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| <br><b>CTK Co., Ltd.</b><br><small>The First Look of Global Regulatory Compliance</small> | <b>CTK Co., Ltd.</b><br>(Ho-dong), 113, Yejik-ro, Cheoin-gu,<br>Yongin-si, Gyeonggi-do, Korea<br>Tel: +82-31-339-9970<br>Fax: +82-31-624-9501 | Report No.:<br>CTK-2017-01618<br>Page (101) / (608)<br>Pages |  |
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## 5. Occupied Bandwidth

### Test Requirements :

#### § 2.1049 Measurements required : Occupied bandwidth

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the specified conditions of § 2.1049(a) through (i) as applicable.

### Test Procedures :

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. The EUT was connected to a spectrum analyzer enabled with an occupied bandwidth in accordance with FCC Part 2.1049. The occupied bandwidth was measured from the fundamental emission at the bottom, middle and top channels. The occupied bandwidth was measured using the built in occupied bandwidth function of the spectrum analyzer. It was set to measure the bandwidth where 99% of the signal power was contained. The analyzer automatically configures the measurement bandwidths to make an accurate measurement based on the channel bandwidth and channel spacing of the EUT.

## Test Results :

### Test Data : Band 2, BW 5MHz, Single carrier, 2TX

| Type              | Carrier | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|-------------------|---------|---------|----------------|-------------|------------|-------------------------|
| Band 2<br>BW 5MHz | Single  | Bottom  | 5              | 2TX         | QPSK       | 4.47                    |
|                   |         |         |                |             | 16QAM      | 4.46                    |
|                   |         |         |                |             | 64QAM      | 4.50                    |
|                   |         |         |                |             | 256QAM     | 4.50                    |
|                   |         | Middle  | 5              | 2TX         | QPSK       | 4.46                    |
|                   |         |         |                |             | 16QAM      | 4.46                    |
|                   |         |         |                |             | 64QAM      | 4.50                    |
|                   |         |         |                |             | 256QAM     | 4.50                    |
|                   |         | Top     | 5              | 2TX         | QPSK       | 4.46                    |
|                   |         |         |                |             | 16QAM      | 4.47                    |
|                   |         |         |                |             | 64QAM      | 4.50                    |
|                   |         |         |                |             | 256QAM     | 4.49                    |

### Test Data : Band 2, BW 5MHz, Single carrier, 4TX

| Type              | Carrier | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|-------------------|---------|---------|----------------|-------------|------------|-------------------------|
| Band 2<br>BW 5MHz | Single  | Bottom  | 7              | 4TX         | QPSK       | 4.47                    |
|                   |         |         |                |             | 16QAM      | 4.46                    |
|                   |         |         |                |             | 64QAM      | 4.50                    |
|                   |         |         |                |             | 256QAM     | 4.50                    |
|                   |         | Middle  | 7              | 4TX         | QPSK       | 4.46                    |
|                   |         |         |                |             | 16QAM      | 4.46                    |
|                   |         |         |                |             | 64QAM      | 4.50                    |
|                   |         |         |                |             | 256QAM     | 4.50                    |
|                   |         | Top     | 7              | 4TX         | QPSK       | 4.46                    |
|                   |         |         |                |             | 16QAM      | 4.46                    |
|                   |         |         |                |             | 64QAM      | 4.50                    |
|                   |         |         |                |             | 256QAM     | 4.50                    |

**Test Data : Band 2, BW 15MHz, Single carrier, 2TX**

| Type               | Carrier | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|--------------------|---------|---------|----------------|-------------|------------|-------------------------|
| Band 2<br>BW 15MHz | Single  | Bottom  | 5              | 2TX         | QPSK       | 13.36                   |
|                    |         |         |                |             | 16QAM      | 13.38                   |
|                    |         |         |                |             | 64QAM      | 13.39                   |
|                    |         |         |                |             | 256QAM     | 13.39                   |
|                    |         | Middle  | 5              | 2TX         | QPSK       | 13.38                   |
|                    |         |         |                |             | 16QAM      | 13.38                   |
|                    |         |         |                |             | 64QAM      | 13.38                   |
|                    |         |         |                |             | 256QAM     | 13.39                   |
|                    |         | Top     | 5              | 2TX         | QPSK       | 13.38                   |
|                    |         |         |                |             | 16QAM      | 13.38                   |
|                    |         |         |                |             | 64QAM      | 13.39                   |
|                    |         |         |                |             | 256QAM     | 13.39                   |

**Test Data : Band 2, BW 15MHz, Single carrier, 4TX**

| Type               | Carrier | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|--------------------|---------|---------|----------------|-------------|------------|-------------------------|
| Band 2<br>BW 15MHz | Single  | Bottom  | 7              | 4TX         | QPSK       | 13.37                   |
|                    |         |         |                |             | 16QAM      | 13.39                   |
|                    |         |         |                |             | 64QAM      | 13.38                   |
|                    |         |         |                |             | 256QAM     | 13.38                   |
|                    |         | Middle  | 7              | 4TX         | QPSK       | 13.38                   |
|                    |         |         |                |             | 16QAM      | 13.38                   |
|                    |         |         |                |             | 64QAM      | 13.38                   |
|                    |         |         |                |             | 256QAM     | 13.38                   |
|                    |         | Top     | 7              | 4TX         | QPSK       | 13.38                   |
|                    |         |         |                |             | 16QAM      | 13.39                   |
|                    |         |         |                |             | 64QAM      | 13.39                   |
|                    |         |         |                |             | 256QAM     | 13.39                   |

**Test Data : Band 2, BW 5MHz + BW 5MHz, Multi carrier, 2TX**

| Type                                  | Carrier              | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|---------------------------------------|----------------------|---------|----------------|-------------|------------|-------------------------|
| Band 2<br><br>BW 5MHz<br>+<br>BW 5MHz | Multi/<br>Contiguous | Bottom  | 5              | 2TX         | QPSK       | 9.38                    |
|                                       |                      |         |                |             | 16QAM      | 9.39                    |
|                                       |                      |         |                |             | 64QAM      | 9.43                    |
|                                       |                      |         |                |             | 256QAM     | 9.43                    |
|                                       |                      | Top     | 5              | 2TX         | QPSK       | 9.38                    |
|                                       |                      |         |                |             | 16QAM      | 9.39                    |
|                                       |                      |         |                |             | 64QAM      | 9.44                    |
|                                       |                      |         |                |             | 256QAM     | 9.44                    |

**Test Data : Band 2, BW 5MHz + BW 5MHz, Multi carrier, 4TX**

| Type                                  | Carrier              | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|---------------------------------------|----------------------|---------|----------------|-------------|------------|-------------------------|
| Band 2<br><br>BW 5MHz<br>+<br>BW 5MHz | Multi/<br>Contiguous | Bottom  | 7              | 4TX         | QPSK       | 9.38                    |
|                                       |                      |         |                |             | 16QAM      | 9.38                    |
|                                       |                      |         |                |             | 64QAM      | 9.43                    |
|                                       |                      |         |                |             | 256QAM     | 9.43                    |
|                                       |                      | Top     | 7              | 4TX         | QPSK       | 9.38                    |
|                                       |                      |         |                |             | 16QAM      | 9.38                    |
|                                       |                      |         |                |             | 64QAM      | 9.43                    |
|                                       |                      |         |                |             | 256QAM     | 9.43                    |

**Test Data : Band 2, BW 5MHz + BW 15MHz, Multi carrier, 2TX**

| Type                                   | Carrier              | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|----------------------------------------|----------------------|---------|----------------|-------------|------------|-------------------------|
| Band 2<br><br>BW 5MHz<br>+<br>BW 15MHz | Multi/<br>Contiguous | Bottom  | 5              | 2TX         | QPSK       | 18.83                   |
|                                        |                      |         |                |             | 16QAM      | 18.81                   |
|                                        |                      |         |                |             | 64QAM      | 18.85                   |
|                                        |                      |         |                |             | 256QAM     | 18.85                   |
|                                        |                      | Top     | 5              | 2TX         | QPSK       | 18.83                   |
|                                        |                      |         |                |             | 16QAM      | 18.84                   |
|                                        |                      |         |                |             | 64QAM      | 18.84                   |
|                                        |                      |         |                |             | 256QAM     | 18.84                   |

**Test Data : Band 2, BW 5MHz + BW 15MHz, Multi carrier, 4TX**

| Type                                   | Carrier              | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|----------------------------------------|----------------------|---------|----------------|-------------|------------|-------------------------|
| Band 2<br><br>BW 5MHz<br>+<br>BW 15MHz | Multi/<br>Contiguous | Bottom  | 7              | 4TX         | QPSK       | 18.82                   |
|                                        |                      |         |                |             | 16QAM      | 18.81                   |
|                                        |                      |         |                |             | 64QAM      | 18.85                   |
|                                        |                      |         |                |             | 256QAM     | 18.84                   |
|                                        |                      | Top     | 7              | 4TX         | QPSK       | 18.84                   |
|                                        |                      |         |                |             | 16QAM      | 18.81                   |
|                                        |                      |         |                |             | 64QAM      | 18.85                   |
|                                        |                      |         |                |             | 256QAM     | 18.84                   |

**Test Data : Band 2, BW 5MHz + BW 5MHz, Multi carrier, 2TX**

| Type                              | Carrier                      | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|-----------------------------------|------------------------------|---------|----------------|-------------|------------|-------------------------|
| Band 2<br>BW 5MHz<br>+<br>BW 5MHz | Multi/<br>Non-<br>Contiguous | Bottom  | 5              | 2TX         | QPSK       | 4.46                    |
|                                   |                              |         |                |             | 16QAM      | 4.46                    |
|                                   |                              |         |                |             | 64QAM      | 4.50                    |
|                                   |                              |         |                |             | 256QAM     | 4.50                    |
|                                   | Multi/<br>Non-<br>Contiguous | Top     | 5              | 2TX         | QPSK       | 4.46                    |
|                                   |                              |         |                |             | 16QAM      | 4.47                    |
|                                   |                              |         |                |             | 64QAM      | 4.50                    |
|                                   |                              |         |                |             | 256QAM     | 4.50                    |

