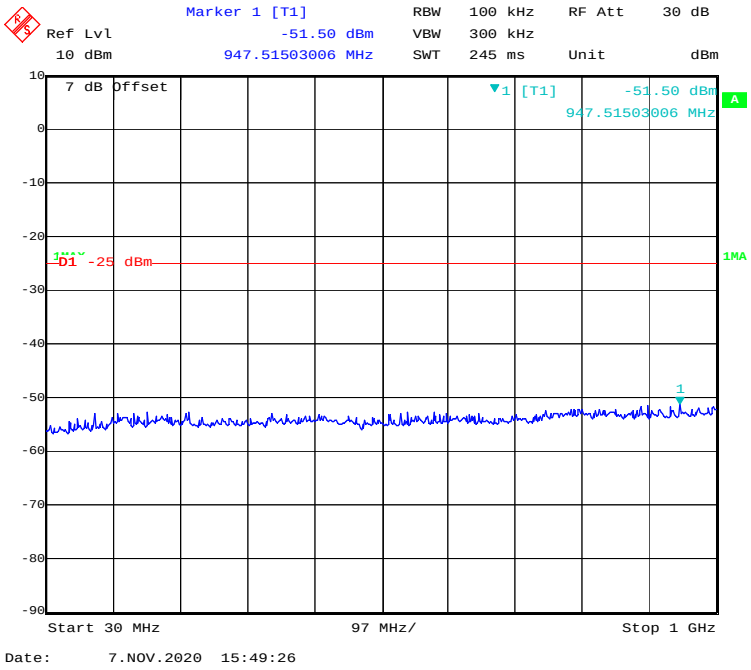
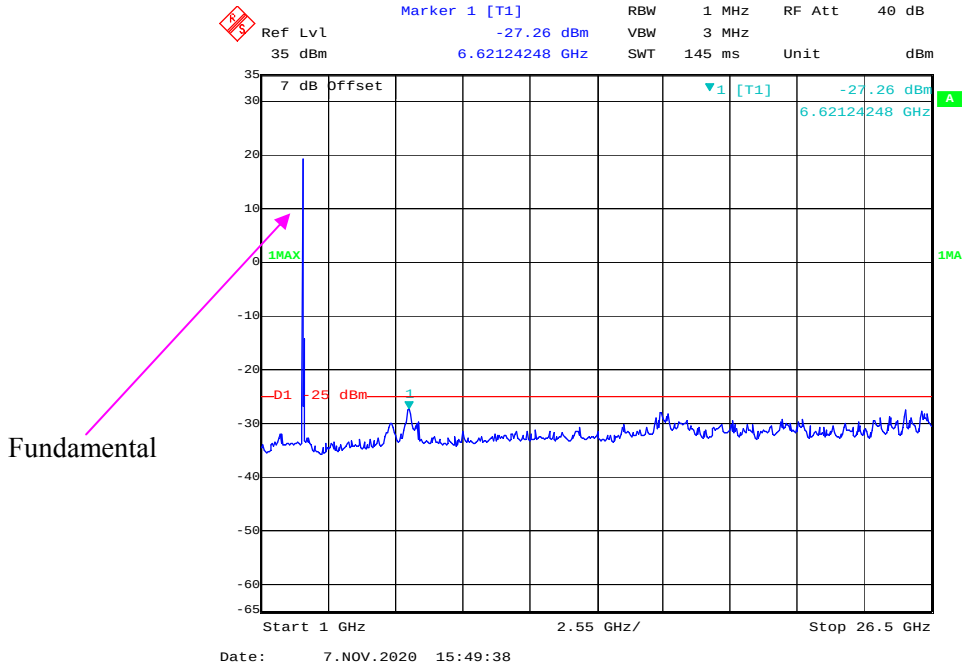
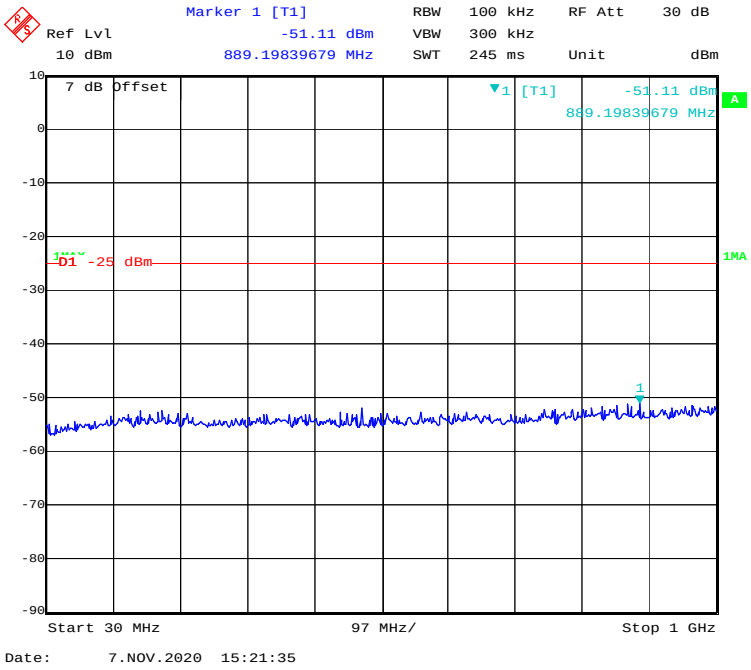
## 30 MHz - 1 GHz (QPSK, 20.0 MHz, Middle Channel)



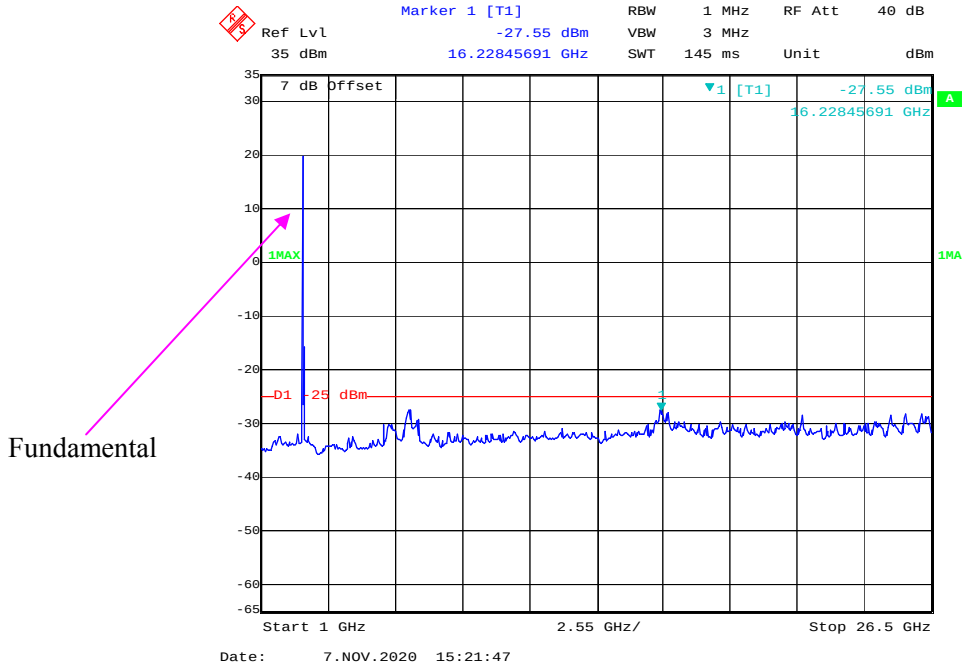

## 1 GHz – 26.5 GHz (QPSK, 20.0 MHz, Middle Channel)



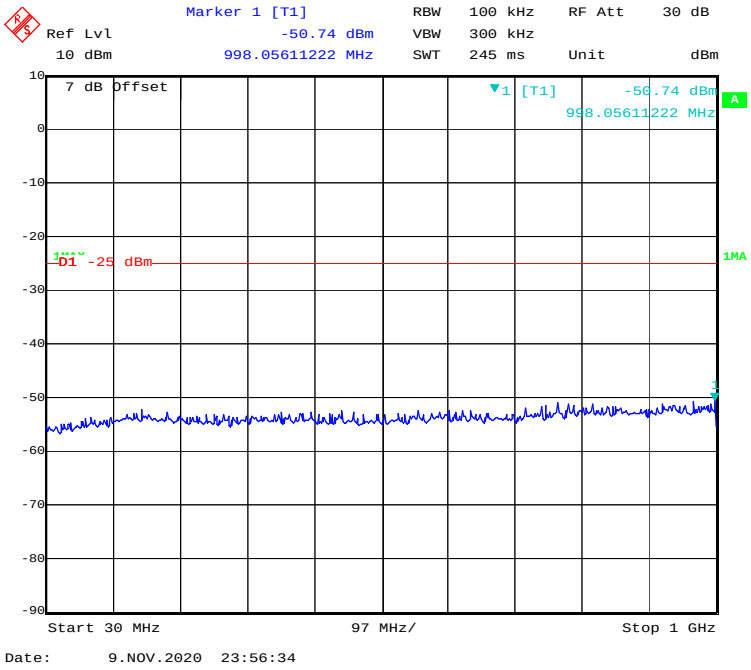
## 30 MHz - 1 GHz (16QAM, 20.0 MHz, Middle Channel)



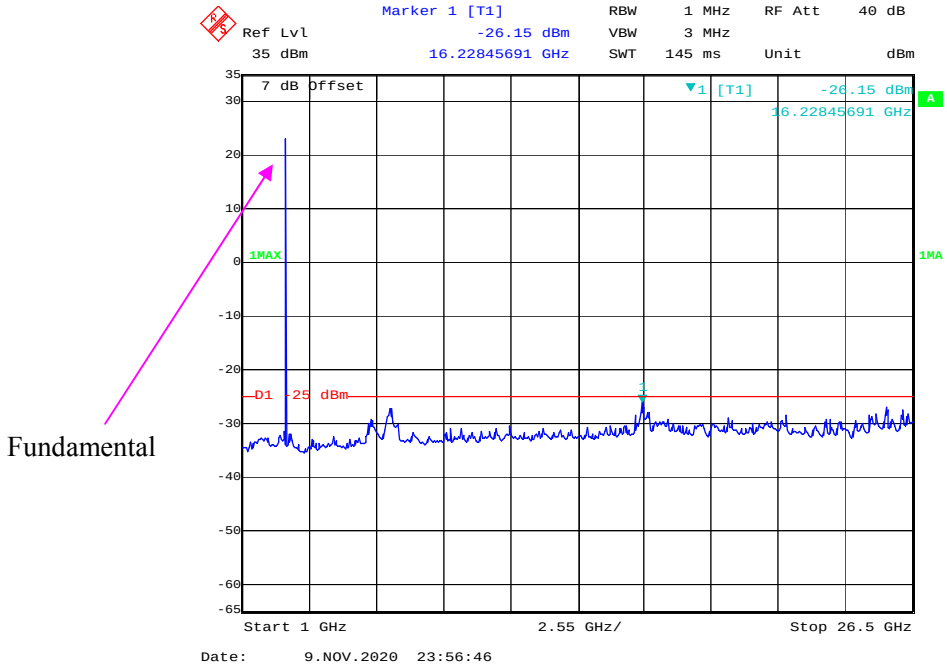

## 1 GHz – 26.5 GHz (16QAM, 20.0 MHz, Middle Channel)



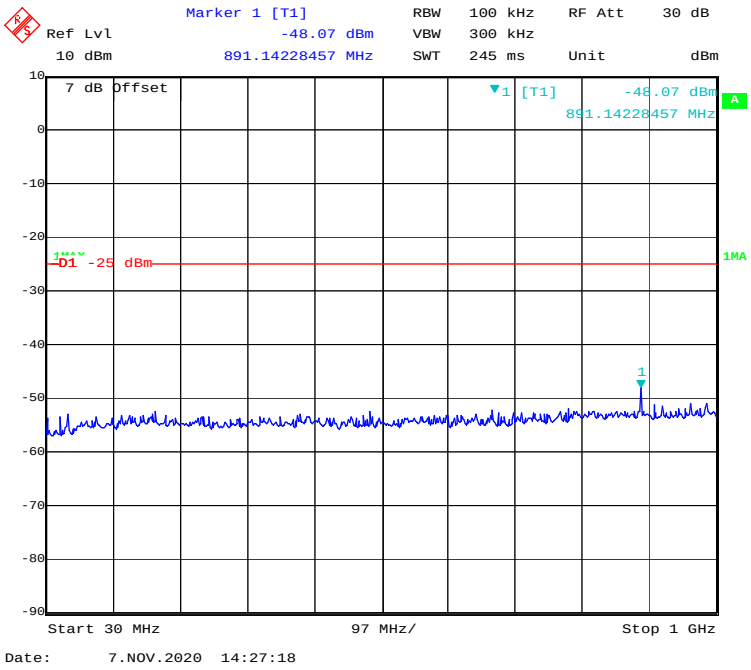
## 30 MHz - 1 GHz (QPSK, 5.0 MHz, High Channel)



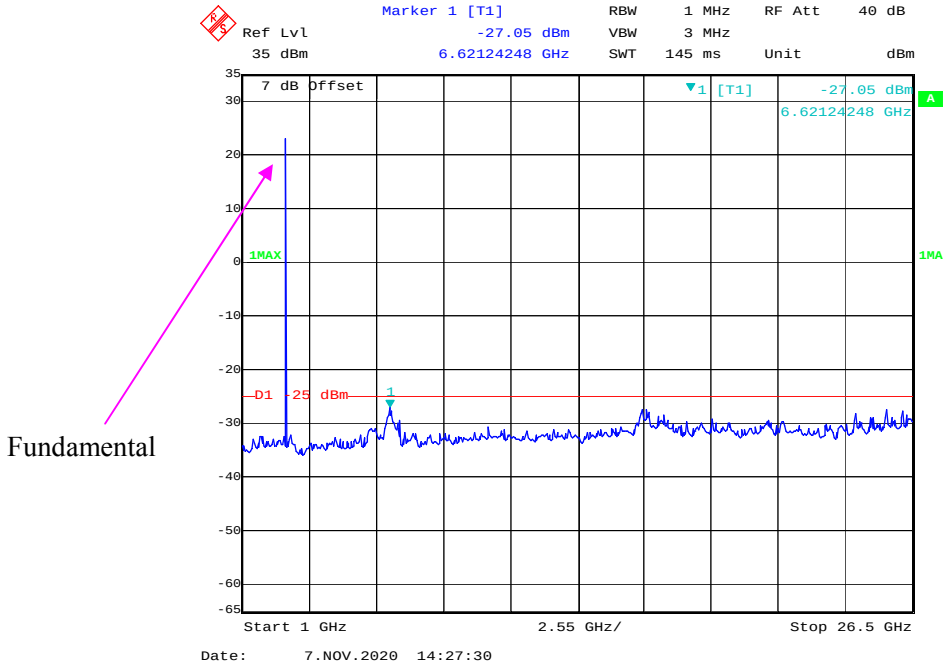

## 1 GHz – 26.5 GHz (QPSK, 5.0 MHz, High Channel)



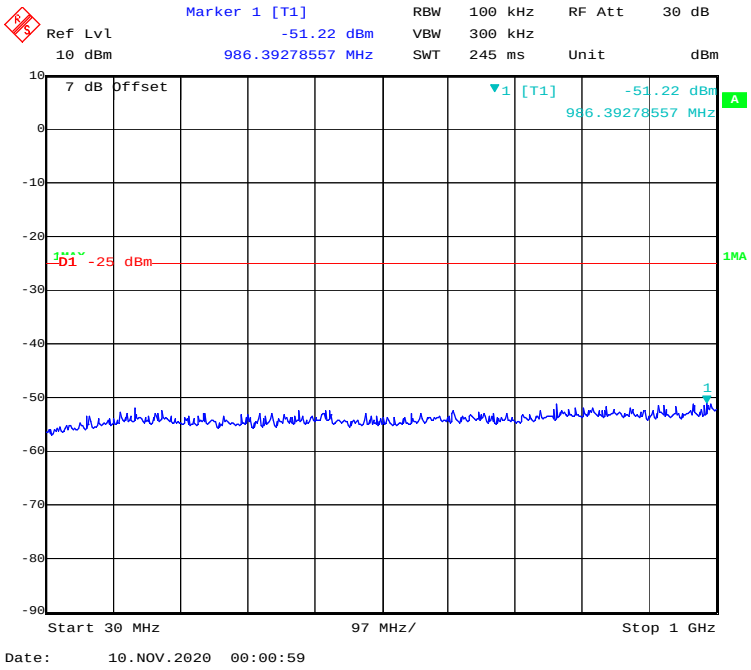
## 30 MHz - 1 GHz (16QAM, 5.0 MHz, High Channel)



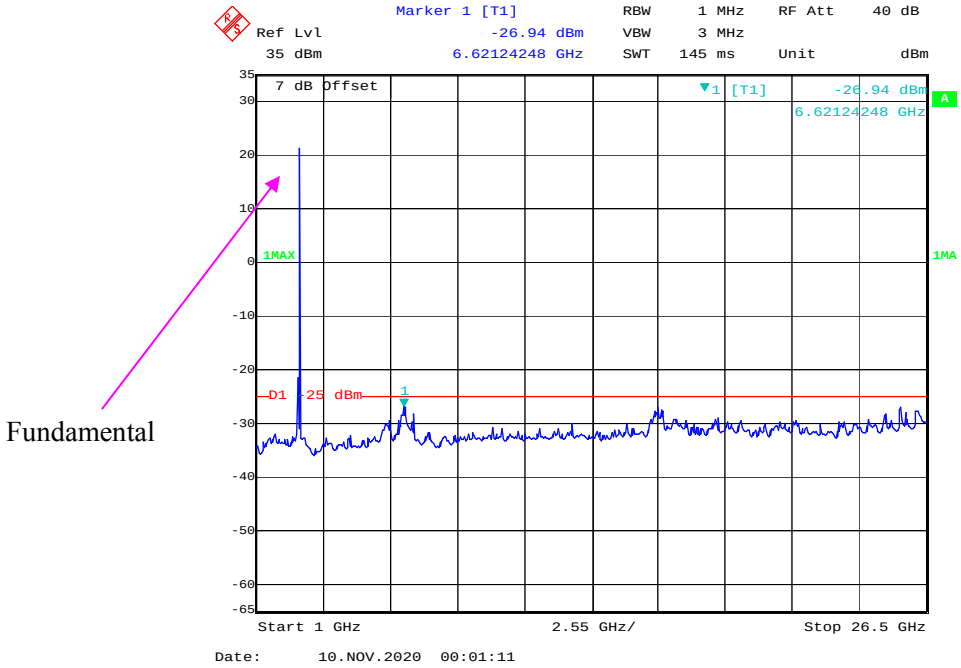

## 1 GHz – 26.5 GHz (16QAM, 5.0 MHz, High Channel)



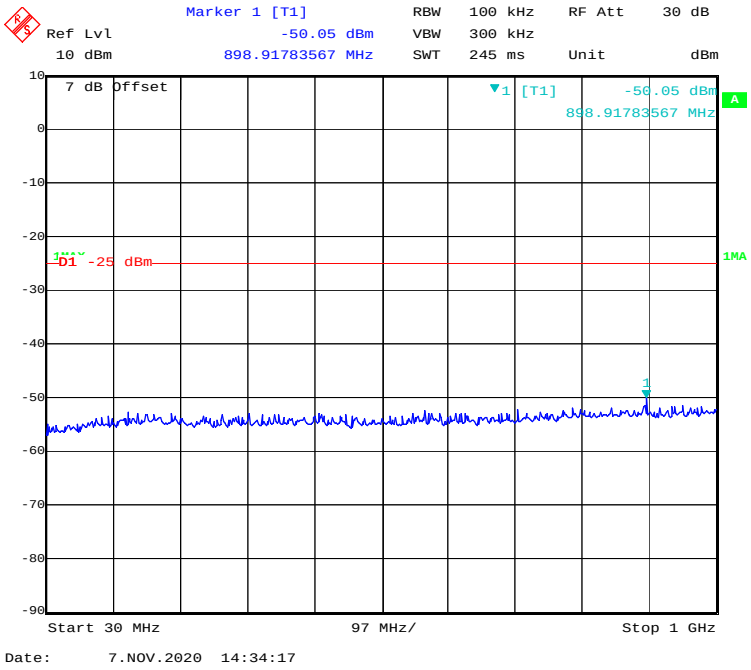
## 30 MHz - 1 GHz (QPSK, 10.0 MHz, High Channel)



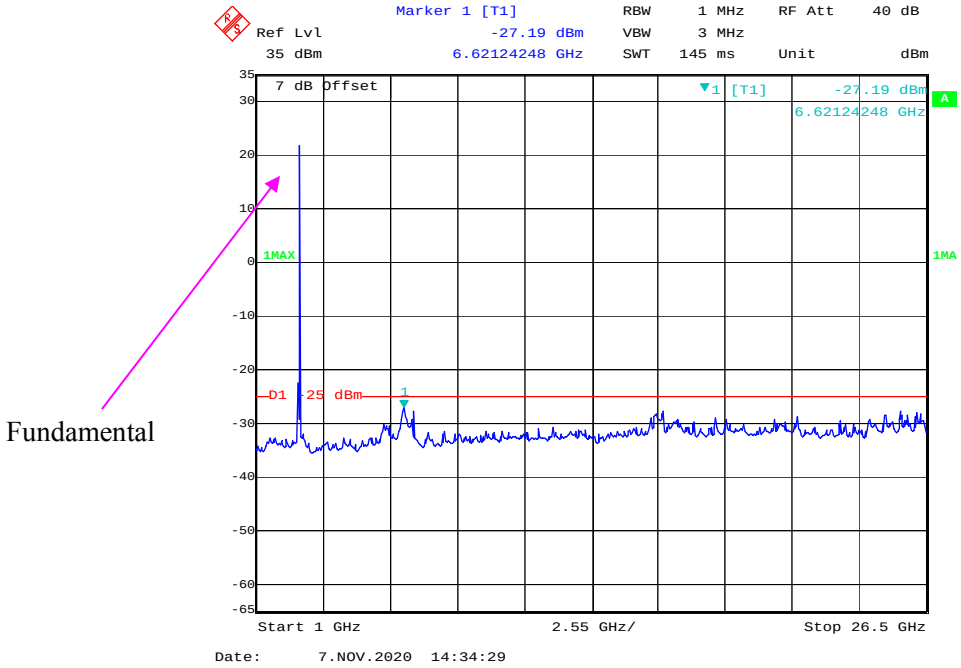

## 1 GHz – 26.5 GHz (QPSK, 10.0 MHz, High Channel)



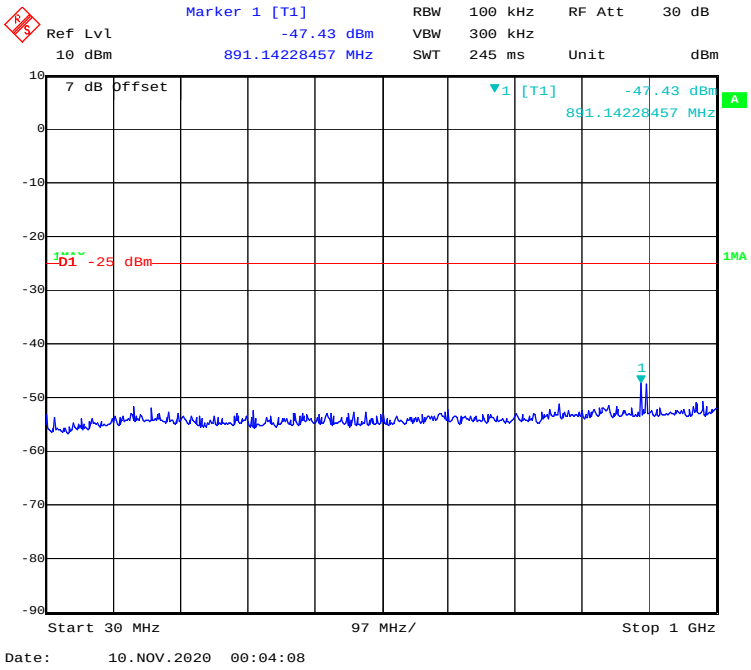
## 30 MHz - 1 GHz (16QAM, 10.0 MHz, High Channel)



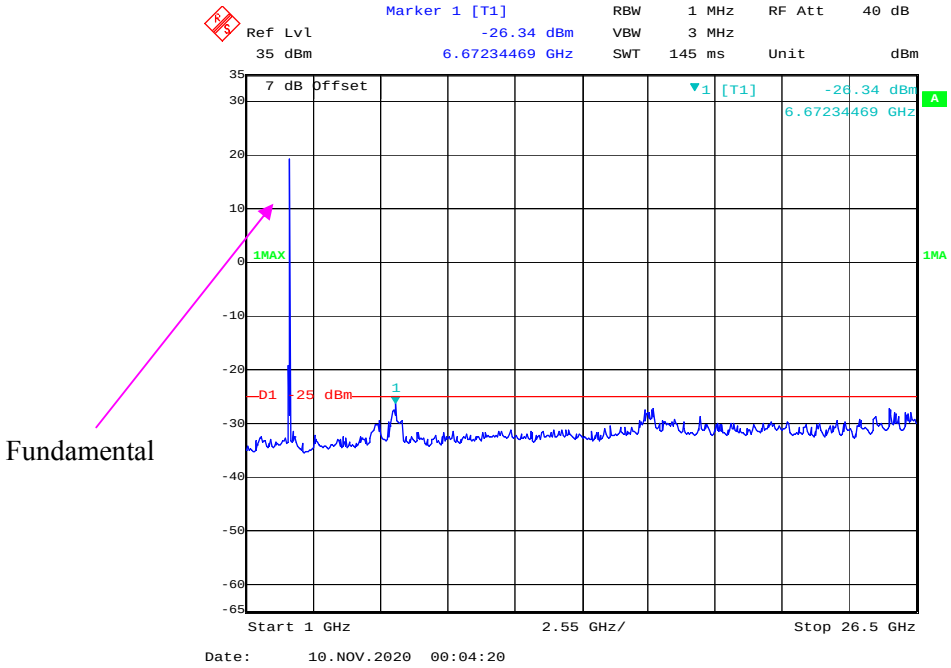

## 1 GHz – 26.5 GHz (16QAM, 10.0 MHz, High Channel)



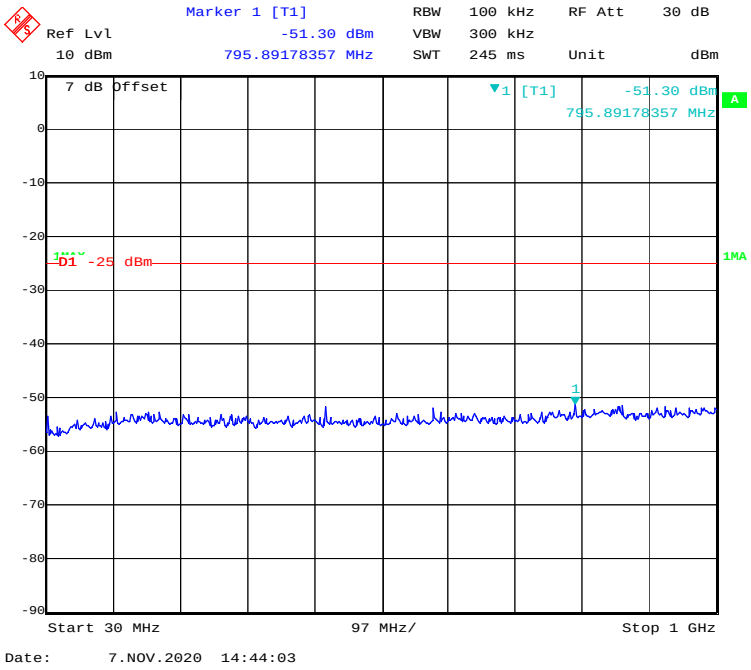
## 30 MHz - 1 GHz (QPSK, 15.0 MHz, High Channel)



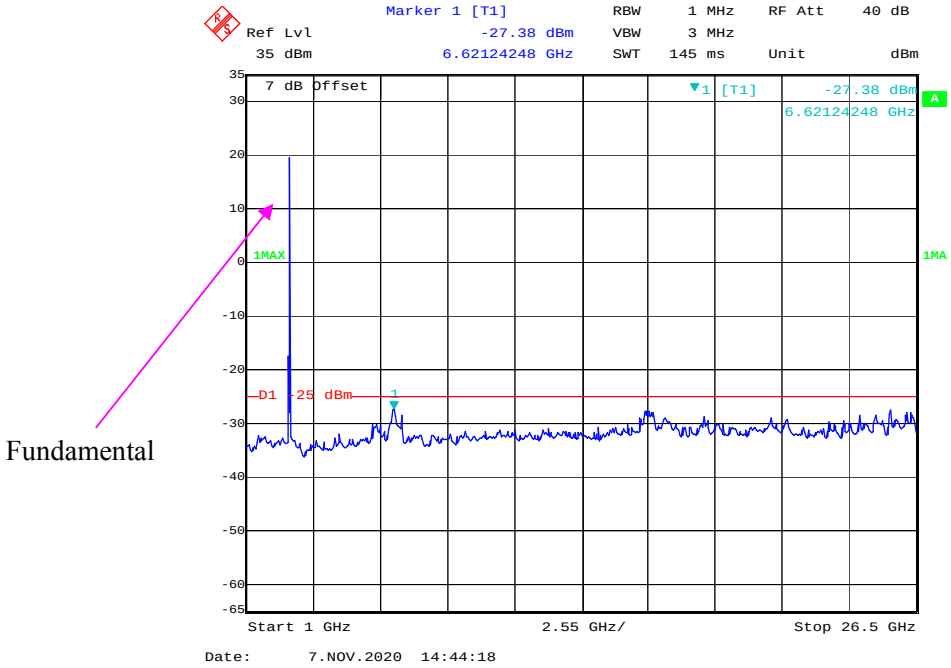

## 1 GHz – 26.5 GHz (QPSK, 15.0MHz, High Channel)



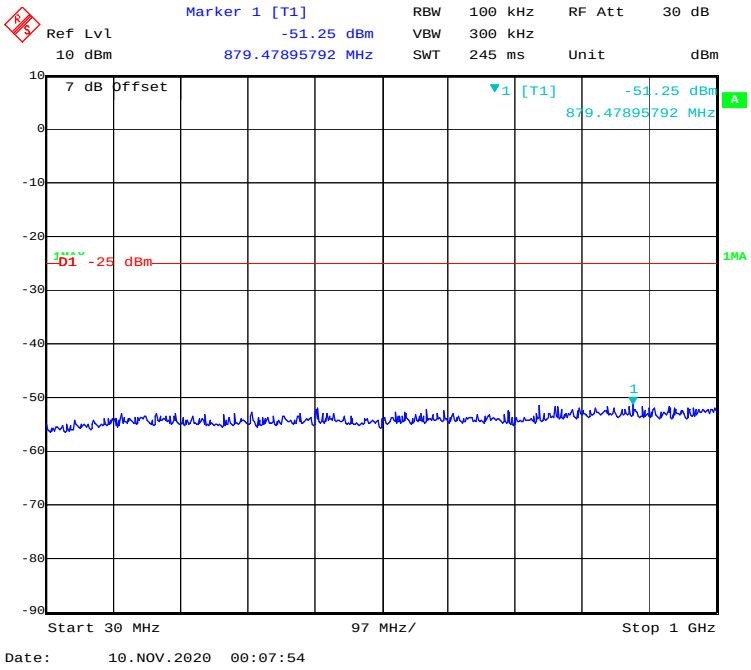
## 30 MHz - 1 GHz (16QAM, 15.0 MHz, High Channel)



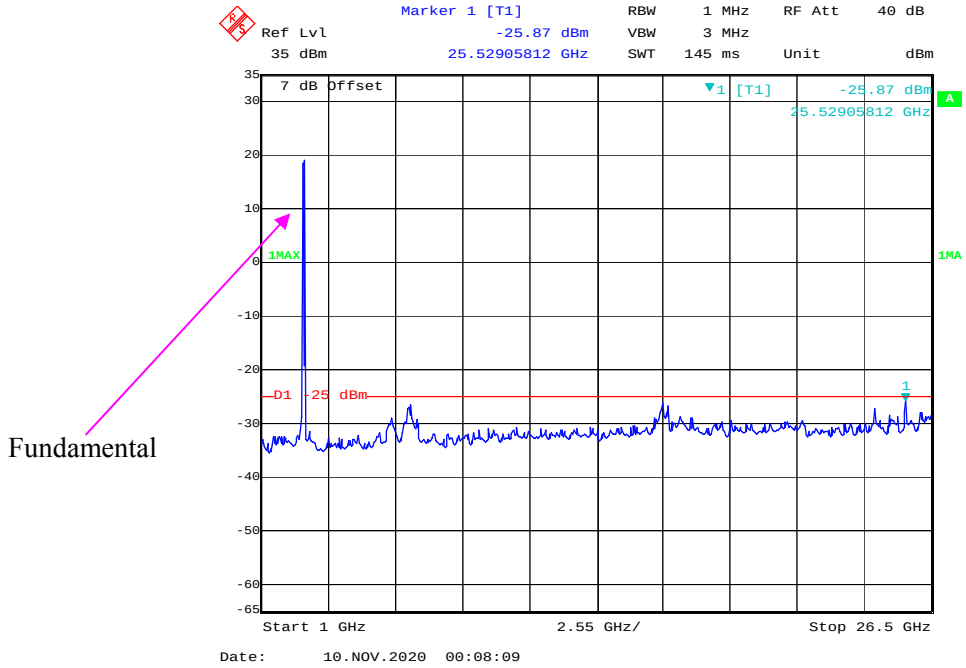

## 1 GHz – 26.5 GHz (16QAM, 15.0MHz, High Channel)



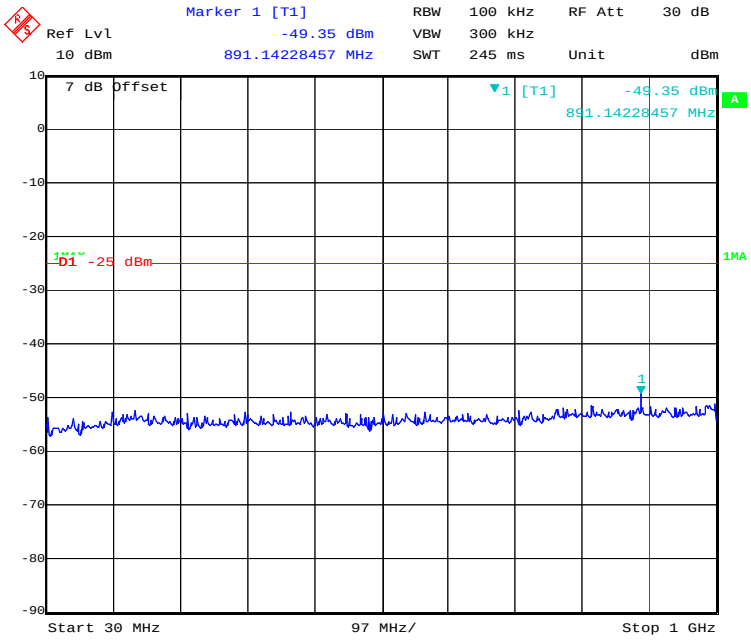
## 30 MHz - 1 GHz (QPSK, 20.0 MHz, High Channel)




## 1 GHz – 26.5 GHz (QPSK, 20.0 MHz, High Channel)

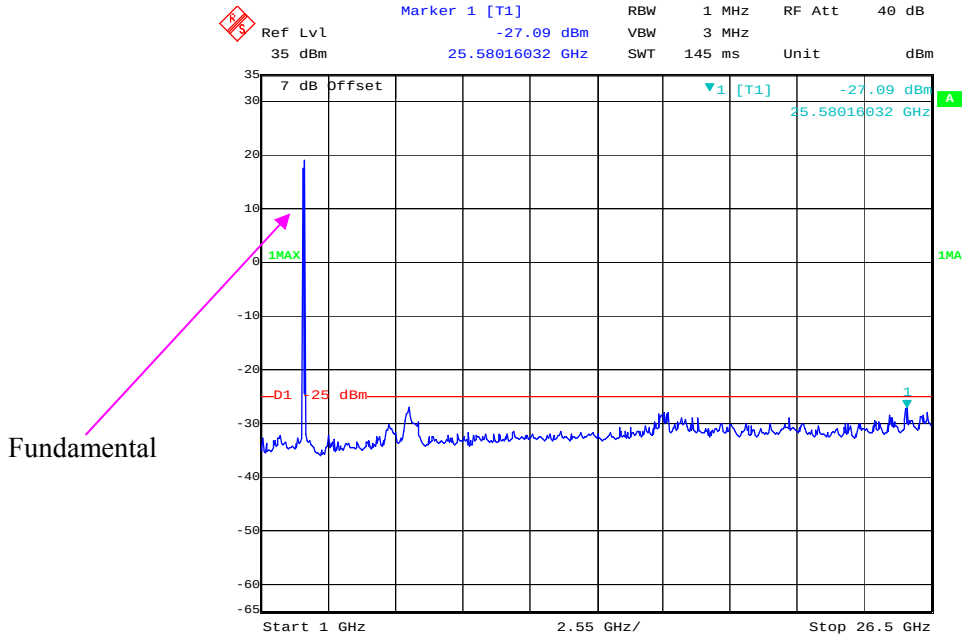


## 30 MHz - 1 GHz (16QAM, 20.0 MHz, High Channel)




Date: 7.NOV.2020 14:19:30

## 1 GHz – 26.5 GHz (16QAM, 20.0 MHz, High Channel)

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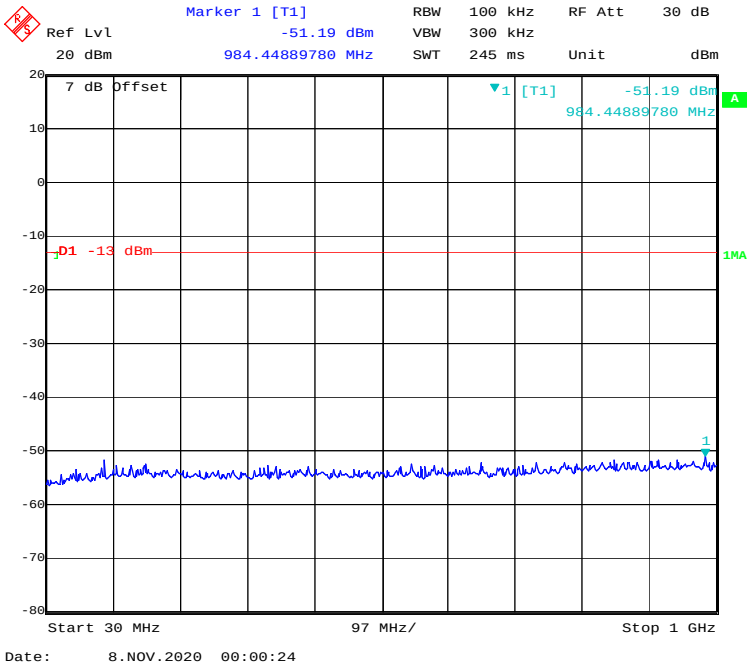
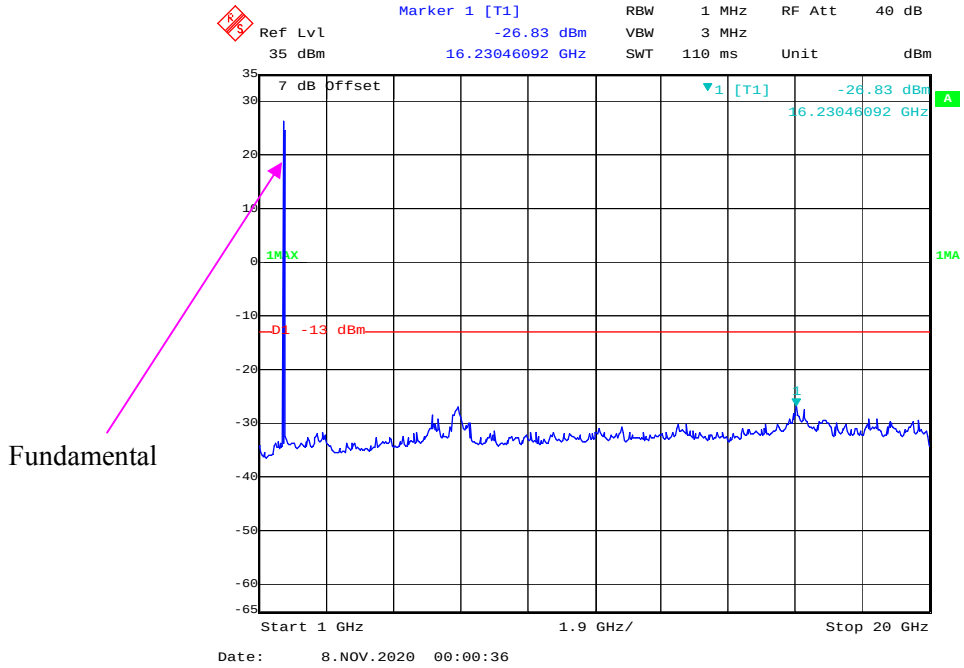
## LTE Band 66:

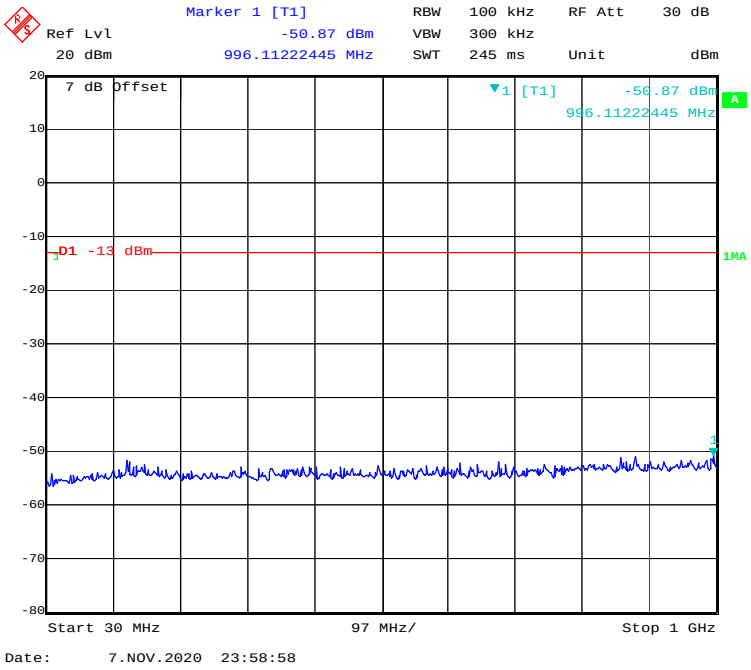
### 30 MHz – 1 GHz (1.4 MHz, QPSK, Low Channel)



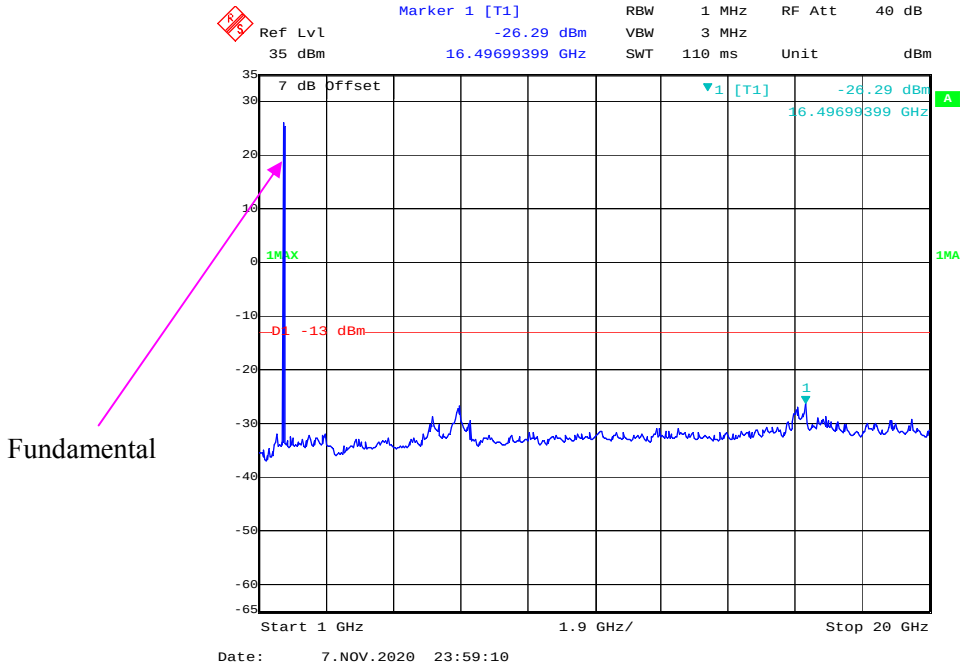

### 1 GHz – 20 GHz (1.4 MHz, QPSK, Low Channel)



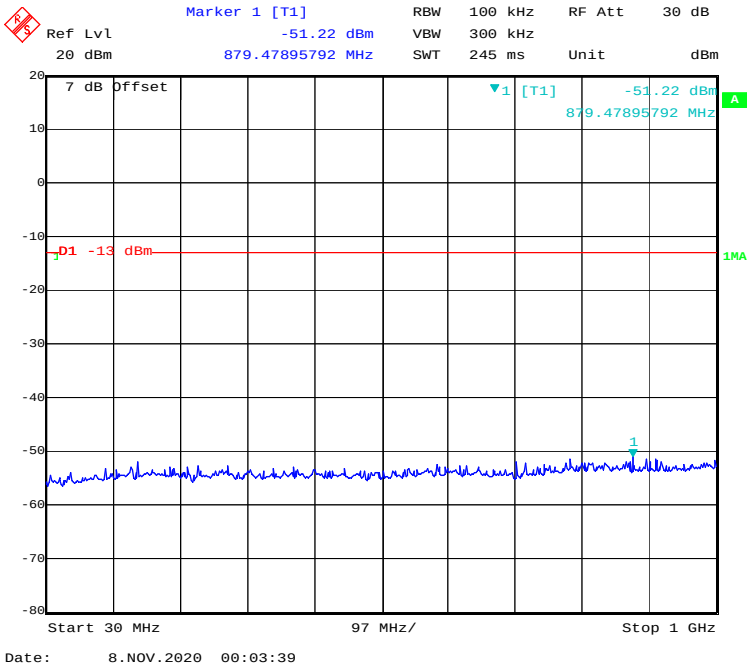
## 30 MHz – 1 GHz (1.4 MHz, 16-QAM, Low Channel)



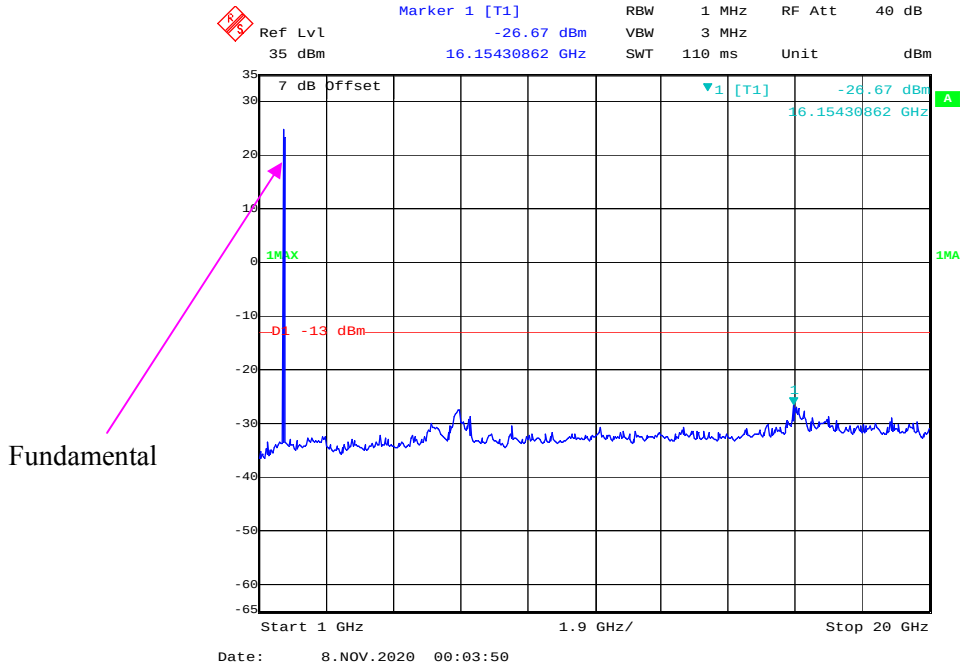

## 1 GHz – 20 GHz (1.4 MHz, 16-QAM, Low Channel)



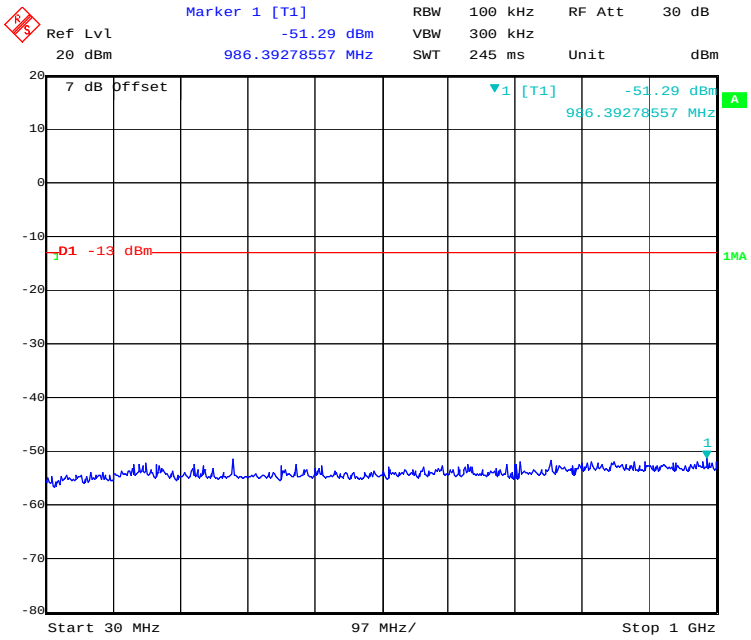
## 30 MHz – 1 GHz (3 MHz, QPSK, Low Channel)




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



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

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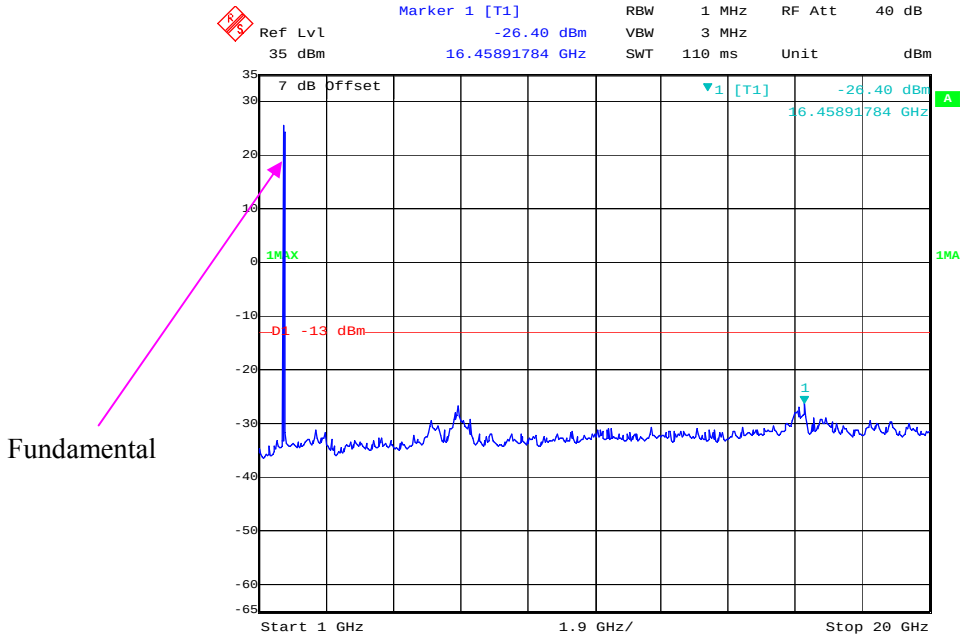
## 1 GHz – 20 GHz (3 MHz, 16-QAM, Low Channel)

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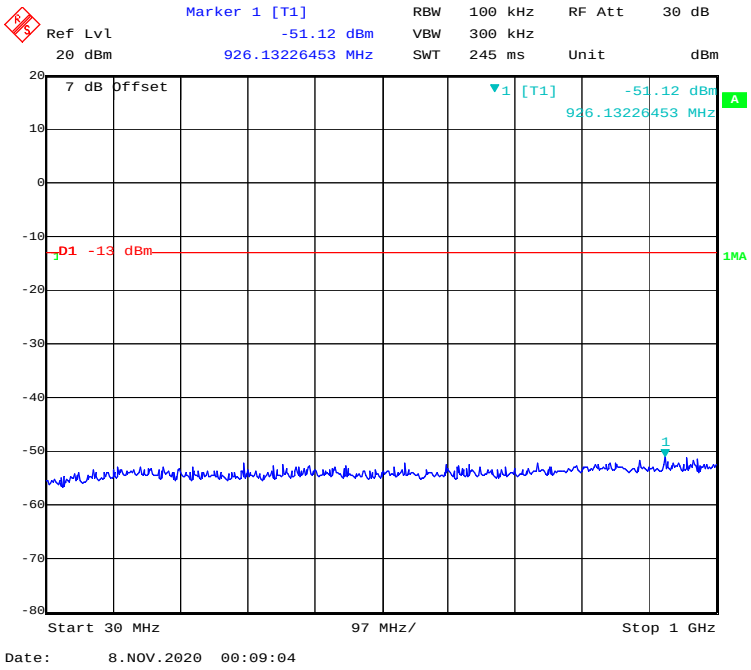
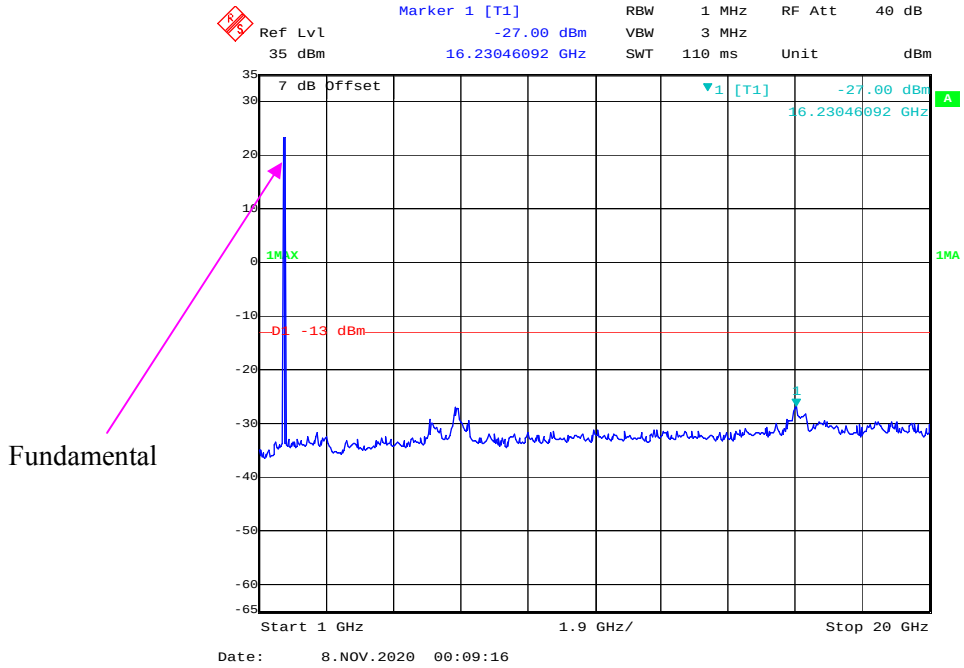
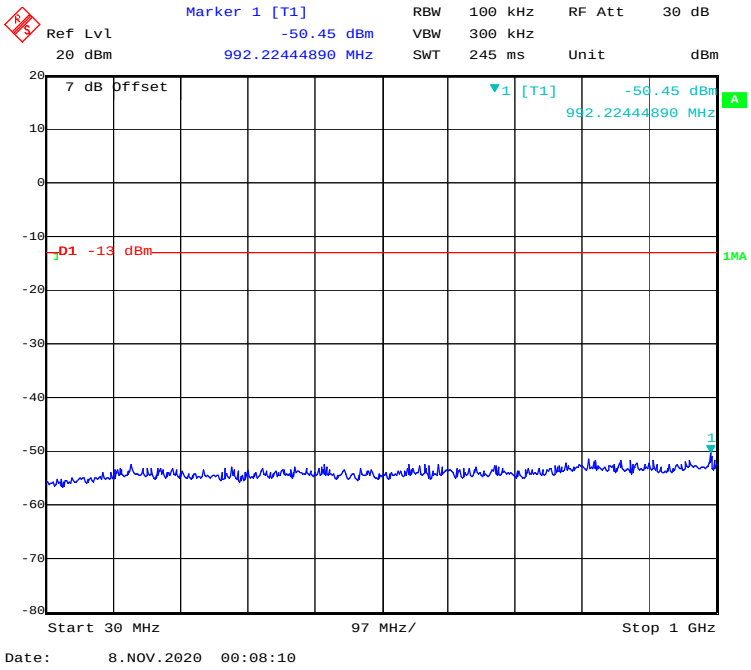
## 30 MHz – 1 GHz (5 MHz, QPSK, Low Channel)



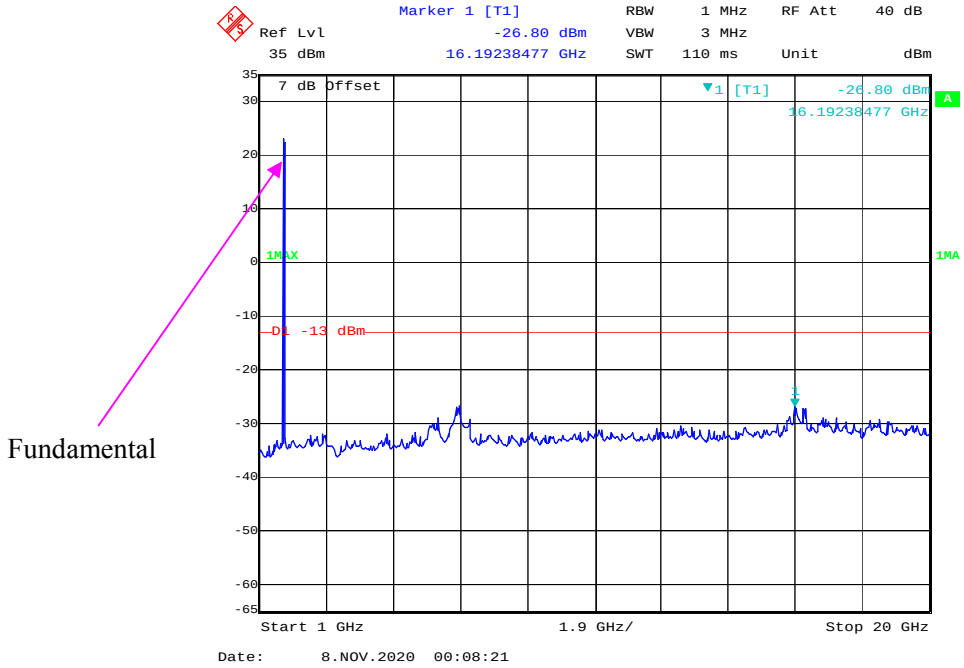

## 1 GHz – 20 GHz (5 MHz, QPSK, Low Channel)



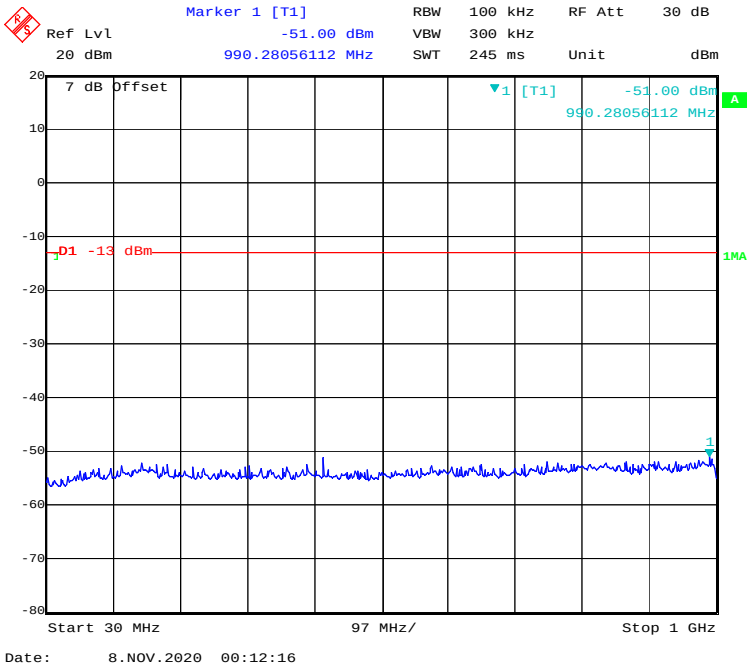
## 30 MHz – 1 GHz (5 MHz, 16-QAM, Low Channel)



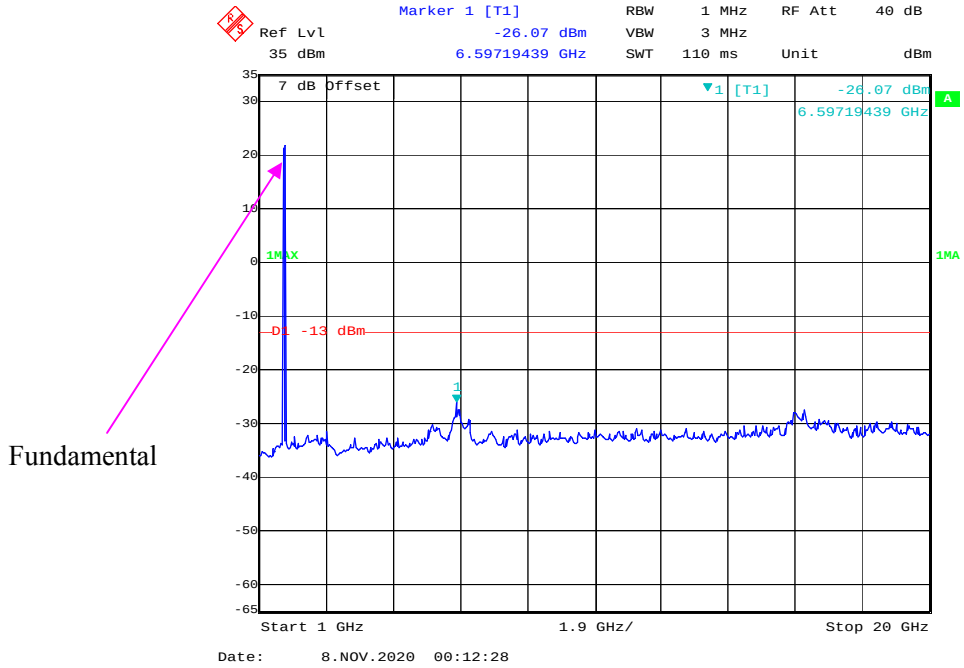

## 1 GHz – 20 GHz (5 MHz, 16-QAM, Low Channel)



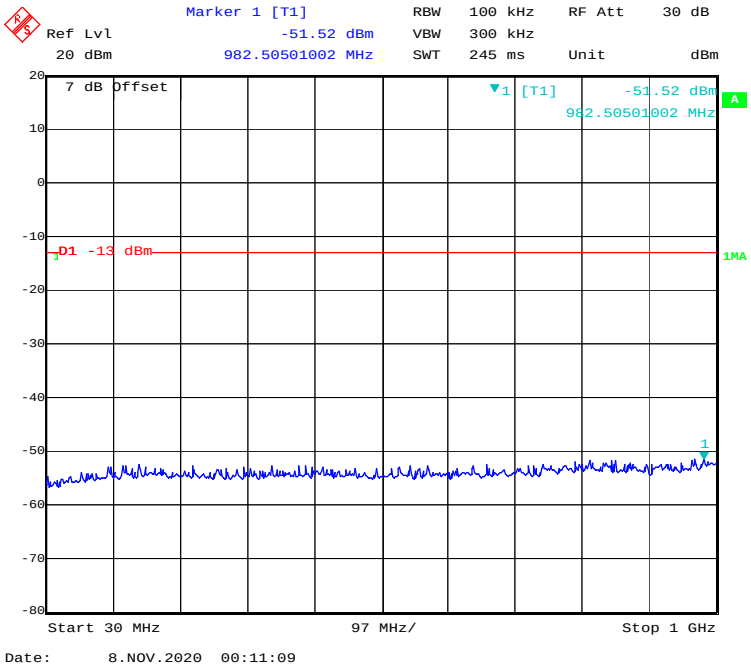
## 30 MHz – 1 GHz (10 MHz, QPSK, Low Channel)



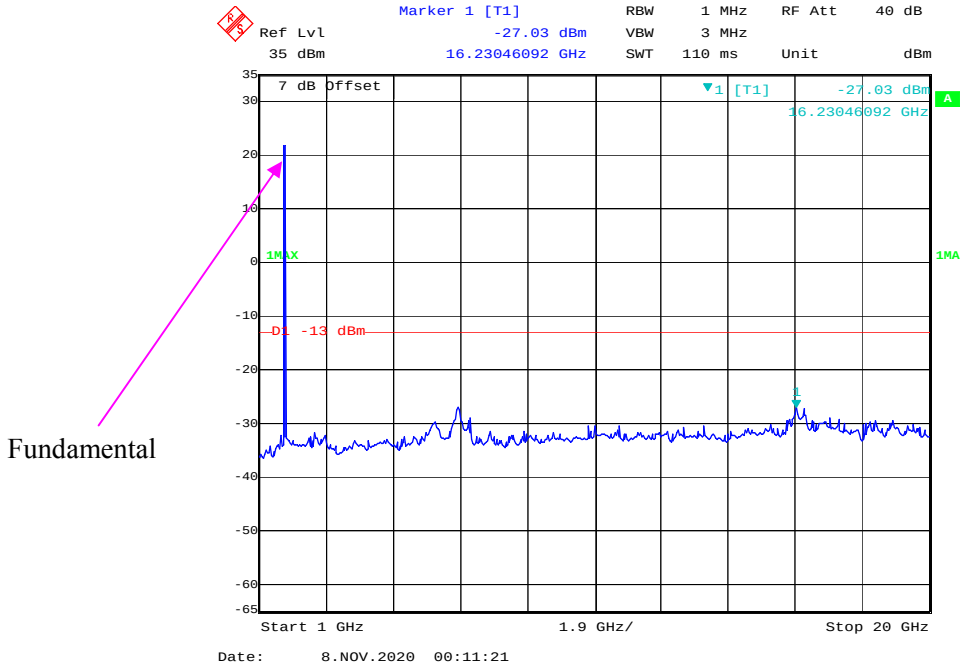

## 1 GHz – 20 GHz (10 MHz, QPSK, Low Channel)



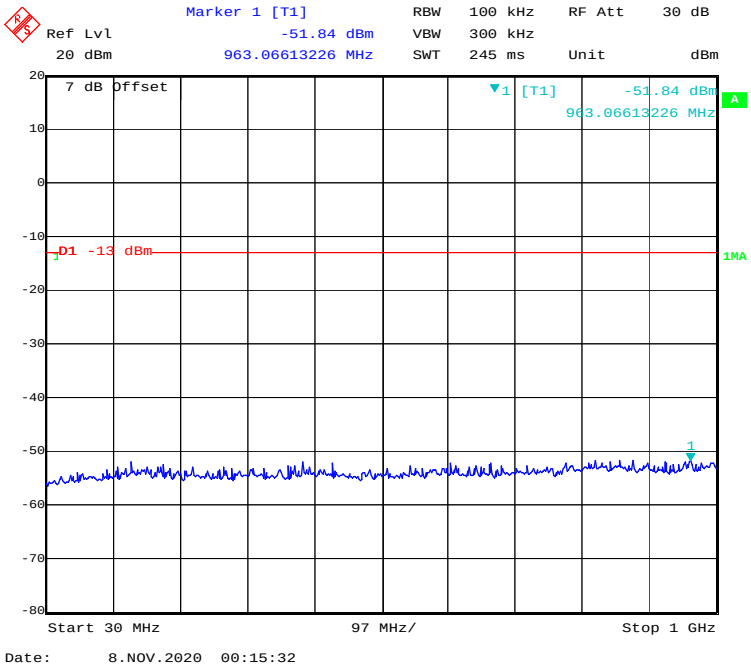
## 30 MHz – 1 GHz (10 MHz, 16-QAM, Low Channel)



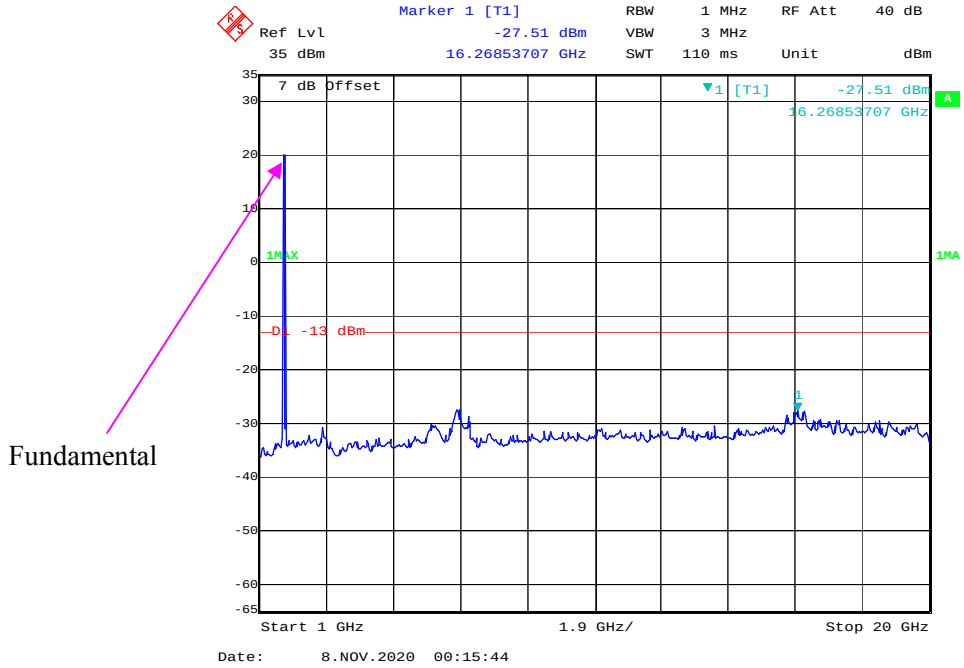

## 1 GHz – 20 GHz (10 MHz, 16-QAM, Low Channel)



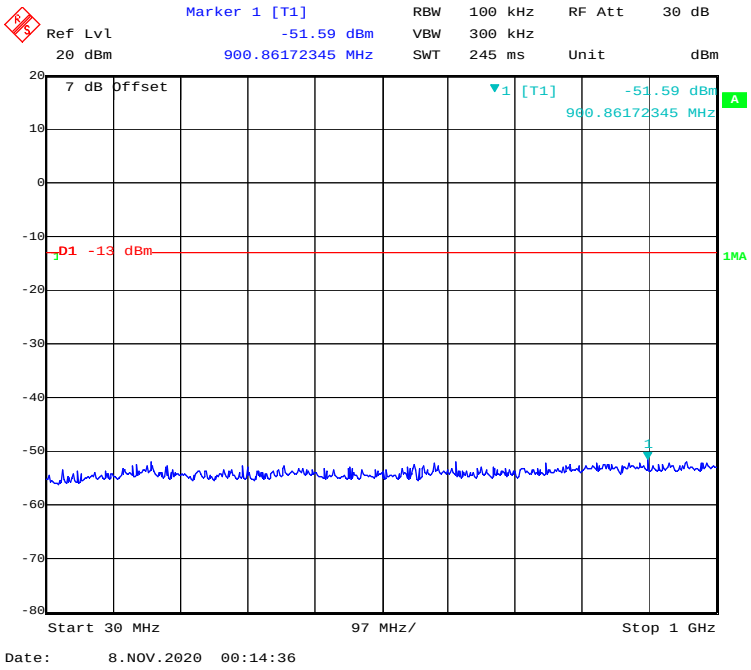
## 30 MHz – 1 GHz (15 MHz, QPSK, Low Channel)



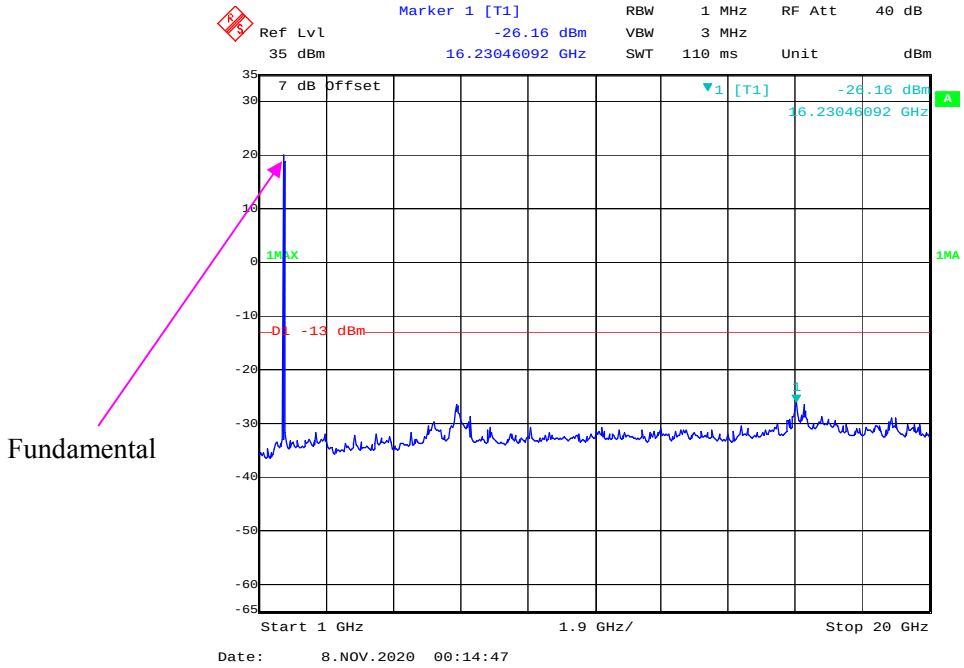

## 1 GHz – 20 GHz (15 MHz, QPSK, Low Channel)



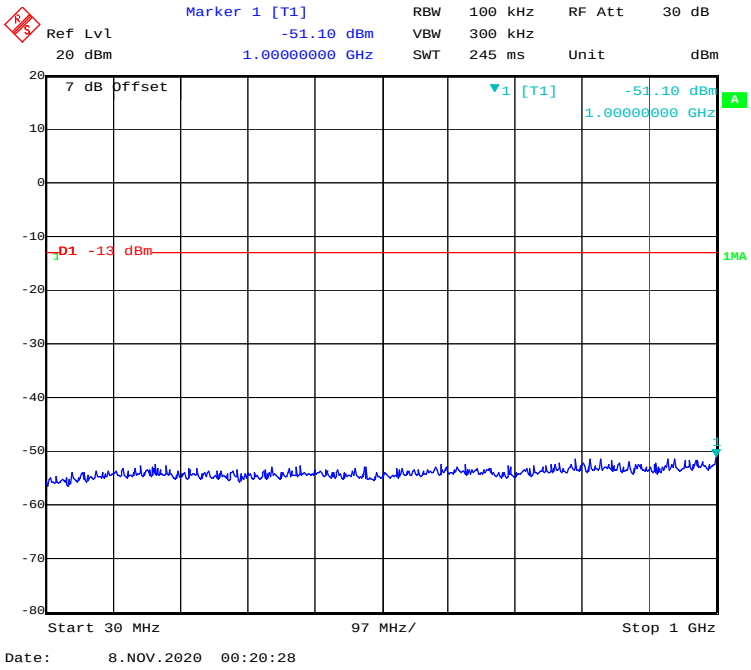
## 30 MHz – 1 GHz (15 MHz, 16-QAM, Low Channel)



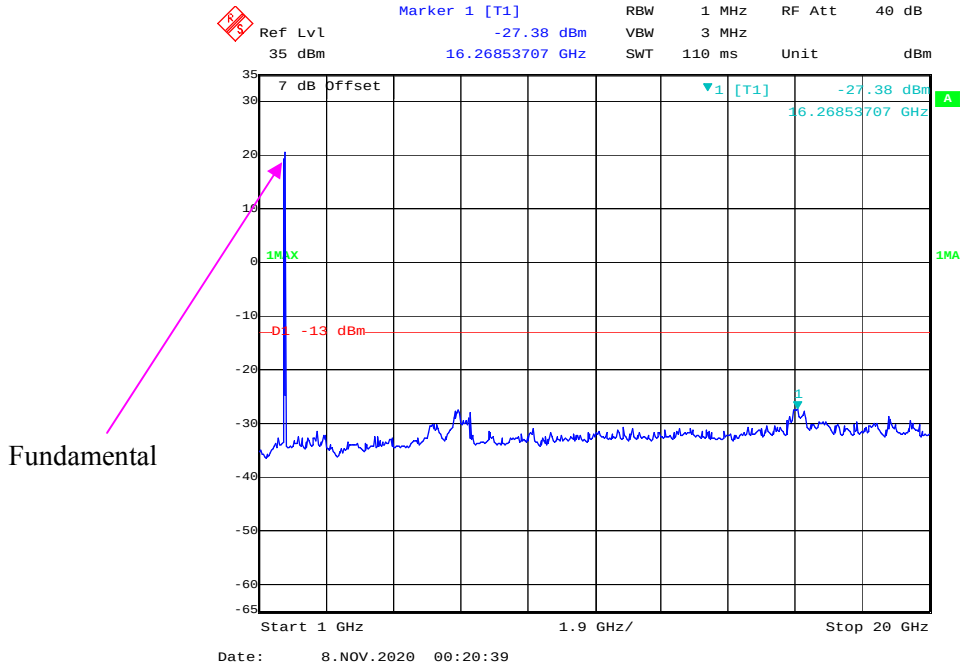

## 1 GHz – 20 GHz (15 MHz, 16-QAM, Low Channel)



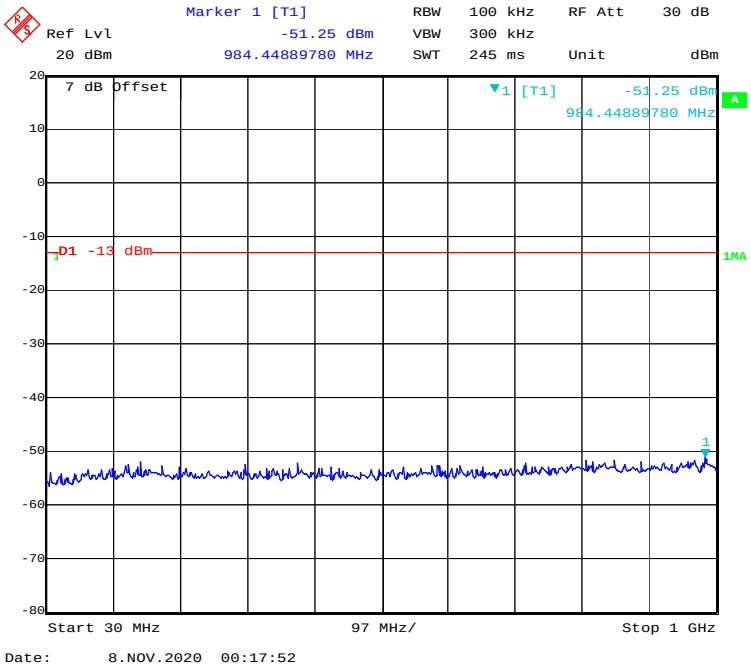
## 30 MHz – 1 GHz (20 MHz, QPSK, Low Channel)



