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode, High Channel**

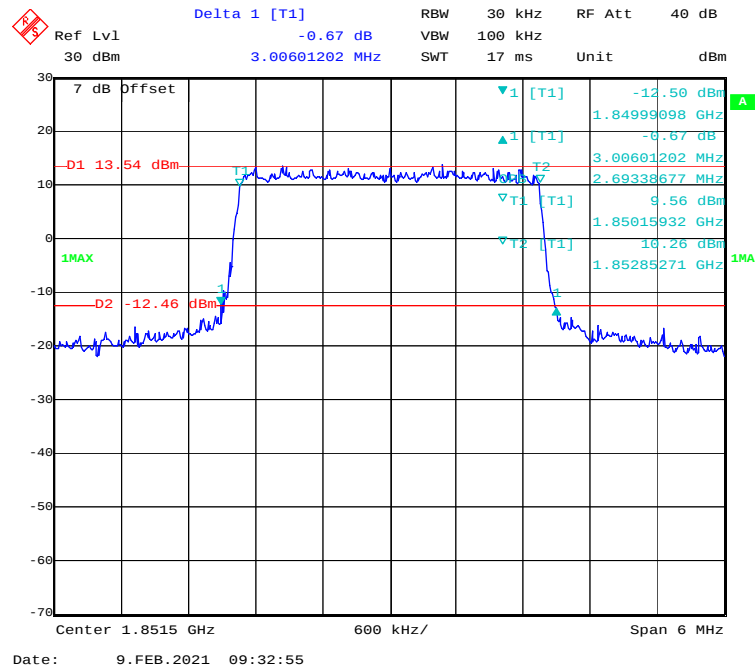
**LTE Band 2:**

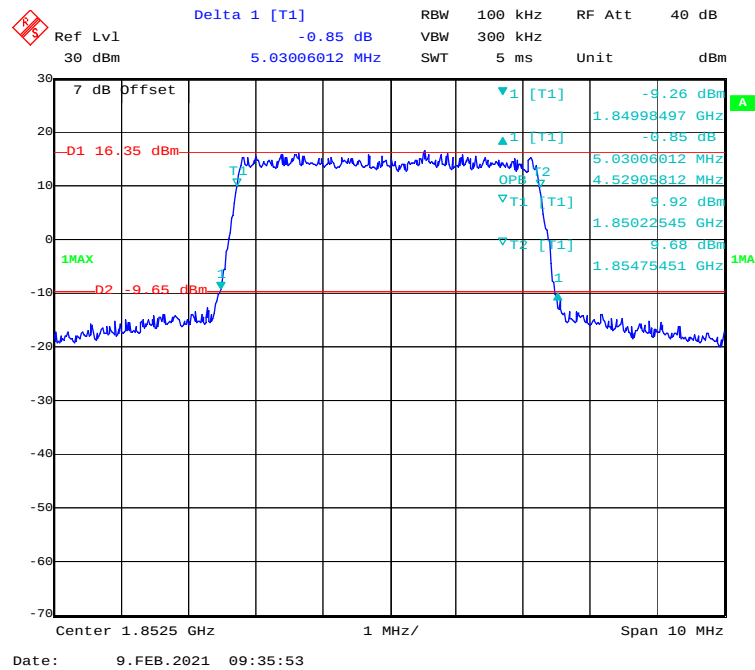
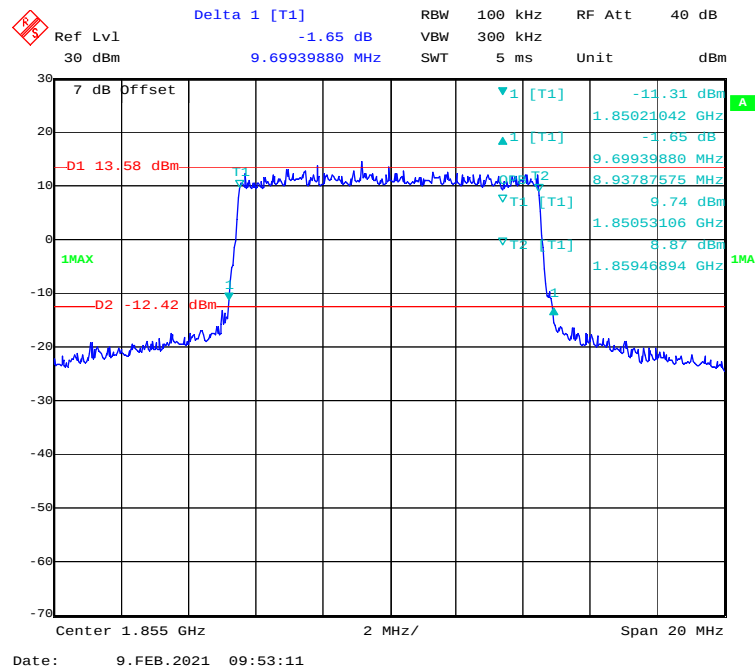
| Test Modulation | Test Bandwidth | 26 dB Bandwidth MHz |                |              | 99% Occupied Bandwidth MHz |                |              |
|-----------------|----------------|---------------------|----------------|--------------|----------------------------|----------------|--------------|
|                 |                | Low Channel         | Middle Channel | High Channel | Low Channel                | Middle Channel | High Channel |
| QPSK            | 1.4M           | 1.35                | 1.29           | 1.32         | 1.12                       | 1.10           | 1.12         |
|                 | 3M             | 3.01                | 2.92           | 2.95         | 2.69                       | 2.69           | 2.69         |
|                 | 5M             | 5.03                | 5.07           | 4.99         | 4.53                       | 4.53           | 4.53         |
|                 | 10M            | 9.70                | 9.74           | 9.50         | 8.94                       | 8.98           | 8.90         |
|                 | 15M            | 14.79               | 14.85          | 14.67        | 13.53                      | 13.47          | 13.47        |
|                 | 20M            | 19.40               | 19.24          | 19.16        | 17.88                      | 17.88          | 17.88        |
| 16-QAM          | 1.4M           | 1.34                | 1.30           | 1.32         | 1.12                       | 1.11           | 1.11         |
|                 | 3M             | 2.97                | 2.96           | 2.96         | 2.69                       | 2.69           | 2.69         |
|                 | 5M             | 5.05                | 5.01           | 4.97         | 4.55                       | 4.53           | 4.53         |
|                 | 10M            | 9.66                | 9.74           | 9.62         | 8.98                       | 8.94           | 8.94         |
|                 | 15M            | 14.79               | 14.79          | 14.67        | 13.53                      | 13.47          | 13.53        |
|                 | 20M            | 19.56               | 19.32          | 19.40        | 17.96                      | 17.96          | 17.96        |

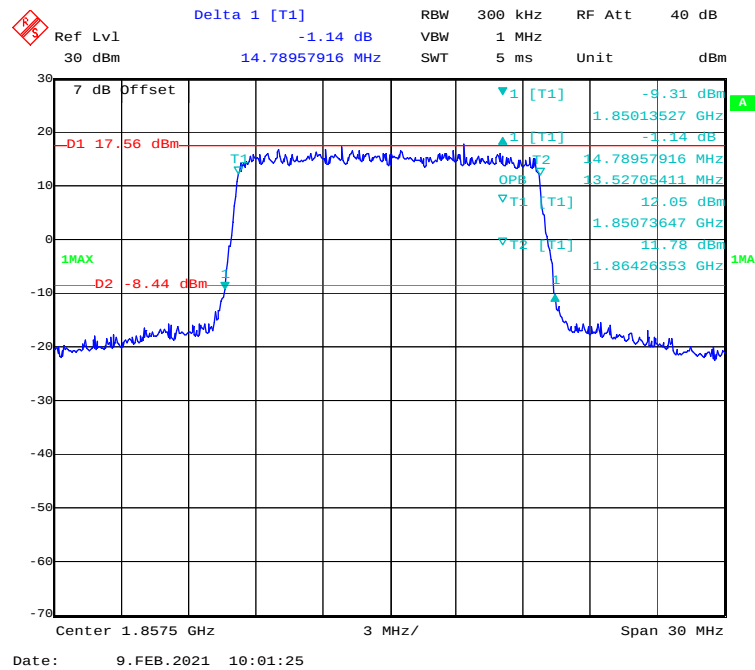
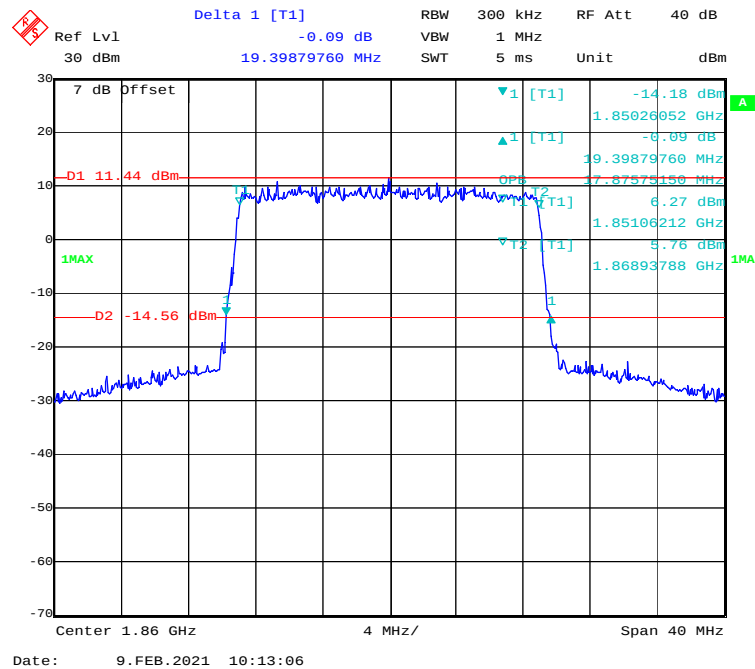
## QPSK (1.4 MHz) - 99% Occupied &amp; 26 dB Emissions Bandwidth, Low channel

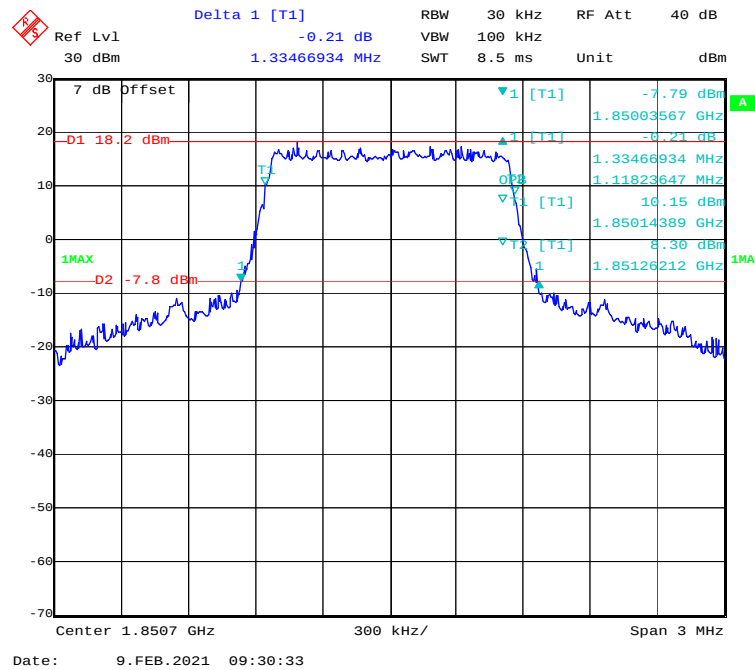
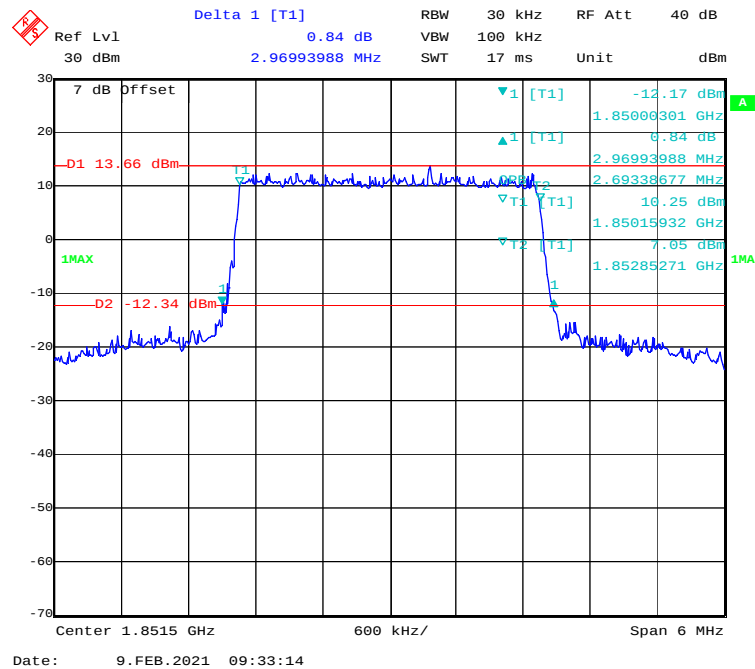


## QPSK (3 MHz) - 99% Occupied &amp; 26 dB Emissions Bandwidth, Low channel

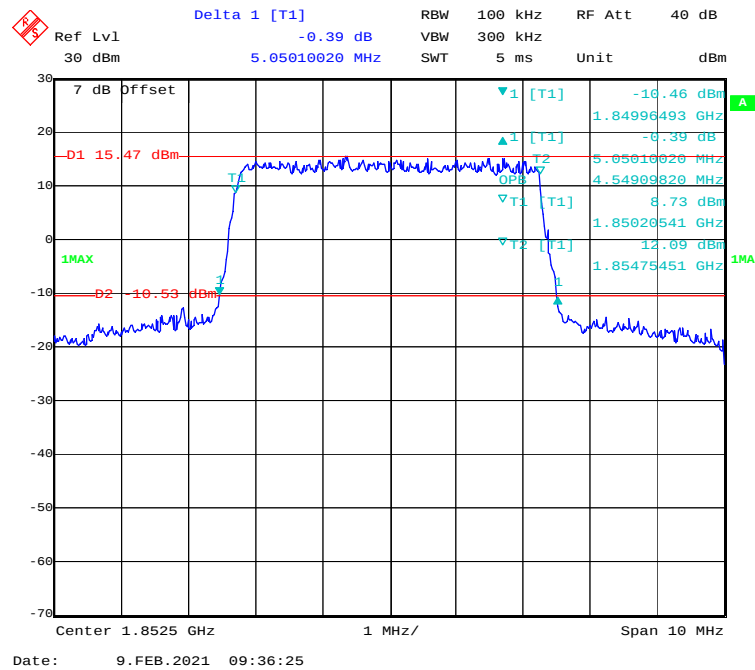


**QPSK (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel****QPSK (10MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

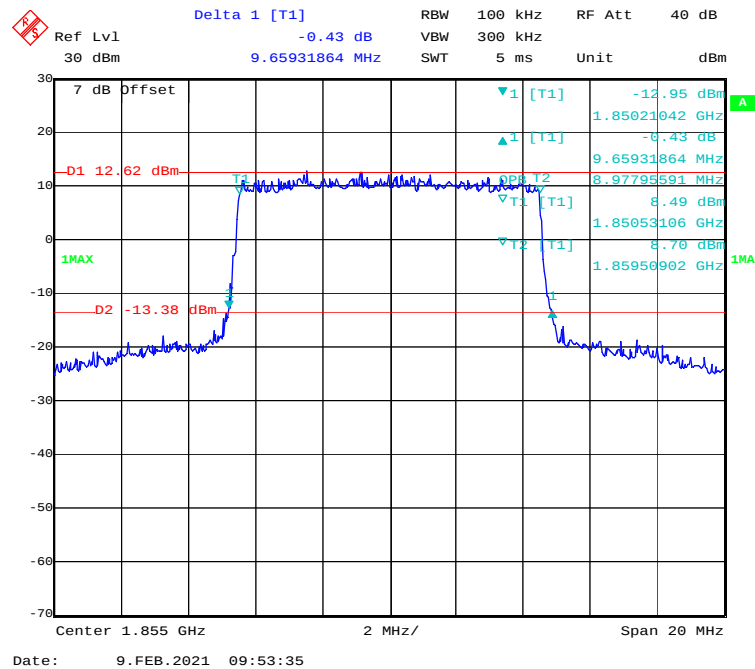
**QPSK (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel****QPSK (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

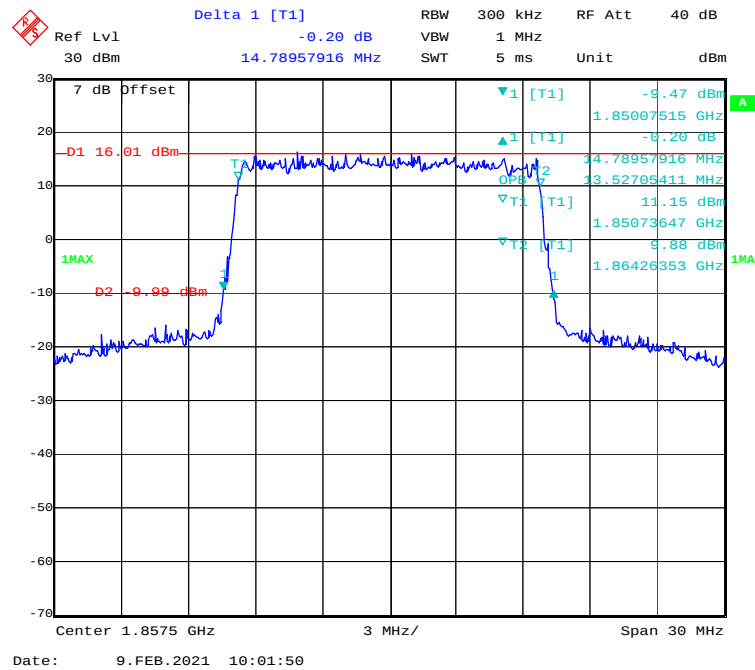
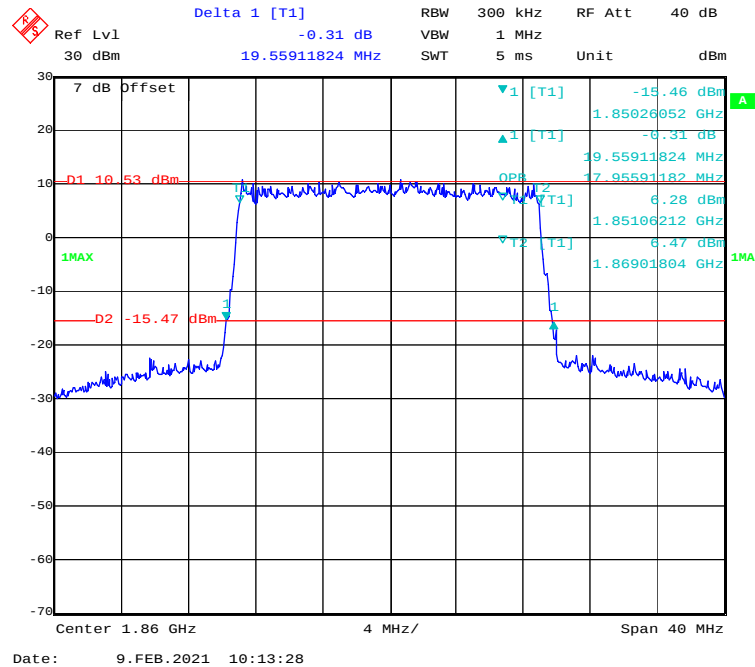
**16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel****16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

### 16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel

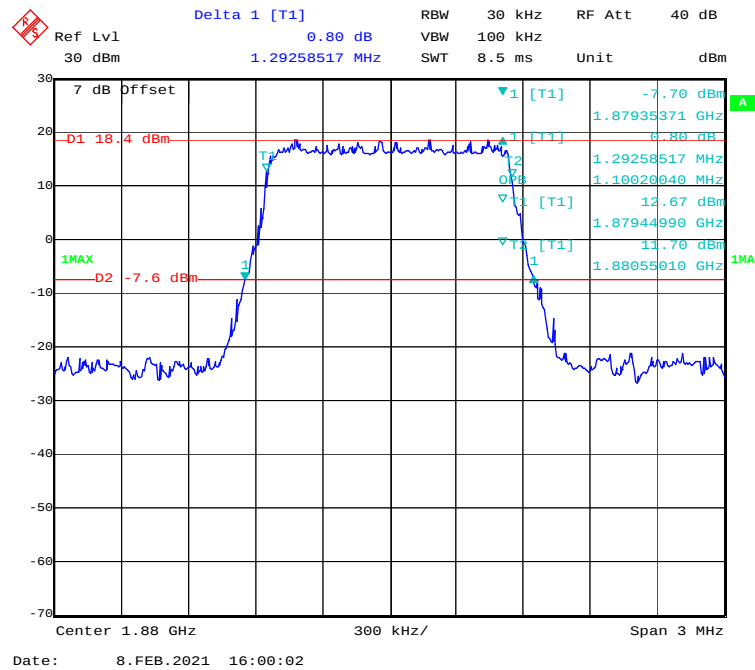


### 16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel

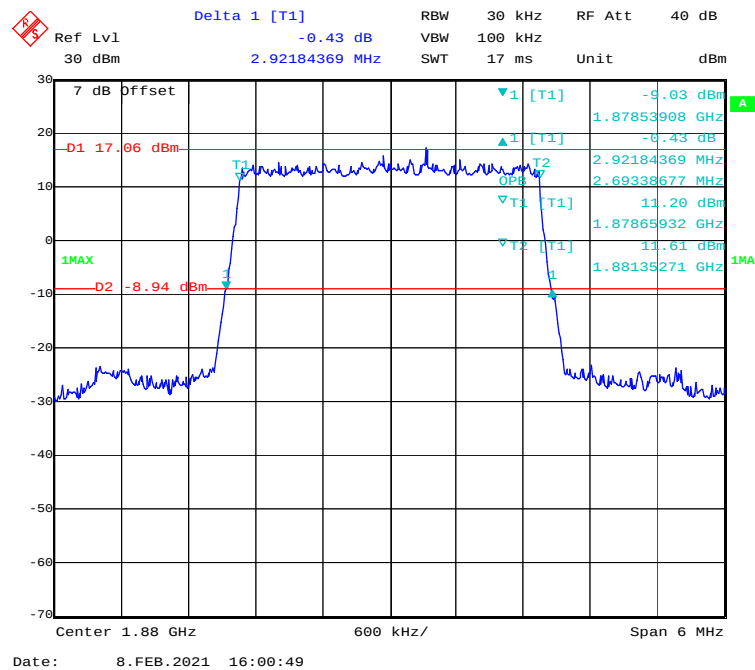


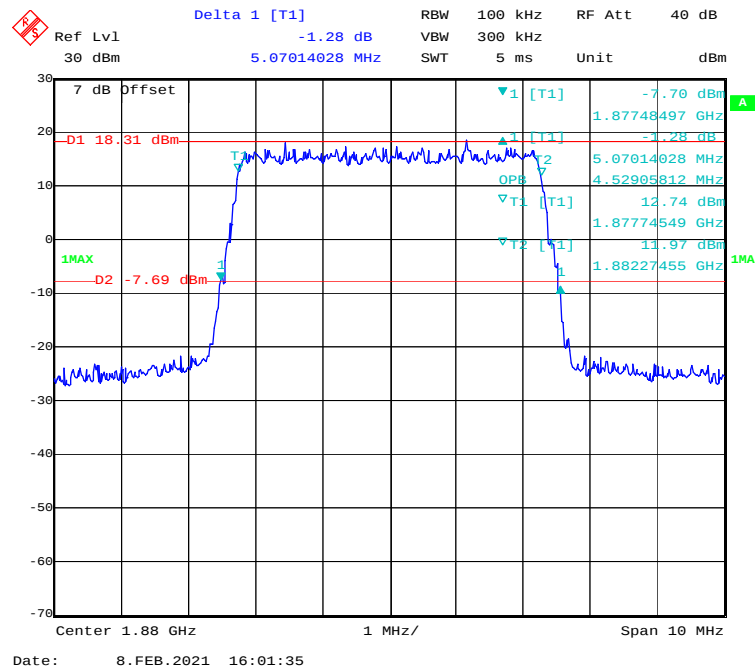
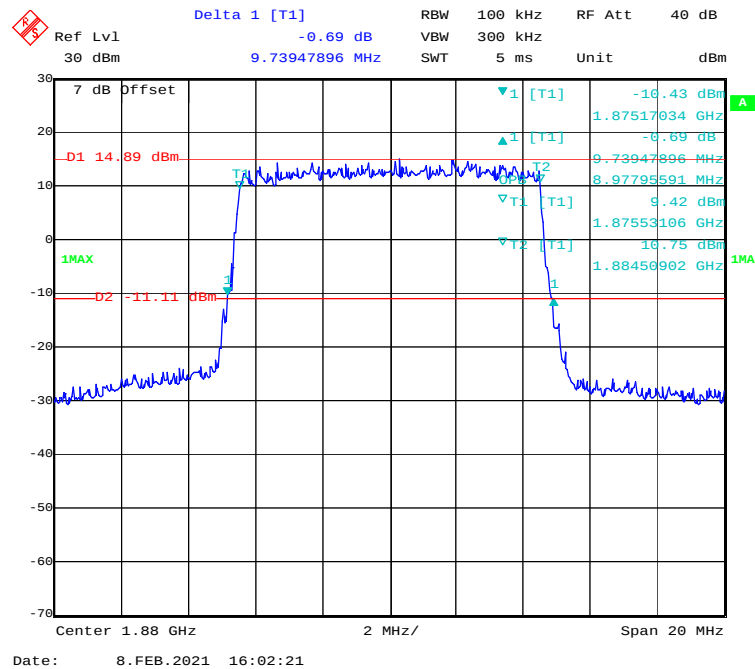
**16-QAM (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel****16-QAM (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

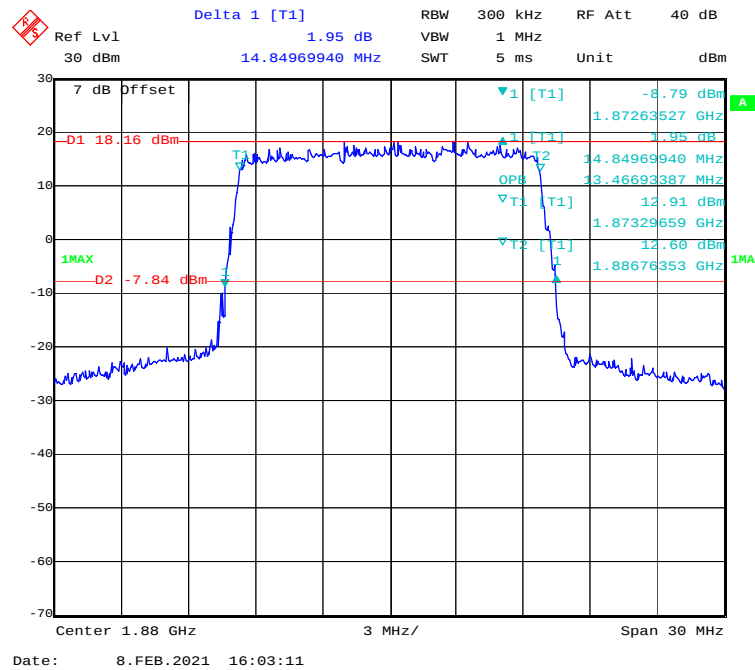
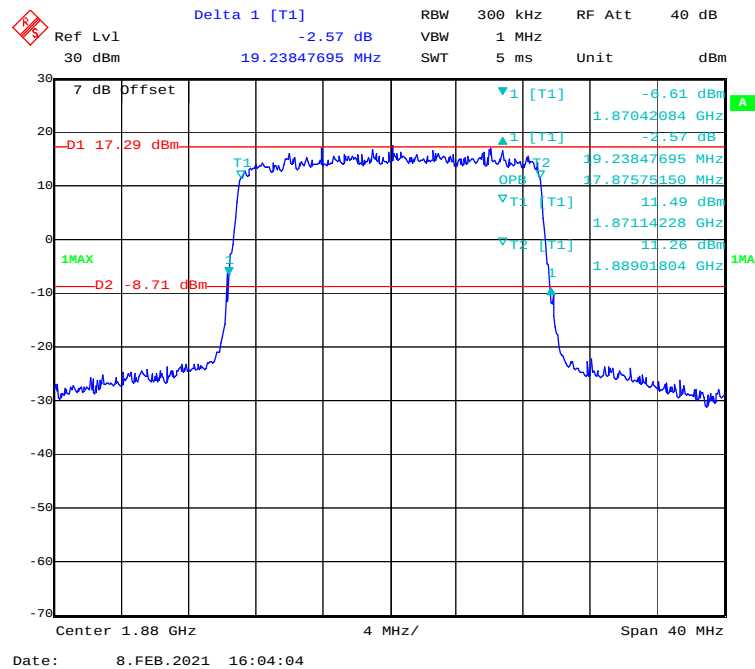
### QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel

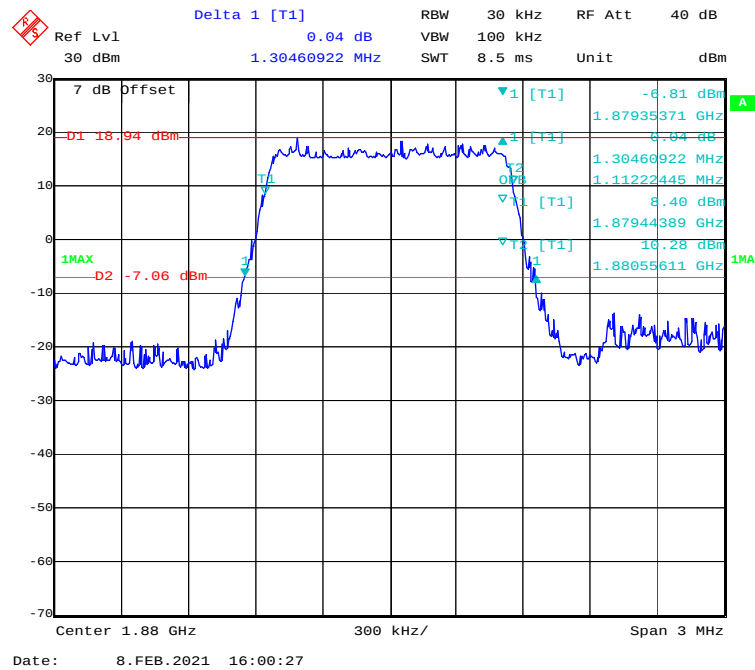
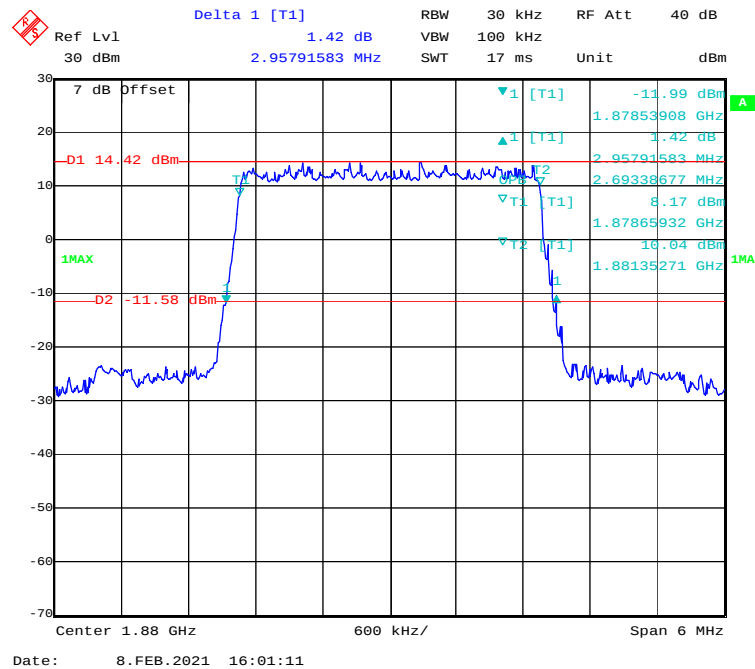


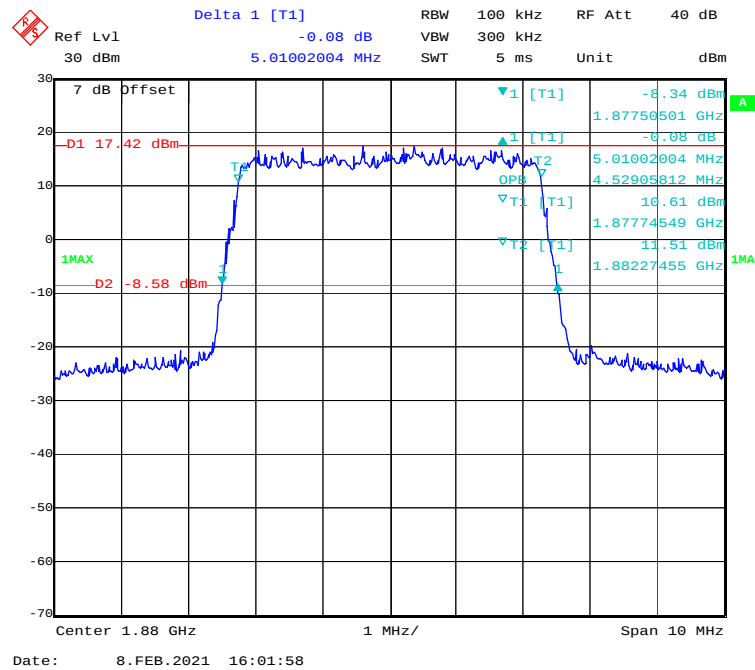
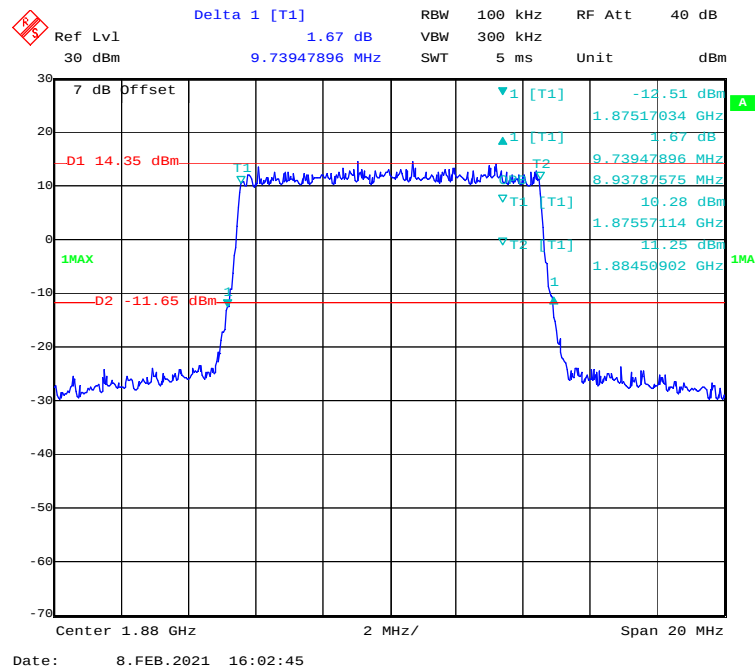
### QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel

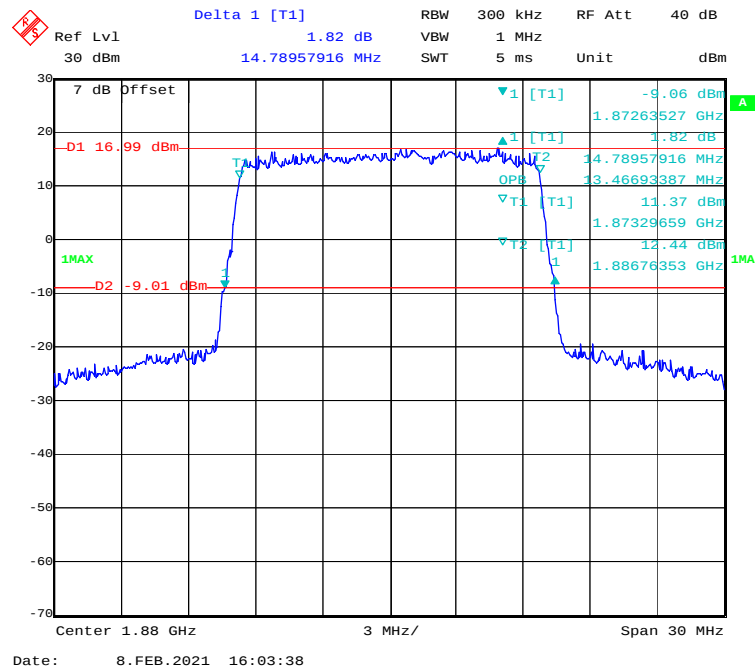
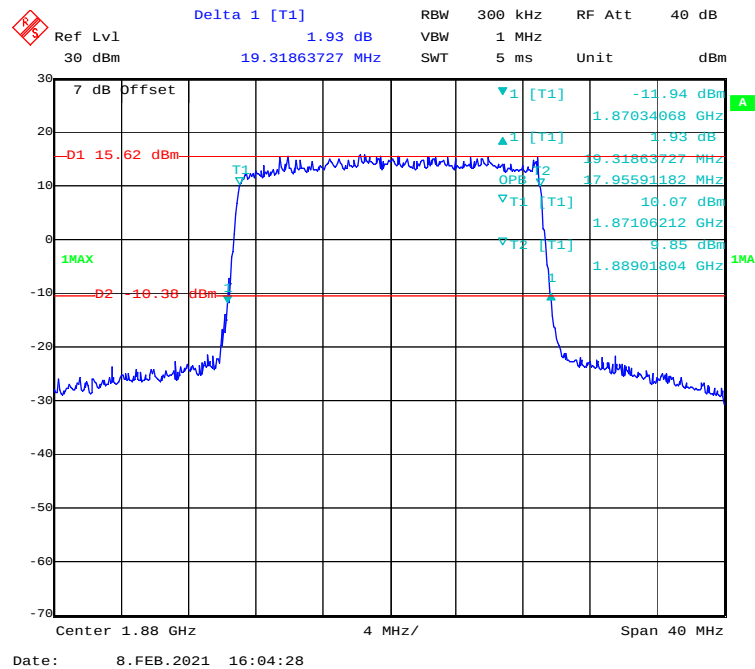


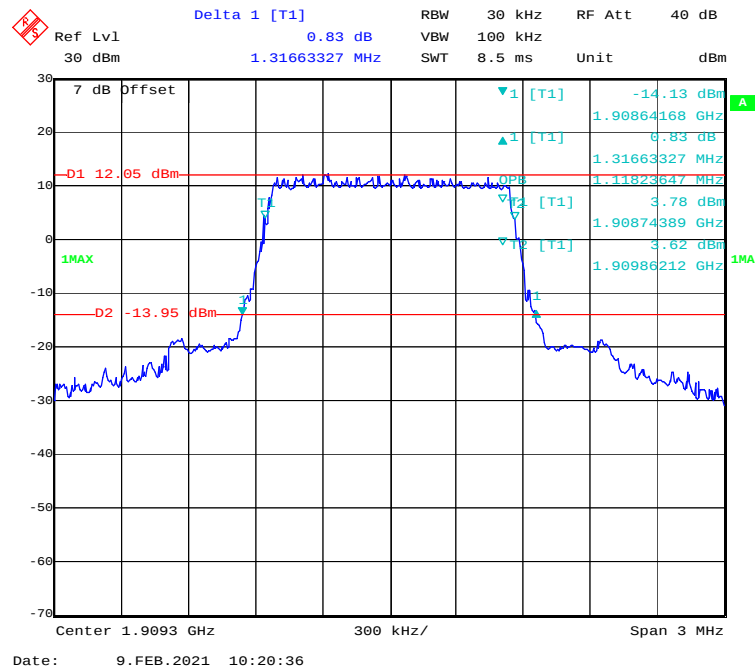
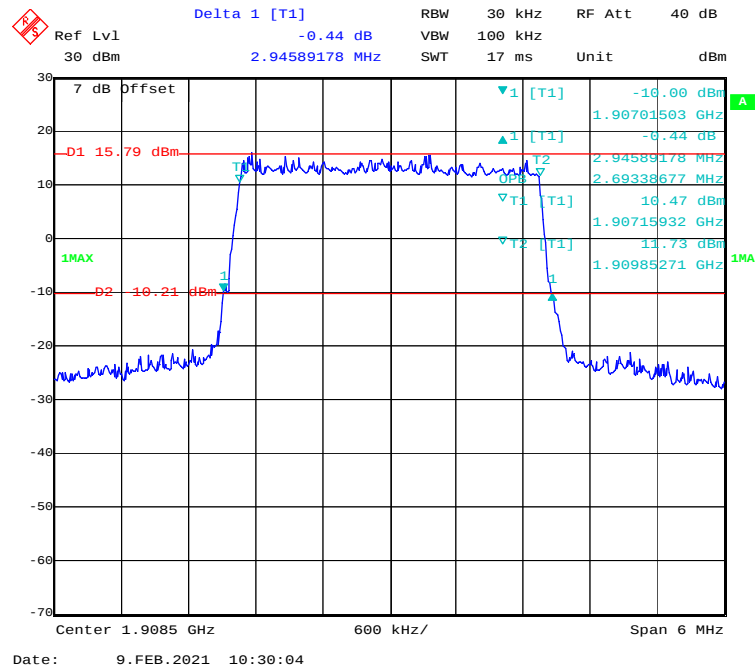
**QPSK (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel****QPSK (10MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

**QPSK (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel****QPSK (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

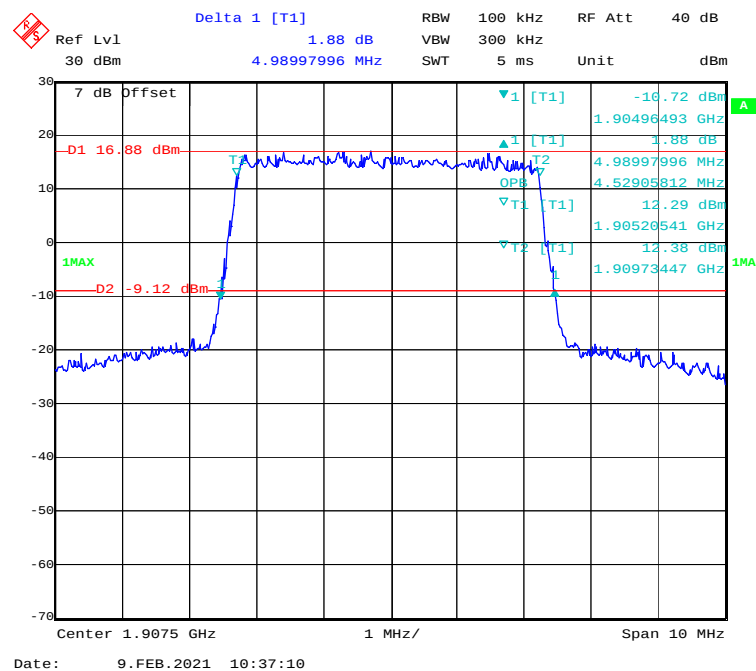
**16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel****16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

**16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel****16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

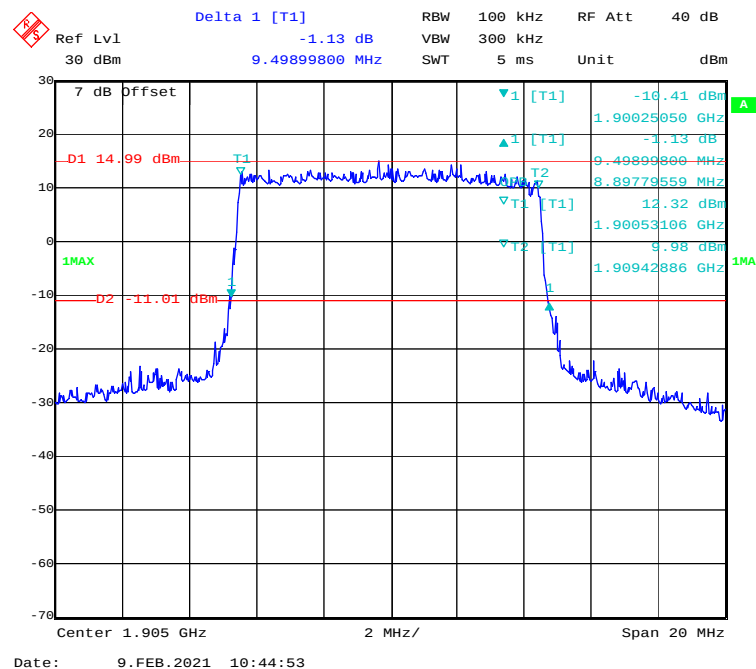
**16-QAM (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel****16-QAM (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

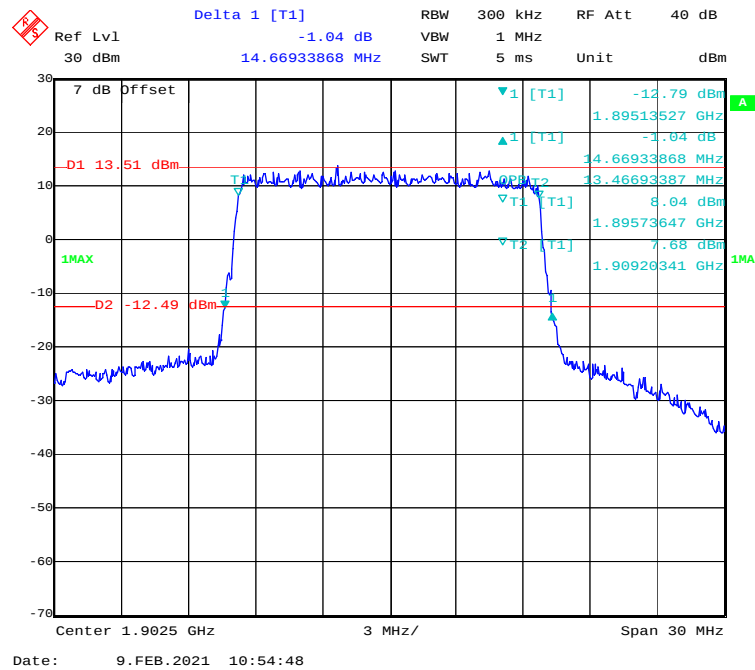
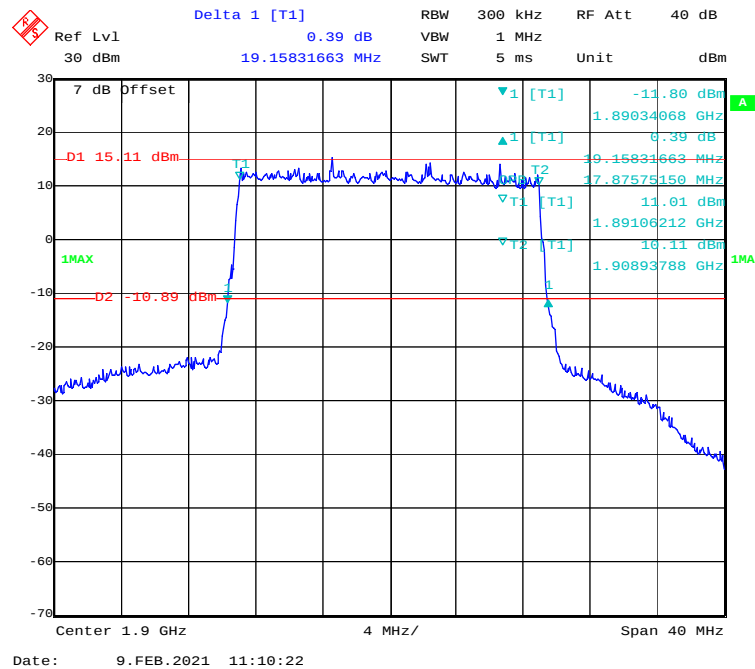
**QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel****QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

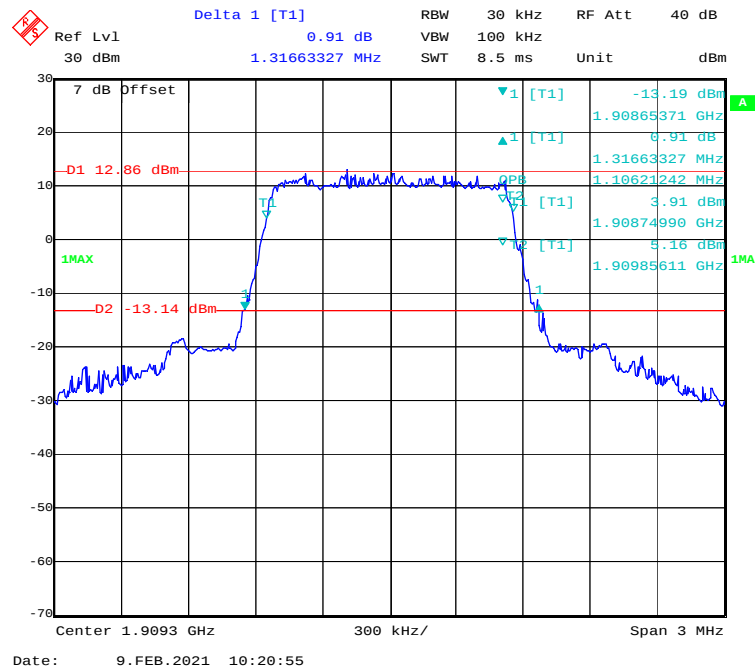
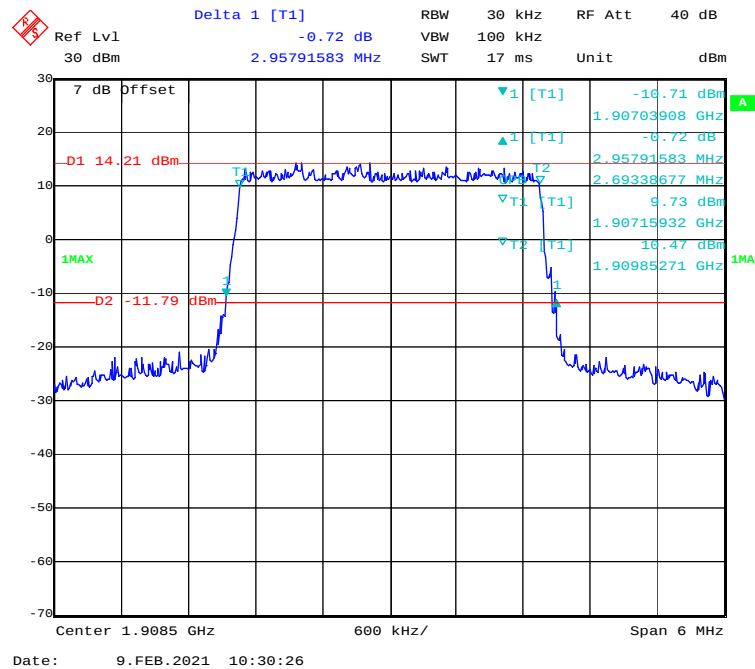
### QPSK (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel

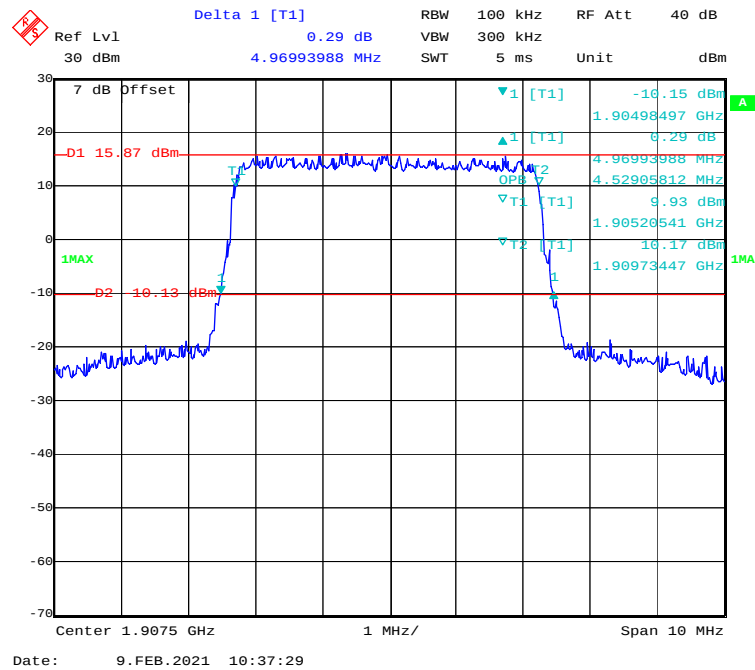
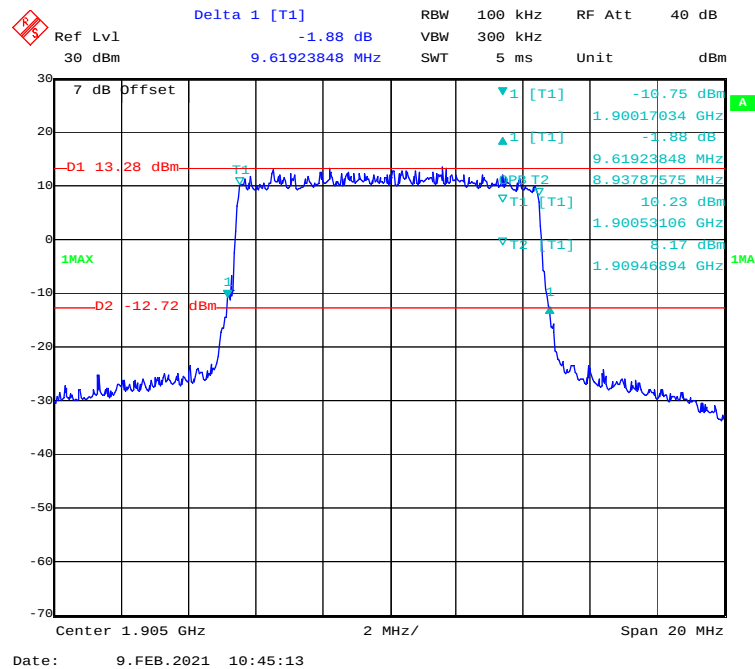


### QPSK (10MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel

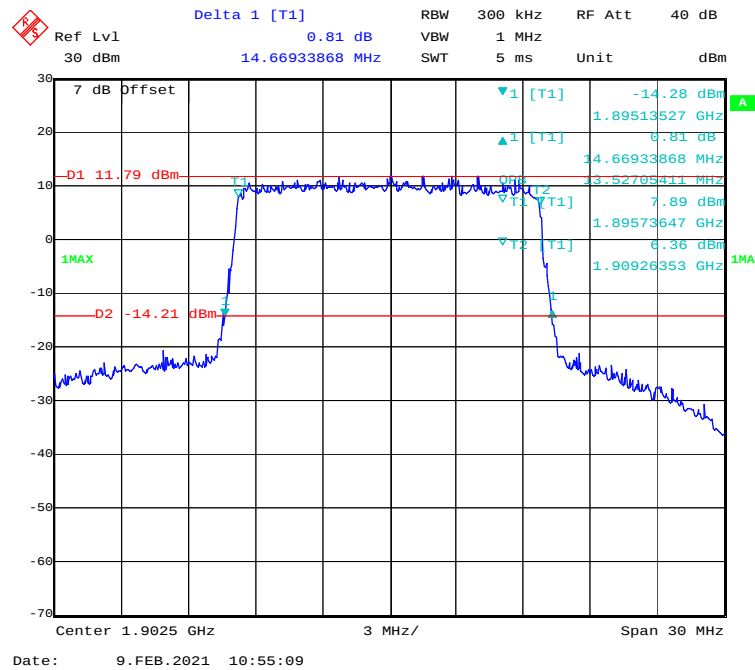


**QPSK (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel****QPSK (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

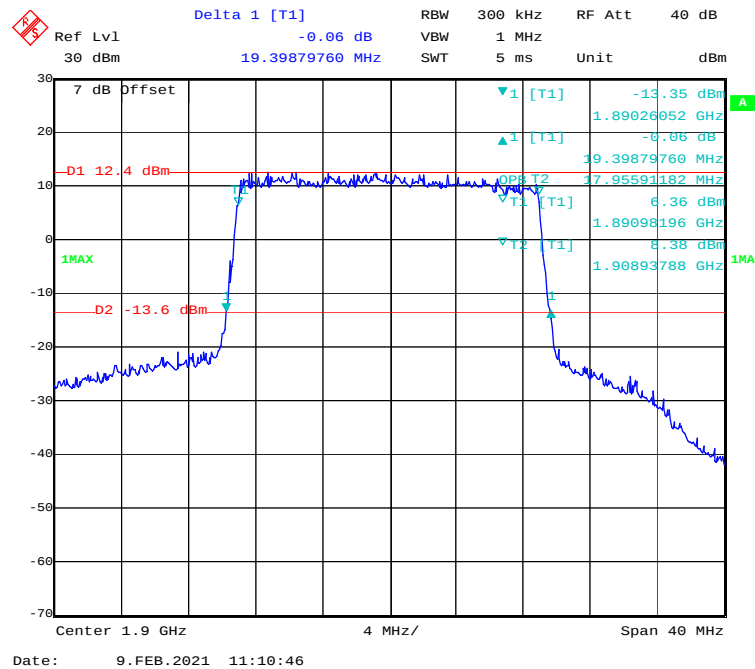
**16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel****16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

**16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel****16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

### 16-QAM (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel

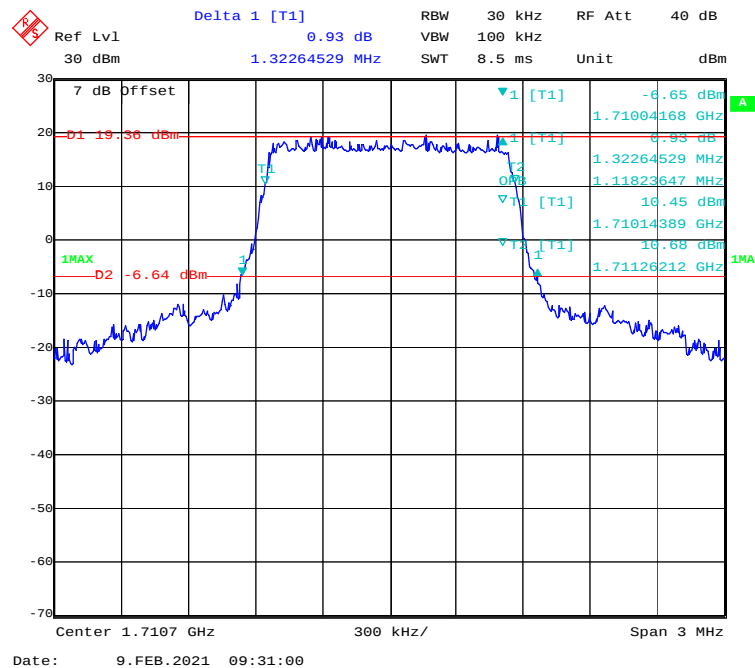


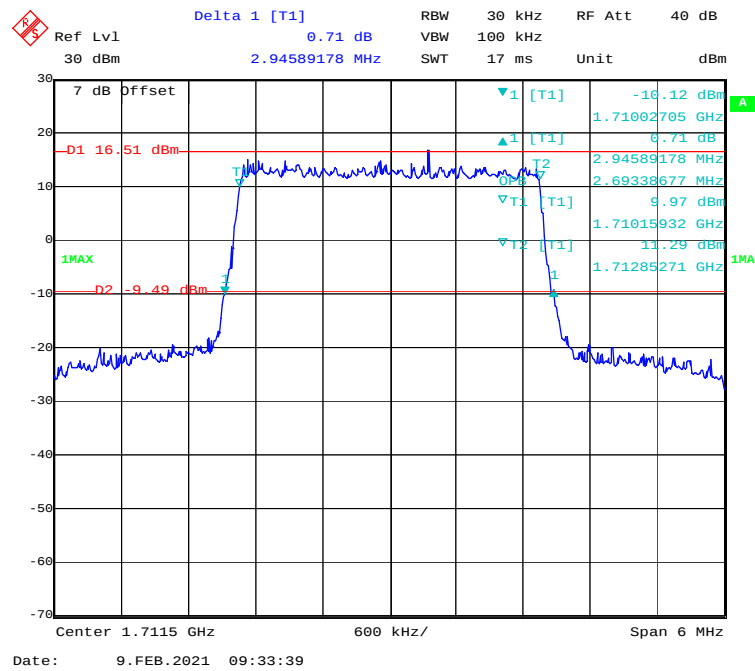
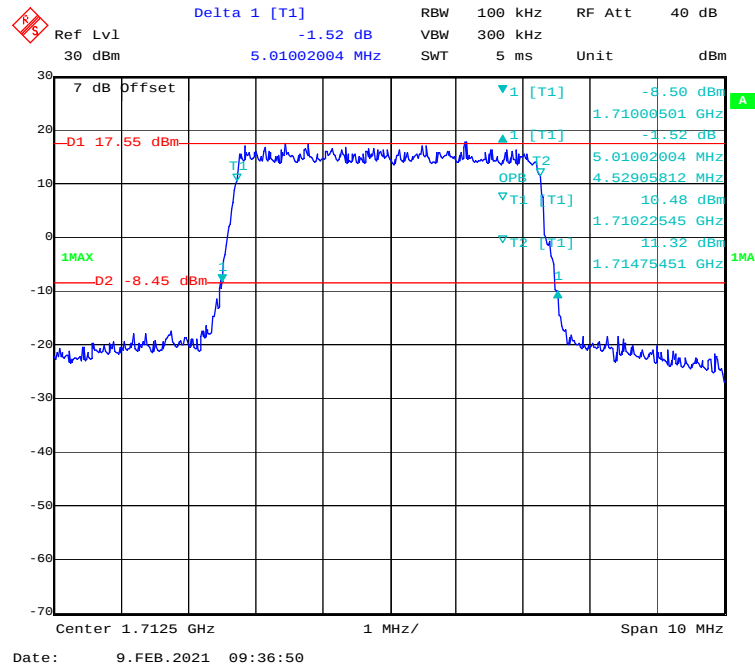
### 16-QAM (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



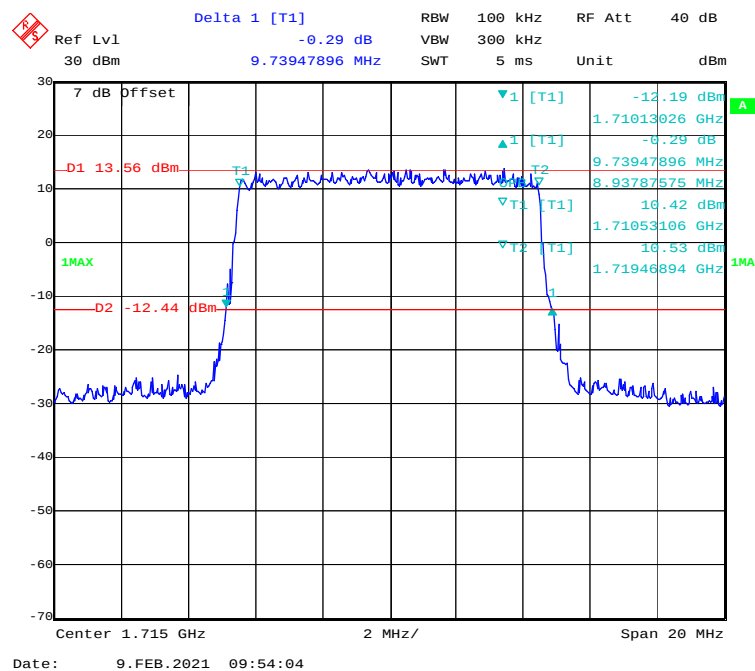
**LTE Band 4:**

| Test Modulation | Test Bandwidth | 26 dB Bandwidth MHz |                |              | 99% Occupied Bandwidth MHz |                |              |
|-----------------|----------------|---------------------|----------------|--------------|----------------------------|----------------|--------------|
|                 |                | Low Channel         | Middle Channel | High Channel | Low Channel                | Middle Channel | High Channel |
| QPSK            | 1.4M           | 1.32                | 1.30           | 1.32         | 1.12                       | 1.10           | 1.11         |
|                 | 3M             | 2.95                | 2.93           | 2.93         | 2.69                       | 2.69           | 2.69         |
|                 | 5M             | 5.01                | 5.03           | 4.99         | 4.53                       | 4.53           | 4.53         |
|                 | 10M            | 9.74                | 9.66           | 9.74         | 8.94                       | 8.94           | 8.94         |
|                 | 15M            | 14.79               | 14.67          | 14.91        | 13.53                      | 13.41          | 13.53        |
|                 | 20M            | 19.32               | 19.24          | 19.24        | 17.96                      | 17.80          | 17.96        |
| 16-QAM          | 1.4M           | 1.32                | 1.30           | 1.29         | 1.10                       | 1.11           | 1.10         |
|                 | 3M             | 2.96                | 2.95           | 2.95         | 2.69                       | 2.69           | 2.69         |
|                 | 5M             | 4.95                | 5.05           | 5.01         | 4.53                       | 4.51           | 4.53         |
|                 | 10M            | 9.58                | 9.66           | 9.62         | 8.94                       | 8.94           | 8.94         |
|                 | 15M            | 14.67               | 14.67          | 14.85        | 13.47                      | 13.47          | 13.53        |
|                 | 20M            | 19.56               | 19.08          | 19.16        | 17.96                      | 17.80          | 17.96        |

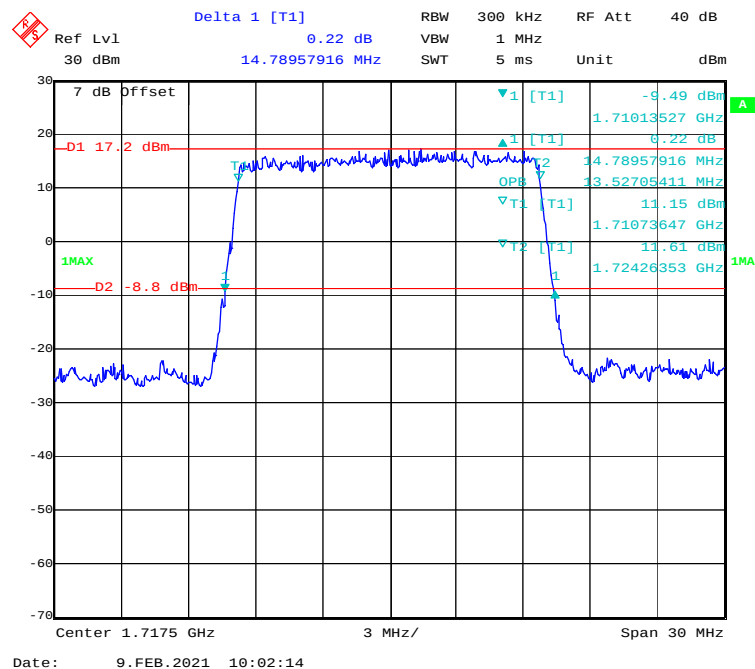
**QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

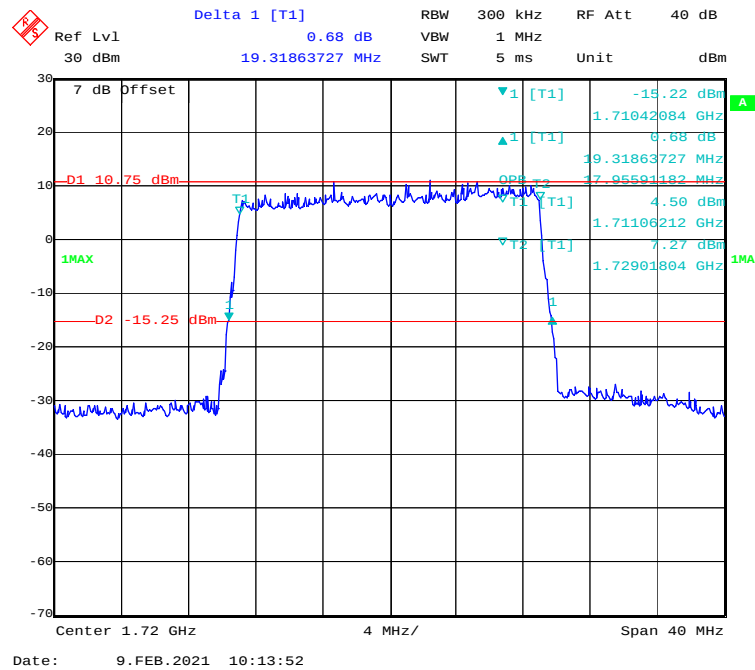
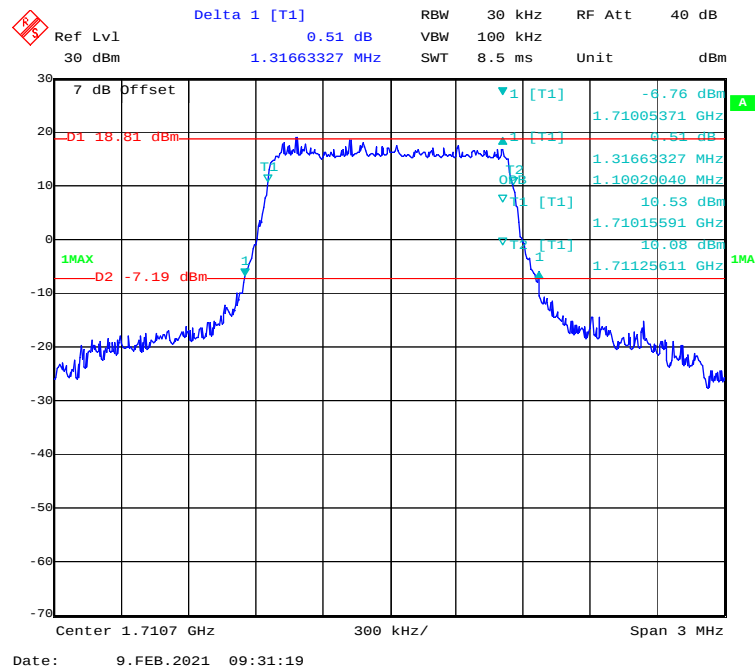
**QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel****QPSK (5MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

### QPSK (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



### QPSK (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



**QPSK (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel****16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

Delta 1 [T1]

Ref Lvl -1.73 dB

30 dBm 2.95791583 MHz

RBW 30 kHz RF Att 40 dB

SWT 17 ms Unit dBm

7 dB Offset

-D1 14.16 dBm

1MAX

D2 -11.84 dBm

▼1 [T1] -12.71 dBm 1.71002705 GHz

▲1 [T1] -1.73 dB 2.95791583 MHz

▼T1 [T1] 9.09 dBm 1.71015932 GHz

▼T2 [T1] 8.94 dBm 1.71285271 GHz

1MA

Center 1.7115 GHz 600 kHz/ Span 6 MHz

Date: 9.FEB.2021 09:33:58

Delta 1 [T1]

Ref Lvl -1.27 dB

30 dBm 4.94989980 MHz

RBW 100 kHz RF Att 40 dB

SWT 5 ms Unit dBm

7 dB Offset

D1 17.84 dBm

1MAX

D2 -8.16 dBm

1MA

▼1 [T1] -6.94 dBm

▲1 [T1] -1.27 dB

OPB 7

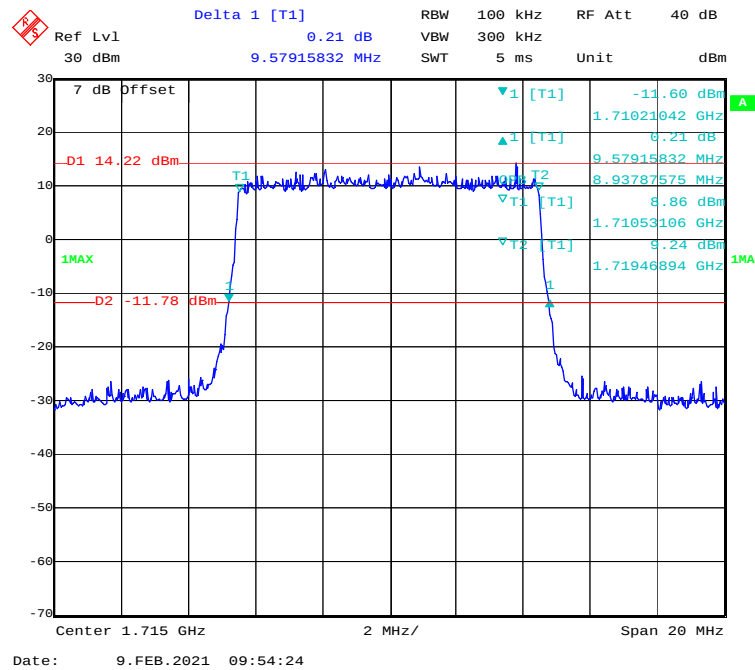
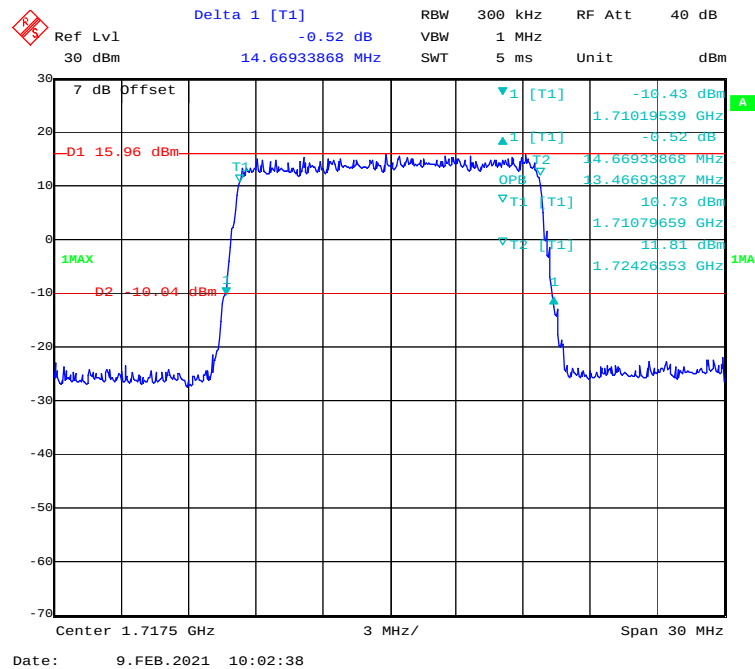
▼T1 [T1] 16.31 dBm

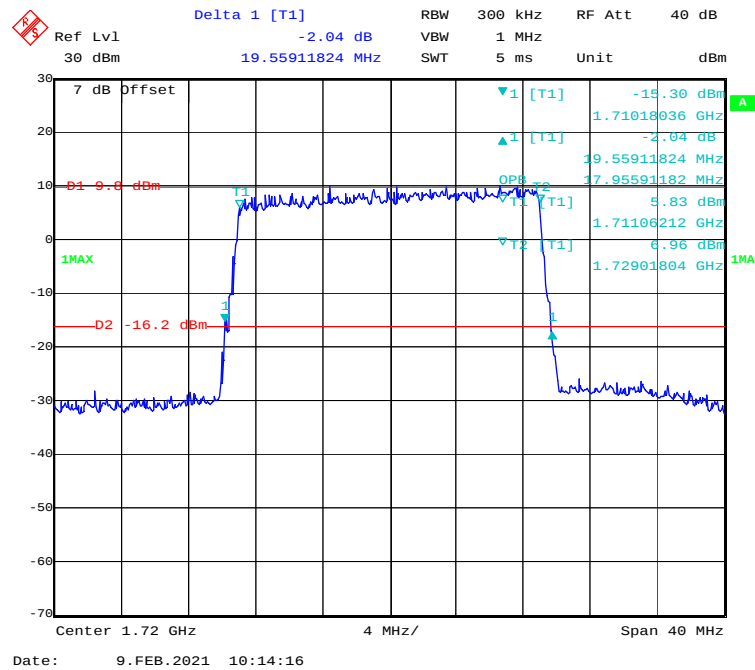
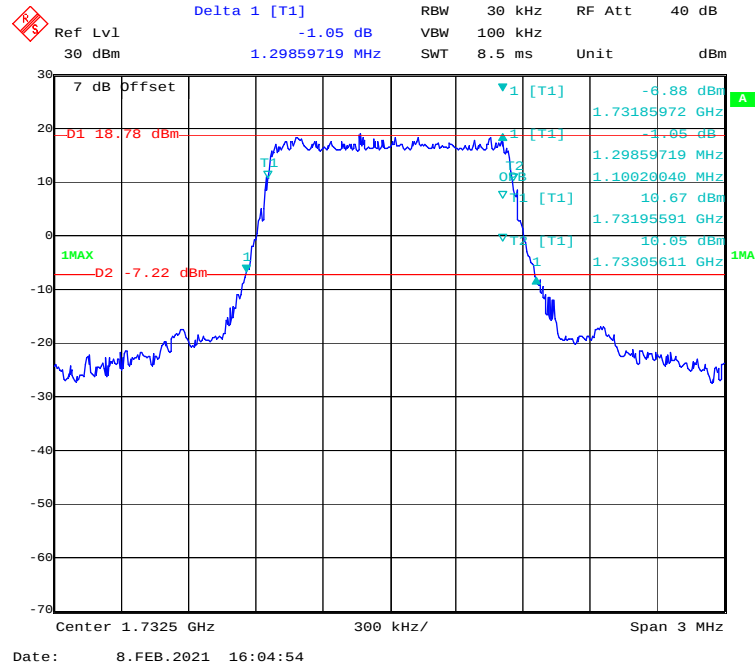
▼T2 [T1] 10.21 dBm

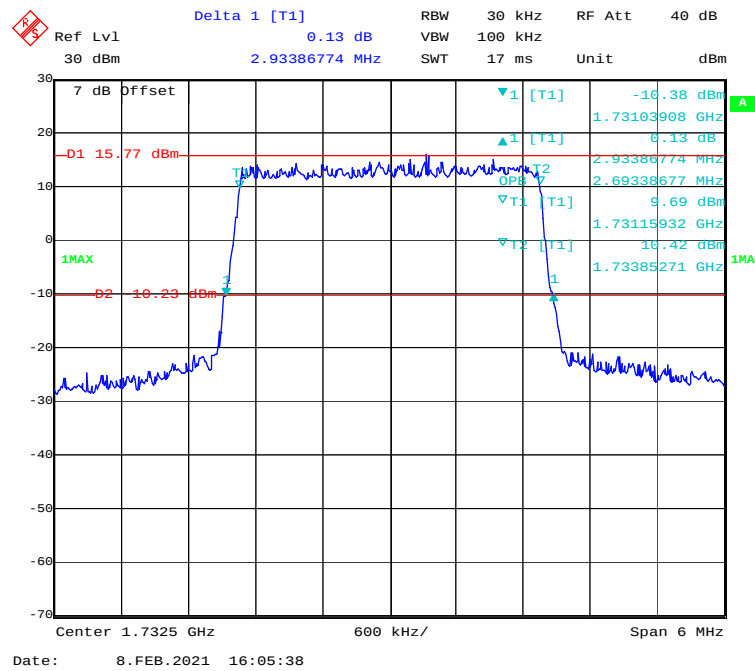
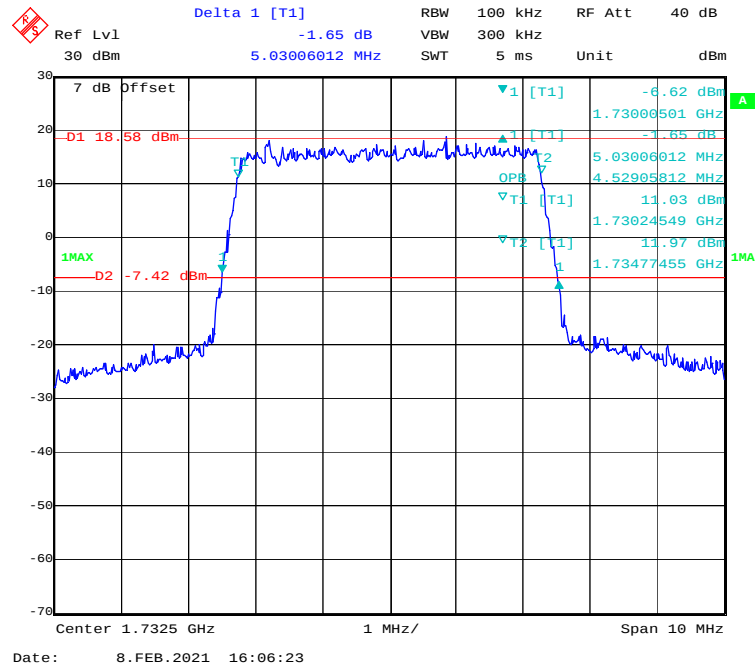
1 1.71475451 GHz

Center 1.7125 GHz 1 MHz/ Span 10 MHz

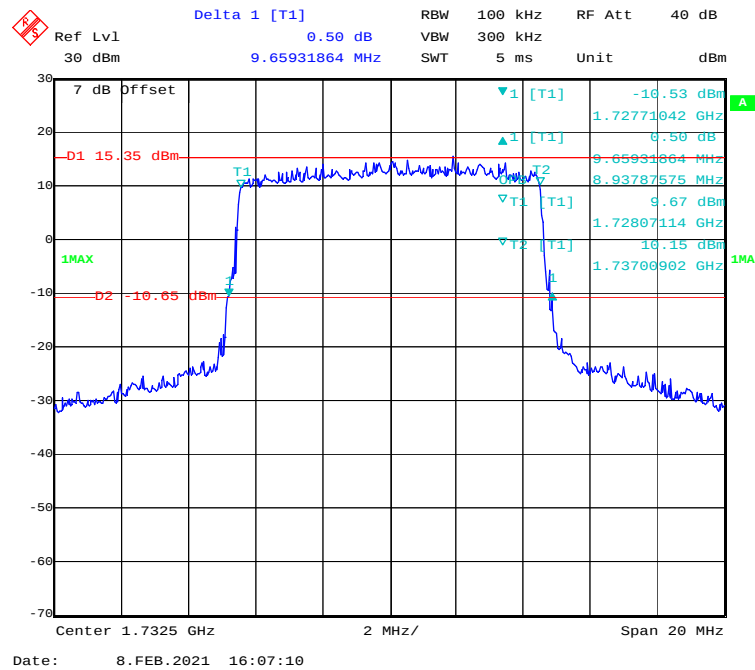
Date: 9.FEB.2021 09:37:10

**16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel****16-QAM (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

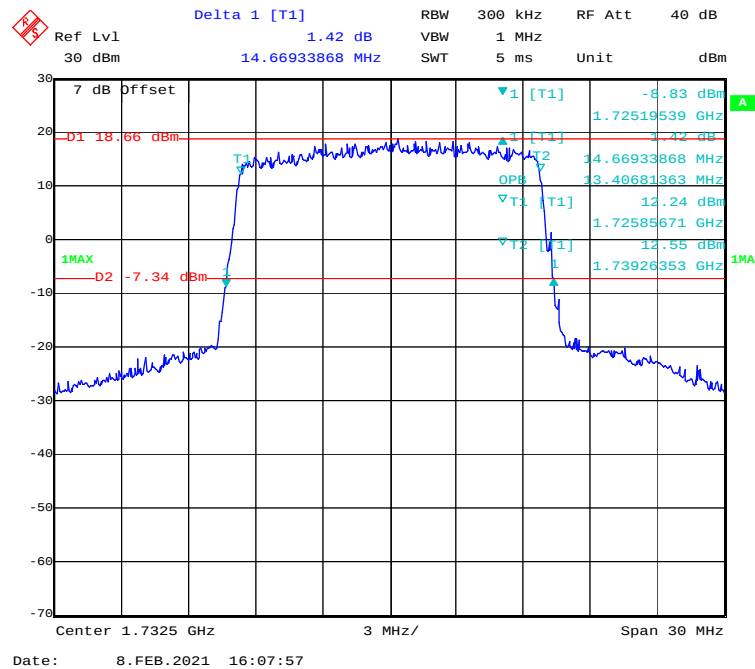
**16-QAM (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel****QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

**QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel****QPSK (5MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

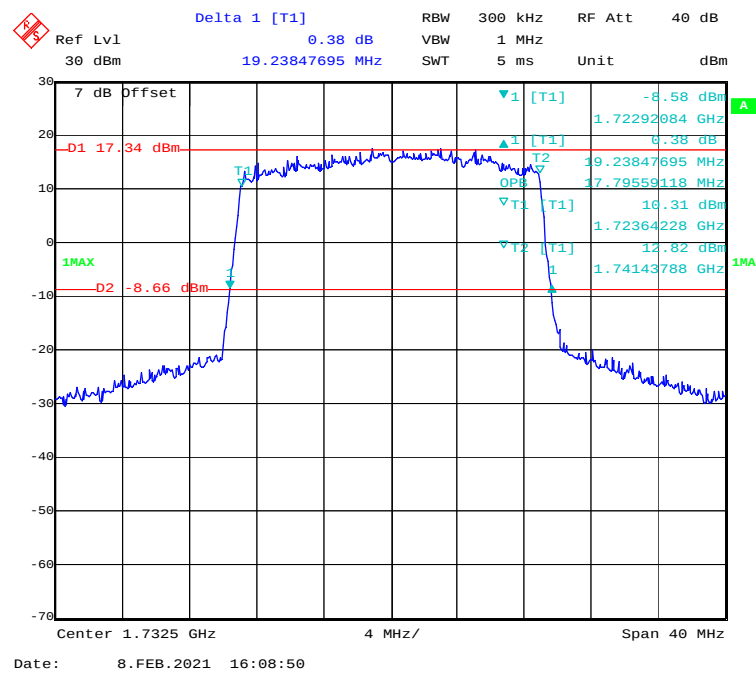
### QPSK (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



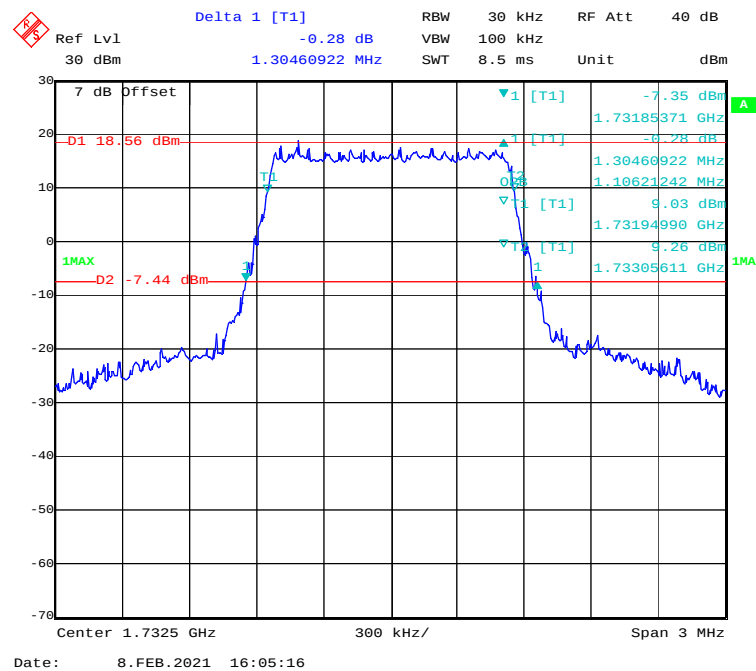
### QPSK (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel

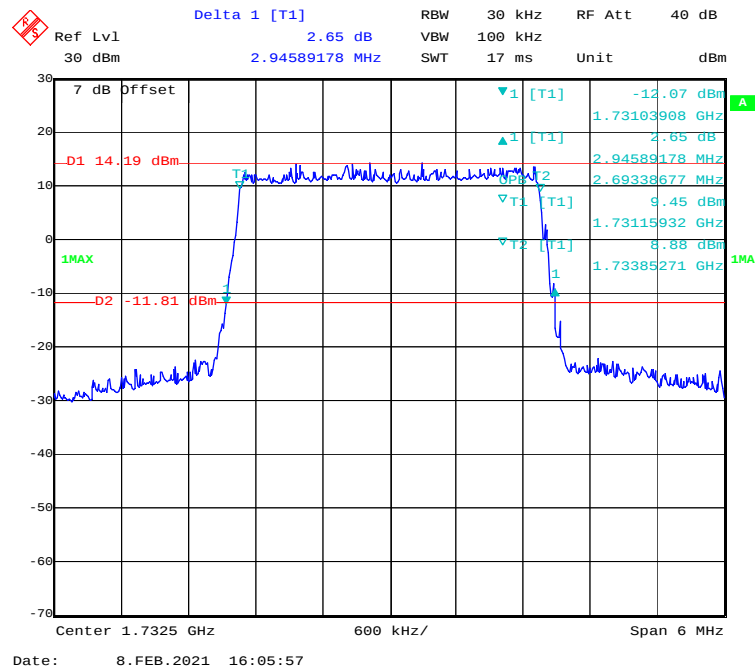
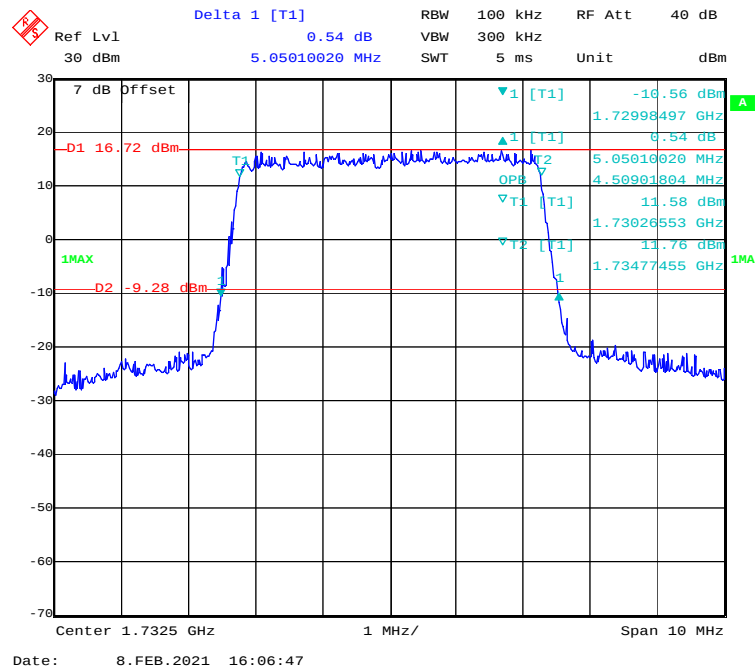


### QPSK (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel

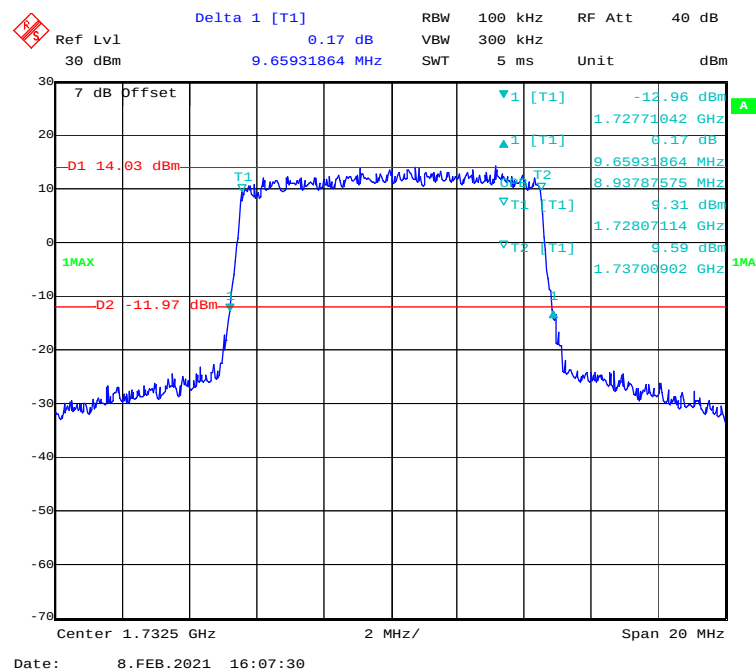


### 16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel

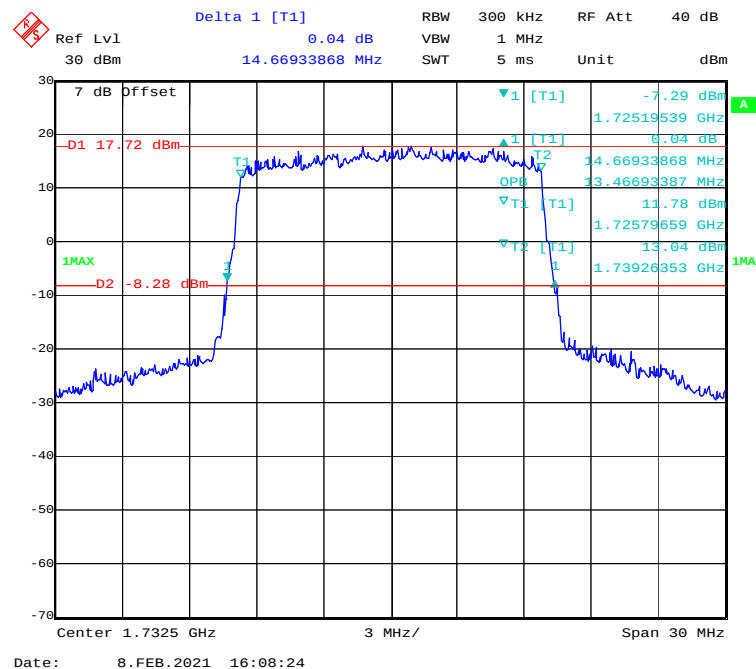


**16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel****16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

### 16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



### 16-QAM (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



Delta 1 [T1]

Ref Lvl 0.37 dB

30 dBm 1.07815631 MHz

RBW 300 kHz RF Att 40 dB

SWT 1 MHz 5 ms Unit dBm

7 dB Offset

D1 16.87 dBm

T1

1MAX

D2 -9.13 dBm

T2

OPB

T1 [T1]

T2 [T1]

T1 [T1]

T2 [T1]

1MAX

Center 1.7325 GHz 4 MHz/ Span 40 MHz

Date: 8.FEB.2021 16:09:14

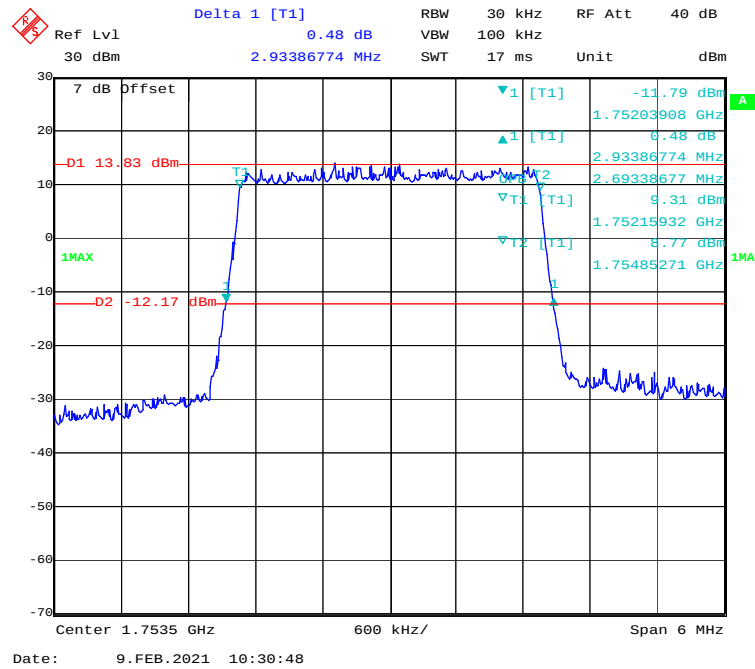
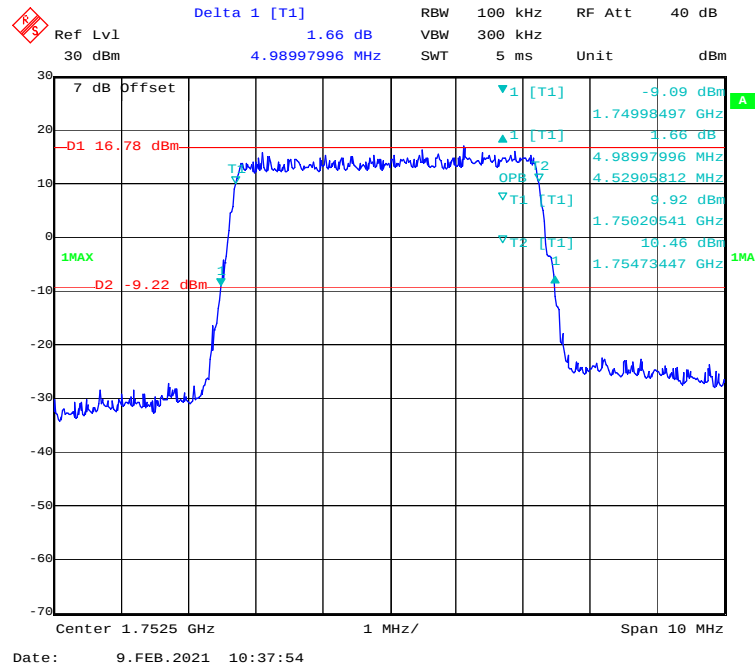
Delta 1 [T1] -0.83 dB  
 RBW 30 kHz RF Att 40 dB  
 Ref Lvl 30 dBm VBW 100 kHz  
 1.31663327 MHz SWT 8.5 ms Unit dBm

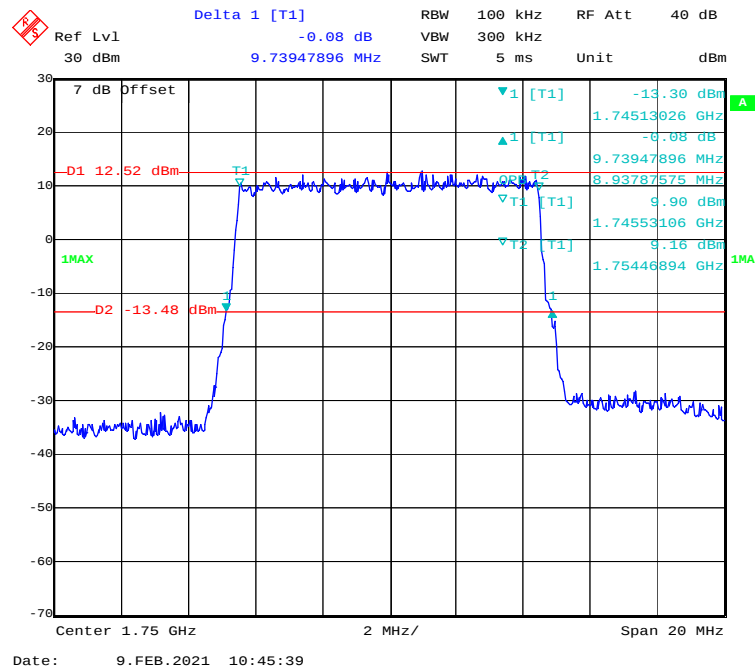
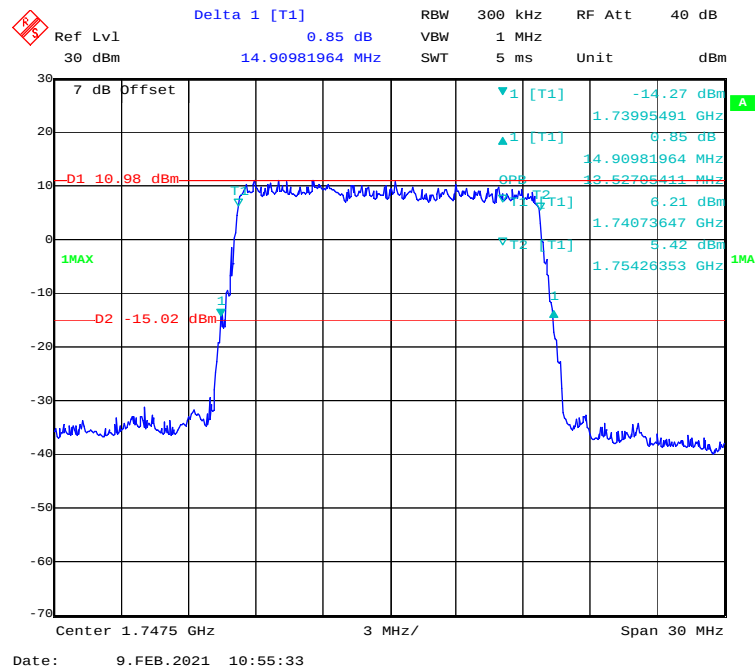
7 dB Offset  
 -D1 11.88 dBm  
 1MAX  
 -D2 -14.12 dBm  
 1MA

