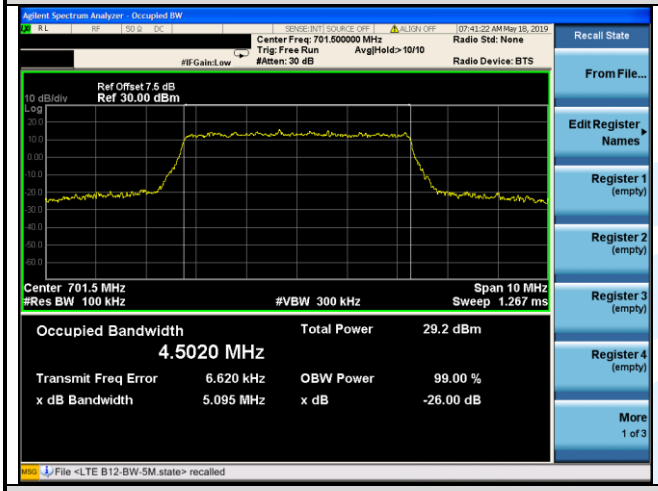
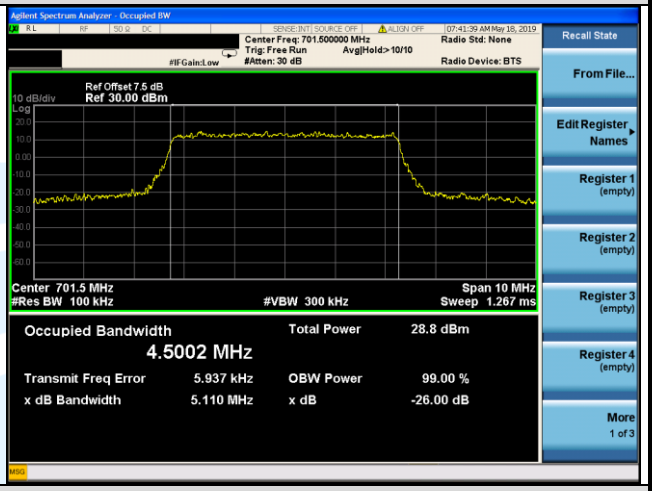
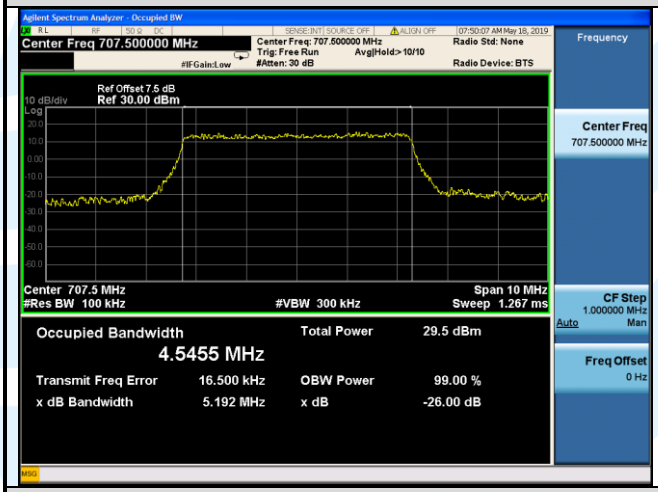
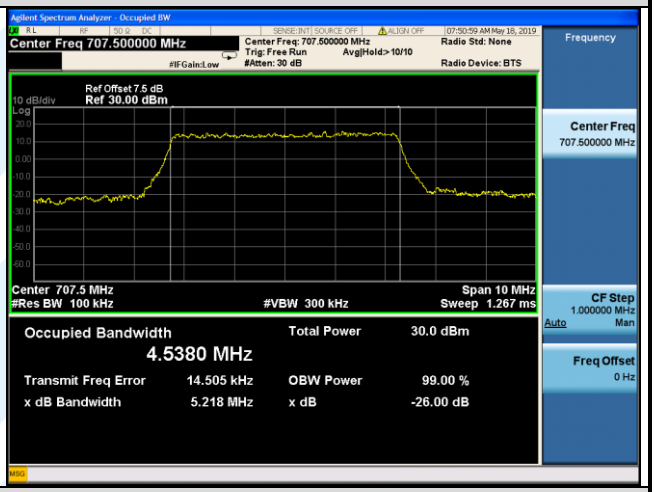
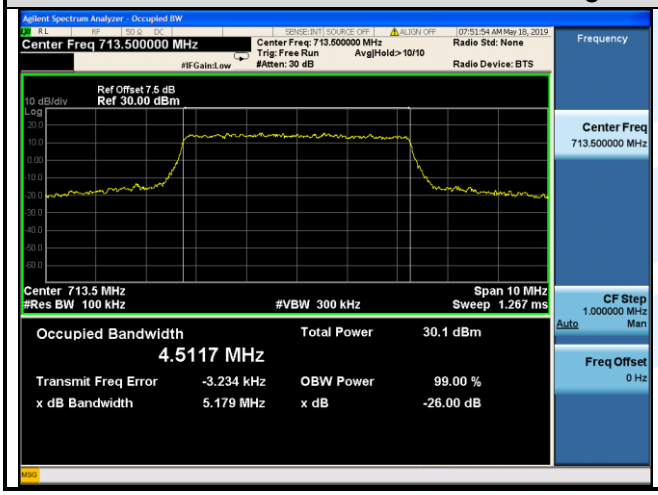
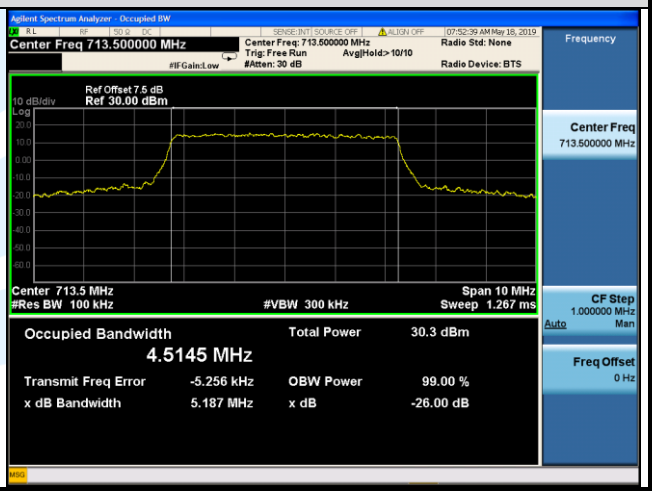
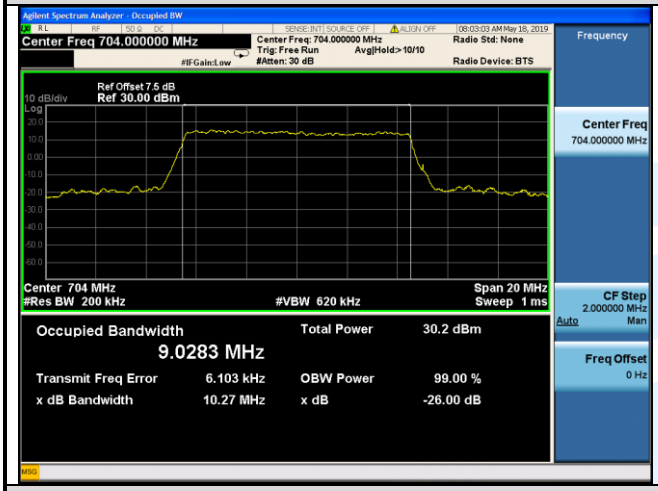
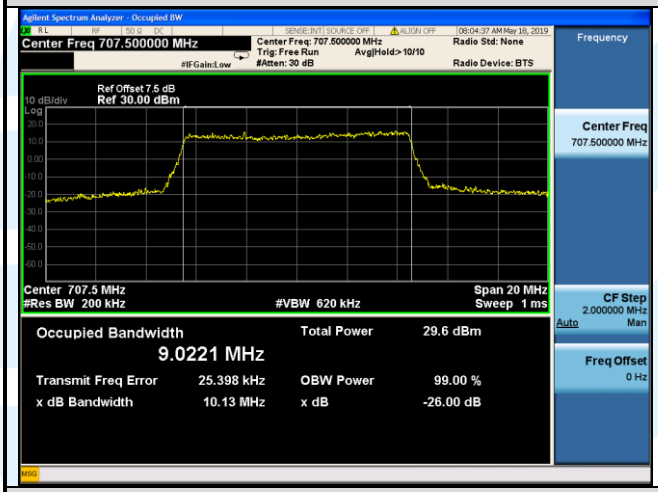
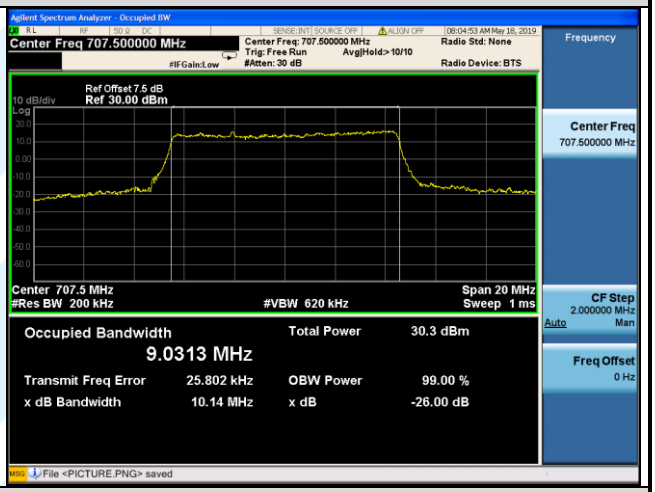
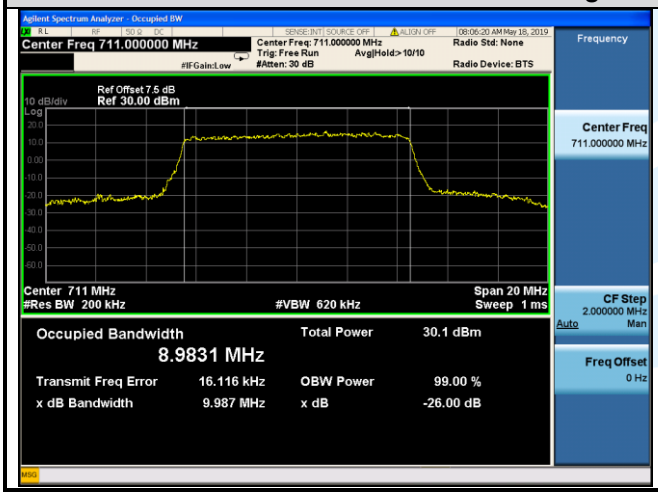
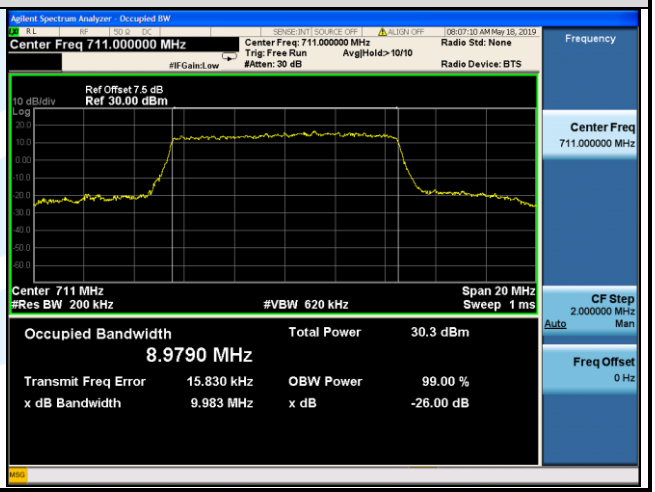
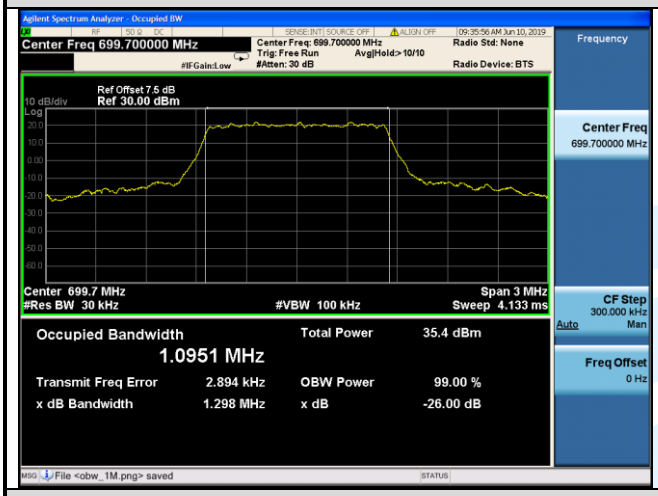
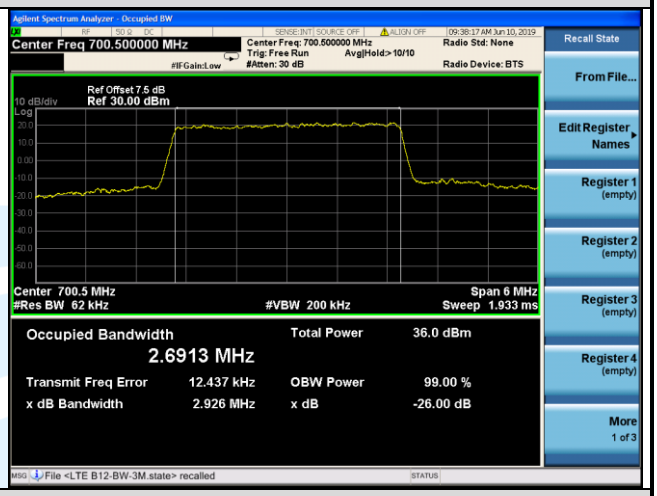
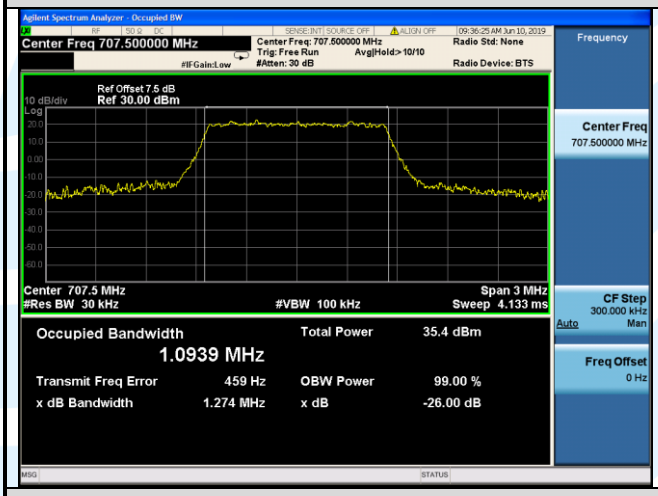
