4.5.10 LTE Band 71

LTE Band 71 Maximum Average Power (dBm)										
Modulation	RB		Test Channel			RB		Test Channel		
	Size	Offset	Low	Mid	High	Size	Offset	Low	Mid	High
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	22.92	22.54	22.77	1	0	22.86	22.56	22.82
	1	12	23.03	22.71	23.23	1	24	23.08	22.74	23.19
	1	24	23.04	22.65	22.81	1	49	23.00	22.81	22.79
	12	0	21.90	21.91	21.96	25	0	22.05	21.88	21.88
	12	6	22.15	22.01	21.92	25	12	22.09	22.01	21.95
	12	13	22.13	21.92	22.02	25	25	22.02	21.89	22.07
	25	0	22.13	21.93	21.99	50	0	22.08	22.02	22.05
16QAM	1	0	21.46	21.59	21.73	1	0	21.41	21.68	21.90
	1	12	22.12	22.44	21.95	1	24	22.13	22.29	21.98
	1	24	21.52	21.55	21.69	1	49	21.50	21.54	21.66
	12	0	20.95	21.16	20.87	25	0	20.83	21.17	21.03
	12	6	21.00	21.19	21.11	25	12	21.09	21.23	20.95
	12	13	21.18	20.91	21.13	25	25	21.11	21.04	21.02
	25	0	21.10	21.04	21.06	50	0	20.96	21.06	21.06
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	22.85	22.61	22.77	1	0	22.93	22.67	22.89
	1	37	22.90	22.85	23.18	1	50	23.10	22.89	**23.29**
	1	74	23.11	22.81	22.78	1	99	23.12	22.83	22.91
	37	0	22.02	22.03	21.85	50	0	22.10	22.07	22.01
	37	19	22.07	22.03	22.02	50	25	22.18	22.10	22.07
	37	39	22.01	21.97	22.04	50	50	22.16	22.04	22.16
	75	0	22.00	22.01	21.94	100	0	22.19	22.05	22.06
16QAM	1	0	21.39	21.67	21.85	1	0	21.54	21.78	21.90
	1	37	22.29	22.36	21.98	1	50	22.31	22.47	22.02
	1	74	21.64	21.59	21.61	1	99	21.69	21.72	21.73
	37	0	20.91	21.14	21.01	50	0	21.01	21.21	21.07
	37	19	20.96	21.21	20.99	50	25	21.15	21.27	21.12
	37	39	21.17	21.08	21.11	50	50	21.20	21.11	21.17
	75	0	20.95	20.98	21.04	100	0	21.15	21.17	21.11

Pre-scan all bandwidth and RB, find worse case mode are chosen to the report, the LTE worse case mode applicability and tested channel detail as below:

Item	Band	Bandwidth(MHz)						Modulation			RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
ERP/EIRP	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
	12	☒	☒	☒	☒	-	-	☒	☒	☒	☒	☐	☐	☒	☒	☒
	13	-	-	☒	☒	-	-	☒	☒	☒	☒	☐	☐	☒	☒	☒
	25	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	26	☒	☒	☒	☒	☒	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
	66	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	71	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
Conducted output power	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☒	☒	☒	☒	☒
	12	☒	☒	☒	☒	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☒
	13	-	-	☒	☒	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☒
	25	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	26	☒	☒	☒	☒	☒	--	☒	☒	☒	☒	☒	☒	☒	☒	☒
	66	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	71	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒

Item	Band	Bandwidth(MHz)						Modulation			RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
99%&26dB Bandwidth	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☐	☐	☒	☒	☒	☒
	12	☒	☒	☒	☒	-	-	☒	☒	☒	☐	☐	☒	☒	☒	☒
	13	-	-	☒	☒	-	-	☒	☒	☒	☐	☐	☒	☒	☒	☒
	25	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
	26	☒	☒	☒	☒	☒	--	☒	☒	☒	☐	☐	☒	☒	☒	☒
	66	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
	71	-	-	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
peak-to-average ratio	2	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	4	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	5	☐	☐	☐	☒	--	--	☒	☒	☒	☒	☐	☒	☒	☐	☒
	12	☐	☐	☐	☒	-	-	☒	☒	☒	☒	☐	☒	☒	☐	☒
	13	-	-	☐	☒	-	-	☒	☒	☒	☒	☐	☒	☒	☐	☒
	25	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	26	☐	☐	☐	☐	☒	--	☒	☒	☒	☒	☐	☒	☒	☐	☒
	66	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	71	-	-	☐	☐	☐	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒

Item	Band	Bandwidth(MHz)						Modulation			RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Band Edge at antenna terminals	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☐	☒	☒	☐	☒
	12	☒	☒	☒	☒	-	-	☒	☒	☒	☒	☐	☒	☒	☐	☒
	13	-	-	☒	☒	-	-	☒	☒	☒	☒	☐	☒	☒	☐	☒
	25	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	26	☒	☒	☒	☒	☒	--	☒	☒	☒	☒	☐	☒	☒	☐	☒
	66	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	71	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
Spurious emissions at antenna terminals	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
	12	☒	☒	☒	☒	-	-	☒	☒	☒	☒	☐	☐	☒	☒	☒
	13	-	-	☒	☒	-	-	☒	☒	☒	☒	☐	☐	☒	☒	☒
	25	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	26	☒	☒	☒	☒	☒	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
	66	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	71	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒

Item	Band	Bandwidth(MHz)						Modulation			RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Field strength of spurious radiation	2	☐	☐	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	4	☐	☐	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	5	☐	☐	☐	☒	--	--	☒	☐	☐	☒	☐	☐	☒	☒	☒
	12	☐	☐	☐	☒	-	-	☒	☐	☐	☒	☐	☐	☒	☒	☒
	13	-	-	☐	☒	-	-	☒	☐	☐	☒	☐	☐	☒	☒	☒
	25	☐	☐	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	26	☐	☐	☐	☐	☒	--	☒	☐	☐	☒	☐	☐	☒	☒	☒
	66	☐	☐	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	71	-	-	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
Frequency stability	2	☐	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	4	☐	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	5	☐	☐	☐	☒	--	--	☒	☐	☐	☐	☐	☒	☐	☒	☐
	12	☐	☐	☐	☒	-	-	☒	☐	☐	☐	☐	☒	☐	☒	☐
	13	-	-	☐	☒	-	-	☒	☐	☐	☐	☐	☒	☐	☒	☐
	25	☐	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	26	☐	☐	☐	☐	☒	--	☒	☐	☐	☐	☐	☒	☐	☒	☐
	66	☐	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	71	-	-	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐

Remark:
The mark "☒" means is chosen for testing; The mark "☐" means is not chosen for testing;
The mark "-" means is not supported bandwidth

5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION

5.1 REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 22	Public Mobile Services
3	FCC 47 CFR Part 27	Miscellaneous Wireless Communications Services
4	FCC 47 CFR Part 24	Personal Communications Services
5	FCC 47 CFR Part 90	Private Land Mobile Radio Services
6	ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
7	RSS-Gen Issue 5	General Requirements for Compliance of Radio Apparatus
8	RSS-130 Issue 2	Equipment Operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz
9	RSS-132 Issue 4	Cellular Telephone Systems Operating in the Bands 824-849 MHz and 869-894 MHz
10	RSS-133 Issue 6	2 GHz Personal Communications Services Aussi disponible
11	RSS-139 Issue 4	Advanced Wireless Services (AWS) Equipment Operating in the Bands 1710-1780 MHz and 2110-2180 MHz
12	RSS-199 Issue 3	Broadband Radio Service (BRS) Equipment Operating in the Band 2500–2690 MHz
13	KDB 971168 D01	KDB 971168 D01 Power Meas License Digital Systems v03r01

5.2 ERP OR EIRP

Test Requirement: FCC 47 CFR Part 2.1046(a)

LTE Band 2 & LTE Band 25: FCC 47 CFR Part 24.232(c), RSS-133 Issue 6, Section 6.4

LTE Band 4 & LTE Band 66: FCC 47 CFR Part 27.50(d)(4), RSS-139 Issue 4, Section 6.5

LTE Band 5 & LTE Band 26: FCC 47 CFR Part 22.913(a), RSS-132 Issue 4, Section 5.4

LTE Band 12 & Band 71: FCC 47 CFR Part 27.50(c)(10), RSS-130 Issue 2, Section 4.6

LTE Band 13: FCC 47 CFR Part 27.50(b)(10), RSS-130 Issue 2, Section 4.6

LTE Band 26: FCC 47 CFR Part 90.635

Test Method: KDB 971168 D01v03r01 Section 5.6 & ANSI C63.26-2015

Limit:

FCC 47 CFR Part 22.913(a):

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

FCC 47 CFR Part 24.232(c):

Mobile and portable stations are limited to 2 watts EIRP.

