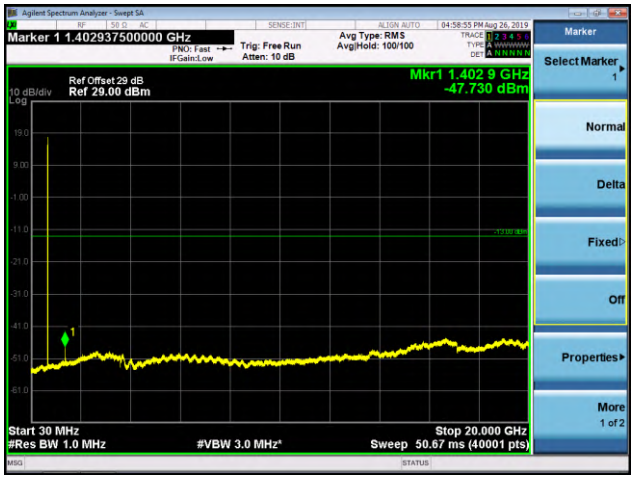
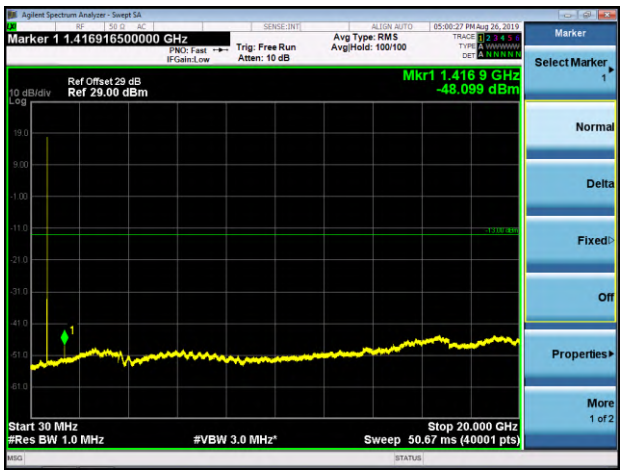
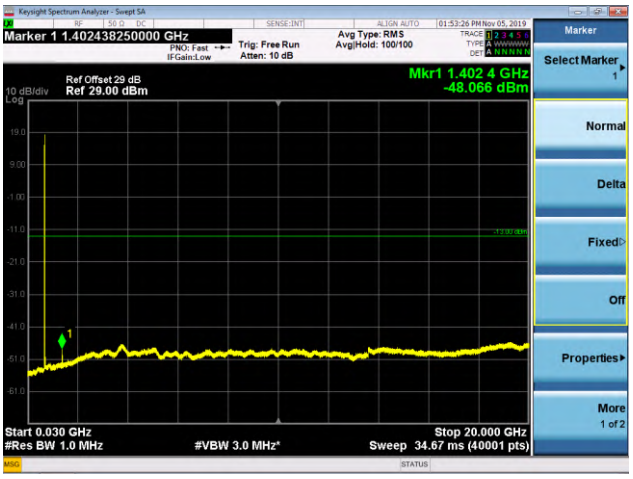
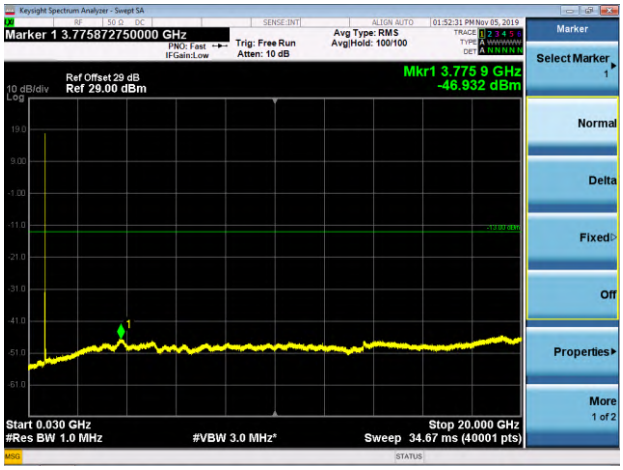
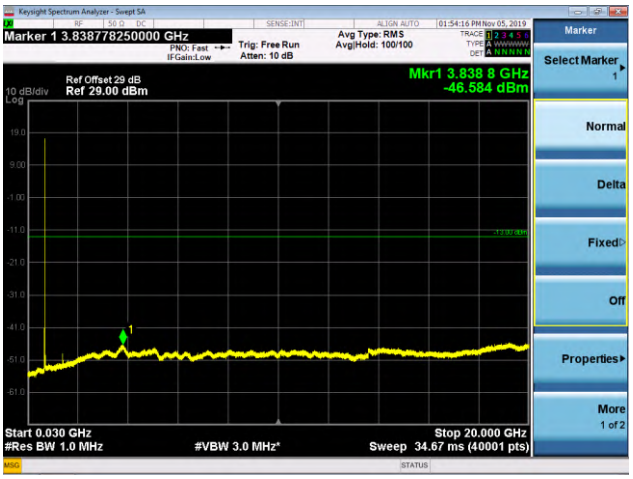
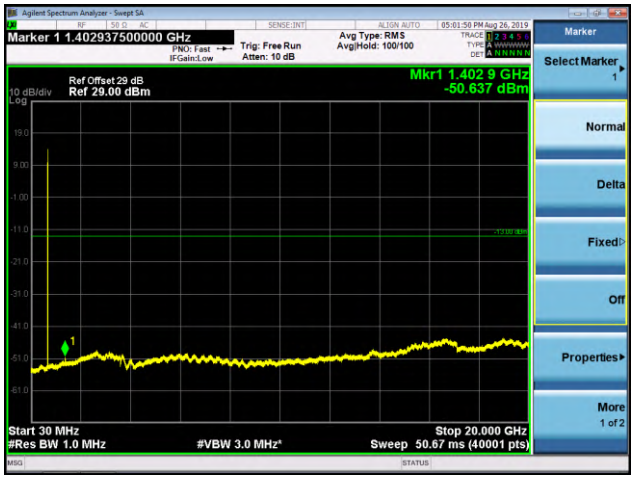
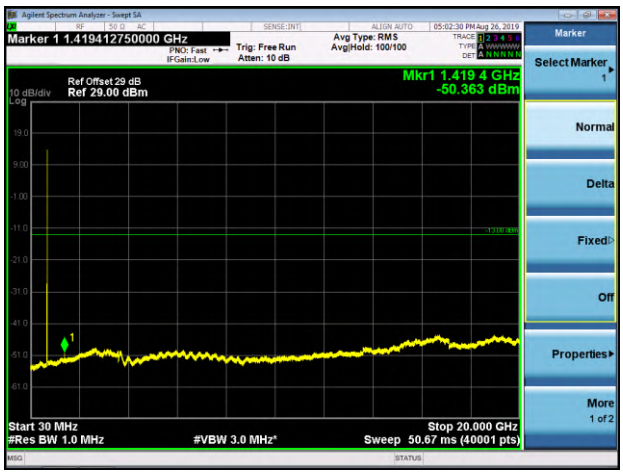
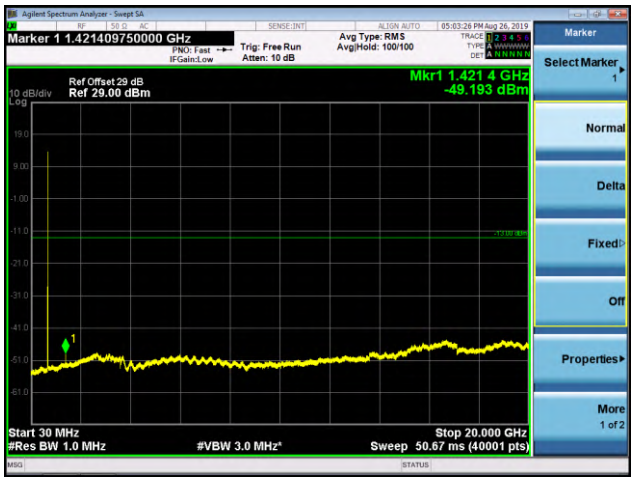
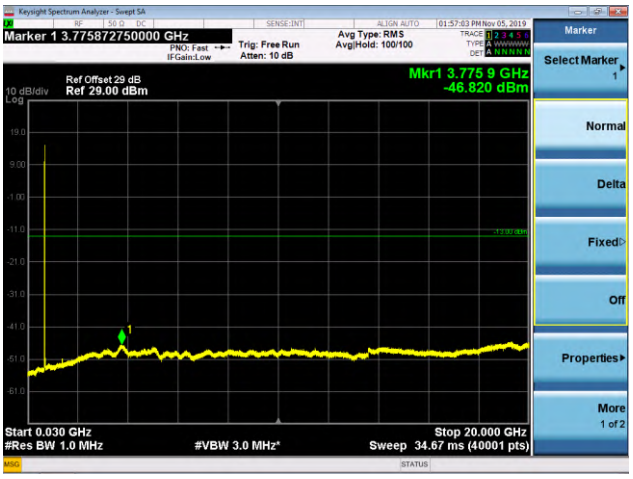
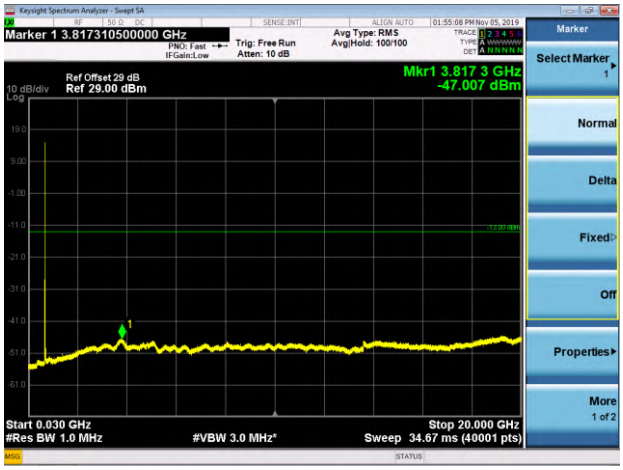
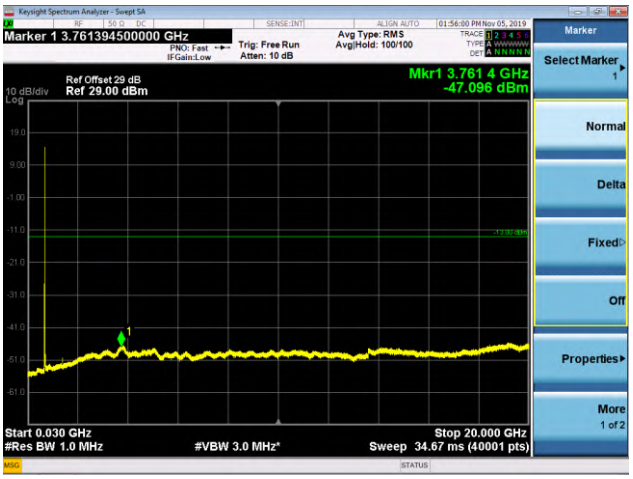
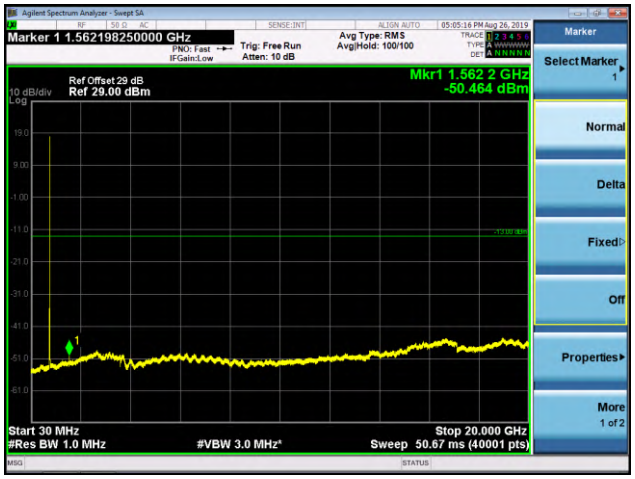
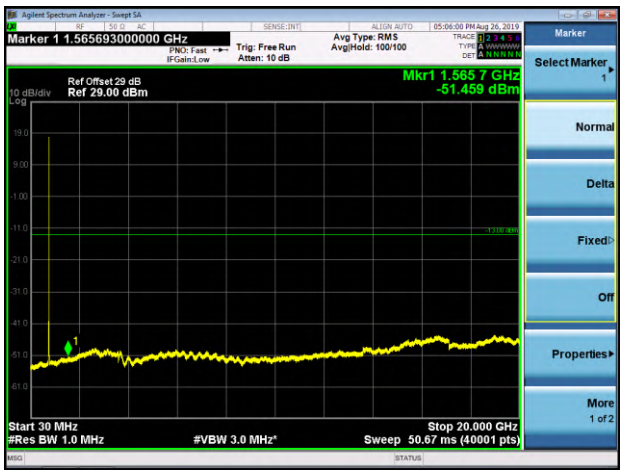
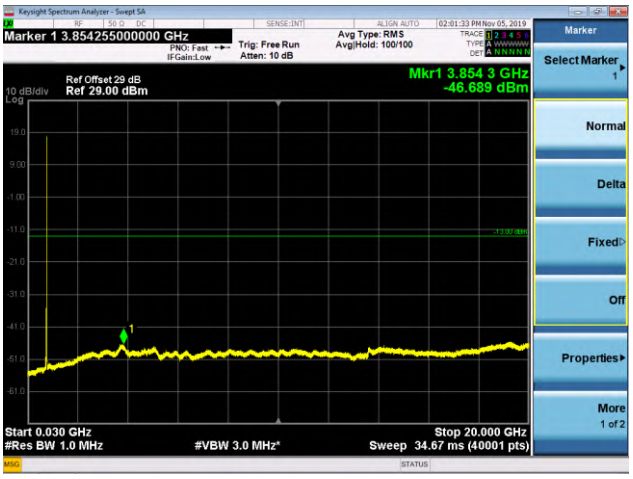
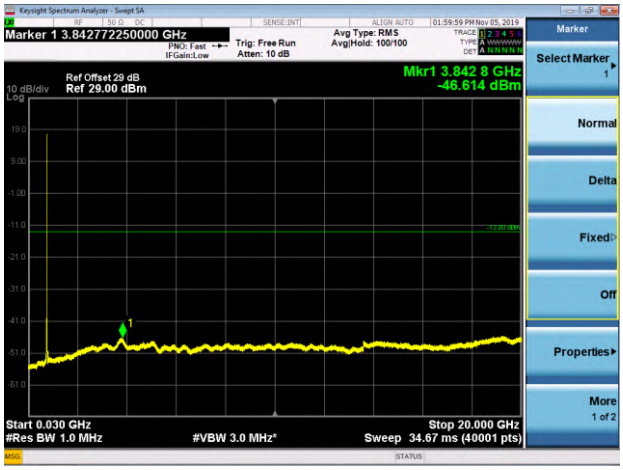
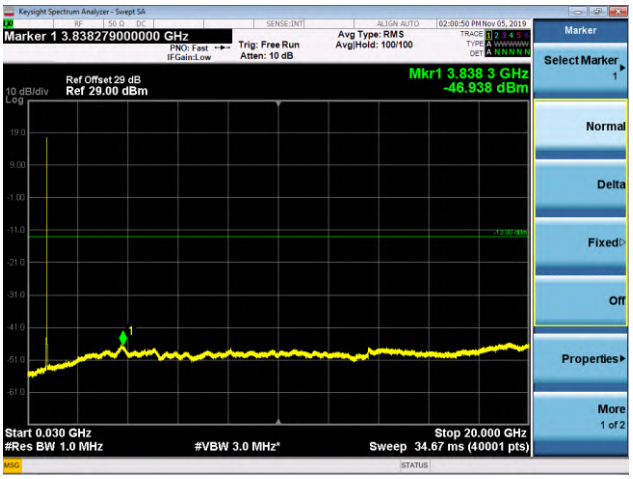
Conducted Spurious Emission	
LTE Band 12 / 5MHz / QPSK	
Low CH	Mid. CH
	
