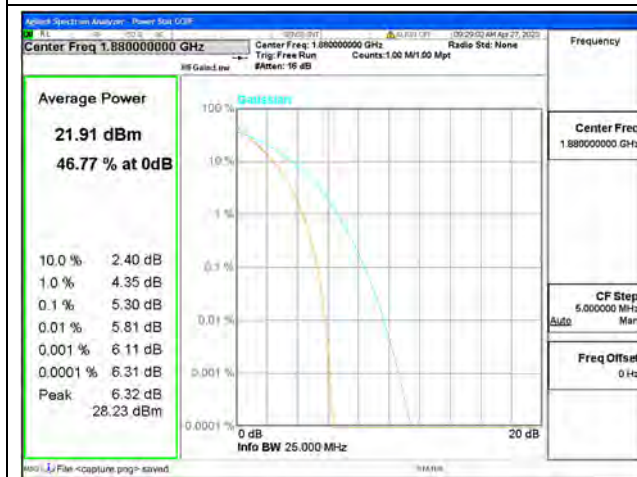


Band2 / 15MHz / Low CH / QPSK



Band2 / 15MHz / Low CH / 16QAM



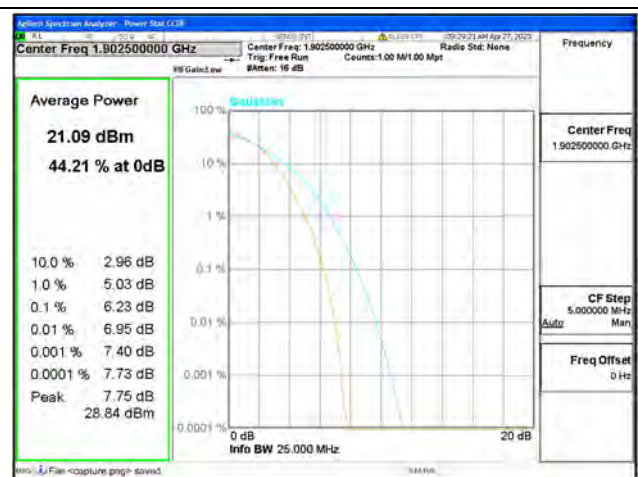
Band2 / 15MHz / Mid CH / QPSK



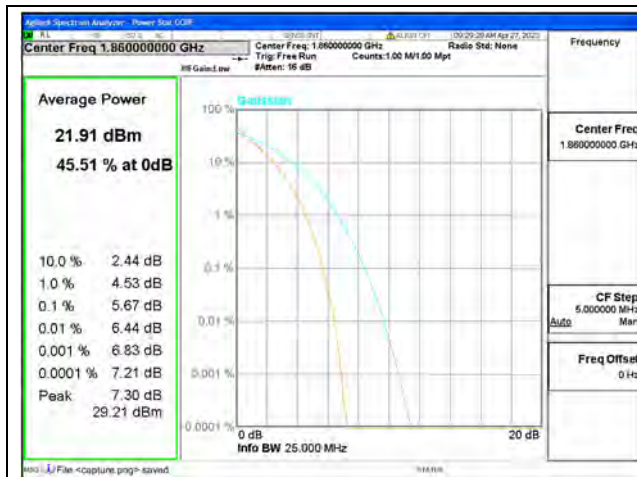
Band2 / 15MHz / Mid CH / 16QAM



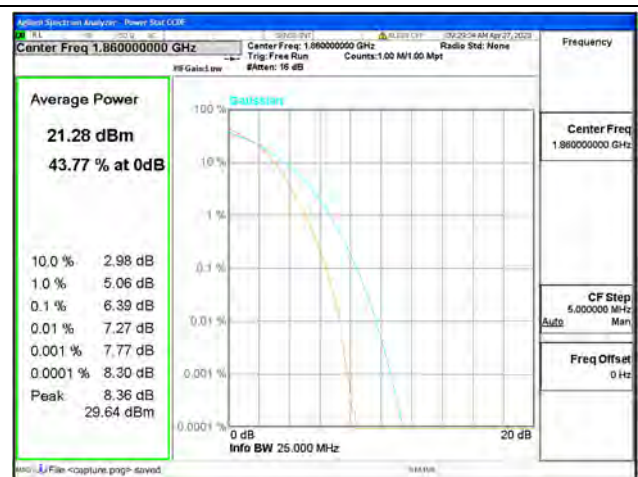
Band2 / 15MHz / High CH / QPSK



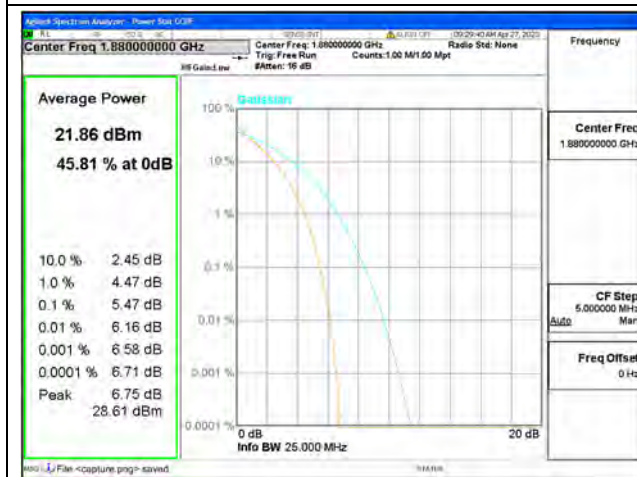
Band2 / 15MHz / High CH / 16QAM



Band2 / 20MHz / Low CH / QPSK



Band2 / 20MHz / Low CH / 16QAM



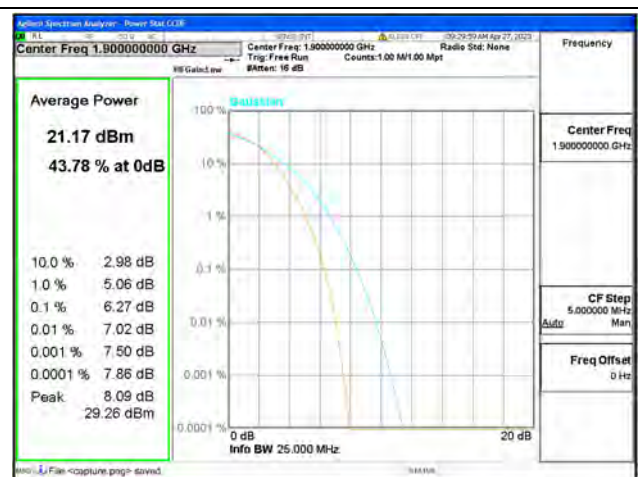
Band2 / 20MHz / Mid CH / QPSK



Band2 / 20MHz / Mid CH / 16QAM

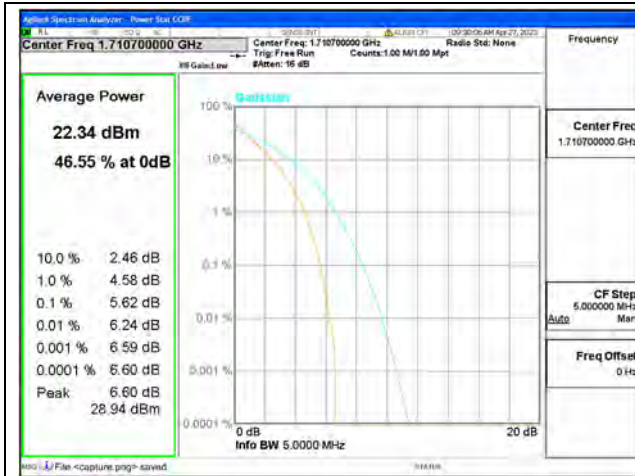


Band2 / 20MHz / High CH / QPSK



Band2 / 20MHz / High CH / 16QAM





Band4 / 1.4MHz / Low CH / QPSK



Band4 / 1.4MHz / Low CH / 16QAM



Band4 / 1.4MHz / Mid CH / QPSK



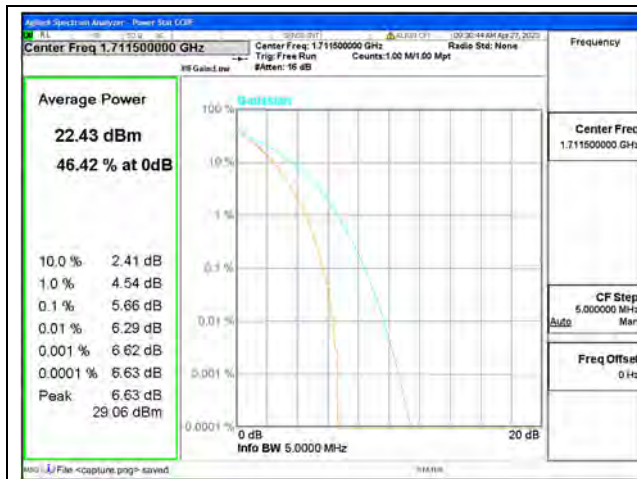
Band4 / 1.4MHz / Mid CH / 16QAM



Band4 / 1.4MHz / High CH / QPSK



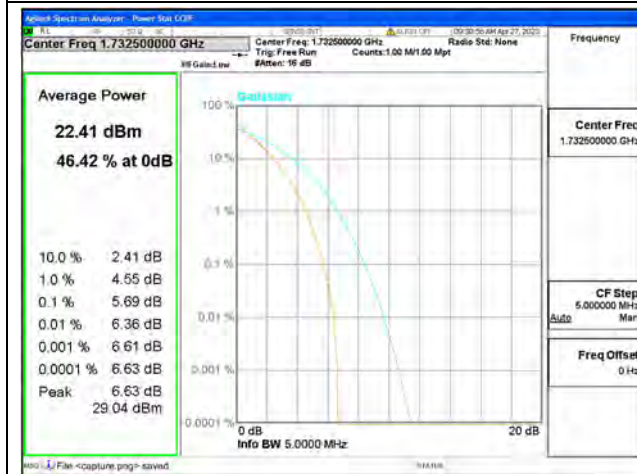
Band4 / 1.4MHz / High CH / 16QAM



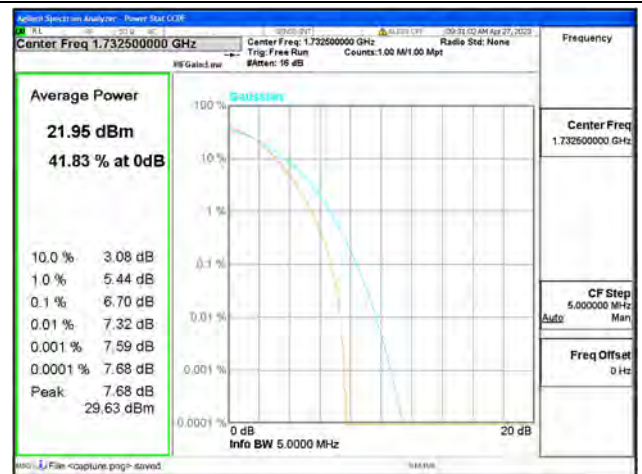
Band4 / 3MHz / Low CH / QPSK



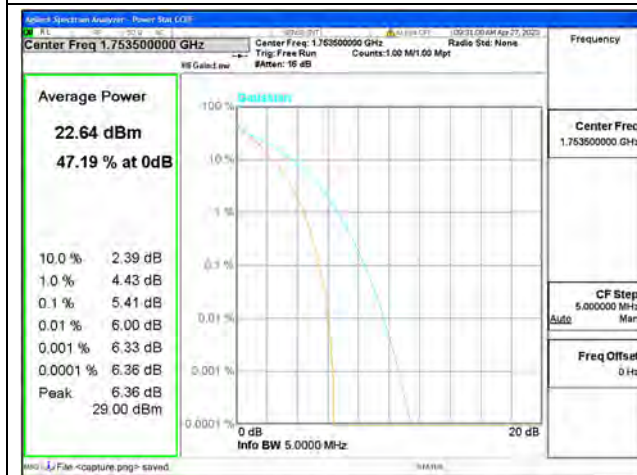
Band4 / 3MHz / Low CH / 16QAM



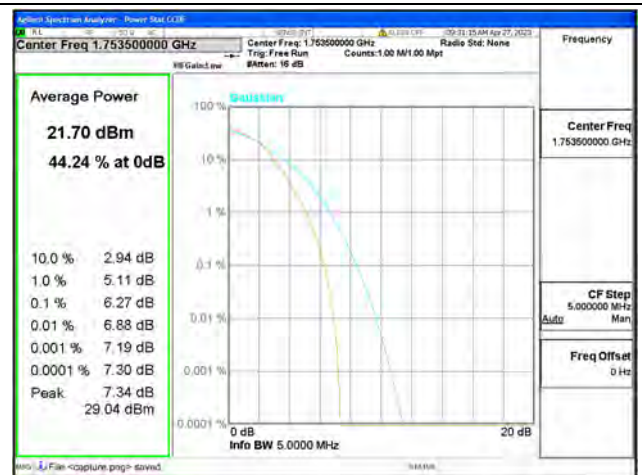
Band4 / 3MHz / Mid CH / QPSK



Band4 / 3MHz / Mid CH / 16QAM

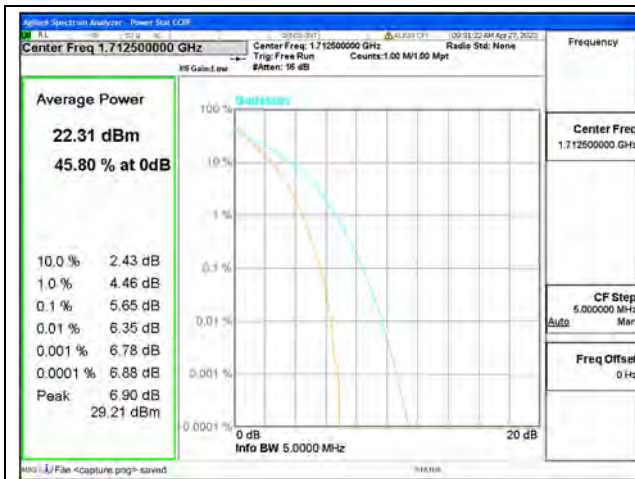


Band4 / 3MHz / High CH / QPSK

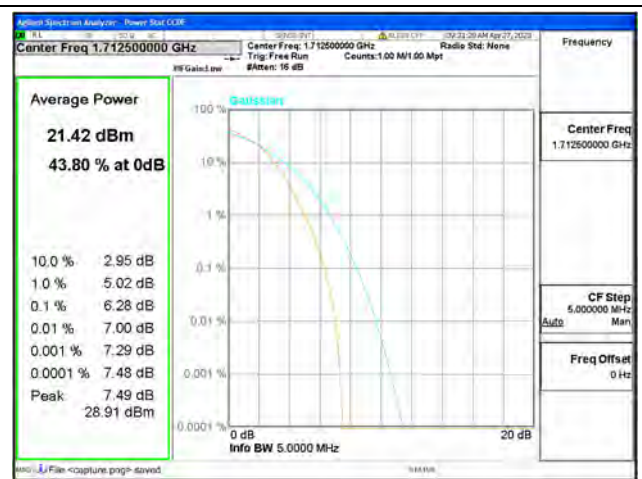


Band4 / 3MHz / High CH / 16QAM

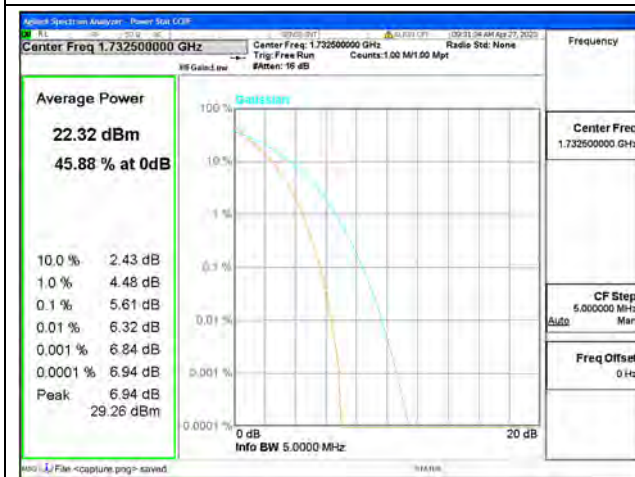




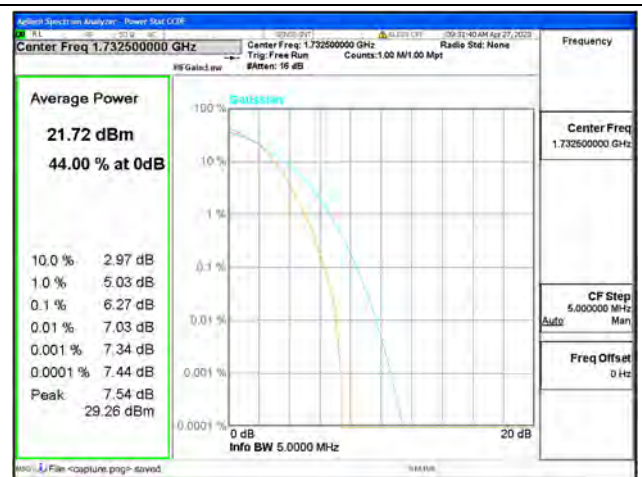
Band4 / 5MHz / Low CH / QPSK



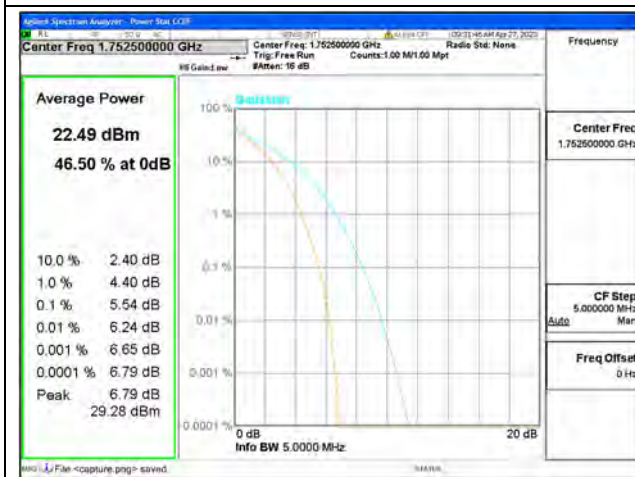
Band4 / 5MHz / Low CH / 16QAM



Band4 / 5MHz / Mid CH / QPSK



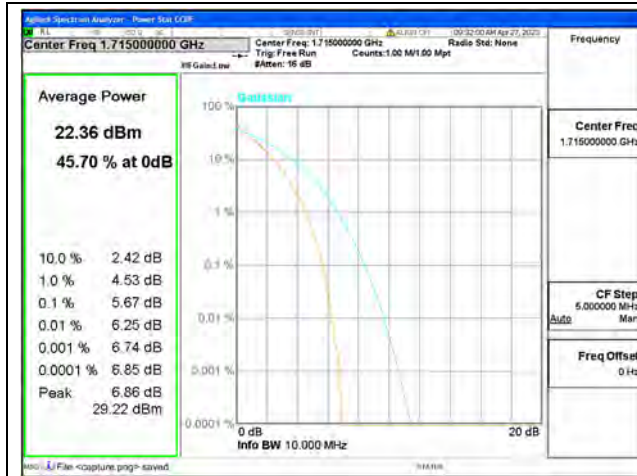
Band4 / 5MHz / Mid CH / 16QAM



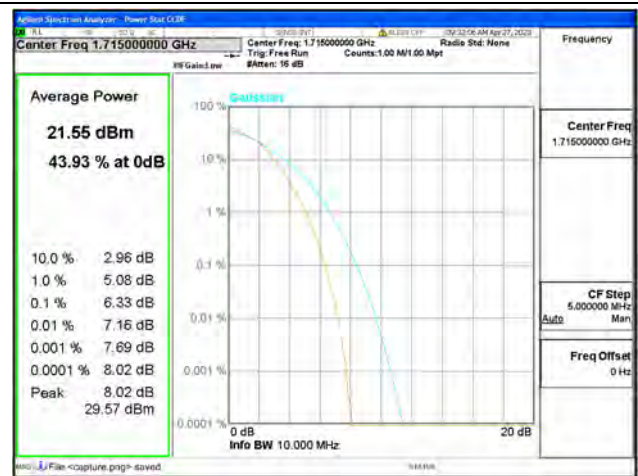
Band4 / 5MHz / High CH / QPSK



Band4 / 5MHz / High CH / 16QAM



Band 4 / 10MHz / Low CH / QPSK



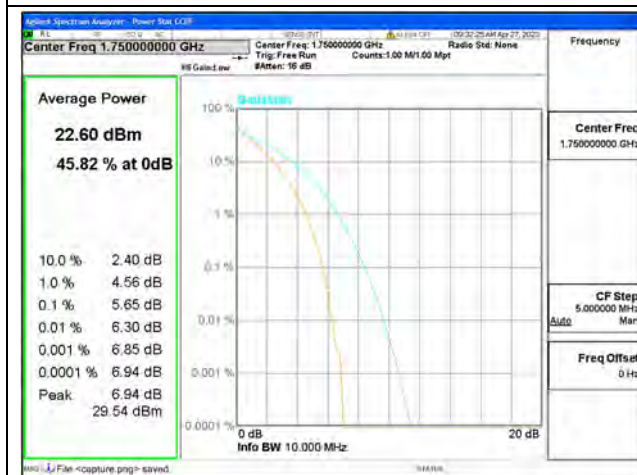
Band 4 / 10MHz / Low CH / 16QAM



Band 4 / 10MHz / Mid CH / QPSK



Band 4 / 10MHz / Mid CH / 16QAM

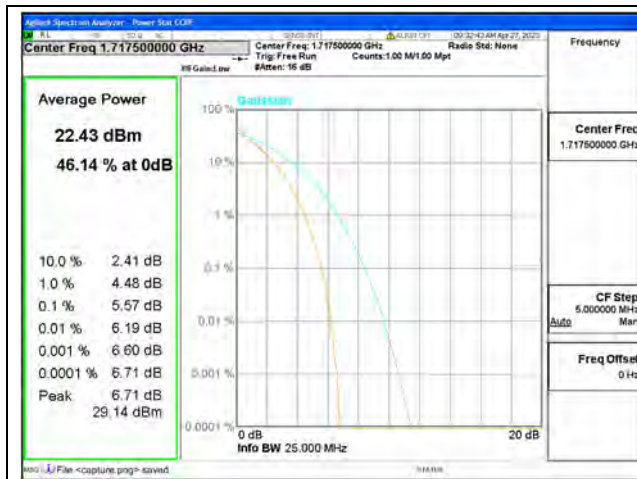


Band 4 / 10MHz / High CH / QPSK

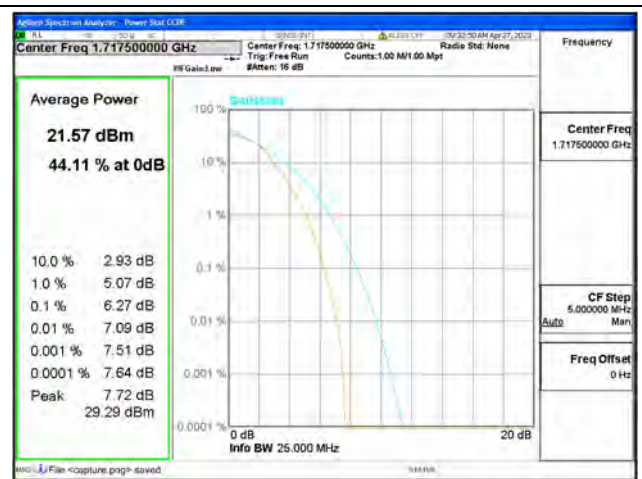


Band 4 / 10MHz / High CH / 16QAM

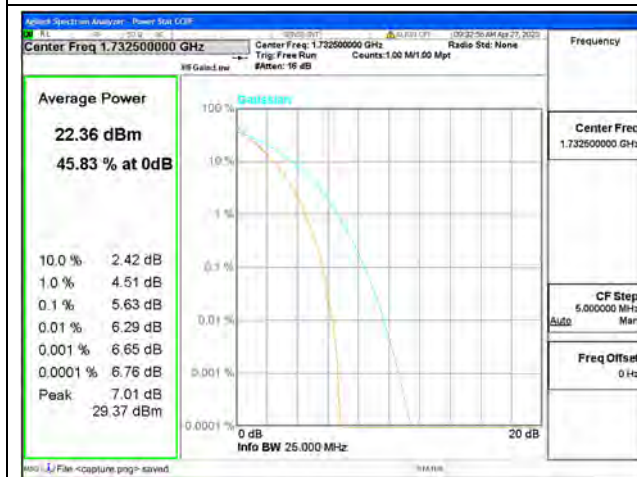




Band 4 / 15MHz / Low CH / QPSK



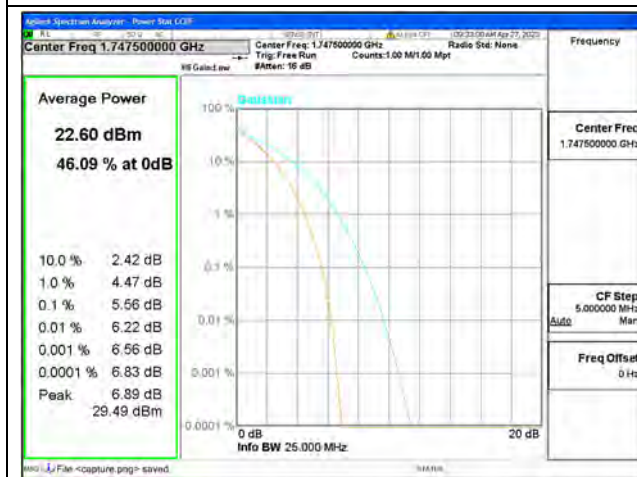
Band 4 / 15MHz / Low CH / 16QAM



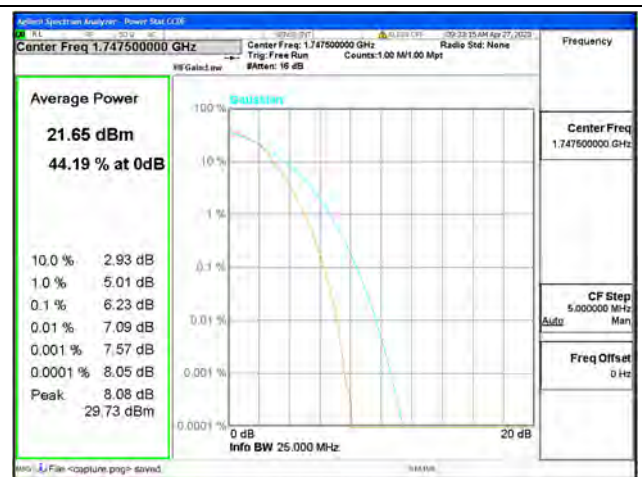
Band 4 / 15MHz / Mid CH / QPSK



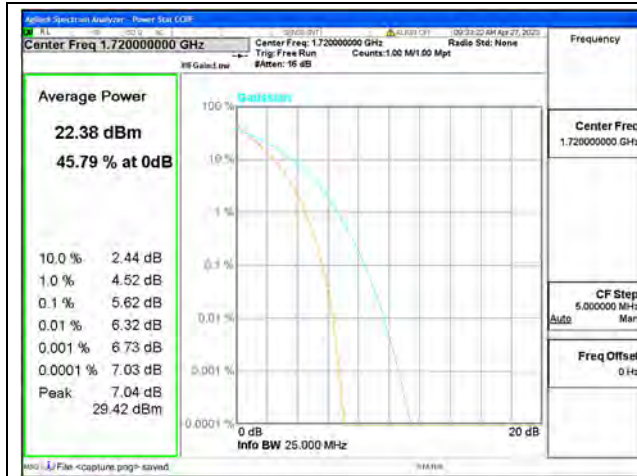
Band 4 / 15MHz / Mid CH / 16QAM



Band 4 / 15MHz / High CH / QPSK



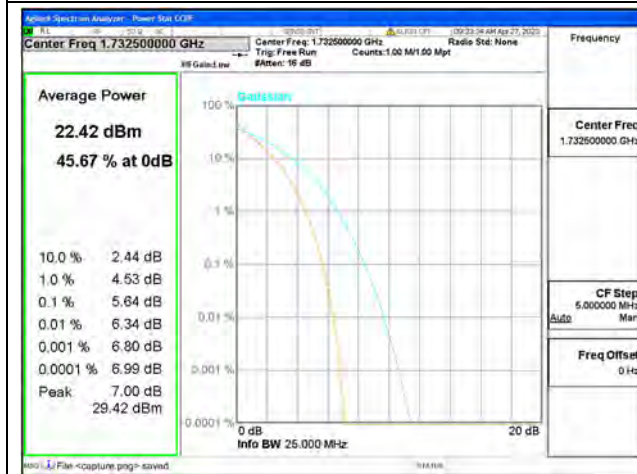
Band 4 / 15MHz / High CH / 16QAM



Band 4 / 20MHz / Low CH / QPSK



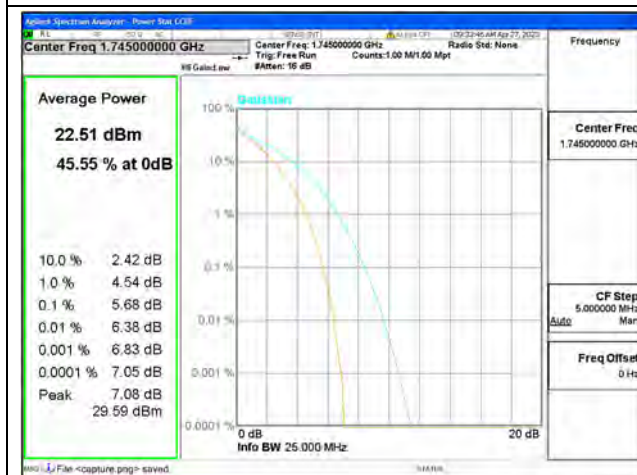
Band 4 / 20MHz / Low CH / 16QAM



Band 4 / 20MHz / Mid CH / QPSK



Band 4 / 20MHz / Mid CH / 16QAM

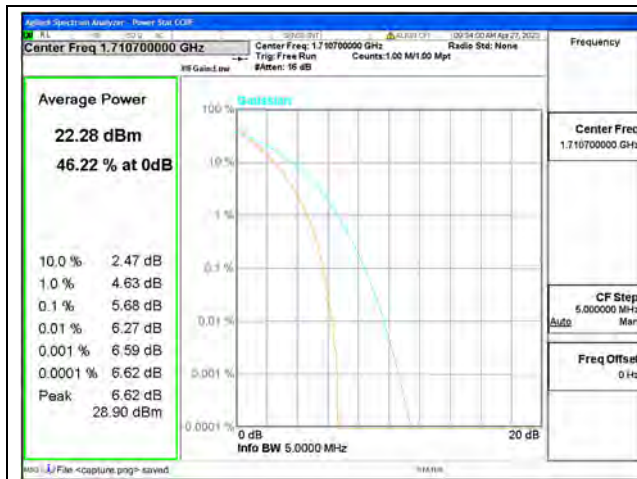


Band 4 / 20MHz / High CH / QPSK

