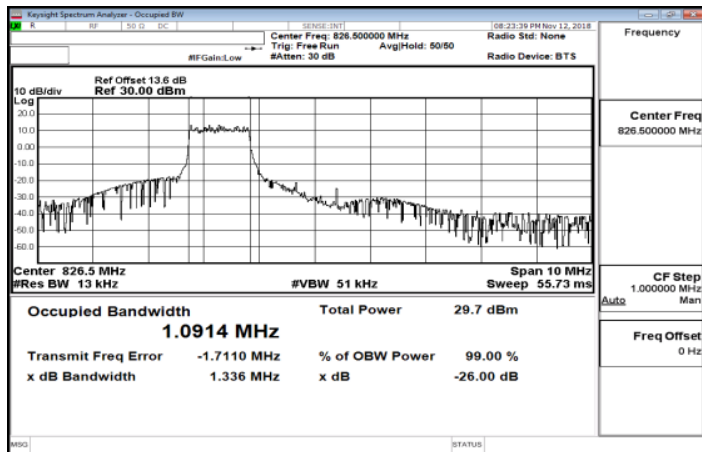
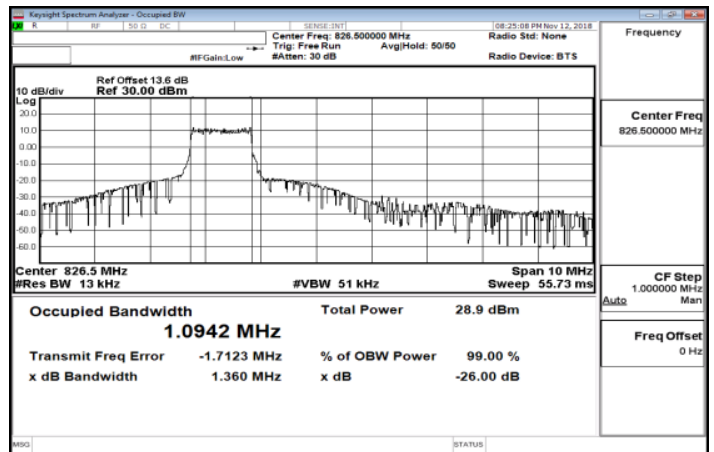


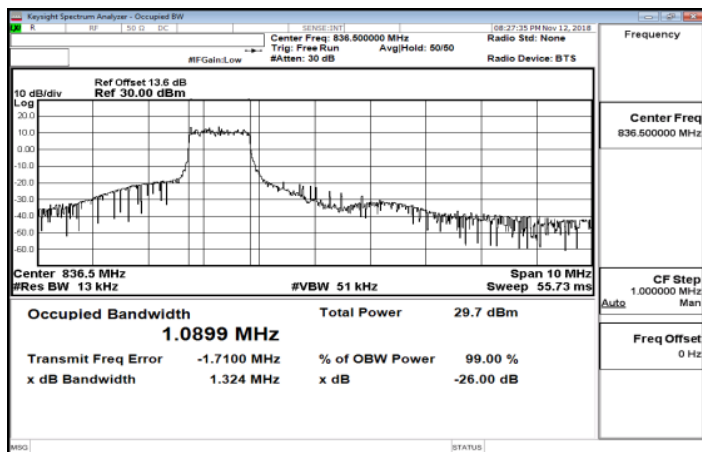
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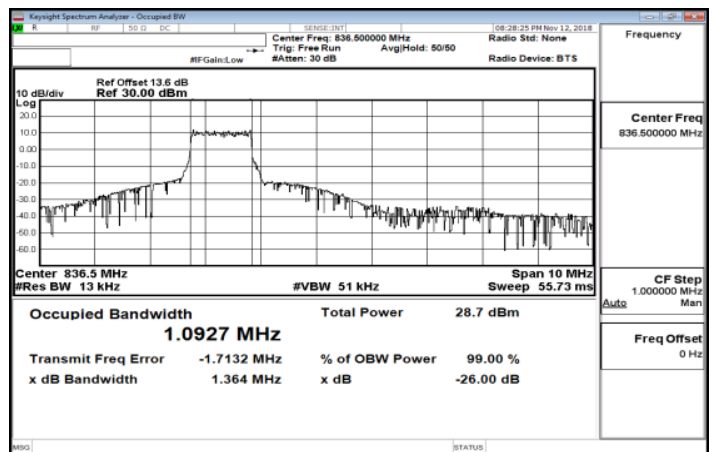
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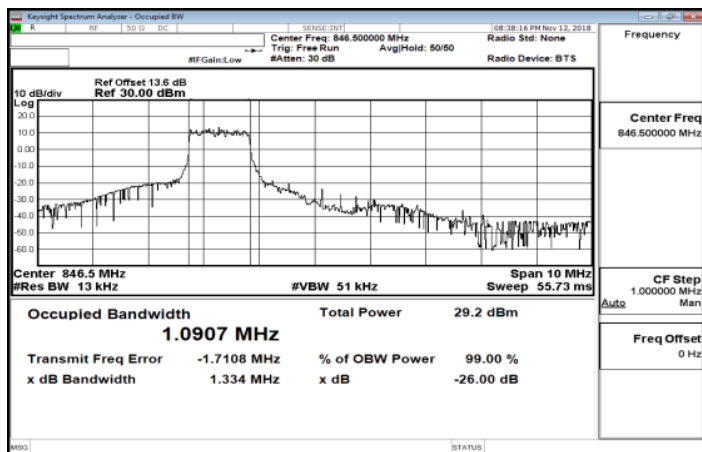
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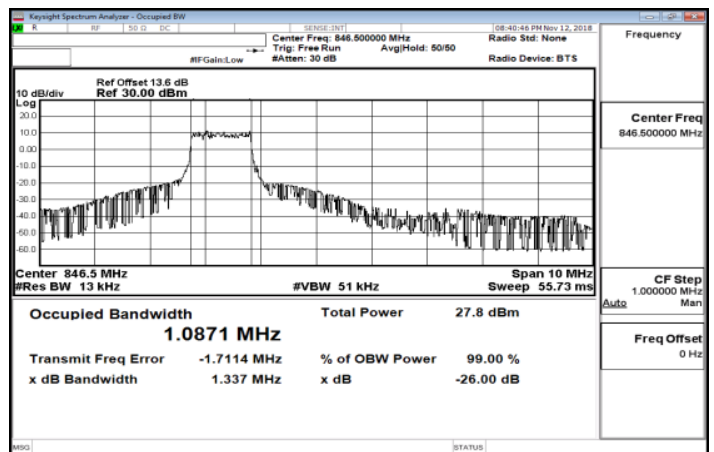
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Band5_5MHz_16QAM_6_0_HighCH20625-846.5



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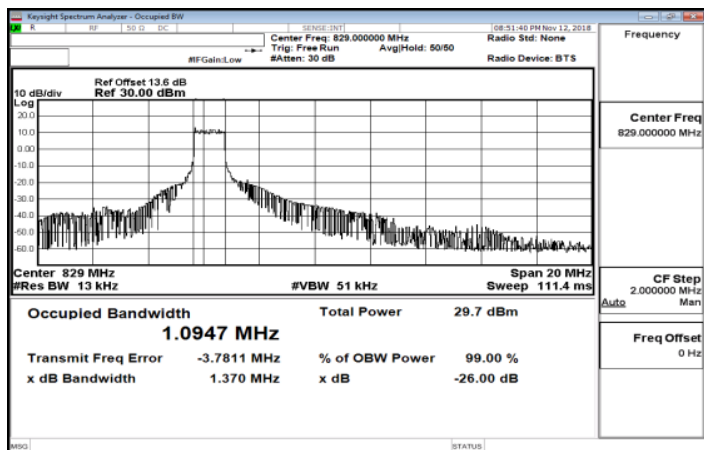
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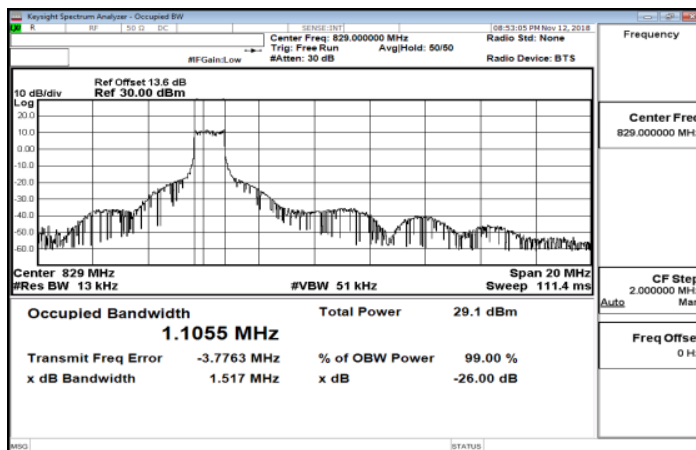
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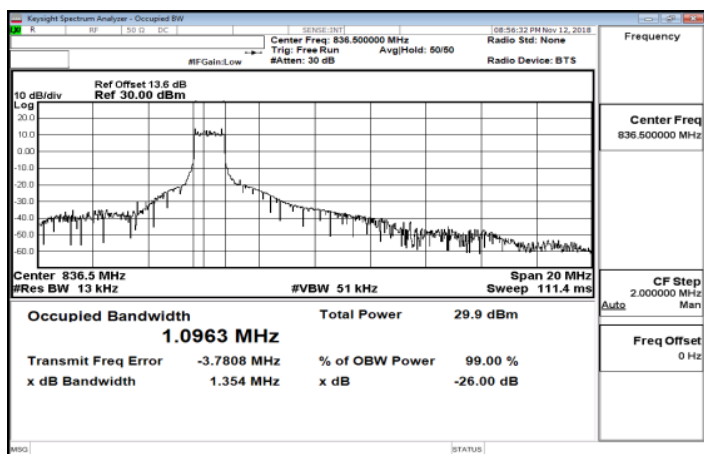
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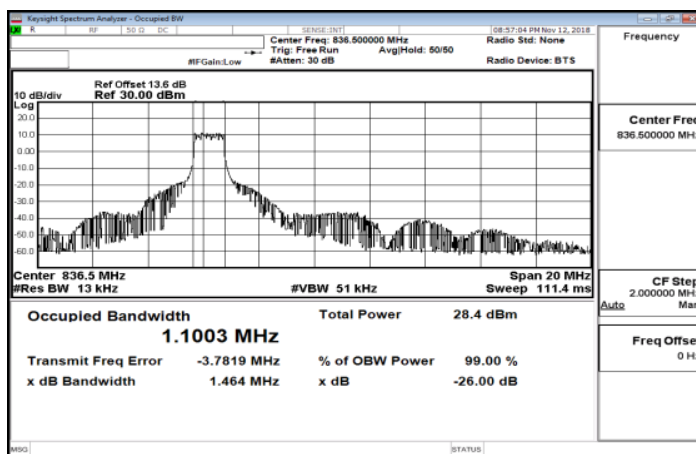
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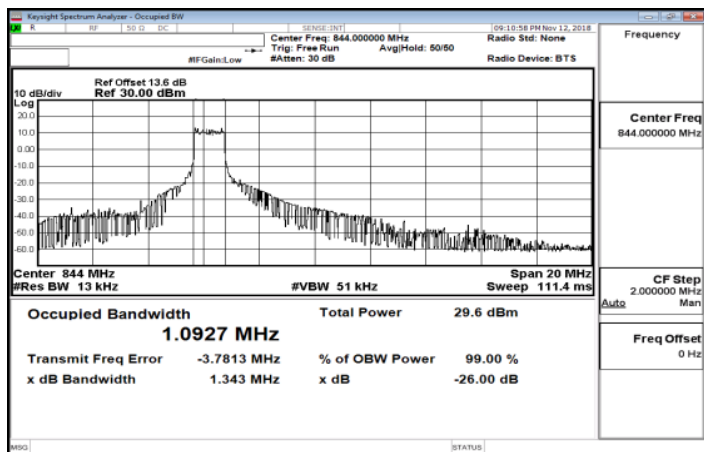
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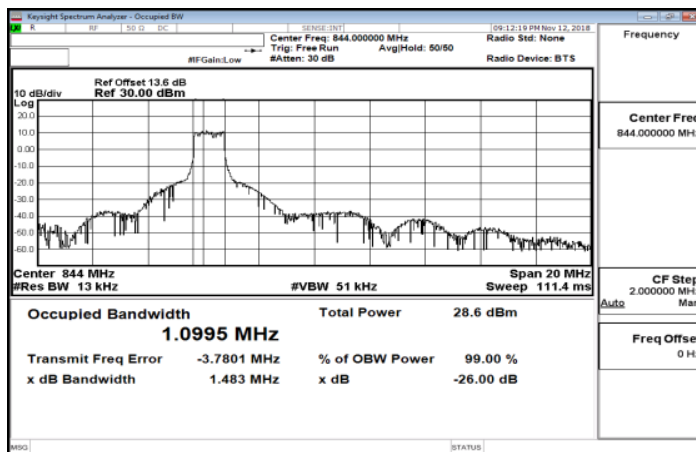
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Band5_10MHz_QPSK_6_0_HighCH20600-844



