

## Occupied Bandwidth

| Channel | 3MHz Bandwidth QPSK                                                                                                                                                                                                                                                                                                     | 3MHz Bandwidth 16QAM                                                                                                                                                                                                                                                                                                    |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lowest  | <p>Ref Level 30.00 dBm Offset 11.50 dB RBW 30 kHz<br/>Att 30 dB SWT 63.2 <math>\mu</math>s VBW 100 kHz Mode Auto FFT<br/>1Pk Max<br/>M1[1] -9.09 dBm<br/>Occ Bw 2.682634731 MHz<br/>D1[1] -0.12 dB<br/>CF 825.5 MHz 501 pts Span 6.0 MHz<br/>ProjectNo.:CR230745209 Tester:Ken Tang<br/>Date: 23.SEP.2023 00:38:35</p>  | <p>Ref Level 30.00 dBm Offset 11.50 dB RBW 30 kHz<br/>Att 30 dB SWT 63.2 <math>\mu</math>s VBW 100 kHz Mode Auto FFT<br/>1Pk Max<br/>M1[1] -10.50 dBm<br/>Occ Bw 2.682634731 MHz<br/>D1[1] -0.41 dB<br/>CF 825.5 MHz 501 pts Span 6.0 MHz<br/>ProjectNo.:CR230745209 Tester:Ken Tang<br/>Date: 23.SEP.2023 00:38:56</p> |
| Middle  | <p>Ref Level 30.00 dBm Offset 11.50 dB RBW 30 kHz<br/>Att 30 dB SWT 63.2 <math>\mu</math>s VBW 100 kHz Mode Auto FFT<br/>1Pk Max<br/>M1[1] -8.79 dBm<br/>Occ Bw 2.694610778 MHz<br/>D1[1] -0.69 dB<br/>CF 836.5 MHz 501 pts Span 6.0 MHz<br/>ProjectNo.:CR230745209 Tester:Ken Tang<br/>Date: 23.SEP.2023 00:39:21</p>  | <p>Ref Level 30.00 dBm Offset 11.50 dB RBW 30 kHz<br/>Att 30 dB SWT 63.2 <math>\mu</math>s VBW 100 kHz Mode Auto FFT<br/>1Pk Max<br/>M1[1] -10.12 dBm<br/>Occ Bw 2.682634731 MHz<br/>D1[1] -0.31 dB<br/>CF 836.5 MHz 501 pts Span 6.0 MHz<br/>ProjectNo.:CR230745209 Tester:Ken Tang<br/>Date: 23.SEP.2023 00:39:51</p> |
| Highest | <p>Ref Level 30.00 dBm Offset 11.50 dB RBW 30 kHz<br/>Att 30 dB SWT 63.2 <math>\mu</math>s VBW 100 kHz Mode Auto FFT<br/>1Pk Max<br/>M1[1] -10.39 dBm<br/>Occ Bw 2.694610778 MHz<br/>D1[1] -0.32 dB<br/>CF 847.5 MHz 501 pts Span 6.0 MHz<br/>ProjectNo.:CR230745209 Tester:Ken Tang<br/>Date: 23.SEP.2023 00:40:12</p> | <p>Ref Level 30.00 dBm Offset 11.50 dB RBW 30 kHz<br/>Att 30 dB SWT 63.2 <math>\mu</math>s VBW 100 kHz Mode Auto FFT<br/>1Pk Max<br/>M1[1] -10.96 dBm<br/>Occ Bw 2.682634731 MHz<br/>D1[1] -0.14 dB<br/>CF 847.5 MHz 501 pts Span 6.0 MHz<br/>ProjectNo.:CR230745209 Tester:Ken Tang<br/>Date: 23.SEP.2023 00:40:30</p> |

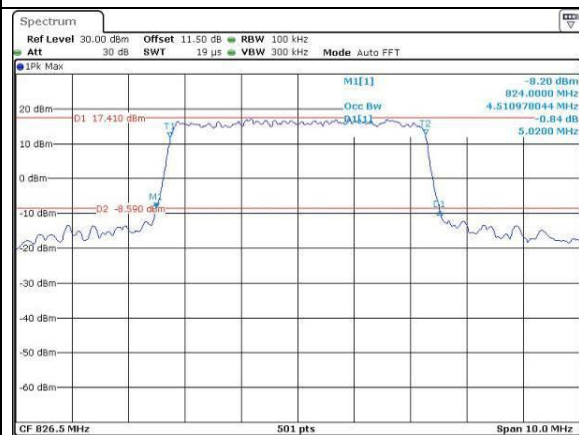
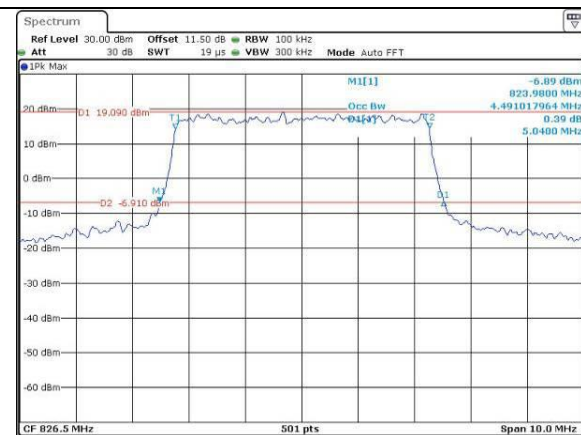
## Occupied Bandwidth

## Channel

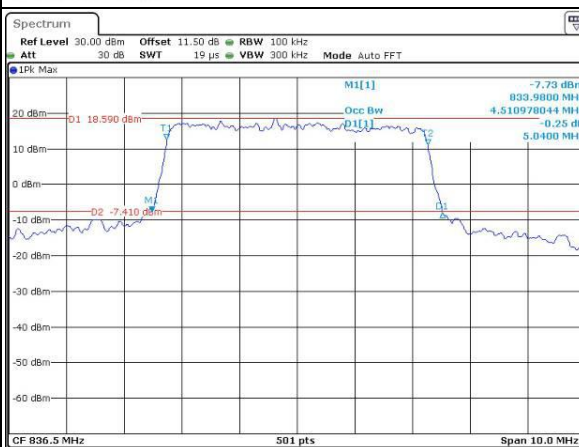
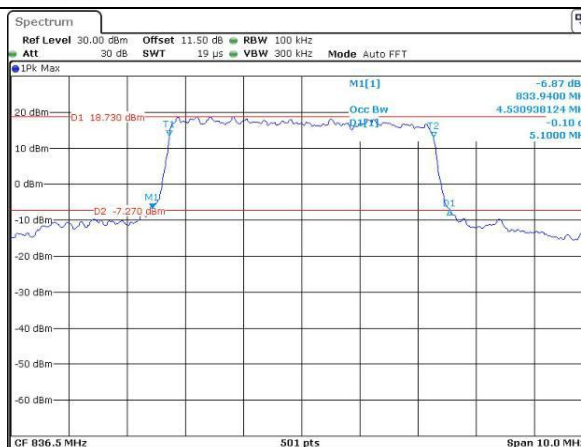
## 5MHz Bandwidth QPSK

## 5MHz Bandwidth 16QAM

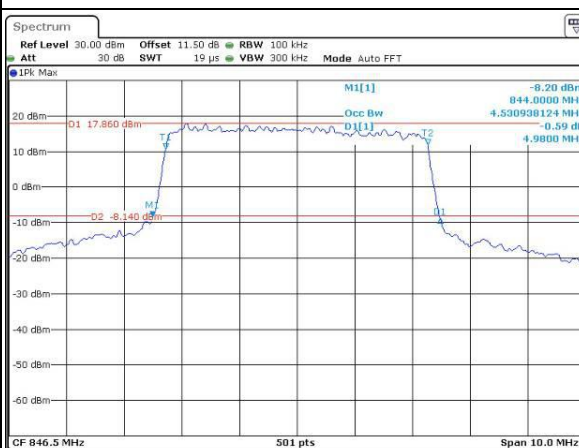
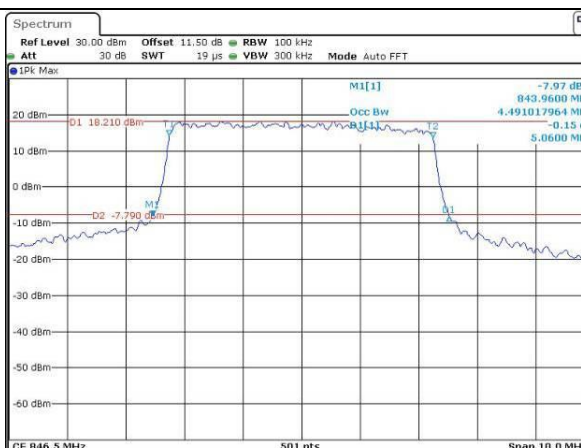
## Lowest



## Middle



## Highest



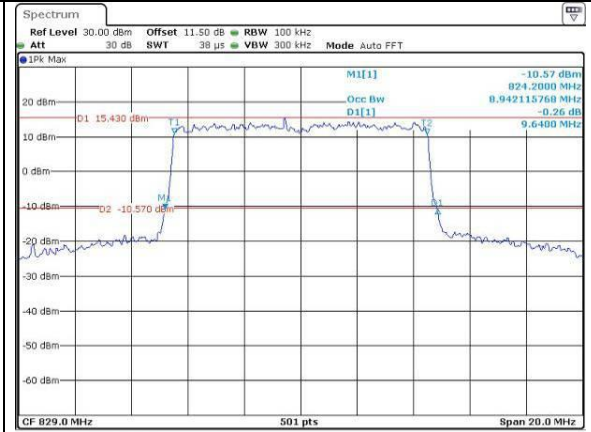
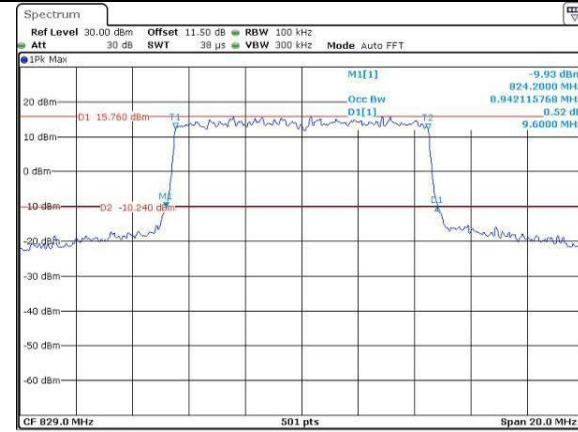
## Occupied Bandwidth

## Channel

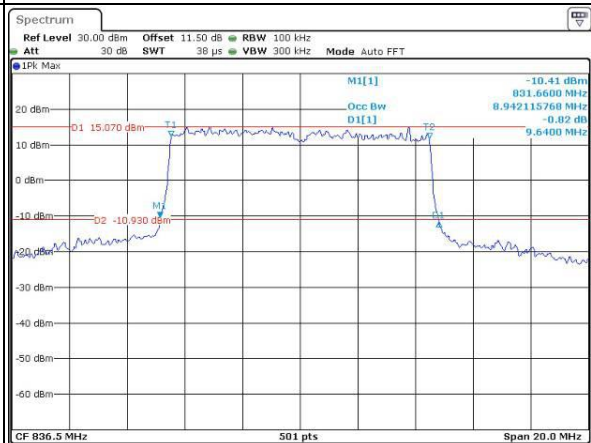
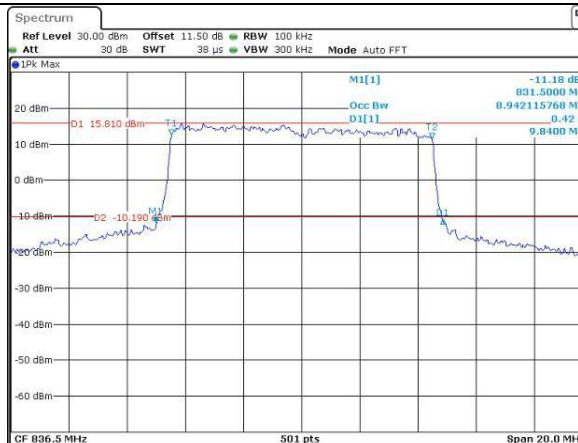
## 10MHz Bandwidth QPSK

## 10MHz Bandwidth 16QAM

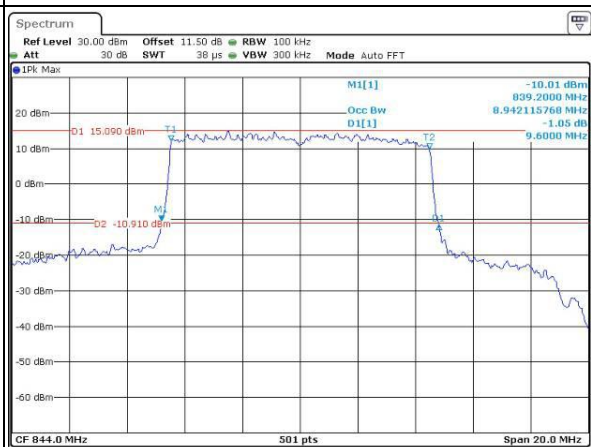
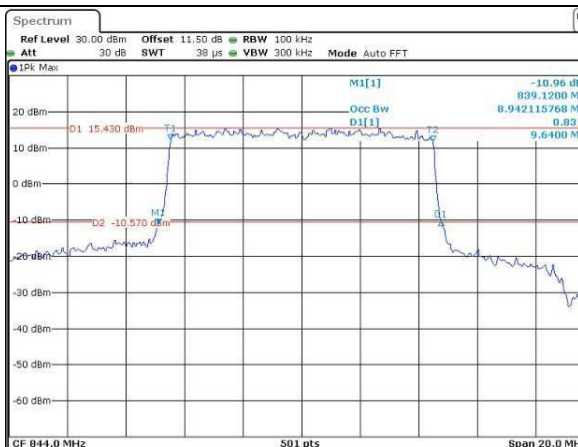
## Lowest



## Middle



## Highest



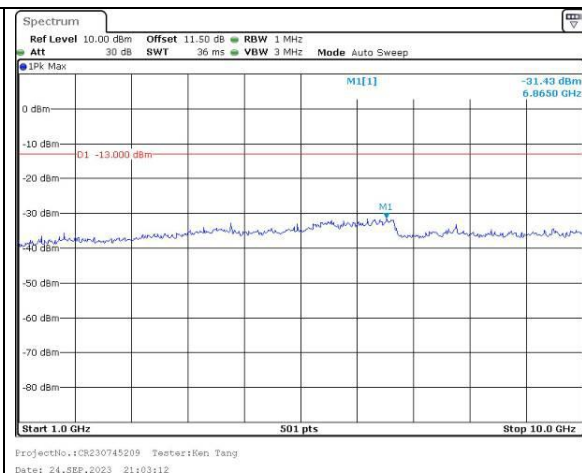
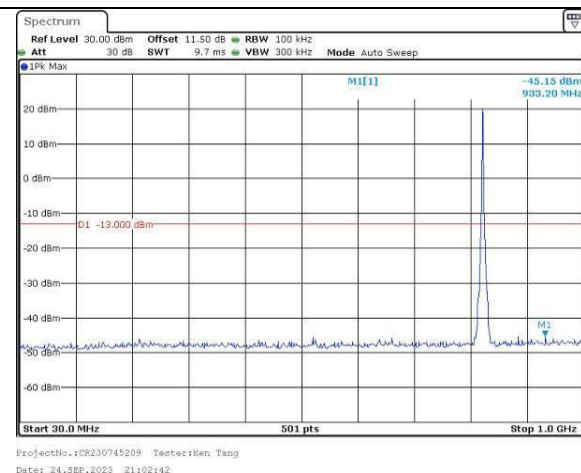


## Spurious Emissions at Antenna Terminal

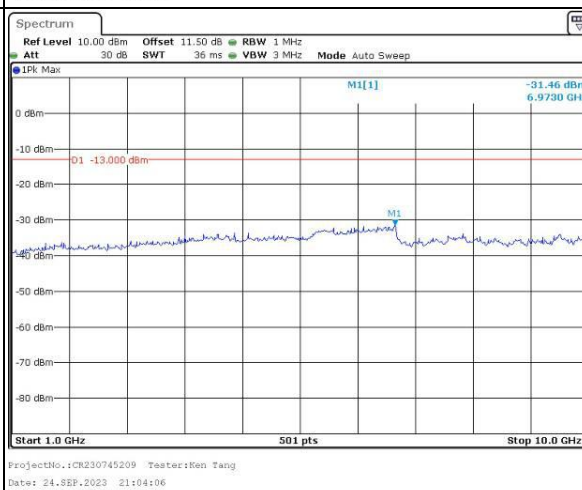
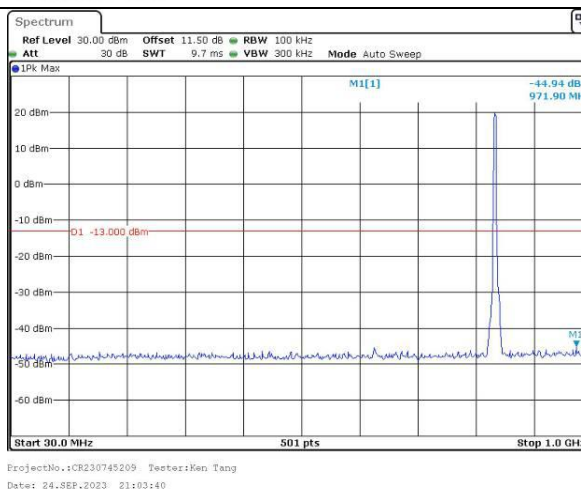
Channel

3MHz Bandwidth QPSK

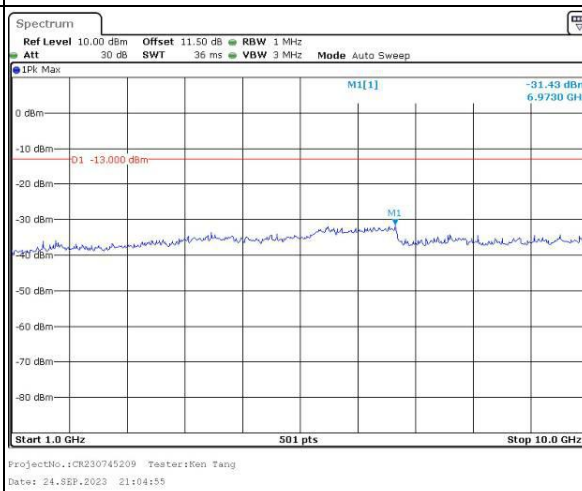
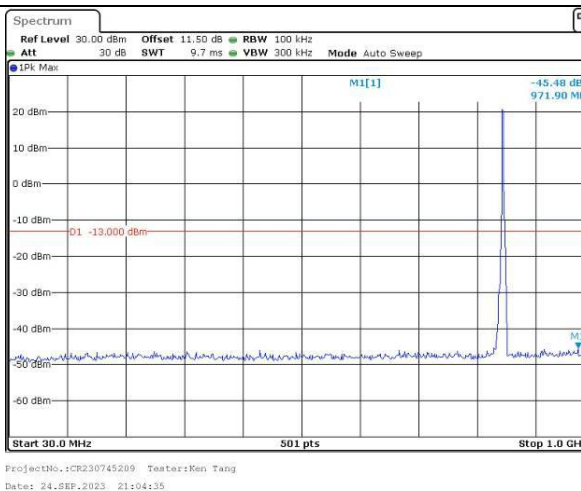
Lowest



Middle



Highest

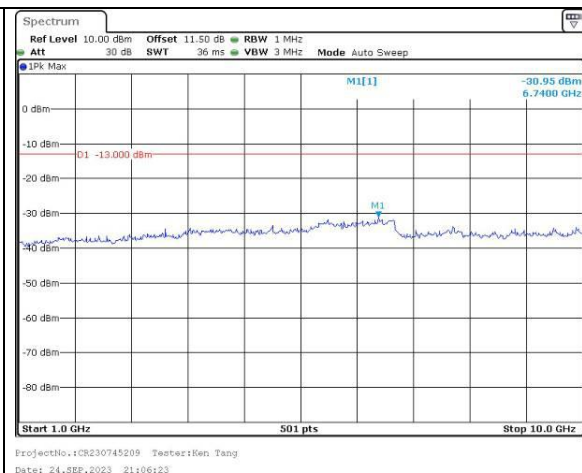
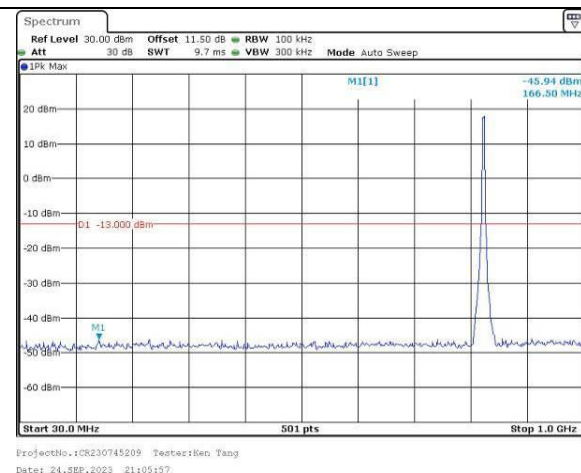


## Spurious Emissions at Antenna Terminal

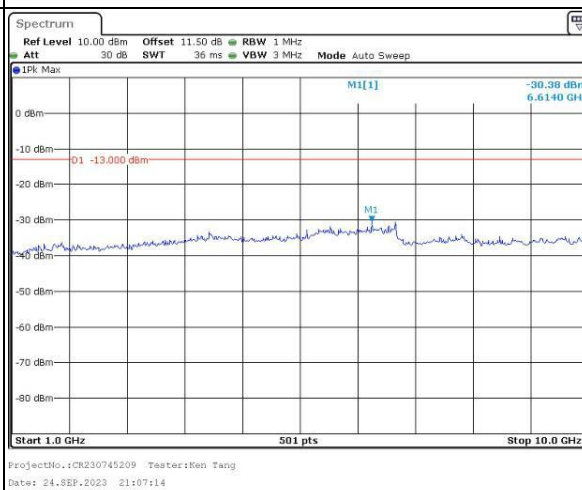
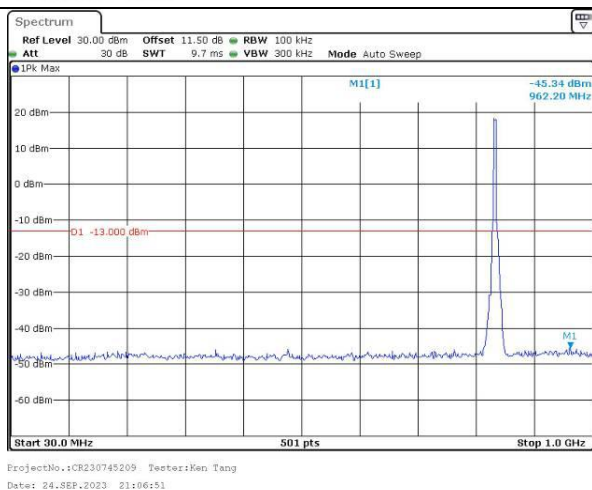
Channel

5MHz Bandwidth QPSK

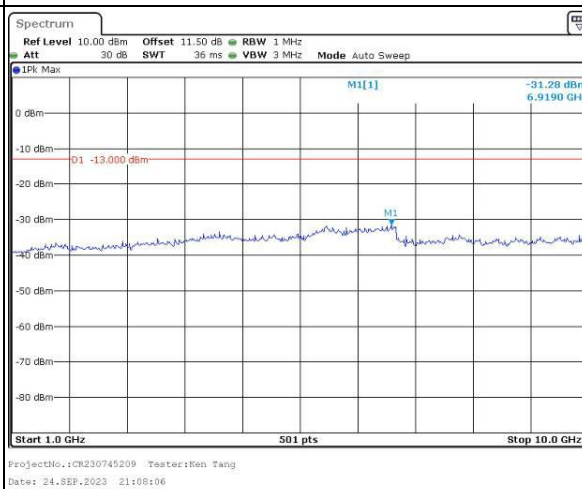
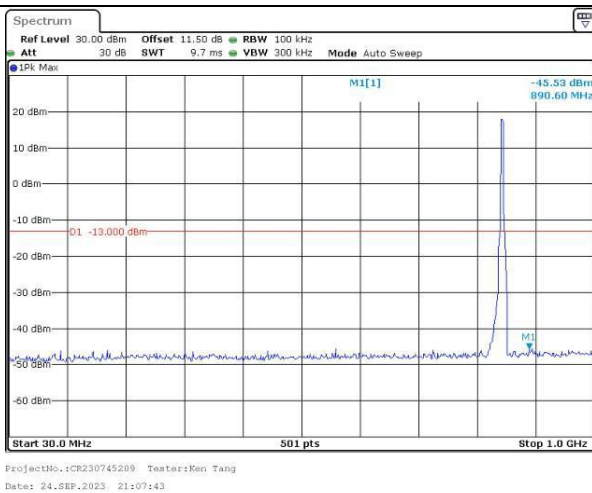
Lowest



Middle



Highest

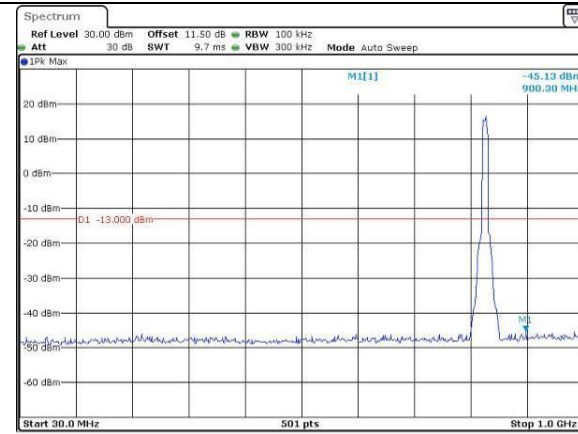


## Spurious Emissions at Antenna Terminal

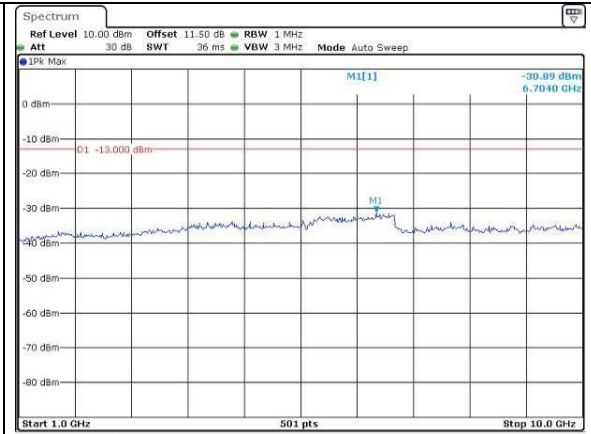
Channel

10MHz Bandwidth QPSK

Lowest

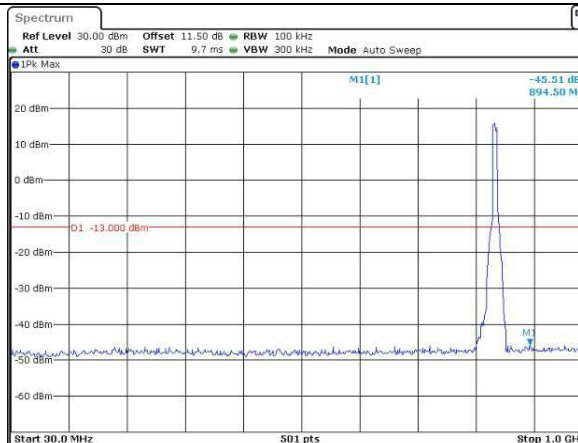


ProjectNo.:CR230745209 Tester:Ken Tang  
Date: 24.SEP.2023 21:09:06

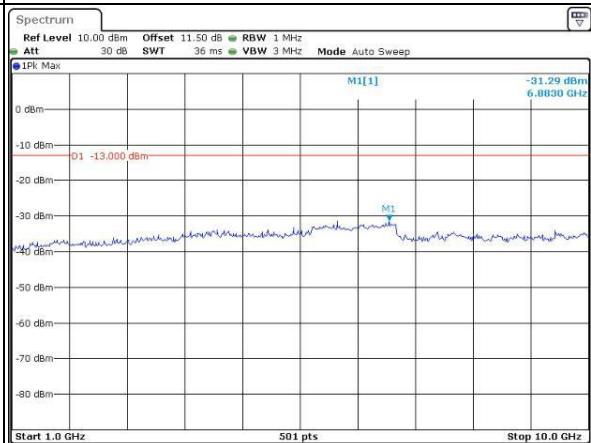


ProjectNo.:CR230745209 Tester:Ken Tang  
Date: 24.SEP.2023 21:09:35

Middle

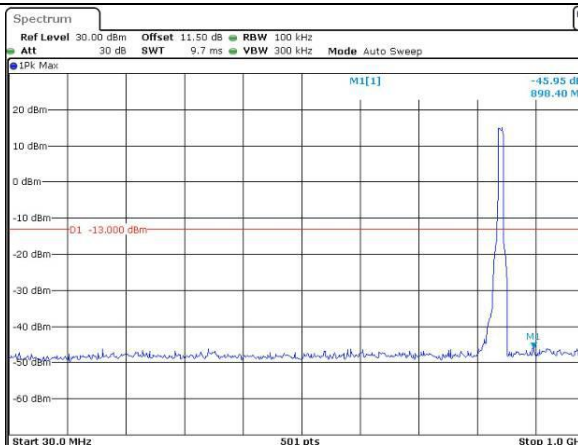


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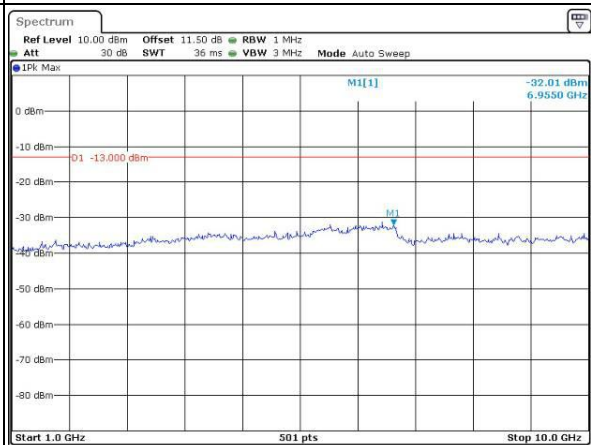


