Industrial Internet Innovation Center (Shanghai) Co.,Ltd.

FCC/IC LTE TEST REPORT

PRODUCT	Smart POS system
BRAND	SUNMI
MODEL	T6900
APPLICANT	Shanghai Sunmi Technology Co.,Ltd.
FCC ID	2AH25T6900P2
IC	22621-T6900P2
ISSUE DATE	January 11,2023
STANDARD(S)	FCC Part 2, FCC Part 22, FCC Part 24, FCC Part 27, RSS-Gen Issue 5, RSS-130 Issue 2, RSS-132 Issue 3, RSS-133 Issue 6, RSS-139 Issue 3, RSS-199 Issue 3

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1. Summary of Test Report

1.1 Test Standard (s)

No.	Test Standard	Title	Version
1	FCC Part 2	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS	2021-10-01
2	FCC Part 22	PUBLIC MOBILE SERVICES	2021-10-01
3	FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	2021-10-01
4	FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	2021-10-01
5	RSS-Gen Issue 5	RSS-Gen —General Requirements for Compliance of Radio Apparatus	2021-02
6	RSS-130 Issue 2	Equipment Operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz	2019-02
7	RSS-132 Issue 3	Cellular Telephone Systems Operating in the Bands 824-849 MHz and 869-894 MHz	2013-01
8	RSS-133 Issue 6	2 GHz Personal Communications Services	2018-01
9	RSS-139 Issue 3	Advanced Wireless Services (AWS) Equipment Operating in the Bands 1710-1780 MHz and 2110-2180 MHz	2015-07
10	RSS-199 Issue 3	Broadband Radio Service (BRS) Equipment Operating in the Band 2500–2690 MHz	2016-12

1.2 Reference Documents

No.	Test Standard	Title	Version
1	ANSI/TIA-603-E	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2016
2	ANSI C63.26	American National Standard of Procedures for Compliance Testing of Licensed Transmitters Used in Licensed Radio	2015
3	KDB 971168 D01	Measurement Guidance for Certification of Licensed Digital Transmitters	v03r01

1.3 Summary of Test Results

LTE Band 2

Items	Test Name	Clause in FCC rules	Sub-clause of IC	Verdict
1	Output Power	24.232(c)	RSS-133 6.4	Pass
2	Emission Limit	24.238(a), 2.1051	RSS-133 6.5	Pass
3	Frequency Stability	24.235, 2.1055	RSS-133 6.3	Pass
4	Occupied Bandwidth	2.1049(h)(i)	RSS-Gen 6.7	Pass
5	Emission Bandwidth	24.238(a)	RSS-Gen 6.7	Pass
6	Band Edge Compliance	24.238(a)	RSS-133 6.5	Pass
7	Conducted Spurious Emission	24.238, 2.1057	RSS-133 6.5	Pass
8	Peak to Average Power Ratio	24.232 (d)	RSS-133 6.4	Pass

LTE Band 4

Items	Test Name	Clause in FCC rules	Sub-clause of IC	Verdict
1	Output Power	27.50(d)(4)	RSS-139 6.5	Pass
2	Emission Limit	27.53(h), 2.1051	RSS-139 6.6	Pass
3	Frequency Stability	27.54, 2.1055	RSS-139 6.4	Pass
4	Occupied Bandwidth	2.1049(h)(i)	RSS-Gen 6.7	Pass
5	Emission Bandwidth	27.53(h)	RSS-Gen 6.7	Pass
6	Band Edge Compliance	27.53(h)	RSS-139 6.6	Pass
7	Conducted Spurious Emission	27.53(h), 2.1057	RSS-139 6.6	Pass
8	Peak to Average Power Ratio	27.50(a)	RSS-139 6.5	Pass

LTE Band 5

Items	Test Name	Clause in FCC rules	Sub-clause of IC	Verdict
1	Output Power	2.1046(a), 22.913(a)	RSS-132 5.4	Pass
2	Emission Limit	22.917, 2.1051	RSS-132 5.5	Pass
3	Frequency Stability	22.235, 2.1055	RSS-132 5.3	Pass
4	Occupied Bandwidth	2.1049(h)(i)	RSS-Gen 6.7	Pass
5	Emission Bandwidth	22.917(b)	RSS-Gen 6.7	Pass
6	Band Edge Compliance	22.917(b)	RSS-132 5.5	Pass
7	Conducted Spurious Emission	22.917, 2.1057	RSS-132 5.5	Pass

LTE Band 7

Items	Test Name	Clause in FCC rules	Sub-clause of IC	Verdict
1	Output Power	27.50(d)(4)	RSS-199 4.4	Pass
2	Emission Limit	27.53(h), 2.1051	RSS-199 4.5	Pass
3	Frequency Stability	27.54, 2.1055	RSS-199 4.3	Pass
4	Occupied Bandwidth	2.1049(h)(i)	RSS-Gen 6.7	Pass
5	Emission Bandwidth	27.53(h)	RSS-Gen 6.7	Pass
6	Band Edge Compliance	27.53(h)	RSS-199 4.5	Pass
7	Conducted Spurious Emission	27.53(h), 2.1057	RSS-199 4.5	Pass
8	Peak to Average Power Ratio	27.50(a)	RSS-199 4.4	Pass

LTE Band 17

Items	Test Name	Clause in FCC rules	Sub-clause of IC	Verdict
1	Output Power	27.50(d)(4)	RSS-130 4.6	Pass
2	Emission Limit	27.53(h), 2.1051	RSS-130 4.7	Pass
3	Frequency Stability	27.54, 2.1055	RSS-130 4.5	Pass
4	Occupied Bandwidth	2.1049(h)(i)	RSS-Gen 6.7	Pass
5	Emission Bandwidth	27.53(h)	RSS-Gen 6.7	Pass
6	Band Edge Compliance	27.53(h)	RSS-130 4.7	Pass
7	Conducted Spurious Emission	27.53(h), 2.1057	RSS-130 4.7	Pass
8	Peak to Average Power Ratio	27.50(a)	RSS-130 4.6	Pass

LTE Band 38

Items	Test Name	Clause in FCC rules	Sub-clause of IC	Verdict
1	Output Power	27.50(d)(4)	RSS-199 4.4	Pass
2	Emission Limit	27.53(h), 2.1051	RSS-199 4.5	Pass
3	Frequency Stability	27.54, 2.1055	RSS-199 4.3	Pass
4	Occupied Bandwidth	2.1049(h)(i)	RSS-Gen 6.7	Pass
5	Emission Bandwidth	27.53(h)	RSS-Gen 6.7	Pass
6	Band Edge Compliance	27.53(h)	RSS-199 4.5	Pass
7	Conducted Spurious Emission	27.53(h), 2.1057	RSS-199 4.5	Pass
8	Peak to Average Power Ratio	27.50(a)	RSS-199 4.4	Pass

LTE Band 41

Items	Test Name	Clause in FCC rules	Sub-clause of IC	Verdict
1	Output Power	27.50(d)(4)	RSS-199 4.4	Pass
2	Emission Limit	27.53(h), 2.1051	RSS-199 4.5	Pass
3	Frequency Stability	27.54, 2.1055	RSS-199 4.3	Pass
4	Occupied Bandwidth	2.1049(h)(i)	RSS-Gen 6.7	Pass
5	Emission Bandwidth	27.53(h)	RSS-Gen 6.7	Pass
6	Band Edge Compliance	27.53(h)	RSS-199 4.5	Pass
7	Conducted Spurious Emission	27.53(h), 2.1057	RSS-199 4.5	Pass
8	Peak to Average Power Ratio	27.50(a)	RSS-199 4.4	Pass

Note:

The T6900, manufactured by Shanghai Sunmi Technology Co.,Ltd. is a new product for testing.

The product's Band 41 uses only 2535-2655 MHZ.

A wider frequency range was tested to be able to fully cover the requirements of ISED, with the exported Canadian product Band 41 using only 2500-2690 MHZ.

The following configurations were tested for radiation spurious emission:

T6900			
Main Supply:**Configuration1**(fingerprint &scanner&standard)			
Name	Model	Manufacturer	Spec
PCB	STM-5	SHENZHEN SUNTAK MULTILAYER PCB CO LTD	V-0 130℃
LCD	HS55ET10P63B	Huashi Opto-Electronic Co., Ltd.	720X (RGB)(H) X 1440(V) dots TFT Type 3.25mm thickness
Rear camera	HNO0458	Holitech science Technology Co., Ltd.	Sensor:Hi556 1/5" Lens:DULE DL5280 VCM:RuienPF8526-44 F.NO:2.2 FOV:>77° Connection method: BTB
Battery	P2	Guangdong Fenghua New Energy Co,.Ltd.	2480mAh/7.6V
Printer	ATP2XEP6RTWENA	Xiamen Pinnacle Electrical Co.,Ltd	Thermal dot printing print 4.0-9.5V， 384dot，Dimension 67.3*18.25*30.0mm
Button cell	CR2032	Yichang Power Glory Technology Co.,Ltd.	Nominal Discharge current 0.2mA Nominal Voltage 3V Nominal Capacity 245(mAh)

Adapter	TPA-23A050200UU01	SHENZHEN TIANYIN ELECTRONICS CO.,LTD.	5V 2A
Secondary Supply: **Configuration2** (fingerprint & standard)			
Name	Model	Manufacturer	Spec
PCB	HF01	JIANGXI ZHIBOXIN TECHNOLOGY CO LTD	V-0 130℃
LCD	JL-P055H030-05	SICHUAN JINGLONG PHOTOELECTRIC SCIENCE AND TECHNOLOGY CO.,LTD	720X (RGB)(H) X 1440(V) dots TFT Type 3.25mm thickness
Rear camera	VM25C27	Shenzhen Chengxiangtong technology Co.,Ltd.	Sensor: GC05A2 1/5" Lens: Horui TR0517B VCM: Hozel VA26F502 F.NO:2.2 FOV:>77° Connection method: BTB
Battery	P2	DongGuan Veken Battery Co.,Ltd.	2480mAh/7.6V
Printer	LTP02-245-G2	Seiko Instruments Inc.	Thermal line dot printing print 5.5-9.5V， 384dot，Dimension 67.3*18.1*30.0mm
Button cell	CR2032	SHANGHAI LONGYOUNG CORPORATION.	Nominal Discharge current 0.2mA Nominal Voltage 3V Nominal Capacity 220(mAh)
Adapter	UC13US	Jiangsu Chenyang Electron Co.,Ltd.	5V2A
Third Supply:**Configuration3(Based on configuration 1)** (fingerprint & standard)			
Name	Model	Manufacturer	Spec
PCB			
LCD			
Rear camera			
Battery	P2 Max	Guangdong Fenghua New Energy Co,.Ltd.	3000mAh/7.6V
Printer			
Button cell			
Adapter			
Note: Hardware Version Id Number (HVIN): 1)T6900P2-1:Configuration1-fingerprint 2)T6900P2-2:Configuration1-scanner 3)T6900P2-3:Configuration1-standard 4)T6900P2-4:Configuration2-fingerprint 5)T6900P2-5:Configuration2-standard			

Industrial Internet Innovation Center (Shanghai) Co., Ltd. only performed test cases which identified with Pass/Fail/Inc result in section 1.3.

Industrial Internet Innovation Center (Shanghai) Co., Ltd. has verified that the compliance of the tested device specified in section 5.3 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 6 of this test report.

1.4 Data Provided by Applicant

No.	Item(s)	Data
1	LTE band 2	-0.7 dBi
2	LTE band 4	3.6 dBi
3	LTE band 5	-3.2 dBi
4	LTE band 7	2.0 dBi
5	LTE band 17	-2.7 dBi
6	LTE band 38	1.4 dBi
7	LTE band 41	2.2 dBi

2. General Information of The Laboratory

2.1 Testing Laboratory

Lab Name	Industrial Internet Innovation Center (Shanghai) Co.,Ltd.
Address	Building 4, No. 766, Jingang Road, Pudong, Shanghai, China
Telephone	021-68866880
FCC Registration No.	958356
FCC Designation No.	CN1177
IC Designation No.	10766A
CAB identifier	CN0067

2.2 Laboratory Environmental Requirements

Temperature	15℃~35℃
Relative Humidity	25%RH~75%RH
Atmospheric Pressure	101kPa

2.3 Project Information

Project Manager	Gao Hongning
Test Date	October 10, 2022 to January 10, 2023

3. General Information of The Customer

3.1 Applicant

Company	Shanghai Sunmi Technology Co.,Ltd.
Address	Room 505, No.388,Song Hu Road, Yang Pu District, Shanghai, China
Telephone	+86-17302160204

3.2 Manufacturer

Company	Shanghai Sunmi Technology Co.,Ltd.
Address	Room 505, No.388,Song Hu Road, Yang Pu District, Shanghai, China

4. General Information of The Product

4.1 Product Description for Equipment under Test (EUT)

Product	Smart POS system
Model	T6900
Date of Receipt	S03aa/S05aa / S06aa/ S08aa / S14aa/ S16aa: September 26,2022 S18aa: September 27,2022 S21aa : November 3,2022
EUT ID*	standard version:S03aa/S05aa/S06aa scan code version supported:S21aa fingerprint version supported:S08aa/S14aa/S16aa
SN/IMEI	S03aa: 869325026812009 869325026812017 S05aa: 869325026811662 869325026811670 S06aa: 869325026810920 869325026810938 S08aa: 869325026801002 869325026801010 S14aa: 869325026801267 869325026801275 S16aa: 869325026800780 869325026800798 S18aa:869325026801085 869325026801093 S21aa : 862318060012757 862318060012765
Supported Radio Technology and Bands	GSM850/GSM900/DCS1800/PCS1900 WCDMA Band I/II/IV/V/VIII LTE Band 1/2/3/4/5/7/17/28/38/41 BT 4.2 BLE/BR/EDR WLAN 802.11b/g/n WLAN 802.11a/n GPS NFC
Hardware Version	B1691_MAIN_PCB
Software Version	SP6359A-20220922115332
FCC ID	2AH25T6900P2
IC	22621-T6900P2
NOTE： EUT ID is the internal identification code of the laboratory.	

4.2 Description for Auxiliary Equipment (AE)

AE ID*	Description	Model	SN/Remark

AE1	RF Cable	N/A	N/A
NOTE： AE ID is the internal identification code of the laboratory.			

4.3 Additional Information

Type of modulation	QPSK/16QAM

5. Test Configuration Information

5.1 Laboratory Environmental Conditions

5.1.1 Permanent Facilities

Relative Humidity	Min. = 45%, Max. = 55%		
Atmospheric Pressure	101kPa		
Temperature	Normal	Minimum	Maximum
	25℃	0℃	45℃
Working Voltage of EUT	Normal	Minimum	Maximum
	7.2V	6.8V	8.4V

5.2 Test Equipments Utilized

Radiated emission test system

No.	Name	Model	S/N	Manufacturer	Cal. Date	Cal. Interval
1	Universal Radio Communication Tester	CMU200	123123	R&S	October 17,2022	1Year
					May 10,2021	1.5 Years
2	Universal Radio Communication Tester	CMW500	104178	R&S	October 17,2022	1Year
					May 10,2021	1.5 Years
3	EMI Test Receiver	ESU40	100307	R&S	February 23, 2022	1 Year
4	TRILOG Broadband Antenna	VULB9163	VULB9163-515	Schwarzbeck	March 11, 2022	1 Year
5	Double- ridged Waveguide Antenna	ETS-3117	00135890	ETS	March 9, 2022	2 Years
6	2-Line V-Network	ENV216	101380	R&S	February 21, 2022	1 Year
7	EMI Test Software	EMC32 V9.15.00	N/A	R&S	N/A	N/A

Anechoic chamber

Fully anechoic chamber by ETS.

