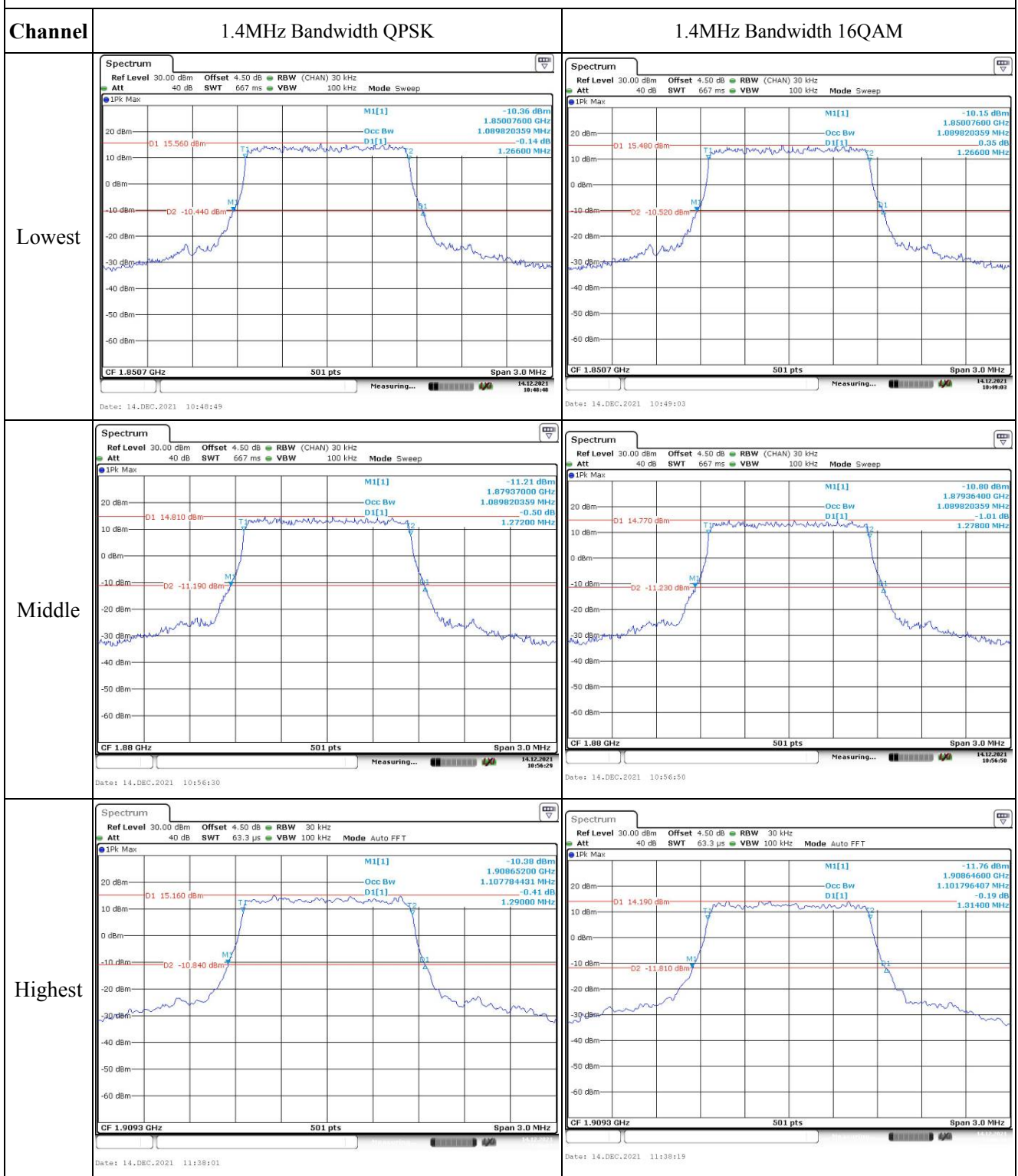
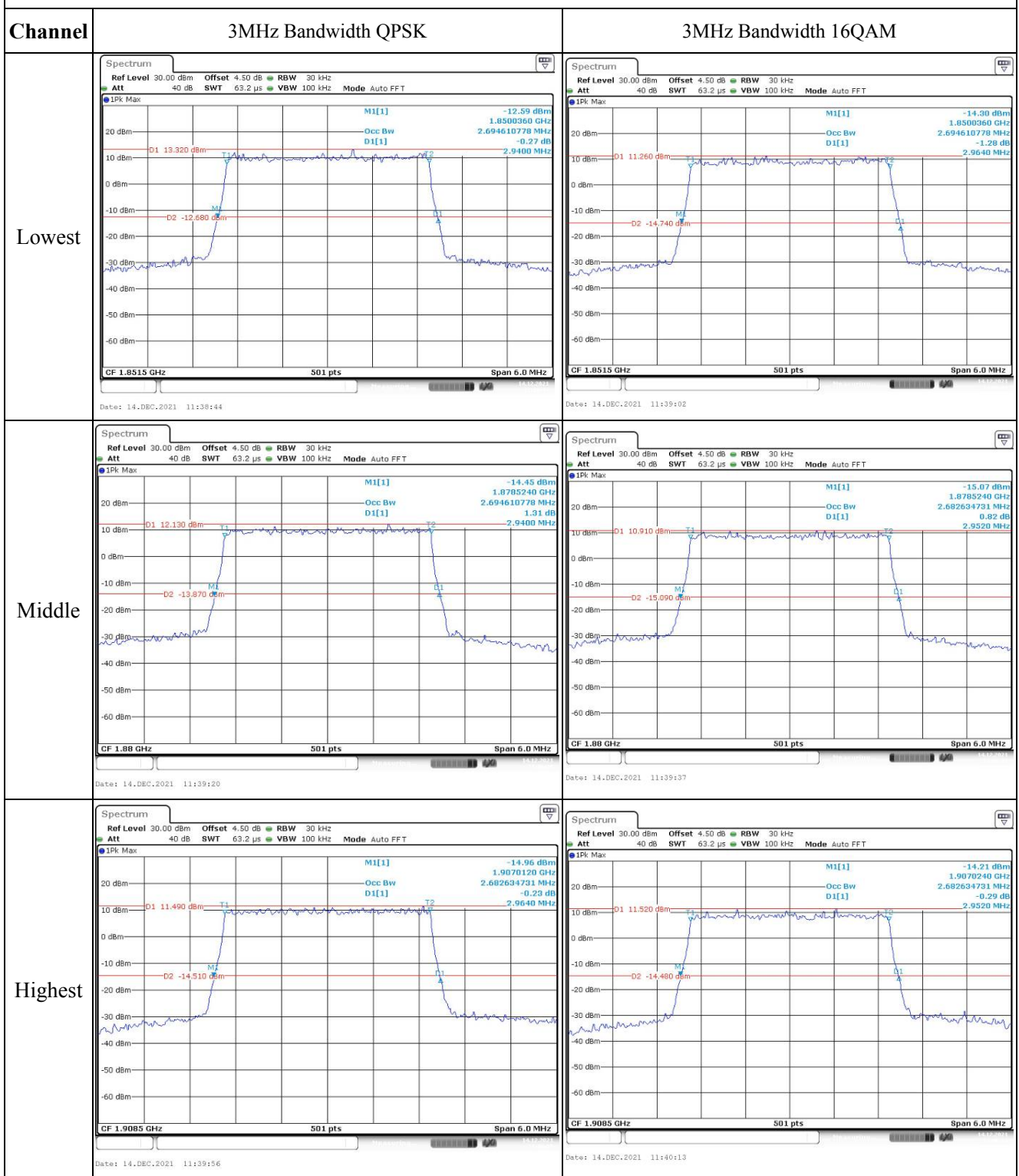