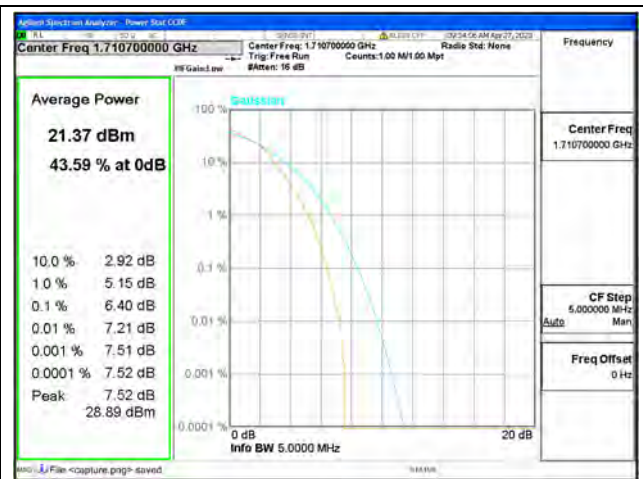


Band 4 / 20MHz / High CH / 16QAM

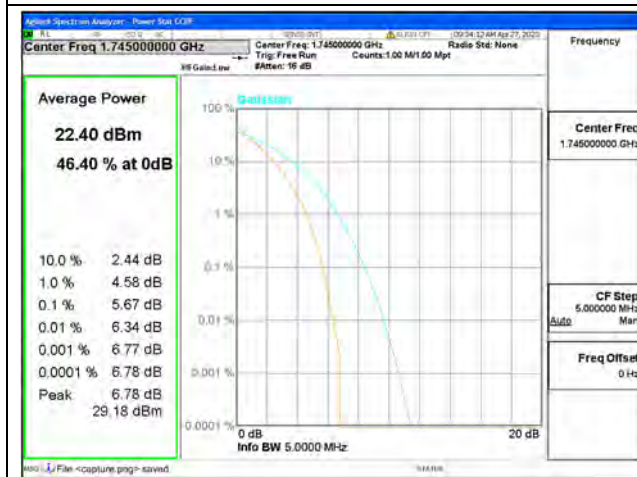




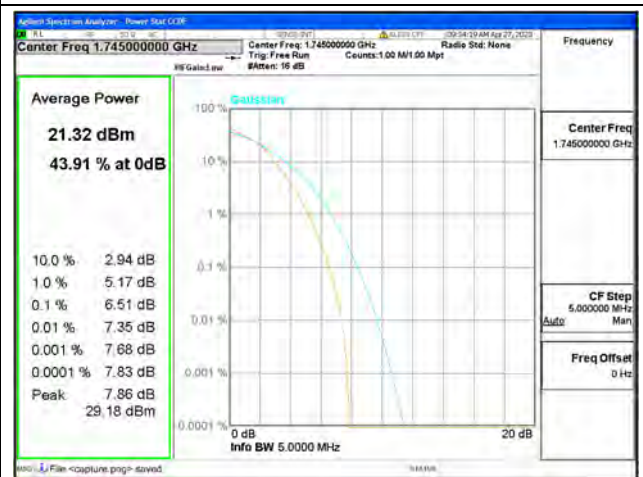
Band66 / 1.4MHz / Low CH / QPSK



Band66 / 1.4MHz / Low CH / 16QAM



Band66 / 1.4MHz / Mid CH / QPSK



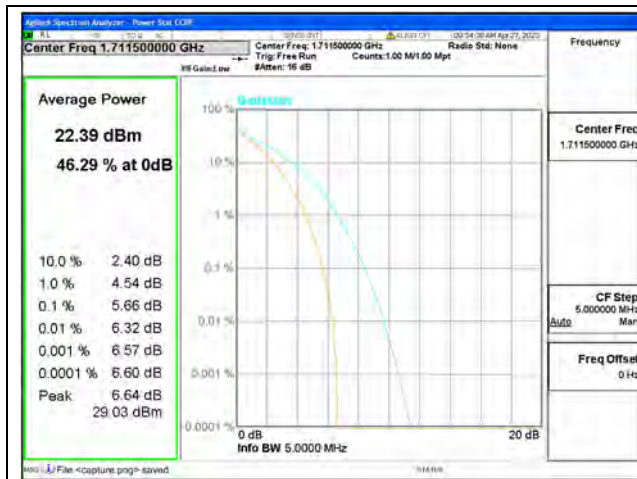
Band66 / 1.4MHz / Mid CH / 16QAM



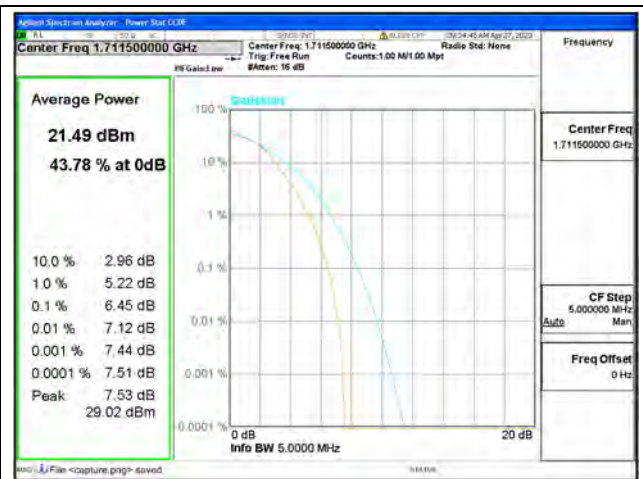
Band66 / 1.4MHz / High CH / QPSK



Band66 / 1.4MHz / High CH / 16QAM



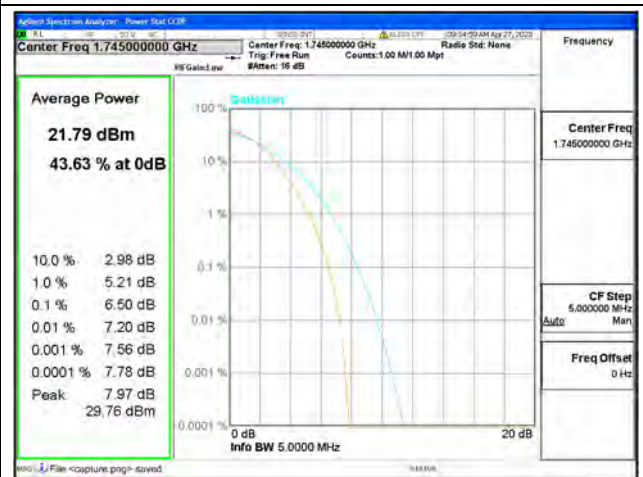
Band66 / 3MHz / Low CH / QPSK



Band66 / 3MHz / Low CH / 16QAM



Band66 / 3MHz / Mid CH / QPSK



Band66 / 3MHz / Mid CH / 16QAM

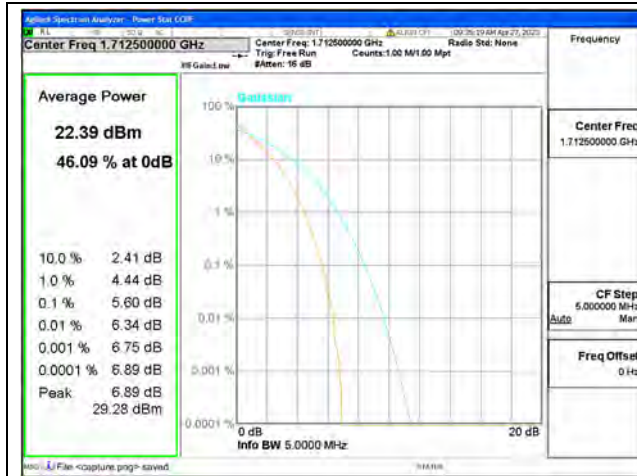


Band66 / 3MHz / High CH / QPSK



Band66 / 3MHz / High CH / 16QAM

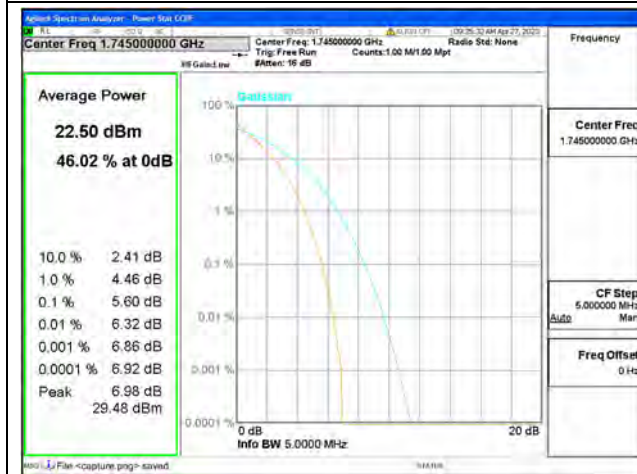




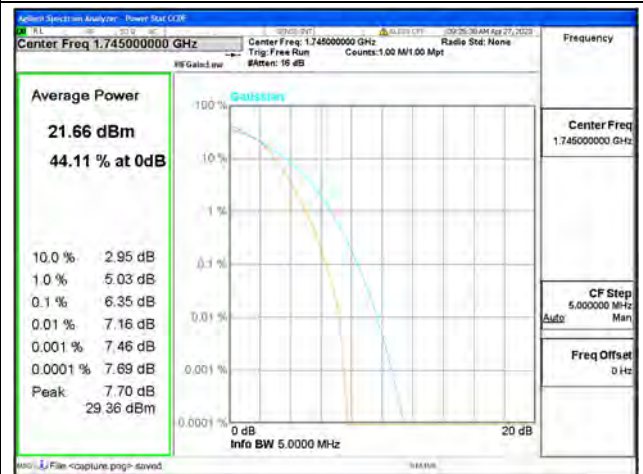
Band66 / 5MHz / Low CH / QPSK



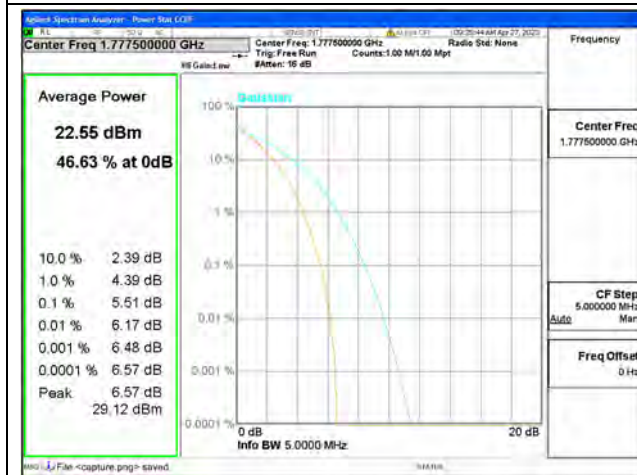
Band66 / 5MHz / Low CH / 16QAM



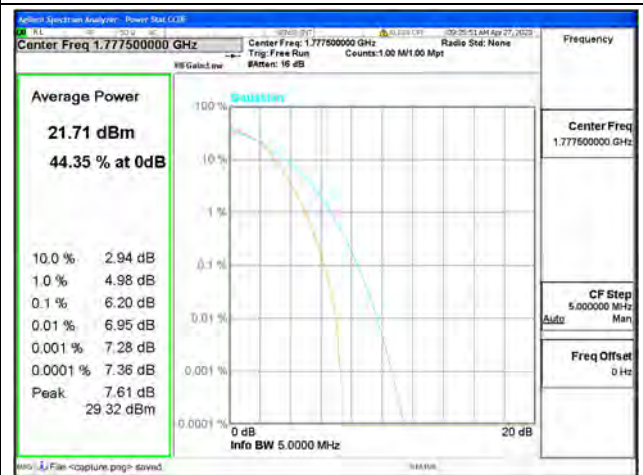
Band66 / 5MHz / Mid CH / QPSK



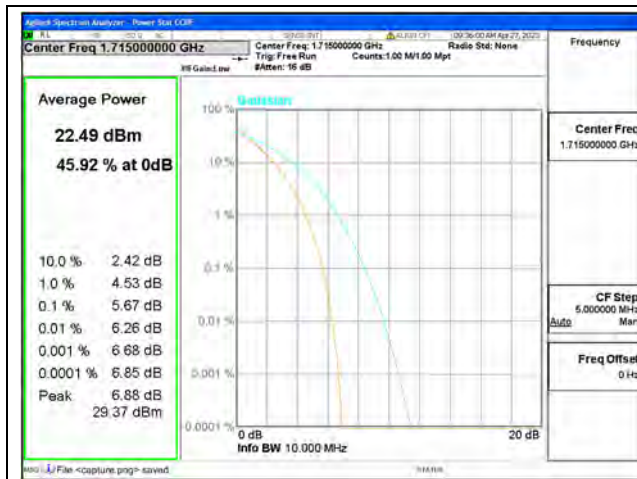
Band66 / 5MHz / Mid CH / 16QAM



Band66 / 5MHz / High CH / QPSK



Band66 / 5MHz / High CH / 16QAM



Band66 / 10MHz / Low CH / QPSK



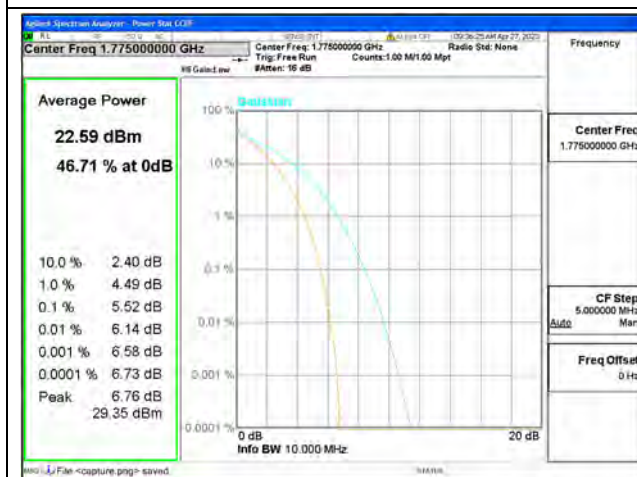
Band66 / 10MHz / Low CH / 16QAM



Band66 / 10MHz / Mid CH / QPSK



Band66 / 10MHz / Mid CH / 16QAM

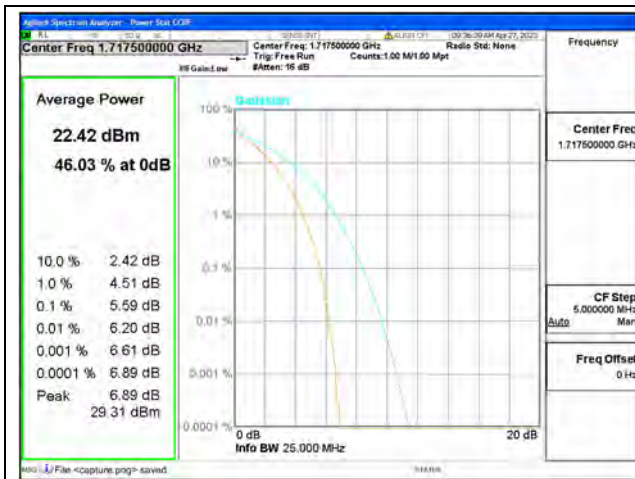


Band66 / 10MHz / High CH / QPSK

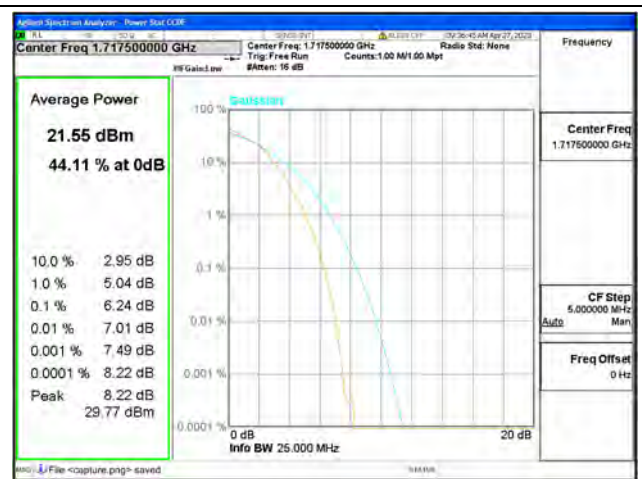


Band66 / 10MHz / High CH / 16QAM





Band66 / 15MHz / Low CH / QPSK



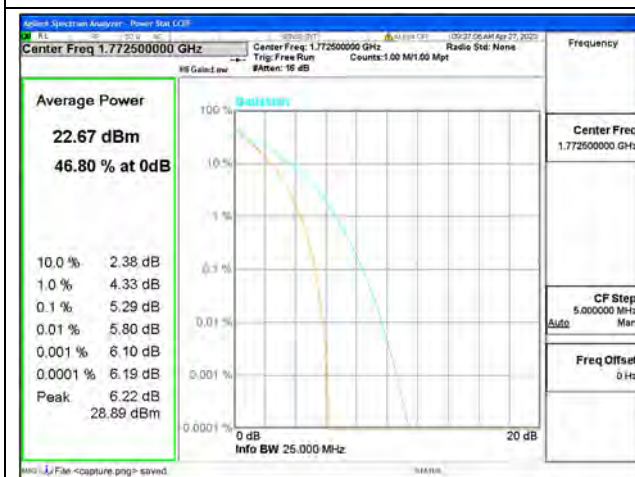
Band66 / 15MHz / Low CH / 16QAM



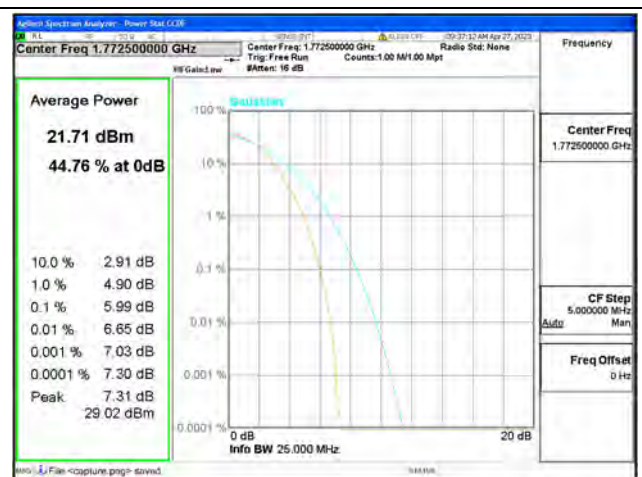
Band66 / 15MHz / Mid CH / QPSK



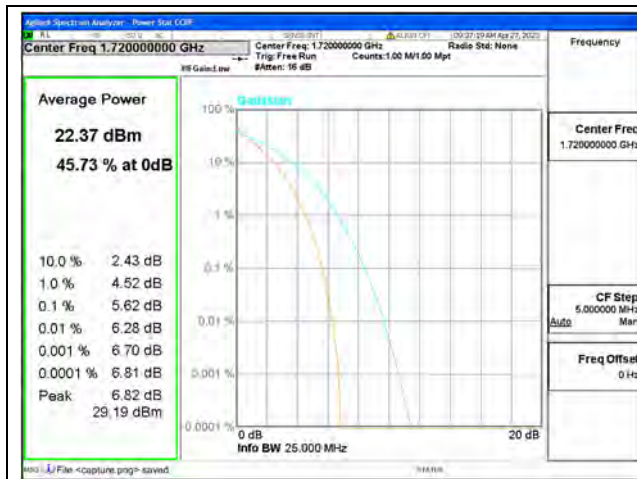
Band66 / 15MHz / Mid CH / 16QAM



Band66 / 15MHz / High CH / QPSK



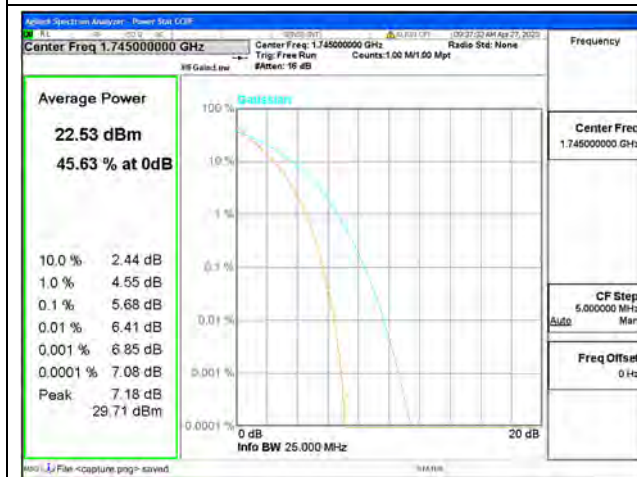
Band66 / 15MHz / High CH / 16QAM



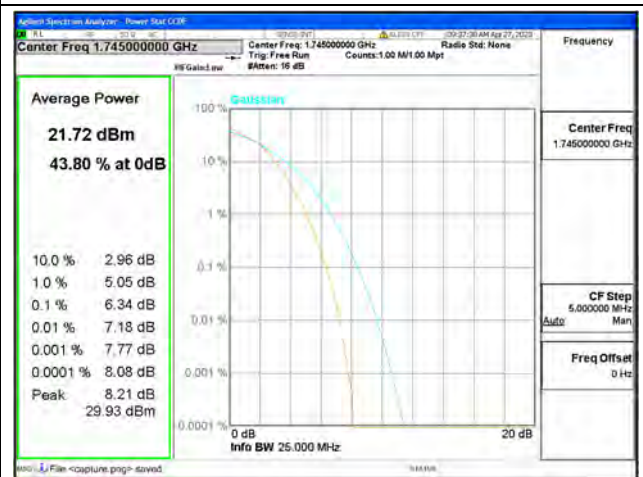
Band66 / 20MHz / Low CH / QPSK



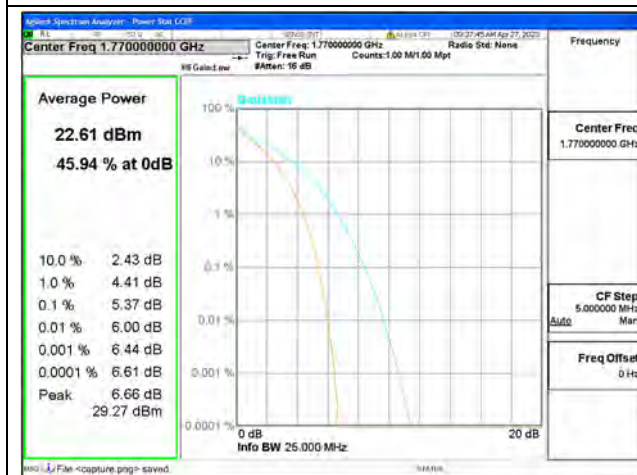
Band66 / 20MHz / Low CH / 16QAM



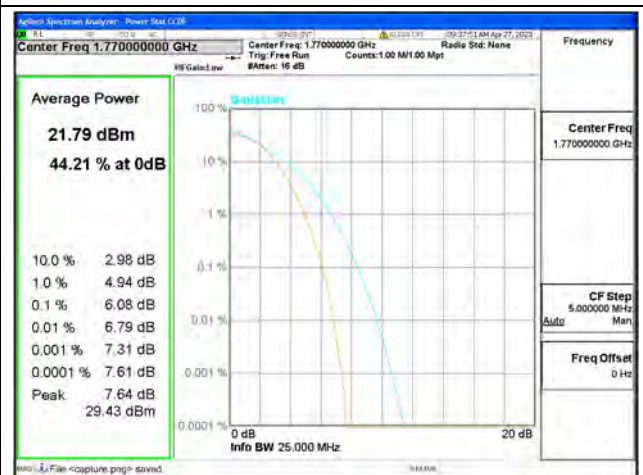
Band66 / 20MHz / Mid CH / QPSK



Band66 / 20MHz / Mid CH / 16QAM



Band66 / 20MHz / High CH / QPSK



Band66 / 20MHz / High CH / 16QAM



## 2.5. Conducted Spurious Emissions

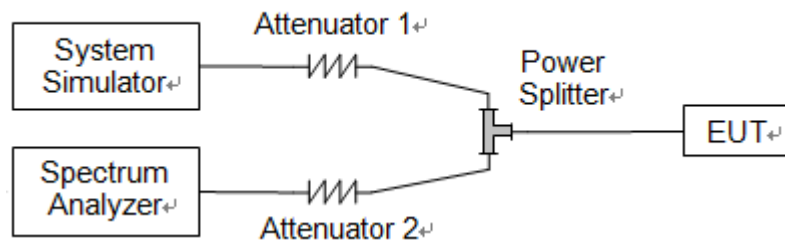
### 2.5.1. Requirement

According to FCC section 2.1051, 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. This calculated to be -13dBm.

Additional requirement for LTE Band 7:

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  $55 + 10 \log(P)$  dB. This calculated to be -25dBm.

### 2.5.2. Test Description



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

### 2.5.3. Test Procedure

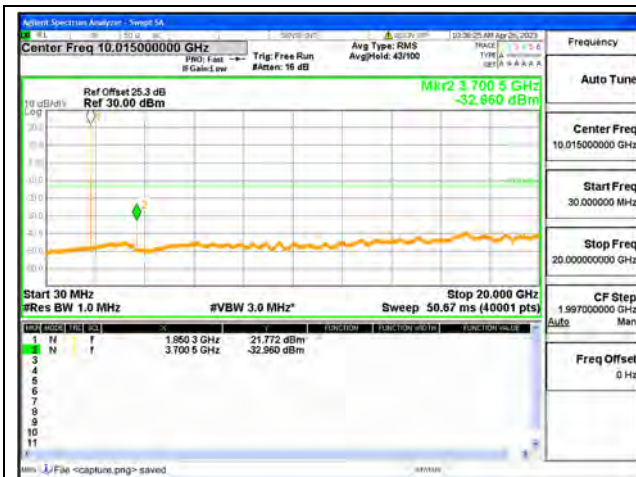
KDB 971168 D01v03 Section 6.0 and ANSI/TIA-603-E-2016.



