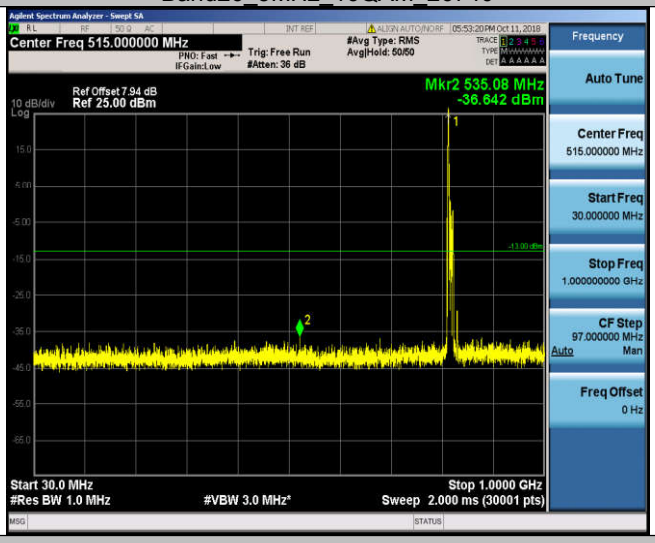
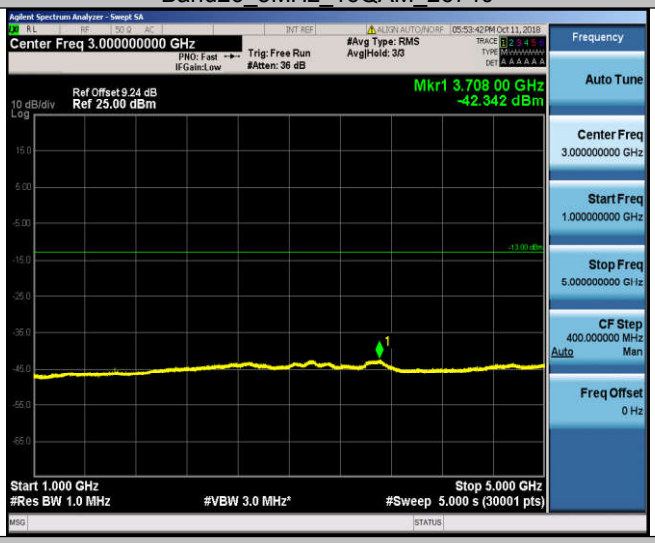
Band26_5MHz_16QAM_26740

Band26_5MHz_16QAM_26740

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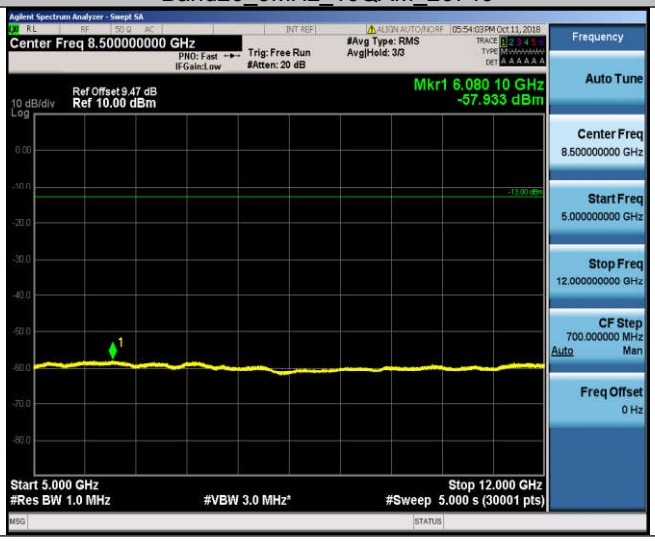

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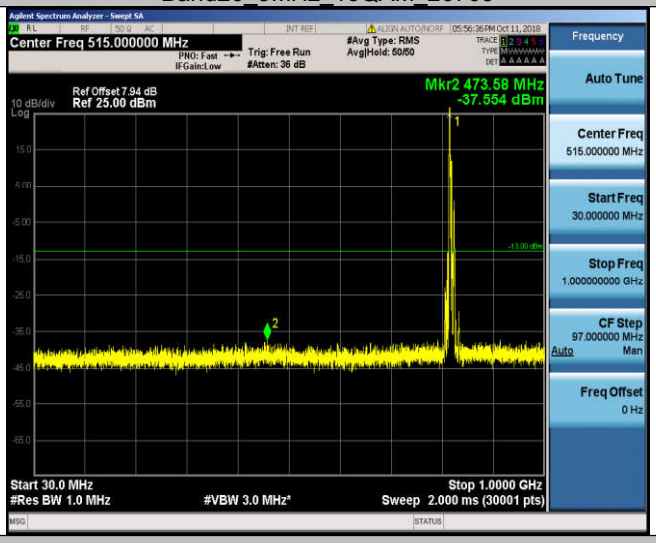
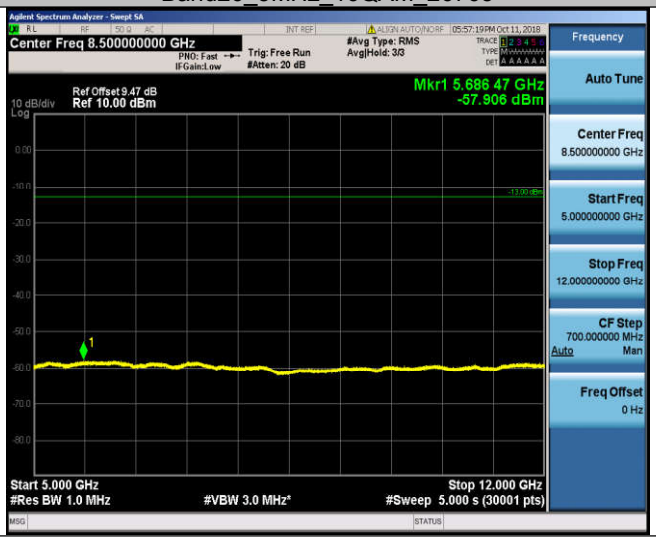
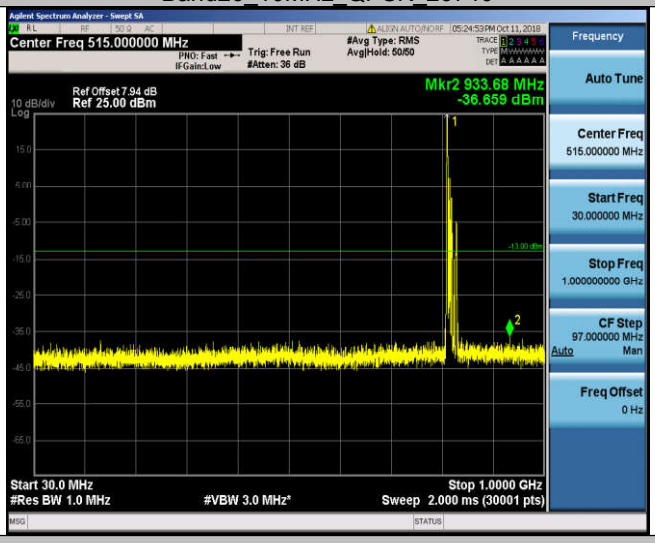

Band26_5MHz_16QAM_26765

Band26_5MHz_16QAM_26765


Band26_10MHz_QPSK_26740

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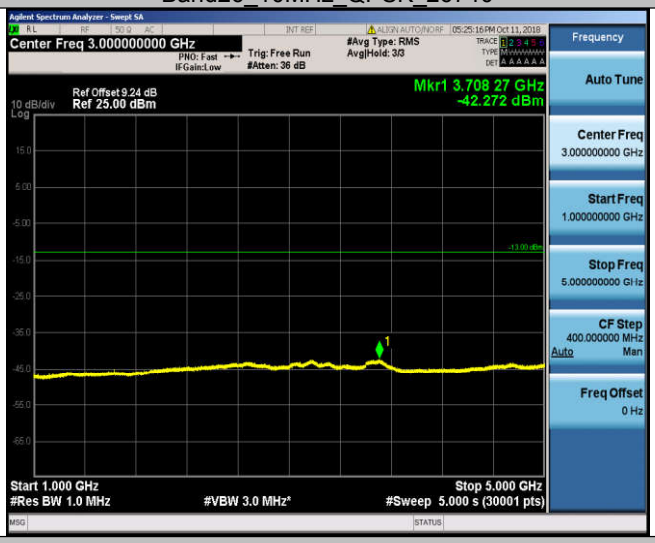
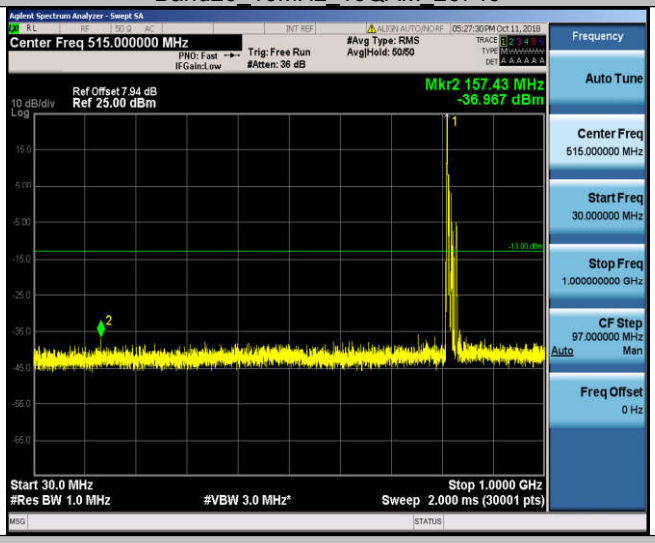
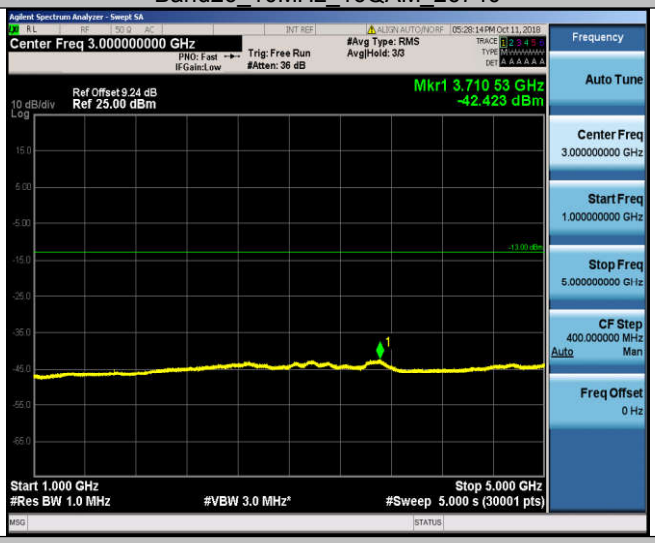
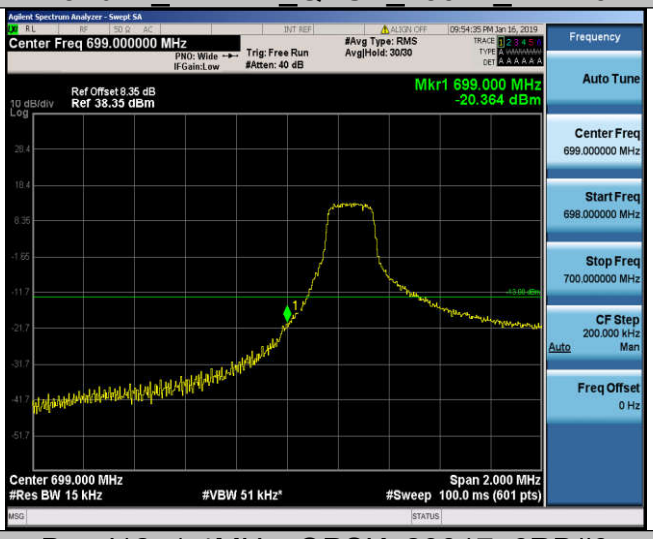
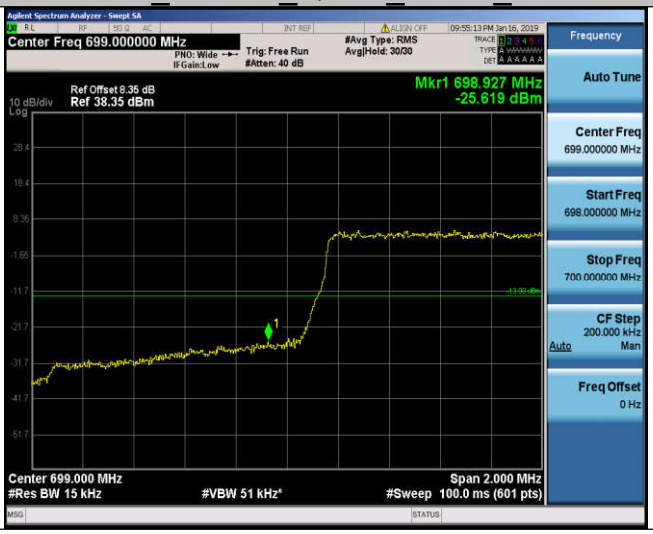
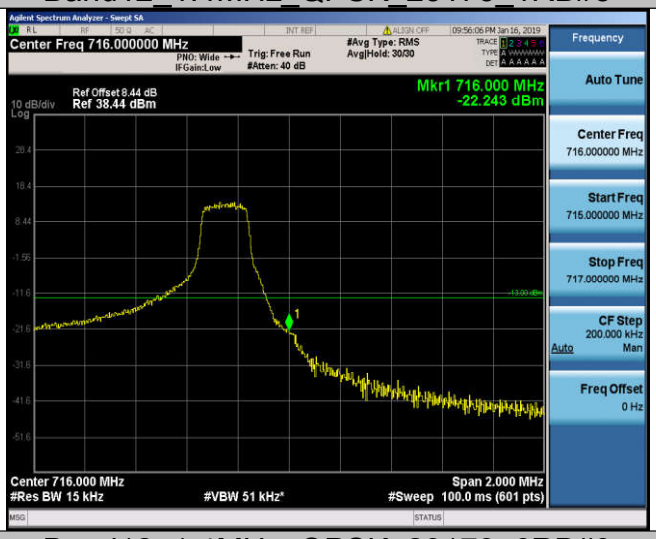

