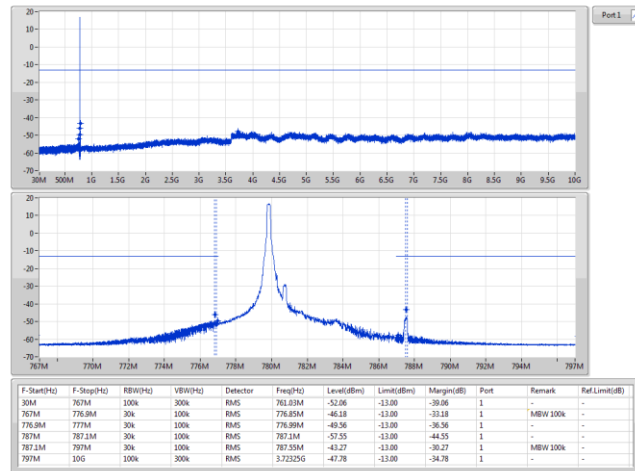


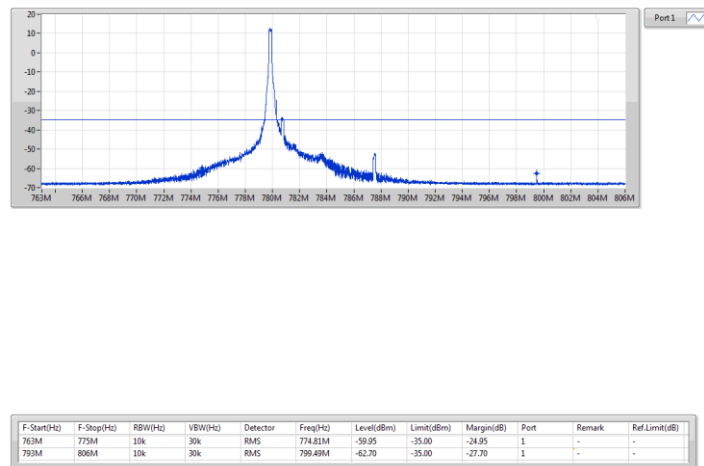
Band 13 LTE-M1\_5MHz\_Nss1\_1TX  
782MHz\_QPSK\_RB 1,#RB 0,NB 0

CSE-TX



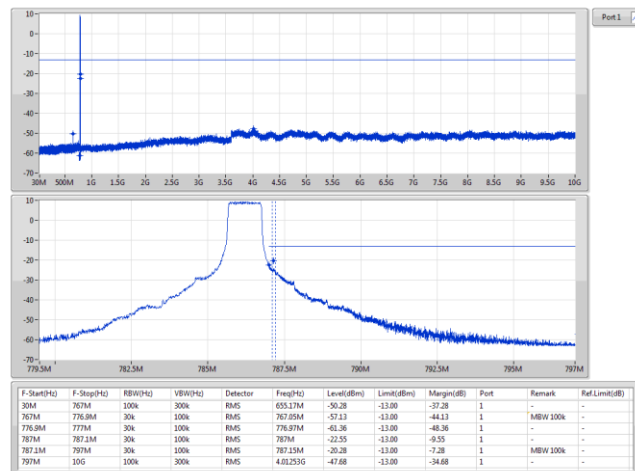
Band 13 LTE-M1\_5MHz\_Nss1\_1TX  
782MHz\_QPSK\_RB 1,#RB 0,NB 0

CSE-TX



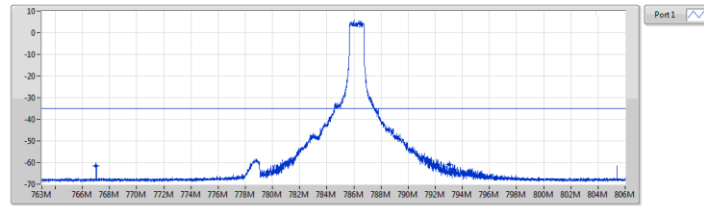
Band 13 LTE-M1\_5MHz\_Nss1\_1TX  
784.5MHz\_QPSK\_RB 6,#RB 0,NB 3

CSE-TX



**Band 13 LTE-M1\_5MHz\_Nss1\_1TX**  
**784.5MHz\_QPSK\_RB 6,#RB 0,NB 3**

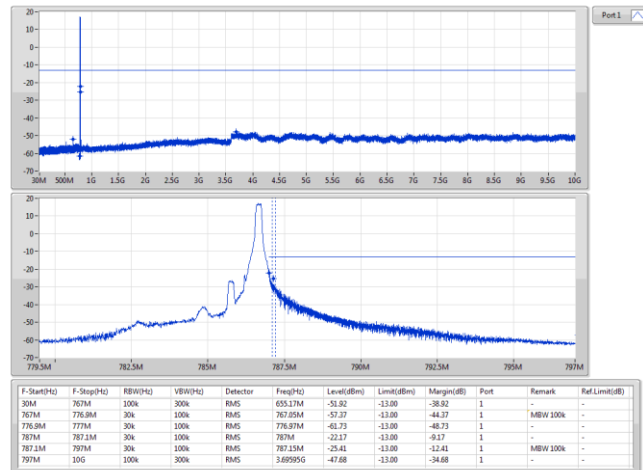
CSE-TX



| F-Start(Hz) | F-Stop(Hz) | RBW(Hz) | VBW(Hz) | Detector | Freq(Hz) | Level(dBm) | Limit(dBm) | Margin(dB) | Port | Remark | Ref.Limit(dB) |
|-------------|------------|---------|---------|----------|----------|------------|------------|------------|------|--------|---------------|
| 763M        | 775M       | 10k     | 30k     | RMS      | 767.01M  | -61.55     | -35.00     | -26.55     | 1    | -      | -             |
| 793M        | 806M       | 10k     | 30k     | RMS      | 793.03M  | -60.81     | -35.00     | -25.81     | 1    | -      | -             |

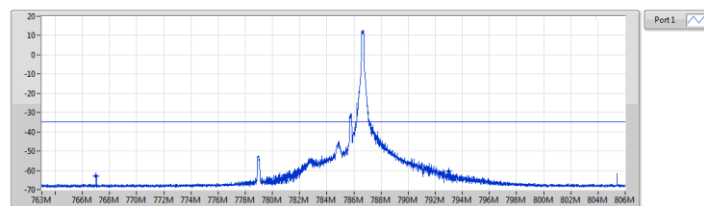
**Band 13 LTE-M1\_5MHz\_Nss1\_1TX**  
**784.5MHz\_QPSK\_RB 1,#RB 5,NB 3**

CSE-TX



**Band 13 LTE-M1\_5MHz\_Nss1\_1TX**  
**784.5MHz\_QPSK\_RB 1,#RB 5,NB 3**

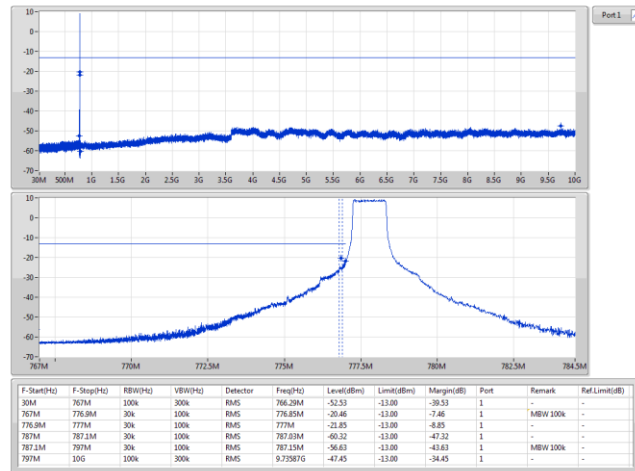
CSE-TX



| F-Start(Hz) | F-Stop(Hz) | RBW(Hz) | VBW(Hz) | Detector | Freq(Hz) | Level(dBm) | Limit(dBm) | Margin(dB) | Port | Remark | Ref.Limit(dB) |
|-------------|------------|---------|---------|----------|----------|------------|------------|------------|------|--------|---------------|
| 763M        | 775M       | 10k     | 30k     | RMS      | 767.01M  | -63.06     | -35.00     | -28.06     | 1    | -      | -             |
| 793M        | 806M       | 10k     | 30k     | RMS      | 793.01M  | -60.66     | -35.00     | -25.66     | 1    | -      | -             |

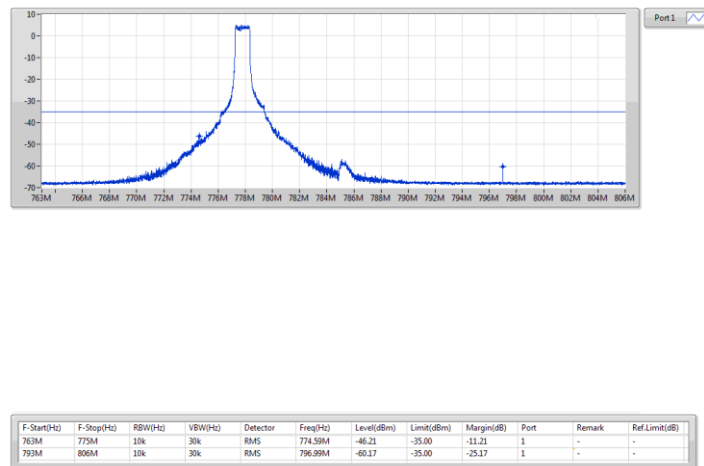
Band 13 LTE-M1\_5MHz\_Nss1\_1TX  
779.5MHz\_16QAM\_RB 6,#RB 0,NB 0

CSE-TX



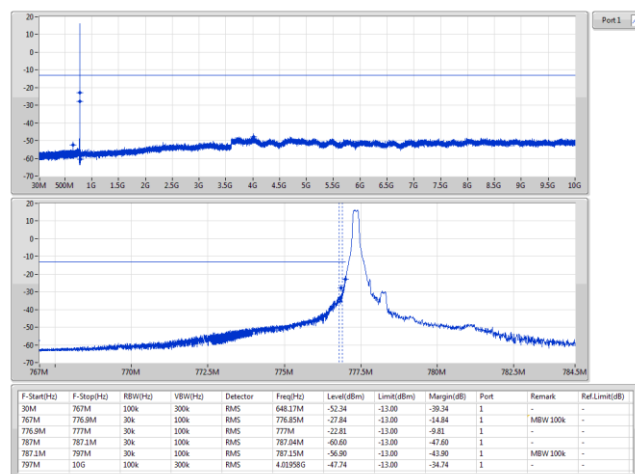
Band 13 LTE-M1\_5MHz\_Nss1\_1TX  
779.5MHz\_16QAM\_RB 6,#RB 0,NB 0

CSE-TX



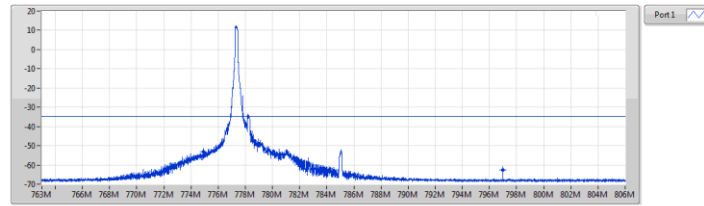
Band 13 LTE-M1\_5MHz\_Nss1\_1TX  
779.5MHz\_16QAM\_RB 1,#RB 0,NB 0

CSE-TX



**Band 13 LTE-M1\_5MHz\_Nss1\_1TX**  
**779.5MHz\_16QAM\_RB 1,#RB 0,NB 0**

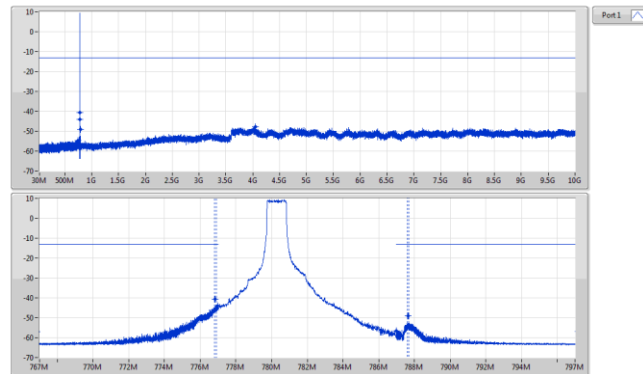
CSE-TX



| F-Start(Hz) | F-Stop(Hz) | RBW(Hz) | VBW(Hz) | Detector | Freq(Hz) | Level(dBm) | Limit(dBm) | Margin(dB) | Port | Remark | Ref.Limit(dB) |
|-------------|------------|---------|---------|----------|----------|------------|------------|------------|------|--------|---------------|
| 763M        | 775M       | 10K     | 30K     | RMS      | 774.93M  | -53.26     | -35.00     | -18.26     | 1    | -      | -             |
| 793M        | 806M       | 10K     | 30K     | RMS      | 796.98M  | -62.48     | -35.00     | -27.48     | 1    | -      | -             |

**Band 13 LTE-M1\_5MHz\_Nss1\_1TX**  
**782MHz\_16QAM\_RB 6,#RB 0,NB 0**

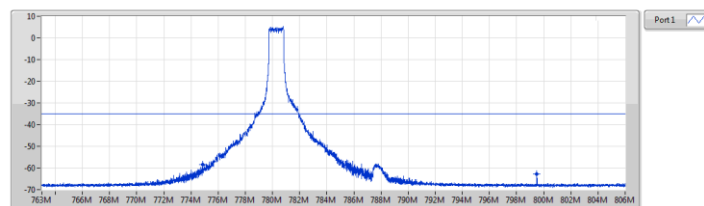
CSE-TX



| F-Start(Hz) | F-Stop(Hz) | RBW(Hz) | VBW(Hz) | Detector | Freq(Hz) | Level(dBm) | Limit(dBm) | Margin(dB) | Port | Remark   | Ref.Limit(dB) |
|-------------|------------|---------|---------|----------|----------|------------|------------|------------|------|----------|---------------|
| 30M         | 767M       | 100K    | 300K    | RMS      | 741.01M  | -54.59     | -13.00     | -41.59     | 1    | -        | -             |
| 767M        | 776.8M     | 30K     | 100K    | RMS      | 776.85M  | -40.53     | -13.00     | -27.53     | 1    | MBW 100K | -             |
| 776.8M      | 777M       | 30K     | 100K    | RMS      | 776.98M  | -44.17     | -13.00     | -31.17     | 1    | -        | -             |
| 777M        | 787.1M     | 30K     | 100K    | RMS      | 787M     | -56.43     | -13.00     | -43.43     | 1    | -        | -             |
| 787.1M      | 797M       | 30K     | 100K    | RMS      | 787.85M  | -49.19     | -13.00     | -36.19     | 1    | MBW 100K | -             |
| 797M        | 10G        | 100K    | 300K    | RMS      | 4.05149G | -47.76     | -13.00     | -34.76     | 1    | -        | -             |

**Band 13 LTE-M1\_5MHz\_Nss1\_1TX**  
**782MHz\_16QAM\_RB 6,#RB 0,NB 0**

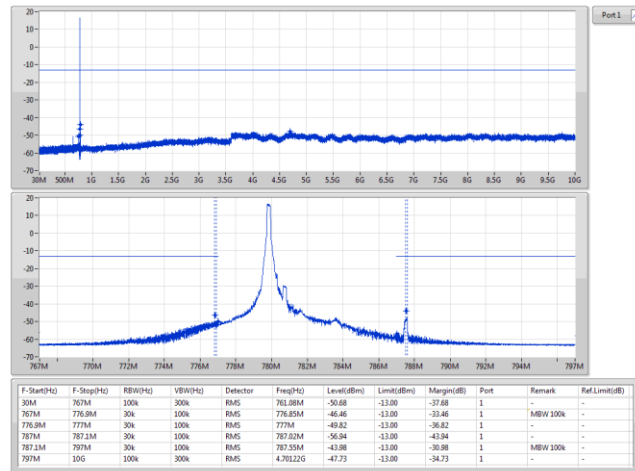
CSE-TX



| F-Start(Hz) | F-Stop(Hz) | RBW(Hz) | VBW(Hz) | Detector | Freq(Hz) | Level(dBm) | Limit(dBm) | Margin(dB) | Port | Remark | Ref.Limit(dB) |
|-------------|------------|---------|---------|----------|----------|------------|------------|------------|------|--------|---------------|
| 763M        | 775M       | 10K     | 30K     | RMS      | 774.86M  | -58.59     | -35.00     | -23.59     | 1    | -      | -             |
| 793M        | 806M       | 10K     | 30K     | RMS      | 799.49M  | -62.66     | -35.00     | -27.66     | 1    | -      | -             |

