FCC TEST REPORT

Product Name:	Enterprise Key-Based Touch Mobile Computer
Trade Mark:	BLUEBIRD
Model No.:	EK430
Add. Model No.:	N/A
Report Number:	210520024RFM-2
Test Standards:	FCC 47 CFR Part 22 FCC 47 CFR Part 24 FCC 47 CFR Part 27
FCC ID:	SS4EK430
Test Result:	PASS
Date of Issue:	September 30, 2021

Prepared for:

Bluebird Inc.
3F, 115, Irwon-ro, Gangnam-gu, Seoul, Republic of Korea

Prepared by:

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Prepared by:	Kieron Luo	Reviewed by:	Henry Lu
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Approved by:	Kevin Liang	Date:	September 30, 2021
	Assistant Manager		

Version

Version No.	Date	Description
V1.0	September 30, 2021	Original

CONTENTS

1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	Bluebird Inc.
Address of Applicant:	3F, 115, Irwon-ro, Gangnam-gu, Seoul, Republic of Korea
Manufacturer:	Bluebird Inc.
Address of Manufacturer:	3F, 115, Irwon-ro, Gangnam-gu, Seoul, Republic of Korea

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Enterprise Key-Based Touch Mobile Computer		
Model No.:	EK430		
Add. Model No.:	N/A		
Trade Mark:	BLUEBIRD		
DUT Stage:	Identical Prototype		
EUT Supports Function:	UTRA Bands:	Band II/ Band V	
	E-UTRA Bands:	FDD Band 2/ Band 4/ Band 5/ Band 7	
	2.4 GHz ISM Band:	IEEE 802.11b/g/n	
		Bluetooth 5.0	
	5 GHz U-NII Bands:	5 150 MHz to 5 250 MHz	IEEE 802.11a/n/ac
		5 250 MHz to 5 350 MHz	IEEE 802.11a/n/ac
		5 470 MHz to 5 725 MHz	IEEE 802.11a/n/ac
		5 725 MHz to 5 850 MHz	IEEE 802.11a/n/ac
	RNSS Bands:	1559 MHz to 1610 MHz	GPS/ GLONASS/ BDS
	NFC:	13.553 MHz to 13.567 MHz	
Software Version:	EK430-VX500-AND10-EN-20210510_R1.00-user		
Hardware Version:	0.2		
Sample Received Date:	May 21, 2021		
Sample Tested Date:	May 24, 2021 to July 28, 2021		

1.2.2 Description of Accessories

Adapter	
Model No.:	XSD-0503000DEXU
Input:	100-240 V~50/60 Hz 0.5 A Max
Output:	5.0 V ⎓ 3.0A
AC Cable:	N/A
DC Cable:	N/A

Battery (Main)	
Model No.:	BAT-680001
Battery Type:	Lithium-ion Rechargeable Battery
Rated Voltage:	3.6 Vdc
Limited Charge Voltage:	4.2 Vdc
Rated Capacity:	6700 mAh

Battery (Sub)	
Model No.:	VK401324PH-Q5
Battery Type:	Lithium-ion Rechargeable Battery
Rated Voltage:	3.7 Vdc
Limited Charge Voltage:	4.2 Vdc
Rated Capacity:	65 mAh

Cable	
Model No.:	N/A
Description:	USB Type-C Plug Cable
Cable Type:	Shielded without ferrite
Length:	1 Meter

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Support Networks:	LTE	
Type of Modulation:	LTE Band 2/4/5/7:	QPSK, 16QAM, 64QAM
Antenna Type:	PIFA Antenna	
Antenna Gain:	LTE Band 2:	0.68 dBi
	LTE Band 4:	-0.58 dBi
	LTE Band 5:	1.11 dBi
	LTE Band 7:	2.53 dBi
Normal Test Voltage:	3.9 Vdc	
Extreme Test Voltage:	3.6 to 4.3Vdc	
Extreme Test Temperature:	-30 °C to +50 °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	22.61	23.29	0.21330	1.1055	1M11G7W
		16QAM		22.08	22.76	0.18880	1.0990	1M10D7W
		64QAM		20.59	21.27	0.13397	1.0978	1M10D7W
	3	QPSK	1851.5-1908.5	22.50	23.18	0.20797	2.7087	2M71G7W
		16QAM		22.22	22.90	0.19498	2.7102	2M71D7W
		64QAM		20.62	21.30	0.13490	2.7085	2M71D7W
	5	QPSK	1852.5-1907.5	22.61	23.29	0.21330	4.5316	4M53G7W
		16QAM		21.93	22.61	0.18239	4.5398	4M54D7W
		64QAM		20.65	21.33	0.13583	4.5400	4M54D7W
	10	QPSK	1855.0-1905.0	22.59	23.27	0.21232	9.0013	9M00G7W
		16QAM		22.32	23.00	0.19953	9.0015	9M00D7W
		64QAM		20.67	21.35	0.13646	9.0000	9M00D7W
	15	QPSK	1857.5-1902.5	22.60	23.28	0.21281	13.504	13M5G7W
		16QAM		22.24	22.92	0.19588	13.495	13M5D7W
		64QAM		20.70	21.38	0.13740	13.490	13M5D7W
	20	QPSK	1860.0-1900.0	22.62	23.30	0.21380	17.988	18M0G7W
		16QAM		22.11	22.79	0.19011	18.011	18M0D7W
		64QAM		20.75	21.43	0.13900	18.049	18M0D7W

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	21.96	21.38	0.13740	1.1033	1M10G7W
		16QAM		21.47	20.89	0.12274	1.0999	1M10D7W
		64QAM		20.08	19.50	0.08913	1.0962	1M10D7W
	3	QPSK	1711.5-1753.5	21.95	21.37	0.13709	2.7112	2M71G7W
		16QAM		21.65	21.07	0.12794	2.7058	2M71D7W
		64QAM		20.09	19.51	0.08933	2.7080	2M71D7W
	5	QPSK	1712.5-1752.5	21.94	21.36	0.13677	4.5378	4M54G7W
		16QAM		21.46	20.88	0.12246	4.5397	4M54D7W
		64QAM		20.12	19.54	0.08995	4.5428	4M54D7W
	10	QPSK	1715-1750	21.96	21.38	0.13740	9.0128	9M01G7W
		16QAM		21.67	21.09	0.12853	9.0100	9M01D7W
		64QAM		20.16	19.58	0.09078	9.0038	9M00D7W
	15	QPSK	1717.5-1747.5	21.93	21.35	0.13646	13.492	13M5G7W
		16QAM		21.67	21.09	0.12853	13.492	13M5D7W
		64QAM		20.22	19.64	0.09204	13.494	13M5D7W
	20	QPSK	1720-1745	21.97	21.39	0.13772	17.989	18M0G7W
		16QAM		21.64	21.06	0.12764	17.994	18M0D7W
		64QAM		20.25	19.67	0.09268	17.982	18M0D7W
5	1.4	QPSK	824.7-848.3	21.90	20.86	0.12190	1.1055	1M11G7W
		16QAM		21.33	20.29	0.10691	1.0984	1M10D7W
		64QAM		20.20	19.16	0.08241	1.0984	1M10D7W
	3	QPSK	825.5-847.5	21.93	20.89	0.12274	2.7113	2M71G7W
		16QAM		21.31	20.27	0.10641	2.7098	2M71D7W
		64QAM		20.23	19.19	0.08299	2.7002	2M70D7W
	5	QPSK	826.5-846.5	21.92	20.88	0.12246	4.5326	4M53G7W
		16QAM		21.38	20.34	0.10814	4.5378	4M54D7W
		64QAM		20.26	19.22	0.08356	4.5412	4M54D7W
	10	QPSK	829-844	21.94	20.90	0.12303	8.9964	9M00G7W
		16QAM		21.38	20.34	0.10814	8.9870	8M99D7W
		64QAM		20.29	19.25	0.08414	8.9985	9M00D7W

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)			
7	5	QPSK	2502.5-2567.5	21.82	24.35	0.27227	4.5300	4M53G7W
		16QAM		21.07	23.60	0.22909	4.5391	4M54D7W
		64QAM		20.09	22.62	0.18281	4.5309	4M53D7W
	10	QPSK	2505-2565	21.84	24.37	0.27353	8.9854	8M99G7W
		16QAM		21.29	23.82	0.24099	8.9937	8M99D7W
		64QAM		20.12	22.65	0.18408	9.0059	9M01D7W
	15	QPSK	2507.5-2562.5	21.77	24.30	0.26915	13.465	13M5G7W
		16QAM		21.43	23.96	0.24889	13.470	13M5D7W
		64QAM		20.15	22.68	0.18535	13.480	13M5D7W
	20	QPSK	2510-2560	21.89	24.42	0.27669	18.013	18M0G7W
		16QAM		21.70	24.23	0.26485	18.002	18M0D7W
		64QAM		20.18	22.71	0.18664	17.995	18M0D7W