Band26_10MHz_QPSK_26740

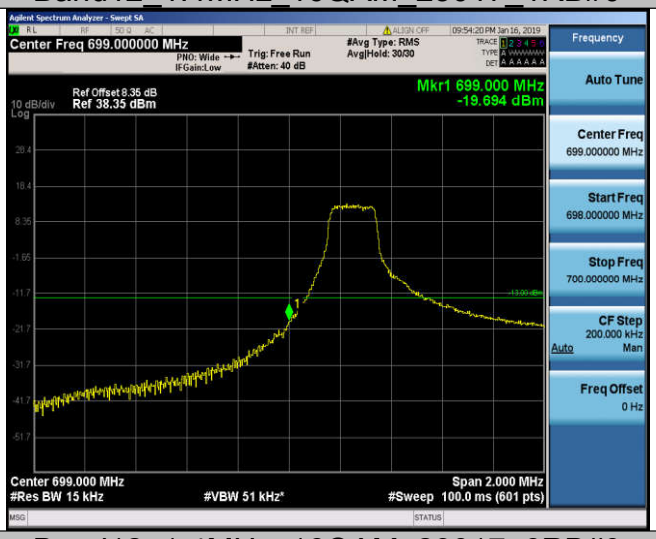

Band26_10MHz_16QAM_26740

Band26_10MHz_16QAM_26740

Band26_10MHz_16QAM_26740


Band edge measurement
LTE Band 12:

Band12_1.4MHz_QPSK_23017_1RB#0

Band12_1.4MHz_QPSK_23017_6RB#0


Band12_1.4MHz_QPSK_23173_1RB#5


Band12_1.4MHz_QPSK_23173_6RB#0


Band12_1.4MHz_16QAM_23017_1RB#0


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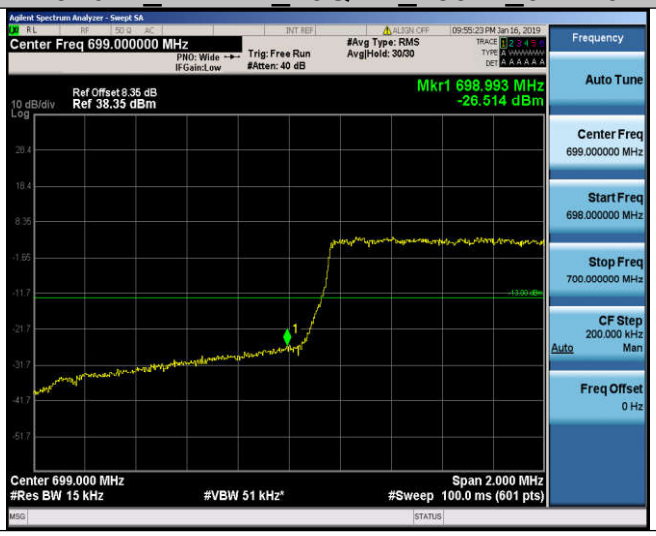

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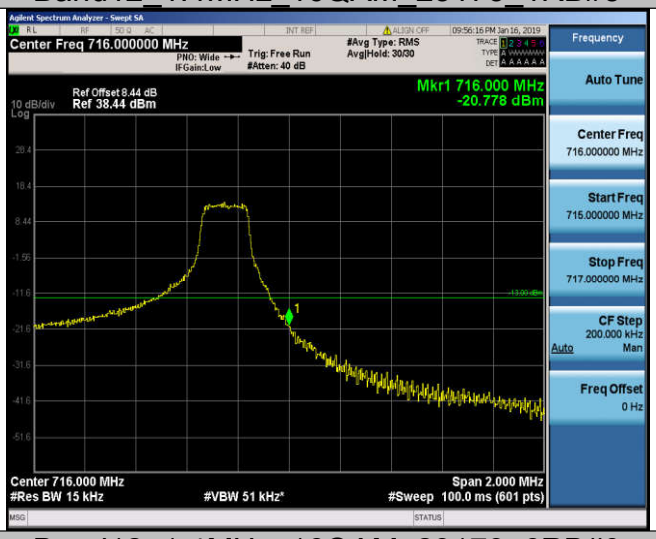
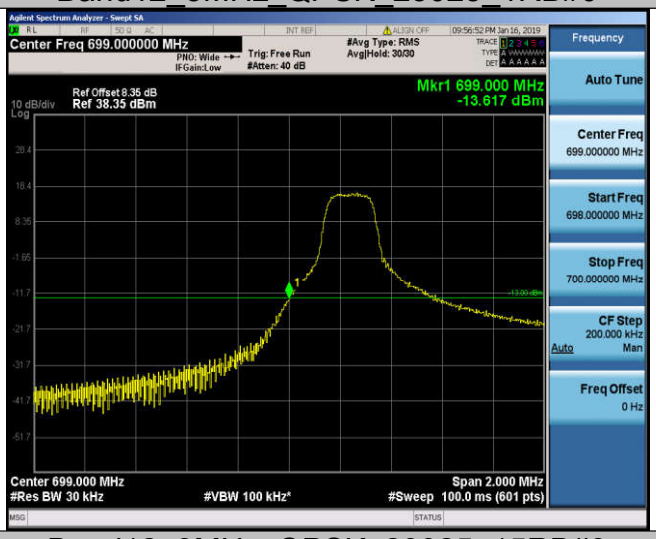
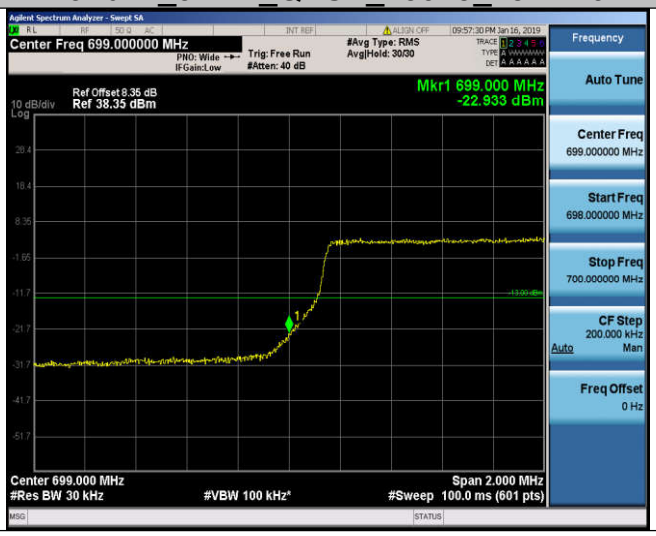
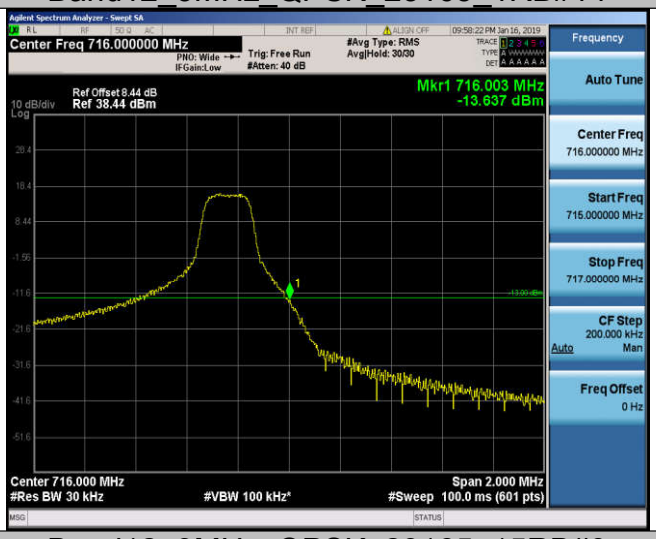


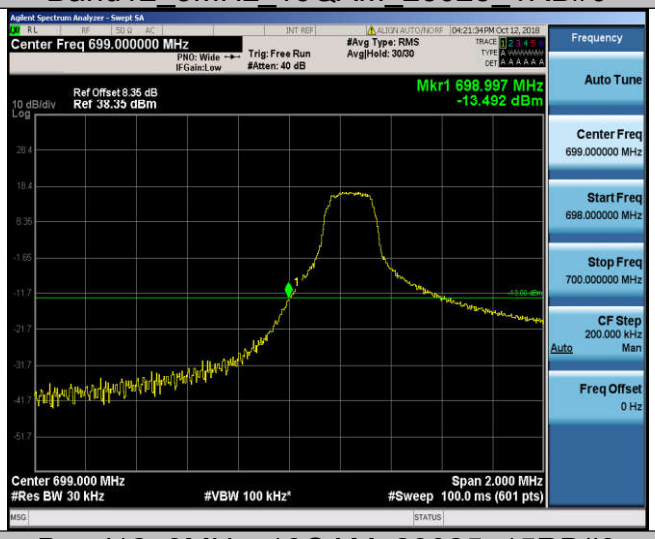
Band12_1.4MHz_16QAM_23173_6RB#0


Band12_3MHz_QPSK_23025_1RB#0


Band12_3MHz_QPSK_23025_15RB#0


Band12_3MHz_QPSK_23165_1RB#14


Band12_3MHz_QPSK_23165_15RB#0


Band12_3MHz_16QAM_23025_1RB#0


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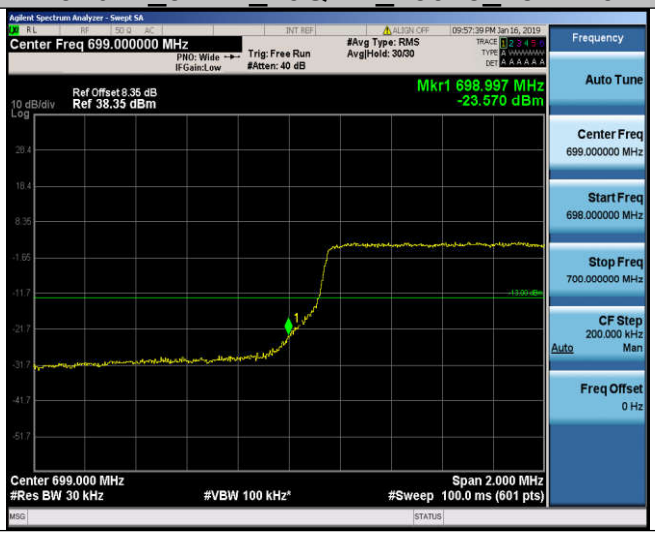

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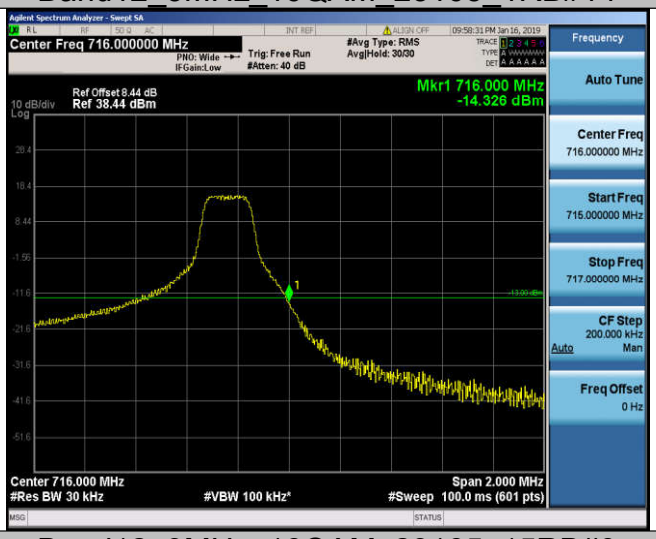
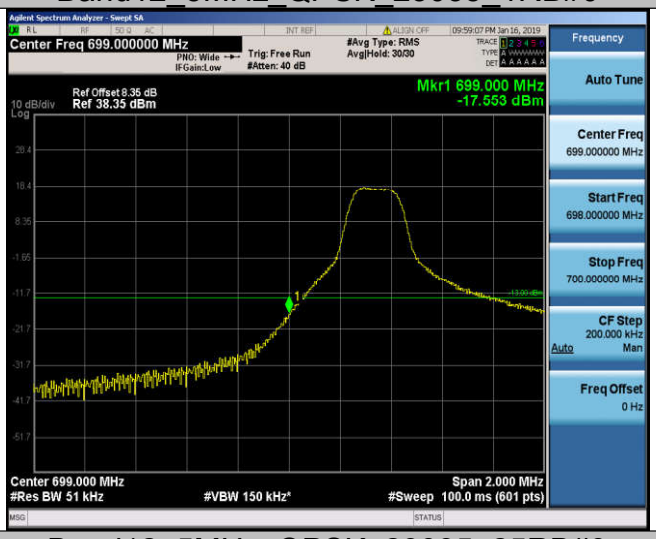
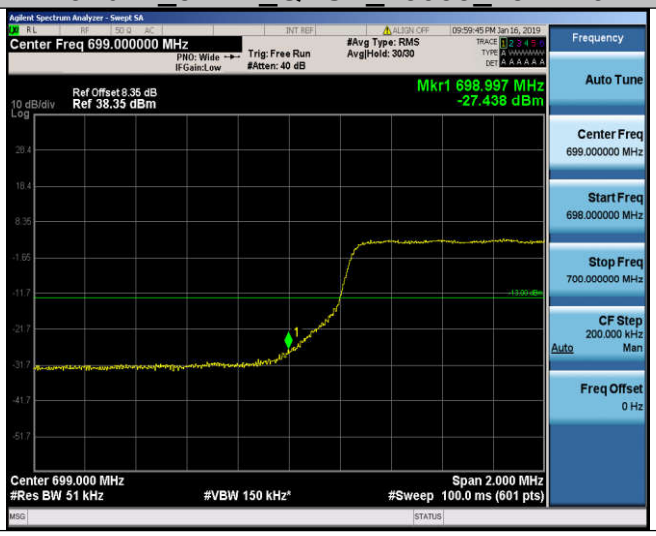
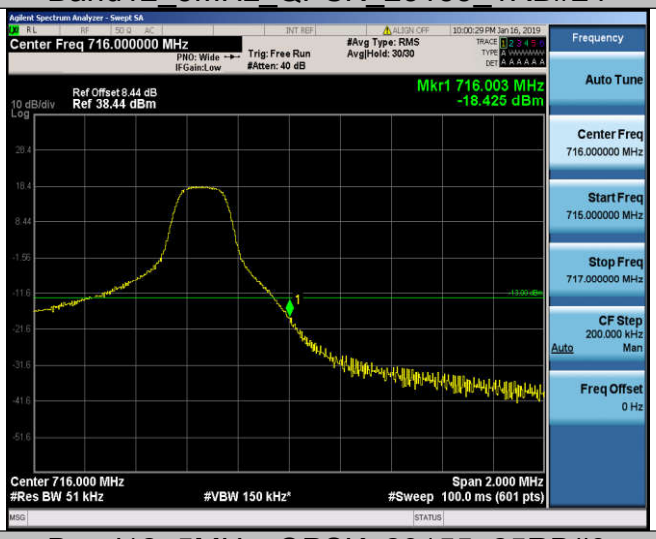