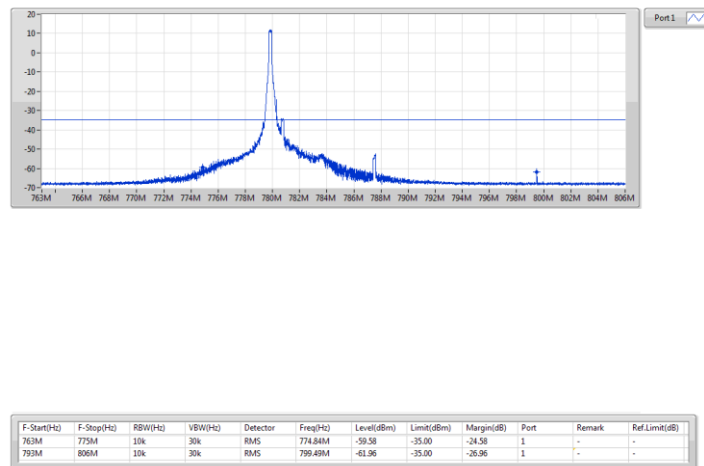
Band 13 LTE-M1\_5MHz\_Nss1\_1TX  
782MHz\_16QAM\_RB 1,#RB 0,NB 0

CSE-TX



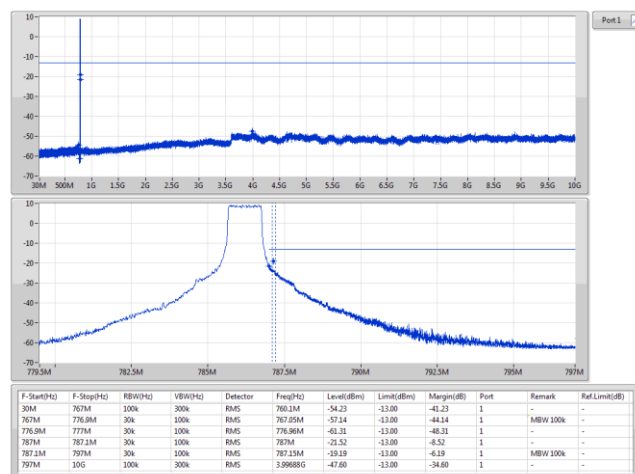
Band 13 LTE-M1\_5MHz\_Nss1\_1TX  
782MHz\_16QAM\_RB 1,#RB 0,NB 0

CSE-TX



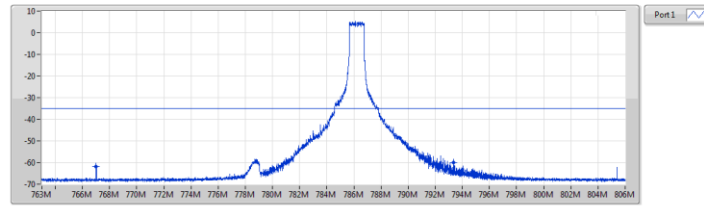
Band 13 LTE-M1\_5MHz\_Nss1\_1TX  
784.5MHz\_16QAM\_RB 6,#RB 0,NB 3

CSE-TX



**Band 13 LTE-M1\_5MHz\_Nss1\_1TX**  
**784.5MHz\_16QAM\_RB 6,#RB 0,NB 3**

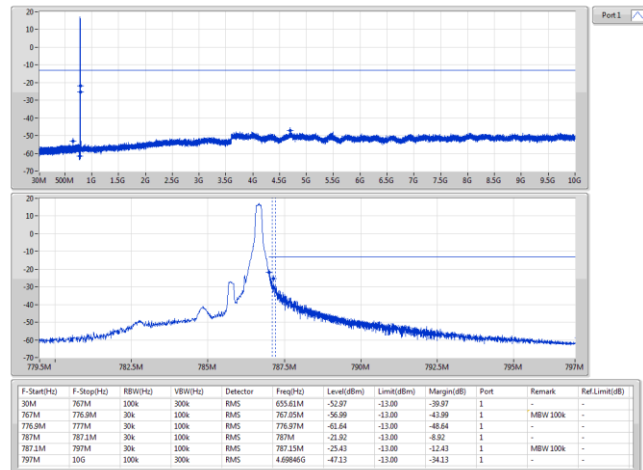
CSE-TX



| F-Start(Hz) | F-Stop(Hz) | RBW(Hz) | VBW(Hz) | Detector | Freq(Hz) | Level(dBm) | Limit(dBm) | Margin(dB) | Port | Remark | Ref.Limit(dB) |
|-------------|------------|---------|---------|----------|----------|------------|------------|------------|------|--------|---------------|
| 763M        | 775M       | 10k     | 30k     | RMS      | 767.01M  | -61.89     | -35.00     | -26.89     | 1    | -      | -             |
| 793M        | 806M       | 10k     | 30k     | RMS      | 793.34M  | -59.96     | -35.00     | -24.96     | 1    | -      | -             |

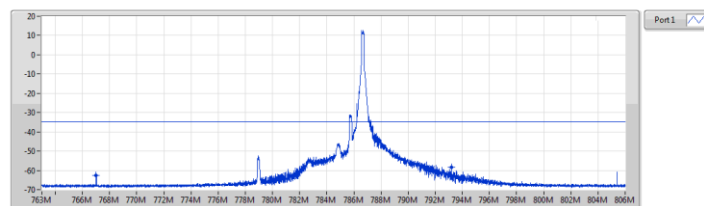
**Band 13 LTE-M1\_5MHz\_Nss1\_1TX**  
**784.5MHz\_16QAM\_RB 1,#RB 5,NB 3**

CSE-TX



**Band 13 LTE-M1\_5MHz\_Nss1\_1TX**  
**784.5MHz\_16QAM\_RB 1,#RB 5,NB 3**

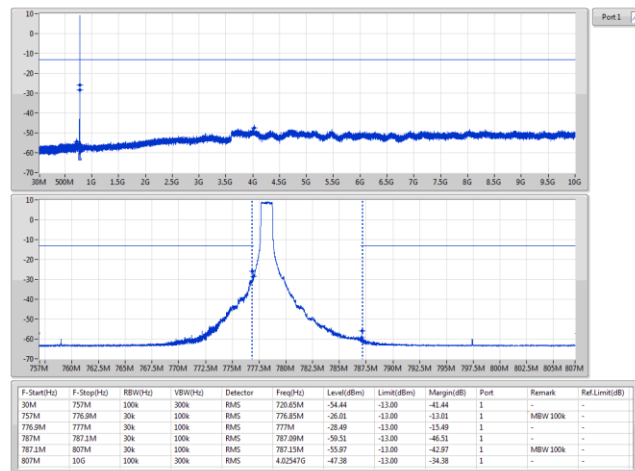
CSE-TX



| F-Start(Hz) | F-Stop(Hz) | RBW(Hz) | VBW(Hz) | Detector | Freq(Hz) | Level(dBm) | Limit(dBm) | Margin(dB) | Port | Remark | Ref.Limit(dB) |
|-------------|------------|---------|---------|----------|----------|------------|------------|------------|------|--------|---------------|
| 763M        | 775M       | 10k     | 30k     | RMS      | 767.01M  | -62.64     | -35.00     | -27.64     | 1    | -      | -             |
| 793M        | 806M       | 10k     | 30k     | RMS      | 793.2M   | -58.51     | -35.00     | -23.51     | 1    | -      | -             |

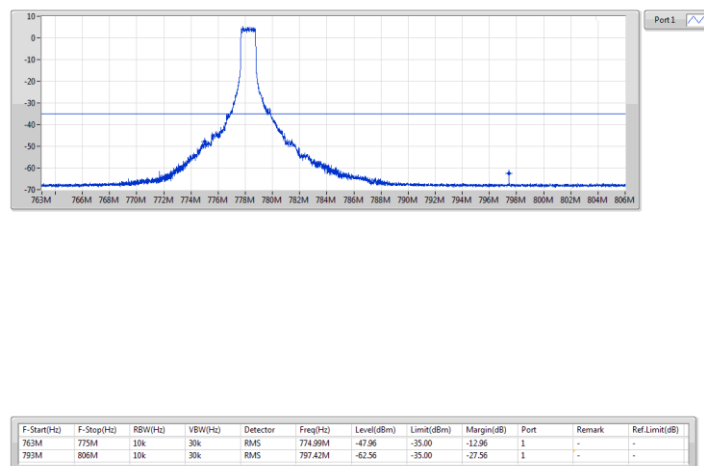
Band 13 LTE-M1\_10MHz Nss1\_1TX  
782MHz QPSK\_RB 6,#RB 0,NB 0

CSE-TX



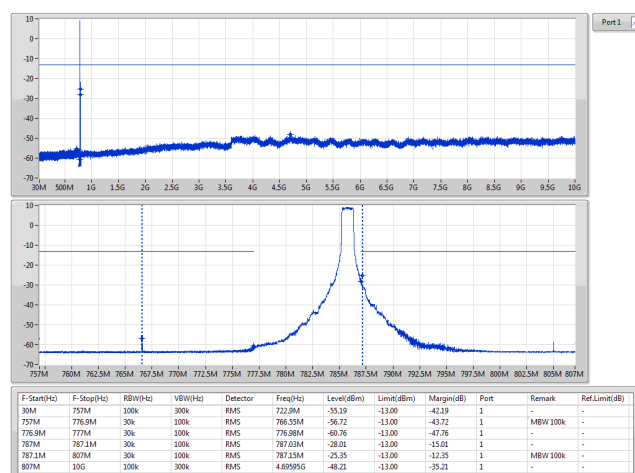
Band 13 LTE-M1\_10MHz Nss1\_1TX  
782MHz QPSK\_RB 6,#RB 0,NB 0

CSE-TX



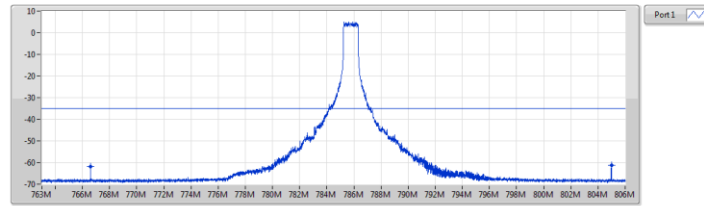
Band 13 LTE-M1\_10MHz Nss1\_1TX  
782MHz QPSK\_RB 6,#RB 0,NB 7

CSE-TX-Port-05,12,



Band 13\_LTE-M1\_10MHz\_Nss1\_1TX  
782MHz\_QPSK\_RB 6,#RB 0,NB 7

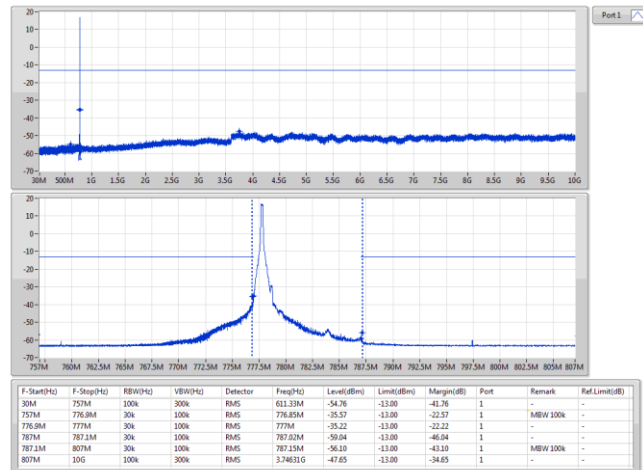
CSE-TX-Port-13



| F-Start(Hz) | F-Stop(Hz) | RBW(Hz) | VBW(Hz) | Detector | Freq(Hz) | Level(dBm) | Limit(dBm) | Margin(dB) | Port | Remark | Ref.Limit(dB) |
|-------------|------------|---------|---------|----------|----------|------------|------------|------------|------|--------|---------------|
| 763M        | 775M       | 10k     | 30k     | RMS      | 786.58M  | -61.93     | -35.00     | -26.93     | 1    | -      | -             |
| 793M        | 806M       | 10k     | 30k     | RMS      | 804.58M  | -61.11     | -35.00     | -26.11     | 1    | -      | -             |

Band 13\_LTE-M1\_10MHz\_Nss1\_1TX  
782MHz\_QPSK\_RB 1,#RB 0,NB 0

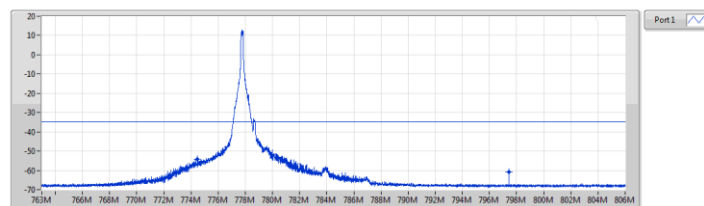
CSE-TX



| F-Start(Hz) | F-Stop(Hz) | RBW(Hz) | VBW(Hz) | Detector | Freq(Hz) | Level(dBm) | Limit(dBm) | Margin(dB) | Port | Remark   | Ref.Limit(dB) |
|-------------|------------|---------|---------|----------|----------|------------|------------|------------|------|----------|---------------|
| 30M         | 757M       | 100k    | 300k    | RMS      | 611.33M  | -54.76     | -13.00     | -41.76     | 1    | -        | -             |
| 757M        | 776.8M     | 30k     | 100k    | RMS      | 776.85M  | -35.57     | -13.00     | -22.57     | 1    | MBW 100k | -             |
| 776.8M      | 777M       | 30k     | 100k    | RMS      | 777M     | -35.22     | -13.00     | -22.22     | 1    | -        | -             |
| 777M        | 787.15M    | 30k     | 100k    | RMS      | 787.33M  | -59.04     | -13.00     | -46.04     | 1    | -        | -             |
| 787.15M     | 807M       | 30k     | 100k    | RMS      | 787.15M  | -56.10     | -13.00     | -43.10     | 1    | MBW 100k | -             |
| 807M        | 10G        | 100k    | 300k    | RMS      | 3.74831G | -47.65     | -13.00     | -34.65     | 1    | -        | -             |

Band 13\_LTE-M1\_10MHz\_Nss1\_1TX  
782MHz\_QPSK\_RB 1,#RB 0,NB 0

CSE-TX

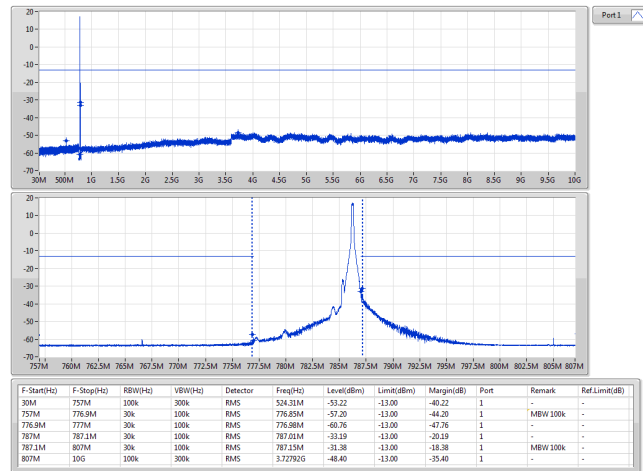


| F-Start(Hz) | F-Stop(Hz) | RBW(Hz) | VBW(Hz) | Detector | Freq(Hz) | Level(dBm) | Limit(dBm) | Margin(dB) | Port | Remark | Ref.Limit(dB) |
|-------------|------------|---------|---------|----------|----------|------------|------------|------------|------|--------|---------------|
| 763M        | 775M       | 10k     | 30k     | RMS      | 774.45M  | -54.24     | -35.00     | -19.24     | 1    | -      | -             |
| 793M        | 806M       | 10k     | 30k     | RMS      | 797.42M  | -60.94     | -35.00     | -25.94     | 1    | -      | -             |



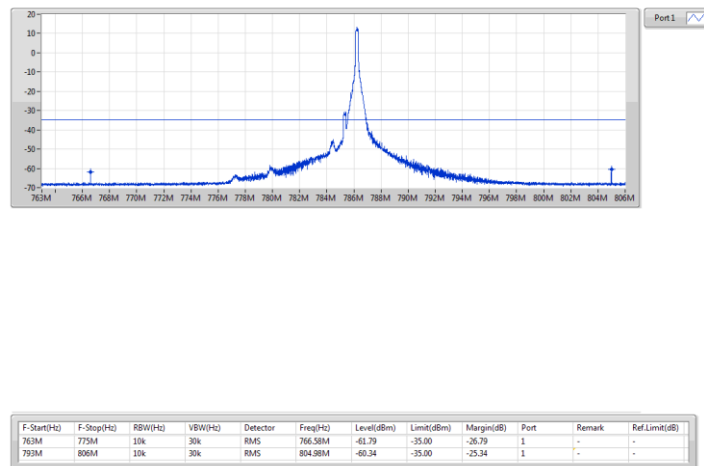
Band 13 LTE-M1\_10MHz Nss1\_1TX  
782MHz QPSK\_RB 1,#RB 5,NB 7

