

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

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

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

| Test Mode:                          | WCDMA R99        | Test Channel: Lowest for Lower Edge, Highest for Upper Edge |                  |          |                  |          |
|-------------------------------------|------------------|---|------------------|----------|------------------|----------|
| Test Item                           | Temperature (°C) | Voltage (V <sub>bc</sub> )                                  | Lower Edge (MHz) |          | Upper Edge (MHz) |          |
|                                     |                  |   | Result           | Limit    | Result           | Limit    |
| Frequency Stability vs. Temperature | -30              | 3.85  | 1710.013         | 1710.000 | 1754.983         | 1755.000 |
|                                     | -20              | 3.85  | 1710.002         | 1710.000 | 1754.986         | 1755.000 |
|                                     | -10              | 3.85  | 1710.009         | 1710.000 | 1754.985         | 1755.000 |
|                                     | 0                | 3.85  | 1710.001         | 1710.000 | 1754.986         | 1755.000 |
|                                     | 10               | 3.85  | 1710.008         | 1710.000 | 1754.971         | 1755.000 |
|                                     | 20               | 3.85  | 1710.025         | 1710.000 | 1754.992         | 1755.000 |
|                                     | 30               | 3.85  | 1710.025         | 1710.000 | 1754.998         | 1755.000 |
|                                     | 40               | 3.85  | 1710.010         | 1710.000 | 1754.982         | 1755.000 |
|                                     | 50               | 3.85  | 1710.022         | 1710.000 | 1754.991         | 1755.000 |
| Frequency Stability vs. Voltage     | 20               | 3.45  | 1710.026         | 1710.000 | 1754.999         | 1755.000 |
|                                     | 20               | 4.4   | 1710.014         | 1710.000 | 1754.984         | 1755.000 |
| <b>Result:</b>                      |                  |   |                  |          | <b>Pass</b>      |          |

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

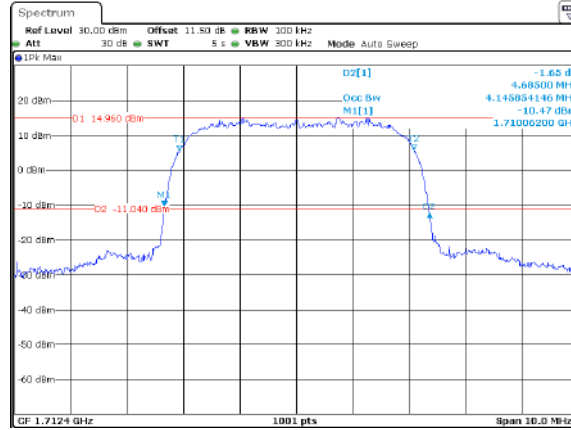
| <b>Occupied Bandwidth</b> |                  |              |
|---------------------------|------------------|--------------|
| <b>Channel</b>            | <b>WCDMA R99</b> | <b>HSDPA</b> |
| <b>Lowest</b>             |                  |              |
| <b>Middle</b>             |                  |              |
| <b>Highest</b>            |                  |              |

Occupied Bandwidth

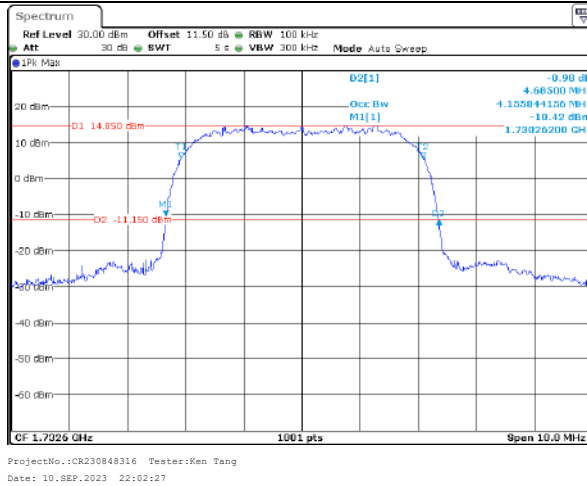
Channel

HSUPA

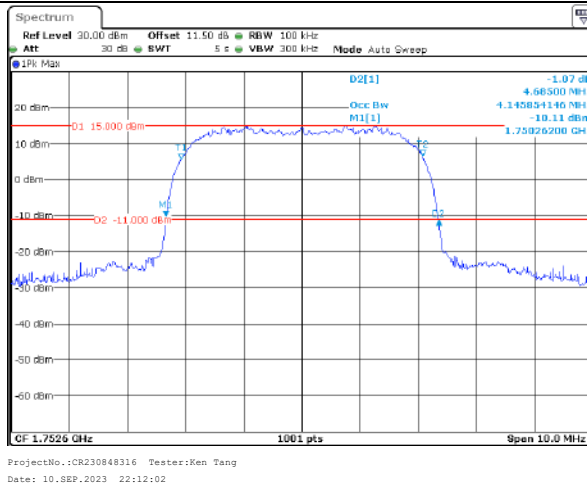
Lowest



Middle



Highest



### Spurious Emissions at Antenna Terminal

| Channel | WCDMA R99  |  |
|---------|--|--|
| Lowest  | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 21:06:55</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 21:08:27</p> |
| Middle  | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 21:02:57</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 21:04:19</p> |
| Highest | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 21:22:32</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 21:24:11</p> |

Out of band emission, Band Edge

| Mode  | Lowest | Highest |
|-------|--------|---------|
| R99   |        |         |
| HSUPA |        |         |
| HSDPA |        |         |

**4.5 Antenna Port Test Data and Results for WCDMA Band 5:**

|                |          |              |                     |
|----------------|----------|--------------|---------------------|
| Serial Number: | 2A55-4   | Test Date:   | 2023/9/10~2023/9/25 |
| Test Site:     | RF       | Test Mode:   | Transmitting        |
| Tester:        | Ken Tang | Test Result: | <b>Pass</b>         |

**Environmental Conditions:**

|                      |       |                           |    |                        |             |
|----------------------|-------|---------------------------|----|------------------------|-------------|
| Temperature:<br>(°C) | 24-26 | Relative Humidity:<br>(%) | 58 | ATM Pressure:<br>(kPa) | 100.1~100.6 |
|----------------------|-------|---------------------------|----|------------------------|-------------|

**Test Equipment List and Details:**

| Manufacturer  | Description                         | Model         | Serial Number   | Calibration Date | Calibration Due Date |
|---------------|-------------------------------------|---------------|-----------------|------------------|----------------------|
| R&S           | Spectrum Analyzer                   | FSV40-N       | 102259          | 2023/4/18        | 2024/4/17            |
| zhuoxiang     | Coaxial Cable                       | SMA-178       | 211001          | Each time        | N/A                  |
| eastsheep     | Coaxial Attenuator                  | 2W-SMA-JK-18G | 21060301        | Each time        | N/A                  |
| Mini-Circuits | Power Splitter                      | ZFRSC-183-S+  | S F448201619    | Each time        | N/A                  |
| R&S           | Wideband Radio Communication Tester | CMW500        | 143458          | 2023/3/31        | 2024/3/30            |
| ZHAOXIN       | DC Power Supply                     | RXN-6010D     | 21R6010D0912386 | N/A              | 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            |

\* 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:**

| Operation Modes | Lowest Frequency (MHz) | Middle Frequency (MHz) | Highest Frequency (MHz) |
|-----------------|------------------------|------------------------|-------------------------|
| WCDMA Band 5    | 826.4                  | 836.6                  | 846.6                   |

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

| Test Mode       | Conducted Average Output Power(dBm) |                |                 | Maximum ERP (dBm) | ERP Limit (dBm) |
|-----------------|-------------------------------------|----------------|-----------------|-------------------|-----------------|
|                 | Lowest Channel                      | Middle Channel | Highest Channel |                   |                 |
| WCDMA R99       | 23.05                               | 23.07          | 23.18           | 16.03             | 38.45           |
| HSDPA Subtest 1 | 23.05                               | 23.05          | 22.94           | 15.90             | 38.45           |
| HSDPA Subtest 2 | 22.82                               | 23.04          | 23.01           | 15.89             | 38.45           |
| HSDPA Subtest 3 | 22.93                               | 22.88          | 22.82           | 15.78             | 38.45           |
| HSDPA Subtest 4 | 22.72                               | 23.01          | 22.98           | 15.86             | 38.45           |
| HSUPA Subtest 1 | 23.03                               | 23.16          | 23.06           | 16.01             | 38.45           |
| HSUPA Subtest 2 | 23.29                               | 23.21          | 23.36           | 16.21             | 38.45           |
| HSUPA Subtest 3 | 23.30                               | 23.41          | 23.35           | <b>16.26</b>      | 38.45           |
| HSUPA Subtest 4 | 23.13                               | 23.39          | 23.25           | 16.24             | 38.45           |
| HSUPA Subtest 5 | 23.05                               | 23.17          | 23.25           | 16.10             | 38.45           |
| HSPA+ Subtest 1 | 23.02                               | 23.11          | 23.19           | 16.04             | 38.45           |

Note:  
 $ERP = \text{Conducted Power(dBm)} - L_c(\text{dB}) + G_T(\text{dBd})$   
 $G_T(\text{dBd}) = G_T(\text{dBi}) - 2.15$

|                |             |
|----------------|-------------|
| <b>Result:</b> | <b>Pass</b> |
|----------------|-------------|

**Peak-to-average Ratio(PAR)**

| Test Mode | Peak-to-average Ratio(dB) |                |                 | Limit (dB) |
|-----------|---------------------------|----------------|-----------------|------------|
|           | Lowest Channel            | Middle Channel | Highest Channel |            |
| WCDMA R99 | 9.76                      | 8.59           | 7.40            | 13         |
| HSDPA     | 6.55                      | 9.89           | 8.79            | 13         |
| HSUPA     | 8.33                      | 9.57           | 8.78            | 13         |

|                |             |
|----------------|-------------|
| <b>Result:</b> | <b>Pass</b> |
|----------------|-------------|

**FCC §2.1049, §22.917, §22.905:Occupied Bandwidth**

| Operation Mode | 99% Occupied Bandwidth (MHz) |                |              | 26 dB Occupied Bandwidth (MHz) |                |              |
|----------------|------------------------------|----------------|--------------|--------------------------------|----------------|--------------|
|                | Low Channel                  | Middle channel | High Channel | Low Channel                    | Middle Channel | High Channel |
| WCDMA R99      | 4.156                        | 4.136          | 4.136        | 4.665                          | 4.665          | 4.675        |
| HSDPA          | 4.146                        | 4.146          | 4.146        | 4.665                          | 4.675          | 4.675        |
| HSUPA          | 4.146                        | 4.146          | 4.146        | 4.675                          | 4.685          | 4.675        |

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

**FCC §2.1051, §22.917(a):Spurious Emissions at Antenna Terminal**

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

**FCC §2.1051, §22.917(a): Out of band emission, Band Edge****Result: Pass, Please refer to the test plots of Out of band emission, Band Edge.****FCC §2.1055, §22.355: Frequency Stability**

| Test Modulation:                    | WCDMA R99        |                            | Test Channel:   | 836.6       | MHz   |
|-------------------------------------|------------------|----------------------------|-----------------|-------------|-------|
| Test Item                           | Temperature (°C) | Voltage (V <sub>DC</sub> ) | Frequency Error |             | Limit |
|                                     |                  |                            | (Hz)            | (ppm)       | (ppm) |
| Frequency Stability vs. Temperature | -30              | 3.85                       | 112.448         | 0.134       | 2.5   |
|                                     | -20              | 3.85                       | 107.028         | 0.128       | 2.5   |
|                                     | -10              | 3.85                       | 102.725         | 0.123       | 2.5   |
|                                     | 0                | 3.85                       | 103.143         | 0.123       | 2.5   |
|                                     | 10               | 3.85                       | 119.360         | 0.143       | 2.5   |
|                                     | 20               | 3.85                       | 113.191         | 0.135       | 2.5   |
|                                     | 30               | 3.85                       | 103.742         | 0.124       | 2.5   |
|                                     | 40               | 3.85                       | 109.784         | 0.131       | 2.5   |
| Frequency Stability vs. Voltage     | 50               | 3.85                       | 101.345         | 0.121       | 2.5   |
|                                     | 20               | 3.45                       | 119.576         | 0.143       | 2.5   |
|                                     | 20               | 4.4                        | 100.714         | 0.120       | 2.5   |
| <b>Result:</b>                      |                  |                            |                 | <b>Pass</b> |       |