Band5_10MHz_16QAM_6_0_HighCH20600-844



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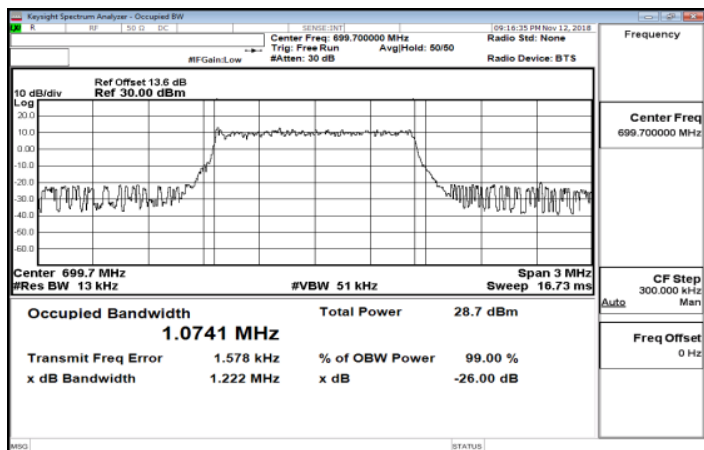
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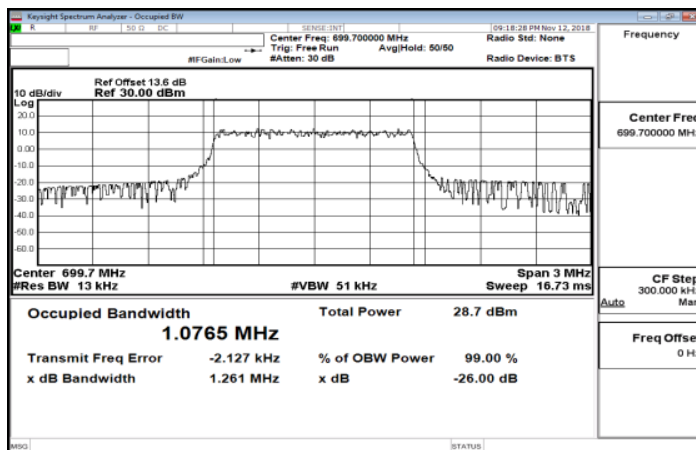
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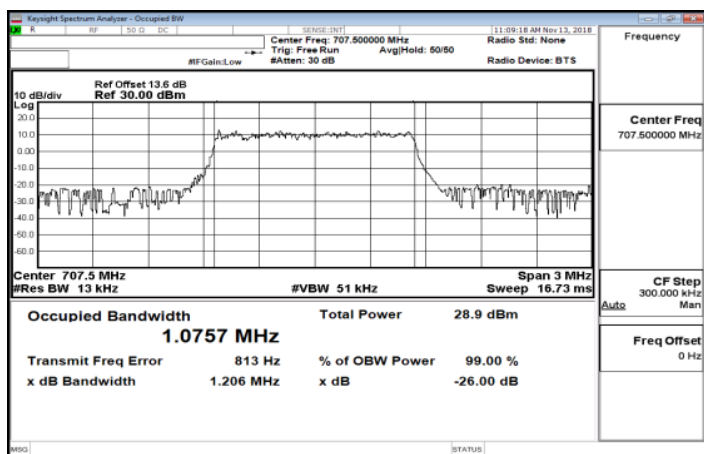
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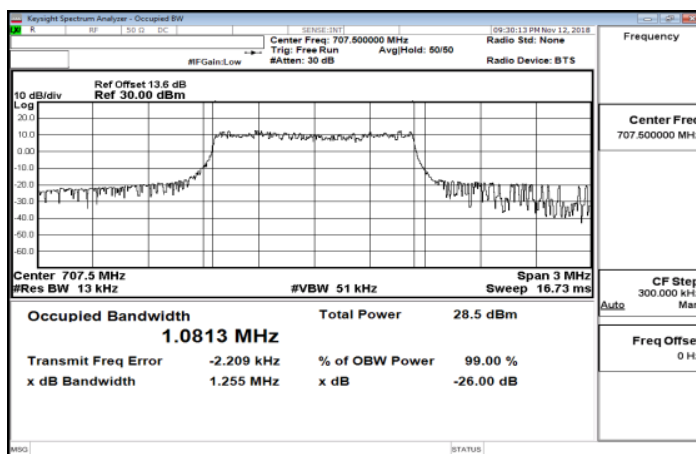
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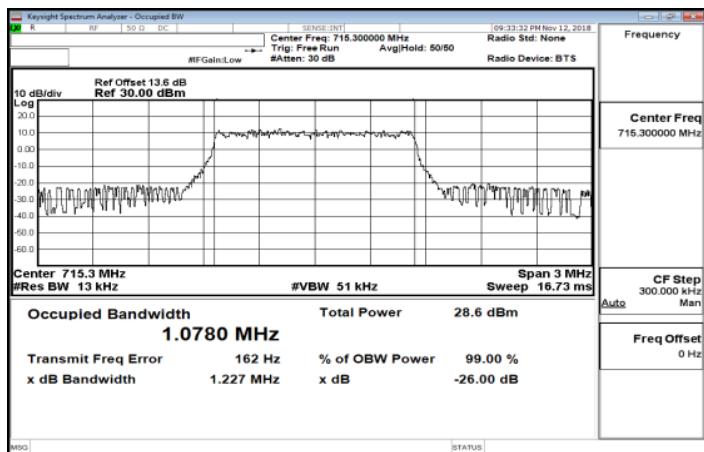
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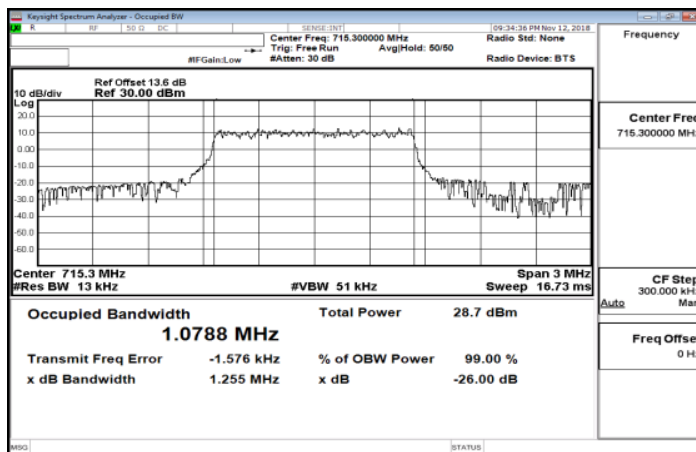
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Band12_1_4MHz_16QAM_6_0_HighCH23173-715.3



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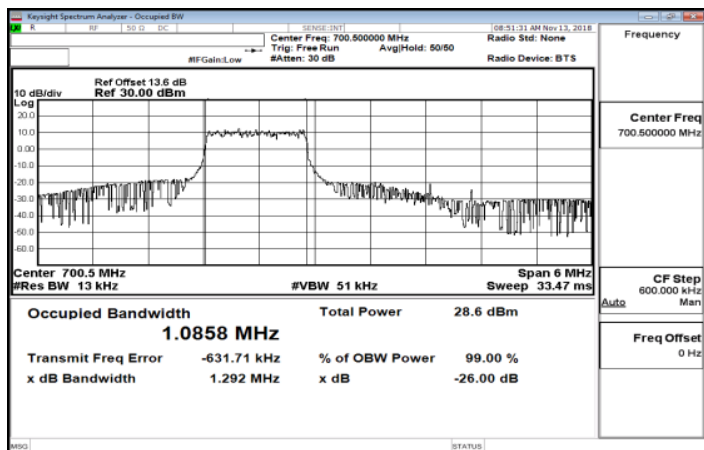
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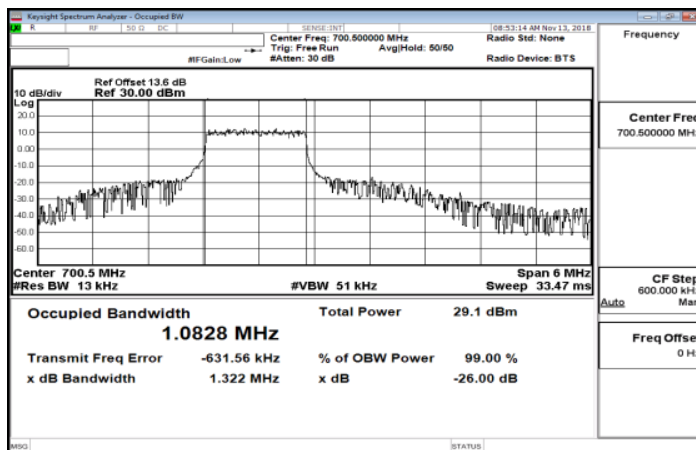
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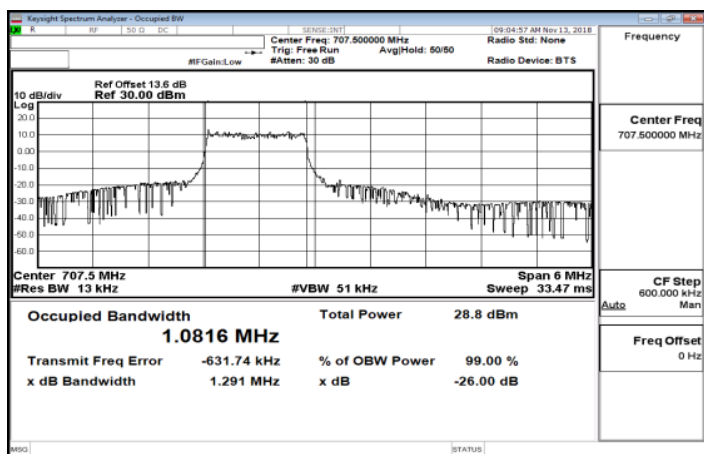
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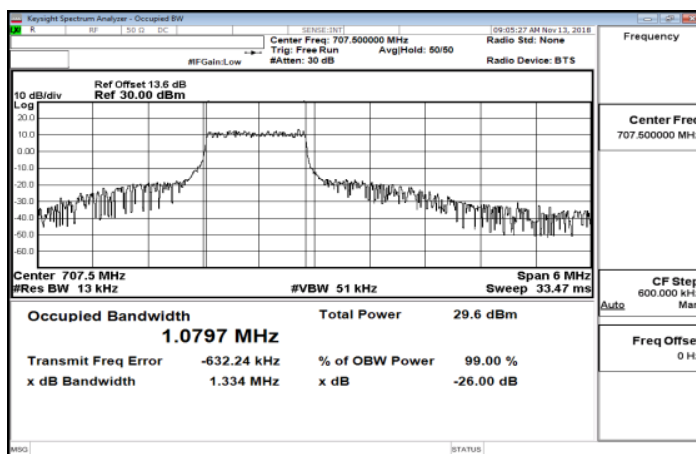
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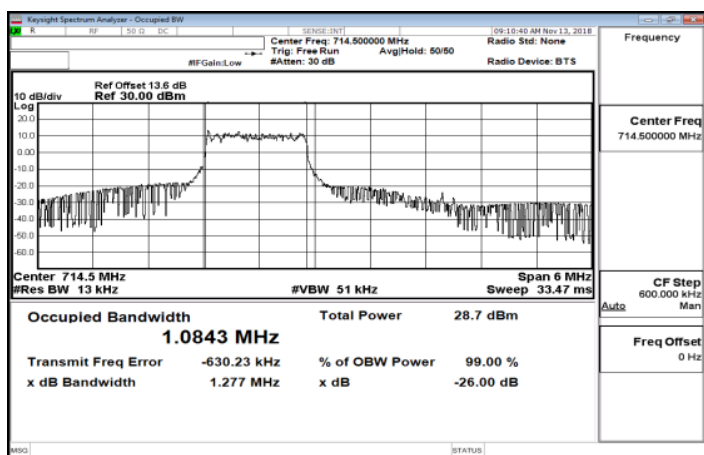
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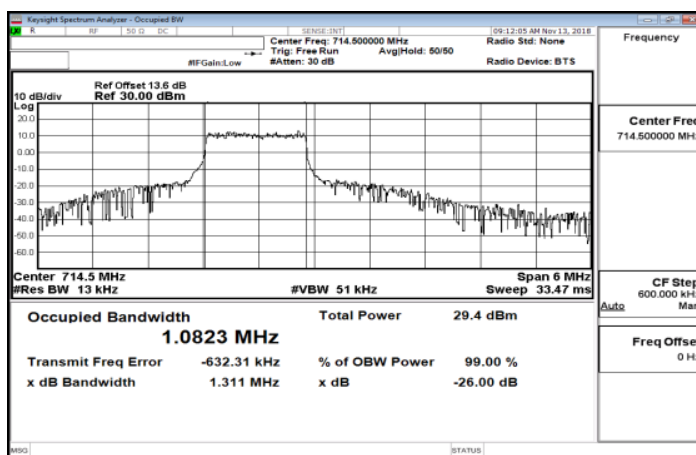
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Band12_3MHz_16QAM_6_0_HighCH23165-714.5



