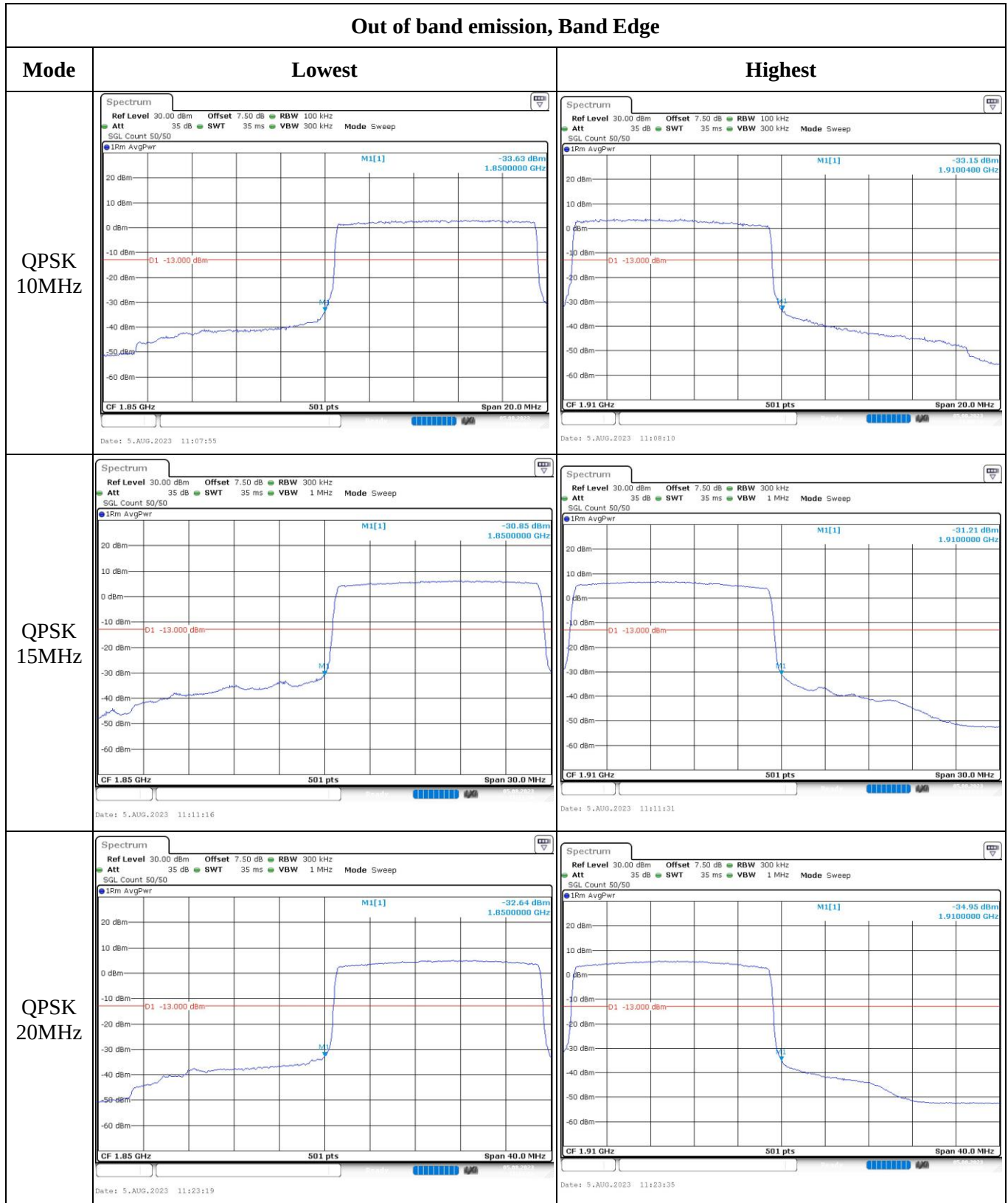
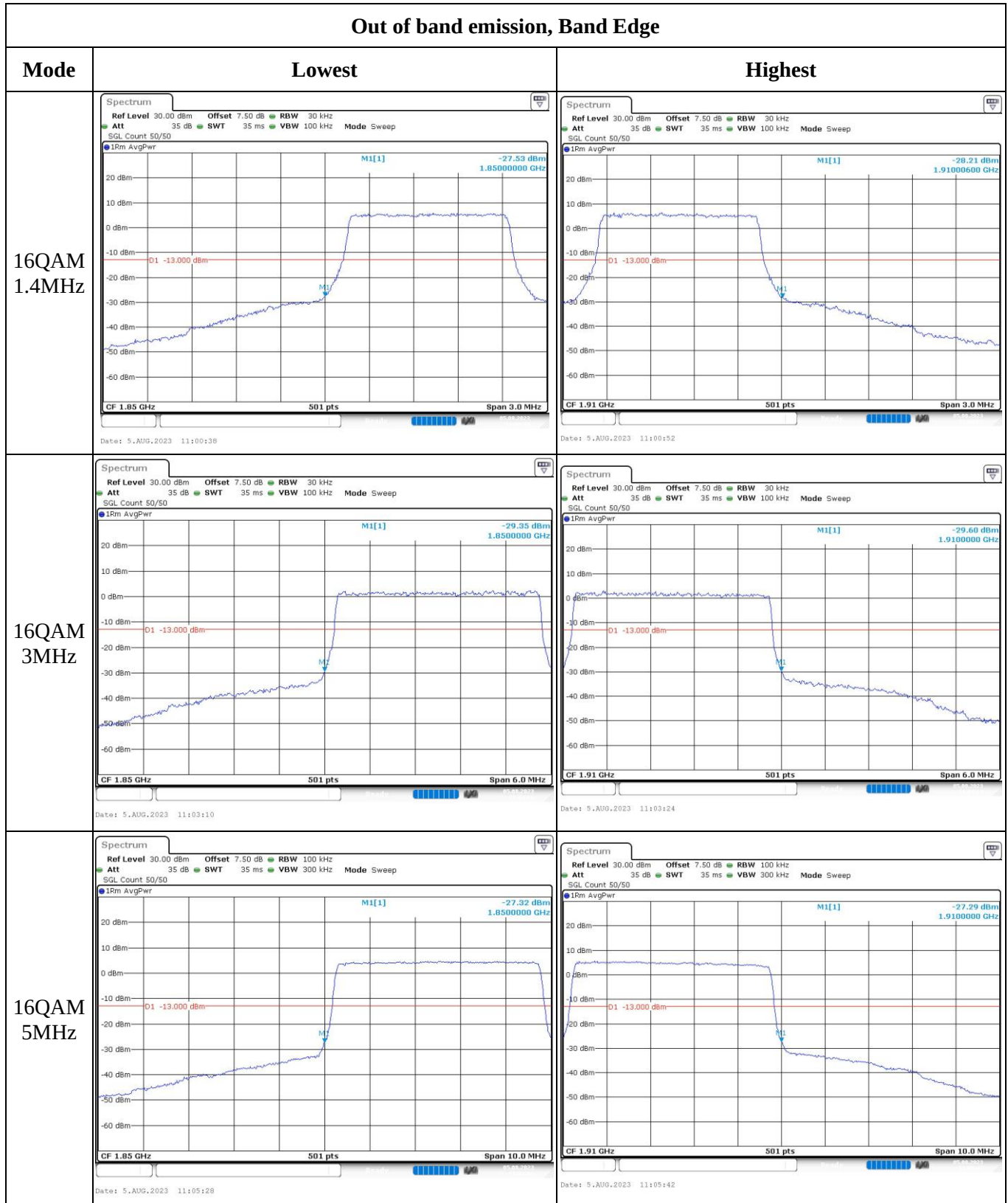


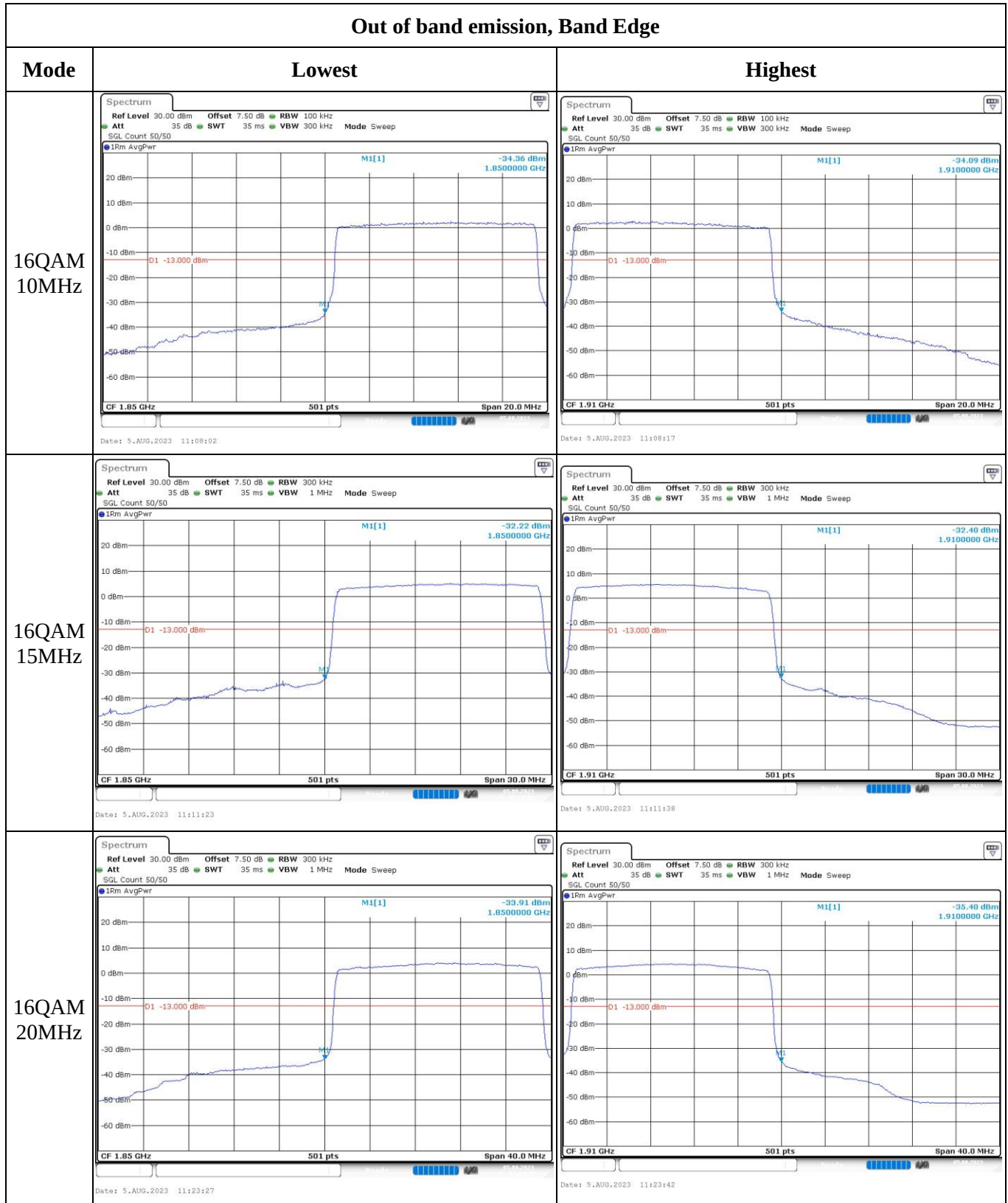
## Out of band emission, Band Edge



## Out of band emission, Band Edge



## Out of band emission, Band Edge



**4.8 Antenna Port Test Data and Results for LTE Band 4**

|                |         |              |                       |
|----------------|---------|--------------|-----------------------|
| Serial Number: | 291M-2  | Test Date:   | 2023/08/05~2023/08/07 |
| Test Site:     | RF      | Test Mode:   | Transmitting          |
| Tester:        | One Luo | Test Result: | <b>Pass</b>           |

**Environmental Conditions:**

|                   |           |                        |       |                     |            |
|-------------------|-----------|------------------------|-------|---------------------|------------|
| Temperature: (°C) | 24.2~26.5 | Relative Humidity: (%) | 42~58 | ATM Pressure: (kPa) | 99.7~102.2 |
|-------------------|-----------|------------------------|-------|---------------------|------------|