**Test Plots**(Note: The 10.5 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):

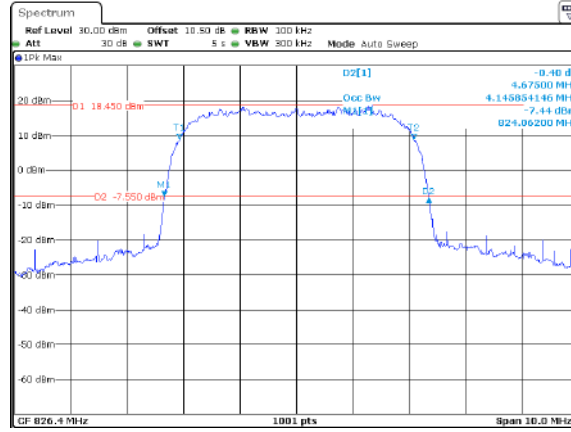
| <b>Occupied Bandwidth</b> |  |  |
|---------------------------|--|--|
| <b>Channel</b>            | <b>WCDMA R99</b>   | <b>HSDPA</b>   |
| <b>Lowest</b>             | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 23:36:25</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 25_SEP.2023 20:16:48</p> |
| <b>Middle</b>             | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 23:49:34</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 23:24:37</p> |
| <b>Highest</b>            | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 23:54:12</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 23:29:42</p> |

**Occupied Bandwidth**

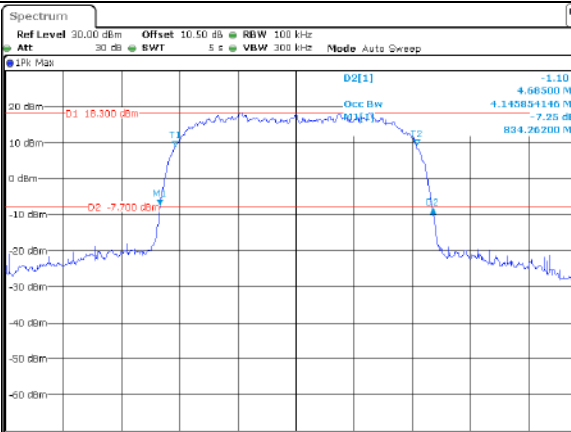
**Channel**

**HSUPA**

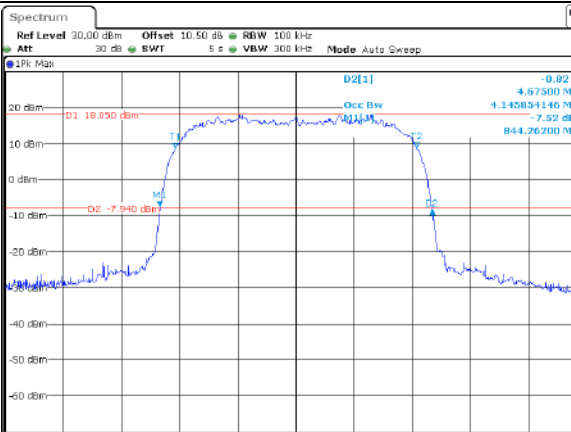
Lowest



Middle



Highest



### Spurious Emissions at Antenna Terminal

| Channel | WCDMA R99  |  |
|---------|--|--|
| Lowest  | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 23:44:33</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 23:44:54</p> |
| Middle  | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 23:50:16</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 23:50:38</p> |
| Highest | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 23:55:09</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 10_SEP.2023 23:55:30</p> |

Out of band emission, Band Edge

| Mode  | Lowest | Highest |
|-------|--------|---------|
| R99   |        |         |
| HSUPA |        |         |
| HSDPA |        |         |

**4.6 Antenna Port Test Data and Results for LTE Band 2**

|                |          |              |              |
|----------------|----------|--------------|--------------|
| Serial Number: | 2A55-4   | Test Date:   | 2023/9/8     |
| Test Site:     | RF       | Test Mode:   | Transmitting |
| Tester:        | Ken Tang | Test Result: | <b>Pass</b>  |

**Environmental Conditions:**

|                      |      |                           |    |                        |       |
|----------------------|------|---------------------------|----|------------------------|-------|
| Temperature:<br>(°C) | 25.4 | Relative Humidity:<br>(%) | 58 | ATM Pressure:<br>(kPa) | 100.5 |
|----------------------|------|---------------------------|----|------------------------|-------|

**Test Equipment List and Details:**

| Manufacturer  | Description                         | Model         | Serial Number   | Calibration Date | Calibration Due Date |
|---------------|-------------------------------------|---------------|-----------------|------------------|----------------------|
| R&S           | Spectrum Analyzer                   | FSV40-N       | 102259          | 2023/4/18        | 2024/4/17            |
| zhuoxiang     | Coaxial Cable                       | SMA-178       | 211001          | Each time        | N/A                  |
| eastsheep     | Coaxial Attenuator                  | 2W-SMA-JK-18G | 21060301        | Each time        | N/A                  |
| Mini-Circuits | Power Splitter                      | ZFRSC-183-S+  | S F448201619    | Each time        | N/A                  |
| R&S           | Wideband Radio Communication Tester | CMW500        | 143458          | 2023/3/31        | 2024/3/30            |
| ZHAOXIN       | DC Power Supply                     | RXN-6010D     | 21R6010D0912386 | N/A              | 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            |

\* 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              | 1850.7                 | 1880                   | 1909.3                  |
| 3MHz                | 1851.5                 | 1880                   | 1908.5                  |
| 5MHz                | 1852.5                 | 1880                   | 1907.5                  |
| 10MHz               | 1855                   | 1880                   | 1905                    |
| 15MHz               | 1857.5                 | 1880                   | 1902.5                  |
| 20MHz               | 1860                   | 1880                   | 1900                    |

**Test Data:****FCC§2.1046;§ 24.232****RF Output Power:**

| Test Bandwidth & Modulation | Resource Block & RB offset | Conducted Average Output Power(dBm) |                |                 | Maximum EIRP(dBm) | EIRP Limit(dBm) |
|-----------------------------|----------------------------|-------------------------------------|----------------|-----------------|-------------------|-----------------|
|                             |                            | Lowest Channel                      | Middle Channel | Highest Channel |                   |                 |
| 1.4MHz QPSK                 | RB1#0                      | 22.18                               | 22.13          | 22.00           | 20.88             | 33              |
|                             | RB1#3                      | 22.11                               | 22.16          | 22.03           |                   |                 |
|                             | RB1#5                      | 22.13                               | 22.06          | 22.01           |                   |                 |
|                             | RB3#0                      | 21.81                               | 21.48          | 21.63           |                   |                 |
|                             | RB3#3                      | 21.79                               | 21.43          | 21.53           |                   |                 |
|                             | RB6#0                      | 20.72                               | 20.40          | 20.63           |                   |                 |
| 1.4MHz 16QAM                | RB1#0                      | 21.03                               | 21.40          | 21.83           | 20.53             | 33              |
|                             | RB1#3                      | 21.10                               | 21.34          | 21.78           |                   |                 |
|                             | RB1#5                      | 21.01                               | 21.31          | 21.76           |                   |                 |
|                             | RB3#0                      | 20.87                               | 20.44          | 20.44           |                   |                 |
|                             | RB3#3                      | 20.87                               | 20.50          | 20.46           |                   |                 |
|                             | RB6#0                      | 19.98                               | 19.83          | 19.69           |                   |                 |
| 3MHz QPSK                   | RB1#0                      | 22.37                               | 21.87          | 21.96           | 21.10             | 33              |
|                             | RB1#8                      | 22.40                               | 21.83          | 22.00           |                   |                 |
|                             | RB1#14                     | 22.35                               | 21.87          | 22.02           |                   |                 |
|                             | RB6#0                      | 20.74                               | 20.50          | 20.52           |                   |                 |
|                             | RB6#9                      | 20.69                               | 20.53          | 20.56           |                   |                 |
|                             | RB15#0                     | 20.76                               | 20.44          | 20.53           |                   |                 |
| 3MHz 16QAM                  | RB1#0                      | 21.44                               | 20.87          | 21.49           | 20.19             | 33              |
|                             | RB1#8                      | 21.41                               | 20.78          | 21.49           |                   |                 |
|                             | RB1#14                     | 21.38                               | 20.78          | 21.49           |                   |                 |
|                             | RB6#0                      | 19.95                               | 19.60          | 19.59           |                   |                 |
|                             | RB6#9                      | 20.05                               | 19.55          | 19.50           |                   |                 |
|                             | RB15#0                     | 19.87                               | 19.53          | 19.70           |                   |                 |
| 5MHz QPSK                   | RB1#0                      | 22.42                               | 21.96          | 22.04           | 21.12             | 33              |
|                             | RB1#13                     | 22.30                               | 21.92          | 22.01           |                   |                 |
|                             | RB1#24                     | 22.32                               | 21.96          | 22.02           |                   |                 |
|                             | RB15#0                     | 20.70                               | 20.42          | 20.53           |                   |                 |
|                             | RB15#10                    | 20.63                               | 20.39          | 20.55           |                   |                 |
|                             | RB25#0                     | 20.62                               | 20.42          | 20.49           |                   |                 |
| 5MHz 16QAM                  | RB1#0                      | 21.42                               | 20.69          | 20.17           | 20.12             | 33              |
|                             | RB1#13                     | 21.36                               | 20.57          | 20.15           |                   |                 |
|                             | RB1#24                     | 21.40                               | 20.72          | 20.15           |                   |                 |
|                             | RB15#0                     | 19.67                               | 19.65          | 19.70           |                   |                 |
|                             | RB15#10                    | 19.72                               | 19.54          | 19.66           |                   |                 |
|                             | RB25#0                     | 19.79                               | 19.46          | 19.76           |                   |                 |

|             |         |       |       |       |       |    |
|-------------|---------|-------|-------|-------|-------|----|
| 10MHz QPSK  | RB1#0   | 22.35 | 22.02 | 21.96 | 21.05 | 33 |
|             | RB1#25  | 22.32 | 21.91 | 21.89 |       |    |
|             | RB1#49  | 22.26 | 21.98 | 22.04 |       |    |
|             | RB25#0  | 20.74 | 20.42 | 20.46 |       |    |
|             | RB25#25 | 20.74 | 20.36 | 20.56 |       |    |
|             | RB50#0  | 20.64 | 20.39 | 20.59 |       |    |
| 10MHz 16QAM | RB1#0   | 21.44 | 20.49 | 21.26 | 20.14 | 33 |
|             | RB1#25  | 21.42 | 20.45 | 21.30 |       |    |
|             | RB1#49  | 21.36 | 20.39 | 21.29 |       |    |
|             | RB25#0  | 19.87 | 19.72 | 19.62 |       |    |
|             | RB25#25 | 19.87 | 19.70 | 19.60 |       |    |
|             | RB50#0  | 19.84 | 19.56 | 19.66 |       |    |
| 15MHz QPSK  | RB1#0   | 22.32 | 21.95 | 21.82 | 21.02 | 33 |
|             | RB1#38  | 22.17 | 21.86 | 21.93 |       |    |
|             | RB1#74  | 22.16 | 21.82 | 22.04 |       |    |
|             | RB36#0  | 20.62 | 20.60 | 20.49 |       |    |
|             | RB36#39 | 20.61 | 20.46 | 20.53 |       |    |
|             | RB75#0  | 20.67 | 20.38 | 20.46 |       |    |
| 15MHz 16QAM | RB1#0   | 22.01 | 21.41 | 21.22 | 20.71 | 33 |
|             | RB1#38  | 21.96 | 21.26 | 21.22 |       |    |
|             | RB1#74  | 21.94 | 21.21 | 21.32 |       |    |
|             | RB36#0  | 19.70 | 19.62 | 19.60 |       |    |
|             | RB36#39 | 19.75 | 19.58 | 19.75 |       |    |
|             | RB75#0  | 19.77 | 19.68 | 19.59 |       |    |
| 20MHz QPSK  | RB1#0   | 22.44 | 22.10 | 21.93 | 21.14 | 33 |
|             | RB1#50  | 22.25 | 21.99 | 22.00 |       |    |
|             | RB1#99  | 22.15 | 22.06 | 22.16 |       |    |
|             | RB50#0  | 20.68 | 20.47 | 20.48 |       |    |
|             | RB50#50 | 20.64 | 20.48 | 20.44 |       |    |
|             | RB100#0 | 20.65 | 20.46 | 20.45 |       |    |
| 20MHz 16QAM | RB1#0   | 21.28 | 21.93 | 21.15 | 20.63 | 33 |
|             | RB1#50  | 21.19 | 21.75 | 21.12 |       |    |
|             | RB1#99  | 21.11 | 21.77 | 21.23 |       |    |
|             | RB50#0  | 19.70 | 19.66 | 19.61 |       |    |
|             | RB50#50 | 19.71 | 19.47 | 19.69 |       |    |
|             | RB100#0 | 19.71 | 19.65 | 19.60 |       |    |

