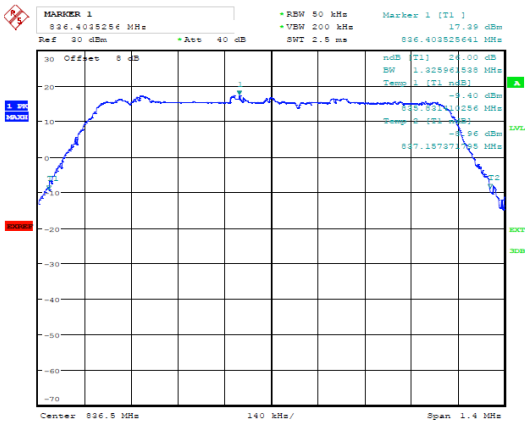
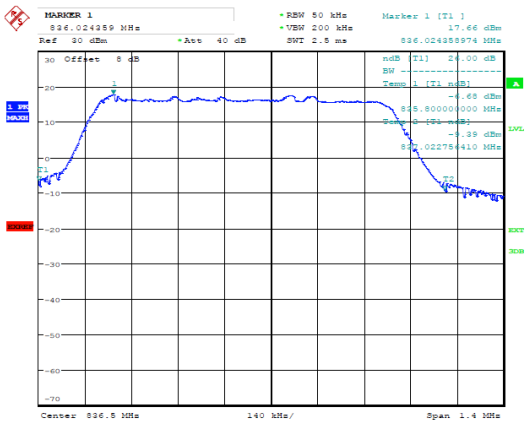
5.5.7 LTE Band 26

LTE Band 26			
Bandwidth	Modulation	Bandwidth(MHz)	
		99% Power	-26dBc
1.4MHz	QPSK	1.12	1.33
	16QAM	0.96	1.20
3MHz	QPSK	1.12	1.38
	16QAM	0.95	1.20
5MHz	QPSK	1.13	1.35
	16QAM	0.97	1.23
10MHz	QPSK	1.12	1.33
	16QAM	0.98	1.35
15MHz	QPSK	1.15	1.39
	16QAM	0.99	1.42

LTE Band 26_ Channel Bandwidth: 1.4 MHz	
QPSK	16QAM
-26dBc	
	
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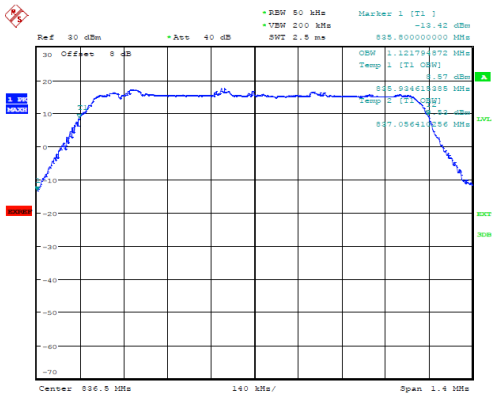
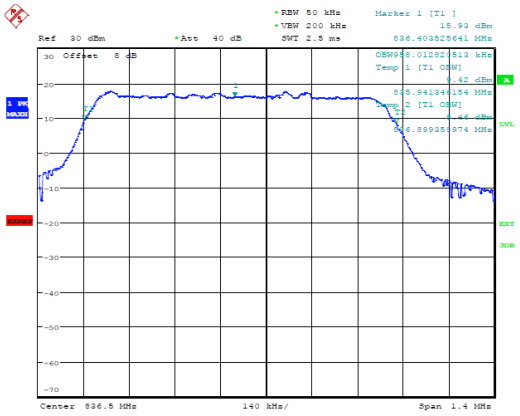
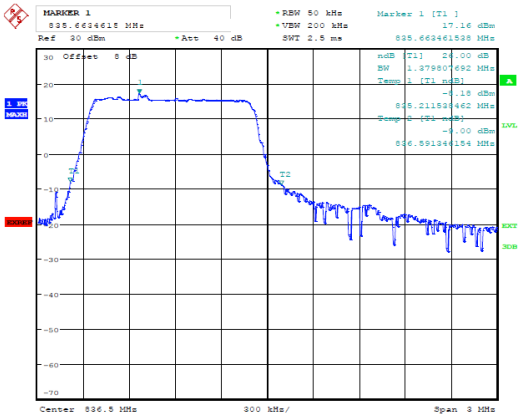
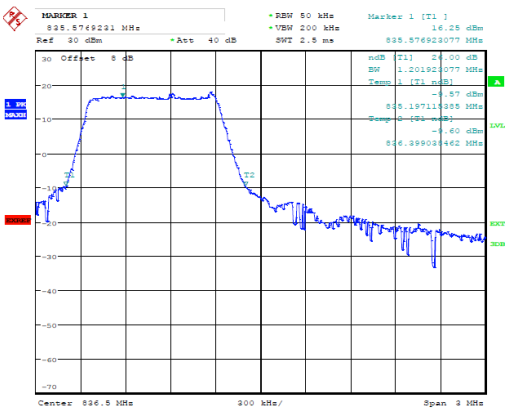
	

LTE Band 26_ Channel Bandwidth: 3 MHz	
QPSK	16QAM
-26dBc	
	
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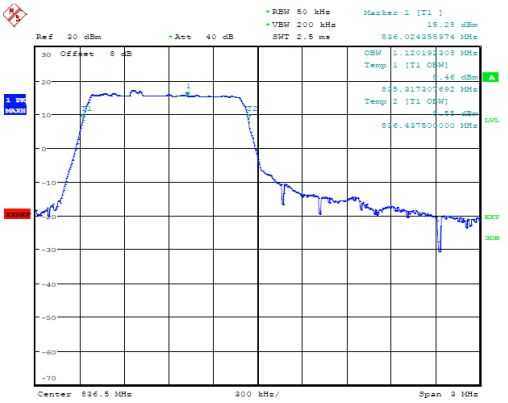
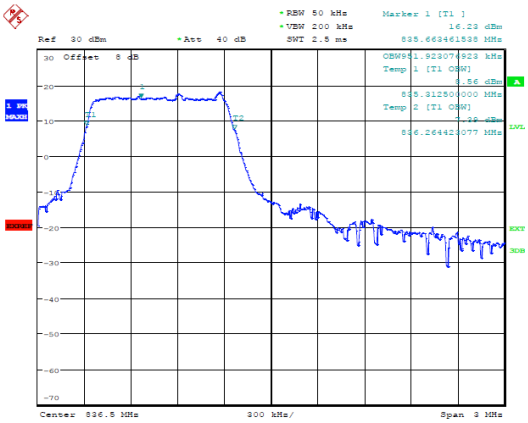
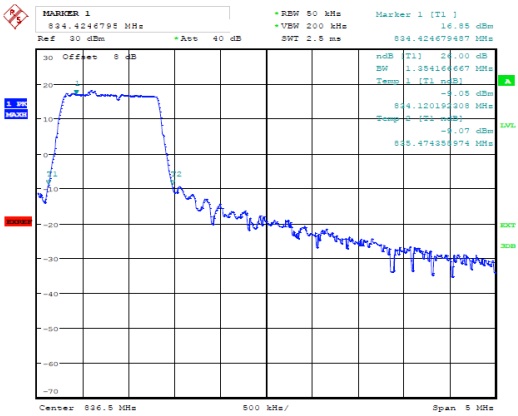
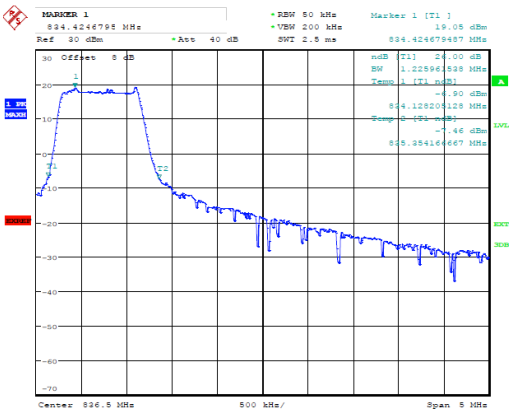
	

LTE Band 26_ Channel Bandwidth: 5 MHz	
QPSK	16QAM
-26dBc	
	
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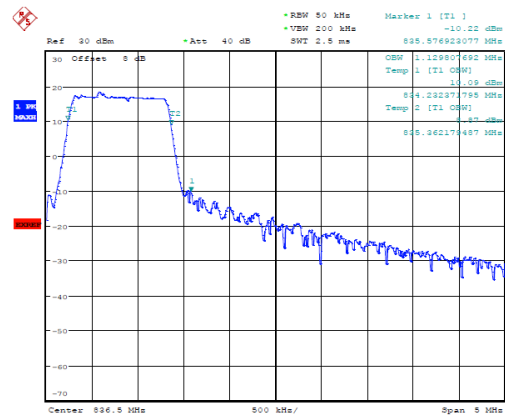
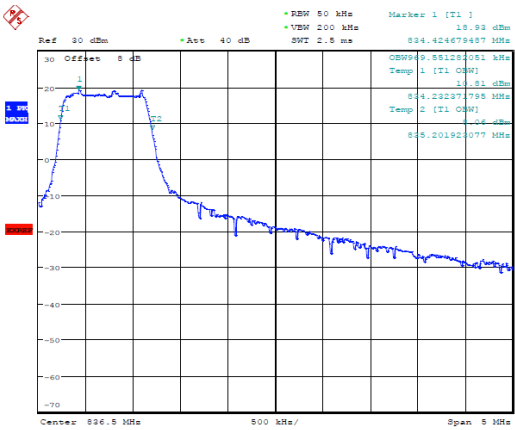
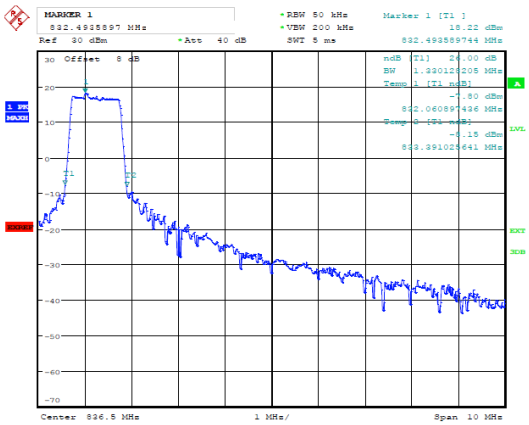
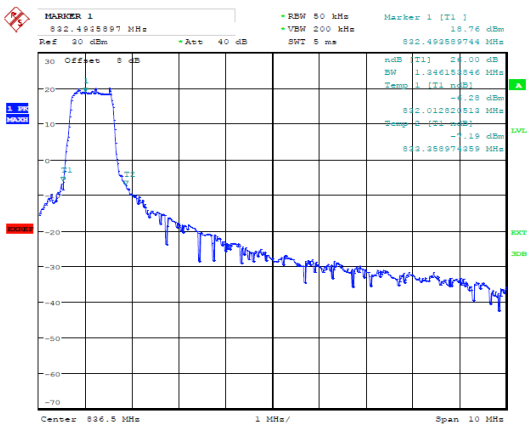
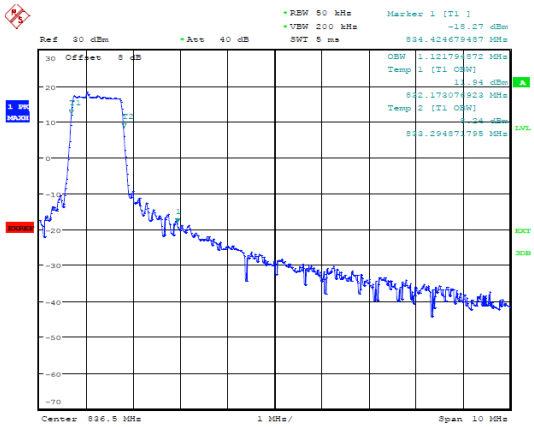
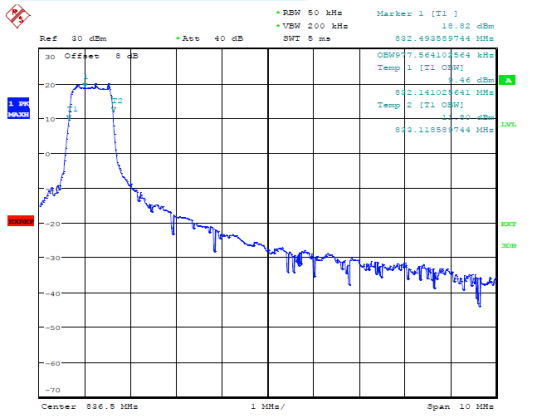
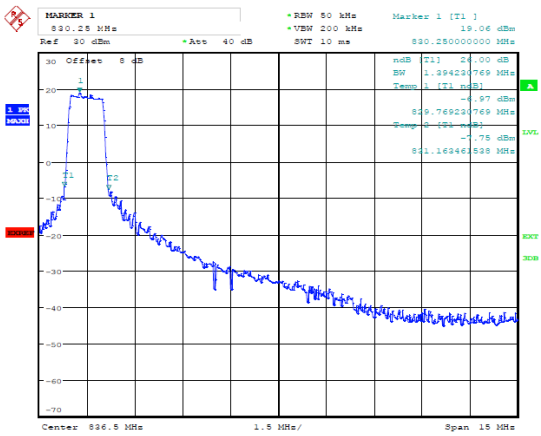
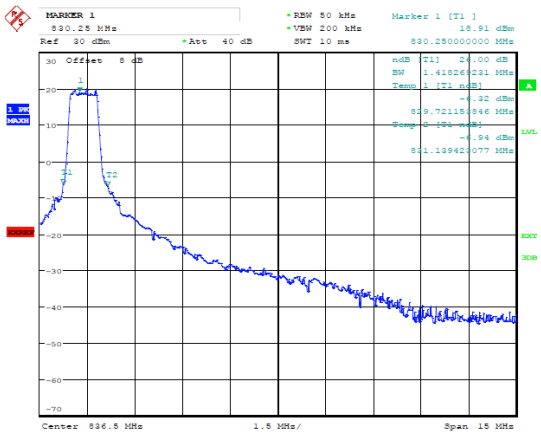
	

