

TEST REPORT

Reference No. : WTD24D08190450W004
FCC ID : 2AEPIKSWK
Applicant..... : COLOMBIANA DE COMERCIO S.A.
Address..... : Car. 43E No 8-71, Medellin, Colombia
Manufacturer : SHENZHEN LAGENIO TECHNOLOGY CO LIMITED
Address..... : Floor 12th, Block B, Longhua Digital Innovation Center, North Station
Community, Minzhi Street, Longhua District, Shenzhen, China
Product..... : Smart Watch
Model(s). : K-SWK
Brand Name : Kalley
Standards..... : FCC CFR47 Part 22 Subpart H
FCC CFR47 Part 24 Subpart E
FCC CFR47 Part 27
Date of Receipt sample : 2024-08-15
Date of Test : 2024-08-15 to 2024-08-28
Date of Issue..... : 2024-09-13
Test Result..... : Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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The logo is a circular blue stamp. The outer ring contains the text 'WALTEK TESTING GROUP CO., LTD.' and the inner circle contains 'WALTEK' with a checkmark symbol.

Deval Qin / Designated Reviewer

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3 Revision History

Test Report No.	Date of Receipt Sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTD24D08190450W004	2024-08-15	2024-08-15 to 2024-08-28	2024-09-13	Original	-	Valid

4 General Information

4.1 General Description of E.U.T.

Product:	Smart Watch
Model(s):	K-SWK
Model Description:	The product has two appearance colors, blue and pink, other parts are the same. The product is designed with two labels to distinguish different appearance colors, the blue appearance color use K-SWKA label and the pink appearance color use K-SWKR label. The EUT is blue appearance color in this report.
Test Sample No.:	1-1/1
LTE Band(s):	FDD Band 2/5/7/12/13
Hardware Version:	ZT05-MB-V2.0
Software Version:	L36G-D_DG-ZT05M20-C90
Storage Location:	Internal Storage

4.2 Details of E.U.T.

Operation Frequency:	LTE Band 2: 1850~1910MHz LTE Band 5: 824~849MHz LTE Band 7: 2500~2570MHz LTE Band 12: 699~716MHz LTE Band 13: 777~787MHz
Max. RF output power:	LTE Band 2: 22.63dBm LTE Band 5: 22.68dBm LTE Band 7: 22.41dBm LTE Band 12: 22.77dBm LTE Band 13: 22.48dBm
Type of Modulation:	LTE: QPSK, 16QAM
Antenna installation:	LTE: PIFA Antenna
Antenna Gain:	LTE Band 2: -5.01dBi LTE Band 5: -11.73dBi LTE Band 7: 0.63dBi LTE Band 12: -10.08dBi LTE Band 13: -9.65dBi

Note:

#: The antenna gain is provided by the applicant, and the applicant should be responsible for its authenticity, WALTEK lab has not verified the authenticity of its information.

Ratings:	Battery: DC 3.8V, 680mAh, 2.584Wh DC 5V charging from USB
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Type of Emission:	LTE Band 2 1.4MHz: 1M09G7D(QPSK), 1M09W7D(16QAM) LTE Band 2 3MHz: 2M69G7D(QPSK), 2M68W7D(16QAM)
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LTE Band 2 5MHz: 4M480G7D(QPSK), 4M48W7D(16QAM)
LTE Band 2 10 MHz: 8M93G7D(QPSK), 8M92W7D(16QAM)
LTE Band 2 15MHz: 13M5G7D(QPSK), 13M5W7D(16QAM)
LTE Band 2 20MHz: 17M9G7D(QPSK), 17M9W7D(16QAM)
LTE Band 5 1.4MHz: 1M09G7D(QPSK), 1M09W7D(16QAM)
LTE Band 5 3MHz: 2M69G7D(QPSK), 2M68W7D(16QAM)
LTE Band 5 5MHz: 4M49G7D(QPSK), 4M48W7D(16QAM)
LTE Band 5 10 MHz: 8M93G7D(QPSK), 8M92W7D(16QAM)
LTE Band 7 5MHz: 4M49G7D(QPSK), 4M49W7D(16QAM)
LTE Band 7 10 MHz: 8M93G7D(QPSK), 8M92W7D(16QAM)
LTE Band 7 15MHz: 13M5G7D(QPSK), 13M5W7D(16QAM)
LTE Band 7 20MHz: 17M9G7D(QPSK), 17M9W7D(16QAM)
LTE Band 12 1.4MHz: 1M09G7D(QPSK), 1M09W7D(16QAM)
LTE Band 12 3MHz: 2M69G7D(QPSK), 2M68W7D(16QAM)
LTE Band 12 5MHz: 4M49G7D(QPSK), 4M48W7D(16QAM)
LTE Band 12 10MHz: 8M93G7D(QPSK), 8M92W7D(16QAM)
LTE Band 13 5MHz: 4M49G7D(QPSK), 4M49W7D(16QAM)
LTE Band 13 10 MHz: 8M93G7D(QPSK), 8M92W7D(16QAM)