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
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2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	SMA Cable	SMA	0.3 Meter	Bluebird

1.5 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China
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 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 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	Effective Radiated Power (ERP)	±4.9 dB
2	Conducted Output Power	±0.7 dB
3	Peak-to-average ratio	±0.68 dB
4	99%&26dB Bandwidth	±1.86%
5	Band Edge at antenna terminals	±2.7dB
6	Spurious emissions at antenna terminals	±2.7dB
7	Field strength of spurious radiation	30MHz-1000MHz: ±4.9dB Above 1GHz: ±4.8dB
8	Frequency stability	± 6.5 x 10^{-8}

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)			
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 SAC	ETS-LINDGREN	3m	N/A	Jan. 22, 2021	Jan. 21, 2024
☒	Receiver	R&S	ESIB26	100114	Nov. 18, 2020	Nov. 17, 2021
☒	Loop Antenna	ETS-LINDGREN	6502	00202525	Nov. 14, 2020	Nov. 13, 2022
☒	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Nov. 14, 2020	Nov. 13, 2022
☒	6dB Attenuator	Talent	RA6A5-N-18	18103001	Nov. 14, 2020	Nov. 13, 2022
☒	Preamplifier	HP	8447F	2805A02960	Nov. 10, 2020	Nov. 9, 2021
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201541	Apr. 30, 2021	Apr. 29, 2023
☒	Pre-amplifier	ETS-LINDGREN	00118385	00201874	Nov. 10, 2020	Nov. 9, 2021
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	Nov. 17, 2020	Nov. 16, 2022
☒	Pre-amplifier	ETS-LINDGREN	00118384	00202652	Nov. 17, 2020	Nov. 16, 2022
☒	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☒	Wideband Radio Communication Tester	R&S	CMW500	119583	Apr. 22, 2021	Apr. 21, 2022
☒	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)**
☒	Spectrum Analyzer	R&S	FSV40-N	101653	Apr. 22, 2021	Apr. 21, 2022
☒	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	Apr. 22, 2021	Apr. 21, 2022
☒	EXA Spectrum Analyzer	KEYSIGHT	N9020A	MY51286807	Nov. 10, 2020	Nov. 9, 2021
☒	Wideband Radio Communication Tester	R&S	CMW500	120932	Apr. 22, 2021	Apr. 21, 2022
☐	Wideband Radio Communication Tester	R&S	CMW500	119583	Apr. 22, 2021	Apr. 21, 2022
☒	DC Source	KIKUSUI	PWR400L	LK003024	Oct. 29, 2020	Oct. 28, 2021
☒	Temp & Humidity chamber	Votisch	VT4002	58566133290020	Apr. 21, 2021	Apr. 20, 2022

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	3.9	20 to 75
TL/VL	-30	3.6	20 to 75
TH/VL	+50	3.6	20 to 75
TL/VH	-30	4.3	20 to 75
TH/VH	+50	4.3	20 to 75

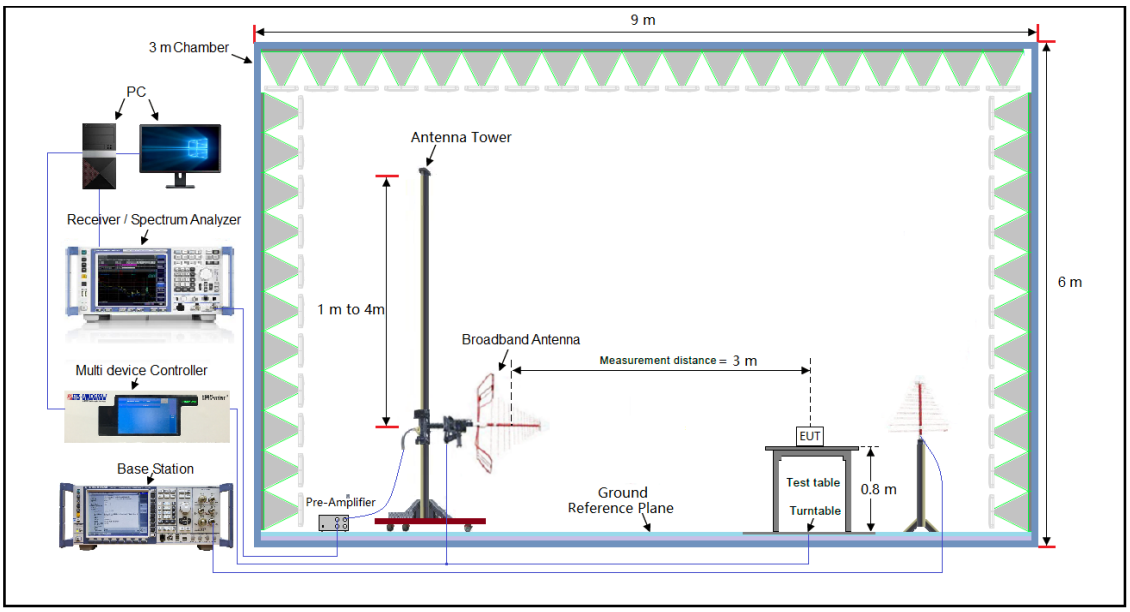
Remark:

1) The EUT just work in such extreme temperature of -30 °C to +50 °C and the extreme voltage of 3.6 V to 4.3 V, so here the EUT is tested in the temperature of -30 °C to +50 °C and the voltage of 3.6 V to 4.3 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.