Band12_3MHz_16QAM_23165_15RB#0


Band12_5MHz_QPSK_23035_1RB#0


Band12_5MHz_QPSK_23035_25RB#0


Band12_5MHz_QPSK_23155_1RB#24


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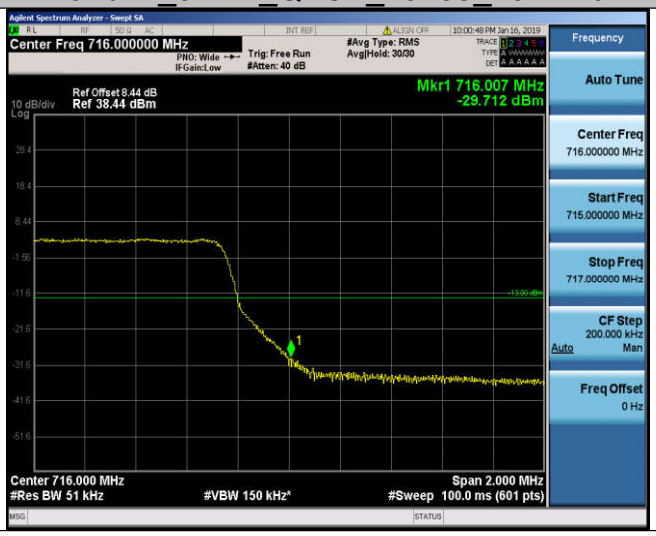

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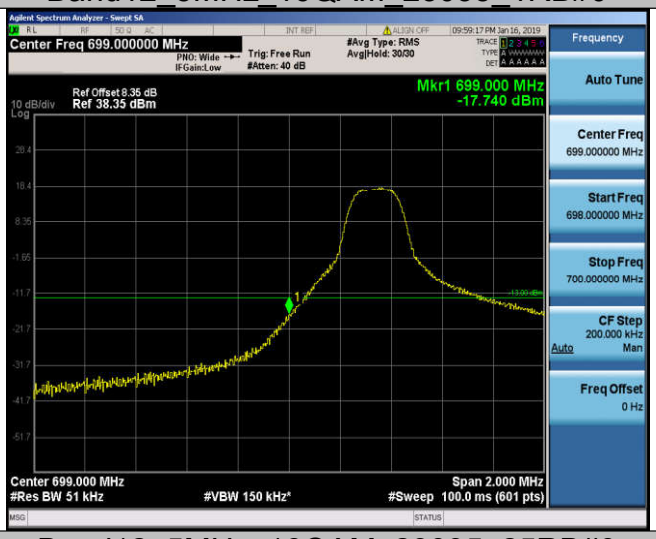
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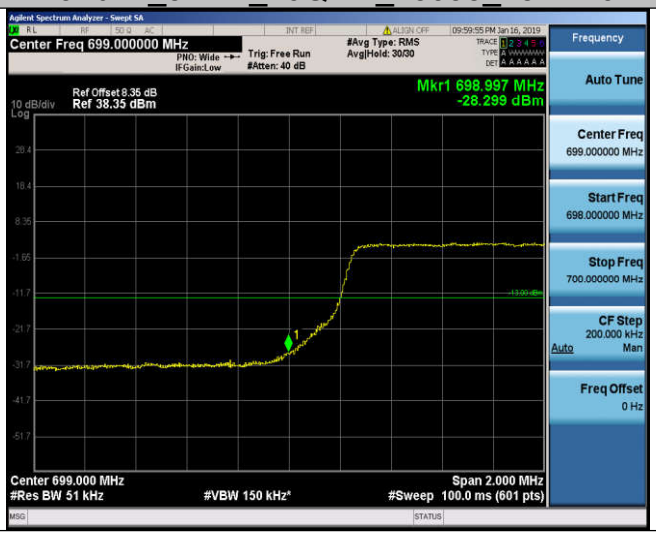
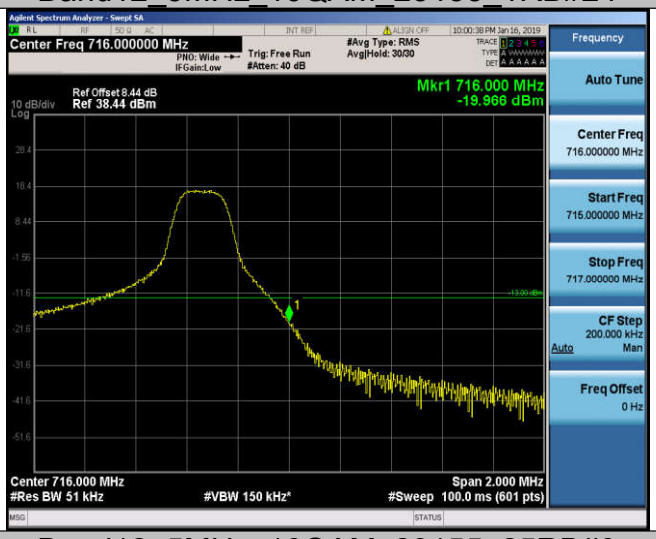
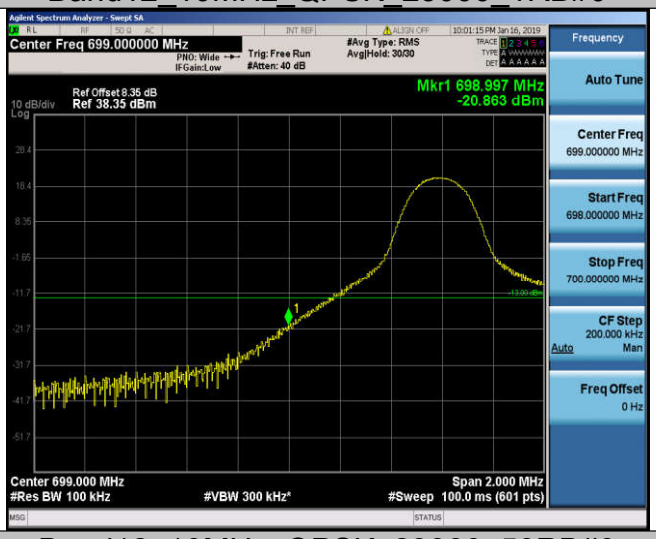
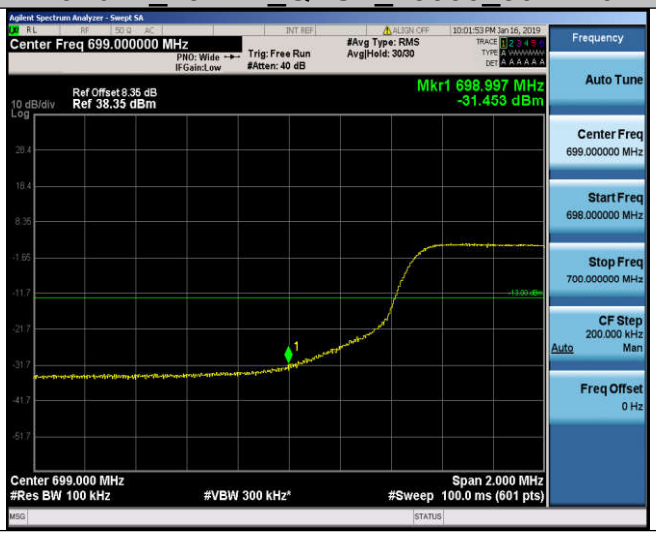
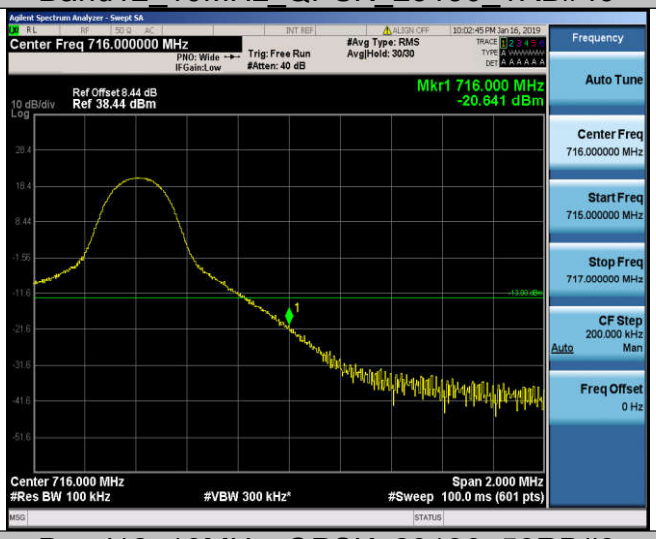
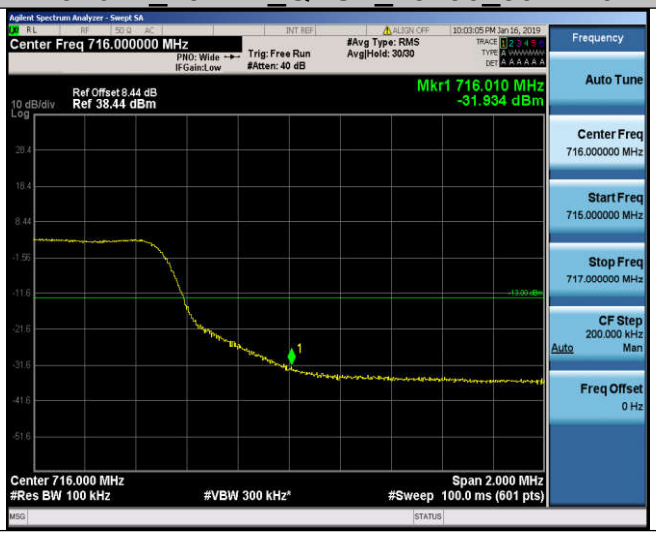
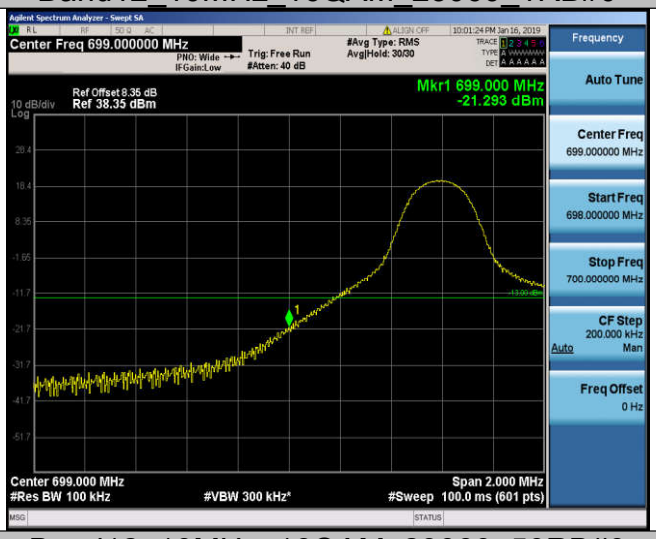