**Test Equipment List and Details:**

| Manufacturer  | Description                         | Model      | Serial Number   | Calibration Date | Calibration Due Date |
|---------------|-------------------------------------|------------|-----------------|------------------|----------------------|
| R&S           | Spectrum Analyzer                   | FSV40      | 101474          | 2023/07/15       | 2024/07/14           |
| zhuoxiang     | Coaxial Cable                       | SMA-178    | 211001          | Each time        | N/A                  |
| YINSAIGE      | Coaxial Cable                       | SS402      | SJ0100001       | Each time        | N/A                  |
| Mini-Circuits | DC Block                            | BLK-18-S+  | 1554403         | Each time        | N/A                  |
| Weinschel     | Power Splitter                      | 1515       | RA914           | Each time        | N/A                  |
| R&S           | Wideband Radio Communication Tester | CMW500     | 149218          | 2023/07/15       | 2024/07/14           |
| BACL          | TEMP&HUMI Test Chamber              | BTH-150-40 | 30174           | 2022/09/29       | 2023/09/28           |
| UNI-T         | Multimeter                          | UT39A+     | C210582554      | 2022/9/29        | 2023/9/28            |
| ZHAOXIN       | DC Power Supply                     | RXN-6010D  | 21R6010D0912386 | N/A              | 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).*

**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                      | 21.78                               | 21.99          | 22.62           | 18.63              | 30               |
|                             | RB1#3                      | 21.91                               | 22.33          | 22.83           |                    |                  |
|                             | RB1#5                      | 21.78                               | 22.29          | 22.67           |                    |                  |
|                             | RB3#0                      | 21.98                               | 22.26          | 22.41           |                    |                  |
|                             | RB3#3                      | 21.98                               | 22.1           | 22.44           |                    |                  |
|                             | RB6#0                      | 20.83                               | 21.14          | 21.26           |                    |                  |
| 1.4MHz 16QAM                | RB1#0                      | 21.23                               | 21.34          | 21.59           | 17.54              | 30               |
|                             | RB1#3                      | 21.5                                | 21.13          | 21.74           |                    |                  |
|                             | RB1#5                      | 21.35                               | 20.71          | 20.96           |                    |                  |
|                             | RB3#0                      | 20.99                               | 21.2           | 20.92           |                    |                  |
|                             | RB3#3                      | 21                                  | 21.31          | 20.97           |                    |                  |
|                             | RB6#0                      | 19.78                               | 20.22          | 20.16           |                    |                  |
| 3MHz QPSK                   | RB1#0                      | 21.91                               | 22.23          | 22.34           | 18.49              | 30               |
|                             | RB1#8                      | 21.84                               | 21.93          | 22.18           |                    |                  |
|                             | RB1#14                     | 21.94                               | 22.16          | 22.69           |                    |                  |
|                             | RB6#0                      | 20.95                               | 21.11          | 21.29           |                    |                  |
|                             | RB6#9                      | 20.93                               | 21.13          | 21.29           |                    |                  |
|                             | RB15#0                     | 21                                  | 21.12          | 21.27           |                    |                  |
| 3MHz 16QAM                  | RB1#0                      | 21.2                                | 21.6           | 21.53           | 17.4               | 30               |
|                             | RB1#8                      | 21.12                               | 21.4           | 20.74           |                    |                  |
|                             | RB1#14                     | 21.15                               | 21.56          | 21.29           |                    |                  |
|                             | RB6#0                      | 19.94                               | 20.03          | 20.22           |                    |                  |
|                             | RB6#9                      | 19.8                                | 20.09          | 20.23           |                    |                  |
|                             | RB15#0                     | 19.91                               | 19.99          | 20.5            |                    |                  |
| 5MHz QPSK                   | RB1#0                      | 21.78                               | 22.21          | 22.44           | 18.47              | 30               |
|                             | RB1#13                     | 21.95                               | 22.32          | 22.38           |                    |                  |
|                             | RB1#24                     | 21.98                               | 22.11          | 22.67           |                    |                  |
|                             | RB15#0                     | 20.94                               | 21.12          | 21.31           |                    |                  |
|                             | RB15#10                    | 21.02                               | 21.15          | 21.3            |                    |                  |
|                             | RB25#0                     | 20.89                               | 21.1           | 21.48           |                    |                  |
| 5MHz 16QAM                  | RB1#0                      | 21.13                               | 20.96          | 20.57           | 17.27              | 30               |
|                             | RB1#13                     | 21.47                               | 20.85          | 21.02           |                    |                  |
|                             | RB1#24                     | 21.27                               | 21.04          | 21.14           |                    |                  |
|                             | RB15#0                     | 19.84                               | 20.15          | 20.36           |                    |                  |
|                             | RB15#10                    | 19.82                               | 20.19          | 20.31           |                    |                  |
|                             | RB25#0                     | 20.02                               | 20.17          | 20.63           |                    |                  |

|             |         |       |       |       |       |    |
|-------------|---------|-------|-------|-------|-------|----|
| 10MHz QPSK  | RB1#0   | 21.86 | 22.09 | 22.29 | 18.26 | 30 |
|             | RB1#25  | 21.85 | 22.02 | 22.31 |       |    |
|             | RB1#49  | 21.98 | 22.21 | 22.46 |       |    |
|             | RB25#0  | 20.94 | 20.97 | 21.35 |       |    |
|             | RB25#25 | 20.99 | 21.13 | 21.41 |       |    |
|             | RB50#0  | 21    | 20.97 | 21.31 |       |    |
| 10MHz 16QAM | RB1#0   | 20.61 | 21.3  | 21.68 | 18    | 30 |
|             | RB1#25  | 20.72 | 21.48 | 22.02 |       |    |
|             | RB1#49  | 21.18 | 22.08 | 22.2  |       |    |
|             | RB25#0  | 20.28 | 19.91 | 20.23 |       |    |
|             | RB25#25 | 19.88 | 20.12 | 20.31 |       |    |
|             | RB50#0  | 20.05 | 20.03 | 20.38 |       |    |
| 15MHz QPSK  | RB1#0   | 21.76 | 22.21 | 22.22 | 18.27 | 30 |
|             | RB1#38  | 22.15 | 22.12 | 22.27 |       |    |
|             | RB1#74  | 22.27 | 22.31 | 22.47 |       |    |
|             | RB36#0  | 21.01 | 21.06 | 21.28 |       |    |
|             | RB36#39 | 21.08 | 21.15 | 21.36 |       |    |
|             | RB75#0  | 21.07 | 21.1  | 21.31 |       |    |
| 15MHz 16QAM | RB1#0   | 21.24 | 21.44 | 21.41 | 17.49 | 30 |
|             | RB1#38  | 21.14 | 21.48 | 21.46 |       |    |
|             | RB1#74  | 21.1  | 21.61 | 21.69 |       |    |
|             | RB36#0  | 19.96 | 20.07 | 20.16 |       |    |
|             | RB36#39 | 19.92 | 20.18 | 20.33 |       |    |
|             | RB75#0  | 19.91 | 20.14 | 20.37 |       |    |
| 20MHz QPSK  | RB1#0   | 22.06 | 21.92 | 22.26 | 18.57 | 30 |
|             | RB1#50  | 22.16 | 22.21 | 22.3  |       |    |
|             | RB1#99  | 22.25 | 22.33 | 22.77 |       |    |
|             | RB50#0  | 20.89 | 21.03 | 21.36 |       |    |
|             | RB50#50 | 20.98 | 21.18 | 21.43 |       |    |
|             | RB100#0 | 21.02 | 21.07 | 21.32 |       |    |
| 20MHz 16QAM | RB1#0   | 21.48 | 21.1  | 21.55 | 18.76 | 30 |
|             | RB1#50  | 21.69 | 21.1  | 21.94 |       |    |
|             | RB1#99  | 21.69 | 21.12 | 22.96 |       |    |
|             | RB50#0  | 19.91 | 20.02 | 20.2  |       |    |
|             | RB50#50 | 20.01 | 20.21 | 20.12 |       |    |
|             | RB100#0 | 20.08 | 20.08 | 20.17 |       |    |

Note: EIRP=Conducted Power(dBm) - Lc(dB) + Gr(dBi)

**Result:**

**Pass**

| <b>Peak-to-average Ratio(PAR)</b> |                            |                           |                |                 |             |
|-----------------------------------|----------------------------|---------------------------|----------------|-----------------|-------------|
| Test Bandwidth & Modulation       | Resource Block & RB offset | Peak-to-average Ratio(dB) |                |                 | Limit (dB)  |
|                                   |                            | Lowest Channel            | Middle Channel | Highest Channel |             |
| 20MHz QPSK                        | RB1#0                      | 4.81                      | 4.64           | 3.97            | 13          |
|                                   | RB100#0                    | 4.06                      | 3.83           | 3.97            | 13          |
| 20MHz 16QAM                       | RB1#0                      | 5.8                       | 5.42           | 5.19            | 13          |
|                                   | RB100#0                    | 5.88                      | 5.65           | 5.77            | 13          |
|                                   |                            |                           |                | <b>Result:</b>  | <b>Pass</b> |

| <b>FCC §2.1049, §27.53:Occupied Bandwidth</b>                        |                              |                |              |                                |                |              |
|----------------------------------------------------------------------|------------------------------|----------------|--------------|--------------------------------|----------------|--------------|
| 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                                                          | 1.108                        | 1.108          | 1.102        | 1.314                          | 1.284          | 1.302        |
| 1.4MHz 16QAM                                                         | 1.096                        | 1.102          | 1.102        | 1.296                          | 1.308          | 1.314        |
| 3MHz QPSK                                                            | 2.695                        | 2.695          | 2.683        | 2.952                          | 2.952          | 2.964        |
| 3MHz 16QAM                                                           | 2.695                        | 2.683          | 2.683        | 2.964                          | 2.964          | 2.94         |
| 5MHz QPSK                                                            | 4.511                        | 4.491          | 4.531        | 5.04                           | 5.02           | 5.04         |
| 5MHz 16QAM                                                           | 4.531                        | 4.531          | 4.511        | 5.06                           | 5.04           | 5.02         |
| 10MHz QPSK                                                           | 8.942                        | 8.942          | 8.942        | 9.72                           | 9.72           | 9.84         |
| 10MHz 16QAM                                                          | 8.942                        | 8.942          | 8.942        | 9.72                           | 9.76           | 9.64         |
| 15MHz QPSK                                                           | 13.473                       | 13.413         | 13.473       | 14.94                          | 14.7           | 14.88        |
| 15MHz 16QAM                                                          | 13.473                       | 13.473         | 13.533       | 14.76                          | 14.82          | 14.88        |
| 20MHz QPSK                                                           | 17.964                       | 17.804         | 17.884       | 19.28                          | 19.28          | 19.6         |
| 20MHz 16QAM                                                          | 17.964                       | 17.884         | 17.964       | 19.52                          | 19.52          | 19.44        |
| Note: The test plots please refer to the Plots of Occupied Bandwidth |                              |                |              |                                |                |              |

| <b>FCC §2.1051, §27.53:Spurious Emissions at Antenna Terminal</b> |                                                                                        |
|-------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| <b>Result:</b>                                                    | <b>Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.</b> |