## Test Plots:

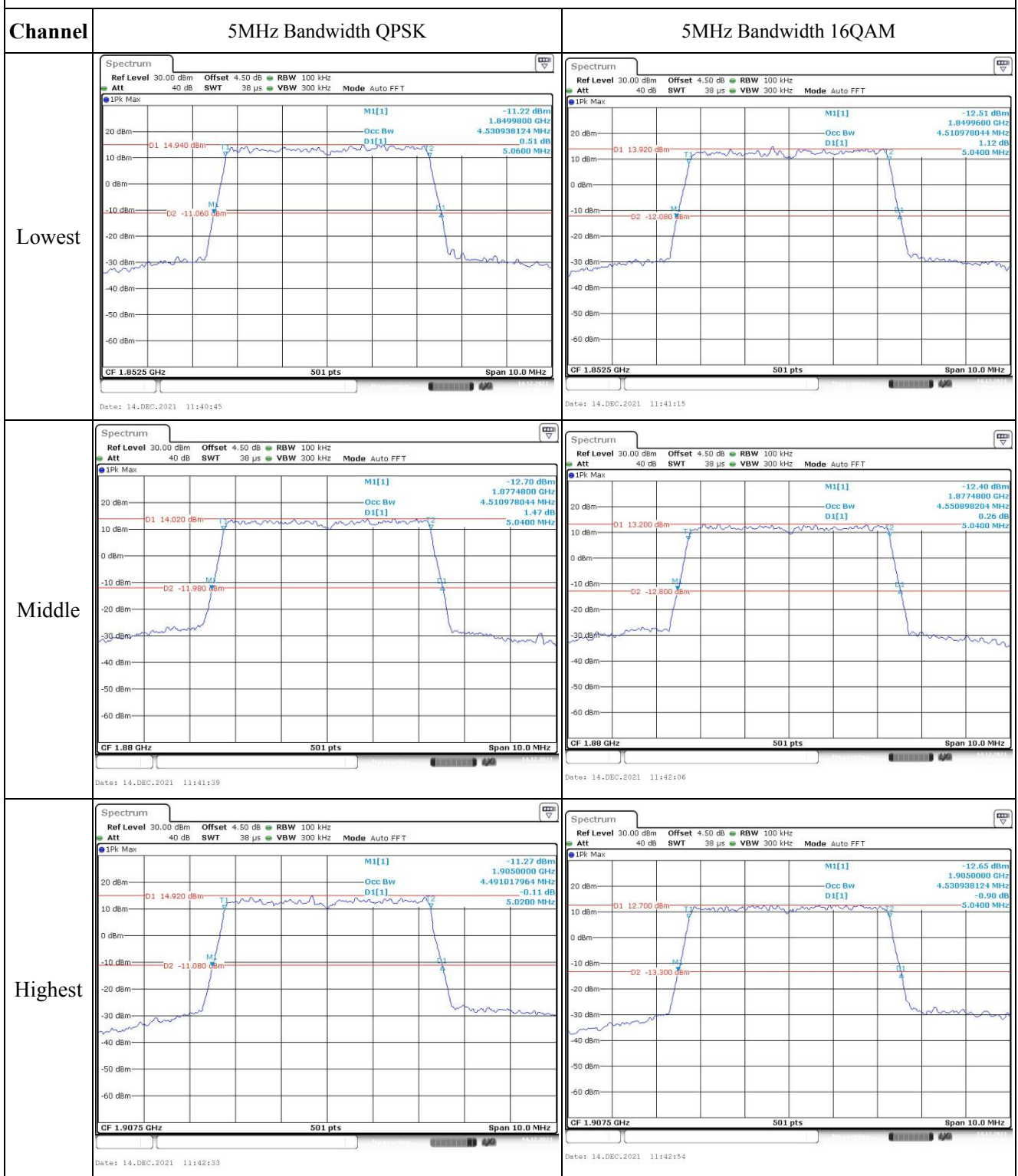
## Occupied Bandwidth



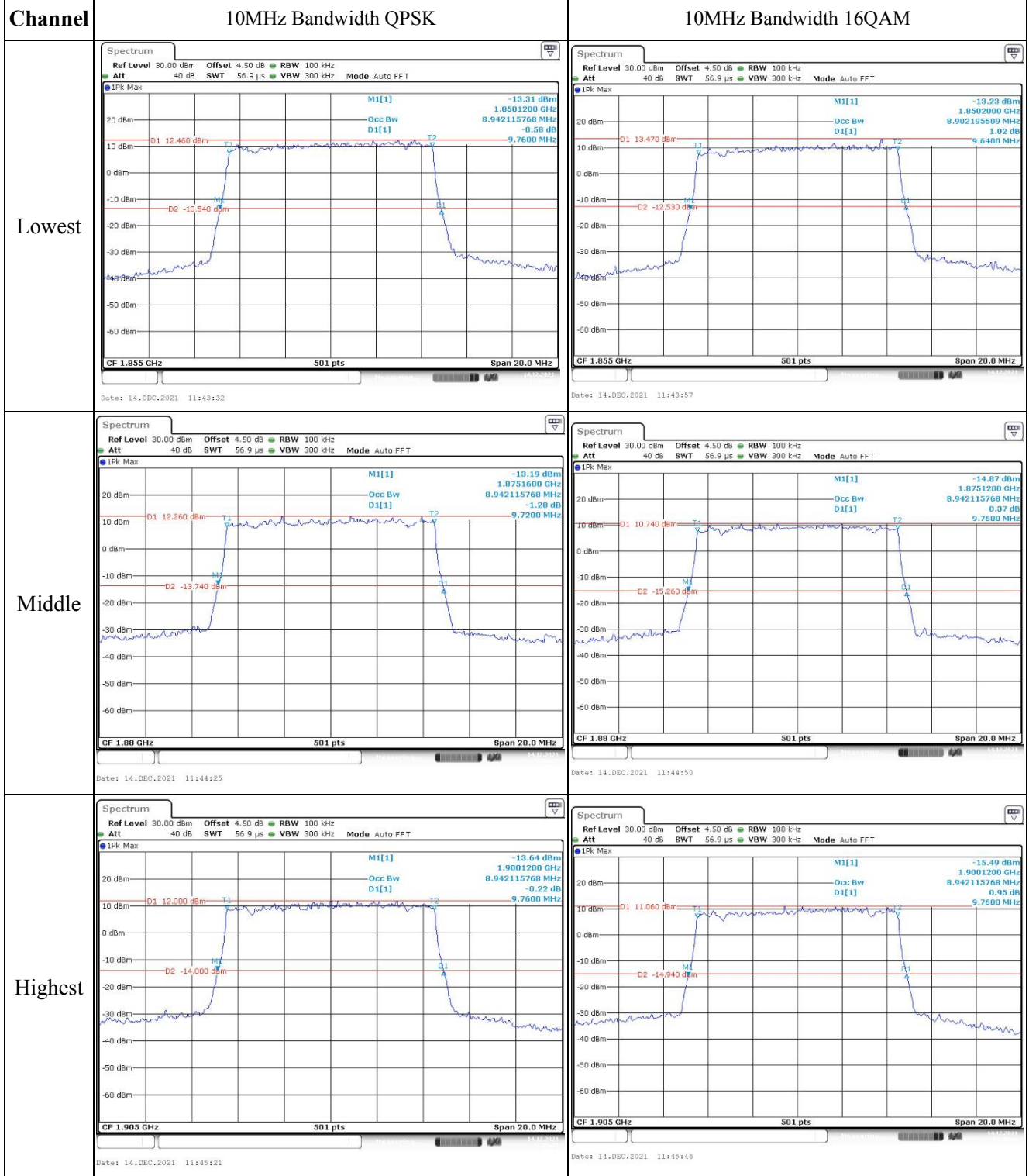
## Occupied Bandwidth



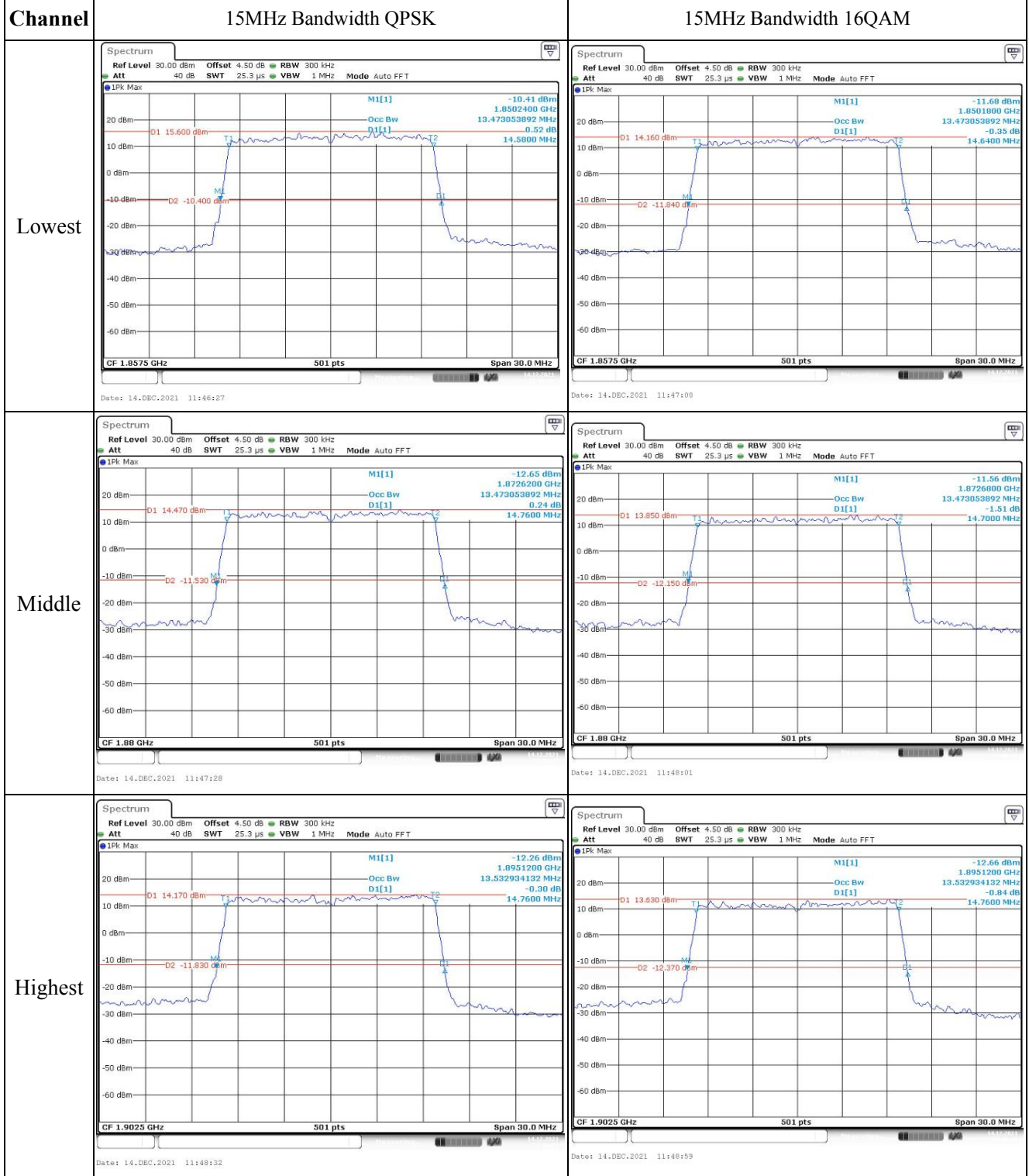
## Occupied Bandwidth



## Occupied Bandwidth



## Occupied Bandwidth



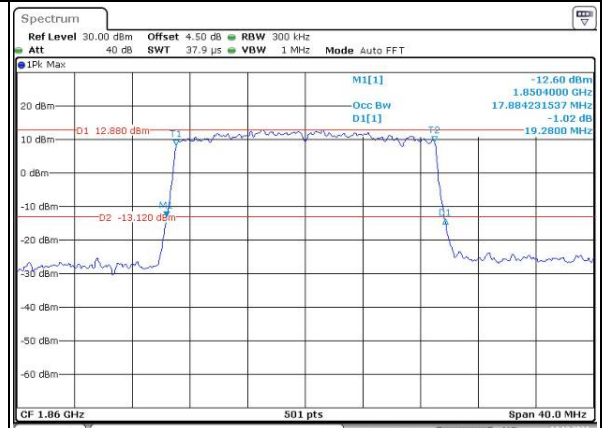
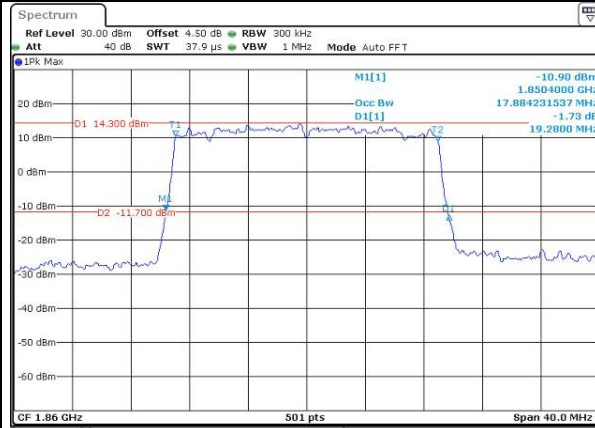
## Occupied Bandwidth

## Channel

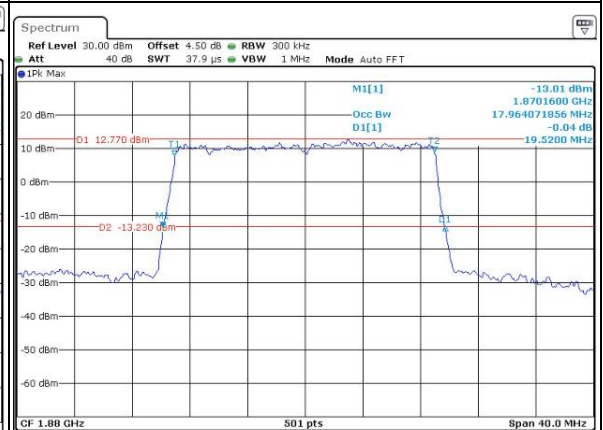
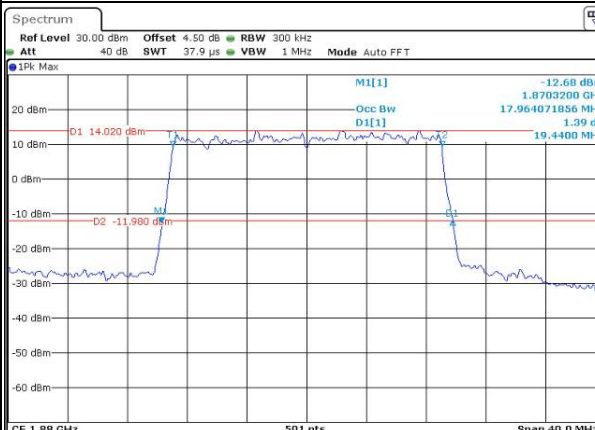
## 20MHz Bandwidth QPSK

## 20MHz Bandwidth 16QAM

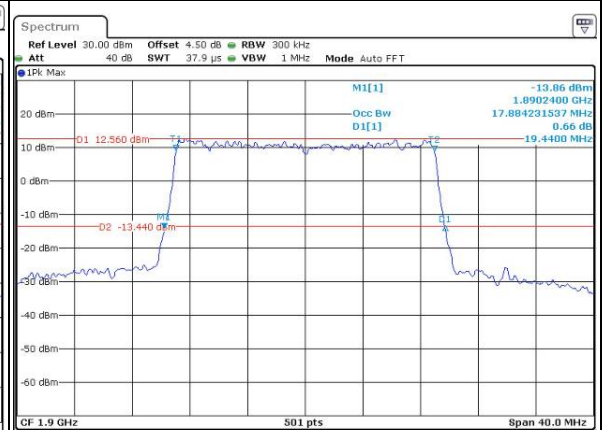
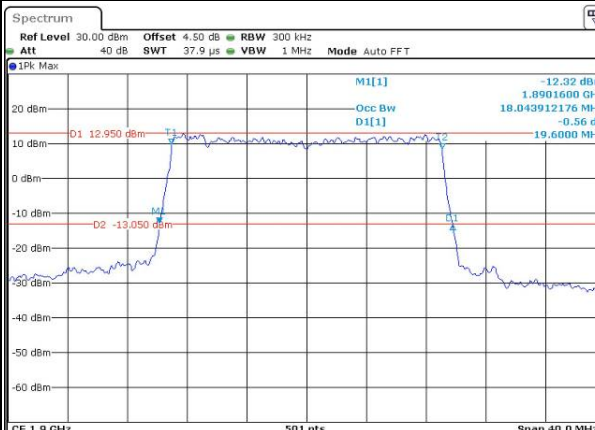
## Lowest



