FCC TEST REPORT

Product Name:	Mobile Phone
Trade Mark:	BLU
Model No.:	JOY 4G
Report Number:	2312078401RFM-2
Test Standards:	FCC 47 CFR Part 22 FCC 47 CFR Part 24 FCC 47 CFR Part 27
FCC ID:	YHLBLUJOY4G
Test Result:	PASS
Date of Issue:	January 18, 2024

Prepared for:

BLU Products, Inc.
8600 NW 36th Street, Suite #300 | Miami, FL 33166

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd.
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	David Chen Senior Project Engineer		Henry Lu Team Leader
Approved by:	Robben Chen	Date:	January 18, 2024
	Robben Chen Assistant Manager		

Version

Version No.	Date	Description
V1.0	January 18, 2024	Original

CONTENTS

1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	BLU Products, Inc.
Address of Applicant:	8600 NW 36th Street, Suite #300 | Miami, FL 33166
Manufacturer:	BLU Products, Inc.
Address of Manufacturer:	8600 NW 36th Street, Suite #300 | Miami, FL 33166

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Mobile Phone	
Model No.:	JOY 4G	
Trade Mark:	BLU	
DUT Stage:	Identical Prototype	
EUT Supports Function: (Provided by the customer)	GSM Bands:	GSM850/PCS 1900
	UTRA Bands:	WCDMA Band II/ Band V
	E-UTRA Bands:	FDD Band 2/ Band 4/ Band 5/ Band 7
	2.4 GHz ISM Band:	Bluetooth 5.0
Software Version:	BLU_J0190LL_V03.03_GENERIC_ANATEL_20231218 (Provided by the customer)	
Hardware Version:	A579-20B (Provided by the customer)	
Sample Received Date:	December 7, 2023	
Sample Tested Date:	December 7, 2023 to January 5, 2024	
Remark: The above EUT's information was provided by customer. Please refer to the specifications or user's manual for more detailed description.		

1.2.2 Description of Accessories

Adapter	
Model No.:	US-TY-0551
Input:	100-240 V~50/60 Hz 0.15 A
Output:	5.0 V ⎓ 550 mA

Battery	
Model No.:	C624043100L
Battery Type:	Lithium-ion Battery
Rated Voltage:	3.7 Vdc
Limited Charge Voltage:	4.2 Vdc
Rated Capacity:	1000 mAh

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Support Networks:	Single Carrier: LTE Band 2/4/5/7	
Type of Modulation:	QPSK, 16QAM	
Antenna Type: (Provided by the customer)	FPC Antenna	
Antenna Gain: (Provided by the customer)	LTE Band 2:	-0.80 dBi
	LTE Band 4:	-0.92 dBi
	LTE Band 5:	-1.77 dBi
	LTE Band 7:	-0.65 dBi
Sample No.:	Radiated: S202312072484-ZJA04/6	
	Conducted: S202312072484-ZJA05/6	
Normal Test Voltage:	3.7 Vdc	
Extreme Test Voltage:	2.8 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)		ERP/EIRP (W)	99% BW (MHz)	Emission Designator
				Conducted (Average)	ERP/EIRP (Average)			
2	1.4	QPSK	1850.7-1909.3	22.66	21.86	0.1535	1.0825	1M08G7D
		16QAM		21.66	20.86	0.1219	1.0803	1M08W7D
	3	QPSK	1851.5-1908.5	22.64	21.84	0.1528	2.6903	2M69G7D
		16QAM		21.47	20.67	0.1167	2.6895	2M69W7D
	5	QPSK	1852.5-1907.5	22.53	21.73	0.1489	4.4606	4M46G7D
		16QAM		21.60	20.80	0.1202	4.4616	4M46W7D
	10	QPSK	1855.0-1905.0	22.66	21.86	0.1535	8.9518	8M95G7D
		16QAM		21.66	20.86	0.1219	8.9473	8M95W7D
	15	QPSK	1857.5-1902.5	22.68	21.88	0.1542	13.428	13M4G7D
		16QAM		21.81	21.01	0.1262	13.421	13M4W7D
	20	QPSK	1860.0-1900.0	22.72	21.92	0.1556	17.937	17M9G7D
		16QAM		21.67	20.87	0.1222	17.912	17M9W7D
4	1.4	QPSK	1710.7-1754.3	23.15	22.23	0.1671	1.0807	1M08G7D
		16QAM		22.10	21.18	0.1312	1.0799	1M08W7D
	3	QPSK	1711.5-1753.5	23.15	22.23	0.1671	2.6860	2M69G7D
		16QAM		22.07	21.15	0.1303	2.6893	2M69W7D
	5	QPSK	1712.5-1752.5	23.17	22.25	0.1679	4.4633	4M46G7D
		16QAM		22.12	21.20	0.1318	4.4613	4M46W7D
	10	QPSK	1715-1750	23.15	22.23	0.1671	8.9518	8M95G7D
		16QAM		22.73	21.81	0.1517	8.9516	8M95W7D
	15	QPSK	1717.5-1747.5	23.22	22.30	0.1698	13.439	13M4G7D
		16QAM		22.81	21.89	0.1545	13.417	13M4W7D
	20	QPSK	1720-1745	23.24	22.32	0.1706	17.905	17M9G7D
		16QAM		22.88	21.96	0.1570	17.946	17M9W7D
5	1.4	QPSK	824.7-848.3	22.12	18.20	0.0661	1.0798	1M08G7D
		16QAM		21.76	17.84	0.0608	1.0813	1M08W7D
	3	QPSK	825.5-847.5	22.09	18.17	0.0656	2.6903	2M69G7D
		16QAM		21.75	17.83	0.0607	2.6872	2M69W7D
	5	QPSK	826.5-846.5	22.15	18.23	0.0665	4.4597	4M46G7D
		16QAM		21.09	17.17	0.0521	4.4579	4M46W7D
	10	QPSK	829-844	22.22	18.30	0.0676	8.9304	8M93G7D
		16QAM		21.81	17.89	0.0615	8.9468	8M95W7D

Bands	BW	Modulation	Frequency Range	Max RF Output Power (dBm)		ERP/EIRP	99% BW	Emission Designator
	(MHz)		(MHz)	Conducted (Average)	ERP/EIRP (Average)	(W)	(MHz)	
7	5	QPSK	2502.5-2567.5	21.99	21.34	0.1361	4.4655	4M47G7D
		16QAM		20.40	19.75	0.0944	4.4570	4M46W7D
	10	QPSK	2505-2565	21.96	21.31	0.1352	8.9368	8M94G7D
		16QAM		21.56	20.91	0.1233	8.9507	8M95W7D
	15	QPSK	2507.5-2562.5	21.80	21.15	0.1303	13.404	13M4G7D
		16QAM		21.51	20.86	0.1219	13.416	13M4W7D
	20	QPSK	2510-2560	22.04	21.39	0.1377	17.902	17M9G7D
		16QAM		21.23	20.58	0.1143	17.898	17M9W7D

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	Antenna Cable	SMA	0.1 Meter	Applicant

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 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 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	Conducted Output Power	±0.7 dB
2	99%&26dB Bandwidth	±1.86 %
3	Emission Mask	±2.7 dBm
4	Spurious emissions at antenna terminals	±2.7 dBm
5	Field strength of spurious radiation	30 MHz-1 GHz: ±4.9 dB 1 GHz-18 GHz: ±4.8 dB 18 GHz-40 GHz: ±5.1 dB
6	Frequency stability	±6.5 x 10^{-8}
7	Humidity	±3.9 %
8	Temperature	±0.62 ℃
9	DC Voltages	±0.68 %

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

Disclaimer and Explanations:
The declared of product specification and data (e.g. antenna gain, RF specification, etc) for EUT presented in the report are provided by the customer, and the customer takes all the responsibilities for the accuracy of product specification.

3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date**	**Cal. Due date**
☒	3m SAC	ETS-LINDGREN	3M	Euroshiedpn-CT001270-1317	22-Jan-2021	21-Jan-2024
☒	Receiver	R&S	ESIB26	100114	27-Oct-2023	26-Oct-2024
☒	Broadband Antenna	ETS-LINDGREN	3142E	00201566	30-Oct-2023	29-Oct-2024
☒	6dB Attenuator	Talent	RA6A5-N-18	18103001	30-Oct-2023	29-Oct-2024
☒	Preamplifier	HP	8447F	2805A02960	31-Oct-2023	30-Oct-2024
☒	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201541	16- Apr-2023	15- Apr-2025
☒	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	00118385	00201874	31-Oct-2023	30-Oct-2024
☒	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	30-Oct-2023	29-Oct-2024
☒	Pre-amplifier	ETS-LINDGREN	00118384	00202652	30-Oct-2023	29-Oct-2024
☒	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☒	Test Software	Audix	e3	Software Version: 9.160323		

RF Conducted Test Equipment List						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date**	**Cal. Due date**
☒	EXA Signal Analyzer	KEYSIGHT	N9010B	MY62060155	19-Apr-2023	18-Apr-2024
☒	DC Source	KIKUSUI	PWR400L	LK003024	N/A	N/A
☒	Digital multimeter	FLUKE	15B+	30701460WS15	31-Oct-2023	30-Oct-2024
☒	Temp & Humidity chamber	Votisch	VT4002	58566133290020	14-Apr-2023	13-Apr-2024
☒	Wideband Radio Communication Tester	R&S	CMW500	119583	14-Apr-2023	13-Apr-2024
☒	Wideband Radio Communication Tester	R&S	CMW500	120932	14-Apr-2023	13-Apr-2024

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	3.7	20 to 75
TL/VL	-30	2.8	20 to 75
TH/VL	+50	2.8	20 to 75
TL/VH	-30	4.3	20 to 75
TH/VH	+50	4.3	20 to 75