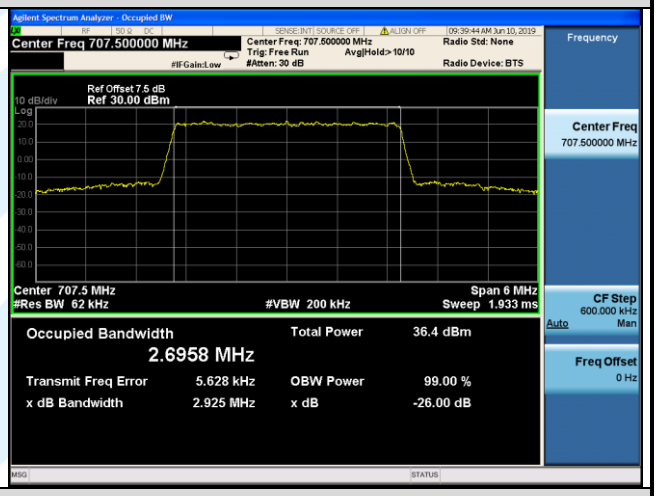
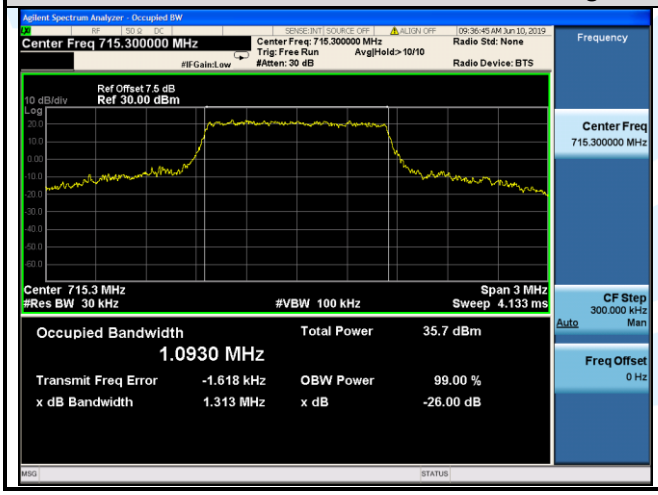
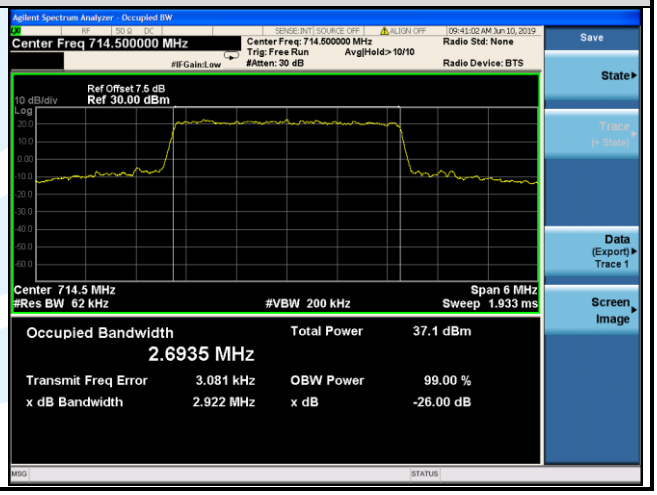
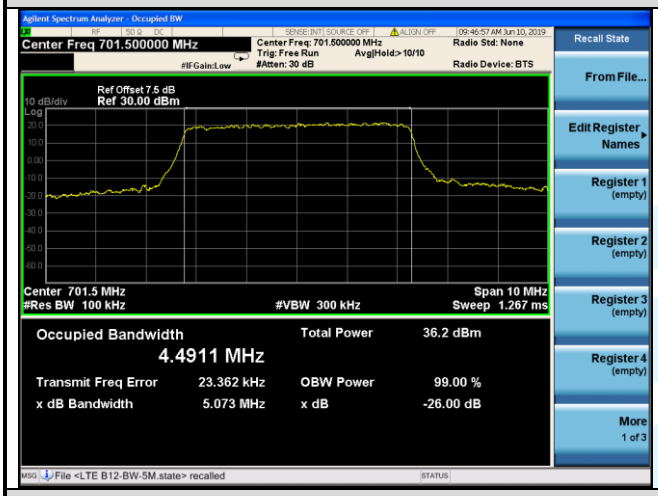
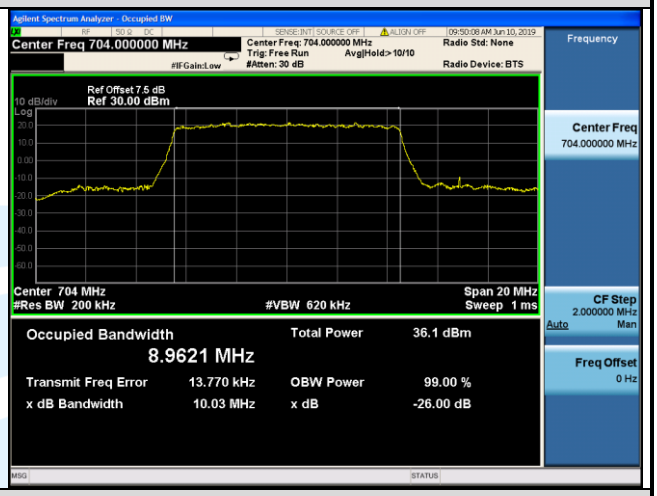
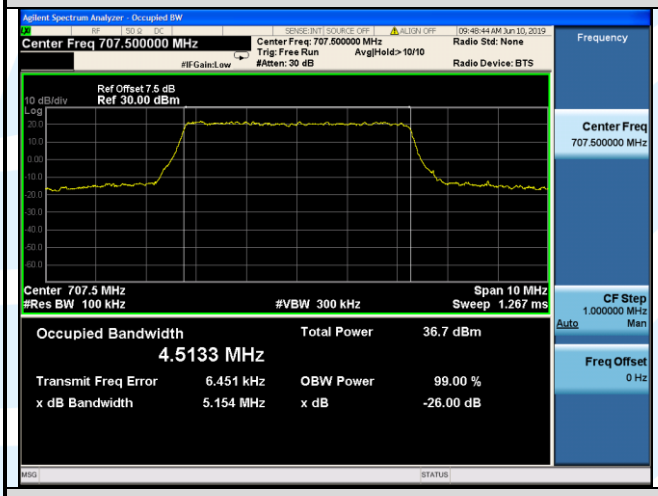
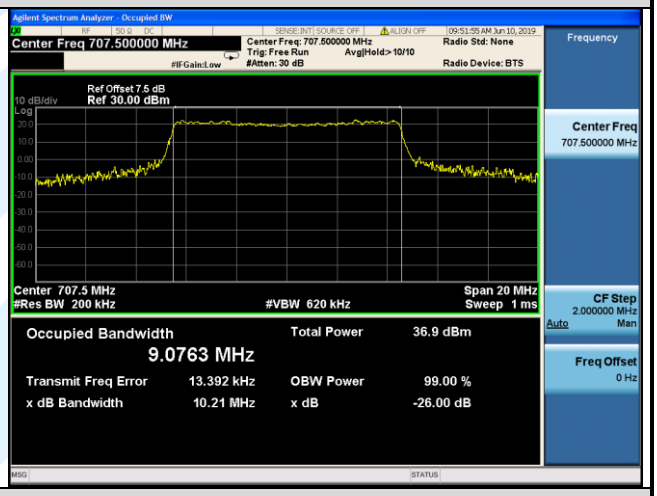
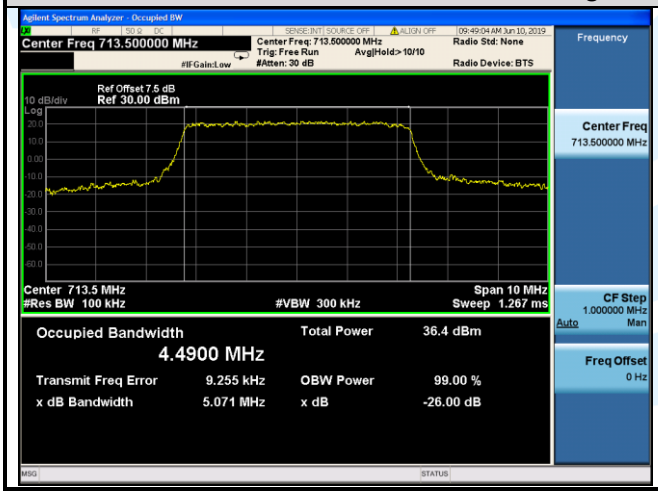
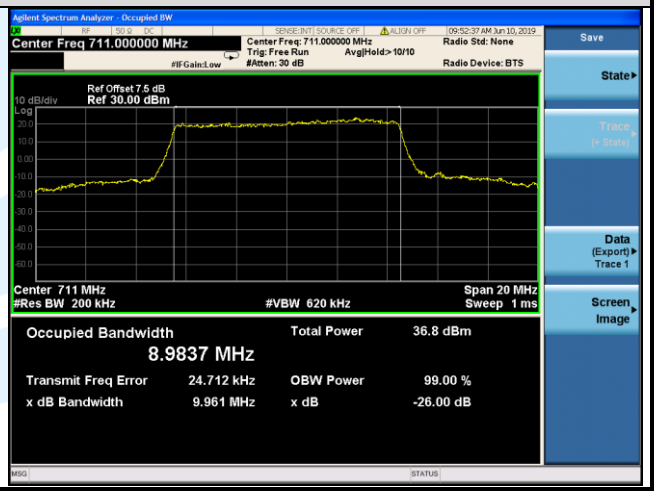
| LTE Band 12_ Channel Bandwidth: 5 MHz | |
|---|---|
| QPSK | 16QAM |
| **Lowest Channel** | |
|  |  |
| **Middle Channel** | |
|  |  |
| **Highest Channel** | |
|  |  |