Band12_5MHz_16QAM_23155_1RB#24

Band12_5MHz_16QAM_23155_25RB#0


Band12_10MHz_QPSK_23060_1RB#0

Band12_10MHz_QPSK_23060_50RB#0


Band12_10MHz_QPSK_23130_1RB#49

Band12_10MHz_QPSK_23130_50RB#0


Band12_10MHz_16QAM_23060_1RB#0

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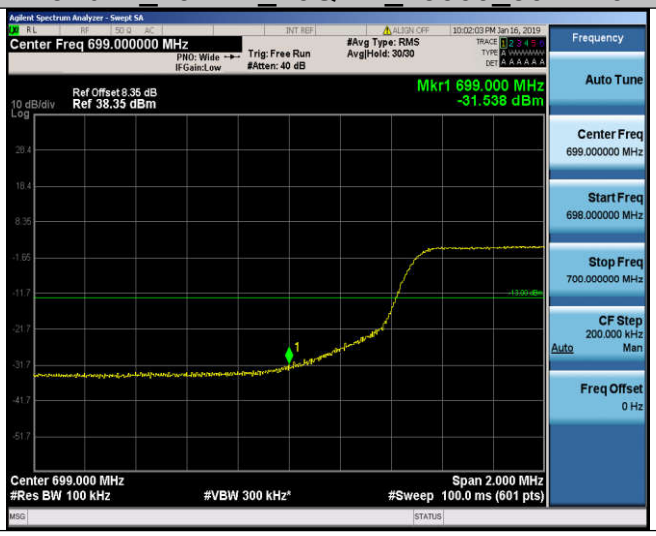
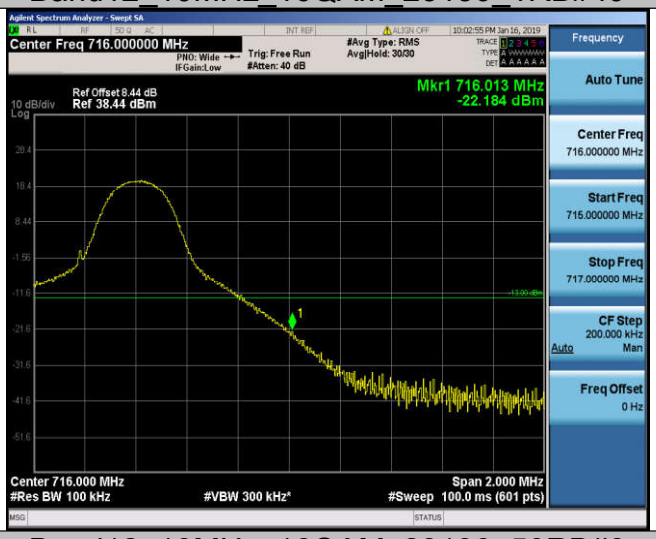


Band12_10MHz_16QAM_23130_1RB#49


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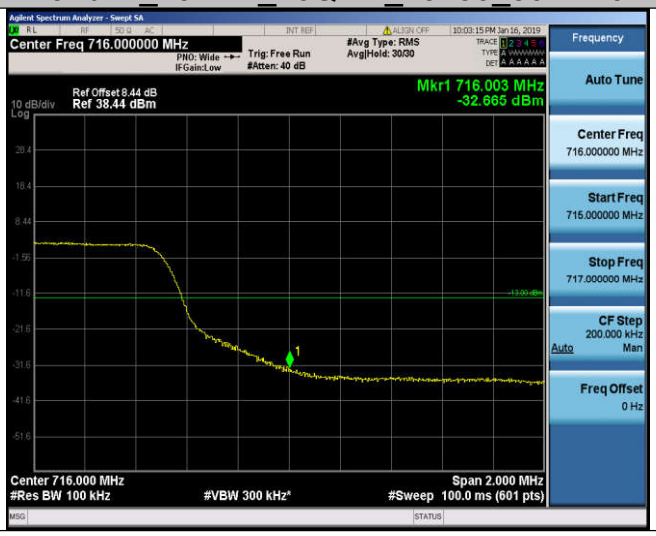
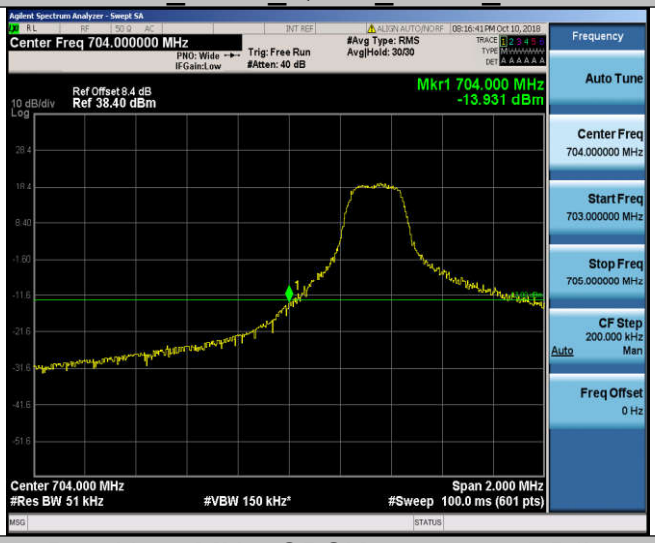
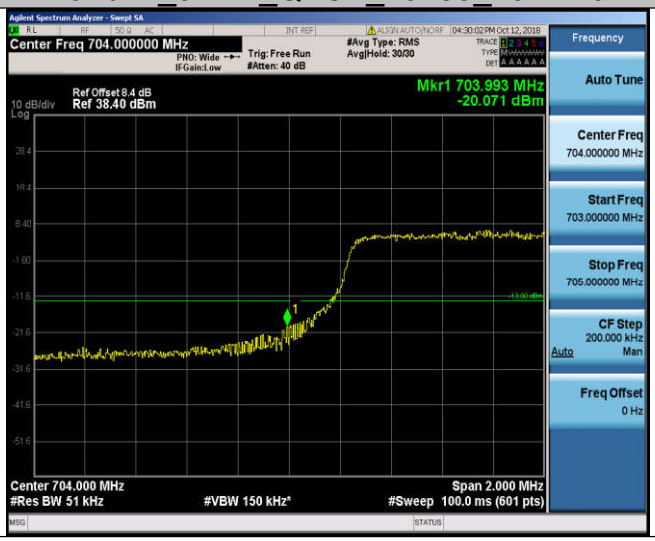
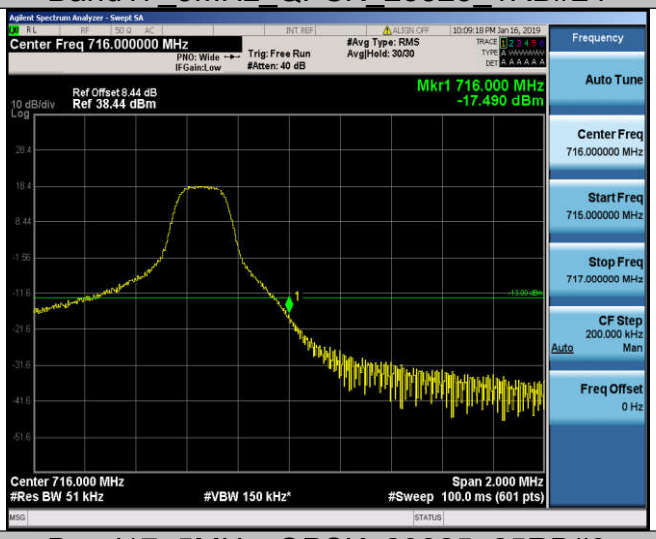
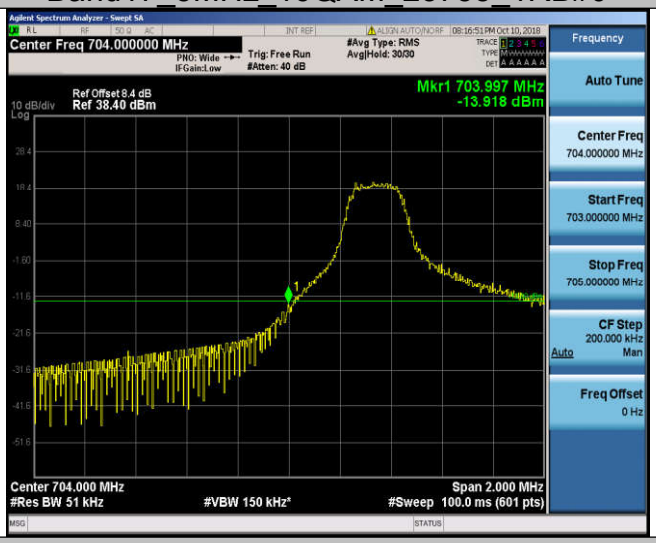


LTE Band 17:

Band17_5MHz_QPSK_23755_1RB#0

Band17_5MHz_QPSK_23755_25RB#0


Band17_5MHz_QPSK_23825_1RB#24


Band17_5MHz_QPSK_23825_25RB#0


Band17_5MHz_16QAM_23755_1RB#0


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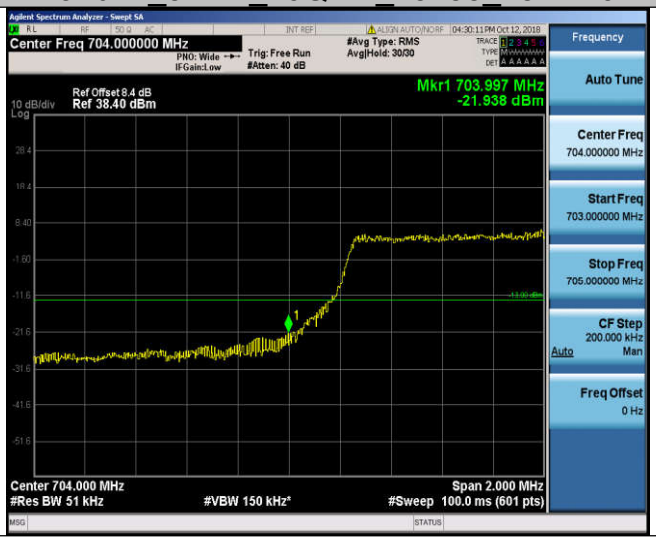

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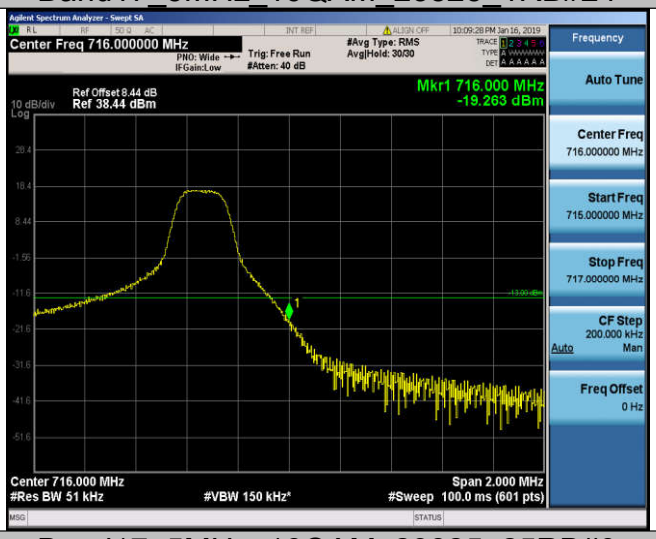
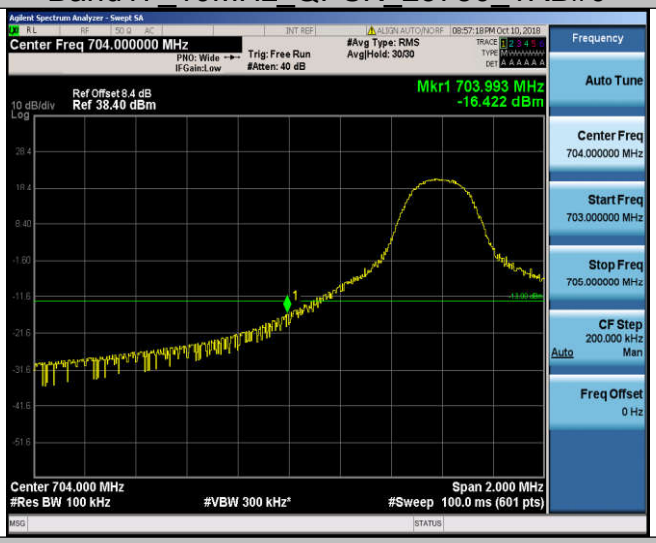
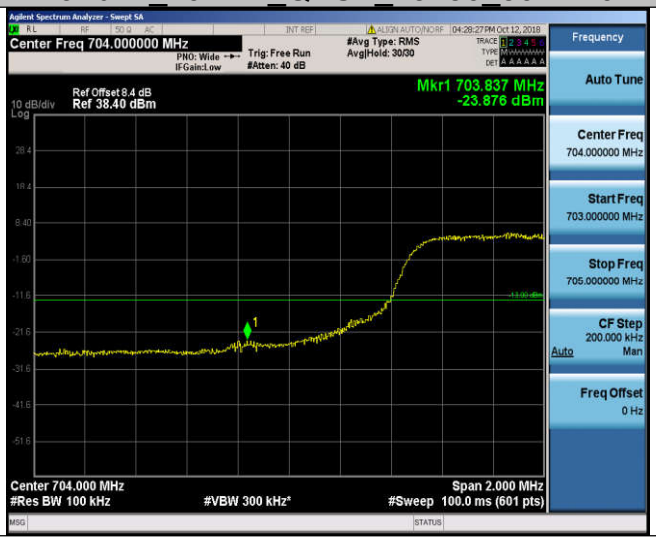
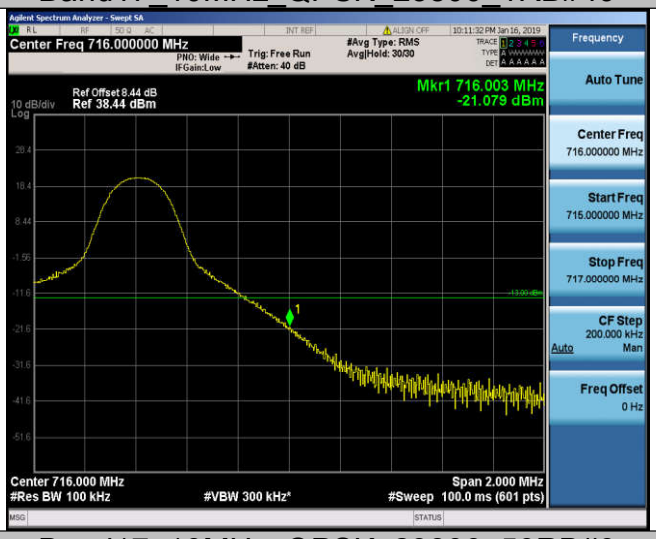
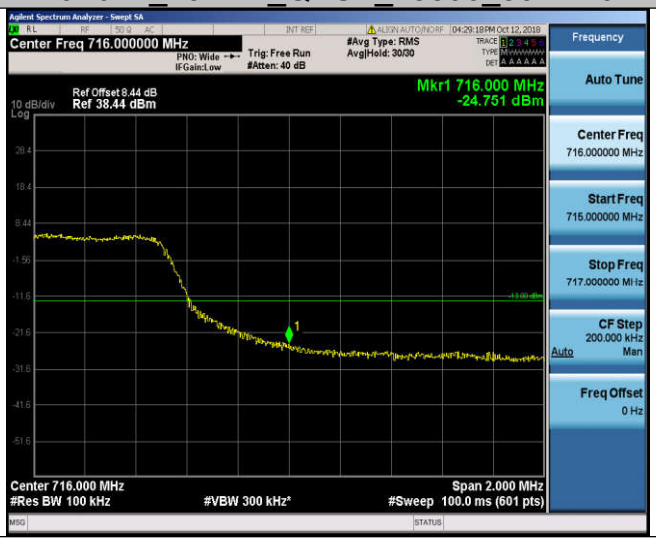
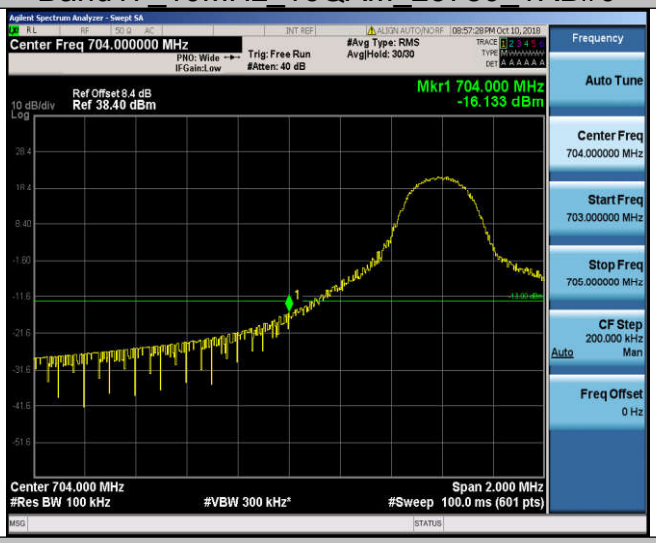


