FCC TEST REPORT

Product Name:	Mobile Phone
Trade Mark:	BOLD
Model No.:	T5
Report Number:	200113001RFM-2
Test Standards:	FCC 47 CFR Part 22 FCC 47 CFR Part 24 FCC 47 CFR Part 27
FCC ID:	YHLBOLDT5
Test Result:	PASS
Date of Issue:	March 12, 2020

Prepared for:

BLU Products, Inc.
10814 NW 33rd St # 100 Doral, FL 33172 ,USA

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd.
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Prepared by: _____ Reviewed by: _____

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Approved by: _____ Date: March 12, 2020

Billy Li
Technical Director

Version

Version No.	Date	Description
V1.0	March 12, 2020	Original

CONTENTS

1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	BLU Products, Inc.
Address of Applicant:	10814 NW 33rd St # 100 Doral, FL 33172 ,USA
Manufacturer:	BLU Products, Inc.
Address of Manufacturer:	10814 NW 33rd St # 100 Doral, FL 33172 ,USA

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Mobile Phone	
Model No.:	T5	
Trade Mark:	BOLD	
DUT Stage:	Identical Prototype	
EUT Supports Function:	GSM Bands:	GSM850/1900
	UTRA Bands:	Band II/ Band V
	E-UTRA Bands:	FDD Band 2/ Band 4/ Band 5/ Band 7
		TDD Band 38
	2.4 GHz ISM Band:	IEEE 802.11b/g/n
		Bluetooth V4.2
Sample Received Date:	January 13, 2020	
Sample Tested Date:	January 13, 2020 to March 4, 2020	

1.2.2 Description of Accessories

Adapter	
Model No.:	US-WW-1003
Input:	100-240 V~50/60 Hz 0.2 A
Output:	5.0 V ⎓ 1000mA
DC Cable:	0.80 Meter, Unshielded without ferrite
Manufacturer:	ShenZhen NanBang Electronics co., LTD

Battery	
Model No.:	C775443200L
Battery Type:	Lithium-ion Rechargeable Battery
Rated Voltage:	3.8 Vdc
Limited Charge Voltage:	4.35 Vdc
Rated Capacity:	2000 mAh
Manufacturer:	Shenzhen Aerospace Electronic Co., Ltd.

Earphone	
Cable Type:	Unshielded
Length:	1.20 Meter

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Support Networks:	LTE	
Type of Modulation:	LTE Band 2/4/5/7/38:	QPSK, 16QAM
Antenna Type:	PIFA Antenna	
Antenna Gain:	LTE Band 2:	-1.5 dBi
	LTE Band 4:	-1.5 dBi
	LTE Band 5:	-1.5 dBi
	LTE Band 7:	-1.5 dBi
	LTE Band 38:	-1.5 dBi
Normal Test Voltage:	3.8 Vdc	
Extreme Test Voltage:	3.5 to 4.4Vdc	
Extreme Test Temperature:	-30 °C to +55 °C	

Summary of Results:

Bands	BW (MHz)	Modulation	Frequency Range (MHz)	Max RF Output Power (dBm) Conducted (Average)	Max RF Output Power (dBm) ERP/EIRP (Average)	EIRP (W)	99% BW (MHz)	Emission Designator
2	1.4	QPSK	1850.7-1909.3	24.25	22.75	0.18836	1.1017	1M10G7D
		16QAM		23.46	21.96	0.15704	1.1022	1M10W7D
	3	QPSK	1851.5-1908.5	24.24	22.74	0.18793	2.7261	2M73G7D
		16QAM		23.45	21.95	0.15668	2.7182	2M72W7D
	5	QPSK	1852.5-1907.5	24.29	22.79	0.19011	4.5387	4M54 G7D
		16QAM		23.37	21.87	0.15382	4.5104	4M51W7D
	10	QPSK	1855.0-1905.0	24.26	22.76	0.18880	9.0201	9M02G7D
		16QAM		23.42	21.92	0.15560	9.0331	9M03W7D
	15	QPSK	1857.5-1902.5	24.26	22.76	0.18880	13.554	13M6G7D
		16QAM		23.48	21.98	0.15776	13.526	13M5W7D
	20	QPSK	1860.0-1900.0	24.33	22.83	0.19187	18.165	18M2G7D
		16QAM		23.54	22.04	0.15996	18.097	18M1W7D

Summary of Results:								
Bands	BW (MHz)	Modulation	Frequency Range (MHz)	Max RF Output Power (dBm)		EIRP (W)	99% BW (MHz)	Emission Designator
				Conducted (Average)	ERP/EIRP (Average)			
4	1.4	QPSK	1710.7-1754.3	24.28	22.78	0.18967	1.1013	1M10G7D
		16QAM		23.63	22.13	0.16331	1.1016	1M10W7D
	3	QPSK	1711.5-1753.5	24.34	22.84	0.19231	2.7194	2M72G7D
		16QAM		23.63	22.13	0.16331	2.7079	2M71W7D
	5	QPSK	1712.5-1752.5	24.32	22.82	0.19143	4.5351	4M54G7D
		16QAM		23.63	22.13	0.16331	4.5142	4M51W7D
	10	QPSK	1715-1750	24.32	22.82	0.19143	9.0317	9M03G7D
		16QAM		23.67	22.17	0.16482	9.0199	9M02W7D
	15	QPSK	1717.5-1747.5	24.31	22.81	0.19099	13.521	13M5G7D
		16QAM		23.72	22.22	0.16672	13.513	13M5W7D
	20	QPSK	1720-1745	24.35	22.85	0.19275	18.190	18M2G7D
		16QAM		23.75	22.25	0.16788	18.087	18M1W7D
5	1.4	QPSK	824.7-848.3	23.78	20.13	0.10304	1.0996	1M10G7D
		16QAM		23.49	19.84	0.09638	1.0998	1M10W7D
	3	QPSK	825.5-847.5	23.83	20.18	0.10423	2.7210	2M72G7D
		16QAM		23.44	19.79	0.09528	2.7215	2M72W7D
	5	QPSK	826.5-846.5	23.79	20.14	0.10328	4.5358	4M54G7D
		16QAM		23.40	19.75	0.09441	4.5020	4M50W7D
	10	QPSK	829-844	23.89	20.24	0.10568	9.0167	9M02G7D
		16QAM		23.52	19.87	0.09705	9.0086	9M01W7D
7	5	QPSK	2502.5-2567.5	24.47	22.97	0.19815	4.5486	4M55G7D
		16QAM		24.13	22.63	0.18323	4.5225	4M52W7D
	10	QPSK	2505-2565	24.54	23.04	0.20137	9.0588	9M06G7D
		16QAM		23.98	22.48	0.17701	9.0515	9M05W7D
	15	QPSK	2507.5-2562.5	24.57	23.07	0.20277	13.583	13M6G7D
		16QAM		24.02	22.52	0.17865	13.590	13M6W7D
	20	QPSK	2510-2560	24.62	23.12	0.20512	18.202	18M2G7D
		16QAM		24.14	22.64	0.18365	18.168	18M2W7D
38	5	QPSK	2572.5-2617.5	24.37	22.87	0.19364	4.5380	4M54G7D
		16QAM		23.53	22.03	0.15959	4.5079	4M51W7D
	10	QPSK	2575-2615	24.47	22.97	0.19815	8.9953	9M00G7D
		16QAM		23.51	22.01	0.15885	9.0201	9M02W7D
	15	QPSK	2577.5-2612.5	24.48	22.98	0.19861	13.526	13M5G7D
		16QAM		23.40	21.90	0.15488	13.507	13M5W7D
	20	QPSK	2580-2610	24.49	22.99	0.19907	18.085	18M1G7D
		16QAM		23.54	22.04	0.15996	18.012	18M0W7D

1.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

1) Support Equipment

Description	Manufacturer	Model No.	Serial Number	Supplied by
-	-	-	-	-

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	Antenna Cable	SMA	0.30 Meter	UnionTrust

1.5 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China 518109
Telephone: +86 (0) 755 2823 0888
Fax: +86 (0) 755 2823 0886

1.6 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L9069
The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

A2LA-Lab Certificate No.: 4312.01
Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

ISED Wireless Device Testing Laboratories
CAB identifier: CN0032

FCC Accredited Lab.
Designation Number: CN1194
Test Firm Registration Number: 259480

1.7 DEVIATION FROM STANDARDS

None.

1.8 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.10 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
1	Conducted emission 9KHz-150KHz	±3.8 dB
2	Conducted emission 150KHz-30MHz	±3.4 dB
3	Radiated emission 9KHz-30MHz	±4.9 dB
4	Radiated emission 30MHz-1GHz	±4.7 dB
5	Radiated emission 1GHz-18GHz	±5.1 dB
6	Radiated emission 18GHz-26GHz	±5.2 dB
7	Radiated emission 26GHz-40GHz	±5.2 dB

2. TEST SUMMARY

FCC 47 CFR Part 24 Test Cases (Band 2)			
Test Item	**Test Requirement**	**Test Method**	**Result**
Equivalent Isotropic Radiated Power (EIRP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 24.232(c)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 24.232(c)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 24.232(d)	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) & FCC 47 CFR Part 24.238(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 24.238(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 24.238(a)(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 24.238(a)(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 24.235	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

FCC 47 CFR Part 27 Test Cases (LTE Band 4)			
Test Item	**Test Requirement**	**Test Method**	**Result**
Equivalent Isotropic Radiated Power (EIRP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(d)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(d)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5)	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) FCC 47 CFR Part 27.53(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 27.53(h)(1)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 27.53(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 27.53(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

FCC 47 CFR Part 22 Test Cases (Band 5)			
Test Item	**Test Requirement**	**Test Method**	**Result**
Effective Radiated Power (ERP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 22.913(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 22.913(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 22.913(a)	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 22.917(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 22.917(a)(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 22.917(a)(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 22.355	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

FCC 47 CFR Part 27 Test Cases (LTE Band 7 & Band 38)			
Test Item	**Test Requirement**	**Test Method**	**Result**
Equivalent Isotropic Radiated Power (EIRP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(h)(2)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(h)(2)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5)	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 27.53(m)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 27.53(m)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 27.53(m)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm dd, yyyy)**	**Cal. Due date (mm dd, yyyy)**
☒	3M Chamber & Accessory Equipment	ETS-LINDGREN	3M	N/A	Dec. 03, 2018	Dec. 03, 2021
☒	Receiver	R&S	ESIB26	100114	Nov. 24, 2019	Nov. 23, 2020
☐	Loop Antenna	ETS-LINDGREN	6502	00202525	Nov. 24, 2019	Nov. 23, 2020
☒	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Nov. 16, 2019	Nov. 15, 2020
☒	6dB Attenuator	Talent	RA6A5-N-18	18103001	Nov. 16, 2019	Nov. 15, 2020
☒	Preamplifier	HP	8447F	2805A02960	Nov. 16, 2019	Nov. 15, 2020
☐	Broadband Antenna (Pre-amplifier)	ETS-LINDGREN	3142E-PA	00201891	Nov. 24, 2019	Nov. 23, 2020
☐	6dB Attenuator	Talent	RA6A5-N-18	18103002	Nov. 24, 2019	Nov. 23, 2020
☐	Horn Antenna	ETS-LINDGREN	3117	00164202	Nov. 24, 2019	Nov. 23, 2020
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201874	Nov. 16, 2019	Nov. 15, 2020
☐	Horn Antenna	ETS-LINDGREN	3116C	00200180	May 18, 2019	May 18, 2020
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	Nov. 16, 2019	Nov. 15, 2020
☒	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☒	Test Software	Audix	e3	Software Version: 9.160323		

RF Test Equipment List						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm dd, yyyy)**	**Cal. Due date (mm dd, yyyy)**
☒	Receiver	R&S	ESR7	1316.3003K07 -101181-K3	Nov. 24, 2019	Nov. 23, 2020
☒	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	Nov. 24, 2019	Nov. 23, 2020
☒	Wideband Radio Communication Tester	R&S	CMW500	120932	Jul. 19, 2019	Jul. 19, 2020
☐	Wideband Radio Communication Tester	R&S	CMW500	119583	Jul. 31, 2019	Jul. 31, 2020
☐	Universal Radio Communication Tester	R&S	CMU200	114713	Nov. 24, 2019	Nov. 23, 2020
☒	DC Source	KIKUSUI	PWR400L	LK003024	Sep. 09, 2019	Sep. 08, 2020
☐	Temp & Humidity chamber	Espec	GL(U)04K A(W)	16921H201P3	Sep. 09, 2019	Sep. 08, 2020
☒	Temp & Humidity chamber	Votisch	VT4002	58566133290 020	Jun. 05, 2018	Jun. 05, 2020

4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

Test Environment	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
TN/VN	+15 to +35	3.8	20 to 75
TL/VL	-30	3.5	20 to 75
TH/VL	+55	3.5	20 to 75
TL/VH	-30	4.4	20 to 75
TH/VH	+55	4.4	20 to 75