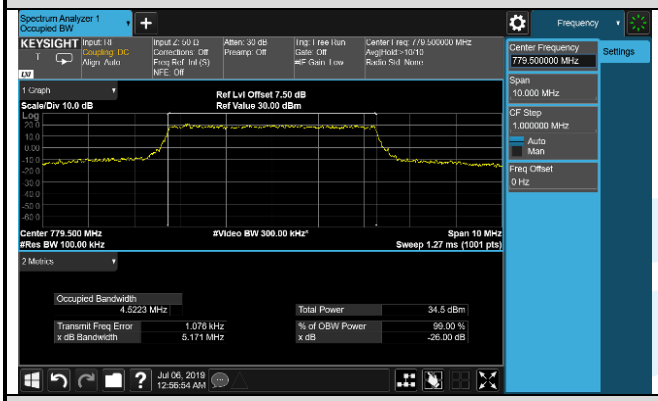
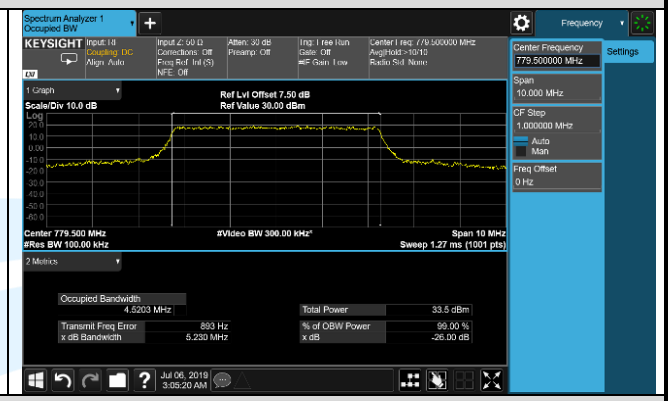
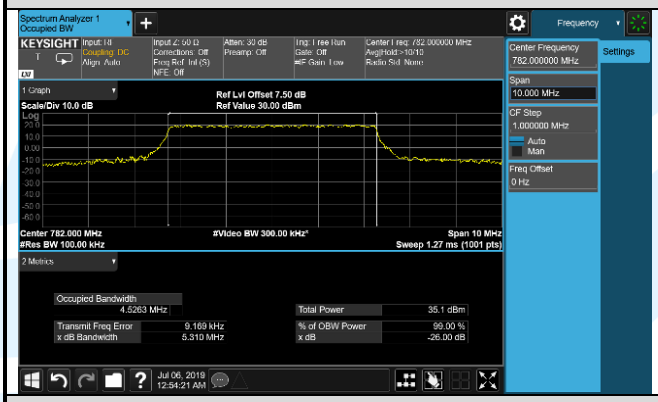
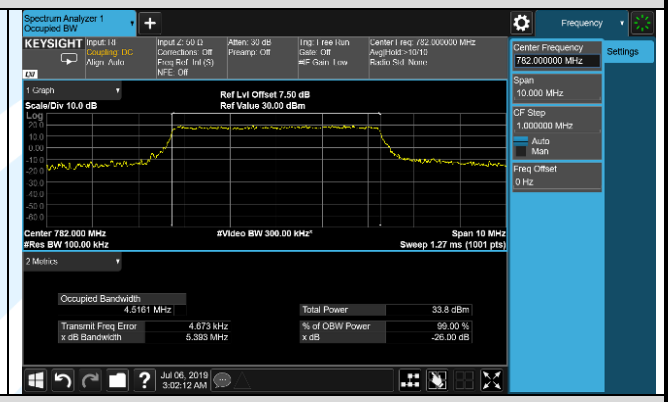
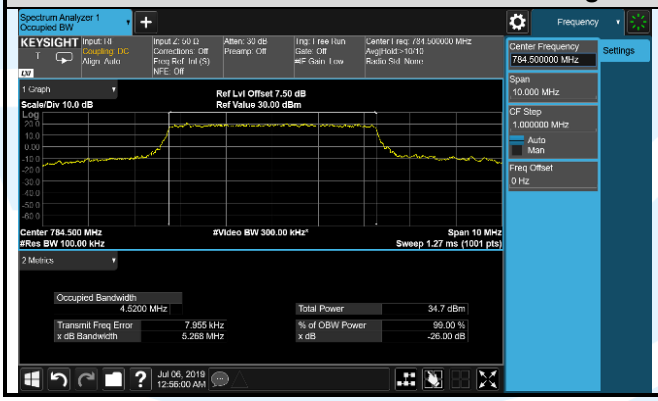
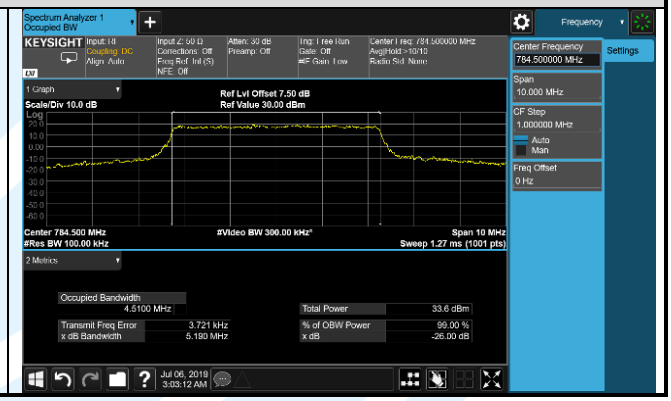
| LTE Band 12_ Channel Bandwidth: 10 MHz | |
|---|---|
| QPSK | 16QAM |
| **Lowest Channel** | |
|  |  |
| **Middle Channel** | |
|  |  |
| **Highest Channel** | |
|  |  |