## Middle



## Highest

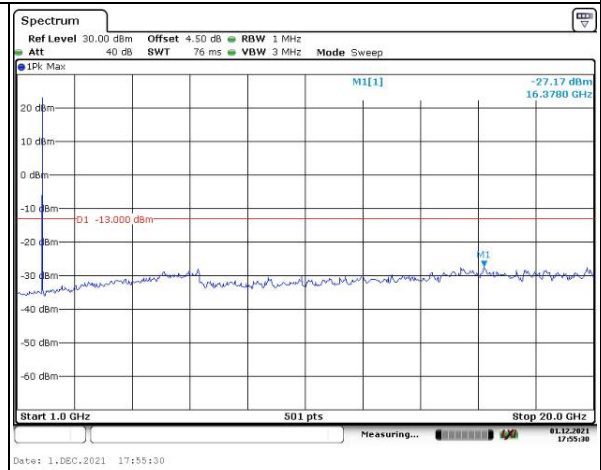
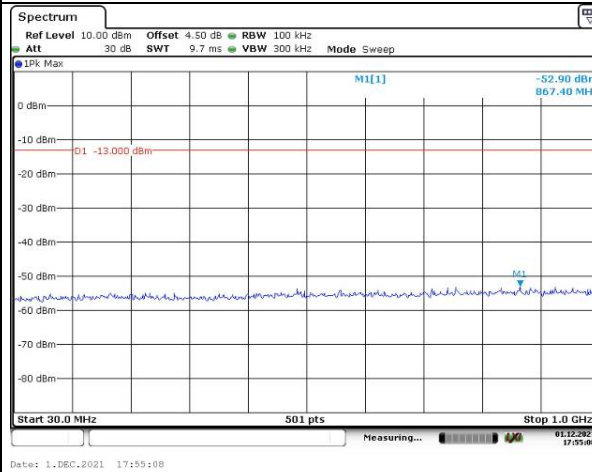


## Spurious Emissions at Antenna Terminal

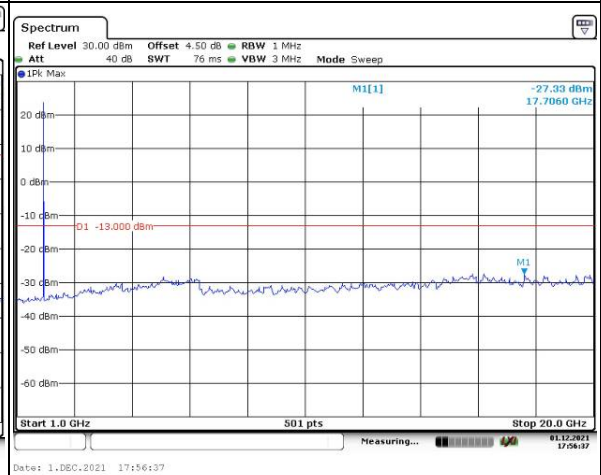
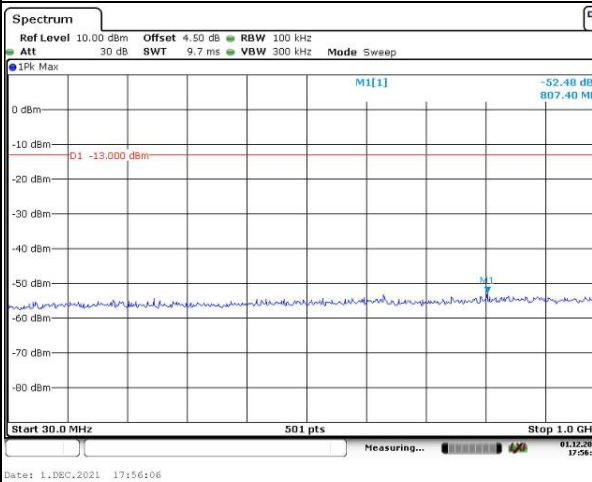
Channel

1.4MHz Bandwidth QPSK

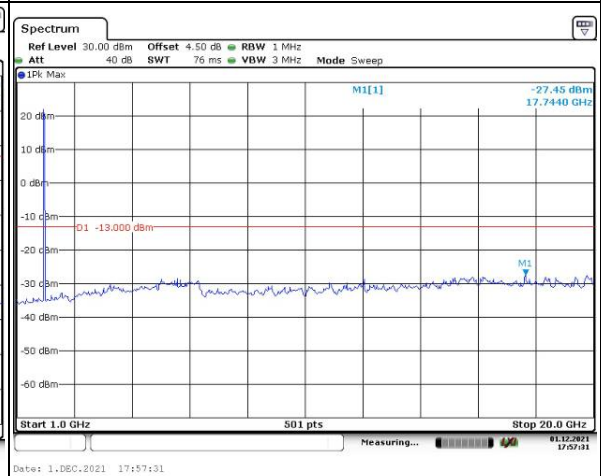
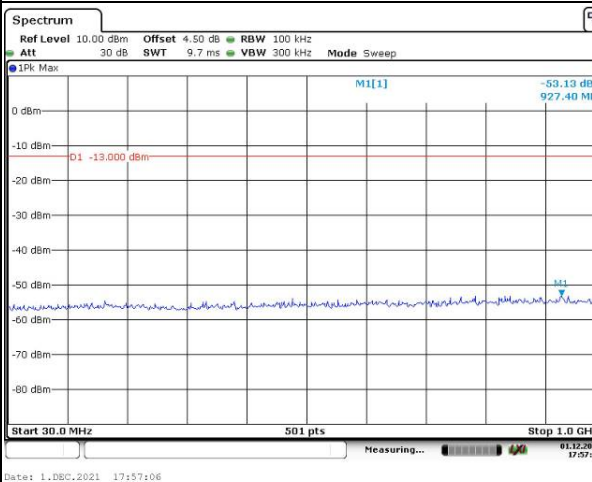
Lowest



Middle



Highest

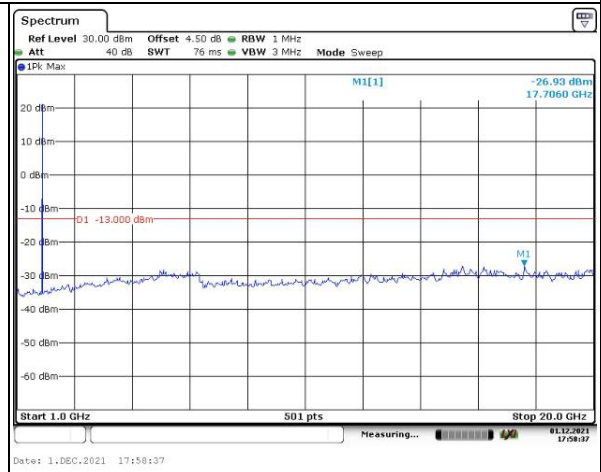
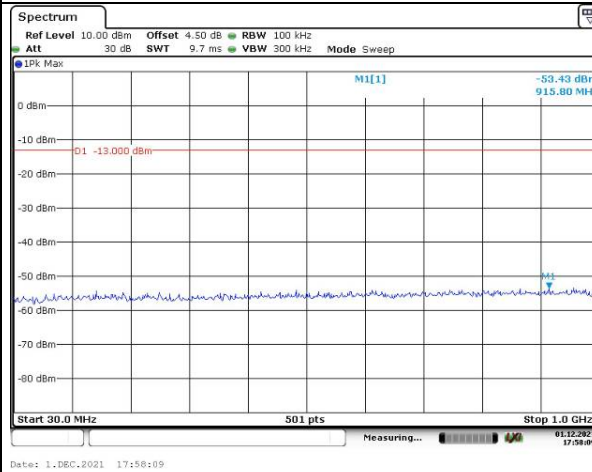


## Spurious Emissions at Antenna Terminal

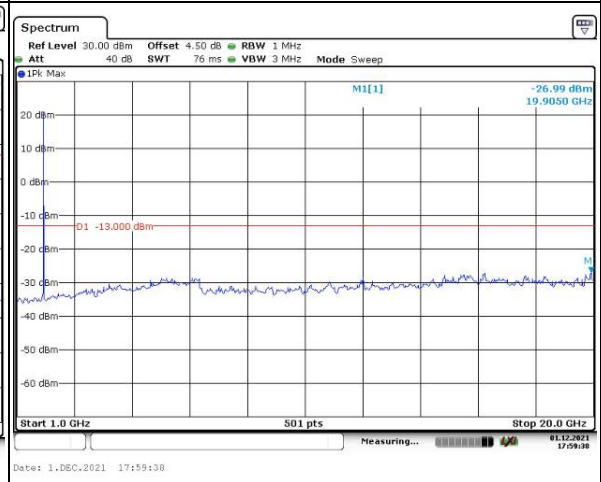
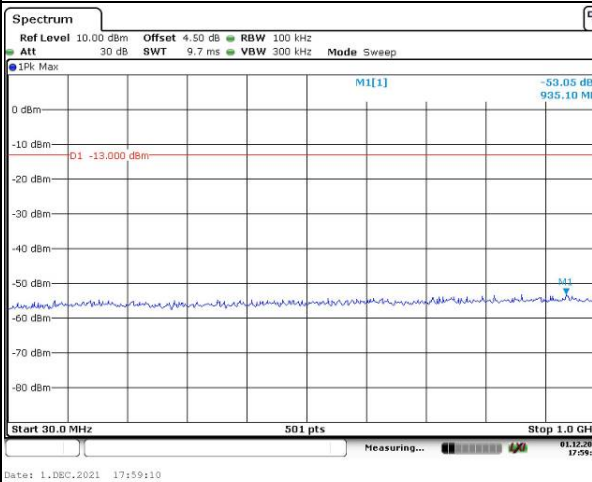
Channel

3MHz Bandwidth QPSK

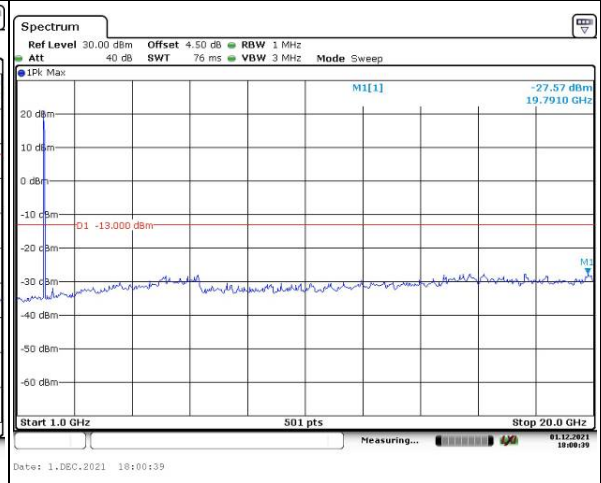
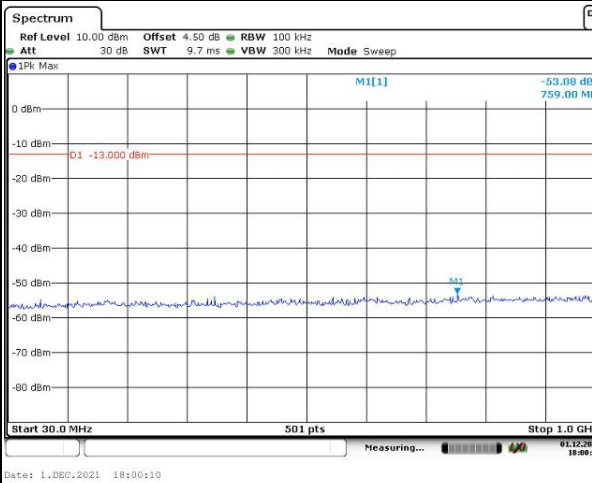
Lowest