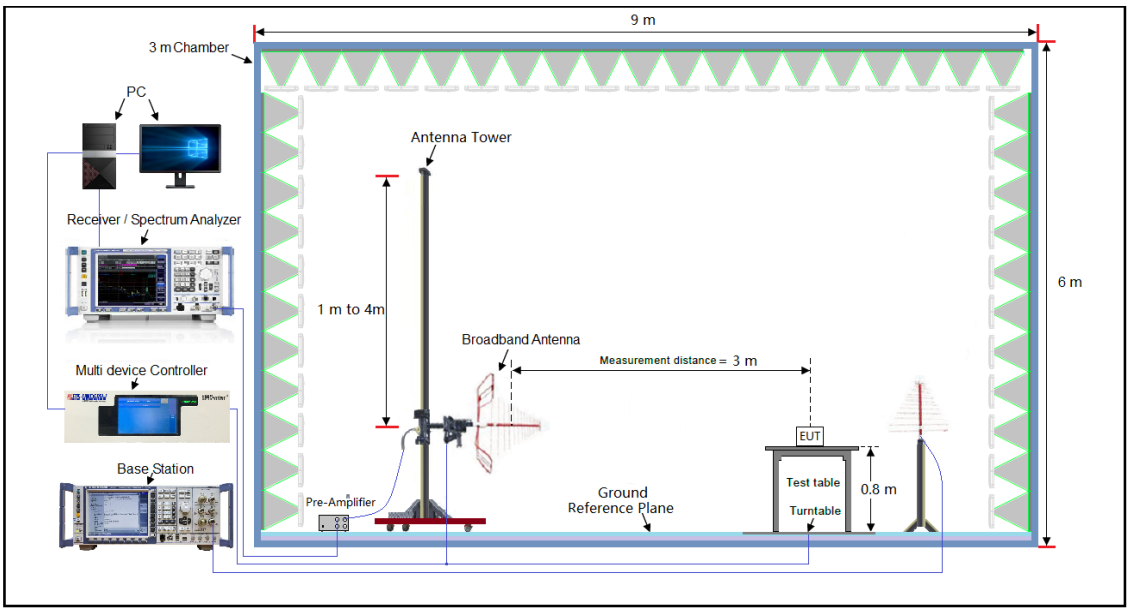
Remark:

1) The EUT just work in such extreme temperature of -30 °C to +50 °C and the extreme voltage of 2.8 V to 4.3 V, so here the EUT is tested in the temperature of -30 °C to +50 °C and the voltage of 2.8 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.

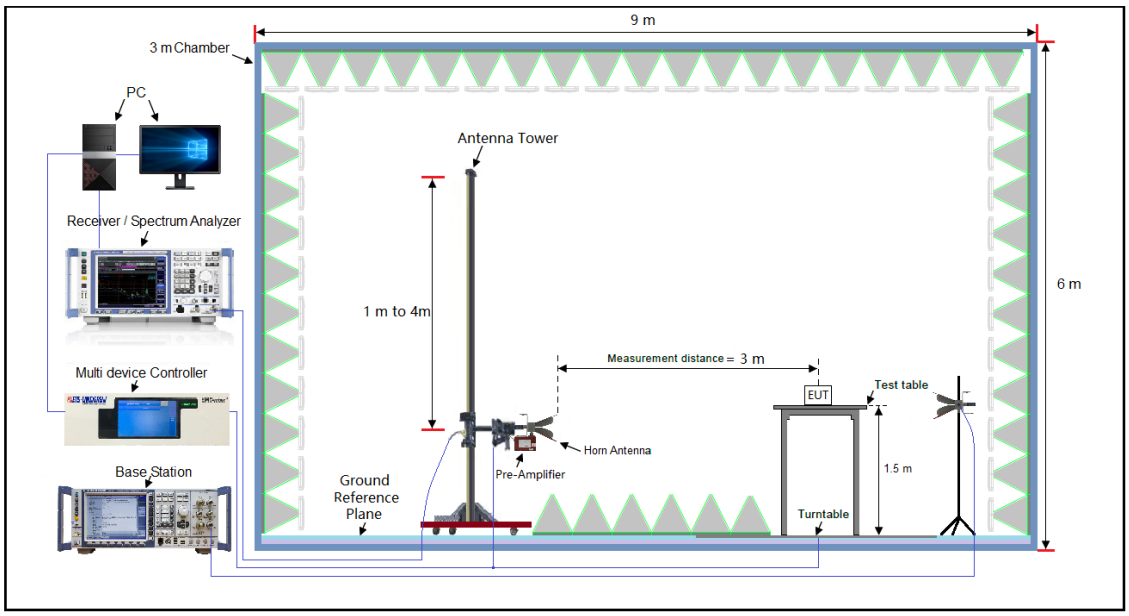
4.2 TEST SETUP

4.2.1 For Radiated Emissions test setup

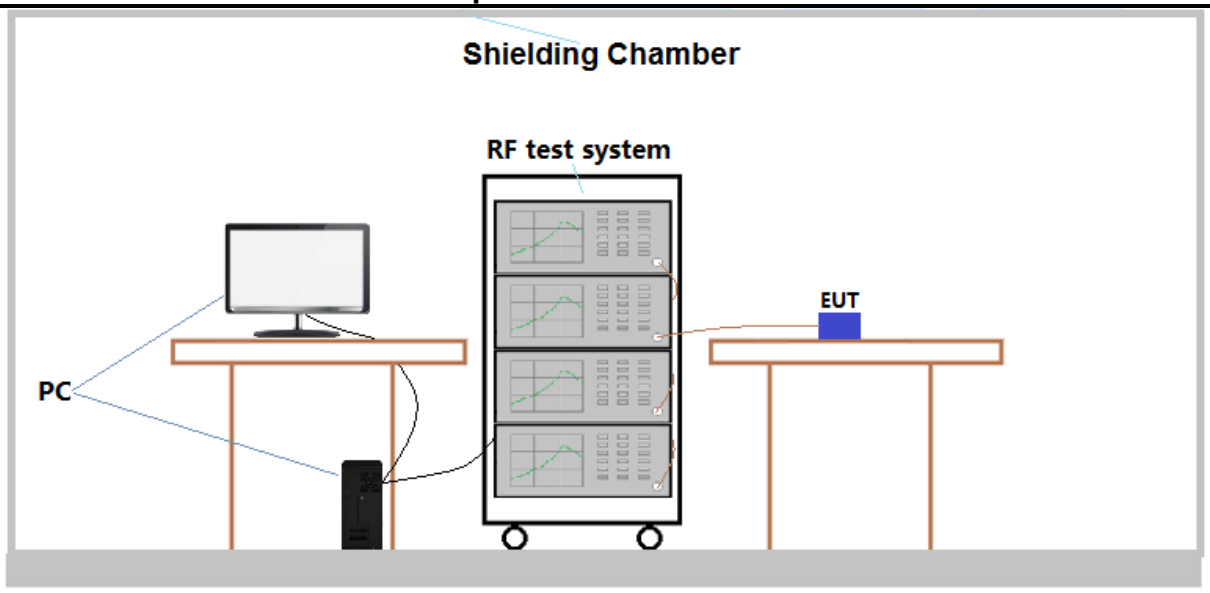
Radiated Emissions 30MHz to 1GHz Test setup



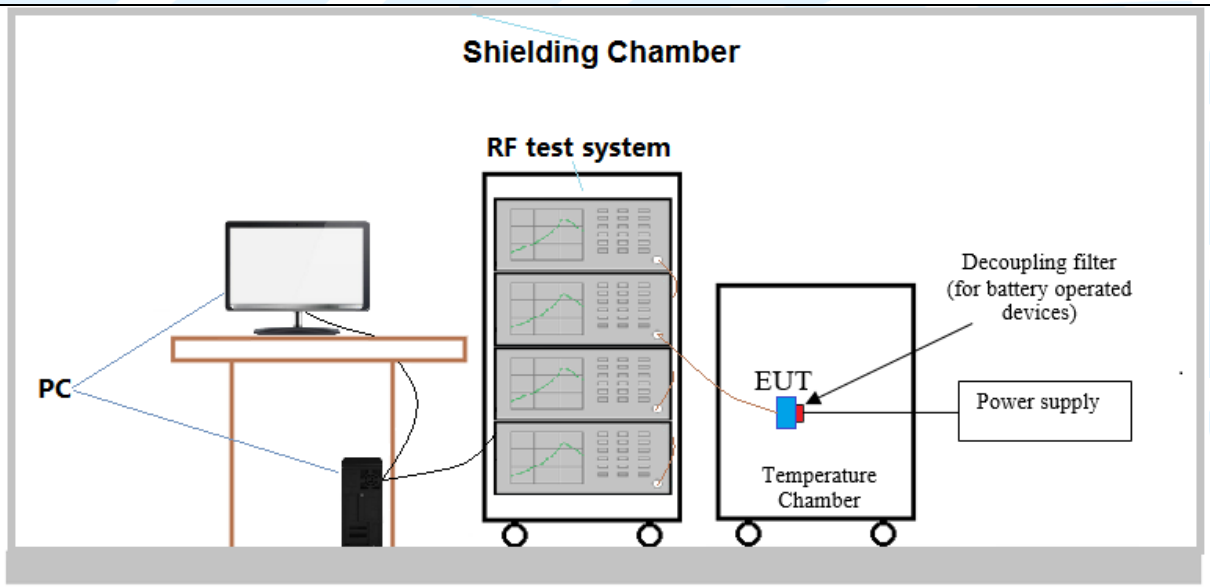
Radiated Emissions Above 1GHz Test setup



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 3.7Vdc 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.

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 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
Conducted output power	2	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☒	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☒	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☐	☒	☒	☒	☒	☒	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☐	☒	☒	☒	☒	☒	☒
99%&26dB Bandwidth	2	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☒	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☒	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☐	☐	☐	☒	☒	☒	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☐	☐	☐	☒	☒	☒	☒
peak-to-average ratio	2	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☒	☐	☒	☐
	4	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☒	☐	☒	☐
	5	☒	☒	☒	☒	--	--	☒	☒	☐	☐	☐	☒	☐	☒	☐
	7	-	-	☒	☒	☒	☒	☒	☒	☐	☐	☐	☒	☐	☒	☐
Band Edge at antenna terminals	2	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☐	☒	☒	☐	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☐	☒	☒	☐	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☐	☒	☐	☒	☒	☐	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☐	☒	☐	☒	☒	☐	☒
Spurious emissions at antenna terminals	2	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☐	☐	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☐	☐	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☐	☒	☐	☐	☒	☒	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☐	☒	☐	☐	☒	☒	☒
Field strength of spurious radiation	2	☐	☐	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	4	☐	☐	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	5	☐	☐	☐	☒	--	--	☒	☐	☐	☒	☐	☐	☒	☒	☒
	7	-	-	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
Frequency stability	2	☐	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	4	☐	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐

	5	☐	☐	☐	☒	--	--	☒	☐	☐	☐	☐	☒	☐	☒	☐
	7	-	-	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
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	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 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 CMW500, and 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