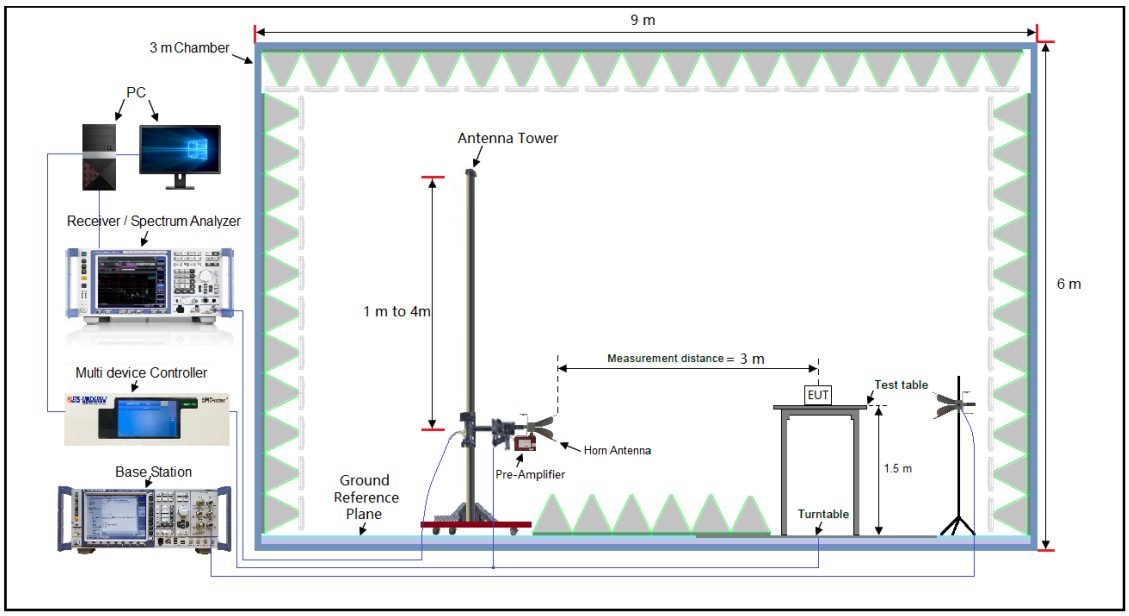
4.2 TEST SETUP

4.2.1 For Radiated Emissions test setup

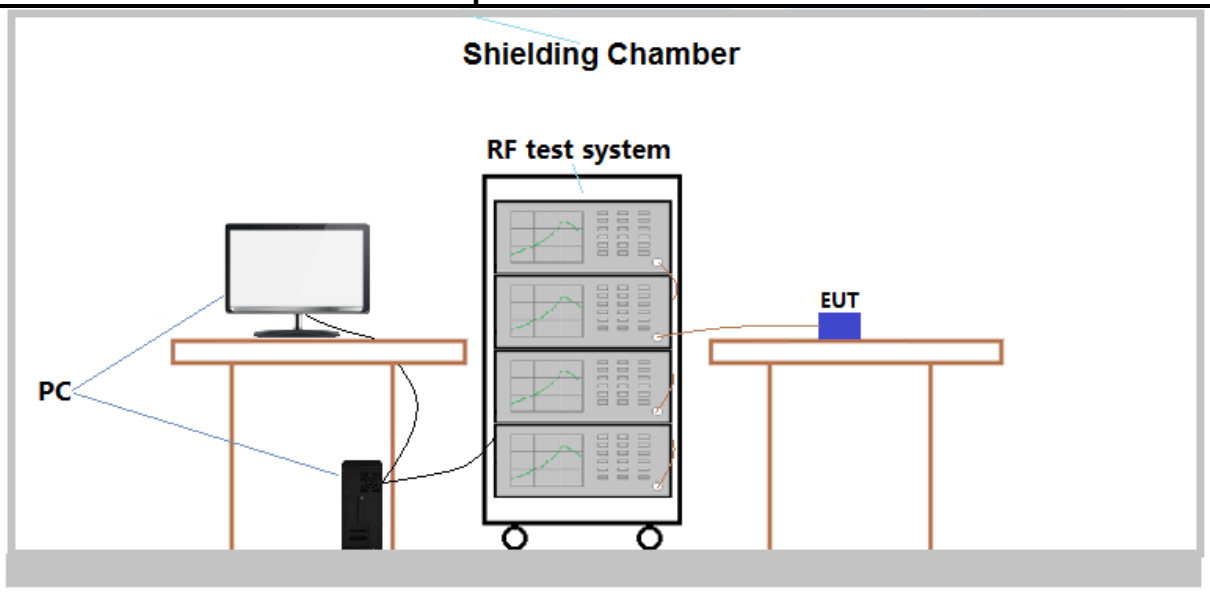
Radiated Emissions 30MHz to 1GHz Test setup



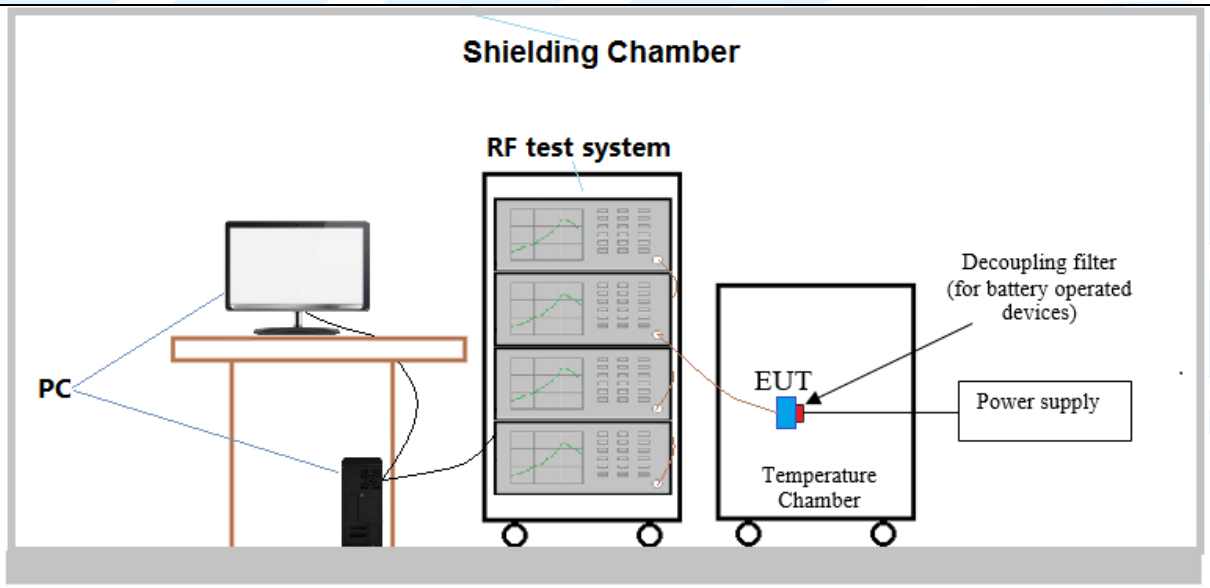
Radiated Emissions Above 1GHz Test setup



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
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

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 3.9V 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

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	22.49	22.47	22.30	1	0	22.35	22.50	22.22
	1	2	22.42	22.46	22.28	1	7	22.36	22.50	22.23
	1	5	22.58	22.45	22.27	1	14	22.42	22.47	22.14
	3	0	22.59	22.60	22.41	8	0	21.53	21.61	21.51
	3	1	22.61	21.58	22.41	8	3	21.61	21.59	21.35
	3	3	22.58	22.60	22.24	8	7	21.46	21.56	21.38
	6	0	21.44	21.42	21.63	15	0	21.43	21.58	21.58
16QAM	1	0	21.86	21.64	22.08	1	0	21.87	22.16	21.92
	1	2	21.92	21.61	21.87	1	7	21.84	22.22	21.85
	1	5	21.86	21.67	21.52	1	14	21.77	22.17	21.63
	3	0	21.64	21.86	21.48	8	0	20.53	20.91	20.47
	3	1	21.82	21.75	21.49	8	3	20.78	20.84	20.46
	3	3	21.65	21.94	21.50	8	7	20.71	20.86	20.50
	6	0	20.74	20.63	20.44	15	0	20.87	20.81	20.54
64QAM	1	0	20.52	20.59	20.56	1	0	20.55	20.62	20.59
	1	2	20.50	20.57	20.54	1	7	20.53	20.60	20.57
	1	5	20.46	20.53	20.50	1	14	20.49	20.56	20.53
	3	0	20.50	20.57	20.54	8	0	19.67	19.71	19.74
	3	1	20.48	20.55	20.52	8	3	19.59	19.63	19.66
	3	3	20.44	20.51	20.48	8	7	19.56	19.60	19.63
	6	0	19.54	19.58	19.61	15	0	19.57	19.61	19.64
	Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
QPSK	1	0	22.50	22.52	22.29	1	0	22.44	22.56	22.34
	1	12	22.47	22.61	22.28	1	24	22.52	22.58	22.24
	1	24	22.53	22.44	22.23	1	49	22.49	22.59	22.21
	12	0	21.46	21.62	21.52	25	0	21.61	21.67	21.44
	12	6	21.68	21.48	21.31	25	12	21.62	21.58	21.34
	12	13	21.63	21.59	21.27	25	25	21.52	21.62	21.32
	25	0	21.53	21.62	21.57	50	0	21.48	21.64	21.63
16QAM	1	0	21.80	21.54	21.93	1	0	21.75	22.32	22.10
	1	12	21.74	21.65	21.93	1	24	21.75	22.30	21.96
	1	24	21.79	21.51	21.66	1	49	21.77	22.22	21.63
	12	0	20.63	20.76	20.38	25	0	20.51	20.85	20.54
	12	6	20.70	20.66	20.58	25	12	20.79	20.75	20.42
	12	13	20.74	20.72	20.50	25	25	20.67	20.78	20.39
	25	0	20.84	20.83	20.56	50	0	20.70	20.75	20.56
64QAM	1	0	20.58	20.65	20.62	1	0	20.60	20.67	20.64
	1	12	20.56	20.63	20.60	1	24	20.58	20.65	20.62
	1	24	20.52	20.59	20.56	1	49	20.54	20.61	20.58
	12	0	19.70	19.74	19.77	25	0	19.72	19.76	19.79
	12	6	19.62	19.66	19.69	25	12	19.64	19.68	19.71
	12	13	19.59	19.63	19.66	25	25	19.61	19.65	19.68
	25	0	19.60	19.64	19.67	50	0	19.62	19.66	19.69