ProjectNo.:CR230745209 Tester:Ken Tang  
Date: 24.SEP.2023 21:10:32

Highest

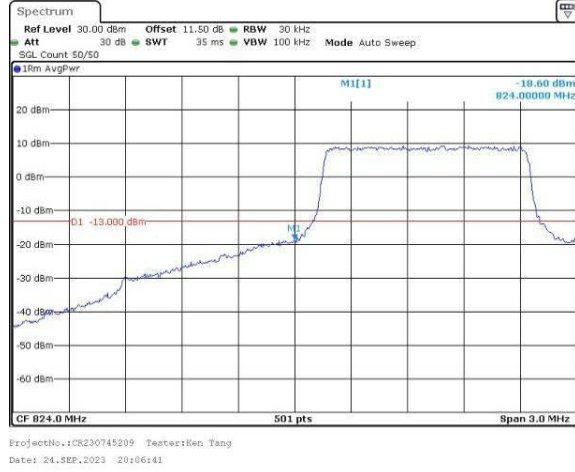
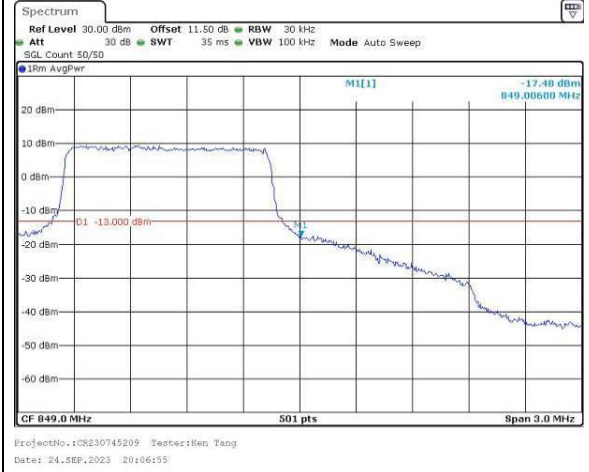
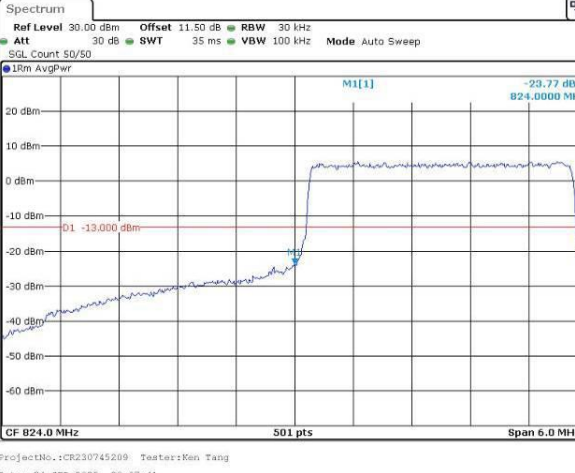
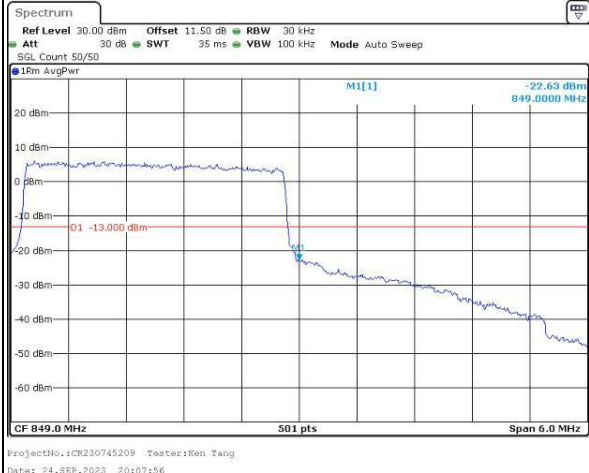
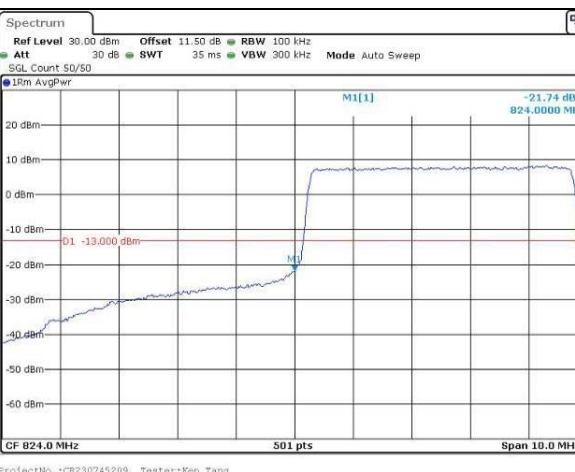


ProjectNo.:CR230745209 Tester:Ken Tang  
Date: 24.SEP.2023 21:10:52

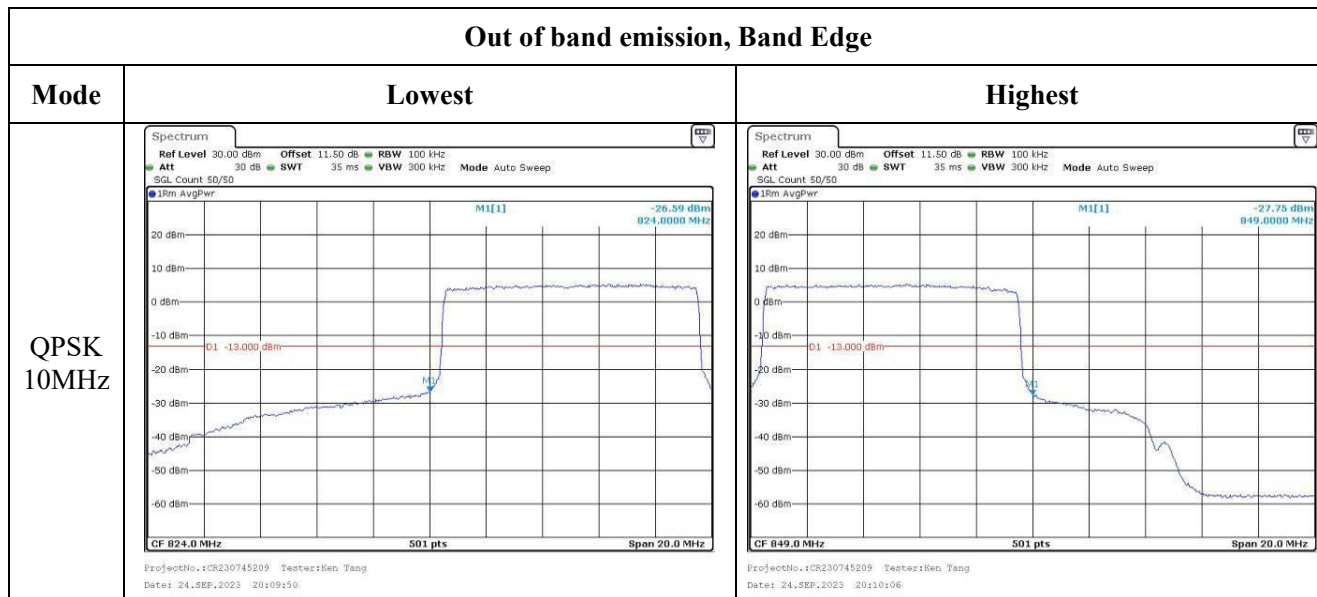


ProjectNo.:CR230745209 Tester:Ken Tang  
Date: 24.SEP.2023 21:11:11

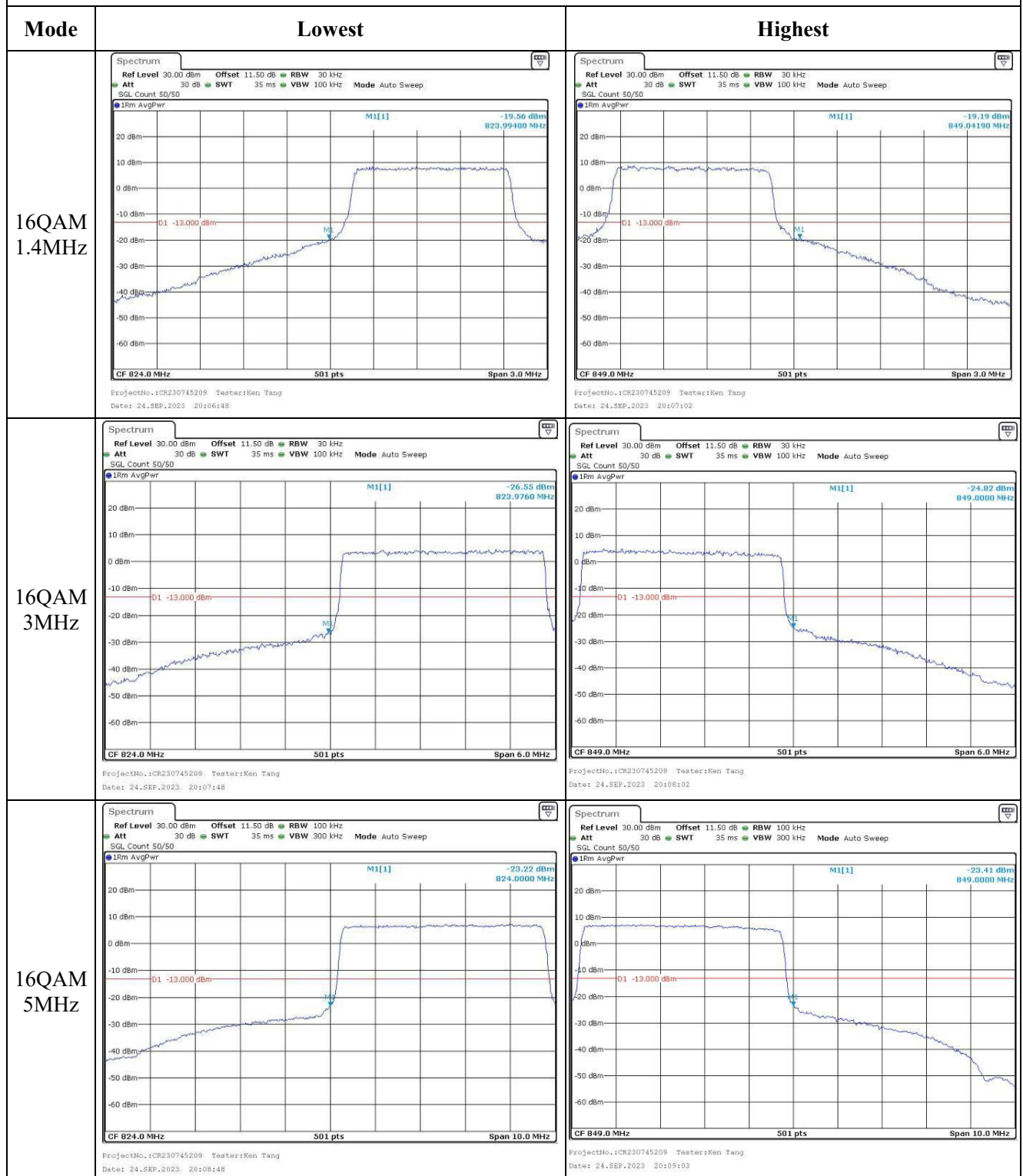
## Out of band emission, Band Edge

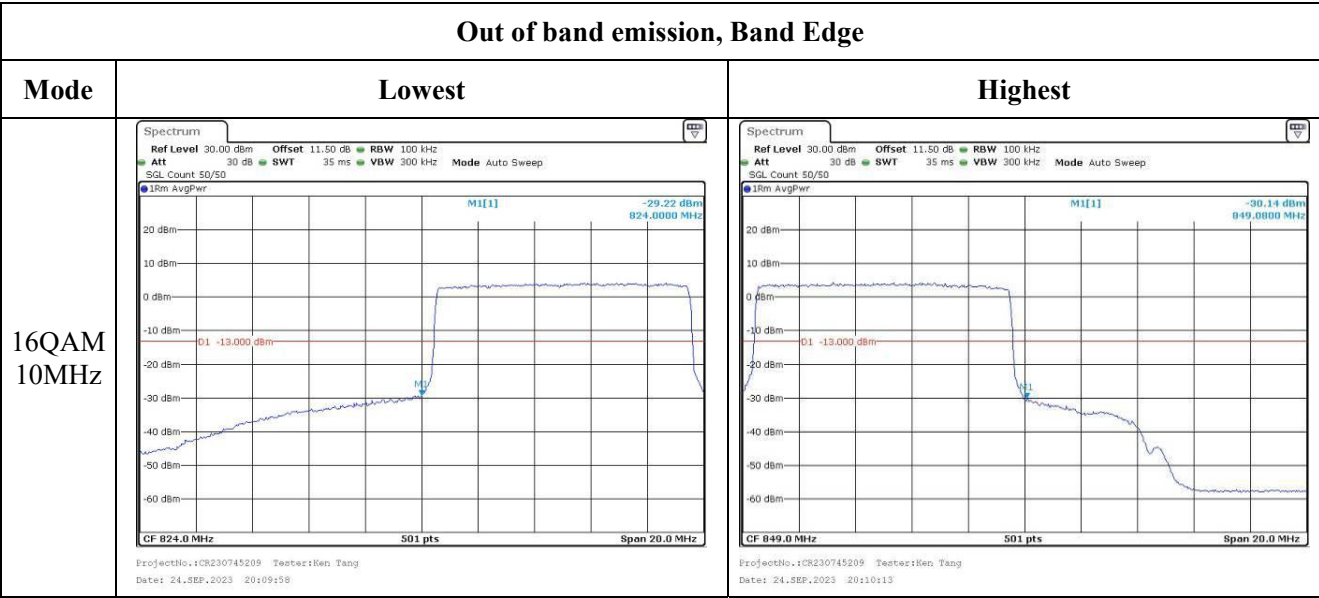
| Mode           | Lowest                                                                              | Highest                                                                              |
|----------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| QPSK<br>1.4MHz |    |    |
| QPSK<br>3MHz   |   |   |
| QPSK<br>5MHz   |  |  |

## Out of band emission, Band Edge



## Out of band emission, Band Edge





#### 4.7 Antenna Port Test Data and Results for LTE Band 12

|                |          |              |                     |
|----------------|----------|--------------|---------------------|
| Serial Number: | 2BCU-1   | Test Date:   | 2023/9/22~2023/9/29 |
| Test Site:     | RF       | Test Mode:   | Transmitting        |
| Tester:        | Ken Tang | Test Result: | Pass                |

##### Environmental Conditions:

|                      |           |                              |       |                        |     |
|----------------------|-----------|------------------------------|-------|------------------------|-----|
| Temperature:<br>(°C) | 26.5-25.4 | Relative<br>Humidity:<br>(%) | 57-49 | ATM Pressure:<br>(kPa) | 101 |
|----------------------|-----------|------------------------------|-------|------------------------|-----|

##### Test Equipment List and Details:

| Manufacturer | Description            | Model         | Serial Number   | Calibration Date | Calibration Due Date |
|--------------|------------------------|---------------|-----------------|------------------|----------------------|
| R&S          | Spectrum Analyzer      | FSV40         | 102259          | 2023/4/18        | 2024/4/17            |
| R&S          | Wideband Radio         | CMW500        | 143458          | 2023/3/31        | 2024/3/30            |
| zhuoxiang    | Coaxial Cable          | SMA-178       | 211001          | Each time        | N/A                  |
| YINSAIGE     | Coaxial Cable          | SS402         | SJ0100001       | Each time        | N/A                  |
| BACL         | TEMP&HUMI Test Chamber | BTH-150-40    | 30174           | 2023/3/31        | 2024/3/30            |
| UNI-T        | Multimeter             | UT39A+        | C210582554      | 2022/9/29        | 2023/9/28            |
| UNI-T        | Multimeter             | UT39A+        | C210582554      | 2023/9/28        | 2024/9/27            |
| ZHAOXIN      | DC Power Supply        | RXN-6010D     | 21R6010D0912386 | N/A              | N/A                  |
| eastsheep    | Coaxial Attenuator     | 2W-SMA-JK-18G | 21060301        | 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).

##### Test Frequency For Each Mode:

| Operation Bandwidth | Lowest Frequency (MHz) | Middle Frequency (MHz) | Highest Frequency (MHz) |
|---------------------|------------------------|------------------------|-------------------------|
| 1.4MHz              | 699.7                  | 707.5                  | 715.3                   |
| 3MHz                | 700.5                  | 707.5                  | 714.5                   |
| 5MHz                | 701.5                  | 707.5                  | 713.5                   |
| 10MHz               | 704                    | 707.5                  | 711                     |

**Test Data:****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                      | 23.49                               | 24.43          | 24.4            | 15.38             | 34.77           |
|                             | RB1#3                      | 24.43                               | 24.41          | 24.42           |                   |                 |
|                             | RB1#5                      | 24.46                               | 24.42          | 24.44           |                   |                 |
|                             | RB3#0                      | 24.5                                | 24.56          | 24.51           |                   |                 |
|                             | RB3#3                      | 24.56                               | 24.54          | 24.5            |                   |                 |
|                             | RB6#0                      | 23.48                               | 23.51          | 23.59           |                   |                 |
| 1.4MHz 16QAM                | RB1#0                      | 23.53                               | 23.55          | 23.67           | 14.57             | 34.77           |
|                             | RB1#3                      | 23.55                               | 23.55          | 23.67           |                   |                 |
|                             | RB1#5                      | 23.56                               | 23.58          | 23.67           |                   |                 |
|                             | RB3#0                      | 23.51                               | 23.7           | 23.44           |                   |                 |
|                             | RB3#3                      | 23.53                               | 23.75          | 23.45           |                   |                 |
|                             | RB6#0                      | 22.43                               | 22.56          | 22.66           |                   |                 |
| 3MHz QPSK                   | RB1#0                      | 24.46                               | 24.61          | 24.42           | 15.43             | 34.77           |
|                             | RB1#8                      | 24.46                               | 24.54          | 24.42           |                   |                 |
|                             | RB1#14                     | 24.46                               | 24.54          | 24.46           |                   |                 |
|                             | RB6#0                      | 23.53                               | 23.54          | 23.62           |                   |                 |
|                             | RB6#9                      | 23.54                               | 23.47          | 23.57           |                   |                 |
|                             | RB15#0                     | 23.54                               | 23.51          | 23.53           |                   |                 |
| 3MHz 16QAM                  | RB1#0                      | 23.57                               | 24.1           | 23.72           | 14.92             | 34.77           |
|                             | RB1#8                      | 23.56                               | 24.05          | 23.65           |                   |                 |
|                             | RB1#14                     | 23.57                               | 24             | 23.66           |                   |                 |
|                             | RB6#0                      | 22.47                               | 22.64          | 22.63           |                   |                 |
|                             | RB6#9                      | 22.48                               | 22.6           | 22.59           |                   |                 |
|                             | RB15#0                     | 22.57                               | 22.58          | 22.44           |                   |                 |
| 5MHz QPSK                   | RB1#0                      | 24.57                               | 24.8           | 24.48           | 15.62             | 34.77           |
|                             | RB1#13                     | 24.55                               | 24.73          | 24.45           |                   |                 |
|                             | RB1#24                     | 24.65                               | 24.75          | 24.54           |                   |                 |
|                             | RB15#0                     | 23.59                               | 23.56          | 23.6            |                   |                 |
|                             | RB15#10                    | 23.52                               | 23.54          | 23.43           |                   |                 |
|                             | RB25#0                     | 23.54                               | 23.53          | 23.52           |                   |                 |
| 5MHz 16QAM                  | RB1#0                      | 23.65                               | 23.52          | 23.82           | 14.67             | 34.77           |
|                             | RB1#13                     | 23.58                               | 23.45          | 23.78           |                   |                 |
|                             | RB1#24                     | 23.7                                | 23.49          | 23.85           |                   |                 |
|                             | RB15#0                     | 22.61                               | 22.61          | 22.58           |                   |                 |
|                             | RB15#10                    | 22.55                               | 22.62          | 22.43           |                   |                 |
|                             | RB25#0                     | 22.57                               | 22.6           | 22.54           |                   |                 |
| 10MHz QPSK                  | RB1#0                      | 24.54                               | 24.63          | 24.56           | 15.46             | 34.77           |
|                             | RB1#25                     | 24.53                               | 24.64          | 24.52           |                   |                 |
|                             | RB1#49                     | 24.51                               | 24.59          | 24.52           |                   |                 |

|                |         |       |       |       |       |       |
|----------------|---------|-------|-------|-------|-------|-------|
| 10MHz<br>16QAM | RB25#0  | 23.49 | 23.56 | 23.48 | 14.95 | 34.77 |
|                | RB25#25 | 23.49 | 23.48 | 23.4  |       |       |
|                | RB50#0  | 23.52 | 23.56 | 23.47 |       |       |
|                | RB1#0   | 23.63 | 24.13 | 23.74 |       |       |
|                | RB1#25  | 23.58 | 24.11 | 23.7  |       |       |
|                | RB1#49  | 23.56 | 24.01 | 23.69 |       |       |
|                | RB25#0  | 22.59 | 22.64 | 22.55 |       |       |
|                | RB25#25 | 22.61 | 22.53 | 22.42 |       |       |
|                | RB50#0  | 22.51 | 22.52 | 22.47 |       |       |

Note:

ERP= Conducted Power(dBm) - LC(dB) + GT(dBd)

GT(dBd)=GT(dBi)-2.15

**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                      | 9.44                      | 9.70           | 9.22            | 13          |
|                             | RB50#0                     | 9.94                      | 9.93           | 6.30            | 13          |
| 10MHz 16QAM                 | RB1#0                      | 6.17                      | 9.76           | 8.18            | 13          |
|                             | RB50#0                     | 7.54                      | 9.87           | 9.10            | 13          |
|                             |                            |                           |                | <b>Result:</b>  | <b>Pass</b> |

**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    | 1.096                        | 1.102          | 1.102        | 1.290                          | 1.326          | 1.290        |
| 1.4MHz 16QAM   | 1.108                        | 1.096          | 1.096        | 1.320                          | 1.284          | 1.302        |
| 3MHz QPSK      | 2.683                        | 2.683          | 2.683        | 2.904                          | 2.892          | 2.892        |
| 3MHz 16QAM     | 2.683                        | 2.683          | 2.683        | 2.904                          | 2.916          | 2.904        |
| 5MHz QPSK      | 4.491                        | 4.511          | 4.491        | 4.960                          | 5.040          | 5.020        |
| 5MHz 16QAM     | 4.511                        | 4.491          | 4.531        | 5.020                          | 4.960          | 4.980        |
| 10MHz QPSK     | 8.942                        | 8.942          | 8.942        | 9.640                          | 9.680          | 9.600        |
| 10MHz 16QAM    | 8.982                        | 8.942          | 8.942        | 9.680                          | 9.600          | 9.640        |

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

**Spurious Emissions at Antenna Terminal**

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

**Out of band emission, Band Edge**

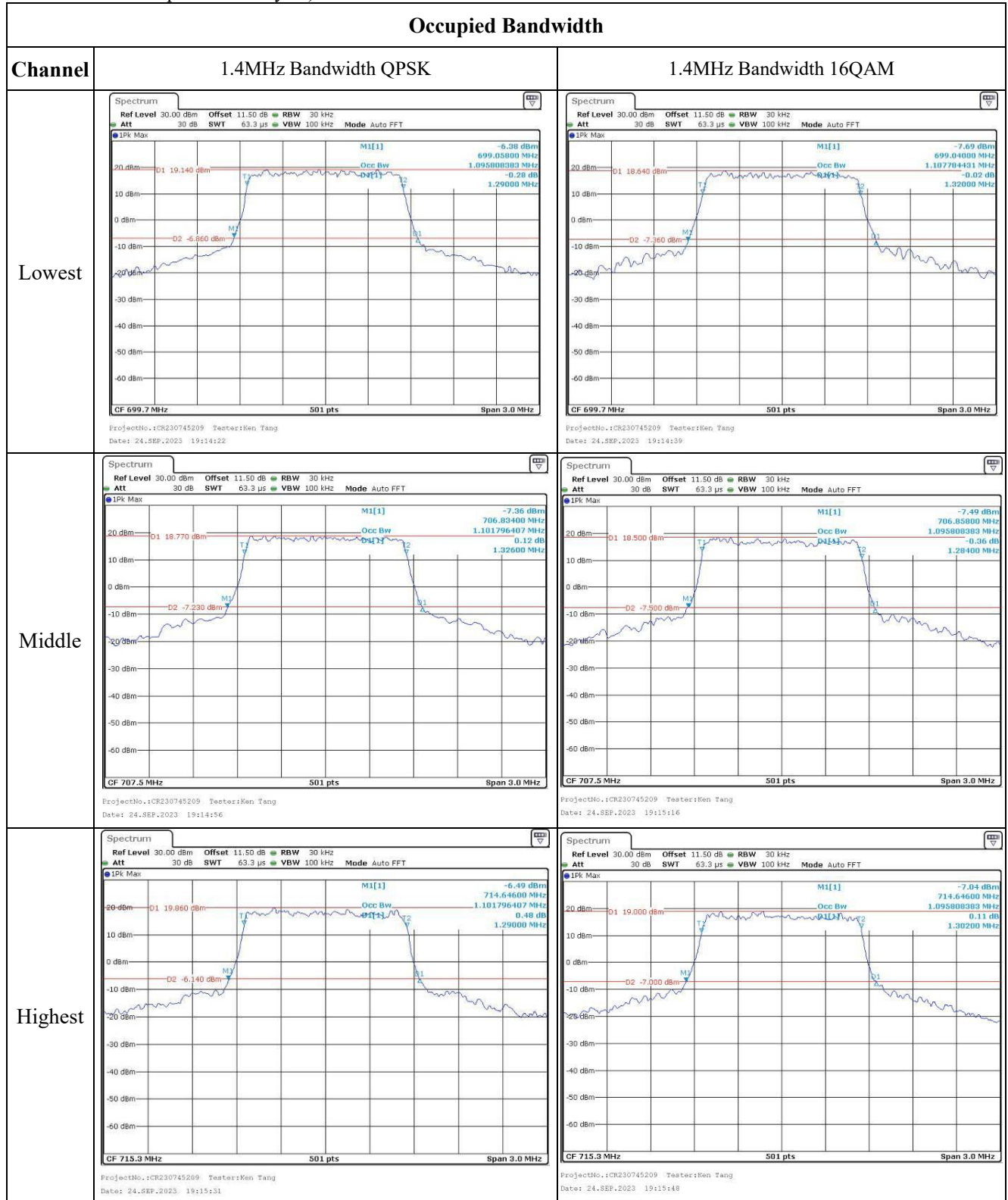
|                |                                                                                 |
|----------------|---------------------------------------------------------------------------------|
| <b>Result:</b> | <b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b>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

**Frequency Stability**

| Test Mode:                          | 10M 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              | 3.87                                                       | 699.028          | 699.00 | 715.991          | 716.00 |
|                                     | -20              | 3.87                                                       | 699.017          | 699.00 | 715.993          | 716.00 |
|                                     | -10              | 3.87                                                       | 699.011          | 699.00 | 715.976          | 716.00 |
|                                     | 0                | 3.87                                                       | 699.001          | 699.00 | 715.990          | 716.00 |
|                                     | 10               | 3.87                                                       | 699.004          | 699.00 | 715.986          | 716.00 |
|                                     | 20               | 3.87                                                       | 699.011          | 699.00 | 715.974          | 716.00 |
|                                     | 30               | 3.87                                                       | 699.029          | 699.00 | 715.992          | 716.00 |
|                                     | 40               | 3.87                                                       | 699.012          | 699.00 | 715.992          | 716.00 |
|                                     | 50               | 3.87                                                       | 699.003          | 699.00 | 715.989          | 716.00 |
| Frequency Stability vs. Voltage     | 20               | 3.35                                                       | 699.003          | 699.00 | 715.985          | 716.00 |
|                                     | 20               | 4.43                                                       | 699.024          | 699.00 | 715.980          | 716.00 |
| <b>Result:</b>                      |                  |                                                            |                  |        | <b>Pass</b>      |        |

| Test Mode:                          | 10M 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              | 3.87                                                       | 699.009          | 699.00 | 715.979          | 716.00 |
|                                     | -20              | 3.87                                                       | 699.024          | 699.00 | 715.978          | 716.00 |
|                                     | -10              | 3.87                                                       | 699.004          | 699.00 | 715.990          | 716.00 |
|                                     | 0                | 3.87                                                       | 699.026          | 699.00 | 715.995          | 716.00 |
|                                     | 10               | 3.87                                                       | 699.012          | 699.00 | 715.975          | 716.00 |
|                                     | 20               | 3.87                                                       | 699.027          | 699.00 | 715.986          | 716.00 |
|                                     | 30               | 3.87                                                       | 699.023          | 699.00 | 715.975          | 716.00 |
|                                     | 40               | 3.87                                                       | 699.021          | 699.00 | 715.980          | 716.00 |
|                                     | 50               | 3.87                                                       | 699.006          | 699.00 | 715.990          | 716.00 |
| Frequency Stability vs. Voltage     | 20               | 3.35                                                       | 699.017          | 699.00 | 715.995          | 716.00 |
|                                     | 20               | 4.43                                                       | 699.004          | 699.00 | 715.988          | 716.00 |
| <b>Result:</b>                      |                  |                                                            |                  |        | <b>Pass</b>      |        |

**Test Plots**(Note: The 11.5dB is the Insertion loss of the RF cable, Coaxial tee connector and Attenuator, which was offset into the Spectrum Analyzer):