5.2.1 LTE Band 2

Conducted Power(dBm)								
Modulation			QPSK			16QAM		
Band	Bandwidth	RB	18607	18900	19193	18607	18900	19193
	(MHz)		1850.7	1880	1909.3	1850.7	1880	1909.3
2	1.4	1@0	21.13	21.79	22.61	20.21	21.33	20.91
		1@3	21.11	21.77	22.60	20.30	21.41	20.93
		1@5	21.14	21.91	22.58	20.25	21.50	20.92
		3@0	21.34	21.93	22.59	20.22	21.02	21.61
		3@1	21.41	21.98	22.66	20.36	20.77	21.66
		3@3	21.33	21.99	22.61	20.25	21.07	21.55
		6@0	20.24	20.79	21.63	19.26	19.94	20.78
Band	Bandwidth	RB	18615	18900	19185	18615	18900	19185
	(MHz)		1851.5	1880	1908.5	1851.5	1880	1908.5
2	3	1@0	21.15	21.82	22.58	20.46	21.34	20.90
		1@8	21.12	21.83	22.64	20.37	21.47	20.96
		1@14	21.21	21.86	22.60	20.48	21.45	20.97
		8@0	20.20	20.89	21.58	19.57	19.88	20.99
		8@4	20.20	20.88	21.64	19.25	20.09	20.86
		8@7	20.17	20.83	21.55	19.52	19.99	20.93
		15@0	20.16	20.89	21.62	19.28	19.95	20.75
Band	Bandwidth	RB	18625	18900	19175	18625	18900	19175
	(MHz)		1852.5	1880	1907.5	1852.5	1880	1907.5
2	5	1@0	21.18	21.70	22.51	19.46	20.64	21.54
		1@12	21.20	21.82	22.53	19.48	20.78	21.60
		1@24	21.23	21.94	22.53	19.49	20.86	21.58
		12@0	20.28	20.90	21.56	19.27	19.75	20.67
		12@7	20.18	20.93	21.64	19.27	20.02	20.74
		12@13	20.24	20.91	21.57	19.36	19.85	20.70
		25@0	20.13	20.80	21.65	19.42	19.82	20.79
Band	Bandwidth	RB	18650	18900	19150	18650	18900	19150
	(MHz)		1855	1880	1905	1855	1880	1905
2	10	1@0	21.18	21.70	22.36	20.79	20.82	20.82
		1@25	21.23	21.91	22.57	20.47	21.66	21.47
		1@49	21.30	21.99	22.66	20.85	21.02	20.95
		25@0	20.18	20.72	21.60	19.31	20.03	20.82
		25@12	20.21	20.86	21.65	19.40	19.97	20.79
		25@25	20.21	20.94	21.59	19.41	20.12	20.89
		50@0	20.21	20.76	21.58	19.53	19.96	20.66
Band	Bandwidth	RB	18675	18900	19125	18675	18900	19125
	(MHz)		1857.5	1880	1902.5	1857.5	1880	1902.5
2	15	1@0	21.18	21.50	21.88	20.42	21.04	21.54
		1@37	21.25	21.83	22.68	20.87	21.71	21.39
		1@74	21.33	21.96	22.29	20.69	21.39	21.81
		36@0	20.28	20.81	21.45	19.51	19.95	20.49
		36@20	20.36	20.92	21.56	19.32	20.09	20.54
		36@39	20.41	20.99	21.62	19.40	20.12	20.85
		75@0	20.37	20.85	21.55	19.47	19.97	20.65
Band	Bandwidth	RB	18700	18900	19100	18700	18900	19100
	(MHz)		1860	1880	1900	1860	1880	1900
2	20	1@0	21.13	21.61	22.13	21.05	20.90	21.19
		1@49	21.20	21.87	22.40	21.06	21.14	21.46
		1@99	22.44	22.54	22.72	21.33	21.43	21.67
		50@0	20.18	20.74	21.33	19.55	20.02	20.47
		50@24	20.25	20.85	21.43	19.32	19.84	20.49
		50@50	20.50	20.94	21.50	19.67	20.10	20.71
		100@0	20.34	20.81	21.39	19.49	19.93	20.43

5.2.2 LTE Band 4

Conducted Power(dBm)								
Modulation			QPSK			16QAM		
Band	Bandwidth	RB	19957	20175	20393	19957	20175	20393
	(MHz)		1710.7	1732.5	1754.3	1710.7	1732.5	1754.3
4	1.4	1@0	22.15	22.96	23.10	21.30	22.01	21.67
		1@3	22.21	23.01	23.10	21.24	22.06	21.63
		1@5	22.10	23.01	23.14	21.24	22.05	21.67
		3@0	22.27	22.99	23.11	21.10	22.08	21.98
		3@1	22.40	22.93	23.15	21.39	21.95	22.10
		3@3	22.31	22.94	23.05	21.09	22.07	22.00
		6@0	21.29	21.95	22.05	20.30	21.05	21.40
Band	Bandwidth	RB	19965	20175	20385	19965	20175	20385
	(MHz)		1711.5	1732.5	1753.5	1711.5	1732.5	1753.5
4	3	1@0	22.12	22.96	23.11	21.50	21.98	21.71
		1@8	22.23	23.04	23.15	21.46	22.07	21.68
		1@14	22.29	23.06	23.06	21.58	22.02	21.73
		8@0	21.15	21.79	22.06	20.57	21.30	21.50
		8@4	21.25	21.81	22.08	20.38	21.04	21.31
		8@7	21.36	21.83	22.03	20.67	21.03	21.53
		15@0	21.33	21.88	22.04	20.46	21.00	21.17
Band	Bandwidth	RB	19975	20175	20375	19975	20175	20375
	(MHz)		1712.5	1732.5	1752.5	1712.5	1732.5	1752.5
4	5	1@0	22.24	22.73	23.01	20.37	21.81	21.43
		1@12	22.42	23.17	23.07	20.55	21.85	22.12
		1@24	22.39	22.80	23.03	20.55	21.97	21.57
		12@0	21.27	21.93	22.10	20.30	21.16	21.21
		12@7	21.33	21.91	22.14	20.41	21.04	21.16
		12@13	21.46	21.83	22.05	20.37	20.77	21.02
		25@0	21.39	21.90	22.08	20.48	20.97	21.29
Band	Bandwidth	RB	20000	20175	20350	20000	20175	20350
	(MHz)		1715	1732.5	1750	1715	1732.5	1750
4	10	1@0	22.28	22.79	23.05	21.97	21.90	21.41
		1@25	22.38	22.99	23.01	21.69	22.73	21.77
		1@49	22.42	22.94	23.15	22.09	22.09	21.50
		25@0	21.43	21.92	22.04	20.42	21.35	21.26
		25@12	21.38	21.94	22.13	20.45	21.05	21.27
		25@25	21.57	21.99	22.03	20.93	21.03	21.29
		50@0	21.49	21.95	22.01	20.50	21.07	21.13
Band	Bandwidth	RB	20025	20175	20325	20025	20175	20325
	(MHz)		1717.5	1732.5	1747.5	1717.5	1732.5	1747.5
4	15	1@0	22.23	22.73	23.07	21.58	21.81	22.07
		1@37	22.36	23.07	22.80	21.97	22.81	22.47
		1@74	22.69	22.94	23.22	21.96	22.11	22.16
		36@0	21.56	21.83	22.03	20.44	20.89	21.14
		36@20	21.47	22.01	21.95	20.98	21.11	21.06
		36@39	21.69	22.08	22.16	20.68	21.01	21.16
		75@0	21.50	21.88	22.02	21.03	20.91	21.11
Band	Bandwidth	RB	20050	20175	20300	20050	20175	20300
	(MHz)		1720	1732.5	1745	1720	1732.5	1745
4	20	1@0	22.24	22.69	22.92	21.19	21.63	22.70
		1@49	22.54	22.99	23.03	21.49	21.88	22.87
		1@99	23.02	23.12	23.24	21.78	22.03	22.88
		50@0	21.38	21.88	22.01	20.64	20.91	21.12
		50@24	21.54	22.01	22.13	20.99	21.05	21.15
		50@50	21.81	21.92	22.05	20.89	21.11	21.23
		100@0	21.66	21.87	22.05	21.02	20.92	21.26

5.2.3 LTE Band 5

Conducted Power(dBm)								
Modulation			QPSK			16QAM		
Band	Bandwidth	RB	20407	20525	20643	20407	20525	20643
	(MHz)		824.7	836.5	848.3	824.7	836.5	848.3
5	1.4	1@0	21.84	21.87	22.10	21.48	21.70	20.82
		1@3	21.84	22.00	21.99	21.22	21.03	20.33
		1@5	21.85	21.89	22.01	21.55	21.76	20.79
		3@0	22.02	22.02	22.08	21.08	20.97	20.81
		3@1	21.90	21.94	22.12	21.34	21.00	20.90
		3@3	21.95	22.07	22.11	21.42	20.90	21.12
		6@0	21.15	21.07	21.00	20.31	20.17	20.13
Band	Bandwidth	RB	20415	20525	20635	20415	20525	20635
	(MHz)		825.5	836.5	847.5	825.5	836.5	847.5
5	3	1@0	21.89	21.99	22.02	21.75	20.99	20.44
		1@8	21.85	22.09	21.96	21.73	21.05	20.35
		1@14	21.80	22.07	22.03	21.36	20.99	20.38
		8@0	21.22	20.98	20.99	20.63	20.48	20.08
		8@4	21.27	21.10	21.08	20.29	20.09	20.07
		8@7	20.97	20.85	21.05	20.29	20.03	20.05
		15@0	21.22	20.97	21.06	20.38	20.00	19.98
Band	Bandwidth	RB	20425	20525	20625	20425	20525	20625
	(MHz)		826.5	836.5	846.5	826.5	836.5	846.5
5	5	1@0	21.91	21.99	21.97	20.55	20.87	21.09
		1@12	21.95	22.12	22.10	20.09	20.90	20.99
		1@24	21.87	22.15	22.12	20.56	20.96	21.02
		12@0	21.30	21.03	21.03	20.25	20.46	19.99
		12@7	20.89	20.98	21.13	19.91	19.98	20.14
		12@13	20.77	20.99	21.16	19.99	19.97	20.10
		25@0	20.76	21.15	21.16	20.05	19.99	20.23
Band	Bandwidth	RB	20450	20525	20600	20450	20525	20600
	(MHz)		829	836.5	844	829	836.5	844
5	10	1@0	21.81	21.78	21.92	21.01	21.32	21.62
		1@25	21.80	21.92	22.02	21.06	21.49	21.68
		1@49	21.82	21.93	22.22	20.60	21.52	21.81
		25@0	20.87	21.10	21.12	20.06	20.39	20.00
		25@12	21.23	21.04	21.04	20.50	19.81	20.10
		25@25	20.81	21.02	21.23	20.01	20.20	20.15
		50@0	21.24	21.01	21.01	20.31	19.93	20.03