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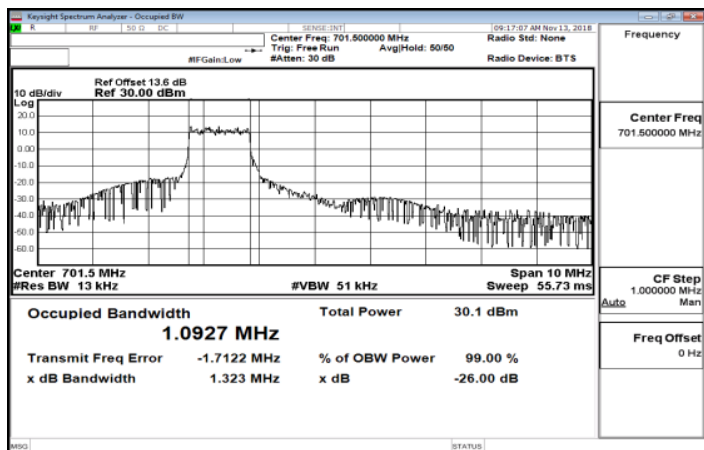
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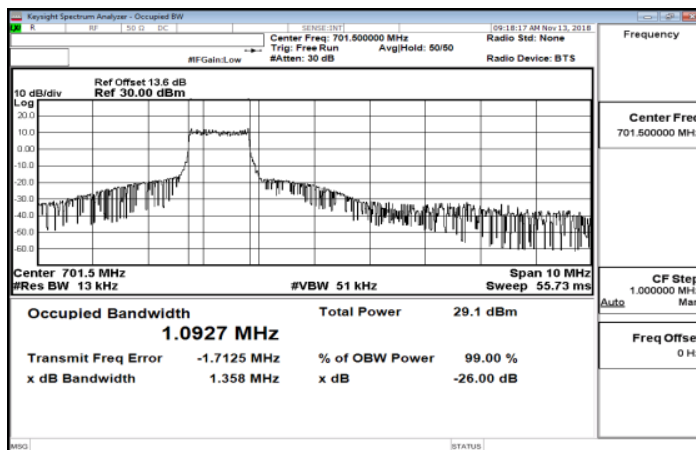
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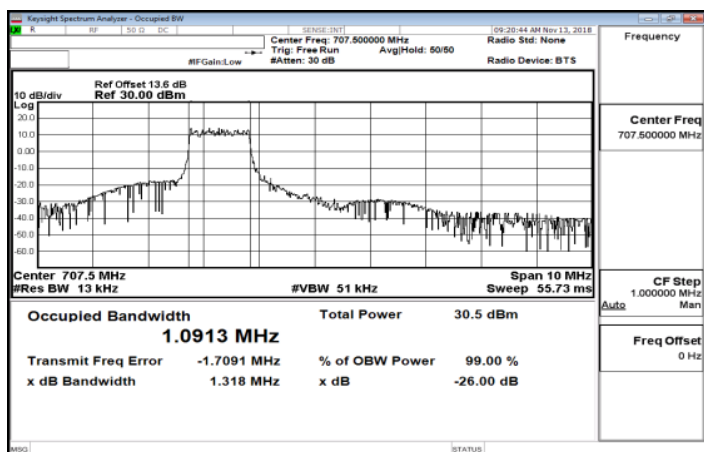
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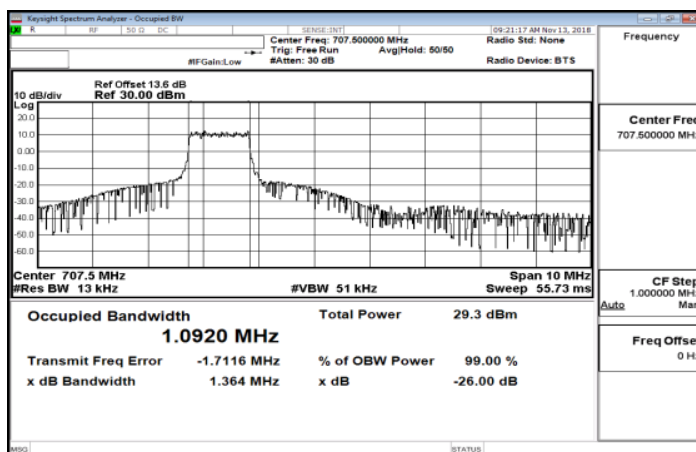
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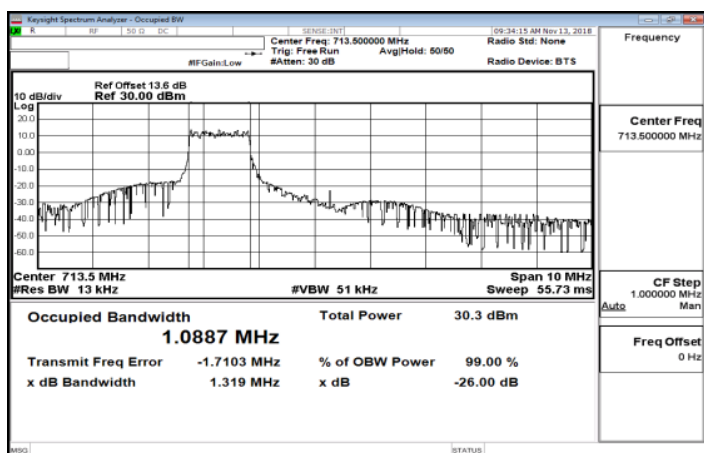
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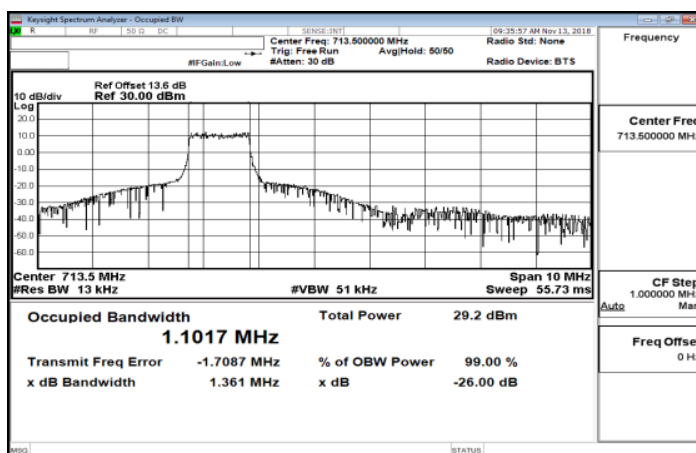
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Band12_5MHz_16QAM_6_0_HighCH23155-713.5



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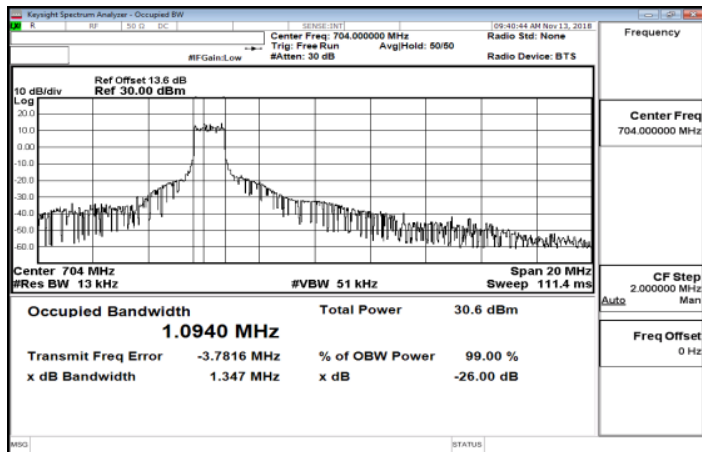
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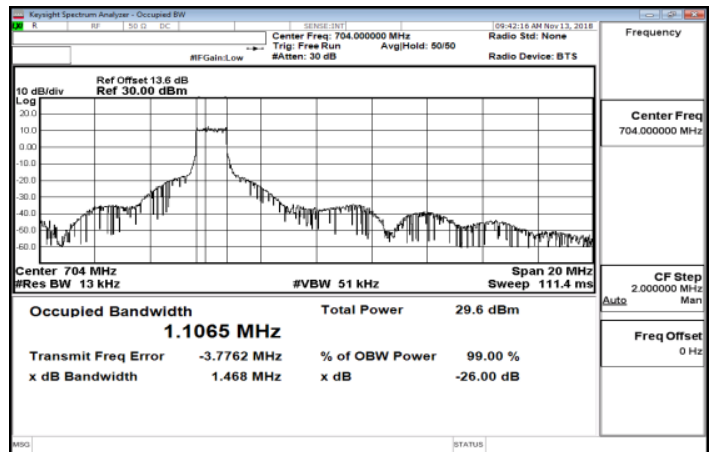
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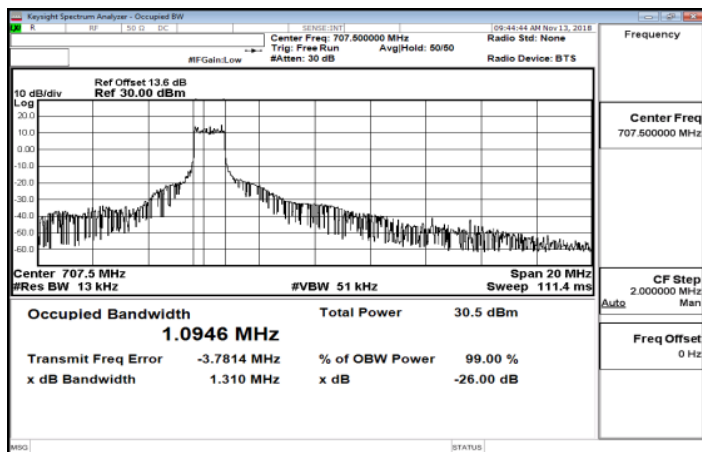
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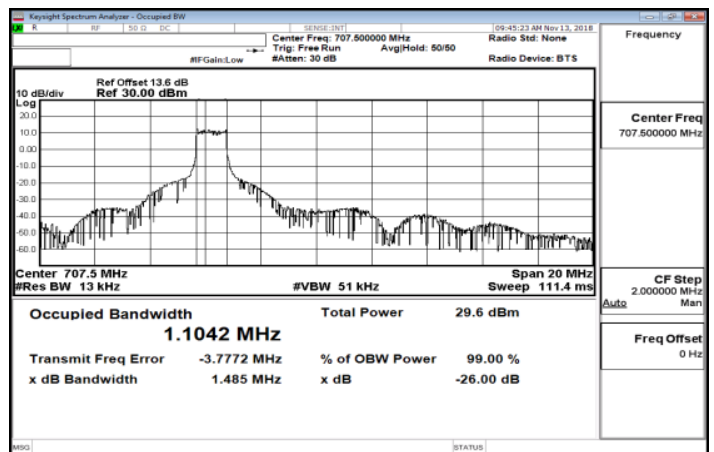
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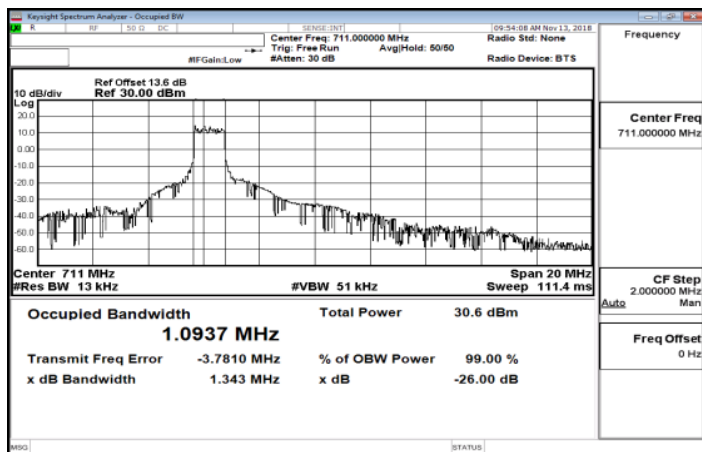
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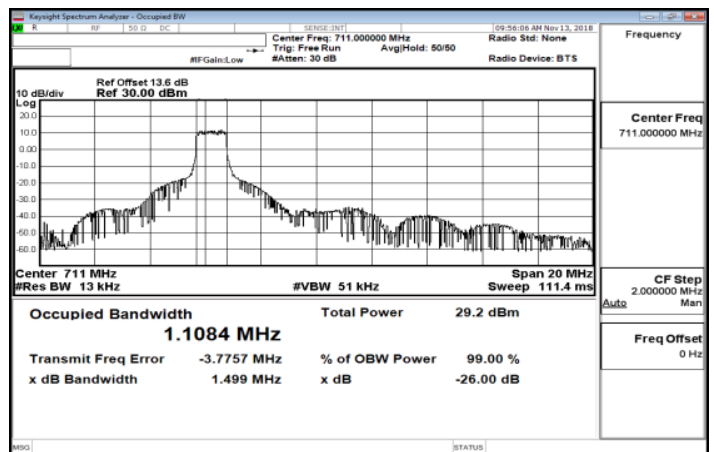
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Band12_10MHz_QPSK_6_0_HighCH23130-711