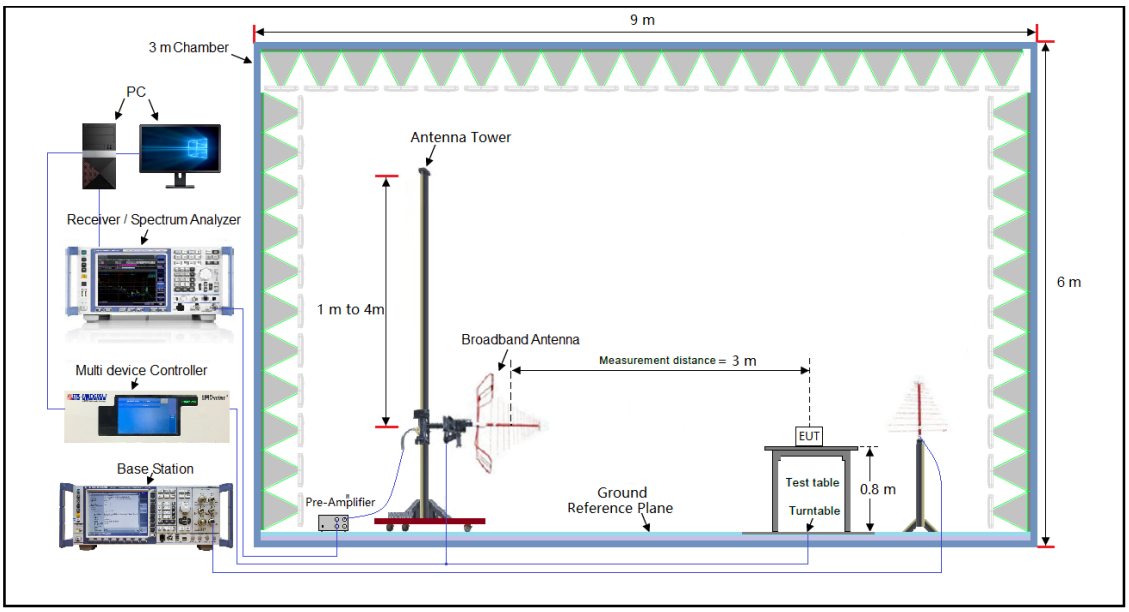
Remark:

1) The EUT just work in such extreme temperature of -30 °C to +55 °C and the extreme voltage of 3.5 V to 4.4 V, so here the EUT is tested in the temperature of -30 °C to +55 °C and the voltage of 3.5 V to 4.4 V.
2) VN: Normal Voltage; TN: Normal Temperature;
TL: Low Extreme Test Temperature; TH: High Extreme Test Temperature;
VL: Low Extreme Test Voltage; VH: High Extreme Test Voltage.

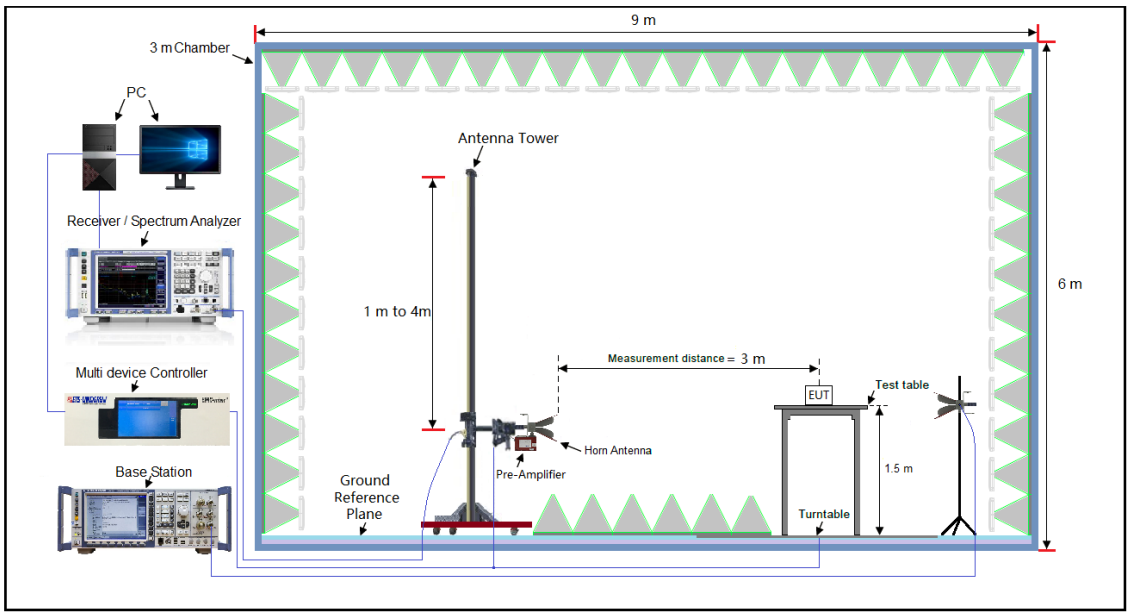
4.2 TEST SETUP

4.2.1 For Radiated Emissions test setup

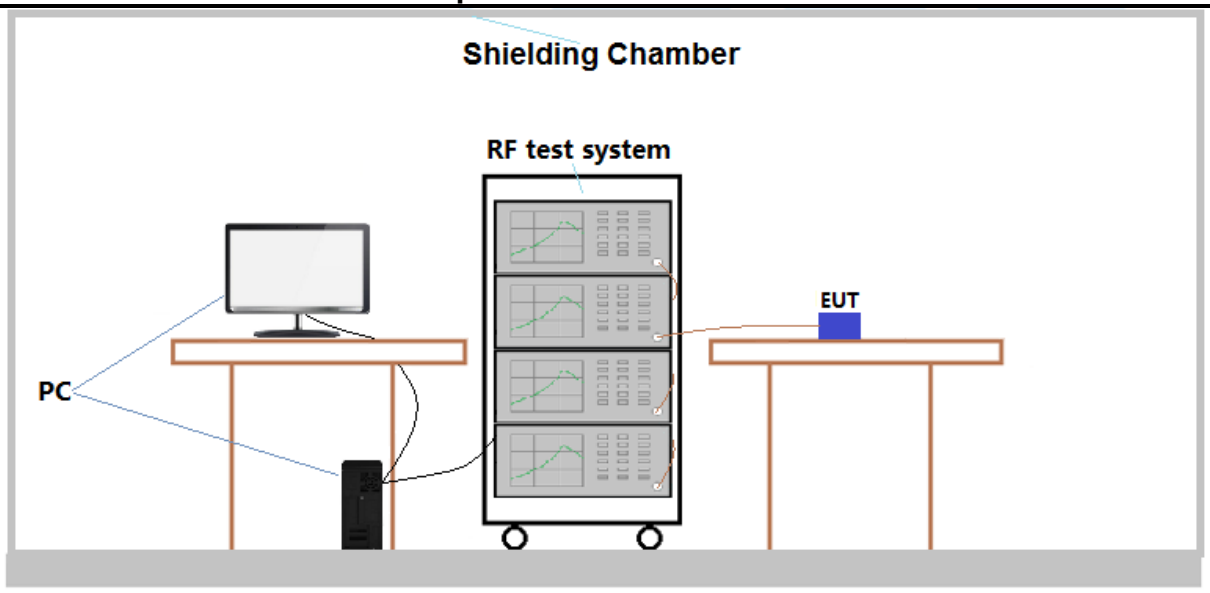
Radiated Emissions 30MHz to 1GHz Test setup



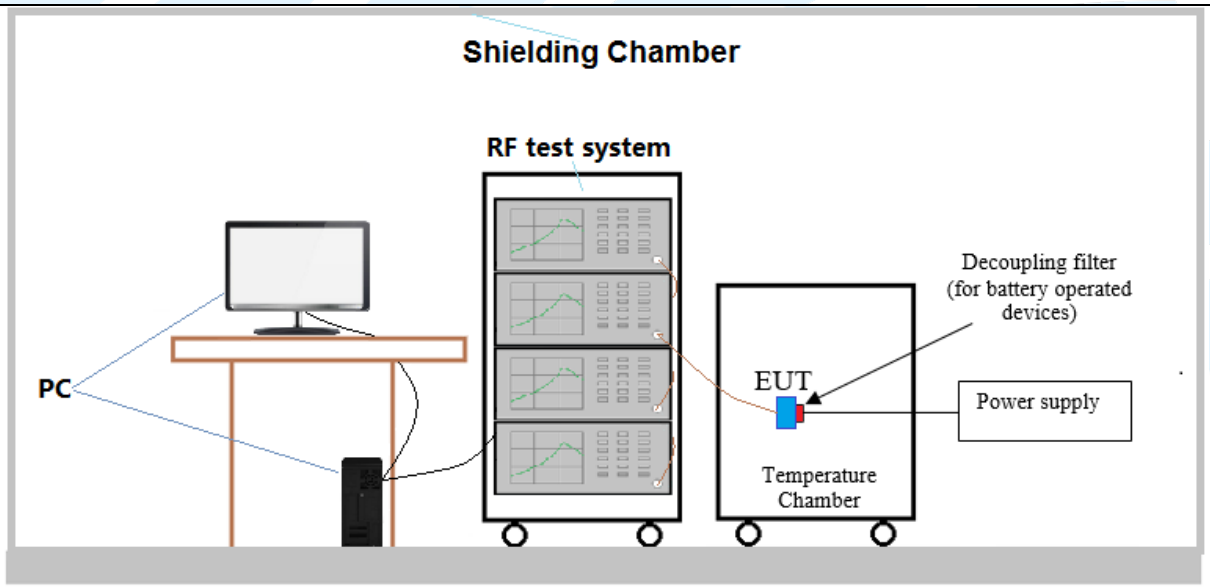
Radiated Emissions Above 1GHz Test setup



4.2.2 For Conducted RF test setup



Normal Environment



Extreme Environment

4.3 TEST CHANNELS

Band	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink (MHz)
LTE Band 2 TX: 1850-1910MHz	Low Range	1.4	18607	1850.7
		3	18615	1851.5
		5	18625	1852.5
		10	18650	1855
		15	18675	1857.5
		20	18700	1860
	Middle Range	1.4/3/5/10/15/20	18900	1880
	High Range	1.4	19193	1909.3
		3	19185	1908.5
		5	19175	1907.5
		10	19150	1905
		15	19125	1902.5
		20	19100	1900
LTE Band 4 TX: 1710-1755MHz	Low Range	1.4	19957	1710.7
		3	19965	1711.5
		5	19975	1712.5
		10	20000	1715
		15	20025	1717.5
		20	20050	1720
	Middle Range	1.4/3/5/10/ 15/20	20175	1732.5
	High Range	1.4	20393	1754.3
		3	20385	1753.5
		5	20375	1752.5
		10	20350	1750
		15	20325	1747.5
		20	20300	1745
LTE band 5 TX: 824–849MHz	Low Range	1.4	20407	824.7
		3	20415	825.5
		5	20425	826.5
		10	20450	829
	Middle Range	1.4/3/5/10	20525	836.5
	High Range	1.4	20643	848.3
		3	20635	847.5
		5	20625	846.5
		10	20600	844

Band	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink (MHz)
LTE Band 7 TX: 2500-2570MHz	Low Range	5	20775	2502.5
		10	20800	2505
		15	20825	2507.5
		20	20850	2510
	Middle Range	5/10/15/20	21100	2535
	High Range	5	21425	2567.5
		10	21400	2565
		15	21375	2562.5
		20	21350	2560
LTE Band 38 TX: 2570-2620MHz	Low Range	5	37775	2572.5
		10	37800	2575
		15	37825	2577.5
		20	37850	2580
	Middle Range	5/10/ 15/20	38000	2595
	High Range	5	38225	2617.5
		10	38200	2615
		15	38175	2612.5
		20	38150	2610

4.4 SYSTEM TEST CONFIGURATION

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. It was powered by a 3.85V battery. Only the worst case data were recorded in this test report.

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, X/Y/Z axis, and antenna ports.
The worst case was found when positioned as the table below.

Band	Mode	Antenna Port	Worst-case axis positioning
LTE Band 2	1TX	Chain 0	Y axis
LTE Band 4	1TX	Chain 0	Y axis
LTE Band 5	1TX	Chain 0	Y axis
LTE Band 7	1TX	Chain 0	Y axis
LTE Band 38	1TX	Chain 0	Y axis

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000MHz. The resolution is 1 MHz or greater for frequencies above 1000MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4.5 PRE-SCAN

Pre-scan under all rate at lowest middle and highest channel, find the transmitter power as below.