FCC 47 CFR Part 27.50(d)(4):

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

FCC 47 CFR Part 27.50(c)(10):

Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

FCC 47 CFR Part 27.50(b)(10):

Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz

bands are limited to 3 watts ERP.

FCC 47 CFR Part 90.635:

(a) The effective radiated power and antenna height for base stations may not exceed 1 kilowatt (30 dBw) and 304 m. (1,000 ft.) above average terrain (AAT), respectively, or the equivalent thereof as determined from the Table. These are maximum values, and applicants will be required to justify power levels and antenna heights requested.

(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

Table—Equivalent Power and Antenna Heights for Base Stations in the 851–869 MHz and 935–940 MHz Bands Which Have a Requirement for a 32 km (20 mi) Service Area Radius

Antenna height (ATT) meters (feet)	Effective radiated power (watts)[1 2 4]
Above 1,372 (4,500)	65
Above 1,220 (4,000) to 1,372 (4,500)	70
Above 1,067 (3,500) to 1,220 (4,000)	75
Above 915 (3,000) to 1,067 (3,500)	100
Above 763 (2,500) to 915 (3,000)	140
Above 610 (2,000) to 763 (2,500)	200
Above 458 (1,500) to 610 (2,000)	350
Above 305 (1,000) to 458 (1,500)	600
Up to 305 (1,000)	[3]1,000

1. Power is given in terms of effective radiated power (ERP).
2. Applicants in the Los Angeles, CA, area who demonstrate a need to serve both the downtown and fringe areas will be permitted to utilize an ERP of 1 kw at the following mountaintop sites: Santiago Park, Sierra Peak, Mount Lukens, and Mount Wilson.
3. Stations with antennas below 305 m (1,000 ft) (AAT) will be restricted to a maximum power of 1 kw (ERP).
4. Licensees in San Diego, CA, will be permitted to utilize an ERP of 500 watts at the following mountaintop sites: Palomar, Otay, Woodson and Miguel.

RSS-130 Issue 2, Section 4.6,

4.6.2 Frequency bands 617-652 MHz and 663-698 MHz

The e.r.p. shall not exceed 3 watts for mobile equipment, fixed subscriber equipment and portable equipment.

4.6.3 Frequency bands 698-756 MHz and 777-787 MHz

The e.r.p. shall not exceed 30 watts for mobile equipment and outdoor fixed subscriber equipment. The e.r.p. shall not exceed 3 watts for portable equipment and indoor fixed subscriber equipment.

RSS-132 Issue 4, Section 5.4,

The transmitter output power shall be measured in terms of average power. The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts.

RSS-133 Issue 6, Section 6.4

The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Moreover, base station transmitters operating in the band 1930-1995 MHz shall not have output power exceeding 100 watts.

RSS-139 Issue 4, Section 6.5

The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one

watt. The e.i.r.p. for fixed and base stations in the band 1710-1780 MHz shall not exceed one watt.

Test Procedure:

$$\textbf{ERP or EIRP} = P_{Meas} + G_T - L_C$$

where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

G_T = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

1) L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

Test Setup: Refer to section 4.2.1 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Pass

Test Data: See table below

5.2.1 LTE Band 2

LTE Band 2 Maximum EIRP (dBm)					
Channel	**QPSK; RB:1**	**16QAM; RB:1**	**64QAM; RB:1**	**Limit (dBm)**	**Result**
Channel Bandwidth: 1.4MHz					
Lowest	23.36	23.03	/	33.01	Pass
Middle	23.24	22.91	/	33.01	Pass
Highest	23.03	22.94	/	33.01	Pass
Channel Bandwidth: 3MHz					
Lowest	23.44	22.73	/	33.01	Pass
Middle	23.17	22.39	/	33.01	Pass
Highest	22.95	22.14	/	33.01	Pass
Channel Bandwidth: 5MHz					
Lowest	23.29	22.89	/	33.01	Pass
Middle	23.23	22.56	/	33.01	Pass
Highest	22.96	22.16	/	33.01	Pass
Channel Bandwidth: 10MHz					
Lowest	23.40	22.80	/	33.01	Pass
Middle	23.34	22.37	/	33.01	Pass
Highest	23.04	22.11	/	33.01	Pass
Channel Bandwidth: 15MHz					
Lowest	23.26	22.88	/	33.01	Pass
Middle	23.30	22.56	/	33.01	Pass
Highest	22.87	22.17	/	33.01	Pass
Channel Bandwidth: 20MHz					
Lowest	23.46	22.89	/	33.01	Pass
Middle	23.35	22.57	/	33.01	Pass
Highest	23.06	22.29	/	33.01	Pass

5.2.2 LTE Band 4

LTE Band 4 Maximum EIRP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 1.4MHz					
Lowest	22.59	21.75	/	30.00	Pass
Middle	22.95	21.80	/	30.00	Pass
Highest	22.60	21.99	/	30.00	Pass
Channel Bandwidth: 3MHz					
Lowest	23.00	21.47	/	30.00	Pass
Middle	22.99	21.54	/	30.00	Pass
Highest	22.90	21.85	/	30.00	Pass
Channel Bandwidth: 5MHz					
Lowest	23.01	21.47	/	30.00	Pass
Middle	22.92	21.63	/	30.00	Pass
Highest	22.82	21.87	/	30.00	Pass
Channel Bandwidth: 10MHz					
Lowest	22.66	21.38	/	30.00	Pass
Middle	22.90	21.48	/	30.00	Pass
Highest	22.57	21.75	/	30.00	Pass
Channel Bandwidth: 15MHz					
Lowest	22.90	21.48	/	30.00	Pass
Middle	23.08	21.63	/	30.00	Pass
Highest	22.91	21.80	/	30.00	Pass
Channel Bandwidth: 20MHz					
Lowest	23.18	22.20	/	30.00	Pass
Middle	23.38	22.14	/	30.00	Pass
Highest	23.32	21.45	/	30.00	Pass

5.2.3 LTE Band 5

LTE Band 5 Maximum ERP (dBm)					
Channel	**QPSK; RB:1**	**16QAM; RB:1**	**64QAM; RB:1**	**Limit (dBm)**	**Result**
Channel Bandwidth: 1.4MHz					
Lowest	20.93	19.75	/	38.45	Pass
Middle	20.50	19.64	/	38.45	Pass
Highest	20.71	20.06	/	38.45	Pass
Channel Bandwidth: 3MHz					
Lowest	20.92	19.86	/	38.45	Pass
Middle	20.64	19.56	/	38.45	Pass
Highest	20.76	19.98		38.45	Pass
Channel Bandwidth: 5MHz					
Lowest	20.91	19.68	/	38.45	Pass
Middle	20.68	19.50	/	38.45	Pass
Highest	20.84	20.05	/	38.45	Pass
Channel Bandwidth: 10MHz					
Lowest	21.10	19.86	/	38.45	Pass
Middle	20.69	19.65	/	38.45	Pass
Highest	20.87	20.10	/	38.45	Pass

5.2.4 LTE Band 12

LTE Band 12 Maximum ERP (dBm)					
Channel	**QPSK; RB:1**	**16QAM; RB:1**	**64QAM; RB:1**	**Limit (dBm)**	**Result**
Channel Bandwidth: 1.4MHz					
Lowest	21.19	20.09	/	34.77	Pass
Middle	21.13	20.67	/	34.77	Pass
Highest	21.01	19.99	/	34.77	Pass
Channel Bandwidth: 3MHz					
Lowest	21.10	20.12	/	34.77	Pass
Middle	21.17	20.76	/	34.77	Pass
Highest	20.90	20.01	/	34.77	Pass
Channel Bandwidth: 5MHz					
Lowest	21.13	20.12	/	34.77	Pass
Middle	21.18	20.68	/	34.77	Pass
Highest	20.99	20.01	/	34.77	Pass
Channel Bandwidth: 10MHz					
Lowest	21.25	20.18	/	34.77	Pass
Middle	21.23	20.78	/	34.77	Pass
Highest	21.07	20.05	/	34.77	Pass