Band12_10MHz_16QAM_6_0_HighCH23130-711



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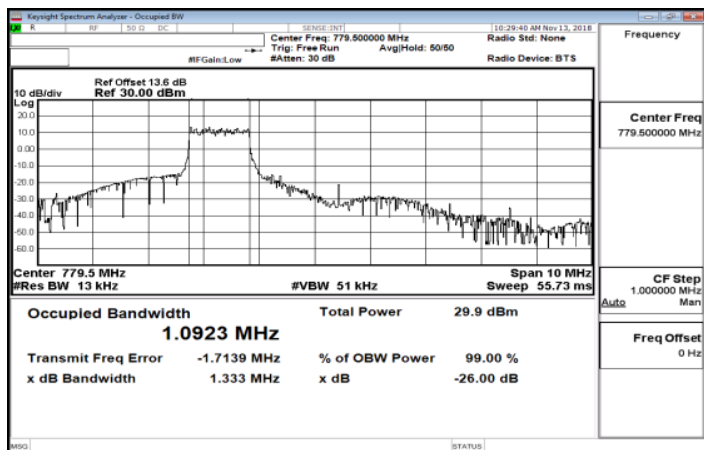
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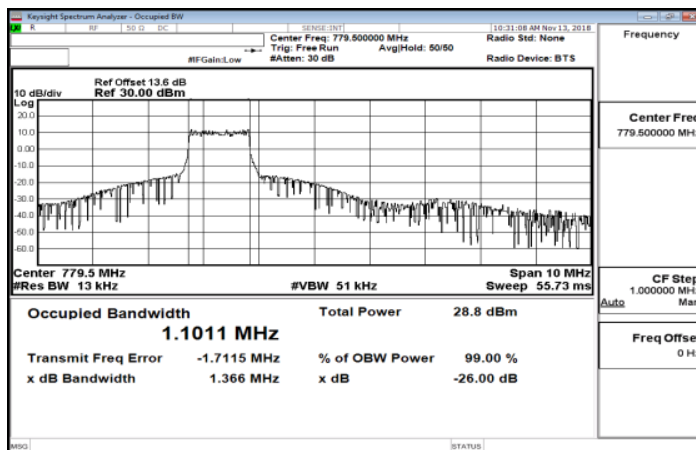
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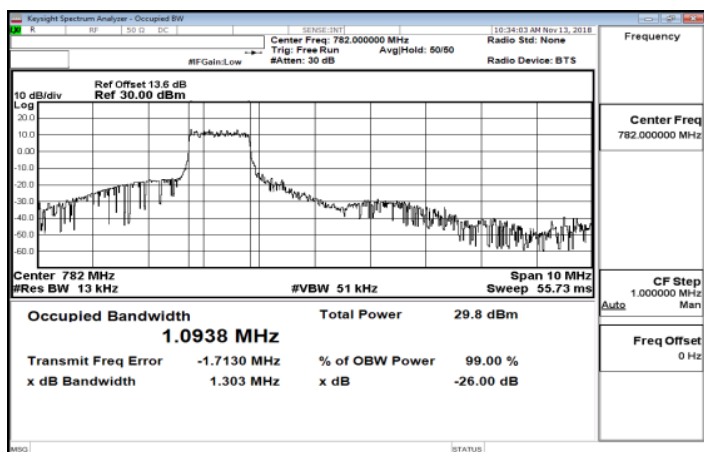
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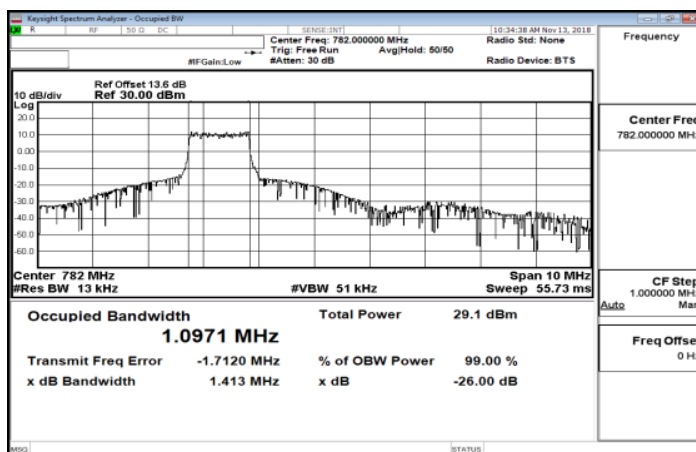
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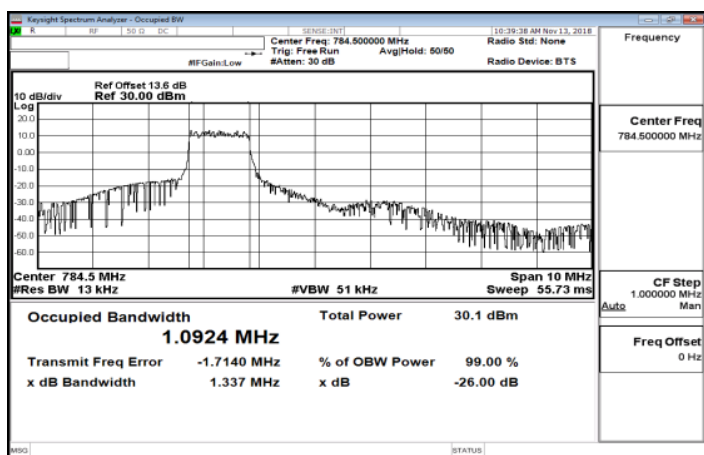
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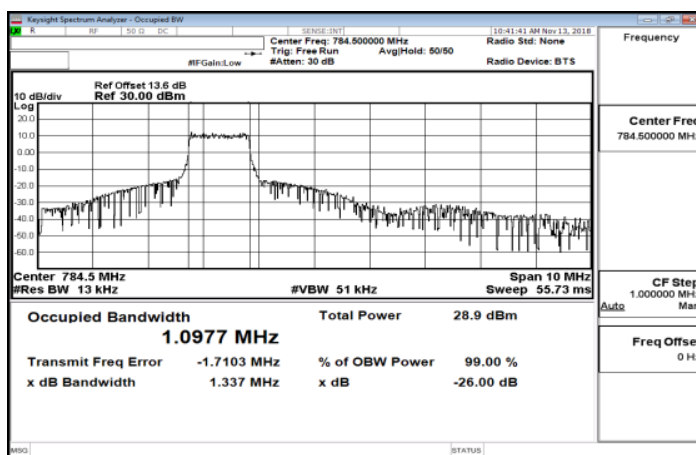
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Band13_5MHz_QPSK_6_0_HighCH23255-784.5



Band13_5MHz_16QAM_6_0_HighCH23255-784.5



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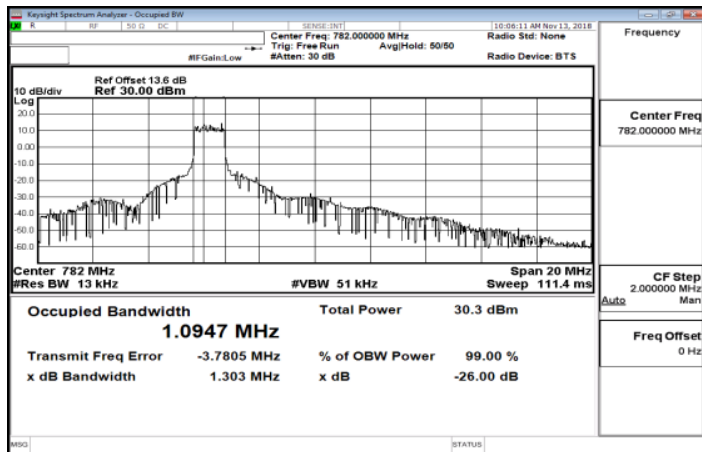
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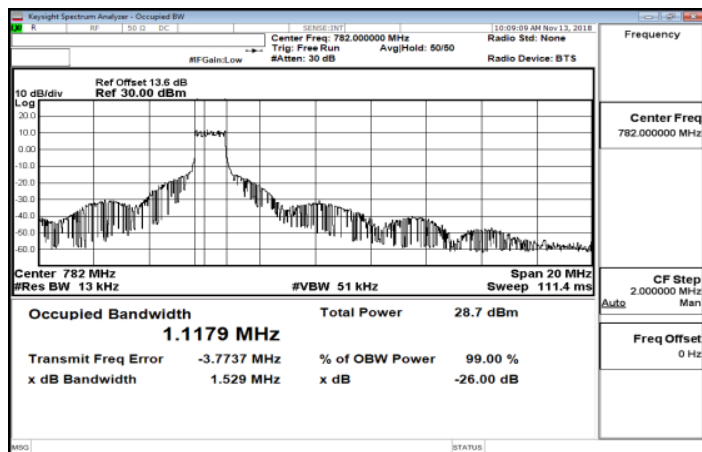
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Band13_10MHz_QPSK_6_0_MidCH23230-782