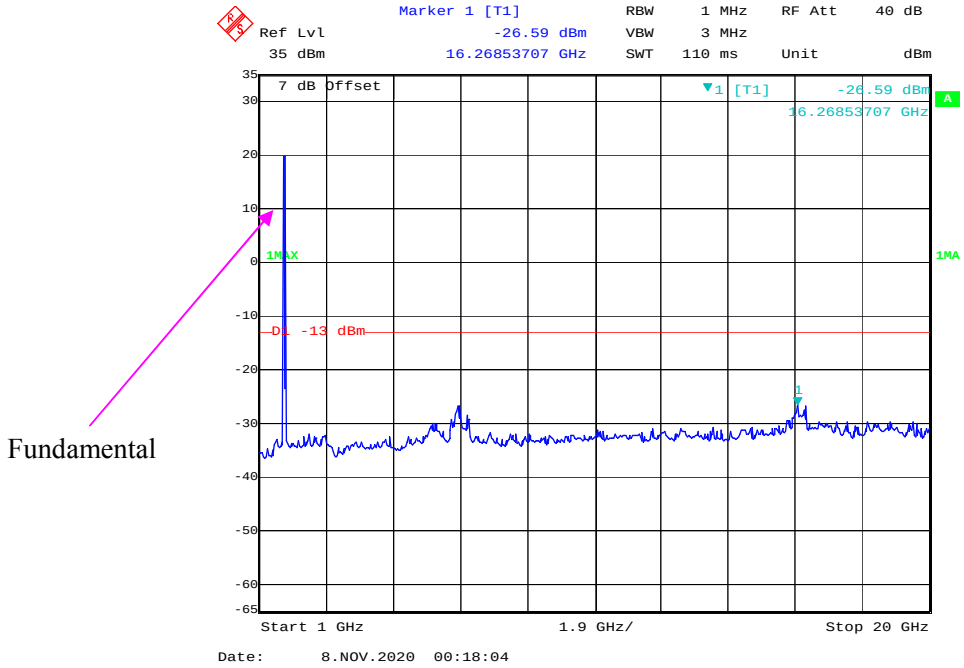

## 1 GHz – 20 GHz (20 MHz, QPSK, Low Channel)



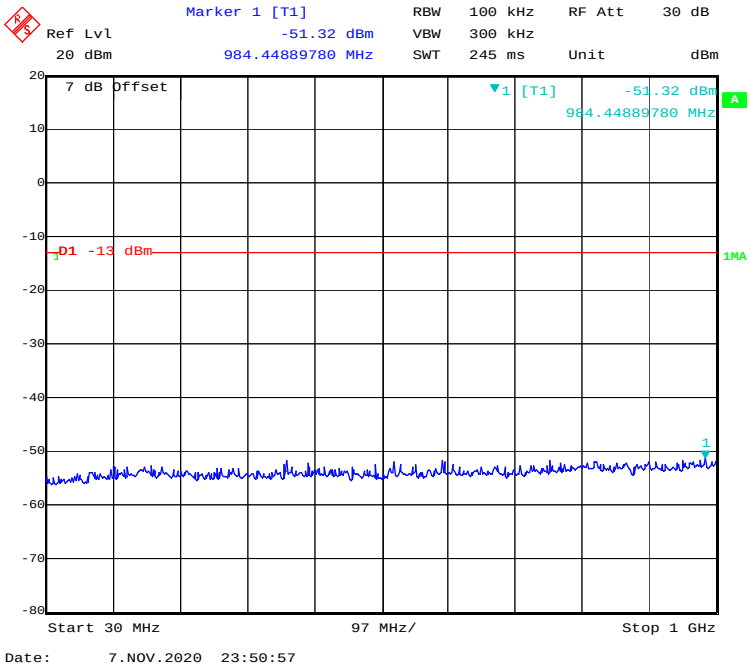
## 30 MHz – 1 GHz (20 MHz, 16-QAM, Low Channel)



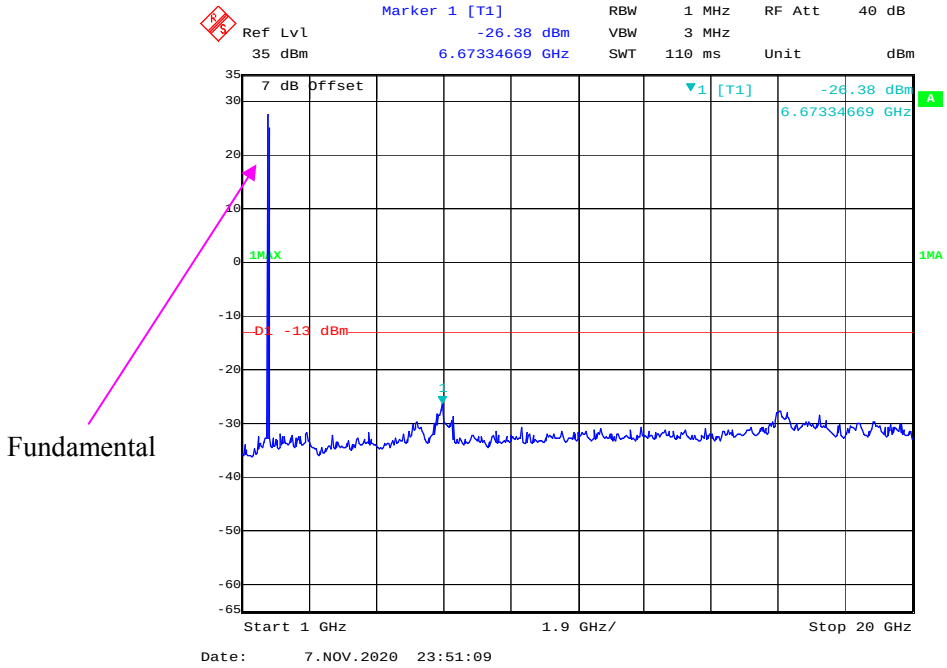

## 1 GHz – 20 GHz (20 MHz, 16-QAM, Low Channel)



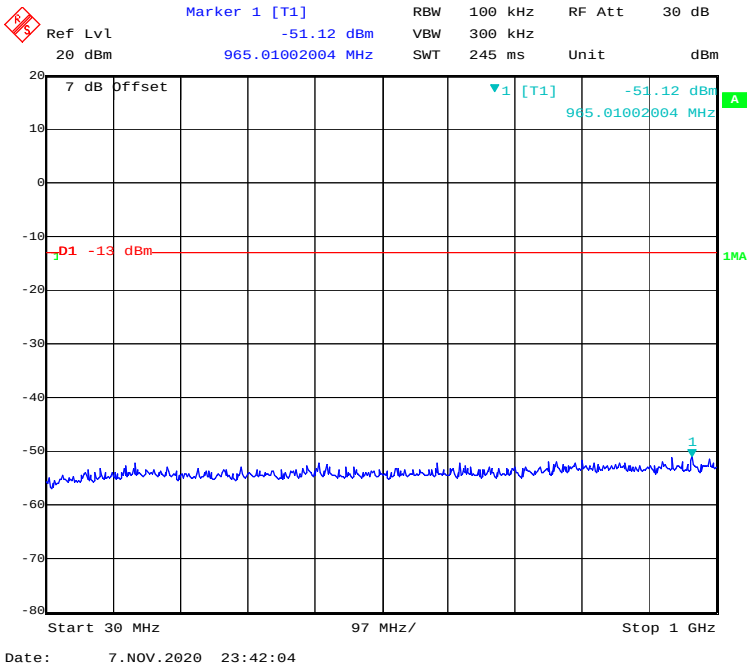
## 30 MHz – 1 GHz (1.4 MHz, QPSK, Middle Channel)



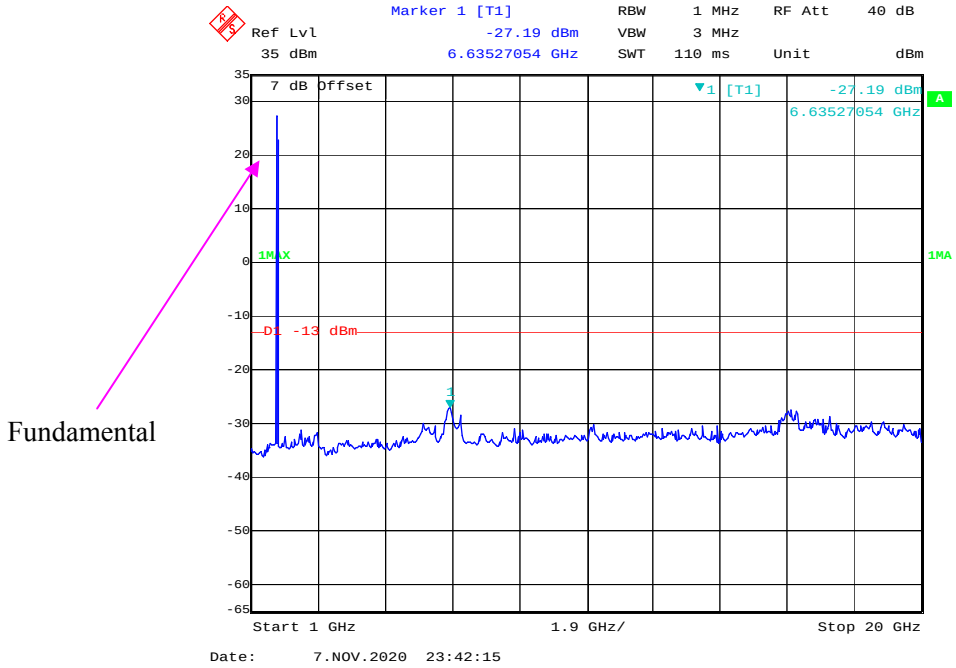

## 1 GHz – 20 GHz (1.4 MHz, QPSK, Middle Channel)



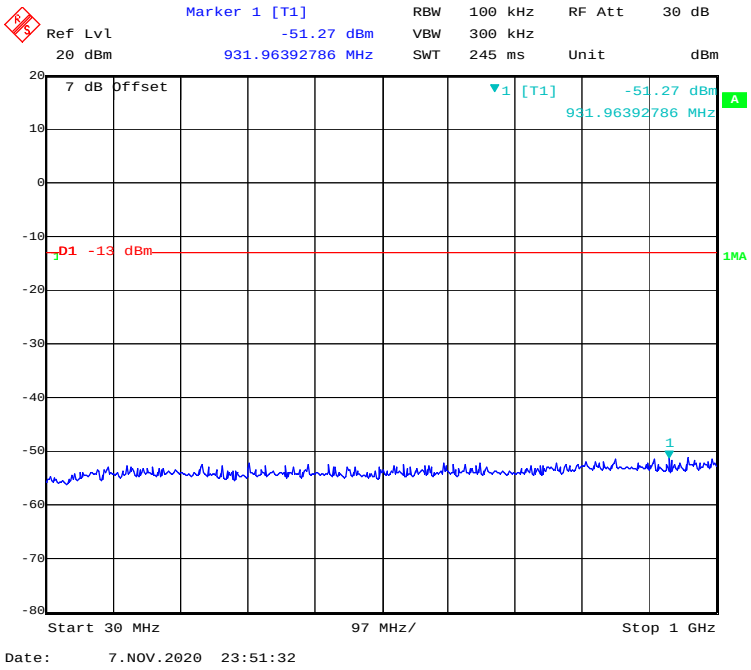
## 30 MHz – 1 GHz (1.4 MHz, 16-QAM, Middle Channel)



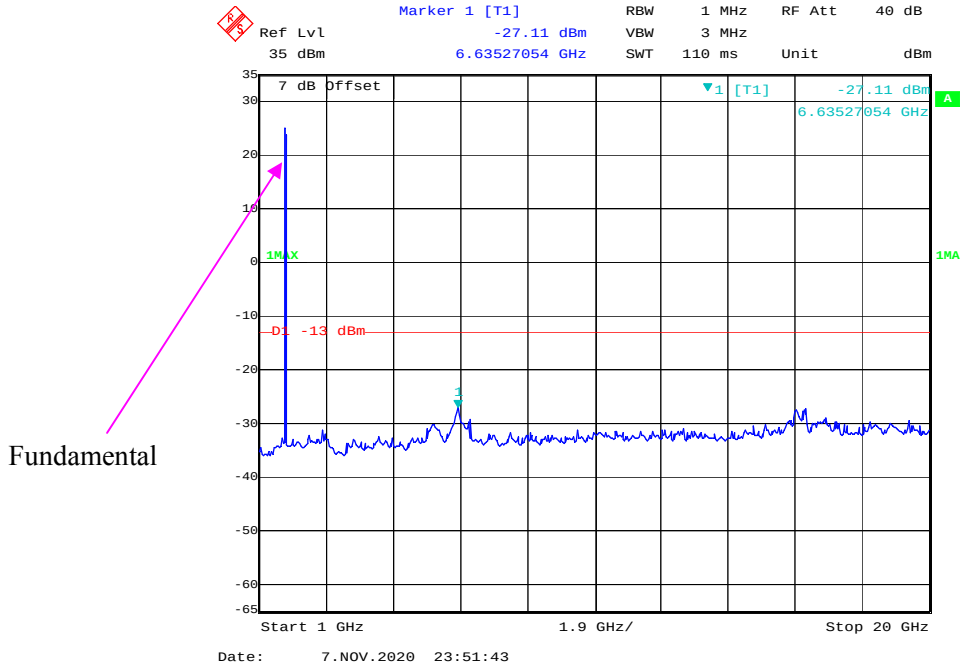

## 1 GHz – 20 GHz (1.4 MHz, 16-QAM, Middle Channel)



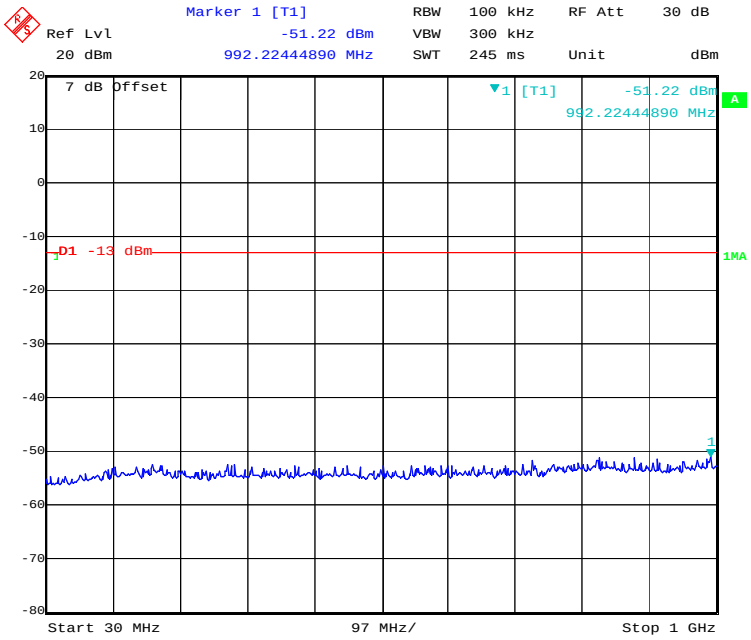
## 30 MHz – 1 GHz (3 MHz, QPSK, Middle Channel)




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



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

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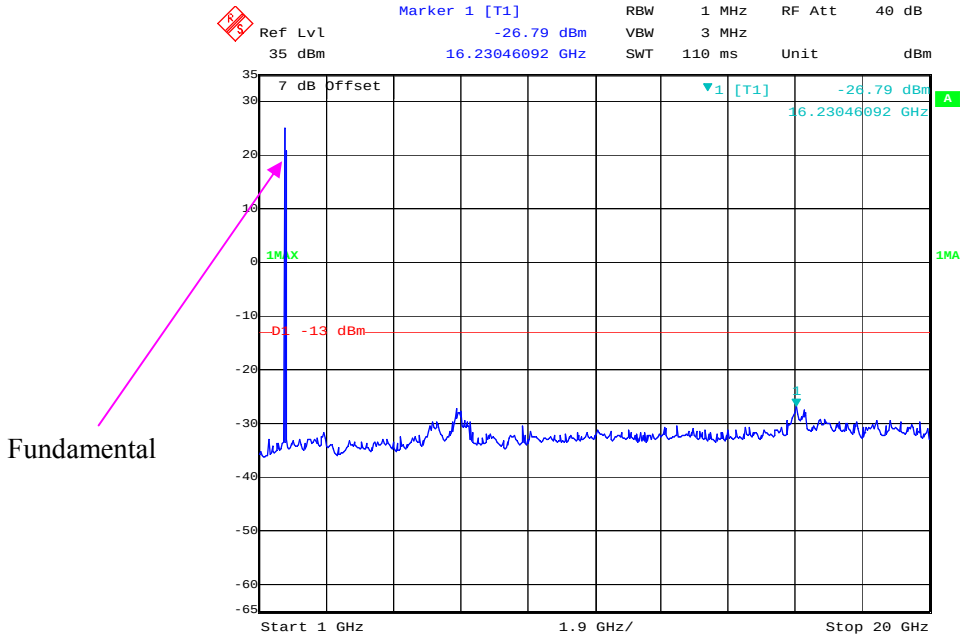
## 1 GHz – 20 GHz (3 MHz, 16-QAM, Middle Channel)

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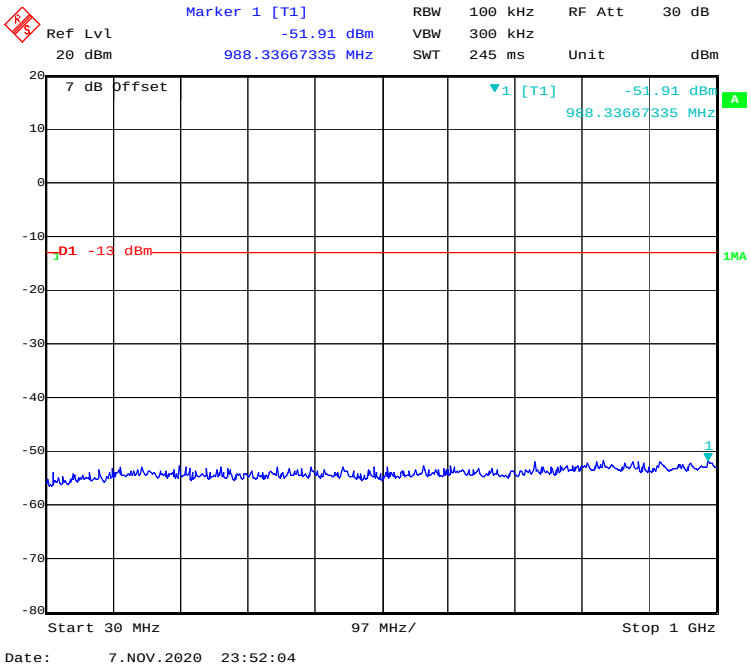
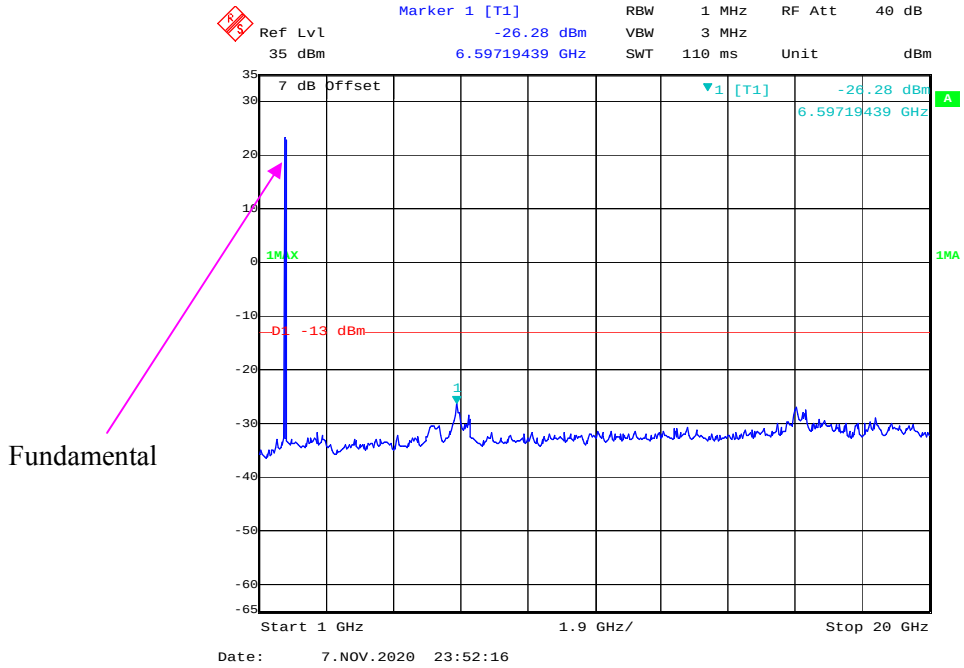
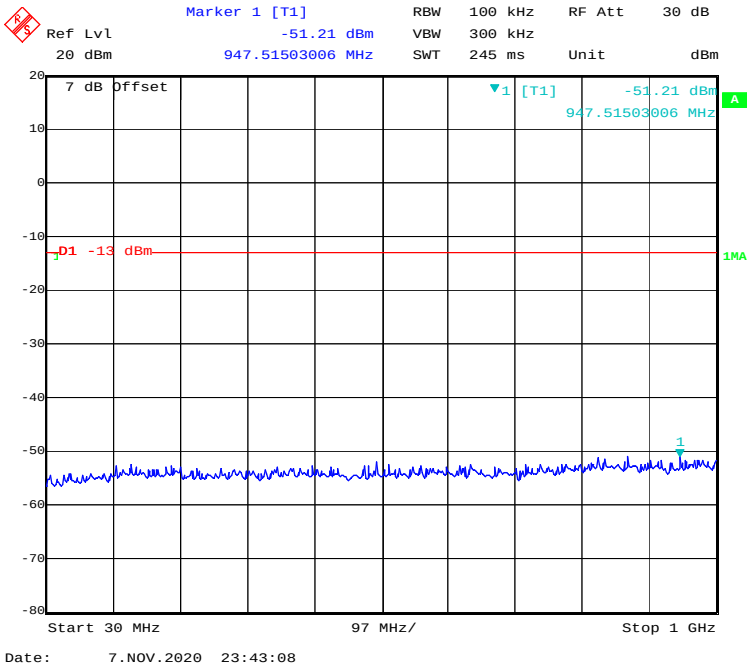
## 30 MHz – 1 GHz (5 MHz, QPSK, Middle Channel)



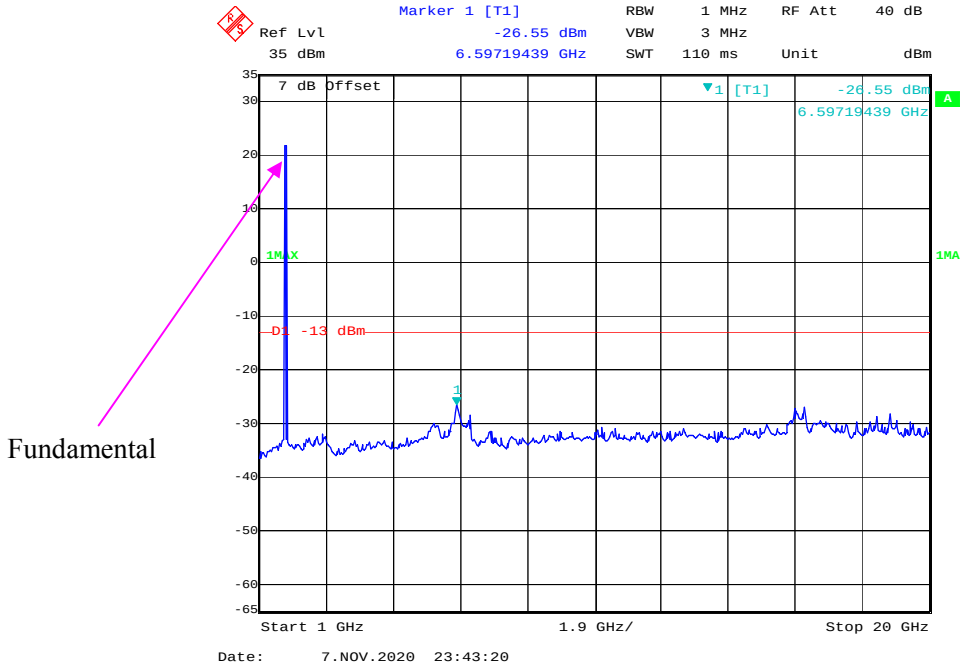

## 1 GHz – 20 GHz (5 MHz, QPSK, Middle Channel)



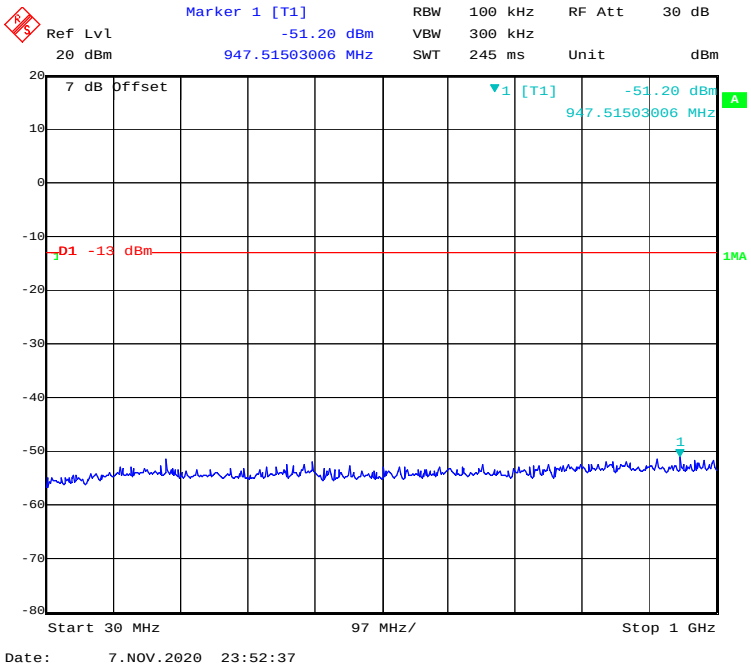
## 30 MHz – 1 GHz (5 MHz, 16-QAM, Middle Channel)



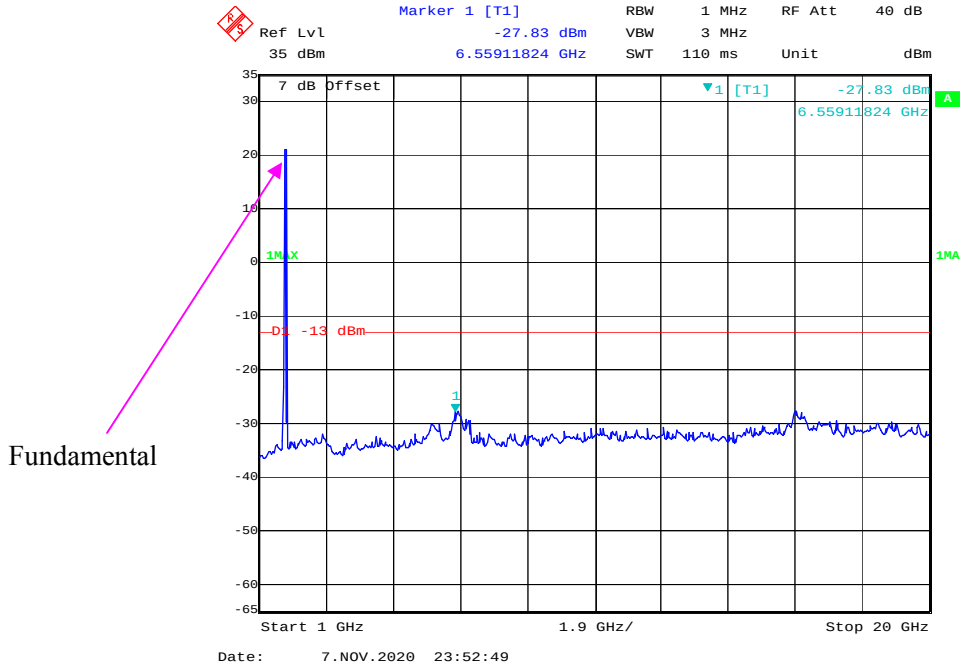

## 1 GHz – 20 GHz (5 MHz, 16-QAM, Middle Channel)



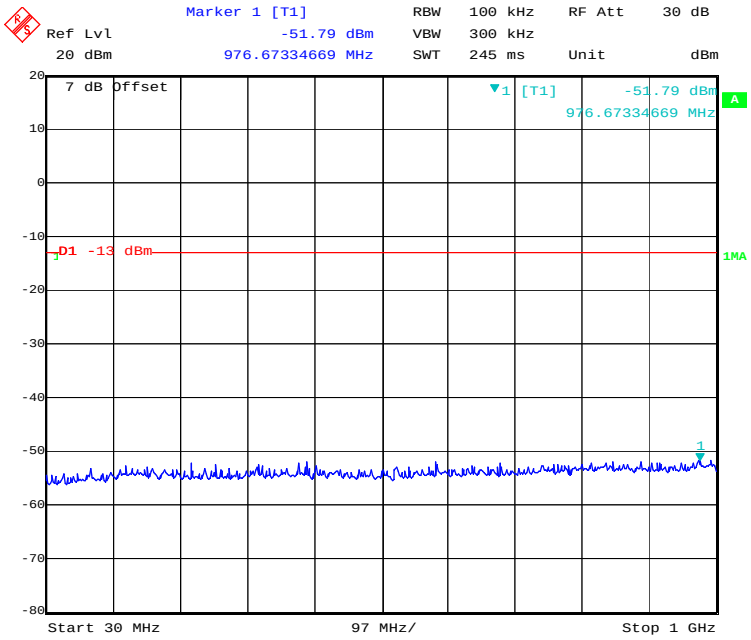
## 30 MHz – 1 GHz (10 MHz, QPSK, Middle Channel)




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



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

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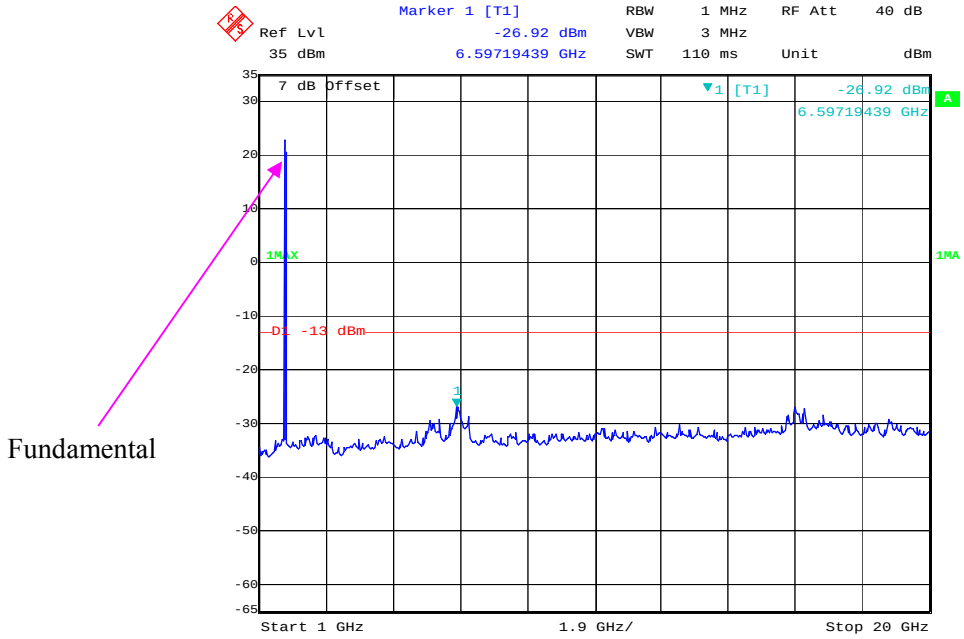
## 1 GHz – 20 GHz (10 MHz, 16-QAM, Middle Channel)

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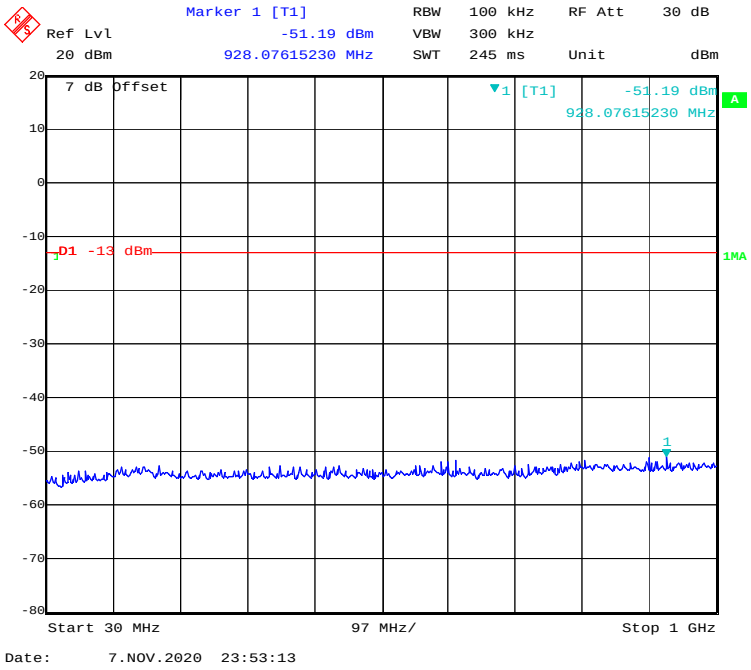
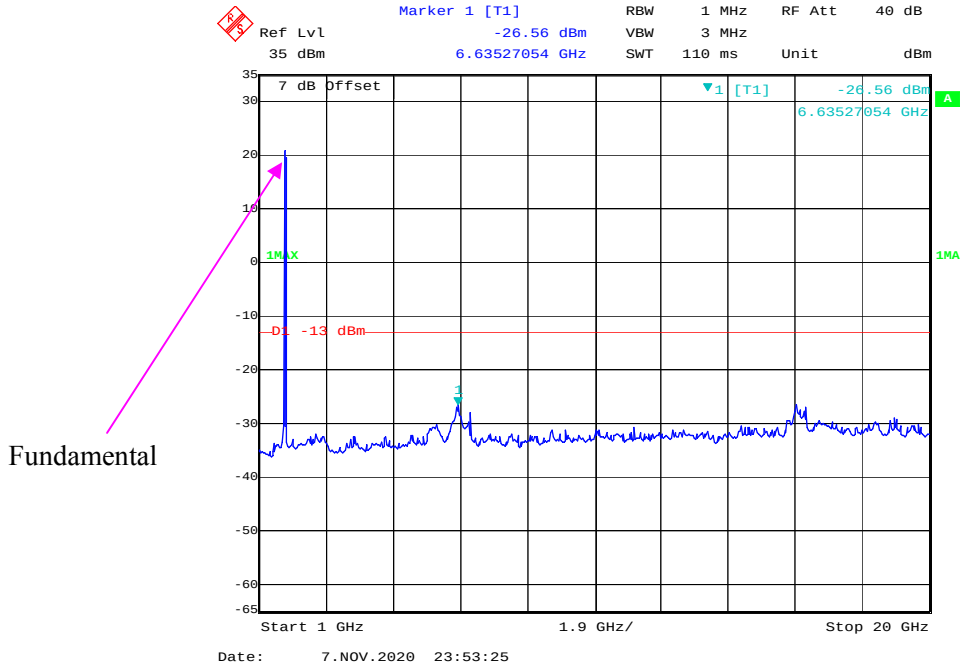
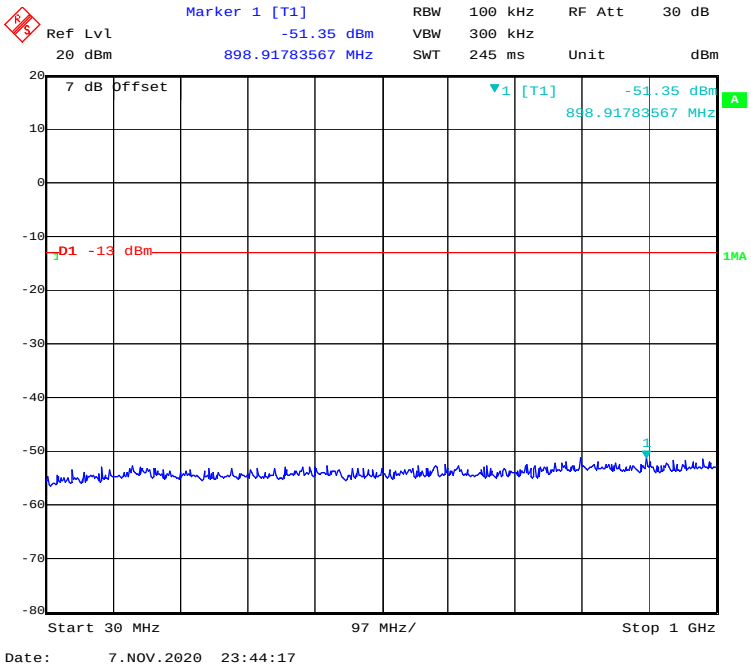
## 30 MHz – 1 GHz (15 MHz, QPSK, Middle Channel)



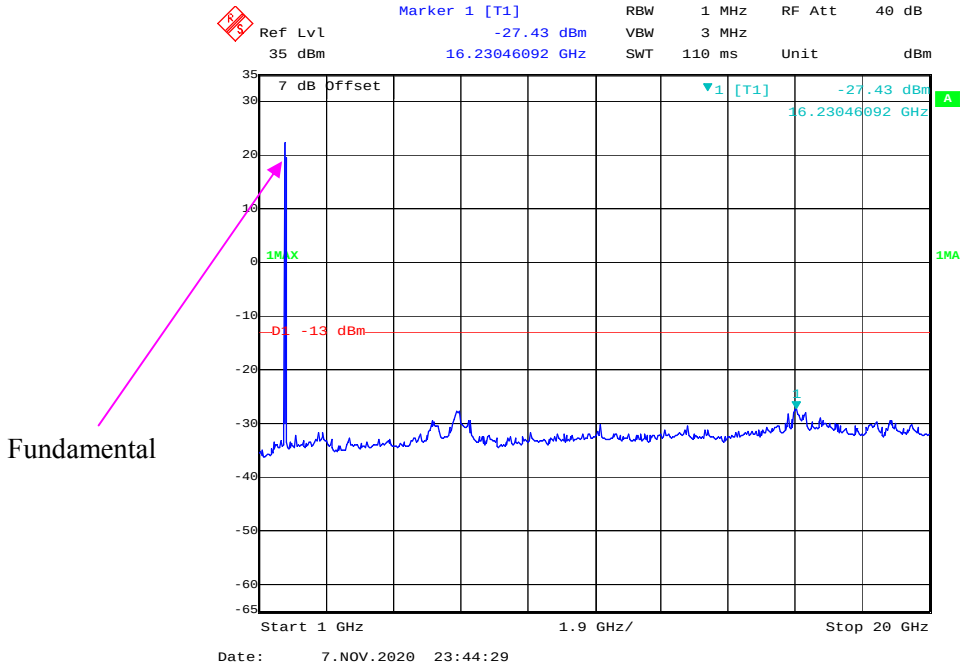

## 1 GHz – 20 GHz (15 MHz, QPSK, Middle Channel)



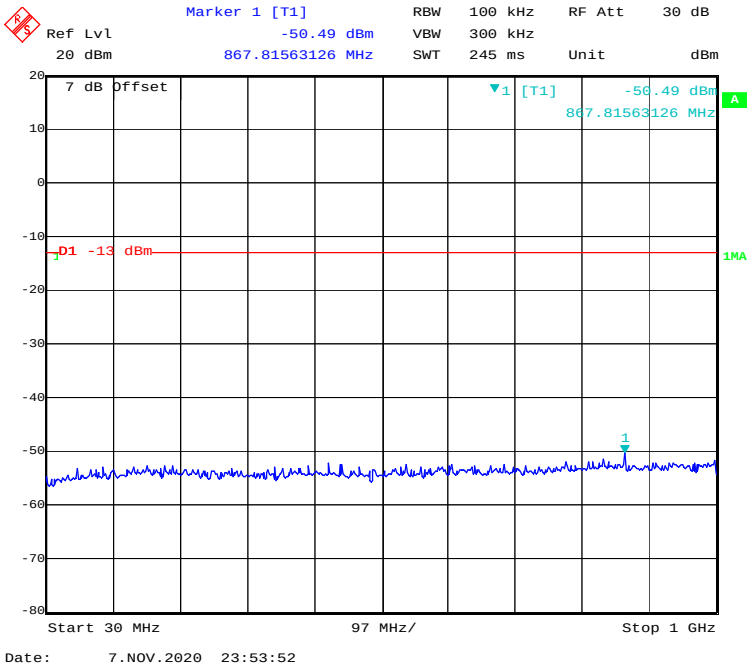
## 30 MHz – 1 GHz (15 MHz, 16-QAM, Middle Channel)



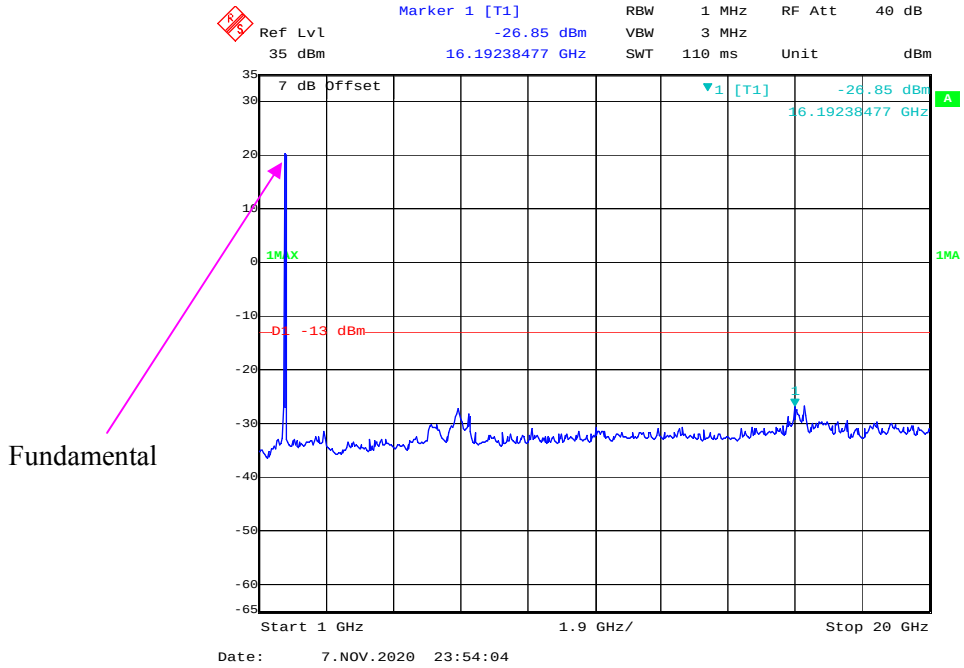

## 1 GHz – 20 GHz (15 MHz, 16-QAM, Middle Channel)



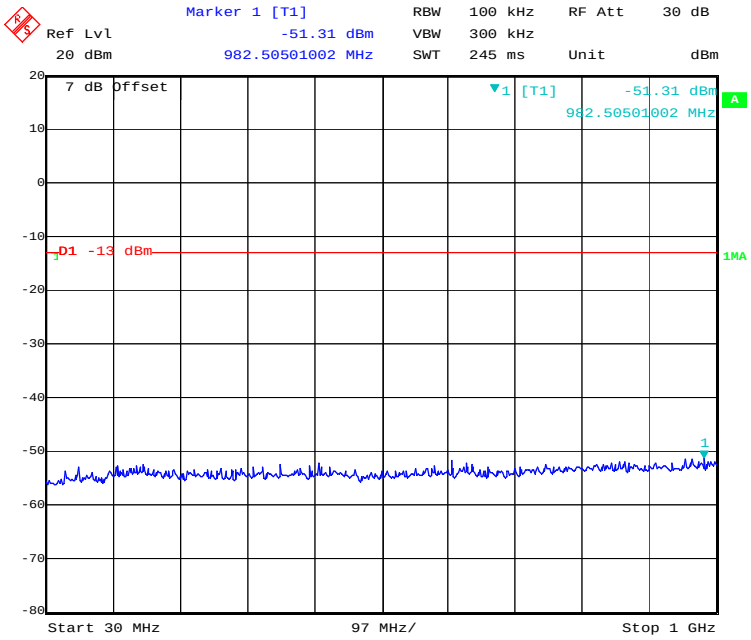
## 30 MHz – 1 GHz (20 MHz, QPSK, Middle Channel)




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



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

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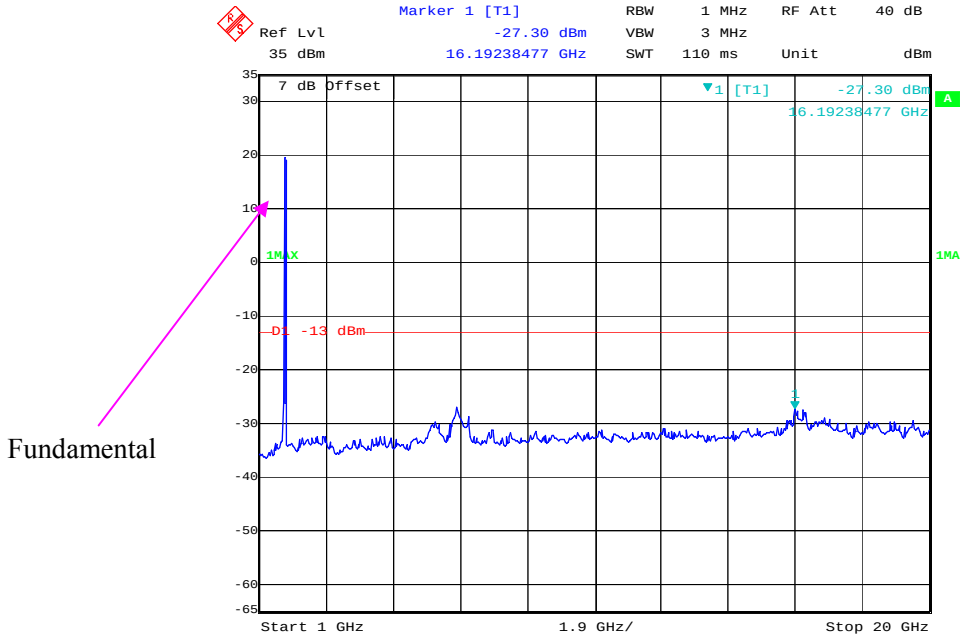
## 1 GHz – 20 GHz (20 MHz, 16-QAM, Middle Channel)

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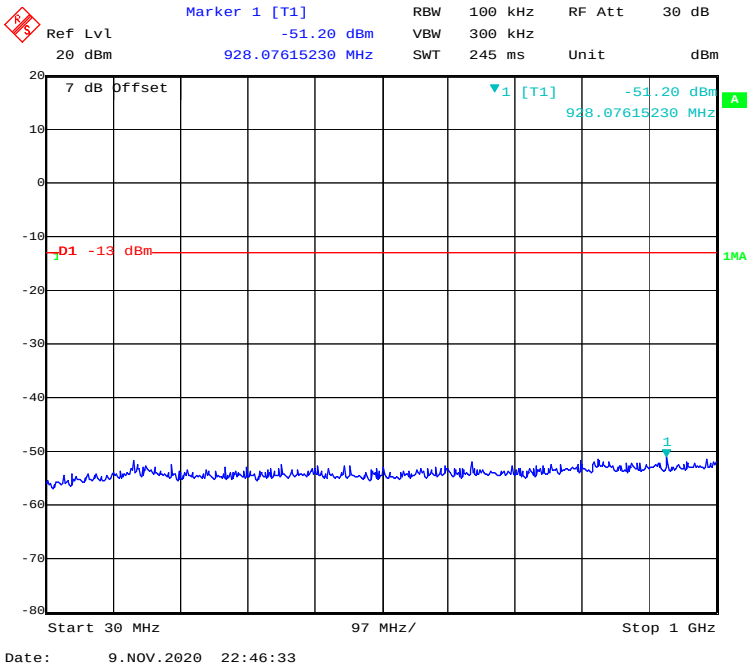
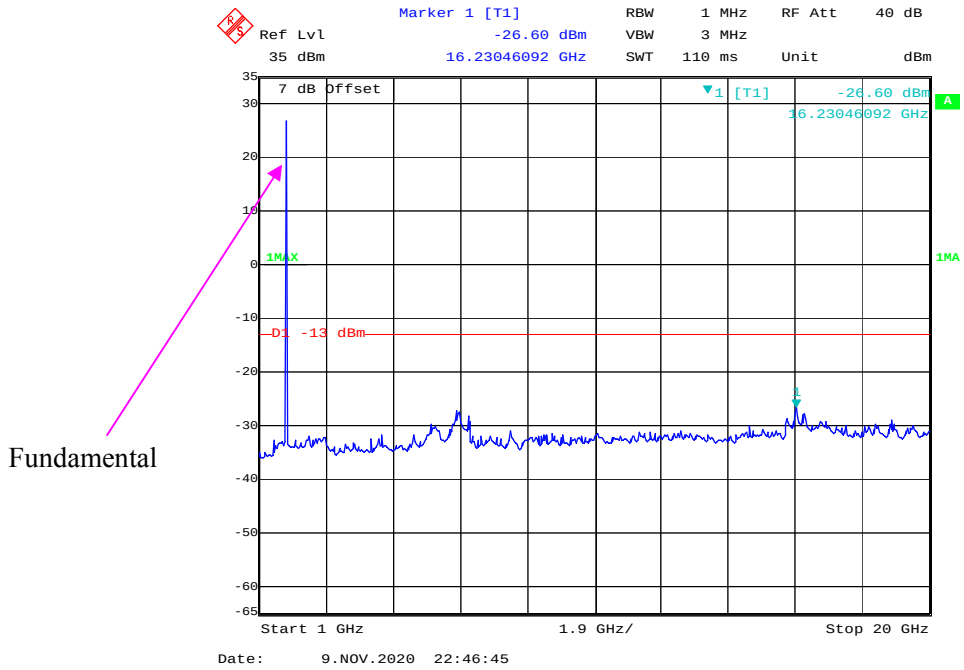
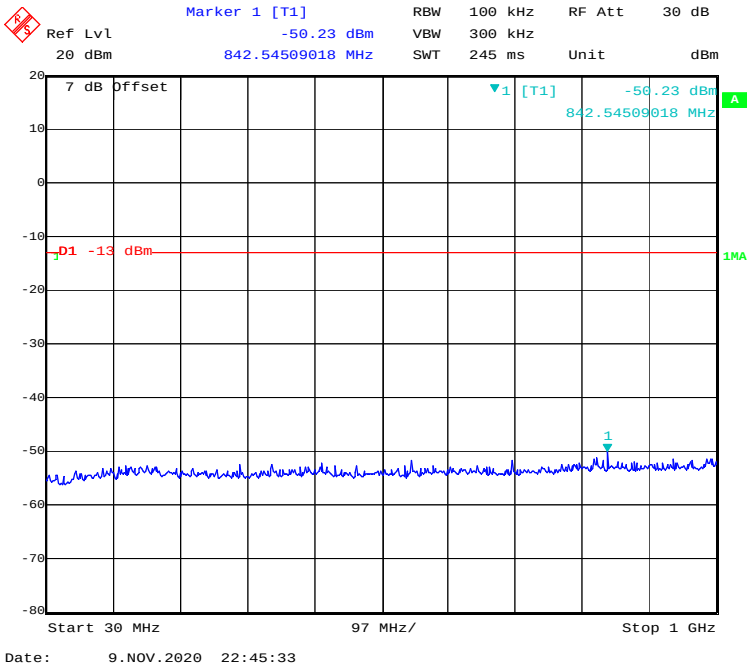
## 30 MHz – 1 GHz (1.4 MHz, QPSK, High Channel)



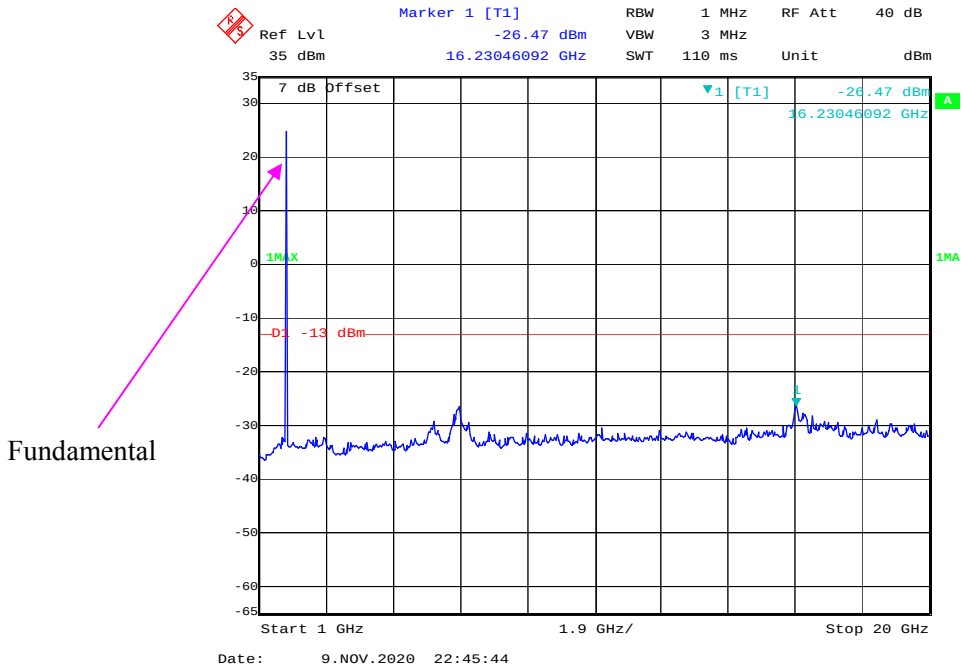

## 1 GHz – 20 GHz (1.4 MHz, QPSK, High Channel)



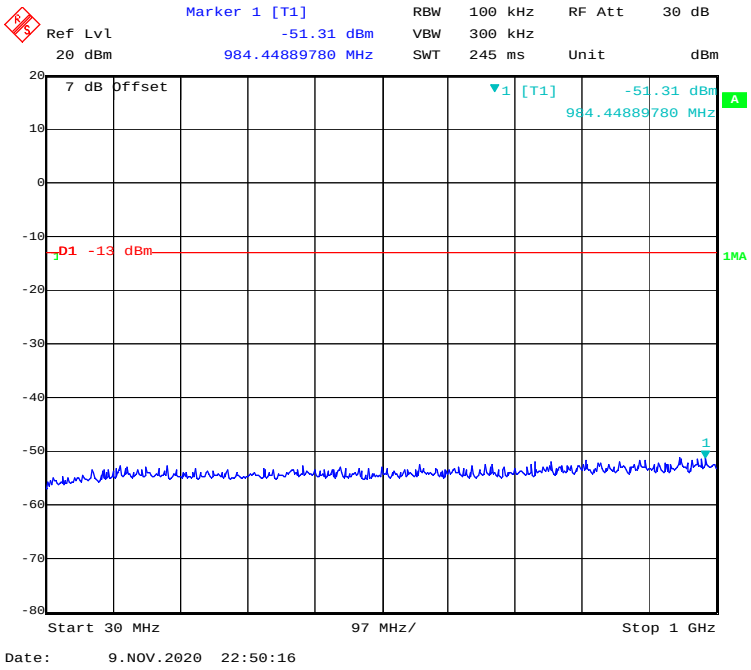
## 30 MHz – 1 GHz (1.4 MHz, 16-QAM, High Channel)



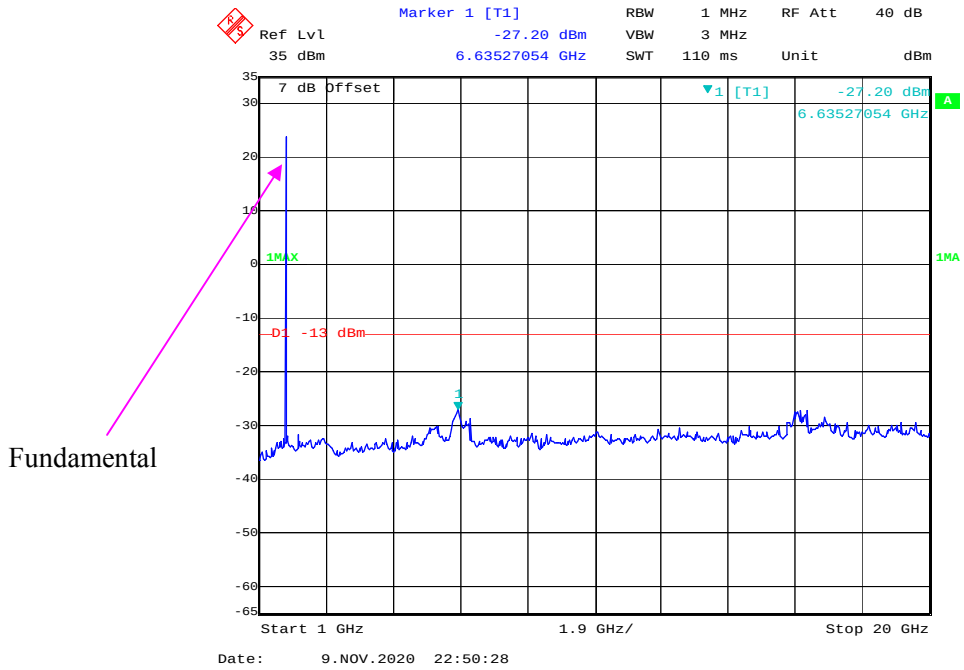

## 1 GHz – 20 GHz (1.4 MHz, 16-QAM, High Channel)



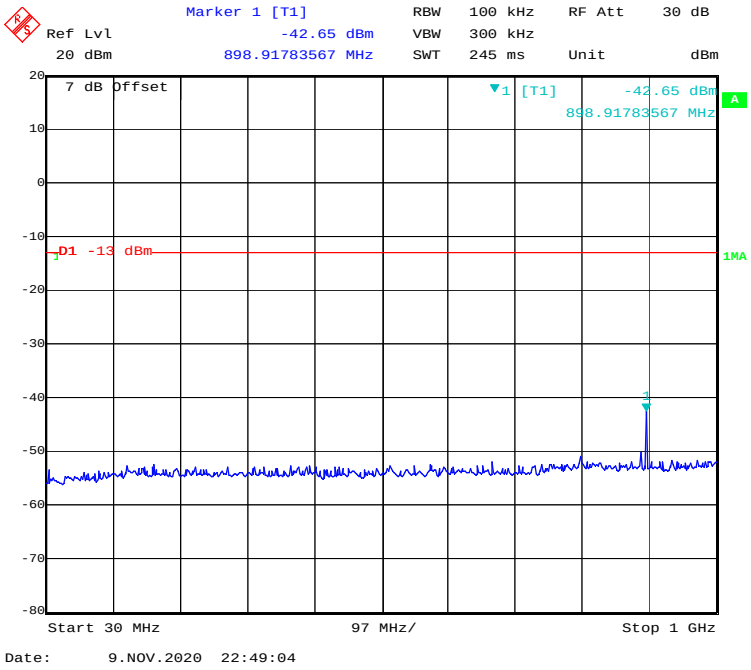
## 30 MHz – 1 GHz (3 MHz, QPSK, High Channel)



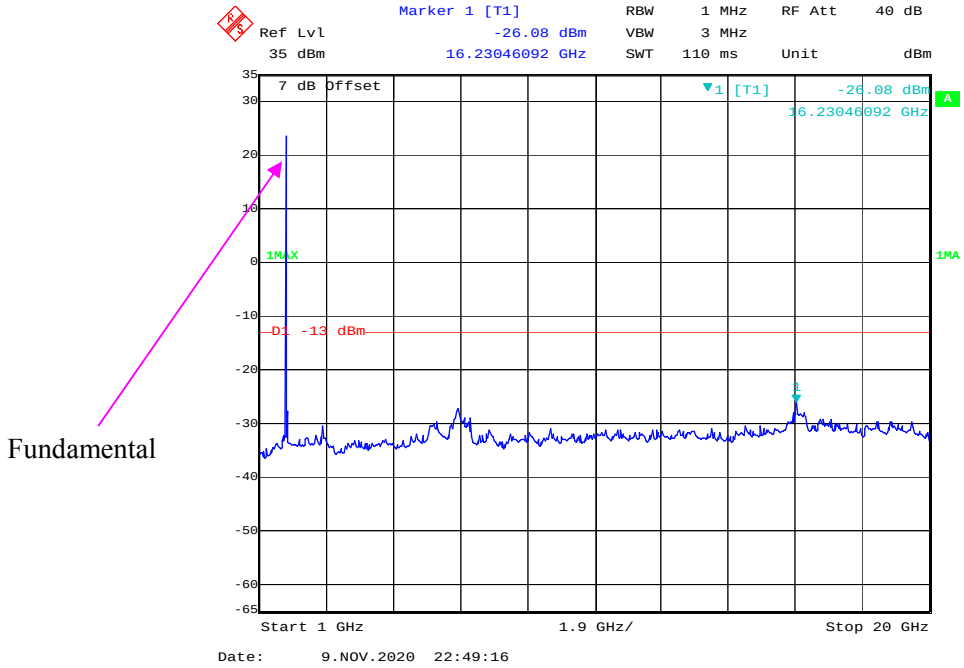

## 1 GHz – 20 GHz (3 MHz, QPSK, High Channel)



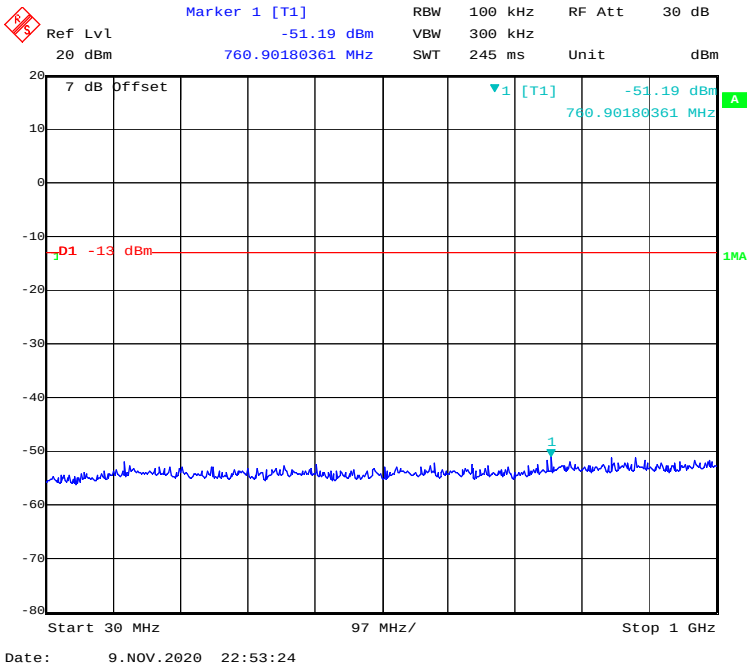
## 30 MHz – 1 GHz (3 MHz, 16-QAM, High Channel)



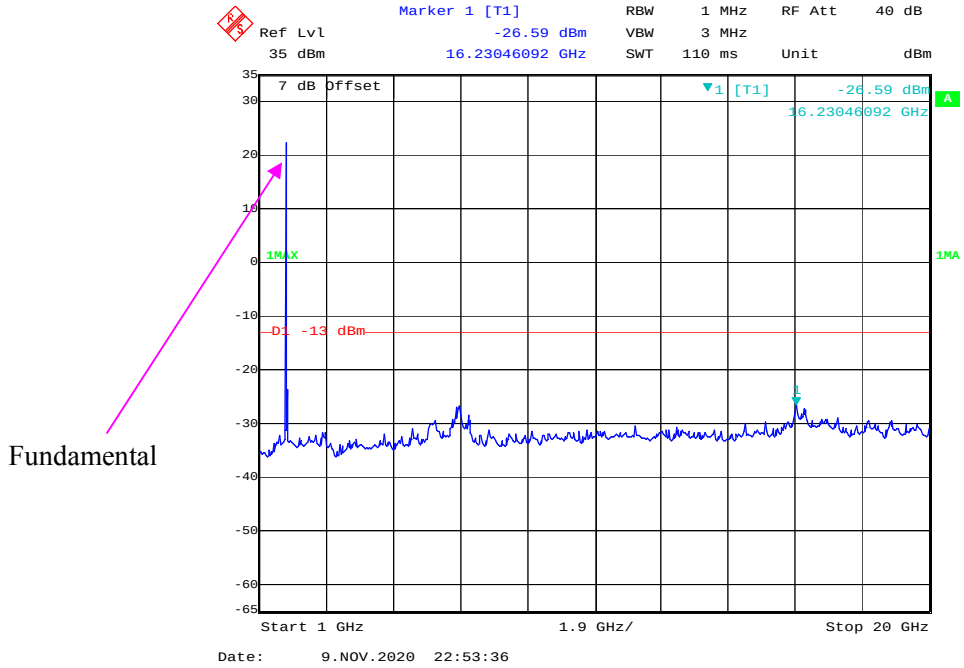

## 1 GHz – 20 GHz (3 MHz, 16-QAM, High Channel)



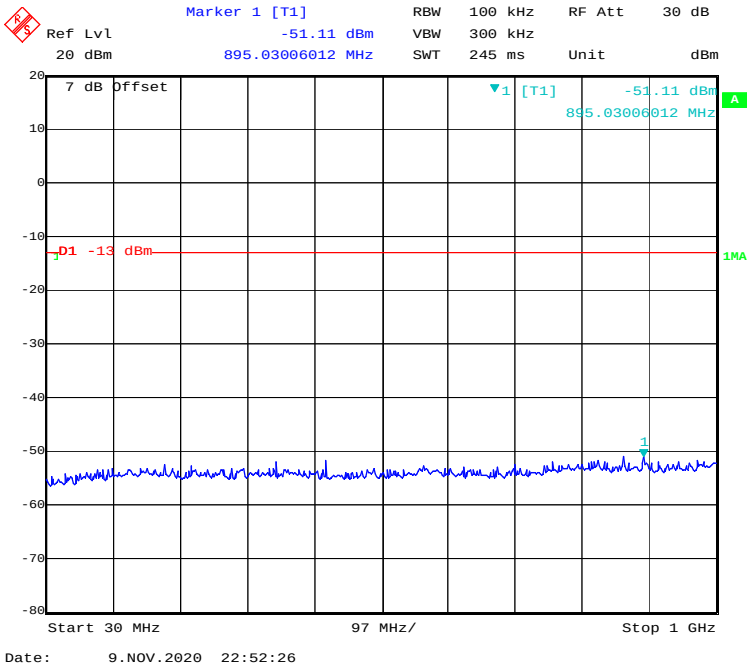
## 30 MHz – 1 GHz (5 MHz, QPSK, High Channel)



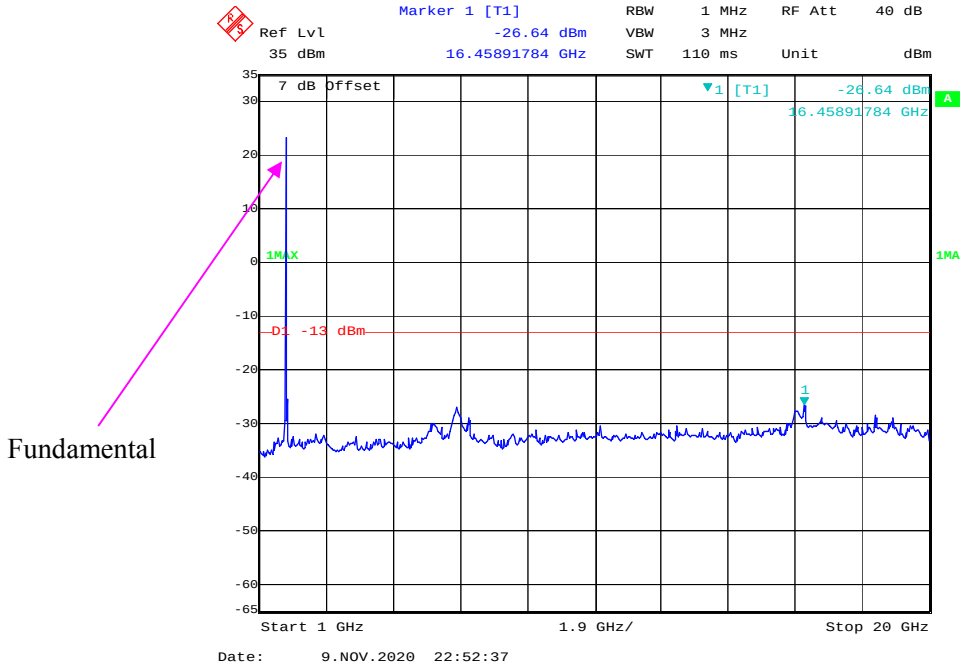

## 1 GHz – 20 GHz (5 MHz, QPSK, High Channel)



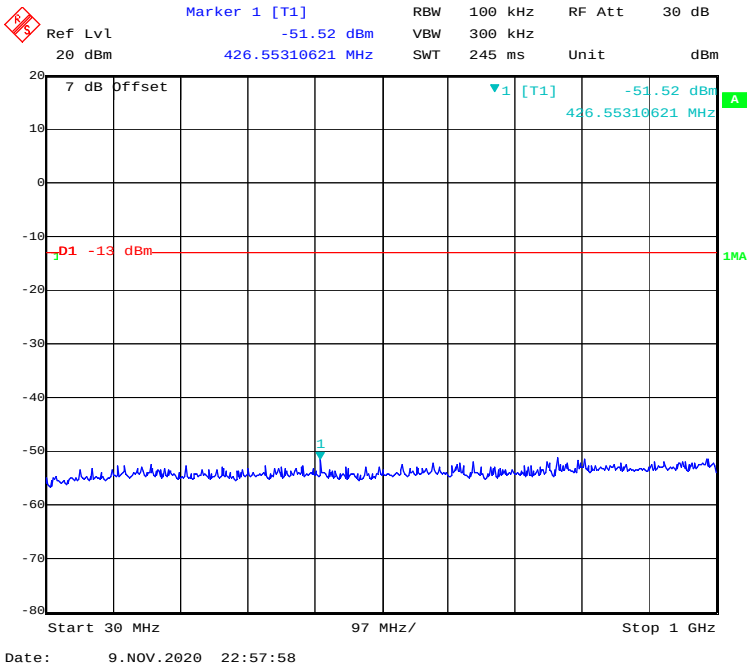
## 30 MHz – 1 GHz (5 MHz, 16-QAM, High Channel)



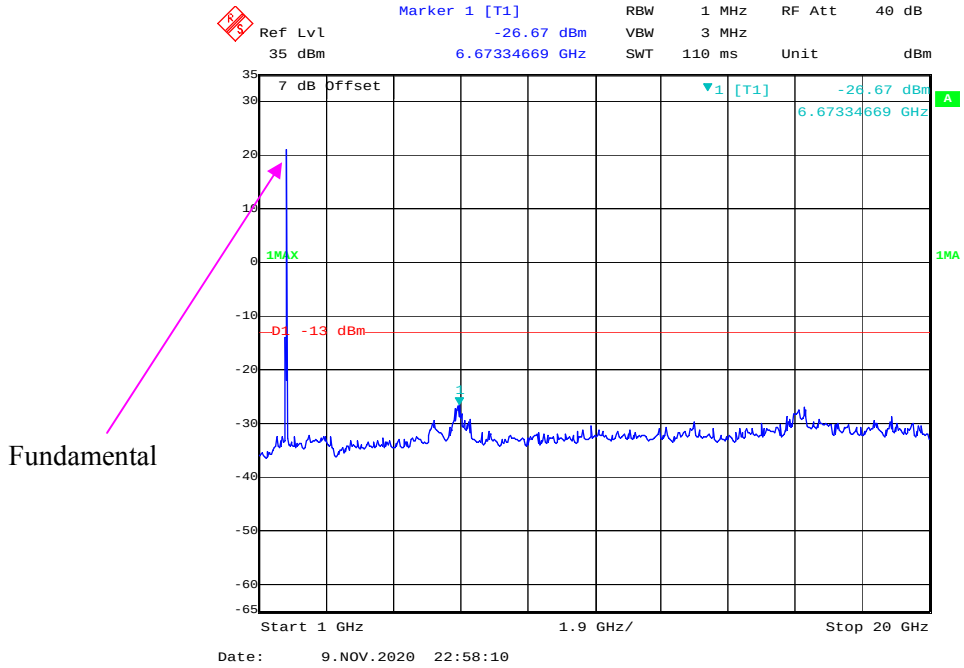

## 1 GHz – 20 GHz (5 MHz, 16-QAM, High Channel)



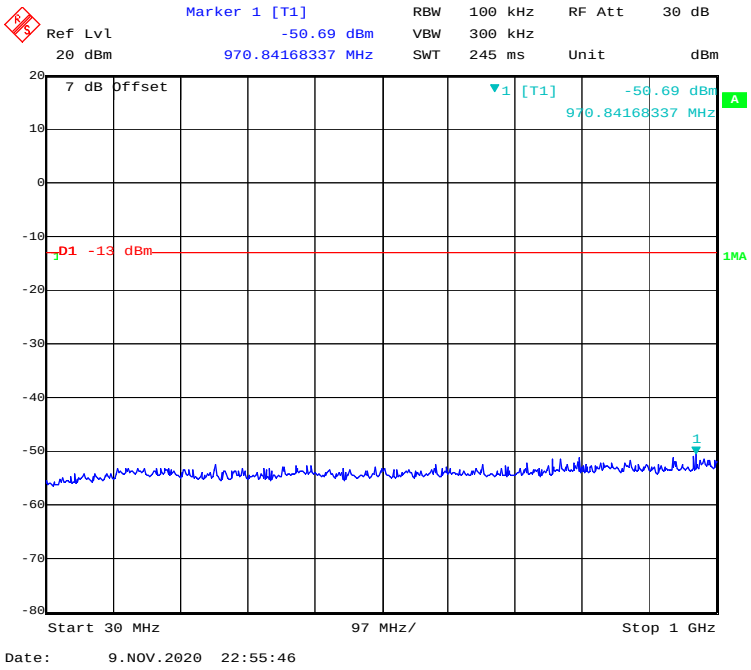
## 30 MHz – 1 GHz (10 MHz, QPSK, High Channel)



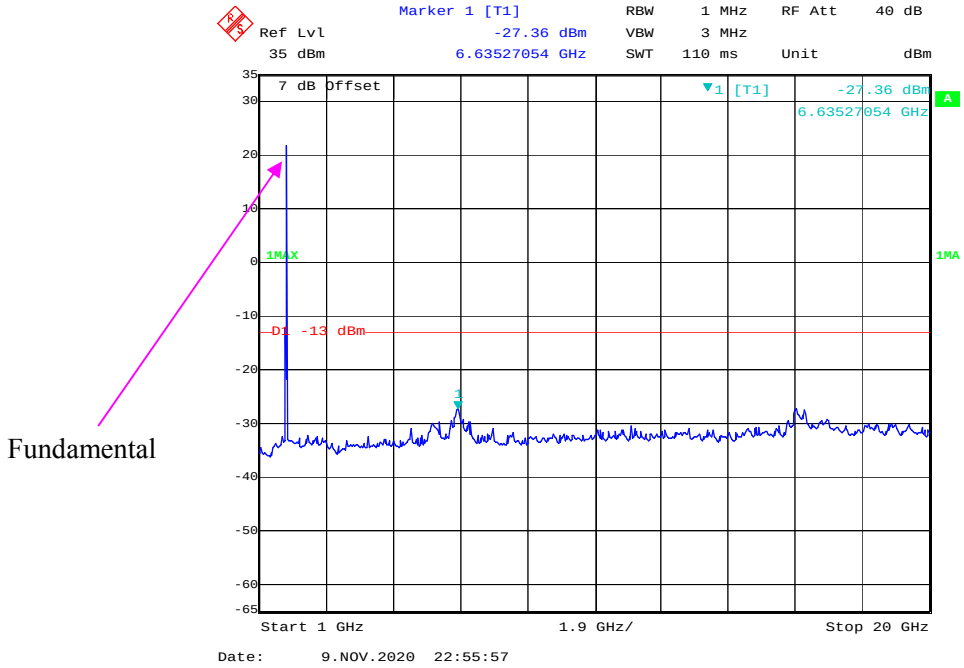

## 1 GHz – 20 GHz (10 MHz, QPSK, High Channel)



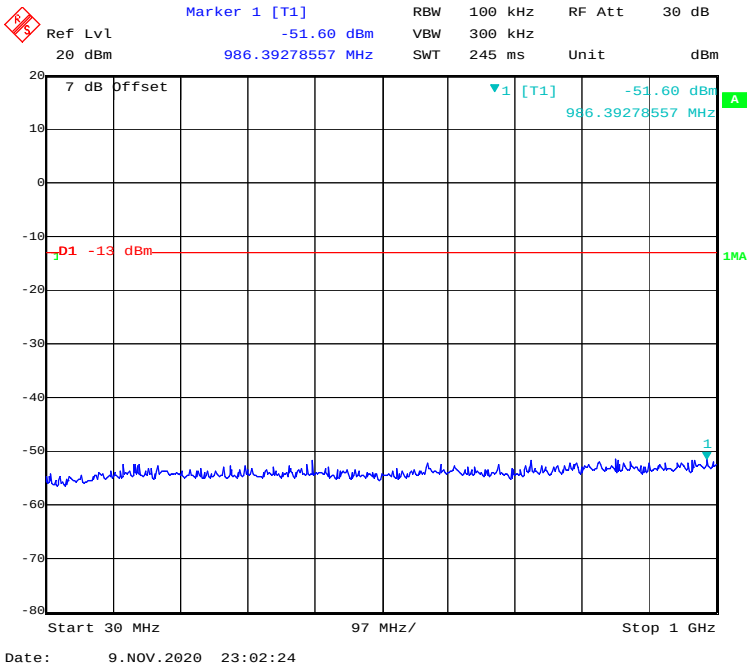
## 30 MHz – 1 GHz (10 MHz, 16-QAM, High Channel)



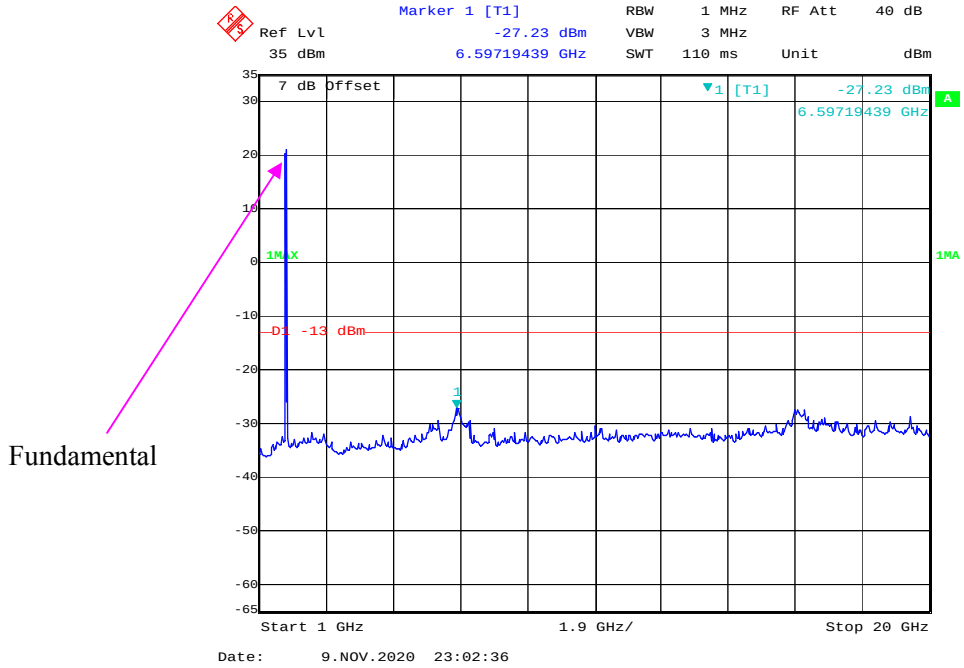

## 1 GHz – 20 GHz (10 MHz, 16-QAM, High Channel)



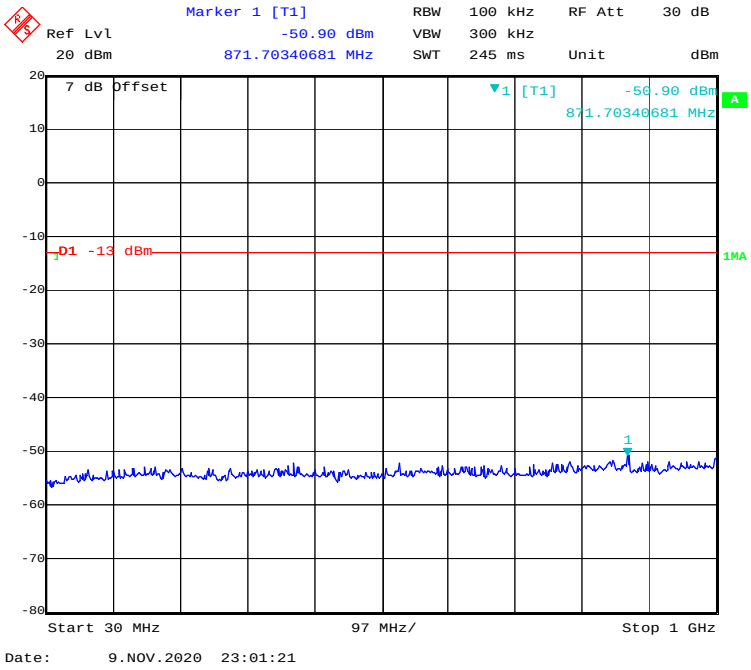
## 30 MHz – 1 GHz (15 MHz, QPSK, High Channel)



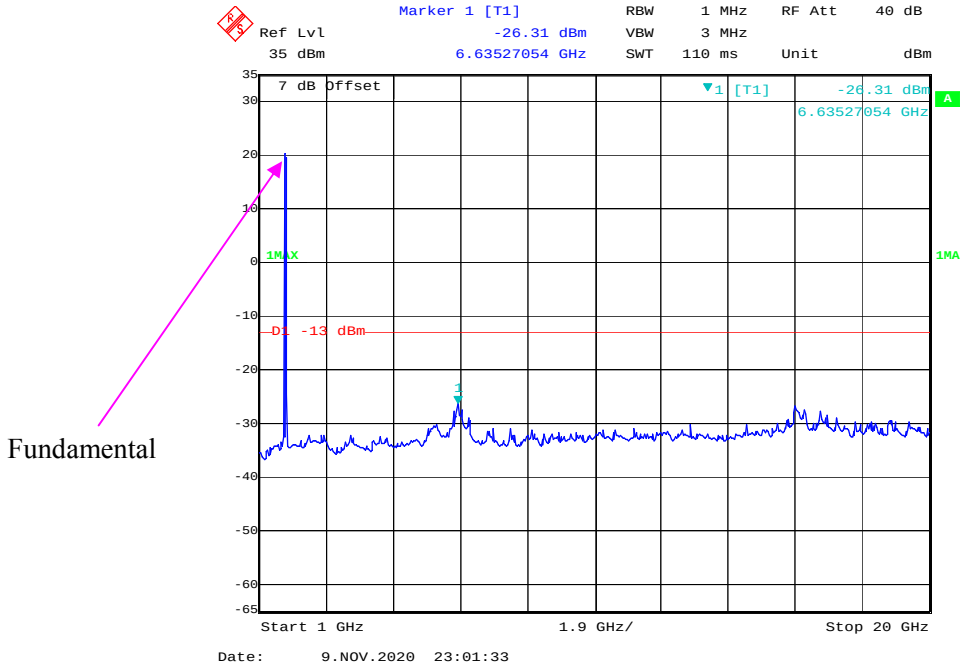

## 1 GHz – 20 GHz (15 MHz, QPSK, High Channel)



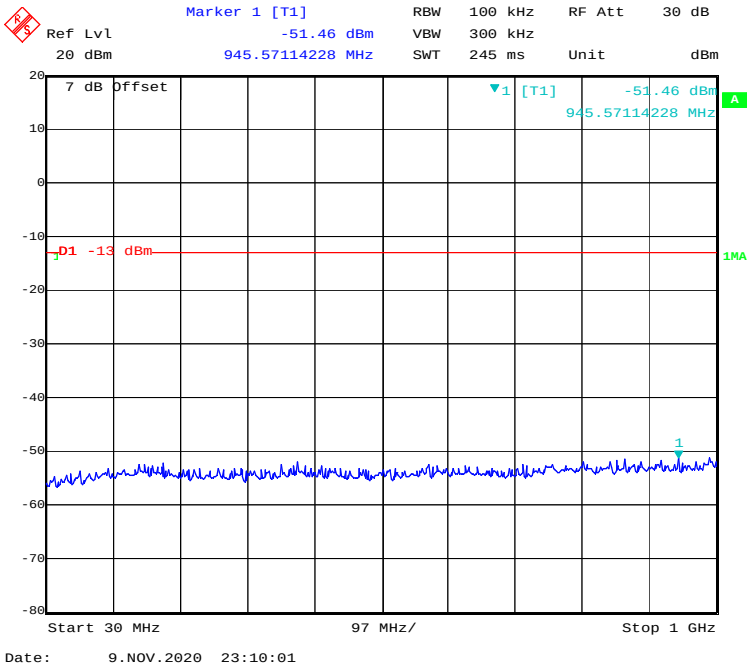
## 30 MHz – 1 GHz (15 MHz, 16-QAM, High Channel)



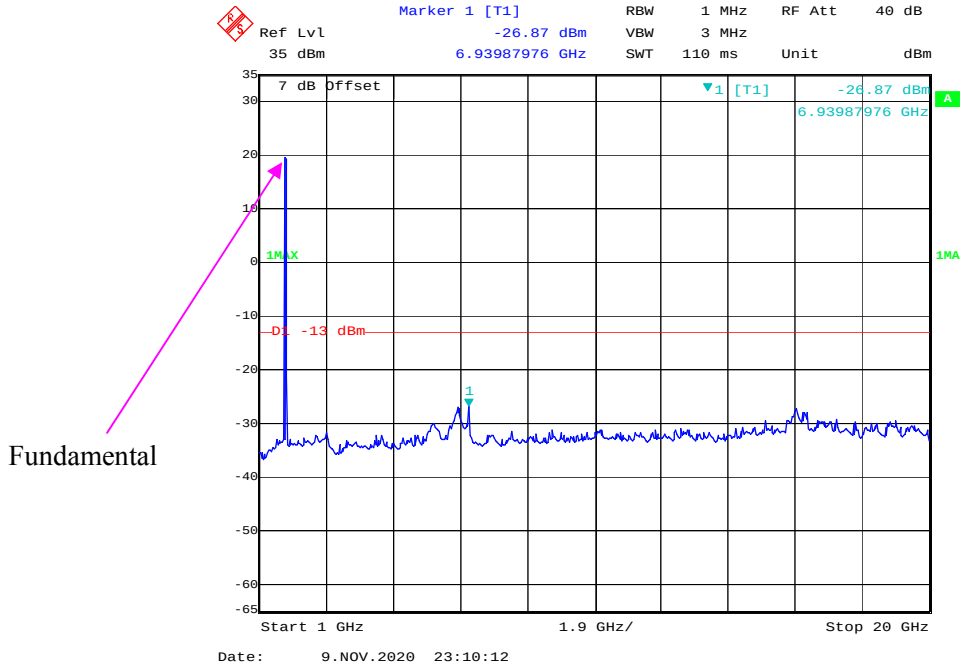

## 1 GHz – 20 GHz (15 MHz, 16-QAM, High Channel)



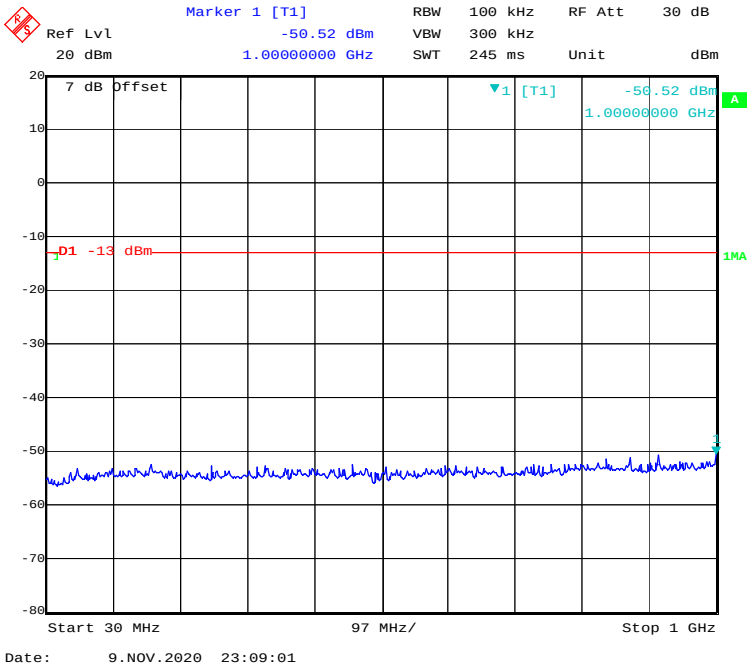
## 30 MHz – 1 GHz (20 MHz, QPSK, High Channel)



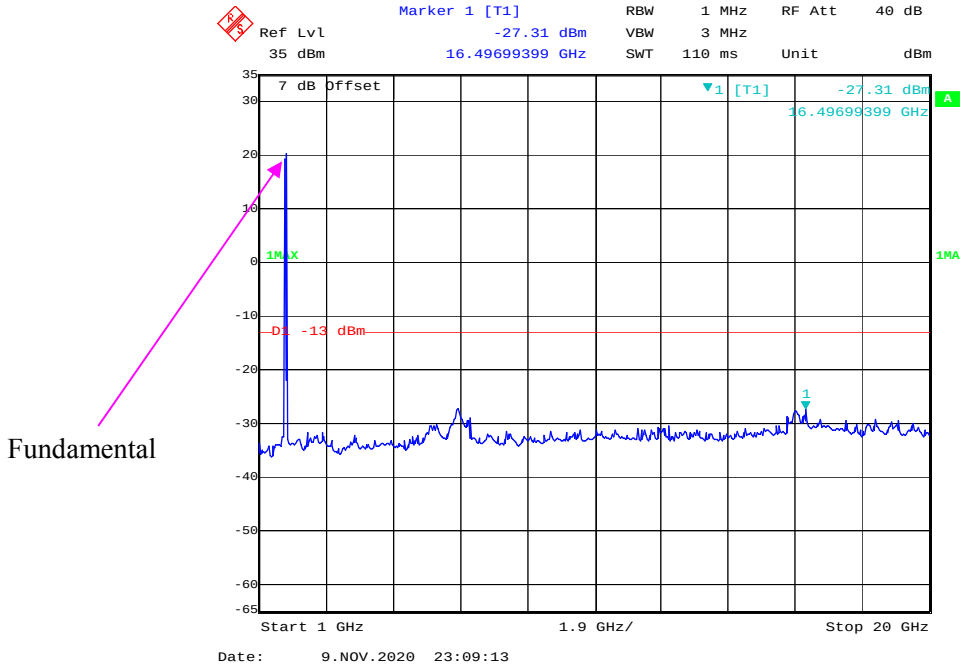

## 1 GHz – 20 GHz (20 MHz, QPSK, High Channel)



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




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



# FCC § 2.1053; § 22.917 (a); § 24.238 (a)& §27.53(h) (m); § 90.691 - SPURIOUS RADIATED EMISSIONS

## Applicable Standards

FCC § 2.1053, §22.917(a) and § 24.238(a), §90.691 and § 27.53(h) (m)

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.