Conducted Test System

No.	Name	Model	S/N	Manufacturer	Cal. Date	Cal. Interval
1	Universal Radio Communication Tester	CMW500	148874	R&S	August. 23,2022	1 Year

2	Vector Signal Analyzer	FSQ26	101091	R&S	August. 23,2022	1 Year
3	Programmable power supply	Keithley 2303	4039070	Keithley	July 12,2022	1 Year
4	Eagle Test Software	Eagle V3.3 FCC BT/WIFI	N/A	ECIT	N/A	N/A
5	Temperature Chamber	B-TF-107C	BTF107C-201804107	BoYi	June 30,2022	1Year

5.3 Measurement Uncertainty

Measurement Items	Range	Confidence Level	Calculated Uncertainty
Peak Output Power-Conducted	2412MHz-2462MHz	95%	0.544dB
Peak Power Spectral Density	2412MHz-2462MHz	95%	0.502dB
Occupied 6dB Bandwidth	2412MHz-2462MHz	95%	69.26kHz
Band Edges-Conducted	2412MHz-2462MHz	95%	0.544dB
Conducted Emission	30MHz-2GHz	95%	0.90dB
Conducted Emission	2GHz-3.6GHz	95%	0.88dB
Conducted Emission	3.6GHz-8GHz	95%	0.96dB
Conducted Emission	8GHz-20GHz	95%	0.94dB
Conducted Emission	20GHz-22GHz	95%	0.88dB
Conducted Emission	22GHz-26GHz	95%	0.86dB
Transmitter Spurious Emission-Radiated	9KHz-30MHz	95%	5.66dB
Transmitter Spurious Emission-Radiated	30MHz-1000MHz	95%	4.98dB
Transmitter Spurious Emission-Radiated	1000MHz -18000MHz	95%	5.06dB
Transmitter Spurious Emission-Radiated	18000MHz -40000MHz	95%	5.20dB
AC Power line Conducted Emission	0.15MHz-30MHz	95%	3.66 dB

6. Test Results

6.1 Output Power

6.1.1 Summary

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMW500) to ensure max power transmission and proper modulation. In all cases, output power is within the specified limits.
CMW500 setting:
1: CMW500 is connected to the DUT
2: Set RX Expected PEP to 30 dBm

6.1.2 Conducted

6.1.2.1Method of Measurements

The EUT was set up for the max output power with pseudo random data modulation.
These measurements were done at 3 frequencies (bottom, middle and top of operational frequency range) for each bandwidth.

6.1.2.2 Test Setup

6.1.2.2 Measurement result

LTE band 2

LTE			LTE B2			
Modulation	RB	RB Offset	Tune up	1.4MHz		
				18607	18900	19193
QPSK	1	Low	23.50	22.08	22.35	22.54
		Middle		22.54	22.81	22.79
		High		22.30	22.48	22.69
	50%	Low	23.50	22.42	22.67	22.60
		Middle		22.34	22.56	22.64
		High		22.43	22.60	22.66
	100%	/	22.50	21.46	21.64	21.75
16QAM	1	Low	22.50	21.74	21.61	21.56
		Middle		21.72	21.68	21.62
		High		21.75	21.73	21.65
	50%	Low	22.50	21.46	21.49	21.53
		Middle		21.55	21.53	21.48
		High		21.64	21.59	21.55
	100%	/	21.50	20.66	20.60	20.68
Modulation	RB	RB Offset	Tune up	3MHz		
				18615	18900	19185

QPSK	1	Low	23.50	22.10	22.39	22.57
		Middle		22.52	22.84	22.83
		High		22.33	22.53	22.73
	50%	Low	2	21.52	21.79	21.73
		Middle		21.46	21.66	21.76
		High	2.50	21.53	21.71	21.76
	100%	/	22.50	21.46	21.68	21.78
16QAM	1	Low	22.50	21.77	21.63	21.59
		Middle		21.75	21.68	21.66
		High		21.77	21.77	21.68
	50%	Low	21.50	20.57	20.62	20.65
		Middle		20.66	20.66	20.60
		High		20.74	20.71	20.68
	100%	/	21.50	20.69	20.64	20.71
Modulation	RB	RB Offset	Tune up	5MHz		
				18625	18900	19175
QPSK	1	Low	23.50	22.07	22.37	22.53
		Middle		22.50	22.80	22.80
		High		22.30	22.48	22.69
	50%	Low	22.50	21.49	21.74	21.69
		Middle		21.44	21.62	21.71
		High		21.51	21.69	21.72
	100%	/	22.50	21.46	21.67	21.76
16QAM	1	Low	22.50	21.74	21.59	21.56
		Middle		21.72	21.66	21.63
		High		21.74	21.75	21.64
	50%	Low	21.50	20.55	20.58	20.62
		Middle		20.63	20.61	20.56
		High		20.71	20.66	20.64
	100%	/	21.50	20.67	20.60	20.66
Modulation	RB	RB Offset	Tune up	10MHz		
				18650	18900	19150
QPSK	1	Low	23.50	22.09	22.38	22.56
		Middle		22.53	22.85	22.84
		High		22.32	22.52	22.72
	50%	Low	22.50	21.52	21.79	21.73
		Middle		21.47	21.67	21.75
		High		21.53	21.73	21.77
	100%	/	22.50	21.50	21.69	21.80
16QAM	1	Low	22.50	21.76	21.62	21.58
		Middle		21.75	21.70	21.66
		High		21.77	21.77	21.67
	50%	Low	21.50	20.58	20.63	20.66
		Middle		20.65	20.65	20.59

		High		20.74	20.71	20.68
	100%	/	21.50	20.70	20.65	20.70
Modulation	RB	RB Offset	Tune up	15MHz		
				18675	18900	19125
QPSK	1	Low	23.50	22.08	22.34	22.54
		Middle		22.51	22.84	22.81
		High		22.29	22.47	22.68
	50%	Low	22.50	21.50	21.75	21.70
		Middle		21.44	21.62	21.71
		High		21.50	21.70	21.73
	100%	/	22.50	21.48	21.65	21.75
16QAM	1	Low	22.50	21.71	21.60	21.56
		Middle		21.73	21.67	21.64
		High		21.74	21.73	21.64
	50%	Low	21.50	20.55	20.61	20.63
		Middle		20.62	20.60	20.55
		High		20.72	20.67	20.65
	100%	/	21.50	20.67	20.60	20.66
Modulation	RB	RB Offset	Tune up	20MHz		
				18700	18900	19100
QPSK	1	Low	23.50	22.05	22.30	22.51
		Middle		22.50	22.80	22.79
		High		22.27	22.46	22.65
	50%	Low	22.50	21.47	21.70	21.66
		Middle		21.42	21.58	21.68
		High		21.47	21.65	21.69
	100%	/	22.50	21.45	21.60	21.71
16QAM	1	Low	22.50	21.62	21.56	21.51
		Middle		21.69	21.65	21.60
		High		21.72	21.70	21.62
	50%	Low	21.50	20.52	20.57	20.60
		Middle		20.59	20.58	20.52
		High		20.69	20.62	20.61
	100%	/	21.50	20.65	20.56	20.63

LTE BAND 4

LTE			LTE B4			
Modulation	RB	RB Offset	Tune up	1.4MHz		
				19957	20175	20393
QPSK	1	Low	22.50	22.06	21.96	21.72
		Middle		22.18	22.16	21.73
		High		21.66	21.47	21.32
	50%	Low	22.50	21.99	22.02	21.86
		Middle		21.95	21.97	21.71

		High		21.95	21.70	21.59
	100%	/	21.50	21.07	20.94	20.71
16QAM	1	Low	21.50	21.14	20.98	20.92
		Middle		21.12	21.16	20.78
		High		20.79	20.92	20.77
	50%	Low	21.50	21.05	21.00	20.80
		Middle		20.94	20.90	20.63
		High		20.95	20.79	20.46
	100%	/	20.50	20.00	19.84	19.73
Modulation	RB	RB Offset	Tune up	3MHz		
				19965	20175	20385
QPSK	1	Low	22.50	22.08	22.00	21.75
		Middle		22.16	22.19	21.77
		High		21.69	21.52	21.36
	50%	Low	21.50	21.09	21.14	20.99
		Middle		21.07	21.07	20.83
		High		21.05	20.81	20.69
	100%	/	21.50	21.07	20.98	20.74
16QAM	1	Low	21.50	21.17	21.00	20.95
		Middle		21.15	21.16	20.82
		High		20.81	20.96	20.80
	50%	Low	20.50	20.16	20.13	19.92
		Middle		20.05	20.03	19.75
		High		20.05	19.91	19.59
	100%	/	20.50	20.03	19.88	19.76
Modulation	RB	RB Offset	Tune up	5MHz		
				19975	20175	20375
QPSK	1	Low	22.50	22.05	21.98	21.71
		Middle		22.14	22.15	21.74
		High		21.66	21.47	21.32
	50%	Low	21.50	21.06	21.09	20.95
		Middle		21.05	21.03	20.78
		High		21.03	20.79	20.65
	100%	/	21.50	21.07	20.97	20.72
16QAM	1	Low	21.50	21.14	20.96	20.92
		Middle		21.12	21.14	20.79
		High		20.78	20.94	20.76
	50%	Low	20.50	20.14	20.09	19.89
		Middle		20.02	19.98	19.71
		High		20.02	19.86	19.55
	100%	/	20.50	20.01	19.84	19.71
Modulation	RB	RB Offset	Tune up	10MHz		
				20000	20175	20350
QPSK	1	Low	22.50	22.07	21.99	21.74

		Middle		22.17	22.20	21.78
		High		21.68	21.51	21.35
	50%	Low	21.50	21.09	21.14	20.99
		Middle		21.08	21.08	20.82
		High		21.05	20.83	20.70
	100%	/	21.50	21.11	20.99	20.76
16QAM	1	Low	21.50	21.16	20.99	20.94
		Middle		21.15	21.18	20.82
		High		20.81	20.96	20.79
	50%	Low	20.50	20.17	20.14	19.93
		Middle		20.04	20.02	19.74
		High		20.05	19.91	19.59
	100%	/	20.50	20.04	19.89	19.75
Modulation	RB	RB Offset	Tune up	15MHz		
				20025	20175	20325
QPSK	1	Low	22.50	22.06	21.95	21.72
		Middle		22.15	22.19	21.75
		High		21.65	21.46	21.31
	50%	Low	21.50	21.07	21.10	20.96
		Middle		21.05	21.03	20.78
		High		21.02	20.80	20.66
	100%	/	21.50	21.09	20.95	20.71
16QAM	1	Low	21.50	21.11	20.97	20.92
		Middle		21.13	21.15	20.80
		High		20.78	20.92	20.76
	50%	Low	20.50	20.14	20.12	19.90
		Middle		20.01	19.97	19.70
		High		20.03	19.87	19.56
	100%	/	20.50	20.01	19.84	19.71
Modulation	RB	RB Offset	Tune up	20MHz		
				20050	20175	20300
QPSK	1	Low	22.50	22.03	21.91	21.69
		Middle		22.14	22.15	21.73
		High		21.63	21.45	21.28
	50%	Low	21.50	21.04	21.05	20.92
		Middle		21.03	20.99	20.75
		High		20.99	20.75	20.62
	100%	/	21.50	21.06	20.90	20.67
16QAM	1	Low	21.50	21.13	20.93	20.87
		Middle		21.09	21.13	20.76
		High		20.76	20.89	20.74
	50%	Low	20.50	20.11	20.08	19.87
		Middle		19.98	19.95	19.67
		High		20.00	19.82	19.52

	100%	/	20.50	19.99	19.80	19.68

LTE BAND 5

LTE			LTE B5			
Modulation	RB	RB Offset	Tune up	1.4MHz		
				20407	20525	20643
QPSK	1	Low	23.50	22.26	22.45	22.39
		Middle		22.45	22.45	22.41
		High		22.36	22.39	22.39
	50%	Low	23.50	22.35	22.52	22.37
		Middle		22.28	22.47	22.48
		High		22.42	22.38	22.42
	100%	/	22.50	21.47	21.45	21.46
16QAM	1	Low	22.50	21.49	21.37	21.54
		Middle		21.47	21.51	21.42
		High		21.38	21.32	21.40
	50%	Low	22.50	21.38	21.41	21.40
		Middle		21.37	21.46	21.50
		High		21.37	21.43	21.42
	100%	/	21.50	20.50	20.56	20.49
Modulation	RB	RB Offset	Tune up	3MHz		
				20415	20525	20635
QPSK	1	Low	23.50	22.27	22.48	22.41
		Middle		22.44	22.49	22.46
		High		22.38	22.43	22.42
	50%	Low	22.50	21.45	21.64	21.50
		Middle		21.41	21.58	21.59
		High		21.52	21.51	21.53
	100%	/	22.50	21.51	21.50	21.51
16QAM	1	Low	22.50	21.51	21.38	21.56
		Middle		21.50	21.53	21.46
		High		21.40	21.36	21.42
	50%	Low	21.50	20.50	20.55	20.53
		Middle		20.47	20.58	20.61
		High		20.47	20.55	20.55
	100%	/	21.50	20.54	20.61	20.51
Modulation	RB	RB Offset	Tune up	5MHz		
				20425	20525	20625
QPSK	1	Low	23.50	22.26	22.44	22.39
		Middle		22.42	22.48	22.43
		High		22.35	22.38	22.38
	50%	Low	22.50	21.43	21.60	21.47
		Middle		21.38	21.53	21.55

		High		21.49	21.48	21.49
	100%	/	22.50	21.49	21.46	21.46
16QAM	1	Low	22.50	21.46	21.36	21.54
		Middle		21.48	21.50	21.44
		High		21.37	21.32	21.39
	50%	Low	21.50	20.47	20.53	20.50
		Middle		20.44	20.53	20.57
		High		20.45	20.51	20.52
	100%	/	21.50	20.51	20.56	20.47
Modulation	RB	RB Offset	Tune up	10MHz		
				20450	20525	20600
QPSK	1	Low	23.50	22.23	22.40	22.36
		Middle		22.41	22.44	22.41
		High		22.33	22.37	22.35
	50%	Low	22.50	21.40	21.55	21.43
		Middle		21.36	21.49	21.52
		High		21.46	21.43	21.45
	100%	/	22.50	21.46	21.41	21.42
16QAM	1	Low	22.50	21.40	21.32	21.49
		Middle		21.44	21.48	21.40
		High		21.35	21.29	21.37
	50%	Low	21.50	20.44	20.49	20.47
		Middle		20.41	20.51	20.54
		High		20.42	20.46	20.48
	100%	/	21.50	20.49	20.52	20.44

LTE BAND 7

LTE			**LTE B7**			
Modulation	RB	RB Offset	Tune up	5MHz		
				20775	21100	21425
QPSK	1	Low	23.00	21.94	21.65	21.69
		Middle		22.04	21.94	22.13
		High		21.85	21.72	22.02
	50%	Low	22.00	21.12	20.86	21.15
		Middle		21.05	20.94	21.05
		High		21.13	20.96	21.06
	100%	/	22.00	21.02	20.90	21.05
16QAM	1	Low	22.00	20.91	20.72	20.75
		Middle		20.89	20.99	20.85
		High		20.92	20.87	20.82
	50%	Low	21.00	19.77	19.73	19.72
		Middle		19.90	19.85	19.78
		High		19.84	19.90	19.74
	100%	/	21.00	19.82	19.93	19.82