5.2.5 LTE Band 13

LTE Band 13 Maximum ERP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 5MHz					
Lowest	21.10	20.23	/	34.77	Pass
Middle	21.17	20.39	/	34.77	Pass
Highest	21.18	20.34	/	34.77	Pass
Channel Bandwidth: 10MHz					
Lowest	/	/	/	34.77	Pass
Middle	21.20	20.39	/	34.77	Pass
Highest	/	/	/	34.77	Pass

5.2.6 LTE Band 25

LTE Band 25 Maximum EIRP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 1.4MHz					
Lowest	22.59	21.75	/	33.01	Pass
Middle	22.95	21.80	/	33.01	Pass
Highest	22.60	21.99	/	33.01	Pass
Channel Bandwidth: 3MHz					
Lowest	23.00	21.47	/	33.01	Pass
Middle	22.99	21.54	/	33.01	Pass
Highest	22.90	21.85	/	33.01	Pass
Channel Bandwidth: 5MHz					
Lowest	23.01	21.47	/	33.01	Pass
Middle	22.92	21.63	/	33.01	Pass
Highest	22.82	21.87	/	33.01	Pass
Channel Bandwidth: 10MHz					
Lowest	22.86	21.38	/	33.01	Pass
Middle	23.02	21.48	/	33.01	Pass
Highest	22.87	21.75	/	33.01	Pass
Channel Bandwidth: 15MHz					
Lowest	22.90	21.48	/	33.01	Pass
Middle	23.08	21.63	/	33.01	Pass
Highest	22.91	21.80	/	33.01	Pass
Channel Bandwidth: 20MHz					
Lowest	23.01	21.55	/	33.01	Pass
Middle	23.11	21.63	/	33.01	Pass
Highest	22.96	21.89	/	33.01	Pass

5.2.7 LTE Band 26

LTE Band 26 Maximum ERP (dBm)					
Channel	**QPSK; RB:1**	**16QAM; RB:1**	**64QAM; RB:1**	**Limit (dBm)**	**Result**
Channel Bandwidth: 1.4MHz					
Lowest	20.94	19.46	/	38.45	Pass
Middle	20.81	19.22	/	38.45	Pass
Highest	20.40	19.65	/	38.45	Pass
Channel Bandwidth: 3MHz					
Lowest	20.88	19.48	/	38.45	Pass
Middle	20.94	19.32	/	38.45	Pass
Highest	20.33	19.59	/	38.45	Pass
Channel Bandwidth: 5MHz					
Lowest	20.81	19.36	/	38.45	Pass
Middle	20.79	19.28	/	38.45	Pass
Highest	20.40	19.66	/	38.45	Pass
Channel Bandwidth: 10MHz					
Lowest	20.95	19.30	/	38.45	Pass
Middle	20.77	19.23	/	38.45	Pass
Highest	20.29	19.60	/	38.45	Pass
Channel Bandwidth: 15MHz					
Lowest	20.98	19.49	/	38.45	Pass
Middle	20.95	19.38	/	38.45	Pass
Highest	20.49	19.68	/	38.45	Pass

5.2.8 LTE Band 26 (Part 90S)

LTE Band 26 Maximum ERP (dBm)					
Channel	**QPSK; RB:1**	**16QAM; RB:1**	**64QAM; RB:1**	**Limit (dBm)**	**Result**
Channel Bandwidth: 1.4MHz					
Lowest	20.91	19.43	/	50	Pass
Middle	20.78	19.19	/	50	Pass
Highest	20.37	19.62	/	50	Pass
Channel Bandwidth: 3MHz					
Lowest	20.85	19.45	/	50	Pass
Middle	20.91	19.29	/	50	Pass
Highest	20.30	19.56	/	50	Pass
Channel Bandwidth: 5MHz					
Lowest	20.78	19.33	/	50	Pass
Middle	20.76	19.25	/	50	Pass
Highest	20.37	19.63	/	50	Pass
Channel Bandwidth: 10MHz					
Middle	20.74	19.26	/	50	Pass

5.2.9 LTE Band 66

LTE Band 66 Maximum EIRP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 1.4MHz					
Lowest	23.24	22.51	/	30.00	Pass
Middle	23.40	22.71	/	30.00	Pass
Highest	23.45	22.14	/	30.00	Pass
Channel Bandwidth: 3MHz					
Lowest	23.20	22.47	/	30.00	Pass
Middle	23.49	22.47	/	30.00	Pass
Highest	23.58	22.31	/	30.00	Pass
Channel Bandwidth: 5MHz					
Lowest	23.24	22.31	/	30.00	Pass
Middle	23.37	22.65	/	30.00	Pass
Highest	23.50	22.25	/	30.00	Pass
Channel Bandwidth: 10MHz					
Lowest	23.24	22.34	/	30.00	Pass
Middle	23.37	22.50	/	30.00	Pass
Highest	23.47	22.37	/	30.00	Pass
Channel Bandwidth: 15MHz					
Lowest	23.28	22.49	/	30.00	Pass
Middle	23.48	22.50	/	30.00	Pass
Highest	23.44	22.30	/	30.00	Pass
Channel Bandwidth: 20MHz					
Lowest	23.32	22.49	/	30.00	Pass
Middle	23.53	22.65	/	30.00	Pass
Highest	23.61	22.42	/	30.00	Pass

5.2.10 LTE 71

LTE Band 71 Maximum ERP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 5MHz					
Lowest	20.88	19.97	/	33.01	Pass
Middle	20.56	20.29	/	33.01	Pass
Highest	21.08	19.80	/	33.01	Pass
Channel Bandwidth: 10MHz					
Lowest	20.93	19.98	/	33.01	Pass
Middle	20.59	20.14	/	33.01	Pass
Highest	21.04	19.83	/	33.01	Pass
Channel Bandwidth: 15MHz					
Lowest	20.75	20.14	/	33.01	Pass
Middle	20.70	20.21	/	33.01	Pass
Highest	21.03	19.83	/	33.01	Pass
Channel Bandwidth: 20MHz					
Lowest	20.95	20.16	/	33.01	Pass
Middle	20.74	20.32	/	33.01	Pass
Highest	21.14	19.87	/	33.01	Pass

5.3 CONDUCTED OUTPUT POWER

Test Requirement: FCC 47 CFR Part 2.1046(a),
LTE Band 2 & LTE Band 25: FCC 47 CFR Part 24.232(c), RSS-133 Issue 6, Section 6.4
LTE Band 4 & LTE Band 66: FCC 47 CFR Part 27.50(d)(4), RSS-139 Issue 4, Section 6.5
LTE Band 5 & LTE Band 26: FCC 47 CFR Part 22.913(a), RSS-132 Issue 4, Section 5.4
LTE Band 12 & Band 71: FCC 47 CFR Part 27.50(c)(10), RSS-130 Issue 2, Section 4.6
LTE Band 13: FCC 47 CFR Part 27.50(b)(10), RSS-130 Issue 2, Section 4.6
LTE Band 26: FCC 47 CFR Part 90.635

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

Limit:

FCC 47 CFR Part 22.913(a):
The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

FCC 47 CFR Part 24.232(c):
Mobile and portable stations are limited to 2 watts EIRP.

FCC 47 CFR Part 27.50(d)(4):
Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

FCC 47 CFR Part 27.50(c)(10):
Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

FCC 47 CFR Part 27.50(b)(10):
Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

FCC 47 CFR Part 90.635:
(a) The effective radiated power and antenna height for base stations may not exceed 1 kilowatt (30 dBw) and 304 m. (1,000 ft.) above average terrain (AAT), respectively, or the equivalent thereof as determined from the Table. These are maximum values, and applicants will be required to justify power levels and antenna heights requested.
(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).
Table—Equivalent Power and Antenna Heights for Base Stations in the 851–869 MHz and 935–940 MHz Bands Which Have a Requirement for a 32 km (20 mi) Service Area Radius

Antenna height (ATT) meters (feet)	Effective radiated power (watts)[1 2 4]
Above 1,372 (4,500)	65
Above 1,220 (4,000) to 1,372 (4,500)	70
Above 1,067 (3,500) to 1,220 (4,000)	75
Above 915 (3,000) to 1,067 (3,500)	100
Above 763 (2,500) to 915 (3,000)	140
Above 610 (2,000) to 763 (2,500)	200
Above 458 (1,500) to 610 (2,000)	350
Above 305 (1,000) to 458 (1,500)	600
Up to 305 (1,000)	[3]1,000

1. Power is given in terms of effective radiated power (ERP).
2. Applicants in the Los Angeles, CA, area who demonstrate a need to serve both the downtown and fringe areas will be permitted to utilize an ERP of 1 kw at the following mountaintop sites: Santiago Park, Sierra

Peak, Mount Lukens, and Mount Wilson.