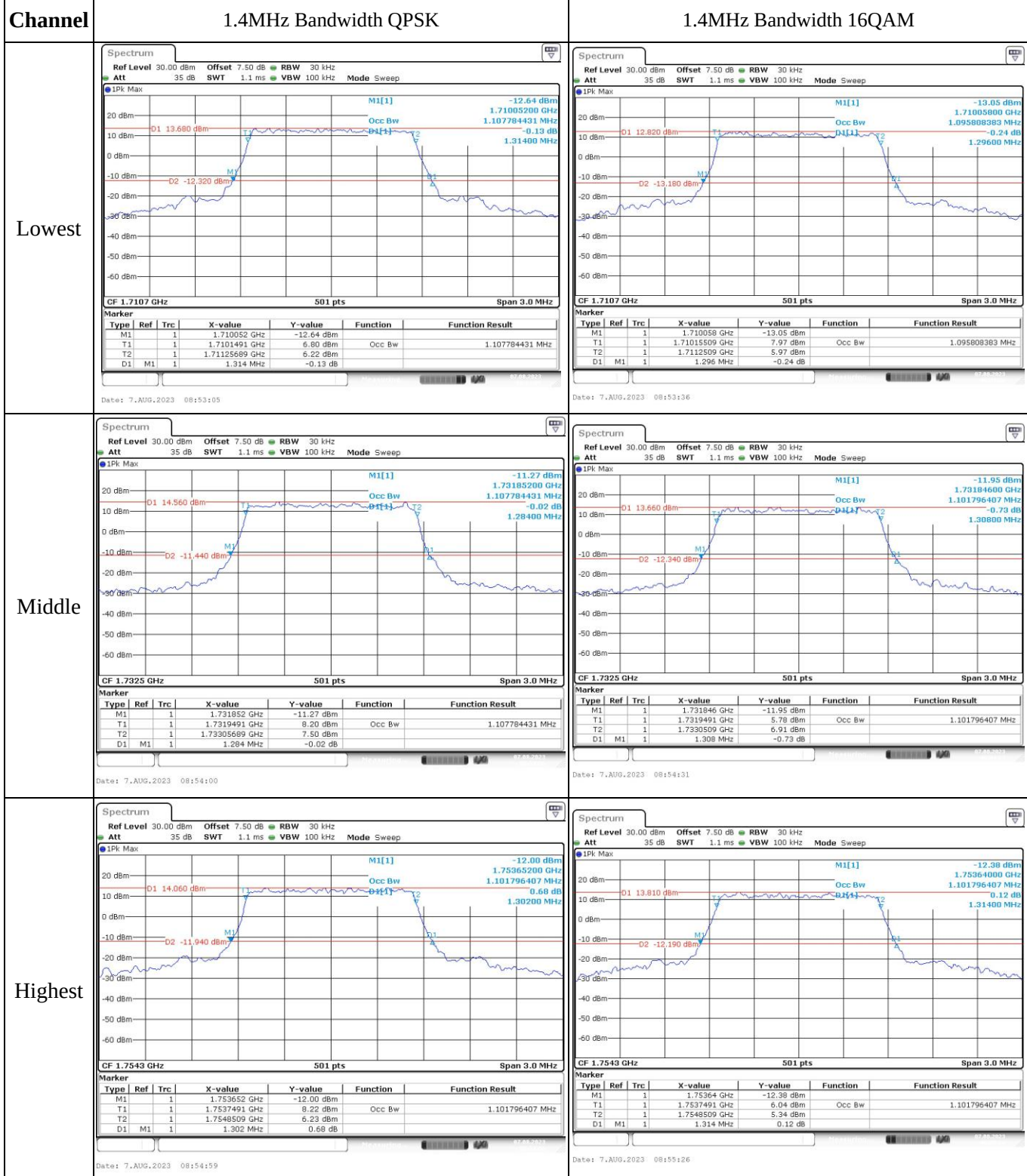
| <b>FCC §2.1051, §27.53:Out of band emission, Band Edge</b> |                                                                                 |
|------------------------------------------------------------|---------------------------------------------------------------------------------|
| <b>Result:</b>                                             | <b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b> |

| <b>FCC §2.1055, §27.54: Frequency Stability</b> |                  |                                                            |                  |         |                  |       |
|-------------------------------------------------|------------------|------------------------------------------------------------|------------------|---------|------------------|-------|
| 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              | 3.8                                                        | 1711.091         | 1710.00 | 1753.913         | 1755  |
|                                                 | -20              | 3.8                                                        | 1711.052         | 1710.00 | 1753.975         | 1755  |
|                                                 | -10              | 3.8                                                        | 1711.054         | 1710.00 | 1753.955         | 1755  |
|                                                 | 0                | 3.8                                                        | 1711.035         | 1710.00 | 1753.973         | 1755  |
|                                                 | 10               | 3.8                                                        | 1711.071         | 1710.00 | 1753.980         | 1755  |
|                                                 | 20               | 3.8                                                        | 1711.058         | 1710.00 | 1753.942         | 1755  |
|                                                 | 30               | 3.8                                                        | 1711.068         | 1710.00 | 1753.963         | 1755  |
|                                                 | 40               | 3.8                                                        | 1711.066         | 1710.00 | 1753.978         | 1755  |
|                                                 | 50               | 3.8                                                        | 1711.045         | 1710.00 | 1753.978         | 1755  |
| Frequency Stability vs. Voltage                 | 20               | 3.55                                                       | 1711.092         | 1710.00 | 1753.941         | 1755  |
|                                                 | 20               | 4.35                                                       | 1711.079         | 1710.00 | 1753.970         | 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              | 3.8                                                        | 1711.089         | 1710.00 | 1754.063         | 1755  |
|                                     | -20              | 3.8                                                        | 1711.052         | 1710.00 | 1754.077         | 1755  |
|                                     | -10              | 3.8                                                        | 1711.071         | 1710.00 | 1754.012         | 1755  |
|                                     | 0                | 3.8                                                        | 1711.097         | 1710.00 | 1754.087         | 1755  |
|                                     | 10               | 3.8                                                        | 1711.019         | 1710.00 | 1754.060         | 1755  |
|                                     | 20               | 3.8                                                        | 1711.058         | 1710.00 | 1754.022         | 1755  |
|                                     | 30               | 3.8                                                        | 1711.082         | 1710.00 | 1754.018         | 1755  |
|                                     | 40               | 3.8                                                        | 1711.003         | 1710.00 | 1754.053         | 1755  |
|                                     | 50               | 3.8                                                        | 1711.083         | 1710.00 | 1754.080         | 1755  |
| Frequency Stability vs. Voltage     | 20               | 3.55                                                       | 1711.029         | 1710.00 | 1754.013         | 1755  |
|                                     | 20               | 4.35                                                       | 1711.069         | 1710.00 | 1754.027         | 1755  |
| <b>Result:</b>                      |                  |                                                            |                  |         | <b>Pass</b>      |       |

**Test Plots**(Note: The 7.5dB is the Insertion loss of the RF cable, Power Splitter and DC Block, which was offset into the Spectrum Analyzer):

### Occupied Bandwidth



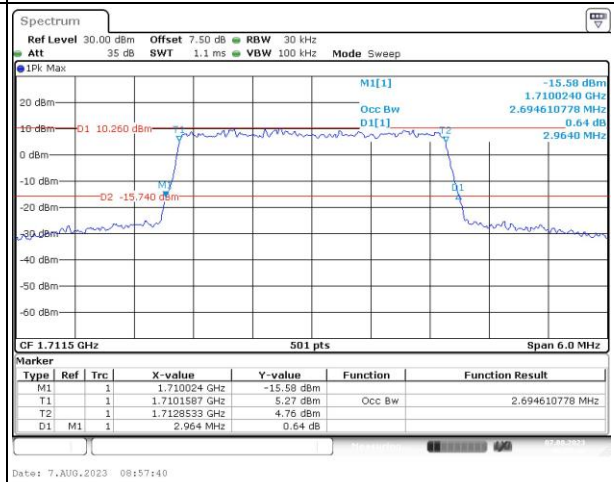
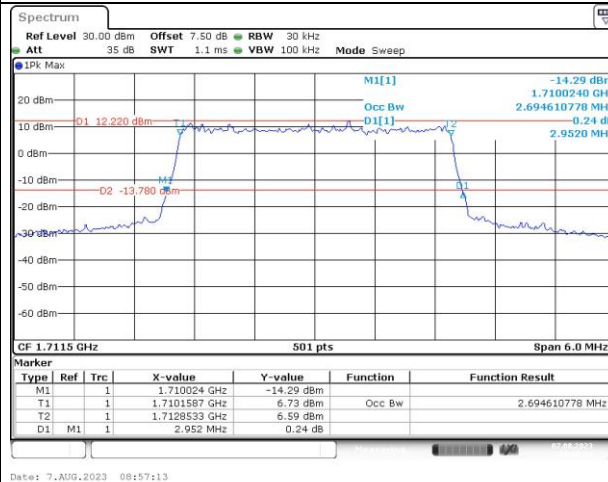
## Occupied Bandwidth

## Channel

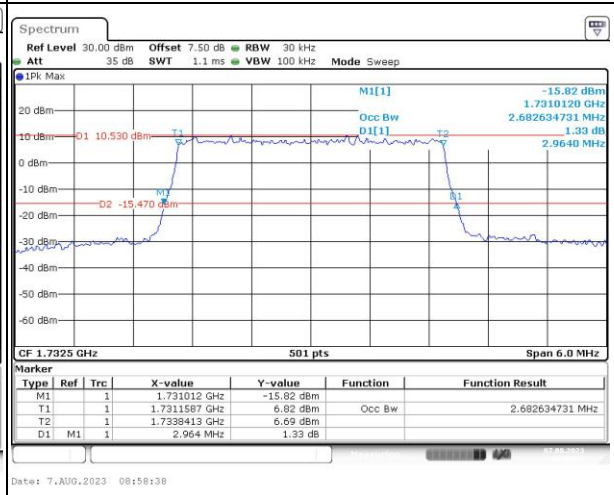
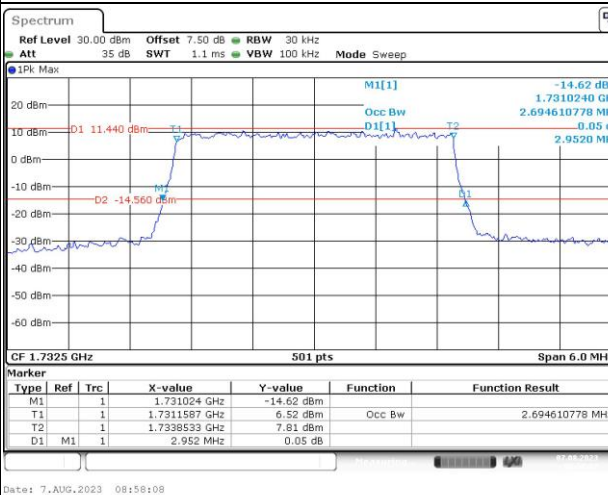
## 3MHz Bandwidth QPSK

## 3MHz Bandwidth 16QAM

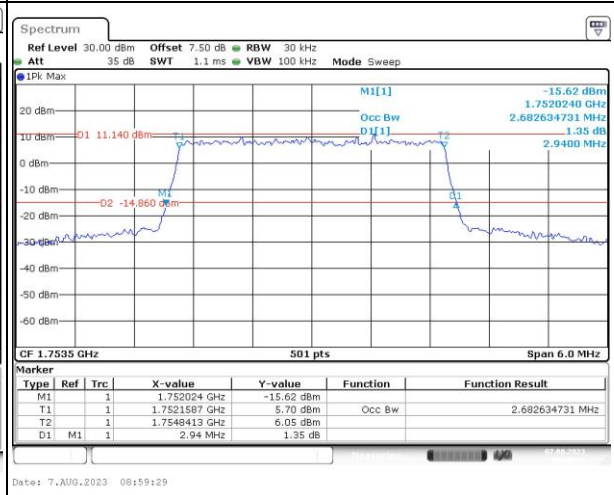
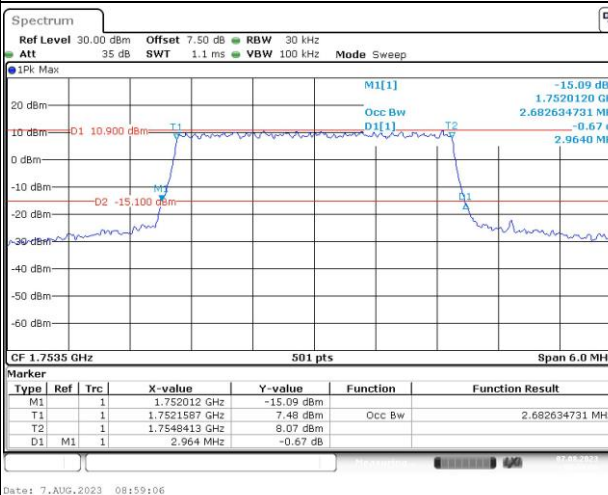
## Lowest



## Middle



## Highest



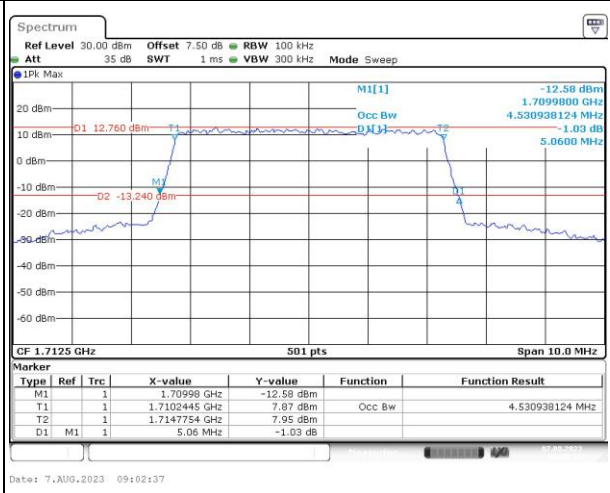
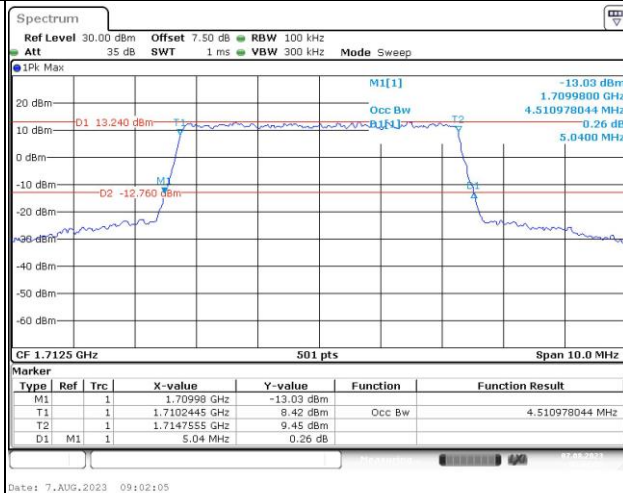
## Occupied Bandwidth