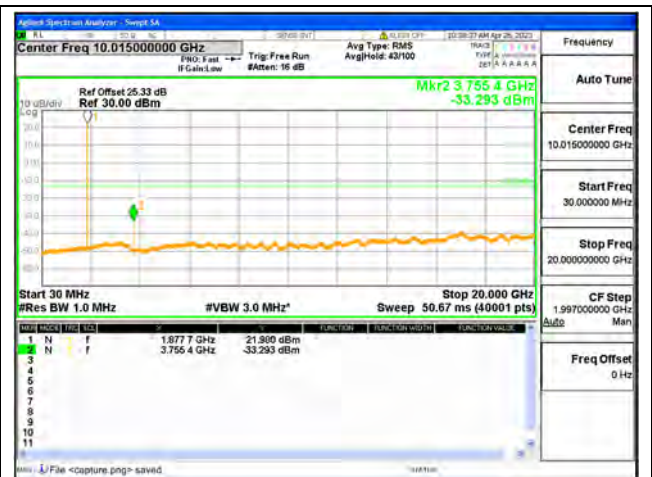
2.5.4. Test Result



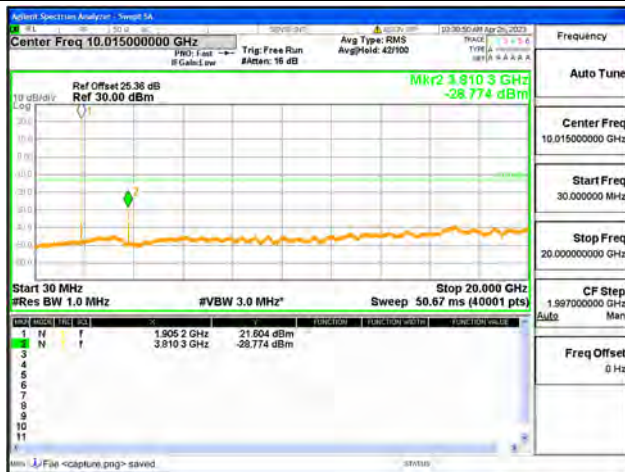




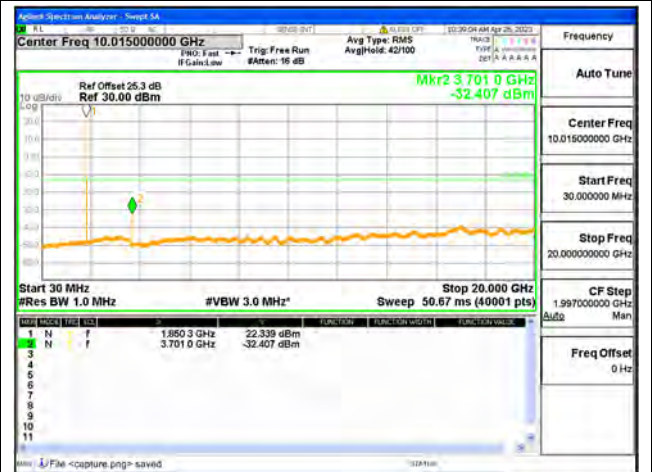
Band2 / 5MHz / Low CH / QPSK



Band2 / 5MHz / Mid CH / QPSK



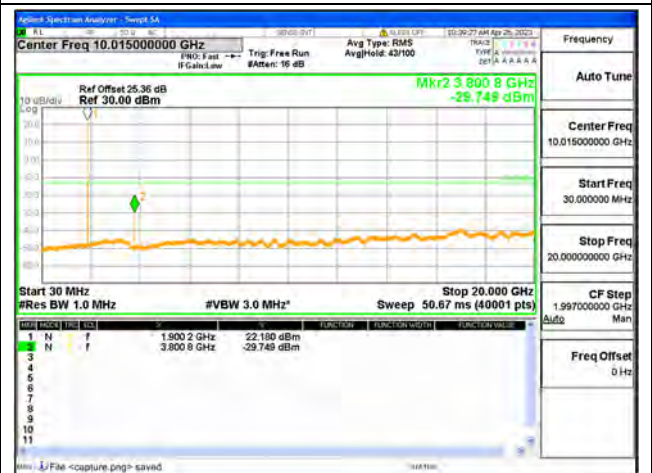
Band2 / 5MHz / High CH / QPSK



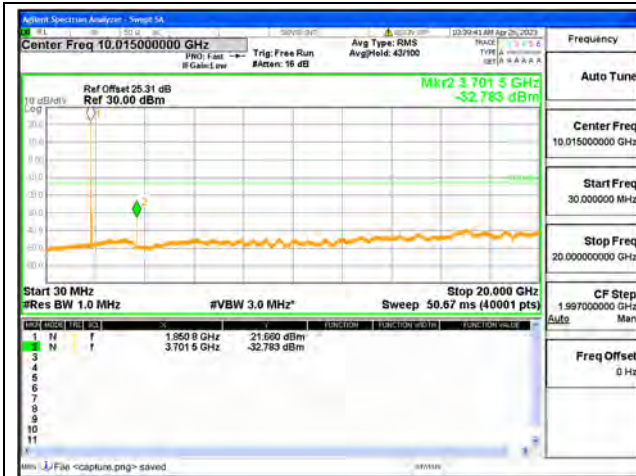
Band2 / 10MHz / Low CH / QPSK



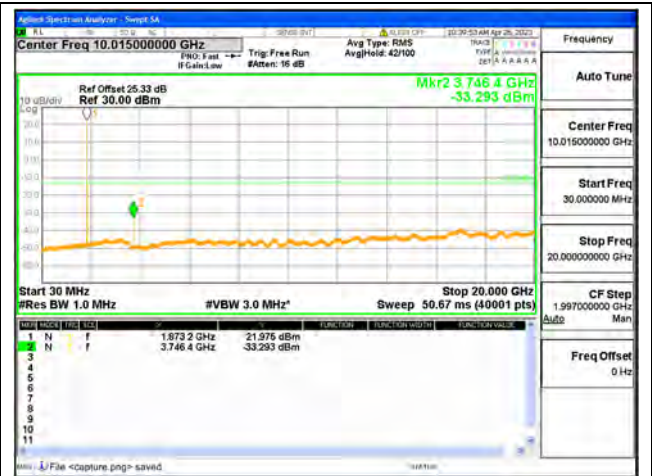
Band2 / 10MHz / Mid CH / QPSK



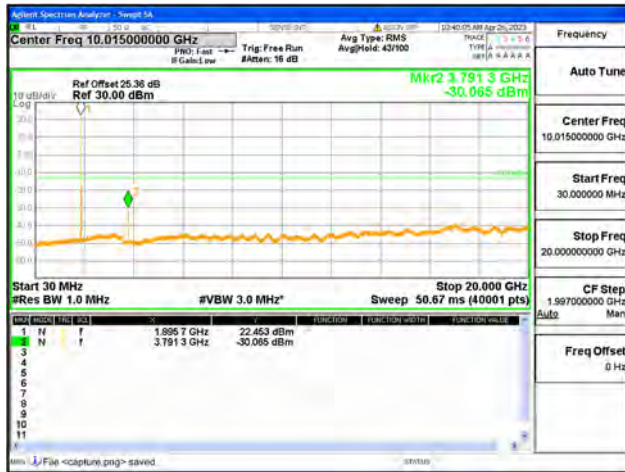
Band2 / 10MHz / High CH / QPSK



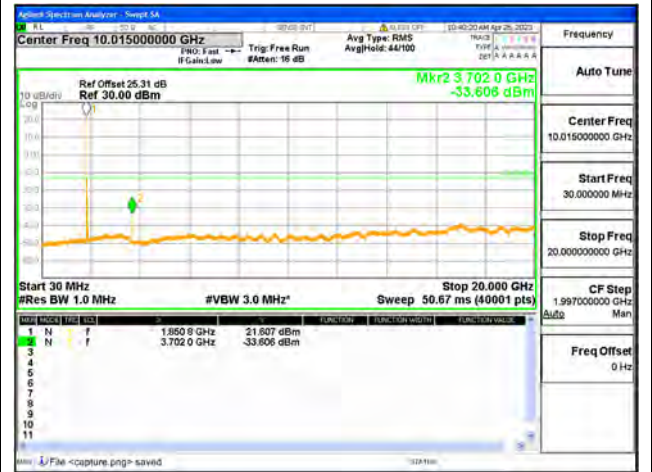
Band2 / 15MHz / Low CH / QPSK



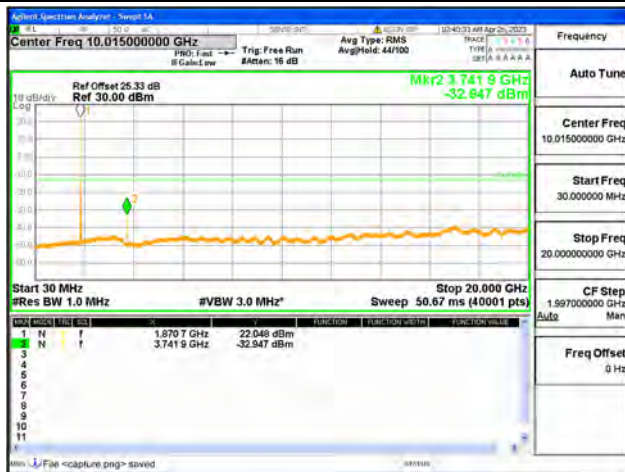
Band2 / 15MHz / Mid CH / QPSK



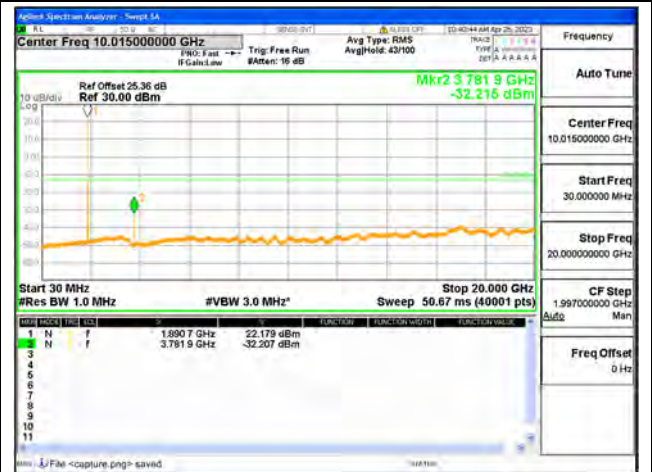
Band2 / 15MHz / High CH / QPSK



Band2 / 20MHz / Low CH / QPSK

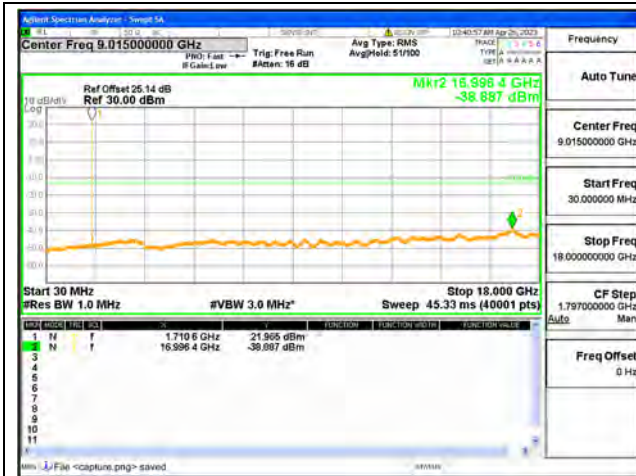


Band2 / 20MHz / Mid CH / QPSK

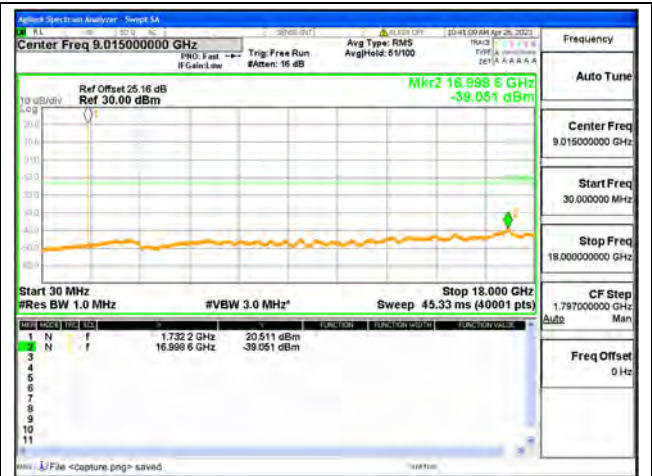


Band2 / 20MHz / High CH / QPSK

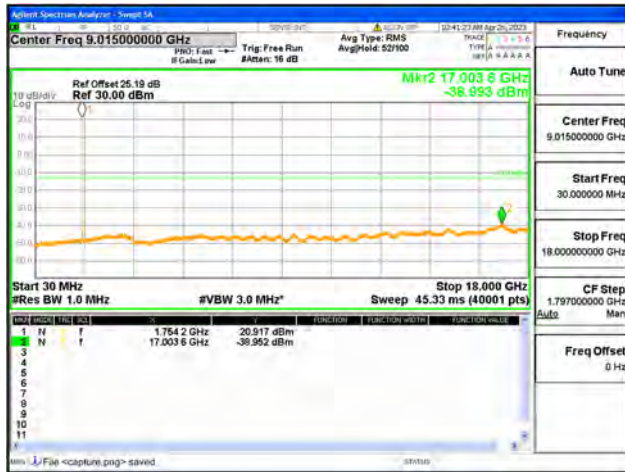




Band4 / 1.4MHz / Low CH / QPSK



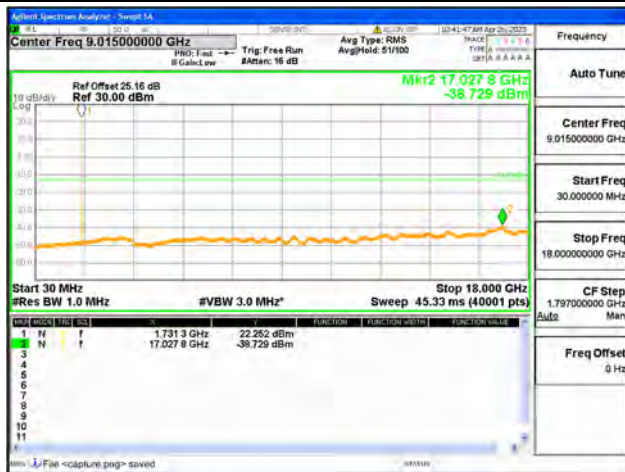
Band4 / 1.4MHz / Mid CH / QPSK



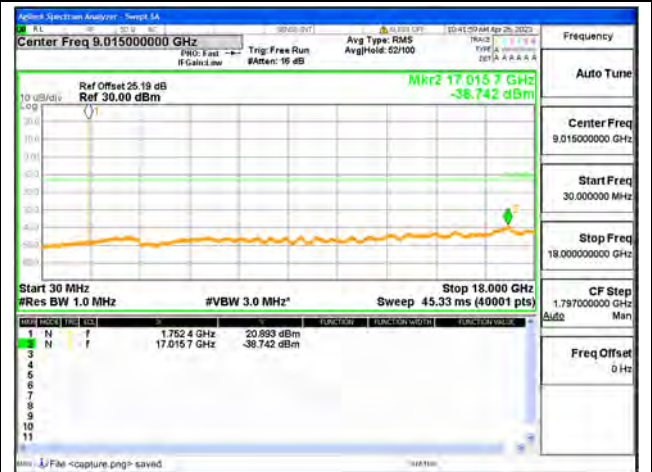
Band4 / 1.4MHz / High CH / QPSK



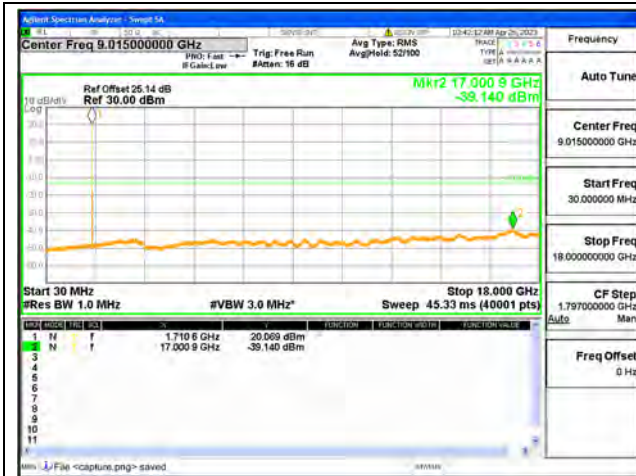
Band4 / 3MHz / Low CH / QPSK



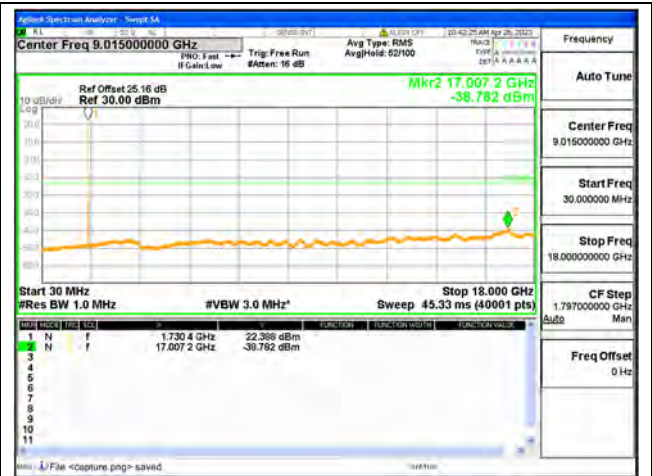
Band4 / 3MHz / Mid CH / QPSK



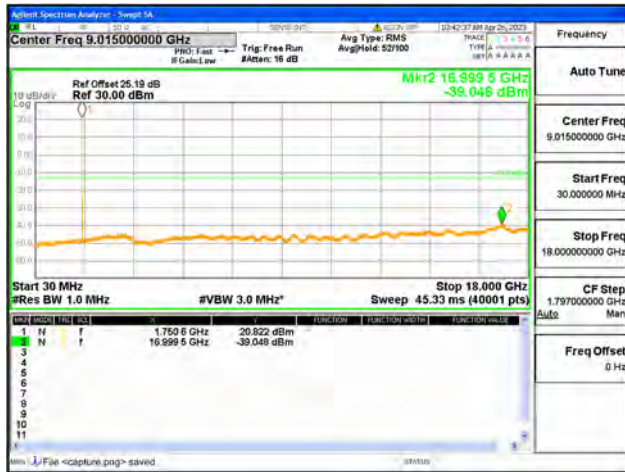
Band4 / 3MHz / High CH / QPSK



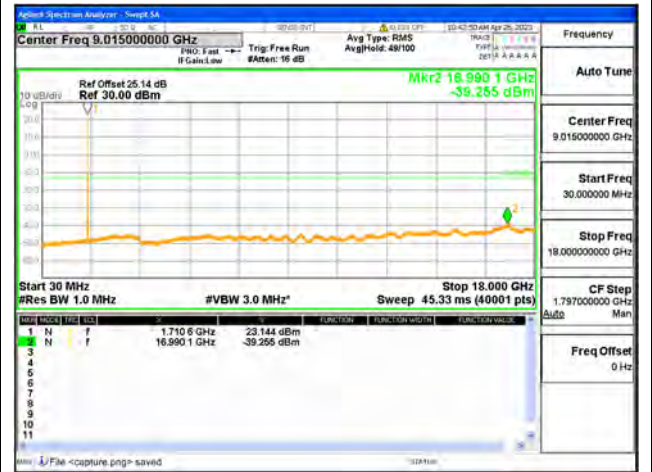
Band4 / 5MHz / Low CH / QPSK



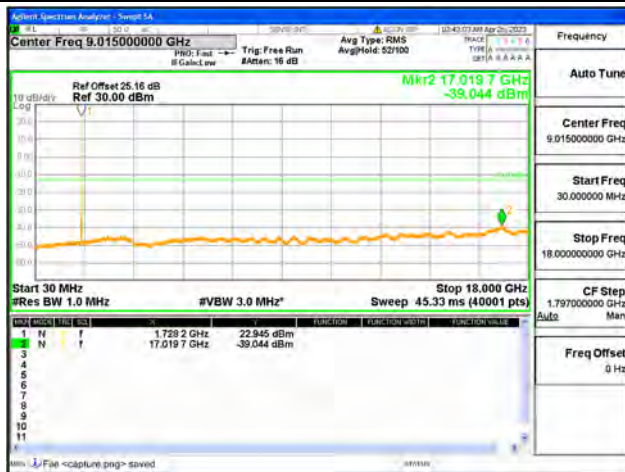
Band4 / 5MHz / Mid CH / QPSK



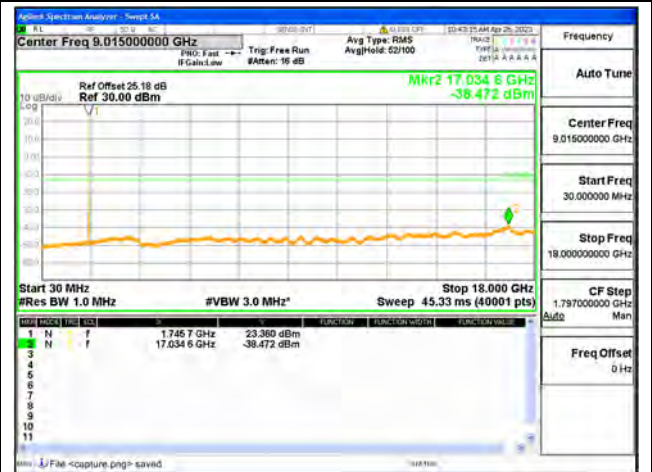
Band4 / 5MHz / High CH / QPSK



Band4 / 10MHz / Low CH / QPSK

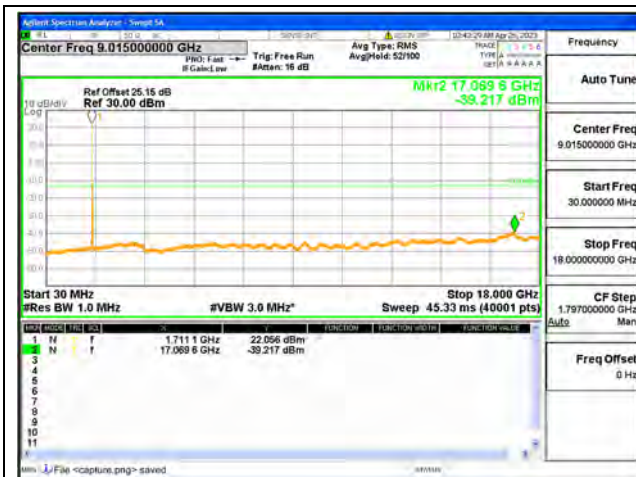


Band4 / 10MHz / Mid CH / QPSK

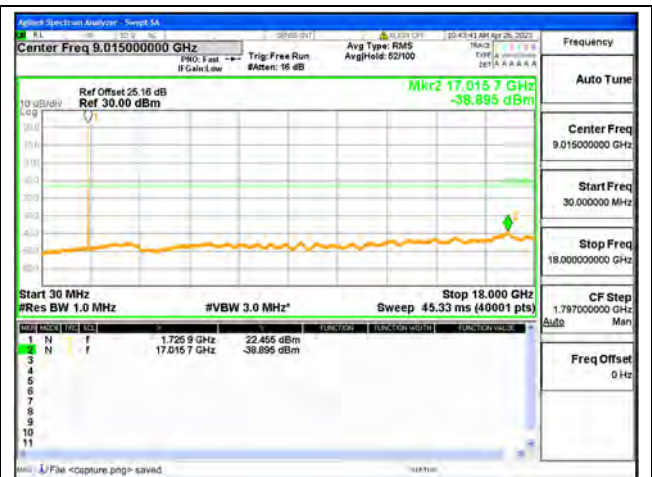


Band4 / 10MHz / High CH / QPSK

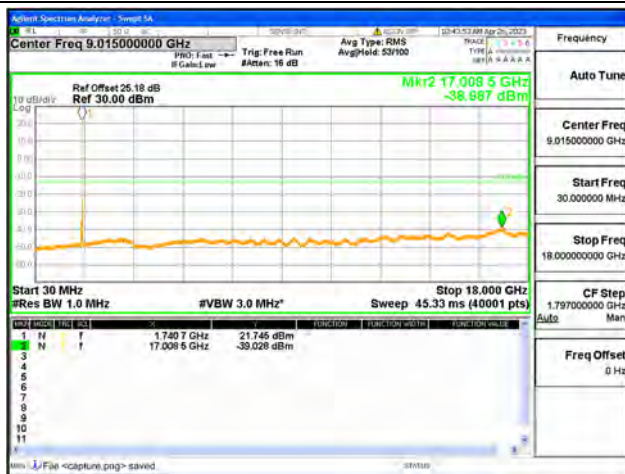




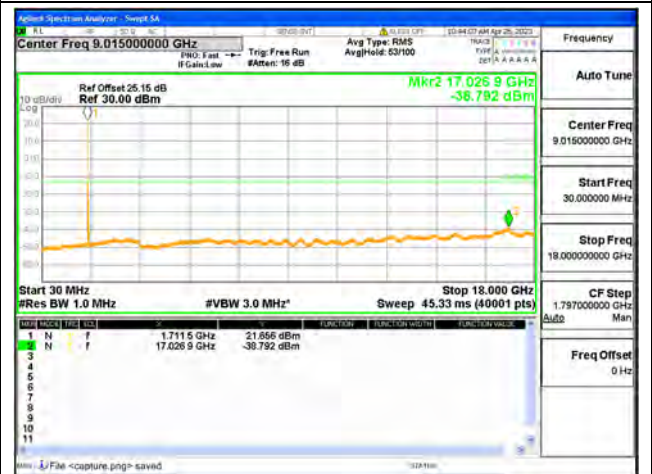
Band4 / 15MHz / Low CH / QPSK



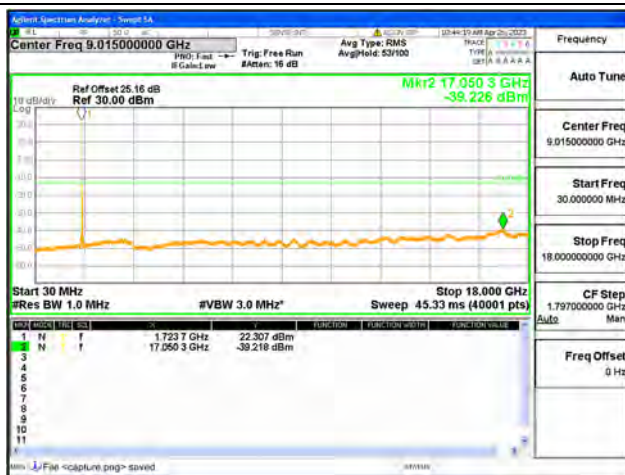
Band4 / 15MHz / Mid CH / QPSK



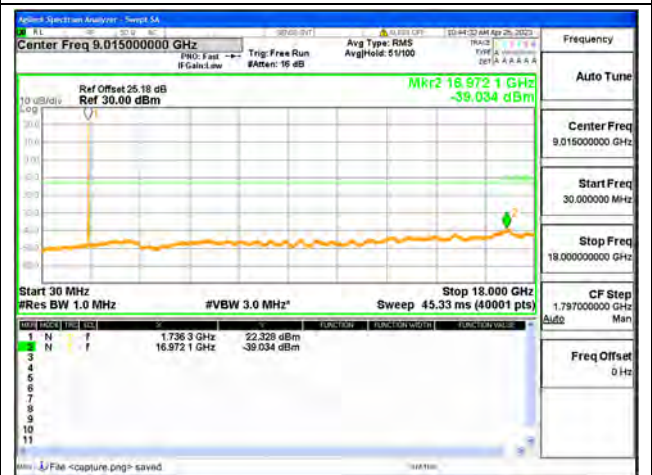
Band4 / 15MHz / High CH / QPSK



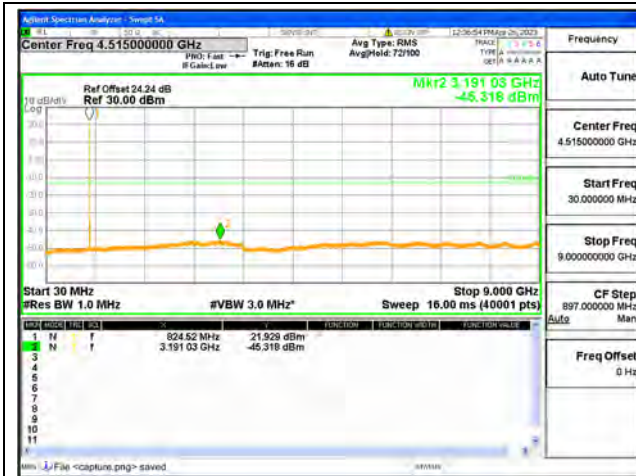
Band4 / 20MHz / Low CH / QPSK



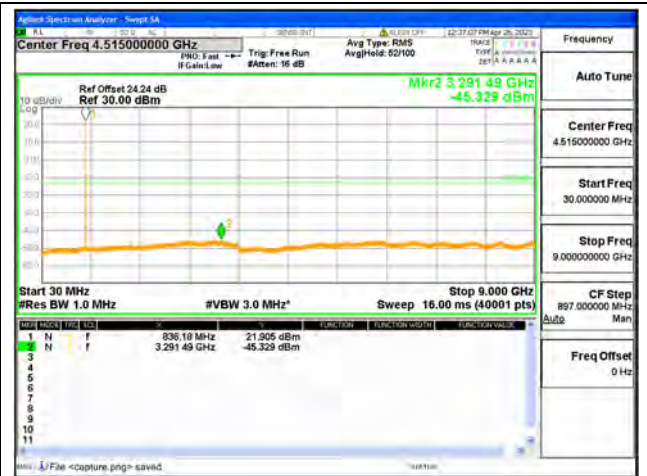
Band4 / 20MHz / Mid CH / QPSK



Band4 / 20MHz / High CH / QPSK



