LTE FDD Band 4-5MHz Channel Bandwidth
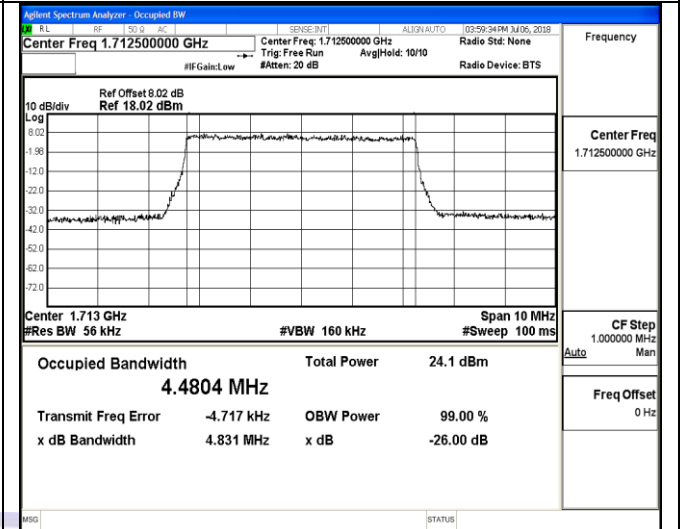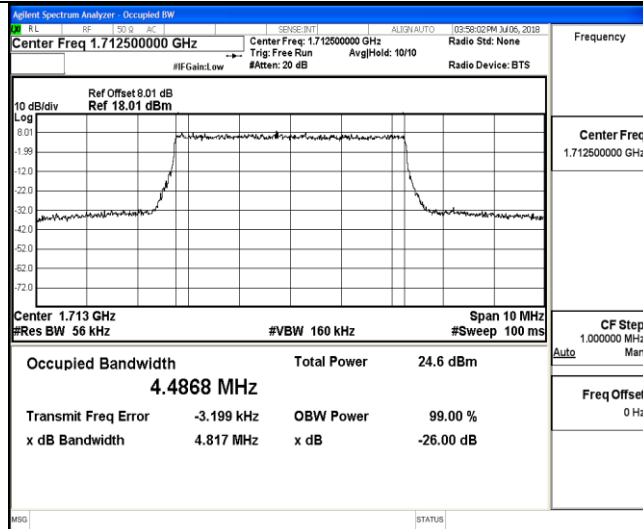
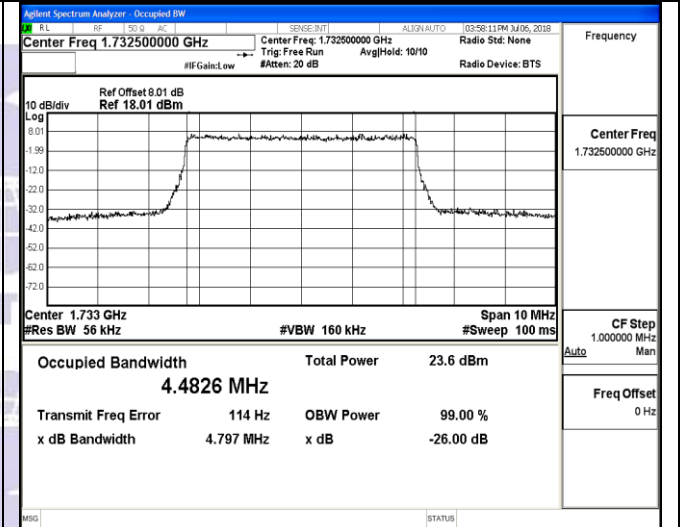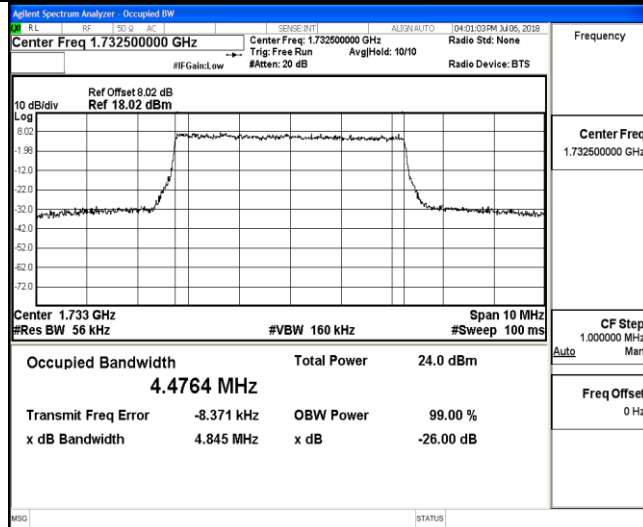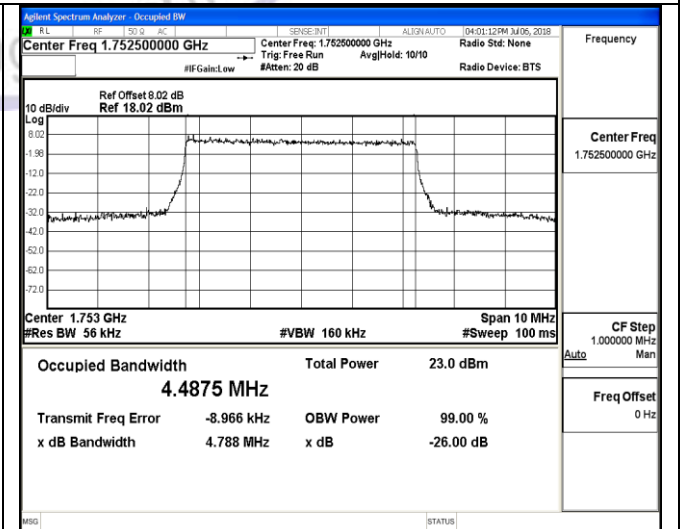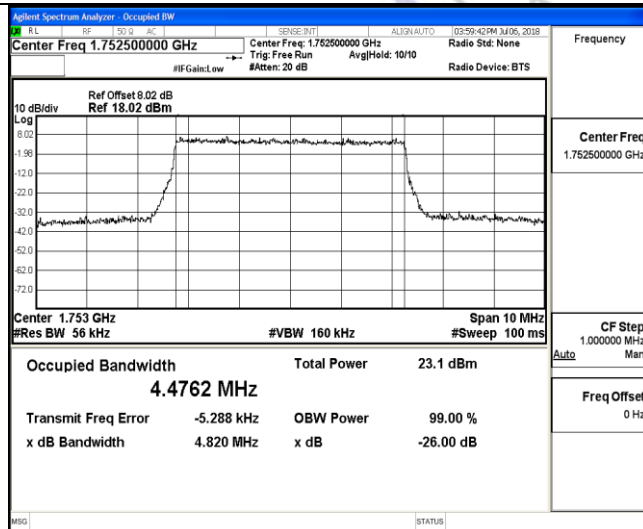| QPSK	16QAM

Low Channel

QPSK — Occupied Bandwidth **4.4868 MHz**	16QAM — Occupied Bandwidth **4.4804 MHz**
Total Power 24.6 dBm	Total Power 24.1 dBm
Transmit Freq Error -3.199 kHz	Transmit Freq Error -4.717 kHz
OBW Power 99.00 %	OBW Power 99.00 %
x dB Bandwidth 4.817 MHz	x dB Bandwidth 4.831 MHz
x dB -26.00 dB	x dB -26.00 dB
25RB#0	25RB#0

Middle Channel

QPSK — Occupied Bandwidth **4.4764 MHz**	16QAM — Occupied Bandwidth **4.4826 MHz**
Total Power 24.0 dBm	Total Power 23.6 dBm
Transmit Freq Error -8.371 kHz	Transmit Freq Error 114 Hz
OBW Power 99.00 %	OBW Power 99.00 %
x dB Bandwidth 4.845 MHz	x dB Bandwidth 4.797 MHz
x dB -26.00 dB	x dB -26.00 dB
25RB#0	25RB#0

High Channel

QPSK — Occupied Bandwidth **4.4762 MHz**	16QAM — Occupied Bandwidth **4.4875 MHz**
Total Power 23.1 dBm	Total Power 23.0 dBm
Transmit Freq Error -5.288 kHz	Transmit Freq Error -8.966 kHz
OBW Power 99.00 %	OBW Power 99.00 %
x dB Bandwidth 4.820 MHz	x dB Bandwidth 4.788 MHz
x dB -26.00 dB	x dB -26.00 dB
25RB#0	25RB#0

LTE FDD Band 4-10MHz Channel Bandwidth	
QPSK	16QAM

Low Channel

Occupied Bandwidth 8.9493 MHz	**Occupied Bandwidth 8.9499 MHz**
Total Power 23.8 dBm	Total Power 23.5 dBm
Transmit Freq Error -2.209 kHz	Transmit Freq Error -6.080 kHz
OBW Power 99.00 %	OBW Power 99.00 %
x dB Bandwidth 9.495 MHz	x dB Bandwidth 9.493 MHz
x dB -26.00 dB	x dB -26.00 dB
50RB#0	50RB#0

