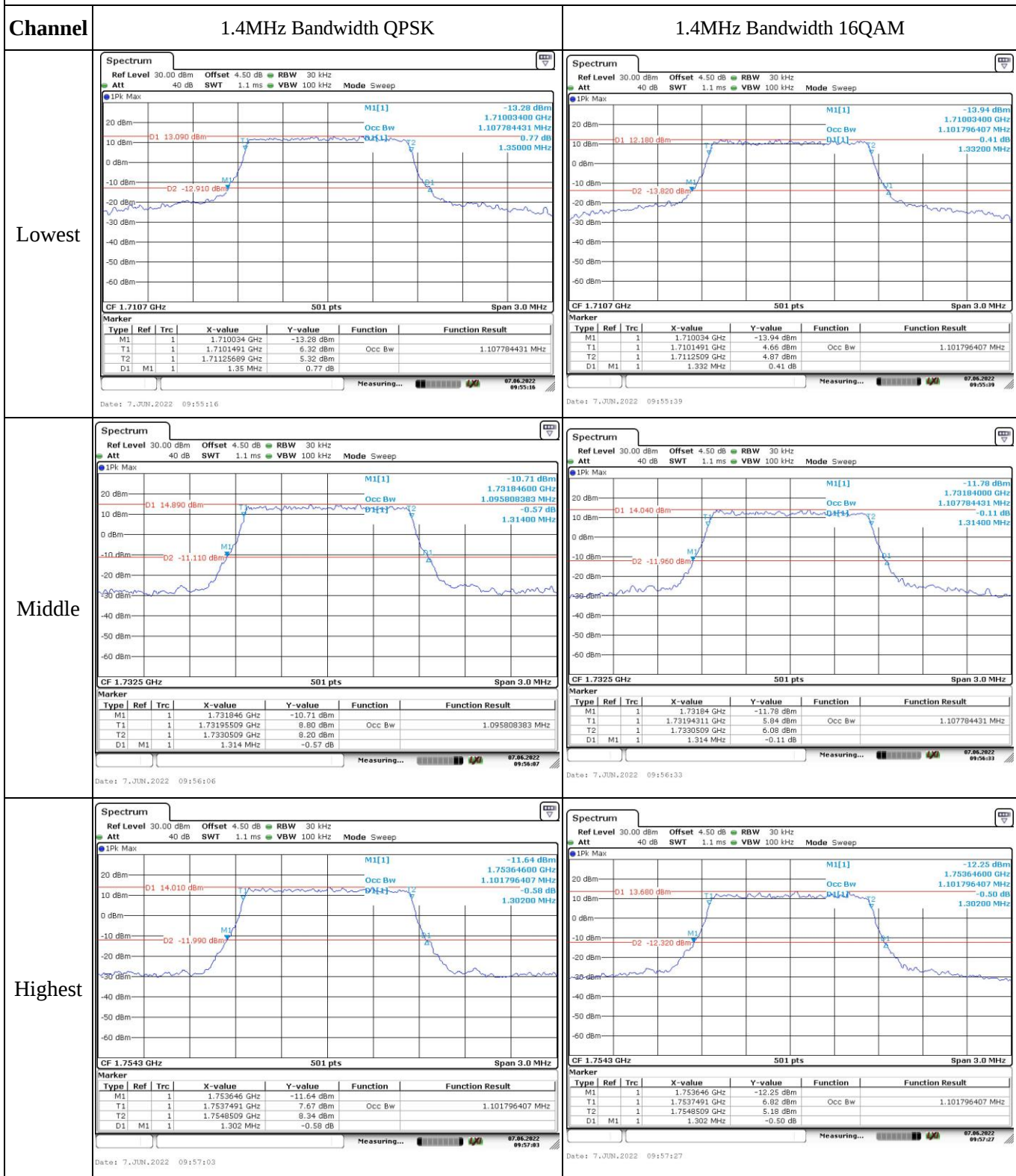
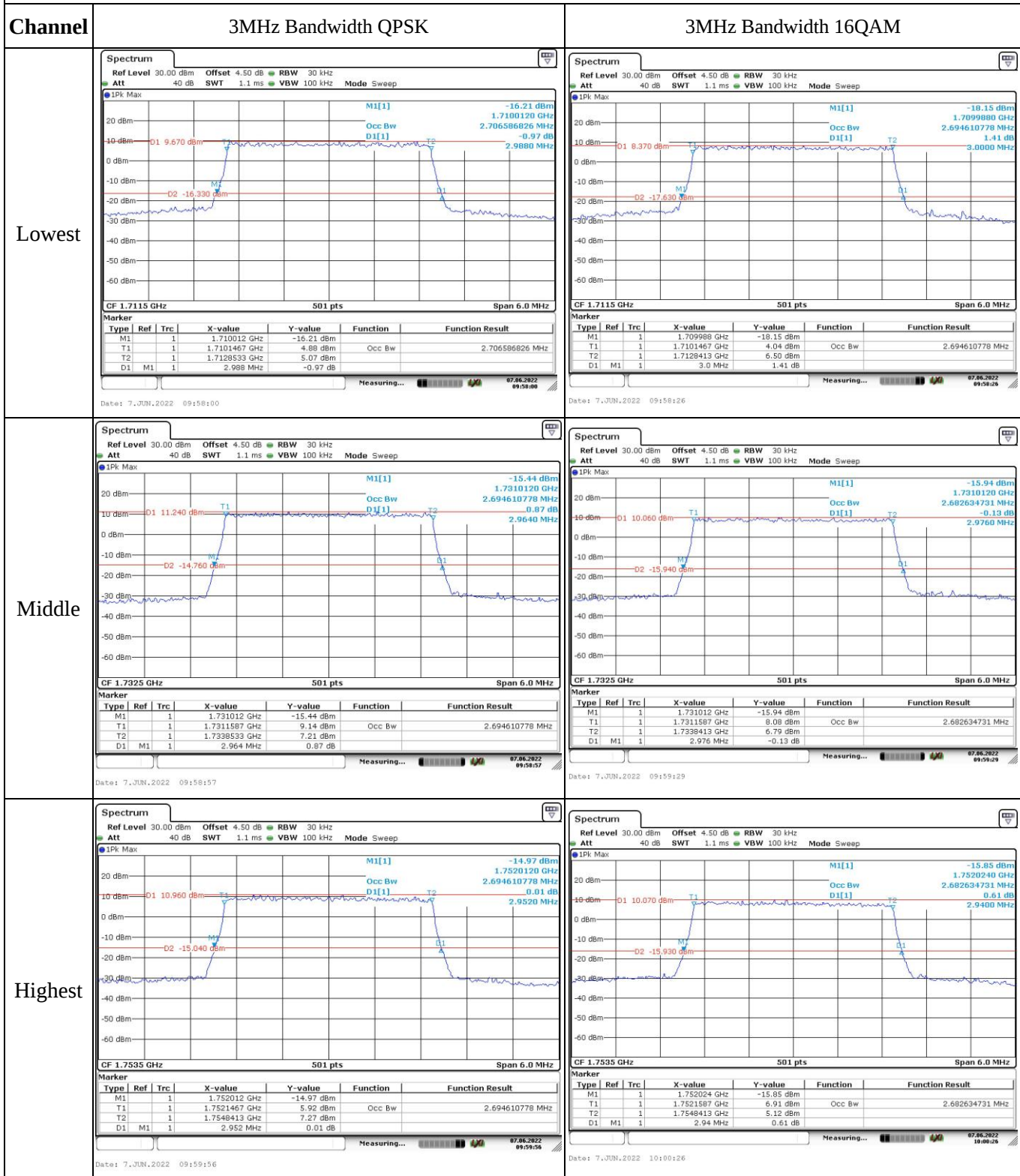


## Test Plots:

## Occupied Bandwidth



## Occupied Bandwidth



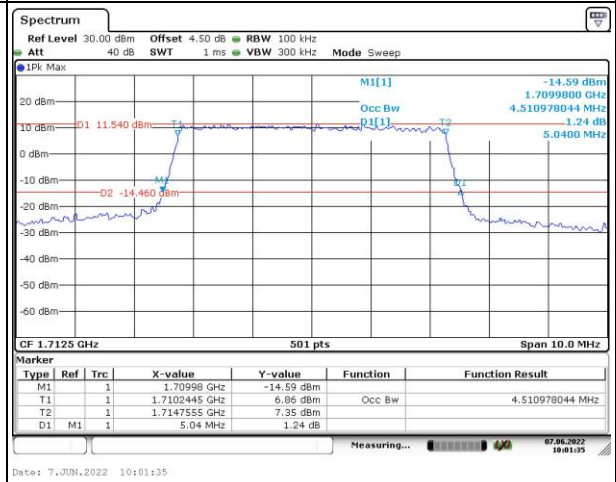
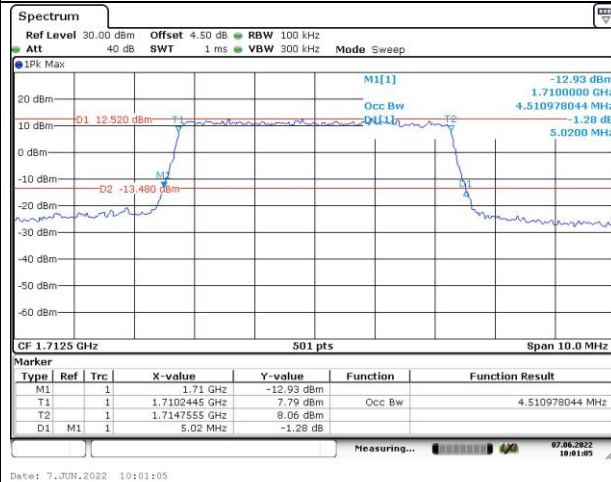
## Occupied Bandwidth

Channel

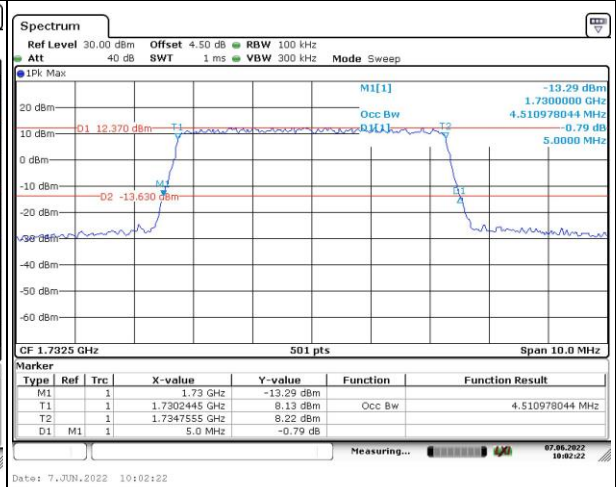
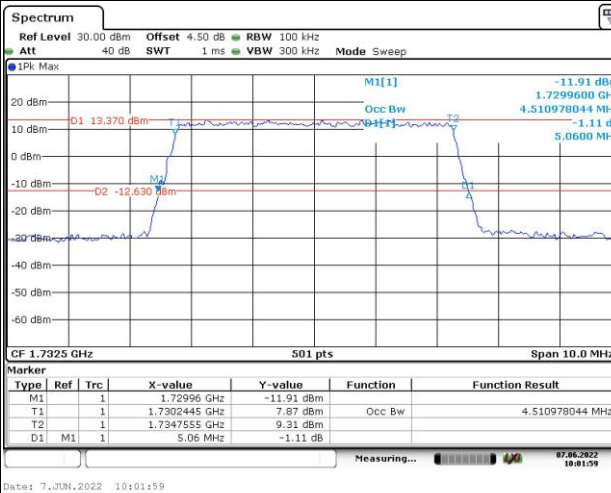
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