3. Stations with antennas below 305 m (1,000 ft) (AAT) will be restricted to a maximum power of 1 kw (ERP).
4. Licensees in San Diego, CA, will be permitted to utilize an ERP of 500 watts at the following mountaintop sites: Palomar, Otay, Woodson and Miguel.

RSS-130 Issue 2, Section 4.6,
4.6.2 Frequency bands 617-652 MHz and 663-698 MHz

The e.r.p. shall not exceed 3 watts for mobile equipment, fixed subscriber equipment and portable equipment.

4.6.3 Frequency bands 698-756 MHz and 777-787 MHz

The e.r.p. shall not exceed 30 watts for mobile equipment and outdoor fixed subscriber equipment. The e.r.p. shall not exceed 3 watts for portable equipment and indoor fixed subscriber equipment.

RSS-132 Issue 4, Section 5.4,
The transmitter output power shall be measured in terms of average power. The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts.

RSS-133 Issue 6, Section 6.4
The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Moreover, base station transmitters operating in the band 1930-1995 MHz shall not have output power exceeding 100 watts.

RSS-139 Issue 4, Section 6.5
The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt. The e.i.r.p. for fixed and base stations in the band 1710-1780 MHz shall not exceed one watt.

Test Procedure:
The EUT was set up for the maximum power with LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

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
Test Data:	The full result refer to section 4.5 for details.

5.4 PEAK-TO-AVERAGE RATIO

Test Requirement:	**LTE Band 2 & LTE Band 25:** FCC 47 CFR Part 24.232(d), RSS-133 Issue 6, Section 6.4 **LTE Band 4 & LTE Band 66:** FCC 47 CFR Part 27.50(d)(5), RSS-139 Issue 4, Section 6.5 **LTE Band 5 & LTE Band 26:** FCC 47 CFR Part 22.913(a), RSS-132 Issue 4, Section 5.4 **LTE Band 12:** FCC 47 CFR Part 27.50(d)(5), RSS-130 Issue 2, Section 4.6 **LTE Band 13:** FCC 47 CFR Part 27.50(d)(5), RSS-130 Issue 2, Section 4.6
Test Method:	KDB 971168 D01v03r01 Section 5.7
Limit:	In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 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.

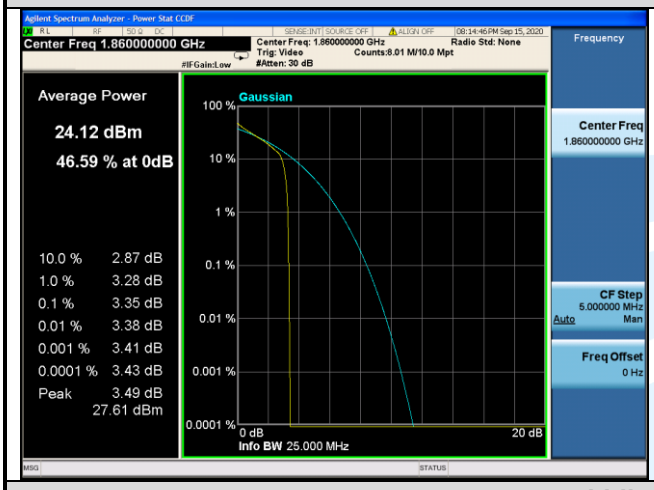
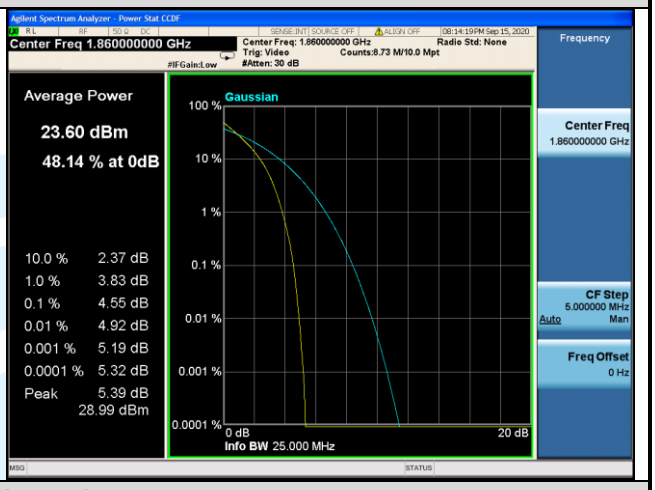
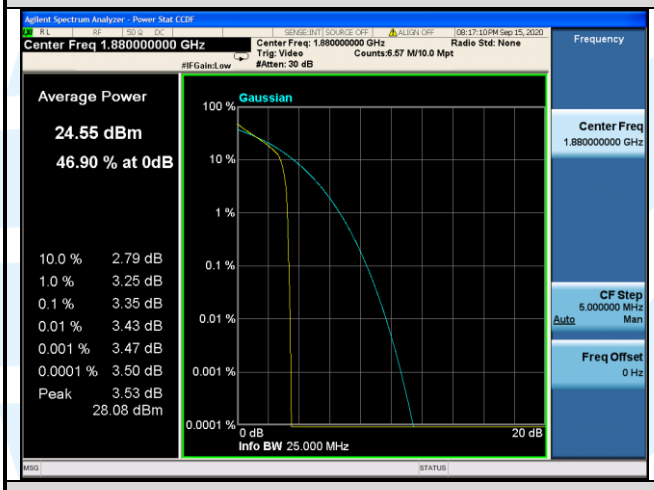
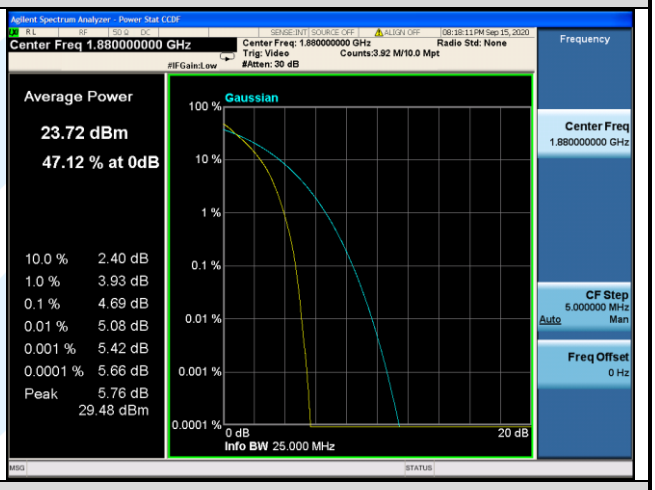
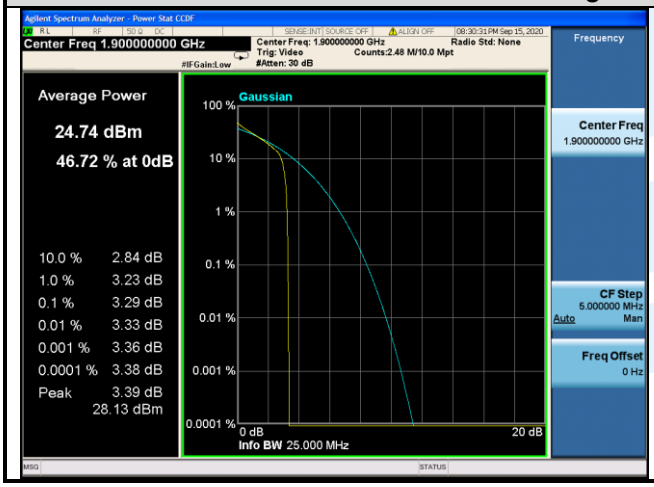
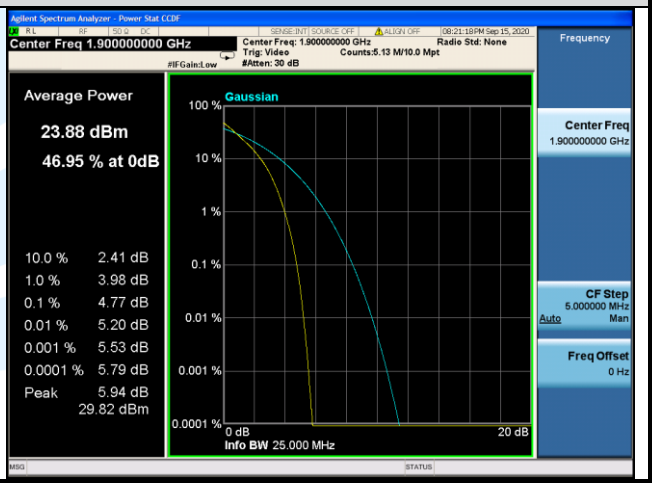
a) Set resolution/measurement bandwidth ≥ signal's occupied bandwidth
b) Set the number of counts to a value that stabilizes the measured CCDF curve
c) Record the maximum PAPR level associated with a probability of 0.1 %