High. CH	
	

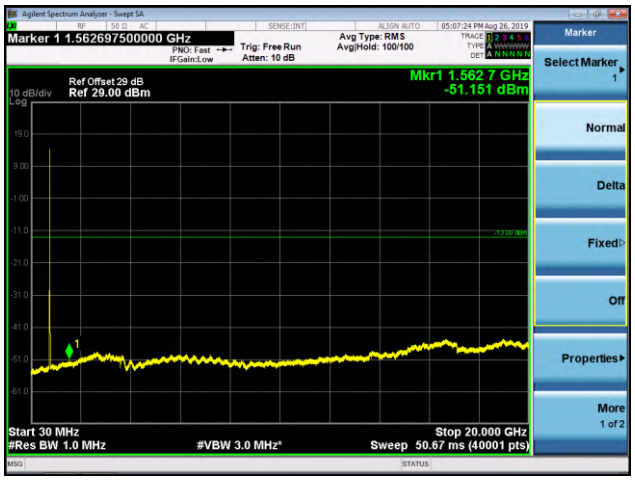
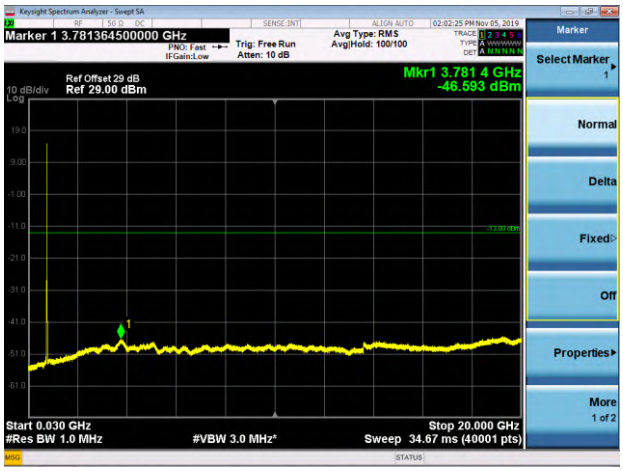
Conducted Spurious Emission	
LTE Band 12 / 5MHz / 16QAM	
Low CH	Mid. CH
	
High. CH	
	

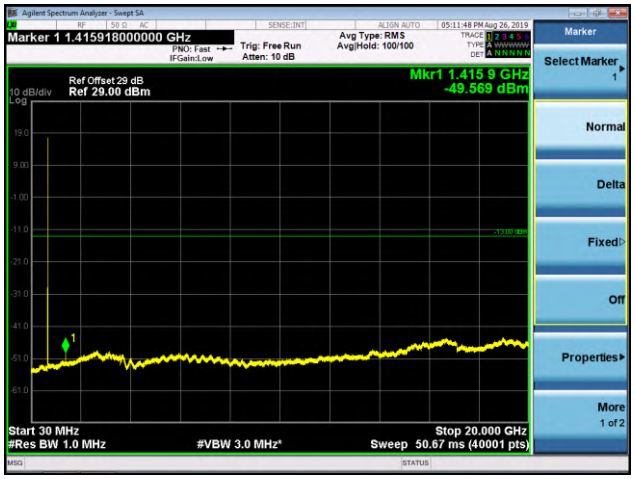
Conducted Spurious Emission	
LTE Band 12 / 10MHz / QPSK	
Low CH	Mid. CH
	
High. CH	
	

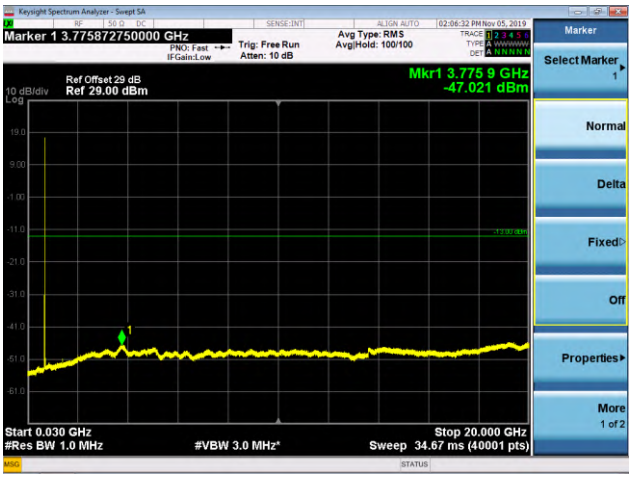
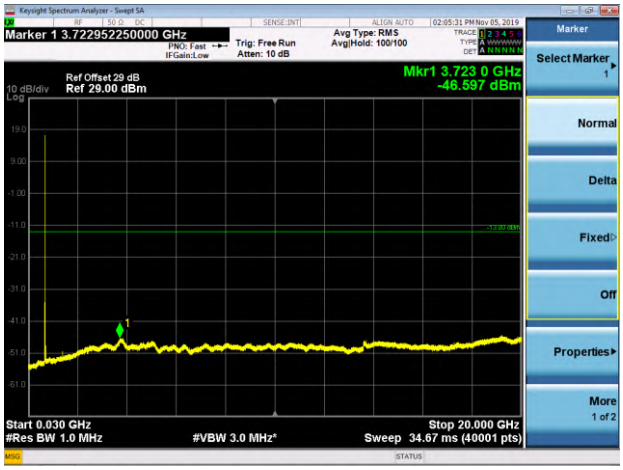
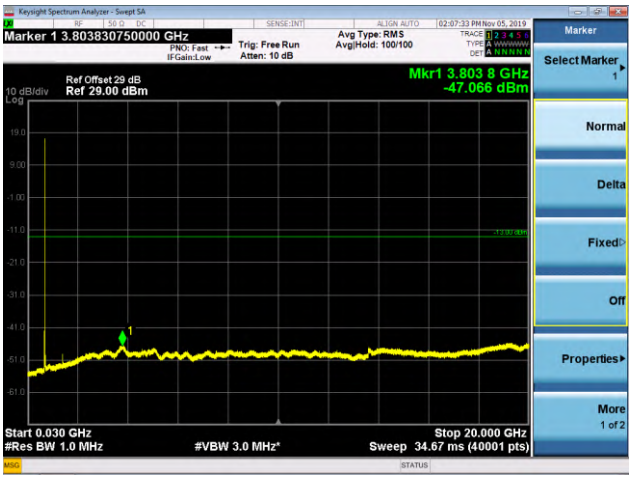
Conducted Spurious Emission	
LTE Band 12 / 10MHz / 16QAM	
Low CH	Mid. CH
	
High. CH	
	

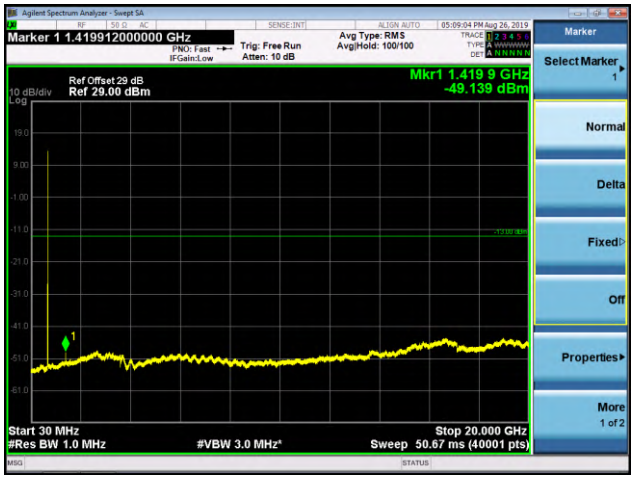
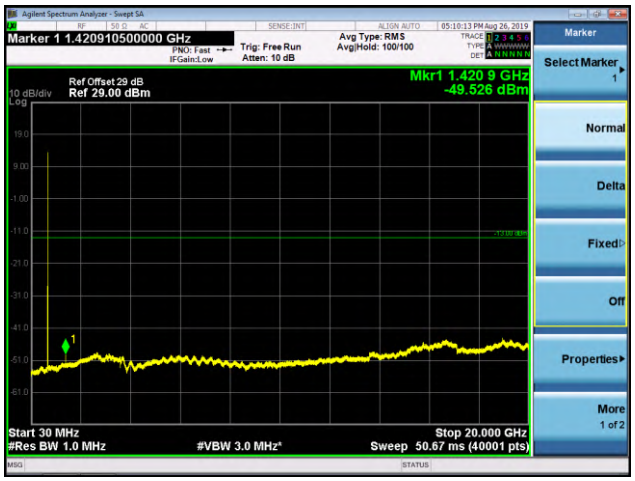
Conducted Spurious Emission	
LTE Band 13 / 5MHz / QPSK	
Low CH	Mid. CH
	
High. CH	
	

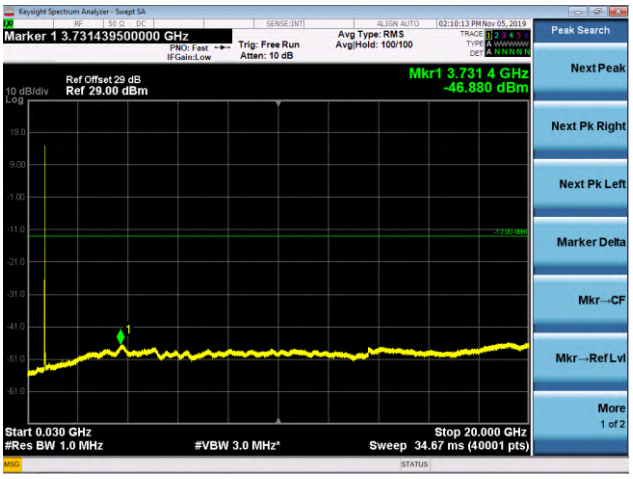
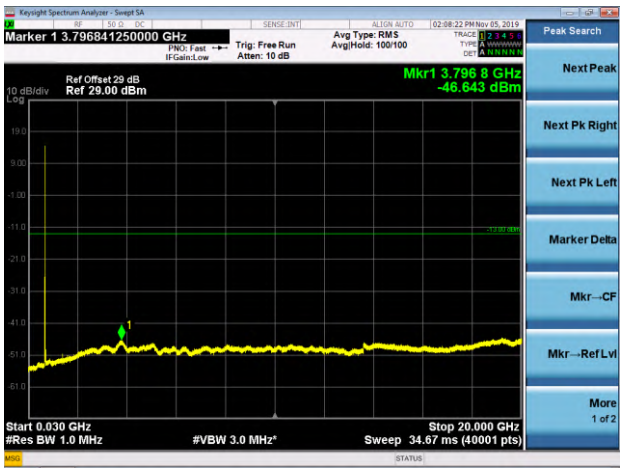
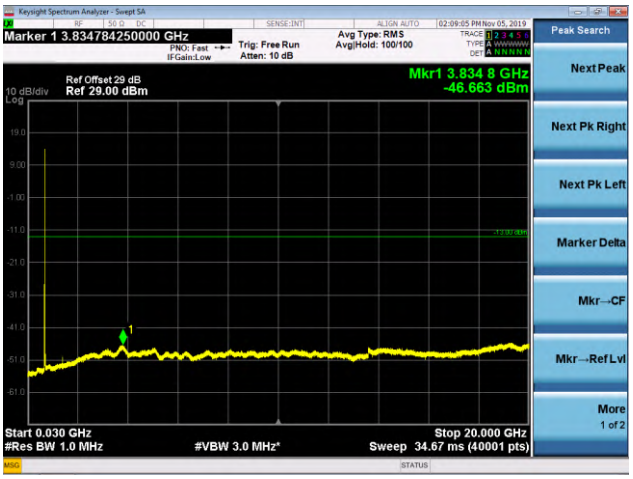
Conducted Spurious Emission	
LTE Band 13 / 5MHz / 16QAM	
Low CH	Mid. CH
	
High. CH	
	

Conducted Spurious Emission	
LTE Band 13 / 10MHz / QPSK	LTE Band 13 / 10MHz / 16QAM
	

Conducted Spurious Emission	
LTE Band 17 / 5MHz / QPSK	
Low CH	Mid. CH
	
High. CH	
	

Conducted Spurious Emission	
LTE Band 17 / 5MHz / 16QAM	
Low CH	Mid. CH
	
High. CH	
	

Conducted Spurious Emission	
LTE Band 17 / 10MHz / QPSK	
Low CH	Mid. CH
	
High. CH	
	

Conducted Spurious Emission	
LTE Band 17 / 10MHz / 16QAM	
Low CH	Mid. CH
	
High. CH	
	

7.5. Peak-Average Ratio

7.5.1.Test Limit

The transmitter's peak-to-average power ratio (PAPR) shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

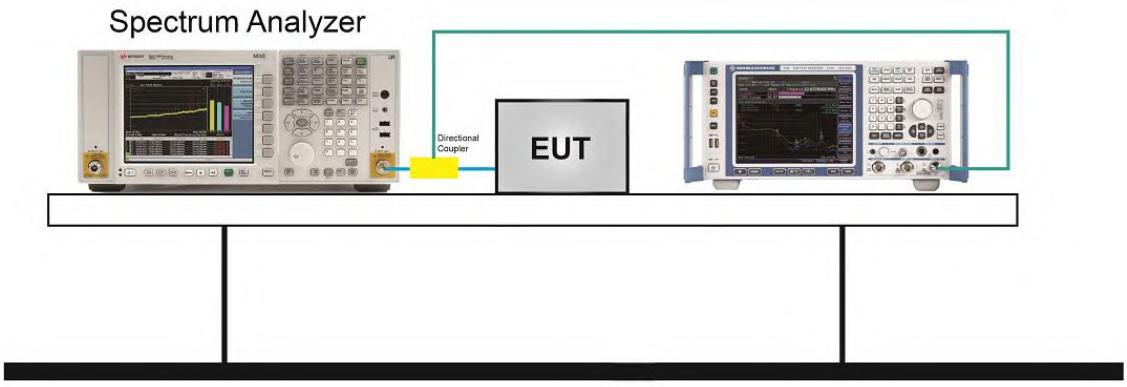
7.5.2.Test Procedure

ANSI C63.26-2015 - Section 5.2.3.4

7.5.3.Test Setting

1. Configure the EUT according to the following setup photo
2. Set the CCDF option in spectrum analyzer.
3. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1%.
4. Record the deviation as PAPR.