**Test Data : Band 2, BW 5MHz + BW 5MHz, Multi carrier, 4TX**

| Type                              | Carrier                      | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|-----------------------------------|------------------------------|---------|----------------|-------------|------------|-------------------------|
| Band 2<br>BW 5MHz<br>+<br>BW 5MHz | Multi/<br>Non-<br>Contiguous | Bottom  | 7              | 4TX         | QPSK       | 4.47                    |
|                                   |                              |         |                |             | 16QAM      | 4.46                    |
|                                   |                              |         |                |             | 64QAM      | 4.50                    |
|                                   |                              |         |                |             | 256QAM     | 4.50                    |
|                                   | Multi/<br>Non-<br>Contiguous | Top     | 7              | 4TX         | QPSK       | 4.46                    |
|                                   |                              |         |                |             | 16QAM      | 4.47                    |
|                                   |                              |         |                |             | 64QAM      | 4.50                    |
|                                   |                              |         |                |             | 256QAM     | 4.50                    |

**Test Data : Band 2, BW 15MHz + BW 5MHz, Multi carrier, 2TX**

| Type                               | Carrier                      | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|------------------------------------|------------------------------|---------|----------------|-------------|------------|-------------------------|
| Band 2<br>BW 15MHz<br>+<br>BW 5MHz | Multi/<br>Non-<br>Contiguous | Bottom  | 5              | 2TX         | QPSK       | 13.39                   |
|                                    |                              |         |                |             | 16QAM      | 13.39                   |
|                                    |                              |         |                |             | 64QAM      | 13.39                   |
|                                    |                              |         |                |             | 256QAM     | 13.38                   |
|                                    | Multi/<br>Non-<br>Contiguous | Top     | 5              | 2TX         | QPSK       | 4.46                    |
|                                    |                              |         |                |             | 16QAM      | 4.46                    |
|                                    |                              |         |                |             | 64QAM      | 4.49                    |
|                                    |                              |         |                |             | 256QAM     | 4.49                    |

**Test Data : Band 2, BW 15MHz + BW 5MHz, Multi carrier, 4TX**

| Type                               | Carrier                      | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|------------------------------------|------------------------------|---------|----------------|-------------|------------|-------------------------|
| Band 2<br>BW 15MHz<br>+<br>BW 5MHz | Multi/<br>Non-<br>Contiguous | Bottom  | 7              | 4TX         | QPSK       | 13.39                   |
|                                    |                              |         |                |             | 16QAM      | 13.39                   |
|                                    |                              |         |                |             | 64QAM      | 13.39                   |
|                                    |                              |         |                |             | 256QAM     | 13.39                   |
|                                    | Multi/<br>Non-<br>Contiguous | Top     | 7              | 4TX         | QPSK       | 4.46                    |
|                                    |                              |         |                |             | 16QAM      | 4.46                    |
|                                    |                              |         |                |             | 64QAM      | 4.49                    |
|                                    |                              |         |                |             | 256QAM     | 4.49                    |

**Test Data : Band 66, BW 5MHz, Single carrier, 2TX**

| Type               | Carrier | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|--------------------|---------|---------|----------------|-------------|------------|-------------------------|
| Band 66<br>BW 5MHz | Single  | Bottom  | 5              | 2TX         | QPSK       | 4.46                    |
|                    |         |         |                |             | 16QAM      | 4.46                    |
|                    |         |         |                |             | 64QAM      | 4.49                    |
|                    |         |         |                |             | 256QAM     | 4.49                    |
|                    |         | Middle  | 5              | 2TX         | QPSK       | 4.47                    |
|                    |         |         |                |             | 16QAM      | 4.47                    |
|                    |         |         |                |             | 64QAM      | 4.50                    |
|                    |         |         |                |             | 256QAM     | 4.50                    |
|                    |         | Top     | 5              | 2TX         | QPSK       | 4.46                    |
|                    |         |         |                |             | 16QAM      | 4.46                    |
|                    |         |         |                |             | 64QAM      | 4.50                    |
|                    |         |         |                |             | 256QAM     | 4.50                    |

**Test Data : Band 66, BW 5MHz, Single carrier, 4TX**

| Type               | Carrier | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|--------------------|---------|---------|----------------|-------------|------------|-------------------------|
| Band 66<br>BW 5MHz | Single  | Bottom  | 7              | 4TX         | QPSK       | 4.46                    |
|                    |         |         |                |             | 16QAM      | 4.45                    |
|                    |         |         |                |             | 64QAM      | 4.49                    |
|                    |         |         |                |             | 256QAM     | 4.49                    |
|                    |         | Middle  | 7              | 4TX         | QPSK       | 4.46                    |
|                    |         |         |                |             | 16QAM      | 4.46                    |
|                    |         |         |                |             | 64QAM      | 4.50                    |
|                    |         |         |                |             | 256QAM     | 4.50                    |
|                    |         | Top     | 7              | 4TX         | QPSK       | 4.45                    |
|                    |         |         |                |             | 16QAM      | 4.46                    |
|                    |         |         |                |             | 64QAM      | 4.46                    |
|                    |         |         |                |             | 256QAM     | 4.47                    |

**Test Data : Band 66, BW 15MHz, Single carrier, 2TX**

| Type                | Carrier | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|---------------------|---------|---------|----------------|-------------|------------|-------------------------|
| Band 66<br>BW 15MHz | Single  | Bottom  | 5              | 2TX         | QPSK       | 13.37                   |
|                     |         |         |                |             | 16QAM      | 13.38                   |
|                     |         |         |                |             | 64QAM      | 13.38                   |
|                     |         |         |                |             | 256QAM     | 13.38                   |
|                     |         | Middle  | 5              | 2TX         | QPSK       | 13.39                   |
|                     |         |         |                |             | 16QAM      | 13.39                   |
|                     |         |         |                |             | 64QAM      | 13.39                   |
|                     |         |         |                |             | 256QAM     | 13.39                   |
|                     |         | Top     | 5              | 2TX         | QPSK       | 13.38                   |
|                     |         |         |                |             | 16QAM      | 13.37                   |
|                     |         |         |                |             | 64QAM      | 13.39                   |
|                     |         |         |                |             | 256QAM     | 13.39                   |

**Test Data : Band 66, BW 15MHz, Single carrier, 4TX**

| Type                | Carrier | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|---------------------|---------|---------|----------------|-------------|------------|-------------------------|
| Band 66<br>BW 15MHz | Single  | Bottom  | 7              | 4TX         | QPSK       | 13.38                   |
|                     |         |         |                |             | 16QAM      | 13.38                   |
|                     |         |         |                |             | 64QAM      | 13.38                   |
|                     |         |         |                |             | 256QAM     | 13.38                   |
|                     |         | Middle  | 7              | 4TX         | QPSK       | 13.38                   |
|                     |         |         |                |             | 16QAM      | 13.39                   |
|                     |         |         |                |             | 64QAM      | 13.39                   |
|                     |         |         |                |             | 256QAM     | 13.39                   |
|                     |         | Top     | 7              | 4TX         | QPSK       | 13.39                   |
|                     |         |         |                |             | 16QAM      | 13.38                   |
|                     |         |         |                |             | 64QAM      | 13.39                   |
|                     |         |         |                |             | 256QAM     | 13.38                   |

**Test Data : Band 66, BW 5MHz + BW 5MHz, Multi carrier, 2TX**

| Type                                   | Carrier              | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|----------------------------------------|----------------------|---------|----------------|-------------|------------|-------------------------|
| Band 66<br><br>BW 5MHz<br>+<br>BW 5MHz | Multi/<br>Contiguous | Bottom  | 5              | 2TX         | QPSK       | 9.37                    |
|                                        |                      |         |                |             | 16QAM      | 9.35                    |
|                                        |                      |         |                |             | 64QAM      | 9.42                    |
|                                        |                      |         |                |             | 256QAM     | 9.42                    |
|                                        |                      | Top     | 5              | 2TX         | QPSK       | 9.37                    |
|                                        |                      |         |                |             | 16QAM      | 9.38                    |
|                                        |                      |         |                |             | 64QAM      | 9.43                    |
|                                        |                      |         |                |             | 256QAM     | 9.44                    |

**Test Data : Band 66, BW 5MHz + BW 5MHz, Multi carrier, 4TX**

| Type                               | Carrier              | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|------------------------------------|----------------------|---------|----------------|-------------|------------|-------------------------|
| Band 66<br>BW 5MHz<br>+<br>BW 5MHz | Multi/<br>Contiguous | Bottom  | 7              | 4TX         | QPSK       | 9.34                    |
|                                    |                      |         |                |             | 16QAM      | 9.38                    |
|                                    |                      |         |                |             | 64QAM      | 9.42                    |
|                                    |                      |         |                |             | 256QAM     | 9.42                    |
|                                    |                      | Top     | 7              | 4TX         | QPSK       | 9.38                    |
|                                    |                      |         |                |             | 16QAM      | 9.38                    |
|                                    |                      |         |                |             | 64QAM      | 9.43                    |
|                                    |                      |         |                |             | 256QAM     | 9.43                    |

**Test Data : Band 66, BW 5MHz + BW 15MHz, Multi carrier, 2TX**

| Test Data 1 Band 66, BW 5MHz + BW 15MHz, Multi-carrier, 2TX |                      |         |                |             |            |                         |
|-------------------------------------------------------------|----------------------|---------|----------------|-------------|------------|-------------------------|
| Type                                                        | Carrier              | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
| Band 66<br><br>BW 5MHz<br>+<br>BW 15MHz                     | Multi/<br>Contiguous | Bottom  | 5              | 2TX         | QPSK       | 18.78                   |
|                                                             |                      |         |                |             | 16QAM      | 18.78                   |
|                                                             |                      |         |                |             | 64QAM      | 18.82                   |
|                                                             |                      |         |                |             | 256QAM     | 18.82                   |
|                                                             |                      | Top     | 5              | 2TX         | QPSK       | 18.81                   |
|                                                             |                      |         |                |             | 16QAM      | 18.81                   |
|                                                             |                      |         |                |             | 64QAM      | 18.83                   |
|                                                             |                      |         |                |             | 256QAM     | 18.84                   |