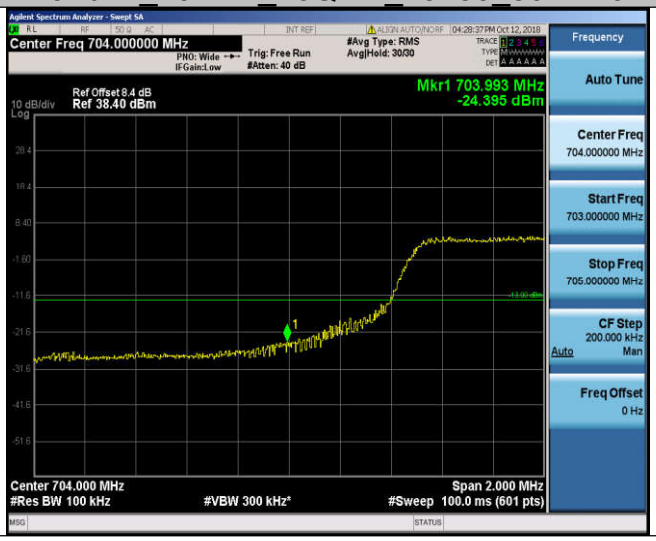
Band17_5MHz_16QAM_23825_25RB#0

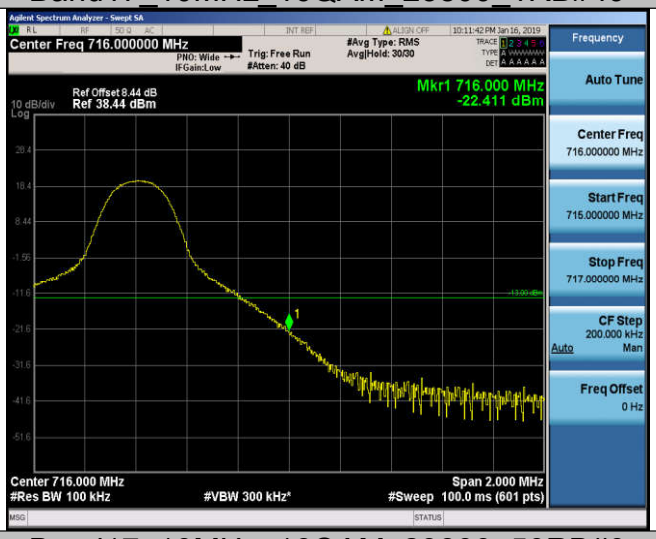
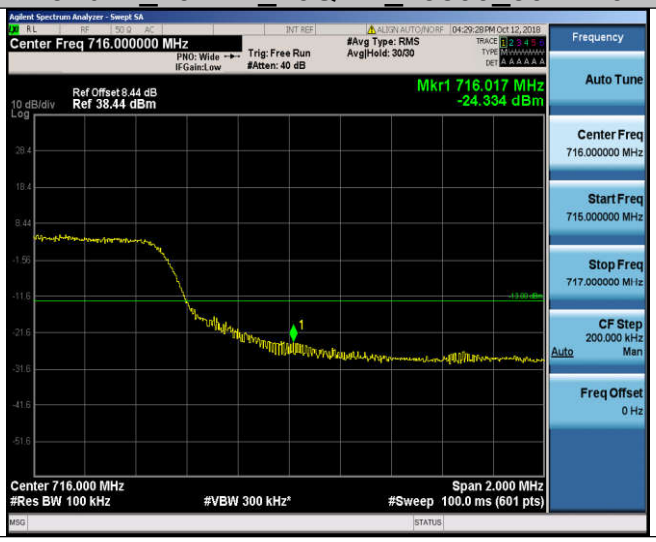

Band17_10MHz_QPSK_23780_1RB#0


Band17_10MHz_QPSK_23780_50RB#0


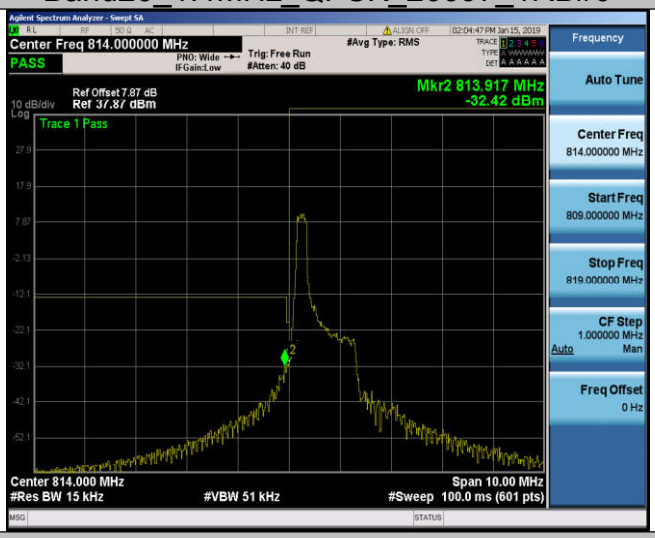
Band17_10MHz_QPSK_23800_1RB#49

Band17_10MHz_QPSK_23800_50RB#0


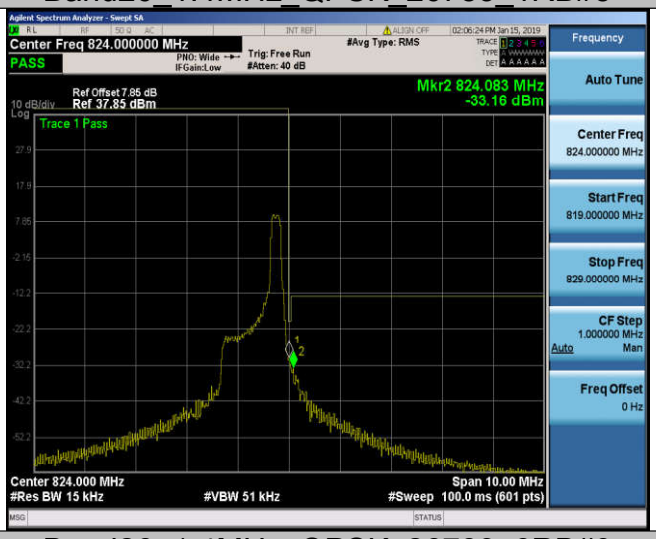
Band17_10MHz_16QAM_23780_1RB#0


Band17_10MHz_16QAM_23780_50RB#0


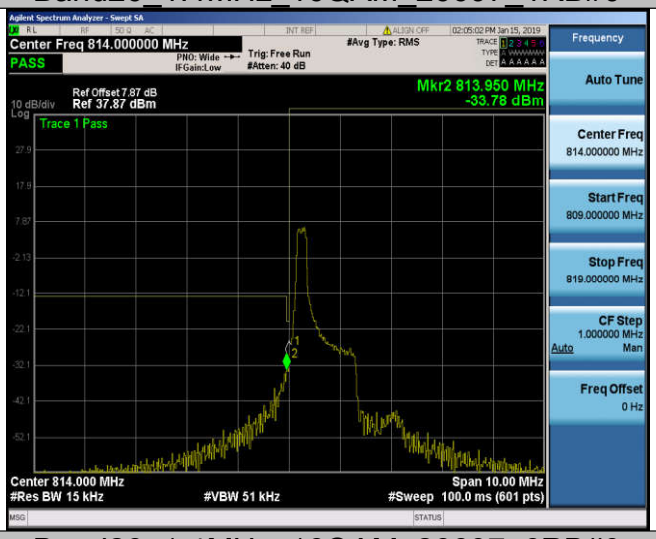
Band17_10MHz_16QAM_23800_1RB#49

Band17_10MHz_16QAM_23800_50RB#0


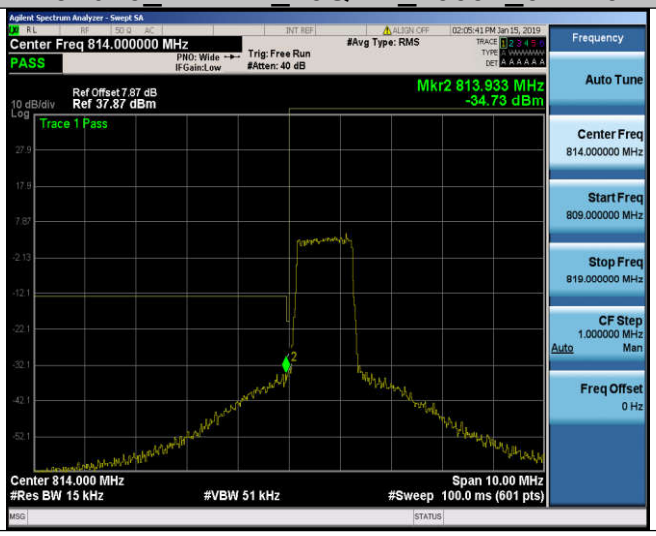
LTE Band 26:

Band26_1.4MHz_QPSK_26697_1RB#0

Band26_1.4MHz_QPSK_26697_6RB#0


Band26_1.4MHz_QPSK_26783_1RB#5


Band26_1.4MHz_QPSK_26783_6RB#0


Band26_1.4MHz_16QAM_26697_1RB#0


Band26_1.4MHz_16QAM_26697_6RB#0


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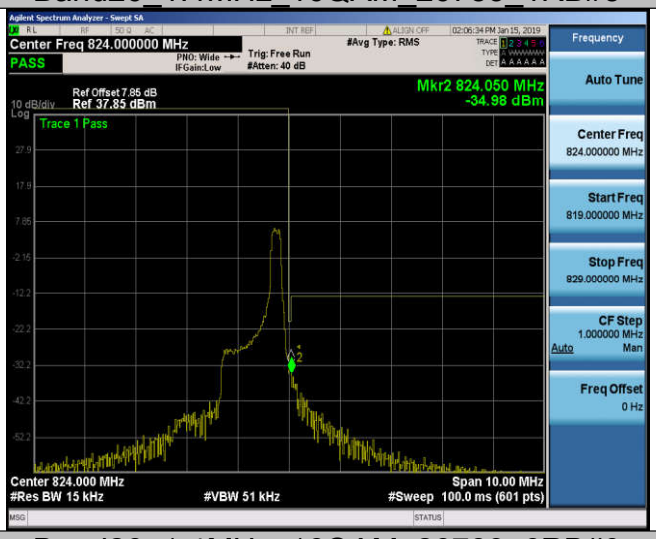