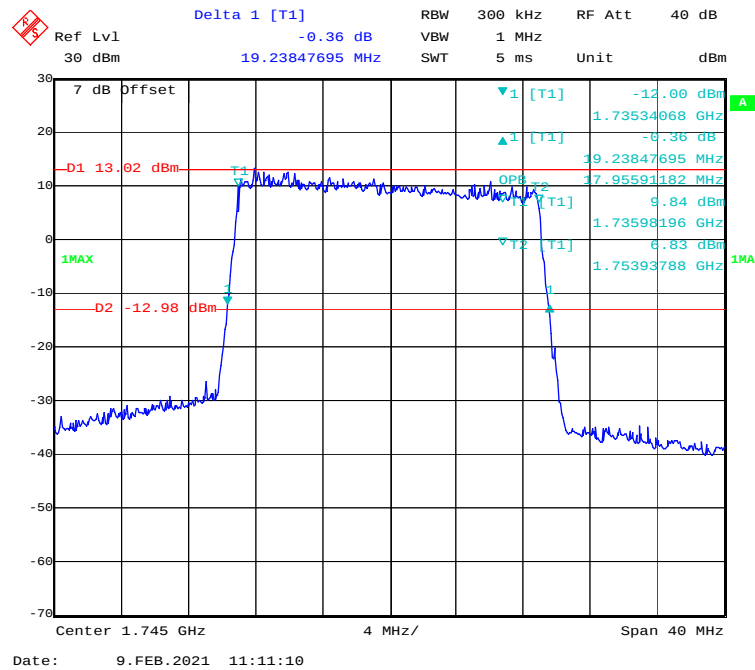
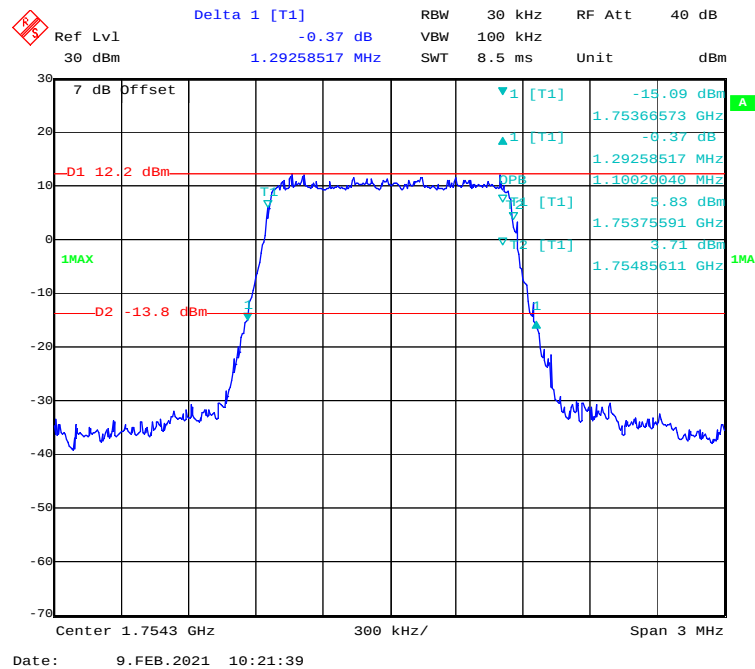
1 [T1] -14.05 dBm 1.75365371 GHz  
 1 [T1] -0.83 dB 1.31663327 MHz  
 1 [T1] 4.18 dBm 1.75375591 GHz  
 1 [T1] 4.92 dBm 1.75486212 GHz

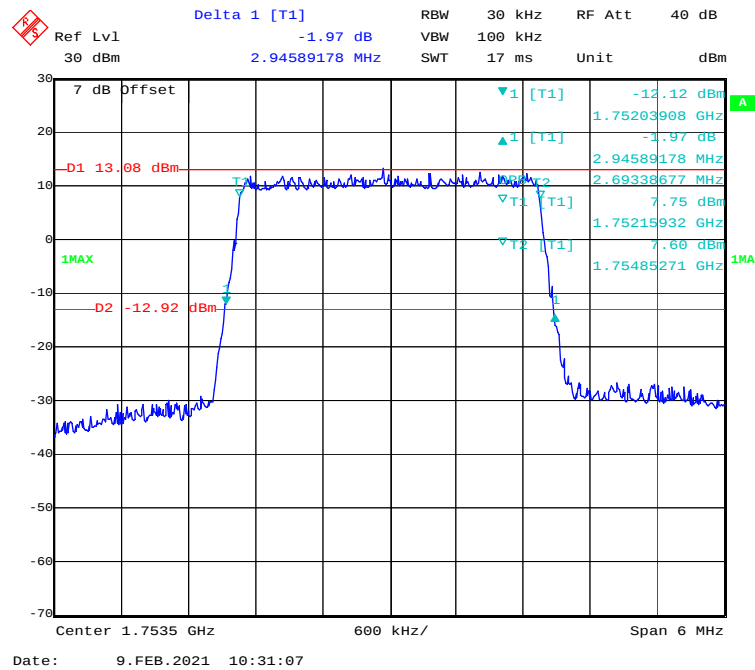
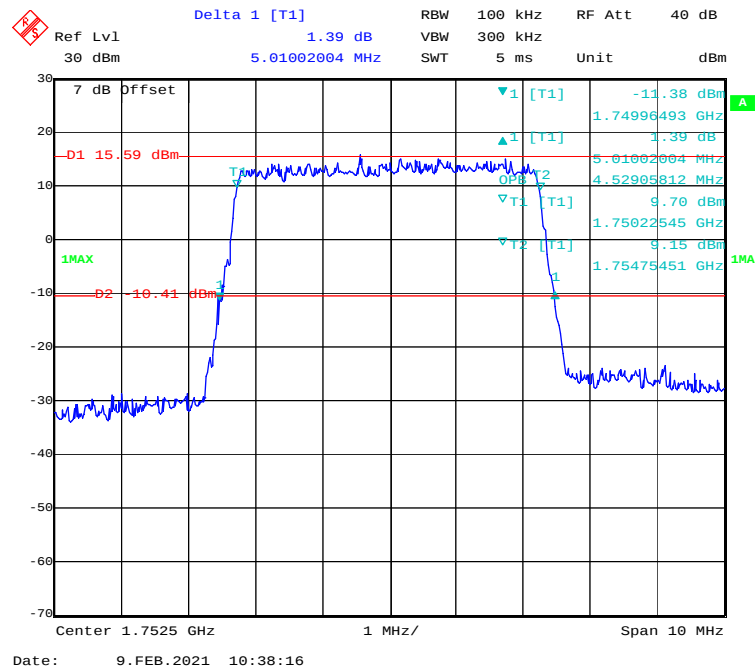
Center 1.7543 GHz 300 kHz/ Span 3 MHz

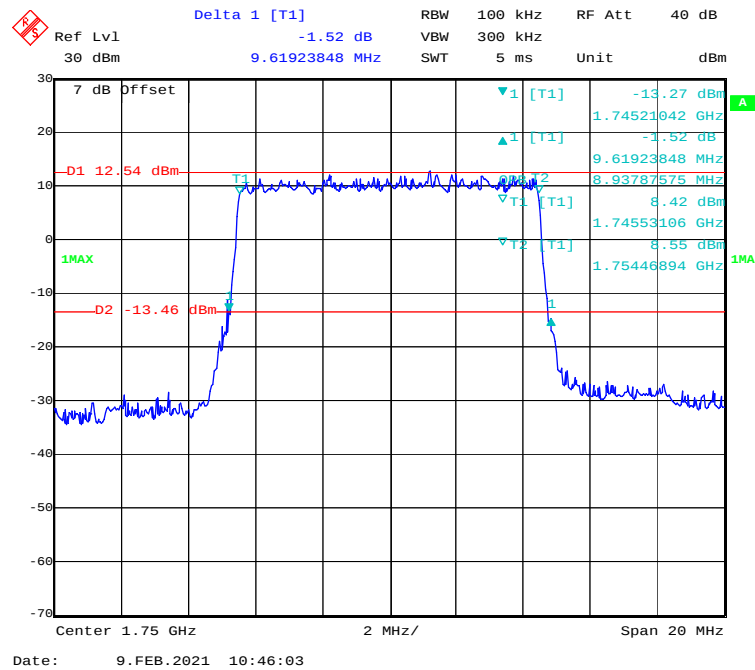
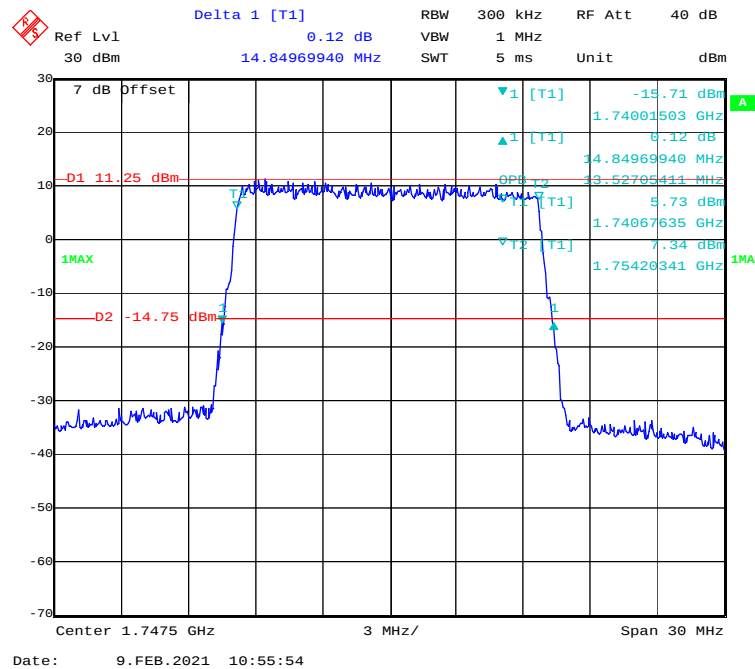
Date: 9.FEB.2021 10:21:20

**QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel****QPSK (5MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

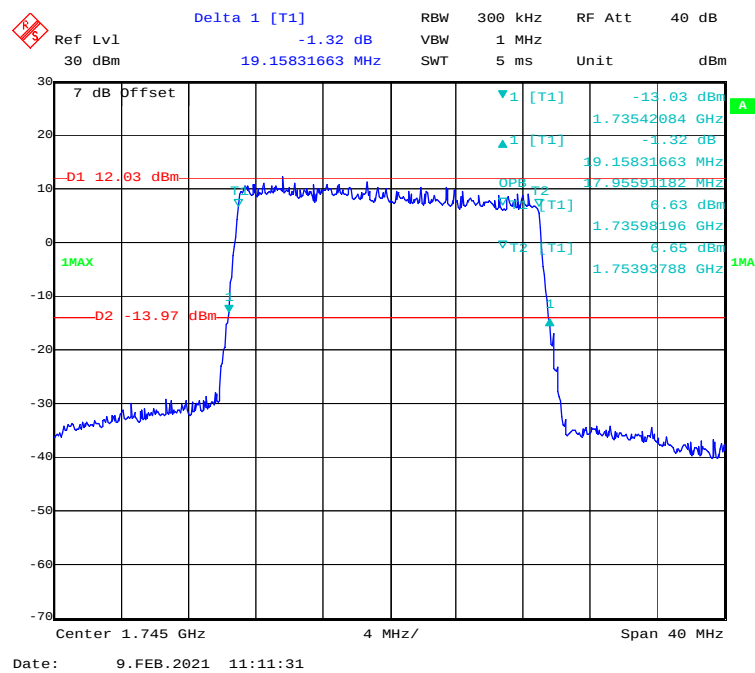
**QPSK (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel****QPSK (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

**QPSK (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel****16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

**16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel****16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

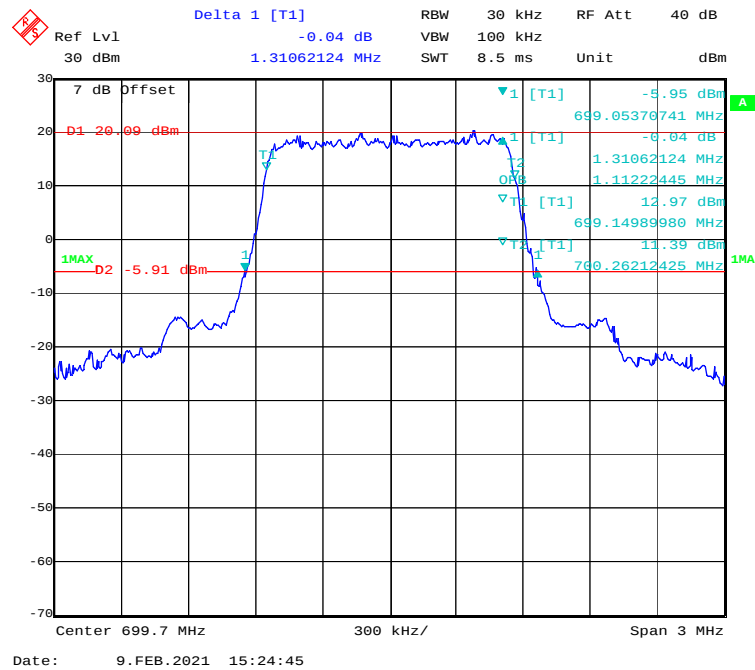
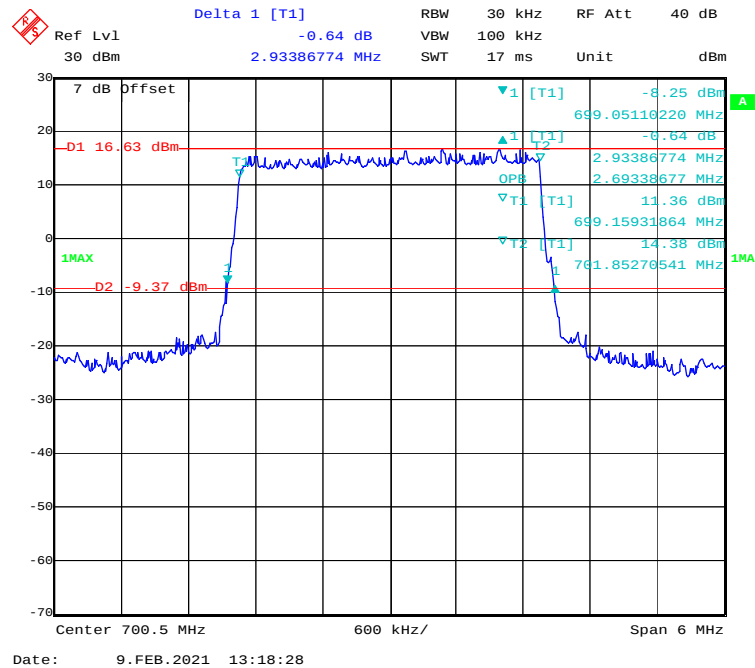
**16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel****16-QAM (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

### 16-QAM (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel

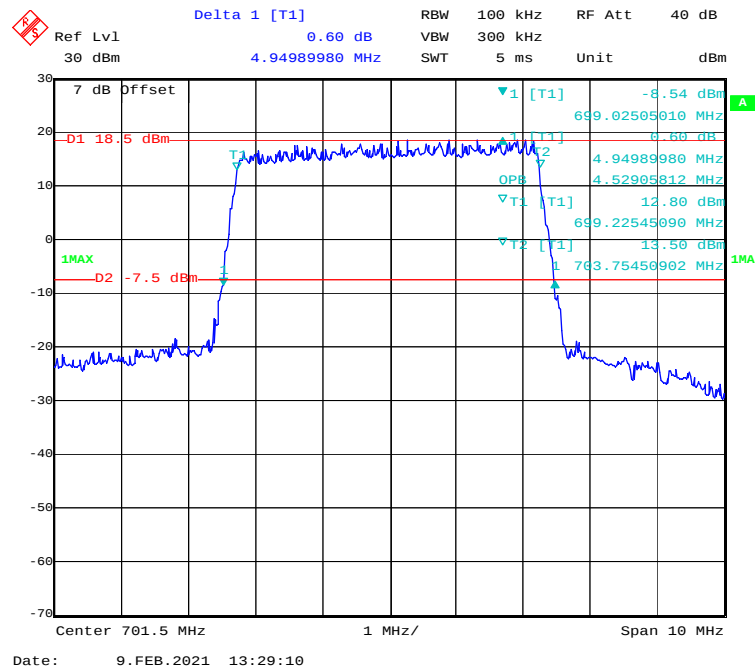


**LTE Band 12:**

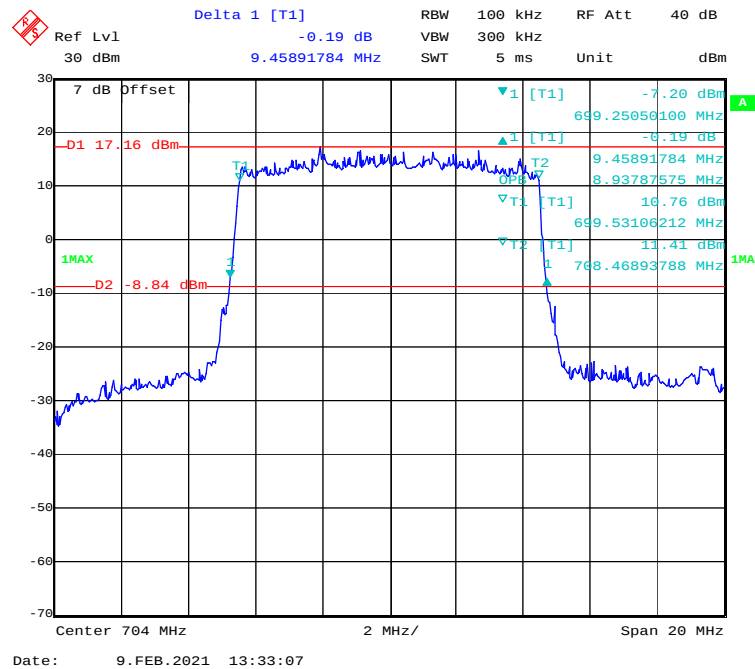
| Test Modulation | Test Bandwidth | 26 dB Bandwidth MHz |                |              | 99% Occupied Bandwidth MHz |                |              |
|-----------------|----------------|---------------------|----------------|--------------|----------------------------|----------------|--------------|
|                 |                | Low Channel         | Middle Channel | High Channel | Low Channel                | Middle Channel | High Channel |
| QPSK            | 1.4M           | 1.31                | 1.30           | 1.29         | 1.11                       | 1.10           | 1.11         |
|                 | 3M             | 2.93                | 2.96           | 2.95         | 2.69                       | 2.69           | 2.69         |
|                 | 5M             | 4.95                | 5.05           | 4.97         | 4.53                       | 4.55           | 4.51         |
|                 | 10M            | 9.46                | 9.78           | 9.70         | 8.94                       | 8.98           | 8.94         |
| 16-QAM          | 1.4M           | 1.31                | 1.30           | 1.29         | 1.11                       | 1.10           | 1.11         |
|                 | 3M             | 2.96                | 2.90           | 2.93         | 2.69                       | 2.68           | 2.69         |
|                 | 5M             | 4.99                | 5.03           | 4.97         | 4.53                       | 4.53           | 4.53         |
|                 | 10M            | 9.54                | 9.74           | 9.70         | 8.94                       | 8.98           | 8.98         |

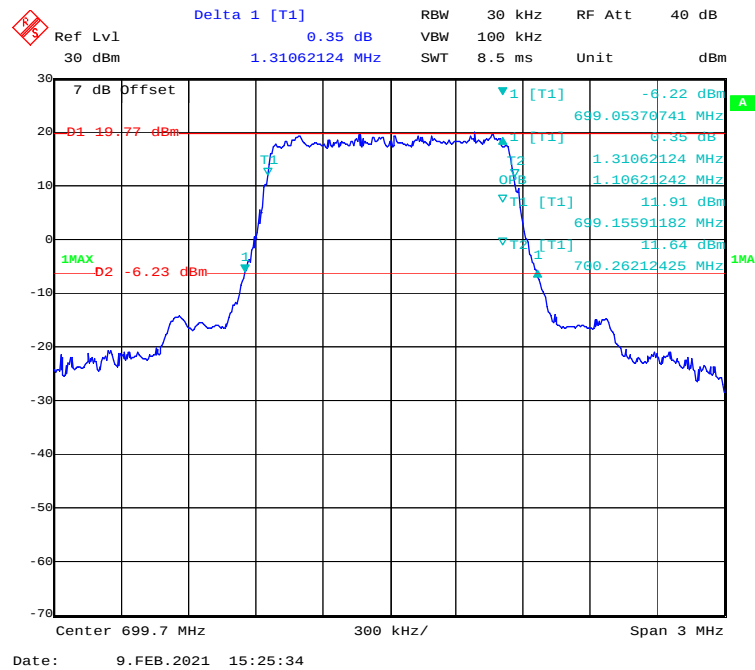
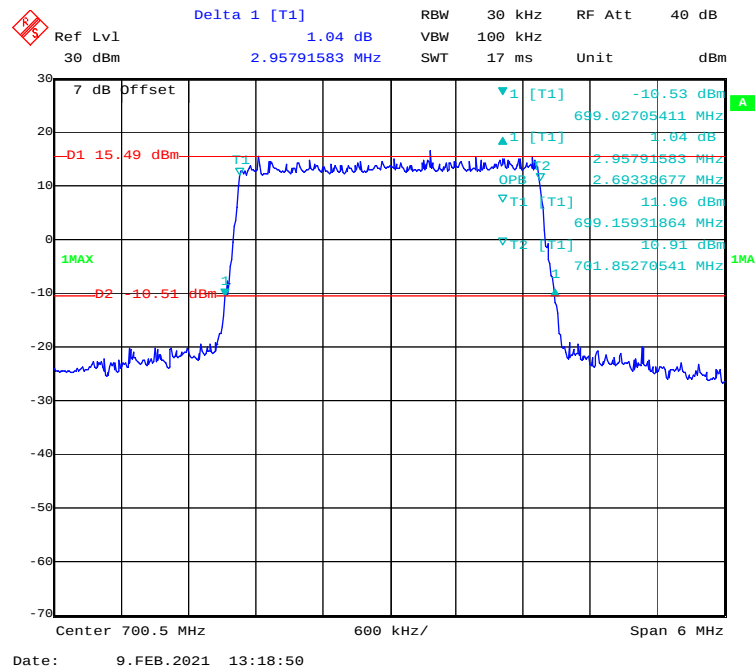
**QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel****QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

### QPSK (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



### QPSK (10MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel

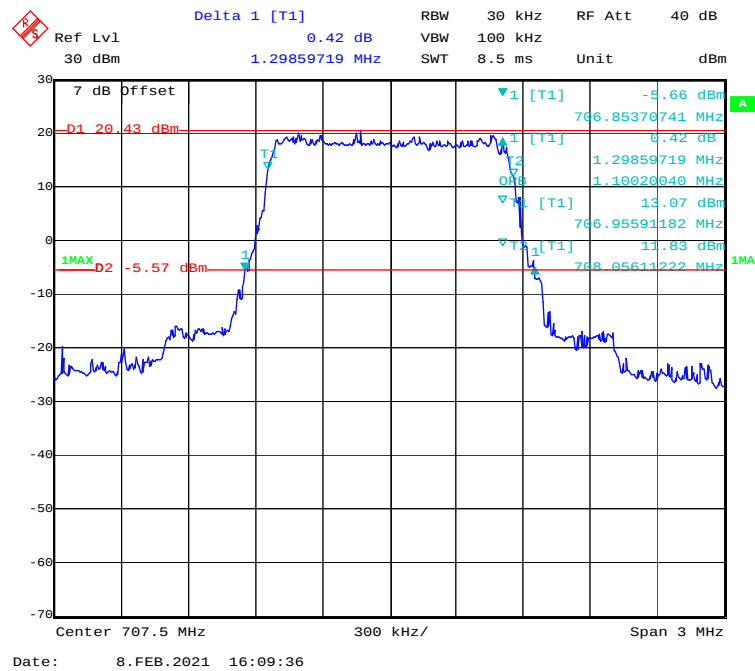
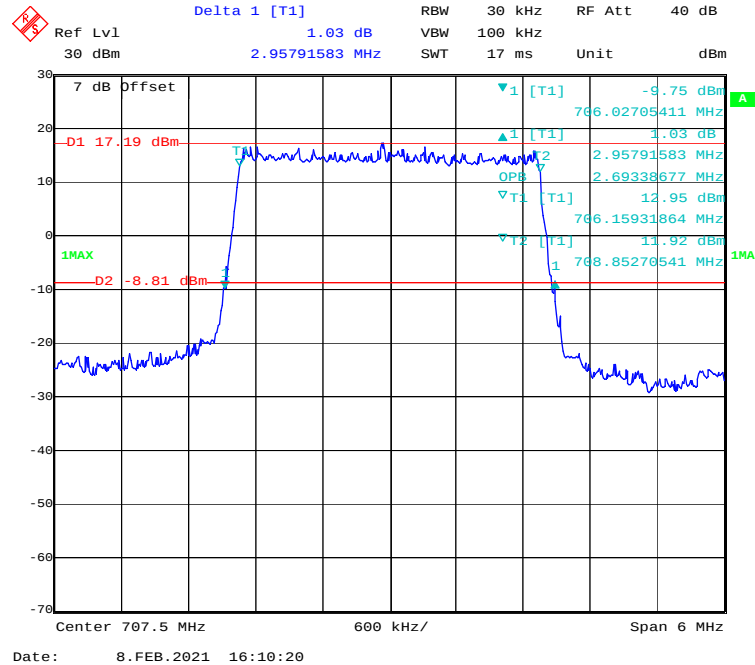


**16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel****16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

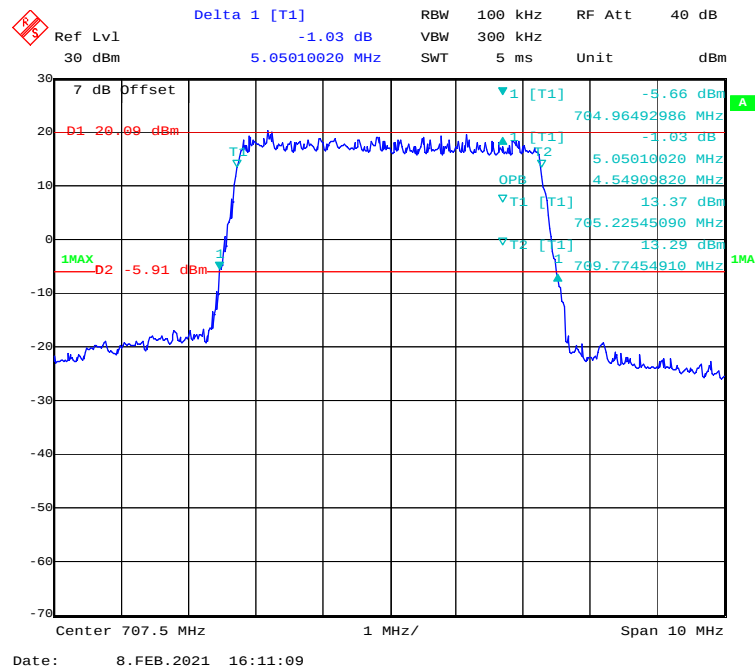
Delta 1 [T1] 1.59 dB  
 RBW 100 kHz RF Att 40 dB  
 Ref Lvl 30 dBm 30 dBm  
 Unit dBm

7 dB Offset  
 D1 18.16 dBm  
 D2 -7.84 dBm  
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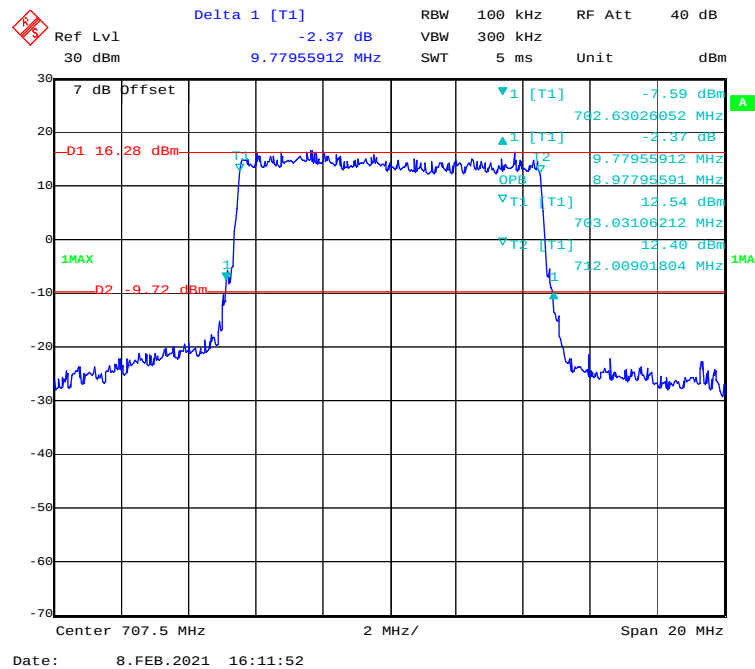
[illegible]

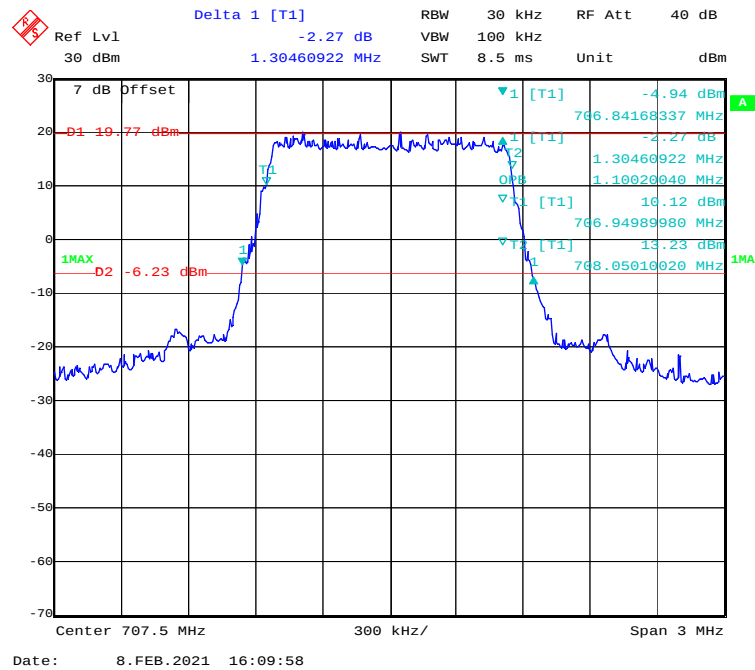
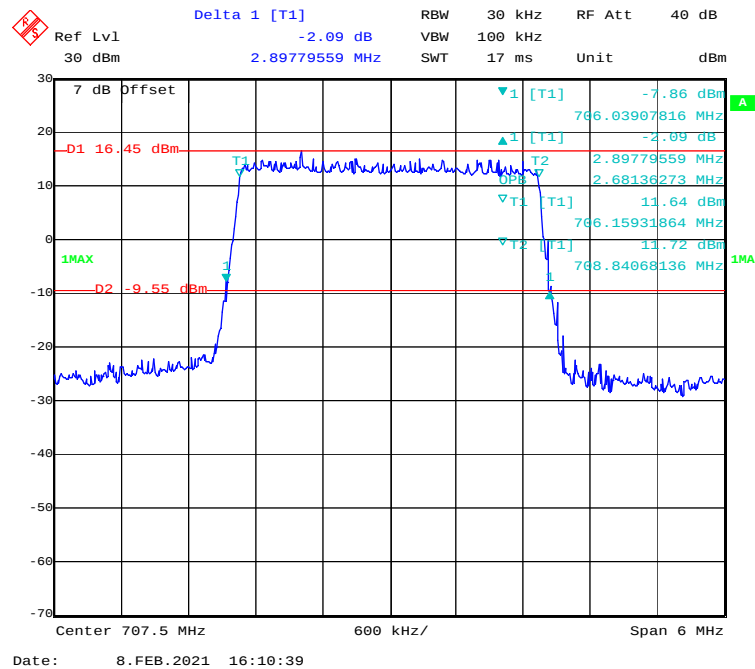
**QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel****QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

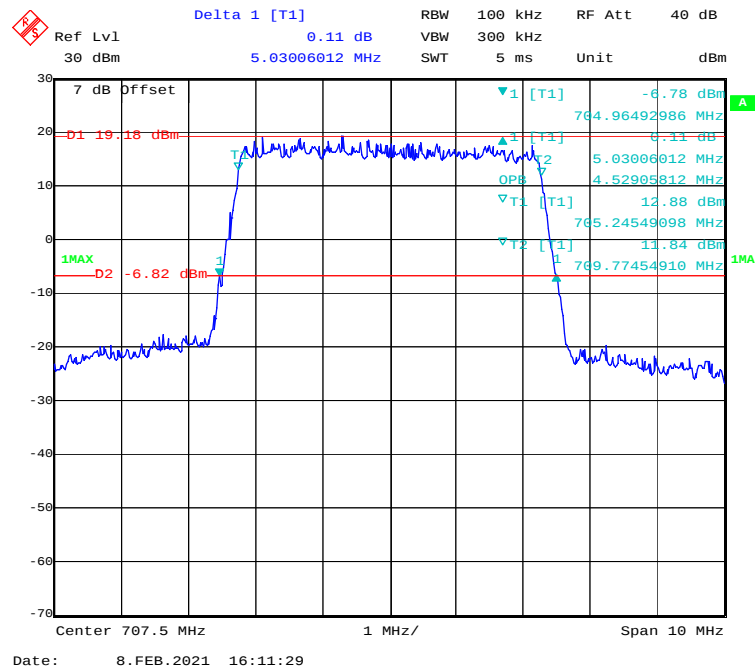
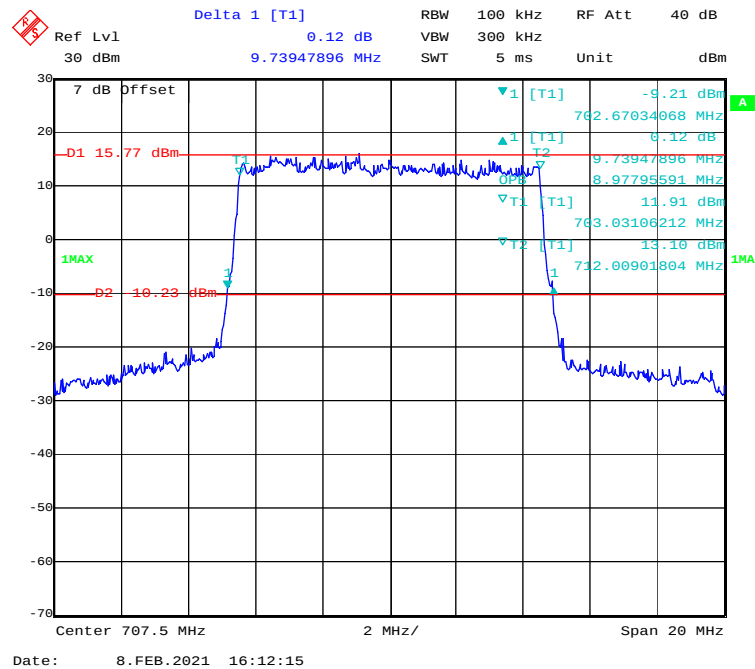
### QPSK (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel

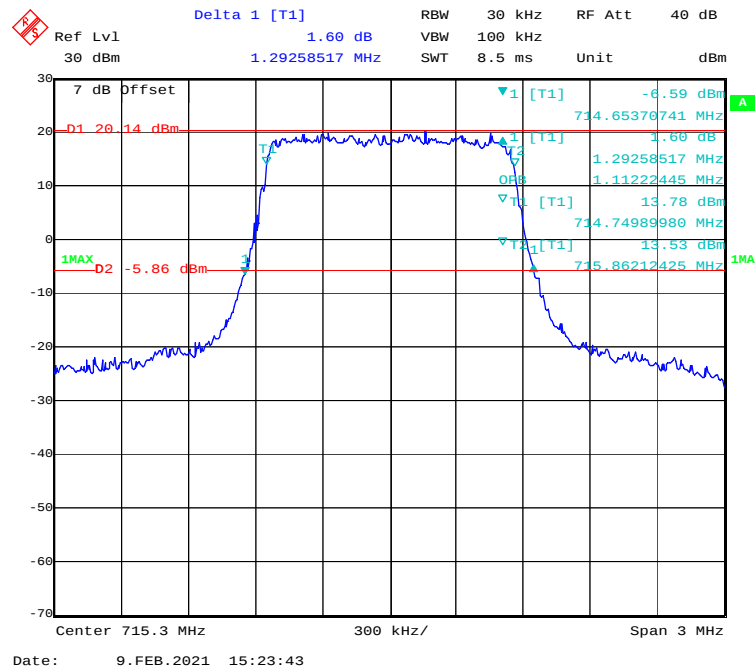
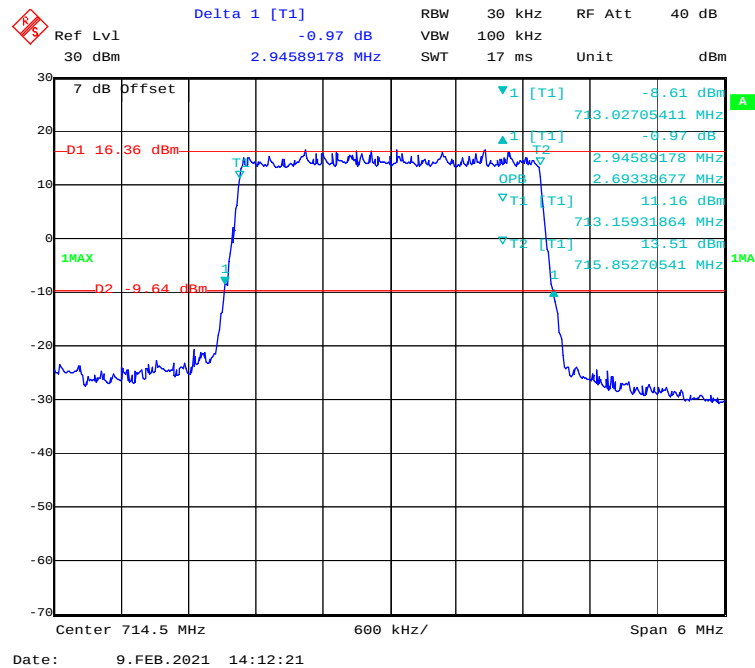


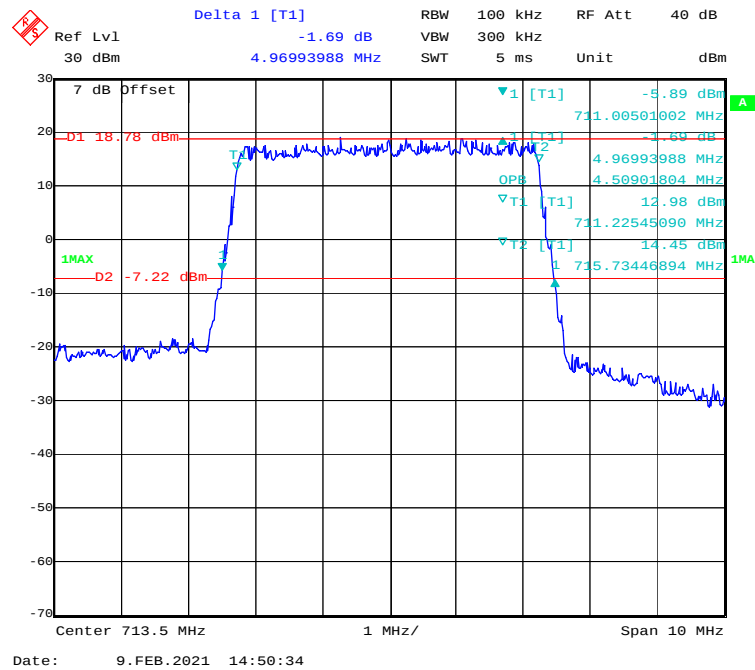
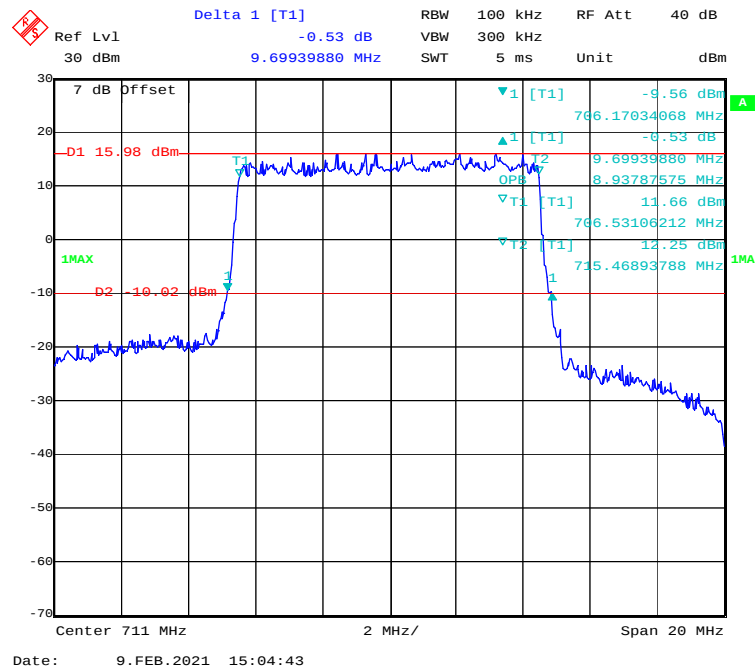
### QPSK (10MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



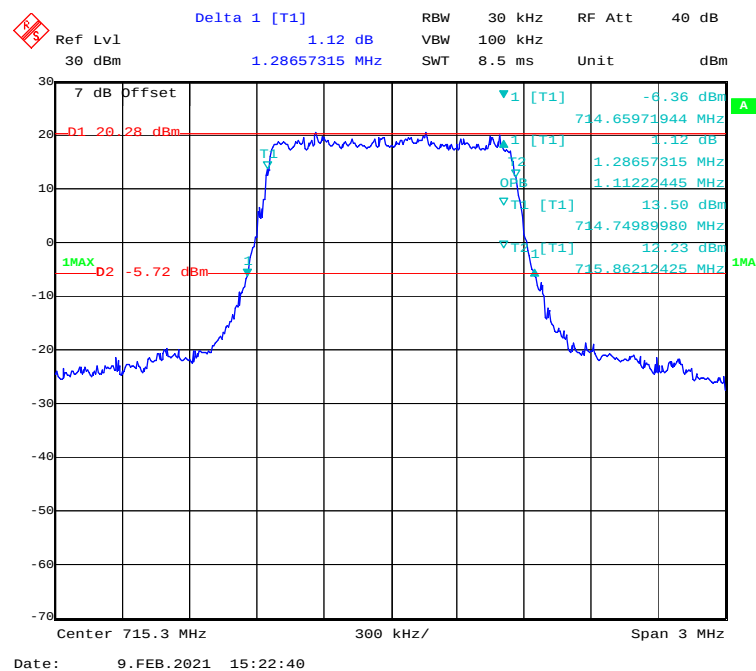
**16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel****16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

**16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel****16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

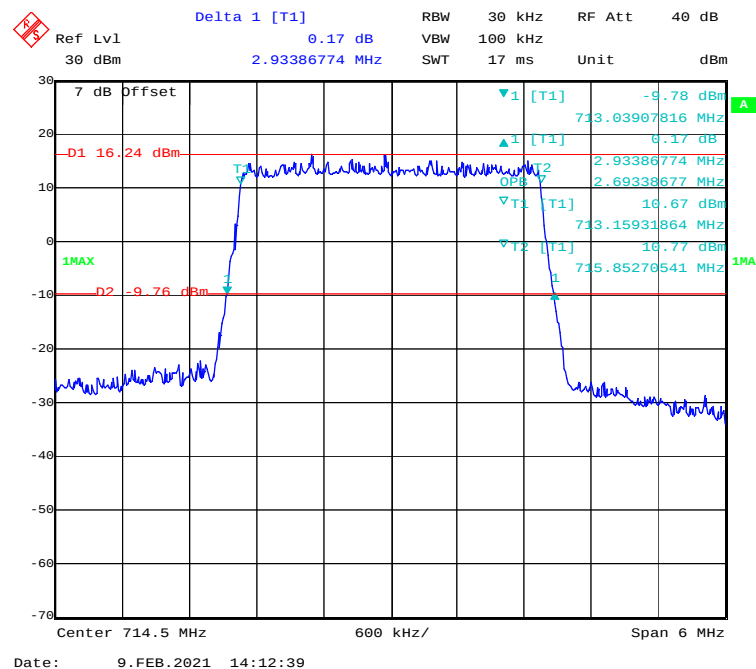
**QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel****QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

**QPSK (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel****QPSK (10MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

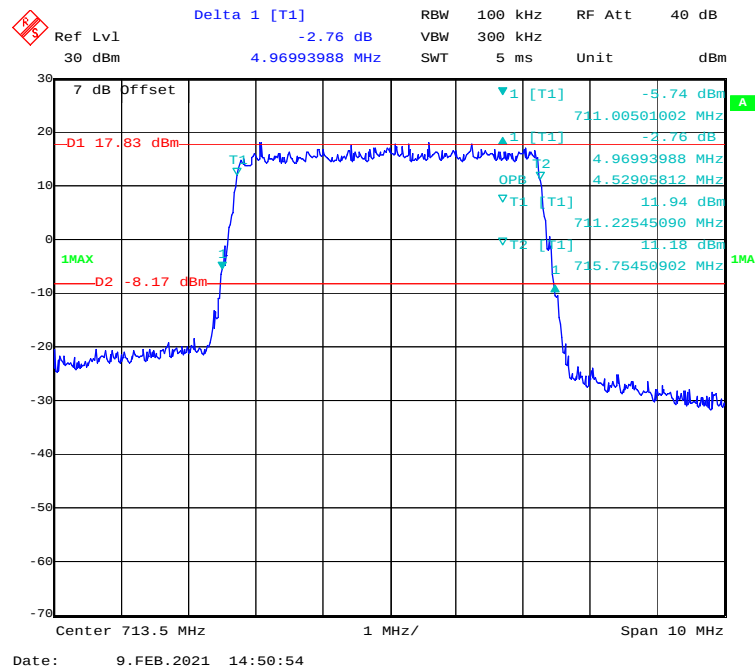
### 16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



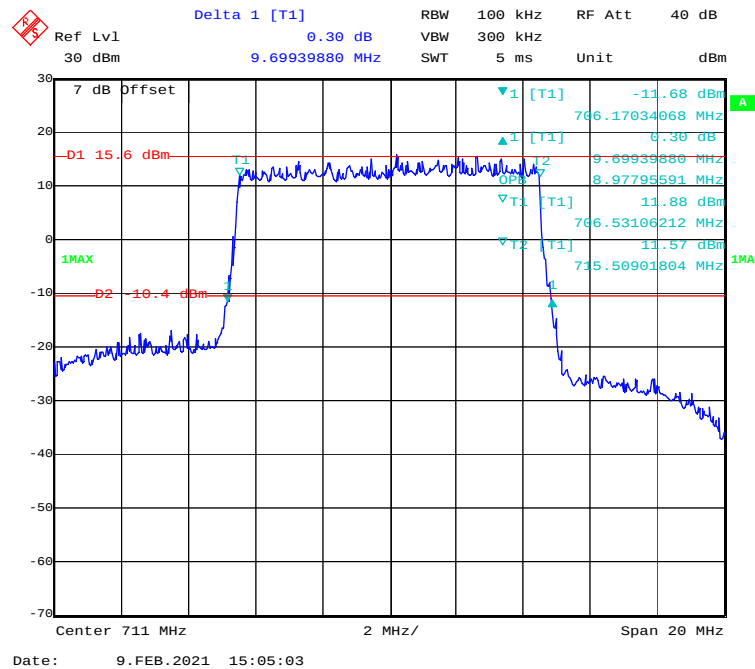
### 16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



### 16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



### 16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



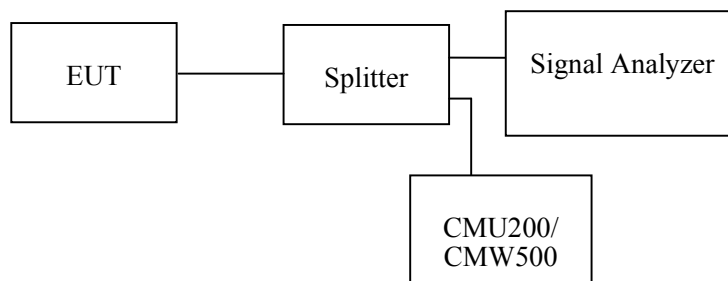
**FCC § 2.1051; § 22.917 (a); § 24.238 (a); §27.53 (h) (g), - SPURIOUS EMISSIONS AT ANTENNA TERMINALS****Applicable Standards**

FCC §2.1051, §22.917(a), §24.238(a), §27.53 (h) (g).

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 100 kHz for below 1GHz & 1MHz for above 1GHz. sufficient scans were taken to show any out of band emissions up to 10<sup>th</sup> harmonic.

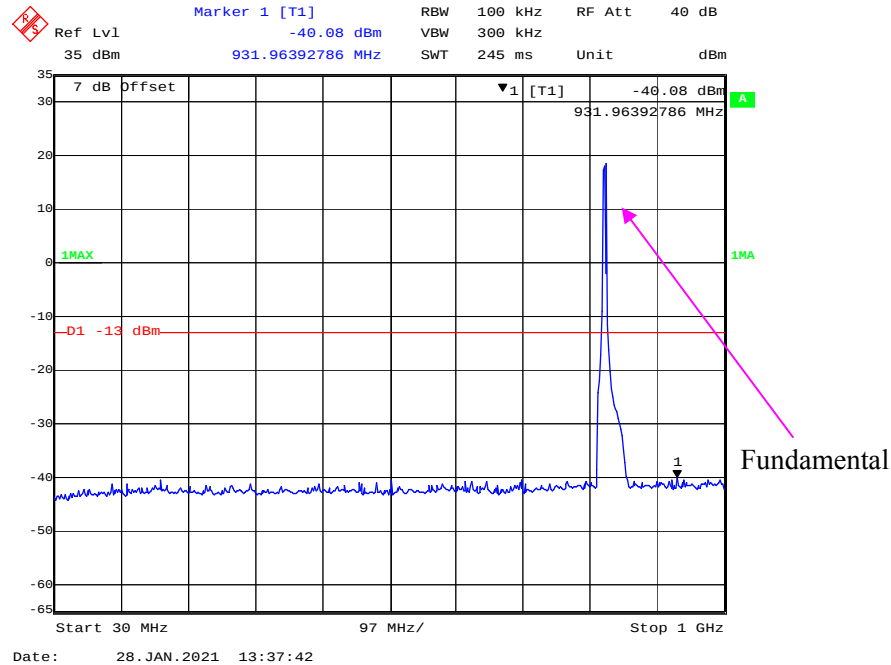
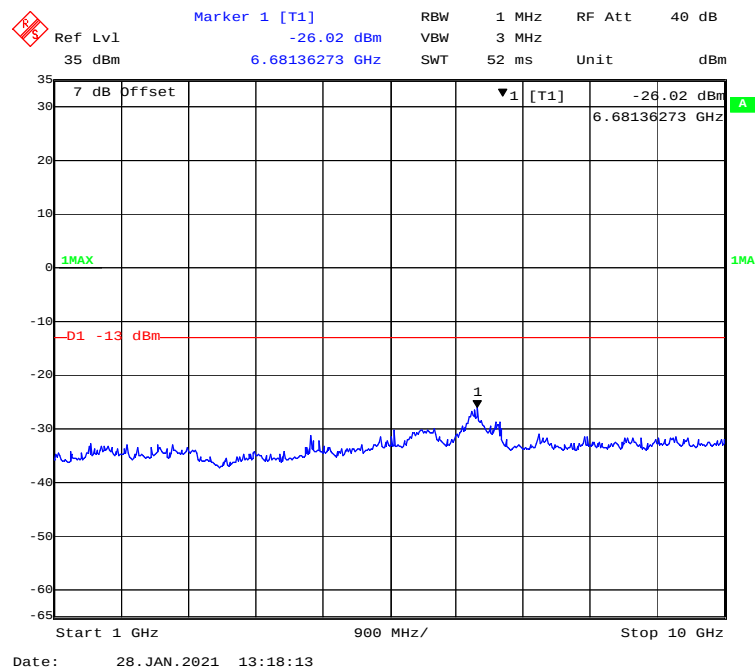
**Test Data****Environmental Conditions**

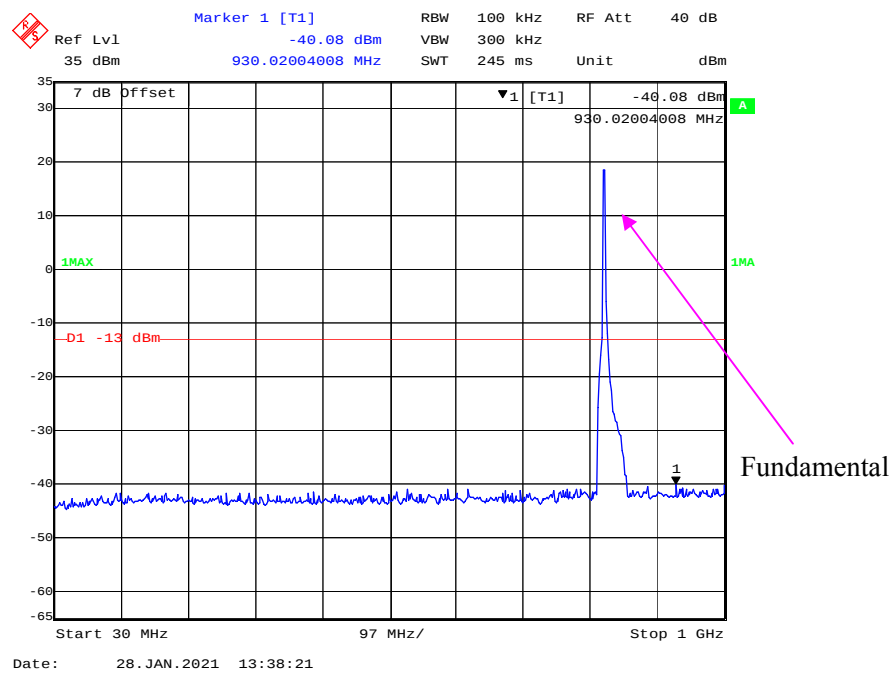
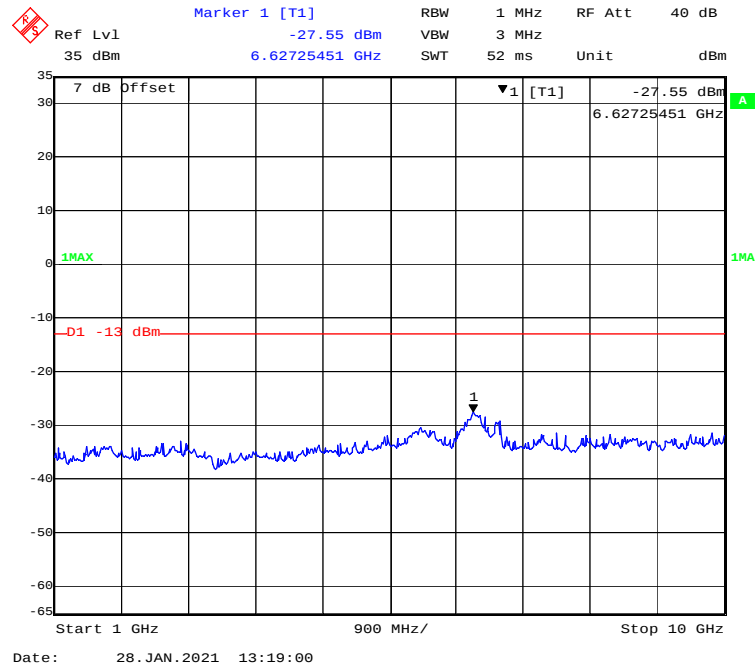
|                           |                   |
|---------------------------|-------------------|
| <b>Temperature:</b>       | 23.2°C-23.5°C     |
| <b>Relative Humidity:</b> | 51 %-23%          |
| <b>ATM Pressure:</b>      | 101.1kPa-103.3kPa |

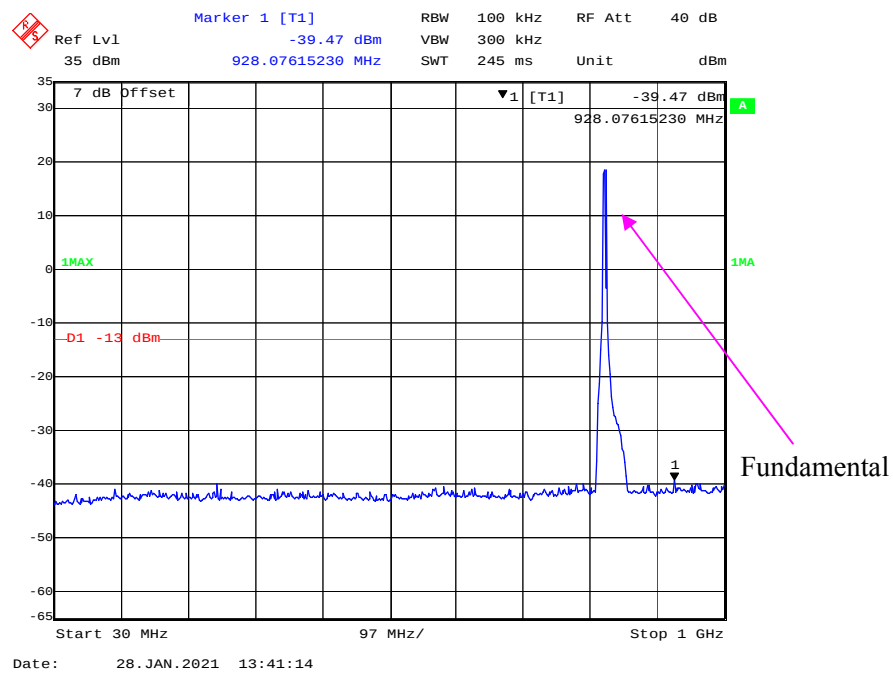
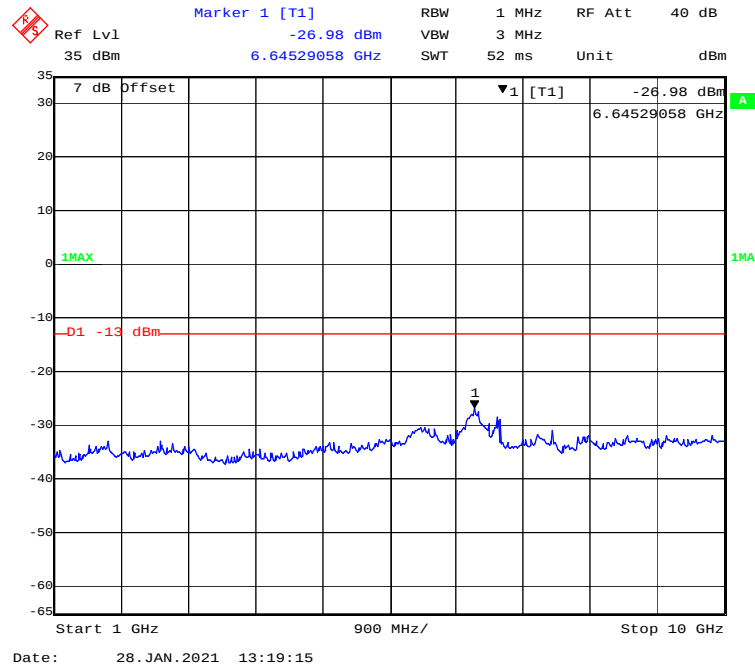
The testing was performed by Tyrone Wang from 2021-01-28 to 2021-02-18.

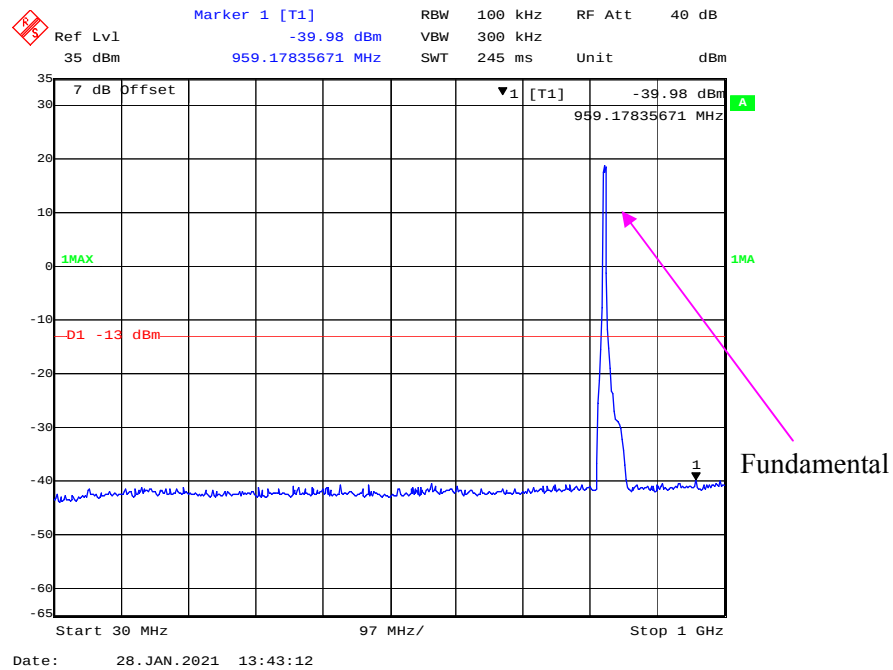
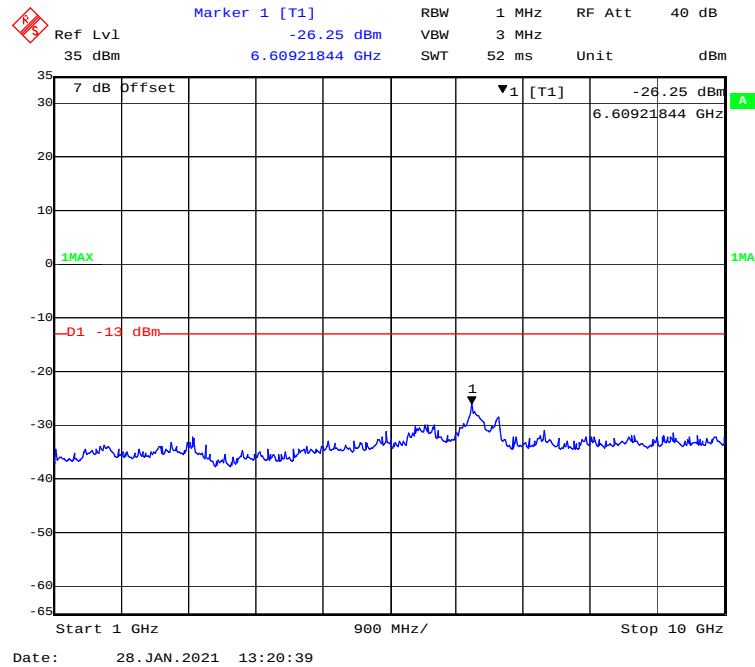
EUT operation mode: Transmitting

Test Result: Compliance.

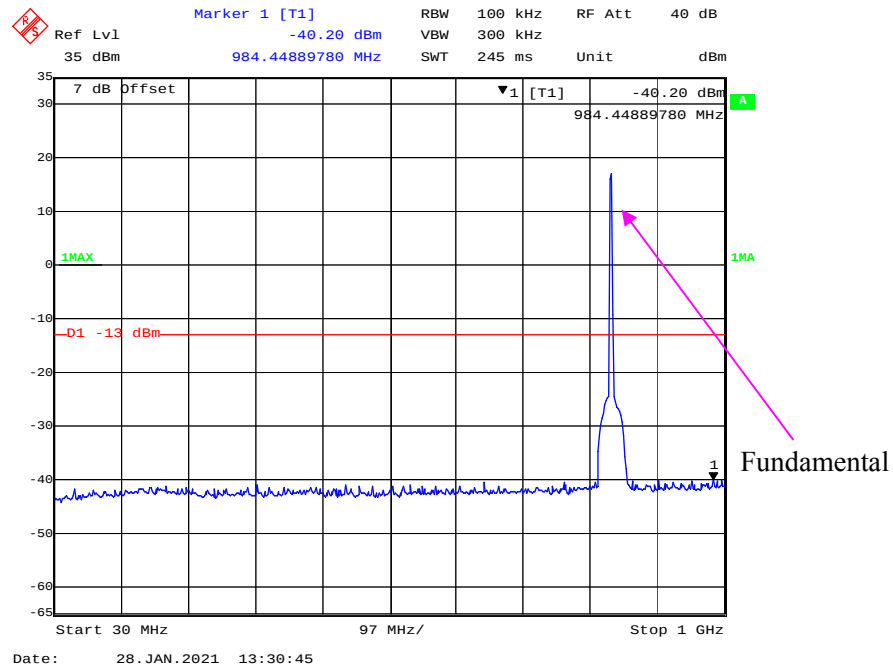
**WCDMA Band V:****30 MHz – 1GHz WCDMA (Rel 99) Mode, Low channel****1 GHz – 10 GHz WCDMA (Rel 99) Mode, Low channel**

**30 MHz – 1GHz WCDMA (HSDPA) Mode, Low channel****1 GHz – 10 GHz WCDMA (HSDPA) Mode, Low channel**

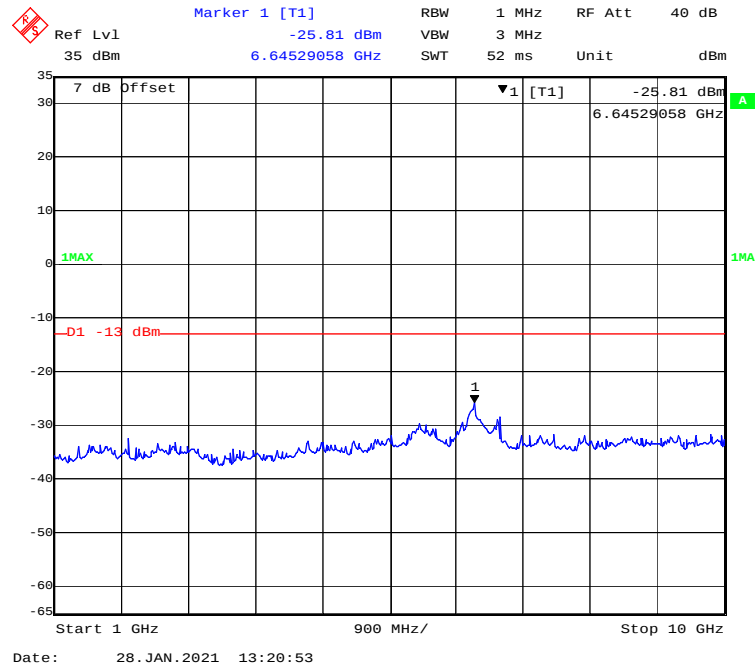
**30 MHz – 1GHz WCDMA (HSUPA) Mode, Low channel****1 GHz – 10 GHz WCDMA (HSUPA) Mode, Low channel**

**30 MHz – 1GHz WCDMA (HSPA+) Mode, Low channel****1 GHz – 10 GHz WCDMA (HSPA+) Mode, Low channel**

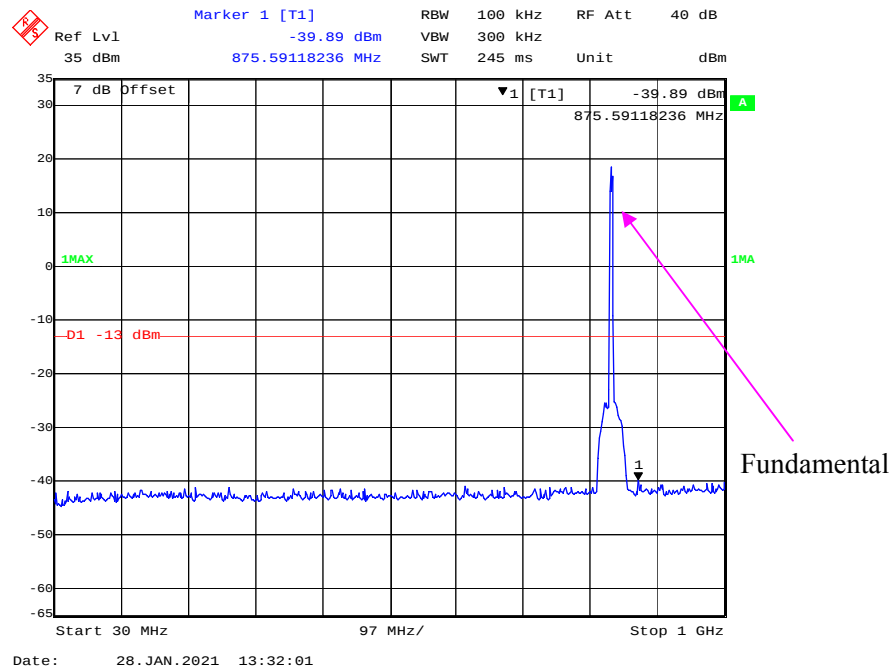
### 30 MHz – 1GHz WCDMA (Rel 99) Mode, Middle channel



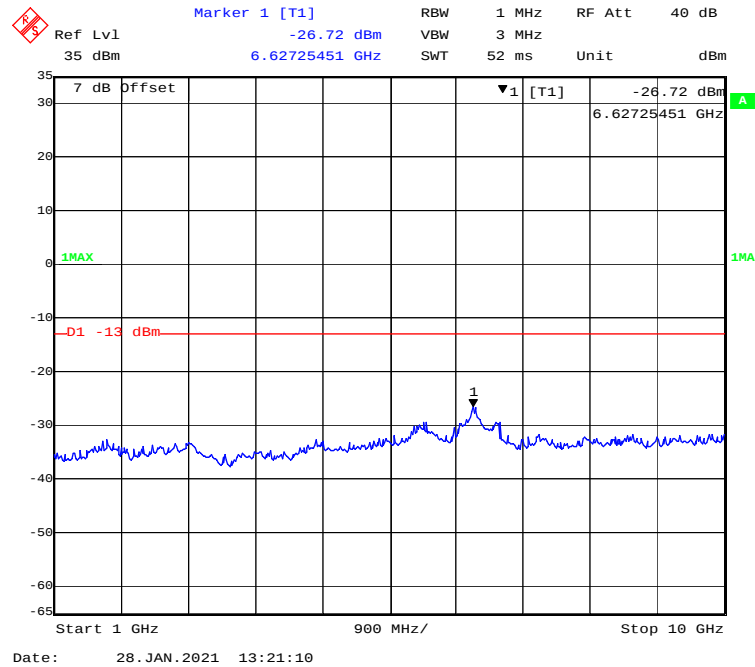
### 1 GHz – 10 GHz WCDMA (Rel 99) Mode, Middle channel



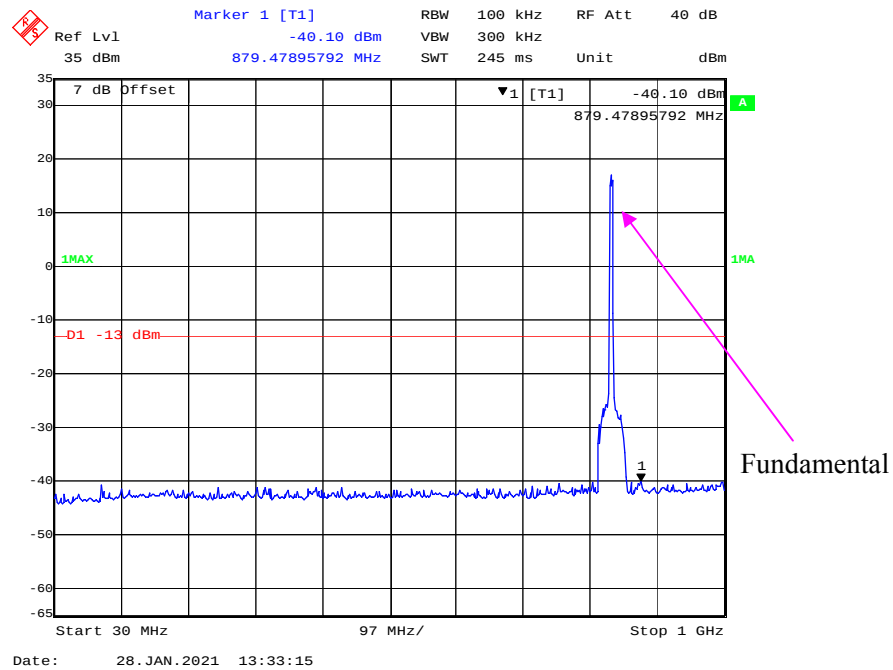
### 30 MHz – 1GHz WCDMA (HSDPA) Mode, Middle channel



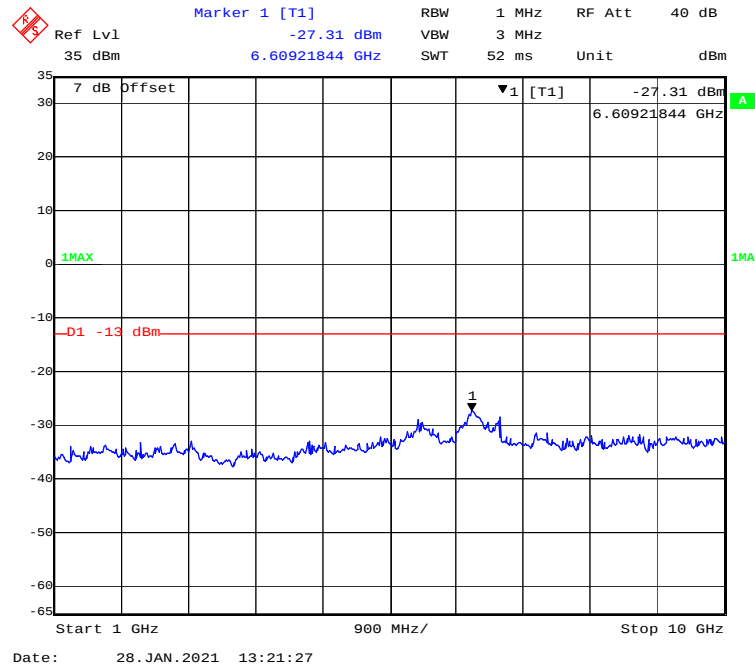
### 1 GHz – 10 GHz WCDMA (HSDPA) Mode, Middle channel

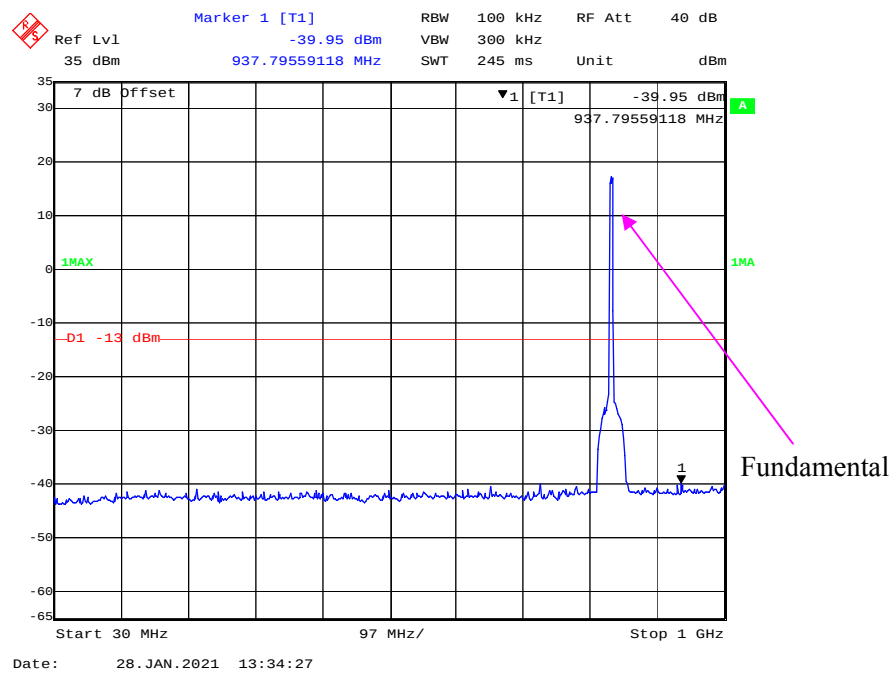
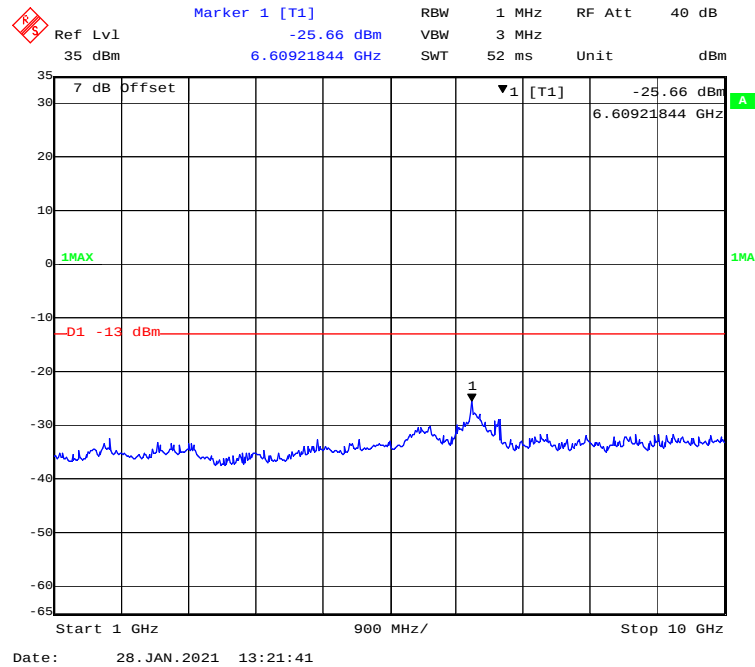


### 30 MHz – 1GHz WCDMA (HSUPA) Mode, Middle channel

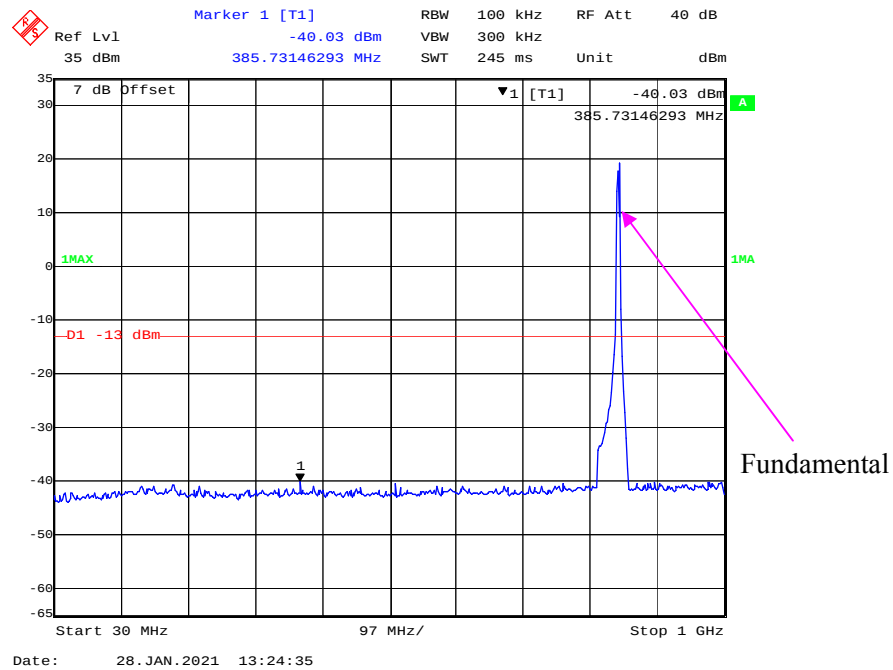


### 1 GHz – 10 GHz WCDMA (HSUPA) Mode, Middle channel

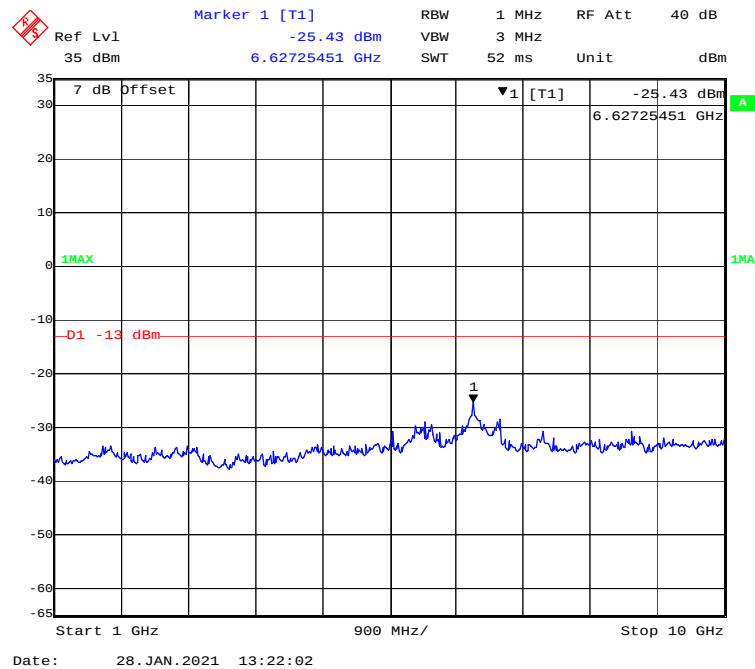


**30 MHz – 1GHz WCDMA (HSPA+) Mode, Middle channel****1 GHz – 10 GHz WCDMA (HSPA+) Mode, Middle channel**

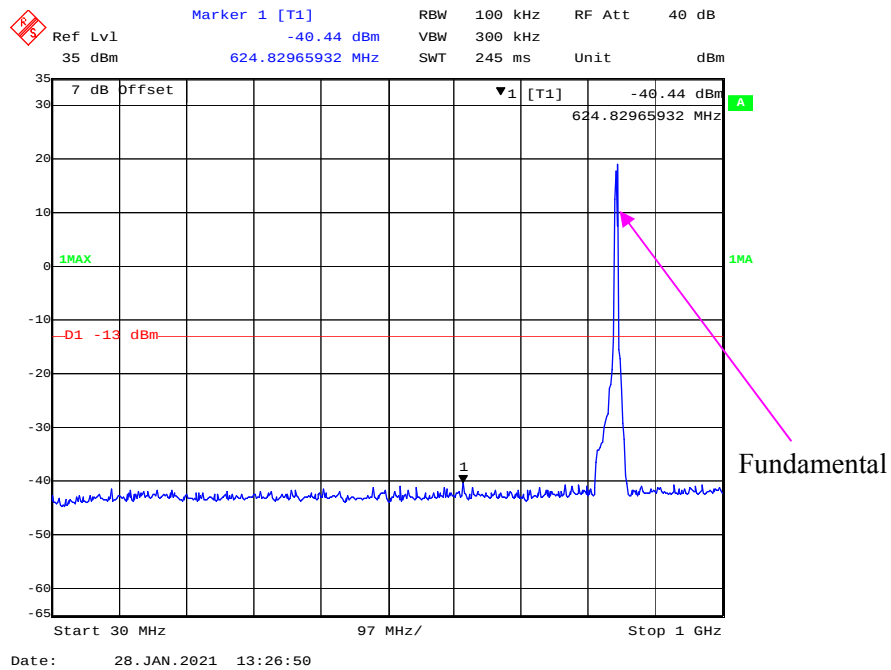
### 30 MHz – 1GHz WCDMA (Rel 99) Mode, High channel



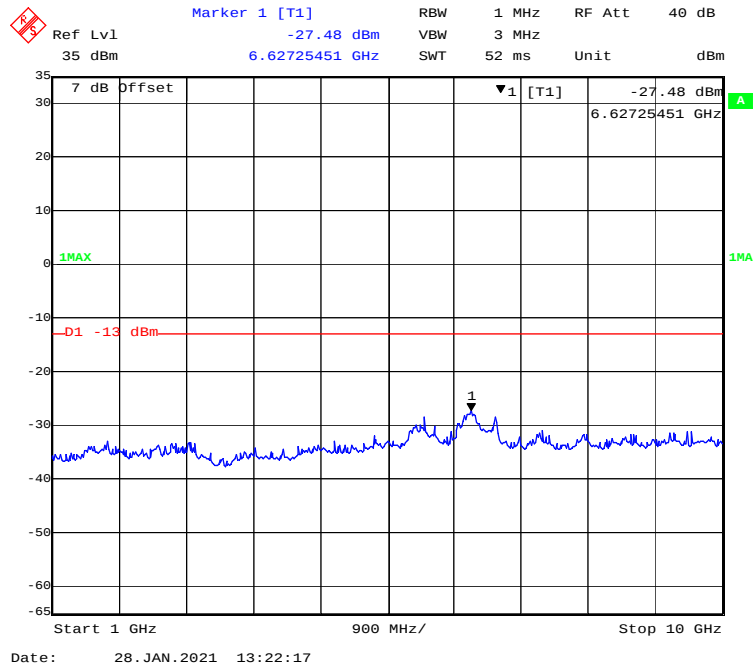
### 1 GHz – 10 GHz WCDMA (Rel 99) Mode, High channel

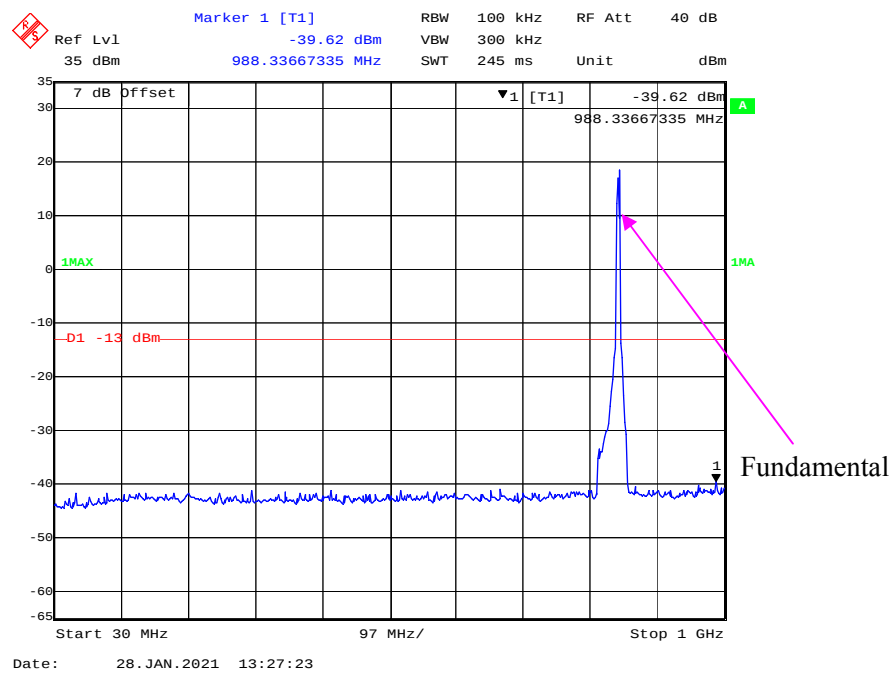
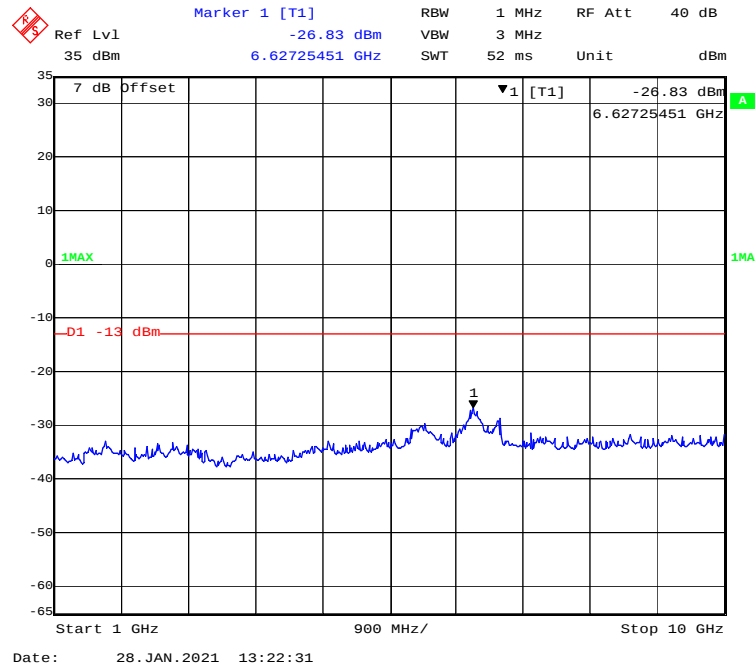


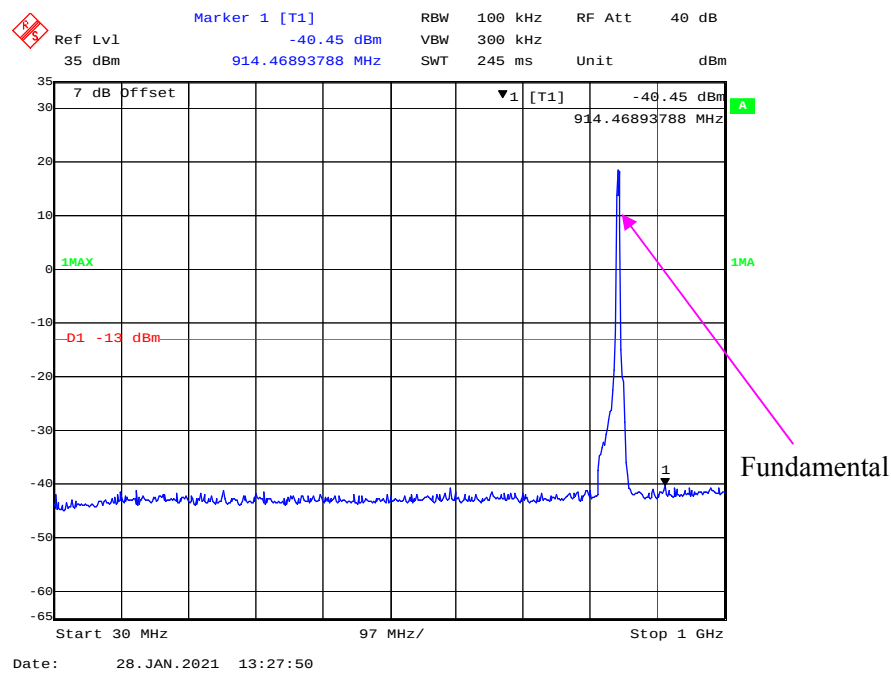
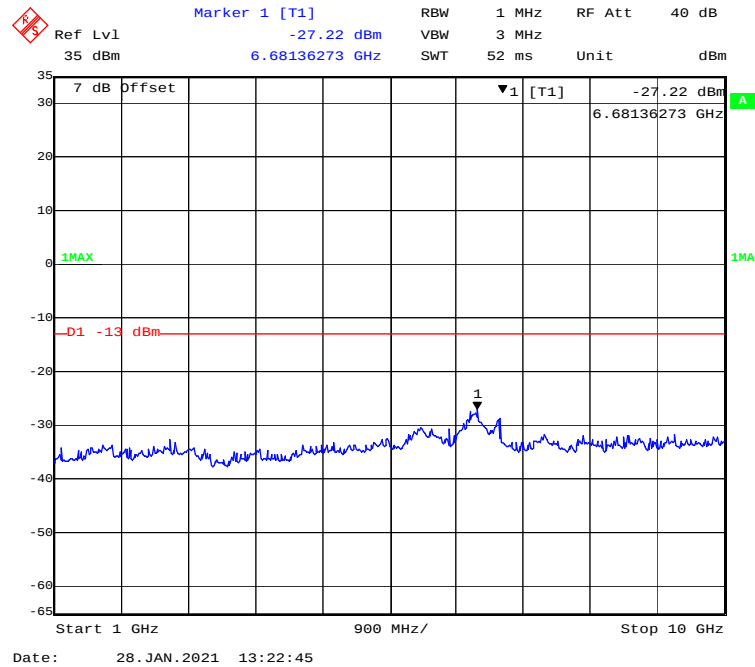
### 30 MHz – 1GHz WCDMA (HSDPA) Mode, High channel



### 1 GHz – 10 GHz WCDMA (HSDPA) Mode, High channel

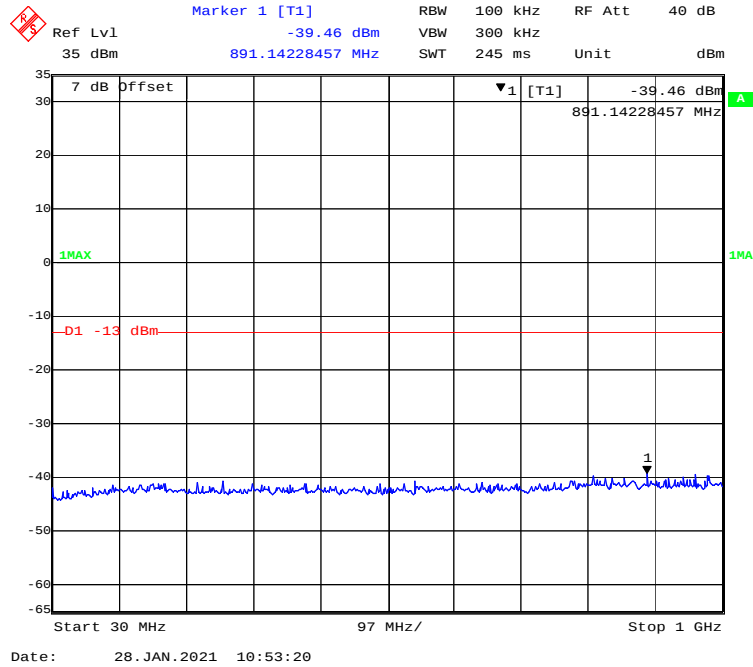


**30 MHz – 1GHz WCDMA (HSUPA) Mode, High channel****1 GHz – 10 GHz WCDMA (HSUPA) Mode, High channel**

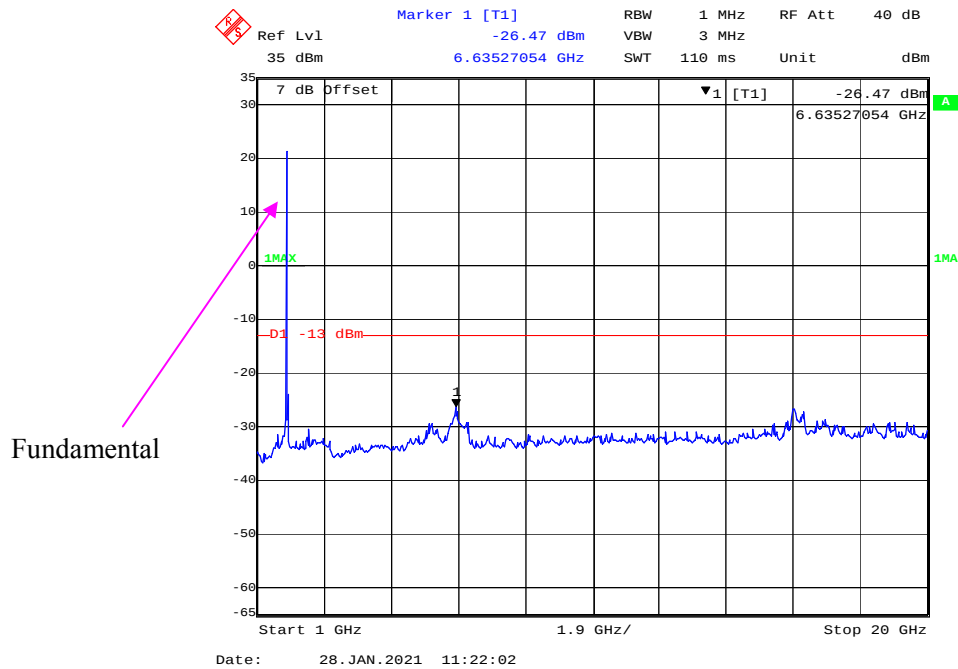
**30 MHz – 1GHz WCDMA (HSPA+) Mode, High channel****1 GHz – 10 GHz WCDMA (HSPA+) Mode, High channel**

## WCDMA Band II:

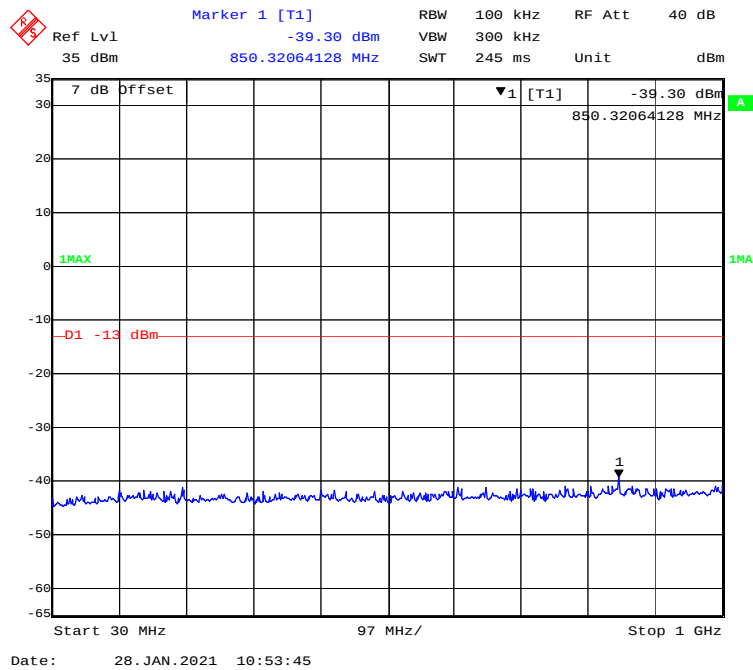
### 30 MHz – 1GHz WCDMA (Rel 99) Mode, Low channel



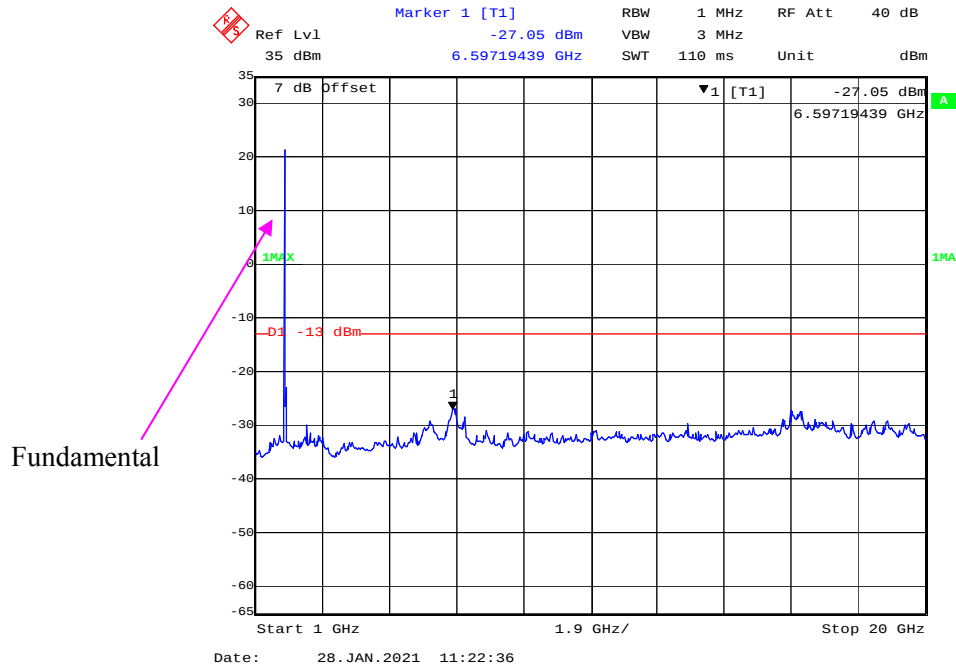
### 1 GHz – 20 GHz WCDMA (Rel 99) Mode, Low channel



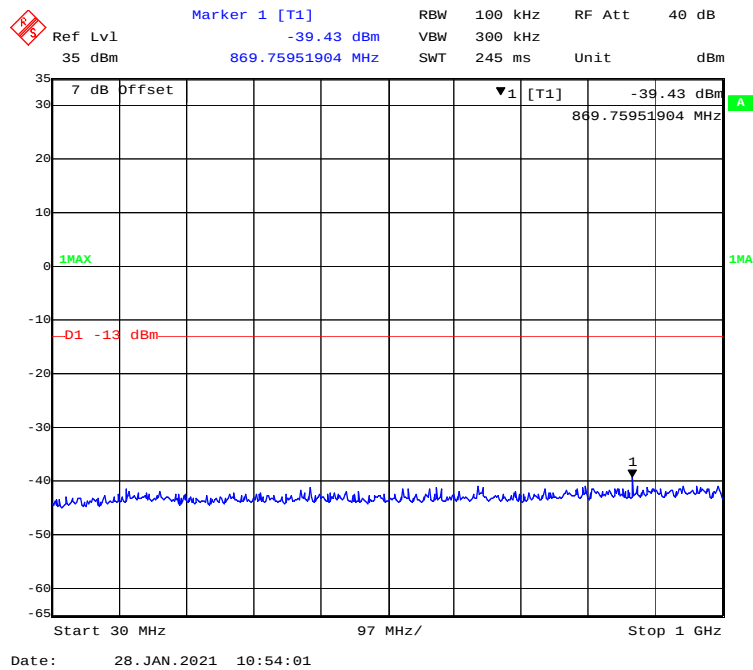
### 30 MHz – 1GHz WCDMA (HSDPA) Mode, Low channel



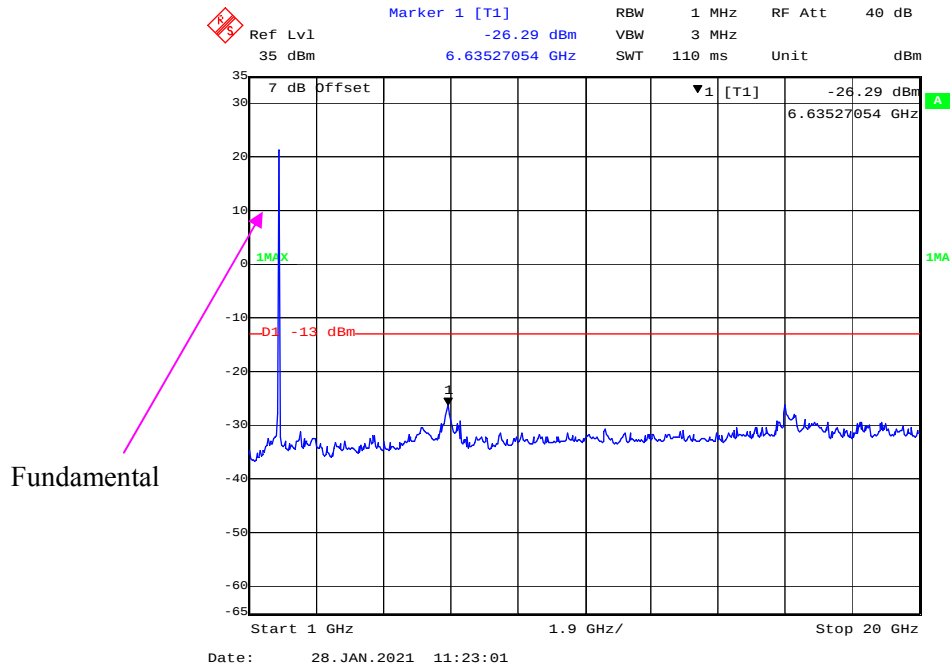
### 1 GHz – 20 GHz WCDMA (HSDPA) Mode, Low channel