Modulation	RB	RB Offset	Tune up	10MHz		
				20800	21100	21400
QPSK	1	Low	23.00	21.96	21.66	21.72
		Middle		22.07	21.99	22.17
		High		21.87	21.76	22.05
	50%	Low	22.00	21.15	20.91	21.19
		Middle		21.08	20.99	21.09
		High		21.15	21.00	21.11
	100%	/	22.00	21.06	20.92	21.09
16QAM	1	Low	22.00	20.93	20.75	20.77
		Middle		20.92	21.03	20.88
		High		20.95	20.89	20.85
	50%	Low	21.00	19.80	19.78	19.76
		Middle		19.92	19.89	19.81
		High		19.87	19.95	19.78
	100%	/	21.00	19.85	19.98	19.86
Modulation	RB	RB Offset	Tune up	15MHz		
				20825	21100	21375
QPSK	1	Low	23.00	21.95	21.62	21.70
		Middle		22.05	21.98	22.14
		High		21.84	21.71	22.01
	50%	Low	22.00	21.13	20.87	21.16
		Middle		21.05	20.94	21.05
		High		21.12	20.97	21.07
	100%	/	22.00	21.04	20.88	21.04
16QAM	1	Low	22.00	20.88	20.73	20.75
		Middle		20.90	21.00	20.86
		High		20.92	20.85	20.82
	50%	Low	21.00	19.77	19.76	19.73
		Middle		19.89	19.84	19.77
		High		19.85	19.91	19.75
	100%	/	21.00	19.82	19.93	19.82
Modulation	RB	RB Offset	Tune up	20MHz		
				20850	21100	21350
QPSK	1	Low	23.00	21.92	21.58	21.67
		Middle		22.04	21.94	22.12
		High		21.82	21.70	21.98
	50%	Low	22.00	21.10	20.82	21.12
		Middle		21.03	20.90	21.02
		High		21.09	20.92	21.03
	100%	/	22.00	21.01	20.83	21.00
16QAM	1	Low	22.00	20.82	20.69	20.70
		Middle		20.86	20.98	20.82
		High		20.90	20.82	20.80

	50%	Low	21.00	19.74	19.72	19.70
		Middle		19.86	19.82	19.74
		High		19.82	19.86	19.71
	100%	/	21.00	19.80	19.89	19.79

LTE BAND 17

LTE			LTE B17			
Modulation	RB	RB Offset	Tune up	5MHz		
				23755	23790	23825
QPSK	1	Low	23.50	22.44	22.62	22.49
		Middle		22.65	22.69	22.54
		High		22.55	22.56	22.54
	50%	Low	22.50	21.64	21.61	21.66
		Middle		21.57	21.62	21.52
		High		21.60	21.59	21.51
	100%	/	22.50	21.59	21.57	21.62
16QAM	1	Low	22.50	21.89	21.67	21.86
		Middle		21.91	21.99	21.94
		High		21.61	21.67	21.76
	50%	Low	21.50	20.51	20.58	20.48
		Middle		20.46	20.53	20.53
		High		20.43	20.54	20.48
	100%	/	21.50	20.52	20.63	20.55
Modulation	RB	RB Offset	Tune up	10MHz		
				23780	23790	23800
QPSK	1	Low	23.50	22.41	22.58	22.46
		Middle		22.64	22.65	22.52
		High		22.53	22.55	22.51
	50%	Low	22.50	21.61	21.56	21.62
		Middle		21.55	21.58	21.49
		High		21.57	21.54	21.47
	100%	/	22.50	21.56	21.52	21.58
16QAM	1	Low	22.50	21.70	21.63	21.81
		Middle		21.87	21.97	21.90
		High		21.59	21.64	21.74
	50%	Low	21.50	20.48	20.54	20.45
		Middle		20.43	20.51	20.50
		High		20.40	20.49	20.44
	100%	/	21.50	20.50	20.59	20.52

LTE BAND 38

LTE			LTE B38			
Modulation	RB	RB Offset	Tune up	5MHz		
				37775	38000	38225
QPSK	1	Low	24.00	21.42	21.94	22.19

		Middle		22.07	22.42	22.71
		High		22.15	22.43	22.60
	50%	Low	23.00	20.80	21.13	21.51
		Middle		21.09	21.37	21.76
		High		21.15	21.42	21.84
	100%	/	23.00	21.01	21.34	21.68
16QAM	1	Low	23.00	21.10	20.87	21.23
		Middle		21.08	21.48	21.92
		High		21.01	21.41	21.69
	50%	Low	22.00	19.82	20.14	20.50
		Middle		19.94	20.37	20.73
		High		20.02	20.47	20.74
	100%	/	22.00	19.98	20.25	20.66
Modulation	RB	RB Offset	Tune up	10MHz		
				37800	38000	38200
QPSK	1	Low	24.00	21.44	21.95	22.22
		Middle		22.10	22.47	22.75
		High		22.17	22.47	22.63
	50%	Low	23.00	20.83	21.18	21.55
		Middle		21.12	21.42	21.80
		High		21.17	21.46	21.89
	100%	/	23.00	21.05	21.36	21.72
16QAM	1	Low	23.00	21.12	20.90	21.25
		Middle		21.11	21.52	21.95
		High		21.04	21.43	21.72
	50%	Low	22.00	19.85	20.19	20.54
		Middle		19.96	20.41	20.76
		High		20.05	20.52	20.78
	100%	/	22.00	20.01	20.30	20.70
Modulation	RB	RB Offset	Tune up	15MHz		
				37825	38000	38175
QPSK	1	Low	24.00	21.43	21.91	22.20
		Middle		22.08	22.46	22.72
		High		22.14	22.42	22.59
	50%	Low	23.00	20.81	21.14	21.52
		Middle		21.09	21.37	21.76
		High		21.14	21.43	21.85
	100%	/	23.00	21.03	21.32	21.67
16QAM	1	Low	23.00	21.07	20.88	21.23
		Middle		21.09	21.49	21.93
		High		21.01	21.39	21.69
	50%	Low	22.00	19.82	20.17	20.51
		Middle		19.93	20.36	20.72
		High		20.03	20.48	20.75

	100%	/	22.00	19.98	20.25	20.66
Modulation	RB	RB Offset	Tune up	20MHz		
				37850	38000	38150
QPSK	1	Low	24.00	21.40	21.87	22.17
		Middle		22.07	22.42	22.70
		High		22.12	22.41	22.56
	50%	Low	23.00	21.12	21.09	21.48
		Middle		21.07	21.33	21.73
		High		21.11	21.38	21.81
	100%	/	23.00	21.20	21.27	21.63
16QAM	1	Low	23.00	20.57	20.84	21.18
		Middle		21.05	21.47	21.89
		High		21.01	21.36	21.67
	50%	Low	22.00	19.79	20.13	20.48
		Middle		19.90	20.34	20.69
		High		20.00	20.43	20.71
	100%	/	22.00	19.96	20.21	20.63

LTE BAND 41

LTE				LTE B41		
Modulation	RB	RB Offset	Tune up	5MHz		
				40065	40640	41215
QPSK	1	Low	24.00	22.14	22.37	22.65
		Middle		22.52	22.75	22.91
		High		22.19	22.58	22.79
	50%	Low	23.00	21.28	21.63	21.91
		Middle		21.54	21.76	21.93
		High		21.58	21.82	21.95
	100%	/	23.00	21.45	21.77	21.95
16QAM	1	Low	23.00	21.63	21.48	21.77
		Middle		21.61	21.84	22.13
		High		21.36	21.65	21.86
	50%	Low	22.00	20.33	20.63	20.92
		Middle		20.57	20.77	21.02
		High		20.69	20.79	20.97
	100%	/	22.00	20.52	20.76	20.91
Modulation	RB	RB Offset	Tune up	10MHz		
				40090	40640	41190
QPSK	1	Low	24.00	22.16	22.38	22.68
		Middle		22.55	22.80	22.95
		High		22.21	22.62	22.82
	50%	Low	23.00	21.31	21.68	21.95
		Middle		21.57	21.81	21.97
		High		21.60	21.86	22.00

	100%	/	23.00	21.49	21.79	21.99
16QAM	1	Low	23.00	21.65	21.51	21.79
		Middle		21.64	21.88	22.16
		High		21.39	21.67	21.89
	50%	Low	22.00	20.36	20.68	20.96
		Middle		20.59	20.81	21.05
		High		20.72	20.84	21.01
	100%	/	22.00	20.55	20.81	20.95
Modulation	RB	RB Offset	Tune up	15MHz		
				40115	40640	41165
QPSK	1	Low	24.00	22.15	22.34	22.66
		Middle		22.53	22.79	22.92
		High		22.18	22.57	22.78
	50%	Low	23.00	21.29	21.64	21.92
		Middle		21.54	21.76	21.93
		High		21.57	21.83	21.96
	100%	/	23.00	21.47	21.75	21.94
16QAM	1	Low	23.00	21.60	21.49	21.77
		Middle		21.62	21.85	22.14
		High		21.36	21.63	21.86
	50%	Low	22.00	20.33	20.66	20.93
		Middle		20.56	20.76	21.01
		High		20.70	20.80	20.98
	100%	/	22.00	20.52	20.76	20.91
Modulation	RB	RB Offset	Tune up	20MHz		
				40140	40640	41140
QPSK	1	Low	24.00	22.12	22.30	22.63
		Middle		22.52	22.75	22.90
		High		22.16	22.56	22.75
	50%	Low	23.00	21.26	21.59	21.88
		Middle		21.52	21.72	21.90
		High		21.54	21.78	21.92
	100%	/	23.00	21.44	21.70	21.90
16QAM	1	Low	23.00	21.19	21.45	21.72
		Middle		21.58	21.83	22.10
		High		21.34	21.60	21.84
	50%	Low	22.00	20.30	20.62	20.90
		Middle		20.53	20.74	20.98
		High		20.67	20.75	20.94
	100%	/	22.00	20.50	20.72	20.88

6.1.3 Radiated

6.1.3.1 Description

This is the test for the maximum radiated power from the EUT.

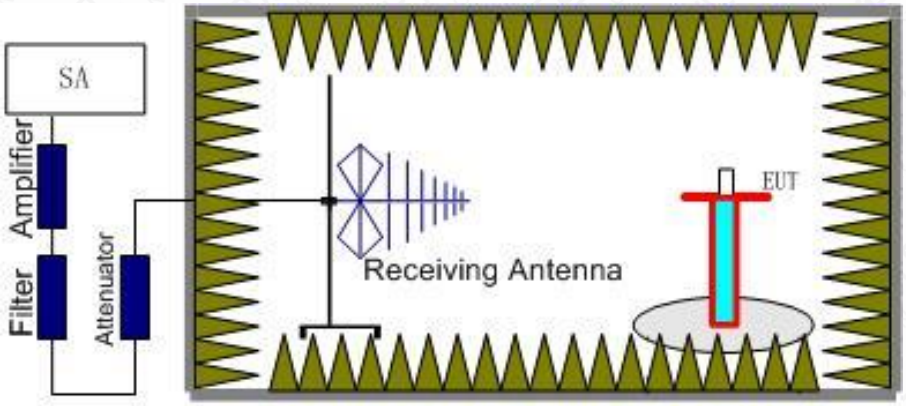
Rule Part 24.232(b) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

Rule Part 27.50(d) specifies “Fixed, mobile, and portable (handheld) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP”.

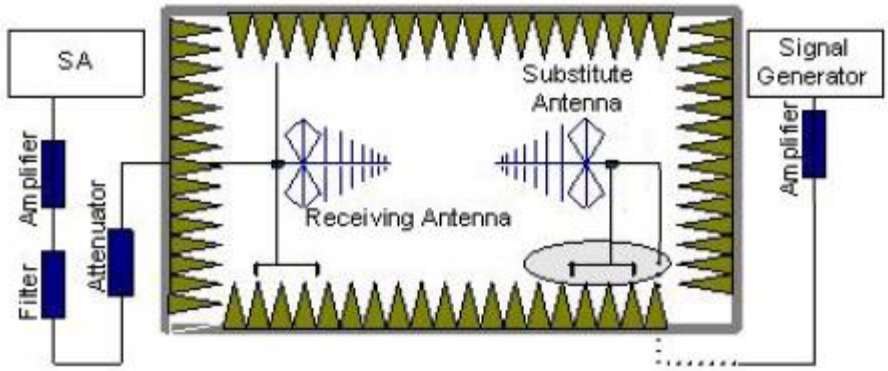
Rule Part 27.50(h)(2) specifies “Mobile stations are limited to 2.0 watts EIRP.”.

Rule Part 27.50(c) specifies “Portable stations (hand-held de-vices) are limited to 3 watts ERP.”

6.1.3.2 Method of Measurement



The measurements procedures in TIA-603E-2016 are used.
1.EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2.The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
3.The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, a substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation

pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna. Adjust the level of the signal generator output until the value of the receiver reaches the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
4.An amplifier should be connected to the Signal Source output port. And the cable should be connected between the amplifier and the substitution antenna.
The cable loss (Pcl), the substitution antenna Gain (Ga) and the amplifier Gain (PAg) should be recorded after test.
The measurement results are obtained as described below:
Power (EIRP) = PMea + PAg - Pcl + Ga
5.This value is EIRP since the measurement is calibrated using an antenna of known gain (unit dBi) and known input power.
6.ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi.

6.1.3.3 Measurement result

LTE Band 2- EIRP 24. 232(b)

Limits: ≤33dBm (2W)

LTE Band 2_1.4MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1850.7	21.84	33.00	H
1880	22.11	33.00	H
1909.3	22.09	33.00	H

LTE Band 2_3MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1851.5	21.82	33.00	H
1880	22.14	33.00	H
1908.5	22.13	33.00	H

LTE Band 2_5MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1852.5	21.80	33.00	H
1880	22.10	33.00	H
1907.5	22.10	33.00	H

LTE Band 2_10MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1855	21.83	33.00	H
1880	22.15	33.00	H
1905	22.14	33.00	H

LTE Band 2_15MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1857.5	21.81	33.00	H
1880	22.14	33.00	H
1902.5	22.11	33.00	H

LTE Band 2_20 MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1860	21.80	33.00	H

1880	22.10	33.00	H
1900	22.09	33.00	H

LTE Band 2_1.4MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1850.7	21.05	33.00	H
1880	21.03	33.00	H
1909.3	20.95	33.00	H

LTE Band 2_3MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1851.5	21.07	33.00	H
1880	21.07	33.00	H
1908.5	20.98	33.00	H

LTE Band 2_5MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1852.5	21.04	33.00	H
1880	21.05	33.00	H
1907.5	20.94	33.00	H

LTE Band 2_10MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1855	21.07	33.00	H
1880	21.07	33.00	H
1905	20.97	33.00	H

LTE Band 2_15MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1857.5	21.04	33.00	H
1880	21.03	33.00	H
1902.5	20.94	33.00	H

LTE Band 2_20 MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1860	21.02	33.00	H
1880	21.00	33.00	H
1900	20.92	33.00	H

LTE Band 4- EIRP 27.50(d)

Limits: ≤30dBm (1W)

LTE Band 4_1.4MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1710.7	25.78	30.00	H
1732.5	25.76	30.00	H
1754.3	25.46	30.00	H

LTE Band 4_3MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1711.5	25.76	30.00	H
1732.5	25.79	30.00	H

1753.5	25.37	30.00	H

LTE Band 4_5MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1712.5	25.74	30.00	H
1732.5	25.75	30.00	H
1752.5	25.34	30.00	H

LTE Band 4_10MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1715	25.77	30.00	H
1732.5	25.80	30.00	H
1750	25.38	30.00	H

LTE Band 4_15MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1717.5	25.75	30.00	H
1732.5	25.79	30.00	H
1747.5	25.35	30.00	H

LTE Band 4_20MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1720	25.74	30.00	H
1732.5	25.75	30.00	H
1745	25.33	30.00	H