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: 15 MHz					Channel Bandwidth: 20 MHz				
QPSK	1	0	22.43	22.48	22.29	1	0	22.51	22.58	22.41
	1	37	22.34	22.56	22.23	1	50	22.54	22.60	22.34
	1	74	22.60	22.43	22.20	1	99	22.61	22.62	22.33
	37	0	21.58	22.17	21.41	50	0	21.66	21.70	21.57
	37	19	21.60	22.01	21.41	50	25	21.71	21.75	21.46
	37	39	21.51	22.08	21.29	50	50	21.66	21.63	21.41
	75	0	21.40	21.59	21.52	100	0	21.59	21.61	21.64
16QAM	1	0	21.73	22.21	22.05	1	0	21.88	21.89	22.10
	1	37	21.91	22.24	21.96	1	50	21.93	22.11	22.00
	1	74	21.91	22.08	21.58	1	99	21.96	21.88	21.70
	37	0	20.59	22.17	20.52	50	0	20.69	20.80	20.58
	37	19	20.66	22.07	20.46	50	25	20.85	20.85	20.59
	37	39	20.73	22.06	20.48	50	50	20.76	20.83	20.54
	75	0	20.69	20.76	20.54	100	0	20.89	20.78	20.61
64QAM	1	0	20.63	20.70	20.67	1	0	20.68	20.75	20.72
	1	37	20.61	20.68	20.65	1	50	20.66	20.73	20.70
	1	74	20.57	20.64	20.61	1	99	20.62	20.69	20.66
	37	0	19.75	19.79	19.82	50	0	19.80	19.84	19.87
	37	19	19.67	19.71	19.74	50	25	19.72	19.76	19.79
	37	39	19.64	19.68	19.71	50	50	19.69	19.73	19.76
	75	0	19.65	19.69	19.72	100	0	19.70	19.74	19.77

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	21.84	21.88	21.80	1	0	21.70	21.93	21.72
	1	2	21.68	21.96	21.80	1	7	21.62	21.95	21.75
	1	5	21.84	21.91	21.74	1	14	21.68	21.93	21.61
	3	0	21.92	21.89	21.94	8	0	20.82	21.09	21.04
	3	1	21.93	21.90	21.95	8	3	20.89	21.04	21.09
	3	3	21.96	21.91	21.84	8	7	20.85	21.02	20.98
	6	0	20.78	20.89	21.00	15	0	20.77	21.09	20.95
16QAM	1	0	21.07	21.04	21.44	1	0	21.08	21.65	21.28
	1	2	21.22	21.12	21.34	1	7	21.14	21.65	21.32
	1	5	21.33	21.04	21.32	1	14	21.24	21.64	21.43
	3	0	21.10	21.44	21.17	8	0	19.99	20.39	20.16
	3	1	21.22	21.29	21.23	8	3	20.18	20.26	20.20
	3	3	21.11	21.47	21.16	8	7	20.17	20.35	20.16
	6	0	20.00	20.11	20.05	15	0	20.13	20.28	20.15
64QAM	1	0	19.98	20.04	20.05	1	0	19.99	20.05	20.06
	1	2	20.03	20.08	20.07	1	7	20.04	20.09	20.08
	1	5	19.96	20.01	19.93	1	14	19.97	20.02	19.94
	3	0	19.97	20.03	20.04	8	0	19.98	20.04	20.05
	3	1	20.02	20.07	20.06	8	3	20.03	20.08	20.07
	3	3	19.95	20.00	19.92	8	7	19.96	20.01	19.93
	6	0	18.86	18.91	18.83	15	0	18.87	18.92	18.84

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: 5 MHz					Channel Bandwidth: 10 MHz				
QPSK	1	0	21.85	21.94	21.79	1	0	21.79	21.90	21.84
	1	12	21.73	21.92	21.80	1	24	21.78	21.96	21.76
	1	24	21.79	21.86	21.70	1	49	21.75	21.92	21.68
	12	0	20.75	21.07	21.05	25	0	20.90	21.10	20.97
	12	6	20.96	21.00	21.05	25	12	20.90	21.05	21.08
	12	13	21.02	21.03	20.87	25	25	20.91	21.11	20.92
	25	0	20.87	21.07	20.94	50	0	20.82	21.10	21.00
16QAM	1	0	21.01	20.98	21.29	1	0	20.96	21.62	21.46
	1	12	21.04	21.05	21.40	1	24	21.05	21.67	21.43
	1	24	21.26	20.95	21.46	1	49	21.24	21.63	21.43
	12	0	20.09	20.26	20.07	25	0	19.97	20.33	20.23
	12	6	20.10	20.18	20.32	25	12	20.19	20.27	20.16
	12	13	20.20	20.21	20.16	25	25	20.13	20.29	20.05
	25	0	20.10	20.33	20.17	50	0	19.96	20.26	20.17
64QAM	1	0	20.02	20.08	20.09	1	0	20.06	20.12	20.13
	1	12	20.07	20.12	20.11	1	24	20.11	20.16	20.15
	1	24	20.00	20.05	19.97	1	49	20.04	20.09	20.01
	12	0	20.01	20.07	20.08	25	0	18.99	19.04	18.96
	12	6	20.06	20.11	20.10	25	12	18.96	19.01	18.93
	12	13	19.99	20.04	19.96	25	25	18.88	18.93	18.85
	25	0	18.90	18.95	18.87	50	0	18.94	18.99	18.91
	Channel Bandwidth: 15 MHz					Channel Bandwidth: 20 MHz				
QPSK	1	0	21.78	21.84	21.79	1	0	21.86	21.97	21.91
	1	37	21.60	21.93	21.75	1	50	21.80	21.90	21.86
	1	74	21.86	21.75	21.67	1	99	21.87	21.90	21.80
	37	0	20.87	21.63	20.94	50	0	20.95	21.14	21.10
	37	19	20.88	21.58	21.15	50	25	20.99	21.18	21.20
	37	39	20.90	21.49	20.89	50	50	21.05	21.17	21.01
	75	0	20.74	21.07	20.89	100	0	20.93	21.11	21.01
16QAM	1	0	20.94	21.62	21.41	1	0	21.09	21.31	21.46
	1	37	21.21	21.67	21.43	1	50	21.23	21.43	21.47
	1	74	21.38	21.52	21.38	1	99	21.43	21.64	21.50
	37	0	20.05	21.62	20.21	50	0	20.15	20.27	20.27
	37	19	20.06	21.41	20.20	50	25	20.25	20.35	20.33
	37	39	20.19	21.49	20.14	50	50	20.22	20.31	20.20
	75	0	19.95	20.23	20.15	100	0	20.15	20.25	20.22
64QAM	1	0	20.12	20.18	20.19	1	0	20.15	20.21	20.22
	1	37	20.17	20.22	20.21	1	50	20.20	20.25	20.24
	1	74	20.10	20.15	20.07	1	99	20.13	20.18	20.10
	37	0	19.05	19.10	19.02	50	0	19.08	19.13	19.05
	37	19	19.02	19.07	18.99	50	25	19.05	19.10	19.02
	37	39	18.94	18.99	18.91	50	50	18.97	19.02	18.94
	75	0	19.00	19.05	18.97	100	0	19.03	19.08	19.00

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	21.84	21.43	21.63	1	0	21.93	21.51	21.91
	1	2	21.88	21.48	21.73	1	7	21.89	21.47	21.88
	1	5	21.88	21.45	21.78	1	14	21.79	21.59	21.85
	3	0	21.90	21.54	21.72	8	0	20.93	20.57	20.90
	3	1	21.88	21.53	21.73	8	3	20.88	20.59	20.89
	3	3	21.84	21.52	21.76	8	7	20.84	20.60	20.88
	6	0	20.81	20.45	20.64	15	0	20.88	20.59	21.00
16QAM	1	0	21.02	20.57	20.75	1	0	21.17	21.24	21.16
	1	2	21.08	20.65	20.81	1	7	21.16	21.19	21.13
	1	5	21.05	20.60	21.03	1	14	21.04	21.31	21.06
	3	0	21.33	20.83	21.14	8	0	20.04	19.88	20.03
	3	1	21.32	20.86	21.20	8	3	19.97	19.86	20.02
	3	3	21.32	20.88	21.22	8	7	19.93	19.85	20.01
	6	0	20.02	19.65	19.87	15	0	19.97	19.79	20.05
64QAM	1	0	20.08	20.20	19.86	1	0	20.11	20.23	19.89
	1	2	19.94	20.09	19.91	1	7	19.97	20.12	19.94
	1	5	19.55	20.13	19.92	1	14	19.58	20.16	19.95
	3	0	18.98	19.00	19.13	8	0	19.01	19.03	19.16
	3	1	19.05	18.85	19.07	8	3	19.08	18.88	19.10
	3	3	19.04	18.87	19.08	8	7	19.07	18.90	19.11
	6	0	18.99	18.95	19.12	15	0	19.02	18.98	19.15
	Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
QPSK	1	0	21.92	21.53	21.85	1	0	21.94	21.67	21.72
	1	12	21.90	21.56	21.91	1	24	21.79	21.51	21.77
	1	24	21.78	21.59	21.86	1	49	21.49	21.59	21.80
	12	0	20.89	20.60	20.90	25	0	20.89	20.66	20.79
	12	6	20.85	20.57	20.88	25	12	20.80	20.64	20.83
	12	13	20.82	20.60	20.91	25	25	20.75	20.62	20.87
	25	0	20.89	20.62	20.83	50	0	20.88	20.84	20.79
16QAM	1	0	21.38	20.57	21.25	1	0	21.22	21.38	21.02
	1	12	21.33	20.64	21.37	1	24	21.06	21.23	21.03
	1	24	21.24	20.65	21.26	1	49	20.78	21.27	21.08
	12	0	20.04	19.75	20.03	25	0	20.07	19.85	19.96
	12	6	20.02	19.71	20.05	25	12	20.02	19.83	19.99
	12	13	20.01	19.74	20.09	25	25	19.90	19.81	20.01
	25	0	19.99	19.82	19.98	50	0	19.87	19.79	19.98
64QAM	1	0	20.14	20.26	19.92	1	0	20.17	20.29	19.95
	1	12	20.00	20.15	19.97	1	24	20.03	20.18	20.00
	1	24	19.61	20.19	19.98	1	49	19.64	20.22	20.01
	12	0	19.04	19.06	19.19	25	0	19.07	19.09	19.22
	12	6	19.11	18.91	19.13	25	12	19.14	18.94	19.16
	12	13	19.10	18.93	19.14	25	25	19.13	18.96	19.17
	25	0	19.05	19.01	19.18	50	0	19.08	19.04	19.21