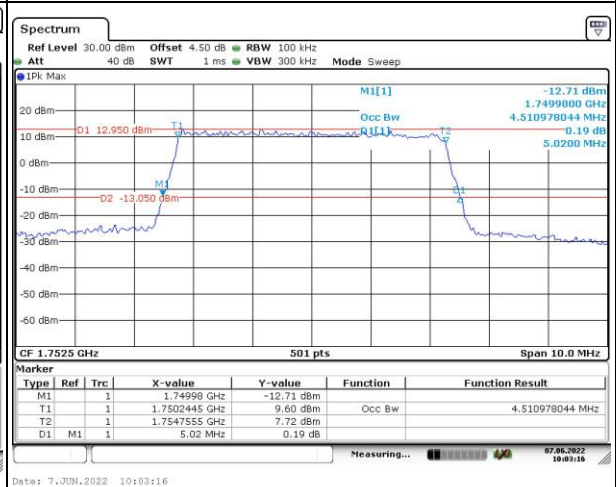
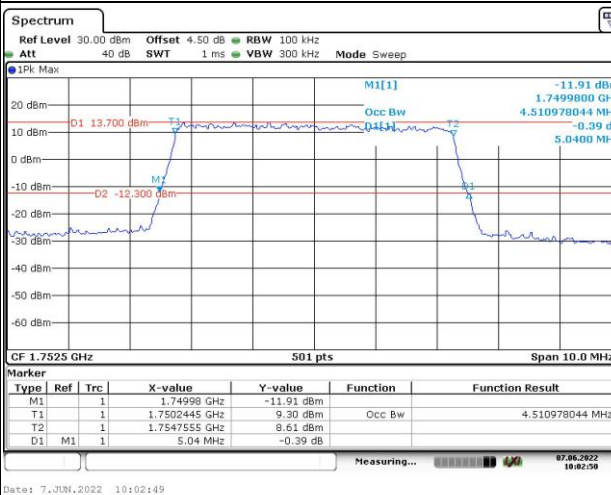
Lowest



Middle



Highest



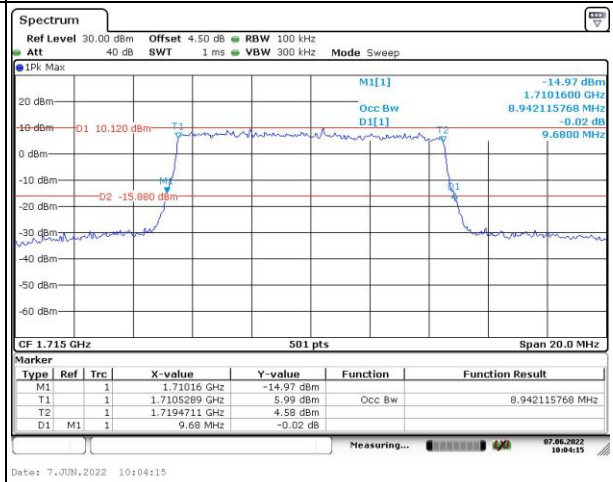
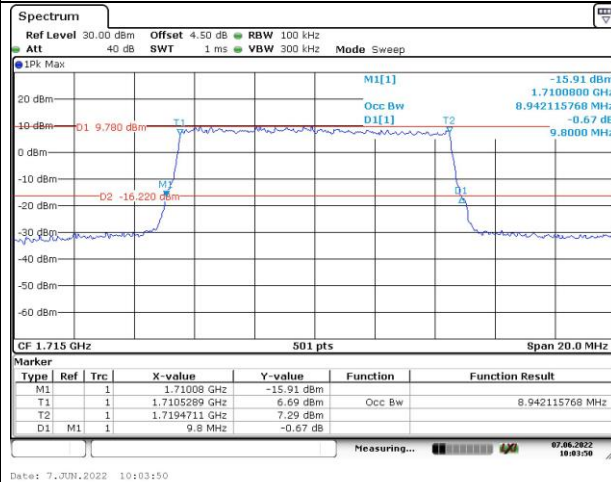
## Occupied Bandwidth

Channel

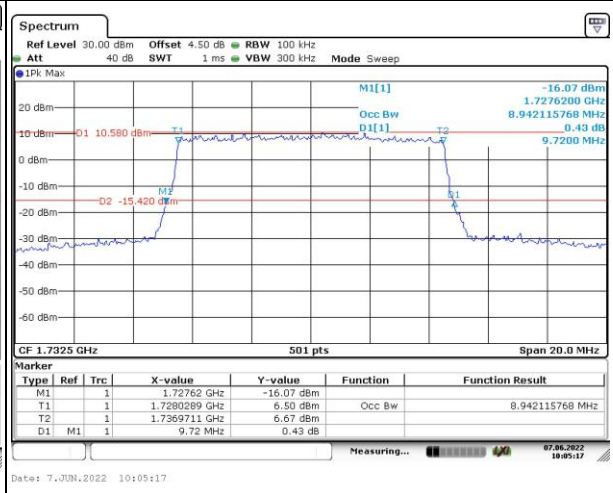
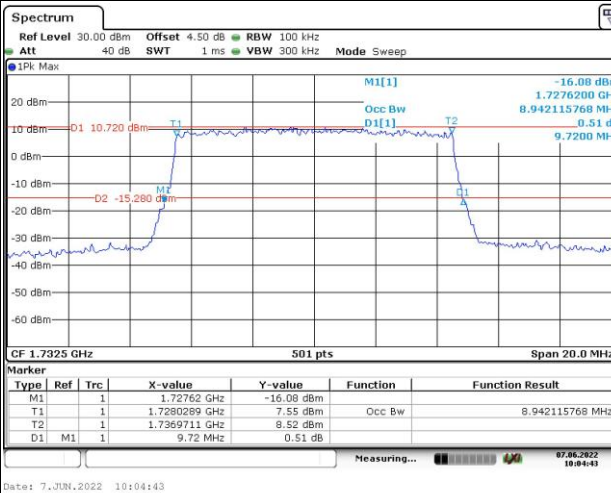
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

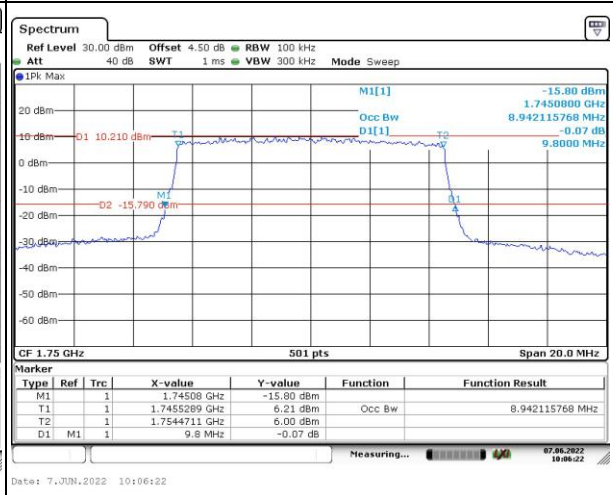
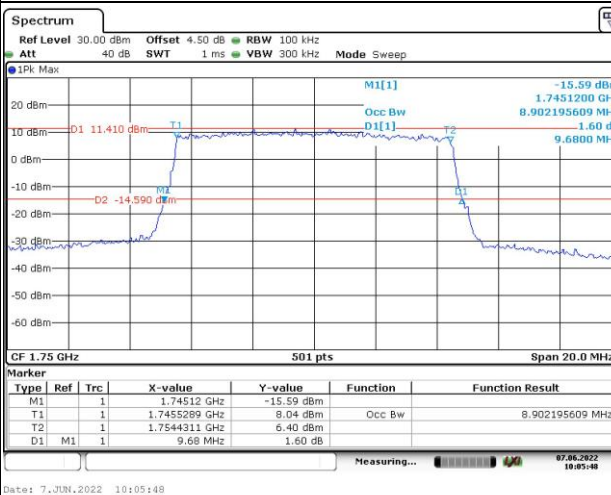
Lowest



Middle



Highest



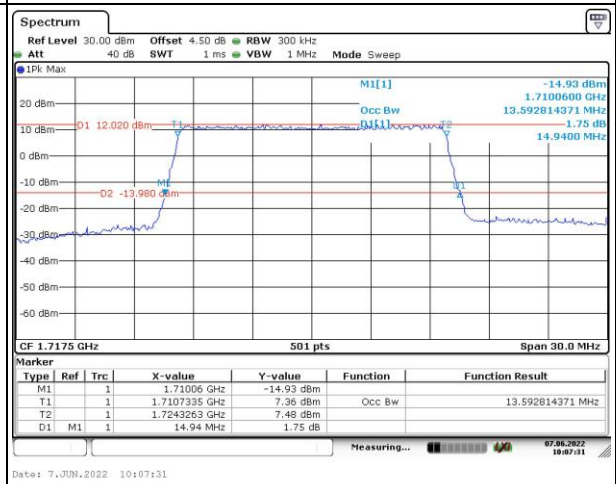
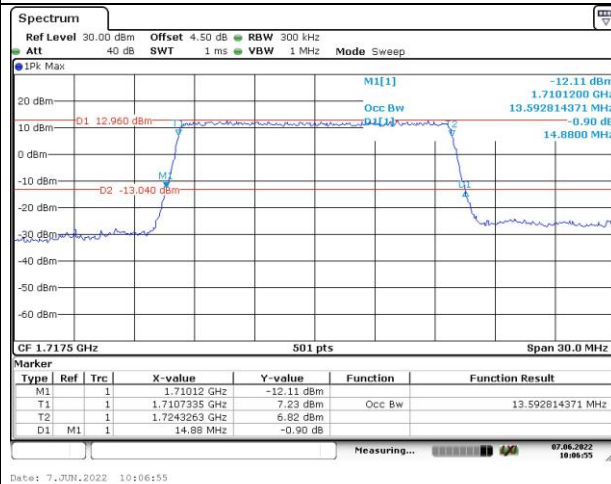
## Occupied Bandwidth

## Channel

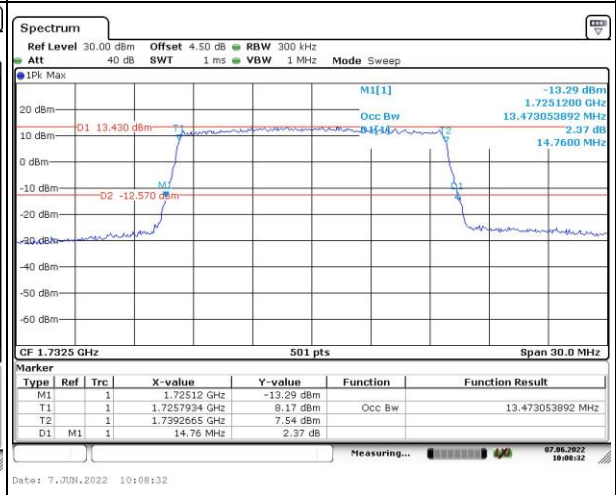
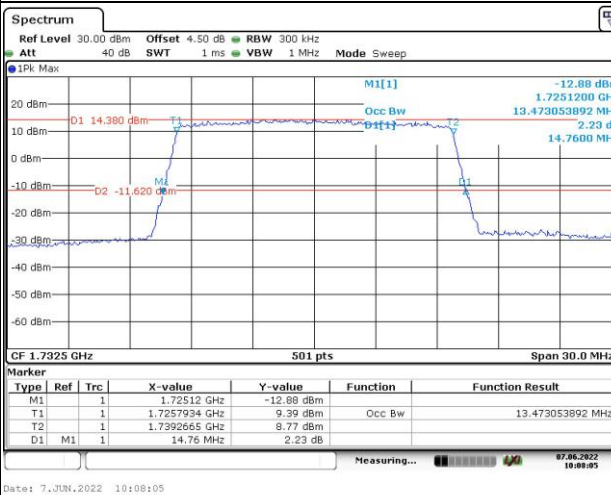
## 15MHz Bandwidth QPSK