## Occupied Bandwidth

| Channel | 3MHz Bandwidth QPSK                                                           | 3MHz Bandwidth 16QAM                                                          |
|---------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Lowest  | <p>ProjectNo.:CR230745209 Testter:Ken Tang<br/>Date: 24.SEP.2023 19:16:33</p> | <p>ProjectNo.:CR230745209 Testter:Ken Tang<br/>Date: 24.SEP.2023 19:16:50</p> |
| Middle  | <p>ProjectNo.:CR230745209 Testter:Ken Tang<br/>Date: 24.SEP.2023 19:17:14</p> | <p>ProjectNo.:CR230745209 Testter:Ken Tang<br/>Date: 24.SEP.2023 19:17:31</p> |
| Highest | <p>ProjectNo.:CR230745209 Testter:Ken Tang<br/>Date: 24.SEP.2023 19:17:52</p> | <p>ProjectNo.:CR230745209 Testter:Ken Tang<br/>Date: 24.SEP.2023 19:18:12</p> |

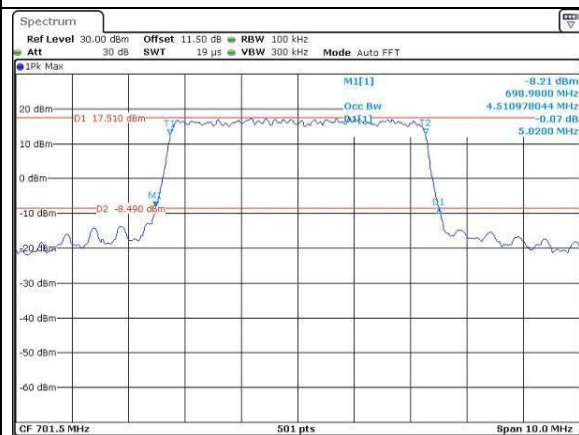
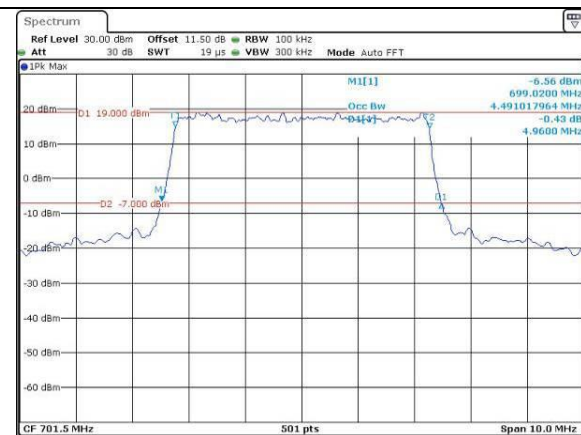
## Occupied Bandwidth

## Channel

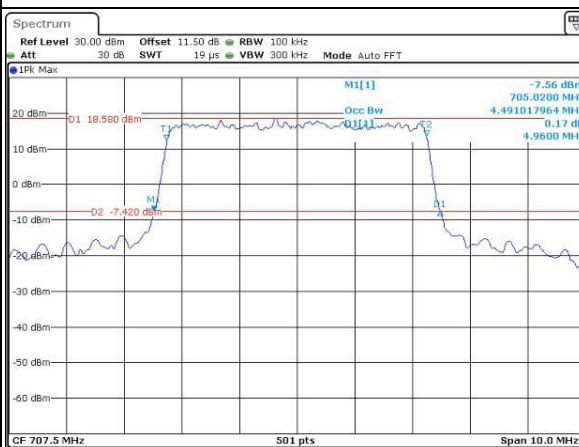
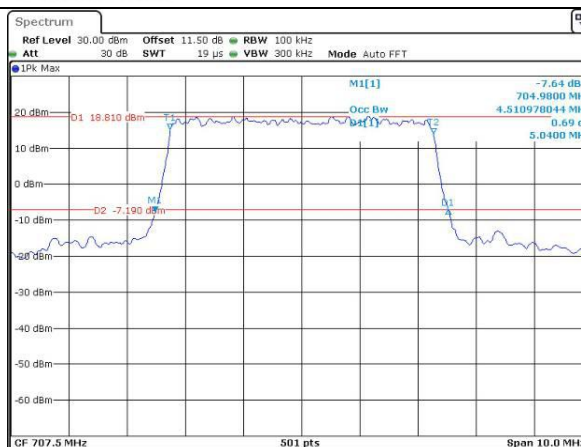
## 5MHz Bandwidth QPSK

## 5MHz Bandwidth 16QAM

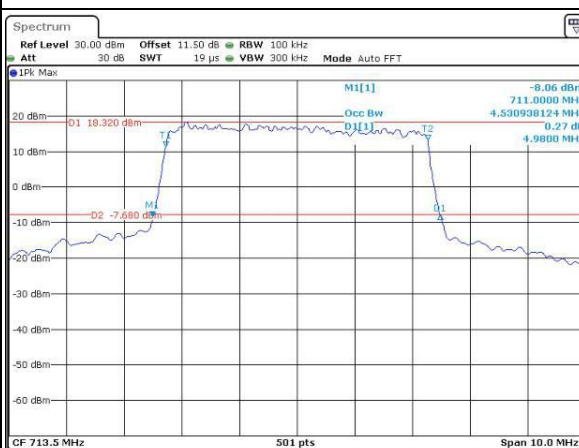
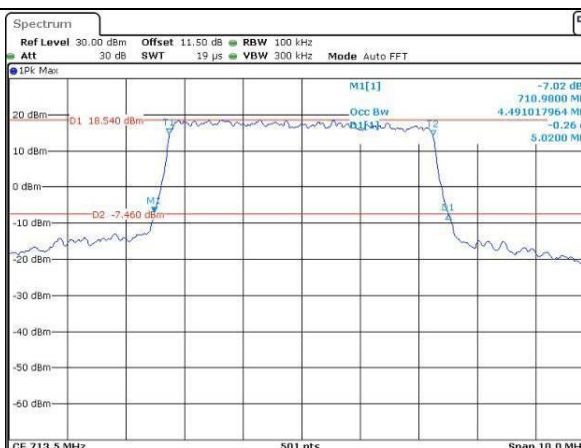
## Lowest



## Middle



## Highest



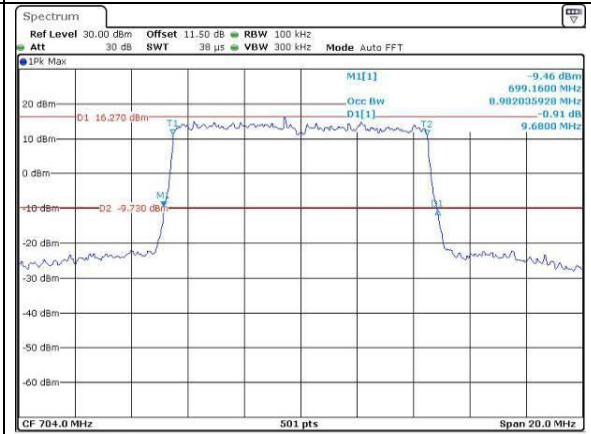
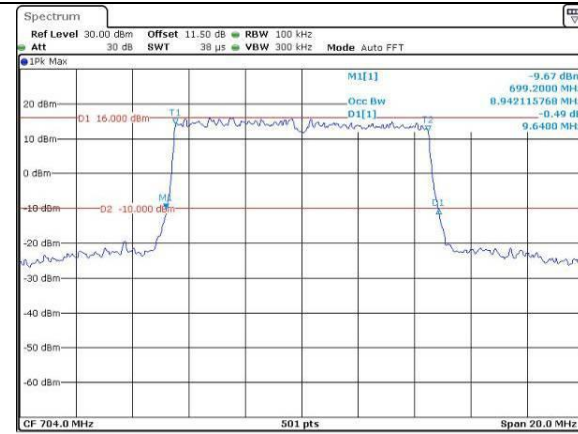
## Occupied Bandwidth

## Channel

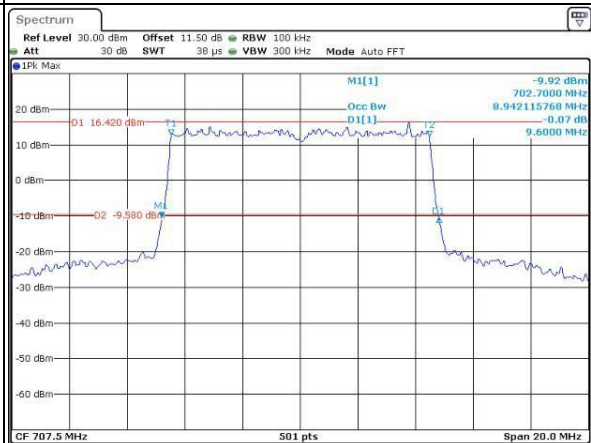
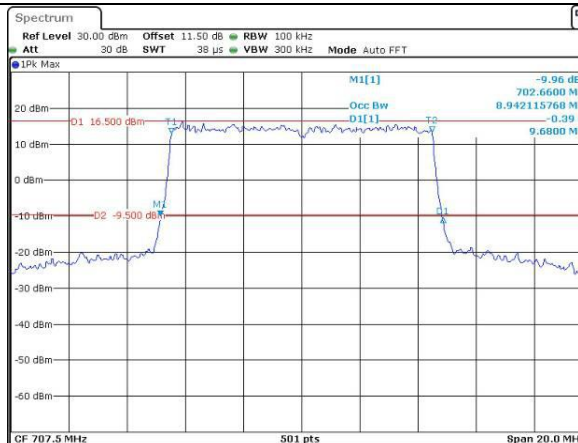
## 10MHz Bandwidth QPSK

## 10MHz Bandwidth 16QAM

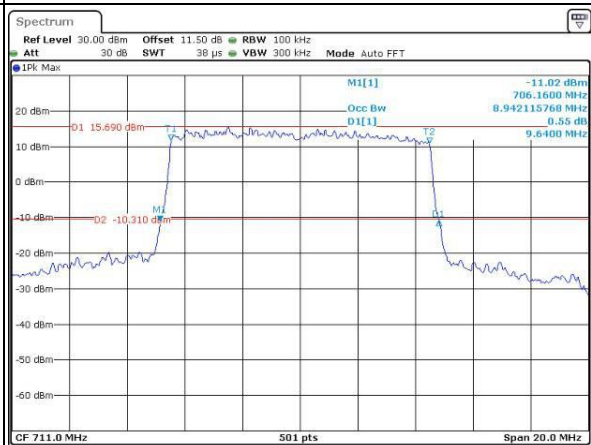
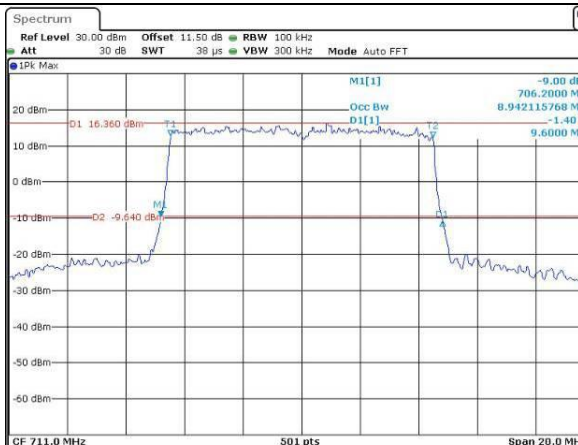
## Lowest



## Middle



## Highest

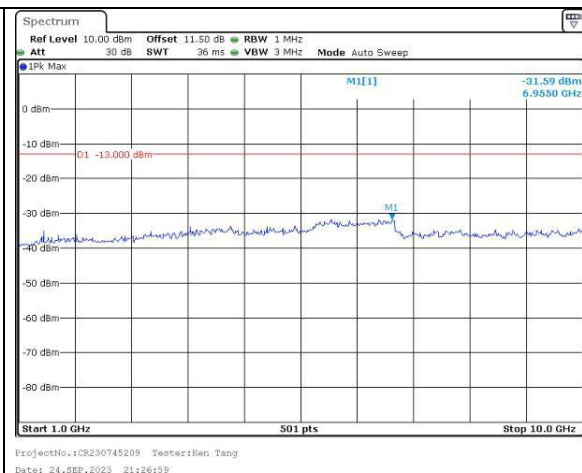
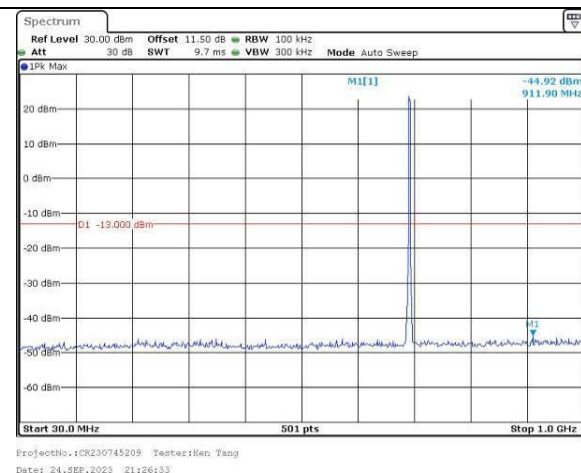


## Spurious Emissions at Antenna Terminal

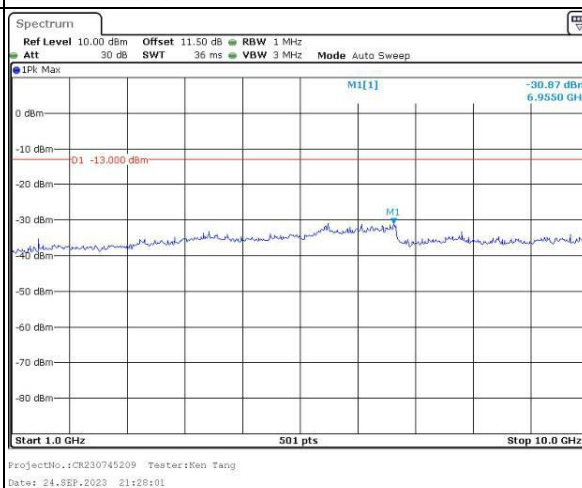
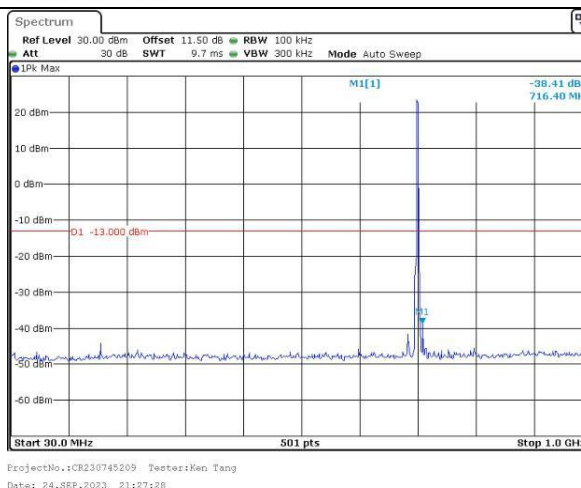
Channel

1.4MHz Bandwidth QPSK

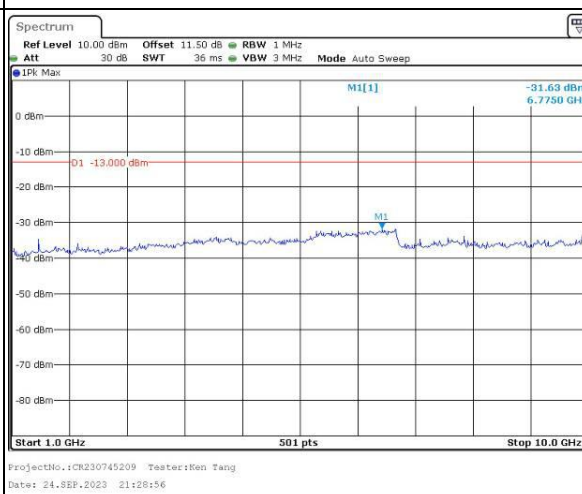
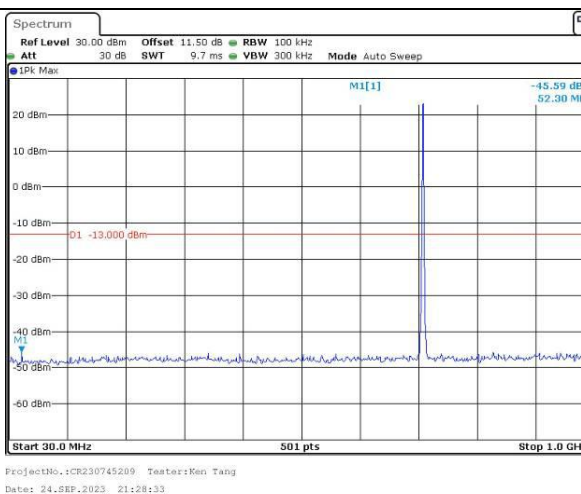
Lowest



Middle



Highest

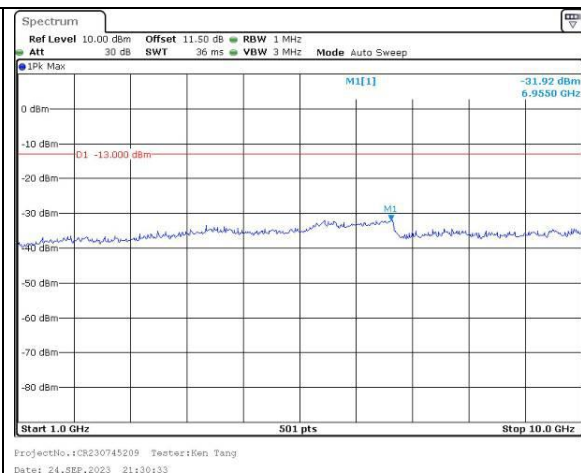
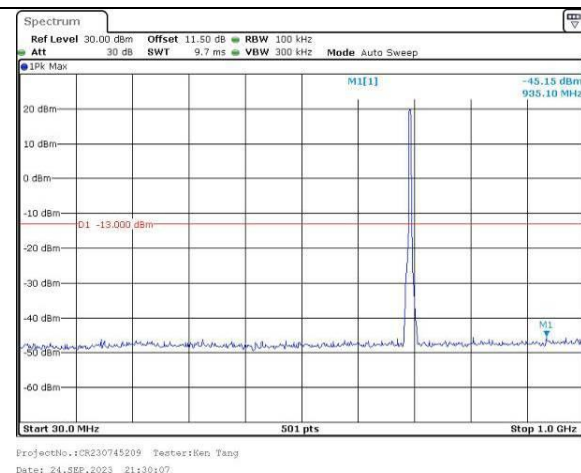


## Spurious Emissions at Antenna Terminal

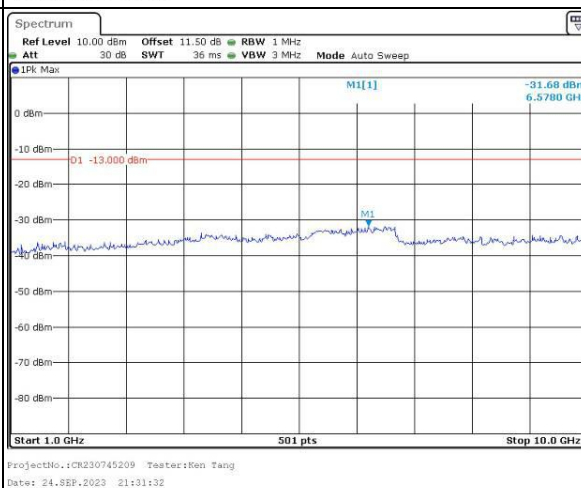
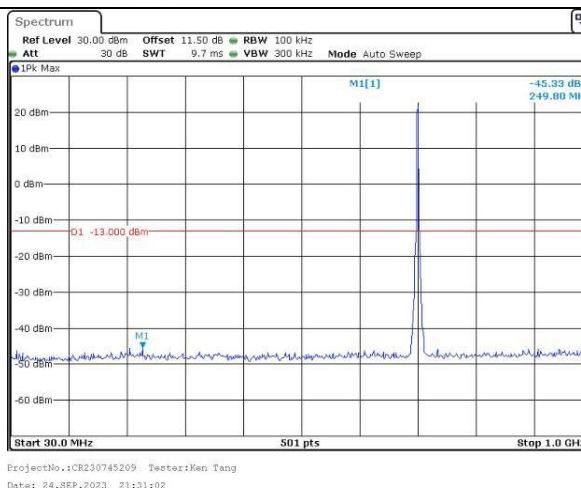
Channel

3MHz Bandwidth QPSK

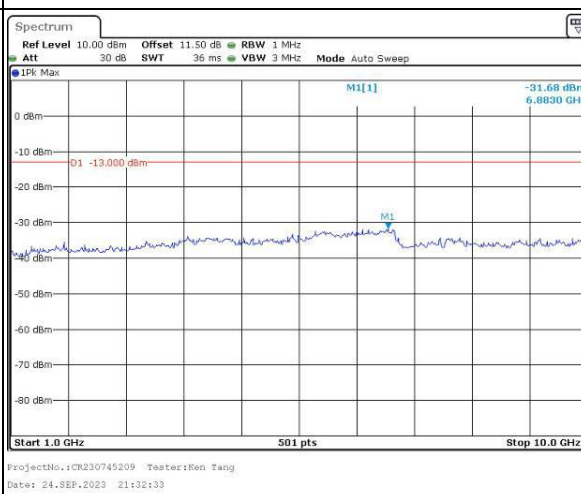
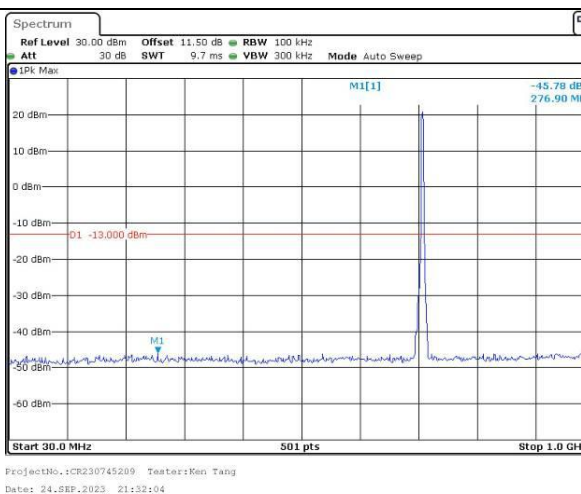
Lowest



Middle



Highest

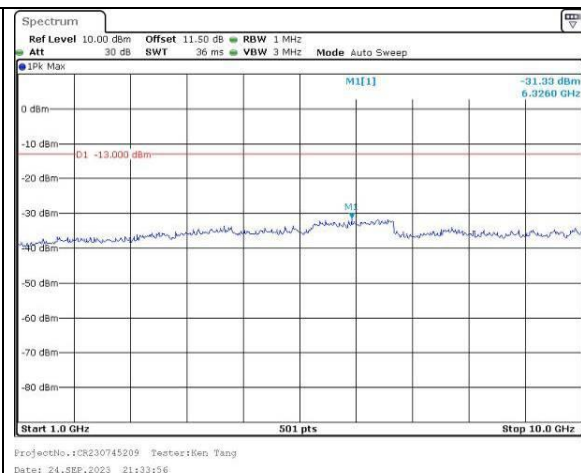
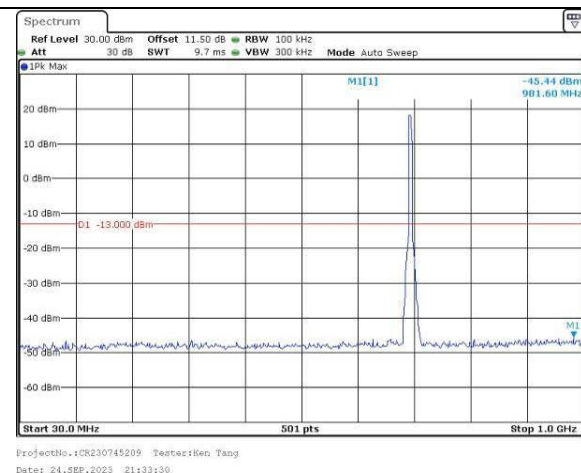


## Spurious Emissions at Antenna Terminal

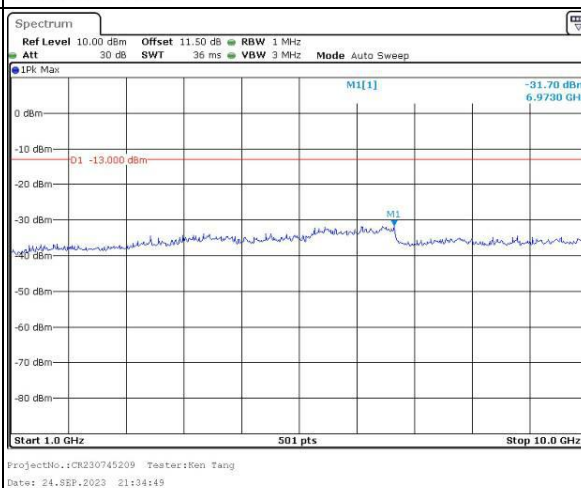
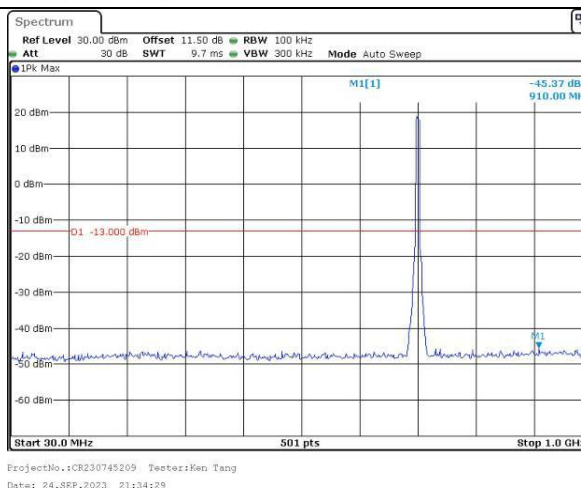
Channel

5MHz Bandwidth QPSK

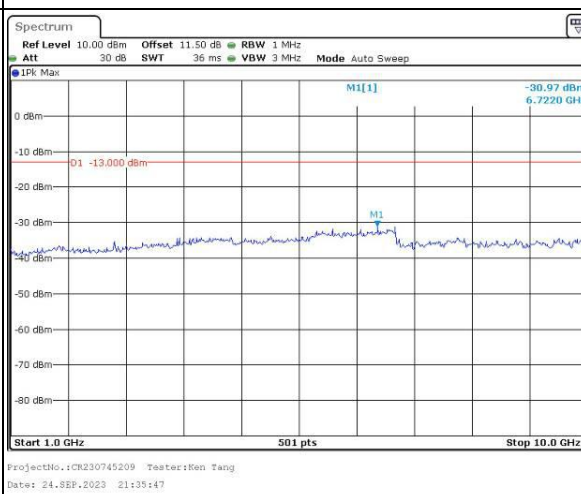
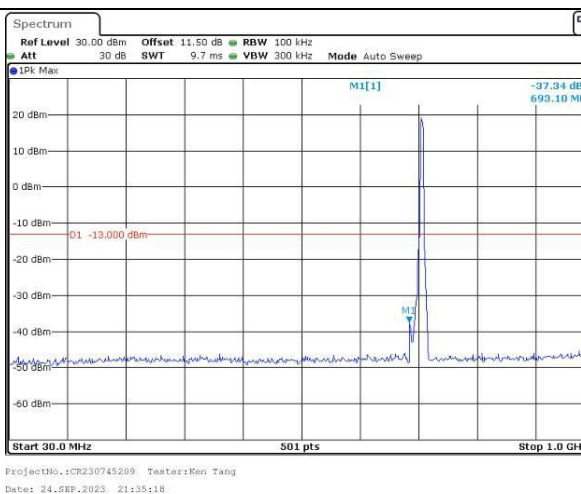
Lowest



Middle



Highest

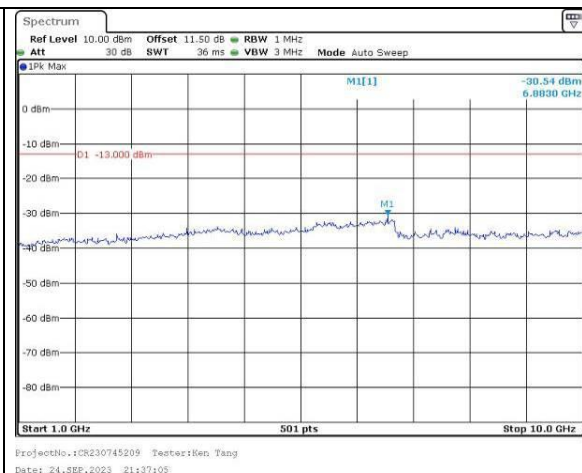
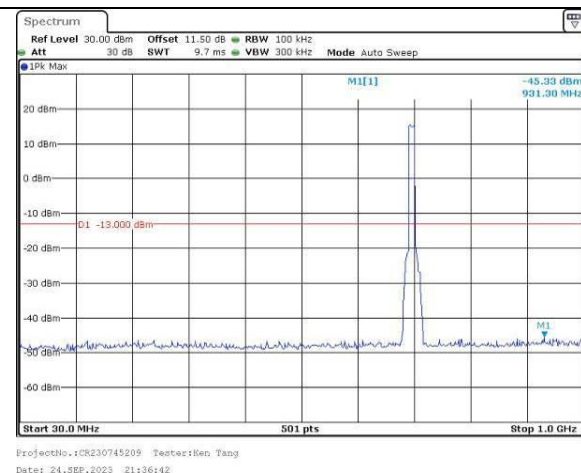