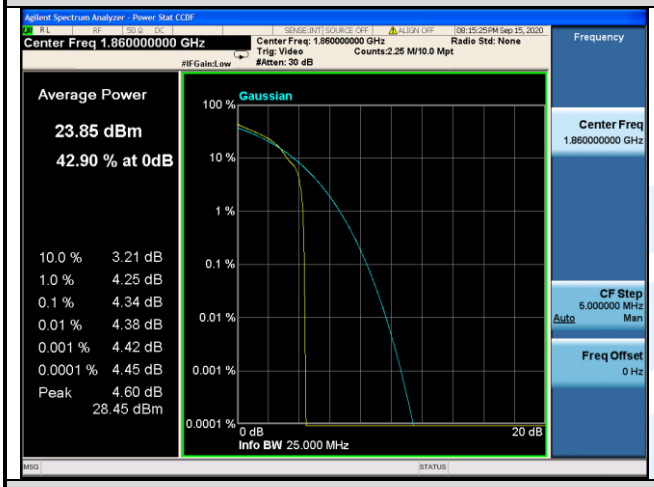
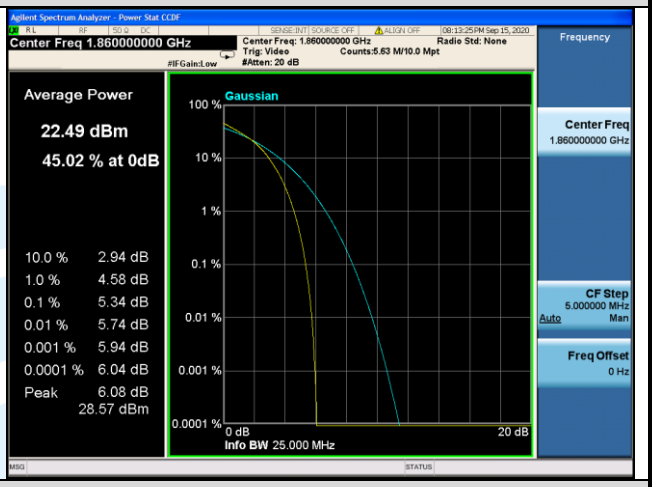
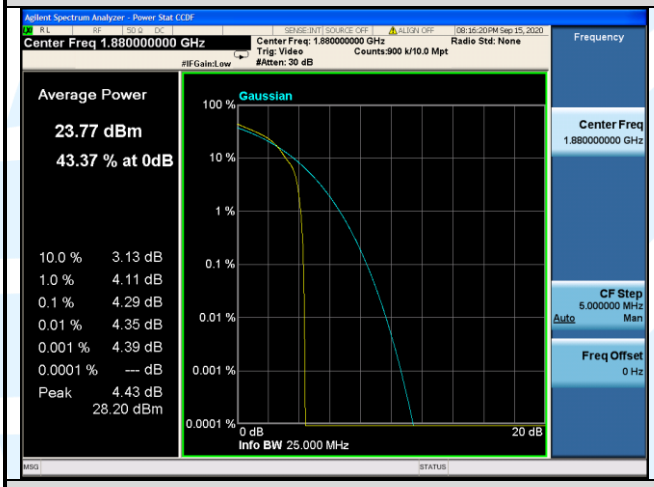
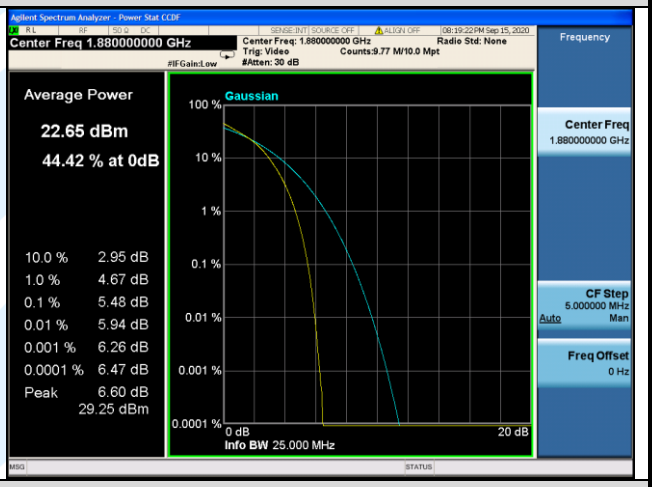
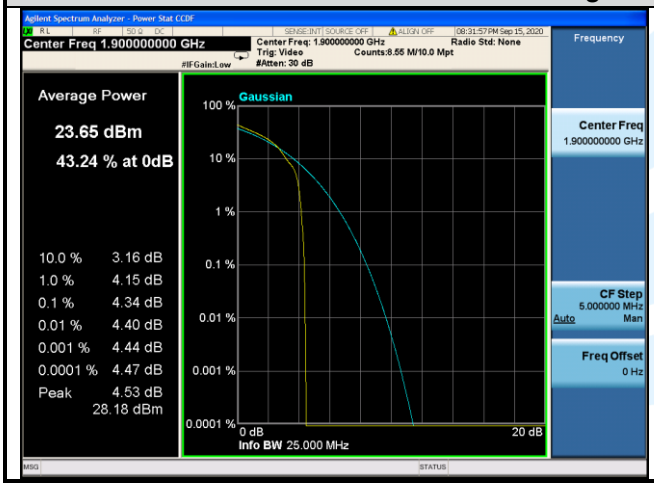
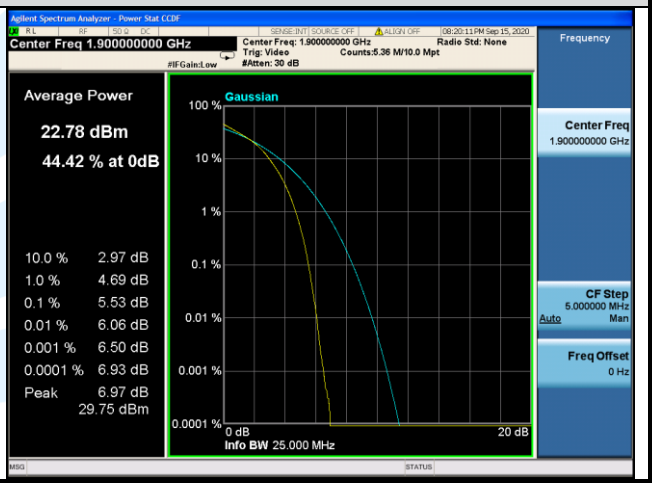
Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