Band13_10MHz_16QAM_6_0_MidCH23230-782



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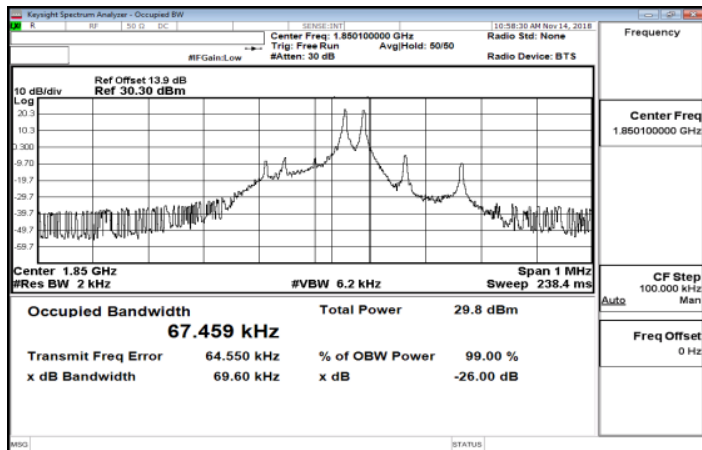
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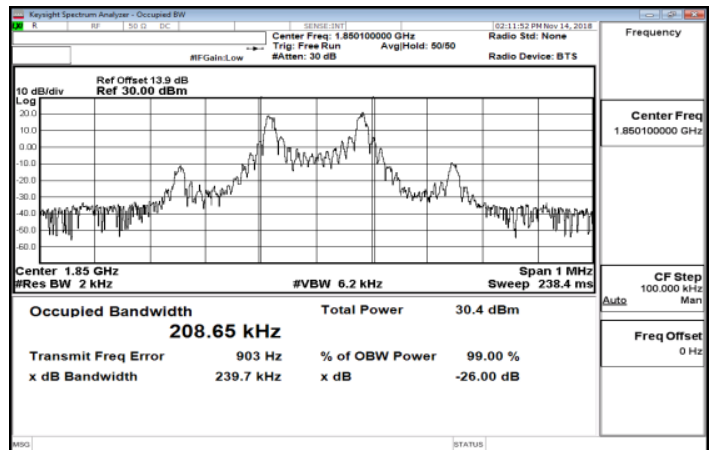
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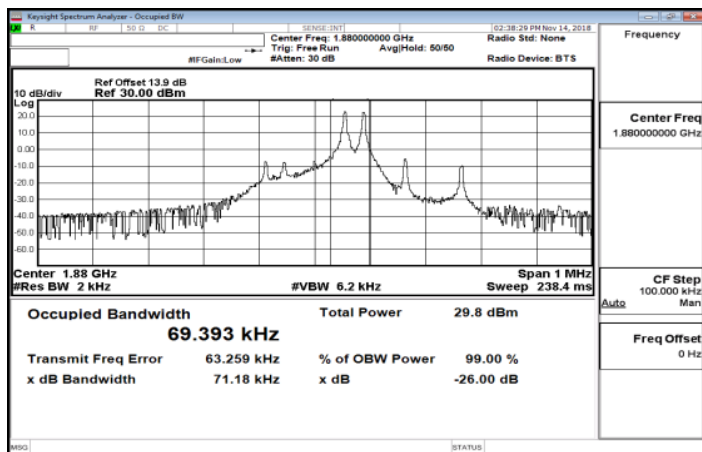
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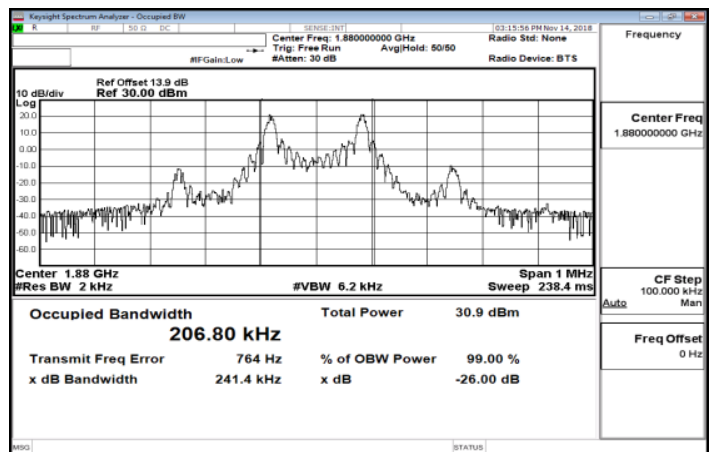
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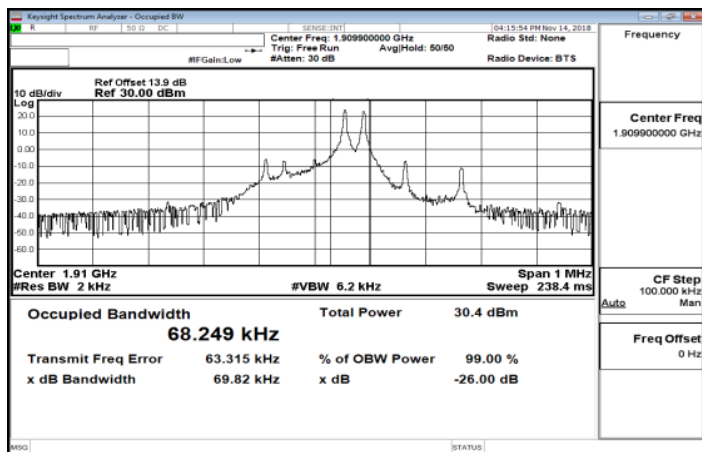
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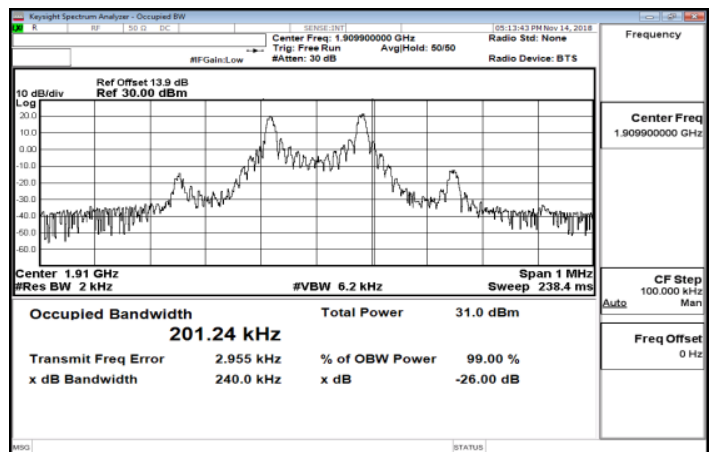
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Band2_3.75KHz_BPSK_1_47_HighCH19199



Band2_15KHz_QPSK_1_11_HighCH19199



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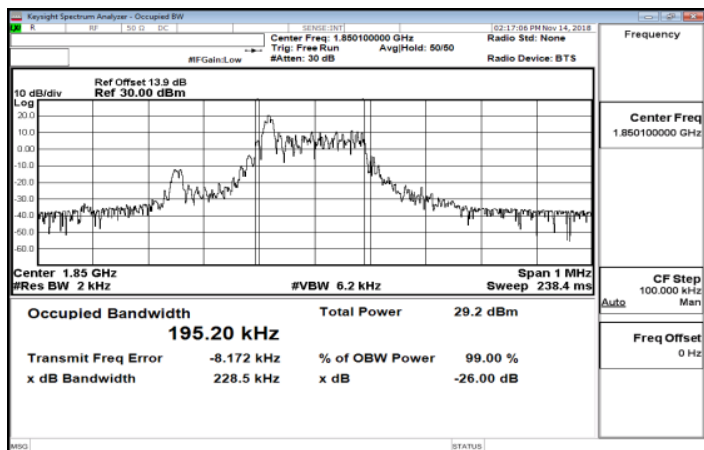
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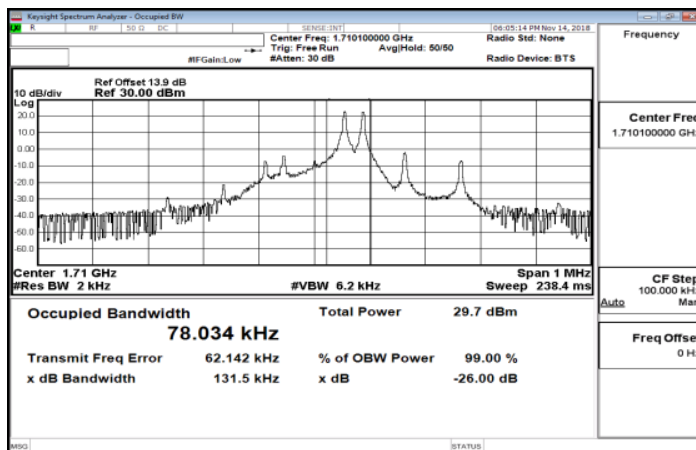
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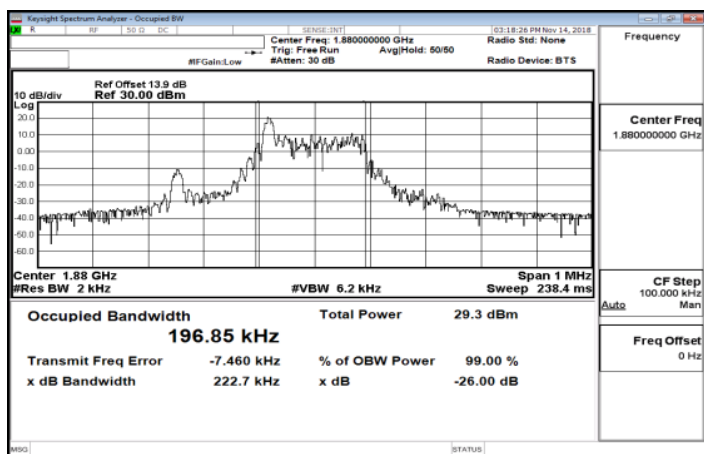
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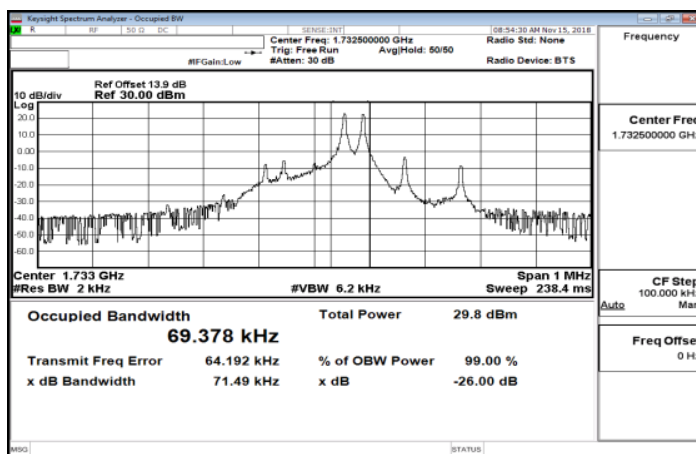
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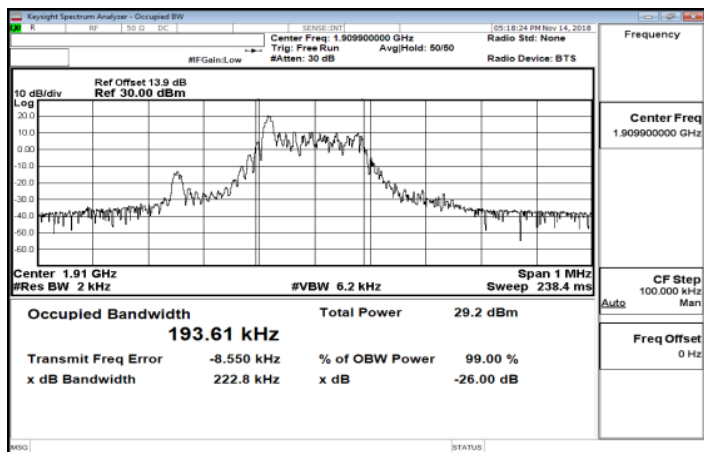
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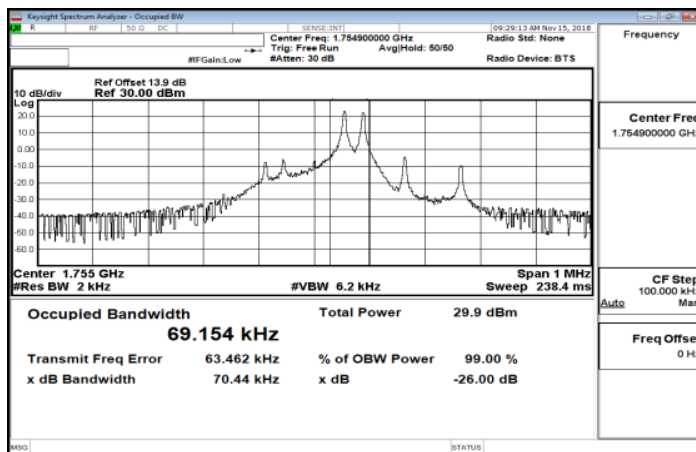
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Band4_3.75KHz_BPSK_1_47_HighCH20399