Middle



Highest

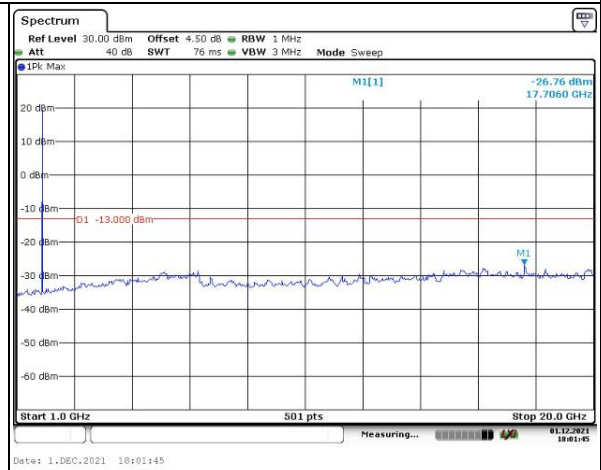
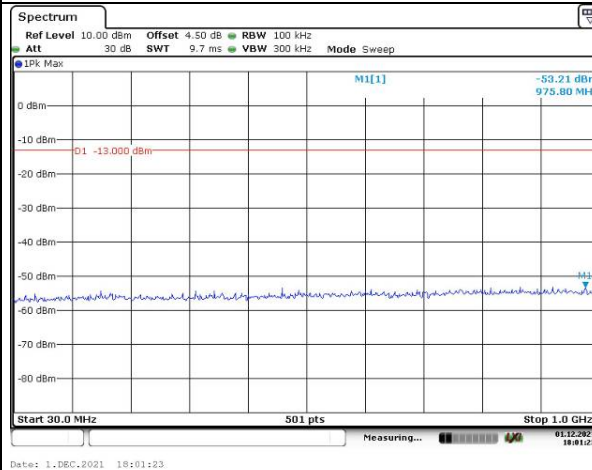


## Spurious Emissions at Antenna Terminal

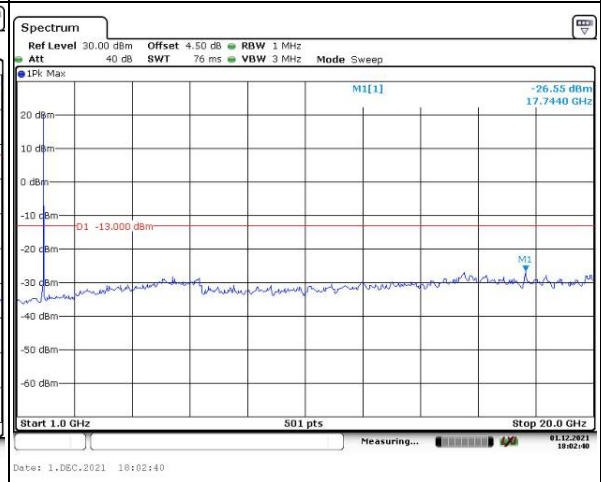
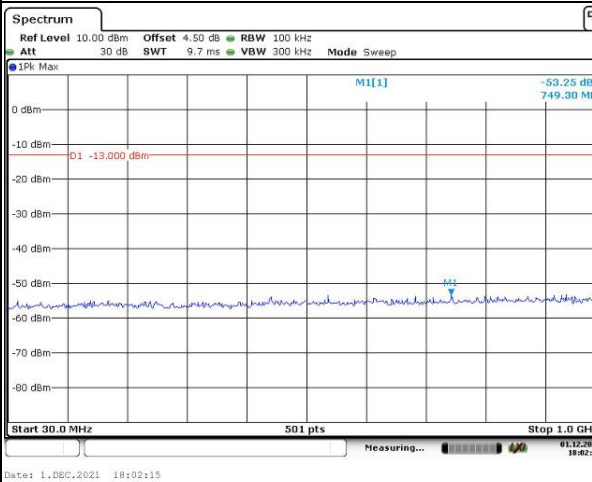
Channel

5MHz Bandwidth QPSK

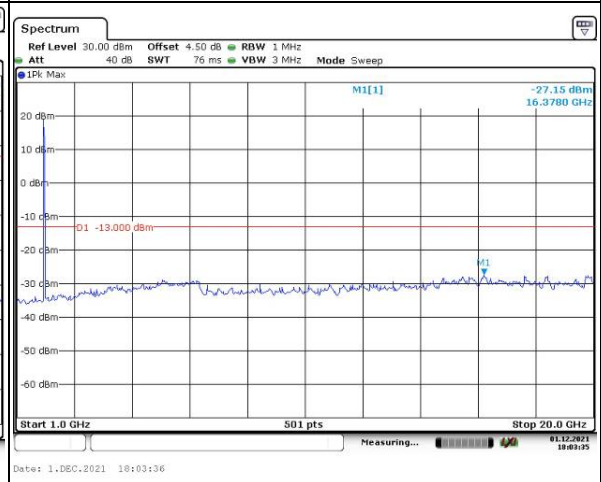
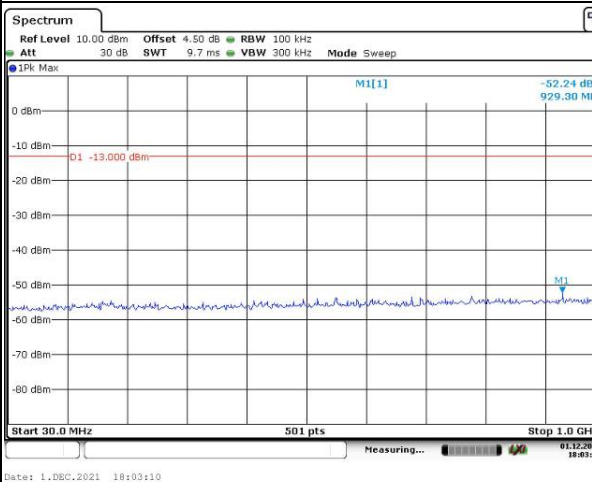
Lowest



Middle



Highest

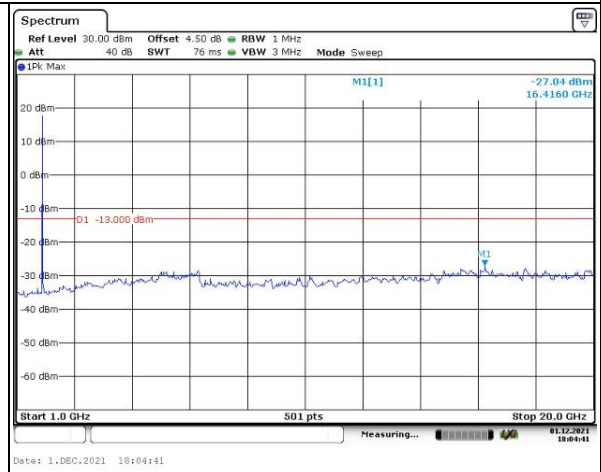
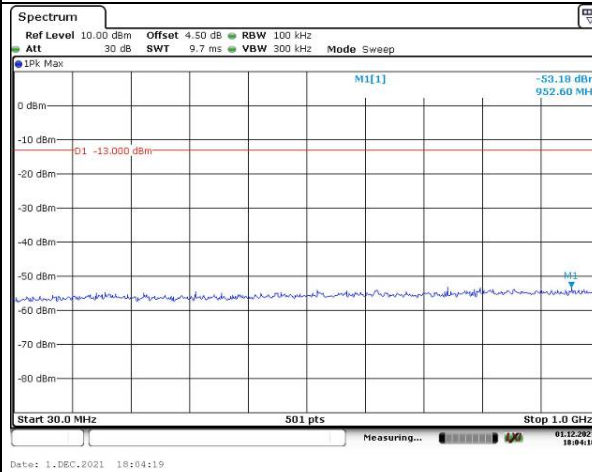


## Spurious Emissions at Antenna Terminal

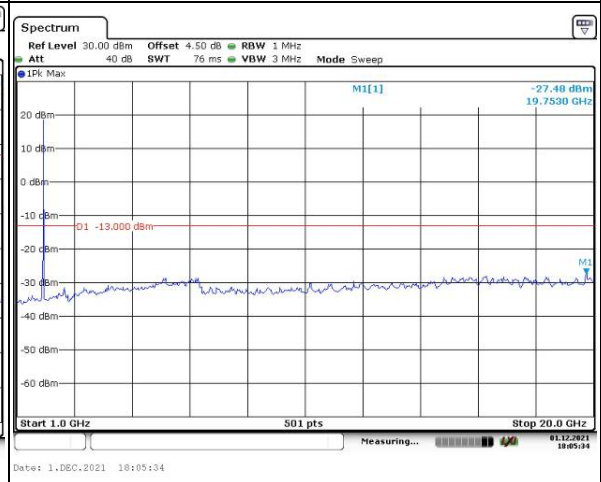
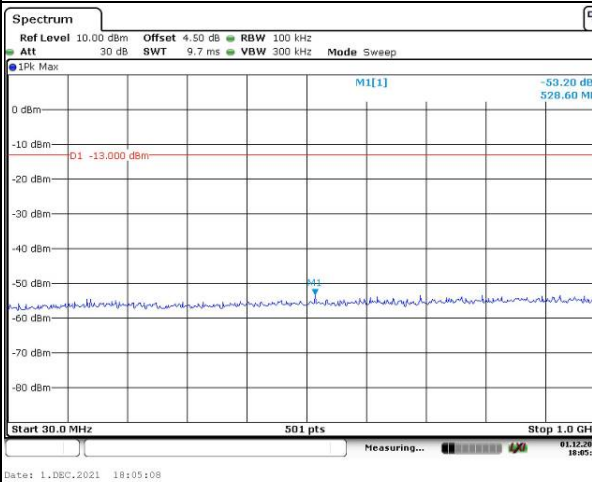
Channel

10MHz Bandwidth QPSK

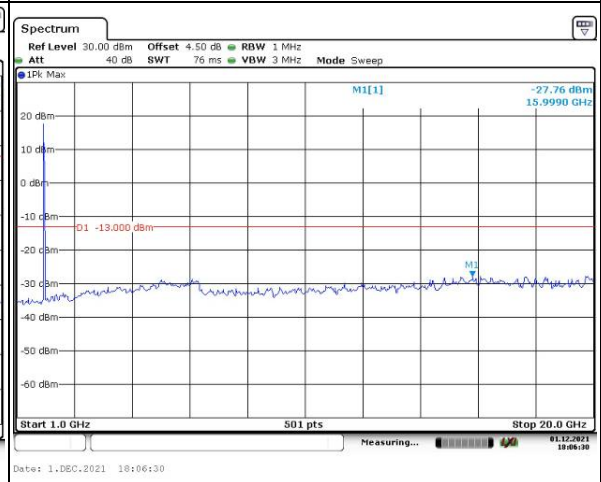
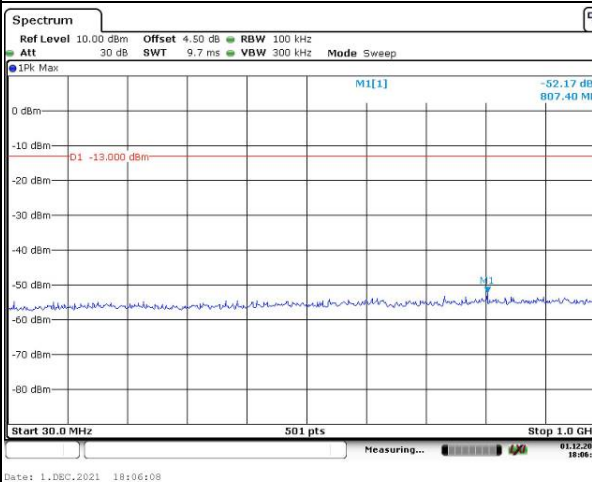
Lowest