## Spurious Emissions at Antenna Terminal

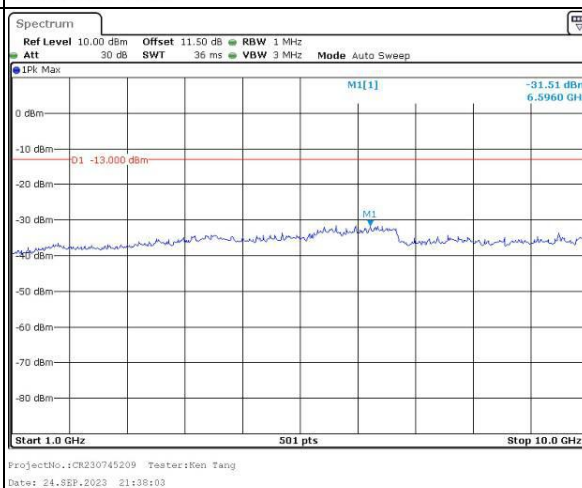
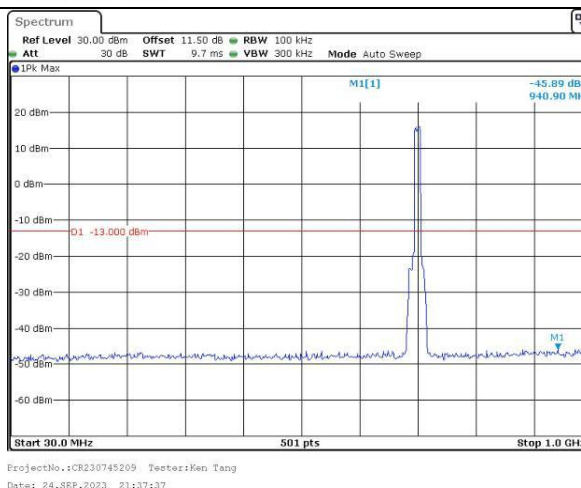
Channel

10MHz Bandwidth QPSK

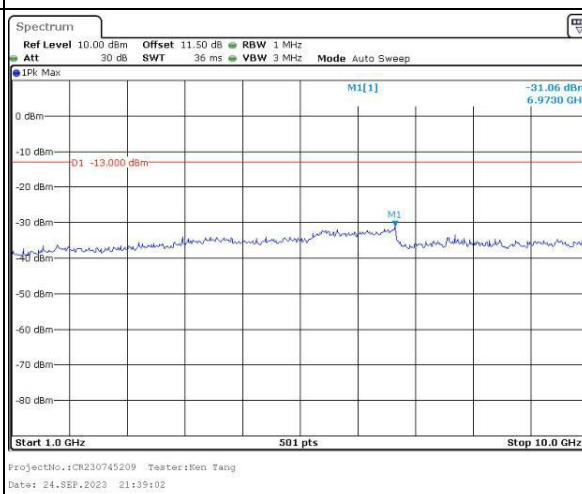
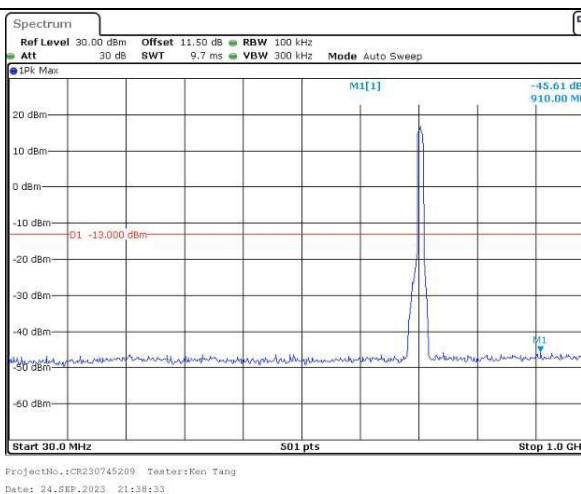
Lowest



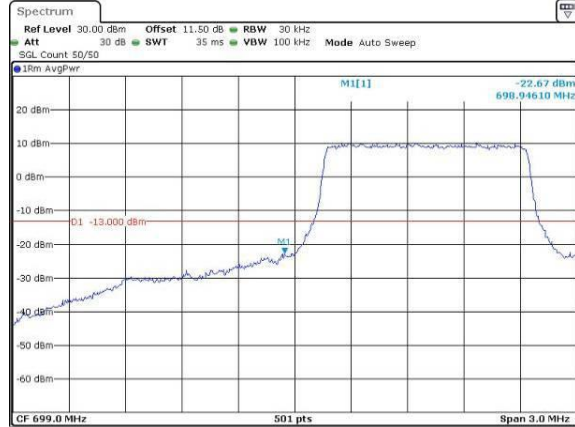
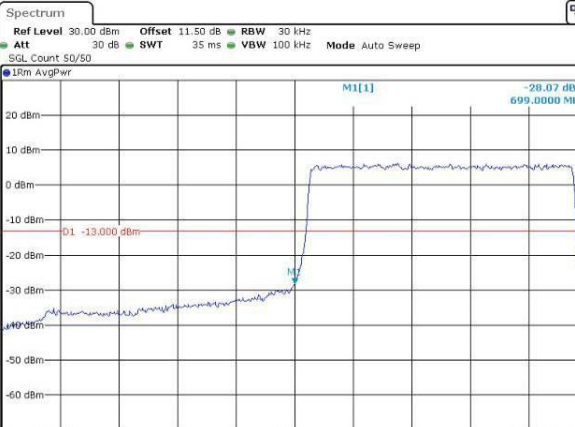
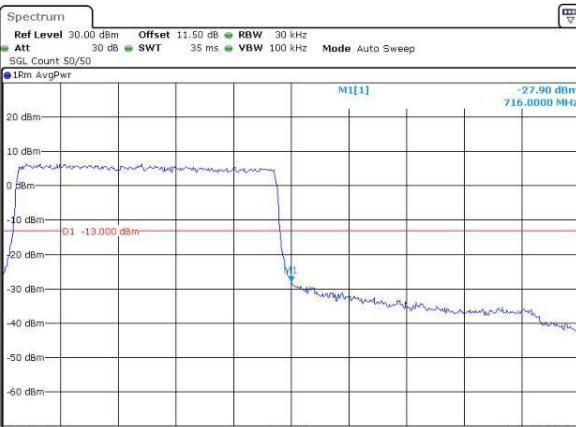
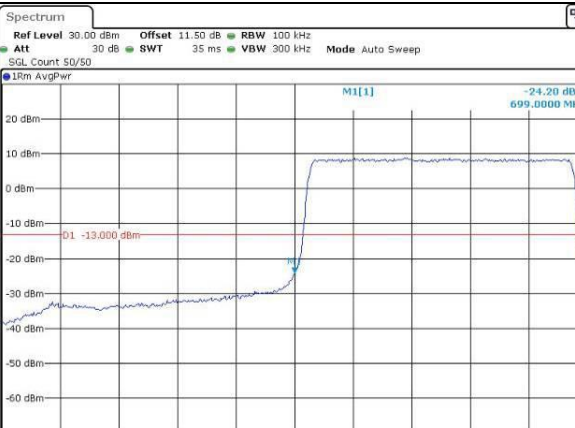
Middle



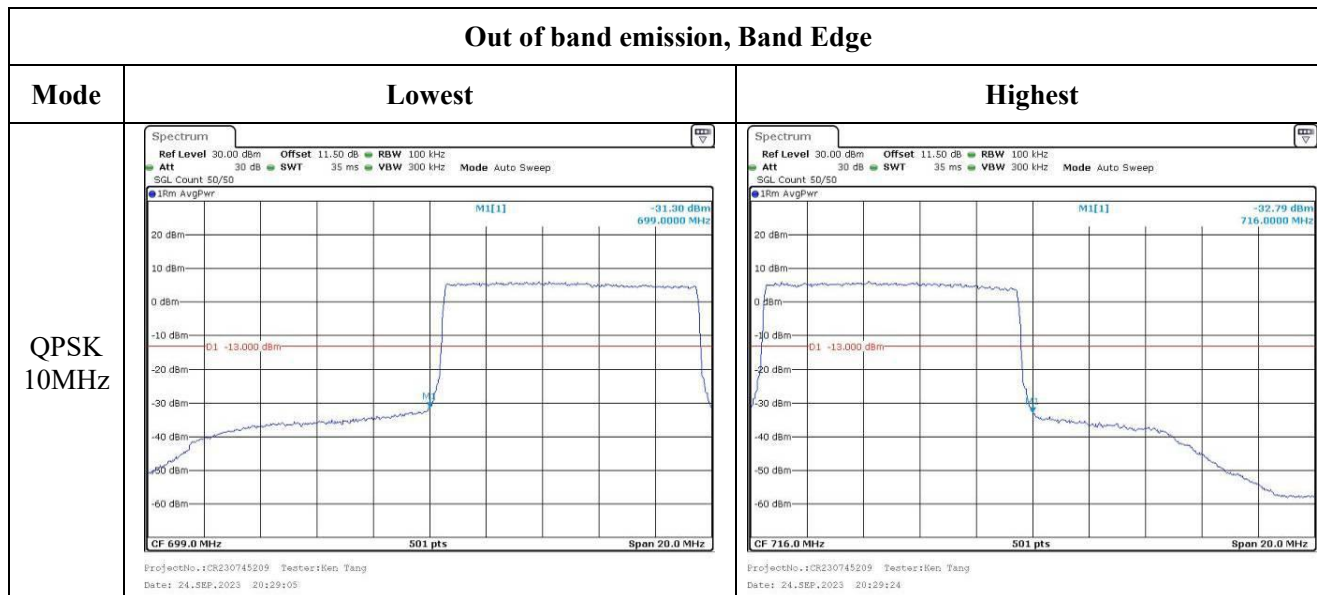
Highest



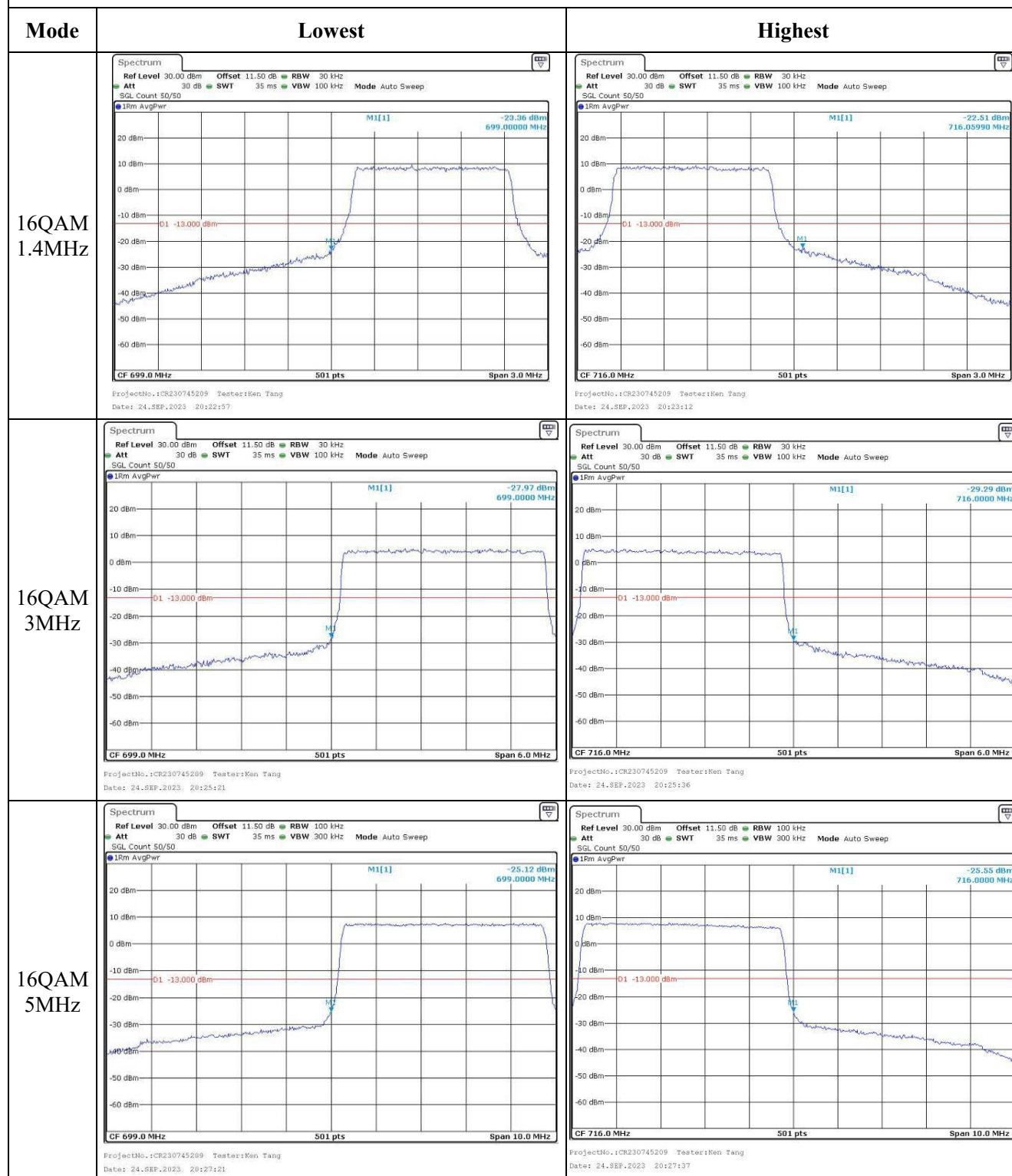
## Out of band emission, Band Edge

| Mode           | Lowest                                                                                                                                                             | Highest                                                                                                                                                             |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| QPSK<br>1.4MHz |  <p>ProjectNo.: CR230745209 Tester: Ken Tang<br/>Date: 24.SEP.2023 20:22:59</p>   |  <p>ProjectNo.: CR230745209 Tester: Ken Tang<br/>Date: 24.SEP.2023 20:23:05</p>   |
| QPSK<br>3MHz   |  <p>ProjectNo.: CR230745209 Tester: Ken Tang<br/>Date: 24.SEP.2023 20:25:13</p>  |  <p>ProjectNo.: CR230745209 Tester: Ken Tang<br/>Date: 24.SEP.2023 20:25:29</p>  |
| QPSK<br>5MHz   |  <p>ProjectNo.: CR230745209 Tester: Ken Tang<br/>Date: 24.SEP.2023 20:27:13</p> |  <p>ProjectNo.: CR230745209 Tester: Ken Tang<br/>Date: 24.SEP.2023 20:27:30</p> |

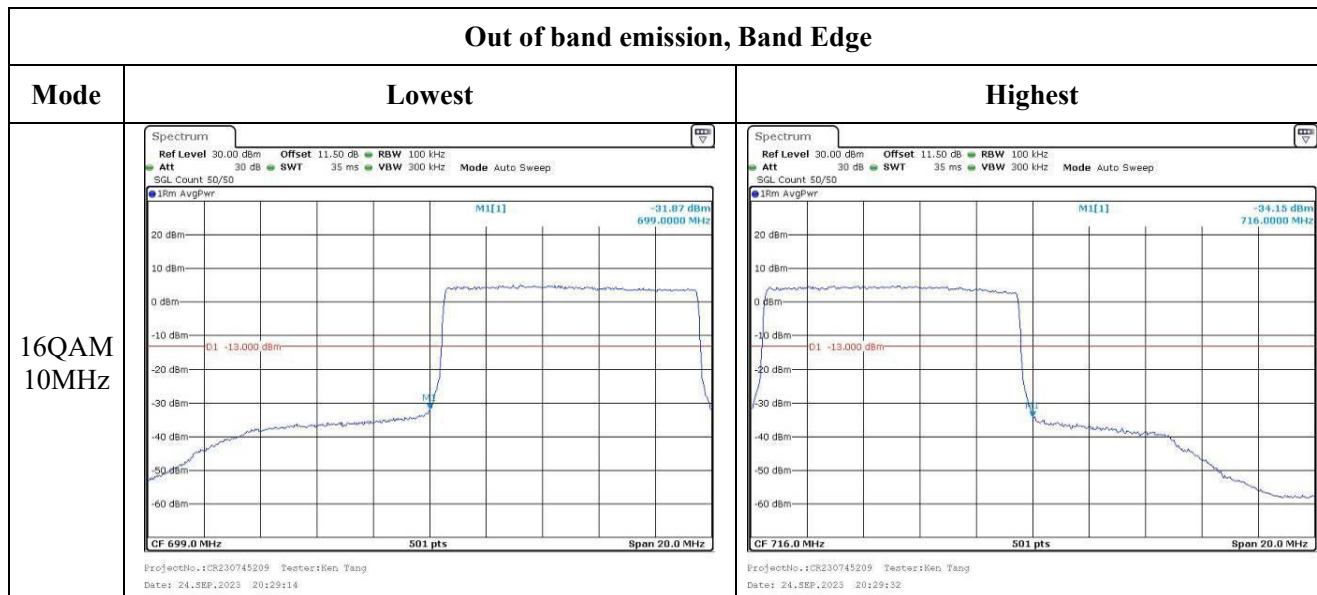
## Out of band emission, Band Edge



## Out of band emission, Band Edge



## Out of band emission, Band Edge



**4.8 Antenna Port Test Data and Results for LTE Band 13**

|                |          |              |                     |
|----------------|----------|--------------|---------------------|
| Serial Number: | 2BCU-1   | Test Date:   | 2023/9/22~2023/9/29 |
| Test Site:     | RF       | Test Mode:   | Transmitting        |
| Tester:        | Ken Tang | Test Result: | Pass                |

**Environmental Conditions:**

|                      |           |                              |       |                        |     |
|----------------------|-----------|------------------------------|-------|------------------------|-----|
| Temperature:<br>(°C) | 26.5-25.4 | Relative<br>Humidity:<br>(%) | 57-49 | ATM Pressure:<br>(kPa) | 101 |
|----------------------|-----------|------------------------------|-------|------------------------|-----|

**Test Equipment List and Details:**

| Manufacturer | Description            | Model         | Serial Number   | Calibration Date | Calibration Due Date |
|--------------|------------------------|---------------|-----------------|------------------|----------------------|
| R&S          | Spectrum Analyzer      | FSV40         | 102259          | 2023/4/18        | 2024/4/17            |
| R&S          | Wideband Radio         | CMW500        | 143458          | 2023/3/31        | 2024/3/30            |
| zhuoxiang    | Coaxial Cable          | SMA-178       | 211001          | Each time        | N/A                  |
| YINSAIGE     | Coaxial Cable          | SS402         | SJ0100001       | Each time        | N/A                  |
| BACL         | TEMP&HUMI Test Chamber | BTH-150-40    | 30174           | 2023/3/31        | 2024/3/30            |
| UNI-T        | Multimeter             | UT39A+        | C210582554      | 2022/9/29        | 2023/9/28            |
| UNI-T        | Multimeter             | UT39A+        | C210582554      | 2023/9/28        | 2024/9/27            |
| ZHAOXIN      | DC Power Supply        | RXN-6010D     | 21R6010D0912386 | N/A              | N/A                  |
| eastsheep    | Coaxial Attenuator     | 2W-SMA-JK-18G | 21060301        | 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).*

**Test Frequency For Each Mode:**

| Operation Bandwidth | Lowest Frequency (MHz) | Middle Frequency (MHz) | Highest Frequency (MHz) |
|---------------------|------------------------|------------------------|-------------------------|
| 5MHz                | 779.5                  | /                      | 784.5                   |
| 10MHz               | /                      | 782                    | /                       |

**Test Data:****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 |                   |                 |
| 5MHz QPSK                   | RB1#0                      | 24.07                               | /              | 24.03           | 16.47             | 34.77           |
|                             | RB1#13                     | 24.09                               | /              | 24.01           |                   |                 |
|                             | RB1#24                     | 24.07                               | /              | 24.01           |                   |                 |
|                             | RB15#0                     | 23.08                               | /              | 23.11           |                   |                 |
|                             | RB15#10                    | 23.02                               | /              | 23.03           |                   |                 |
|                             | RB25#0                     | 23.02                               | /              | 23.06           |                   |                 |
| 5MHz 16QAM                  | RB1#0                      | 23.13                               | /              | 23.33           | 15.71             | 34.77           |
|                             | RB1#13                     | 23.11                               | /              | 23.33           |                   |                 |
|                             | RB1#24                     | 23.09                               | /              | 23.29           |                   |                 |
|                             | RB15#0                     | 22.09                               | /              | 22.08           |                   |                 |
|                             | RB15#10                    | 22.04                               | /              | 22.00           |                   |                 |
|                             | RB25#0                     | 22.07                               | /              | 22.09           |                   |                 |
| 10MHz QPSK                  | RB1#0                      | /                                   | 24.26          | /               | 16.64             | 34.77           |
|                             | RB1#25                     | /                                   | 24.22          | /               |                   |                 |
|                             | RB1#49                     | /                                   | 24.21          | /               |                   |                 |
|                             | RB25#0                     | /                                   | 23.07          | /               |                   |                 |
|                             | RB25#25                    | /                                   | 23.00          | /               |                   |                 |
|                             | RB50#0                     | /                                   | 23.03          | /               |                   |                 |
| 10MHz 16QAM                 | RB1#0                      | /                                   | 22.99          | /               | 15.37             | 34.77           |
|                             | RB1#25                     | /                                   | 22.90          | /               |                   |                 |
|                             | RB1#49                     | /                                   | 22.94          | /               |                   |                 |
|                             | RB25#0                     | /                                   | 22.13          | /               |                   |                 |
|                             | RB25#25                    | /                                   | 22.03          | /               |                   |                 |
|                             | RB50#0                     | /                                   | 22.08          | /               |                   |                 |

Note:

ERP= Conducted Power(dBm) - LC(dB) + GT(dBd)

GT(dBd)=GT(dBi)-2.15

**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                      | /                         | 7.63           | /               | 13          |
|                             | RB50#0                     | /                         | 6.08           | /               | 13          |
| 10MHz 16QAM                 | RB1#0                      | /                         | 7.61           | /               | 13          |
|                             | RB50#0                     | /                         | 9.15           | /               | 13          |
|                             |                            |                           |                | <b>Result:</b>  | <b>Pass</b> |

**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 |
| 5MHz QPSK      | 4.511                        | /              | 4.511        | 5.04                           | /              | 5.04         |
| 5MHz 16QAM     | 4.511                        | /              | 4.511        | 5.02                           | /              | 5.02         |
| 10MHz QPSK     | /                            | 8.982          | /            | /                              | 9.64           | /            |
| 10MHz 16QAM    | /                            | 8.982          | /            | /                              | 9.6            | /            |

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

**Spurious Emissions at Antenna Terminal**

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

**Out of band emission, Band Edge**

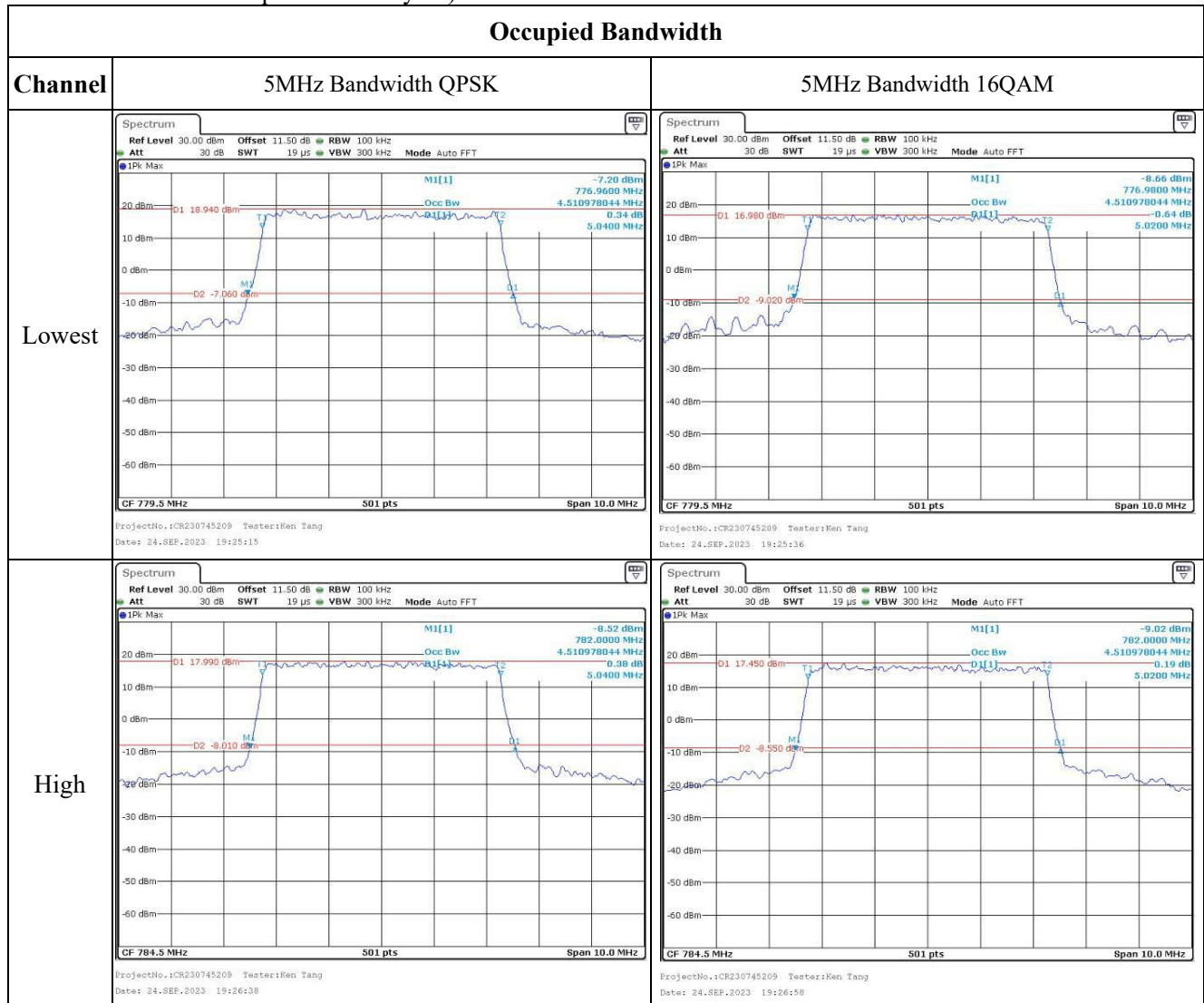
|                |                                                                                 |
|----------------|---------------------------------------------------------------------------------|
| <b>Result:</b> | <b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b>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

**Frequency Stability**

| Test Mode:                          | 10M 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              | 3.87                                                        | 777.023          | 777.00 | 786.998          | 787.00 |
|                                     | -20              | 3.87                                                        | 777.011          | 777.00 | 786.985          | 787.00 |
|                                     | -10              | 3.87                                                        | 777.015          | 777.00 | 786.992          | 787.00 |
|                                     | 0                | 3.87                                                        | 777.017          | 777.00 | 786.990          | 787.00 |
|                                     | 10               | 3.87                                                        | 777.017          | 777.00 | 786.983          | 787.00 |
|                                     | 20               | 3.87                                                        | 777.010          | 777.00 | 786.993          | 787.00 |
|                                     | 30               | 3.87                                                        | 777.012          | 777.00 | 786.974          | 787.00 |
|                                     | 40               | 3.87                                                        | 777.028          | 777.00 | 786.970          | 787.00 |
|                                     | 50               | 3.87                                                        | 777.007          | 777.00 | 786.990          | 787.00 |
| Frequency Stability vs. Voltage     | 20               | 3.35                                                        | 777.001          | 777.00 | 786.981          | 787.00 |
|                                     | 20               | 4.43                                                        | 777.016          | 777.00 | 786.987          | 787.00 |
| <b>Result:</b>                      |                  |                                                             |                  |        | <b>Pass</b>      |        |

| Test Mode:                                | 10M<br>16QAM        | Test Channel: Lowest for Lower Edge,Highest for Upper Edge |                     |        |                     |             |
|-------------------------------------------|---------------------|------------------------------------------------------------|---------------------|--------|---------------------|-------------|
| Test Item                                 | Temperature<br>(°C) | Voltage<br>(V <sub>DC</sub> )                              | Lower Edge<br>(MHz) |        | Upper Edge<br>(MHz) |             |
|                                           |                     |                                                            | Result              | Limit  | Result              | Limit       |
| Frequency<br>Stability vs.<br>Temperature | -30                 | 3.87                                                       | 777.012             | 777.00 | 786.988             | 787.00      |
|                                           | -20                 | 3.87                                                       | 777.011             | 777.00 | 786.995             | 787.00      |
|                                           | -10                 | 3.87                                                       | 777.019             | 777.00 | 786.973             | 787.00      |
|                                           | 0                   | 3.87                                                       | 777.014             | 777.00 | 786.973             | 787.00      |
|                                           | 10                  | 3.87                                                       | 777.026             | 777.00 | 786.994             | 787.00      |
|                                           | 20                  | 3.87                                                       | 777.021             | 777.00 | 786.970             | 787.00      |
|                                           | 30                  | 3.87                                                       | 777.006             | 777.00 | 786.995             | 787.00      |
|                                           | 40                  | 3.87                                                       | 777.021             | 777.00 | 786.989             | 787.00      |
|                                           | 50                  | 3.87                                                       | 777.013             | 777.00 | 786.986             | 787.00      |
| Frequency<br>Stability vs.<br>Voltage     | 20                  | 3.35                                                       | 777.015             | 777.00 | 786.973             | 787.00      |
|                                           | 20                  | 4.43                                                       | 777.005             | 777.00 | 786.973             | 787.00      |
|                                           |                     |                                                            |                     |        | <b>Result:</b>      | <b>Pass</b> |

**Test Plots**(Note: The 11.5 dB is the Insertion loss of the RF cable, Power splitter and Attenuator, which was offset into the Spectrum Analyzer):