## Channel

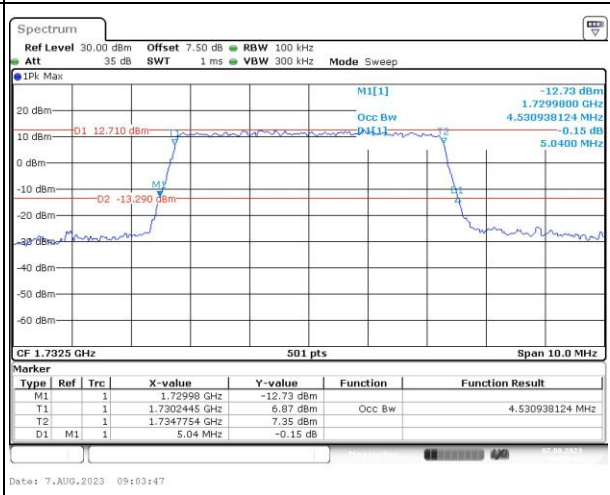
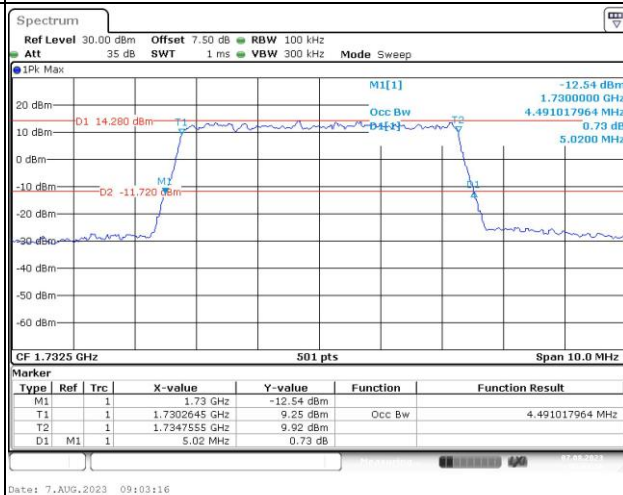
## 5MHz Bandwidth QPSK

## 5MHz Bandwidth 16QAM

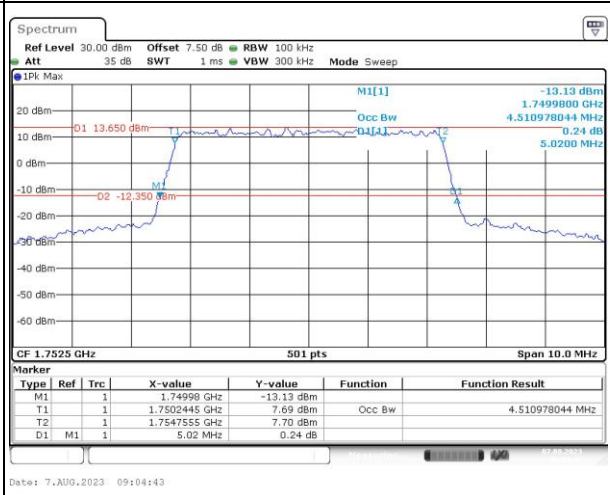
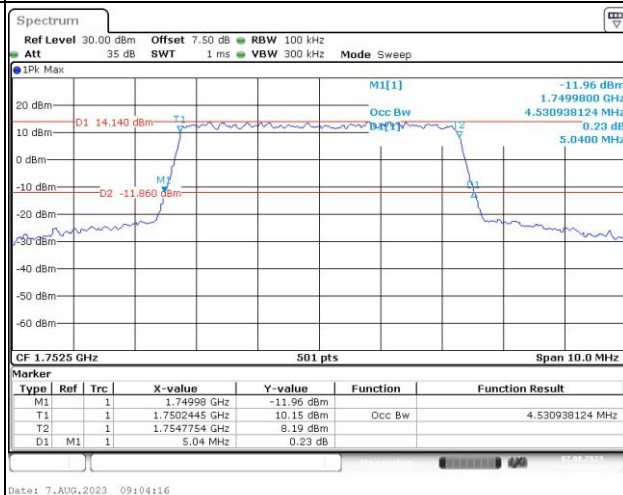
## Lowest



## Middle



## Highest



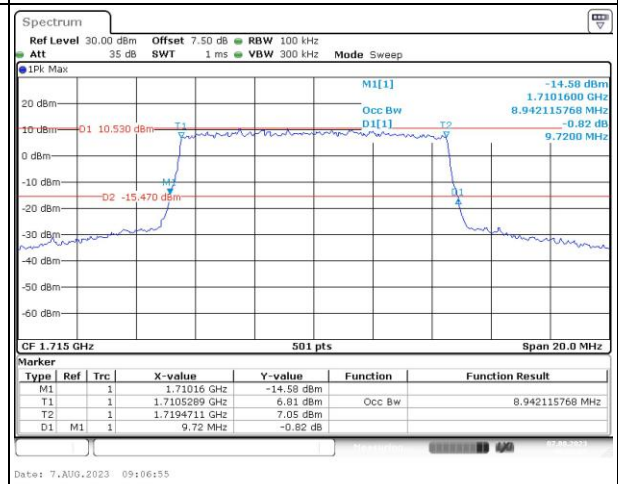
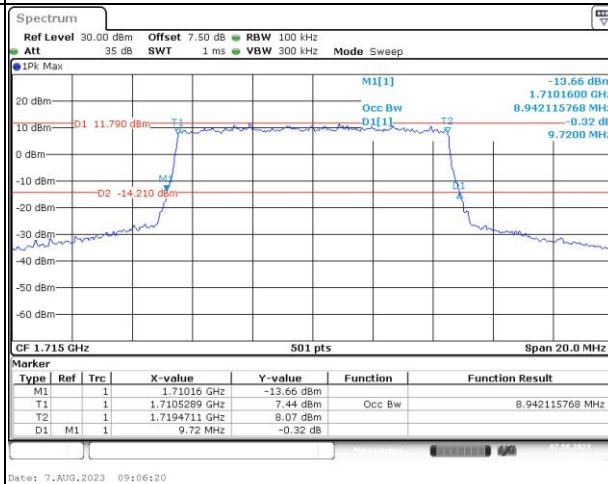
## Occupied Bandwidth

## Channel

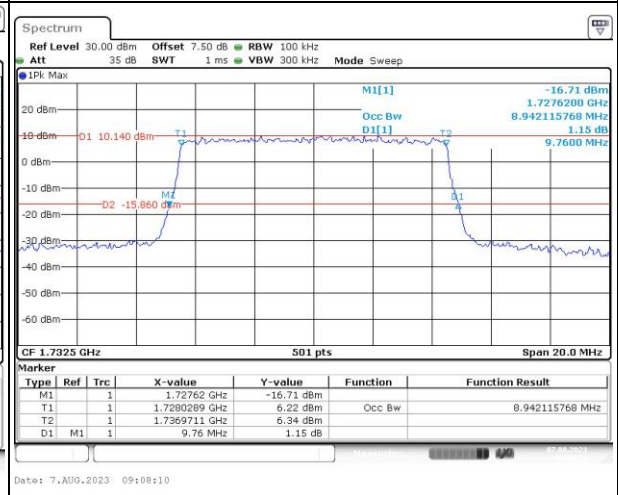
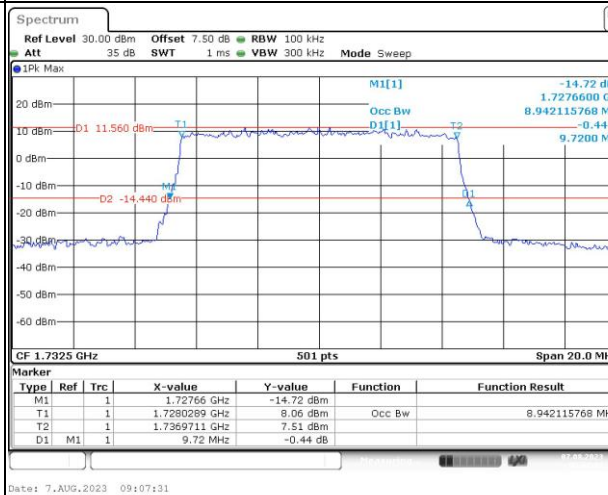
## 10MHz Bandwidth QPSK

## 10MHz Bandwidth 16QAM

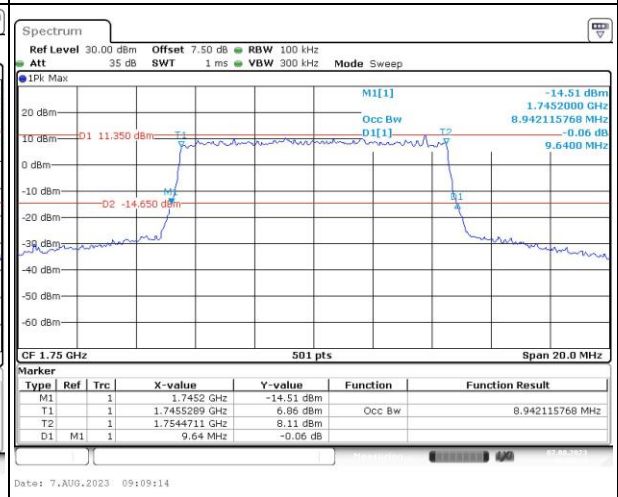
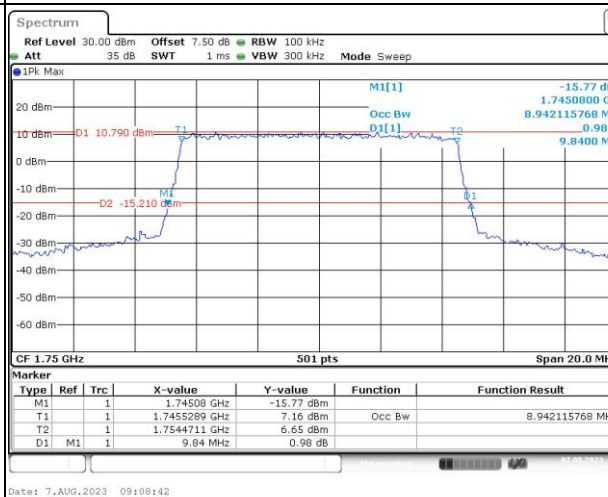
## Lowest



## Middle



## Highest



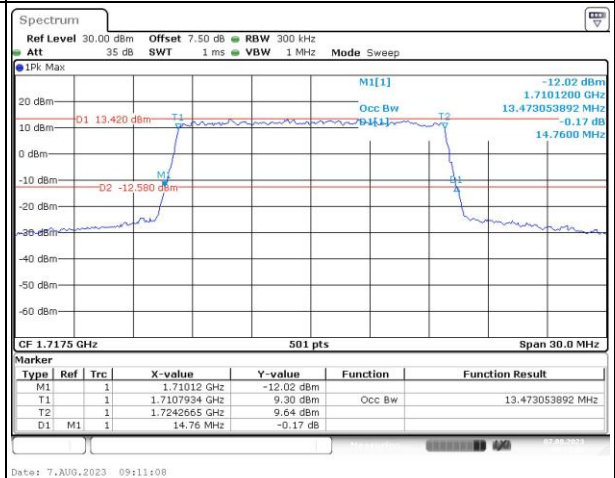
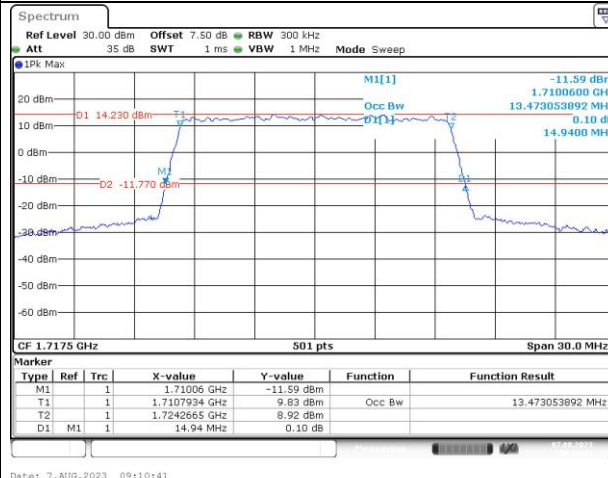
## Occupied Bandwidth