LTE Band 2_ Channel Bandwidth: 10 MHz	
QPSK	16QAM
-26dBc	
	
99%	
	

LTE Band 26_ Channel Bandwidth: 15 MHz	
QPSK	16QAM
-26dBc	
	
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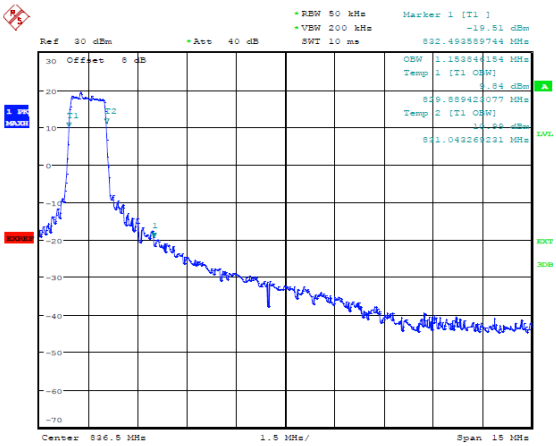
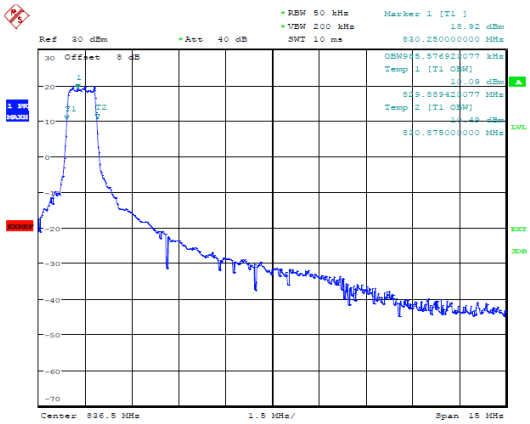
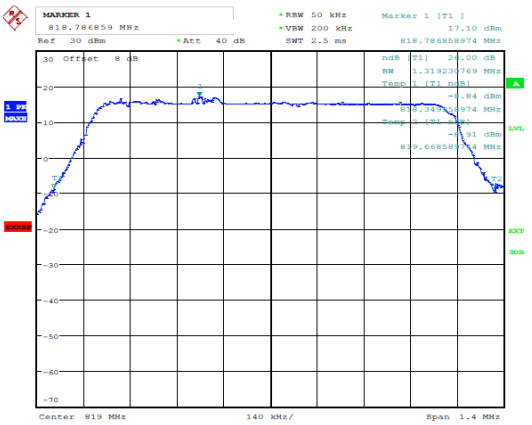
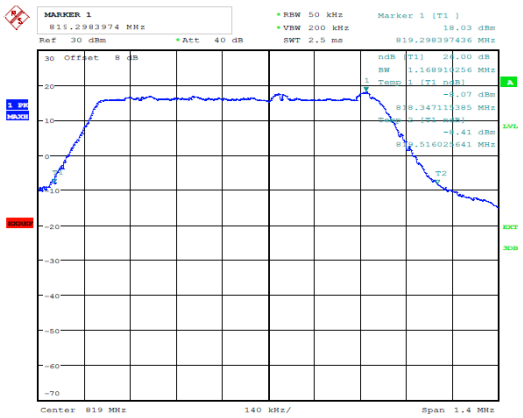
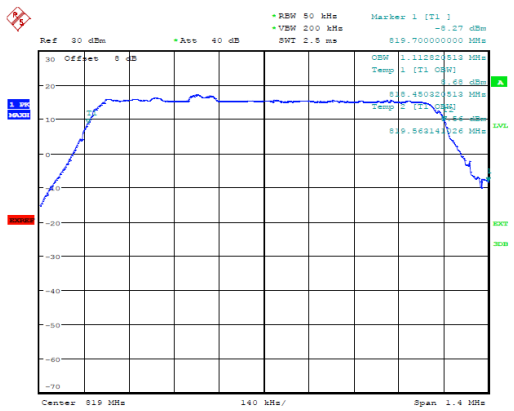
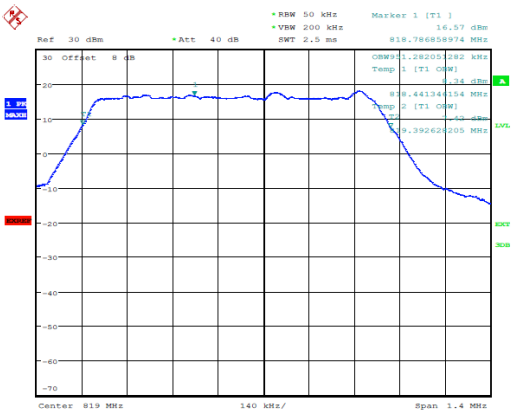
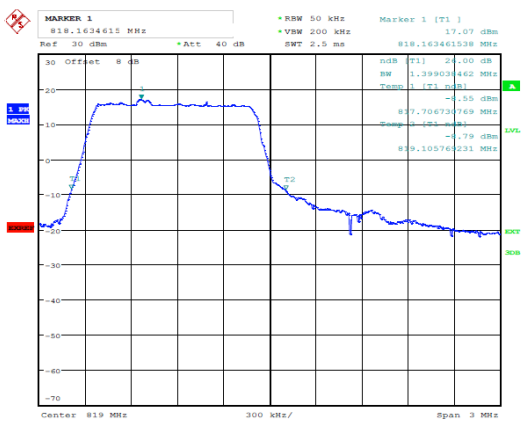
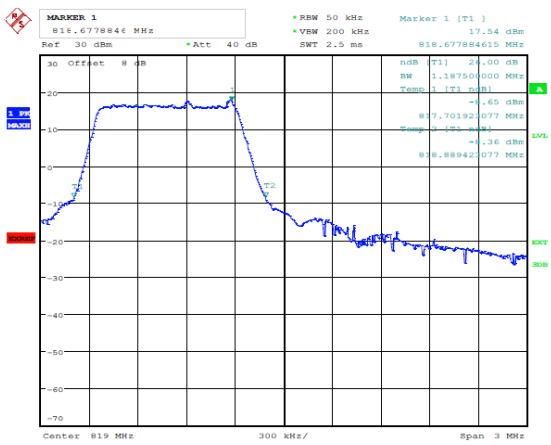
	

5.5.8 LTE Band 26 (Part 90S)

LTE Band 26			
Bandwidth	Modulation	Bandwidth(MHz)	
		99% Power	-26dBc
1.4MHz	QPSK	1.11	1.32
	16QAM	0.99	1.17
3MHz	QPSK	1.12	1.40
	16QAM	1.00	1.19
5MHz	QPSK	1.13	1.35
	16QAM	0.97	1.25
10MHz	QPSK	1.14	1.33
	16QAM	0.98	1.35

LTE Band 26_ Channel Bandwidth: 1.4 MHz	
QPSK	16QAM
-26dBc	
	
99%	
	

LTE Band 26_ Channel Bandwidth: 3 MHz	
QPSK	16QAM
-26dBc	
	
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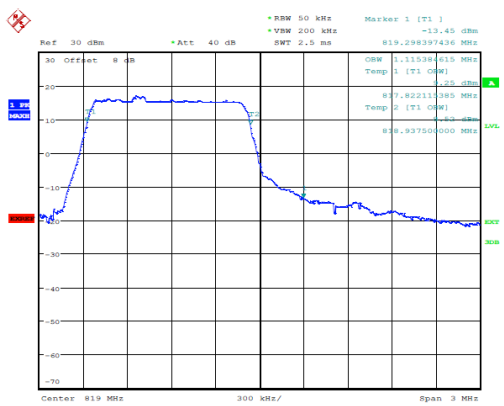
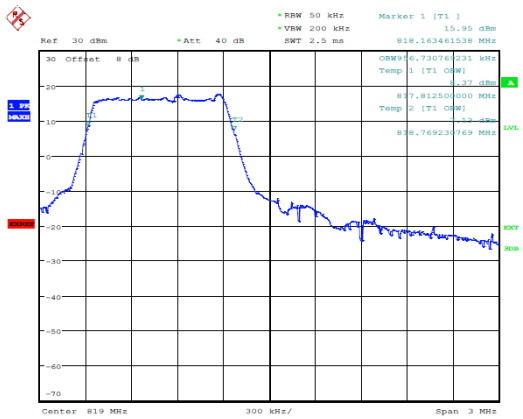
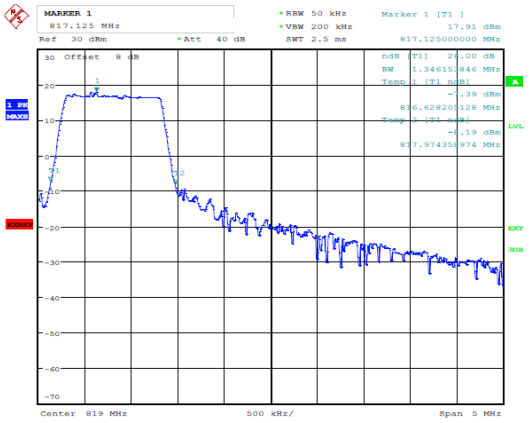
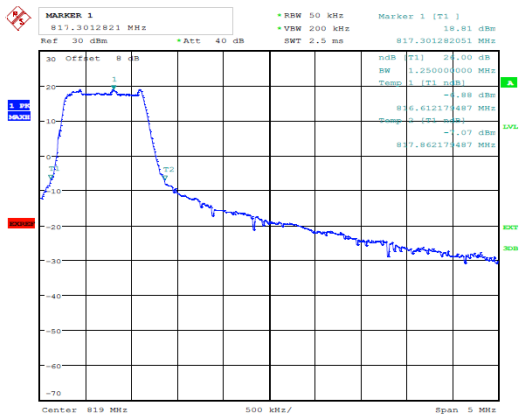
	

LTE Band 26_ Channel Bandwidth: 5 MHz	
QPSK	16QAM
-26dBc	
	
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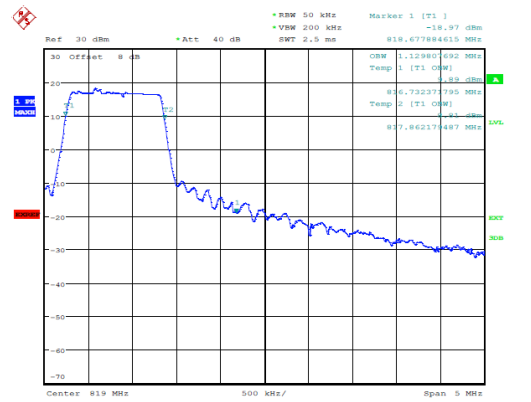
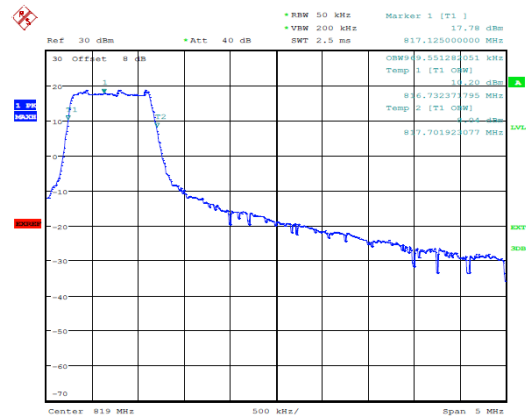
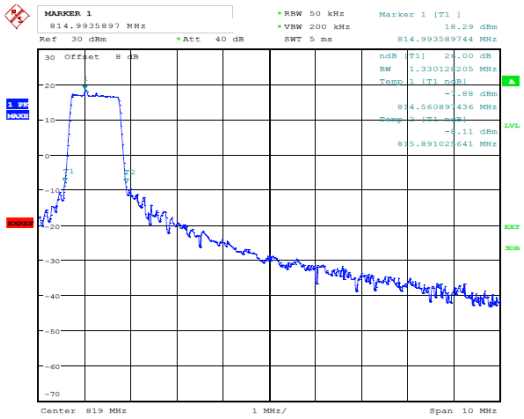
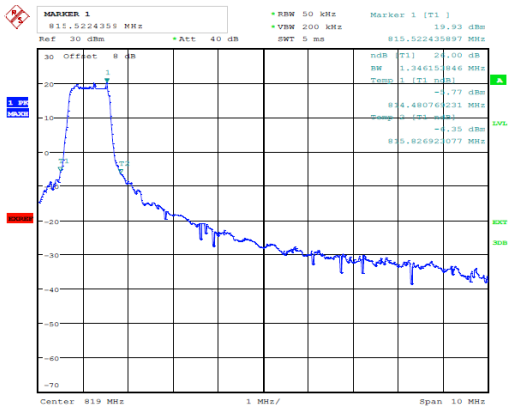
	