Middle Channel
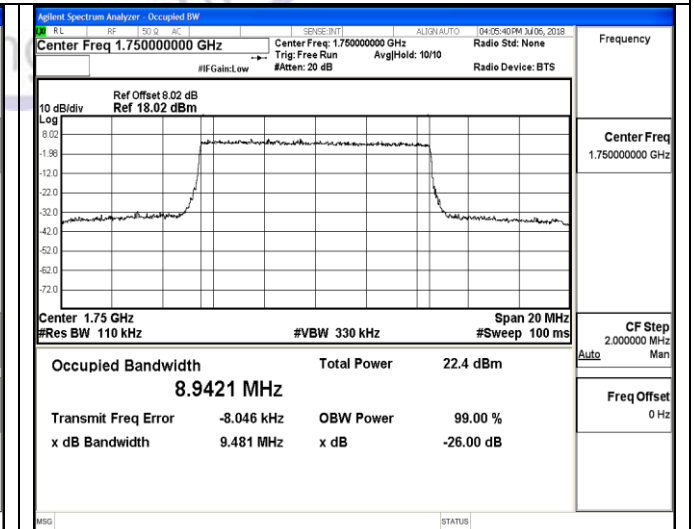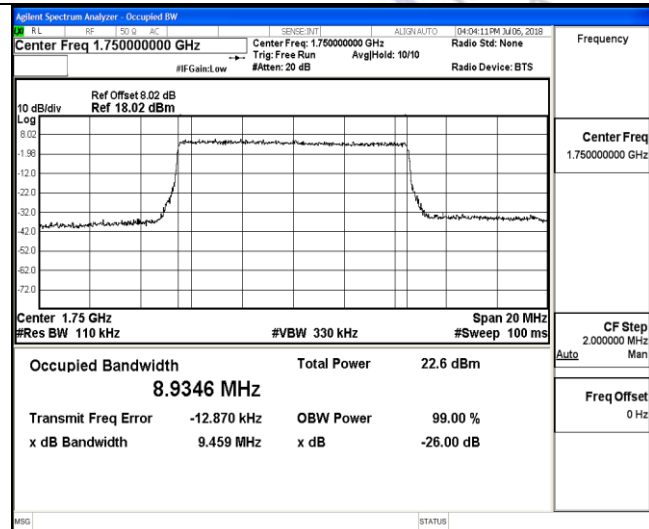
Occupied Bandwidth 8.9318 MHz	**Occupied Bandwidth 8.9483 MHz**
Total Power 23.3 dBm	Total Power 22.9 dBm
Transmit Freq Error -8.370 kHz	Transmit Freq Error 593 Hz
OBW Power 99.00 %	OBW Power 99.00 %
x dB Bandwidth 9.466 MHz	x dB Bandwidth 9.507 MHz
x dB -26.00 dB	x dB -26.00 dB
50RB#0	50RB#0

High Channel

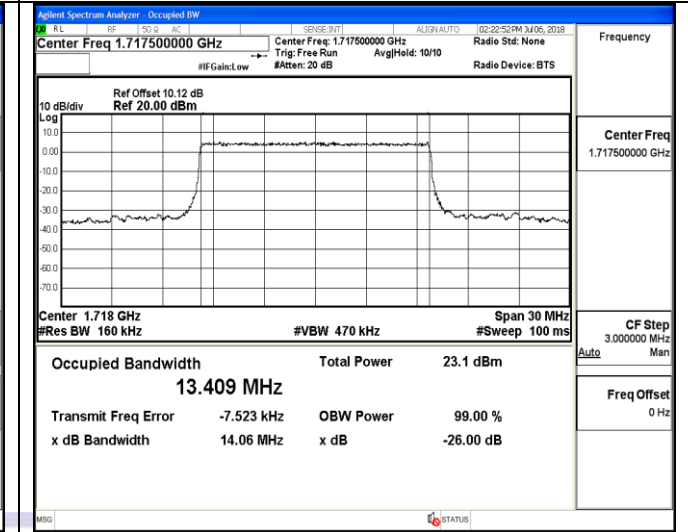|	
Occupied Bandwidth 8.9346 MHz	**Occupied Bandwidth 8.9421 MHz**
Total Power 22.6 dBm	Total Power 22.4 dBm
Transmit Freq Error -12.870 kHz	Transmit Freq Error -8.046 kHz
OBW Power 99.00 %	OBW Power 99.00 %
x dB Bandwidth 9.459 MHz	x dB Bandwidth 9.481 MHz
x dB -26.00 dB	x dB -26.00 dB
50RB#0	50RB#0

LTE FDD Band 4-15MHz Channel Bandwidth

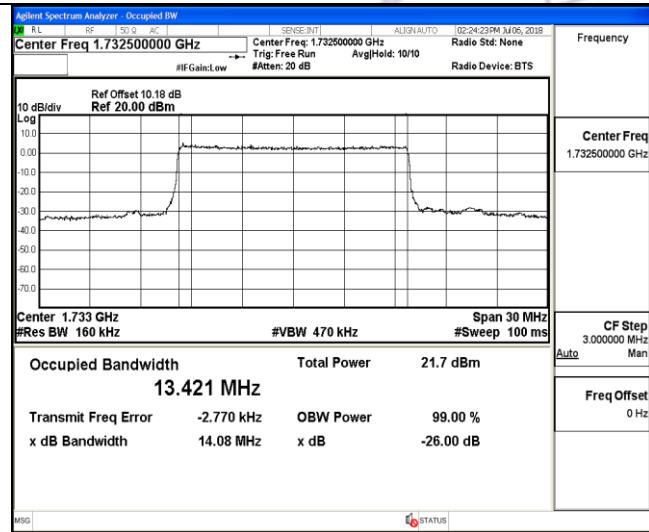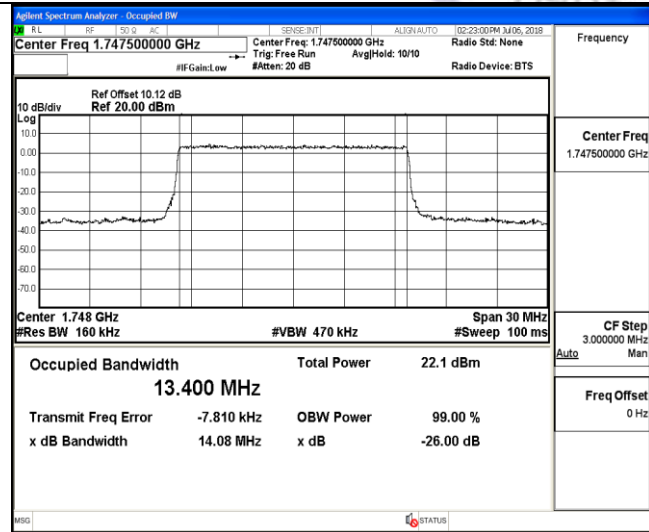| QPSK	16QAM
Occupied Bandwidth 13.397 MHz	**Occupied Bandwidth** 13.409 MHz
Total Power 23.1 dBm	Total Power 23.1 dBm
Transmit Freq Error 7.728 kHz OBW Power 99.00 %	Transmit Freq Error -7.523 kHz OBW Power 99.00 %
x dB Bandwidth 14.06 MHz x dB -26.00 dB	x dB Bandwidth 14.06 MHz x dB -26.00 dB
75RB#0	*75RB#0*

Low Channel

QPSK	16QAM
Occupied Bandwidth 13.421 MHz	**Occupied Bandwidth** 13.385 MHz
Total Power 21.7 dBm	Total Power 22.0 dBm
Transmit Freq Error -2.770 kHz OBW Power 99.00 %	Transmit Freq Error 8.636 kHz OBW Power 99.00 %
x dB Bandwidth 14.08 MHz x dB -26.00 dB	x dB Bandwidth 14.04 MHz x dB -26.00 dB
75RB#0	*75RB#0*

Middle Channel

QPSK	16QAM
Occupied Bandwidth 13.400 MHz	**Occupied Bandwidth** 13.417 MHz
Total Power 22.1 dBm	Total Power 20.8 dBm
Transmit Freq Error -7.810 kHz OBW Power 99.00 %	Transmit Freq Error 1.015 kHz OBW Power 99.00 %
x dB Bandwidth 14.08 MHz x dB -26.00 dB	x dB Bandwidth 14.12 MHz x dB -26.00 dB
75RB#0	*75RB#0*