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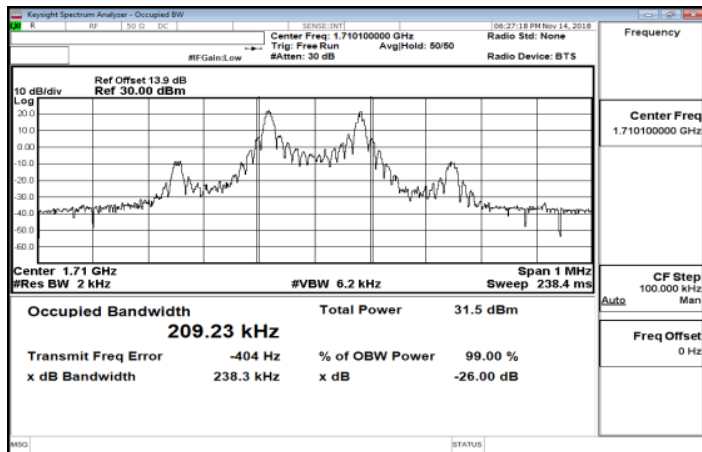
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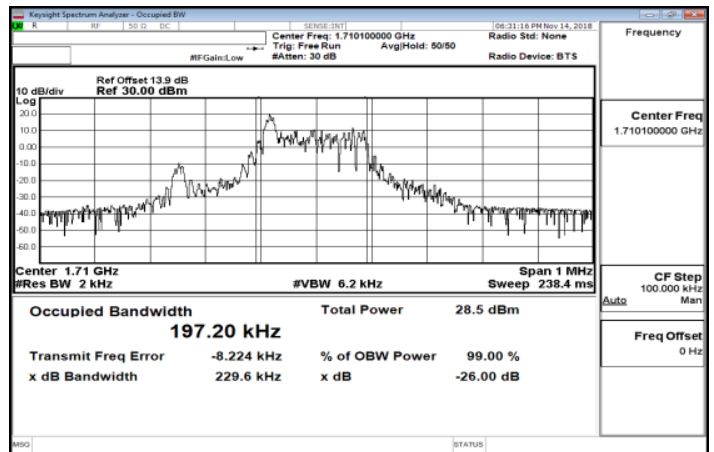
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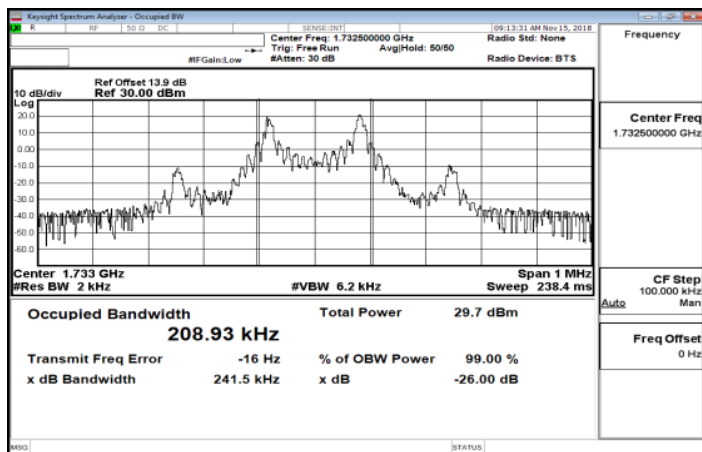
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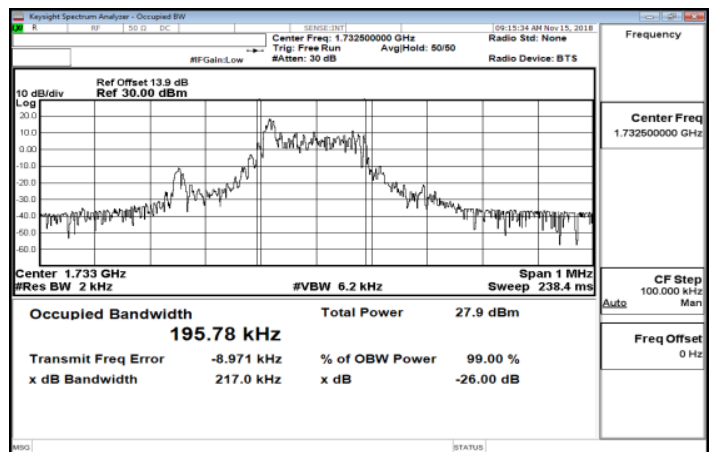
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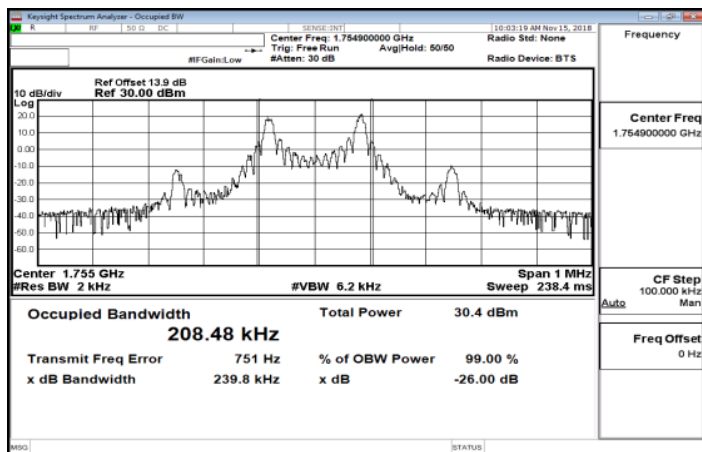
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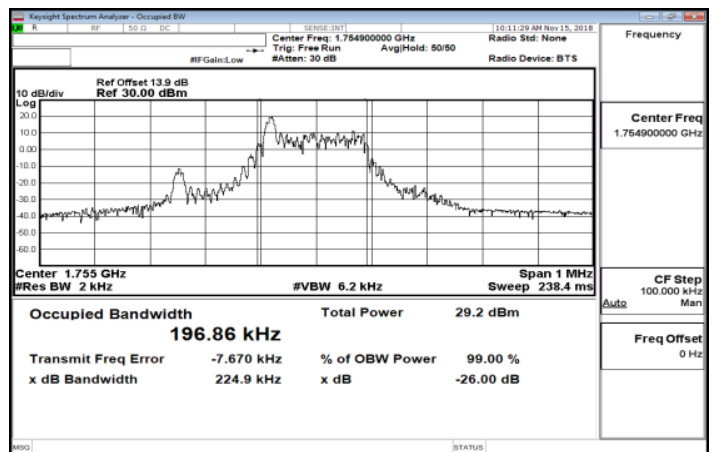
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Band4_15KHz_QPSK_12_0_HighCH20399



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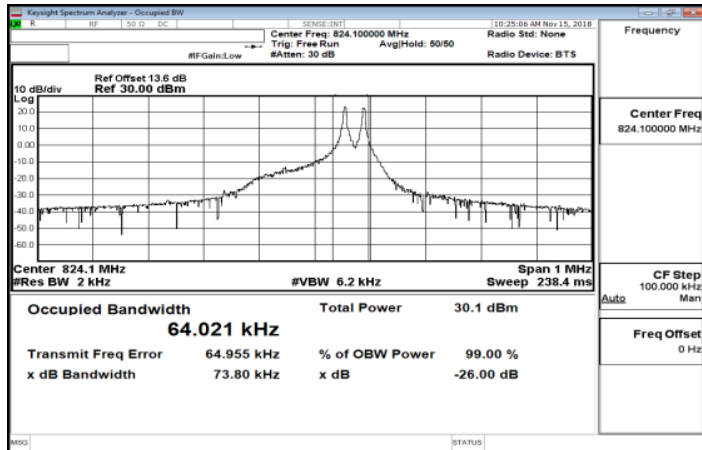
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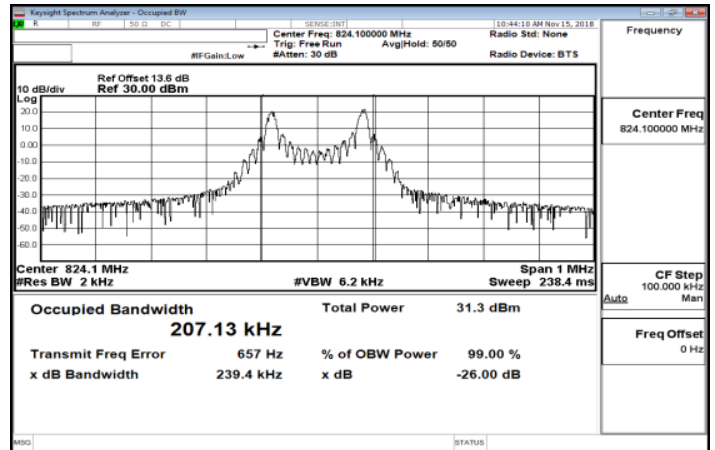
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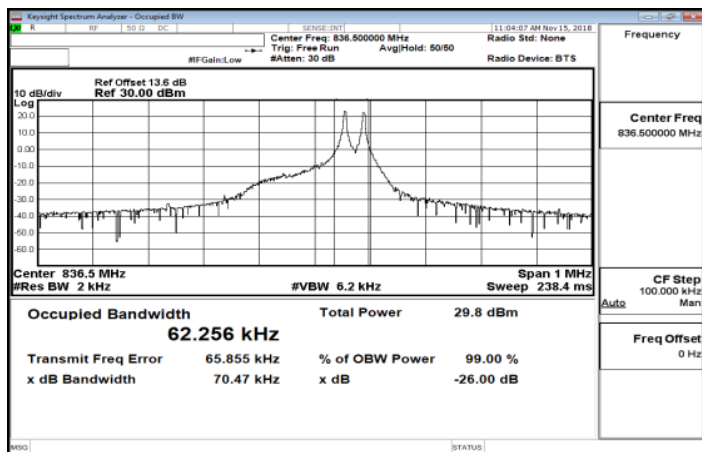
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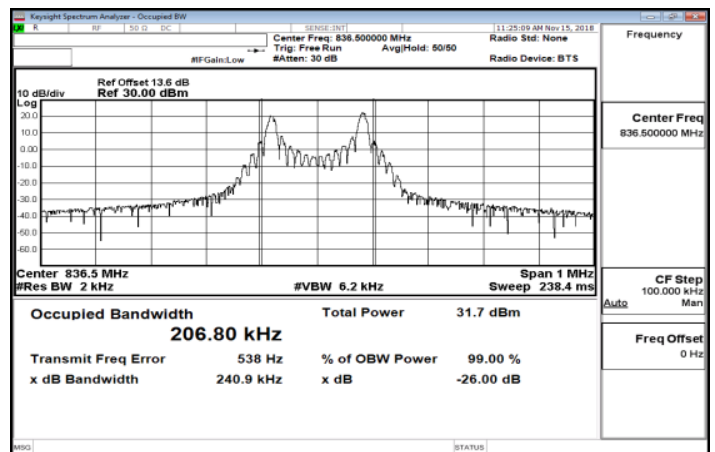
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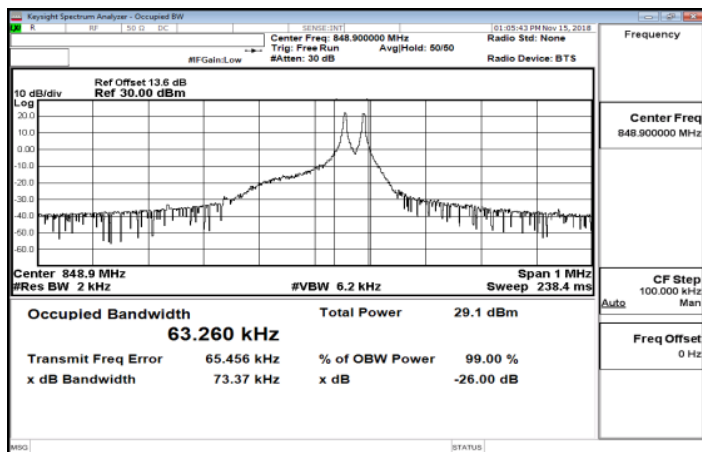
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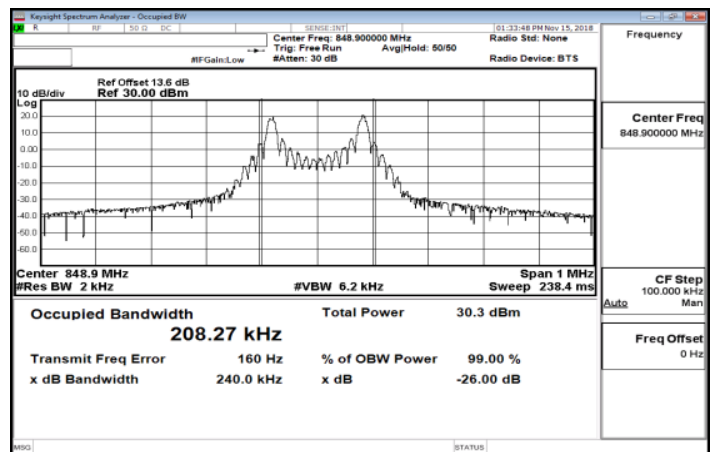
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Band5_3.75KHz_BPSK_1_47_HighCH20649