7.5.4.Test Setup



7.5.5.Test Result

Product	Color Radio	Temperature	25°C
Test Engineer	Dandy Li	Relative Humidity	52%
Test Site	TR3	Test Date	2019/08/26

LTE Band 2 / 20MHz					
Mod.	QPSK		16-QAM		Limit: 13dB
RB Size	1RB	Full RB	1RB	Full RB	Result
Low CH	4.90	5.36	5.92	6.25	Pass
Mid. CH	4.96	5.49	5.76	6.35	Pass
High CH	4.95	5.62	5.87	6.43	Pass

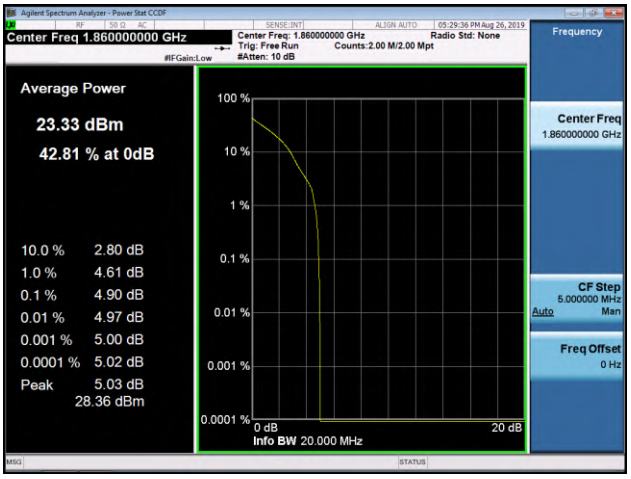
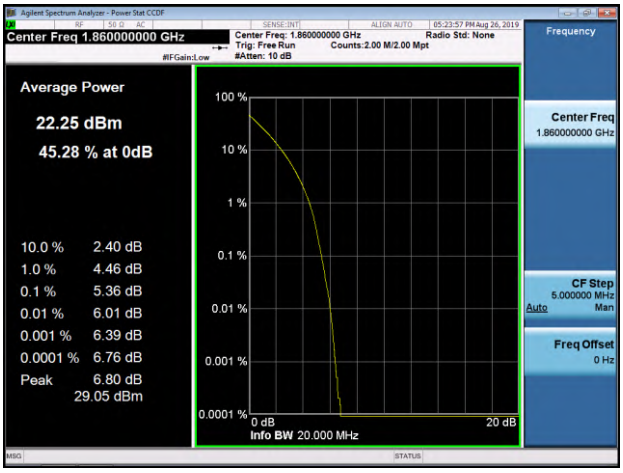
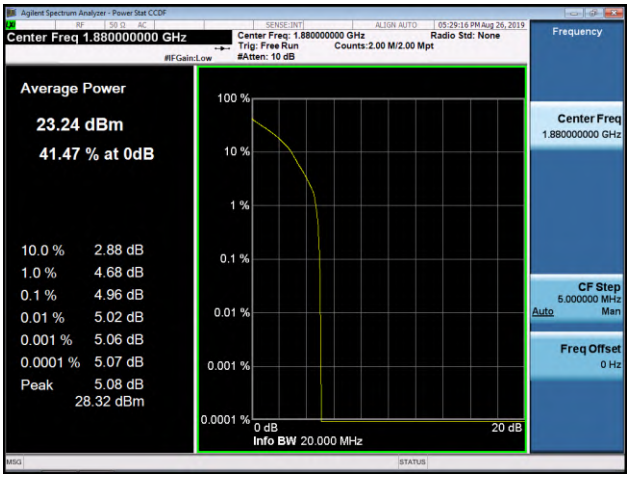
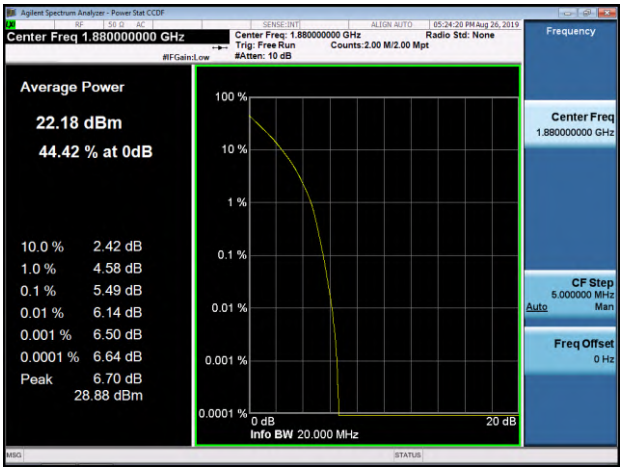
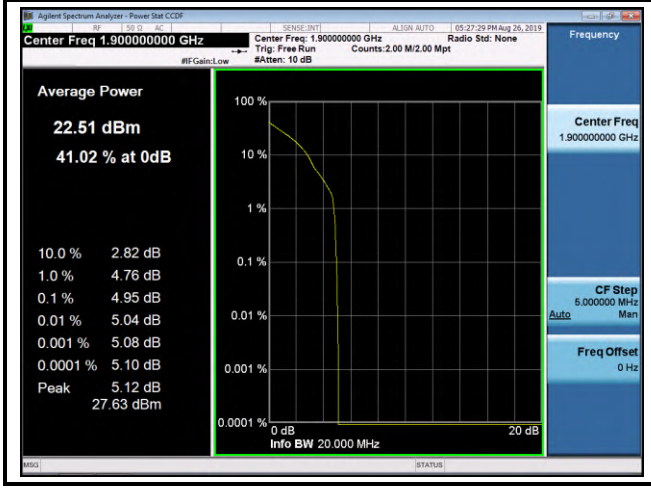
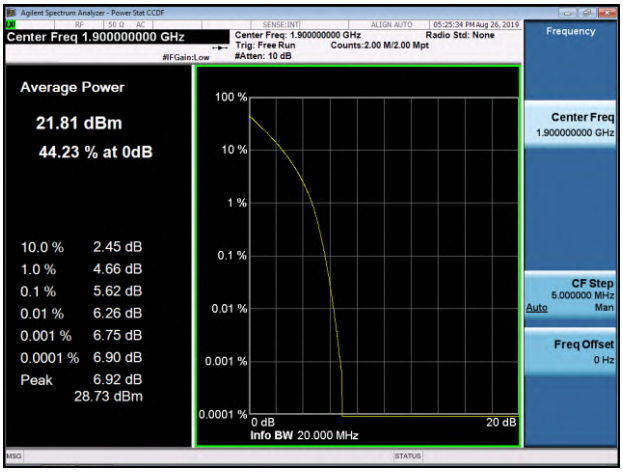
LTE Band 4 / 20MHz					
Mod.	QPSK		16-QAM		Limit: 13dB
RB Size	1RB	Full RB	1RB	Full RB	Result
Low CH	5.00	5.34	5.99	6.24	Pass
Mid. CH	4.82	5.36	5.55	6.43	Pass
High CH	5.15	5.46	6.16	6.36	Pass

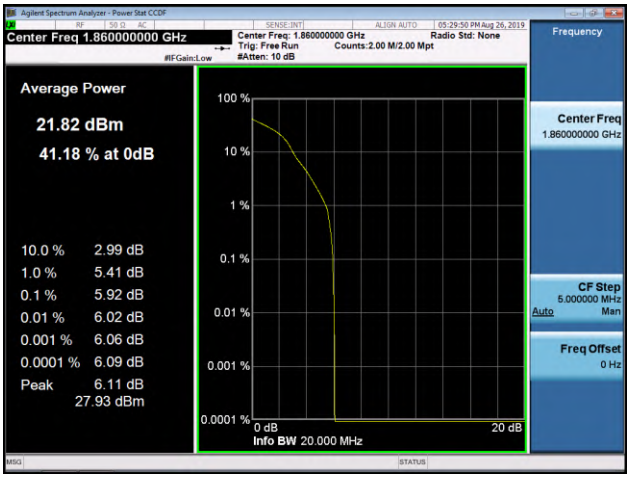
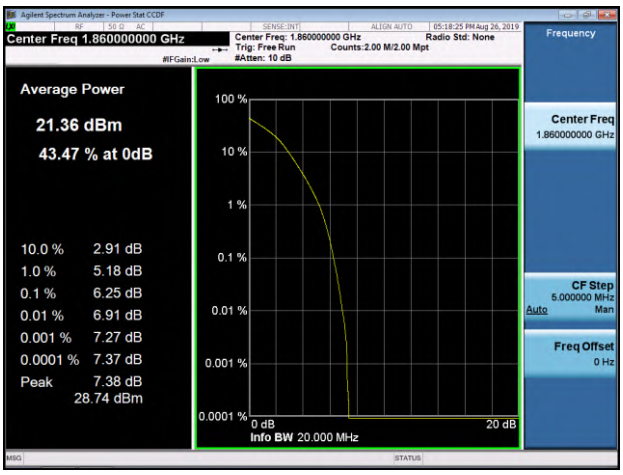
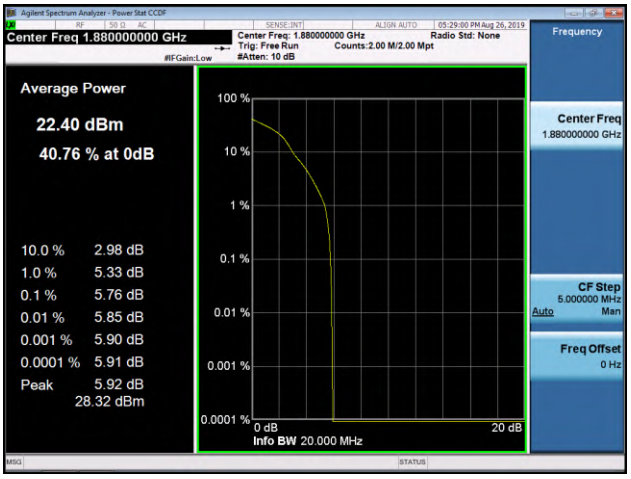
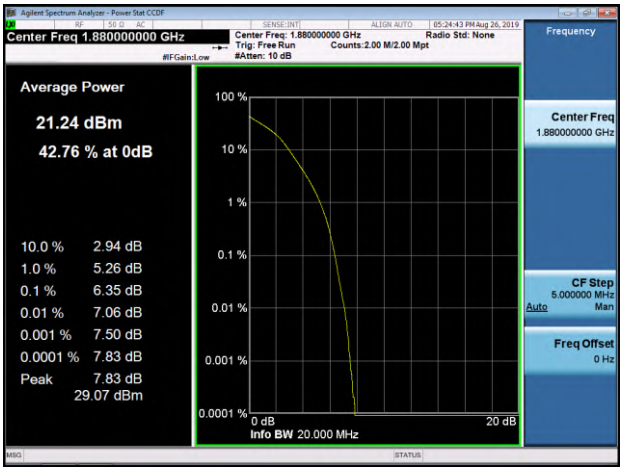
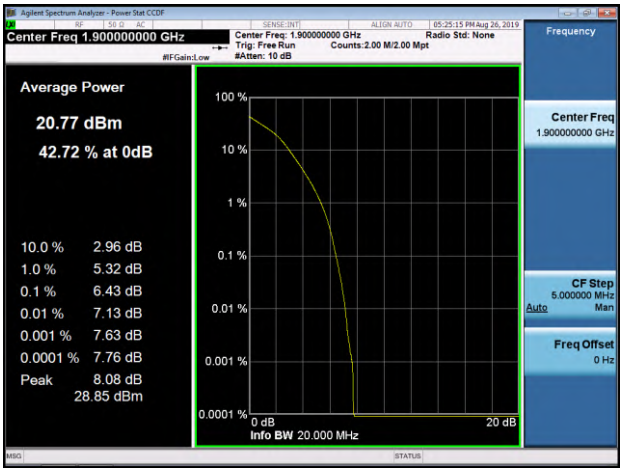
LTE Band 5 / 10MHz					
Mod.	QPSK		16-QAM		Limit: 13dB
RB Size	1RB	Full RB	1RB	Full RB	Result
Low CH	4.64	5.68	5.27	6.45	Pass
Mid. CH	5.25	5.27	6.12	6.15	Pass
High CH	4.79	5.55	5.58	6.31	Pass

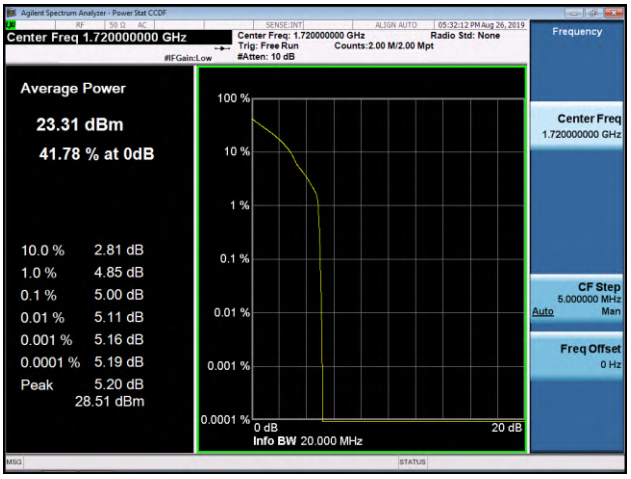
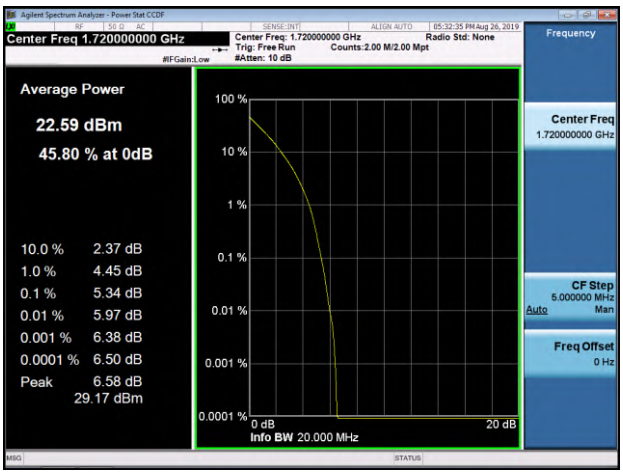
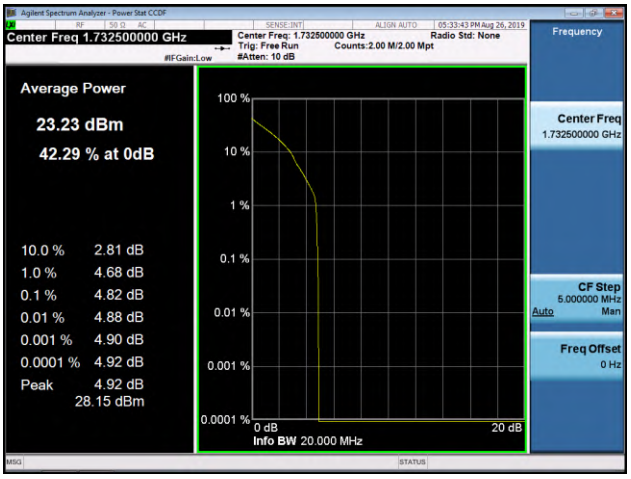
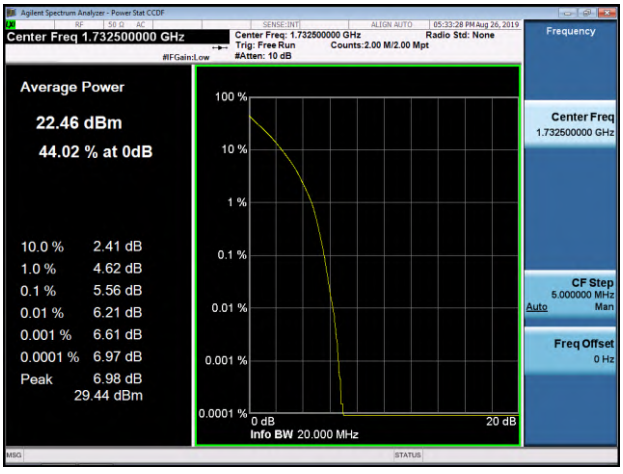
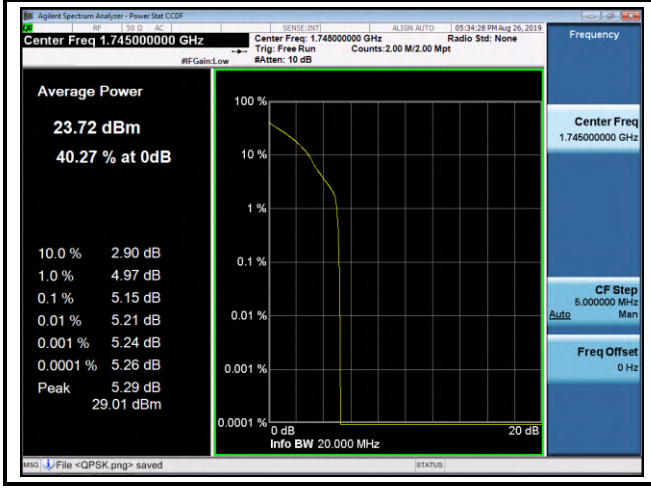
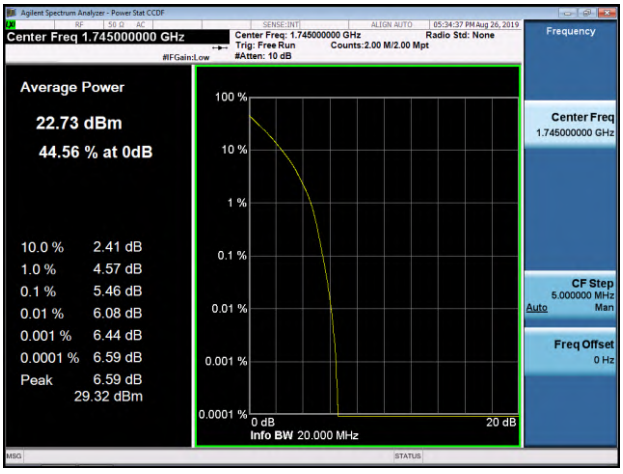
LTE Band 12 / 10MHz					
Mod.	QPSK		16-QAM		Limit: 13dB
RB Size	1RB	Full RB	1RB	Full RB	Result
Low CH	5.03	5.10	5.75	5.93	Pass
Mid. CH	4.59	5.25	5.45	6.05	Pass
High CH	4.59	5.37	5.45	6.15	Pass