LTE Band 26_ Channel Bandwidth: 10 MHz	
QPSK	16QAM
-26dBc	
	
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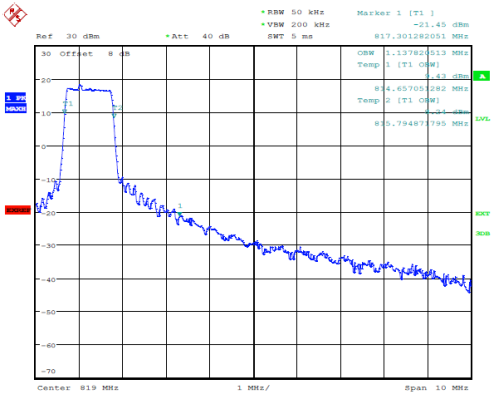
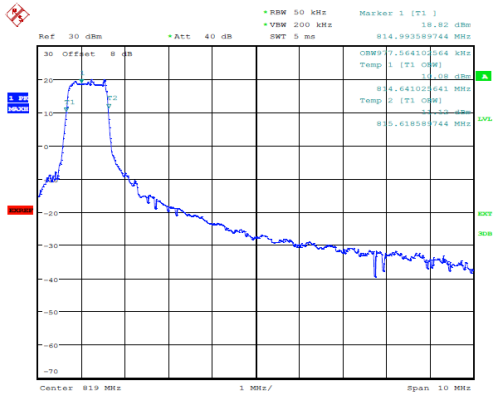
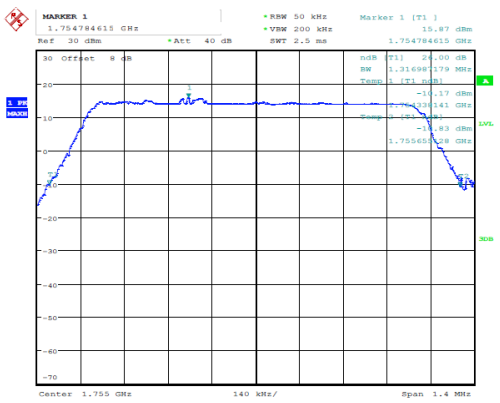
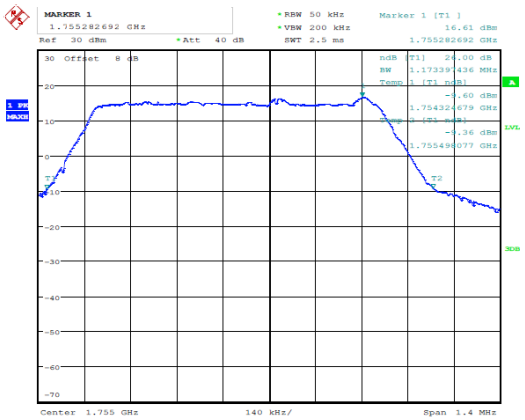
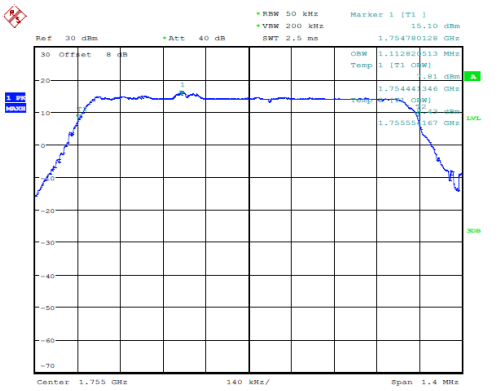
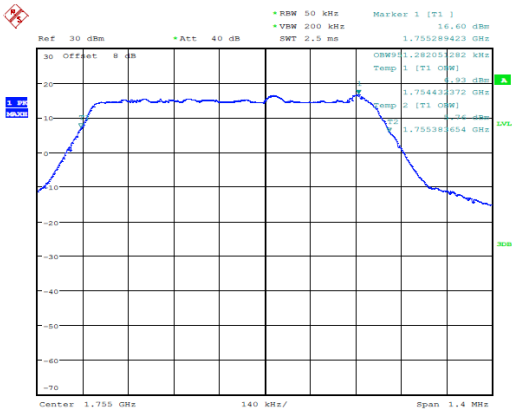
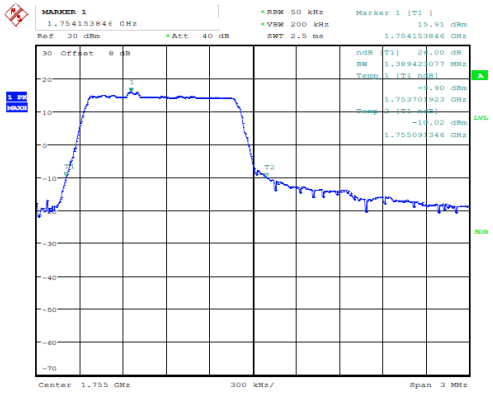
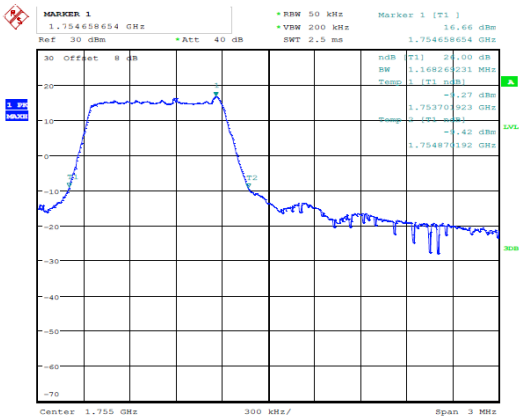
	

5.5.9 LTE Band 66

LTE Band 66			
Bandwidth	Modulation	Bandwidth(MHz)	
		99% Power	-26dBc
1.4MHz	QPSK	1.11	1.32
	16QAM	0.95	1.17
3MHz	QPSK	1.12	1.39
	16QAM	0.96	1.17
5MHz	QPSK	1.12	1.38
	16QAM	0.96	1.18
10MHz	QPSK	1.12	1.33
	16QAM	0.99	1.30
15MHz	QPSK	1.13	1.39
	16QAM	1.01	1.30
20MHz	QPSK	1.12	1.38
	16QAM	1.03	1.31

LTE Band 66_ Channel Bandwidth: 1.4 MHz	
QPSK	16QAM
-26dBc	
	
99%	
	

LTE Band 66_ Channel Bandwidth: 3 MHz	
QPSK	16QAM
-26dBc	
	
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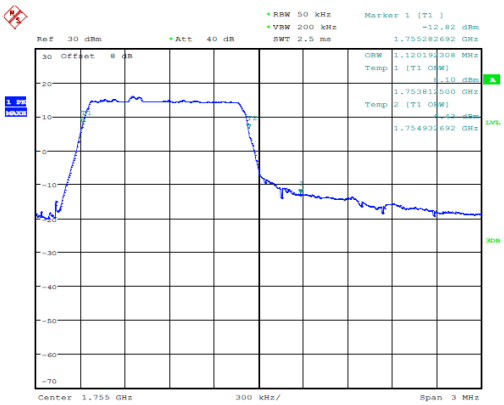
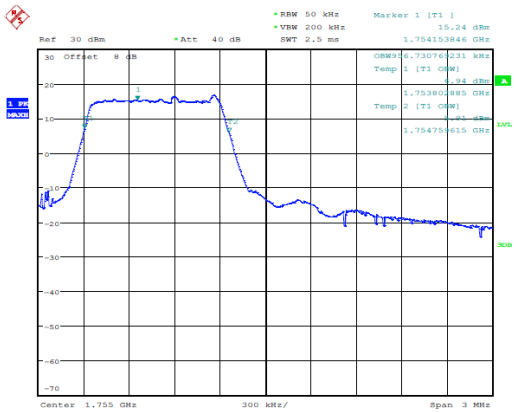
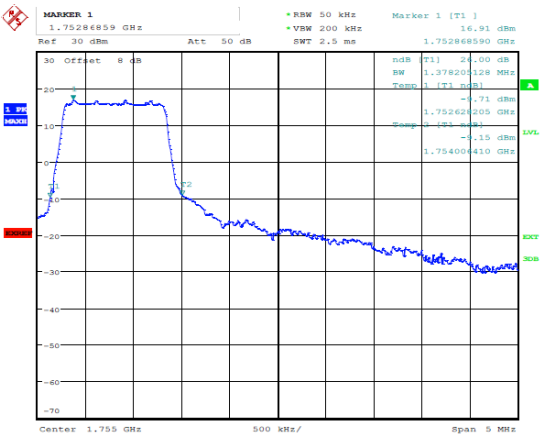
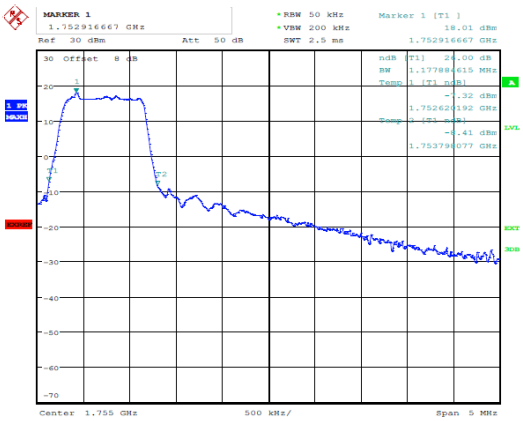
	

LTE Band 66_ Channel Bandwidth: 5 MHz	
QPSK	16QAM
-26dBc	
	
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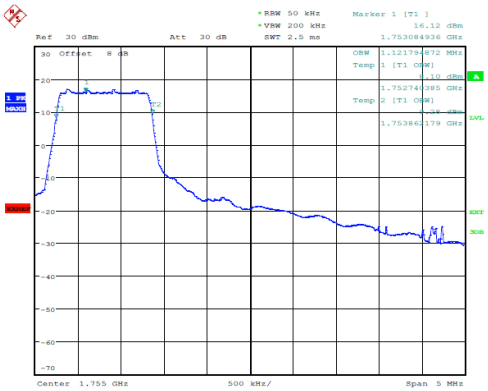
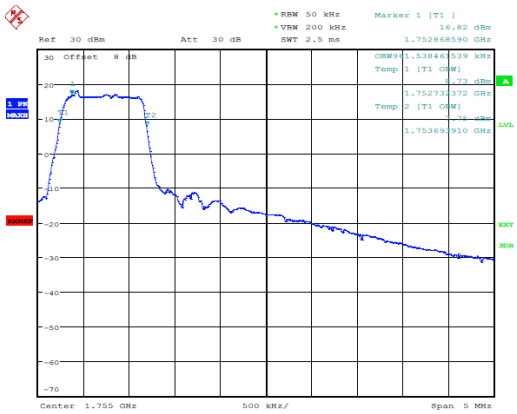
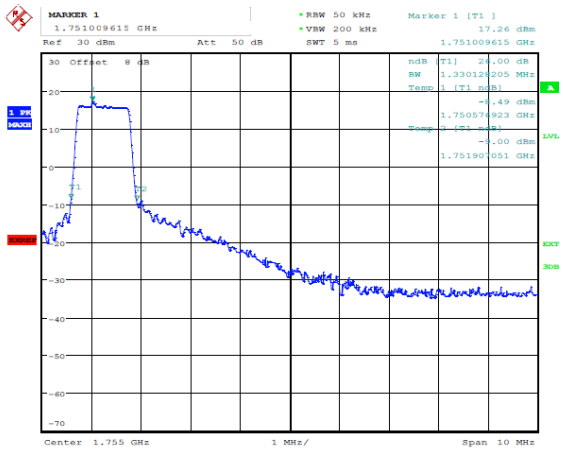
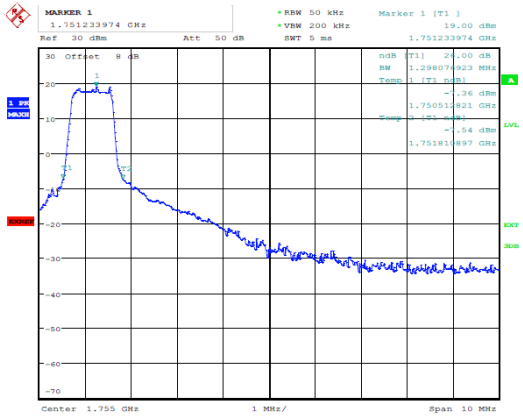
	