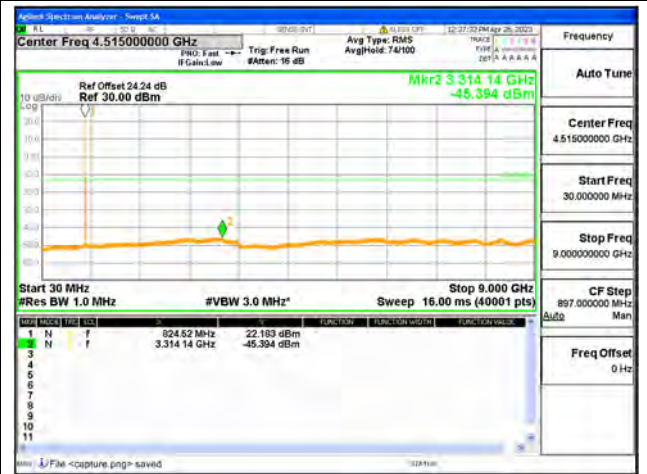
Band5 / 1.4MHz / Low CH / QPSK



Band5 / 1.4MHz / Mid CH / QPSK



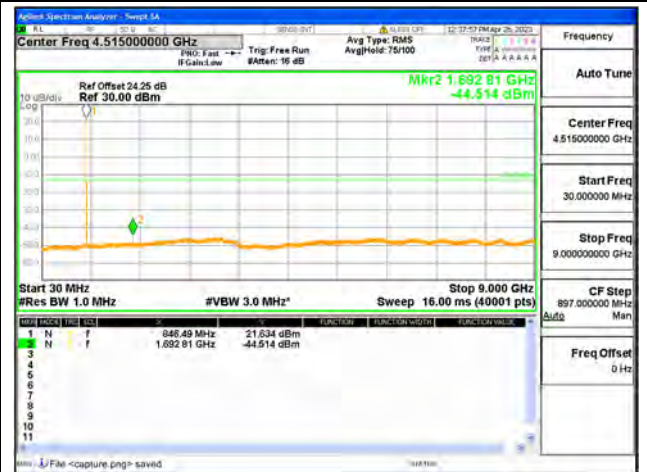
Band5 / 1.4MHz / High CH / QPSK



Band5 / 3MHz / Low CH / QPSK

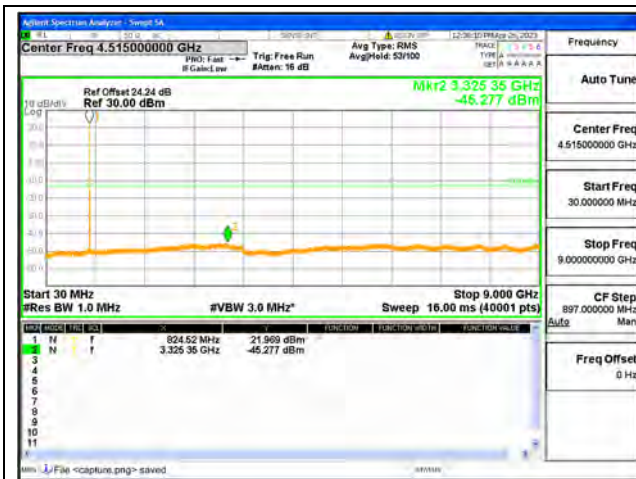


Band5 / 3MHz / Mid CH / QPSK

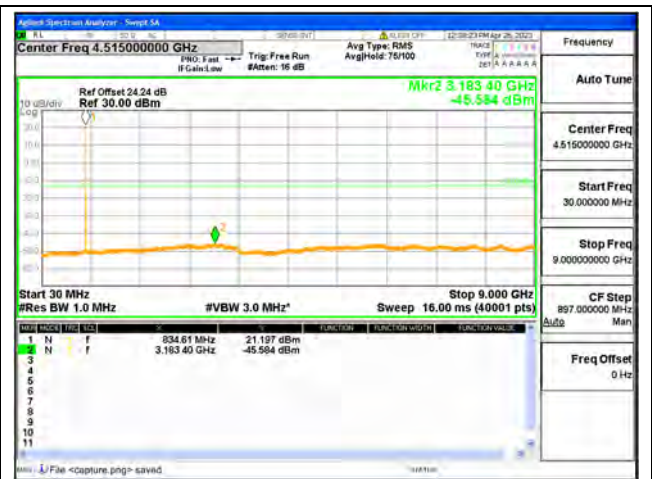


Band5 / 3MHz / High CH / QPSK

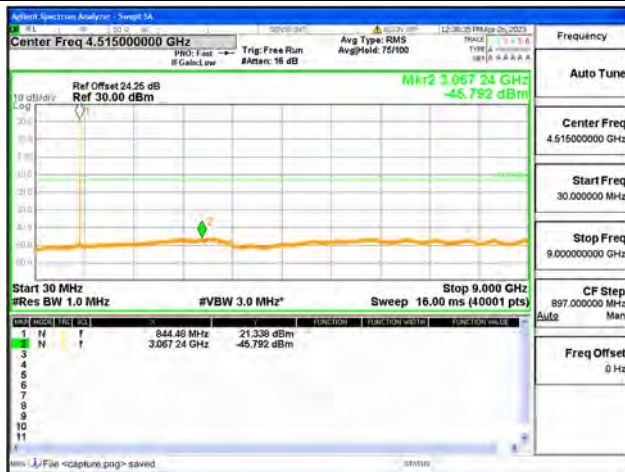




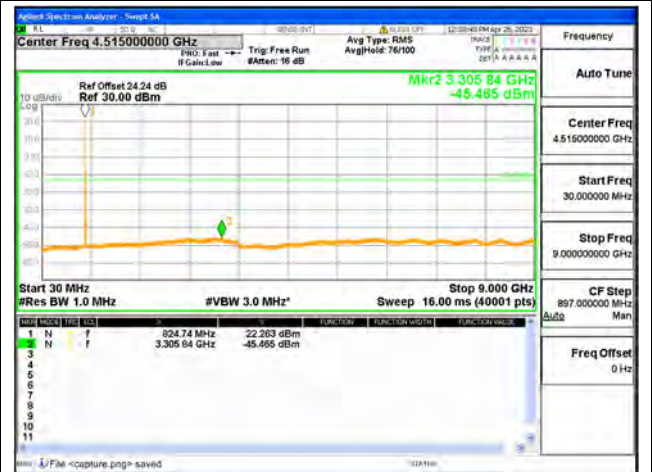
Band5 / 5MHz / Low CH / QPSK



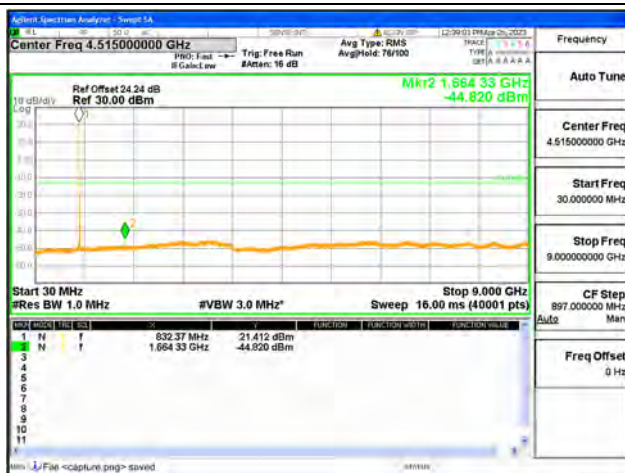
Band5 / 5MHz / Mid CH / QPSK



Band5 / 5MHz / High CH / QPSK



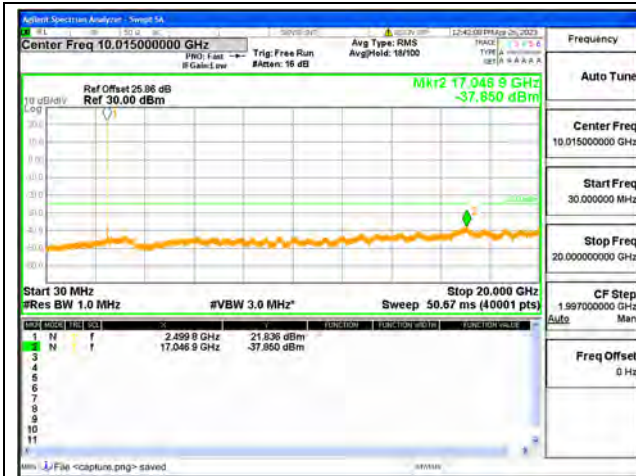
Band5 / 10MHz / Low CH / QPSK



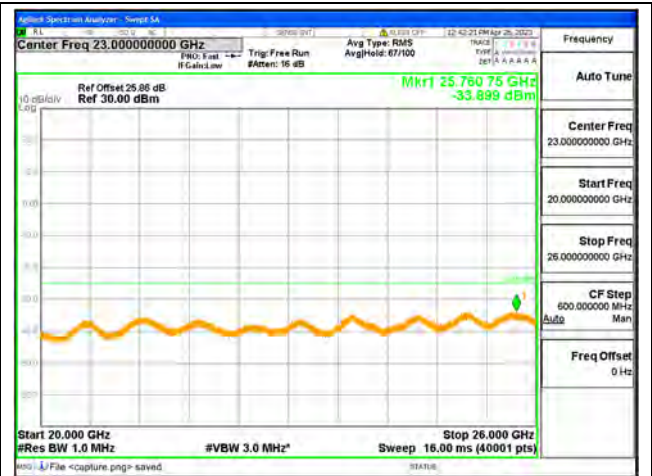
Band5 / 10MHz / Mid CH / QPSK



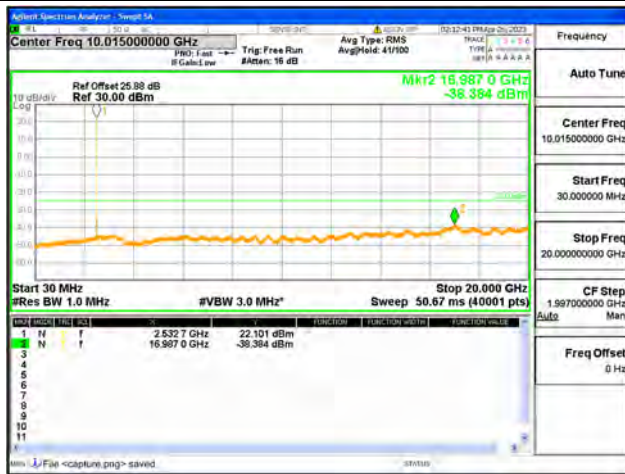
Band5 / 10MHz / High CH / QPSK



Band7-30M-20G / 5MHz / Low CH / QPSK



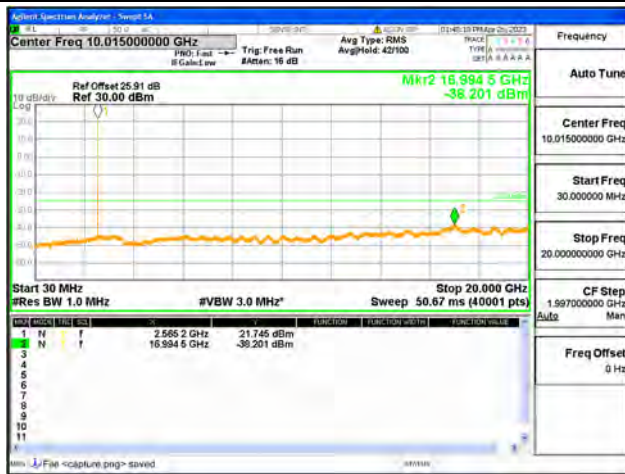
Band7-20G-26G / 5MHz / Low CH / QPSK



Band7-30M-20G / 5MHz / Mid CH / QPSK



Band7-20G-26G / 5MHz / Mid CH / QPSK

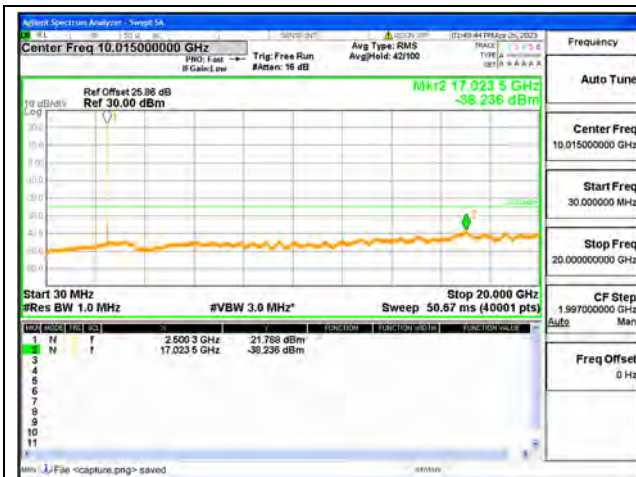


Band7-30M-20G / 5MHz / High CH / QPSK

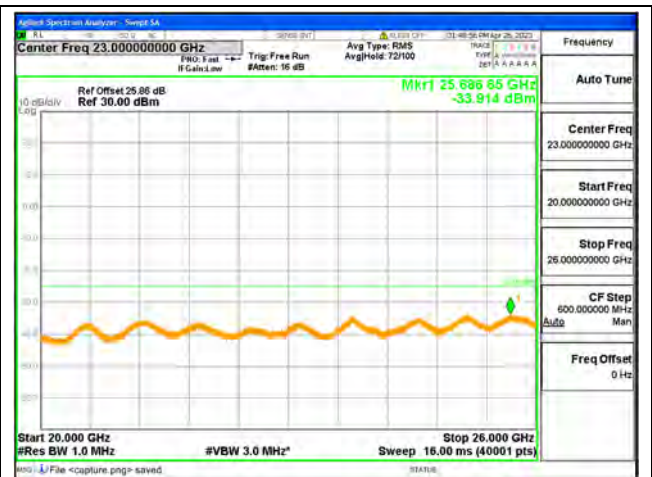


Band7-20G-26G / 5MHz / High CH / QPSK

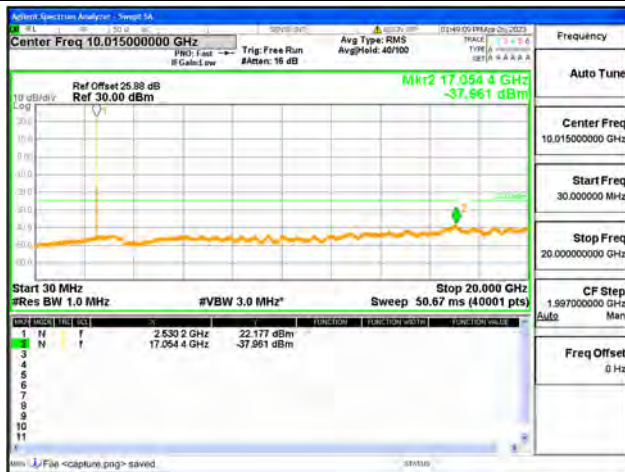




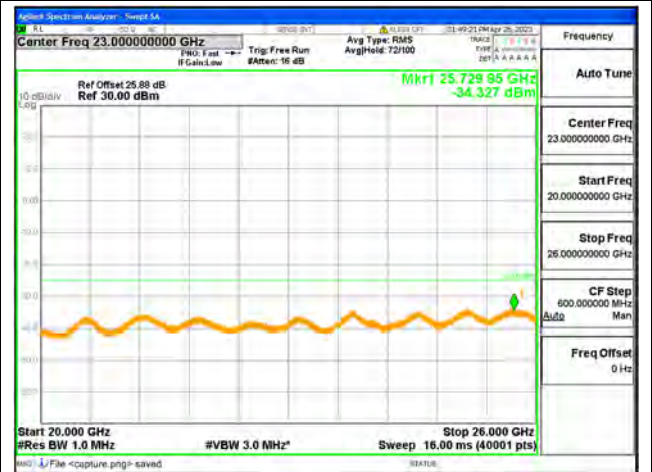
Band7-30M-20G / 10MHz / Low CH / QPSK



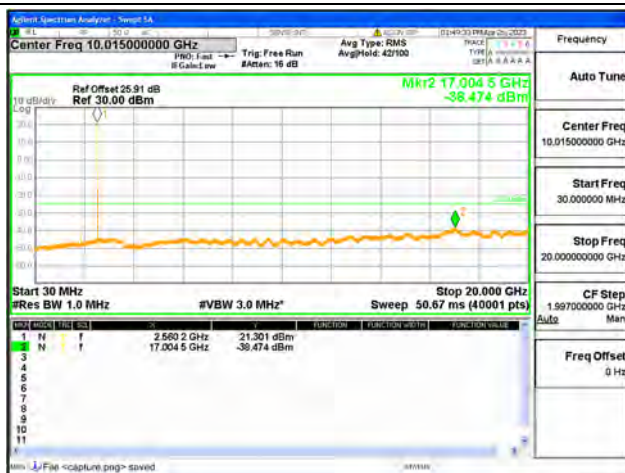
Band7-20G-26G / 10MHz / Low CH / QPSK



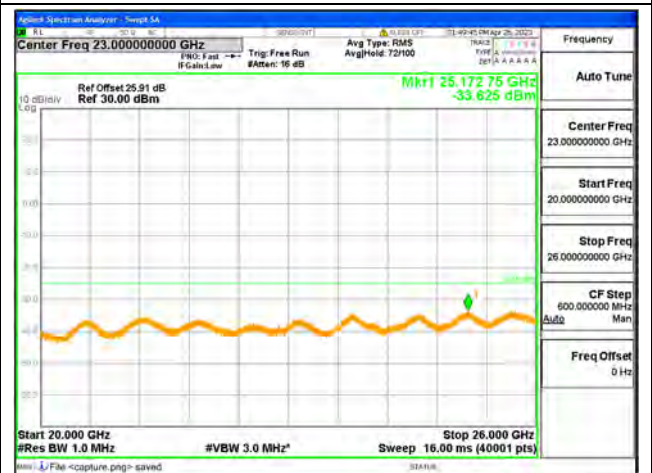
Band7-30M-20G / 10MHz / Mid CH / QPSK



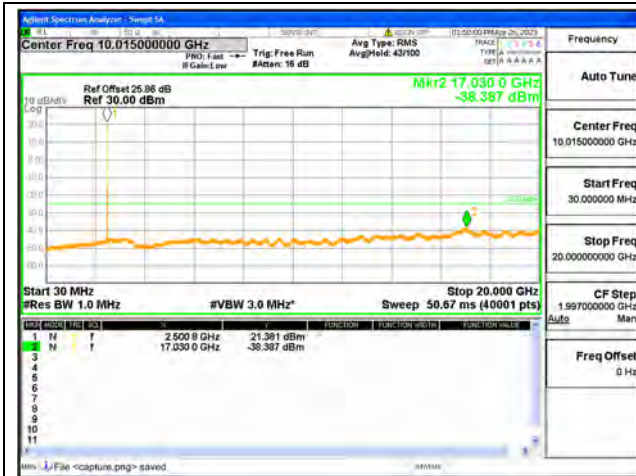
Band7-20G-26G / 10MHz / Mid CH / QPSK



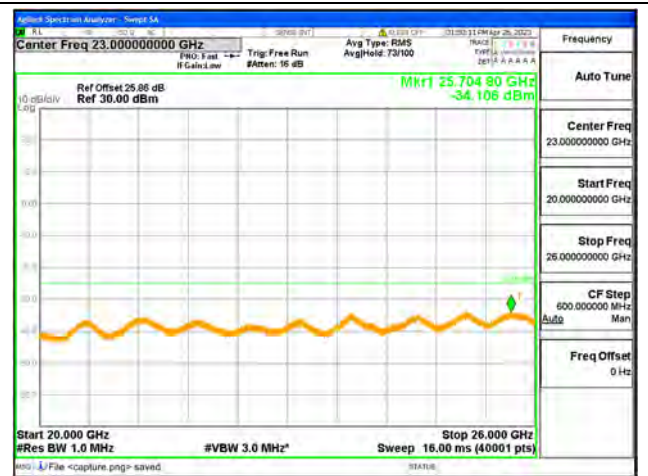
Band7-30M-20G / 10MHz / High CH / QPSK



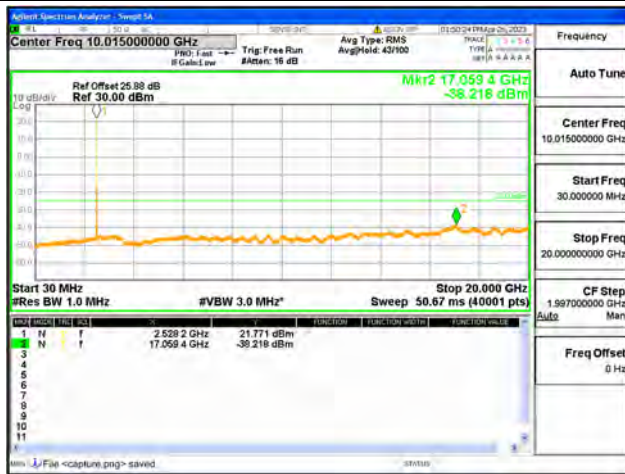
Band7-20G-26G / 10MHz / High CH / QPSK



Band7-30M-20G / 15MHz / Low CH / QPSK



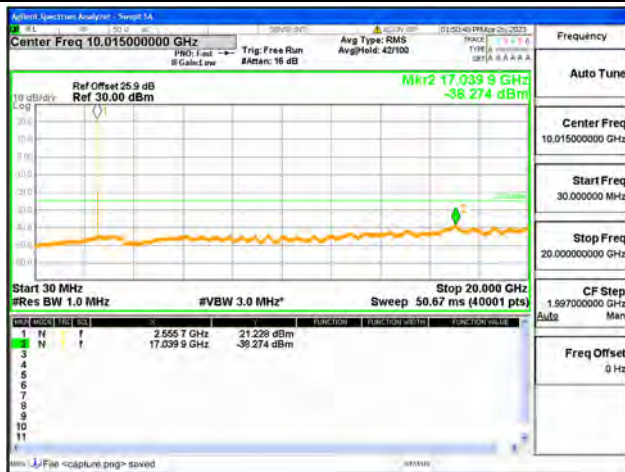
Band7-20G-26G / 15MHz / Low CH / QPSK



Band7-30M-20G / 15MHz / Mid CH / QPSK



Band7-20G-26G / 15MHz / Mid CH / QPSK

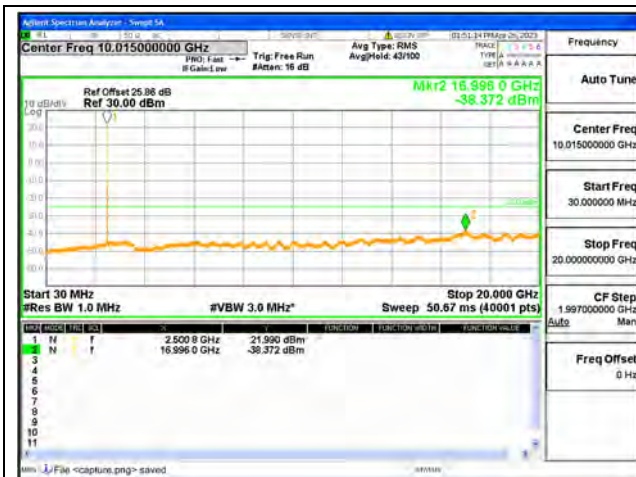


Band7-30M-20G / 15MHz / High CH / QPSK

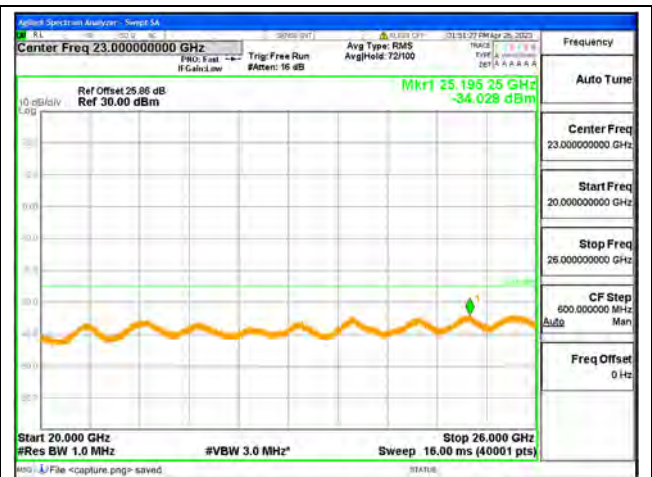


Band7-20G-26G / 15MHz / High CH / QPSK

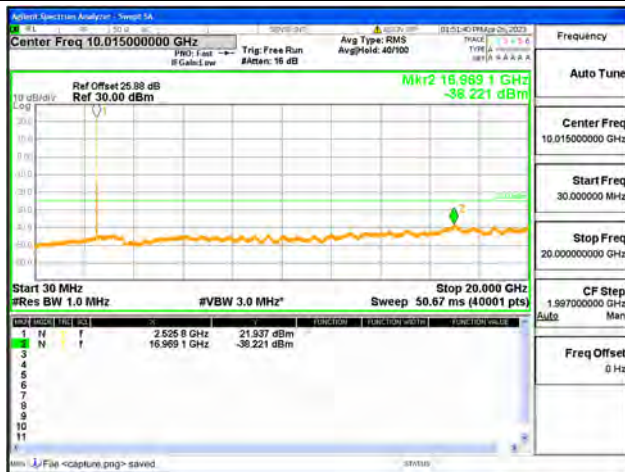




Band7-30M-20G / 20MHz / Low CH / QPSK



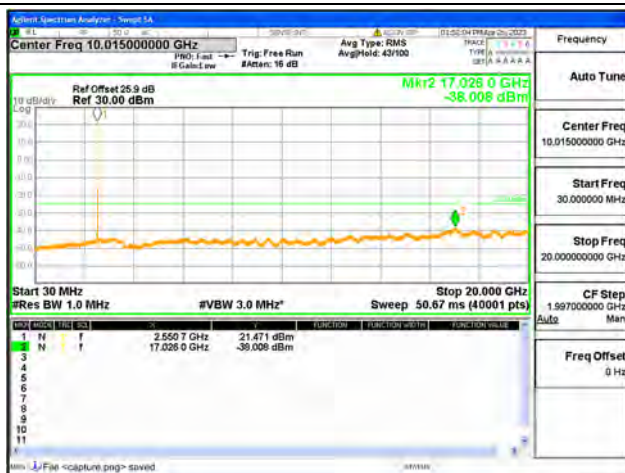