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
Test Data:	See table below

5.4.1 LTE Band 2

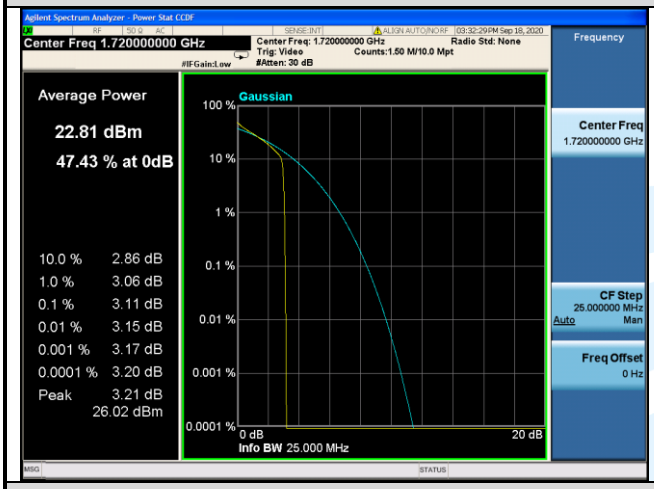
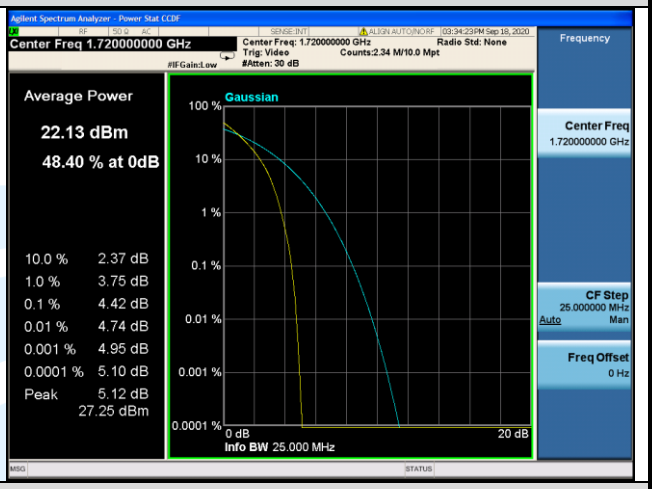
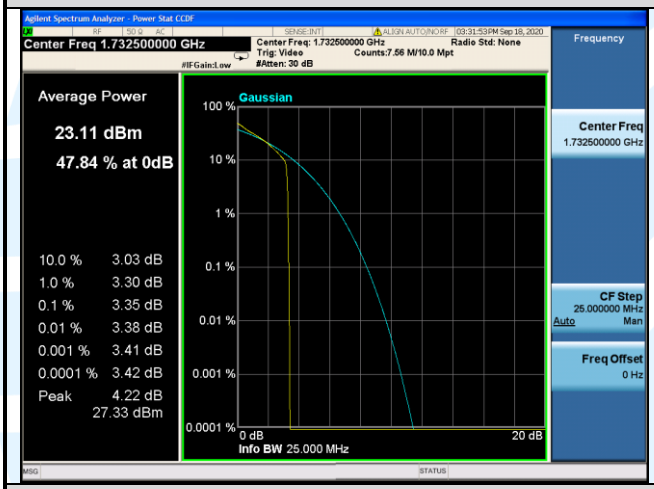
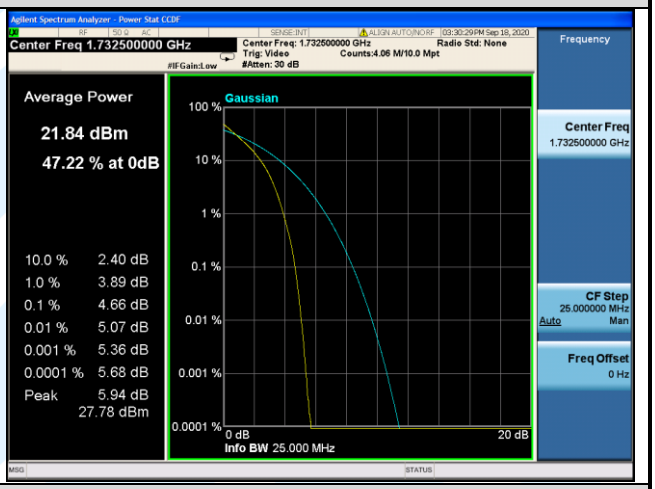
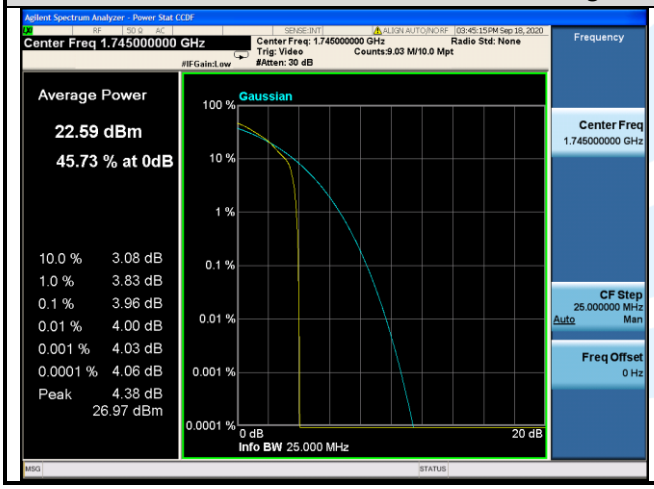
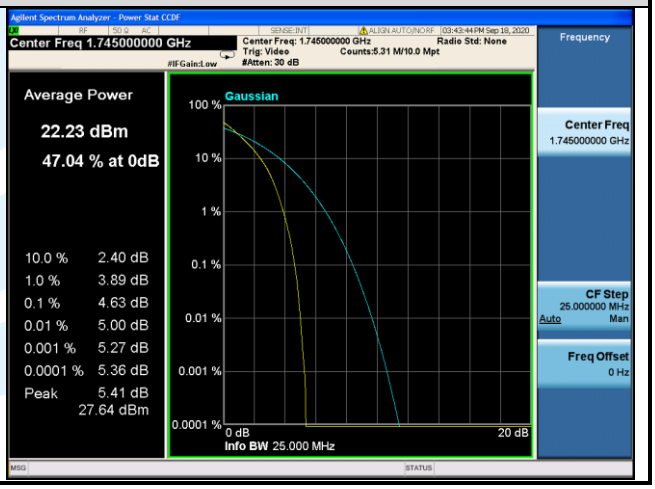
LTE Band 2 Peak-to-average ratio (dB)						
Channel	**RB Configuration**	**Channel Bandwidth: 20 MHz**			**Limit (dB)**	**Result**
		QPSK	**16QAM**	**64QAM**		
Lowest	1 RB	3.35	4.34	/	13	Pass
	Full RB	4.55	5.34	/	13	Pass
Middle	1 RB	3.35	4.29	/	13	Pass
	Full RB	4.69	5.48	/	13	Pass
Highest	1 RB	3.29	4.34	/	13	Pass
	Full RB	4.77	5.53	/	13	Pass