4.3 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Support Band	Test Mode BW(MHz)	Channel Frequency	Channel Number
LTE Band 2	1.4	1850.7 MHz	18607
		1880.0 MHz	18900
		1909.3 MHz	19193
	3	1851.5 MHz	18615
		1880.0 MHz	18900
		1908.5 MHz	19185
	5	1852.5 MHz	18625
		1880.0 MHz	18900
		1907.5 MHz	19175
	10	1855.0 MHz	18650
		1880.0 MHz	18900
		1905.0 MHz	19150
	15	1857.5 MHz	18675
		1880.0 MHz	18900
		1902.5 MHz	19125
20	1860.0 MHz	18700	
	1880.0 MHz	18900	
	1900.0 MHz	19100	
LTE Band 5	1.4	824.7 MHz	20407
		836.5 MHz	20525
		848.3 MHz	20643
	3	825.5 MHz	20415
		836.5 MHz	20525
		847.5 MHz	20635
	5	826.5 MHz	20425
		836.5 MHz	20525
		846.5 MHz	20625
10	829.0 MHz	20450	
	836.5 MHz	20525	
	844.0 MHz	20600	
LTE Band 7	5	2502.5 MHz	20775
		2535.0 MHz	21100
		2567.5 MHz	21425
	10	2505.0 MHz	20800
		2535.0 MHz	21100
		2565.0 MHz	21400
	15	2507.5 MHz	20825
2535.0 MHz		21100	

	20	2562.5 MHz	21375
		2510.0 MHz	20850
		2535.0 MHz	21100
		2560.0 MHz	21350
LTE Band 12	1.4	699.7 MHz	23017
		707.5 MHz	23095
		715.3 MHz	23173
	3	700.5 MHz	23025
		707.5 MHz	23095
		714.5 MHz	23165
	5	701.5 MHz	23035
		707.5 MHz	23095
		713.5 MHz	23155
	10	704.0 MHz	23060
		707.5 MHz	23095
		711.0 MHz	23130
LTE Band 13	5	779.5 MHz	23205
		782.0 MHz	23230
		784.5 MHz	23255
	10	782.0 MHz	23230
Remark: All mode(s) were tested and the worst data was recorded.			

4.4 Test Facility

The test facility has a test site registered with the following organizations:

ISED CAB identifier: CN0013. Test Firm Registration No.: 7760A.

Waltek Testing Group Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files.

Registration number 7760A, October 15, 2016.

FCC Designation No.: CN1201. Test Firm Registration No.: 523476.

Waltek Testing Group Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration number 523476, September 10, 2019.

5 Test Summary

Test Items	Test Requirement	Result
RF Output Power	2.1046 22.913 (a) 24.232 (c) 27.50(h.2) 27.50(d.4)	PASS
Peak-to-Average Ratio	24.232 (d) 27.50(d)	PASS
Bandwidth	2.1049 22.905 22.917 24.238 27.53(a)	PASS
Spurious Emissions at Antenna Terminal	2.1051 22.917 (a) 24.238 (a) 27.53(h) 27.53(m)(4)	PASS
Field Strength of Spurious Radiation	2.1053 22.917 (a) 24.238 (a) 27.53(h) 27.53(m)(4)	PASS
Out of band emission	22.917 (a) 24.238 (a) 27.53(h) 27.53(m)(4)	PASS
Frequency Stability	2.1055 22.355 24.235 27.5(h) 27.54	PASS
Maximum Permissible Exposure (SAR)	1.1307 2.1093	PASS