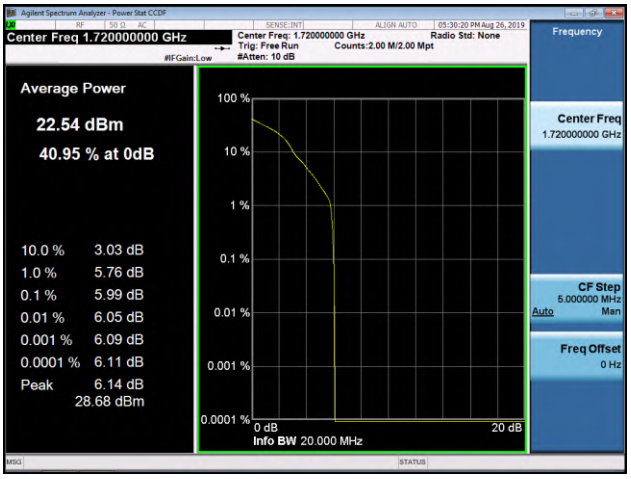
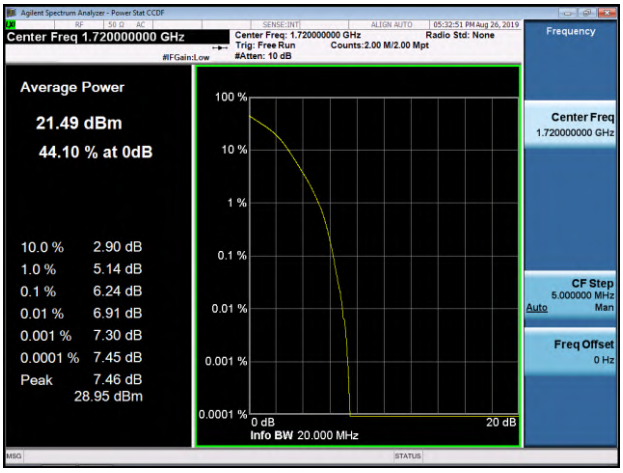
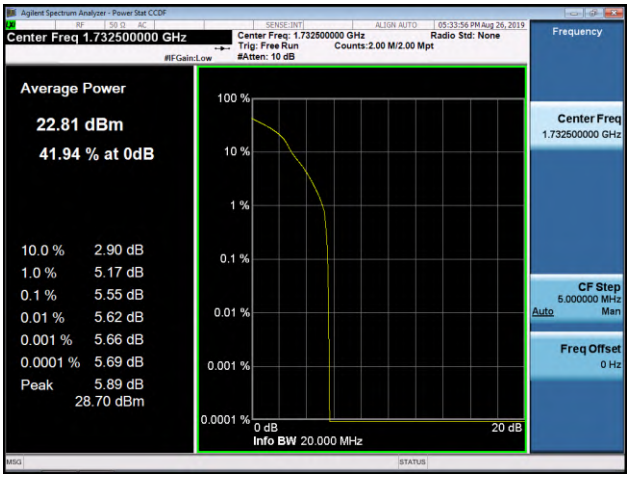
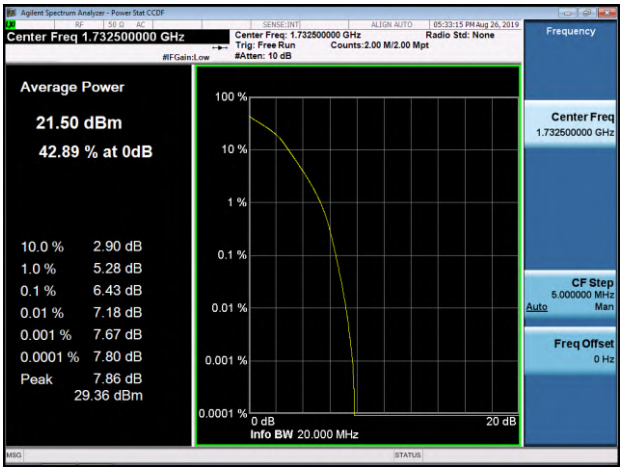
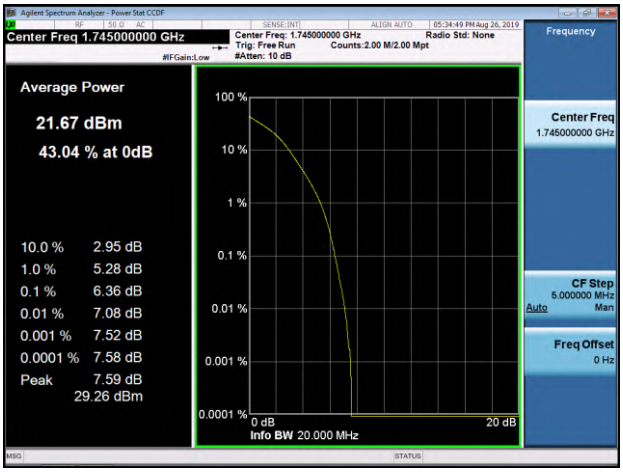
LTE Band 13 / 10MHz					
Mod.	QPSK		16-QAM		Limit: 13dB
RB Size	1RB	Full RB	1RB	Full RB	Result
Mid. CH	4.49	5.13	5.37	5.79	Pass

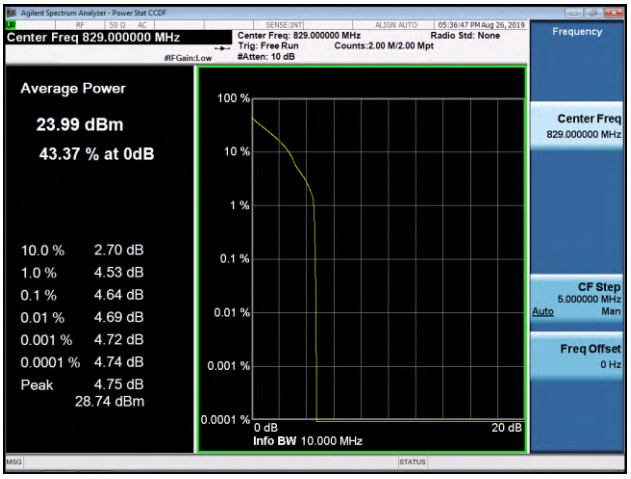
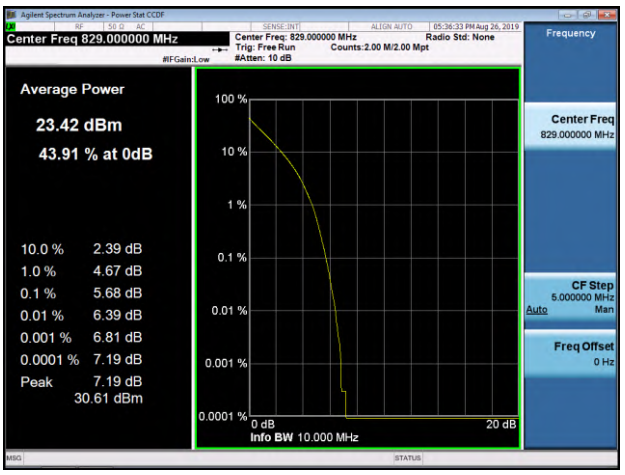
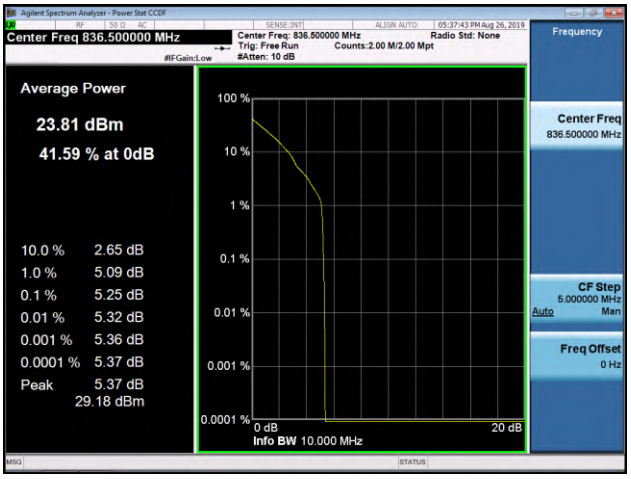
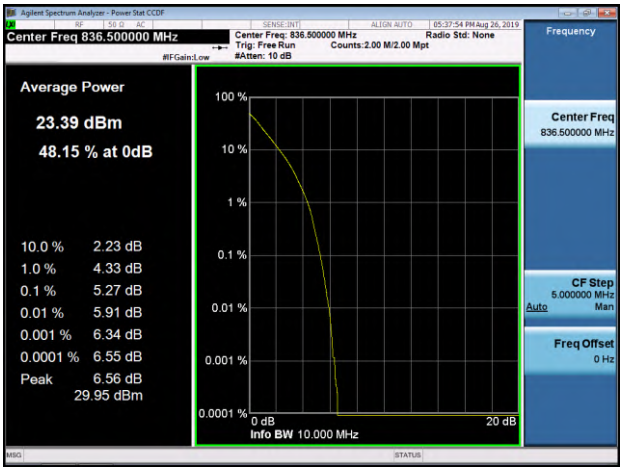
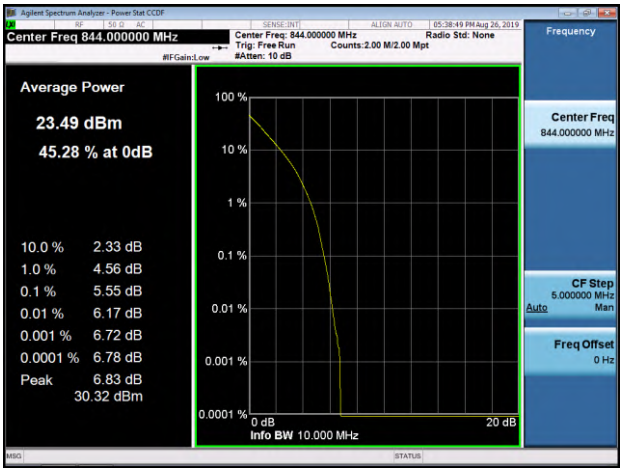
LTE Band 17 / 10MHz					
Mod.	QPSK		16-QAM		Limit: 13dB
RB Size	1RB	Full RB	1RB	Full RB	Result
Low CH	4.56	5.35	5.39	6.09	Pass
Mid. CH	4.56	5.42	5.46	6.15	Pass
High CH	4.59	5.37	5.45	6.14	Pass

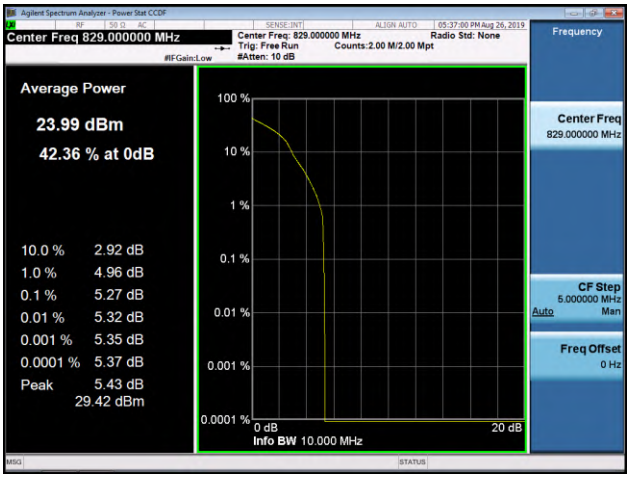
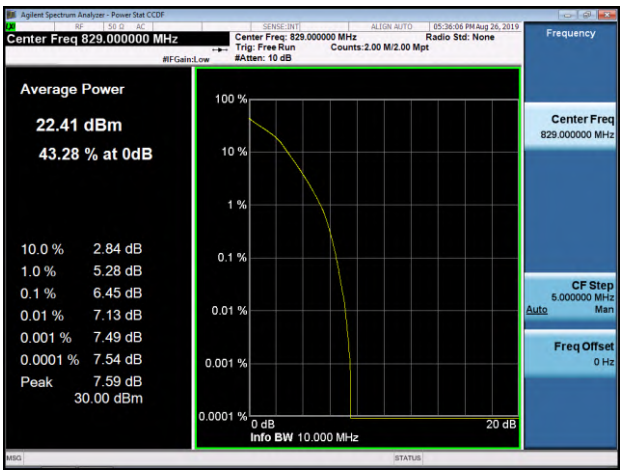
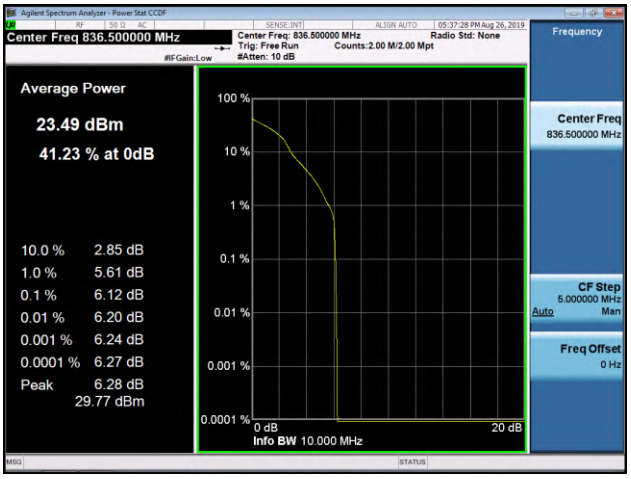
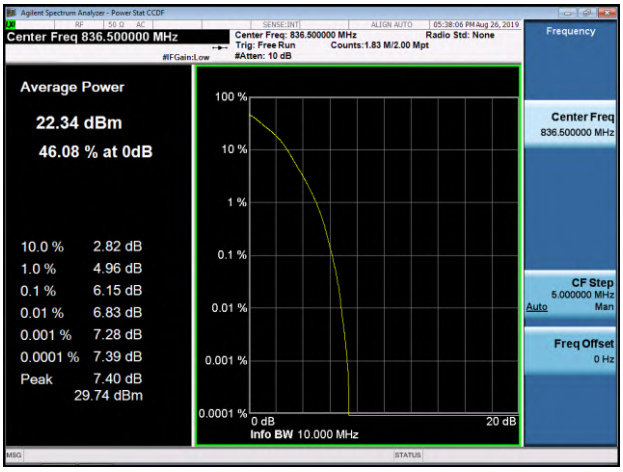
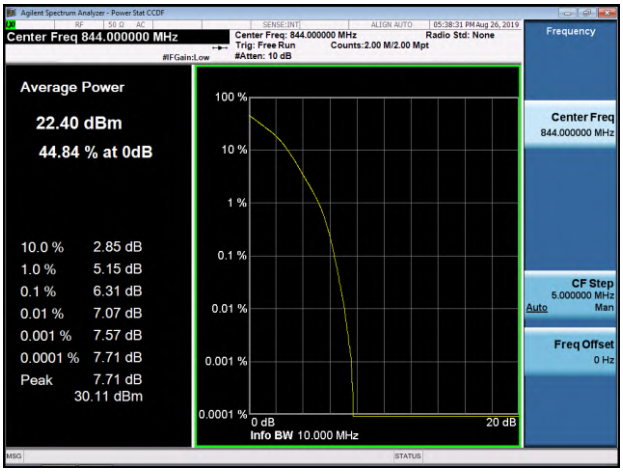
LTE Band 2 / 20MHz / QPSK	
Low CH / 1RB	Low CH / Full RB
	