Band7-20G-26G / 20MHz / Low CH / QPSK



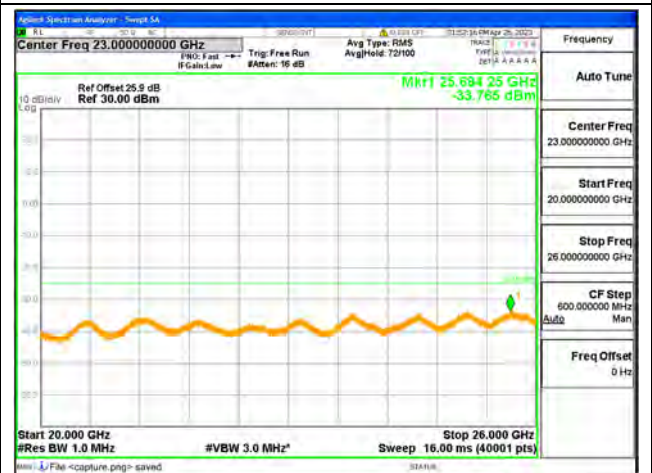
Band7-30M-20G / 20MHz / Mid CH / QPSK



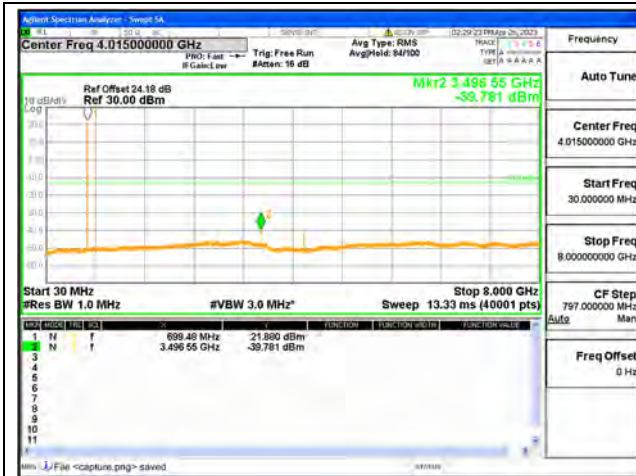
Band7-20G-26G / 20MHz / Mid CH / QPSK



Band7-30M-20G / 20MHz / High CH / QPSK



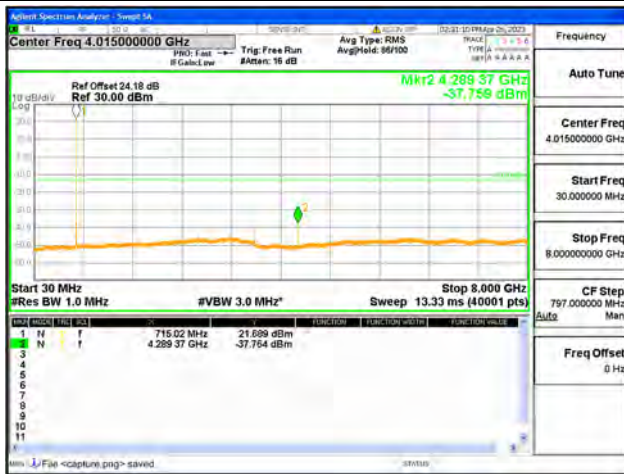
Band7-20G-26G / 20MHz / High CH / QPSK



Band12 / 1.4MHz / Low CH / QPSK



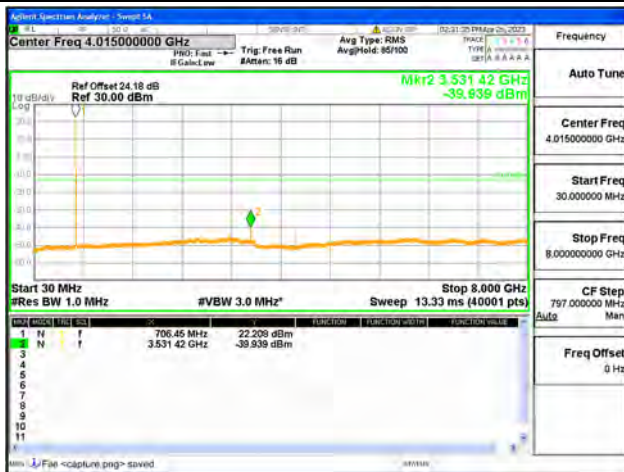
Band12 / 1.4MHz / Mid CH / QPSK



Band12 / 1.4MHz / High CH / QPSK



Band12 / 3MHz / Low CH / QPSK

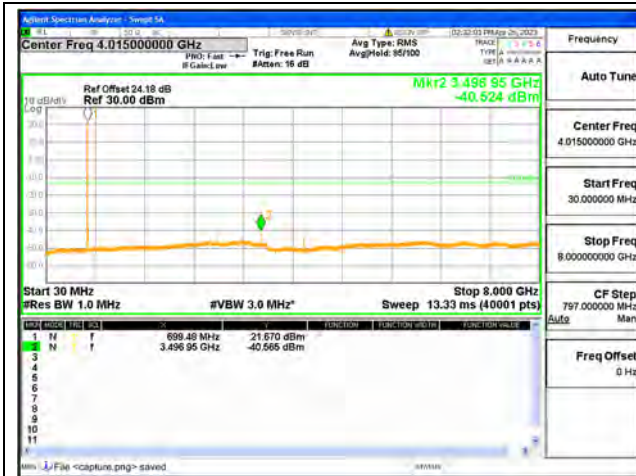


Band12 / 3MHz / Mid CH / QPSK

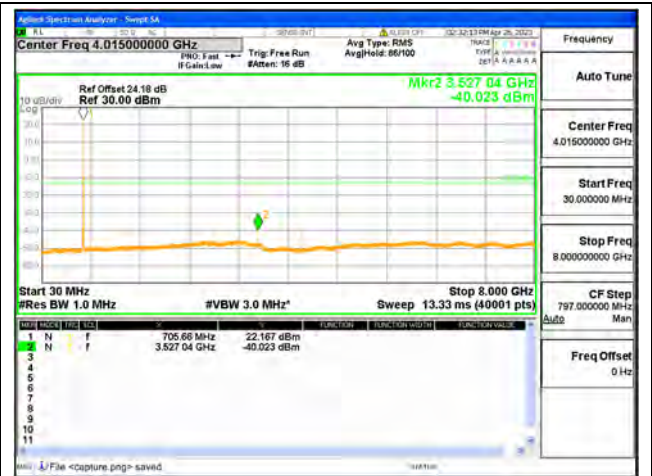


Band12 / 3MHz / High CH / QPSK





Band12 / 5MHz / Low CH / QPSK



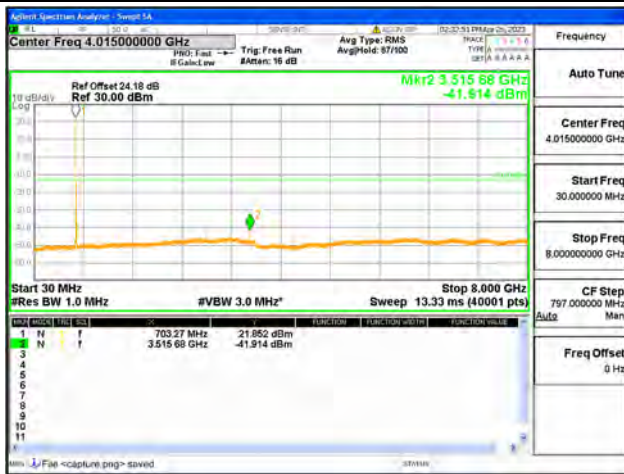
Band12 / 5MHz / Mid CH / QPSK



Band12 / 5MHz / High CH / QPSK



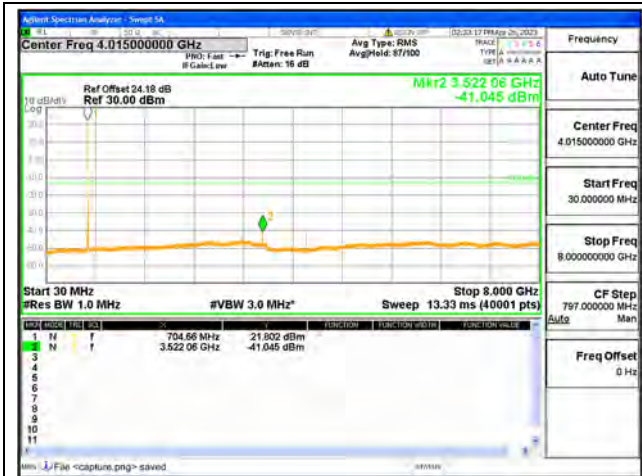
Band12 / 10MHz / Low CH / QPSK



Band12 / 10MHz / Mid CH / QPSK



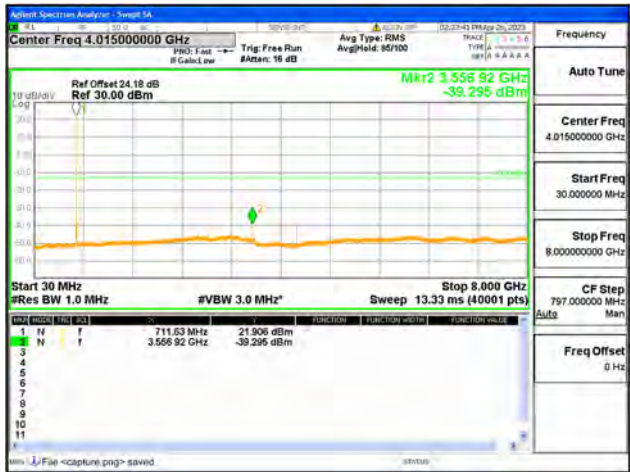
Band12 / 10MHz / High CH / QPSK



Band17 / 5MHz / Low CH / QPSK



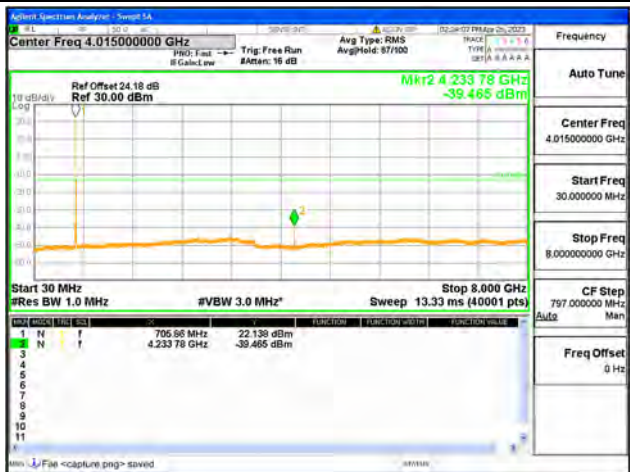
Band17 / 5MHz / Mid CH / QPSK



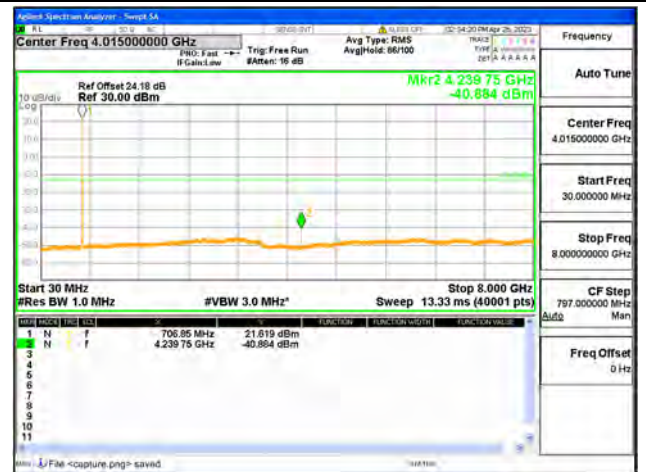
Band17 / 5MHz / High CH / QPSK



Band17 / 10MHz / Low CH / QPSK

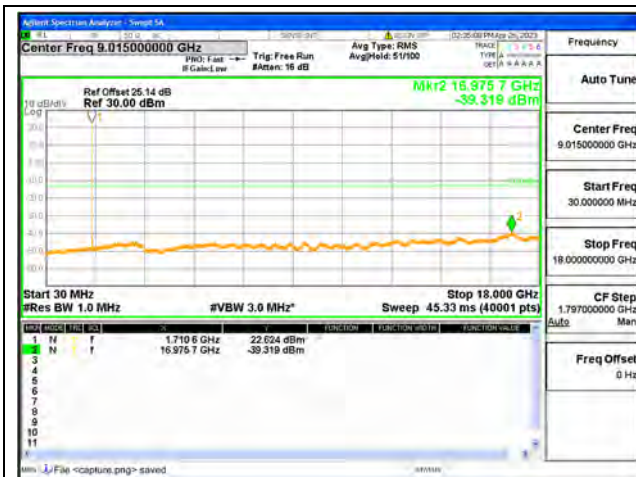


Band17 / 10MHz / Mid CH / QPSK

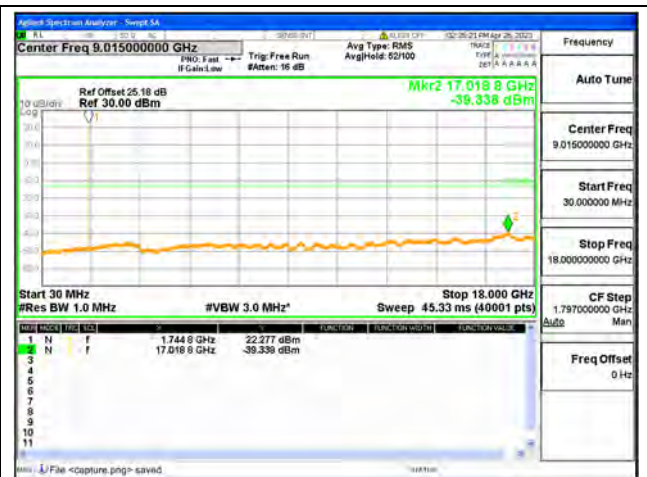


Band17 / 10MHz / High CH / QPSK

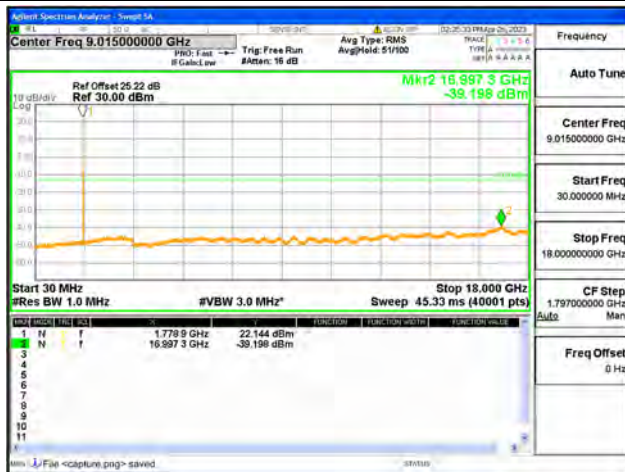




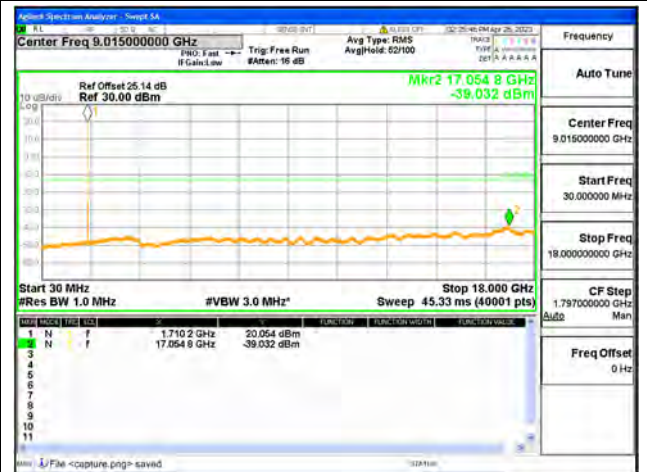
Band66 / 1.4MHz / Low CH / QPSK



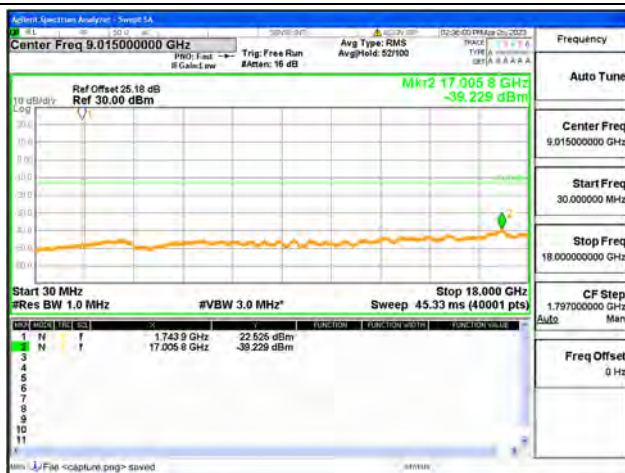
Band66 / 1.4MHz / Mid CH / QPSK



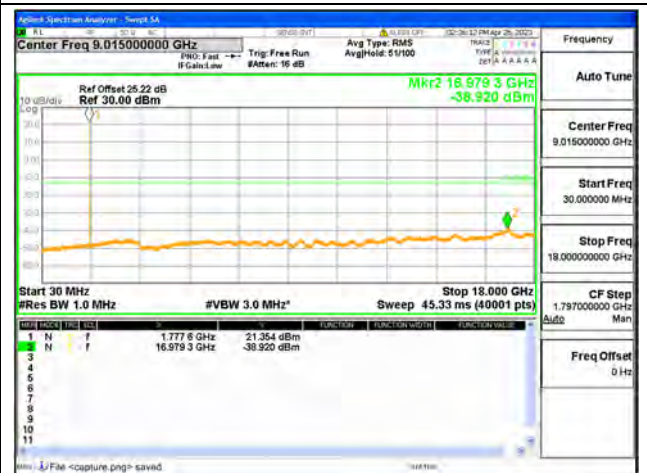
Band66 / 1.4MHz / High CH / QPSK



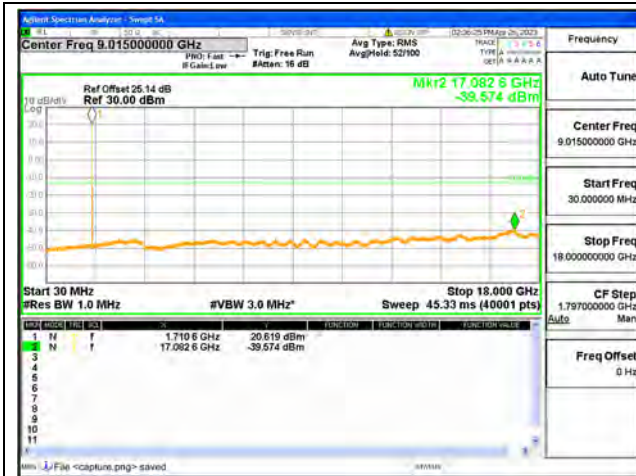
Band66 / 3MHz / Low CH / QPSK



Band66 / 3MHz / Mid CH / QPSK



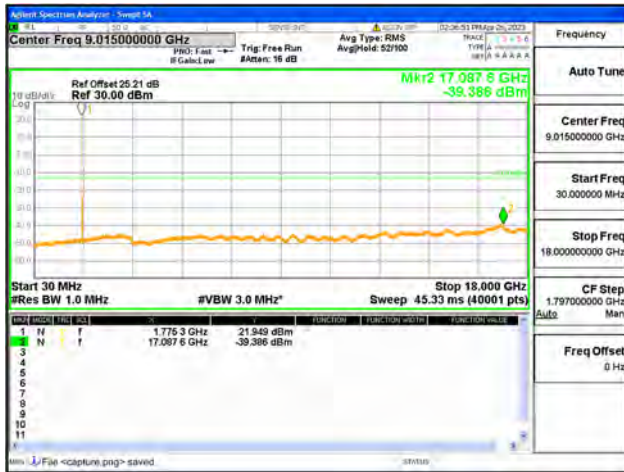
Band66 / 3MHz / High CH / QPSK



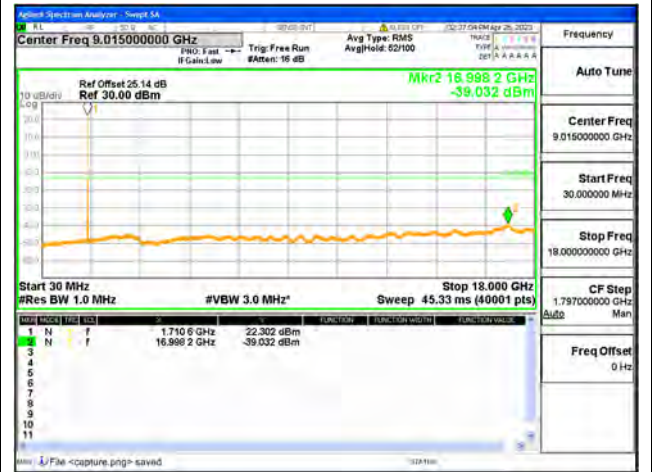
Band66 / 5MHz / Low CH / QPSK



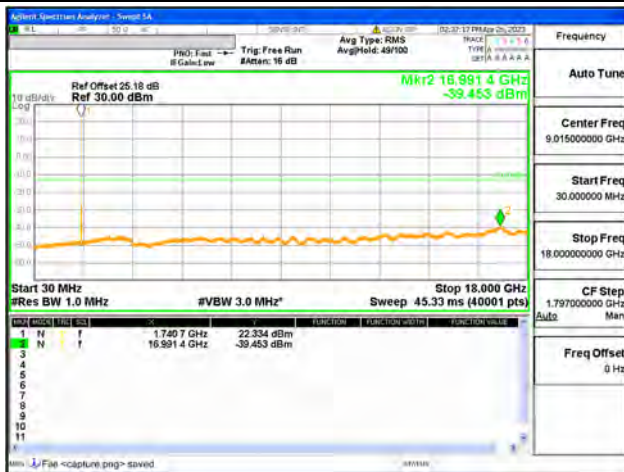
Band66 / 5MHz / Mid CH / QPSK



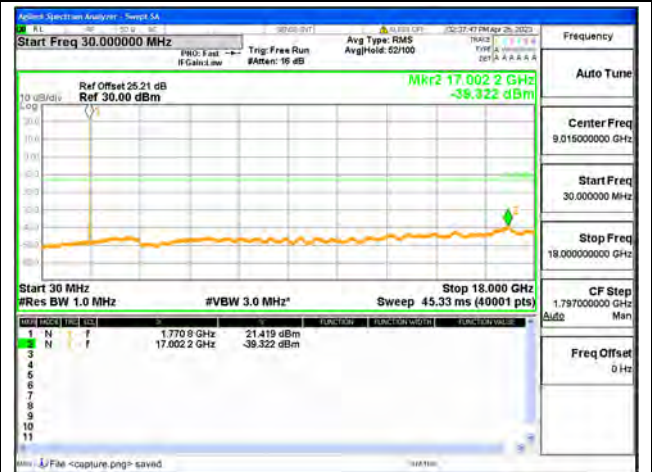
Band66 / 5MHz / High CH / QPSK



Band66 / 10MHz / Low CH / QPSK

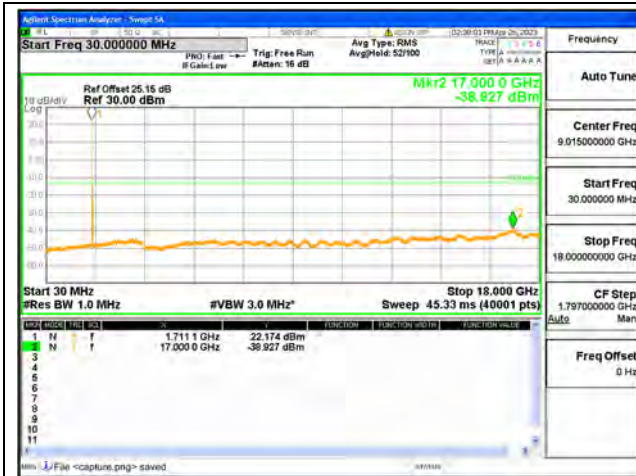


Band66 / 10MHz / Mid CH / QPSK

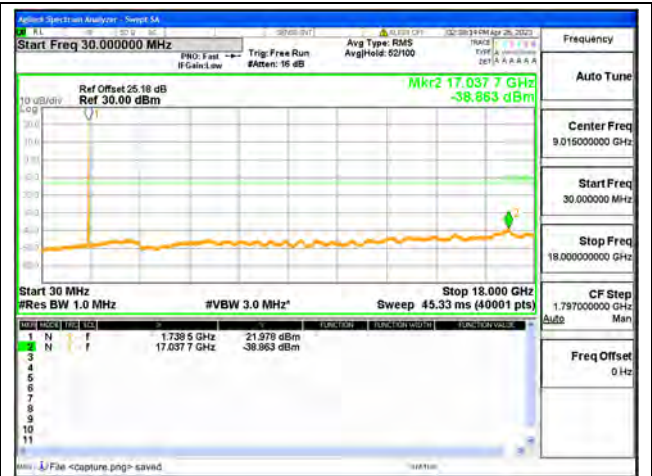


Band66 / 10MHz / High CH / QPSK