Note: EIRP=Conducted Power(dBm) - LC(dB) + GT(dBi)

**Result:**

**Pass**

| <b>Peak-to-average Ratio(PAR)</b> |                            |                           |                |                 |             |
|-----------------------------------|----------------------------|---------------------------|----------------|-----------------|-------------|
| Test Bandwidth & Modulation       | Resource Block & RB offset | Peak-to-average Ratio(dB) |                |                 | Limit (dB)  |
|                                   |                            | Lowest Channel            | Middle Channel | Highest Channel |             |
| 20MHz QPSK                        | RB1#0                      | 4.26                      | 5.48           | 4.64            | 13          |
|                                   | RB100#0                    | 4.61                      | 4.38           | 4.41            | 13          |
| 20MHz 16QAM                       | RB1#0                      | 5.45                      | 6              | 6.17            | 13          |
|                                   | RB100#0                    | 6.12                      | 5.97           | 5.97            | 13          |
| <b>Result:</b>                    |                            |                           |                |                 | <b>Pass</b> |

| <b>FCC §2.1049, §24.238:Occupied Bandwidth</b> |                              |                |              |                                |                |              |
|--|------------------------------|----------------|--------------|--------------------------------|----------------|--------------|
| Operation Mode                                 | 99% Occupied Bandwidth (MHz) |                |              | 26 dB Occupied Bandwidth (MHz) |                |              |
|  | Low Channel                  | Middle channel | High Channel | Low Channel                    | Middle Channel | High Channel |
| 1.4MHz QPSK                                    | 1.102                        | 1.096          | 1.102        | 1.260                          | 1.260          | 1.260        |
| 1.4MHz 16QAM                                   | 1.102                        | 1.102          | 1.09         | 1.254                          | 1.260          | 1.248        |
| 3MHz QPSK                                      | 2.695                        | 2.683          | 2.695        | 3.012                          | 3.024          | 3.000        |
| 3MHz 16QAM                                     | 2.695                        | 2.695          | 2.695        | 3.000                          | 3.012          | 3.024        |
| 5MHz QPSK                                      | 4.511                        | 4.511          | 4.531        | 5.000                          | 4.980          | 5.000        |
| 5MHz 16QAM                                     | 4.531                        | 4.511          | 4.511        | 5.000                          | 5.000          | 4.980        |
| 10MHz QPSK                                     | 8.942                        | 8.982          | 8.982        | 9.800                          | 9.840          | 9.760        |
| 10MHz 16QAM                                    | 8.942                        | 8.942          | 8.942        | 9.800                          | 9.840          | 9.800        |
| 15MHz QPSK                                     | 13.473                       | 13.533         | 13.533       | 15.000                         | 15.000         | 14.880       |
| 15MHz 16QAM                                    | 13.533                       | 13.533         | 13.533       | 15.060                         | 14.880         | 15.000       |
| 20MHz QPSK                                     | 17.964                       | 17.964         | 17.964       | 19.600                         | 19.680         | 19.520       |
| 20MHz 16QAM                                    | 18.044                       | 18.044         | 18.044       | 19.760                         | 19.760         | 19.680       |

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

| <b>FCC §2.1051, § 24.238 (a):Spurious Emissions at Antenna Terminal</b> |  |
|---|--|
| <b>Result:</b>  | <b>Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.</b> |

| <b>FCC §2.1051, § 24.238 (a):Out of band emission, Band Edge</b> |   |
|--|---|
| <b>Result:</b>   | <b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b> |



| <b>FCC §2.1055, §24.235: Frequency Stability</b> |                  |  |                  |          |                  |             |
|--|------------------|--|------------------|----------|------------------|-------------|
| Test Mode:                                       | 20M QPSK         | Test Channel: Lowest for Lower Edge,Highest for Upper Edge |                  |          |                  |             |
| Test Item  | Temperature (°C) | Voltage (V <sub>DC</sub> )                                 | Lower Edge (MHz) |          | Upper Edge (MHz) |             |
|  |                  |  | Result           | Limit    | Result           | Limit       |
| Frequency Stability vs. Temperature              | -30              | 3.85   | 1850.008         | 1850.000 | 1909.999         | 1910.000    |
|  | -20              | 3.85   | 1850.014         | 1850.000 | 1909.994         | 1910.000    |
|  | -10              | 3.85   | 1850.017         | 1850.000 | 1909.994         | 1910.000    |
|  | 0                | 3.85   | 1850.019         | 1850.000 | 1909.988         | 1910.000    |
|  | 10               | 3.85   | 1850.016         | 1850.000 | 1909.991         | 1910.000    |
|  | 20               | 3.85   | 1850.004         | 1850.000 | 1909.993         | 1910.000    |
|  | 30               | 3.85   | 1850.011         | 1850.000 | 1909.982         | 1910.000    |
|  | 40               | 3.85   | 1850.015         | 1850.000 | 1909.983         | 1910.000    |
|  | 50               | 3.85   | 1850.014         | 1850.000 | 1909.989         | 1910.000    |
| Frequency Stability vs. Voltage                  | 20               | 3.45   | 1850.018         | 1850.000 | 1909.997         | 1910.000    |
|  | 20               | 4.4  | 1850.008         | 1850.000 | 1909.997         | 1910.000    |
|  |                  |  |                  |          | <b>Result:</b>   | <b>Pass</b> |

| Test Mode:                          | 20M 16QAM        | Test Channel: Lowest for Lower Edge,Highest for Upper Edge |                  |          |                  |             |
|-------------------------------------|------------------|--|------------------|----------|------------------|-------------|
| Test Item                           | Temperature (°C) | Voltage (V <sub>DC</sub> )                                 | Lower Edge (MHz) |          | Upper Edge (MHz) |             |
|                                     |                  |  | Result           | Limit    | Result           | Limit       |
| Frequency Stability vs. Temperature | -30              | 3.85   | 1850.012         | 1850.000 | 1909.986         | 1910.000    |
|                                     | -20              | 3.85   | 1850.013         | 1850.000 | 1909.992         | 1910.000    |
|                                     | -10              | 3.85   | 1850.009         | 1850.000 | 1909.990         | 1910.000    |
|                                     | 0                | 3.85   | 1850.012         | 1850.000 | 1909.989         | 1910.000    |
|                                     | 10               | 3.85   | 1850.015         | 1850.000 | 1909.986         | 1910.000    |
|                                     | 20               | 3.85   | 1850.019         | 1850.000 | 1909.996         | 1910.000    |
|                                     | 30               | 3.85   | 1850.017         | 1850.000 | 1909.993         | 1910.000    |
|                                     | 40               | 3.85   | 1850.020         | 1850.000 | 1909.986         | 1910.000    |
|                                     | 50               | 3.85   | 1850.013         | 1850.000 | 1909.993         | 1910.000    |
| Frequency Stability vs. Voltage     | 20               | 3.45   | 1850.016         | 1850.000 | 1909.994         | 1910.000    |
|                                     | 20               | 4.4  | 1850.018         | 1850.000 | 1909.989         | 1910.000    |
|                                     |                  |  |                  |          | <b>Result:</b>   | <b>Pass</b> |

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

**Occupied Bandwidth**

| Channel | 1.4MHz Bandwidth QPSK  | 1.4MHz Bandwidth 16QAM   |
|---------|--|--|
| Lowest  | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8_SEP.2023 18:56:25</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8_SEP.2023 18:56:42</p> |
| Middle  | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8_SEP.2023 18:57:03</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8_SEP.2023 18:57:24</p> |
| Highest | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8_SEP.2023 18:57:45</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8_SEP.2023 18:58:02</p> |

Occupied Bandwidth

| Channel | 3MHz Bandwidth QPSK   | 3MHz Bandwidth 16QAM  |
|---------|---|---|
| Lowest  | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 18:59:26</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 18:59:44</p> |
| Middle  | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 18:59:02</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 18:59:22</p> |
| Highest | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 18:59:41</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 19:00:01</p> |

Occupied Bandwidth

| Channel | 5MHz Bandwidth QPSK   | 5MHz Bandwidth 16QAM  |
|---------|---|---|
| Lowest  | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8.SEP.2023 19:08:26</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8.SEP.2023 19:08:44</p> |
| Middle  | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8.SEP.2023 19:01:08</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8.SEP.2023 19:01:29</p> |
| Highest | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8.SEP.2023 19:01:47</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8.SEP.2023 19:02:08</p> |

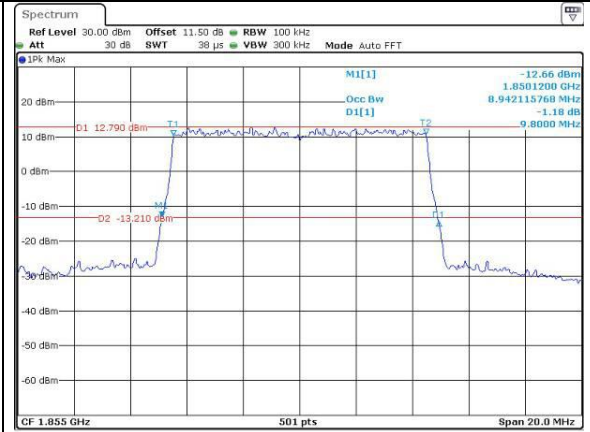
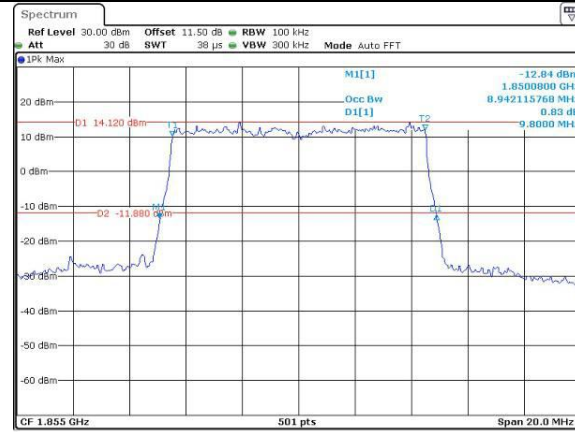
Occupied Bandwidth

Channel

10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

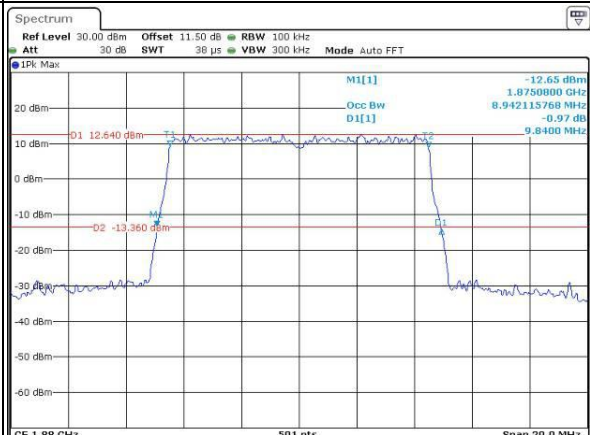
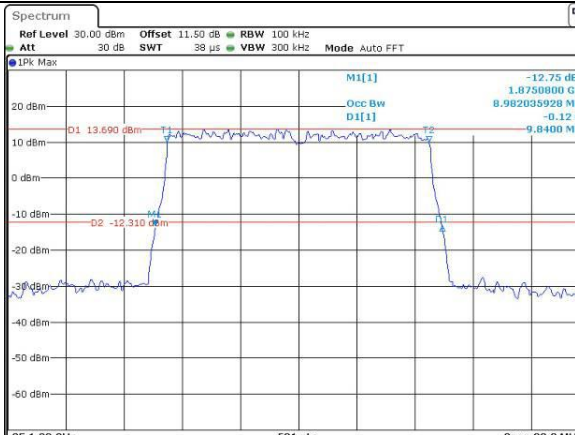
Lowest