CSE-TX-Port-05,12,



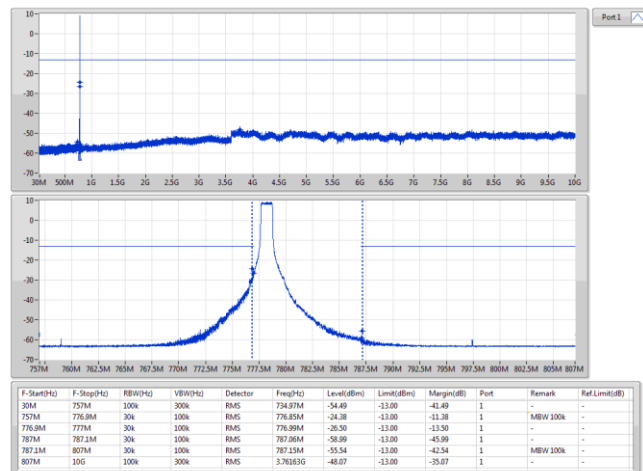
Band 13 LTE-M1\_10MHz Nss1\_1TX  
782MHz QPSK\_RB 1,#RB 5,NB 7

CSE-TX-Port-13



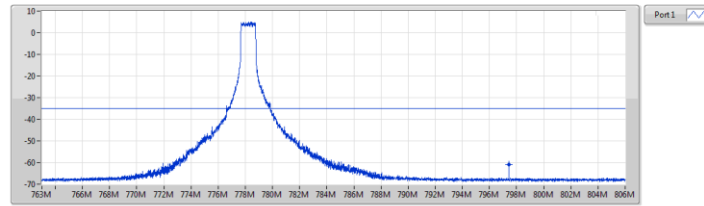
Band 13 LTE-M1\_10MHz Nss1\_1TX  
782MHz 16QAM\_RB 6,#RB 0,NB 0

CSE-TX



**Band 13\_LTE-M1\_10MHz\_Nss1\_1TX**  
**782MHz\_16QAM\_RB 6,#RB 0,NB 0**

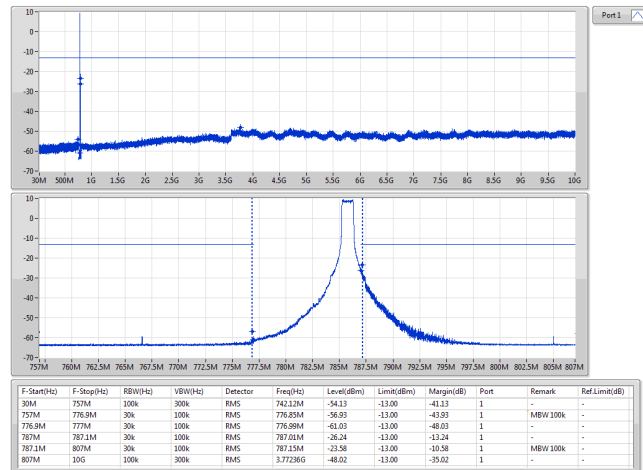
CSE-TX



| F-Start(Hz) | F-Stop(Hz) | RBW(Hz) | VBW(Hz) | Detector | Freq(Hz) | Level(dBm) | Limit(dBm) | Margin(dB) | Port | Remark | Ref.Limit(dB) |
|-------------|------------|---------|---------|----------|----------|------------|------------|------------|------|--------|---------------|
| 763M        | 775M       | 10k     | 30k     | RMS      | 774.99M  | -46.66     | -35.00     | -13.66     | 1    | -      | -             |
| 793M        | 806M       | 10k     | 30k     | RMS      | 797.42M  | -60.89     | -35.00     | -25.89     | 1    | -      | -             |

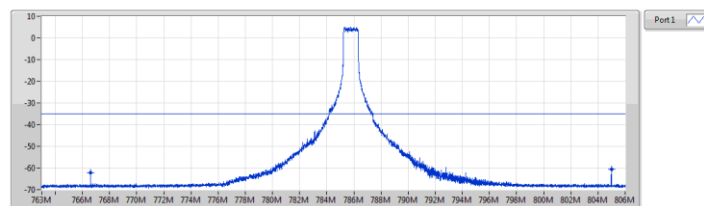
**Band 13\_LTE-M1\_10MHz\_Nss1\_1TX**  
**782MHz\_16QAM\_RB 6,#RB 0,NB 7**

CSE-TX-Port-05,12,



**Band 13\_LTE-M1\_10MHz\_Nss1\_1TX**  
**782MHz\_16QAM\_RB 6,#RB 0,NB 7**

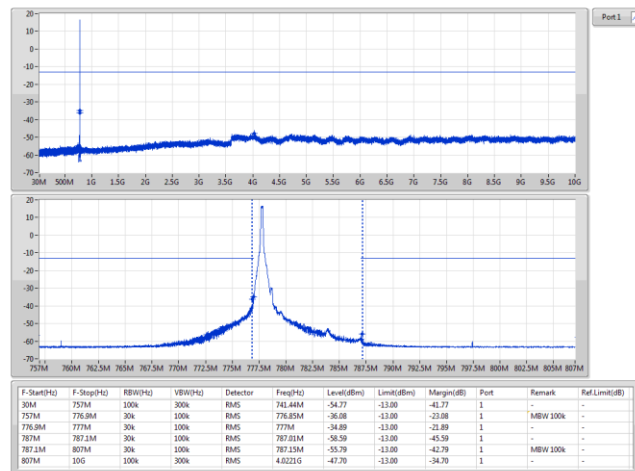
CSE-TX-Port-13



| F-Start(Hz) | F-Stop(Hz) | RBW(Hz) | VBW(Hz) | Detector | Freq(Hz) | Level(dBm) | Limit(dBm) | Margin(dB) | Port | Remark | Ref.Limit(dB) |
|-------------|------------|---------|---------|----------|----------|------------|------------|------------|------|--------|---------------|
| 763M        | 775M       | 10k     | 30k     | RMS      | 766.58M  | -62.22     | -35.00     | -27.22     | 1    | -      | -             |
| 793M        | 806M       | 10k     | 30k     | RMS      | 804.98M  | -60.63     | -35.00     | -25.63     | 1    | -      | -             |

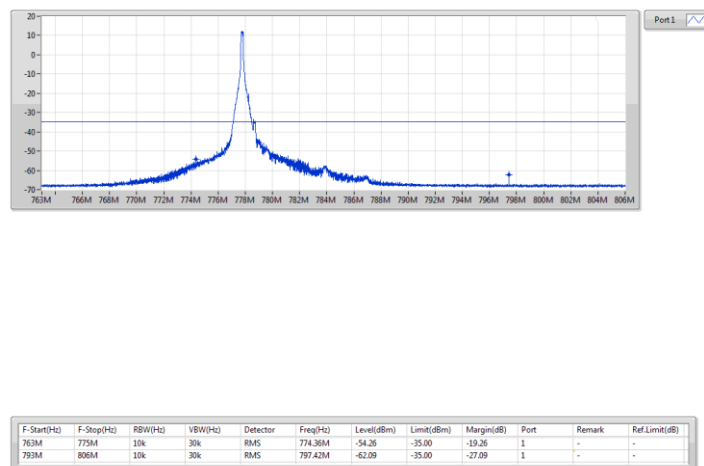
Band 13 LTE-M1\_10MHz Nss1\_1TX  
782MHz\_16QAM\_RB 1,#RB 0,NB 0

CSE-TX



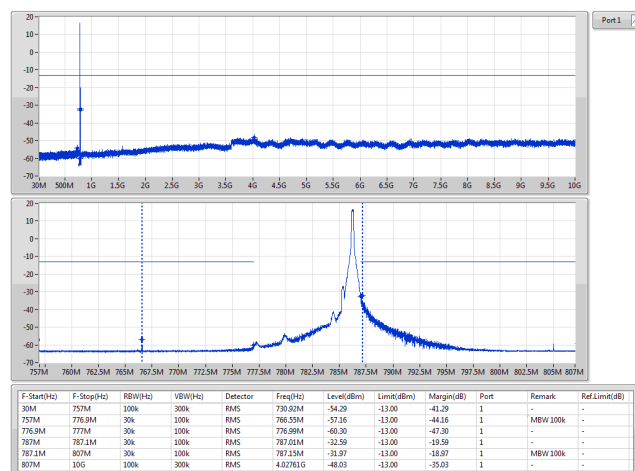
Band 13 LTE-M1\_10MHz Nss1\_1TX  
782MHz\_16QAM\_RB 1,#RB 0,NB 0

CSE-TX



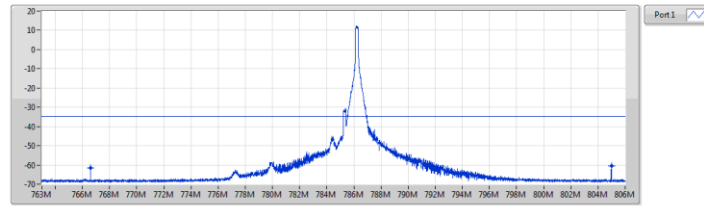
Band 13 LTE-M1\_10MHz Nss1\_1TX  
782MHz\_16QAM\_RB 1,#RB 5,NB 7

CSE-TX-Port-05,12,



Band 13\_LTE-M1\_10MHz\_Nss1\_1TX  
782MHz\_16QAM\_RB 1,#RB 5,NB 7

CSE-TX-Port-13



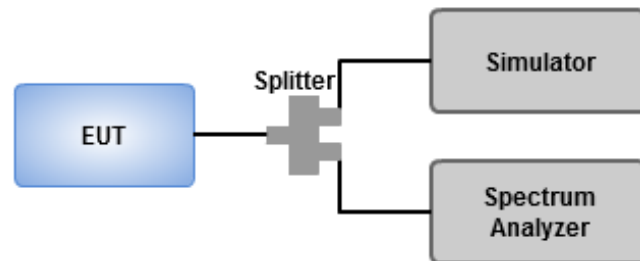
| F-Start(Hz) | F-Stop(Hz) | RBW(Hz) | VBW(Hz) | Detector | Freq(Hz) | Level(dBm) | Limit(dBm) | Margin(dB) | Port | Remark | Ref.Limit(dB) |
|-------------|------------|---------|---------|----------|----------|------------|------------|------------|------|--------|---------------|
| 763M        | 775M       | 10k     | 30k     | RBAS     | 766.58M  | -61.59     | -35.00     | -26.59     | 1    | -      | -             |
| 793M        | 806M       | 10k     | 30k     | RBAS     | 804.58M  | -60.50     | -35.00     | -25.50     | 1    | -      | -             |

## 3.4 Occupied Bandwidth

### 3.4.1 Test Procedures

1. Set resolution bandwidth (RBW) = 30 kHz, Video bandwidth= 100 kHz.
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Using occupied bandwidth measurement function of spectrum analyzer to measure occupied bandwidth.

### 3.4.2 Test Setup



### 3.4.3 Test Result of Occupied Bandwidth

#### Summary of LTE Band 12

| Mode                                | Max-OBW | ITU-Code | Min-OBW |
|-------------------------------------|---------|----------|---------|
|                                     | (Hz)    |          | (Hz)    |
| Band 12_LTE-M1_1.4MHz_Nss1_1TX_RB 6 | 1.098M  | 1M10     | 1.092M  |
| Band 12_LTE-M1_3MHz_Nss1_1TX_RB 6   | 1.113M  | 1M11     | 1.101M  |
| Band 12_LTE-M1_5MHz_Nss1_1TX_RB 6   | 1.115M  | 1M12     | 1.097M  |
| Band 12_LTE-M1_10MHz_Nss1_1TX_RB 6  | 1.128M  | 1M13     | 1.108M  |

**Max-N dB** = Maximum 26dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;

**Min-N dB** = Minimum 26dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

#### Result

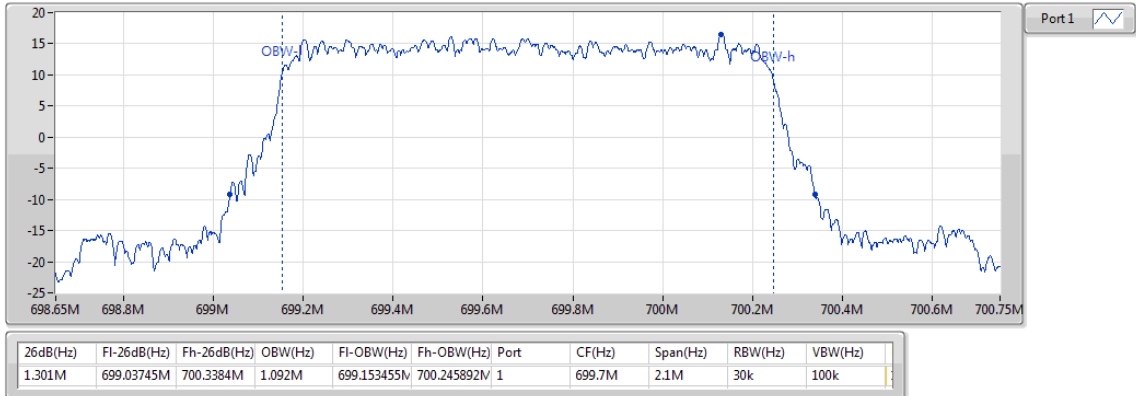
| Mode                           | Result | Limit<br>(Hz) | Port 1-NdB<br>(Hz) | Port 1-OBW<br>(Hz) |
|--------------------------------|--------|---------------|--------------------|--------------------|
| LTE-M1_1.4MHz_Nss1_1TX         | -      | -             | -                  | -                  |
| 699.7MHz_QPSK_RB 6,#RB 0,NB 0  | Pass   | Inf           | 1.301M             | 1.092M             |
| 707.5MHz_QPSK_RB 6,#RB 0,NB 0  | Pass   | Inf           | 1.294M             | 1.098M             |
| 715.3MHz_QPSK_RB 6,#RB 0,NB 0  | Pass   | Inf           | 1.274M             | 1.097M             |
| 699.7MHz_16QAM_RB 6,#RB 0,NB 0 | Pass   | Inf           | 1.293M             | 1.094M             |
| 707.5MHz_16QAM_RB 6,#RB 0,NB 0 | Pass   | Inf           | 1.282M             | 1.096M             |
| 715.3MHz_16QAM_RB 6,#RB 0,NB 0 | Pass   | Inf           | 1.275M             | 1.098M             |
| LTE-M1_3MHz_Nss1_1TX           | -      | -             | -                  | -                  |
| 700.5MHz_QPSK_RB 6,#RB 0,NB 0  | Pass   | Inf           | 1.395M             | 1.104M             |
| 707.5MHz_QPSK_RB 6,#RB 0,NB 0  | Pass   | Inf           | 1.438M             | 1.113M             |
| 714.5MHz_QPSK_RB 6,#RB 0,NB 1  | Pass   | Inf           | 1.433M             | 1.101M             |
| 700.5MHz_16QAM_RB 6,#RB 0,NB 0 | Pass   | Inf           | 1.391M             | 1.104M             |
| 707.5MHz_16QAM_RB 6,#RB 0,NB 0 | Pass   | Inf           | 1.42M              | 1.111M             |
| 714.5MHz_16QAM_RB 6,#RB 0,NB 1 | Pass   | Inf           | 1.42M              | 1.107M             |
| LTE-M1_5MHz_Nss1_1TX           | -      | -             | -                  | -                  |
| 701.5MHz_QPSK_RB 6,#RB 0,NB 0  | Pass   | Inf           | 1.339M             | 1.098M             |
| 707.5MHz_QPSK_RB 6,#RB 0,NB 0  | Pass   | Inf           | 1.335M             | 1.097M             |
| 713.5MHz_QPSK_RB 6,#RB 0,NB 3  | Pass   | Inf           | 1.391M             | 1.102M             |
| 701.5MHz_16QAM_RB 6,#RB 0,NB 0 | Pass   | Inf           | 1.459M             | 1.115M             |
| 707.5MHz_16QAM_RB 6,#RB 0,NB 0 | Pass   | Inf           | 1.395M             | 1.115M             |
| 713.5MHz_16QAM_RB 6,#RB 0,NB 3 | Pass   | Inf           | 1.538M             | 1.114M             |
| LTE-M1_10MHz_Nss1_1TX          | -      | -             | -                  | -                  |
| 704MHz_QPSK_RB 6,#RB 0,NB 0    | Pass   | Inf           | 1.65M              | 1.128M             |
| 707.5MHz_QPSK_RB 6,#RB 0,NB 0  | Pass   | Inf           | 1.485M             | 1.108M             |
| 711MHz_QPSK_RB 6,#RB 0,NB 7    | Pass   | Inf           | 1.785M             | 1.117M             |
| 704MHz_16QAM_RB 6,#RB 0,NB 0   | Pass   | Inf           | 1.5M               | 1.12M              |
| 707.5MHz_16QAM_RB 6,#RB 0,NB 0 | Pass   | Inf           | 1.575M             | 1.124M             |
| 711MHz_16QAM_RB 6,#RB 0,NB 7   | Pass   | Inf           | 1.59M              | 1.115M             |