27.53(h) (m), for mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Rule Part 90.691 specifies that “The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

## Test Procedure

The 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 (TX pwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 $Log_{10}$ (power out in Watts)

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 22.5~23.6 ℃ |
| **Relative Humidity:** | 50~52 % |
| **ATM Pressure:** | 100.7~101.5 kPa |

*The testing was performed by CK Huang from 2020-11-24 to 2021-01-05.*

*Test mode: Transmitting*

**30 MHz ~ 10 GHz:**

**GSM 850 Band**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| GPRS Mode, Low channel | | | | | | | | | | |
| 199.50 | 37.46 | 195 | 100 | H | -68.16 | 0.42 | -3.97 | -72.55 | -13.00 | 59.55 |
| 199.50 | 38.69 | 56 | 100 | V | -66.93 | 0.42 | -3.97 | -71.32 | -13.00 | 58.32 |
| 1648.40 | 52.69 | 78 | 150 | H | -60.66 | 0.84 | 8.44 | -53.06 | -13.00 | 40.06 |
| 1648.40 | 53.26 | 96 | 150 | V | -60.09 | 0.84 | 8.44 | -52.49 | -13.00 | 39.49 |
| GPRS Mode, Middle channel | | | | | | | | | | |
| 199.50 | 37.96 | 195 | 100 | H | -67.66 | 0.42 | -3.97 | -72.05 | -13.00 | 59.05 |
| 199.50 | 38.69 | 56 | 100 | V | -66.93 | 0.42 | -3.97 | -71.32 | -13.00 | 58.32 |
| 1673.20 | 52.90 | 78 | 150 | H | -60.45 | 0.84 | 8.48 | -52.81 | -13.00 | 39.81 |
| 1673.20 | 52.62 | 96 | 150 | V | -60.73 | 0.84 | 8.48 | -53.09 | -13.00 | 40.09 |
| GPRS Mode, High channel | | | | | | | | | | |
| 199.50 | 37.69 | 195 | 100 | H | -67.93 | 0.42 | -3.97 | -72.32 | -13.00 | 59.32 |
| 199.50 | 39.01 | 56 | 100 | V | -66.61 | 0.42 | -3.97 | -71.00 | -13.00 | 58.00 |
| 1697.60 | 51.27 | 78 | 150 | H | -61.74 | 0.84 | 8.52 | -54.06 | -13.00 | 41.06 |
| 1697.60 | 52.39 | 96 | 150 | V | -60.62 | 0.84 | 8.52 | -52.94 | -13.00 | 39.94 |

**WCDMA Band V**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| WCDMA Mode, Low channel | | | | | | | | | | |
| 200.35 | 42.67 | 219 | 143 | H | -62.93 | 0.42 | -3.94 | -67.29 | -13.00 | 54.29 |
| 200.35 | 43.02 | 91 | 127 | V | -62.58 | 0.42 | -3.94 | -66.94 | -13.00 | 53.94 |
| 1652.80 | 56.54 | 145 | 104 | H | -56.78 | 0.84 | 8.44 | -61.25 | -13.00 | 48.25 |
| 1652.80 | 57.16 | 264 | 201 | V | -56.16 | 0.84 | 8.44 | -62.85 | -13.00 | 49.85 |
| WCDMA Mode, Middle channel | | | | | | | | | | |
| 200.35 | 42.69 | 219 | 143 | H | -62.91 | 0.42 | -3.94 | -67.27 | -13.00 | 54.27 |
| 200.35 | 43.49 | 91 | 127 | V | -62.11 | 0.42 | -3.94 | -66.47 | -13.00 | 53.47 |
| 1673.20 | 56.54 | 145 | 104 | H | -41.07 | 0.83 | 8.20 | -61.84 | -13.00 | 48.84 |
| 1673.20 | 57.16 | 264 | 201 | V | -40.99 | 0.83 | 8.20 | -60.19 | -13.00 | 47.19 |
| WCDMA Mode, High channel | | | | | | | | | | |
| 200.35 | 42.55 | 219 | 143 | H | -63.05 | 0.42 | -3.94 | -67.41 | -13.00 | 54.41 |
| 200.35 | 43.68 | 91 | 127 | V | -61.92 | 0.42 | -3.94 | -66.28 | -13.00 | 53.28 |
| 1693.20 | 56.54 | 145 | 104 | H | -56.49 | 0.84 | 8.51 | -60.55 | -13.00 | 47.55 |
| 1693.20 | 57.16 | 264 | 201 | V | -55.87 | 0.84 | 8.51 | -61.76 | -13.00 | 48.76 |

**30 MHz ~ 20 GHz:**

**PCS 1900 Band**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| GPRS Mode, Low channel | | | | | | | | | | |
| 756.04 | 42.49 | 55 | 100 | H | -58.36 | 0.62 | -1.47 | -60.45 | -13.00 | 60.45 |
| 756.04 | 43.96 | 302 | 100 | V | -56.89 | 0.62 | -1.47 | -58.98 | -13.00 | 58.98 |
| 3700.40 | 39.98 | 225 | 150 | H | -66.99 | 0.95 | 9.78 | -58.16 | -13.00 | 58.16 |
| 3700.40 | 40.66 | 110 | 150 | V | -66.31 | 0.95 | 9.78 | -57.48 | -13.00 | 57.48 |
| GPRS Mode, Middle channel | | | | | | | | | | |
| 756.04 | 41.69 | 55 | 100 | H | -59.16 | 0.62 | -1.47 | -61.25 | -13.00 | 61.25 |
| 756.04 | 42.55 | 302 | 100 | V | -58.30 | 0.62 | -1.47 | -60.39 | -13.00 | 60.39 |
| 3760.00 | 40.67 | 225 | 150 | H | -66.3 | 0.95 | 9.74 | -57.51 | -13.00 | 57.51 |
| 3760.00 | 40.12 | 110 | 150 | V | -66.85 | 0.95 | 9.74 | -58.06 | -13.00 | 58.06 |
| GPRS Mode, High channel | | | | | | | | | | |
| 756.04 | 44.32 | 55 | 100 | H | -56.53 | 0.62 | -1.47 | -58.62 | -13.00 | 58.62 |
| 756.04 | 42.19 | 302 | 100 | V | -58.66 | 0.62 | -1.47 | -60.75 | -13.00 | 60.75 |
| 3819.60 | 40.35 | 225 | 150 | H | -66.24 | 0.96 | 9.71 | -57.49 | -13.00 | 57.49 |
| 3819.60 | 39.15 | 110 | 150 | V | -67.44 | 0.96 | 9.71 | -58.69 | -13.00 | 58.69 |

**WCDMA Band II**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| WCDMA Mode, Low channel | | | | | | | | | | |
| 758.28 | 42.19 | 118 | 156 | H | -58.52 | 0.62 | -1.64 | -60.78 | -13.00 | 47.78 |
| 758.28 | 42.67 | 356 | 141 | V | -58.04 | 0.62 | -1.64 | -60.30 | -13.00 | 47.30 |
| 3704.80 | 47.61 | 245 | 207 | H | -59.35 | 0.95 | 9.78 | -56.96 | -13.00 | 43.96 |
| 3704.80 | 48.35 | 216 | 162 | V | -58.61 | 0.95 | 9.78 | -57.09 | -13.00 | 44.09 |
| WCDMA Mode, Middle channel | | | | | | | | | | |
| 758.28 | 41.68 | 118 | 156 | H | -59.03 | 0.62 | -1.64 | -61.29 | -13.00 | 48.29 |
| 758.28 | 42.97 | 356 | 141 | V | -57.74 | 0.62 | -1.64 | -60.00 | -13.00 | 47.00 |
| 3760.00 | 47.61 | 245 | 207 | H | -50.06 | 0.93 | 9.90 | -56.14 | -13.00 | 43.14 |
| 3760.00 | 48.35 | 216 | 162 | V | -49.79 | 0.93 | 9.90 | -57.69 | -13.00 | 44.69 |
| WCDMA Mode, High channel | | | | | | | | | | |
| 758.28 | 43.15 | 118 | 156 | H | -57.56 | 0.62 | -1.64 | -59.82 | -13.00 | 46.82 |
| 758.28 | 42.96 | 356 | 141 | V | -57.75 | 0.62 | -1.64 | -60.01 | -13.00 | 47.01 |
| 3815.20 | 47.61 | 245 | 207 | H | -58.99 | 0.96 | 9.71 | -55.09 | -13.00 | 42.09 |
| 3815.20 | 48.35 | 216 | 162 | V | -58.25 | 0.96 | 9.71 | 57.69 | -13.00 | -70.69 |

**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 worst case as below)*

**30 MHz ~ 20 GHz:**

**LTE Band 2:**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth Low Channel | | | | | | | | | | |
| 214.75 | 41.68 | 226 | 100 | H | -62.71 | 0.43 | -3.45 | -58.83 | -13.00 | 45.83 |
| 214.75 | 43.09 | 307 | 200 | V | -61.30 | 0.43 | -3.45 | -57.42 | -13.00 | 44.42 |
| 3701.40 | 41.64 | 45 | 150 | H | -65.32 | 0.95 | 9.78 | -56.49 | -13.00 | 43.49 |
| 3701.40 | 40.17 | 269 | 100 | V | -66.79 | 0.95 | 9.78 | -57.96 | -13.00 | 44.96 |
| 16-QAM 1.4MHz Bandwidth Low Channel | | | | | | | | | | |
| 214.75 | 41.55 | 203 | 150 | H | -62.84 | 0.43 | -3.45 | -58.96 | -13.00 | 45.96 |
| 214.75 | 43.08 | 173 | 150 | V | -61.31 | 0.43 | -3.45 | -57.43 | -13.00 | 44.43 |
| 3701.40 | 40.15 | 268 | 200 | H | -66.81 | 0.95 | 9.78 | -57.98 | -13.00 | 44.98 |
| 3701.40 | 42.04 | 321 | 200 | V | -64.92 | 0.95 | 9.78 | -56.09 | -13.00 | 43.09 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth Middle Channel | | | | | | | | | | |
| 214.75 | 41.04 | 210 | 100 | H | -63.35 | 0.43 | -3.45 | -59.47 | -13.00 | 46.47 |
| 214.75 | 42.69 | 151 | 100 | V | -61.70 | 0.43 | -3.45 | -57.82 | -13.00 | 44.82 |
| 3760.00 | 40.51 | 348 | 150 | H | -66.27 | 0.95 | 9.74 | -57.48 | -13.00 | 44.48 |
| 3760.00 | 39.96 | 89 | 100 | V | -66.82 | 0.95 | 9.74 | -58.03 | -13.00 | 45.03 |
| 16-QAM 1.4MHz Bandwidth Middle Channel | | | | | | | | | | |
| 214.75 | 42.09 | 357 | 150 | H | -62.30 | 0.43 | -3.45 | -58.42 | -13.00 | 45.42 |
| 214.75 | 43.69 | 29 | 150 | V | -60.70 | 0.43 | -3.45 | -56.82 | -13.00 | 43.82 |
| 3760.00 | 41.30 | 176 | 200 | H | -65.48 | 0.95 | 9.74 | -56.69 | -13.00 | 43.69 |
| 3760.00 | 39.33 | 310 | 200 | V | -67.45 | 0.95 | 9.74 | -58.66 | -13.00 | 45.66 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth High Channel | | | | | | | | | | |
| 214.75 | 41.06 | 138 | 100 | H | -63.33 | 0.43 | -3.45 | -59.45 | -13.00 | 46.45 |
| 214.75 | 43.29 | 82 | 200 | V | -61.10 | 0.43 | -3.45 | -57.22 | -13.00 | 44.22 |
| 3818.60 | 41.39 | 295 | 150 | H | -65.21 | 0.96 | 9.71 | -56.46 | -13.00 | 43.46 |
| 3818.60 | 40.80 | 132 | 100 | V | -65.80 | 0.96 | 9.71 | -57.05 | -13.00 | 44.05 |
| 16-QAM 1.4MHz Bandwidth High Channel | | | | | | | | | | |
| 214.75 | 40.46 | 251 | 150 | H | -63.93 | 0.43 | -3.45 | -60.05 | -13.00 | 47.05 |
| 214.75 | 43.69 | 154 | 150 | V | -60.70 | 0.43 | -3.45 | -56.82 | -13.00 | 43.82 |
| 3818.60 | 40.89 | 354 | 200 | H | -65.71 | 0.96 | 9.71 | -56.96 | -13.00 | 43.96 |
| 3818.60 | 40.73 | 253 | 200 | V | -65.87 | 0.96 | 9.71 | -57.12 | -13.00 | 44.12 |

**LTE Band 4:**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth Low Channel | | | | | | | | | | |
| 213.81 | 40.33 | 355 | 100 | H | -64.14 | 0.43 | -3.48 | -60.23 | -13.00 | 47.23 |
| 213.81 | 42.59 | 325 | 200 | V | -61.88 | 0.43 | -3.48 | -57.97 | -13.00 | 44.97 |
| 3421.40 | 42.92 | 113 | 150 | H | -65.02 | 0.93 | 9.82 | -56.13 | -13.00 | 43.13 |
| 3421.40 | 41.09 | 228 | 100 | V | -66.85 | 0.93 | 9.82 | -57.96 | -13.00 | 44.96 |
| 16-QAM 1.4MHz Bandwidth Low Channel | | | | | | | | | | |
| 213.81 | 41.05 | 207 | 150 | H | -63.42 | 0.43 | -3.48 | -59.51 | -13.00 | 46.51 |
| 213.81 | 43.13 | 185 | 150 | V | -61.34 | 0.43 | -3.48 | -57.43 | -13.00 | 44.43 |
| 3421.40 | 42.89 | 276 | 200 | H | -65.05 | 0.93 | 9.82 | -56.16 | -13.00 | 43.16 |
| 3421.40 | 41.61 | 125 | 200 | V | -66.33 | 0.93 | 9.82 | -57.44 | -13.00 | 44.44 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth Middle Channel | | | | | | | | | | |
| 213.81 | 40.22 | 358 | 100 | H | -64.25 | 0.43 | -3.48 | -60.34 | -13.00 | 47.34 |
| 213.81 | 43.15 | 231 | 200 | V | -61.32 | 0.43 | -3.48 | -57.41 | -13.00 | 44.41 |
| 3465.00 | 42.65 | 188 | 150 | H | -65.10 | 0.93 | 9.87 | -56.16 | -13.00 | 43.16 |
| 3465.00 | 41.78 | 318 | 100 | V | -65.97 | 0.93 | 9.87 | -57.03 | -13.00 | 44.03 |
| 16-QAM 1.4MHz Bandwidth Middle Channel | | | | | | | | | | |
| 213.81 | 40.55 | 218 | 150 | H | -63.92 | 0.43 | -3.48 | -60.01 | -13.00 | 47.01 |
| 213.81 | 42.69 | 44 | 150 | V | -61.78 | 0.43 | -3.48 | -57.87 | -13.00 | 44.87 |
| 3465.00 | 42.36 | 216 | 200 | H | -65.39 | 0.93 | 9.87 | -56.45 | -13.00 | 43.45 |
| 3465.00 | 42.79 | 295 | 200 | V | -64.96 | 0.93 | 9.87 | -56.02 | -13.00 | 43.02 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth High Channel | | | | | | | | | | |
| 213.81 | 41.22 | 30 | 100 | H | -63.25 | 0.43 | -3.48 | -59.34 | -13.00 | 46.34 |
| 213.81 | 43.85 | 128 | 200 | V | -60.62 | 0.43 | -3.48 | -56.71 | -13.00 | 43.71 |
| 3508.60 | 41.44 | 126 | 150 | H | -66.13 | 0.93 | 9.90 | -57.16 | -13.00 | 44.16 |
| 3508.60 | 41.64 | 202 | 100 | V | -65.93 | 0.93 | 9.90 | -56.96 | -13.00 | 43.96 |
| 16-QAM 1.4MHz Bandwidth High Channel | | | | | | | | | | |
| 213.81 | 40.22 | 331 | 150 | H | -64.25 | 0.43 | -3.48 | -60.34 | -13.00 | 47.34 |
| 213.81 | 43.19 | 239 | 150 | V | -61.28 | 0.43 | -3.48 | -57.37 | -13.00 | 44.37 |
| 3508.60 | 41.49 | 14 | 200 | H | -66.08 | 0.93 | 9.90 | -57.11 | -13.00 | 44.11 |
| 3508.60 | 41.75 | 212 | 200 | V | -65.82 | 0.93 | 9.90 | -56.85 | -13.00 | 43.85 |

**30 MHz ~ 10 GHz:**

**LTE Band 5:**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth Low Channel | | | | | | | | | | |
| 222.78 | 44.06 | 116 | 100 | H | -59.65 | 0.43 | -3.18 | -56.04 | -13.00 | 43.04 |
| 222.78 | 45.01 | 173 | 200 | V | -58.70 | 0.43 | -3.18 | -55.09 | -13.00 | 42.09 |
| 1649.40 | 59.72 | 253 | 150 | H | -53.62 | 0.84 | 8.44 | -46.02 | -13.00 | 33.02 |
| 1649.40 | 59.89 | 80 | 100 | V | -53.45 | 0.84 | 8.44 | -45.85 | -13.00 | 32.85 |
| 16-QAM 1.4MHz Bandwidth Low Channel | | | | | | | | | | |
| 222.78 | 43.16 | 5 | 150 | H | -60.55 | 0.43 | -3.18 | -56.94 | -13.00 | 43.94 |
| 222.78 | 44.85 | 109 | 150 | V | -58.86 | 0.43 | -3.18 | -55.25 | -13.00 | 42.25 |
| 1649.40 | 59.57 | 52 | 200 | H | -53.77 | 0.84 | 8.44 | -46.17 | -13.00 | 33.17 |
| 1649.40 | 59.76 | 213 | 200 | V | -53.58 | 0.84 | 8.44 | -45.98 | -13.00 | 32.98 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth Middle Channel | | | | | | | | | | |
| 222.78 | 44.63 | 64 | 100 | H | -59.08 | 0.43 | -3.18 | -55.47 | -13.00 | 42.47 |
| 222.78 | 45.96 | 313 | 200 | V | -57.75 | 0.43 | -3.18 | -54.14 | -13.00 | 41.14 |
| 1673.00 | 49.81 | 223 | 150 | H | -53.58 | 0.84 | 8.48 | -45.94 | -13.00 | 32.94 |
| 1673.00 | 48.90 | 93 | 100 | V | -54.49 | 0.84 | 8.48 | -46.85 | -13.00 | 33.85 |
| 16-QAM 1.4MHz Bandwidth Middle Channel | | | | | | | | | | |
| 222.78 | 44.12 | 155 | 150 | H | -59.59 | 0.43 | -3.18 | -55.98 | -13.00 | 42.98 |
| 222.78 | 45.96 | 323 | 150 | V | -57.75 | 0.43 | -3.18 | -54.14 | -13.00 | 41.14 |
| 1673.00 | 50.60 | 216 | 200 | H | -52.79 | 0.84 | 8.48 | -45.15 | -13.00 | 32.15 |
| 1673.00 | 48.79 | 348 | 200 | V | -54.60 | 0.84 | 8.48 | -46.96 | -13.00 | 33.96 |

| Frequency (MHz) | Receiver Reading (dBμV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth High Channel | | | | | | | | | | |
| 222.78 | 44.12 | 253 | 100 | H | -59.59 | 0.43 | -3.18 | -55.98 | -13.00 | 42.98 |
| 222.78 | 45.34 | 149 | 200 | V | -58.37 | 0.43 | -3.18 | -54.76 | -13.00 | 41.76 |
| 1696.60 | 59.32 | 330 | 150 | H | -53.69 | 0.84 | 8.51 | -46.02 | -13.00 | 33.02 |
| 1696.60 | 59.49 | 45 | 100 | V | -53.52 | 0.84 | 8.51 | -45.85 | -13.00 | 32.85 |
| 16-QAM 1.4MHz Bandwidth High Channel | | | | | | | | | | |
| 222.78 | 43.19 | 256 | 150 | H | -60.52 | 0.43 | -3.18 | -56.91 | -13.00 | 43.91 |
| 222.78 | 45.08 | 337 | 150 | V | -58.63 | 0.43 | -3.18 | -55.02 | -13.00 | 42.02 |
| 1696.60 | 58.49 | 128 | 200 | H | -54.52 | 0.84 | 8.51 | -46.85 | -13.00 | 33.85 |
| 1696.60 | 60.15 | 61 | 200 | V | -52.86 | 0.84 | 8.51 | -45.19 | -13.00 | 32.19 |

**30MHz~26.5GHz:**

**LTE Band 7:**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth Low Channel | | | | | | | | | | |
| 222.66 | 43.19 | 54 | 200 | H | -60.53 | 0.43 | -3.18 | -56.92 | -25.00 | 31.92 |
| 222.66 | 45.07 | 346 | 200 | V | -58.65 | 0.43 | -3.18 | -55.04 | -25.00 | 30.04 |
| 5005.00 | 40.81 | 183 | 100 | H | -65.18 | 1.08 | 10.30 | -55.96 | -25.00 | 30.96 |
| 5005.00 | 41.92 | 346 | 150 | V | -64.07 | 1.08 | 10.30 | -54.85 | -25.00 | 29.85 |
| 16-QAM 5MHz Bandwidth Low Channel | | | | | | | | | | |
| 222.66 | 43.15 | 142 | 100 | H | -60.57 | 0.43 | -3.18 | -56.96 | -25.00 | 31.96 |
| 222.66 | 45.85 | 4 | 150 | V | -57.87 | 0.43 | -3.18 | -54.26 | -25.00 | 29.26 |
| 5005.00 | 42.01 | 130 | 150 | H | -63.98 | 1.08 | 10.30 | -54.76 | -25.00 | 29.76 |
| 5005.00 | 40.92 | 298 | 200 | V | -65.07 | 1.08 | 10.30 | -55.85 | -25.00 | 30.85 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth Middle Channel | | | | | | | | | | |
| 222.66 | 44.34 | 64 | 200 | H | -59.38 | 0.43 | -3.18 | -55.77 | -25.00 | 30.77 |
| 222.66 | 45.96 | 137 | 200 | V | -57.76 | 0.43 | -3.18 | -54.15 | -25.00 | 29.15 |
| 5070.00 | 30.68 | 213 | 100 | H | -64.60 | 1.09 | 10.30 | -55.39 | -25.00 | 30.39 |
| 5070.00 | 29.22 | 232 | 150 | V | -66.06 | 1.09 | 10.30 | -56.85 | -25.00 | 31.85 |
| 16-QAM 5MHz Bandwidth Middle Channel | | | | | | | | | | |
| 222.66 | 43.98 | 219 | 100 | H | -59.74 | 0.43 | -3.18 | -56.13 | -25.00 | 31.13 |
| 222.66 | 45.05 | 111 | 150 | V | -58.67 | 0.43 | -3.18 | -55.06 | -25.00 | 30.06 |
| 5070.00 | 31.10 | 238 | 150 | H | -64.18 | 1.09 | 10.30 | -54.97 | -25.00 | 29.97 |
| 5070.00 | 29.22 | 26 | 200 | V | -66.06 | 1.09 | 10.30 | -56.85 | -25.00 | 31.85 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth High Channel | | | | | | | | | | |
| 222.66 | 42.97 | 176 | 200 | H | -60.75 | 0.43 | -3.18 | -57.14 | -25.00 | 32.14 |
| 222.66 | 44.17 | 227 | 200 | V | -59.55 | 0.43 | -3.18 | -55.94 | -25.00 | 30.94 |
| 5135.00 | 41.31 | 182 | 100 | H | -63.96 | 1.10 | 10.30 | -54.76 | -25.00 | 29.76 |
| 5135.00 | 39.23 | 141 | 150 | V | -66.04 | 1.10 | 10.30 | -56.84 | -25.00 | 31.84 |
| 16-QAM 5MHz Bandwidth High Channel | | | | | | | | | | |
| 222.66 | 43.12 | 193 | 100 | H | -60.60 | 0.43 | -3.18 | -56.99 | -25.00 | 31.99 |
| 222.66 | 42.96 | 117 | 150 | V | -60.76 | 0.43 | -3.18 | -57.15 | -25.00 | 32.15 |
| 5135.00 | 41.31 | 117 | 150 | H | -63.96 | 1.10 | 10.30 | -54.76 | -25.00 | 29.76 |
| 5135.00 | 39.26 | 270 | 200 | V | -66.01 | 1.10 | 10.30 | -56.81 | -25.00 | 31.81 |

**30MHz~10GHz:**

**LTE Band 12:**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth Low Channel | | | | | | | | | | |
| 223.63 | 43.58 | 142 | 100 | H | -60.06 | 0.43 | -3.15 | -56.48 | -13.00 | 43.48 |
| 223.63 | 44.94 | 17 | 200 | V | -58.70 | 0.43 | -3.15 | -55.12 | -13.00 | 42.12 |
| 1399.40 | 50.91 | 215 | 150 | H | -63.26 | 0.82 | 7.92 | -56.16 | -13.00 | 43.16 |
| 1399.40 | 49.09 | 32 | 100 | V | -65.08 | 0.82 | 7.92 | -57.98 | -13.00 | 44.98 |
| 16-QAM 1.4MHz Bandwidth Low Channel | | | | | | | | | | |
| 223.63 | 43.22 | 156 | 150 | H | -60.42 | 0.43 | -3.15 | -56.84 | -13.00 | 43.84 |
| 223.63 | 44.94 | 217 | 150 | V | -58.70 | 0.43 | -3.15 | -55.12 | -13.00 | 42.12 |
| 1399.40 | 50.23 | 304 | 200 | H | -63.94 | 0.82 | 7.92 | -56.84 | -13.00 | 43.84 |
| 1399.40 | 49.98 | 324 | 200 | V | -64.19 | 0.82 | 7.92 | -57.09 | -13.00 | 44.09 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth Middle Channel | | | | | | | | | | |
| 223.63 | 43.58 | 306 | 100 | H | -60.06 | 0.43 | -3.15 | -56.48 | -13.00 | 43.48 |
| 223.63 | 44.19 | 133 | 200 | V | -59.45 | 0.43 | -3.15 | -55.87 | -13.00 | 42.87 |
| 1415.00 | 49.77 | 6 | 150 | H | -64.43 | 0.82 | 7.96 | -57.29 | -13.00 | 44.29 |
| 1415.00 | 49.08 | 26 | 100 | V | -65.12 | 0.82 | 7.96 | -57.98 | -13.00 | 44.98 |
| 16-QAM 1.4MHz Bandwidth Middle Channel | | | | | | | | | | |
| 223.63 | 43.12 | 347 | 150 | H | -60.52 | 0.43 | -3.15 | -56.94 | -13.00 | 43.94 |
| 223.63 | 44.85 | 88 | 150 | V | -58.79 | 0.43 | -3.15 | -55.21 | -13.00 | 42.21 |
| 1415.00 | 49.03 | 164 | 200 | H | -65.17 | 0.82 | 7.96 | -58.03 | -13.00 | 45.03 |
| 1415.00 | 49.93 | 76 | 200 | V | -64.27 | 0.82 | 7.96 | -57.13 | -13.00 | 44.13 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth High Channel | | | | | | | | | | |
| 223.63 | 44.25 | 32 | 100 | H | -59.39 | 0.43 | -3.15 | -55.81 | -13.00 | 42.81 |
| 223.63 | 43.96 | 253 | 200 | V | -59.68 | 0.43 | -3.15 | -56.10 | -13.00 | 43.10 |
| 1430.60 | 50.08 | 350 | 150 | H | -64.15 | 0.82 | 8.00 | -56.97 | -13.00 | 43.97 |
| 1430.60 | 49.17 | 223 | 100 | V | -65.06 | 0.82 | 8.00 | -57.88 | -13.00 | 44.88 |
| 16-QAM 1.4MHz Bandwidth High Channel | | | | | | | | | | |
| 223.63 | 43.85 | 1 | 150 | H | -59.79 | 0.43 | -3.15 | -56.21 | -13.00 | 43.21 |
| 223.63 | 44.96 | 90 | 150 | V | -58.68 | 0.43 | -3.15 | -55.10 | -13.00 | 42.10 |
| 1430.60 | 50.08 | 76 | 200 | H | -64.15 | 0.82 | 8.00 | -56.97 | -13.00 | 43.97 |
| 1430.60 | 50.02 | 216 | 200 | V | -64.21 | 0.82 | 8.00 | -57.03 | -13.00 | 44.03 |

**LTE Band 17:**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth Low Channel | | | | | | | | | | |
| 219.99 | 43.12 | 352 | 100 | H | -60.83 | 0.43 | -3.18 | -64.44 | -13.00 | 51.44 |
| 219.99 | 44.85 | 273 | 200 | V | -59.10 | 0.43 | -3.18 | -62.71 | -13.00 | 49.71 |
| 1413.00 | 46.86 | 218 | 150 | H | -68.11 | 0.83 | 8.06 | -60.88 | -13.00 | 47.88 |
| 1413.00 | 45.98 | 264 | 100 | V | -68.99 | 0.83 | 8.06 | -61.76 | -13.00 | 48.76 |
| 16-QAM 5MHz Bandwidth Low Channel | | | | | | | | | | |
| 219.99 | 43.02 | 302 | 100 | H | -60.93 | 0.43 | -3.18 | -64.54 | -13.00 | 51.54 |
| 219.99 | 44.97 | 305 | 200 | V | -58.98 | 0.43 | -3.18 | -62.59 | -13.00 | 49.59 |
| 1413.00 | 55.68 | 206 | 200 | H | -59.29 | 0.83 | 8.06 | -52.06 | -13.00 | 39.06 |
| 1413.00 | 56.42 | 113 | 200 | V | -58.55 | 0.83 | 8.06 | -51.32 | -13.00 | 38.32 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth Middle Channel | | | | | | | | | | |
| 219.99 | 43.67 | 118 | 100 | H | -60.28 | 0.43 | -3.27 | -63.98 | -13.00 | 50.98 |
| 219.99 | 45.96 | 320 | 200 | V | -57.99 | 0.43 | -3.27 | -61.69 | -13.00 | 48.69 |
| 1420.00 | 46.85 | 335 | 150 | H | -68.07 | 0.83 | 8.07 | -60.83 | -13.00 | 47.83 |
| 1420.00 | 46.49 | 216 | 100 | V | -68.43 | 0.83 | 8.07 | -61.19 | -13.00 | 48.19 |
| 16-QAM 5MHz Bandwidth Middle Channel | | | | | | | | | | |
| 219.99 | 43.55 | 162 | 100 | H | -60.40 | 0.55 | -1.71 | -62.66 | -13.00 | 49.66 |
| 219.99 | 44.77 | 197 | 200 | V | -59.18 | 0.55 | -1.71 | -61.44 | -13.00 | 48.44 |
| 1420.00 | 47.24 | 137 | 200 | H | -67.68 | 0.83 | 8.07 | -60.44 | -13.00 | 47.44 |
| 1420.00 | 45.59 | 72 | 200 | V | -69.33 | 0.83 | 8.07 | -62.09 | -13.00 | 49.09 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth High Channel | | | | | | | | | | |
| 219.99 | 43.12 | 117 | 100 | H | -60.83 | 0.43 | -3.27 | -64.53 | -13.00 | 51.53 |
| 219.99 | 44.95 | 70 | 200 | V | -59.00 | 0.43 | -3.27 | -62.70 | -13.00 | 49.70 |
| 1427.00 | 46.08 | 8 | 150 | H | -68.80 | 0.83 | 8.08 | -61.55 | -13.00 | 48.55 |
| 1427.00 | 44.68 | 305 | 100 | V | -70.20 | 0.83 | 8.08 | -62.95 | -13.00 | 49.95 |
| 16-QAM 5MHz Bandwidth High Channel | | | | | | | | | | |
| 219.99 | 43.22 | 339 | 100 | H | -60.73 | 0.43 | -3.27 | -64.43 | -13.00 | 51.43 |
| 219.99 | 44.98 | 117 | 200 | V | -58.97 | 0.43 | -3.27 | -62.67 | -13.00 | 49.67 |
| 1427.00 | 46.78 | 128 | 200 | H | -68.10 | 0.83 | 8.08 | -60.85 | -13.00 | 47.85 |
| 1427.00 | 44.84 | 136 | 200 | V | -70.04 | 0.83 | 8.08 | -62.79 | -13.00 | 49.79 |

**30 MHz ~ 20 GHz:**

**LTE Band 25:**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth Low Channel | | | | | | | | | | |
| 215.63 | 41.55 | 267 | 100 | H | -62.76 | 0.43 | -3.42 | -66.61 | -13.00 | 53.61 |
| 215.63 | 42.79 | 346 | 200 | V | -61.52 | 0.43 | -3.42 | -65.37 | -13.00 | 52.37 |
| 3611.40 | 43.17 | 249 | 150 | H | -64.08 | 0.94 | 9.83 | -55.19 | -13.00 | 42.19 |
| 3611.40 | 41.54 | 1 | 100 | V | -65.71 | 0.94 | 9.83 | -56.82 | -13.00 | 43.82 |
| 16-QAM 1.4MHz Bandwidth Low Channel | | | | | | | | | | |
| 215.63 | 42.03 | 141 | 100 | H | -62.28 | 0.43 | -3.42 | -66.13 | -13.00 | 53.13 |
| 215.63 | 43.66 | 143 | 200 | V | -60.65 | 0.43 | -3.42 | -64.50 | -13.00 | 51.50 |
| 3611.40 | 43.24 | 317 | 200 | H | -64.01 | 0.94 | 9.83 | -55.12 | -13.00 | 42.12 |
| 3611.40 | 41.64 | 85 | 200 | V | -65.61 | 0.94 | 9.83 | -56.72 | -13.00 | 43.72 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth Middle Channel | | | | | | | | | | |
| 215.63 | 41.69 | 162 | 100 | H | -62.62 | 0.43 | -3.42 | -66.47 | -13.00 | 53.47 |
| 215.63 | 42.55 | 22 | 200 | V | -61.76 | 0.43 | -3.42 | -65.61 | -13.00 | 52.61 |
| 3765.00 | 42.44 | 321 | 150 | H | -64.32 | 0.95 | 9.74 | -55.53 | -13.00 | 42.53 |
| 3765.00 | 41.48 | 287 | 100 | V | -65.28 | 0.95 | 9.74 | -56.49 | -13.00 | 43.49 |
| 16-QAM 1.4MHz Bandwidth Middle Channel | | | | | | | | | | |
| 215.63 | 41.22 | 243 | 100 | H | -63.09 | 0.43 | -3.42 | -66.94 | -13.00 | 53.94 |
| 215.63 | 43.59 | 44 | 200 | V | -60.72 | 0.43 | -3.42 | -64.57 | -13.00 | 51.57 |
| 3765.00 | 42.21 | 156 | 200 | H | -64.55 | 0.95 | 9.74 | -55.76 | -13.00 | 42.76 |
| 3765.00 | 41.06 | 29 | 200 | V | -65.70 | 0.95 | 9.74 | -56.91 | -13.00 | 43.91 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth High Channel | | | | | | | | | | |
| 215.63 | 42.16 | 108 | 100 | H | -62.15 | 0.43 | -3.42 | -66.00 | -13.00 | 53.00 |
| 215.63 | 43.22 | 355 | 200 | V | -61.09 | 0.43 | -3.42 | -64.94 | -13.00 | 51.94 |
| 3828.60 | 41.69 | 140 | 150 | H | -64.87 | 0.96 | 9.70 | -56.13 | -13.00 | 43.13 |
| 3828.60 | 41.85 | 224 | 100 | V | -64.71 | 0.96 | 9.70 | -55.97 | -13.00 | 42.97 |
| 16-QAM 1.4MHz Bandwidth High Channel | | | | | | | | | | |
| 215.63 | 40.55 | 349 | 100 | H | -63.76 | 0.43 | -3.42 | -67.61 | -13.00 | 54.61 |
| 215.63 | 42.97 | 163 | 200 | V | -61.34 | 0.43 | -3.42 | -65.19 | -13.00 | 52.19 |
| 3828.60 | 41.97 | 183 | 200 | H | -64.59 | 0.96 | 9.70 | -55.85 | -13.00 | 42.85 |
| 3828.60 | 41.06 | 351 | 200 | V | -65.50 | 0.96 | 9.70 | -56.76 | -13.00 | 43.76 |

**30 MHz ~ 10 GHz:**

**LTE Band 26:**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth Low Channel | | | | | | | | | | |
| 221.71 | 42.66 | 137 | 100 | H | -61.14 | 0.43 | -3.21 | -64.78 | -13.00 | 51.78 |
| 221.71 | 44.76 | 137 | 200 | V | -59.04 | 0.43 | -3.21 | -62.68 | -13.00 | 49.68 |
| 1629.40 | 67.35 | 193 | 100 | H | -46.12 | 0.84 | 8.41 | -38.55 | -13.00 | 25.55 |
| 1629.40 | 66.46 | 234 | 150 | V | -47.01 | 0.84 | 8.41 | -39.44 | -13.00 | 26.44 |
| 16-QAM 1.4MHz Bandwidth Low Channel | | | | | | | | | | |
| 221.71 | 41.49 | 352 | 100 | H | -62.31 | 0.43 | -3.21 | -65.95 | -13.00 | 52.95 |
| 221.71 | 44.02 | 197 | 150 | V | -59.78 | 0.43 | -3.21 | -40.35 | -13.00 | 27.35 |
| 1629.40 | 67.35 | 156 | 150 | H | -46.12 | 0.84 | 8.41 | -38.55 | -13.00 | 25.55 |
| 1629.40 | 66.41 | 227 | 200 | V | -47.06 | 0.84 | 8.41 | -39.49 | -13.00 | 26.49 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth Middle Channel | | | | | | | | | | |
| 221.71 | 43.33 | 7 | 100 | H | -60.47 | 0.43 | -3.21 | -64.11 | -13.00 | 51.11 |
| 221.71 | 44.55 | 135 | 200 | V | -59.25 | 0.43 | -3.21 | -62.89 | -13.00 | 49.89 |
| 1663.00 | 66.77 | 116 | 100 | H | -46.47 | 0.84 | 8.46 | -38.85 | -13.00 | 25.85 |
| 1663.00 | 66.47 | 333 | 150 | V | -46.77 | 0.84 | 8.46 | -39.15 | -13.00 | 26.15 |
| 16-QAM 1.4MHz Bandwidth Middle Channel | | | | | | | | | | |
| 221.71 | 43.12 | 36 | 100 | H | -60.68 | 0.43 | -3.21 | -64.32 | -13.00 | 51.32 |
| 221.71 | 44.88 | 119 | 200 | V | -58.92 | 0.43 | -3.21 | -62.56 | -13.00 | 49.56 |
| 1663.00 | 66.96 | 262 | 150 | H | -46.28 | 0.84 | 8.46 | -38.66 | -13.00 | 25.66 |
| 1663.00 | 66.60 | 232 | 200 | V | -46.64 | 0.84 | 8.46 | -39.02 | -13.00 | 26.02 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth High Channel | | | | | | | | | | |
| 221.71 | 43.02 | 305 | 100 | H | -60.78 | 0.43 | -3.21 | -64.42 | -13.00 | 51.42 |
| 221.71 | 44.85 | 344 | 200 | V | -58.95 | 0.43 | -3.21 | -62.59 | -13.00 | 49.59 |
| 1696.60 | 67.23 | 317 | 100 | H | -45.78 | 0.84 | 8.51 | -38.11 | -13.00 | 25.11 |
| 1696.60 | 66.12 | 224 | 150 | V | -46.89 | 0.84 | 8.51 | -39.22 | -13.00 | 26.22 |
| 16-QAM 1.4MHz Bandwidth High Channel | | | | | | | | | | |
| 221.71 | 42.19 | 111 | 100 | H | -61.61 | 0.43 | -3.21 | -65.25 | -13.00 | 52.25 |
| 221.71 | 44.55 | 5 | 200 | V | -59.25 | 0.43 | -3.21 | -62.89 | -13.00 | 49.89 |
| 1696.60 | 66.35 | 6 | 150 | H | -46.66 | 0.84 | 8.51 | -38.99 | -13.00 | 25.99 |
| 1696.60 | 65.78 | 140 | 200 | V | -47.23 | 0.84 | 8.51 | -39.56 | -13.00 | 26.56 |

**30 MHz ~ 26.5 GHz:**

**LTE Band 38:**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth Low Channel | | | | | | | | | | |
| 220.72 | 42.55 | 87 | 100 | H | -61.34 | 0.43 | -3.25 | -57.66 | -25.00 | 32.66 |
| 220.72 | 45.36 | 47 | 200 | V | -58.53 | 0.43 | -3.25 | -54.85 | -25.00 | 29.85 |
| 5145.00 | 42.55 | 355 | 100 | H | -62.66 | 1.10 | 10.30 | -53.46 | -25.00 | 28.46 |
| 5145.00 | 41.16 | 195 | 150 | V | -64.05 | 1.10 | 10.30 | -54.85 | -25.00 | 29.85 |
| 16-QAM 5MHz Bandwidth Low Channel | | | | | | | | | | |
| 220.72 | 43.22 | 123 | 100 | H | -60.67 | 0.43 | -3.25 | -56.99 | -25.00 | 31.99 |
| 220.72 | 44.58 | 181 | 150 | V | -59.31 | 0.43 | -3.25 | -55.63 | -25.00 | 30.63 |
| 5145.00 | 42.79 | 221 | 100 | H | -62.42 | 1.10 | 10.30 | -53.22 | -25.00 | 28.22 |
| 5145.00 | 42.92 | 213 | 200 | V | -62.29 | 1.10 | 10.30 | -53.09 | -25.00 | 28.09 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth Middle Channel | | | | | | | | | | |
| 220.72 | 43.47 | 311 | 100 | H | -60.42 | 0.43 | -3.25 | -56.74 | -25.00 | 31.74 |
| 220.72 | 44.19 | 115 | 200 | V | -59.70 | 0.43 | -3.25 | -56.02 | -25.00 | 31.02 |
| 5190.00 | 42.11 | 343 | 100 | H | -63.10 | 1.10 | 10.30 | -53.90 | -25.00 | 28.90 |
| 5190.00 | 41.89 | 103 | 150 | V | -63.32 | 1.10 | 10.30 | -54.12 | -25.00 | 29.12 |
| 16-QAM 5MHz Bandwidth Middle Channel | | | | | | | | | | |
| 220.72 | 41.64 | 284 | 100 | H | -62.25 | 0.43 | -3.25 | -58.57 | -25.00 | 33.57 |
| 220.72 | 44.55 | 59 | 150 | V | -59.34 | 0.43 | -3.25 | -55.66 | -25.00 | 30.66 |
| 5190.00 | 42.89 | 207 | 100 | H | -62.32 | 1.10 | 10.30 | -53.12 | -25.00 | 28.12 |
| 5190.00 | 41.05 | 261 | 200 | V | -64.16 | 1.10 | 10.30 | -54.96 | -25.00 | 29.96 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth High Channel | | | | | | | | | | |
| 220.72 | 43.22 | 279 | 100 | H | -60.67 | 0.43 | -3.25 | -56.99 | -25.00 | 31.99 |
| 220.72 | 44.97 | 249 | 200 | V | -58.92 | 0.43 | -3.25 | -55.24 | -25.00 | 30.24 |
| 5235.00 | 41.40 | 342 | 100 | H | -63.31 | 1.11 | 10.30 | -54.12 | -25.00 | 29.12 |
| 5235.00 | 41.56 | 10 | 150 | V | -63.15 | 1.11 | 10.30 | -53.96 | -25.00 | 28.96 |
| 16-QAM 5MHz Bandwidth High Channel | | | | | | | | | | |
| 220.72 | 42.11 | 234 | 100 | H | -61.78 | 0.43 | -3.25 | -58.10 | -25.00 | 33.10 |
| 220.72 | 44.97 | 91 | 150 | V | -58.92 | 0.43 | -3.25 | -55.24 | -25.00 | 30.24 |
| 5235.00 | 41.27 | 204 | 100 | H | -63.44 | 1.11 | 10.30 | -54.25 | -25.00 | 29.25 |
| 5235.00 | 41.56 | 221 | 200 | V | -63.15 | 1.11 | 10.30 | -53.96 | -25.00 | 28.96 |

**LTE Band 40:**

**2305-2315MHz**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth Low Channel | | | | | | | | | | |
| 221.69 | 41.68 | 296 | 150 | H | -62.12 | 0.43 | -3.21 | -58.48 | -40.00 | 18.48 |
| 221.69 | 44.08 | 259 | 200 | V | -59.72 | 0.43 | -3.21 | -56.08 | -40.00 | 16.08 |
| 4615.00 | 41.94 | 39 | 100 | H | -64.98 | 1.03 | 9.99 | -56.02 | -40.00 | 16.02 |
| 4615.00 | 42.50 | 144 | 100 | V | -64.42 | 1.03 | 9.99 | -55.46 | -40.00 | 15.46 |
| 16-QAM 5MHz Bandwidth Low Channel | | | | | | | | | | |
| 221.69 | 44.03 | 145 | 200 | H | -59.77 | 0.43 | -3.21 | -56.13 | -40.00 | 16.13 |
| 221.69 | 43.96 | 97 | 150 | V | -59.84 | 0.43 | -3.21 | -56.20 | -40.00 | 16.20 |
| 4615.00 | 41.20 | 339 | 150 | H | -65.72 | 1.03 | 9.99 | -56.76 | -40.00 | 16.76 |
| 4615.00 | 43.41 | 9 | 100 | V | -63.51 | 1.03 | 9.99 | -54.55 | -40.00 | 14.55 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth Middle Channel | | | | | | | | | | |
| 221.69 | 44.88 | 291 | 150 | H | -58.92 | 0.43 | -3.21 | -55.28 | -40.00 | 15.28 |
| 221.69 | 46.22 | 136 | 200 | V | -57.58 | 0.43 | -3.21 | -53.94 | -40.00 | 13.94 |
| 4620.00 | 41.47 | 186 | 100 | H | -65.44 | 1.03 | 10.00 | -56.47 | -40.00 | 16.47 |
| 4620.00 | 40.92 | 85 | 100 | V | -65.99 | 1.03 | 10.00 | -57.02 | -40.00 | 17.02 |
| 16-QAM 5MHz Bandwidth Middle Channel | | | | | | | | | | |
| 221.69 | 44.22 | 178 | 200 | H | -59.58 | 0.43 | -3.21 | -55.94 | -40.00 | 15.94 |
| 221.69 | 45.96 | 344 | 150 | V | -57.84 | 0.43 | -3.21 | -54.20 | -40.00 | 14.20 |
| 4620.00 | 41.92 | 274 | 150 | H | -64.99 | 1.03 | 10.00 | -56.02 | -40.00 | 16.02 |
| 4620.00 | 41.96 | 212 | 100 | V | -64.95 | 1.03 | 10.00 | -55.98 | -40.00 | 15.98 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth High Channel | | | | | | | | | | |
| 221.69 | 42.66 | 266 | 150 | H | -61.14 | 0.43 | -3.21 | -57.50 | -40.00 | 17.50 |
| 221.69 | 44.55 | 9 | 200 | V | -59.25 | 0.43 | -3.21 | -55.61 | -40.00 | 15.61 |
| 4625.00 | 41.18 | 203 | 100 | H | -65.72 | 1.04 | 10.00 | -56.76 | -40.00 | 16.76 |
| 4625.00 | 42.77 | 170 | 100 | V | -64.13 | 1.04 | 10.00 | -55.17 | -40.00 | 15.17 |
| 16-QAM 5MHz Bandwidth High Channel | | | | | | | | | | |
| 221.69 | 41.55 | 294 | 200 | H | -62.25 | 0.43 | -3.21 | -58.61 | -40.00 | 18.61 |
| 221.69 | 43.76 | 96 | 150 | V | -60.04 | 0.43 | -3.21 | -56.40 | -40.00 | 16.40 |
| 4625.00 | 41.82 | 270 | 150 | H | -65.08 | 1.04 | 10.00 | -56.12 | -40.00 | 16.12 |
| 4625.00 | 42.95 | 191 | 100 | V | -63.95 | 1.04 | 10.00 | -54.99 | -40.00 | 14.99 |

**2350-2360MHz**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth Low Channel | | | | | | | | | | |
| 221.69 | 43.02 | 333 | 150 | H | -60.78 | 0.43 | -3.21 | -57.14 | -40.00 | 17.14 |
| 221.69 | 44.88 | 293 | 200 | V | -58.92 | 0.43 | -3.21 | -55.28 | -40.00 | 15.28 |
| 4705.00 | 42.47 | 173 | 100 | H | -64.24 | 1.04 | 10.06 | -55.22 | -40.00 | 15.22 |
| 4705.00 | 40.90 | 191 | 100 | V | -65.81 | 1.04 | 10.06 | -56.79 | -40.00 | 16.79 |
| 16-QAM 5MHz Bandwidth Low Channel | | | | | | | | | | |
| 221.69 | 44.02 | 311 | 200 | H | -59.78 | 0.43 | -3.21 | -56.14 | -40.00 | 16.14 |
| 221.69 | 45.96 | 277 | 150 | V | -57.84 | 0.43 | -3.21 | -54.20 | -40.00 | 14.20 |
| 4705.00 | 41.58 | 318 | 150 | H | -65.13 | 1.04 | 10.06 | -56.11 | -40.00 | 16.11 |
| 4705.00 | 42.67 | 352 | 100 | V | -64.04 | 1.04 | 10.06 | -55.02 | -40.00 | 15.02 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth Middle Channel | | | | | | | | | | |
| 221.69 | 44.25 | 78 | 150 | H | -54.91 | 0.43 | -3.21 | -51.27 | -40.00 | 11.27 |
| 221.69 | 45.96 | 283 | 200 | V | -53.20 | 0.43 | -3.21 | -49.56 | -40.00 | 9.56 |
| 4710.00 | 42.66 | 25 | 100 | H | -64.04 | 1.05 | 10.07 | -55.02 | -40.00 | 15.02 |
| 4710.00 | 39.72 | 302 | 100 | V | -66.98 | 1.05 | 10.07 | -57.96 | -40.00 | 17.96 |
| 16-QAM 5MHz Bandwidth Middle Channel | | | | | | | | | | |
| 221.69 | 44.22 | 154 | 200 | H | -54.94 | 0.43 | -3.21 | -51.30 | -40.00 | 11.30 |
| 221.69 | 45.76 | 347 | 150 | V | -53.40 | 0.43 | -3.21 | -49.76 | -40.00 | 9.76 |
| 4710.00 | 42.56 | 272 | 150 | H | -64.14 | 1.05 | 10.07 | -55.12 | -40.00 | 15.12 |
| 4710.00 | 40.71 | 179 | 100 | V | -65.99 | 1.05 | 10.07 | -56.97 | -40.00 | 16.97 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth High Channel | | | | | | | | | | |
| 221.69 | 41.26 | 242 | 150 | H | -62.54 | 0.43 | -3.21 | -58.90 | -40.00 | 18.90 |
| 221.69 | 43.76 | 277 | 200 | V | -60.04 | 0.43 | -3.21 | -56.40 | -40.00 | 16.40 |
| 4715.00 | 41.56 | 83 | 100 | H | -65.13 | 1.05 | 10.07 | -56.11 | -40.00 | 16.11 |
| 4715.00 | 42.65 | 76 | 100 | V | -64.04 | 1.05 | 10.07 | -55.02 | -40.00 | 15.02 |
| 16-QAM 5MHz Bandwidth High Channel | | | | | | | | | | |
| 221.69 | 41.59 | 123 | 200 | H | -62.21 | 0.43 | -3.21 | -58.57 | -40.00 | 18.57 |
| 221.69 | 43.37 | 115 | 150 | V | -60.43 | 0.43 | -3.21 | -56.79 | -40.00 | 16.79 |
| 4715.00 | 40.91 | 88 | 150 | H | -65.78 | 1.05 | 10.07 | -56.76 | -40.00 | 16.76 |
| 4715.00 | 41.90 | 355 | 100 | V | -64.79 | 1.05 | 10.07 | -55.77 | -40.00 | 15.77 |

**LTE Band 41:**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth Low Channel | | | | | | | | | | |
| 219.99 | 43.59 | 152 | 150 | H | -60.36 | 0.43 | -3.27 | -56.66 | -25.00 | 31.66 |
| 219.99 | 46.33 | 215 | 200 | V | -57.62 | 0.43 | -3.27 | -53.92 | -25.00 | 28.92 |
| 5115.00 | 43.01 | 359 | 100 | H | -62.37 | 1.09 | 10.30 | -53.16 | -25.00 | 28.16 |
| 5115.00 | 44.01 | 55 | 100 | V | -61.37 | 1.09 | 10.30 | -52.16 | -25.00 | 27.16 |
| 16-QAM 5MHz Bandwidth Low Channel | | | | | | | | | | |
| 219.99 | 42.55 | 323 | 200 | H | -61.40 | 0.43 | -3.27 | -57.70 | -25.00 | 32.70 |
| 219.99 | 44.97 | 236 | 150 | V | -58.98 | 0.43 | -3.27 | -55.28 | -25.00 | 30.28 |
| 5115.00 | 41.01 | 170 | 150 | H | -64.37 | 1.09 | 10.30 | -55.16 | -25.00 | 30.16 |
| 5115.00 | 42.21 | 88 | 100 | V | -63.17 | 1.09 | 10.30 | -53.96 | -25.00 | 28.96 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth Middle Channel | | | | | | | | | | |
| 219.99 | 44.27 | 127 | 150 | H | -59.68 | 0.43 | -3.27 | -55.98 | -25.00 | 30.98 |
| 219.99 | 45.96 | 217 | 200 | V | -57.99 | 0.43 | -3.27 | -54.29 | -25.00 | 29.29 |
| 5210.00 | 42.06 | 259 | 100 | H | -63.32 | 1.11 | 10.30 | -54.13 | -25.00 | 29.13 |
| 5210.00 | 40.53 | 228 | 100 | V | -64.85 | 1.11 | 10.30 | -55.66 | -25.00 | 30.66 |
| 16-QAM 5MHz Bandwidth Middle Channel | | | | | | | | | | |
| 219.99 | 43.15 | 170 | 200 | H | -60.80 | 0.43 | -3.27 | -57.10 | -25.00 | 32.10 |
| 219.99 | 46.39 | 356 | 150 | V | -57.56 | 0.43 | -3.27 | -53.86 | -25.00 | 28.86 |
| 5210.00 | 41.00 | 82 | 150 | H | -64.38 | 1.11 | 10.30 | -55.19 | -25.00 | 30.19 |
| 5210.00 | 41.23 | 116 | 100 | V | -64.15 | 1.11 | 10.30 | -54.96 | -25.00 | 29.96 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 5MHz Bandwidth High Channel | | | | | | | | | | |
| 219.99 | 42.59 | 25 | 150 | H | -61.36 | 0.43 | -3.27 | -57.66 | -25.00 | 32.66 |
| 219.99 | 44.66 | 259 | 200 | V | -59.29 | 0.43 | -3.27 | -55.59 | -25.00 | 30.59 |
| 5305.00 | 42.02 | 35 | 100 | H | -62.30 | 1.12 | 10.30 | -53.12 | -25.00 | 28.12 |
| 5305.00 | 41.05 | 287 | 100 | V | -63.27 | 1.12 | 10.30 | -54.09 | -25.00 | 29.09 |
| 16-QAM 5MHz Bandwidth High Channel | | | | | | | | | | |
| 219.99 | 41.69 | 221 | 200 | H | -62.26 | 0.43 | -3.27 | -58.56 | -25.00 | 33.56 |
| 219.99 | 44.86 | 190 | 150 | V | -59.09 | 0.43 | -3.27 | -55.39 | -25.00 | 30.39 |
| 5305.00 | 41.59 | 283 | 150 | H | -62.73 | 1.12 | 10.30 | -53.55 | -25.00 | 28.55 |
| 5305.00 | 40.18 | 296 | 100 | V | -64.14 | 1.12 | 10.30 | -54.96 | -25.00 | 29.96 |

**30 MHz ~ 20 GHz:**

**LTE Band 66:**

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth Low Channel | | | | | | | | | | |
| 222.06 | 43.22 | 276 | 150 | H | -60.55 | 0.43 | -3.20 | -56.92 | -13.00 | 43.92 |
| 222.06 | 44.96 | 341 | 200 | V | -58.81 | 0.43 | -3.20 | -55.18 | -13.00 | 42.18 |
| 3421.40 | 47.50 | 310 | 100 | H | -60.44 | 0.93 | 9.82 | -51.55 | -13.00 | 38.55 |
| 3421.40 | 46.36 | 210 | 100 | V | -61.58 | 0.93 | 9.82 | -52.69 | -13.00 | 39.69 |
| 16-QAM 1.4MHz Bandwidth Low Channel | | | | | | | | | | |
| 222.06 | 43.64 | 234 | 200 | H | -60.13 | 0.43 | -3.20 | -56.50 | -13.00 | 43.50 |
| 222.06 | 44.25 | 96 | 150 | V | -59.52 | 0.43 | -3.20 | -55.89 | -13.00 | 42.89 |
| 3421.40 | 48.36 | 249 | 150 | H | -59.58 | 0.93 | 9.82 | -50.69 | -13.00 | 37.69 |
| 3421.40 | 47.29 | 257 | 100 | V | -60.65 | 0.93 | 9.82 | -51.76 | -13.00 | 38.76 |

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth Middle Channel | | | | | | | | | | |
| 222.06 | 44.13 | 151 | 150 | H | -59.64 | 0.43 | -3.20 | -56.01 | -13.00 | 43.01 |
| 222.06 | 46.22 | 244 | 200 | V | -57.55 | 0.43 | -3.20 | -53.92 | -13.00 | 40.92 |
| 3490.00 | 48.45 | 188 | 100 | H | -59.19 | 0.93 | 9.89 | -50.23 | -13.00 | 37.23 |
| 3490.00 | 46.99 | 294 | 100 | V | -60.65 | 0.93 | 9.89 | -51.69 | -13.00 | 38.69 |
| 16-QAM 1.4MHz Bandwidth Middle Channel | | | | | | | | | | |
| 222.06 | 43.25 | 13 | 200 | H | -60.52 | 0.43 | -3.20 | -56.89 | -13.00 | 43.89 |
| 222.06 | 44.96 | 285 | 150 | V | -58.81 | 0.43 | -3.20 | -55.18 | -13.00 | 42.18 |
| 3490.00 | 48.13 | 67 | 150 | H | -59.51 | 0.93 | 9.89 | -50.55 | -13.00 | 37.55 |
| 3490.00 | 45.72 | 331 | 100 | V | -61.92 | 0.93 | 9.89 | -52.96 | -13.00 | 39.96 |

| Frequency (MHz) | Receiver Reading (dBμV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBd/dBi) | | | |
| QPSK 1.4MHz Bandwidth High Channel | | | | | | | | | | |
| 222.06 | 43.25 | 358 | 150 | H | -60.52 | 0.43 | -3.20 | -56.89 | -13 | 43.89 |
| 222.06 | 46.19 | 327 | 200 | V | -57.58 | 0.43 | -3.20 | -53.95 | -13 | 40.95 |
| 3558.60 | 47.99 | 82 | 100 | H | -59.43 | 0.93 | 9.87 | -50.49 | -13 | 37.49 |
| 3558.60 | 46.29 | 112 | 100 | V | -61.13 | 0.93 | 9.87 | -52.19 | -13 | 39.19 |
| 16-QAM 1.4MHz Bandwidth High Channel | | | | | | | | | | |
| 222.06 | 42.49 | 307 | 200 | H | -61.28 | 0.43 | -3.20 | -57.65 | -13 | 44.65 |
| 222.06 | 43.96 | 248 | 150 | V | -59.81 | 0.43 | -3.20 | -56.18 | -13 | 43.18 |
| 3558.60 | 47.05 | 32 | 150 | H | -60.37 | 0.93 | 9.87 | -51.43 | -13 | 38.43 |
| 3558.60 | 45.72 | 161 | 100 | V | -61.70 | 0.93 | 9.87 | -52.76 | -13 | 39.76 |

**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 (h) (m); § 90.691 - 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.

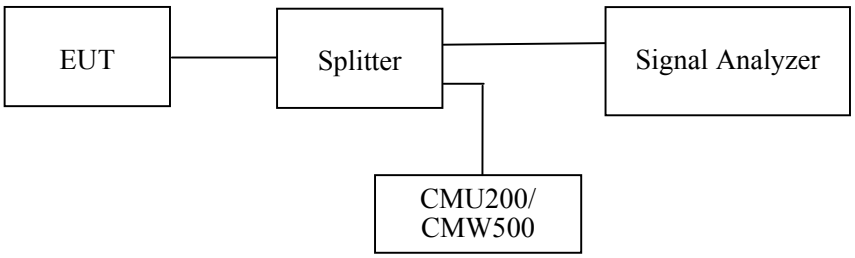
According to FCC §27.53 (h) (m), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.
For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

FCC §2.1051 and §90.691(a).The power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or less, but at least one percent of the emission bandwidth of the fundamental emission of the transmitter, provided the measured energy is integrated over a 1 MHz bandwidth.