LTE Band 66_ Channel Bandwidth: 10 MHz	
QPSK	16QAM
-26dBc	
	
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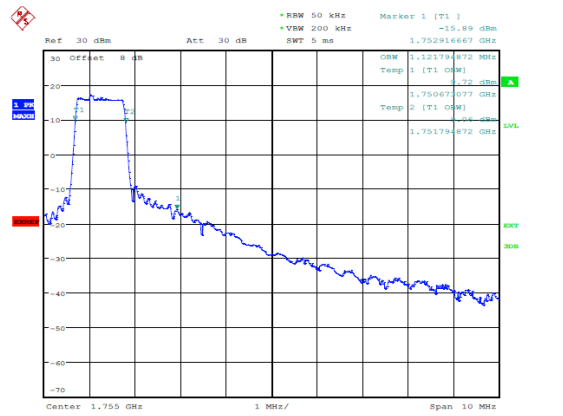
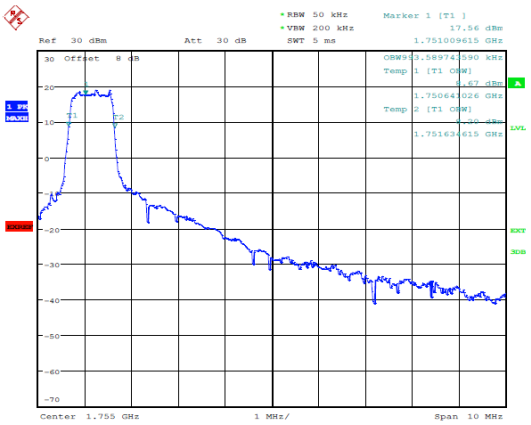
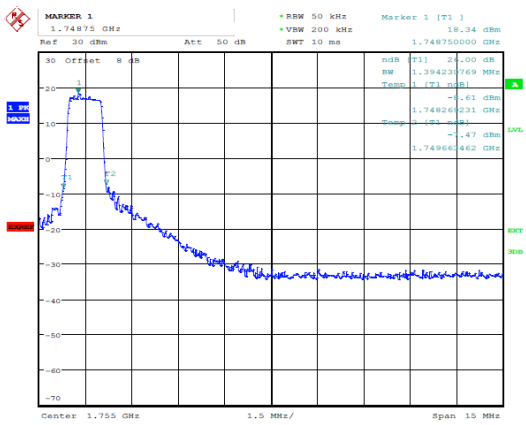
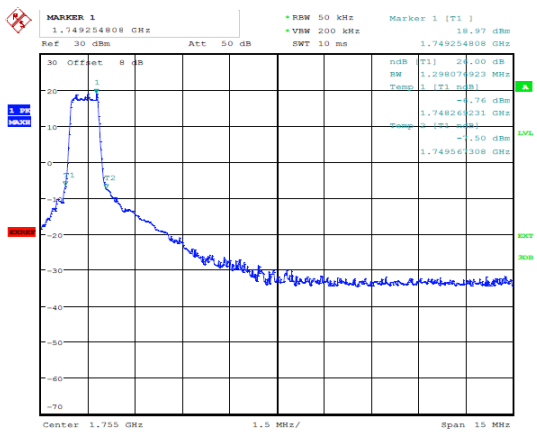
	

LTE Band 66_ Channel Bandwidth: 15 MHz	
QPSK	16QAM
-26dBc	
	
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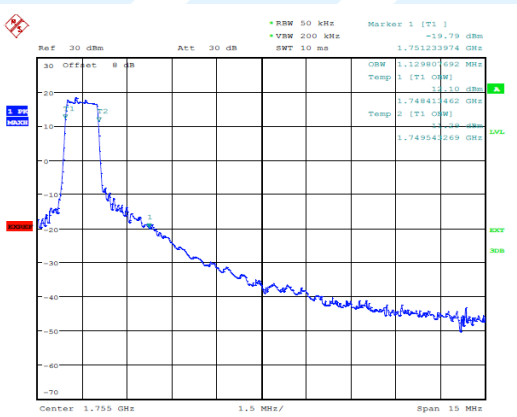
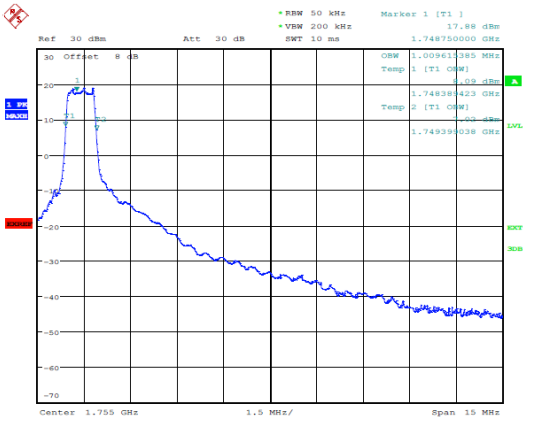
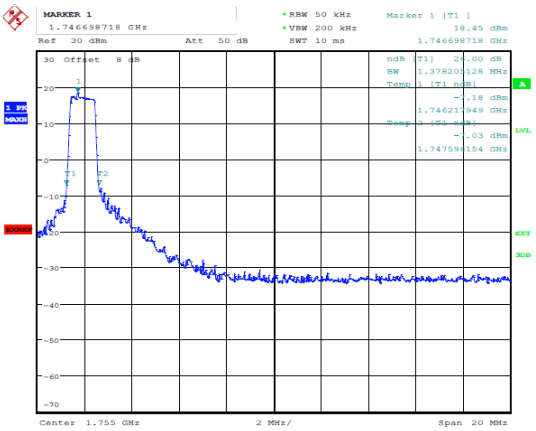
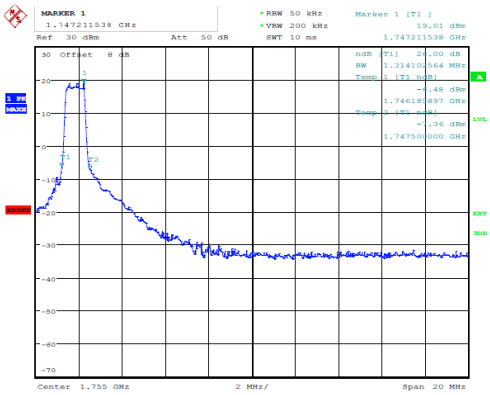
	

LTE Band 66_ Channel Bandwidth: 20 MHz	
QPSK	16QAM
-26dBc	
	
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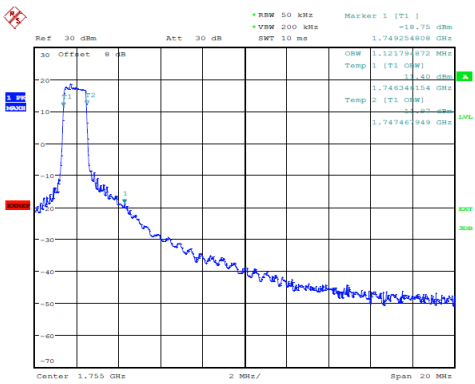
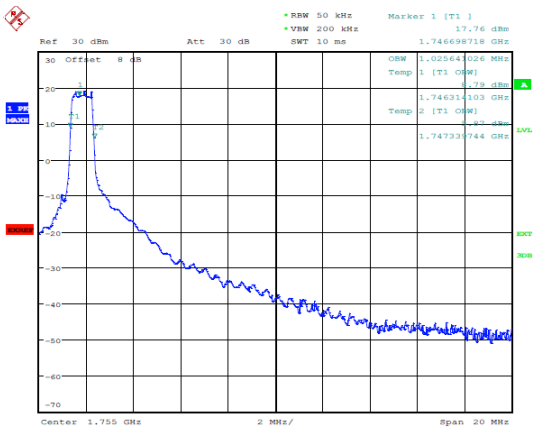
	

5.6 BAND EDGE AT ANTENNA TERMINALS

Test Requirement: **LTE Band 2 & LTE Band 25:** FCC 47 CFR Part 24.238(a)
LTE Band 4 & LTE Band 66: FCC 47 CFR Part 27.53(h)(1)
LTE Band 5 & LTE Band 26: FCC 47 CFR Part 22.917(a)
LTE Band 12 : FCC 47 CFR Part 27.53(g)
LTE Band 13: FCC 47 CFR Part 27.53(c)(2)
LTE Band 26: FCC 47 CFR Part 90.691

LTE Band 2 & LTE Band 25: RSS-133 Issue 6, Section 6.5
LTE Band 4 & LTE Band 66: RSS-139 Issue 3, Section 6.6
LTE Band 5: RSS-132 Issue 3, Section 5.5
LTE Band 12 & LTE Band 13: RSS-130 Issue 2, Section 4.7

Test Method: ANSI C63.26-2015 & KDB 971168 D01v03r01

Limit:

FCC 47 CFR Part 24.238(a), 27.53(h)(1), 22.917(a) :
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to -13 dBm.

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

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

FCC 47 CFR Part 90.691:
(a)(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.
(a)(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.

RSS-130 Issue 2, Section 4.7,
General unwanted emissions limits: The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10 log10 p (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

Additional unwanted emissions limits:
In addition to the limit outlined in section 4.7.1 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 log10 p (watts), dB, for base and fixed equipment, and
   ii. 65 + 10 log10 p (watts), dB, for mobile and portable equipment.
b) The e.i.r.p. in the band 1559-1610 MHz shall not exceed -70 dBW/MHz for wideband signal and -80 dBW for discrete emission with bandwidth less than 700 Hz.

RSS-132 Issue 3, Section 5.5,

In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p (watts).

After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

RSS-133 Issue 6, Section 6.5,
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 log10 p(watts).

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 log10 p(watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

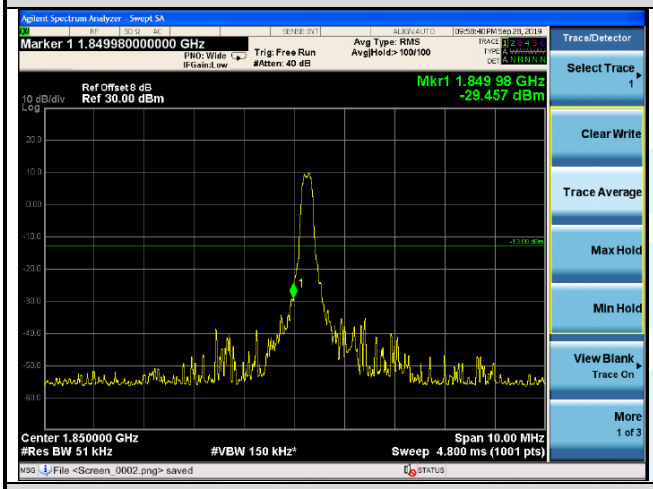
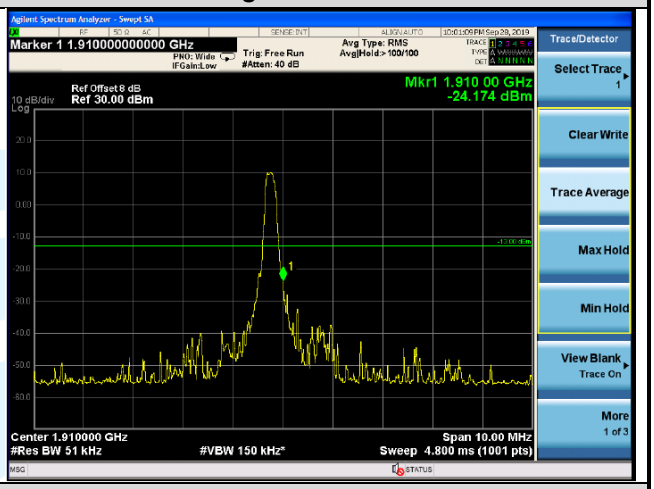
RSS-139 Issue 3, Section 6.6,
In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block,2 which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least 43 + 10 log10 p (watts) dB.
After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least 43 + 10 log10 p (watts) dB.