Band5_15KHz_QPSK_1_11_HighCH20649



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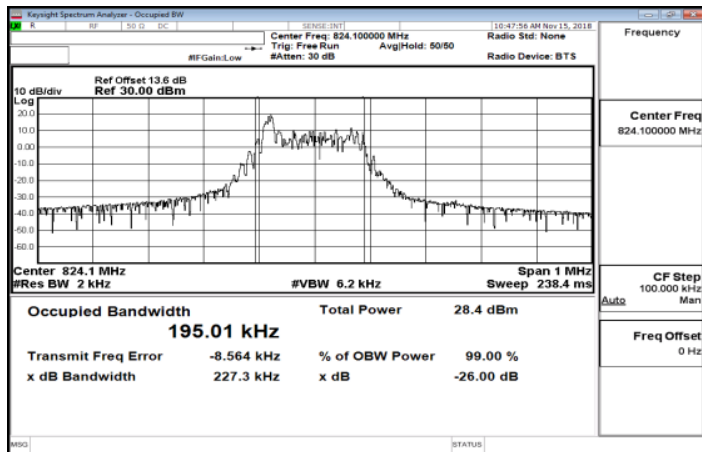
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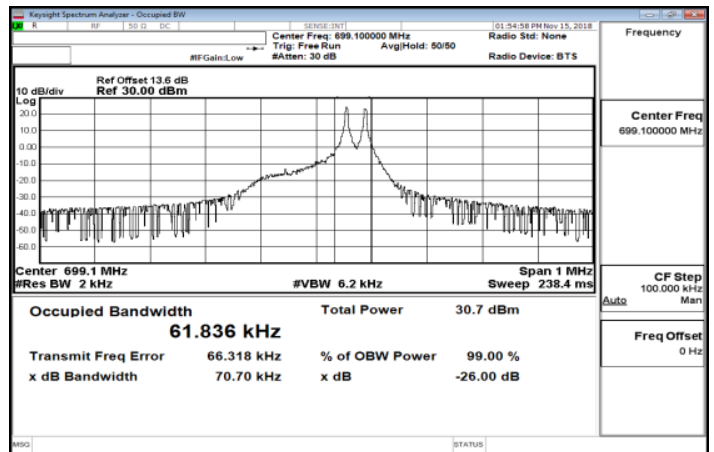
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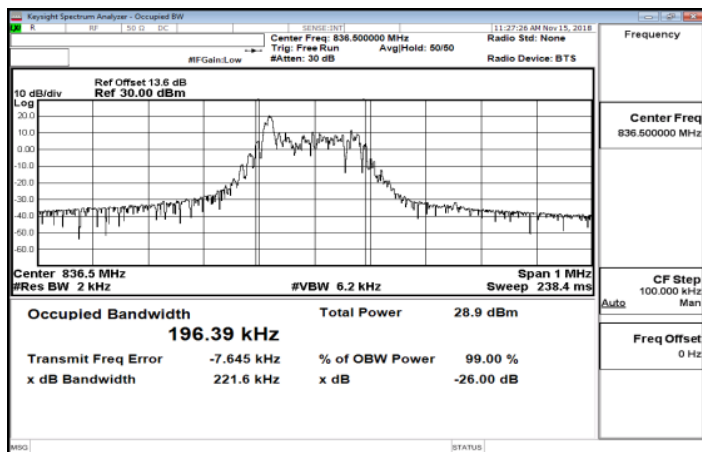
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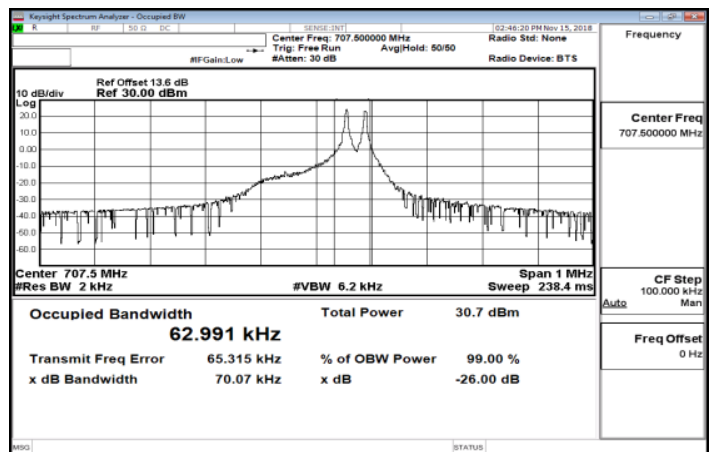
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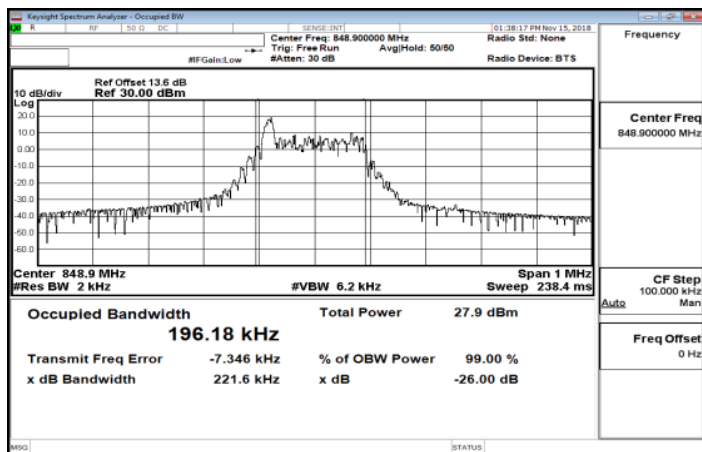
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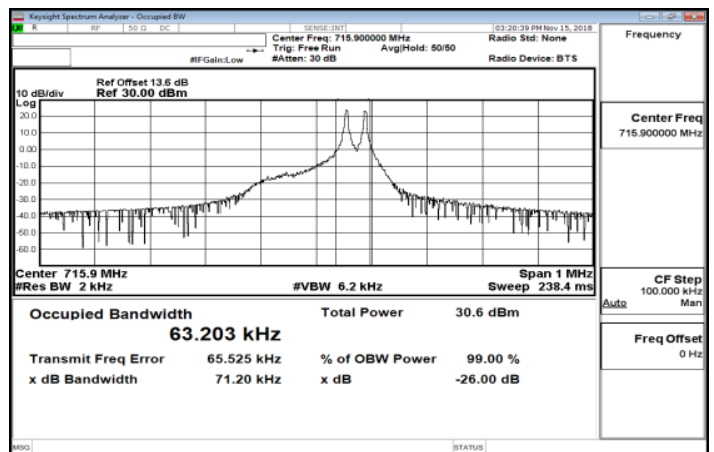
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Band5_15KHz_QPSK_12_0_HighCH20649



Band12_3.75KHz_BPSK_1_47_HighCH23179



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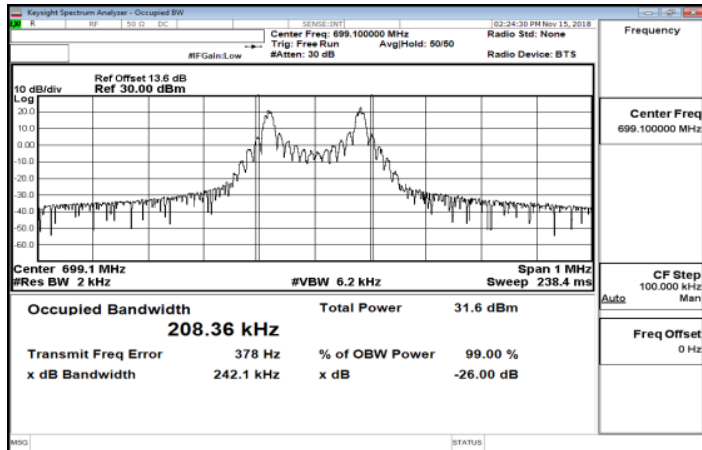
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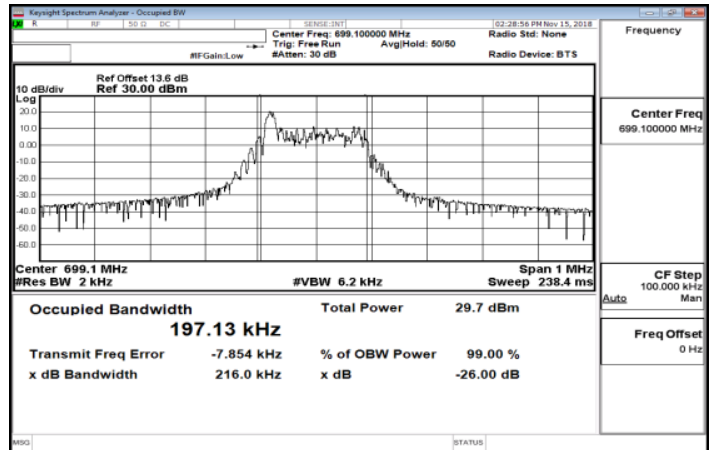
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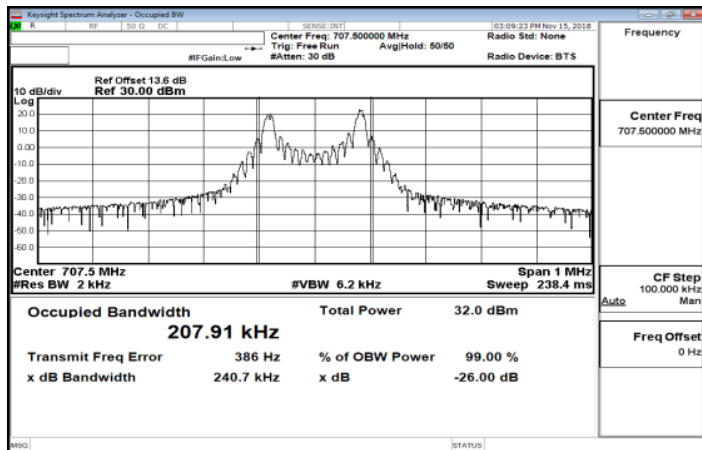
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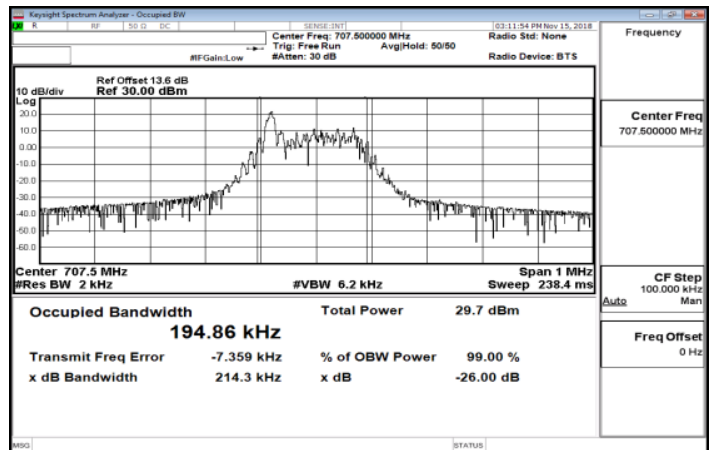
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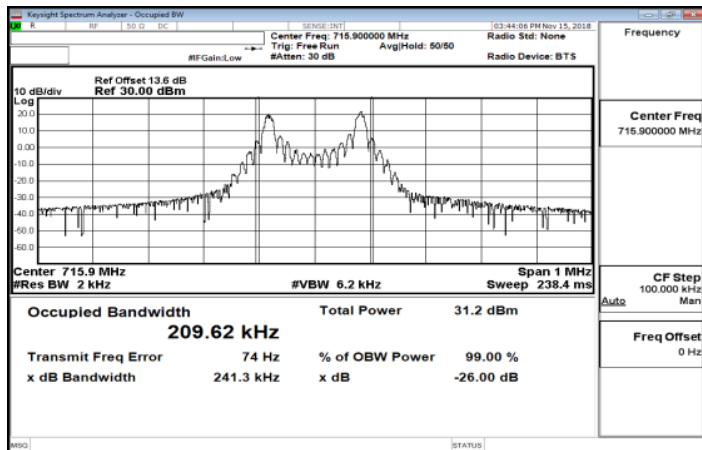
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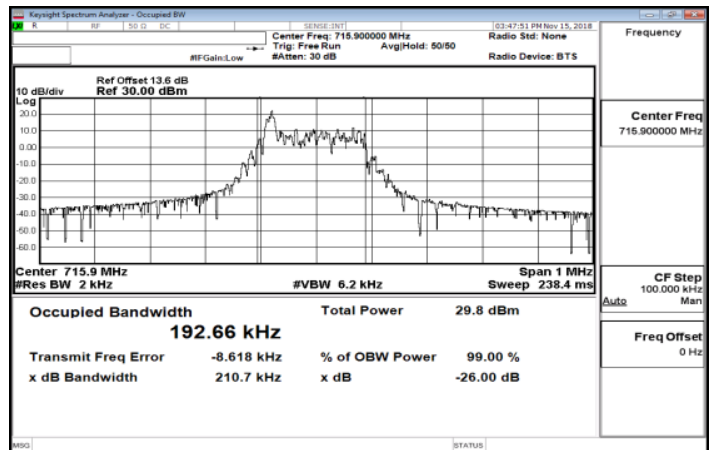
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Band12_15KHz_QPSK_1_11_HighCH23179