## 15MHz Bandwidth 16QAM

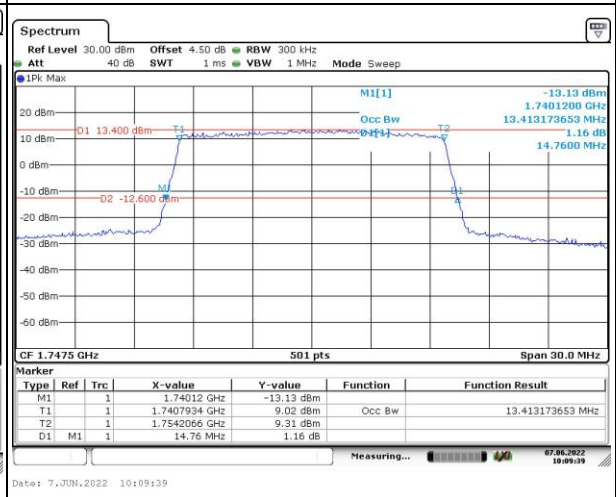
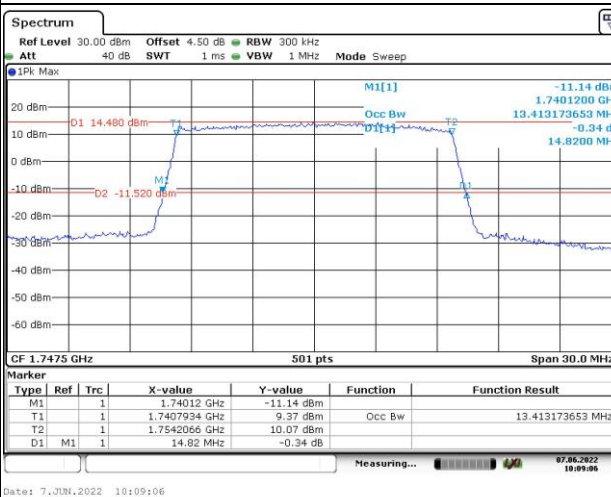
## Lowest



## Middle



## Highest



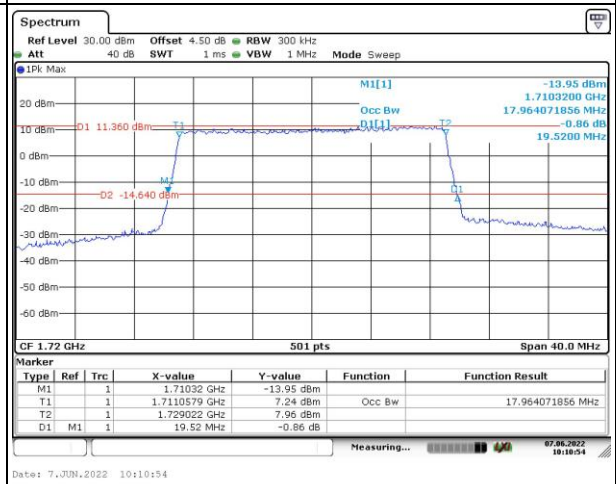
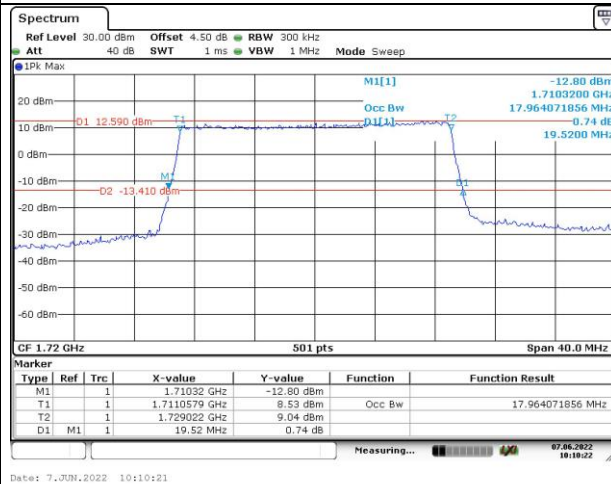
## Occupied Bandwidth

Channel

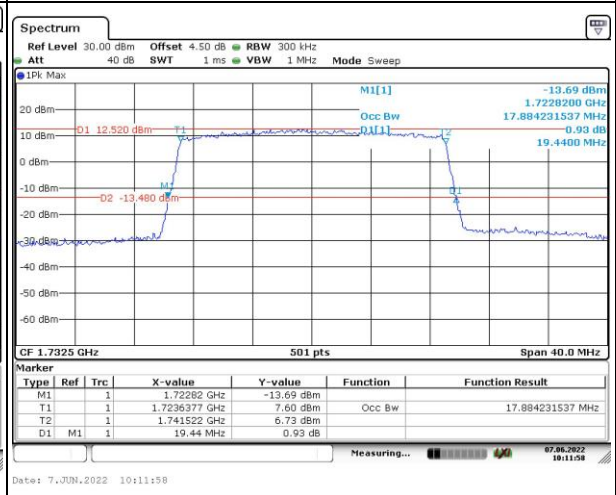
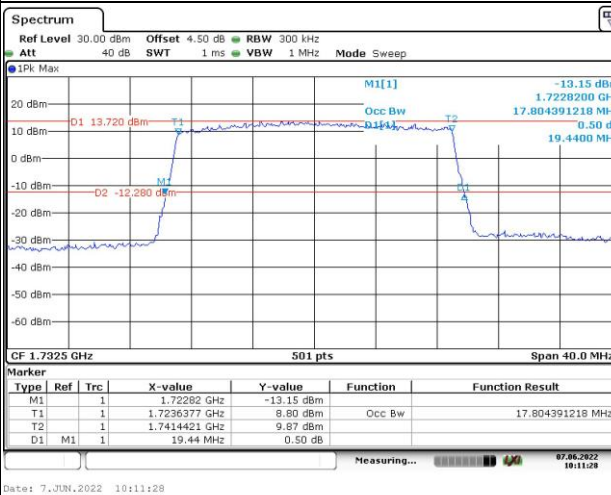
20MHz Bandwidth QPSK

20MHz Bandwidth 16QAM

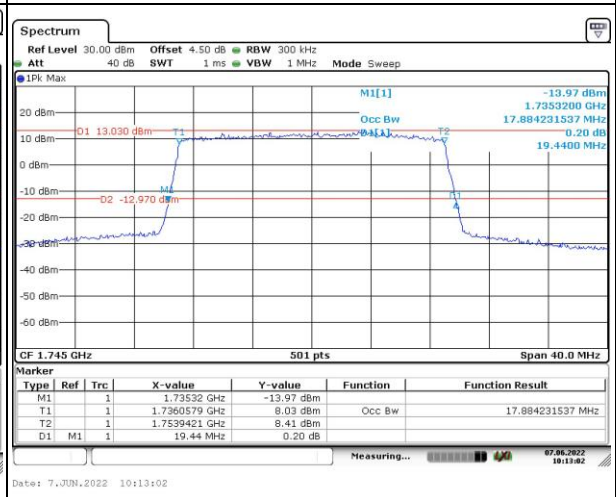
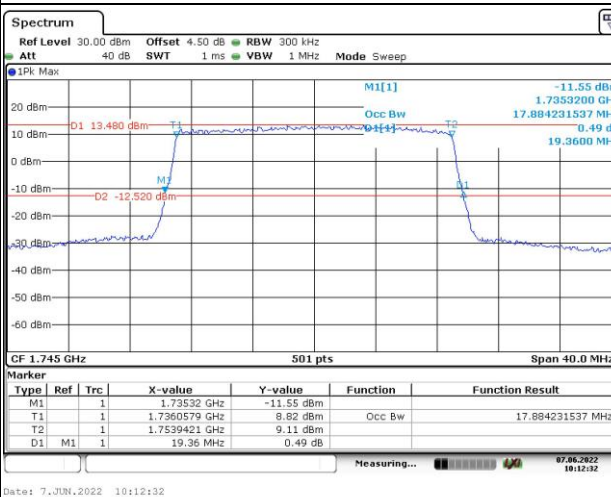
Lowest



Middle



Highest

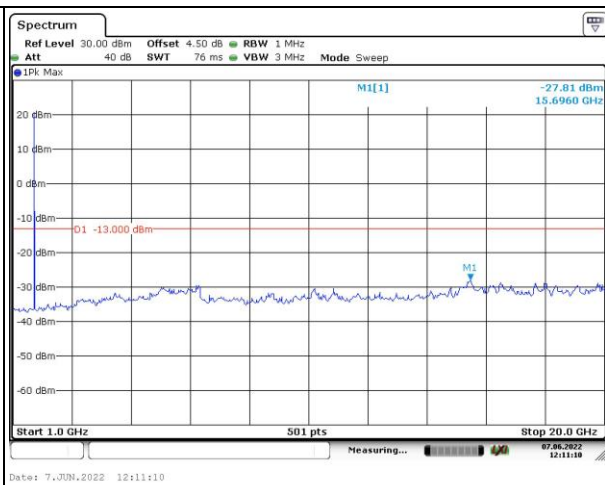
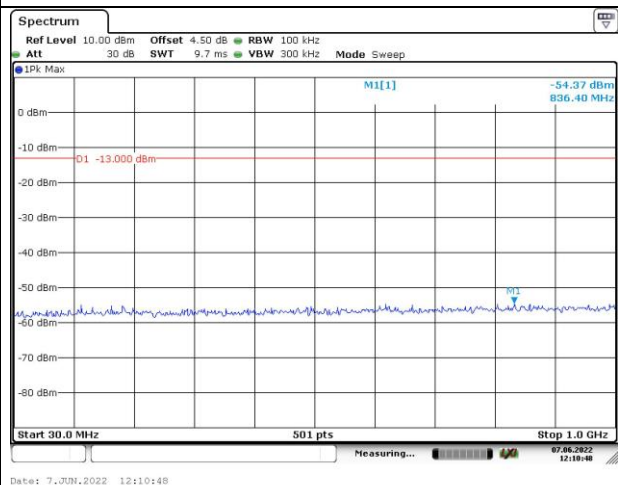


## Spurious Emissions at Antenna Terminal

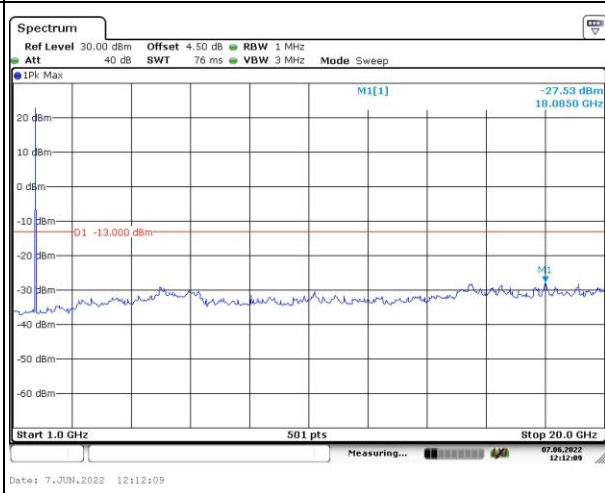
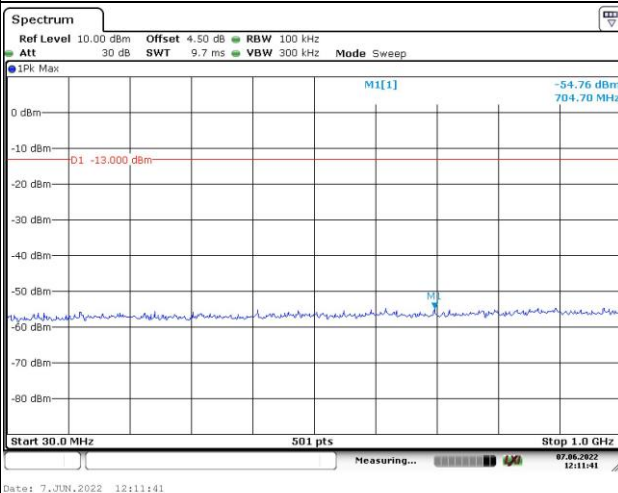
Channel