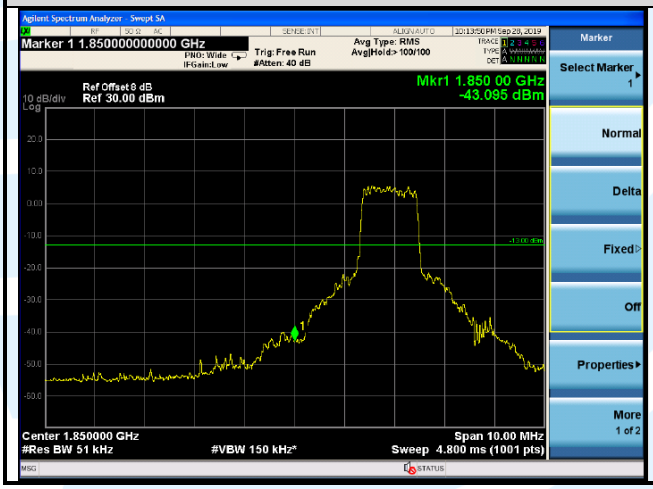
Test Procedure:
The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer.
For each band edge measurement:
1) Set the spectrum analyzer span to include the block edge frequency.
2) Set a marker to point the corresponding band edge frequency in each test case.
3) Set display line at -13 dBm
4) Set resolution bandwidth to at least 1% of emission bandwidth.
5) Set spectrum analyzer with RMS detector.
6) Record the max trace plot into the test report

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

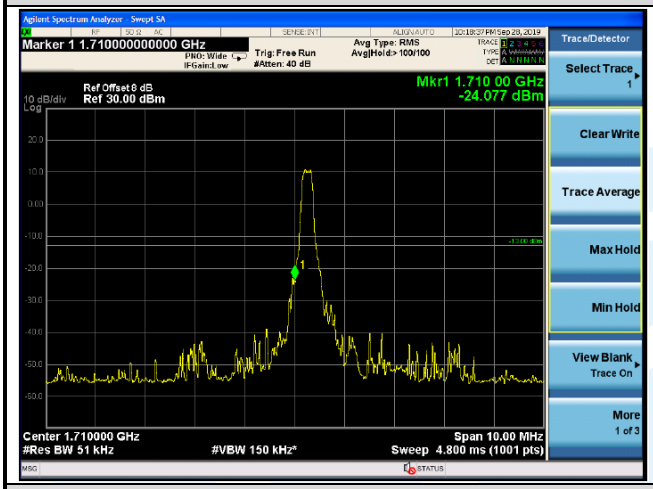
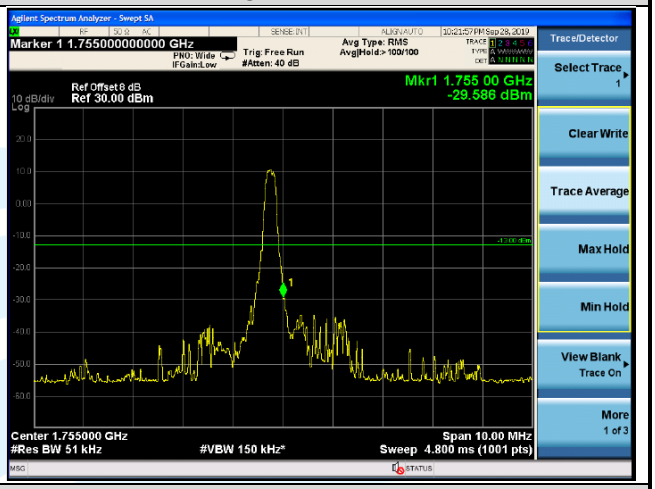
Test Setup:	Refer to section 4.2.2 for details.
Instruments Used:	Refer to section 3 for details
Test Mode:	Link mode
Test Results:	Pass

5.6.1 LTE Band 2

LTE Band 2 / 1.4 MHz / QPSK	
1#0-0	1#5-0
Lowest Channel	Highest Channel
	

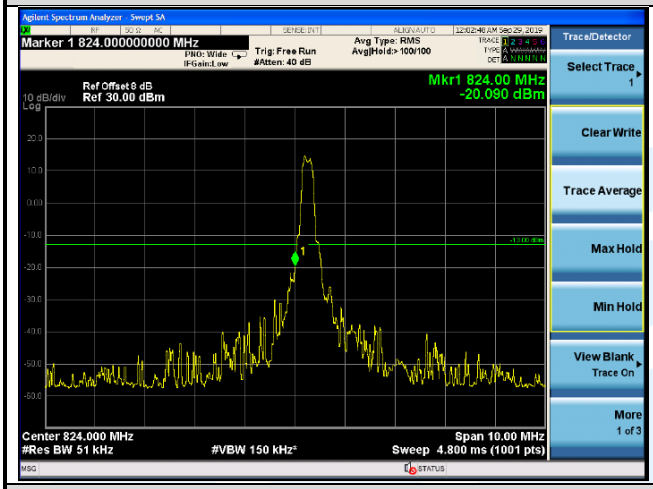
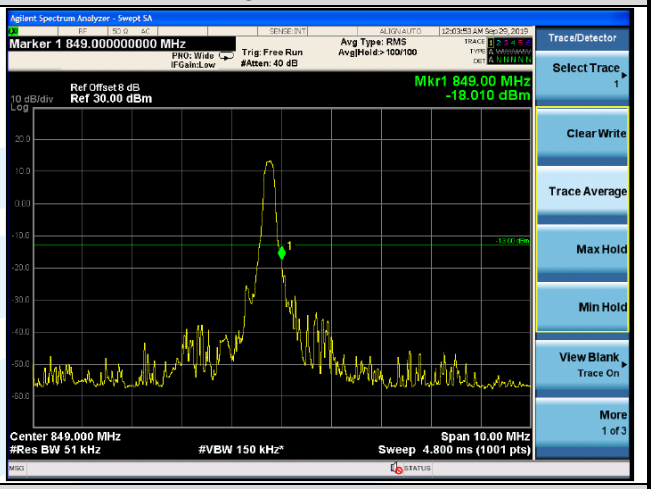
LTE Band 2 / 20 MHz / QPSK	
6#0-0	6#0-15
Lowest Channel	Highest Channel
	

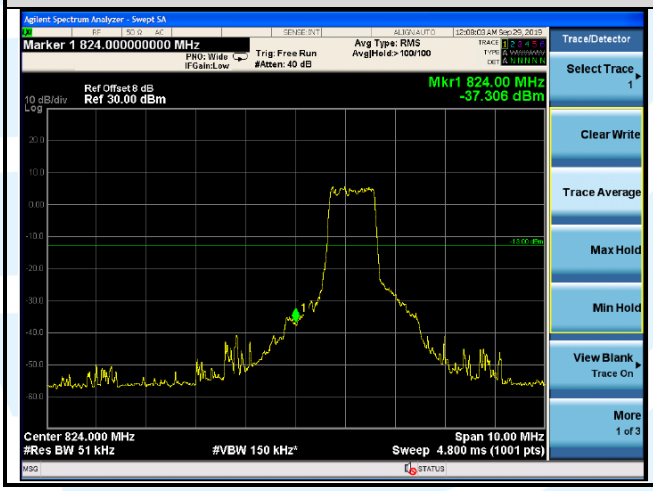
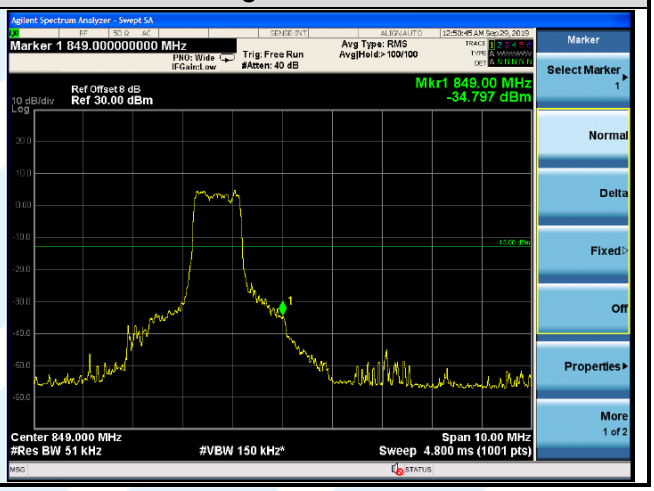
5.6.2 LTE Band 4

LTE Band 4 / 1.4 MHz / QPSK	
1#0-0	1#5-0
Lowest Channel	Highest Channel
	

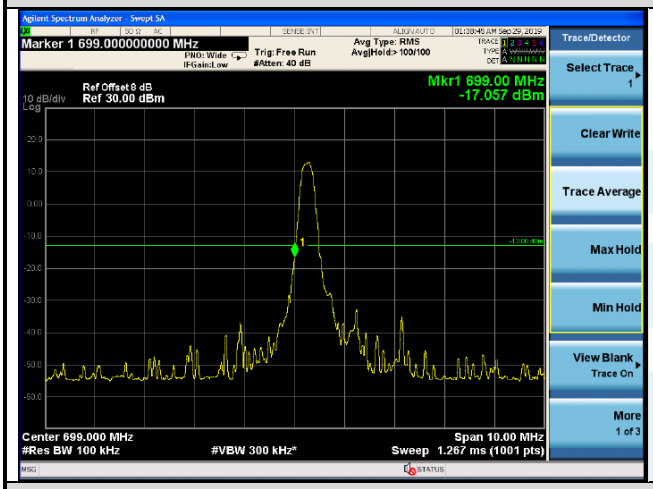
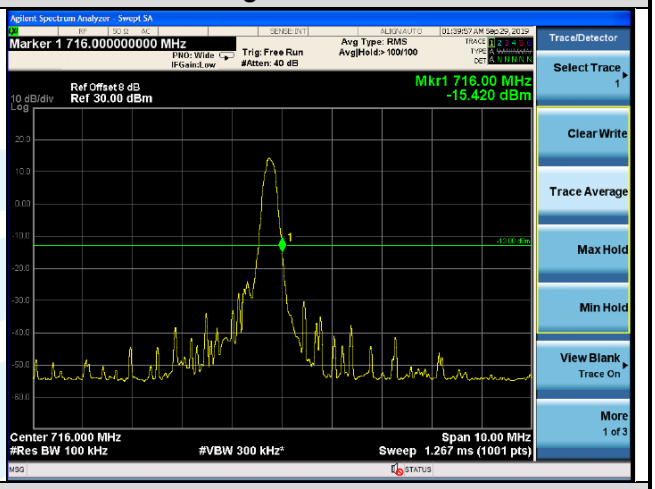
LTE Band 4 / 20 MHz / QPSK	
6#0-0	6#0-15
Lowest Channel	Highest Channel

5.6.3 LTE Band 5

LTE Band 5 / 1.4 MHz / QPSK	
1#0-0	1#5-0
Lowest Channel	Highest Channel
	

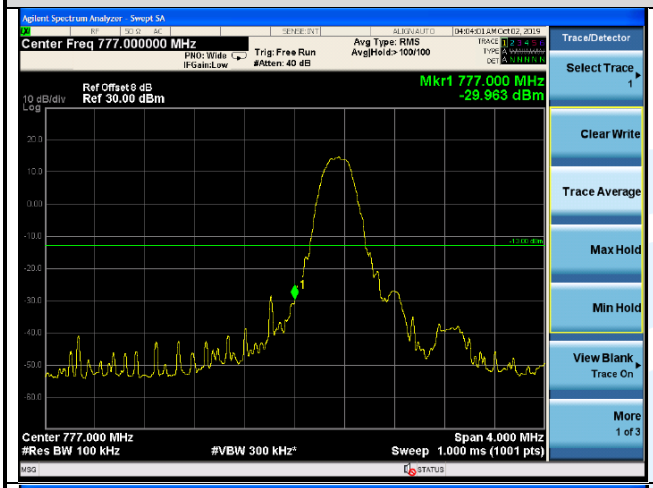
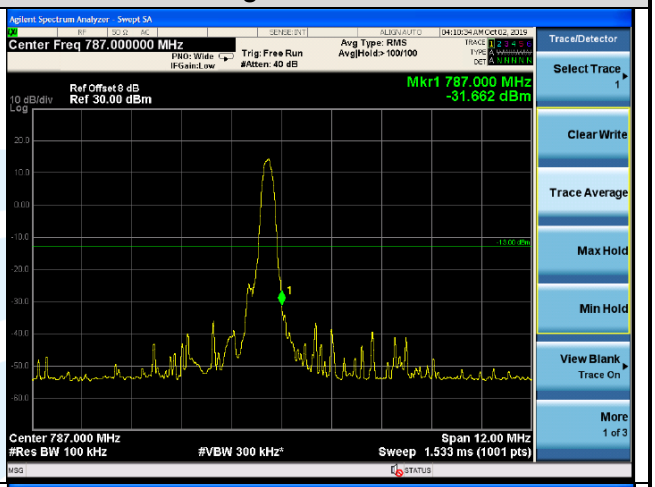
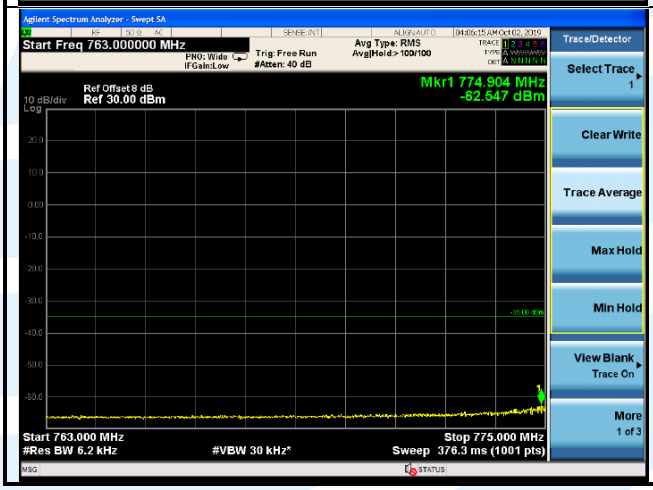
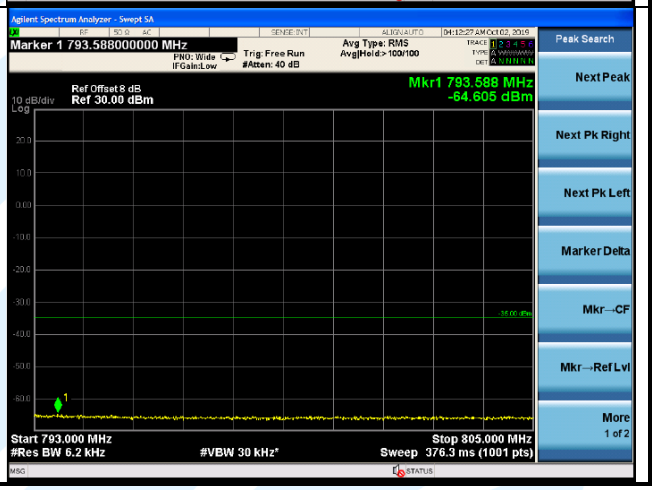
LTE Band 5 / 10 MHz / QPSK	
5#0-0	5#0-7
Lowest Channel	Highest Channel
	