## Channel

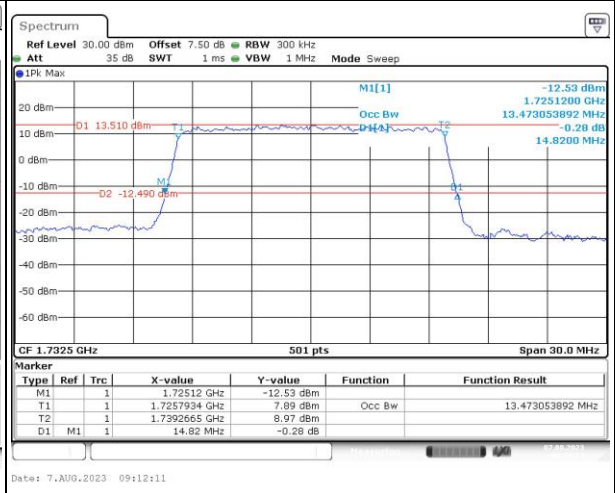
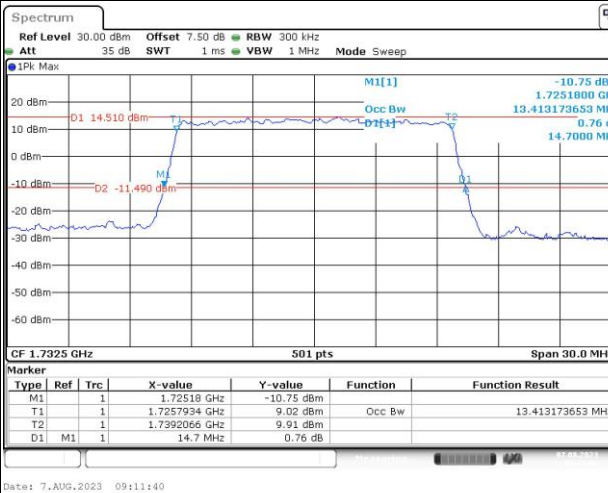
## 15MHz Bandwidth QPSK

## 15MHz Bandwidth 16QAM

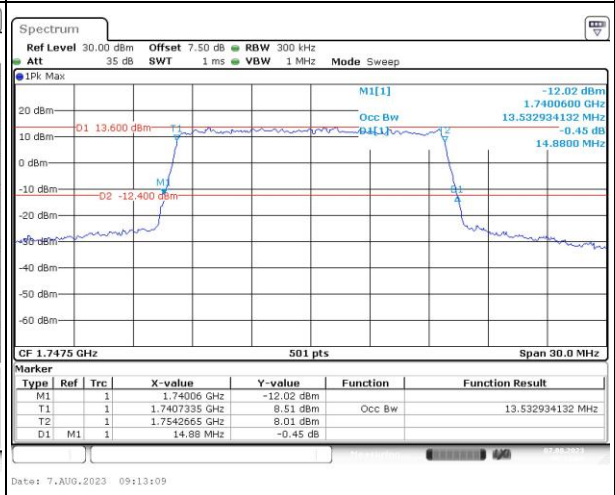
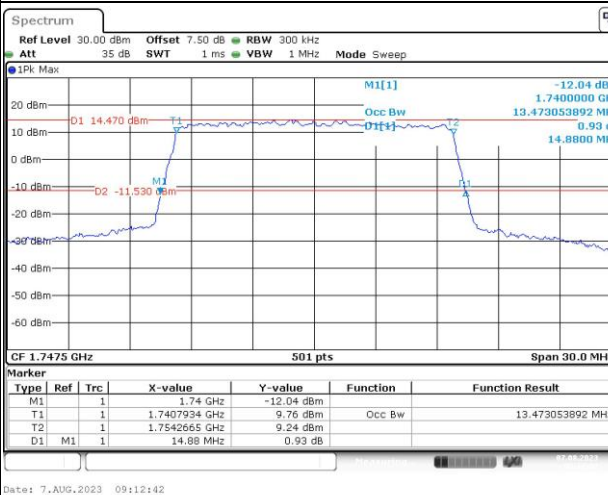
## Lowest



## Middle



## Highest



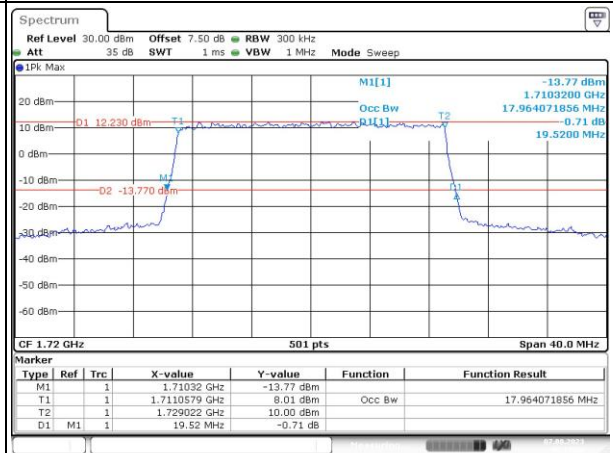
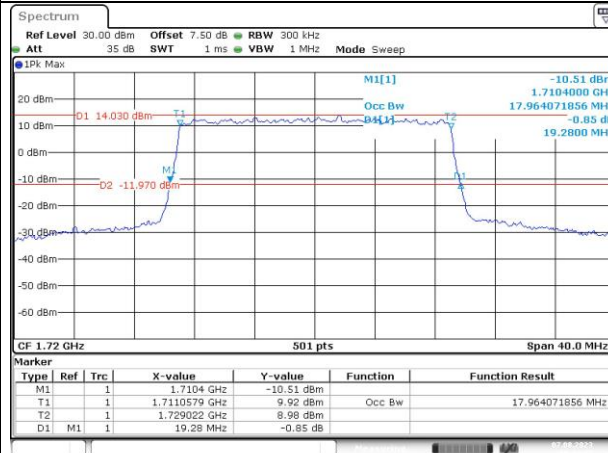
## Occupied Bandwidth

## Channel

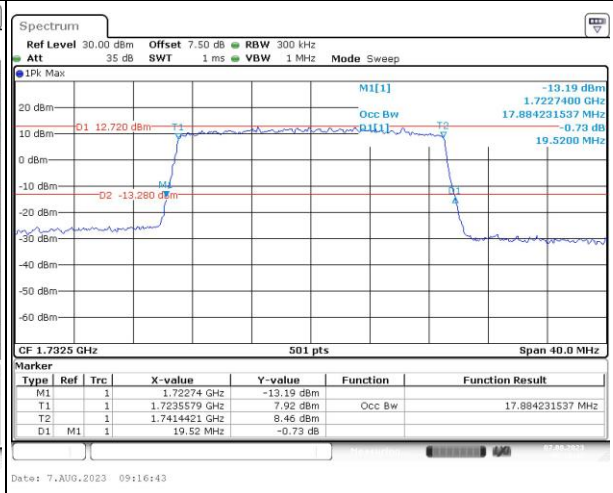
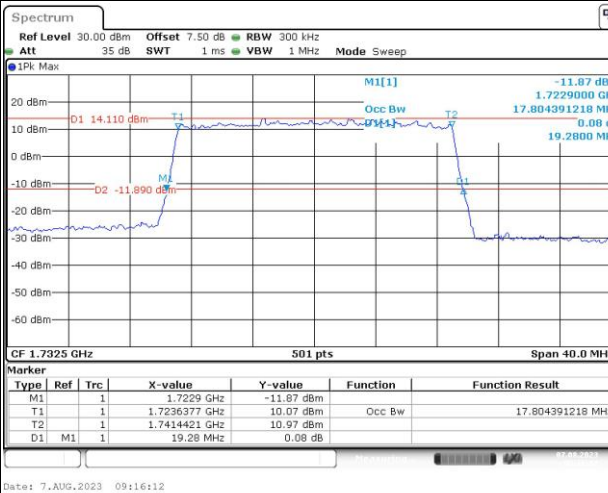
## 20MHz Bandwidth QPSK

## 20MHz Bandwidth 16QAM

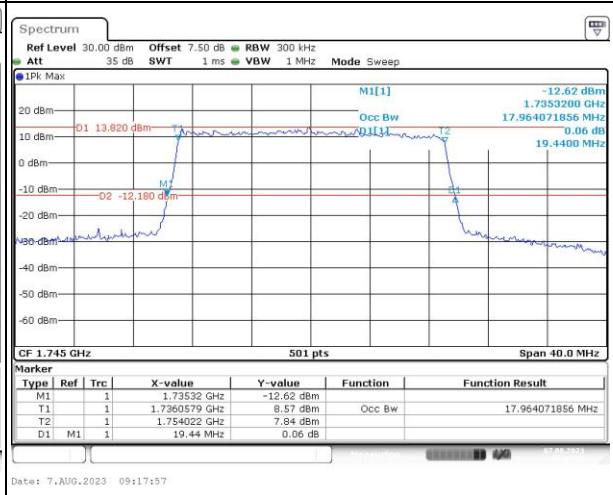
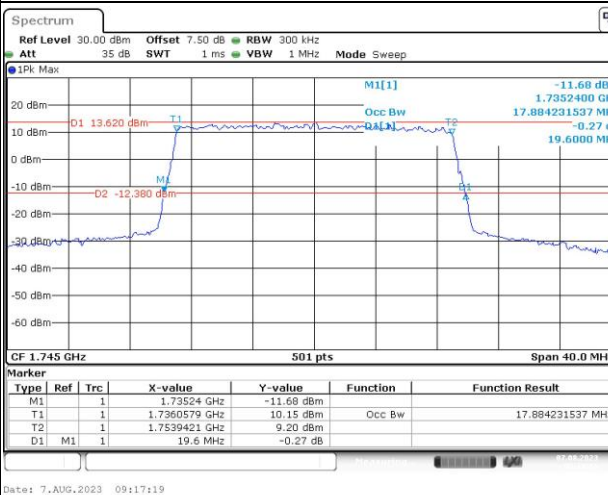
## Lowest



## Middle



## Highest

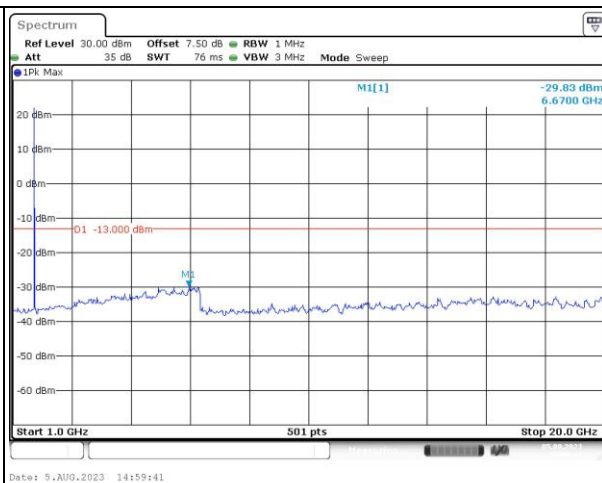
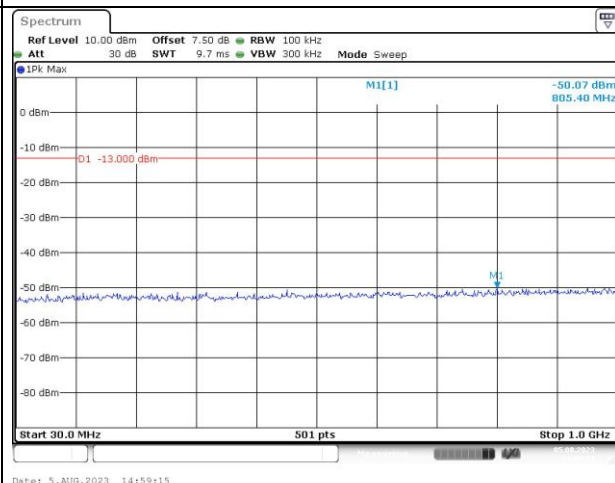