1.4MHz Bandwidth QPSK

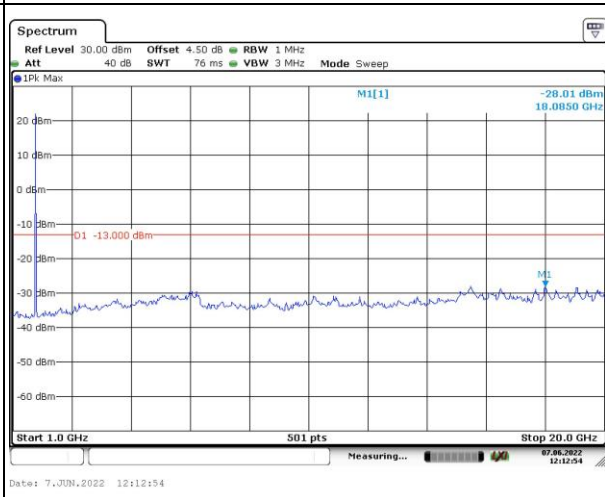
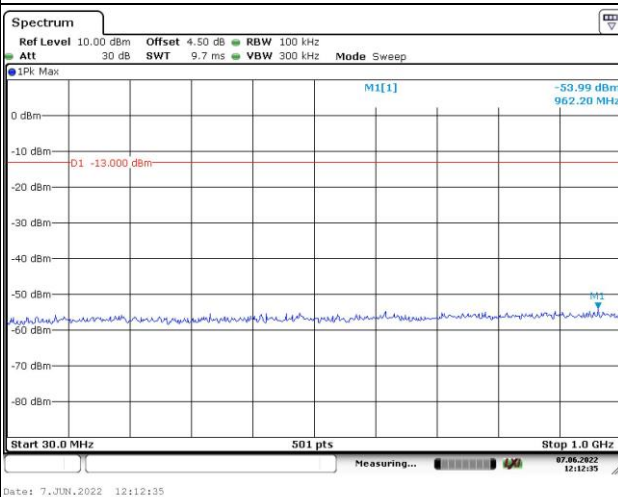
Lowest



Middle



Highest

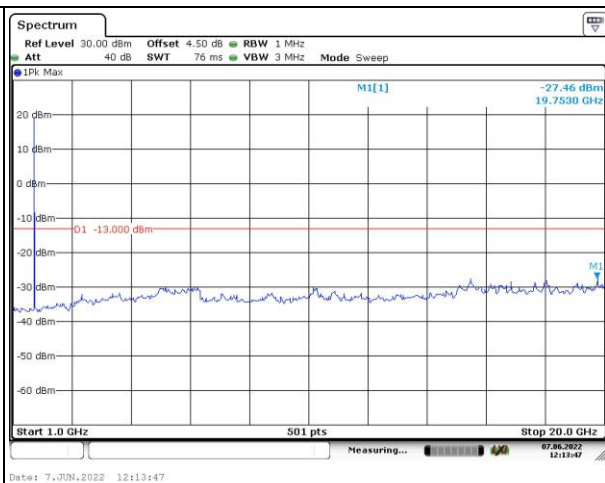
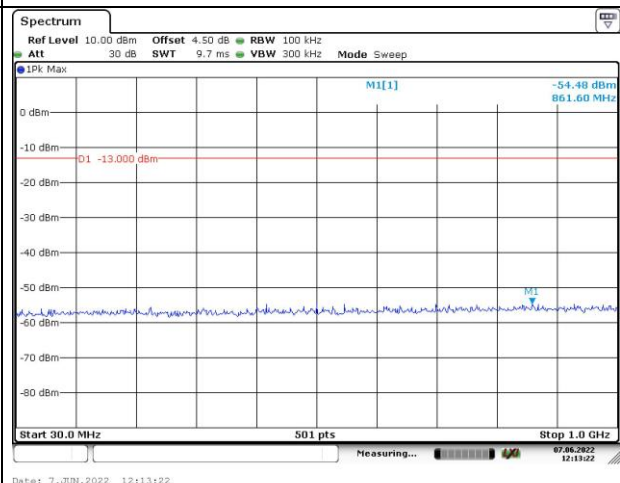


## Spurious Emissions at Antenna Terminal

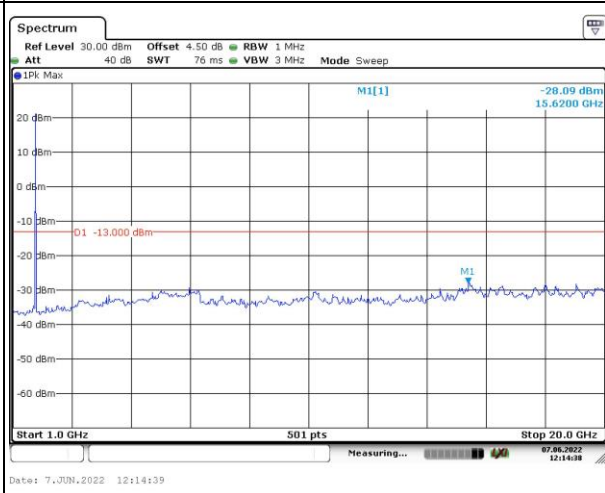
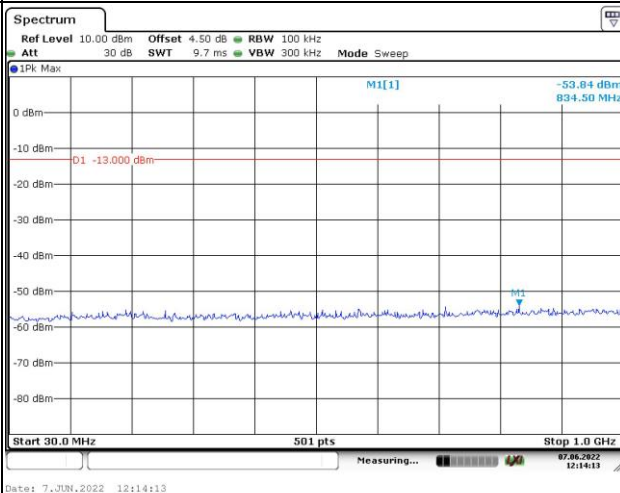
Channel

3MHz Bandwidth QPSK

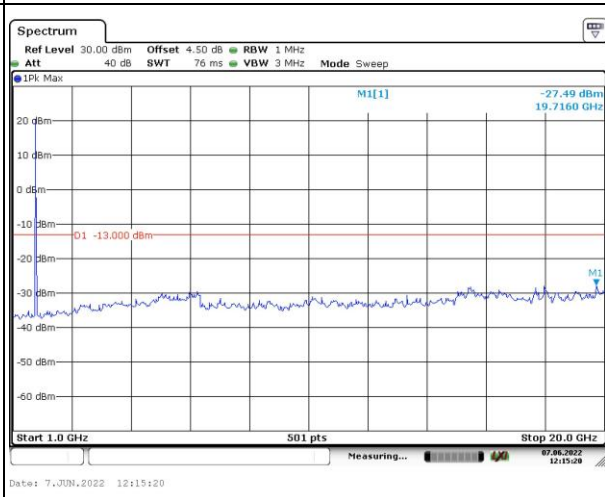
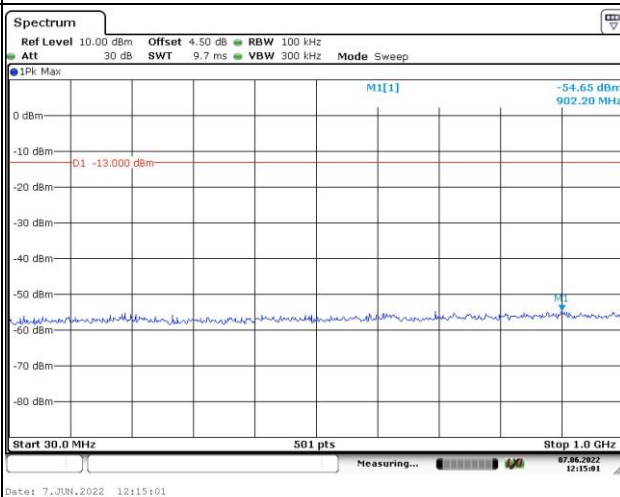
Lowest



Middle



Highest

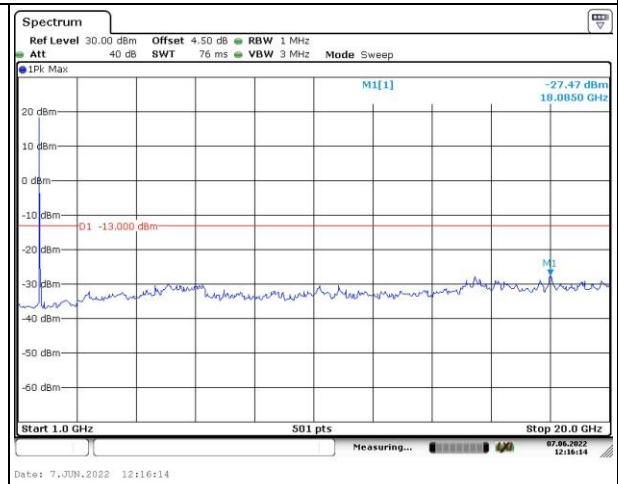
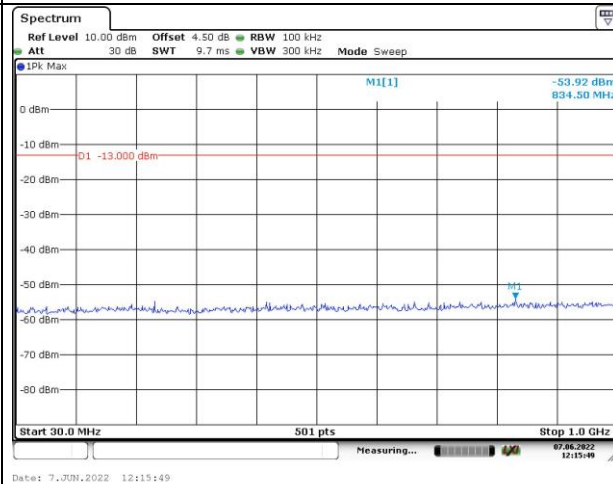


## Spurious Emissions at Antenna Terminal

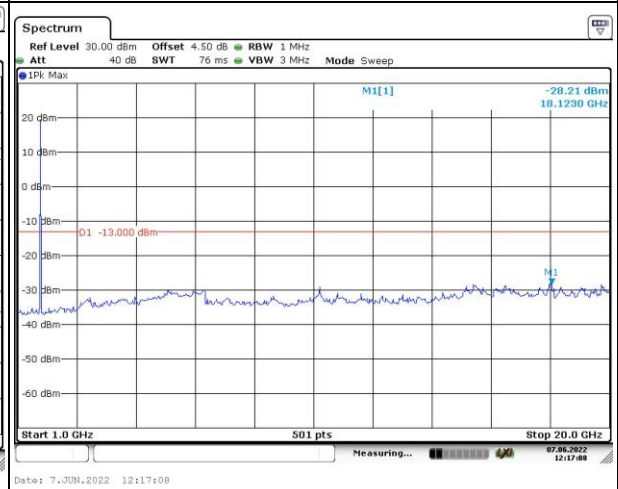
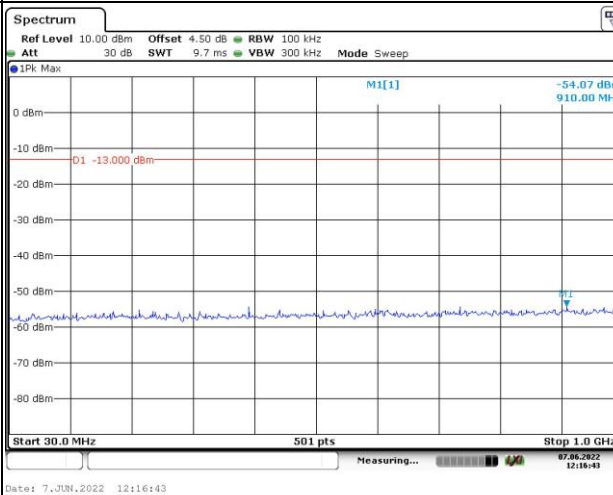
Channel