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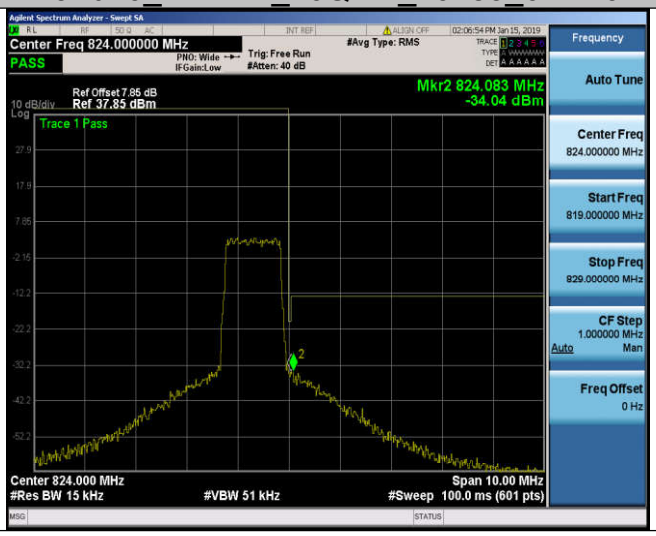

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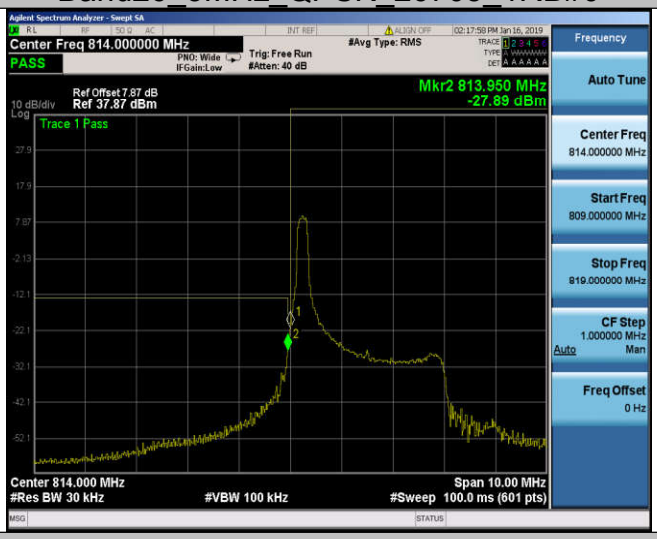
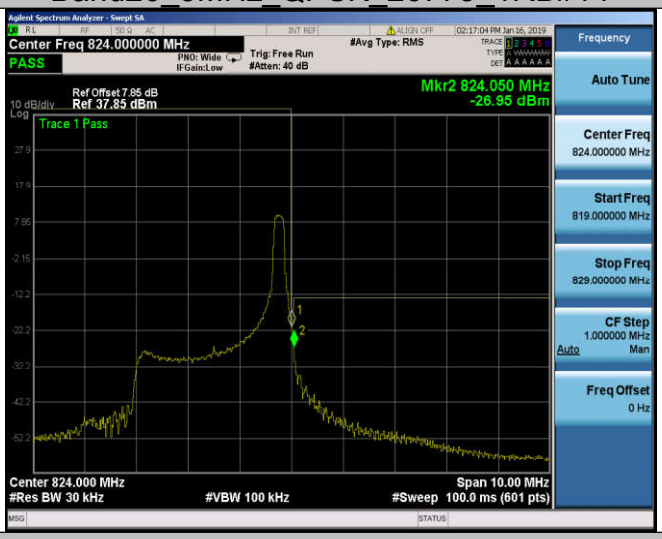
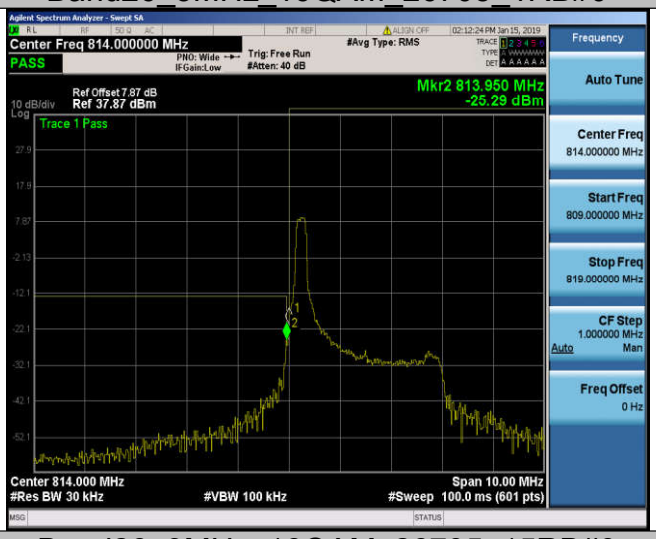
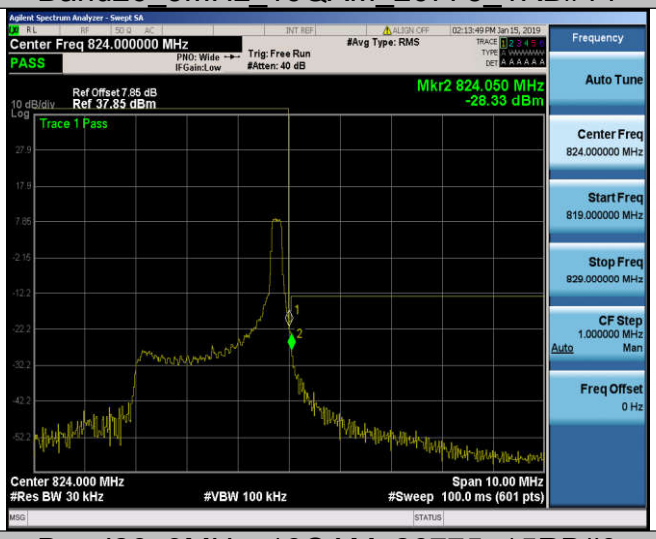


Band26_3MHz_QPSK_26705_15RB#0

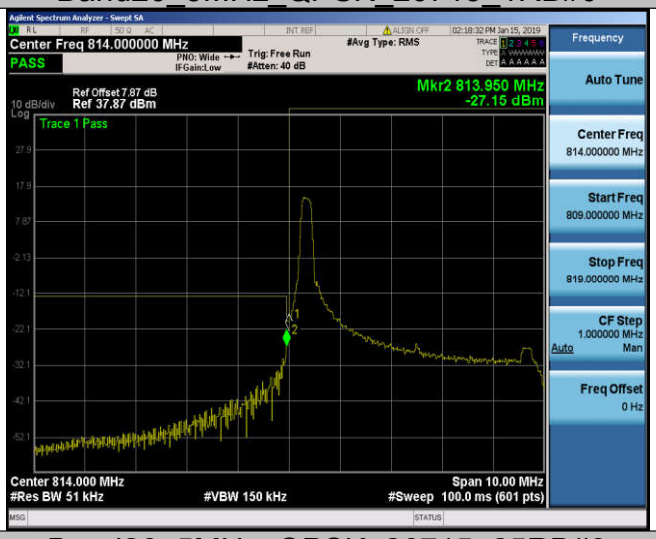

Band26_3MHz_QPSK_26775_1RB#14

Band26_3MHz_QPSK_26775_15RB#0


Band26_3MHz_16QAM_26705_1RB#0


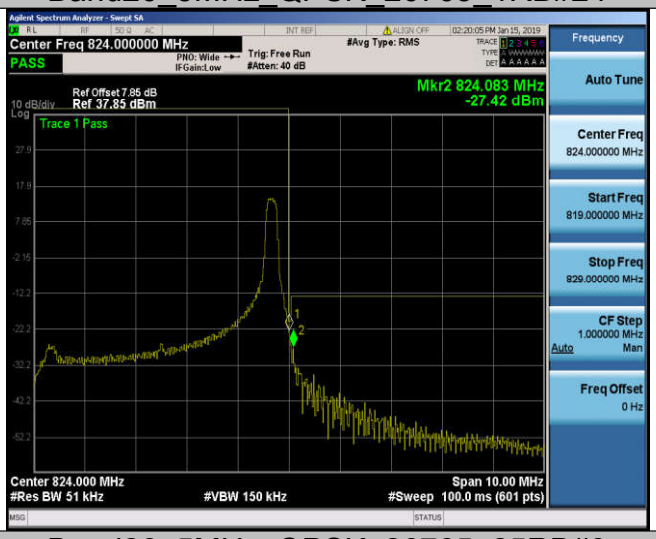
Band26_3MHz_16QAM_26705_15RB#0


Band26_3MHz_16QAM_26775_1RB#14


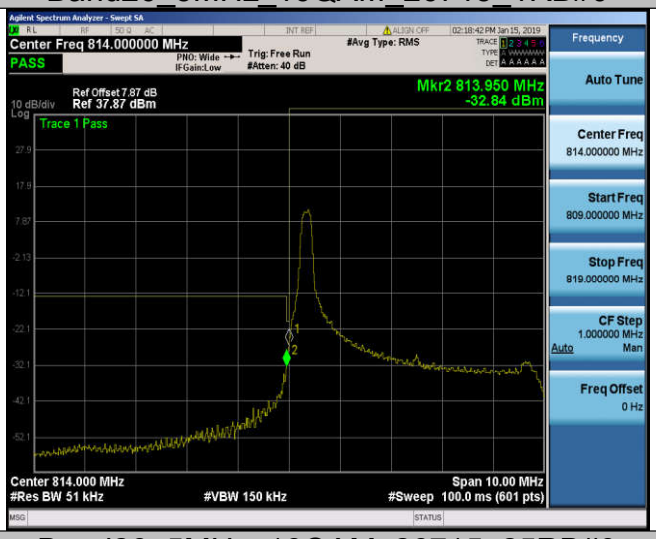
Band26_3MHz_16QAM_26775_15RB#0


Band26_5MHz_QPSK_26715_1RB#0


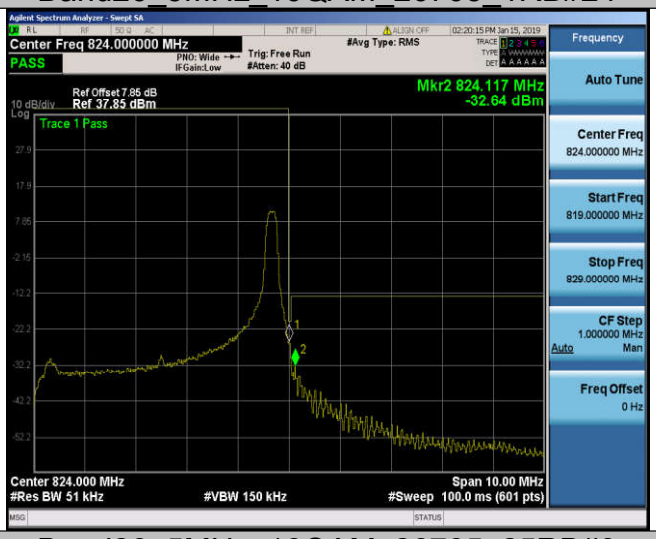
Band26_5MHz_QPSK_26715_25RB#0


Band26_5MHz_QPSK_26765_1RB#24


Band26_5MHz_QPSK_26765_25RB#0


Band26_5MHz_16QAM_26715_1RB#0


Band26_5MHz_16QAM_26715_25RB#0


Band26_5MHz_16QAM_26765_1RB#24

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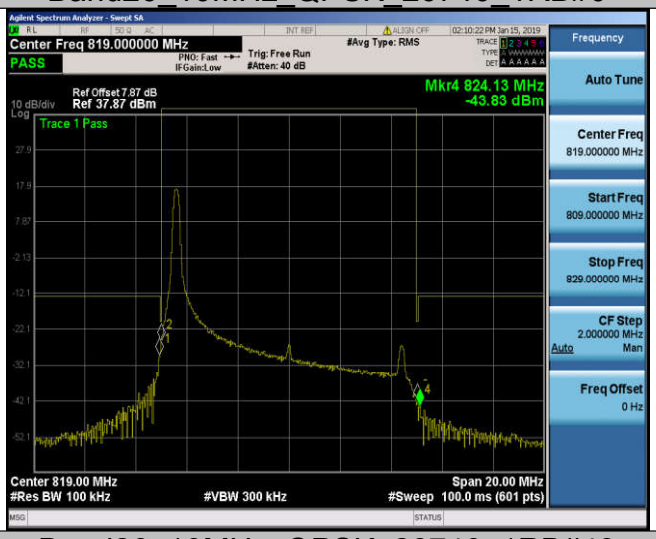