5.2.4 LTE Band 7

Conducted Power(dBm)								
Modulation			QPSK			16QAM		
Band	Bandwidth	RB	20775	21100	21425	20775	21100	21425
	(MHz)		2502.5	2535	2567.5	2502.5	2535	2567.5
7	5	1@0	21.99	21.05	21.31	20.40	19.89	19.55
		1@12	21.90	21.18	21.29	20.15	19.83	19.77
		1@24	21.93	21.08	21.48	20.28	19.94	20.32
		12@0	21.03	20.15	20.37	20.10	19.10	19.35
		12@7	20.92	20.09	20.30	20.03	19.21	19.36
		12@13	20.91	20.06	20.43	20.08	18.98	19.30
		25@0	20.85	20.04	20.33	20.22	19.20	19.56
Band	Bandwidth	RB	20800	21100	21400	20800	21100	21400
	(MHz)		2505	2535	2565	2505	2535	2565
7	10	1@0	21.96	21.07	21.04	21.21	20.32	20.03
		1@25	21.80	20.97	21.23	21.56	20.18	20.16
		1@49	21.78	20.95	21.44	21.29	20.15	20.24
		25@0	21.00	20.03	20.27	20.11	19.36	19.36
		25@12	20.99	20.16	20.31	20.05	19.19	19.59
		25@25	20.84	19.96	20.44	20.01	19.19	19.68
		50@0	21.00	20.05	20.34	20.09	19.27	19.48
Band	Bandwidth	RB	20825	21100	21375	20825	21100	21375
	(MHz)		2507.5	2535	2562.5	2507.5	2535	2562.5
7	15	1@0	21.80	21.02	20.63	21.51	20.97	20.01
		1@37	21.59	20.94	20.83	21.38	20.83	20.22
		1@74	21.28	20.86	21.03	20.99	20.80	20.42
		36@0	20.87	20.11	20.16	19.98	19.15	19.27
		36@20	20.86	19.99	20.25	19.97	19.28	19.17
		36@39	20.70	20.10	20.35	19.85	19.06	19.49
		75@0	20.80	20.15	20.13	19.97	19.15	19.23
Band	Bandwidth	RB	20850	21100	21350	20850	21100	21350
	(MHz)		2510	2535	2560	2510	2535	2560
7	20	1@0	22.04	21.80	21.89	20.78	20.45	20.61
		1@49	21.84	21.68	21.01	20.67	20.25	20.90
		1@99	21.52	21.57	21.36	20.29	20.18	21.23
		50@0	20.82	20.10	20.03	20.07	19.25	19.08
		50@24	20.69	19.94	20.09	19.89	19.16	19.17
		50@50	20.47	19.92	20.28	19.69	19.08	19.40
		100@0	20.63	20.16	20.03	19.83	19.09	19.30

5.3 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:
According to KDB 412172 D01 Power Approach,

- **ERP or EIRP = $P_T + G_T - L_C$**
- **ERP = EIRP - 2.15**

where

- **P_T** = transmitter output power, expressed in dBW, dBm, or PSD;
- **G_T** = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);
- **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

Note: The maximum ERP/EIRP is calculated from max output power and antenna gain, the antenna gain provided by the customer, and the customer takes all the responsibilities for the accuracy of antenna gain.

5.3.1 LTE Band 2

Channel	Maximum EIRP (dBm)			Maximum EIRP (W)			Result
	QPSK	16QAM	Limit (dBm)	QPSK	16QAM	Limit (W)	
Channel Bandwidth: 1.4MHz							
Lowest	20.61	19.56	33.01	0.1151	0.0904	2	Pass
Middle	21.19	20.70	33.01	0.1315	0.1175	2	Pass
Highest	21.86	20.86	33.01	0.1535	0.1219	2	Pass
Channel Bandwidth: 3MHz							
Lowest	20.41	19.68	33.01	0.1099	0.0929	2	Pass
Middle	21.06	20.67	33.01	0.1276	0.1167	2	Pass
Highest	21.84	20.19	33.01	0.1528	0.1045	2	Pass
Channel Bandwidth: 5MHz							
Lowest	20.43	18.69	33.01	0.1104	0.0740	2	Pass
Middle	21.14	20.06	33.01	0.1300	0.1014	2	Pass
Highest	21.73	20.80	33.01	0.1489	0.1202	2	Pass
Channel Bandwidth: 10MHz							
Lowest	20.50	20.05	33.01	0.1122	0.1012	2	Pass
Middle	21.19	20.86	33.01	0.1315	0.1219	2	Pass
Highest	21.86	20.67	33.01	0.1535	0.1167	2	Pass
Channel Bandwidth: 15MHz							
Lowest	20.53	20.07	33.01	0.1130	0.1016	2	Pass
Middle	21.16	20.91	33.01	0.1306	0.1233	2	Pass
Highest	21.88	21.01	33.01	0.1542	0.1262	2	Pass
Channel Bandwidth: 20MHz							
Lowest	21.64	20.53	33.01	0.1459	0.1130	2	Pass
Middle	21.74	20.63	33.01	0.1493	0.1156	2	Pass
Highest	21.92	20.87	33.01	0.1556	0.1222	2	Pass

5.3.2 LTE Band 4

Channel	Maximum EIRP (dBm)			Maximum EIRP (W)			Result
	QPSK	16QAM	Limit (dBm)	QPSK	16QAM	Limit (W)	
Channel Bandwidth: 1.4MHz							
Lowest	21.48	20.47	30.00	0.1406	0.1114	1	Pass
Middle	22.09	21.16	30.00	0.1618	0.1306	1	Pass
Highest	22.23	21.18	30.00	0.1671	0.1312	1	Pass
Channel Bandwidth: 3MHz							
Lowest	21.37	20.66	30.00	0.1371	0.1164	1	Pass
Middle	22.14	21.15	30.00	0.1637	0.1303	1	Pass
Highest	22.23	20.81	30.00	0.1671	0.1205	1	Pass
Channel Bandwidth: 5MHz							
Lowest	21.50	19.63	30.00	0.1413	0.0918	1	Pass
Middle	22.25	21.05	30.00	0.1679	0.1274	1	Pass
Highest	22.15	21.20	30.00	0.1641	0.1318	1	Pass
Channel Bandwidth: 10MHz							
Lowest	21.50	21.17	30.00	0.1413	0.1309	1	Pass
Middle	22.07	21.81	30.00	0.1611	0.1517	1	Pass
Highest	22.23	20.85	30.00	0.1671	0.1216	1	Pass
Channel Bandwidth: 15MHz							
Lowest	21.77	21.05	30.00	0.1503	0.1274	1	Pass
Middle	22.15	21.89	30.00	0.1641	0.1545	1	Pass
Highest	22.30	21.55	30.00	0.1698	0.1429	1	Pass
Channel Bandwidth: 20MHz							
Lowest	22.10	20.86	30.00	0.1622	0.1219	1	Pass
Middle	22.20	21.11	30.00	0.1660	0.1291	1	Pass
Highest	22.32	21.96	30.00	0.1706	0.1570	1	Pass

5.3.3 LTE Band 5

Channel	Maximum EIRP (dBm)			Maximum EIRP (W)			Result
	QPSK	16QAM	Limit (dBm)	QPSK	16QAM	Limit (W)	
Channel Bandwidth: 1.4MHz							
Lowest	18.10	17.63	38.45	0.0646	0.0579	7	Pass
Middle	18.15	17.84	38.45	0.0653	0.0608	7	Pass
Highest	18.20	17.20	38.45	0.0661	0.0525	7	Pass
Channel Bandwidth: 3MHz							
Lowest	17.97	17.83	38.45	0.0627	0.0607	7	Pass
Middle	18.17	17.13	38.45	0.0656	0.0516	7	Pass
Highest	18.11	16.52	38.45	0.0647	0.0449	7	Pass
Channel Bandwidth: 5MHz							
Lowest	18.03	16.64	38.45	0.0635	0.0461	7	Pass
Middle	18.23	17.04	38.45	0.0665	0.0506	7	Pass
Highest	18.20	17.17	38.45	0.0661	0.0521	7	Pass
Channel Bandwidth: 10MHz							
Lowest	17.90	17.14	38.45	0.0617	0.0518	7	Pass
Middle	18.01	17.60	38.45	0.0632	0.0575	7	Pass
Highest	18.30	17.89	38.45	0.0676	0.0615	7	Pass

5.3.4 LTE Band 7

Channel	Maximum EIRP (dBm)			Maximum EIRP (W)			Result
	QPSK	16QAM	Limit (dBm)	QPSK	16QAM	Limit (W)	
Channel Bandwidth: 5MHz							
Lowest	21.34	19.75	33.01	0.1361	0.0944	2	Pass
Middle	20.53	19.29	33.01	0.1130	0.0849	2	Pass
Highest	20.83	19.67	33.01	0.1211	0.0927	2	Pass
Channel Bandwidth: 10MHz							
Lowest	21.31	20.91	33.01	0.1352	0.1233	2	Pass
Middle	20.42	19.67	33.01	0.1102	0.0927	2	Pass
Highest	20.79	19.59	33.01	0.1199	0.0910	2	Pass
Channel Bandwidth: 15MHz							
Lowest	21.15	20.86	33.01	0.1303	0.1219	2	Pass
Middle	20.37	20.32	33.01	0.1089	0.1076	2	Pass
Highest	20.38	19.77	33.01	0.1091	0.0948	2	Pass
Channel Bandwidth: 20MHz							
Lowest	21.39	20.13	33.01	0.1377	0.1030	2	Pass
Middle	21.15	19.80	33.01	0.1303	0.0955	2	Pass
Highest	21.24	20.58	33.01	0.1330	0.1143	2	Pass

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:	**Please refer to Appendix A**

5.5 99%&26DB BANDWIDTH

Test Requirement: FCC 47 CFR Part 2.1049(h)

Test Method: ANSI C63.26-2015 & KDB 971168 D01v03r01 Section 4

Limit: No Limit, for reporting purposes only.

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. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The 99% and -26dB bandwidths was also measured and recorded.