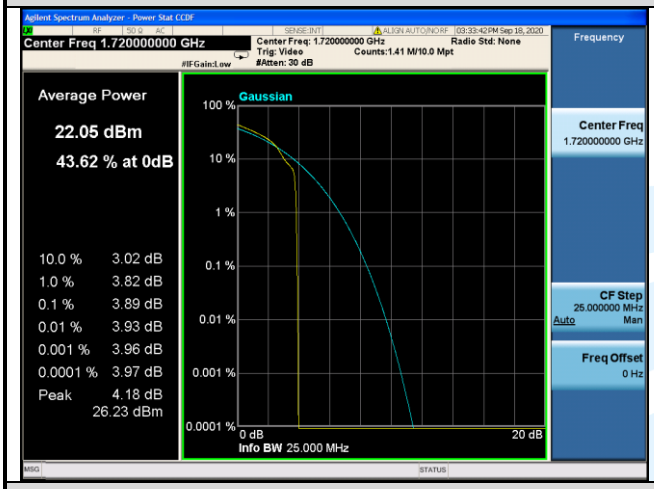
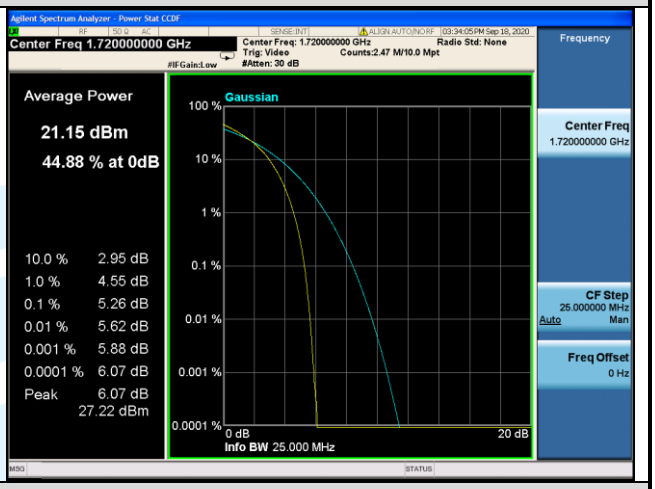
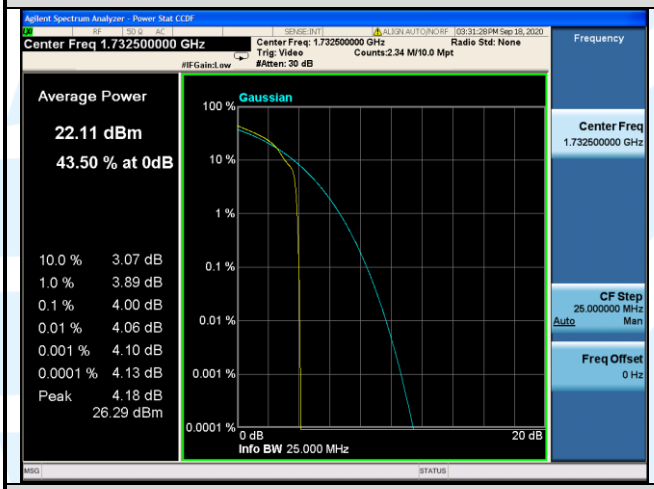
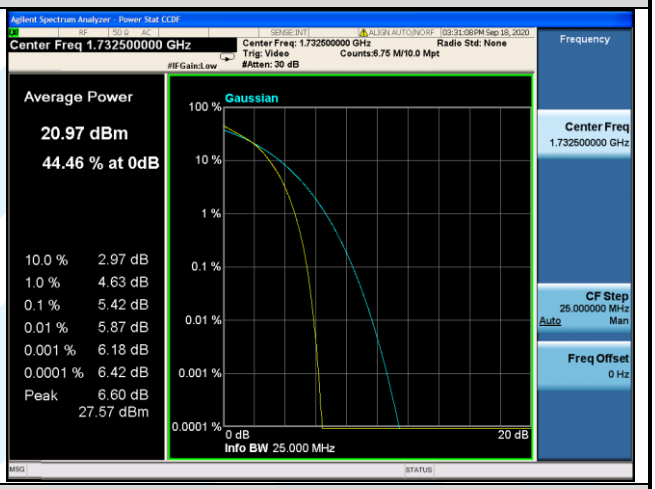
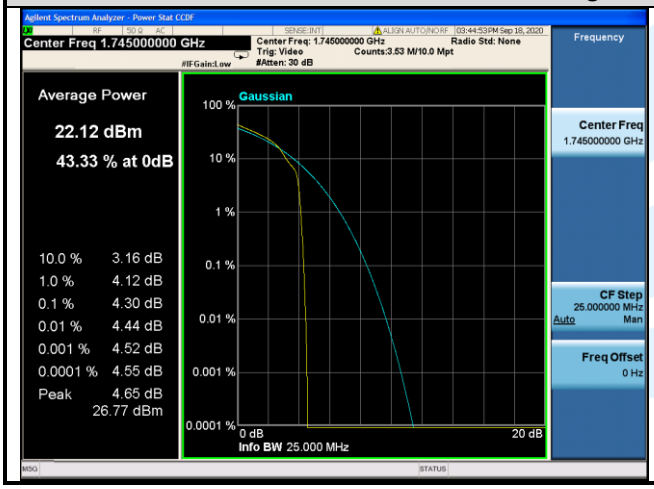
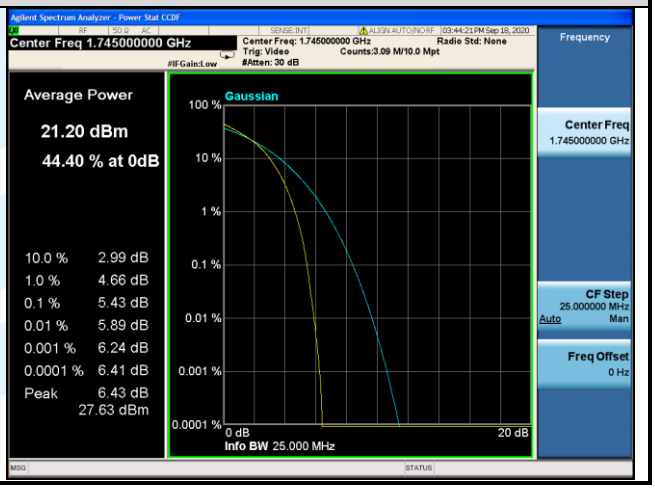
LTE Band 2 / 20 MHz / QPSK	
1 RB	Full RB
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

LTE Band 2 / 20 MHz / 16QAM	
1 RB	Full RB
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

5.4.2 LTE Band 4

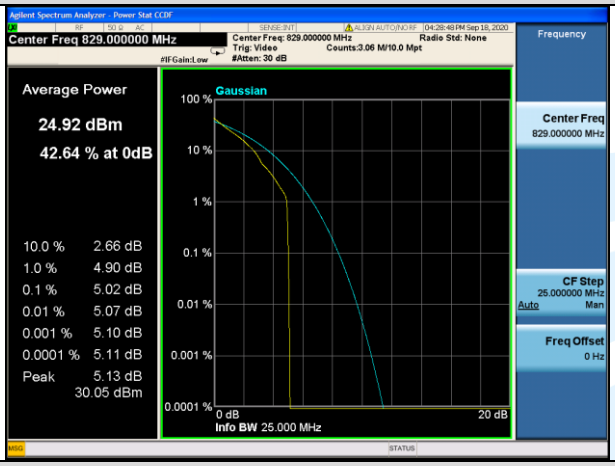
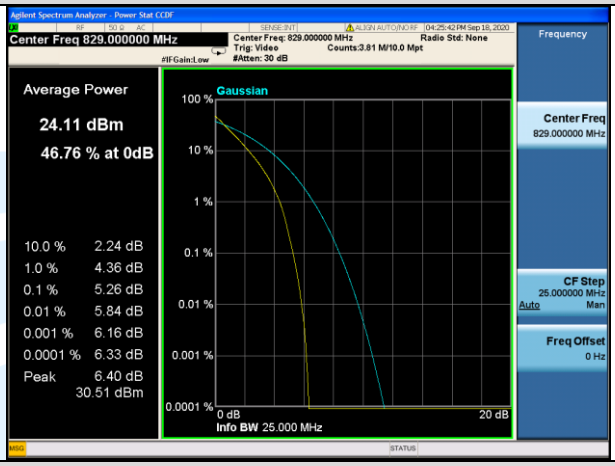
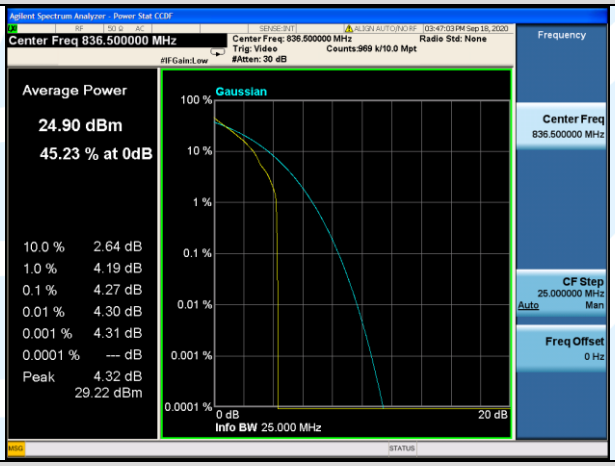
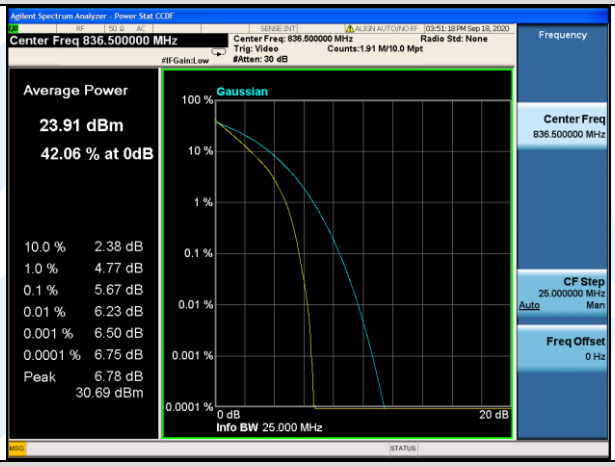
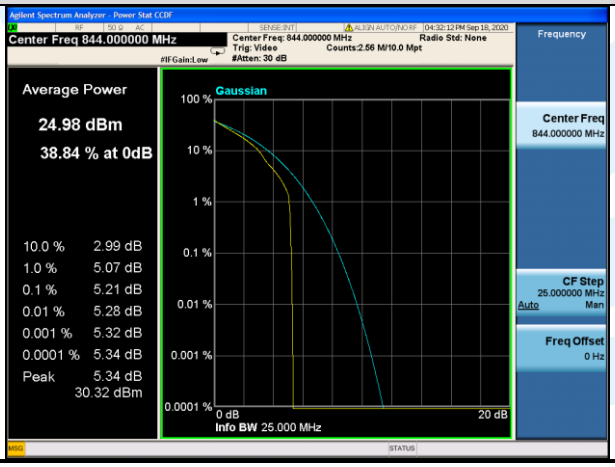
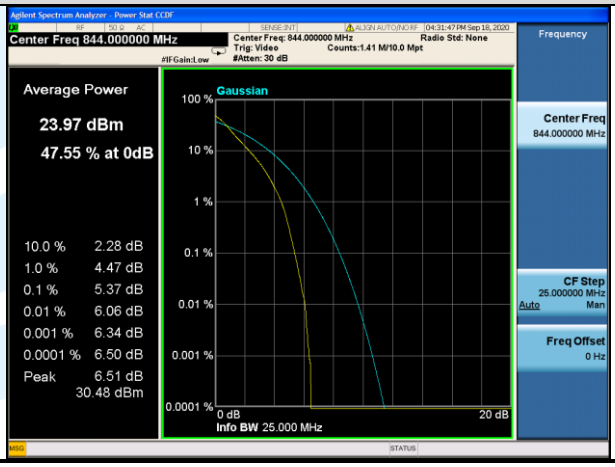
LTE Band 4 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 20 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	3.11	3.89	/	13	Pass
	Full RB	4.42	5.26	/	13	Pass
Middle	1 RB	3.35	4.00	/	13	Pass
	Full RB	4.66	5.42	/	13	Pass
Highest	1 RB	3.96	4.30	/	13	Pass
	Full RB	4.63	5.43	/	13	Pass