4.5.1 LTE Band 2

LTE Band 2 Maximum Average Power (dBm)										
Modulation	RB		Test Channel			RB		Test Channel		
	Size	Offset	Low	Mid	High	Size	Offset	Low	Mid	High
Channel Bandwidth: 1.4 MHz						Channel Bandwidth: 3 MHz				
QPSK	1	0	23.65	23.99	24.10	1	0	23.63	23.97	24.17
	1	2	23.73	23.93	24.25	1	7	23.81	23.86	24.17
	1	5	23.71	24.08	24.17	1	14	23.74	23.97	24.24
	3	0	23.93	23.87	23.96	8	0	22.92	22.87	22.92
	3	1	23.91	23.92	23.85	8	3	22.96	22.95	22.86
	3	3	23.85	24.05	24.03	8	7	22.84	23.05	23.12
	6	0	22.81	22.96	22.88	15	0	22.88	23.04	22.89
16QAM	1	0	23.12	22.77	23.30	1	0	23.17	22.77	23.42
	1	2	23.29	22.77	23.36	1	7	23.18	22.67	23.27
	1	5	23.28	22.62	23.46	1	14	23.14	22.79	23.45
	3	0	23.18	23.13	23.07	8	0	22.05	21.98	22.18
	3	1	23.11	23.08	23.07	8	3	22.14	22.01	22.21
	3	3	23.07	23.00	23.20	8	7	22.16	22.00	22.18
	6	0	22.05	22.05	22.25	15	0	21.98	22.10	22.19
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	23.69	24.00	24.19	1	0	23.75	23.88	24.17
	1	12	23.66	23.92	24.18	1	24	23.77	24.03	24.26
	1	24	23.81	24.05	24.29	1	49	23.73	24.09	24.24
	12	0	22.87	22.96	22.88	25	0	22.91	22.97	23.04
	12	6	22.83	22.93	23.00	25	12	22.96	22.92	22.92
	12	13	22.96	23.07	23.11	25	25	22.82	22.91	22.98
	25	0	22.89	22.99	23.02	50	0	22.88	22.97	23.01
16QAM	1	0	23.26	22.70	23.25	1	0	23.27	22.74	23.42
	1	12	23.34	22.84	23.29	1	24	23.25	22.65	23.24
	1	24	23.18	22.73	23.37	1	49	23.28	22.73	23.35
	12	0	22.06	22.10	22.14	25	0	22.06	21.97	22.17
	12	6	22.01	22.16	22.23	25	12	22.00	22.00	22.18
	12	13	22.03	22.08	22.31	25	25	22.08	22.02	22.15
	25	0	21.96	22.22	22.28	50	0	22.02	22.08	22.16
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	23.77	23.86	24.19	1	0	23.80	24.00	24.24
	1	37	23.63	23.99	24.09	1	50	23.83	24.04	24.28
	1	74	23.80	24.00	24.26	1	99	23.87	24.15	24.33
	37	0	22.93	22.94	22.93	50	0	22.97	23.02	23.06
	37	19	22.95	22.93	22.98	50	25	23.01	23.09	23.04
	37	39	22.92	23.03	23.08	50	50	22.99	23.08	23.13
	75	0	22.85	22.95	22.90	100	0	22.95	23.06	23.06
16QAM	1	0	23.22	22.72	23.34	1	0	23.29	22.81	23.44
	1	37	23.33	22.84	23.30	1	50	23.34	22.85	23.42
	1	74	23.25	22.68	23.48	1	99	23.33	22.82	23.54
	37	0	22.01	22.10	22.15	50	0	22.19	22.15	22.23
	37	19	22.13	22.11	22.17	50	25	22.15	22.20	22.24
	37	39	22.14	22.04	22.30	50	50	22.18	22.11	22.32
	75	0	21.91	22.15	22.15	100	0	22.07	22.23	22.29

4.5.2 LTE Band 4

LTE Band 4 Maximum Average Power (dBm)										
Modulation	RB		Test Channel			RB		Test Channel		
	Size	Offset	Low	Mid	High	Size	Offset	Low	Mid	High
Channel Bandwidth: 1.4 MHz						Channel Bandwidth: 3 MHz				
QPSK	1	0	24.27	23.96	24.00	1	0	24.23	24.05	24.13
	1	2	24.22	23.98	24.06	1	7	24.34	23.92	24.07
	1	5	24.28	24.01	24.11	1	14	24.27	23.92	24.00
	3	0	23.87	23.90	23.99	8	0	22.95	22.92	22.93
	3	1	23.99	23.96	23.99	8	3	22.92	22.98	23.13
	3	3	24.11	23.79	24.13	8	7	23.01	22.81	23.08
	6	0	22.88	23.04	22.94	15	0	22.97	22.98	22.92
16QAM	1	0	23.25	22.83	23.61	1	0	23.32	22.92	23.63
	1	2	23.32	22.93	23.54	1	7	23.44	22.80	23.61
	1	5	23.43	22.97	23.63	1	14	23.39	22.98	23.62
	3	0	23.19	23.10	22.96	8	0	22.13	22.10	21.96
	3	1	23.24	23.06	23.04	8	3	22.25	22.03	22.15
	3	3	23.22	23.06	23.09	8	7	22.20	22.05	22.20
	6	0	22.14	22.05	22.14	15	0	22.30	22.08	22.17
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	24.27	23.93	24.05	1	0	24.27	23.93	24.02
	1	12	24.32	23.92	24.04	1	24	24.23	23.96	24.06
	1	24	24.32	24.08	24.10	1	49	24.32	23.91	24.02
	12	0	23.06	22.87	22.92	25	0	22.93	22.89	23.06
	12	6	22.87	22.92	23.10	25	12	22.87	22.87	23.11
	12	13	23.02	22.97	23.04	25	25	23.12	22.83	23.02
	25	0	22.93	22.98	22.99	50	0	22.88	22.90	22.95
16QAM	1	0	23.36	22.92	23.60	1	0	23.34	22.87	23.67
	1	12	23.28	22.98	23.55	1	24	23.31	22.83	23.67
	1	24	23.46	23.00	23.63	1	49	23.33	22.90	23.57
	12	0	22.15	22.17	22.11	25	0	22.19	22.15	22.10
	12	6	22.14	22.09	22.07	25	12	22.09	22.05	22.15
	12	13	22.20	22.10	22.23	25	25	22.20	22.10	22.18
	25	0	22.30	22.02	22.20	50	0	22.27	22.04	22.17
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	24.31	24.04	23.99	1	0	24.35	24.09	24.16
	1	37	24.17	24.03	24.13	1	50	24.34	24.08	24.17
	1	74	24.14	24.03	24.15	1	99	24.34	24.10	24.17
	37	0	22.88	22.83	23.03	50	0	23.06	23.01	23.06
	37	19	22.98	22.98	23.12	50	25	23.05	22.99	23.13
	37	39	22.99	22.88	23.11	50	50	23.13	22.98	23.14
	75	0	22.90	22.96	22.96	100	0	22.99	23.09	23.01
16QAM	1	0	23.24	22.89	23.63	1	0	23.41	22.93	23.73
	1	37	23.46	22.83	23.60	1	50	23.46	22.98	23.72
	1	74	23.42	22.89	23.72	1	99	23.50	23.03	23.75
	37	0	22.27	22.10	21.98	50	0	22.28	22.23	22.14
	37	19	22.14	22.02	22.15	50	25	22.29	22.20	22.20
	37	39	22.09	22.12	22.10	50	50	22.28	22.18	22.24
	75	0	22.12	22.13	22.04	100	0	22.31	22.14	22.20

4.5.3 LTE Band 5

LTE Band 5 Maximum Average Power (dBm)										
Modulation	RB		Test Channel			RB		Test Channel		
	Size	Offset	Low	Mid	High	Size	Offset	Low	Mid	High
Channel Bandwidth: 1.4 MHz						Channel Bandwidth: 3 MHz				
QPSK	1	0	23.72	23.67	23.53	1	0	23.73	23.70	23.58
	1	2	23.72	23.57	23.49	1	7	23.71	23.71	23.54
	1	5	23.66	23.57	23.69	1	14	23.83	23.66	23.55
	3	0	23.74	23.63	23.67	8	0	22.76	22.79	22.66
	3	1	23.78	23.63	23.54	8	3	22.72	22.64	22.57
	3	3	23.67	23.74	23.55	8	7	22.74	22.78	22.63
	6	0	22.69	22.61	22.64	15	0	22.73	22.68	22.64
16QAM	1	0	23.49	23.24	23.22	1	0	23.40	23.16	23.19
	1	2	23.33	23.29	23.21	1	7	23.44	23.21	23.13
	1	5	23.33	23.17	23.02	1	14	23.30	23.15	23.19
	3	0	22.91	22.79	22.63	8	0	21.88	21.80	21.68
	3	1	22.79	22.88	22.70	8	3	21.80	21.84	21.73
	3	3	22.97	22.77	22.59	8	7	21.97	21.76	21.68
	6	0	21.79	21.84	21.69	15	0	21.75	21.79	21.68
Channel Bandwidth: 5 MHz						Channel Bandwidth: 10 MHz				
QPSK	1	0	23.79	23.66	23.61	1	0	23.83	23.80	23.69
	1	12	23.70	23.75	23.62	1	24	23.89	23.76	23.65
	1	24	23.65	23.70	23.64	1	49	23.85	23.72	23.71
	12	0	22.64	22.68	22.66	25	0	22.78	22.79	22.67
	12	6	22.68	22.58	22.52	25	12	22.81	22.78	22.69
	12	13	22.73	22.74	22.59	25	25	22.84	22.83	22.63
	25	0	22.80	22.72	22.60	50	0	22.83	22.80	22.70
16QAM	1	0	23.40	23.30	23.14	1	0	23.52	23.33	23.32
	1	12	23.26	23.15	23.20	1	24	23.44	23.30	23.25
	1	24	23.40	23.14	23.15	1	49	23.46	23.20	23.22
	12	0	21.87	21.81	21.62	25	0	21.95	21.88	21.77
	12	6	21.71	21.77	21.65	25	12	21.84	21.91	21.78
	12	13	21.97	21.78	21.70	25	25	21.99	21.84	21.78
	25	0	21.71	21.85	21.56	50	0	21.86	21.92	21.71

4.5.4 LTE Band 7

LTE Band 7 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	24.07	24.37	24.09	1	0	24.17	24.53	24.16
	1	12	24.43	24.47	24.03	1	24	24.42	24.35	24.10
	1	24	24.46	24.44	24.06	1	49	24.35	24.54	23.98
	12	0	23.49	23.31	23.31	25	0	23.44	23.38	23.39
	12	6	23.58	23.37	23.27	25	12	23.61	23.37	23.36
	12	13	23.57	23.47	23.27	25	25	23.54	23.58	23.32
	25	0	23.47	23.40	23.26	50	0	23.54	23.37	23.35
16QAM	1	0	23.92	23.89	23.35	1	0	23.76	23.87	23.43
	1	12	23.94	23.95	23.37	1	24	23.91	23.92	23.33
	1	24	23.93	24.13	23.61	1	49	23.98	23.95	23.61
	12	0	22.75	22.59	22.41	25	0	22.83	22.50	22.38
	12	6	22.68	22.70	22.45	25	12	22.64	22.64	22.50
	12	13	22.58	22.53	22.64	25	25	22.62	22.67	22.56
	25	0	22.72	22.46	22.49	50	0	22.66	22.48	22.52
	Channel Bandwidth: 15 MHz					Channel Bandwidth: 20 MHz				
QPSK	1	0	24.16	24.42	24.04	1	0	24.20	24.55	24.24
	1	37	24.29	24.52	24.08	1	50	24.47	24.53	24.19
	1	74	24.47	24.57	24.09	1	99	24.53	24.62	24.10
	37	0	23.55	23.38	23.24	50	0	23.62	23.51	23.43
	37	19	23.63	23.45	23.33	50	25	23.65	23.55	23.42
	37	39	23.52	23.53	23.39	50	50	23.64	23.61	23.44
	75	0	23.53	23.33	23.36	100	0	23.57	23.50	23.37
16QAM	1	0	23.83	24.02	23.35	1	0	23.95	24.02	23.51
	1	37	23.93	23.81	23.47	1	50	24.04	23.99	23.50
	1	74	23.90	24.02	23.56	1	99	24.02	24.14	23.62
	37	0	22.81	22.61	22.46	50	0	22.91	22.67	22.56
	37	19	22.69	22.62	22.44	50	25	22.83	22.72	22.60
	37	39	22.71	22.54	22.59	50	50	22.77	22.69	22.67
	75	0	22.77	22.53	22.57	100	0	22.77	22.66	22.62