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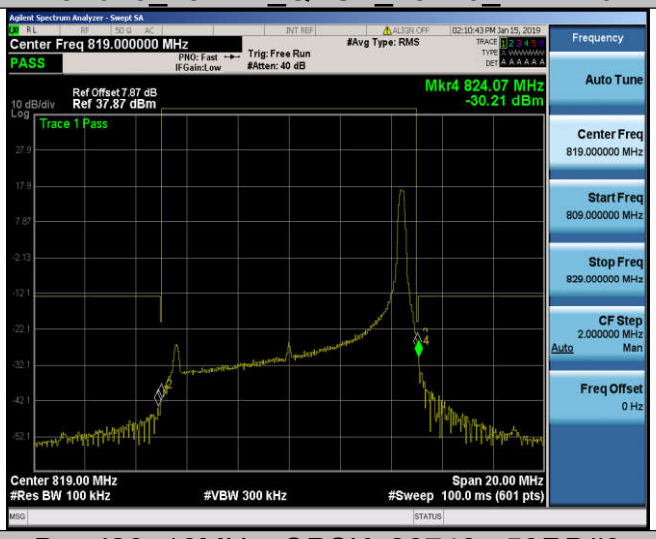
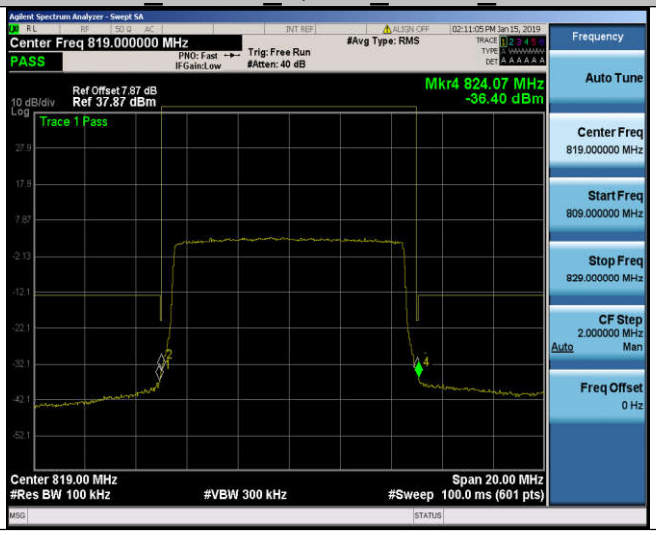


Band26_10MHz_QPSK_26740_ 50RB#0


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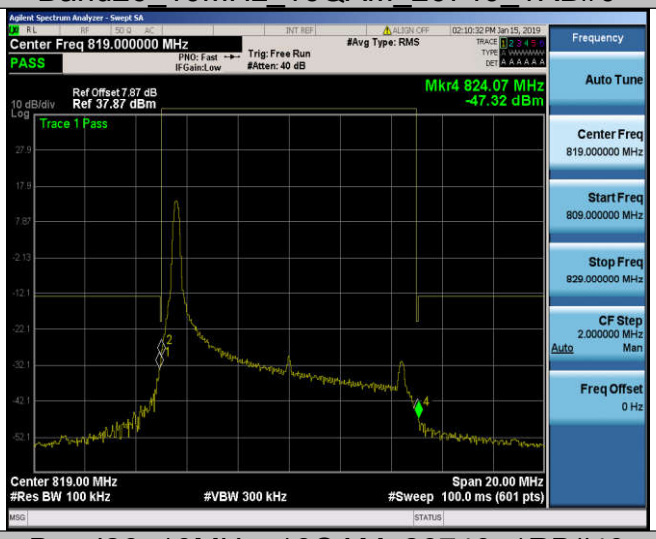
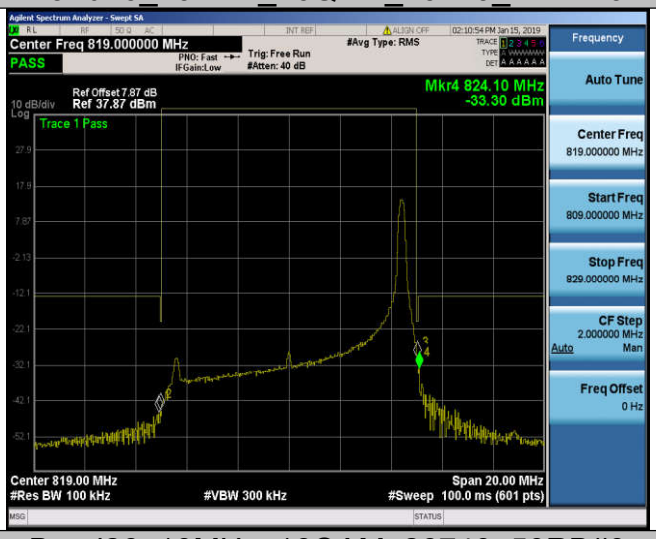
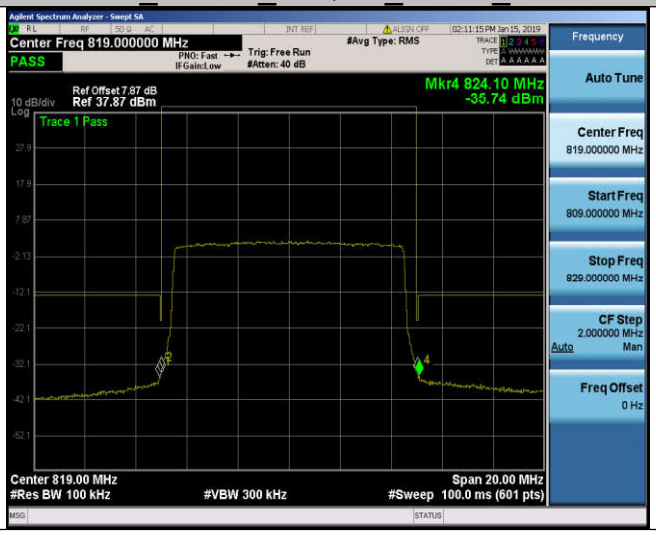


Band26_10MHz_16QAM_26740_1RB#49



Band26_10MHz_16QAM_26740_50RB#0



5.5. Spurious Emissions Radiated

5.5.1. Test Standard

FCC: CFR Part 2.1051, CFR Part 27.53, CFR Part 90.669

5.5.2. Test Limit

The radio frequency voltage or power generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in FCC 2.1049 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.
(a) 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. For all power levels +30dBm to 0dBm, this becomes a constant specification of -13dBm.

FCC 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 90.669
(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:
(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.
(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.
The power of any emission shall be attenuated below the mean output power P (dBW) by at least 43 + 10 log10(p), measured in a 100 kHz bandwidth for frequencies less than or equal to 1 GHz, and in a 1 MHz bandwidth for frequencies greater than 1 GHz.

5.5.3. Test Procedure

1. Connect the equipment as shown in the above diagram with the EUT's antenna in a horizontal orientation.
2. Adjust the settings of the Wideband Radio Communication Tester (CMW500) to set the EUT to its maximum power at the required channel.
3. Set the spectrum analyzer to measure peak hold with the required settings.
4. Place the measurement antenna in a horizontal orientation. Rotate the EUT 360 .

Raise the measurement antenna up to 4 meters in 0.5 meters increments and rotate the EUT 360 at each height to maximize all emissions. Measure and record all spurious emissions (LVL) up to the tenth harmonic of the carrier frequency.

5. Replace the EUT with a horizontally polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
6. Connect the antenna to a signal generator with known output power and record the path loss in dB (LOSS). LOSS = Generator Output Power (dBm) – Analyzer reading (dBm).
7. Determine the level of spurious emissions using the following equation:

Spurious (dBm) = LVL (dBm) + LOSS (dB):

8. Repeat steps 4, 5 and 6 with all antennas vertically polarized.
9. Determine the level of spurious emissions using the following equation:

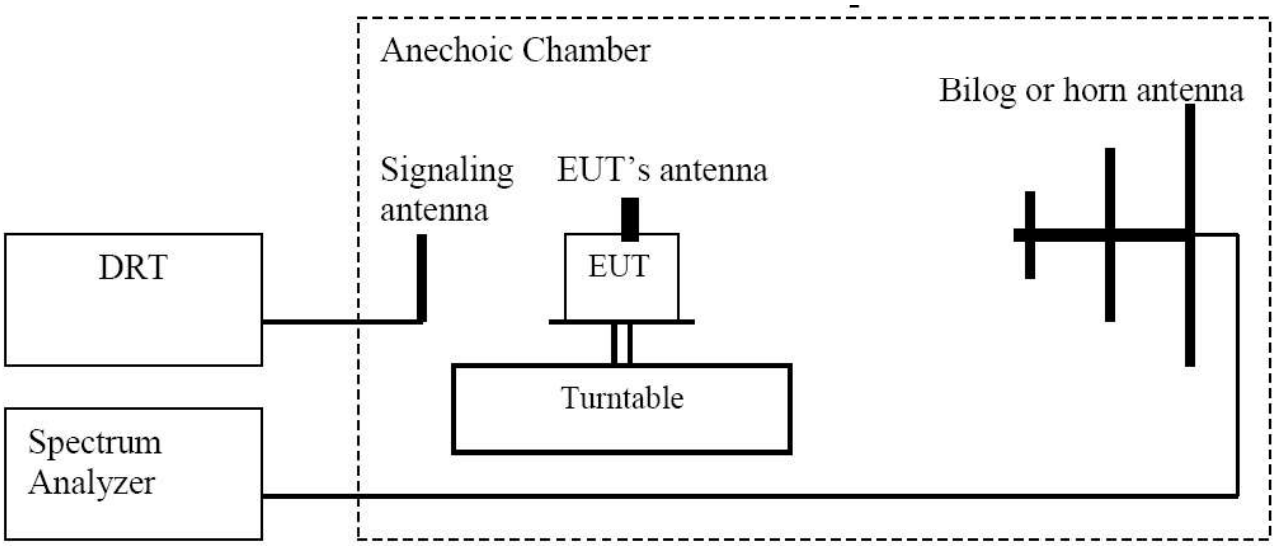
Spurious (dBm) = LVL (dBm) + LOSS (dB):

10. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.

(Note: Steps 5 and 6 above are performed prior to testing and LOSS is recorded by test software. Steps 3, 4 and 7 above are performed with test software.)

Spectrum analyzer settings: RBW=VBW=1MHz

5.5.4.Test Setup



5.5.5.Test Data

Test Band = LTE Band 12
Test Mode = QPSK /TM1
Bandwidth=1.4MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1415	-9.29	0.9	6.49	40.6	-44.3	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 12
Test Mode = 16QAM /TM2
Bandwidth=1.4MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1415	-10.29	0.9	6.49	40.6	-45.3	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 12
Test Mode = QPSK /TM1
Bandwidth=3MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1415	-10.69	0.9	6.49	40.6	-45.7	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 12
Test Mode = 16QAM /TM2
Bandwidth=3MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1415	-9.89	0.9	6.49	40.6	-44.9	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 12
Test Mode = QPSK /TM1
Bandwidth=5MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1415	-10.09	0.9	6.49	40.6	-45.1	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 12
Test Mode = 16QAM /TM2
Bandwidth=5MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1415	-9.49	0.9	6.49	40.6	-44.5	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 12
Test Mode = QPSK /TM1
Bandwidth=10MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1415	-9.19	0.9	6.49	40.6	-44.2	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 12
Test Mode = 16QAM /TM2
Bandwidth=10MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1415	-9.89	0.9	6.49	40.6	-44.9	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 17
Test Mode = QPSK /TM1
Bandwidth=5MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1420	-10.19	0.9	6.49	40.6	-45.2	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 17
Test Mode = 16QAM /TM2
Bandwidth=5MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1420	-8.89	0.9	6.49	40.6	-43.9	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 17
Test Mode = QPSK /TM1
Bandwidth=10MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1420	-9.49	0.9	6.49	40.6	-44.5	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 17
Test Mode = 16QAM /TM2
Bandwidth=10MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1420	-9.19	0.9	6.49	40.6	-44.2	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 26
Test Mode = QPSK /TM1
Bandwidth=1.4MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1638	-9.17	0.9	6.77	40.6	-43.9	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 26
Test Mode = 16QAM /TM2
Bandwidth=1.4MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1638	-9.87	0.9	6.77	40.6	-44.6	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 26
Test Mode = QPSK /TM1
Bandwidth=3MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1638	-10.57	0.9	6.77	40.6	-45.3	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 26
Test Mode = 16QAM /TM2
Bandwidth=3MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1638	-10.07	0.9	6.77	40.6	-44.8	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 26
Test Mode = QPSK /TM1
Bandwidth=5MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1638	-10.27	0.9	6.77	40.6	-45	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 26
Test Mode = 16QAM /TM2
Bandwidth=5MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1638	-9.67	0.9	6.77	40.6	-44.4	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 26
Test Mode = QPSK /TM1
Bandwidth=10MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1638	-10.07	0.9	6.77	40.6	-44.8	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

Test Band = LTE Band 26
Test Mode = 16QAM /TM2
Bandwidth=10MHz
Test Channel = MCH

Freq.	SG. Level	Cable Loss	Antenna Gain	Preamp	Substitution	Polarization	Limit
[MHz]	[dBm]	[dB]	[dBi]	dB	Level (EIRP) [dBm]		[dBm]
1638	-9.17	0.9	6.77	40.6	-43.9	Horizontal	-13

The emissions don’ t show in above result tables are more than 20dB below the limits

Note: both of Vertical and Horizontal polarization are evaluated, and only the worst case is recorded in this report

5.6. Frequency Stability

5.6.1. Test Standard

FCC:CFR part 2.1055, CFR Part 27.54, CFR Part 90.213

5.6.2. Test Limit

FCC 27.54 The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.
FCC 90.213, The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

5.6.3. Test Procedure

1. The transmitter output (antenna port) was connected to the BS Simulator.
2. The BS simulator was used to set the TX channel and power level and modulate the TX signal with different bit patterns.
3. BS simulator used the frequency error function and measured the peak frequency error. Power must be removed when changing from one temperature to another or one voltage to another voltage. Power warm up is at least 15 min and power applied should perform before recording frequency error. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.
4. EUT is connected the external power supply to control the DC input power. The various Volts from the minimum 4.5 Volts to 5.5 Volts. Each step shall be record the frequency error rate.
5. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.
6. Extreme temperature rule is-30°C~50°C.