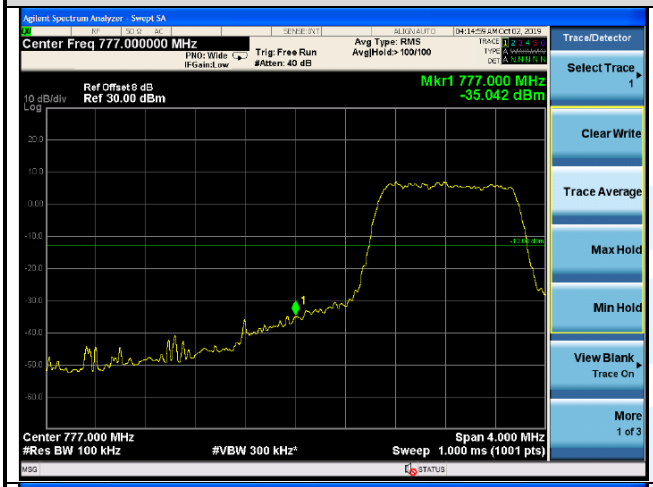
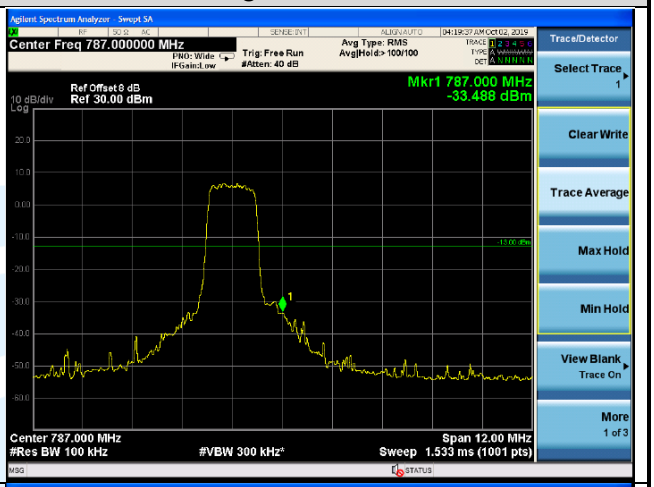
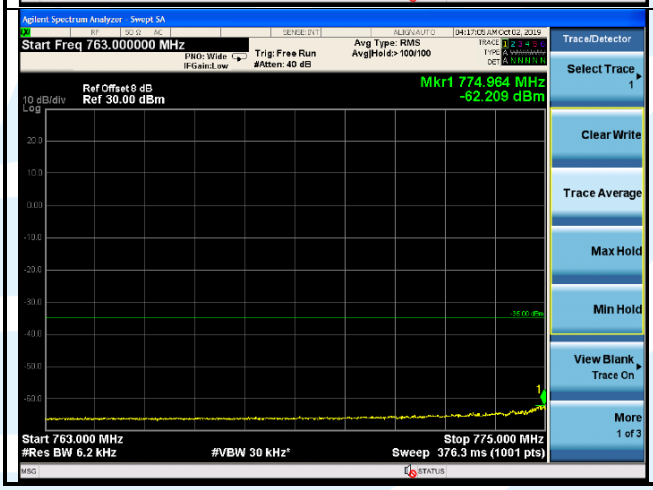
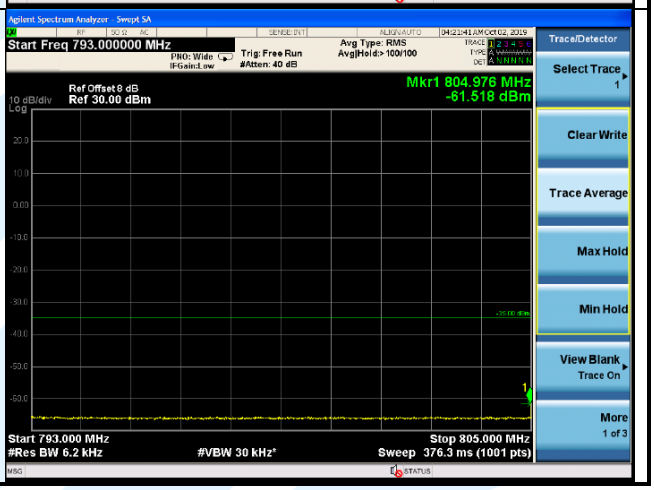
5.6.4 LTE Band 12

LTE Band 12 / 1.4 MHz / QPSK	
1#0-0	1#5-0
Lowest Channel	Highest Channel
	

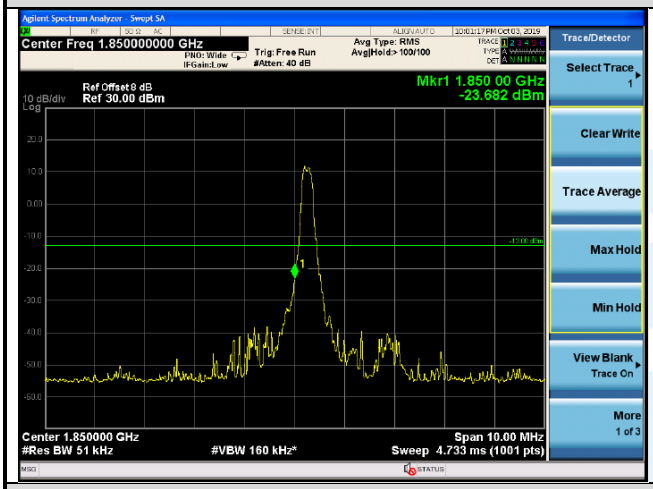
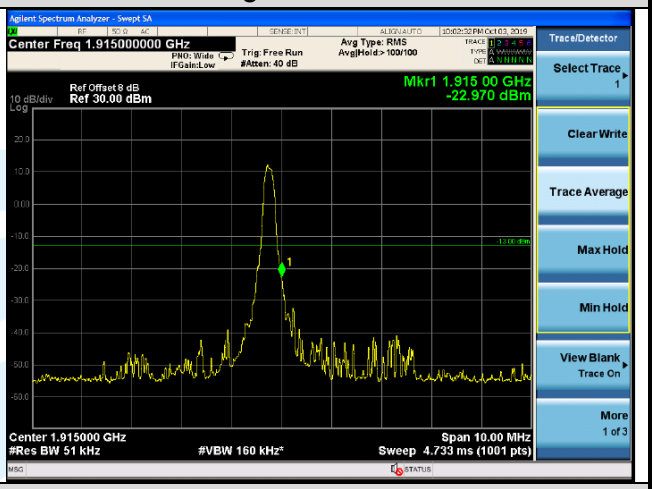
LTE Band 12 / 10 MHz / QPSK	
6#0-0	6#0-7
Lowest Channel	Highest Channel

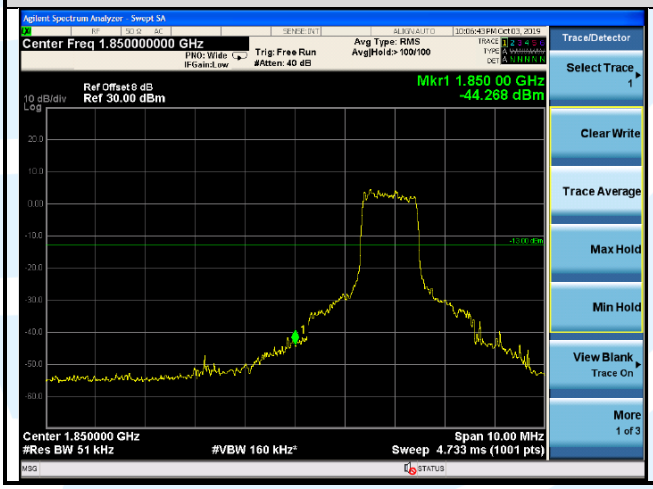
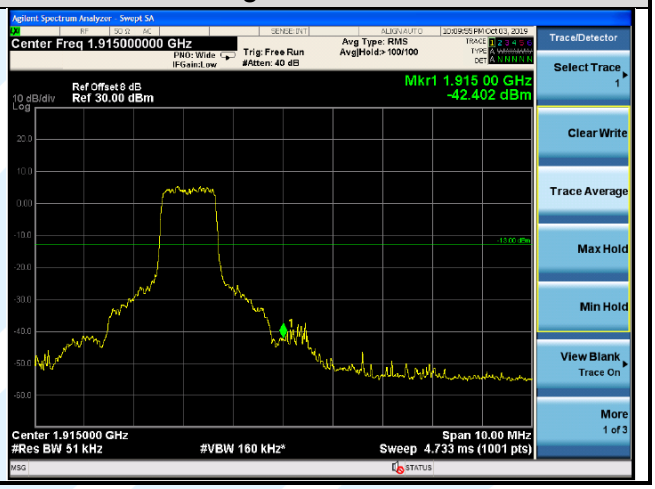
5.6.5 LTE Band 13

LTE Band 13 / 1.4 MHz / QPSK	
1#0-0	1#5-3
Lowest Channel	Highest Channel
	
	

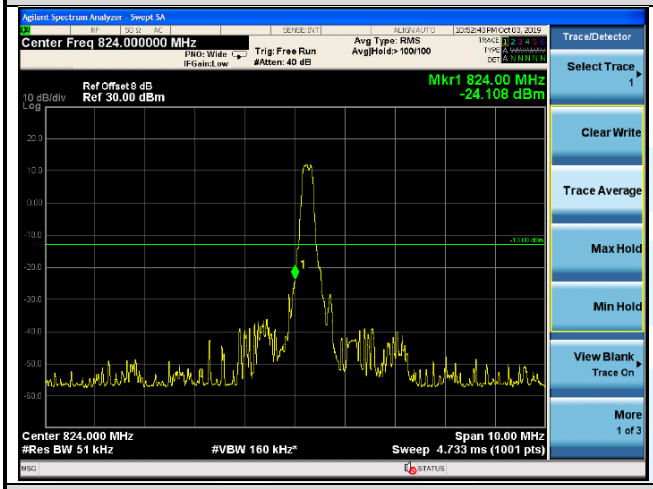
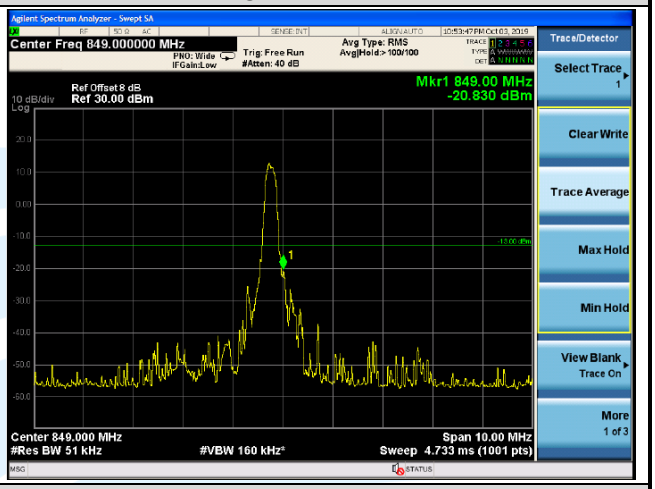
LTE Band 13 / 10 MHz / QPSK	
6#0-0	6#0-7
Lowest Channel	Highest Channel
	
	