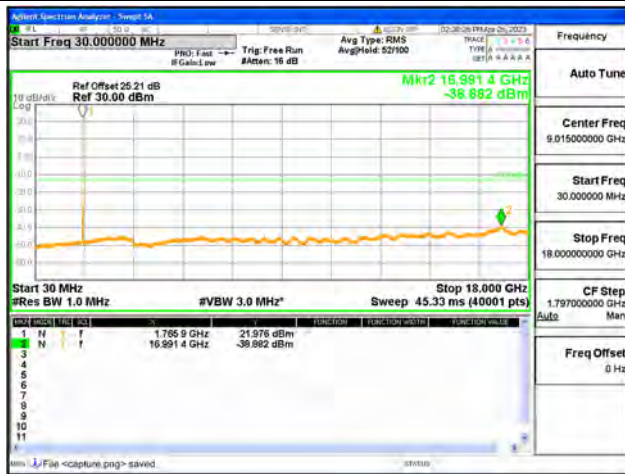




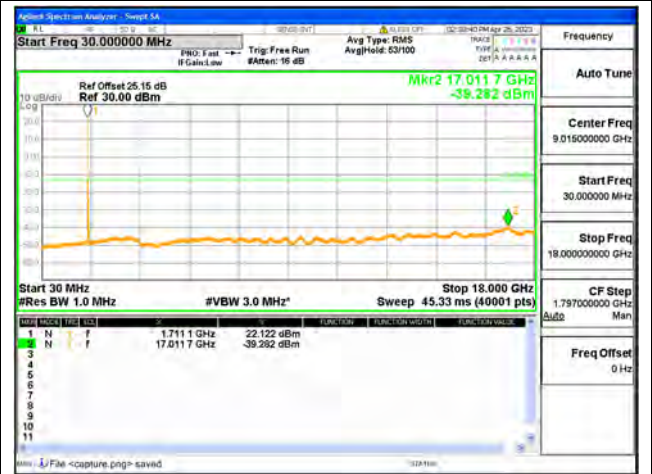
Band66 / 15MHz / Low CH / QPSK



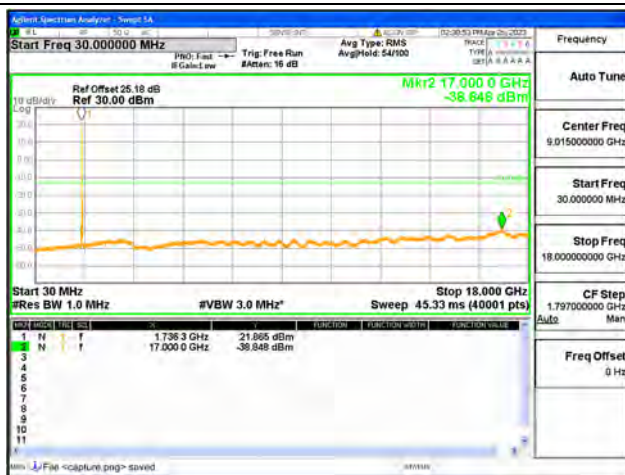
Band66 / 15MHz / Mid CH / QPSK



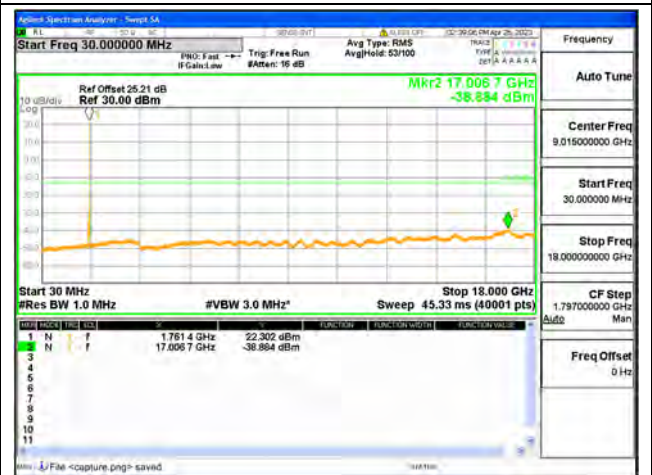
Band66 / 15MHz / High CH / QPSK



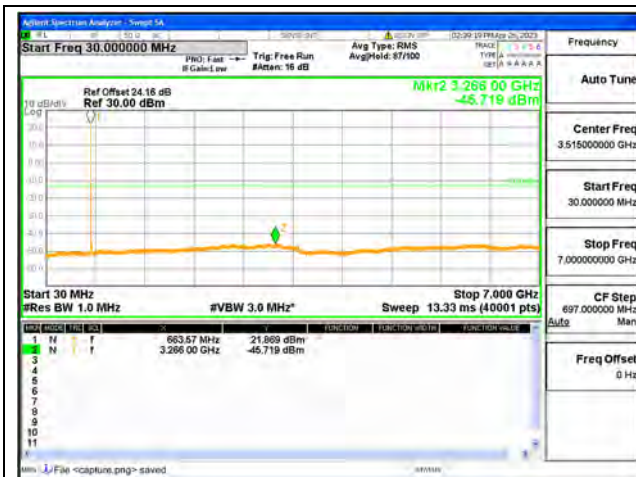
Band66 / 20MHz / Low CH / QPSK



Band66 / 20MHz / Mid CH / QPSK



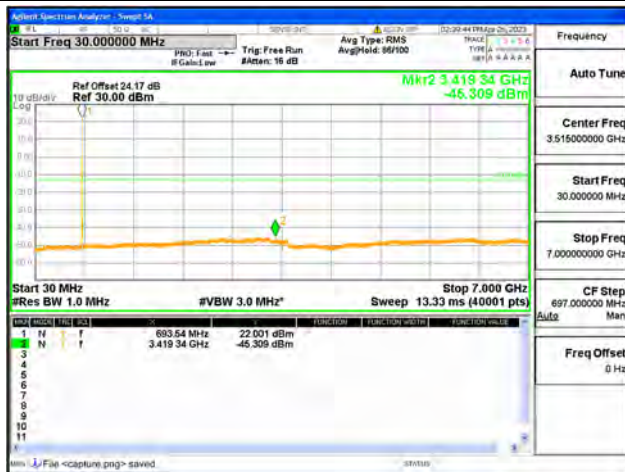
Band66 / 20MHz / High CH / QPSK



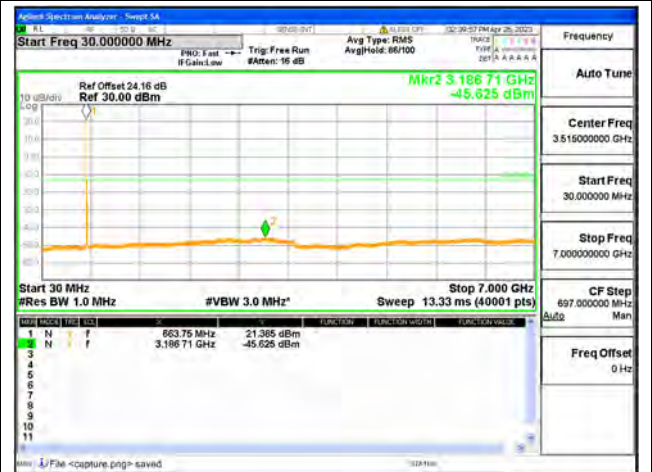
Band71 / 5MHz / Low CH / QPSK



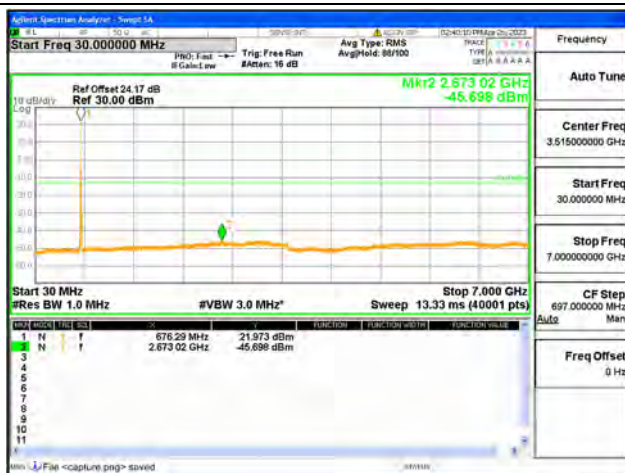
Band71 / 5MHz / Mid CH / QPSK



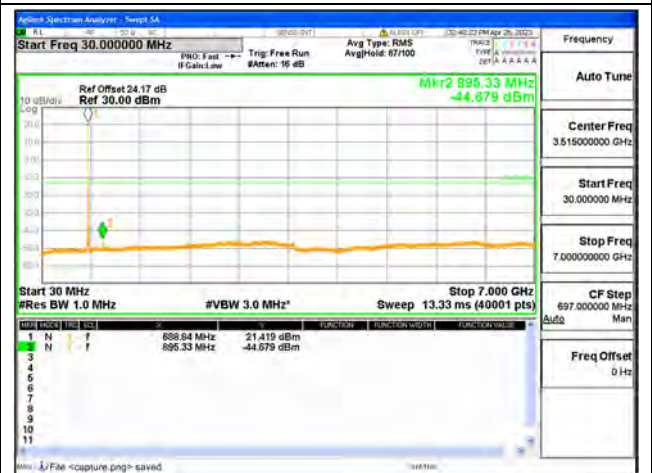
Band71 / 5MHz / High CH / QPSK



Band71 / 10MHz / Low CH / QPSK

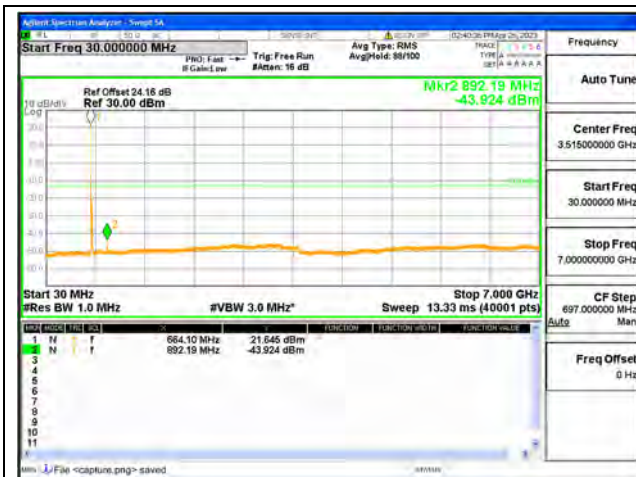


Band71 / 10MHz / Mid CH / QPSK

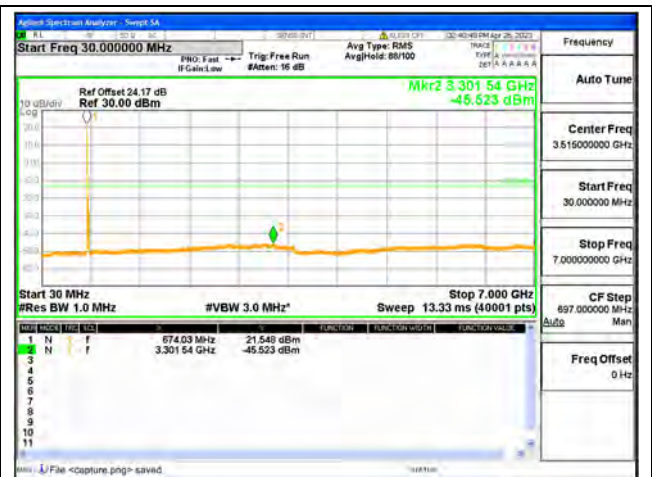


Band71 / 10MHz / High CH / QPSK

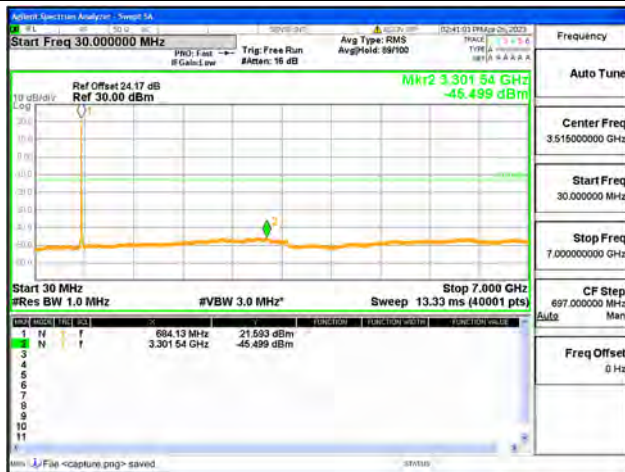




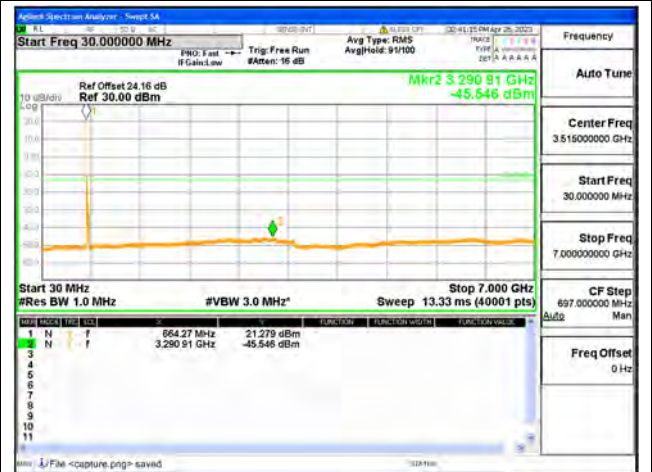
Band71 / 15MHz / Low CH / QPSK



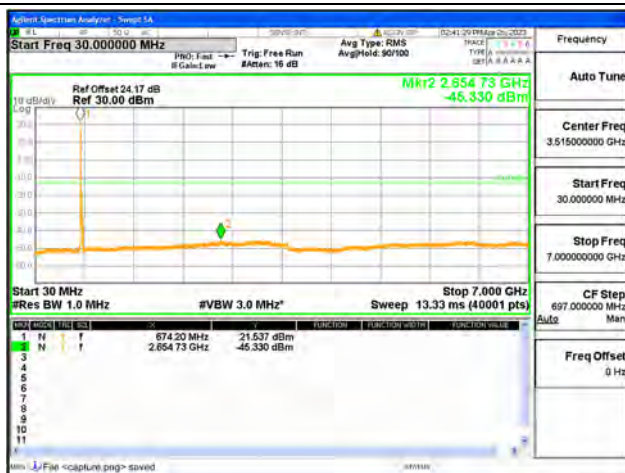
Band71 / 15MHz / Mid CH / QPSK



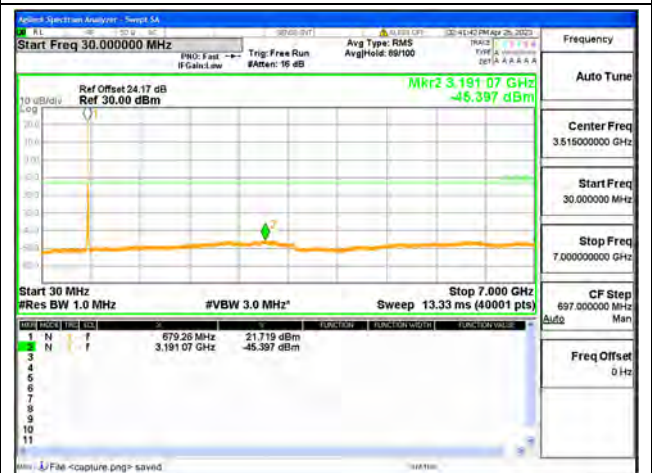
Band71 / 15MHz / High CH / QPSK



Band71 / 20MHz / Low CH / QPSK



Band71 / 20MHz / Mid CH / QPSK



Band71 / 20MHz / High CH / QPSK



## 2.6. Band Edge

### 2.6.1. Requirement

#### Band 2

According to FCC section 24.238(a), for operations in the 1850–1910MHz bands, 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 in a 1MHz bandwidth. However, in the 1 MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

#### Band 4, 66

According to FCC section 27.53(h), for operations in the 1710–1755MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10}(P)$  dB a 1MHz bandwidth. However, in the 1 MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

#### Band 5

According to FCC section 22.917(a), for operations in the 824–849MHz bands, 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 in a 100kHz bandwidth. However, in the 1 MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

#### Band 12, 17, 71

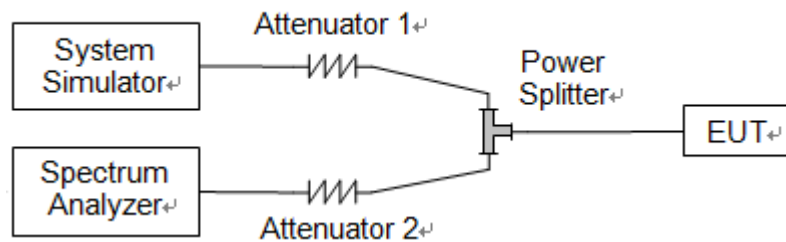
For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log(P)$  dB. Compliance with 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.