Middle



Highest

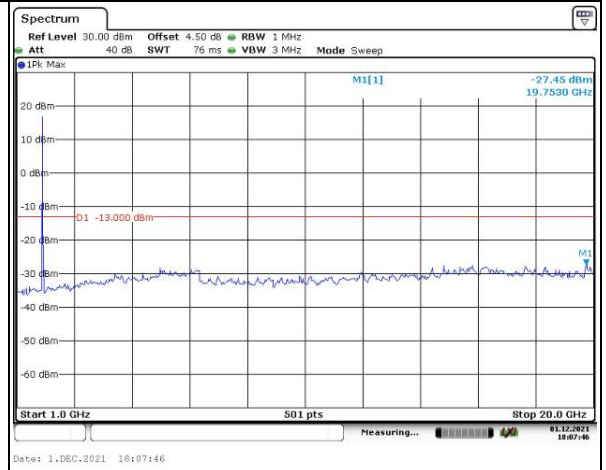
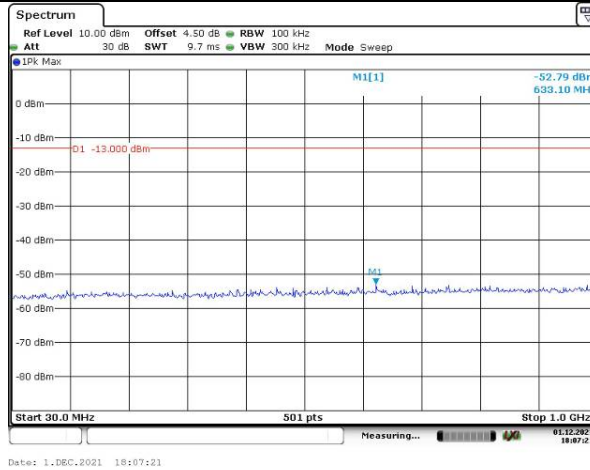


## Spurious Emissions at Antenna Terminal

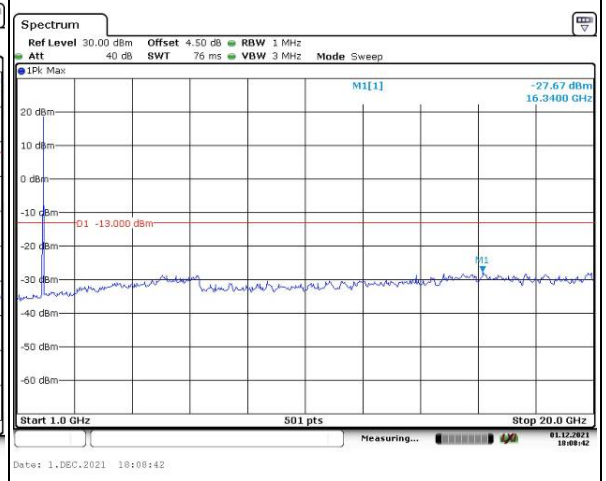
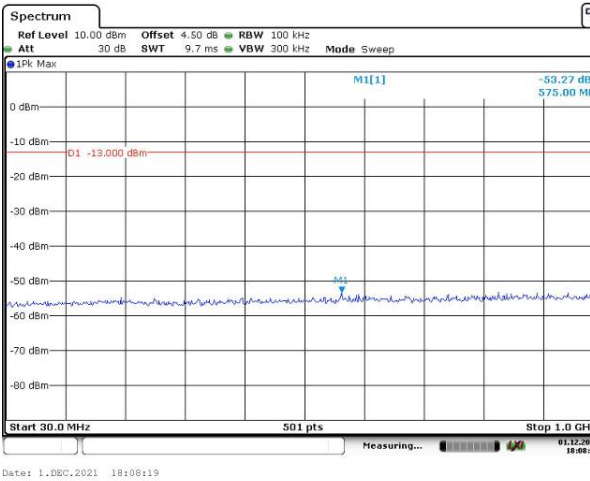
Channel

15MHz Bandwidth QPSK

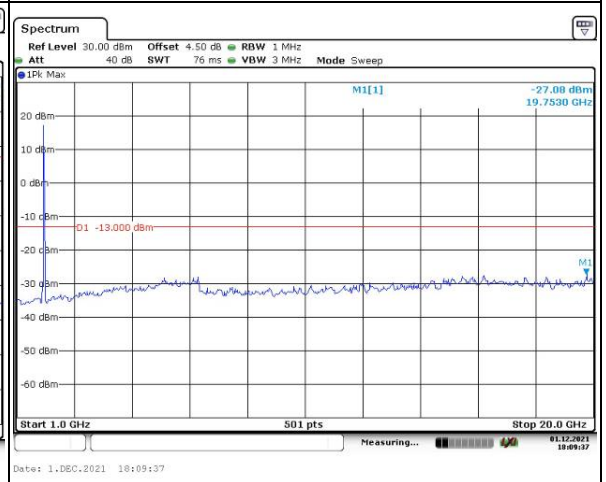
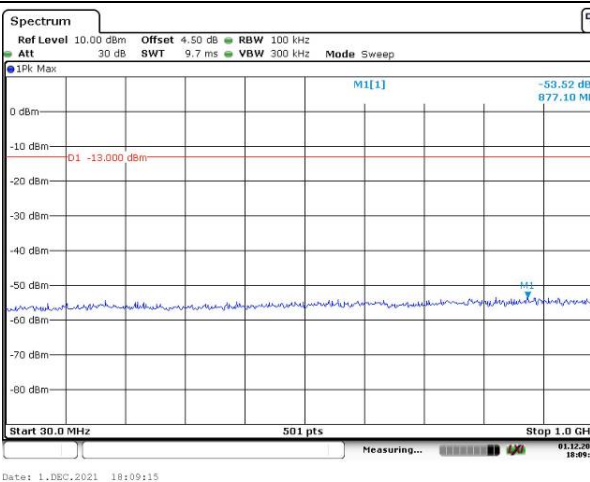
Lowest



Middle



Highest

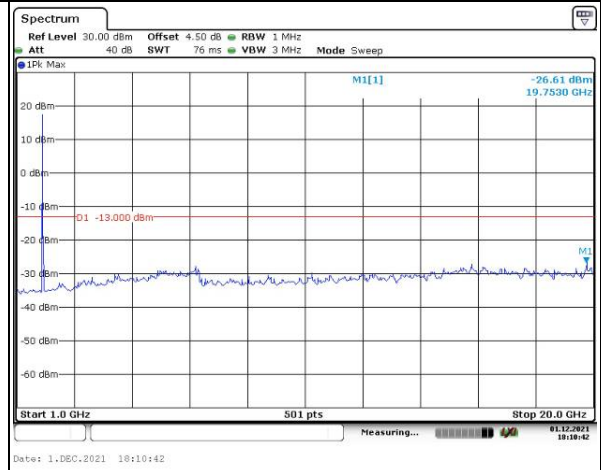
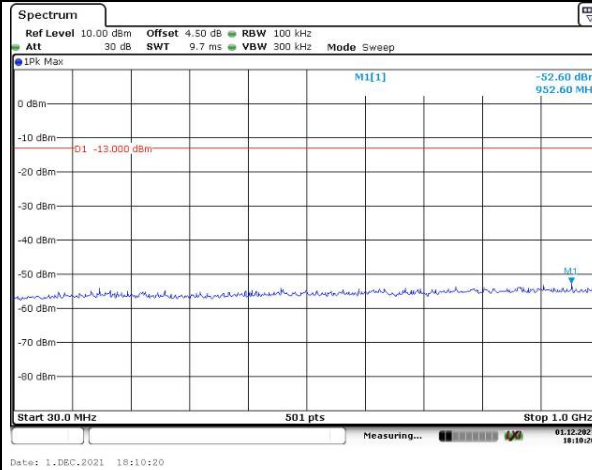


## Spurious Emissions at Antenna Terminal

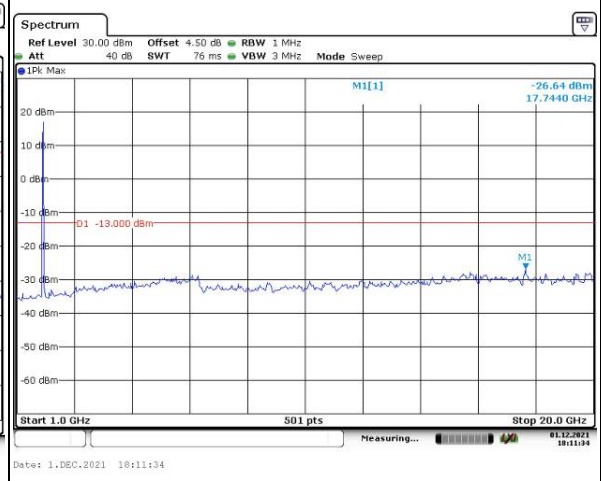
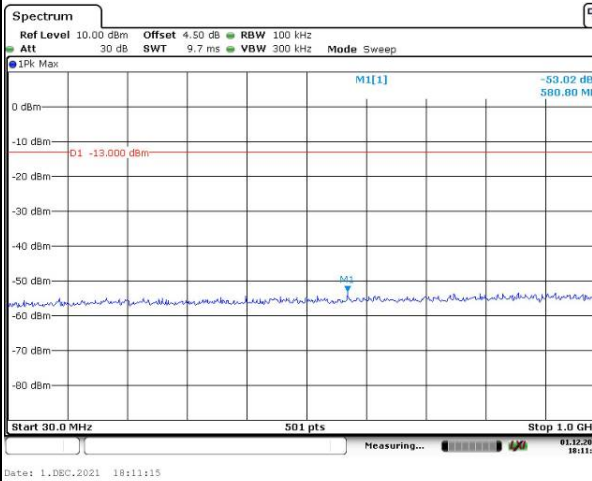
Channel

20MHz Bandwidth QPSK

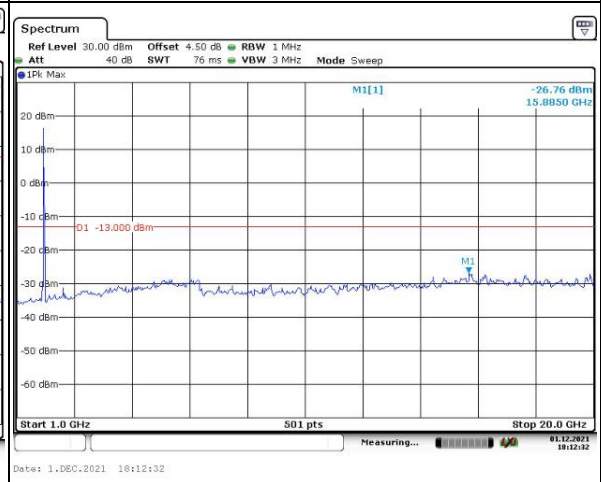
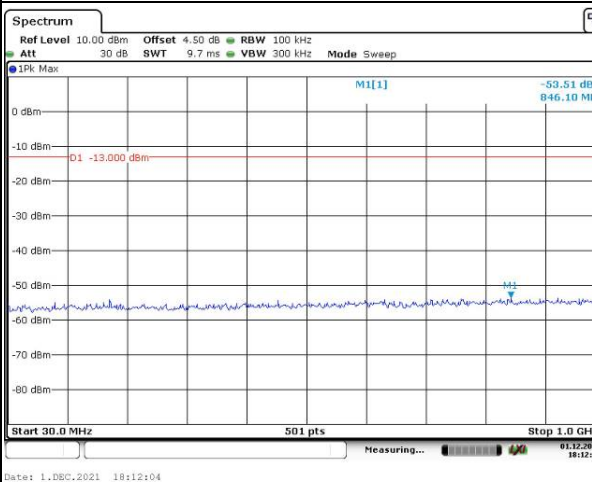
Lowest