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: **Please refer to Appendix A**

5.6 BAND EDGE AT ANTENNA TERMINALS

Test Requirement: **LTE Band 2:** FCC 47 CFR Part 24.238(a)
LTE Band 4: FCC 47 CFR Part 27.53(h)(1)
LTE Band 5: FCC 47 CFR Part 22.917(a)
LTE Band 7: FCC 47 CFR Part 27.53(m)(4)

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

Limit:

FCC 47 CFR Part 24.238(a), 27.53(h)(1), 22.917(a):

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to -13 dBm.

FCC 47 CFR Part 27.53(m)(4):

For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

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.
For each band edge measurement:

1) Set the spectrum analyzer span to include the block edge frequency.
2) Set a marker to point the corresponding band edge frequency in each test case.
3) Set display line at -13 dBm
4) Set resolution bandwidth to at least 1% of emission bandwidth.
5) Set spectrum analyzer with RMS detector.
6) Record the max trace plot into the test report

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: **Please refer to Appendix A**

5.7 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Test Requirement: **LTE Band 2:** FCC 47 CFR Part 24.238(a)
LTE Band 4: FCC 47 CFR Part 27.53(h)
LTE Band 5: FCC 47 CFR Part 22.917(a)
LTE Band 7: FCC 47 CFR Part 27.53(m)(4)

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

Limit:

FCC 47 CFR Part 24.238(a), 27.53(h)(1), 22.917(a):
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to -13 dBm.

FCC 47 CFR Part 27.53(m)(4):
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 55 + 10 log(P) dB. The emission limit equal to -25 dBm.

Test Procedure:

The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range. b. Measuring frequency range is from 30 MHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

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: **Please refer to Appendix A**

5.8 FIELD STRENGTH OF SPURIOUS RADIATION

Test Requirement: **LTE Band 2:** FCC 47 CFR Part 24.238(a)
LTE Band 4: FCC 47 CFR Part 27.53(h)
LTE Band 5: FCC 47 CFR Part 22.917(a)
LTE Band 7: FCC 47 CFR Part 27.53(m)(4)

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

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009 MHz-30 MHz	Peak	10 kHz	30 KHz	Peak
30 MHz-1 GHz	Quasi-peak	100 kHz	300 KHz	Peak
Above 1 GHz	Peak	1 MHz	3 MHz	Peak

Limits:

FCC 47 CFR Part 24.238(a), 27.53(h)(1), 22.917(a):
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to -13 dBm.

FCC 47 CFR Part 27.53(m)(4):
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 55 + 10 log(P) dB. The emission limit equal to -25 dBm.

Test Setup: Refer to section 4.2.1 for details.

Test Procedures: KDB 971168 D01v03r01 Section 7

Equipment Used: Refer to section 3 for details.

Test Result: Pass

The worst measurement data as follows:

5.8.1 LTE Band 2

LTE Band 2_ 20 MHz_ QPSK							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
Lowest Channel							
1	698.804	-80.79	12.02	-68.77	-13.00	-55.77	Horizontal
2	781.961	-80.63	12.77	-67.86	-13.00	-54.86	Horizontal
3	925.613	-81.23	14.71	-66.52	-13.00	-53.52	Horizontal
4	3720.000	-45.88	8.67	-37.21	-13.00	-24.21	Horizontal
5	5580.000	-46.25	12.08	-34.17	-13.00	-21.17	Horizontal
6	760.287	-80.97	12.29	-68.68	-13.00	-55.68	Vertical
7	881.184	-79.22	13.65	-65.57	-13.00	-52.57	Vertical
8	979.139	-80.94	14.85	-66.09	-13.00	-53.09	Vertical
9	3720.000	-36.61	8.67	-27.94	-13.00	-14.94	Vertical
10	5580.000	-41.67	12.08	-29.59	-13.00	-16.59	Vertical
Middle Channel							
1	744.427	-80.42	11.94	-68.48	-13.00	-55.48	Horizontal
2	760.287	-80.60	12.29	-68.31	-13.00	-55.31	Horizontal
3	938.714	-82.04	14.71	-67.33	-13.00	-54.33	Horizontal
4	3760.000	-42.72	8.78	-33.94	-13.00	-20.94	Horizontal
5	5640.000	-40.27	12.00	-28.27	-13.00	-15.27	Horizontal
6	703.731	-81.38	11.90	-69.48	-13.00	-56.48	Vertical
7	875.013	-82.02	14.01	-68.01	-13.00	-55.01	Vertical
8	925.613	-81.06	14.71	-66.35	-13.00	-53.35	Vertical
9	3760.000	-41.01	8.78	-32.23	-13.00	-19.23	Vertical
10	5640.000	-45.48	12.00	-33.48	-13.00	-20.48	Vertical
Highest Channel							
1	693.910	-81.14	11.86	-69.28	-13.00	-56.28	Horizontal
2	739.214	-79.43	11.80	-67.63	-13.00	-54.63	Horizontal
3	986.044	-81.24	14.72	-66.52	-13.00	-53.52	Horizontal
4	3800.000	-38.94	8.89	-30.05	-13.00	-17.05	Horizontal
5	5700.000	-46.43	11.93	-34.50	-13.00	-21.50	Horizontal
6	703.731	-81.59	11.90	-69.69	-13.00	-56.69	Vertical
7	776.485	-81.08	12.71	-68.37	-13.00	-55.37	Vertical
8	912.695	-81.80	14.39	-67.41	-13.00	-54.41	Vertical
9	3800.000	-36.84	8.89	-27.95	-13.00	-14.95	Vertical
10	5700.000	-49.01	11.93	-37.08	-13.00	-24.08	Vertical

5.8.2 LTE Band 4

LTE Band 4_ 20 MHz_ QPSK							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
Lowest Channel							
1	689.051	-79.58	11.59	-67.99	-13.00	-54.99	Horizontal
2	787.475	-80.72	12.94	-67.78	-13.00	-54.78	Horizontal
3	906.304	-81.35	14.40	-66.95	-13.00	-53.95	Horizontal
4	5160.000	-38.54	10.81	-27.73	-13.00	-14.73	Horizontal
5	6880.000	-46.13	13.76	-32.37	-13.00	-19.37	Horizontal
6	906.304	-81.60	14.40	-67.20	-13.00	-54.20	Vertical
7	938.714	-80.60	14.71	-65.89	-13.00	-52.89	Vertical
8	979.139	-80.49	14.85	-65.64	-13.00	-52.64	Vertical
9	5160.000	-39.51	10.81	-28.70	-13.00	-15.70	Vertical
10	6880.000	-47.86	13.76	-34.10	-13.00	-21.10	Vertical
Middle Channel							
1	804.252	-80.53	12.90	-67.63	-13.00	-54.63	Horizontal
2	906.304	-81.47	14.40	-67.07	-13.00	-54.07	Horizontal
3	979.139	-81.63	14.85	-66.78	-13.00	-53.78	Horizontal
4	3465.000	-41.63	7.74	-33.89	-13.00	-20.89	Horizontal
5	5197.500	-39.85	10.91	-28.94	-13.00	-15.94	Horizontal
6	793.028	-81.06	13.00	-68.06	-13.00	-55.06	Vertical
7	827.179	-80.65	12.79	-67.86	-13.00	-54.86	Vertical
8	945.334	-80.68	14.42	-66.26	-13.00	-53.26	Vertical
9	3465.000	-38.46	7.74	-30.72	-13.00	-17.72	Vertical
10	5197.500	-38.86	10.91	-27.95	-13.00	-14.95	Vertical
Highest Channel							
1	693.910	-81.20	11.86	-69.34	-13.00	-56.34	Horizontal
2	760.287	-80.54	12.29	-68.25	-13.00	-55.25	Horizontal
3	899.958	-81.13	14.32	-66.81	-13.00	-53.81	Horizontal
4	3490.000	-40.24	7.89	-32.35	-13.00	-19.35	Horizontal
5	5235.000	-36.26	11.06	-25.20	-13.00	-12.20	Horizontal
6	708.694	-80.41	11.65	-68.76	-13.00	-55.76	Vertical
7	798.620	-80.73	12.97	-67.76	-13.00	-54.76	Vertical
8	925.613	-80.87	14.71	-66.16	-13.00	-53.16	Vertical
9	3490.000	-38.96	7.89	-31.07	-13.00	-18.07	Vertical
10	5235.000	-36.33	11.06	-25.27	-13.00	-12.27	Vertical

5.8.3 LTE Band 5

LTE Band 5_ 10 MHz_ QPSK							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
Lowest Channel							
1	698.804	-88.19	40.84	-47.35	-13.00	-34.35	Horizontal
2	781.961	-86.95	41.56	-45.39	-13.00	-32.39	Horizontal
3	938.714	-86.60	43.17	-43.43	-13.00	-30.43	Horizontal
4	1658.000	-44.79	0.08	-44.71	-13.00	-31.71	Horizontal
5	2487.000	-67.07	4.11	-62.96	-13.00	-49.96	Horizontal
6	798.620	-87.90	41.76	-46.14	-13.00	-33.14	Vertical
7	875.013	-86.86	42.62	-44.24	-13.00	-31.24	Vertical
8	932.141	-85.33	43.32	-42.01	-13.00	-29.01	Vertical
9	1658.000	-36.72	0.08	-36.64	-13.00	-23.64	Vertical
10	2487.000	-67.54	4.11	-63.43	-13.00	-50.43	Vertical
Middle Channel							
1	793.028	-86.88	41.79	-45.09	-13.00	-32.09	Horizontal
2	815.635	-86.73	41.48	-45.25	-13.00	-32.25	Horizontal
3	938.714	-86.70	43.17	-43.53	-13.00	-30.53	Horizontal
4	1658.000	-53.09	0.08	-53.01	-13.00	-40.01	Horizontal
5	2509.500	-64.21	4.20	-60.01	-13.00	-47.01	Horizontal
6	793.028	-87.14	41.79	-45.35	-13.00	-32.35	Vertical
7	912.695	-85.96	42.91	-43.05	-13.00	-30.05	Vertical
8	932.141	-86.50	43.32	-43.18	-13.00	-30.18	Vertical
9	1673.000	-43.60	0.15	-43.45	-13.00	-30.45	Vertical
10	2509.500	-64.62	4.20	-60.42	-13.00	-47.42	Vertical
Highest Channel							
1	765.648	-87.03	41.20	-45.83	-13.00	-32.83	Horizontal
2	925.613	-86.19	43.20	-42.99	-13.00	-29.99	Horizontal
3	952.000	-85.90	42.93	-42.97	-13.00	-29.97	Horizontal
4	1688.000	-48.30	0.22	-48.08	-13.00	-35.08	Horizontal
5	2532.000	-62.03	4.24	-57.79	-13.00	-44.79	Horizontal
6	793.028	-86.98	41.79	-45.19	-13.00	-32.19	Vertical
7	945.334	-85.85	42.86	-42.99	-13.00	-29.99	Vertical
8	992.997	-86.53	43.17	-43.36	-13.00	-30.36	Vertical
9	1688.000	-41.52	0.22	-41.30	-13.00	-28.30	Vertical
10	2532.000	-59.29	4.24	-55.05	-13.00	-42.05	Vertical