ProjectNo.:CR230848316 Testeri:Ken Tang  
Date: 8\_SEP.2023 19:02:33

ProjectNo.:CR230848316 Testeri:Ken Tang  
Date: 8\_SEP.2023 19:03:06

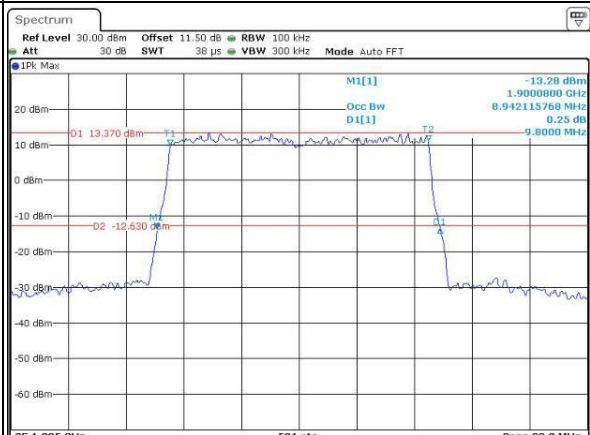
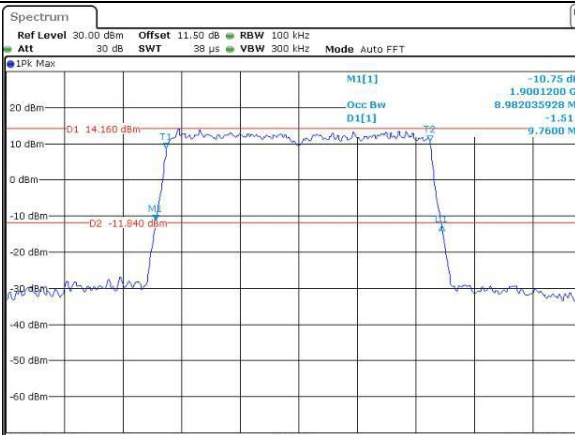
Middle



ProjectNo.:CR230848316 Testeri:Ken Tang  
Date: 8\_SEP.2023 19:03:41

ProjectNo.:CR230848316 Testeri:Ken Tang  
Date: 8\_SEP.2023 19:04:14

Highest



ProjectNo.:CR230848316 Testeri:Ken Tang  
Date: 8\_SEP.2023 19:04:42

ProjectNo.:CR230848316 Testeri:Ken Tang  
Date: 8\_SEP.2023 19:05:09

Occupied Bandwidth

| Channel | 15MHz Bandwidth QPSK   | 15MHz Bandwidth 16QAM  |
|---------|--|--|
| Lowest  | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:05:41</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:06:18</p> |
| Middle  | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:06:49</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:07:14</p> |
| Highest | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:07:42</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:08:04</p> |

Occupied Bandwidth

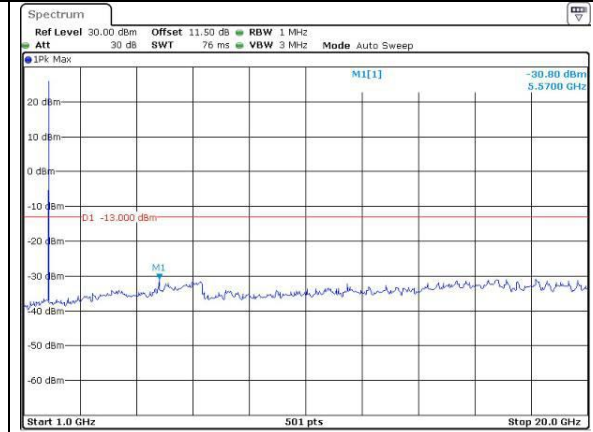
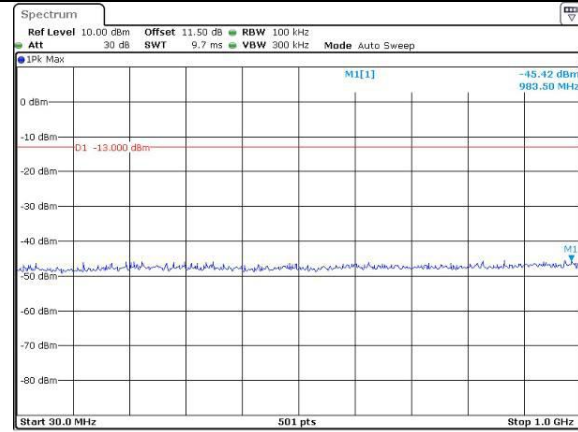
| Channel | 20MHz Bandwidth QPSK   | 20MHz Bandwidth 16QAM  |
|---------|--|--|
| Lowest  | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:08:43</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:09:16</p> |
| Middle  | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:09:45</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:10:06</p> |
| Highest | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:10:41</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:11:09</p> |

Spurious Emissions at Antenna Terminal

Channel

1.4MHz Bandwidth QPSK

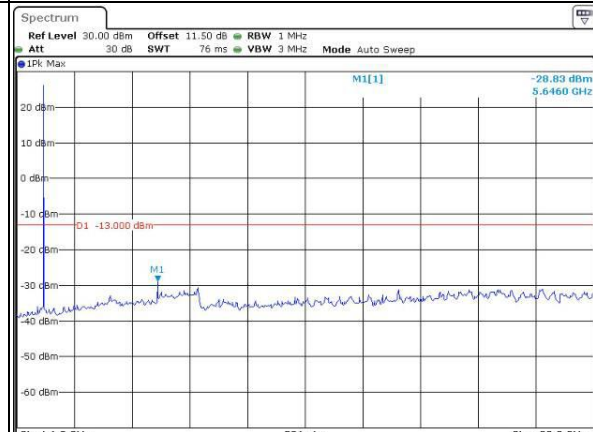
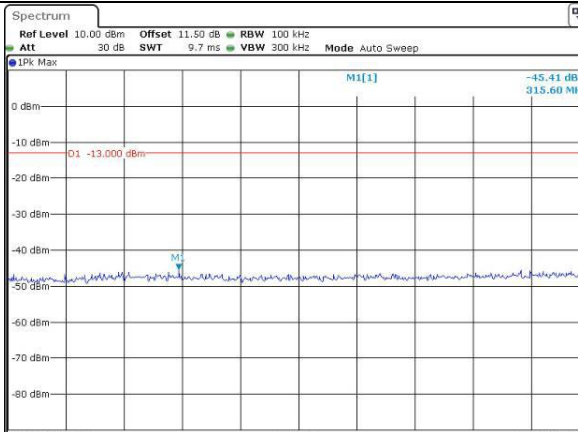
Lowest



ProjectNo.:CR230848316 Tester:Ken Tang  
Date: 8.SEP.2023 20:29:44

ProjectNo.:CR230848316 Tester:Ken Tang  
Date: 8.SEP.2023 20:30:10

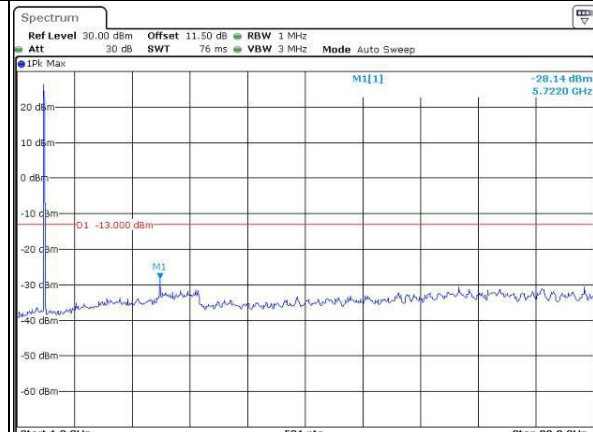
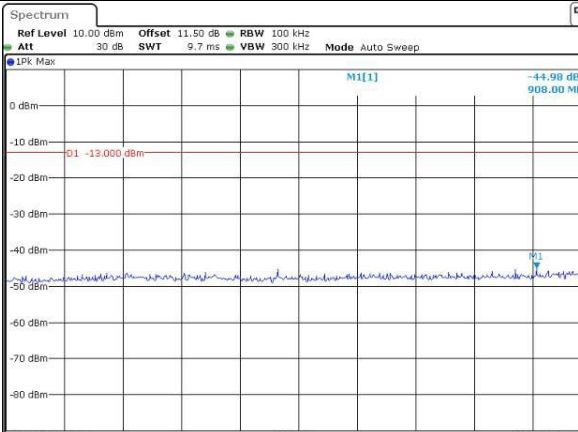
Middle



ProjectNo.:CR230848316 Tester:Ken Tang  
Date: 8.SEP.2023 20:30:39

ProjectNo.:CR230848316 Tester:Ken Tang  
Date: 8.SEP.2023 20:31:09

Highest



ProjectNo.:CR230848316 Tester:Ken Tang  
Date: 8.SEP.2023 20:31:38

ProjectNo.:CR230848316 Tester:Ken Tang  
Date: 8.SEP.2023 20:32:01

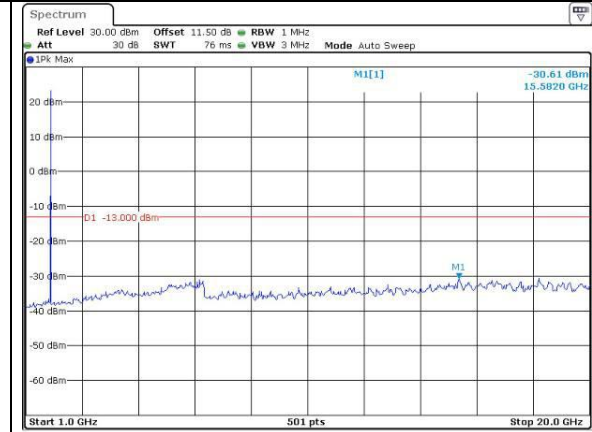
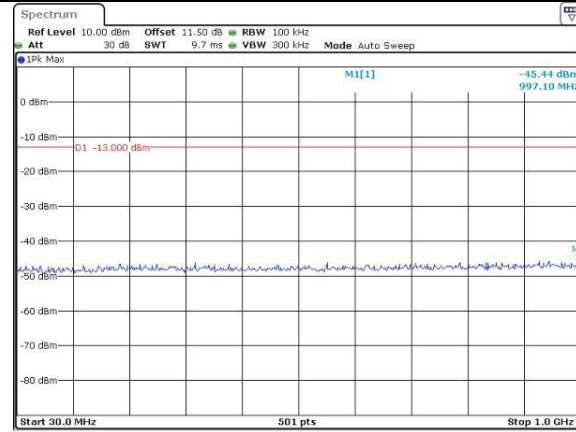