LTE Band 4_1.4MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1710.7	24.74	30.00	H
1732.5	24.76	30.00	H
1754.3	24.52	30.00	H

LTE Band 4_3MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1711.5	24.77	30.00	H
1732.5	24.76	30.00	H
1753.5	24.55	30.00	H

LTE Band 4_5MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1712.5	24.74	30.00	H
1732.5	24.74	30.00	H
1752.5	24.52	30.00	H

LTE Band 4_10MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1715	24.76	30.00	H
1732.5	24.78	30.00	H
1750.5	24.54	30.00	H

LTE Band 4_15MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization

1717.5	24.73	30.00	H
1732.5	24.75	30.00	H
1747.5	24.52	30.00	H

LTE Band 4_20MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
1720	24.73	30.00	H
1732.5	24.73	30.00	H
1745	24.47	30.00	H

LTE Band 5- ERP/EIRP 22.913(a)

Limits: ≤38.45dBm (7W)

LTE Band 5_1.4MHz_QPSK

Frequency(MHz)	ERP(dBm)	EIRP(dBm)	Limit(dBm)	Polarization
824.70	17.10	19.25	38.45	H
836.50	17.17	19.32	38.45	H
848.30	17.13	19.28	38.45	H

LTE Band 5_3MHz_QPSK

Frequency(MHz)	ERP(dBm)	EIRP(dBm)	Limit(dBm)	Polarization
825.50	17.09	19.24	38.45	H
836.50	17.14	19.29	38.45	H
847.50	17.11	19.26	38.45	H

LTE Band 5_5MHz_QPSK

Frequency(MHz)	ERP(dBm)	EIRP(dBm)	Limit(dBm)	Polarization
826.50	17.07	19.22	38.45	H
836.50	17.13	19.28	38.45	H
846.50	17.08	19.23	38.45	H

LTE Band 5_10MHz_QPSK

Frequency(MHz)	ERP(dBm)	EIRP(dBm)	Limit(dBm)	Polarization
829.00	17.06	19.21	38.45	H
836.50	17.09	19.24	38.45	H
844.00	17.06	19.21	38.45	H

LTE Band 5_1.4MHz_16QAM

Frequency(MHz)	ERP(dBm)	EIRP(dBm)	Limit(dBm)	Polarization
824.70	16.14	18.29	38.45	H
836.50	16.16	18.31	38.45	H
848.30	16.19	18.34	38.45	H

LTE Band 5_3MHz_16QAM

Frequency(MHz)	ERP(dBm)	EIRP(dBm)	Limit(dBm)	Polarization
825.50	16.16	18.31	38.45	H
836.50	16.18	18.33	38.45	H
847.50	16.21	18.36	38.45	H

LTE Band 5_5MHz_16QAM

Frequency(MHz)	ERP(dBm)	EIRP(dBm)	Limit(dBm)	Polarization
826.50	16.13	18.28	38.45	H

836.50	16.15	18.30	38.45	H
846.50	16.19	18.34	38.45	H

LTE Band 5_10MHz_16QAM

Frequency(MHz)	ERP(dBm)	EIRP(dBm)	Limit(dBm)	Polarization
829.00	16.09	18.24	38.45	H
836.50	16.13	18.28	38.45	H
844.00	16.14	18.29	38.45	H

LTE Band 7- EIRP 27.50(h)(2)

Limits: ≤33 dBm (2W)

LTE Band 7_5MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2502.5	24.04	33.00	H
2535	23.94	33.00	H
2567.5	24.13	33.00	H

LTE Band 7_10MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2505	24.07	33.00	H
2535	23.99	33.00	H
2565	24.17	33.00	H

LTE Band 7_15MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2507.5	24.05	33.00	H
2535	23.98	33.00	H
2562.5	24.14	33.00	H

LTE Band 7_20MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2510	24.04	33.00	H
2535	23.94	33.00	H
2560	24.12	33.00	H

LTE Band 7_5MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2502.5	22.92	33.00	H
2535	22.99	33.00	H
2567.5	22.85	33.00	H

LTE Band 7_10MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2505	22.95	33.00	H
2535	23.03	33.00	H
2565	22.88	33.00	H

LTE Band 7_15MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2507.5	22.92	33.00	H
2535	23.00	33.00	H

2562.5	22.86	33.00	H

LTE Band 7_20MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2510	22.90	33.00	H
2535	22.98	33.00	H
2560	22.82	33.00	H

LTE Band 17- ERP 27.50(c)(10)

Limits: ≤34.77dBm (3W)

LTE Band 17_5MHz_QPSK

Frequency(MHz)	ERP(dBm)	Limit(dBm)	Polarization
706.5	17.80	34.77	H
710	17.84	34.77	H
713.5	17.69	34.77	H

LTE Band 17_10MHz_QPSK

Frequency(MHz)	ERP(dBm)	Limit(dBm)	Polarization
709	17.79	34.77	H
710	17.80	34.77	H
711	17.67	34.77	H

LTE Band 17_5MHz_16QAM

Frequency(MHz)	ERP(dBm)	Limit(dBm)	Polarization
706.5	17.06	34.77	H
710	17.14	34.77	H
713.5	17.09	34.77	H

LTE Band 17_10MHz_16QAM

Frequency(MHz)	ERP(dBm)	Limit(dBm)	Polarization
709	17.02	34.77	H
710	17.12	34.77	H
711	17.05	34.77	H

TE Band 38- EIRP 27.50(h)(2)

Limits: ≤33 dBm (2W)

LTE Band 38_5MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2572.5	23.55	33.00	H
2595	23.83	33.00	H
2617.5	24.11	33.00	H

LTE Band 38_10MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2575	23.57	33.00	H
2595	23.87	33.00	H

2615	24.15	33.00	H

LTE Band 38_15MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2577.5	23.54	33.00	H
2595	23.86	33.00	H
2612.5	24.12	33.00	H

LTE Band 38_20MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2580	23.52	33.00	H
2595	23.82	33.00	H
2610	24.10	33.00	H

LTE Band 38_5MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2572.5	22.50	33.00	H
2595	22.88	33.00	H
2617.5	23.32	33.00	H

LTE Band 38_10MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2575	22.52	33.00	H
2595	22.92	33.00	H
2615	23.35	33.00	H

LTE Band 38_15MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2577.5	22.49	33.00	H
2595	22.89	33.00	H
2612.5	23.33	33.00	H

LTE Band 38_20MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2580	22.45	33.00	H
2595	22.87	33.00	H
2610	23.29	33.00	H

LTE Band 41- EIRP 27.50(h)(2)

Limits: ≤33 dBm (2W)

LTE Band 41_5MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2537.5	24.72	33.00	H
2595	24.95	33.00	H
2652.5	25.11	33.00	H

LTE Band 41_10MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2540	24.75	33.00	H
2595	25.00	33.00	H
2650	25.15	33.00	H

LTE Band 41_15MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2542.5	24.73	33.00	H
2595	24.99	33.00	H
2674.5	25.12	33.00	H

LTE Band 41_20MHz_QPSK

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2545	24.72	33.00	H
2595	24.95	33.00	H
2645	25.10	33.00	H

LTE Band 41_5MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2537.5	23.83	33.00	H
2595	24.04	33.00	H
2652.5	24.33	33.00	H

LTE Band 41_10MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2540	23.85	33.00	H
2595	24.08	33.00	H
2650	24.36	33.00	H

LTE Band 41_15MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2542.5	23.82	33.00	H
2595	24.05	33.00	H
2674.5	24.34	33.00	H

LTE Band 41_20MHz_16QAM

Frequency(MHz)	EIRP(dBm)	Limit(dBm)	Polarization
2545	23.78	33.00	H
2595	24.03	33.00	H
2645	24.30	33.00	H

ANALYZER SETTINGS:

RBW = VBW = 8MHz for occupied bandwdiths equal to or less than 5MHz.

RBW = VBW = 20MHz for occupied bandwidths equal to or greater than 10MHz.

6.2 Emission Limt

Reference

CFR 2.1051,2.1053,22.917,24.238(a), 27.53(g), 27.53(h), 27.53(m),90.669.
Rule RSS-130 4.7; Rule RSS-132 5.5; Rule RSS-133 6.5; Rule RSS-139 6.6; Rule RSS-199 4.5

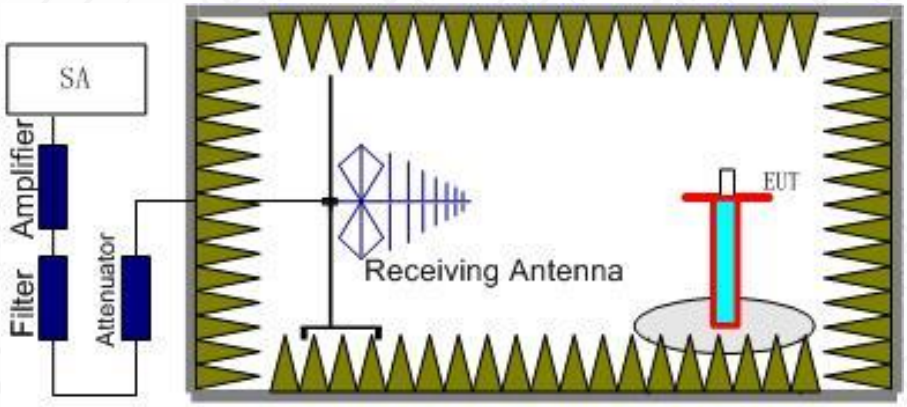
6.2.1 Measurement Method

The measurements procedures in TIA-603E-2016 are used. This measurement is carried out in fully-anechoic chamber FAC-3.

The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier. The resolution bandwidth is set 1MHz as outlined in Part 27.53(g), Part 27.53(h), Part 27.53(m). The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the LTE Bands 7.

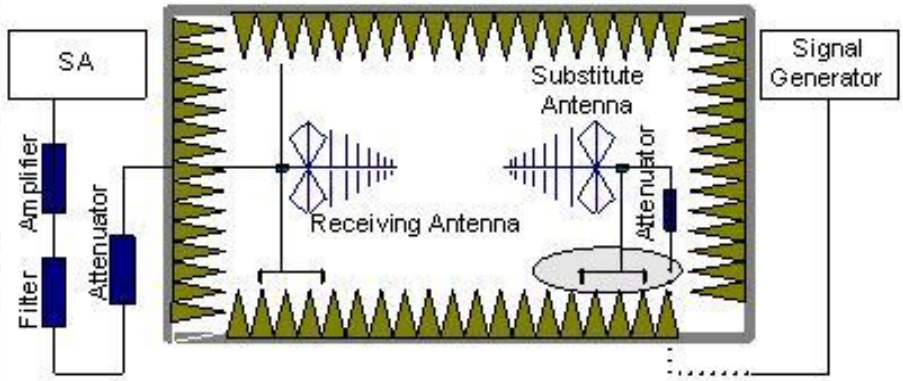
The procedure of radiated spurious emissions is as follows:

1.Below 1 GHz, EUT was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna. Above 1 GHz, EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna.EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector.



2.The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).

3.The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna. Adjust the level of the signal generator output until the value of the receiver reaches the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4.The Path loss (Ppl) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (Ga) should be recorded after test.

An amplifier should be connected in for the test.

The Path loss (Ppl) is the summation of the cable loss and the gain of the amplifier.

The measurement results are obtained as described below:

Power (EIRP) =PMea- Ppl + Ga

5.This value is EIRP since the measurement is calibrated using an antenna of known gain (unit: dBi) and known input power.

6.ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi.

6.2.2 Measurement Limit

Part 27.53(g),27.53(h), 27.53(m) state that on any frequency outside frequency band of the US Cellular/PCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log (P) dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

According to KDB 971168 6, a relaxation of the reference bandwidth is often provided for measurements within a specified frequency range at the edge of the authorized frequency block/band. This is often implemented by permitting the use of a narrower RBW (typically limited to a minimum RBW of 1% of the OBW) for measuring the out-of-band emissions without a requirement to integrate the result over the full reference bandwidth.

Part 27.53(m) states that 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.

Rule RSS-132: 5.5 specifies that " In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p (watts).
After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required. Limit -13 dBm
Rule RSS-133 6.5 specifies that " In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p(watts).
After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10 p(watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required." Limit -13 dBm
Rule RSS-139 6.6 specifies that "In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block,Footnote2 which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least 43 + 10 log10 p (watts) dB.
After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least 43 + 10 log10 p (watts) dB. Limit -13 dBm

6.2.3 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the LTE Bands 5.It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the LTE Bands 5. Into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this. The evaluated frequency range is from 30MHz to 26GHz.

BAND	Channel		Result
2	L	18607	Pass
	M	18900	Pass
	H	19193	Pass
4	L	19957	Pass
	M	20175	Pass
	H	20393	Pass
5	L	20407	Pass
	M	20525	Pass

	H	20643	Pass
7	L	20775	Pass
	M	21100	Pass
	H	21425	Pass
17	L	23755	Pass
	M	23790	Pass
	H	23825	Pass
38	L	37775	Pass
	M	38000	Pass
	H	38225	Pass
41	L	40065	Pass
	M	40640	Pass
	H	41215	Pass

Standard version
Main Supply
RSE-LTE41-S03aa-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3928.4	-51.21	6.8	8.6	-49.41	-13	H
5152.4	-48.46	7.9	9.4	-46.96	-13	H
7628.4	-49.54	9.7	11.8	-47.44	-13	V
10372.0	-43.86	11.6	12.3	-43.16	-13	V
13222.5	-39.75	13.0	12.3	-40.45	-13	H
16003.2	-33.41	15.0	12.3	-36.11	-13	H

RSE-LTE41-S03aa-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3880.8	-51.81	6.8	8.6	-50.01	-13	H
5107.2	-48.25	7.9	9.6	-46.55	-13	H
7581.6	-49.1	9.7	11.6	-47.2	-13	V

10610.8	-45.14	11.6	12.3	-44.44	-13	H
12893.5	-39.35	13.0	12.3	-40.05	-13	H
15387.2	-35.66	14.4	12.3	-37.76	-13	H

RSE-LTE41-S03aa-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3986.0	-52.01	6.9	8.6	-50.31	-13	H
5374.8	-47.53	8.1	9.4	-46.23	-13	H
7631.2	-49.51	9.7	11.8	-47.41	-13	V
10740.4	-30.99	11.7	12.3	-30.39	-13	V
12839.2	-40.27	12.5	12.3	-40.47	-13	H
16113.5	-33.46	15.0	12.3	-36.16	-13	H

RSE-LTE17-S03aa-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
1419.5	-52.55	4.0	5.3	-51.25	-13	H
2130.0	-40.4	5.0	5.1	-40.3	-13	H
2835.0	-42.13	5.8	6.1	-41.83	-13	H
3560.0	-54.52	6.4	7.8	-53.12	-13	H
4284.8	-54.35	7.1	8.9	-52.55	-13	H
4966.0	-53.73	7.7	9.6	-51.83	-13	H

RSE-LTE17-S03aa-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
1412.9	-50.09	4.0	5.3	-48.79	-13	H
2121.2	-41.37	4.9	4.5	-41.77	-13	H
2816.9	-41.34	5.7	6.1	-40.94	-13	V
3530.0	-55.15	6.4	7.8	-53.75	-13	V
4246.4	-52.53	7.1	8.9	-50.73	-13	V
4982.4	-53.39	7.8	9.6	-51.59	-13	H

RSE-LTE17-S03aa-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
1427.5	-51.58	4.1	5.3	-50.38	-13	V
2134.6	-43.61	5.0	5.1	-43.51	-13	H
2892.3	-41.06	5.8	6.7	-40.16	-13	H
3581.6	-54.51	6.5	7.8	-53.21	-13	H
4348.8	-54.29	7.2	8.9	-52.59	-13	H
5159.6	-52.31	7.9	9.4	-50.81	-13	V