5.8.4 LTE Band 7

LTE Band 7_ 20 MHz_ QPSK							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
Lowest Channel							
1	660.602	-80.21	10.77	-69.44	-25.00	-44.44	Horizontal
2	793.028	-80.55	13.00	-67.55	-25.00	-42.55	Horizontal
3	919.132	-79.64	14.52	-65.12	-25.00	-40.12	Horizontal
4	5020.000	-46.45	10.46	-35.99	-25.00	-10.99	Horizontal
5	10040.000	-55.80	18.83	-36.97	-25.00	-11.97	Horizontal
6	708.694	-80.39	11.65	-68.74	-25.00	-43.74	Vertical
7	833.013	-81.05	13.10	-67.95	-25.00	-42.95	Vertical
8	932.141	-81.51	14.85	-66.66	-25.00	-41.66	Vertical
9	5020.000	-44.30	10.46	-33.84	-25.00	-8.84	Vertical
10	10040.000	-61.01	18.83	-42.18	-25.00	-17.18	Vertical
Middle Channel							
1	798.620	-80.80	12.97	-67.83	-25.00	-42.83	Horizontal
2	850.760	-80.43	13.08	-67.35	-25.00	-42.35	Horizontal
3	952.000	-80.75	14.50	-66.25	-25.00	-41.25	Horizontal
4	5070.000	-46.69	10.59	-36.10	-25.00	-11.10	Horizontal
5	10140.000	-54.63	18.87	-35.76	-25.00	-10.76	Horizontal
6	771.047	-80.74	12.54	-68.20	-25.00	-43.20	Vertical
7	821.387	-80.43	12.66	-67.77	-25.00	-42.77	Vertical
8	972.283	-80.30	14.58	-65.72	-25.00	-40.72	Vertical
9	5070.000	-45.66	10.59	-35.07	-25.00	-10.07	Vertical
10	10140.000	-58.28	18.87	-39.41	-25.00	-14.41	Vertical
Highest Channel							
1	693.910	-80.83	11.86	-68.97	-25.00	-43.97	Horizontal
2	781.961	-79.88	12.77	-67.11	-25.00	-42.11	Horizontal
3	862.802	-80.50	13.35	-67.15	-25.00	-42.15	Horizontal
4	5120.000	-55.30	10.71	-44.59	-25.00	-19.59	Horizontal
5	10240.000	-51.10	18.90	-32.20	-25.00	-7.20	Horizontal
6	754.963	-79.96	12.07	-67.89	-25.00	-42.89	Vertical
7	868.886	-80.90	13.69	-67.21	-25.00	-42.21	Vertical
8	938.714	-80.77	14.71	-66.06	-25.00	-41.06	Vertical
9	5120.000	-51.88	10.71	-41.17	-25.00	-16.17	Vertical
10	10240.000	-59.62	18.90	-40.72	-25.00	-15.72	Vertical

Remark:

1. Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result – Limit

5.9 FREQUENCY STABILITY

Test Requirement: FCC 47 CFR Part 2.1055 &
FCC 47 CFR Part 22.355 &
FCC 47 CFR Part 24.235 &
FCC 47 CFR Part 27.54

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

Limits:

FCC 47 CFR Part 22.355, FCC 47 CFR Par 90.213

The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

FCC 47 CFR Part 24.235, FCC 47 CFR Part 27.54

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

Test Setup: Refer to section 4.2.2 for details.

Test Procedures:

1) Use CMW 500 with Frequency Error measurement capability.
   a) Temp. = −30° to + 50°Ca
   b) Voltage =low voltage, 2.8 Vdc, Normal, 3.7 Vdc and High voltage, 4.3 Vdc.
2) Frequency Stability vs Temperature:

The EUT is place inside a temperature chamber. The temperature is set to 20ºC and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50ºC is reached.

3) Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

Equipment Used: Refer to section 3 for details.

Test Result: Pass

Modulation	Channel/ Frequency (MHz)	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Result
LTE Band 2 / 20MHz / Full RB							
QPSK	18900 / 1880.0	VL	TN	3.2	0.0017	Note 1	Pass
		VN		2.5	0.0013		Pass
		VH		5.1	0.0027		Pass
		VN	50	3.7	0.0020		Pass
			40	2.6	0.0014		Pass
			30	2.2	0.0012		Pass
			20	2.7	0.0014		Pass
			10	3.1	0.0016		Pass
			0	4.2	0.0022		Pass
			-10	3.8	0.0020		Pass
			-20	4.1	0.0022		Pass
			-30	3.5	0.0019		Pass

Modulation	Channel/ Frequency (MHz)	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Pass/ Fail
LTE Band 4 / 20MHz / Full RB							
QPSK	20175 / 1732.5	VL	TN	2.4	0.0014	Note 1	Pass
		VN		3.1	0.0018		Pass
		VH		3.8	0.0022		Pass
		VN	50	3.1	0.0018		Pass
			40	2.5	0.0014		Pass
			30	2.6	0.0015		Pass
			20	1.8	0.0010		Pass
			10	3.3	0.0019		Pass
			0	2.2	0.0013		Pass
			-10	2.9	0.0017		Pass
			-20	3.8	0.0022		Pass
			-30	4.5	0.0026		Pass

Modulation	Channel/ Frequency (MHz)	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Pass/ Fail
LTE Band 5 / 10MHz / Full RB							
QPSK	20525 / 836.5	VL	TN	4.5	0.0054	± 2.5	Pass
		VN		3.6	0.0043	± 2.5	Pass
		VH		2.7	0.0032	± 2.5	Pass
		VN	50	3.1	0.0037	± 2.5	Pass
			40	2.8	0.0033	± 2.5	Pass
			30	3.2	0.0038	± 2.5	Pass
			20	2.3	0.0027	± 2.5	Pass
			10	2.7	0.0032	± 2.5	Pass
			0	4.3	0.0051	± 2.5	Pass
			-10	3.5	0.0042	± 2.5	Pass
			-20	2.6	0.0031	± 2.5	Pass
			-30	3.1	0.0037	± 2.5	Pass

Modulation	Channel/ Frequency (MHz)	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Pass/ Fail
LTE Band 7 / 20MHz / Full RB							
QPSK	21100 / 2535	VL	TN	3.1	0.0012	N/A	Pass
		VN		3.8	0.0015		Pass
		VH		4.5	0.0018		Pass
		VN	50	2.9	0.0011		Pass
			40	2.3	0.0009		Pass
			30	2.1	0.0008		Pass
			20	1.8	0.0007		Pass
			10	3.5	0.0014		Pass
			0	2.9	0.0011		Pass
			-10	3.2	0.0013		Pass
			-20	2.5	0.0010		Pass
			-30	2.8	0.0011		Pass

APPENDIX A RF TEST DATA

A.1 LTE BAND 2

Peak to Average Ratio

Band	Bandwidth (MHz)	Channel	Freq (MHz)	Modulation	RB	Result (dB)	Limit (dB)	Verdict
2	20.0	18700	1860.0	QPSK	100@0	5.56	13	PASS
2	20.0	18700	1860.0	16QAM	100@0	6.30	13	PASS
2	20.0	18900	1880.0	QPSK	100@0	5.53	13	PASS
2	20.0	18900	1880.0	16QAM	100@0	6.20	13	PASS
2	20.0	19100	1900.0	QPSK	100@0	5.33	13	PASS
2	20.0	19100	1900.0	16QAM	100@0	5.98	13	PASS
2	15.0	18675	1857.5	QPSK	75@0	5.40	13	PASS
2	15.0	18675	1857.5	16QAM	75@0	6.10	13	PASS
2	15.0	18900	1880.0	QPSK	75@0	5.37	13	PASS
2	15.0	18900	1880.0	16QAM	75@0	6.08	13	PASS
2	15.0	19125	1902.5	QPSK	75@0	5.19	13	PASS
2	15.0	19125	1902.5	16QAM	75@0	5.96	13	PASS
2	10.0	18650	1855.0	QPSK	50@0	5.62	13	PASS
2	10.0	18650	1855.0	16QAM	50@0	6.29	13	PASS
2	10.0	18900	1880.0	QPSK	50@0	5.48	13	PASS
2	10.0	18900	1880.0	16QAM	50@0	6.13	13	PASS
2	10.0	19150	1905.0	QPSK	50@0	5.08	13	PASS
2	10.0	19150	1905.0	16QAM	50@0	5.78	13	PASS
2	5.0	18625	1852.5	QPSK	25@0	5.56	13	PASS
2	5.0	18625	1852.5	16QAM	25@0	6.21	13	PASS
2	5.0	18900	1880.0	QPSK	25@0	5.42	13	PASS
2	5.0	18900	1880.0	16QAM	25@0	6.05	13	PASS
2	5.0	19175	1907.5	QPSK	25@0	4.74	13	PASS
2	5.0	19175	1907.5	16QAM	25@0	5.50	13	PASS
2	3.0	18615	1851.5	QPSK	15@0	5.62	13	PASS
2	3.0	18615	1851.5	16QAM	15@0	6.30	13	PASS
2	3.0	18900	1880.0	QPSK	15@0	5.48	13	PASS
2	3.0	18900	1880.0	16QAM	15@0	6.16	13	PASS
2	3.0	19185	1908.5	QPSK	15@0	4.70	13	PASS
2	3.0	19185	1908.5	16QAM	15@0	5.33	13	PASS
2	1.4	18607	1850.7	QPSK	6@0	5.57	13	PASS
2	1.4	18607	1850.7	16QAM	6@0	6.33	13	PASS
2	1.4	18900	1880.0	QPSK	6@0	5.35	13	PASS
2	1.4	18900	1880.0	16QAM	6@0	6.12	13	PASS
2	1.4	19193	1909.3	QPSK	6@0	4.38	13	PASS
2	1.4	19193	1909.3	16QAM	6@0	5.01	13	PASS