**Port X-N dB** = Port X 26dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

**Band 12\_LTE-M1\_1.4MHz\_Nss1\_1TX**

EBW

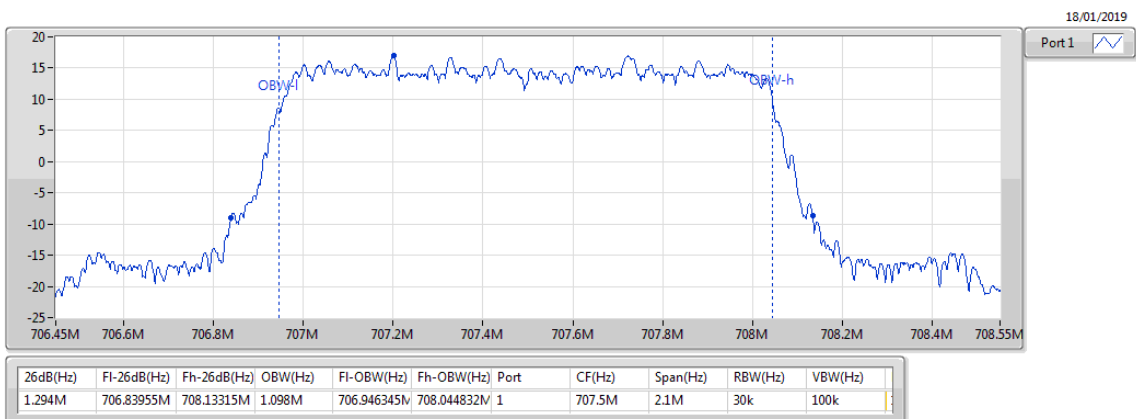
**699.7MHz\_QPSK\_RB 6,#RB 0,NB 0**



**Band 12\_LTE-M1\_1.4MHz\_Nss1\_1TX**

EBW

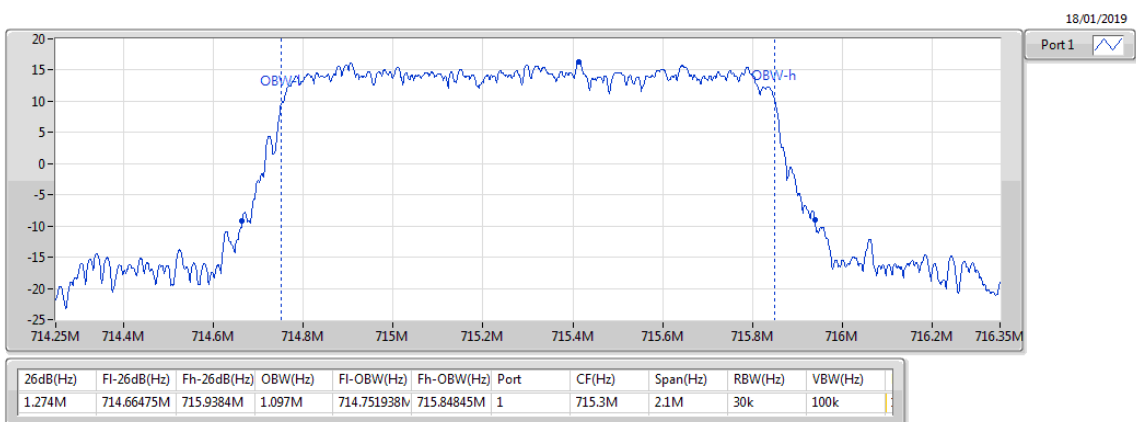
**707.5MHz\_QPSK\_RB 6,#RB 0,NB 0**



**Band 12\_LTE-M1\_1.4MHz\_Nss1\_1TX**

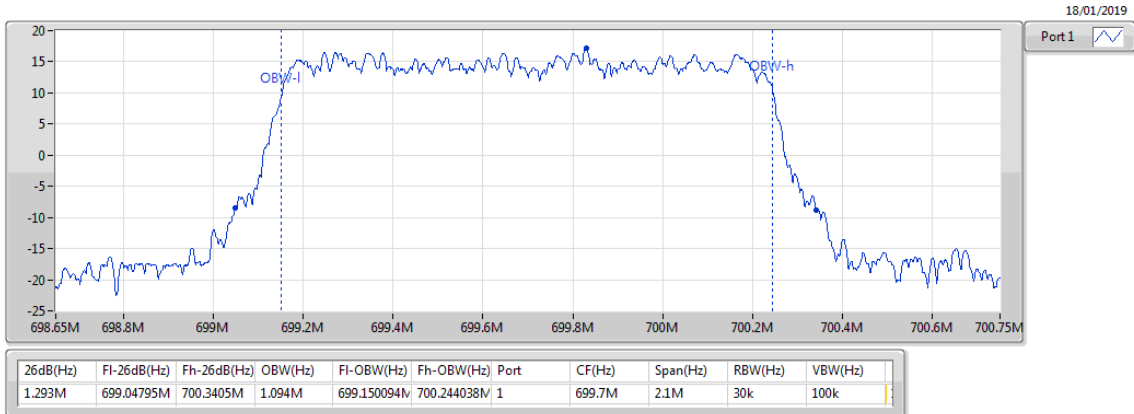
EBW

**715.3MHz\_QPSK\_RB 6,#RB 0,NB 0**



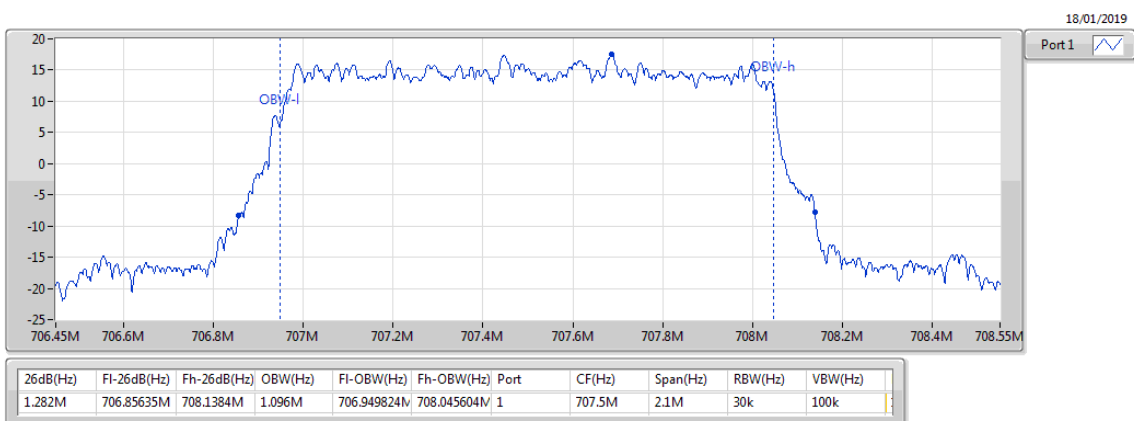
**Band 12\_LTE-M1\_1.4MHz\_Nss1\_1TX**  
**699.7MHz\_16QAM\_RB 6,#RB 0,NB 0**

EBW



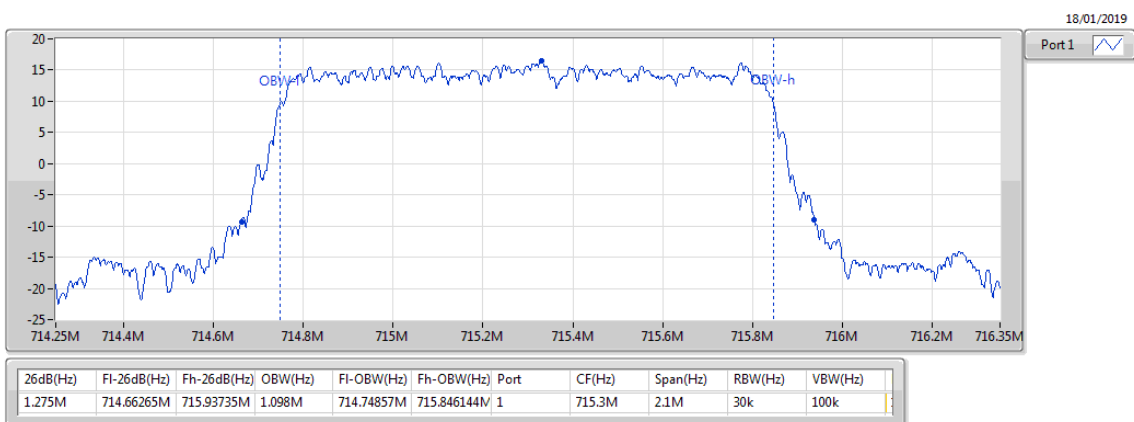
**Band 12\_LTE-M1\_1.4MHz\_Nss1\_1TX**  
**707.5MHz\_16QAM\_RB 6,#RB 0,NB 0**

EBW



**Band 12\_LTE-M1\_1.4MHz\_Nss1\_1TX**  
**715.3MHz\_16QAM\_RB 6,#RB 0,NB 0**

EBW

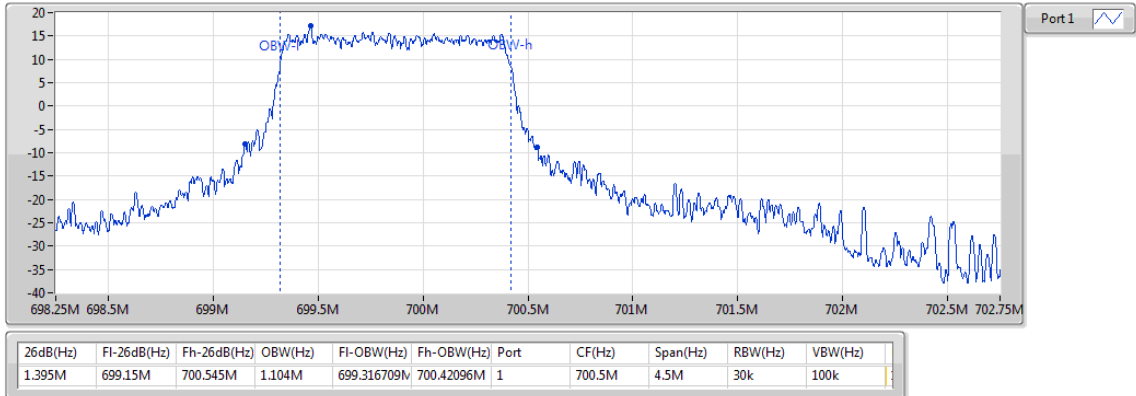




**Band 12\_LTE-M1\_3MHz\_Nss1\_1TX**

EBW

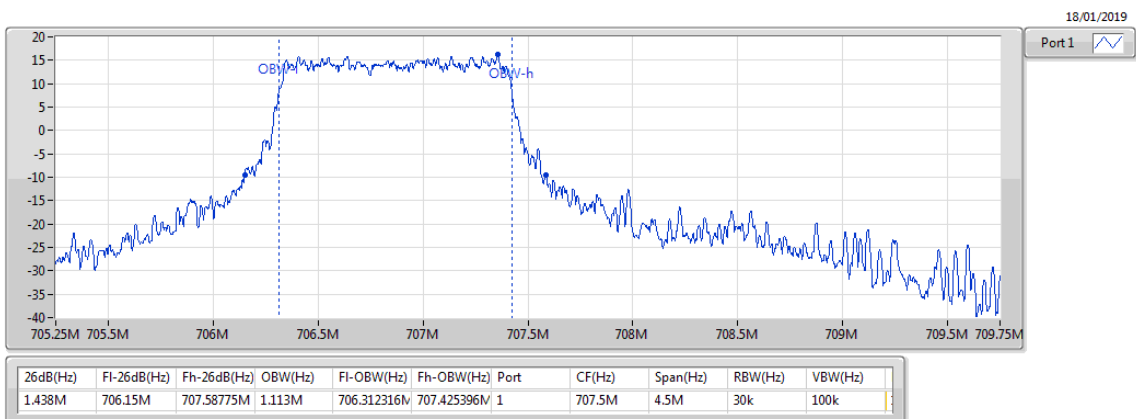
**700.5MHz\_QPSK\_RB 6,#RB 0,NB 0**



**Band 12\_LTE-M1\_3MHz\_Nss1\_1TX**

EBW

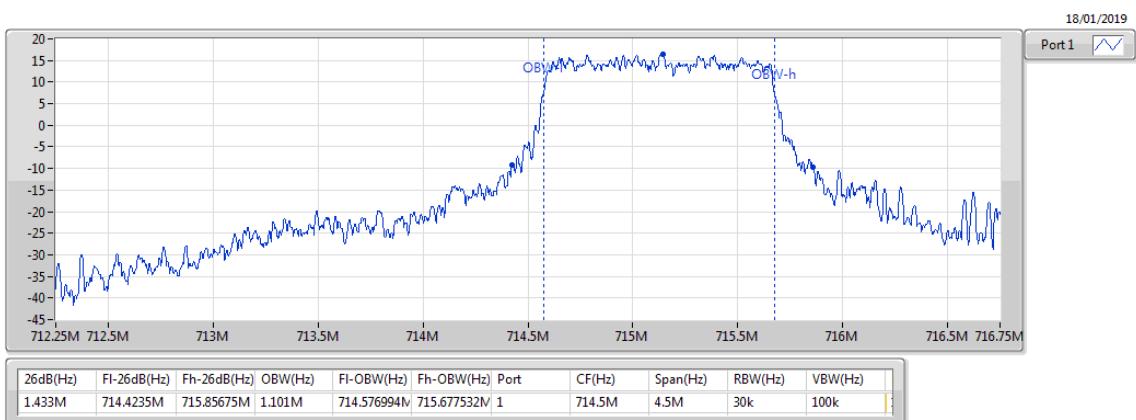
**707.5MHz\_QPSK\_RB 6,#RB 0,NB 0**



**Band 12\_LTE-M1\_3MHz\_Nss1\_1TX**

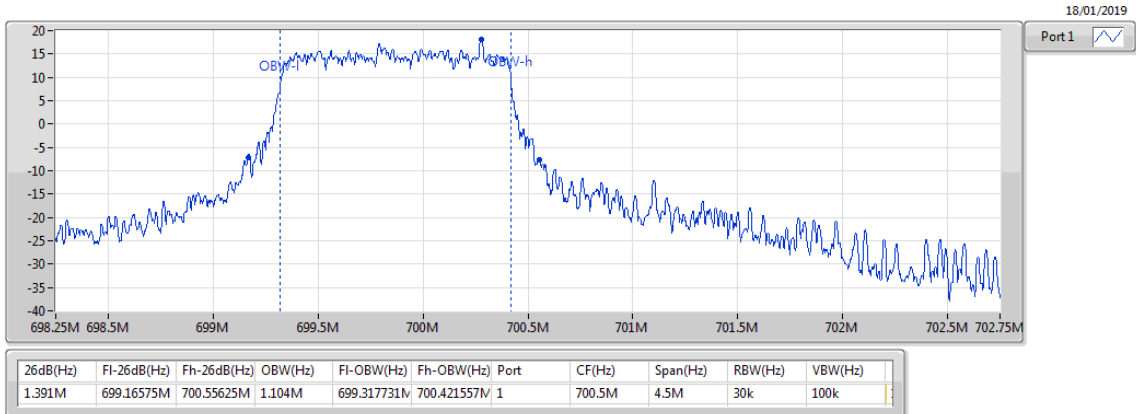
EBW

**714.5MHz\_QPSK\_RB 6,#RB 0,NB 1**



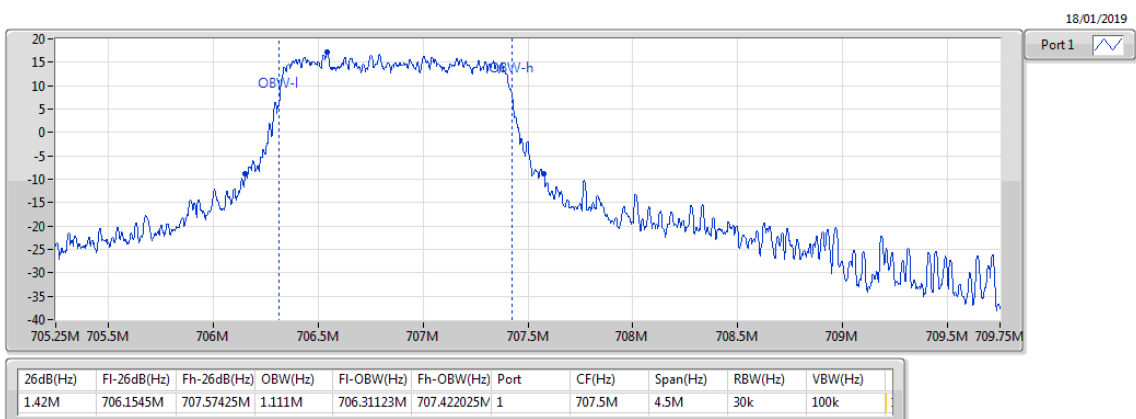
**Band 12\_LTE-M1\_3MHz\_Nss1\_1TX**  
**700.5MHz\_16QAM\_RB 6,#RB 0,NB 0**