4.5.5 LTE Band 38

LTE Band 38 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	24.14	24.30	24.35	1	0	24.13	24.17	24.41
	1	12	24.11	24.21	24.37	1	24	24.15	24.21	24.47
	1	24	24.15	24.29	24.32	1	49	24.24	24.26	24.31
	12	0	23.35	23.16	23.18	25	0	23.34	23.31	23.14
	12	6	23.47	23.27	23.33	25	12	23.43	23.15	23.30
	12	13	23.28	23.42	23.30	25	25	23.17	23.37	23.32
	25	0	23.25	23.27	23.27	50	0	23.19	23.43	23.36
16QAM	1	0	23.16	23.53	23.09	1	0	23.12	23.51	23.12
	1	12	23.05	23.49	23.10	1	24	23.07	23.45	23.15
	1	24	23.17	22.27	23.34	1	49	23.17	22.20	23.39
	12	0	22.41	22.49	22.48	25	0	22.41	22.55	22.47
	12	6	22.64	22.62	22.68	25	12	22.63	22.47	22.73
	12	13	22.51	22.67	22.75	25	25	22.54	22.64	22.65
	25	0	22.54	22.31	22.48	50	0	22.45	22.44	22.37
Channel Bandwidth: 15 MHz						Channel Bandwidth: 20 MHz				
QPSK	1	0	24.12	24.22	24.31	1	0	24.24	24.35	24.46
	1	37	24.22	24.35	24.35	1	50	24.29	24.36	24.48
	1	74	24.20	24.40	24.48	1	99	24.33	24.44	24.49
	37	0	23.37	23.14	23.18	50	0	23.47	23.32	23.31
	37	19	23.29	23.16	23.34	50	25	23.48	23.35	23.42
	37	39	23.25	23.44	23.32	50	50	23.37	23.47	23.39
	75	0	23.35	23.37	23.28	100	0	23.36	23.43	23.39
16QAM	1	0	23.13	23.38	23.00	1	0	23.31	23.54	23.17
	1	37	23.14	23.40	23.26	1	50	23.23	23.53	23.28
	1	74	23.17	22.14	23.40	1	99	23.34	22.31	23.41
	37	0	22.32	22.63	22.44	50	0	22.50	22.68	22.58
	37	19	22.46	22.46	22.62	50	25	22.64	22.64	22.75
	37	39	22.38	22.50	22.65	50	50	22.57	22.70	22.83
	75	0	22.45	22.34	22.52	100	0	22.59	22.47	22.53

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	☒	☒	☒	☒	--	--	☒	☒	☐	☒	☐	☐	☒	☒	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☐	☒	☐	☐	☒	☒	☒
	38	-	-	☒	☒	☒	☒	☒	☒	☐	☒	☐	☐	☒	☒	☒
Conducted output power	2	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☒	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☒	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☐	☒	☒	☒	☒	☒	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☐	☒	☒	☒	☒	☒	☒
	38	-	-	☒	☒	☒	☒	☒	☒	☐	☒	☒	☒	☒	☒	☒
99%&26dB Bandwidth	2	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☒	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☒	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☐	☐	☐	☒	☒	☒	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☐	☐	☐	☒	☒	☒	☒
	38	-	-	☒	☒	☒	☒	☒	☒	☐	☐	☐	☒	☒	☒	☒
peak-to-average ratio	2	☐	☐	☐	☐	☐	☒	☒	☒	☐	☒	☐	☒	☒	☐	☒
	4	☐	☐	☐	☐	☐	☒	☒	☒	☐	☒	☐	☒	☒	☐	☒
	5	☐	☐	☐	☒	--	--	☒	☒	☐	☒	☐	☒	☒	☐	☒
	7	-	-	☐	☐	☐	☒	☒	☒	☐	☒	☐	☒	☒	☐	☒
	38	-	-	☐	☐	☐	☒	☒	☒	☐	☒	☐	☒	☒	☐	☒

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	☒	☒	☒	☒	--	--	☒	☒	☐	☒	☐	☒	☒	☐	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☐	☒	☐	☒	☒	☐	☒
	38	-	-	☒	☒	☒	☒	☒	☒	☐	☒	☐	☒	☒	☐	☒
Spurious emissions at antenna terminals	2	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☐	☐	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☐	☐	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☐	☒	☐	☐	☒	☒	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☐	☒	☐	☐	☒	☒	☒
	38	-	-	☒	☒	☒	☒	☒	☒	☐	☒	☐	☐	☒	☒	☒
Field strength of spurious radiation	2	☐	☐	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	4	☐	☐	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	5	☐	☐	☐	☒	--	--	☒	☐	☐	☒	☐	☐	☒	☒	☒
	7	-	-	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	38	-	-	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
Frequency stability	2	☐	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	4	☐	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	5	☐	☐	☐	☒	--	--	☒	☐	☐	☐	☐	☒	☐	☒	☐
	7	-	-	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	38	-	-	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐

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	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: FCC 47 CFR Part 24.232(c)
LTE Band 4: FCC 47 CFR Part 27.50(d)(4)
LTE Band 5: FCC 47 CFR Part 22.913(a)
LTE Band 7 & Band 38: FCC 47 CFR Part 27.50(h)(2)

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(h)(2):
Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

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.

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	22.23	21.78	/	33.01	Pass
Middle	22.43	21.12	/	33.01	Pass
Highest	22.75	21.96	/	33.01	Pass
Channel Bandwidth: 3MHz					
Lowest	22.24	21.64	/	33.01	Pass
Middle	22.47	21.29	/	33.01	Pass
Highest	22.74	21.95	/	33.01	Pass
Channel Bandwidth: 5MHz					
Lowest	22.31	21.68	/	33.01	Pass
Middle	22.55	21.23	/	33.01	Pass
Highest	22.79	21.87	/	33.01	Pass
Channel Bandwidth: 10MHz					
Lowest	22.27	21.77	/	33.01	Pass
Middle	22.53	21.24	/	33.01	Pass
Highest	22.76	21.92	/	33.01	Pass
Channel Bandwidth: 15MHz					
Lowest	22.30	21.75	/	33.01	Pass
Middle	22.50	21.18	/	33.01	Pass
Highest	22.76	21.98	/	33.01	Pass
Channel Bandwidth: 20MHz					
Lowest	22.37	21.83	/	33.01	Pass
Middle	22.65	21.32	/	33.01	Pass
Highest	22.83	22.04	/	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	22.78	21.93	/	30.00	Pass
Middle	22.51	21.47	/	30.00	Pass
Highest	22.61	22.13	/	30.00	Pass
Channel Bandwidth: 3MHz					
Lowest	22.84	21.82	/	30.00	Pass
Middle	22.42	21.42	/	30.00	Pass
Highest	22.57	22.13	/	30.00	Pass
Channel Bandwidth: 5MHz					
Lowest	22.82	21.96	/	30.00	Pass
Middle	22.58	21.50	/	30.00	Pass
Highest	22.60	22.13	/	30.00	Pass
Channel Bandwidth: 10MHz					
Lowest	22.82	21.84	/	30.00	Pass
Middle	22.41	21.37	/	30.00	Pass
Highest	22.52	22.17	/	30.00	Pass
Channel Bandwidth: 15MHz					
Lowest	22.81	21.92	/	30.00	Pass
Middle	22.54	21.39	/	30.00	Pass
Highest	22.49	22.22	/	30.00	Pass
Channel Bandwidth: 20MHz					
Lowest	22.85	22.00	/	30.00	Pass
Middle	22.59	21.53	/	30.00	Pass
Highest	22.66	22.25	/	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	20.13	19.84	/	38.45	Pass
Middle	19.98	19.59	/	38.45	Pass
Highest	19.89	19.57	/	38.45	Pass
Channel Bandwidth: 3MHz					
Lowest	20.18	19.79	/	38.45	Pass
Middle	20.01	19.56	/	38.45	Pass
Highest	19.90	19.48	/	38.45	Pass
Channel Bandwidth: 5MHz					
Lowest	20.14	19.75	/	38.45	Pass
Middle	20.01	19.49	/	38.45	Pass
Highest	19.96	19.50	/	38.45	Pass
Channel Bandwidth: 10MHz					
Lowest	20.24	19.87	/	38.45	Pass
Middle	20.11	19.68	/	38.45	Pass
Highest	20.00	19.67	/	38.45	Pass

5.2.4 LTE Band 7

LTE Band 7 Maximum EIRP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 5MHz					
Lowest	22.93	22.43	/	33.01	Pass
Middle	22.97	22.63	/	33.01	Pass
Highest	22.53	22.11	/	33.01	Pass
Channel Bandwidth: 10MHz					
Lowest	22.85	22.48	/	33.01	Pass
Middle	23.04	22.45	/	33.01	Pass
Highest	22.48	22.11	/	33.01	Pass
Channel Bandwidth: 15MHz					
Lowest	22.97	22.40	/	33.01	Pass
Middle	23.07	22.52	/	33.01	Pass
Highest	22.59	22.06	/	33.01	Pass
Channel Bandwidth: 20MHz					
Lowest	23.03	22.52	/	33.01	Pass
Middle	23.12	22.64	/	33.01	Pass
Highest	22.60	22.12	/	33.01	Pass

5.2.5 LTE Band 38

LTE Band 38 Maximum EIRP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 5MHz					
Lowest	22.61	21.66	/	33.01	Pass
Middle	22.71	22.03	/	33.01	Pass
Highest	22.87	21.59	/	33.01	Pass
Channel Bandwidth: 10MHz					
Lowest	22.65	21.62	/	33.01	Pass
Middle	22.71	22.01	/	33.01	Pass
Highest	22.97	21.62	/	33.01	Pass
Channel Bandwidth: 15MHz					
Lowest	22.70	21.64	/	33.01	Pass
Middle	22.90	21.90	/	33.01	Pass
Highest	22.98	21.76	/	33.01	Pass
Channel Bandwidth: 20MHz					
Lowest	22.83	21.81	/	33.01	Pass
Middle	22.94	22.04	/	33.01	Pass
Highest	22.99	21.67	/	33.01	Pass

5.3 CONDUCTED OUTPUT POWER

Test Requirement: FCC 47 CFR Part 2.1046(a)
LTE Band 2: FCC 47 CFR Part 24.232(c)
LTE Band 4: FCC 47 CFR Part 27.50(d)(4)
LTE Band 5: FCC 47 CFR Part 22.913(a)
LTE Band 7 & Band 38: FCC 47 CFR Part 27.50(h)(2)

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(h)(2):
Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

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.

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:** FCC 47 CFR Part 24.232(d) **LTE Band 4:** FCC 47 CFR Part 27.50(d)(5) **LTE Band 5:** FCC 47 CFR Part 22.913(a) **LTE Band 7 & Band 38:** FCC 47 CFR Part 27.50(d)(5)
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.