Mid CH / 1RB	Mid CH / Full RB
	
High CH / 1RB	High CH / Full RB
	

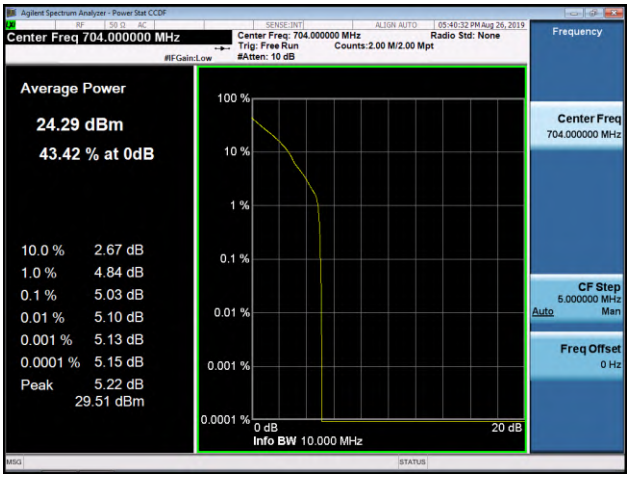
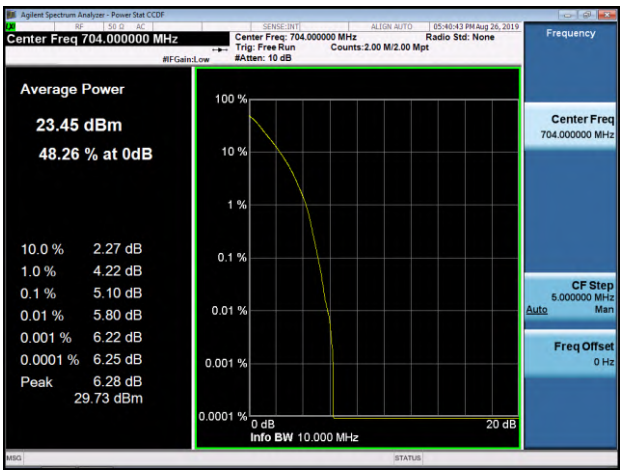
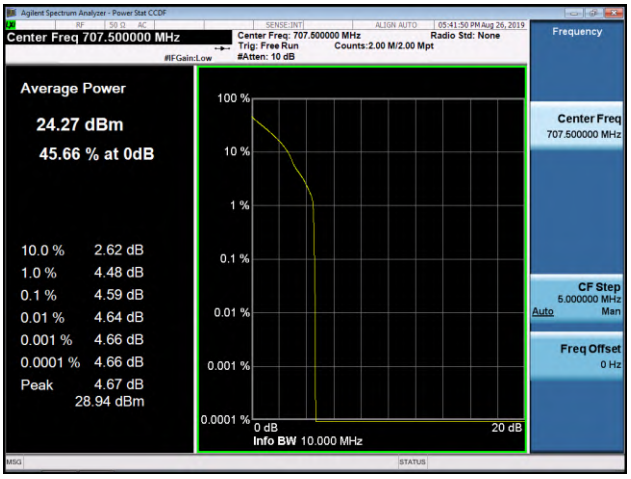
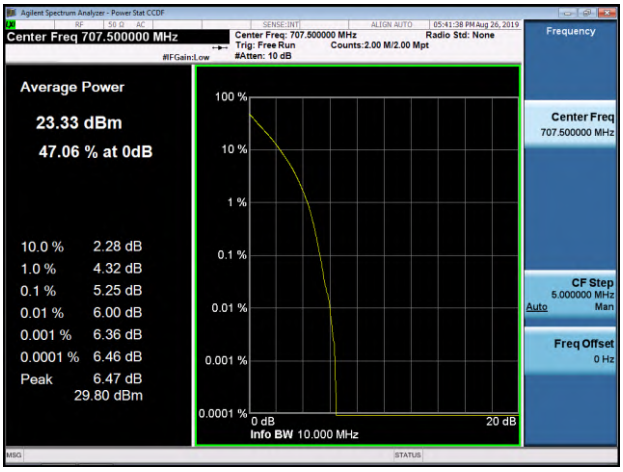
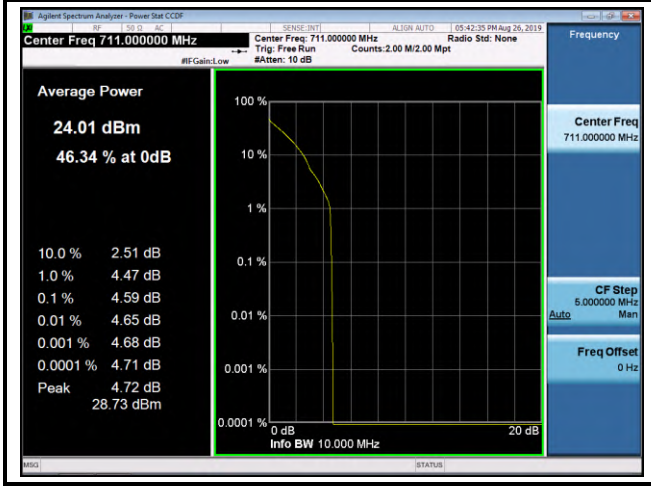
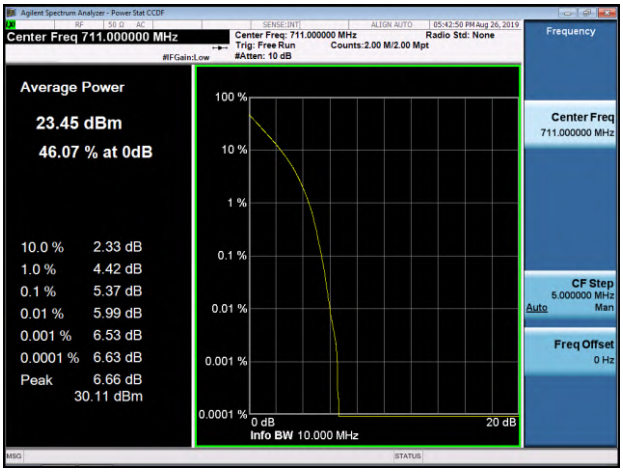
LTE Band 2 / 20MHz / 16-QAM	
Low CH / 1RB	Low CH / Full RB
	
Mid CH / 1RB	Mid CH / Full RB
	
High CH / 1RB	High CH / Full RB
	

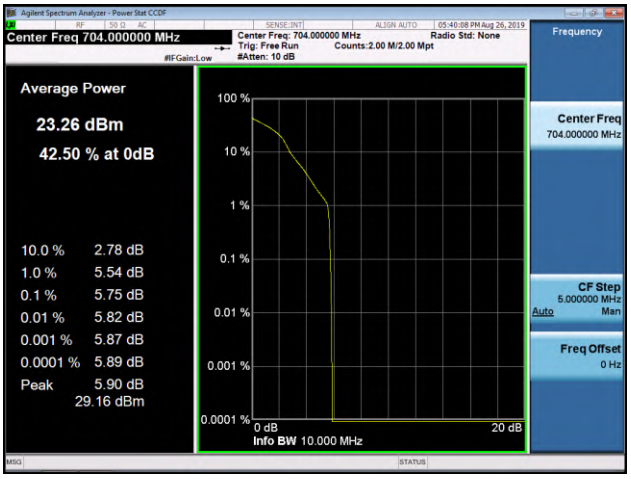
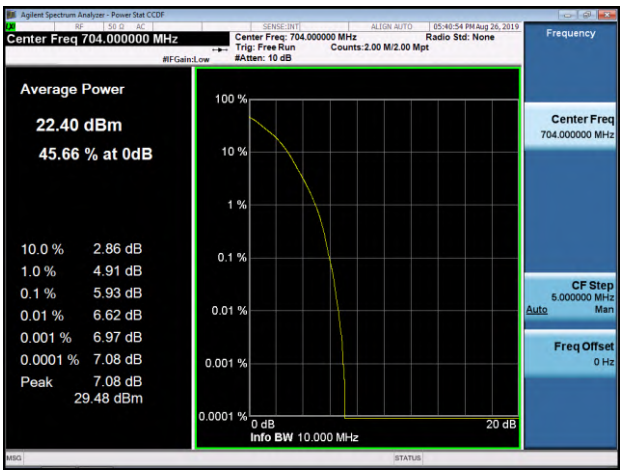
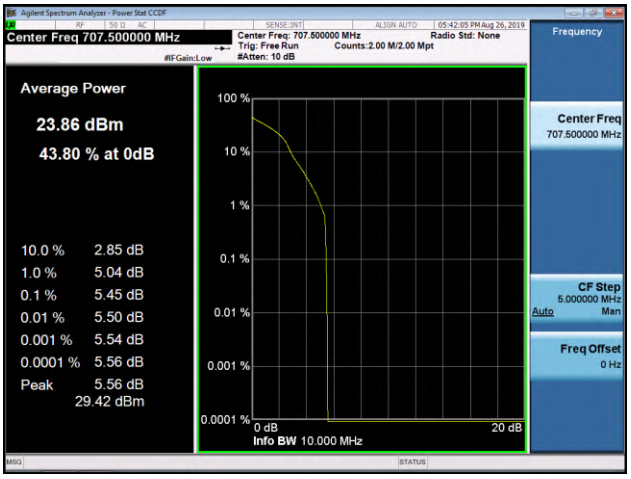
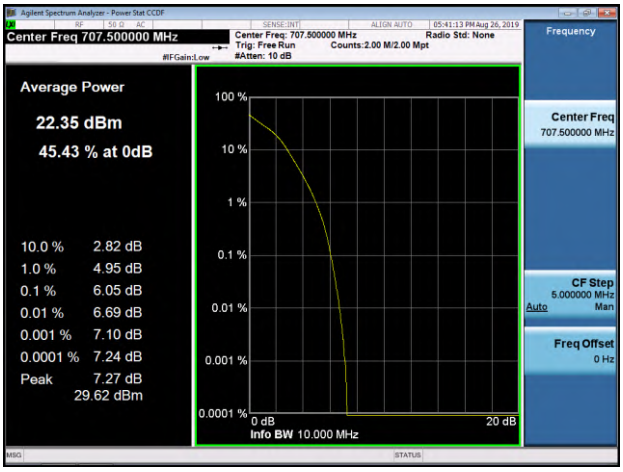
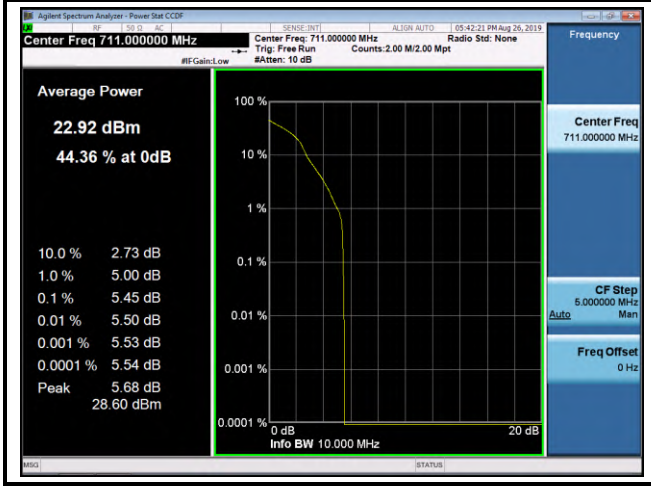
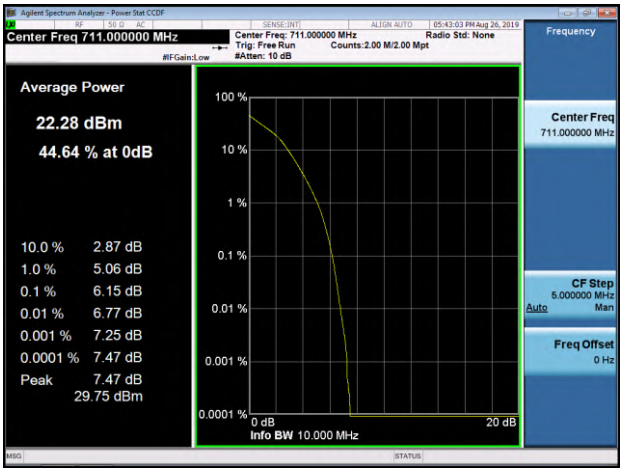
LTE Band 4 / 20MHz / QPSK	
Low CH / 1RB	Low CH / Full RB
	