EBW



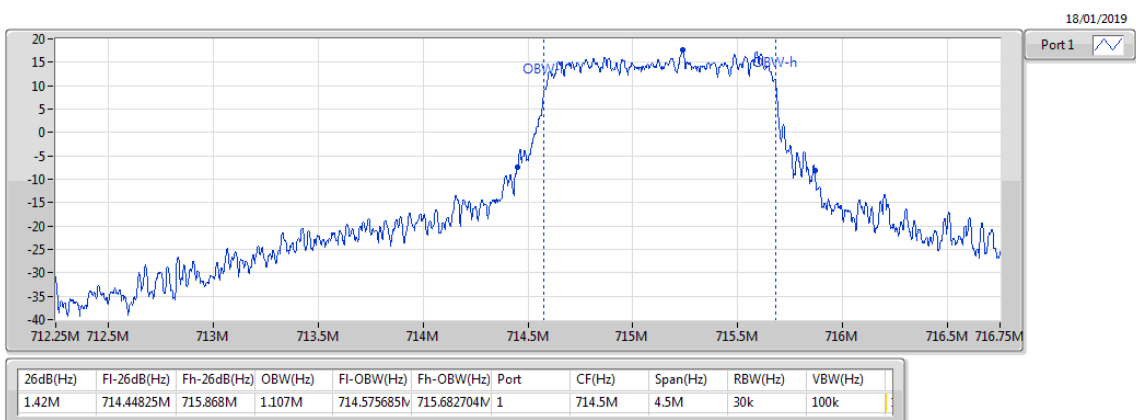
**Band 12\_LTE-M1\_3MHz\_Nss1\_1TX**  
**707.5MHz\_16QAM\_RB 6,#RB 0,NB 0**

EBW



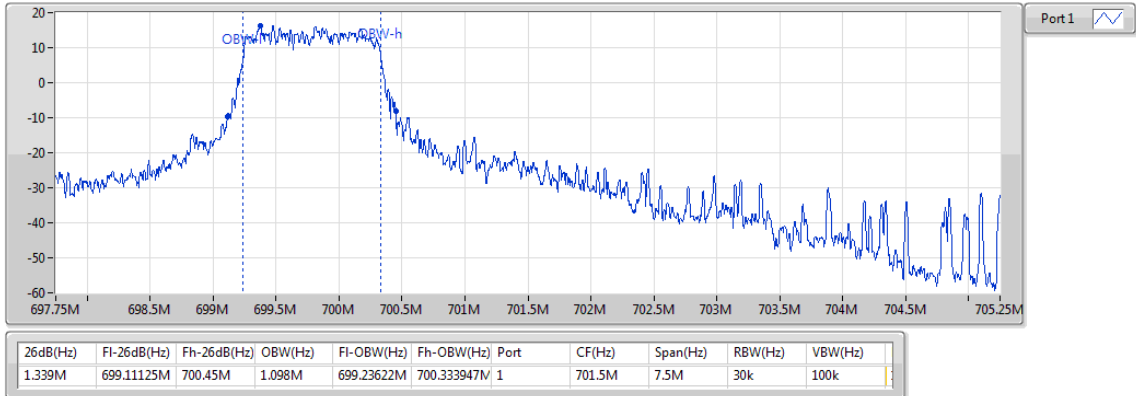
**Band 12\_LTE-M1\_3MHz\_Nss1\_1TX**  
**714.5MHz\_16QAM\_RB 6,#RB 0,NB 1**

EBW



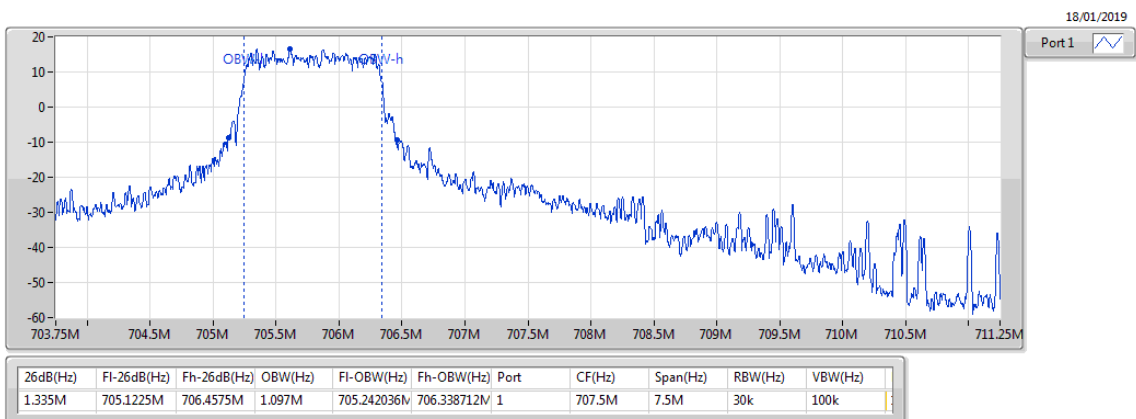
**Band 12\_LTE-M1\_5MHz\_Nss1\_1TX**  
**701.5MHz\_QPSK\_RB 6,#RB 0,NB 0**

EBW



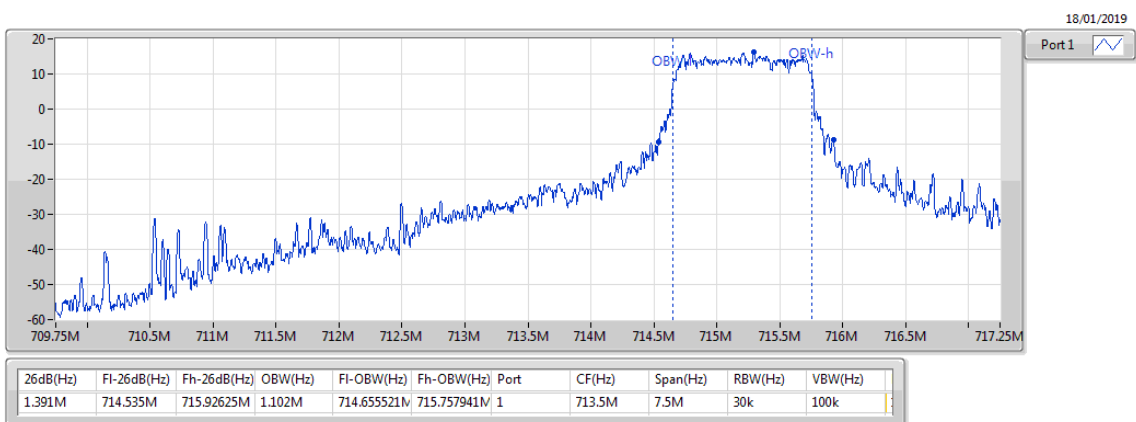
**Band 12\_LTE-M1\_5MHz\_Nss1\_1TX**  
**707.5MHz\_QPSK\_RB 6,#RB 0,NB 0**

EBW



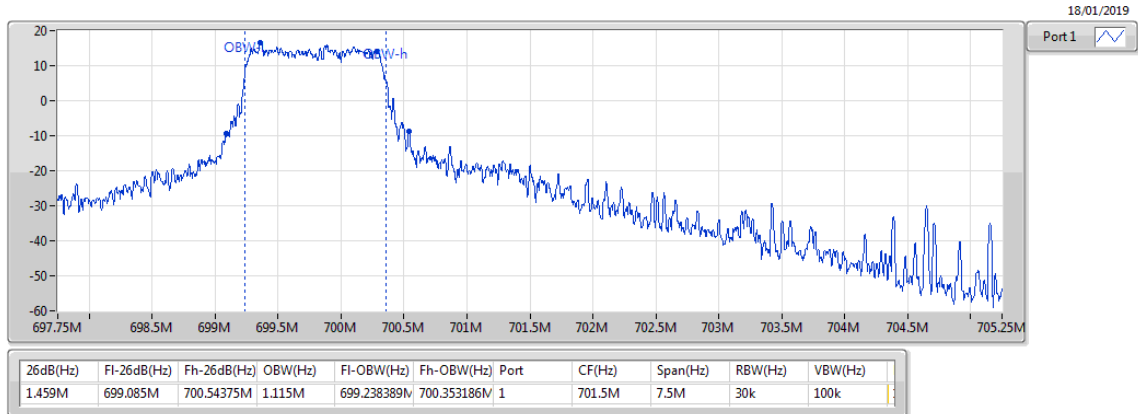
**Band 12\_LTE-M1\_5MHz\_Nss1\_1TX**  
**713.5MHz\_QPSK\_RB 6,#RB 0,NB 3**

EBW



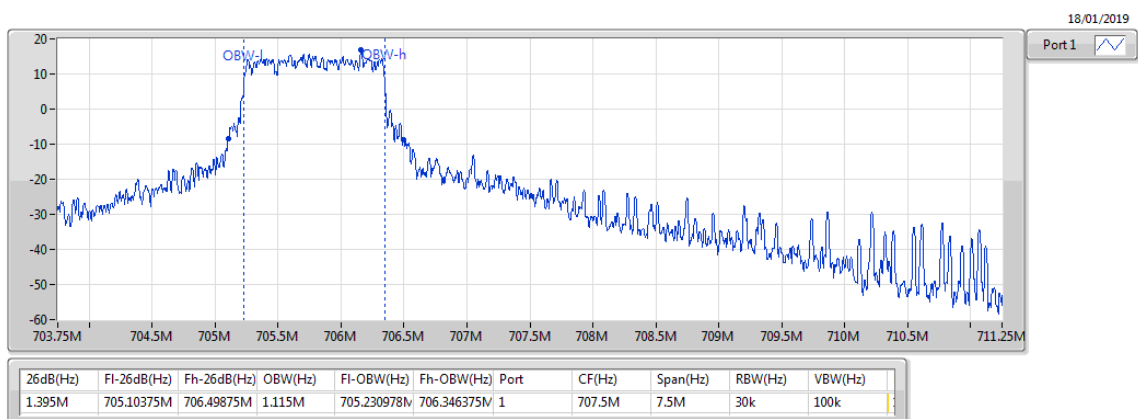
**Band 12\_LTE-M1\_5MHz\_Nss1\_1TX**  
**701.5MHz\_16QAM\_RB 6,#RB 0,NB 0**

EBW



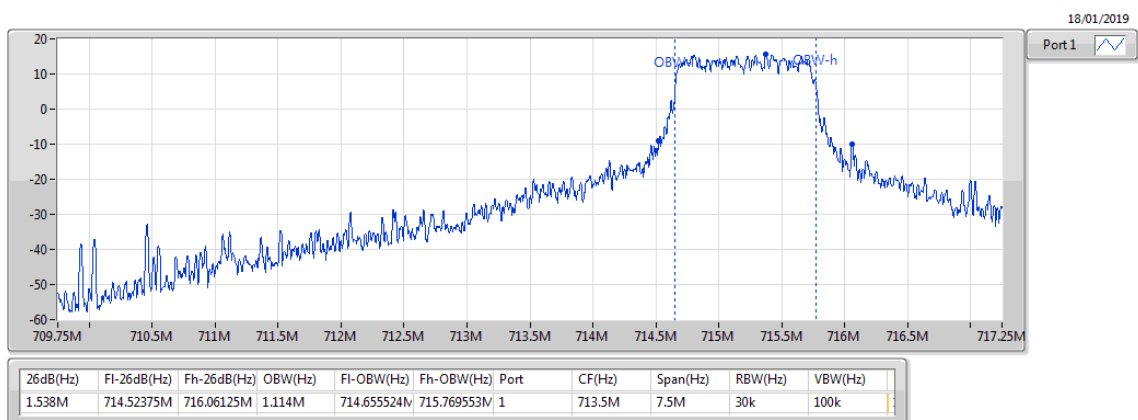
**Band 12\_LTE-M1\_5MHz\_Nss1\_1TX**  
**707.5MHz\_16QAM\_RB 6,#RB 0,NB 0**