**Test Data : Band 66, BW 5MHz + BW 15MHz, Multi carrier, 4TX**

| Type                                | Carrier              | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|-------------------------------------|----------------------|---------|----------------|-------------|------------|-------------------------|
| Band 66<br>BW 5MHz<br>+<br>BW 15MHz | Multi/<br>Contiguous | Bottom  | 7              | 4TX         | QPSK       | 18.79                   |
|                                     |                      |         |                |             | 16QAM      | 18.83                   |
|                                     |                      |         |                |             | 64QAM      | 18.83                   |
|                                     |                      |         |                |             | 256QAM     | 18.82                   |
|                                     |                      | Top     | 7              | 4TX         | QPSK       | 18.80                   |
|                                     |                      |         |                |             | 16QAM      | 18.83                   |
|                                     |                      |         |                |             | 64QAM      | 18.83                   |
|                                     |                      |         |                |             | 256QAM     | 18.84                   |

**Test Data : Band 66, BW 5MHz + BW 5MHz, Multi carrier, 2TX**

| Type                               | Carrier                      | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|------------------------------------|------------------------------|---------|----------------|-------------|------------|-------------------------|
| Band 66<br>BW 5MHz<br>+<br>BW 5MHz | Multi/<br>Non-<br>Contiguous | Bottom  | 5              | 2TX         | QPSK       | 4.46                    |
|                                    |                              |         |                |             | 16QAM      | 4.45                    |
|                                    |                              |         |                |             | 64QAM      | 4.49                    |
|                                    |                              |         |                |             | 256QAM     | 4.49                    |
|                                    | Top                          | 5       | 2TX            | 2TX         | QPSK       | 4.46                    |
|                                    |                              |         |                |             | 16QAM      | 4.46                    |
|                                    |                              |         |                |             | 64QAM      | 4.50                    |
|                                    |                              |         |                |             | 256QAM     | 4.50                    |

**Test Data : Band 66, BW 5MHz + BW 5MHz, Multi carrier, 4TX**

| Type                               | Carrier                      | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|------------------------------------|------------------------------|---------|----------------|-------------|------------|-------------------------|
| Band 66<br>BW 5MHz<br>+<br>BW 5MHz | Multi/<br>Non-<br>Contiguous | Bottom  | 7              | 4TX         | QPSK       | 4.45                    |
|                                    |                              |         |                |             | 16QAM      | 4.46                    |
|                                    |                              |         |                |             | 64QAM      | 4.49                    |
|                                    |                              |         |                |             | 256QAM     | 4.49                    |
|                                    | Top                          | 7       | 4TX            | 4TX         | QPSK       | 4.45                    |
|                                    |                              |         |                |             | 16QAM      | 4.45                    |
|                                    |                              |         |                |             | 64QAM      | 4.50                    |
|                                    |                              |         |                |             | 256QAM     | 4.50                    |

**Test Data : Band 66, BW 15MHz + BW 5MHz, Multi carrier, 2TX**

| Type                                | Carrier                      | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|-------------------------------------|------------------------------|---------|----------------|-------------|------------|-------------------------|
| Band 66<br>BW 15MHz<br>+<br>BW 5MHz | Multi/<br>Non-<br>Contiguous | Bottom  | 5              | 2TX         | QPSK       | 13.38                   |
|                                     |                              |         |                |             | 16QAM      | 13.38                   |
|                                     |                              |         |                |             | 64QAM      | 13.38                   |
|                                     |                              |         |                |             | 256QAM     | 13.38                   |
|                                     | Top                          | 5       | 2TX            | 2TX         | QPSK       | 4.47                    |
|                                     |                              |         |                |             | 16QAM      | 4.46                    |
|                                     |                              |         |                |             | 64QAM      | 4.50                    |
|                                     |                              |         |                |             | 256QAM     | 4.50                    |

**Test Data : Band 66, BW 15MHz + BW 5MHz, Multi carrier, 4TX**

| Type                                | Carrier                      | Channel | Test Ant. port | Output port | Modulation | Occupied Bandwidth(MHz) |
|-------------------------------------|------------------------------|---------|----------------|-------------|------------|-------------------------|
| Band 66<br>BW 15MHz<br>+<br>BW 5MHz | Multi/<br>Non-<br>Contiguous | Bottom  | 7              | 4TX         | QPSK       | 13.37                   |
|                                     |                              |         |                |             | 16QAM      | 13.37                   |
|                                     |                              |         |                |             | 64QAM      | 13.37                   |
|                                     |                              |         |                |             | 256QAM     | 13.38                   |
|                                     | Top                          | 7       | 4TX            | 4TX         | QPSK       | 4.47                    |
|                                     |                              |         |                |             | 16QAM      | 4.47                    |
|                                     |                              |         |                |             | 64QAM      | 4.50                    |
|                                     |                              |         |                |             | 256QAM     | 4.50                    |

### Test Plot at Occupied Bandwidth

#### Band 2, BW 5MHz, Single carrier, 2TX, Bottom

##### QPSK



##### 16QAM



##### 64QAM



##### 256QAM



**Band 2, BW 5MHz, Single carrier, 2TX, Middle**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 2, BW 5MHz, Single carrier, 2TX, Top**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 2, BW 15MHz, Single carrier, 2TX, Bottom**

**QPSK**



**16QAM**



**64QAM**



**256QAM**

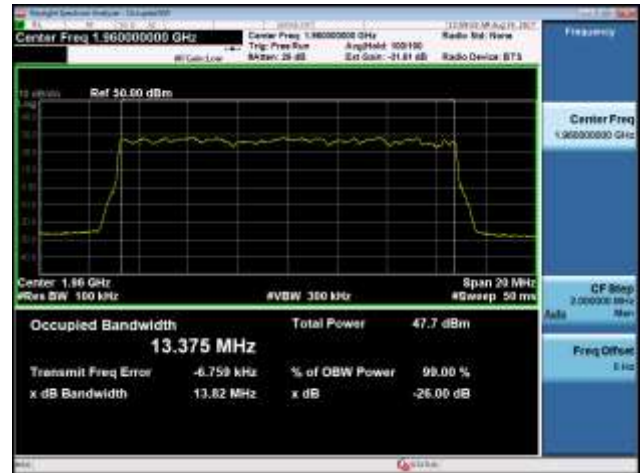


**Band 2, BW 15MHz, Single carrier, 2TX, Middle**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 2, BW 15MHz, Single carrier, 2TX, Top**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 2, BW 5MHz, Single carrier, 4TX, Bottom**

QPSK



16QAM



64QAM



256QAM



**Band 2, BW 5MHz, Single carrier, 4TX, Middle**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 2, BW 5MHz, Single carrier, 4TX Top**

QPSK



16QAM



64QAM



256QAM



**Band 2, BW 15MHz, Single carrier, 4TX, Bottom**

**QPSK**



**16QAM**



**64QAM**



**256QAM**

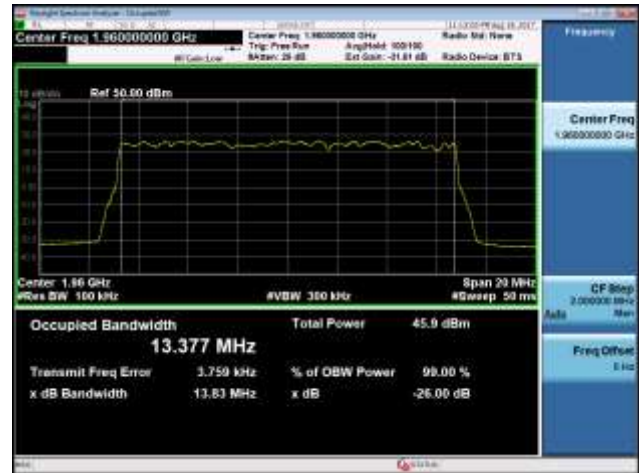


**Band 2, BW 15MHz, Single carrier, 4TX, Middle**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 2, BW 15MHz, Single carrier, 4TX Top**