Mid CH / 1RB	Mid CH / Full RB
	
High CH / 1RB	High CH / Full RB
	

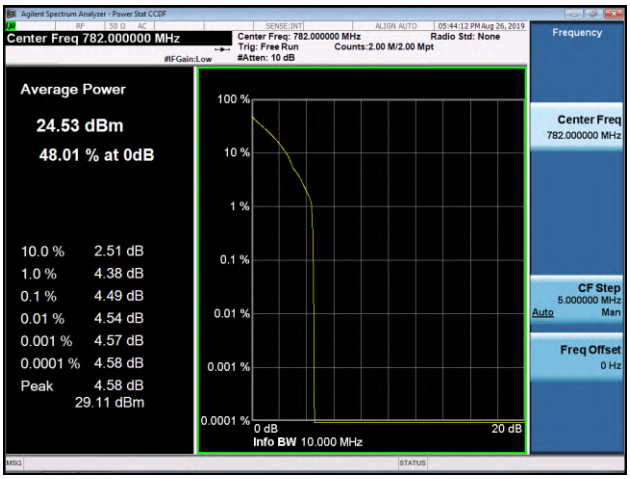
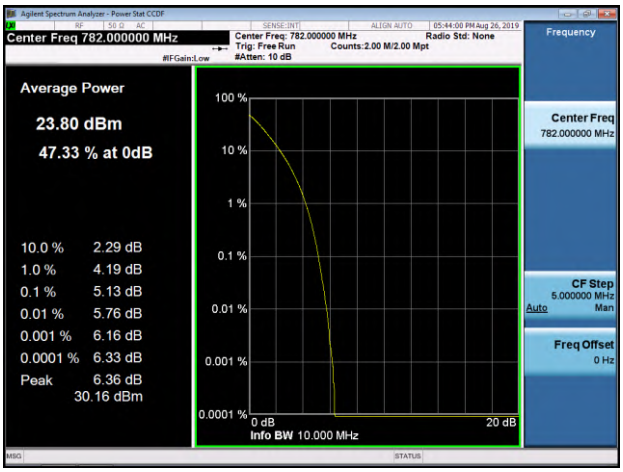
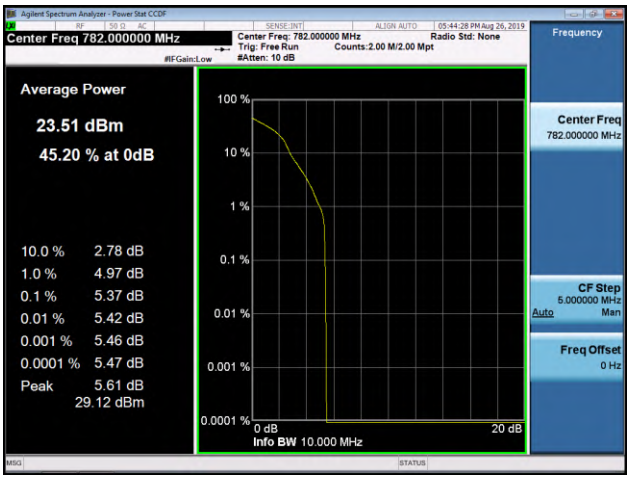
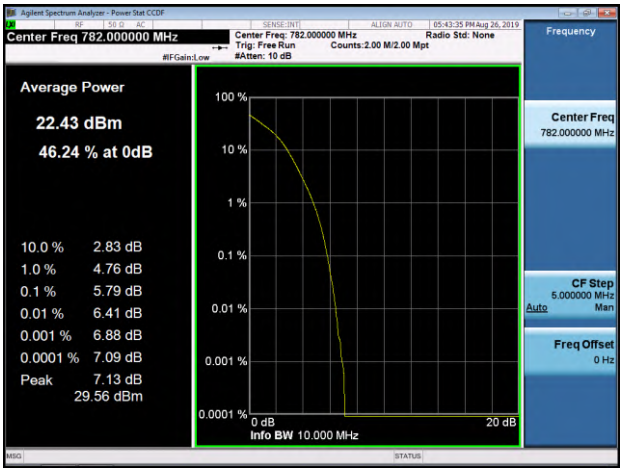
LTE Band 4 / 20MHz / 16-QAM	
Low CH / 1RB	Low CH Full RB
	
Mid CH / 1RB	Mid CH Full RB
	
High CH / 1RB	High CH Full RB
	

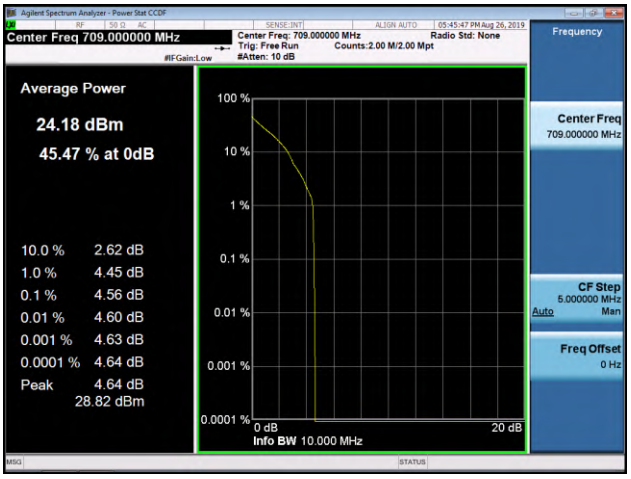
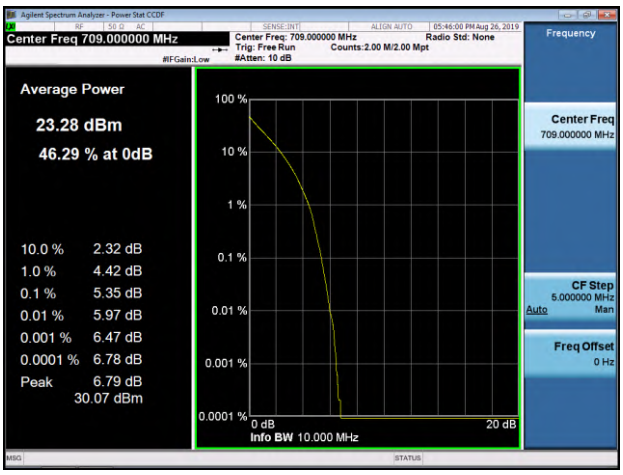
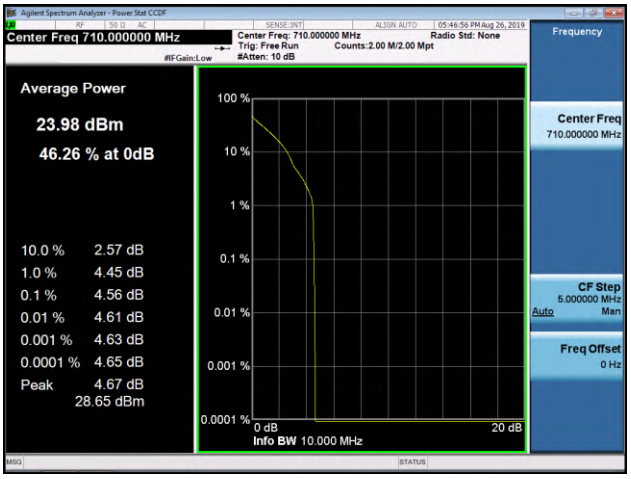
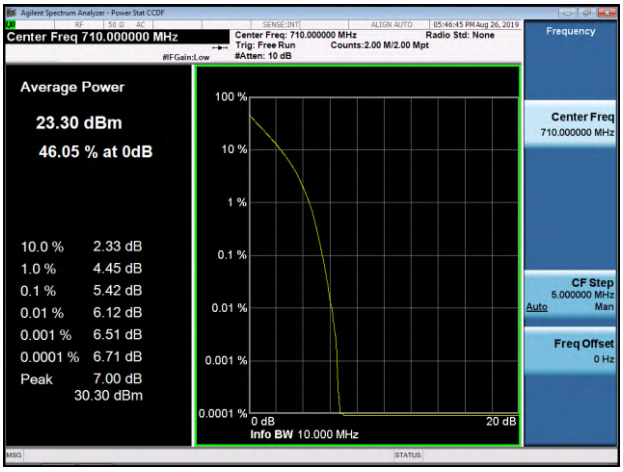
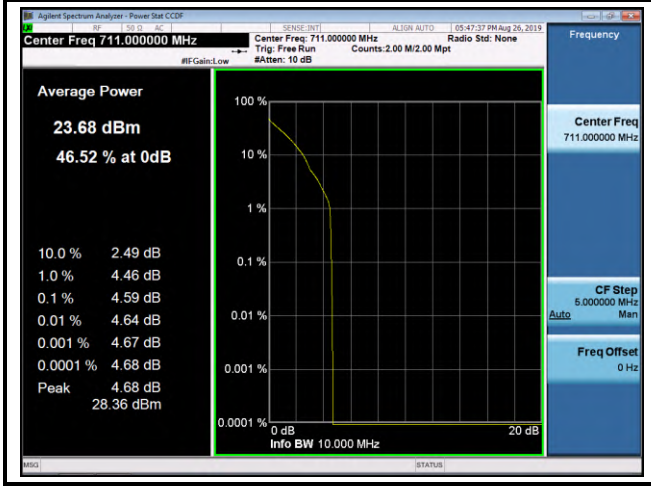
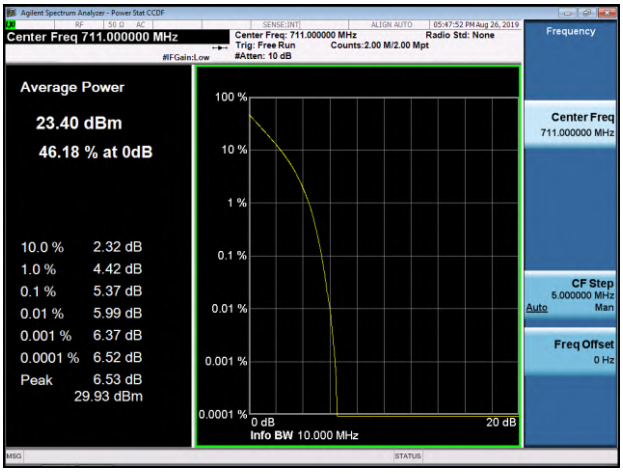
LTE Band 5 / 10MHz / QPSK	
Low CH / 1RB	Low CH Full RB
	
Mid CH / 1RB	Mid CH Full RB
	
High CH / 1RB	High CH Full RB
	

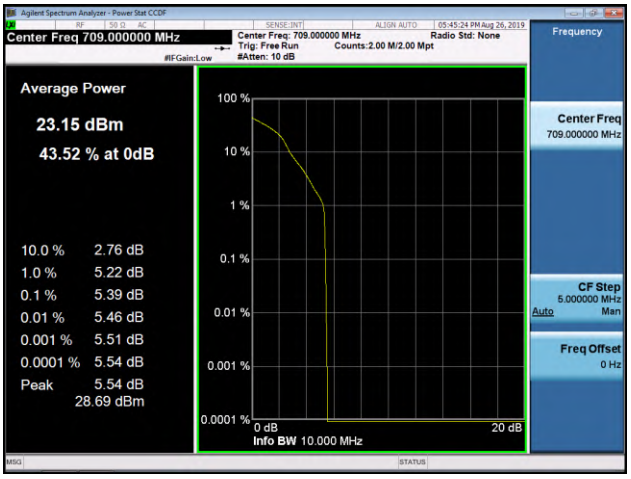
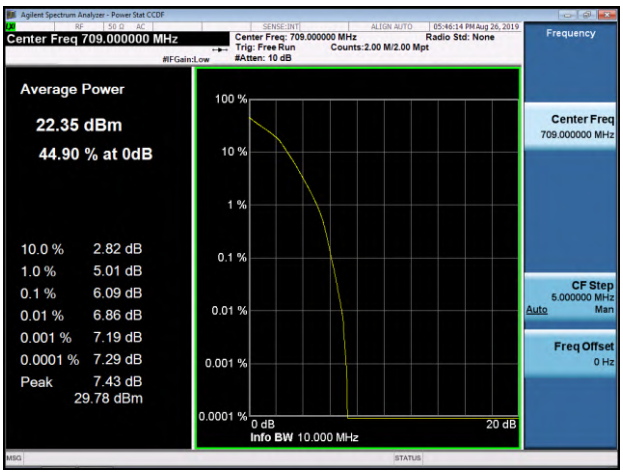
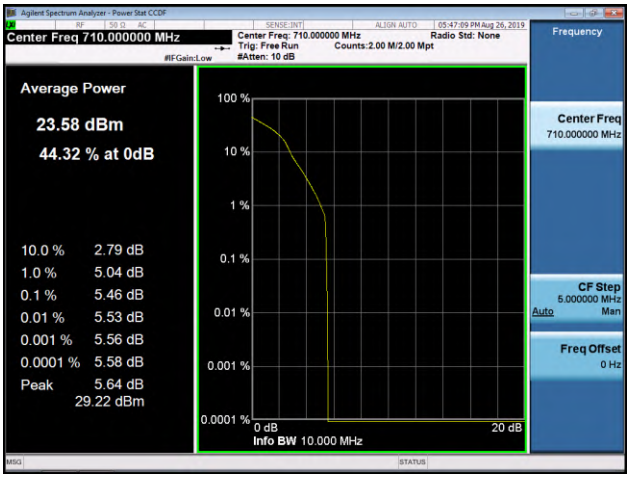
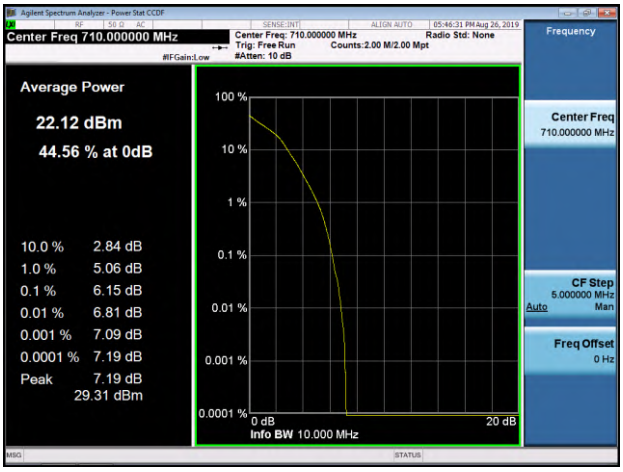
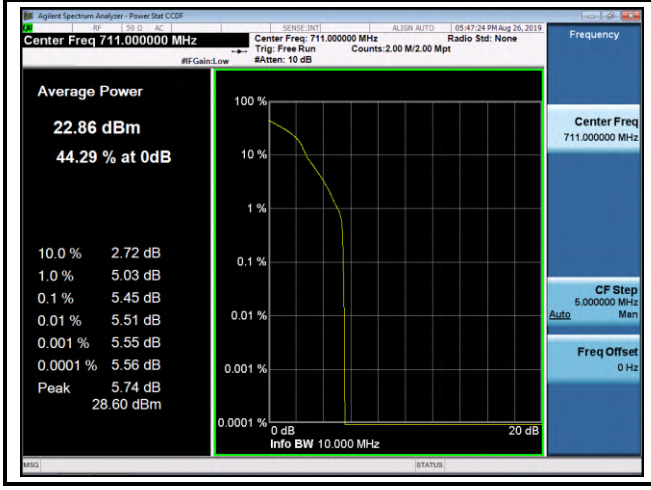
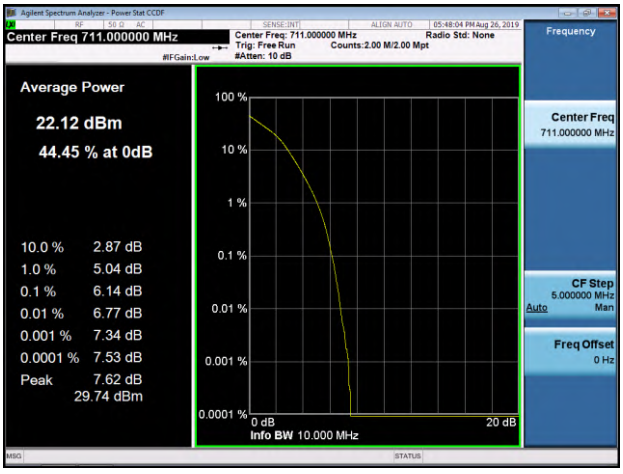
LTE Band 5 / 10MHz / 16-QAM	
Low CH / 1RB	Low CH Full RB
	
Mid CH / 1RB	Mid CH Full RB
	
High CH / 1RB	High CH Full RB
	

LTE Band 12 / 10MHz / QPSK	
Low CH / 1RB	Low CH Full RB
	
Mid CH / 1RB	Mid CH Full RB
	
High CH / 1RB	High CH Full RB
	

LTE Band 12 / 10MHz / 16-QAM	
Low CH / 1RB	Low CH Full RB
	
Mid CH / 1RB	Mid CH Full RB
	
High CH / 1RB	High CH Full RB
	

LTE Band 13 / 10MHz / QPSK	
1RB	Full RB
	
LTE Band 13 / 10MHz / 16QAM	
1RB	Full RB
	

LTE Band 17 / 10MHz / QPSK	
Low CH / 1RB	Low CH Full RB
	
Mid CH / 1RB	Mid CH Full RB
	
High CH / 1RB	High CH Full RB
	

LTE Band 17 / 10MHz / 16-QAM	
Low CH / 1RB	Low CH Full RB
	
Mid CH / 1RB	Mid CH Full RB
	
High CH / 1RB	High CH Full RB
	

7.6. Conducted & Radiated Power (ERP & EIRP)

7.6.1.Test Limit

Radiated Power

For FCC Part 24.232(c): LTE Band 2

The EIRP of mobile transmitters and auxiliary test transmitters must not exceed 2 Watts.