Test Graphs

B2_20M_QPSK_100@0_CH_18700

B2_20M_16QAM_100@0_CH_18700

B2_20M_QPSK_100@0_CH_18900

B2_20M_16QAM_100@0_CH_18900

B2_20M_QPSK_100@0_CH_19100

B2_20M_16QAM_100@0_CH_19100

B2_15M_QPSK_75@0_CH_18675

B2_15M_16QAM_75@0_CH_18675

B2_15M_QPSK_75@0_CH_18900

B2_15M_16QAM_75@0_CH_18900

B2_15M_QPSK_75@0_CH_19125

B2_15M_16QAM_75@0_CH_19125

B2_10M_QPSK_50@0_CH_18650

B2_10M_16QAM_50@0_CH_18650

B2_10M_QPSK_50@0_CH_18900

B2_10M_16QAM_50@0_CH_18900

B2_10M_QPSK_50@0_CH_19150

B2_10M_16QAM_50@0_CH_19150

B2_5M_QPSK_25@0_CH_18625

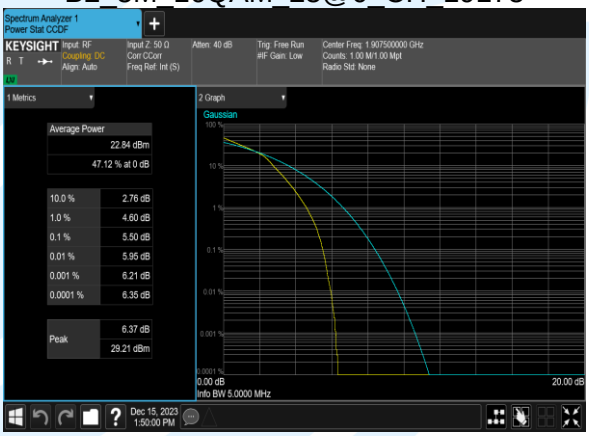
B2_5M_16QAM_25@0_CH_18625

B2_5M_QPSK_25@0_CH_18900

B2_5M_16QAM_25@0_CH_18900

B2_5M_QPSK_25@0_CH_19175

B2_5M_16QAM_25@0_CH_19175



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B2_3M_QPSK_15@0_CH_18900

B2_3M_16QAM_15@0_CH_18900

B2_3M_QPSK_15@0_CH_19185

B2_3M_16QAM_15@0_CH_19185

B2_1.4M_QPSK_6@0_CH_18607

B2_1.4M_16QAM_6@0_CH_18607

B2_1.4M_QPSK_6@0_CH_18900

B2_1.4M_16QAM_6@0_CH_18900

B2_1.4M_QPSK_6@0_CH_19193

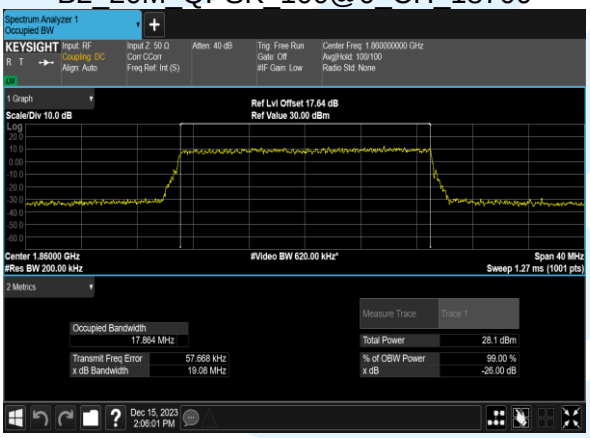
B2_1.4M_16QAM_6@0_CH_19193

Occupied Bandwidth

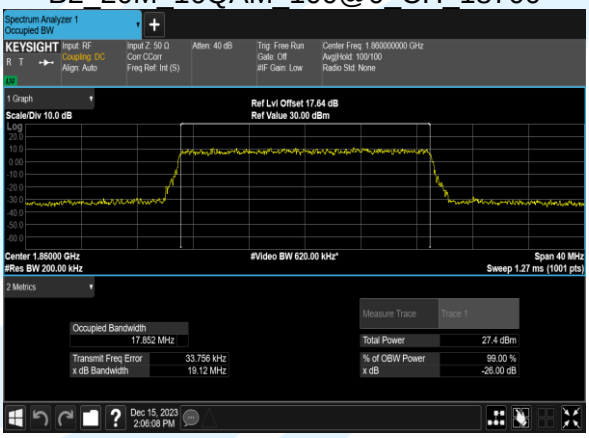
Band	Bandwidth (MHz)	Channel	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB BW (MHz)
2	20.0	18700	1860.0	QPSK	100@0	17.864	19.08
2	20.0	18700	1860.0	16QAM	100@0	17.852	19.12
2	20.0	18900	1880.0	QPSK	100@0	17.920	19.16
2	20.0	18900	1880.0	16QAM	100@0	17.912	19.19
2	20.0	19100	1900.0	QPSK	100@0	17.937	19.24
2	20.0	19100	1900.0	16QAM	100@0	17.906	19.00
2	15.0	18675	1857.5	QPSK	75@0	13.421	14.51
2	15.0	18675	1857.5	16QAM	75@0	13.389	14.42
2	15.0	18900	1880.0	QPSK	75@0	13.428	14.41
2	15.0	18900	1880.0	16QAM	75@0	13.402	14.43
2	15.0	19125	1902.5	QPSK	75@0	13.425	14.49
2	15.0	19125	1902.5	16QAM	75@0	13.421	14.56
2	10.0	18650	1855.0	QPSK	50@0	8.9518	9.681
2	10.0	18650	1855.0	16QAM	50@0	8.9339	9.579
2	10.0	18900	1880.0	QPSK	50@0	8.9379	9.709
2	10.0	18900	1880.0	16QAM	50@0	8.9311	9.456
2	10.0	19150	1905.0	QPSK	50@0	8.9322	9.698
2	10.0	19150	1905.0	16QAM	50@0	8.9473	9.681
2	5.0	18625	1852.5	QPSK	25@0	4.4566	4.870
2	5.0	18625	1852.5	16QAM	25@0	4.4616	4.879
2	5.0	18900	1880.0	QPSK	25@0	4.4606	4.854
2	5.0	18900	1880.0	16QAM	25@0	4.4498	4.821
2	5.0	19175	1907.5	QPSK	25@0	4.4576	4.885
2	5.0	19175	1907.5	16QAM	25@0	4.4610	4.915
2	3.0	18615	1851.5	QPSK	15@0	2.6764	2.958
2	3.0	18615	1851.5	16QAM	15@0	2.6784	2.955
2	3.0	18900	1880.0	QPSK	15@0	2.6903	2.971
2	3.0	18900	1880.0	16QAM	15@0	2.6871	2.973
2	3.0	19185	1908.5	QPSK	15@0	2.6841	2.987
2	3.0	19185	1908.5	16QAM	15@0	2.6895	3.001
2	1.4	18607	1850.7	QPSK	6@0	1.0825	1.216
2	1.4	18607	1850.7	16QAM	6@0	1.0761	1.224
2	1.4	18900	1880.0	QPSK	6@0	1.0770	1.225
2	1.4	18900	1880.0	16QAM	6@0	1.0803	1.218
2	1.4	19193	1909.3	QPSK	6@0	1.0810	1.219
2	1.4	19193	1909.3	16QAM	6@0	1.0790	1.224

Test Graphs

B2_20M_QPSK_100@0_CH_18700



B2_20M_16QAM_100@0_CH_18700



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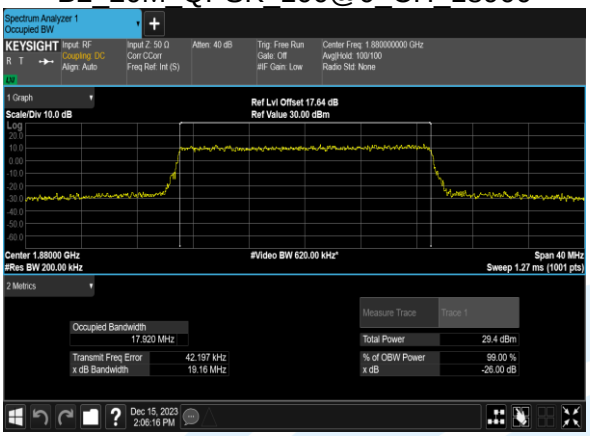

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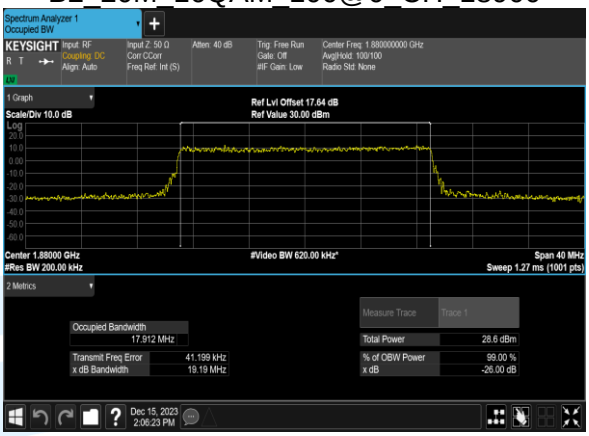
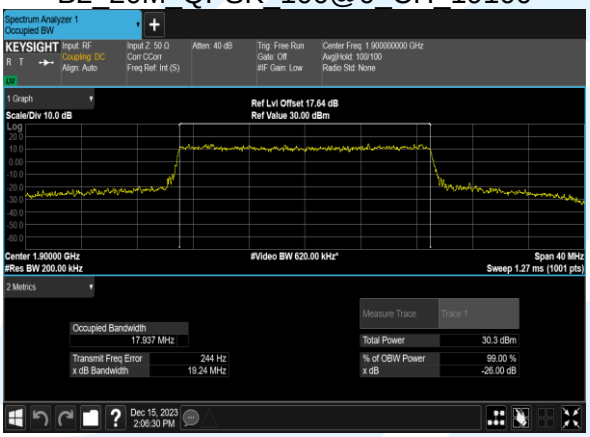
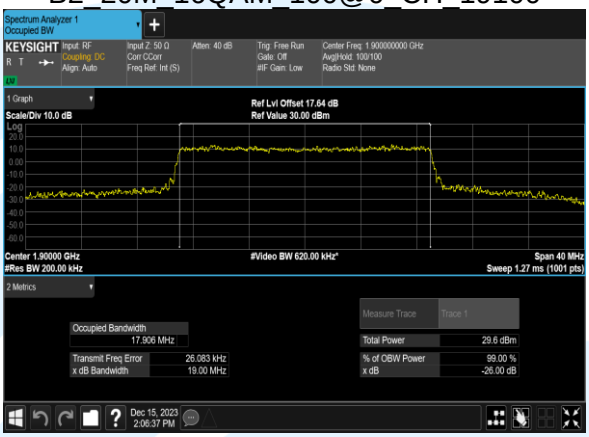