High Channel
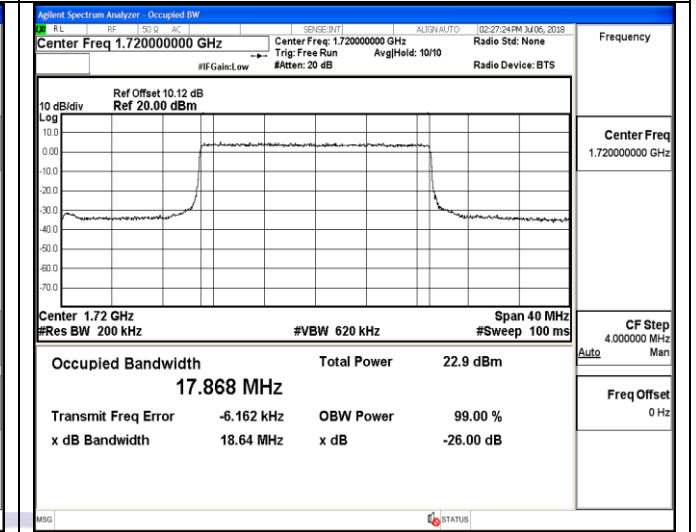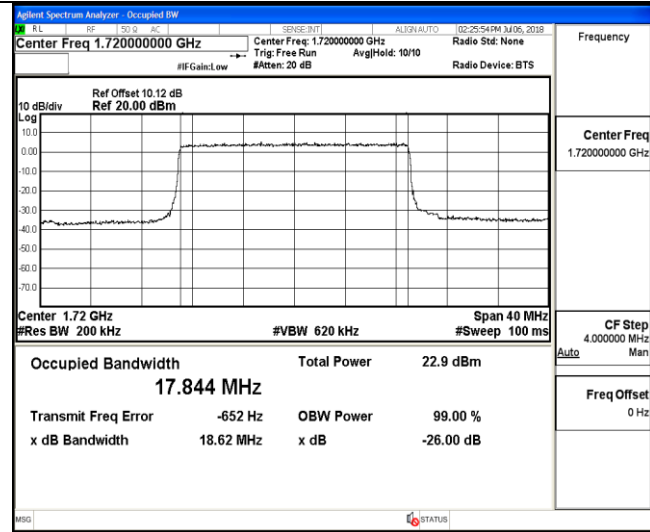
| LTE FDD Band 4-20MHz Channel Bandwidth	
QPSK	16QAM
100RB#0	100RB#0
Low Channel	
100RB#0	100RB#0
Middle Channel	
100RB#0	100RB#0
High Channel	
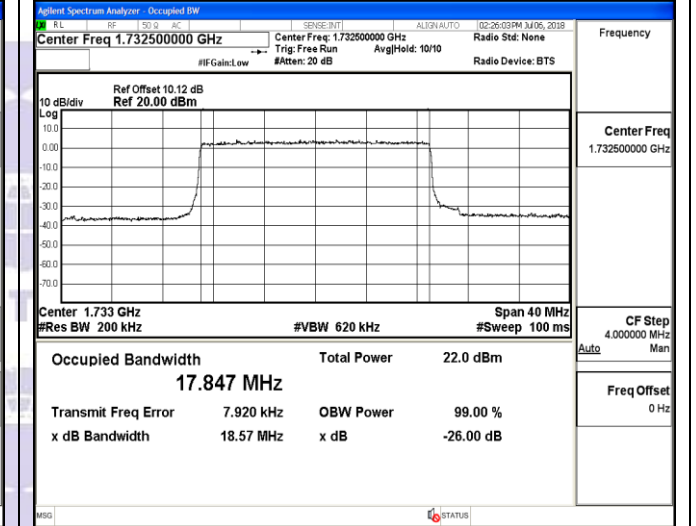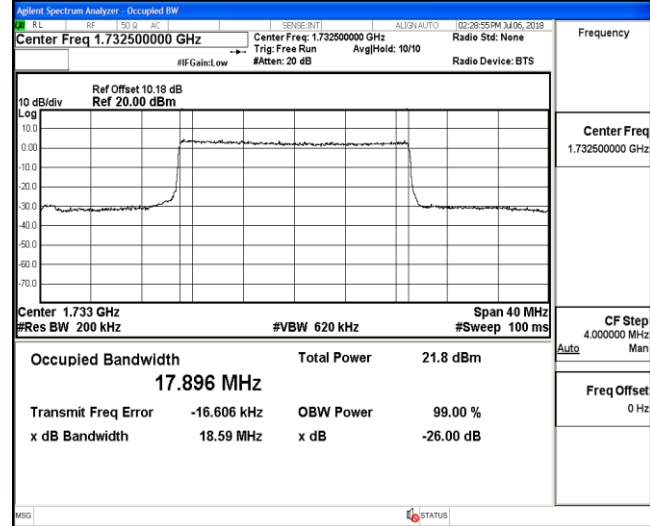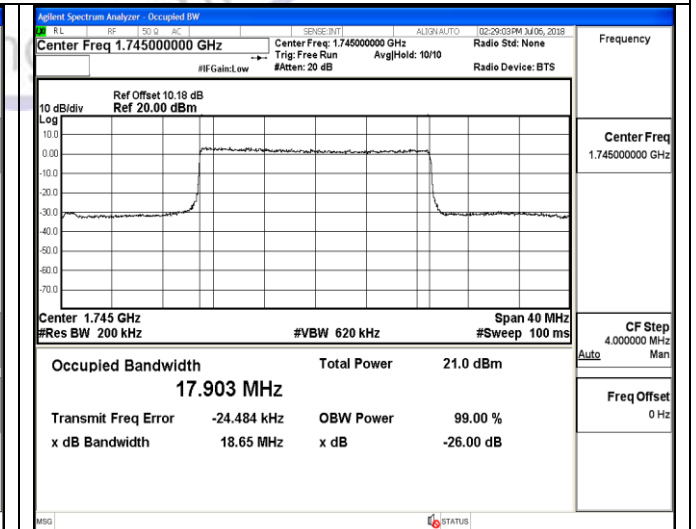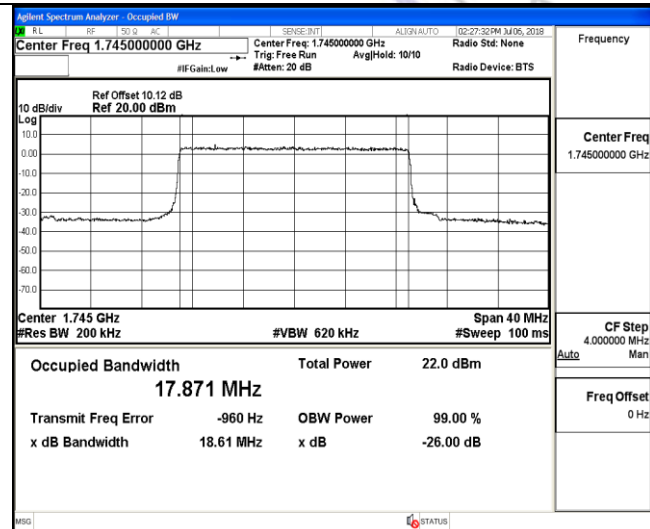
3.4. Band Edge compliance

<u>LIMIT</u>

According to §27.53 (h): For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log10(P) dB.

<u>TEST CONFIGURATION</u>
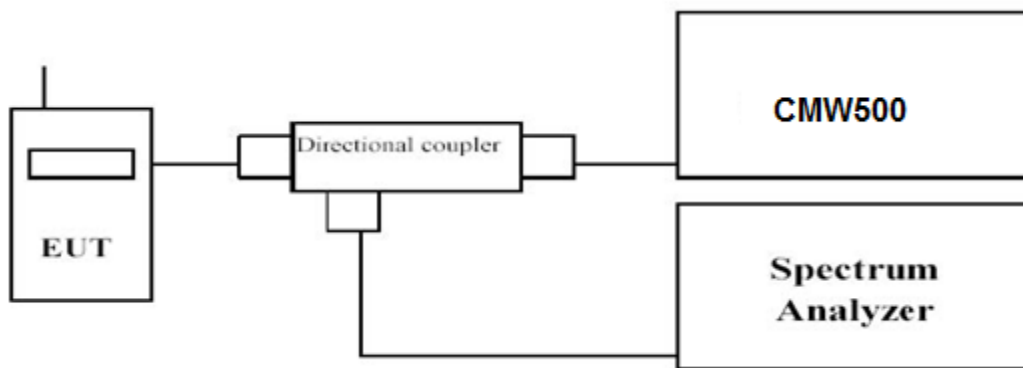
<u>TEST PROCEDURE</u>

1. The transmitter output port was connected to base station.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement.
3. Set EUT at maximum power through base station.
4. Select lowest and highest channels for each band and different modulation.
5. Measure Band edge using RMS (Average) detector by spectrum

<u>TEST RESULTS</u>

Remark:
    1. We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 4; recorded worst case for each Channel Bandwidth of LTE FDD Band 4.