## Spurious Emissions at Antenna Terminal

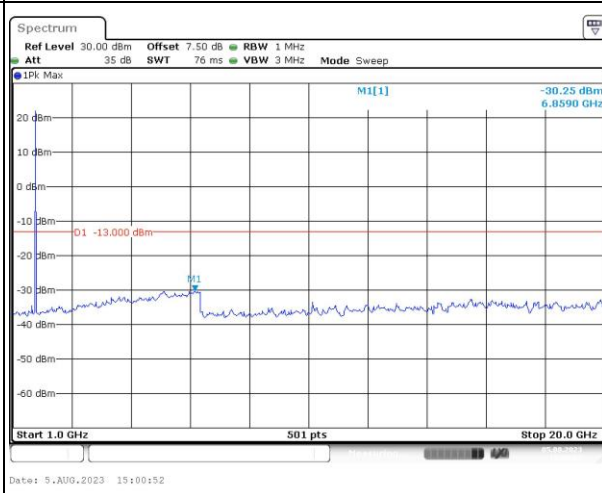
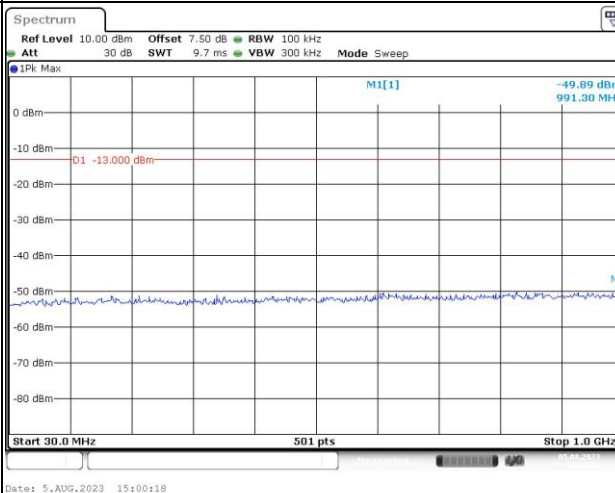
Channel

1.4MHz Bandwidth QPSK

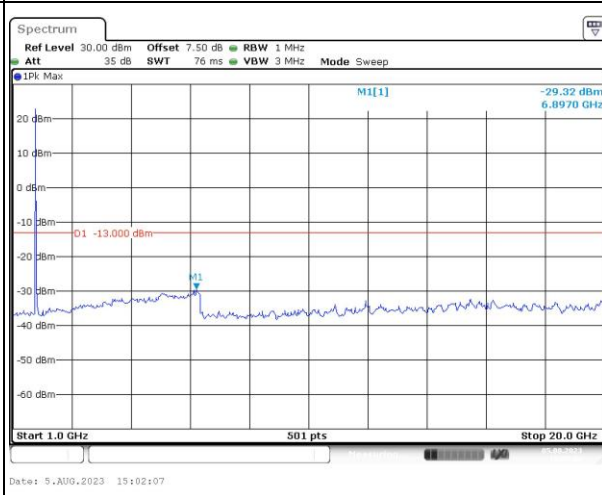
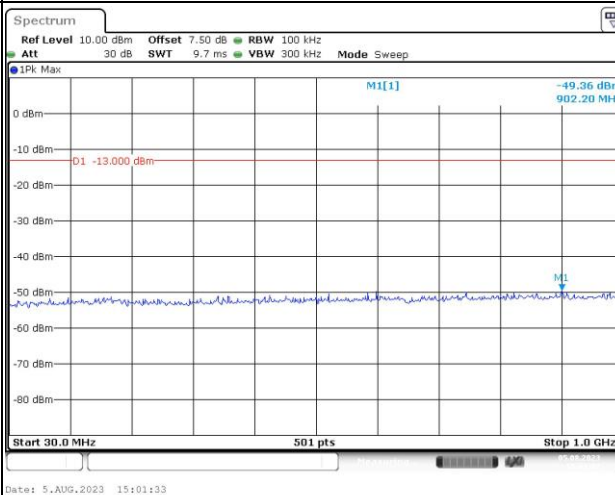
Lowest



Middle



Highest

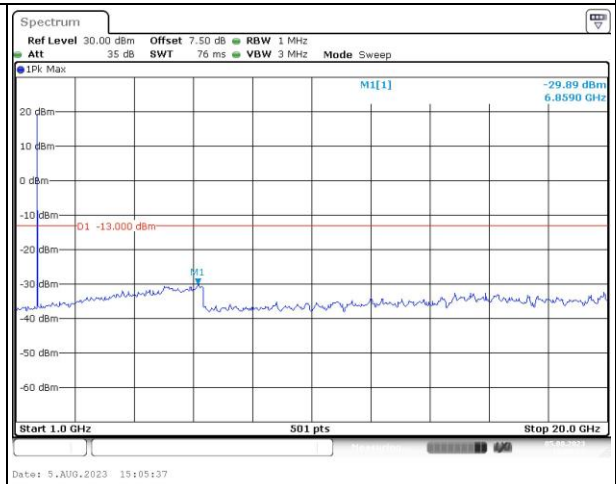
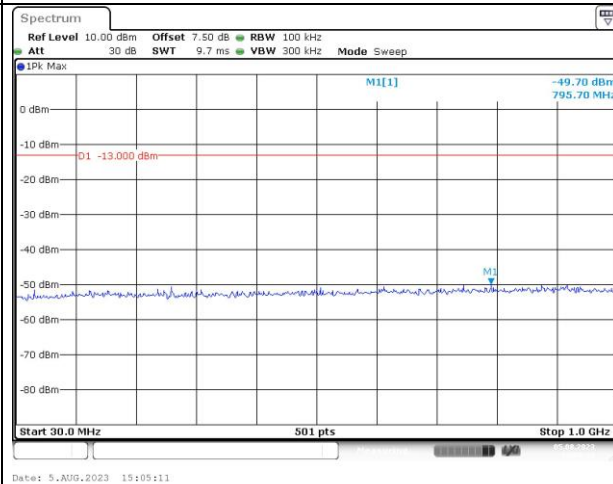


## Spurious Emissions at Antenna Terminal

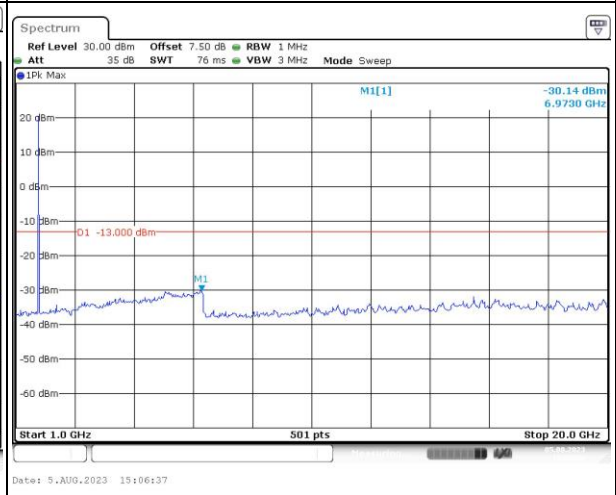
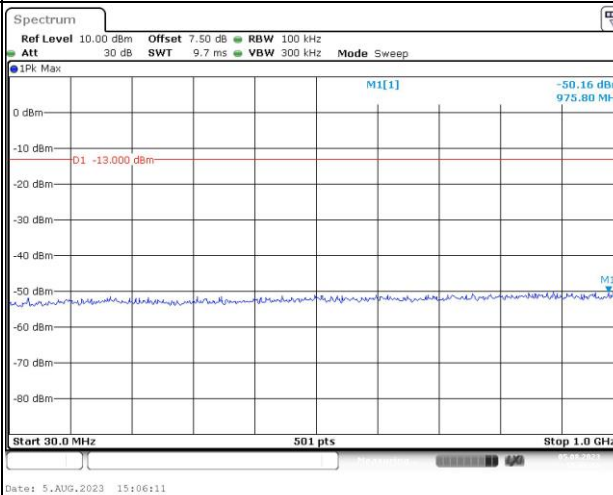
Channel

3MHz Bandwidth QPSK

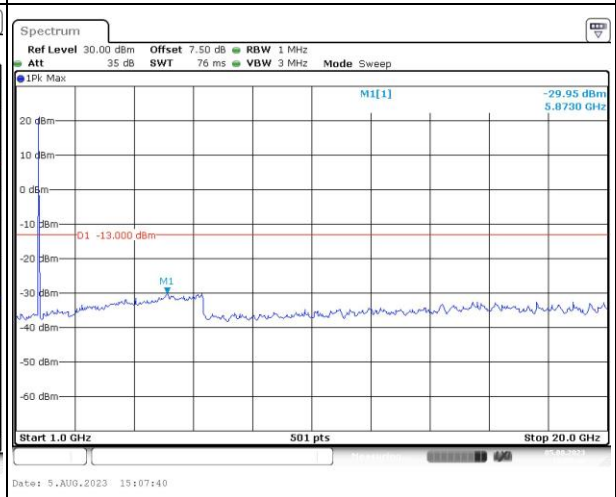
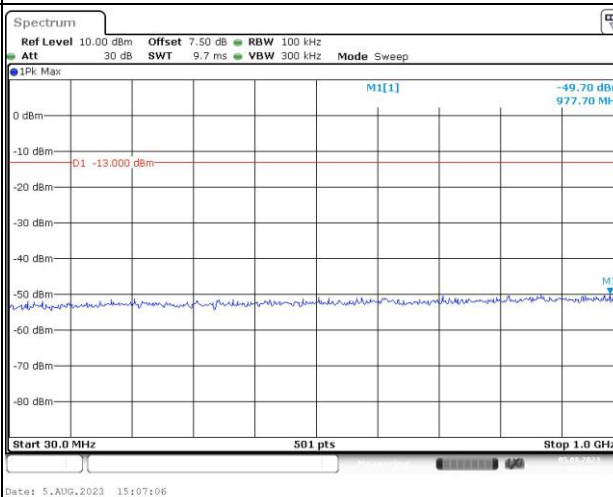
Lowest



Middle



Highest

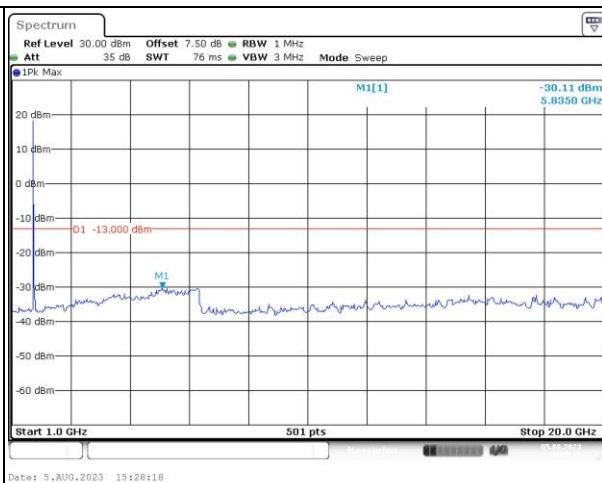
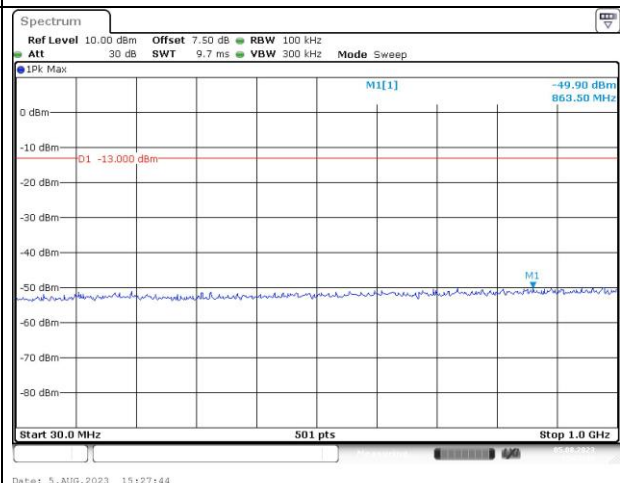