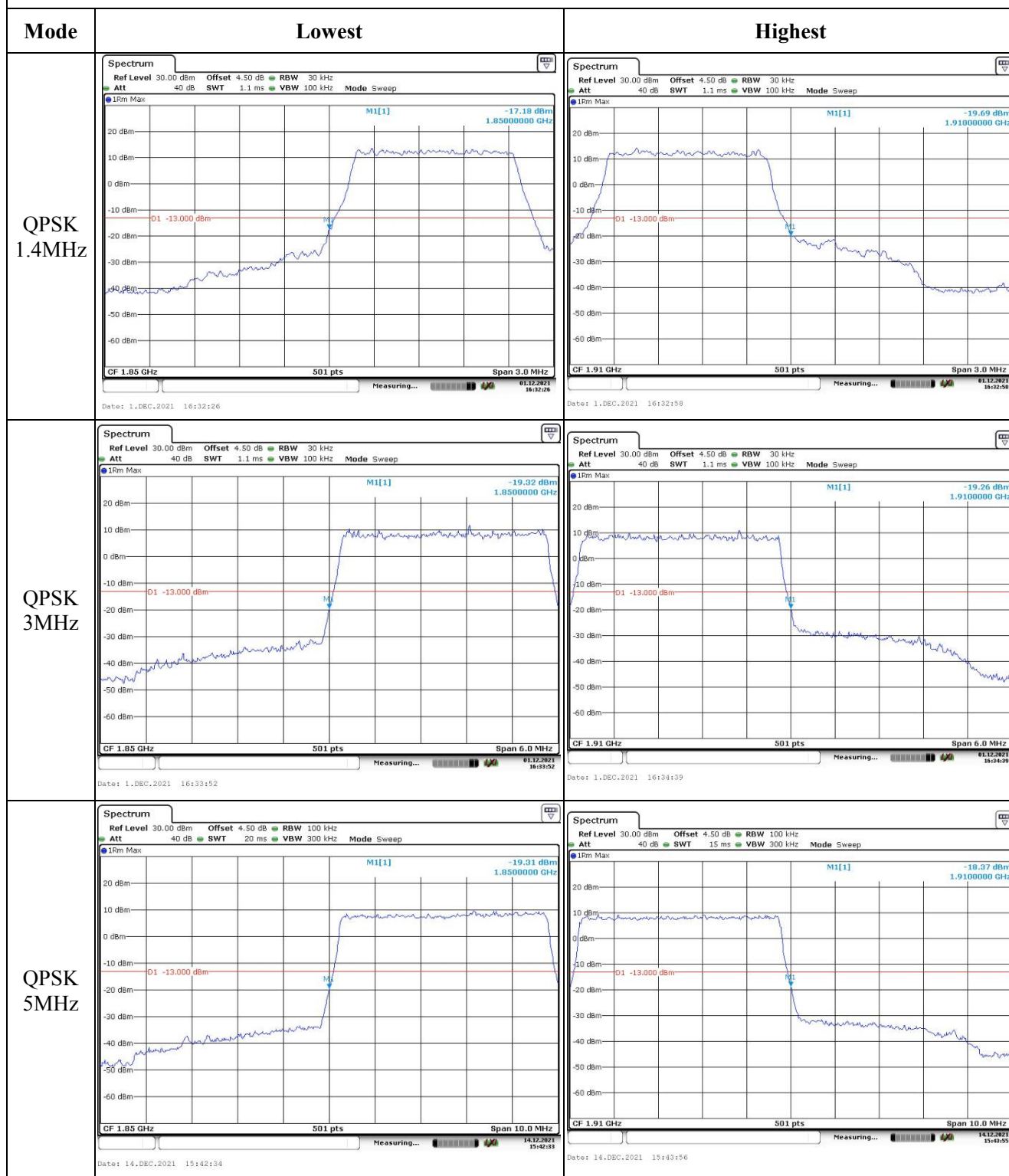
Middle



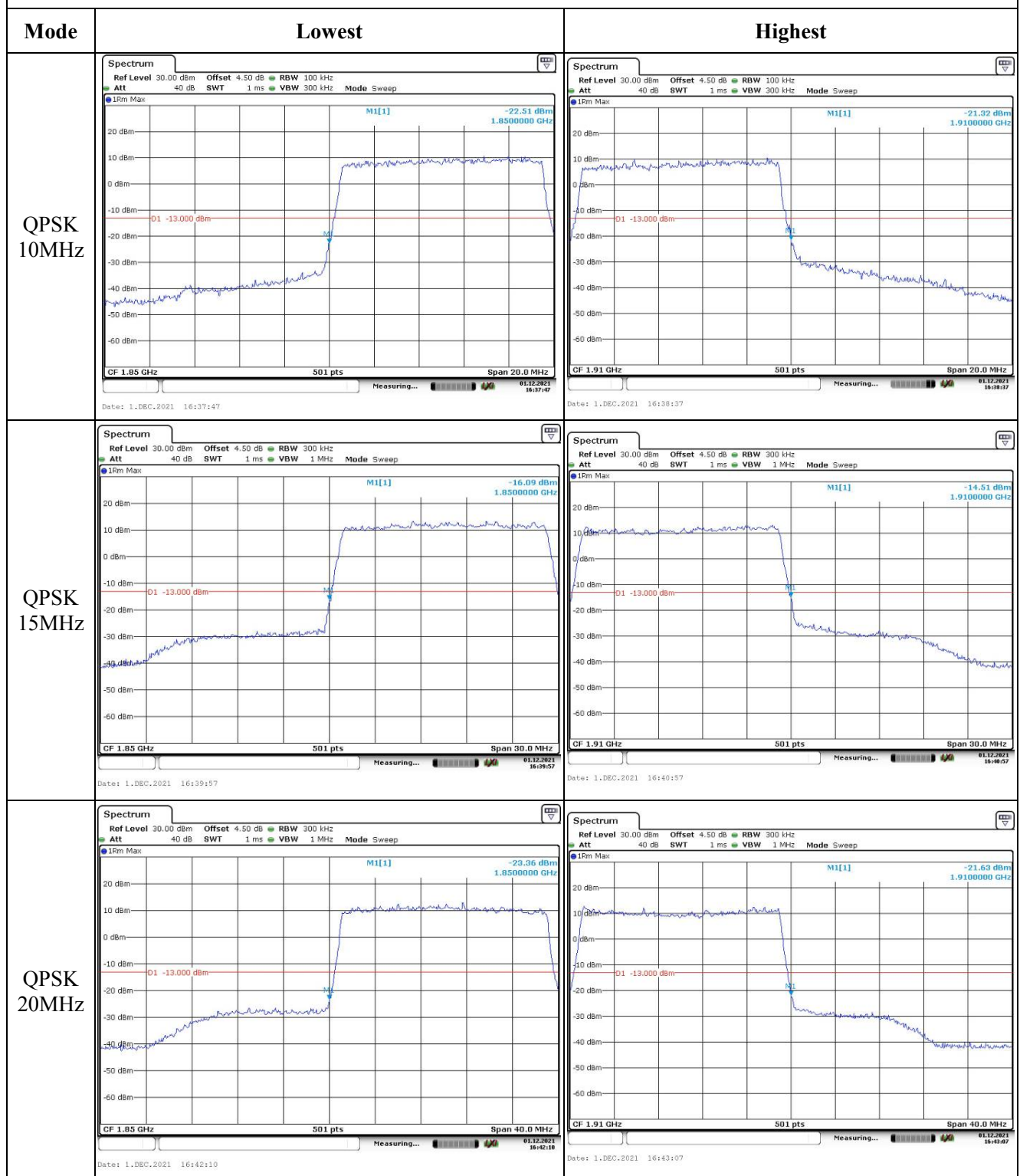
Highest



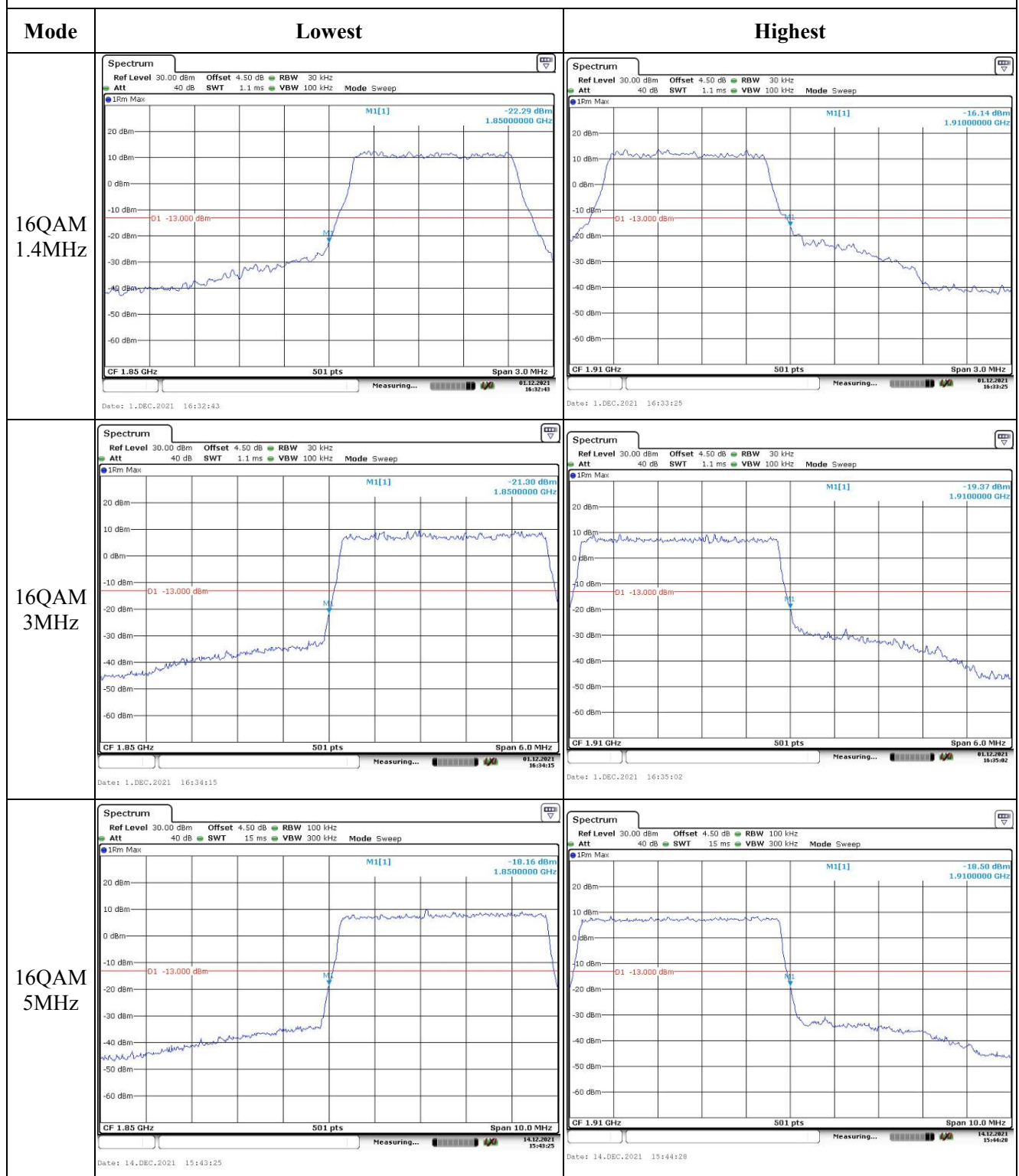
## Out of band emission, Band Edge



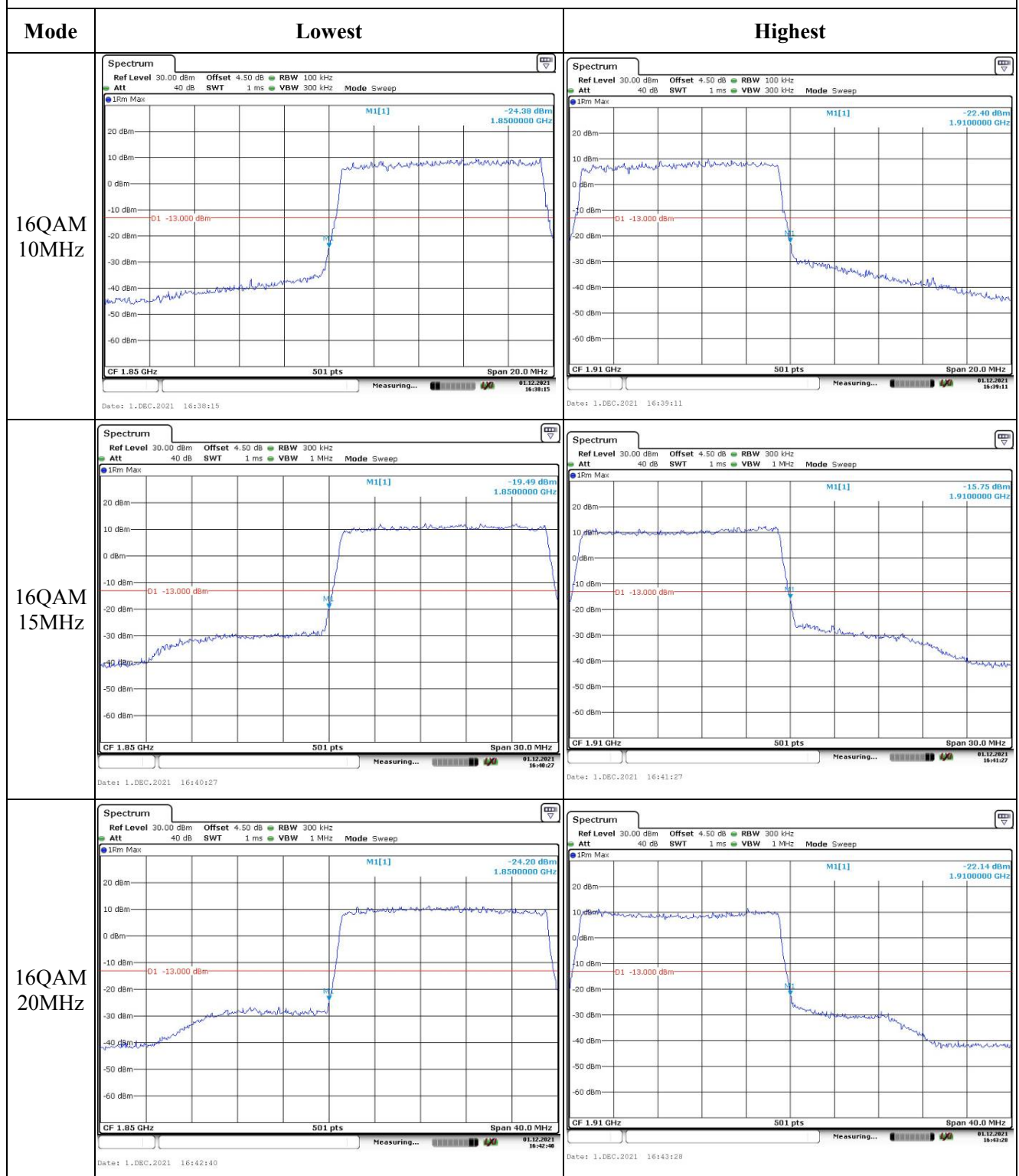
## Out of band emission, Band Edge



## Out of band emission, Band Edge



## Out of band emission, Band Edge



**4.7 Antenna Port Test Data and Results for LTE Band 4:**

|                           |               |                           |    |                        |              |  |
|---------------------------|---------------|---------------------------|----|------------------------|--------------|--|
| Serial Number:            | CR21110087-S1 |                           |    | Test Date:             | 2021/12/16   |  |
| Test Site:                | RF            |                           |    | Test Mode:             | Transmitting |  |
| Tester:                   | Wolf Mo       |                           |    | Test Result:           | Pass         |  |
| Environmental Conditions: |               |                           |    |                        |              |  |
| Temperature:<br>(°C)      | 25.9          | Relative Humidity:<br>(%) | 60 | ATM Pressure:<br>(kPa) | 101.1        |  |

**Test Equipment List and Details:**

| Manufacturer  | Description                         | Model             | Serial Number | Calibration Date | Calibration Due Date |
|---------------|-------------------------------------|-------------------|---------------|------------------|----------------------|
| R&S           | Spectrum Analyzer                   | Spectrum Analyzer | 101474        | 2021/7/22        | 2022/7/21            |
| zhuoxiang     | Coaxial Cable                       | SMA-178           | 211001        | Each time        | N/A                  |
| Mini-Circuits | DC Block                            | BLK-18-S+         | 1554403       | Each time        | N/A                  |
| ZHAOXIN       | DC Power Supply                     | RXN-6010D         | 21R6010D09    | N/A              | N/A                  |
| Weinschel     | Coaxial Attenuators                 | 53-20-34          | LN751         | Each time        | N/A                  |
| R&S           | Wideband Radio Communication Tester | CMW500            | 149218        | 2021/7/22        | 2022/7/21            |
| BACL          | TEMP&HUMI Test Chamber              | BTH-150           | 30026         | 2021/7/22        | 2022/7/22            |
| UNI-T         | Multimeter                          | UT39A+            | C210582554    | 2021/9/30        | 2022/9/30            |
| E-Microwave   | Two-way Splitter                    | ODP-1-6           | OE0120176     | Each Time        | N/A                  |

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**EUT Information@ LTE Band 4▲:**

|                                      |     |  |         |                     |     |              |
|--------------------------------------|-----|--|---------|---------------------|-----|--------------|
| Antenna Gain<br>(dBi):               | 1   |  |         | Cable Loss<br>(dB): | 0.2 |              |
| Operation Voltage(V <sub>DC</sub> ): |     |  |         |                     |     |              |
| Lowest:                              | 3.5 |  | Normal: | 3.7                 |     | Highest: 4.2 |

**Test Frequency For Each Mode:**

| Operation Bandwidth | Lowest Frequency (MHz) | Middle Frequency (MHz) | Highest Frequency (MHz) |
|---------------------|------------------------|------------------------|-------------------------|
| 1.4MHz              | 1710.7                 | 1732.5                 | 1754.3                  |
| 3MHz                | 1711.5                 | 1732.5                 | 1753.5                  |
| 5MHz                | 1712.5                 | 1732.5                 | 1752.5                  |
| 10MHz               | 1715                   | 1732.5                 | 1750                    |
| 15MHz               | 1717.5                 | 1732.5                 | 1747.5                  |
| 20MHz               | 1720                   | 1732.5                 | 1745                    |

**Test Data:****FCC§2.1046;§ 27.50(d)(4)****RF Output Power:**

| Test Bandwidth & Modulation | Resource Block & RB offset | Conducted Average Output Power(dBm) |                |                 | Maximum EIRP (dBm) | EIRP Limit (dBm) |
|-----------------------------|----------------------------|-------------------------------------|----------------|-----------------|--------------------|------------------|
|                             |                            | Lowest Channel                      | Middle Channel | Highest Channel |                    |                  |
| 1.4MHz QPSK                 | RB1#0                      | 22.35                               | 22.36          | 22.40           | 23.48              | 30               |
|                             | RB1#3                      | 22.33                               | 22.68          | 22.48           |                    |                  |
|                             | RB1#5                      | 22.51                               | 22.58          | 22.47           |                    |                  |
|                             | RB3#0                      | 22.50                               | 22.50          | 22.47           |                    |                  |
|                             | RB3#3                      | 22.40                               | 22.52          | 22.45           |                    |                  |
|                             | RB6#0                      | 21.45                               | 21.56          | 21.52           |                    |                  |
| 1.4MHz 16QAM                | RB1#0                      | 21.57                               | 21.89          | 21.16           | 22.93              | 30               |