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	21.80	21.49	21.66	1	0	21.84	21.51	21.55
	1	12	21.82	21.47	21.71	1	24	21.80	21.38	21.65
	1	24	21.79	21.49	21.62	1	49	21.83	21.63	21.59
	12	0	21.01	20.45	20.67	25	0	20.99	20.44	20.56
	12	6	20.89	20.45	20.60	25	12	20.96	20.51	20.63
	12	13	20.97	20.46	20.63	25	25	20.94	20.53	20.71
	25	0	21.02	20.44	20.68	50	0	20.92	20.50	20.62
16QAM	1	0	21.07	20.52	21.03	1	0	21.27	21.19	20.80
	1	12	21.05	20.48	21.06	1	24	21.13	21.08	20.89
	1	24	20.96	20.57	21.00	1	49	21.07	21.29	20.85
	12	0	20.10	19.51	19.81	25	0	20.13	19.62	19.69
	12	6	20.03	19.49	19.83	25	12	20.04	20.58	19.77
	12	13	20.04	19.51	19.80	25	25	20.07	19.61	19.89
	25	0	20.14	19.60	19.79	50	0	20.02	19.56	19.72
64QAM	1	0	20.09	19.78	19.41	1	0	20.12	19.81	19.44
	1	12	20.08	19.49	19.74	1	24	20.11	19.52	19.77
	1	24	20.01	19.83	19.64	1	49	20.04	19.86	19.67
	12	0	19.00	18.65	18.61	25	0	19.03	18.68	18.64
	12	6	18.91	18.76	18.82	25	12	18.94	18.79	18.85
	12	13	18.96	18.69	18.76	25	25	18.99	18.72	18.79
	25	0	19.06	18.74	18.68	50	0	19.09	18.77	18.71
	Channel Bandwidth: 15 MHz					Channel Bandwidth: 20 MHz				
QPSK	1	0	21.73	21.55	21.47	1	0	21.89	21.64	21.45
	1	37	21.77	21.36	21.57	1	50	21.86	21.37	21.65
	1	74	21.77	21.72	21.63	1	99	21.70	21.72	21.68
	37	0	21.28	21.24	20.71	50	0	20.91	20.63	20.45
	37	19	21.11	21.31	20.73	50	25	20.85	20.59	20.64
	37	39	21.03	21.38	20.89	50	50	20.72	20.64	20.72
	75	0	20.85	20.41	20.52	100	0	20.65	20.60	20.69
16QAM	1	0	21.30	21.24	20.71	1	0	21.70	21.00	20.79
	1	37	21.06	21.08	20.84	1	50	21.41	20.85	20.95
	1	74	21.03	21.43	20.92	1	99	21.33	21.15	21.02
	37	0	21.32	21.23	20.74	50	0	20.00	19.73	19.57
	37	19	21.24	21.32	20.79	50	25	19.95	19.65	19.74
	37	39	21.00	21.43	20.86	50	50	19.90	19.66	19.74
	75	0	20.00	19.56	19.69	100	0	19.96	19.74	19.72
64QAM	1	0	20.15	19.84	19.47	1	0	20.18	19.87	19.50
	1	37	20.14	19.55	19.80	1	50	20.17	19.58	19.83
	1	74	20.07	19.89	19.70	1	99	20.10	19.92	19.73
	37	0	19.06	18.71	18.67	50	0	19.09	18.74	18.70
	37	19	18.97	18.82	18.88	50	25	19.00	18.85	18.91
	37	39	19.02	18.75	18.82	50	50	19.05	18.78	18.85
	75	0	19.12	18.80	18.74	100	0	19.15	18.83	18.77

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	ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
6	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: 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.

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	23.29	22.60	21.20	33.01	Pass
Middle	23.28	22.62	21.27	33.01	Pass
Highest	23.09	22.76	21.24	33.01	Pass
Channel Bandwidth: 3MHz					
Lowest	23.10	22.55	21.23	33.01	Pass
Middle	23.18	22.90	21.30	33.01	Pass
Highest	22.91	22.60	21.27	33.01	Pass
Channel Bandwidth: 5MHz					
Lowest	23.21	22.48	21.26	33.01	Pass
Middle	23.29	22.33	21.33	33.01	Pass
Highest	22.97	22.61	21.30	33.01	Pass
Channel Bandwidth: 10MHz					
Lowest	23.20	22.45	21.28	33.01	Pass
Middle	23.27	23.00	21.35	33.01	Pass
Highest	23.02	22.78	21.32	33.01	Pass
Channel Bandwidth: 15MHz					
Lowest	23.28	22.59	21.31	33.01	Pass
Middle	23.24	22.92	21.38	33.01	Pass
Highest	22.97	22.73	21.35	33.01	Pass
Channel Bandwidth: 20MHz					
Lowest	23.29	22.64	21.36	33.01	Pass
Middle	23.30	22.79	21.43	33.01	Pass
Highest	23.09	22.78	21.40	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	21.38	20.75	19.45	30.00	Pass
Middle	21.38	20.89	19.50	30.00	Pass
Highest	21.37	20.86	19.49	30.00	Pass
Channel Bandwidth: 3MHz					
Lowest	21.12	20.66	19.46	30.00	Pass
Middle	21.37	21.07	19.51	30.00	Pass
Highest	21.17	20.85	19.50	30.00	Pass
Channel Bandwidth: 5MHz					
Lowest	21.27	20.68	19.49	30.00	Pass
Middle	21.36	20.47	19.54	30.00	Pass
Highest	21.22	20.88	19.53	30.00	Pass
Channel Bandwidth: 10MHz					
Lowest	21.21	20.66	19.53	30.00	Pass
Middle	21.38	21.09	19.58	30.00	Pass
Highest	21.18	20.88	19.57	30.00	Pass
Channel Bandwidth: 15MHz					
Lowest	21.28	20.80	19.59	30.00	Pass
Middle	21.35	21.09	19.64	30.00	Pass
Highest	21.21	20.85	19.63	30.00	Pass
Channel Bandwidth: 20MHz					
Lowest	21.29	20.85	19.62	30.00	Pass
Middle	21.39	21.06	19.67	30.00	Pass
Highest	21.33	20.92	19.66	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	20.86	20.29	19.04	38.45	Pass
Middle	20.49	19.84	19.16	38.45	Pass
Highest	20.74	20.18	18.88	38.45	Pass
Channel Bandwidth: 3MHz					
Lowest	20.89	20.13	19.07	38.45	Pass
Middle	20.55	20.27	19.19	38.45	Pass
Highest	20.87	20.12	18.91	38.45	Pass
Channel Bandwidth: 5MHz					
Lowest	20.88	20.34	19.10	38.45	Pass
Middle	20.55	19.61	19.22	38.45	Pass
Highest	20.87	20.33	18.94	38.45	Pass
Channel Bandwidth: 10MHz					
Lowest	20.90	20.18	19.13	38.45	Pass
Middle	20.63	20.34	19.25	38.45	Pass
Highest	20.76	20.04	18.97	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	24.35	23.60	22.62	33.01	Pass
Middle	24.02	23.10	22.36	33.01	Pass
Highest	24.24	23.59	22.27	33.01	Pass
Channel Bandwidth: 10MHz					
Lowest	24.37	23.80	22.65	33.01	Pass
Middle	24.16	23.82	22.39	33.01	Pass
Highest	24.18	23.42	22.30	33.01	Pass
Channel Bandwidth: 15MHz					
Lowest	24.30	23.85	22.68	33.01	Pass
Middle	24.25	23.96	22.42	33.01	Pass
Highest	24.16	23.45	22.23	33.01	Pass
Channel Bandwidth: 20MHz					
Lowest	24.42	24.23	22.71	33.01	Pass
Middle	24.25	23.68	22.45	33.01	Pass
Highest	24.21	23.55	22.36	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:** 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.