5MHz Bandwidth QPSK

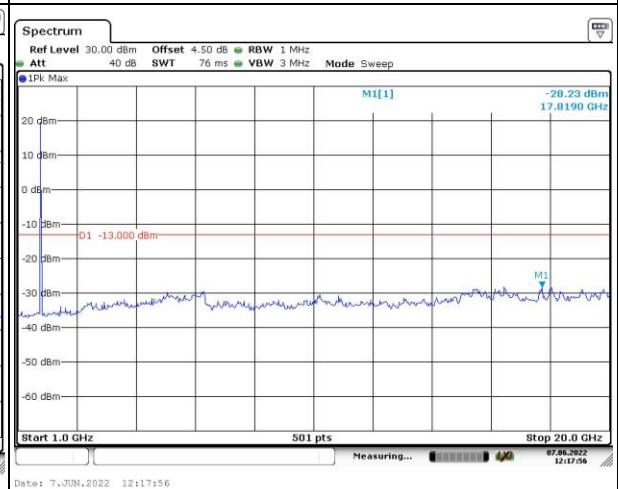
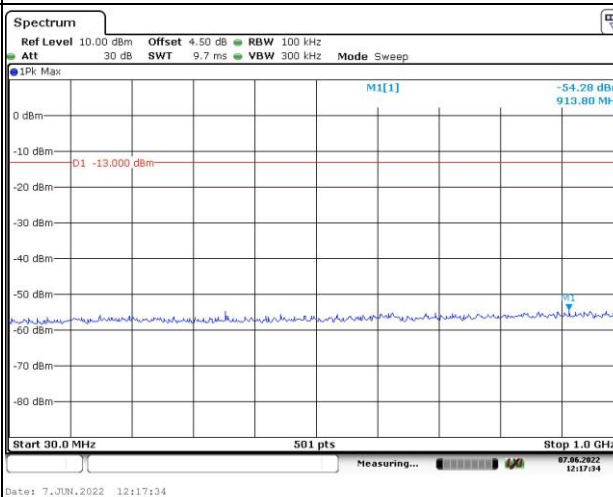
Lowest



Middle



Highest

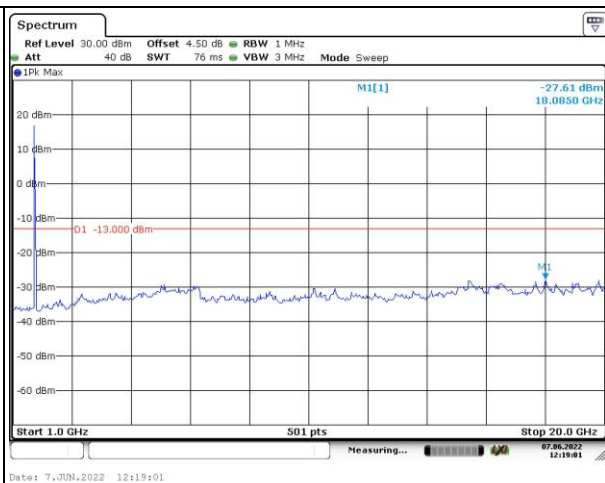
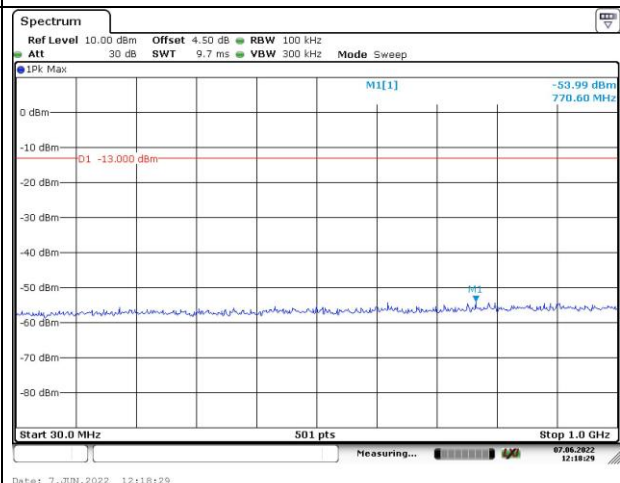


## Spurious Emissions at Antenna Terminal

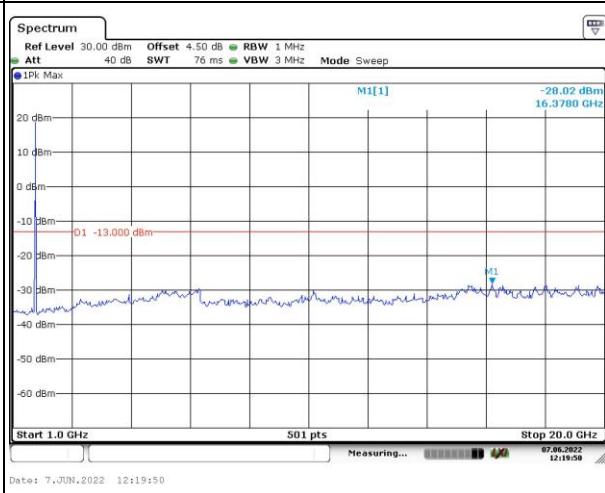
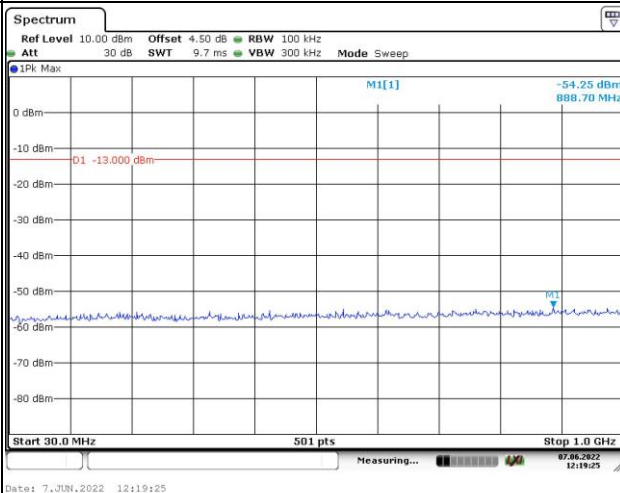
Channel

10MHz Bandwidth QPSK

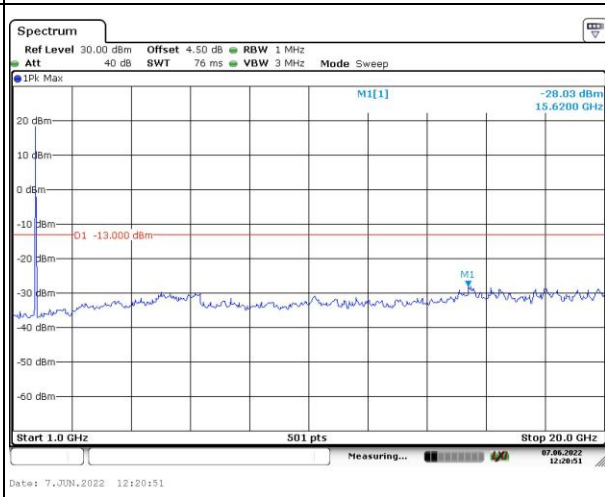
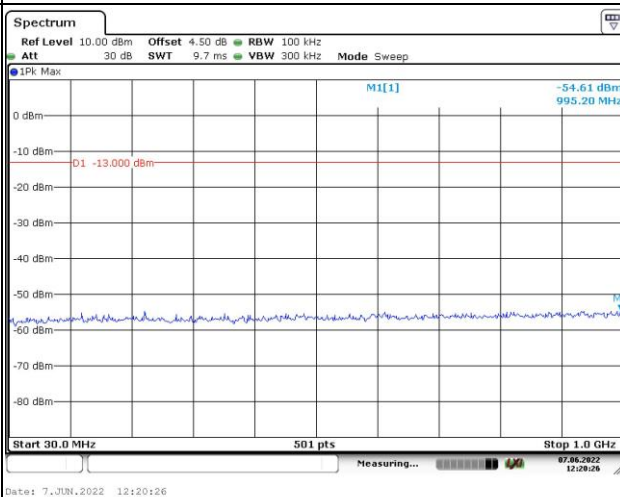
Lowest