## Band 7

According to FCC section 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.

### 2.6.2. Description



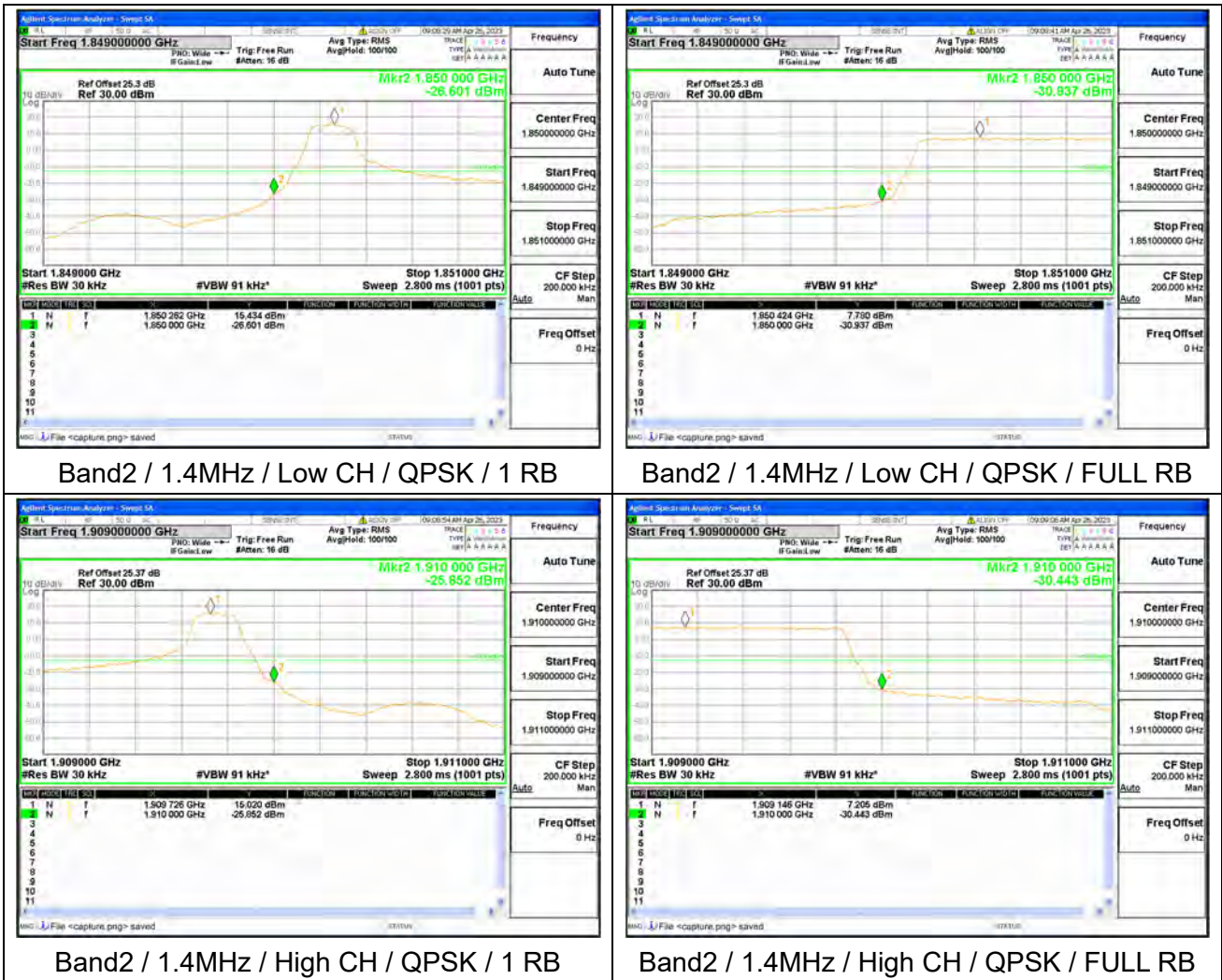
The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

### 2.6.3. Test Procedure

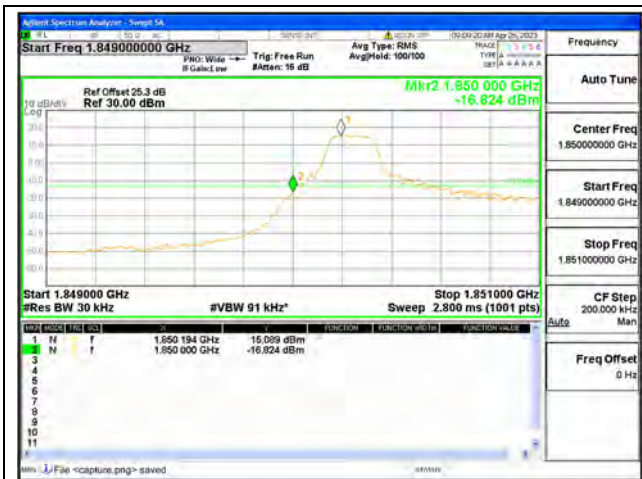
KDB 971168 D01v03 Section 6.0 and ANSI/TIA-603-E-2016.



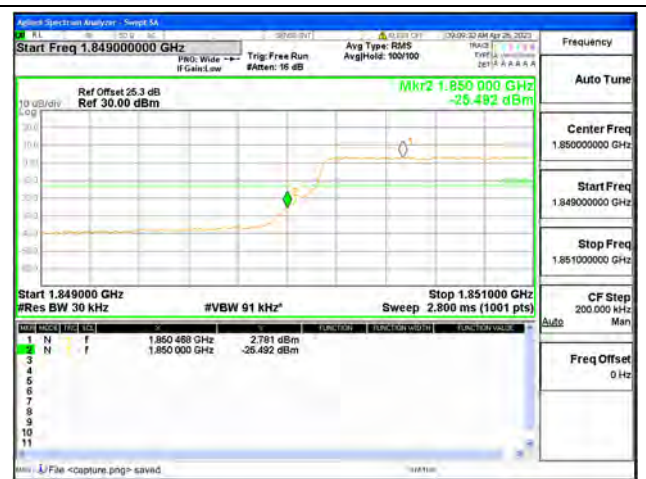
2.6.4. Test Result



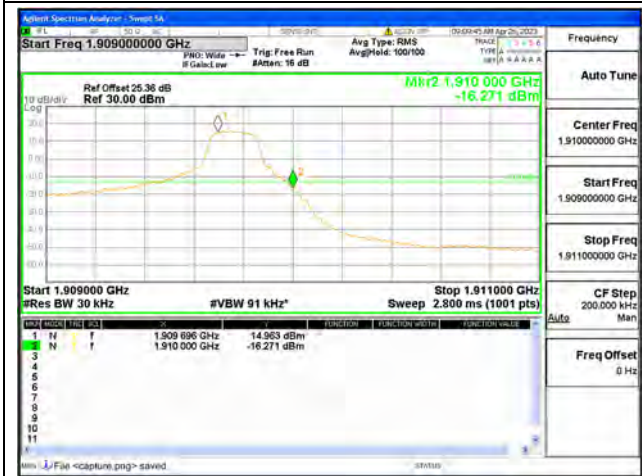




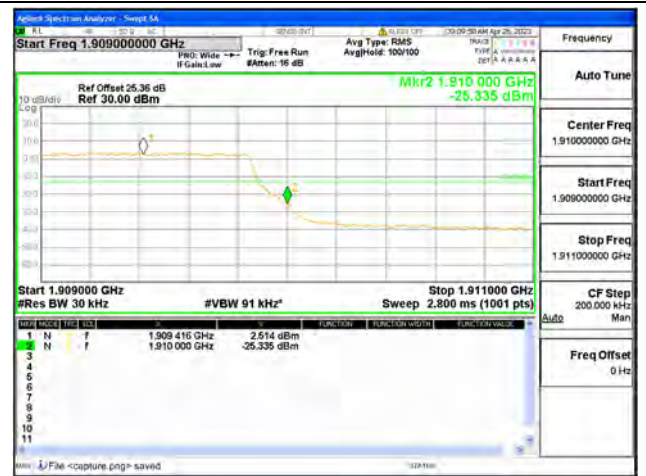
Band2 / 3MHz / Low CH / QPSK / 1 RB



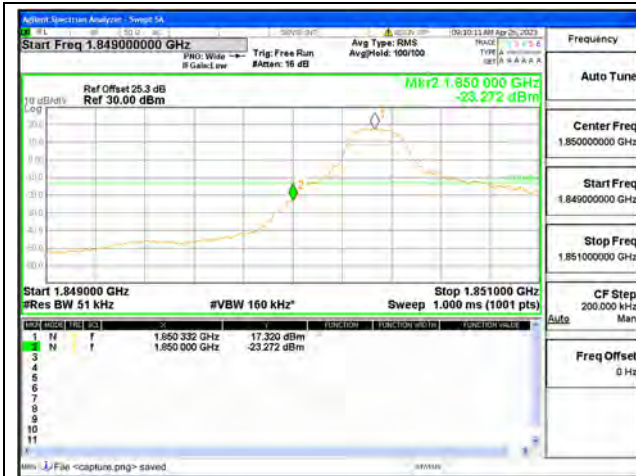
Band2 / 3MHz / Low CH / QPSK / FULL RB



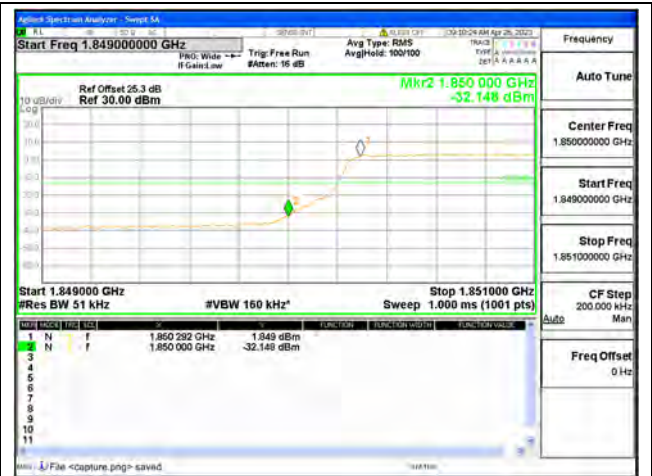
Band2 / 3MHz / High CH / QPSK / 1 RB



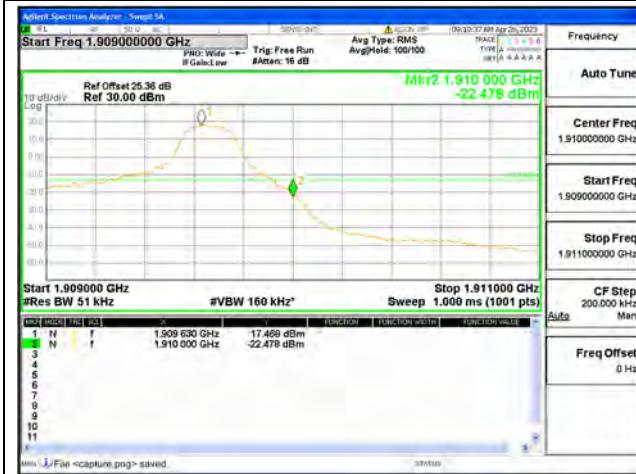
Band2 / 3MHz / High CH / QPSK / FULL RB



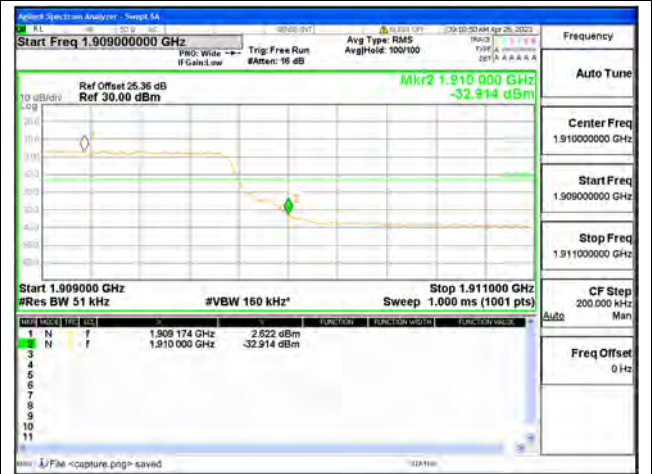
Band2 / 5MHz / Low CH / QPSK / 1 RB



Band2 / 5MHz / Low CH / QPSK / FULL RB

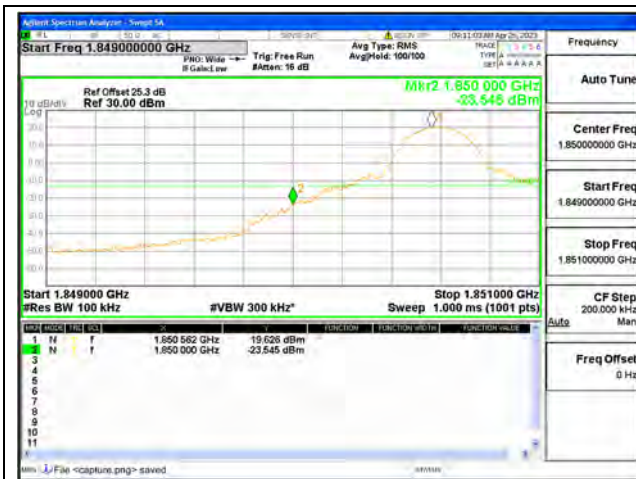


Band2 / 5MHz / High CH / QPSK / 1 RB

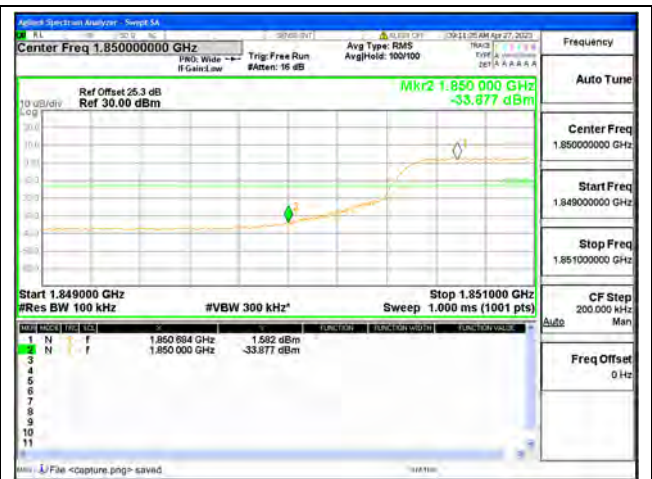


Band2 / 5MHz / High CH / QPSK / FULL RB

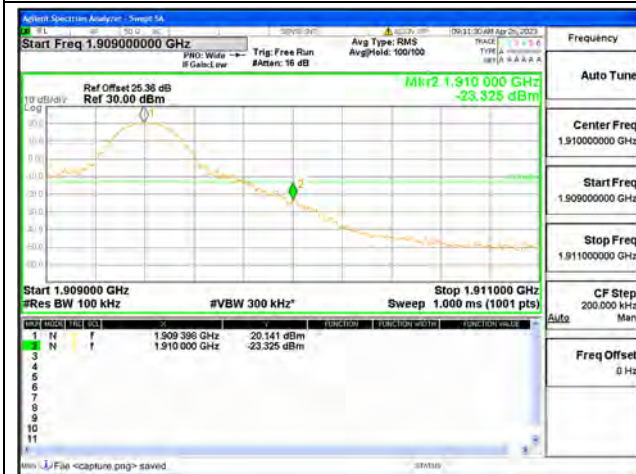




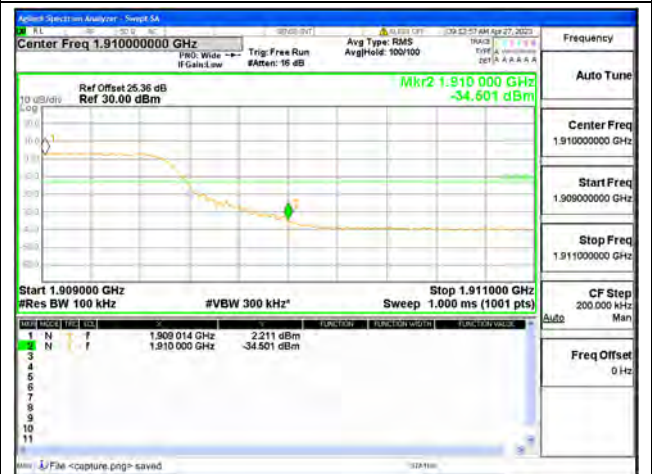
Band2 / 10MHz / Low CH / QPSK / 1 RB



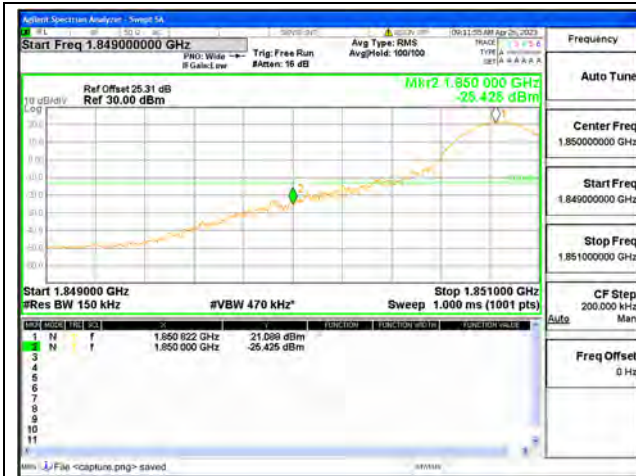
Band2 / 10MHz / Low CH / QPSK / FULL RB



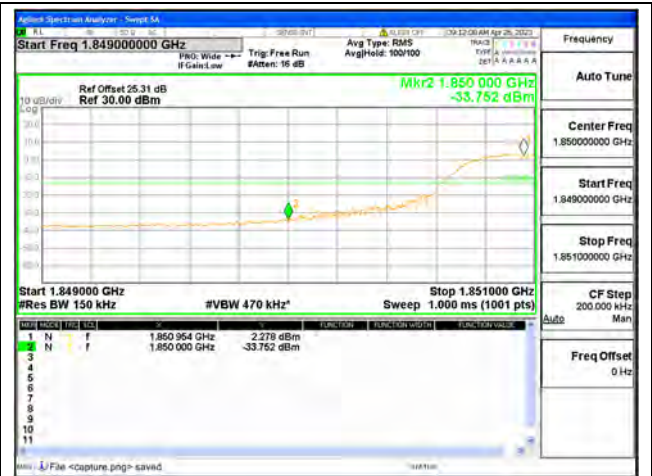
Band2 / 10MHz / High CH / QPSK / 1 RB



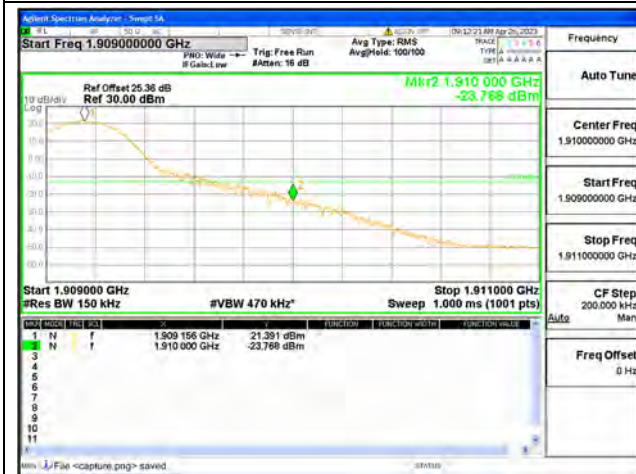
Band2 / 10MHz / High CH / QPSK / FULL RB



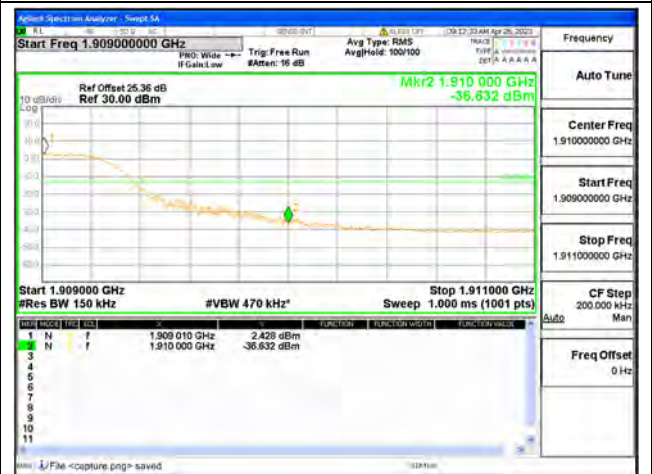
Band2 / 15MHz / Low CH / QPSK / 1 RB



Band2 / 15MHz / Low CH / QPSK / FULL RB

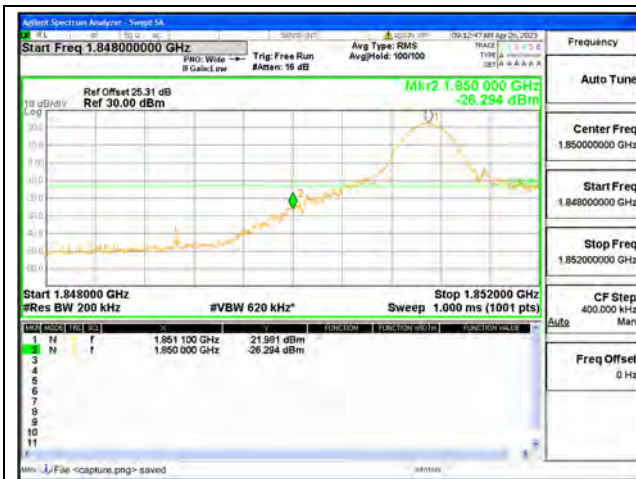


Band2 / 15MHz / High CH / QPSK / 1 RB

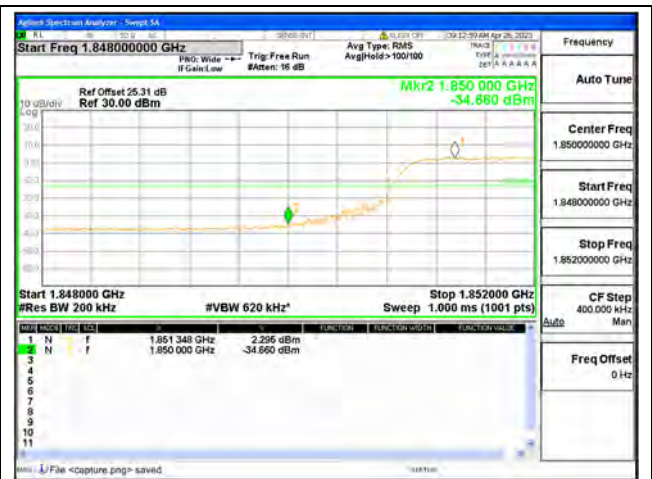


Band2 / 15MHz / High CH / QPSK / FULL RB

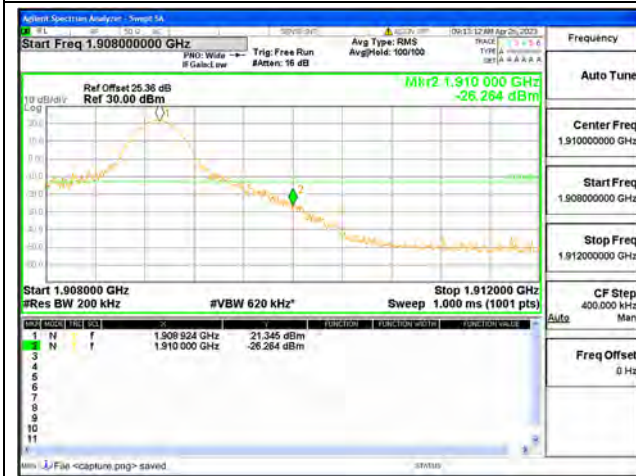




Band2 / 20MHz / Low CH / QPSK / 1 RB



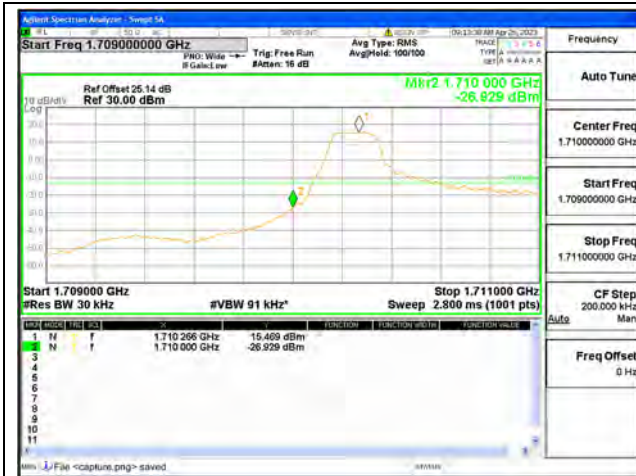
Band2 / 20MHz / Low CH / QPSK / FULL RB



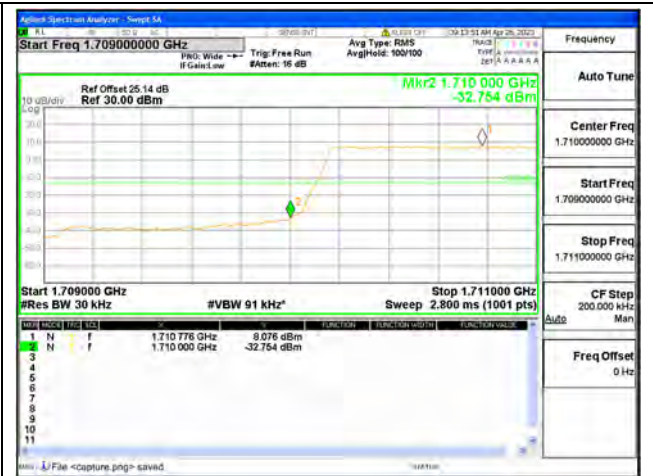
Band2 / 20MHz / High CH / QPSK / 1 RB



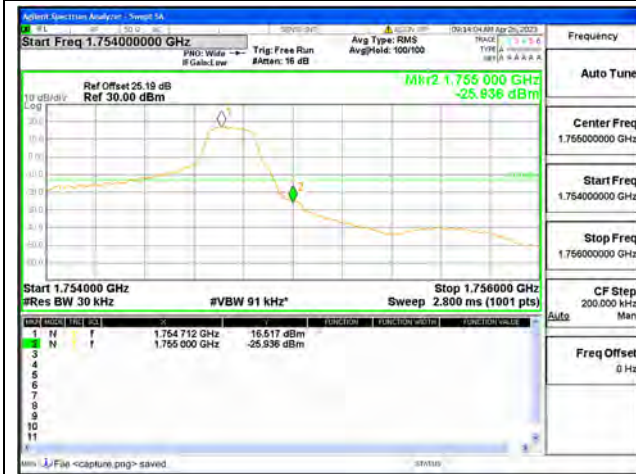
Band2 / 20MHz / High CH / QPSK / FULL RB