LTE FDD Band 4-1.4MHz Channel Bandwidth Band Edge Compliance
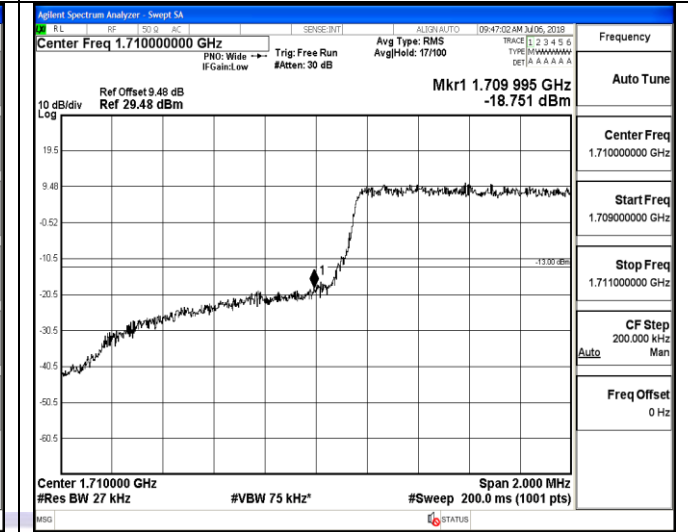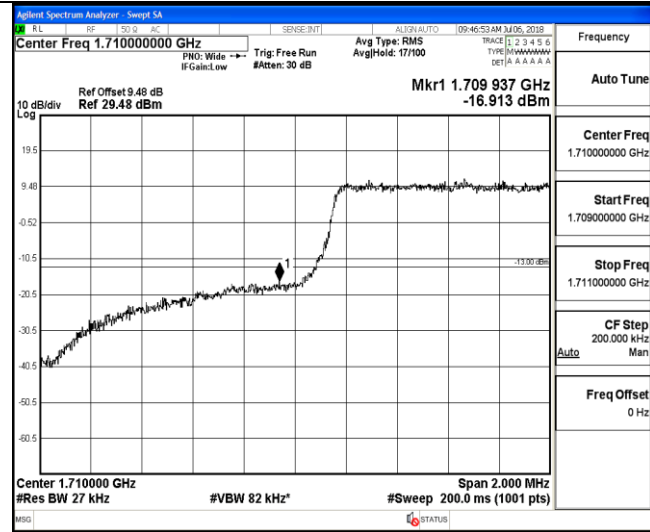
QPSK	*16QAM*
1RB#0	*1RB#0*
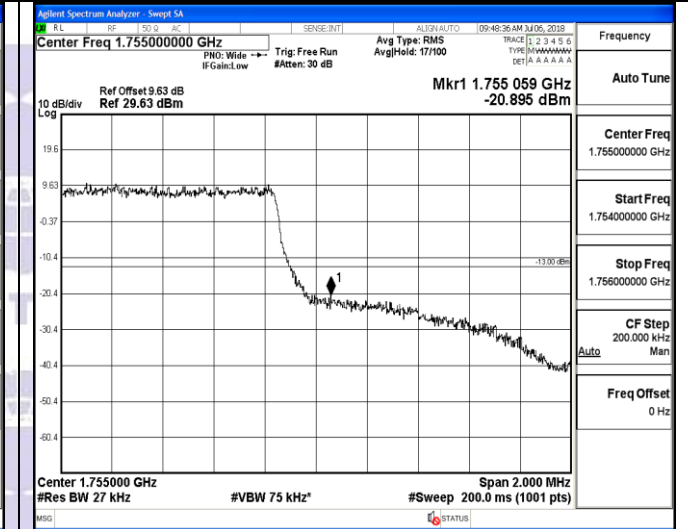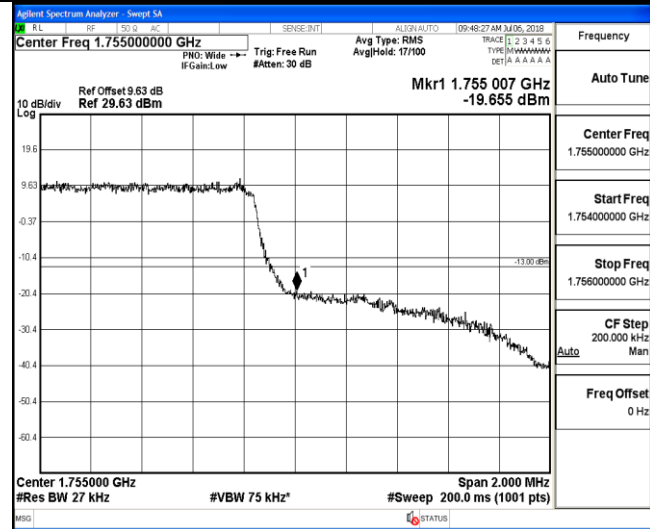
Low Channel