Spurious Emissions at Antenna Terminal

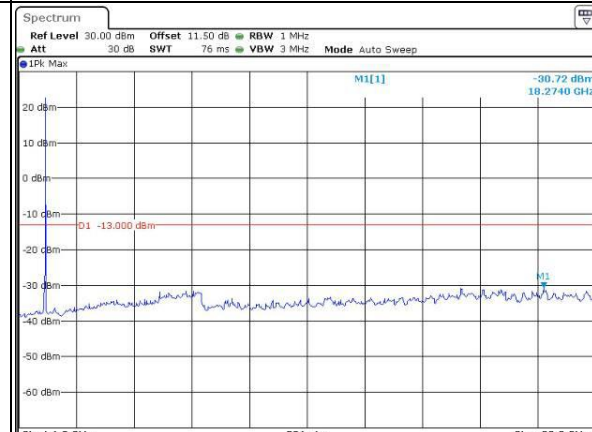
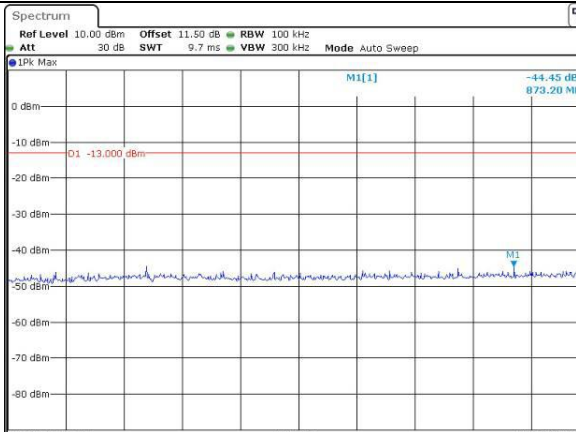
Channel

3MHz Bandwidth QPSK

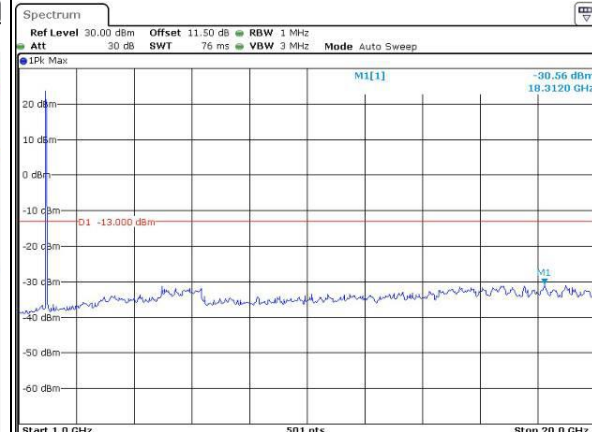
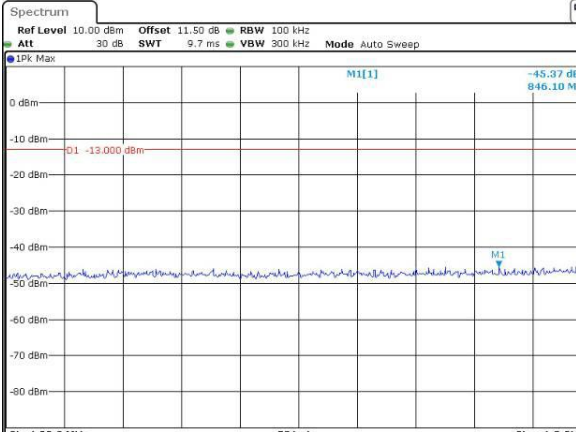
Lowest



Middle



Highest

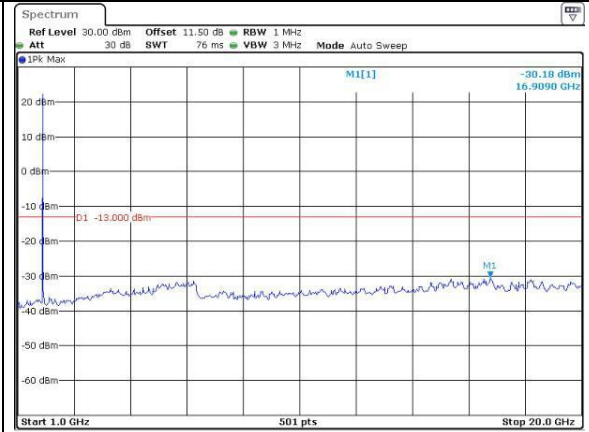
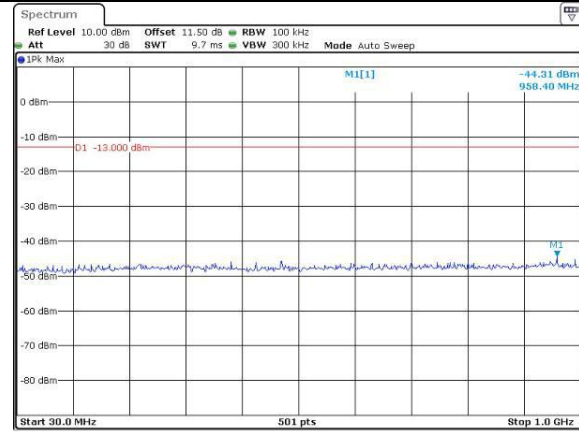


### Spurious Emissions at Antenna Terminal

Channel

5MHz Bandwidth QPSK

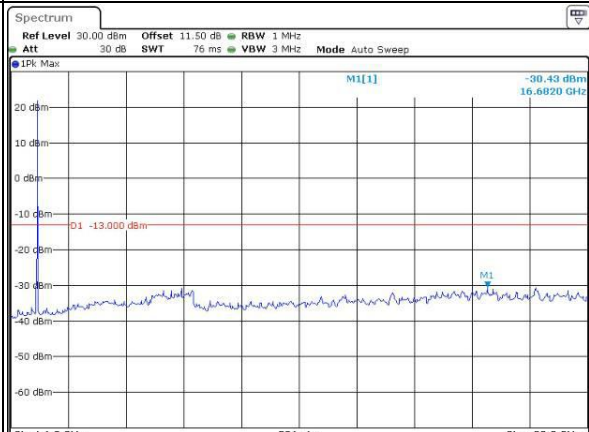
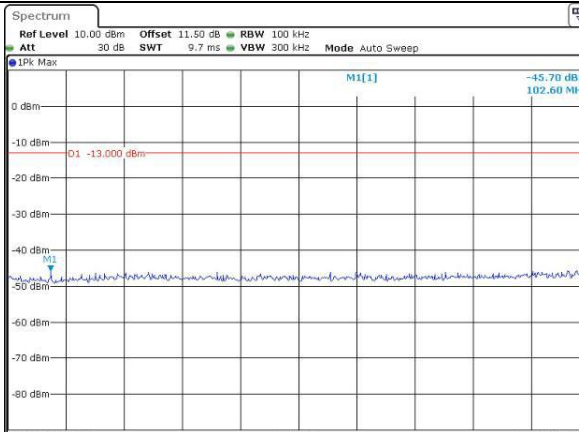
Lowest



ProjectNo.:CR230848316 Tester:Ken Tang  
Date: 8.SEP.2023 20:35:14

ProjectNo.:CR230848316 Tester:Ken Tang  
Date: 8.SEP.2023 20:35:43

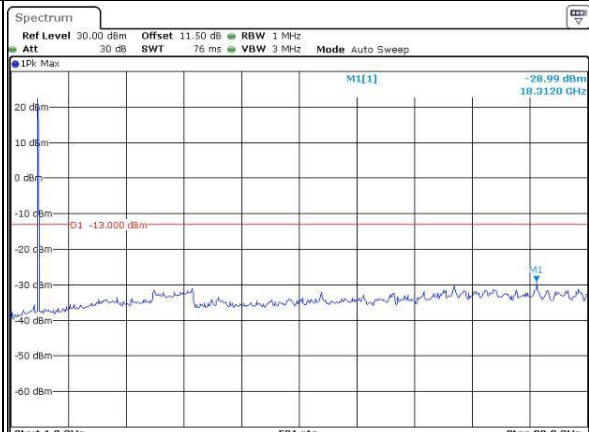
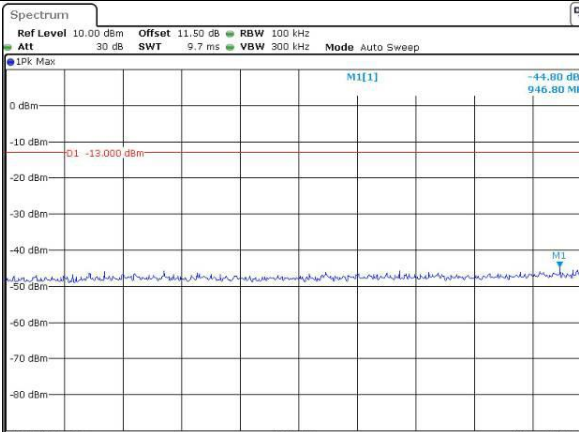
Middle



ProjectNo.:CR230848316 Tester:Ken Tang  
Date: 8.SEP.2023 20:36:13

ProjectNo.:CR230848316 Tester:Ken Tang  
Date: 8.SEP.2023 20:36:36

Highest



ProjectNo.:CR230848316 Tester:Ken Tang  
Date: 8.SEP.2023 20:37:06

ProjectNo.:CR230848316 Tester:Ken Tang  
Date: 8.SEP.2023 20:37:39

### Spurious Emissions at Antenna Terminal

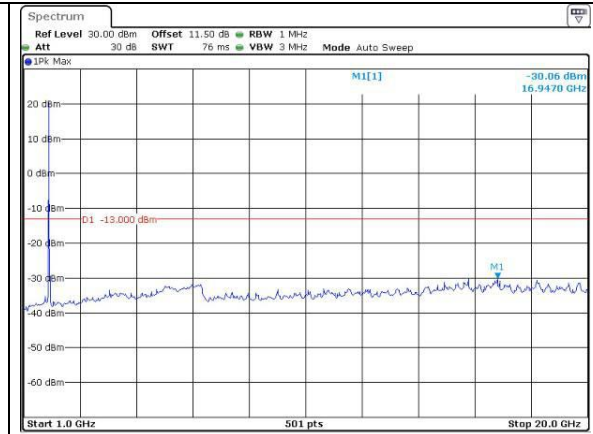
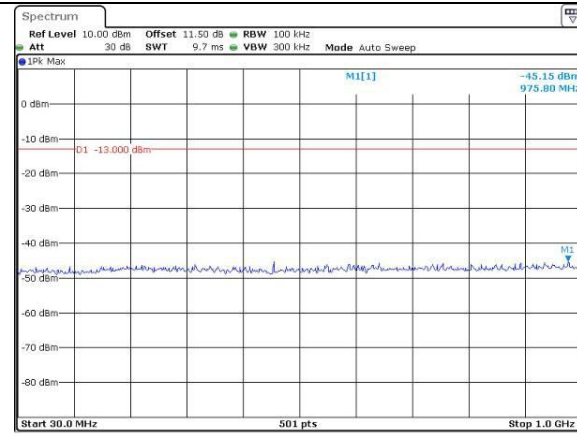
| Channel | 10MHz Bandwidth QPSK  |   |
|---------|---|---|
| Lowest  | <p>                     Spectrum<br/>                     Ref Level 10.00 dBm Offset 11.50 dB RBW 100 kHz<br/>                     Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Auto Sweep<br/>                     IPk Max M1[1] -45.64 dBm 700.90 MHz<br/>                     0 dBm<br/>                     -10 dBm D1 -13.000 dBm<br/>                     -20 dBm<br/>                     -30 dBm<br/>                     -40 dBm<br/>                     -50 dBm<br/>                     -60 dBm<br/>                     -70 dBm<br/>                     -80 dBm<br/>                     Start 30.0 MHz 501 pts Stop 1.0 GHz<br/>                     ProjectNo.:CR230848316 Tester:Ken Tang<br/>                     Date: 8_SEP.2023 20:38:13                 </p> | <p>                     Spectrum<br/>                     Ref Level 30.00 dBm Offset 11.50 dB RBW 1 MHz<br/>                     Att 30 dB SWT 76 ms VBW 3 MHz Mode Auto Sweep<br/>                     IPk Max M1[1] -30.45 dBm 16.3020 GHz<br/>                     20 dBm<br/>                     10 dBm<br/>                     0 dBm<br/>                     -10 dBm D1 -13.000 dBm<br/>                     -20 dBm<br/>                     -30 dBm<br/>                     -40 dBm<br/>                     -50 dBm<br/>                     -60 dBm<br/>                     Start 1.0 GHz 501 pts Stop 20.0 GHz<br/>                     ProjectNo.:CR230848316 Tester:Ken Tang<br/>                     Date: 8_SEP.2023 20:38:45                 </p> |
| Middle  | <p>                     Spectrum<br/>                     Ref Level 10.00 dBm Offset 11.50 dB RBW 100 kHz<br/>                     Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Auto Sweep<br/>                     IPk Max M1[1] -45.01 dBm 627.30 MHz<br/>                     0 dBm<br/>                     -10 dBm D1 -13.000 dBm<br/>                     -20 dBm<br/>                     -30 dBm<br/>                     -40 dBm<br/>                     -50 dBm<br/>                     -60 dBm<br/>                     -70 dBm<br/>                     -80 dBm<br/>                     Start 30.0 MHz 501 pts Stop 1.0 GHz<br/>                     ProjectNo.:CR230848316 Tester:Ken Tang<br/>                     Date: 8_SEP.2023 20:39:21                 </p> | <p>                     Spectrum<br/>                     Ref Level 30.00 dBm Offset 11.50 dB RBW 1 MHz<br/>                     Att 30 dB SWT 76 ms VBW 3 MHz Mode Auto Sweep<br/>                     IPk Max M1[1] -30.04 dBm 16.6440 GHz<br/>                     20 dBm<br/>                     10 dBm<br/>                     0 dBm<br/>                     -10 dBm D1 -13.000 dBm<br/>                     -20 dBm<br/>                     -30 dBm<br/>                     -40 dBm<br/>                     -50 dBm<br/>                     -60 dBm<br/>                     Start 1.0 GHz 501 pts Stop 20.0 GHz<br/>                     ProjectNo.:CR230848316 Tester:Ken Tang<br/>                     Date: 8_SEP.2023 20:39:51                 </p> |
| Highest | <p>                     Spectrum<br/>                     Ref Level 10.00 dBm Offset 11.50 dB RBW 100 kHz<br/>                     Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Auto Sweep<br/>                     IPk Max M1[1] -44.40 dBm 710.90 MHz<br/>                     0 dBm<br/>                     -10 dBm D1 -13.000 dBm<br/>                     -20 dBm<br/>                     -30 dBm<br/>                     -40 dBm<br/>                     -50 dBm<br/>                     -60 dBm<br/>                     -70 dBm<br/>                     -80 dBm<br/>                     Start 30.0 MHz 501 pts Stop 1.0 GHz<br/>                     ProjectNo.:CR230848316 Tester:Ken Tang<br/>                     Date: 8_SEP.2023 20:40:24                 </p> | <p>                     Spectrum<br/>                     Ref Level 30.00 dBm Offset 11.50 dB RBW 1 MHz<br/>                     Att 30 dB SWT 76 ms VBW 3 MHz Mode Auto Sweep<br/>                     IPk Max M1[1] -30.22 dBm 18.2740 GHz<br/>                     20 dBm<br/>                     10 dBm<br/>                     0 dBm<br/>                     -10 dBm D1 -13.000 dBm<br/>                     -20 dBm<br/>                     -30 dBm<br/>                     -40 dBm<br/>                     -50 dBm<br/>                     -60 dBm<br/>                     Start 1.0 GHz 501 pts Stop 20.0 GHz<br/>                     ProjectNo.:CR230848316 Tester:Ken Tang<br/>                     Date: 8_SEP.2023 20:40:50                 </p> |