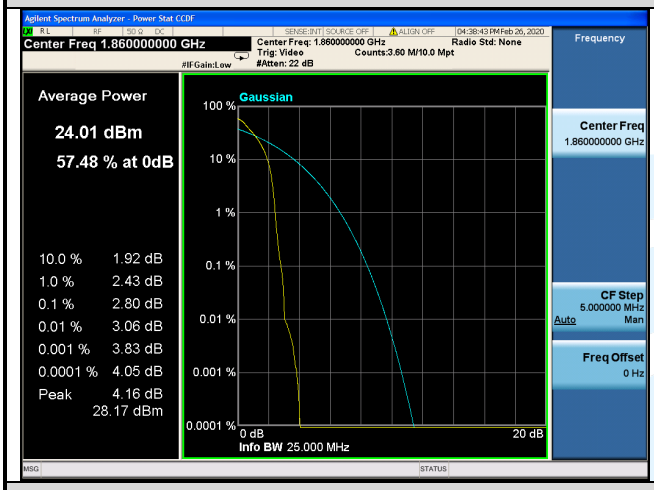
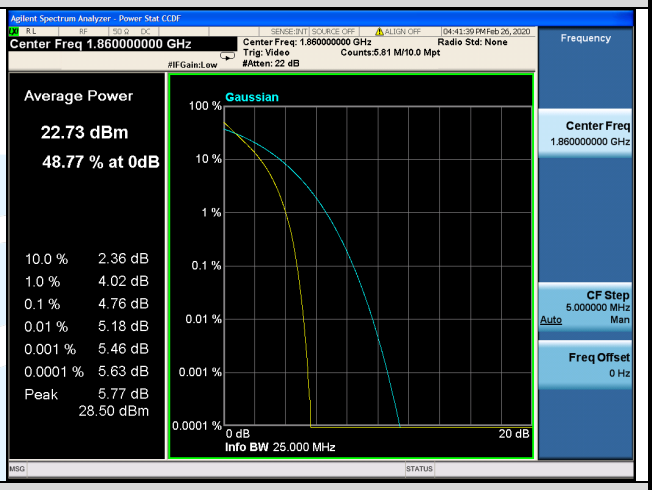
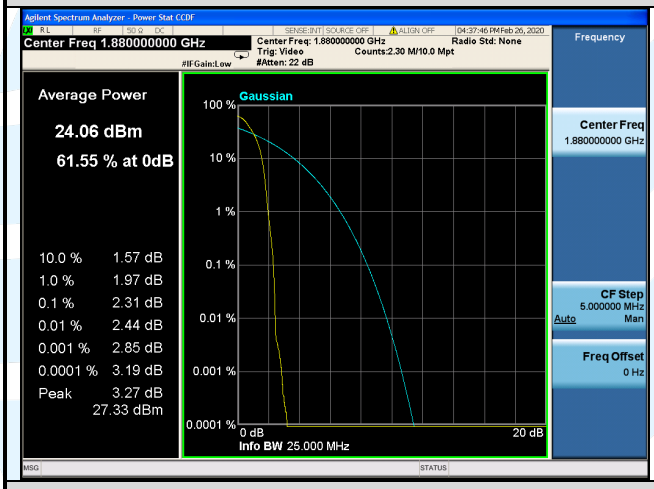
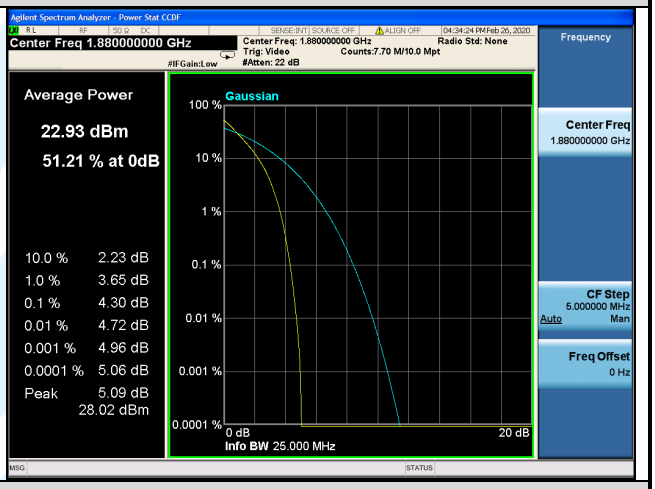
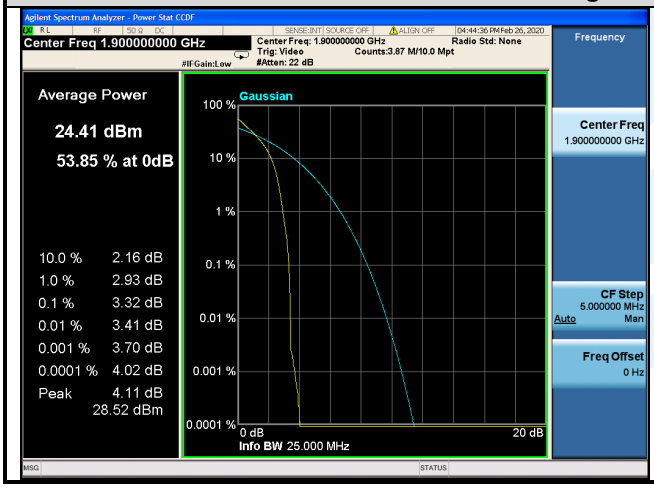
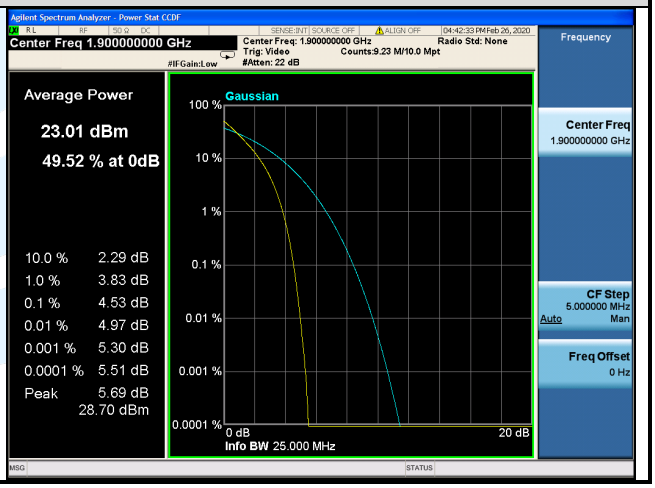
a) Set resolution/measurement bandwidth ≥ signal's occupied bandwidth
b) Set the number of counts to a value that stabilizes the measured CCDF curve
c) Record the maximum PAPR level associated with a probability of 0.1 %

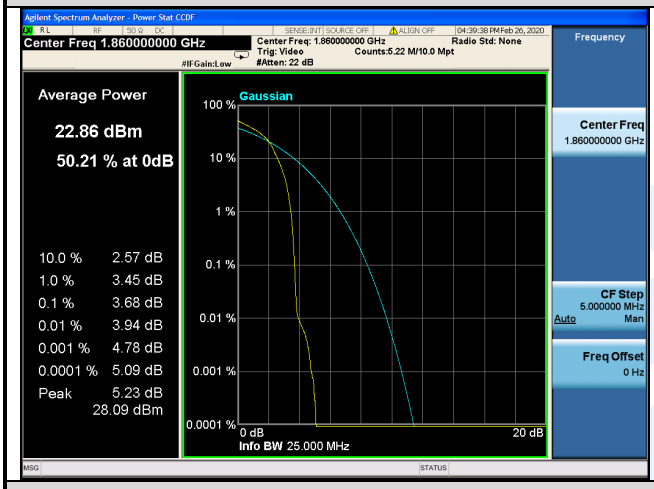
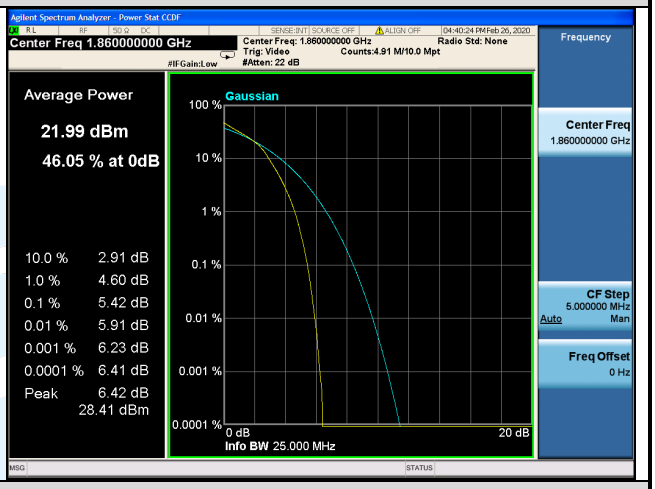
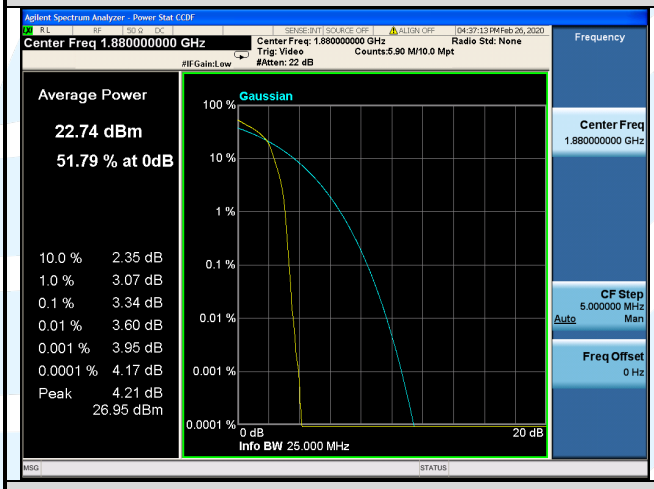
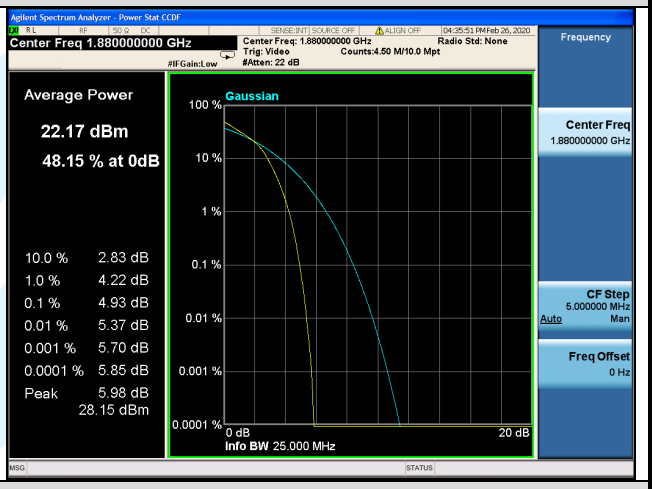
Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

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	2.80	3.68	/	13	Pass
	Full RB	4.76	5.42	/	13	Pass
Middle	1 RB	2.31	3.34	/	13	Pass
	Full RB	4.30	4.93	/	13	Pass
Highest	1 RB	3.32	4.34	/	13	Pass
	Full RB	4.53	5.11	/	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	
	