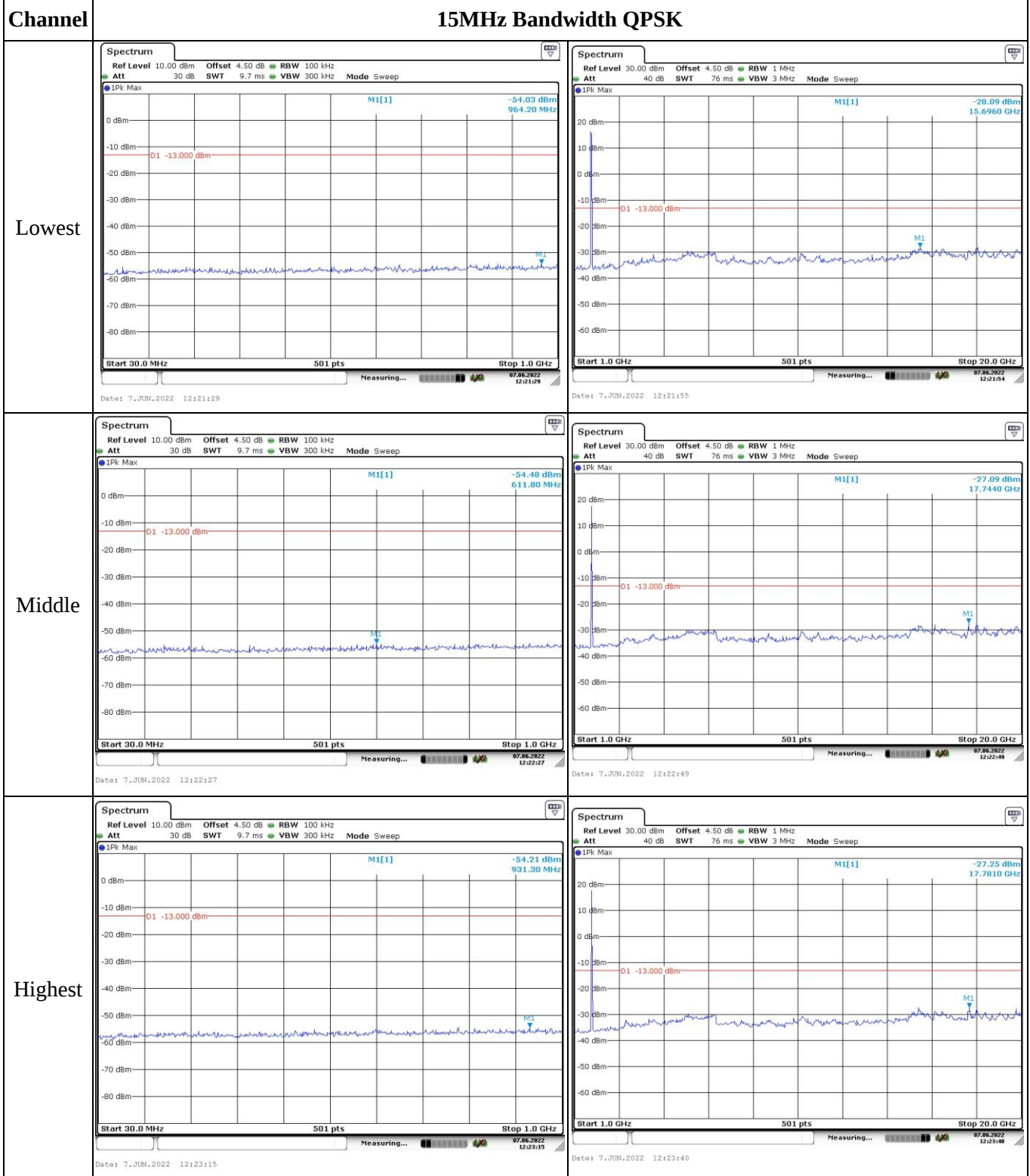
Middle



Highest



## Spurious Emissions at Antenna Terminal

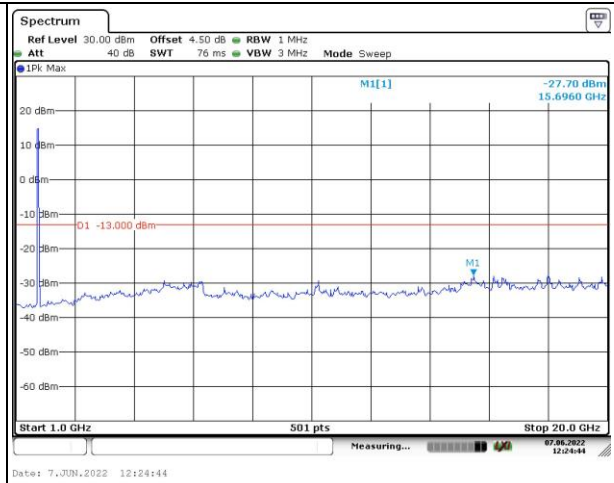
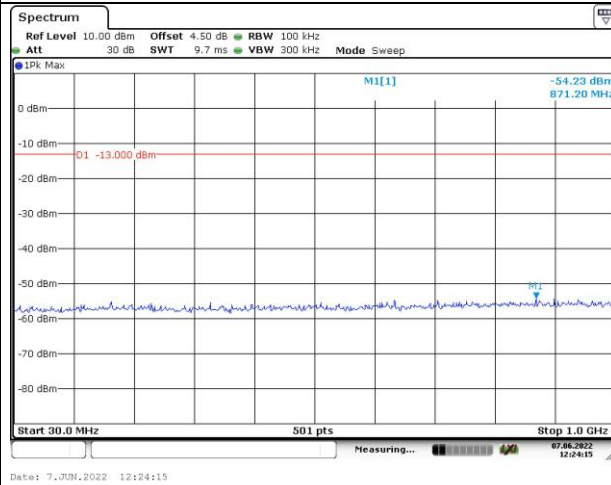


## Spurious Emissions at Antenna Terminal

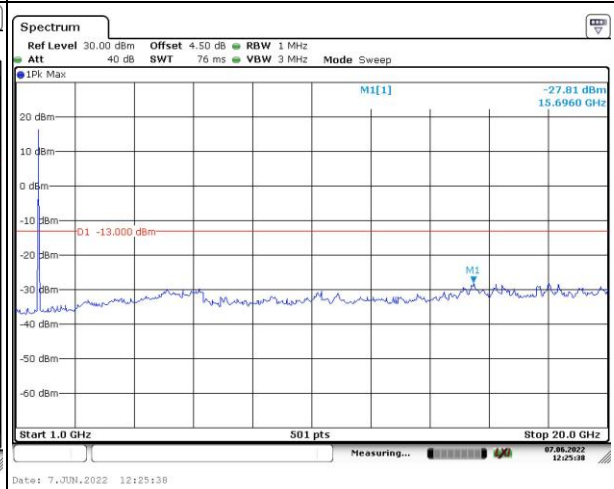
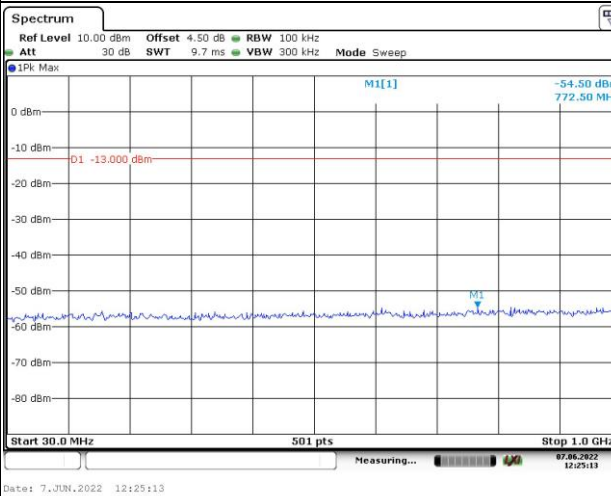
Channel

20MHz Bandwidth QPSK

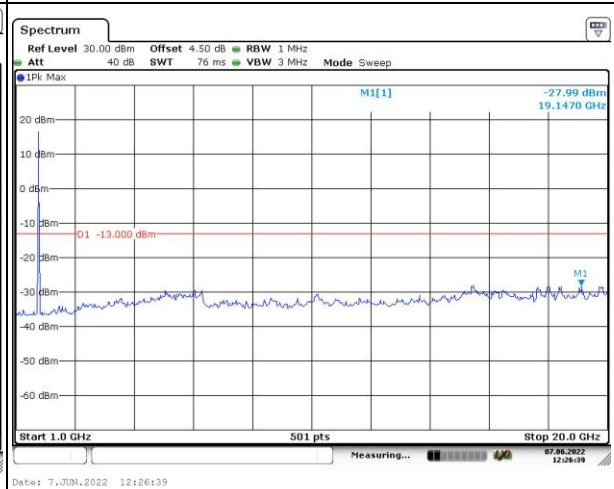
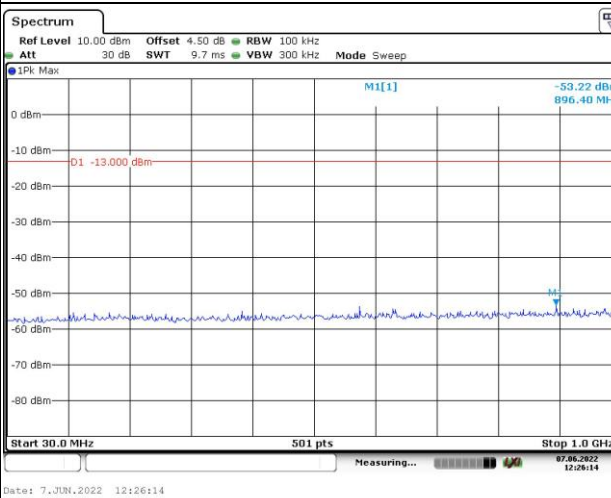
Lowest