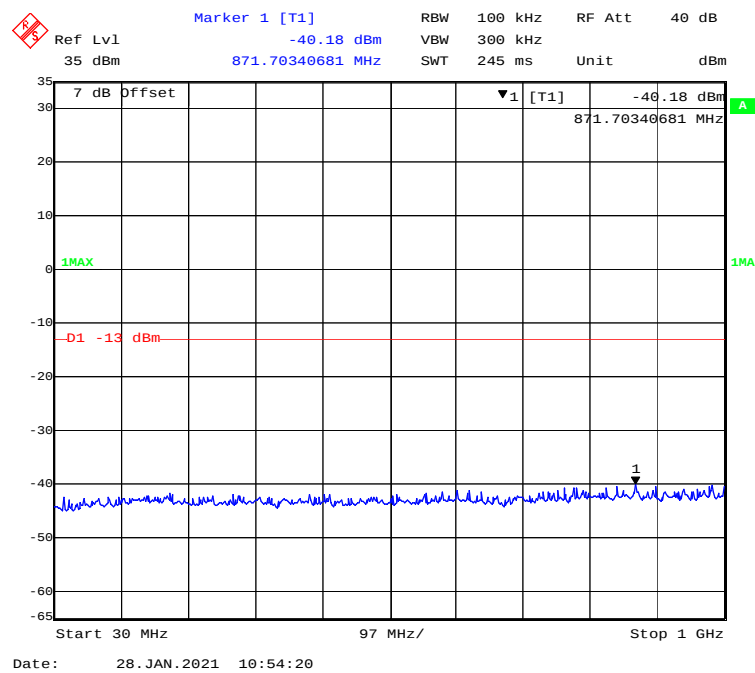
### 30 MHz – 1GHz WCDMA (HSUPA) Mode, Low channel



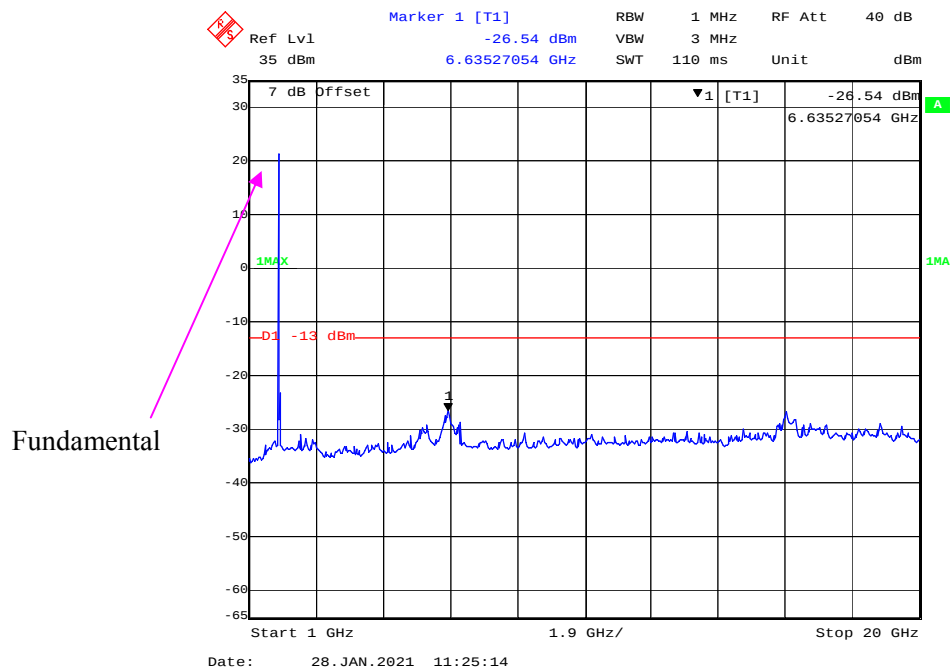
### 1 GHz – 20 GHz WCDMA (HSUPA) Mode, Low channel



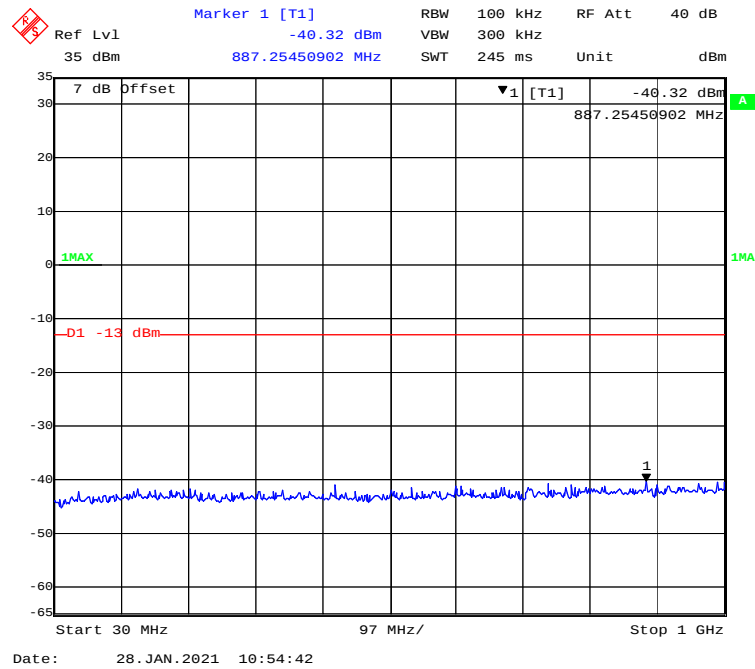
### 30 MHz – 1GHz WCDMA (HSPA+) Mode, Low channel



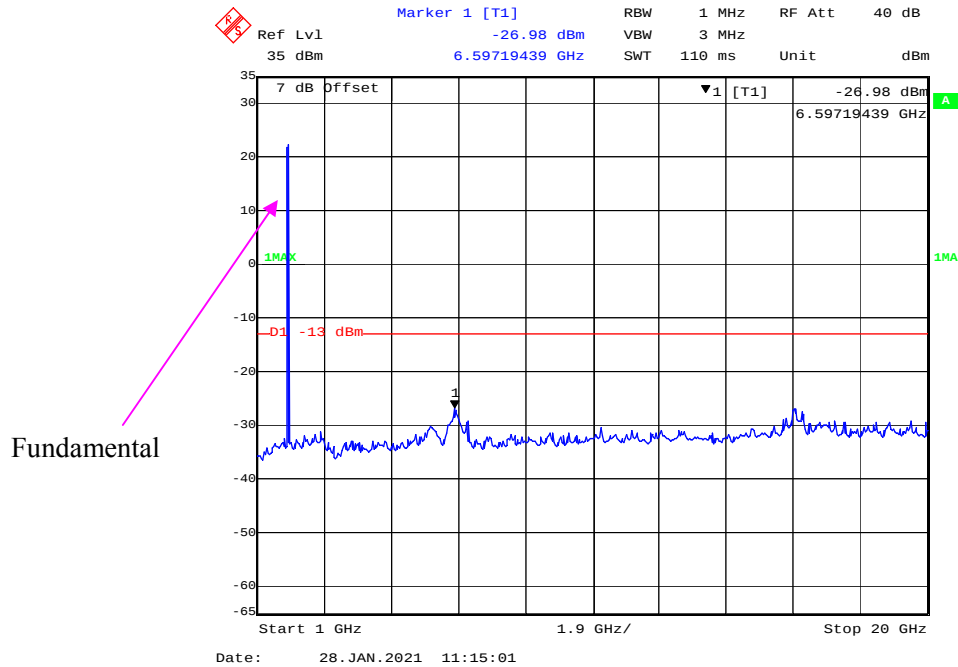
### 1 GHz – 20 GHz WCDMA (HSPA+) Mode, Low channel



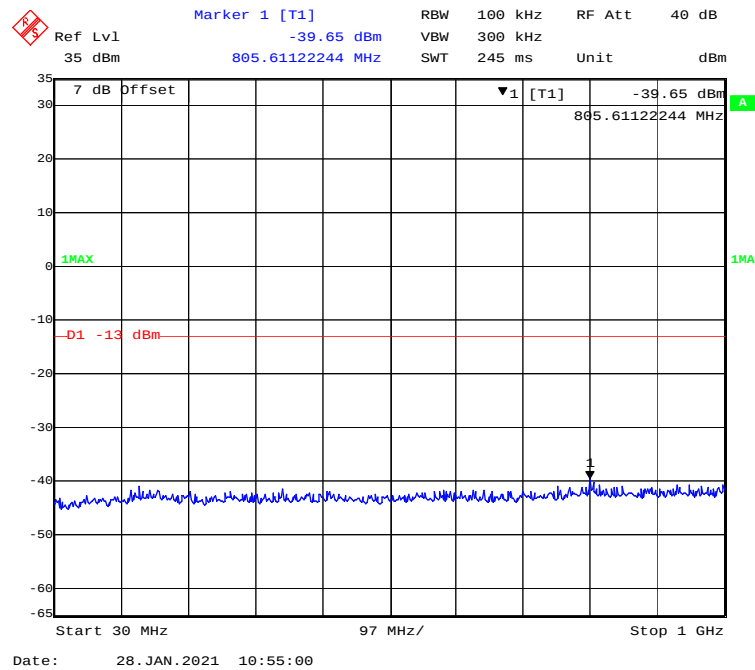
### 30 MHz – 1GHz WCDMA (Rel 99) Mode, Middle channel



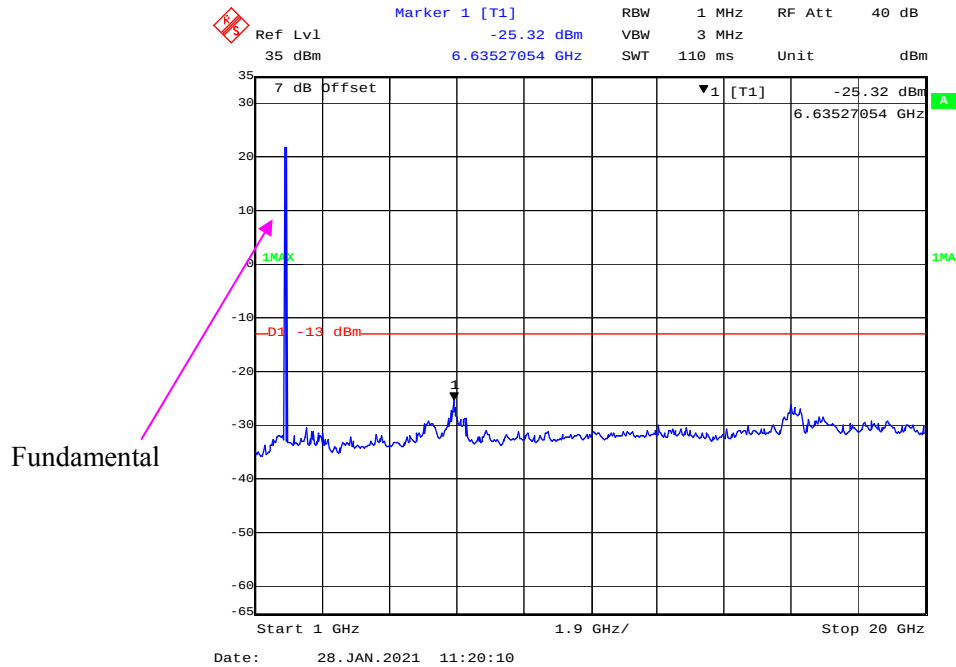
### 1 GHz – 20 GHz WCDMA (Rel 99) Mode, Middle channel



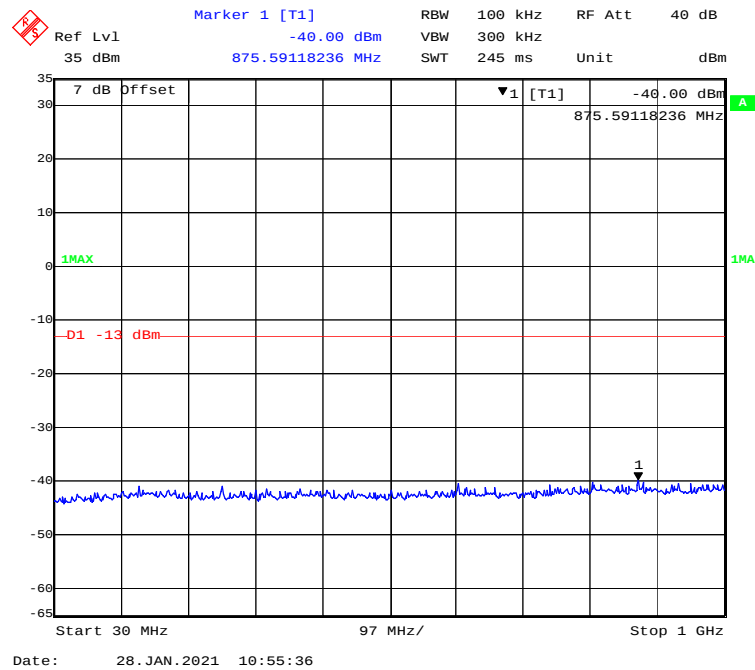
### 30 MHz – 1GHz WCDMA (HSDPA) Mode, Middle channel



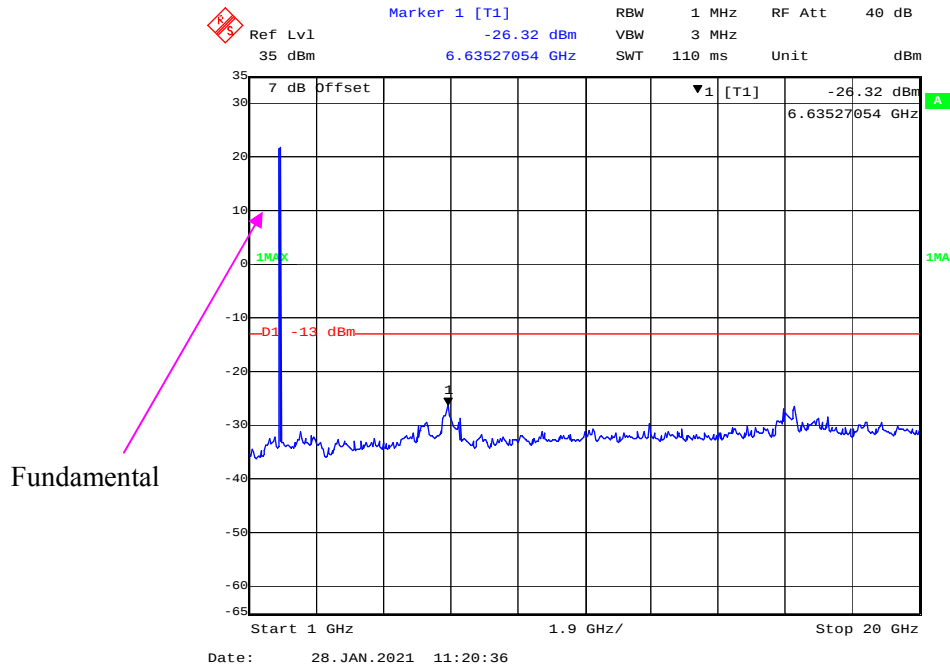
### 1 GHz – 20 GHz WCDMA (HSDPA) Mode, Middle channel



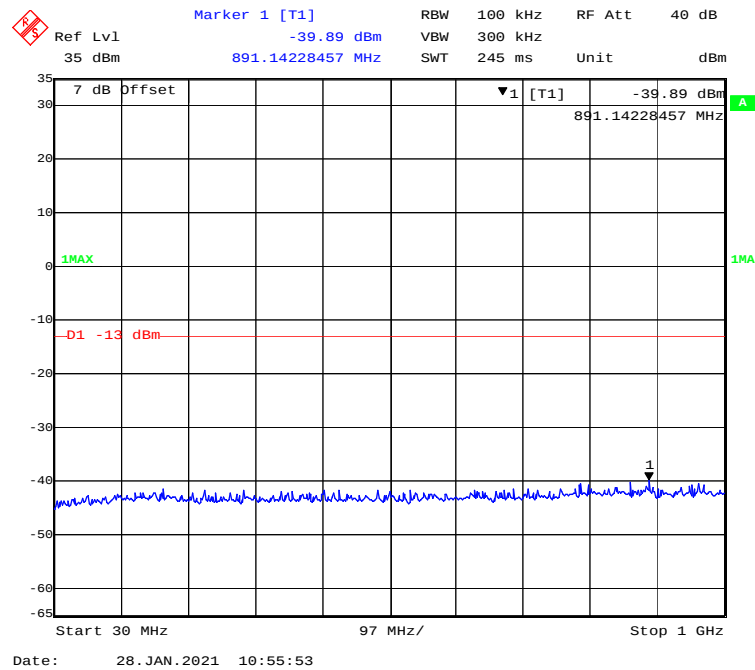
### 30 MHz – 1GHz WCDMA (HSUPA) Mode, Middle channel



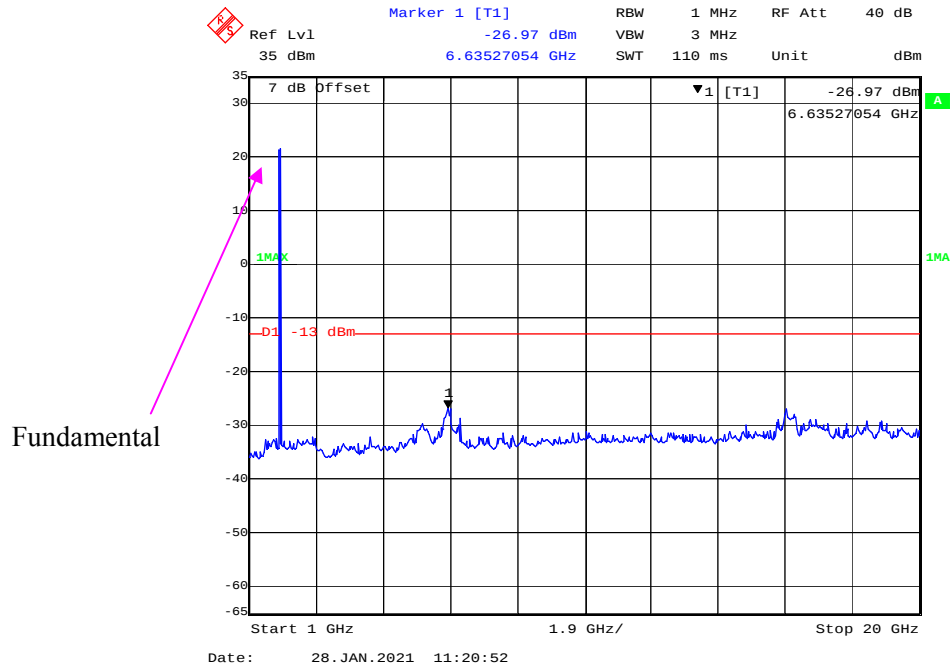
### 1 GHz – 20 GHz WCDMA (HSUPA) Mode, Middle channel



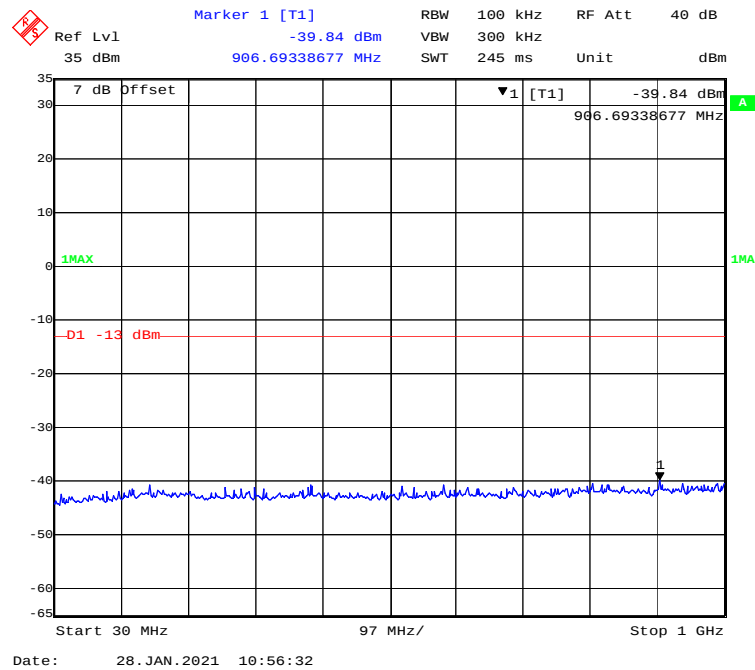
### 30 MHz – 1GHz WCDMA (HSPA+) Mode, Middle channel



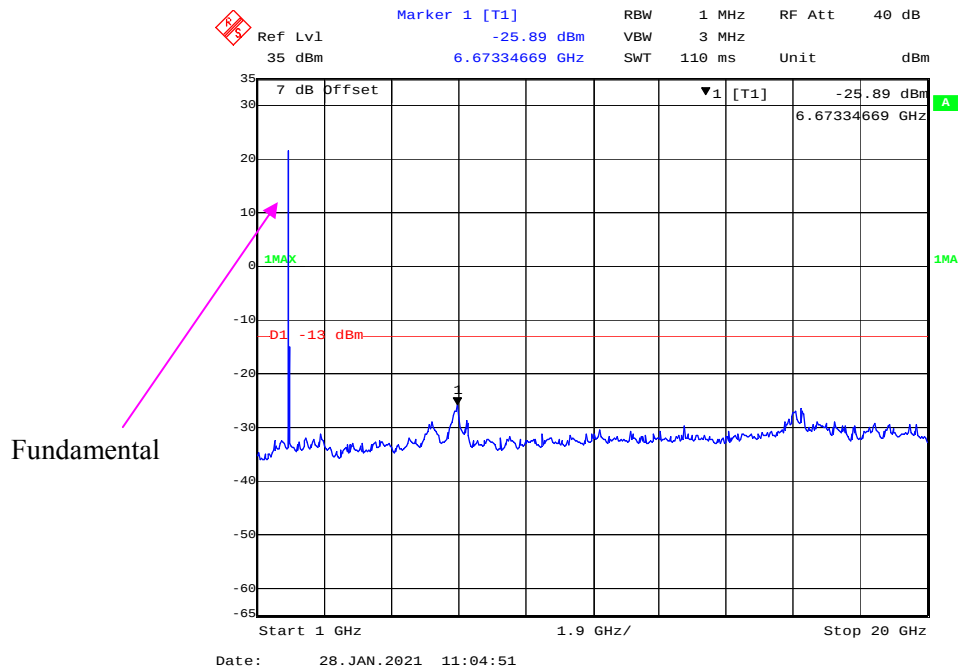
### 1 GHz – 20 GHz WCDMA (HSPA+) Mode, Middle channel

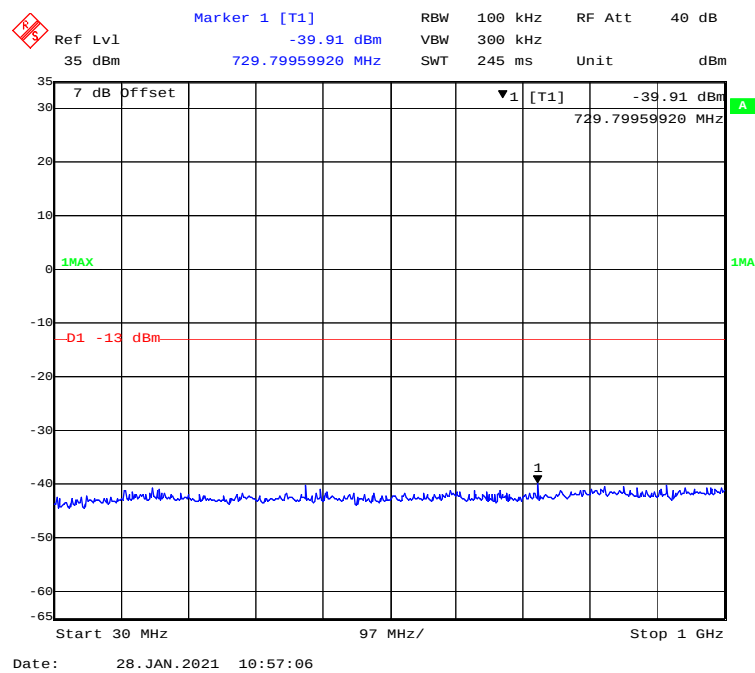
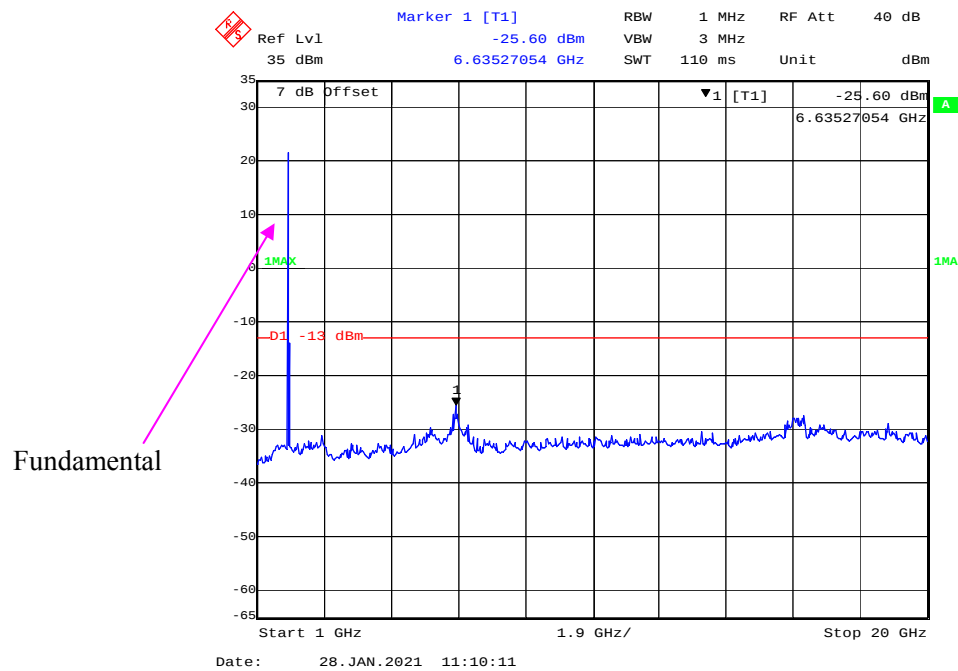


### 30 MHz – 1GHz WCDMA (Rel 99) Mode, High channel

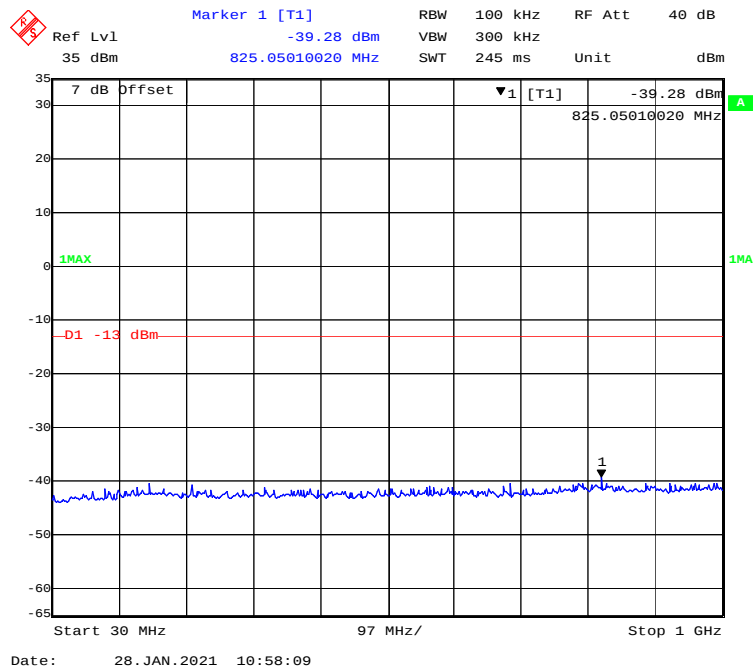


### 1 GHz – 20 GHz WCDMA (Rel 99) Mode, High channel

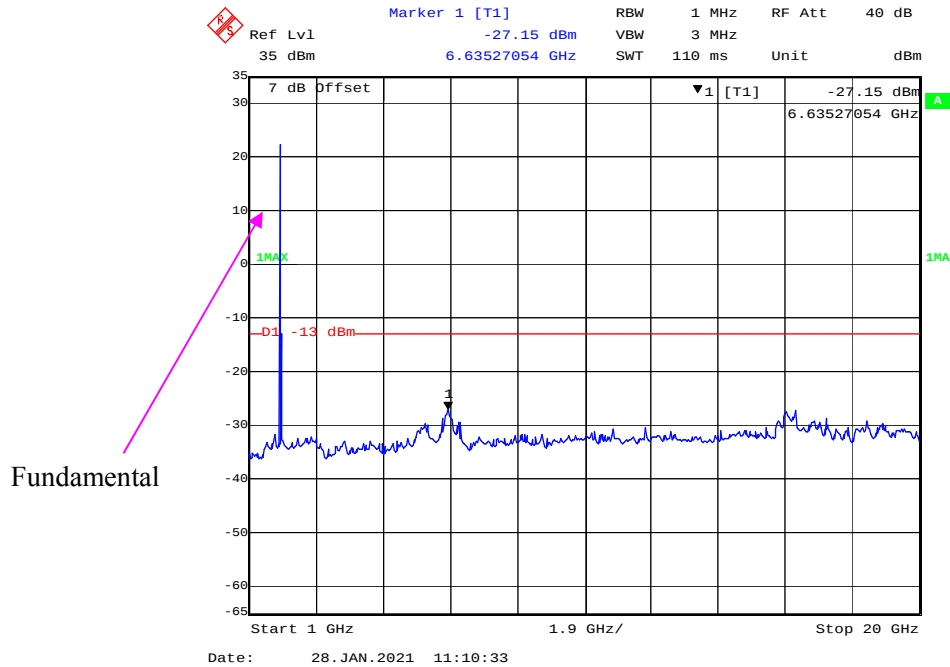


**30 MHz – 1GHz WCDMA (HSDPA) Mode, High channel****1 GHz – 20 GHz WCDMA (HSDPA) Mode, High channel**

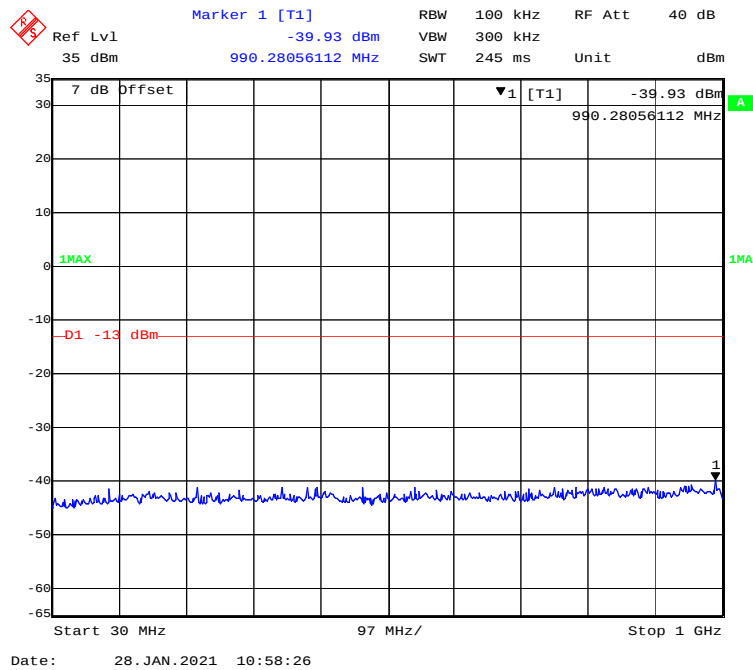
### 30 MHz – 1GHz WCDMA (HSUPA) Mode, High channel



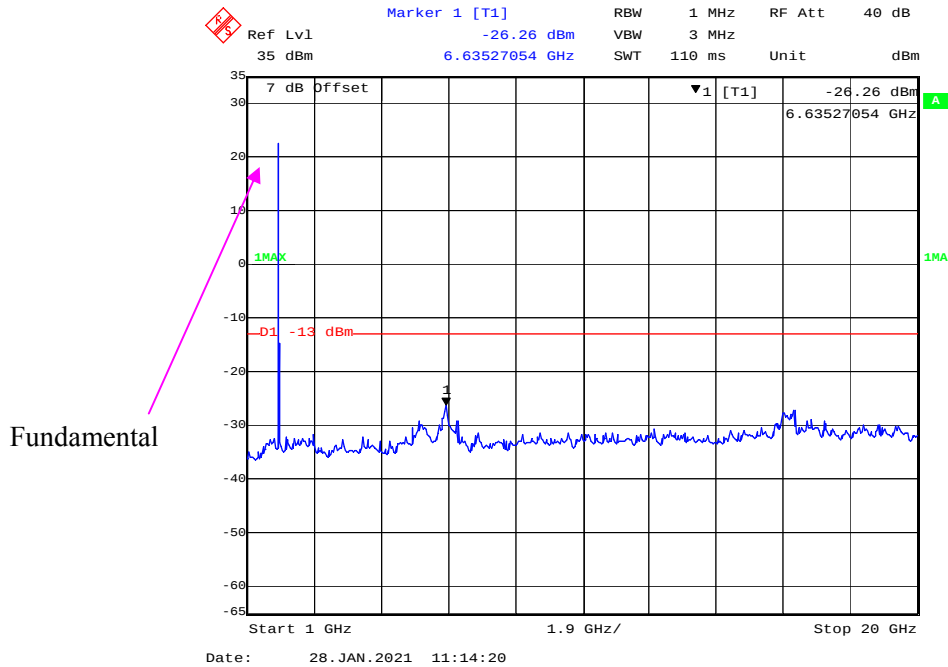
### 1 GHz – 20 GHz WCDMA (HSUPA) Mode, High channel



### 30 MHz – 1GHz WCDMA (HSPA+) Mode, High channel

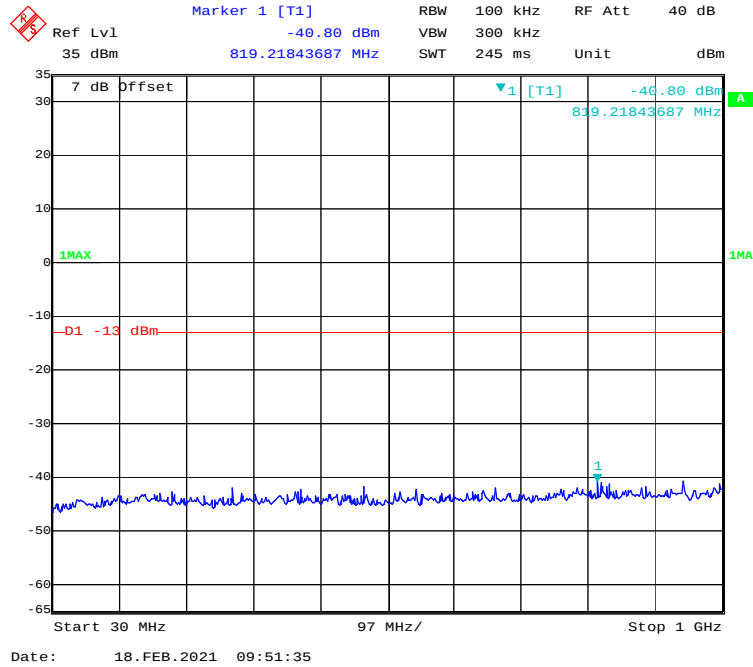


### 1 GHz – 20 GHz WCDMA (HSPA+) Mode, High channel

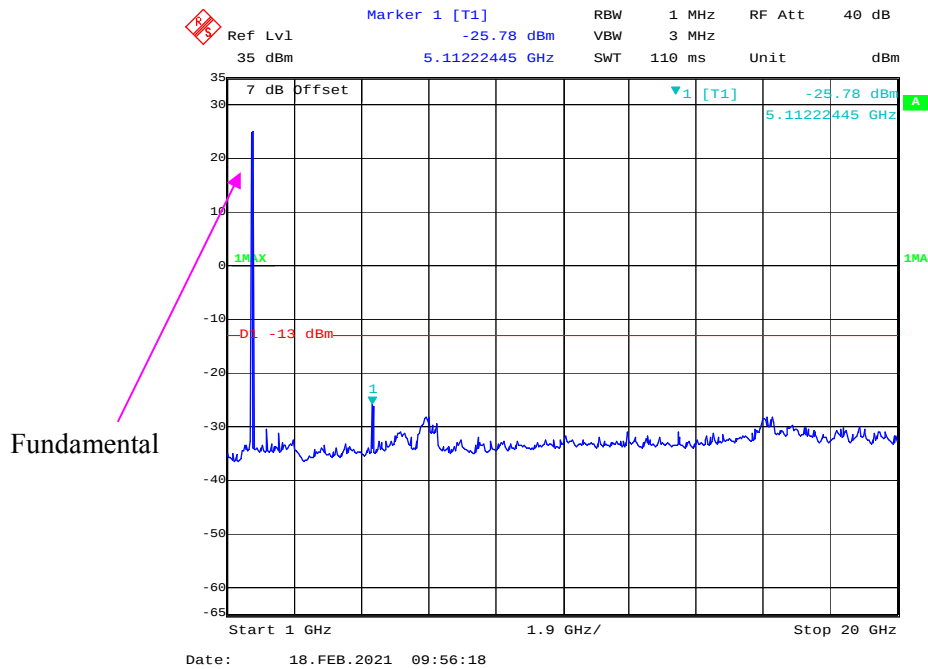


# WCDMA Band IV:

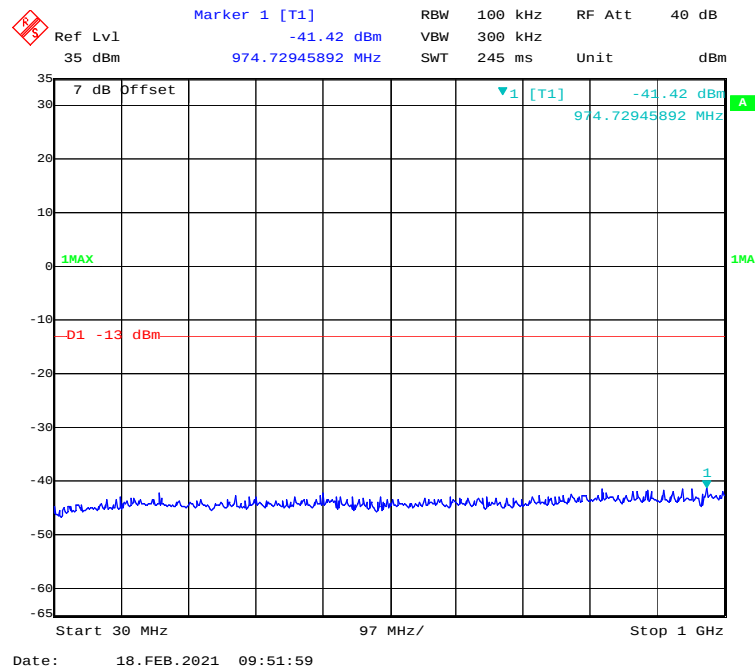
## 30 MHz – 1GHz WCDMA (Rel 99) Mode, Low channel



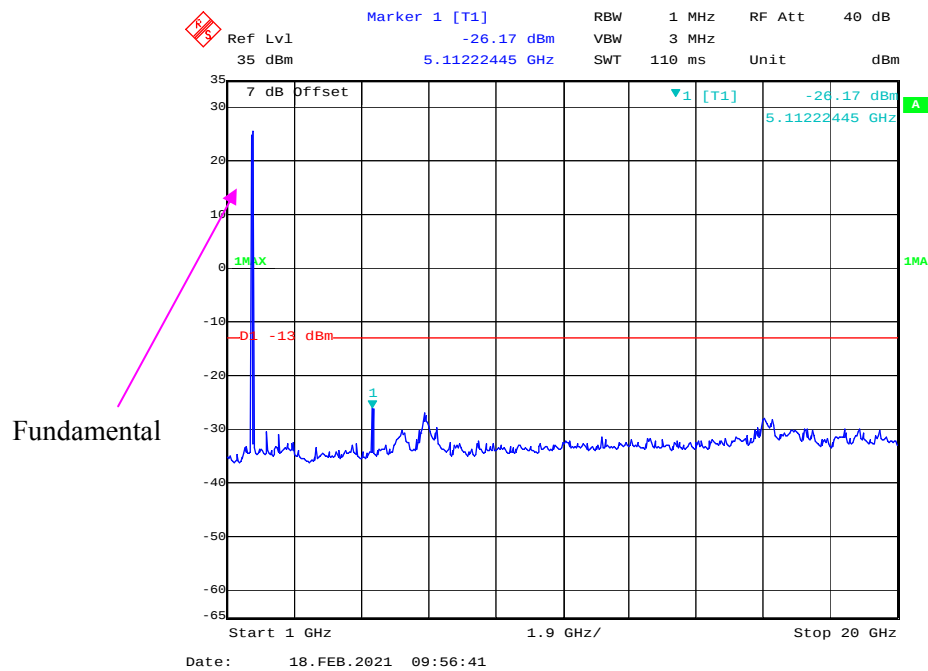
## 1 GHz – 20 GHz WCDMA (Rel 99) Mode, Low channel



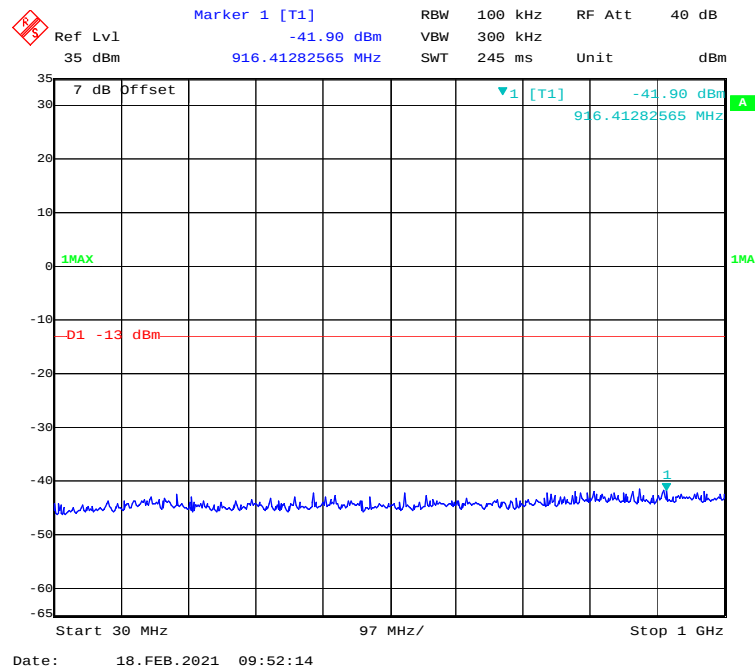
### 30 MHz – 1GHz WCDMA (HSDPA) Mode, Low channel



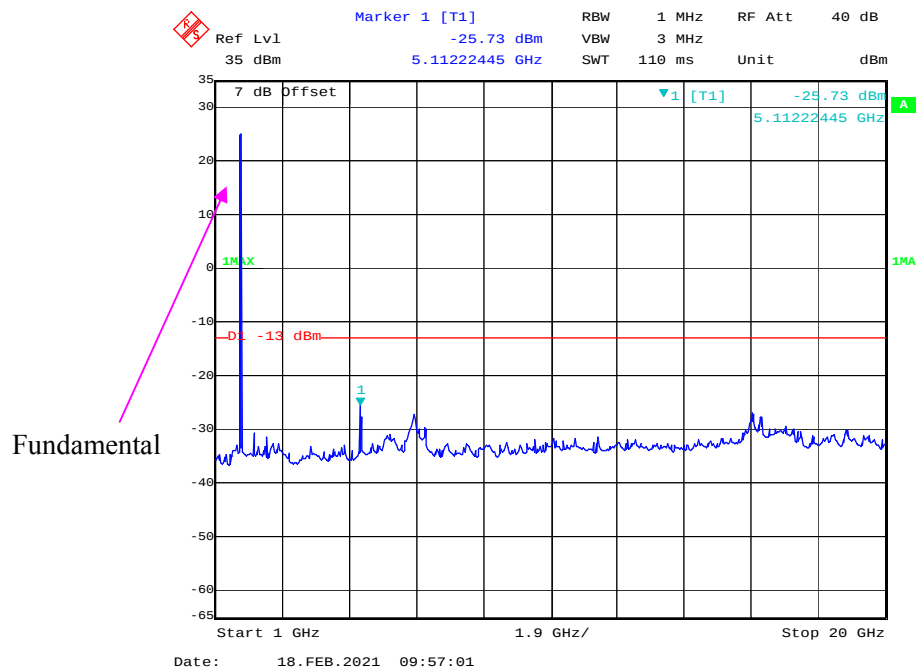
### 1 GHz – 20 GHz WCDMA (HSDPA) Mode, Low channel



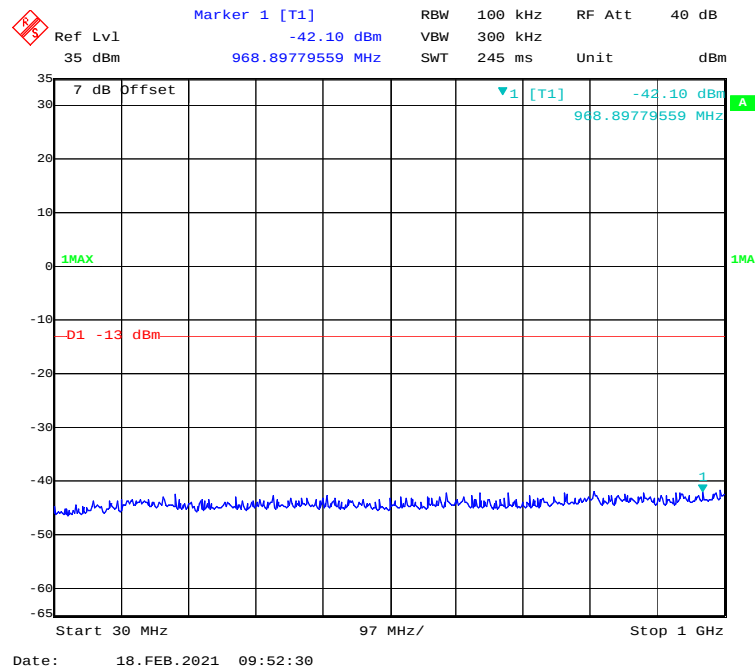
### 30 MHz – 1GHz WCDMA (HSUPA) Mode, Low channel



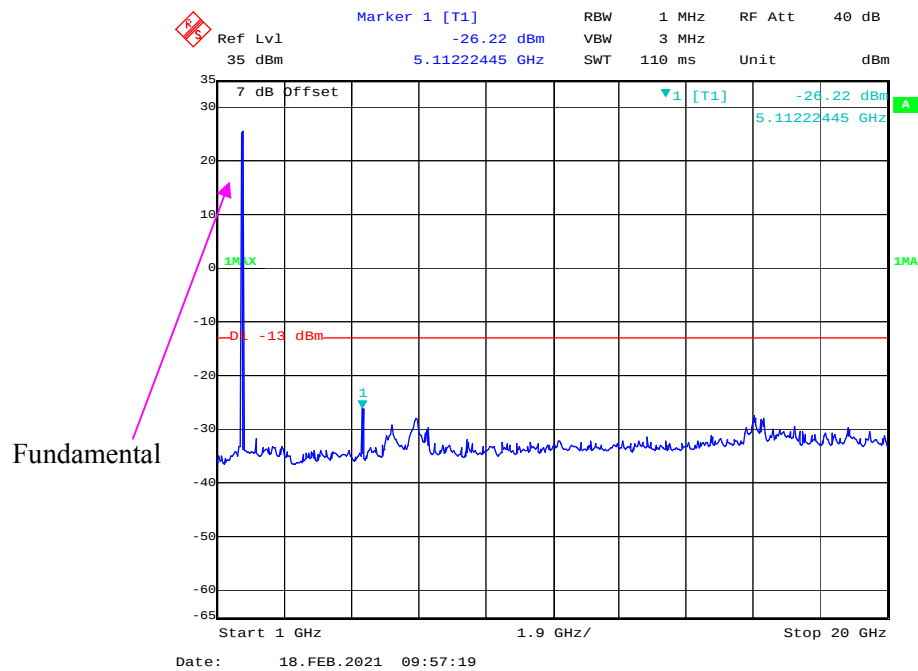
### 1 GHz – 20 GHz WCDMA (HSUPA) Mode, Low channel



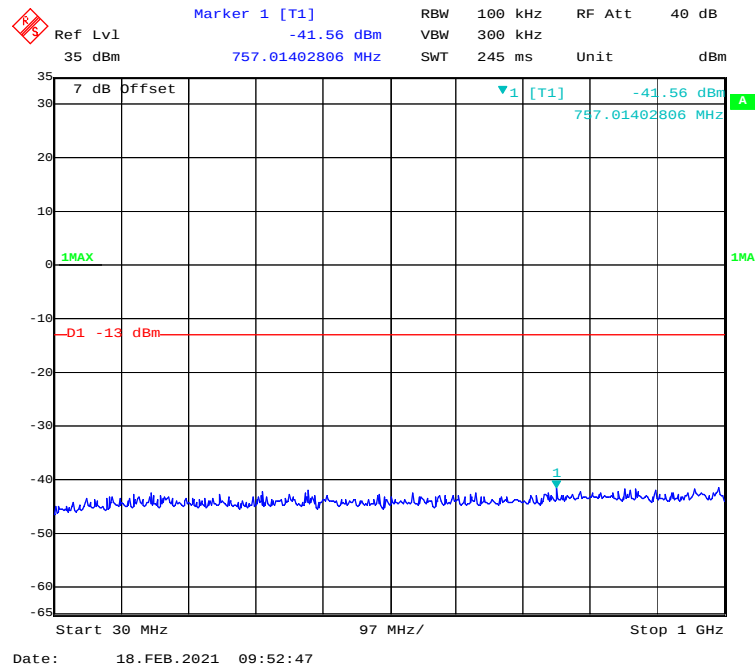
### 30 MHz – 1GHz WCDMA (HSPA+) Mode, Low channel



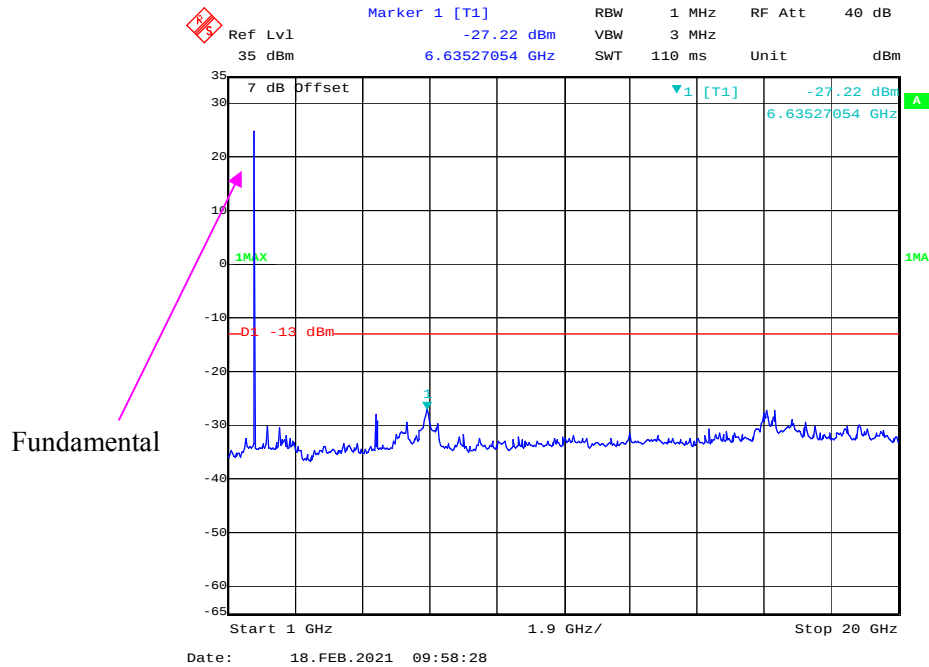
### 1 GHz – 20 GHz WCDMA (HSPA+) Mode, Low channel



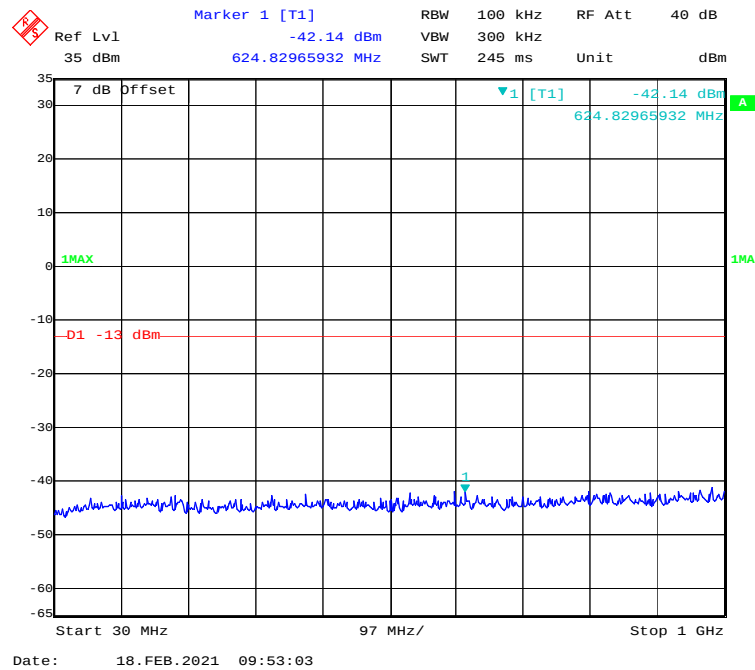
### 30 MHz – 1GHz WCDMA (Rel 99) Mode, Middle channel



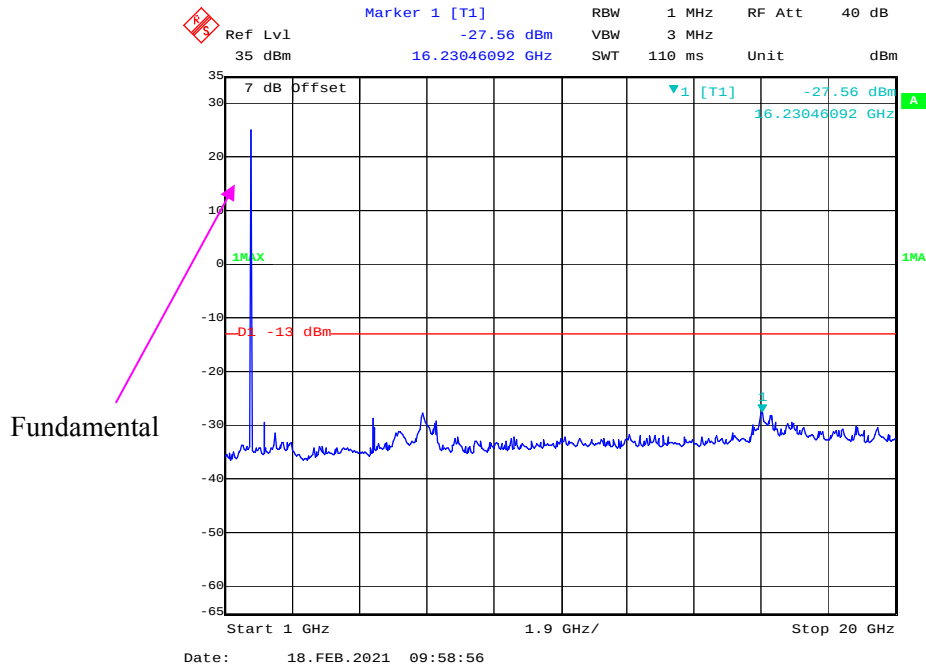
### 1 GHz – 20 GHz WCDMA (Rel 99) Mode, Middle channel



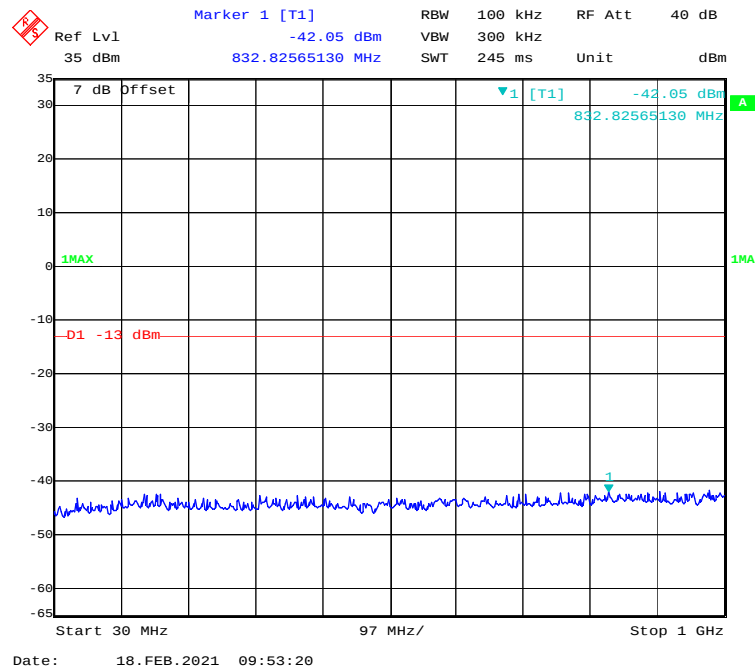
### 30 MHz – 1GHz WCDMA (HSDPA) Mode, Middle channel



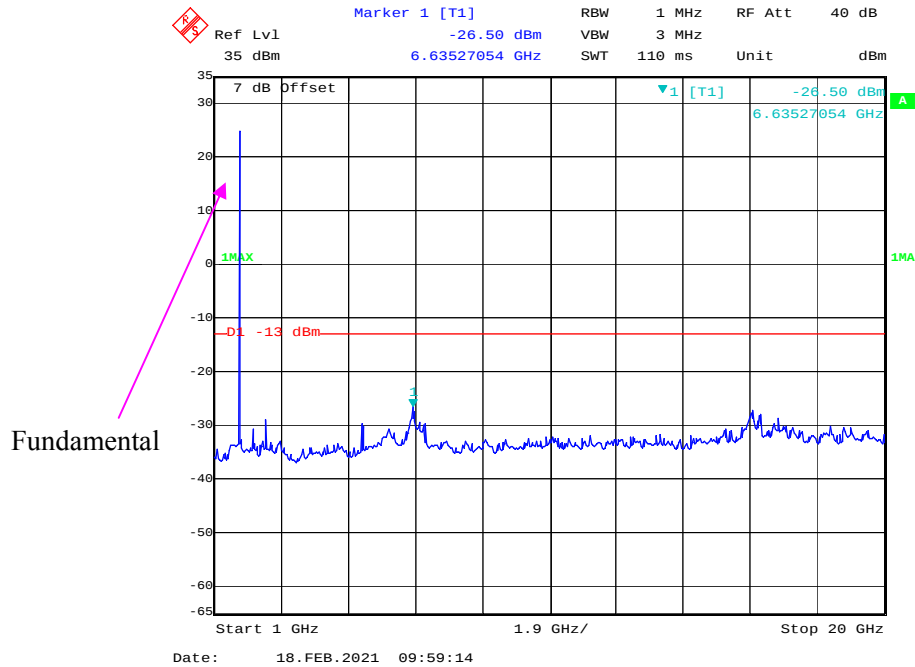
### 1 GHz – 20 GHz WCDMA (HSDPA) Mode, Middle channel



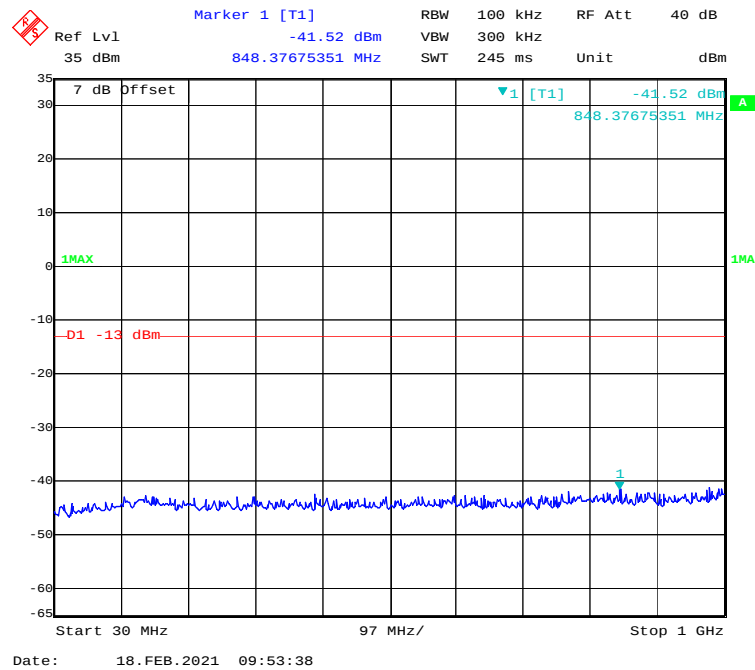
### 30 MHz – 1GHz WCDMA (HSUPA) Mode, Middle channel



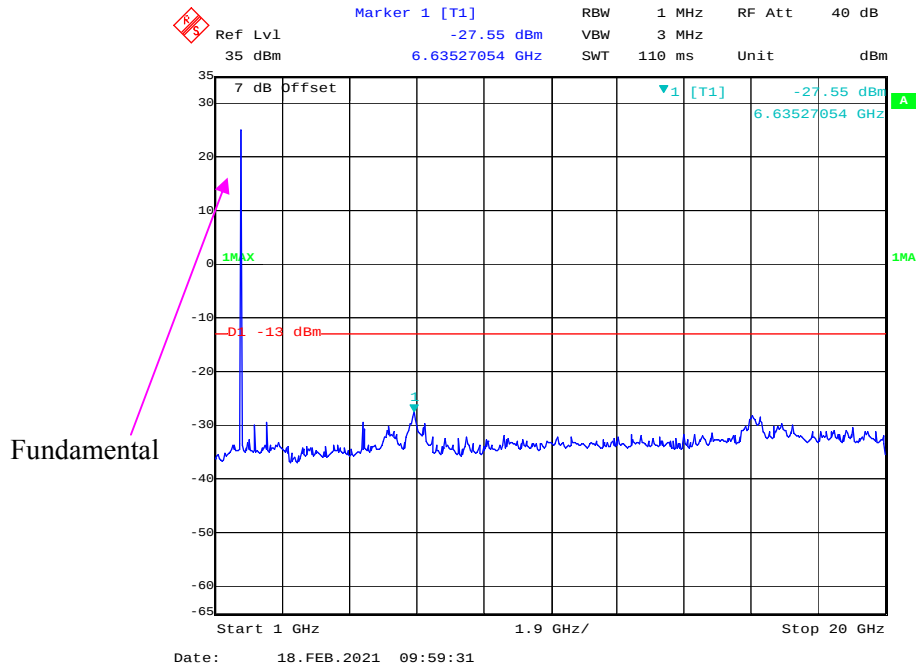
### 1 GHz – 20 GHz WCDMA (HSUPA) Mode, Middle channel



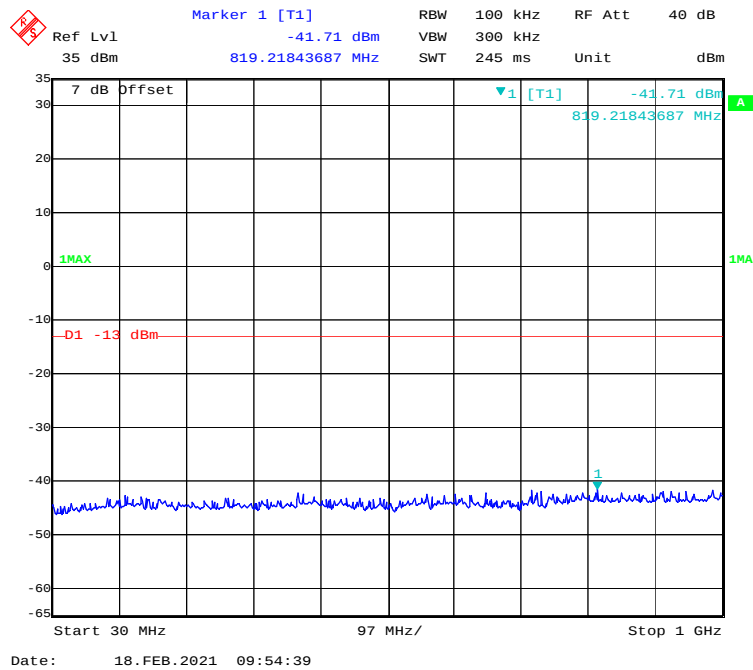
### 30 MHz – 1GHz WCDMA (HSPA+) Mode, Middle channel



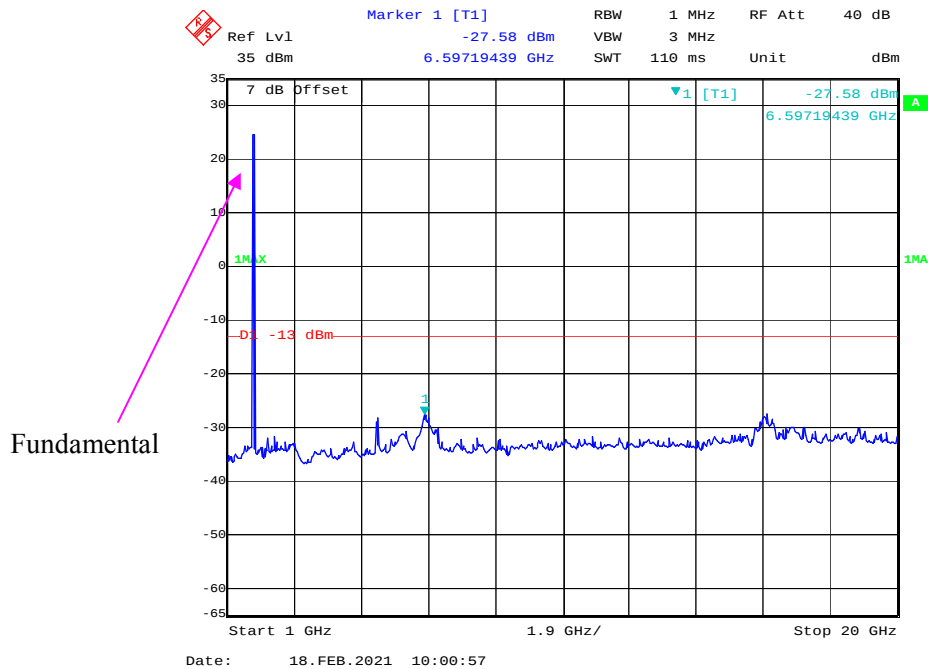
### 1 GHz – 20 GHz WCDMA (HSPA+) Mode, Middle channel



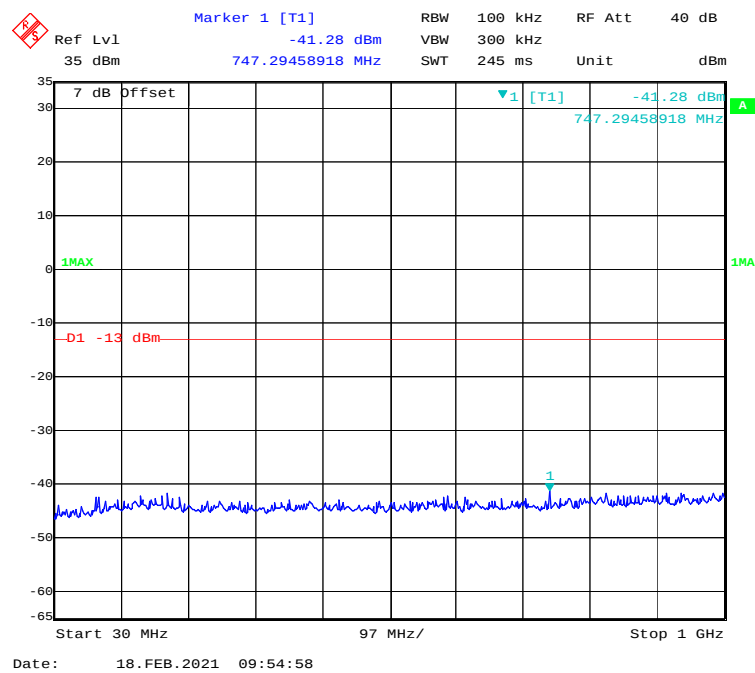
### 30 MHz – 1GHz WCDMA (Rel 99) Mode, High channel



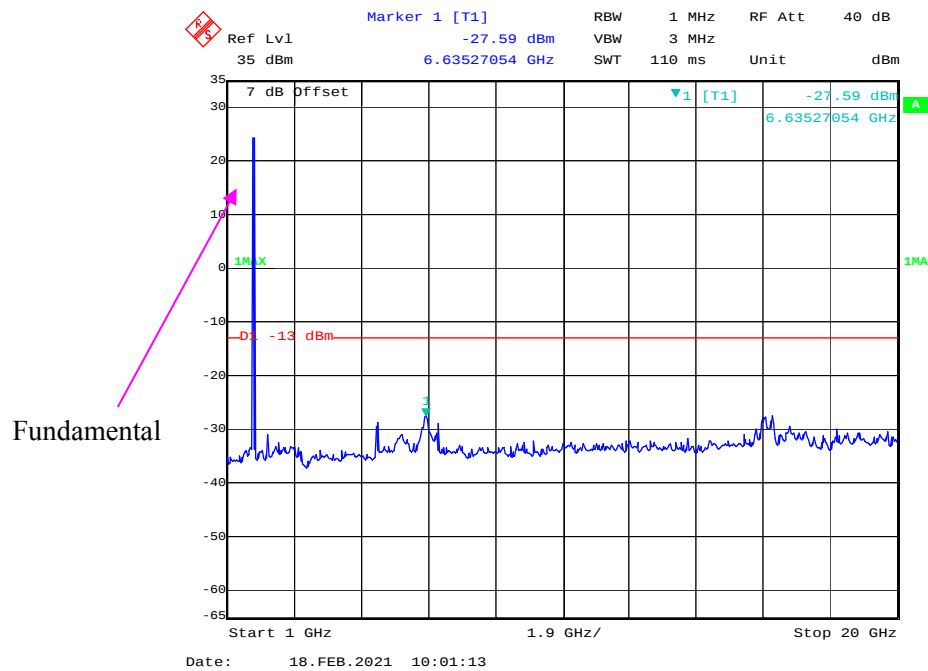
### 1 GHz – 20 GHz WCDMA (Rel 99) Mode, High channel



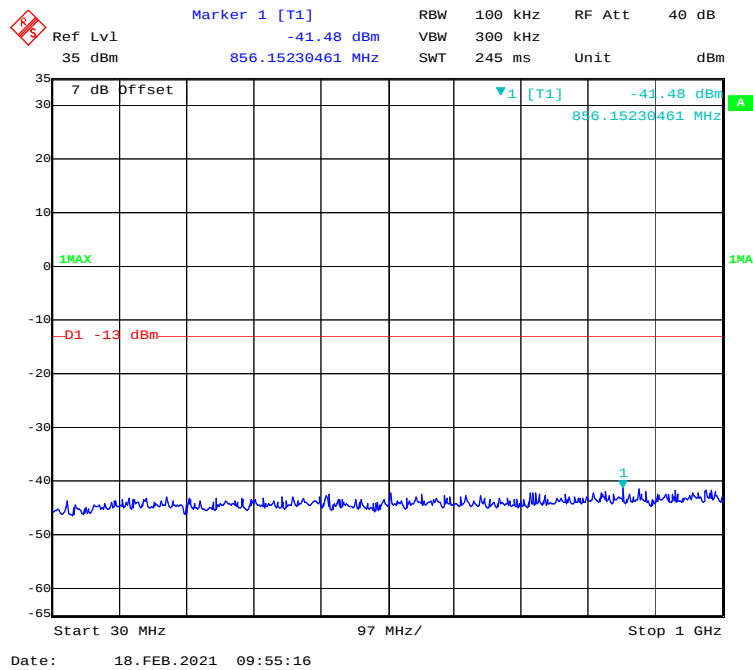
### 30 MHz – 1GHz WCDMA (HSDPA) Mode, High channel



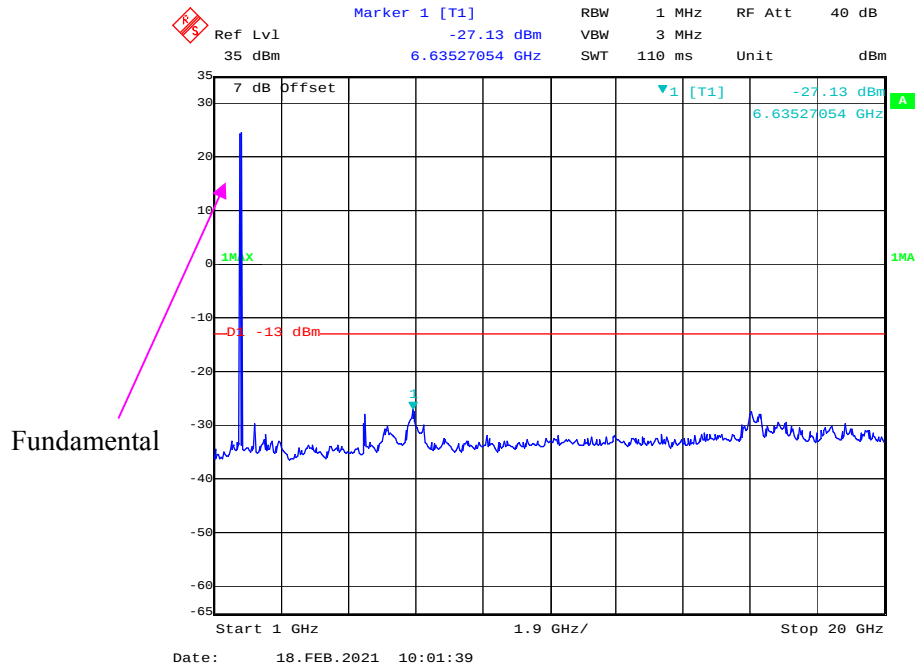
### 1 GHz – 20 GHz WCDMA (HSDPA) Mode, High channel



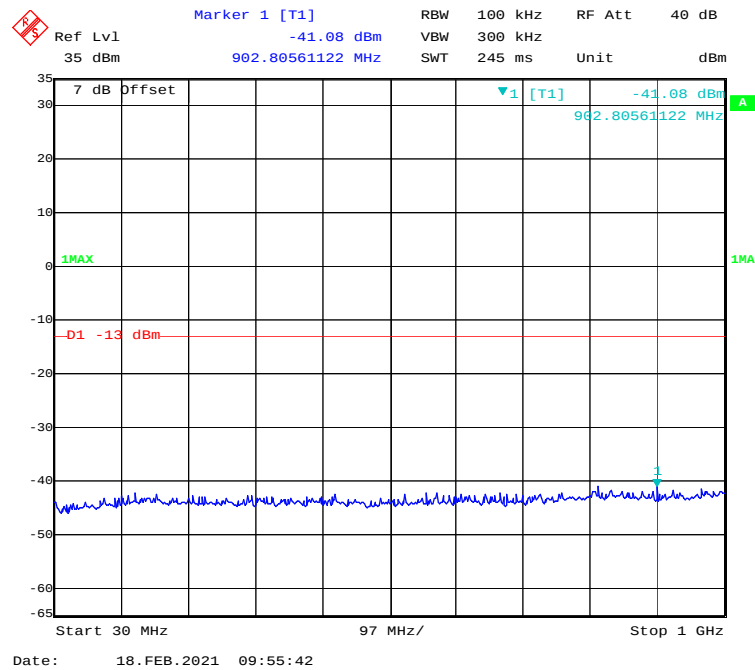
### 30 MHz – 1GHz WCDMA (HSUPA) Mode, High channel



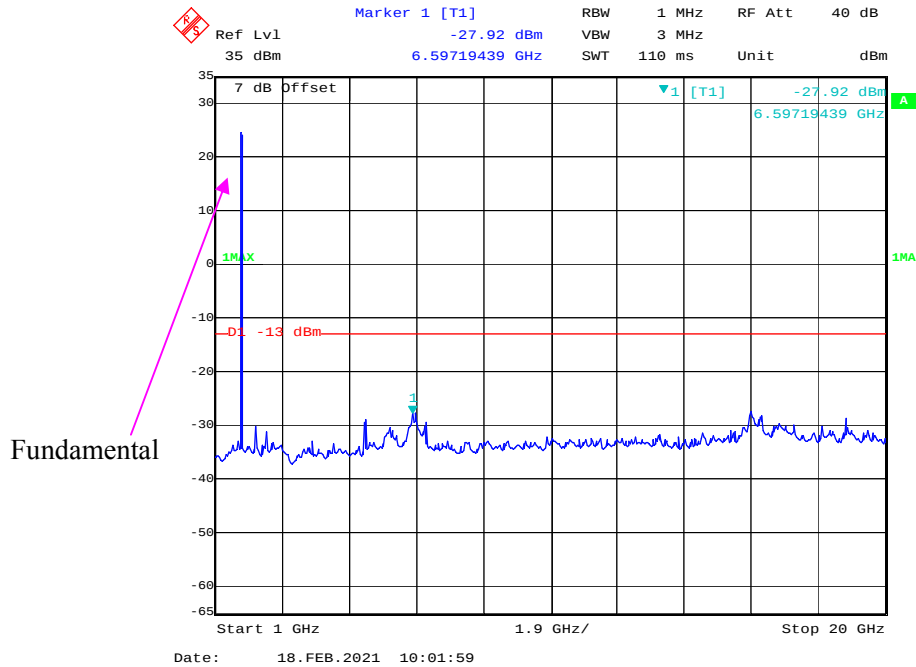
### 1 GHz – 20 GHz WCDMA (HSUPA) Mode, High channel



### 30 MHz – 1GHz WCDMA (HSPA+) Mode, High channel

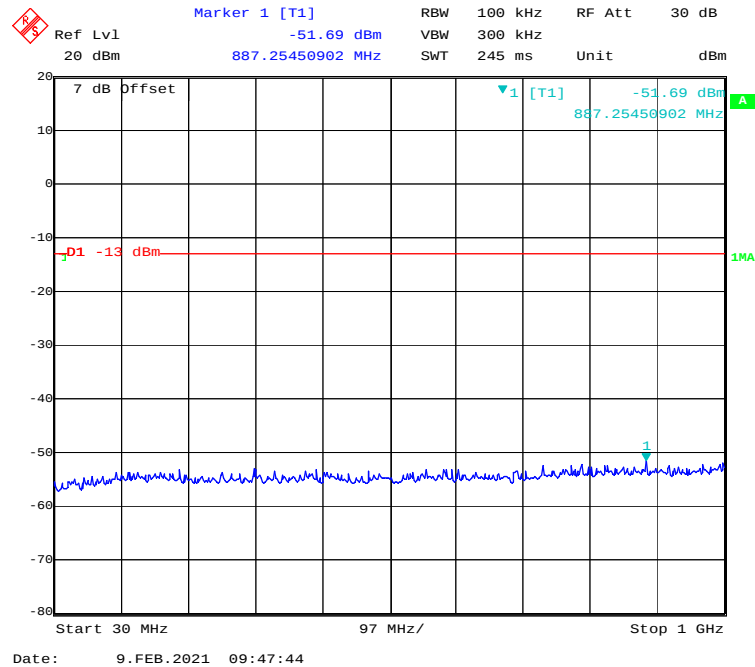


### 1 GHz – 20 GHz WCDMA (HSPA+) Mode, High channel

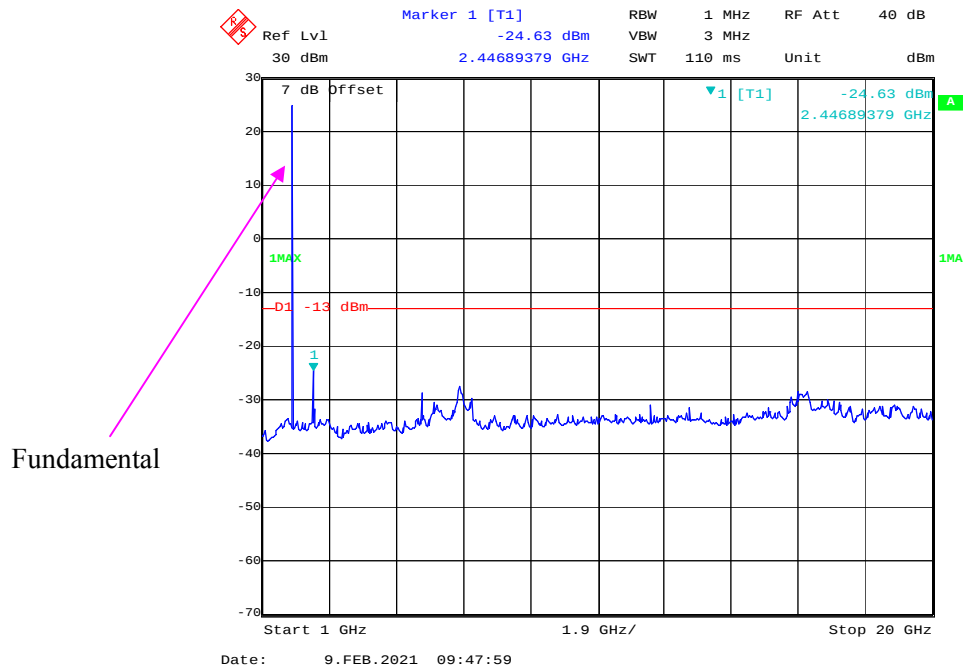


## LTE Band 2:

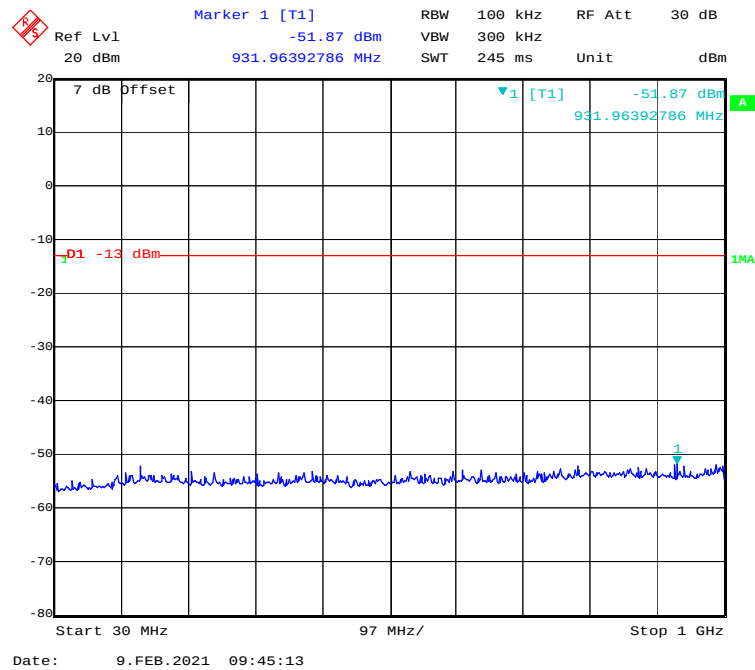
### 30 MHz - 1 GHz (1.4 MHz, QPSK, Low Channel)



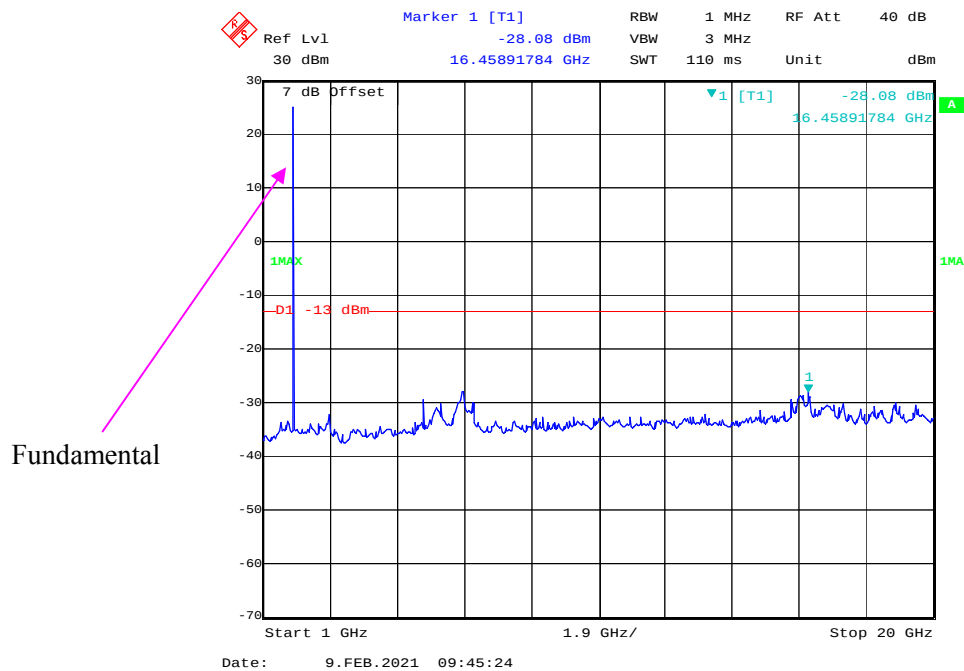
### 1 GHz – 20 GHz (1.4 MHz, QPSK, Low Channel)



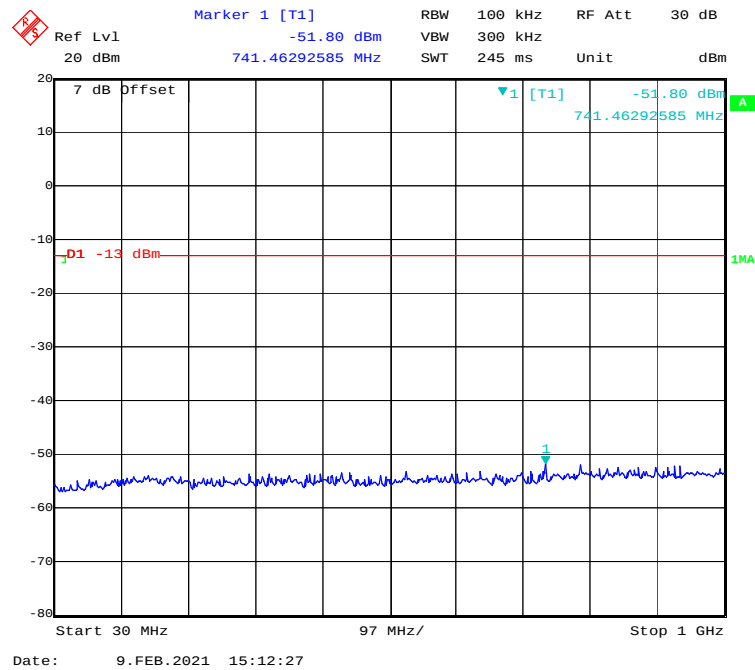
### 30 MHz - 1 GHz (1.4 MHz, 16-QAM, Low Channel)



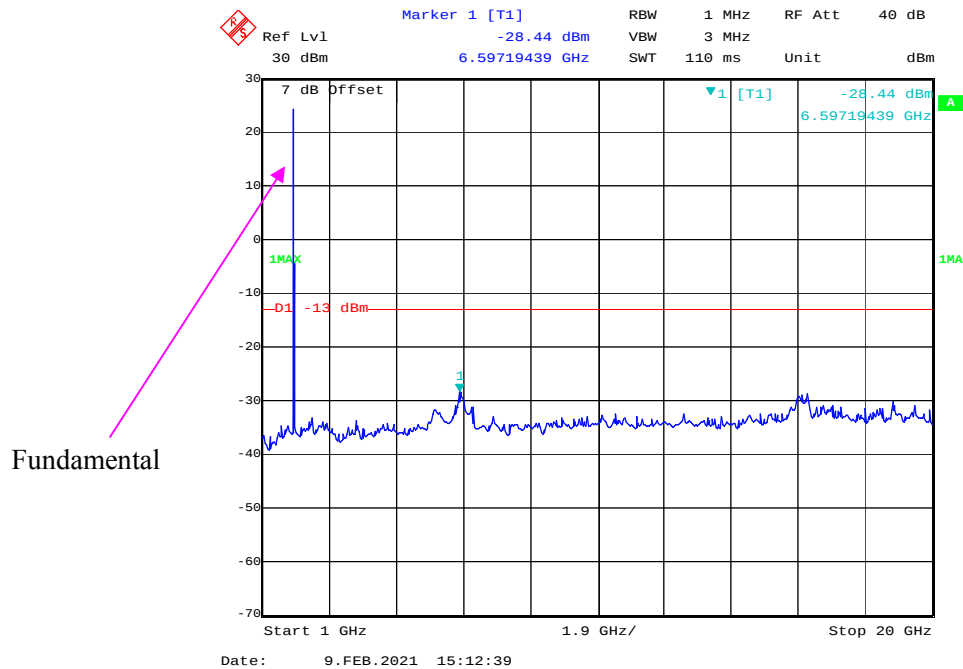
### 1 GHz – 20 GHz (1.4 MHz, 16-QAM, Low Channel)



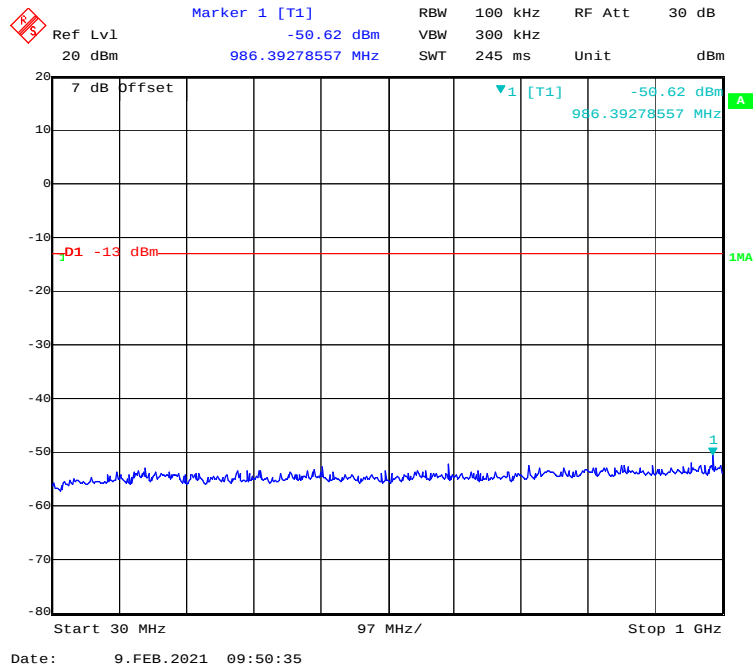
### 30 MHz - 1 GHz (3 MHz, QPSK, Low Channel)



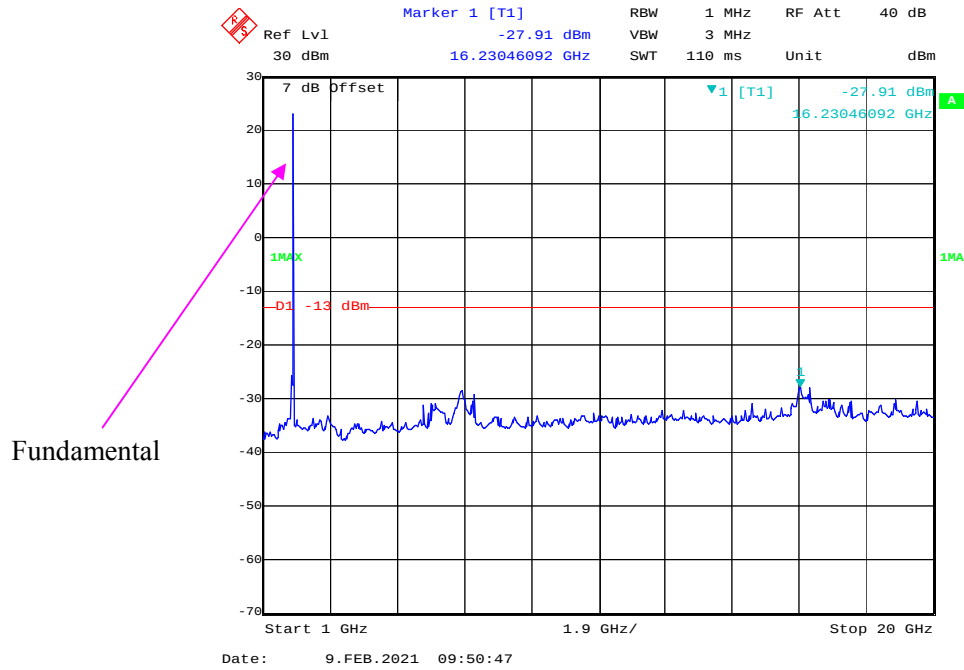
### 1 GHz – 20 GHz (3 MHz, QPSK, Low Channel)



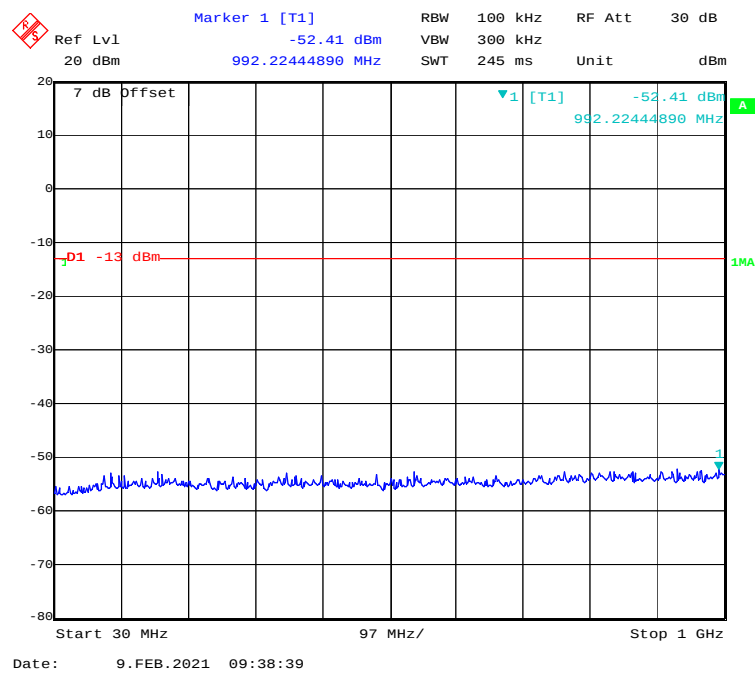
### 30 MHz - 1 GHz (3 MHz, 16-QAM, Low Channel)



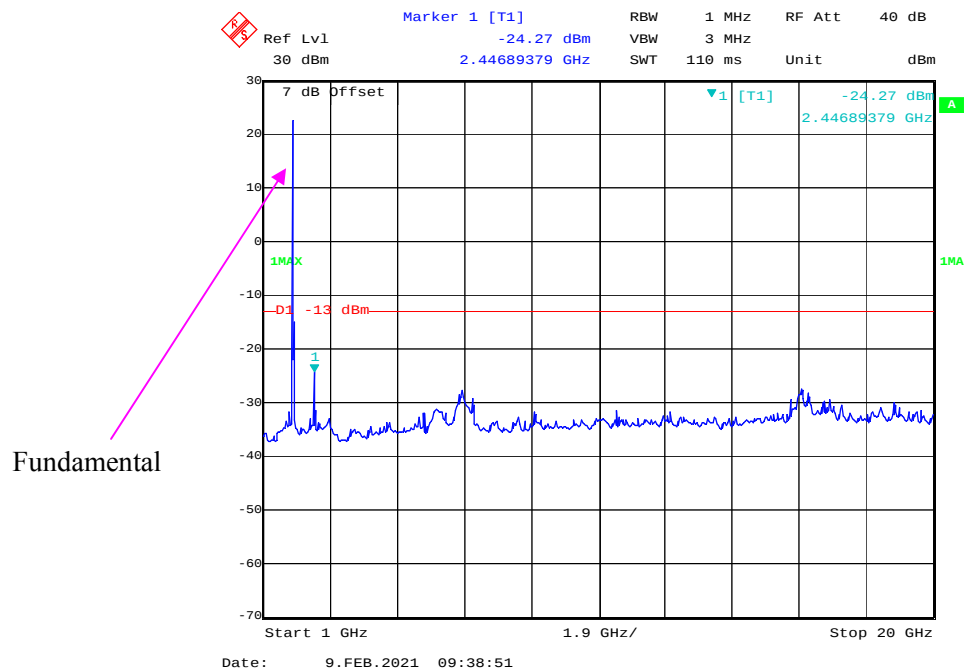
### 1 GHz – 20 GHz (3 MHz, 16-QAM, Low Channel)



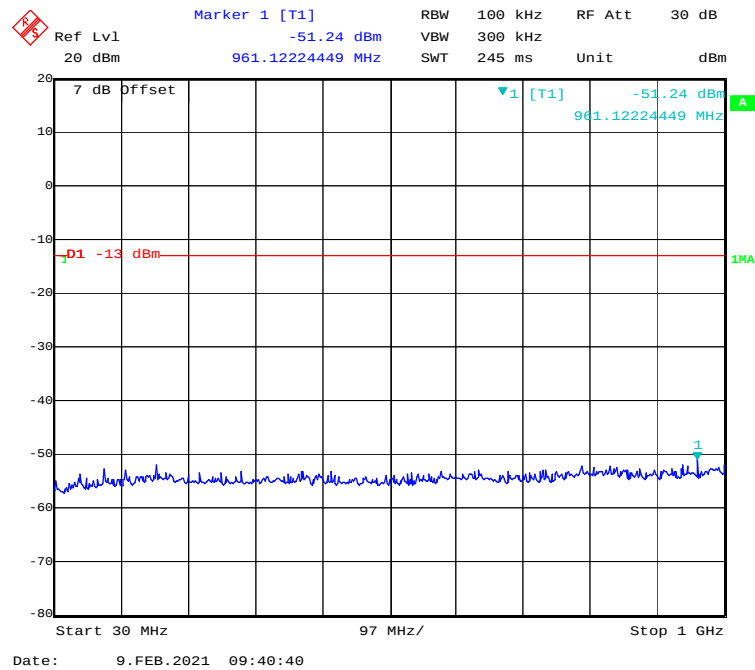
### 30 MHz - 1 GHz (5 MHz, QPSK, Low Channel)



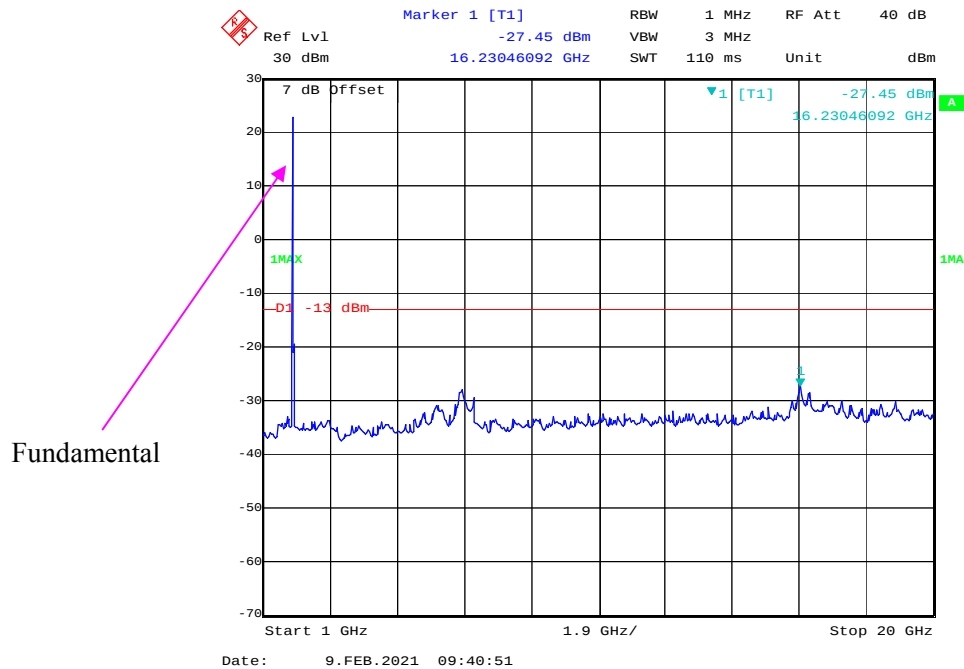
### 1 GHz – 20 GHz (5 MHz, QPSK, Low Channel)



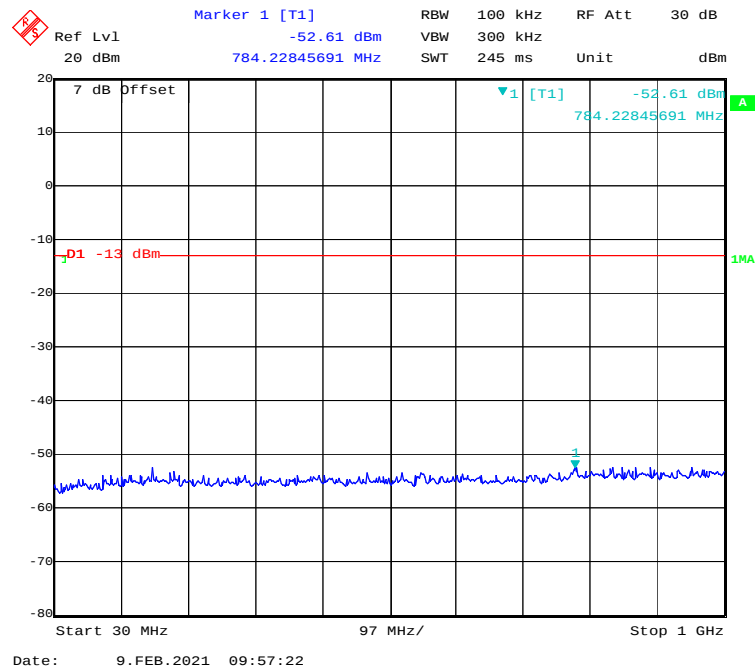
### 30 MHz - 1 GHz (5 MHz, 16-QAM, Low Channel)