1RB#0	*1RB#0*

High Channel

LTE FDD Band 4-3MHz Channel Bandwidth Band Edge Compliance	
QPSK	16QAM
1RB#0	1RB#0
Low Channel	
1RB#0	1RB#0
High Channel	
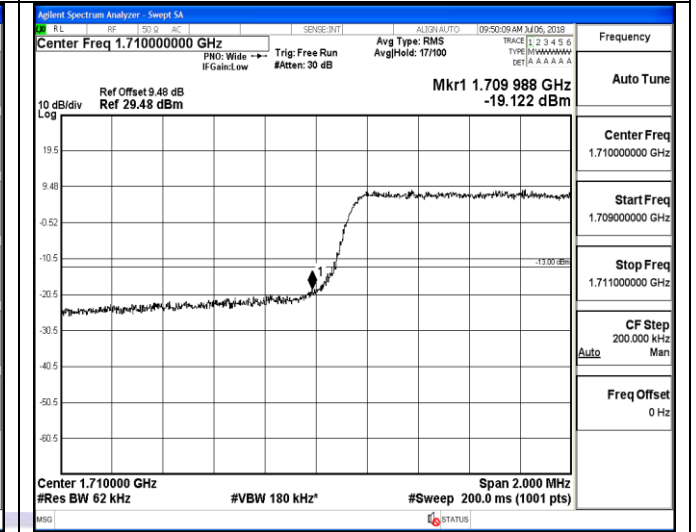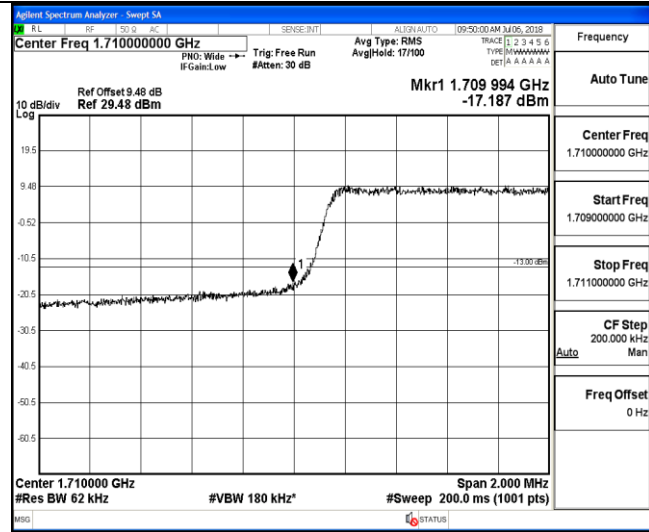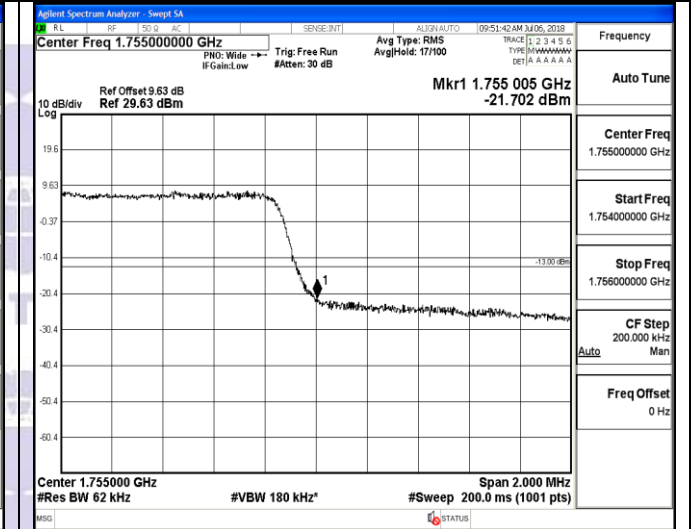
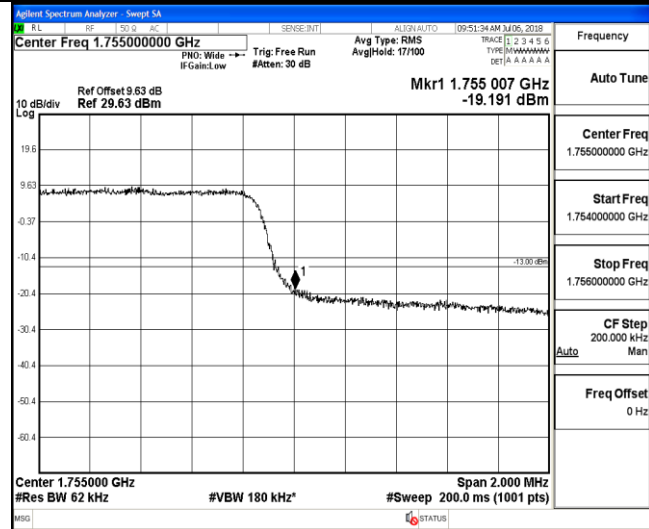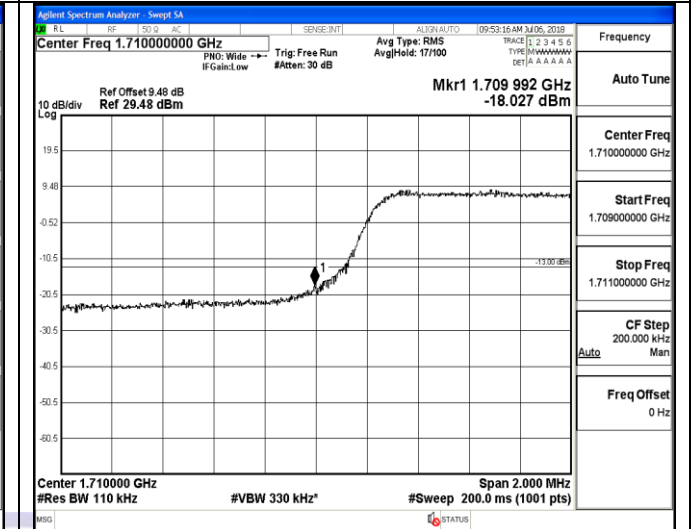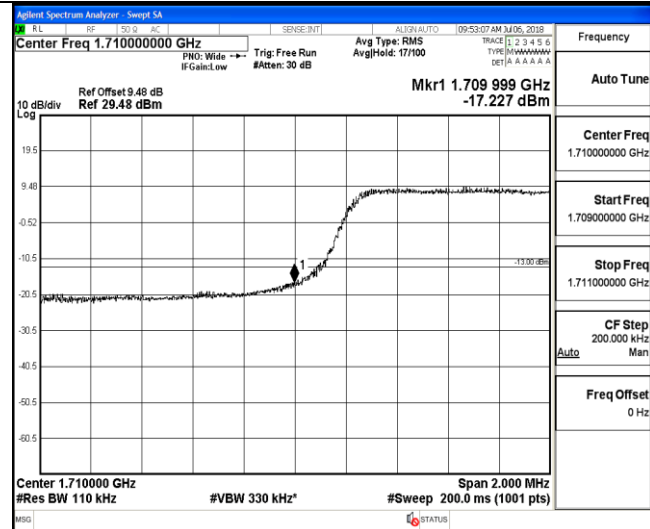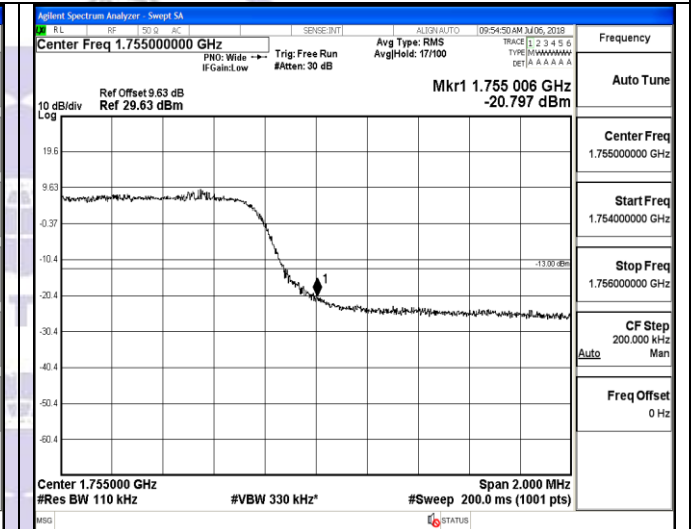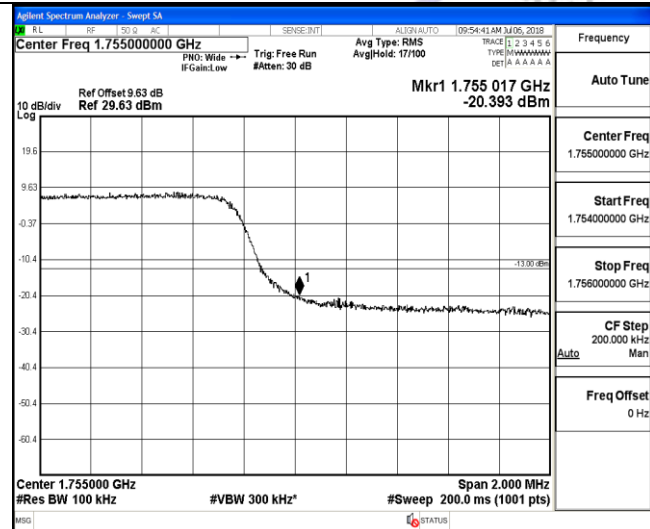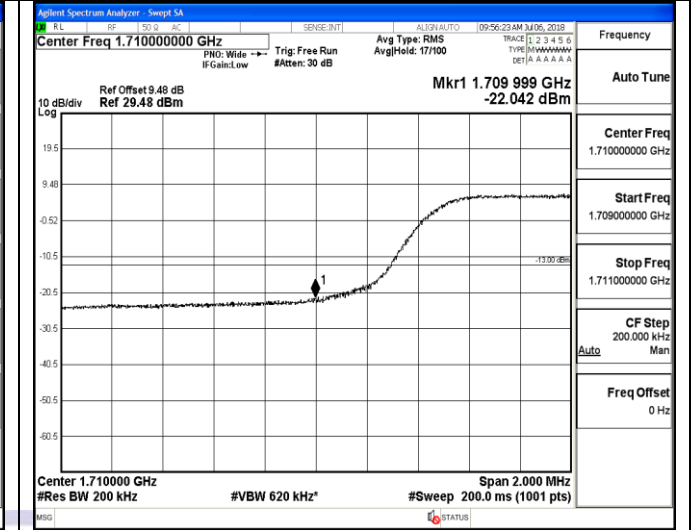| LTE FDD Band 4-5MHz Channel Bandwidth Band Edge Compliance	
QPSK	16QAM
1RB#0	1RB#0
Low Channel	
1RB#0	1RB#0
High Channel	
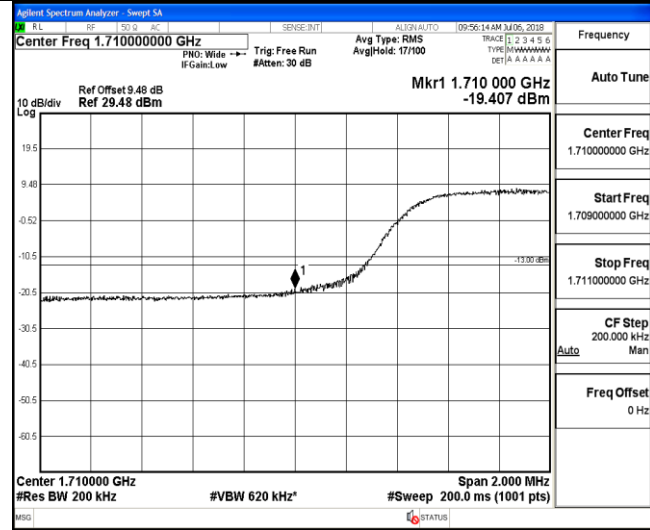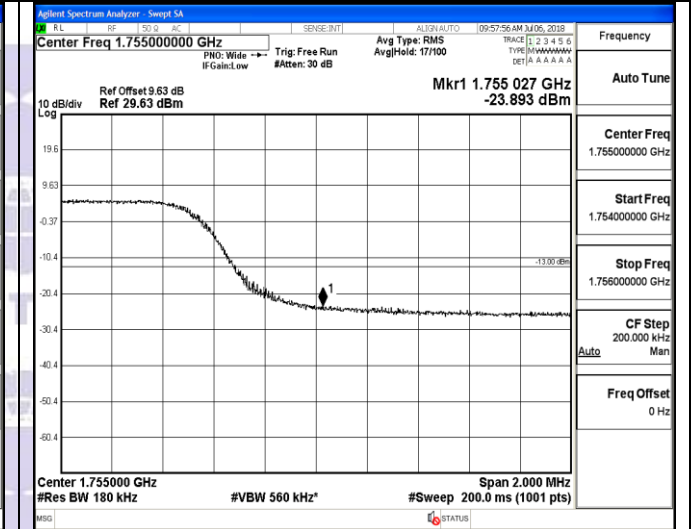
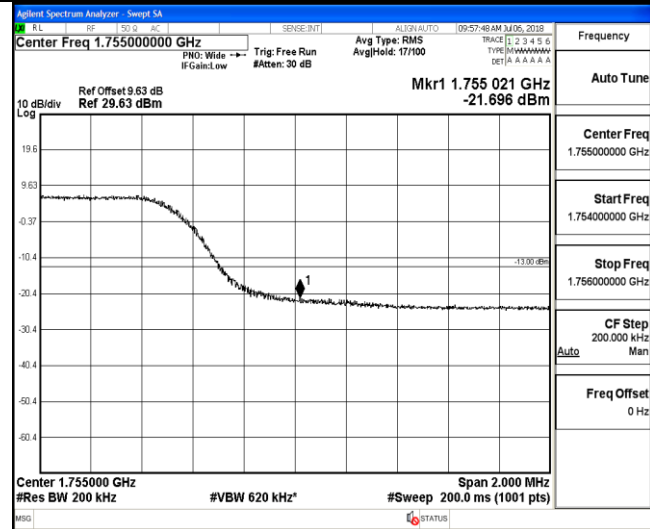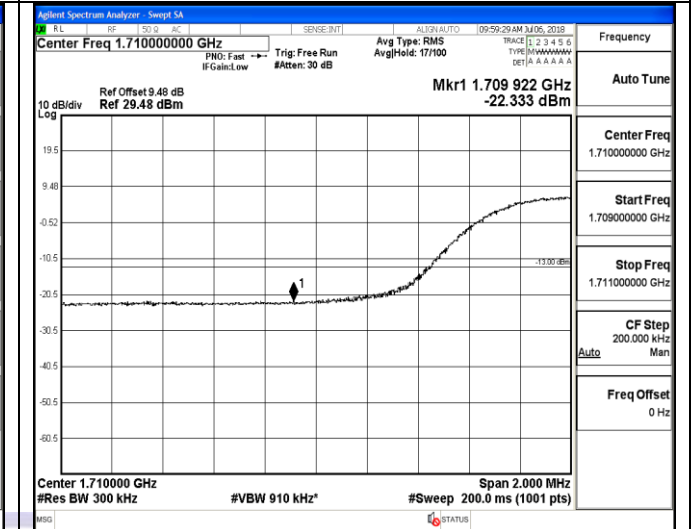| LTE FDD Band 4-10MHz Channel Bandwidth Band Edge Compliance	
QPSK	16QAM
1RB#0	1RB#0
Low Channel	
1RB#0	1RB#0
High Channel	