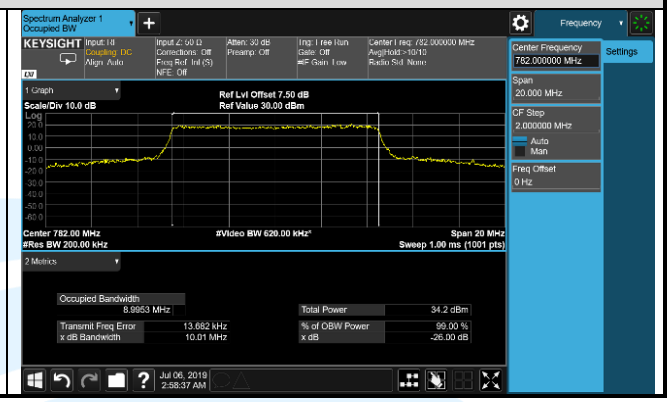
| LTE Band 12 / 1.4MHz / 64QAM | LTE Band 12 / 3MHz / 64QAM |
|---|---|
| **Lowest Channel** | |
|  |  |
| **Middle Channel** | |
|  |  |
| **Highest Channel** | |
|  |  |

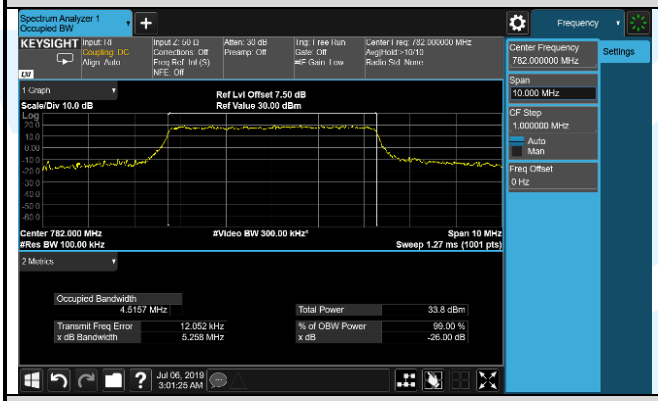
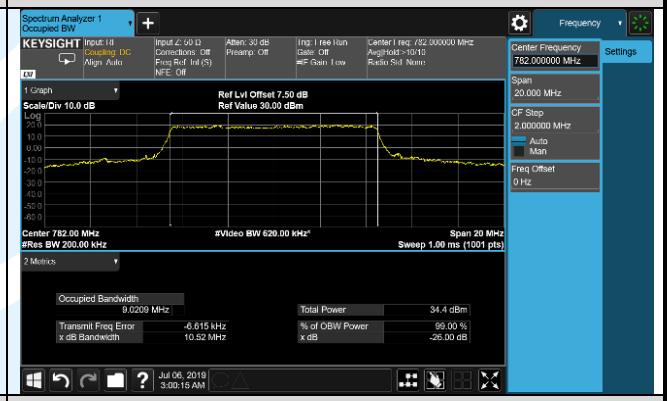
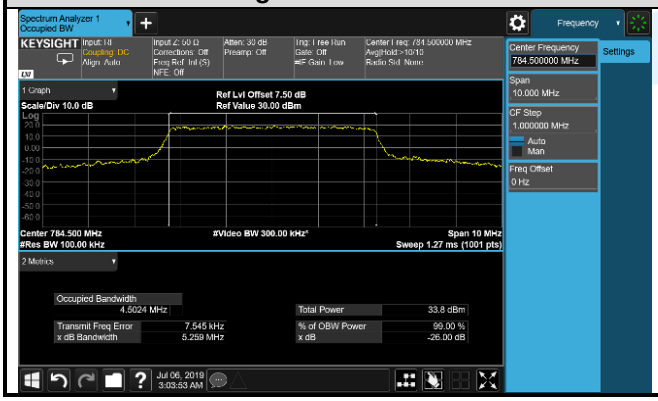
| LTE Band 12 / 5MHz / 64QAM | LTE Band 12 / 10MHz / 64QAM |
|---|---|
| **Lowest Channel** | |
|  |  |
| **Middle Channel** | |
|  |  |
| **Highest Channel** | |
|  |  |