**QPSK**



**16QAM**



**64QAM**



**256QAM**

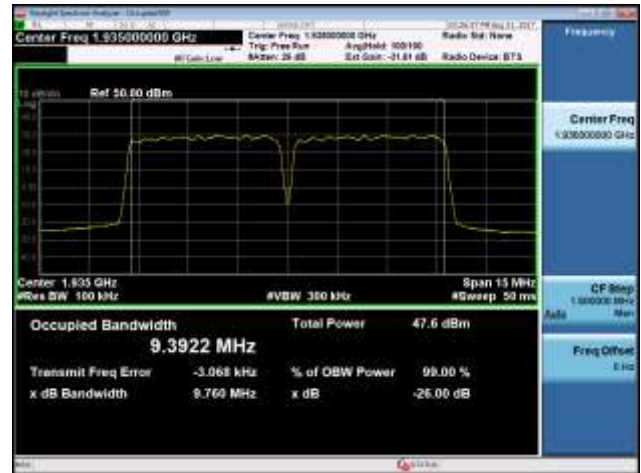


**Band 2, BW 5MHz + BW 5MHz, Multi carrier(Contiguous), 2TX, Bottom**

**QPSK**



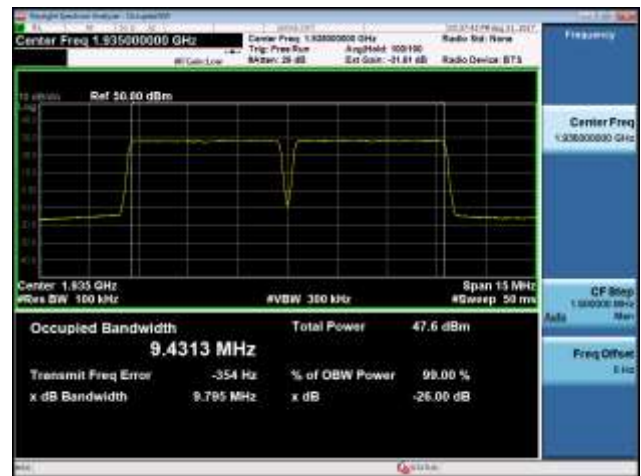
**16QAM**



**64QAM**



**256QAM**

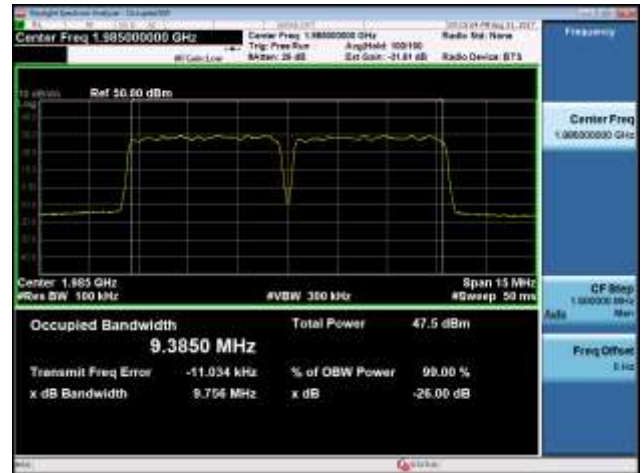


**Band 2, BW 5MHz + BW 5MHz, Multi carrier(Contiguous), 2TX, Top**

**QPSK**



**16QAM**



**64QAM**

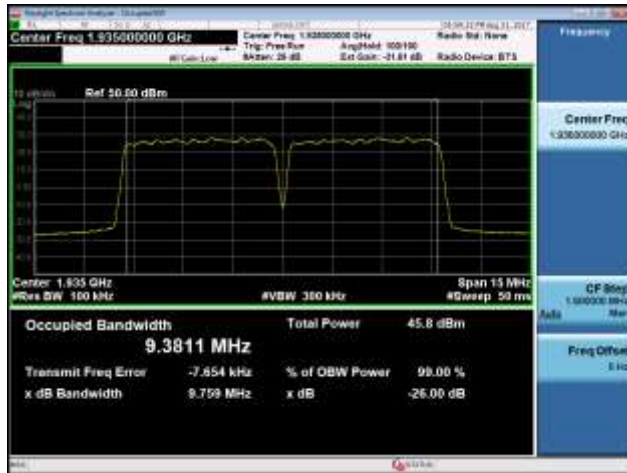


**256QAM**

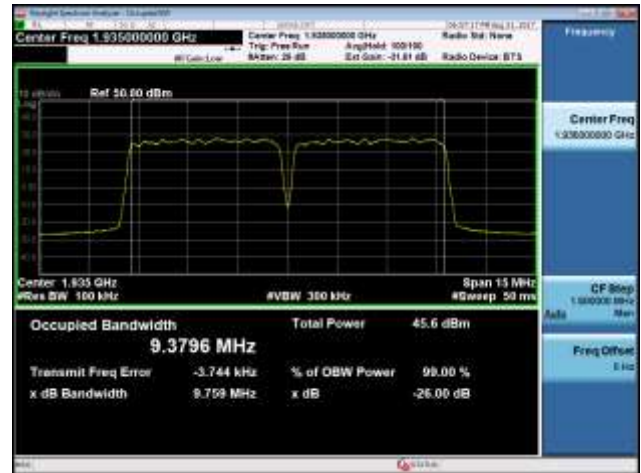


**Band 2, BW 5MHz + BW 5MHz, Multi carrier(Contiguous), 4TX, Bottom**

**QPSK**



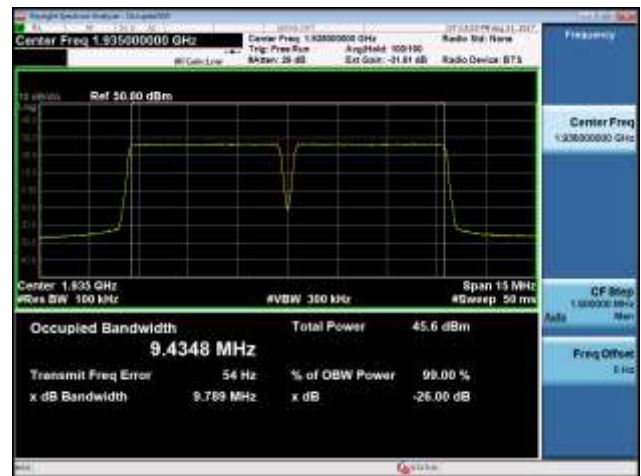
**16QAM**



**64QAM**

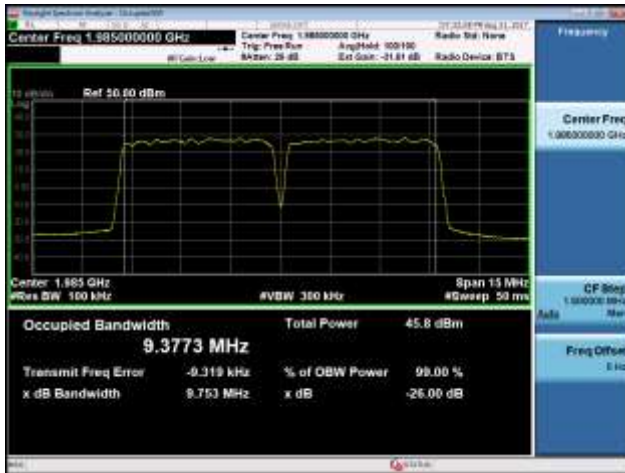


**256QAM**

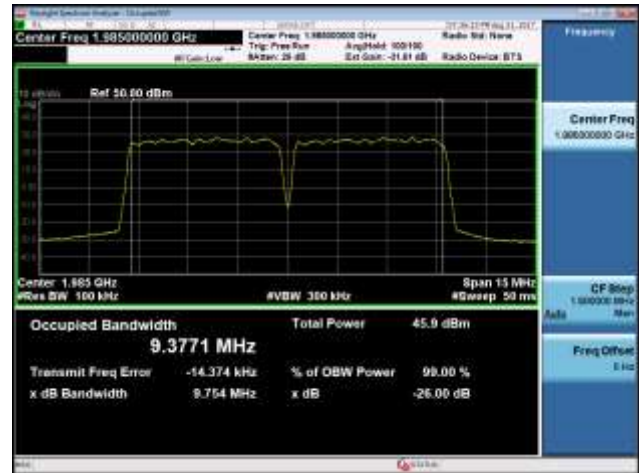


**Band 2, BW 5MHz + BW 5MHz, Multi carrier(Contiguous), 4TX, Top**

**QPSK**



**16QAM**



**64QAM**

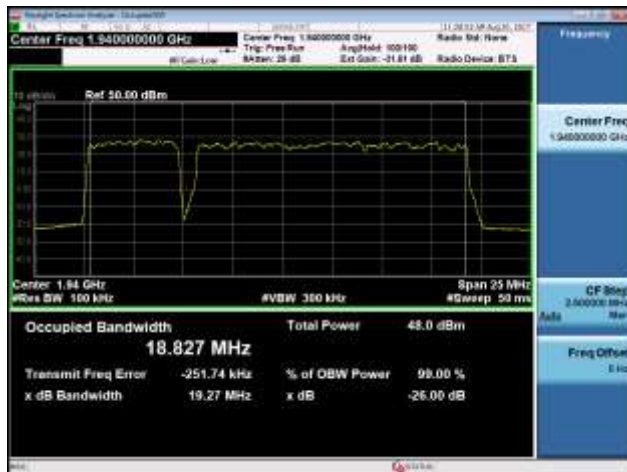


**256QAM**

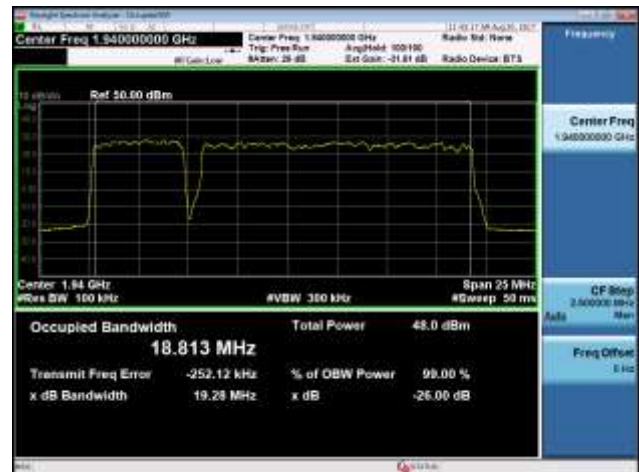


**Band 2, BW 5MHz + BW 15MHz, Multi carrier(Contiguous), 2TX, Bottom**

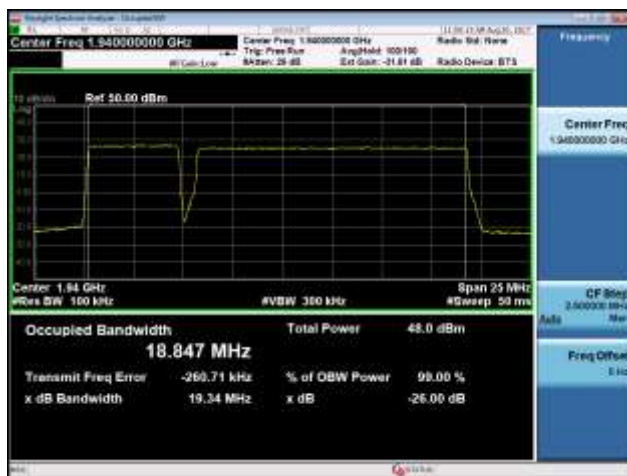
QPSK



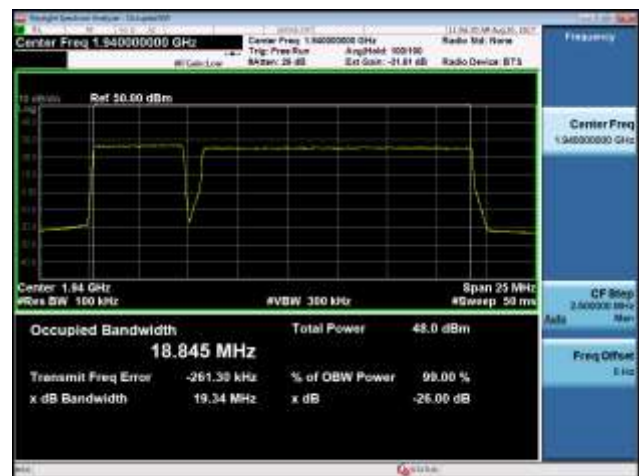
16QAM



64QAM



256QAM

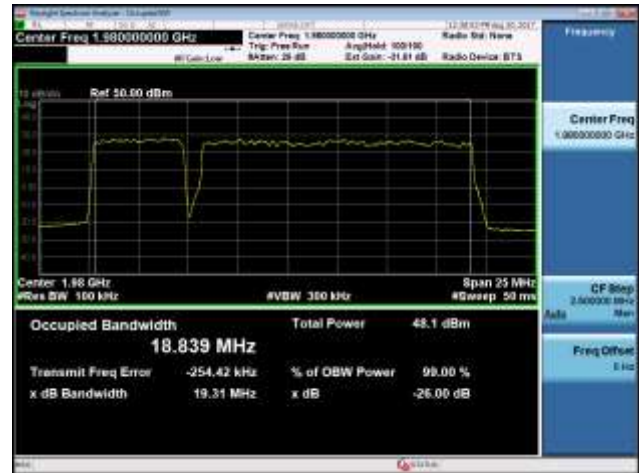


**Band 2, BW 5MHz + BW 15MHz, Multi carrier(Contiguous), 2TX, Top**

**QPSK**



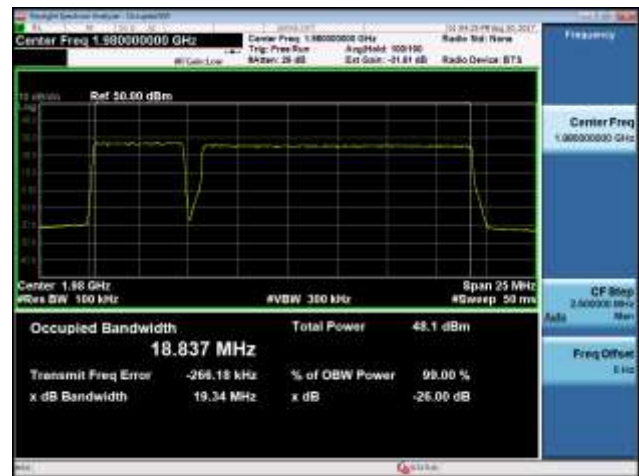
**16QAM**



**64QAM**



**256QAM**

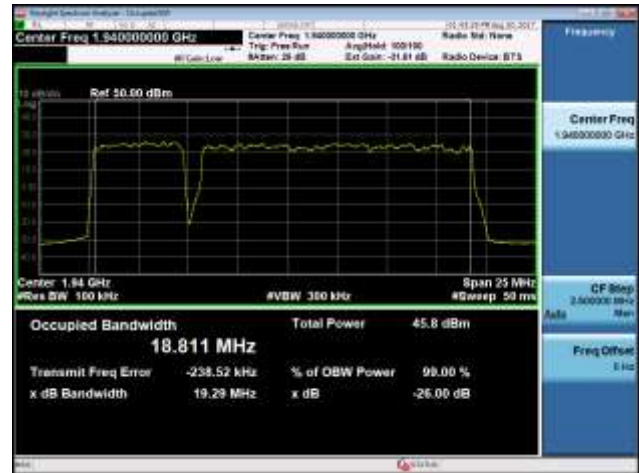


**Band 2, BW 5MHz + BW 15MHz, Multi carrier(Contiguous), 4TX, Bottom**

**QPSK**



**16QAM**



**64QAM**

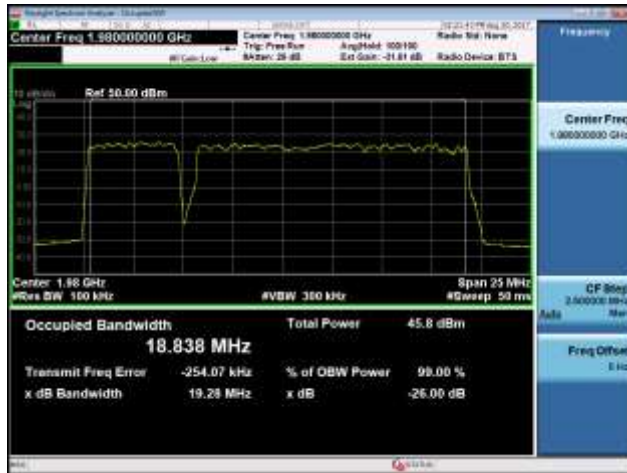


**256QAM**

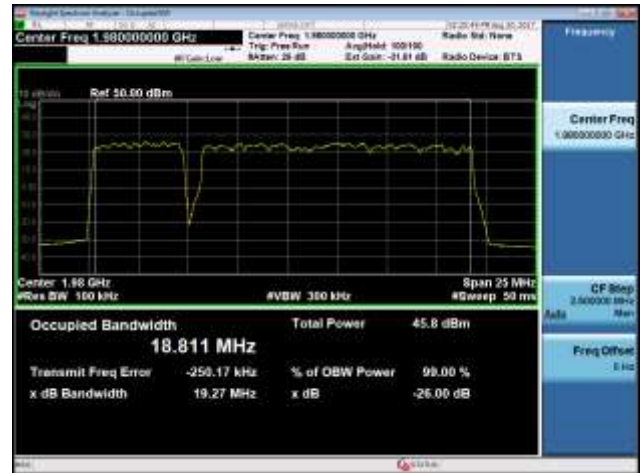