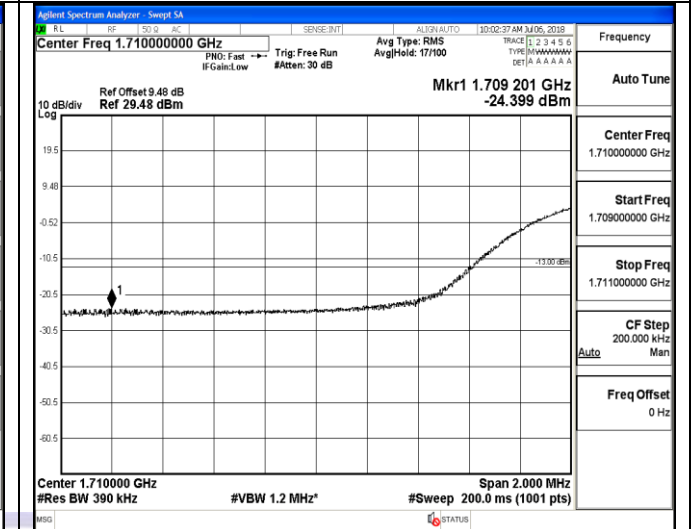| LTE FDD Band 4-15MHz Channel Bandwidth Band Edge Compliance	
QPSK	*16QAM*
1RB#0	*1RB#0*
Low Channel	
1RB#0	*1RB#0*
High Channel	
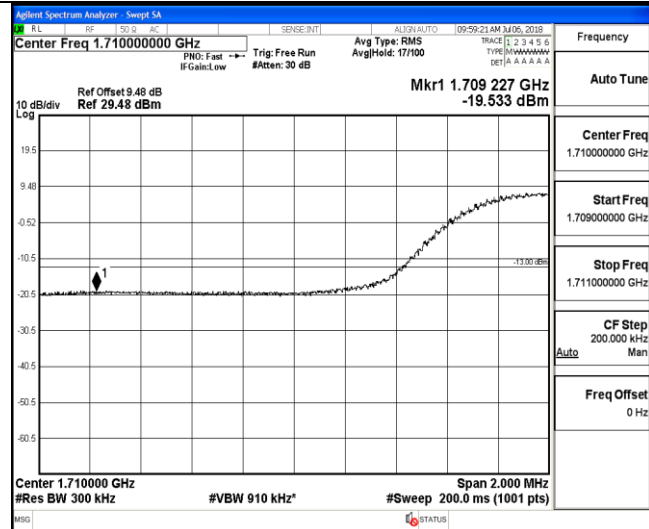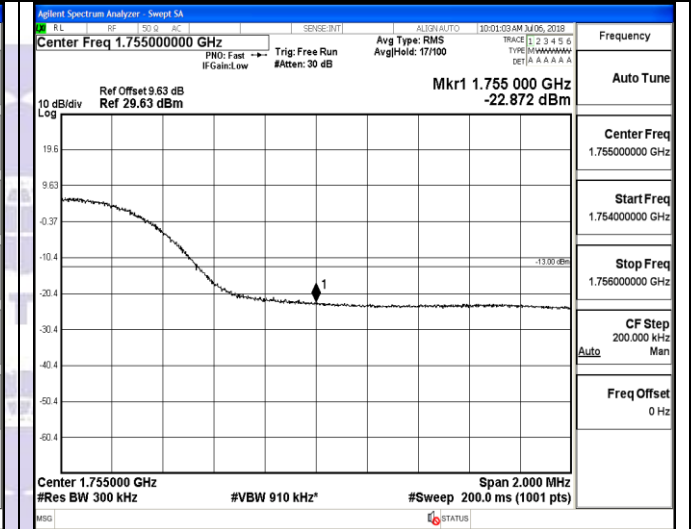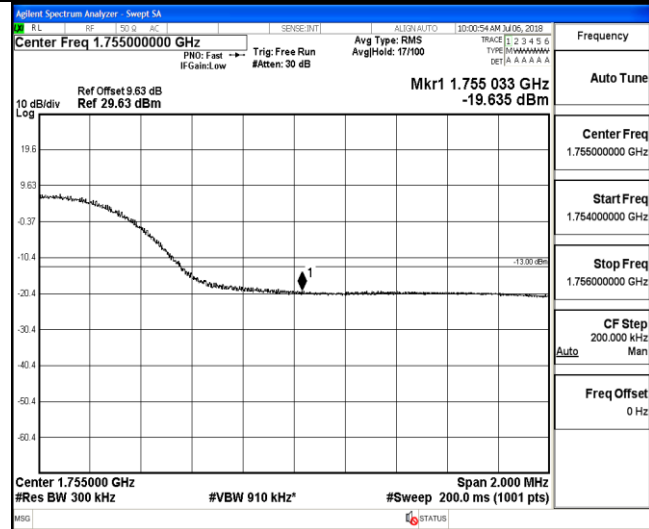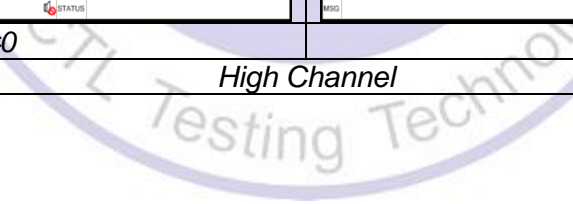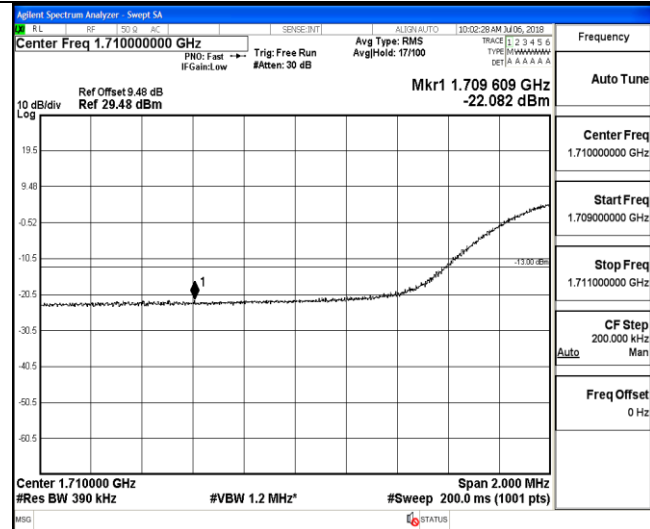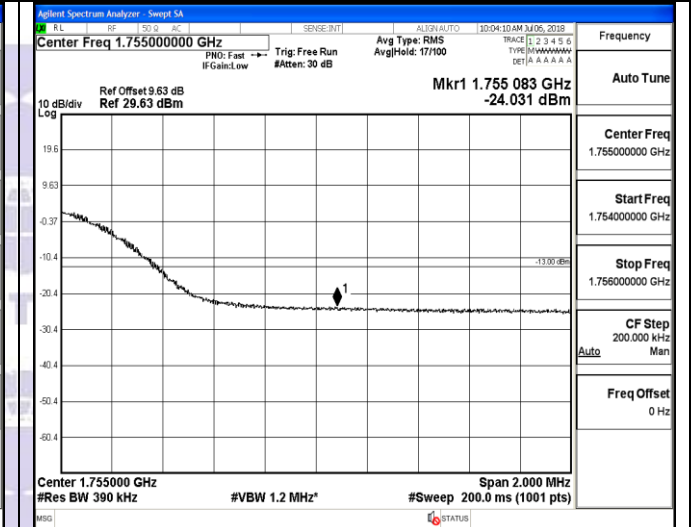
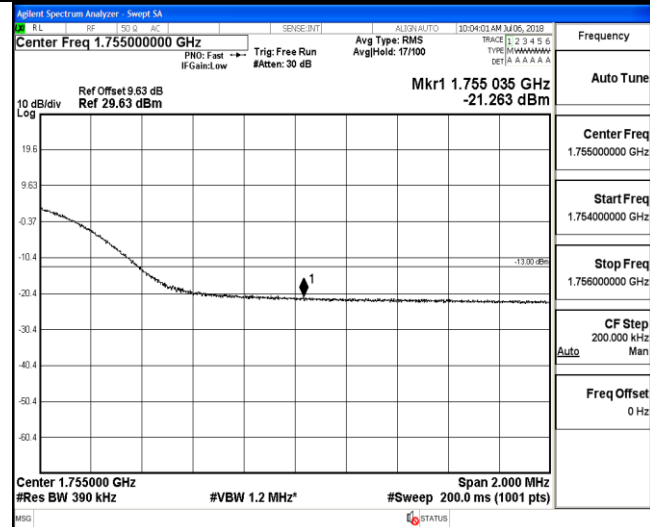| LTE FDD Band 4-20MHz Channel Bandwidth Band Edge Compliance	
QPSK	*16QAM*
1RB#0	*1RB#0*
Low Channel	
1RB#0	*1RB#0*
High Channel	

3.5. Spurious Emission

<u>**LIMIT**</u>

According to §27.53 (h): For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log10(P) dB.