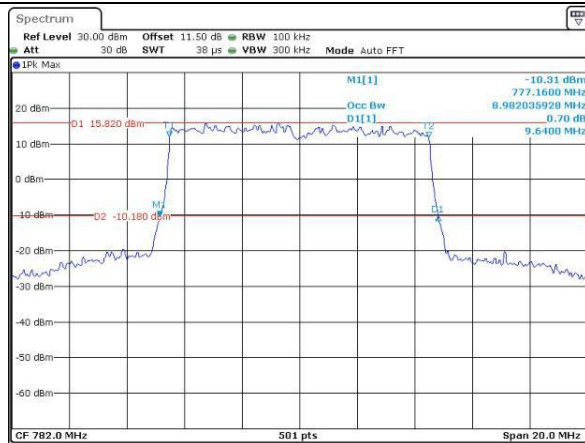
## Occupied Bandwidth

Channel

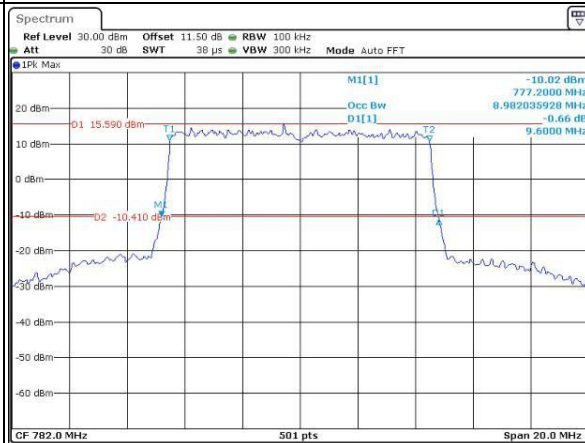
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

Middle



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Date: 24.SEP.2023 19:28:51



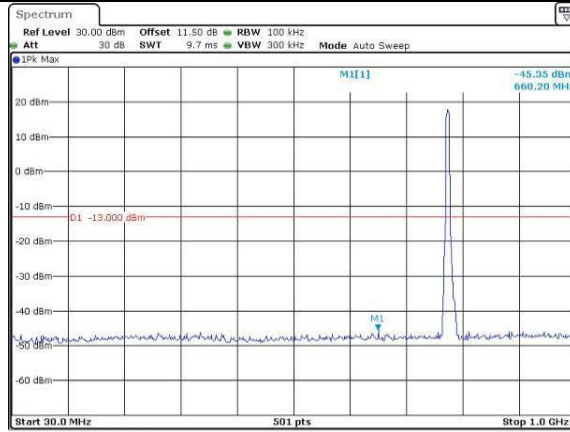
ProjectNo.:CR230745209 Tester:Ren Tang  
Date: 24.SEP.2023 19:29:21

## Spurious Emissions at Antenna Terminal

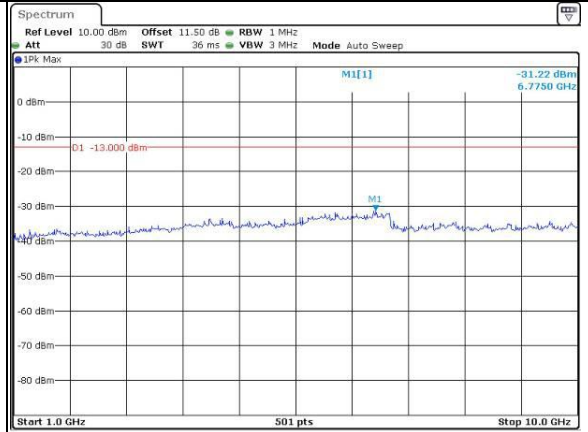
Channel

5MHz Bandwidth QPSK

Low

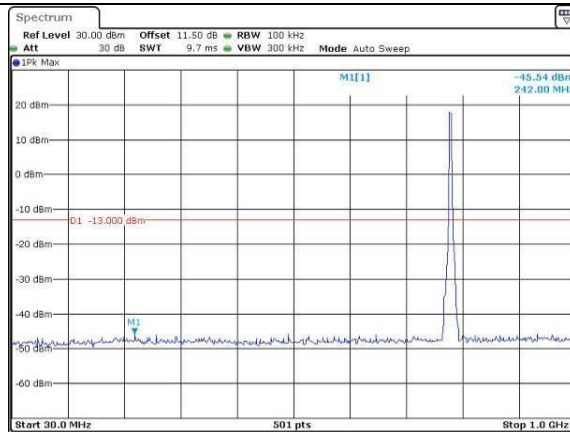


ProjectNo.:CR230745209 Tester:Ken Tang  
Date: 24,SEP,2023 21:39:34

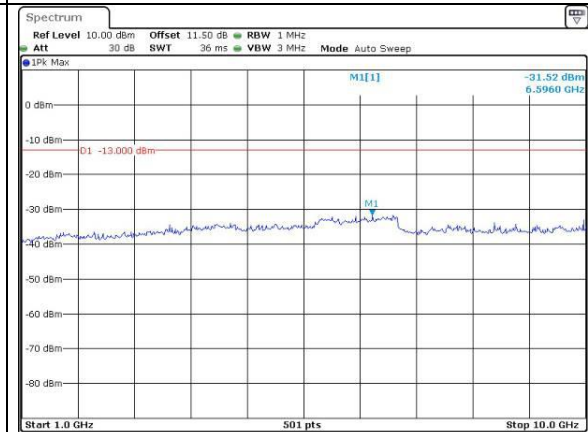


ProjectNo.:CR230745209 Tester:Ken Tang  
Date: 24,SEP,2023 21:39:57

High

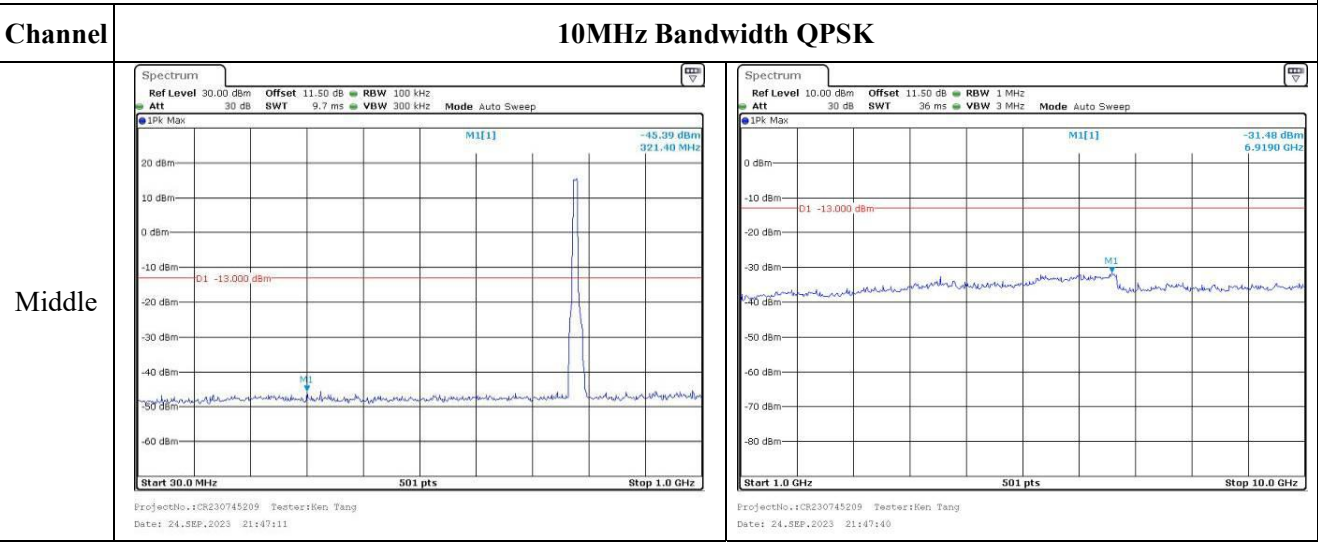


ProjectNo.:CR230745209 Tester:Ken Tang  
Date: 24,SEP,2023 21:44:17

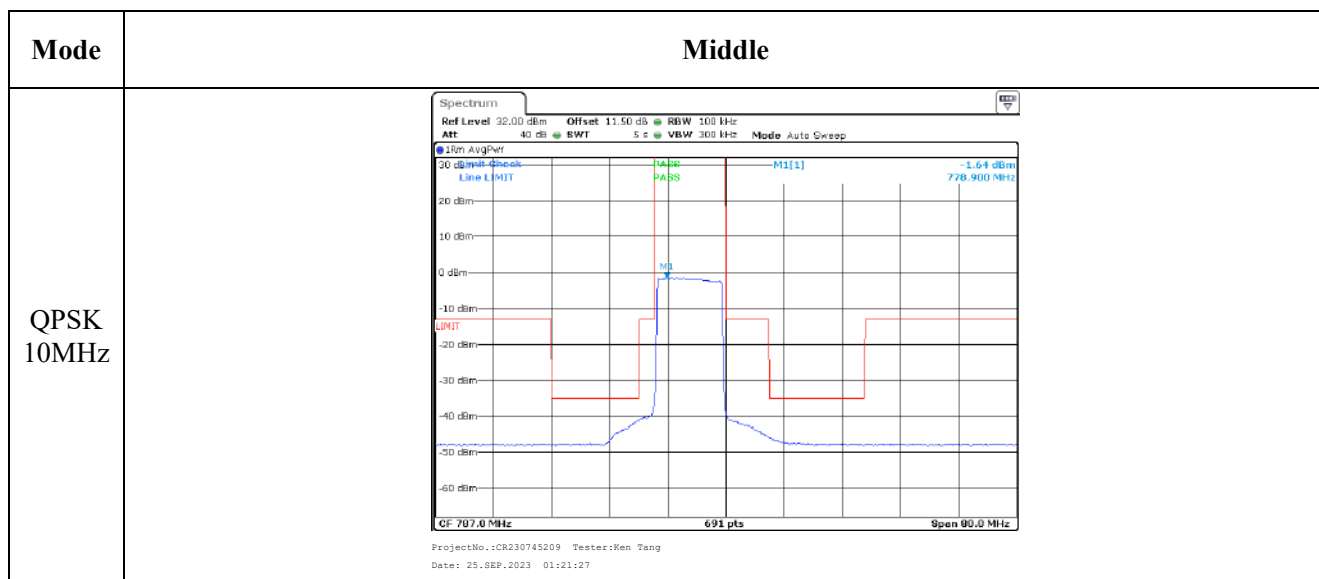
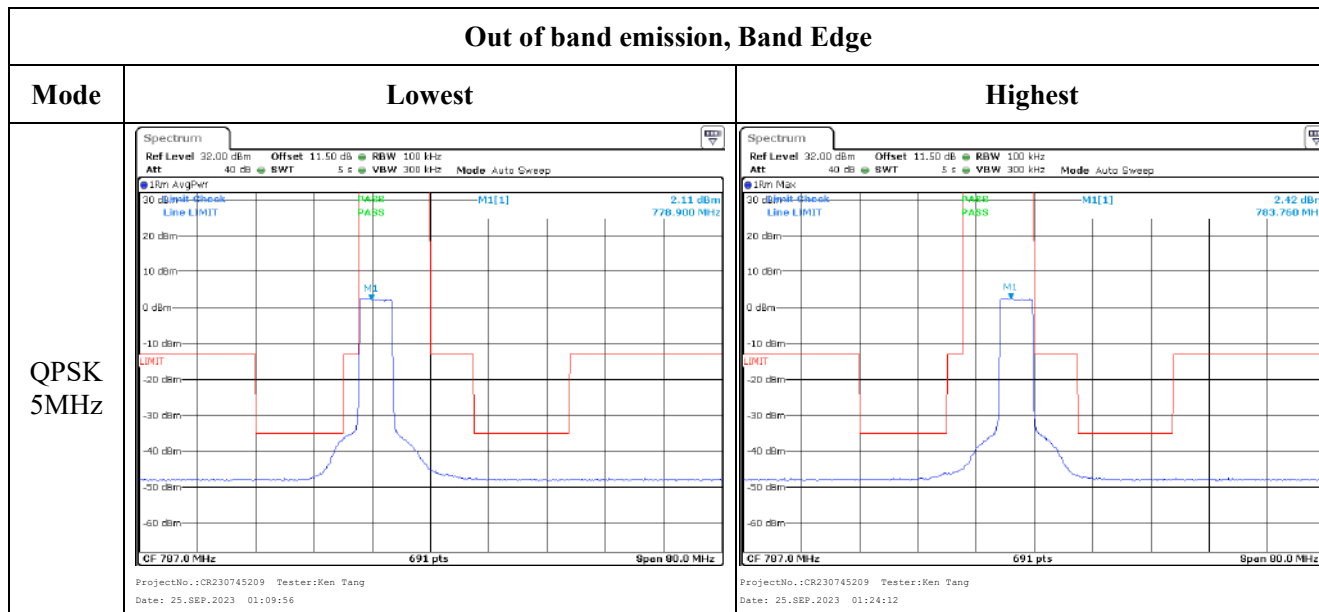


ProjectNo.:CR230745209 Tester:Ken Tang  
Date: 24,SEP,2023 21:44:43

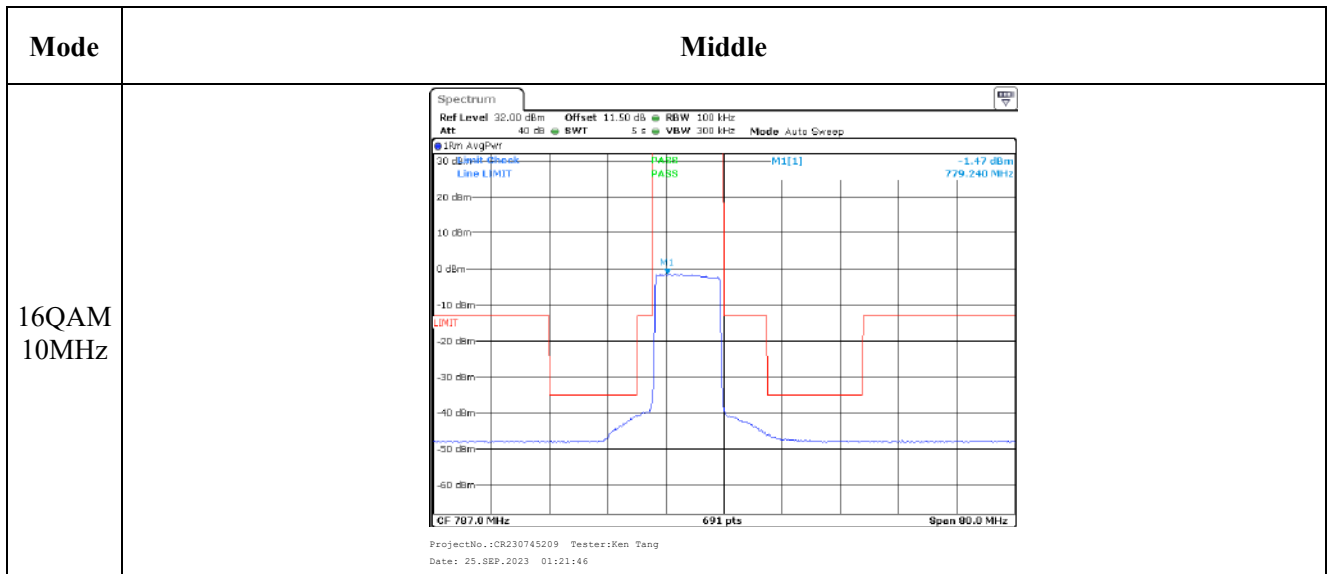
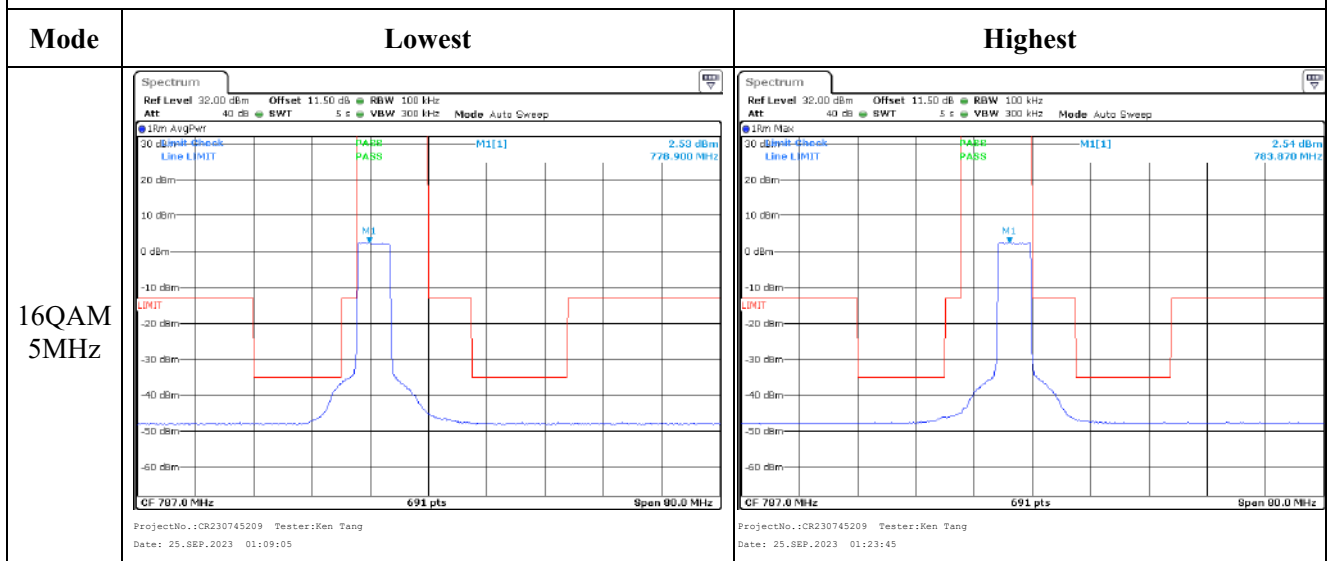
Spurious Emissions at Antenna Terminal



## Out of band emission, Band Edge



## Out of band emission, Band Edge



**4.9 Antenna Port Test Data and Results for LTE Band 41**

|                |                     |              |                      |
|----------------|---------------------|--------------|----------------------|
| Serial Number: | 2BCU-1              | Test Date:   | 2023/9/22-2023/12/21 |
| Test Site:     | RF                  | Test Mode:   | Transmitting         |
| Tester:        | Ken Tang, Len Huang | Test Result: | Pass                 |

| Environmental Conditions: |           |                           |       |                        |     |
|---------------------------|-----------|---------------------------|-------|------------------------|-----|
| Temperature:<br>(°C)      | 26.5~26.8 | Relative Humidity:<br>(%) | 57~51 | ATM Pressure:<br>(kPa) | 101 |

| Test Equipment List and Details:                                                                                                                                                                            |                        |               |                 |                  |                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------|-----------------|------------------|----------------------|
| Manufacturer                                                                                                                                                                                                | Description            | Model         | Serial Number   | Calibration Date | Calibration Due Date |
| R&S                                                                                                                                                                                                         | Spectrum Analyzer      | FSV40         | 102259          | 2023/4/18        | 2024/4/17            |
| R&S                                                                                                                                                                                                         | Wideband Radio         | CMW500        | 143458          | 2023/3/31        | 2024/3/30            |
| zhuoxiang                                                                                                                                                                                                   | Coaxial Cable          | SMA-178       | 211001          | Each time        | N/A                  |
| YINSAIGE                                                                                                                                                                                                    | Coaxial Cable          | SS402         | SJ0100001       | Each time        | N/A                  |
| BACL                                                                                                                                                                                                        | TEMP&HUMI Test Chamber | BTH-150-40    | 30174           | 2023/3/31        | 2024/3/30            |
| UNI-T                                                                                                                                                                                                       | Multimeter             | UT39A+        | C210582554      | 2022/9/29        | 2023/9/28            |
| UNI-T                                                                                                                                                                                                       | Multimeter             | UT39A+        | C210582554      | 2023/9/28        | 2024/9/27            |
| ZHAOXIN                                                                                                                                                                                                     | DC Power Supply        | RXN-6010D     | 21R6010D0912386 | N/A              | N/A                  |
| eastsheep                                                                                                                                                                                                   | Coaxial Attenuator     | 2W-SMA-JK-18G | 21060301        | 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). |                        |               |                 |                  |                      |

| Test Frequency For Each Mode: |                        |                        |                         |
|-------------------------------|------------------------|------------------------|-------------------------|
| Operation Bandwidth           | Lowest Frequency (MHz) | Middle Frequency (MHz) | Highest Frequency (MHz) |
| 5MHz                          | 2498.5                 | 2593                   | 2687.5                  |
| 10MHz                         | 2501                   | 2593                   | 2685                    |
| 15MHz                         | 2503.5                 | 2593                   | 2682.5                  |
| 20MHz                         | 2506                   | 2593                   | 2680                    |

**Test Data:****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 |                    |                  |
| 5MHz QPSK                   | RB1#0                      | 25                                  | 24.95          | 24.9            | 25.02              | 33               |
|                             | RB1#13                     | 24.96                               | 24.92          | 24.88           |                    |                  |
|                             | RB1#24                     | 24.99                               | 24.93          | 24.89           |                    |                  |
|                             | RB15#0                     | 24.8                                | 24.99          | 24.91           |                    |                  |
|                             | RB15#10                    | 24.81                               | 24.92          | 24.95           |                    |                  |
|                             | RB25#0                     | 24.83                               | 24.93          | 24.88           |                    |                  |
| 5MHz 16QAM                  | RB1#0                      | 24.84                               | 24.93          | 25.09           | 25.11              | 33               |
|                             | RB1#13                     | 24.81                               | 24.91          | 25.04           |                    |                  |
|                             | RB1#24                     | 24.78                               | 24.91          | 24.99           |                    |                  |
|                             | RB15#0                     | 24.82                               | 25.04          | 24.92           |                    |                  |
|                             | RB15#10                    | 24.79                               | 24.96          | 24.99           |                    |                  |
|                             | RB25#0                     | 24.87                               | 25.01          | 24.96           |                    |                  |
| 10MHz QPSK                  | RB1#0                      | 24.74                               | 25             | 24.79           | 25.07              | 33               |
|                             | RB1#25                     | 24.77                               | 25.05          | 24.83           |                    |                  |
|                             | RB1#49                     | 24.7                                | 25             | 24.79           |                    |                  |
|                             | RB25#0                     | 24.77                               | 25.02          | 24.84           |                    |                  |
|                             | RB25#25                    | 24.79                               | 24.9           | 24.85           |                    |                  |
|                             | RB50#0                     | 24.8                                | 24.98          | 24.89           |                    |                  |
| 10MHz 16QAM                 | RB1#0                      | 24.97                               | 25.12          | 24.75           | 25.16              | 33               |
|                             | RB1#25                     | 24.97                               | 25.14          | 24.79           |                    |                  |
|                             | RB1#49                     | 24.92                               | 25.11          | 24.74           |                    |                  |
|                             | RB25#0                     | 24.85                               | 25.02          | 24.95           |                    |                  |
|                             | RB25#25                    | 24.86                               | 24.94          | 24.92           |                    |                  |
|                             | RB50#0                     | 24.82                               | 24.99          | 24.92           |                    |                  |
| 15MHz QPSK                  | RB1#0                      | 24.63                               | 24.97          | 24.76           | 25.08              | 33               |
|                             | RB1#38                     | 24.67                               | 25.06          | 24.89           |                    |                  |
|                             | RB1#74                     | 24.6                                | 24.98          | 24.82           |                    |                  |
|                             | RB36#0                     | 24.71                               | 24.94          | 24.81           |                    |                  |
|                             | RB36#39                    | 24.69                               | 24.85          | 24.79           |                    |                  |
|                             | RB75#0                     | 24.75                               | 24.87          | 24.85           |                    |                  |
| 15MHz 16QAM                 | RB1#0                      | 24.7                                | 25.07          | 24.86           | 25.16              | 33               |
|                             | RB1#38                     | 24.69                               | 25.14          | 24.99           |                    |                  |
|                             | RB1#74                     | 24.6                                | 25.1           | 24.92           |                    |                  |
|                             | RB36#0                     | 24.77                               | 25.03          | 24.86           |                    |                  |
|                             | RB36#39                    | 24.72                               | 24.95          | 24.86           |                    |                  |
|                             | RB75#0                     | 24.76                               | 24.93          | 24.83           |                    |                  |
| 20MHz QPSK                  | RB1#0                      | 24.69                               | 24.79          | 24.59           | 25.04              | 33               |
|                             | RB1#50                     | 24.75                               | 24.9           | 24.76           |                    |                  |
|                             | RB1#99                     | 24.6                                | 24.76          | 24.67           |                    |                  |

|                |         |                                                    |       |       |         |    |      |
|----------------|---------|----------------------------------------------------|-------|-------|---------|----|------|
|                | RB50#0  | 24.79                                              | 25.02 | 24.92 |         |    |      |
|                | RB50#50 | 24.72                                              | 24.83 | 24.83 |         |    |      |
|                | RB100#0 | 24.76                                              | 24.9  | 24.89 |         |    |      |
| 20MHz<br>16QAM | RB1#0   | 25.17                                              | 24.85 | 24.68 | 25.2    | 33 |      |
|                | RB1#50  | 25.18                                              | 24.93 | 24.81 |         |    |      |
|                | RB1#99  | 25.07                                              | 24.8  | 24.72 |         |    |      |
|                | RB50#0  | 24.84                                              | 25.02 | 25    |         |    |      |
|                | RB50#50 | 24.77                                              | 24.84 | 24.95 |         |    |      |
|                | RB100#0 | 24.78                                              | 24.91 | 24.92 |         |    |      |
|                |         | Note: EIRP=Conducted Power(dBm) - LC(dB) + GT(dBi) |       |       |         |    |      |
|                |         |                                                    |       |       | 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 |           |
| 20MHz QPSK                  | RB1#0                      | 6.28                      | 7.35           | 8.18            | 13        |
|                             | RB100#0                    | 8.58                      | 7.31           | 6.97            | 13        |
| 20MHz 16QAM                 | RB1#0                      | 7.20                      | 7.42           | 9.06            | 13        |
|                             | RB100#0                    | 7.81                      | 9.61           | 9.31            | 13        |
|                             |                            |                           |                | Result:         | Pass      |

| 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 |
| 5MHz QPSK                                                            | 4.511                        | 4.511          | 4.511        | 5.360                          | 5.240          | 5.440        |
| 5MHz 16QAM                                                           | 4.551                        | 4.551          | 4.631        | 8.084                          | 8.443          | 9.561        |
| 10MHz QPSK                                                           | 8.942                        | 8.942          | 8.942        | 9.560                          | 9.720          | 12.360       |
| 10MHz 16QAM                                                          | 8.942                        | 8.982          | 9.022        | 10.720                         | 9.960          | 14.371       |
| 15MHz QPSK                                                           | 13.473                       | 13.533         | 13.533       | 14.880                         | 15.060         | 14.760       |
| 15MHz 16QAM                                                          | 13.533                       | 13.533         | 13.653       | 17.160                         | 16.860         | 27.485       |
| 20MHz QPSK                                                           | 17.884                       | 17.964         | 17.964       | 19.280                         | 19.280         | 19.200       |
| 20MHz 16QAM                                                          | 17.884                       | 17.964         | 17.964       | 19.680                         | 24.720         | 19.880       |
| Note: The test plots please refer to the Plots of Occupied Bandwidth |                              |                |              |                                |                |              |

**Spurious Emissions at Antenna Terminal**

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

**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> |
|----------------|---------------------------------------------------------------------------------|

**Frequency Stability for FCC**

| Test Mode:                          | 20M QPSK         | Test Channel: Lowest for Lower Edge,Highest for Upper Edge |                  |         |                  |       |
|-------------------------------------|------------------|------------------------------------------------------------|------------------|---------|------------------|-------|
| Test Item                           | Temperature (°C) | Voltage (VDC)                                              | Lower Edge (MHz) |         | Upper Edge (MHz) |       |
|                                     |                  |                                                            | Result           | Limit   | Result           | Limit |
| Frequency Stability vs. Temperature | -30              | 3.87                                                       | 2496.029         | 2496.00 | 2689.977         | 2690  |
|                                     | -20              | 3.87                                                       | 2496.025         | 2496.00 | 2689.972         | 2690  |
|                                     | -10              | 3.87                                                       | 2496.018         | 2496.00 | 2689.978         | 2690  |
|                                     | 0                | 3.87                                                       | 2496.015         | 2496.00 | 2689.993         | 2690  |
|                                     | 10               | 3.87                                                       | 2496.366         | 2496.00 | 2689.994         | 2690  |
|                                     | 20               | 3.87                                                       | 2496.013         | 2496.00 | 2689.975         | 2690  |
|                                     | 30               | 3.87                                                       | 2496.027         | 2496.00 | 2689.974         | 2690  |
|                                     | 40               | 3.87                                                       | 2496.014         | 2496.00 | 2689.982         | 2690  |
|                                     | 50               | 3.87                                                       | 2496.011         | 2496.00 | 2689.972         | 2690  |
| Frequency Stability vs. Voltage     | 20               | 3.35                                                       | 2496.017         | 2496.00 | 2689.989         | 2690  |
|                                     | 20               | 4.43                                                       | 2496.005         | 2496.00 | 2689.989         | 2690  |
| <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 (VDC)                                              | Lower Edge (MHz) |         | Upper Edge (MHz) |       |
|                                     |                  |                                                            | Result           | Limit   | Result           | Limit |
| Frequency Stability vs. Temperature | -30              | 3.87                                                       | 2496.010         | 2496.00 | 2689.980         | 2690  |
|                                     | -20              | 3.87                                                       | 2496.018         | 2496.00 | 2689.976         | 2690  |
|                                     | -10              | 3.87                                                       | 2496.001         | 2496.00 | 2689.997         | 2690  |
|                                     | 0                | 3.87                                                       | 2496.017         | 2496.00 | 2689.994         | 2690  |
|                                     | 10               | 3.87                                                       | 2496.014         | 2496.00 | 2689.995         | 2690  |
|                                     | 20               | 3.87                                                       | 2496.012         | 2496.00 | 2689.978         | 2690  |
|                                     | 30               | 3.87                                                       | 2496.027         | 2496.00 | 2689.971         | 2690  |
|                                     | 40               | 3.87                                                       | 2496.002         | 2496.00 | 2689.975         | 2690  |
|                                     | 50               | 3.87                                                       | 2496.026         | 2496.00 | 2689.975         | 2690  |
| Frequency Stability vs. Voltage     | 20               | 3.35                                                       | 2496.018         | 2496.00 | 2689.860         | 2690  |
|                                     | 20               | 4.43                                                       | 2496.026         | 2496.00 | 2689.984         | 2690  |
| <b>Result:</b>                      |                  |                                                            |                  |         | <b>Pass</b>      |       |