6 Equipment Used during Test

6.1 Equipments List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date	Calibration Due Date
3m Semi-anechoic Chamber for Radiation Emissions 1#						
1	Spectrum Analyzer	R&S	FSP30	100091	2024-04-22	2025-04-21
2	Amplifier	Agilent	8447D	2944A10178	2024-07-18	2025-07-17
3	Tri-log Broadband Antenna	SCHWARZBECK	VULB9163	336	2024-07-21	2025-07-20
4	Coaxial Cable	Top	TYPE16(13M)	-	2024-04-22	2025-04-21
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120D	667	2024-01-23	2025-01-22
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	2024-07-18	2025-07-17
7	Broadband Preamplifier	COMPLIANCE	PAP-1G18	2004	2024-07-18	2025-07-17
8	Coaxial Cable	Top	ZT26-NJ-NJ-8M/FA	-	2024-04-22	2025-04-21
9	Microwave Amplifier	SCHWARZBECK	BBV 9721	100472	2024-07-18	2025-07-17
10	Coaxial Cable	Top	ZT40-2.92J-2.92J-2.0M	17100919	2024-04-22	2025-04-21
3m Semi-anechoic Chamber for Radiation Emissions 2#						
1	Test Receiver	R&S	ESCI	101296	2024-04-22	2025-04-21
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2023-11-04	2024-11-03
3	Active Loop Antenna	Com-Power	AL-130R	10160007	2024-04-27	2025-04-26
4	Amplifier	ANRITSU	MH648A	M43381	2024-04-22	2025-04-21
5	Cable	HUBER+SUHNER	CBL2	525178	2024-04-22	2025-04-21
RF Conducted Testing						
1	Spectrum Analyzer	Agilent	N9020A	MY49100060	2024-07-18	2025-07-17
2	Universal Radio Communication Tester	R&S	CMW 500	127818	2024-04-22	2025-04-21

Test Software:

Test Item	Software name	Software version
Radiated Emission(3m)	EZ-EMC	EZ-EMC(RA-03A1-1)

6.2 Measurement Uncertainty

Parameter	Uncertainty
Conducted Emission	± 3.64 dB(AC mains 150KHz~30MHz)
Radiated Spurious Emissions	± 5.08 dB (Bilog antenna 30M~1000MHz)
	± 5.47 dB (Horn antenna 1000M~25000MHz)
Radio Frequency	± 1 x 10 ⁻⁷ Hz
RF Power	± 0.42 dB
RF Power Density	± 0.7dB
Conducted Spurious Emissions	± 2.76 dB (9kHz~26500MHz)
Confidence interval: 95%. Confidence factor:k=2	

7 RF Output Power

Test Requirement:	FCC Part 2.1046, 22.913 (a), 24.232 (c), 27.50(h.2); 27.50(d.4)
Test Method:	ANSI C63.26:2015 ANSI/TIA-603-E:2016
Test Mode:	TX transmitting

7.1 EUT Operation

Operating Environment :

Temperature:	25.4 °C
Humidity:	58.1 % RH
Atmospheric Pressure:	101.2kPa

7.2 Test Procedure

Conducted method:

The RF output of the transmitter was connected to the wireless test set and the spectrum analyzer through sufficient attenuation.



Radiated method:

1. The setup of EUT is according with per TIA/EIA Standard 603D:2010.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

7.3 Test Result

Conducted Power

LTE Band 2:

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
1.4MHz	18607	1850.7	QPSK	1	0	22.14	22.0±1	/
				1	2	22.16	22.0±1	/
				1	5	22.12	22.0±1	/
				3	0	22.13	22.0±1	/
				3	1	22.19	22.0±1	/
				3	2	22.12	22.0±1	/
			16QAM	6	0	21.21	22.0±1	1.0
				1	0	22.15	22.0±1	1.0
				1	2	22.12	22.0±1	1.0
				1	5	22.15	22.0±1	1.0
				3	0	21.32	22.0±1	1.0
				3	1	21.3	22.0±1	1.0
				3	2	21.33	22.0±1	1.0
				6	0	20.21	20.0±1	1.0
	18900	1880	QPSK	1	0	22.37	22.0±1	/
				1	2	22.37	22.0±1	/
				1	5	22.3	22.0±1	/
				3	0	22.41	22.0±1	/
				3	1	22.45	22.0±1	/
				3	2	22.37	22.0±1	/
			16QAM	6	0	21.38	22.0±1	1.0
				1	0	21.73	21.0±1	1.0
				1	2	21.73	21.0±1	1.0
				1	5	21.62	21.0±1	1.0
				3	0	21.42	21.0±1	1.0
				3	1	21.44	21.0±1	1.0
				3	2	21.37	21.0±1	1.0
				6	0	20.13	21.0±1	1.0
	19193	1909.3	QPSK	1	0	22.54	22.0±1	/
				1	2	22.52	22.0±1	/
				1	5	22.52	22.0±1	/
				3	0	22.54	22.0±1	/
				3	1	22.5	22.0±1	/
				3	2	22.51	22.0±1	/
			16QAM	6	0	21.61	22.0±1	1.0
				1	0	21.65	21.0±1	1.0
				1	2	21.73	21.0±1	1.0
				1	5	21.75	21.0±1	1.0
				3	0	21.91	21.0±1	1.0
				3	1	21.88	21.0±1	1.0
				3	2	21.9	21.0±1	1.0
				6	0	20.77	21.0±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
3MHz	18615	1851.5	QPSK	1	0	22.01	22.0±1	/
				1	8	22.06	22.0±1	/
				1	14	22.09	22.0±1	/
				6	0	21.16	22.0±1	1.0
				6	4	21.11	22.0±1	1.0
				6	9	21.11	22.0±1	1.0
				15	0	21.16	22.0±1	1.0
			16QAM	1	0	21.79	21.0±1	1.0
				1	8	21.79	21.0±1	1.0
				1	14	21.77	21.0±1	1.0
				6	0	20.25	21.0±1	1.0
				6	4	20.22	21.0±1	1.0
				6	9	20.29	21.0±1	1.0
				15	0	20.34	21.0±1	1.0
	18900	1880	QPSK	1	0	22.38	22.0±1	/
				1	8	22.32	22.0±1	/
				1	14	22.36	22.0±1	/
				6	0	21.4	22.0±1	1.0
				6	4	21.42	22.0±1	1.0
				6	9	21.35	22.0±1	1.0
				15	0	21.38	22.0±1	1.0
			16QAM	1	0	21.65	21.0±1	1.0
				1	8	21.68	21.0±1	1.0
				1	14	21.69	21.0±1	1.0
				6	0	20.58	21.0±1	1.0
				6	4	20.57	21.0±1	1.0
				6	9	20.54	21.0±1	1.0
				15	0	20.53	21.0±1	1.0
	19185	1908.5	QPSK	1	0	22.56	22.0±1	/
				1	8	22.49	22.0±1	/
				1	14	22.55	22.0±1	/
				6	0	21.56	22.0±1	1.0
				6	4	21.6	22.0±1	1.0
				6	9	21.44	22.0±1	1.0
				15	0	21.59	22.0±1	1.0
			16QAM	1	0	21.89	21.0±1	1.0
				1	8	21.75	21.0±1	1.0
				1	14	21.85	21.0±1	1.0
				6	0	20.65	21.0±1	1.0
				6	4	20.64	21.0±1	1.0
				6	9	20.6	21.0±1	1.0
				15	0	20.57	21.0±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
5MHz	18625	1852.5	QPSK	1	0	22.14	22.0±1	/
				1	12	22.08	22.0±1	/
				1	24	22.06	22.0±1	/
				12	0	21.13	22.0±1	1.0
				12	6	21.16	22.0±1	1.0
				12	11	21.23	22.0±1	1.0
				25	0	21.14	22.0±1	1.0
			16QAM	1	0	20.99	21.0±1	1.0
				1	12	21.04	21.0±1	1.0
				1	24	21.06	21.0±1	1.0
				12	0	20.24	21.0±1	1.0
				12	6	20.24	21.0±1	1.0
				12	11	20.27	21.0±1	1.0
				25	0	20.34	21.0±1	1.0
	18900	1880	QPSK	1	0	22.48	22.0±1	/
				1	12	22.38	22.0±1	/
				1	24	22.41	22.0±1	/
				12	0	21.42	22.0±1	1.0
				12	6	21.34	22.0±1	1.0
				12	11	21.3	22.0±1	1.0
				25	0	21.39	22.0±1	1.0