**LTE Band 13**

| LTE Band 13 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Channel | RB Configuration | | 26 dB BW (MHz) | | | 99% BW (MHz) | | |
| | Size | Offset | QPSK | 16QAM | 64QAM | QPSK | 16QAM | 64QAM |
| **Channel Bandwidth: 5 MHz** | | | | | | | | |
| Lowest | 25 | 0 | 5.171 | 5.230 | 5.223 | 4.5223 | 4.5203 | 4.5123 |
| Middle | 25 | 0 | 5.310 | 5.393 | 5.258 | 4.5263 | 4.5161 | 4.5157 |
| Highest | 25 | 0 | 5.268 | 5.190 | 5.259 | 4.5200 | 4.5100 | 4.5024 |
| **Channel Bandwidth: 10 MHz** | | | | | | | | |
| Middle | 50 | 0 | 10.20 | 10.01 | 10.52 | 9.0180 | 8.9953 | 9.0209 |

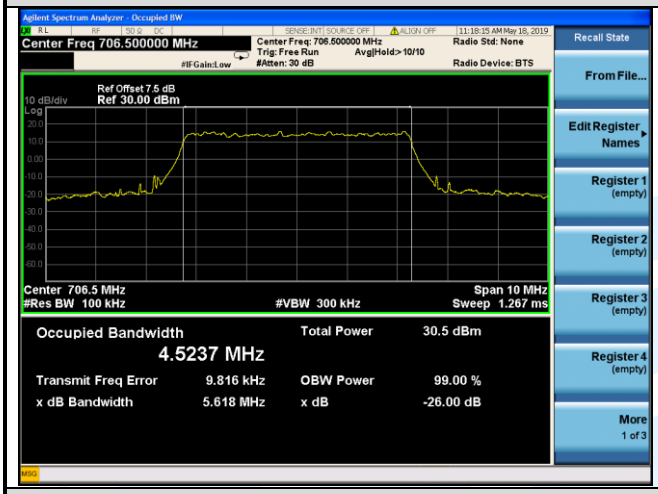
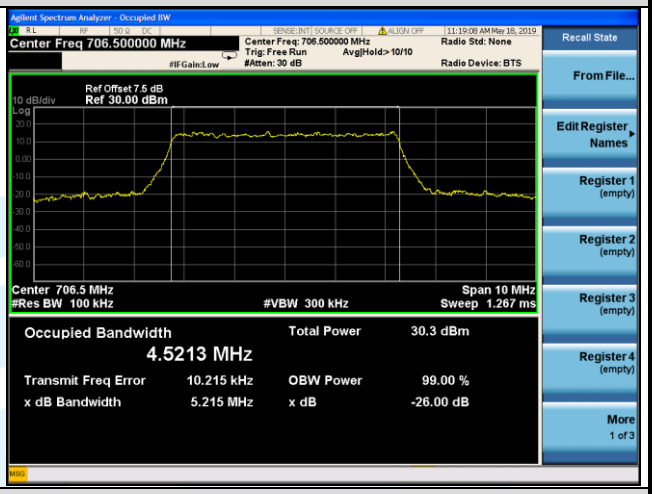
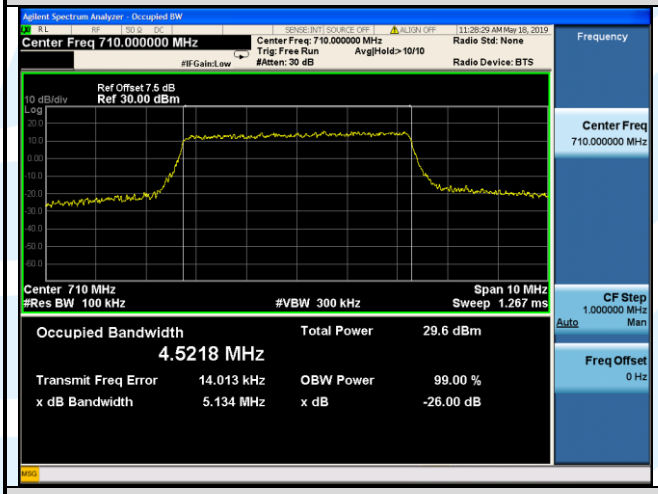
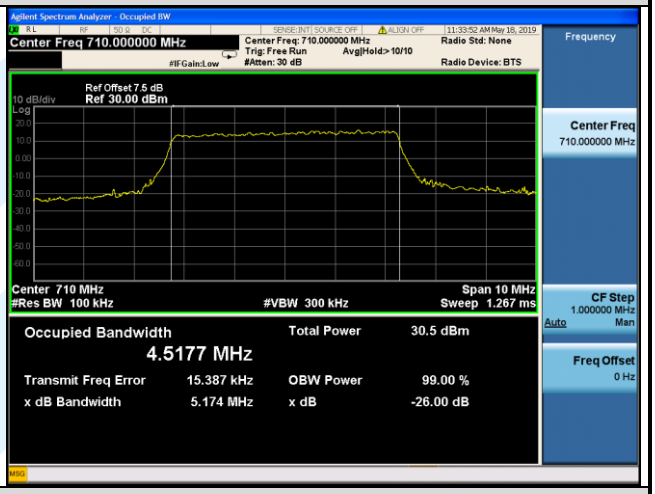
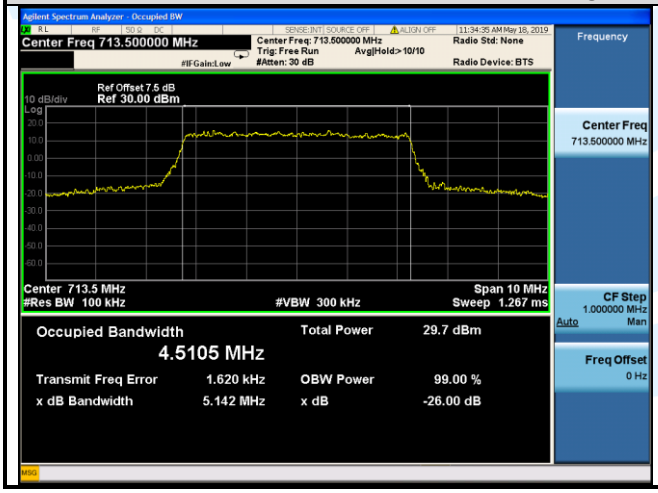
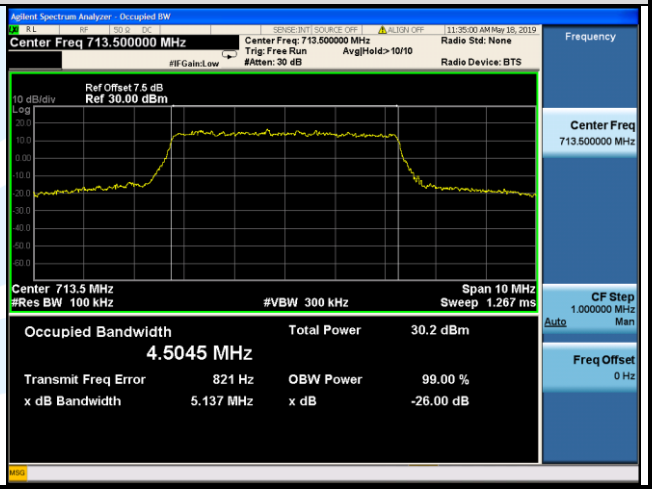
| LTE Band 13 Channel Bandwidth: 5 MHz | |
|---|---|
| QPSK | 16QAM |
| **Lowest Channel** | |
|  |  |
| **Middle Channel** | |
|  |  |
| **Highest Channel** | |
|  |  |