**Test Plots**(Note: The 11.5dB is the Insertion loss of the RF cable, Coaxial tee connector and Attenuator, which was offset into the Spectrum Analyzer):

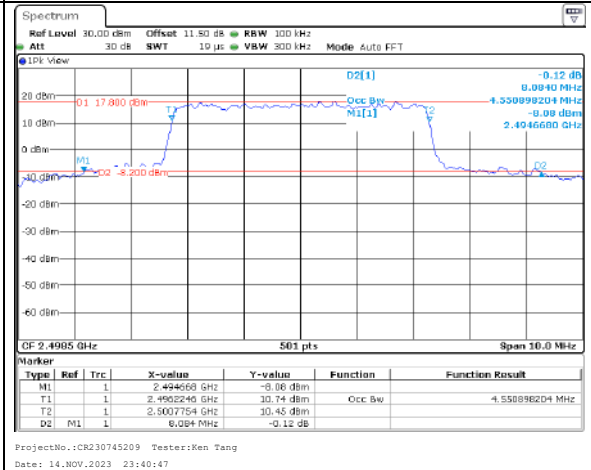
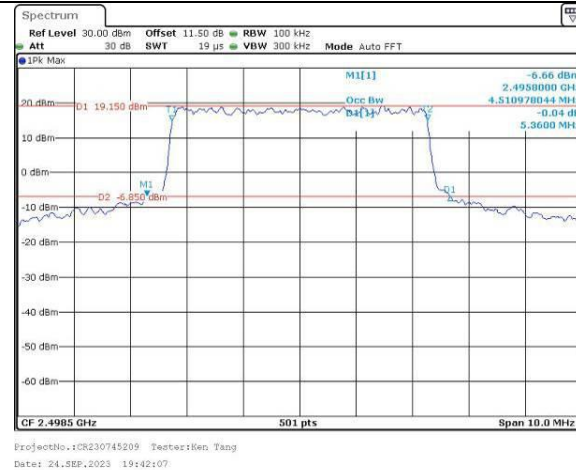
### Occupied Bandwidth

#### Channel

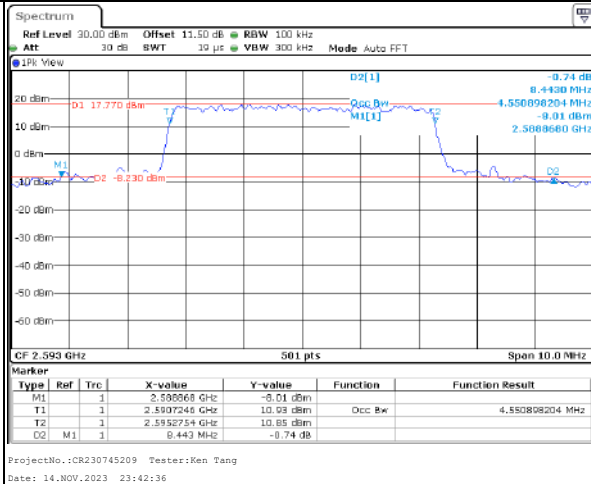
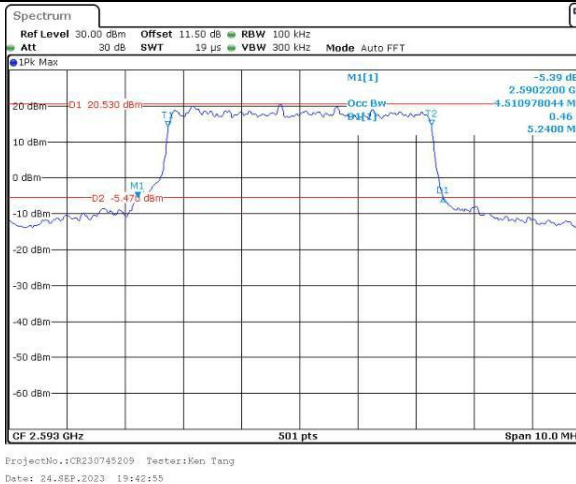
#### 5MHz Bandwidth QPSK

#### 5MHz Bandwidth 16QAM

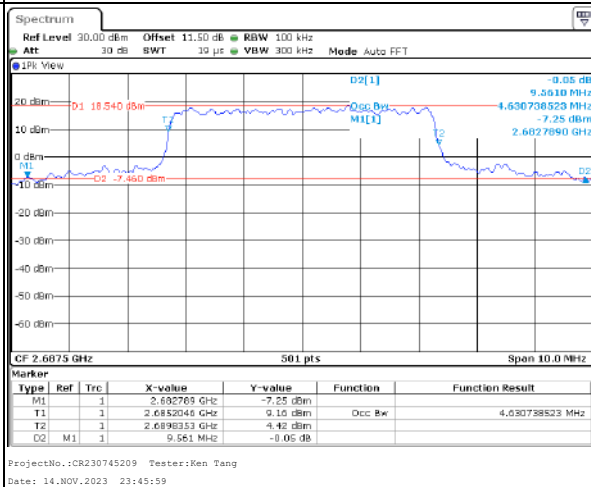
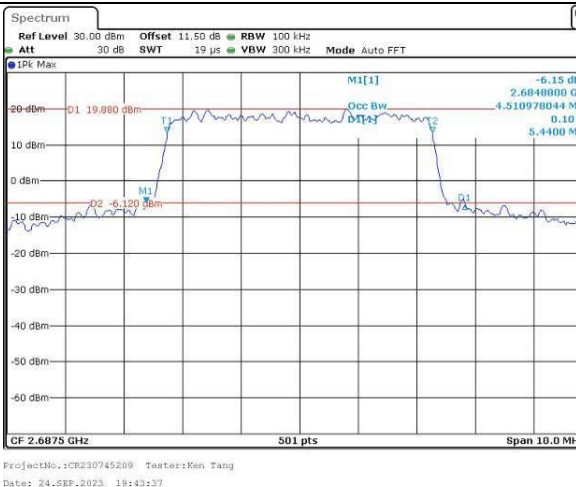
Lowest



Middle



Highest



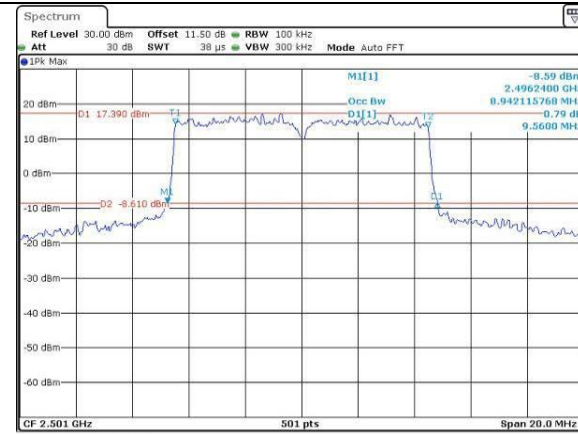
## Occupied Bandwidth

## Channel

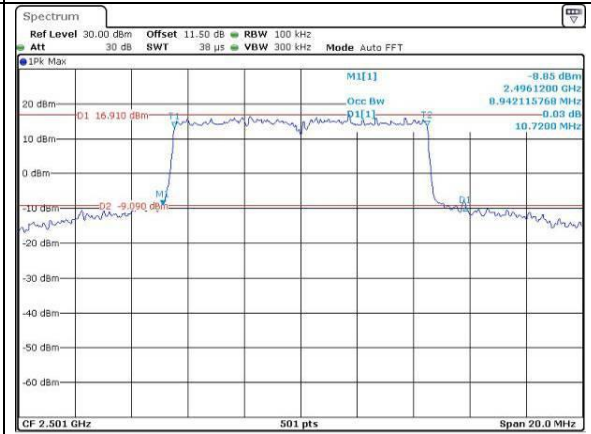
## 10MHz Bandwidth QPSK

## 10MHz Bandwidth 16QAM

## Lowest

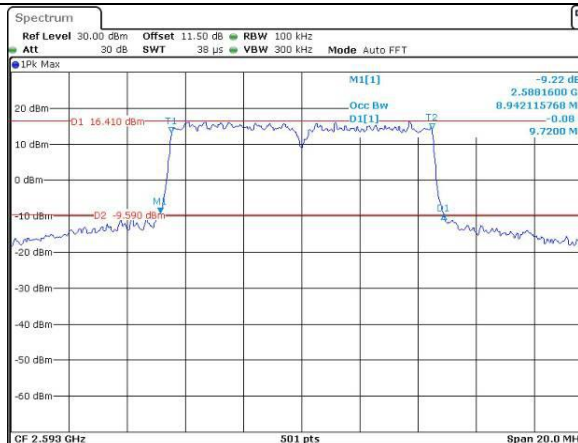


ProjectNo.:CR230745209 Testter:Ken Tang  
Date: 24.SEP.2023 19:45:08

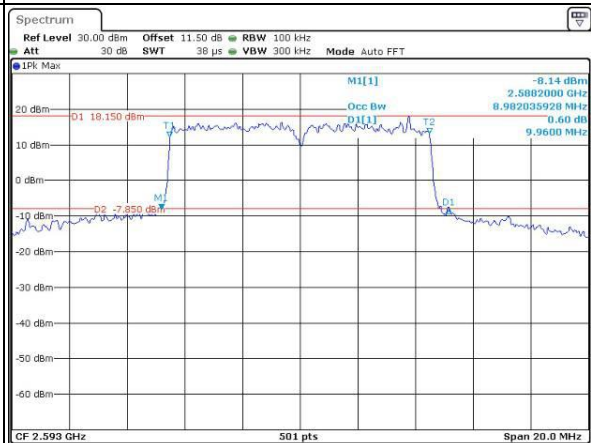


ProjectNo.:CR230745209 Testter:Ken Tang  
Date: 24.SEP.2023 19:45:44

## Middle

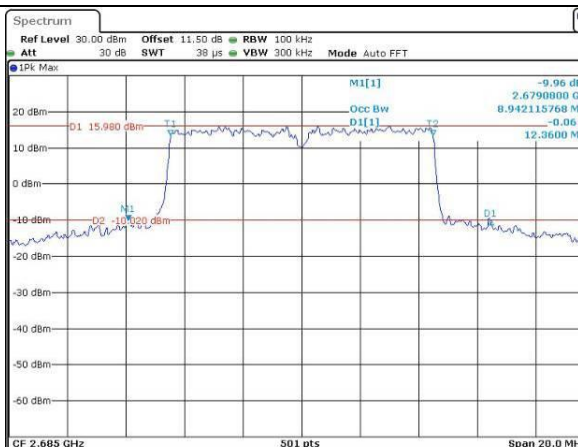


ProjectNo.:CR230745209 Testter:Ken Tang  
Date: 24.SEP.2023 19:46:12

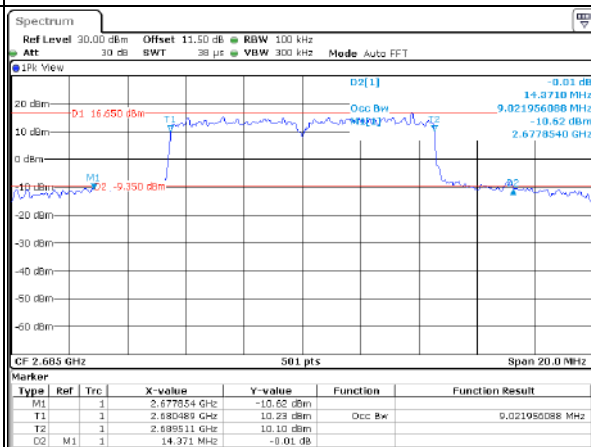


ProjectNo.:CR230745209 Testter:Ken Tang  
Date: 24.SEP.2023 19:46:45

## Highest



ProjectNo.:CR230745209 Testter:Ken Tang  
Date: 24.SEP.2023 19:47:19



ProjectNo.:CR230745209 Testter:Ken Tang  
Date: 14.NOV.2023 23:50:55

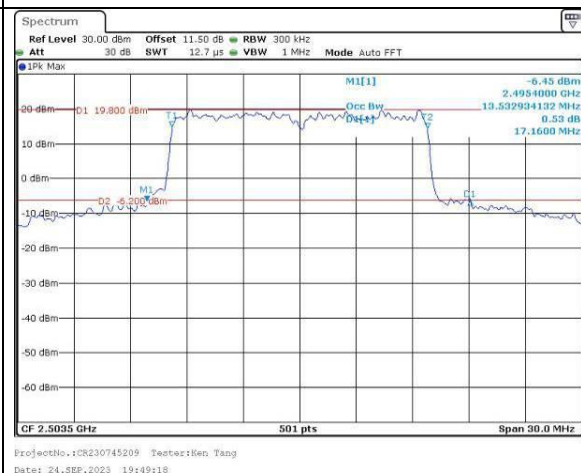
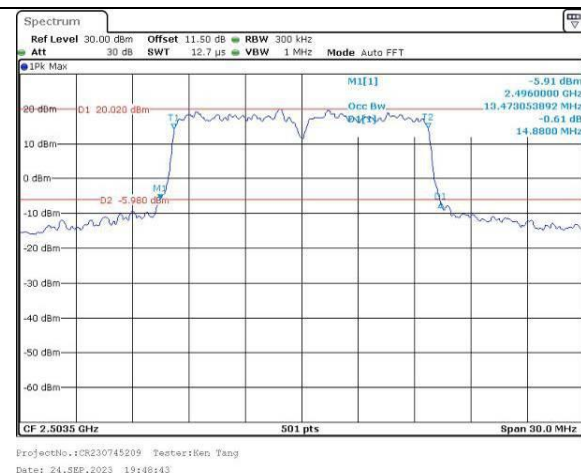
## Occupied Bandwidth

## Channel

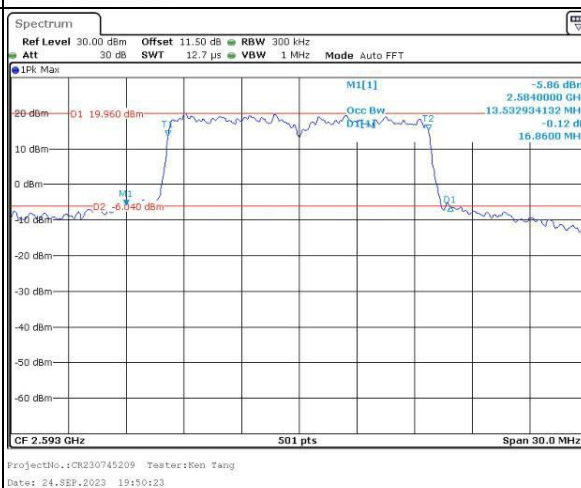
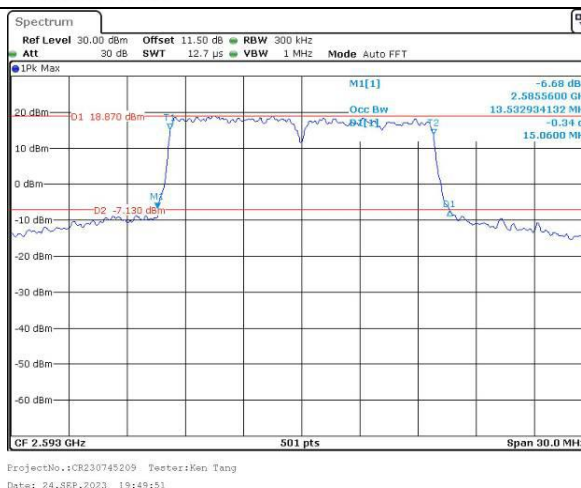
## 15MHz Bandwidth QPSK

## 15MHz Bandwidth 16QAM

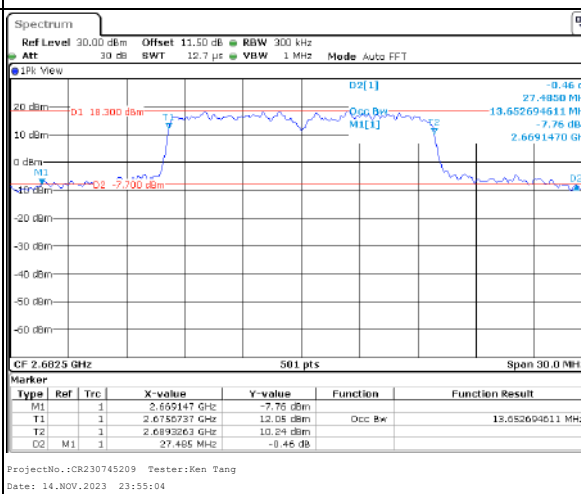
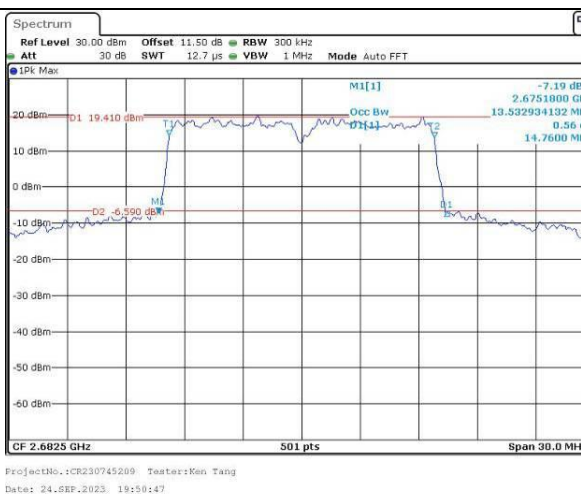
## Lowest



## Middle



## Highest



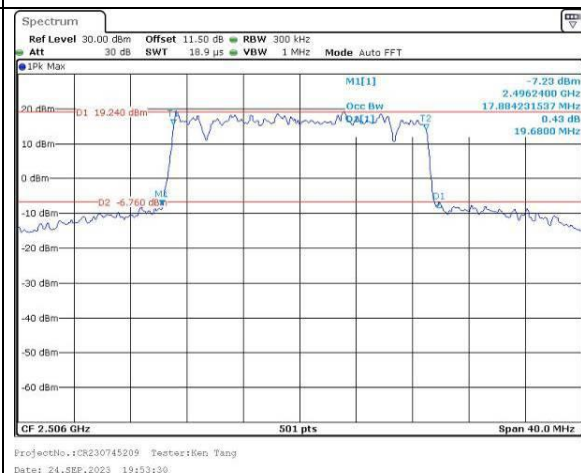
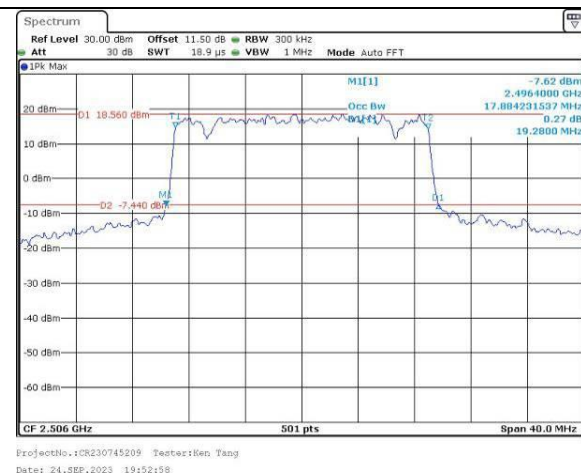
## Occupied Bandwidth

## Channel

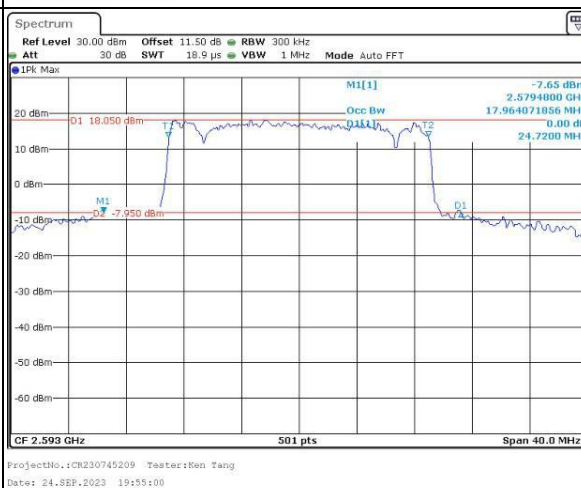
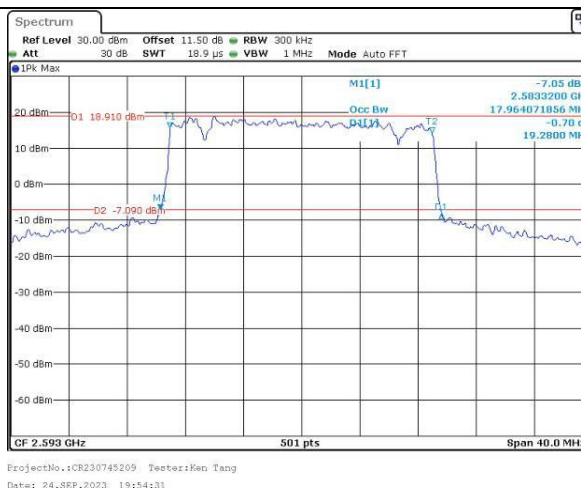
## 20MHz Bandwidth QPSK

## 20MHz Bandwidth 16QAM

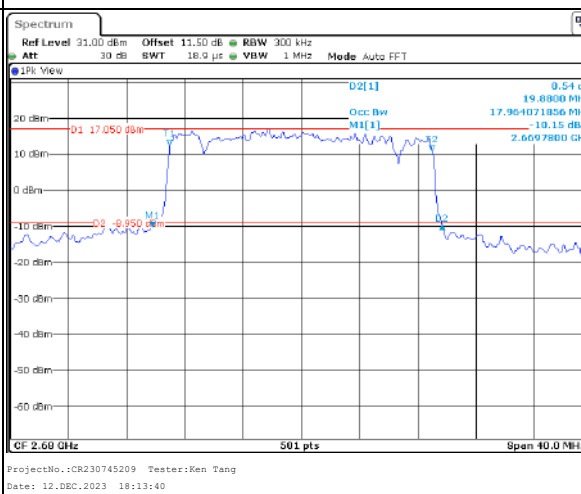
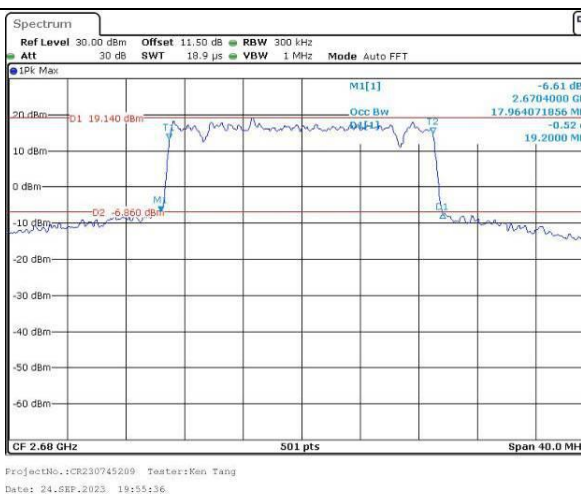
## Lowest



## Middle



## Highest

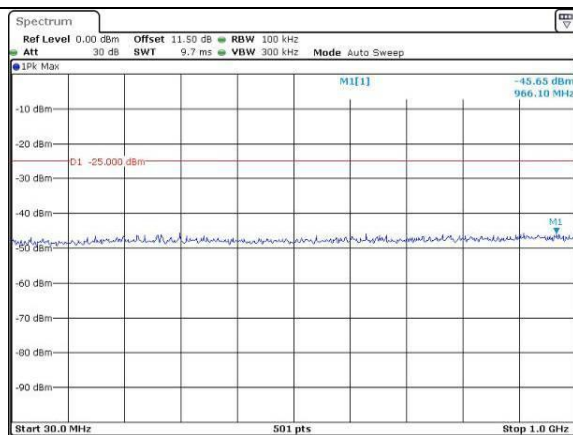


## Spurious Emissions at Antenna Terminal

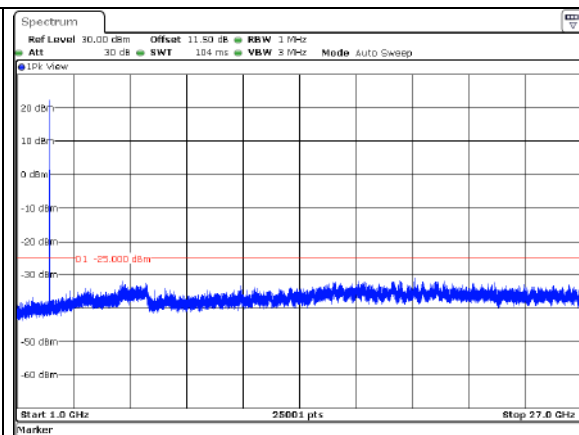
Channel

5MHz Bandwidth QPSK

Lowest

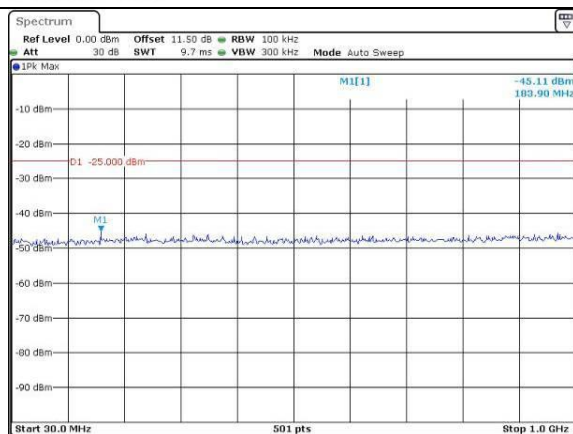


ProjectNo.:CR230745209 Tester:Ken Tang  
Date: 24.SEP.2023 21:49:36

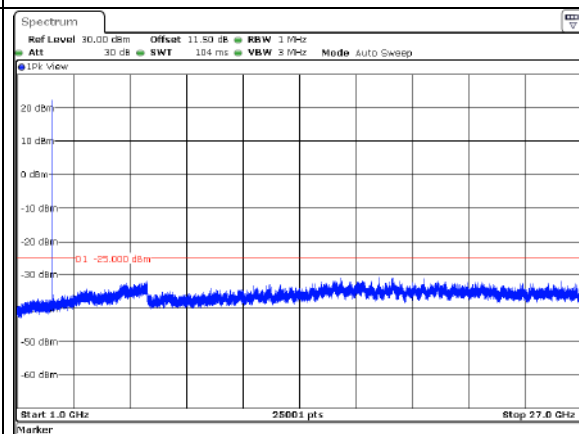


ProjectNo.:CR230745209 Tester:Ken Tang  
Date: 14.NOV.2023 22:51:04

Middle

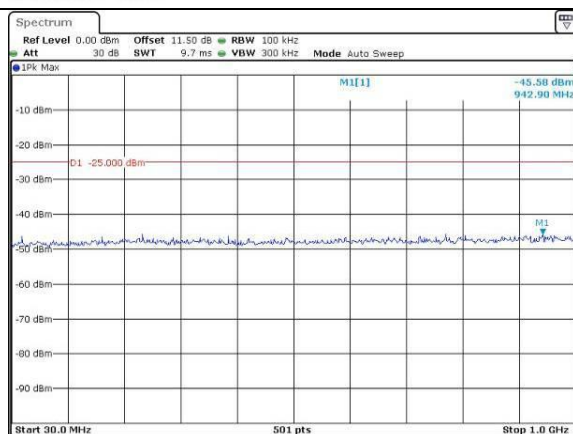


ProjectNo.:CR230745209 Tester:Ken Tang  
Date: 24.SEP.2023 21:50:31

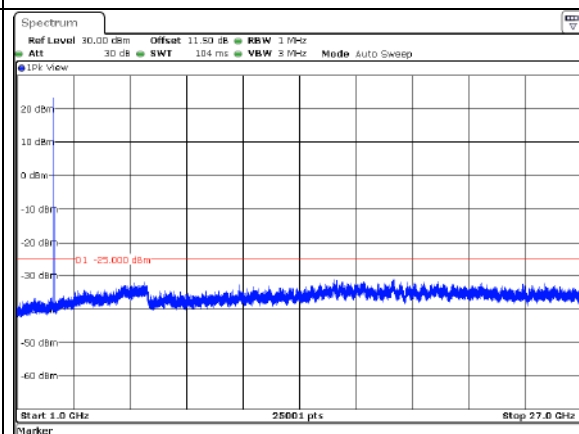


ProjectNo.:CR230745209 Tester:Ken Tang  
Date: 14.NOV.2023 22:51:58

High



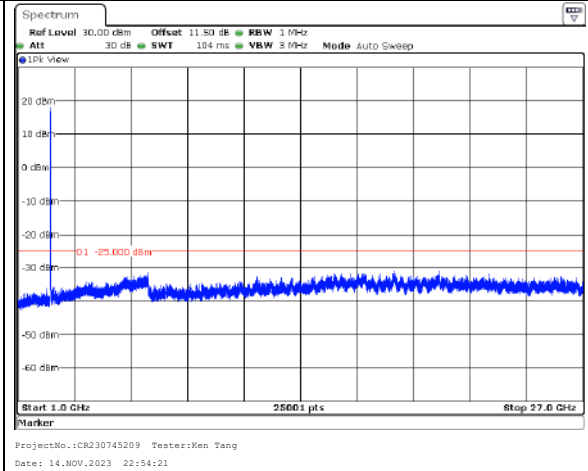
ProjectNo.:CR230745209 Tester:Ken Tang  
Date: 24.SEP.2023 21:51:24