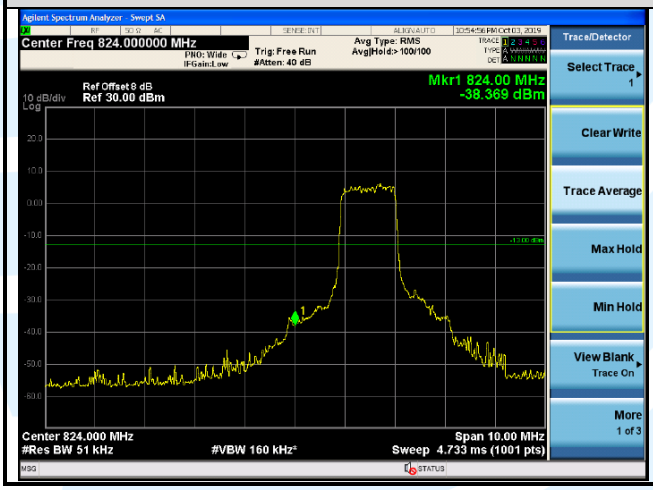
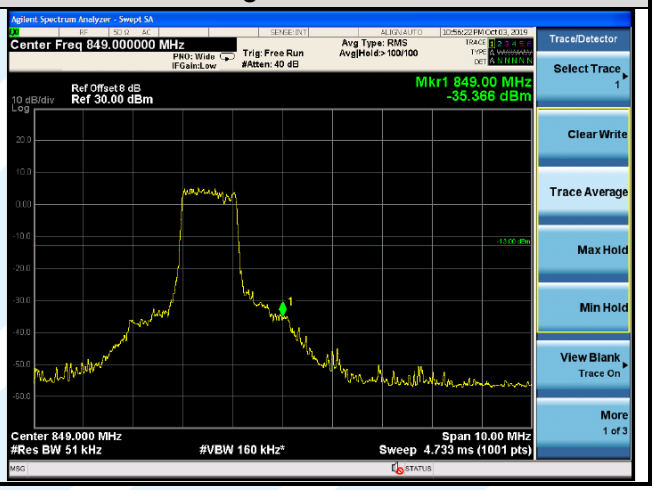
5.6.6 LTE Band 25

LTE Band 25 / 1.4 MHz / QPSK	
1#0-0	1#5-0
Lowest Channel	Highest Channel
	

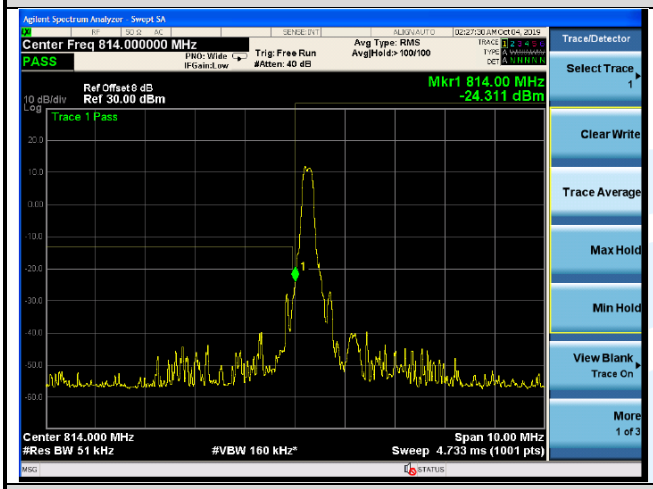
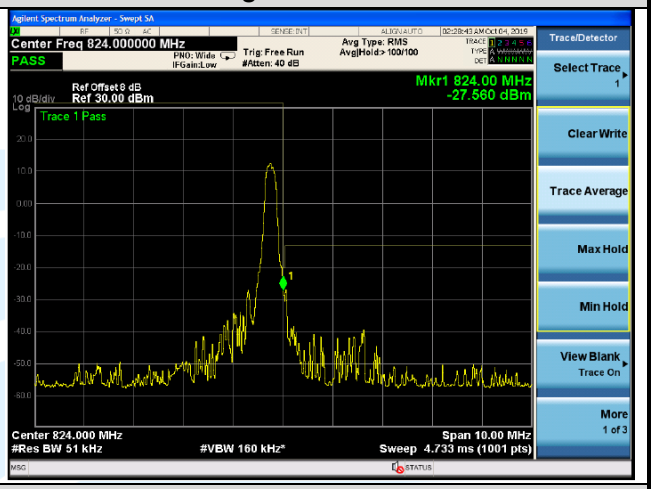
LTE Band 25 / 20 MHz / QPSK	
6#0-0	6#0-15
Lowest Channel	Highest Channel
	

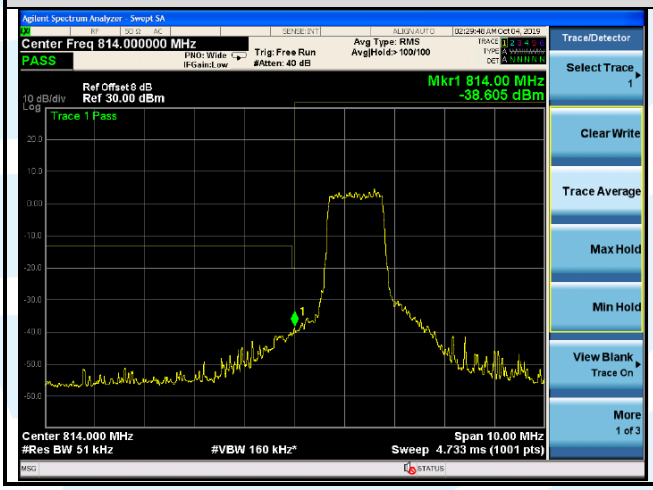
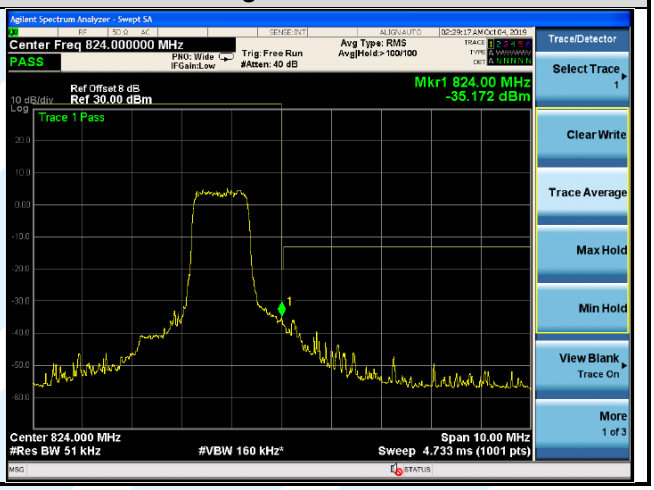
5.6.7 LTE Band 26

LTE Band 26 / 1.4 MHz / QPSK	
1#0-0	1#5-0
Lowest Channel	Highest Channel
	

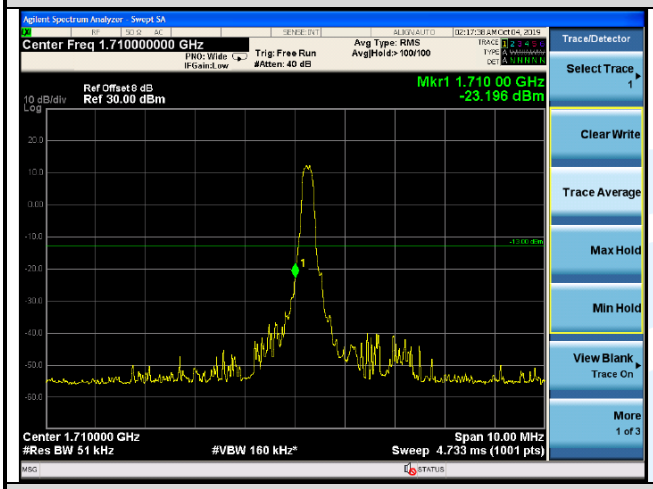
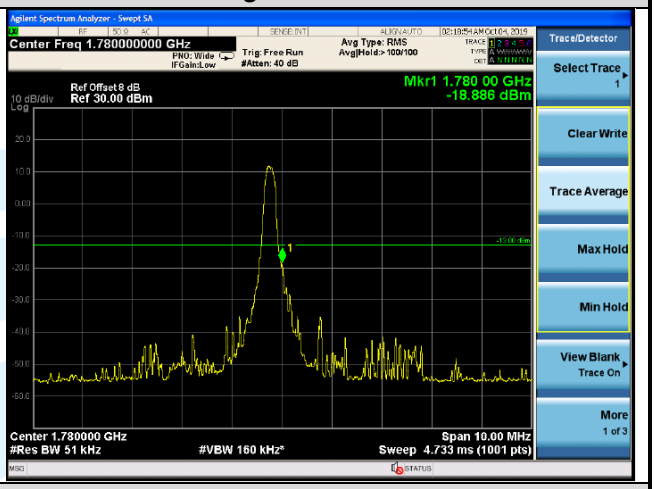
LTE Band 15 / 20 MHz / QPSK	
6#0-0	6#0-11
Lowest Channel	Highest Channel
	

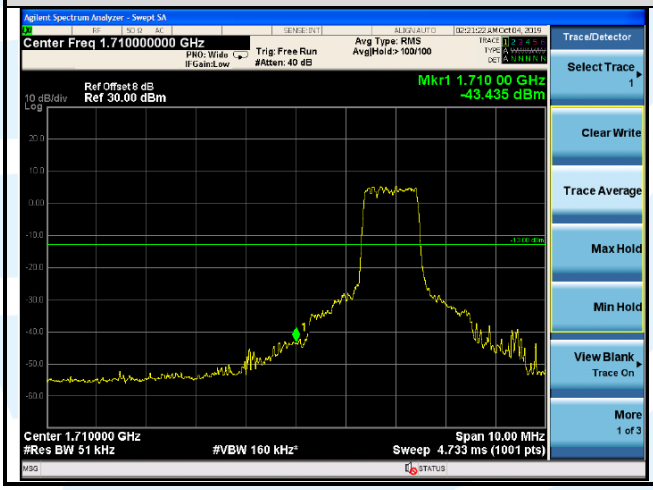
5.6.8 LTE Band 26 (Part 90S)

LTE Band 26 / 1.4 MHz / QPSK	
1#0-0	1#5-0
Lowest Channel	Highest Channel
	

LTE Band 26 / 10 MHz / QPSK	
6#0-0	6#0-7
Lowest Channel	Highest Channel
	

5.6.9 LTE Band 66

LTE Band 66 / 1.4 MHz / QPSK	
1#0-0	1#5-0
Lowest Channel	Highest Channel
	

LTE Band 26 / 20 MHz / QPSK	
6#0-0	6#0-15
Lowest Channel	Highest Channel
	

5.7 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Test Requirement: **LTE Band 2 & LTE Band 25:** FCC 47 CFR Part 24.238(a)
LTE Band 4 & LTE Band 66: FCC 47 CFR Part 27.53(h)
LTE Band 5 & LTE Band 26: FCC 47 CFR Part 22.917(a)
LTE Band 12: FCC 47 CFR Part 27.53(g)
LTE Band 13: FCC 47 CFR Part 27.53
LTE Band 26: FCC 47 CFR Part 90.691

LTE Band 2 & LTE Band 25: RSS-133 Issue 6, Section 6.5
LTE Band 4 & LTE Band 66: RSS-139 Issue 3, Section 6.6
LTE Band 5: RSS-132 Issue 3, Section 5.5
LTE Band 12 & LTE Band 13 : RSS-130 Issue 2, Section 4.7

Test Method: ANSI C63.26-2015 & KDB 971168 D01v03r01

Limit:

FCC 47 CFR Part 24.238(a), 27.53(h)(1), 22.917(a), 27.53(g), 27.53(c)(2), 90.691:
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to -13 dBm.

RSS-132 Issue 3, Section 5.5, RSS-133 Issue 6, Section 6.6, RSS-139 Issue 3, Section 6.5, RSS-130 Issue 2, Section 4.7:
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 43 + 10 log(P) dB. The emission limit equal to -13 dBm.

Test Procedure:
The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range. b. Measuring frequency range is from 30 MHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

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

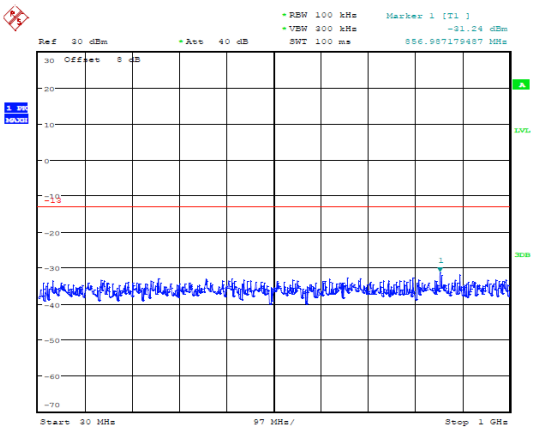
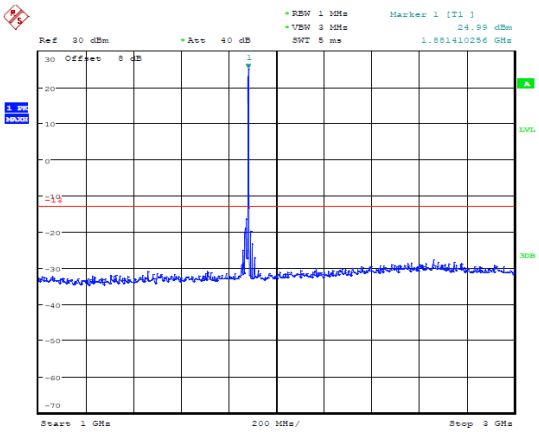
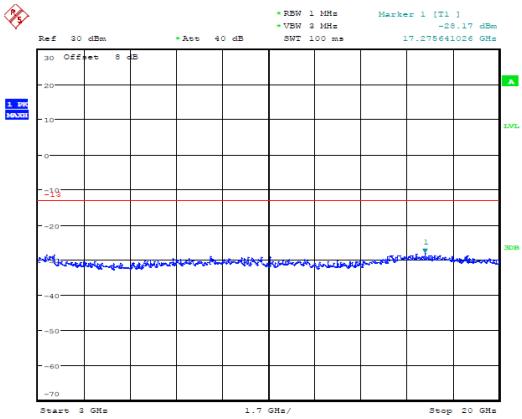
Test Setup: Refer to section 4.2.2 for details.