## 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:** | 22.9~23.3 ℃ |
| **Relative Humidity:** | 49~50 % |
| **ATM Pressure:** | 100.7~102.5 kPa |

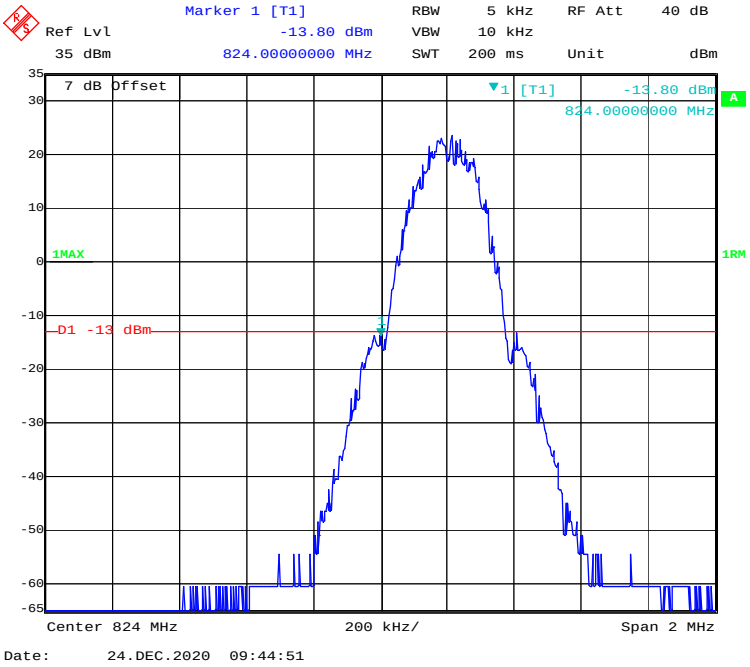
*The testing was performed by CK Huang from 2020-11-06 to 2020-12-24*

*EUT operation mode: Transmitting*

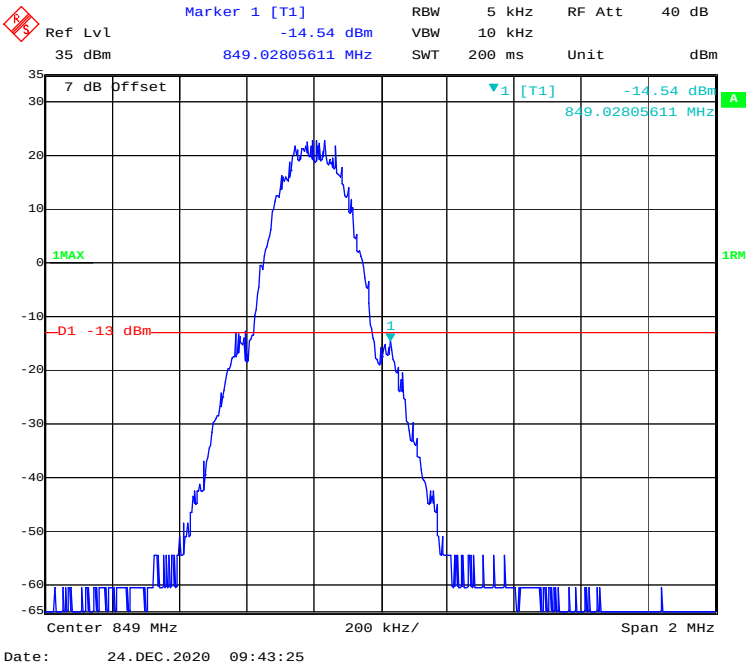
*Test Result: Compliant.*

## GSM 850 Band:

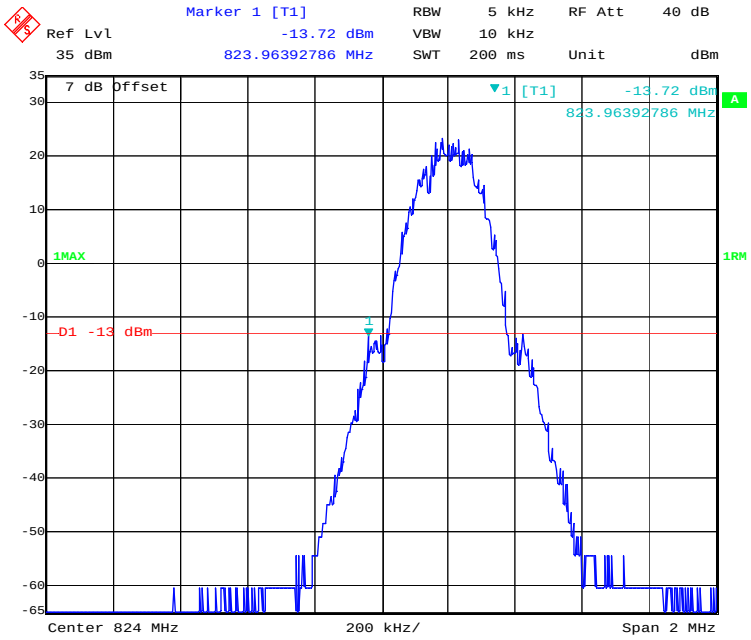
### GSM Mode, Left Band Edge




### GSM Mode, Right Band Edge

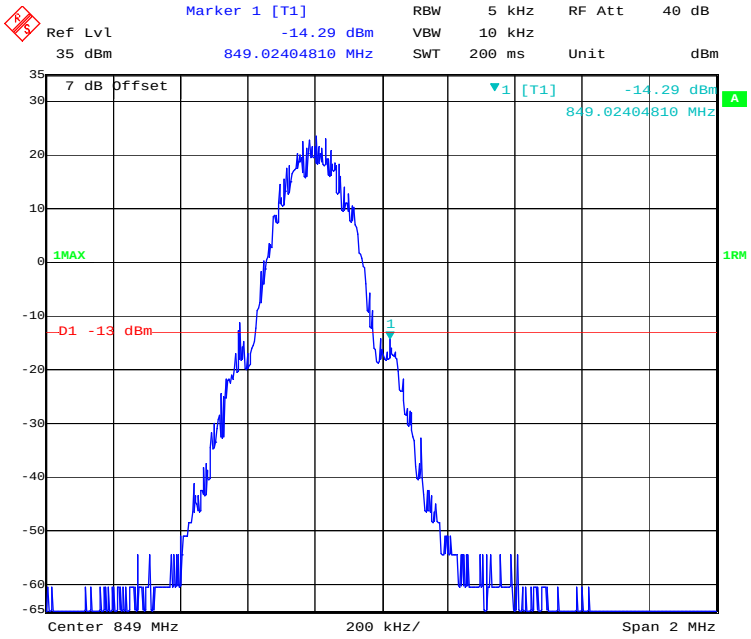


## GPRS Mode, Left Band Edge



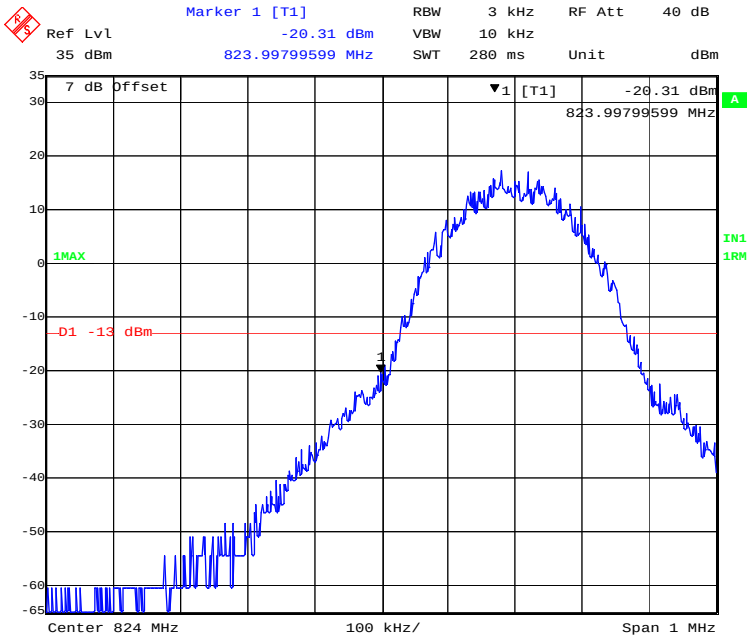

Date: 24.DEC.2020 09:44:20

## GPRS Mode, Right Band Edge



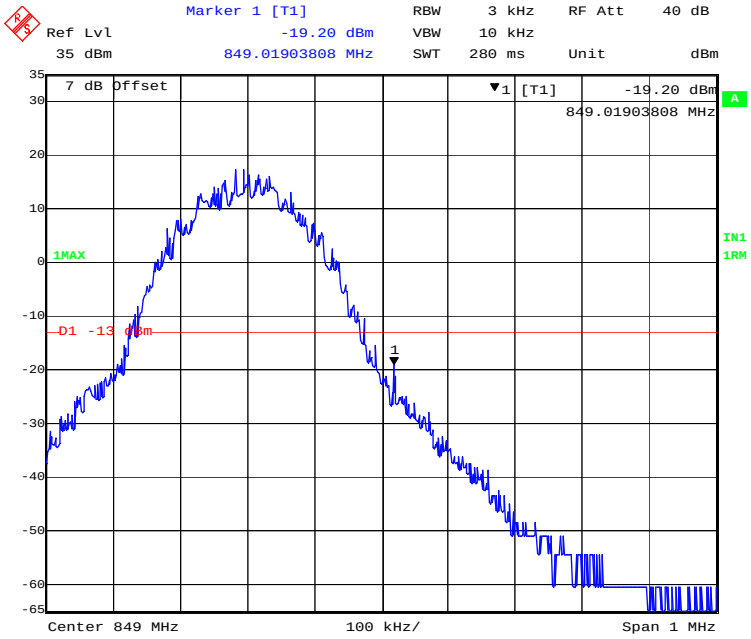

Date: 24.DEC.2020 09:42:58

## EGPRS Mode, Left Band Edge




Date: 12.NOV.2020 21:21:21

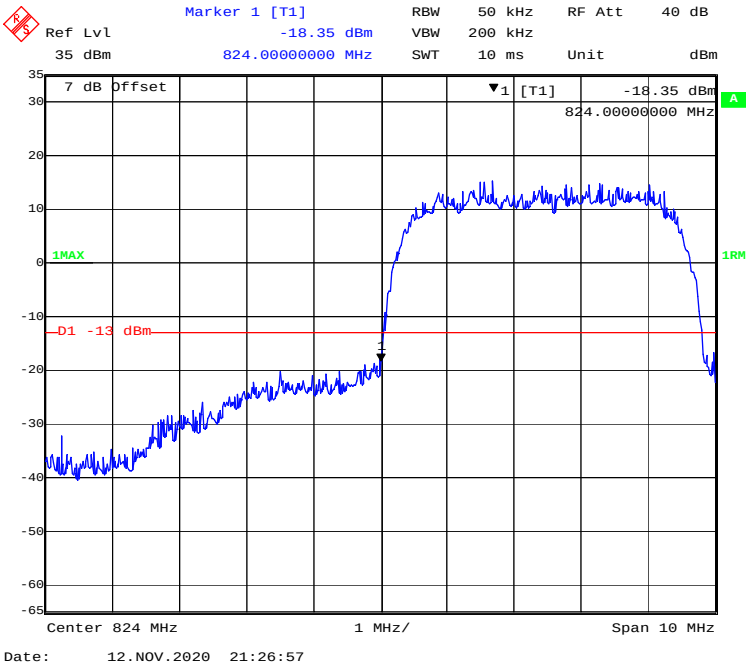
## EGPRS Mode, Right Band Edge



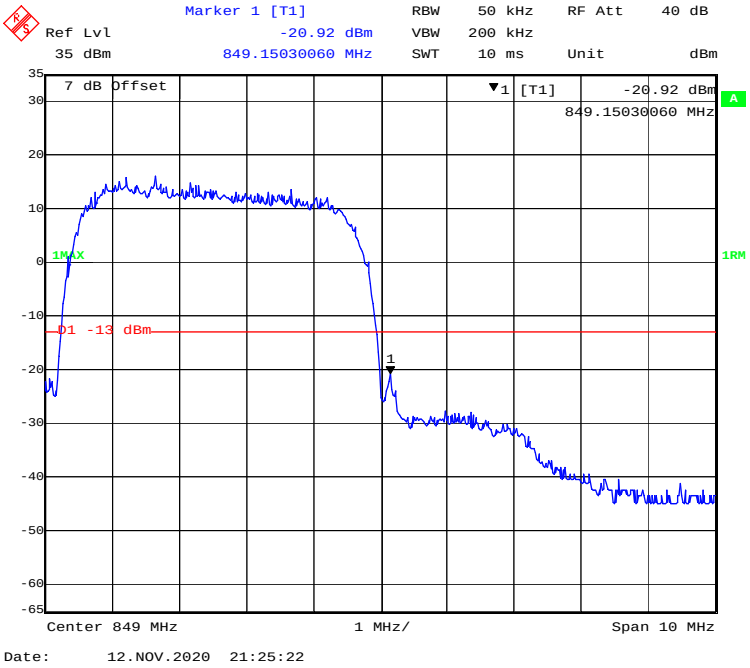

Date: 12.NOV.2020 21:20:39

## WCDMA Band V

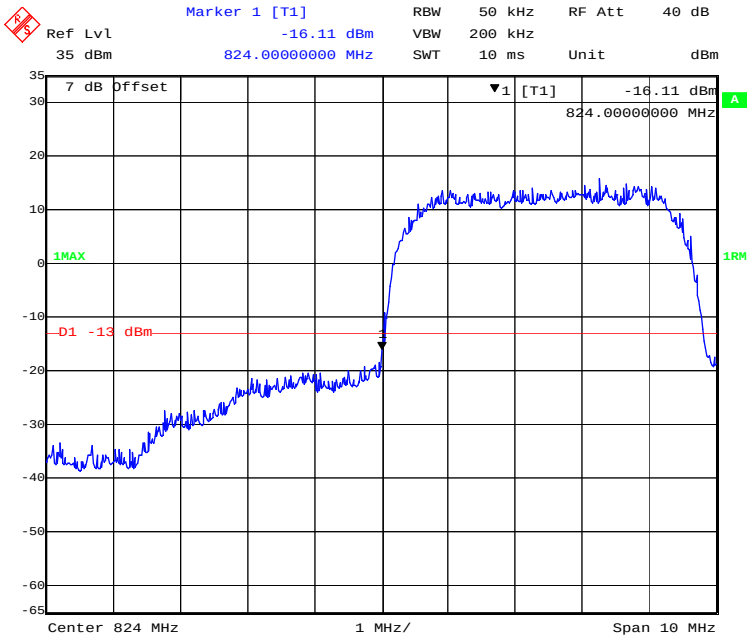
### WCDMA (Rel 99) Mode, Left Band Edge




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

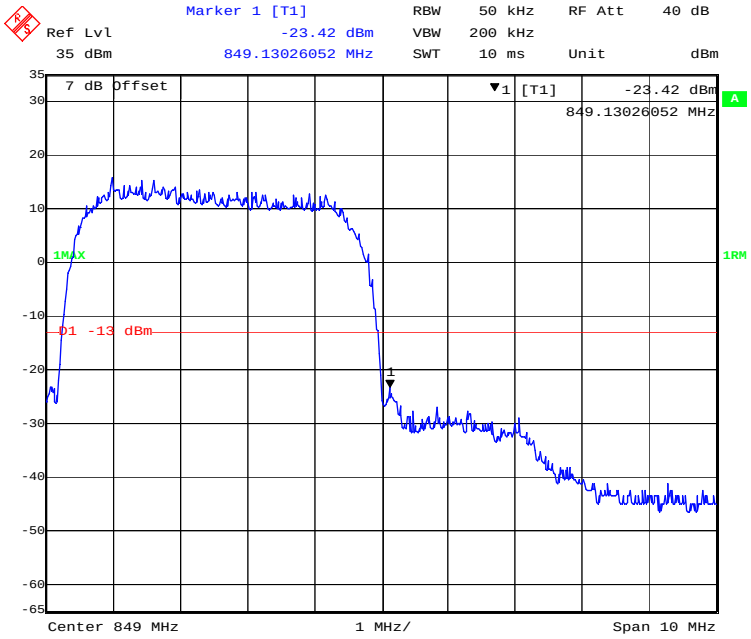


## WCDMA (HSDPA) Mode, Left Band Edge



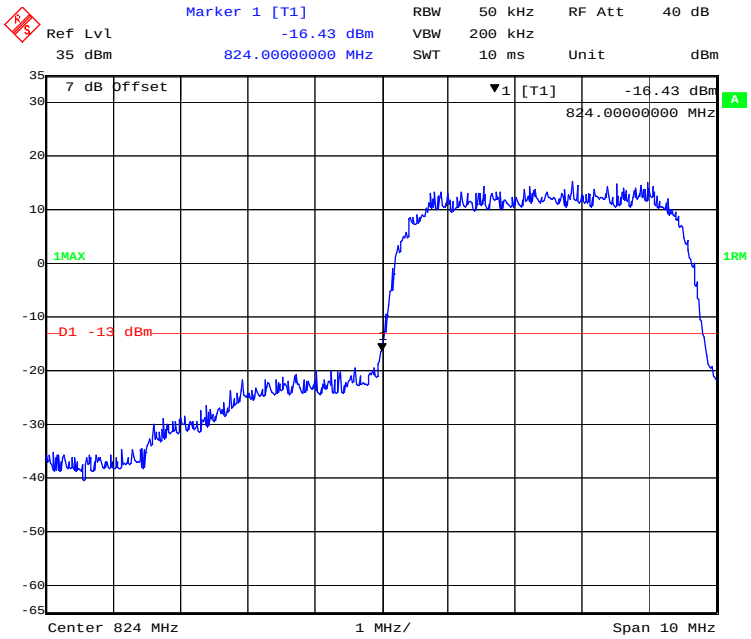

Date: 12.NOV.2020 21:27:13

## WCDMA (HSDPA) Mode, Right Band Edge



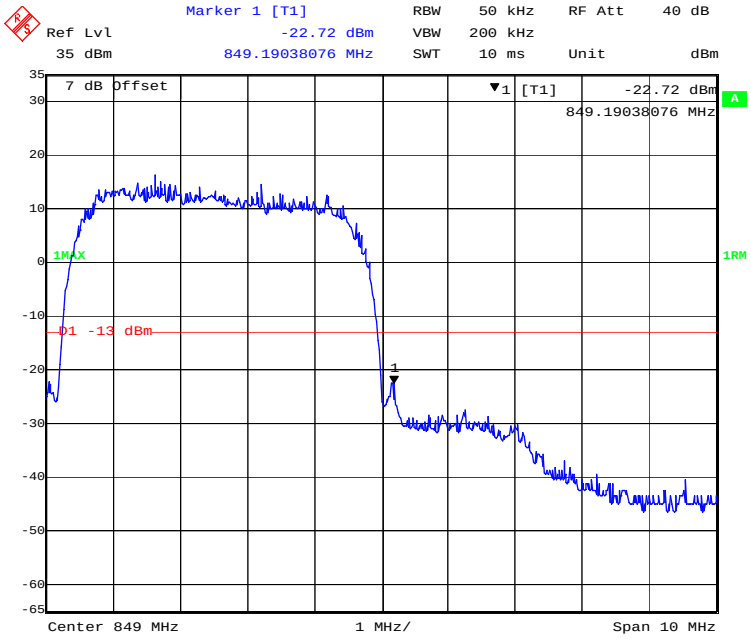

Date: 12.NOV.2020 21:25:49

## WCDMA (HSUPA) Mode, Left Band Edge



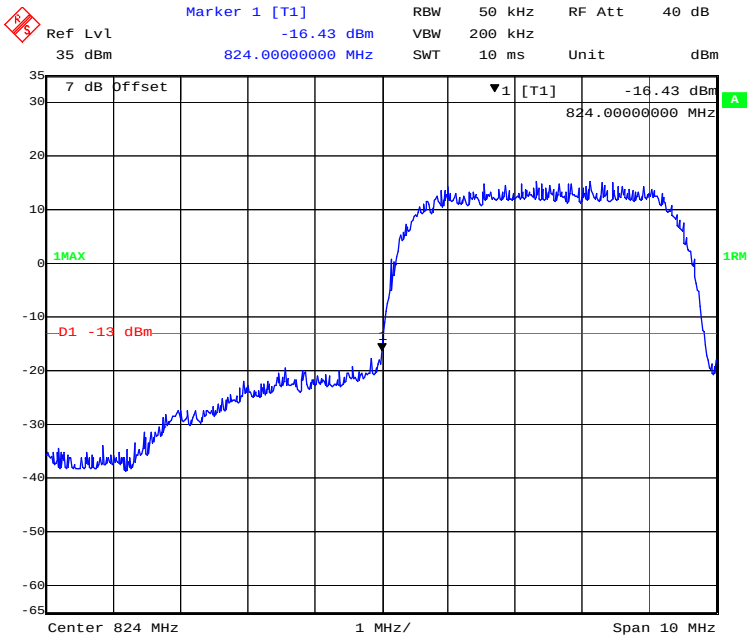

Date: 12.NOV.2020 21:27:35

## WCDMA (HSUPA) Mode, Right Band Edge



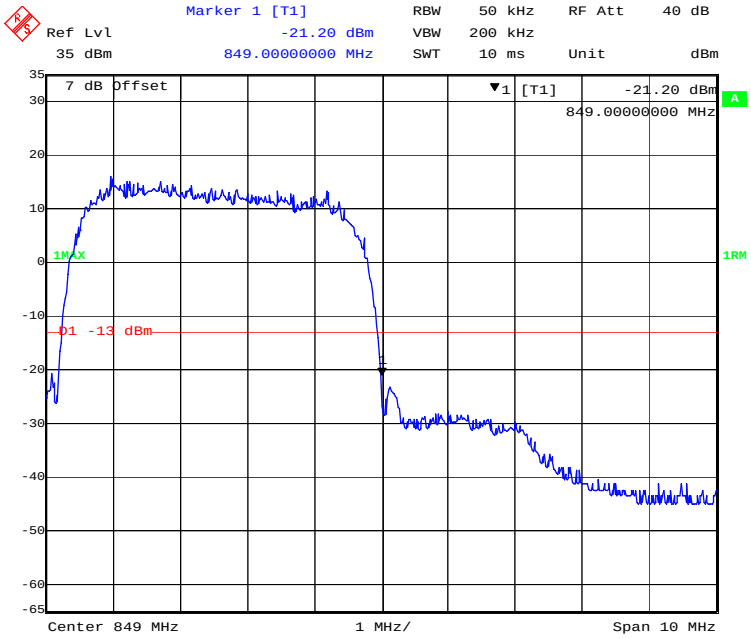

Date: 12.NOV.2020 21:26:05

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




Date: 12.NOV.2020 21:27:54

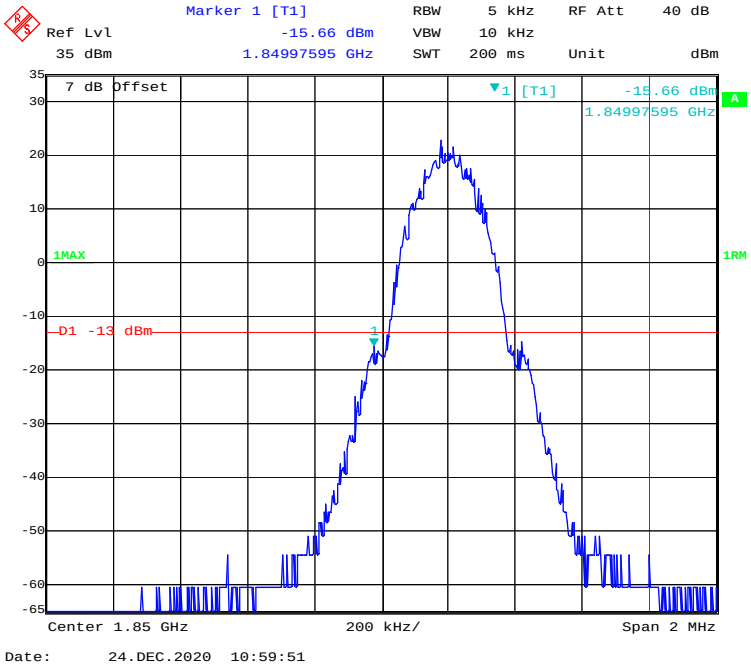
## WCDMA (HSPA+) Mode, Right Band Edge



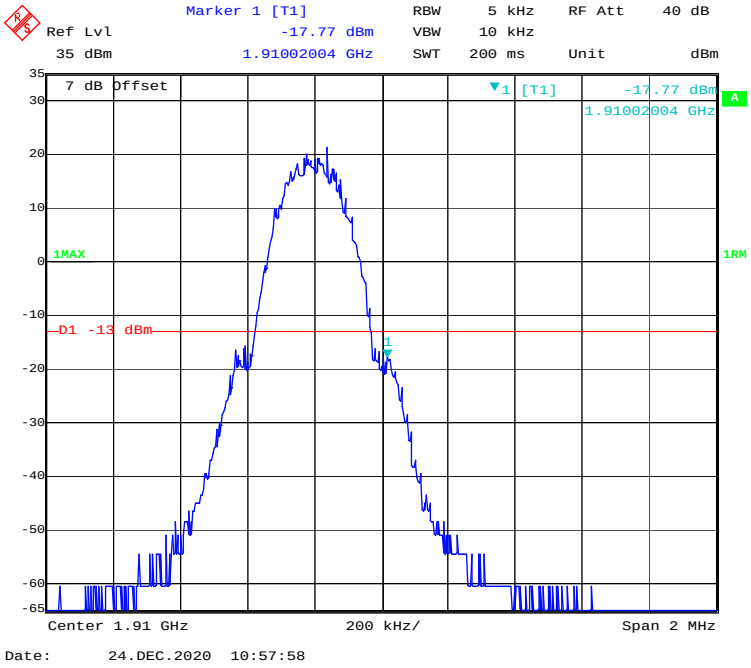

Date: 12.NOV.2020 21:26:36

## PCS 1900 Band:

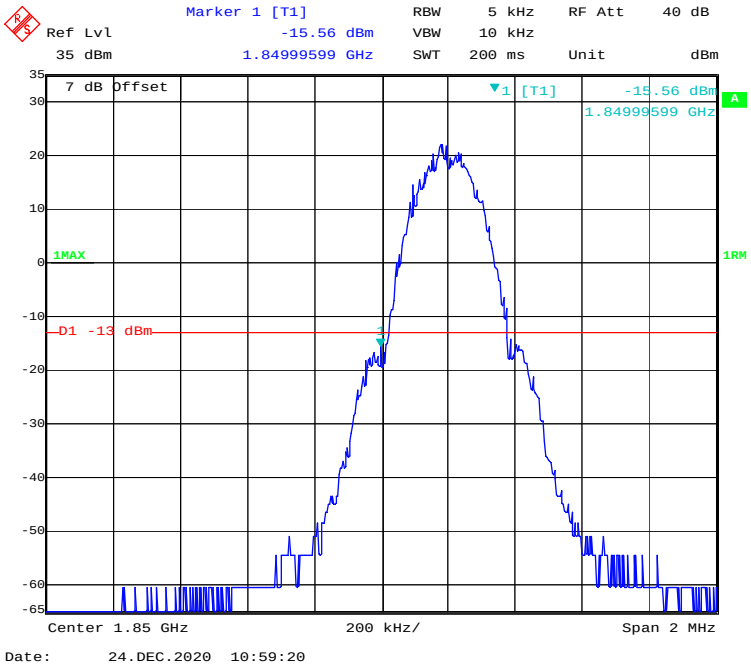
### GSM Mode, Left Band Edge



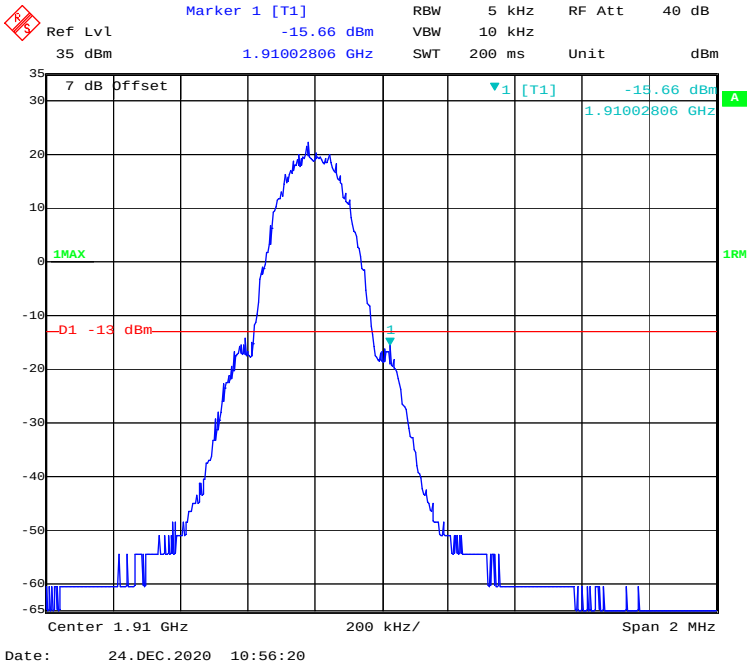

### GSM Mode, Right Band Edge



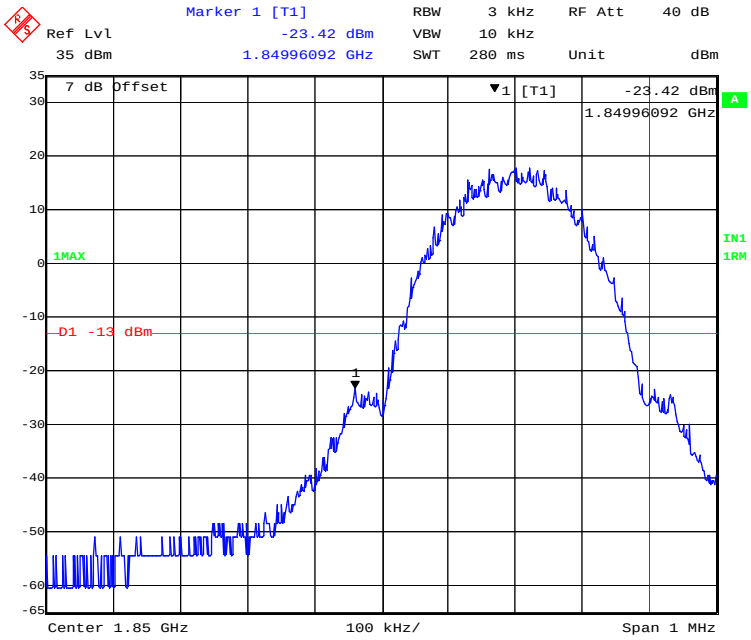
## GPRS Mode, Left Band Edge




## GPRS Mode, Right Band Edge

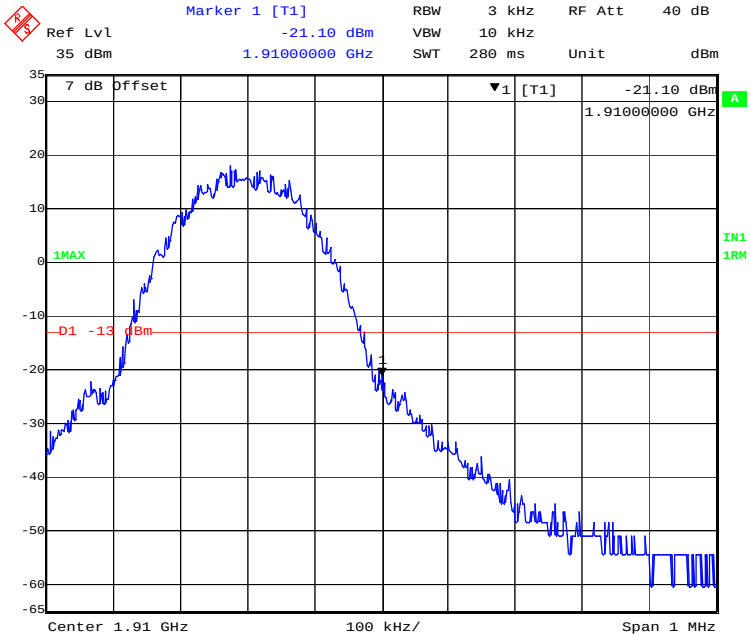


## EGPRS Mode, Left Band Edge




Date: 12.NOV.2020 22:08:30

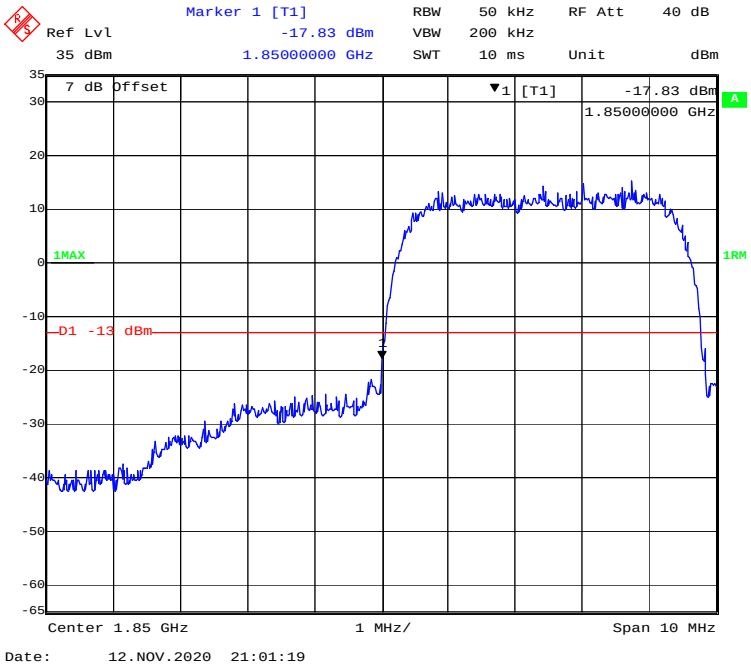
## EGPRS Mode, Right Band Edge



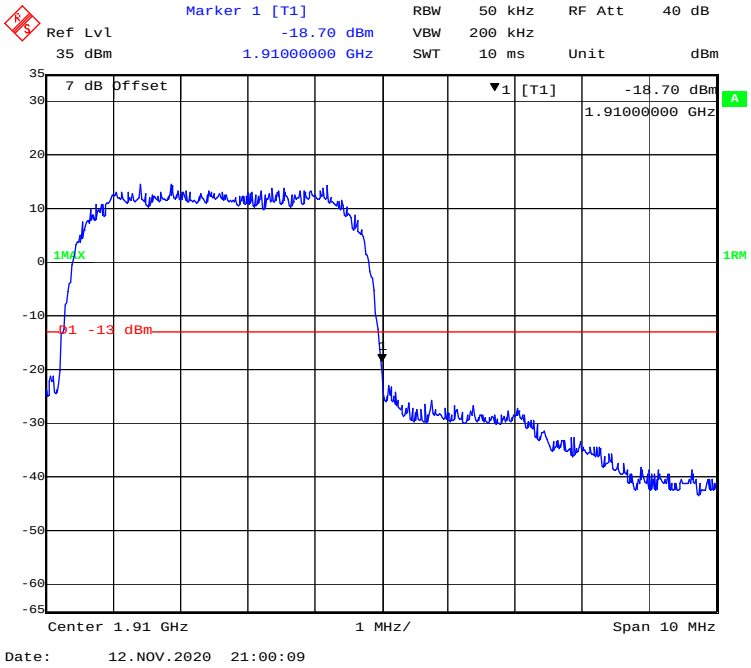

Date: 12.NOV.2020 22:07:05

## WCDMA Band II

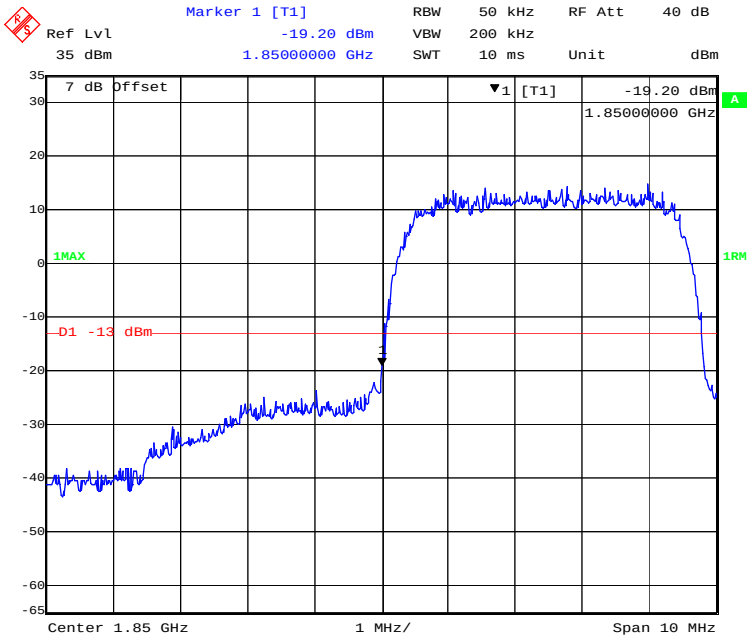
### WCDMA (Rel 99) Mode, Left Band Edge




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

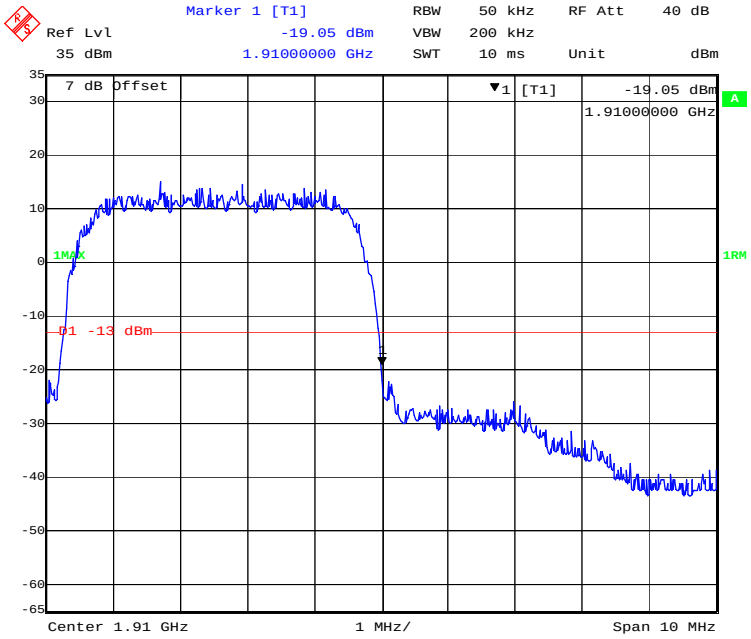


## WCDMA (HSDPA) Mode, Left Band Edge



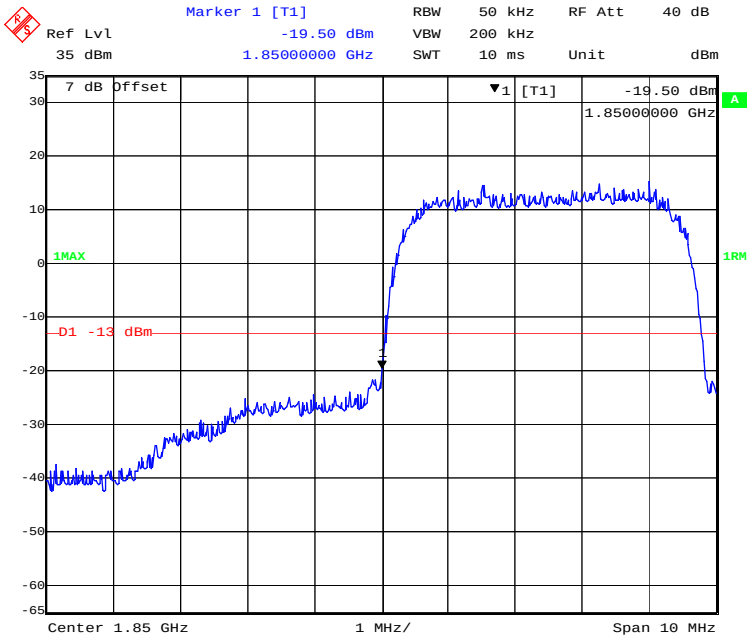

Date: 12.NOV.2020 21:01:32

## WCDMA (HSDPA) Mode, Right Band Edge



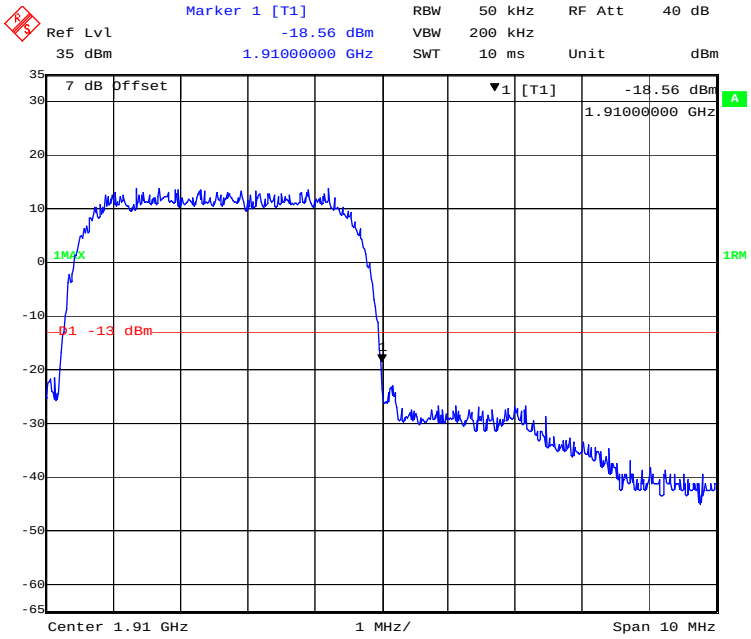

Date: 12.NOV.2020 21:00:31

## WCDMA (HSUPA) Mode, Left Band Edge



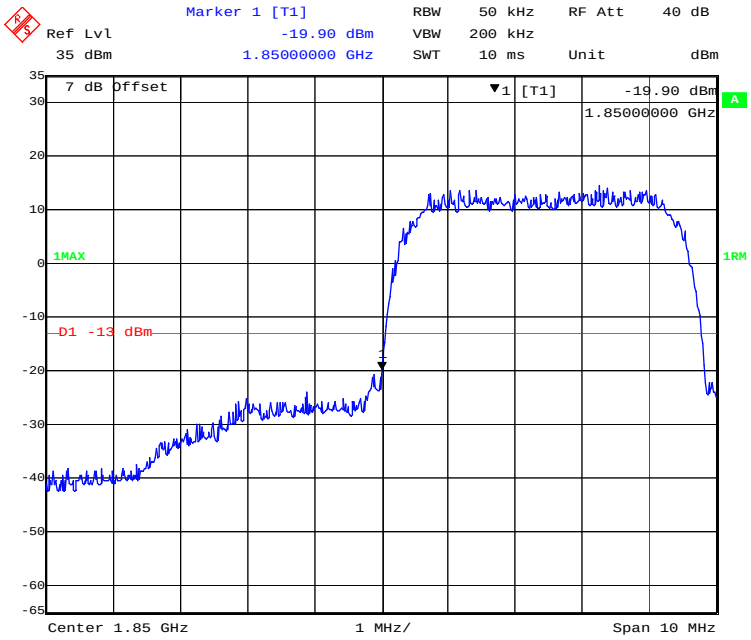

Date: 12.NOV.2020 21:01:51

## WCDMA (HSUPA) Mode, Right Band Edge



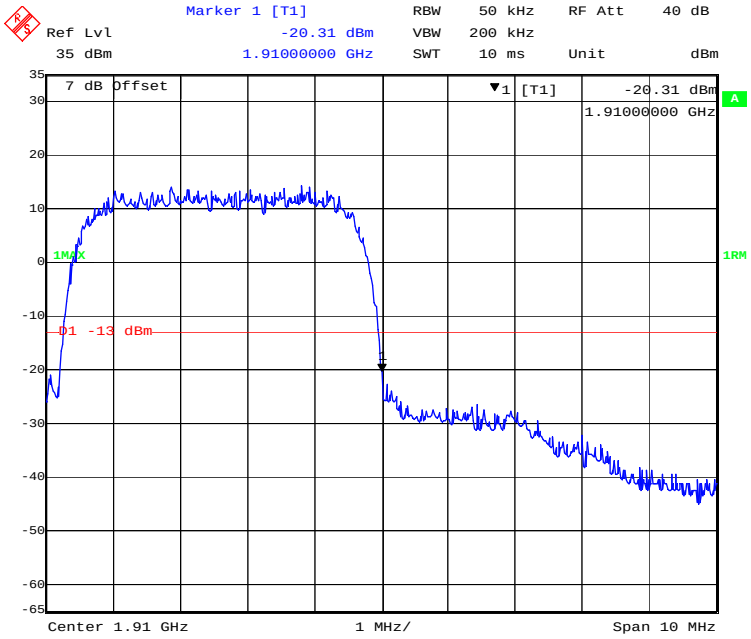

Date: 12.NOV.2020 21:00:44

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




Date: 12.NOV.2020 21:02:06

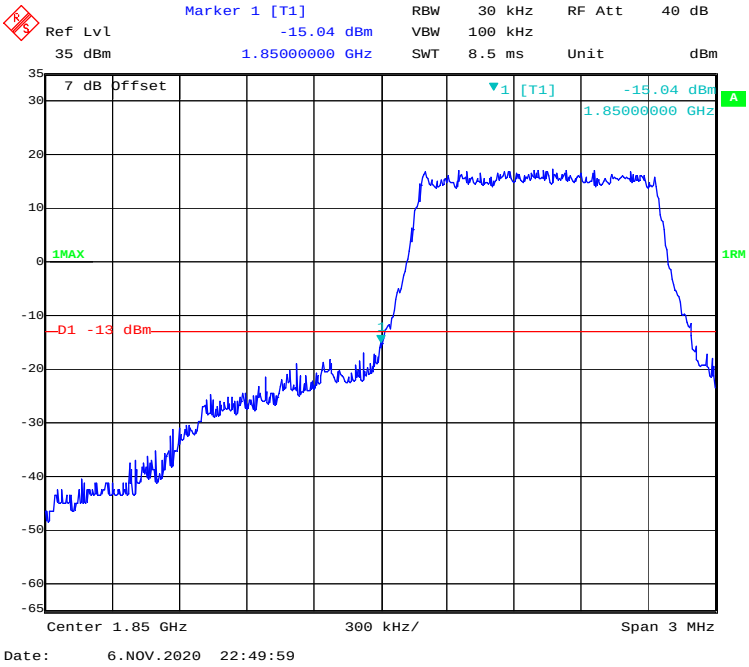
## WCDMA (HSPA+) Mode, Right Band Edge



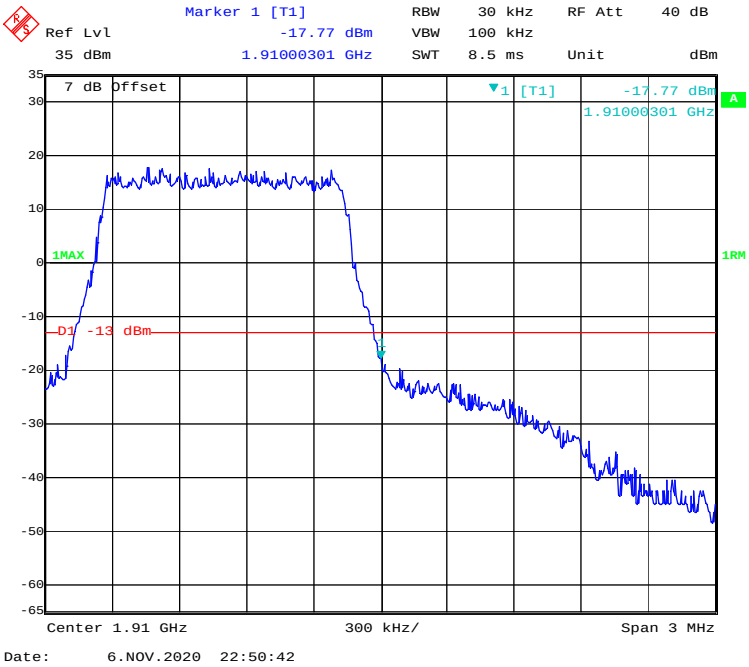

Date: 12.NOV.2020 21:00:57

## LTE Band 2:

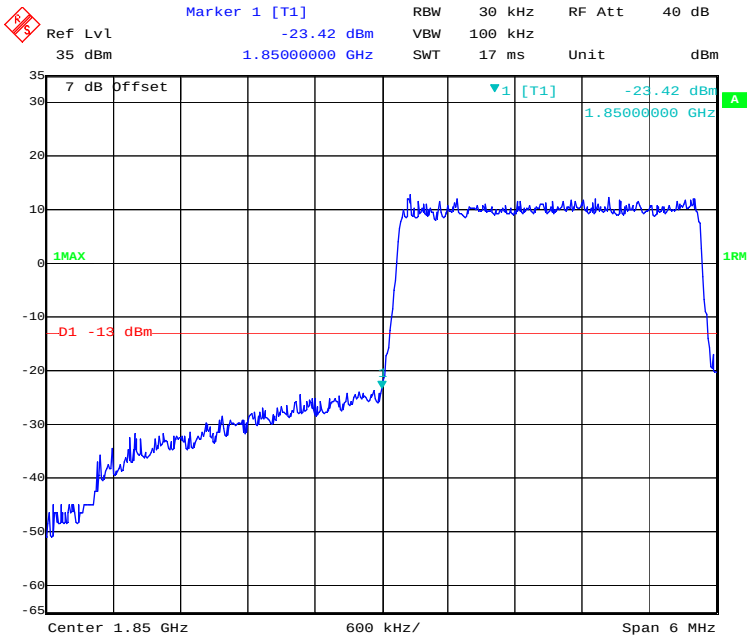
### QPSK (1.4 MHz, FULL RB) - Left Band Edge




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

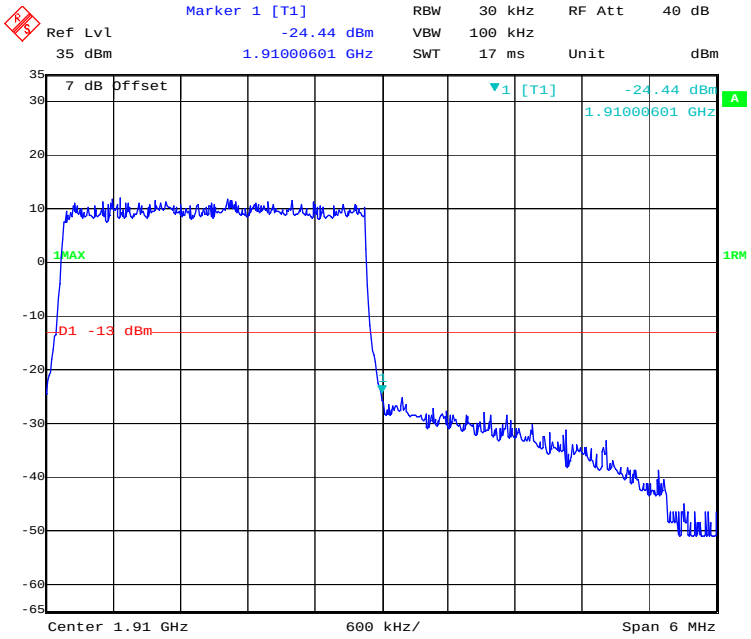


## QPSK (3 MHz, FULL RB) - Left Band Edge



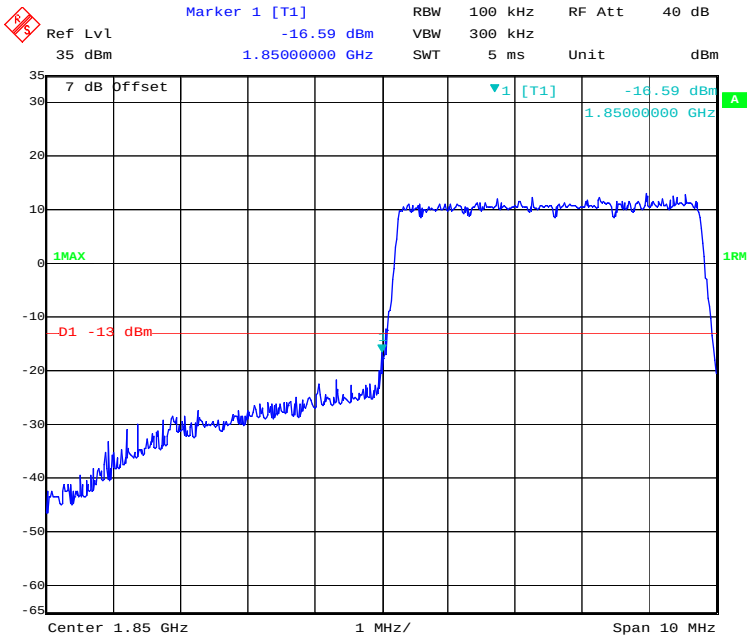

Date: 6.NOV.2020 22:51:24

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



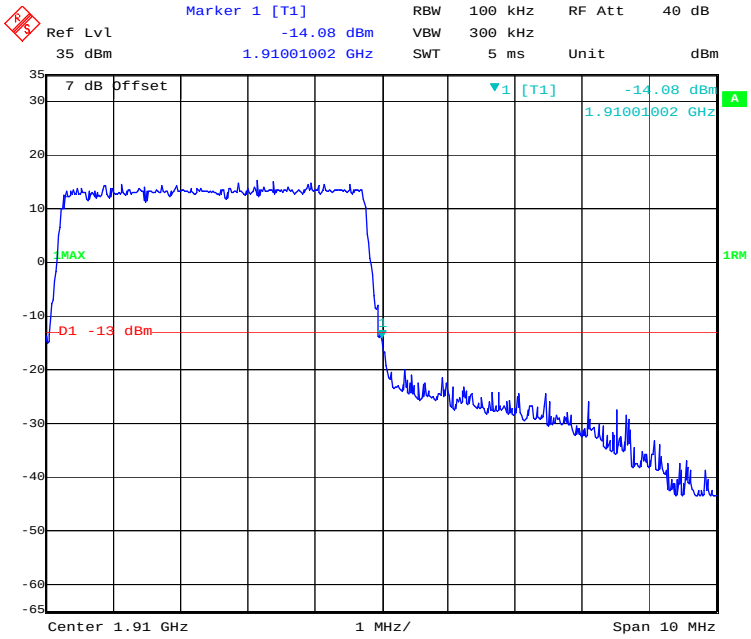

Date: 6.NOV.2020 22:52:03

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



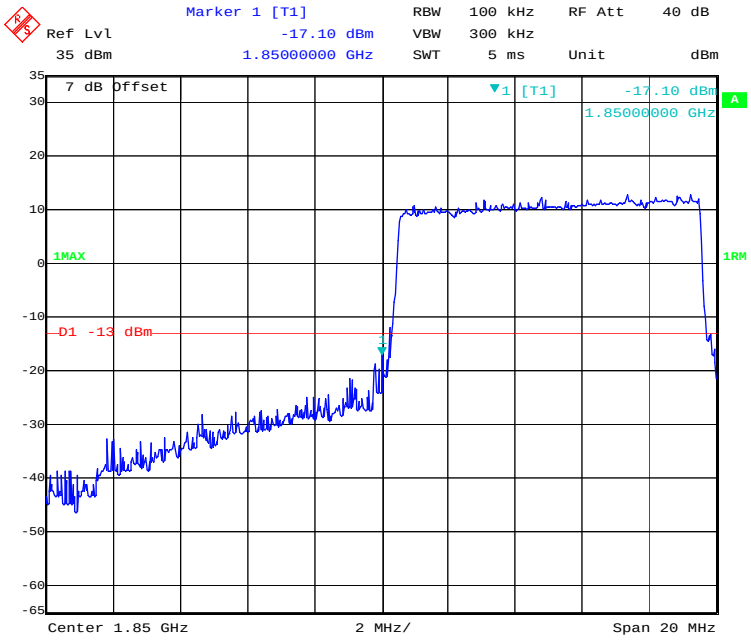

Date: 10.NOV.2020 23:25:25

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



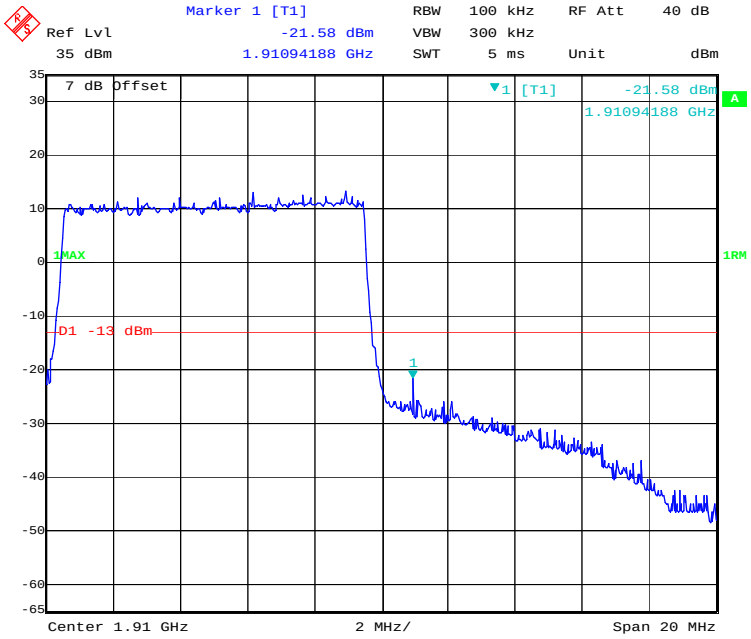

Date: 6.NOV.2020 22:53:28

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



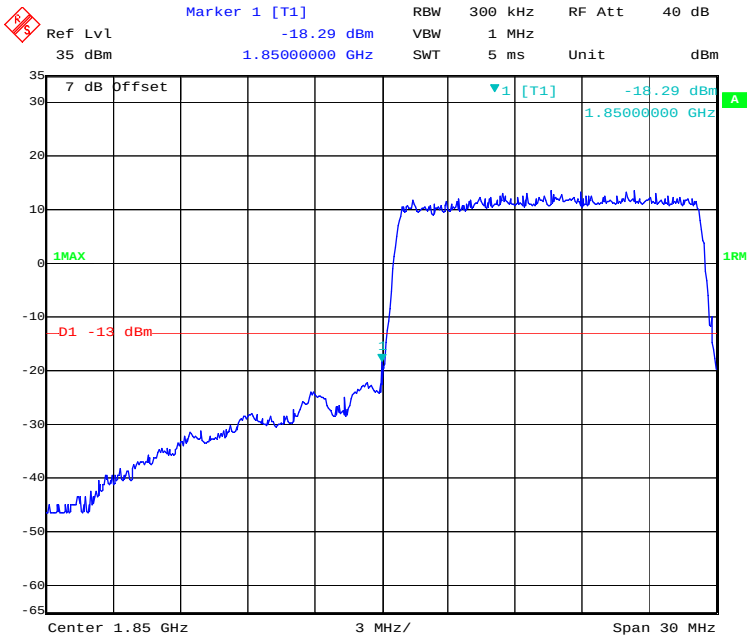

Date: 6.NOV.2020 22:54:16

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



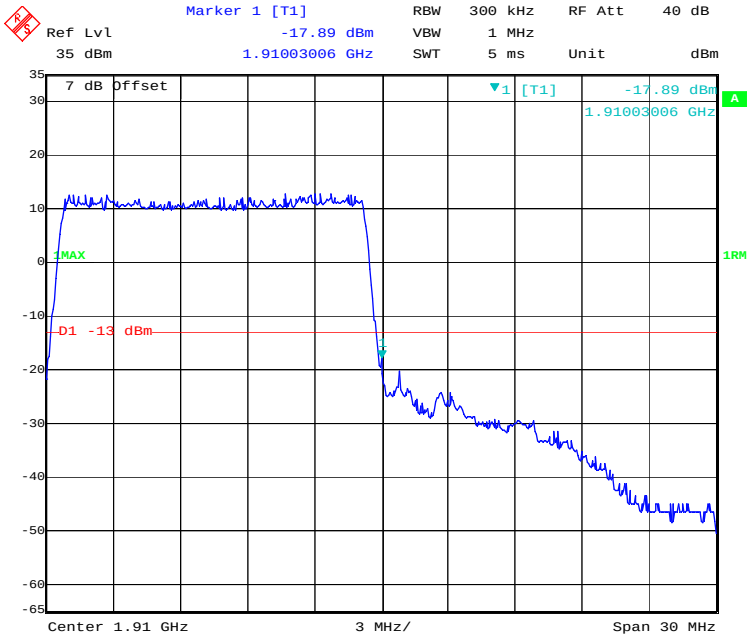

Date: 6.NOV.2020 22:55:01

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



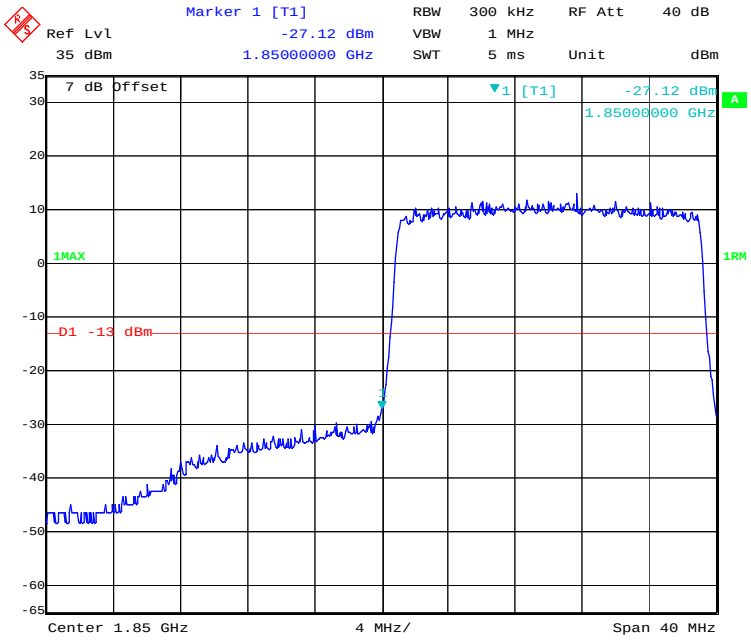

Date: 6.NOV.2020 22:55:49

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



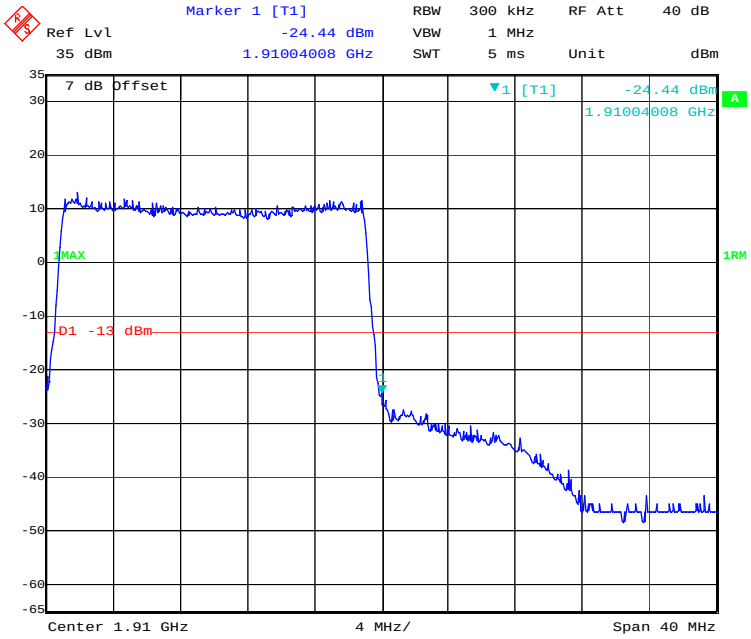

Date: 6.NOV.2020 22:56:31

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



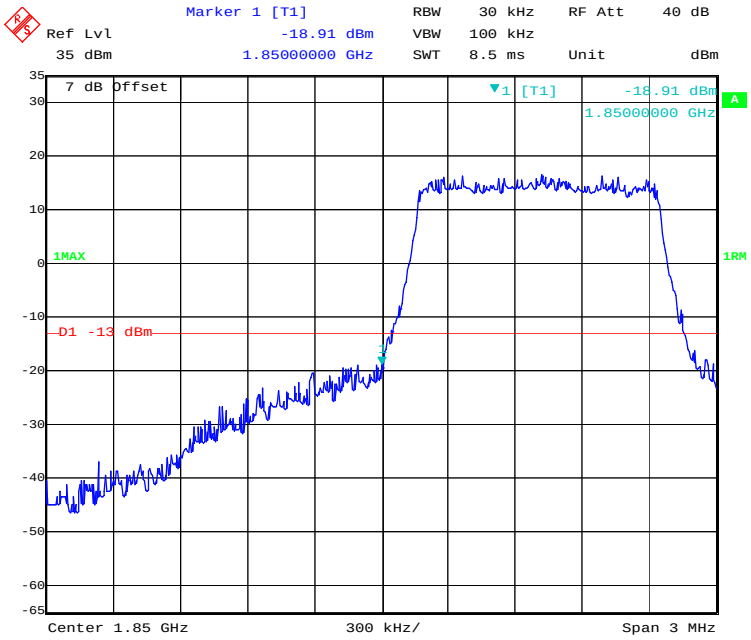

Date: 6.NOV.2020 22:57:15

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



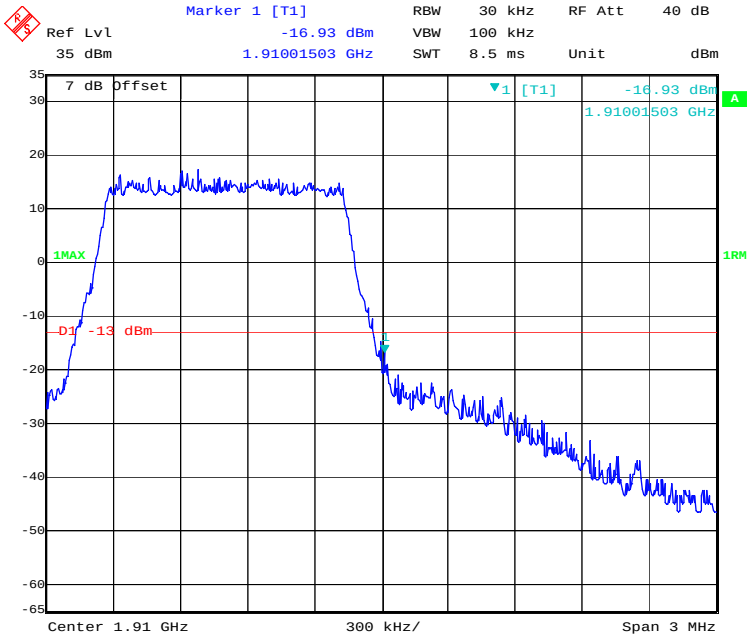

Date: 6.NOV.2020 22:57:57

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



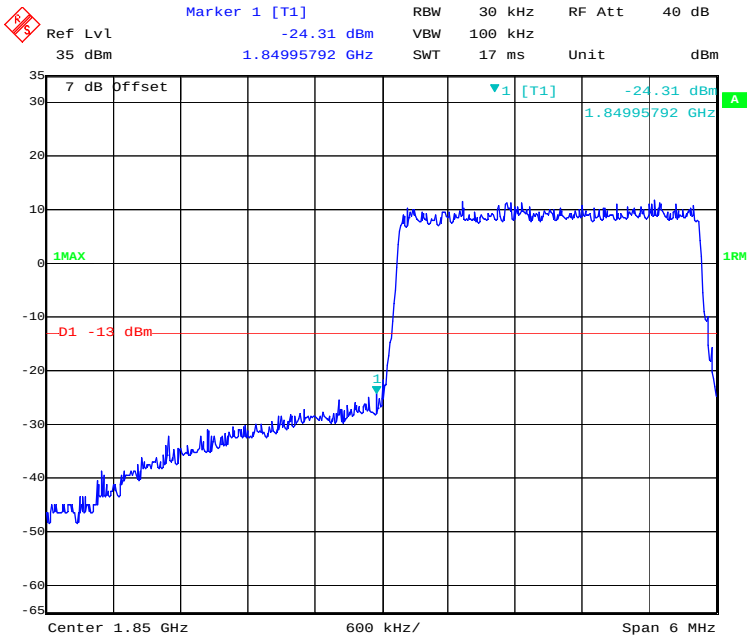

Date: 6.NOV.2020 22:50:18

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



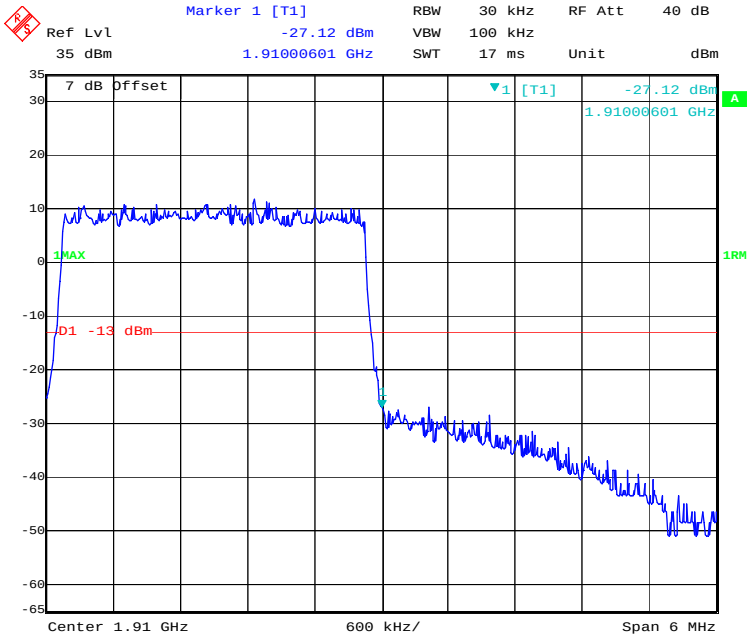

Date: 6.NOV.2020 22:51:01

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



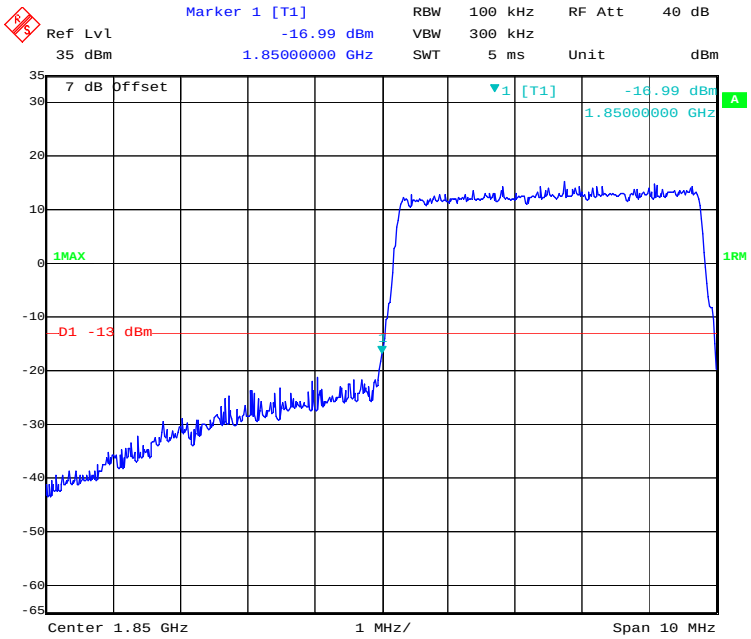

Date: 6.NOV.2020 22:51:43

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



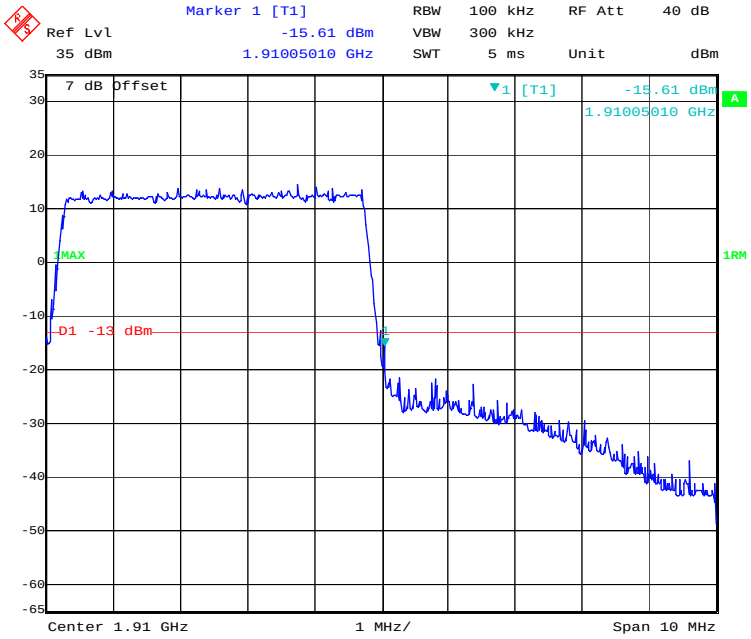

Date: 6.NOV.2020 22:52:22

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



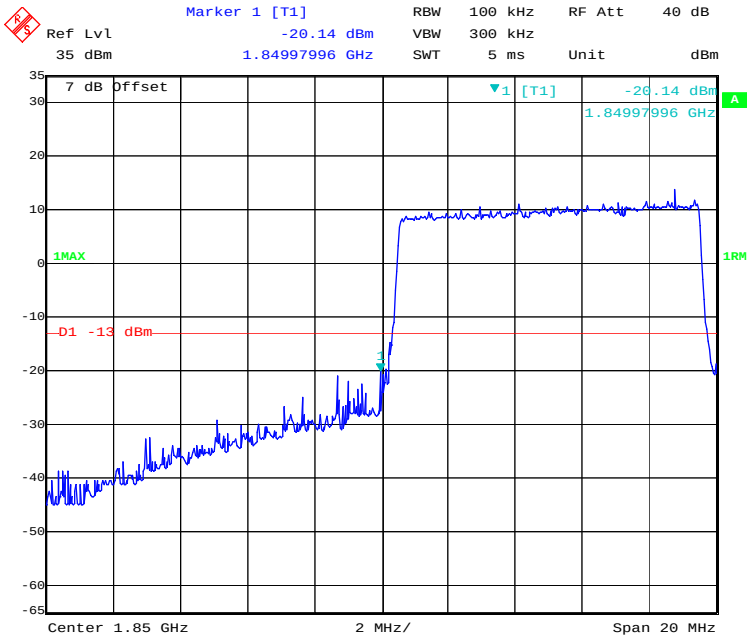

Date: 6.NOV.2020 22:53:07

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



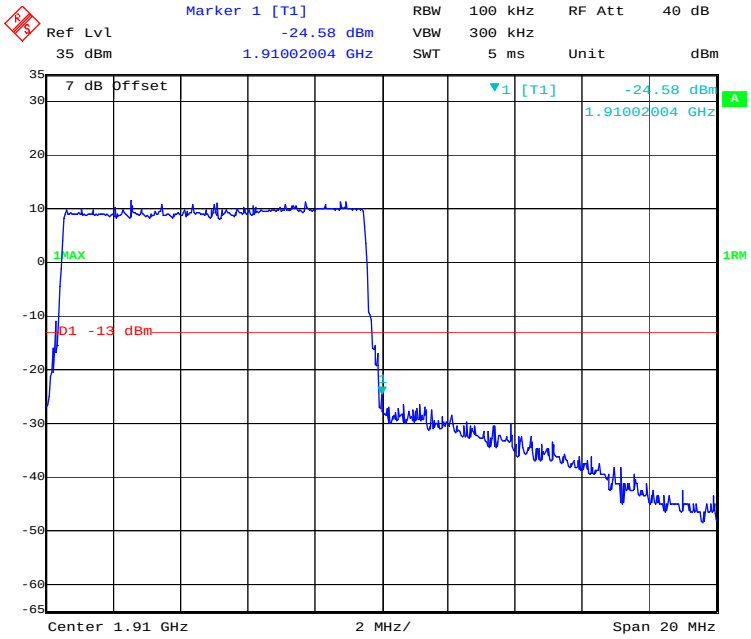

Date: 6.NOV.2020 22:53:49

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



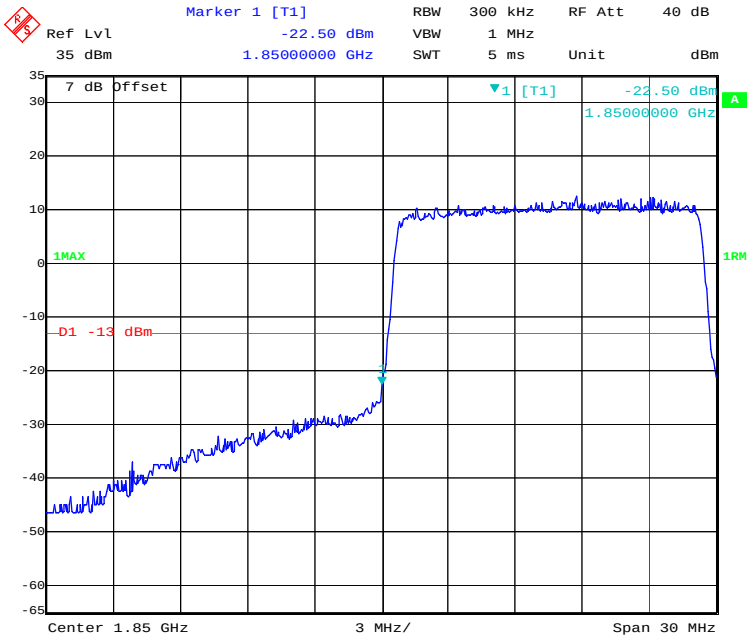

Date: 6.NOV.2020 22:54:40

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



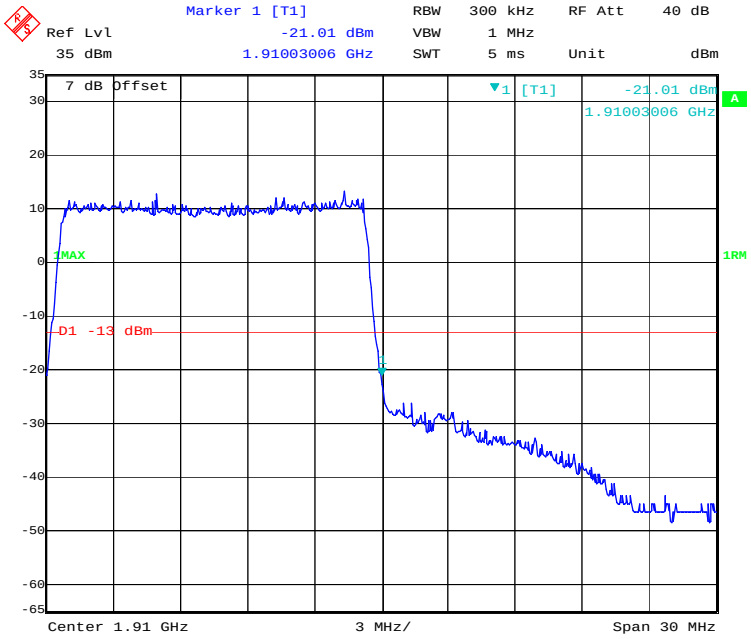

Date: 6.NOV.2020 22:55:21

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



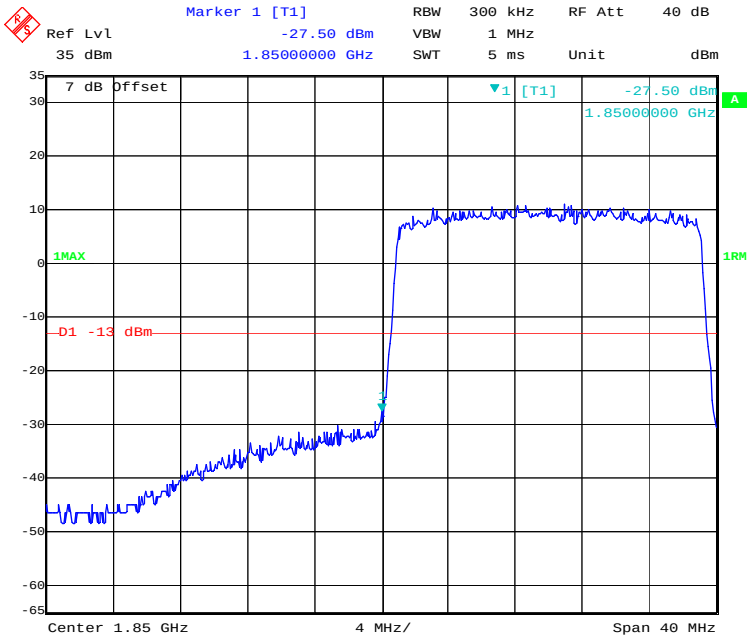

Date: 6.NOV.2020 22:56:09

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



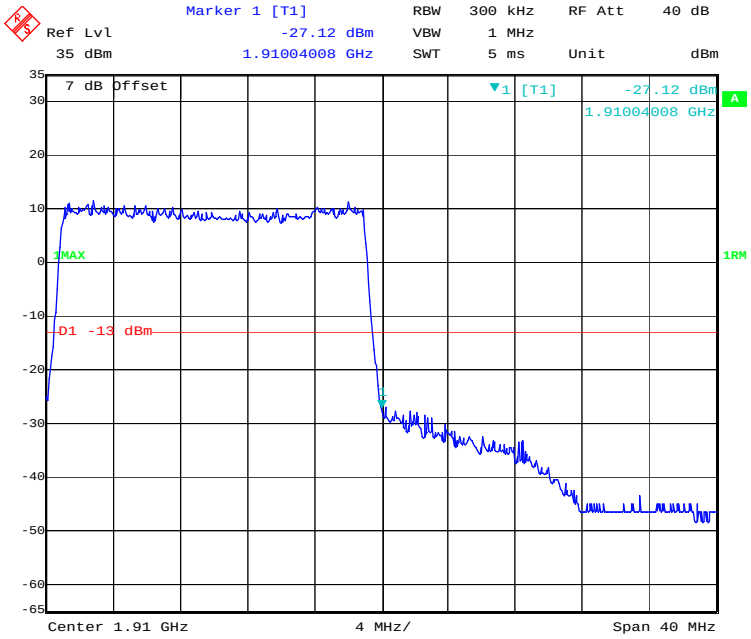

Date: 6.NOV.2020 22:56:51

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




Date: 6.NOV.2020 22:57:35

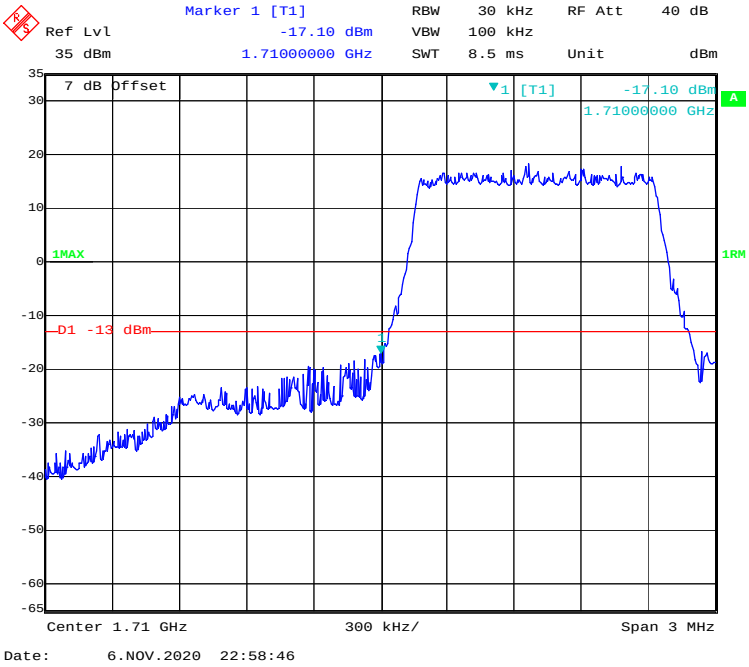
## 16-QAM (20 MHz, FULL RB) - Right Band Edge



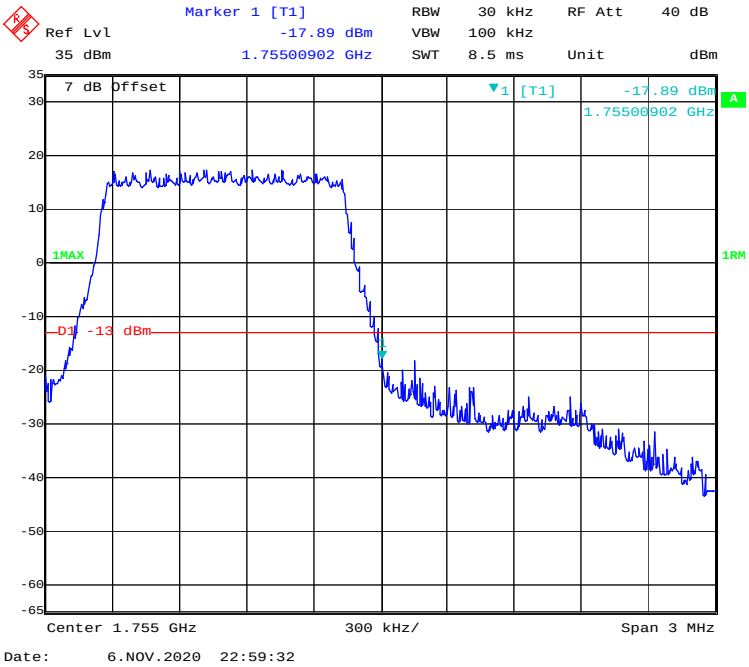

Date: 6.NOV.2020 22:58:20

## LTE Band 4:

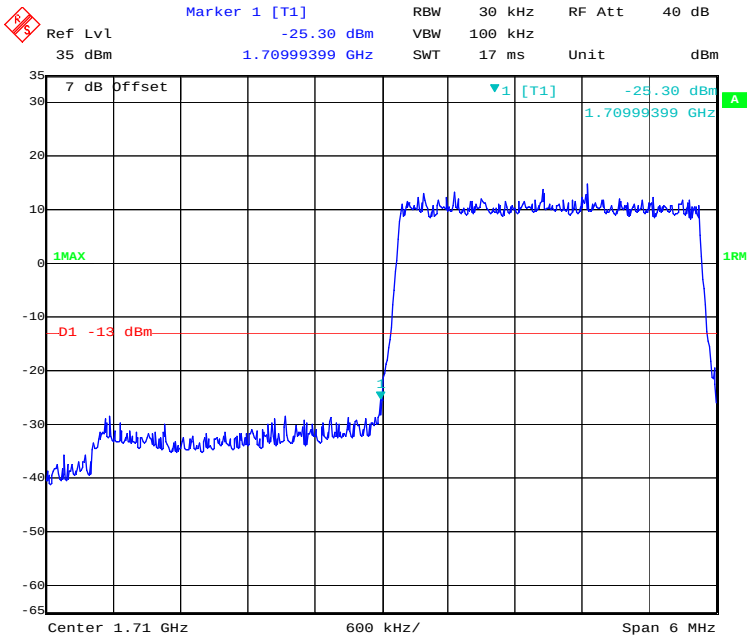
### QPSK (1.4 MHz, FULL RB) - Left Band Edge