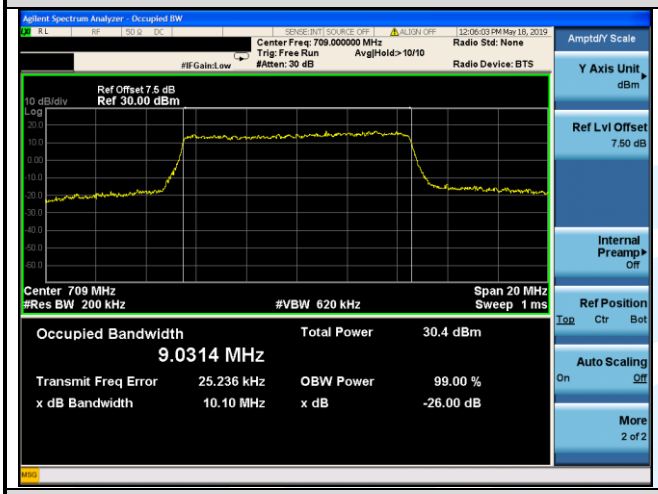
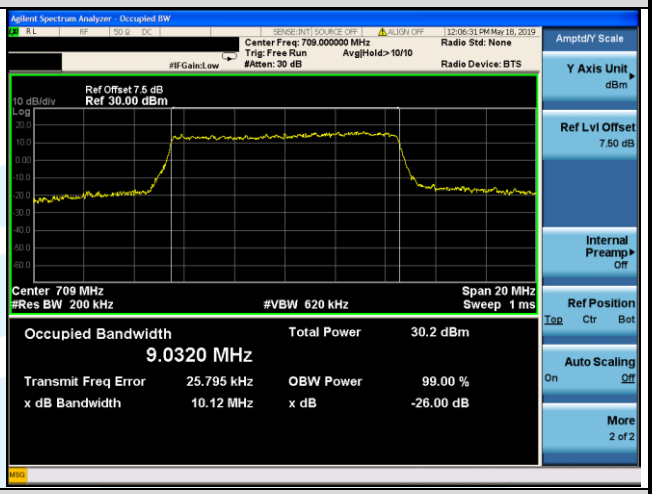
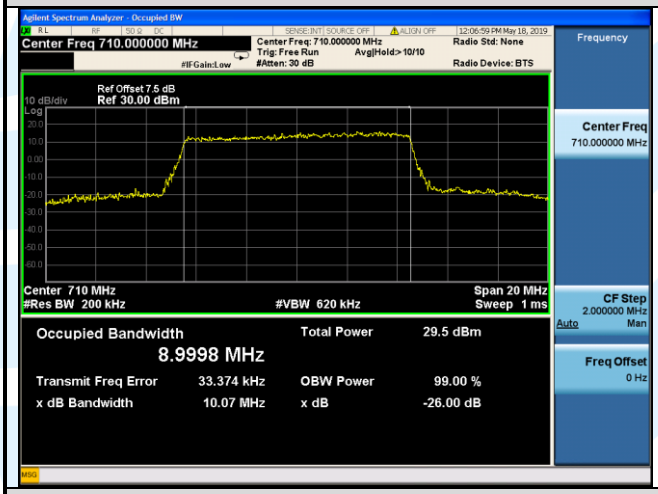
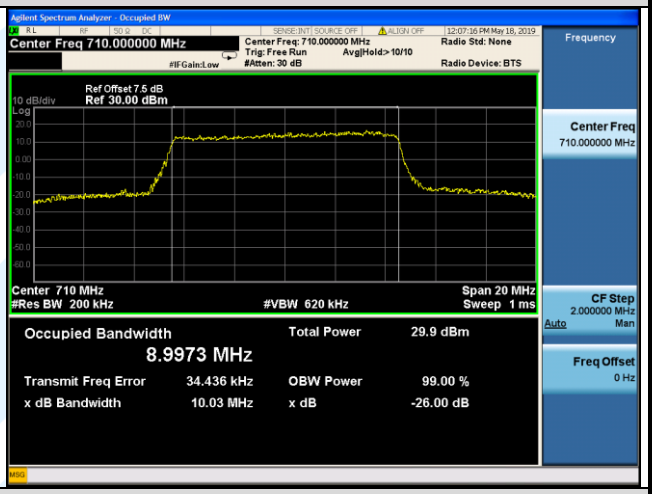
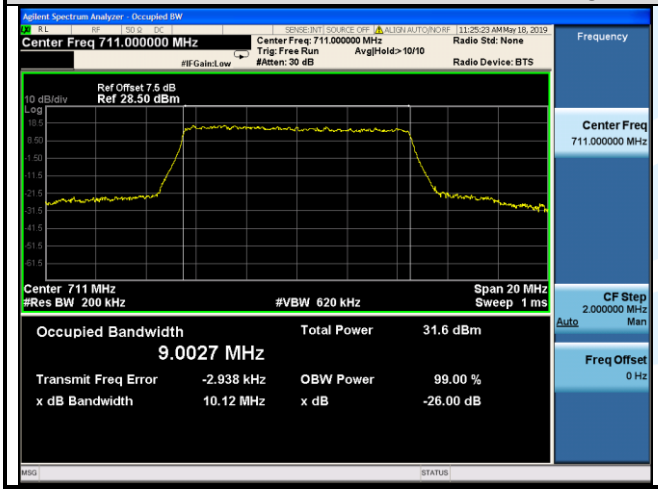
| LTE Band 13 Channel Bandwidth: 10 MHz | |
|---|---|
| QPSK | 16QAM |
| Middle Channel | |
|  |  |