RSE-LTE7-S03aa-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3758.0	-51.06	6.6	7.9	-49.76	-13	V
5093.6	-47.93	7.9	9.6	-46.23	-13	H
7450.4	-49.2	9.7	11.6	-47.3	-13	V
9958.4	-46.5	11.2	12.5	-45.2	-13	H
12202.2	-41.41	12.6	12.3	-41.71	-13	H
15320.8	-35.66	14.4	12.3	-37.76	-13	V

RSE-LTE7-S03aa-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3574.8	-50.33	6.4	7.8	-48.93	-13	V
5175.2	-47.7	8.0	9.4	-46.3	-13	V
6861.6	-50.23	9.2	10.9	-48.53	-13	H
8834.8	-49.28	10.4	12.7	-46.98	-13	H
10797.2	-44.69	11.7	12.3	-44.09	-13	H
13292.5	-39.08	13.6	12.3	-40.38	-13	V

RSE-LTE7-S03aa-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3979.2	-52.63	6.9	8.6	-50.93	-13	H
5243.6	-47.24	8.0	9.4	-45.84	-13	H

7659.6	-49.98	9.7	11.8	-47.88	-13	V
10290.4	-44.81	11.5	12.3	-44.01	-13	V
12811.2	-40.32	12.5	12.3	-40.52	-13	H
15852.8	-32.51	15.0	12.3	-35.21	-13	H

RSE-LTE5-S03aa-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
2748.1	-42.7	5.7	6.1	-42.3	-13	V
3485.6	-54.48	6.4	7.8	-53.08	-13	H
4426.8	-54.06	7.3	8.7	-52.66	-13	H
5618.4	-53.86	8.3	9.8	-52.36	-13	H
7105.3	-53.06	9.4	11.1	-51.36	-13	H
8940.4	-51.4	10.4	12.6	-49.2	-13	H

RSE-LTE5-S03aa-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
2689.2	-42.77	5.6	6.1	-42.27	-13	H
3694.8	-53.28	6.6	7.9	-51.98	-13	V
4284.0	-53.43	7.1	8.9	-51.63	-13	H
5223.2	-51.15	8.0	9.4	-49.75	-13	H
6305.2	-52.46	8.8	10.3	-50.96	-13	V
7642.9	-53.06	9.7	11.8	-50.96	-13	V

RSE-LTE5-S03aa-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
2428.5	-32.98	5.3	5.6	-32.68	-13	V
3535.6	-53.66	6.4	7.8	-52.26	-13	H
4431.2	-53.83	7.3	8.7	-52.43	-13	H
5662.8	-54.52	8.3	10.2	-52.62	-13	V
6772.4	-51.79	9.2	10.9	-50.09	-13	V

8392.3	-53.21	10.2	12.6	-50.81	-13	V

RSE-LTE4-S03aa-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3464.4	-52.63	6.4	7.8	-51.23	-13	H
4662.0	-53.58	7.5	9.0	-52.08	-13	H
6248.8	-52.47	8.8	10.3	-50.97	-13	H
8766.8	-51.85	10.4	12.7	-49.55	-13	H
11663.6	-46.21	12.4	12.3	-46.31	-13	V
15765.6	-39.8	14.9	12.3	-42.4	-13	H

RSE-LTE4-S03aa-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3584.0	-53.64	6.5	7.8	-52.34	-13	V
5142.8	-52.43	7.9	9.4	-50.93	-13	H
6850.4	-51.24	9.2	10.9	-49.54	-13	V
9254.0	-50.58	10.7	12.7	-48.58	-13	V
12241.8	-45.8	12.6	12.3	-46.1	-13	V
16790.4	-38.21	15.8	12.3	-41.71	-13	H

RSE-LTE4-S03aa-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3505.2	-52.3	6.4	7.8	-50.9	-13	V
4742.8	-53.42	7.5	9.0	-51.92	-13	H
6257.6	-51.45	8.8	10.3	-49.95	-13	H
8711.6	-52.68	10.4	12.7	-50.38	-13	H
11683.2	-45.7	12.4	12.3	-45.8	-13	V
15688.6	-40.76	14.5	12.3	-42.96	-13	H

RSE-LTE2-S03aa-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization

3760.0	-51	6.6	7.9	-49.7	-13	H
4964.4	-53.38	7.7	9.6	-51.48	-13	H
6691.2	-53.2	9.1	10.9	-51.4	-13	V
8580.8	-53.22	10.3	12.6	-50.92	-13	H
10794.8	-47.68	11.7	12.3	-47.08	-13	V
13682.4	-44.03	13.9	12.3	-45.63	-13	V

RSE-LTE2-S03aa-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3703.6	-52.87	6.6	7.9	-51.57	-13	H
5558.8	-50.37	8.2	9.8	-48.77	-13	V
7728.0	-52.86	9.8	11.8	-50.86	-13	V
10154.4	-50.52	11.3	12.5	-49.32	-13	V
13212.0	-45.57	13.0	12.3	-46.27	-13	V
17060.6	-37.78	16.0	12.3	-41.48	-13	H

RSE-LTE2-S03aa-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3814.8	-46.94	6.7	7.9	-45.74	-13	H
5210.8	-50.1	8.0	9.4	-48.7	-13	V
6780.4	-52.82	9.2	10.9	-51.12	-13	H
8874.8	-52.13	10.4	12.7	-49.83	-13	V
11644.0	-45.16	12.2	12.3	-45.06	-13	V
15706.8	-40.28	14.5	12.3	-42.48	-13	H

Secondary Supply

RSE-LTE41-S06aa-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
4075.2	-53.05	7.0	8.6	-51.45	-13	V
5375.6	-46.96	8.1	9.8	-45.26	-13	H
7789.2	-49.36	9.9	11.8	-47.46	-13	H

10750.0	-34.03	11.7	12.3	-33.43	-13	V
13824.5	-42.14	13.8	12.3	-43.64	-13	H
16512.5	-33.77	14.6	12.3	-36.07	-13	H

RSE-LTE41-S06aa-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3892.0	-52.01	6.8	8.6	-50.21	-13	H
5513.6	-50.78	8.2	9.8	-49.18	-13	V
7807.2	-48.09	9.9	11.8	-46.19	-13	V
10723.6	-43.54	11.7	12.3	-42.94	-13	V
14281.2	-39.99	13.6	12.3	-41.29	-13	V
16890.5	-30.79	16.3	12.3	-34.79	-13	V

RSE-LTE41-S06aa-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3806.4	-50.81	6.7	7.9	-49.61	-13	H
5243.6	-48.07	8.0	9.4	-46.67	-13	H
7026.0	-50.02	9.4	11.1	-48.32	-13	V
9305.2	-46.82	10.7	12.7	-44.82	-13	V
11990.5	-41.83	12.6	12.3	-42.13	-13	V
15436.2	-34.09	14.4	12.3	-36.19	-13	H

Third Supply

RSE-LTE41-S03aa-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3840.8	-49.67	6.7	7.9	-48.47	-13	H
5377.6	-45.85	8.1	9.8	-44.15	-13	V
8062.8	-47.19	9.9	12.2	-44.89	-13	V
10750.0	-30.99	11.7	12.3	-30.39	-13	V
13840.2	-40.34	13.8	12.3	-41.84	-13	V
16782.0	-30.09	15.8	12.3	-33.59	-13	H

RSE-LTE41-S03aa-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3578.0	-52	6.5	7.8	-50.7	-13	V
5192.8	-46.62	8.0	9.4	-45.22	-13	H
7374.0	-48.63	9.6	11.4	-46.83	-13	V
9931.6	-46.81	11.0	12.5	-45.31	-13	H
12911.0	-40.04	13.0	12.3	-40.74	-13	H
16831.0	-30.56	15.8	12.3	-34.06	-13	H

RSE-LTE41-S03aa-M-2

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3614.4	-51.3	6.5	7.8	-50	-13	V
5142.0	-47.72	7.9	9.4	-46.22	-13	H
7092.0	-49.79	9.4	11.1	-48.09	-13	H
9827.6	-46.06	11.0	12.5	-44.56	-13	H
13086.0	-41.3	13.0	12.3	-42	-13	H
17076.0	-30.48	16.0	12.3	-34.18	-13	H

Scan code version supported:
Main Supply
RSE-LTE2-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3815.2	-40.46	6.7	7.9	-39.26	-13	H
5722.8	-37.42	8.5	10.2	-35.72	-13	V
7805.6	-52.63	9.9	11.8	-50.73	-13	H
10255.6	-51.03	11.5	12.3	-50.23	-13	H
12818.6	-46.66	12.5	12.3	-46.86	-13	H
16888.4	-39.85	16.3	12.3	-43.85	-13	V

RSE-LTE2-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization

3701.6	-44.78	6.6	7.9	-43.48	-13	H
4590.4	-53.22	7.4	8.7	-51.92	-13	H
5553.2	-38.11	8.2	9.8	-36.51	-13	H
7868.8	-53.4	9.9	11.8	-51.5	-13	H
10315.2	-50.43	11.5	12.3	-49.63	-13	H
12741.6	-44.24	12.7	12.3	-44.64	-13	H

RSE-LTE2-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3759.2	-41.99	6.6	7.9	-40.69	-13	H
5640.4	-37.05	8.3	10.2	-35.15	-13	V
7572.8	-51.4	9.7	11.6	-49.5	-13	V
9400.0	-48.96	10.7	12.7	-46.96	-13	V
12299.2	-46.99	12.7	12.3	-47.39	-13	V
16033.0	-41.92	15.0	12.3	-44.62	-13	H

RSE-LTE4-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3504.8	-51.62	6.4	7.8	-50.22	-13	H
4846.4	-53	7.6	9.0	-51.6	-13	V
6622.4	-52.74	9.1	10.6	-51.24	-13	H
9132.4	-51.94	10.5	12.6	-49.84	-13	H
12222.2	-45.5	12.6	12.3	-45.8	-13	H
16854.8	-39.61	16.3	12.3	-43.61	-13	H

RSE-LTE4-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3515.2	-53.57	6.4	7.8	-52.17	-13	H
4707.6	-53.81	7.5	9.0	-52.31	-13	H
6028.4	-53.16	8.6	10.2	-51.56	-13	V

7800.0	-51.7	9.9	11.8	-49.8	-13	V
10627.6	-49.27	11.6	12.3	-48.57	-13	H
15722.2	-42.42	14.5	12.3	-44.62	-13	H

RSE-LTE4-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3464.8	-51.31	6.4	7.8	-49.91	-13	H
4674.8	-53.83	7.5	9.0	-52.33	-13	H
6408.0	-51.93	8.9	10.6	-50.23	-13	V
8734.4	-52.96	10.4	12.7	-50.66	-13	H
12299.2	-46.54	12.7	12.3	-46.94	-13	H
16796.0	-39.71	15.8	12.3	-43.21	-13	H

RSE-LTE5-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
1693.0	-40.1	4.5	4.7	-39.9	-13	H
2455.8	-38.6	5.4	5.6	-38.4	-13	V
3384.4	-53.18	6.3	7.8	-51.68	-13	H
4370.8	-54.57	7.2	8.9	-52.87	-13	H
5924.4	-52.92	8.5	10.2	-51.22	-13	H
9311.8	-46.86	10.7	12.7	-44.86	-13	V

RSE-LTE5-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
1204.9	-53.69	3.7	3.0	-54.39	-13	H
1652.8	-38.65	4.5	4.7	-38.45	-13	H
2419.6	-37.12	5.3	5.6	-36.82	-13	H
3605.2	-54.61	6.5	7.8	-53.31	-13	H
4960.4	-54.08	7.7	9.6	-52.18	-13	H
7031.5	-52.29	9.4	11.1	-50.59	-13	H

RSE-LTE5-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
1673.2	-40.83	4.5	4.7	-40.63	-13	H
2241.2	-45.67	5.1	5.1	-45.67	-13	H
2859.2	-40.06	5.8	6.1	-39.76	-13	H
3707.6	-54.17	6.6	7.9	-52.87	-13	V
4920.4	-53.03	7.7	9.6	-51.13	-13	H
6968.8	-53.63	9.3	11.1	-51.83	-13	V

RSE-LTE7-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3644.4	-51.87	6.6	7.9	-50.57	-13	H
4821.2	-49.79	7.6	9.0	-48.39	-13	H
6243.6	-50.14	8.8	10.3	-48.64	-13	H
7982.0	-49.5	9.9	12.2	-47.2	-13	H
10270.0	-37.4	11.5	12.3	-36.6	-13	V
14326.8	-39.3	13.6	12.3	-40.6	-13	V

RSE-LTE7-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
5026.0	-49.43	7.8	9.6	-47.63	-13	V
6374.4	-49.6	8.8	10.3	-48.1	-13	H
8183.6	-49.37	10.1	12.4	-47.07	-13	H
10010.8	-39.32	11.2	12.5	-38.02	-13	V
12645.0	-41.15	12.8	12.3	-41.65	-13	H
16852.0	-30.32	16.3	12.3	-34.32	-13	H

RSE-LTE7-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
4674.0	-49.62	7.5	9.0	-48.12	-13	H
5886.8	-50.8	8.5	10.2	-49.1	-13	V

7246.4	-50.06	9.6	11.4	-48.26	-13	V
8704.0	-49.26	10.4	12.7	-46.96	-13	V
10270.4	-38.14	11.5	12.3	-37.34	-13	V
15261.2	-35.6	14.4	12.3	-37.7	-13	H

RSE-LTE17-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
1474.9	-54.51	4.1	5.3	-53.31	-13	V
2140.4	-45.22	5.0	5.1	-45.12	-13	H
2809.2	-40.78	5.7	6.1	-40.38	-13	V
3566.0	-53.19	6.4	7.8	-51.79	-13	H
4892.8	-53.74	7.7	9.6	-51.84	-13	V
6401.6	-52.41	8.9	10.6	-50.71	-13	H

RSE-LTE17-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
1893.7	-47.81	4.7	4.5	-48.01	-13	V
2579.2	-43.2	5.5	5.6	-43.1	-13	V
3529.6	-53.08	6.4	7.8	-51.68	-13	H
4364.4	-54.59	7.2	8.9	-52.89	-13	V
5474.4	-53.36	8.1	9.8	-51.66	-13	V
6886.0	-53.39	9.3	11.1	-51.59	-13	V

RSE-LTE17-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
1346.8	-51.47	3.9	3.0	-52.37	-13	H
1785.4	-48.68	4.5	4.7	-48.48	-13	V
2140.4	-36.91	5.0	5.1	-36.81	-13	H
2636.5	-42.12	5.5	6.1	-41.52	-13	H
3566.0	-48.25	6.4	7.8	-46.85	-13	H

6274.8	-52.53	8.8	10.3	-51.03	-13	V

RSE-LTE41-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3798.4	-50.63	6.7	7.9	-49.43	-13	H
5374.4	-48.66	8.1	9.4	-47.36	-13	V
6621.6	-48.8	9.1	10.6	-47.3	-13	V
8062.0	-46.46	9.9	12.2	-44.16	-13	H
10750.4	-30.78	11.7	12.3	-30.18	-13	H
14480.8	-40.02	14.2	12.3	-41.92	-13	V

RSE-LTE41-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3252.0	-51.92	6.1	6.9	-51.12	-13	H
4426.8	-50.55	7.3	8.7	-49.15	-13	H
6072.8	-49.73	8.6	10.2	-48.13	-13	V
8380.4	-50.5	10.2	12.6	-48.1	-13	V
11686.0	-42.2	12.4	12.3	-42.3	-13	V
16003.2	-32.68	15.0	12.3	-35.38	-13	H