## Spurious Emissions at Antenna Terminal

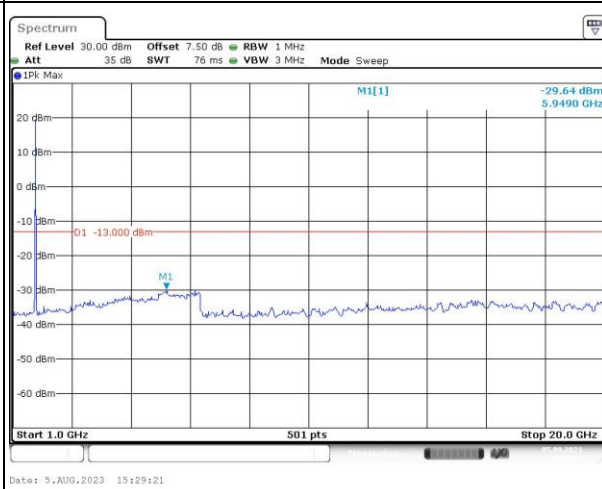
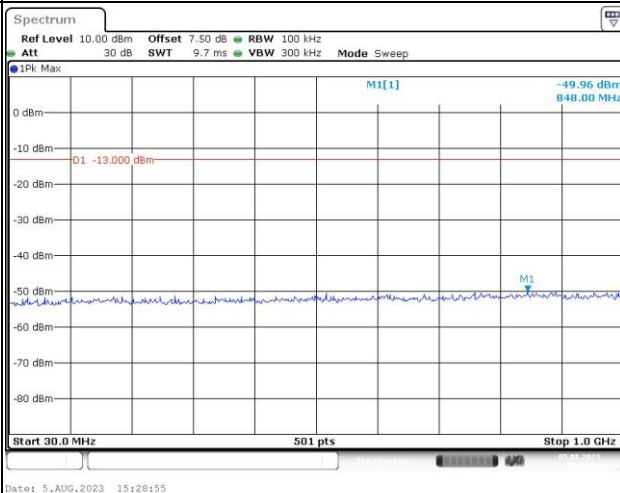
Channel

5MHz Bandwidth QPSK

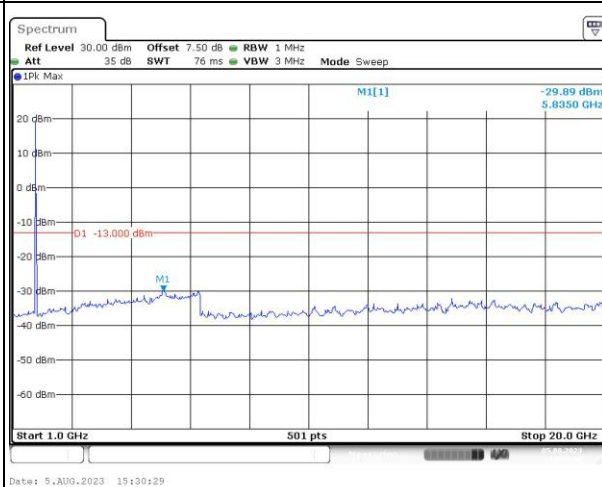
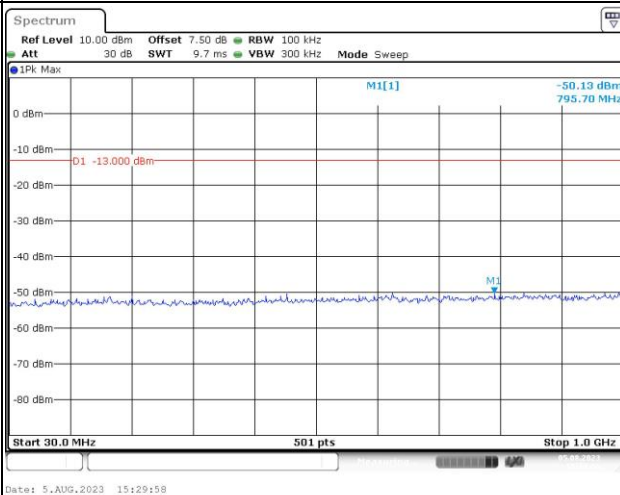
Lowest



Middle



Highest

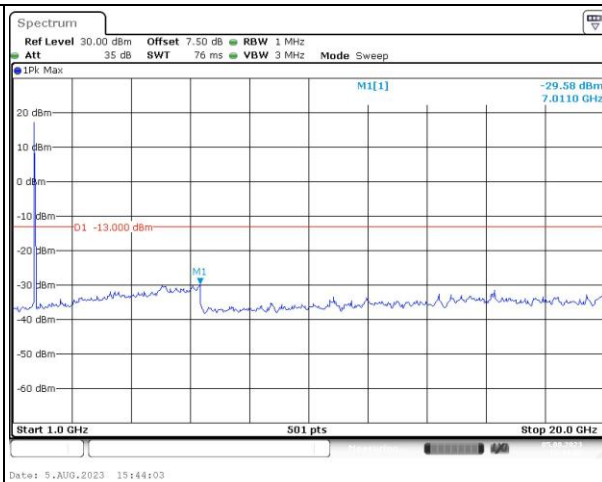
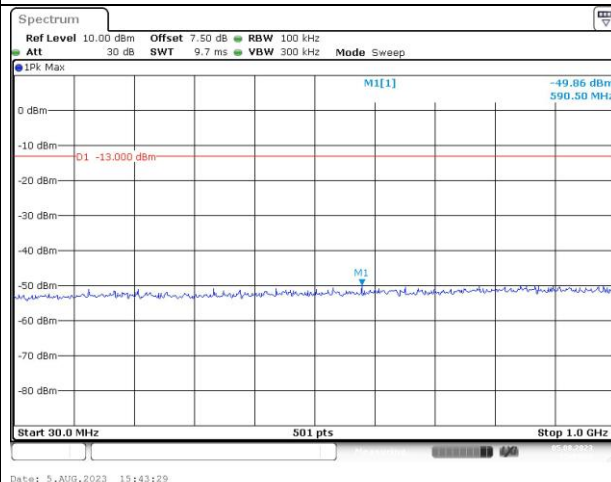


## Spurious Emissions at Antenna Terminal

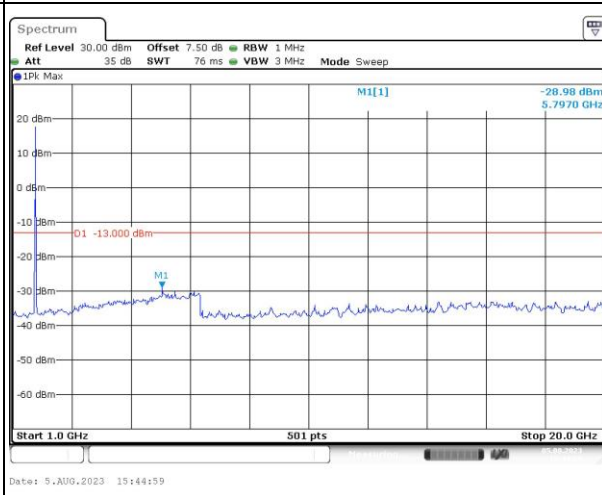
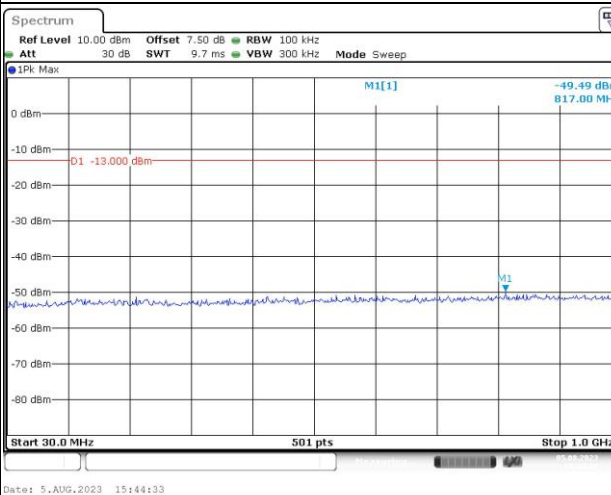
Channel

10MHz Bandwidth QPSK

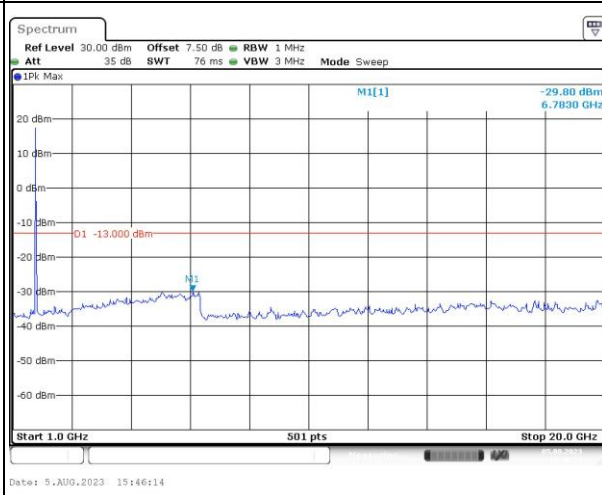
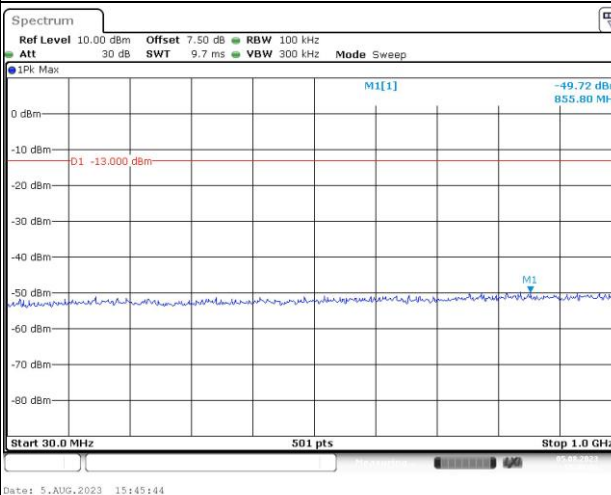
Lowest



Middle



Highest

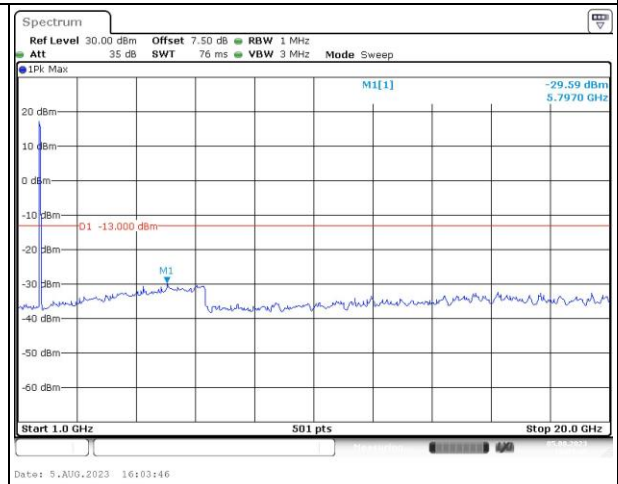
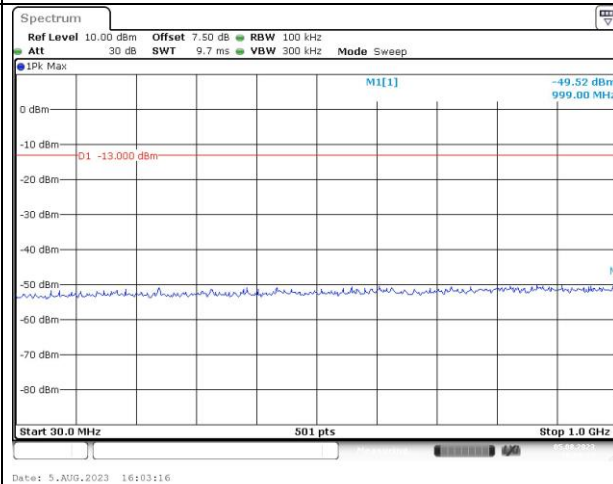


## Spurious Emissions at Antenna Terminal

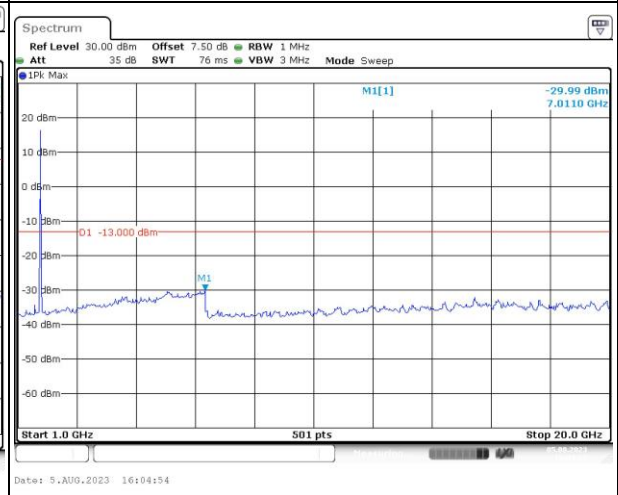
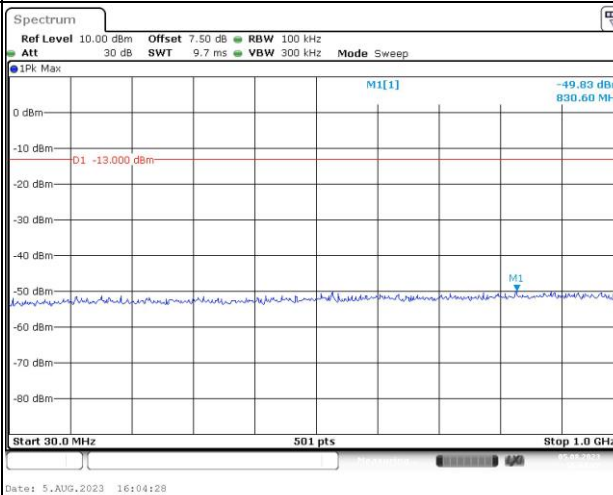
Channel