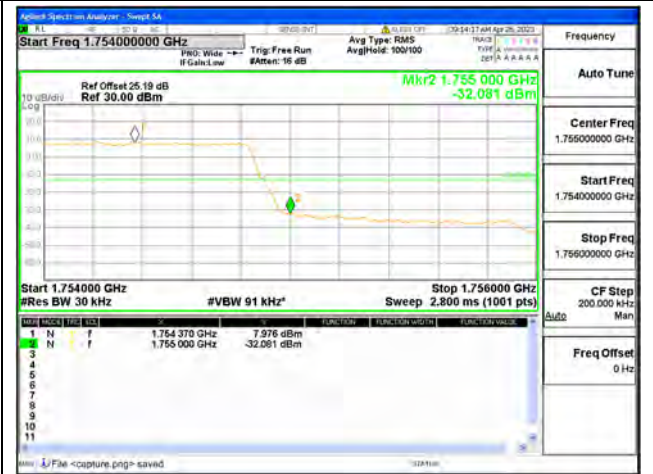
Band4 / 1.4MHz / Low CH / QPSK / 1 RB



Band4 / 1.4MHz / Low CH / QPSK / FULL RB

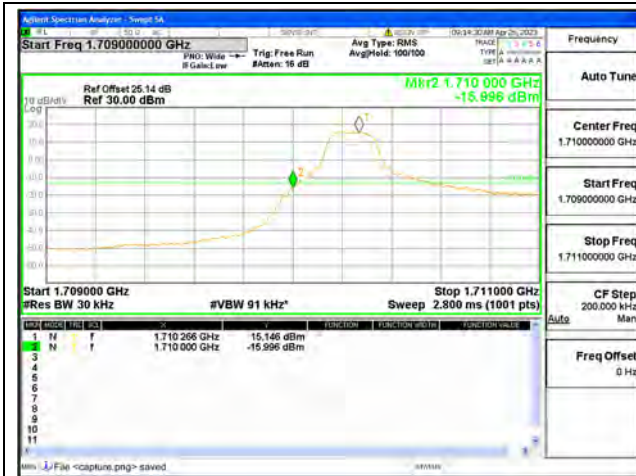


Band4 / 1.4MHz / High CH / QPSK / 1 RB

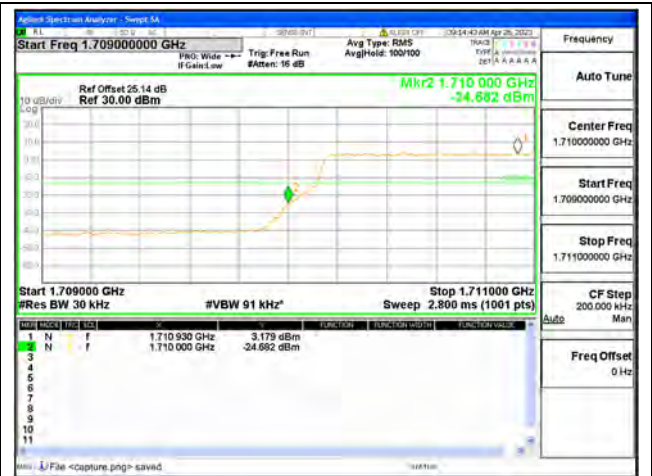


Band4 / 1.4MHz / High CH / QPSK / FULL RB

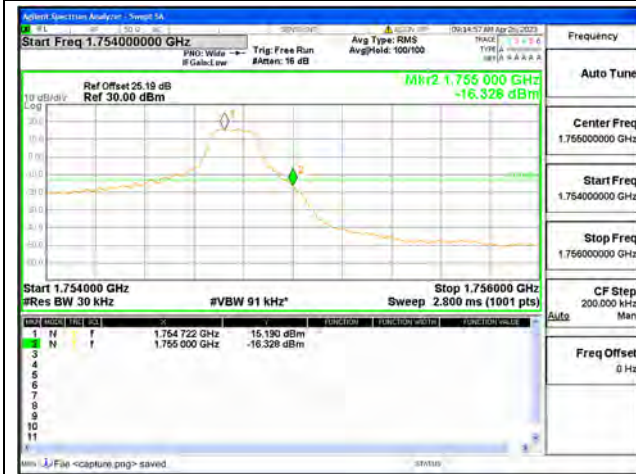




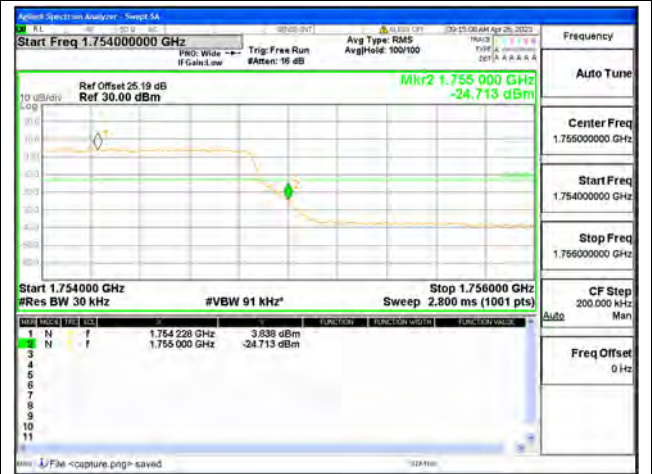
Band4 / 3MHz / Low CH / QPSK / 1 RB



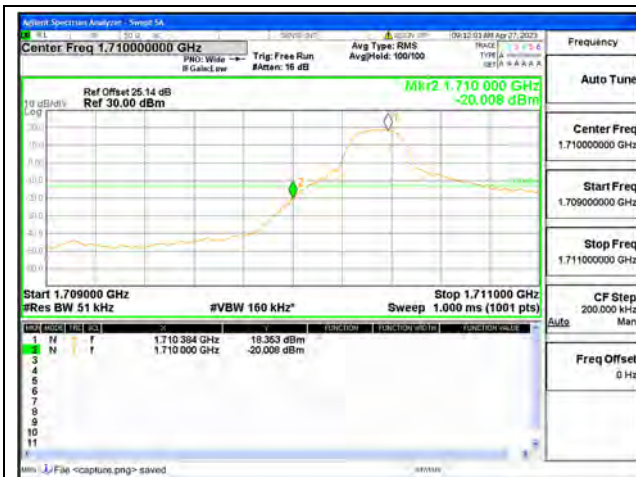
Band4 / 3MHz / Low CH / QPSK / FULL RB



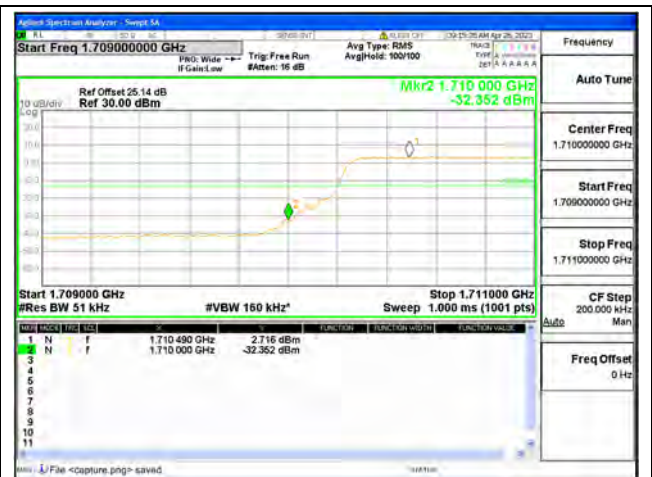
Band4 / 3MHz / High CH / QPSK / 1 RB



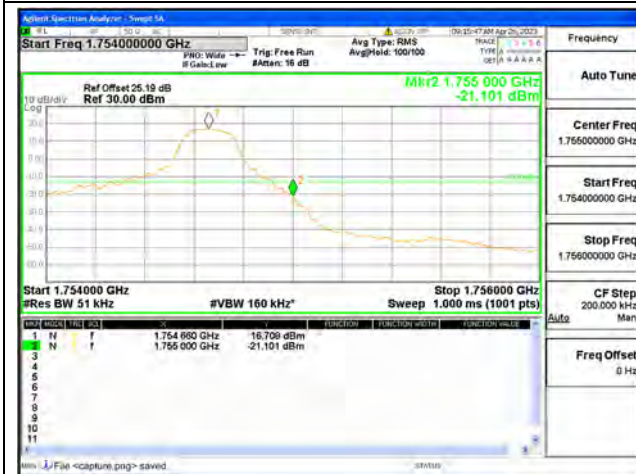
Band4 / 3MHz / High CH / QPSK / FULL RB



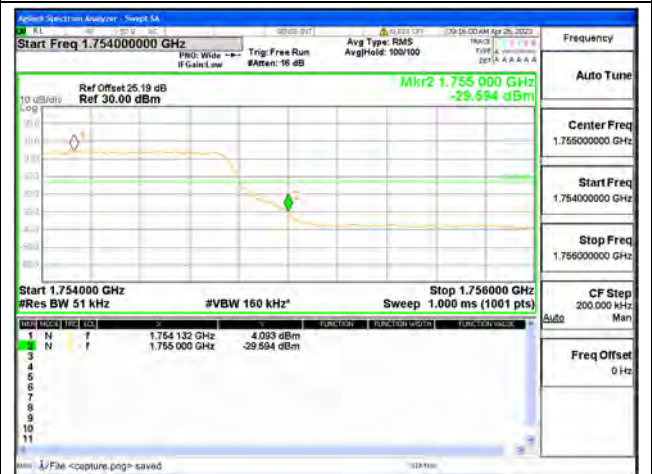
Band4 / 5MHz / Low CH / QPSK / 1 RB



Band4 / 5MHz / Low CH / QPSK / FULL RB

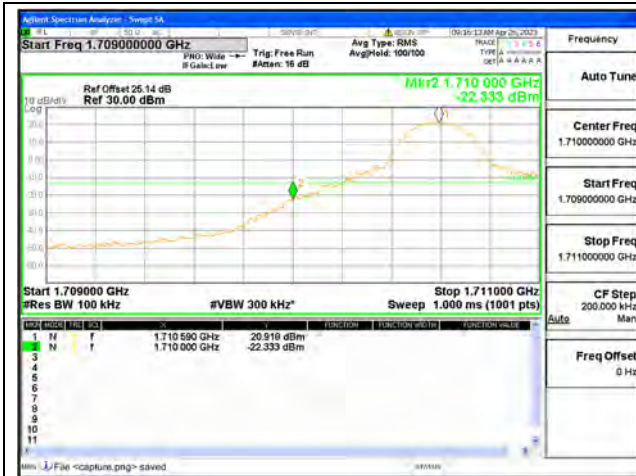


Band4 / 5MHz / High CH / QPSK / 1 RB

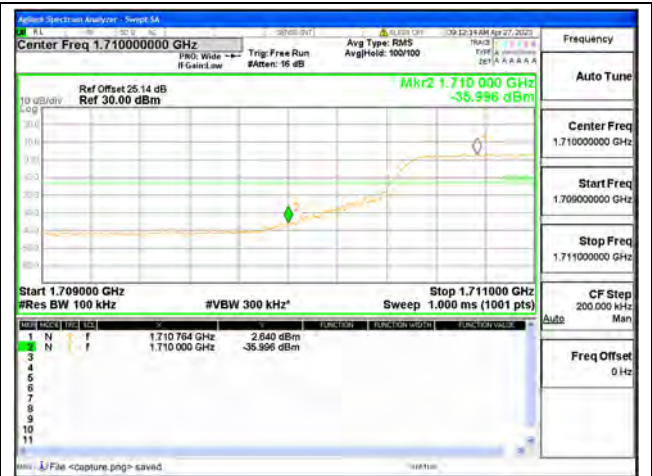


Band4 / 5MHz / High CH / QPSK / FULL RB

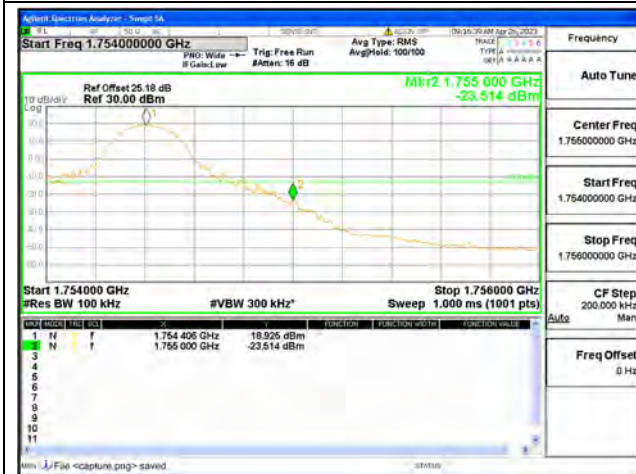




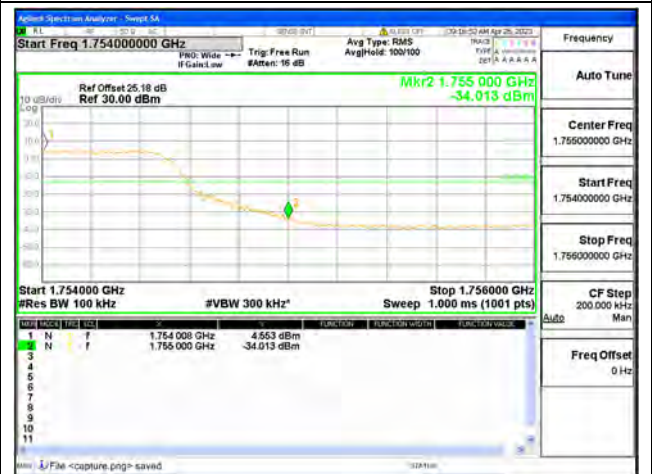
Band4 / 10MHz / Low CH / QPSK / 1 RB



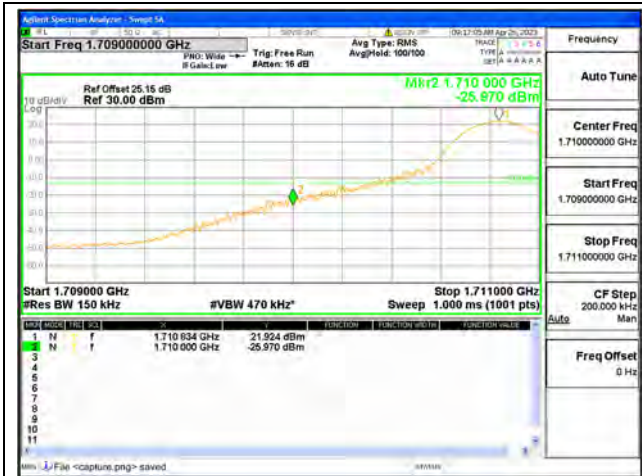
Band4 / 10MHz / Low CH / QPSK / FULL RB



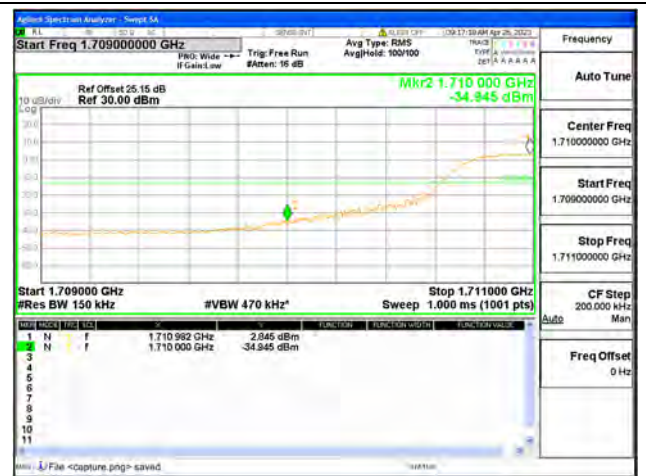
Band4 / 10MHz / High CH / QPSK / 1 RB



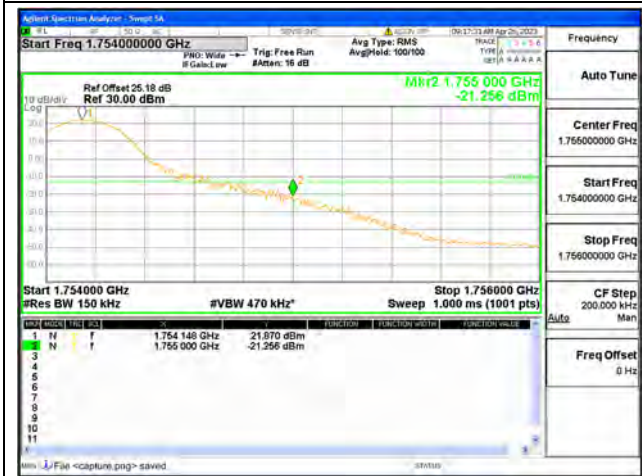
Band4 / 10MHz / High CH / QPSK / FULL RB



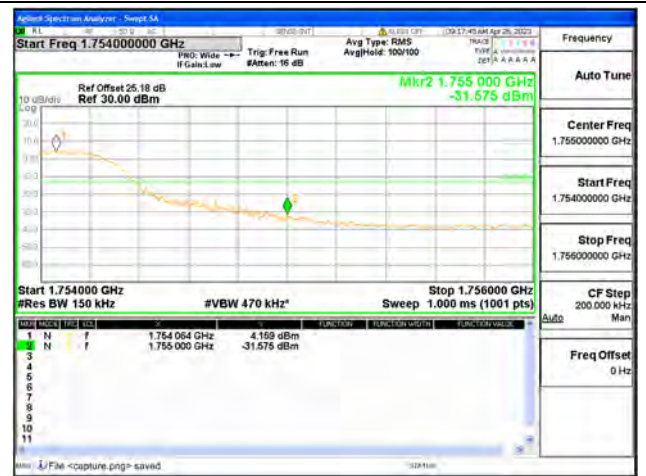
Band4 / 15MHz / Low CH / QPSK / 1 RB



Band4 / 15MHz / Low CH / QPSK / FULL RB

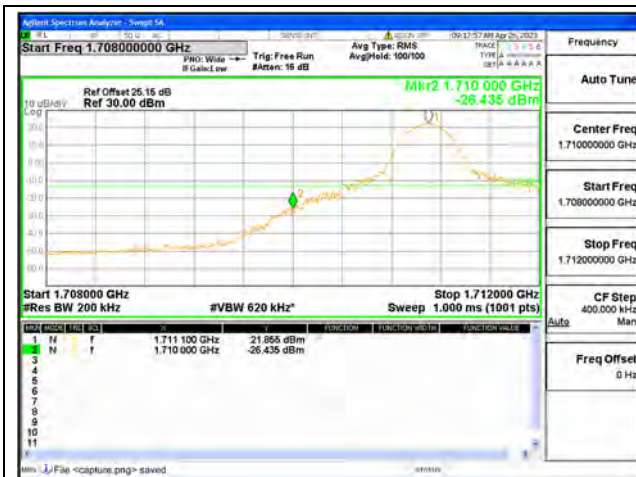


Band4 / 15MHz / High CH / QPSK / 1 RB

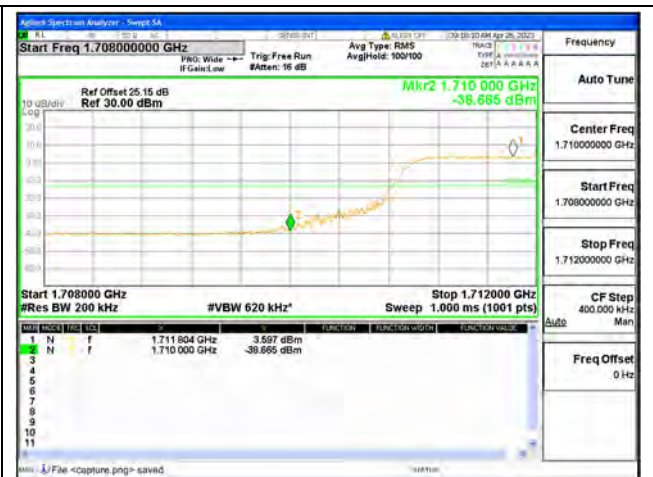


Band4 / 15MHz / High CH / QPSK / FULL RB

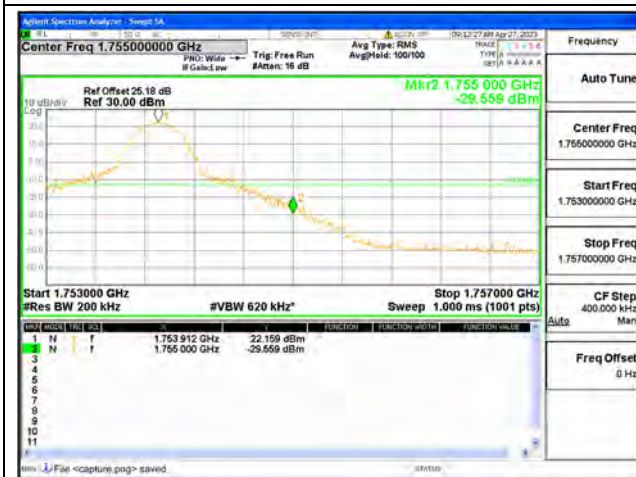




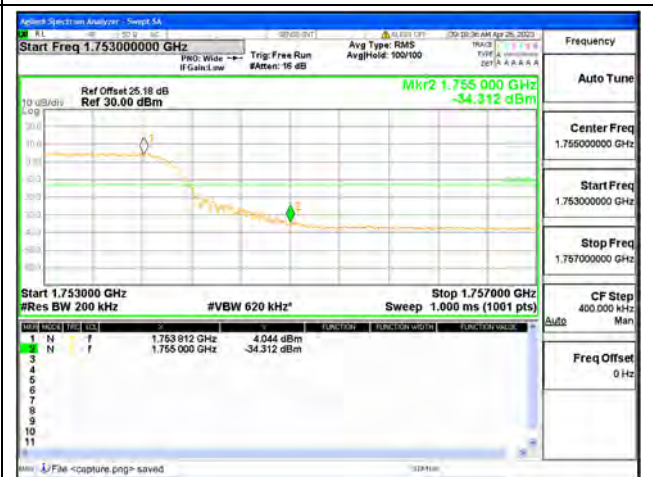
Band4 / 20MHz / Low CH / QPSK / 1 RB



Band4 / 20MHz / Low CH / QPSK / FULL RB



Band4 / 20MHz / High CH / QPSK / 1 RB



Band4 / 20MHz / High CH / QPSK / FULL RB