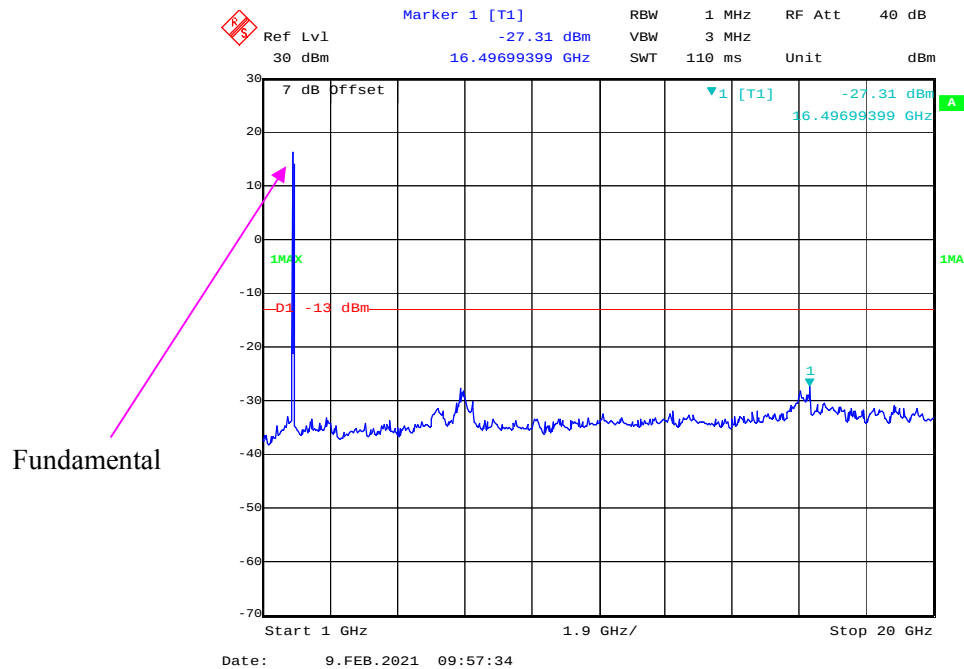
### 1 GHz – 20 GHz (5 MHz, 16-QAM, Low Channel)



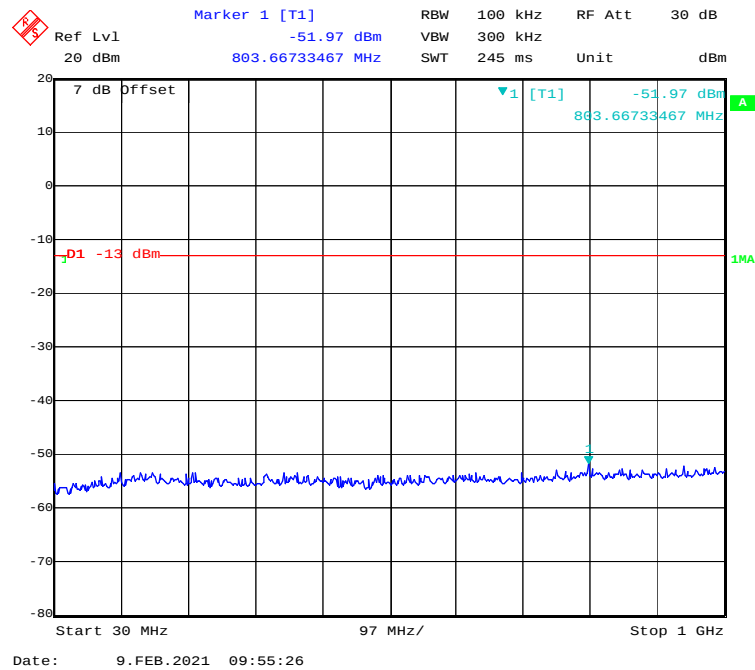
### 30 MHz - 1 GHz (10 MHz, QPSK, Low Channel)



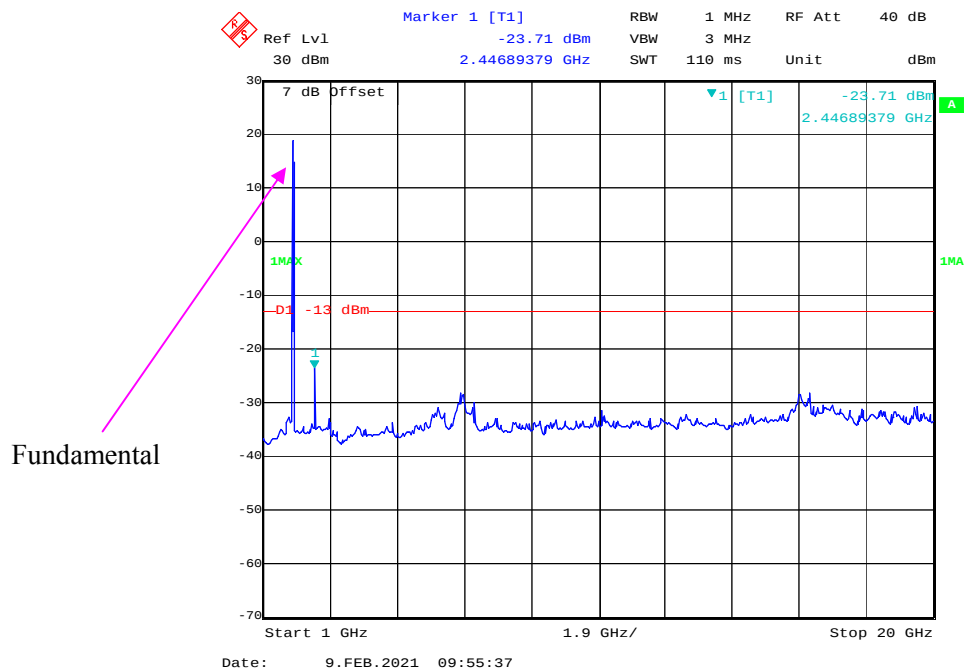
### 1 GHz – 20 GHz (10 MHz, QPSK, Low Channel)



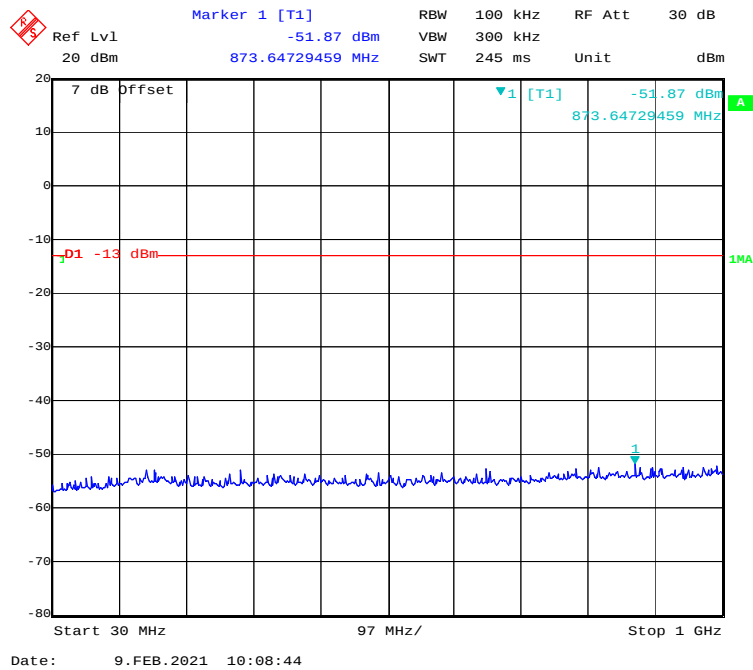
### 30 MHz - 1 GHz (10 MHz, 16-QAM, Low Channel)



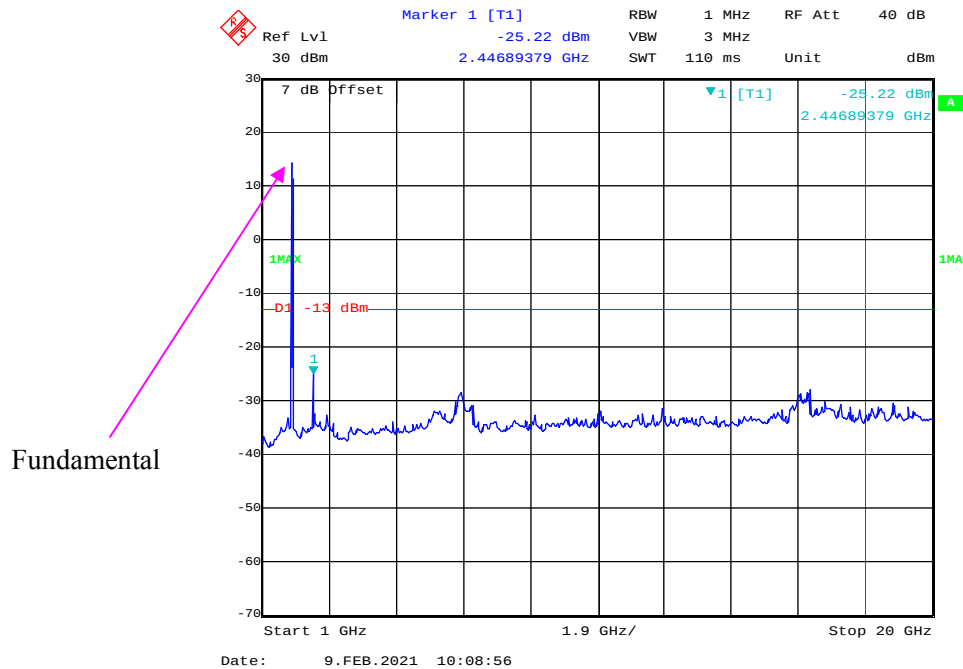
### 1 GHz – 20 GHz (10 MHz, 16-QAM, Low Channel)



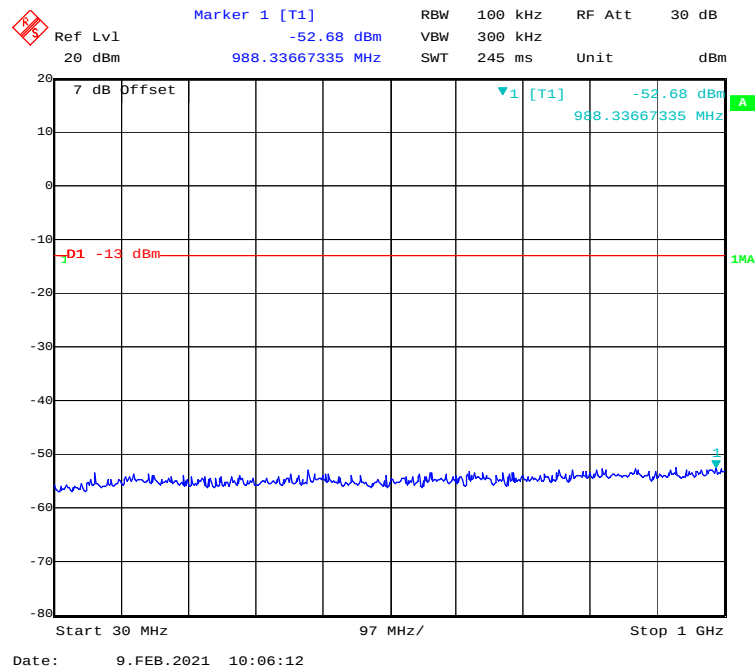
### 30 MHz - 1 GHz (15 MHz, QPSK, Low Channel)



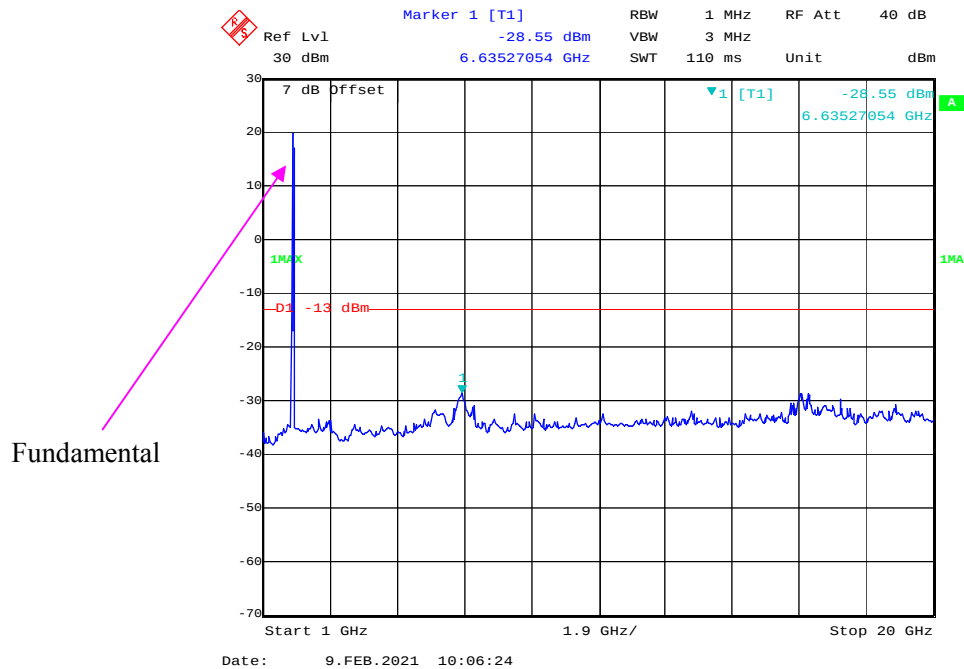
### 1 GHz – 20 GHz (15 MHz, QPSK, Low Channel)



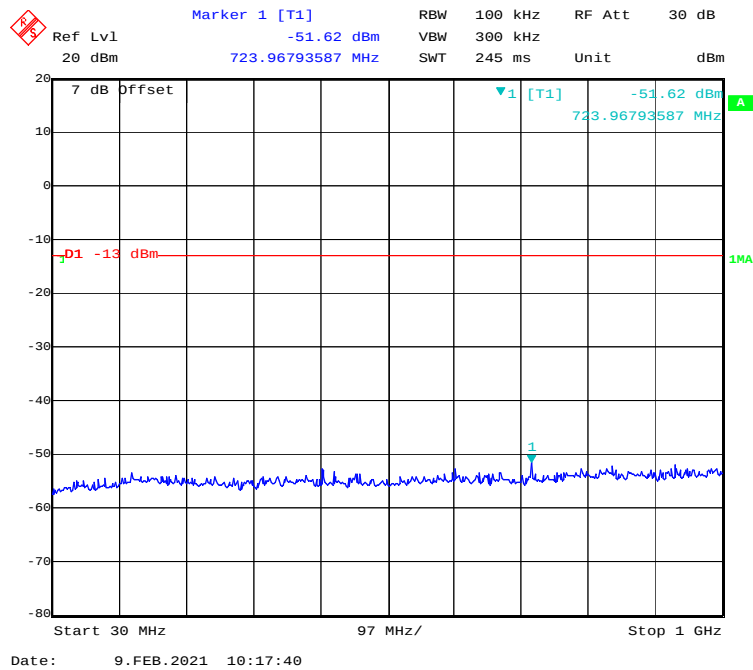
### 30 MHz - 1 GHz (15 MHz, 16-QAM, Low Channel)



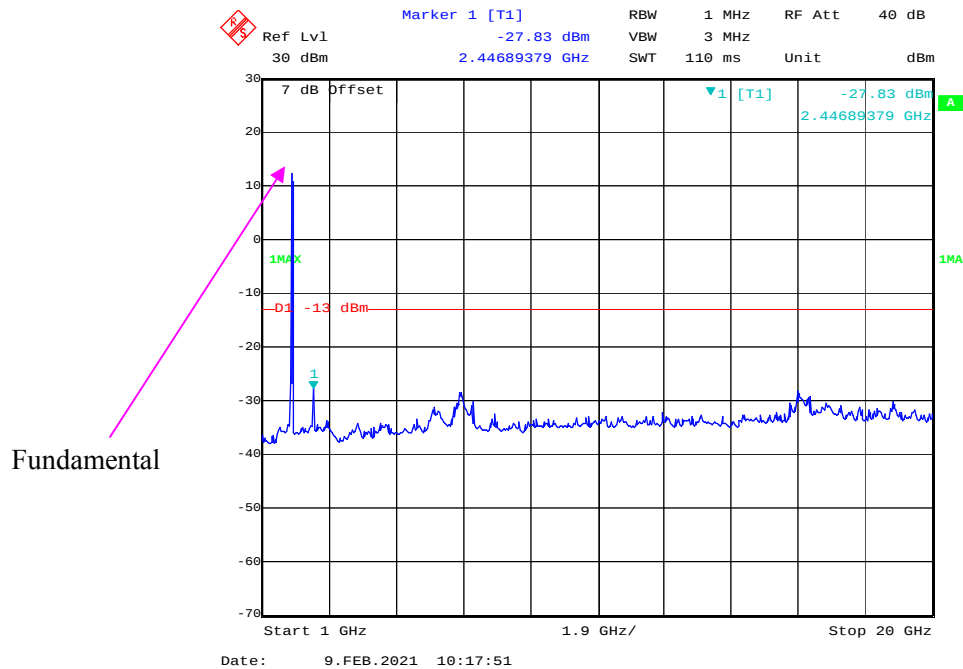
### 1 GHz – 20 GHz (15 MHz, 16-QAM, Low Channel)



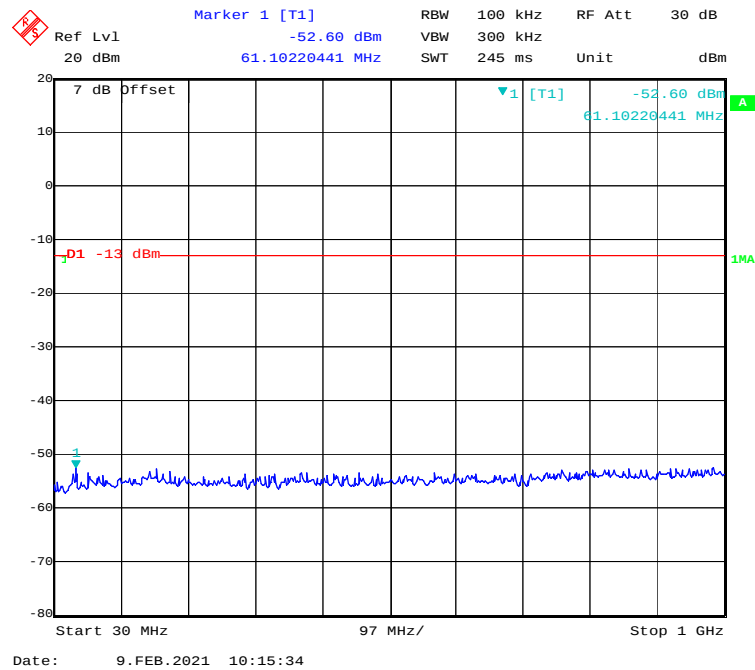
### 30 MHz - 1 GHz (20 MHz, QPSK, Low Channel)



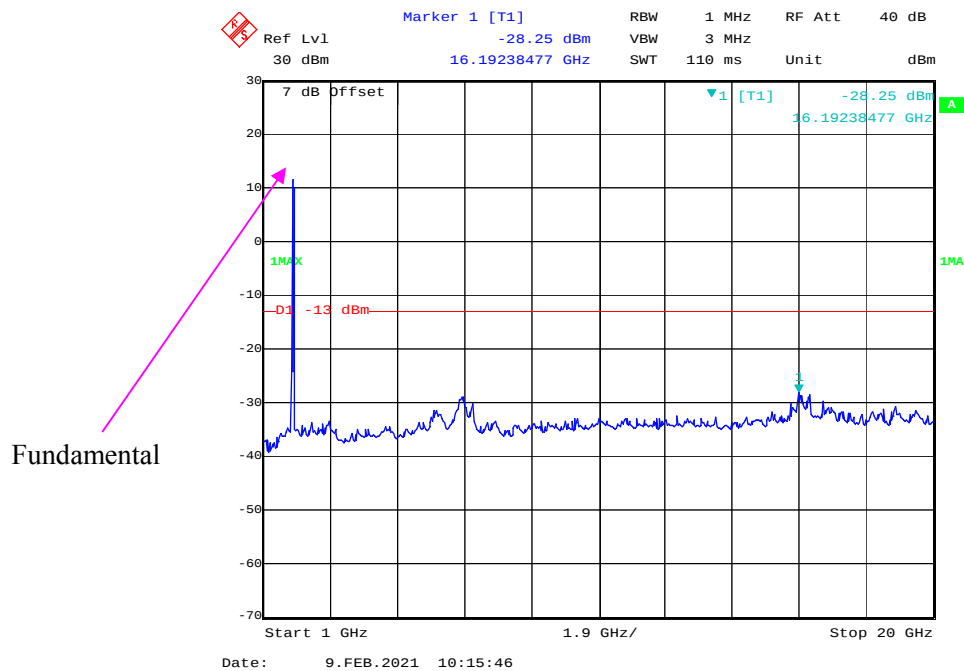
### 1 GHz – 20 GHz (20 MHz, QPSK, Low Channel)



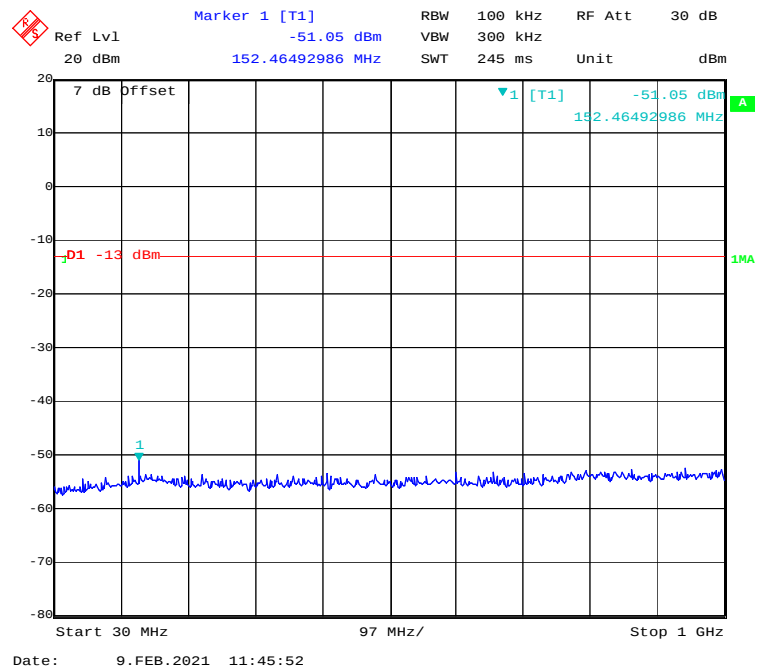
### 30 MHz - 1 GHz (20 MHz, 16-QAM, Low Channel)



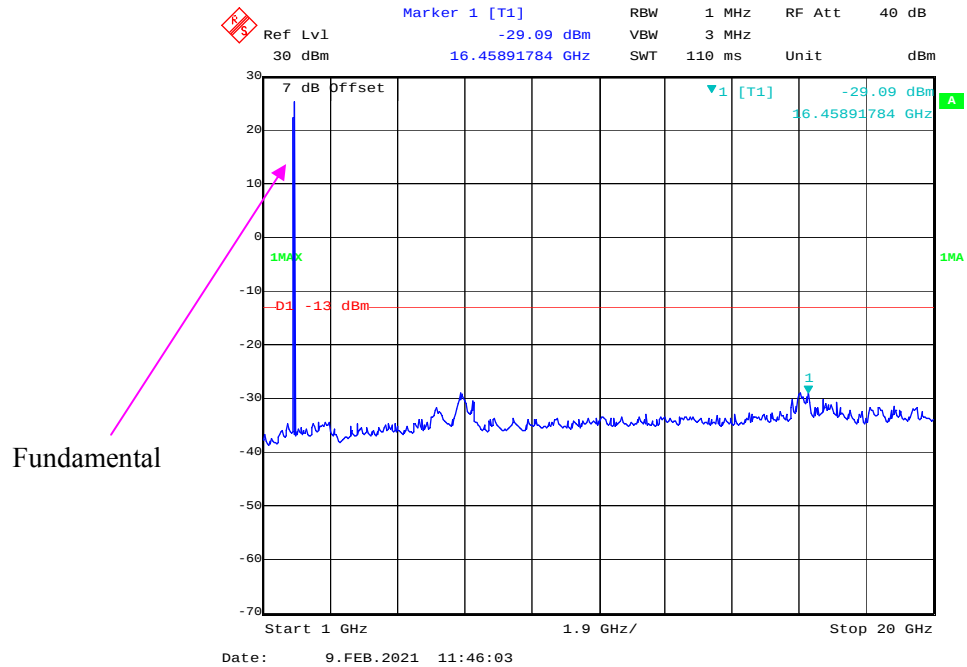
### 1 GHz – 20 GHz (20 MHz, 16-QAM, Low Channel)



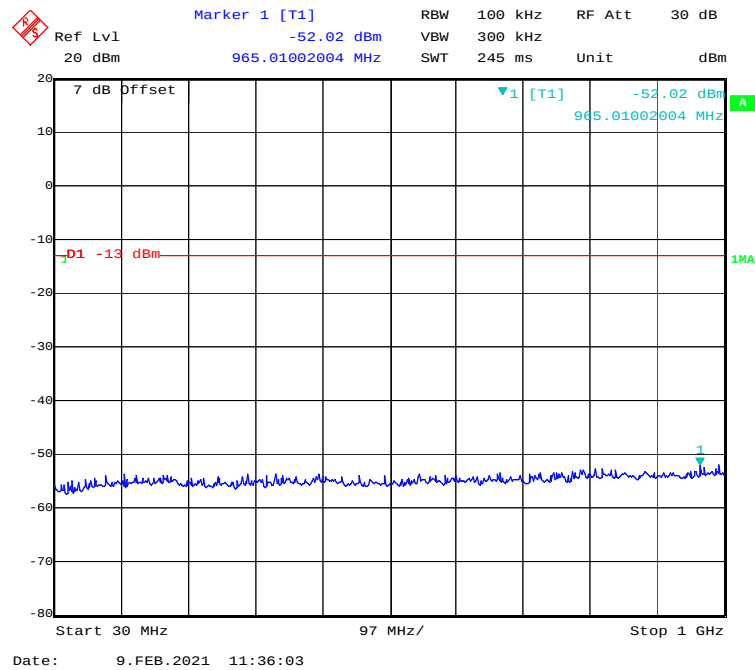
### 30 MHz - 1 GHz (1.4 MHz, QPSK, Middle Channel)



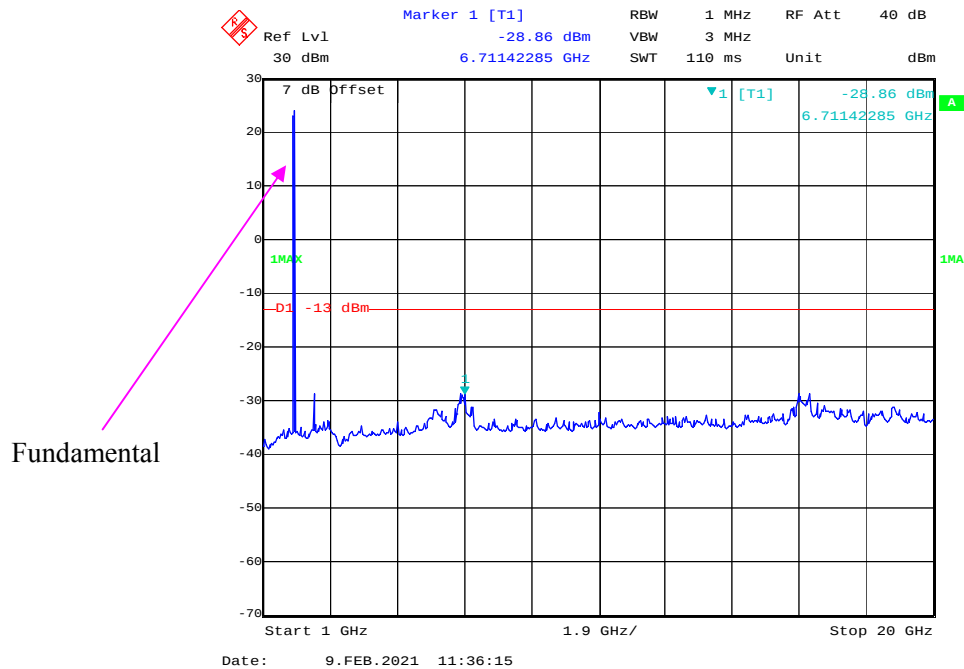
### 1 GHz – 20 GHz (1.4 MHz, QPSK, Middle Channel)



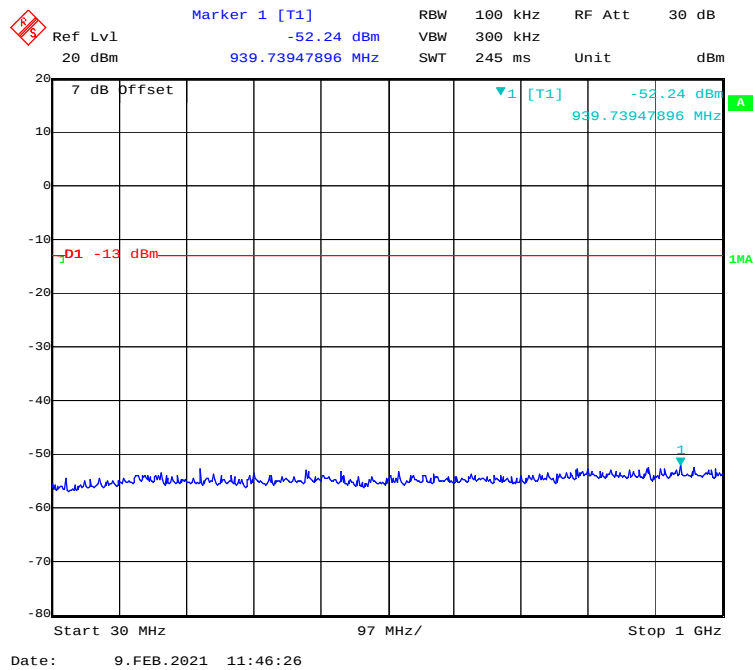
### 30 MHz - 1 GHz (1.4 MHz, 16-QAM, Middle Channel)



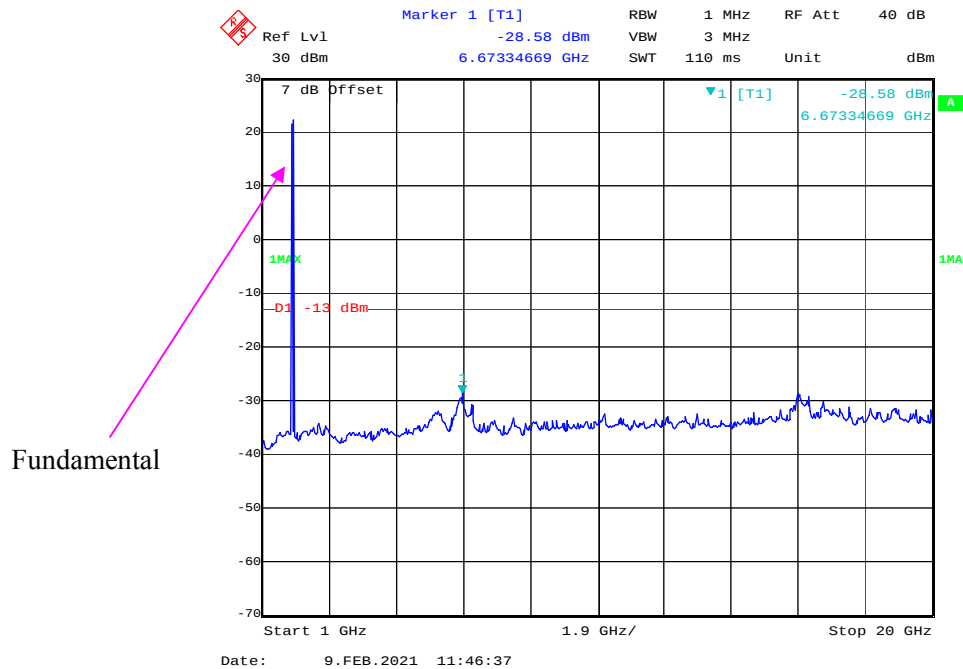
### 1 GHz – 20 GHz (1.4 MHz, 16-QAM, Middle Channel)



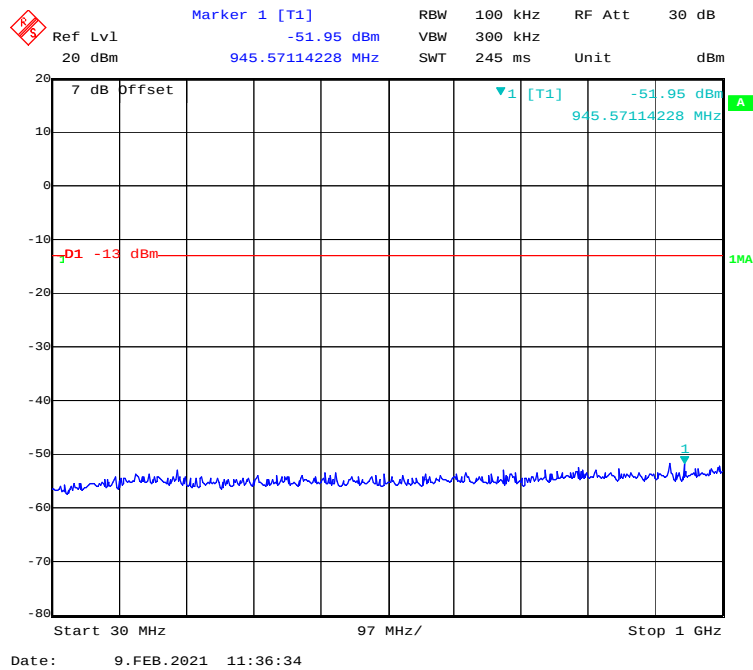
### 30 MHz - 1 GHz (3 MHz, QPSK, Middle Channel)



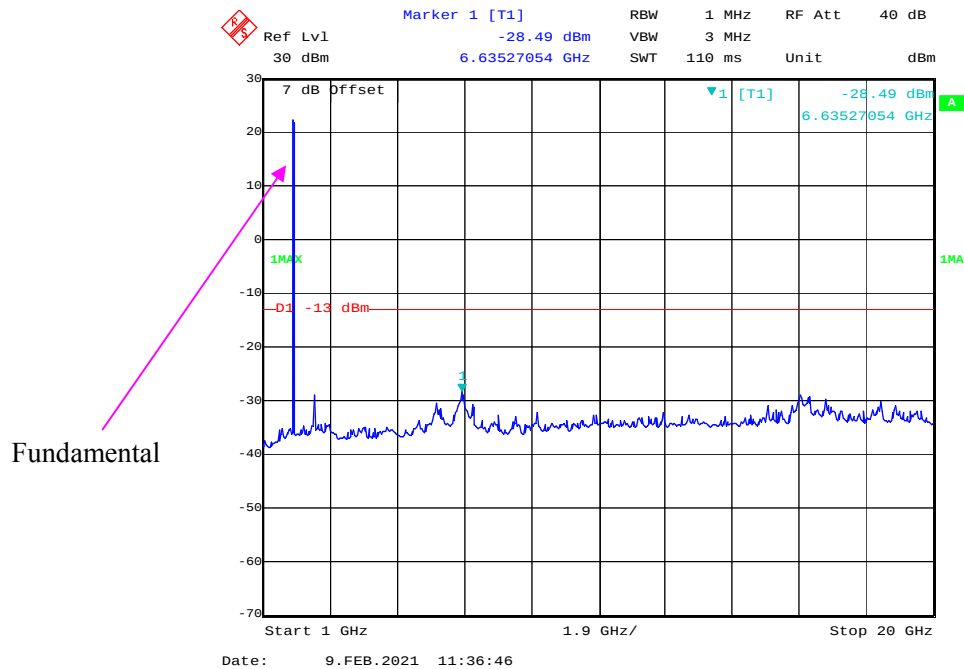
### 1 GHz – 20 GHz (3 MHz, QPSK, Middle Channel)



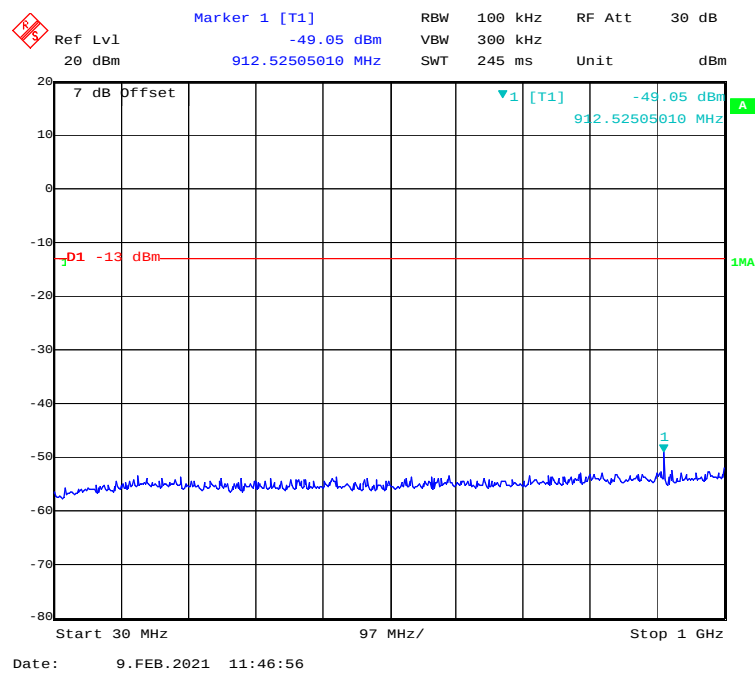
### 30 MHz - 1 GHz (3 MHz, 16-QAM, Middle Channel)



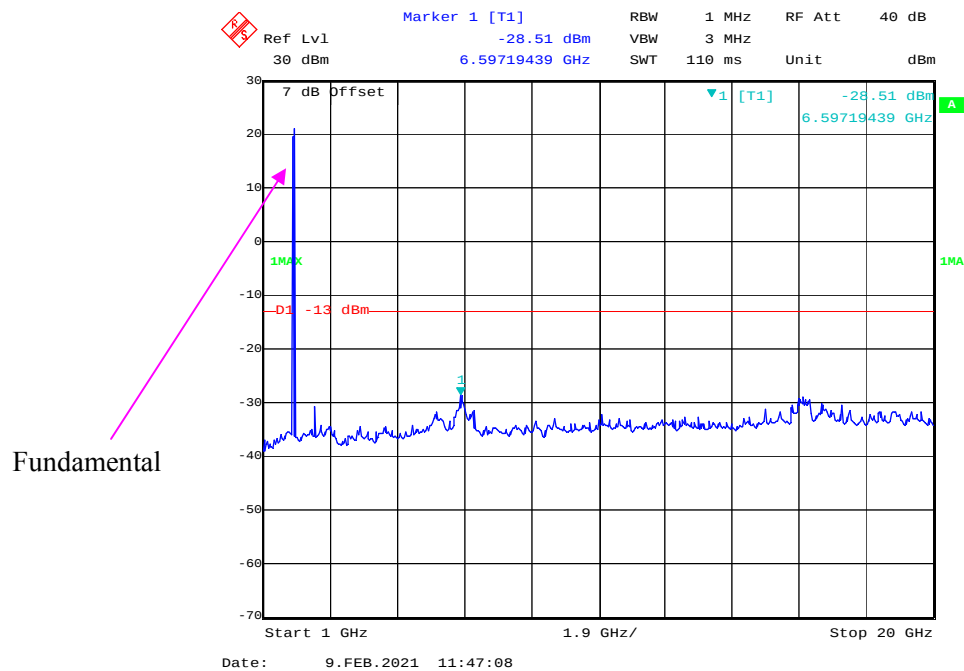
### 1 GHz – 20 GHz (3 MHz, 16-QAM, Middle Channel)



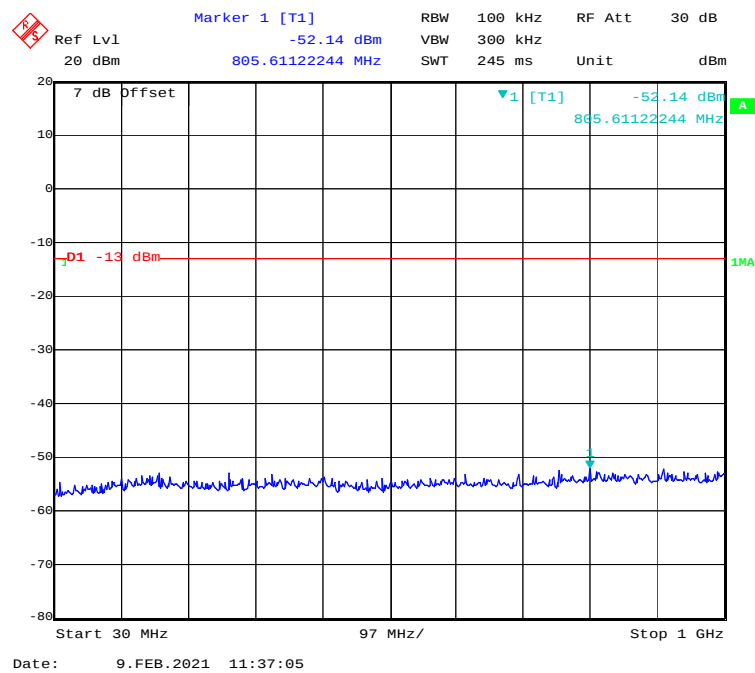
### 30 MHz - 1 GHz (5 MHz, QPSK, Middle Channel)



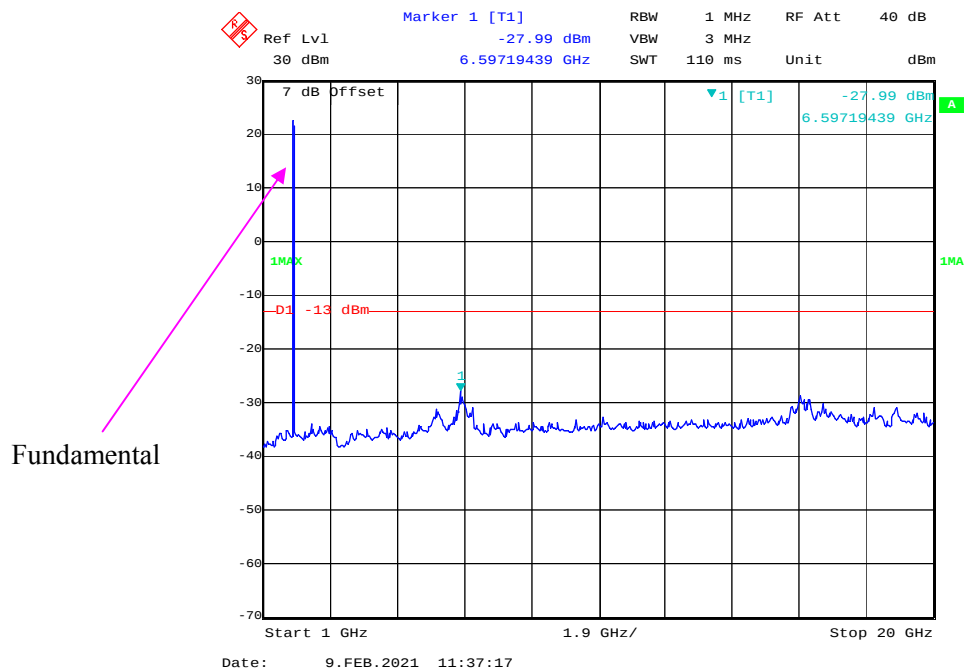
### 1 GHz – 20 GHz (5 MHz, QPSK, Middle Channel)



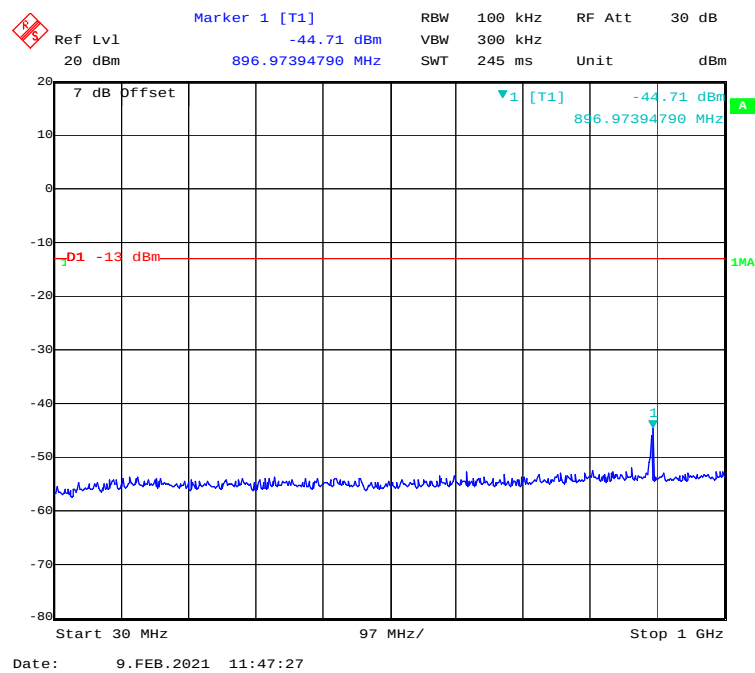
### 30 MHz - 1 GHz (5 MHz, 16-QAM, Middle Channel)



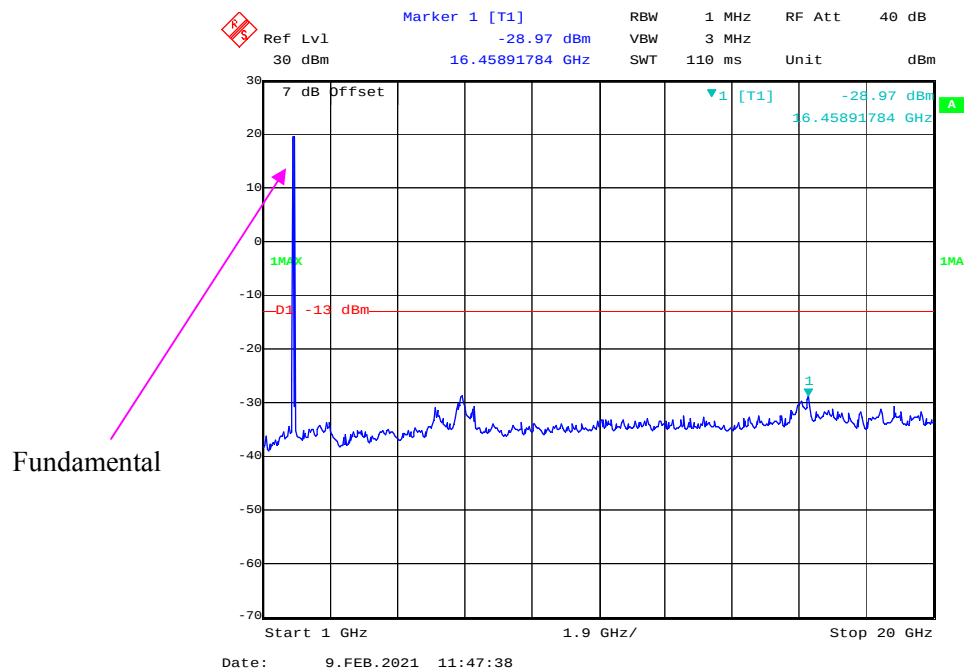
### 1 GHz – 20 GHz (5 MHz, 16-QAM, Middle Channel)



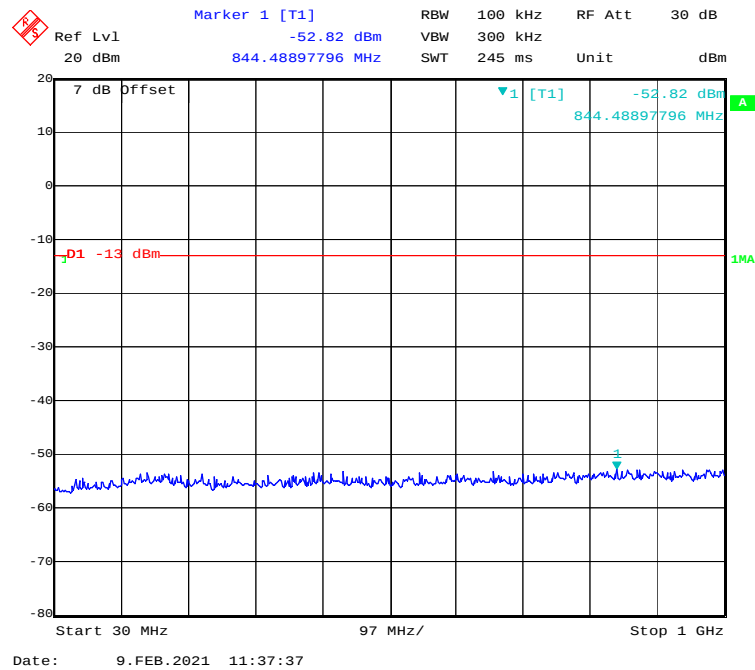
### 30 MHz - 1 GHz (10 MHz, QPSK, Middle Channel)



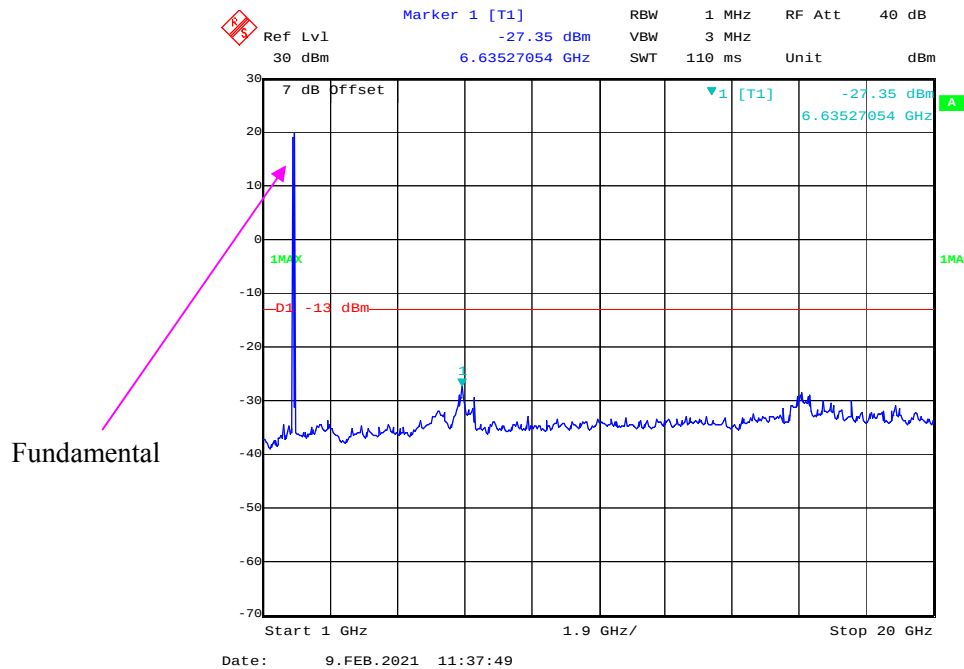
### 1 GHz – 20 GHz (10 MHz, QPSK, Middle Channel)



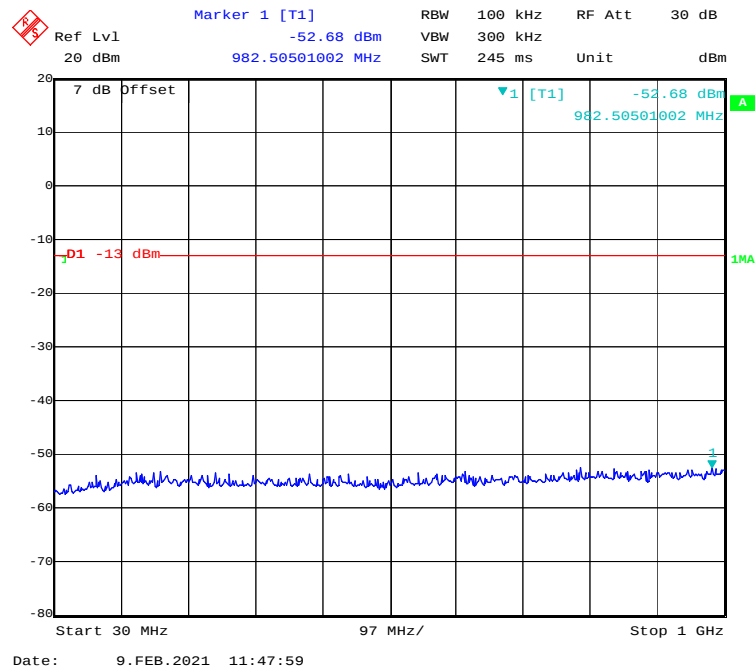
### 30 MHz - 1 GHz (10 MHz, 16-QAM, Middle Channel)



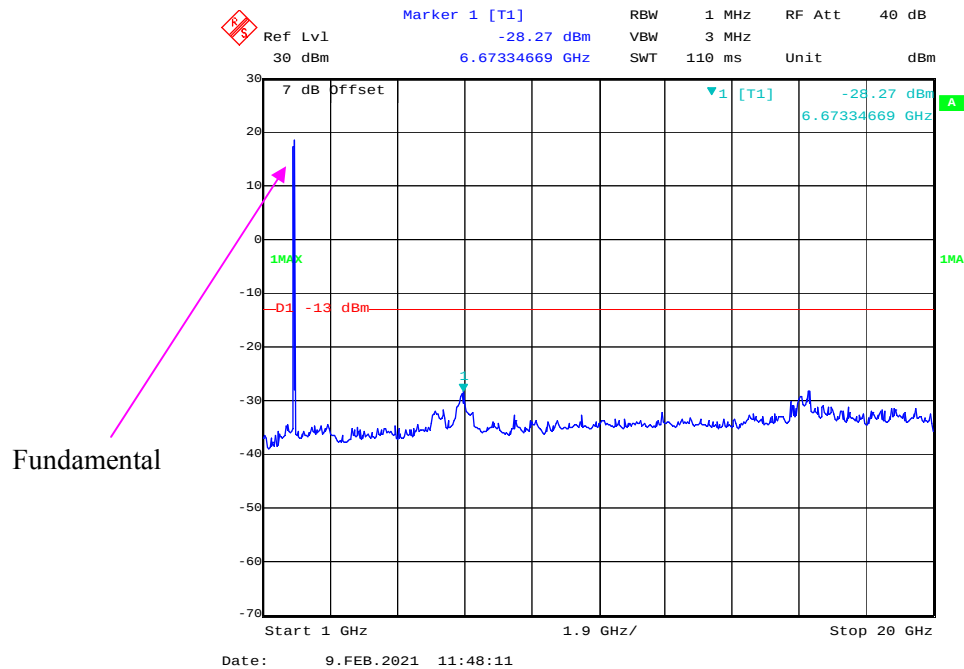
### 1 GHz – 20 GHz (10 MHz, 16-QAM, Middle Channel)



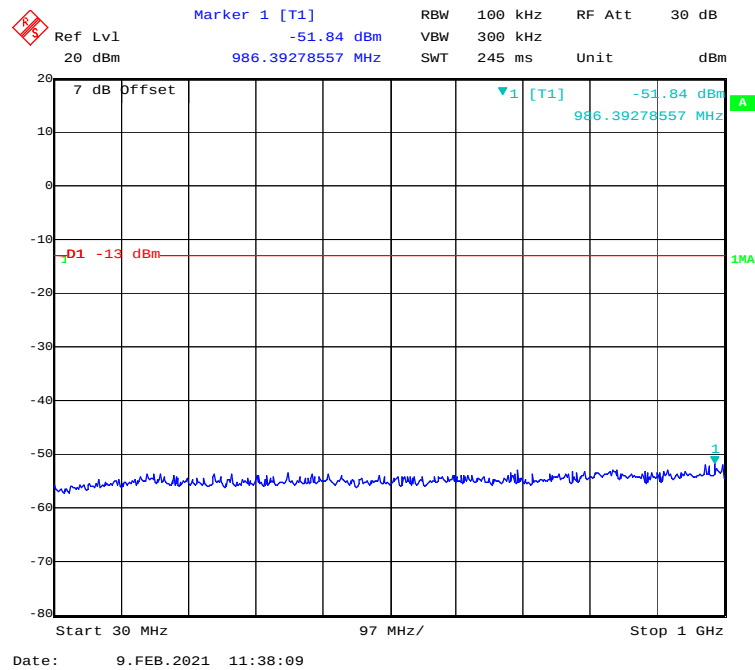
### 30 MHz - 1 GHz (15 MHz, QPSK, Middle Channel)



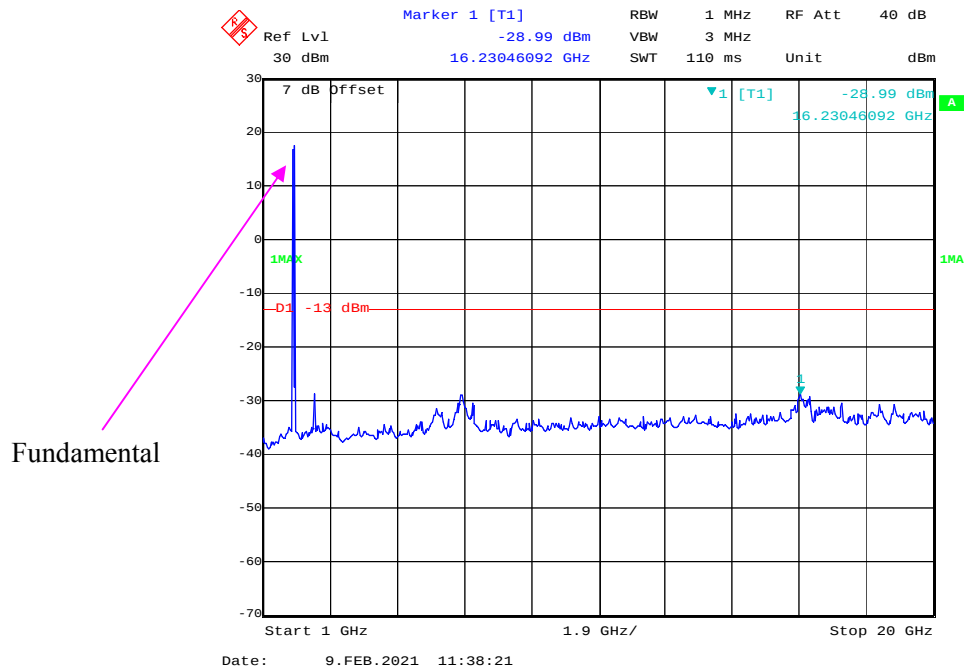
### 1 GHz – 20 GHz (15 MHz, QPSK, Middle Channel)



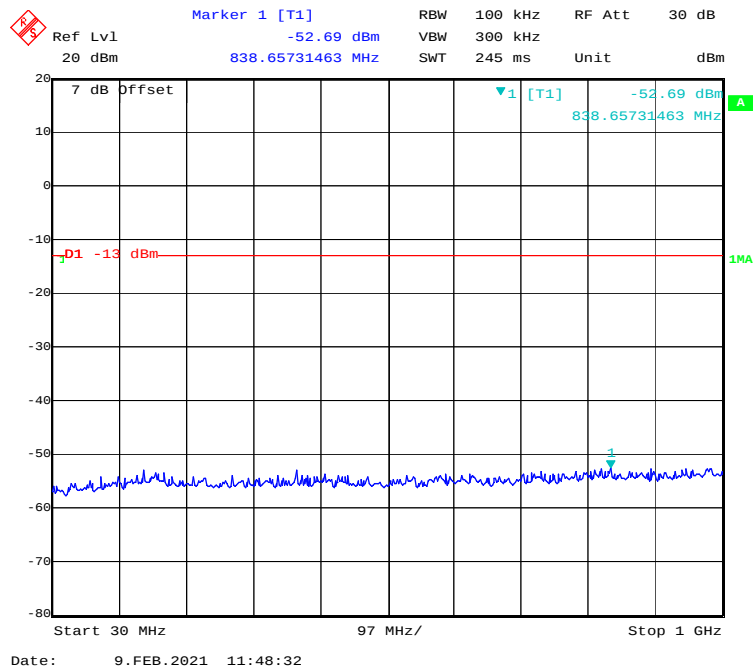
### 30 MHz - 1 GHz (15 MHz, 16-QAM, Middle Channel)



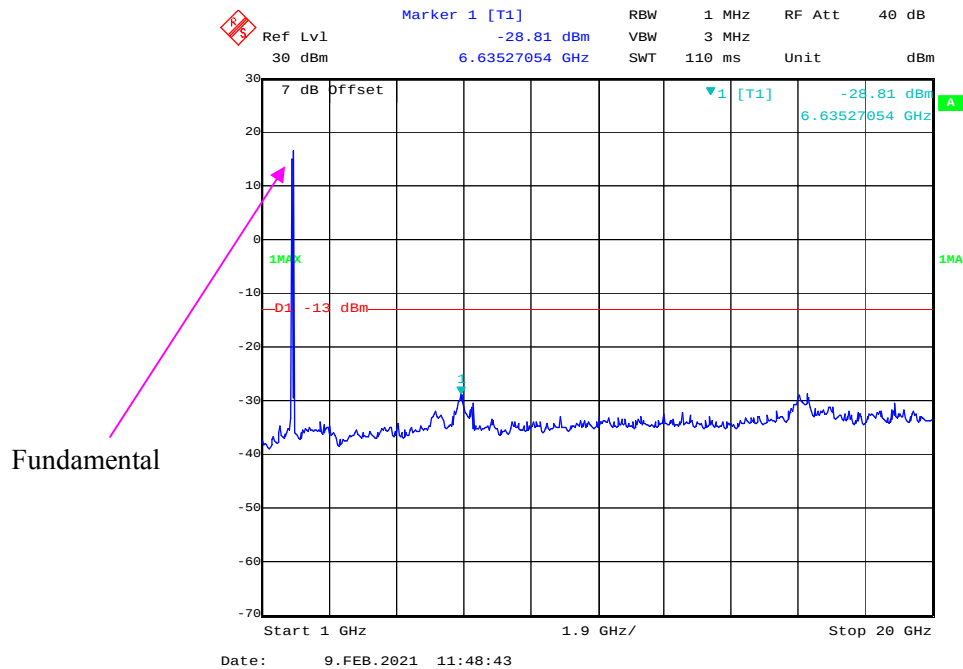
### 1 GHz – 20 GHz (15 MHz, 16-QAM, Middle Channel)



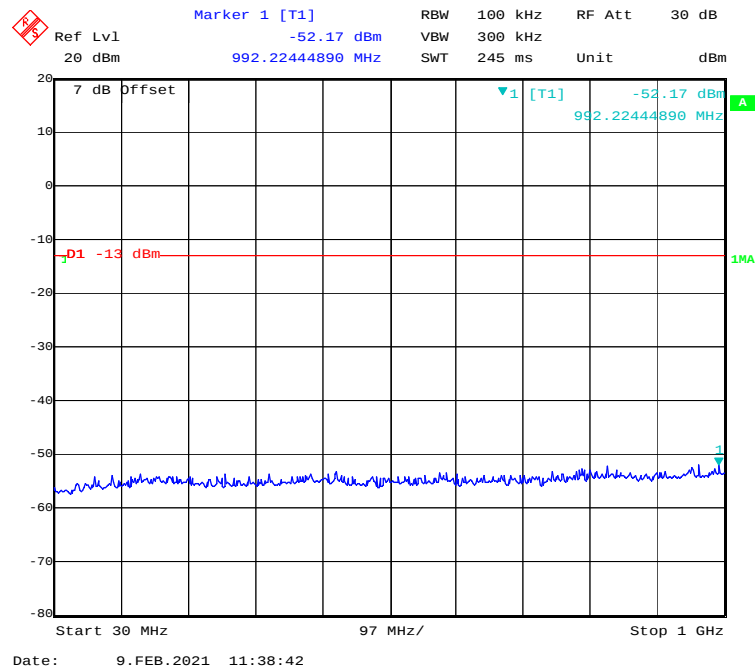
### 30 MHz - 1 GHz (20 MHz, QPSK, Middle Channel)



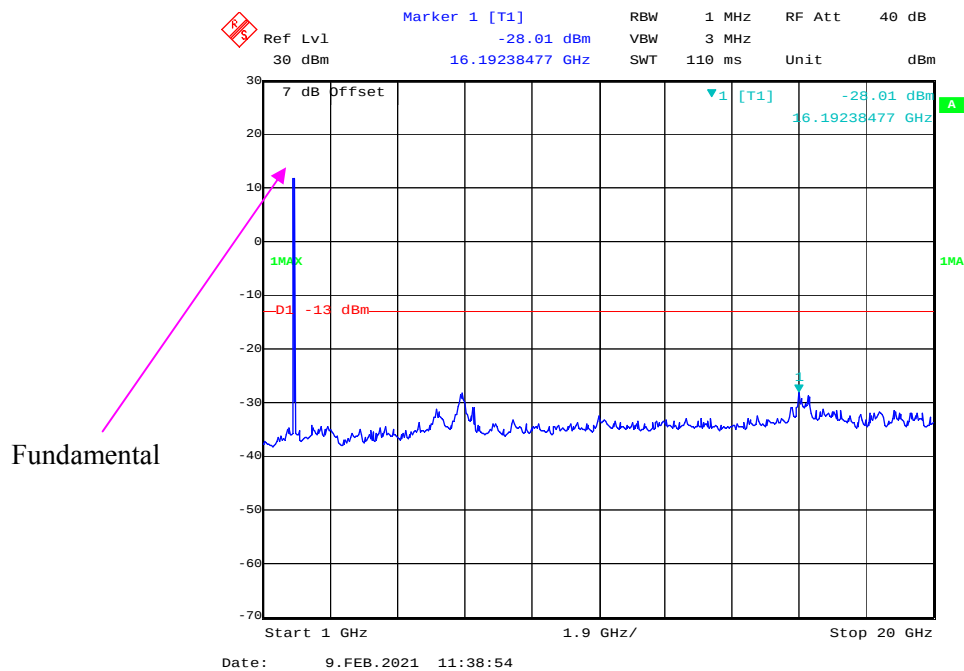
### 1 GHz – 20 GHz (20 MHz, QPSK, Middle Channel)



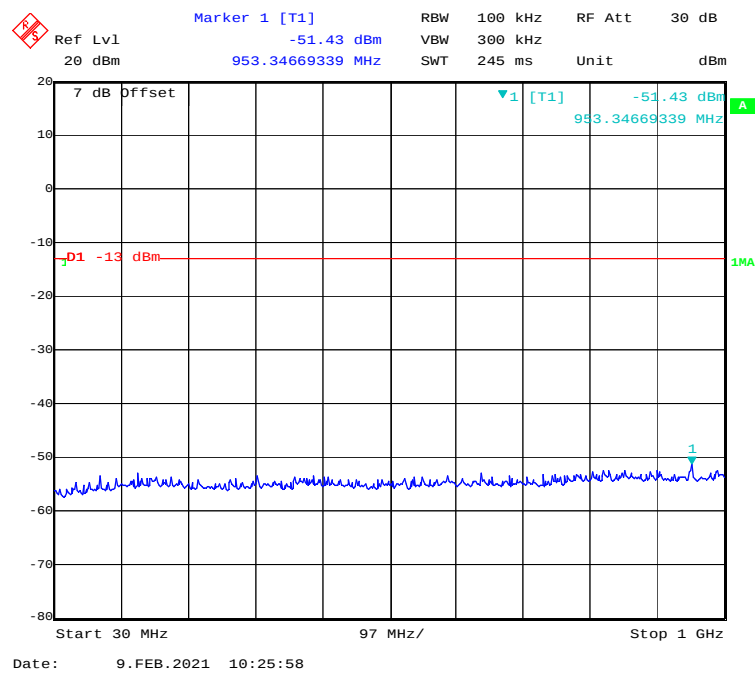
### 30 MHz - 1 GHz (20 MHz, 16-QAM, Middle Channel)



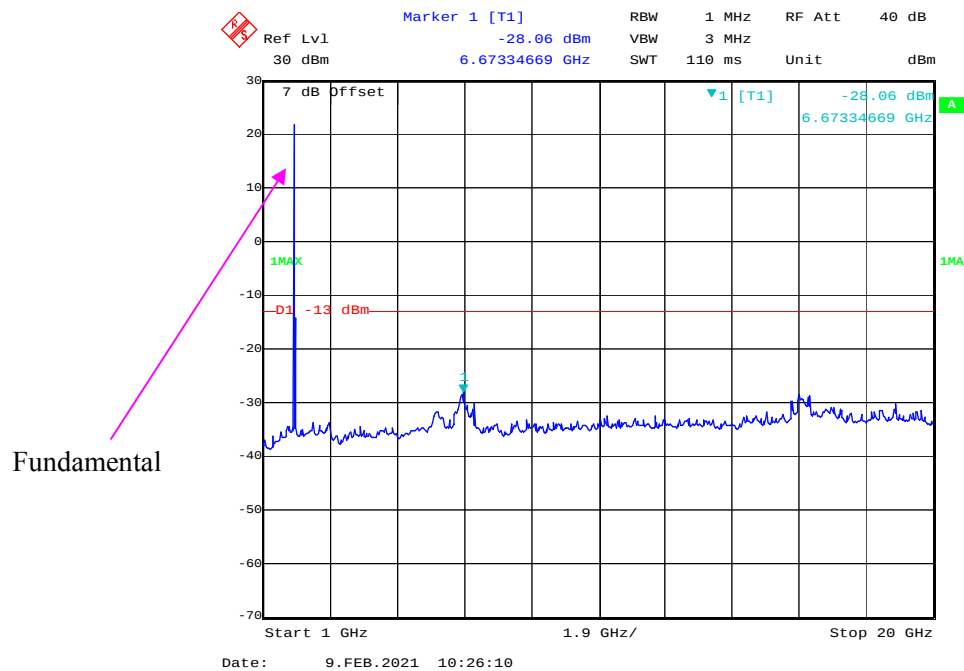
### 1 GHz – 20 GHz (20 MHz, 16-QAM, Middle Channel)



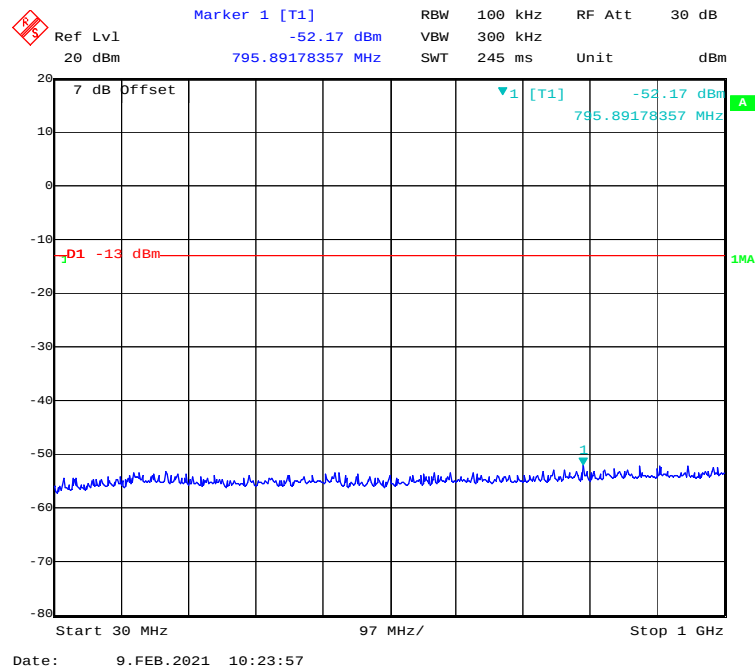
### 30 MHz - 1 GHz (1.4 MHz, QPSK, High Channel)



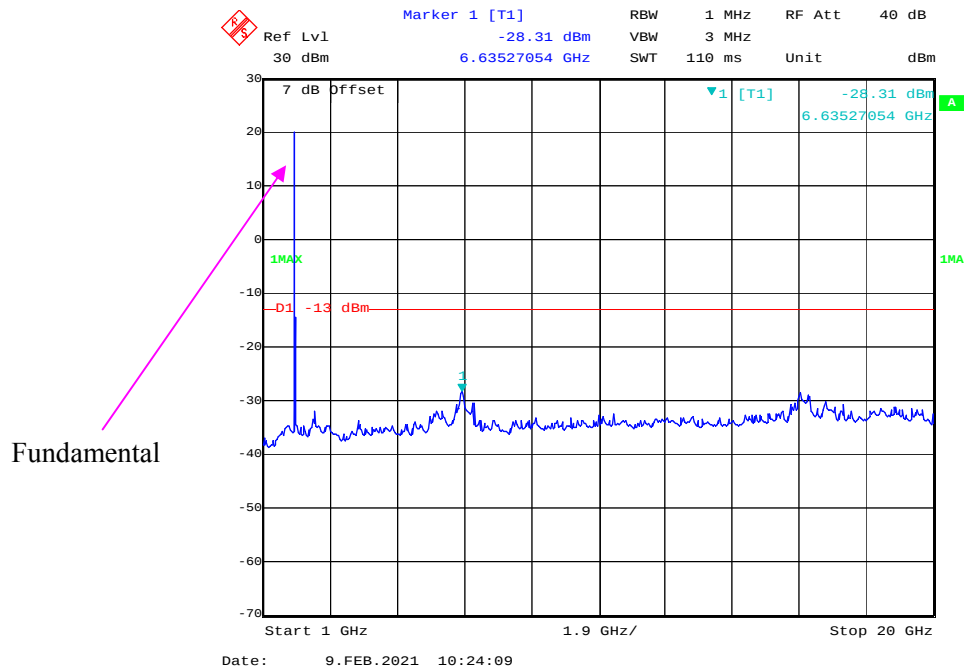
### 1 GHz – 20 GHz (1.4 MHz, QPSK, High Channel)



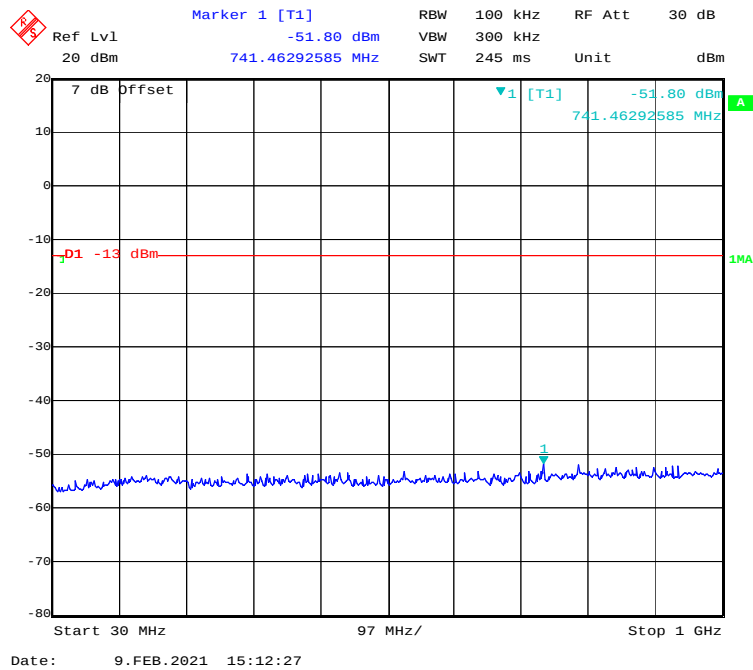
### 30 MHz - 1 GHz (1.4 MHz, 16-QAM, High Channel)



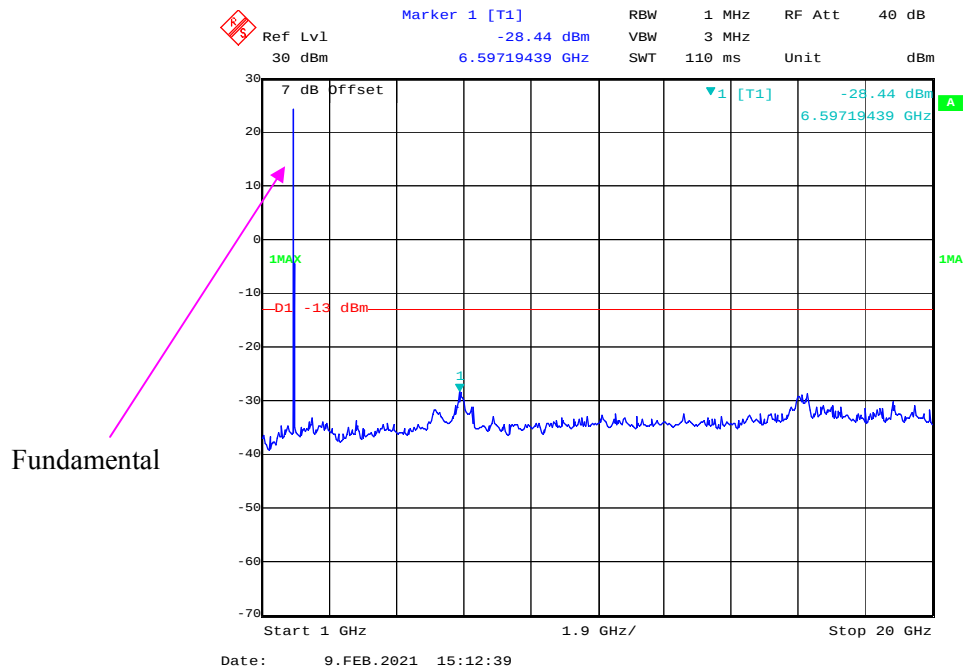
### 1 GHz – 20 GHz (1.4 MHz, 16-QAM, High Channel)



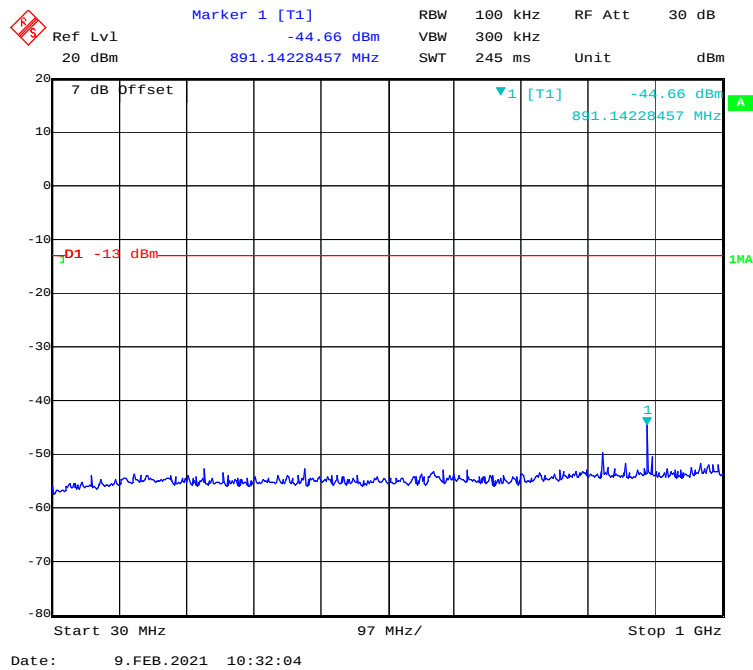
### 30 MHz - 1 GHz (3 MHz, QPSK, High Channel)



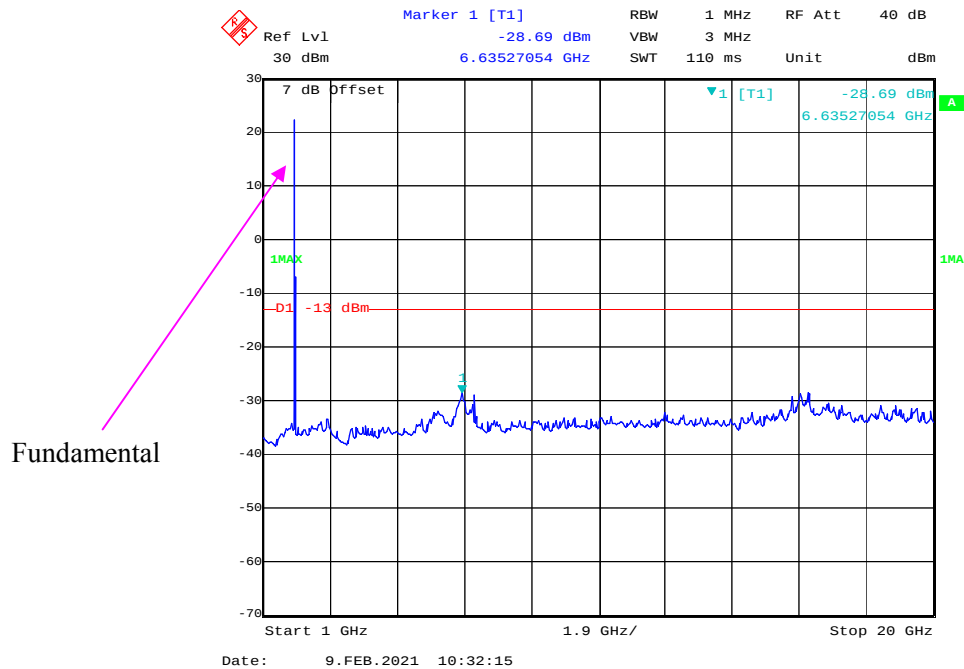
### 1 GHz – 20 GHz (3 MHz, QPSK, High Channel)



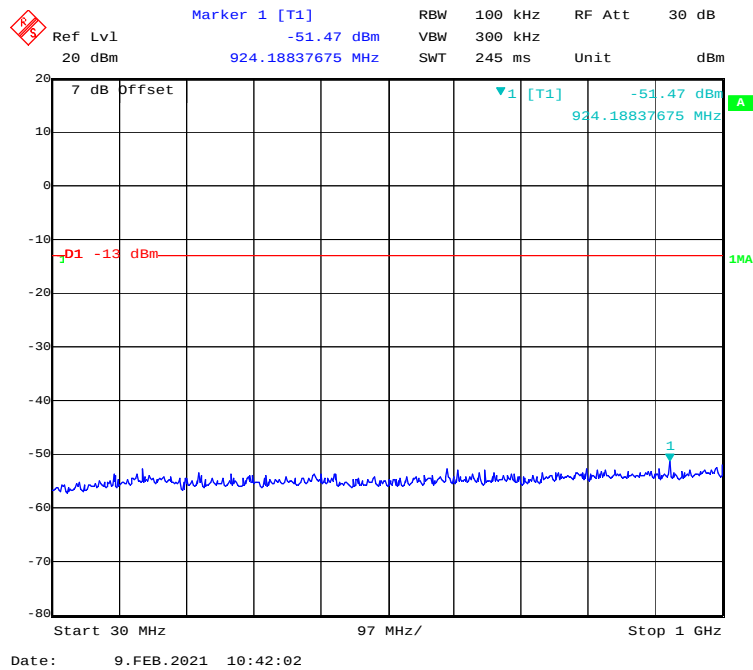
### 30 MHz - 1 GHz (3 MHz, 16-QAM, High Channel)



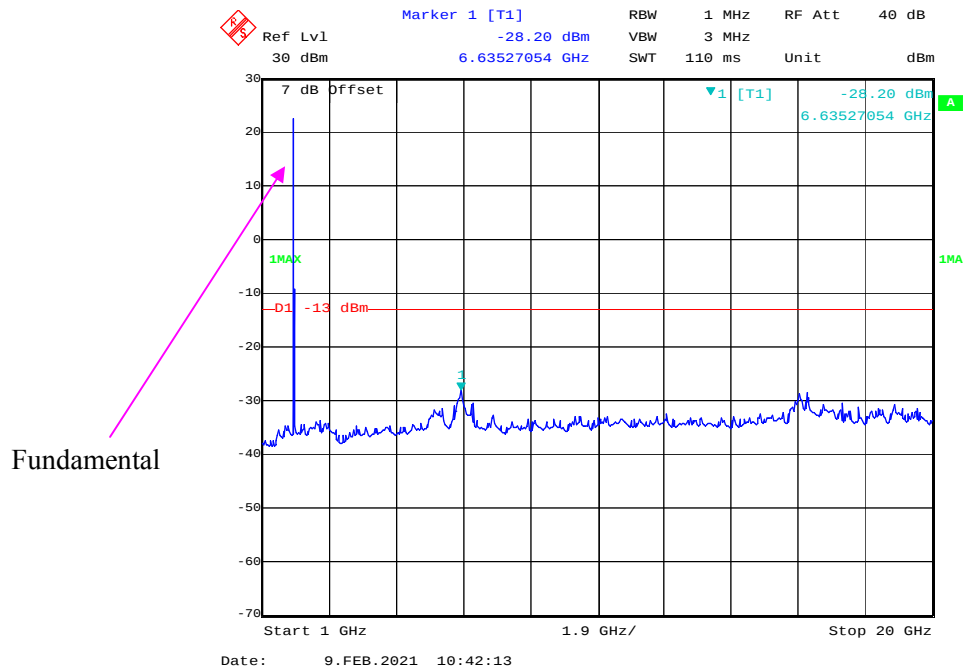
### 1 GHz – 20 GHz (3 MHz, 16-QAM, High Channel)



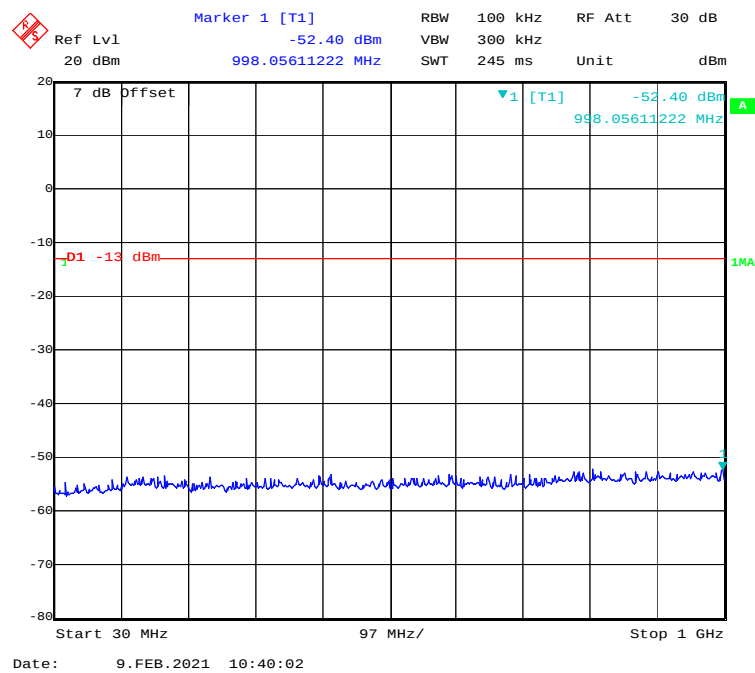
### 30 MHz - 1 GHz (5 MHz, QPSK, High Channel)



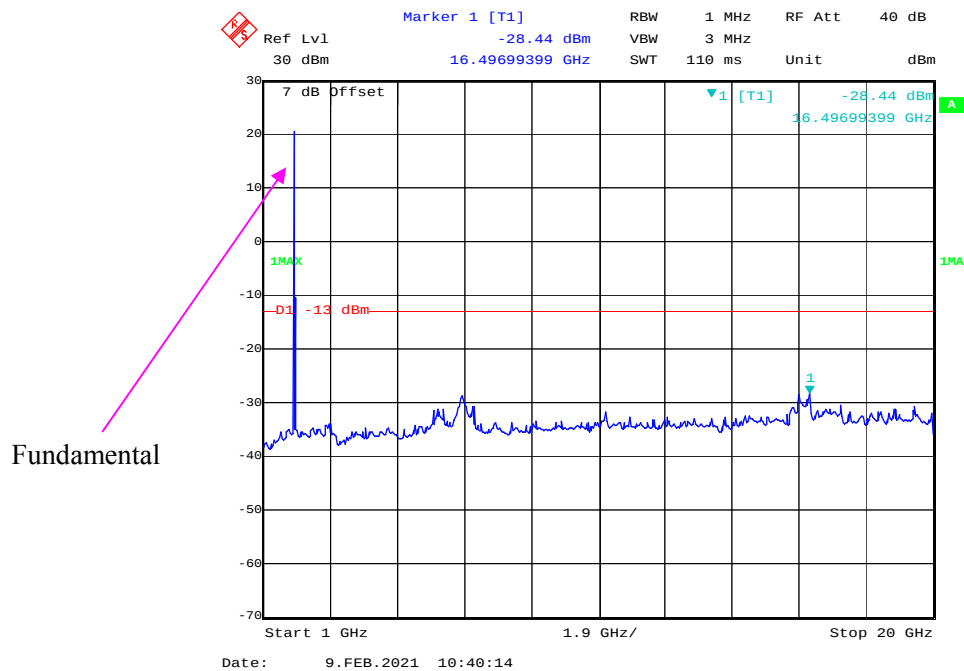
### 1 GHz – 20 GHz (5 MHz, QPSK, High Channel)



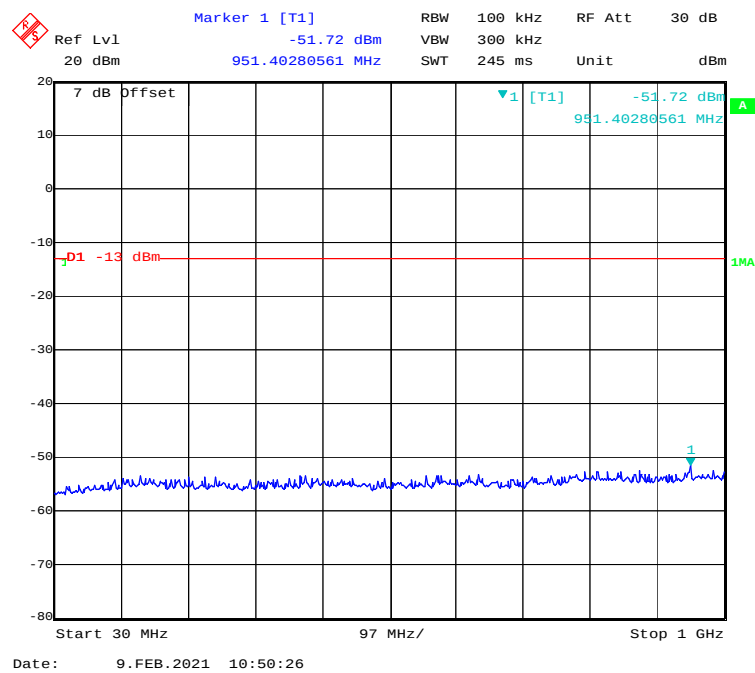
### 30 MHz - 1 GHz (5 MHz, 16-QAM, High Channel)



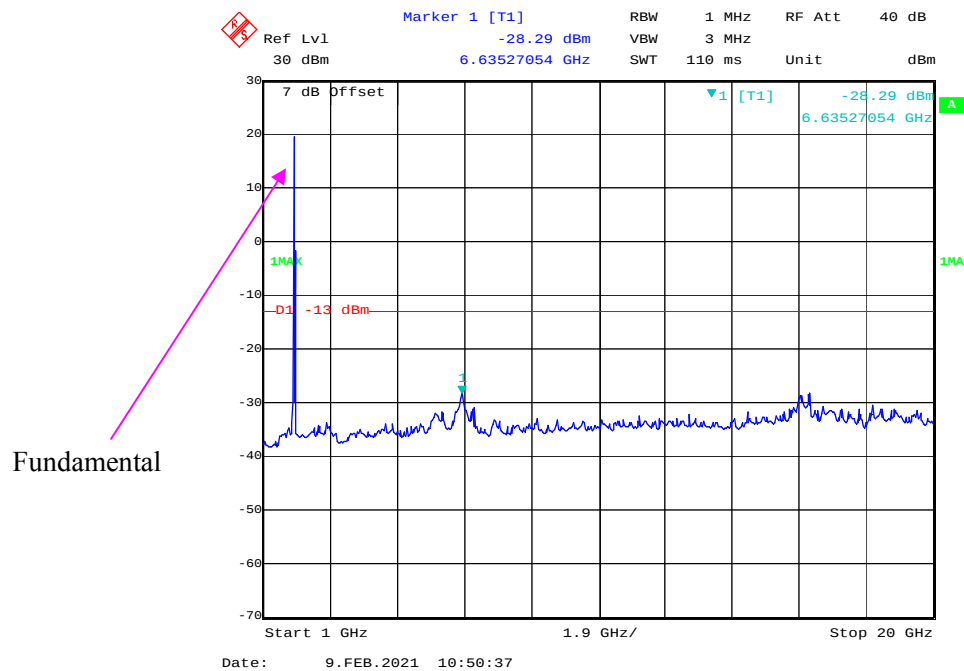
### 1 GHz - 20 GHz (5 MHz, 16-QAM, High Channel)



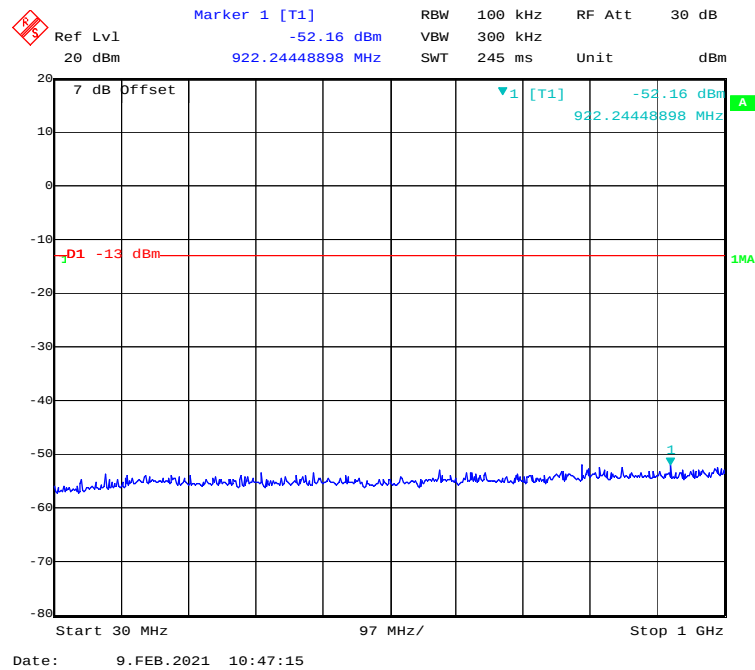
### 30 MHz - 1 GHz (10 MHz, QPSK, High Channel)



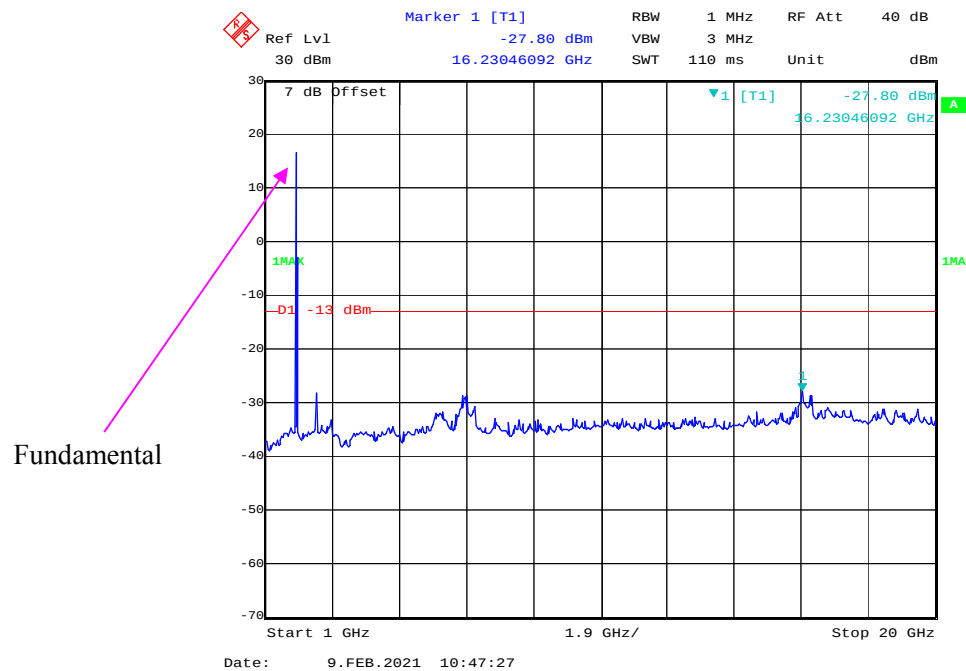
### 1 GHz – 20 GHz (10 MHz, QPSK, High Channel)



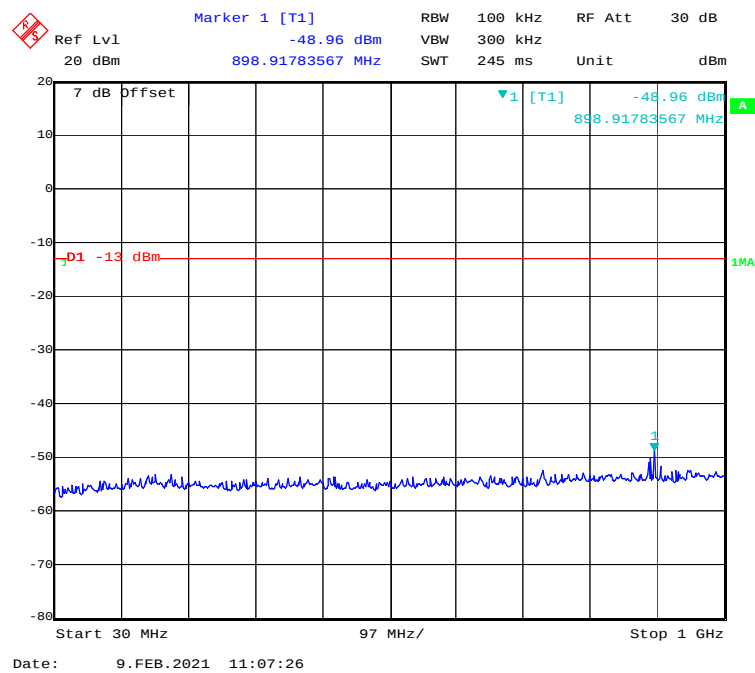
### 30 MHz - 1 GHz (10 MHz, 16-QAM, High Channel)



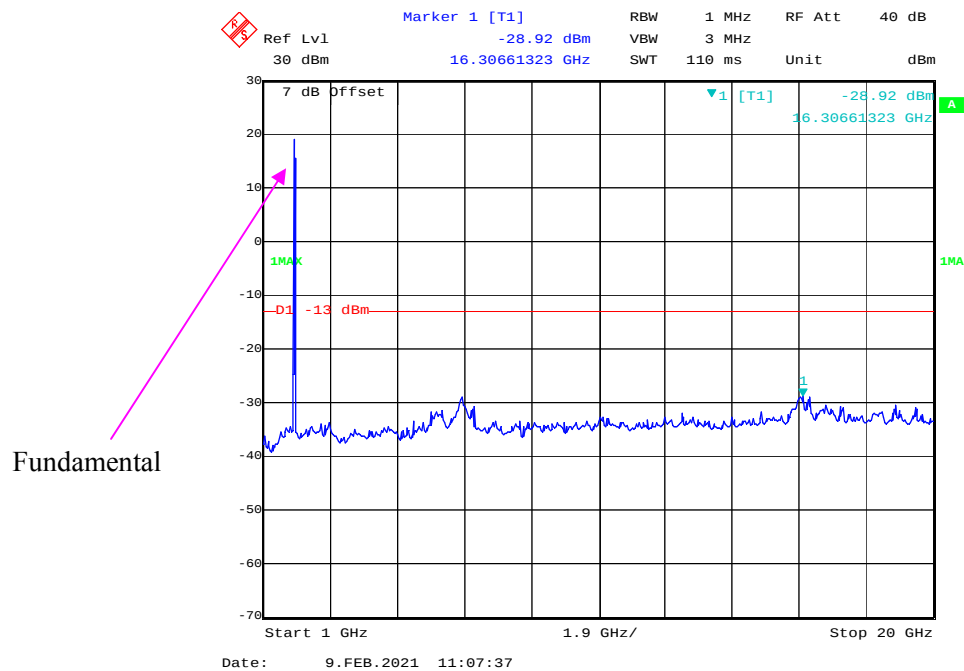
### 1 GHz – 20 GHz (10 MHz, 16-QAM, High Channel)



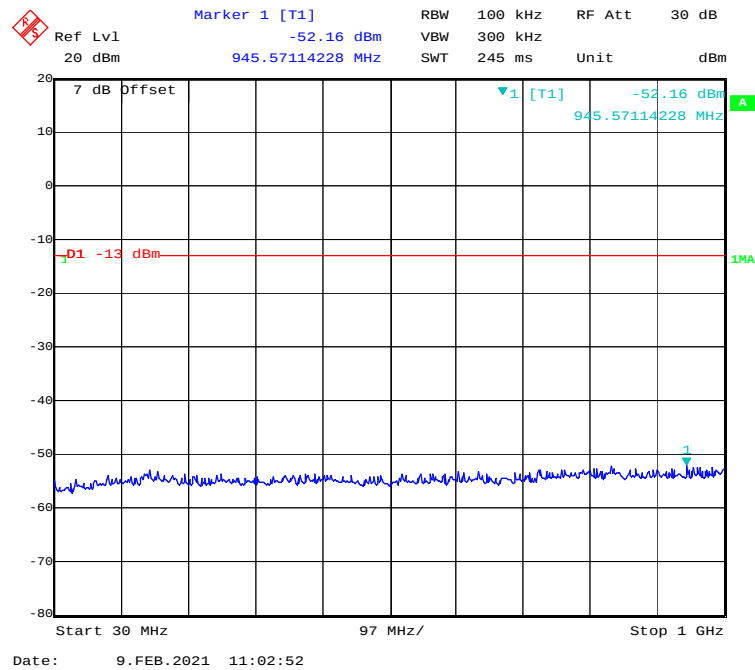
### 30 MHz - 1 GHz (15 MHz, QPSK, High Channel)