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:** 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.

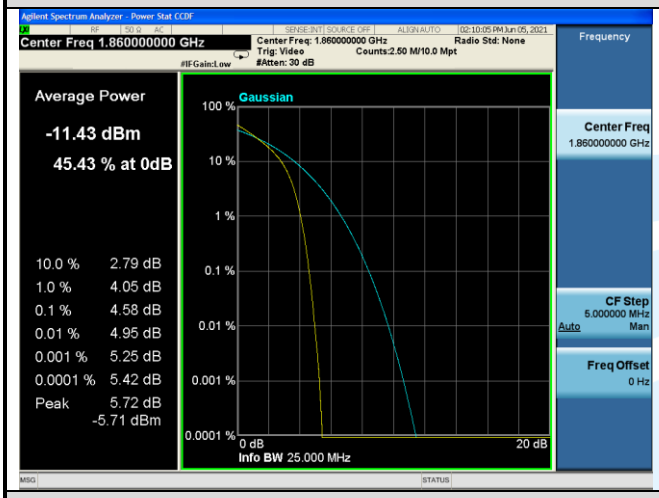
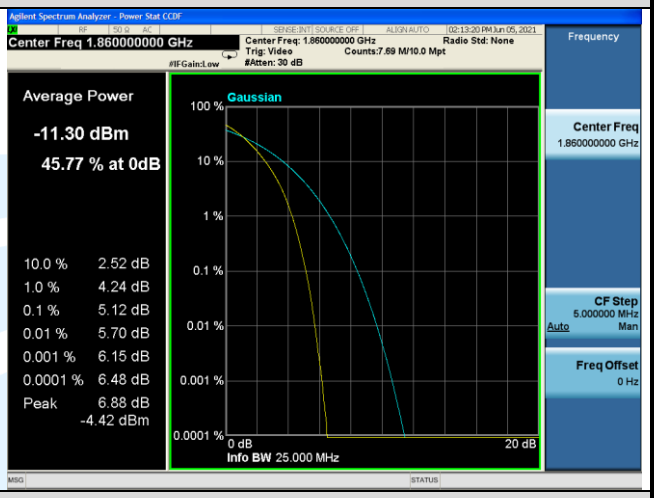
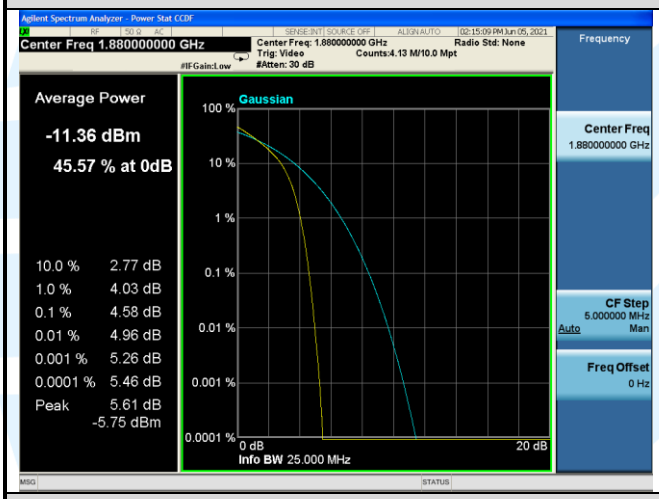
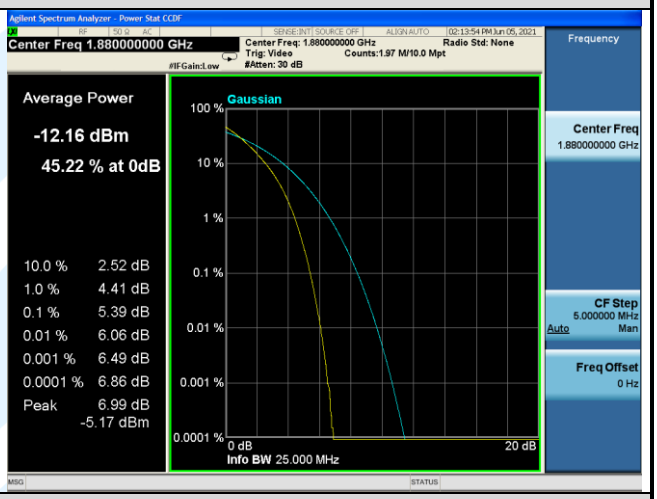
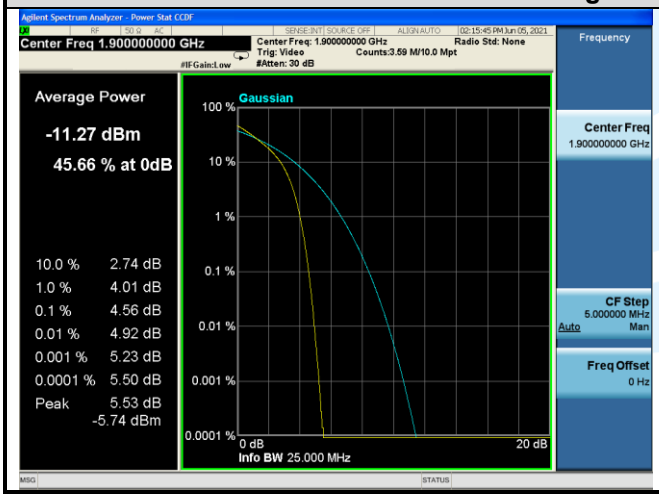
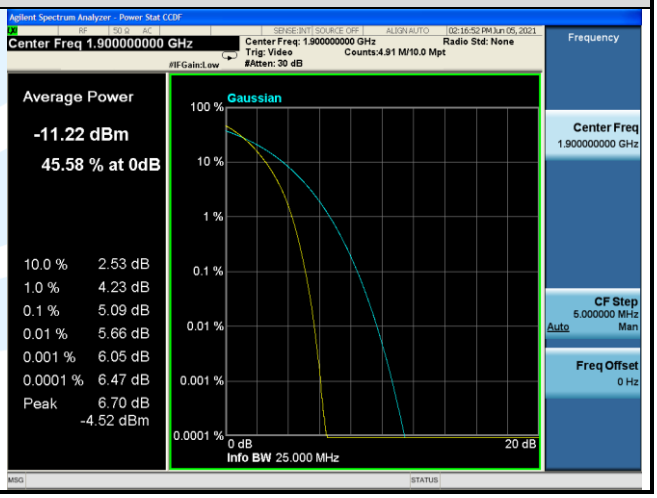
a) Set resolution/measurement bandwidth ≥ signal's occupied bandwidth
b) Set the number of counts to a value that stabilizes the measured CCDF curve
c) Record the maximum PAPR level associated with a probability of 0.1 %