RSE-LTE41-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3516.8	-52.18	6.4	7.8	-50.78	-13	V
4973.2	-50	7.7	9.6	-48.1	-13	H
6998.4	-50.04	9.3	11.1	-48.24	-13	V
9545.2	-47.36	10.7	12.7	-45.36	-13	H
12781.5	-40.64	12.5	12.3	-40.84	-13	H
16782.0	-30.19	15.8	12.3	-33.69	-13	H

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Main Supply

RSE-LTE41-M-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3963.2	-52.63	6.8	8.6	-50.83	-13	H
5190.4	-47.62	8.0	9.4	-46.22	-13	H
7776.0	-49.95	9.9	11.8	-48.05	-13	H
10370.8	-42.97	11.6	12.3	-42.27	-13	H
12982.8	-40.97	13.2	12.3	-41.87	-13	H
15660.2	-36.39	14.5	12.3	-38.59	-13	H

RSE-LTE41-L-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3994.0	-52.53	6.9	8.6	-50.83	-13	V
5210.0	-47.15	8.0	9.4	-45.75	-13	V
7804.0	-49.49	9.9	11.8	-47.59	-13	V
10160.8	-46.47	11.3	12.5	-45.27	-13	H
12223.2	-40.85	12.6	12.3	-41.15	-13	H
15352.2	-34.96	14.4	12.3	-37.06	-13	H

RSE-LTE41-H-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3956.0	-51.5	6.8	8.6	-49.7	-13	H
5376.8	-47.46	8.1	9.8	-45.76	-13	V
8066.0	-46.96	9.9	12.2	-44.66	-13	V
10750.4	-31.32	11.7	12.3	-30.72	-13	H
13465.8	-39.6	13.7	12.3	-41	-13	V
16108.2	-33.26	15.0	12.3	-35.96	-13	H

RSE-LTE17-M-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
1419.8	-40.51	4.0	5.3	-39.21	-13	H
2130.0	-47.48	5.0	5.1	-47.38	-13	H

2840.8	-42.27	5.8	6.1	-41.97	-13	V
3548.4	-54.29	6.4	7.8	-52.89	-13	H
4162.4	-55.62	7.0	8.9	-53.72	-13	H
4965.6	-55.13	7.7	9.6	-53.23	-13	H

RSE-LTE17-L-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
1413.3	-38.99	4.0	5.3	-37.69	-13	H
2119.6	-47.4	4.9	4.5	-47.8	-13	H
2829.6	-42.22	5.8	6.1	-41.92	-13	V
3546.0	-53.92	6.4	7.8	-52.52	-13	H
4227.6	-54.3	7.1	8.9	-52.5	-13	H
4962.4	-54.92	7.7	9.6	-53.02	-13	H

RSE-LTE17-H-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
1427.1	-39.31	4.1	5.3	-38.11	-13	H
2140.8	-47.3	5.0	5.1	-47.2	-13	V
2855.8	-42.02	5.8	6.1	-41.72	-13	V
3566.0	-54.07	6.4	7.8	-52.67	-13	V
4277.2	-54.47	7.1	8.9	-52.67	-13	H
4985.6	-55.15	7.8	9.6	-53.35	-13	H

RSE-LTE7-M-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
5166.8	-48.12	7.9	9.4	-46.62	-13	H
7295.2	-50.3	9.6	11.4	-48.5	-13	V
8997.6	-48.43	10.4	12.6	-46.23	-13	H
10744.0	-44.44	11.7	12.3	-43.84	-13	V
13387.0	-39.27	13.7	12.3	-40.67	-13	V

15854.5	-32.67	15.0	12.3	-35.37	-13	H

RSE-LTE7-L-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
5224.8	-47.36	8.0	9.4	-45.96	-13	H
7370.0	-48.52	9.6	11.4	-46.72	-13	V
10005.6	-44.61	11.2	12.5	-43.31	-13	V
12135.8	-40.96	12.6	12.3	-41.26	-13	H
14150.0	-40.7	14.0	12.3	-42.4	-13	V
15485.2	-34.5	14.5	12.3	-36.7	-13	H

RSE-LTE7-H-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
5192.8	-47.04	8.0	9.4	-45.64	-13	H
6896.8	-50.72	9.3	11.1	-48.92	-13	V
8523.6	-50.6	10.3	12.6	-48.3	-13	H
10270.0	-40.72	11.5	12.3	-39.92	-13	V
12277.5	-40.78	12.7	12.3	-41.18	-13	V
14801.0	-37.57	14.3	12.3	-39.57	-13	H

RSE-LTE5-M-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
1672.9	-50.77	4.5	4.7	-50.57	-13	V
2509.2	-39.07	5.4	5.6	-38.87	-13	V
3180.4	-52.9	6.1	6.9	-52.1	-13	H
4050.0	-53.57	6.9	8.6	-51.87	-13	H
4868.0	-53.33	7.6	9.0	-51.93	-13	H
5676.4	-53.66	8.5	10.2	-51.96	-13	H

RSE-LTE5-L-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization

1650.0	-49.15	4.5	4.7	-48.95	-13	V
2474.2	-34.91	5.4	5.6	-34.71	-13	V
3439.6	-53.91	6.4	7.8	-52.51	-13	V
4123.2	-51.94	7.0	8.6	-50.34	-13	H
5196.4	-51.15	8.0	9.4	-49.75	-13	V
6319.2	-51.58	8.8	10.3	-50.08	-13	V

RSE-LTE5-H-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
1720.3	-50.52	4.5	4.7	-50.32	-13	H
2467.7	-37.94	5.4	5.6	-37.74	-13	H
3188.0	-52.83	6.1	6.9	-52.03	-13	V
4242.0	-52.05	7.1	8.9	-50.25	-13	H
5194.8	-50.43	8.0	9.4	-49.03	-13	H
6348.4	-51.71	8.8	10.3	-50.21	-13	H

RSE-LTE4-M-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3854.8	-53.17	6.7	7.9	-51.97	-13	H
5148.4	-50.55	7.9	9.4	-49.05	-13	V
6402.8	-52.33	8.9	10.6	-50.63	-13	V
7876.8	-53.2	9.9	12.2	-50.9	-13	V
9290.0	-51.79	10.7	12.7	-49.79	-13	H
11106.4	-46.01	12.1	12.3	-45.81	-13	V

RSE-LTE4-L-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3650.0	-53.33	6.6	7.9	-52.03	-13	V
4655.6	-53.38	7.5	9.0	-51.88	-13	H
5626.8	-53.34	8.3	10.2	-51.44	-13	H

6843.2	-51.62	9.2	10.9	-49.92	-13	V
8135.2	-53	10.0	12.4	-50.6	-13	H
9398.0	-50.98	10.7	12.7	-48.98	-13	V

RSE-LTE4-H-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3731.6	-53	6.6	7.9	-51.7	-13	H
4578.8	-52.78	7.4	8.7	-51.48	-13	H
5588.4	-52.17	8.3	9.8	-50.67	-13	H
7017.2	-51.35	9.3	11.1	-49.55	-13	H
8344.0	-53.56	10.1	12.4	-51.26	-13	V
10526.4	-47.6	11.6	12.3	-46.9	-13	V

RSE-LTE2-M-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3759.6	-48.71	6.6	7.9	-47.41	-13	V
5125.2	-51.69	7.9	9.4	-50.19	-13	V
6230.4	-52.63	8.8	10.3	-51.13	-13	V
7519.6	-50.08	9.7	11.6	-48.18	-13	V
9743.6	-50.7	10.9	12.7	-48.9	-13	H
12211.0	-45.22	12.6	12.3	-45.52	-13	V

RSE-LTE2-L-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3700.8	-51.61	6.6	7.9	-50.31	-13	V
5193.6	-51.09	8.0	9.4	-49.69	-13	H
7402.4	-49.86	9.7	11.6	-47.96	-13	V
9478.0	-50.63	10.7	12.7	-48.63	-13	V
11103.6	-43.22	12.1	12.3	-43.02	-13	V
13140.6	-46.66	13.0	12.3	-47.36	-13	H

RSE-LTE2-H-S08aa

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3818.4	-48.72	6.7	7.9	-47.52	-13	V
5222.8	-50.27	8.0	9.4	-48.87	-13	H
6723.6	-52.71	9.1	10.9	-50.91	-13	V
8646.0	-51.98	10.3	12.7	-49.58	-13	V
10488.0	-50.15	11.6	12.3	-49.45	-13	H
13069.2	-46.71	13.0	12.3	-47.41	-13	H

Secondary Supply

RSE-LTE41-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3979.6	-52.02	6.9	8.6	-50.32	-13	H
5375.2	-49.33	8.1	9.8	-47.63	-13	H
8054.4	-50.5	9.9	12.2	-48.2	-13	V
10750.4	-40.35	11.7	12.3	-39.75	-13	V
13437.8	-39.49	13.7	12.3	-40.89	-13	H
16131.0	-33.67	15.0	12.3	-36.37	-13	H

RSE-LTE41-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3939.6	-52.23	6.8	8.6	-50.43	-13	H
5321.2	-49.46	8.0	9.4	-48.06	-13	H
7849.6	-49.57	9.9	11.8	-47.67	-13	V
10287.6	-46.57	11.5	12.3	-45.77	-13	H
12338.8	-39.93	12.7	12.3	-40.33	-13	H
15259.5	-35.14	14.4	12.3	-37.24	-13	H

RSE-LTE41-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
3858.4	-52.11	6.7	7.9	-50.91	-13	V
5186.8	-47.88	8.0	9.4	-46.48	-13	V

7783.6	-49.69	9.9	11.8	-47.79	-13	V
10372.4	-45.45	11.6	12.3	-44.75	-13	H
12968.8	-41.03	13.2	12.3	-41.93	-13	H
15600.8	-34.28	14.6	12.3	-36.58	-13	H

Third Supply

RSE-LTE41-S08aa-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3786.0	-51.33	6.7	7.9	-50.13	-13	H
5283.2	-49.87	8.0	9.4	-48.47	-13	H
7206.8	-49.79	9.5	11.4	-47.89	-13	H
9250.0	-47.78	10.5	12.6	-45.68	-13	V
12281.0	-41.24	12.7	12.3	-41.64	-13	V
15301.5	-35.06	14.4	12.3	-37.16	-13	H

RSE-LTE41-S08aa-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3708.8	-51.59	6.6	7.9	-50.29	-13	H
5241.2	-46.73	8.0	9.4	-45.33	-13	V
7398.8	-49.72	9.7	11.6	-47.82	-13	H
9943.2	-45.56	11.0	12.5	-44.06	-13	V
13378.2	-39.57	13.7	12.3	-40.97	-13	H
17041.0	-31.5	16.0	12.3	-35.2	-13	H

RSE-LTE41-S08aa-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit（dBm）	Polarization
3678.0	-50.31	6.6	7.9	-49.01	-13	V
4855.2	-48.71	7.6	9.0	-47.31	-13	H
6358.0	-48.33	8.8	10.3	-46.83	-13	V
8258.0	-49.71	10.1	12.4	-47.41	-13	V
10371.6	-43.16	11.6	12.3	-42.46	-13	H

13861.2	-39.84	13.5	12.3	-41.04	-13	V

6.3 Frqency Stability

Reference

CFR Part 2.1055,22.235,24.235,27.54,90.213(a).
Rule RSS-130 4.5;Rule RSS-132 5.3; Rule RSS-133 6.3; Rule RSS-139 6.4; Rule RSS-199 4.3

6.3.1 Method of Measurement

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a “call mode”. This is accomplished with the use of R&S CMW500 DIGITAL RADIO COMMUNICATION TESTER.
1.Measure the carrier frequency at room temperature.
2.Subject the EUT to overnight soak at -10℃.
3.With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on middle channel for LTE band 7. Measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4.Repeat the above measurements at 10℃ increments from -10℃ to +50℃. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
5.Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
6.Subject the EUT to overnight soak at +50℃.
7.With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8.Repeat the above measurements at 10 ℃ decrements from +50℃ to -10℃. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
9.At all temperature levels hold the temperature to +/- 0.5℃ during the measurement procedure.

6.3.2Measurement Limit

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d) (2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.6VDC and 4.35VDC, with a nominal voltage of 3.8VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. For the purposes of measuring frequency stability these voltage limits are to be used.

6.3.3 Test Setup

6.3.4 Measurement results

LTE Band 2, 1.4MHz bandwidth ,Full_RB,MID(worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
8.7	-6.123	-26.722	0.003	0.014
7.6	-7.167	-26.393	0.004	0.014
7.2	-14.205	-34.575	0.008	0.018

Frequency Error vs Temperature

Temperature (℃)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
50	-16.766	-35.677	0.009	0.019
40	9.027	-27.323	0.005	0.015
30	-7.811	-33.56	0.004	0.018
20	-13.604	-33.188	0.007	0.018
10	-20.428	-31.757	0.011	0.017
0	-17.867	-30.47	0.01	0.016
-10	-16.665	-28.696	0.009	0.015
-20	-11.044	-26.751	0.006	0.014
-30	-17.223	-31.157	0.009	0.017

LTE Band 4, 1.4MHz bandwidth,Full_RB,MID (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
8.7	-5.364	-20.528	0.003	0.012
7.6	-6.28	-23.031	0.004	0.013
7.2	-4.692	-20.299	0.003	0.012

Frequency Error vs Temperature

Temperature (℃)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
50	-6.638	-20.528	0.004	0.012
40	-2.604	-19.341	0.002	0.011
30	-4.306	29.497	0.002	0.017
20	5.064	-15.221	0.003	0.009
10	-4.792	-15.55	0.003	0.009
0	5.422	-18.611	0.003	0.011
-10	5.364	-15.278	0.003	0.009
-20	-3.49	-15.864	0.002	0.009
-30	3.505	-14.076	0.002	0.008

LTE Band 5, 1.4MHz bandwidth ,Full_RB,MID (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
8.7	-9.427	-20.428	0.011	0.024
7.6	-8.125	-18.325	0.01	0.022
7.2	-5.479	-19.941	0.007	0.024

Frequency Error vs Temperature

Temperature (℃)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM

50	-5.722	-21.243	0.007	0.025
40	-8.082	-19.856	0.01	0.024
30	-9.155	-21.214	0.011	0.025
20	-9.313	-23.89	0.011	0.029
10	-8.14	-20.871	0.01	0.025
0	-9.098	-20.499	0.011	0.025
-10	-11.272	-22.688	0.013	0.027
-20	-10.557	-22.016	0.013	0.026
-30	-11.001	-23.918	0.013	0.029

LTE Band 7, 5MHz bandwidth,Full_RB,MID (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
8.7	5.736	11.501	0.002	0.004
7.6	5.05	-11.573	0.002	0.005
7.2	-6.409	19.183	0.002	0.007

Frequency Error vs Temperature

Temperature (℃)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
50	-6.509	12.002	0.003	0.005
40	-6.623	10.715	0.003	0.004
30	-5.994	13.762	0.002	0.005
20	-5.35	11.187	0.002	0.004
10	-4.735	10.9	0.002	0.004
0	-8.125	13.289	0.003	0.005
-10	-2.532	-9.699	0.001	0.004
-20	-6.909	-12.016	0.003	0.005
-30	-10.371	-13.146	0.004	0.005

LTE Band 17, 5MHz bandwidth,Full_RB,MID (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
8.7	-3.805	-7.968	0.005	0.011
7.6	-5.322	-9.799	0.007	0.014
7.2	-8.583	-9.37	0.012	0.013