EBW



**Band 12\_LTE-M1\_5MHz\_Nss1\_1TX**  
**713.5MHz\_16QAM\_RB 6,#RB 0,NB 3**

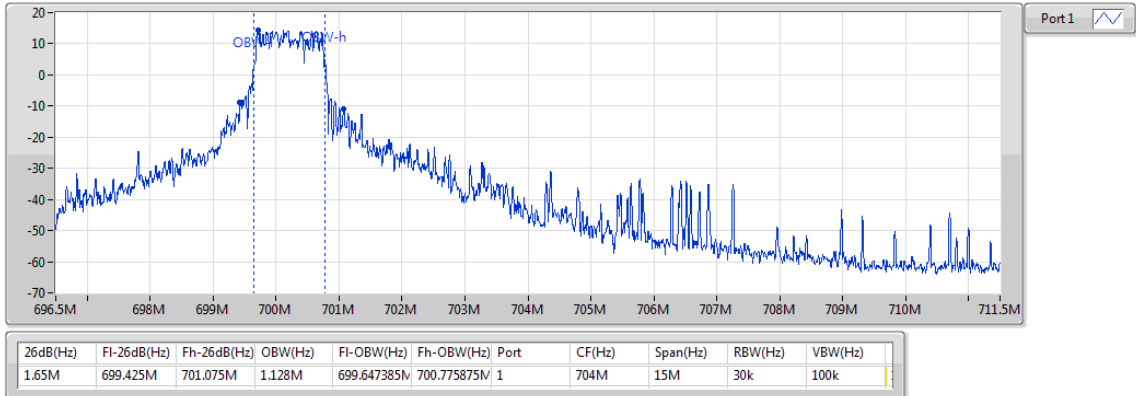
EBW



### Band 12\_LTE-M1\_10MHz\_Nss1\_1TX

EBW

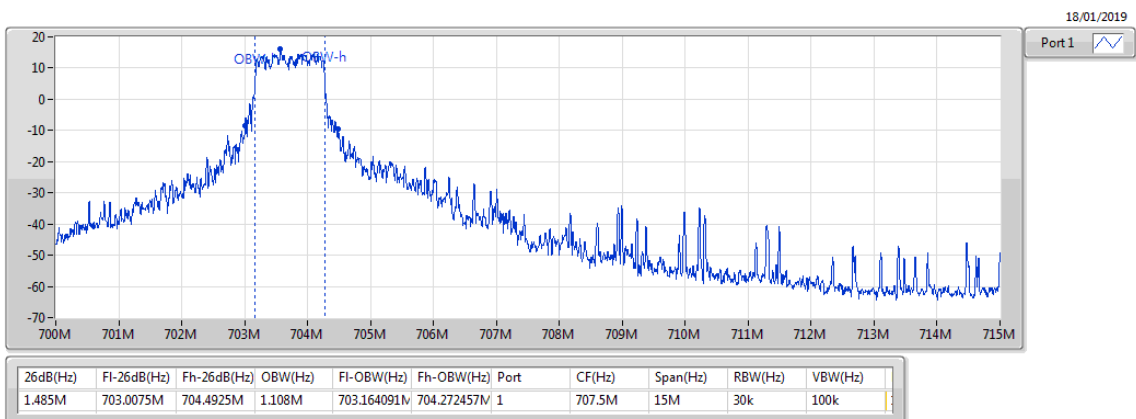
704MHz\_QPSK\_RB 6,#RB 0,NB 0



### Band 12\_LTE-M1\_10MHz\_Nss1\_1TX

EBW

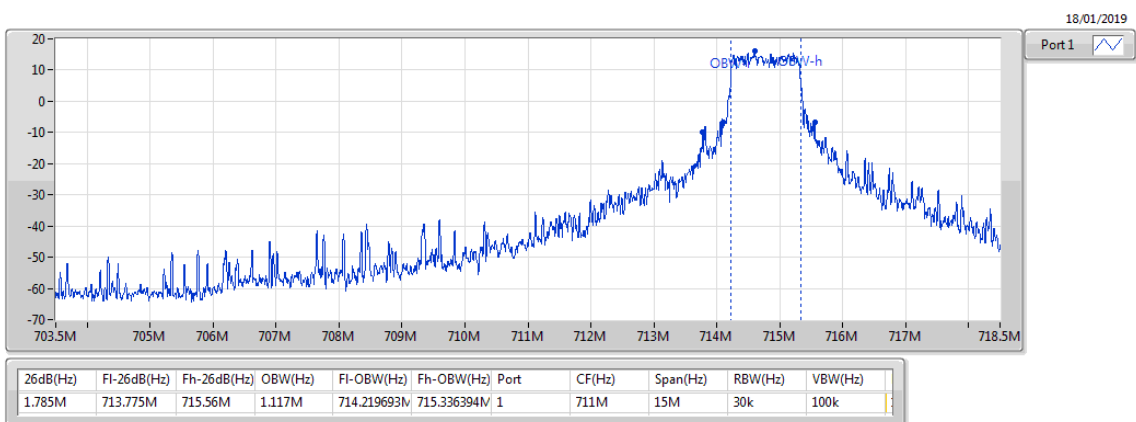
707.5MHz\_QPSK\_RB 6,#RB 0,NB 0



### Band 12\_LTE-M1\_10MHz\_Nss1\_1TX

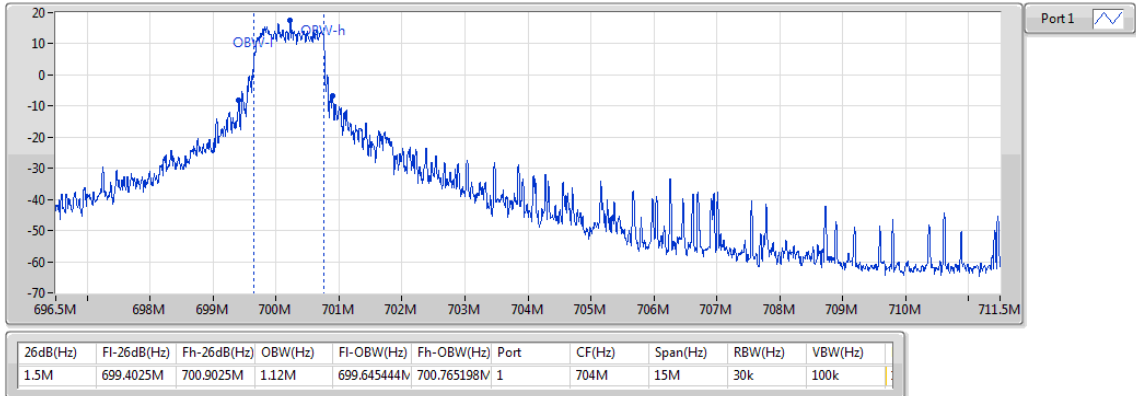
EBW

711MHz\_QPSK\_RB 6,#RB 0,NB 7



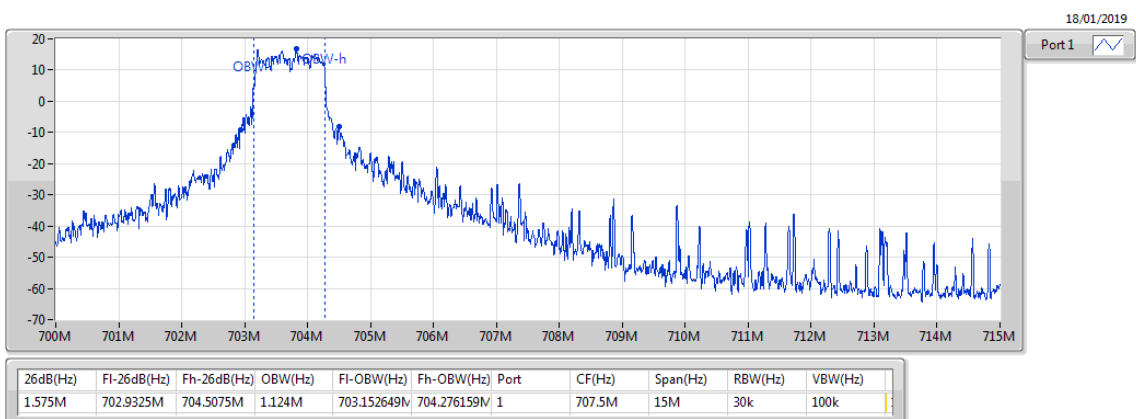
**Band 12\_LTE-M1\_10MHz\_Nss1\_1TX**  
**704MHz\_16QAM\_RB 6,#RB 0,NB 0**

EBW



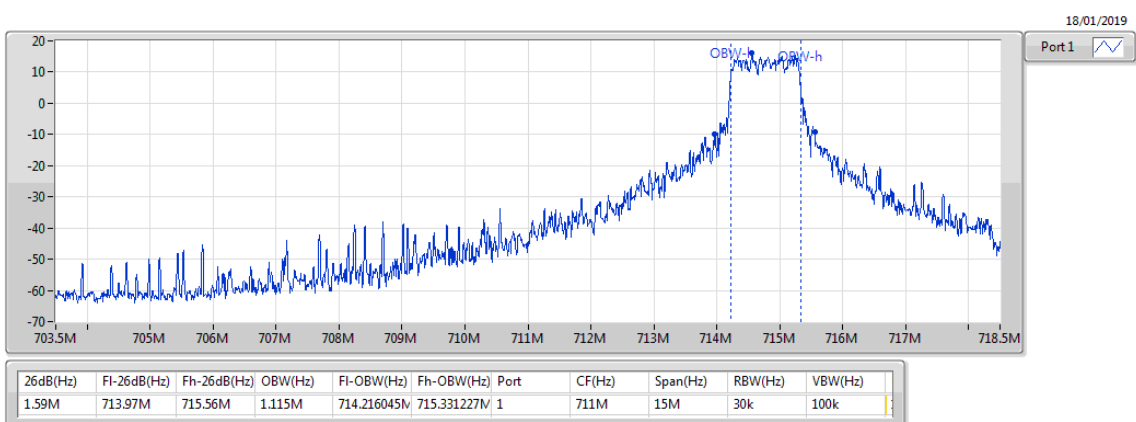
**Band 12\_LTE-M1\_10MHz\_Nss1\_1TX**  
**707.5MHz\_16QAM\_RB 6,#RB 0,NB 0**

EBW



**Band 12\_LTE-M1\_10MHz\_Nss1\_1TX**  
**711MHz\_16QAM\_RB 6,#RB 0,NB 7**

EBW



### Summary of LTE Band 13

| Mode                               | Max-OBW | ITU-Code | Min-OBW |
|------------------------------------|---------|----------|---------|
|                                    | (Hz)    |          | (Hz)    |
| Band 13_LTE-M1_5MHz_Nss1_1TX_RB 6  | 1.11M   | 1M11     | 1.087M  |
| Band 13_LTE-M1_10MHz_Nss1_1TX_RB 6 | 1.127M  | 1M13     | 1.118M  |

**Min-N dB** = Minimum 26dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

### Result

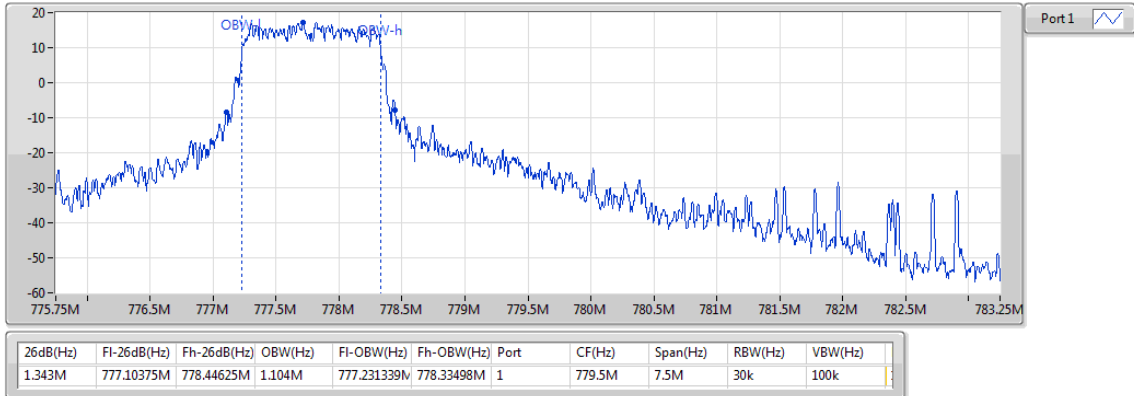
| Mode                           | Result | Limit<br>(Hz) | Port 1-NdB<br>(Hz) | Port 1-OBW<br>(Hz) |
|--------------------------------|--------|---------------|--------------------|--------------------|
| LTE-M1_5MHz_Nss1_1TX           | -      | -             | -                  | -                  |
| 779.5MHz_QPSK_RB 6,#RB 0,NB 0  | Pass   | Inf           | 1.343M             | 1.104M             |
| 782MHz_QPSK_RB 6,#RB 0,NB 0    | Pass   | Inf           | 1.444M             | 1.094M             |
| 784.5MHz_QPSK_RB 6,#RB 0,NB 3  | Pass   | Inf           | 1.436M             | 1.087M             |
| 779.5MHz_16QAM_RB 6,#RB 0,NB 0 | Pass   | Inf           | 1.53M              | 1.109M             |
| 782MHz_16QAM_RB 6,#RB 0,NB 0   | Pass   | Inf           | 1.339M             | 1.11M              |
| 784.5MHz_16QAM_RB 6,#RB 0,NB 3 | Pass   | Inf           | 1.436M             | 1.108M             |
| LTE-M1_10MHz_Nss1_1TX          | -      | -             | -                  | -                  |
| 782MHz_QPSK_RB 6,#RB 0,NB 0    | Pass   | Inf           | 1.635M             | 1.118M             |
| 782MHz_16QAM_RB 6,#RB 0,NB 0   | Pass   | Inf           | 1.478M             | 1.127M             |

**Port X-N dB** = Port X 26dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

### Band 13\_LTE-M1\_5MHz\_Nss1\_1TX

EBW

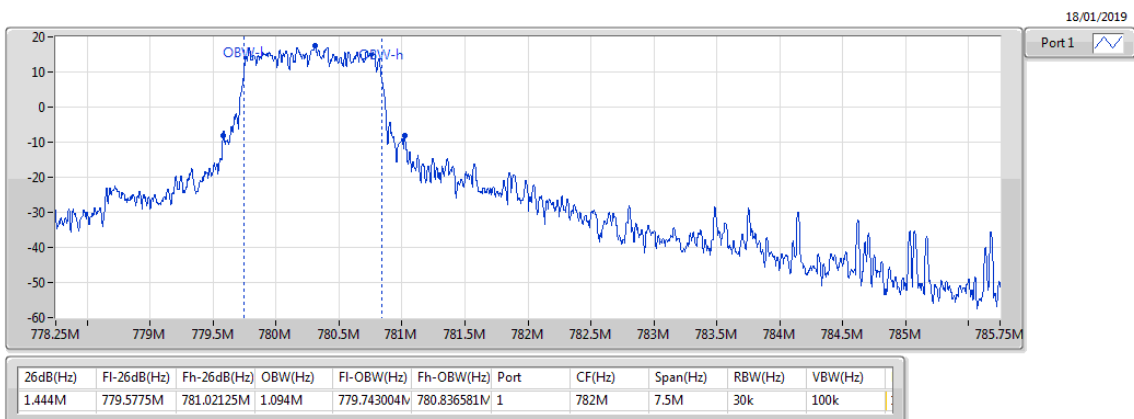
779.5MHz\_QPSK\_RB 6,#RB 0,NB 0



### Band 13\_LTE-M1\_5MHz\_Nss1\_1TX

EBW

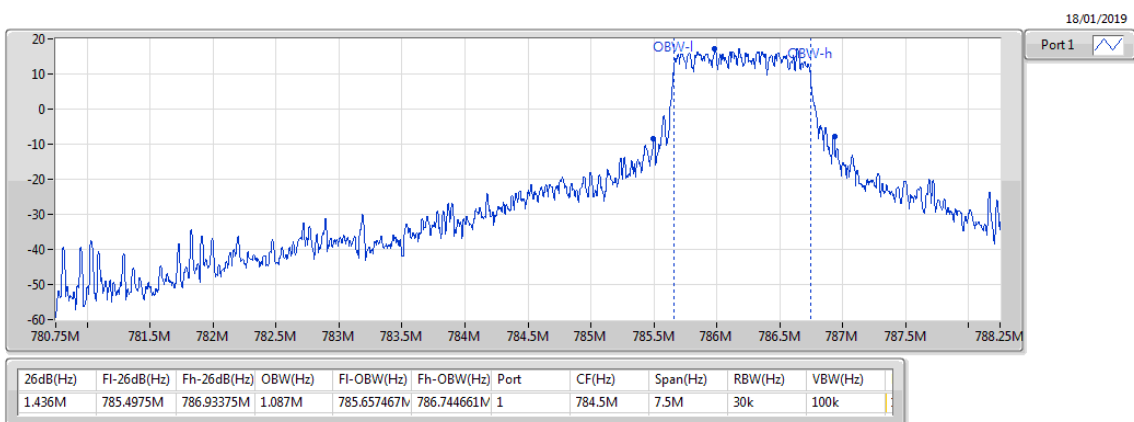
782MHz\_QPSK\_RB 6,#RB 0,NB 0



### Band 13\_LTE-M1\_5MHz\_Nss1\_1TX

EBW

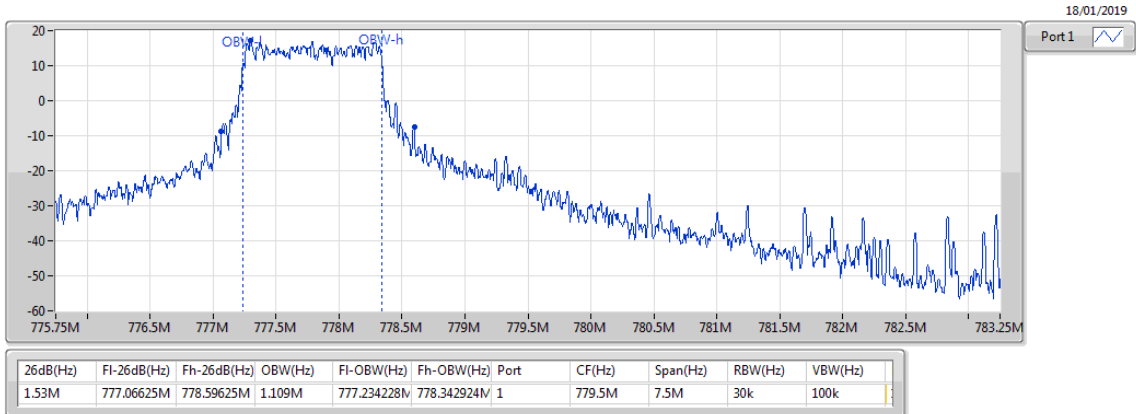
784.5MHz\_QPSK\_RB 6,#RB 0,NB 3





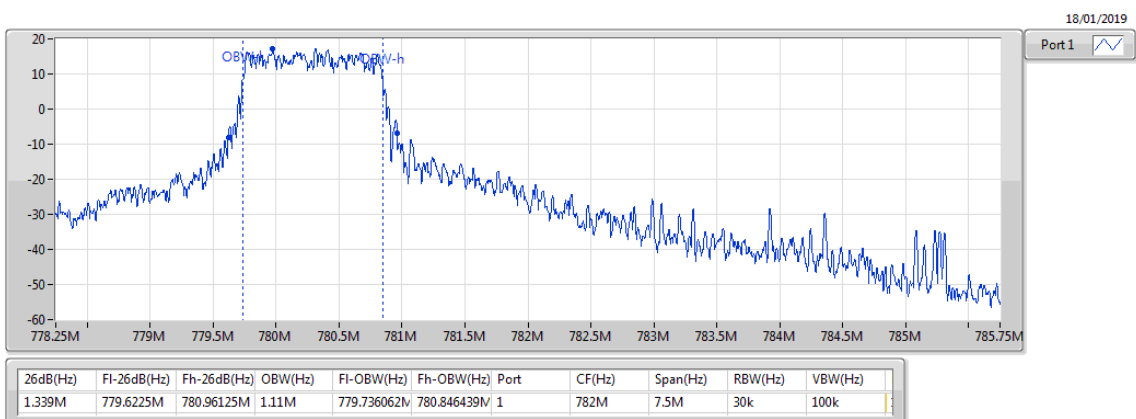
**Band 13\_LTE-M1\_5MHz\_Nss1\_1TX**  
**779.5MHz\_16QAM\_RB 6,#RB 0,NB 0**