**Band 2, BW 5MHz + BW 15MHz, Multi carrier(Contiguous), 4TX, Top**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 2, BW 5MHz + BW 5MHz, Multi carrier(Non-Contiguous), 2TX, Bottom**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 2, BW 5MHz + BW 5MHz, Multi carrier(Non-Contiguous), 2TX, Top**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 2, BW 5MHz + BW 5MHz, Multi carrier(Non-Contiguous), 4TX, Bottom**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 2, BW 5MHz + BW 5MHz, Multi carrier(Non-Contiguous), 4TX, Top**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 2, BW 15MHz + BW 5MHz, Multi carrier(Non-Contiguous), 2TX, Bottom**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 2, BW 15MHz + BW 5MHz, Multi carrier(Non-Contiguous), 2TX, Top**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 2, BW 15MHz + BW 5MHz, Multi carrier(Non-Contiguous), 4TX, Bottom**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 2, BW 15MHz + BW 5MHz, Multi carrier(Non-Contiguous), 4TX, Top**

**QPSK**



**16QAM**



**64QAM**



**256QAM**





**Band 66, BW 5MHz, Single carrier, 2TX, Middle**

**QPSK**



**16QAM**

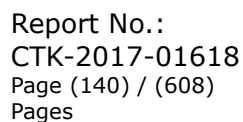


**64QAM**



**256QAM**





**Band 66, BW 15MHz, Single carrier, 2TX, Bottom**

QPSK



16QAM



64QAM



256QAM



**Band 66, BW 15MHz, Single carrier, 2TX, Middle**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 66, BW 15MHz, Single carrier, 2TX, Top**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 66, BW 5MHz, Single carrier, 4TX, Bottom**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 66, BW 5MHz, Single carrier, 4TX, Middle**