Spurious Emissions at Antenna Terminal

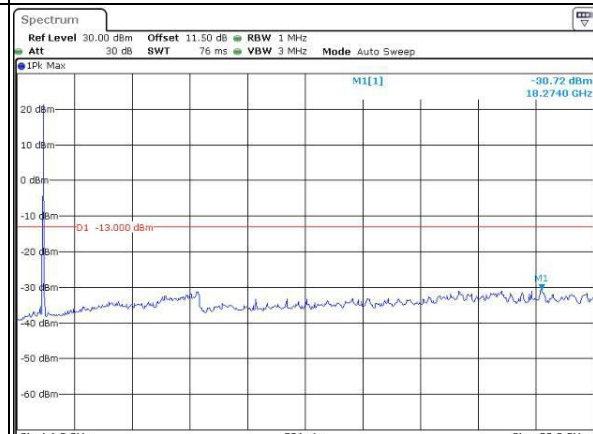
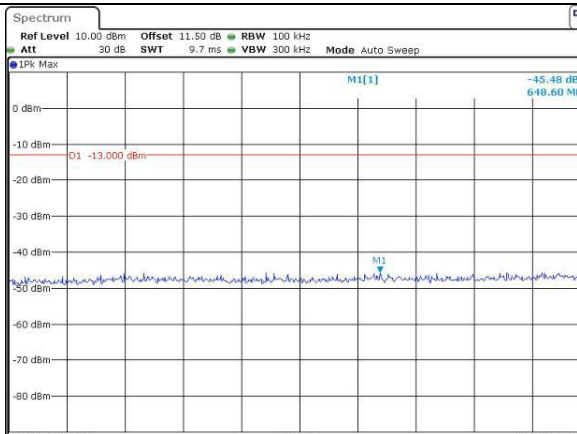
Channel

15MHz Bandwidth QPSK

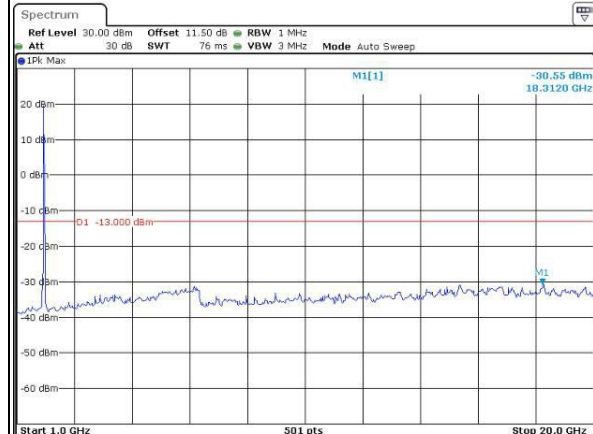
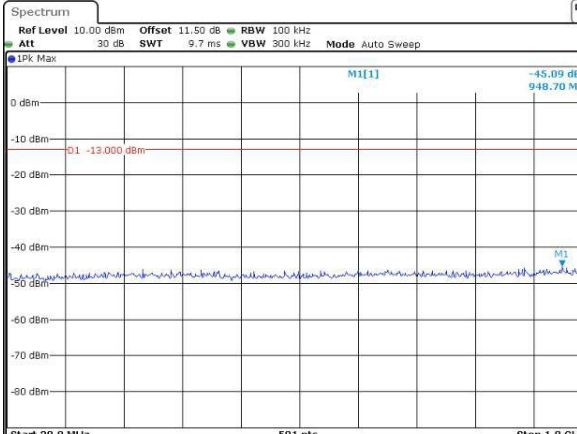
Lowest



Middle



Highest

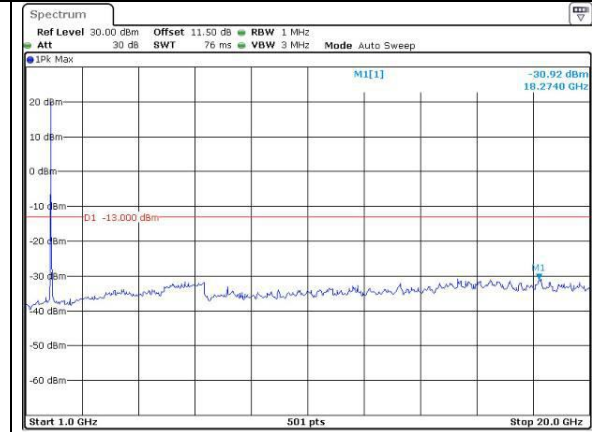
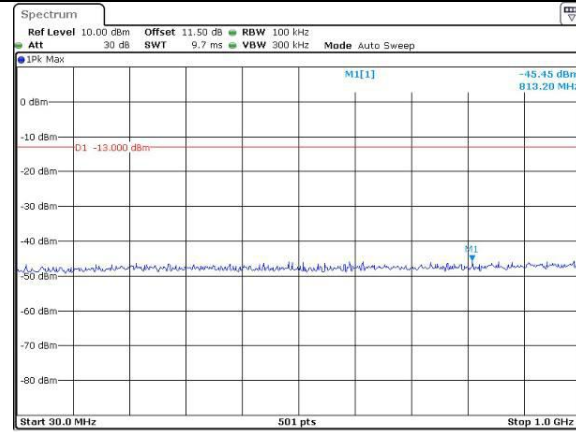


Spurious Emissions at Antenna Terminal

Channel

20MHz Bandwidth QPSK

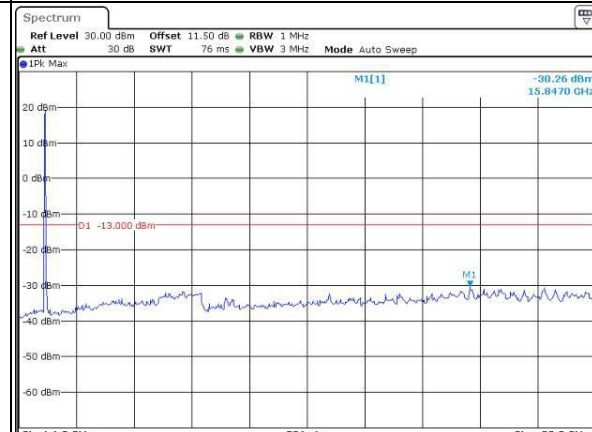
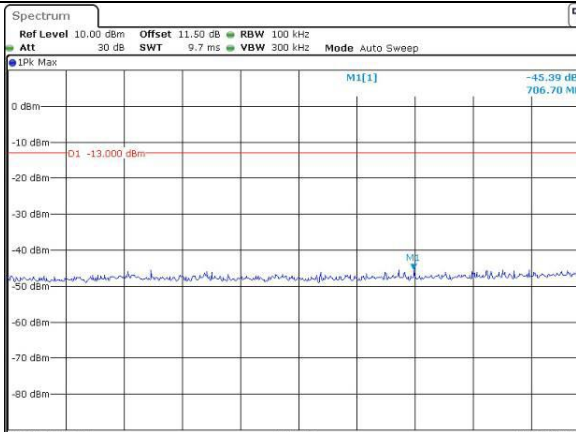
Lowest



ProjectNo.:CR230848316 Testeri:Ken Tang  
Date: 8.SEP.2023 20:44:20

ProjectNo.:CR230848316 Testeri:Ken Tang  
Date: 8.SEP.2023 20:44:46

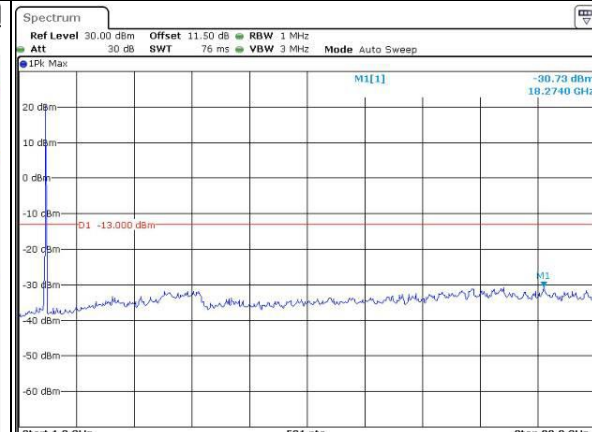
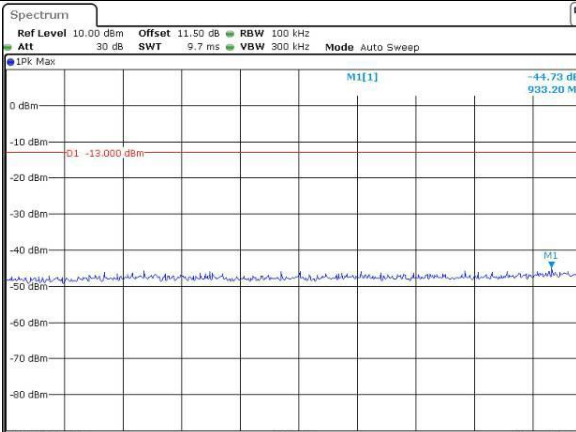
Middle