<u>**TEST CONFIGURATION**</u>

Conducted Spurious Measurement:
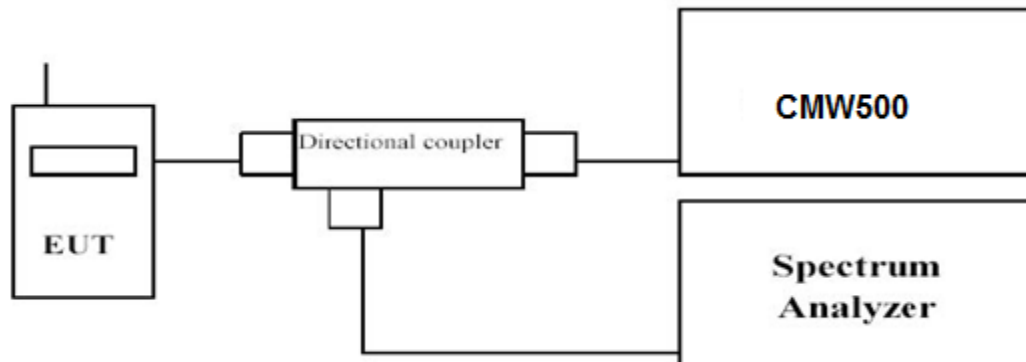
Radiated Spurious Measurement:
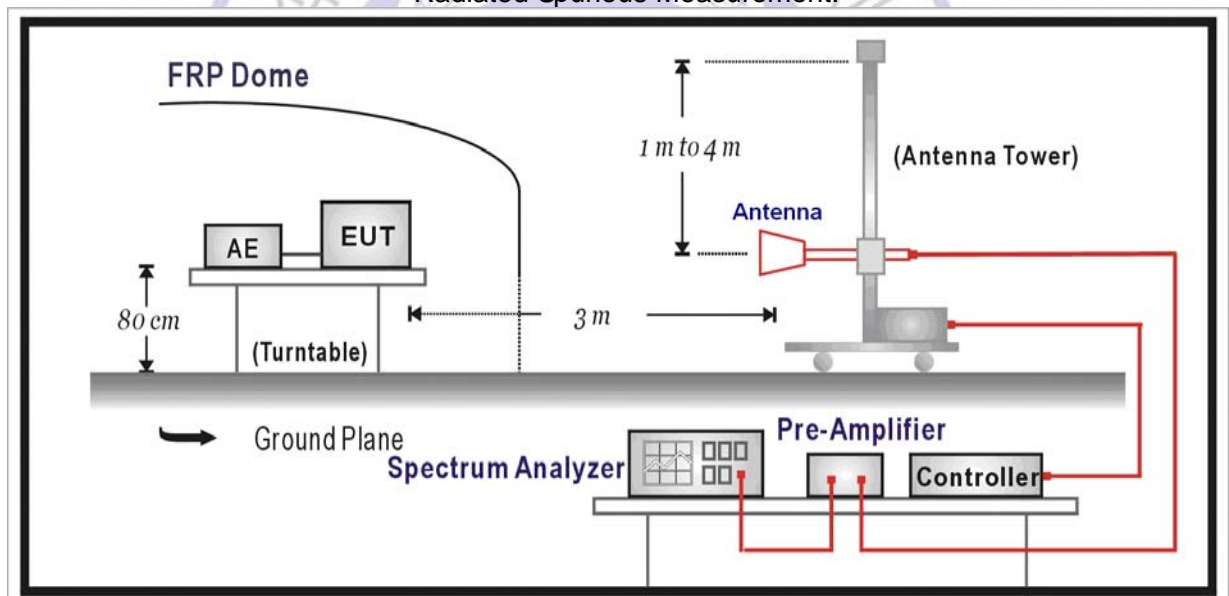
<u>**TEST PROCEDURE**</u>

The EUT was setup according to EIA/TIA 603D

Conducted Spurious Measurement:
a. Place the EUT on a bench and set it in transmitting mode.
b. Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMW500 by a Directional Couple.
c. EUT Communicate with CMW500 then selects a channel for testing.
d. Add a correction factor to the display of spectrum, and then test.
e. The resolution bandwidth of the spectrum analyzer was set sufficient scans were taken to show the out of band Emission if any up to10th harmonic.

Radiated Spurious Measurement:

a. The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.

b. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter

c. The output of the test antenna shall be connected to the measuring receiver.

d. The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.

e. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.

f. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

g. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.

h. The maximum signal level detected by the measuring receiver shall be noted.

i. The transmitter shall be replaced by a substitution antenna.

j. The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.

k. The substitution antenna shall be connected to a calibrated signal generator.

l. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.

m. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.

n. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.

o. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.

p. The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.

q. The resolution bandwidth of the spectrum analyzer was set at 100 kHz for Part 22 and 1MHz for Part 24. The frequency range was checked up to 10th harmonic.

r. Test site anechoic chamber refer to ANSI C63.
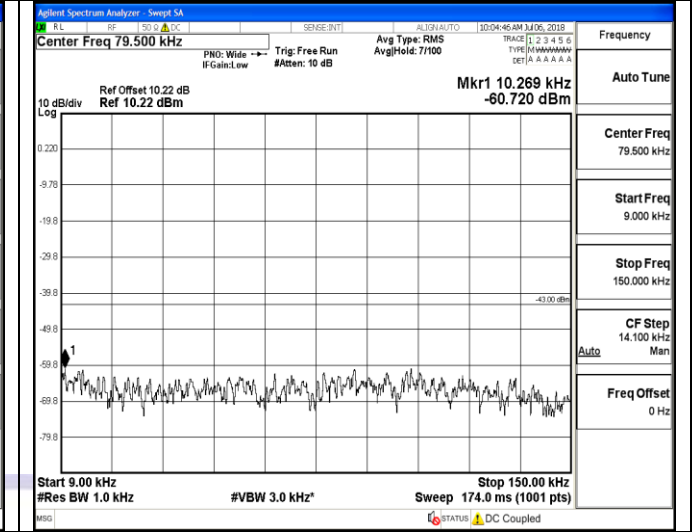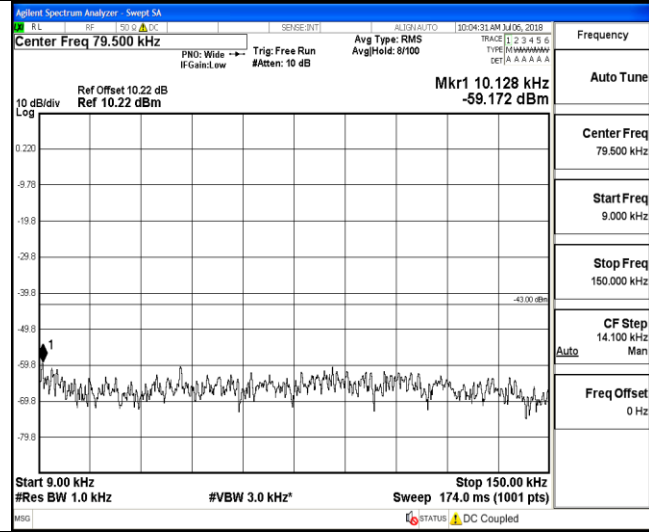
TEST RESULTS

Remark:
1. *We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 4; recorded worst case for each Channel Bandwidth of LTE FDD Band 4.*