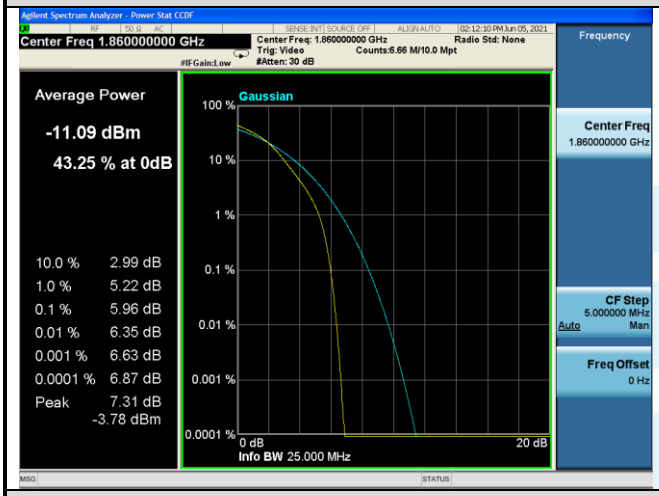
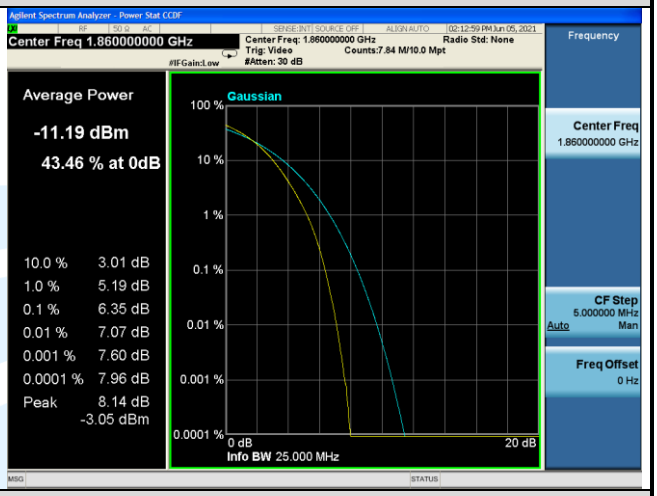
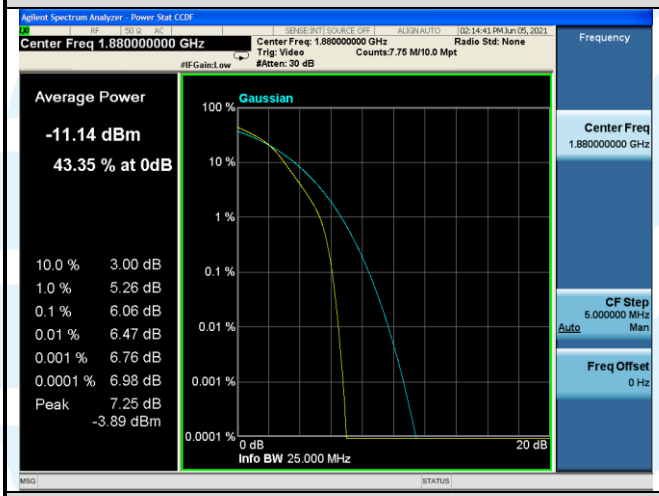
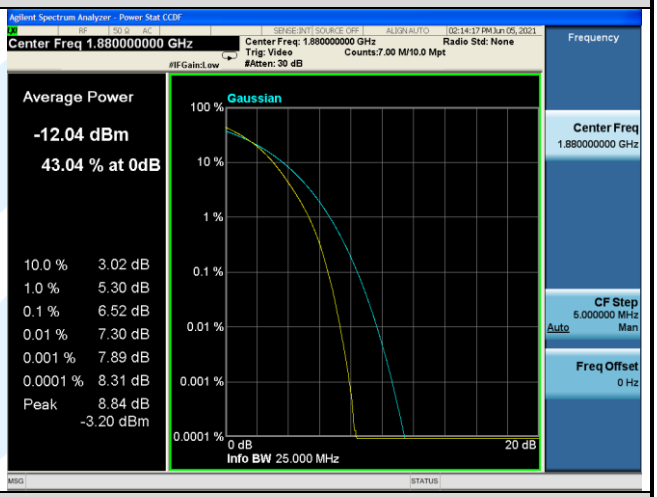
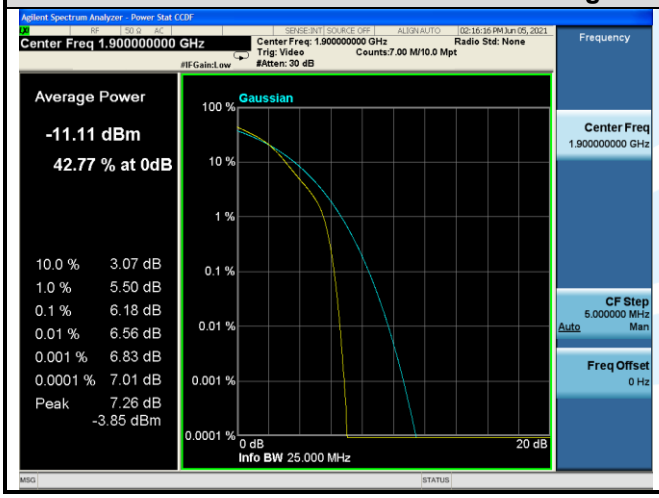
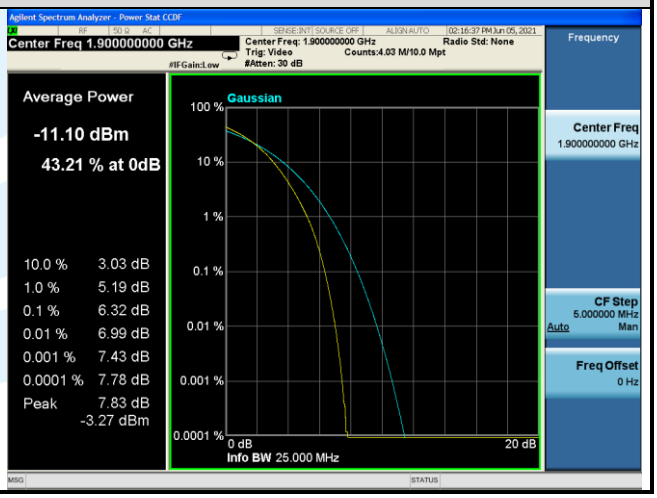
Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