5.6.4. Test Setup

Connect the EUT to the Wideband Radio Communication Tester (CMW500) via the connector. Then measure the frequency error by the Wideband Radio Communication Tester (CMW500). The EUT's output is matched with a 50 Ω load.

5.6.5. Test Data

Measurement Results vs. Variation of Voltage－LTE Band 12(1.4MHZ)

Modulation	Nominal Frequency (MHz)	Voltage [Vdc]	Measured Frequency Error(Hz)	Verdict
QPSK	707.5	2.805	-15.81	PASS
		3.3	-59.27	PASS
		3.795	48.27	PASS
16QAM	707.5	2.805	-33.22	PASS
		3.3	42.33	PASS
		3.795	-37.29	PASS

Measurement Results vs. Variation of Temperature－LTE Band 12(1.4MHZ)

Modulation	Nominal Frequency (MHz)	Temperature	Measured Frequency Error(Hz)	Verdict
QPSK	707.5	-30 °C	-18.68	PASS
		-20 °C	-47.11	PASS
		-10 °C	-28.45	PASS
		0 °C	-35.05	PASS
		+10 °C	-30.71	PASS
		+20 °C	49.15	PASS
		+30 °C	40.73	PASS
		+40 °C	34.68	PASS
		+50 °C	48.94	PASS
16QAM	707.5	-30 °C	-46.35	PASS
		-20 °C	-39.65	PASS
		-10 °C	-9.11	PASS
		0 °C	-18.73	PASS
		+10 °C	-53.79	PASS
		+20 °C	-51.67	PASS
		+30 °C	-48.57	PASS
		+40 °C	-41.56	PASS
		+50 °C	-45.30	PASS

Measurement Results vs. Variation of Voltage—LTE Band 12(3MHZ)

Modulation	Nominal Frequency (MHz)	Voltage [Vdc]	Measured Frequency Error(Hz)	Verdict
QPSK	707.5	2.805	-38.98	PASS
		3.3	-57.94	PASS
		3.795	28.62	PASS
16QAM	707.5	2.805	-41.86	PASS
		3.3	-21.13	PASS
		3.795	-48.18	PASS

Measurement Results vs. Variation of Temperature—LTE Band 12(3MHZ)

Modulation	Nominal Frequency (MHz)	Temperature	Measured Frequency Error(Hz)	Verdict
QPSK	707.5	-30 °C	28.87	PASS
		-20 °C	-17.94	PASS
		-10 °C	-34.19	PASS
		0 °C	-18.83	PASS
		+10 °C	-26.79	PASS
		+20 °C	51.04	PASS
		+30 °C	13.56	PASS
		+40 °C	8.08	PASS
		+50 °C	-14.61	PASS
16QAM	707.5	-30 °C	-54.02	PASS
		-20 °C	-49.98	PASS
		-10 °C	13.80	PASS
		0 °C	-20.07	PASS
		+10 °C	-41.10	PASS
		+20 °C	-51.76	PASS
		+30 °C	-53.87	PASS
		+40 °C	-49.45	PASS
		+50 °C	-52.11	PASS

Measurement Results vs. Variation of Voltage—LTE Band 12(5MHZ)

Modulation	Nominal Frequency (MHz)	Voltage [Vdc]	Measured Frequency Error(Hz)	Verdict
QPSK	707.5	2.805	-28.54	PASS
		3.3	-55.52	PASS
		3.795	48.87	PASS
16QAM	707.5	2.805	-51.11	PASS
		3.3	5.98	PASS
		3.795	-48.07	PASS

Measurement Results vs. Variation of Temperature—LTE Band 12(5MHZ)

Modulation	Nominal Frequency (MHz)	Temperature	Measured Frequency Error(Hz)	Verdict
QPSK	707.5	-30 °C	14.12	PASS
		-20 °C	-18.63	PASS
		-10 °C	-19.14	PASS
		0 °C	-39.05	PASS
		+10 °C	-15.88	PASS
		+20 °C	49.32	PASS
		+30 °C	41.07	PASS
		+40 °C	8.80	PASS
		+50 °C	-14.41	PASS
16QAM	707.5	-30 °C	-31.46	PASS
		-20 °C	-18.01	PASS
		-10 °C	-46.15	PASS
		0 °C	-11.39	PASS
		+10 °C	-42.41	PASS
		+20 °C	-51.67	PASS
		+30 °C	-47.19	PASS
		+40 °C	-26.35	PASS
		+50 °C	35.33	PASS

Measurement Results vs. Variation of Voltage—LTE Band 12(10MHZ)

Modulation	Nominal Frequency (MHz)	Voltage [Vdc]	Measured Frequency Error(Hz)	Verdict
QPSK	707.5	2.805	50.91	PASS
		3.3	-58.99	PASS
		3.795	49.57	PASS
16QAM	707.5	2.805	-51.91	PASS
		3.3	-52.80	PASS
		3.795	25.88	PASS

Measurement Results vs. Variation of Temperature—LTE Band 12(10MHZ)

Modulation	Nominal Frequency (MHz)	Temperature	Measured Frequency Error(Hz)	Verdict
QPSK	707.5	-30 °C	51.08	PASS
		-20 °C	48.81	PASS
		-10 °C	47.69	PASS
		0 °C	40.27	PASS
		+10 °C	50.80	PASS
		+20 °C	32.22	PASS
		+30 °C	48.52	PASS
		+40 °C	51.37	PASS
		+50 °C	47.21	PASS
16QAM	707.5	-30 °C	-48.64	PASS
		-20 °C	-28.80	PASS
		-10 °C	-42.36	PASS
		0 °C	-49.64	PASS
		+10 °C	-51.77	PASS
		+20 °C	-42.29	PASS
		+30 °C	-49.51	PASS
		+40 °C	-50.54	PASS
		+50 °C	-48.85	PASS

Measurement Results vs. Variation of Voltage—LTE Band 17(5MHZ)

Modulation	Nominal Frequency (MHz)	Voltage [Vdc]	Measured Frequency Error(Hz)	Verdict
QPSK	710	2.805	56.02	PASS
		3.3	-30.57	PASS
		3.795	52.91	PASS
16QAM	710	2.805	28.98	PASS
		3.3	48.31	PASS
		3.795	36.72	PASS

Measurement Results vs. Variation of Temperature—LTE Band 17(5MHZ)

Modulation	Nominal Frequency (MHz)	Temperature	Measured Frequency Error(Hz)	Verdict
QPSK	710	-30 °C	35.18	PASS
		-20 °C	52.14	PASS
		-10 °C	52.93	PASS
		0 °C	52.27	PASS
		+10 °C	52.00	PASS
		+20 °C	37.11	PASS
		+30 °C	45.96	PASS
		+40 °C	50.14	PASS
		+50 °C	16.16	PASS
16QAM	710	-30 °C	30.97	PASS
		-20 °C	29.54	PASS
		-10 °C	-31.39	PASS
		0 °C	-11.52	PASS
		+10 °C	-26.06	PASS
		+20 °C	32.33	PASS
		+30 °C	11.16	PASS
		+40 °C	-40.03	PASS
		+50 °C	-17.38	PASS

Measurement Results vs. Variation of Voltage—LTE Band 17(10MHZ)

Modulation	Nominal Frequency (MHz)	Voltage [Vdc]	Measured Frequency Error(Hz)	Verdict
QPSK	710	2.805	49.64	PASS
		3.3	-62.04	PASS
		3.795	44.79	PASS
16QAM	710	2.805	-47.24	PASS
		3.3	19.90	PASS
		3.795	51.47	PASS

Measurement Results vs. Variation of Temperature—LTE Band 17(10MHZ)

Modulation	Nominal Frequency (MHz)	Temperature	Measured Frequency Error(Hz)	Verdict
QPSK	710	-30 °C	52.19	PASS
		-20 °C	-25.26	PASS
		-10 °C	-47.88	PASS
		0 °C	-22.65	PASS
		+10 °C	47.44	PASS
		+20 °C	37.29	PASS
		+30 °C	49.15	PASS
		+40 °C	48.45	PASS
		+50 °C	23.10	PASS
16QAM	710	-30 °C	-22.56	PASS
		-20 °C	49.24	PASS
		-10 °C	44.70	PASS
		0 °C	41.10	PASS
		+10 °C	-50.11	PASS
		+20 °C	47.55	PASS
		+30 °C	51.30	PASS
		+40 °C	50.02	PASS
		+50 °C	51.03	PASS

Measurement Results vs. Variation of Voltage－LTE Band 26(1.4MHZ)

Modulation	Nominal Frequency (MHz)	Voltage [Vdc]	Measured Frequency Error(Hz)	Verdict
QPSK	819	2.805	54.96	PASS
		3.3	60.51	PASS
		3.795	55.43	PASS
16QAM	819	2.805	50.40	PASS
		3.3	55.25	PASS
		3.795	51.24	PASS

Measurement Results vs. Variation of Temperature－LTE Band 26(1.4MHZ)

Modulation	Nominal Frequency (MHz)	Temperature	Measured Frequency Error(Hz)	Verdict
QPSK	819	-30 °C	27.57	PASS
		-20 °C	20.86	PASS
		-10 °C	47.84	PASS
		0 °C	30.94	PASS
		+10 °C	35.38	PASS
		+20 °C	55.43	PASS
		+30 °C	52.39	PASS
		+40 °C	56.03	PASS
		+50 °C	50.61	PASS
16QAM	819	-30 °C	-24.52	PASS
		-20 °C	-27.24	PASS
		-10 °C	-41.41	PASS
		0 °C	-12.83	PASS
		+10 °C	-29.88	PASS
		+20 °C	47.62	PASS
		+30 °C	51.90	PASS
		+40 °C	51.30	PASS
		+50 °C	49.77	PASS

Measurement Results vs. Variation of Voltage—LTE Band 26(3MHZ)

Modulation	Nominal Frequency (MHz)	Voltage [Vdc]	Measured Frequency Error(Hz)	Verdict
QPSK	819	2.805	47.75	PASS
		3.3	-68.26	PASS
		3.795	35.41	PASS
16QAM	819	2.805	-43.53	PASS
		3.3	14.61	PASS
		3.795	-52.74	PASS

Measurement Results vs. Variation of Temperature—LTE Band 26(3MHZ)

Modulation	Nominal Frequency (MHz)	Temperature	Measured Frequency Error(Hz)	Verdict
QPSK	819	-30 °C	-48.39	PASS
		-20 °C	-51.07	PASS
		-10 °C	-51.93	PASS
		0 °C	-47.59	PASS
		+10 °C	-47.06	PASS
		+20 °C	49.60	PASS
		+30 °C	46.41	PASS
		+40 °C	26.34	PASS
		+50 °C	-34.60	PASS
16QAM	819	-30 °C	-50.02	PASS
		-20 °C	-33.42	PASS
		-10 °C	-26.84	PASS
		0 °C	-37.88	PASS
		+10 °C	-50.73	PASS
		+20 °C	-42.80	PASS
		+30 °C	-22.23	PASS
		+40 °C	-32.07	PASS
		+50 °C	37.45	PASS

Measurement Results vs. Variation of Voltage—LTE Band 26(5MHZ)

Modulation	Nominal Frequency (MHz)	Voltage [Vdc]	Measured Frequency Error(Hz)	Verdict
QPSK	819	2.805	33.67	PASS
		3.3	-57.84	PASS
		3.795	54.36	PASS
16QAM	819	2.805	-54.22	PASS
		3.3	39.61	PASS
		3.795	-44.66	PASS

Measurement Results vs. Variation of Temperature—LTE Band 26(5MHZ)

Modulation	Nominal Frequency (MHz)	Temperature	Measured Frequency Error(Hz)	Verdict
QPSK	819	-30 °C	44.22	PASS
		-20 °C	26.48	PASS
		-10 °C	46.35	PASS
		0 °C	49.55	PASS
		+10 °C	14.02	PASS
		+20 °C	51.31	PASS
		+30 °C	49.60	PASS
		+40 °C	49.14	PASS
		+50 °C	51.00	PASS
16QAM	819	-30 °C	-50.95	PASS
		-20 °C	-48.55	PASS
		-10 °C	-47.71	PASS
		0 °C	-49.62	PASS
		+10 °C	-49.24	PASS
		+20 °C	-27.11	PASS
		+30 °C	-50.88	PASS
		+40 °C	8.83	PASS
		+50 °C	-11.19	PASS

Measurement Results vs. Variation of Voltage—LTE Band 26(10MHZ)

Modulation	Nominal Frequency (MHz)	Voltage [Vdc]	Measured Frequency Error(Hz)	Verdict
QPSK	819	2.805	51.54	PASS
		3.3	45.66	PASS
		3.795	49.11	PASS
16QAM	819	2.805	-47.52	PASS
		3.3	-52.66	PASS
		3.795	-50.11	PASS

Measurement Results vs. Variation of Temperature—LTE Band 26(10MHZ)

Modulation	Nominal Frequency (MHz)	Temperature	Measured Frequency Error(Hz)	Verdict
QPSK	819	-30 °C	-47.69	PASS
		-20 °C	-53.49	PASS
		-10 °C	-40.68	PASS
		0 °C	-50.21	PASS
		+10 °C	-26.04	PASS
		+20 °C	-49.24	PASS
		+30 °C	51.41	PASS
		+40 °C	42.86	PASS
		+50 °C	11.16	PASS
16QAM	819	-30 °C	49.35	PASS
		-20 °C	45.15	PASS
		-10 °C	50.35	PASS
		0 °C	16.71	PASS
		+10 °C	-30.96	PASS
		+20 °C	-52.90	PASS
		+30 °C	-50.20	PASS
		+40 °C	27.11	PASS
		+50 °C	50.61	PASS

END OF REPORT