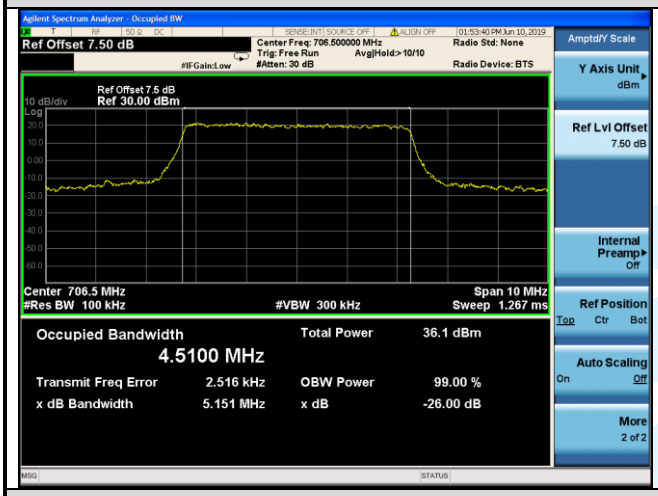
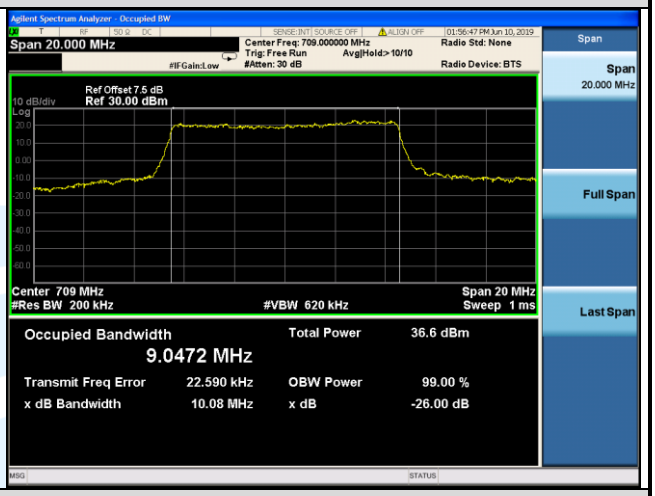
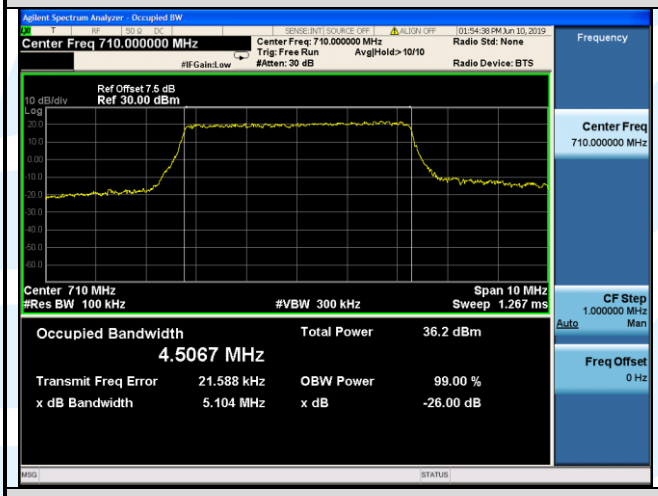
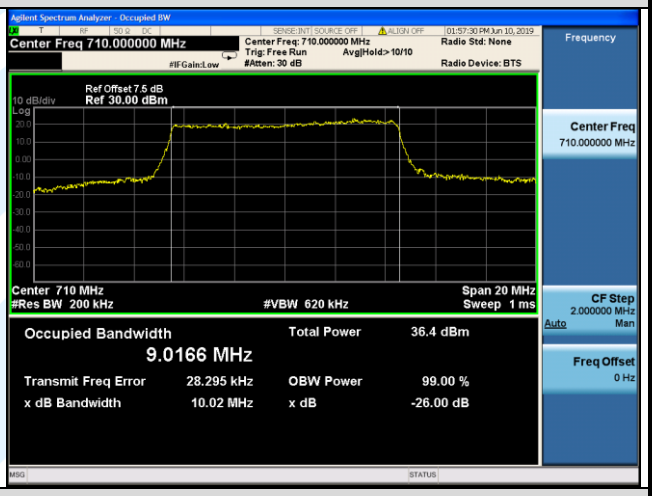
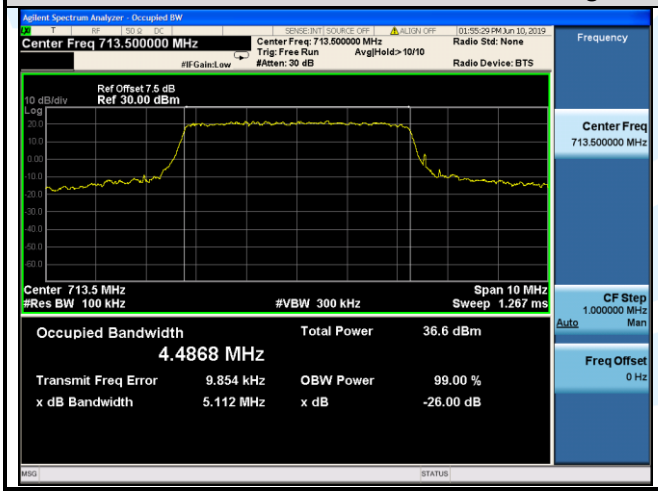
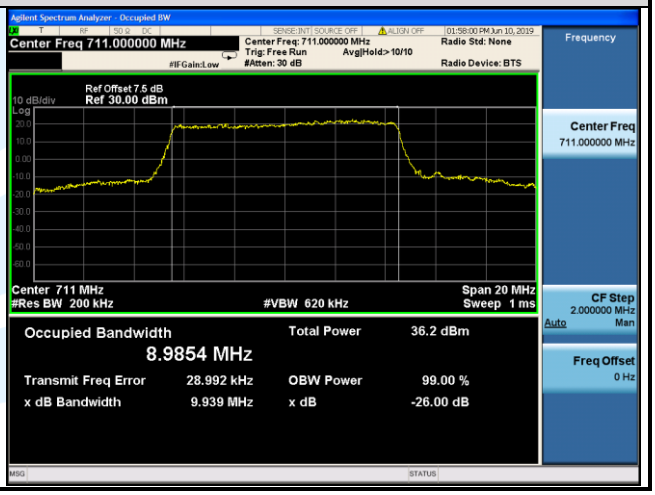
| LTE Band 13/ 5MHz / 64QAM | LTE Band 13/ 10MHz / 64QAM |
|---|---|
| Lowest Channel | Lowest Channel |
|  | N/A |
| Middle Channel | Middle Channel |
|  |  |
| Highest Channel | Highest Channel |
|  | N/A |

**LTE Band 17**

| LTE Band 17 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Channel | RB Configuration | | 26 dB BW (MHz) | | | 99% BW (MHz) | | |
| | Size | Offset | QPSK | 16QAM | 64QAM | QPSK | 16QAM | 64QAM |
| **Channel Bandwidth: 5 MHz** | | | | | | | | |
| Lowest | 25 | 0 | 5.618 | 5.215 | 5.151 | 4.5237 | 4.5213 | 4.5100 |
| Middle | 25 | 0 | 5.134 | 5.174 | 5.104 | 4.5218 | 4.5177 | 4.5067 |
| Highest | 25 | 0 | 5.142 | 5.137 | 5.112 | 4.5105 | 4.5045 | 4.4868 |
| **Channel Bandwidth: 10 MHz** | | | | | | | | |
| Lowest | 50 | 0 | 10.10 | 10.12 | 10.08 | 9.0314 | 9.0320 | 9.0472 |
| Middle | 50 | 0 | 10.07 | 10.03 | 10.02 | 8.9998 | 8.9973 | 9.0166 |
| Highest | 50 | 0 | 10.12 | 10.15 | 9.939 | 9.0027 | 9.0036 | 8.9854 |

| LTE Band 17_ Channel Bandwidth: 5 MHz | |
|---|---|
| QPSK | 16QAM |
| **Lowest Channel** | |
|  |  |
| **Middle Channel** | |
|  |  |
| **Highest Channel** | |
|  |  |

| LTE Band 17_ Channel Bandwidth: 10 MHz | |
|---|---|
| QPSK | 16QAM |
| **Lowest Channel** | |
|  |  |
| **Middle Channel** | |
|  |  |
| **Highest Channel** | |
|  |  |

| LTE Band 17 / 5MHz / 64QAM | LTE Band 17 / 10MHz / 64QAM |
|---|---|
| **Lowest Channel** | |
|  |  |
| **Middle Channel** | |
|  |  |
| **Highest Channel** | |
|  |  |

## 5.6 BAND EDGE AT ANTENNA TERMINALS

**Test Requirement:** FCC 47 CFR Part 2.1051,
GSM 850 & WCDMA Band V & LTE Band 5: FCC 47 CFR Part 22.917(a),
GSM 1900 & WCDMA Band II & LTE Band 2: FCC 47 CFR Part 24.238(a),
WCDMA Band IV & LTE Band 4: FCC 47 CFR Part 27.53(h)(1),
LTE Band 12 & Band 17: FCC 47 CFR Part 27.53(g)
LTE Band 13: FCC 47 CFR Part 27.53(c)(2)
LTE Band 7: FCC 47 CFR Part 27.53(m)(4)

**Test Method:** ANSI/TIA-603-E-2016 & KDB 971168 D01v03r01

**Limit:**

**FCC 47 CFR Part 22 & FCC 47 CFR Part 24:** The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to -13 dBm.

**FCC 47 CFR Part 27.53(g):** For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

**FCC 47 CFR Part 27.53(h)(1)**: Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB. The emission limit equal to –13 dBm.