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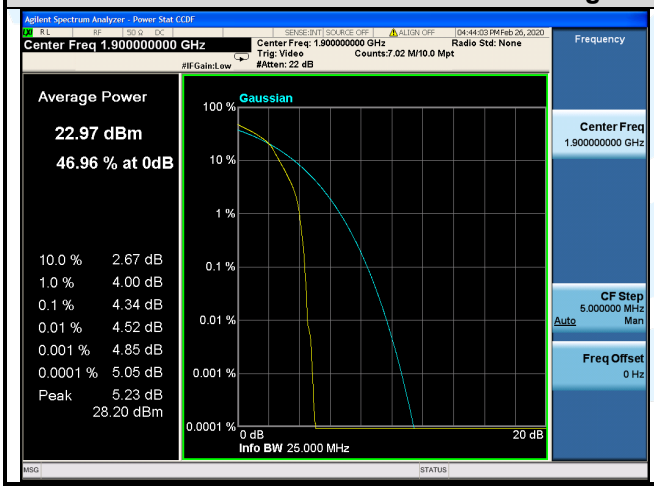
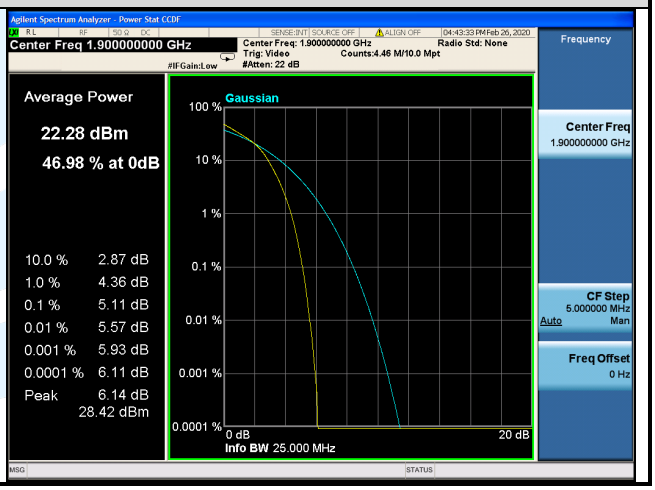
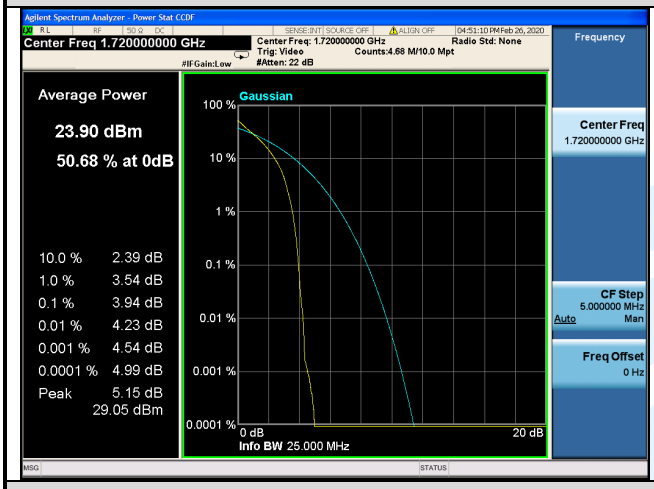
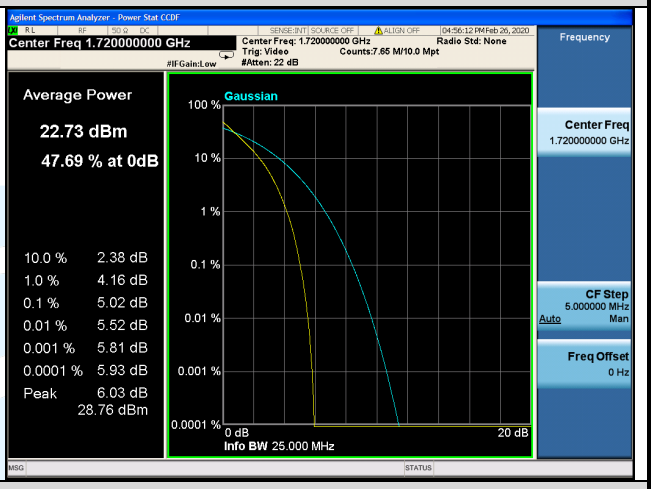
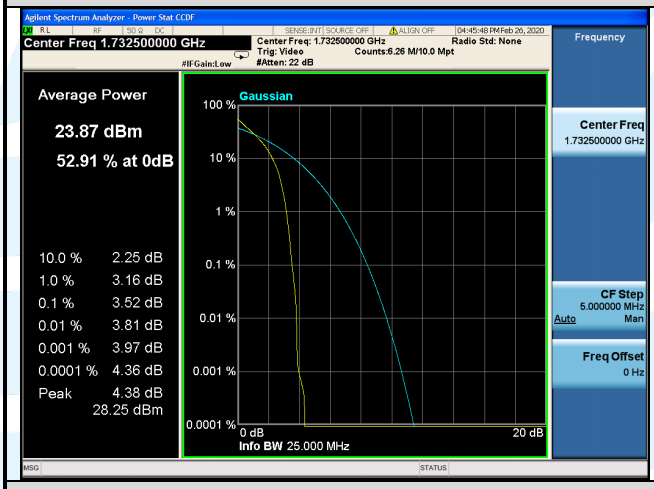
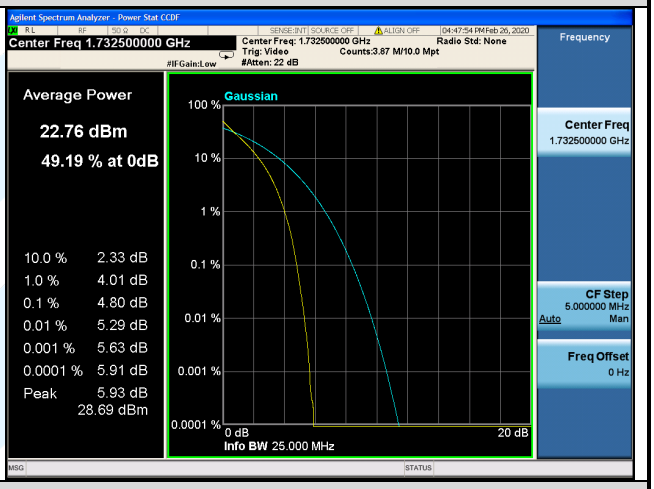
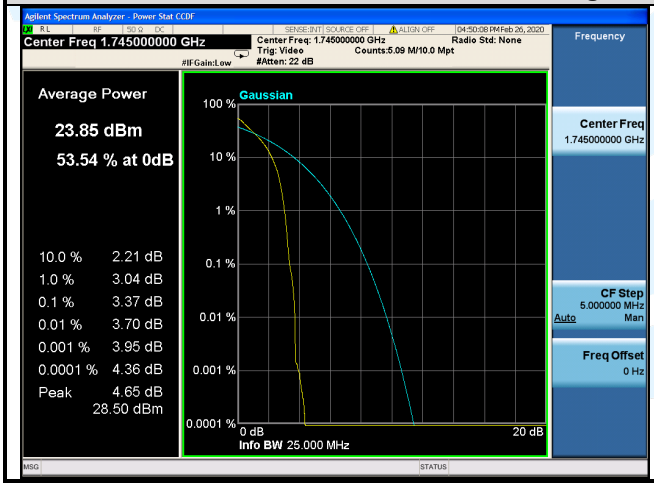
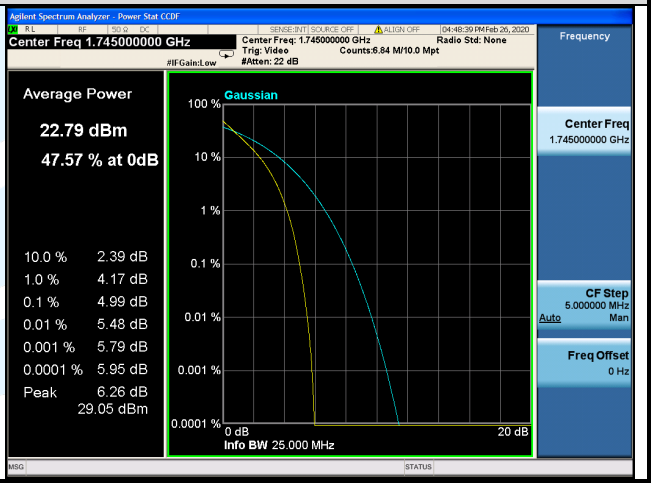
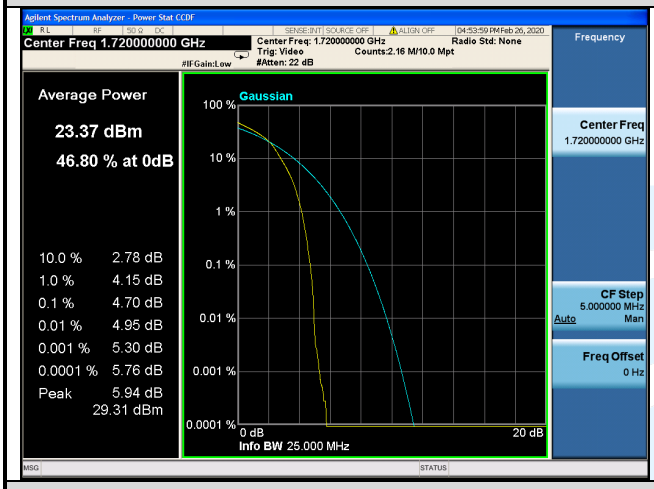
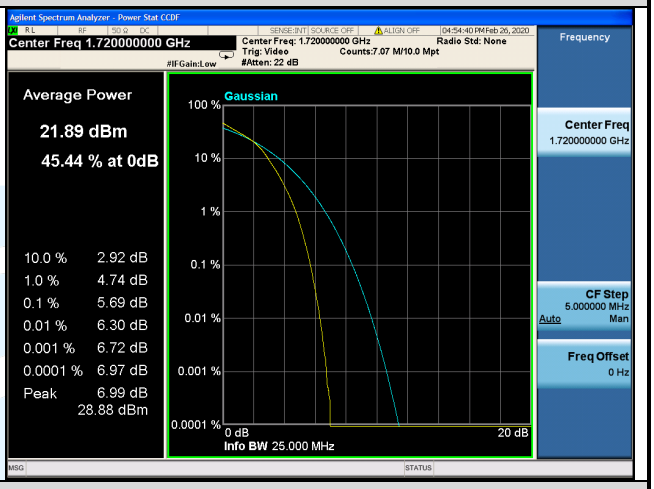
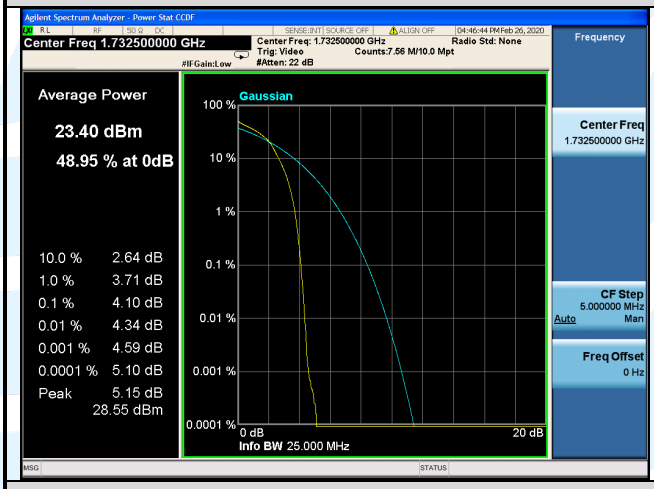
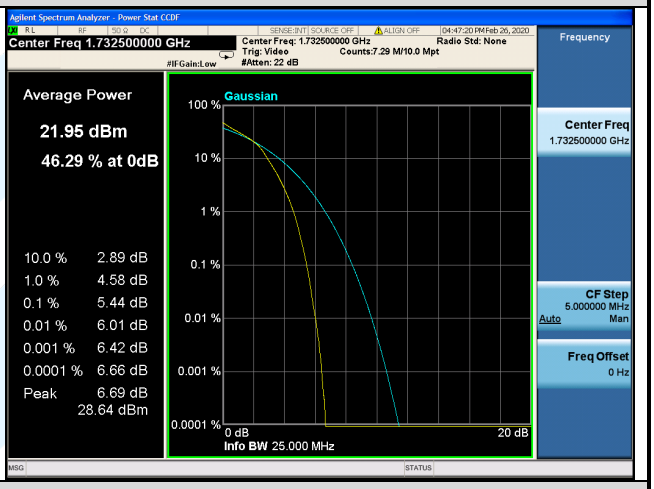
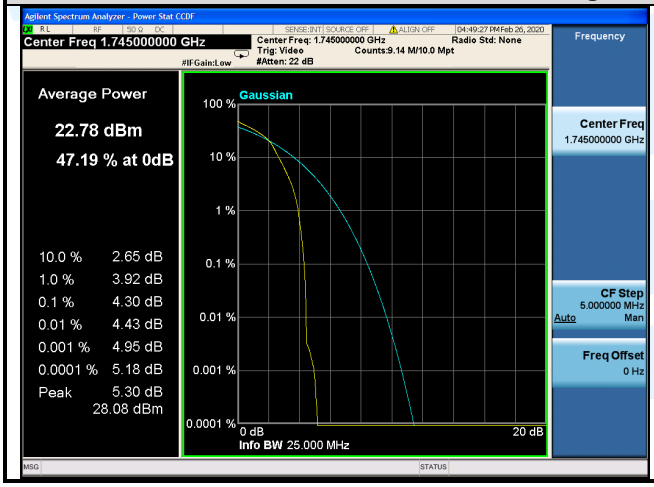
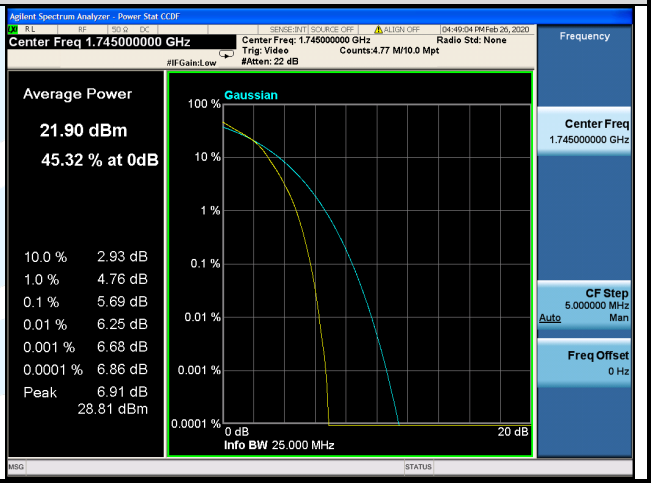
	