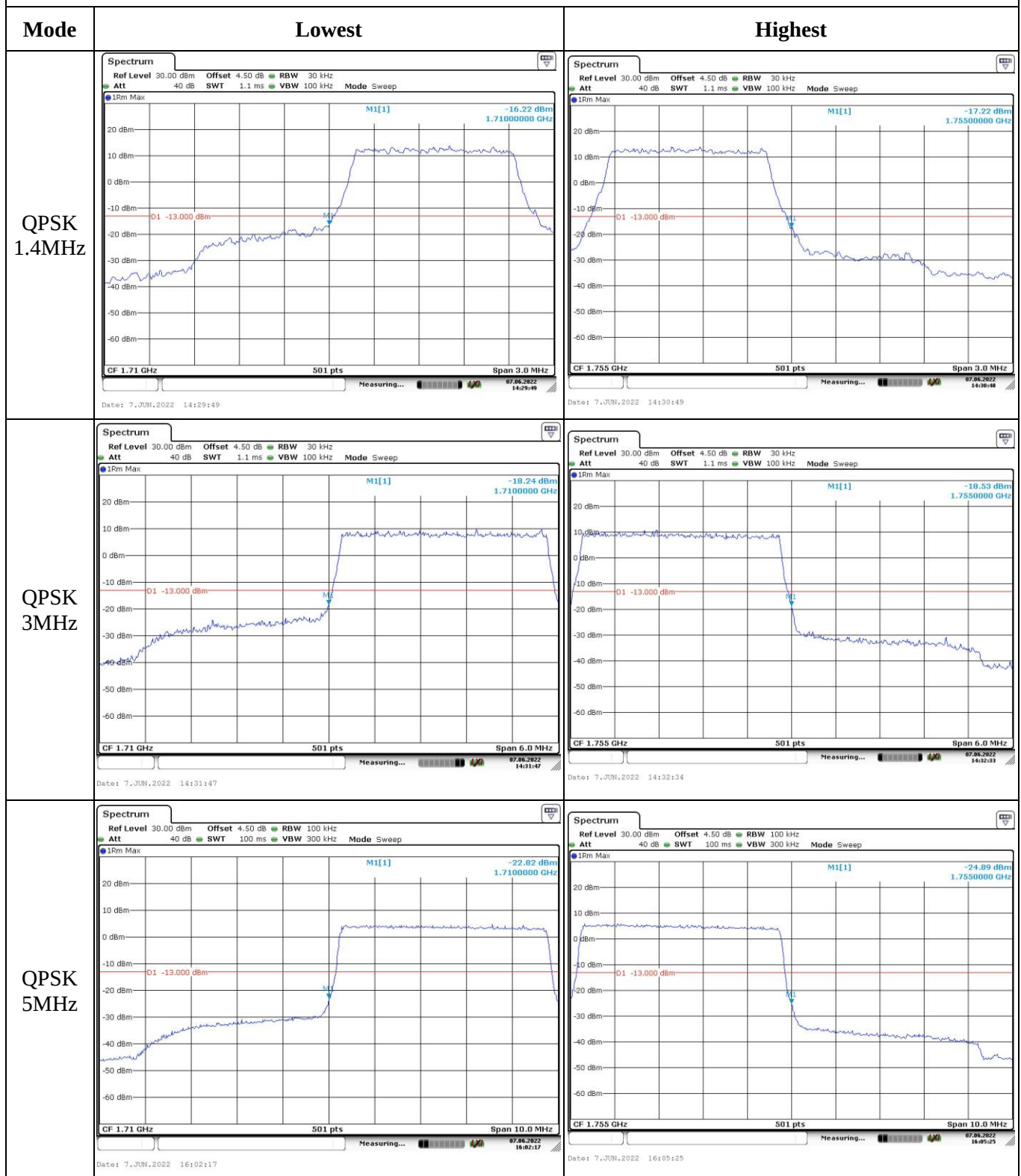
Middle



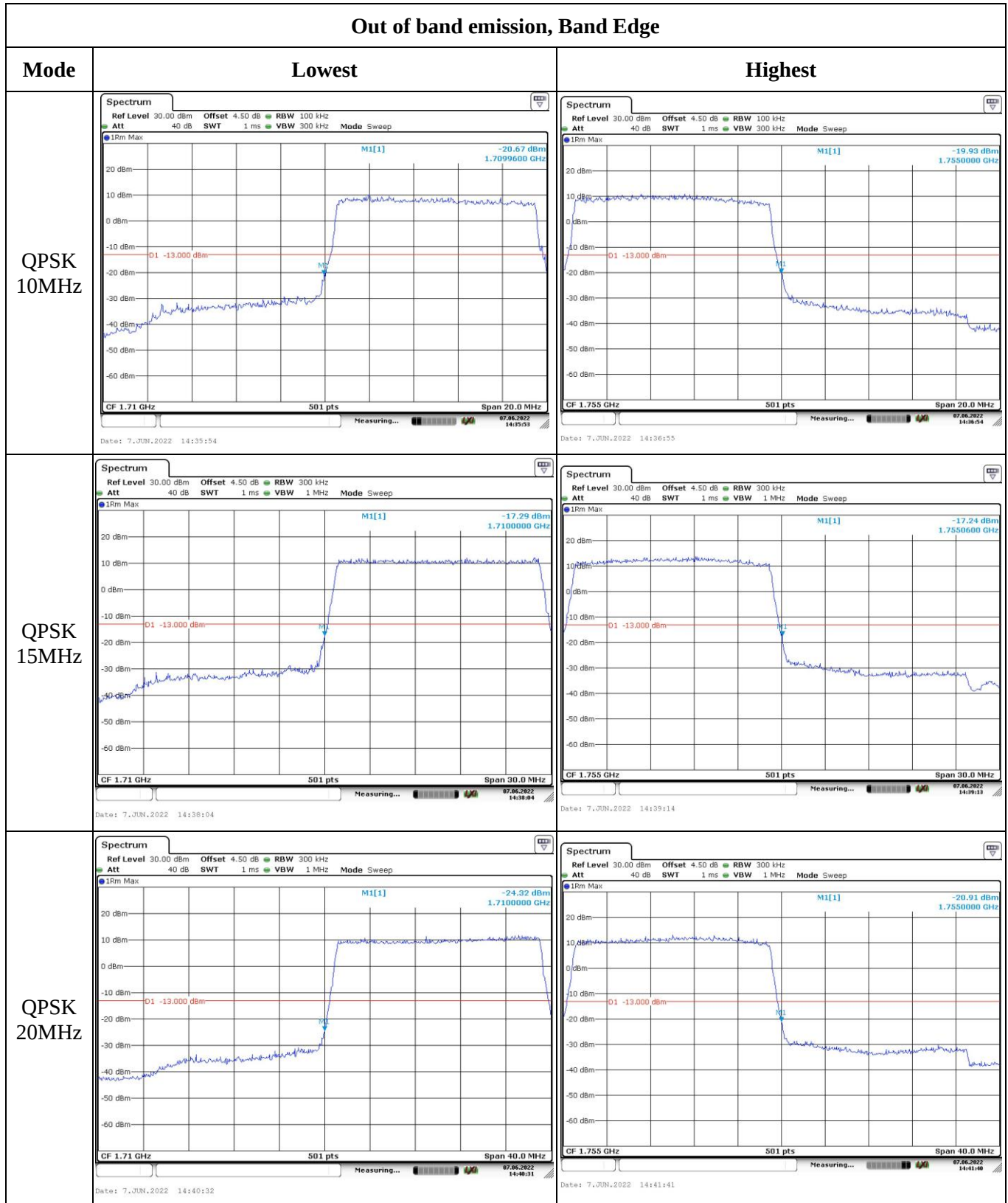
Highest



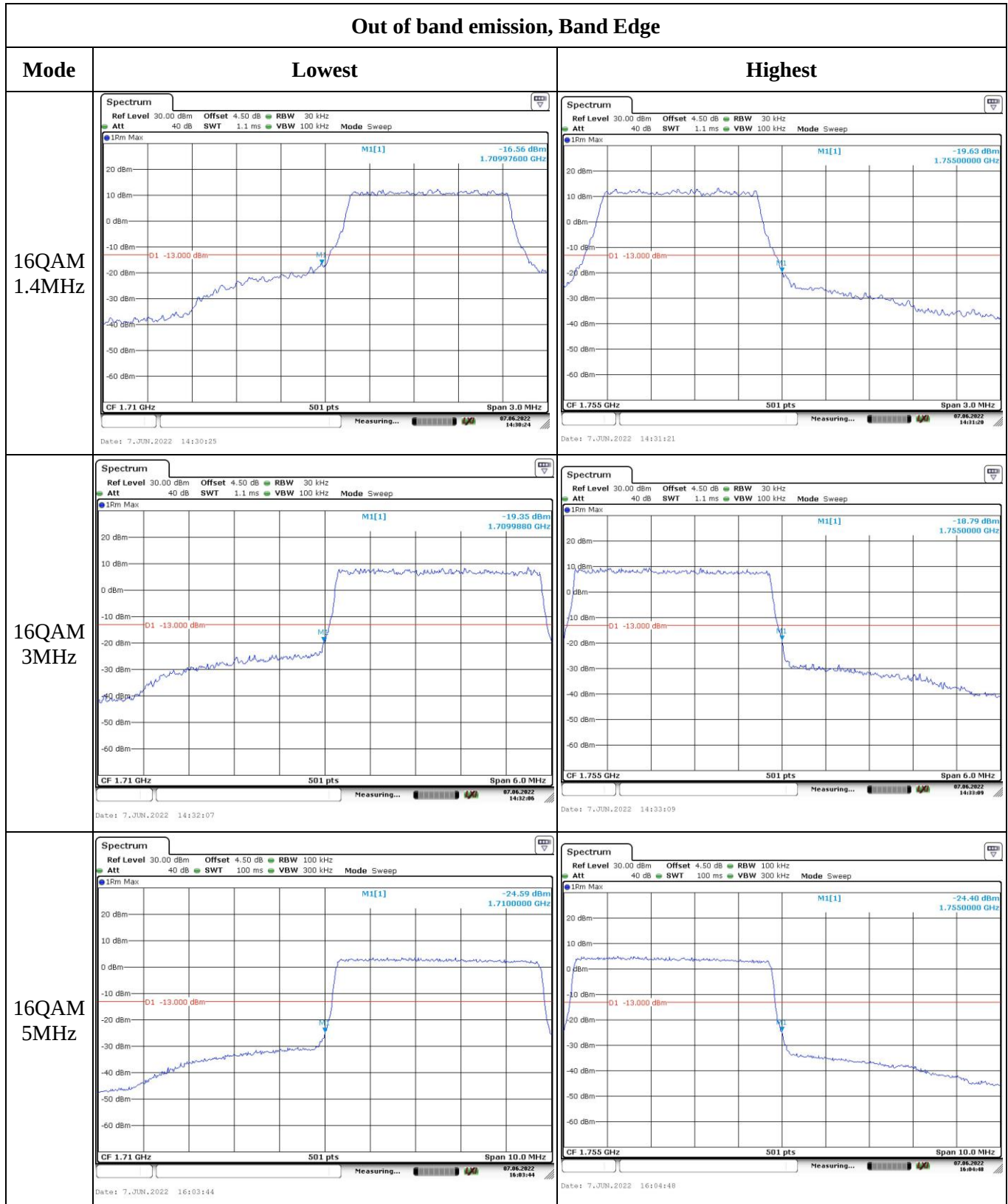
## Out of band emission, Band Edge



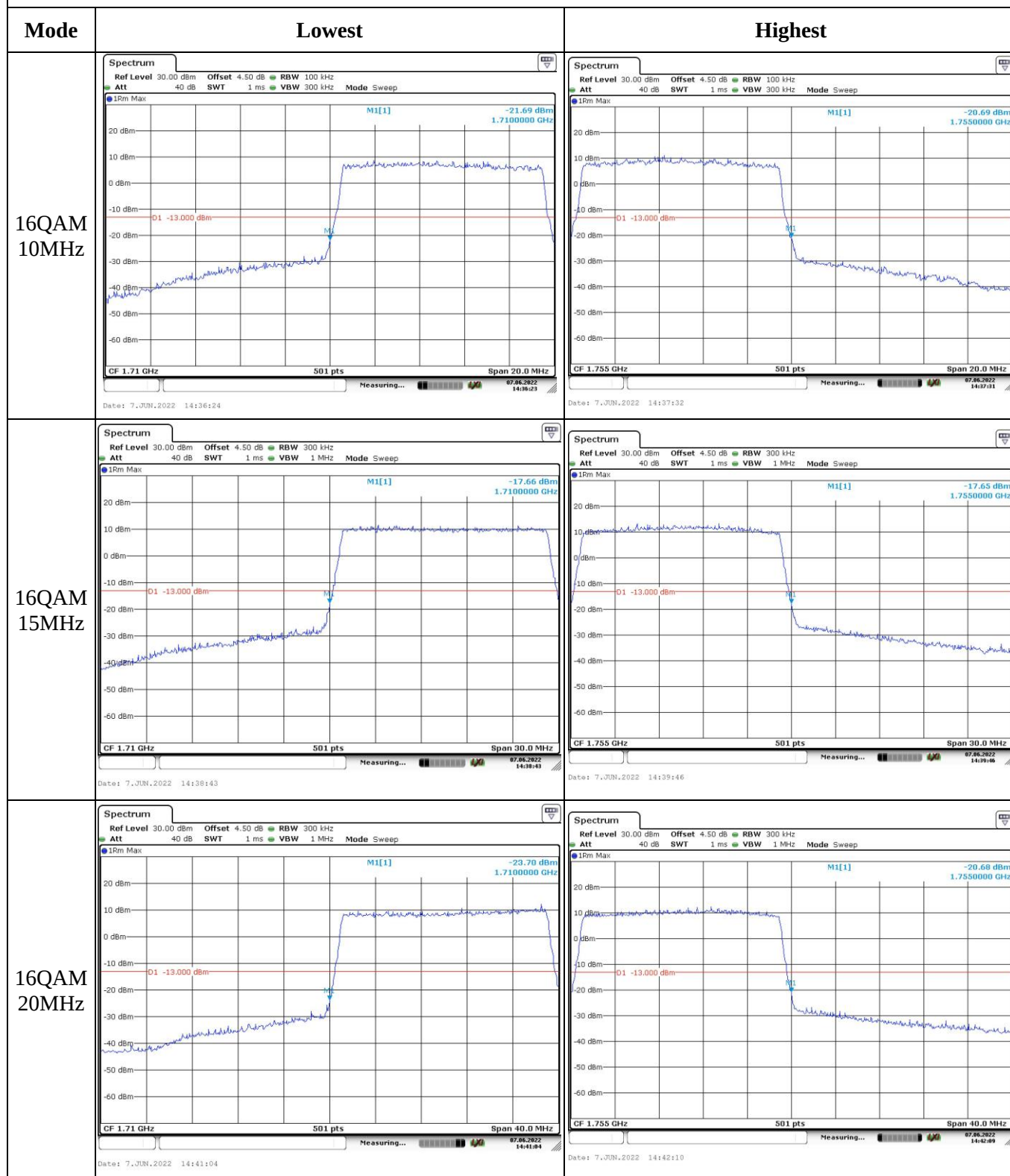
## Out of band emission, Band Edge



## Out of band emission, Band Edge



## Out of band emission, Band Edge



**4.6 Antenna Port Test Data and Results for LTE Band 5:**

|                |                  |              |              |
|----------------|------------------|--------------|--------------|
| Serial Number: | CR22050038-RF-S1 | Test Date:   | 2022-06-07   |
| Test Site:     | RF               | Test Mode:   | Transmitting |
| Tester:        | Ada Yan          | Test Result: | Pass         |

**Environmental Conditions:**

|                      |      |                           |    |                        |       |
|----------------------|------|---------------------------|----|------------------------|-------|
| Temperature:<br>(°C) | 26.8 | Relative Humidity:<br>(%) | 60 | ATM Pressure:<br>(kPa) | 100.3 |
|----------------------|------|---------------------------|----|------------------------|-------|