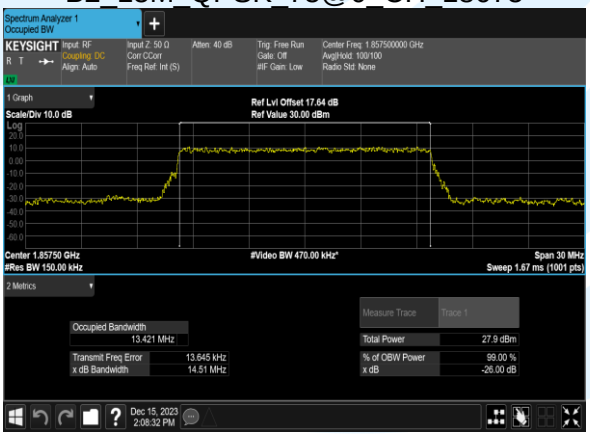
B2_20M_QPSK_100@0_CH_19100



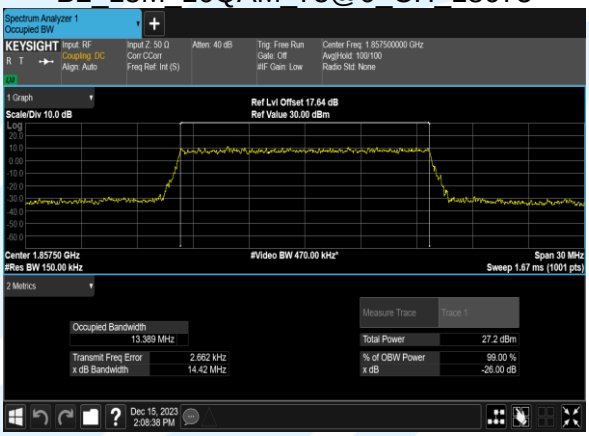
B2_20M_16QAM_100@0_CH_19100



B2_15M_QPSK_75@0_CH_18675



B2_15M_16QAM_75@0_CH_18675



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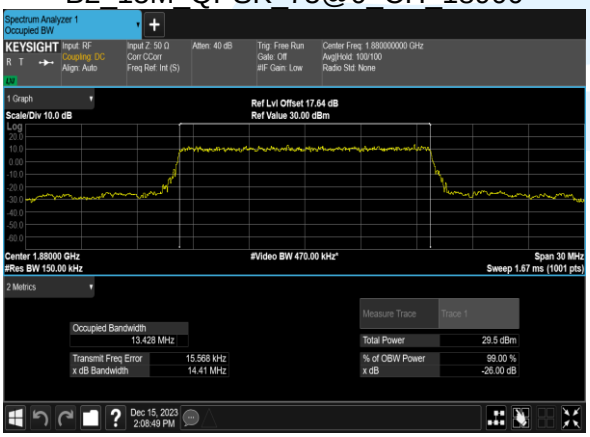

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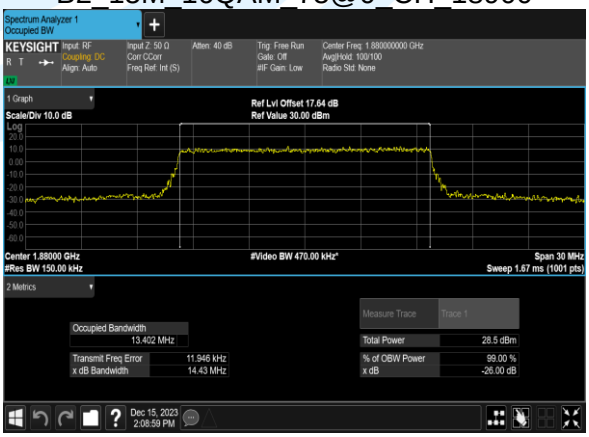
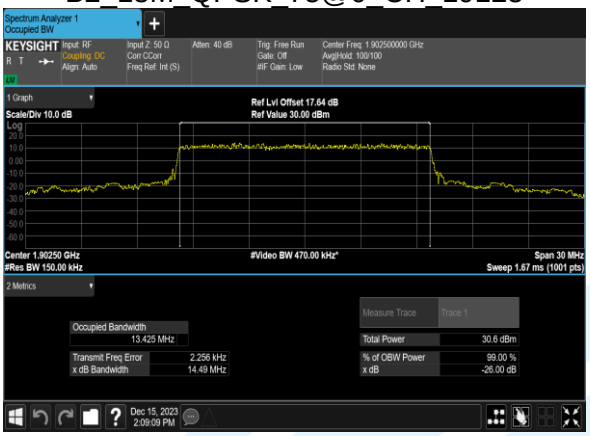
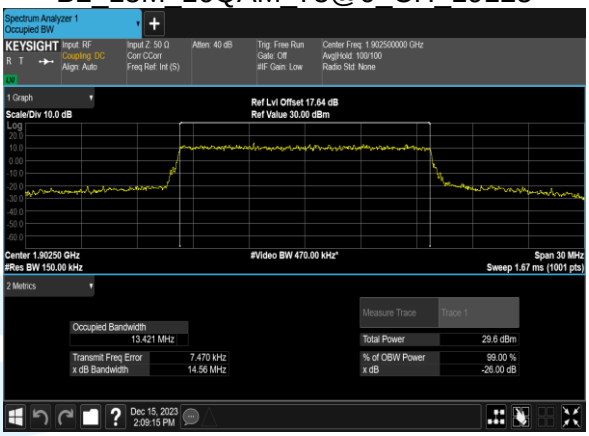


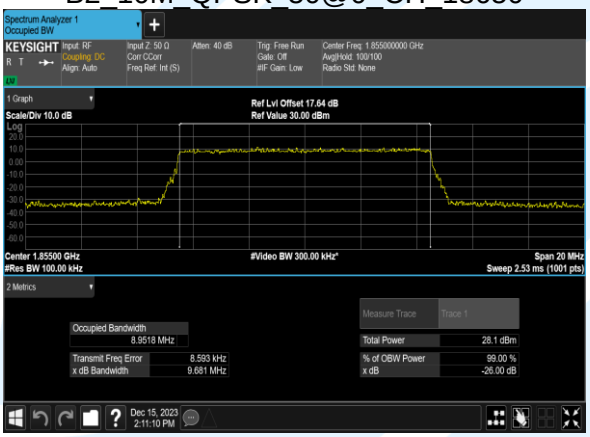
B2_15M_QPSK_75@0_CH_19125



B2_15M_16QAM_75@0_CH_19125



B2_10M_QPSK_50@0_CH_18650



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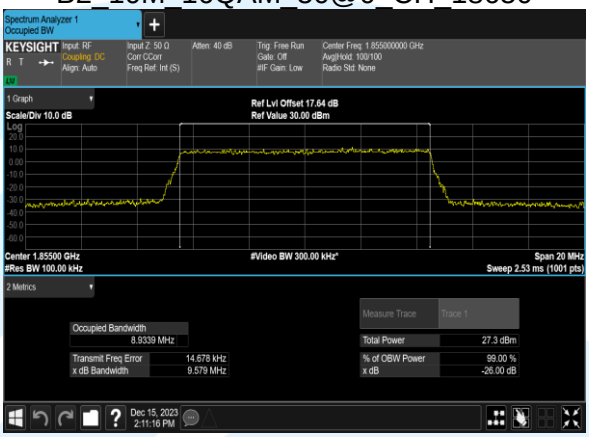
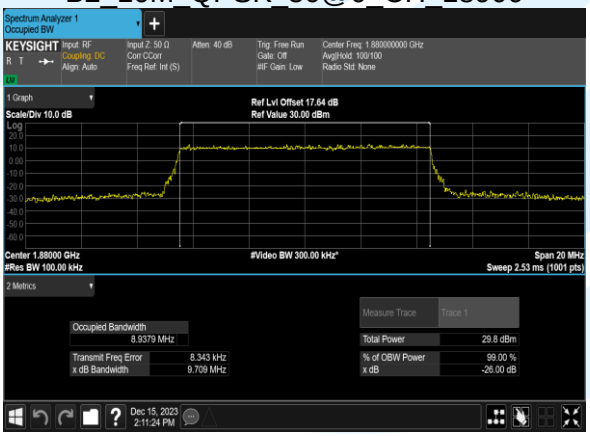


B2_10M_QPSK_50@0_CH_18900



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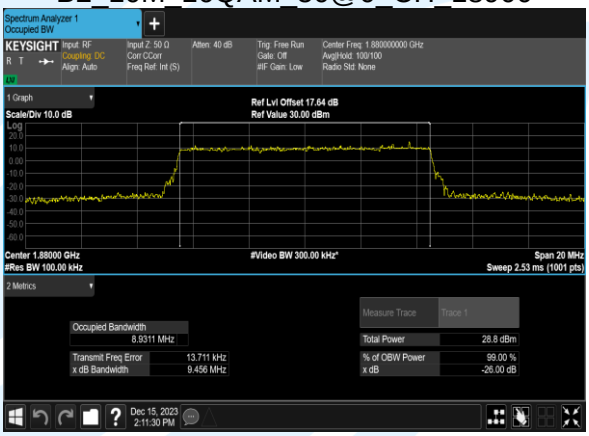
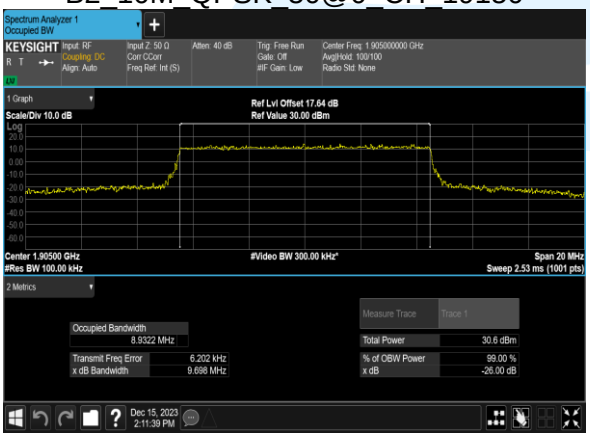


B2_10M_QPSK_50@0_CH_19150



B2_10M_16QAM_50@0_CH_19150