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

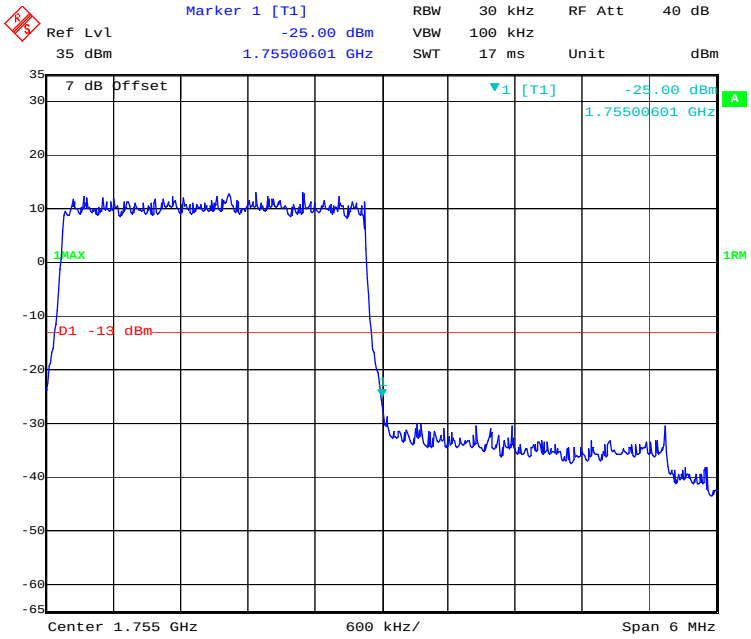


## QPSK (3 MHz, FULL RB) - Left Band Edge



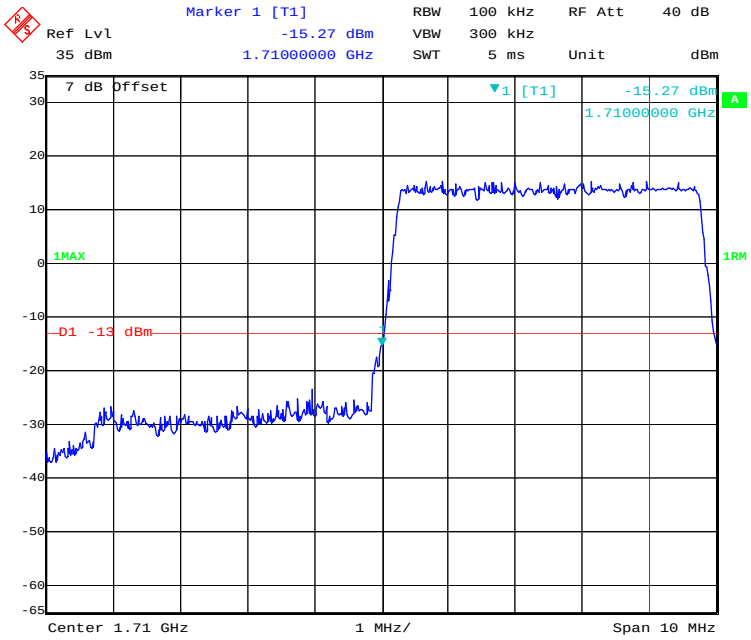

Date: 6.NOV.2020 23:00:17

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



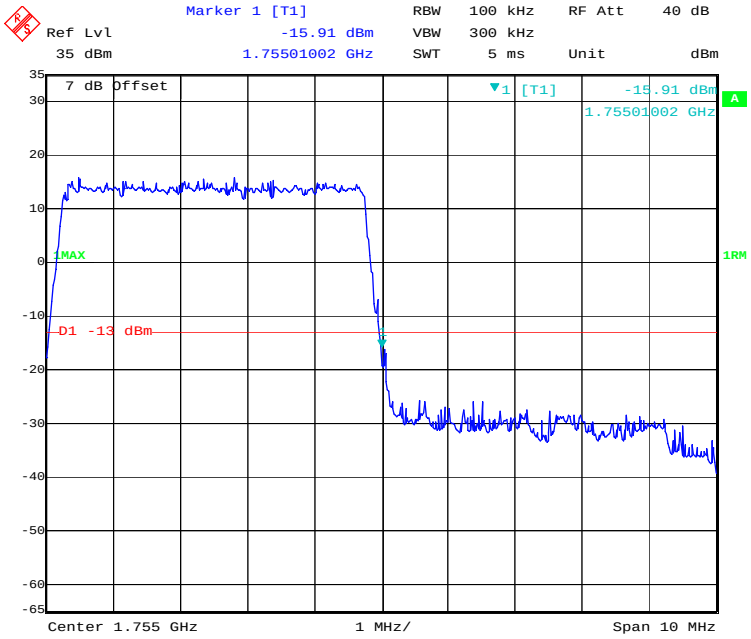

Date: 6.NOV.2020 23:00:57

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



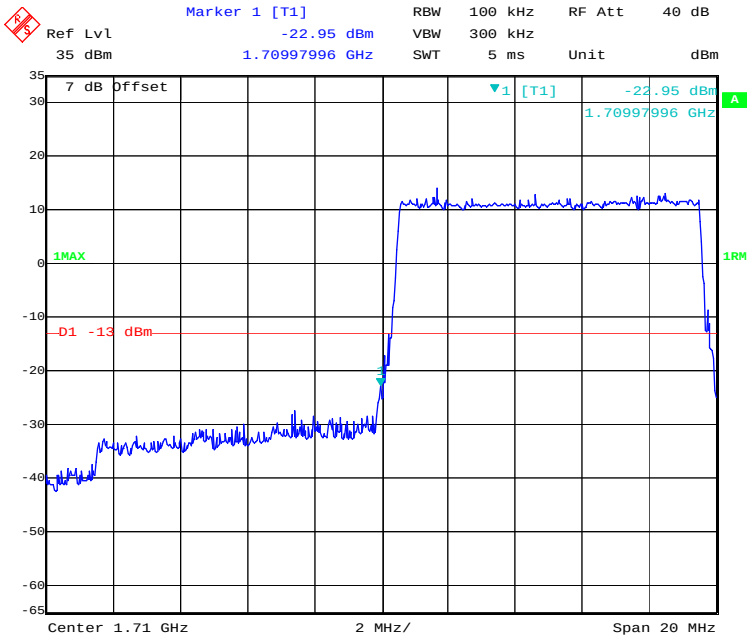

Date: 6.NOV.2020 23:01:37

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



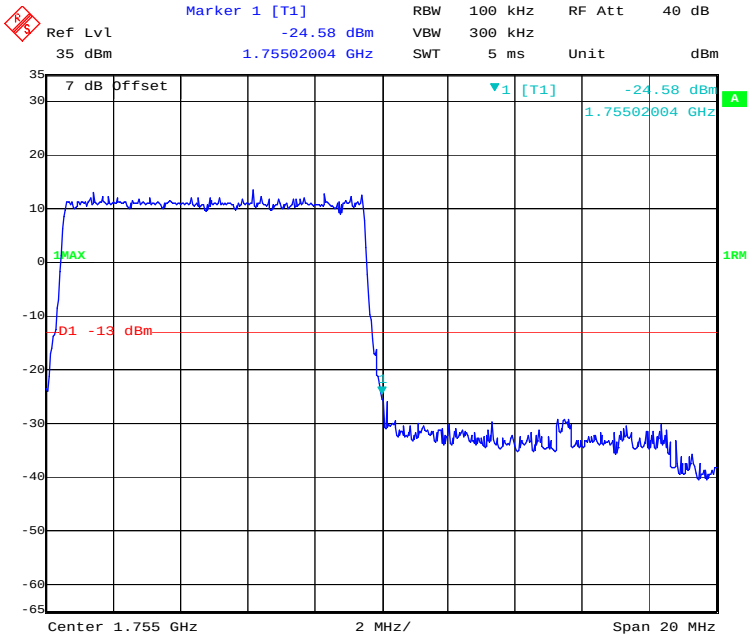

Date: 6.NOV.2020 23:02:12

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



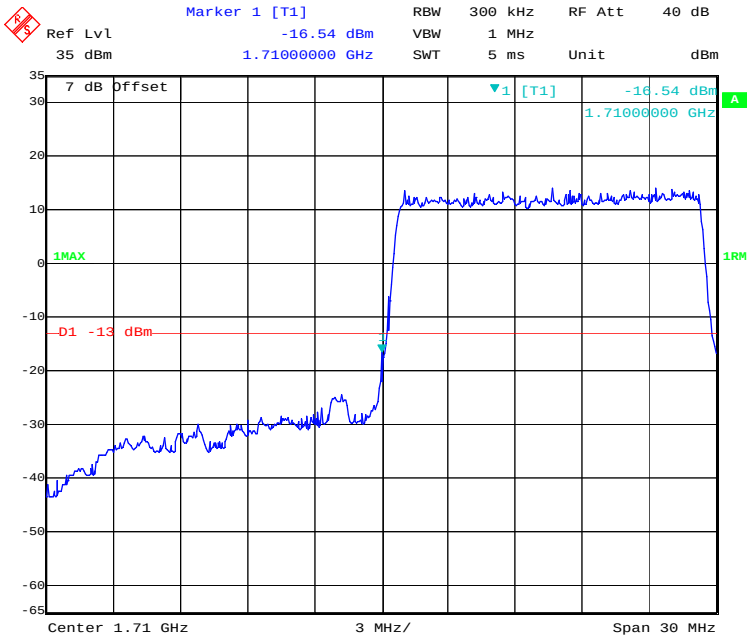

Date: 6.NOV.2020 23:02:56

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



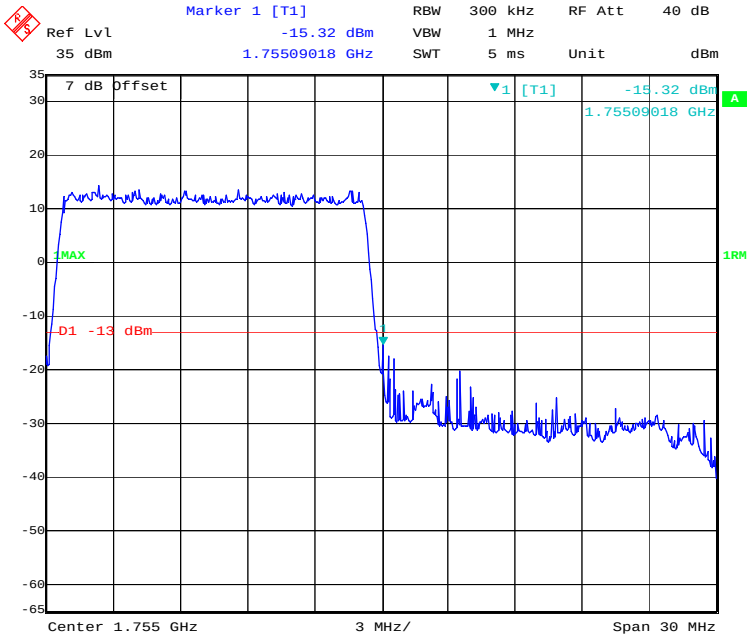

Date: 6.NOV.2020 23:03:35

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



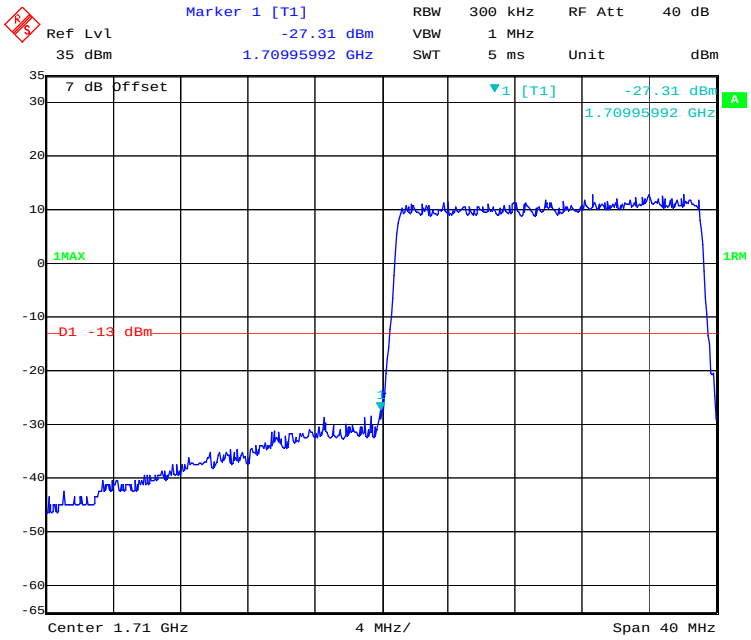

Date: 6.NOV.2020 23:04:22

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



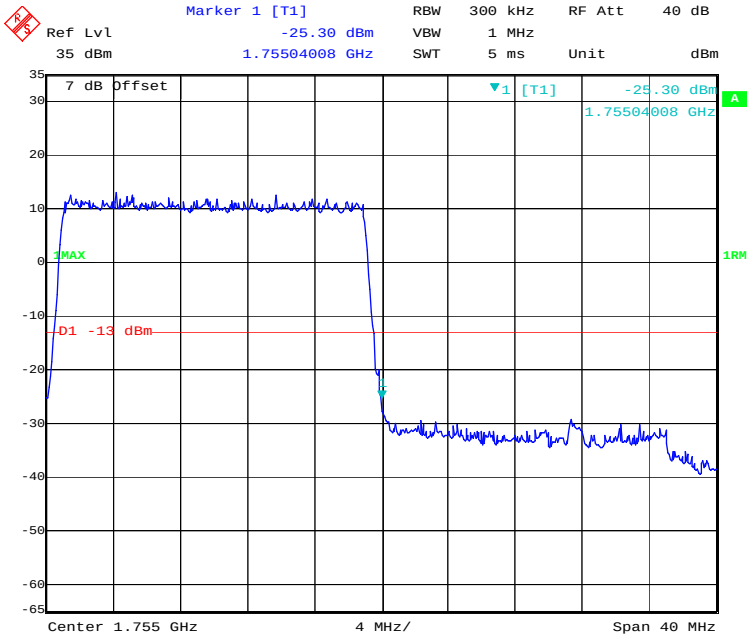

Date: 6.NOV.2020 23:05:07

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



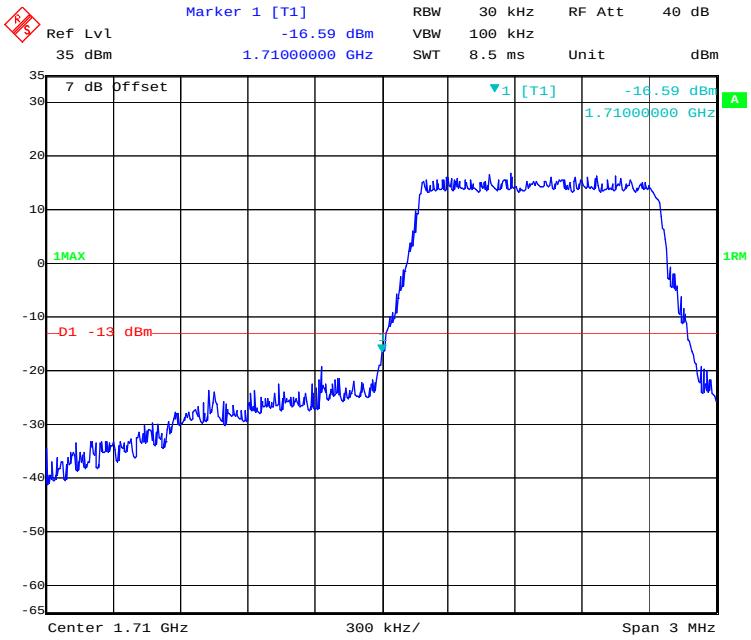

Date: 6.NOV.2020 23:05:55

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



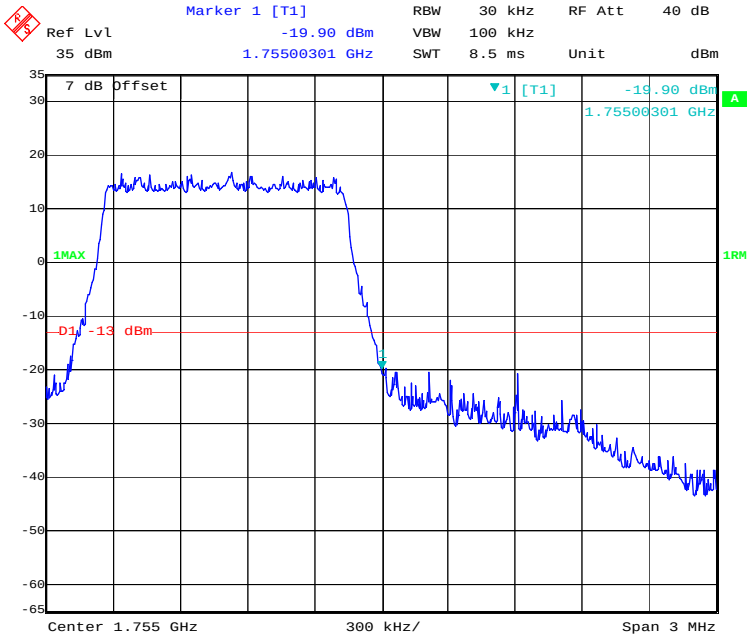

Date: 6.NOV.2020 23:06:37

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



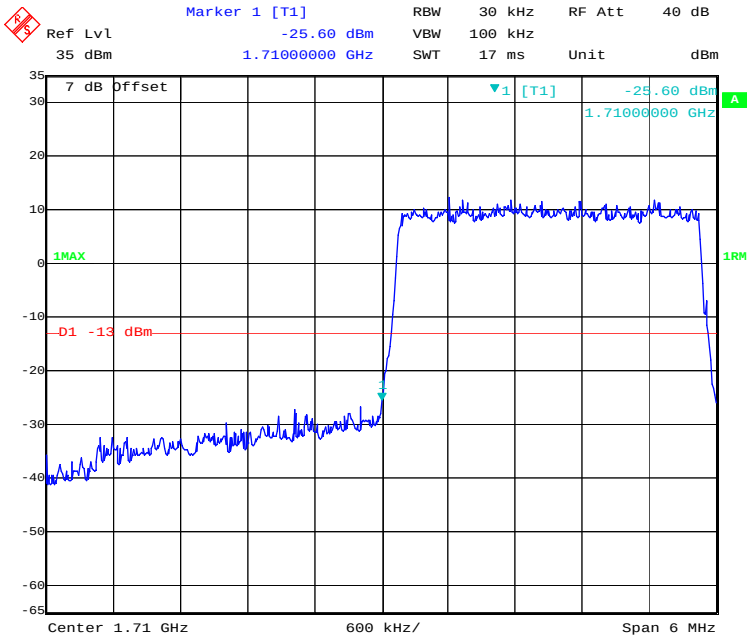

Date: 6.NOV.2020 22:59:09

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



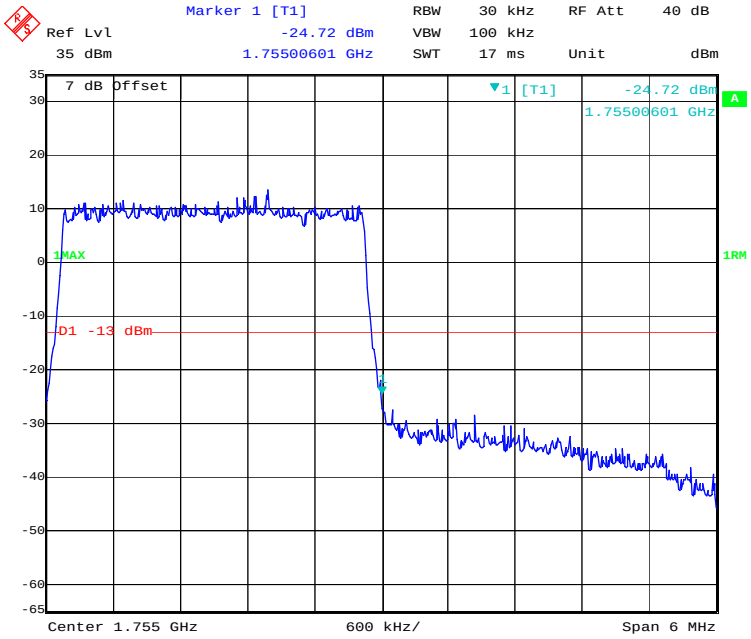

Date: 6.NOV.2020 22:59:55

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



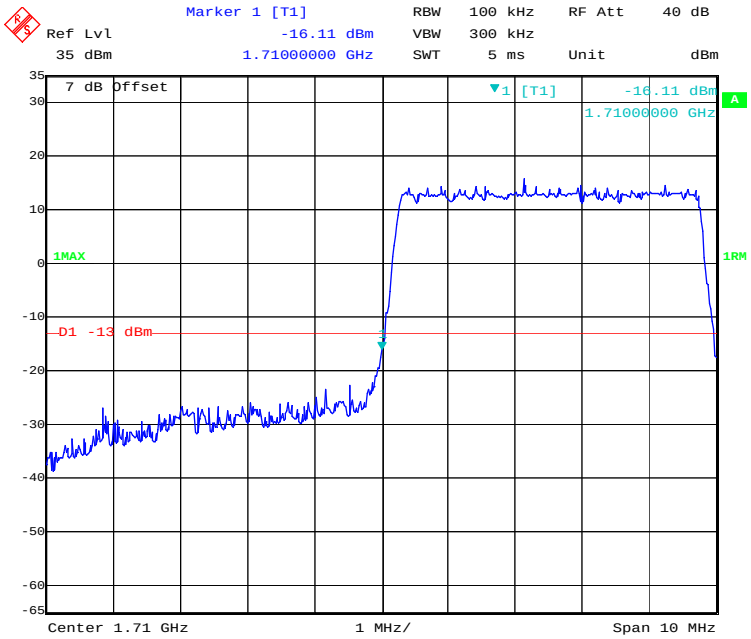

Date: 6.NOV.2020 23:00:37

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




Date: 6.NOV.2020 23:01:16

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

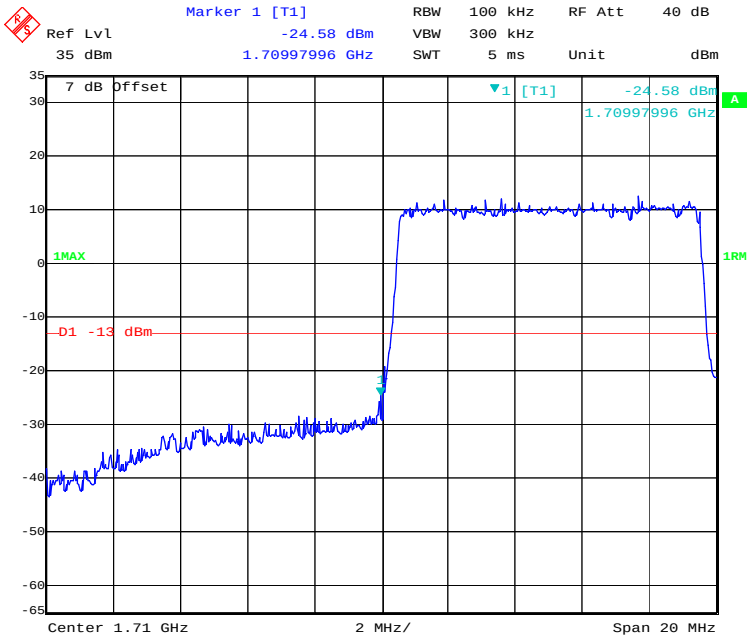



Date: 6.NOV.2020 23:01:54

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

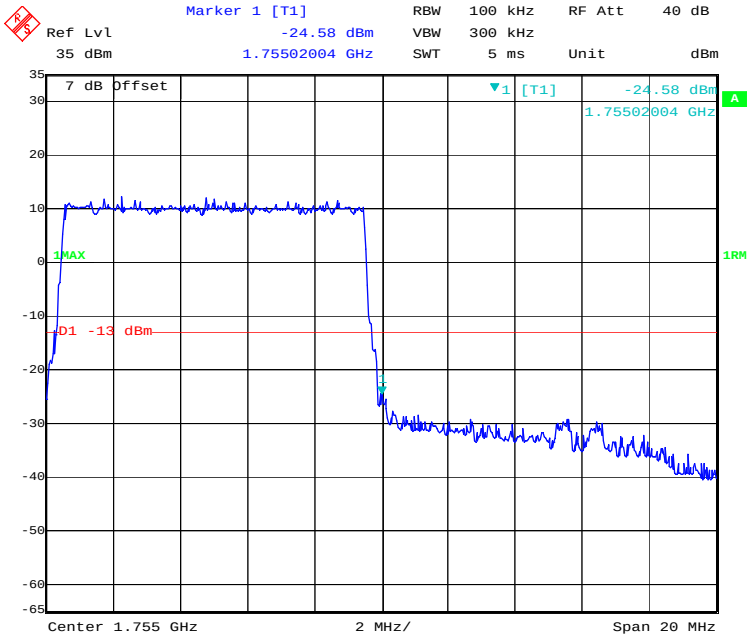
Date: 6.NOV.2020 23:02:32

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



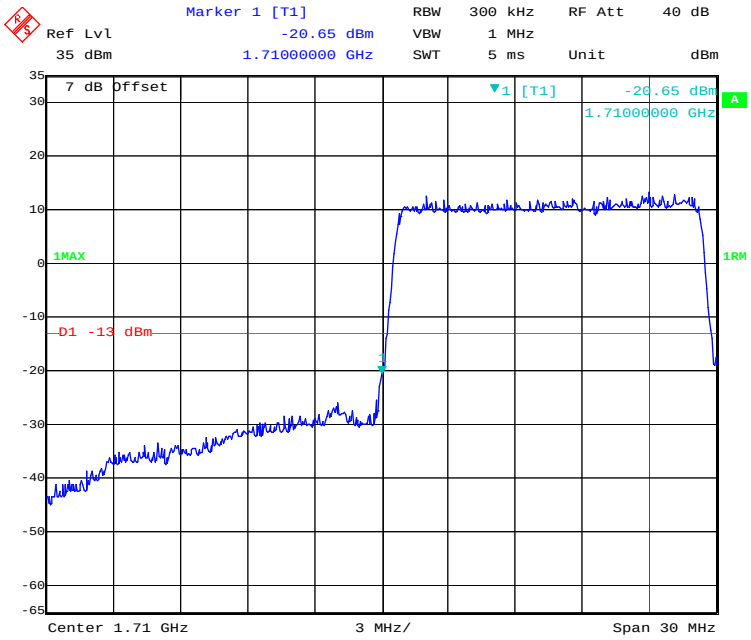

Date: 6.NOV.2020 23:03:13

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



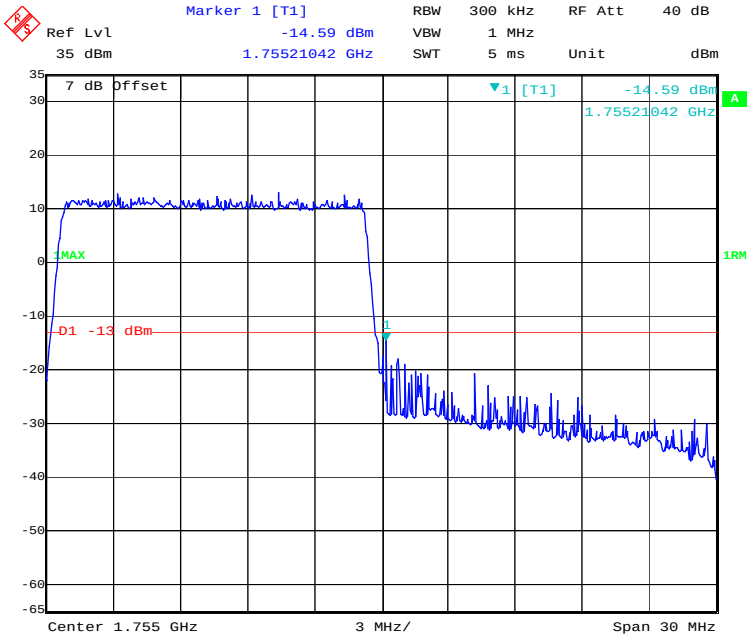

Date: 6.NOV.2020 23:03:55

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



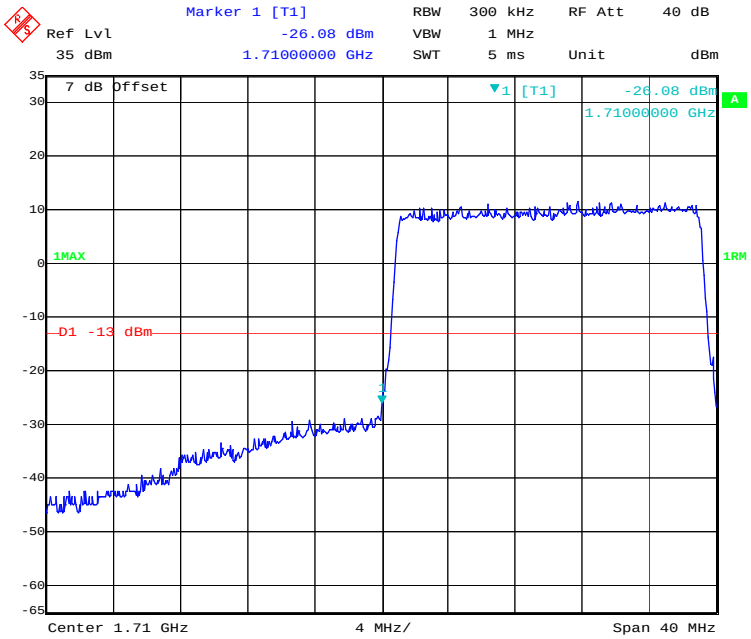

Date: 6.NOV.2020 23:04:43

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



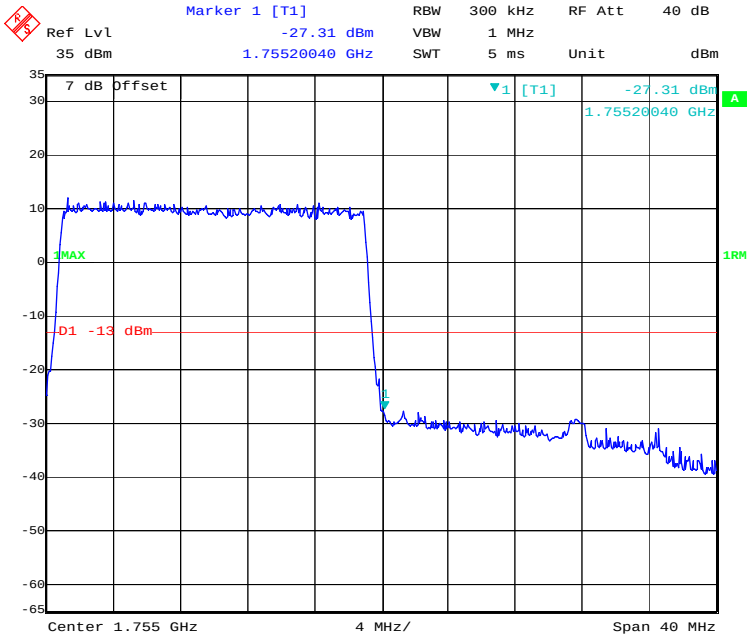

Date: 6.NOV.2020 23:05:31

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




Date: 6.NOV.2020 23:06:15

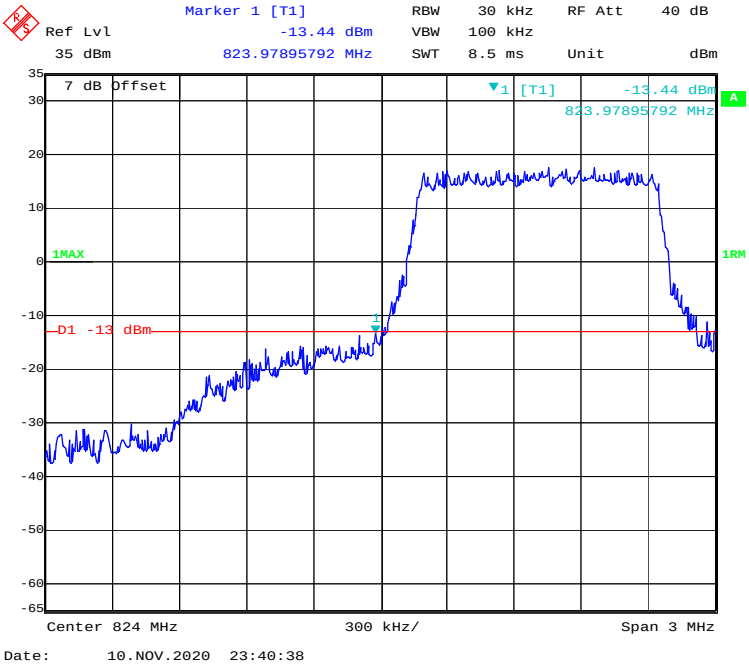
## 16-QAM (20 MHz, FULL RB) - Right Band Edge



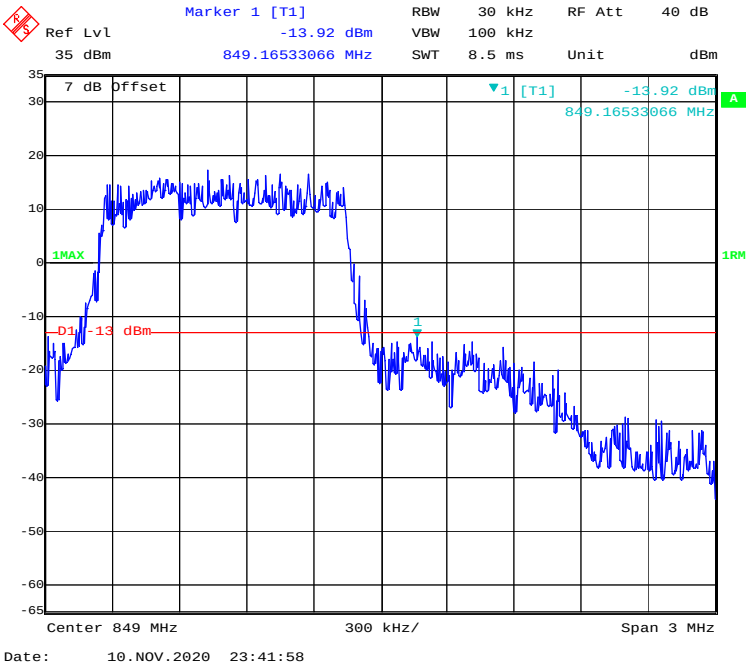

Date: 6.NOV.2020 23:07:00

## LTE Band 5:

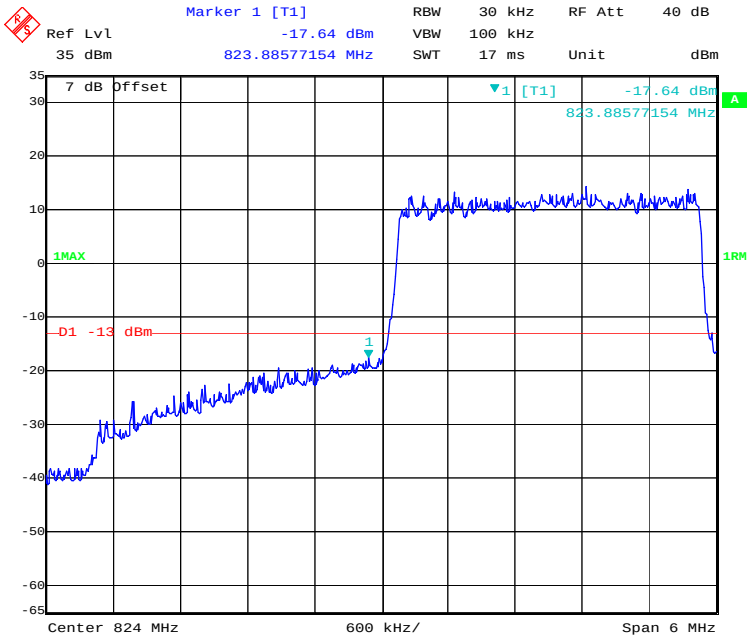
### QPSK (1.4 MHz, FULL RB) - Left Band Edge




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

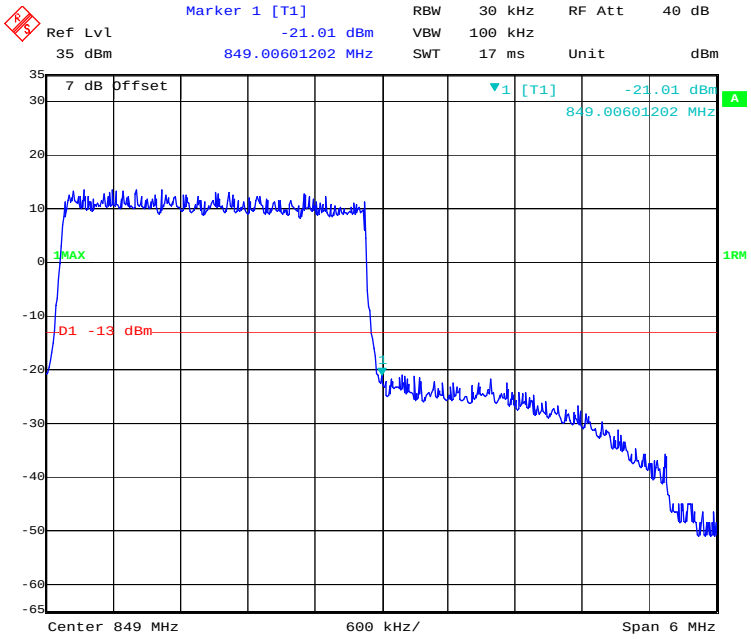


## QPSK (3.0 MHz, FULL RB) - Left Band Edge



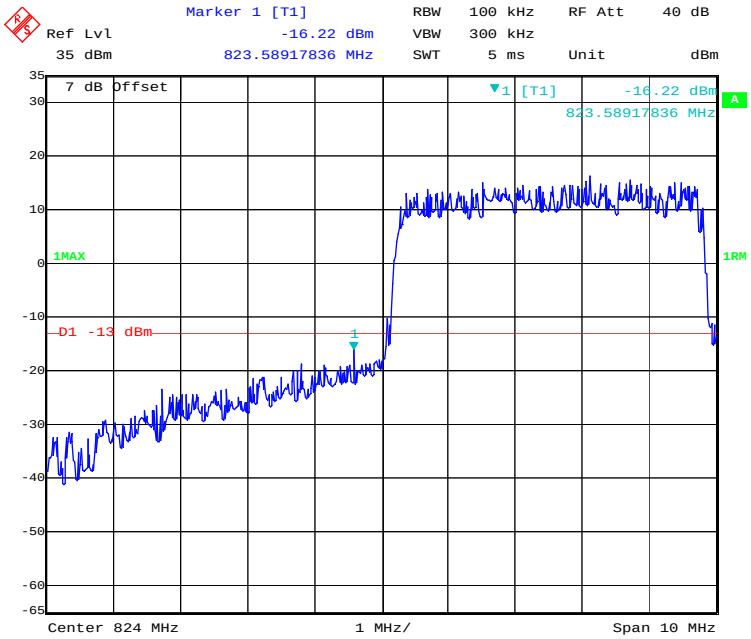

Date: 6.NOV.2020 23:08:55

## QPSK (3.0 MHz, FULL RB) - Right Band Edge



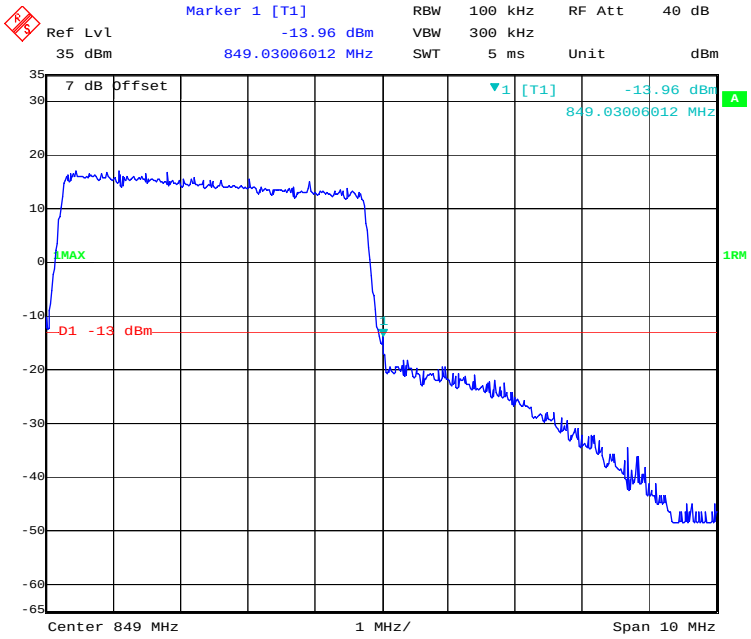

Date: 6.NOV.2020 23:09:32

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



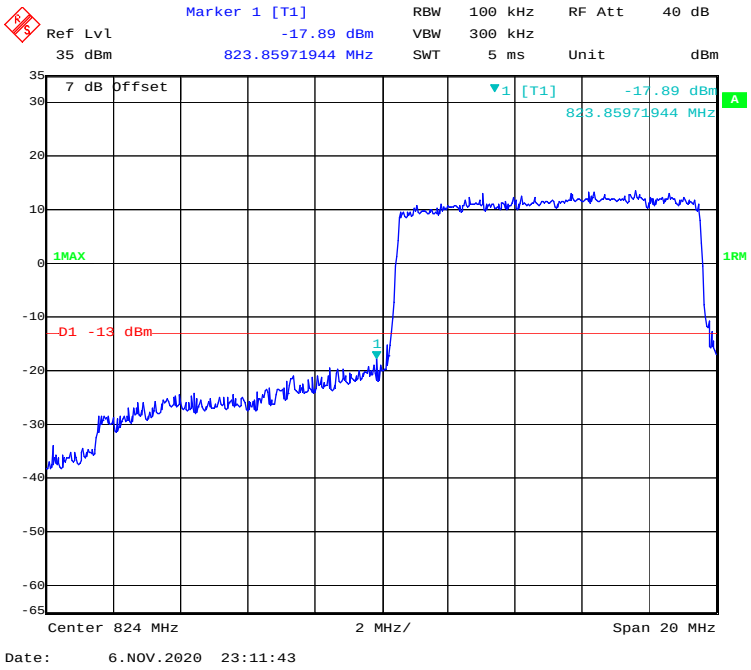

Date: 10.NOV.2020 23:43:15

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

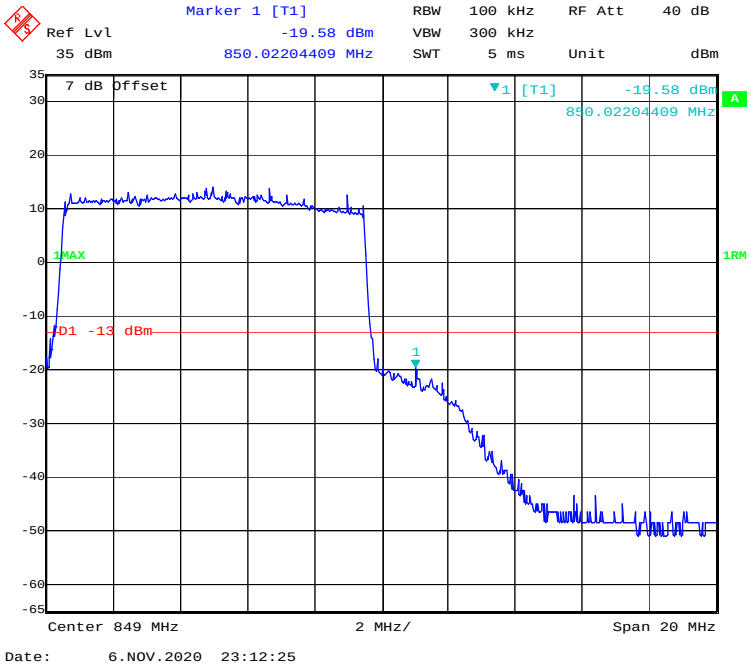



Date: 6.NOV.2020 23:11:01

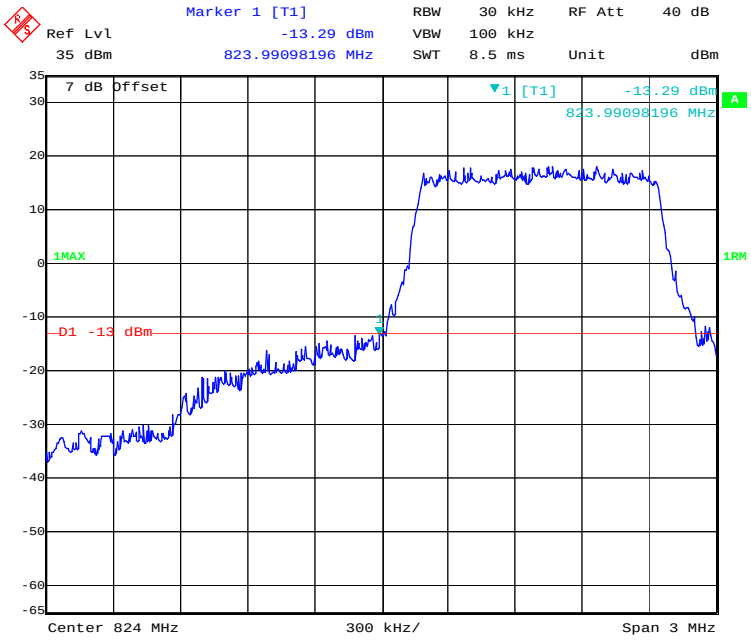
## QPSK (10.0 MHz, FULL RB) - Left Band Edge




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

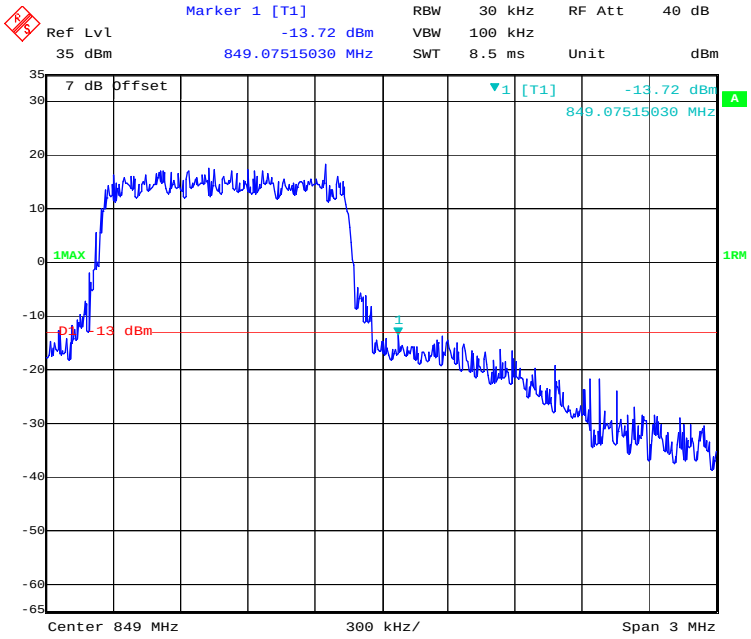


## 16-QAM (1.4 MHz, FULL RB) - Left Band Edge



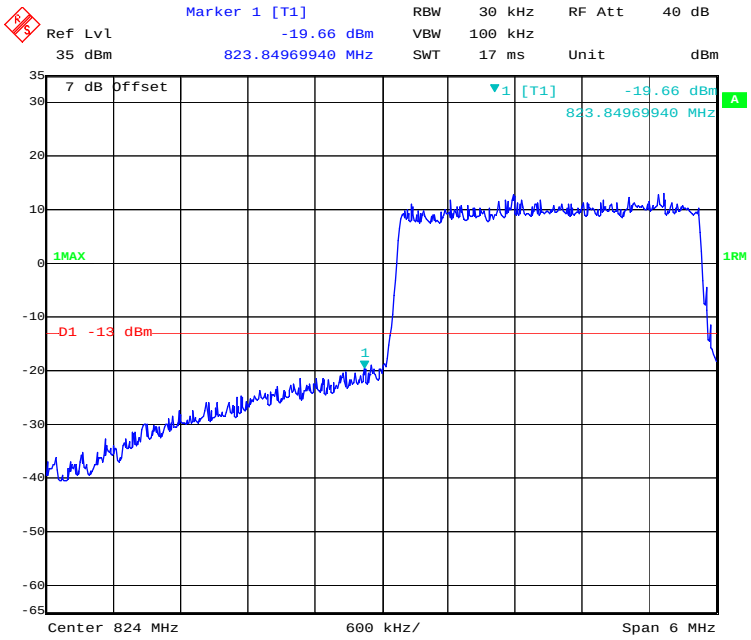

Date: 10.NOV.2020 23:39:52

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



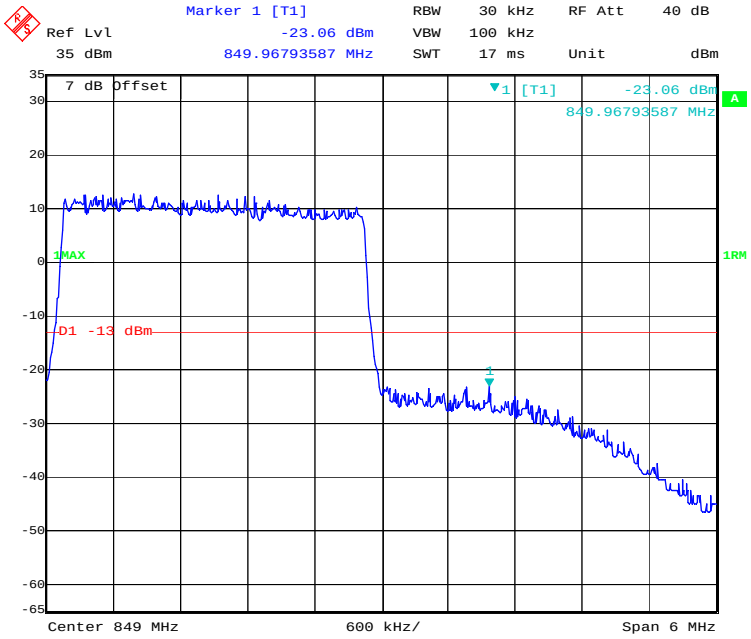

Date: 10.NOV.2020 23:41:27

## 16-QAM (3.0 MHz, FULL RB) - Left Band Edge



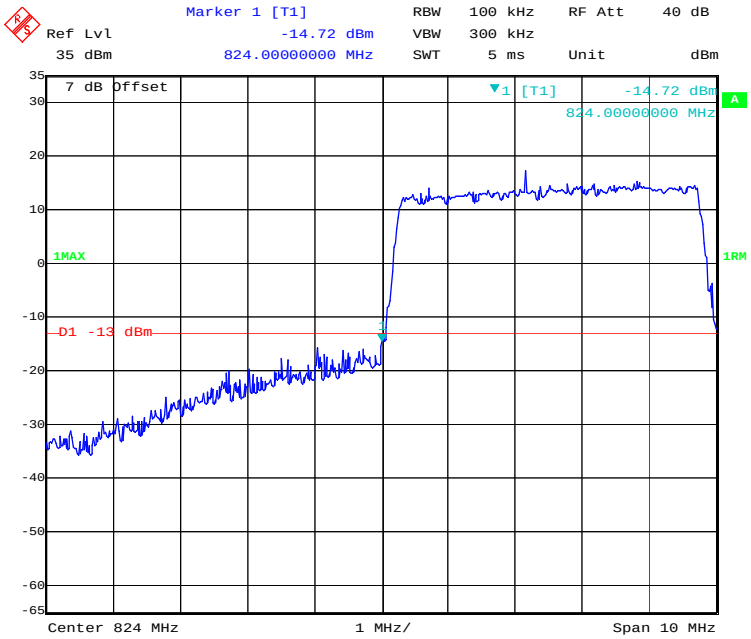

Date: 6.NOV.2020 23:09:15

## 16-QAM (3.0 MHz, FULL RB) - Right Band Edge



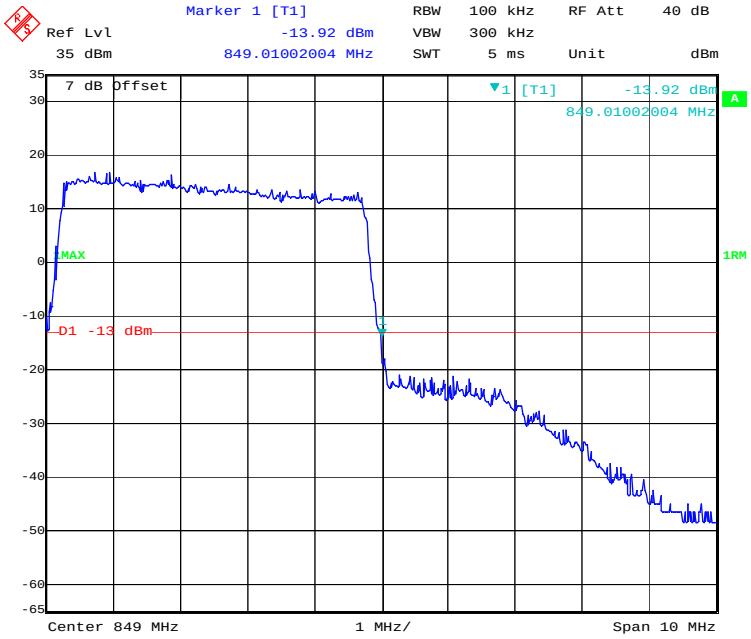

Date: 6.NOV.2020 23:09:54

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



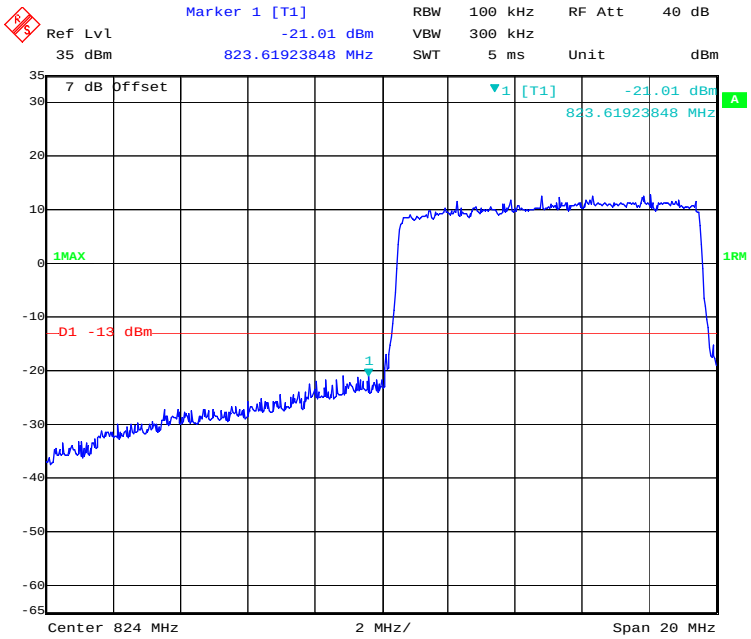

Date: 6.NOV.2020 23:10:40

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



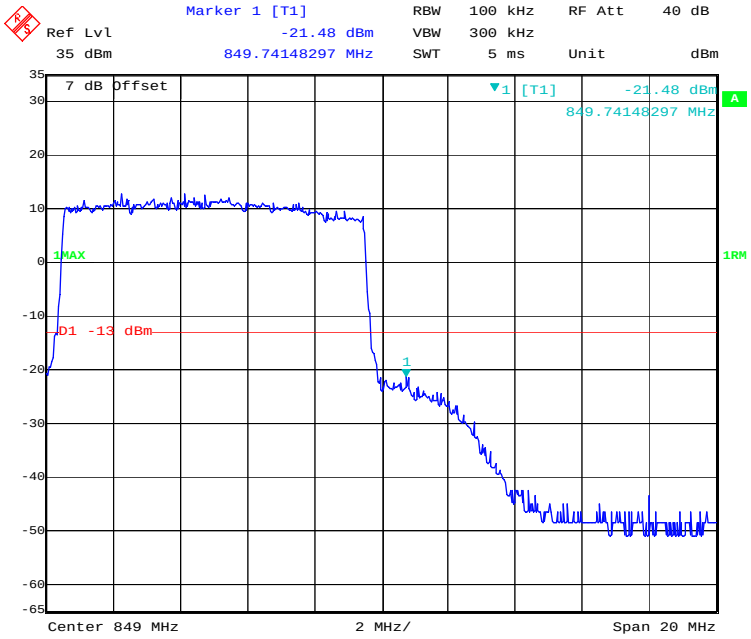

Date: 6.NOV.2020 23:11:21

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




Date: 6.NOV.2020 23:12:04

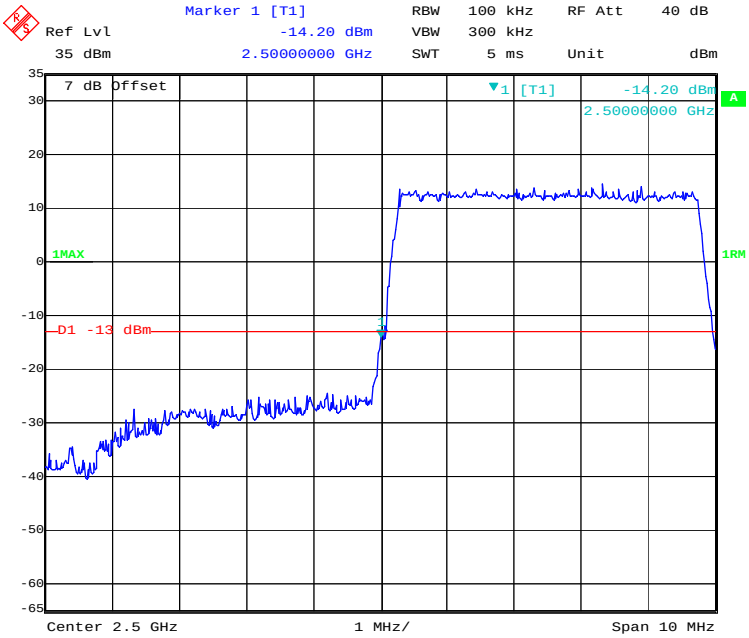
## 16-QAM (10.0 MHz, FULL RB) - Right Band Edge




Date: 6.NOV.2020 23:12:45

## LTE Band 7:

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

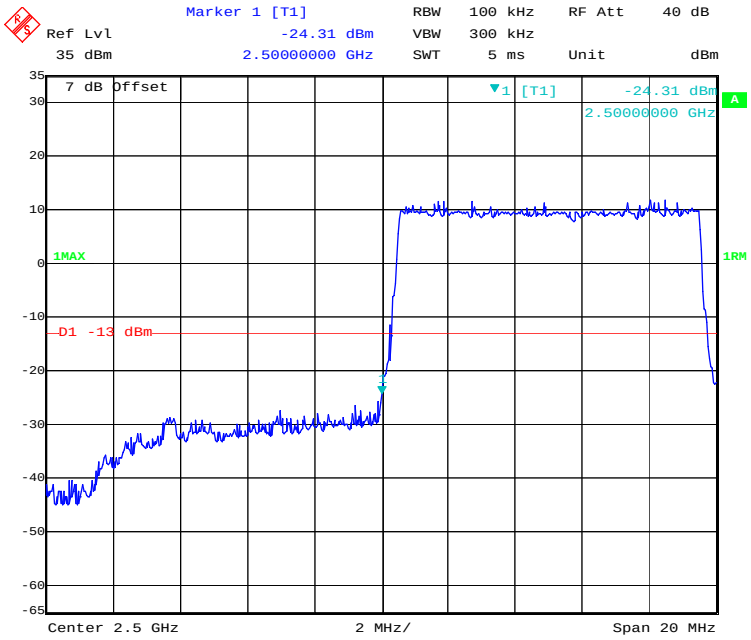



Date: 6.NOV.2020 23:13:09

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

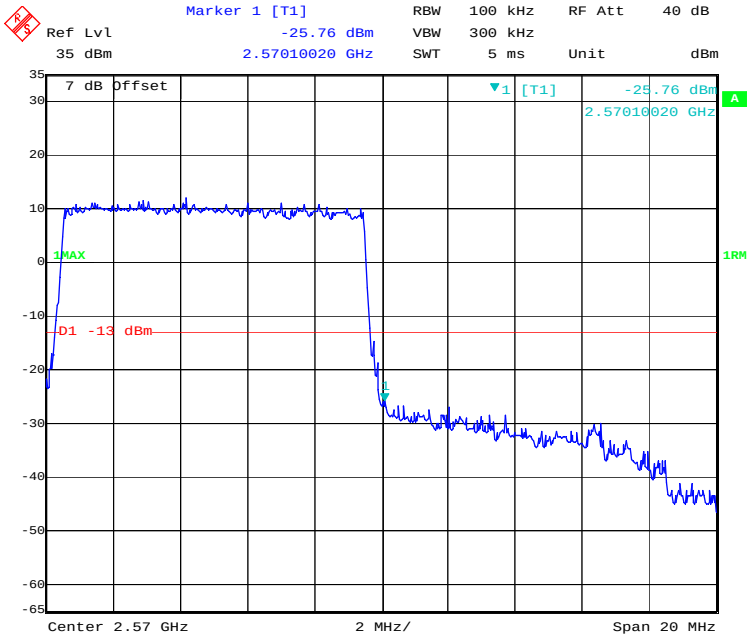
Date: 6.NOV.2020 23:13:48

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



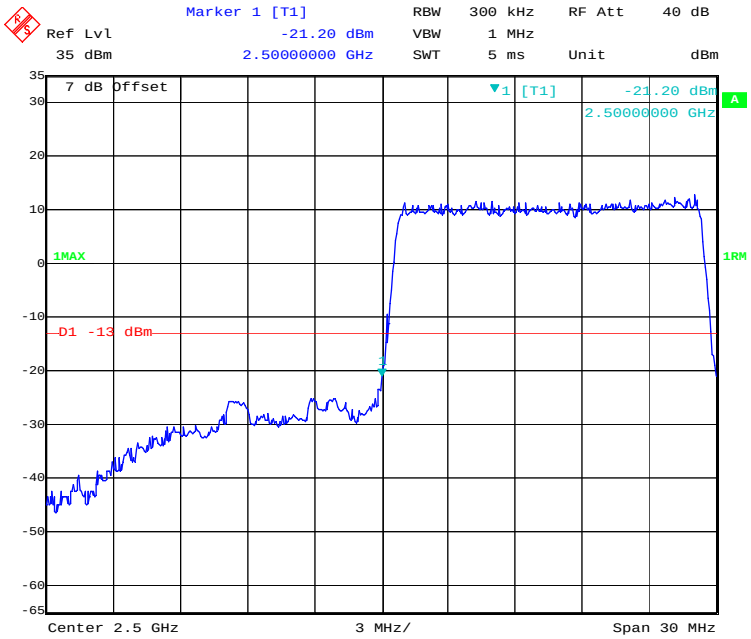

Date: 6.NOV.2020 23:14:32

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



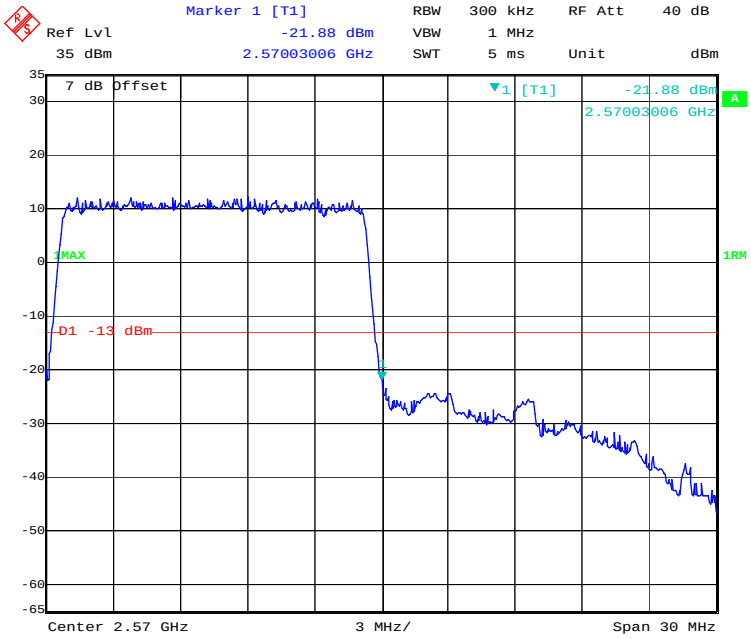

Date: 6.NOV.2020 23:15:11

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



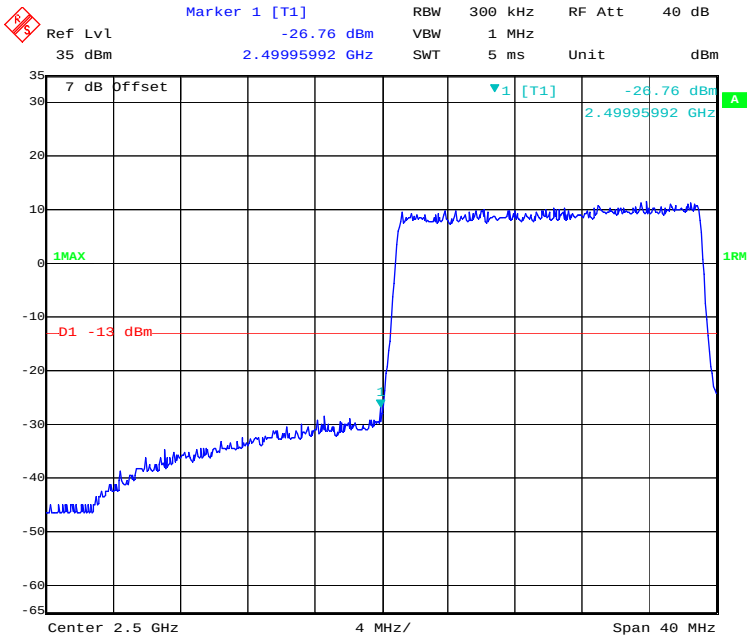

Date: 6.NOV.2020 23:15:57

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



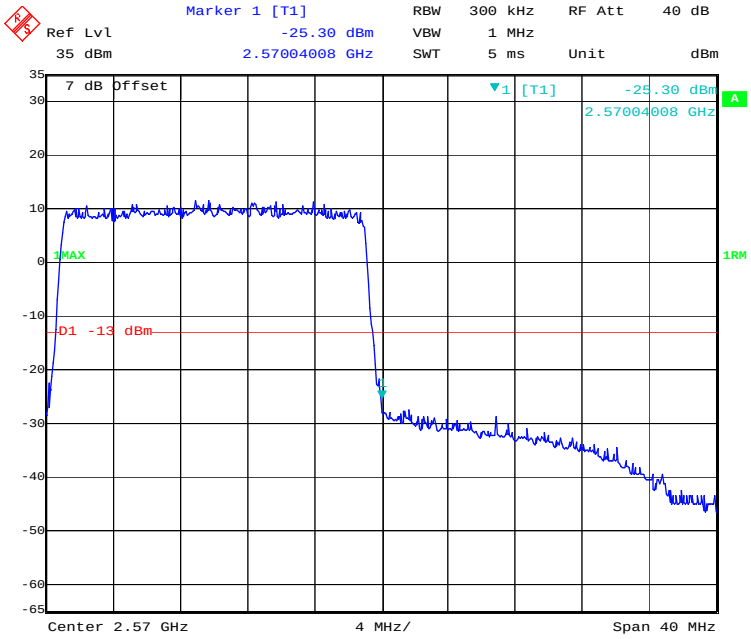

Date: 6.NOV.2020 23:16:42

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



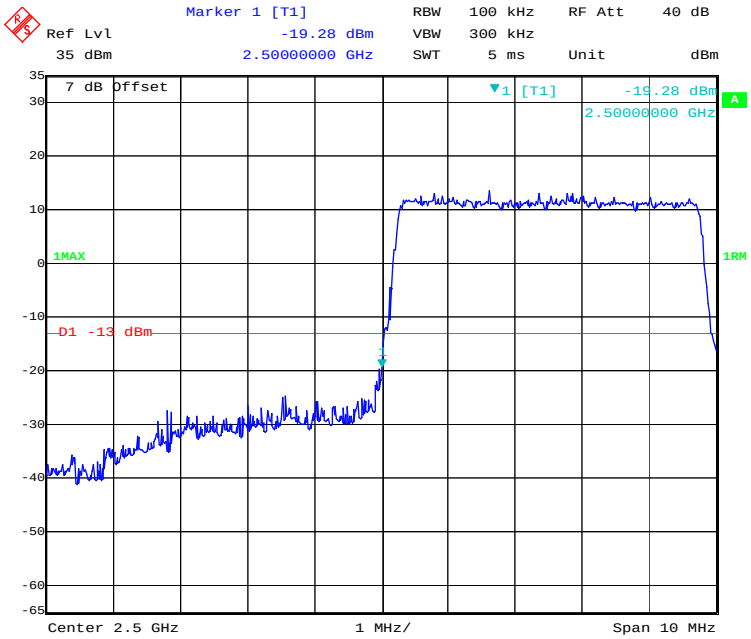

Date: 6.NOV.2020 23:17:30

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



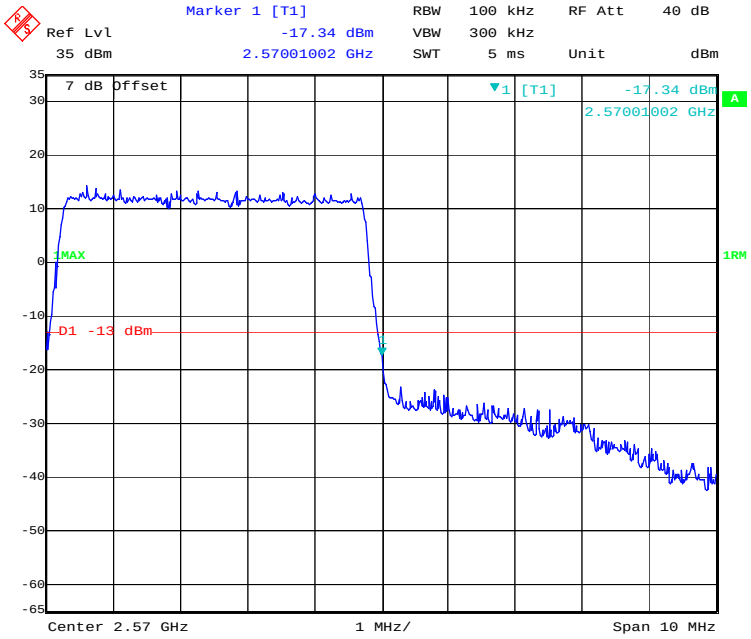

Date: 6.NOV.2020 23:18:18

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



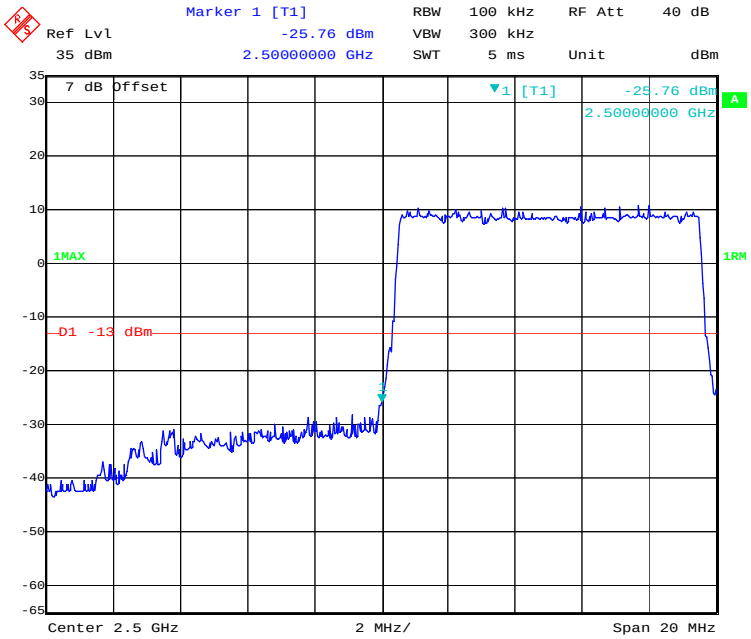

Date: 6.NOV.2020 23:13:26

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



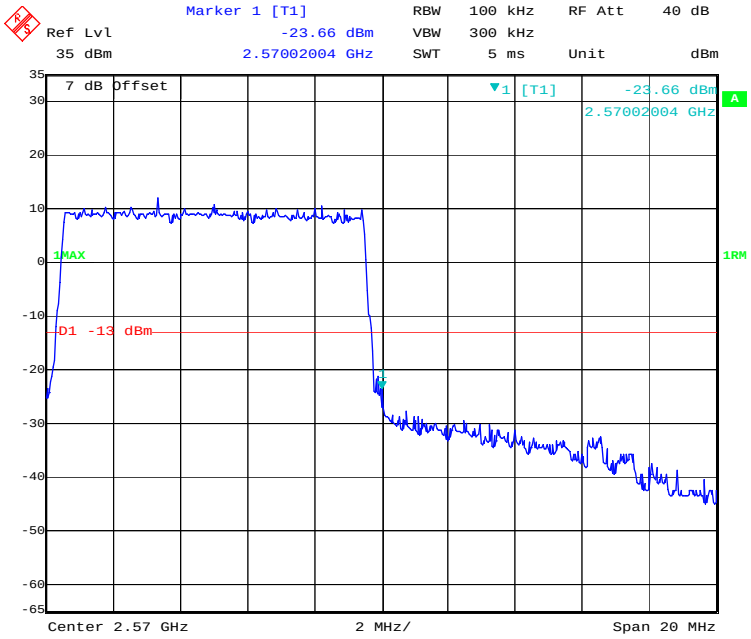

Date: 6.NOV.2020 23:14:08

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



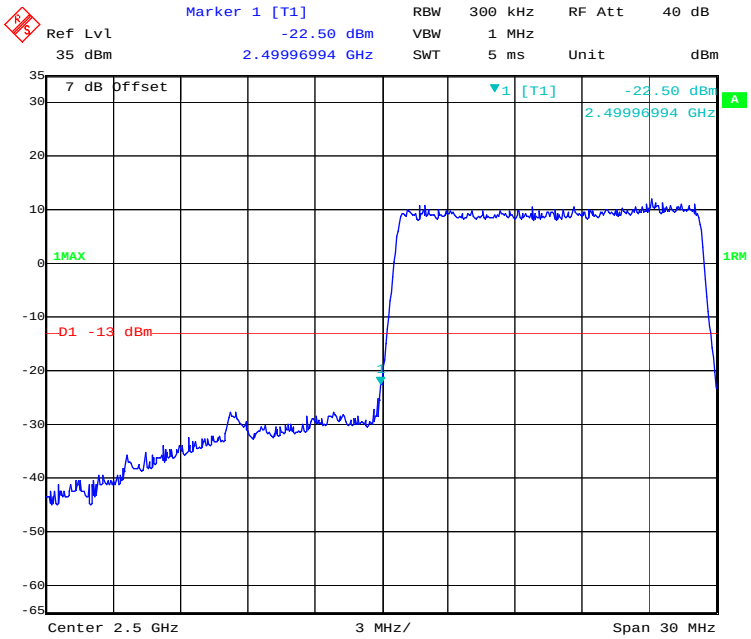

Date: 6.NOV.2020 23:14:53

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



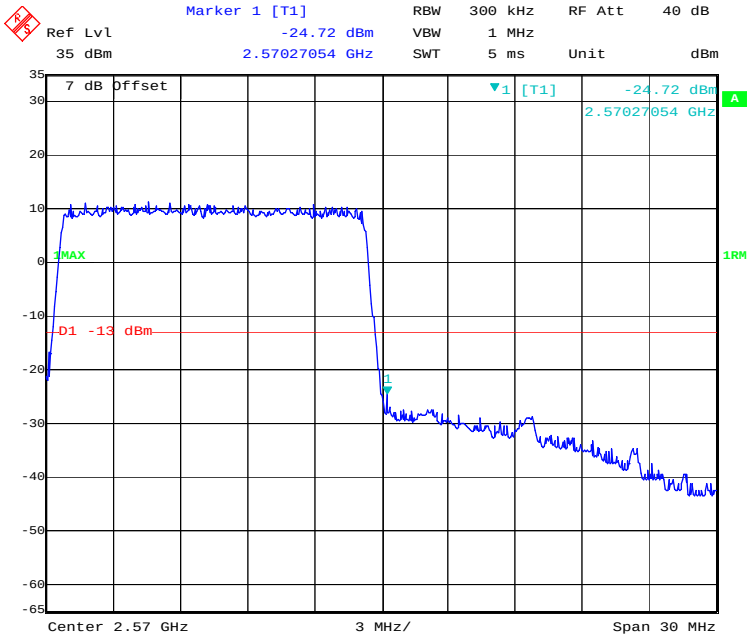

Date: 6.NOV.2020 23:15:32

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



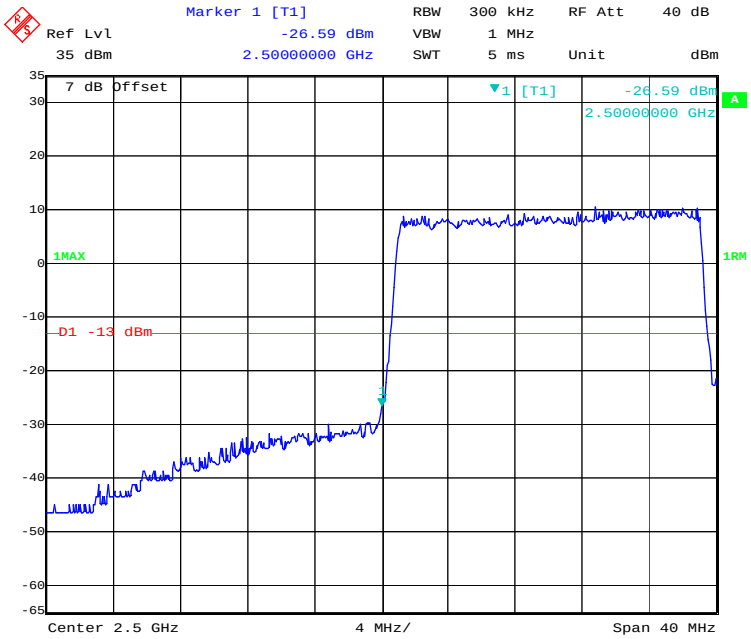

Date: 6.NOV.2020 23:16:20

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



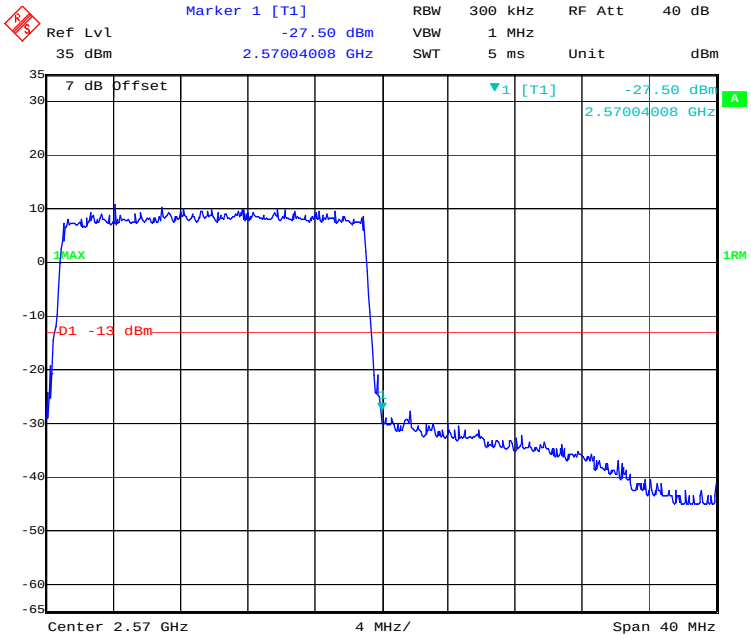

Date: 6.NOV.2020 23:17:02

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




Date: 6.NOV.2020 23:17:53

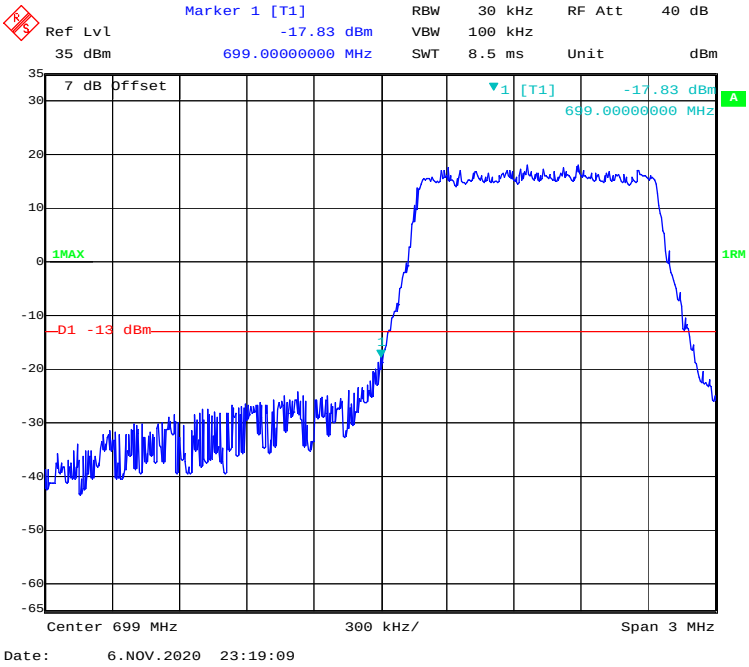
## 16-QAM (20.0 MHz, FULL RB) - Right Band Edge