**Test Equipment List and Details:**

| Manufacturer  | Description                         | Model     | Serial Number | Calibration Date | Calibration Due Date |
|---------------|-------------------------------------|-----------|---------------|------------------|----------------------|
| R&S           | Spectrum Analyzer                   | FSV40     | 101474        | 2021-07-22       | 2022-07-21           |
| zhuoxiang     | Coaxial Cable                       | SMA-178   | 211001        | Each time        | N/A                  |
| Unknown       | RF Cable                            | Unknown   | RF Cable 004  | Each time        | N/A                  |
| Mini-Circuits | DC Block                            | BLK-18-S+ | 1554403       | Each time        | N/A                  |
| Weinschel     | Coaxial Attenuators                 | 53-20-34  | LN751         | Each time        | N/A                  |
| R&S           | Wideband Radio Communication Tester | CMW500    | 144976        | 2021-07-22       | 2022-07-21           |
| BACL          | TEMP&HUMI Test Chamber              | BTH-150   | 30026         | 2021-07-22       | 2022-07-21           |
| UNI-T         | Multimeter                          | UT39A+    | C210582554    | 2021-09-30       | 2022-09-29           |
| Unknown       | Coaxial tee connector               | Unknown   | 2204006       | 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 5▲:**

|                                 |      |                                 |       |                             |     |
|---------------------------------|------|---------------------------------|-------|-----------------------------|-----|
| Antenna Gain<br>$G_T$<br>(dBi): | 1.08 | Antenna Gain<br>$G_T$<br>(dBd): | -1.07 | Path Loss<br>$L_C$<br>(dB): | 0   |
| Operation Voltage( $V_{DC}$ ):  |      |                                 |       |                             |     |
| Lowest:                         | 3.4  | Normal:                         | 3.7   | Highest:                    | 4.2 |

**Test Frequency For Each Mode:**

| Operation Bandwidth | Lowest Frequency (MHz) | Middle Frequency (MHz) | Highest Frequency (MHz) |
|---------------------|------------------------|------------------------|-------------------------|
| 1.4MHz              | 824.7                  | 836.5                  | 848.3                   |
| 3MHz                | 825.5                  | 836.5                  | 847.5                   |
| 5MHz                | 826.5                  | 836.5                  | 846.5                   |
| 10MHz               | 829                    | 836.5                  | 844                     |

**Test Data:****FCC §2.1046; § 22.913 (a)****RF Output Power:**

| Test Bandwidth & Modulation | Resource Block & RB offset | Conducted Average Output Power(dBm) |                |                 | Maximum ERP (dBm) | ERP Limit (dBm) |
|-----------------------------|----------------------------|-------------------------------------|----------------|-----------------|-------------------|-----------------|
|                             |                            | Lowest Channel                      | Middle Channel | Highest Channel |                   |                 |
| 1.4MHz QPSK                 | RB1#0                      | 22.81                               | 22.67          | 22.64           | 21.85             | 38.45           |
|                             | RB1#3                      | 22.92                               | 22.91          | 22.79           |                   |                 |
|                             | RB1#5                      | 22.71                               | 22.82          | 22.77           |                   |                 |
|                             | RB3#0                      | 22.66                               | 22.73          | 22.75           |                   |                 |
|                             | RB3#3                      | 22.64                               | 22.74          | 22.79           |                   |                 |
|                             | RB6#0                      | 21.73                               | 21.79          | 21.79           |                   |                 |
| 1.4MHz 16QAM                | RB1#0                      | 21.96                               | 21.7           | 21.72           | 20.97             | 38.45           |
|                             | RB1#3                      | 22.04                               | 21.87          | 21.74           |                   |                 |
|                             | RB1#5                      | 21.77                               | 21.82          | 21.73           |                   |                 |
|                             | RB3#0                      | 21.65                               | 21.75          | 21.79           |                   |                 |
|                             | RB3#3                      | 21.72                               | 21.78          | 21.68           |                   |                 |
|                             | RB6#0                      | 20.74                               | 20.73          | 20.73           |                   |                 |
| 3MHz QPSK                   | RB1#0                      | 22.78                               | 22.75          | 22.87           | 21.86             | 38.45           |
|                             | RB1#8                      | 22.68                               | 22.65          | 22.91           |                   |                 |
|                             | RB1#14                     | 22.66                               | 22.72          | 22.93           |                   |                 |
|                             | RB6#0                      | 21.78                               | 21.91          | 21.79           |                   |                 |
|                             | RB6#9                      | 21.67                               | 21.77          | 21.83           |                   |                 |
|                             | RB15#0                     | 21.68                               | 21.91          | 21.82           |                   |                 |
| 3MHz 16QAM                  | RB1#0                      | 21.8                                | 21.77          | 21.83           | 20.8              | 38.45           |
|                             | RB1#8                      | 21.56                               | 21.59          | 21.78           |                   |                 |
|                             | RB1#14                     | 21.59                               | 21.7           | 21.87           |                   |                 |
|                             | RB6#0                      | 20.68                               | 20.88          | 20.8            |                   |                 |
|                             | RB6#9                      | 20.67                               | 20.72          | 20.74           |                   |                 |
|                             | RB15#0                     | 20.65                               | 20.87          | 20.79           |                   |                 |
| 5MHz QPSK                   | RB1#0                      | 22.75                               | 22.59          | 22.57           | 21.76             | 38.45           |
|                             | RB1#13                     | 22.65                               | 22.7           | 22.83           |                   |                 |
|                             | RB1#24                     | 22.73                               | 22.59          | 22.74           |                   |                 |
|                             | RB15#0                     | 21.7                                | 21.82          | 21.87           |                   |                 |
|                             | RB15#10                    | 21.71                               | 21.78          | 21.8            |                   |                 |
|                             | RB25#0                     | 21.77                               | 21.92          | 21.8            |                   |                 |
| 5MHz 16QAM                  | RB1#0                      | 21.8                                | 21.59          | 21.73           | 20.93             | 38.45           |
|                             | RB1#13                     | 21.69                               | 21.77          | 22              |                   |                 |
|                             | RB1#24                     | 21.78                               | 21.75          | 21.81           |                   |                 |
|                             | RB15#0                     | 20.59                               | 20.84          | 20.79           |                   |                 |
|                             | RB15#10                    | 20.71                               | 20.72          | 20.79           |                   |                 |
|                             | RB25#0                     | 20.72                               | 20.82          | 20.73           |                   |                 |
| 10MHz QPSK                  | RB1#0                      | 22.73                               | 22.71          | 22.86           | 21.88             | 38.45           |
|                             | RB1#25                     | 22.95                               | 22.78          | 22.87           |                   |                 |
|                             | RB1#49                     | 22.84                               | 22.69          | 22.91           |                   |                 |

|                                                                                |         |       |       |       |         |       |
|--------------------------------------------------------------------------------|---------|-------|-------|-------|---------|-------|
|                                                                                | RB25#0  | 21.81 | 21.92 | 21.88 |         |       |
|                                                                                | RB25#25 | 21.83 | 21.85 | 21.79 |         |       |
|                                                                                | RB50#0  | 21.83 | 21.93 | 21.88 |         |       |
| 10MHz 16QAM                                                                    | RB1#0   | 21.54 | 21.61 | 21.91 | 20.86   | 38.45 |
|                                                                                | RB1#25  | 21.71 | 21.81 | 21.93 |         |       |
|                                                                                | RB1#49  | 21.73 | 21.68 | 21.83 |         |       |
|                                                                                | RB25#0  | 20.71 | 20.83 | 20.82 |         |       |
|                                                                                | RB25#25 | 20.79 | 20.83 | 20.82 |         |       |
|                                                                                | RB50#0  | 20.79 | 20.83 | 20.8  |         |       |
| Note:<br>ERP=Conducted Power(dBm) - L <sub>C</sub> (dB) + G <sub>T</sub> (dBd) |         |       |       |       |         |       |
|                                                                                |         |       |       |       | Result: | Pass  |

**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 |             |
| 10MHz QPSK                  | RB1#0                      | 4.58                      | 4.67           | 4.26            | 13          |
|                             | RB50#0                     | 4.9                       | 4.96           | 4.61            | 13          |
| 10MHz 16QAM                 | RB1#0                      | 5.57                      | 5.71           | 5.39            | 13          |
|                             | RB50#0                     | 5.86                      | 6.03           | 5.45            | 13          |
| <b>Result:</b>              |                            |                           |                |                 | <b>Pass</b> |

**FCC §2.1049, §22.905: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                        | 1.102          | 1.102        | 1.32                           | 1.308          | 1.32         |
| 1.4MHz 16QAM   | 1.102                        | 1.096          | 1.108        | 1.314                          | 1.314          | 1.308        |
| 3MHz QPSK      | 2.683                        | 2.695          | 2.695        | 2.964                          | 2.952          | 2.952        |
| 3MHz 16QAM     | 2.683                        | 2.695          | 2.683        | 2.964                          | 2.952          | 2.952        |
| 5MHz QPSK      | 4.511                        | 4.531          | 4.551        | 5.04                           | 5.06           | 5.08         |
| 5MHz 16QAM     | 4.531                        | 4.511          | 4.531        | 5.04                           | 5.04           | 5.06         |
| 10MHz QPSK     | 8.942                        | 8.942          | 8.942        | 9.72                           | 9.76           | 9.84         |
| 10MHz 16QAM    | 8.942                        | 8.942          | 8.981        | 9.72                           | 9.72           | 9.76         |

Note: The test plots please refer to the Plots of Occupied Bandwidth

**FCC §2.1051, §22.917(a):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, §22.917(a):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, §22.355: Frequency Stability |                  |                            |                 |                |             |
|-------------------------------------------|------------------|----------------------------|-----------------|----------------|-------------|
| Test Mode:                                | 10 MHz QPSK      |                            | Test Channel:   | 836.5          | MHz         |
| Test Item                                 | Temperature (°C) | Voltage (V <sub>DC</sub> ) | Frequency Error |                | Limit       |
|                                           |                  |                            | (Hz)            | (ppm)          | (ppm)       |
| Frequency Stability vs. Temperature       | -30              | 3.7                        | 1               | 0.001          | 2.5         |
|                                           | -20              | 3.7                        | -7              | -0.008         | 2.5         |
|                                           | -10              | 3.7                        | 9               | 0.011          | 2.5         |
|                                           | 0                | 3.7                        | 6               | 0.007          | 2.5         |
|                                           | 10               | 3.7                        | -5              | -0.006         | 2.5         |
|                                           | 20               | 3.7                        | 0               | 0.000          | 2.5         |
|                                           | 30               | 3.7                        | 6               | 0.007          | 2.5         |
|                                           | 40               | 3.7                        | 5               | 0.006          | 2.5         |
|                                           | 50               | 3.7                        | -6              | -0.007         | 2.5         |
| Frequency Stability vs. Voltage           | 20               | 3.4                        | 8               | 0.010          | 2.5         |
|                                           | 20               | 4.2                        | -8              | -0.010         | 2.5         |
|                                           |                  |                            |                 | <b>Result:</b> | <b>Pass</b> |

| Test Mode:                          | 10 MHz 16QAM     |                            | Test Channel:   | 836.5          | MHz         |
|-------------------------------------|------------------|----------------------------|-----------------|----------------|-------------|
| Test Item                           | Temperature (°C) | Voltage (V <sub>DC</sub> ) | Frequency Error |                | Limit       |
|                                     |                  |                            | (Hz)            | (ppm)          | (ppm)       |
| Frequency Stability vs. Temperature | -30              | 3.7                        | 1               | 0.001          | 2.5         |
|                                     | -20              | 3.7                        | -9              | -0.011         | 2.5         |
|                                     | -10              | 3.7                        | 8               | 0.010          | 2.5         |
|                                     | 0                | 3.7                        | -5              | -0.006         | 2.5         |
|                                     | 10               | 3.7                        | -9              | -0.011         | 2.5         |
|                                     | 20               | 3.7                        | 1               | 0.001          | 2.5         |
|                                     | 30               | 3.7                        | -8              | -0.010         | 2.5         |
|                                     | 40               | 3.7                        | -9              | -0.011         | 2.5         |
|                                     | 50               | 3.7                        | 5               | 0.006          | 2.5         |
| Frequency Stability vs. Voltage     | 20               | 3.4                        | -6              | -0.007         | 2.5         |
|                                     | 20               | 4.2                        | 7               | 0.008          | 2.5         |
|                                     |                  |                            |                 | <b>Result:</b> | <b>Pass</b> |