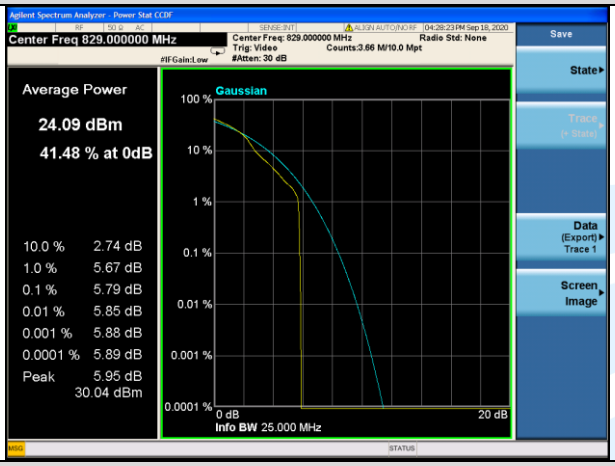
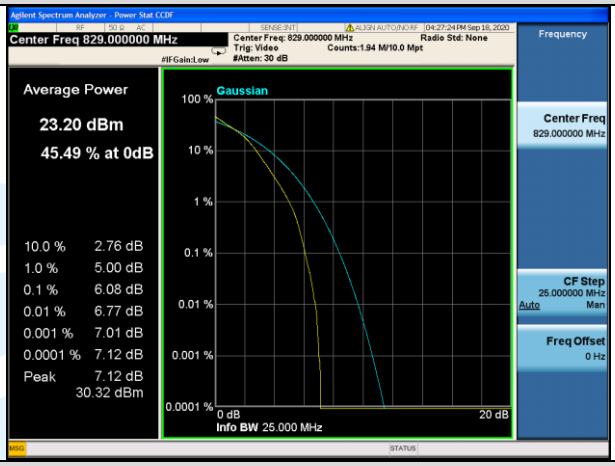
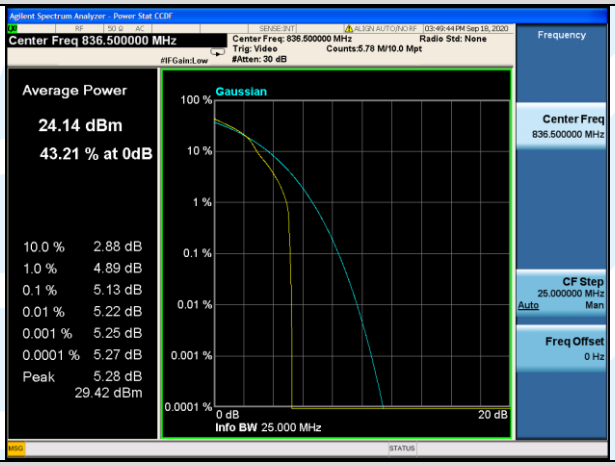
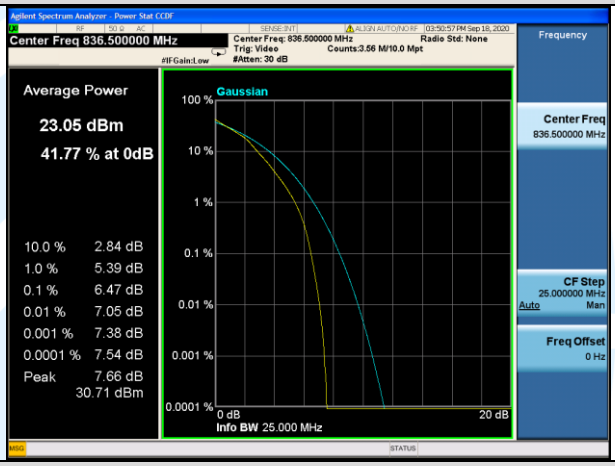
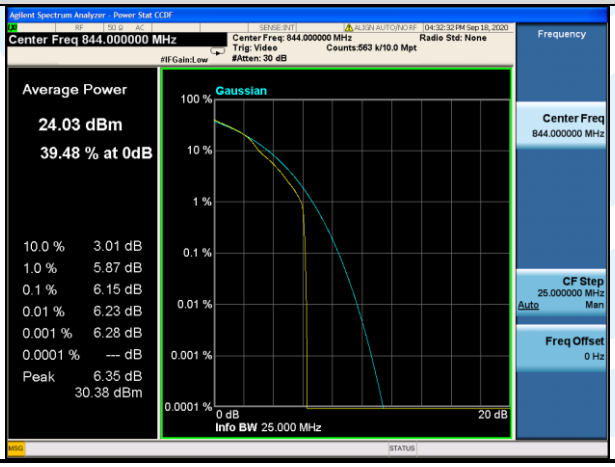
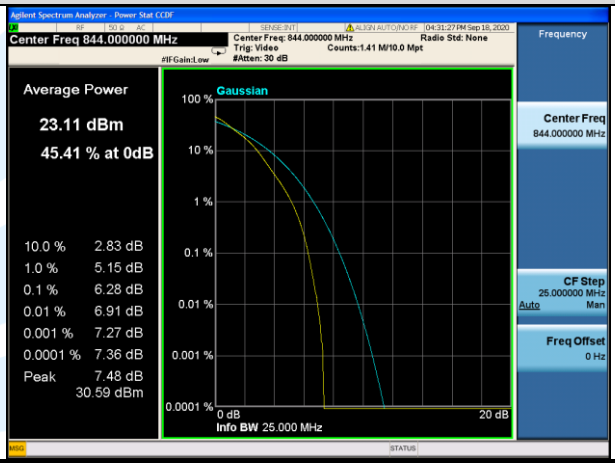
LTE Band 4 / 20MHz / QPSK	
1 RB	Full RB
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

LTE Band 4 / 20MHz / 16QAM	
1 RB	Full RB
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

5.4.3 LTE Band 5

LTE Band 5 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 10 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	5.02	5.79	/	13	Pass
	Full RB	5.26	6.08	/	13	Pass
Middle	1 RB	4.27	5.13	/	13	Pass
	Full RB	5.67	6.47	/	13	Pass
Highest	1 RB	5.21	6.15	/	13	Pass
	Full RB	5.37	6.28	/	13	Pass

LTE Band 5 / 10 MHz / QPSK	
1 RB	Full RB
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

LTE Band 5 / 10 MHz / 16QAM	
1 RB	Full RB
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

5.4.4 LTE Band 12

LTE Band 12 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 10 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	3.75	4.63	/	13	Pass
	Full RB	4.95	5.80	/	13	Pass
Middle	1 RB	3.55	4.38	/	13	Pass
	Full RB	5.04	5.81	/	13	Pass
Highest	1 RB	3.11	3.93	/	13	Pass
	Full RB	5.16	5.99	/	13	Pass