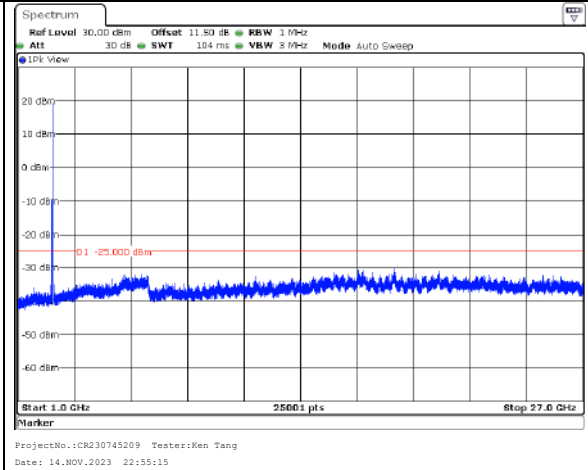
ProjectNo.:CR230745209 Tester:Ken Tang  
Date: 14.NOV.2023 22:53:17

## Channel

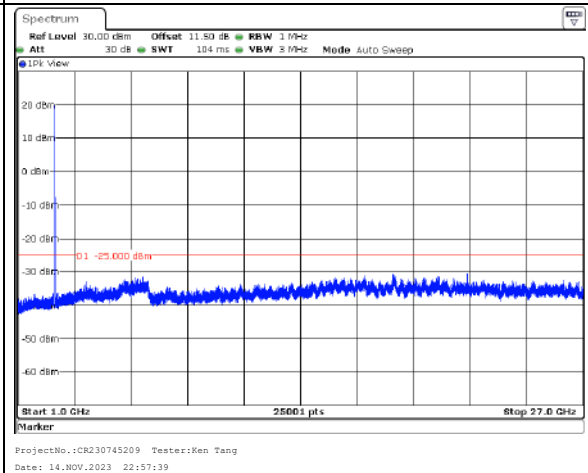
## Lowest



Middle



## High

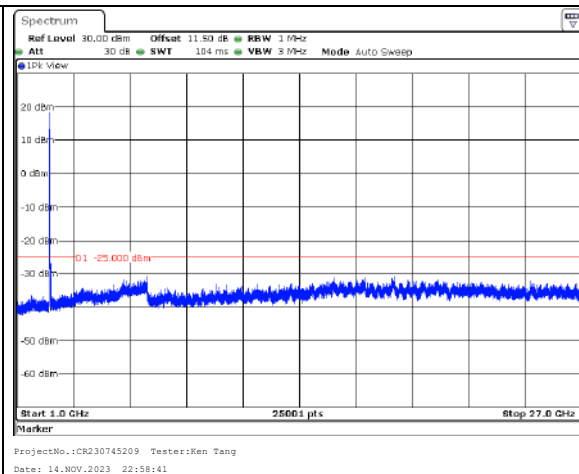
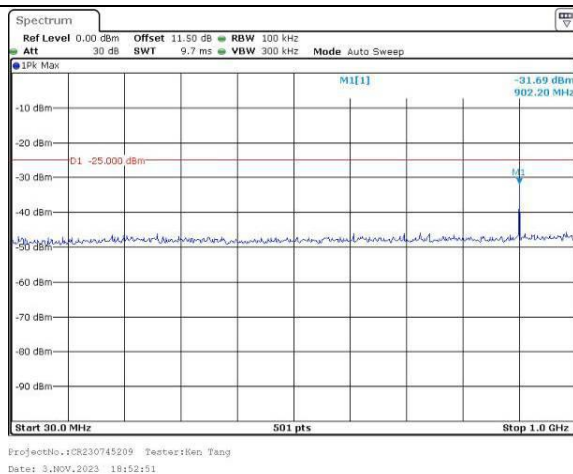


## Spurious Emissions at Antenna Terminal

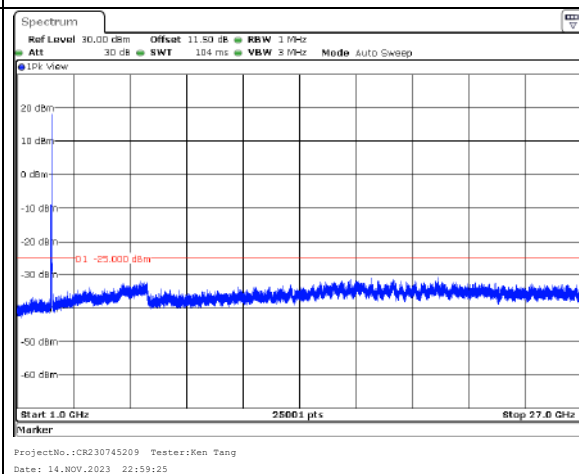
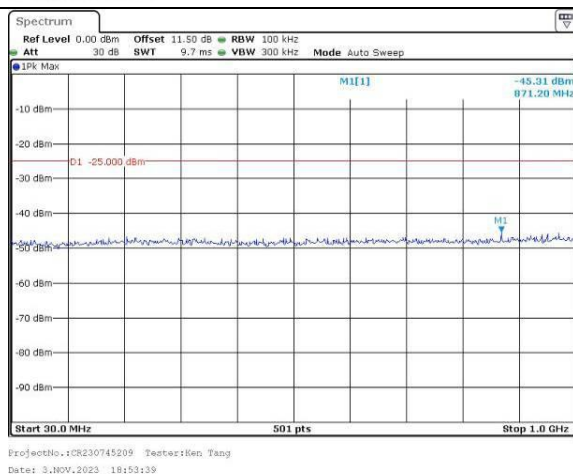
Channel

15MHz Bandwidth QPSK

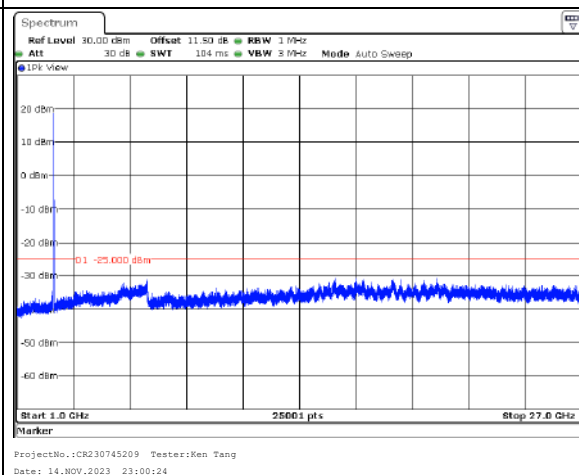
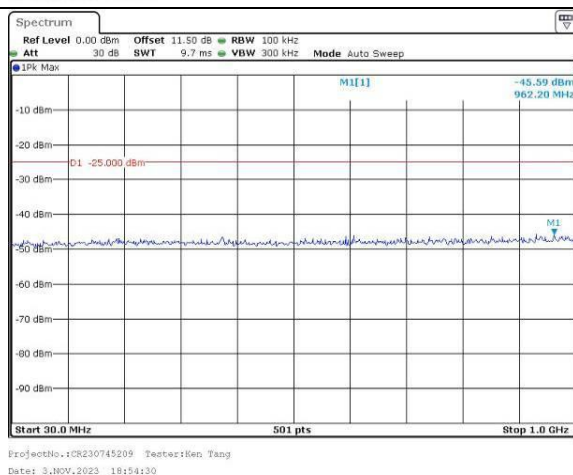
Lowest



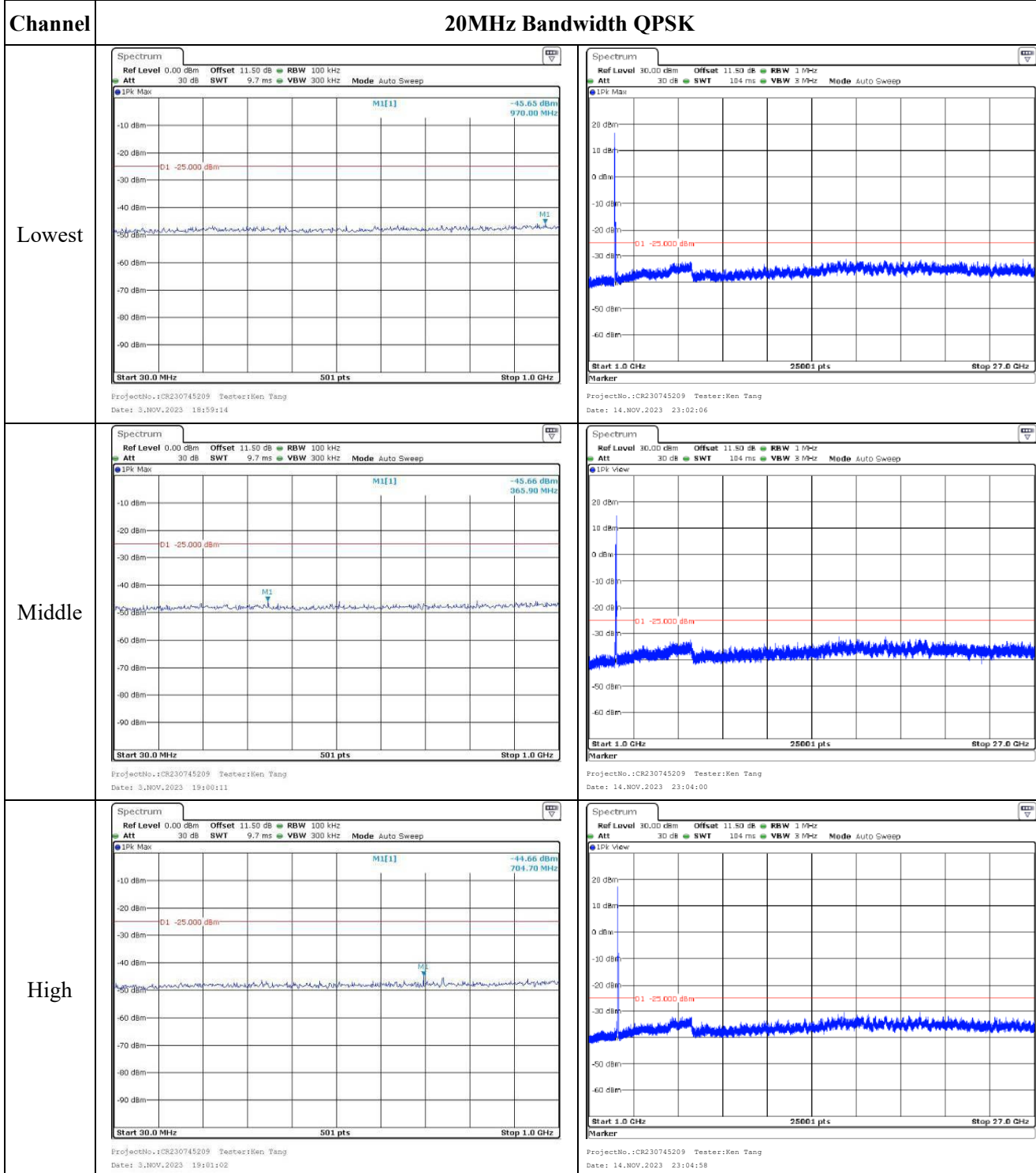
Middle



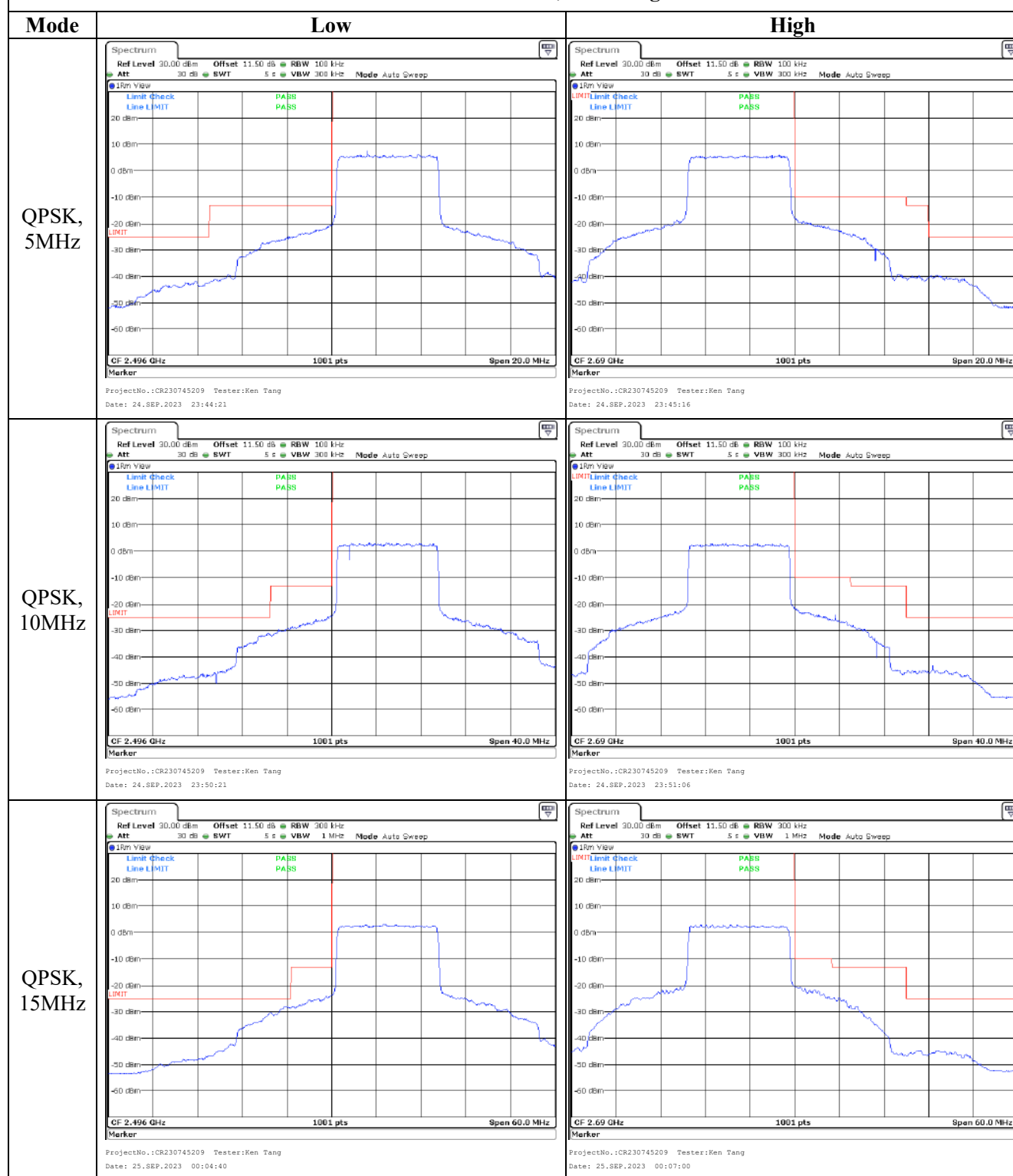
High



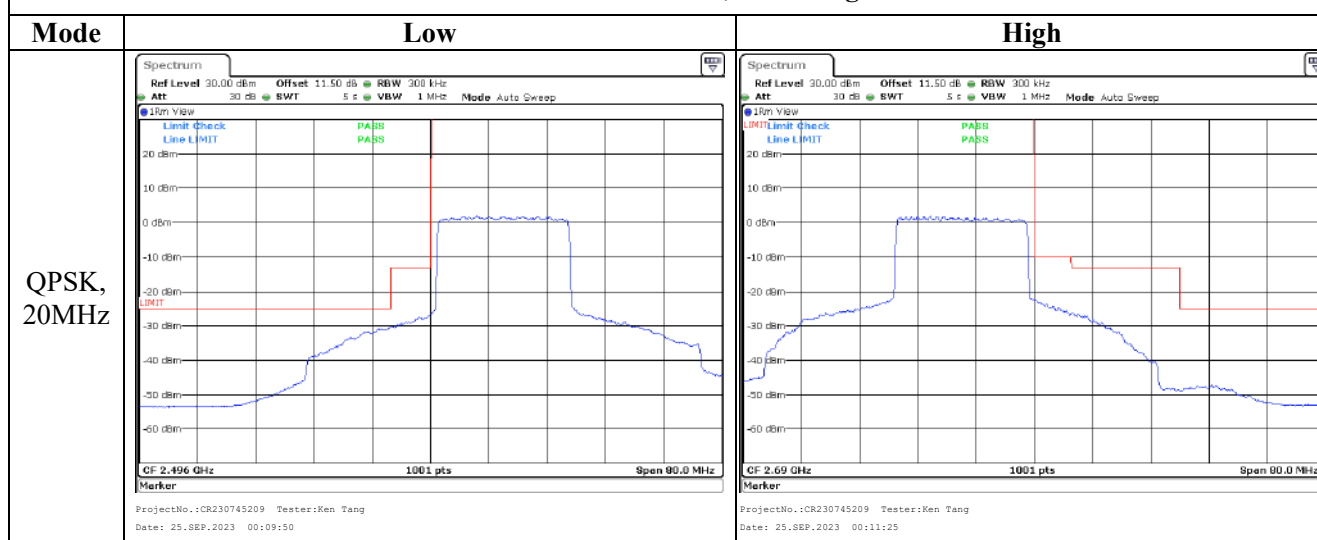
## Spurious Emissions at Antenna Terminal



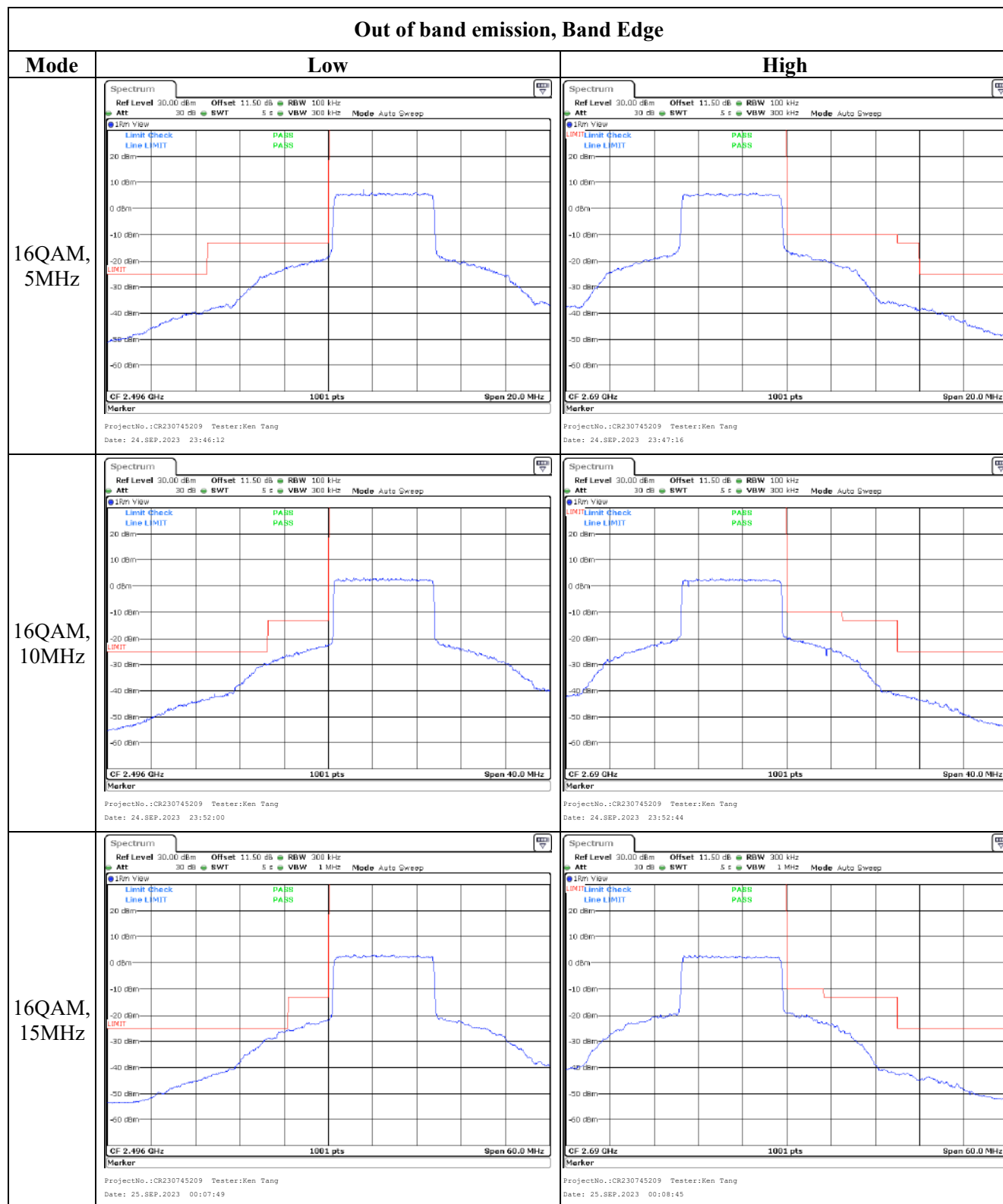
## Out of band emission, Band Edge



## Out of band emission, Band Edge



## Out of band emission, Band Edge



| Out of band emission, Band Edge |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                             |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mode                            | Low                                                                                                                                                                                                                                                                                                                          | High                                                                                                                                                                                                                                                                                                                        |
| 16QAM,<br>20MHz                 | <p>Spectrum</p> <p>Ref Level 30.00 dBm Offset 11.50 dB RBW 300 kHz</p> <p>Att 30 dB SWT 5 s VBW 1 MHz Mode Auto Sweep</p> <p>16m View</p> <p>Limit Check PASS</p> <p>Line LIMIT</p> <p>CF 2.496 GHz 1001 pts Span 00.0 MHz</p> <p>Marker</p> <p>ProjectNo.:CR230745209 Tester:Ken Tang</p> <p>Date: 25.SEP.2023 00:12:36</p> | <p>Spectrum</p> <p>Ref Level 30.00 dBm Offset 11.50 dB RBW 300 kHz</p> <p>Att 30 dB SWT 5 s VBW 1 MHz Mode Auto Sweep</p> <p>16m View</p> <p>Limit Check PASS</p> <p>Line LIMIT</p> <p>CF 2.69 GHz 1001 pts Span 00.0 MHz</p> <p>Marker</p> <p>ProjectNo.:CR230745209 Tester:Ken Tang</p> <p>Date: 25.SEP.2023 00:14:03</p> |

**4.10 Radiated Spurious Emissions**

|                |                     |              |                     |
|----------------|---------------------|--------------|---------------------|
| Serial Number: | 2BCU-2              | Test Date:   | 2023/9/26~2023/9/27 |
| Test Site:     | 966-1, 966-2        | Test Mode:   | Transmitting        |
| Tester:        | Carl Xue, coco Tian | Test Result: | Pass                |

**Environmental Conditions:**

|                      |           |                           |       |                           |             |
|----------------------|-----------|---------------------------|-------|---------------------------|-------------|
| Temperature:<br>(°C) | 25.5~25.8 | Relative Humidity:<br>(%) | 49~60 | ATM<br>Pressure:<br>(kPa) | 100.2~100.3 |
|----------------------|-----------|---------------------------|-------|---------------------------|-------------|

**Test Equipment List and Details:**

| Manufacturer    | Description                     | Model                 | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|---------------------------------|-----------------------|---------------|------------------|----------------------|
| Sunol Sciences  | Antenna                         | JB6                   | A082520-5     | 2020/10/19       | 2023/10/18           |
| R&S             | EMI Test Receiver               | ESR3                  | 102724        | 2023/3/31        | 2024/3/30            |
| TIMES MICROWAVE | Coaxial Cable                   | LMR-600-UltraFlex     | C-0470-02     | 2023/7/16        | 2024/7/15            |
| TIMES MICROWAVE | Coaxial Cable                   | LMR-600-UltraFlex     | C-0780-01     | 2023/7/16        | 2024/7/15            |
| Sonoma          | Amplifier                       | 310N                  | 186165        | 2023/7/16        | 2024/7/15            |
| EMCO            | Adjustable Dipole Antenna       | 3121C                 | 9109-756      | N/A              | N/A                  |
| MICRO-COAX      | Coaxial Cable                   | UFA210B-0-0720-300300 | 99G1448       | 2022/7/16        | 2024/7/15            |
| Agilent         | Signal Generator                | E8247C                | MY43321352    | 2022/11/18       | 2023/11/17           |
| ETS-Lindgren    | Horn Antenna                    | 3115                  | 9912-5985     | 2020/10/13       | 2023/10/12           |
| R&S             | Spectrum Analyzer               | FSV40                 | 101591        | 2023/3/31        | 2024/3/30            |
| MICRO-COAX      | Coaxial Cable                   | UFA210A-1-1200-70U300 | 217423-008    | 2023/8/6         | 2024/8/5             |
| MICRO-COAX      | Coaxial Cable                   | UFA210A-1-2362-300300 | 235780-001    | 2023/8/6         | 2024/8/5             |
| Mini            | Pre-amplifier                   | ZVA-183-S+            | 5969001149    | 2022/11/9        | 2023/11/8            |
| AH              | Double Ridge Guide Horn Antenna | SAS-571               | 1396          | 2021/10/18       | 2024/10/17           |
| PASTERNAK       | Horn Antenna                    | PE9852/2F-20          | 112002        | 2021/2/5         | 2024/2/4             |
| PASTERNAK       | Horn Antenna                    | PE9852/2F-20          | 112001        | 2021/2/5         | 2024/2/4             |
| Quinstar        | Preamplifier                    | QLW-18405536-JO       | 15964001005   | 2023/9/15        | 2024/9/14            |
| PASTERNAK       | Horn Antenna                    | PE9850/2F-20          | 072001        | 2021/2/5         | 2024/2/4             |
| PASTERNAK       | Horn Antenna                    | PE9850/2F-20          | 072002        | 2021/2/5         | 2024/2/4             |
| MICRO-COAX      | Coaxial Cable                   | UFB142A-1-2362-200200 | 235772-001    | 2023/8/6         | 2024/8/5             |

*\* **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 Data:**

Please refer to the below table and plots.