For FCC Part 27.50(d): LTE Band 4

The EIRP of mobile transmitters and auxiliary test transmitters must not exceed 1 Watts.

FCC Part 22.913(a)(5): LTE Band 5

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

For FCC Part 27.50(c)(10): LTE Band 12 / 17

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 3 Watts.

For FCC Part 27.50(b)(10): LTE Band 13

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 3 Watts.

7.6.2.Test Procedure Used

ANSI C63.26-2015 - Section 5.2.4.2 & 5.2.7

7.6.3.Test Setup

Average Power Measurement

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

According to KDB 412172 D01 Power Approach,

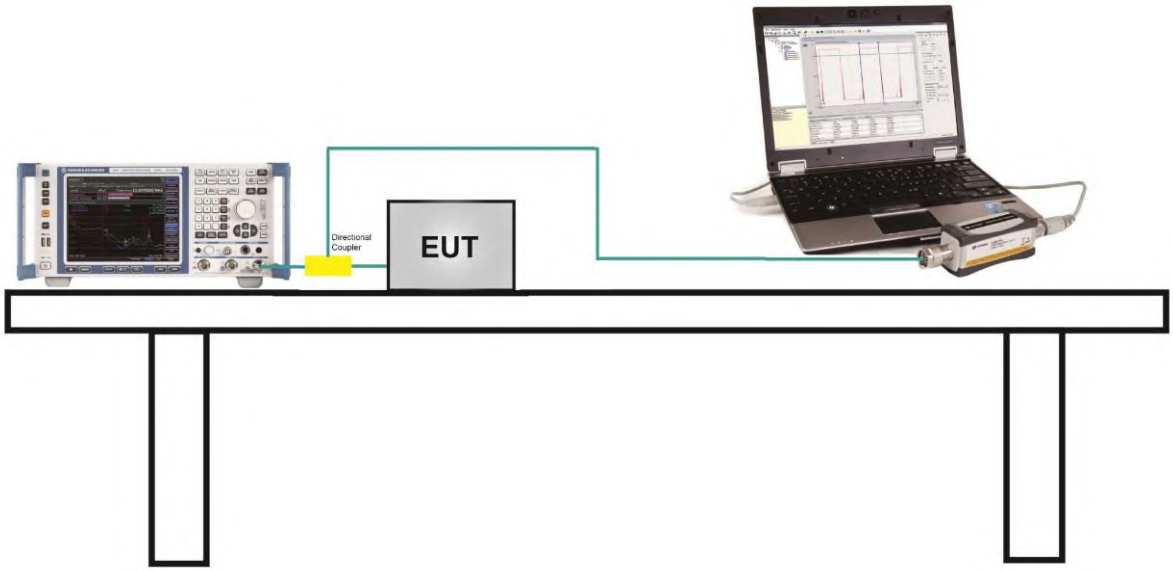
EIRP = PT + GT - LC, ERP = EIRP -2.15, where

PT = transmitter output power in dBm

GT = gain of the transmitting antenna in dBi

LC = signal attenuation in the connecting cable between the transmitter and antenna in dB

7.6.4.Test Setting



7.6.5.Test Result

Product	Color Radio	Temperature	25°C
Test Engineer	Dandy Li	Relative Humidity	52%
Test Site	TR3	Test Date	2019/08/26

FDD LTE Band 2						
Bandwidth (MHz)	Channel No.	Frequency (MHz)	Conducted Power (dBm)		Radiated Power (dBm)	
			QPSK	16QAM	QPSK	16QAM
1.4MHz	18607	1850.7	22.09	21.16	18.72	17.79
	18900	1880	**22.25**	21.08	18.88	17.71
	19193	1909.3	21.82	21.05	18.45	17.68
3MHz	18615	1851.5	21.93	20.93	18.56	17.56
	18900	1880	22.14	21.30	18.77	17.93
	19185	1908.5	21.82	20.87	18.45	17.50
5MHz	18625	1852.5	21.92	21.05	18.55	17.68
	18900	1880	22.02	20.91	18.65	17.54
	19175	1907.5	21.80	20.78	18.43	17.41
10MHz	18650	1855	21.98	20.92	18.61	17.55
	18900	1880	22.05	21.15	18.68	17.78
	19150	1905	22.02	20.89	18.65	17.52
15MHz	18675	1857.5	22.03	21.09	18.66	17.72
	18900	1880	22.06	21.07	18.69	17.70
	19125	1902.5	21.64	20.68	18.27	17.31
20MHz	18700	1860	22.06	21.15	18.69	17.78
	18900	1880	22.12	21.10	18.75	17.73
	19100	1900	21.70	20.82	18.33	17.45

Note:

EIRP = $P_T + G_T - L_C$ (Refer to ANSI C63.26 Annex C)

P_T = Conducted Power, $G_T - L_C$ = -3.37dBi

So Radiated Power (dBm) = Conducted Power (dBm) - 3.37 dBi

FDD LTE Band 4						
Bandwidth (MHz)	Channel No.	Frequency (MHz)	Conducted Power (dBm)		Radiated Power (dBm)	
			QPSK	16QAM	QPSK	16QAM
1.4MHz	19957	1710.7	22.37	21.55	19.00	18.18
	20175	1732.5	22.30	21.11	18.93	17.74
	20393	1754.3	22.31	21.52	18.94	18.15
3MHz	19965	1711.5	**22.43**	21.52	19.06	18.15
	20175	1732.5	22.21	21.49	18.84	18.12
	20385	1753.5	22.33	21.28	18.96	17.91
5MHz	19975	1712.5	22.34	21.41	18.97	18.04
	20175	1732.5	22.23	21.31	18.86	17.94
	20375	1752.5	22.29	21.37	18.92	18.00
10MHz	20000	1715	22.38	21.42	19.01	18.05
	20175	1732.5	22.07	21.15	18.70	17.78
	20350	1750	22.22	21.29	18.85	17.92
15MHz	20025	1717.5	22.33	21.26	18.96	17.89
	20175	1732.5	22.14	21.11	18.77	17.74
	20325	1747.5	22.30	21.26	18.93	17.89
20MHz	20050	1720	22.02	21.08	18.65	17.71
	20175	1732.5	21.90	20.87	18.53	17.50
	20300	1745	22.14	21.21	18.77	17.84

Note:

EIRP = $P_T + G_T - L_C$ (Refer to ANSI C63.26 Annex C)

P_T = Conducted Power, $G_T - L_C$ = -3.37dBi

So Radiated Power (dBm) = Conducted Power (dBm) - 3.37 dBi

FDD LTE Band 5						
Bandwidth (MHz)	Channel No.	Frequency (MHz)	Conducted Power (dBm)		Radiated Power (dBm)	
			QPSK	16QAM	QPSK	16QAM
1.4MHz	20407	824.70	22.95	22.03	17.43	16.51
	20525	836.50	22.85	21.83	17.33	16.31
	20643	848.30	22.75	21.67	17.23	16.15
3MHz	20415	825.50	22.80	21.89	17.28	16.37
	20525	836.50	22.78	21.50	17.26	15.98
	20635	847.50	22.84	21.81	17.32	16.29
5MHz	20425	826.50	**23.01**	21.97	17.49	16.45
	20525	836.50	22.84	21.86	17.32	16.34
	20625	846.50	22.98	21.90	17.46	16.38
10MHz	20450	829.00	23.00	21.93	17.48	16.41
	20525	836.50	22.92	21.83	17.40	16.31
	20600	844.00	22.98	21.90	17.46	16.38

Notes:

EIRP = P_T + G_T - L_C (Refer to ANSI C63.26 Annex C)

P_T = Conducted Power, G_T - L_C = -3.37 dBi

ERP = EIRP - 2.15 dB.

So Radiated Power (dBm) = Conducted Power (dBm) - 3.37 dBi - 2.15 dB

FDD LTE Band 12						
Bandwidth (MHz)	Channel No.	Frequency (MHz)	Conducted Power (dBm)		Radiated Power (dBm)	
			QPSK	16QAM	QPSK	16QAM
1.4MHz	23017	699.7	23.04	22.10	17.52	16.58
	23095	707.5	22.84	21.91	17.32	16.39
	23173	715.3	22.93	21.88	17.41	16.36
3MHz	23025	700.5	23.04	22.23	17.52	16.71
	23095	707.5	22.97	22.07	17.45	16.55
	23165	714.5	**23.07**	21.95	17.55	16.43
5MHz	23035	701.5	23.02	21.89	17.50	16.37
	23095	707.5	22.94	22.09	17.42	16.57
	23155	713.5	22.93	21.86	17.41	16.34
10MHz	23060	704	22.93	21.90	17.41	16.38
	23095	707.5	22.93	21.94	17.41	16.42
	23130	711	22.97	21.94	17.45	16.42

Notes:

EIRP = P_T + G_T - L_C (Refer to ANSI C63.26 Annex C)

P_T = Conducted Power, G_T - L_C = -3.37 dBi

ERP = EIRP - 2.15 dB.

So Radiated Power (dBm) = Conducted Power (dBm) - 3.37 dBi - 2.15 dB

FDD LTE Band 13						
Bandwidth (MHz)	Channel No.	Frequency (MHz)	Conducted Power (dBm)		Radiated Power (dBm)	
			QPSK	16QAM	QPSK	16QAM
5MHz	23205	779.9	**23.10**	22.03	17.58	16.51
	23230	782	23.09	22.15	17.57	16.63
	23255	784.5	22.52	21.64	17.00	16.12
10MHz	23230	782	22.98	21.94	17.46	16.42

Notes:

EIRP = P_T + G_T - L_C (Refer to ANSI C63.26 Annex C)

P_T = Conducted Power, G_T - L_C = -3.37 dBi

ERP = EIRP - 2.15 dB.

So Radiated Power (dBm) = Conducted Power (dBm) - 3.37 dBi - 2.15 dB

FDD LTE Band 17						
Bandwidth (MHz)	Channel No.	Frequency (MHz)	Conducted Power (dBm)		Radiated Power (dBm)	
			QPSK	16QAM	QPSK	16QAM
5MHz	23755	706.5	22.76	21.82	17.24	16.30
	23790	710	22.74	21.81	17.22	16.29
	23825	713.5	**22.96**	21.89	17.44	16.37
10MHz	23780	709	22.93	21.92	17.41	16.40
	23790	710	22.84	21.82	17.32	16.30
	23800	711	22.92	21.78	17.40	16.26

Notes:

EIRP = P_T + G_T - L_C (Refer to ANSI C63.26 Annex C)

P_T = Conducted Power, G_T - L_C = -3.37 dBi

ERP = EIRP - 2.15 dB.

So Radiated Power (dBm) = Conducted Power (dBm) - 3.37 dBi - 2.15 dB

7.7. Radiated Spurious Emissions Measurements

7.7.1.Test Limit

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.

7.7.2.Test Procedure Used

ANSI C63.26-2015 - Section 5.2.7 & 5.5

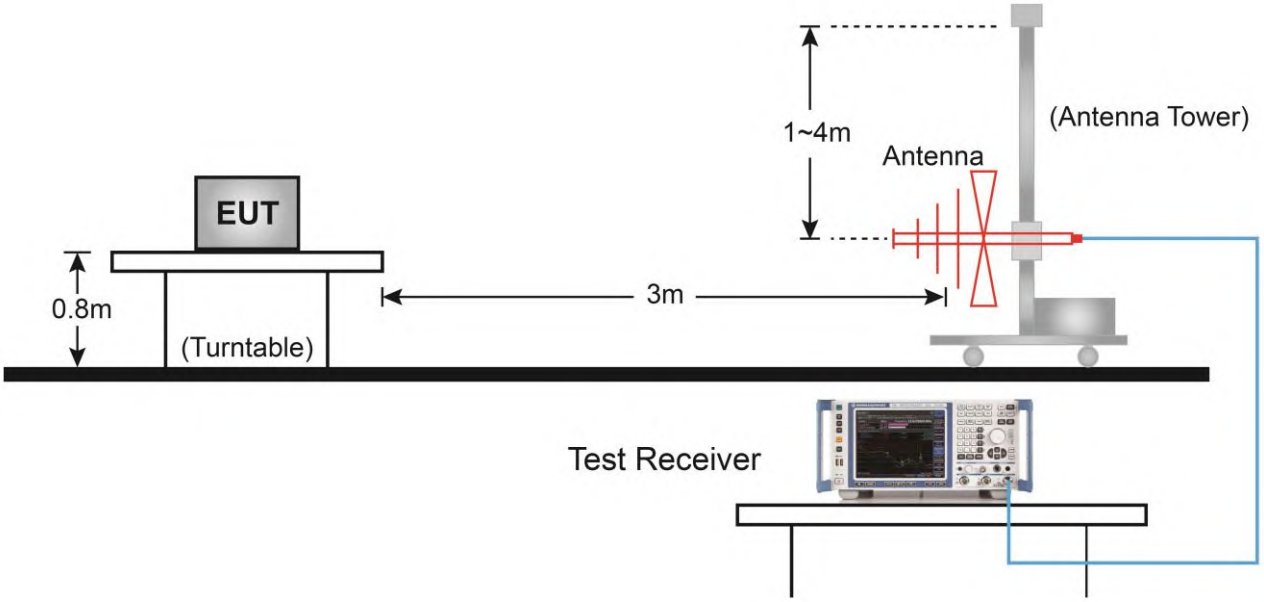
7.7.3.Test Setting

1. The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
2. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
3. The output of the test antenna shall be connected to the measuring receiver.
4. The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
5. 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.
6. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
7. 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.
8. The maximum signal level detected by the measuring receiver shall be noted.
9. The transmitter shall be replaced by a substitution antenna.
10. 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.
11. The substitution antenna shall be connected to a calibrated signal generator.