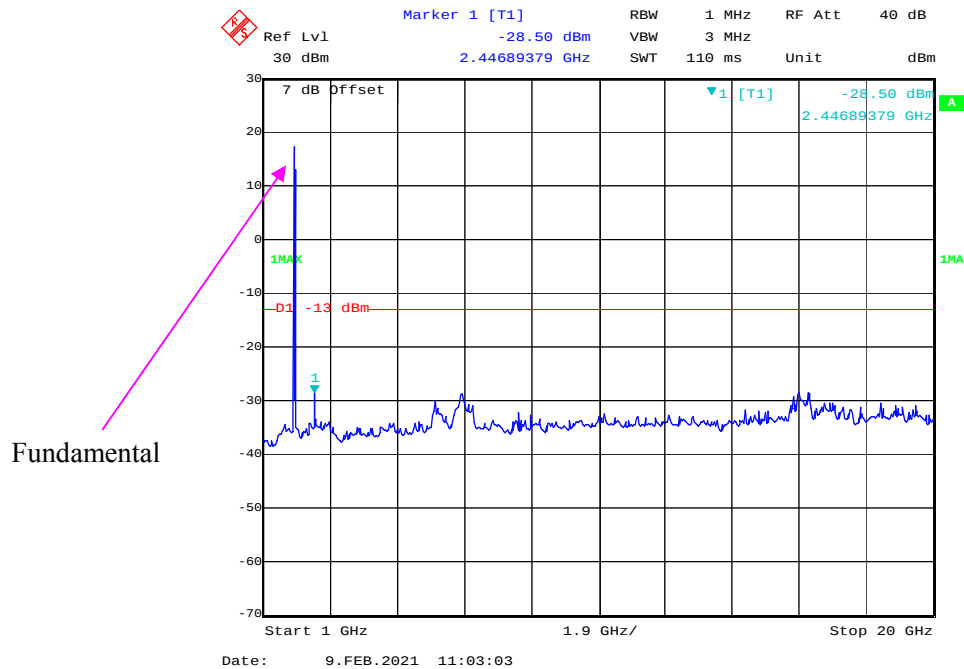
### 1 GHz – 20 GHz (15 MHz, QPSK, High Channel)



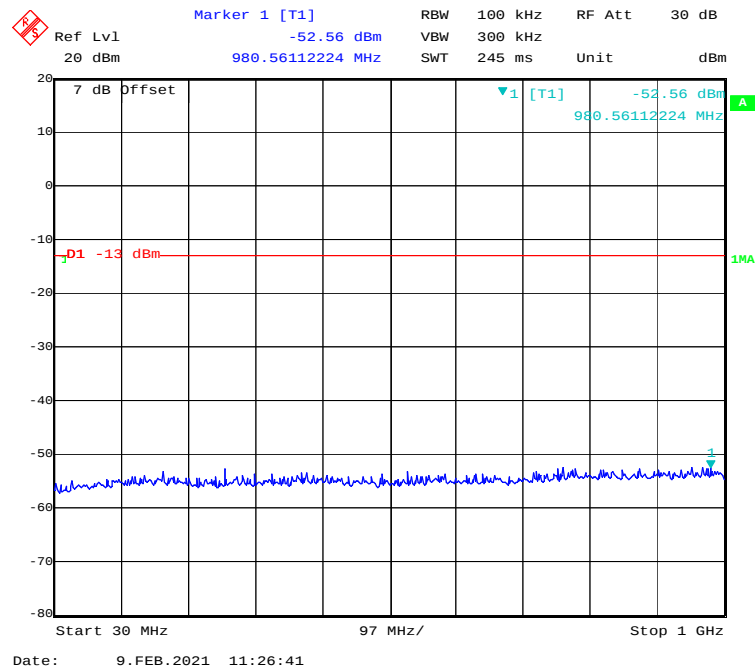
### 30 MHz - 1 GHz (15 MHz, 16-QAM, High Channel)



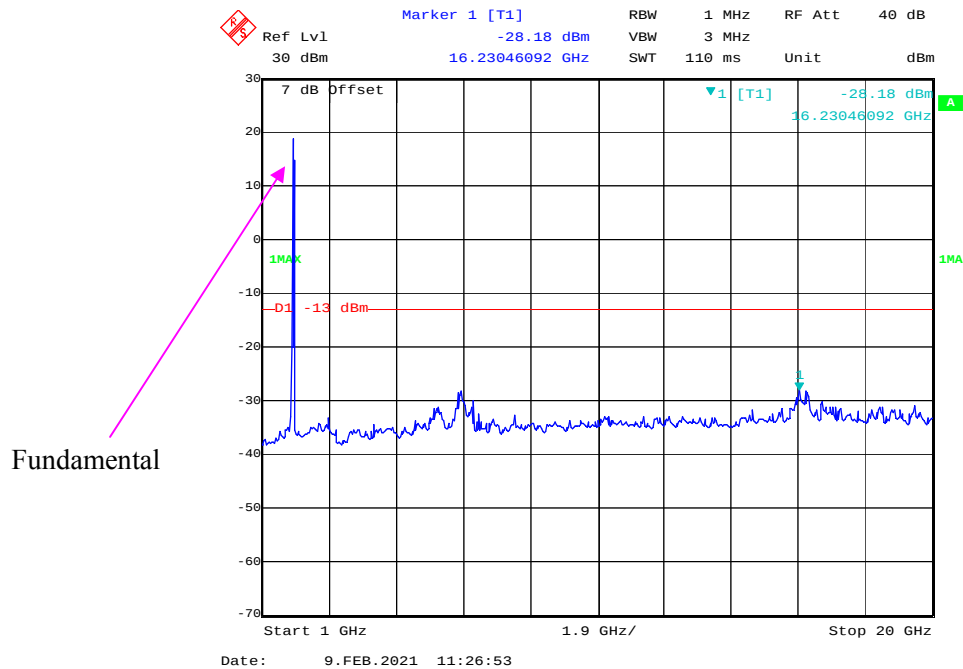
### 1 GHz – 20 GHz (15 MHz, 16-QAM, High Channel)



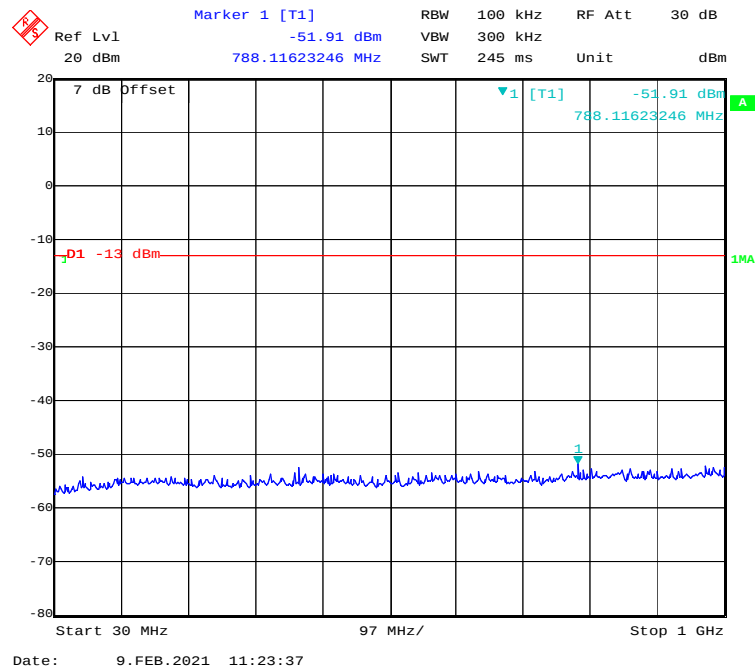
### 30 MHz - 1 GHz (20 MHz, QPSK, High Channel)



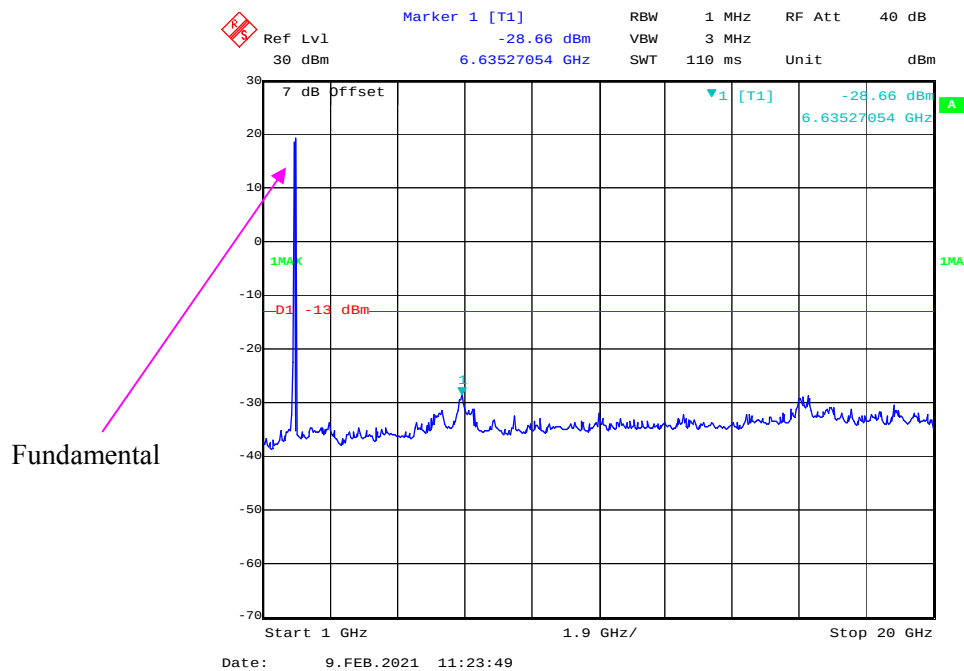
### 1 GHz – 20 GHz (20 MHz, QPSK, High Channel)



### 30 MHz - 1 GHz (20 MHz, 16-QAM, High Channel)

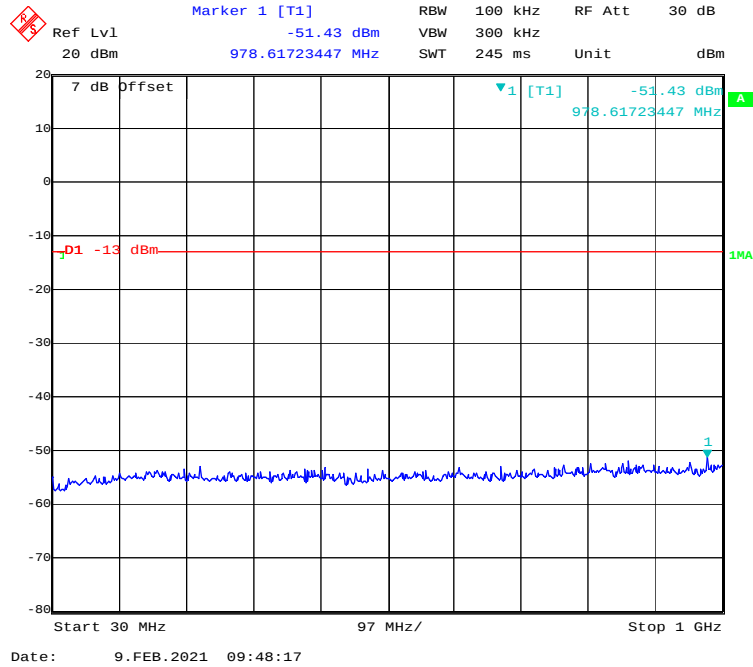


### 1 GHz – 20 GHz (20 MHz, 16-QAM, High Channel)

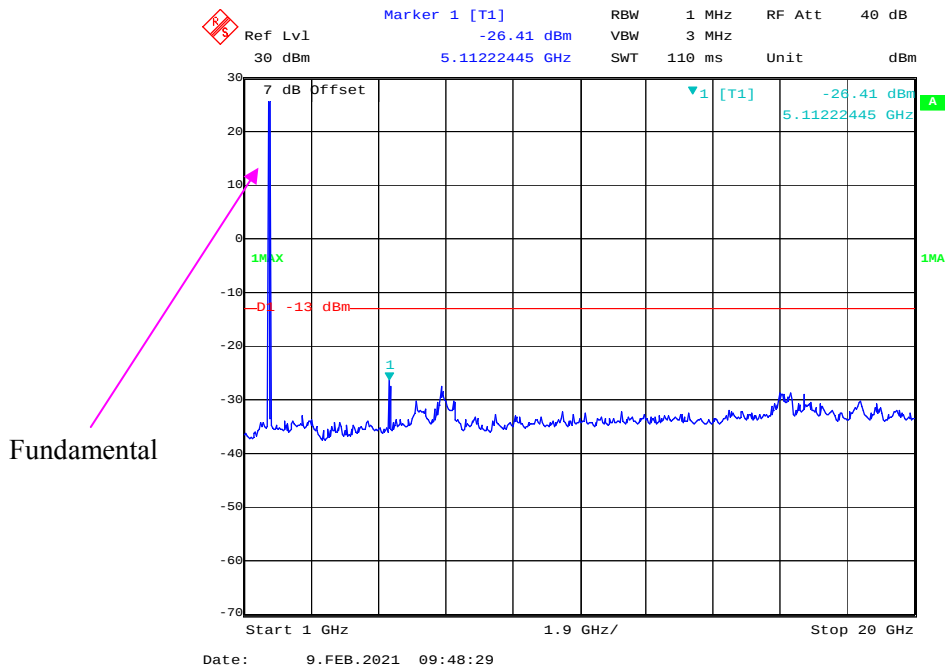


# LTE Band 4:

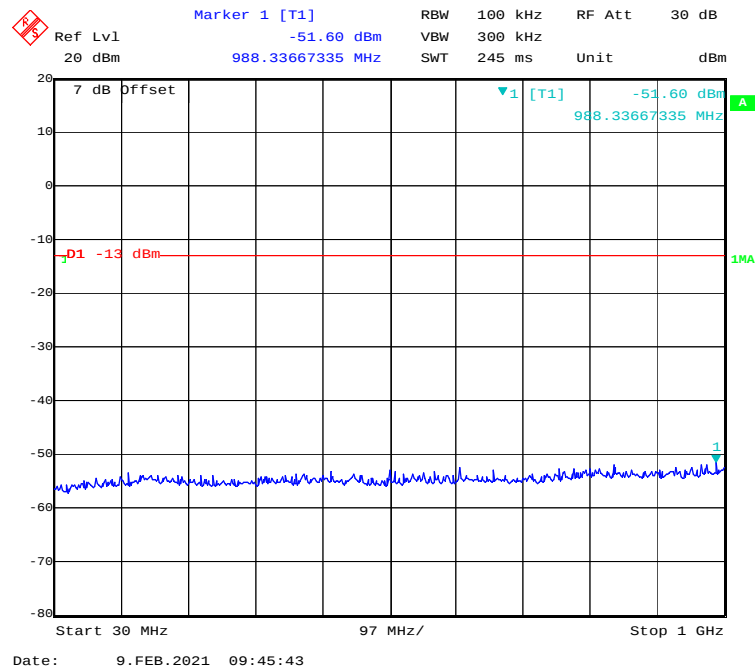
## 30 MHz - 1 GHz (1.4 MHz, QPSK, Low Channel)



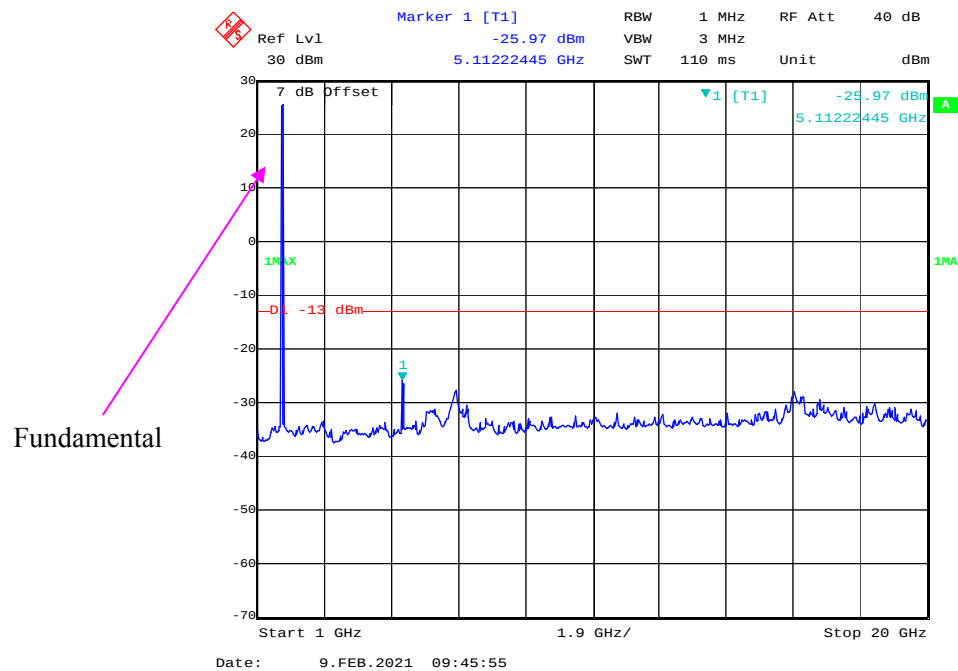
## 1 GHz – 20 GHz (1.4 MHz, QPSK, Low Channel)



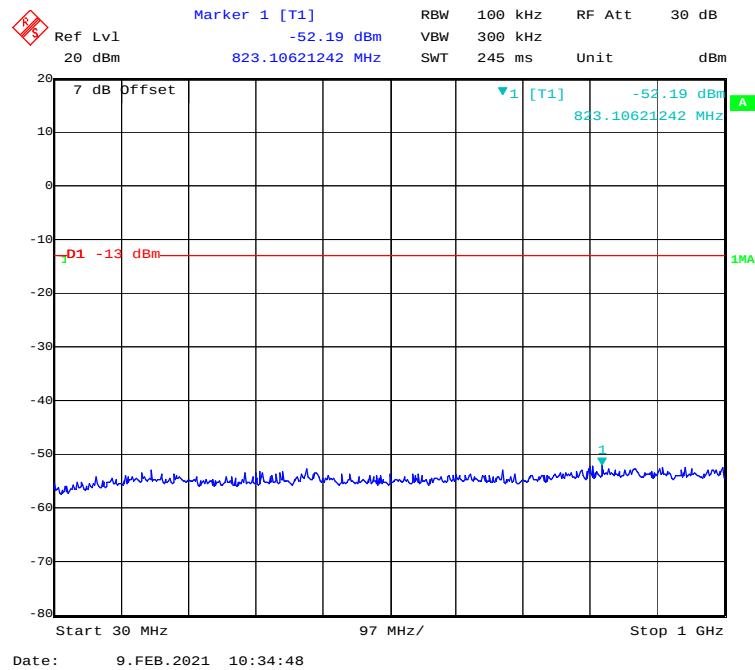
### 30 MHz - 1 GHz (1.4 MHz, 16-QAM, Low Channel)



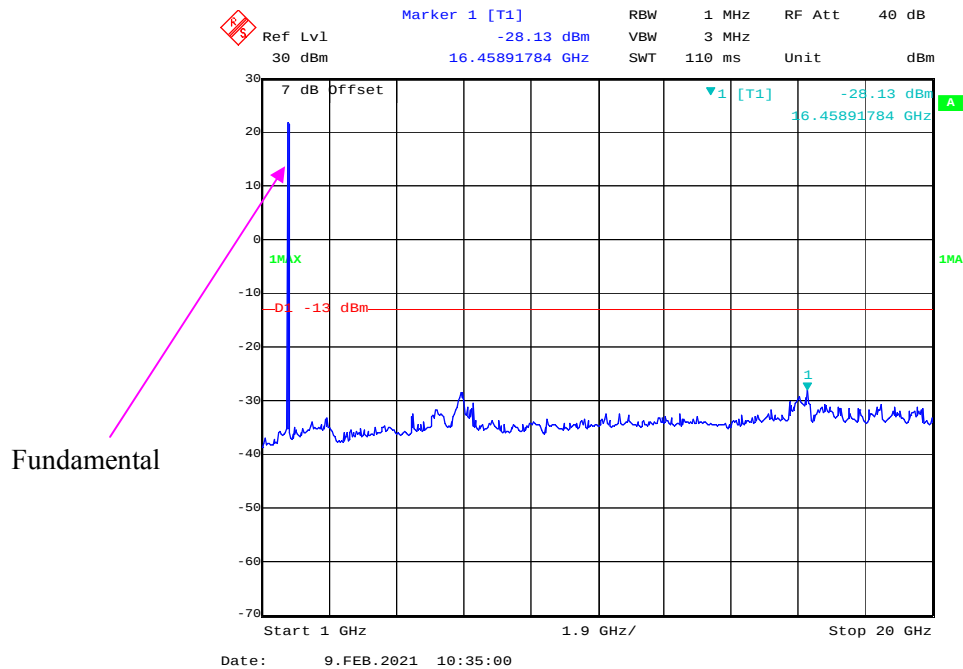
### 1 GHz – 20 GHz (1.4 MHz, 16-QAM, Low Channel)



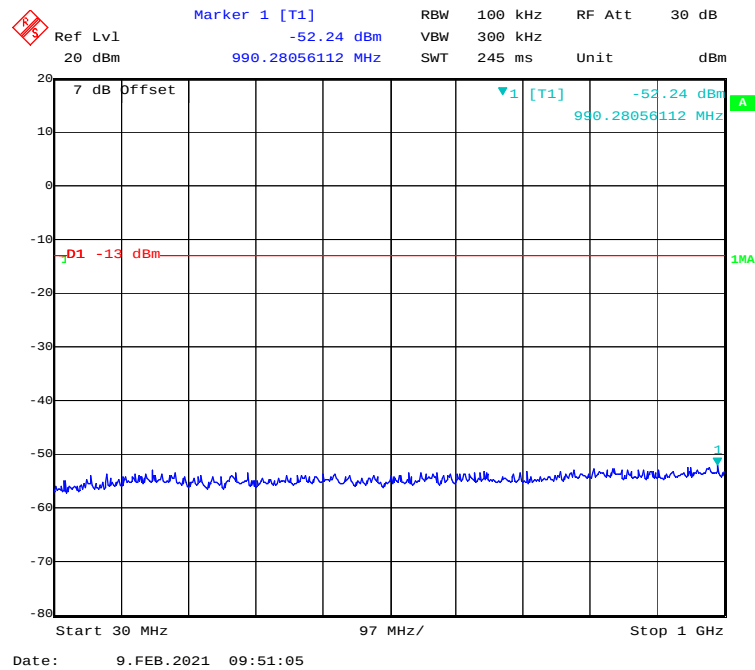
### 30 MHz - 1 GHz (3 MHz, QPSK, Low Channel)



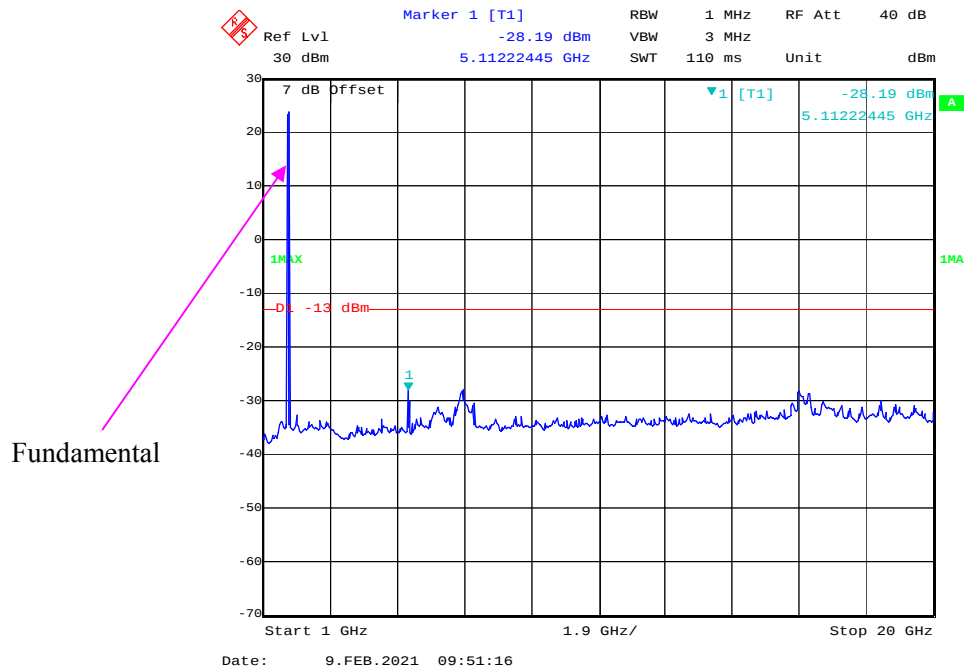
### 1 GHz – 20 GHz (3 MHz, QPSK, Low Channel)



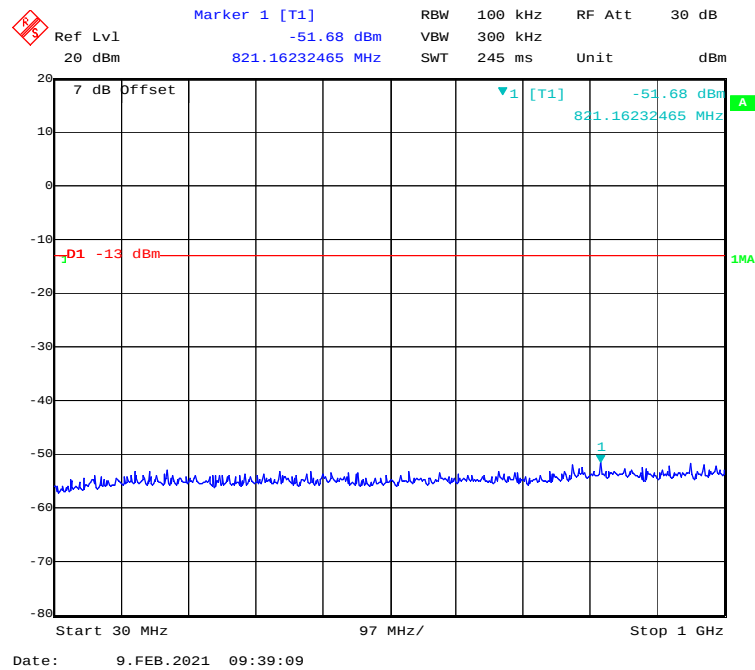
### 30 MHz - 1 GHz (3 MHz, 16-QAM, Low Channel)



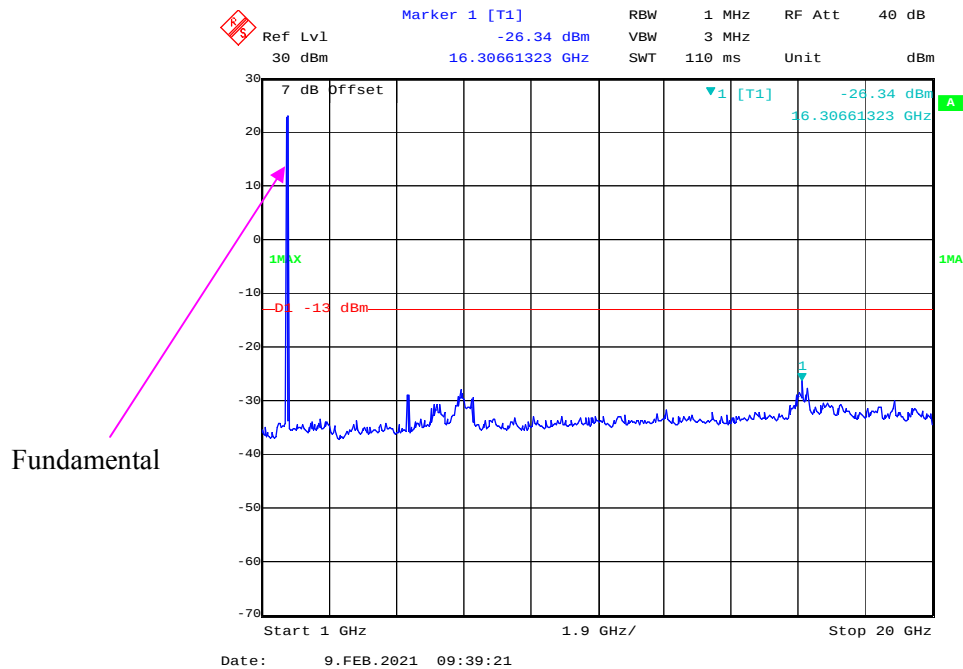
### 1 GHz – 20 GHz (3 MHz, 16-QAM, Low Channel)



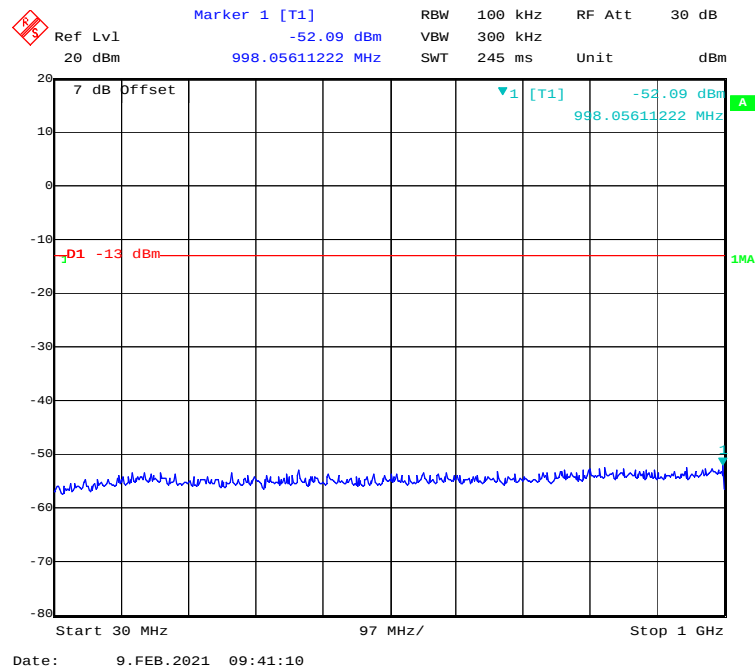
### 30 MHz - 1 GHz (5 MHz, QPSK, Low Channel)



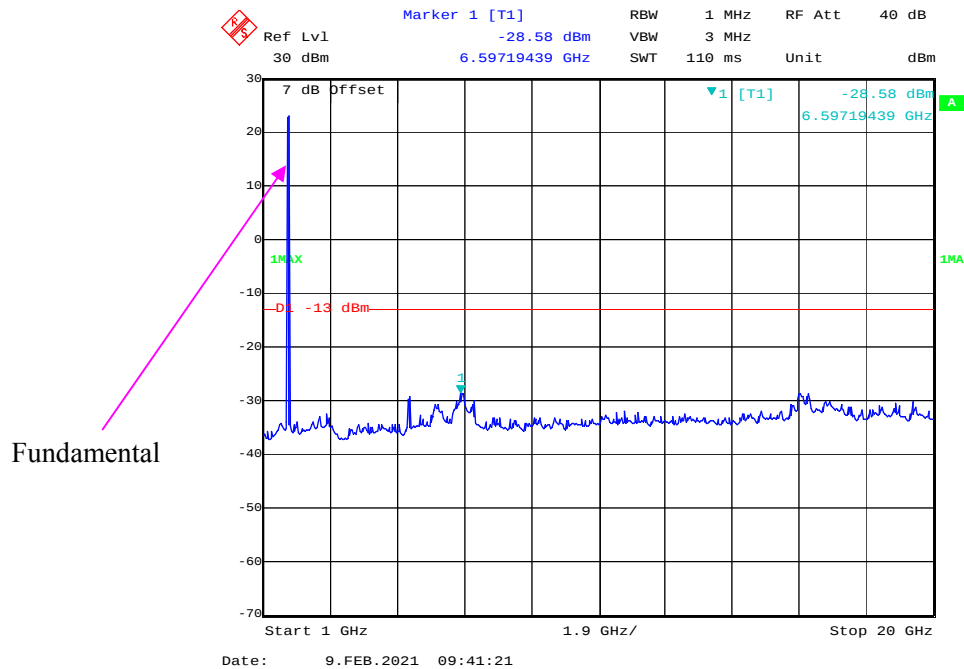
### 1 GHz – 20 GHz (5 MHz, QPSK, Low Channel)



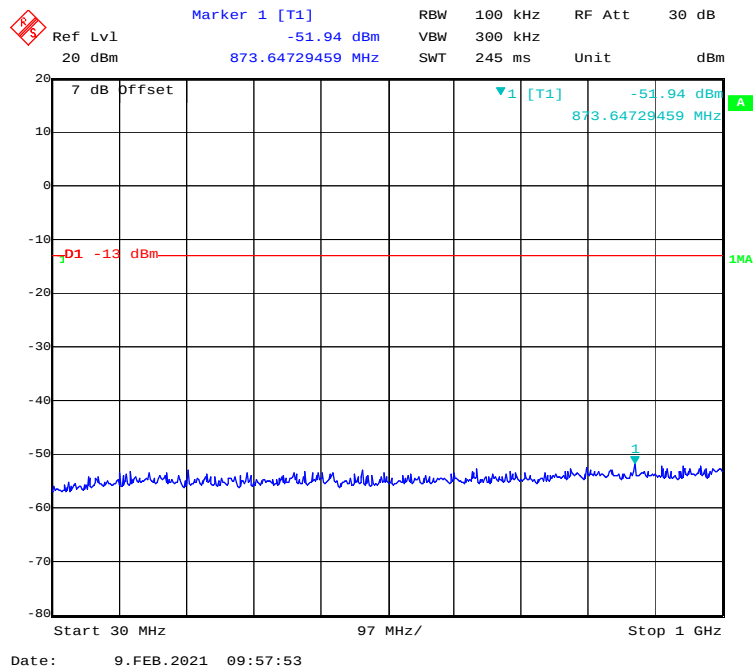
### 30 MHz - 1 GHz (5 MHz, 16-QAM, Low Channel)



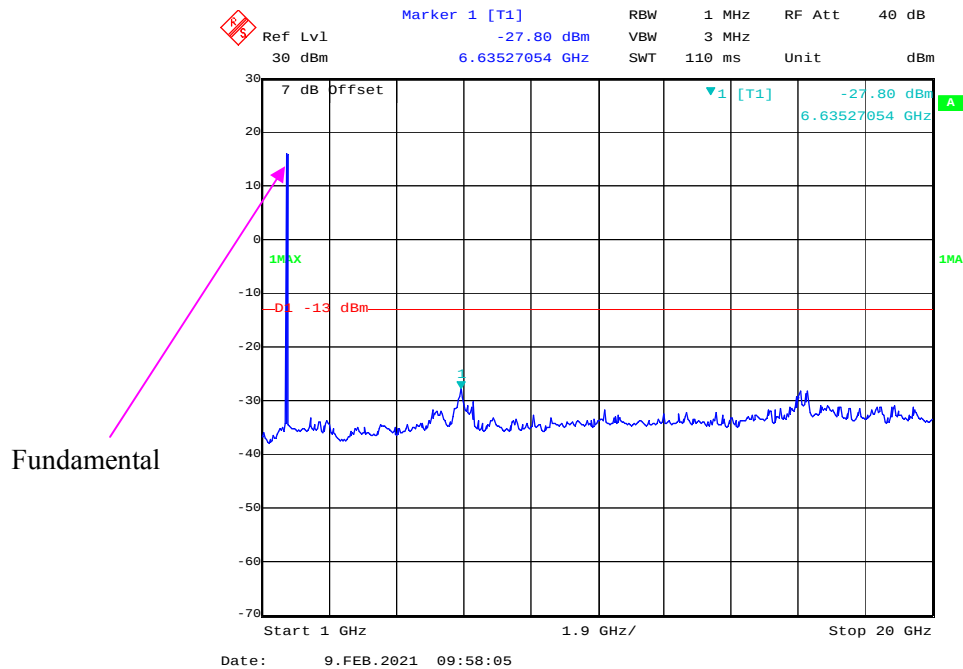
### 1 GHz – 20 GHz (5 MHz, 16-QAM, Low Channel)



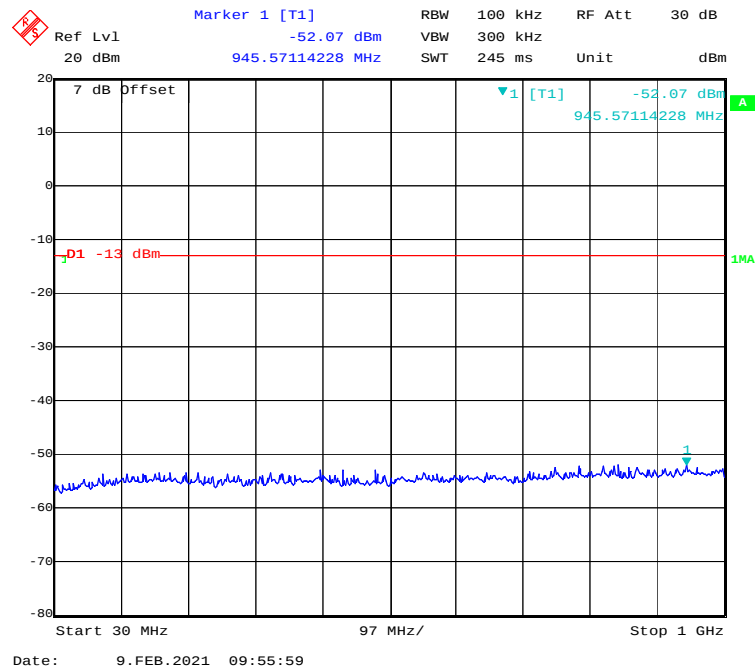
### 30 MHz - 1 GHz (10 MHz, QPSK, Low Channel)



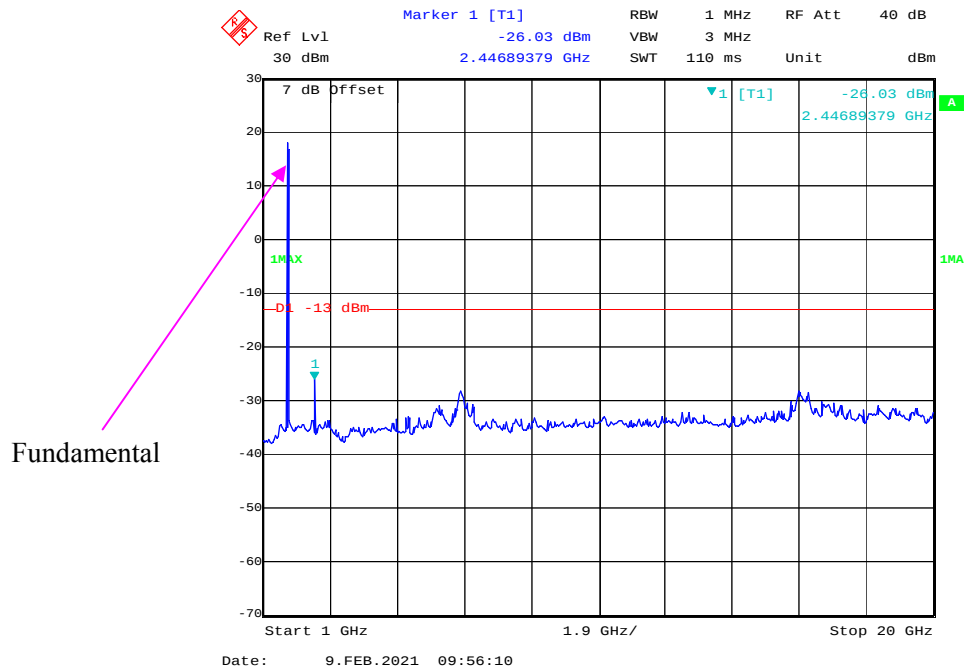
### 1 GHz – 20 GHz (10 MHz, QPSK, Low Channel)



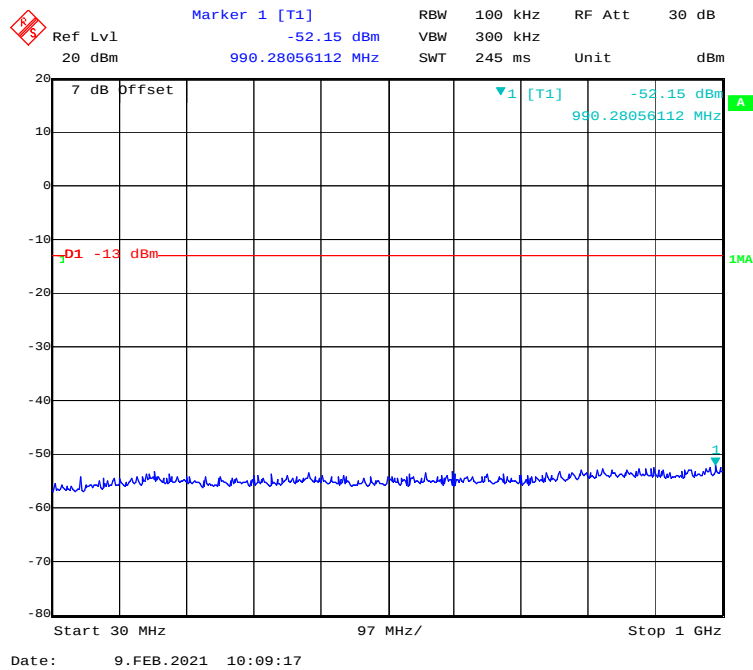
### 30 MHz - 1 GHz (10 MHz, 16-QAM, Low Channel)



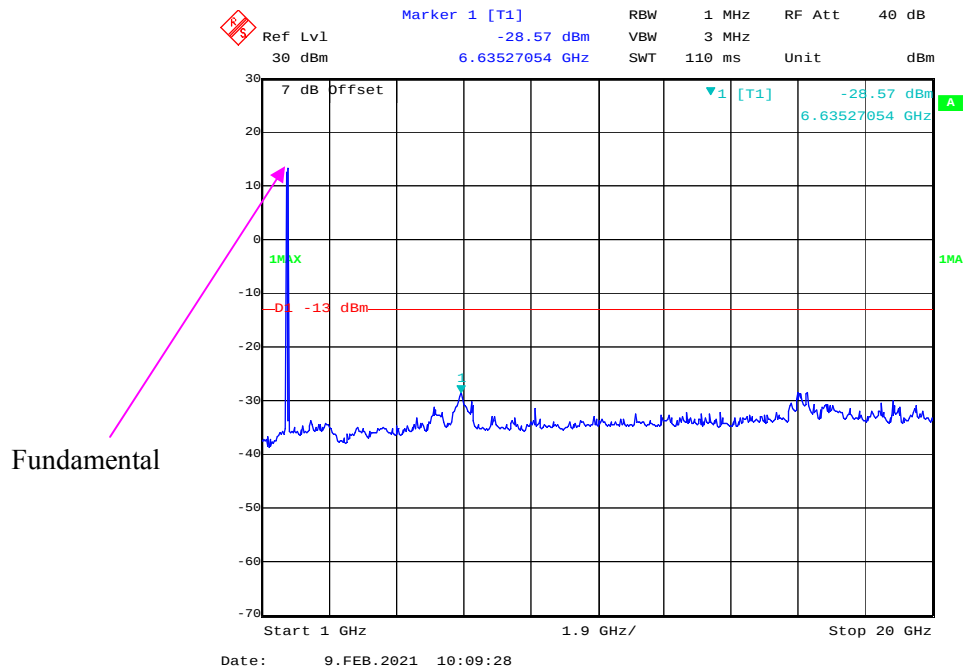
### 1 GHz – 20 GHz (10 MHz, 16-QAM, Low Channel)



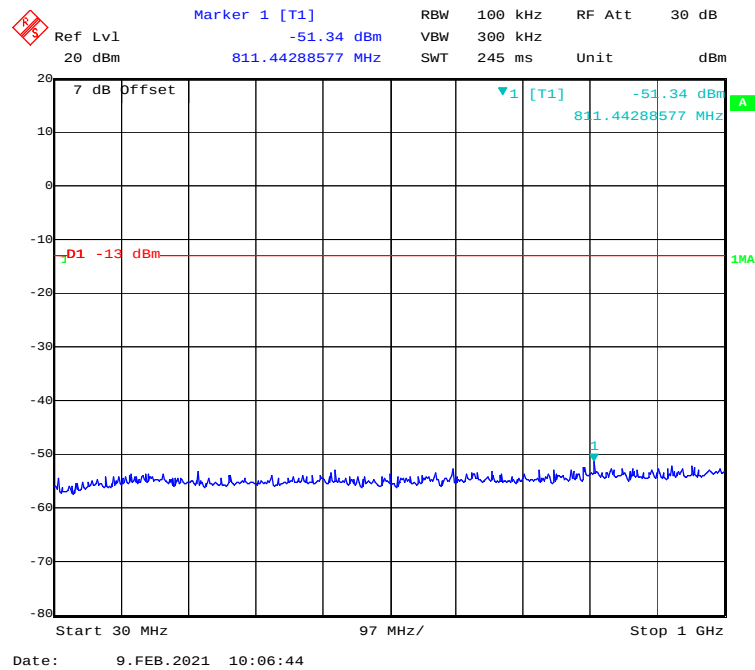
### 30 MHz - 1 GHz (15 MHz, QPSK, Low Channel)



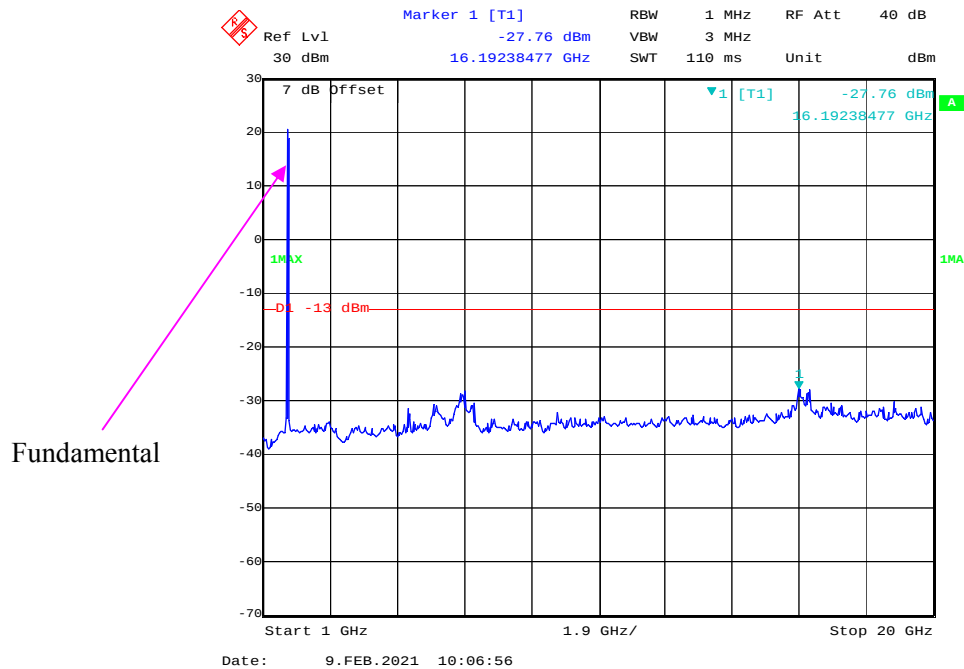
### 1 GHz – 20 GHz (15 MHz, QPSK, Low Channel)



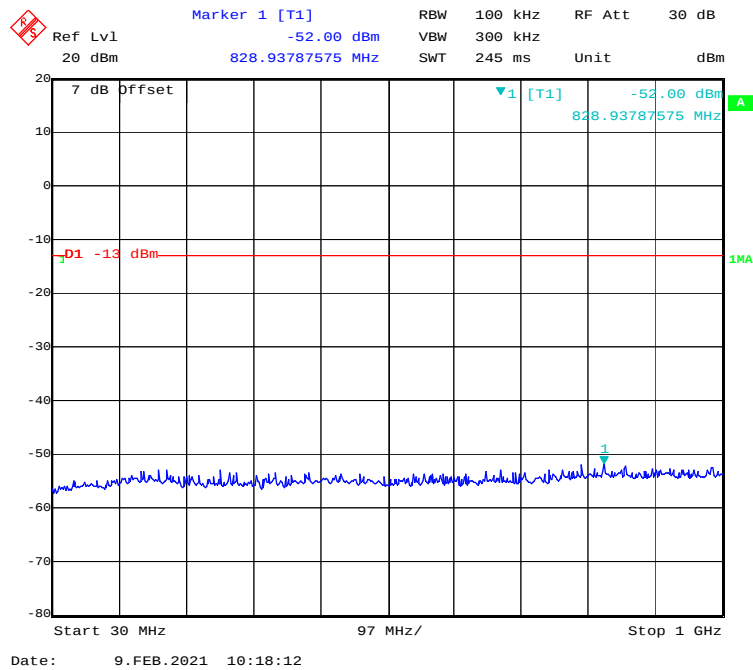
### 30 MHz - 1 GHz (15 MHz, 16-QAM, Low Channel)



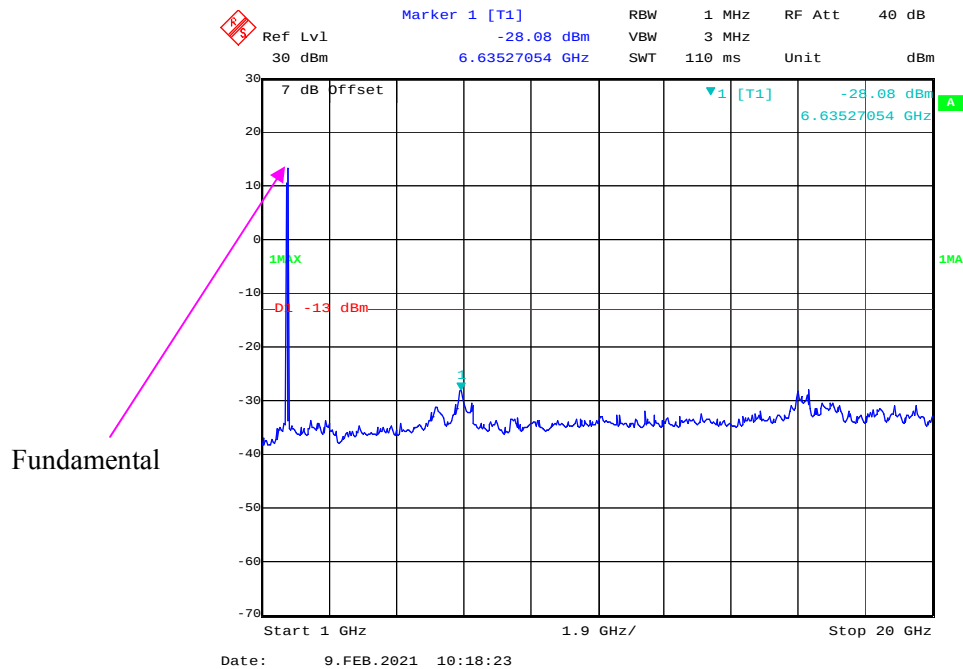
### 1 GHz – 20 GHz (15 MHz, 16-QAM, Low Channel)



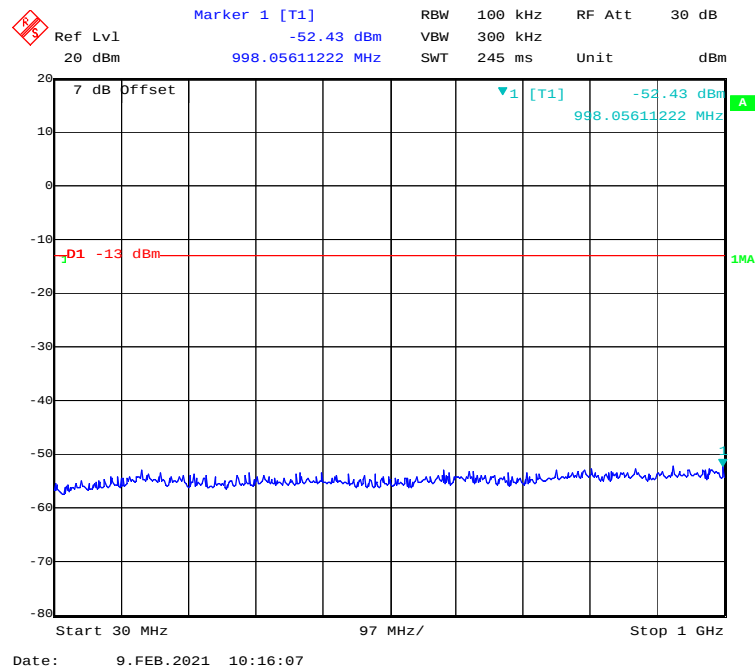
### 30 MHz - 1 GHz (20 MHz, QPSK, Low Channel)



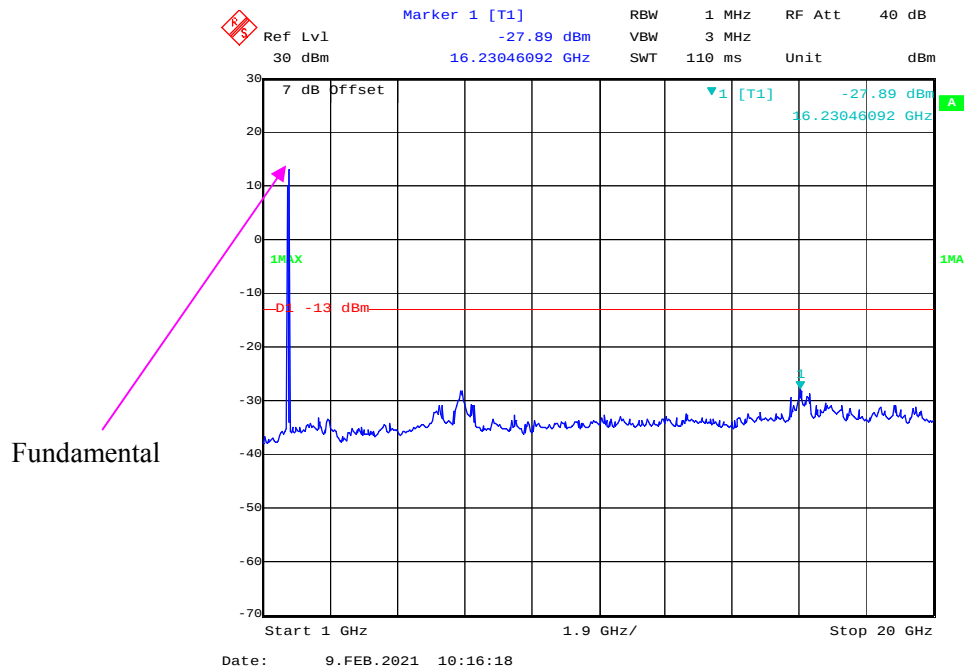
### 1 GHz – 20 GHz (20 MHz, QPSK, Low Channel)



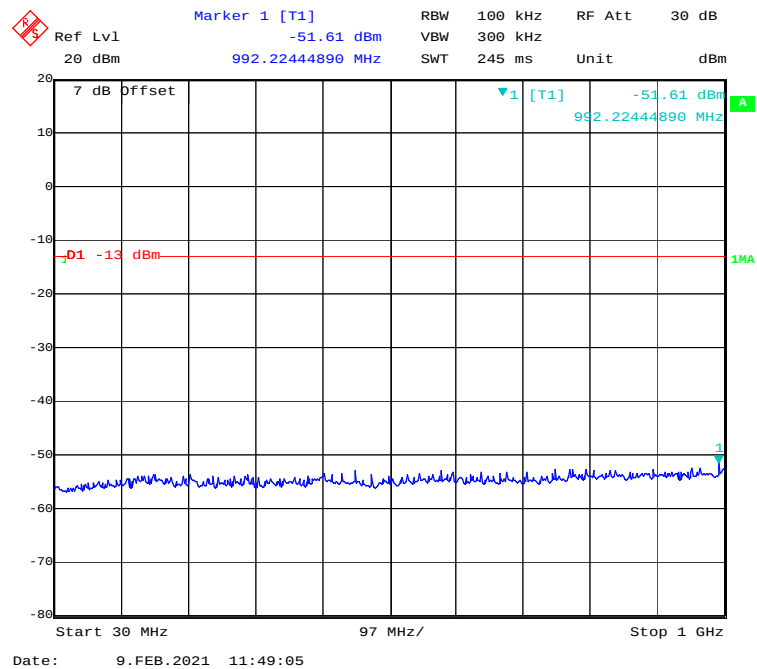
### 30 MHz - 1 GHz (20 MHz, 16-QAM, Low Channel)



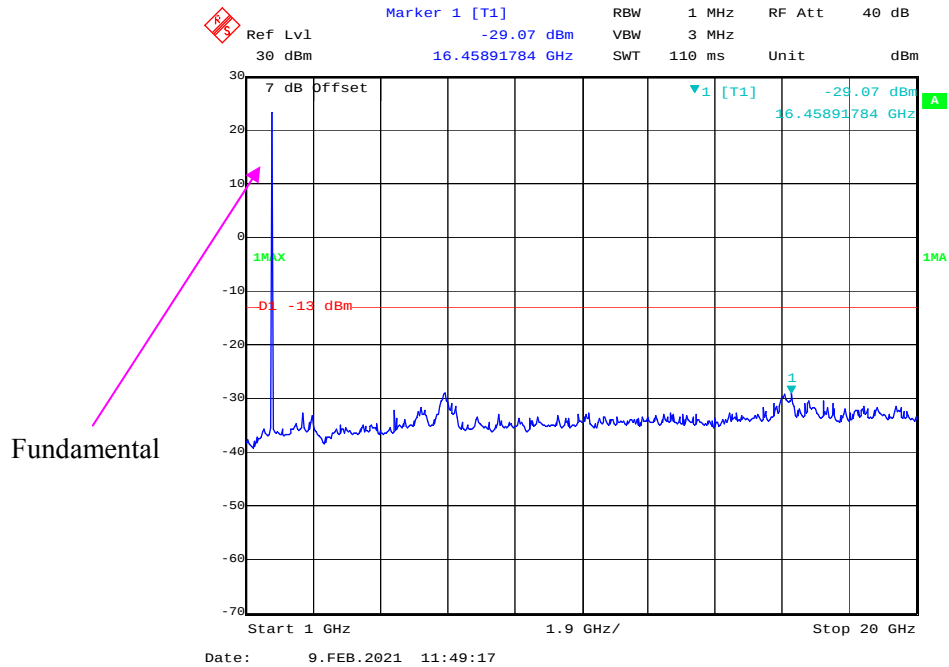
### 1 GHz – 20 GHz (20 MHz, 16-QAM, Low Channel)



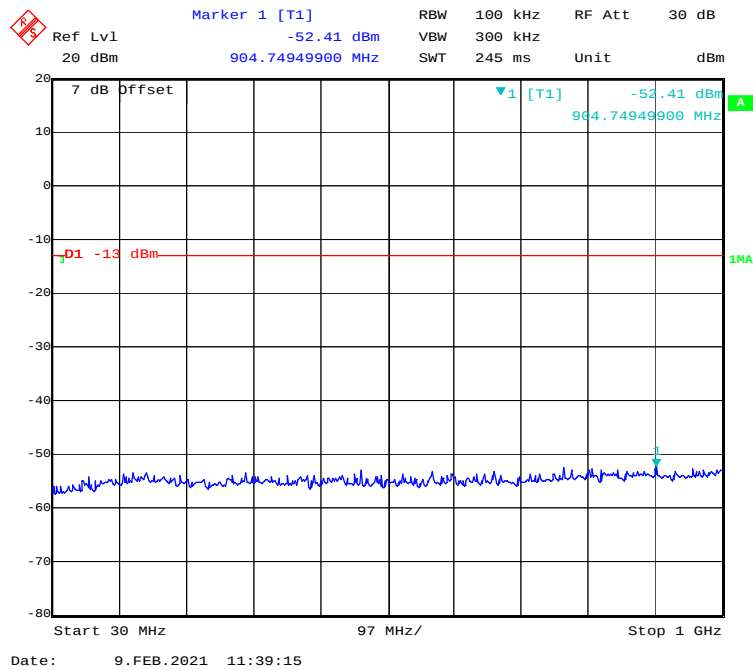
### 30 MHz - 1 GHz (1.4 MHz, QPSK, Middle Channel)



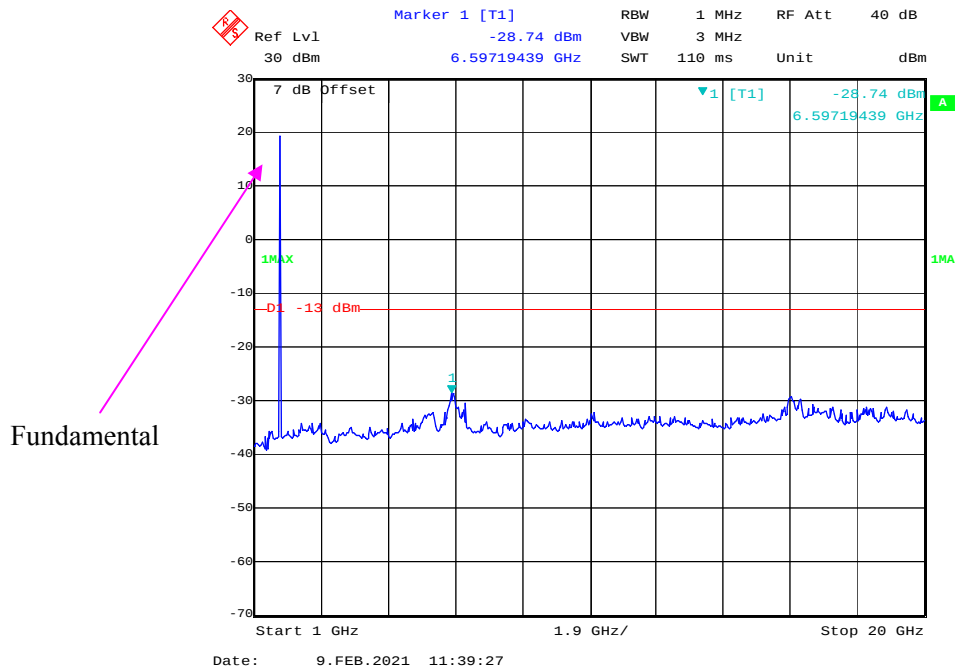
### 1 GHz – 20 GHz (1.4 MHz, QPSK, Middle Channel)



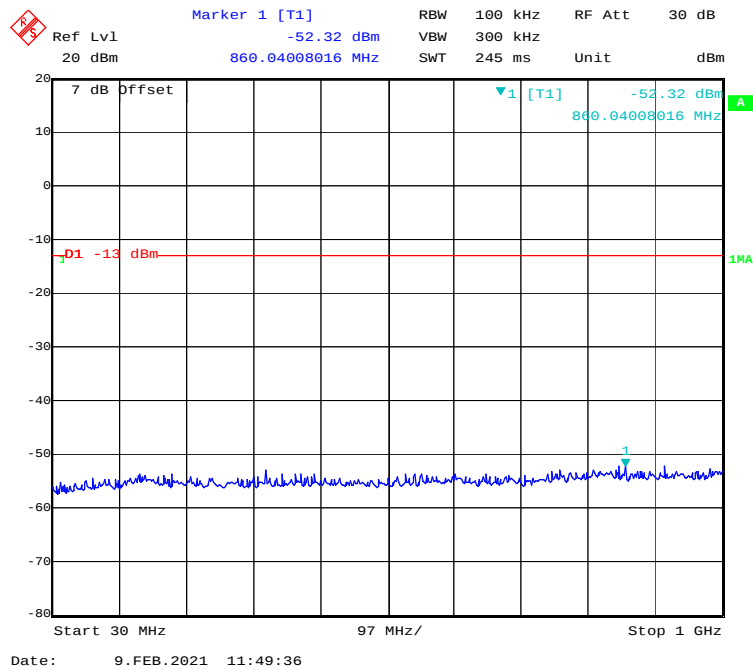
### 30 MHz - 1 GHz (1.4 MHz, 16-QAM, Middle Channel)



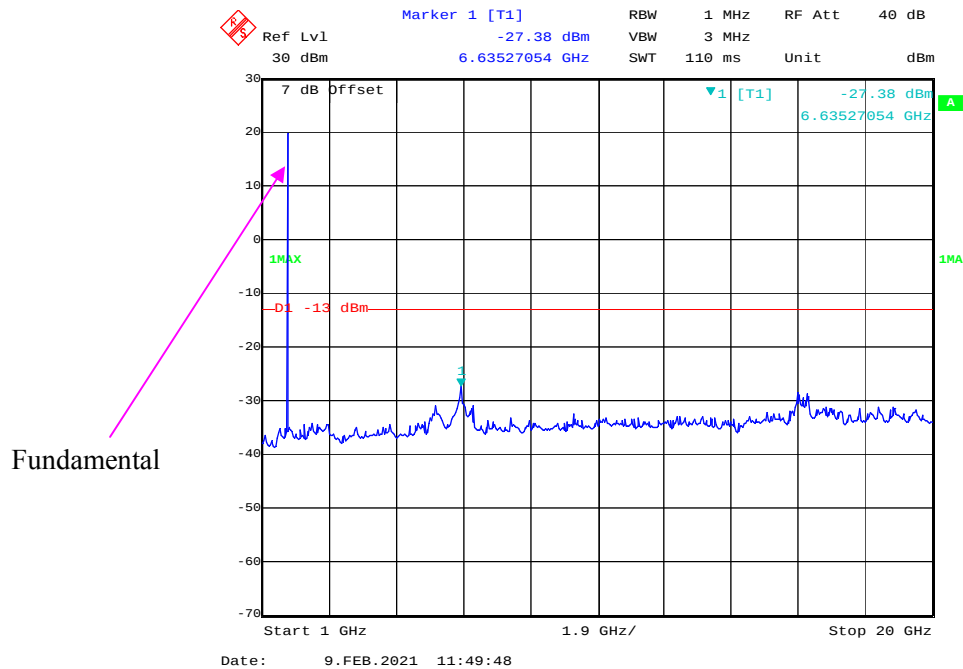
### 1 GHz – 20 GHz (1.4 MHz, 16-QAM, Middle Channel)



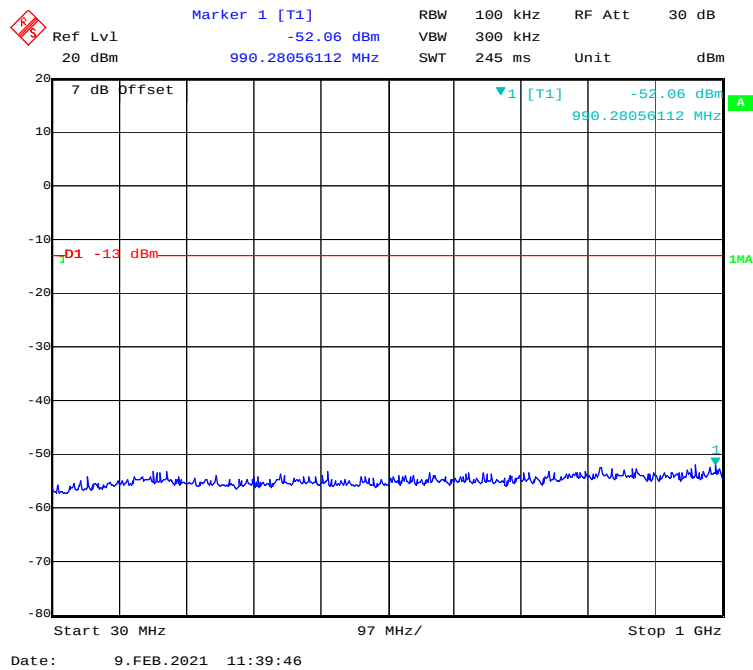
### 30 MHz - 1 GHz (3 MHz, QPSK, Middle Channel)



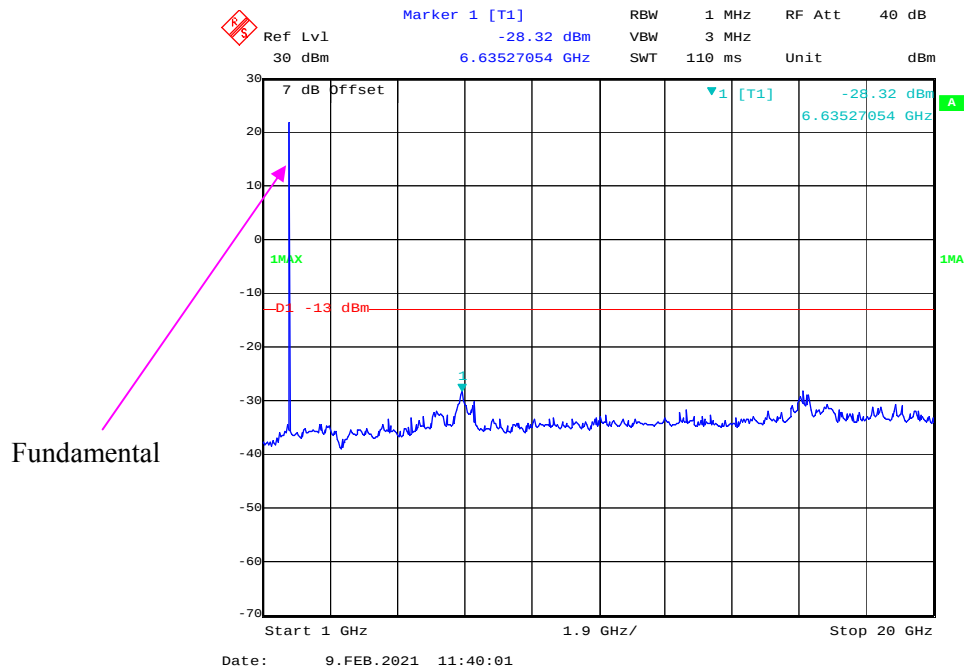
### 1 GHz – 20 GHz (3 MHz, QPSK, Middle Channel)



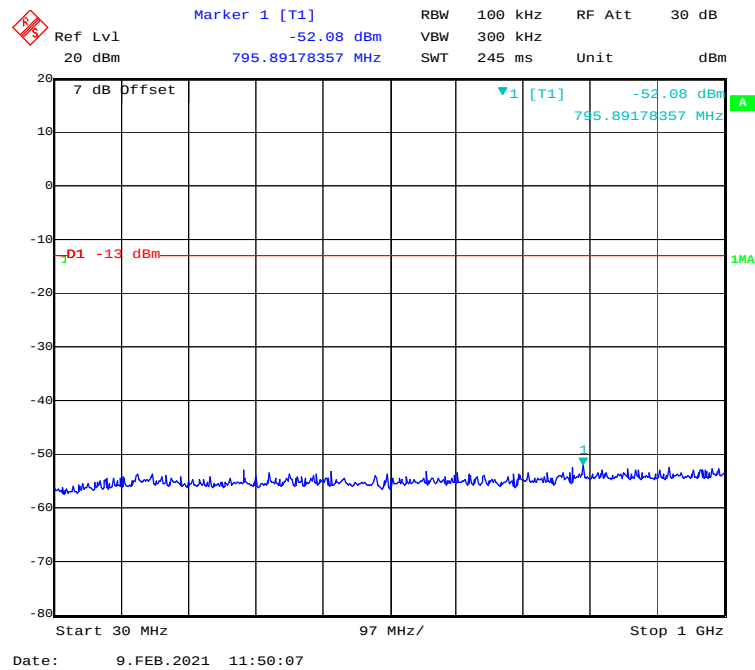
### 30 MHz - 1 GHz (3 MHz, 16-QAM, Middle Channel)



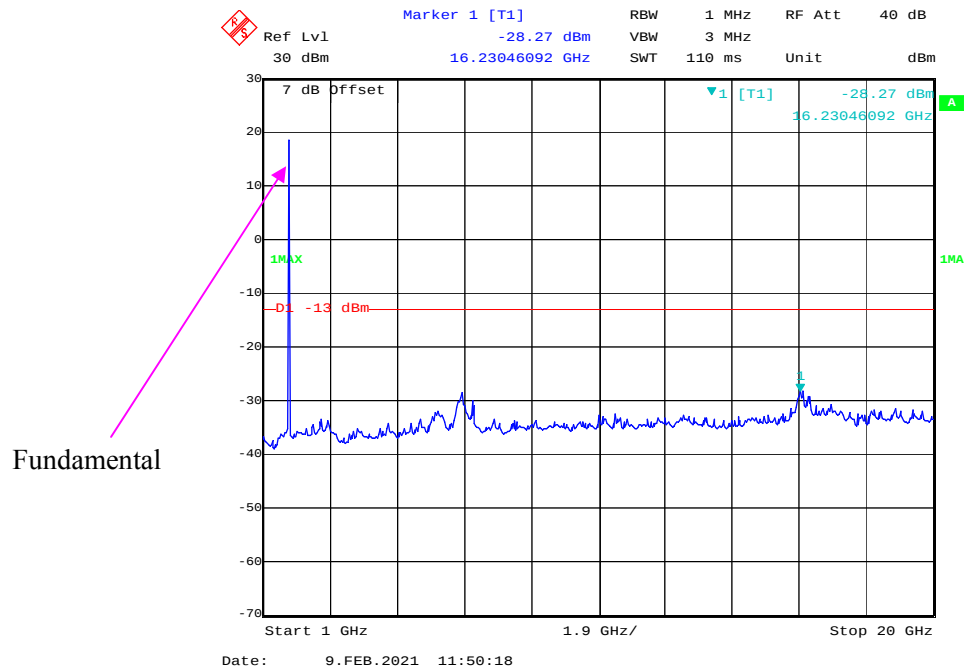
### 1 GHz – 20 GHz (3 MHz, 16-QAM, Middle Channel)



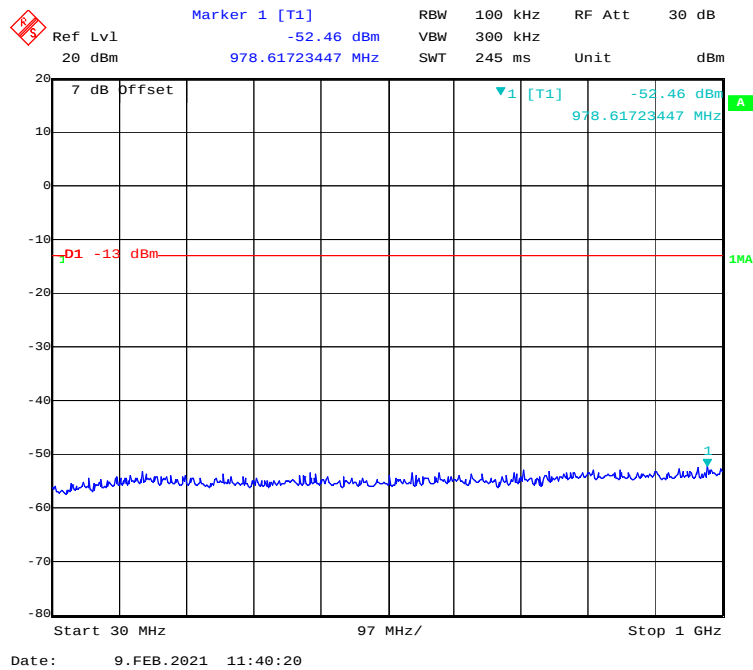
### 30 MHz - 1 GHz (5 MHz, QPSK, Middle Channel)



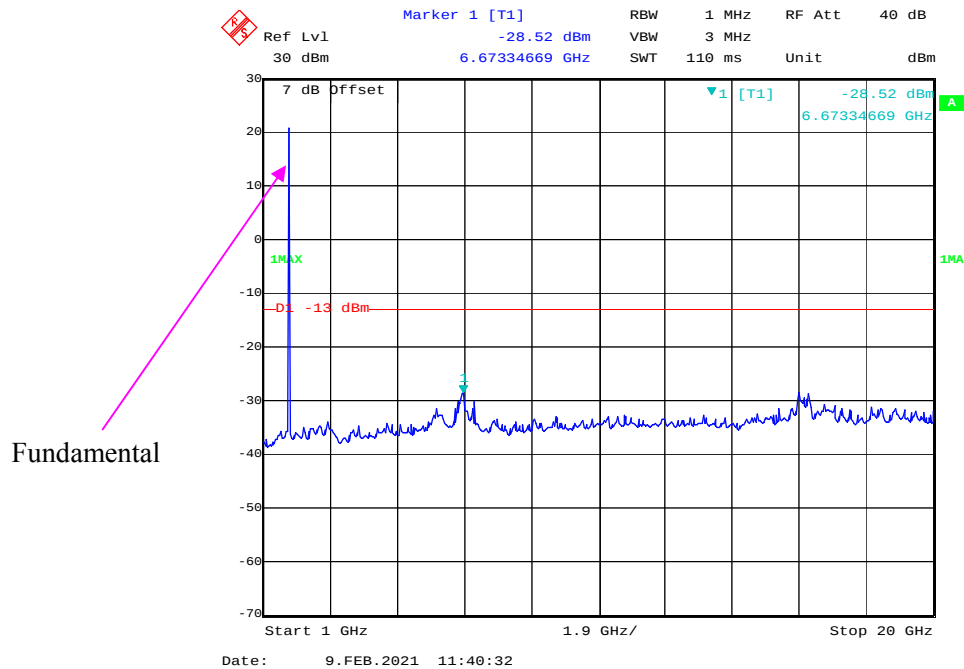
### 1 GHz – 20 GHz (5 MHz, QPSK, Middle Channel)



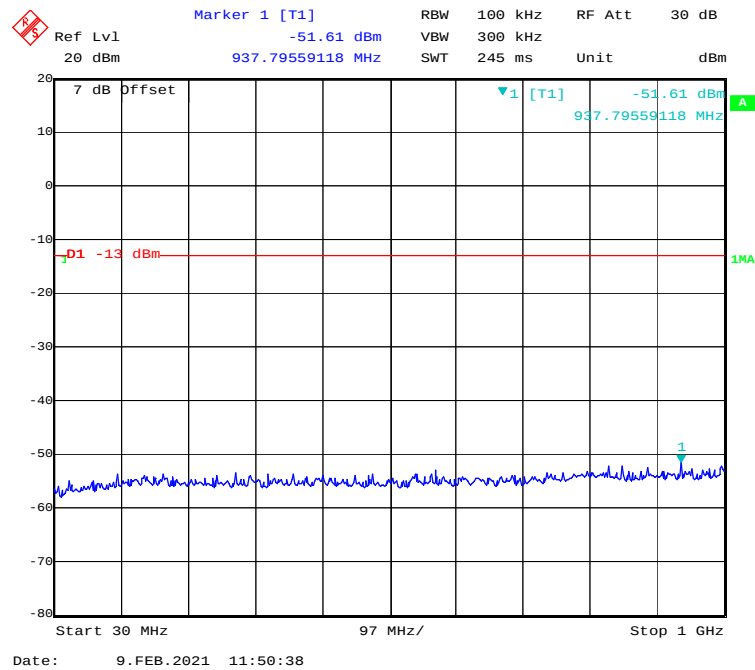
### 30 MHz - 1 GHz (5 MHz, 16-QAM, Middle Channel)



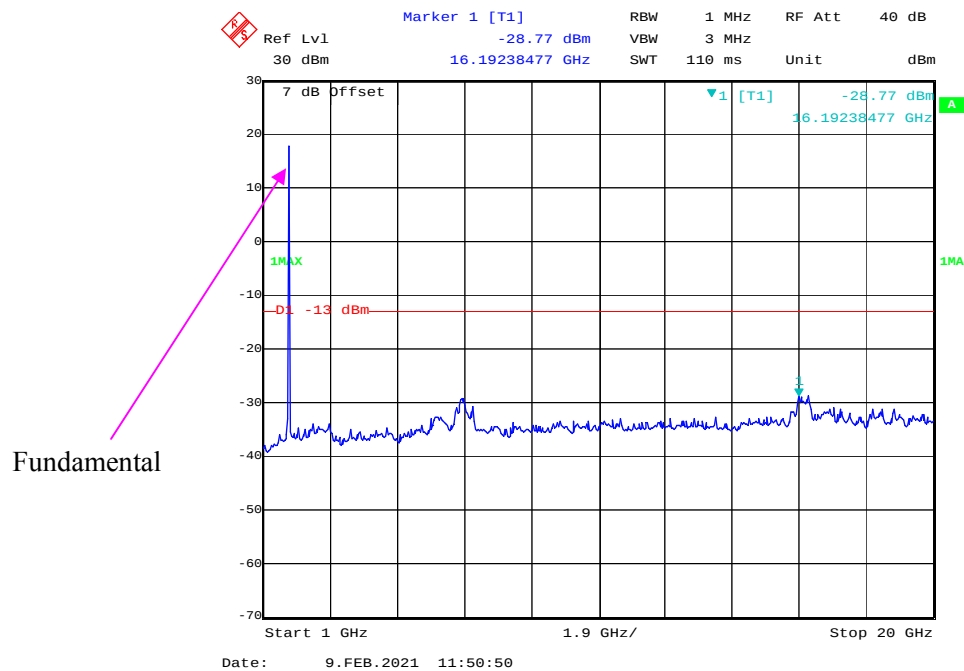
### 1 GHz – 20 GHz (5 MHz, 16-QAM, Middle Channel)



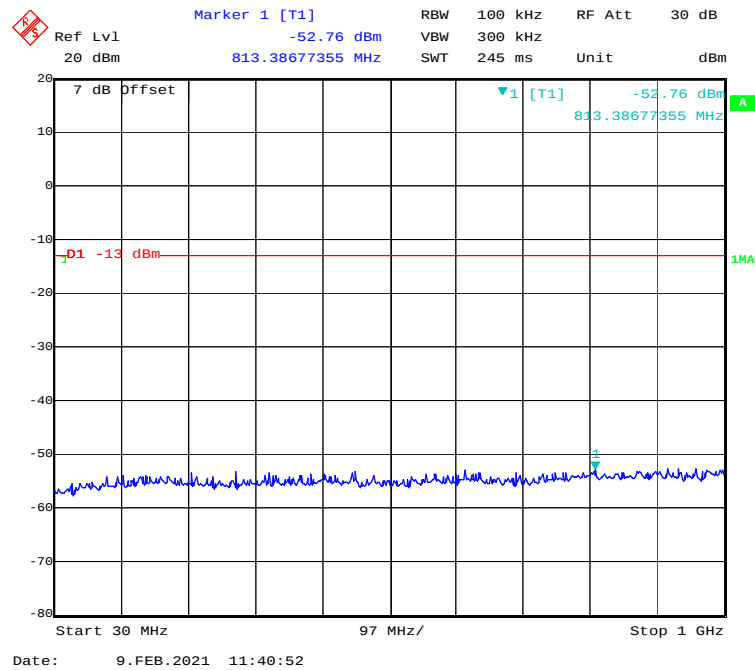
### 30 MHz - 1 GHz (10 MHz, QPSK, Middle Channel)



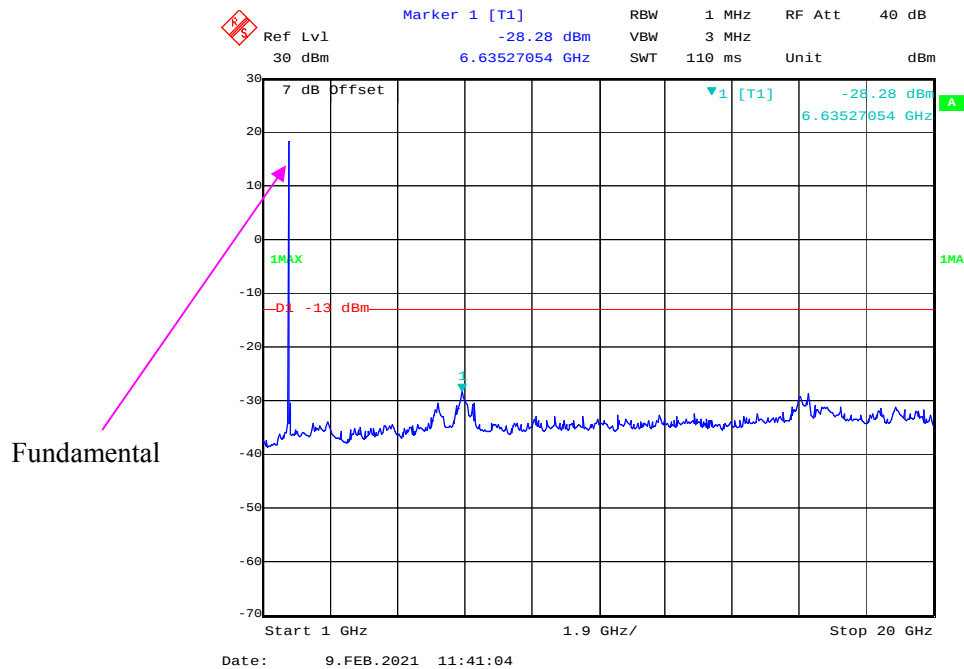
### 1 GHz – 20 GHz (10 MHz, QPSK, Middle Channel)



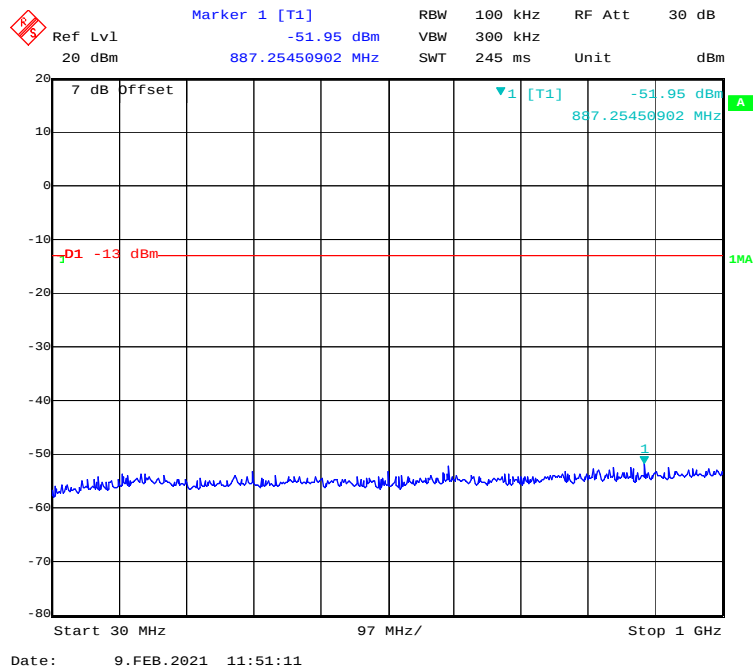
### 30 MHz - 1 GHz (10 MHz, 16-QAM, Middle Channel)



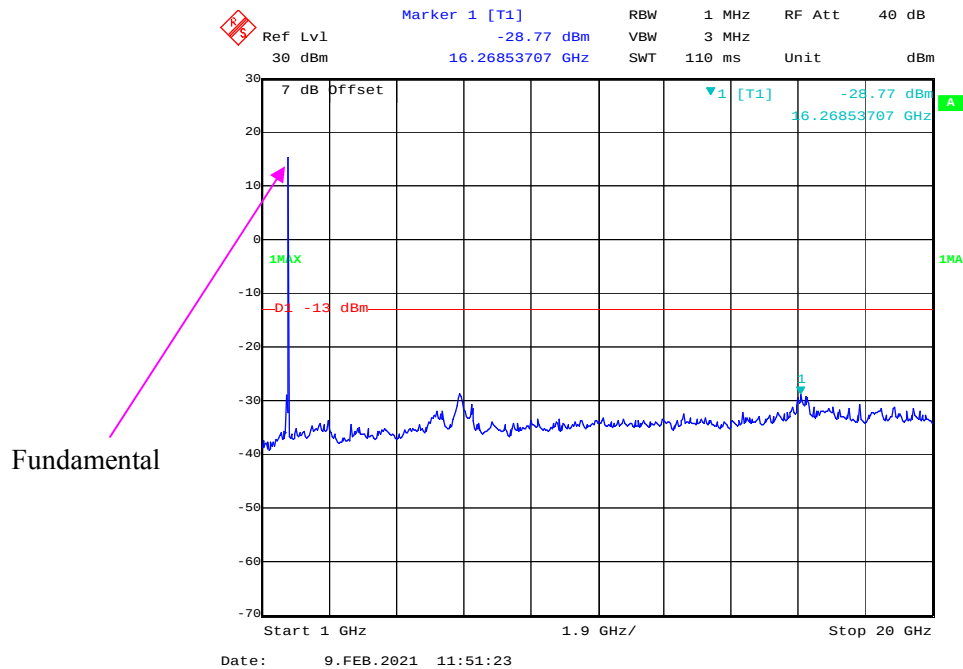
### 1 GHz – 20 GHz (10 MHz, 16-QAM, Middle Channel)



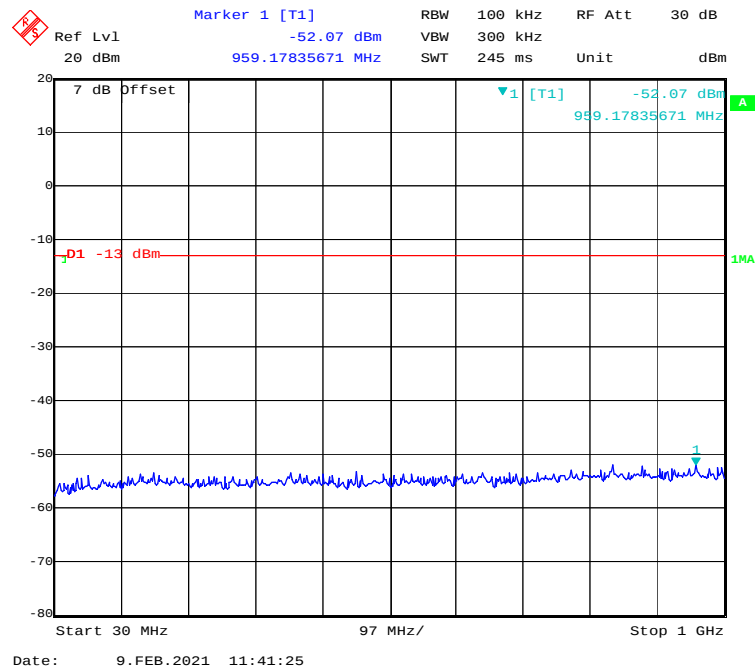
### 30 MHz - 1 GHz (15 MHz, QPSK, Middle Channel)



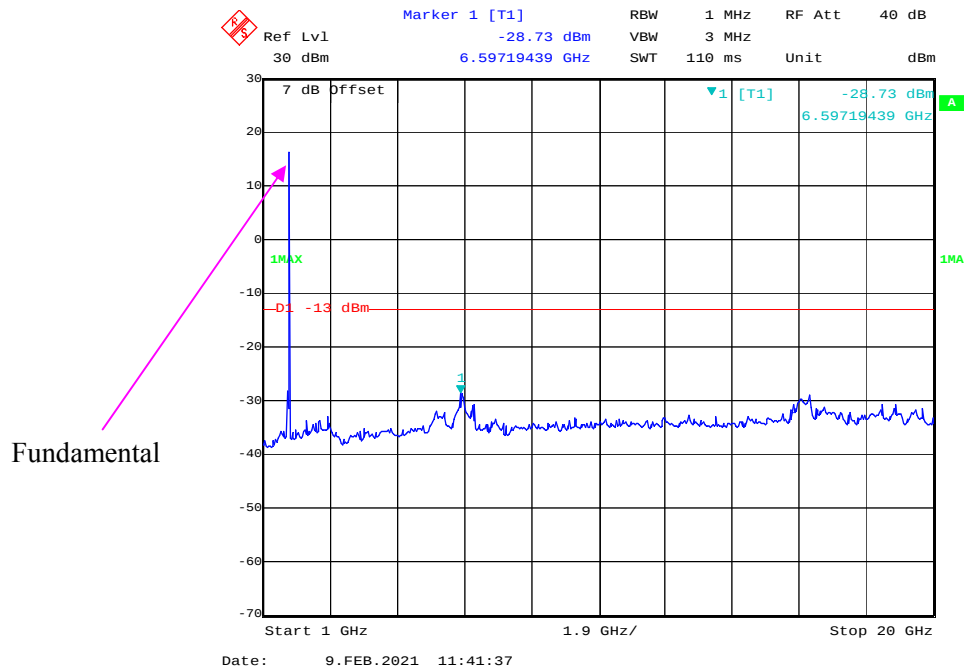
### 1 GHz – 20 GHz (15 MHz, QPSK, Middle Channel)



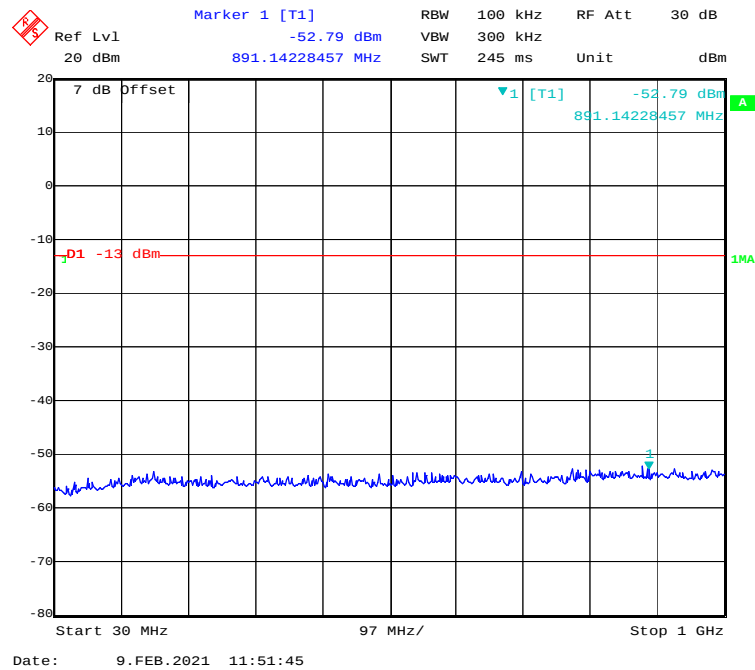
### 30 MHz - 1 GHz (15 MHz, 16-QAM, Middle Channel)



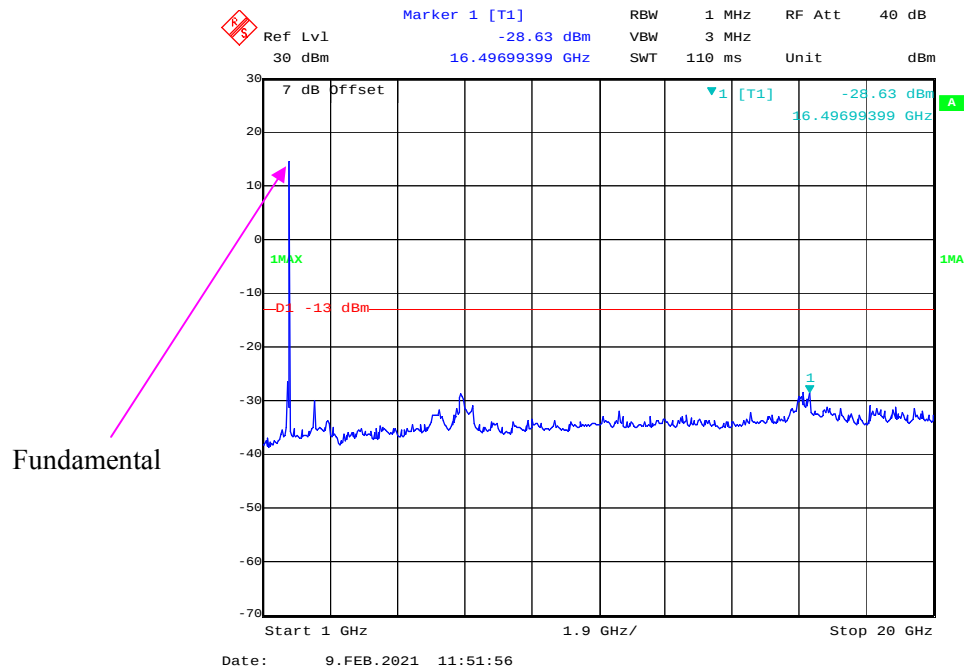
### 1 GHz – 20 GHz (15 MHz, 16-QAM, Middle Channel)



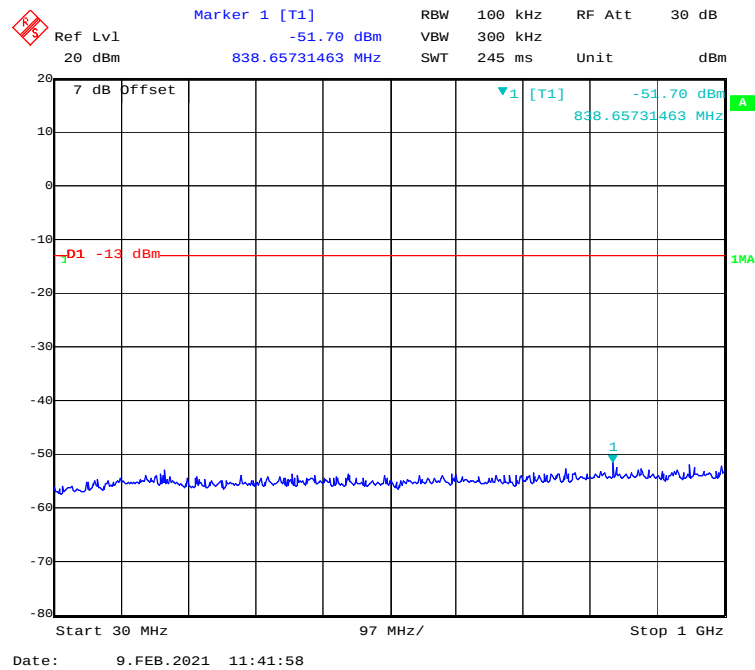
### 30 MHz - 1 GHz (20 MHz, QPSK, Middle Channel)



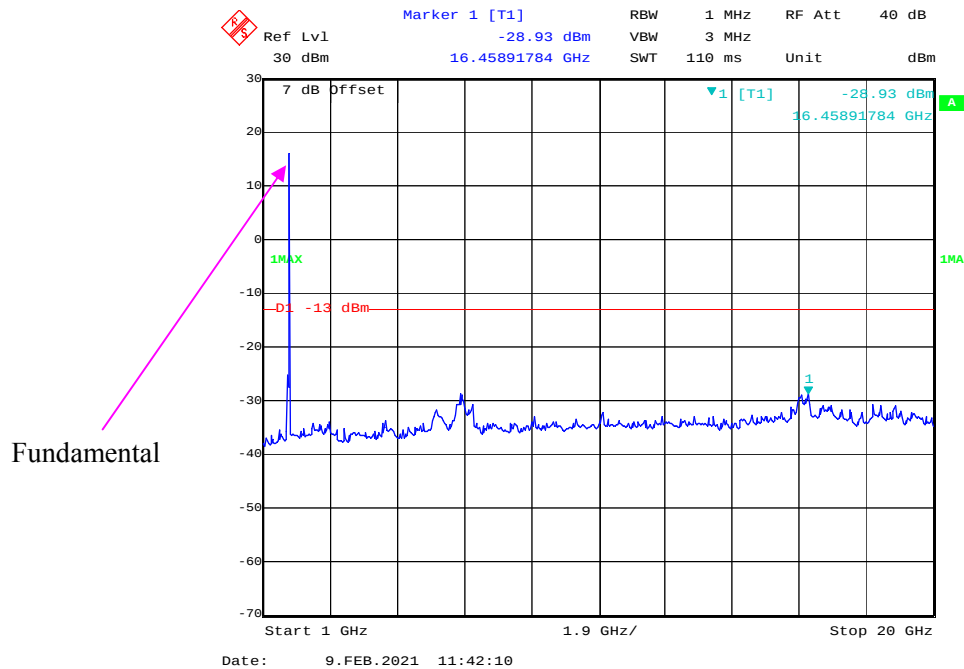
### 1 GHz – 20 GHz (20 MHz, QPSK, Middle Channel)



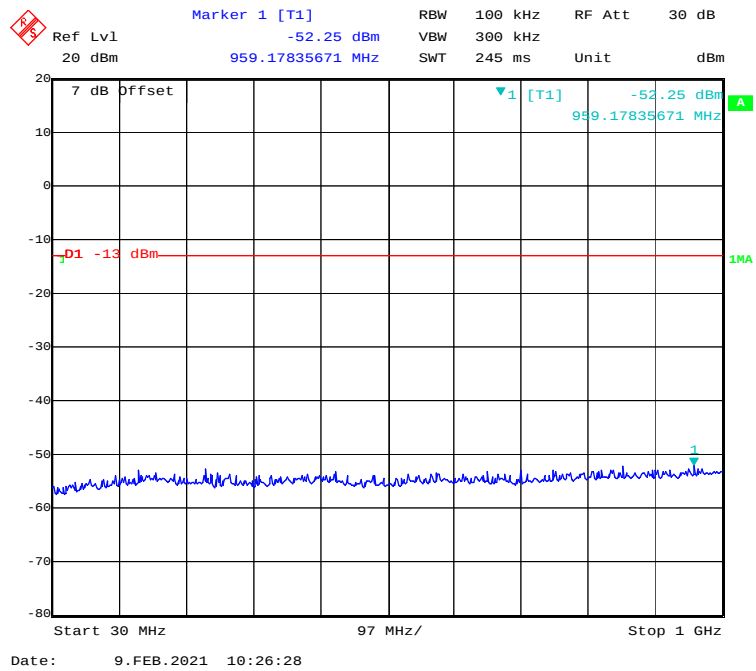
### 30 MHz - 1 GHz (20 MHz, 16-QAM, Middle Channel)