Frequency Error vs Temperature

Temperature (℃)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
50	-10.056	-8.912	0.014	0.013
40	-10.643	-8.383	0.015	0.012
30	-8.068	-13.804	0.011	0.019
20	-4.95	-12.703	0.007	0.018
10	-7.582	-10.471	0.011	0.015
0	-10.271	-9.542	0.014	0.013
-10	-8.626	6.652	0.012	0.009
-20	-3.877	-6.824	0.005	0.01
-30	-5.608	-9.656	0.008	0.014

LTE Band 38, 5MHz bandwidth,Full_RB,MID (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
8.7	-6.251	-19.798	0.002	0.008
7.6	-13.404	-14.219	0.005	0.005
7.2	-6.294	-11.044	0.002	0.004

Frequency Error vs Temperature

Temperature (℃)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
50	-12.774	-19.584	0.005	0.008
40	-9.928	-18.024	0.004	0.007
30	-5.522	-11.744	0.002	0.005
20	-12.774	-23.389	0.005	0.009
10	-15.993	-31.414	0.006	0.012
0	-16.866	-22.559	0.006	0.009
-10	-27.165	-13.218	0.01	0.005
-20	-8.225	-15.349	0.003	0.006
-30	-6.924	-13.776	0.003	0.005

LTE Band 41, 5MHz bandwidth,Full_RB,MID (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
8.7	-9.155	-11.559	0.003	0.004
7.6	-11.544	-17.567	0.004	0.007
7.2	-5.236	-11.988	0.002	0.005

Frequency Error vs Temperature

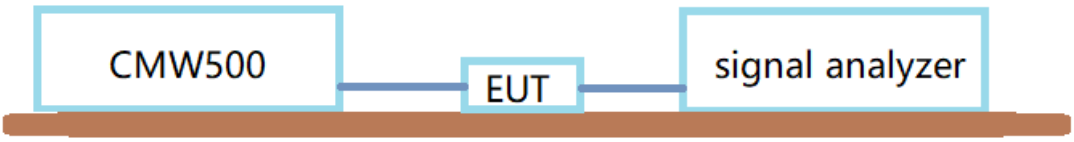
Temperature (℃)	Frequency error (Hz)		Frequency error (ppm)	
	QPSK	16QAM	QPSK	16QAM
50	-10.8	-20.528	0.004	0.008
40	-11.23	-20.313	0.004	0.008
30	-10.586	-15.178	0.004	0.006
20	-7.839	-17.996	0.003	0.007
10	-10.929	-22.774	0.004	0.009
0	-15.078	-24.433	0.006	0.009
-10	-15.321	-20.185	0.006	0.008
-20	-9.556	-18.497	0.004	0.007
-30	-10.557	-26.479	0.004	0.01

6.4 Occupied Bandwidth

Reference

CFR Part 2.1049(h) (i)
No specific occupied bandwidth requirements in RSS-Gen: 6.7.

6.4.1 Test Setup

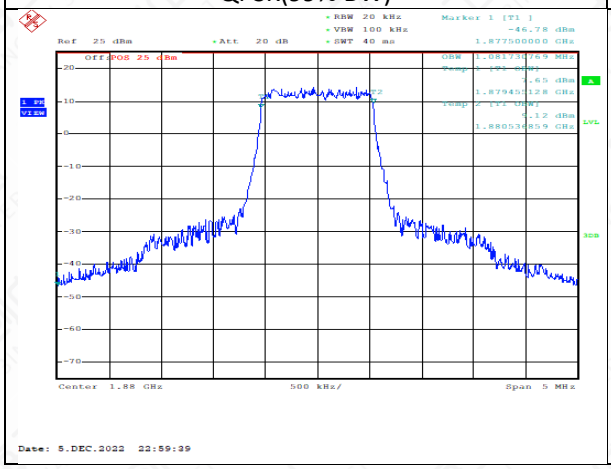
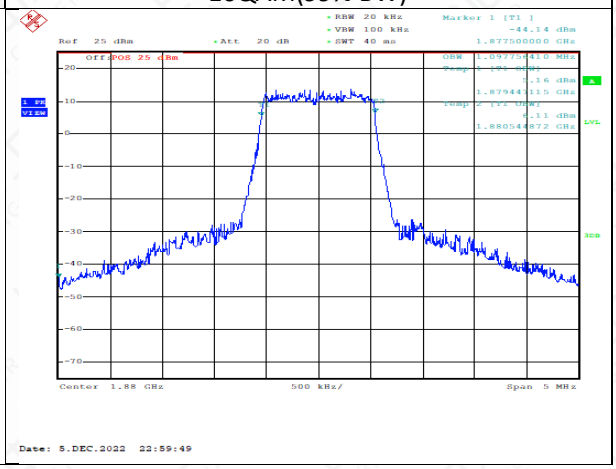


6.4.2 Occupied Bandwidth Results

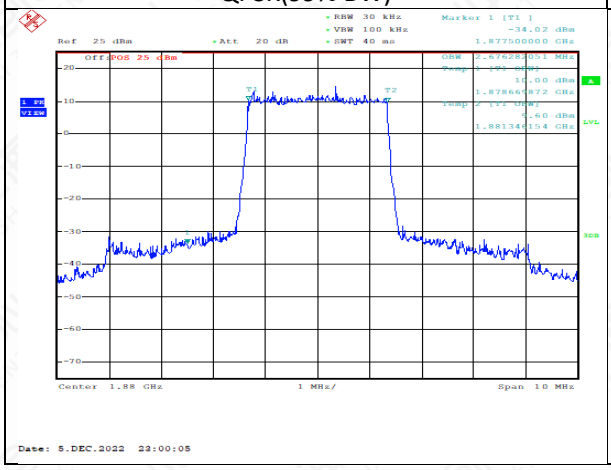
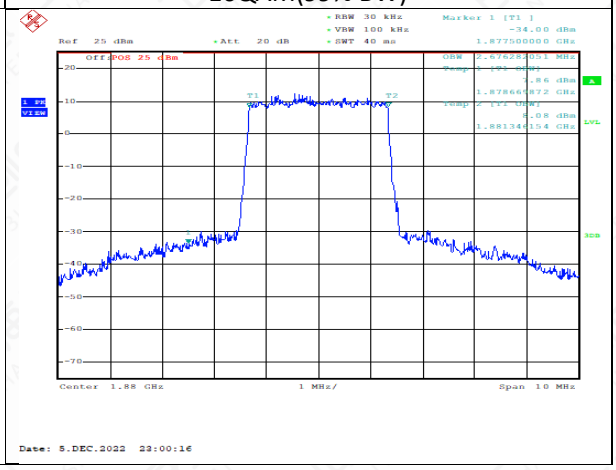
Occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the US Cellular/PCS frequency bands. The table below lists the measured 99% BW. Spectrum analyzer plots are included on the following pages.
The measurement method is from KDB 971168 4:
a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (i.e., two to five times the OBW).
b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least 10log (OBW / RBW) below the reference level.
d) Set the detection mode to peak, and the trace mode to max hold.
e) Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

Occupied Bandwidth Measurement Results:

LTE band 2, 1.4MHz (99%)

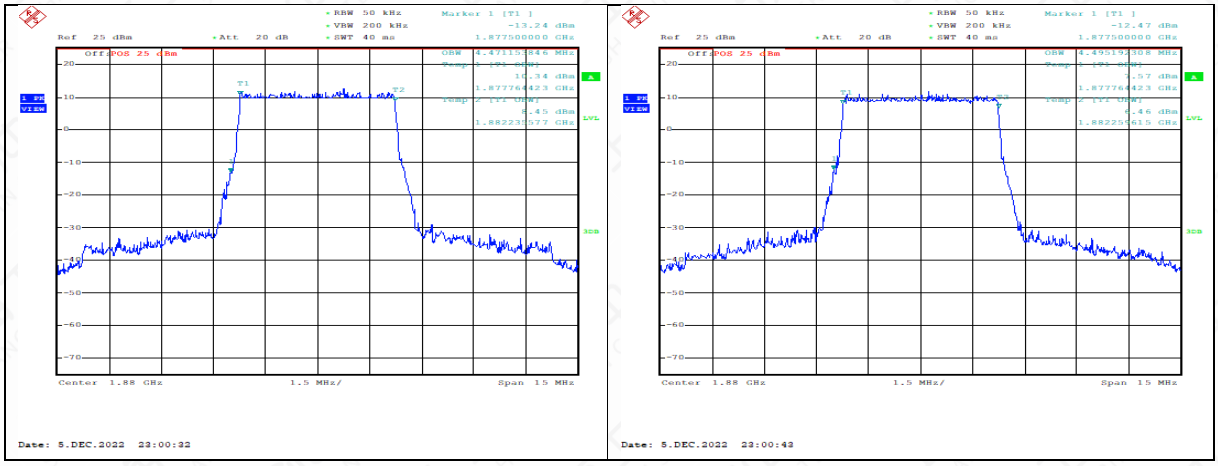
Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
1880.0	QPSK	16QAM
	1.08	1.10
QPSK(99% BW)	16QAM(99% BW)	
		

LTE band 2, 3MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
1880.0	QPSK	16QAM
	2.68	2.68
QPSK(99% BW)	16QAM(99% BW)	
		

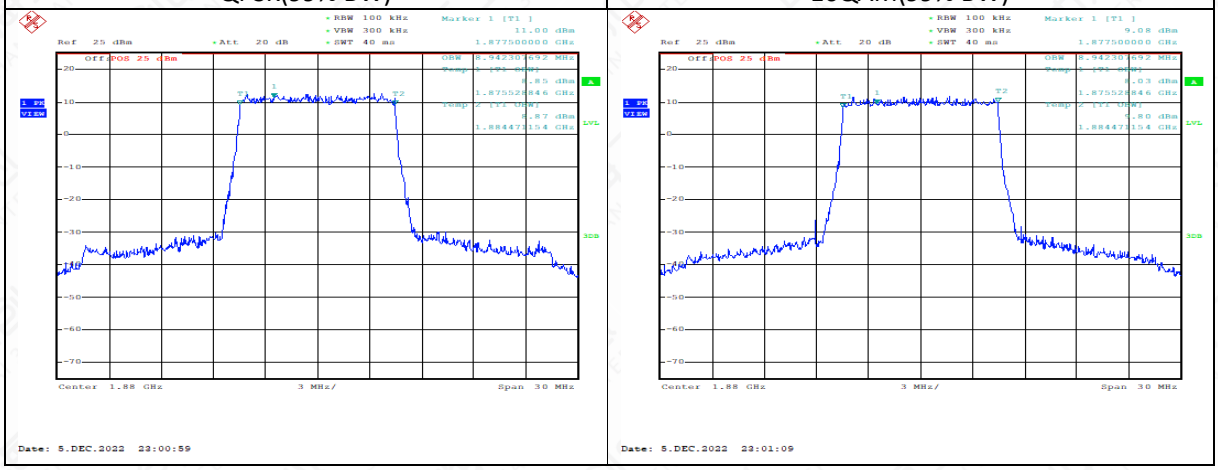
LTE band 2, 5MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
1880.0	QPSK	16QAM
	4.47	4.50
QPSK(99% BW)	16QAM(99% BW)	



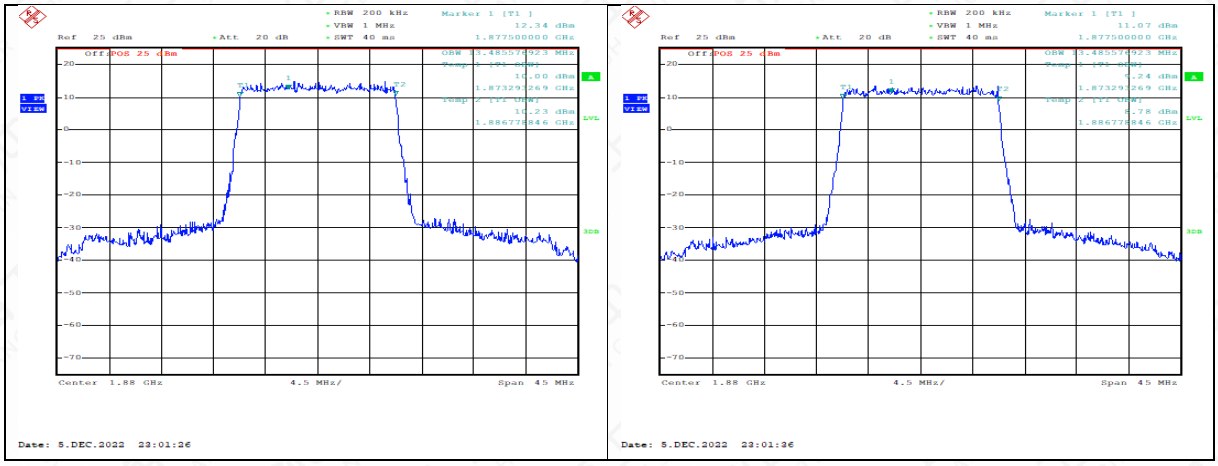
LTE band 2, 10MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
1880.0	QPSK	16QAM
	8.94	8.94
QPSK(99% BW)	16QAM(99% BW)	



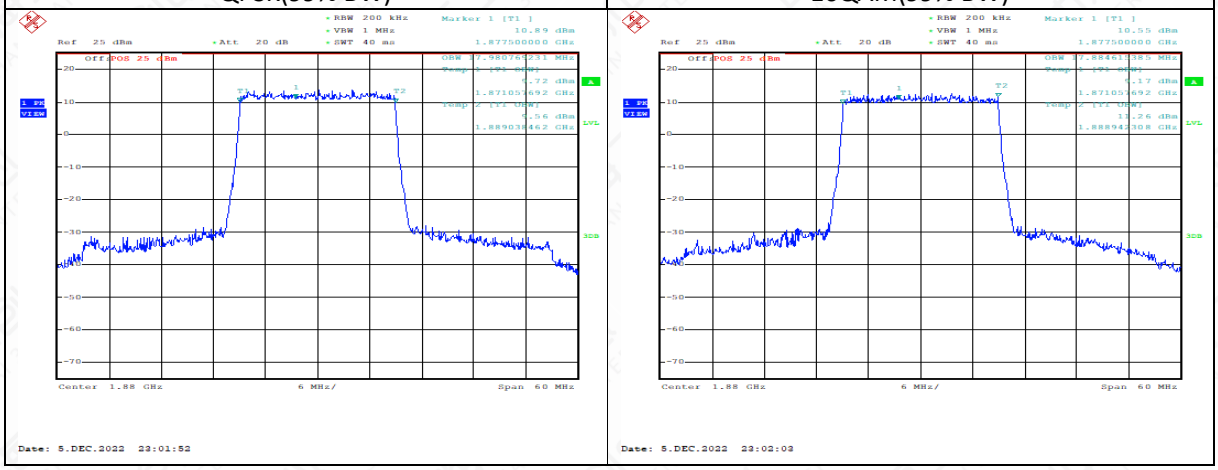
LTE band 2, 15MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
1880.0	QPSK	16QAM
	13.49	13.49
QPSK(99% BW)	16QAM(99% BW)	