5.4.2 LTE Band 4

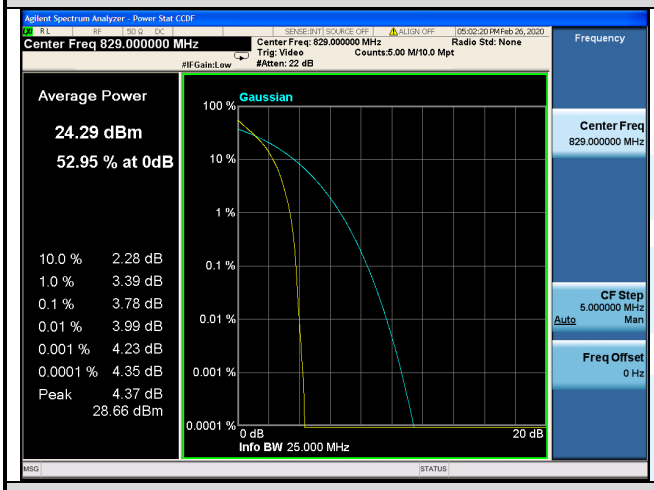
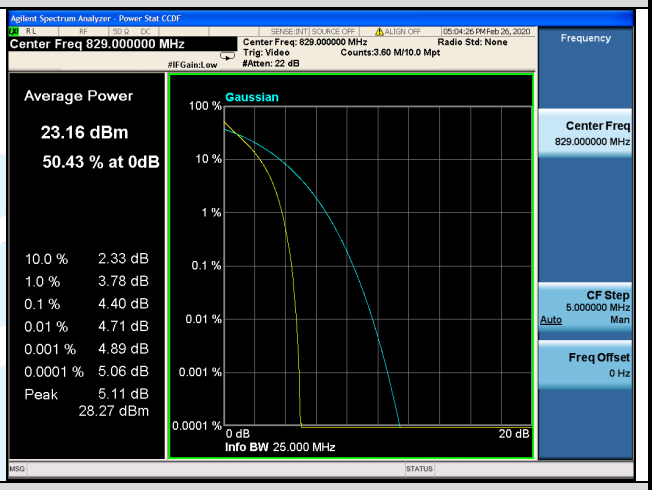
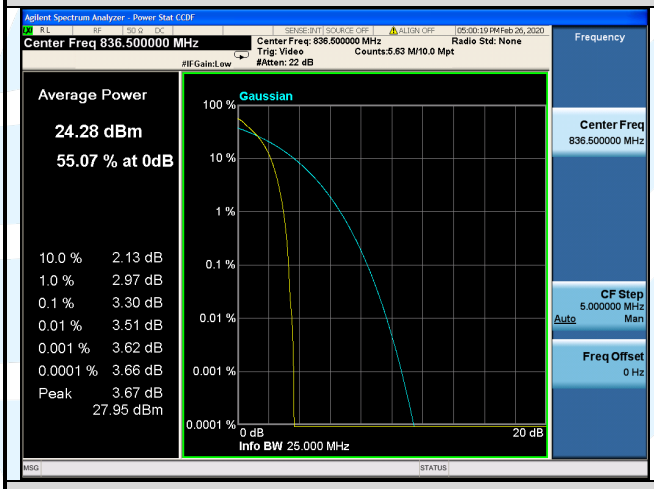
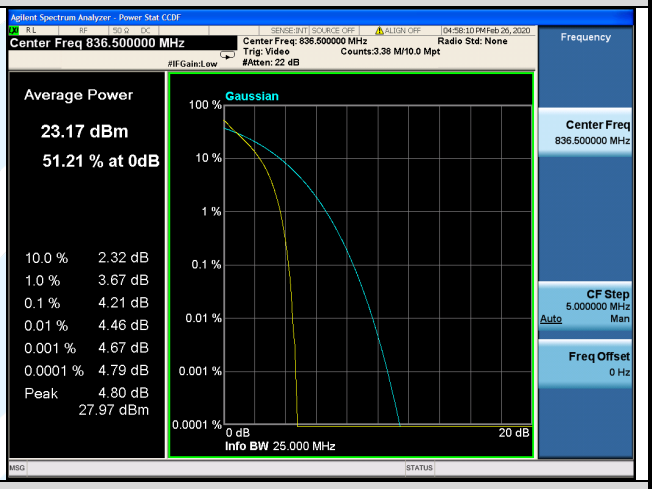
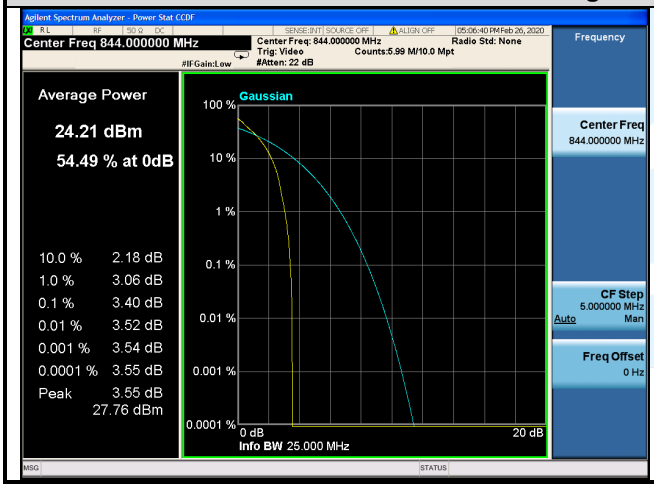
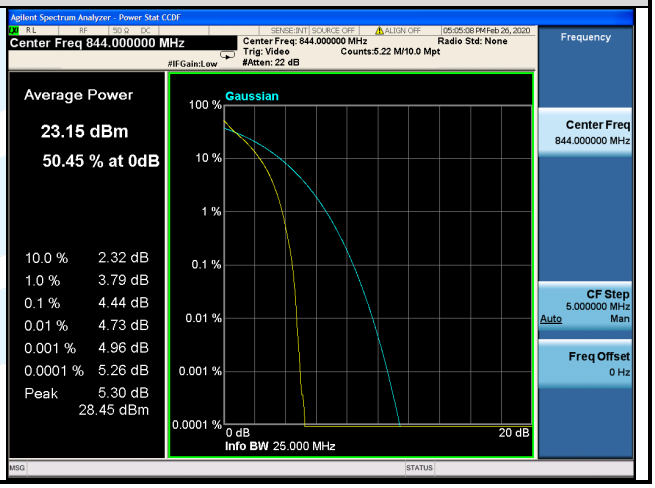
LTE Band 4 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 20 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	3.94	4.70	/	13	Pass
	Full RB	5.02	5.69	/	13	Pass
Middle	1 RB	3.52	4.10	/	13	Pass
	Full RB	4.80	5.44	/	13	Pass
Highest	1 RB	3.37	4.30	/	13	Pass
	Full RB	4.99	5.69	/	13	Pass

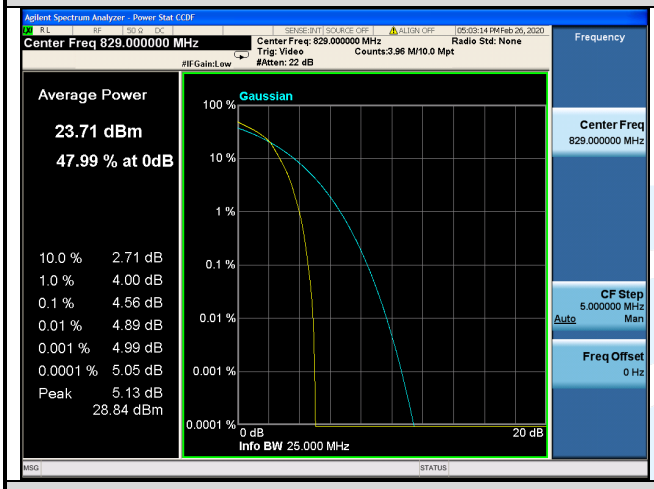
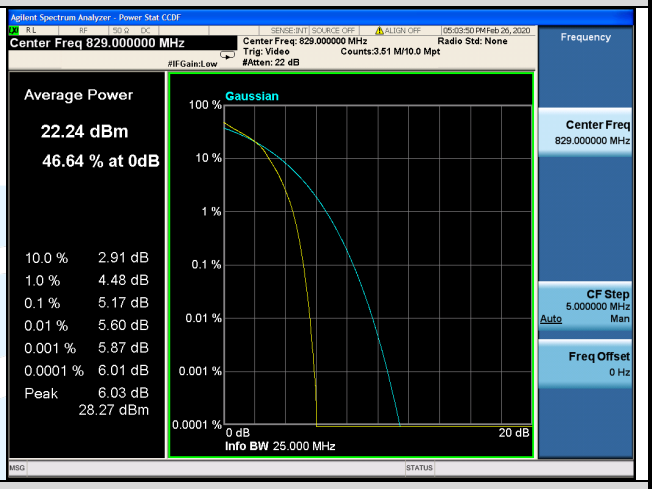
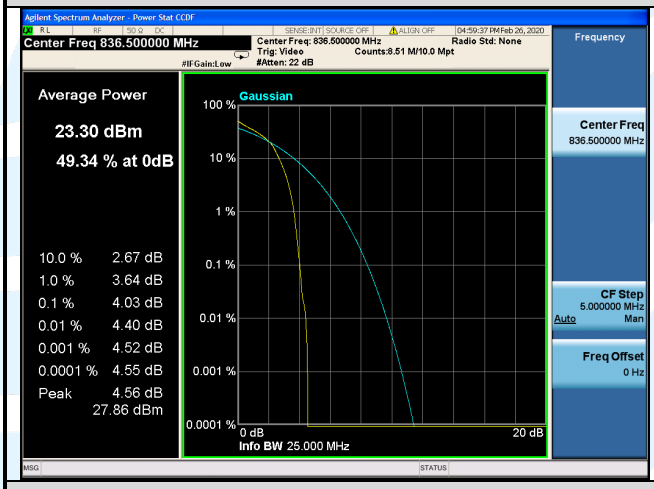
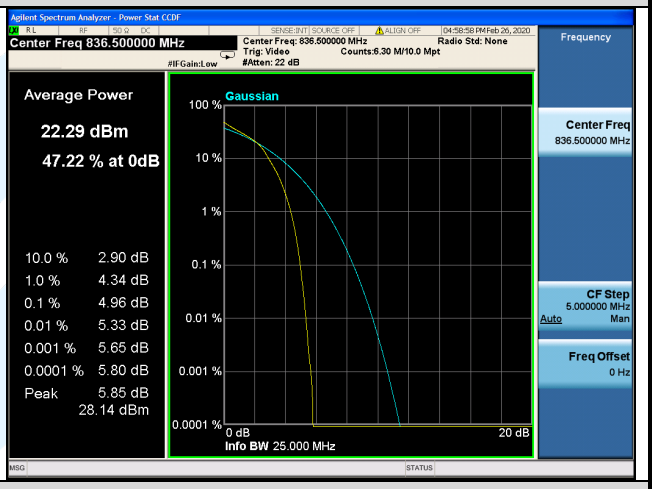
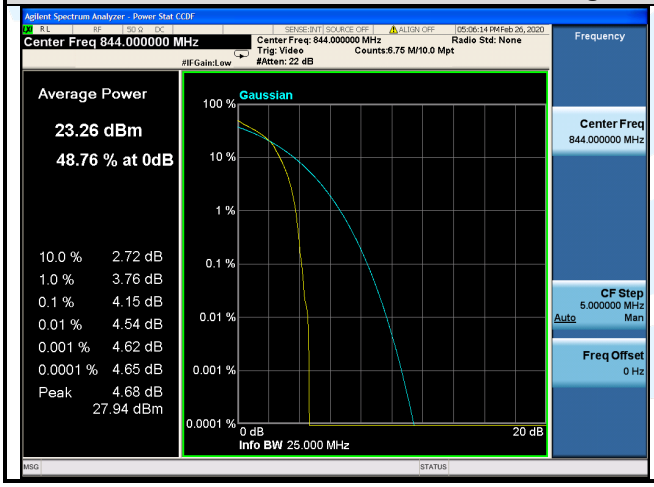
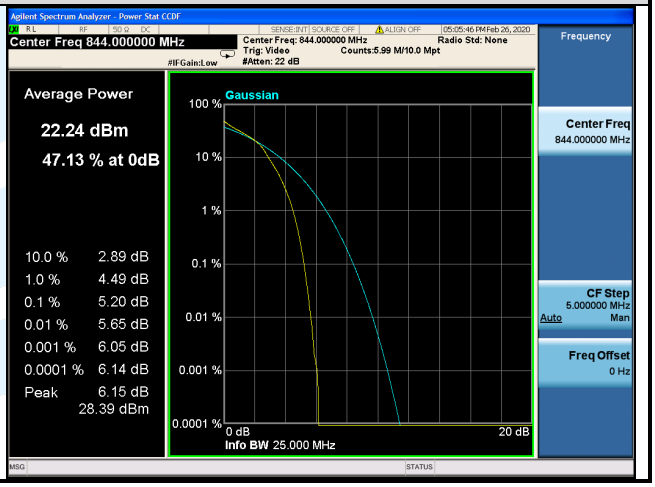
LTE Band 4 / 20MHz / QPSK	
1 RB	Full RB
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