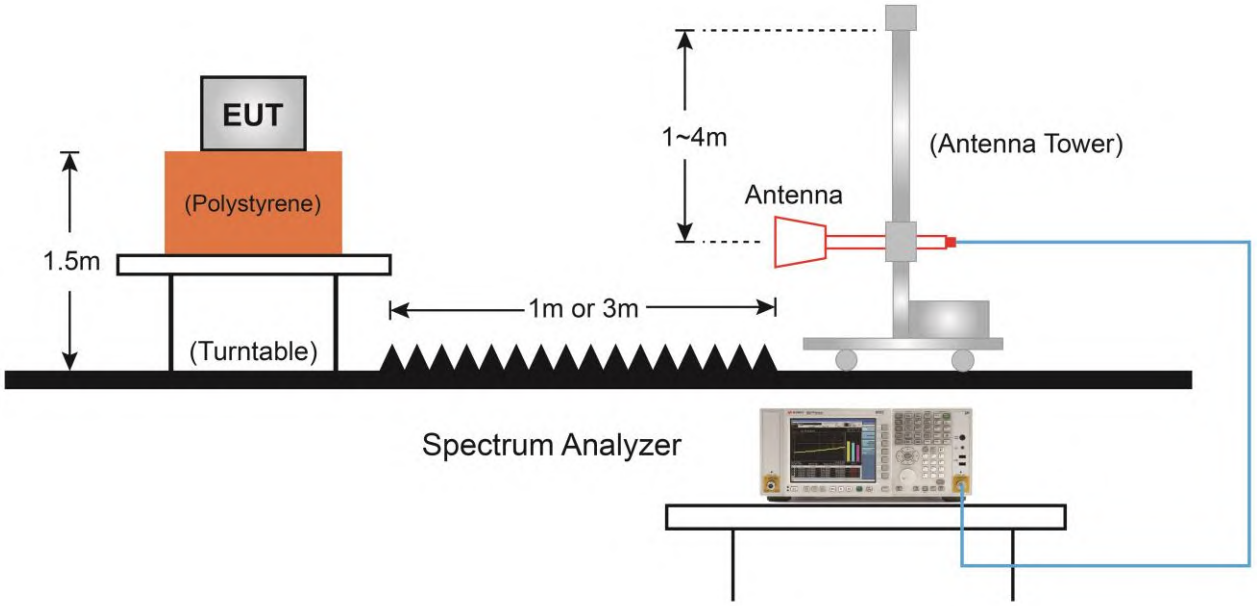
12. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
13. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
14. The input 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.
15. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
16. 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.
17. Test site anechoic chamber refer to ANSI C63.4: 2014.

7.7.4.Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



7.7.5.Test Result

Product	Color Radio	Temperature	26°C
Test Engineer	Jason Gao	Relative Humidity	50%
Test Site	AC1	Test Date	2019/08/24

LTE Band 2							
Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Substitute Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Mid CH 18900 (1880MHz) BW=1.4MHz							
5573.00	V	-60.74	1.26	13.15	-48.85	-13.00	-48.85
8165.50	V	-57.37	1.49	11.72	-47.14	-13.00	-34.14
5581.50	H	-63.23	1.25	13.15	-51.33	-13.00	-38.33
8701.00	H	-57.71	1.45	11.65	-47.51	-13.00	-34.51

Notes:

1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

2. ERP (dBm) = SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBi).

LTE Band 4							
Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Substitute Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Margin (dB)
Low CH 19965 (1711.5MHz) BW=3MHz							
5156.50	V	-62.07	1.22	12.81	-50.47	-13.00	-37.47
7400.50	V	-57.05	1.45	11.02	-47.48	-13.00	-34.48
5156.50	H	-63.29	1.22	12.81	-51.70	-13.00	-38.70
7069.00	H	-58.87	1.42	11.37	-48.92	-13.00	-35.92

Notes:

1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

2. ERP (dBm) = SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBi).

LTE Band 5							
Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Substitute Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Margin (dB)
Low CH 20425 (826.5MHz) BW=5MHz							
5003.50	V	-60.53	1.19	12.66	-51.21	-13	-38.21
7494.00	V	-56.56	1.47	11.22	-48.96	-13	-35.96
5003.50	H	-60.81	1.47	12.66	-51.77	-13	-38.77
7460.00	H	-57.86	1.79	11.15	-50.65	-13	-37.65

Notes:

1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

2. ERP (dBm) = SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBi) - 2.15

LTE Band 12							
Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Substitute Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Margin (dB)
High CH 23165 (714.5MHz) BW=3MHz							
1399.50	V	-63.90	0.64	8.01	-58.67	-13.00	-45.67
2105.00	V	-51.76	0.77	9.52	-45.15	-13.00	-32.15
1408.00	H	-60.17	0.64	8.07	-54.88	-13.00	-41.88
2105.00	H	-50.38	0.89	9.52	-43.90	-13.00	-30.90

Notes:

1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

2. ERP (dBm) = SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBi) - 2.15

LTE Band 13							
Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Substitute Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Margin (dB)
Low CH 23205 (779.9MHz) BW=5MHz							
1416.50	V	-54.49	0.58	8.14	-49.08	-13.00	-36.08
2122.00	V	-50.87	0.73	9.47	-44.28	-13.00	-31.28
1416.50	H	-50.81	0.58	8.14	-45.40	-13.00	-32.40
2122.00	H	-53.23	0.73	9.47	-46.64	-13.00	-33.64

Notes:

1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

2. ERP (dBm) = SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBi) - 2.15.

LTE Band 17							
Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Substitute Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Margin (dB)
Low. CH 23825 (713.5MHz) BW=5MHz							
1416.50	V	-56.51	0.58	8.14	-51.10	-13.00	-38.10
2122.00	V	-58.55	0.73	9.47	-51.96	-13.00	-38.96
1416.50	H	-54.87	0.58	8.14	-49.46	-13.00	-36.46
2122.00	H	-57.14	0.73	9.47	-50.55	-13.00	-37.55

Notes:

1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

2. ERP (dBm) = SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBi) - 2.15

7.8. Frequency Stability Under Temperature & Voltage Variations

7.8.1.Test Limit

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

For Part 24, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

For Part 27, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

7.8.2.Test Procedure

ANSI C63.26 - Section 5.6

7.8.3.Test Setting

Frequency Stability Under Temperature Variations:

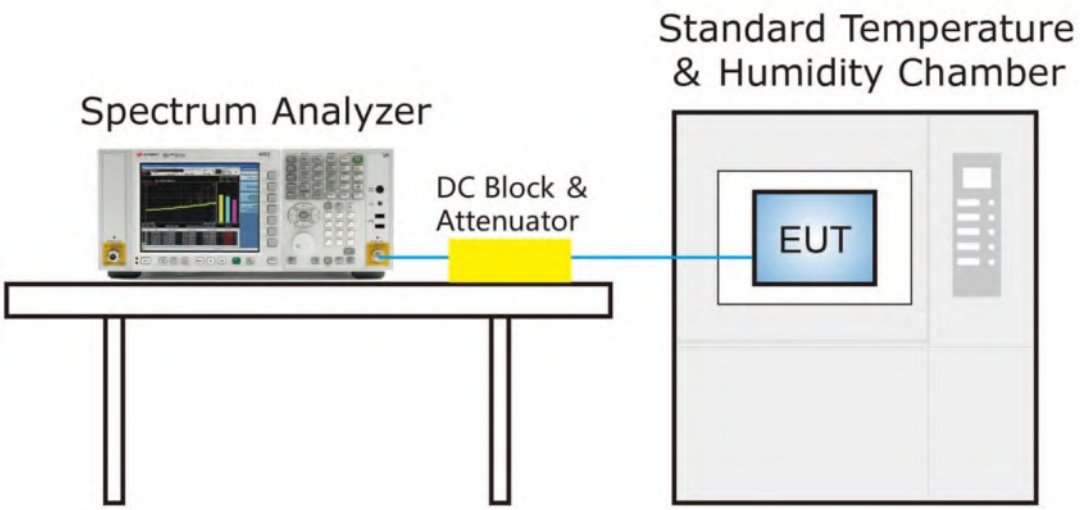
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C decreased per stage until the lowest temperature reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint (If a product is specified to operate over a range of input voltage then the −15% variation is applied to the lowermost voltage and the +15% is applied to the uppermost voltage), record the maximum frequency change.

7.8.4.Test Setup



7.8.5.Test Result

Product	Color Radio	Temperature	25°C
Test Engineer	Dandy Li	Relative Humidity	52%
Test Site	TR3	Test Date	2019/08/26
Test Mode	LTE Band 2 Mid. CH 18900 (1880.0MHz)		

Voltage (%)	Power (V_{DC})	TEMP (%)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)	Limit (%)	Result
QPSK							
100%	12	+20(Ref)	1880,000,000	-9	0.000000	±0.00025	Pass
100%		-30	1880,000,000	-6	0.000000	±0.00025	Pass
100%		-20	1880,000,000	-13	-0.000001	±0.00025	Pass
100%		-10	1880,000,000	-33	-0.000002	±0.00025	Pass
100%		0	1880,000,000	-66	-0.000003	±0.00025	Pass
100%		+10	1880,000,000	-53	-0.000003	±0.00025	Pass
100%		+20	1880,000,000	-41	-0.000002	±0.00025	Pass
100%		+30	1880,000,000	-13	-0.000001	±0.00025	Pass
100%		+40	1880,000,000	-31	-0.000002	±0.00025	Pass
100%		+50	1880,000,000	-31	-0.000002	±0.00025	Pass
115%	13.8	+20	1880,000,000	-28	-0.000001	±0.00025	Pass
85%	10.2	+20	1880,000,000	-17	-0.000001	±0.00025	Pass

Product	Color Radio	Temperature	25°C
Test Engineer	Dandy Li	Relative Humidity	52%
Test Site	TR3	Test Date	2019/08/26
Test Mode	LTE Band 4 Mid. CH 20175 (1732.5MHz)		

Voltage (%)	Power (V_{DC})	TEMP (%)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)	Limit (%)	Result
QPSK							
100%	12	+20(Ref)	1732,500,000	32	0.000002	±0.00025	Pass
100%		-30	1732,500,000	15	0.000001	±0.00025	Pass
100%		-20	1732,500,000	5	0.000000	±0.00025	Pass
100%		-10	1732,500,000	35	0.000002	±0.00025	Pass
100%		0	1732,500,000	17	0.000001	±0.00025	Pass
100%		+10	1732,500,000	14	0.000001	±0.00025	Pass
100%		+20	1732,500,000	2	0.000000	±0.00025	Pass
100%		+30	1732,500,000	42	0.000002	±0.00025	Pass
100%		+40	1732,500,000	30	0.000002	±0.00025	Pass
100%		+50	1732,500,000	15	0.000001	±0.00025	Pass
115%	13.8	+20	1732,500,000	5	0.000000	±0.00025	Pass
85%	10.2	+20	1732,500,000	5	0.000000	±0.00025	Pass

Product	Color Radio	Temperature	25°C
Test Engineer	Dandy Li	Relative Humidity	52%
Test Site	TR3	Test Date	2019/08/26
Test Mode	LTE Band 5 Mid. CH 20525 (836.5MHz)		

Voltage (%)	Power (V_{DC})	TEMP (%)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)	Limit (%)	Result
QPSK							
100%	12	+20(Ref)	836,500,000	-13	-0.000002	±0.00025	Pass
100%		-30	836,500,000	-9	-0.000001	±0.00025	Pass
100%		-20	836,500,000	-5	-0.000001	±0.00025	Pass
100%		-10	836,500,000	-28	-0.000003	±0.00025	Pass
100%		0	836,500,000	-22	-0.000003	±0.00025	Pass
100%		+10	836,500,000	-13	-0.000002	±0.00025	Pass
100%		+20	836,500,000	-18	-0.000002	±0.00025	Pass
100%		+30	836,500,000	-8	-0.000001	±0.00025	Pass
100%		+40	836,500,000	-3	0.000000	±0.00025	Pass
100%		+50	836,500,000	-5	-0.000001	±0.00025	Pass
115%	13.8	+20	836,500,000	-5	-0.000001	±0.00025	Pass
85%	10.2	+20	836,500,000	-4	-0.000001	±0.00025	Pass

Product	Color Radio	Temperature	25°C
Test Engineer	Dandy Li	Relative Humidity	52%
Test Site	TR3	Test Date	2019/08/26
Test Mode	LTE Band 12 Mid. CH 23095 (707.5MHz)		

Voltage (%)	Power (V_{DC})	TEMP (%)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)	Limit (%)	Result
QPSK							
100%	12	+20(Ref)	707,500,000	-22	-0.000003	±0.00025	Pass
100%		-30	707,500,000	-16	-0.000002	±0.00025	Pass
100%		-20	707,500,000	-6	-0.000001	±0.00025	Pass
100%		-10	707,500,000	-16	-0.000002	±0.00025	Pass
100%		0	707,500,000	-6	-0.000001	±0.00025	Pass
100%		+10	707,500,000	-1	0.000000	±0.00025	Pass
100%		+20	707,500,000	-4	-0.000001	±0.00025	Pass
100%		+30	707,500,000	-6	-0.000001	±0.00025	Pass
100%		+40	707,500,000	-14	-0.000002	±0.00025	Pass
100%		+50	707,500,000	-6	-0.000001	±0.00025	Pass
115%	13.8	+20	707,500,000	-10	-0.000001	±0.00025	Pass
85%	10.2	+20	707,500,000	-23	-0.000003	±0.00025	Pass

Product	Color Radio	Temperature	25°C
Test Engineer	Dandy Li	Relative Humidity	52%
Test Site	TR3	Test Date	2019/08/26
Test Mode	LTE Band 13 Mid. CH 23230 (782MHz)		

Voltage (%)	Power (V_{DC})	TEMP (%)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)	Limit (%)	Result
QPSK							
100%	12	+20(Ref)	707,500,000	-4	0.000000	±0.00025	Pass
100%		-30	707,500,000	-6	-0.000001	±0.00025	Pass
100%		-20	707,500,000	-10	-0.000001	±0.00025	Pass
100%		-10	707,500,000	-12	-0.000002	±0.00025	Pass
100%		0	707,500,000	-1	0.000000	±0.00025	Pass
100%		+10	707,500,000	-14	-0.000002	±0.00025	Pass
100%		+20	707,500,000	-20	-0.000003	±0.00025	Pass
100%		+30	707,500,000	-4	0.000000	±0.00025	Pass
100%		+40	707,500,000	-12	-0.000001	±0.00025	Pass
100%		+50	707,500,000	-6	-0.000001	±0.00025	Pass
115%	13.8	+20	707,500,000	-1	0.000000	±0.00025	Pass
85%	10.2	+20	707,500,000	-18	-0.000002	±0.00025	Pass

Product	Color Radio	Temperature	25°C
Test Engineer	Dandy Li	Relative Humidity	52%
Test Site	TR3	Test Date	2019/08/26
Test Mode	LTE Band 17 Mid. CH 23790 (710.0MHz)		

Voltage (%)	Power (V_{DC})	TEMP (%)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)	Limit (%)	Result
QPSK							
100%	12	+20(Ref)	710,000,000	-22	-0.000003	±0.00025	Pass
100%		-30	710,000,000	-10	-0.000001	±0.00025	Pass
100%		-20	710,000,000	-25	-0.000003	±0.00025	Pass
100%		-10	710,000,000	-29	-0.000004	±0.00025	Pass
100%		0	710,000,000	-7	-0.000001	±0.00025	Pass
100%		+10	710,000,000	-1	0.000000	±0.00025	Pass
100%		+20	710,000,000	-10	-0.000001	±0.00025	Pass
100%		+30	710,000,000	-13	-0.000002	±0.00025	Pass
100%		+40	710,000,000	-13	-0.000002	±0.00025	Pass
100%		+50	710,000,000	-22	-0.000003	±0.00025	Pass
115%	13.8	+20	710,000,000	-26	-0.000004	±0.00025	Pass
85%	10.2	+20	710,000,000	-11	-0.000002	±0.00025	Pass

8. CONCLUSION

The data collected relate only the item(s) tested and show that the device compliance with all the requirements of Parts 2, 22, 24, 27 of the FCC Rules.

The End

Appendix A – Test Setup Photograph

Refer to “1907WSU008-UT” file.

Appendix B – EUT Photograph

Refer to “1907WSU008-UE” file.