**QPSK**



**16QAM**



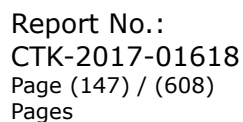
**64QAM**



**256QAM**







**Band 66, BW 15MHz, Single carrier, 4TX, Middle**

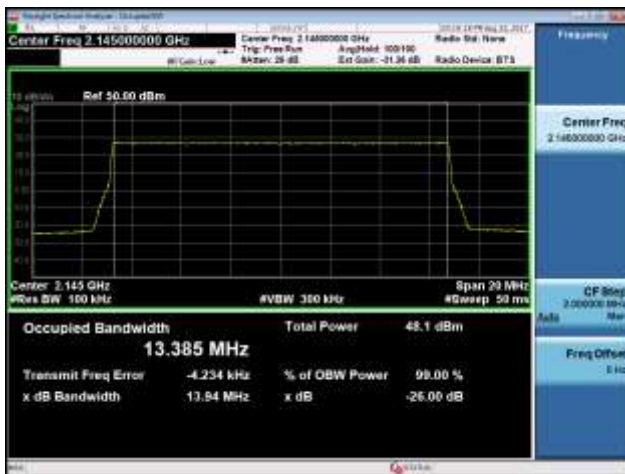
**QPSK**



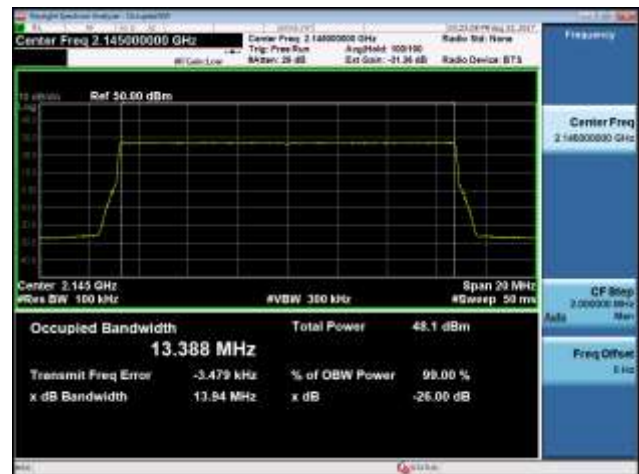
**16QAM**



**64QAM**



**256QAM**

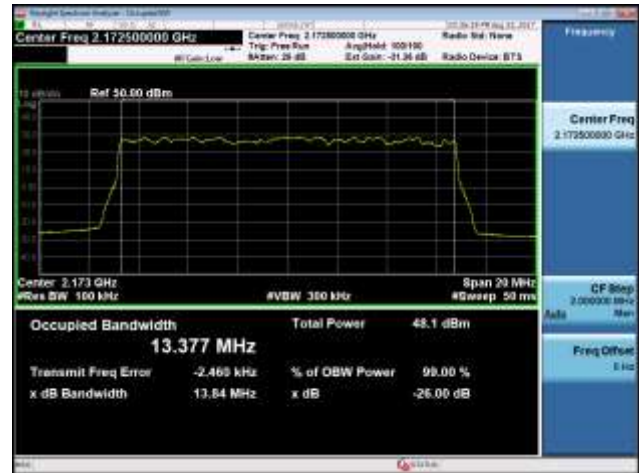


**Band 66, BW 15MHz, Single carrier, 4TX Top**

**QPSK**



**16QAM**



**64QAM**



**256QAM**



**Band 66, BW 5MHz + BW 5MHz, Multi carrier(Contiguous), 2TX, Bottom**

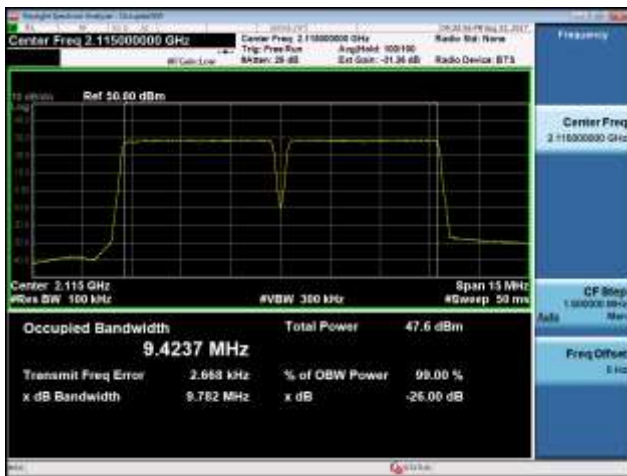
**QPSK**



**16QAM**



**64QAM**



**256QAM**

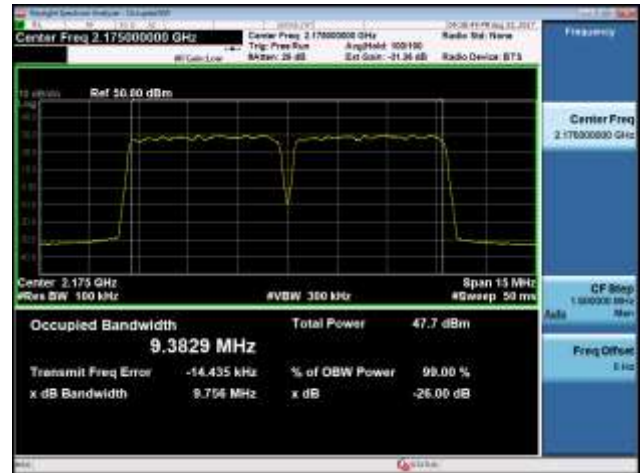


**Band 66, BW 5MHz + BW 5MHz, Multi carrier(Contiguous), 2TX, Top**

**QPSK**



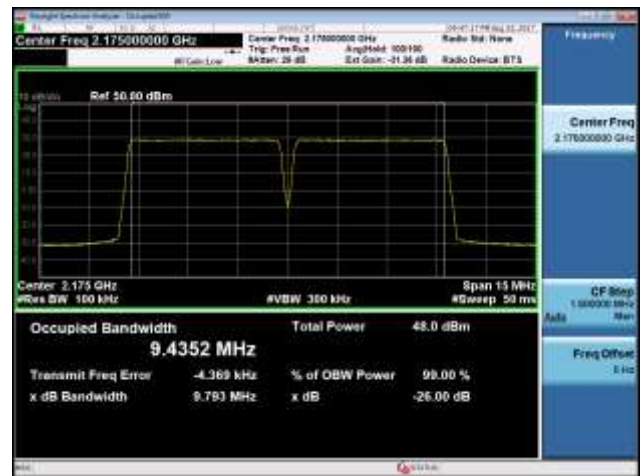
**16QAM**



**64QAM**



**256QAM**



**Band 66, BW 5MHz + BW 5MHz, Multi carrier(Contiguous), 4TX, Bottom**

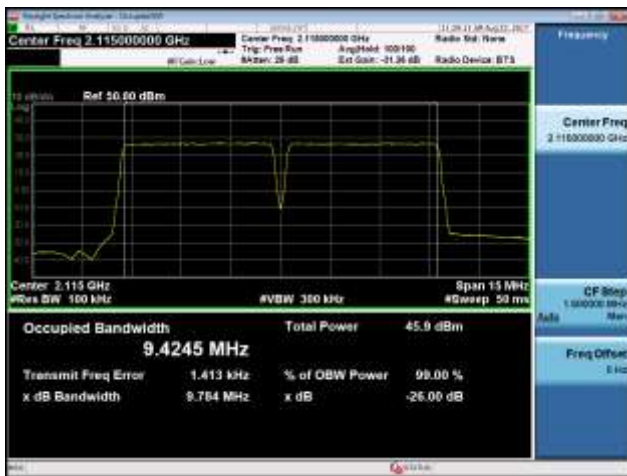
**QPSK**



**16QAM**



**64QAM**

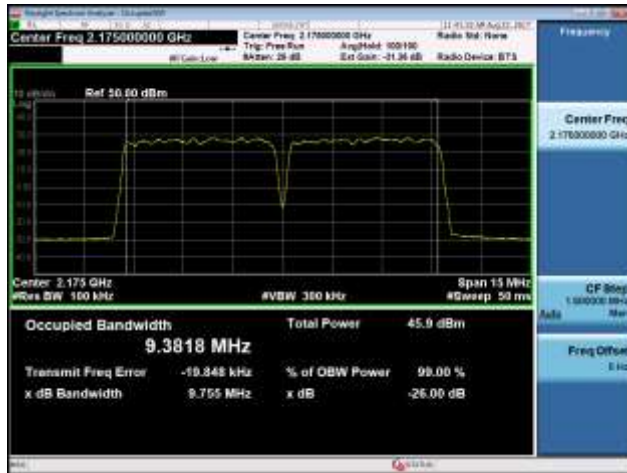


**256QAM**



**Band 66, BW 5MHz + BW 5MHz, Multi carrier(Contiguous), 4TX, Top**

QPSK



16QAM



64QAM



256QAM