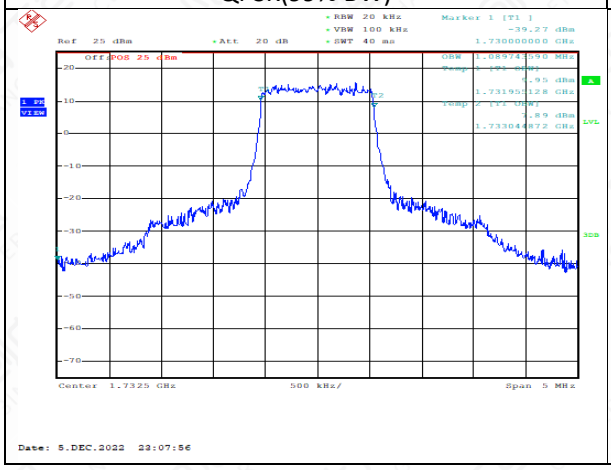
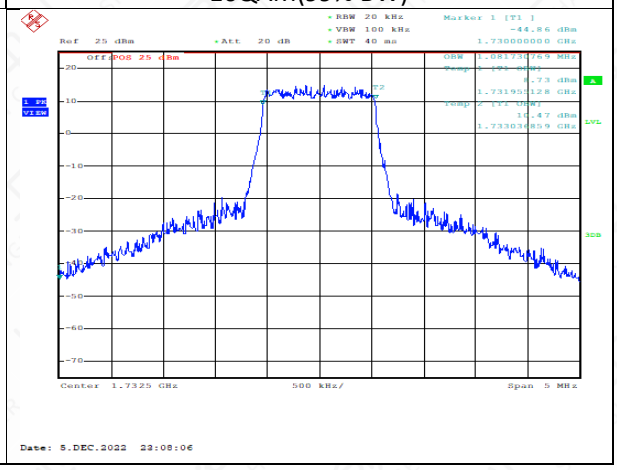


LTE band 2, 20MHz (99%)

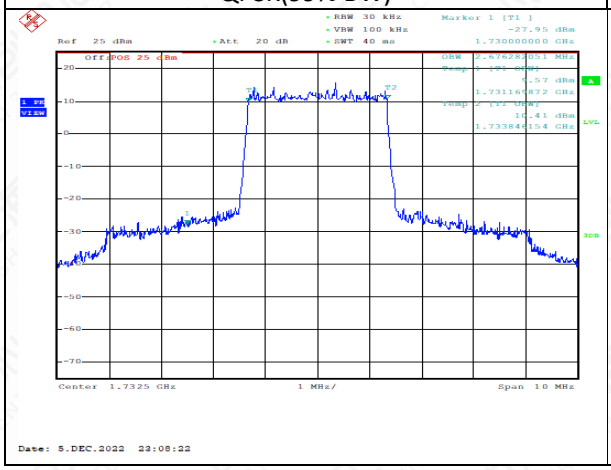
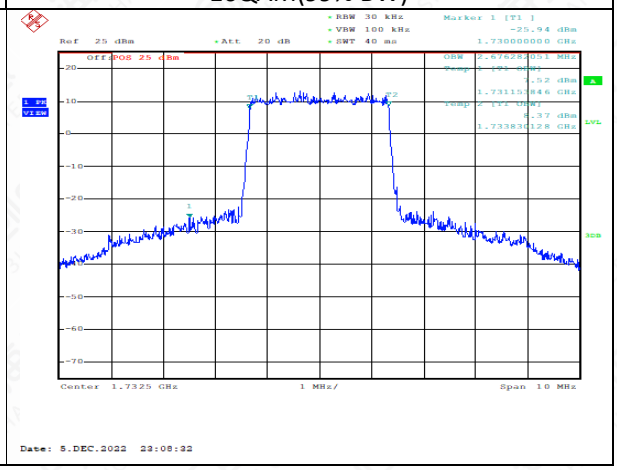
Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
	QPSK	16QAM
1880.0	17.98	17.89
QPSK(99% BW)	16QAM(99% BW)	



LTE band 4, 1.4MHz (99%)

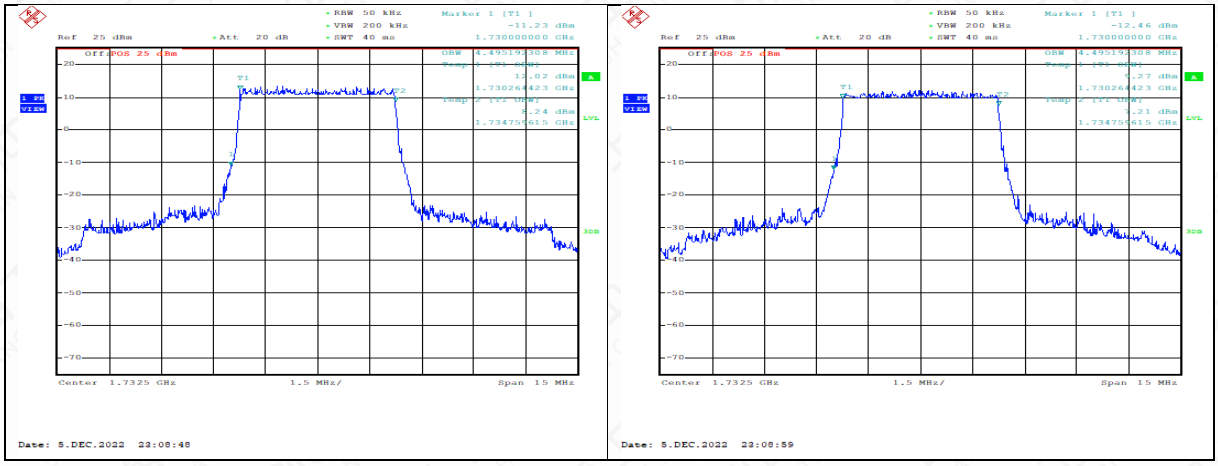
Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
1732.5	QPSK	16QAM
	1.09	1.08
QPSK(99% BW)	16QAM(99% BW)	
		

LTE band 4, 3MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
1732.5	QPSK	16QAM
	2.68	2.68
QPSK(99% BW)	16QAM(99% BW)	
		

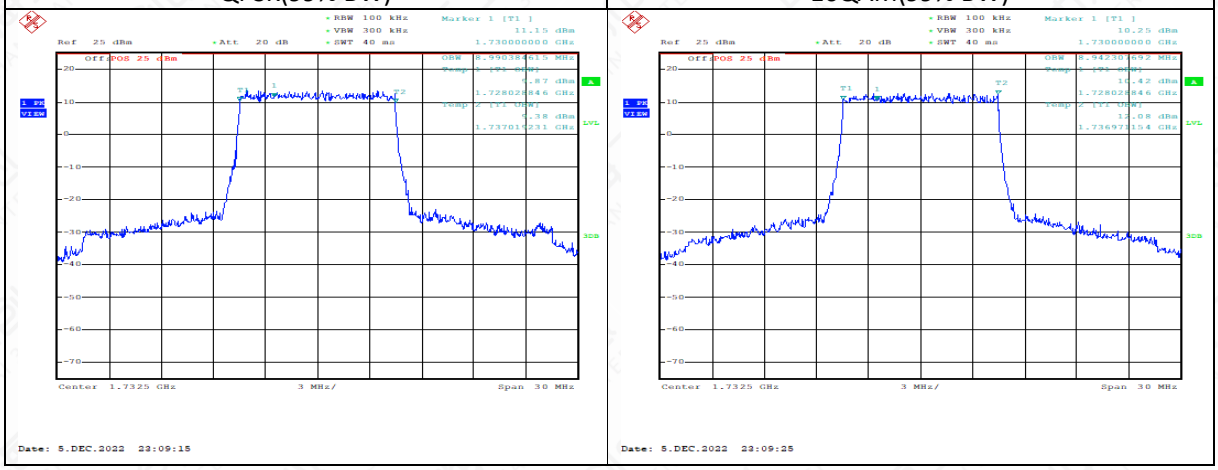
LTE band 4, 5MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
1732.5	QPSK	16QAM
	4.50	4.50
QPSK(99% BW)	16QAM(99% BW)	



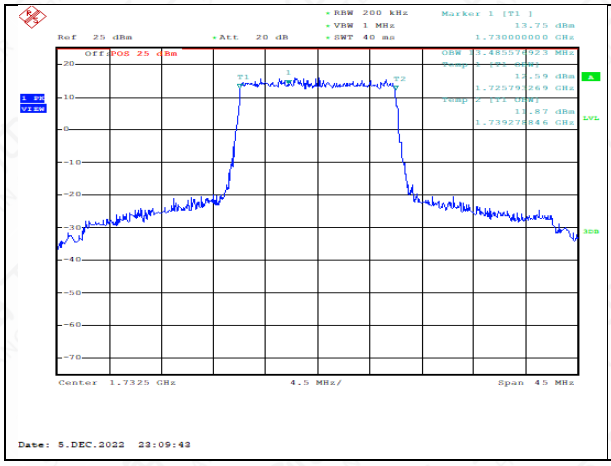
LTE band 4, 10MHz (99%)

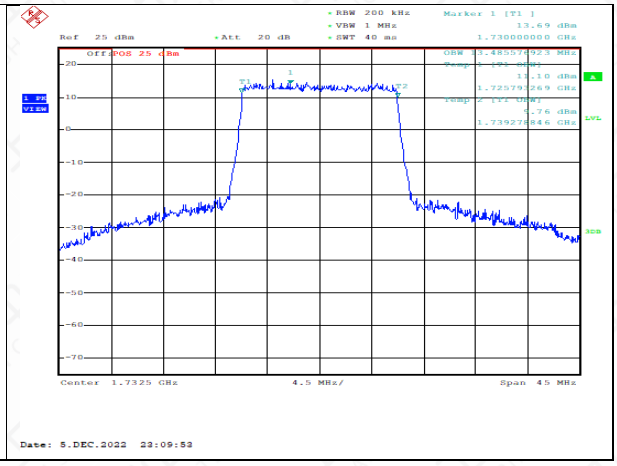
Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
1732.5	QPSK	16QAM
	8.99	8.94
QPSK(99% BW)	16QAM(99% BW)	



LTE band 4, 15MHz (99%)

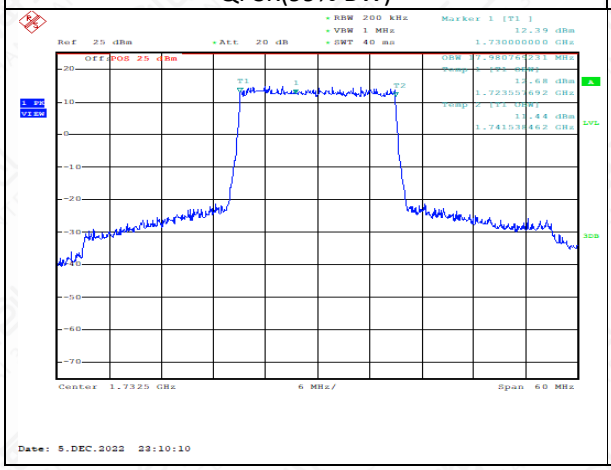
Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
1732.5	QPSK	16QAM
	13.49	13.49
QPSK(99% BW)	16QAM(99% BW)	

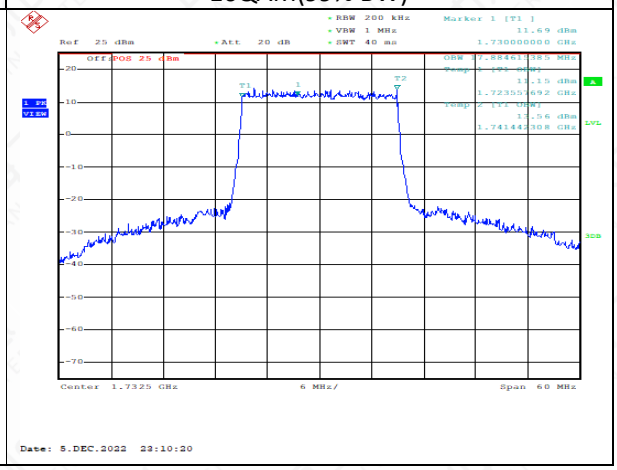




LTE band 4, 20MHz (99%)

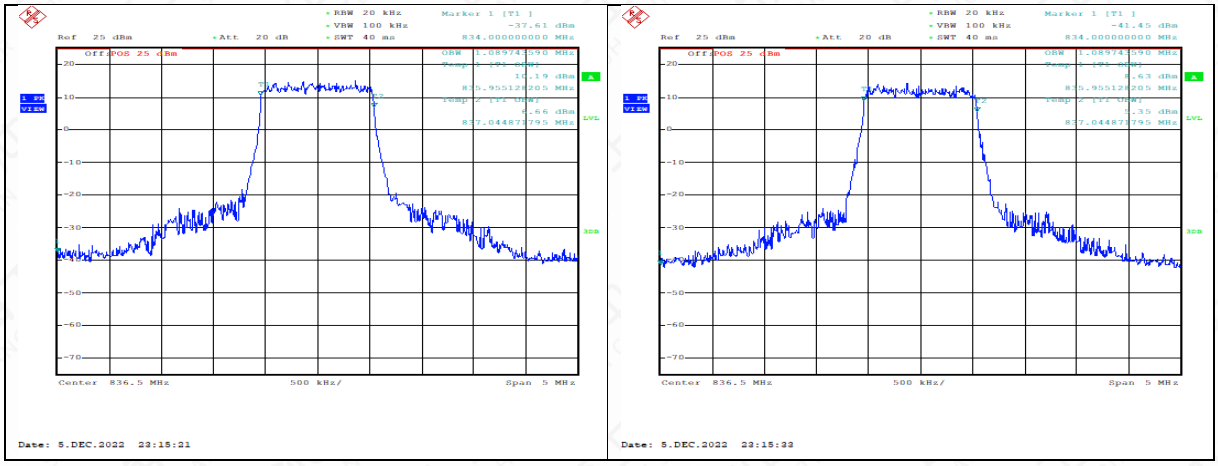
Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
1732.5	QPSK	16QAM
	17.89	17.89
QPSK(99% BW)	16QAM(99% BW)	





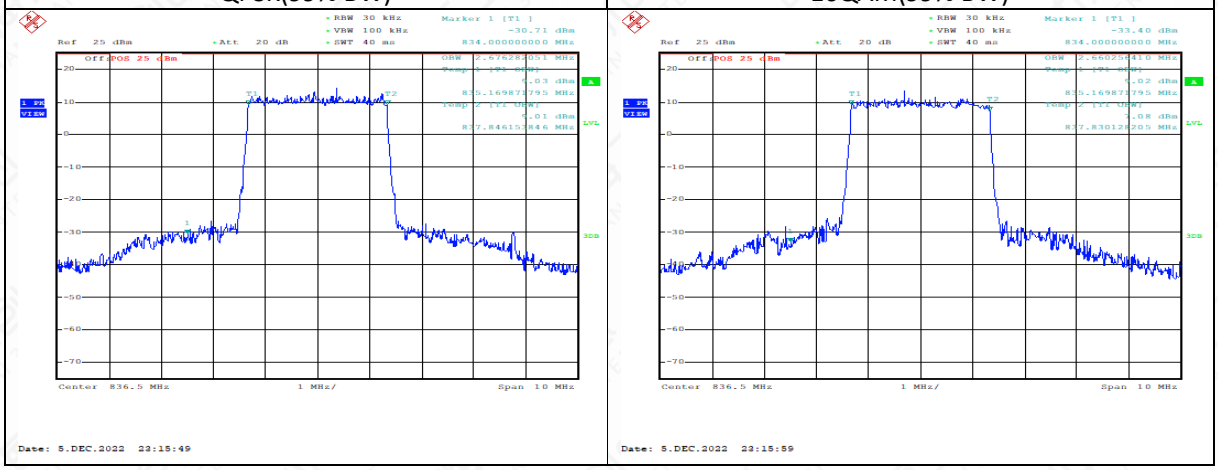
LTE band 5,1.4MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
836.5	QPSK	16QAM
	1.09	1.09
QPSK(99% BW)	16QAM(99% BW)	



LTE band 5, 3MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
836.5	QPSK	16QAM
	2.68	2.66
QPSK(99% BW)	16QAM(99% BW)	



LTE band 5, 5MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(MHz)	
836.5	QPSK	16QAM
	4.47	4.47
QPSK(99% BW)	16QAM(99% BW)	