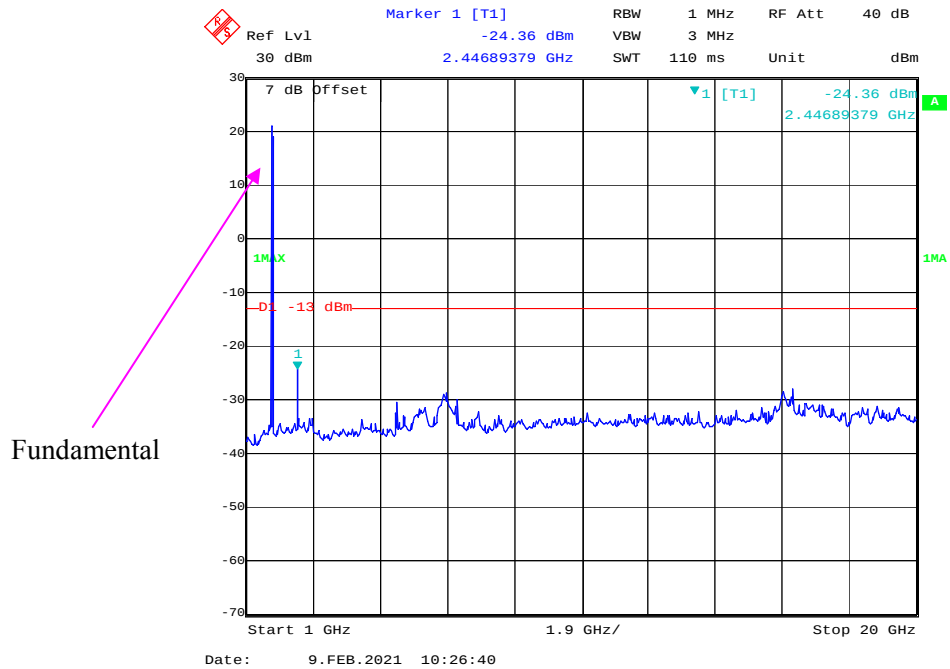
### 1 GHz – 20 GHz (20 MHz, 16-QAM, Middle Channel)



### 30 MHz - 1 GHz (1.4 MHz, QPSK, High Channel)



### 1 GHz – 20 GHz (1.4 MHz, QPSK, High Channel)



The screenshot shows a Spectrum Analyzer interface with the following details:

- Top Bar:**
  - Marker 1 [T1] (blue text)
  - Ref Lvl: -52.18 dBm
  - RBW: 100 kHz
  - VBW: 300 kHz
  - RF Att: 30 dB
  - 20 dBm
  - 978.61723447 MHz
  - SWT: 245 ms
  - Unit: dBm
- Grid and Trace:**
  - A grid with major lines every 10 dB and minor lines every 2 dB.
  - A blue trace representing the spectrum, showing a noisy baseline around -52.18 dBm.
  - A red horizontal line at -13 dBm, labeled "D1 -13 dBm".
  - A green arrow pointing to the blue trace at the marker frequency, labeled "1 [T1]".
  - A green arrow pointing to the red line, labeled "A".
- Bottom Bar:**
  - Start 30 MHz
  - 97 MHz/ (span)
  - Stop 1 GHz
- Date and Time:** 9.FEB.2021 10:24:30

Ref Lvl 30 dBm Marker 1 [T1] -28.15 dBm RBW 1 MHz RF Att 40 dB  
 30 dBm 16.45891784 GHz VBW 3 MHz SWT 110 ms Unit dBm

7 dB Offset

1MAX

-13 dBm

1 [T1] -28.15 dBm 16.45891784 GHz

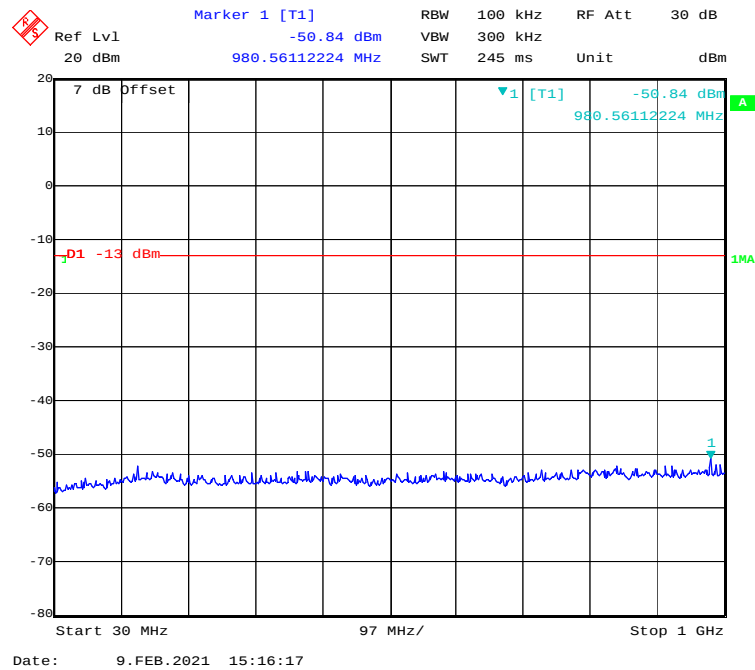
1

Fundamental

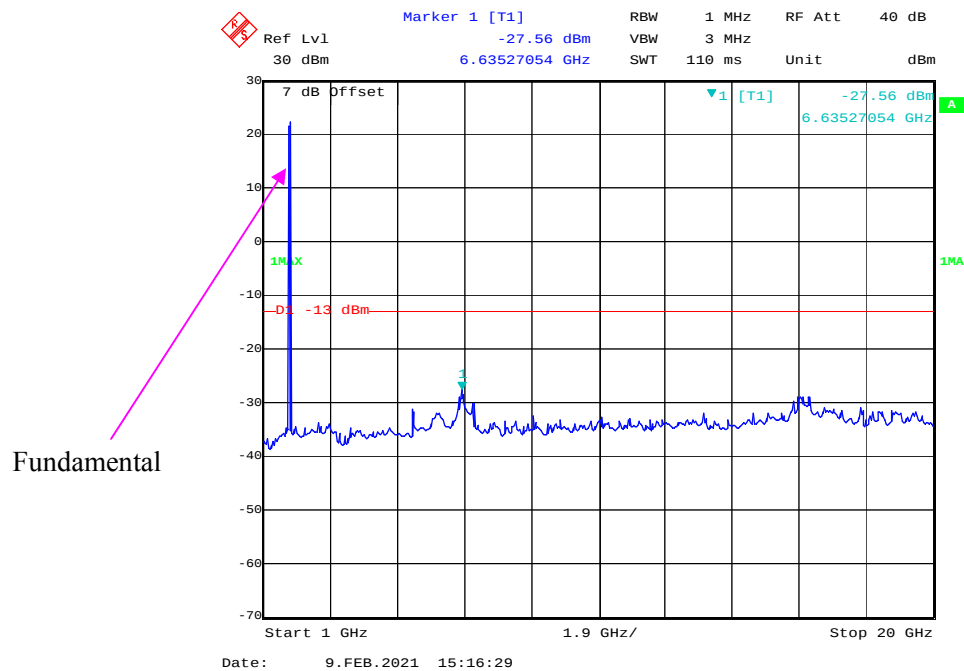
Start 1 GHz 1.9 GHz/ Stop 20 GHz

Date: 9.FEB.2021 10:24:42

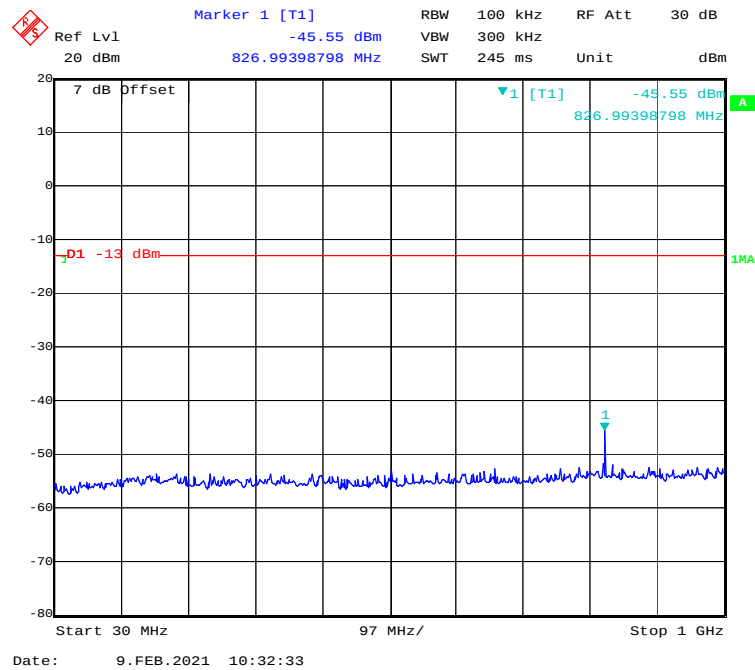
### 30 MHz - 1 GHz (3 MHz, QPSK, High Channel)



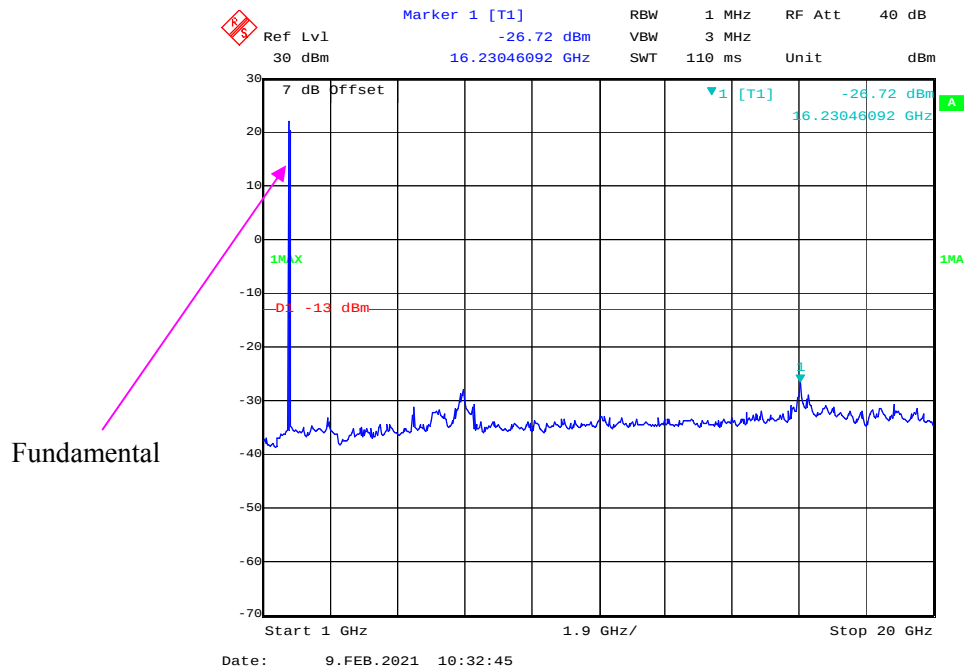
### 1 GHz - 20 GHz (3 MHz, QPSK, High Channel)



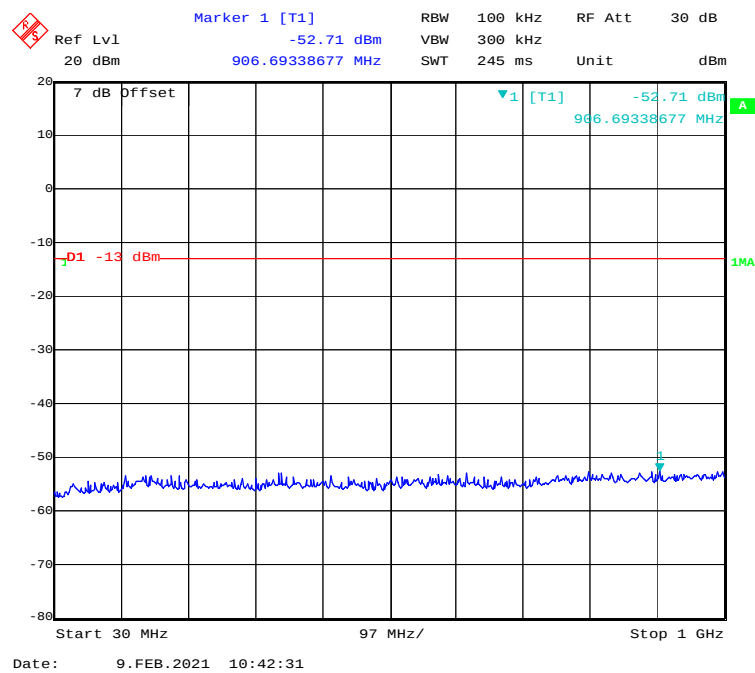
### 30 MHz - 1 GHz (3 MHz, 16-QAM, High Channel)



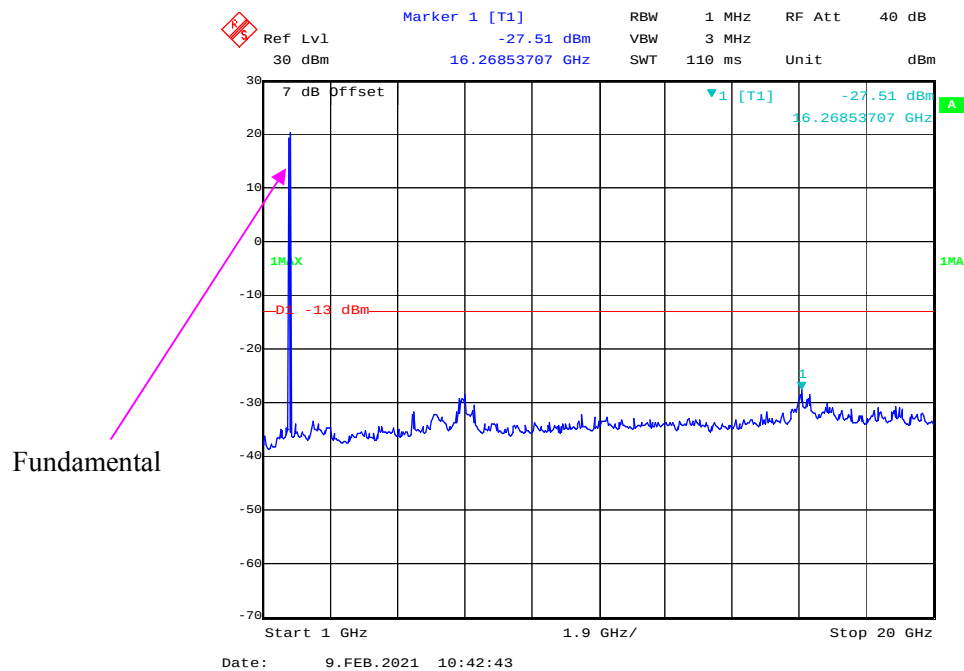
### 1 GHz – 20 GHz (3 MHz, 16-QAM, High Channel)



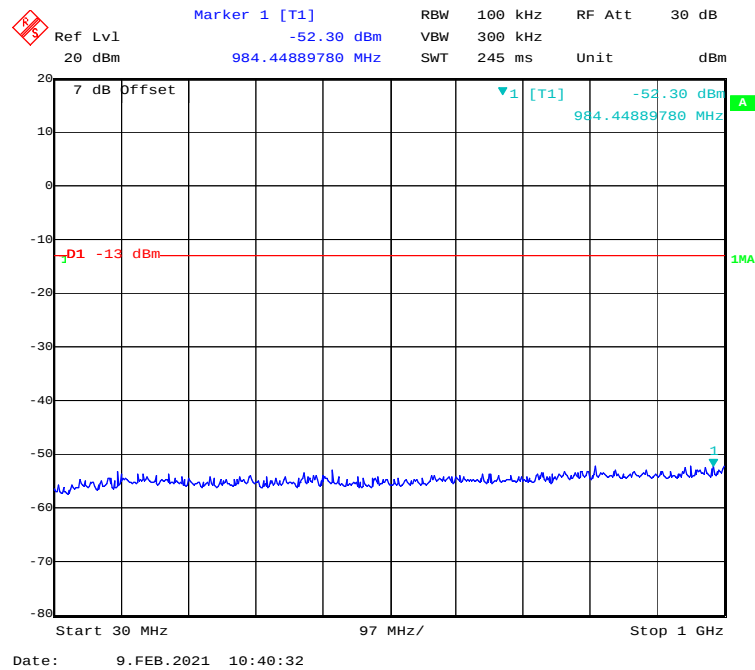
### 30 MHz - 1 GHz (5 MHz, QPSK, High Channel)



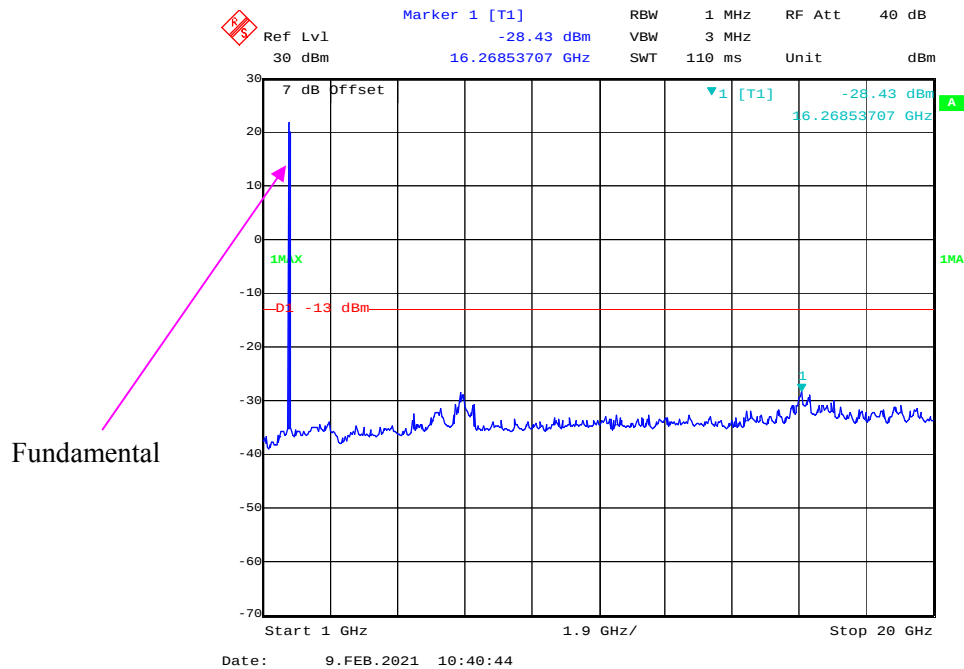
### 1 GHz – 20 GHz (5 MHz, QPSK, High Channel)



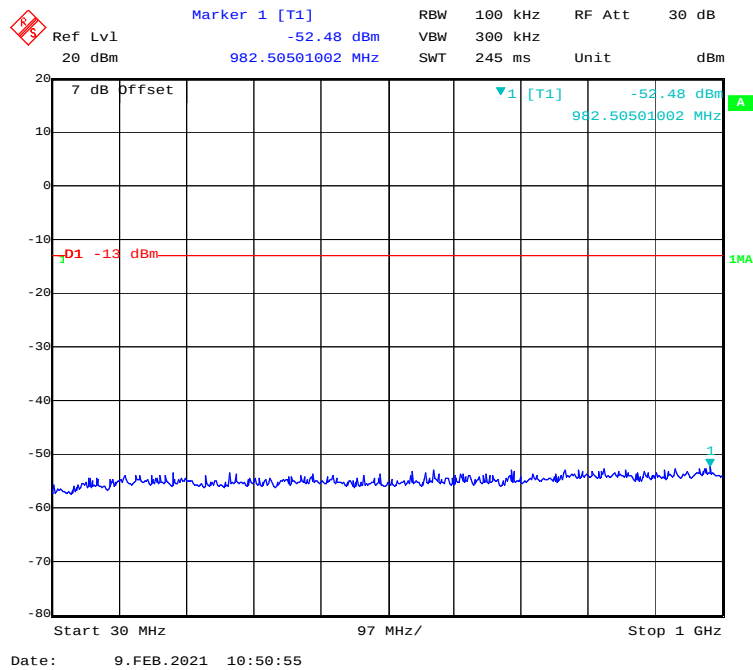
### 30 MHz - 1 GHz (5 MHz, 16-QAM, High Channel)



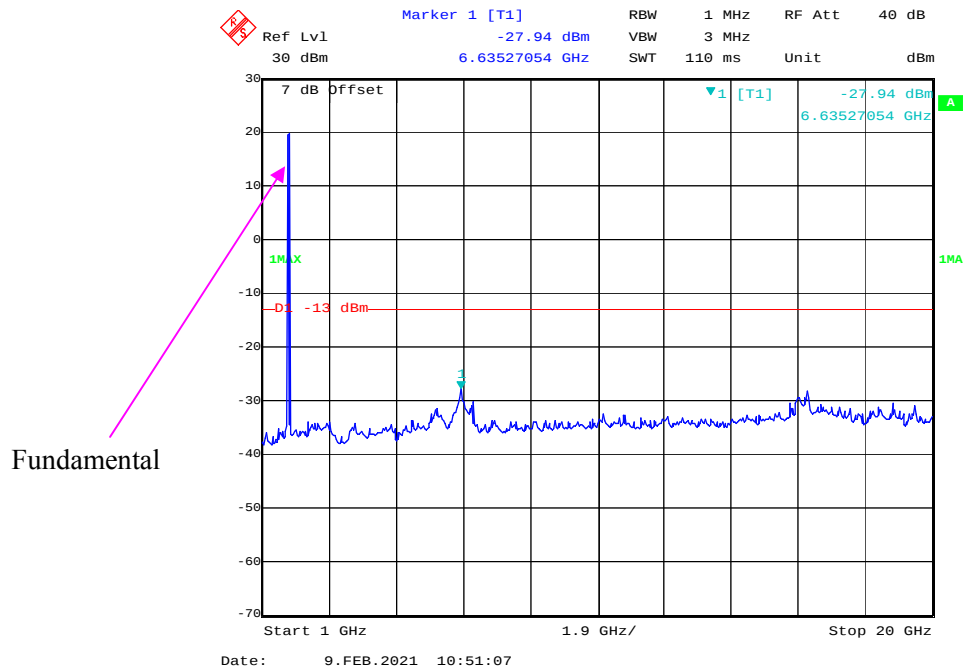
### 1 GHz – 20 GHz (5 MHz, 16-QAM, High Channel)



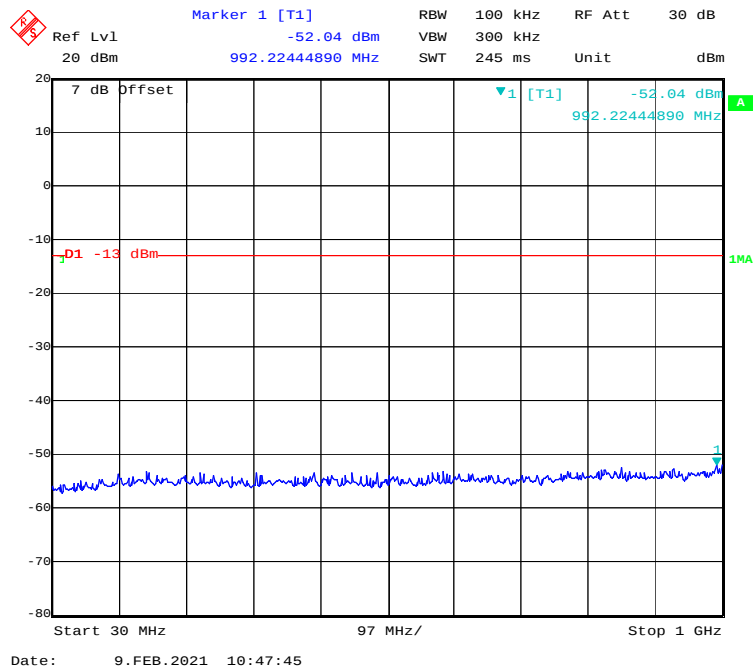
### 30 MHz - 1 GHz (10 MHz, QPSK, High Channel)



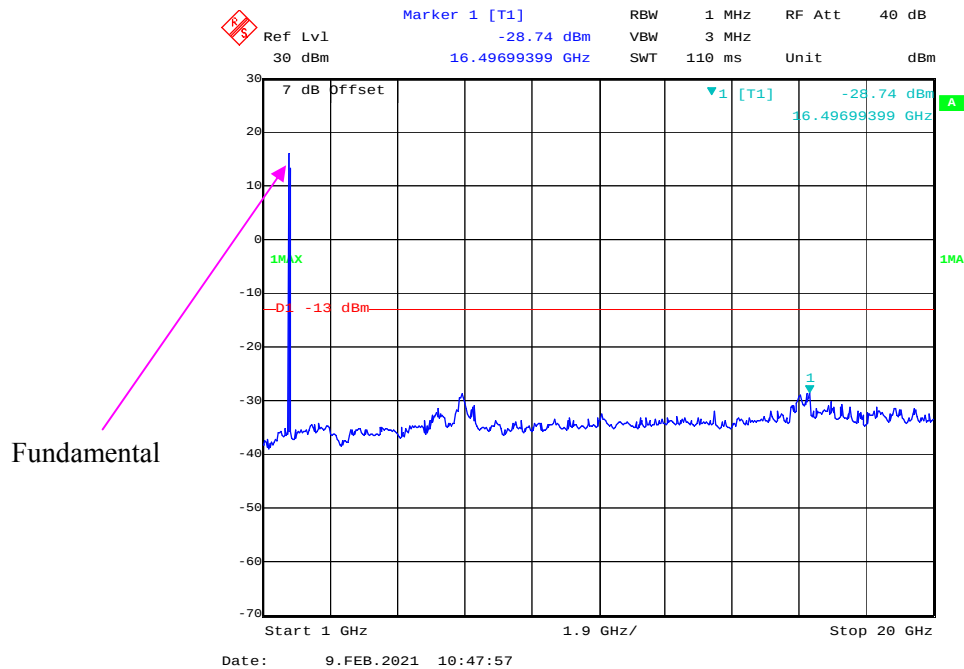
### 1 GHz – 20 GHz (10 MHz, QPSK, High Channel)



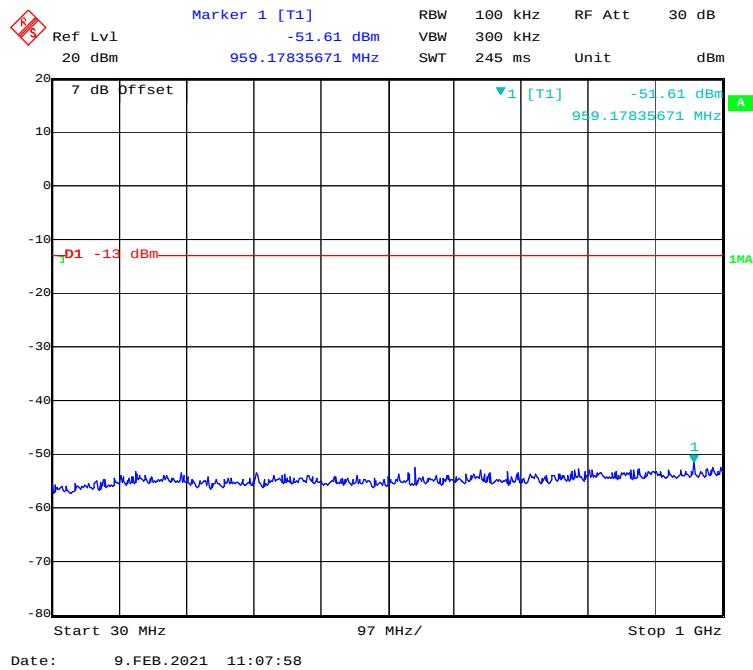
### 30 MHz - 1 GHz (10 MHz, 16-QAM, High Channel)



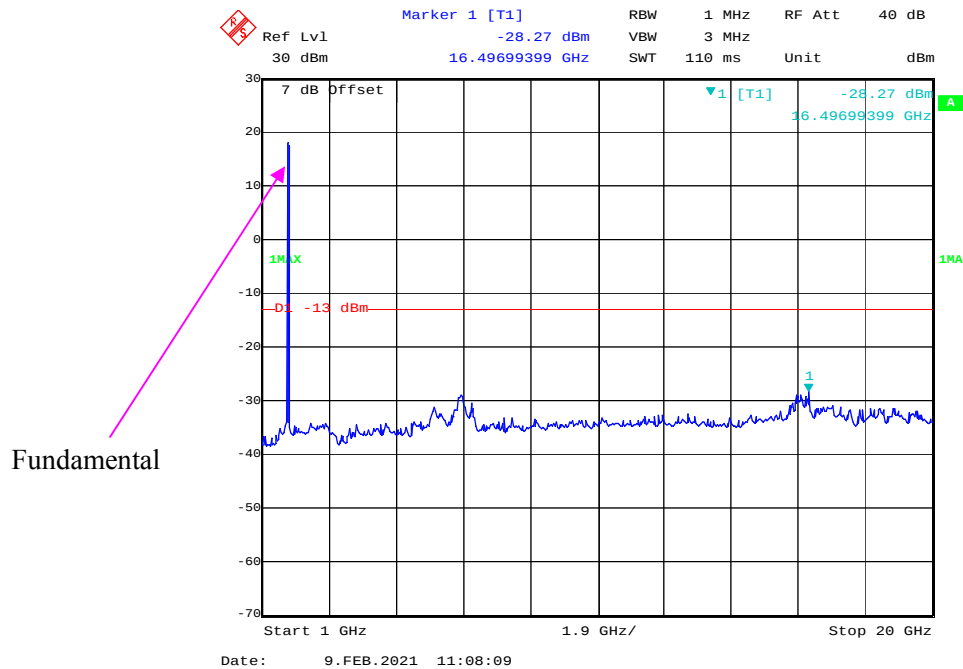
### 1 GHz – 20 GHz (10 MHz, 16-QAM, High Channel)



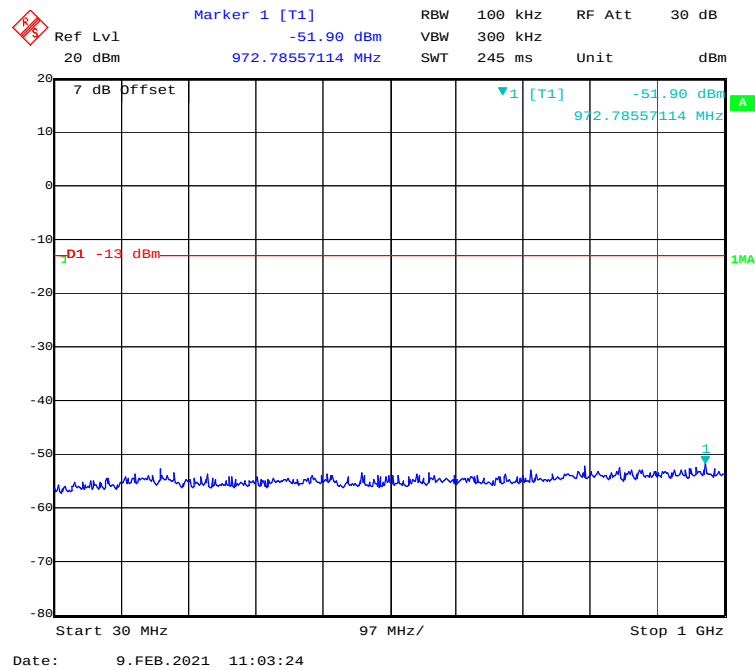
### 30 MHz - 1 GHz (15 MHz, QPSK, High Channel)



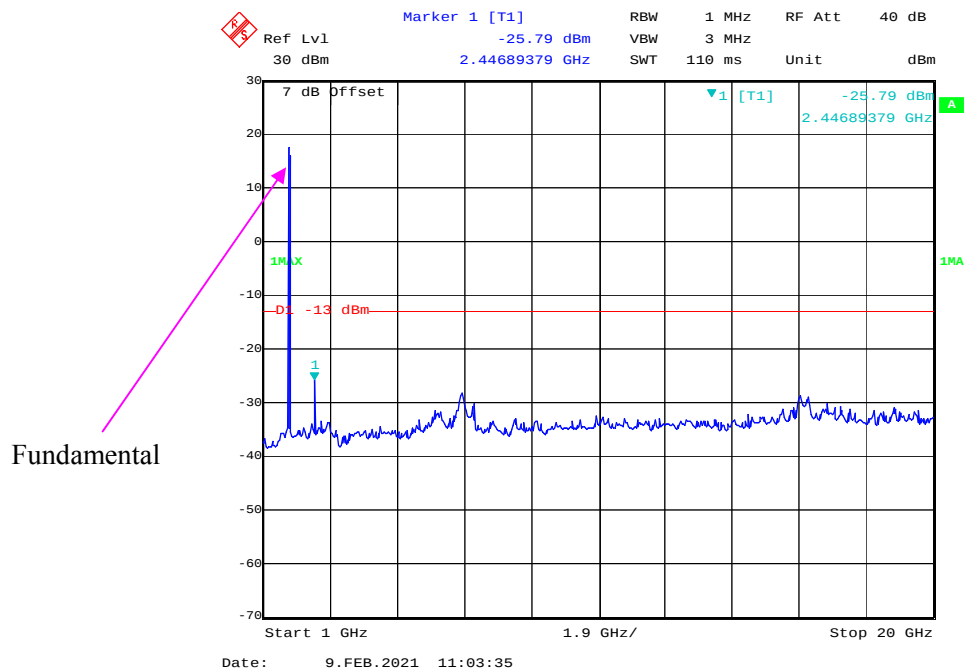
### 1 GHz – 20 GHz (15 MHz, QPSK, High Channel)



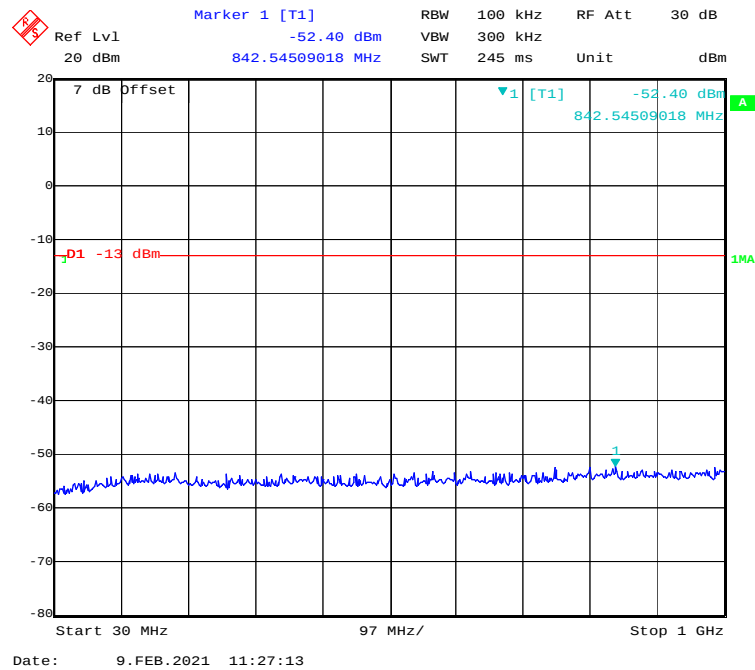
### 30 MHz - 1 GHz (15 MHz, 16-QAM, High Channel)



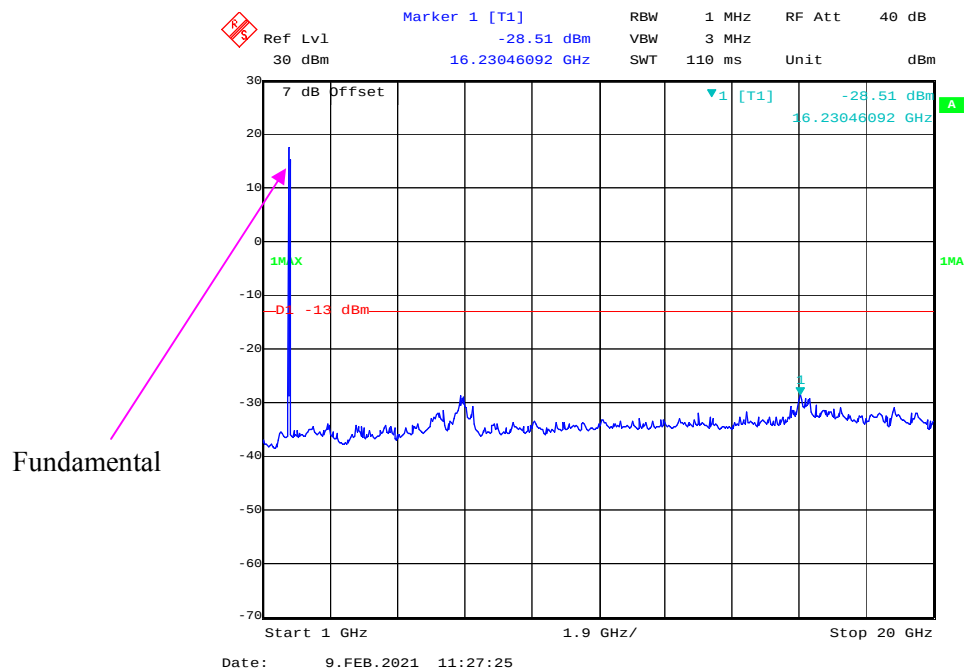
### 1 GHz – 20 GHz (15 MHz, 16-QAM, High Channel)



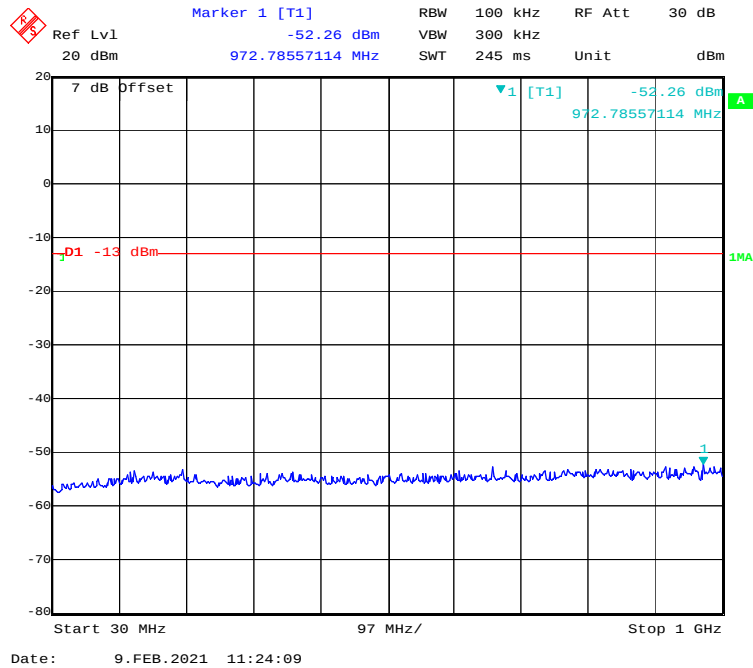
### 30 MHz - 1 GHz (20 MHz, QPSK, High Channel)



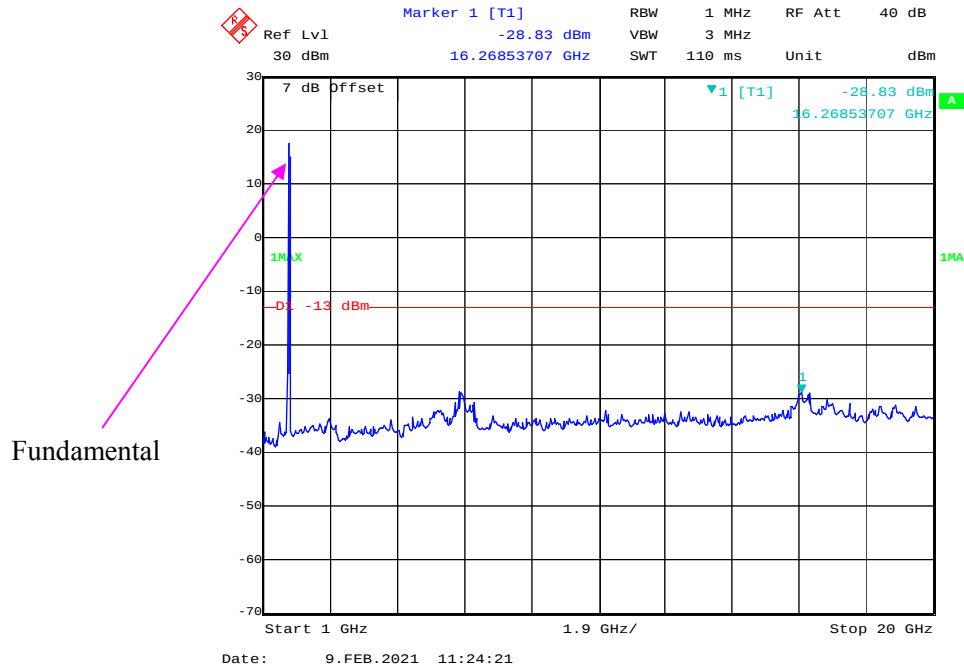
### 1 GHz – 20 GHz (20 MHz, QPSK, High Channel)



### 30 MHz - 1 GHz (20 MHz, 16-QAM, High Channel)

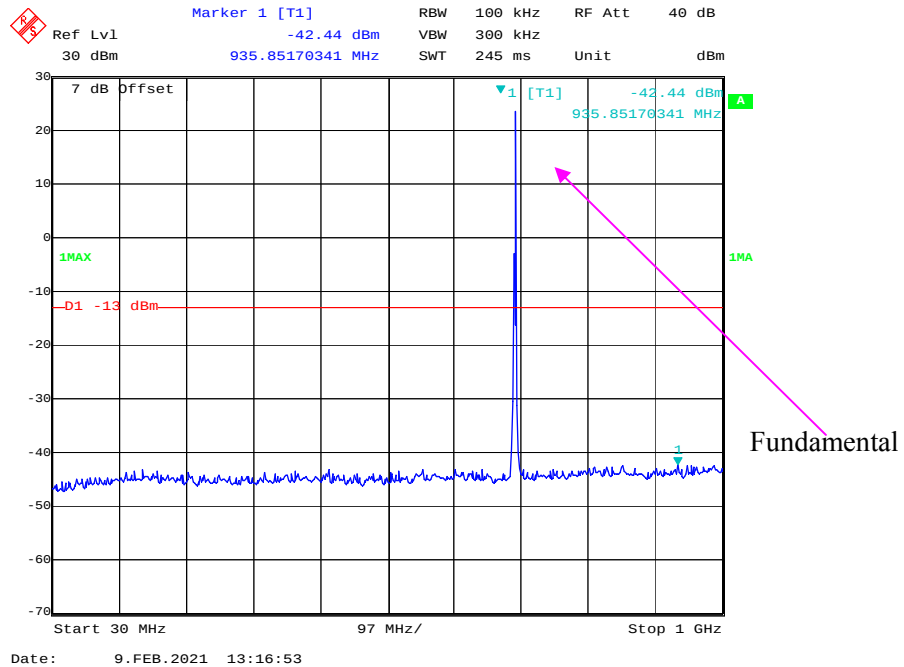


### 1 GHz – 20 GHz (20 MHz, 16-QAM, High Channel)

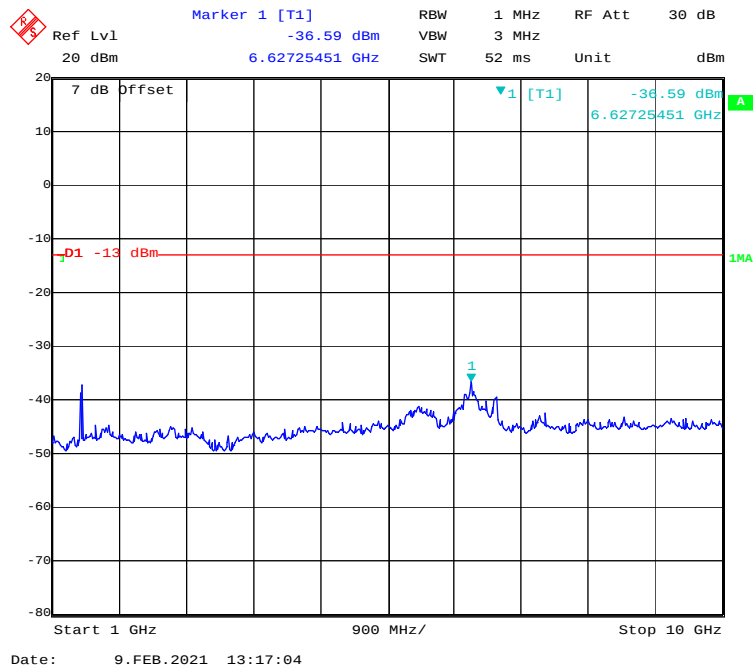


# LTE Band 12:

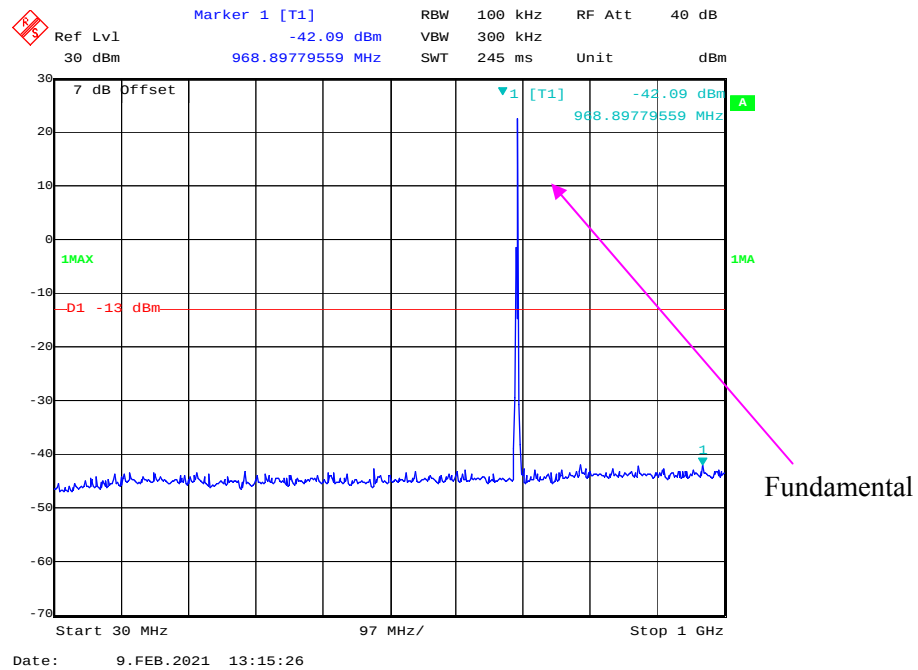
## 30 MHz - 1 GHz (1.4 MHz, QPSK, Low Channel)



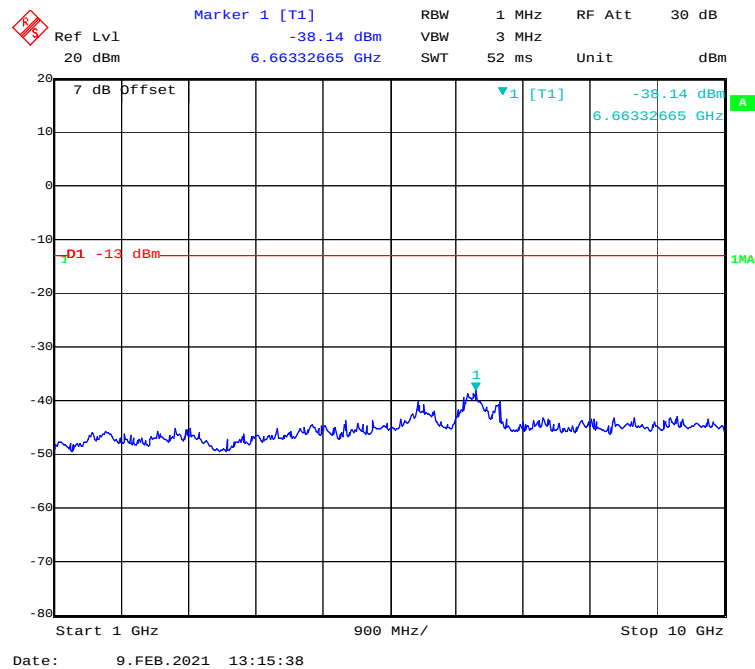
## 1 GHz – 10 GHz (1.4 MHz, QPSK, Low Channel)



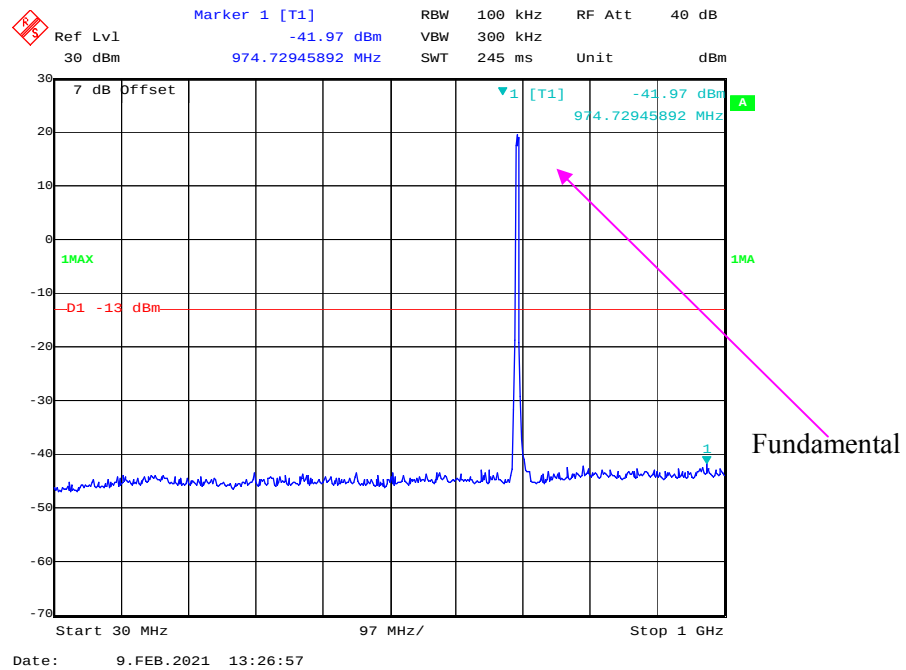
### 30 MHz - 1 GHz (1.4 MHz, 16-QAM, Low Channel)



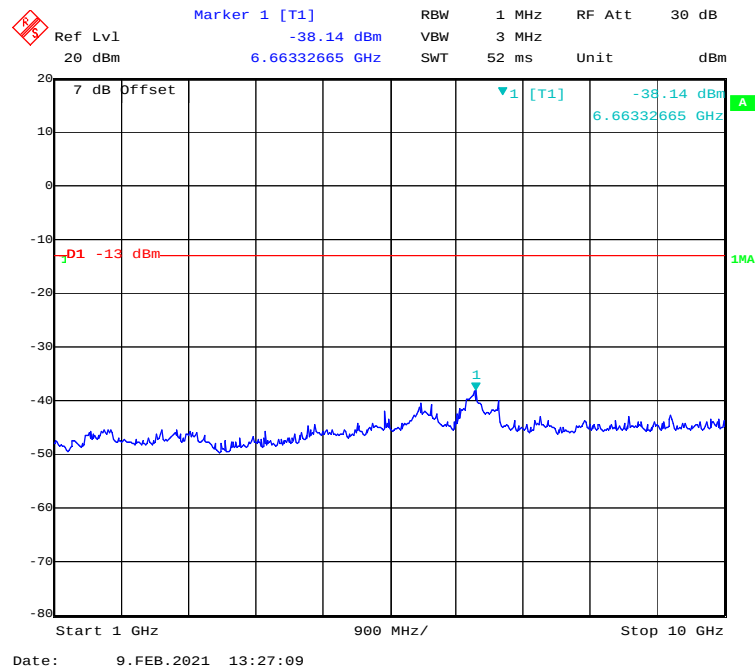
### 1 GHz – 10 GHz (1.4 MHz, 16-QAM, Low Channel)



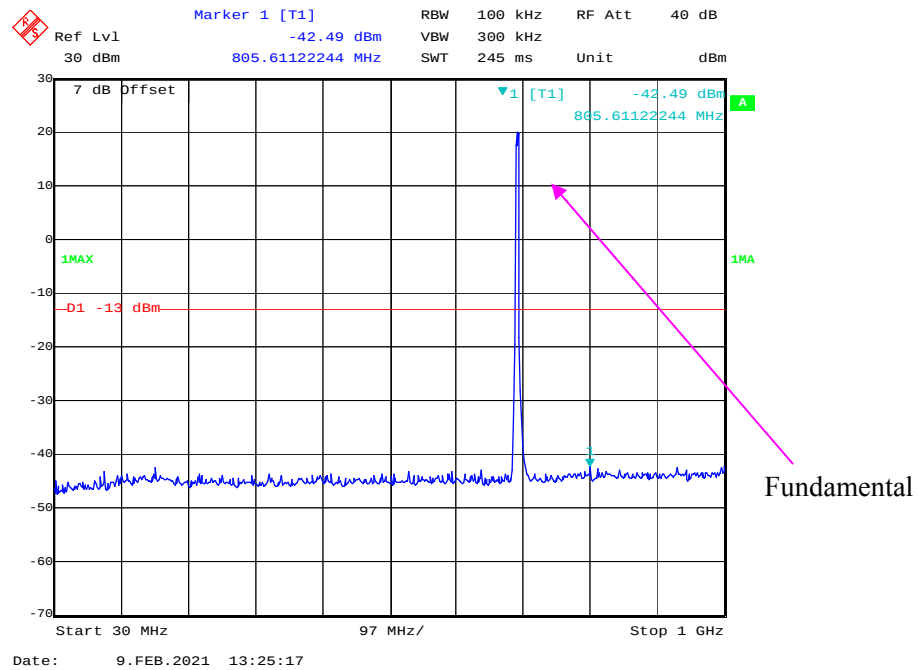
### 30 MHz - 1 GHz (3 MHz, QPSK, Low Channel)



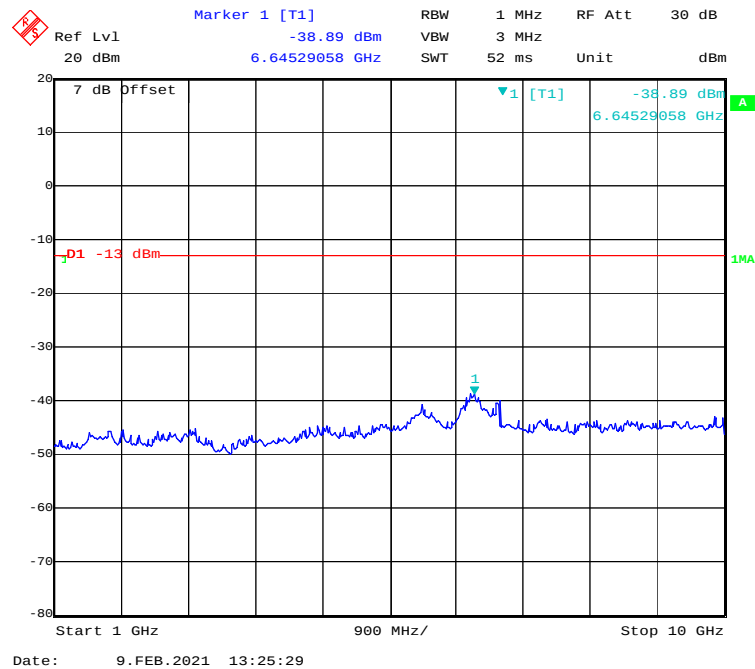
### 1 GHz – 10 GHz (3 MHz, QPSK, Low Channel)

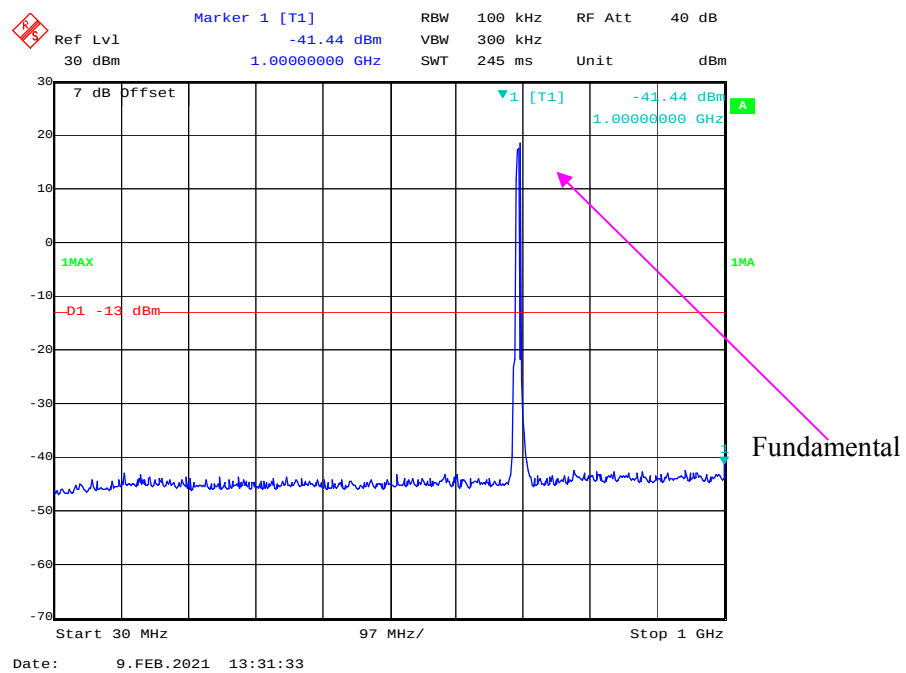
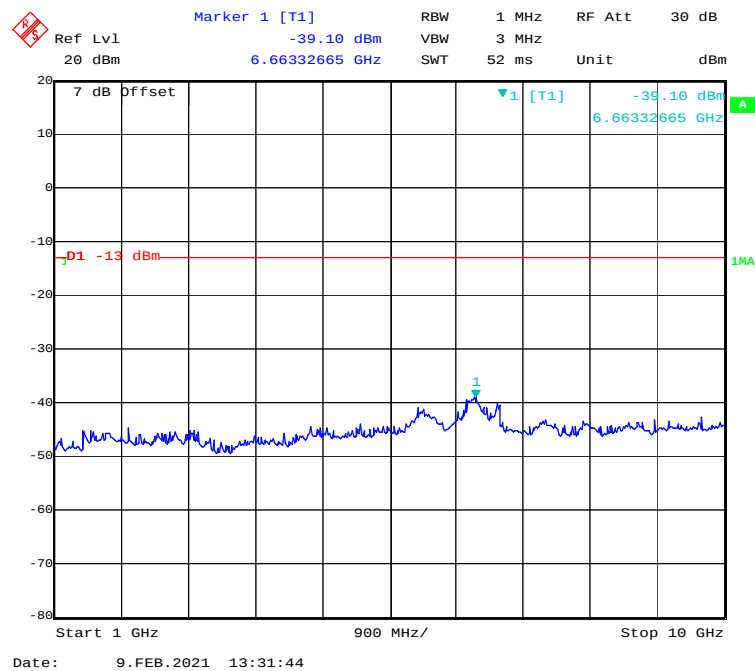


### 30 MHz - 1 GHz (3 MHz, 16-QAM, Low Channel)

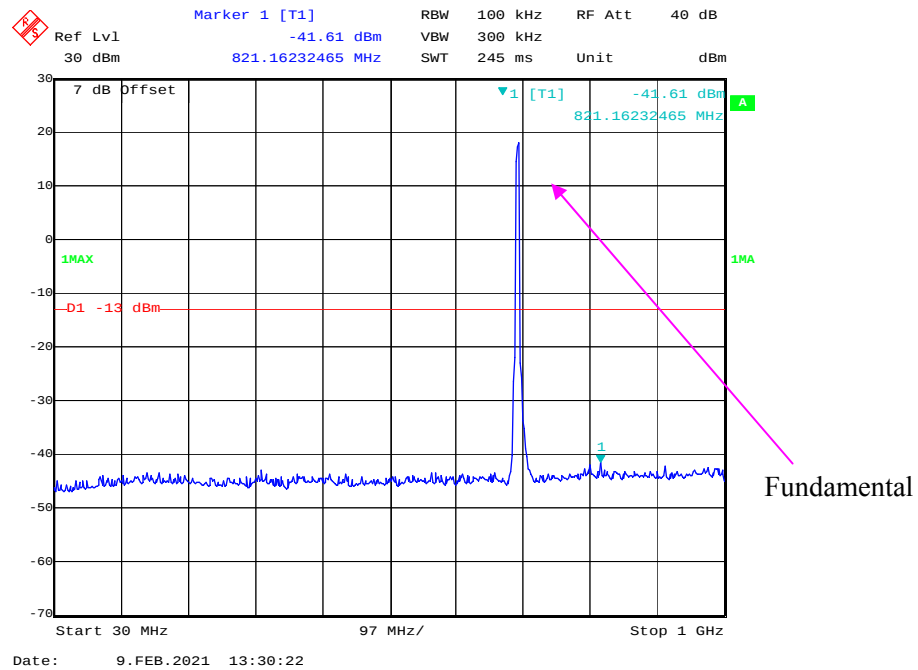


### 1 GHz – 10 GHz (3 MHz, 16-QAM, Low Channel)

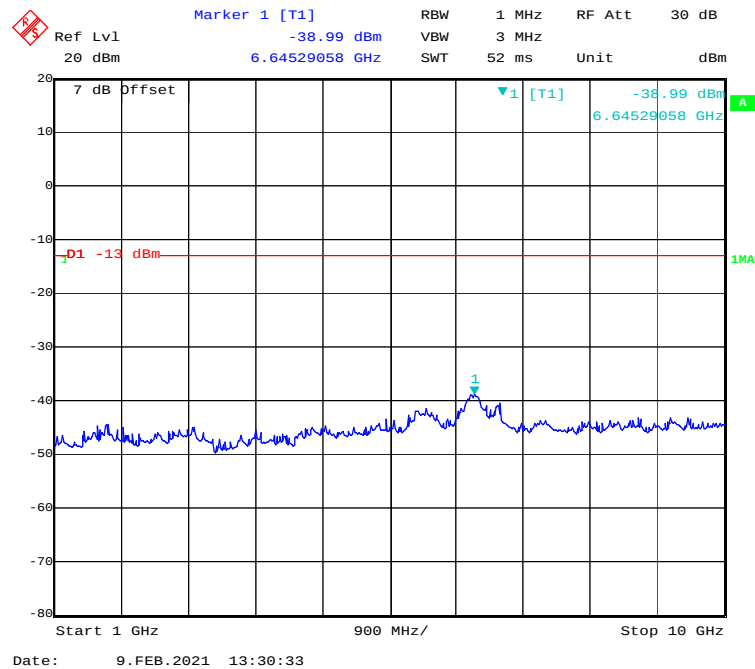


**30 MHz - 1 GHz (5 MHz, QPSK, Low Channel)****1 GHz – 10 GHz (5 MHz, QPSK, Low Channel)**

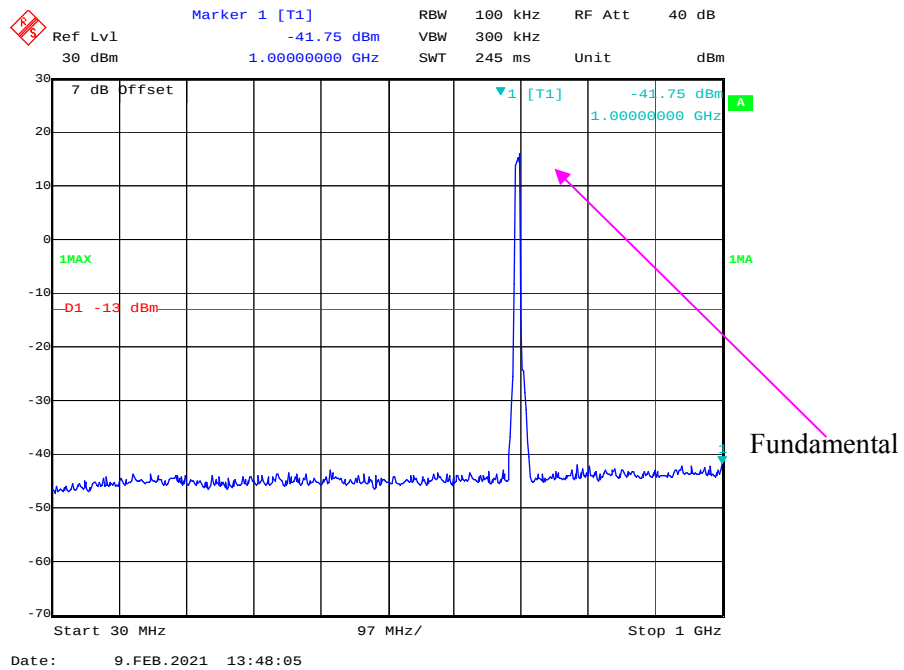
### 30 MHz - 1 GHz (5 MHz, 16-QAM, Low Channel)



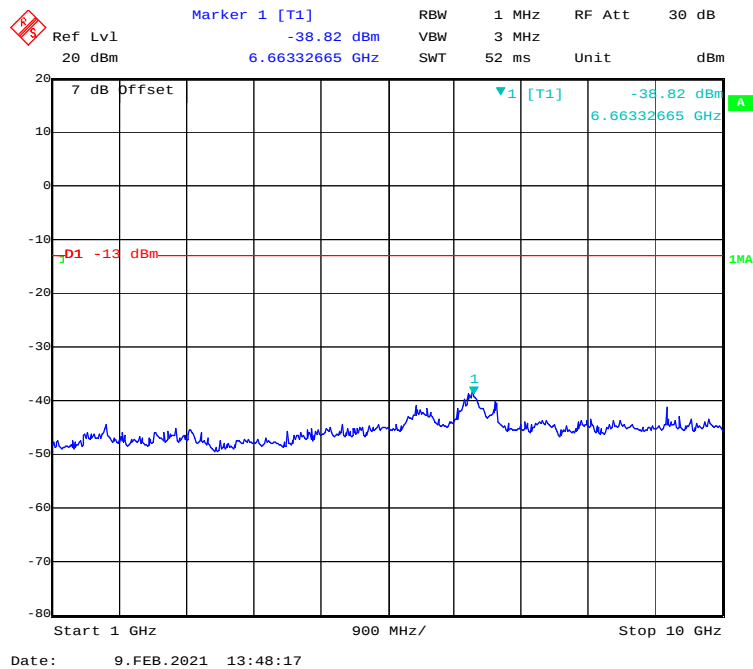
### 1 GHz – 10 GHz (5 MHz, 16-QAM, Low Channel)



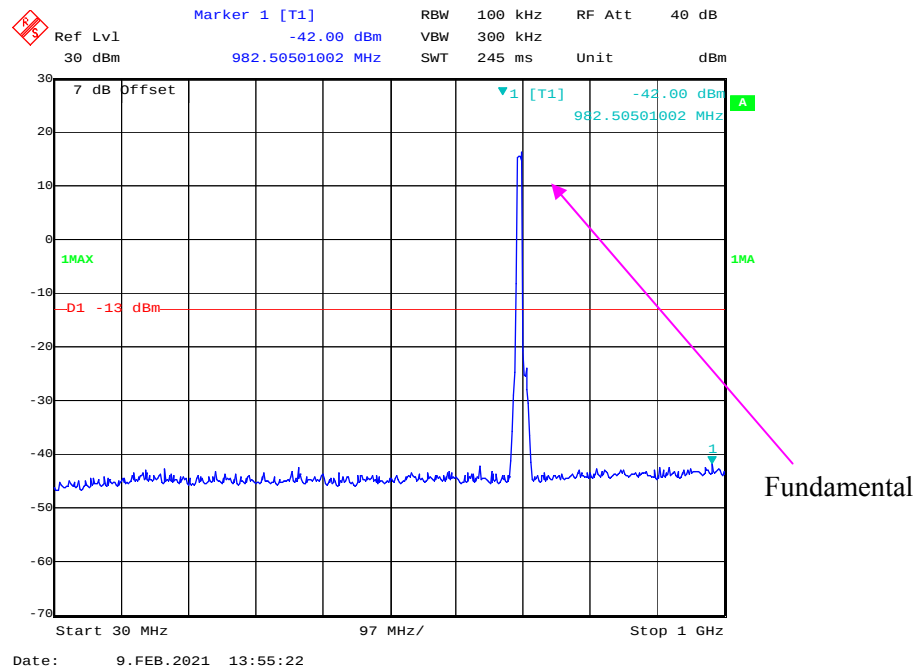
### 30 MHz - 1 GHz (10 MHz, QPSK, Low Channel)



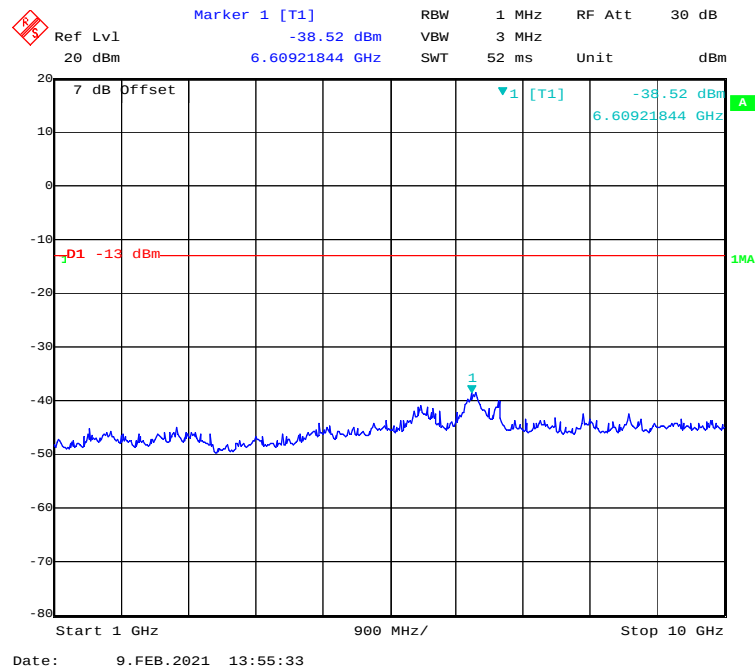
### 1 GHz – 10 GHz (10 MHz, QPSK, Low Channel)



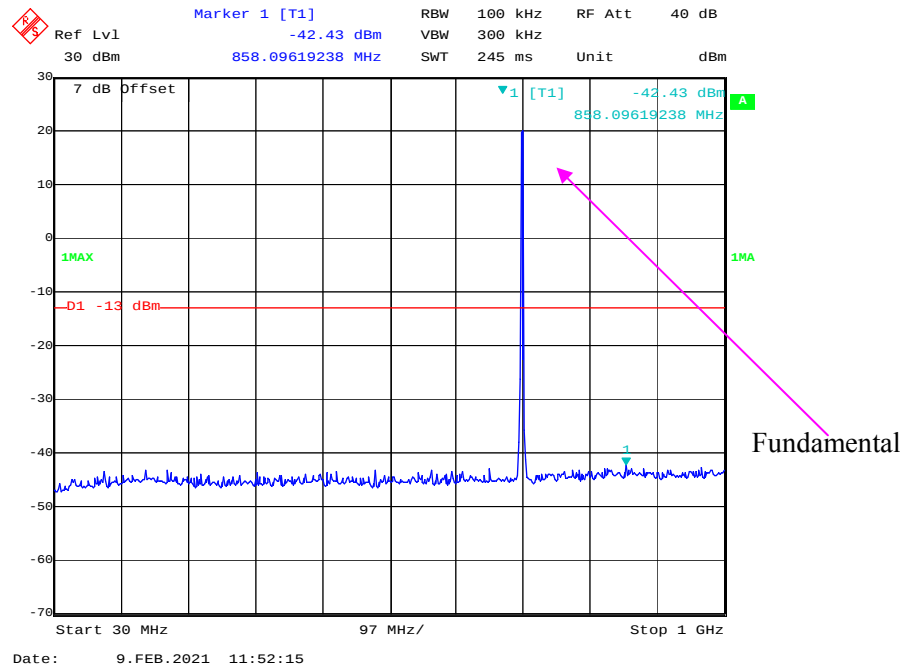
### 30 MHz - 1 GHz (10 MHz, 16-QAM, Low Channel)



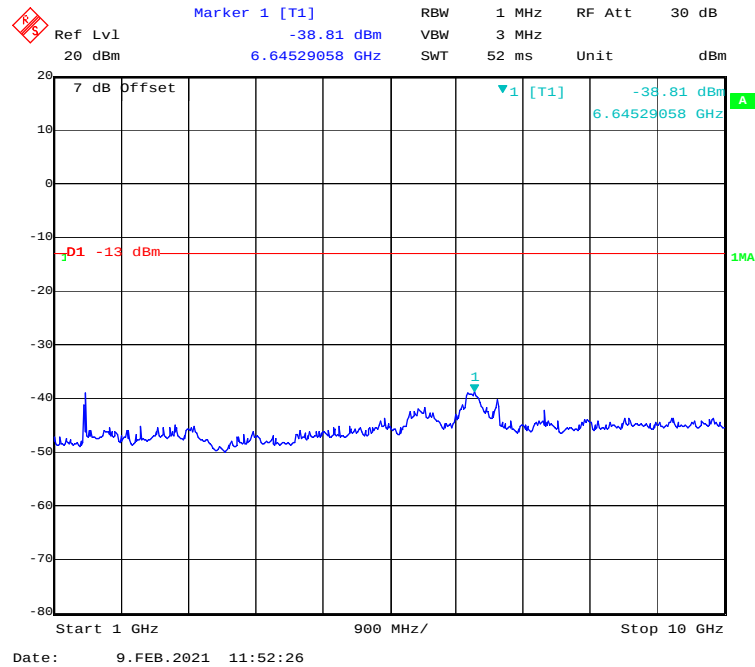
### 1 GHz – 10 GHz (10 MHz, 16-QAM, Low Channel)



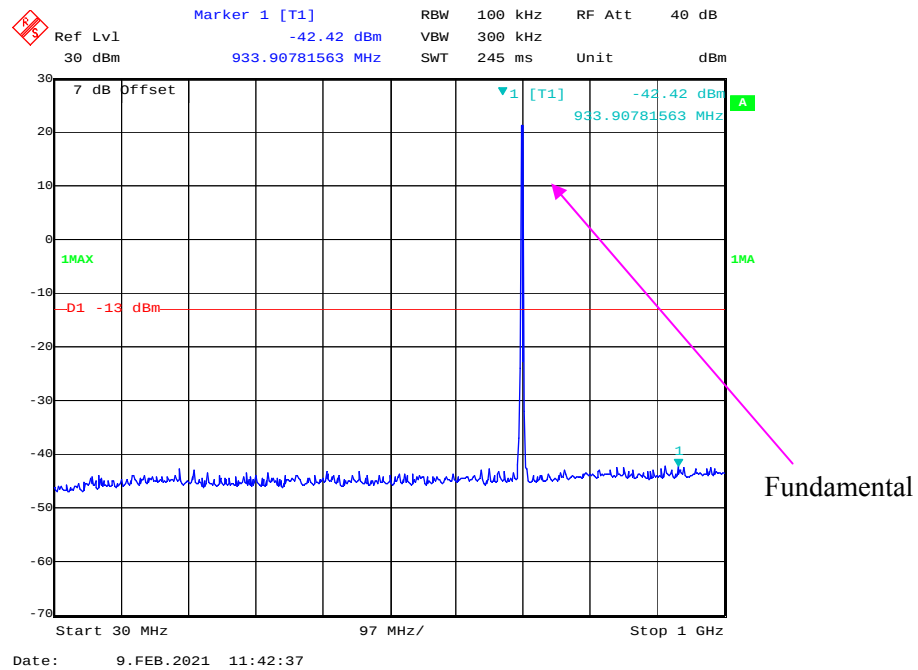
### 30 MHz - 1 GHz (1.4 MHz, QPSK, Middle Channel)



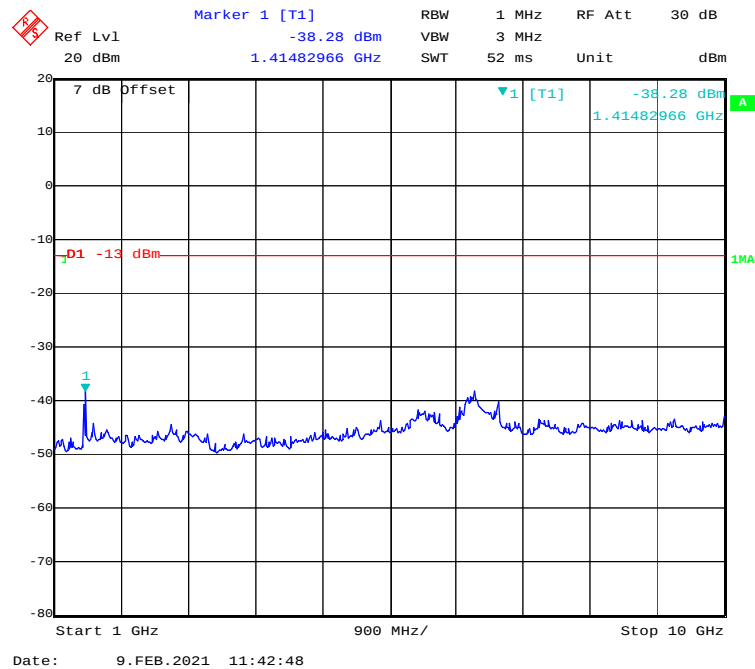
### 1 GHz – 10 GHz (1.4 MHz, QPSK, Middle Channel)



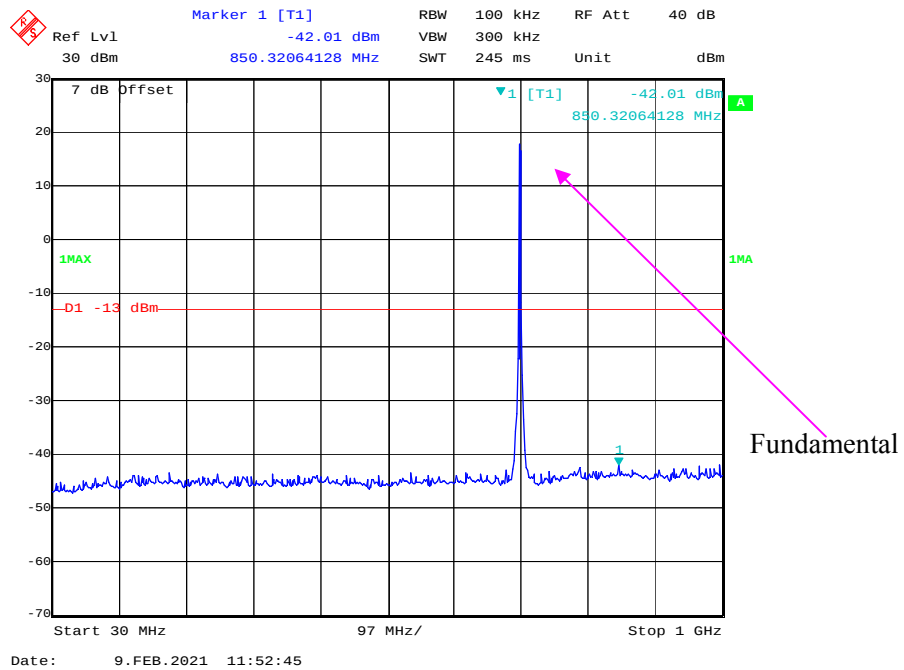
### 30 MHz - 1 GHz (1.4 MHz, 16-QAM, Middle Channel)



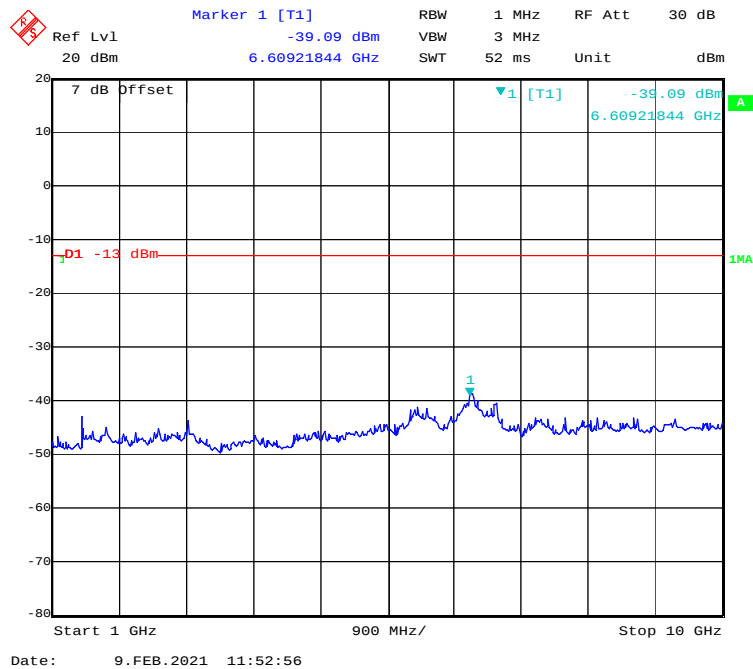
### 1 GHz – 10 GHz (1.4 MHz, 16-QAM, Middle Channel)



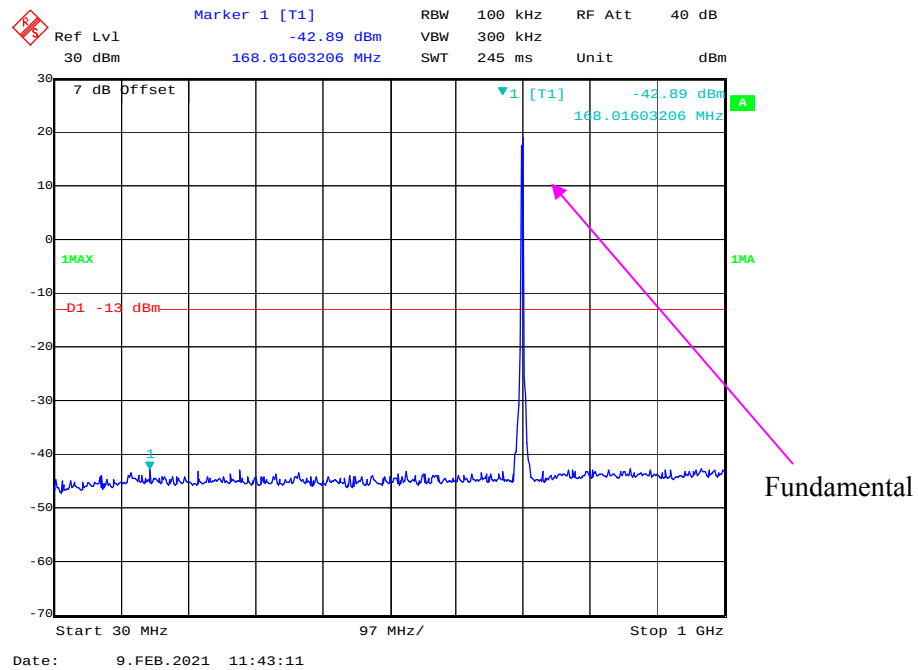
### 30 MHz - 1 GHz (3 MHz, QPSK, Middle Channel)



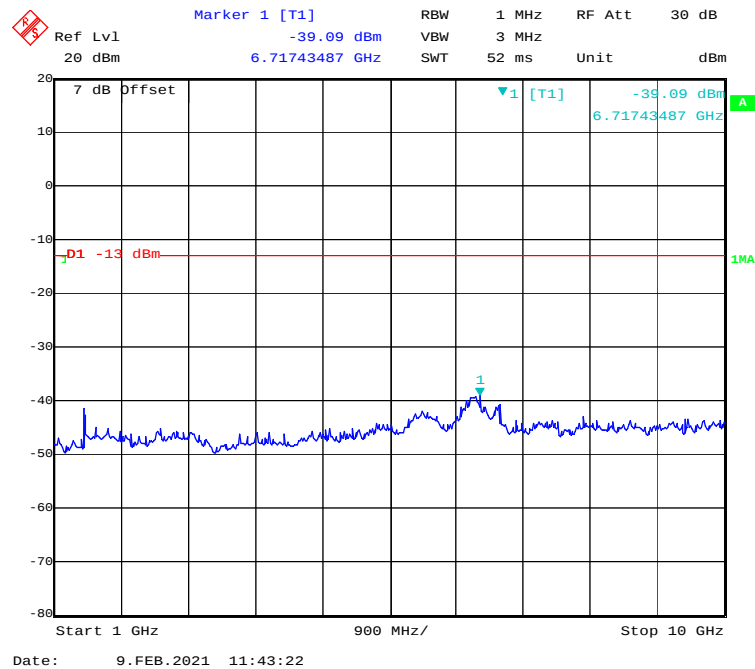
### 1 GHz – 10 GHz (3 MHz, QPSK, Middle Channel)



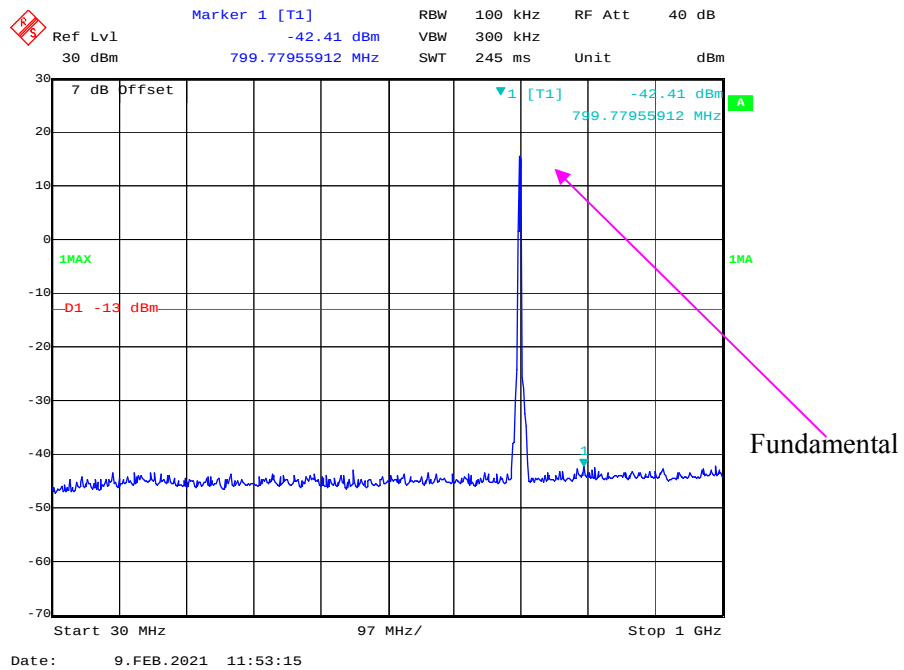
### 30 MHz - 1 GHz (3 MHz, 16-QAM, Middle Channel)



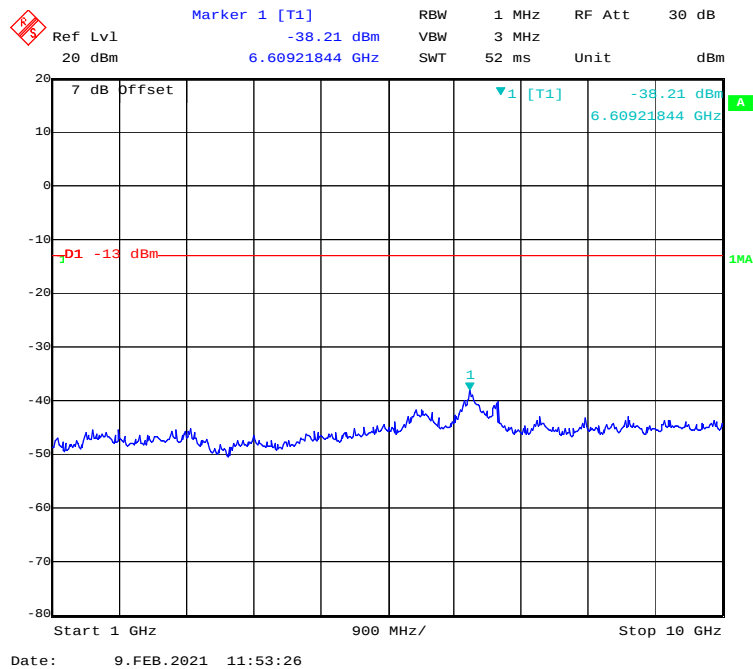
### 1 GHz – 10 GHz (3 MHz, 16-QAM, Middle Channel)



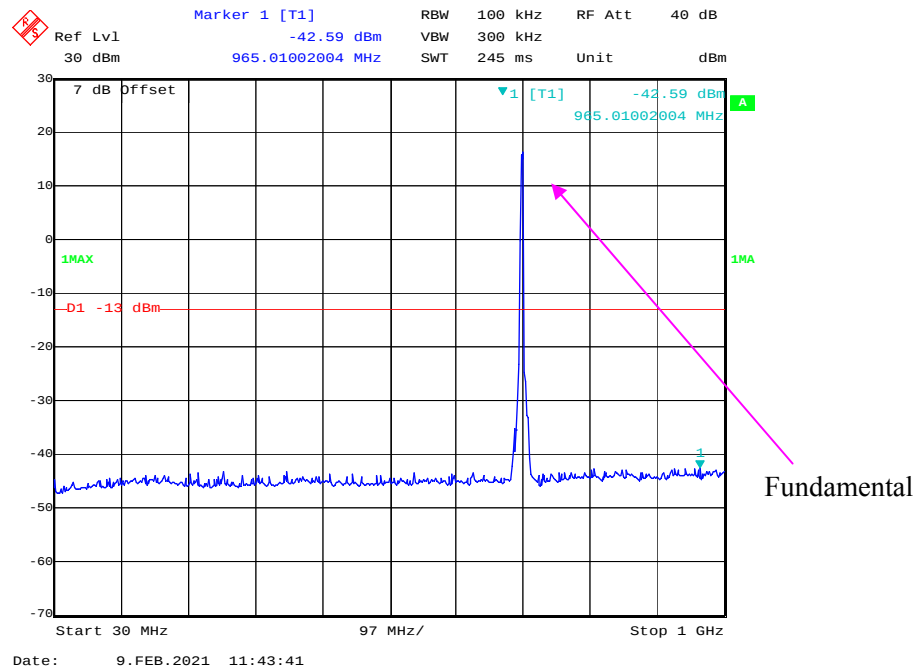
### 30 MHz - 1 GHz (5 MHz, QPSK, Middle Channel)



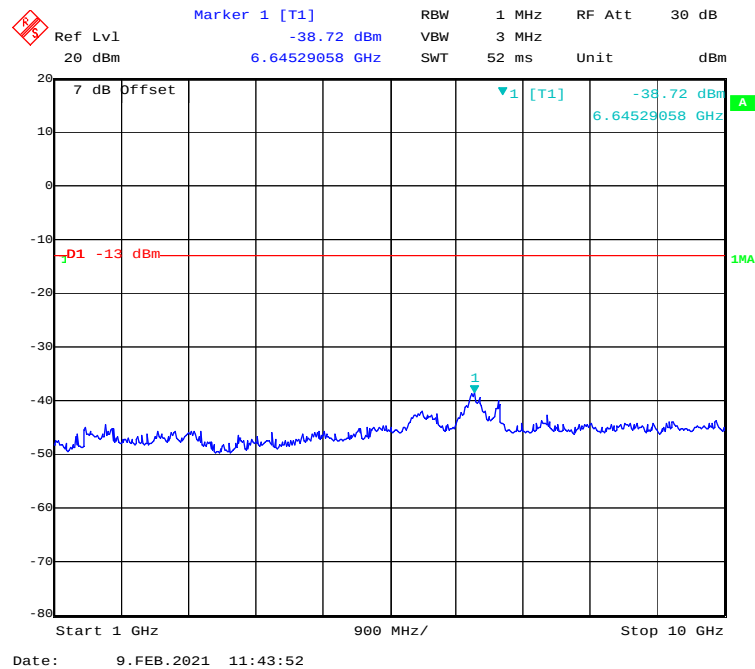
### 1 GHz – 10 GHz (5 MHz, QPSK, Middle Channel)



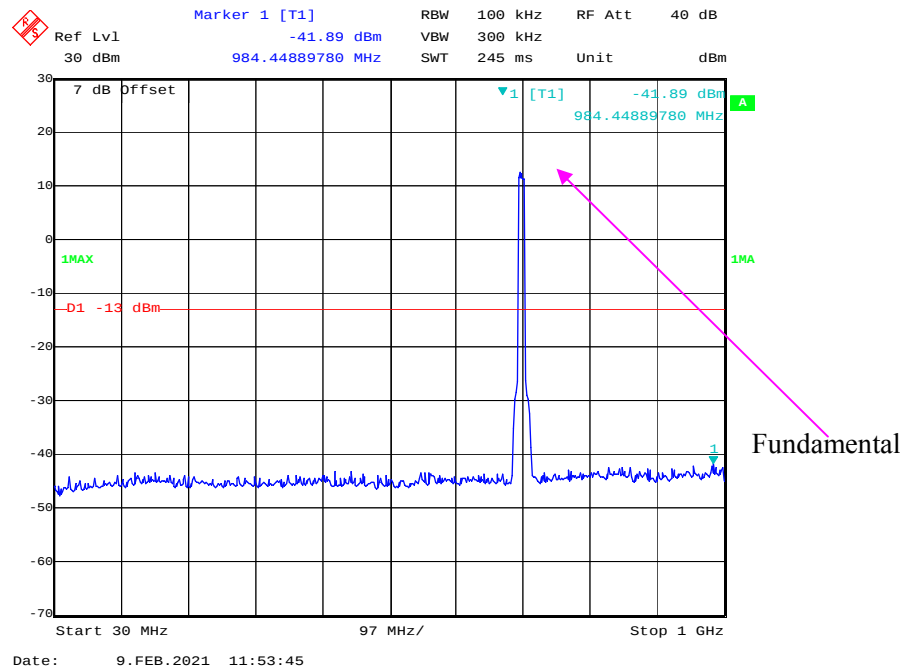
### 30 MHz - 1 GHz (5 MHz, 16-QAM, Middle Channel)



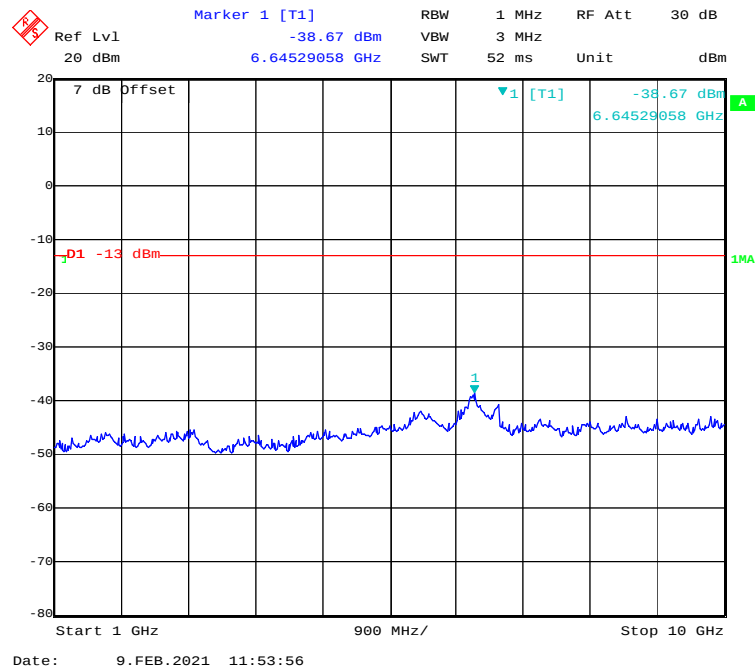
### 1 GHz – 10 GHz (5 MHz, 16-QAM, Middle Channel)



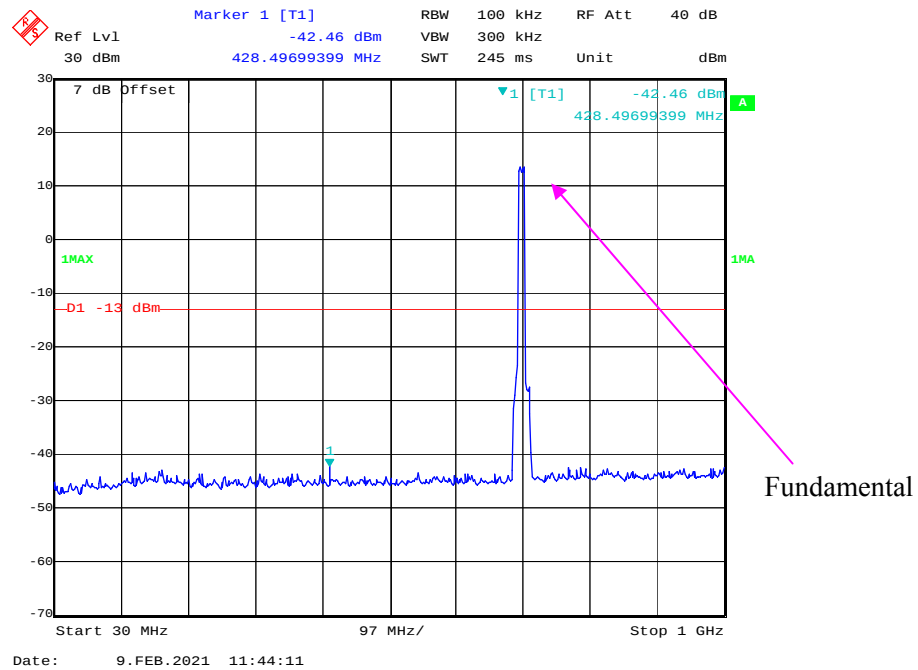
### 30 MHz - 1 GHz (10 MHz, QPSK, Middle Channel)



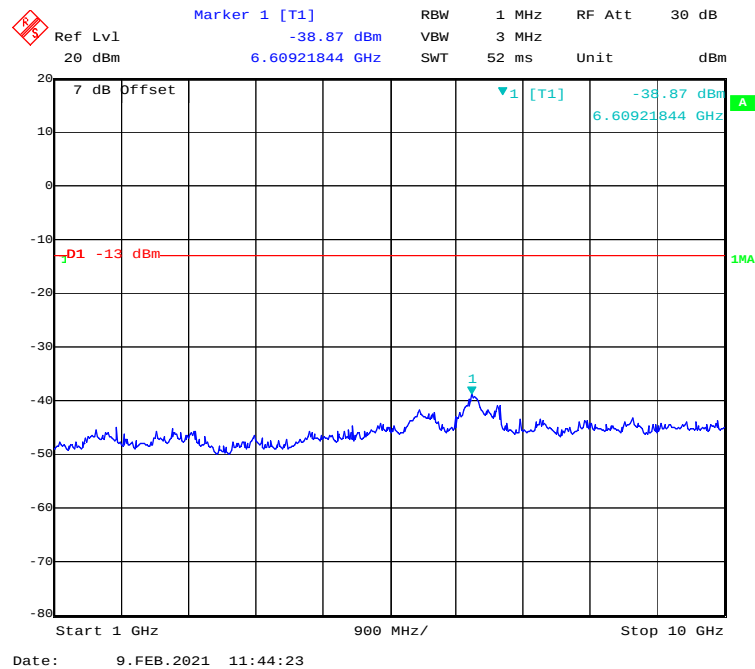
### 1 GHz – 10 GHz (10 MHz, QPSK, Middle Channel)



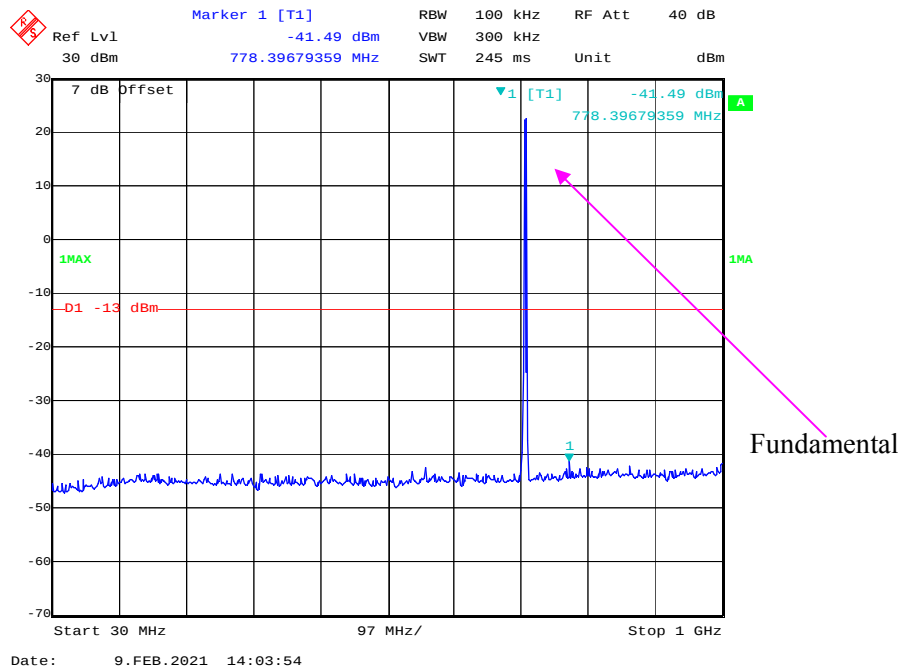
### 30 MHz - 1 GHz (10 MHz, 16-QAM, Middle Channel)



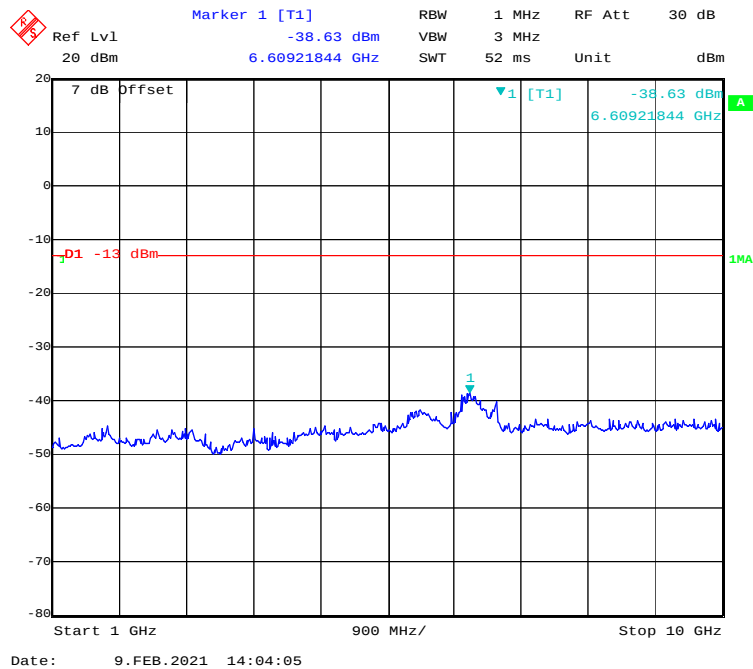
### 1 GHz – 10 GHz (10 MHz, 16-QAM, Middle Channel)