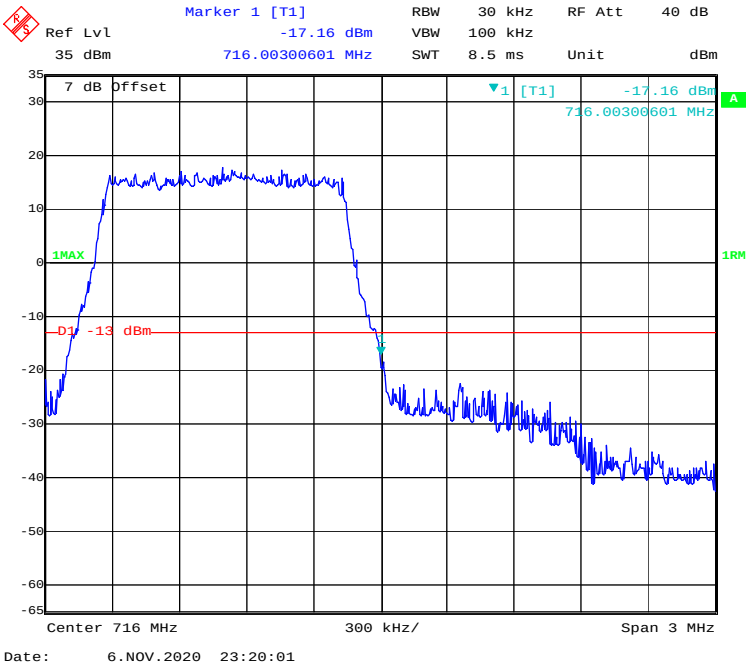

Date: 6.NOV.2020 23:18:38

## LTE Band 12:

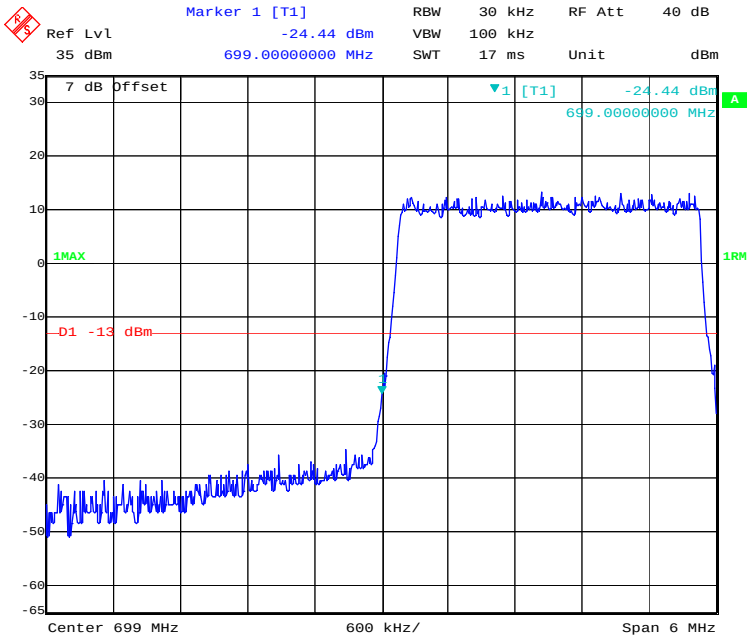
### QPSK (1.4 MHz, FULL RB) - Left Band Edge




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

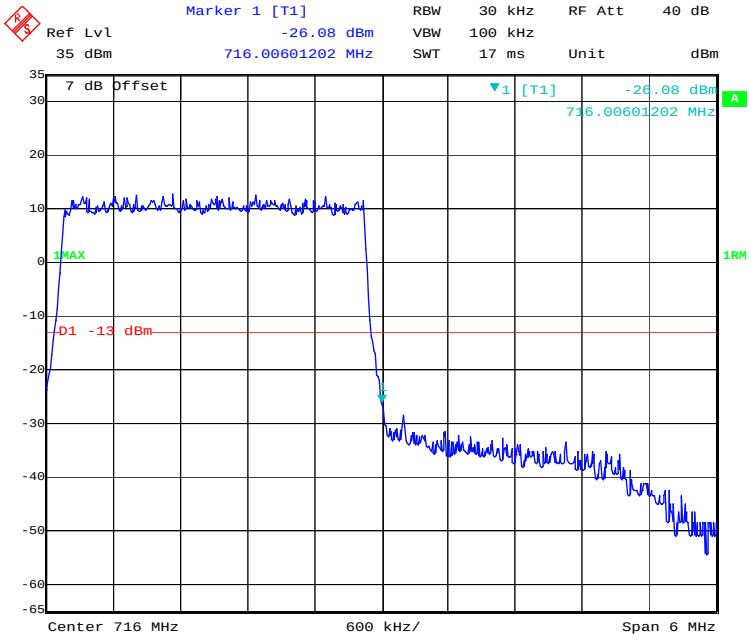


## QPSK (3.0 MHz, FULL RB) - Left Band Edge



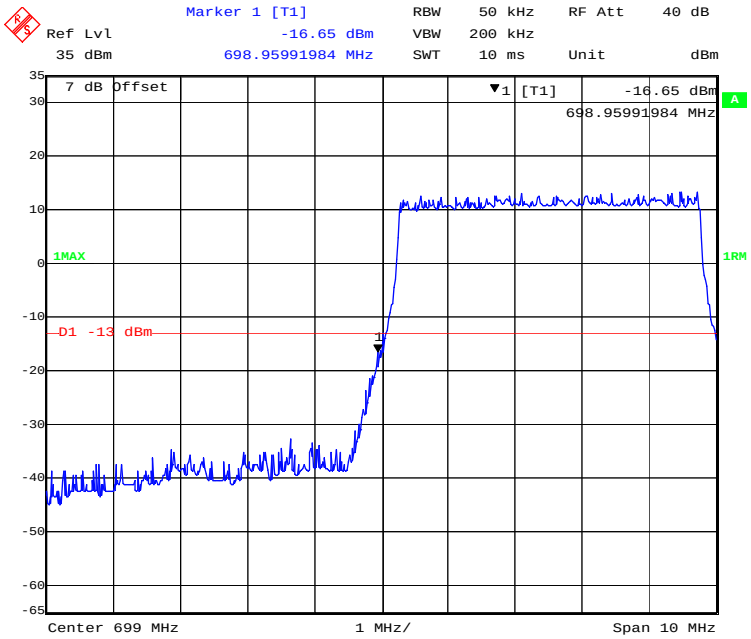

Date: 6.NOV.2020 23:20:48

## QPSK (3.0 MHz, FULL RB) - Right Band Edge



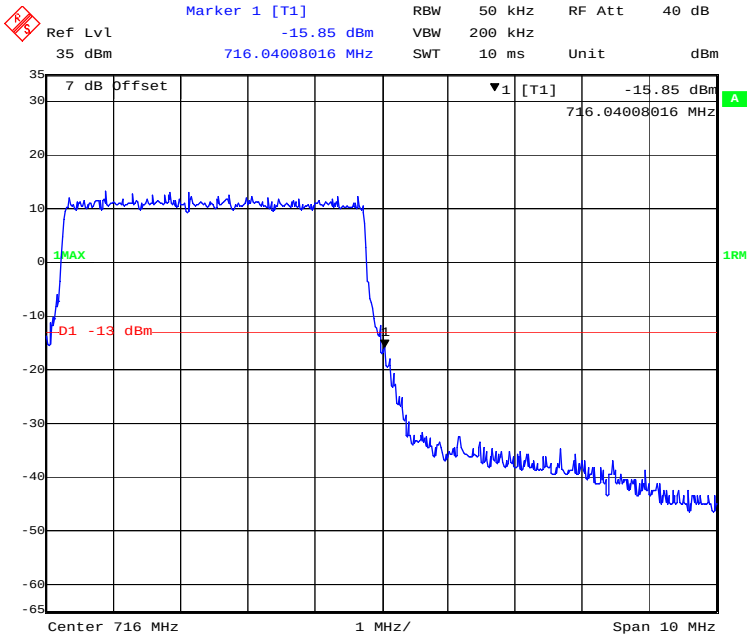

Date: 6.NOV.2020 23:21:34

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



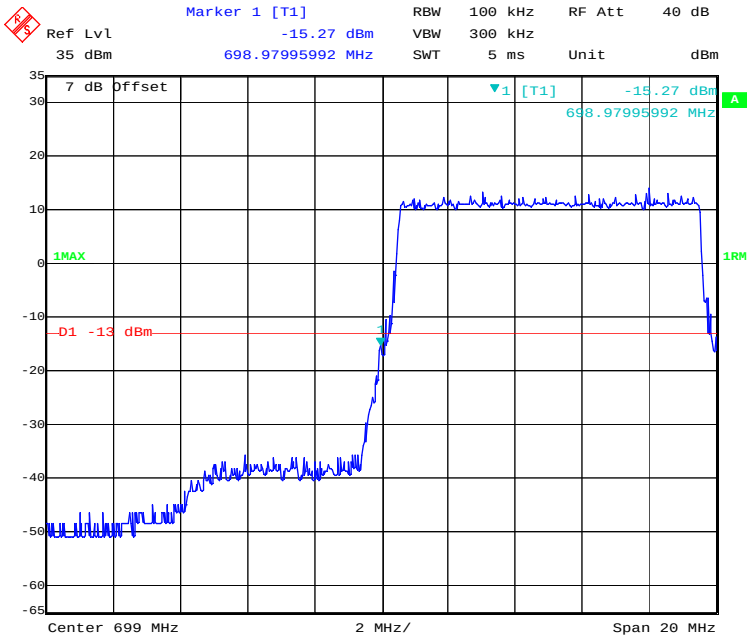

Date: 13.NOV.2020 20:30:48

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



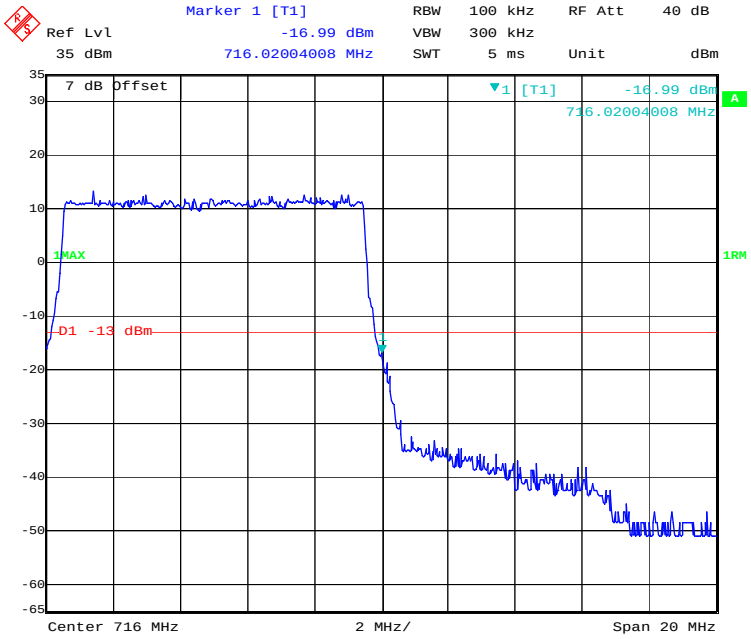

Date: 13.NOV.2020 20:31:33

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



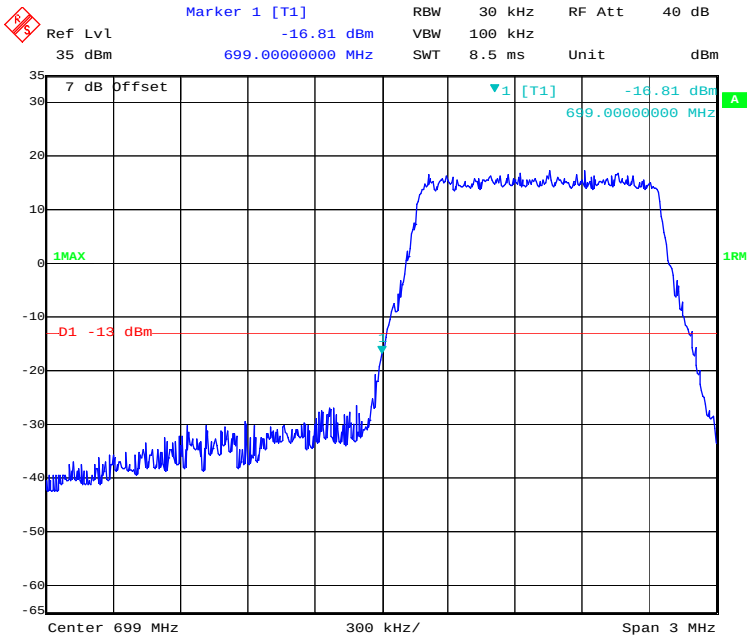

Date: 6.NOV.2020 23:24:01

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



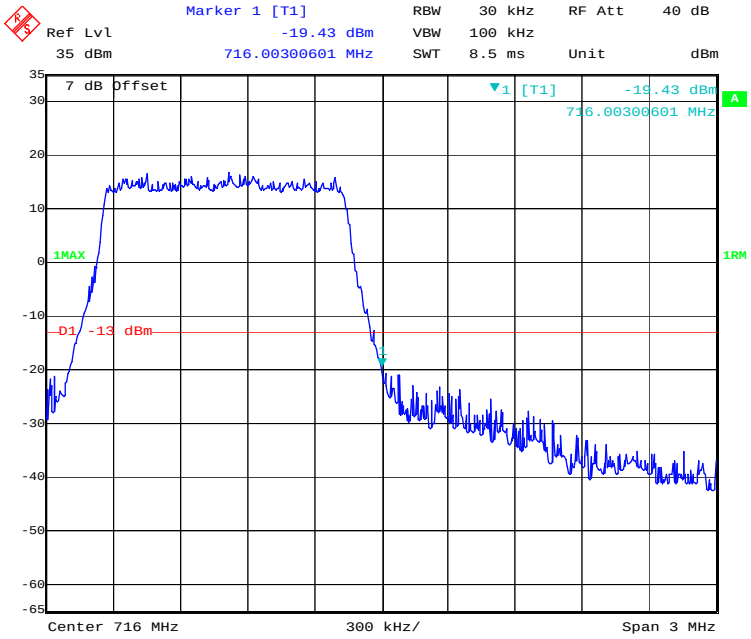

Date: 6.NOV.2020 23:24:46

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



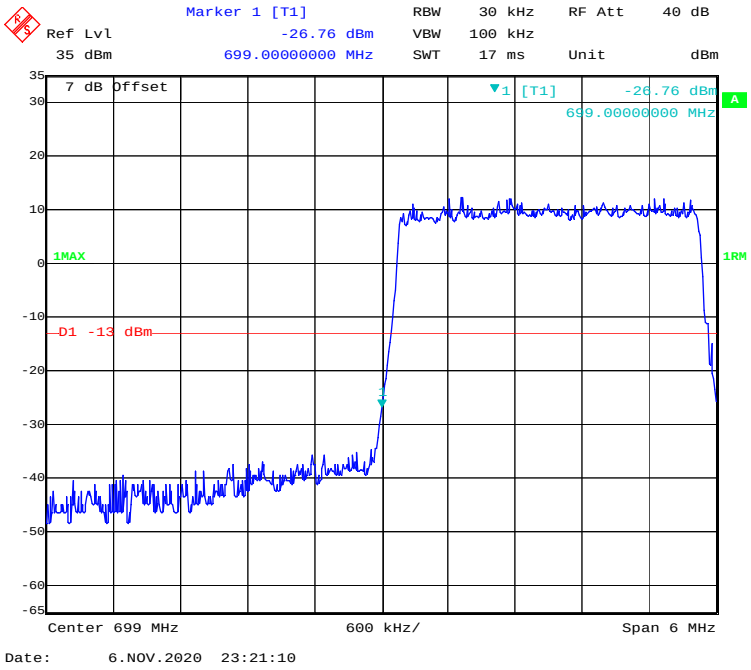

Date: 6.NOV.2020 23:19:41

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

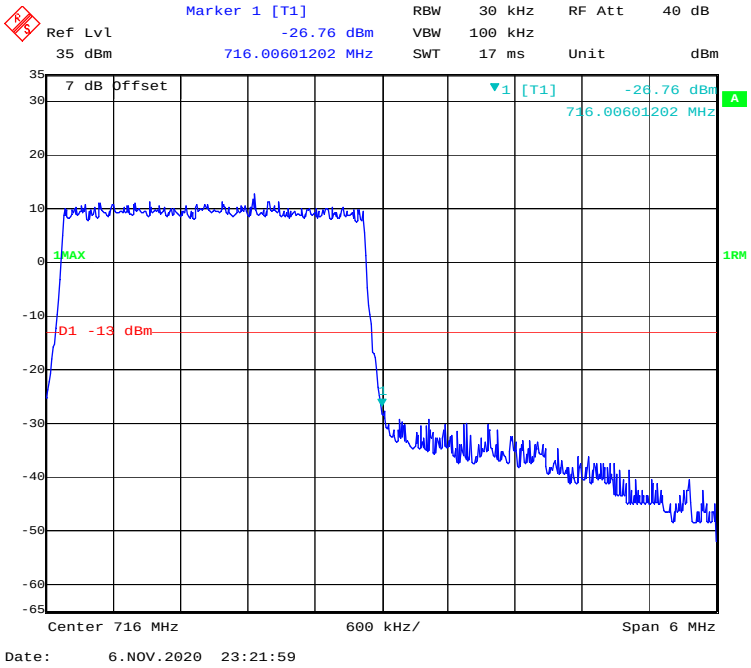



Date: 6.NOV.2020 23:20:21

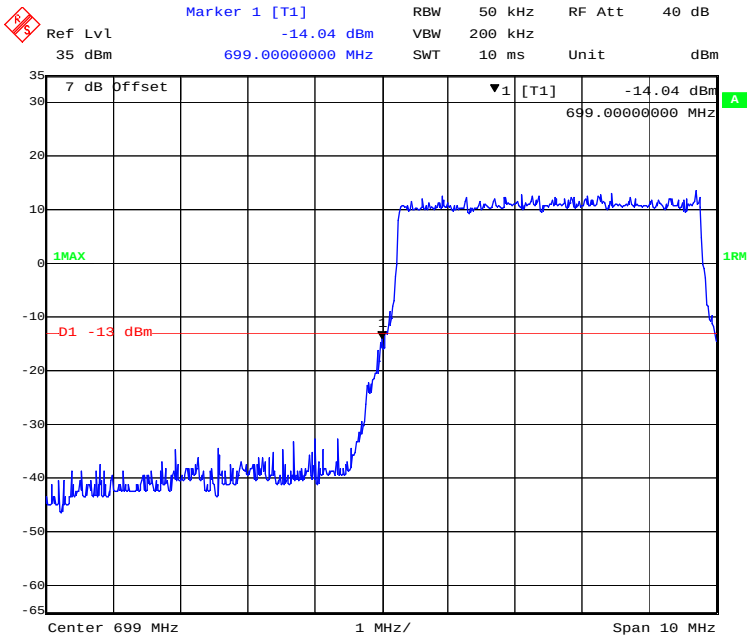
## 16-QAM (3.0 MHz, FULL RB) - Left Band Edge




## 16-QAM (3.0 MHz, FULL RB) - Right Band Edge

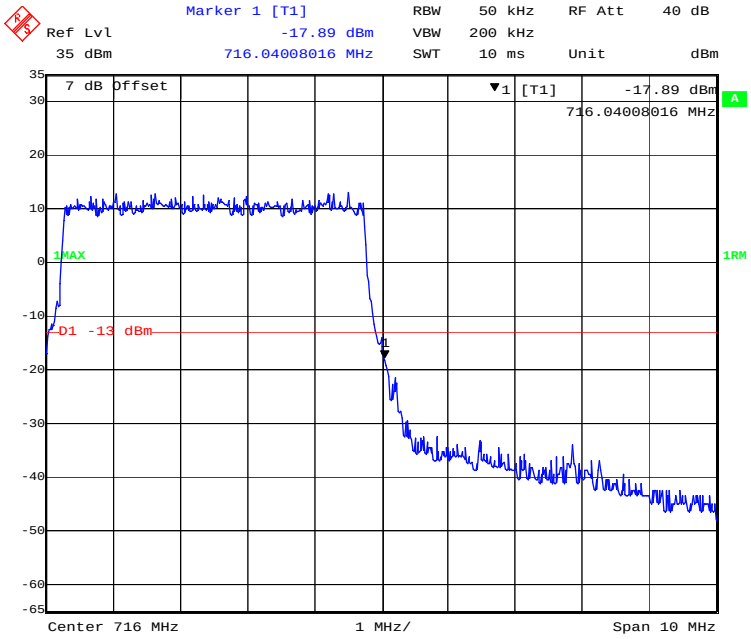


## 16-QAM (5.0 MHz, FULL RB) - Left Band Edge



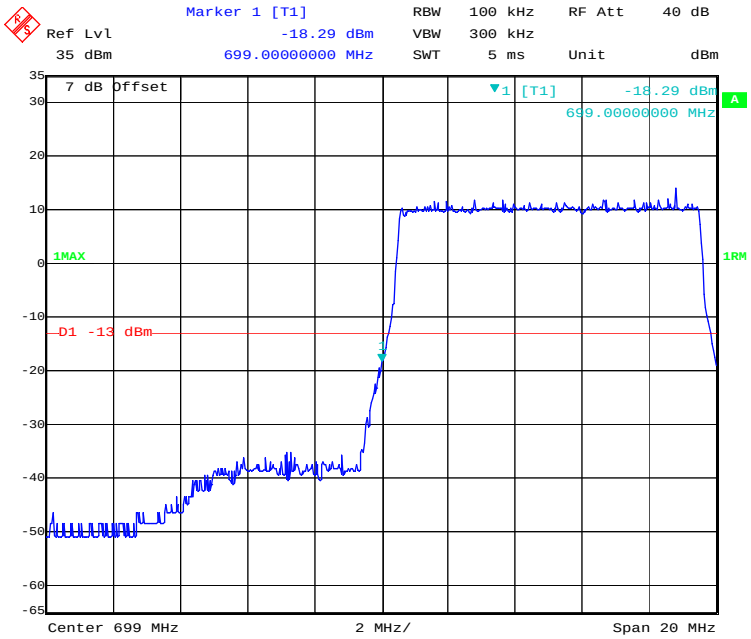

Date: 13.NOV.2020 20:30:00

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



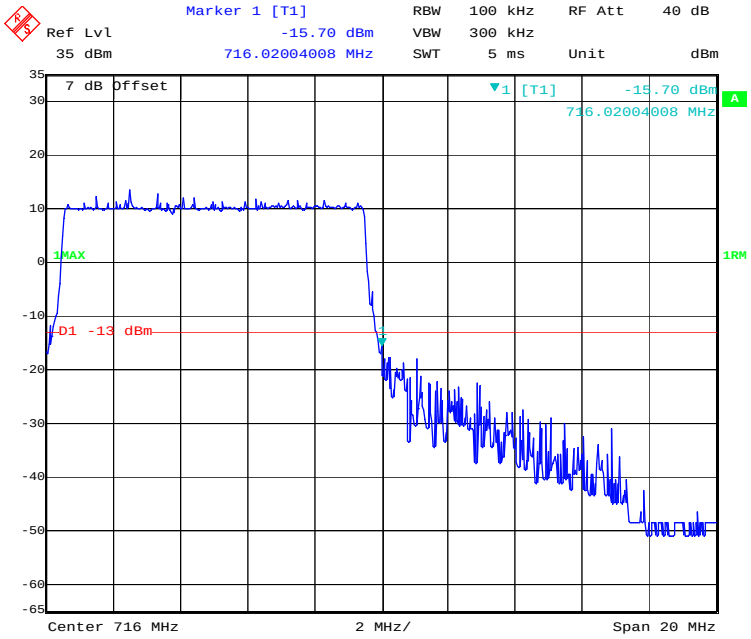

Date: 13.NOV.2020 20:31:11

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




Date: 6.NOV.2020 23:24:25

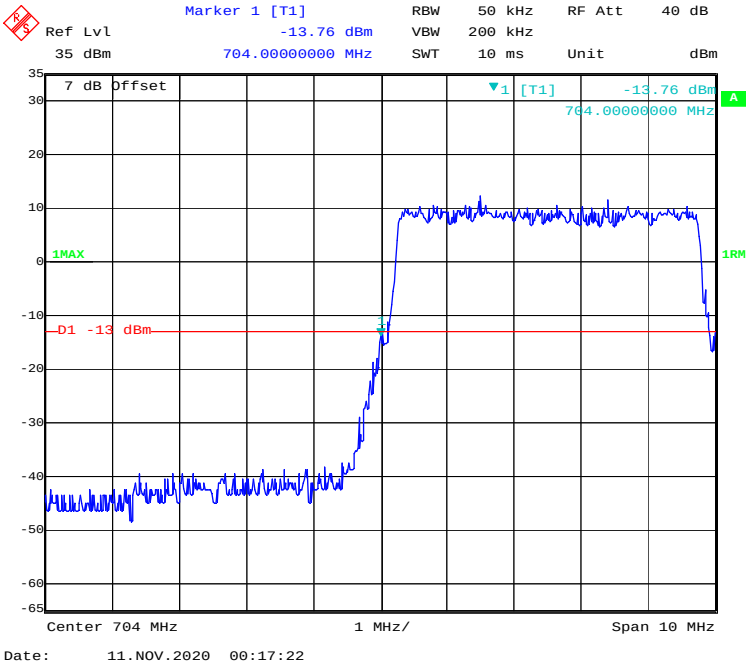
## 16-QAM (10.0 MHz, FULL RB) - Right Band Edge



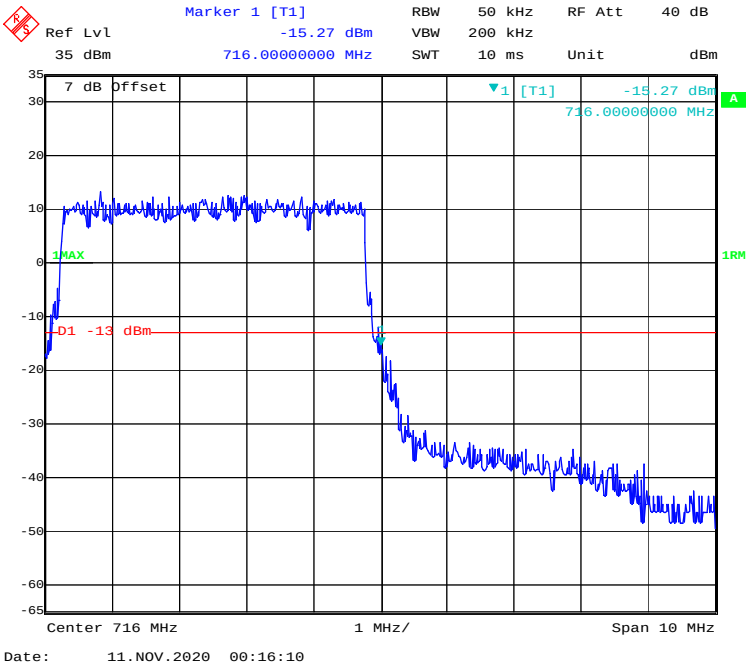

Date: 6.NOV.2020 23:25:16

## LTE Band 17:

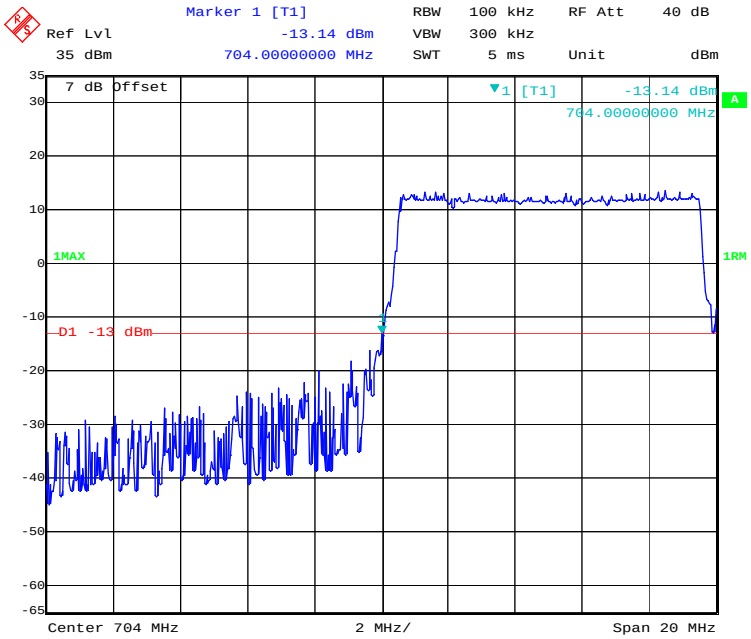
### QPSK (5.0 MHz, FULL RB) - Left Band Edge




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

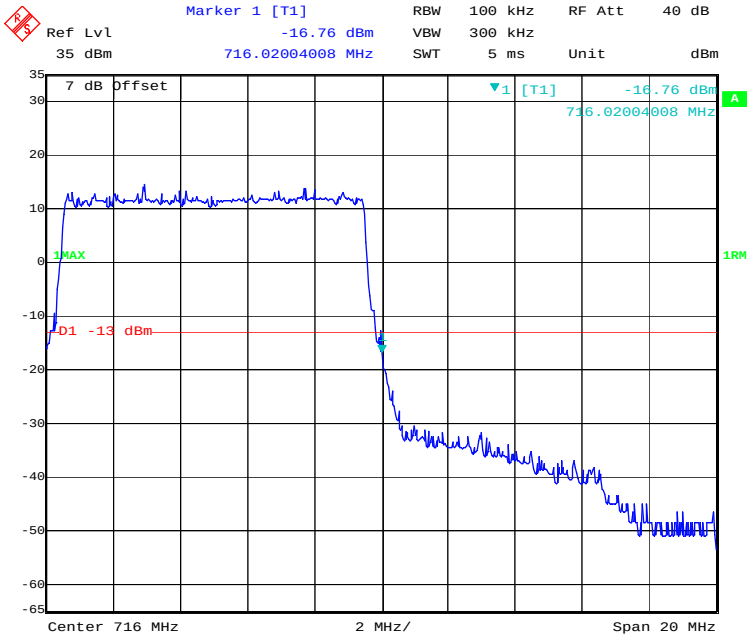


## QPSK (10.0 MHz, FULL RB) - Left Band Edge



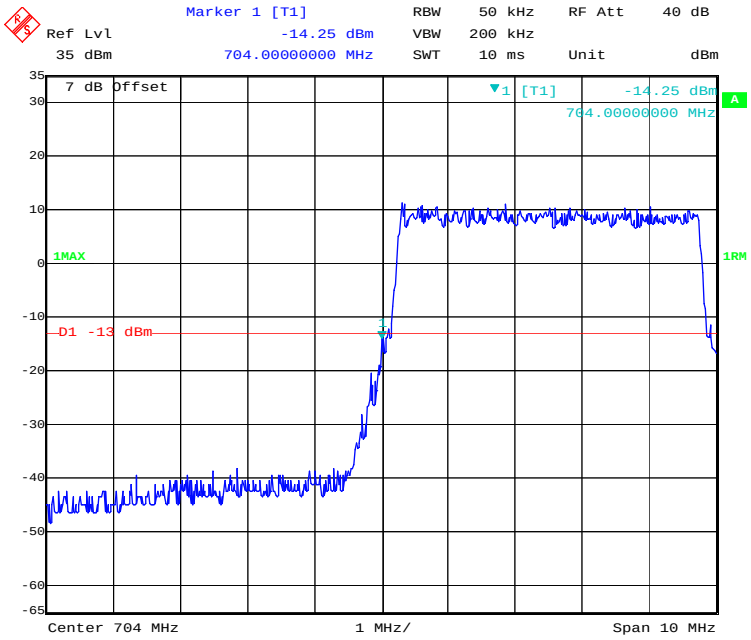

Date: 10.NOV.2020 22:51:14

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



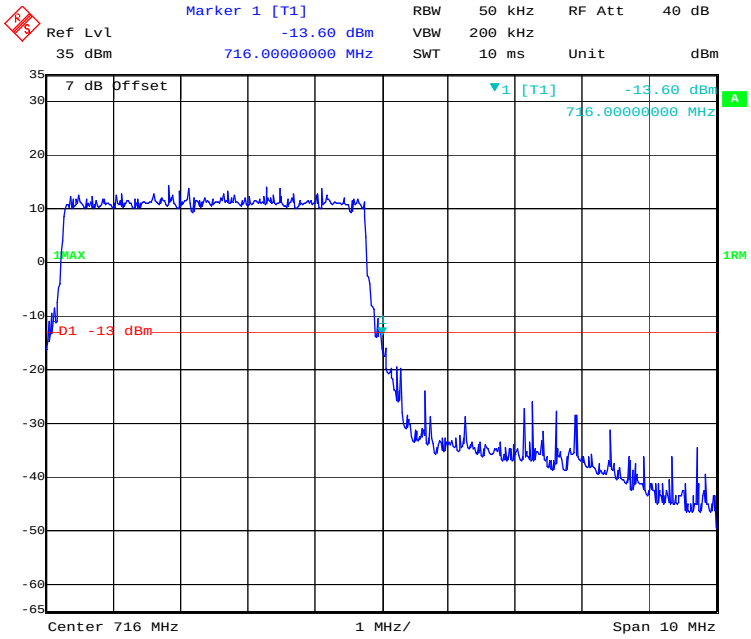

Date: 10.NOV.2020 22:52:02

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



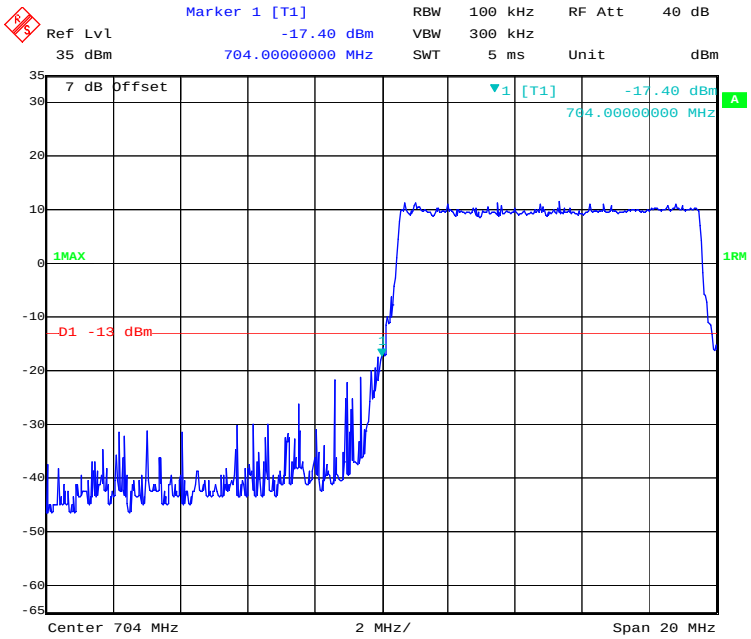

Date: 11.NOV.2020 00:17:07

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



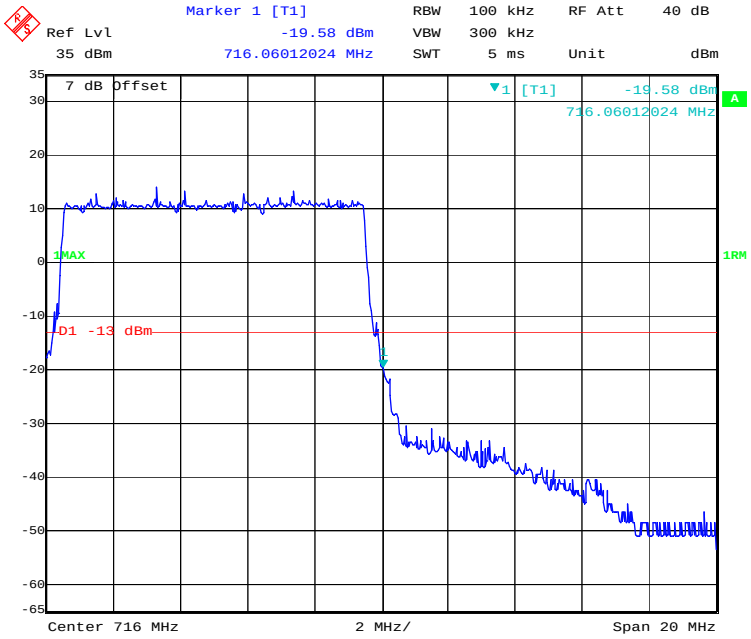

Date: 11.NOV.2020 00:15:41

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




Date: 11.NOV.2020 00:19:01

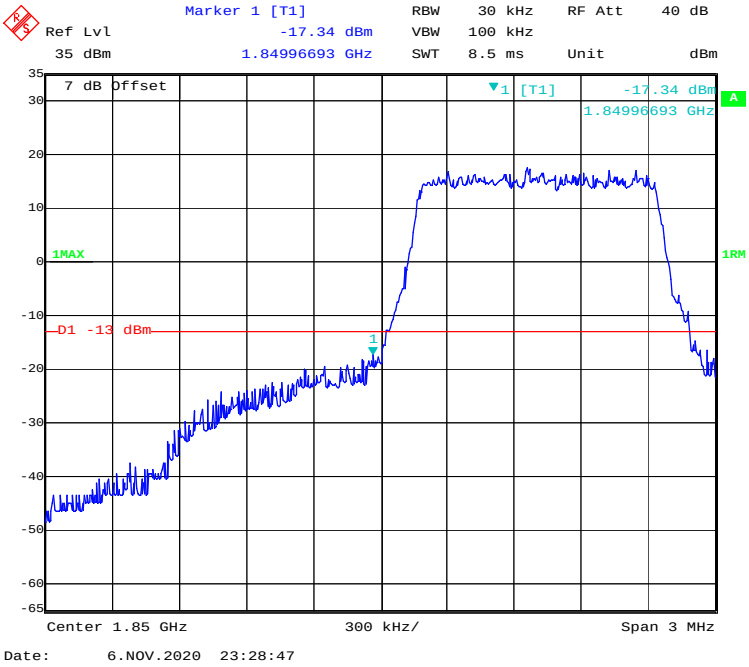
## 16-QAM (10.0 MHz, FULL RB) - Right Band Edge



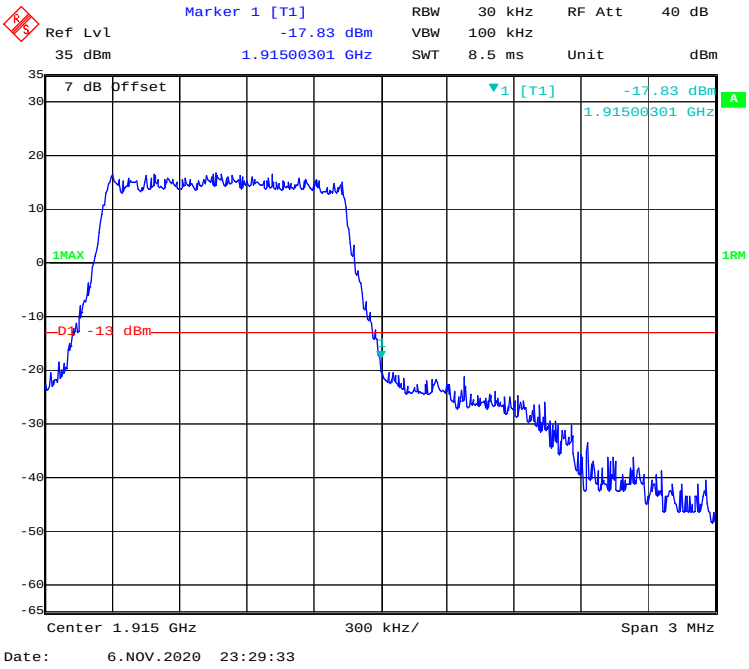

Date: 10.NOV.2020 22:52:23

## LTE Band 25:

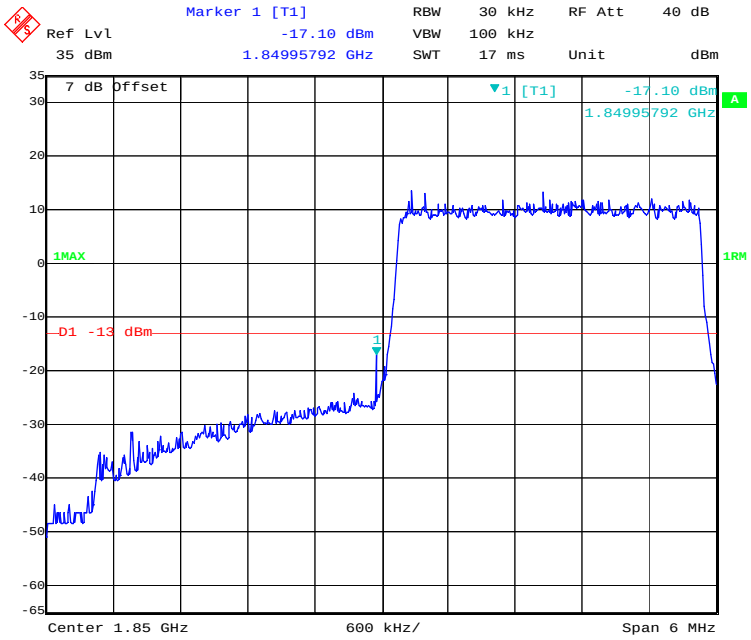
### QPSK (1.4 MHz, FULL RB) - Left Band Edge




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

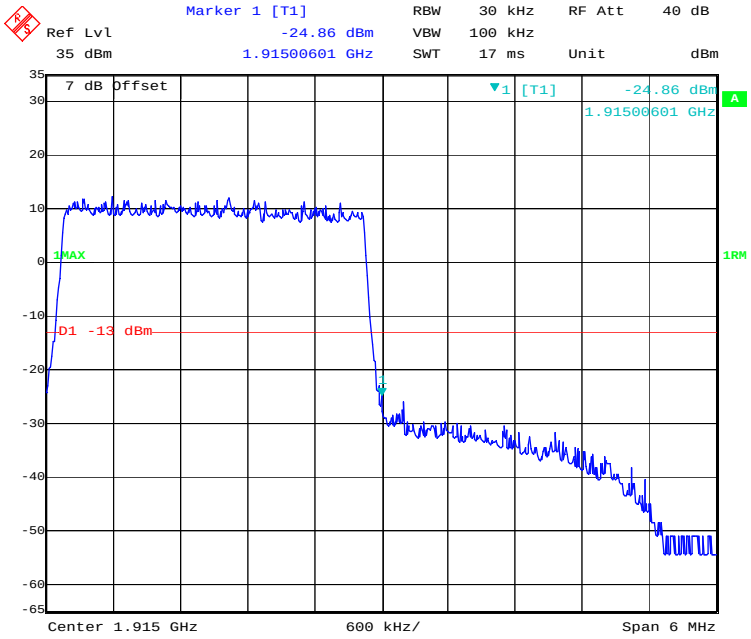


## QPSK (3 MHz, FULL RB) - Left Band Edge



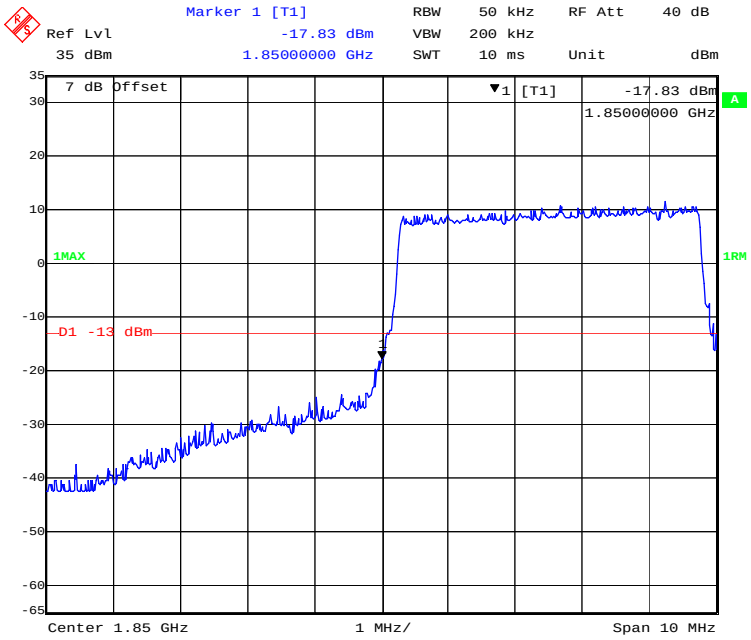

Date: 6.NOV.2020 23:30:19

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




Date: 6.NOV.2020 23:30:58

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

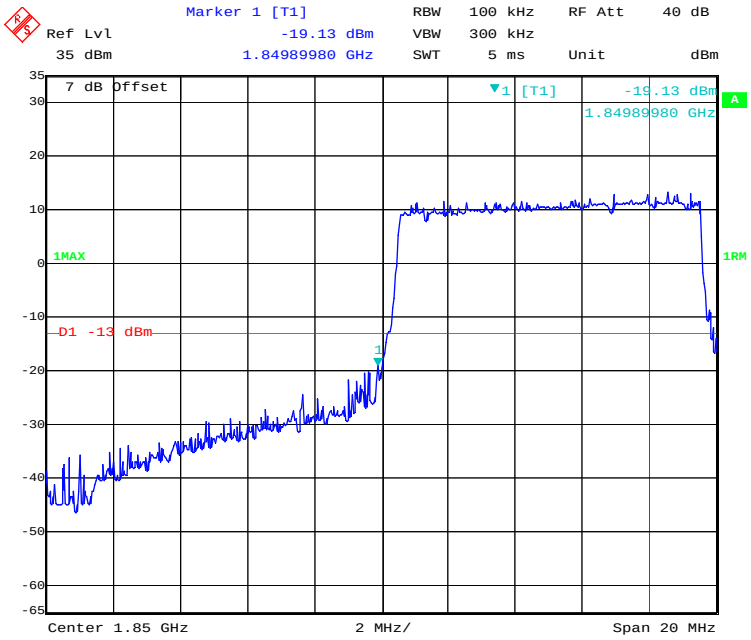



Date: 13.NOV.2020 21:24:36

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

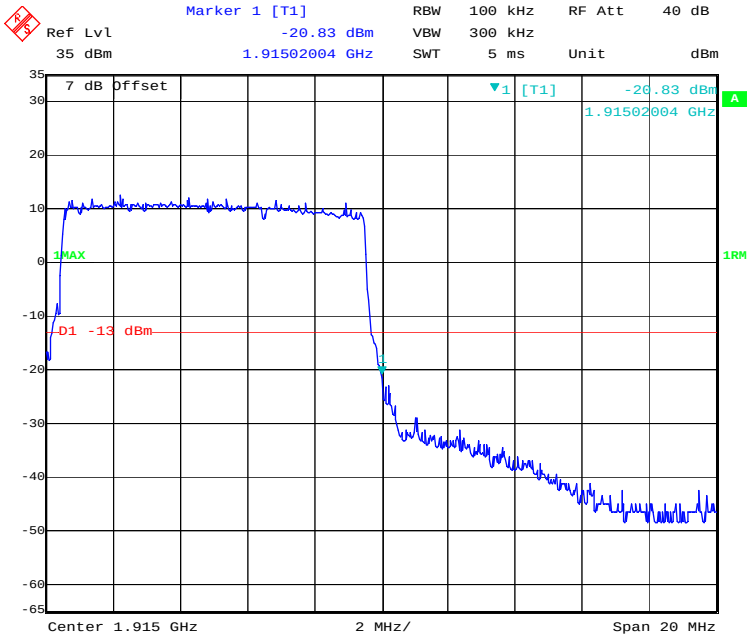
Date: 13.NOV.2020 21:25:32

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



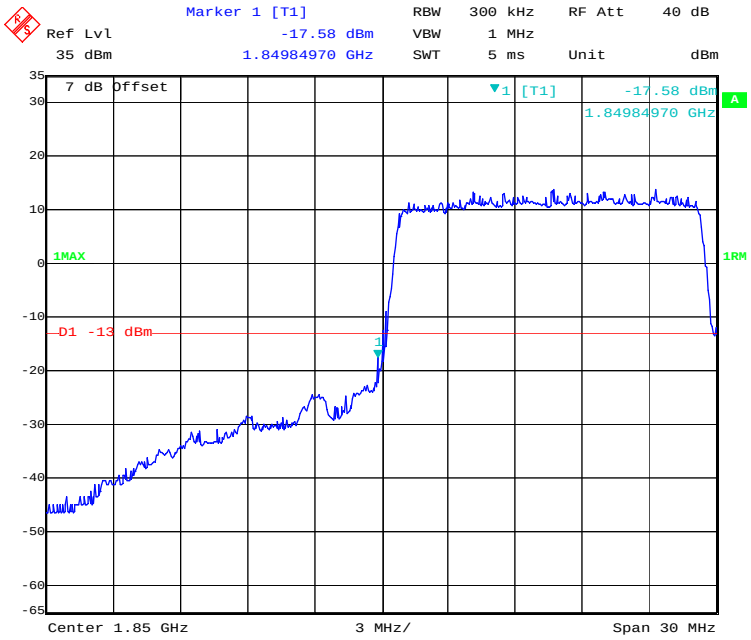

Date: 6.NOV.2020 23:33:18

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



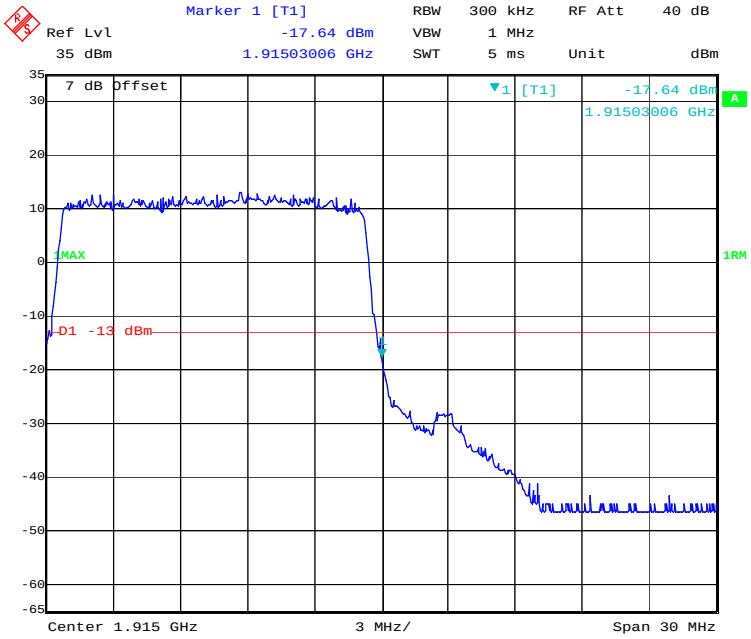

Date: 6.NOV.2020 23:33:57

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



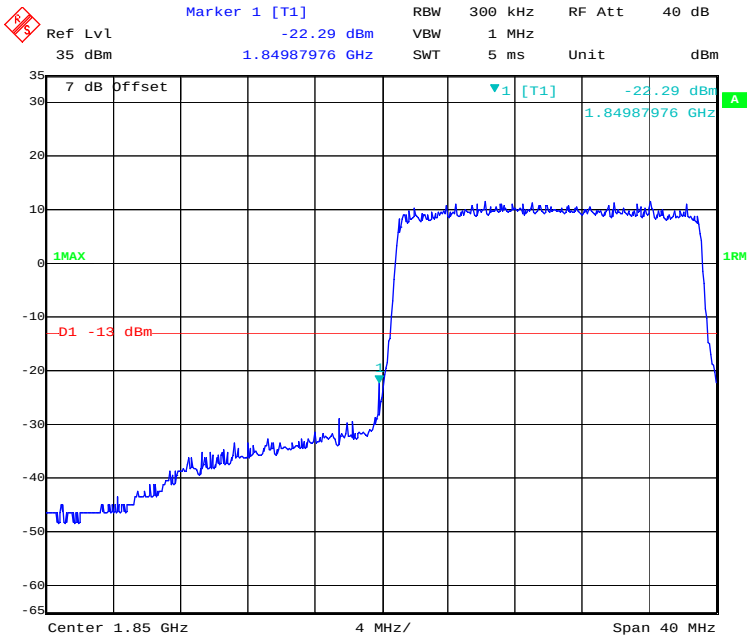

Date: 6.NOV.2020 23:34:45

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



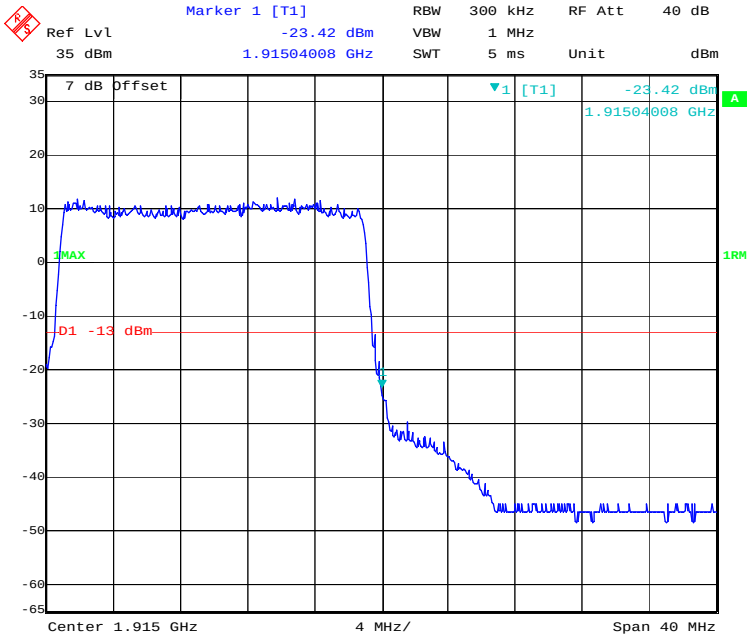

Date: 6.NOV.2020 23:35:30

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



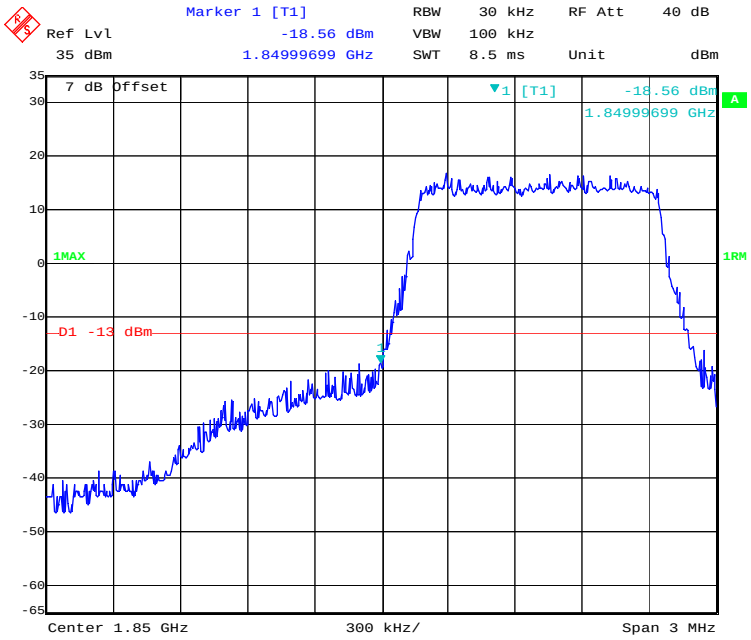

Date: 6.NOV.2020 23:36:19

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



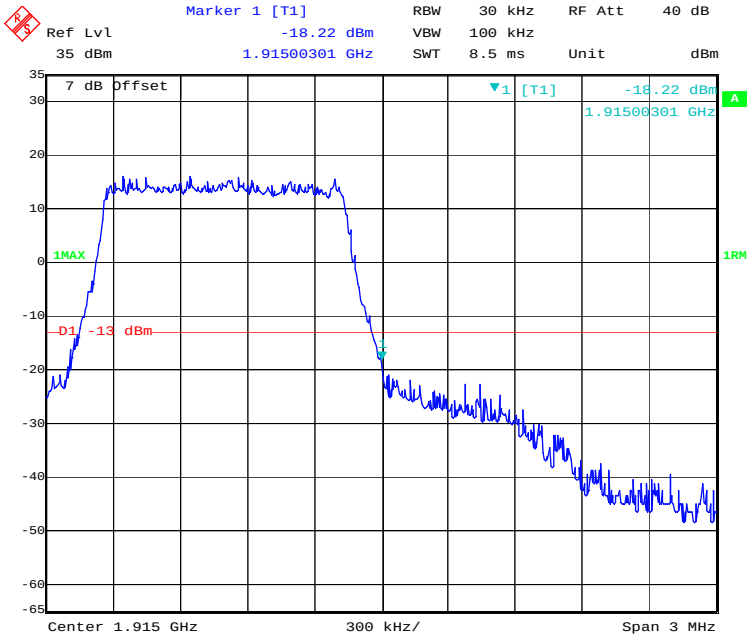

Date: 6.NOV.2020 23:37:04

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



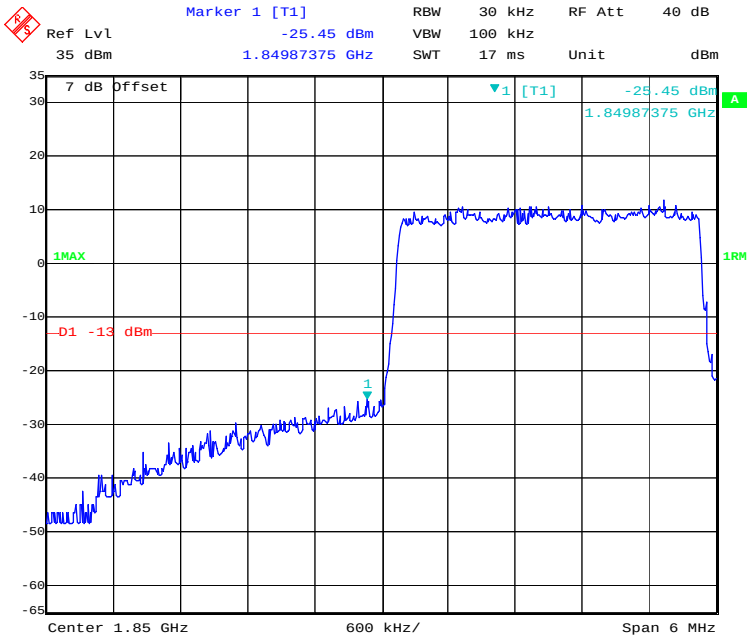

Date: 6.NOV.2020 23:29:10

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



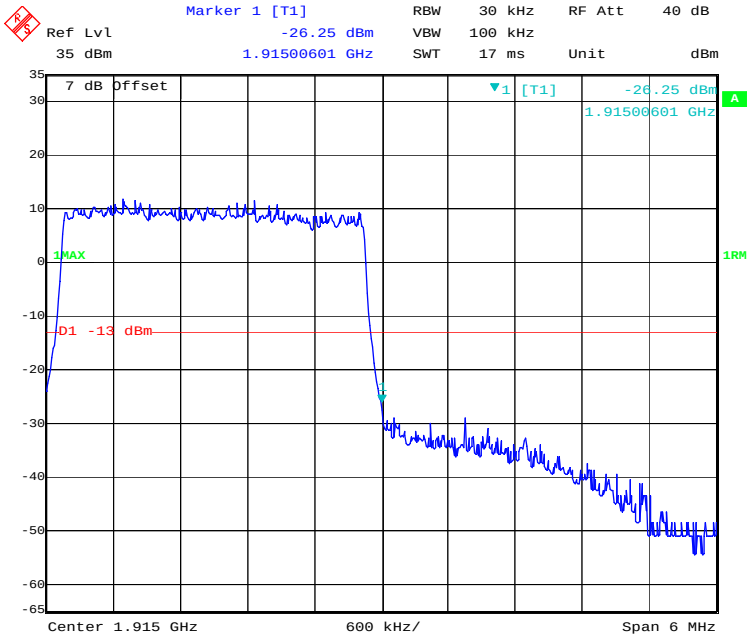

Date: 6.NOV.2020 23:29:56

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



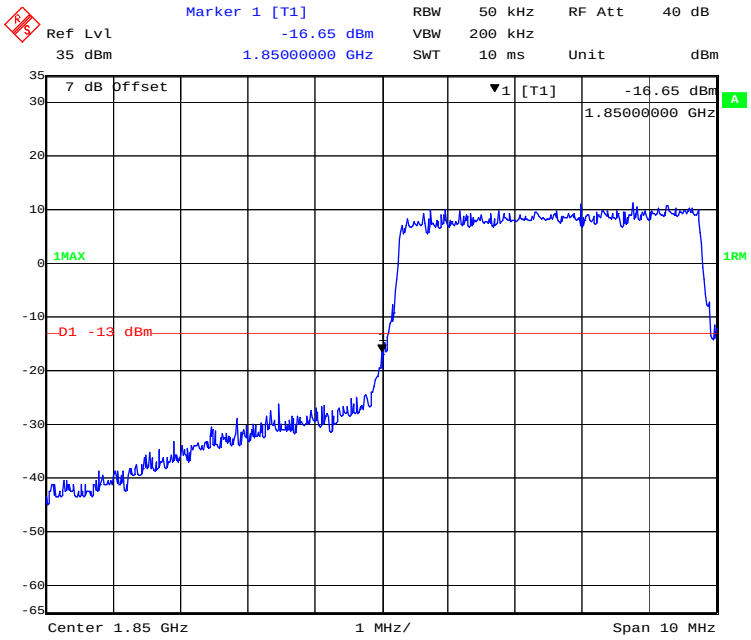

Date: 6.NOV.2020 23:30:38

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



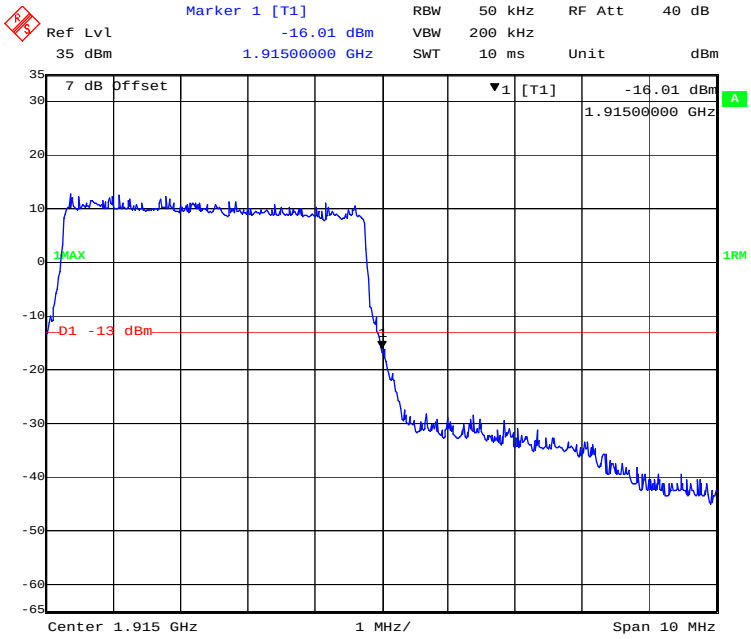

Date: 6.NOV.2020 23:31:24

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



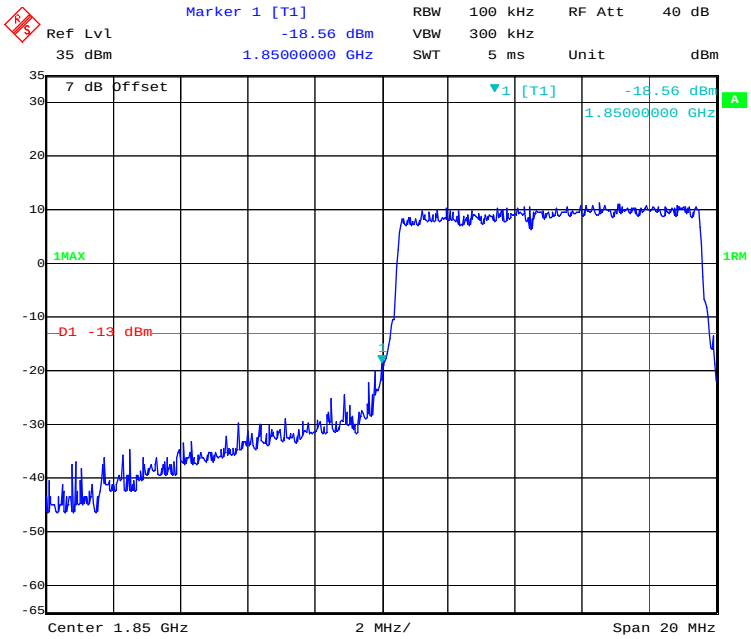

Date: 13.NOV.2020 21:24:08

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



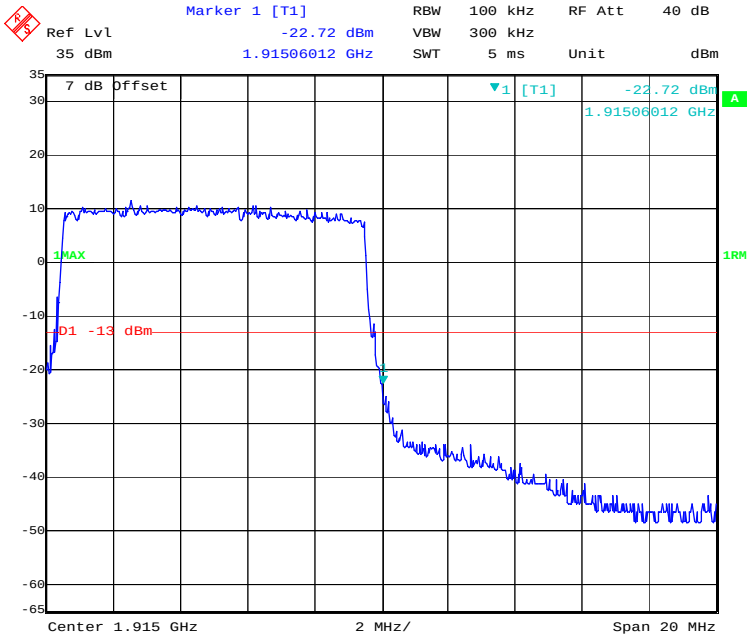

Date: 13.NOV.2020 21:25:13

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



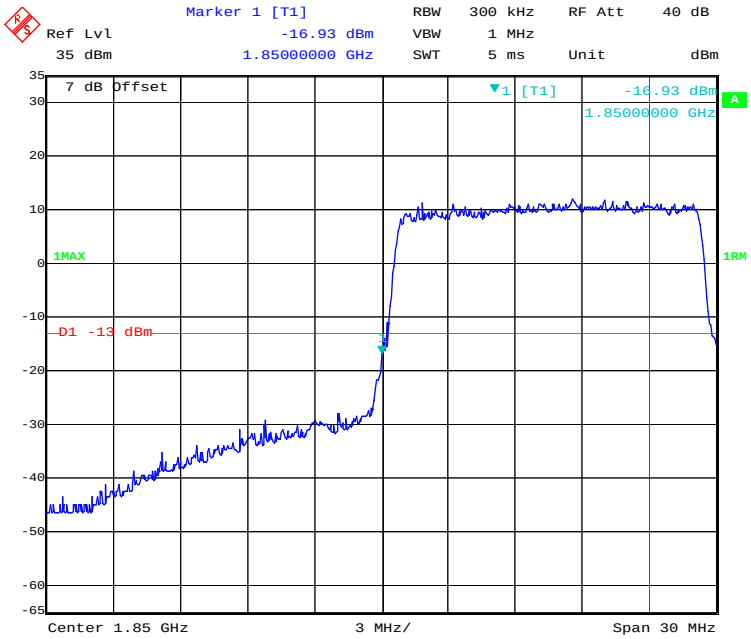

Date: 6.NOV.2020 23:33:36

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



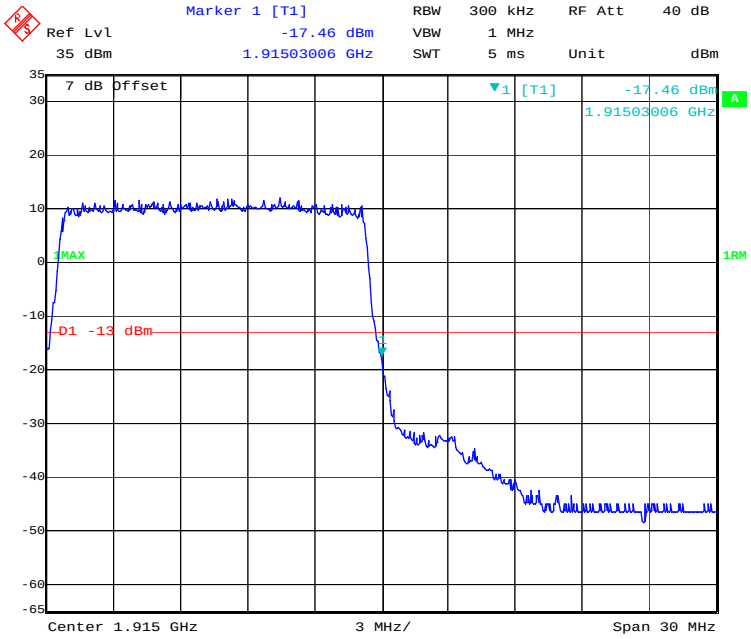

Date: 6.NOV.2020 23:34:17

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



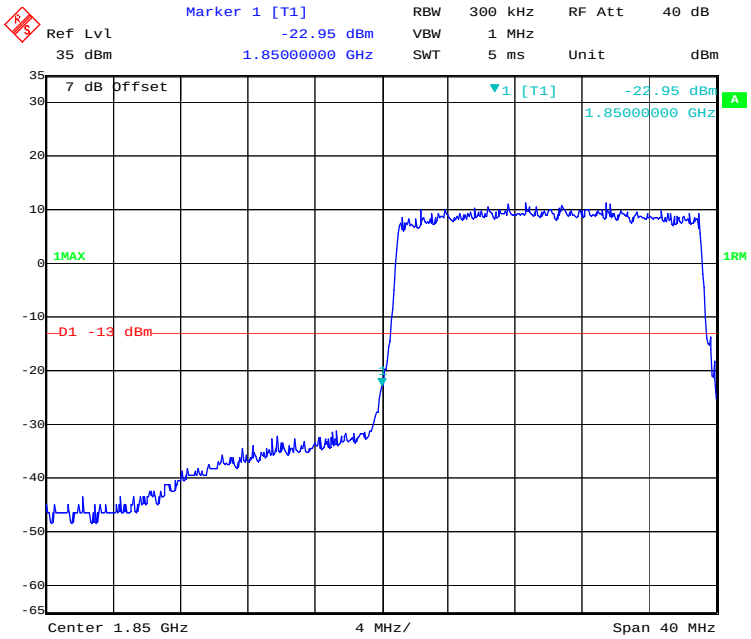

Date: 6.NOV.2020 23:35:06

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



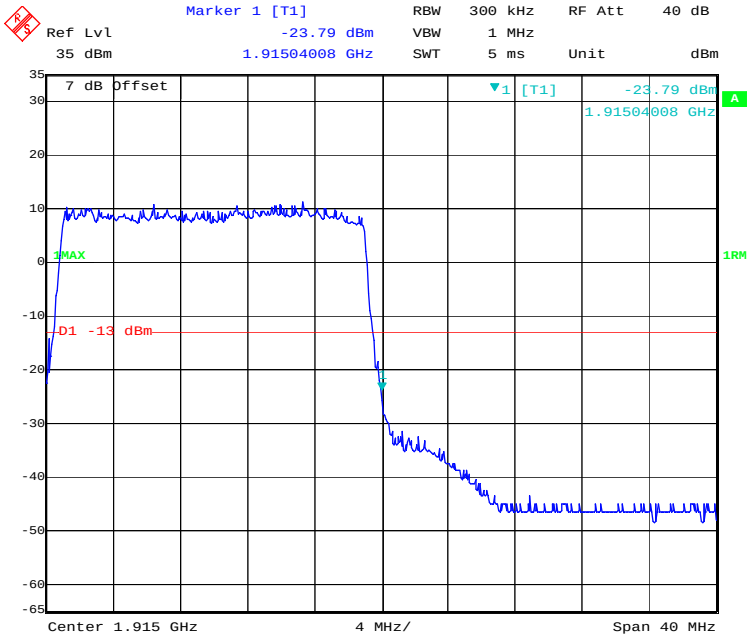

Date: 6.NOV.2020 23:35:54

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




Date: 6.NOV.2020 23:36:42

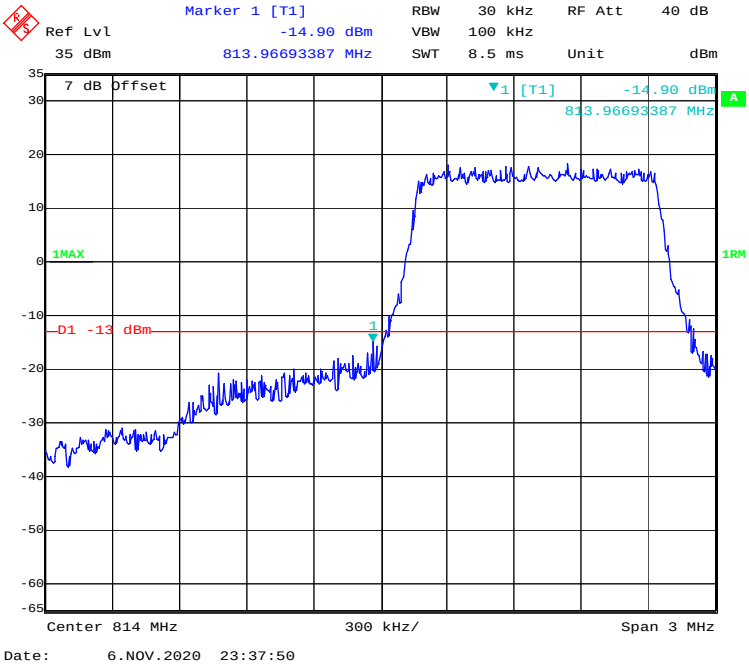
## 16-QAM (20 MHz, FULL RB) - Right Band Edge



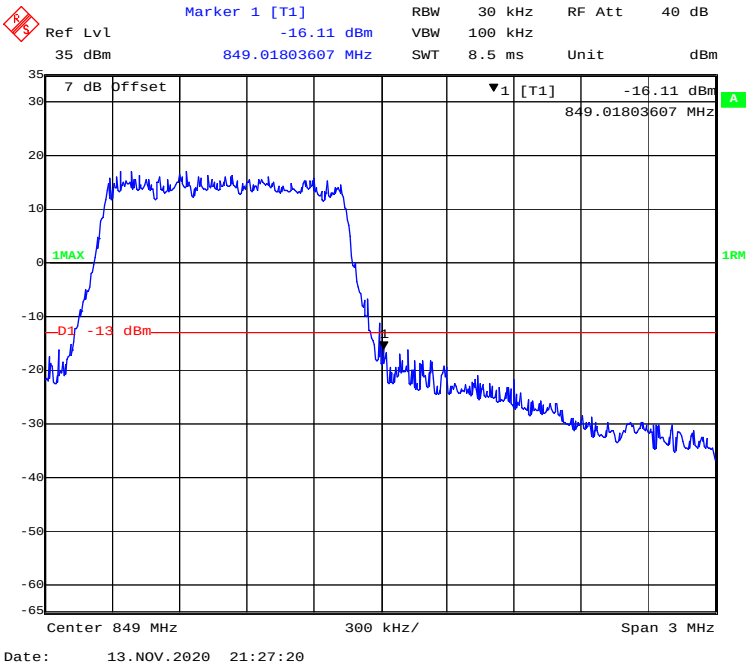

Date: 6.NOV.2020 23:37:28

## LTE Band 26:

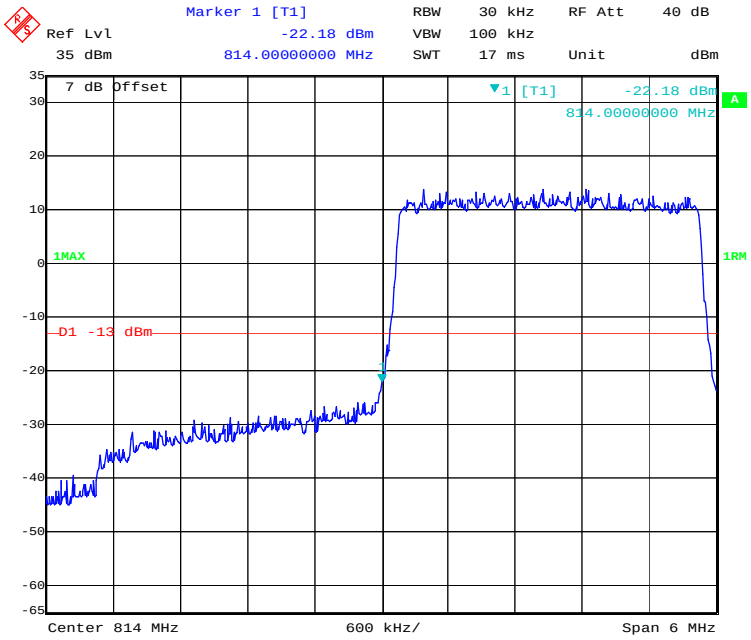
### QPSK (1.4 MHz, FULL RB) - Left Band Edge