|                             | RB1#3                      | 21.84                               | 22.13          | 21.06           |                    |                  |
|                             | RB1#5                      | 21.71                               | 21.63          | 20.78           |                    |                  |
|                             | RB3#0                      | 21.52                               | 21.59          | 21.21           |                    |                  |
|                             | RB3#3                      | 21.57                               | 21.59          | 21.00           |                    |                  |
|                             | RB6#0                      | 20.46                               | 20.63          | 20.69           |                    |                  |
| 3MHz QPSK                   | RB1#0                      | 22.33                               | 22.36          | 22.48           | 23.42              | 30               |
|                             | RB1#8                      | 22.52                               | 22.37          | 22.25           |                    |                  |
|                             | RB1#14                     | 22.62                               | 22.40          | 22.34           |                    |                  |
|                             | RB6#0                      | 21.44                               | 21.43          | 21.39           |                    |                  |
|                             | RB6#9                      | 21.34                               | 21.45          | 21.43           |                    |                  |
|                             | RB15#0                     | 21.43                               | 21.38          | 21.43           |                    |                  |
| 3MHz 16QAM                  | RB1#0                      | 21.78                               | 21.96          | 21.53           | 22.76              | 30               |
|                             | RB1#8                      | 21.39                               | 21.54          | 21.03           |                    |                  |
|                             | RB1#14                     | 21.42                               | 21.54          | 21.18           |                    |                  |
|                             | RB6#0                      | 20.54                               | 20.36          | 20.52           |                    |                  |
|                             | RB6#9                      | 20.46                               | 20.63          | 20.55           |                    |                  |
|                             | RB15#0                     | 20.55                               | 20.40          | 20.65           |                    |                  |
| 5MHz QPSK                   | RB1#0                      | 22.04                               | 22.28          | 22.40           | 23.36              | 30               |

|             |         |       |       |       |       |    |
|-------------|---------|-------|-------|-------|-------|----|
|             | RB1#13  | 22.24 | 22.31 | 22.23 |       |    |
|             | RB1#24  | 22.24 | 22.56 | 22.39 |       |    |
|             | RB15#0  | 21.42 | 21.37 | 21.55 |       |    |
|             | RB15#10 | 21.38 | 21.42 | 21.39 |       |    |
|             | RB25#0  | 21.46 | 21.43 | 21.44 |       |    |
| 5MHz 16QAM  | RB1#0   | 21.31 | 21.52 | 21.14 | 22.38 | 30 |
|             | RB1#13  | 20.69 | 21.05 | 20.87 |       |    |
|             | RB1#24  | 20.60 | 21.58 | 21.48 |       |    |
|             | RB15#0  | 20.50 | 20.20 | 20.56 |       |    |
|             | RB15#10 | 20.37 | 20.28 | 20.47 |       |    |
|             | RB25#0  | 20.50 | 20.21 | 20.63 |       |    |
| 10MHz QPSK  | RB1#0   | 22.58 | 22.50 | 22.49 | 23.38 | 30 |
|             | RB1#25  | 22.30 | 22.39 | 22.46 |       |    |
|             | RB1#49  | 22.25 | 22.42 | 22.35 |       |    |
|             | RB25#0  | 21.39 | 21.42 | 21.57 |       |    |
|             | RB25#25 | 21.25 | 21.44 | 21.37 |       |    |
|             | RB50#0  | 21.43 | 21.49 | 21.52 |       |    |
| 10MHz 16QAM | RB1#0   | 22.02 | 22.06 | 21.51 | 22.9  | 30 |
|             | RB1#25  | 21.55 | 21.73 | 21.45 |       |    |
|             | RB1#49  | 21.28 | 22.10 | 21.12 |       |    |
|             | RB25#0  | 20.48 | 20.64 | 20.95 |       |    |
|             | RB25#25 | 20.26 | 20.50 | 20.52 |       |    |
|             | RB50#0  | 20.40 | 20.45 | 20.61 |       |    |
| 15MHz QPSK  | RB1#0   | 22.49 | 22.62 | 22.63 | 23.59 | 30 |
|             | RB1#38  | 22.13 | 22.51 | 22.45 |       |    |
|             | RB1#74  | 22.54 | 22.79 | 22.53 |       |    |
|             | RB36#0  | 21.45 | 21.43 | 21.64 |       |    |
|             | RB36#39 | 21.36 | 21.49 | 21.47 |       |    |
|             | RB75#0  | 21.42 | 21.48 | 21.46 |       |    |
| 15MHz 16QAM | RB1#0   | 22.01 | 21.76 | 22.08 | 22.88 | 30 |
|             | RB1#38  | 21.40 | 21.38 | 21.64 |       |    |
|             | RB1#74  | 21.64 | 22.02 | 21.77 |       |    |
|             | RB36#0  | 20.51 | 20.51 | 20.79 |       |    |
|             | RB36#39 | 20.35 | 20.36 | 20.43 |       |    |
|             | RB75#0  | 20.41 | 20.42 | 20.43 |       |    |
| 20MHz QPSK  | RB1#0   | 22.65 | 22.46 | 22.61 | 23.65 | 30 |
|             | RB1#50  | 22.46 | 22.85 | 22.51 |       |    |
|             | RB1#99  | 22.48 | 22.84 | 22.50 |       |    |
|             | RB50#0  | 21.49 | 21.46 | 21.50 |       |    |
|             | RB50#50 | 21.32 | 21.54 | 21.54 |       |    |
|             | RB100#0 | 21.44 | 21.46 | 21.59 |       |    |
| 20MHz 16QAM | RB1#0   | 21.74 | 21.99 | 22.01 | 23.34 | 30 |
|             | RB1#50  | 20.99 | 21.19 | 22.54 |       |    |
|             | RB1#99  | 21.08 | 21.72 | 21.99 |       |    |