**Band 66, BW 5MHz + BW 15MHz, Multi carrier(Contiguous), 2TX, Bottom**

QPSK



16QAM



64QAM



256QAM



**Band 66, BW 5MHz + BW 15MHz, Multi carrier(Contiguous), 2TX, Top**

**QPSK**



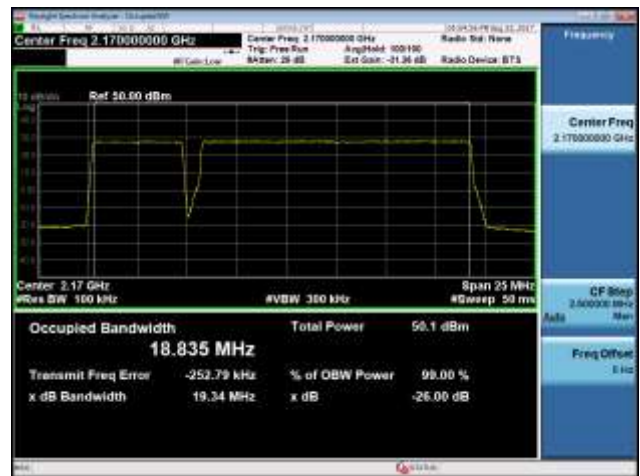
**16QAM**



**64QAM**



**256QAM**



**Band 66, BW 5MHz + BW 15MHz, Multi carrier(Contiguous), 4TX, Bottom**

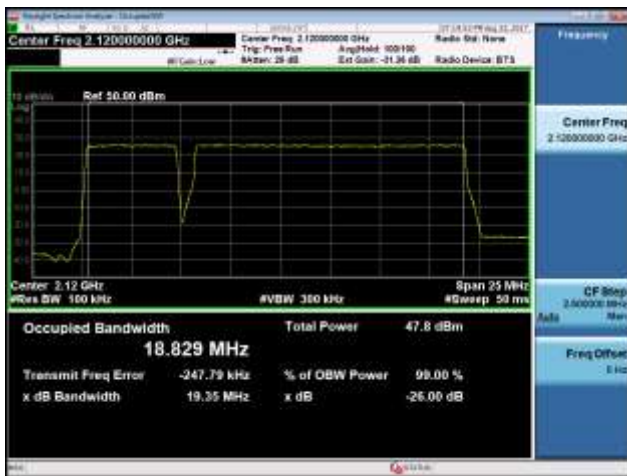
QPSK



16QAM



64QAM



256QAM

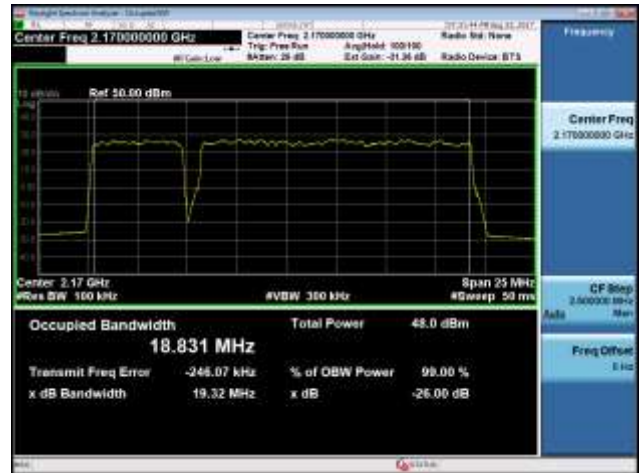


**Band 66, BW 5MHz + BW 15MHz, Multi carrier(Contiguous), 4TX, Top**

**QPSK**



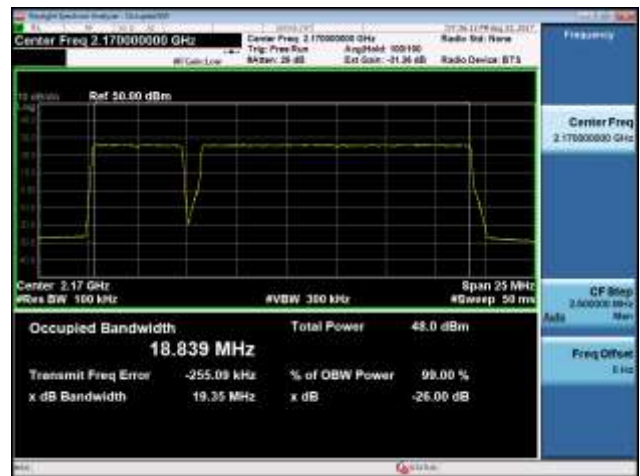
**16QAM**



**64QAM**



**256QAM**

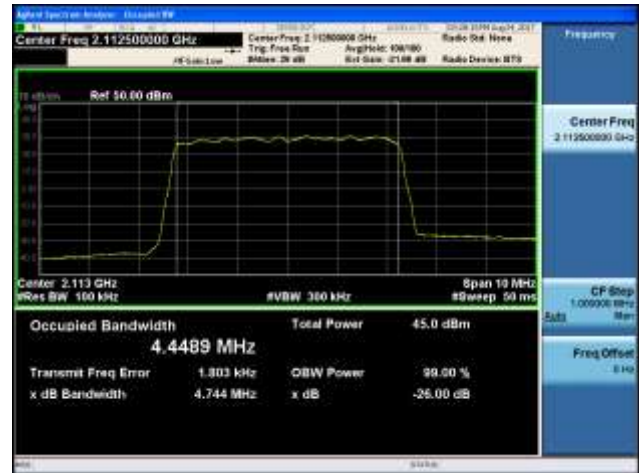


**Band 66, BW 5MHz + BW 5MHz, Multi carrier(Non-Contiguous), 2TX, Bottom**

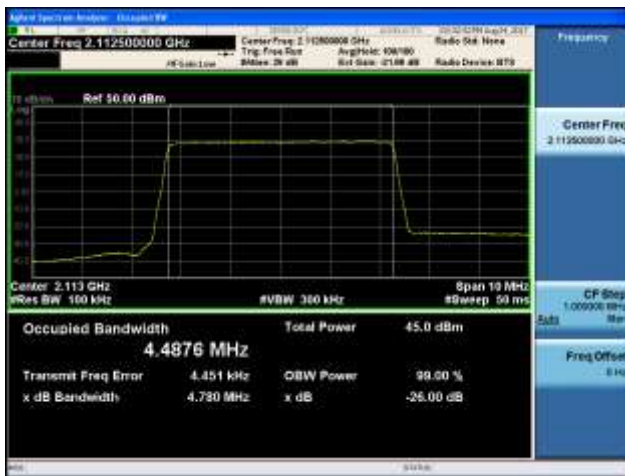
**QPSK**



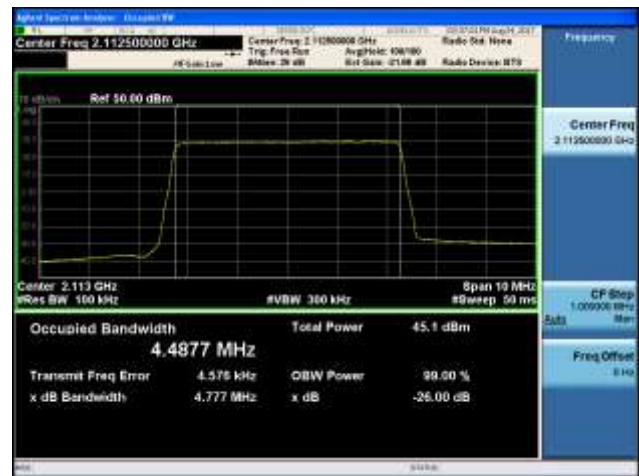
**16QAM**



**64QAM**



**256QAM**

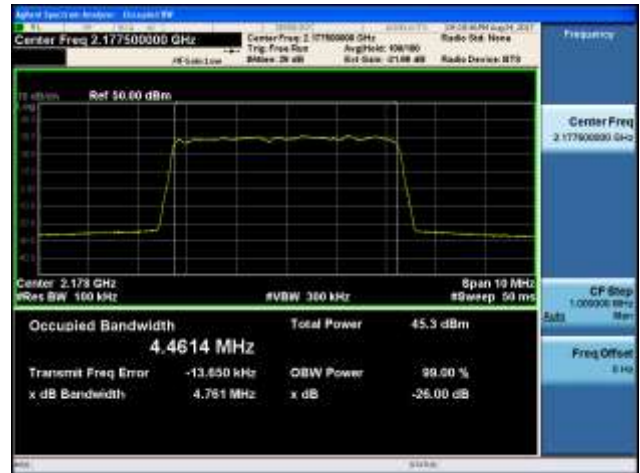


**Band 66, BW 5MHz + BW 5MHz, Multi carrier(Non-Contiguous), 2TX, Top**

**QPSK**



**16QAM**



**64QAM**

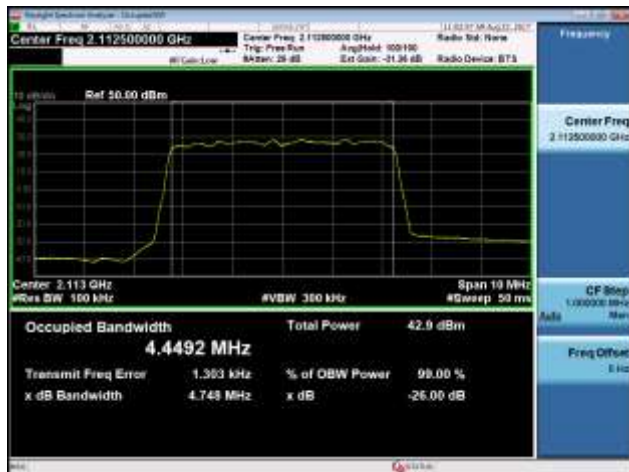


**256QAM**



**Band 66, BW 5MHz + BW 5MHz, Multi carrier(Non-Contiguous), 4TX, Bottom**

QPSK