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

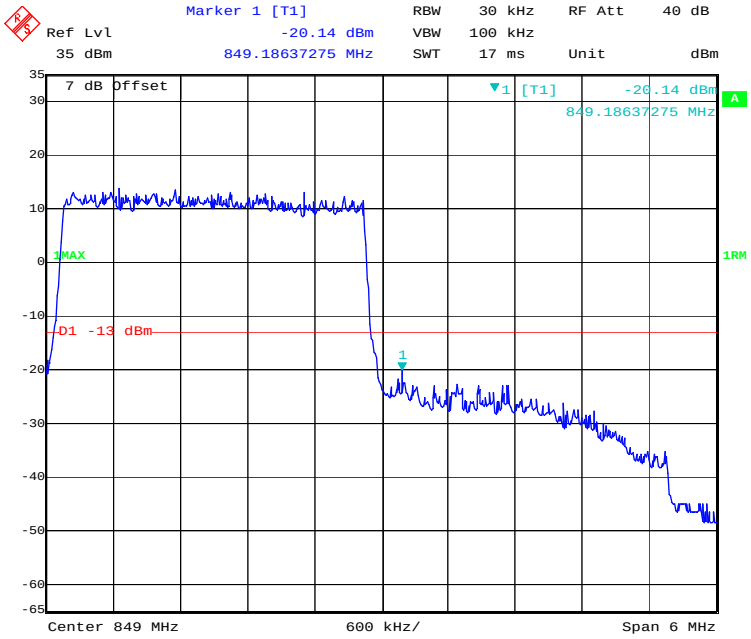


## QPSK (3 MHz, FULL RB) - Left Band Edge



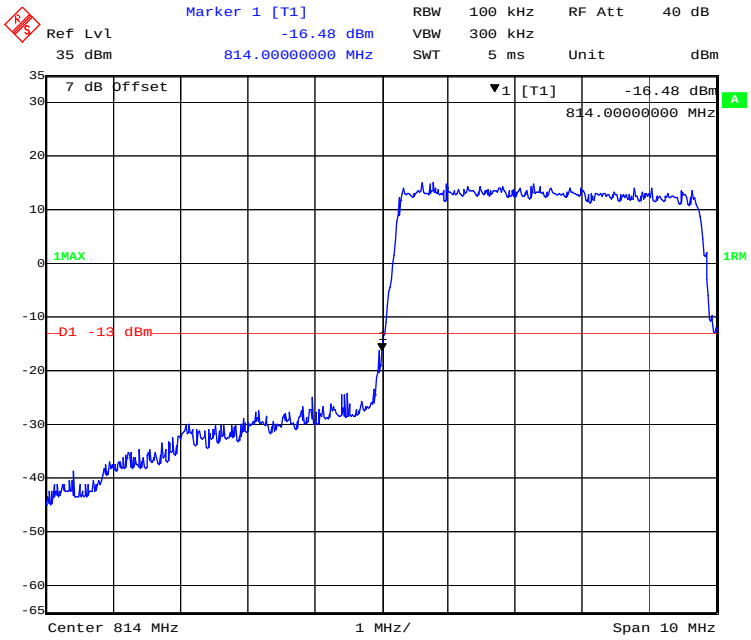

Date: 6.NOV.2020 23:39:12

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



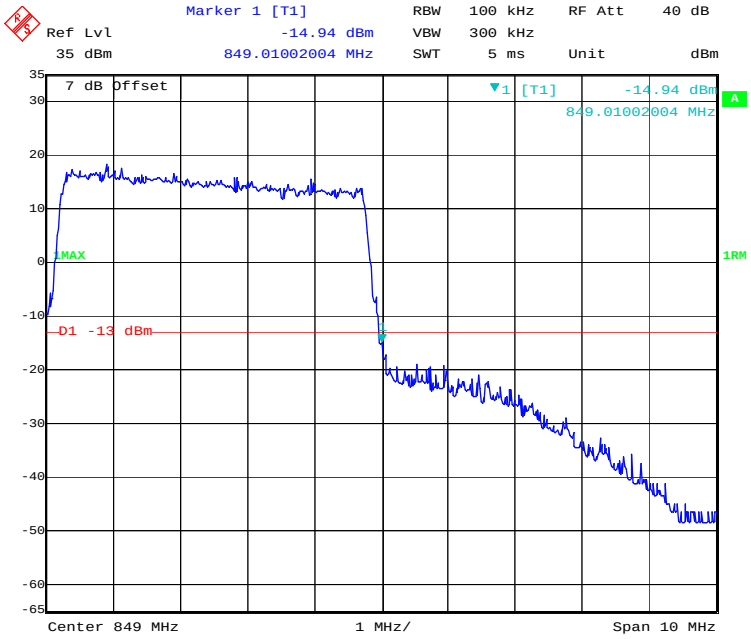

Date: 6.NOV.2020 23:39:52

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



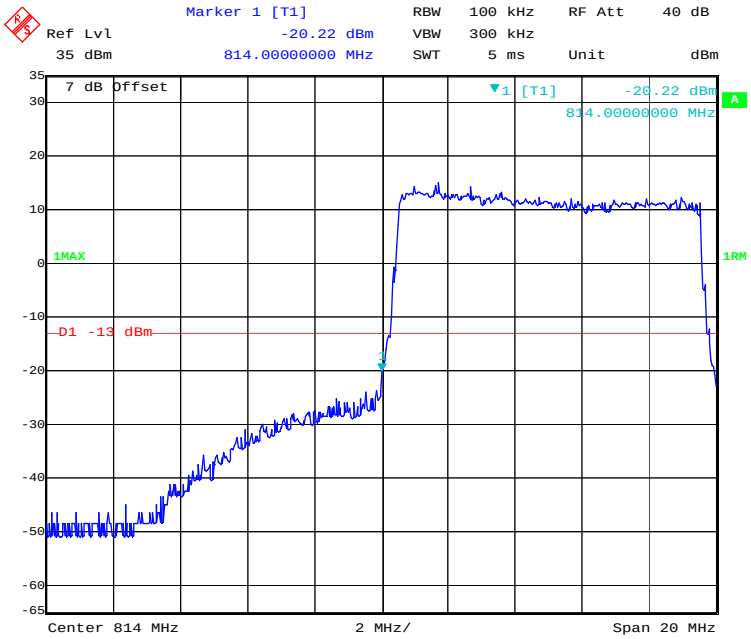

Date: 13.NOV.2020 21:28:28

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



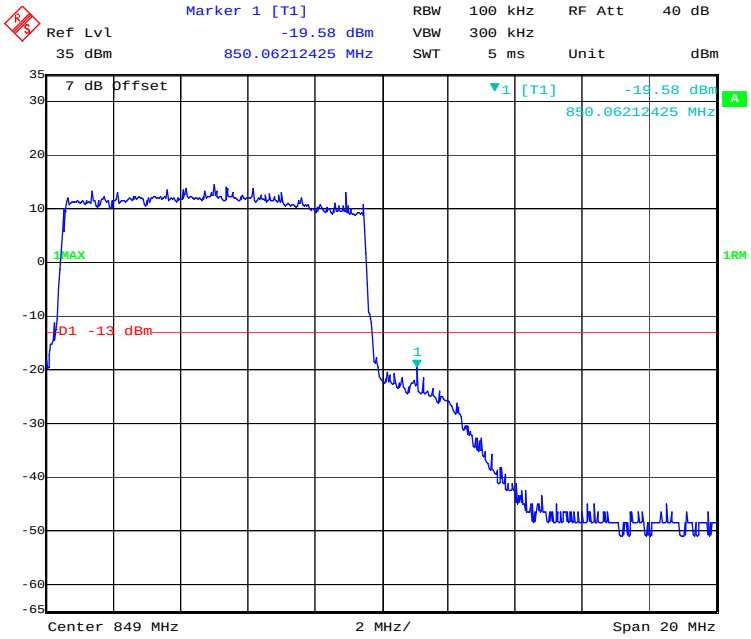

Date: 6.NOV.2020 23:41:18

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



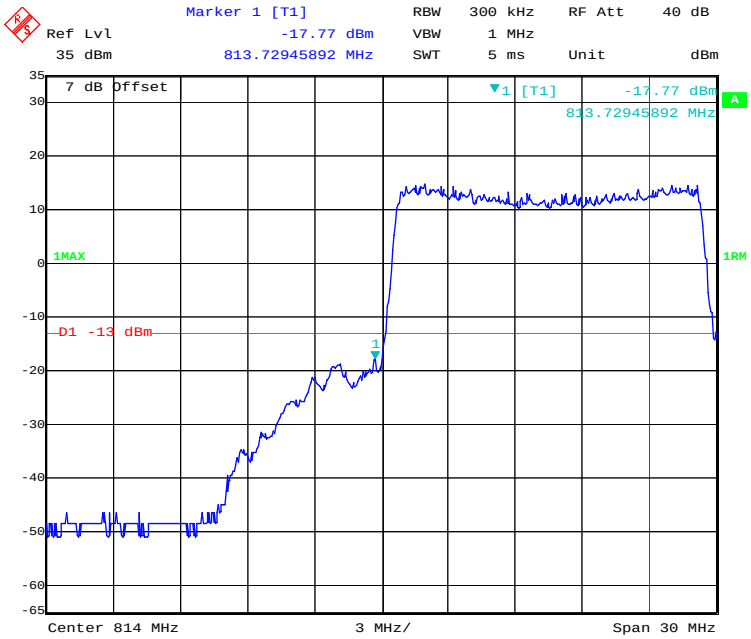

Date: 6.NOV.2020 23:41:59

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



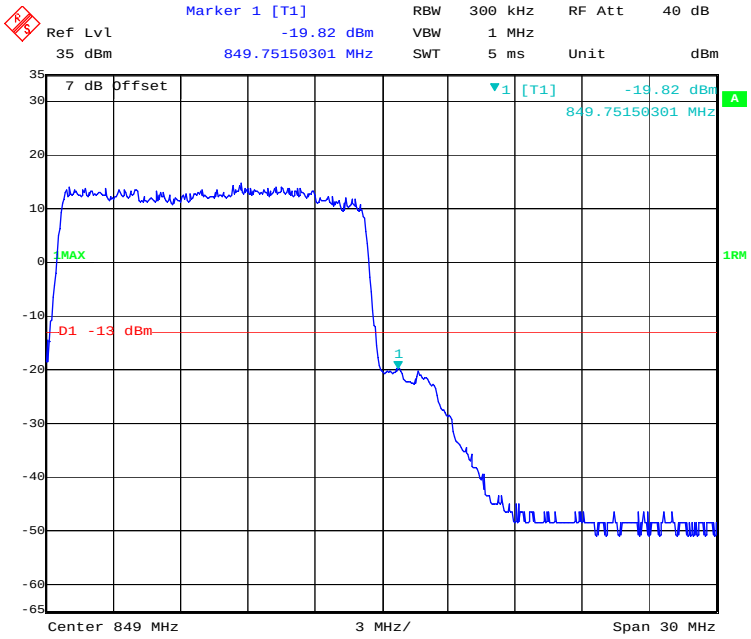

Date: 6.NOV.2020 23:42:41

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



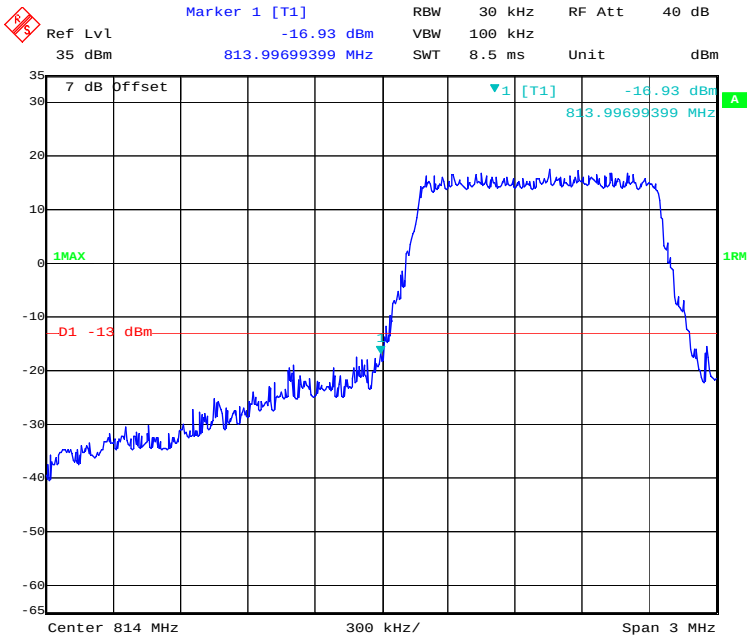

Date: 6.NOV.2020 23:43:30

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



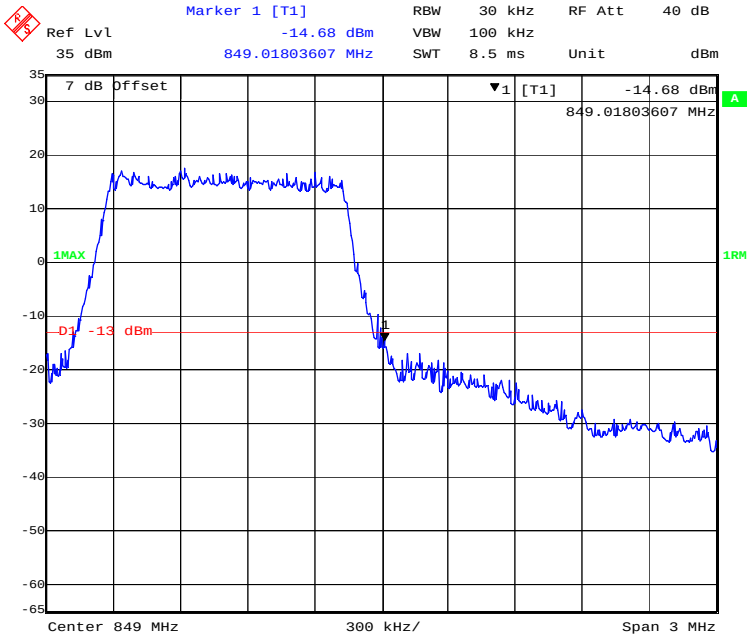

Date: 6.NOV.2020 23:44:12

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



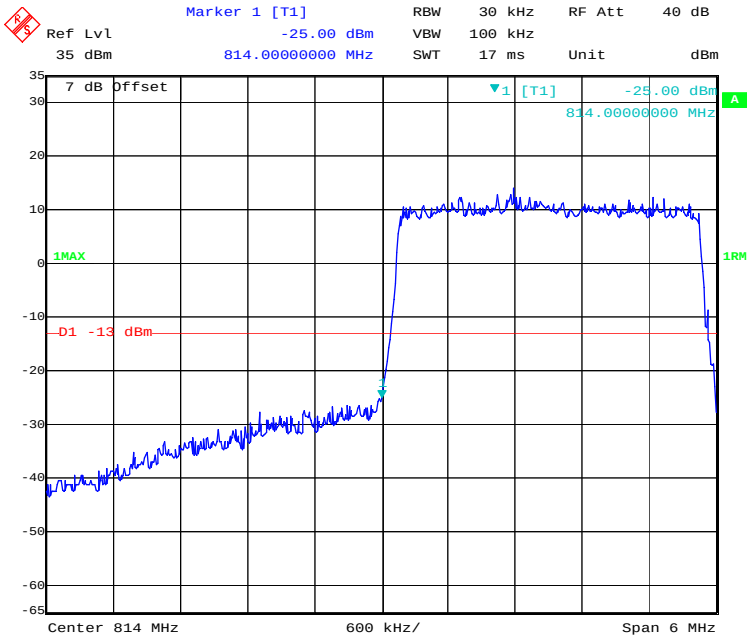

Date: 6.NOV.2020 23:38:10

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



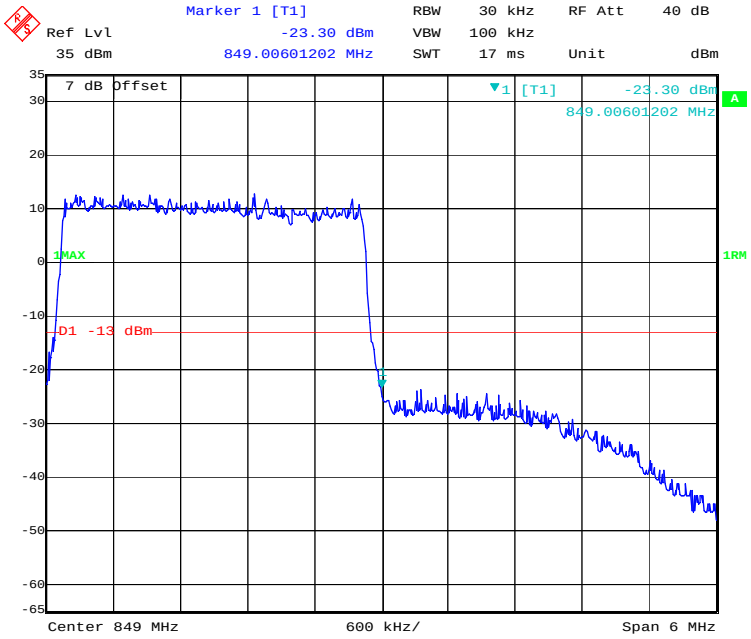

Date: 13.NOV.2020 21:26:58

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



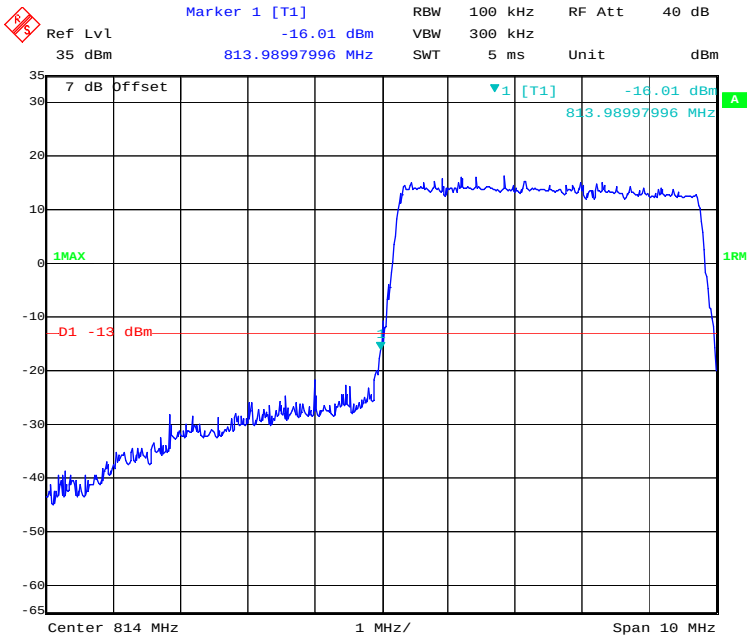

Date: 6.NOV.2020 23:39:31

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



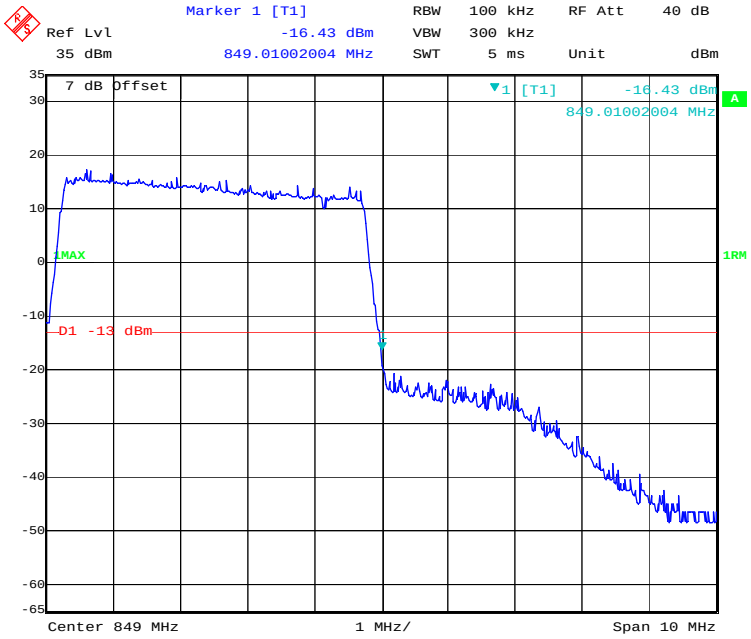

Date: 6.NOV.2020 23:40:11

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



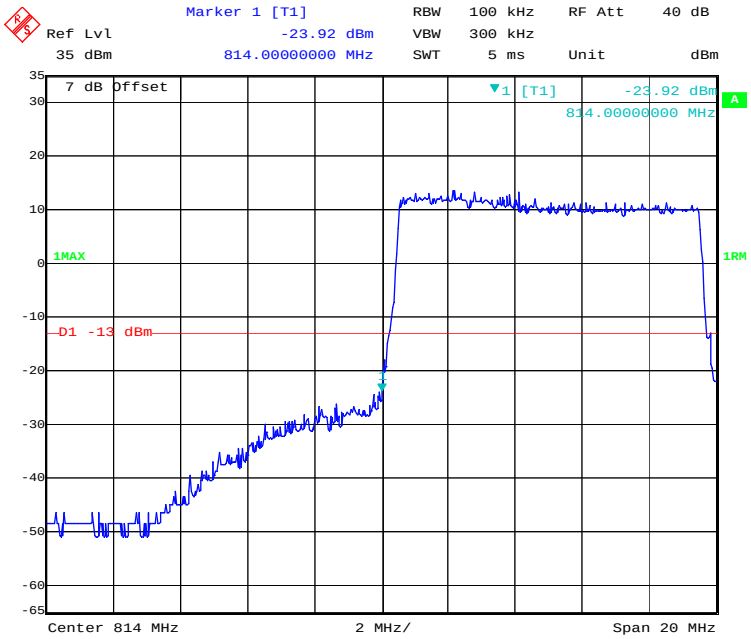

Date: 6.NOV.2020 23:40:56

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



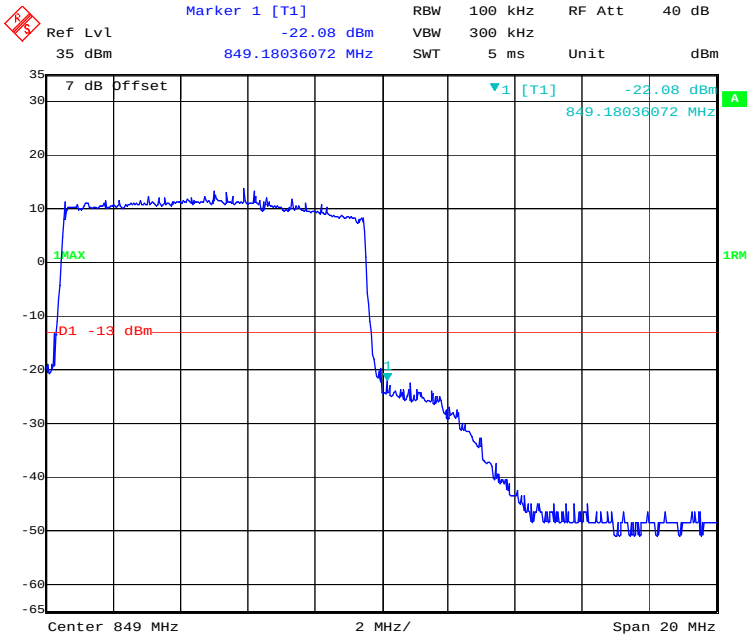

Date: 6.NOV.2020 23:41:38

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



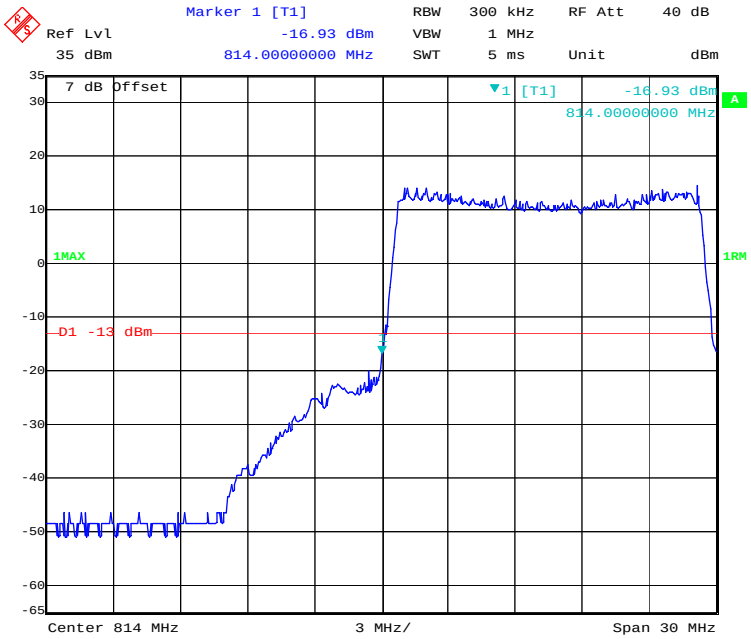

Date: 6.NOV.2020 23:42:19

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




Date: 6.NOV.2020 23:43:04

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



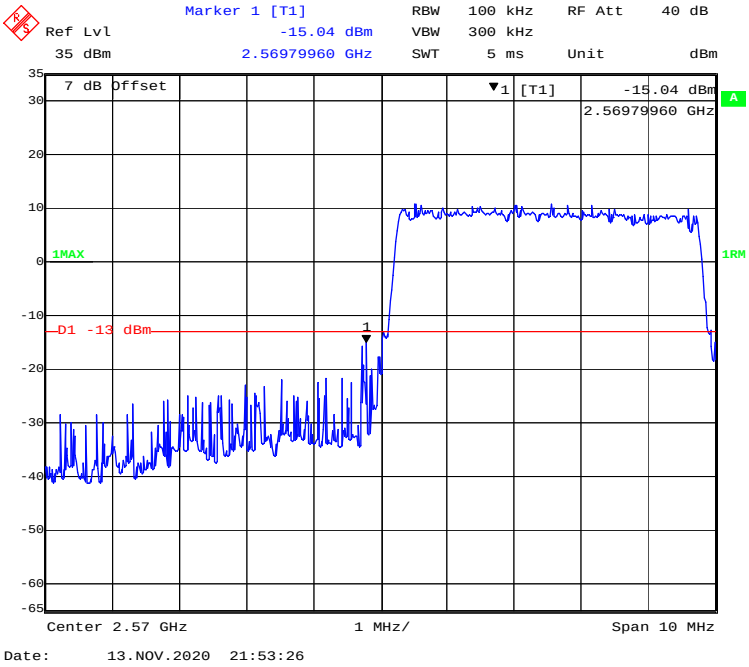

Date: 6.NOV.2020 23:43:50

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

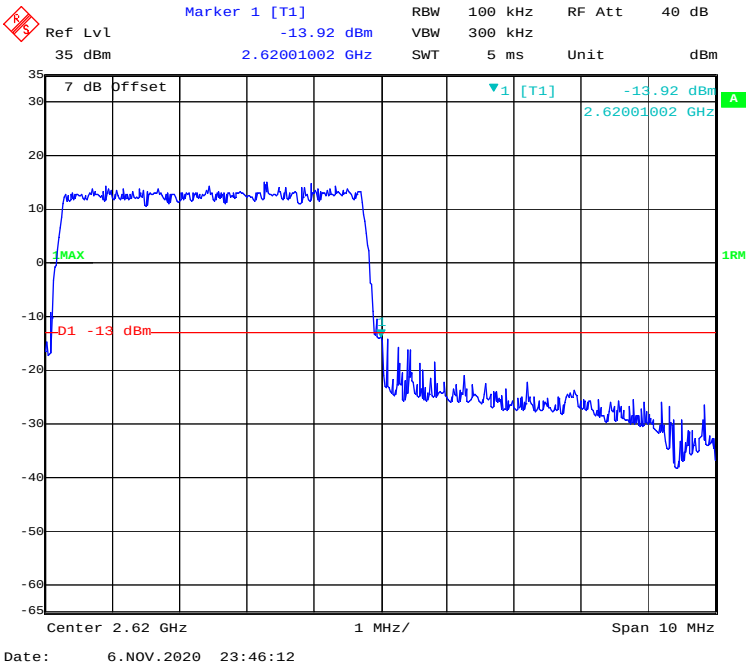
Date: 6.NOV.2020 23:44:35

## LTE Band 38:

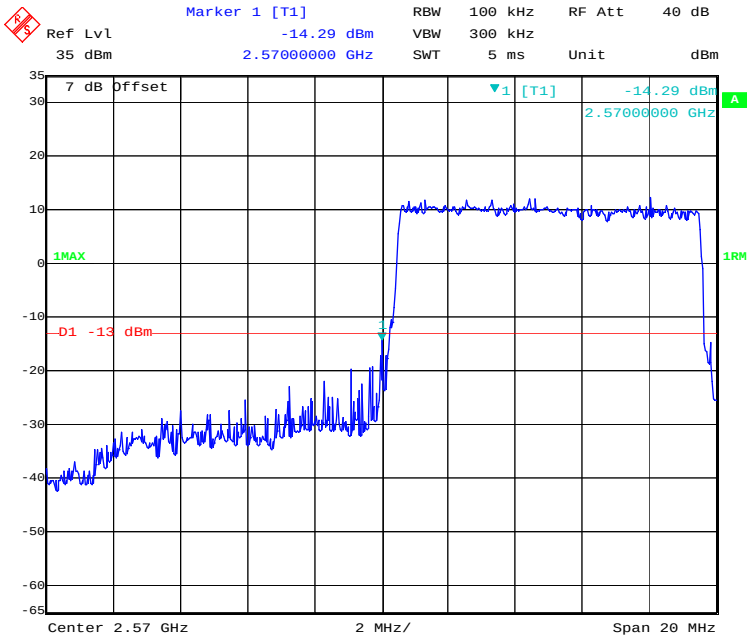
### QPSK (5.0 MHz, FULL RB) - Left Band Edge




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

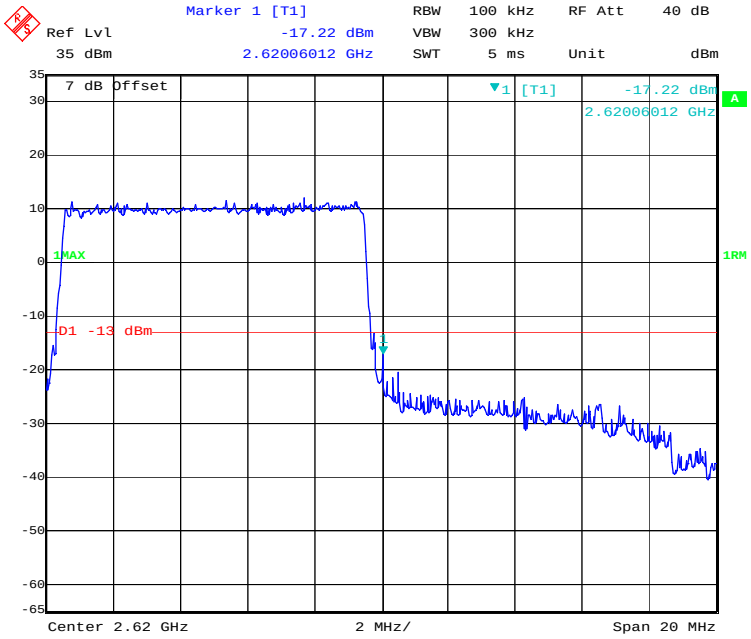


## QPSK (10.0 MHz, FULL RB) - Left Band Edge



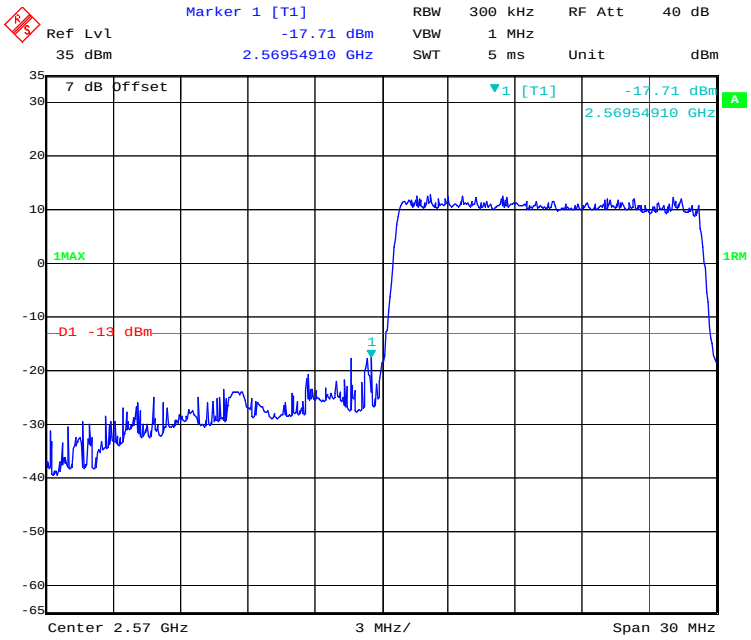

Date: 6.NOV.2020 23:47:02

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




Date: 6.NOV.2020 23:47:50

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

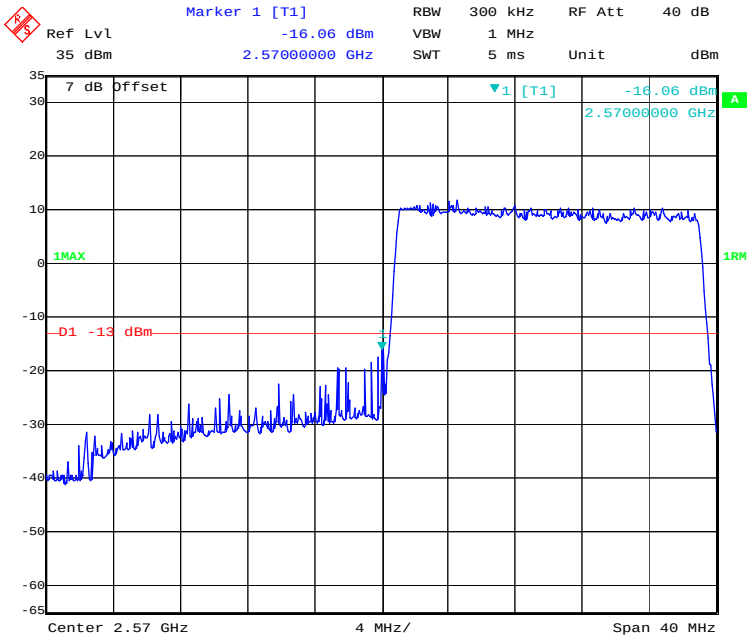



Date: 6.NOV.2020 23:48:47

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

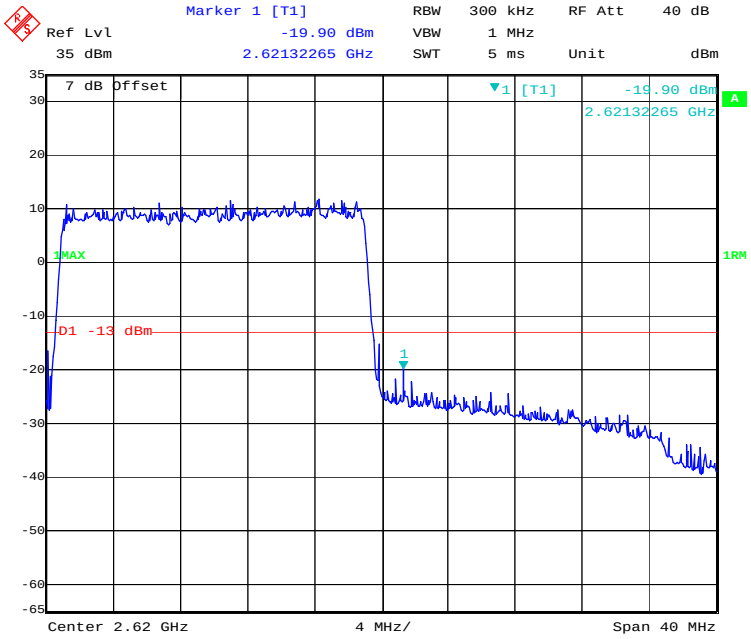
Date: 6.NOV.2020 23:49:42

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



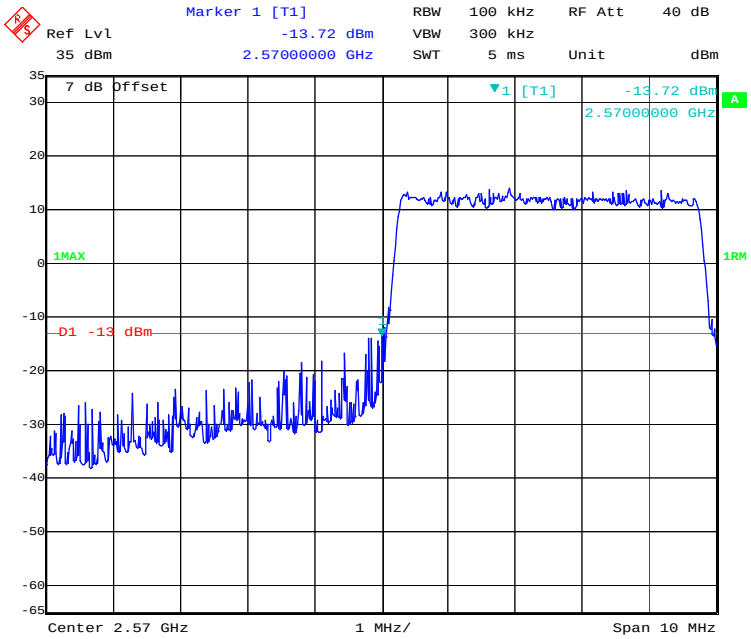

Date: 6.NOV.2020 23:50:39

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



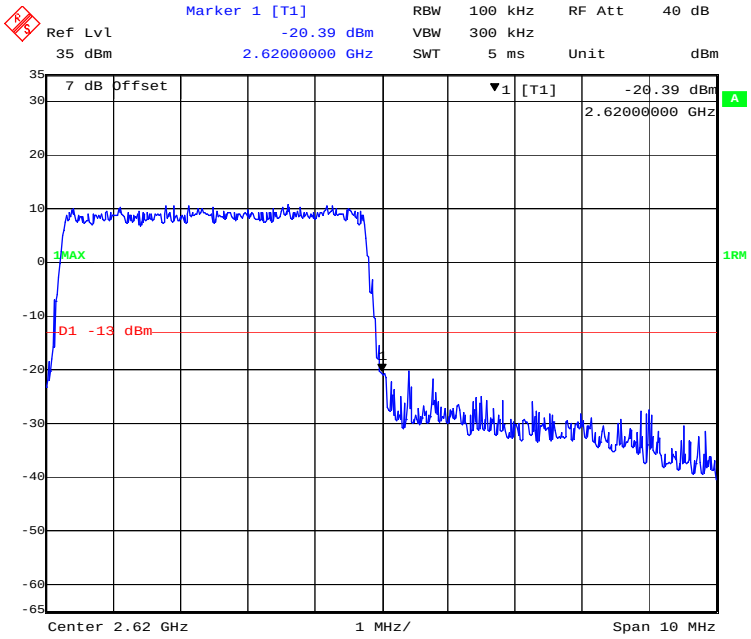

Date: 6.NOV.2020 23:51:24

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



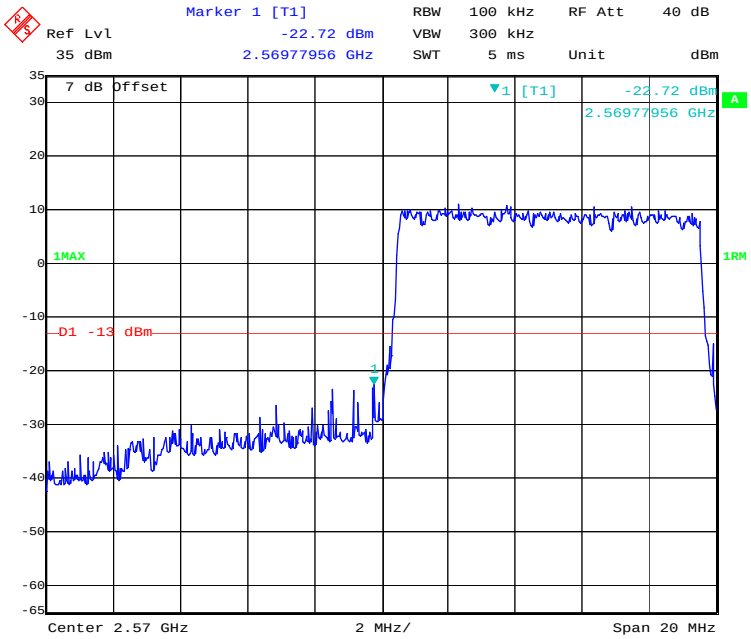

Date: 6.NOV.2020 23:45:47

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



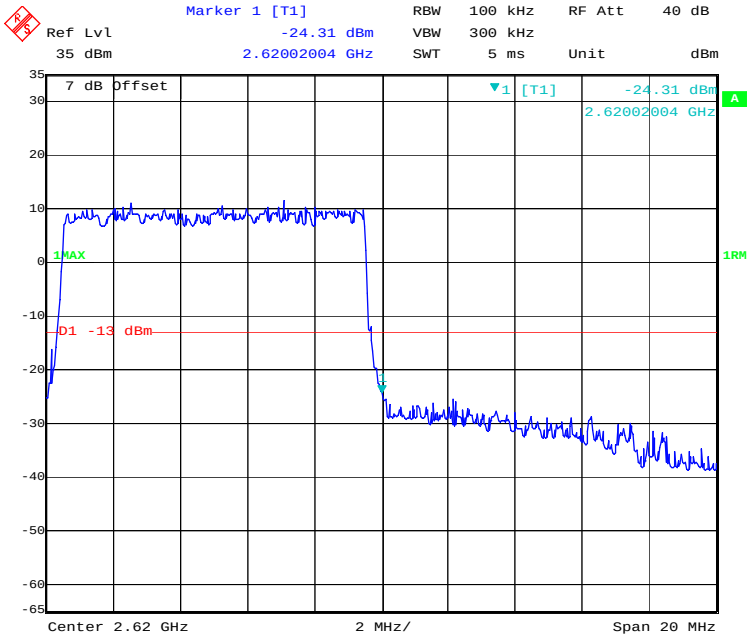

Date: 13.NOV.2020 21:52:47

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



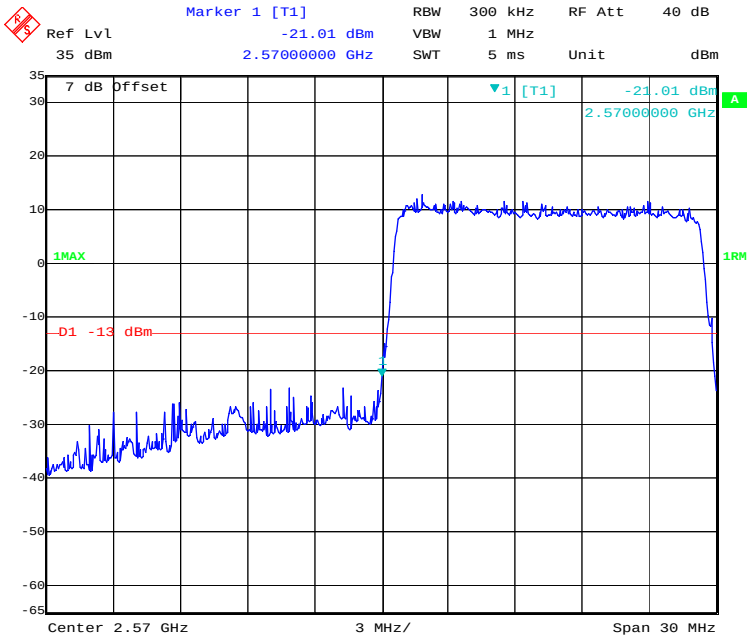

Date: 6.NOV.2020 23:47:22

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



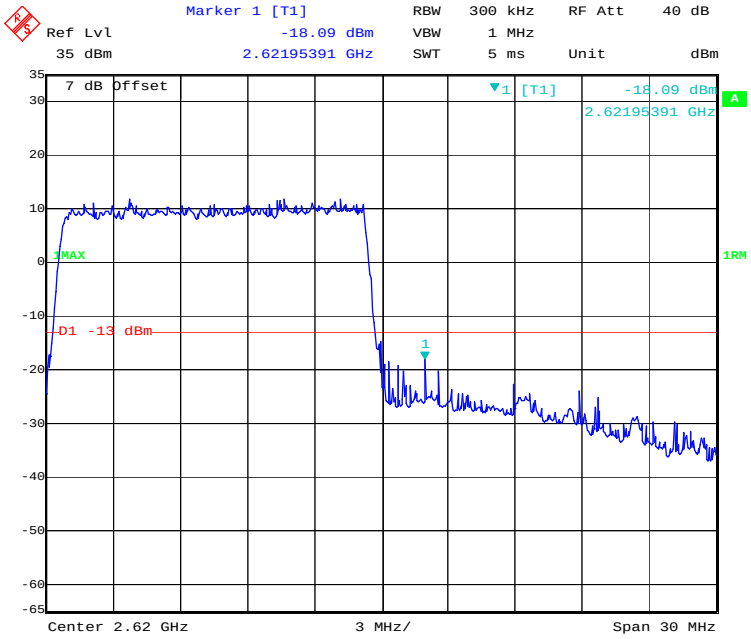

Date: 6.NOV.2020 23:48:14

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



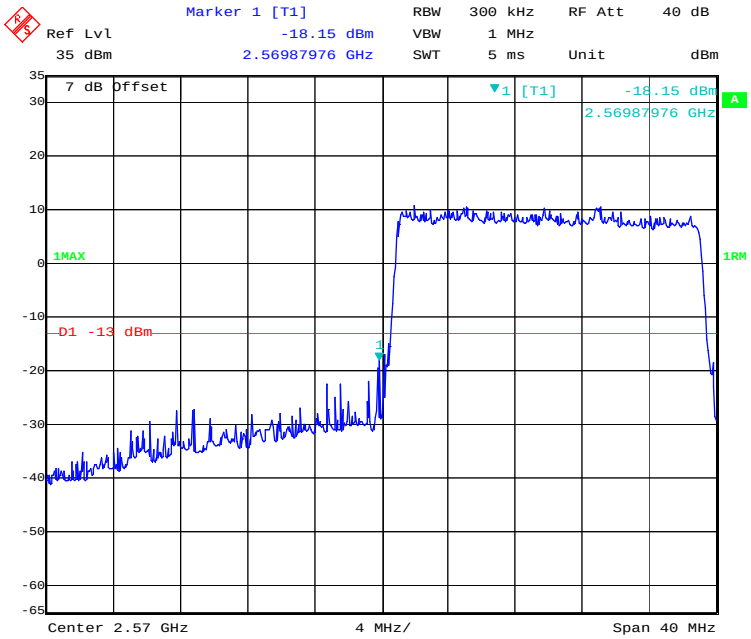

Date: 6.NOV.2020 23:49:14

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



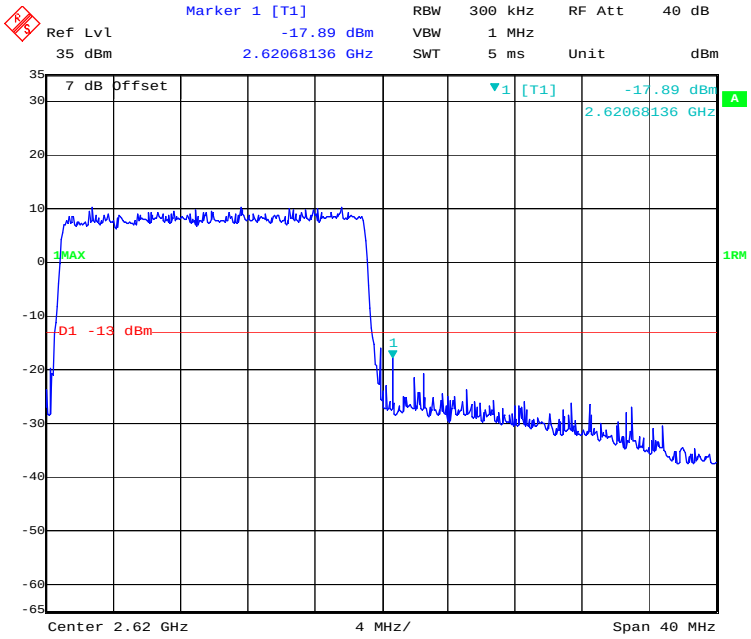

Date: 6.NOV.2020 23:50:09

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




Date: 6.NOV.2020 23:51:03

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

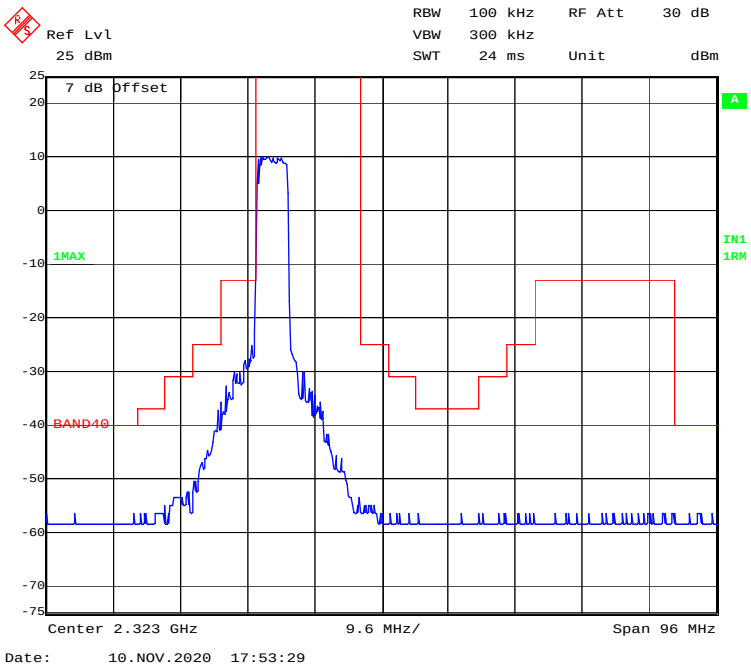



Date: 6.NOV.2020 23:51:51

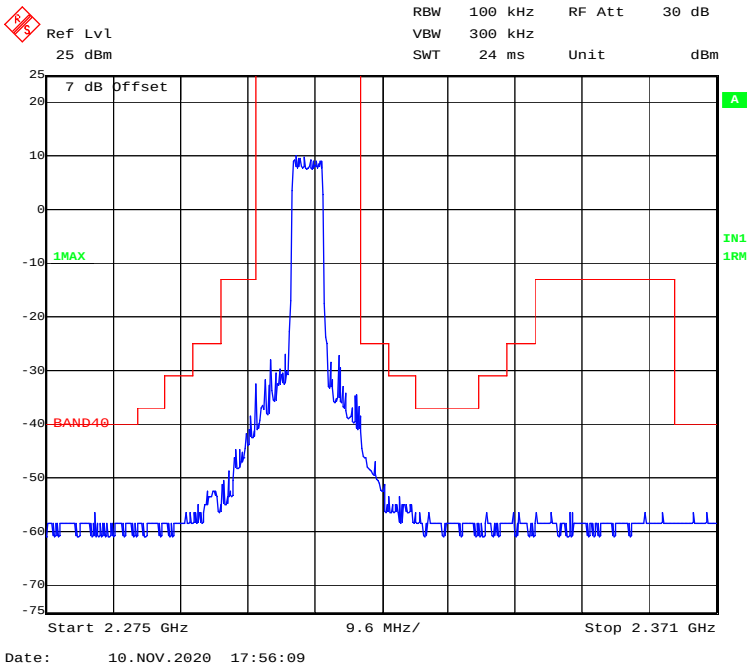
## LTE Band 40:

### 2305-2315MHz

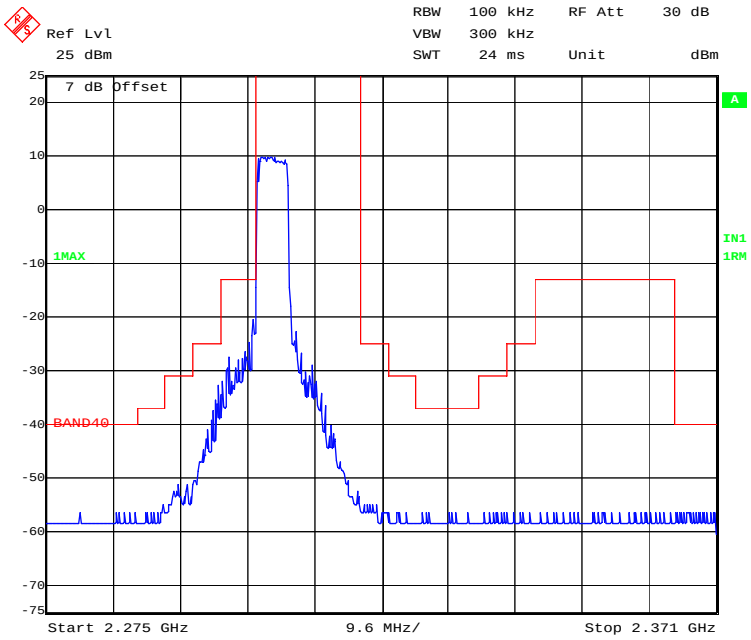
**QPSK (5.0 MHz, FULL RB) - Left Band Edge**




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

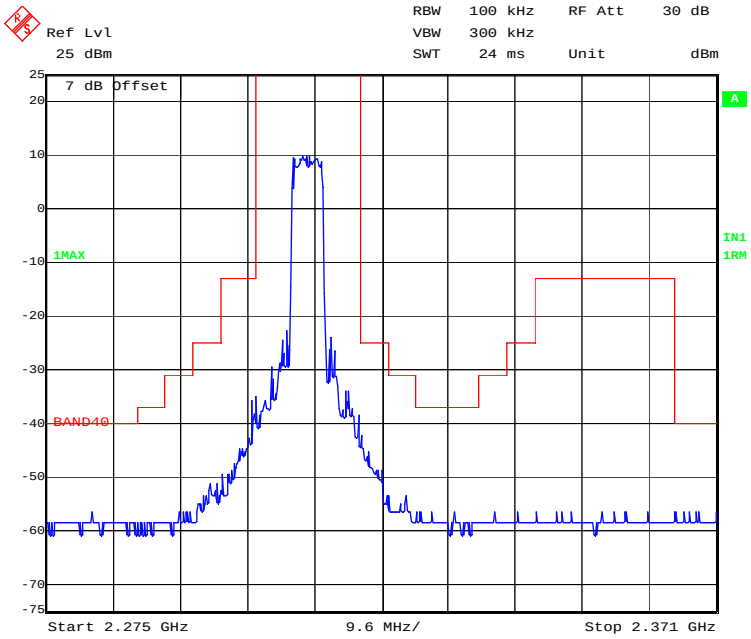


## 16-QAM (5.0 MHz, FULL RB) - Left Band Edge



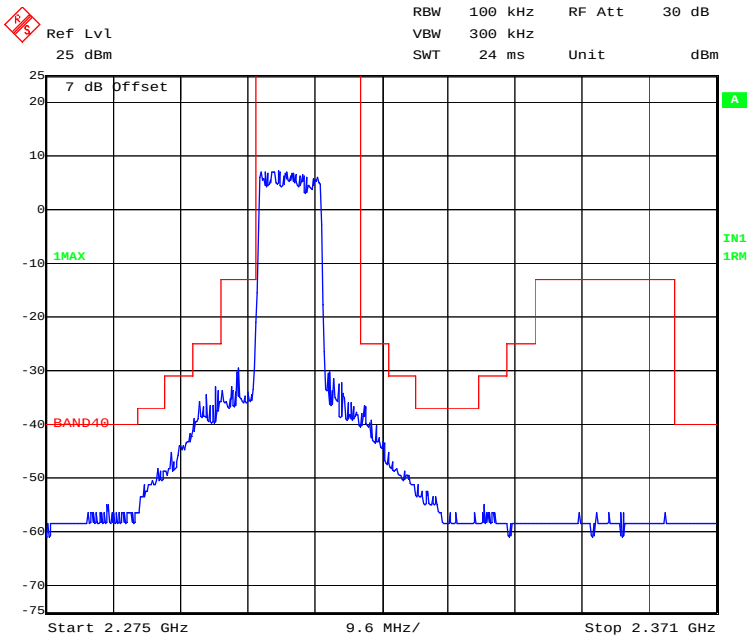

Date: 10.NOV.2020 17:55:16

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



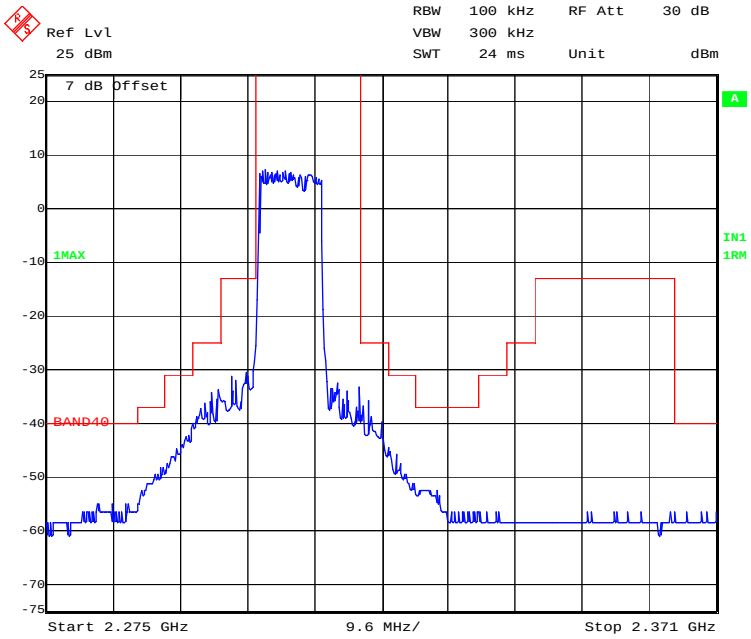

Date: 10.NOV.2020 17:56:28

## QPSK (10.0 MHz, FULL RB) Band Edge




Date: 10.NOV.2020 17:56:51

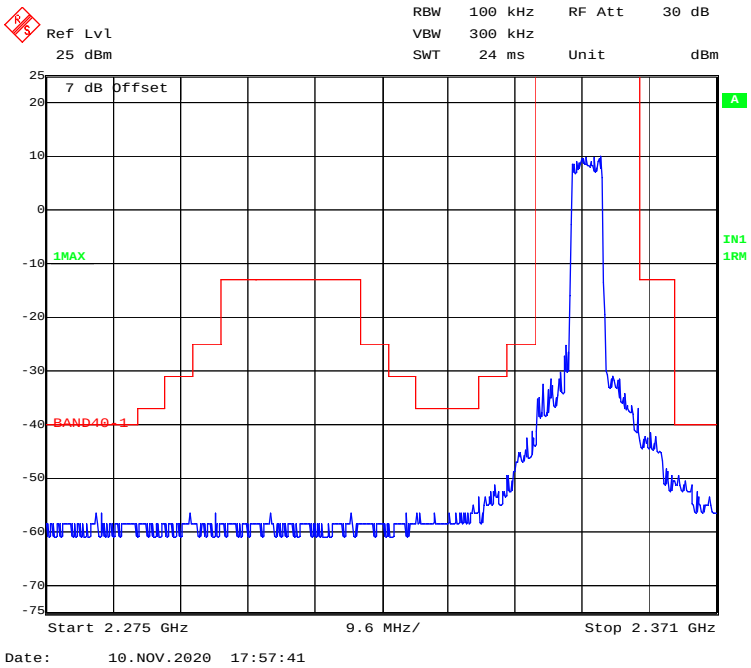
## 16-QAM (10.0 MHz, FULL RB) Band Edge



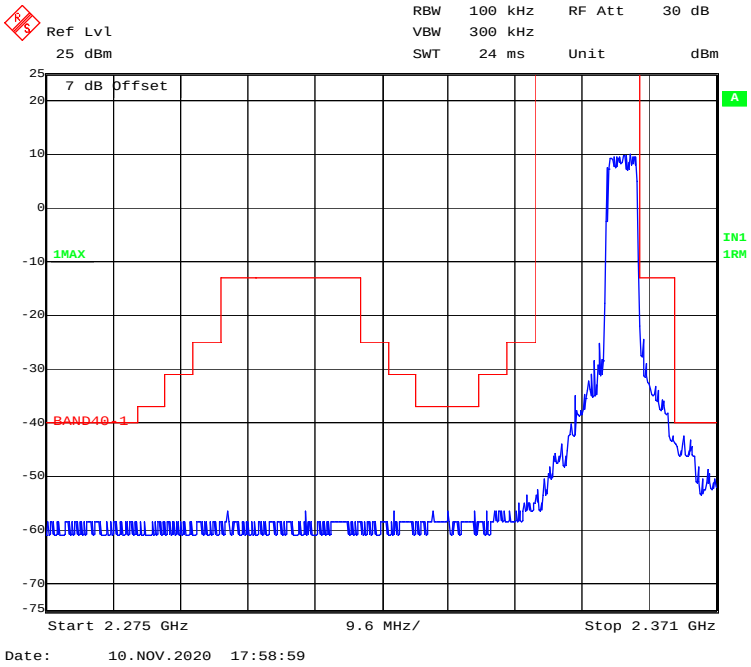

Date: 10.NOV.2020 17:57:08

**2350-2360MHz**

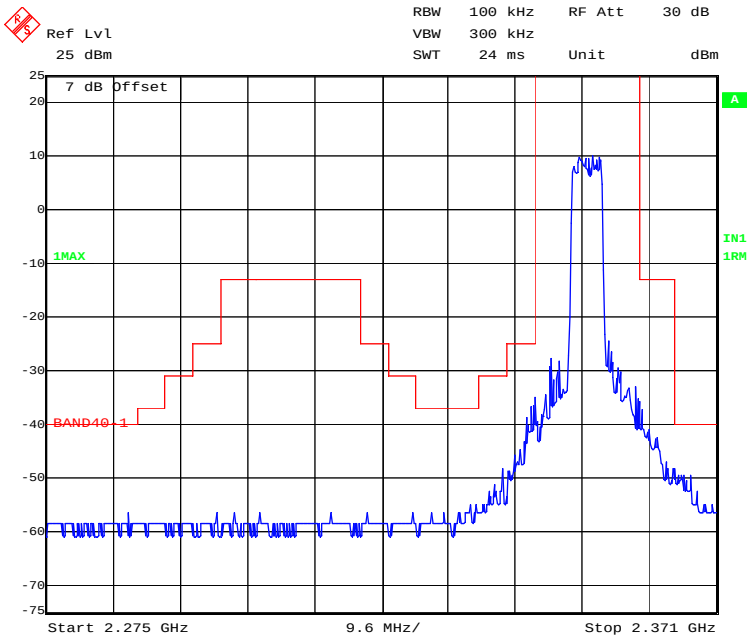
## QPSK (5.0 MHz, FULL RB) - Left Band Edge




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

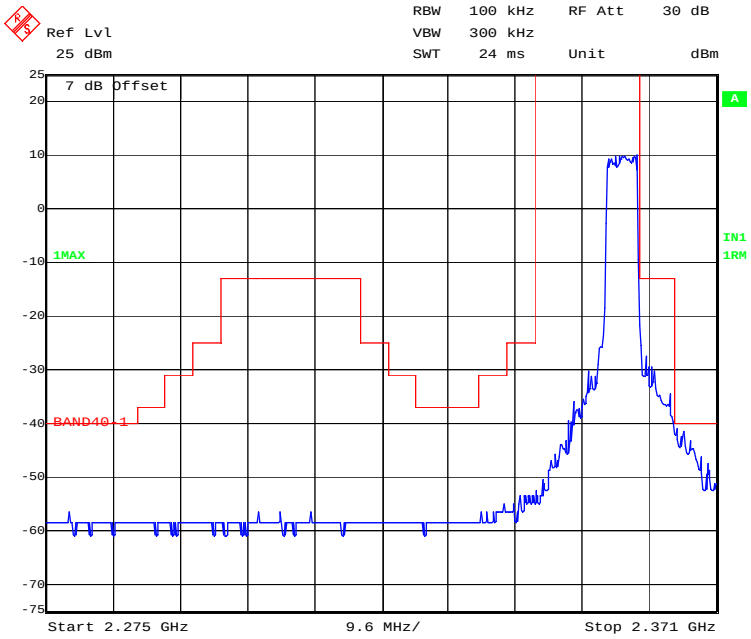


## 16-QAM (5.0 MHz, FULL RB) - Left Band Edge



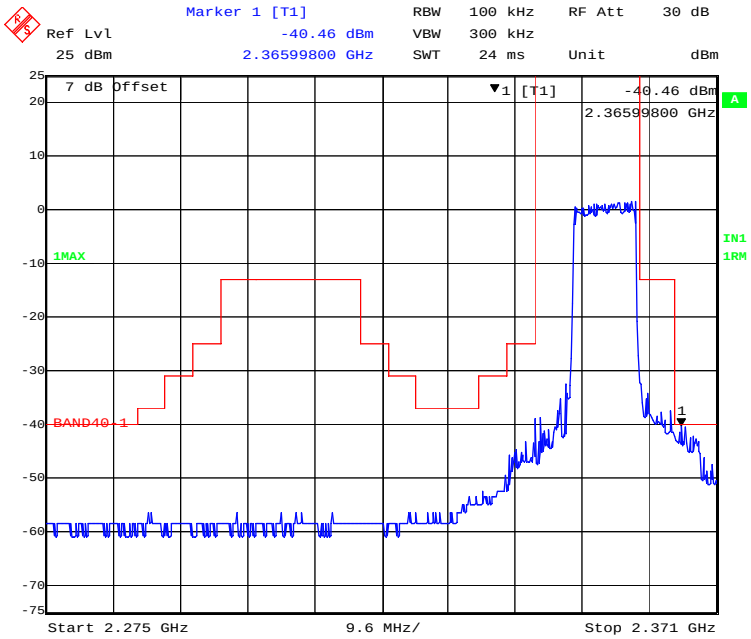

Date: 10.NOV.2020 17:58:07

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



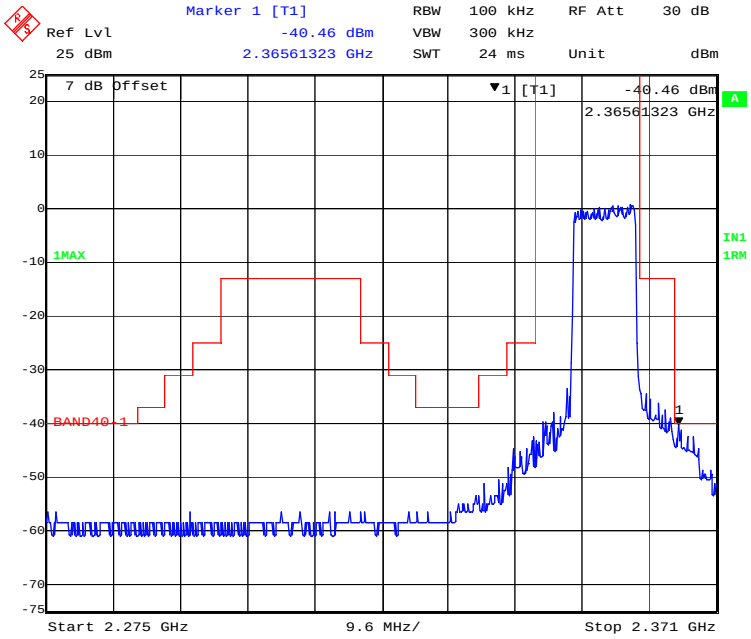

Date: 10.NOV.2020 17:59:24

## QPSK (10.0 MHz, FULL RB) Band Edge




Date: 10.NOV.2020 18:05:08

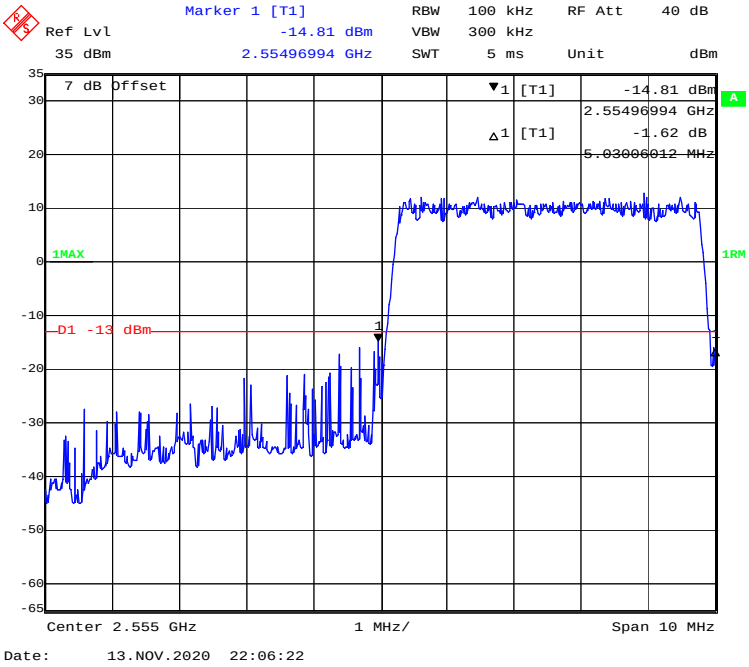
## 16-QAM (10.0 MHz, FULL RB) Band Edge



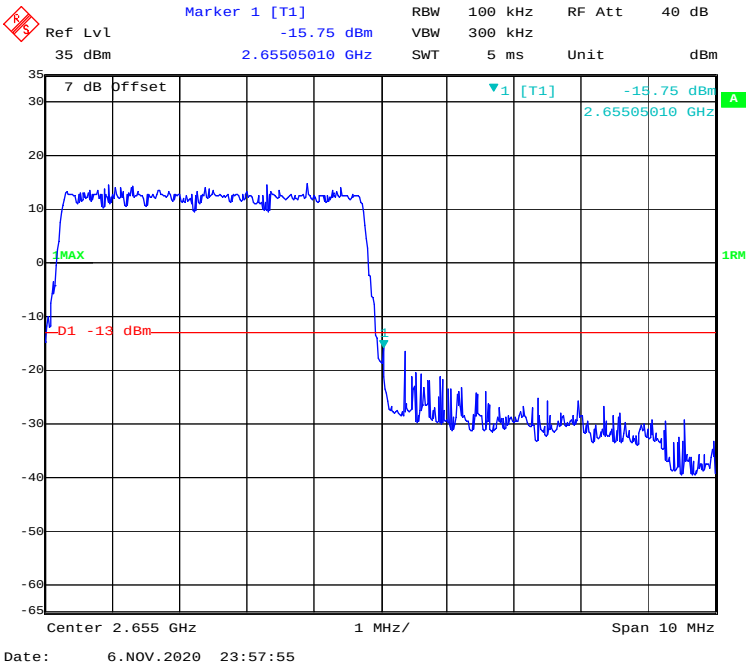

Date: 10.NOV.2020 18:05:54

## LTE Band 41:

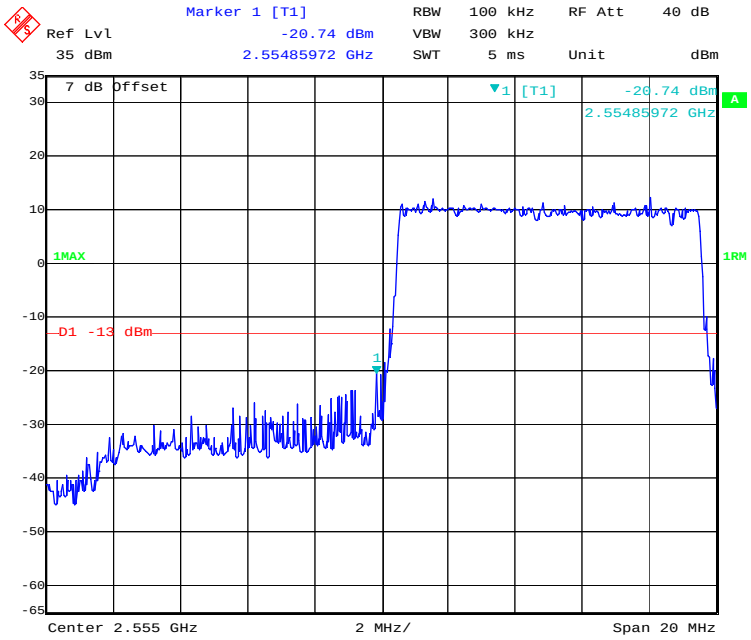
### QPSK (5.0 MHz, FULL RB) - Left Band Edge




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

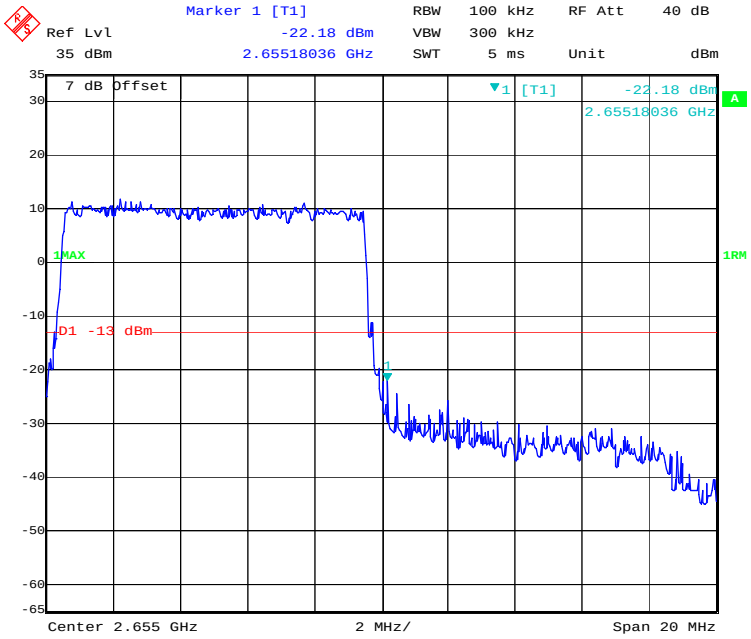


## QPSK (10.0 MHz, FULL RB) - Left Band Edge



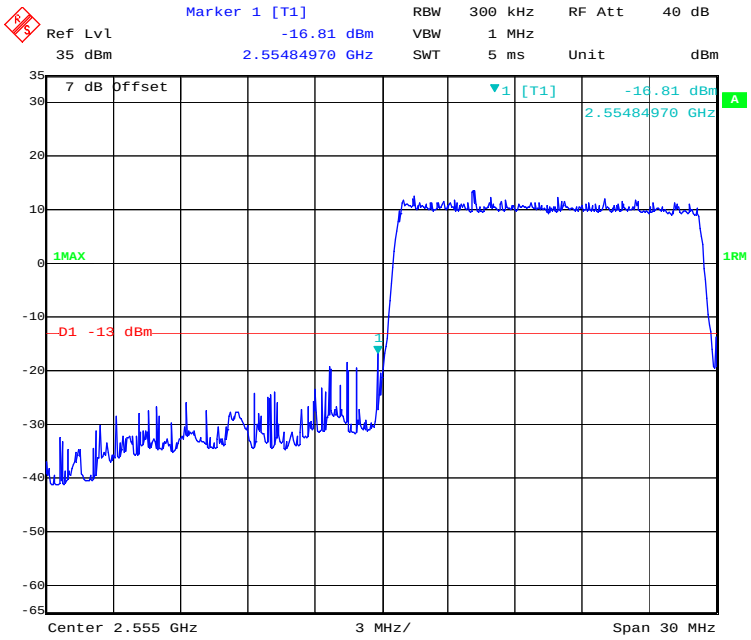

Date: 6.NOV.2020 23:58:49

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



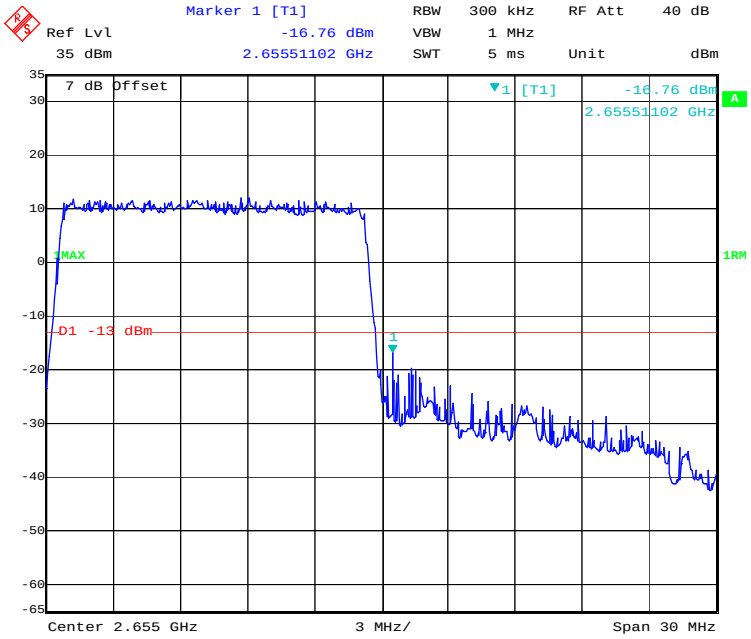

Date: 6.NOV.2020 23:59:37

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



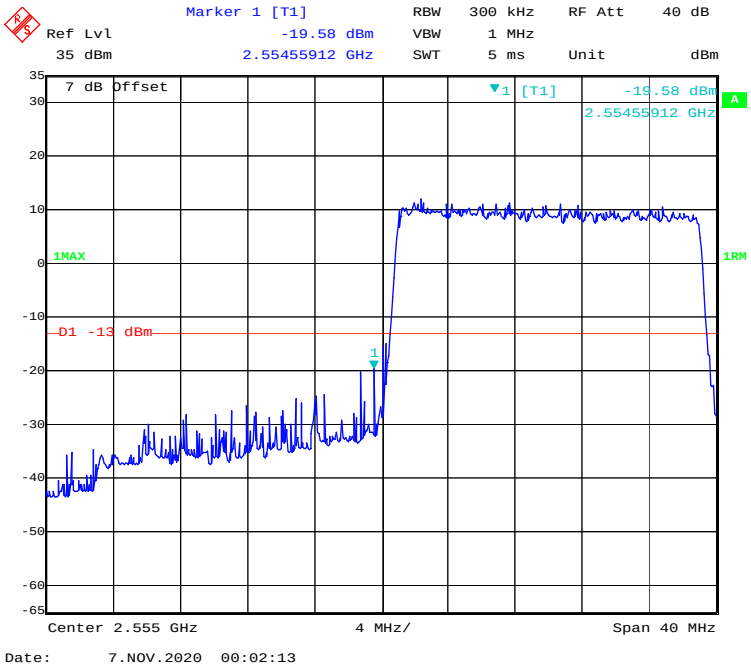

Date: 7.NOV.2020 00:00:31

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

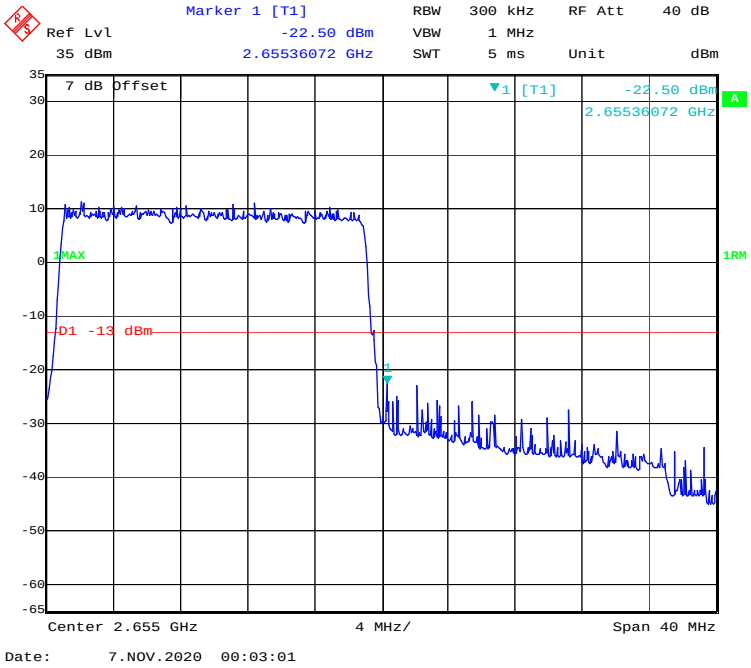



Date: 7.NOV.2020 00:01:22

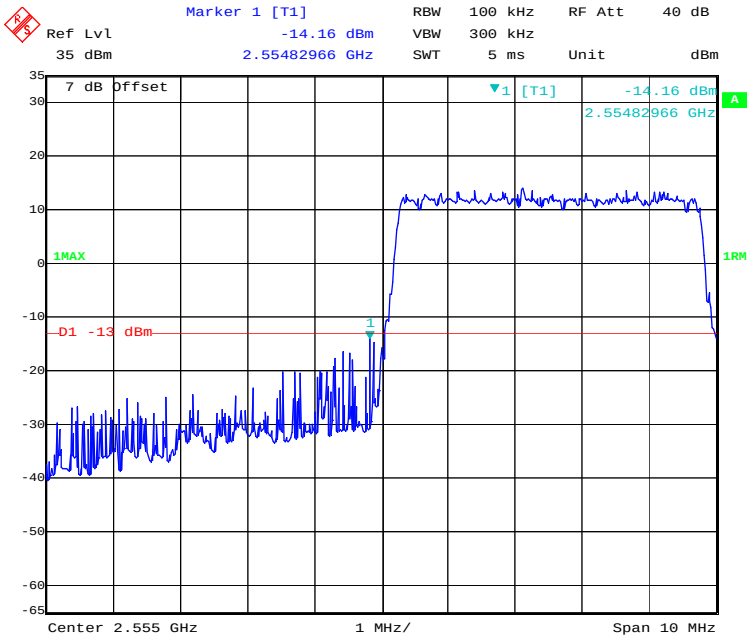
## QPSK (20.0 MHz, FULL RB) - Left Band Edge