**FCC 47 CFR Part 27.53(c)(2):** On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

**FCC 47 CFR Part 27.53(m)(4)**: For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

**Test Procedure:**

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer.
For each band edge measurement:

1) Set the spectrum analyzer span to include the block edge frequency.
2) Set a marker to point the corresponding band edge frequency in each test case.
3) Set display line at -13 dBm
4) Set resolution bandwidth to at least 1% of emission bandwidth.
5) Set spectrum analyzer with RMS detector.
6) Record the max trace plot into the test report

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

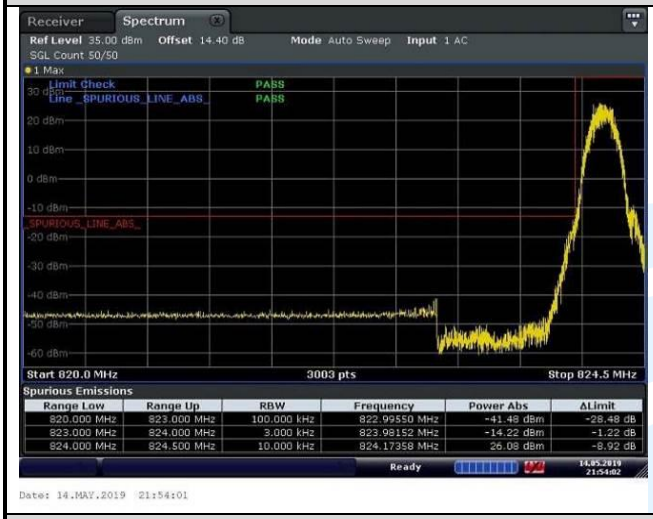
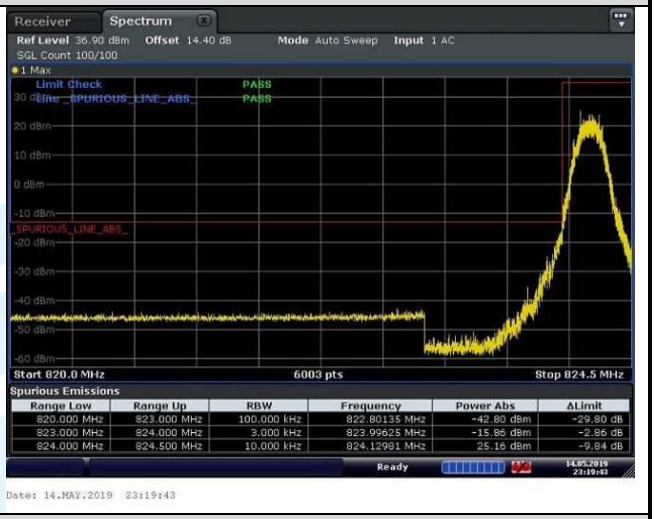
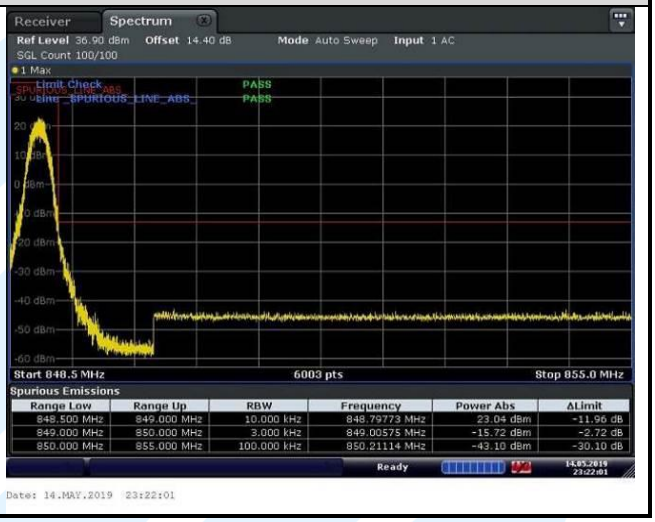
**Test Setup:** Refer to section 4.2.2 for details.

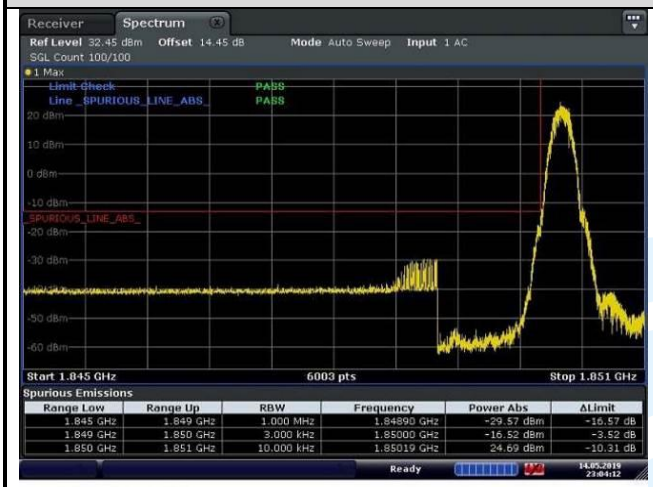
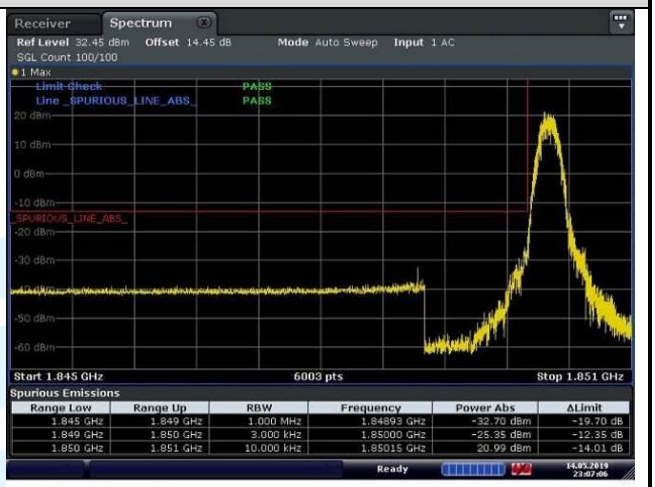
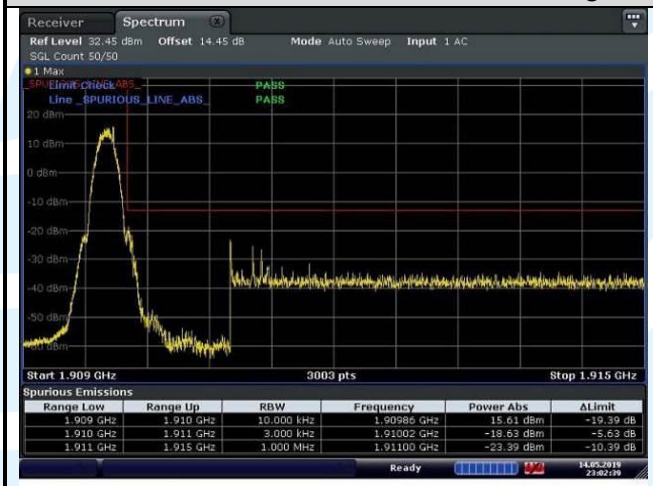
**Instruments Used:** Refer to section 3 for details

**Test Mode:** Link mode

**Test Results:** Pass

**The test plots as follows:**

| GSM 850 1Tx-slot | EDGE 850 1Tx-slot |
|---|---|
| **Lowest Channel** | |
|  |  |
| **Highest Channel** | |
|  |  |

| GSM 1900 1Tx-slot | EDGE 1900 1Tx-slot |
|---|---|
| **Lowest Channel** | |
|  |  |
| **Highest Channel** | |
|  |  |