16QAM



64QAM



256QAM

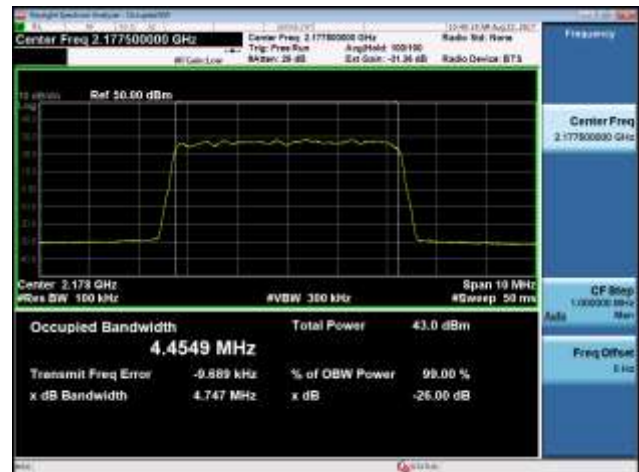


**Band 66, BW 5MHz + BW 5MHz, Multi carrier(Non-Contiguous), 4TX, Top**

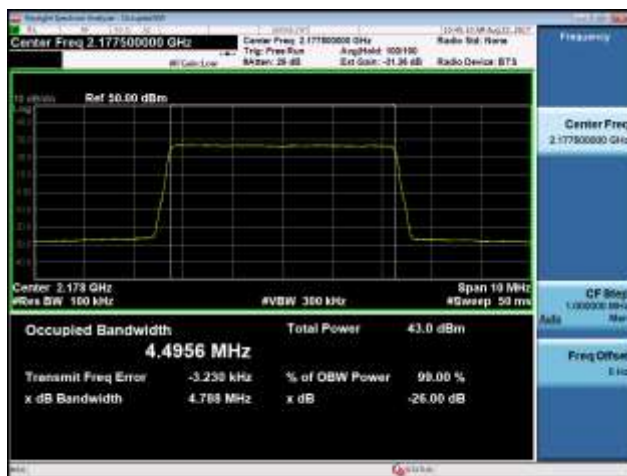
QPSK



16QAM



64QAM

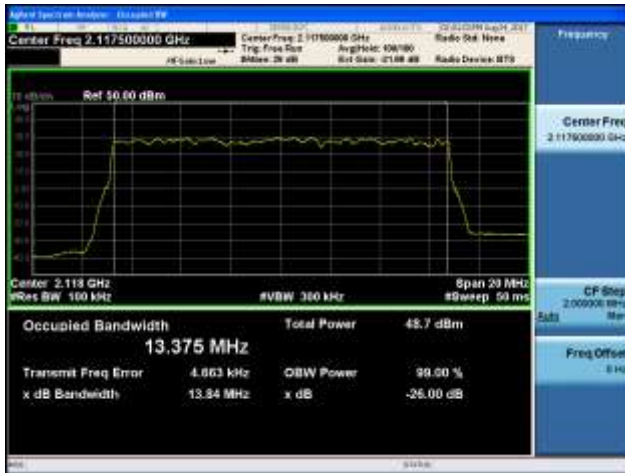


256QAM

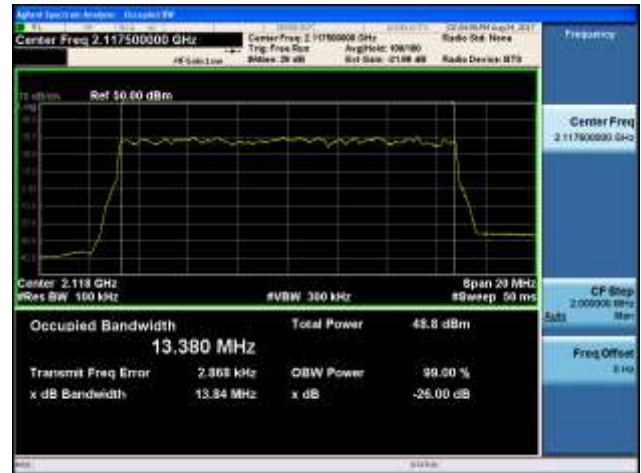


**Band 66, BW 15MHz + BW 5MHz, Multi carrier(Non-Contiguous), 2TX, Bottom**

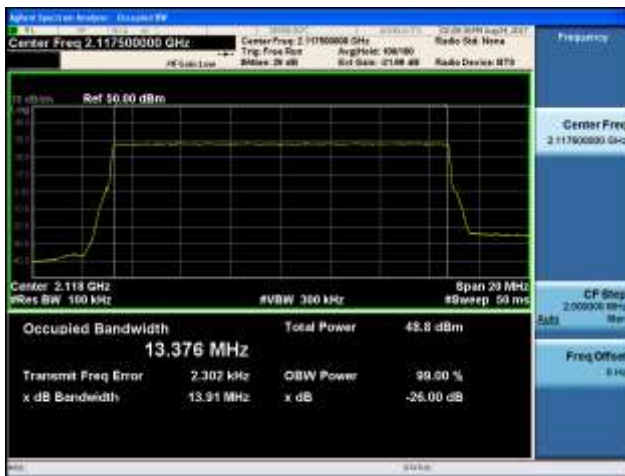
QPSK



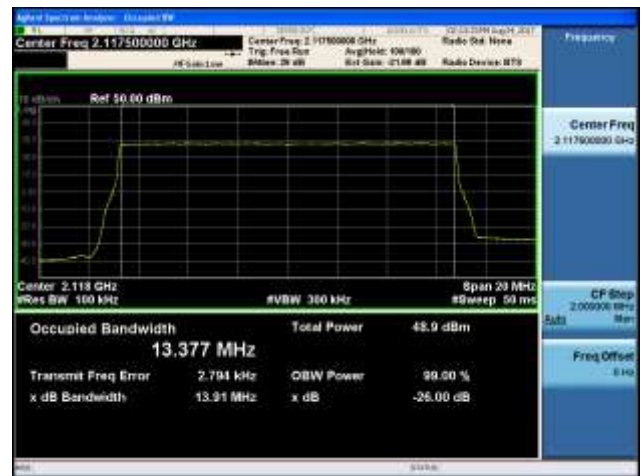
16QAM



64QAM



256QAM

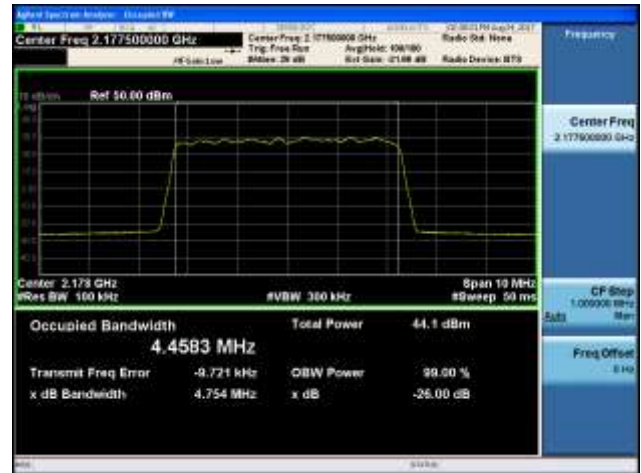


**Band 66, BW 15MHz + BW 5MHz, Multi carrier(Non-Contiguous), 2TX, Top**

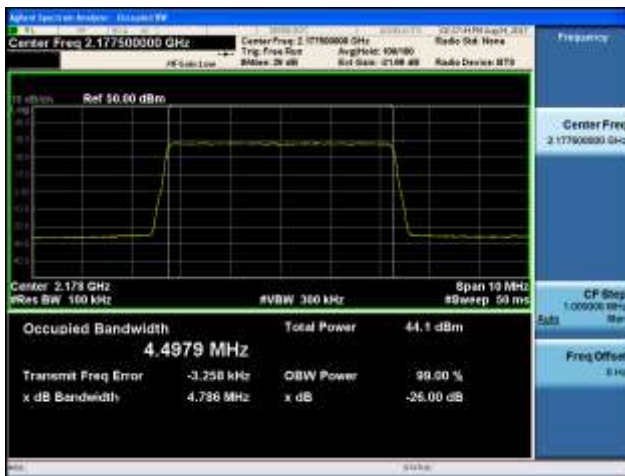
QPSK



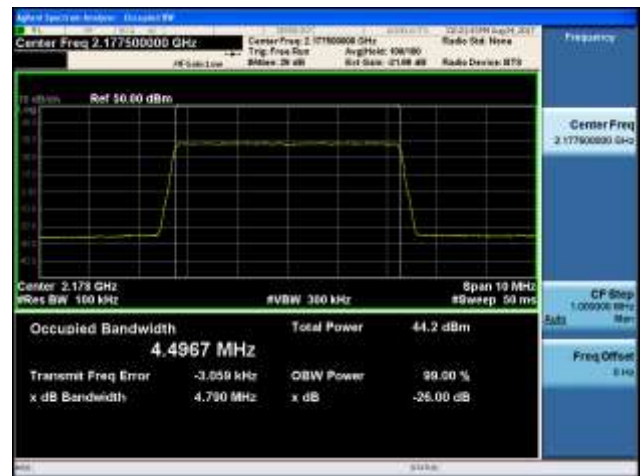
16QAM



64QAM



256QAM

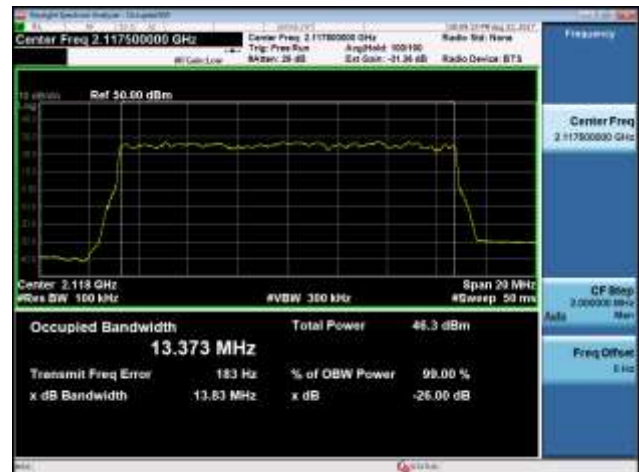


**Band 66, BW 15MHz + BW 5MHz, Multi carrier(Non-Contiguous), 4TX, Bottom**

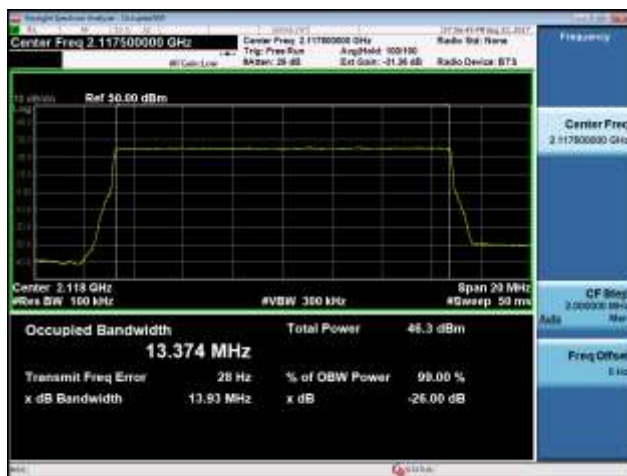
QPSK



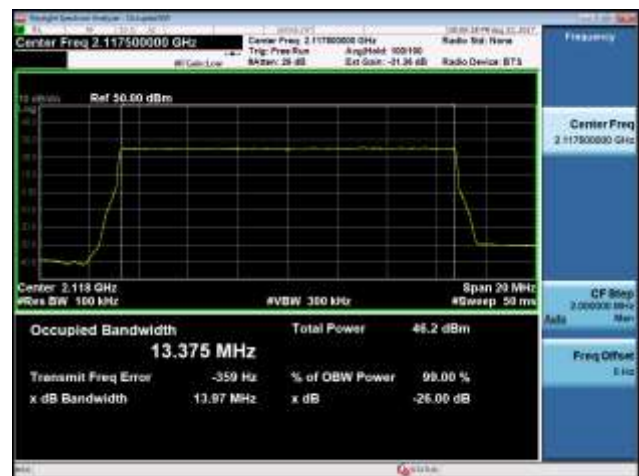
16QAM



64QAM



256QAM



**Band 66, BW 15MHz + BW 5MHz, Multi carrier(Non-Contiguous), 4TX, Top**

**QPSK**



**16QAM**



**64QAM**



**256QAM**