ProjectNo.:CR230848316 Testeri:Ken Tang  
Date: 8.SEP.2023 20:45:17

ProjectNo.:CR230848316 Testeri:Ken Tang  
Date: 8.SEP.2023 20:45:43

Highest



ProjectNo.:CR230848316 Testeri:Ken Tang  
Date: 8.SEP.2023 20:46:18

ProjectNo.:CR230848316 Testeri:Ken Tang  
Date: 8.SEP.2023 20:46:44

Out of band emission, Band Edge

| Mode           | Lowest  | Highest   |
|----------------|---|---|
| QPSK<br>1.4MHz | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:15:06</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:15:22</p> |
| QPSK<br>3MHz   | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:15:40</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:15:56</p> |
| QPSK<br>5MHz   | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:16:15</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:16:32</p> |

Out of band emission, Band Edge

| Mode          | Lowest  | Highest   |
|---------------|---|---|
| QPSK<br>10MHz | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:16:53</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:17:11</p> |
| QPSK<br>15MHz | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:17:32</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:17:51</p> |
| QPSK<br>20MHz | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:18:14</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:18:33</p> |

Out of band emission, Band Edge

| Mode            | Lowest  | Highest   |
|-----------------|---|---|
| 16QAM<br>1.4MHz | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:15:13</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:15:29</p> |
| 16QAM<br>3MHz   | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:15:48</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:16:03</p> |
| 16QAM<br>5MHz   | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:16:23</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:16:40</p> |



Out of band emission, Band Edge

| Mode           | Lowest  | Highest   |
|----------------|---|---|
| 16QAM<br>10MHz | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:17:01</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:17:19</p> |
| 16QAM<br>15MHz | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:17:41</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:18:00</p> |
| 16QAM<br>20MHz | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:18:23</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 20:18:42</p> |

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

|                |          |              |              |
|----------------|----------|--------------|--------------|
| Serial Number: | 2A55-4   | Test Date:   | 2023/9/8     |
| Test Site:     | RF       | Test Mode:   | Transmitting |
| Tester:        | Ken Tang | Test Result: | <b>Pass</b>  |

**Environmental Conditions:**

|                      |      |                           |    |                        |       |
|----------------------|------|---------------------------|----|------------------------|-------|
| Temperature:<br>(°C) | 25.4 | Relative Humidity:<br>(%) | 58 | ATM Pressure:<br>(kPa) | 100.5 |
|----------------------|------|---------------------------|----|------------------------|-------|

**Test Equipment List and Details:**

| Manufacturer  | Description                         | Model         | Serial Number   | Calibration Date | Calibration Due Date |
|---------------|-------------------------------------|---------------|-----------------|------------------|----------------------|
| R&S           | Spectrum Analyzer                   | FSV40-N       | 102259          | 2023/4/18        | 2024/4/17            |
| zhuoxiang     | Coaxial Cable                       | SMA-178       | 211001          | Each time        | N/A                  |
| eastsheep     | Coaxial Attenuator                  | 2W-SMA-JK-18G | 21060301        | Each time        | N/A                  |
| Minl-Circuits | Power Splitter                      | ZFRSC-183-S+  | S F448201619    | Each time        | N/A                  |
| R&S           | Wideband Radio Communication Tester | CMW500        | 143458          | 2023/3/31        | 2024/3/30            |
| ZHAOXIN       | DC Power Supply                     | RXN-6010D     | 21R6010D0912386 | N/A              | 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            |

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

**Test Frequency for Each Mode:**

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

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

| Test Bandwidth & Modulation | Resource Block & RB offset | Conducted Average Output Power(dBm) |                |                 | Maximum EIRP(dBm) | EIRP Limit(dBm) |
|-----------------------------|----------------------------|-------------------------------------|----------------|-----------------|-------------------|-----------------|
|                             |                            | Lowest Channel                      | Middle Channel | Highest Channel |                   |                 |
| 1.4MHz QPSK                 | RB1#0                      | 19.63                               | 19.27          | 19.41           | 18.23             | 30              |
|                             | RB1#3                      | 19.56                               | 19.33          | 19.41           |                   |                 |
|                             | RB1#5                      | 19.62                               | 19.41          | 19.36           |                   |                 |
|                             | RB3#0                      | 19.41                               | 19.37          | 19.34           |                   |                 |
|                             | RB3#3                      | 19.44                               | 19.39          | 19.32           |                   |                 |
|                             | RB6#0                      | 18.51                               | 18.39          | 18.33           |                   |                 |
| 1.4MHz 16QAM                | RB1#0                      | 18.77                               | 18.37          | 18.50           | 17.63             | 30              |
|                             | RB1#3                      | 19.03                               | 18.57          | 18.71           |                   |                 |
|                             | RB1#5                      | 18.86                               | 18.41          | 18.51           |                   |                 |
|                             | RB3#0                      | 18.80                               | 18.61          | 18.84           |                   |                 |
|                             | RB3#3                      | 18.85                               | 18.61          | 18.84           |                   |                 |
|                             | RB6#0                      | 17.30                               | 17.50          | 17.18           |                   |                 |
| 3MHz QPSK                   | RB1#0                      | 19.67                               | 19.36          | 19.23           | 18.27             | 30              |
|                             | RB1#8                      | 19.62                               | 19.33          | 19.23           |                   |                 |
|                             | RB1#14                     | 19.59                               | 19.39          | 19.24           |                   |                 |
|                             | RB6#0                      | 18.53                               | 18.48          | 18.43           |                   |                 |
|                             | RB6#9                      | 18.67                               | 18.53          | 18.42           |                   |                 |
|                             | RB15#0                     | 18.63                               | 18.51          | 18.45           |                   |                 |
| 3MHz 16QAM                  | RB1#0                      | 18.82                               | 18.43          | 18.96           | 17.68             | 30              |
|                             | RB1#8                      | 19.08                               | 18.58          | 19.07           |                   |                 |
|                             | RB1#14                     | 19.02                               | 18.50          | 18.93           |                   |                 |
|                             | RB6#0                      | 17.31                               | 17.53          | 17.27           |                   |                 |
|                             | RB6#9                      | 17.49                               | 17.60          | 17.29           |                   |                 |
|                             | RB15#0                     | 17.38                               | 17.71          | 17.32           |                   |                 |
| 5MHz QPSK                   | RB1#0                      | 19.60                               | 19.23          | 19.16           | 18.20             | 30              |
|                             | RB1#13                     | 19.47                               | 19.33          | 19.15           |                   |                 |
|                             | RB1#24                     | 19.50                               | 19.36          | 19.04           |                   |                 |
|                             | RB15#0                     | 18.74                               | 18.80          | 18.41           |                   |                 |
|                             | RB15#10                    | 18.84                               | 18.85          | 18.42           |                   |                 |
|                             | RB25#0                     | 18.74                               | 18.78          | 18.37           |                   |                 |
| 5MHz 16QAM                  | RB1#0                      | 18.83                               | 18.53          | 18.18           | 18.14             | 30              |
|                             | RB1#13                     | 19.54                               | 19.06          | 18.70           |                   |                 |
|                             | RB1#24                     | 19.03                               | 18.61          | 18.18           |                   |                 |
|                             | RB15#0                     | 17.31                               | 17.59          | 17.21           |                   |                 |
|                             | RB15#10                    | 17.46                               | 17.67          | 17.23           |                   |                 |
|                             | RB25#0                     | 17.39                               | 17.62          | 17.21           |                   |                 |

|             |         |       |       |       |       |    |
|-------------|---------|-------|-------|-------|-------|----|
| 10MHz QPSK  | RB1#0   | 19.65 | 19.37 | 19.33 | 18.25 | 30 |
|             | RB1#25  | 19.58 | 19.38 | 19.26 |       |    |
|             | RB1#49  | 19.61 | 19.49 | 19.18 |       |    |
|             | RB25#0  | 18.16 | 18.00 | 17.82 |       |    |
|             | RB25#25 | 18.41 | 18.36 | 18.09 |       |    |
|             | RB50#0  | 18.29 | 18.19 | 17.95 |       |    |
| 10MHz 16QAM | RB1#0   | 18.86 | 18.38 | 19.09 | 18.21 | 30 |
|             | RB1#25  | 19.20 | 18.57 | 19.13 |       |    |
|             | RB1#49  | 19.61 | 19.02 | 19.59 |       |    |
|             | RB25#0  | 17.44 | 17.73 | 17.30 |       |    |
|             | RB25#25 | 17.73 | 18.11 | 17.59 |       |    |
|             | RB50#0  | 17.59 | 17.88 | 17.42 |       |    |
| 15MHz QPSK  | RB1#0   | 19.63 | 19.36 | 19.38 | 18.27 | 30 |
|             | RB1#38  | 19.58 | 19.36 | 19.28 |       |    |
|             | RB1#74  | 19.67 | 19.36 | 19.18 |       |    |
|             | RB36#0  | 18.61 | 18.36 | 18.45 |       |    |
|             | RB36#39 | 18.79 | 18.49 | 18.37 |       |    |
|             | RB75#0  | 18.69 | 18.43 | 18.40 |       |    |
| 15MHz 16QAM | RB1#0   | 19.02 | 18.84 | 19.12 | 17.95 | 30 |
|             | RB1#38  | 19.12 | 19.00 | 18.90 |       |    |
|             | RB1#74  | 19.35 | 19.06 | 18.98 |       |    |
|             | RB36#0  | 17.48 | 17.65 | 17.54 |       |    |
|             | RB36#39 | 17.68 | 17.80 | 17.49 |       |    |
|             | RB75#0  | 17.59 | 17.74 | 17.53 |       |    |
| 20MHz QPSK  | RB1#0   | 19.52 | 19.51 | 19.77 | 18.37 | 30 |
|             | RB1#50  | 19.43 | 19.51 | 19.66 |       |    |
|             | RB1#99  | 19.47 | 19.52 | 19.53 |       |    |
|             | RB50#0  | 18.04 | 18.55 | 18.35 |       |    |
|             | RB50#50 | 18.25 | 18.66 | 18.20 |       |    |
|             | RB100#0 | 18.13 | 18.59 | 18.26 |       |    |
| 20MHz 16QAM | RB1#0   | 18.72 | 19.25 | 19.12 | 17.97 | 30 |
|             | RB1#50  | 18.54 | 18.95 | 18.36 |       |    |
|             | RB1#99  | 19.08 | 19.37 | 18.94 |       |    |
|             | RB50#0  | 17.65 | 17.85 | 17.86 |       |    |
|             | RB50#50 | 17.87 | 17.97 | 17.73 |       |    |
|             | RB100#0 | 17.77 | 17.92 | 17.82 |       |    |

Note: EIRP=Conducted Power(dBm) - Lc(dB) + G<sub>T</sub>(dBi)

**Result:**

**Pass**

| <b>Peak-to-average Ratio(PAR)</b> |                            |                           |                |                 |             |
|-----------------------------------|----------------------------|---------------------------|----------------|-----------------|-------------|
| Test Bandwidth & Modulation       | Resource Block & RB offset | Peak-to-average Ratio(dB) |                |                 | Limit (dB)  |
|                                   |                            | Lowest Channel            | Middle Channel | Highest Channel |             |
| 20MHz QPSK                        | RB1#0                      | 6.72                      | 6.35           | 6.7             | 13          |
|                                   | RB100#0                    | 4.61                      | 4.58           | 4.67            | 13          |
| 20MHz 16QAM                       | RB1#0                      | 7.86                      | 6.35           | 7.77            | 13          |
|                                   | RB100#0                    | 6.06                      | 6.06           | 6.12            | 13          |
| <b>Result:</b>                    |                            |                           |                |                 | <b>Pass</b> |

| <b>FCC §2.1049, §27.53:Occupied Bandwidth</b> |                              |                |              |                                |                |              |
|---|------------------------------|----------------|--------------|--------------------------------|----------------|--------------|
| Operation Mode                                | 99% Occupied Bandwidth (MHz) |                |              | 26 dB Occupied Bandwidth (MHz) |                |              |
|   | Low Channel                  | Middle channel | High Channel | Low Channel                    | Middle Channel | High Channel |
| 1.4MHz QPSK                                   | 1.102                        | 1.102          | 1.096        | 1.260                          | 1.266          | 1.260        |
| 1.4MHz 16QAM                                  | 1.090                        | 1.102          | 1.102        | 1.254                          | 1.254          | 1.260        |
| 3MHz QPSK                                     | 2.695                        | 2.695          | 2.695        | 3.012                          | 3.012          | 2.988        |
| 3MHz 16QAM                                    | 2.683                        | 2.695          | 2.695        | 3.012                          | 3.024          | 3.012        |
| 5MHz QPSK                                     | 4.511                        | 4.511          | 4.531        | 5.020                          | 4.980          | 5.020        |
| 5MHz 16QAM                                    | 4.531                        | 4.531          | 4.511        | 5.040                          | 5.020          | 4.980        |
| 10MHz QPSK                                    | 8.942                        | 8.942          | 8.942        | 9.760                          | 9.800          | 9.800        |
| 10MHz 16QAM                                   | 8.942                        | 8.942          | 8.942        | 9.760                          | 9.880          | 9.760        |
| 15MHz QPSK                                    | 13.473                       | 13.533         | 13.533       | 14.940                         | 15.000         | 15.000       |
| 15MHz 16QAM                                   | 13.533                       | 13.533         | 13.533       | 15.060                         | 15.060         | 14.940       |
| 20MHz QPSK                                    | 17.964                       | 17.884         | 17.964       | 19.680                         | 19.680         | 19.680       |
| 20MHz 16QAM                                   | 17.964                       | 17.884         | 18.044       | 19.600                         | 19.520         | 19.680       |