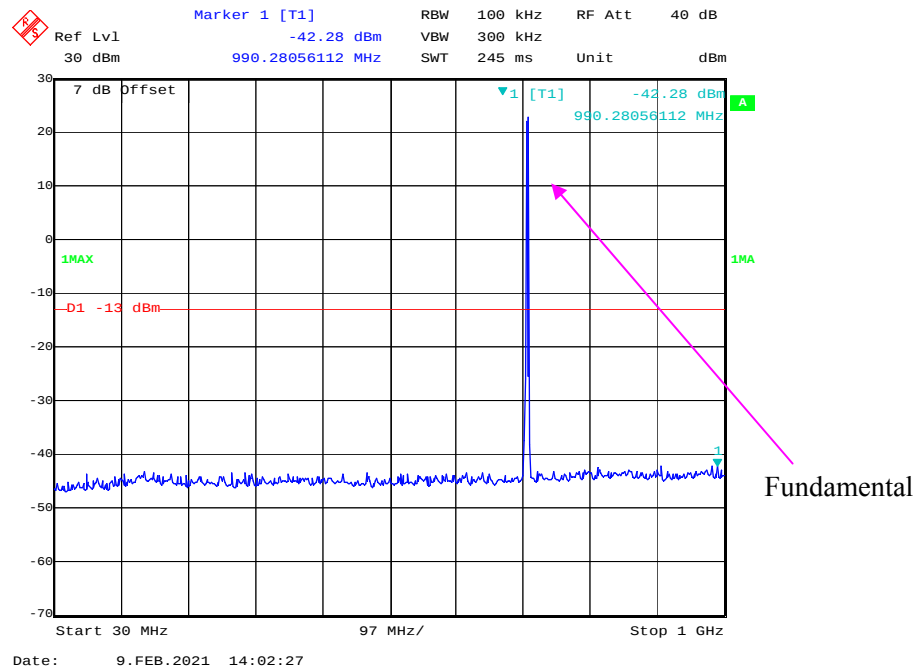
### 30 MHz - 1 GHz (1.4 MHz, QPSK, High Channel)



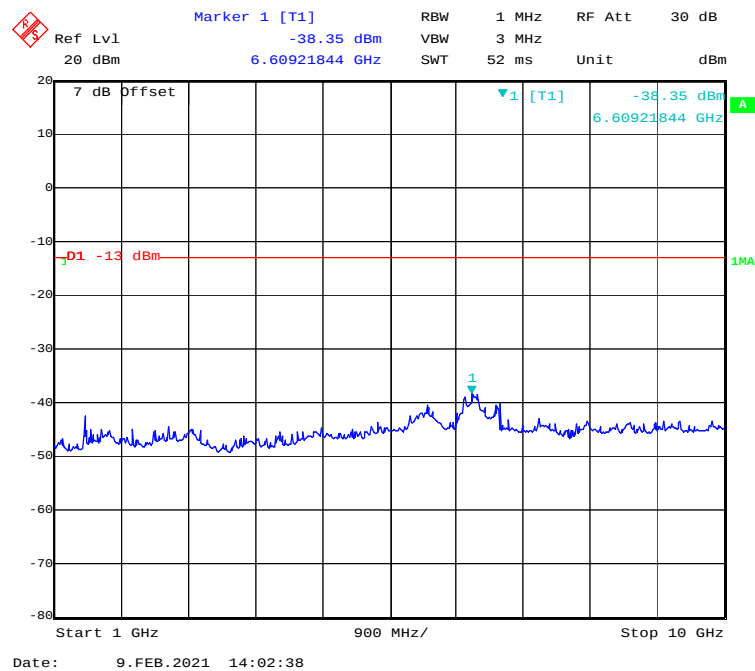
### 1 GHz – 10 GHz (1.4 MHz, QPSK, High Channel)



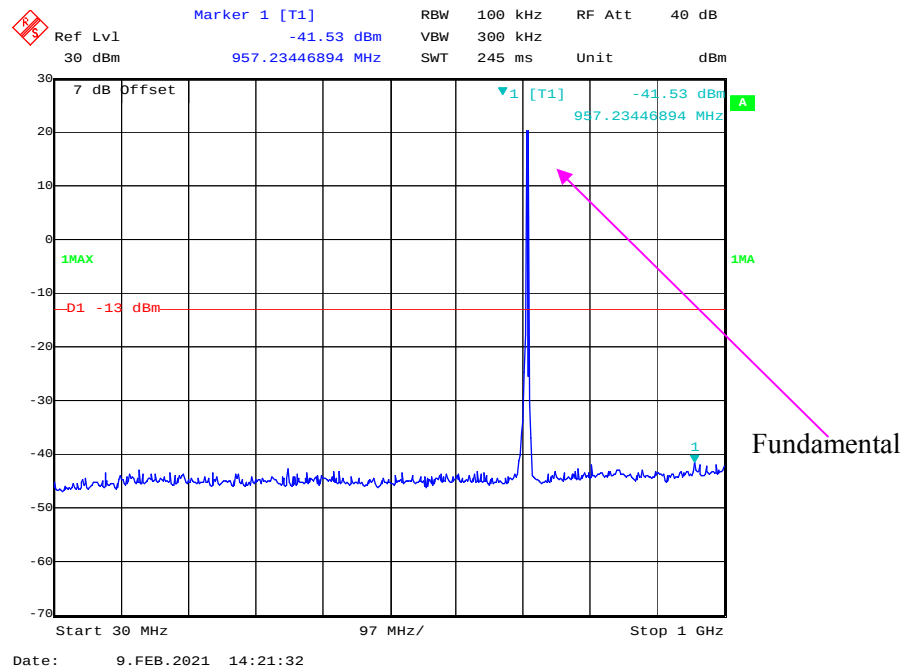
### 30 MHz - 1 GHz (1.4 MHz, 16-QAM, High Channel)



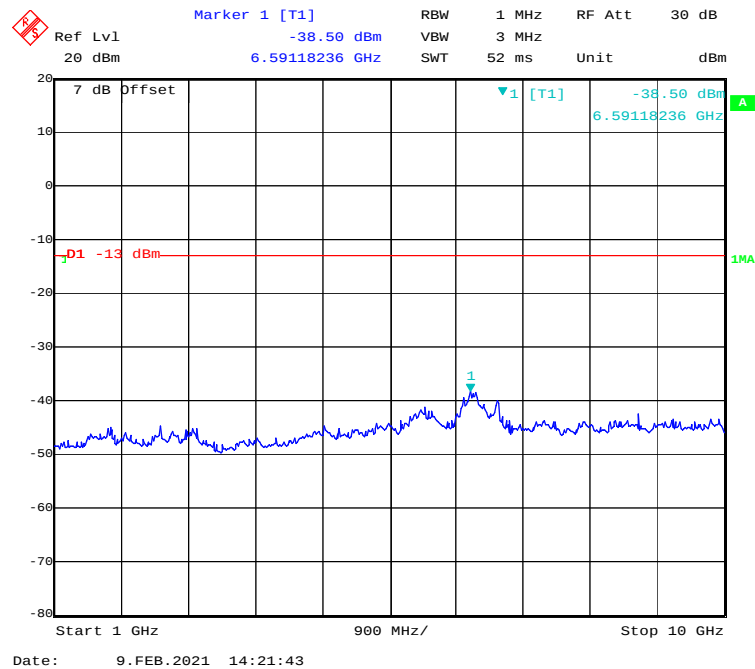
### 1 GHz – 10 GHz (1.4 MHz, 16-QAM, High Channel)

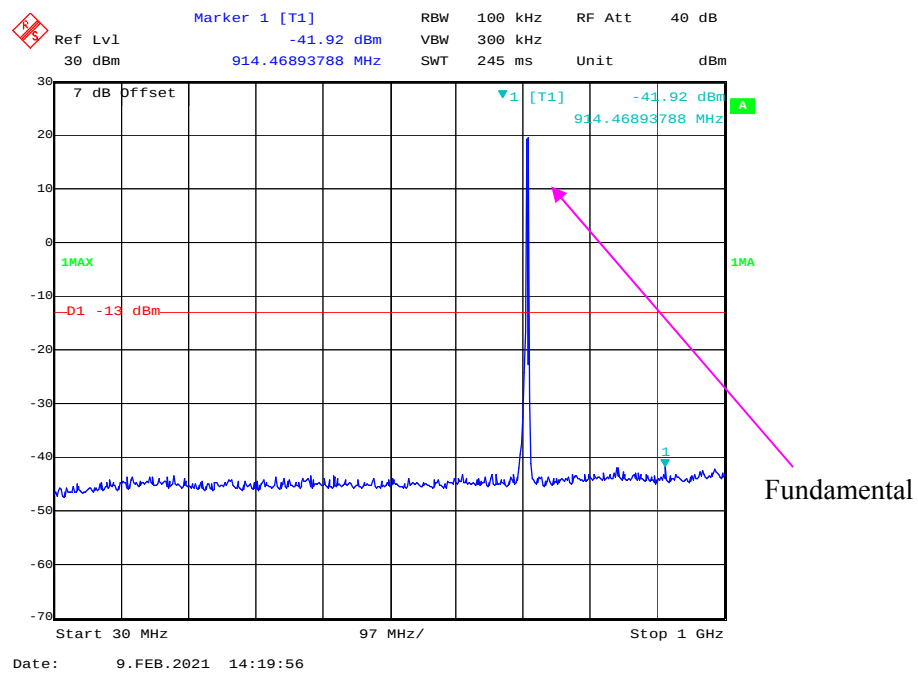
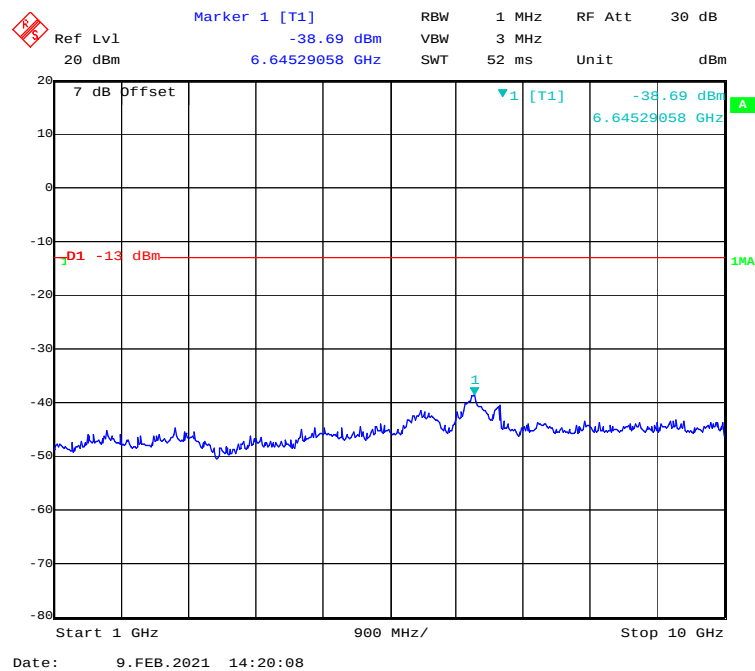


### 30 MHz - 1 GHz (3 MHz, QPSK, High Channel)

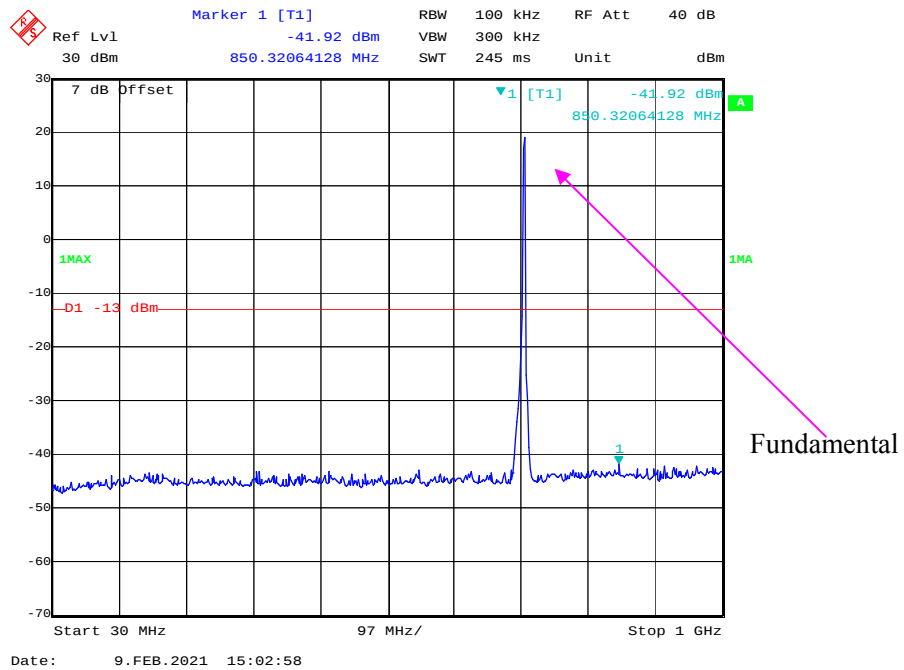


### 1 GHz – 10 GHz (3 MHz, QPSK, High Channel)

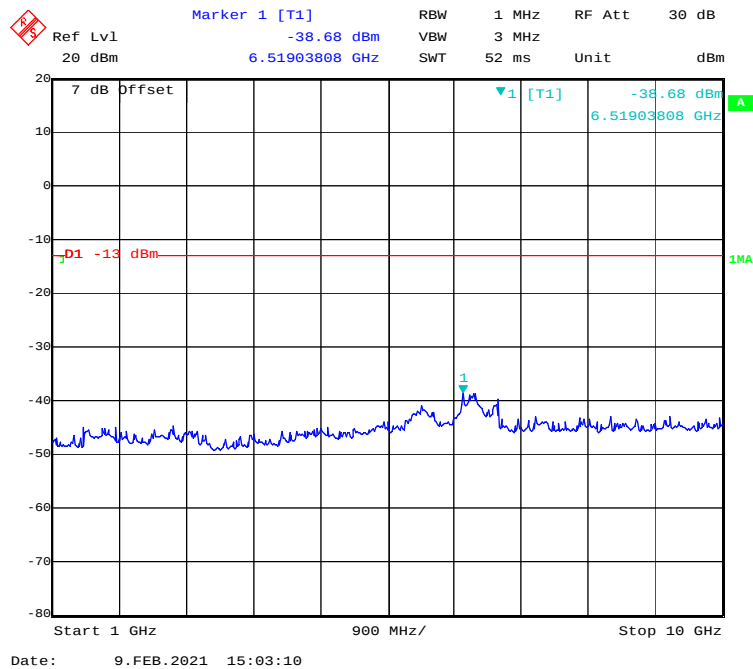


**30 MHz - 1 GHz (3 MHz, 16-QAM, High Channel)****1 GHz – 10 GHz (3 MHz, 16-QAM, High Channel)**

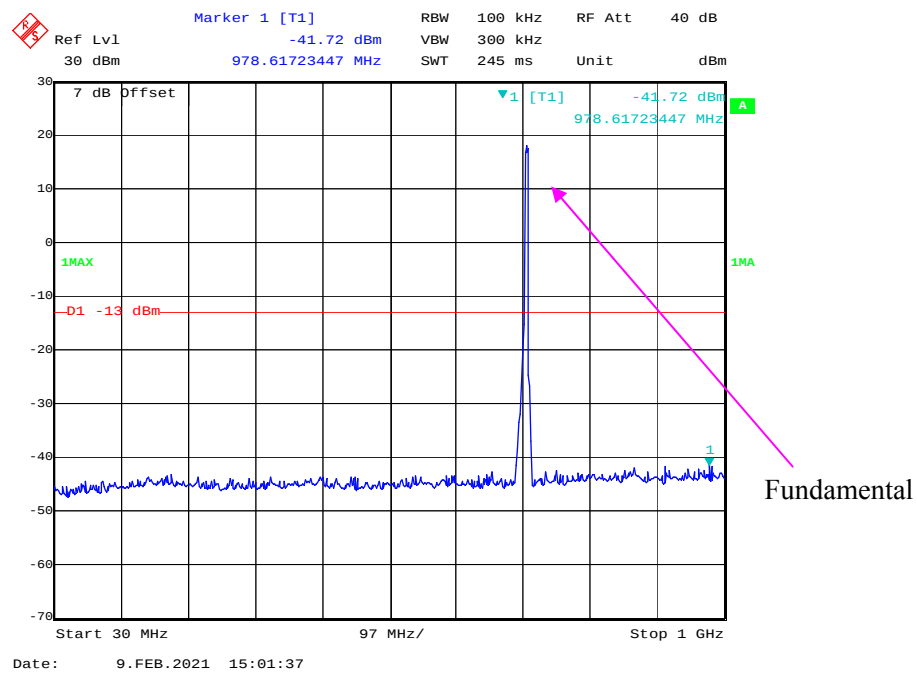
### 30 MHz - 1 GHz (5 MHz, QPSK, High Channel)



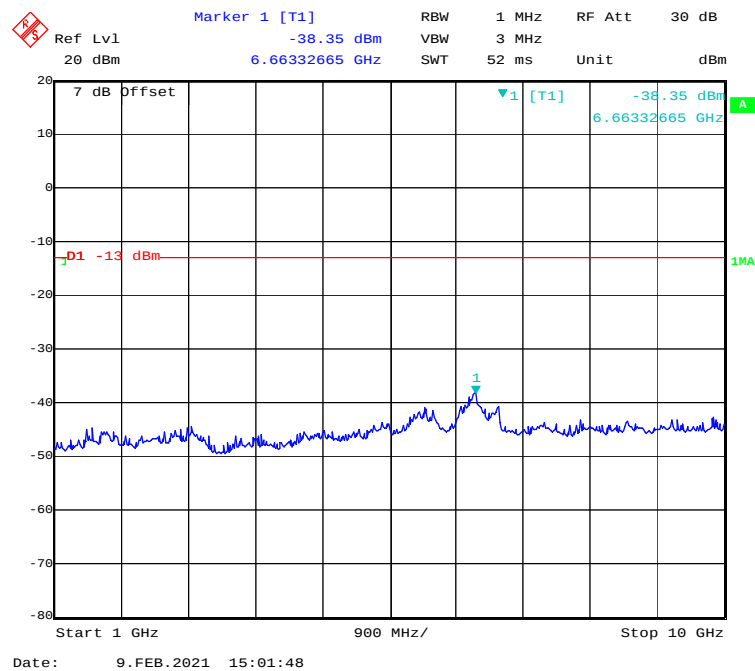
### 1 GHz – 10 GHz (5 MHz, QPSK, High Channel)



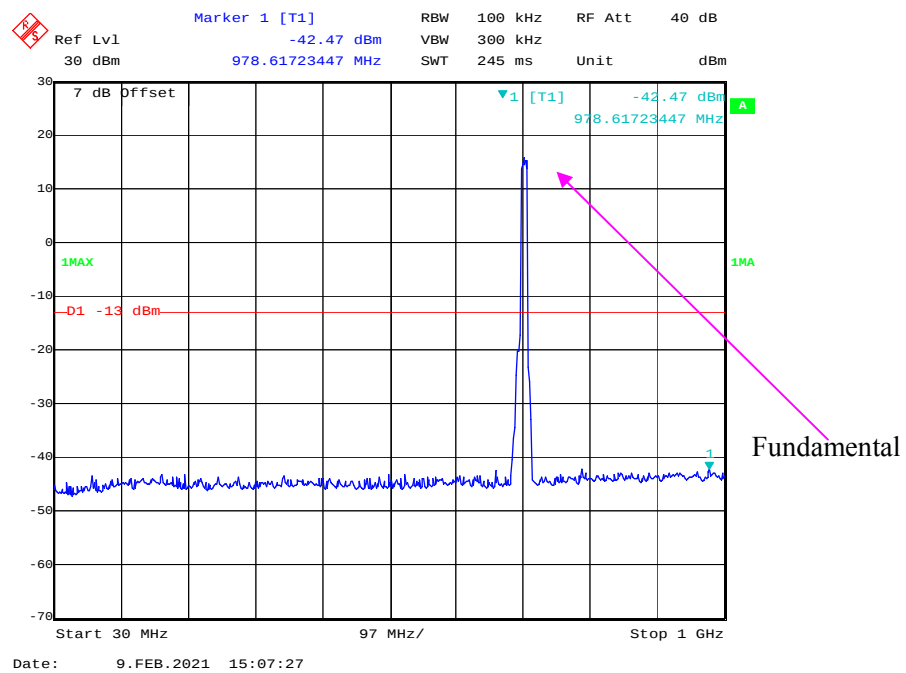
### 30 MHz - 1 GHz (5 MHz, 16-QAM, High Channel)



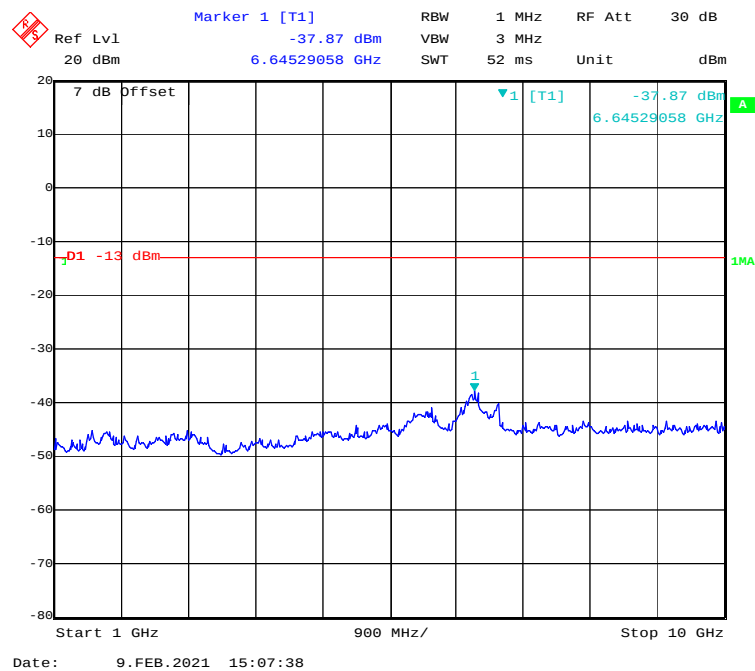
### 1 GHz – 10 GHz (5 MHz, 16-QAM, High Channel)



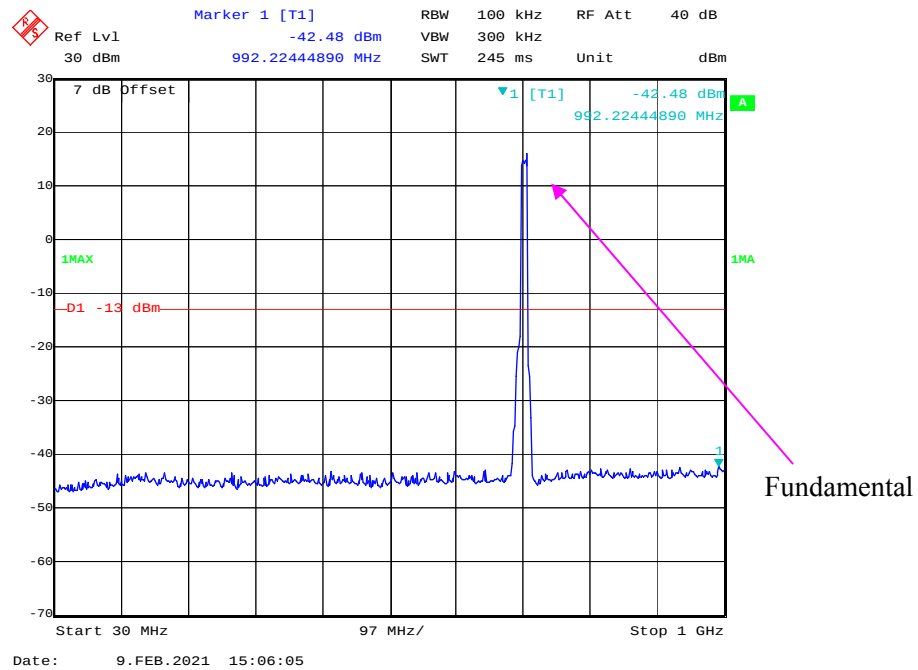
### 30 MHz - 1 GHz (10 MHz, QPSK, High Channel)



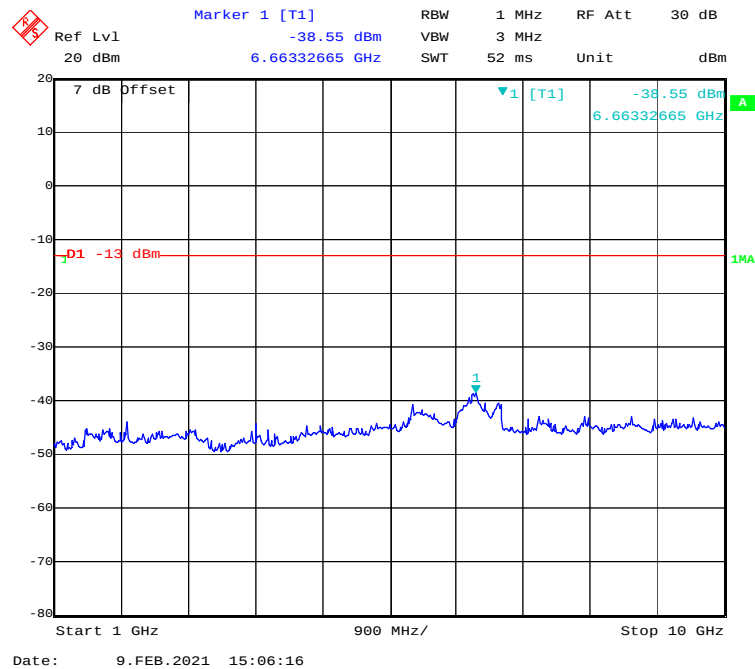
### 1 GHz – 10 GHz (10 MHz, QPSK, High Channel)



### 30 MHz - 1 GHz (10 MHz, 16-QAM, High Channel)



### 1 GHz – 10 GHz (10 MHz, 16-QAM, High Channel)



## **FCC § 2.1053; § 22.917 (a); § 24.238 (a); §27.53 (g) (h);- SPURIOUS RADIATED EMISSIONS**

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### **Applicable Standards**

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

22.917 (a) Out of band emissions. 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.

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

According to §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 (g) (h).

### **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 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.

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

Spurious emissions in dB =  $10 \lg (\text{TX pwr in Watts}/0.001)$  – the absolute level

Spurious attenuation limit in dB =  $43 + 10 \text{ Log}_{10} (\text{power out in Watts})$

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

|                           |          |
|---------------------------|----------|
| <b>Temperature:</b>       | 23.2℃    |
| <b>Relative Humidity:</b> | 51 %     |
| <b>ATM Pressure:</b>      | 101.3kPa |

The testing was performed by Tyrone Wang on 2021-02-18.

Test mode: Transmitting (Pre-scan with low, middle and high channels, and the worse case data as below)

**30 MHz ~ 10 GHz:**

**WCDMA Band V**

| Frequency<br>(MHz)      | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|-------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                         |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| WCDMA Mode, Low channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 335.3                   | 54.98                         | 275                          | 150            | H              | -53.1                       | 0.48                  | -1.87                        | -55.45                     | -13            | 42.45          |
| 335.3                   | 55.22                         | 200                          | 150            | V              | -52.86                      | 0.48                  | -1.87                        | -55.21                     | -13            | 42.21          |
| 1652.80                 | 45.72                         | 119                          | 100            | H              | -67.60                      | 0.84                  | 8.44                         | -60                        | -13            | 47             |
| 1652.80                 | 46.31                         | 304                          | 100            | V              | -67.01                      | 0.84                  | 8.44                         | -59.41                     | -13            | 46.41          |

| Frequency<br>(MHz)         | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|----------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                            |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| WCDMA Mode, Middle channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 335.3                      | 54.02                         | 19                           | 150            | H              | -54.06                      | 0.48                  | -1.87                        | -56.41                     | -13            | 43.41          |
| 335.3                      | 54.79                         | 83                           | 150            | V              | -53.29                      | 0.48                  | -1.87                        | -55.64                     | -13            | 42.64          |
| 1673.20                    | 45.37                         | 324                          | 100            | H              | -67.95                      | 0.84                  | 8.48                         | -60.31                     | -13            | 47.31          |
| 1673.20                    | 45.77                         | 35                           | 100            | V              | -67.55                      | 0.84                  | 8.48                         | -59.91                     | -13            | 46.91          |

| Frequency<br>(MHz)       | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|--------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                          |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| WCDMA Mode, High channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 335.3                    | 54.99                         | 122                          | 150            | H              | -53.09                      | 0.48                  | -1.87                        | -55.44                     | -13            | 42.44          |
| 335.3                    | 55.47                         | 170                          | 150            | V              | -52.61                      | 0.48                  | -1.87                        | -54.96                     | -13            | 41.96          |
| 1693.20                  | 45.72                         | 117                          | 100            | H              | -67.31                      | 0.84                  | 8.51                         | -59.64                     | -13            | 46.64          |
| 1693.20                  | 46.2                          | 4                            | 100            | V              | -66.83                      | 0.84                  | 8.51                         | -59.16                     | -13            | 46.16          |

30 MHz ~ 20 GHz:

## WCDMA Band II

| Frequency<br>(MHz)      | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|-------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                         |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| WCDMA Mode, Low channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 557.43                  | 54.29                         | 18                           | 150            | H              | -50.34                      | 0.58                  | -1.2                         | -52.12                     | -13            | 39.12          |
| 557.43                  | 55.66                         | 174                          | 150            | V              | -48.97                      | 0.58                  | -1.2                         | -50.75                     | -13            | 37.75          |
| 3704.8                  | 38.55                         | 43                           | 200            | H              | -68.41                      | 0.95                  | 9.78                         | -59.58                     | -13            | 46.58          |
| 3704.8                  | 38.84                         | 225                          | 100            | V              | -68.12                      | 0.95                  | 9.78                         | -59.29                     | -13            | 46.29          |

| Frequency<br>(MHz)         | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|----------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                            |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| WCDMA Mode, Middle channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 557.43                     | 54.13                         | 67                           | 150            | H              | -50.50                      | 0.58                  | -1.2                         | -52.28                     | -13            | 39.28          |
| 557.43                     | 54.84                         | 123                          | 150            | V              | -49.79                      | 0.58                  | -1.2                         | -51.57                     | -13            | 38.57          |
| 3760                       | 37.68                         | 150                          | 200            | H              | -69.1                       | 0.95                  | 9.74                         | -60.31                     | -13            | 47.31          |
| 3760                       | 38.33                         | 13                           | 100            | V              | -68.45                      | 0.95                  | 9.74                         | -59.66                     | -13            | 46.66          |

| Frequency<br>(MHz)       | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|--------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                          |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| WCDMA Mode, High channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 557.43                   | 54.46                         | 19                           | 150            | H              | -50.17                      | 0.58                  | -1.2                         | -51.95                     | -13            | 38.95          |
| 557.43                   | 55.94                         | 30                           | 150            | V              | -48.69                      | 0.58                  | -1.2                         | -50.47                     | -13            | 37.47          |
| 3815.2                   | 38.83                         | 350                          | 200            | H              | -67.77                      | 0.96                  | 9.71                         | -59.02                     | -13            | 46.02          |
| 3815.2                   | 39.49                         | 224                          | 100            | V              | -67.11                      | 0.96                  | 9.71                         | -58.36                     | -13            | 45.36          |

## WCDMA Band IV

| Frequency<br>(MHz)      | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|-------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                         |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| WCDMA Mode, Low channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 711.18                  | 54.95                         | 23                           | 150            | H              | -45.62                      | 0.62                  | -1.69                        | -47.93                     | -13            | 34.93          |
| 711.18                  | 55.77                         | 341                          | 150            | V              | -44.8                       | 0.62                  | -1.69                        | -47.11                     | -13            | 34.11          |
| 3424.8                  | 39.64                         | 233                          | 200            | H              | -68.26                      | 0.93                  | 9.83                         | -59.36                     | -13            | 46.36          |
| 3424.8                  | 39.61                         | 265                          | 100            | V              | -68.29                      | 0.93                  | 9.83                         | -59.39                     | -13            | 46.39          |

| Frequency<br>(MHz)         | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|----------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                            |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| WCDMA Mode, Middle channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 711.18                     | 54.63                         | 208                          | 150            | H              | -45.94                      | 0.62                  | -1.69                        | -48.25                     | -13            | 35.25          |
| 711.18                     | 54.9                          | 128                          | 150            | V              | -45.67                      | 0.62                  | -1.69                        | -47.98                     | -13            | 34.98          |
| 3465.2                     | 38.50                         | 313                          | 200            | H              | -69.25                      | 0.93                  | 9.87                         | -60.31                     | -13            | 47.31          |
| 3465.2                     | 38.77                         | 75                           | 100            | V              | -68.98                      | 0.93                  | 9.87                         | -60.04                     | -13            | 47.04          |

| Frequency<br>(MHz)       | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|--------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                          |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| WCDMA Mode, High channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 711.18                   | 55.34                         | 221                          | 150            | H              | -45.23                      | 0.62                  | -1.69                        | -47.54                     | -13            | 34.54          |
| 711.18                   | 56.65                         | 338                          | 150            | V              | -43.92                      | 0.62                  | -1.69                        | -46.23                     | -13            | 33.23          |
| 3505.2                   | 40.19                         | 308                          | 200            | H              | -67.41                      | 0.93                  | 9.9                          | -58.44                     | -13            | 45.44          |
| 3505.2                   | 40.20                         | 287                          | 100            | V              | -67.4                       | 0.93                  | 9.9                          | -58.43                     | -13            | 45.43          |

**Note:**

1) Absolute Level (dBm) = Submitted Level (dBm) - Cable loss (dB) + Antenna Gain (dBd/dBi)

2) Margin (dB) = Limit (dBm) - Absolute Level (dBm)

Test mode: Transmitting (Pre-scan with all the bandwidth, and worse case as below)

**30 MHz ~ 20 GHz:**

**LTE Band 2:**

| Frequency<br>(MHz)                  | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|-------------------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                                     |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4MHz Bandwidth Low Channel   |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 214.75                              | 41.84                         | 262                          | 100            | H              | -62.55                      | 0.43                  | -3.45                        | -66.43                     | -13            | 53.43          |
| 214.75                              | 41.99                         | 253                          | 200            | V              | -62.4                       | 0.43                  | -3.45                        | -66.28                     | -13            | 53.28          |
| 3701.40                             | 41.23                         | 198                          | 150            | H              | -65.73                      | 0.95                  | 9.78                         | -56.9                      | -13            | 43.90          |
| 3701.40                             | 41.53                         | 176                          | 100            | V              | -65.43                      | 0.95                  | 9.78                         | -56.6                      | -13            | 43.60          |
| 16-QAM 1.4MHz Bandwidth Low Channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 214.75                              | 41.35                         | 207                          | 150            | H              | -63.04                      | 0.43                  | -3.45                        | -66.92                     | -13            | 53.92          |
| 214.75                              | 41.83                         | 321                          | 150            | V              | -62.56                      | 0.43                  | -3.45                        | -66.44                     | -13            | 53.44          |
| 3701.40                             | 42.4                          | 59                           | 200            | H              | -64.56                      | 0.95                  | 9.78                         | -55.73                     | -13            | 42.73          |
| 3701.40                             | 42.03                         | 238                          | 200            | V              | -64.93                      | 0.95                  | 9.78                         | -56.1                      | -13            | 43.10          |

| Frequency<br>(MHz)                     | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|----------------------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                                        |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4MHz Bandwidth Middle Channel   |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 214.75                                 | 41.04                         | 64                           | 100            | H              | -63.35                      | 0.43                  | -3.45                        | -67.23                     | -13            | 54.23          |
| 214.75                                 | 41.96                         | 51                           | 100            | V              | -62.43                      | 0.43                  | -3.45                        | -66.31                     | -13            | 53.31          |
| 3760                                   | 40.51                         | 25                           | 150            | H              | -66.27                      | 0.95                  | 9.74                         | -57.48                     | -13            | 44.48          |
| 3760                                   | 40.53                         | 190                          | 100            | V              | -66.25                      | 0.95                  | 9.74                         | -57.46                     | -13            | 44.46          |
| 16-QAM 1.4MHz Bandwidth Middle Channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 214.75                                 | 41.41                         | 294                          | 150            | H              | -62.98                      | 0.43                  | -3.45                        | -66.86                     | -13            | 53.86          |
| 214.75                                 | 41.88                         | 184                          | 150            | V              | -62.51                      | 0.43                  | -3.45                        | -66.39                     | -13            | 53.39          |
| 3760                                   | 41.12                         | 332                          | 200            | H              | -65.66                      | 0.95                  | 9.74                         | -56.87                     | -13            | 43.87          |
| 3760                                   | 41.34                         | 68                           | 200            | V              | -65.44                      | 0.95                  | 9.74                         | -56.65                     | -13            | 43.65          |

| Frequency<br>(MHz)                   | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|--------------------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                                      |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4MHz Bandwidth High Channel   |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 214.75                               | 42.02                         | 202                          | 100            | H              | -62.37                      | 0.43                  | -3.45                        | -66.25                     | -13            | 53.25          |
| 214.75                               | 42.49                         | 244                          | 200            | V              | -61.9                       | 0.43                  | -3.45                        | -65.78                     | -13            | 52.78          |
| 3818.60                              | 41.22                         | 310                          | 150            | H              | -65.38                      | 0.96                  | 9.71                         | -56.63                     | -13            | 43.63          |
| 3818.60                              | 42.13                         | 62                           | 100            | V              | -64.47                      | 0.96                  | 9.71                         | -55.72                     | -13            | 42.72          |
| 16-QAM 1.4MHz Bandwidth High Channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 214.75                               | 41.5                          | 54                           | 150            | H              | -62.89                      | 0.43                  | -3.45                        | -66.77                     | -13            | 53.77          |
| 214.75                               | 41.5                          | 95                           | 150            | V              | -62.89                      | 0.43                  | -3.45                        | -66.77                     | -13            | 53.77          |
| 3818.60                              | 42.69                         | 28                           | 200            | H              | -63.91                      | 0.96                  | 9.71                         | -55.16                     | -13            | 42.16          |
| 3818.60                              | 42.73                         | 280                          | 200            | V              | -63.87                      | 0.96                  | 9.71                         | -55.12                     | -13            | 42.12          |

**30 MHz ~ 20 GHz:**  
**LTE Band 4:**

| Frequency<br>(MHz)                  | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|-------------------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                                     |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4MHz Bandwidth Low Channel   |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 213.81                              | 41.95                         | 250                          | 100            | H              | -62.52                      | 0.43                  | -3.48                        | -66.43                     | -13            | 53.43          |
| 213.81                              | 41.75                         | 342                          | 200            | V              | -62.72                      | 0.43                  | -3.48                        | -66.63                     | -13            | 53.63          |
| 3421.40                             | 43.63                         | 161                          | 150            | H              | -64.31                      | 0.93                  | 9.82                         | -55.42                     | -13            | 42.42          |
| 3421.40                             | 44.53                         | 115                          | 100            | V              | -63.41                      | 0.93                  | 9.82                         | -54.52                     | -13            | 41.52          |
| 16-QAM 1.4MHz Bandwidth Low Channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 213.81                              | 41.29                         | 248                          | 150            | H              | -63.18                      | 0.43                  | -3.48                        | -59.27                     | -13            | 46.27          |
| 213.81                              | 41.84                         | 21                           | 150            | V              | -62.63                      | 0.43                  | -3.48                        | -58.72                     | -13            | 45.72          |
| 3421.40                             | 44.99                         | 98                           | 200            | H              | -62.95                      | 0.93                  | 9.82                         | -54.06                     | -13            | 41.06          |
| 3421.40                             | 44.21                         | 185                          | 200            | V              | -63.73                      | 0.93                  | 9.82                         | -54.84                     | -13            | 41.84          |

| Frequency<br>(MHz)                     | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|----------------------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                                        |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4MHz Bandwidth Middle Channel   |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 213.81                                 | 41.04                         | 98                           | 100            | H              | -63.43                      | 0.43                  | -3.48                        | -67.34                     | -13            | 54.34          |
| 213.81                                 | 41.37                         | 326                          | 200            | V              | -63.1                       | 0.43                  | -3.48                        | -67.01                     | -13            | 54.01          |
| 3465                                   | 42.65                         | 150                          | 150            | H              | -65.1                       | 0.93                  | 9.87                         | -56.16                     | -13            | 43.16          |
| 3465                                   | 43.35                         | 291                          | 100            | V              | -64.4                       | 0.93                  | 9.87                         | -55.46                     | -13            | 42.46          |
| 16-QAM 1.4MHz Bandwidth Middle Channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 213.81                                 | 41.47                         | 310                          | 150            | H              | -63                         | 0.43                  | -3.48                        | -66.91                     | -13            | 53.91          |
| 213.81                                 | 41.15                         | 176                          | 150            | V              | -63.32                      | 0.43                  | -3.48                        | -67.23                     | -13            | 54.23          |
| 3465                                   | 43.63                         | 359                          | 200            | H              | -64.12                      | 0.93                  | 9.87                         | -55.18                     | -13            | 42.18          |
| 3465                                   | 44.14                         | 210                          | 200            | V              | -63.61                      | 0.93                  | 9.87                         | -54.67                     | -13            | 41.67          |

| Frequency<br>(MHz)                   | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|--------------------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                                      |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4MHz Bandwidth High Channel   |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 213.81                               | 42                            | 141                          | 100            | H              | -62.47                      | 0.43                  | -3.48                        | -66.38                     | -13            | 53.38          |
| 213.81                               | 42.67                         | 288                          | 200            | V              | -61.8                       | 0.43                  | -3.48                        | -65.71                     | -13            | 52.71          |
| 3508.60                              | 43.63                         | 278                          | 150            | H              | -63.94                      | 0.93                  | 9.90                         | -54.97                     | -13            | 41.97          |
| 3508.60                              | 44.15                         | 116                          | 100            | V              | -63.42                      | 0.93                  | 9.90                         | -54.45                     | -13            | 41.45          |
| 16-QAM 1.4MHz Bandwidth High Channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 213.81                               | 41.62                         | 129                          | 150            | H              | -62.85                      | 0.43                  | -3.48                        | -66.76                     | -13            | 53.76          |
| 213.81                               | 41.68                         | 279                          | 150            | V              | -62.79                      | 0.43                  | -3.48                        | -66.7                      | -13            | 53.70          |
| 3508.60                              | 45.02                         | 291                          | 200            | H              | -62.55                      | 0.93                  | 9.90                         | -53.58                     | -13            | 40.58          |
| 3508.60                              | 44.21                         | 89                           | 200            | V              | -63.36                      | 0.93                  | 9.90                         | -54.39                     | -13            | 41.39          |

**30 MHz ~ 10 GHz:****LTE Band 12:**

| Frequency<br>(MHz)                  | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|-------------------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                                     |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4MHz Bandwidth Low Channel   |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 223.63                              | 44.48                         | 205                          | 100            | H              | -59.16                      | 0.43                  | -3.15                        | -62.74                     | -13            | 49.74          |
| 223.63                              | 43.89                         | 148                          | 200            | V              | -59.75                      | 0.43                  | -3.15                        | -63.33                     | -13            | 50.33          |
| 1399.4                              | 51.8                          | 59                           | 150            | H              | -62.37                      | 0.82                  | 7.92                         | -55.27                     | -13            | 42.27          |
| 1399.4                              | 53.37                         | 294                          | 100            | V              | -60.8                       | 0.82                  | 7.92                         | -53.7                      | -13            | 40.70          |
| 16-QAM 1.4MHz Bandwidth Low Channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 223.63                              | 44.03                         | 19                           | 150            | H              | -59.61                      | 0.43                  | -3.15                        | -63.19                     | -13            | 50.19          |
| 223.63                              | 45.09                         | 176                          | 150            | V              | -58.55                      | 0.43                  | -3.15                        | -62.13                     | -13            | 49.13          |
| 1399.4                              | 53.81                         | 178                          | 200            | H              | -60.36                      | 0.82                  | 7.92                         | -53.26                     | -13            | 40.26          |
| 1399.4                              | 52.15                         | 204                          | 200            | V              | -62.02                      | 0.82                  | 7.92                         | -54.92                     | -13            | 41.92          |

| Frequency<br>(MHz)                     | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|----------------------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                                        |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4MHz Bandwidth Middle Channel   |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 223.63                                 | 43.58                         | 23                           | 100            | H              | -60.06                      | 0.43                  | -3.15                        | -63.64                     | -13            | 50.64          |
| 223.63                                 | 43.71                         | 192                          | 200            | V              | -59.93                      | 0.43                  | -3.15                        | -63.51                     | -13            | 50.51          |
| 1415                                   | 51.67                         | 8                            | 150            | H              | -62.53                      | 0.82                  | 7.96                         | -55.39                     | -13            | 42.39          |
| 1415                                   | 52.18                         | 85                           | 100            | V              | -62.02                      | 0.82                  | 7.96                         | -54.88                     | -13            | 41.88          |
| 16-QAM 1.4MHz Bandwidth Middle Channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 223.63                                 | 43.71                         | 55                           | 150            | H              | -59.93                      | 0.43                  | -3.15                        | -63.51                     | -13            | 50.51          |
| 223.63                                 | 44                            | 311                          | 150            | V              | -59.64                      | 0.43                  | -3.15                        | -63.22                     | -13            | 50.22          |
| 1415                                   | 52.19                         | 58                           | 200            | H              | -62.01                      | 0.82                  | 7.96                         | -54.87                     | -13            | 41.87          |
| 1415                                   | 52.19                         | 137                          | 200            | V              | -62.01                      | 0.82                  | 7.96                         | -54.87                     | -13            | 41.87          |

| Frequency<br>(MHz)                   | Receiver<br>Reading<br>(dBμV) | Turntable<br>Angle<br>Degree | Rx Antenna     |                | Substituted                 |                       |                              | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|--------------------------------------|-------------------------------|------------------------------|----------------|----------------|-----------------------------|-----------------------|------------------------------|----------------------------|----------------|----------------|
|                                      |                               |                              | Height<br>(cm) | Polar<br>(H/V) | Submitted<br>Level<br>(dBm) | Cable<br>Loss<br>(dB) | Antenna<br>Gain<br>(dBd/dBi) |                            |                |                |
| QPSK 1.4MHz Bandwidth High Channel   |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 223.63                               | 43.68                         | 145                          | 100            | H              | -59.96                      | 0.43                  | -3.15                        | -63.54                     | -13            | 50.54          |
| 223.63                               | 43.68                         | 300                          | 200            | V              | -59.96                      | 0.43                  | -3.15                        | -63.54                     | -13            | 50.54          |
| 1430.6                               | 51.68                         | 86                           | 150            | H              | -62.55                      | 0.82                  | 8                            | -55.37                     | -13            | 42.37          |
| 1430.6                               | 52.85                         | 170                          | 100            | V              | -61.38                      | 0.82                  | 8                            | -54.2                      | -13            | 41.20          |
| 16-QAM 1.4MHz Bandwidth High Channel |                               |                              |                |                |                             |                       |                              |                            |                |                |
| 223.63                               | 44.41                         | 359                          | 150            | H              | -59.23                      | 0.43                  | -3.15                        | -62.81                     | -13            | 49.81          |
| 223.63                               | 44.1                          | 254                          | 150            | V              | -59.54                      | 0.43                  | -3.15                        | -63.12                     | -13            | 50.12          |
| 1430.6                               | 53.4                          | 354                          | 200            | H              | -60.83                      | 0.82                  | 8                            | -53.65                     | -13            | 40.65          |
| 1430.6                               | 52.08                         | 342                          | 200            | V              | -62.15                      | 0.82                  | 8                            | -54.97                     | -13            | 41.97          |

**Note:**

- 1) Absolute Level (dBm) = Submitted Level (dBm) - Cable loss (dB) + Antenna Gain (dBd/dBi)
- 2) Margin (dB) = Limit (dBm) - Absolute Level (dBm)

**FCC § 22.917 (a); § 24.238 (a); §27.53 (g) (h); - BAND EDGES****Applicable Standards**

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.

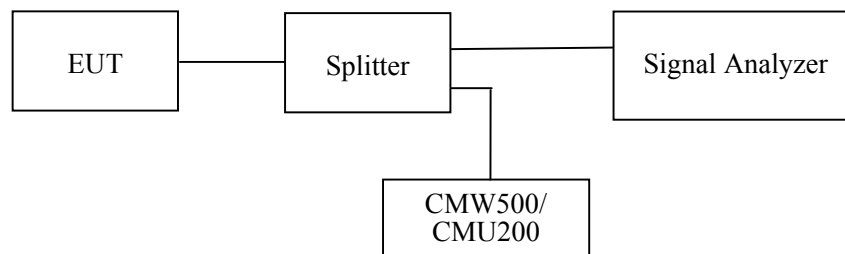
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

according to FCC §27.53 (g) (h).

**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:       | 23.2°C-23.5°C     |
| Relative Humidity: | 51 %-53%          |
| ATM Pressure:      | 101.1kPa-103.3kPa |

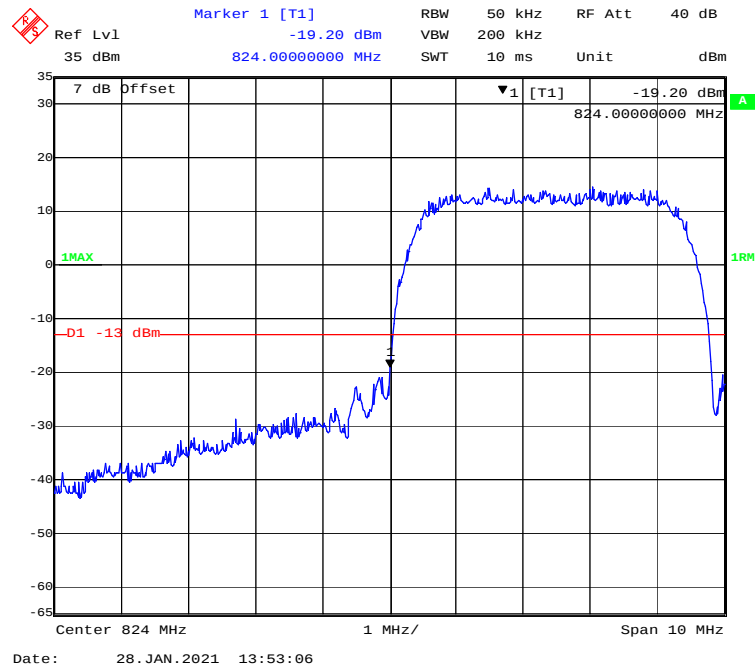
The testing was performed by Tyrone Wang from 2021-01-28 to 2021-02-18.

EUT operation mode: Transmitting

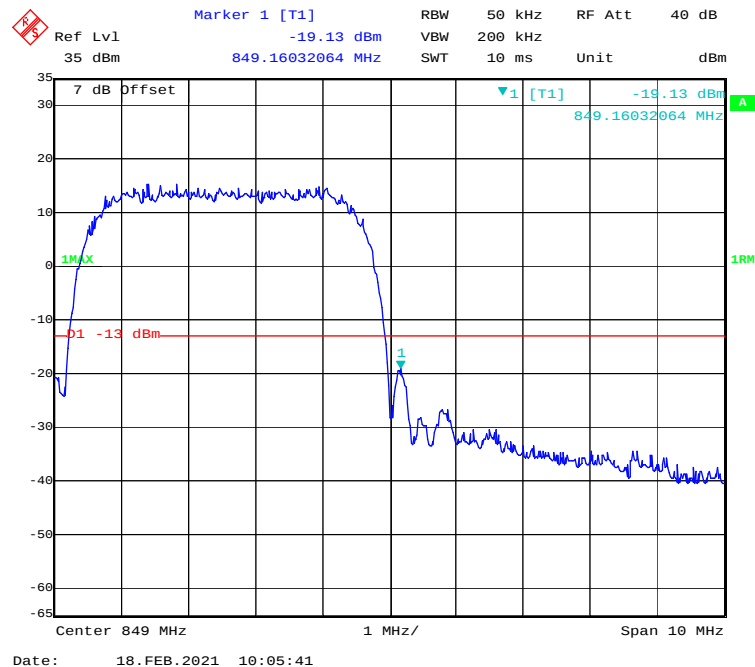
Test Result: Compliance.

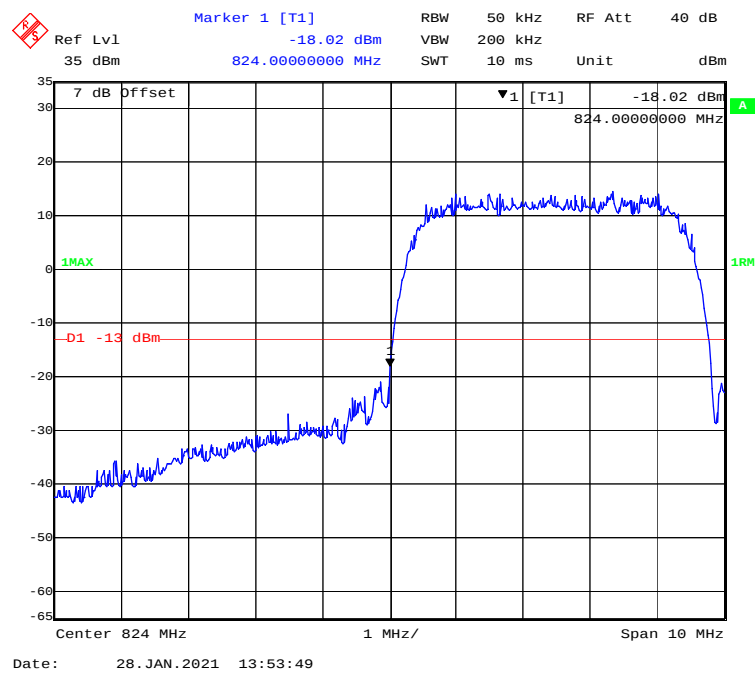
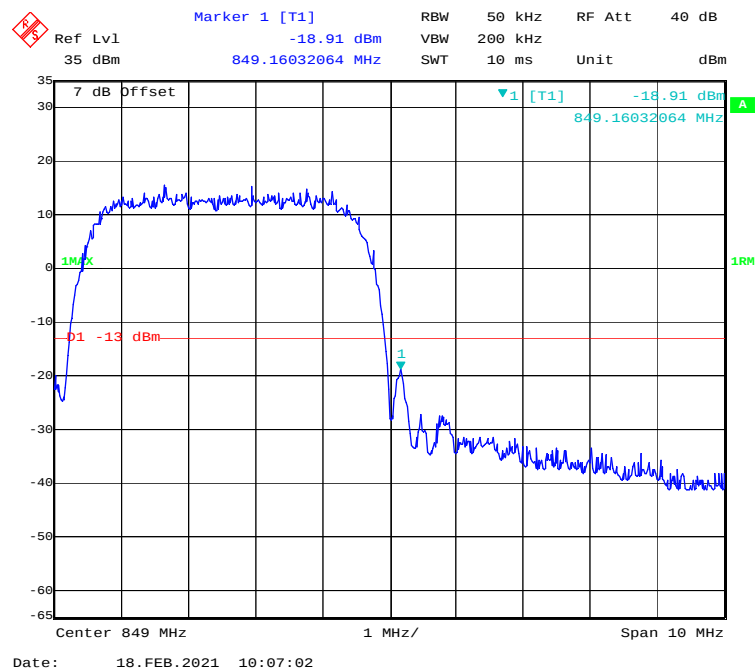
## WCDMA Band V

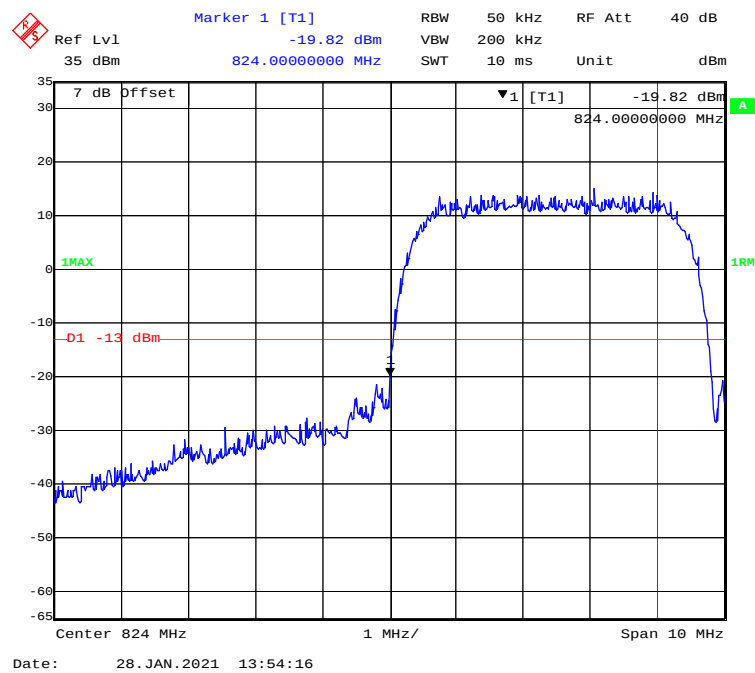
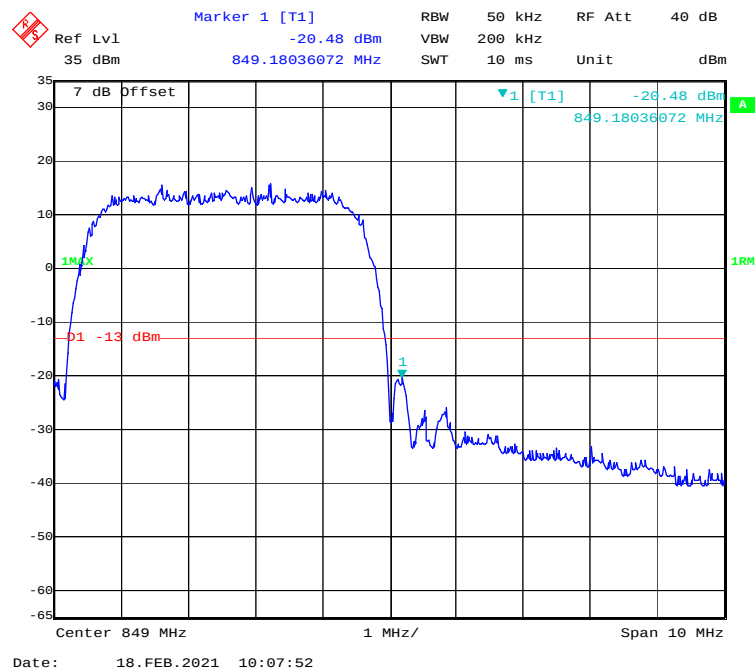
## WCDMA (Rel 99) Mode, Left Band Edge



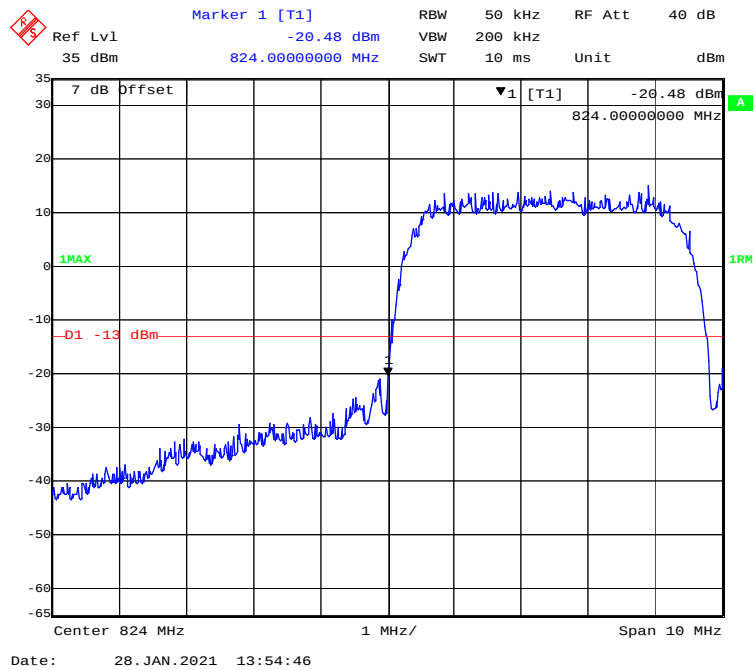
## WCDMA (Rel 99) Mode, Right Band Edge



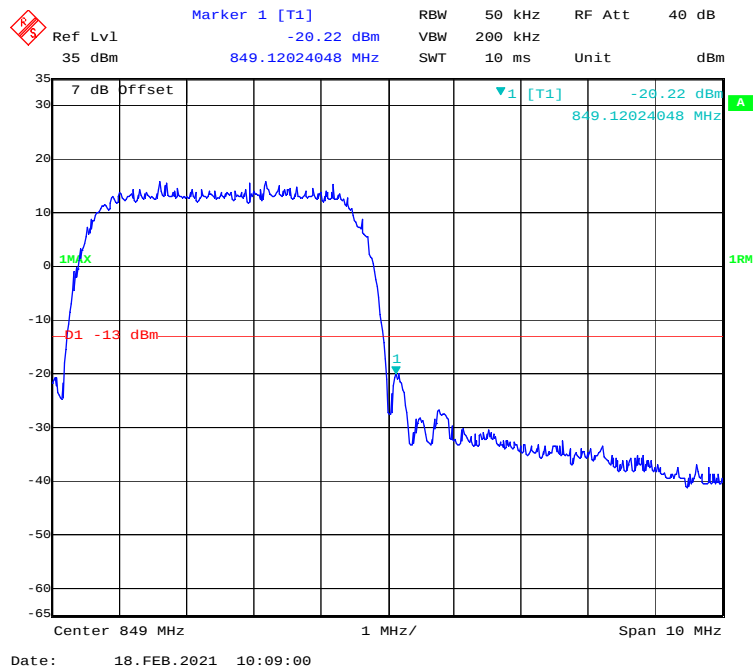
**WCDMA (HSDPA) Mode, Left Band Edge****WCDMA (HSDPA) Mode, Right Band Edge**

**WCDMA (HSUPA) Mode, Left Band Edge****WCDMA (HSUPA) Mode, Right Band Edge**

### WCDMA (HSPA+) Mode, Left Band Edge

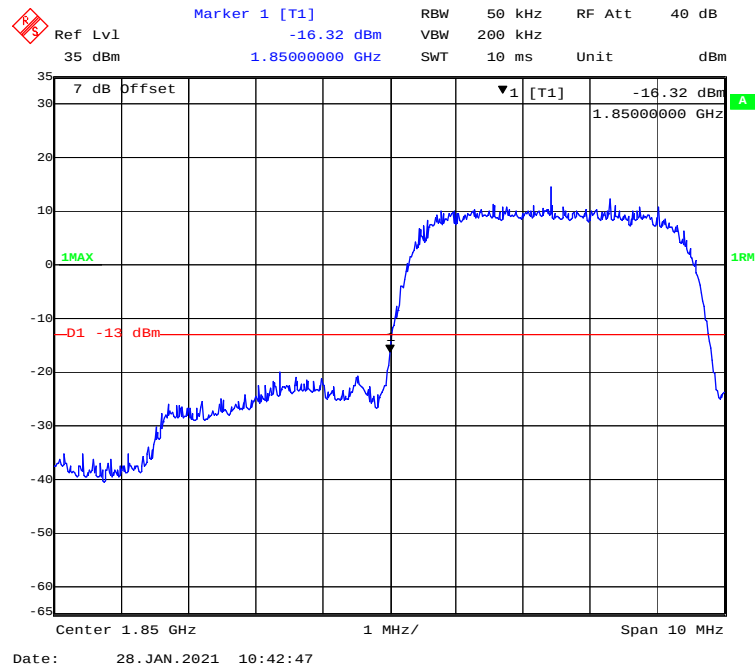


### WCDMA (HSPA+) Mode, Right Band Edge

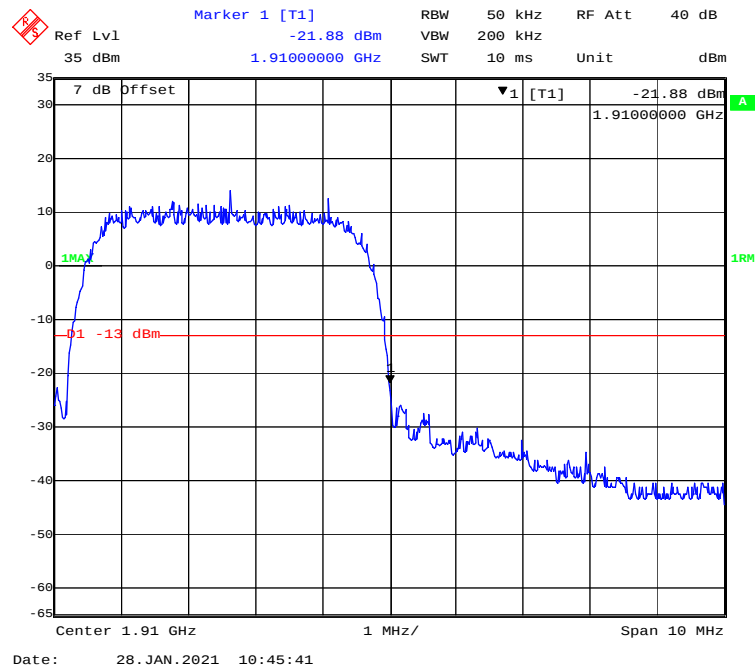


# WCDMA Band II

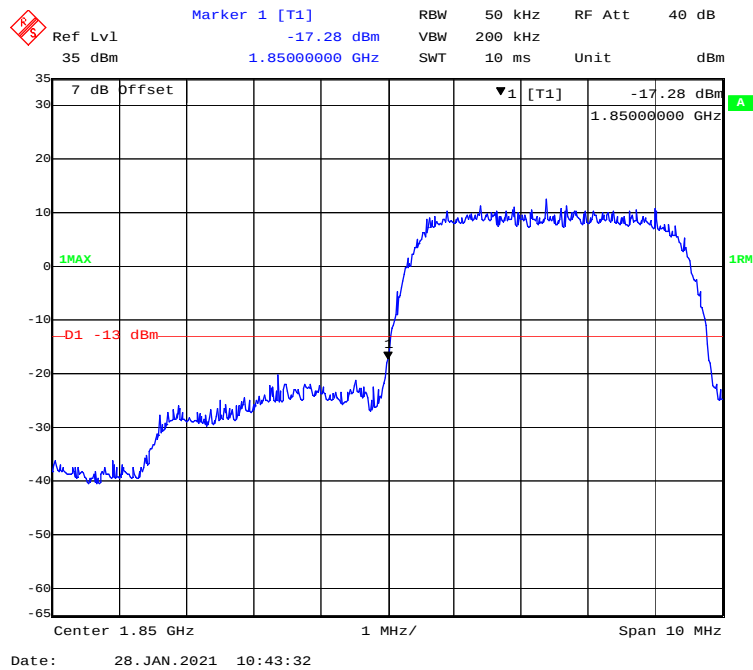
## WCDMA (Rel99) Mode, Left Band Edge



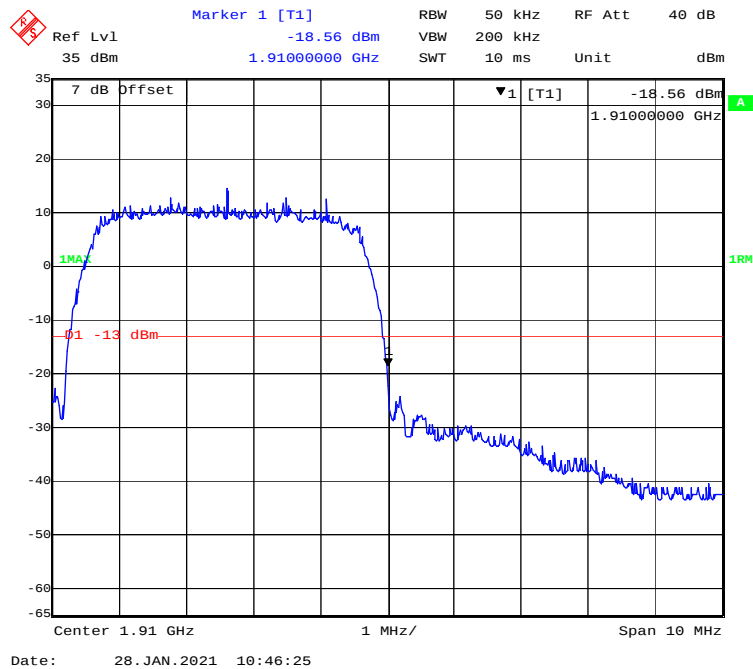
## WCDMA (Rel99) Mode, Right Band Edge



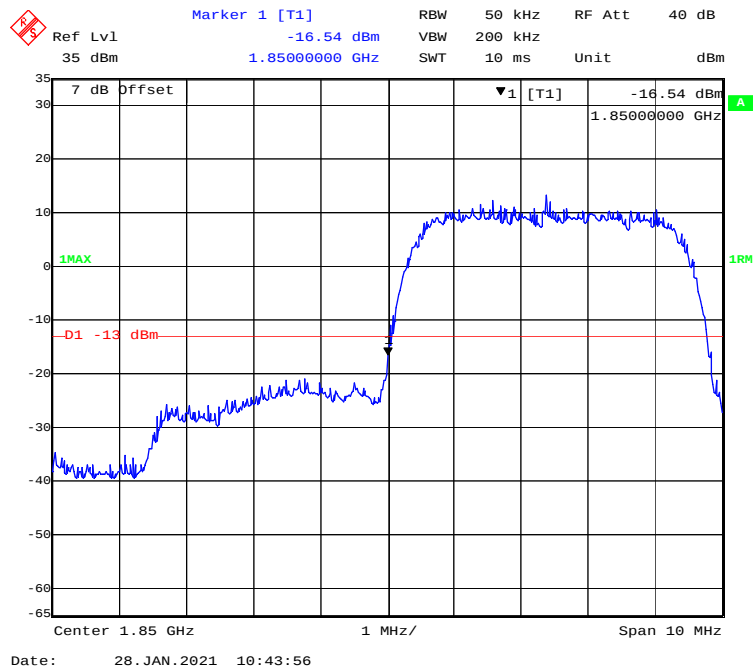
### WCDMA (HSDPA) Mode, Left Band Edge



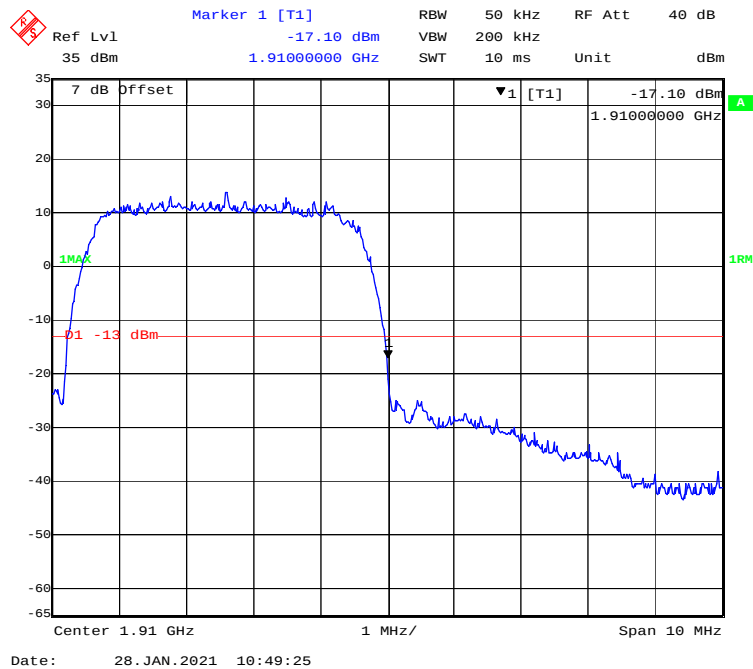
### WCDMA (HSDPA) Mode, Right Band Edge

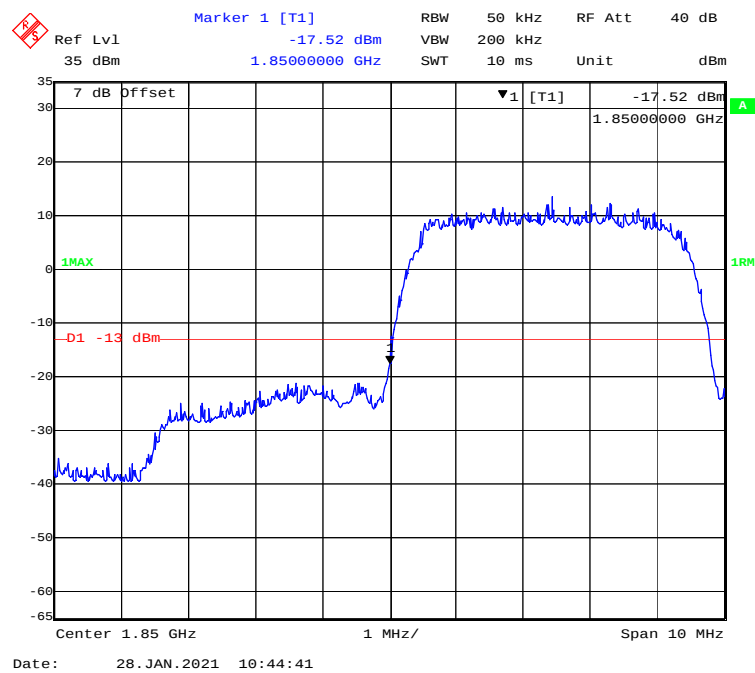
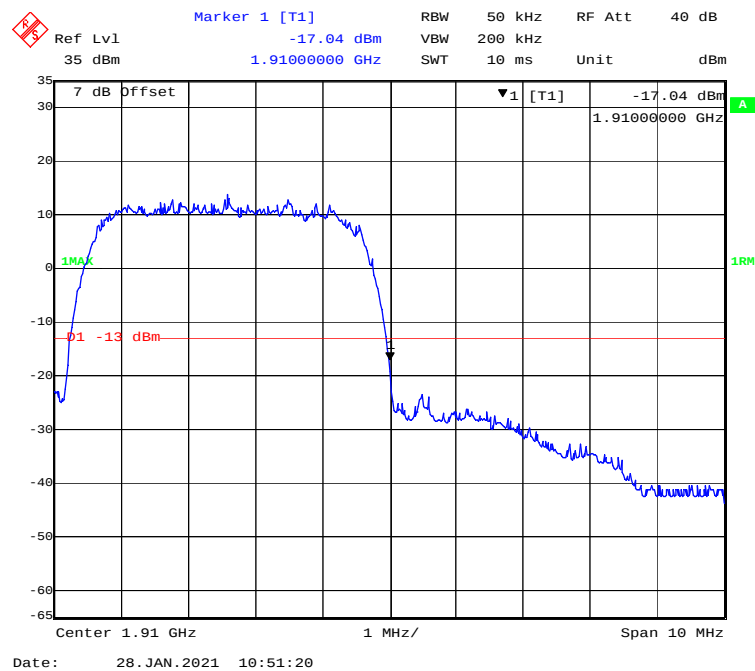


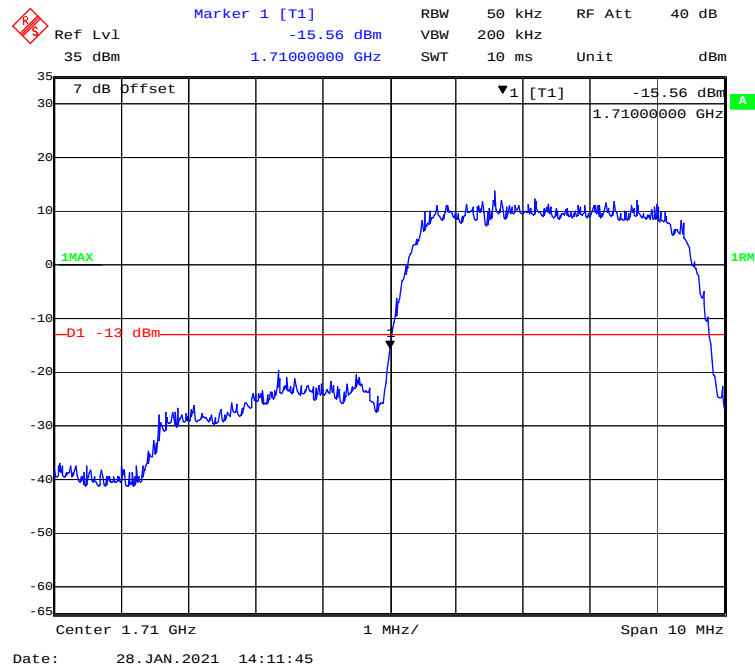
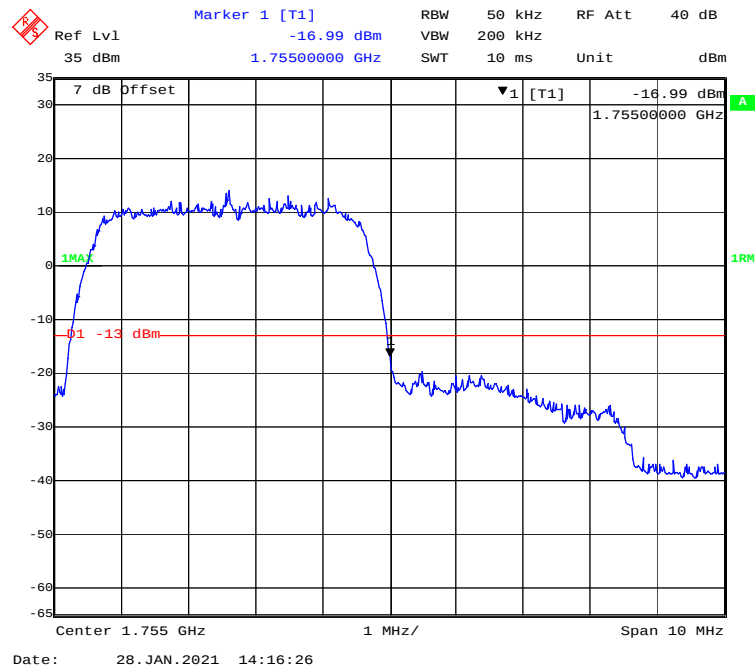
### WCDMA (HSUPA) Mode, Left Band Edge



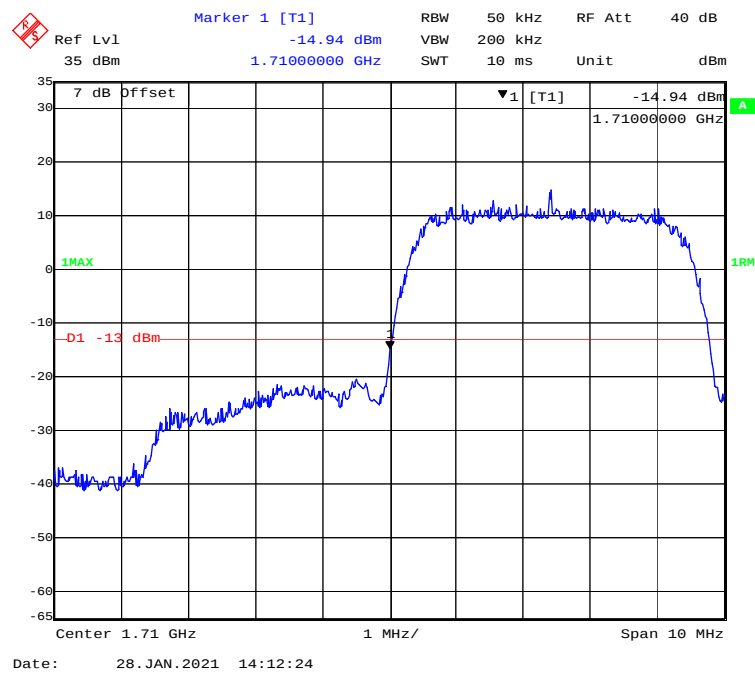
### WCDMA (HSUPA) Mode, Right Band Edge



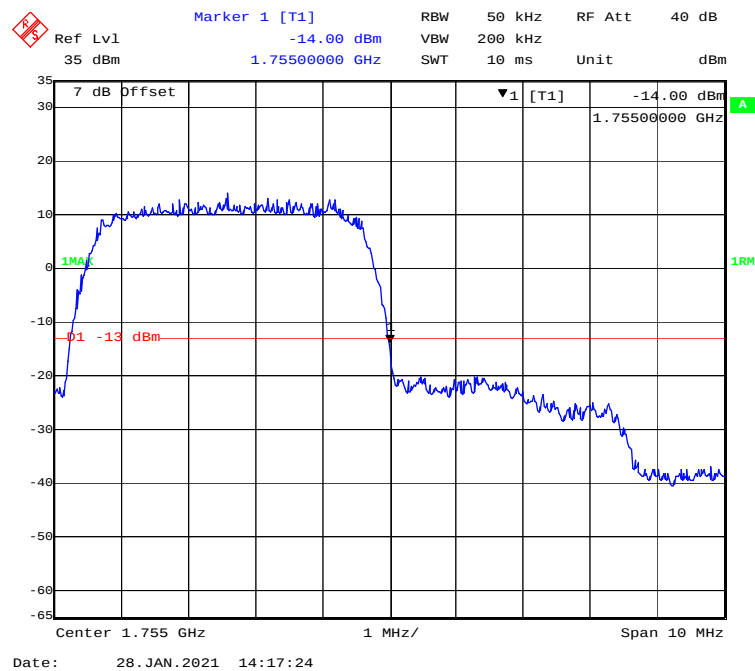
**WCDMA (HSPA+) Mode, Left Band Edge****WCDMA (HSPA+) Mode, Right Band Edge**

**WCDMA Band IV****WCDMA (Rel99) Mode, Left Band Edge****WCDMA (Rel99) Mode, Right Band Edge**

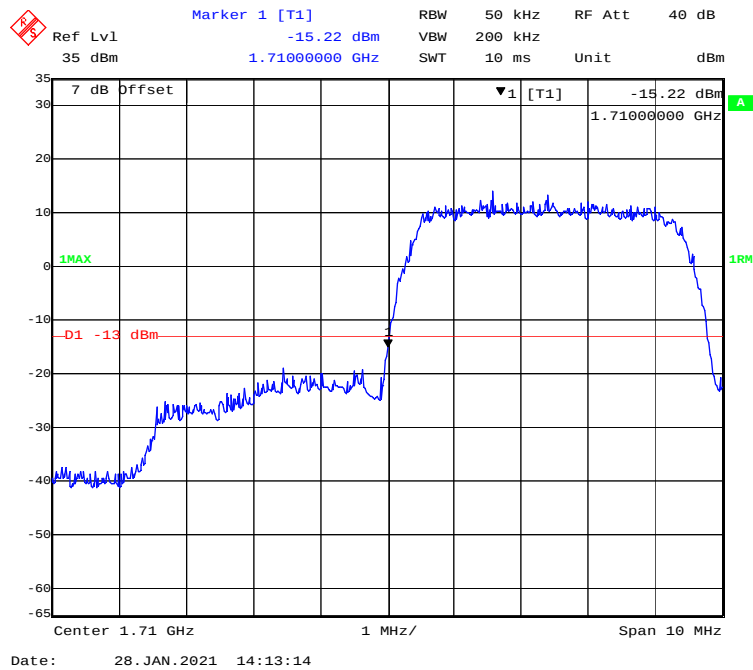
### WCDMA (HSDPA) Mode, Left Band Edge



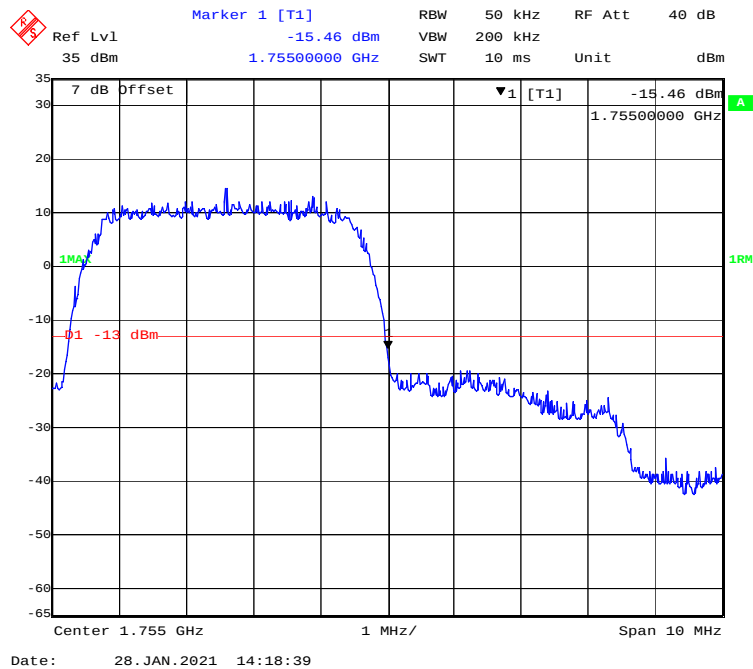
### WCDMA (HSDPA) Mode, Right Band Edge



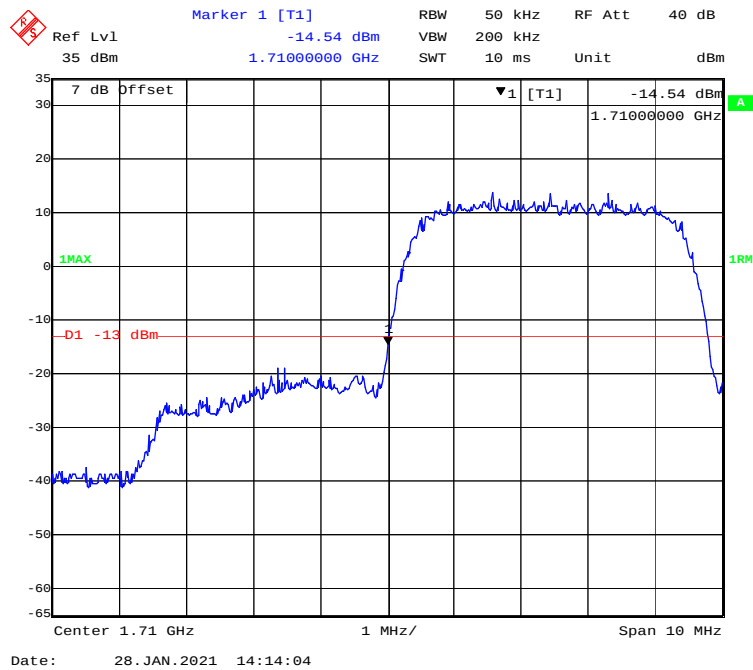
### WCDMA (HSUPA) Mode, Left Band Edge



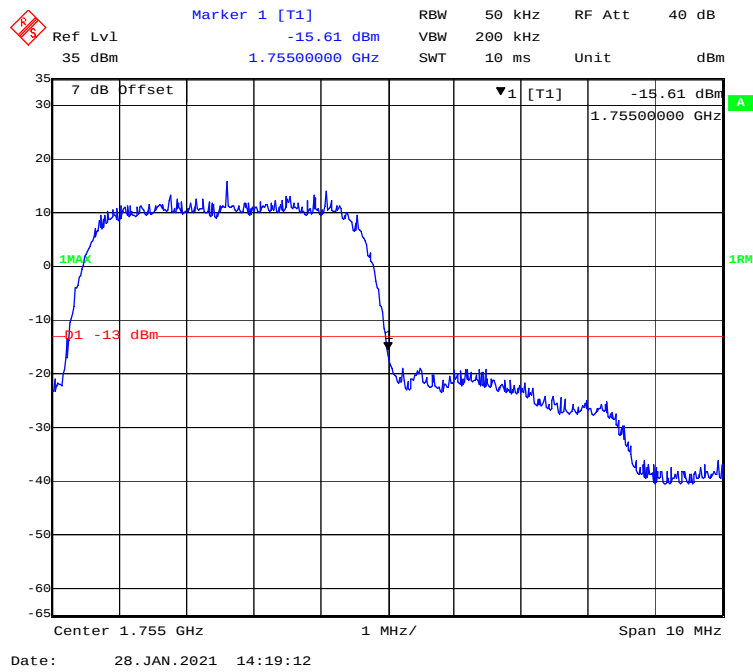
### WCDMA (HSUPA) Mode, Right Band Edge

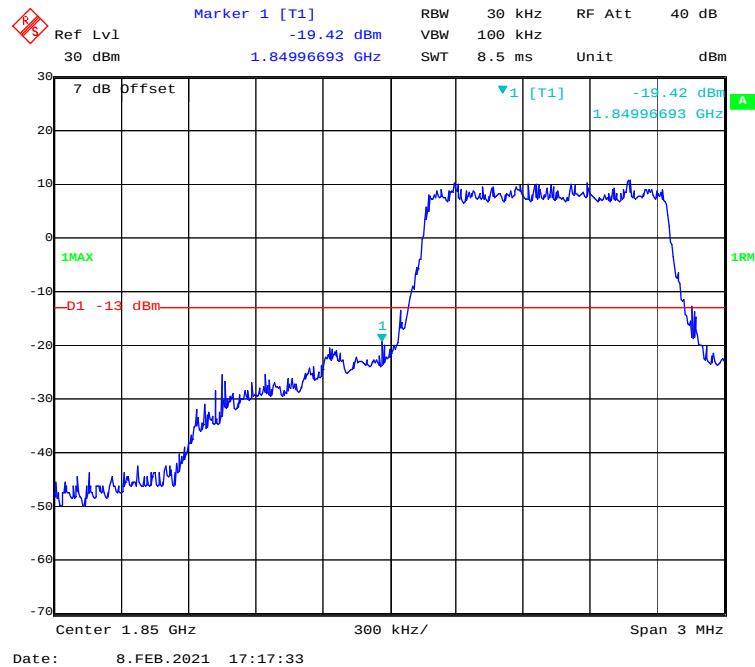
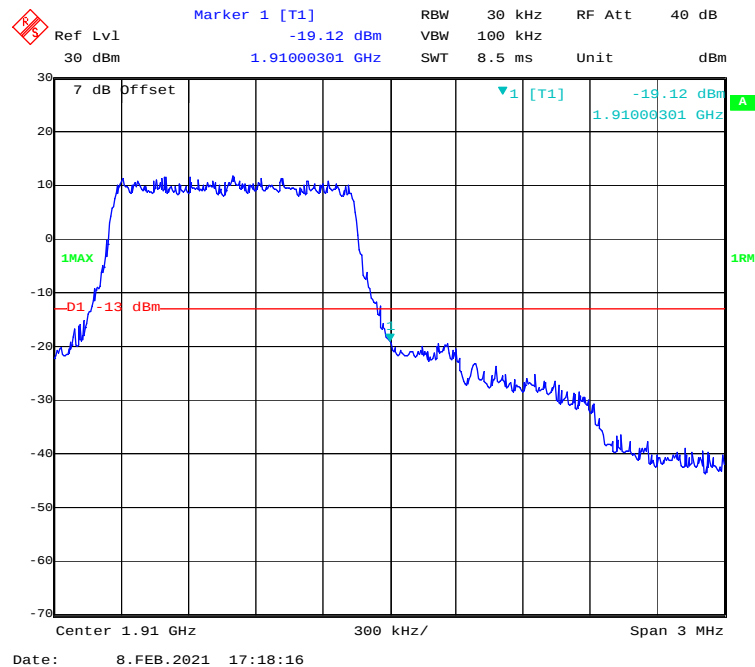


### WCDMA (HSPA+) Mode, Left Band Edge

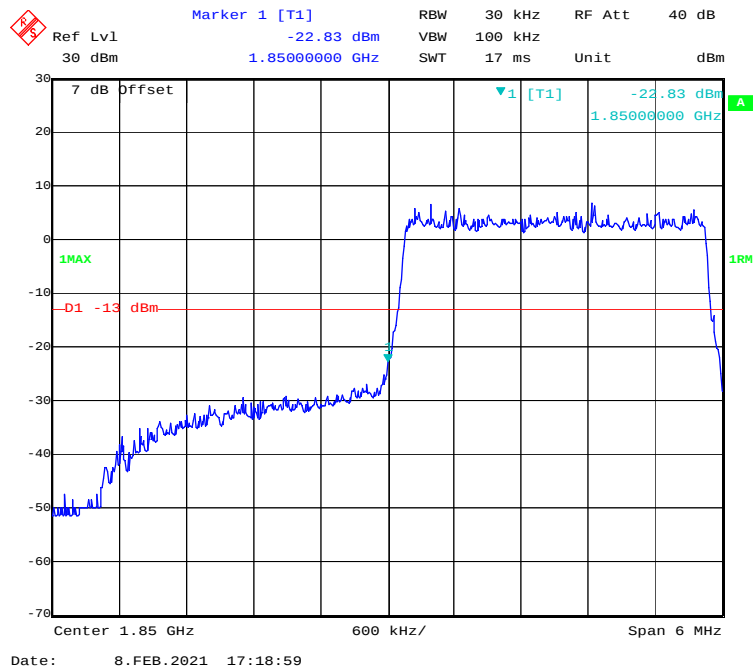


### WCDMA (HSPA+) Mode, Right Band Edge

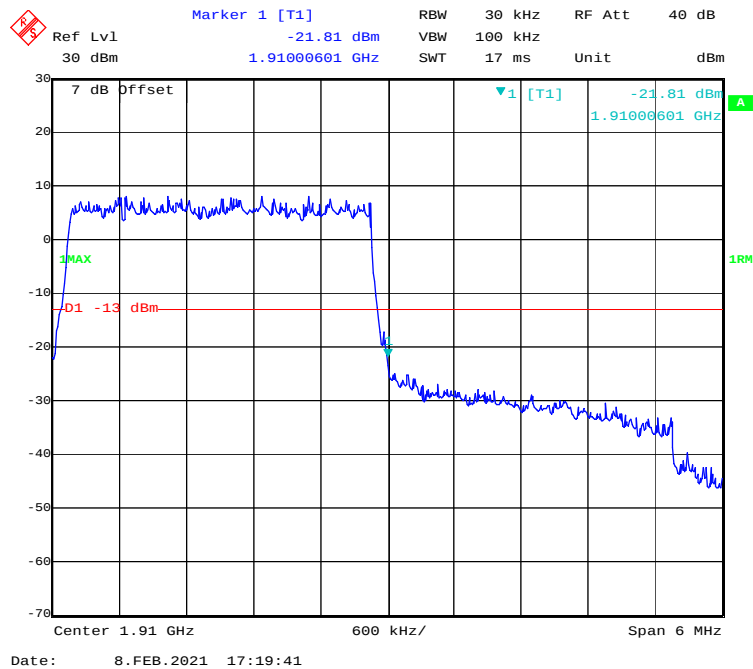


**LTE Band 2:****QPSK (1.4 MHz, FULL RB) - Left Band Edge****QPSK (1.4 MHz, FULL RB) - Right Band Edge**

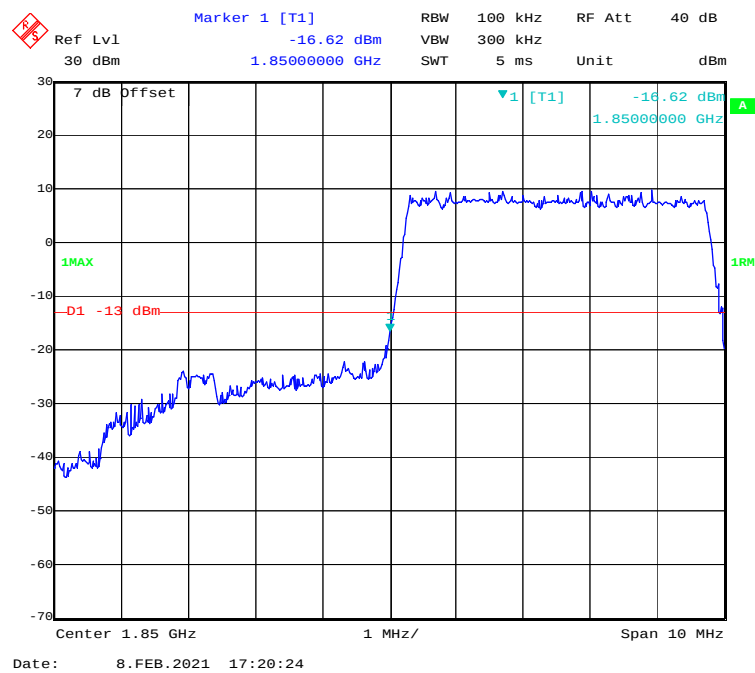
### QPSK (3 MHz, FULL RB) - Left Band Edge



### QPSK (3 MHz, FULL RB) - Right Band Edge

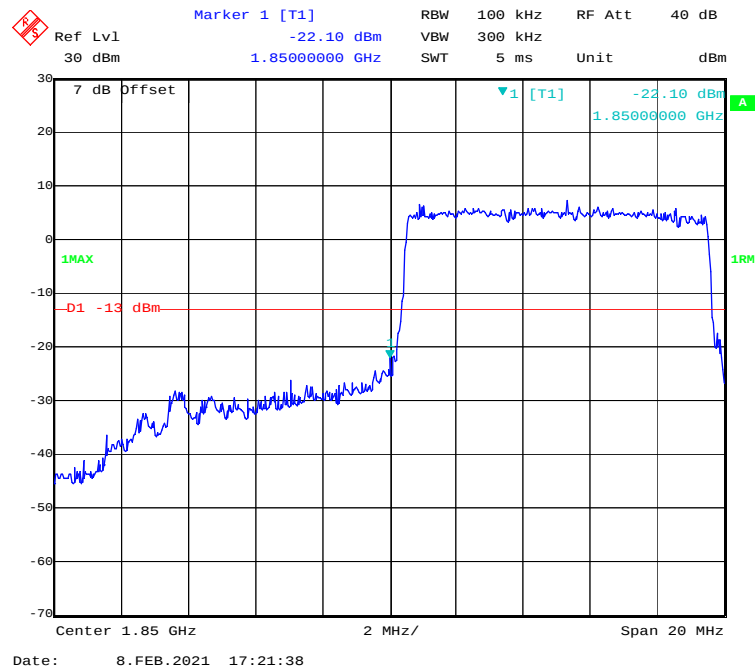
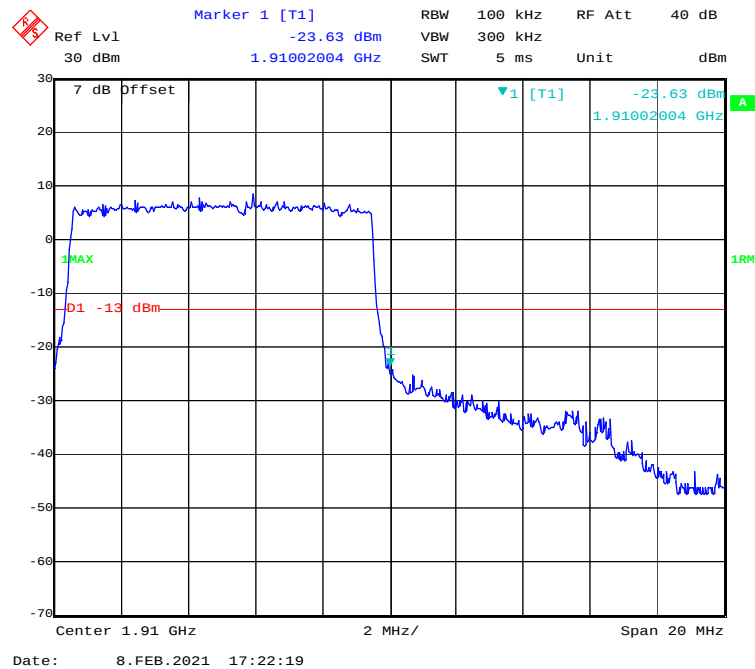


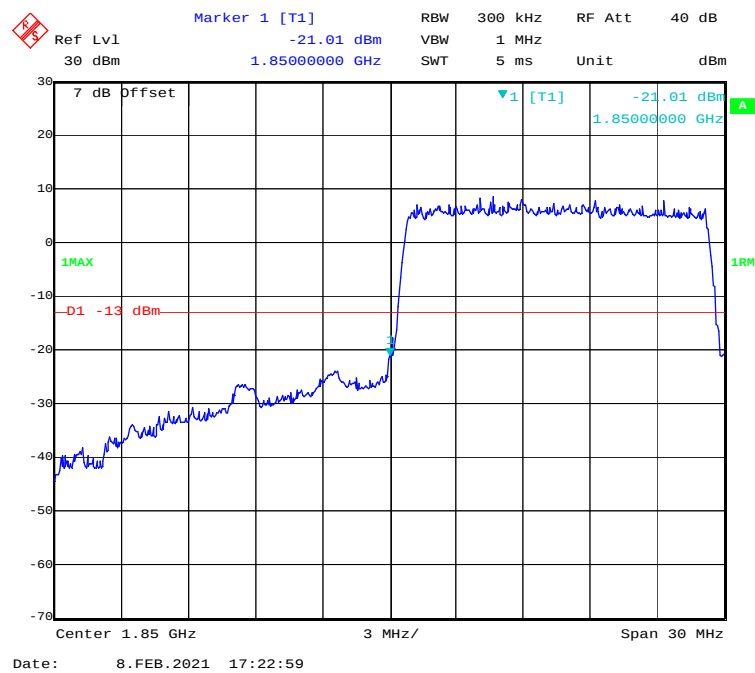
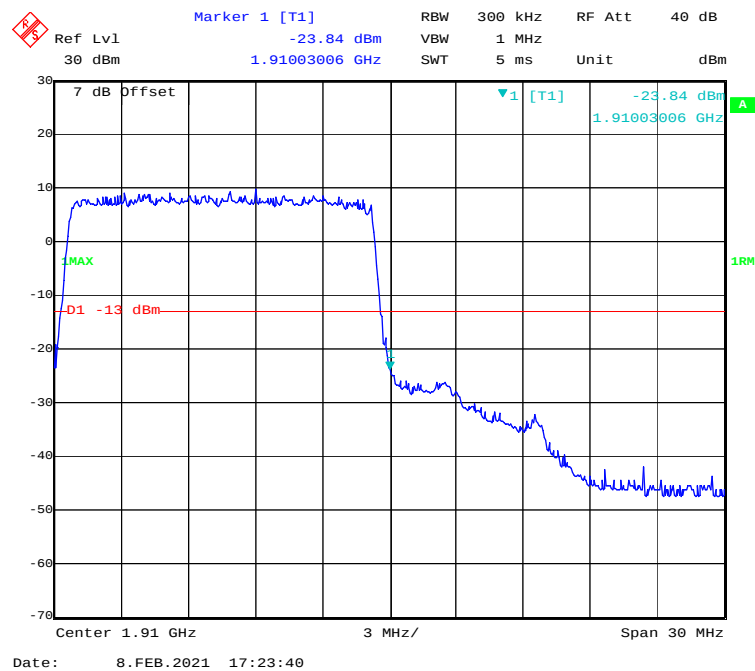
### QPSK (5 MHz, FULL RB) - Left Band Edge