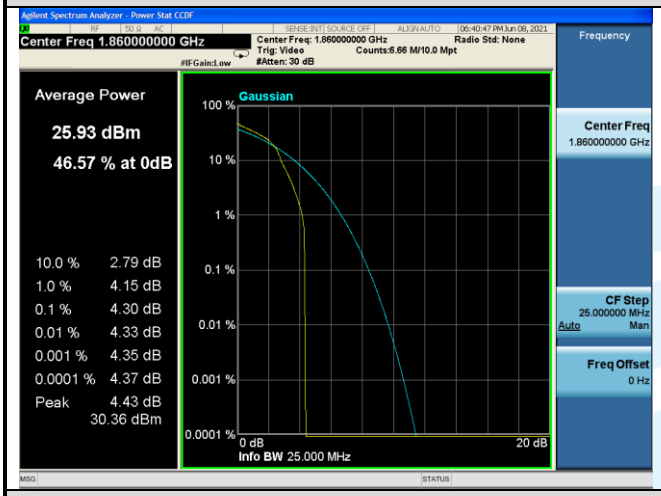
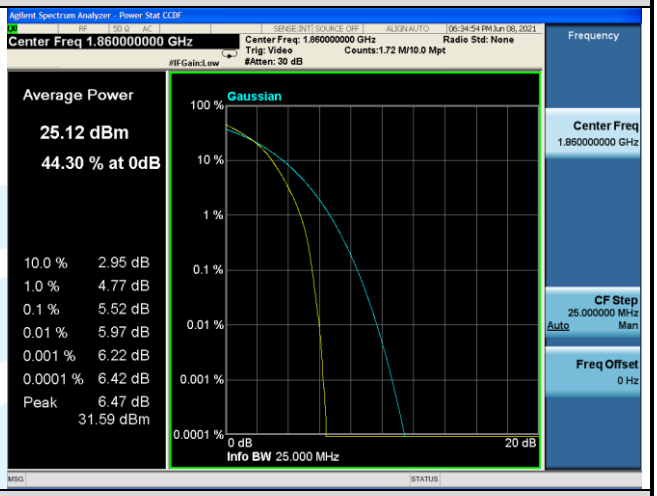
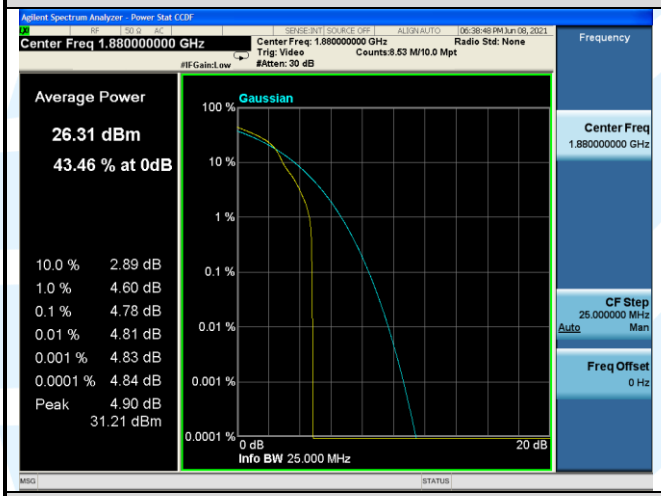
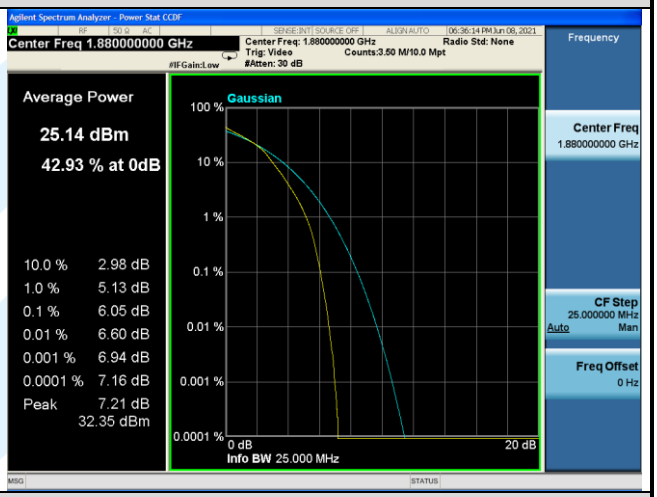
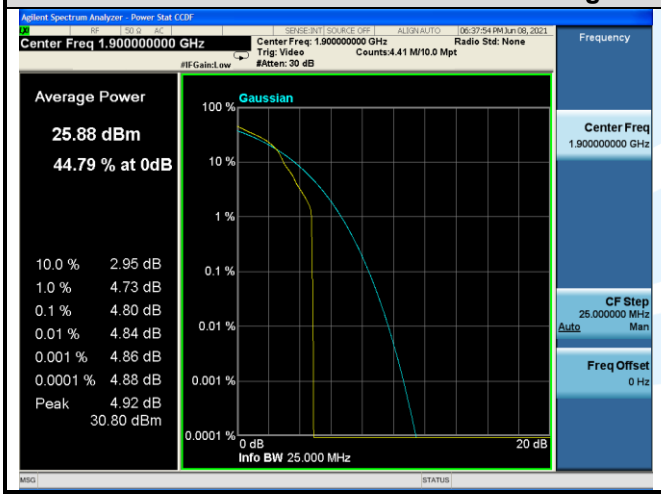
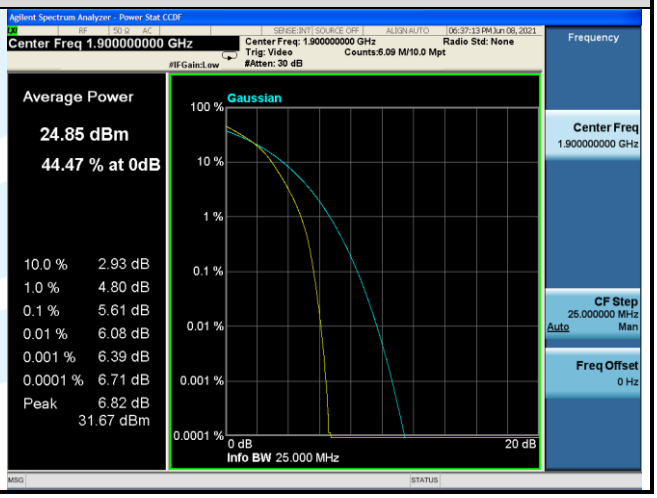
Test Setup:	Refer to section 4.2.2 for details.
Instruments Used:	Refer to section 3 for details
Test Mode:	Link mode
Test Results:	Pass
Test Data:	See table below

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	4.58	5.96	4.30	13	Pass
	Full RB	5.12	6.35	5.52	13	Pass
Middle	1 RB	4.58	6.06	4.78	13	Pass
	Full RB	5.39	6.52	6.05	13	Pass
Highest	1 RB	4.56	6.18	4.80	13	Pass
	Full RB	5.09	6.32	5.61	13	Pass

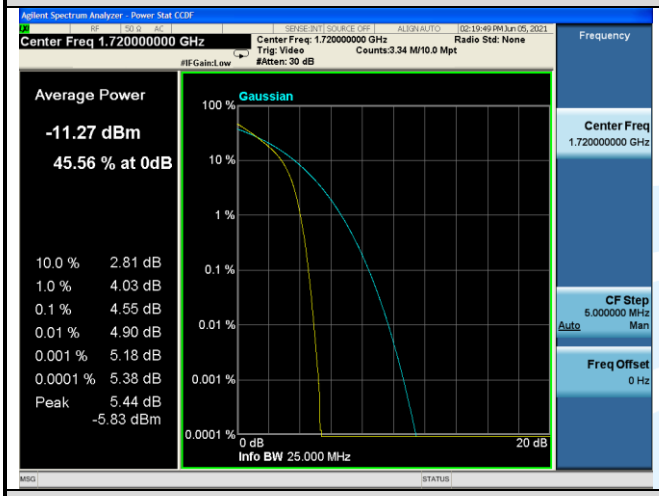
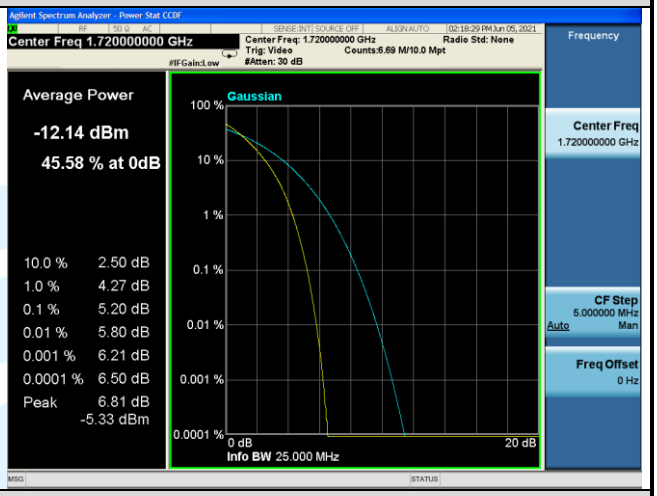
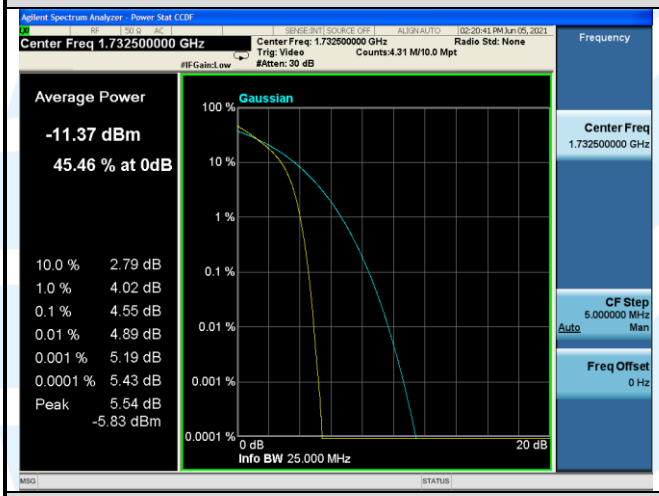
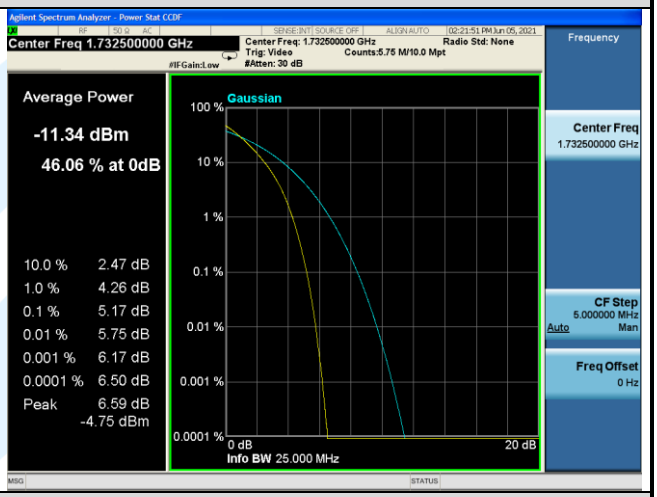
LTE Band 2 / 20 MHz / QPSK	
1 RB	Full RB
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

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

LTE Band 2 / 20 MHz / 64QAM	
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	4.55	5.93	5.05	13	Pass
	Full RB	5.20	6.38	6.09	13	Pass
Middle	1 RB	4.55	6.07	4.97	13	Pass
	Full RB	5.17	6.36	6.15	13	Pass
Highest	1 RB	4.56	6.15	5.08	13	Pass
	Full RB	5.30	6.45	6.34	13	Pass

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