EBW



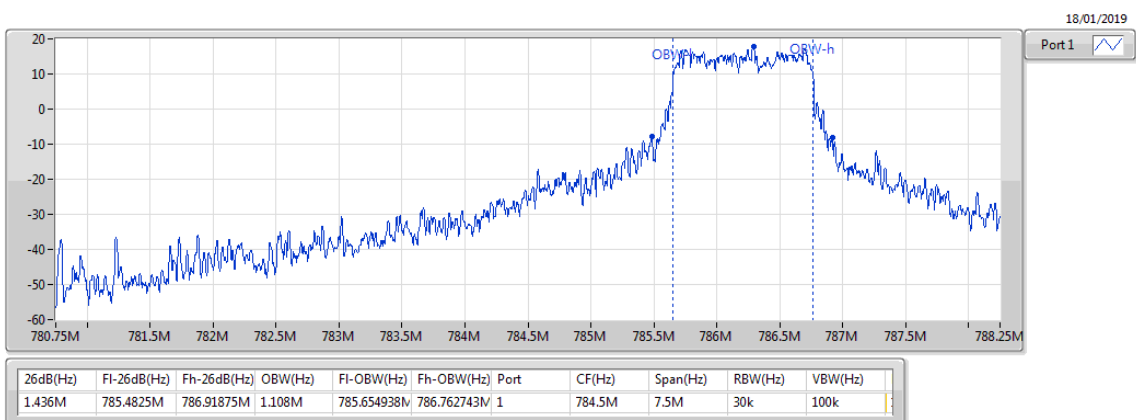
**Band 13\_LTE-M1\_5MHz\_Nss1\_1TX**  
**782MHz\_16QAM\_RB 6,#RB 0,NB 0**

EBW



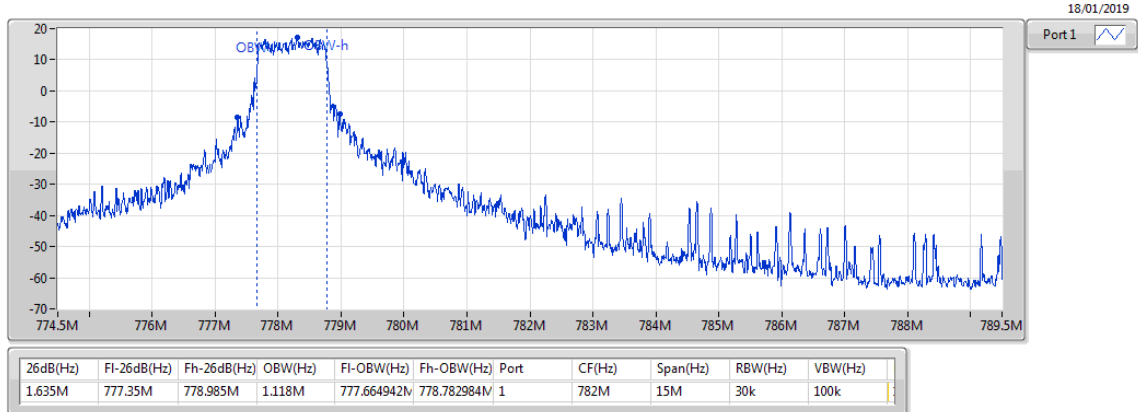
**Band 13\_LTE-M1\_5MHz\_Nss1\_1TX**  
**784.5MHz\_16QAM\_RB 6,#RB 0,NB 3**

EBW



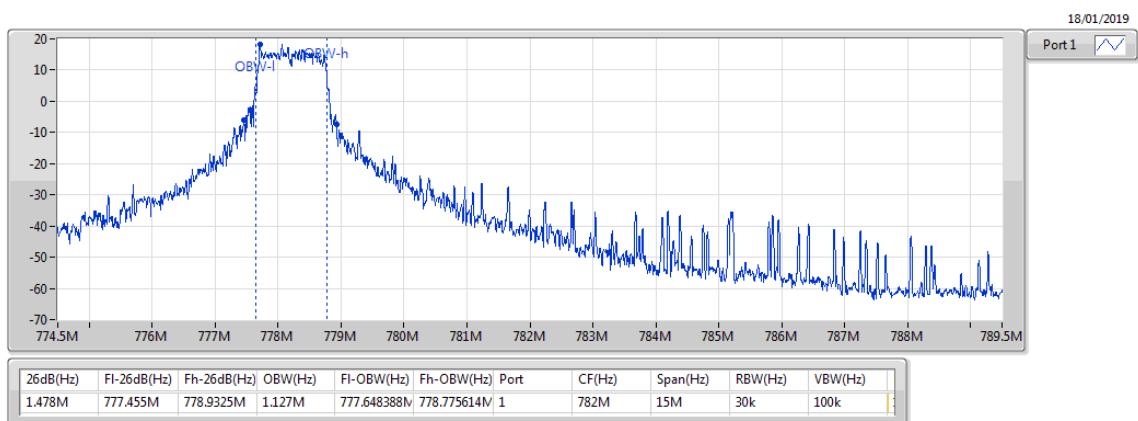
**Band 13\_LTE-M1\_10MHz\_Nss1\_1TX**  
**782MHz\_QPSK\_RB 6,#RB 0,NB 0**

EBW



**Band 13\_LTE-M1\_10MHz\_Nss1\_1TX**  
**782MHz\_16QAM\_RB 6,#RB 0,NB 0**

EBW



## 3.5 Frequency Stability

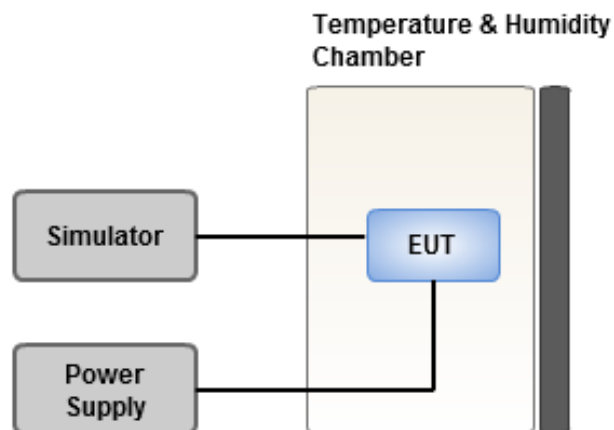
### 3.5.1 Limit of Frequency Stability

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

### 3.5.2 Test Procedures

1. EUT was placed at temperature chamber and connected to an external power supply.
2. Temperature and voltage condition shall be tested to confirm frequency stability.
3. The test shall be performed under normal and extreme condition for temperature and voltage.
4. Tem Link up EUT and simulator. Confirm frequency drift value of simulator and record it.

### 3.5.3 Test Setup



### 3.5.4 Test Result of Frequency Stability

| LTE Band: 12     | Frequency Drift (ppm) |          |                |           |
|------------------|-----------------------|----------|----------------|-----------|
| Temperature (°C) | CB: 1.4MHz            | CB: 3MHz | CB: 5MHz       | CB: 10MHz |
| T20°CVmax        | -0.014                | -0.013   | -0.013         | -0.013    |
| T20°CVmin        | -0.013                | -0.013   | -0.013         | -0.13     |
| T75°CVnom        | -0.046                | -0.043   | -0.045         | -0.044    |
| T70°CVnom        | -0.041                | -0.042   | -0.044         | -0.043    |
| T60°CVnom        | -0.038                | -0.037   | -0.039         | -0.036    |
| T50°CVnom        | -0.033                | -0.034   | -0.036         | -0.031    |
| T40°CVnom        | -0.027                | -0.025   | -0.028         | -0.025    |
| T30°CVnom        | -0.015                | -0.016   | -0.016         | -0.014    |
| T20°CVnom        | -0.014                | -0.013   | -0.012         | -0.012    |
| T10°CVnom        | -0.013                | -0.012   | -0.012         | -0.012    |
| T0°CVnom         | -0.013                | -0.012   | -0.012         | -0.012    |
| T-10°CVnom       | -0.012                | -0.011   | -0.011         | -0.011    |
| T-20°CVnom       | -0.011                | -0.01    | -0.01          | -0.011    |
| T-30°CVnom       | -0.011                | -0.01    | -0.01          | -0.011    |
| T-35°CVnom       | -0.009                | -0.01    | -0.01          | -0.01     |
| Vnom [V]: 3.6    | Vmax [V]: 3.7         |          | Vmin [V]: 2.45 |           |
| Tnom [°C]: 20    | Tmax [°C]: 75         |          | Tmin [°C]: -35 |           |

| LTE Band: 13     | Frequency Drift (ppm) |                |
|------------------|-----------------------|----------------|
| Temperature (°C) | CB: 5MHz              | CB: 10MHz      |
| T20°CVmax        | -0.013                | -0.012         |
| T20°CVmin        | -0.013                | -0.013         |
| T75°CVnom        | -0.043                | -0.041         |
| T70°CVnom        | -0.04                 | -0.038         |
| T60°CVnom        | -0.037                | -0.035         |
| T50°CVnom        | -0.031                | -0.028         |
| T40°CVnom        | -0.025                | -0.027         |
| T30°CVnom        | -0.011                | -0.016         |
| T20°CVnom        | -0.013                | -0.013         |
| T10°CVnom        | -0.012                | -0.013         |
| T0°CVnom         | -0.012                | -0.012         |
| T-10°CVnom       | -0.012                | -0.012         |
| T-20°CVnom       | -0.009                | -0.011         |
| T-30°CVnom       | -0.008                | -0.009         |
| T-35°CVnom       | -0.008                | -0.008         |
| Vnom [V]: 3.6    | Vmax [V]: 3.7         | Vmin [V]: 2.45 |
| Tnom [°C]: 20    | Tmax [°C]: 75         | Tmin [°C]: -35 |

## 3.6 Peak to Average Ratio

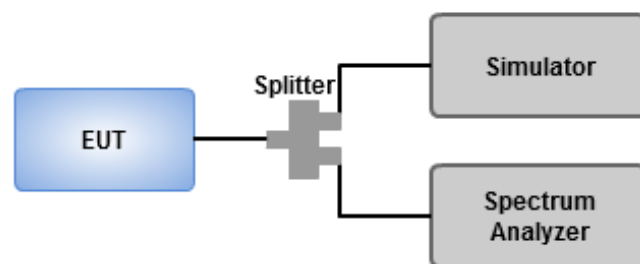
### 3.6.1 Limit of Peak to Average Ratio

The Peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

### 3.6.2 Test Procedures

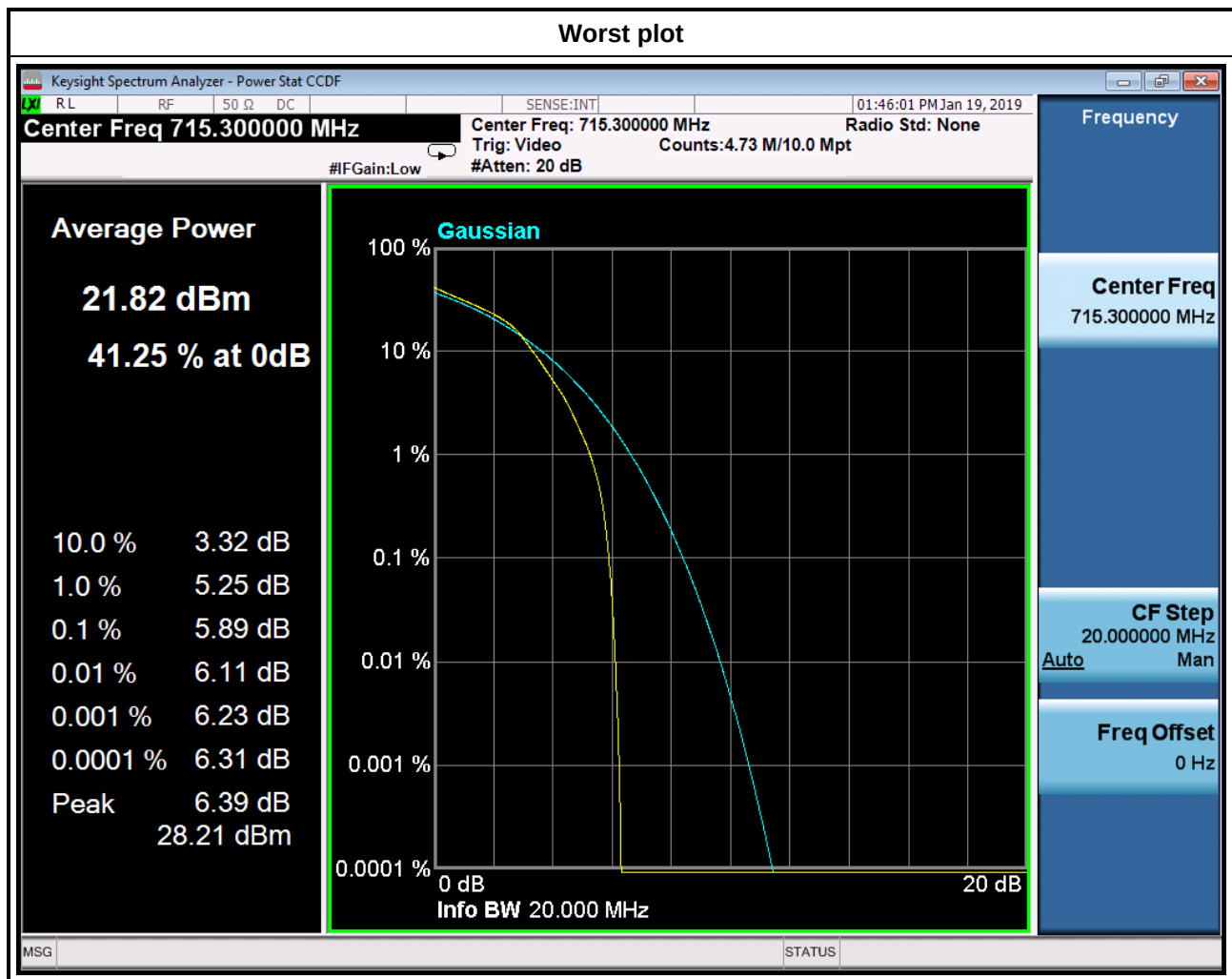
1. Set the number of counts to a value that stabilizes the measured CCDF curve.
2. Set the measurement interval to 1 ms.
3. Record the maximum PAPR level associated with a probability of 0.1%.

### 3.6.3 Test Setup

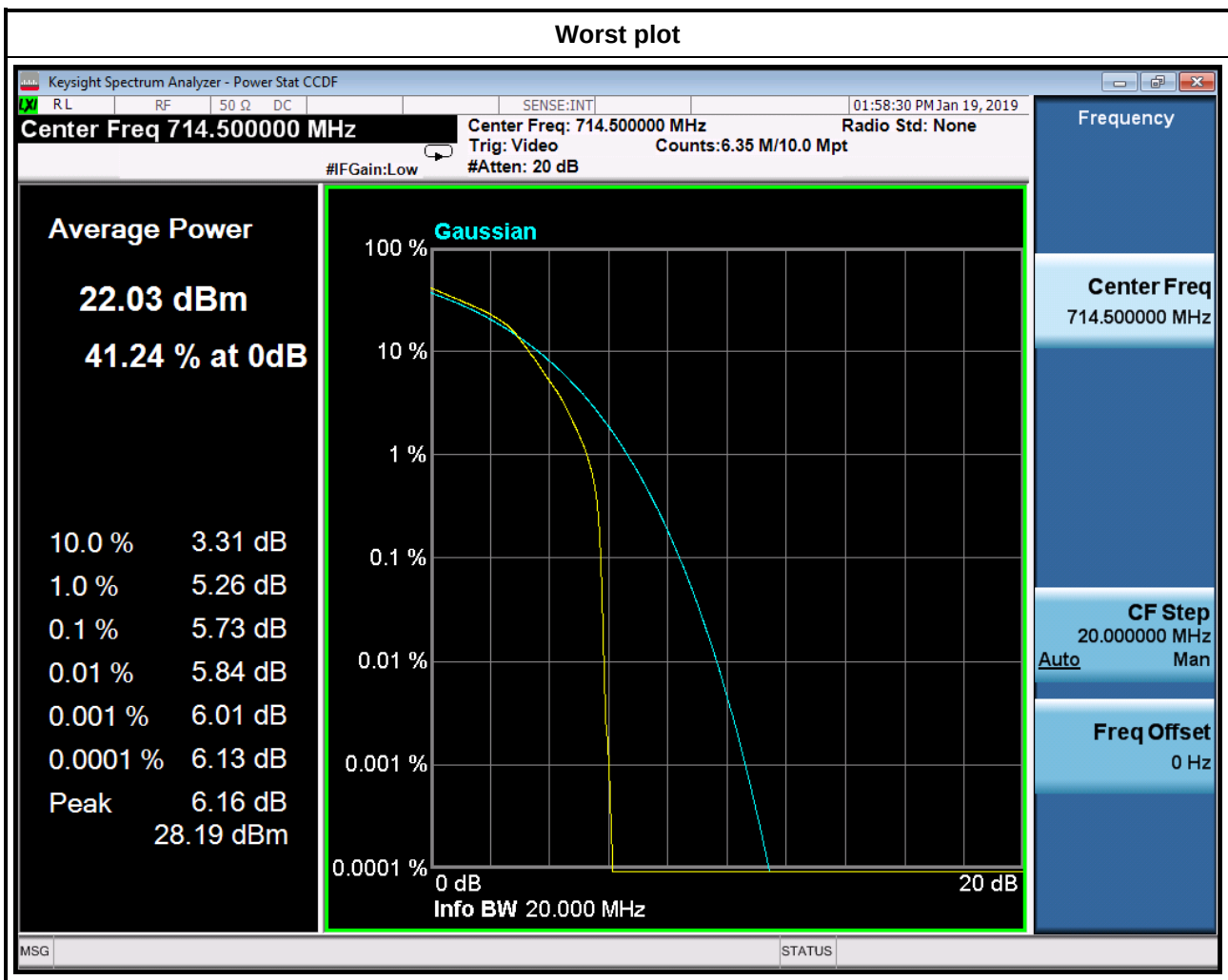


### 3.6.4 Test Result of Peak to Average Ratio

| Mode        | Channel Bandwidth (MHz) | Modulation | Channel | Frequency (MHz) | Peak to Average Ratio (dB) |
|-------------|-------------------------|------------|---------|-----------------|----------------------------|
| LTE Band 12 | 1.4                     | QPSK       | 23017   | 699.7           | 5.38                       |
| LTE Band 12 | 1.4                     | QPSK       | 23095   | 707.5           | 5.48                       |
| LTE Band 12 | 1.4                     | QPSK       | 23173   | 715.3           | 5.52                       |
| LTE Band 12 | 1.4                     | 16QAM      | 23017   | 699.7           | 5.88                       |
| LTE Band 12 | 1.4                     | 16QAM      | 23095   | 707.5           | 5.88                       |
| LTE Band 12 | 1.4                     | 16QAM      | 23173   | 715.3           | 5.89                       |