Conducted Measurement:
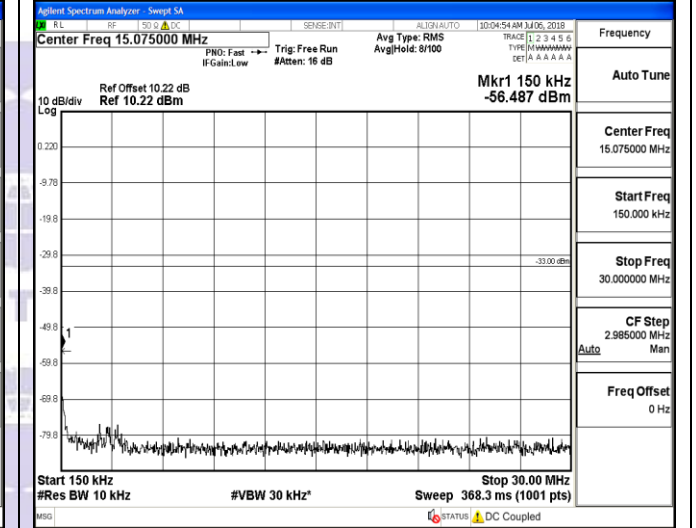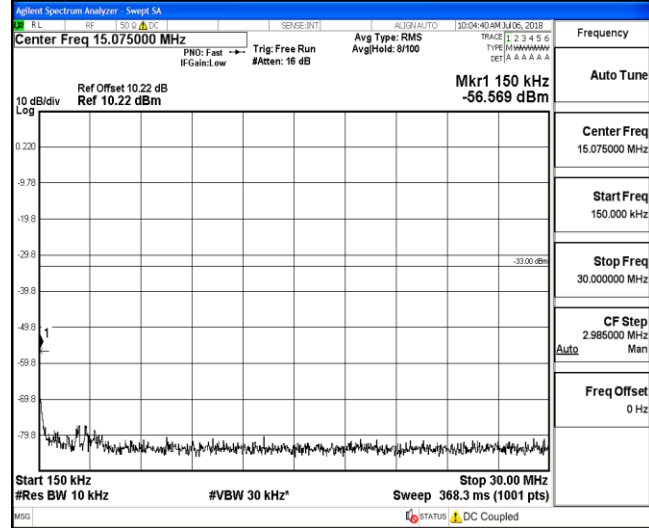
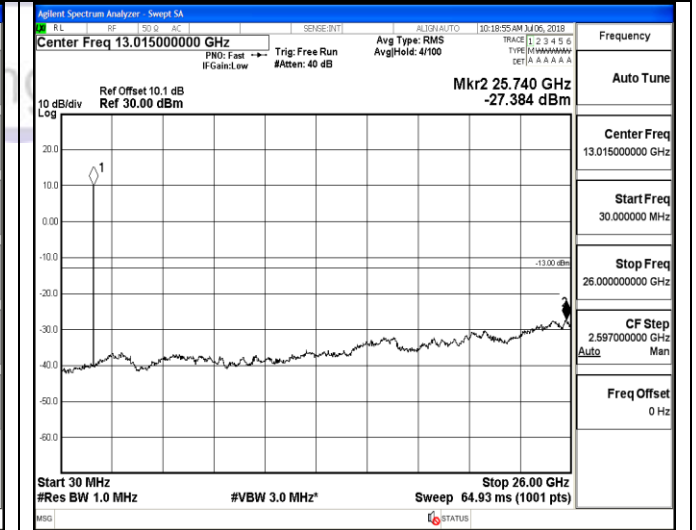| LTE FDD Band 4-1.4MHz Channel Bandwidth	
Low Channel	
QPSK	16QAM
9KHz~150KHz	9KHz~150KHz
150KHz~30MHz	150KHz~30MHz
30MHz~26.5GHz	30MHz~26.5GHz
1RB#0	1RB#0
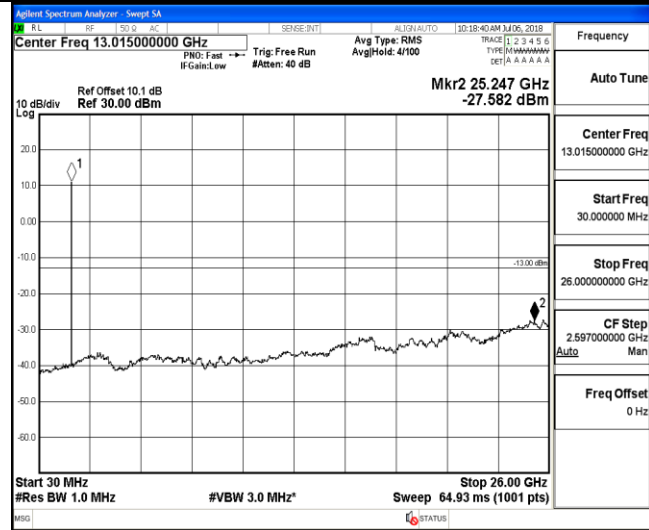
LTE FDD Band 4-1.4MHz Channel Bandwidth	
Middle Channel	
QPSK	16QAM
9KHz~150KHz	9KHz~150KHz
150KHz~30MHz	150KHz~30MHz
30MHz~26.5GHz	30MHz~26.5GHz
1RB#0	1RB#0
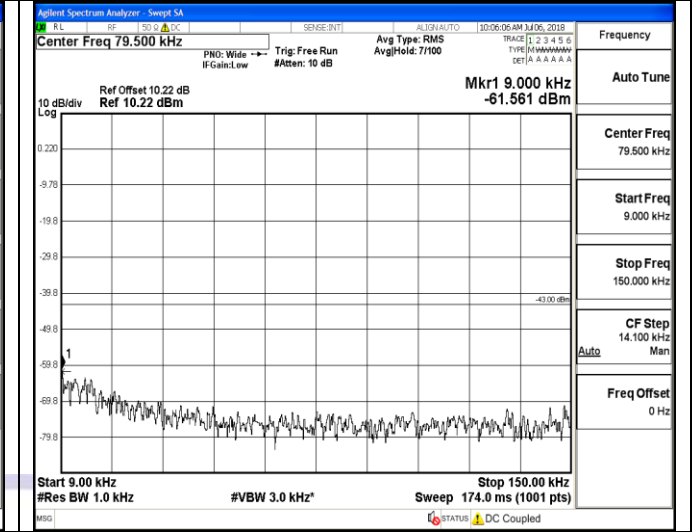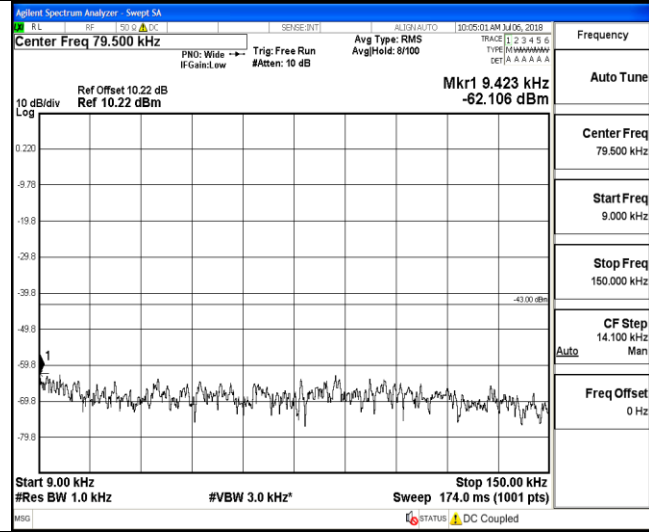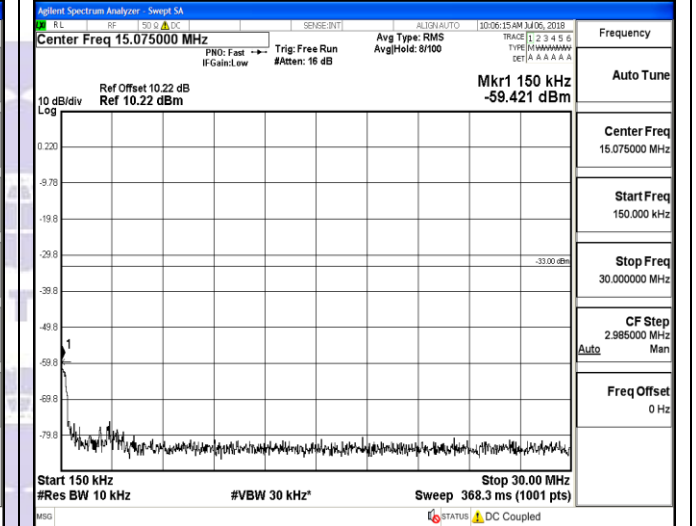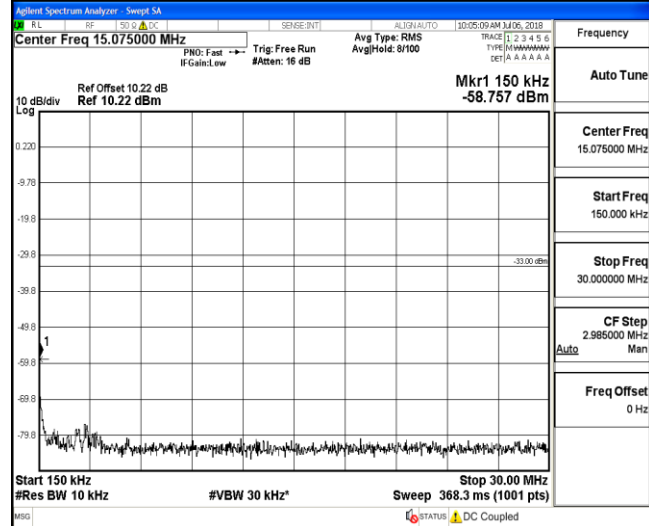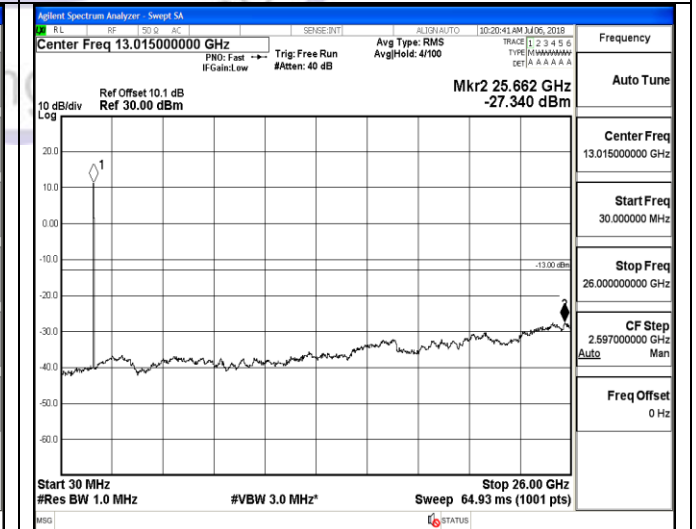
LTE FDD Band 4-1.4MHz Channel Bandwidth	
High Channel	
QPSK	16QAM
9KHz~150KHz	9KHz~150KHz
150KHz~30MHz	150KHz~30MHz
30MHz~26.5GHz	30MHz~26.5GHz
1RB#0	1RB#0