15MHz Bandwidth QPSK

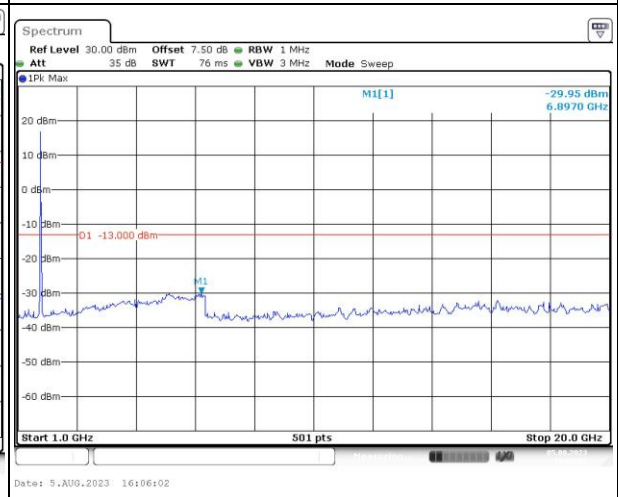
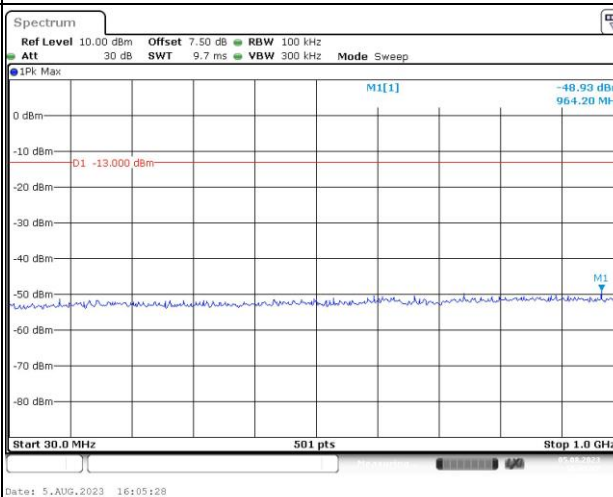
Lowest



Middle



Highest

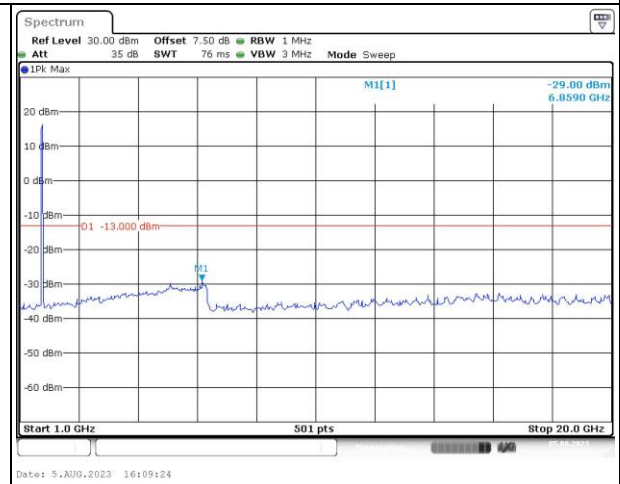
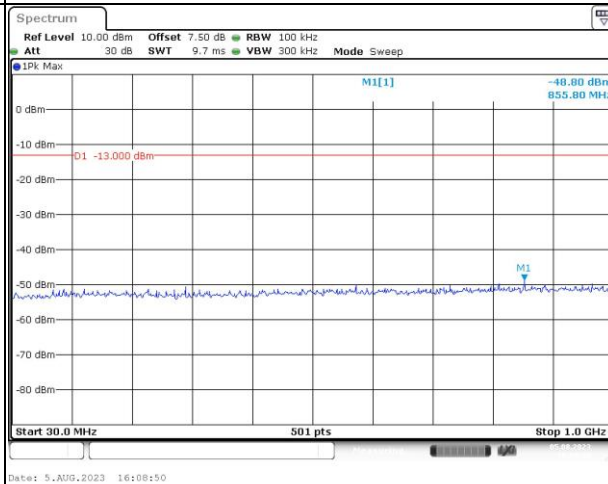


## Spurious Emissions at Antenna Terminal

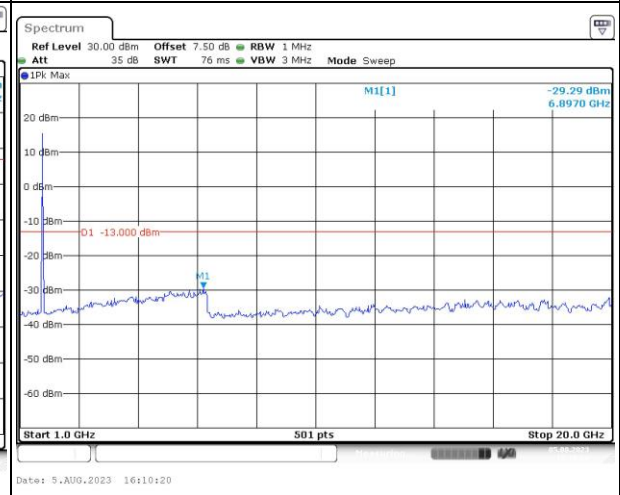
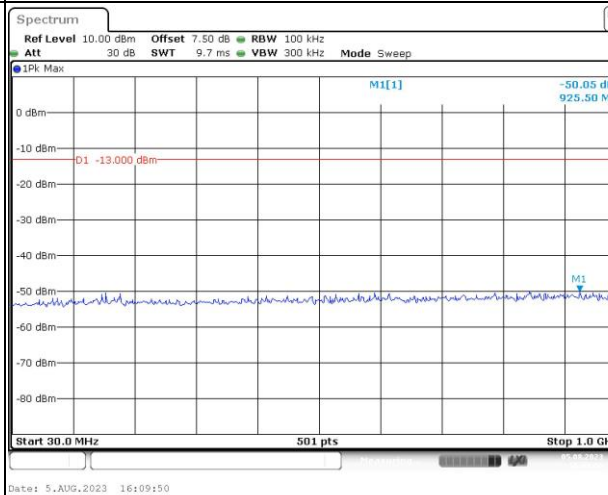
Channel

20MHz Bandwidth QPSK

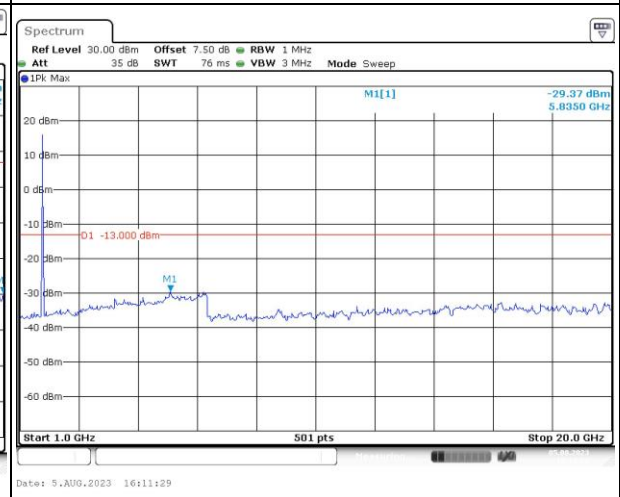
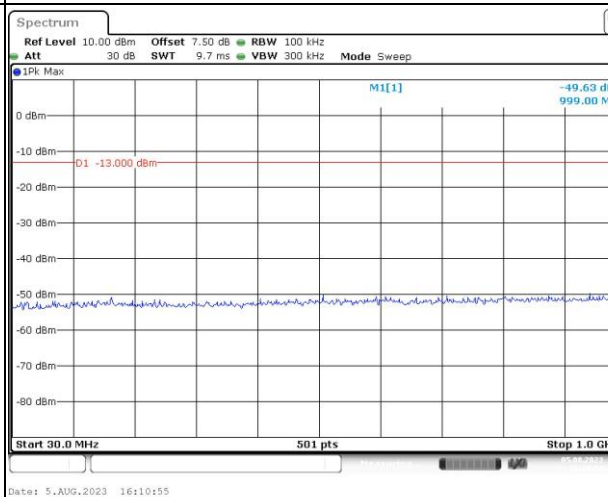
Lowest



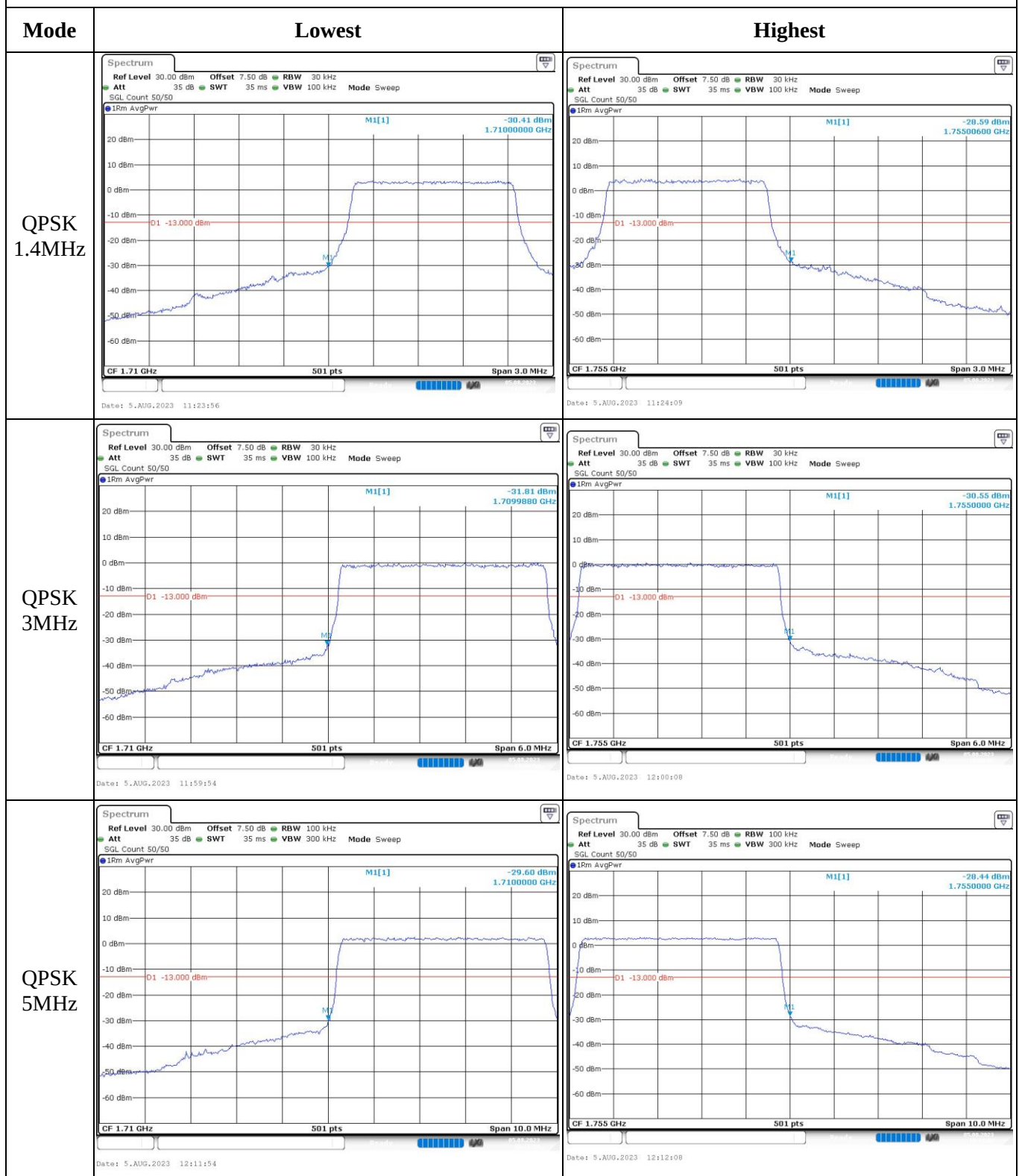
Middle



Highest



## Out of band emission, Band Edge



## Out of band emission, Band Edge