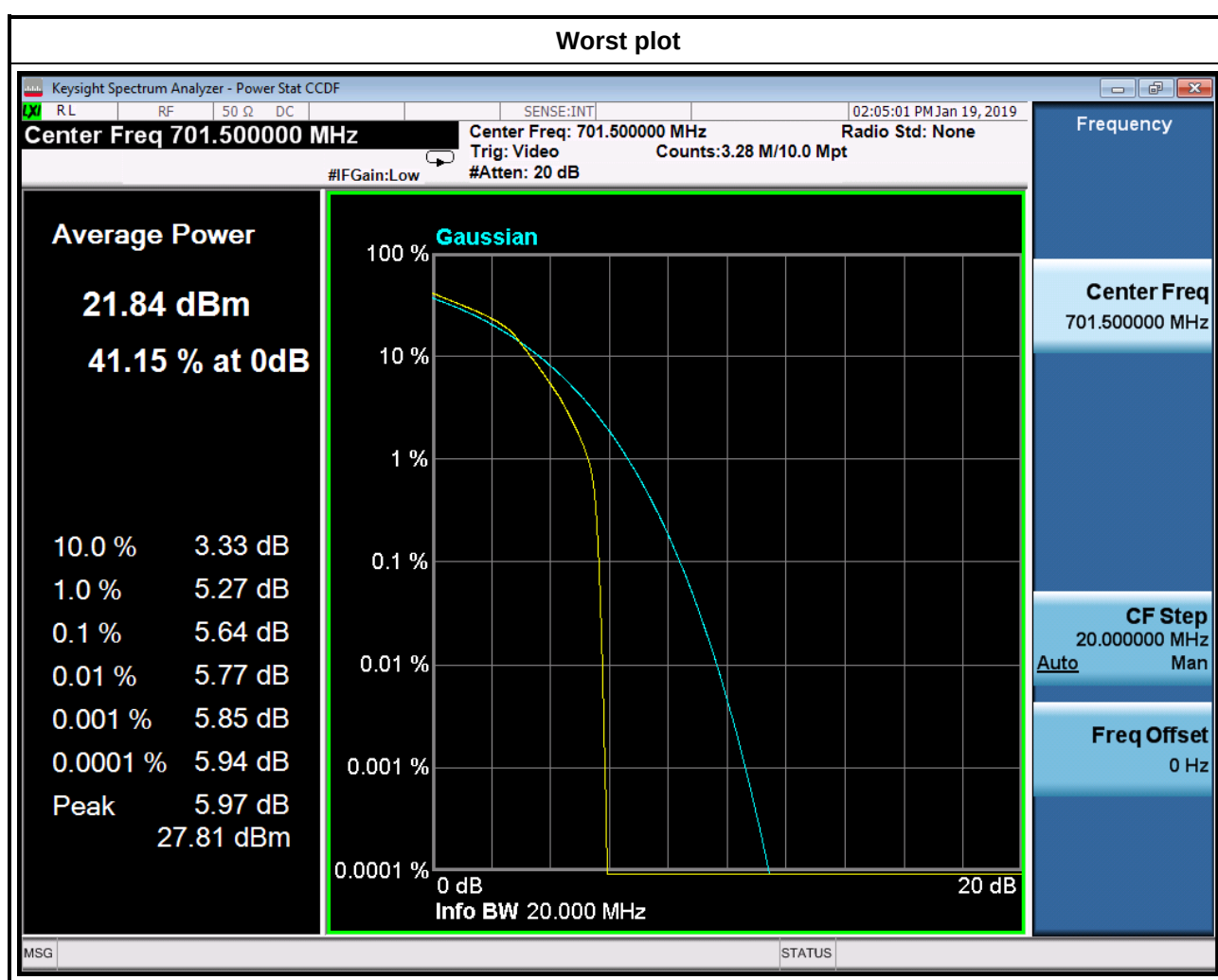


| Mode        | Channel Bandwidth (MHz) | Modulation | Channel | Frequency (MHz) | Peak to Average Ratio (dB) |
|-------------|-------------------------|------------|---------|-----------------|----------------------------|
| LTE Band 12 | 3                       | QPSK       | 23025   | 700.5           | 5.07                       |
| LTE Band 12 | 3                       | QPSK       | 23095   | 707.5           | 5.18                       |
| LTE Band 12 | 3                       | QPSK       | 23165   | 714.5           | 5.21                       |
| LTE Band 12 | 3                       | 16QAM      | 23025   | 700.5           | 5.65                       |
| LTE Band 12 | 3                       | 16QAM      | 23095   | 707.5           | 5.68                       |
| LTE Band 12 | 3                       | 16QAM      | 23165   | 714.5           | 5.73                       |





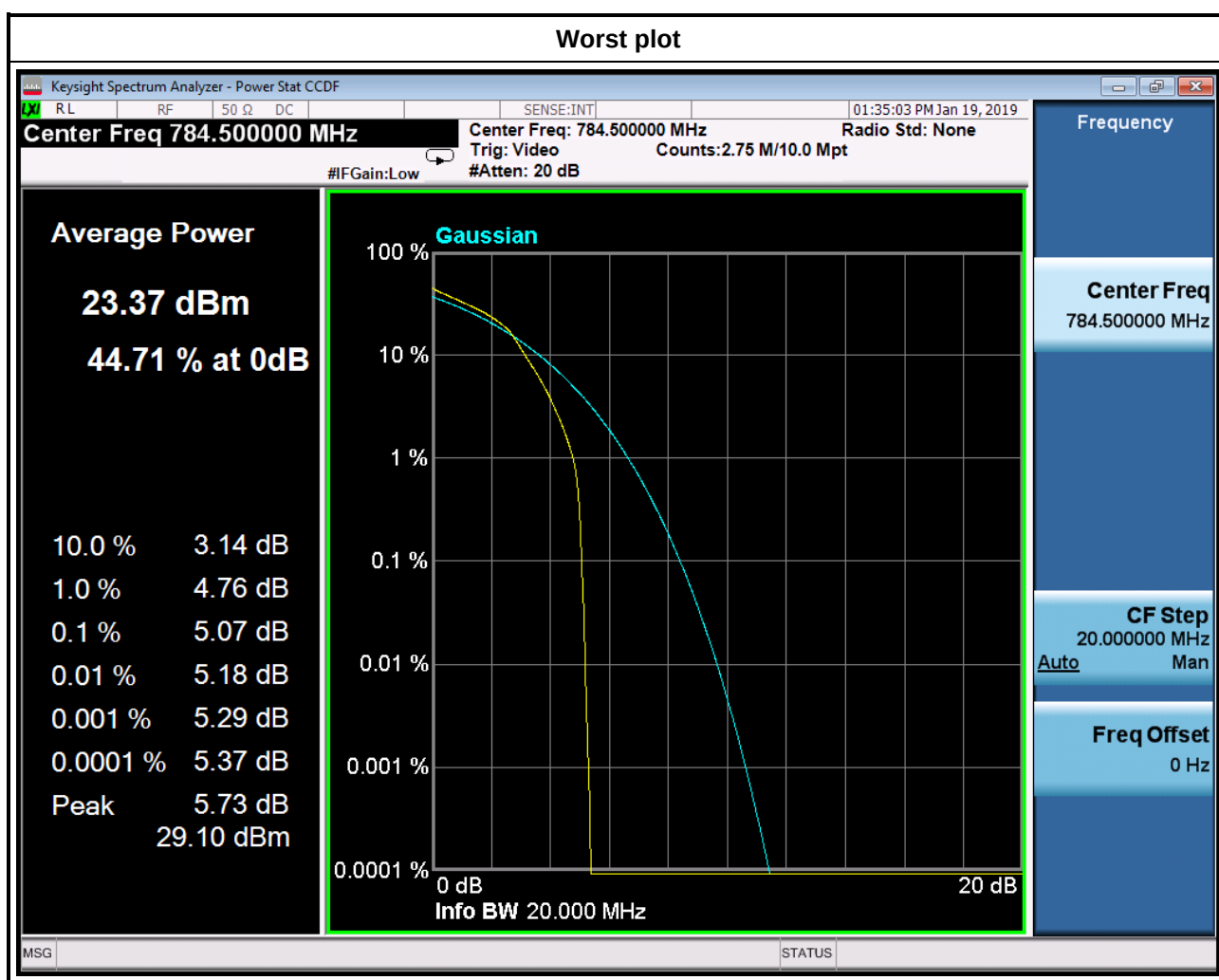
| Mode        | Channel Bandwidth (MHz) | Modulation | Channel | Frequency (MHz) | Peak to Average Ratio (dB) |
|-------------|-------------------------|------------|---------|-----------------|----------------------------|
| LTE Band 12 | 5                       | QPSK       | 23035   | 701.5           | 5.05                       |
| LTE Band 12 | 5                       | QPSK       | 23095   | 707.5           | 4.99                       |
| LTE Band 12 | 5                       | QPSK       | 23155   | 713.5           | 5.20                       |
| LTE Band 12 | 5                       | 16QAM      | 23035   | 701.5           | 5.64                       |
| LTE Band 12 | 5                       | 16QAM      | 23095   | 707.5           | 5.51                       |
| LTE Band 12 | 5                       | 16QAM      | 23155   | 713.5           | 5.61                       |



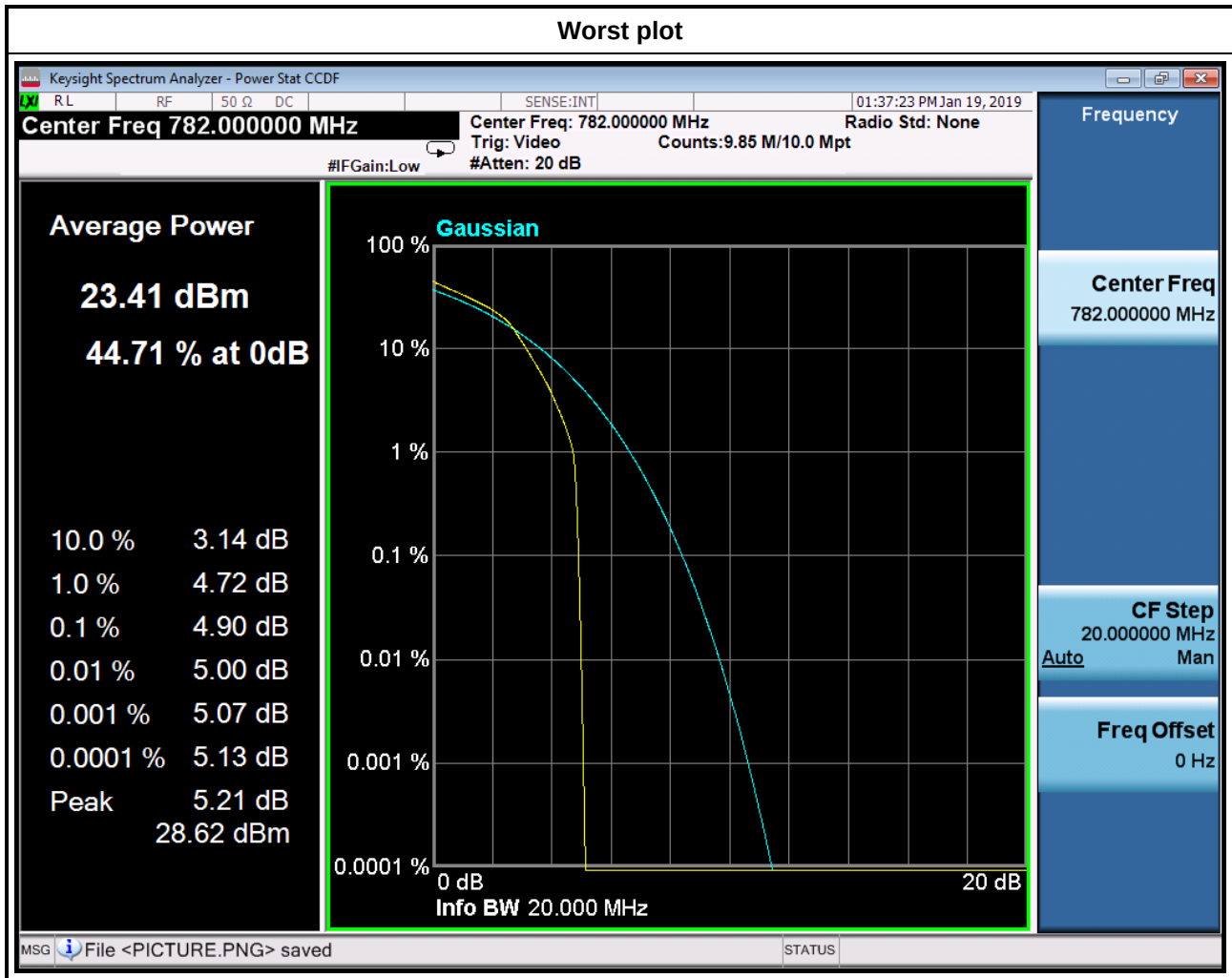
| Mode        | Channel Bandwidth (MHz) | Modulation | Channel | Frequency (MHz) | Peak to Average Ratio (dB) |
|-------------|-------------------------|------------|---------|-----------------|----------------------------|
| LTE Band 12 | 10                      | QPSK       | 23060   | 704.0           | 4.97                       |
| LTE Band 12 | 10                      | QPSK       | 23095   | 707.5           | 4.87                       |
| LTE Band 12 | 10                      | QPSK       | 23130   | 711.0           | 4.99                       |
| LTE Band 12 | 10                      | 16QAM      | 23060   | 704.0           | 5.52                       |
| LTE Band 12 | 10                      | 16QAM      | 23095   | 707.5           | 5.52                       |
| LTE Band 12 | 10                      | 16QAM      | 23130   | 711.0           | 5.61                       |



| Mode        | Channel Bandwidth (MHz) | Modulation | Channel | Frequency (MHz) | Peak to Average Ratio (dB) |
|-------------|-------------------------|------------|---------|-----------------|----------------------------|
| LTE Band 13 | 5                       | QPSK       | 23205   | 779.5           | 4.62                       |
| LTE Band 13 | 5                       | QPSK       | 23230   | 782.0           | 4.47                       |
| LTE Band 13 | 5                       | QPSK       | 23255   | 784.5           | 4.57                       |
| LTE Band 13 | 5                       | 16QAM      | 23205   | 779.5           | 5.04                       |
| LTE Band 13 | 5                       | 16QAM      | 23230   | 782.0           | 4.93                       |
| LTE Band 13 | 5                       | 16QAM      | 23255   | 784.5           | 5.07                       |



| Mode        | Channel Bandwidth (MHz) | Modulation | Channel | Frequency (MHz) | Peak to Average Ratio (dB) |
|-------------|-------------------------|------------|---------|-----------------|----------------------------|
| LTE Band 13 | 10                      | QPSK       | 23230   | 782.0           | 4.43                       |
| LTE Band 13 | 10                      | 16QAM      | 23230   | 782.0           | 4.90                       |



## 4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website <http://www.icertifi.com.tw>.

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