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

5.4.3 LTE Band 5

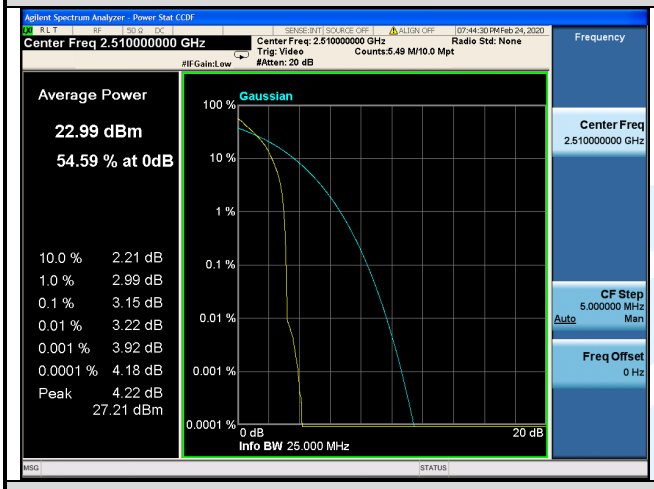
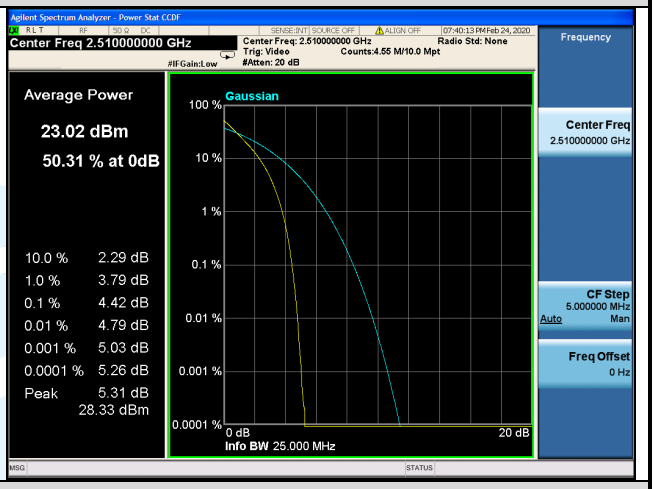
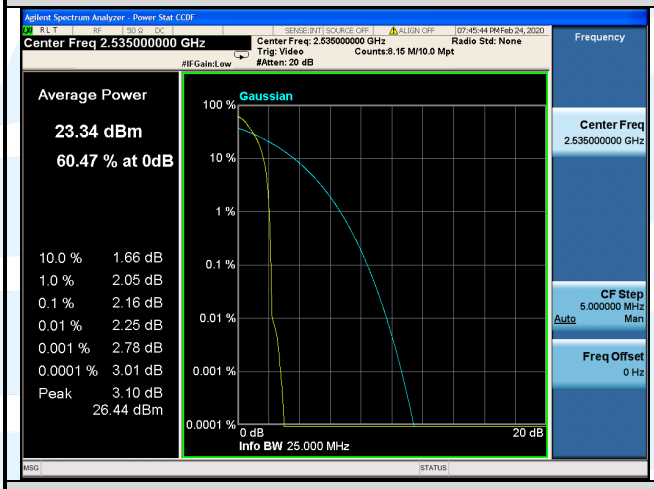
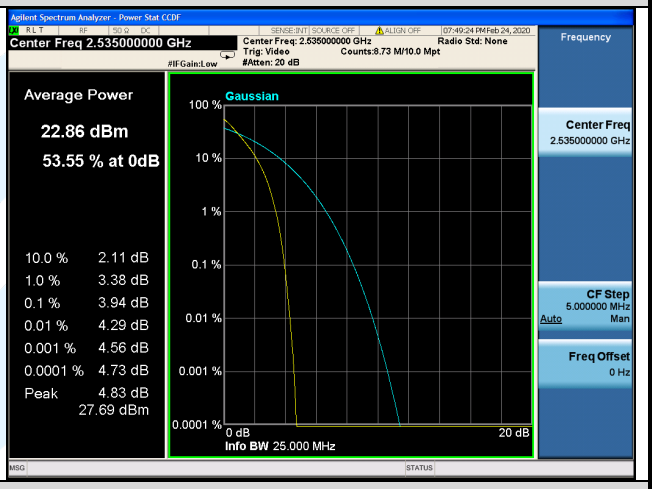
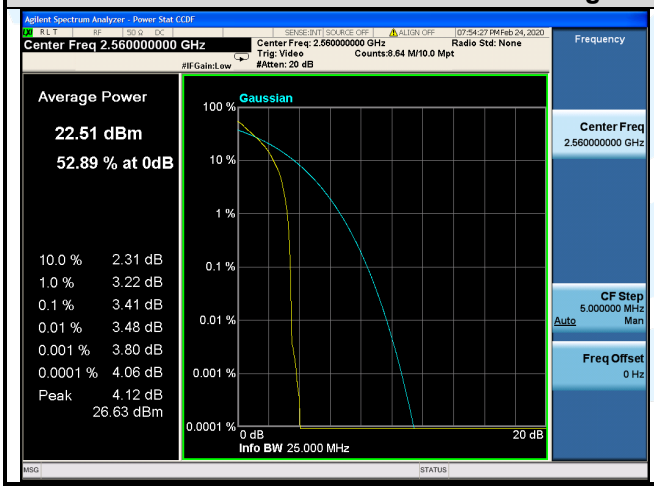
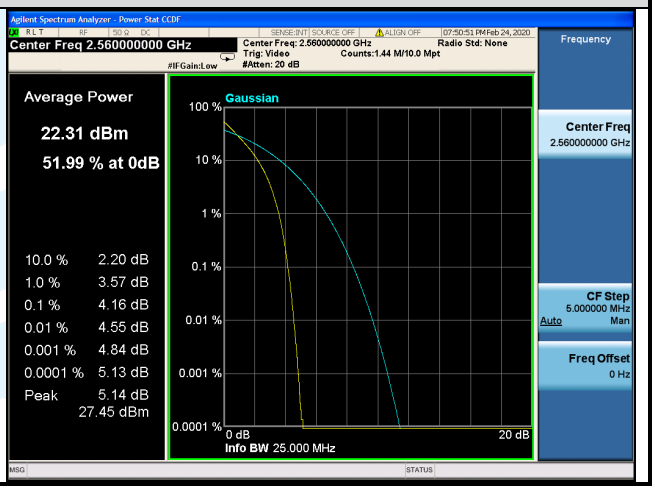
LTE Band 5 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 10 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	3.78	4.56	/	13	Pass
	Full RB	4.40	5.17	/	13	Pass
Middle	1 RB	3.30	4.03	/	13	Pass
	Full RB	4.21	4.96	/	13	Pass
Highest	1 RB	3.40	4.15	/	13	Pass
	Full RB	4.44	5.20	/	13	Pass

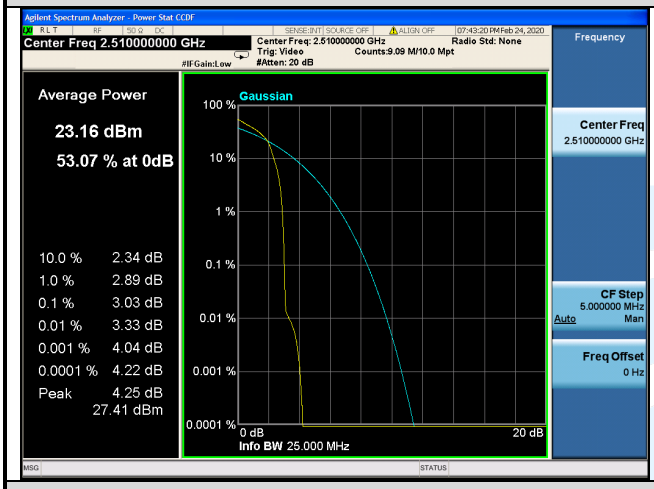
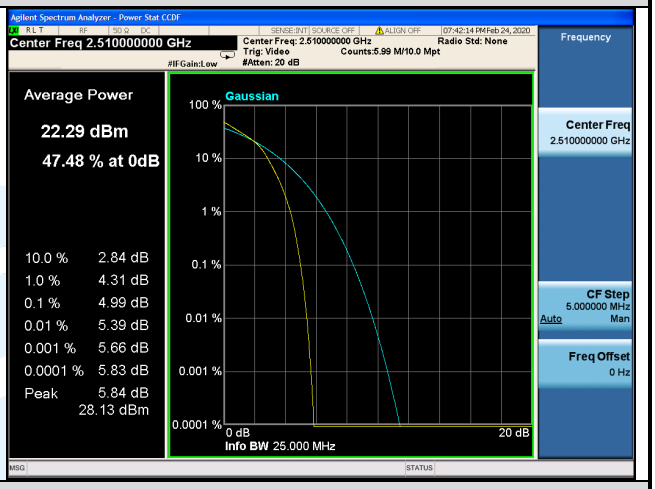
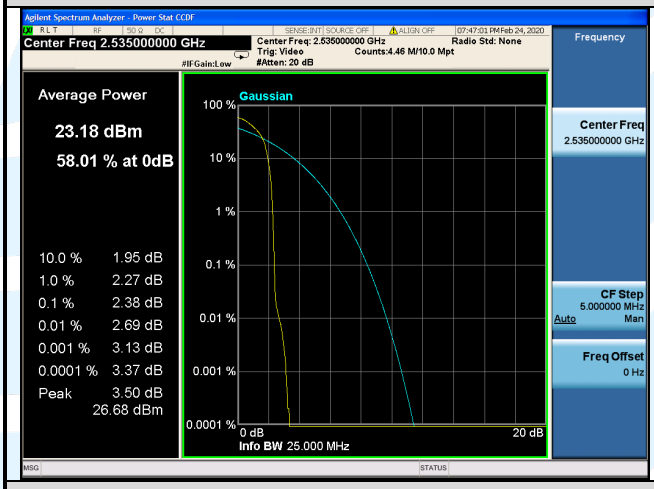
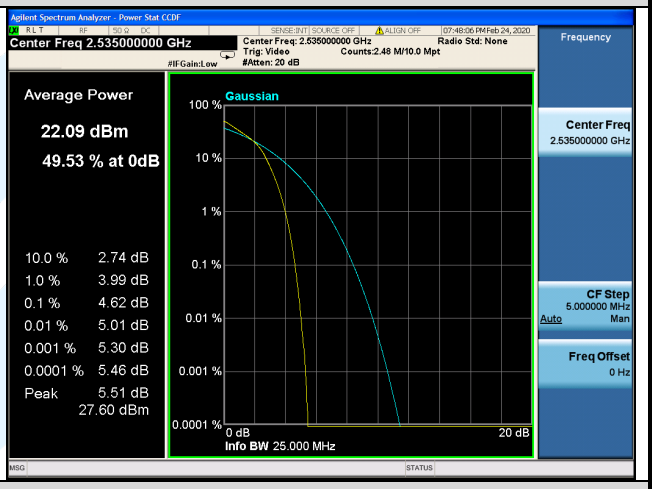
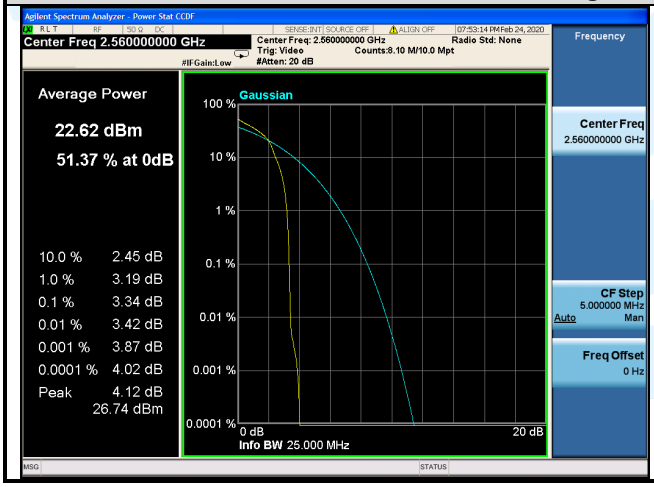
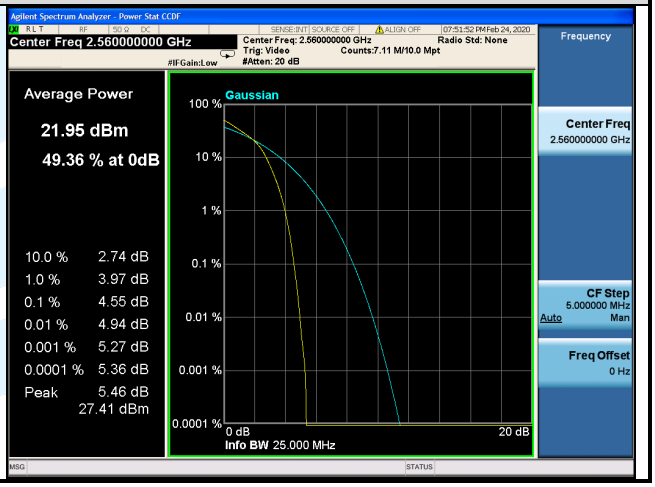
LTE Band 5 / 10 MHz / QPSK	
1 RB	Full RB
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

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

5.4.4 LTE Band 7

LTE Band 7 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 20 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	3.15	3.03	/	13	Pass
	Full RB	4.42	4.99	/	13	Pass
Middle	1 RB	2.16	2.38	/	13	Pass
	Full RB	3.94	4.62	/	13	Pass
Highest	1 RB	3.41	3.34	/	13	Pass
	Full RB	4.16	4.55	/	13	Pass

LTE Band 7 / 20MHz / QPSK	
1 RB	Full RB
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

LTE Band 7 / 20MHz / 16QAM	
1 RB	Full RB
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

5.4.5 LTE Band 38

LTE Band 38 Peak-to-average ratio (dB)						
Channel	RB Configuration	Channel Bandwidth: 20 MHz			Limit (dB)	Result
		QPSK	16QAM	64QAM		
Lowest	1 RB	4.98	5.84	/	13	Pass
	Full RB	5.83	6.60	/	13	Pass
Middle	1 RB	4.51	5.54	/	13	Pass
	Full RB	5.87	6.80	/	13	Pass
Highest	1 RB	4.35	5.22	/	13	Pass
	Full RB	5.64	6.53	/	13	Pass