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

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

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

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

| Test Mode:                          | 20M QPSK         | Test Channel: Lowest for Lower Edge,Highest for Upper Edge |                  |         |                  |       |
|-------------------------------------|------------------|--|------------------|---------|------------------|-------|
| Test Item                           | Temperature (°C) | Voltage (V <sub>DC</sub> )                                 | Lower Edge (MHz) |         | Upper Edge (MHz) |       |
|                                     |                  |  | Result           | Limit   | Result           | Limit |
| Frequency Stability vs. Temperature | -30              | 3.85   | 1710.016         | 1710.00 | 1754.983         | 1755  |
|                                     | -20              | 3.85   | 1710.010         | 1710.00 | 1754.989         | 1755  |
|                                     | -10              | 3.85   | 1710.015         | 1710.00 | 1754.989         | 1755  |
|                                     | 0                | 3.85   | 1710.012         | 1710.00 | 1754.984         | 1755  |
|                                     | 10               | 3.85   | 1710.007         | 1710.00 | 1754.997         | 1755  |
|                                     | 20               | 3.85   | 1710.001         | 1710.00 | 1754.992         | 1755  |
|                                     | 30               | 3.85   | 1710.012         | 1710.00 | 1754.980         | 1755  |
|                                     | 40               | 3.85   | 1710.018         | 1710.00 | 1754.999         | 1755  |
| Frequency Stability vs. Voltage     | 20               | 3.45   | 1710.002         | 1710.00 | 1754.998         | 1755  |
|                                     | 20               | 4.4  | 1710.010         | 1710.00 | 1754.995         | 1755  |
| <b>Result:</b>                      |                  |  |                  |         | <b>Pass</b>      |       |

| Test Mode:                          | 20M 16QAM        | Test Channel: Lowest for Lower Edge,Highest for Upper Edge |                  |         |                  |       |
|-------------------------------------|------------------|--|------------------|---------|------------------|-------|
| Test Item                           | Temperature (°C) | Voltage (V <sub>DC</sub> )                                 | Lower Edge (MHz) |         | Upper Edge (MHz) |       |
|                                     |                  |  | Result           | Limit   | Result           | Limit |
| Frequency Stability vs. Temperature | -30              | 3.85   | 1710.004         | 1710.00 | 1754.982         | 1755  |
|                                     | -20              | 3.85   | 1710.006         | 1710.00 | 1754.998         | 1755  |
|                                     | -10              | 3.85   | 1710.008         | 1710.00 | 1754.987         | 1755  |
|                                     | 0                | 3.85   | 1710.012         | 1710.00 | 1754.982         | 1755  |
|                                     | 10               | 3.85   | 1710.001         | 1710.00 | 1754.989         | 1755  |
|                                     | 20               | 3.85   | 1710.015         | 1710.00 | 1754.989         | 1755  |
|                                     | 30               | 3.85   | 1710.007         | 1710.00 | 1754.983         | 1755  |
|                                     | 40               | 3.85   | 1710.015         | 1710.00 | 1754.987         | 1755  |
| Frequency Stability vs. Voltage     | 20               | 3.45   | 1710.009         | 1710.00 | 1754.997         | 1755  |
|                                     | 20               | 4.4  | 1710.019         | 1710.00 | 1754.983         | 1755  |
| <b>Result:</b>                      |                  |  |                  |         | <b>Pass</b>      |       |

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

**Occupied Bandwidth**

| Channel | 1.4MHz Bandwidth QPSK  | 1.4MHz Bandwidth 16QAM   |
|---------|--|--|
| Lowest  | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:11:38</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:11:59</p> |
| Middle  | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:12:17</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:12:37</p> |
| Highest | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:12:55</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:13:19</p> |

Occupied Bandwidth

| Channel | 3MHz Bandwidth QPSK   | 3MHz Bandwidth 16QAM  |
|---------|---|---|
| Lowest  | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 19:13:40</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 19:14:01</p> |
| Middle  | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 19:14:19</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 19:14:40</p> |
| Highest | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 19:14:58</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8_SEP.2023 19:15:15</p> |



Occupied Bandwidth

| Channel | 5MHz Bandwidth QPSK | 5MHz Bandwidth 16QAM |
|---------|---------------------|----------------------|
| Lowest  |                     |                      |
| Middle  |                     |                      |
| Highest |                     |                      |

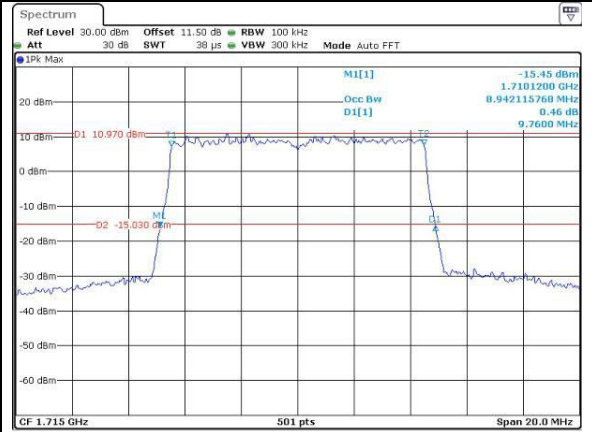
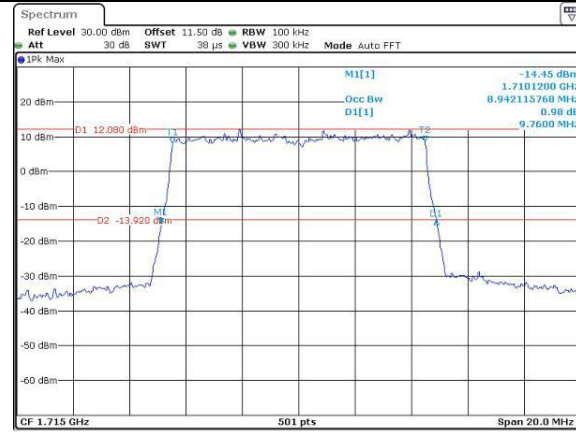
**Occupied Bandwidth**

**Channel**

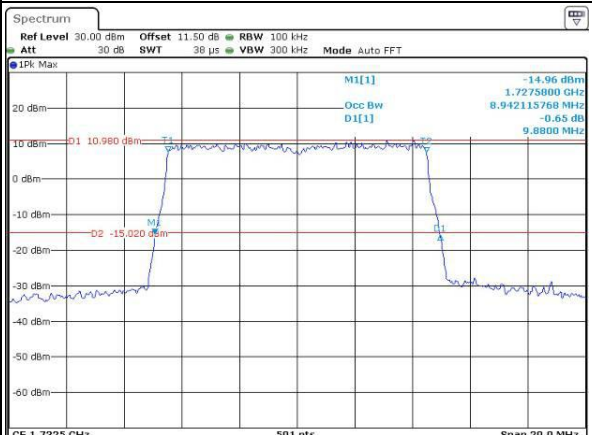
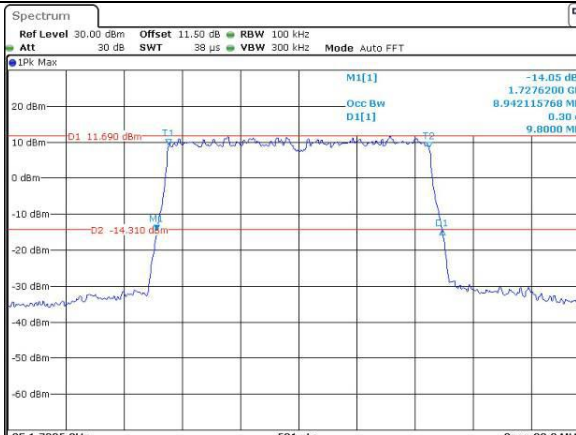
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

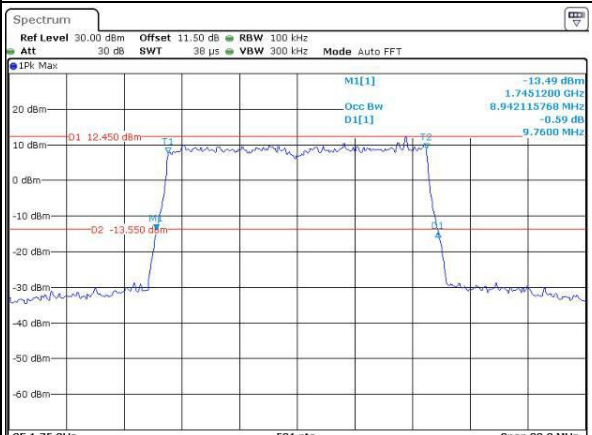
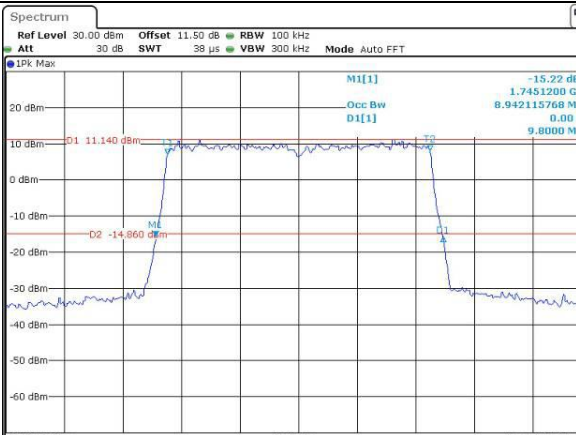
Lowest



Middle



Highest



Occupied Bandwidth

| Channel | 15MHz Bandwidth QPSK   | 15MHz Bandwidth 16QAM  |
|---------|--|--|
| Lowest  | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:20:43</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:21:11</p> |
| Middle  | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:21:33</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:22:03</p> |
| Highest | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:22:38</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:23:09</p> |

Occupied Bandwidth

| Channel | 20MHz Bandwidth QPSK   | 20MHz Bandwidth 16QAM  |
|---------|--|--|
| Lowest  | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:23:45</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:24:13</p> |
| Middle  | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:24:41</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:25:06</p> |
| Highest | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:25:38</p> | <p>ProjectNo.:CR230848316 Testeri:Ken Tang<br/>Date: 8.SEP.2023 19:26:15</p> |

Spurious Emissions at Antenna Terminal

| Channel | 1.4MHz Bandwidth QPSK   |   |
|---------|---|---|
| Lowest  | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8.SEP.2023 20:47:21</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8.SEP.2023 20:47:51</p> |
| Middle  | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8.SEP.2023 20:48:17</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8.SEP.2023 20:48:37</p> |
| Highest | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8.SEP.2023 20:49:06</p> | <p>ProjectNo.:CR230848316 Tester:Ken Tang<br/>Date: 8.SEP.2023 20:49:33</p> |