|                                                                      |         |       |       |       |                |             |
|----------------------------------------------------------------------|---------|-------|-------|-------|----------------|-------------|
|                                                                      | RB50#0  | 20.51 | 20.41 | 20.55 |                |             |
|                                                                      | RB50#50 | 20.36 | 20.49 | 20.62 |                |             |
|                                                                      | RB100#0 | 20.44 | 20.48 | 20.62 |                |             |
| Note: EIRP=Conducted Power(dBm) - Cable loss(dB) + Antenna Gain(dBi) |         |       |       |       |                |             |
|                                                                      |         |       |       |       | <b>Result:</b> | <b>Pass</b> |

| Peak-to-average Ratio(PAR)  |                            |                           |                |                 |             |
|-----------------------------|----------------------------|---------------------------|----------------|-----------------|-------------|
| Test Bandwidth & Modulation | Resource Block & RB offset | Peak-to-average Ratio(dB) |                |                 | Limit (dB)  |
|                             |                            | Lowest Channel            | Middle Channel | Highest Channel |             |
| 20MHz QPSK                  | RB1#0                      | 4.64                      | 4.46           | 4.61            | 13          |
|                             | RB100#0                    | 4.87                      | 4.93           | 4.75            | 13          |
| 20MHz 16QAM                 | RB1#0                      | 5.59                      | 5.48           | 5.62            | 13          |
|                             | RB100#0                    | 5.83                      | 5.88           | 5.71            | 13          |
| <b>Result:</b>              |                            |                           |                |                 | <b>Pass</b> |

| FCC §2.1049, §27.53:Occupied Bandwidth                               |                              |                |              |                                |                |              |
|----------------------------------------------------------------------|------------------------------|----------------|--------------|--------------------------------|----------------|--------------|
| Operation Mode                                                       | 99% Occupied Bandwidth (MHz) |                |              | 26 dB Occupied Bandwidth (MHz) |                |              |
|                                                                      | Low Channel                  | Middle channel | High Channel | Low Channel                    | Middle Channel | High Channel |
| 1.4MHz QPSK                                                          | 1.102                        | 1.108          | 1.102        | 1.314                          | 1.326          | 1.290        |
| 1.4MHz 16QAM                                                         | 1.102                        | 1.096          | 1.102        | 1.320                          | 1.290          | 1.326        |
| 3MHz QPSK                                                            | 2.695                        | 2.695          | 2.683        | 2.952                          | 2.940          | 2.952        |
| 3MHz 16QAM                                                           | 2.695                        | 2.683          | 2.683        | 2.976                          | 2.952          | 2.952        |
| 5MHz QPSK                                                            | 4.531                        | 4.511          | 4.511        | 5.060                          | 5.040          | 5.060        |
| 5MHz 16QAM                                                           | 4.511                        | 4.531          | 4.531        | 5.020                          | 5.040          | 5.060        |
| 10MHz QPSK                                                           | 8.942                        | 8.942          | 8.942        | 9.800                          | 9.760          | 9.720        |
| 10MHz 16QAM                                                          | 8.942                        | 8.942          | 8.942        | 9.640                          | 9.720          | 9.760        |
| 15MHz QPSK                                                           | 13.473                       | 13.413         | 13.473       | 14.700                         | 14.640         | 14.700       |
| 15MHz 16QAM                                                          | 13.473                       | 13.533         | 13.473       | 14.580                         | 14.640         | 14.580       |
| 20MHz QPSK                                                           | 17.884                       | 17.884         | 18.044       | 19.200                         | 19.360         | 19.520       |
| 20MHz 16QAM                                                          | 17.964                       | 17.884         | 17.964       | 19.440                         | 19.440         | 19.520       |
| Note: The test plots please refer to the Plots of Occupied Bandwidth |                              |                |              |                                |                |              |

**FCC §2.1051, § 27.53:Spurious Emissions at Antenna Terminal**

|                |                                                                                        |
|----------------|----------------------------------------------------------------------------------------|
| <b>Result:</b> | <b>Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.</b> |
|----------------|----------------------------------------------------------------------------------------|

**FCC §2.1051, § 27.53:Out of band emission, Band Edge**

|                |                                                                                 |
|----------------|---------------------------------------------------------------------------------|
| <b>Result:</b> | <b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b> |
|----------------|---------------------------------------------------------------------------------|

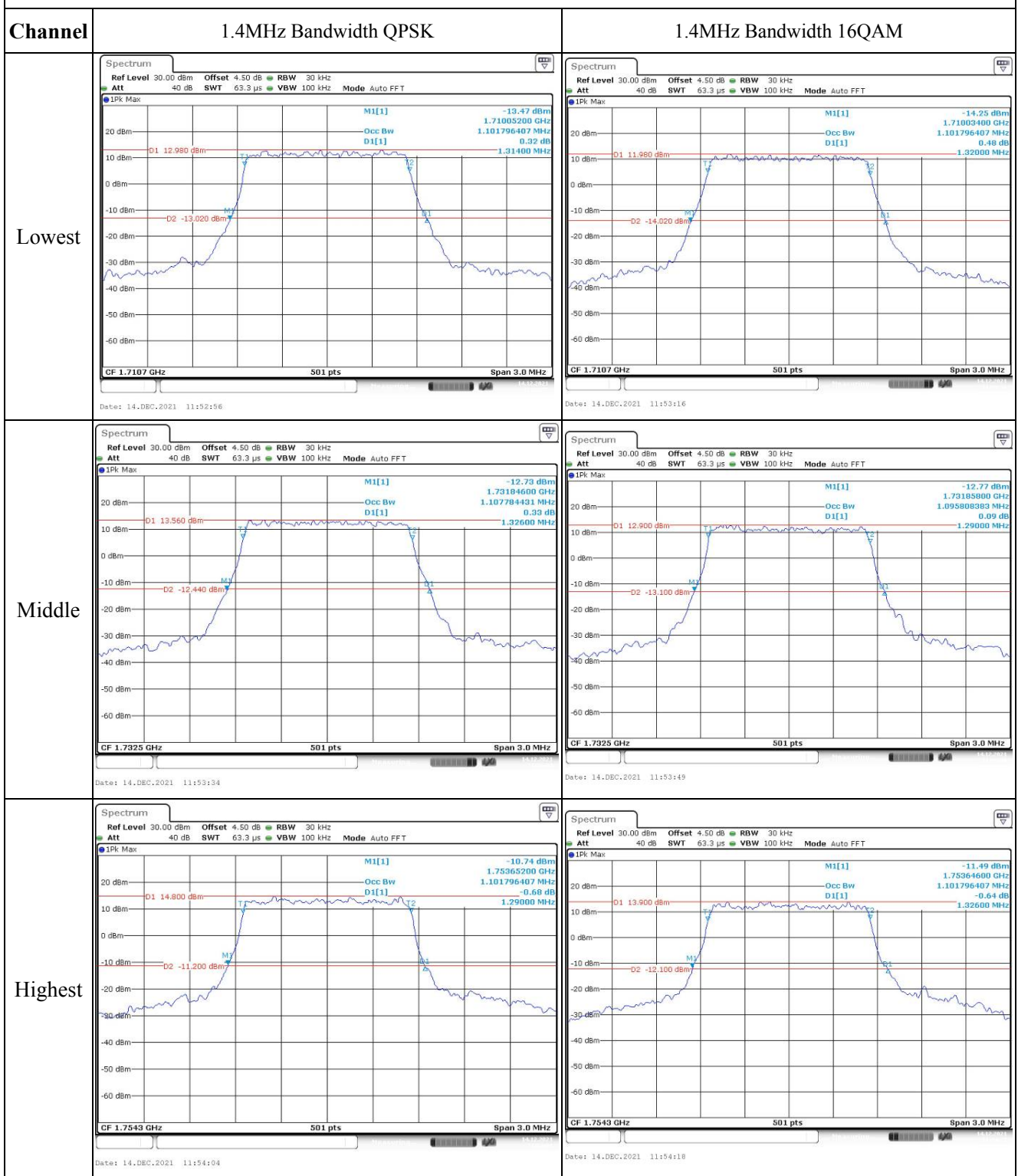
**FCC §2.1055, §27.54: Frequency Stability**

| Test Mode:                          | 20M QPSK         | Test Channel: Lowest for Lower Edge,Highest for Upper Edge |                  |         |                  |       |
|-------------------------------------|------------------|------------------------------------------------------------|------------------|---------|------------------|-------|
| Test Item                           | Temperature (°C) | Voltage (V <sub>DC</sub> )                                 | Lower Edge (MHz) |         | Upper Edge (MHz) |       |
|                                     |                  |                                                            | Result           | Limit   | Result           | Limit |
| Frequency Stability vs. Temperature | -30              | 3.7                                                        | 1710.528         | 1710.00 | 1754.472         | 1755  |
|                                     | -20              | 3.7                                                        | 1710.529         | 1710.00 | 1754.472         | 1755  |
|                                     | -10              | 3.7                                                        | 1710.528         | 1710.00 | 1754.471         | 1755  |
|                                     | 0                | 3.7                                                        | 1710.529         | 1710.00 | 1754.471         | 1755  |
|                                     | 10               | 3.7                                                        | 1710.527         | 1710.00 | 1754.470         | 1755  |
|                                     | 20               | 3.7                                                        | 1710.529         | 1710.00 | 1754.471         | 1755  |
|                                     | 30               | 3.7                                                        | 1710.529         | 1710.00 | 1754.471         | 1755  |
|                                     | 40               | 3.7                                                        | 1710.526         | 1710.00 | 1754.471         | 1755  |
|                                     | 50               | 3.7                                                        | 1710.526         | 1710.00 | 1754.470         | 1755  |
| Frequency Stability vs. Voltage     | 20               | 3.5                                                        | 1710.529         | 1710.00 | 1754.471         | 1755  |
|                                     | 20               | 4.2                                                        | 1710.521         | 1710.00 | 1754.470         | 1755  |
| <b>Result:</b>                      |                  |                                                            |                  |         | <b>Pass</b>      |       |

| Test Mode:                          | 20M 16QAM        | Test Channel: Lowest for Lower Edge,Highest for Upper Edge |                  |         |                  |       |
|-------------------------------------|------------------|------------------------------------------------------------|------------------|---------|------------------|-------|
| Test Item                           | Temperature (°C) | Voltage (V <sub>DC</sub> )                                 | Lower Edge (MHz) |         | Upper Edge (MHz) |       |
|                                     |                  |                                                            | Result           | Limit   | Result           | Limit |
| Frequency Stability vs. Temperature | -30              | 3.7                                                        | 1710.528         | 1710.00 | 1754.472         | 1755  |
|                                     | -20              | 3.7                                                        | 1710.529         | 1710.00 | 1754.472         | 1755  |
|                                     | -10              | 3.7                                                        | 1710.528         | 1710.00 | 1754.471         | 1755  |
|                                     | 0                | 3.7                                                        | 1710.529         | 1710.00 | 1754.471         | 1755  |
|                                     | 10               | 3.7                                                        | 1710.527         | 1710.00 | 1754.470         | 1755  |
|                                     | 20               | 3.7                                                        | 1710.529         | 1710.00 | 1754.471         | 1755  |
|                                     | 30               | 3.7                                                        | 1710.529         | 1710.00 | 1754.471         | 1755  |
|                                     | 40               | 3.7                                                        | 1710.526         | 1710.00 | 1754.471         | 1755  |
|                                     | 50               | 3.7                                                        | 1710.526         | 1710.00 | 1754.470         | 1755  |
| Frequency Stability vs. Voltage     | 20               | 3.5                                                        | 1710.529         | 1710.00 | 1754.471         | 1755  |
|                                     | 20               | 4.2                                                        | 1710.521         | 1710.00 | 1754.470         | 1755  |
| <b>Result:</b>                      |                  |                                                            |                  |         | <b>Pass</b>      |       |

## Test Plots:

## Occupied Bandwidth





## Occupied Bandwidth