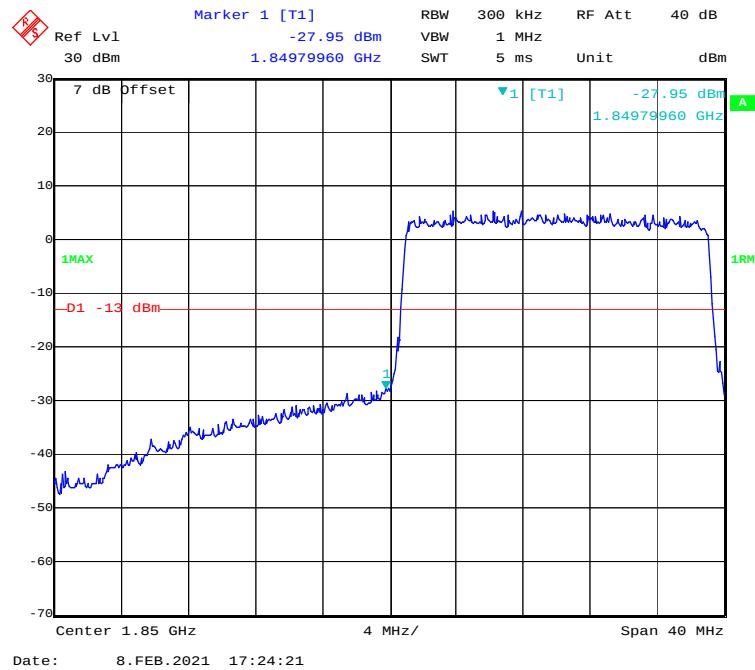
### QPSK (5 MHz, FULL RB) - Right Band Edge



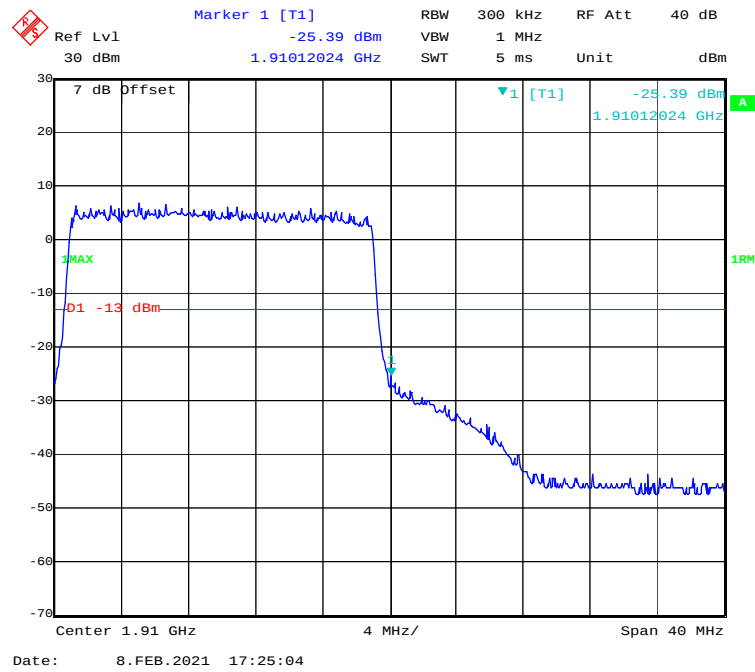
**QPSK (10 MHz, FULL RB) - Left Band Edge****QPSK (10 MHz, FULL RB) - Right Band Edge**

**QPSK (15 MHz, FULL RB) - Left Band Edge****QPSK (15 MHz, FULL RB) - Right Band Edge**

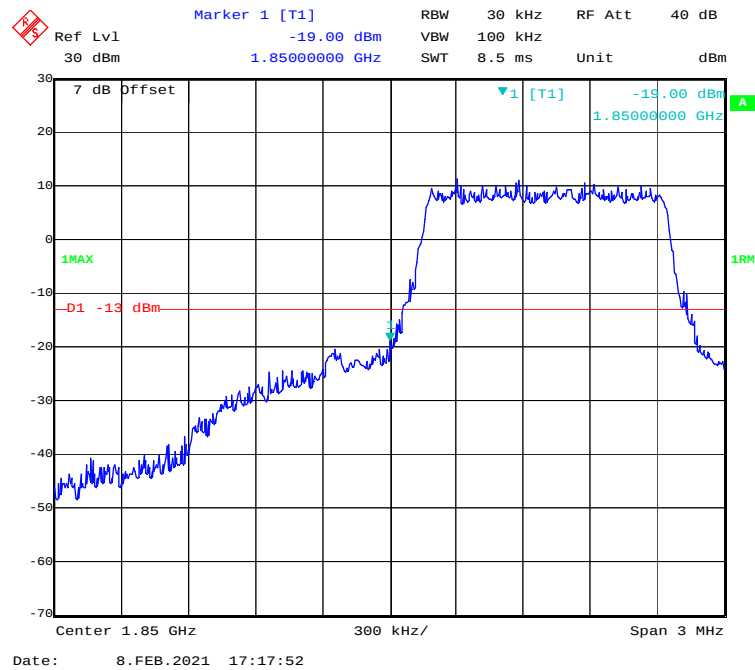
### QPSK (20 MHz, FULL RB) - Left Band Edge



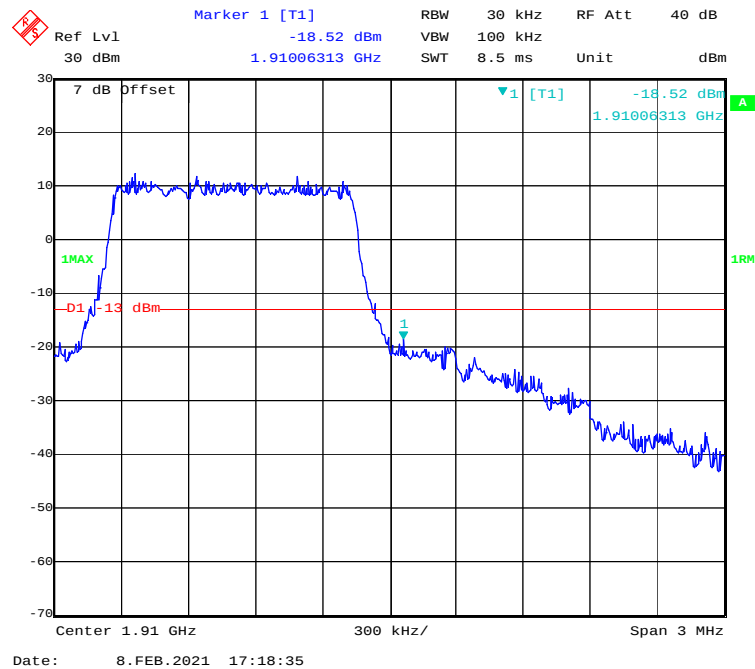
### QPSK (20 MHz, FULL RB) - Right Band Edge



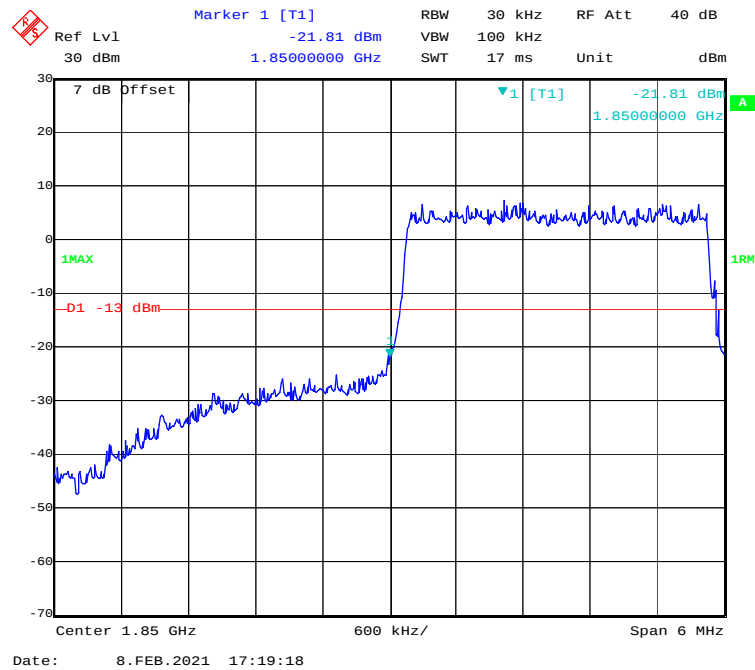
### 16-QAM (1.4 MHz, FULL RB) - Left Band Edge



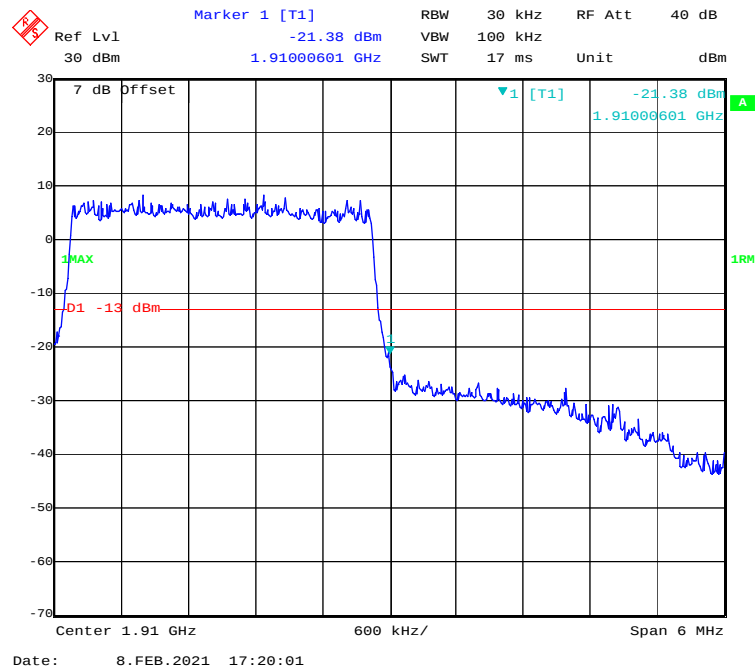
### 16-QAM (1.4 MHz, FULL RB) - Right Band Edge



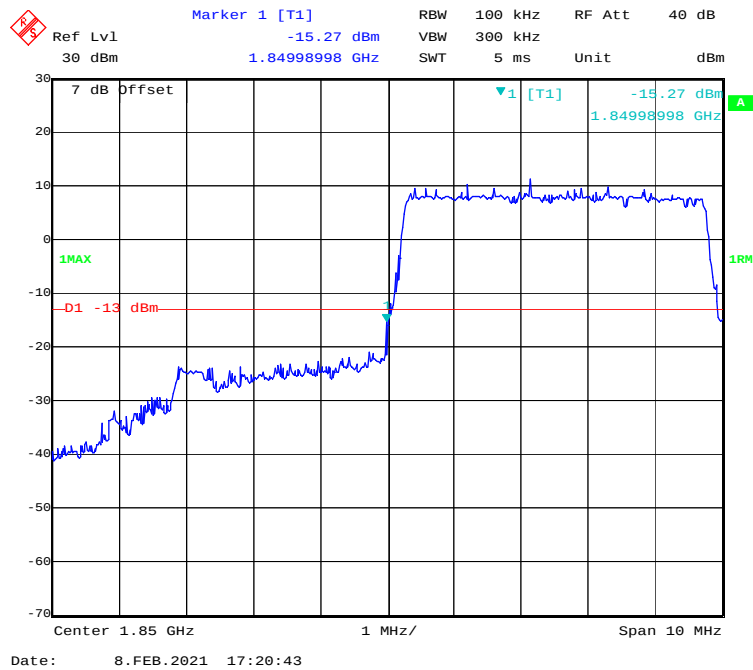
### 16-QAM (3 MHz, FULL RB) - Left Band Edge



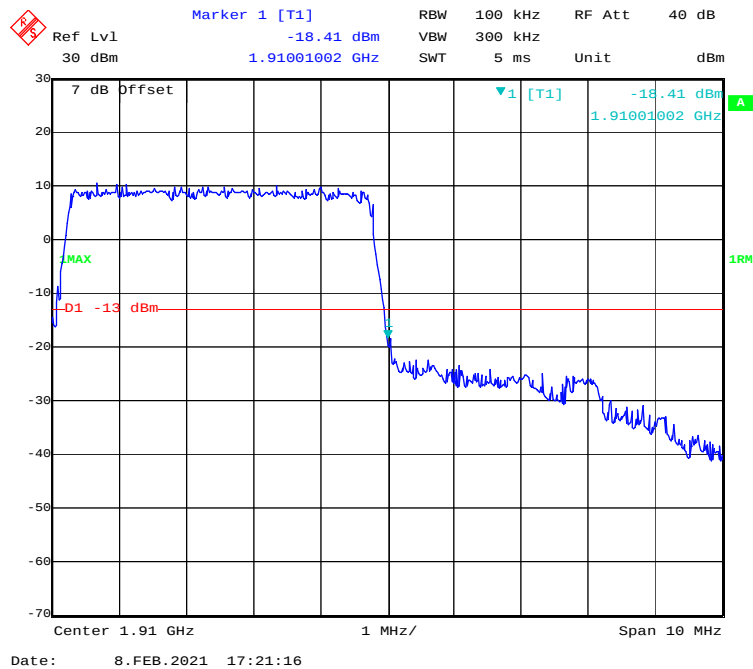
### 16-QAM (3 MHz, FULL RB) - Right Band Edge



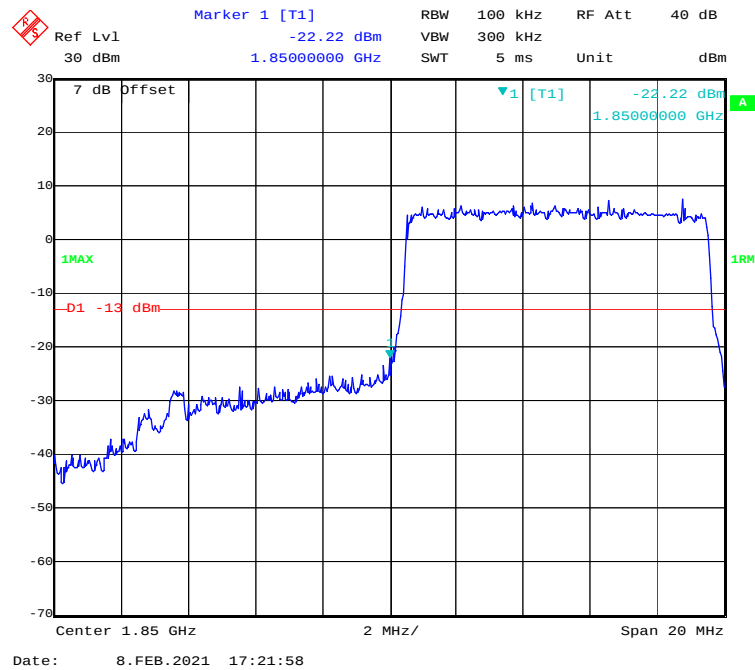
### 16-QAM (5 MHz, FULL RB) - Left Band Edge



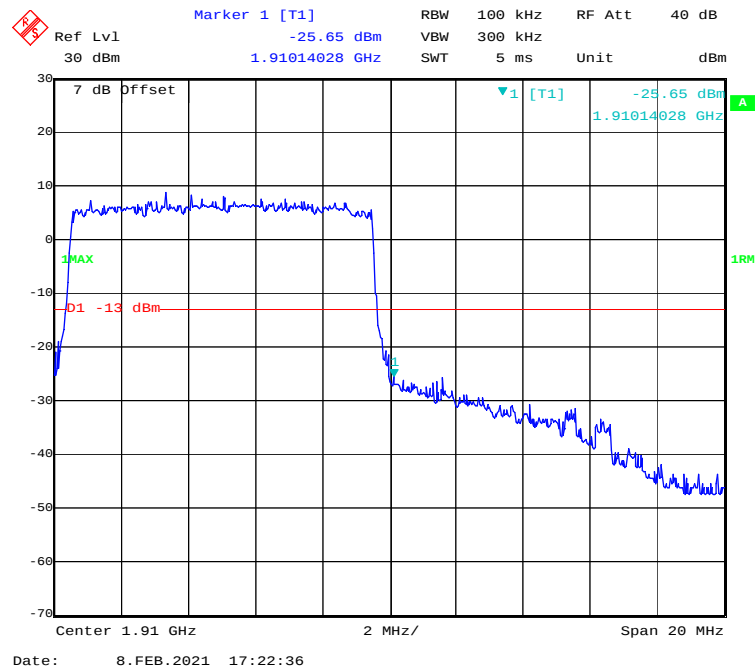
### 16-QAM (5 MHz, FULL RB) - Right Band Edge



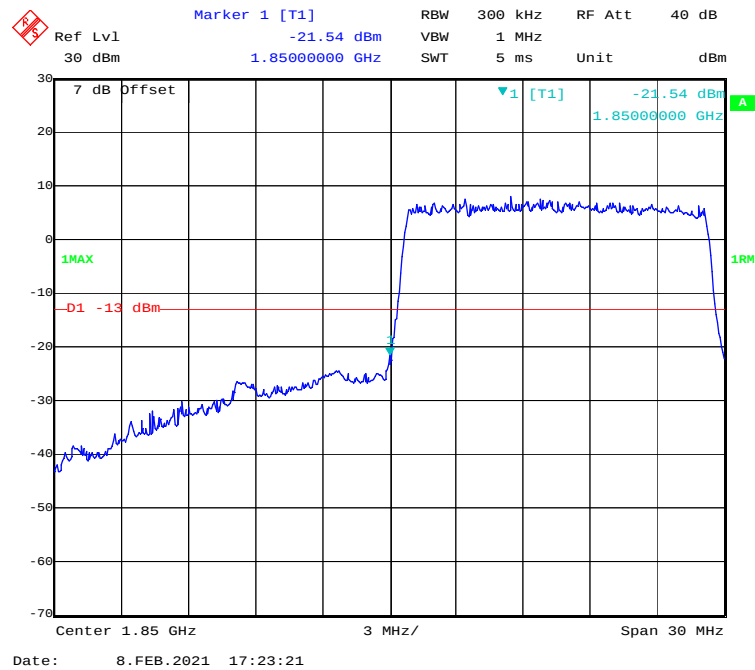
### 16-QAM (10 MHz, FULL RB) - Left Band Edge



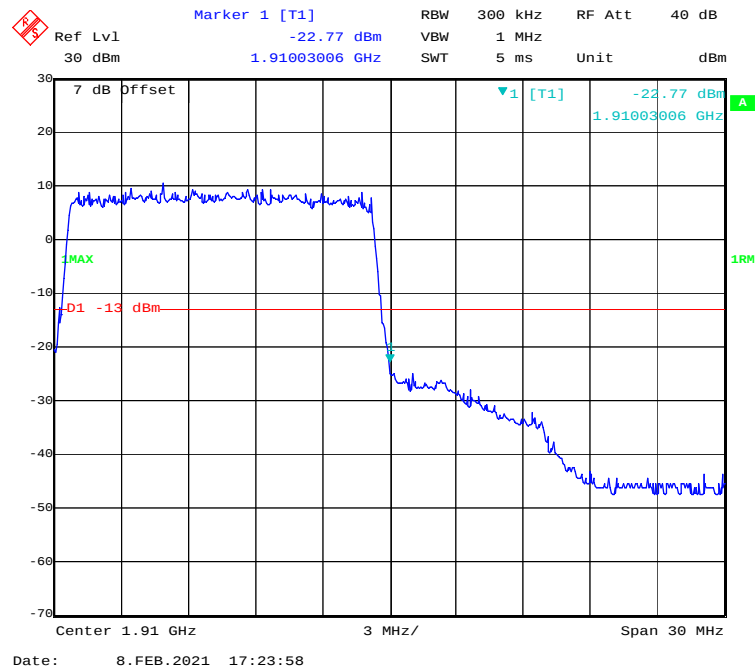
### 16-QAM (10 MHz, FULL RB) - Right Band Edge



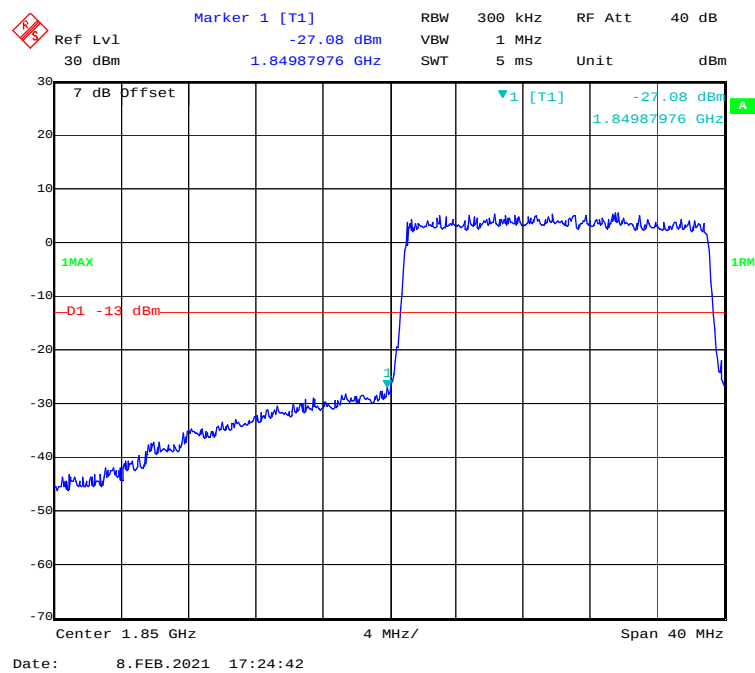
### 16-QAM (15 MHz, FULL RB) - Left Band Edge



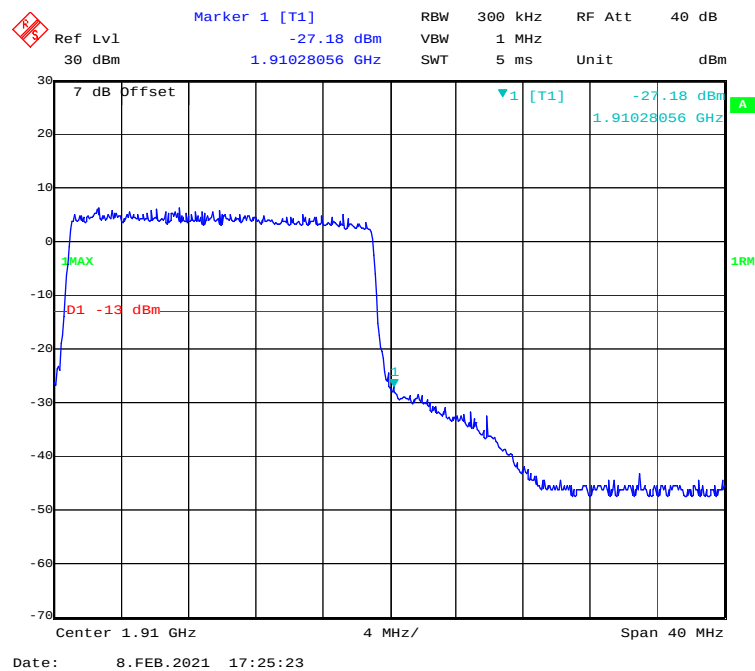
### 16-QAM (15 MHz, FULL RB) - Right Band Edge

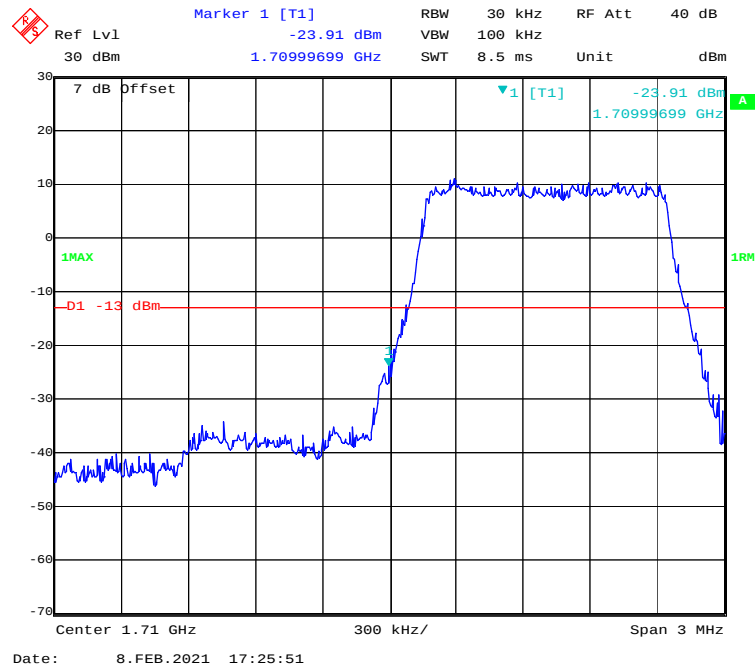
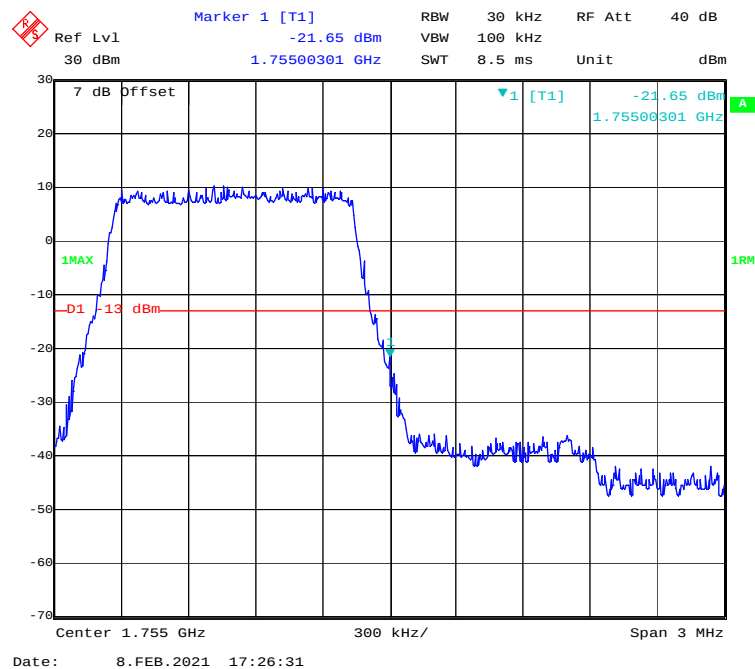


### 16-QAM (20 MHz, FULL RB) - Left Band Edge

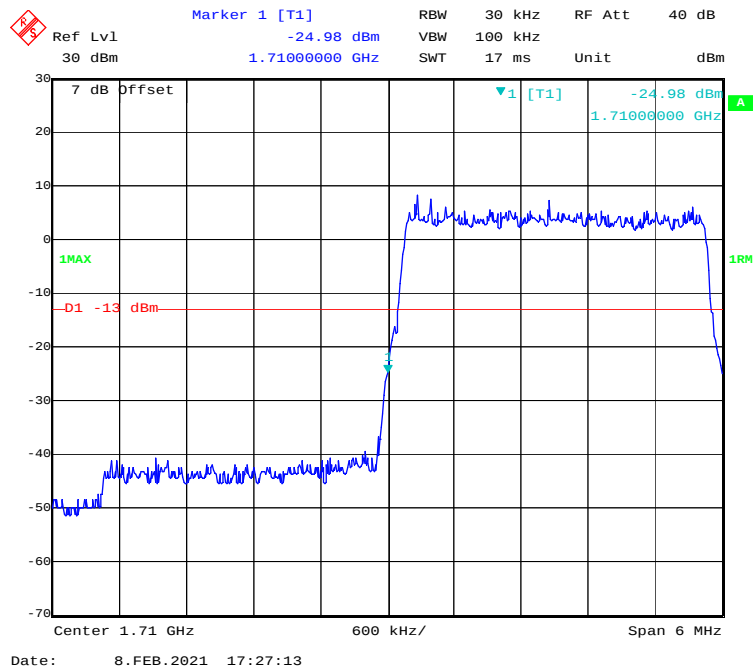


### 16-QAM (20 MHz, FULL RB) - Right Band Edge

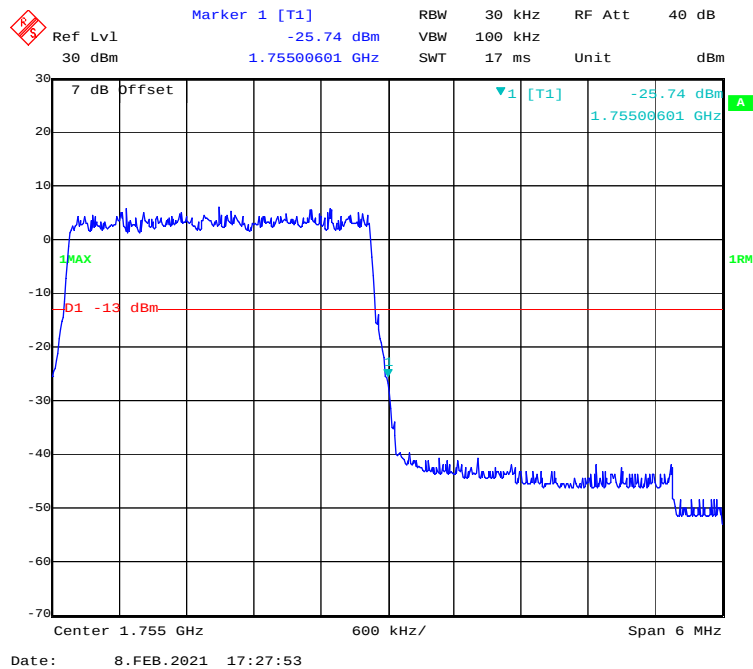


**LTE Band 4:****QPSK (1.4 MHz, FULL RB) - Left Band Edge****QPSK (1.4 MHz, FULL RB) - Right Band Edge**

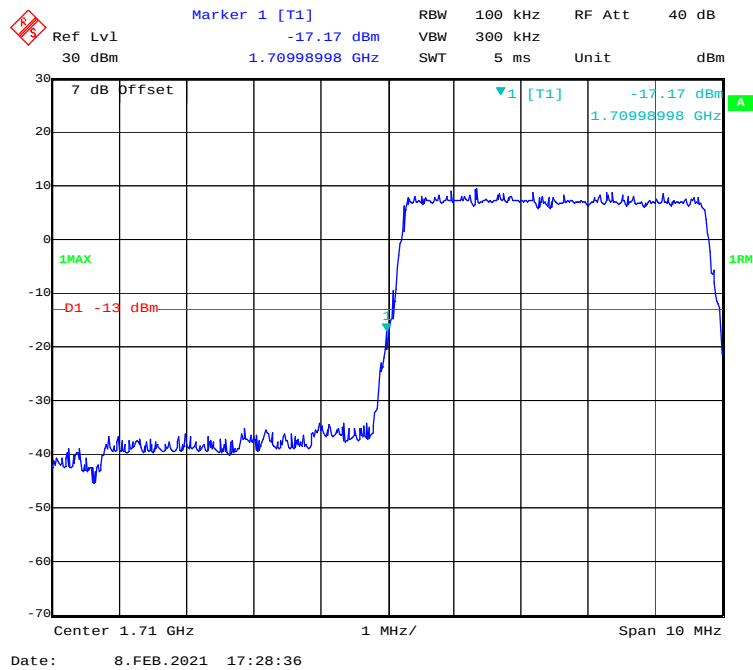
### QPSK (3 MHz, FULL RB) - Left Band Edge



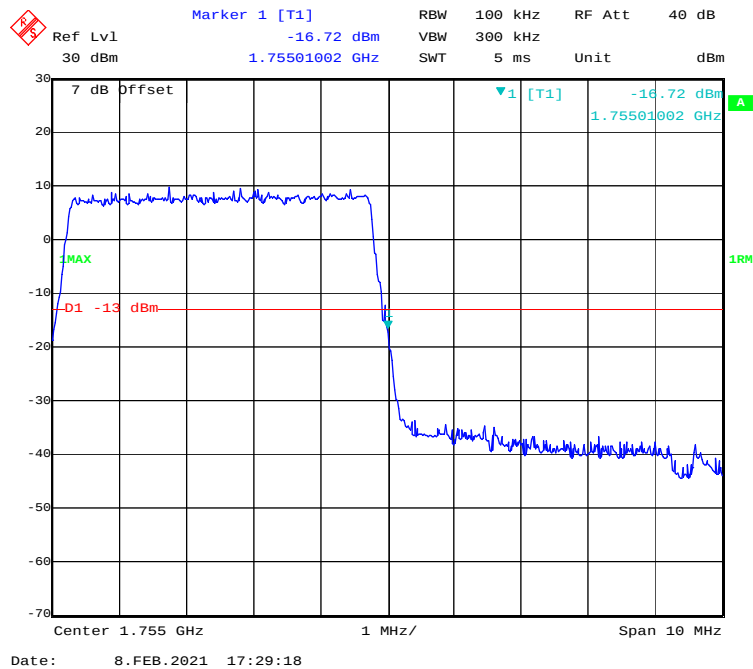
### QPSK (3 MHz, FULL RB) - Right Band Edge

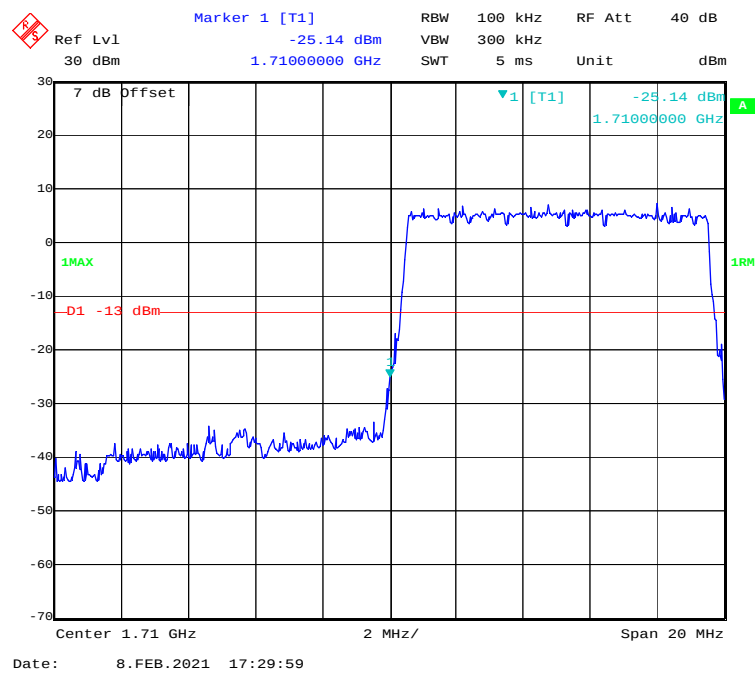
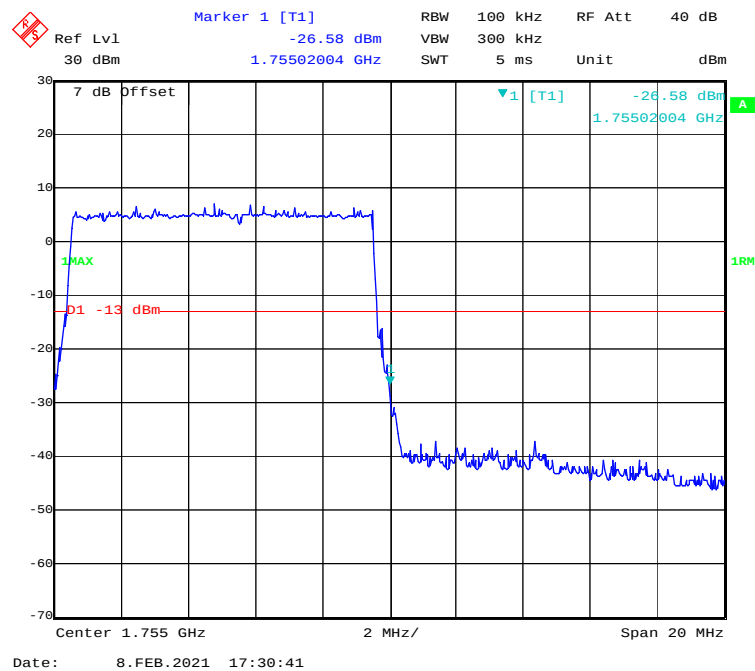


### QPSK (5 MHz, FULL RB) - Left Band Edge

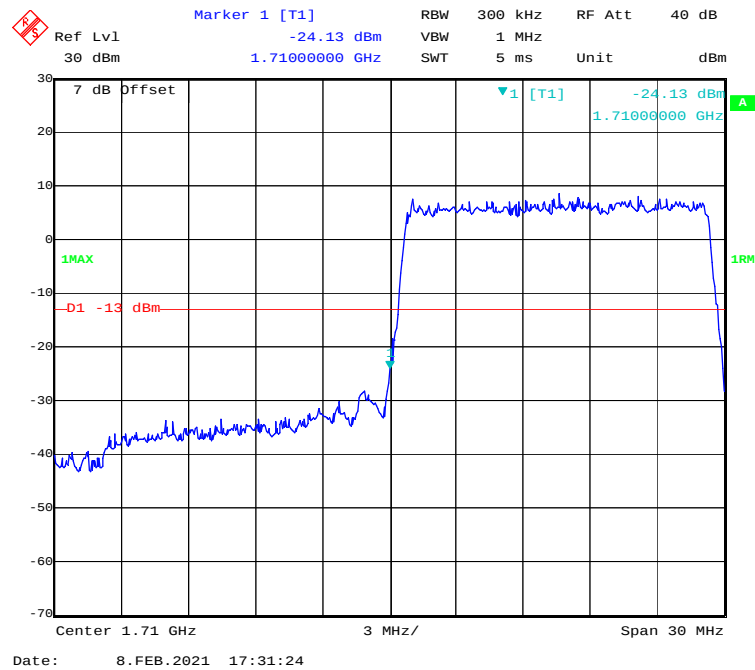


### QPSK (5 MHz, FULL RB) - Right Band Edge

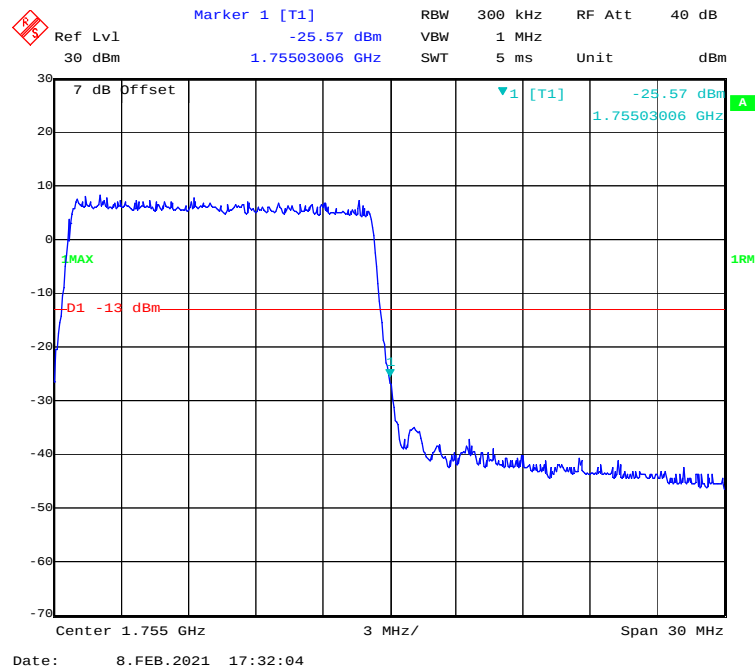


**QPSK (10 MHz, FULL RB) - Left Band Edge****QPSK (10 MHz, FULL RB) - Right Band Edge**

### QPSK (15 MHz, FULL RB) - Left Band Edge



### QPSK (15 MHz, FULL RB) - Right Band Edge

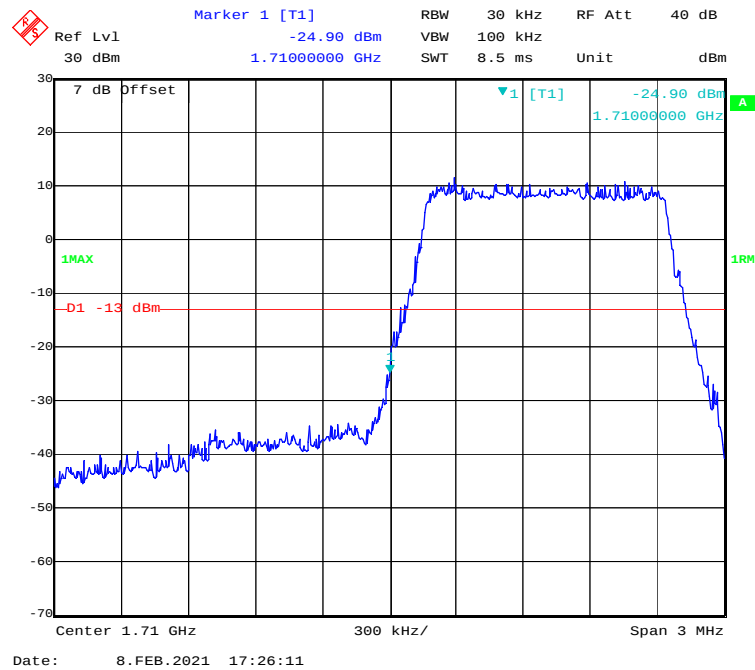
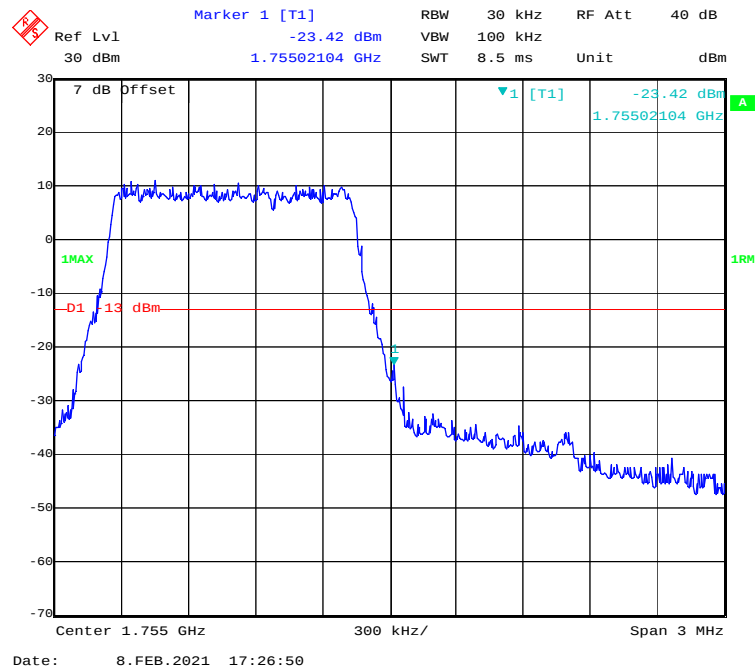


Ref Lvl 30 dBm  
 RBW 300 kHz  
 RF Att 40 dB  
 Marker 1 [T1]  
 -31.41 dBm  
 1.71000000 GHz  
 SWT 5 ms  
 Unit dBm  
 7 dB Offset  
 1MAX  
 -D1 -13 dBm  
 Center 1.71 GHz  
 4 MHz/  
 Span 40 MHz  
 Date: 8.FEB.2021 17:32:48

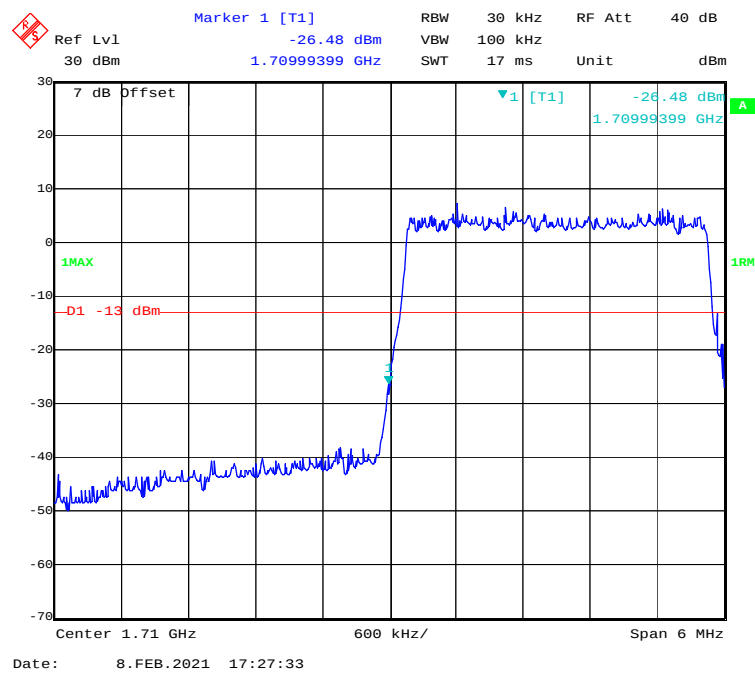
REF Lvl: 30 dBm  
 RBW: 300 kHz  
 RF Att: 40 dB  
 Unit: dBm  
 Span: 40 MHz  
 Center: 1.755 GHz  
 Date: 8.FEB.2021 17:33:26

Marker 1 [T1]  
 -30.60 dBm  
 1.75504008 GHz

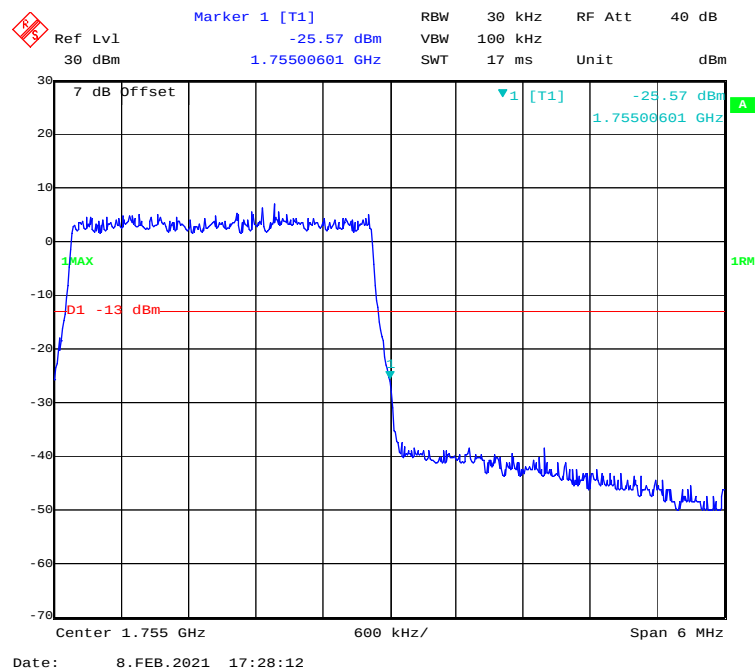
7 dB Offset  
 1MAX  
 D1 -13 dBm

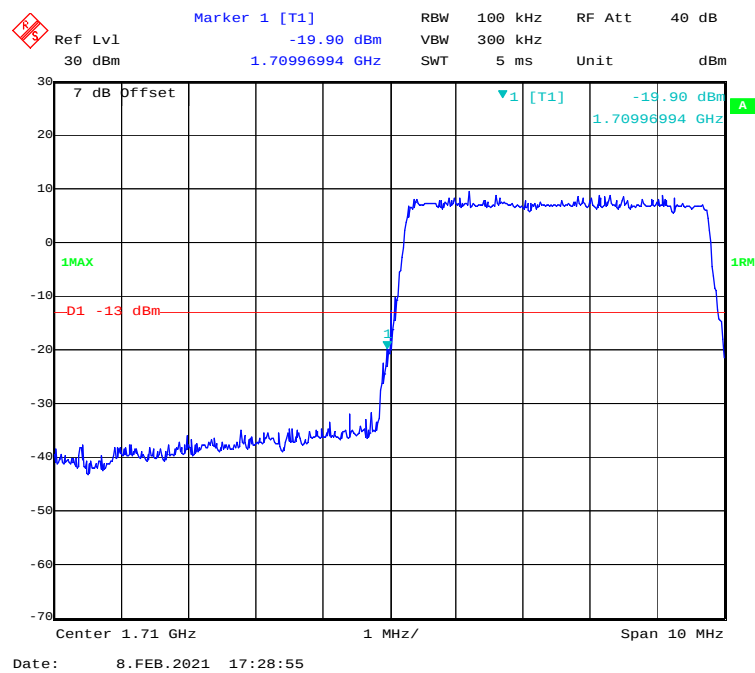
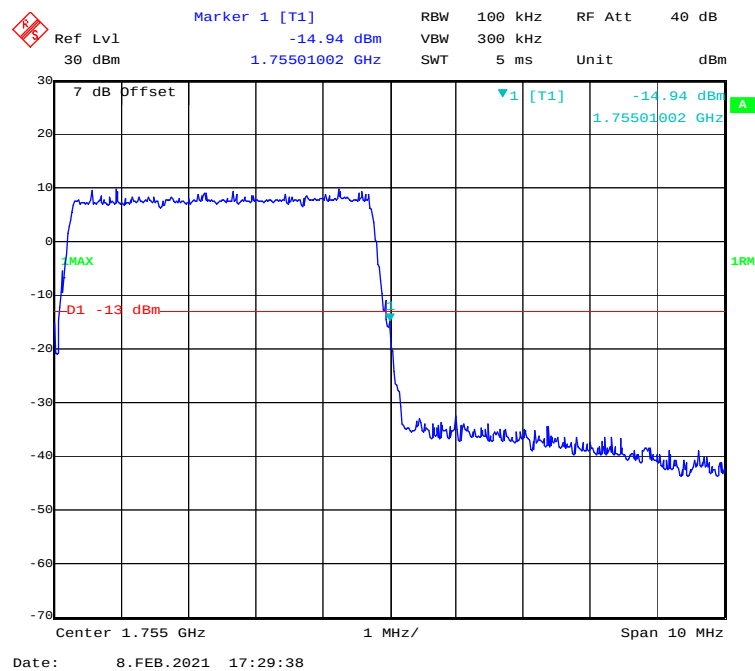
**16-QAM (1.4 MHz, FULL RB) - Left Band Edge****16-QAM (1.4 MHz, FULL RB) - Right Band Edge**

### 16-QAM (3 MHz, FULL RB) - Left Band Edge

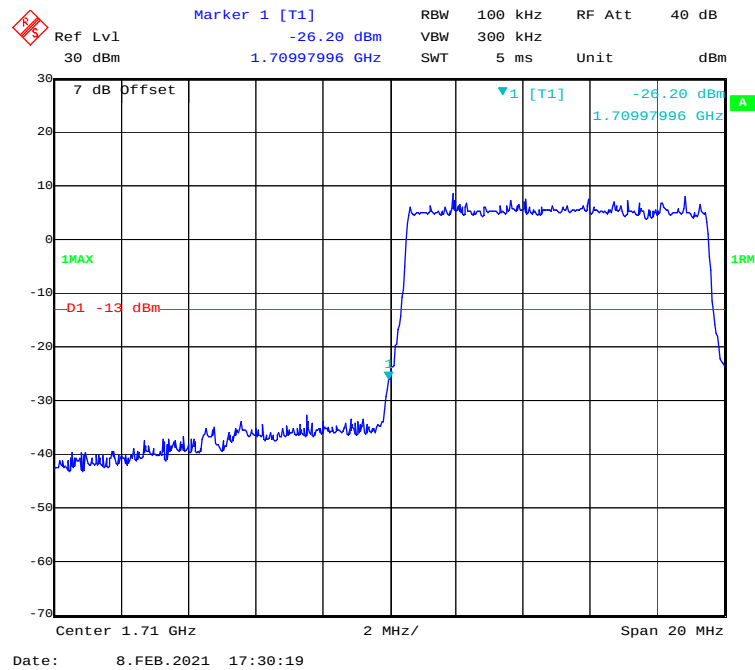


### 16-QAM (3 MHz, FULL RB) - Right Band Edge

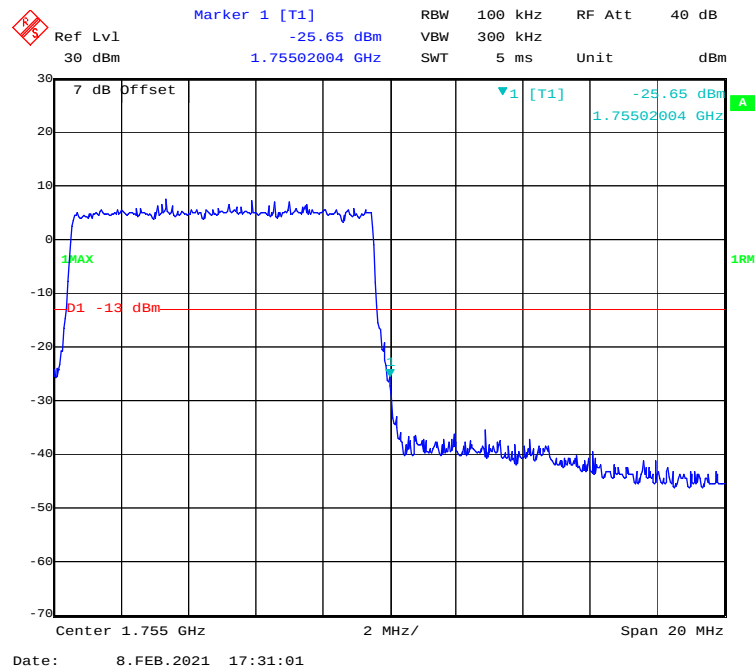


**16-QAM (5 MHz, FULL RB) - Left Band Edge****16-QAM (5 MHz, FULL RB) - Right Band Edge**

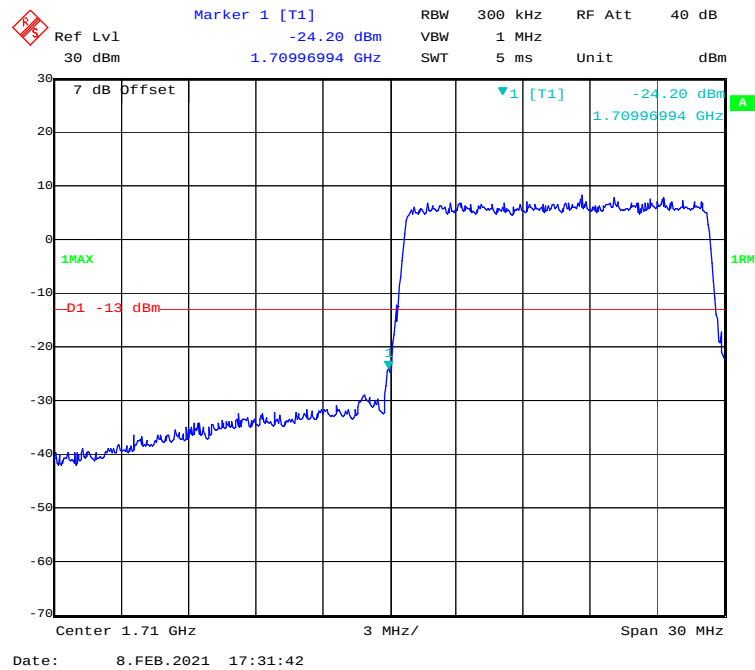
### 16-QAM (10 MHz, FULL RB) - Left Band Edge



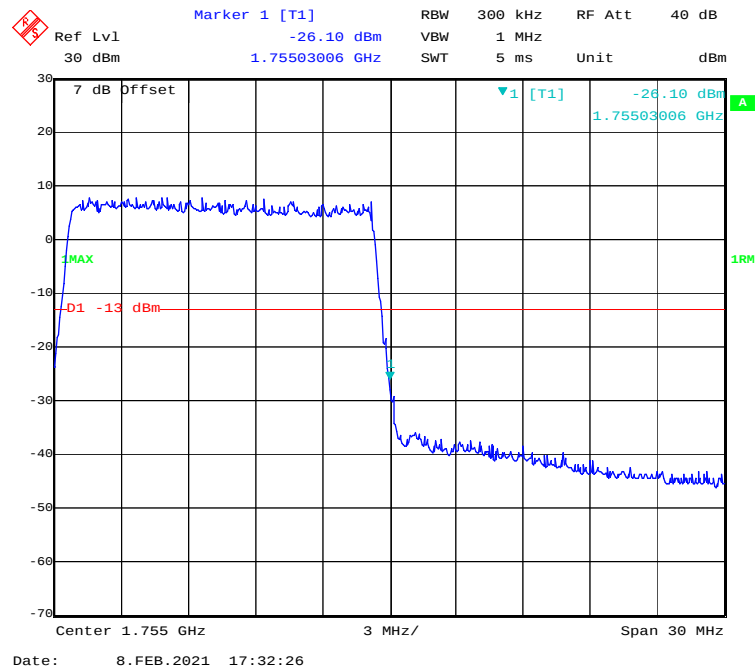
### 16-QAM (10 MHz, FULL RB) - Right Band Edge



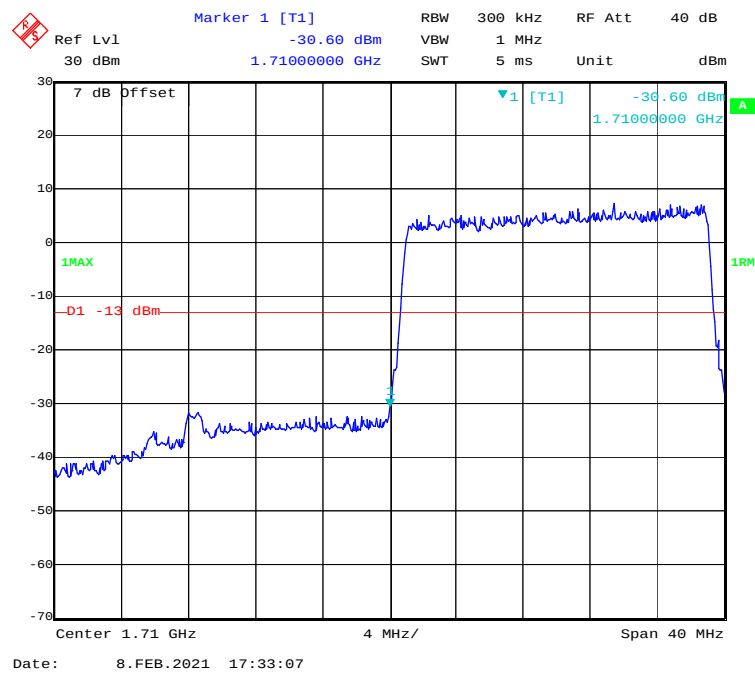
### 16-QAM (15 MHz, FULL RB) - Left Band Edge



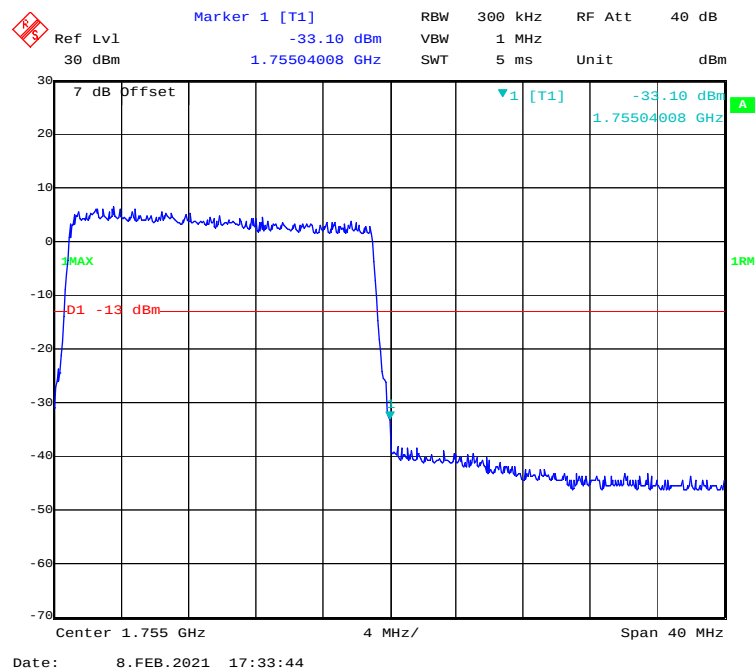
### 16-QAM (15 MHz, FULL RB) - Right Band Edge

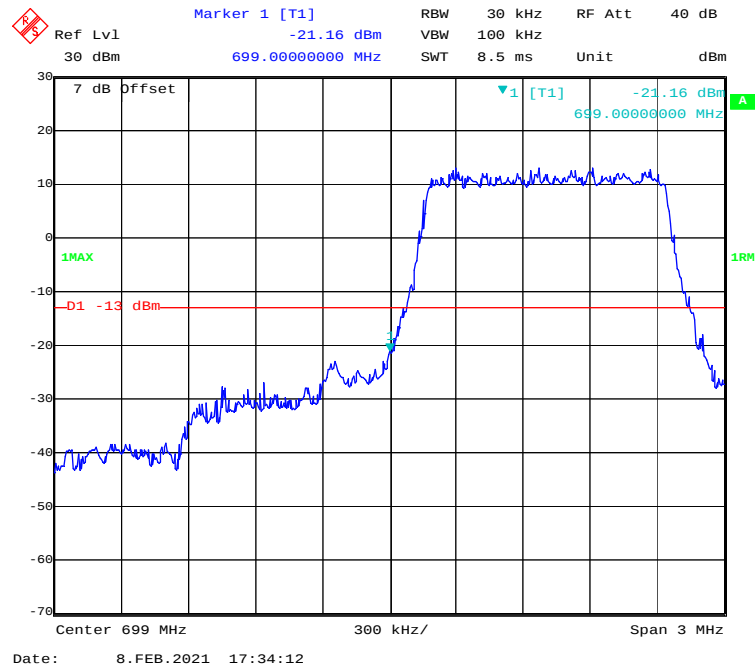
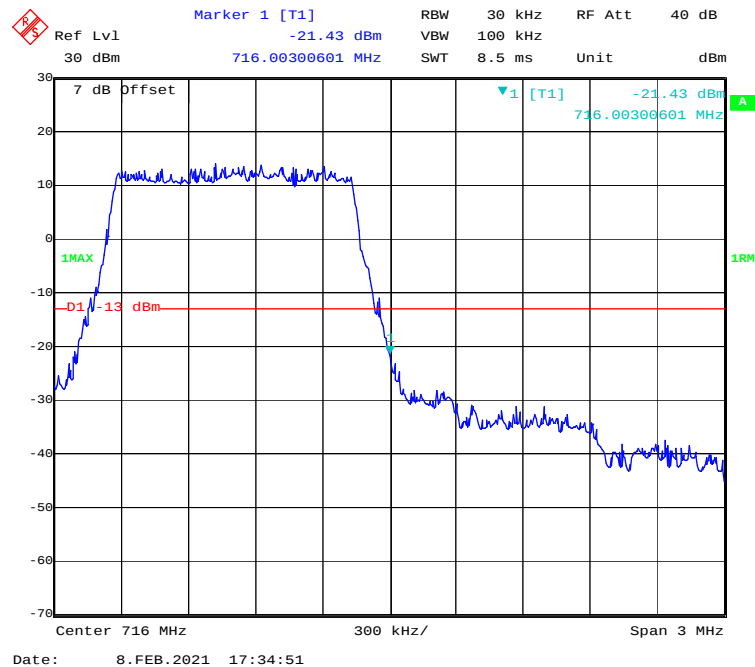


### 16-QAM (20 MHz, FULL RB) - Left Band Edge

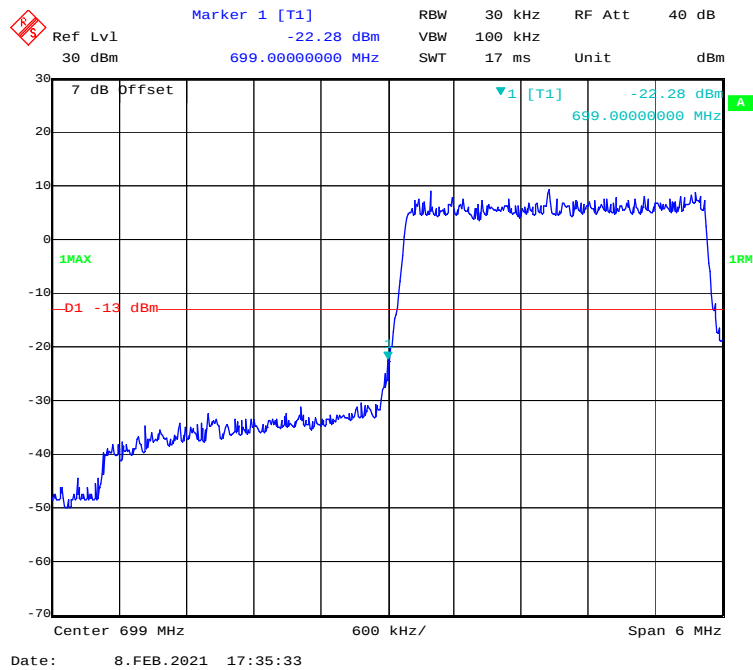


### 16-QAM (20 MHz, FULL RB) - Right Band Edge

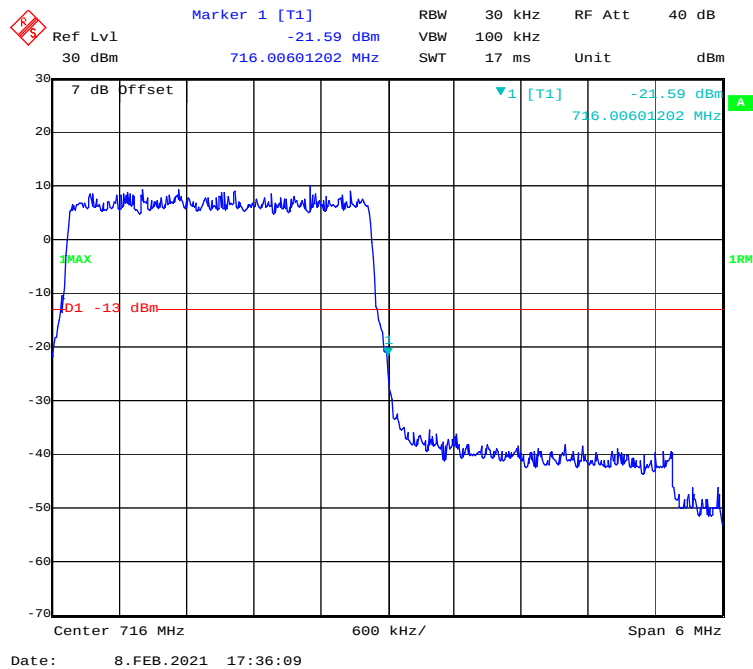


**LTE Band 12:****QPSK (1.4 MHz, FULL RB) - Left Band Edge****QPSK (1.4 MHz, FULL RB) - Right Band Edge**

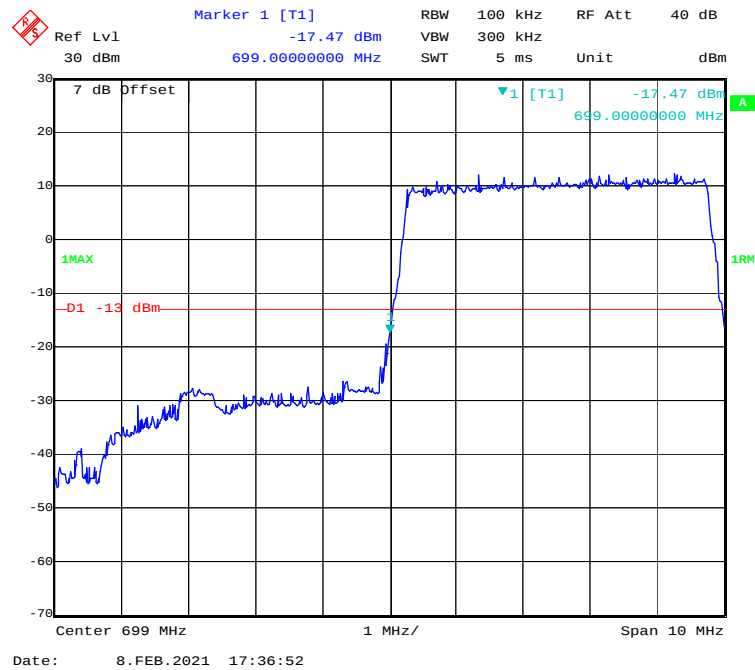
### QPSK (3 MHz, FULL RB) - Left Band Edge



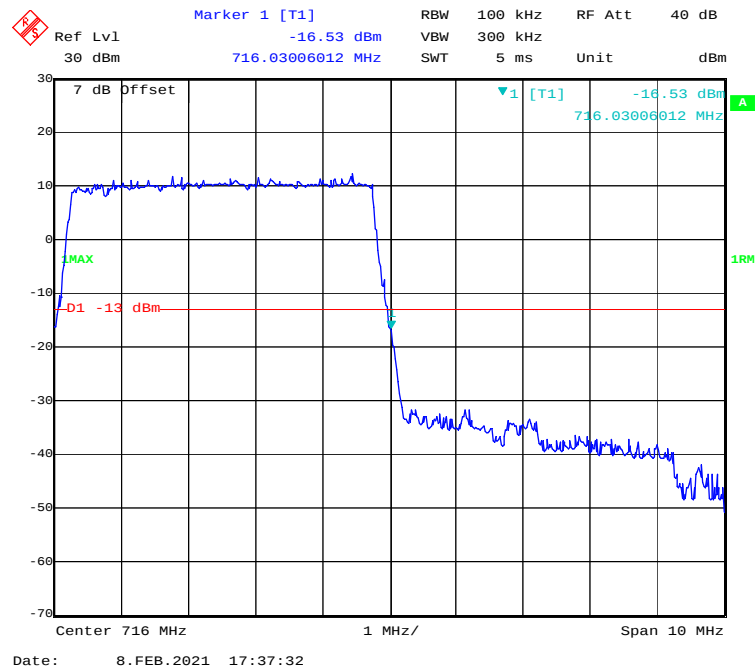
### QPSK (3 MHz, FULL RB) - Right Band Edge



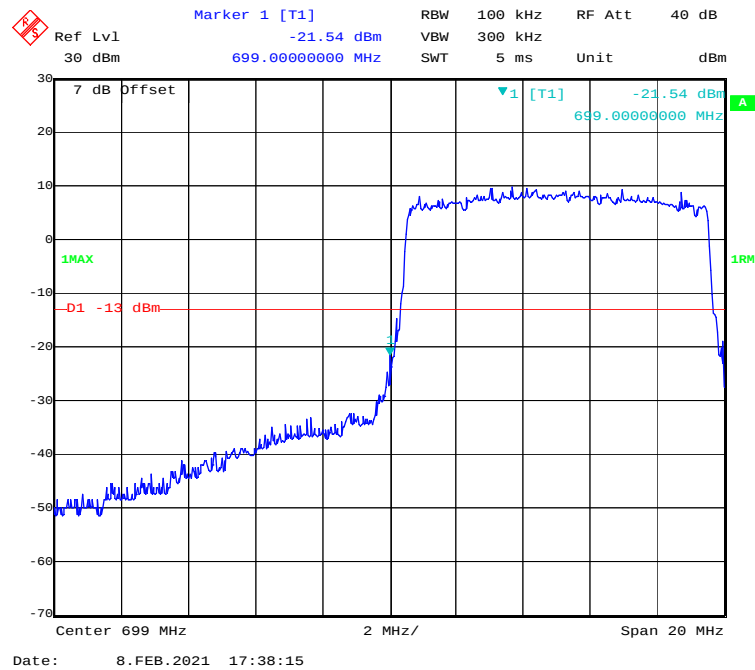
### QPSK (5 MHz, FULL RB) - Left Band Edge



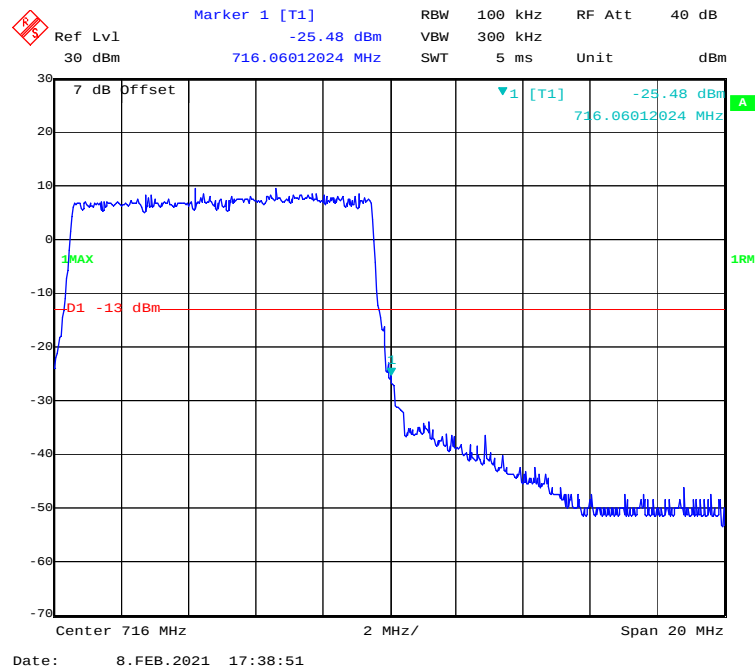
### QPSK (5 MHz, FULL RB) - Right Band Edge



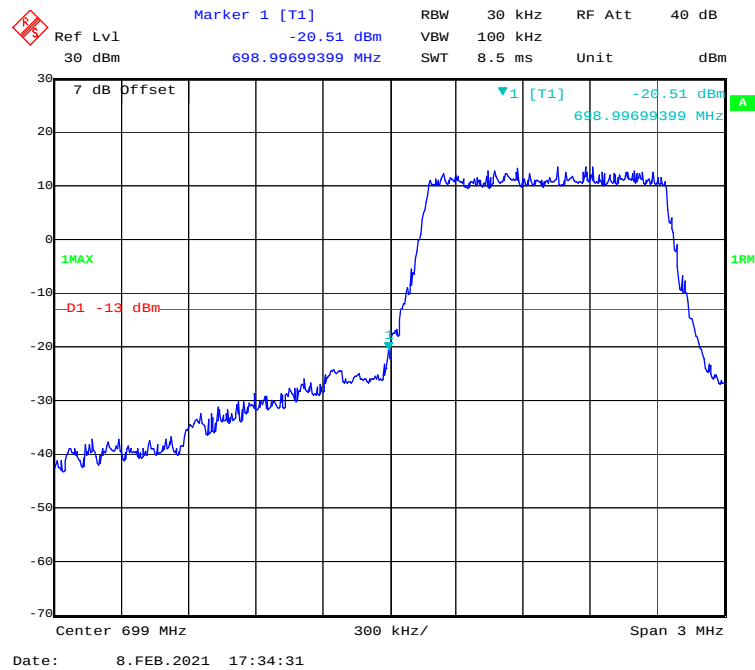
### QPSK (10 MHz, FULL RB) - Left Band Edge



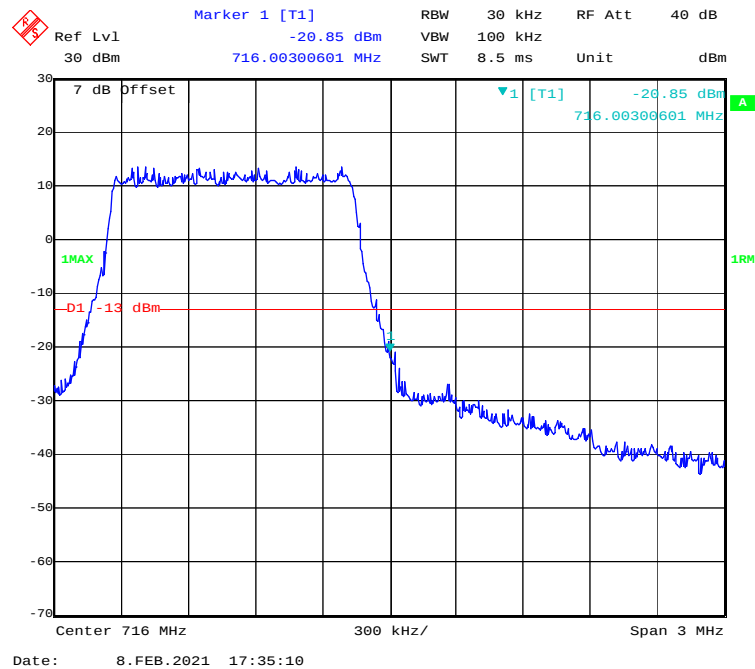
### QPSK (10 MHz, FULL RB) - Right Band Edge

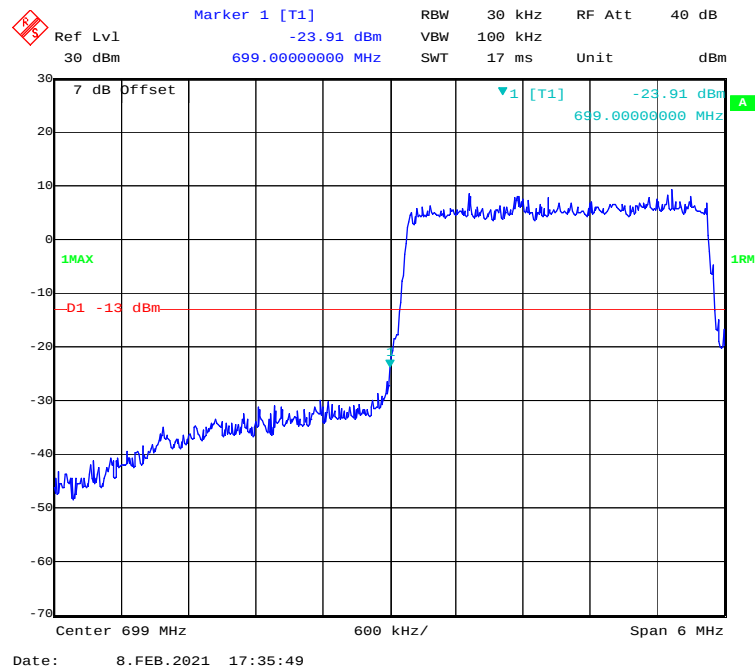
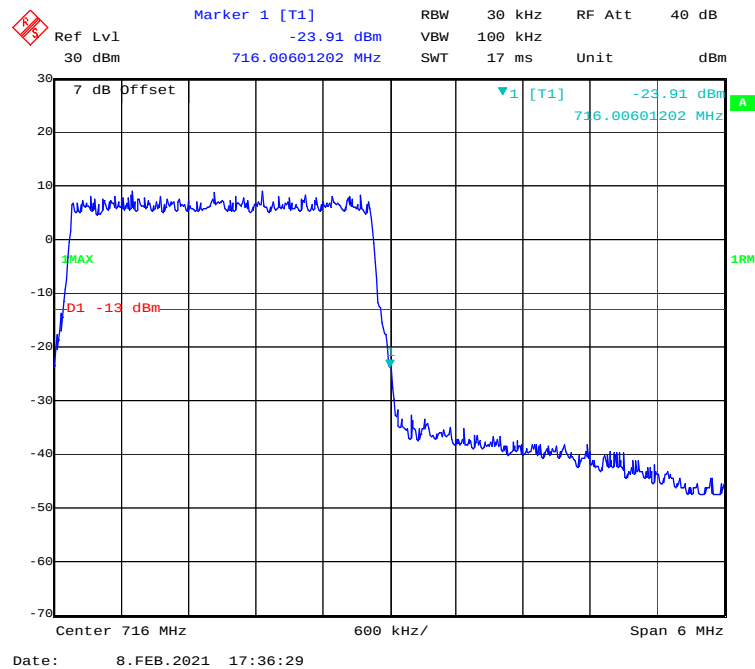


### 16-QAM (1.4 MHz, FULL RB) - Left Band Edge

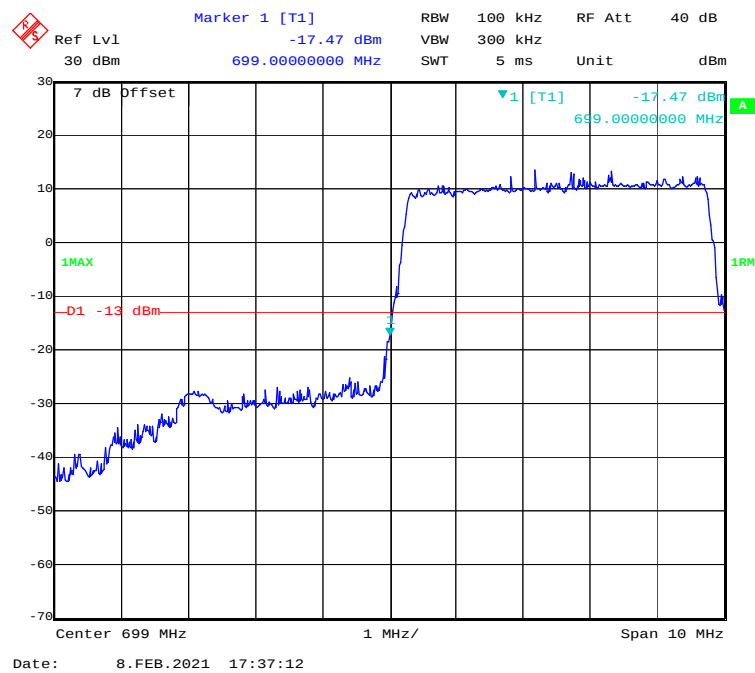


### 16-QAM (1.4 MHz, FULL RB) - Right Band Edge

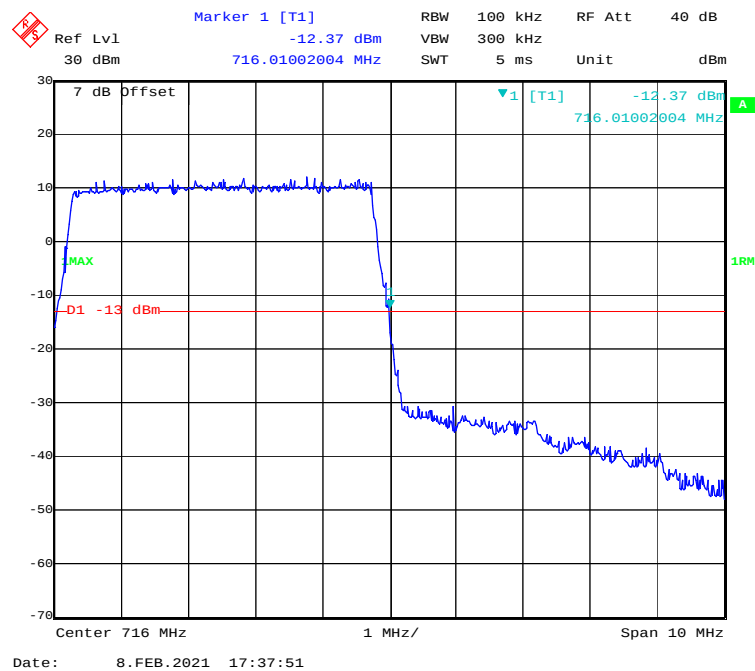


**16-QAM (3 MHz, FULL RB) - Left Band Edge****16-QAM (3 MHz, FULL RB) - Right Band Edge**

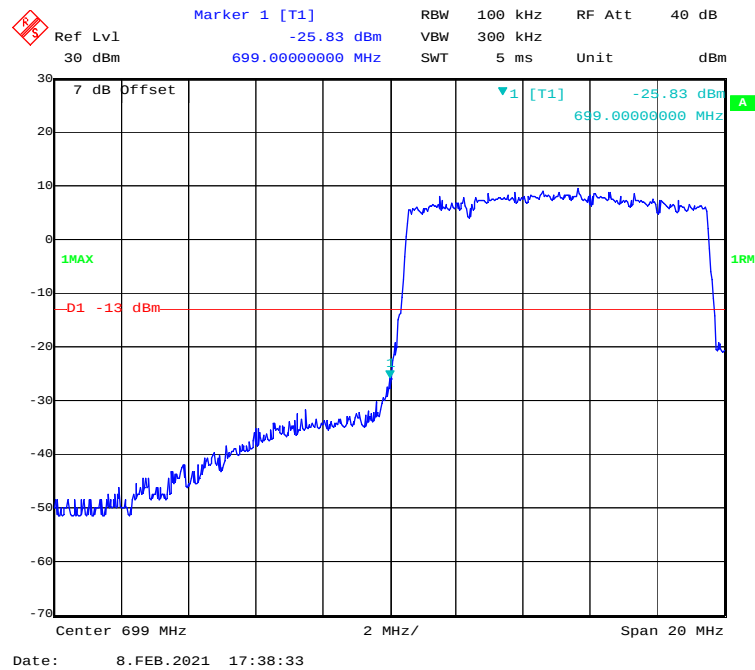
### 16-QAM (5 MHz, FULL RB) - Left Band Edge



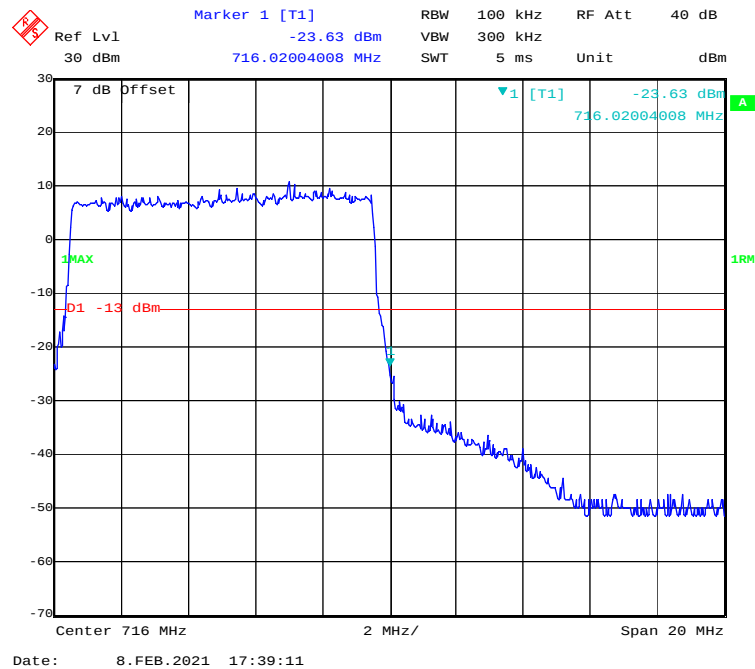
### 16-QAM (5 MHz, FULL RB) - Right Band Edge



### 16-QAM (10 MHz, FULL RB) - Left Band Edge



### 16-QAM (10 MHz, FULL RB) - Right Band Edge



**FCC § 2.1055; § 22.355; § 24.235; §27.54; - FREQUENCY STABILITY****Applicable Standards**

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                    |

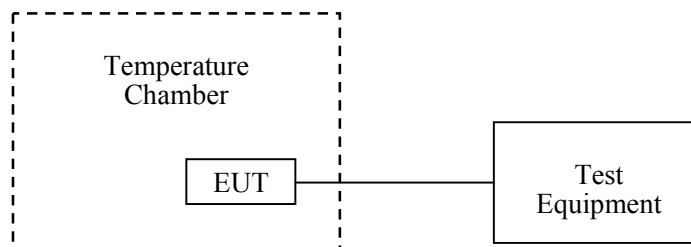
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

**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>       | 23.2°C   |
| <b>Relative Humidity:</b> | 51 %     |
| <b>ATM Pressure:</b>      | 101.3kPa |

The testing was performed by Tyrone Wang on 2021-02-08.

EUT operation mode: Transmitting

Test Result: Compliance.

**Powered by DC Source(worst case)**

**WCDMA Band V:**

| Middle Channel, $f_0 = 836.6$ MHz |                                   |                      |                       |             |
|-----------------------------------|-----------------------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                  | Power Supplied (V <sub>DC</sub> ) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| -30                               | DC 12 V                           | 6                    | 0.007172              | 2.5         |
| -20                               |                                   | 18                   | 0.021516              | 2.5         |
| -10                               |                                   | 14                   | 0.016734              | 2.5         |
| 0                                 |                                   | 16                   | 0.019125              | 2.5         |
| 10                                |                                   | 12                   | 0.014344              | 2.5         |
| 20                                |                                   | 7                    | 0.008367              | 2.5         |
| 30                                |                                   | 13                   | 0.015539              | 2.5         |
| 40                                |                                   | 19                   | 0.022711              | 2.5         |
| 50                                |                                   | 12                   | 0.014344              | 2.5         |
| 20                                | V min.= 9                         | 8                    | 0.009563              | 2.5         |
| 20                                | V max.= 35                        | 7                    | 0.008367              | 2.5         |

**WCDMA Band II:**

| <b>WCDMA Mode, Middle Channel, <math>f_o=1880.0</math> MHz</b> |                                            |                                     |                                      |               |
|----------------------------------------------------------------|--------------------------------------------|-------------------------------------|--------------------------------------|---------------|
| <b>Temperature<br/>(°C)</b>                                    | <b>Power Supplied<br/>(V<sub>AC</sub>)</b> | <b>Frequency<br/>Error<br/>(Hz)</b> | <b>Frequency<br/>Error<br/>(ppm)</b> | <b>Result</b> |
| -30                                                            | DC 12 V                                    | 17                                  | 0.009043                             | pass          |
| -20                                                            |                                            | 15                                  | 0.007979                             | pass          |
| -10                                                            |                                            | 7                                   | 0.003723                             | pass          |
| 0                                                              |                                            | 18                                  | 0.009574                             | pass          |
| 10                                                             |                                            | 9                                   | 0.004787                             | pass          |
| 20                                                             |                                            | 15                                  | 0.007979                             | pass          |
| 30                                                             |                                            | 8                                   | 0.004255                             | pass          |
| 40                                                             |                                            | 12                                  | 0.006383                             | pass          |
| 50                                                             |                                            | 11                                  | 0.005851                             | pass          |
| 20                                                             | V min.= 9                                  | 7                                   | 0.003723                             | pass          |
| 20                                                             | V max.= 35                                 | 16                                  | 0.008511                             | pass          |

**WCDMA Band IV:**

| <b>WCDMA Mode, Low Channel &amp; High Channel</b> |                           |                      |                      |                            |                            |
|---------------------------------------------------|---------------------------|----------------------|----------------------|----------------------------|----------------------------|
| <b>Temperature</b>                                | <b>Power<br/>Supplied</b> | <b>F<sub>L</sub></b> | <b>F<sub>H</sub></b> | <b>F<sub>L</sub> Limit</b> | <b>F<sub>H</sub> Limit</b> |
| <b>(°C)</b>                                       | <b>(V<sub>AC</sub>)</b>   | <b>(MHz)</b>         | <b>(MHz)</b>         | <b>(MHz)</b>               | <b>(MHz)</b>               |
| -30                                               | DC 12 V                   | 1710.3461            | 1754.9708            | 1710                       | 1755                       |
| -20                                               |                           | 1710.353             | 1754.9363            | 1710                       | 1755                       |
| -10                                               |                           | 1710.3455            | 1754.921             | 1710                       | 1755                       |
| 0                                                 |                           | 1710.4052            | 1754.7788            | 1710                       | 1755                       |
| 10                                                |                           | 1710.4541            | 1754.6465            | 1710                       | 1755                       |
| 20                                                |                           | 1710.3418            | 1754.9216            | 1710                       | 1755                       |
| 30                                                |                           | 1710.3297            | 1754.9061            | 1710                       | 1755                       |
| 40                                                |                           | 1710.4636            | 1754.828             | 1710                       | 1755                       |
| 50                                                |                           | 1710.4087            | 1754.7475            | 1710                       | 1755                       |
| 20                                                | V min.= 9                 | 1710.461             | 1754.9666            | 1710                       | 1755                       |
| 20                                                | V max.= 35                | 1710.4632            | 1754.7078            | 1710                       | 1755                       |

**LTE Band 2:**

| Middle Channel, $f_0$ =1880.0 MHz (QPSK) /Channel Bandwidth:20MHz |                                   |                      |                       |        |
|-------------------------------------------------------------------|-----------------------------------|----------------------|-----------------------|--------|
| Temperature (°C)                                                  | Power Supplied (V <sub>AC</sub> ) | Frequency Error (Hz) | Frequency Error (ppm) | Result |
| -30                                                               | DC 12 V                           | 17                   | 0.009043              | PASS   |
| -20                                                               |                                   | 13                   | 0.006915              | PASS   |
| -10                                                               |                                   | 12                   | 0.006383              | PASS   |
| 0                                                                 |                                   | 16                   | 0.008511              | PASS   |
| 10                                                                |                                   | 17                   | 0.009043              | PASS   |
| 20                                                                |                                   | 13                   | 0.006915              | PASS   |
| 30                                                                |                                   | 16                   | 0.008511              | PASS   |
| 40                                                                |                                   | 14                   | 0.007447              | PASS   |
| 50                                                                |                                   | 13                   | 0.006915              | PASS   |
| 20                                                                | V min.= 9                         | 12                   | 0.006383              | PASS   |
| 20                                                                | V max.= 35                        | 20                   | 0.010638              | PASS   |

| Middle Channel, $f_0$ =1880.0 MHz (16-QAM) /Channel Bandwidth:20MHz |                                   |                      |                       |        |
|---------------------------------------------------------------------|-----------------------------------|----------------------|-----------------------|--------|
| Temperature (°C)                                                    | Power Supplied (V <sub>AC</sub> ) | Frequency Error (Hz) | Frequency Error (ppm) | Result |
| -30                                                                 | DC 12 V                           | 16                   | 0.008511              | PASS   |
| -20                                                                 |                                   | 7                    | 0.003723              | PASS   |
| 0                                                                   |                                   | 18                   | 0.009574              | PASS   |
| 0                                                                   |                                   | 12                   | 0.006383              | PASS   |
| 10                                                                  |                                   | 15                   | 0.007979              | PASS   |
| 20                                                                  |                                   | 15                   | 0.007979              | PASS   |
| 30                                                                  |                                   | 6                    | 0.003191              | PASS   |
| 40                                                                  |                                   | 10                   | 0.005319              | PASS   |
| 50                                                                  |                                   | 9                    | 0.004787              | PASS   |
| 20                                                                  | V min.= 9                         | 11                   | 0.005851              | PASS   |
| 20                                                                  | V max.= 35                        | 19                   | 0.010106              | PASS   |

**LTE Band 4:**

| Low Channel & High Channel (QPSK) /Channel Bandwidth:20MHz |                    |                |                |                      |                      |
|------------------------------------------------------------|--------------------|----------------|----------------|----------------------|----------------------|
| Temperature                                                | Power Supplied     | F <sub>L</sub> | F <sub>H</sub> | F <sub>L</sub> Limit | F <sub>H</sub> Limit |
| (°C)                                                       | (V <sub>AC</sub> ) | (MHz)          | (MHz)          | (MHz)                | (MHz)                |
| -30                                                        | DC 12 V            | 1710.9469      | 1754.0606      | 1710                 | 1755                 |
| -20                                                        |                    | 1710.9484      | 1754.0681      | 1710                 | 1755                 |
| -10                                                        |                    | 1710.9493      | 1754.0654      | 1710                 | 1755                 |
| 0                                                          |                    | 1710.9424      | 1754.0688      | 1710                 | 1755                 |
| 10                                                         |                    | 1710.9412      | 1754.0619      | 1710                 | 1755                 |
| 20                                                         |                    | 1710.9457      | 1754.0651      | 1710                 | 1755                 |
| 30                                                         |                    | 1710.9420      | 1754.0603      | 1710                 | 1755                 |
| 40                                                         |                    | 1710.9456      | 1754.0655      | 1710                 | 1755                 |
| 50                                                         |                    | 1710.9439      | 1754.0695      | 1710                 | 1755                 |
| 20                                                         | V min.= 9          | 1710.9494      | 1754.0638      | 1710                 | 1755                 |
| 20                                                         | V max.= 35         | 1710.9438      | 1754.0626      | 1710                 | 1755                 |

| Low Channel & High Channel (16-QAM) /Channel Bandwidth:20MHz |                    |                |                |                      |                      |
|--------------------------------------------------------------|--------------------|----------------|----------------|----------------------|----------------------|
| Temperature                                                  | Power Supplied     | F <sub>L</sub> | F <sub>H</sub> | F <sub>L</sub> Limit | F <sub>H</sub> Limit |
| (°C)                                                         | (V <sub>AC</sub> ) | (MHz)          | (MHz)          | (MHz)                | (MHz)                |
| -30                                                          | DC 12 V            | 1710.9481      | 1754.0606      | 1710                 | 1755                 |
| -20                                                          |                    | 1710.9468      | 1754.0673      | 1710                 | 1755                 |
| -10                                                          |                    | 1710.9477      | 1754.0644      | 1710                 | 1755                 |
| 0                                                            |                    | 1710.9437      | 1754.0688      | 1710                 | 1755                 |
| 10                                                           |                    | 1710.9423      | 1754.0644      | 1710                 | 1755                 |
| 20                                                           |                    | 1710.9468      | 1754.0698      | 1710                 | 1755                 |
| 30                                                           |                    | 1710.9417      | 1754.0649      | 1710                 | 1755                 |
| 40                                                           |                    | 1710.9427      | 1754.0605      | 1710                 | 1755                 |
| 50                                                           |                    | 1710.9499      | 1754.0667      | 1710                 | 1755                 |
| 20                                                           | V min.= 9          | 1710.9402      | 1754.0688      | 1710                 | 1755                 |
| 20                                                           | V max.= 35         | 1710.9446      | 1754.0618      | 1710                 | 1755                 |

**LTE Band 12:**

| Low Channel & High Channel (QPSK) /Channel Bandwidth:10MHz |                    |                |                |                      |                      |
|------------------------------------------------------------|--------------------|----------------|----------------|----------------------|----------------------|
| Temperature                                                | Power Supplied     | F <sub>L</sub> | F <sub>H</sub> | F <sub>L</sub> Limit | F <sub>H</sub> Limit |
| (°C)                                                       | (V <sub>AC</sub> ) | (MHz)          | (MHz)          | (MHz)                | (MHz)                |
| -30                                                        | DC 12 V            | 699.5316       | 715.4685       | 699                  | 716                  |
| -20                                                        |                    | 699.5304       | 715.4681       | 699                  | 716                  |
| -10                                                        |                    | 699.5311       | 715.4661       | 699                  | 716                  |
| 0                                                          |                    | 699.5308       | 715.4667       | 699                  | 716                  |
| 10                                                         |                    | 699.5305       | 715.4656       | 699                  | 716                  |
| 20                                                         |                    | 699.5310       | 715.4689       | 699                  | 716                  |
| 30                                                         |                    | 699.5311       | 715.4677       | 699                  | 716                  |
| 40                                                         |                    | 699.5314       | 715.4688       | 699                  | 716                  |
| 50                                                         |                    | 699.5318       | 715.4686       | 699                  | 716                  |
| 20                                                         | V min.= 9          | 699.5314       | 715.4676       | 699                  | 716                  |
| 20                                                         | V max.= 35         | 699.5321       | 715.4682       | 699                  | 716                  |

| Low Channel & High Channel (16-QAM) /Channel Bandwidth:10MHz |                    |                |                |                      |                      |
|--------------------------------------------------------------|--------------------|----------------|----------------|----------------------|----------------------|
| Temperature                                                  | Power Supplied     | F <sub>L</sub> | F <sub>H</sub> | F <sub>L</sub> Limit | F <sub>H</sub> Limit |
| (°C)                                                         | (V <sub>AC</sub> ) | (MHz)          | (MHz)          | (MHz)                | (MHz)                |
| -30                                                          | DC 12 V            | 699.5312       | 715.4681       | 699                  | 716                  |
| -20                                                          |                    | 699.5338       | 715.4683       | 699                  | 716                  |
| -10                                                          |                    | 699.5302       | 715.4687       | 699                  | 716                  |
| 0                                                            |                    | 699.5316       | 715.4681       | 699                  | 716                  |
| 10                                                           |                    | 699.5328       | 715.4684       | 699                  | 716                  |
| 20                                                           |                    | 699.5311       | 715.4683       | 699                  | 716                  |
| 30                                                           |                    | 699.5345       | 715.4686       | 699                  | 716                  |
| 40                                                           |                    | 699.5323       | 715.4688       | 699                  | 716                  |
| 50                                                           |                    | 699.5341       | 715.4686       | 699                  | 716                  |
| 20                                                           | V min.= 9          | 699.5338       | 715.4689       | 699                  | 716                  |
| 20                                                           | V max.= 35         | 699.5339       | 715.4683       | 699                  | 716                  |

### **Declarations**

1: BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with an asterisk '\*'. Customer model name, addresses, names, trademarks etc. are not considered data.

2: Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

3: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

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