After pre-scan in the X, Y and Z axes of orientation, the worst case is below:

**Cellular Band****30 MHz-10 GHz:**

| Frequency<br>(MHz)         | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method            |                              |                    | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|----------------------------|----------------|-------------------------------|-------------------------------|------------------------------|--------------------|----------------------------|----------------|----------------|
|                            |                |                               | Substituted<br>Level<br>(dBm) | Antenna<br>Gain<br>(dBd/dBi) | Cable Loss<br>(dB) |                            |                |                |
| GSM 850 Frequency:824.2MHz |                |                               |                               |                              |                    |                            |                |                |
| 724.44                     | H              | 20.86                         | -51.97                        | 0.00                         | 0.51               | -52.48                     | -13.00         | 39.48          |
| 691.98                     | V              | 20.77                         | -49.30                        | 0.00                         | 0.54               | -49.84                     | -13.00         | 36.84          |
| 1648.400                   | H              | 48.31                         | -56.02                        | 8.68                         | 0.80               | -48.14                     | -13.00         | 35.14          |
| 1648.400                   | V              | 46.62                         | -57.79                        | 8.68                         | 0.80               | -49.91                     | -13.00         | 36.91          |
| 2472.600                   | H              | 43.87                         | -56.91                        | 9.38                         | 1.00               | -48.53                     | -13.00         | 35.53          |
| 2472.600                   | V              | 45.29                         | -55.44                        | 9.38                         | 1.00               | -47.06                     | -13.00         | 34.06          |
| 3296.800                   | H              | 36.47                         | -60.21                        | 10.32                        | 1.15               | -51.04                     | -13.00         | 38.04          |
| 3296.800                   | V              | 35.64                         | -60.80                        | 10.32                        | 1.15               | -51.63                     | -13.00         | 38.63          |
| GSM 850 Frequency:836.6MHz |                |                               |                               |                              |                    |                            |                |                |
| 714.36                     | H              | 21.10                         | -51.93                        | 0.00                         | 0.50               | -52.43                     | -13.00         | 39.43          |
| 721.69                     | V              | 20.84                         | -48.61                        | 0.00                         | 0.50               | -49.11                     | -13.00         | 36.11          |
| 1673.200                   | H              | 48.60                         | -55.71                        | 8.71                         | 0.85               | -47.85                     | -13.00         | 34.85          |
| 1673.200                   | V              | 46.74                         | -57.67                        | 8.71                         | 0.85               | -49.81                     | -13.00         | 36.81          |
| 2509.800                   | H              | 39.71                         | -60.90                        | 9.42                         | 1.01               | -52.49                     | -13.00         | 39.49          |
| 2509.800                   | V              | 45.69                         | -54.93                        | 9.42                         | 1.01               | -46.52                     | -13.00         | 33.52          |
| 3346.400                   | H              | 35.26                         | -61.91                        | 10.34                        | 1.16               | -52.73                     | -13.00         | 39.73          |
| 3346.400                   | V              | 35.07                         | -61.96                        | 10.34                        | 1.16               | -52.78                     | -13.00         | 39.78          |
| GSM 850 Frequency:848.8MHz |                |                               |                               |                              |                    |                            |                |                |
| 587.11                     | H              | 20.96                         | -53.15                        | 0.00                         | 0.47               | -53.62                     | -13.00         | 40.62          |
| 711.65                     | V              | 21.13                         | -48.54                        | 0.00                         | 0.51               | -49.05                     | -13.00         | 36.05          |
| 1697.600                   | H              | 47.63                         | -56.66                        | 8.74                         | 0.90               | -48.82                     | -13.00         | 35.82          |
| 1697.600                   | V              | 46.65                         | -57.77                        | 8.74                         | 0.90               | -49.93                     | -13.00         | 36.93          |
| 2546.400                   | H              | 40.12                         | -60.21                        | 9.47                         | 1.01               | -51.75                     | -13.00         | 38.75          |
| 2546.400                   | V              | 47.27                         | -53.01                        | 9.47                         | 1.01               | -44.55                     | -13.00         | 31.55          |
| 3395.200                   | H              | 36.32                         | -61.37                        | 10.36                        | 1.19               | -52.20                     | -13.00         | 39.20          |
| 3395.200                   | V              | 35.30                         | -62.36                        | 10.36                        | 1.19               | -53.19                     | -13.00         | 40.19          |

## PCS Band

## 30 MHz-20 GHz:

| Frequency<br>(MHz)           | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method            |                              |                    | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|------------------------------|----------------|-------------------------------|-------------------------------|------------------------------|--------------------|----------------------------|----------------|----------------|
|                              |                |                               | Substituted<br>Level<br>(dBm) | Antenna<br>Gain<br>(dBd/dBi) | Cable Loss<br>(dB) |                            |                |                |
| GSM 1900 Frequency:1850.2MHz |                |                               |                               |                              |                    |                            |                |                |
| 94.09                        | H              | 42.30                         | -70.46                        | 0.00                         | 0.18               | -70.64                     | -13.00         | 57.64          |
| 91.17                        | V              | 45.37                         | -63.69                        | 0.00                         | 0.18               | -63.87                     | -13.00         | 50.87          |
| 3700.400                     | H              | 41.03                         | -56.29                        | 10.60                        | 1.25               | -46.94                     | -13.00         | 33.94          |
| 3700.400                     | V              | 38.64                         | -58.66                        | 10.60                        | 1.25               | -49.31                     | -13.00         | 36.31          |
| 5550.600                     | H              | 42.89                         | -50.37                        | 11.44                        | 1.49               | -40.42                     | -13.00         | 27.42          |
| 5550.600                     | V              | 41.87                         | -51.23                        | 11.44                        | 1.49               | -41.28                     | -13.00         | 28.28          |
| GSM 1900 Frequency:1880MHz   |                |                               |                               |                              |                    |                            |                |                |
| 91.17                        | H              | 42.14                         | -70.81                        | 0.00                         | 0.18               | -70.99                     | -13.00         | 57.99          |
| 92.13                        | V              | 45.34                         | -63.50                        | 0.00                         | 0.18               | -63.68                     | -13.00         | 50.68          |
| 3760.000                     | H              | 41.56                         | -54.85                        | 10.66                        | 1.24               | -45.43                     | -13.00         | 32.43          |
| 3760.000                     | V              | 39.26                         | -57.03                        | 10.66                        | 1.24               | -47.61                     | -13.00         | 34.61          |
| 5640.000                     | H              | 41.77                         | -51.68                        | 11.33                        | 1.54               | -41.89                     | -13.00         | 28.89          |
| 5640.000                     | V              | 40.39                         | -52.94                        | 11.33                        | 1.54               | -43.15                     | -13.00         | 30.15          |
| GSM 1900 Frequency:1909.8MHz |                |                               |                               |                              |                    |                            |                |                |
| 95.76                        | H              | 41.97                         | -70.68                        | 0.00                         | 0.19               | -70.87                     | -13.00         | 57.87          |
| 93.11                        | V              | 45.25                         | -63.36                        | 0.00                         | 0.18               | -63.54                     | -13.00         | 50.54          |
| 3819.600                     | H              | 42.65                         | -53.21                        | 10.72                        | 1.29               | -43.78                     | -13.00         | 30.78          |
| 3819.600                     | V              | 38.64                         | -57.08                        | 10.72                        | 1.29               | -47.65                     | -13.00         | 34.65          |
| 5729.400                     | H              | 43.64                         | -49.84                        | 11.22                        | 1.59               | -40.21                     | -13.00         | 27.21          |
| 5729.400                     | V              | 39.64                         | -53.72                        | 11.22                        | 1.59               | -44.09                     | -13.00         | 31.09          |

**WCDMA Band 2:****30 MHz-20 GHz:**

| Frequency<br>(MHz)                  | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method            |                              |                    | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|-------------------------------------|----------------|-------------------------------|-------------------------------|------------------------------|--------------------|----------------------------|----------------|----------------|
|                                     |                |                               | Substituted<br>Level<br>(dBm) | Antenna<br>Gain<br>(dBd/dBi) | Cable Loss<br>(dB) |                            |                |                |
| WCDMA Band II, Frequency:1852.4 MHz |                |                               |                               |                              |                    |                            |                |                |
| 91.81                               | H              | 42.28                         | -70.63                        | 0.00                         | 0.18               | -70.81                     | -13.00         | 57.81          |
| 92.46                               | V              | 45.09                         | -63.67                        | 0.00                         | 0.18               | -63.85                     | -13.00         | 50.85          |
| 3704.800                            | H              | 35.12                         | -62.14                        | 10.60                        | 1.25               | -52.79                     | -13.00         | 39.79          |
| 3704.800                            | V              | 34.98                         | -62.25                        | 10.60                        | 1.25               | -52.90                     | -13.00         | 39.90          |
| 5557.200                            | H              | 37.16                         | -56.12                        | 11.43                        | 1.49               | -46.18                     | -13.00         | 33.18          |
| 5557.200                            | V              | 35.74                         | -57.39                        | 11.43                        | 1.49               | -47.45                     | -13.00         | 34.45          |
| WCDMA Band II, Frequency:1880 MHz   |                |                               |                               |                              |                    |                            |                |                |
| 92.16                               | H              | 41.84                         | -71.05                        | 0.00                         | 0.18               | -71.23                     | -13.00         | 58.23          |
| 91.17                               | V              | 44.60                         | -64.46                        | 0.00                         | 0.18               | -64.64                     | -13.00         | 51.64          |
| 3760.000                            | H              | 35.09                         | -61.32                        | 10.66                        | 1.24               | -51.90                     | -13.00         | 38.90          |
| 3760.000                            | V              | 35.46                         | -60.83                        | 10.66                        | 1.24               | -51.41                     | -13.00         | 38.41          |
| 5640.000                            | H              | 37.65                         | -55.80                        | 11.33                        | 1.54               | -46.01                     | -13.00         | 33.01          |
| 5640.000                            | V              | 35.16                         | -58.17                        | 11.33                        | 1.54               | -48.38                     | -13.00         | 35.38          |
| WCDMA Band II, Frequency:1907.6MHz  |                |                               |                               |                              |                    |                            |                |                |
| 94.09                               | H              | 41.76                         | -71.00                        | 0.00                         | 0.18               | -71.18                     | -13.00         | 58.18          |
| 93.11                               | V              | 44.64                         | -63.97                        | 0.00                         | 0.18               | -64.15                     | -13.00         | 51.15          |
| 3815.200                            | H              | 35.31                         | -60.54                        | 10.72                        | 1.29               | -51.11                     | -13.00         | 38.11          |
| 3815.200                            | V              | 35.16                         | -60.53                        | 10.72                        | 1.29               | -51.10                     | -13.00         | 38.10          |
| 5722.800                            | H              | 37.46                         | -56.03                        | 11.23                        | 1.58               | -46.38                     | -13.00         | 33.38          |
| 5722.800                            | V              | 36.07                         | -57.28                        | 11.23                        | 1.58               | -47.63                     | -13.00         | 34.63          |

**WCDMA Band 5:****30 MHz-10 GHz:**

| Frequency<br>(MHz)               | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method            |                              |                    | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|----------------------------------|----------------|-------------------------------|-------------------------------|------------------------------|--------------------|----------------------------|----------------|----------------|
|                                  |                |                               | Substituted<br>Level<br>(dBm) | Antenna<br>Gain<br>(dBd/dBi) | Cable Loss<br>(dB) |                            |                |                |
| WCDMA Band 5 Frequency:826.4 MHz |                |                               |                               |                              |                    |                            |                |                |
| 539.47                           | H              | 21.13                         | -53.92                        | 0.00                         | 0.46               | -54.38                     | -13.00         | 41.38          |
| 701.97                           | V              | 20.94                         | -48.94                        | 0.00                         | 0.55               | -49.49                     | -13.00         | 36.49          |
| 1652.800                         | H              | 34.67                         | -69.66                        | 8.68                         | 0.81               | -61.79                     | -13.00         | 48.79          |
| 1652.800                         | V              | 35.84                         | -68.57                        | 8.68                         | 0.81               | -60.70                     | -13.00         | 47.70          |
| 2479.200                         | H              | 37.45                         | -63.31                        | 9.39                         | 1.01               | -54.93                     | -13.00         | 41.93          |
| 2479.200                         | V              | 36.83                         | -63.90                        | 9.39                         | 1.01               | -55.52                     | -13.00         | 42.52          |
| 3305.600                         | H              | 36.27                         | -60.46                        | 10.32                        | 1.15               | -51.29                     | -13.00         | 38.29          |
| 3305.600                         | V              | 37.63                         | -58.87                        | 10.32                        | 1.15               | -49.70                     | -13.00         | 36.70          |
| WCDMA Band 5 Frequency:836.6MHz  |                |                               |                               |                              |                    |                            |                |                |
| 724.26                           | H              | 20.76                         | -52.07                        | 0.00                         | 0.51               | -52.58                     | -13.00         | 39.58          |
| 697.06                           | V              | 21.02                         | -48.95                        | 0.00                         | 0.55               | -49.50                     | -13.00         | 36.50          |
| 1673.200                         | H              | 34.69                         | -69.62                        | 8.71                         | 0.85               | -61.76                     | -13.00         | 48.76          |
| 1673.200                         | V              | 35.64                         | -68.77                        | 8.71                         | 0.85               | -60.91                     | -13.00         | 47.91          |
| 2509.800                         | H              | 37.64                         | -62.97                        | 9.42                         | 1.01               | -54.56                     | -13.00         | 41.56          |
| 2509.800                         | V              | 40.35                         | -60.27                        | 9.42                         | 1.01               | -51.86                     | -13.00         | 38.86          |
| 3346.400                         | H              | 38.64                         | -58.53                        | 10.34                        | 1.16               | -49.35                     | -13.00         | 36.35          |
| 3346.400                         | V              | 36.21                         | -60.82                        | 10.34                        | 1.16               | -51.64                     | -13.00         | 38.64          |
| WCDMA Band 5 Frequency:846.6MHz  |                |                               |                               |                              |                    |                            |                |                |
| 701.78                           | H              | 21.03                         | -52.25                        | 0.00                         | 0.55               | -52.80                     | -13.00         | 39.80          |
| 709.38                           | V              | 21.12                         | -48.60                        | 0.00                         | 0.52               | -49.12                     | -13.00         | 36.12          |
| 1693.200                         | H              | 35.69                         | -68.61                        | 8.73                         | 0.89               | -60.77                     | -13.00         | 47.77          |
| 1693.200                         | V              | 34.71                         | -69.71                        | 8.73                         | 0.89               | -61.87                     | -13.00         | 48.87          |
| 2539.800                         | H              | 40.75                         | -59.63                        | 9.46                         | 1.01               | -51.18                     | -13.00         | 38.18          |
| 2539.800                         | V              | 36.54                         | -63.80                        | 9.46                         | 1.01               | -55.35                     | -13.00         | 42.35          |
| 3386.400                         | H              | 39.54                         | -58.05                        | 10.35                        | 1.18               | -48.88                     | -13.00         | 35.88          |
| 3386.400                         | V              | 38.54                         | -59.00                        | 10.35                        | 1.18               | -49.83                     | -13.00         | 36.83          |

**LTE Bands:**

(The Worst modulation and bandwidth was below)

**LTE Band 2 (30MHz-20GHz):**

| Frequency<br>(MHz)                 | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method            |                              |                    | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|------------------------------------|----------------|-------------------------------|-------------------------------|------------------------------|--------------------|----------------------------|----------------|----------------|
|                                    |                |                               | Substituted<br>Level<br>(dBm) | Antenna<br>Gain<br>(dBd/dBi) | Cable Loss<br>(dB) |                            |                |                |
| QPSK, 1.4MHz, Frequency:1850.7 MHz |                |                               |                               |                              |                    |                            |                |                |
| 94.09                              | H              | 42.23                         | -70.53                        | 0.00                         | 0.18               | -70.71                     | -13.00         | 57.71          |
| 92.14                              | V              | 44.91                         | -63.93                        | 0.00                         | 0.18               | -64.11                     | -13.00         | 51.11          |
| 3701.400                           | H              | 35.19                         | -62.12                        | 10.60                        | 1.25               | -52.77                     | -13.00         | 39.77          |
| 3701.400                           | V              | 35.27                         | -62.02                        | 10.60                        | 1.25               | -52.67                     | -13.00         | 39.67          |
| 5552.100                           | H              | 36.42                         | -56.85                        | 11.44                        | 1.49               | -46.90                     | -13.00         | 33.90          |
| 5552.100                           | V              | 35.64                         | -57.46                        | 11.44                        | 1.49               | -47.51                     | -13.00         | 34.51          |
| QPSK, 1.4MHz,Frequency:1880 MHz    |                |                               |                               |                              |                    |                            |                |                |
| 93.11                              | H              | 42.12                         | -70.70                        | 0.00                         | 0.18               | -70.88                     | -13.00         | 57.88          |
| 91.49                              | V              | 44.82                         | -64.17                        | 0.00                         | 0.18               | -64.35                     | -13.00         | 51.35          |
| 3760.000                           | H              | 35.26                         | -61.15                        | 10.66                        | 1.24               | -51.73                     | -13.00         | 38.73          |
| 3760.000                           | V              | 34.76                         | -61.53                        | 10.66                        | 1.24               | -52.11                     | -13.00         | 39.11          |
| 5640.000                           | H              | 36.42                         | -57.03                        | 11.33                        | 1.54               | -47.24                     | -13.00         | 34.24          |
| 5640.000                           | V              | 35.21                         | -58.12                        | 11.33                        | 1.54               | -48.33                     | -13.00         | 35.33          |
| QPSK, 1.4MHz,Frequency:1909.3 MHz  |                |                               |                               |                              |                    |                            |                |                |
| 91.81                              | H              | 41.91                         | -71.00                        | 0.00                         | 0.18               | -71.18                     | -13.00         | 58.18          |
| 93.44                              | V              | 45.30                         | -63.24                        | 0.00                         | 0.18               | -63.42                     | -13.00         | 50.42          |
| 3818.600                           | H              | 34.97                         | -60.89                        | 10.72                        | 1.29               | -51.46                     | -13.00         | 38.46          |
| 3818.600                           | V              | 35.10                         | -60.61                        | 10.72                        | 1.29               | -51.18                     | -13.00         | 38.18          |
| 5727.900                           | H              | 36.42                         | -57.06                        | 11.23                        | 1.59               | -47.42                     | -13.00         | 34.42          |
| 5727.900                           | V              | 35.81                         | -57.55                        | 11.23                        | 1.59               | -47.91                     | -13.00         | 34.91          |

**LTE Band 5(30MHz-10GHz):**

| Frequency<br>(MHz)                 | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method            |                              |                    | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|------------------------------------|----------------|-------------------------------|-------------------------------|------------------------------|--------------------|----------------------------|----------------|----------------|
|                                    |                |                               | Substituted<br>Level<br>(dBm) | Antenna<br>Gain<br>(dBd/dBi) | Cable Loss<br>(dB) |                            |                |                |
| QPSK, 1.4MHz, Frequency: 824.7 MHz |                |                               |                               |                              |                    |                            |                |                |
| 721.94                             | H              | 20.81                         | -52.07                        | 0.00                         | 0.50               | -52.57                     | -13.00         | 39.57          |
| 716.90                             | V              | 21.04                         | -48.51                        | 0.00                         | 0.50               | -49.01                     | -13.00         | 36.01          |
| 1649.400                           | H              | 34.86                         | -69.47                        | 8.68                         | 0.80               | -61.59                     | -13.00         | 48.59          |
| 1649.400                           | V              | 34.69                         | -69.72                        | 8.68                         | 0.80               | -61.84                     | -13.00         | 48.84          |
| 2474.100                           | H              | 35.41                         | -65.37                        | 9.38                         | 1.00               | -56.99                     | -13.00         | 43.99          |
| 2474.100                           | V              | 34.66                         | -66.07                        | 9.38                         | 1.00               | -57.69                     | -13.00         | 44.69          |
| 3298.800                           | H              | 41.82                         | -54.86                        | 10.32                        | 1.15               | -45.69                     | -13.00         | 32.69          |
| 3298.800                           | V              | 40.52                         | -55.92                        | 10.32                        | 1.15               | -46.75                     | -13.00         | 33.75          |
| QPSK, 1.4MHz, Frequency: 836.5 MHz |                |                               |                               |                              |                    |                            |                |                |
| 704.43                             | H              | 20.86                         | -52.37                        | 0.00                         | 0.55               | -52.92                     | -13.00         | 39.92          |
| 727.02                             | V              | 20.94                         | -48.39                        | 0.00                         | 0.52               | -48.91                     | -13.00         | 35.91          |
| 1673.000                           | H              | 35.13                         | -69.18                        | 8.71                         | 0.85               | -61.32                     | -13.00         | 48.32          |
| 1673.000                           | V              | 34.87                         | -69.54                        | 8.71                         | 0.85               | -61.68                     | -13.00         | 48.68          |
| 2509.500                           | H              | 35.01                         | -65.60                        | 9.42                         | 1.01               | -57.19                     | -13.00         | 44.19          |
| 2509.500                           | V              | 35.45                         | -65.17                        | 9.42                         | 1.01               | -56.76                     | -13.00         | 43.76          |
| 3346.000                           | H              | 38.61                         | -58.55                        | 10.34                        | 1.16               | -49.37                     | -13.00         | 36.37          |
| 3346.000                           | V              | 37.01                         | -60.01                        | 10.34                        | 1.16               | -50.83                     | -13.00         | 37.83          |
| QPSK, 1.4MHz, Frequency: 848.3 MHz |                |                               |                               |                              |                    |                            |                |                |
| 580.78                             | H              | 20.90                         | -53.34                        | 0.00                         | 0.46               | -53.80                     | -13.00         | 40.80          |
| 714.40                             | V              | 21.22                         | -48.39                        | 0.00                         | 0.50               | -48.89                     | -13.00         | 35.89          |
| 1696.600                           | H              | 34.69                         | -69.60                        | 8.74                         | 0.89               | -61.75                     | -13.00         | 48.75          |
| 1696.600                           | V              | 34.69                         | -69.73                        | 8.74                         | 0.89               | -61.88                     | -13.00         | 48.88          |
| 2544.900                           | H              | 35.10                         | -65.24                        | 9.47                         | 1.01               | -56.78                     | -13.00         | 43.78          |
| 2544.900                           | V              | 35.20                         | -65.10                        | 9.47                         | 1.01               | -56.64                     | -13.00         | 43.64          |
| 3393.200                           | H              | 41.58                         | -56.09                        | 10.36                        | 1.19               | -46.92                     | -13.00         | 33.92          |
| 3393.200                           | V              | 39.67                         | -57.96                        | 10.36                        | 1.19               | -48.79                     | -13.00         | 35.79          |

**LTE Band 12 (30MHz-10GHz):**

| Frequency<br>(MHz)                 | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method            |                              |                    | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|------------------------------------|----------------|-------------------------------|-------------------------------|------------------------------|--------------------|----------------------------|----------------|----------------|
|                                    |                |                               | Substituted<br>Level<br>(dBm) | Antenna<br>Gain<br>(dBd/dBi) | Cable Loss<br>(dB) |                            |                |                |
| QPSK, 1.4MHz, Frequency: 699.7 MHz |                |                               |                               |                              |                    |                            |                |                |
| 581.01                             | H              | 20.54                         | -53.69                        | 0.00                         | 0.46               | -54.15                     | -13.00         | 41.15          |
| 605.75                             | V              | 20.51                         | -51.12                        | 0.00                         | 0.50               | -51.62                     | -13.00         | 38.62          |
| 1399.400                           | H              | 35.39                         | -68.31                        | 8.22                         | 0.71               | -60.80                     | -13.00         | 47.80          |
| 1399.400                           | V              | 36.11                         | -67.64                        | 8.22                         | 0.71               | -60.13                     | -13.00         | 47.13          |
| 2099.100                           | H              | 36.48                         | -65.40                        | 9.16                         | 0.91               | -57.15                     | -13.00         | 44.15          |
| 2099.100                           | V              | 35.17                         | -66.66                        | 9.16                         | 0.91               | -58.41                     | -13.00         | 45.41          |
| 2798.800                           | H              | 35.44                         | -64.49                        | 9.88                         | 1.04               | -55.65                     | -13.00         | 42.65          |
| 2798.800                           | V              | 36.03                         | -63.77                        | 9.88                         | 1.04               | -54.93                     | -13.00         | 41.93          |
| QPSK, 1.4MHz, Frequency:707.5 MHz  |                |                               |                               |                              |                    |                            |                |                |
| 605.95                             | H              | 20.67                         | -53.16                        | 0.00                         | 0.49               | -53.65                     | -13.00         | 40.65          |
| 510.21                             | V              | 20.70                         | -50.90                        | 0.00                         | 0.45               | -51.35                     | -13.00         | 38.35          |
| 1415.000                           | H              | 36.47                         | -67.20                        | 8.26                         | 0.72               | -59.66                     | -13.00         | 46.66          |
| 1415.000                           | V              | 35.43                         | -68.29                        | 8.26                         | 0.72               | -60.75                     | -13.00         | 47.75          |
| 2122.500                           | H              | 35.69                         | -66.30                        | 9.17                         | 0.92               | -58.05                     | -13.00         | 45.05          |
| 2122.500                           | V              | 35.17                         | -66.80                        | 9.17                         | 0.92               | -58.55                     | -13.00         | 45.55          |
| 2830.000                           | H              | 36.73                         | -63.07                        | 9.93                         | 1.06               | -54.20                     | -13.00         | 41.20          |
| 2830.000                           | V              | 35.21                         | -64.52                        | 9.93                         | 1.06               | -55.65                     | -13.00         | 42.65          |
| QPSK, 1.4MHz, Frequency: 715.3 MHz |                |                               |                               |                              |                    |                            |                |                |
| 570.92                             | H              | 20.50                         | -53.93                        | 0.00                         | 0.46               | -54.39                     | -13.00         | 41.39          |
| 553.00                             | V              | 20.64                         | -51.02                        | 0.00                         | 0.48               | -51.50                     | -13.00         | 38.50          |
| 1430.600                           | H              | 35.56                         | -68.07                        | 8.31                         | 0.73               | -60.49                     | -13.00         | 47.49          |
| 1430.600                           | V              | 36.31                         | -67.38                        | 8.31                         | 0.73               | -59.80                     | -13.00         | 46.80          |
| 2145.900                           | H              | 36.77                         | -65.33                        | 9.19                         | 0.93               | -57.07                     | -13.00         | 44.07          |
| 2145.900                           | V              | 35.28                         | -66.83                        | 9.19                         | 0.93               | -58.57                     | -13.00         | 45.57          |
| 2861.200                           | H              | 36.48                         | -63.17                        | 9.98                         | 1.07               | -54.26                     | -13.00         | 41.26          |
| 2861.200                           | V              | 35.16                         | -64.51                        | 9.98                         | 1.07               | -55.60                     | -13.00         | 42.60          |

**LTE Band 13 (30MHz-10GHz):**

| Frequency<br>(MHz)               | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method            |                              |                    | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|----------------------------------|----------------|-------------------------------|-------------------------------|------------------------------|--------------------|----------------------------|----------------|----------------|
|                                  |                |                               | Substituted<br>Level<br>(dBm) | Antenna<br>Gain<br>(dBd/dBi) | Cable Loss<br>(dB) |                            |                |                |
| QPSK, 5MHz, Frequency: 779.5 MHz |                |                               |                               |                              |                    |                            |                |                |
| 658.83                           | H              | 20.71                         | -52.83                        | 0.00                         | 0.51               | -53.34                     | -13.00         | 40.34          |
| 589.07                           | V              | 20.66                         | -51.05                        | 0.00                         | 0.48               | -51.53                     | -13.00         | 38.53          |
| 1559.000                         | H              | 35.75                         | -68.24                        | 8.57                         | 0.80               | -60.47                     | -40.00         | 20.47          |
| 1559.000                         | V              | 34.62                         | -69.43                        | 8.57                         | 0.80               | -61.66                     | -40.00         | 21.66          |
| 2338.500                         | H              | 38.87                         | -62.72                        | 9.30                         | 0.97               | -54.39                     | -13.00         | 41.39          |
| 2338.500                         | V              | 37.15                         | -64.21                        | 9.30                         | 0.97               | -55.88                     | -13.00         | 42.88          |
| 3118.000                         | H              | 37.16                         | -60.33                        | 10.25                        | 1.13               | -51.21                     | -13.00         | 38.21          |
| 3118.000                         | V              | 39.78                         | -57.57                        | 10.25                        | 1.13               | -48.45                     | -13.00         | 35.45          |
| QPSK, 5MHz, Frequency:784.5 MHz  |                |                               |                               |                              |                    |                            |                |                |
| 631.68                           | H              | 20.62                         | -53.07                        | 0.00                         | 0.49               | -53.56                     | -13.00         | 40.56          |
| 496.17                           | V              | 20.54                         | -51.19                        | 0.00                         | 0.45               | -51.64                     | -13.00         | 38.64          |
| 1569.000                         | H              | 35.38                         | -68.70                        | 8.58                         | 0.81               | -60.93                     | -40.00         | 20.93          |
| 1569.000                         | V              | 36.15                         | -67.98                        | 8.58                         | 0.81               | -60.21                     | -40.00         | 20.21          |
| 2353.500                         | H              | 38.64                         | -62.81                        | 9.31                         | 0.97               | -54.47                     | -13.00         | 41.47          |
| 2353.500                         | V              | 46.39                         | -54.83                        | 9.31                         | 0.97               | -46.49                     | -13.00         | 33.49          |
| 3138.000                         | H              | 39.58                         | -57.82                        | 10.26                        | 1.14               | -48.70                     | -13.00         | 35.70          |
| 3138.000                         | V              | 42.58                         | -54.65                        | 10.26                        | 1.14               | -45.53                     | -13.00         | 32.53          |

**LTE Band 41 (30MHz-27GHz):**

| Frequency<br>(MHz)               | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted Method            |                              |                    | Absolute<br>Level<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|----------------------------------|----------------|-------------------------------|-------------------------------|------------------------------|--------------------|----------------------------|----------------|----------------|
|                                  |                |                               | Substituted<br>Level<br>(dBm) | Antenna<br>Gain<br>(dBd/dBi) | Cable Loss<br>(dB) |                            |                |                |
| QPSK, 5MHz, Frequency: 2498.5MHz |                |                               |                               |                              |                    |                            |                |                |
| 94.42                            | H              | 41.80                         | -70.94                        | 0.00                         | 0.18               | -71.12                     | -25.00         | 46.12          |
| 92.13                            | V              | 44.90                         | -63.94                        | 0.00                         | 0.18               | -64.12                     | -25.00         | 39.12          |
| 4997.000                         | H              | 35.64                         | -57.30                        | 11.20                        | 1.48               | -47.58                     | -25.00         | 22.58          |
| 4997.000                         | V              | 36.52                         | -56.28                        | 11.20                        | 1.48               | -46.56                     | -25.00         | 21.56          |
| 7495.500                         | H              | 35.73                         | -54.06                        | 10.90                        | 1.94               | -45.10                     | -25.00         | 20.10          |
| 7495.500                         | V              | 34.86                         | -55.43                        | 10.90                        | 1.94               | -46.47                     | -25.00         | 21.47          |
| QPSK, 5MHz, Frequency: 2593MHz   |                |                               |                               |                              |                    |                            |                |                |
| 93.76                            | H              | 42.10                         | -70.68                        | 0.00                         | 0.18               | -70.86                     | -25.00         | 45.86          |
| 93.43                            | V              | 44.72                         | -63.82                        | 0.00                         | 0.18               | -64.00                     | -25.00         | 39.00          |
| 5186.000                         | H              | 36.48                         | -57.55                        | 11.31                        | 1.44               | -47.68                     | -25.00         | 22.68          |
| 5186.000                         | V              | 35.64                         | -58.25                        | 11.31                        | 1.44               | -48.38                     | -25.00         | 23.38          |
| 7779.000                         | H              | 35.20                         | -54.29                        | 10.84                        | 1.99               | -45.44                     | -25.00         | 20.44          |
| 7779.000                         | V              | 34.96                         | -54.98                        | 10.84                        | 1.99               | -46.13                     | -25.00         | 21.13          |
| QPSK, 5MHz, Frequency: 2687.5MHz |                |                               |                               |                              |                    |                            |                |                |
| 92.46                            | H              | 41.65                         | -71.22                        | 0.00                         | 0.18               | -71.40                     | -25.00         | 46.40          |
| 91.17                            | V              | 44.69                         | -64.37                        | 0.00                         | 0.18               | -64.55                     | -25.00         | 39.55          |
| 5375.000                         | H              | 35.62                         | -57.89                        | 11.43                        | 1.49               | -47.95                     | -25.00         | 22.95          |
| 5375.000                         | V              | 36.08                         | -57.42                        | 11.43                        | 1.49               | -47.48                     | -25.00         | 22.48          |
| 8062.500                         | H              | 36.69                         | -51.53                        | 10.81                        | 2.12               | -42.84                     | -25.00         | 17.84          |
| 8062.500                         | V              | 35.27                         | -53.45                        | 10.81                        | 2.12               | -44.76                     | -25.00         | 19.76          |

Note:

- 1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
- 2) Absolute Level = Substituted Level - Cable loss + Antenna Gain
- 3) Margin = Limit-Absolute Level

## **5. EUT PHOTOGRAPHS**

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Please refer to the attachment CR230745209-EXP EUT EXTERNAL PHOTOGRAPHS and CR230745209-INP EUT INTERNAL PHOTOGRAPHS

## **6. TEST SETUP PHOTOGRAPHS**

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Please refer to the attachment CR230745209-00F-TSP TEST SETUP PHOTOGRAPHS.

**==== END OF REPORT =====**