Instruments Used: Refer to section 3 for details

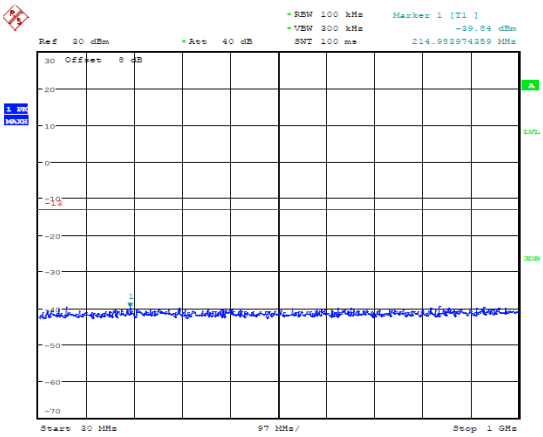
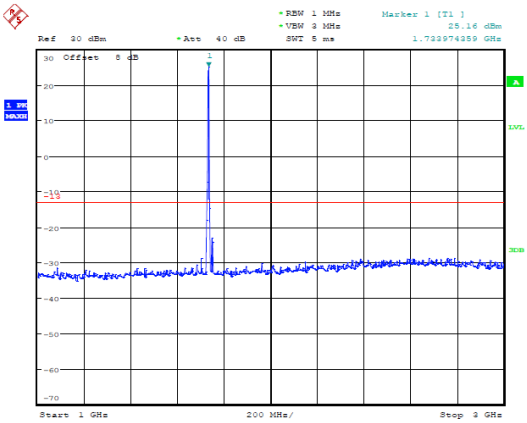
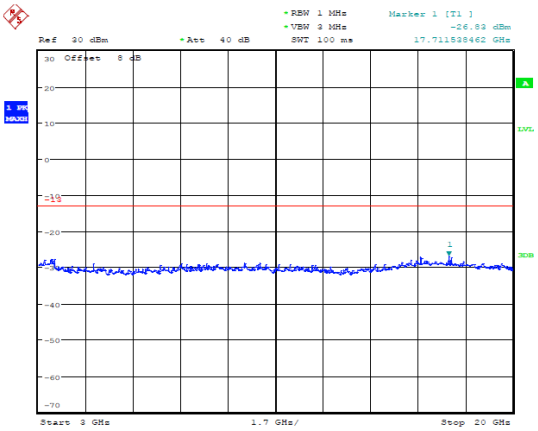
Test Mode: Link mode

Test Results: Pass

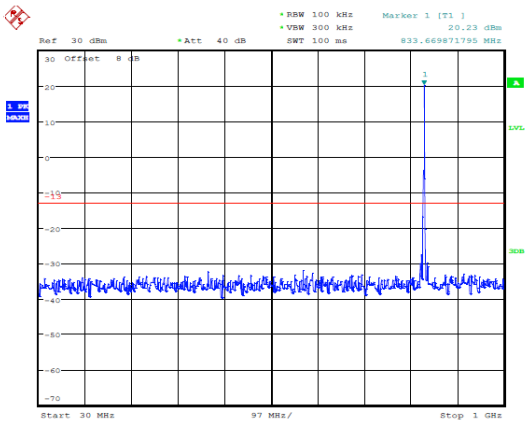
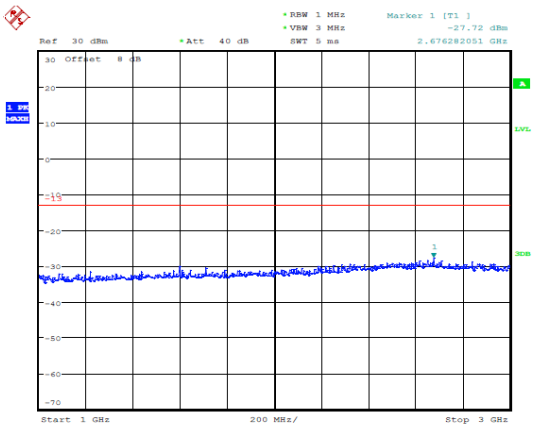
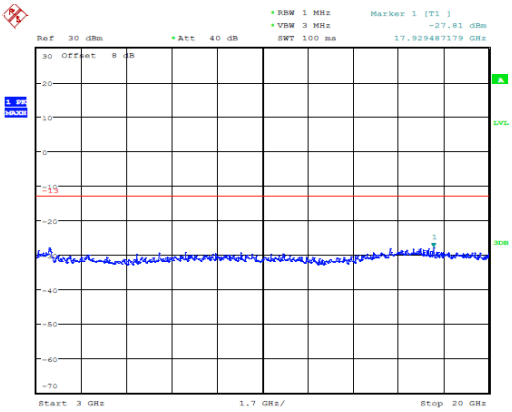
5.7.1 LTE Band 2

LTE Band 2
30MHz – 1GHz

1GHz – 3GHz

3GHz – 20GHz


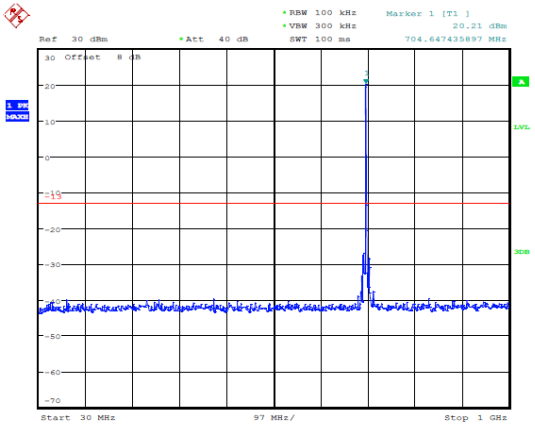
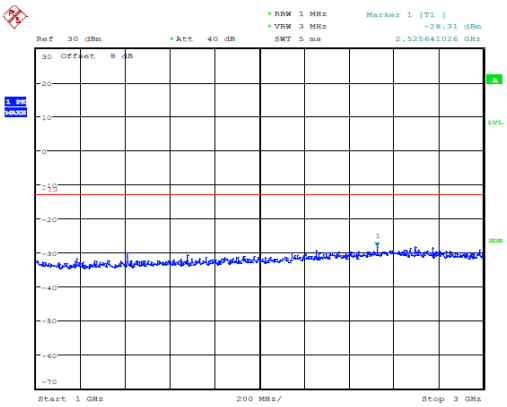
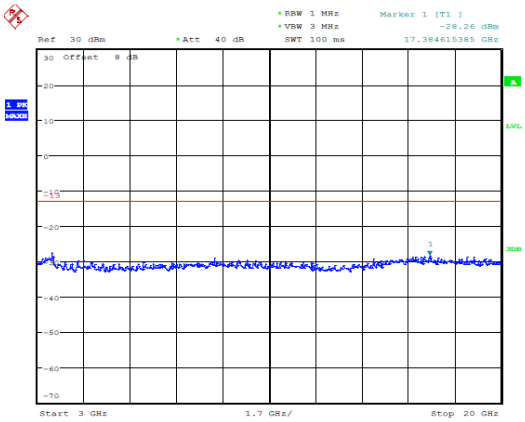
5.7.2 LTE Band 4

LTE Band 4
30MHz – 1GHz

1GHz – 3GHz

3GHz – 20GHz


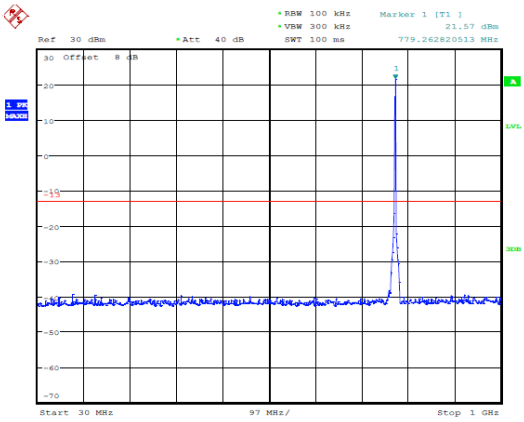
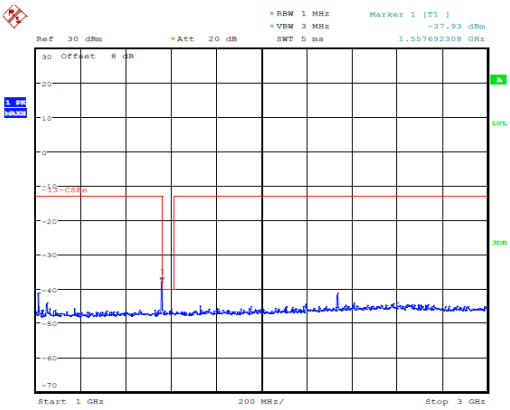
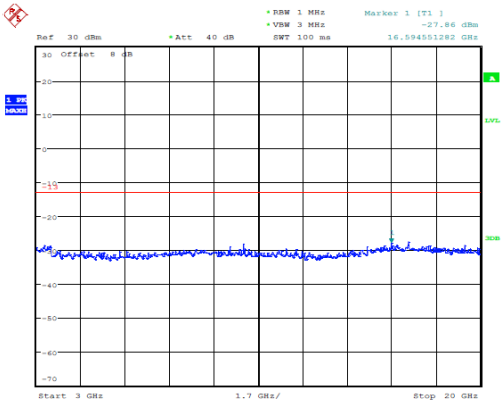
5.7.3 LTE Band 5

LTE Band 5
30MHz – 1GHz

1GHz – 3GHz

3GHz – 20GHz


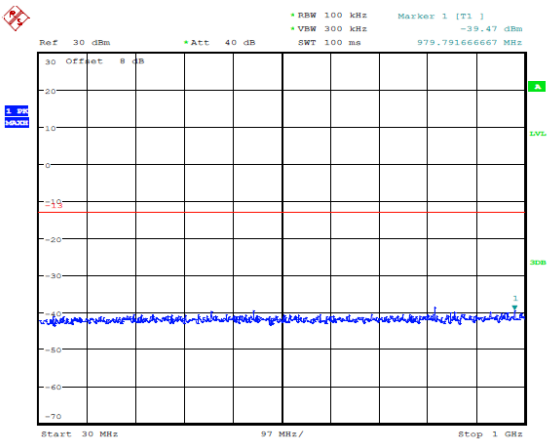
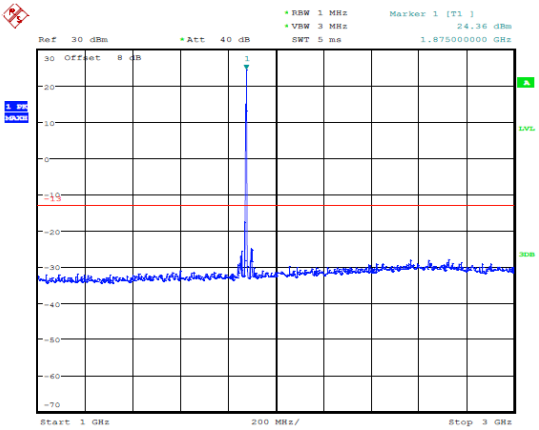
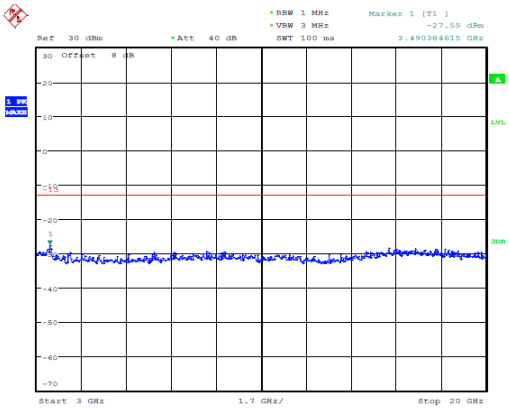
5.7.4 LTE Band 12

LTE Band 12
30MHz – 1GHz

1GHz – 3GHz

3GHz – 20GHz


5.7.5 LTE Band 13

LTE Band 13
30MHz – 1GHz

1GHz – 3GHz

3GHz – 20GHz


5.7.6 LTE Band 25

LTE Band 25
30MHz – 1GHz

1GHz – 3GHz

3GHz – 20GHz