Band12_15KHz_QPSK_12_0_HighCH23179



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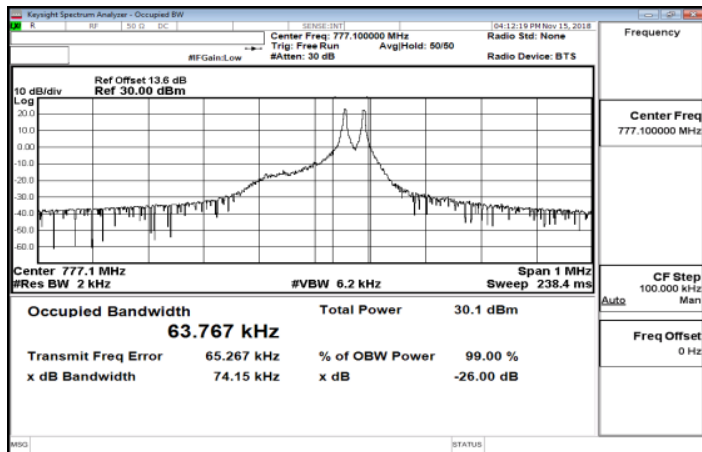
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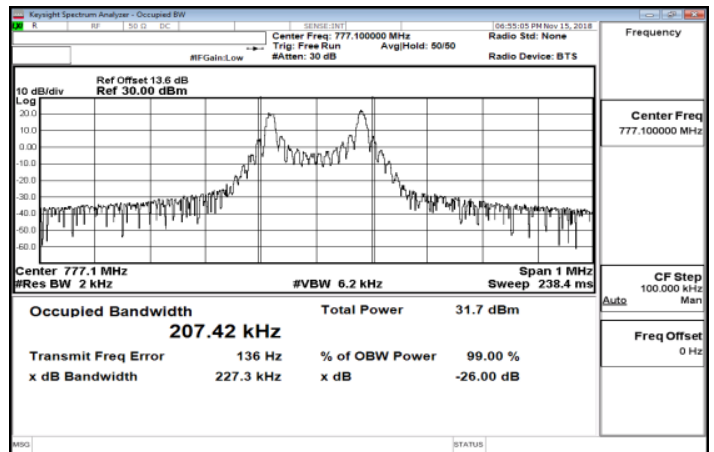
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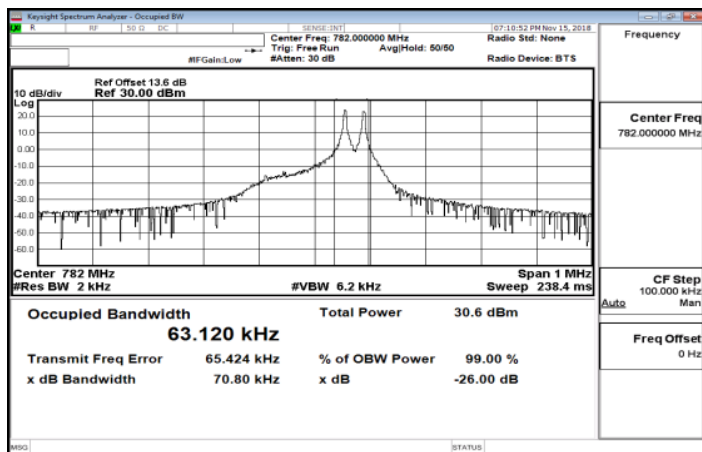
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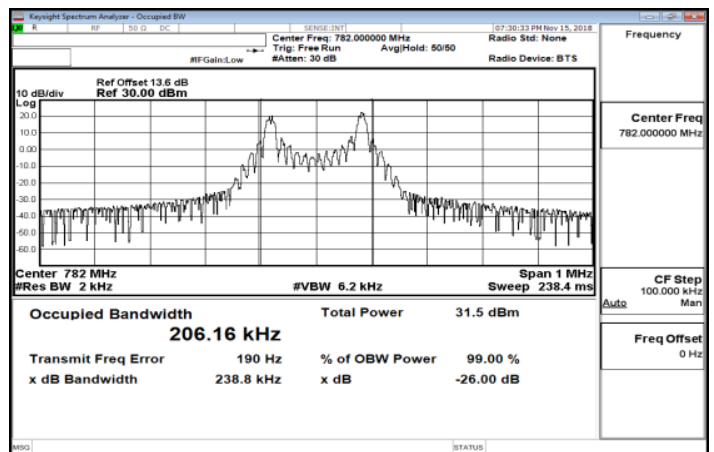
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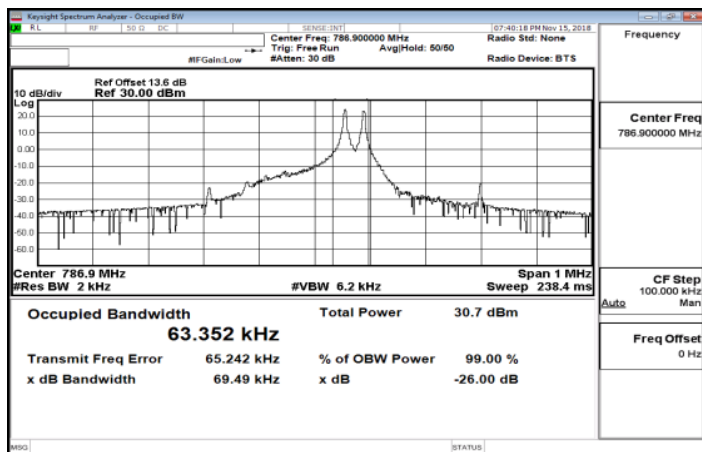
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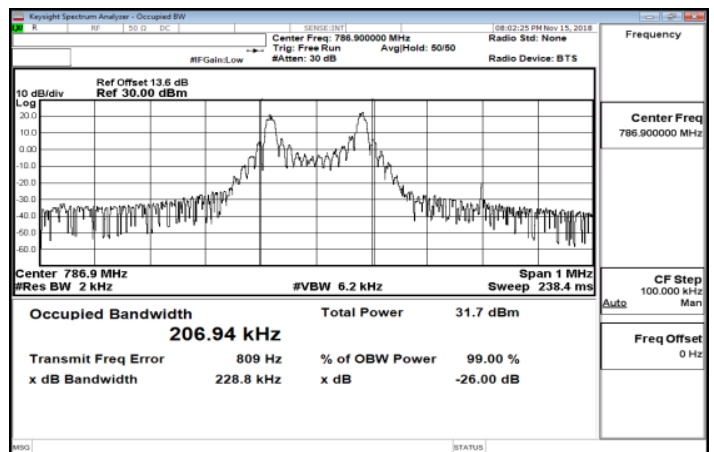
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Band13_3.75KHz_BPSK_1_47_HighCH23279



Band13_15KHz_QPSK_1_11_HighCH23279



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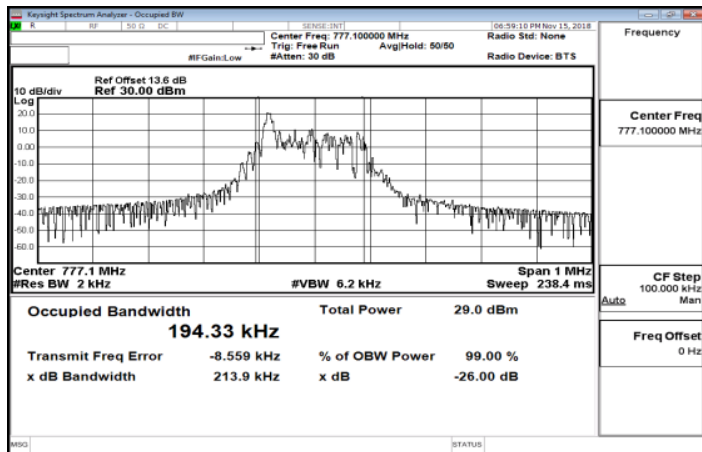
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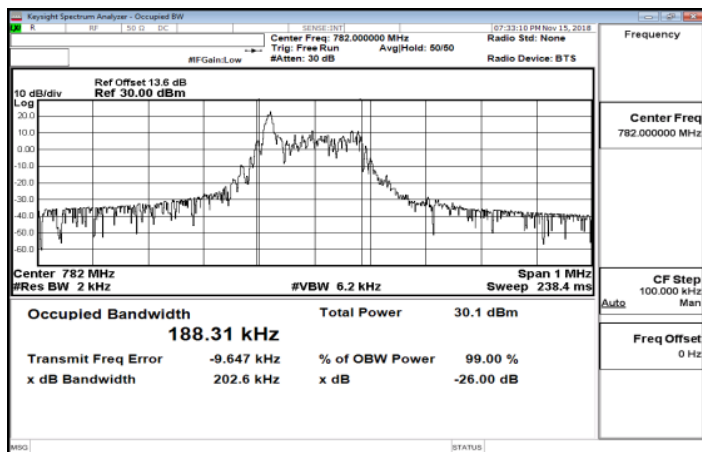
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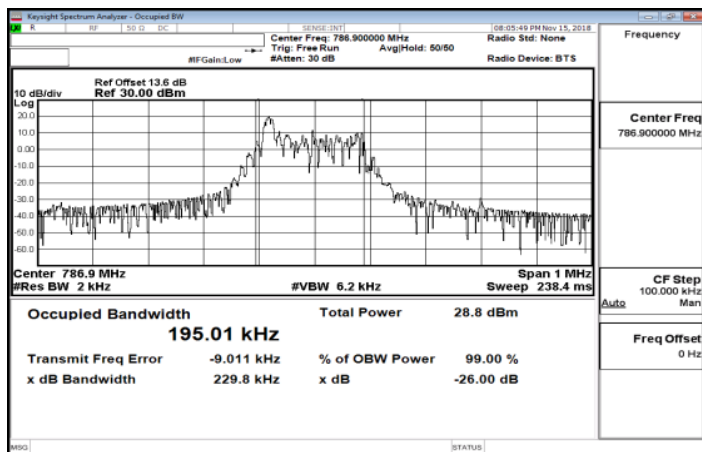
Band13_15KHz_QPSK_12_0_LowCH23181



Band13_15KHz_QPSK_12_0_MidCH23230



Band13_15KHz_QPSK_12_0_HighCH23279



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8 OUT OF BAND EMISSION AT ANTENNA TERMINALS

8.3 Standard Applicable

FCC §22.917(a), §24.238(a), §27.53(h), Out of band emissions. 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.

FCC §27.53(c)

(c) For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the 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, in accordance with the following:

(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 (-13dBm)

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log(P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

§27.53 (f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

FCC §27.53(c) (5) & FCC §27.53(g)

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.

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FCC §27.53(h) (3)

Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz 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. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

FCC §27.53(m) (4) (6)

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 than $43 + 10 \log (P)$ 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.

Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495-2496 MHz). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

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According to RSS-130 §4.6

The power of any unwanted emissions in any 100 kHz bandwidth on any frequency outside the frequency range(s) within which the equipment is designed to operate shall be attenuated below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside the equipment's operating frequency range, a resolution bandwidth of 30 kHz may be employed.

In addition to the limit outlined in Section 4.6.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

(a) The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:

- (i) $76 + 10 \log_{10} p$ (watts), dB, for base and fixed equipment, and
- (ii) $65 + 10 \log_{10} p$ (watts), dB, for mobile and portable equipment.

According to RSS-133 §6.5

6.5.1 Out-of-Block Emissions

Equipment shall comply with the limits in (i) and (ii) below.

(i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts).

(ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

According to RSS-139 §6.5

For Operation Band 1710-1755MHz and 2110-2155MHz

(i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in watts) by at least $43 + 10 \log_{10}(P)$, dB. Limit = 13dBm

(ii) After the first 1.0 MHz outside the equipment's operating frequency block, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in watts) by at least $43 + 10 \log_{10}(P)$, dB. Limit = -13dBm

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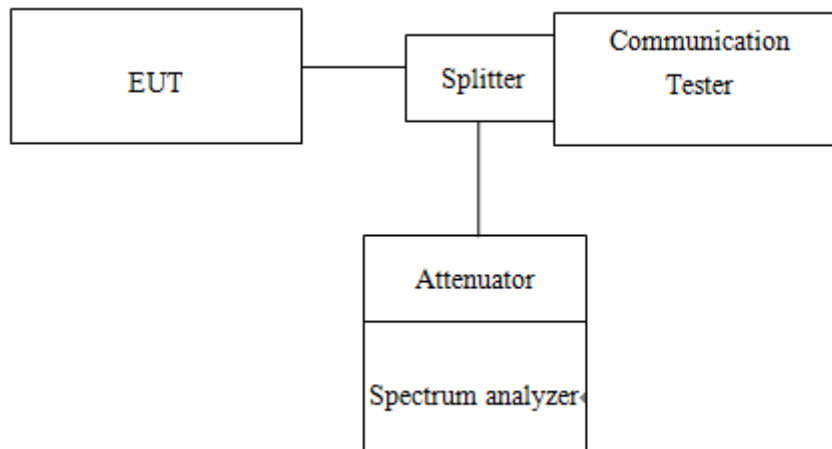
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8.4 Test SET-UP



8.5 Measurement Procedure

Conducted Emission

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

1. To connect Antenna Port of EUT to Spectrum.
2. Set RBW = 1MHz & VBW = 1MHz on Spectrum.
3. Allow trace to fully stabilize
4. Repeat above procedures until all default test channel measured were complete.

Band Edge

1. To connect Antenna Port of EUT to Spectrum.
2. The band edge of low and high channels for the highest RF powers was measured. Setting $RBW \geq 1\% \text{ EBW}$.
3. Allow trace to fully stabilize
4. Repeat above procedures until all default test channel measured were complete.

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8.6 Measurement Equipment Used

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	N9010A	MY51440113	2018/06/20	2019/06/19
Radio Communication Analyzer	Anritsu	MT8821C	6261786084	2018/01/03	2019/01/02
DC Power Supply	Agilent	E3640A	MY53140006	2018/05/30	2019/05/29
Attenuator	Marvelous	MVE2213-10	RF30	2017/12/26	2018/12/25
Splitter	Woken	DOM35LW1A2	RF36	2017/12/26	2018/12/25

8.7 Measurement Result:

Refer to next pages.

NOTE: The occurrence of the spike on the conducted emission is the signal of the fundamental emission.

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