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

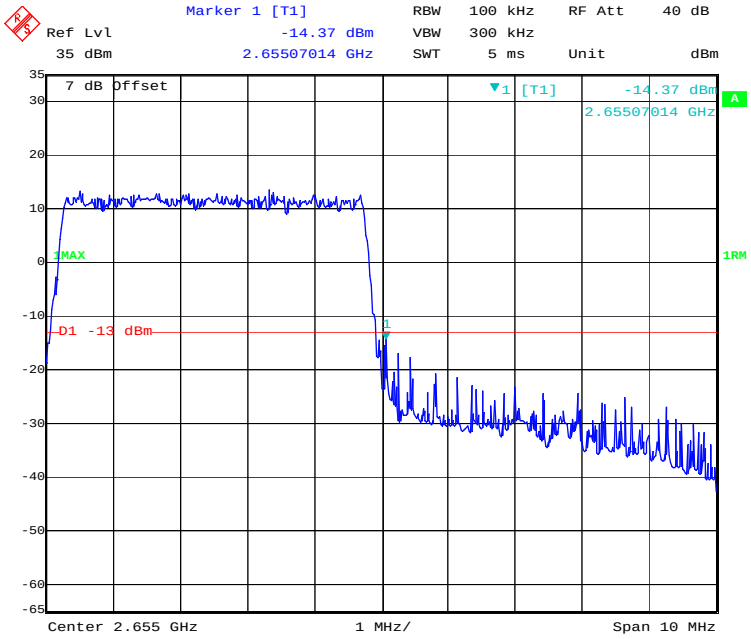


## 16-QAM (5.0 MHz, FULL RB) - Left Band Edge



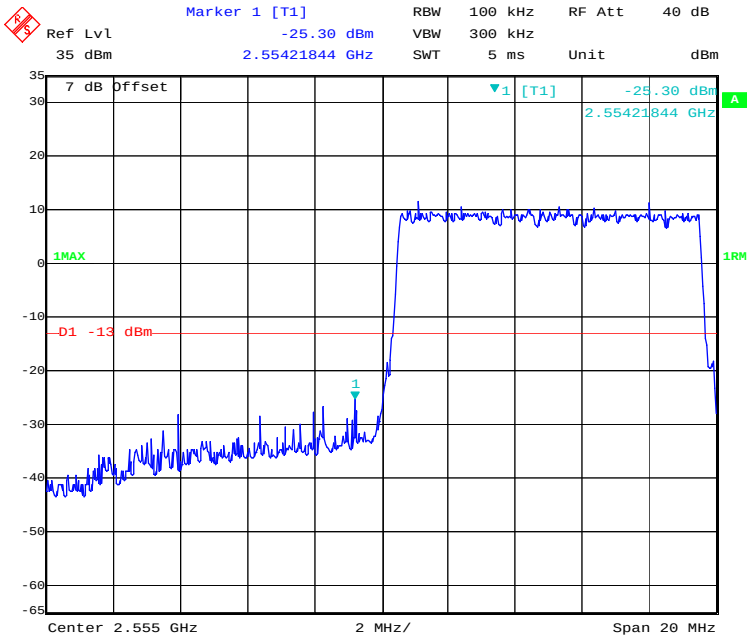

Date: 6.NOV.2020 23:57:31

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



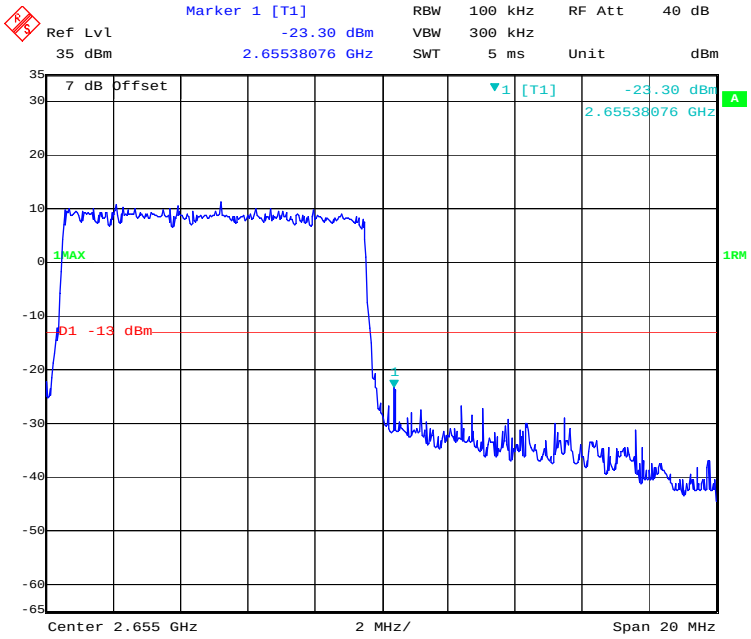

Date: 6.NOV.2020 23:58:19

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



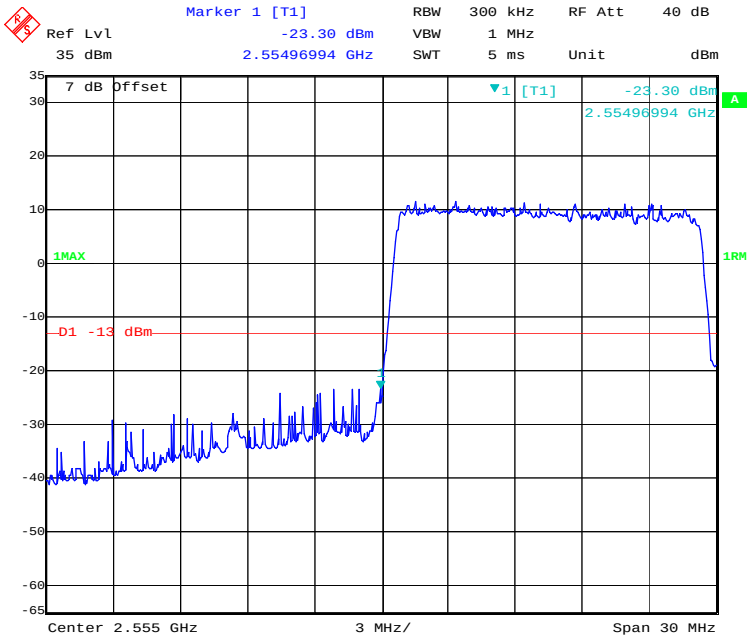

Date: 6.NOV.2020 23:59:13

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




Date: 7.NOV.2020 00:00:00

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

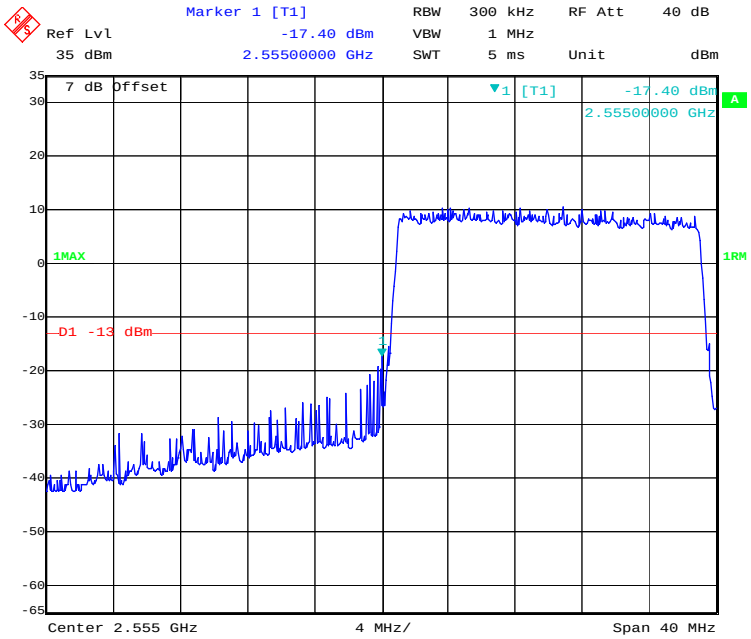



Date: 7.NOV.2020 00:00:55

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

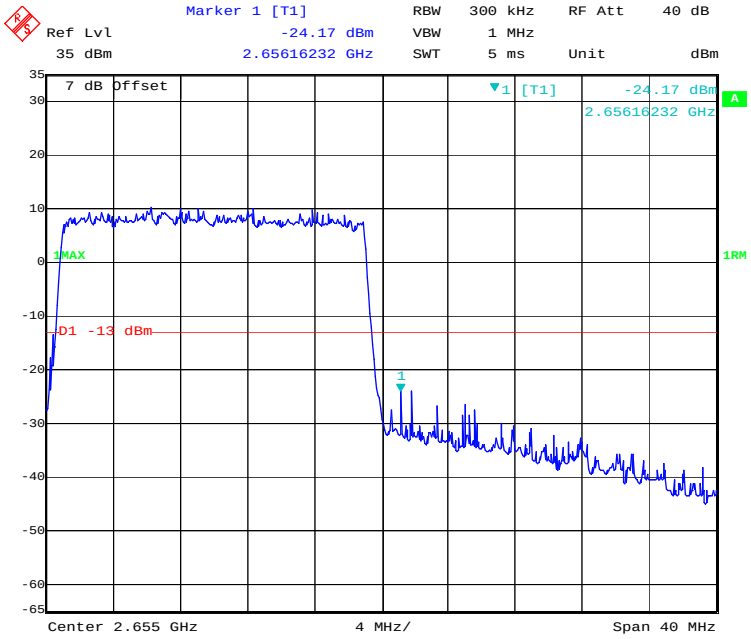
Date: 7.NOV.2020 00:01:43

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




Date: 7.NOV.2020 00:02:36

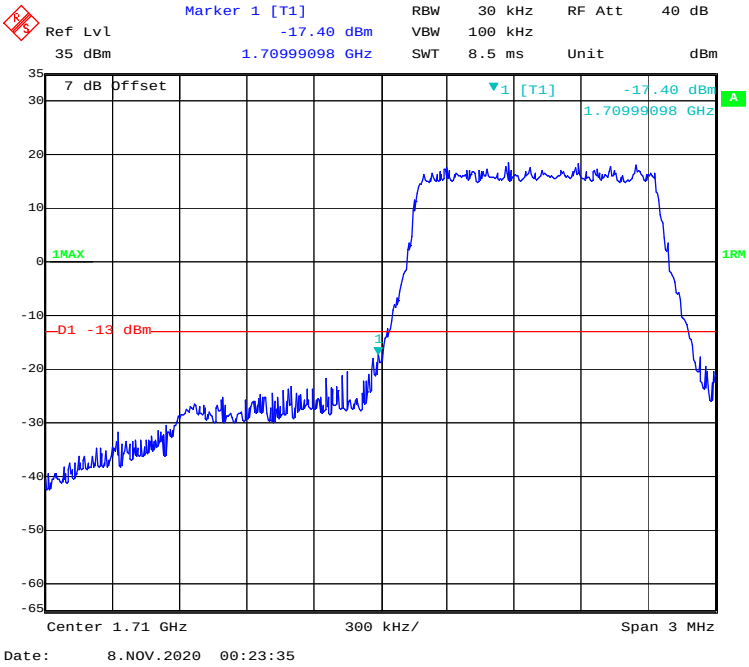
## 16-QAM (20.0 MHz, FULL RB) - Right Band Edge



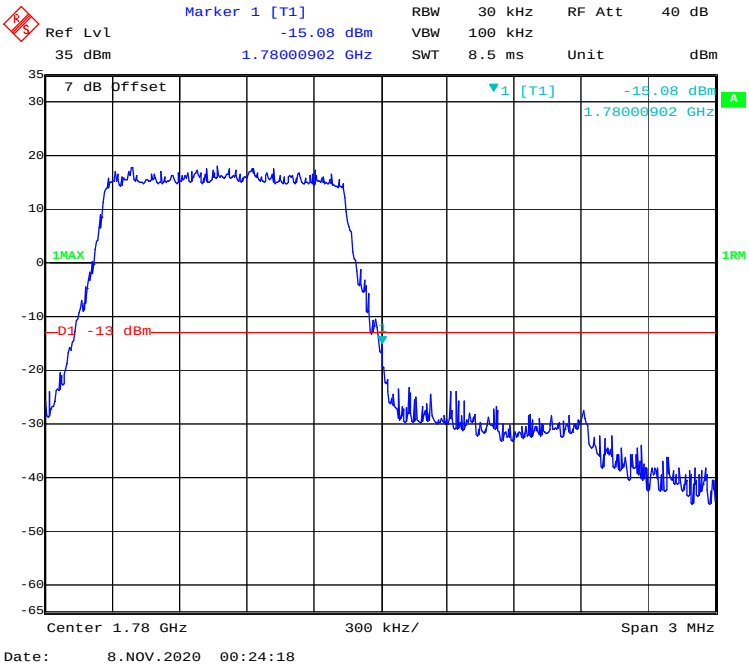

Date: 7.NOV.2020 00:03:24

## LTE Band 66:

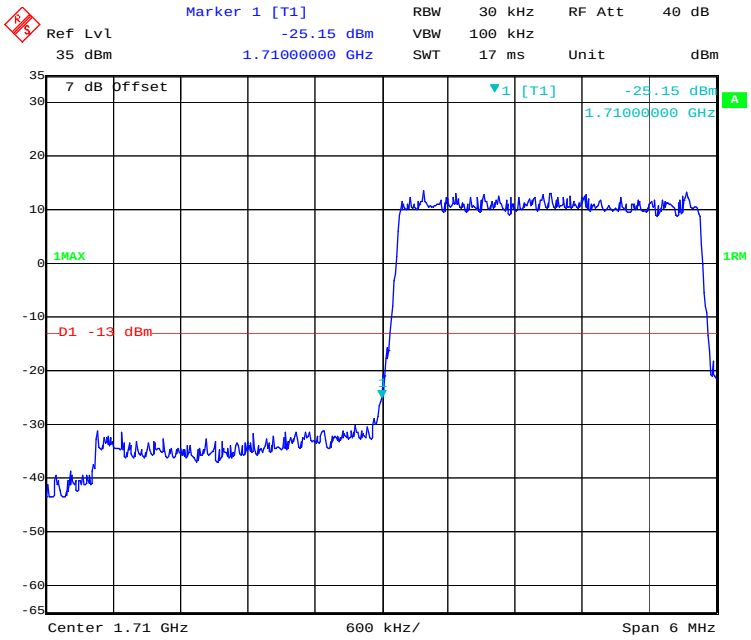
### QPSK (1.4 MHz, FULL RB) - Left Band Edge




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

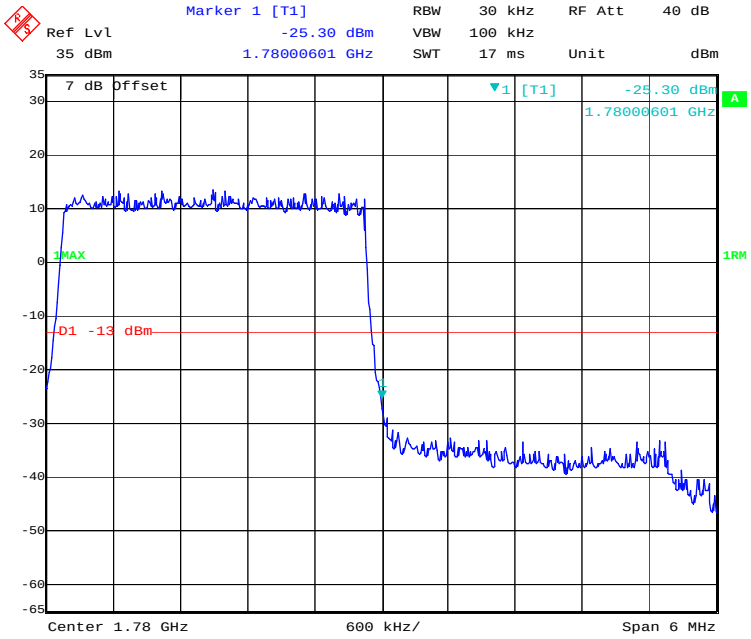


## QPSK (3 MHz, FULL RB) - Left Band Edge



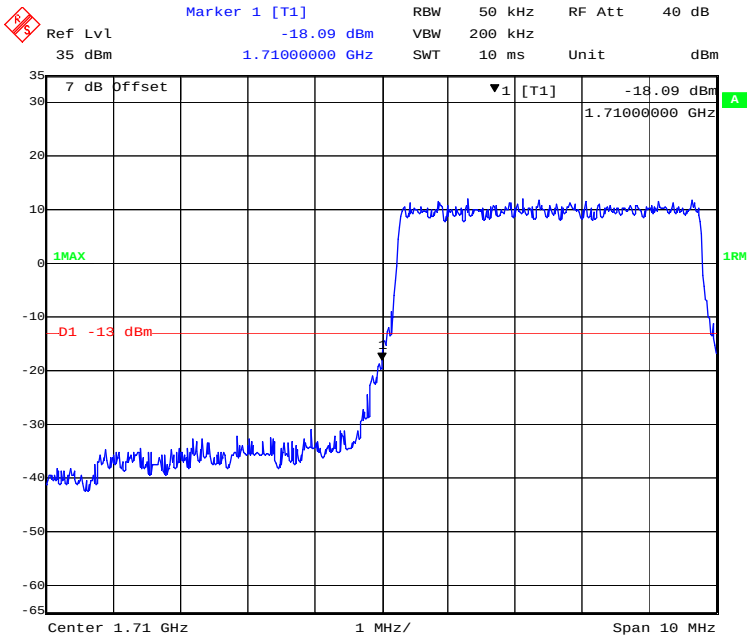

Date: 8.NOV.2020 00:25:04

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



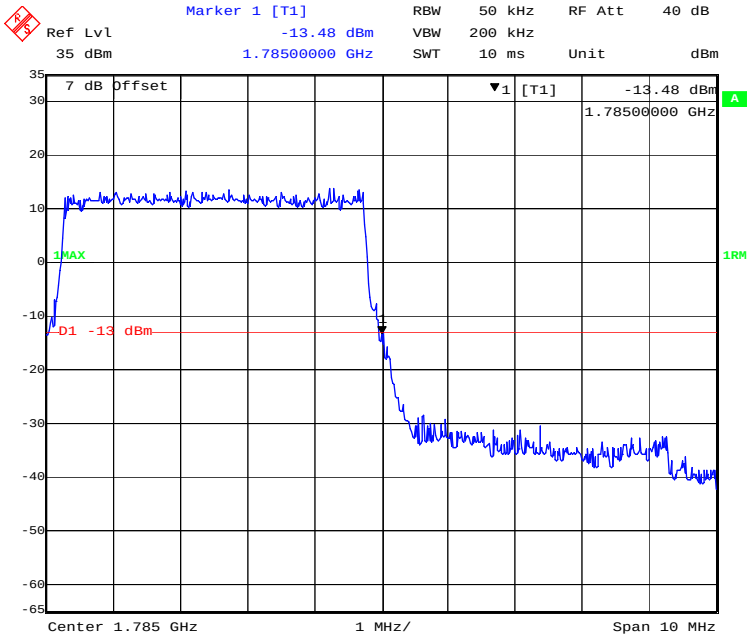

Date: 8.NOV.2020 00:25:43

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



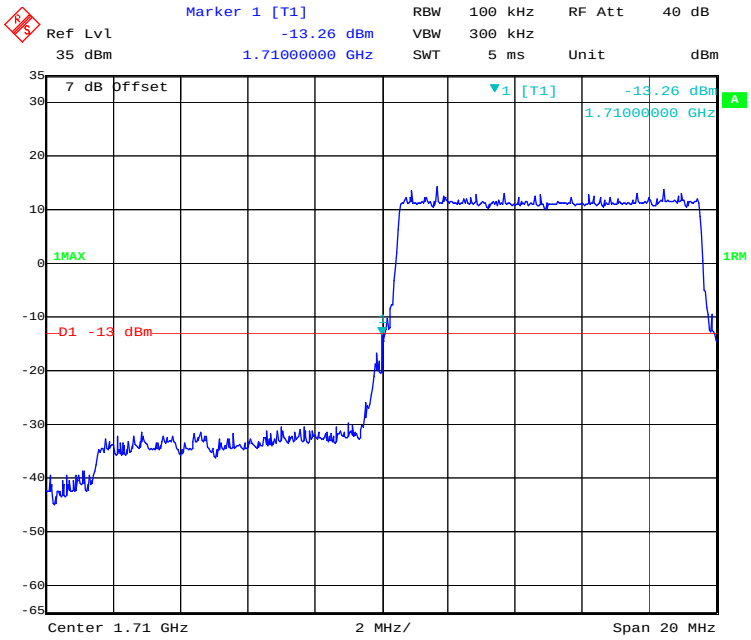

Date: 13.NOV.2020 22:35:29

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



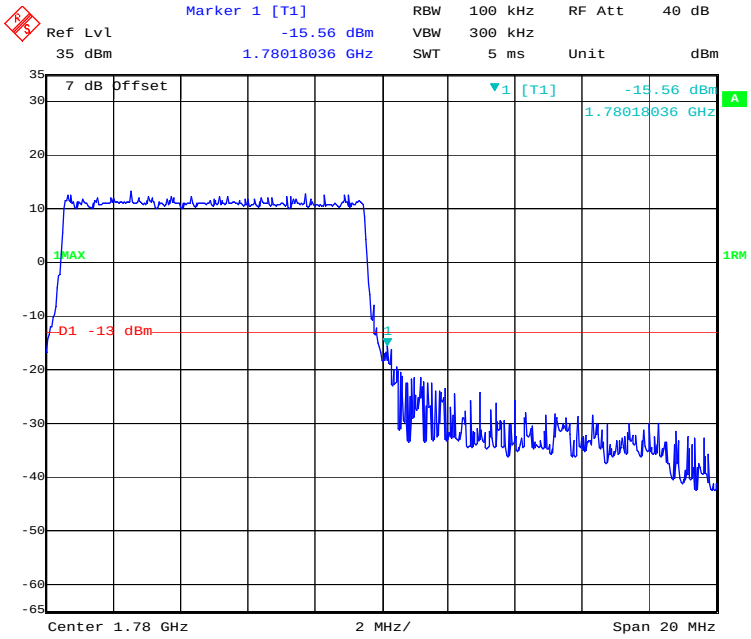

Date: 13.NOV.2020 22:36:09

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



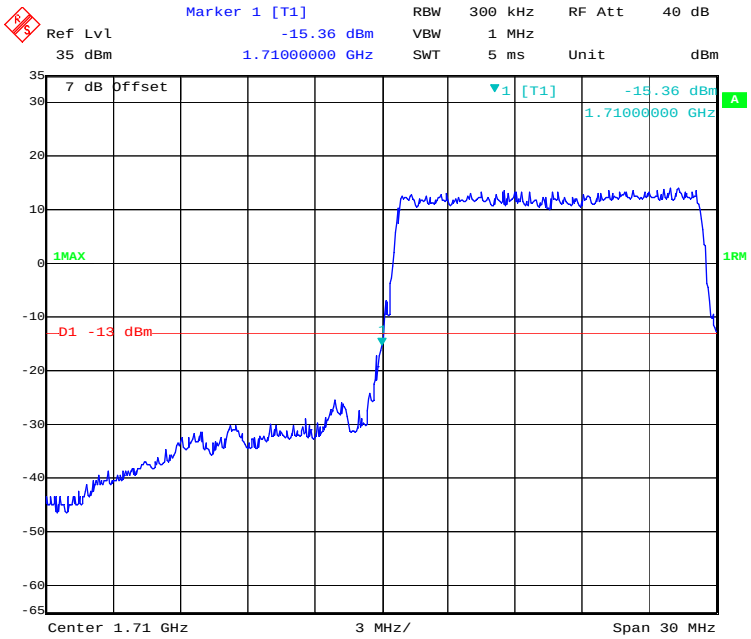

Date: 9.NOV.2020 22:33:46

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



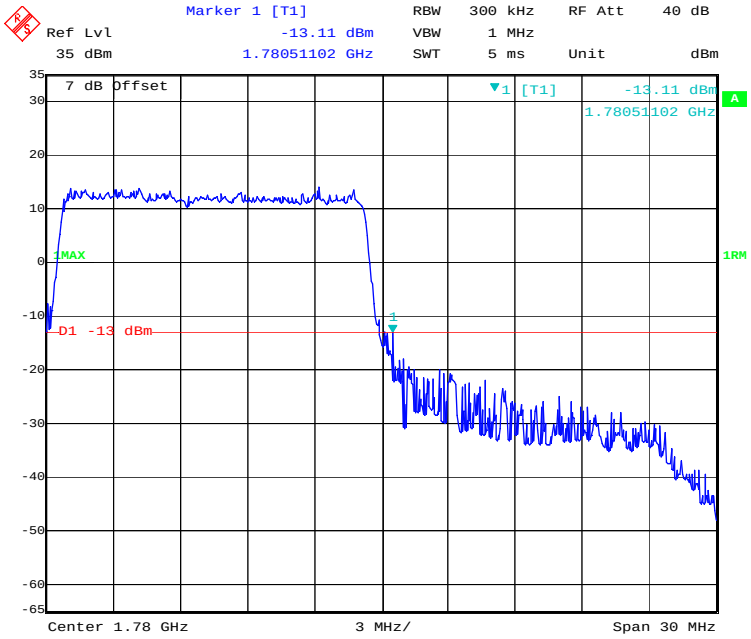

Date: 9.NOV.2020 22:34:31

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



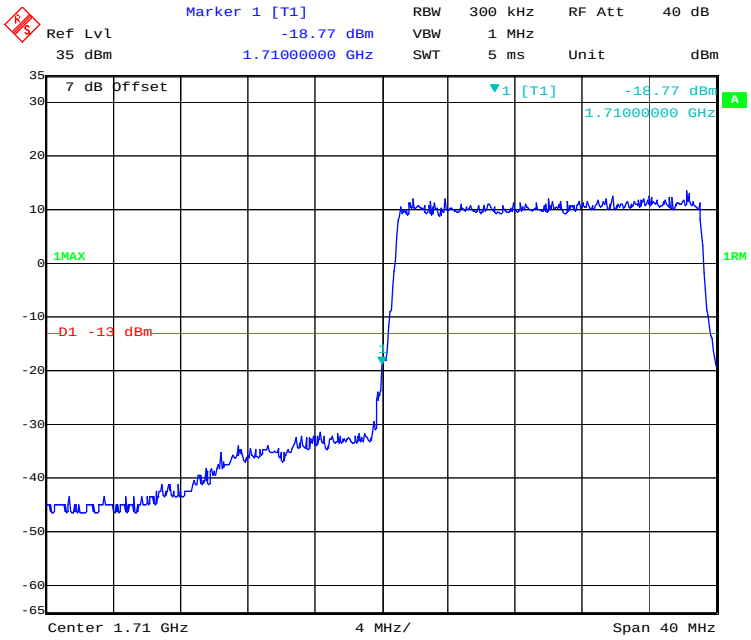

Date: 9.NOV.2020 22:35:21

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



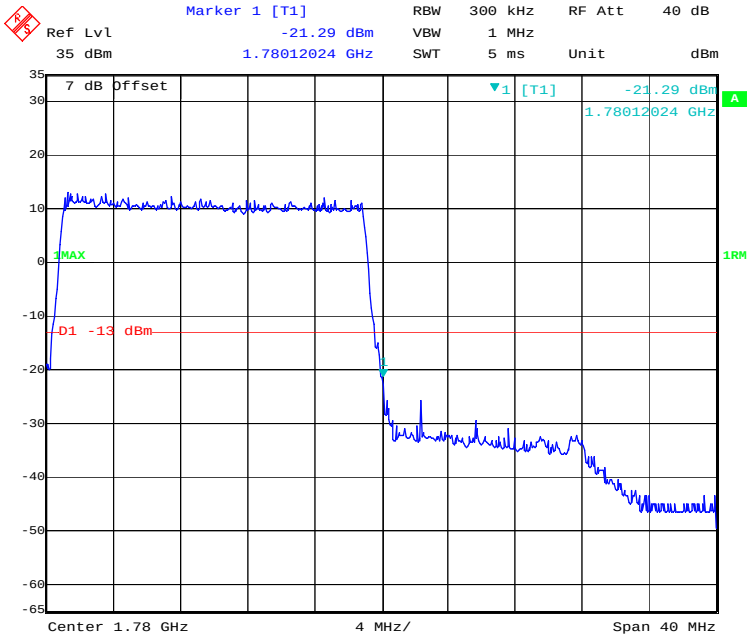

Date: 9.NOV.2020 22:36:09

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



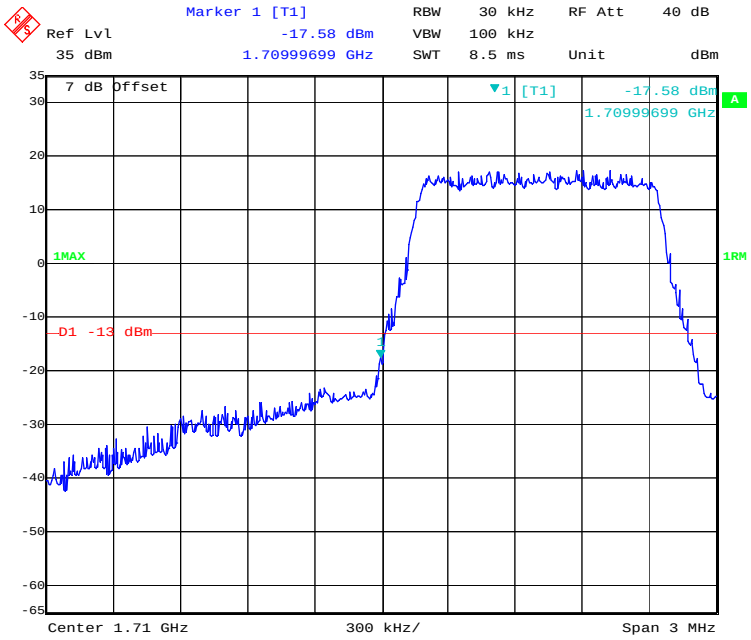

Date: 9.NOV.2020 22:37:00

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



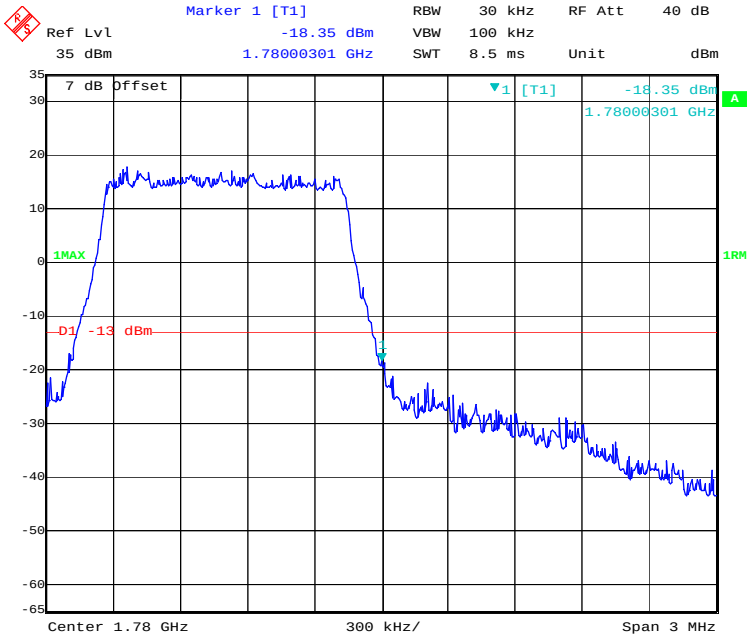

Date: 9.NOV.2020 22:37:48

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



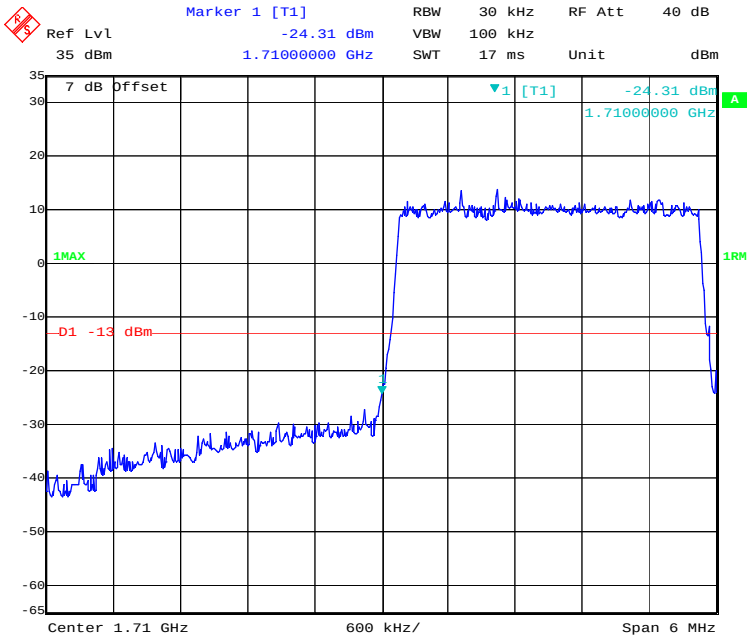

Date: 8.NOV.2020 00:23:57

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



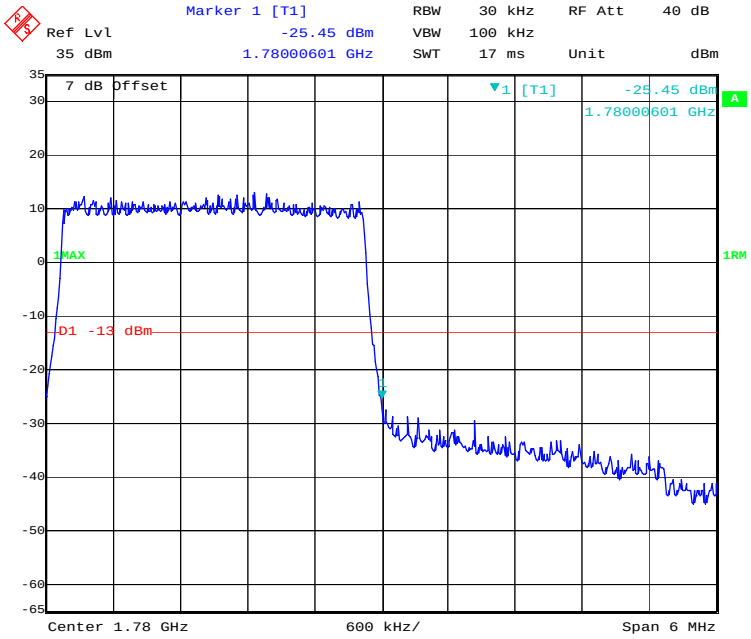

Date: 8.NOV.2020 00:24:40

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



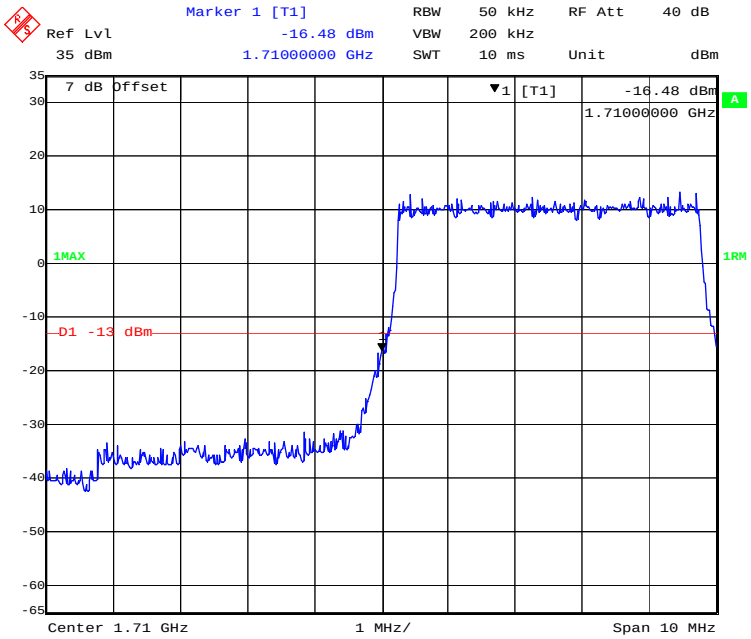

Date: 8.NOV.2020 00:25:23

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



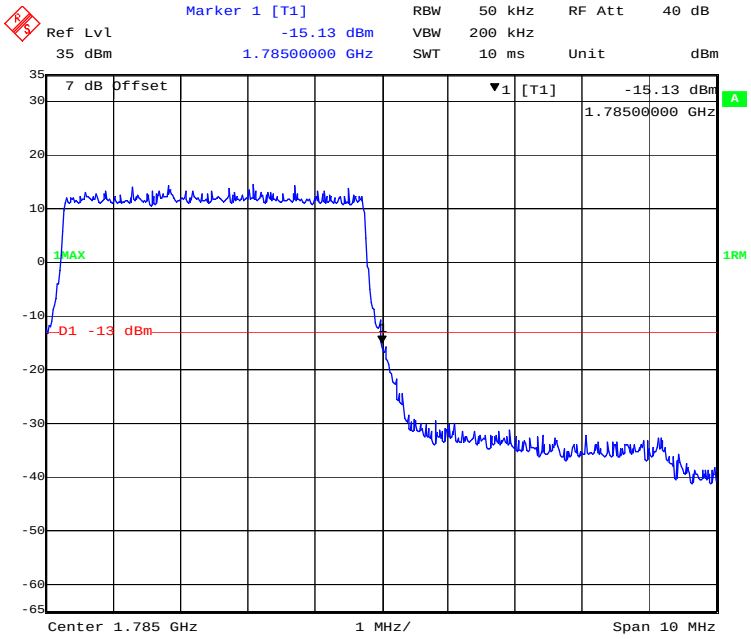

Date: 8.NOV.2020 00:26:05

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



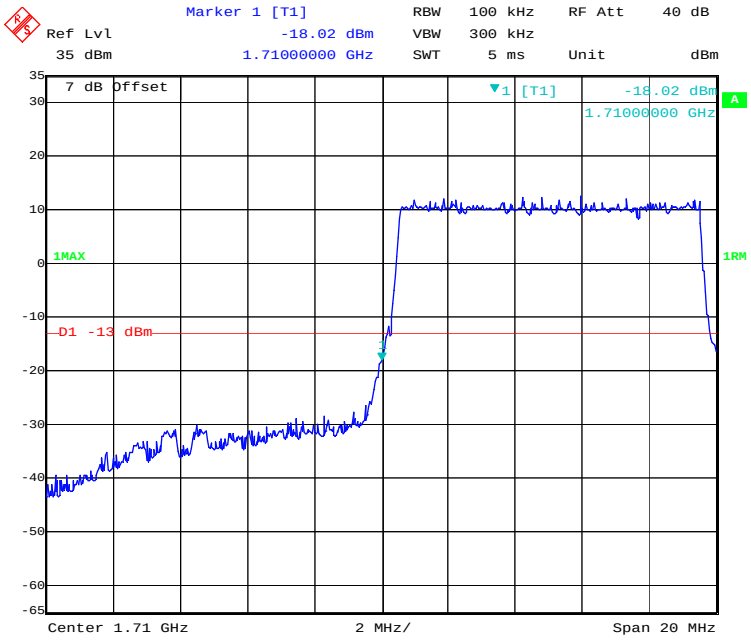

Date: 13.NOV.2020 22:35:17

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




Date: 13.NOV.2020 22:35:55

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

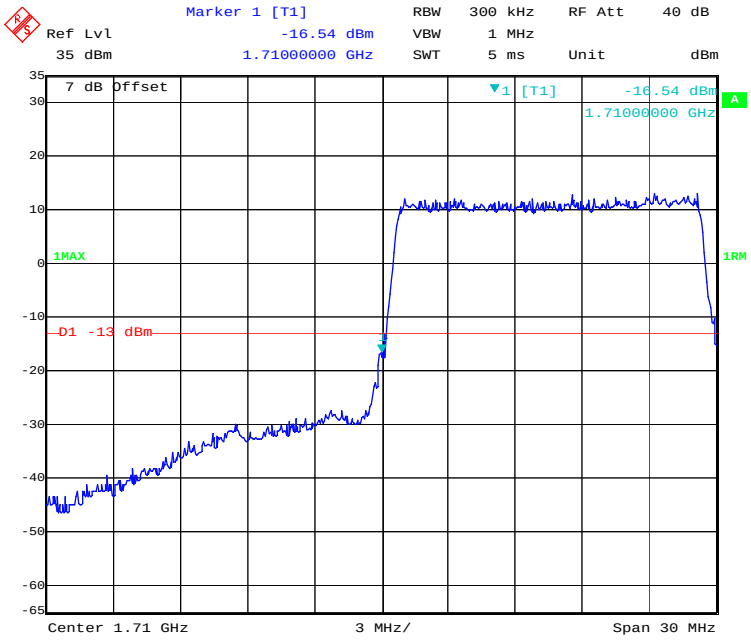



Date: 9.NOV.2020 22:34:07

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

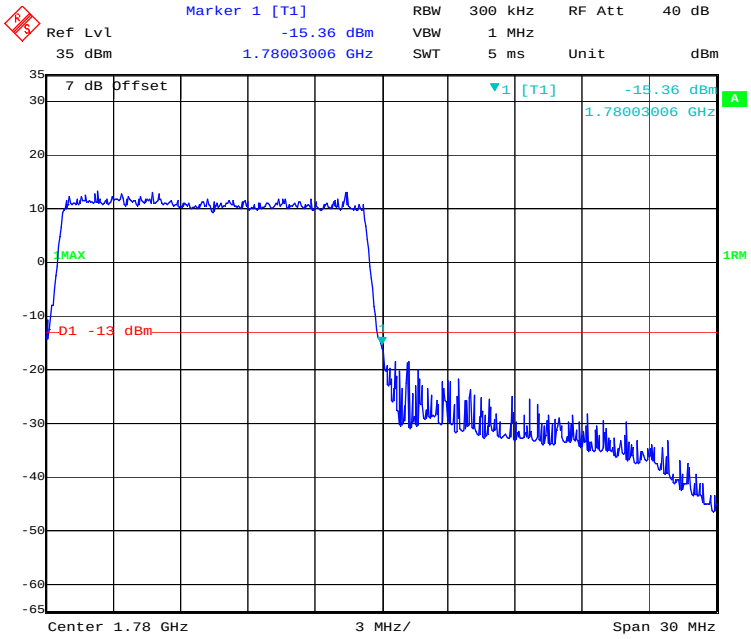
Date: 13.NOV.2020 22:36:47

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



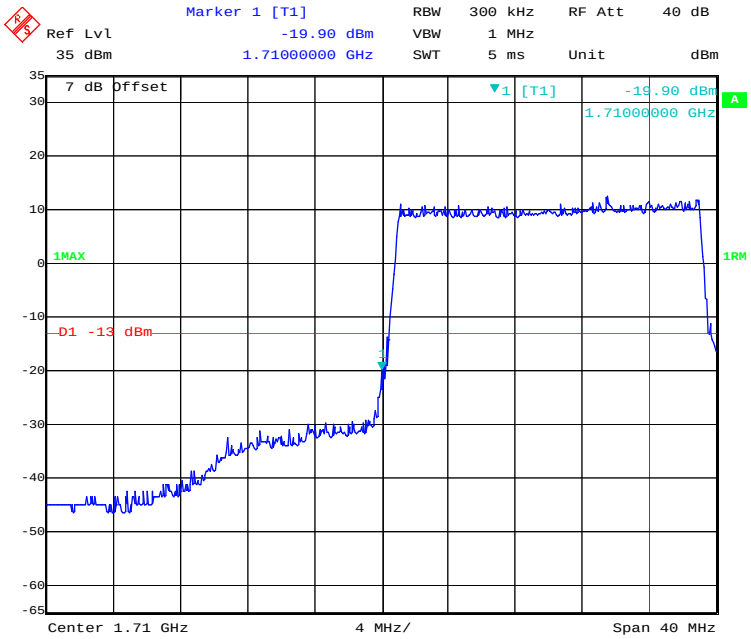

Date: 9.NOV.2020 22:35:41

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



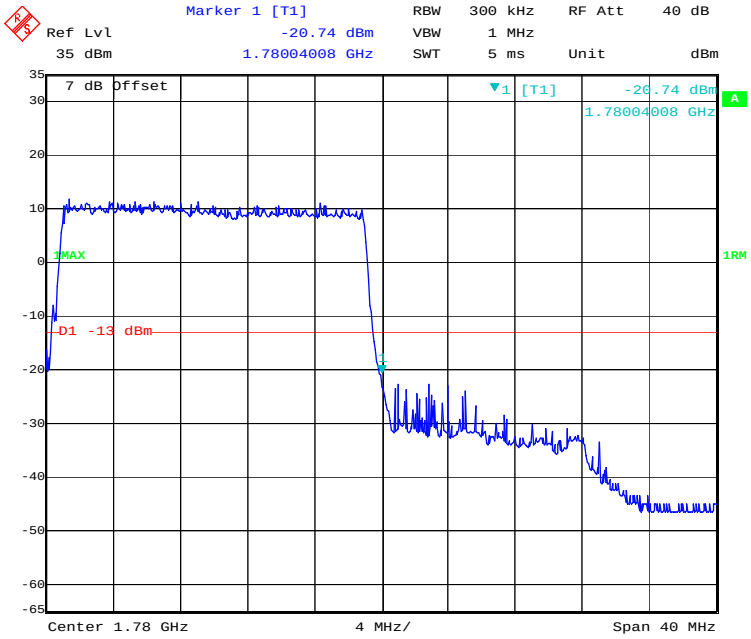

Date: 9.NOV.2020 22:36:36

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




Date: 9.NOV.2020 22:37:24

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




Date: 9.NOV.2020 22:38:12

# FCC § 2.1055; § 22.355; § 24.235; §27.54; §90.213- FREQUENCY STABILITY

## Applicable Standards

FCC § 2.1055, §22.355, §24.235, §27.54 and §90.213.

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

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

**Frequency Tolerance for Transmitters in the Public Mobile Services**

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

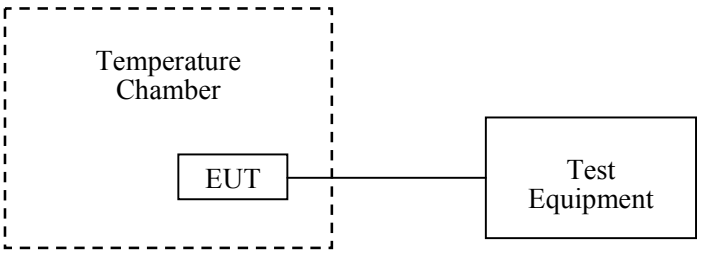
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

## Test Procedure

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

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

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



## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 21.5-23.5 ℃ |
| **Relative Humidity:** | 47-52 % |
| **ATM Pressure:** | 101.2-101.9 kPa |

*The testing was performed by CK Huang from 2020-11-24 to 2021-01-05.*

*EUT operation mode: Transmitting*

*Test Result: Compliant.*

### GSM 850 Band:

| GSM Mode, Middle Channel, $f_o$ =836.6 MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Limit (ppm)** |
| -30 | 3.8 | 20 | 0.02391 | 2.5 |
| -20 | | 12 | 0.01434 | 2.5 |
| -10 | | 11 | 0.01315 | 2.5 |
| 0 | | 16 | 0.01913 | 2.5 |
| 10 | | 8 | 0.00956 | 2.5 |
| 20 | | 12 | 0.01434 | 2.5 |
| 30 | | 15 | 0.01793 | 2.5 |
| 40 | | 14 | 0.01673 | 2.5 |
| 50 | | 10 | 0.01195 | 2.5 |
| 20 | V min.= 3.42 | 15 | 0.01793 | 2.5 |
| 20 | V max.= 4.18 | 16 | 0.01913 | 2.5 |

| GPRS Mode, Middle Channel, $f_o$ =836.6 MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Limit (ppm)** |
| -30 | 3.8 | 20 | 0.02391 | 2.5 |
| -20 | | 8 | 0.00956 | 2.5 |
| -10 | | 12 | 0.01434 | 2.5 |
| 0 | | 14 | 0.01673 | 2.5 |
| 10 | | 9 | 0.01076 | 2.5 |
| 20 | | 15 | 0.01793 | 2.5 |
| 30 | | 21 | 0.02510 | 2.5 |
| 40 | | 12 | 0.01434 | 2.5 |
| 50 | | 16 | 0.01913 | 2.5 |
| 20 | V min.= 3.42 | 11 | 0.01315 | 2.5 |
| 20 | V max.= 4.18 | 15 | 0.01793 | 2.5 |

| EGPRS Mode, Middle Channel, $f_o$ =836.6 MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Limit (ppm)** |
| -30 | 3.8 | 8 | 0.00956 | 2.5 |
| -20 | | 21 | 0.02510 | 2.5 |
| -10 | | 20 | 0.02391 | 2.5 |
| 0 | | 12 | 0.01434 | 2.5 |
| 10 | | 11 | 0.01315 | 2.5 |
| 20 | | 14 | 0.01673 | 2.5 |
| 30 | | 12 | 0.01434 | 2.5 |
| 40 | | 11 | 0.01315 | 2.5 |
| 50 | | 9 | 0.01076 | 2.5 |
| 20 | V min.= 3.42 | 14 | 0.01673 | 2.5 |
| 20 | V max.= 4.18 | 12 | 0.01434 | 2.5 |

**WCDMA Band V:**

| WCDMA Mode, Middle Channel, $f_o$ = 836.6 MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Limit (ppm)** |
| -30 | 3.8 | 14 | 0.0167 | 2.5 |
| -20 | | 14 | 0.0167 | 2.5 |
| -10 | | 10 | 0.0120 | 2.5 |
| 0 | | 12 | 0.0143 | 2.5 |
| 10 | | 15 | 0.0179 | 2.5 |
| 20 | | 8 | 0.0096 | 2.5 |
| 30 | | 9 | 0.0108 | 2.5 |
| 40 | | 21 | 0.0251 | 2.5 |
| 50 | | 15 | 0.0179 | 2.5 |
| 20 | V min.= 3.42 | 12 | 0.0143 | 2.5 |
| 20 | V max.= 4.18 | 13 | 0.0155 | 2.5 |

**PCS 1900 Band:**

| GSM Mode, Middle Channel, $f_o$ =1880.0 MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Result** |
| -30 | 3.8 | -15 | -0.00798 | pass |
| -20 | | -15 | -0.00798 | pass |
| -10 | | -12 | -0.00638 | pass |
| 0 | | -15 | -0.00798 | pass |
| 10 | | -13 | -0.00691 | pass |
| 20 | | -9 | -0.00479 | pass |
| 30 | | -9 | -0.00479 | pass |
| 40 | | -17 | -0.00904 | pass |
| 50 | | -15 | -0.00798 | pass |
| 20 | V min.= 3.42 | -9 | -0.00479 | pass |
| 20 | V max.= 4.18 | -19 | -0.01011 | pass |

| GPRS Mode, Middle Channel, $f_o$ =1880.0 MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Result** |
| -30 | 3.8 | -14 | -0.00745 | pass |
| -20 | | -16 | -0.00851 | pass |
| -10 | | -13 | -0.00691 | pass |
| 0 | | -12 | -0.00638 | pass |
| 10 | | -15 | -0.00798 | pass |
| 20 | | -10 | -0.00532 | pass |
| 30 | | -15 | -0.00798 | pass |
| 40 | | -16 | -0.00851 | pass |
| 50 | | -9 | -0.00479 | pass |
| 20 | V min.= 3.42 | -21 | -0.01117 | pass |
| 20 | V max.= 4.18 | -12 | -0.00638 | pass |

| EGPRS Mode, Middle Channel, $f_o$ =1880.0 MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Result** |
| -30 | 3.8 | -18 | -0.00957 | pass |
| -20 | | -12 | -0.00638 | pass |
| -10 | | -20 | -0.01064 | pass |
| 0 | | -15 | -0.00798 | pass |
| 10 | | -18 | -0.00957 | pass |
| 20 | | -14 | -0.00745 | pass |
| 30 | | -18 | -0.00957 | pass |
| 40 | | -19 | -0.01011 | pass |
| 50 | | -20 | -0.01064 | pass |
| 20 | V min.= 3.42 | -19 | -0.01011 | pass |
| 20 | V max.= 4.18 | -17 | -0.00904 | pass |

**WCDMA Band II:**

| WCDMA Mode, Middle Channel, $f_o$ = 1880.0 MHz | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Result** |
| -30 | 3.8 | -13 | -0.0069 | pass |
| -20 | | -15 | -0.0080 | pass |
| -10 | | -10 | -0.0053 | pass |
| 0 | | -10 | -0.0053 | pass |
| 10 | | -10 | -0.0053 | pass |
| 20 | | -16 | -0.0085 | pass |
| 30 | | -13 | -0.0069 | pass |
| 40 | | -17 | -0.0090 | pass |
| 50 | | -18 | -0.0096 | pass |
| 20 | V min.= 3.42 | -14 | -0.0074 | pass |
| 20 | V max.= 4.18 | -16 | -0.0085 | pass |

## LTE Band 2:

| $f_o$ =1880.0 MHz (QPSK) | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Result** |
| -30 | 3.8 | 14 | 0.0167 | Pass |
| -20 | | 10 | 0.0120 | Pass |
| -10 | | 11 | 0.0132 | Pass |
| 0 | | 16 | 0.0191 | Pass |
| 10 | | 9 | 0.0108 | Pass |
| 20 | | 14 | 0.0167 | Pass |
| 30 | | 21 | 0.0251 | Pass |
| 40 | | 17 | 0.0203 | Pass |
| 50 | | 12 | 0.0143 | Pass |
| 20 | V min.= 3.42 | 13 | 0.0155 | Pass |
| 20 | V max.= 4.18 | 13 | 0.0155 | Pass |

| $f_o$ =1880.0 MHz (16-QAM) | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Result** |
| -30 | 3.8 | 20 | 0.0239 | Pass |
| -20 | | 12 | 0.0143 | Pass |
| -10 | | 17 | 0.0203 | Pass |
| 0 | | 20 | 0.0239 | Pass |
| 10 | | 13 | 0.0155 | Pass |
| 20 | | 15 | 0.0179 | Pass |
| 30 | | 12 | 0.0143 | Pass |
| 40 | | 16 | 0.0191 | Pass |
| 50 | | 14 | 0.0167 | Pass |
| 20 | V min.= 3.42 | 15 | 0.0179 | Pass |
| 20 | V max.= 4.18 | 11 | 0.0132 | Pass |

## LTE Band 4:

| Low Channel & High Channel (QPSK) | | | | | |
|---|---|---|---|---|---|
| Temperature | Power Supplied | $F_L$ | $F_H$ | $F_L$ Limit | $F_H$ Limit |
| (℃) | ($V_{DC}$) | (MHz) | (MHz) | (MHz) | (MHz) |
| -30 | 3.8 | 1710.0483 | 1754.9677 | 1710 | 1755 |
| -20 | | 1710.0454 | 1754.9602 | 1710 | 1755 |
| -10 | | 1710.0407 | 1754.9693 | 1710 | 1755 |
| 0 | | 1710.0482 | 1754.9614 | 1710 | 1755 |
| 10 | | 1710.0497 | 1754.9647 | 1710 | 1755 |
| 20 | | 1710.0477 | 1754.9687 | 1710 | 1755 |
| 30 | | 1710.0411 | 1754.9629 | 1710 | 1755 |
| 40 | | 1710.0433 | 1754.9682 | 1710 | 1755 |
| 50 | | 1710.0458 | 1754.9611 | 1710 | 1755 |
| 20 | V min.= 3.42 | 1710.0428 | 1754.9683 | 1710 | 1755 |
| 20 | V max.= 4.18 | 1710.0474 | 1754.9610 | 1710 | 1755 |

| Low Channel & High Channel (16-QAM) | | | | | |
|---|---|---|---|---|---|
| Temperature | Power Supplied | $F_L$ | $F_H$ | $F_L$ Limit | $F_H$ Limit |
| (℃) | ($V_{DC}$) | (MHz) | (MHz) | (MHz) | (MHz) |
| -30 | 3.8 | 1710.0490 | 1754.9648 | 1710 | 1755 |
| -20 | | 1710.0424 | 1754.9619 | 1710 | 1755 |
| -10 | | 1710.0411 | 1754.9671 | 1710 | 1755 |
| 0 | | 1710.0417 | 1754.9622 | 1710 | 1755 |
| 10 | | 1710.0436 | 1754.9679 | 1710 | 1755 |
| 20 | | 1710.0495 | 1754.9659 | 1710 | 1755 |
| 30 | | 1710.0455 | 1754.9641 | 1710 | 1755 |
| 40 | | 1710.0452 | 1754.9671 | 1710 | 1755 |
| 50 | | 1710.0476 | 1754.9643 | 1710 | 1755 |
| 20 | V min.= 3.42 | 1710.0442 | 1754.9603 | 1710 | 1755 |
| 20 | V max.= 4.18 | 1710.0434 | 1754.9653 | 1710 | 1755 |

## LTE Band 5:

| Middle Channel, $f_o$ = 836.5 MHz (QPSK) | | | | |
|---|---|---|---|---|
| **Temperature** | **Power Supplied** | **Frequency Error** | **Frequency Error** | **Limit** |
| **(℃)** | **($V_{DC}$)** | **(Hz)** | **(ppm)** | **(ppm)** |
| -30 | 3.8 | 19 | 0.0227 | 2.5 |
| -20 | | 21 | 0.0251 | 2.5 |
| -10 | | 12 | 0.0143 | 2.5 |
| 0 | | 15 | 0.0179 | 2.5 |
| 10 | | 19 | 0.0227 | 2.5 |
| 20 | | 12 | 0.0143 | 2.5 |
| 30 | | 13 | 0.0155 | 2.5 |
| 40 | | 16 | 0.0191 | 2.5 |
| 50 | | 16 | 0.0191 | 2.5 |
| 20 | V min.= 3.42 | 15 | 0.0179 | 2.5 |
| 20 | V max.= 4.18 | 21 | 0.0251 | 2.5 |

| Middle Channel, $f_o$ = 836.5 MHz (16-QAM) | | | | |
|---|---|---|---|---|
| **Temperature** | **Power Supplied** | **Frequency Error** | **Frequency Error** | **Limit** |
| **(℃)** | **($V_{DC}$)** | **(Hz)** | **(ppm)** | **(ppm)** |
| -30 | 3.8 | 14 | 0.0167 | 2.5 |
| -20 | | 16 | 0.0191 | 2.5 |
| -10 | | 16 | 0.0191 | 2.5 |
| 0 | | 14 | 0.0167 | 2.5 |
| 10 | | 10 | 0.0120 | 2.5 |
| 20 | | 10 | 0.0120 | 2.5 |
| 30 | | 16 | 0.0191 | 2.5 |
| 40 | | 14 | 0.0167 | 2.5 |
| 50 | | 14 | 0.0167 | 2.5 |
| 20 | V min.= 3.42 | 13 | 0.0155 | 2.5 |
| 20 | V max.= 4.18 | 16 | 0.0191 | 2.5 |

## LTE Band 7:

| Low Channel & High Channel (QPSK) /Channel Bandwidth:20MHz | | | | | |
|---|---|---|---|---|---|
| Temperature | Power Supplied | $F_L$ | $F_H$ | $F_L$ Limit | $F_H$ Limit |
| (℃) | ($V_{DC}$) | (MHz) | (MHz) | (MHz) | (MHz) |
| -30 | 3.8 | 2500.0449 | 2569.9587 | 2500 | 2570 |
| -20 | | 2500.0443 | 2569.9561 | 2500 | 2570 |
| -10 | | 2500.0441 | 2569.9541 | 2500 | 2570 |
| 0 | | 2500.0488 | 2569.9525 | 2500 | 2570 |
| 10 | | 2500.0469 | 2569.9578 | 2500 | 2570 |
| 20 | | 2500.0410 | 2569.9578 | 2500 | 2570 |
| 30 | | 2500.0432 | 2569.9563 | 2500 | 2570 |
| 40 | | 2500.0418 | 2569.9536 | 2500 | 2570 |
| 50 | | 2500.0417 | 2569.9561 | 2500 | 2570 |
| 20 | V min.= 3.42 | 2500.0409 | 2569.9544 | 2500 | 2570 |
| 20 | V max.= 4.18 | 2500.0416 | 2569.9504 | 2500 | 2570 |

| Low Channel & High Channel (16-QAM) /Channel Bandwidth:20MHz | | | | | |
|---|---|---|---|---|---|
| Temperature | Power Supplied | $F_L$ | $F_H$ | $F_L$ Limit | $F_H$ Limit |
| (℃) | ($V_{DC}$) | (MHz) | (MHz) | (MHz) | (MHz) |
| -30 | 3.8 | 2500.0405 | 2569.9545 | 2500 | 2570 |
| -20 | | 2500.0429 | 2569.9512 | 2500 | 2570 |
| -10 | | 2500.0403 | 2569.9503 | 2500 | 2570 |
| 0 | | 2500.0476 | 2569.9511 | 2500 | 2570 |
| 10 | | 2500.0488 | 2569.9510 | 2500 | 2570 |
| 20 | | 2500.0499 | 2569.9540 | 2500 | 2570 |
| 30 | | 2500.0478 | 2569.9533 | 2500 | 2570 |
| 40 | | 2500.0461 | 2569.9531 | 2500 | 2570 |
| 50 | | 2500.0494 | 2569.9595 | 2500 | 2570 |
| 20 | V min.= 3.42 | 2500.0461 | 2569.9595 | 2500 | 2570 |
| 20 | V max.= 4.18 | 2500.0450 | 2569.9586 | 2500 | 2570 |

## LTE Band 12:

| Low Channel & High Channel (QPSK) | | | | | |
|---|---|---|---|---|---|
| Temperature | Power Supplied | $F_L$ | $F_H$ | $F_L$ Limit | $F_H$ Limit |
| (℃) | ($V_{DC}$) | (MHz) | (MHz) | (MHz) | (MHz) |
| -30 | 3.8 | 699.1389 | 715.7647 | 699 | 716 |
| -20 | | 699.1163 | 715.6689 | 699 | 716 |
| -10 | | 699.2820 | 715.8043 | 699 | 716 |
| 0 | | 699.0428 | 715.9745 | 699 | 716 |
| 10 | | 699.2237 | 715.9851 | 699 | 716 |
| 20 | | 699.0858 | 715.9939 | 699 | 716 |
| 30 | | 699.2676 | 715.9893 | 699 | 716 |
| 40 | | 699.3256 | 715.6758 | 699 | 716 |
| 50 | | 699.1979 | 715.7645 | 699 | 716 |
| 20 | V min.= 3.42 | 699.1607 | 715.8477 | 699 | 716 |
| 20 | V max.= 4.18 | 699.0578 | 715.6496 | 699 | 716 |

| Low Channel & High Channel (16-QAM) | | | | | |
|---|---|---|---|---|---|
| Temperature | Power Supplied | $F_L$ | $F_H$ | $F_L$ Limit | $F_H$ Limit |
| (℃) | ($V_{DC}$) | (MHz) | (MHz) | (MHz) | (MHz) |
| -30 | 3.8 | 699.0745 | 715.8395 | 699 | 716 |
| -20 | | 699.2272 | 715.9904 | 699 | 716 |
| -10 | | 699.2658 | 715.7142 | 699 | 716 |
| 0 | | 699.1272 | 715.8427 | 699 | 716 |
| 10 | | 699.2364 | 715.8581 | 699 | 716 |
| 20 | | 699.1985 | 715.8016 | 699 | 716 |
| 30 | | 699.2949 | 715.8626 | 699 | 716 |
| 40 | | 699.0387 | 715.9961 | 699 | 716 |
| 50 | | 699.0857 | 715.9321 | 699 | 716 |
| 20 | V min.= 3.42 | 699.2466 | 715.7896 | 699 | 716 |
| 20 | V max.= 4.18 | 699.3991 | 715.8825 | 699 | 716 |

## LTE Band 17:

| Low Channel & High Channel (QPSK) | | | | | |
|---|---|---|---|---|---|
| Temperature | Power Supplied | $F_L$ | $F_H$ | $F_L$ Limit | $F_H$ Limit |
| (℃) | ($V_{DC}$) | (MHz) | (MHz) | (MHz) | (MHz) |
| -30 | 3.8 | 704.0016 | 715.7676 | 704 | 716 |
| -20 | | 704.0067 | 715.7615 | 704 | 716 |
| -10 | | 704.0089 | 715.7615 | 704 | 716 |
| 0 | | 704.0003 | 715.7693 | 704 | 716 |
| 10 | | 704.0029 | 715.7667 | 704 | 716 |
| 20 | | 704.0003 | 715.7607 | 704 | 716 |
| 30 | | 704.0012 | 715.7631 | 704 | 716 |
| 40 | | 704.0078 | 715.7665 | 704 | 716 |
| 50 | | 704.0056 | 715.7667 | 704 | 716 |
| 20 | V min.= 3.42 | 704.0023 | 715.7692 | 704 | 716 |
| 20 | V max.= 4.18 | 704.0057 | 715.7635 | 704 | 716 |

| Low Channel & High Channel (16-QAM) | | | | | |
|---|---|---|---|---|---|
| Temperature | Power Supplied | $F_L$ | $F_H$ | $F_L$ Limit | $F_H$ Limit |
| (℃) | ($V_{DC}$) | (MHz) | (MHz) | (MHz) | (MHz) |
| -30 | 3.8 | 704.0007 | 715.7678 | 704 | 716 |
| -20 | | 704.0058 | 715.7691 | 704 | 716 |
| -10 | | 704.0061 | 715.7614 | 704 | 716 |
| 0 | | 704.0075 | 715.7641 | 704 | 716 |
| 10 | | 704.0038 | 715.7658 | 704 | 716 |
| 20 | | 704.0047 | 715.7601 | 704 | 716 |
| 30 | | 704.0063 | 715.7688 | 704 | 716 |
| 40 | | 704.0003 | 715.7660 | 704 | 716 |
| 50 | | 704.0014 | 715.7625 | 704 | 716 |
| 20 | V min.= 3.42 | 704.0034 | 715.7656 | 704 | 716 |
| 20 | V max.= 4.18 | 704.0033 | 715.7660 | 704 | 716 |

## LTE Band 25:

| $f_o$ =1880.0 MHz (QPSK) | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Result** |
| -30 | 3.8 | 16 | 0.0191 | Pass |
| -20 | | 17 | 0.0203 | Pass |
| -10 | | 13 | 0.0155 | Pass |
| 0 | | 12 | 0.0143 | Pass |
| 10 | | 15 | 0.0179 | Pass |
| 20 | | 16 | 0.0191 | Pass |
| 30 | | 13 | 0.0155 | Pass |
| 40 | | 14 | 0.0167 | Pass |
| 50 | | 18 | 0.0215 | Pass |
| 20 | V min.= 3.42 | 8 | 0.0096 | Pass |
| 20 | V max.= 4.18 | 14 | 0.0167 | Pass |

| $f_o$ =1880.0 MHz (16-QAM) | | | | |
|---|---|---|---|---|
| **Temperature (℃)** | **Power Supplied ($V_{DC}$)** | **Frequency Error (Hz)** | **Frequency Error (ppm)** | **Result** |
| -30 | 3.8 | 17 | 0.0203 | Pass |
| -20 | | 14 | 0.0167 | Pass |
| -10 | | 17 | 0.0203 | Pass |
| 0 | | 9 | 0.0108 | Pass |
| 10 | | 15 | 0.0179 | Pass |
| 20 | | 15 | 0.0179 | Pass |
| 30 | | 17 | 0.0203 | Pass |
| 40 | | 9 | 0.0108 | Pass |
| 50 | | 17 | 0.0203 | Pass |
| 20 | V min.= 3.42 | 14 | 0.0167 | Pass |
| 20 | V max.= 4.18 | 18 | 0.0215 | Pass |

## LTE Band 26:

| Middle Channel, $f_o$ = 831.5 MHz (QPSK) | | | | |
|---|---|---|---|---|
| **Temperature** | **Power Supplied** | **Frequency Error** | **Frequency Error** | **Limit** |
| **(℃)** | **($V_{DC}$)** | **(Hz)** | **(ppm)** | **(ppm)** |
| -30 | 3.8 | 11 | 0.0132 | 2.5 |
| -20 | | 8 | 0.0096 | 2.5 |
| -10 | | 17 | 0.0203 | 2.5 |
| 0 | | 16 | 0.0191 | 2.5 |
| 10 | | 17 | 0.0203 | 2.5 |
| 20 | | 14 | 0.0167 | 2.5 |
| 30 | | 18 | 0.0215 | 2.5 |
| 40 | | 14 | 0.0167 | 2.5 |
| 50 | | 15 | 0.0179 | 2.5 |
| 20 | V min.= 3.42 | 18 | 0.0215 | 2.5 |
| 20 | V max.= 4.18 | 19 | 0.0227 | 2.5 |

| Middle Channel, $f_o$ = 831.5 MHz (16-QAM) | | | | |
|---|---|---|---|---|
| **Temperature** | **Power Supplied** | **Frequency Error** | **Frequency Error** | **Limit** |
| **(℃)** | **($V_{DC}$)** | **(Hz)** | **(ppm)** | **(ppm)** |
| -30 | 3.8 | 14 | 0.0167 | 2.5 |
| -20 | | 16 | 0.0191 | 2.5 |
| -10 | | 11 | 0.0132 | 2.5 |
| 0 | | 7 | 0.0084 | 2.5 |
| 10 | | 6 | 0.0072 | 2.5 |
| 20 | | 14 | 0.0167 | 2.5 |
| 30 | | 13 | 0.0155 | 2.5 |
| 40 | | 16 | 0.0191 | 2.5 |
| 50 | | 7 | 0.0084 | 2.5 |
| 20 | V min.= 3.42 | 8 | 0.0096 | 2.5 |
| 20 | V max.= 4.18 | 18 | 0.0215 | 2.5 |

## LTE Band 38:

| Low Channel & High Channel (QPSK) /Channel Bandwidth:20MHz | | | | | |
|---|---|---|---|---|---|
| Temperature | Power Supplied | $F_L$ | $F_H$ | $F_L$ Limit | $F_H$ Limit |
| (℃) | ($V_{DC}$) | (MHz) | (MHz) | (MHz) | (MHz) |
| -30 | 3.8 | 2570.0416 | 2619.9639 | 2570 | 2620 |
| -20 | | 2570.0443 | 2619.9642 | 2570 | 2620 |
| -10 | | 2570.0468 | 2619.9636 | 2570 | 2620 |
| 0 | | 2570.0477 | 2619.9601 | 2570 | 2620 |
| 10 | | 2570.0499 | 2619.9615 | 2570 | 2620 |
| 20 | | 2570.0404 | 2619.9692 | 2570 | 2620 |
| 30 | | 2570.0443 | 2619.9609 | 2570 | 2620 |
| 40 | | 2570.0430 | 2619.9652 | 2570 | 2620 |
| 50 | | 2570.0420 | 2619.9645 | 2570 | 2620 |
| 20 | V min.= 3.42 | 2570.0436 | 2619.9692 | 2570 | 2620 |
| 20 | V max.= 4.18 | 2570.0434 | 2619.9699 | 2570 | 2620 |

| Low Channel & High Channel (16-QAM) /Channel Bandwidth:20MHz | | | | | |
|---|---|---|---|---|---|
| Temperature | Power Supplied | $F_L$ | $F_H$ | $F_L$ Limit | $F_H$ Limit |
| (℃) | ($V_{DC}$) | (MHz) | (MHz) | (MHz) | (MHz) |
| -30 | 3.8 | 2570.0403 | 2619.9606 | 2570 | 2620 |
| -20 | | 2570.0474 | 2619.9683 | 2570 | 2620 |
| -10 | | 2570.0405 | 2619.9617 | 2570 | 2620 |
| 0 | | 2570.0402 | 2619.9606 | 2570 | 2620 |
| 10 | | 2570.0483 | 2619.9608 | 2570 | 2620 |
| 20 | | 2570.0464 | 2619.9653 | 2570 | 2620 |
| 30 | | 2570.0480 | 2619.9655 | 2570 | 2620 |
| 40 | | 2570.0414 | 2619.9622 | 2570 | 2620 |
| 50 | | 2570.0496 | 2619.9603 | 2570 | 2620 |
| 20 | V min.= 3.42 | 2570.0423 | 2619.9634 | 2570 | 2620 |
| 20 | V max.= 4.18 | 2570.0417 | 2619.9610 | 2570 | 2620 |

## LTE Band 40:

**2305-2315MHz**

| Channel Bandwidth:10MHz (QPSK) | | | | | |
|---|---|---|---|---|---|
| **Temperature** | **Power Supplied** | **$F_L$** | **$F_H$** | **$F_L$ Limit** | **$F_H$ Limit** |
| **(℃)** | **($V_{DC}$)** | **(MHz)** | **(MHz)** | **(MHz)** | **(MHz)** |
| -30 | 3.8 | 2305.0553 | 2314.9591 | 2305 | 2315 |
| -20 | | 2305.0503 | 2314.9582 | 2305 | 2315 |
| -10 | | 2305.0594 | 2314.9554 | 2305 | 2315 |
| 0 | | 2305.0504 | 2314.9503 | 2305 | 2315 |
| 10 | | 2305.0550 | 2314.9592 | 2305 | 2315 |
| 20 | | 2305.0600 | 2314.9543 | 2305 | 2315 |
| 30 | | 2305.0570 | 2314.9508 | 2305 | 2315 |
| 40 | | 2305.0507 | 2314.9518 | 2305 | 2315 |
| 50 | | 2305.0534 | 2314.9557 | 2305 | 2315 |
| 20 | V min.= 3.42 | 2305.0523 | 2314.9530 | 2305 | 2315 |
| 20 | V max.= 4.18 | 2305.0582 | 2314.9538 | 2305 | 2315 |

| Channel Bandwidth:10MHz (16-QAM) | | | | | |
|---|---|---|---|---|---|
| **Temperature** | **Power Supplied** | **$F_L$** | **$F_H$** | **$F_L$ Limit** | **$F_H$ Limit** |
| **(℃)** | **($V_{DC}$)** | **(MHz)** | **(MHz)** | **(MHz)** | **(MHz)** |
| -30 | 3.8 | 2305.0589 | 2314.9558 | 2305 | 2315 |
| -20 | | 2305.0501 | 2314.9516 | 2305 | 2315 |
| -10 | | 2305.0568 | 2314.9573 | 2305 | 2315 |
| 0 | | 2305.0579 | 2314.9550 | 2305 | 2315 |
| 10 | | 2305.0517 | 2314.9515 | 2305 | 2315 |
| 20 | | 2305.0561 | 2314.9575 | 2305 | 2315 |
| 30 | | 2305.0586 | 2314.9520 | 2305 | 2315 |
| 40 | | 2305.0571 | 2314.9575 | 2305 | 2315 |
| 50 | | 2305.0517 | 2314.9598 | 2305 | 2315 |
| 20 | V min.= 3.42 | 2305.0513 | 2314.9586 | 2305 | 2315 |
| 20 | V max.= 4.18 | 2305.0573 | 2314.9588 | 2305 | 2315 |

**2350-2360MHz**

| Channel Bandwidth:10MHz (QPSK) | | | | | |
|---|---|---|---|---|---|
| **Temperature** | **Power Supplied** | **$F_L$** | **$F_H$** | **$F_L$ Limit** | **$F_H$ Limit** |
| **(℃)** | **($V_{DC}$)** | **(MHz)** | **(MHz)** | **(MHz)** | **(MHz)** |
| -30 | 3.8 | 2350.0551 | 2359.9579 | 2350 | 2360 |
| -20 | | 2350.0528 | 2359.9595 | 2350 | 2360 |
| -10 | | 2350.0537 | 2359.9508 | 2350 | 2360 |
| 0 | | 2350.0529 | 2359.9593 | 2350 | 2360 |
| 10 | | 2350.0558 | 2359.9573 | 2350 | 2360 |
| 20 | | 2350.0595 | 2359.9578 | 2350 | 2360 |
| 30 | | 2350.0567 | 2359.9573 | 2350 | 2360 |
| 40 | | 2350.0557 | 2359.9535 | 2350 | 2360 |
| 50 | | 2350.0552 | 2359.9594 | 2350 | 2360 |
| 20 | V min.= 3.42 | 2350.0591 | 2359.9521 | 2350 | 2360 |
| 20 | V max.= 4.18 | 2350.0570 | 2359.9570 | 2350 | 2360 |

| Channel Bandwidth:10MHz (16-QAM) | | | | | |
|---|---|---|---|---|---|
| **Temperature** | **Power Supplied** | **$F_L$** | **$F_H$** | **$F_L$ Limit** | **$F_H$ Limit** |
| **(℃)** | **($V_{DC}$)** | **(MHz)** | **(MHz)** | **(MHz)** | **(MHz)** |
| -30 | 3.8 | 2350.0575 | 2359.9581 | 2350 | 2360 |
| -20 | | 2350.0504 | 2359.9537 | 2350 | 2360 |
| -10 | | 2350.0507 | 2359.9511 | 2350 | 2360 |
| 0 | | 2350.0541 | 2359.9523 | 2350 | 2360 |
| 10 | | 2350.0530 | 2359.9597 | 2350 | 2360 |
| 20 | | 2350.0546 | 2359.9551 | 2350 | 2360 |
| 30 | | 2350.0518 | 2359.9557 | 2350 | 2360 |
| 40 | | 2350.0587 | 2359.9589 | 2350 | 2360 |
| 50 | | 2350.0514 | 2359.9542 | 2350 | 2360 |
| 20 | V min.= 3.42 | 2350.0566 | 2359.9571 | 2350 | 2360 |
| 20 | V max.= 4.18 | 2350.0501 | 2359.9590 | 2350 | 2360 |

## LTE Band 41:

| Low Channel & High Channel (QPSK) /Channel Bandwidth:20MHz | | | | | |
|---|---|---|---|---|---|
| Temperature | Power Supplied | $F_L$ | $F_H$ | $F_L$ Limit | $F_H$ Limit |
| (℃) | ($V_{DC}$) | (MHz) | (MHz) | (MHz) | (MHz) |
| -30 | 3.8 | 2555.0556 | 2654.9538 | 2555 | 2655 |
| -20 | | 2555.0550 | 2654.9513 | 2555 | 2655 |
| -10 | | 2555.0516 | 2654.9529 | 2555 | 2655 |
| 0 | | 2555.0508 | 2654.9589 | 2555 | 2655 |
| 10 | | 2555.0556 | 2654.9542 | 2555 | 2655 |
| 20 | | 2555.0504 | 2654.9526 | 2555 | 2655 |
| 30 | | 2555.0591 | 2654.9568 | 2555 | 2655 |
| 40 | | 2555.0561 | 2654.9573 | 2555 | 2655 |
| 50 | | 2555.0552 | 2654.9508 | 2555 | 2655 |
| 20 | V min.= 3.42 | 2555.0557 | 2654.9549 | 2555 | 2655 |
| 20 | V max.= 4.18 | 2555.0568 | 2654.9524 | 2555 | 2655 |

| Low Channel & High Channel (16-QAM) /Channel Bandwidth:20MHz | | | | | |
|---|---|---|---|---|---|
| Temperature | Power Supplied | $F_L$ | $F_H$ | $F_L$ Limit | $F_H$ Limit |
| (℃) | ($V_{DC}$) | (MHz) | (MHz) | (MHz) | (MHz) |
| -30 | 3.8 | 2555.0589 | 2654.9580 | 2555 | 2655 |
| -20 | | 2555.0575 | 2654.9568 | 2555 | 2655 |
| -10 | | 2555.0549 | 2654.9526 | 2555 | 2655 |
| 0 | | 2555.0534 | 2654.9566 | 2555 | 2655 |
| 10 | | 2555.0559 | 2654.9551 | 2555 | 2655 |
| 20 | | 2555.0548 | 2654.9552 | 2555 | 2655 |
| 30 | | 2555.0575 | 2654.9593 | 2555 | 2655 |
| 40 | | 2555.0550 | 2654.9539 | 2555 | 2655 |
| 50 | | 2555.0535 | 2654.9596 | 2555 | 2655 |
| 20 | V min.= 3.42 | 2555.0585 | 2654.9539 | 2555 | 2655 |
| 20 | V max.= 4.18 | 2555.0507 | 2654.9524 | 2555 | 2655 |

## LTE Band 66:

| Low Channel & High Channel (QPSK) /Channel Bandwidth:20MHz | | | | | |
|---|---|---|---|---|---|
| Temperature | Power Supplied | $F_L$ | $F_H$ | $F_L$ Limit | $F_H$ Limit |
| (℃) | ($V_{DC}$) | (MHz) | (MHz) | (MHz) | (MHz) |
| -30 | 3.8 | 1710.3084 | 1779.8528 | 1710 | 1780 |
| -20 | | 1710.1568 | 1779.6455 | 1710 | 1780 |
| -10 | | 1710.3777 | 1779.6378 | 1710 | 1780 |
| 0 | | 1710.2150 | 1779.7302 | 1710 | 1780 |
| 10 | | 1710.3983 | 1779.8041 | 1710 | 1780 |
| 20 | | 1710.1486 | 1779.6540 | 1710 | 1780 |
| 30 | | 1710.3324 | 1779.8900 | 1710 | 1780 |
| 40 | | 1710.0226 | 1779.6564 | 1710 | 1780 |
| 50 | | 1710.3603 | 1779.7889 | 1710 | 1780 |
| 20 | V min.= 3.42 | 1710.0901 | 1779.7330 | 1710 | 1780 |
| 20 | V max.= 4.18 | 1710.3713 | 1779.9420 | 1710 | 1780 |

| Low Channel & High Channel (16-QAM) /Channel Bandwidth:20MHz | | | | | |
|---|---|---|---|---|---|
| Temperature | Power Supplied | $F_L$ | $F_H$ | $F_L$ Limit | $F_H$ Limit |
| (℃) | ($V_{DC}$) | (MHz) | (MHz) | (MHz) | (MHz) |
| -30 | 3.8 | 1710.1268 | 1779.8090 | 1710 | 1780 |
| -20 | | 1710.3717 | 1779.9497 | 1710 | 1780 |
| -10 | | 1710.1695 | 1779.7702 | 1710 | 1780 |
| 0 | | 1710.2809 | 1779.7619 | 1710 | 1780 |
| 10 | | 1710.2543 | 1779.8056 | 1710 | 1780 |
| 20 | | 1710.3048 | 1779.9417 | 1710 | 1780 |
| 30 | | 1710.0889 | 1779.7344 | 1710 | 1780 |
| 40 | | 1710.3745 | 1779.6850 | 1710 | 1780 |
| 50 | | 1710.3126 | 1779.8461 | 1710 | 1780 |
| 20 | V min.= 3.42 | 1710.1582 | 1779.9074 | 1710 | 1780 |
| 20 | V max.= 4.18 | 1710.3015 | 1779.6364 | 1710 | 1780 |

## Declarations

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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.

4: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

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