			16QAM	1	0	21.3	21.0±1	1.0
				1	12	21.29	21.0±1	1.0
				1	24	21.29	21.0±1	1.0
				12	0	20.45	21.0±1	1.0
				12	6	20.52	21.0±1	1.0
				12	11	20.52	21.0±1	1.0
				25	0	20.54	21.0±1	1.0
	19175	1907.5	QPSK	1	0	22.56	22.0±1	/
				1	12	22.59	22.0±1	/
				1	24	22.54	22.0±1	/
				12	0	21.59	22.0±1	1.0
				12	6	21.61	22.0±1	1.0
				12	11	21.53	22.0±1	1.0
				25	0	21.49	22.0±1	1.0
			16QAM	1	0	21.42	21.0±1	1.0
				1	12	21.5	21.0±1	1.0
				1	24	21.38	21.0±1	1.0
				12	0	20.63	21.0±1	1.0
				12	6	20.69	21.0±1	1.0
				12	11	20.6	21.0±1	1.0
				25	0	20.58	21.0±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
10MHz	18650	1855	QPSK	1	0	22.15	22.0±1	/
				1	24	22.23	22.0±1	/
				1	49	22.19	22.0±1	/
				25	0	21.21	22.0±1	1.0
				25	12	21.2	22.0±1	1.0
				25	24	21.14	22.0±1	1.0
				50	0	21.16	22.0±1	1.0
			16QAM	1	0	21.91	21.0±1	1.0
				1	24	21.95	21.0±1	1.0
				1	49	21.96	21.0±1	1.0
				25	0	20.19	21.0±1	1.0
				25	12	20.21	21.0±1	1.0
				25	24	20.24	21.0±1	1.0
				50	0	20.26	21.0±1	1.0
	18900	1880	QPSK	1	0	22.46	22.0±1	/
				1	24	22.49	22.0±1	/
				1	49	22.54	22.0±1	/
				25	0	21.43	22.0±1	1.0
				25	12	21.4	22.0±1	1.0
				25	24	21.47	22.0±1	1.0
				50	0	21.44	22.0±1	1.0
			16QAM	1	0	21.62	21.0±1	1.0
				1	24	21.63	21.0±1	1.0
				1	49	21.58	21.0±1	1.0
				25	0	20.51	21.0±1	1.0
				25	12	20.45	21.0±1	1.0
				25	24	20.57	21.0±1	1.0
				50	0	20.48	21.0±1	1.0
	19150	1905	QPSK	1	0	22.55	22.0±1	/
				1	24	22.55	22.0±1	/
				1	49	22.56	22.0±1	/
				25	0	21.63	22.0±1	1.0
				25	12	21.51	22.0±1	1.0
				25	24	21.58	22.0±1	1.0
				50	0	21.53	22.0±1	1.0
			16QAM	1	0	21.63	21.0±1	1.0
				1	24	21.65	21.0±1	1.0
				1	49	21.61	21.0±1	1.0
				25	0	20.67	21.0±1	1.0
				25	12	20.66	21.0±1	1.0
				25	24	20.74	21.0±1	1.0
				50	0	20.58	21.0±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
15MHz	18675	1857.5	QPSK	1	0	22.14	22.0±1	/
				1	37	22.25	22.0±1	/
				1	74	22.36	22.0±1	/
				36	0	21.14	22.0±1	1.0
				36	16	21.25	22.0±1	1.0
				36	35	21.31	22.0±1	1.0
				75	0	21.2	22.0±1	1.0
			16QAM	1	0	21.96	21.0±1	1.0
				1	37	21.92	21.0±1	1.0
				1	74	22.02	21.0±1	1.0
				36	0	20.26	21.0±1	1.0
				36	16	20.24	21.0±1	1.0
				36	35	20.3	21.0±1	1.0
				75	0	20.38	21.0±1	1.0
	18900	1880	QPSK	1	0	22.37	22.0±1	/
				1	37	22.41	22.0±1	/
				1	74	22.44	22.0±1	/
				36	0	21.46	22.0±1	1.0
				36	16	21.43	22.0±1	1.0
				36	35	21.41	22.0±1	1.0
				75	0	21.31	22.0±1	1.0
			16QAM	1	0	21.61	21.0±1	1.0
				1	37	21.62	21.0±1	1.0
				1	74	21.61	21.0±1	1.0
				36	0	20.52	21.0±1	1.0
				36	16	20.61	21.0±1	1.0
				36	35	20.67	21.0±1	1.0
				75	0	20.49	21.0±1	1.0
	19125	1902.5	QPSK	1	0	22.31	22.0±1	/
				1	37	22.43	22.0±1	/
				1	74	22.41	22.0±1	/
				36	0	21.43	22.0±1	1.0
				36	16	21.58	22.0±1	1.0
				36	35	21.5	22.0±1	1.0
				75	0	21.47	22.0±1	1.0
			16QAM	1	0	22.43	21.5±1	1.0
				1	37	22.41	21.5±1	1.0
				1	74	22.31	21.5±1	1.0
				36	0	20.56	21.5±1	1.0
				36	16	20.56	21.5±1	1.0
				36	35	20.65	21.5±1	1.0
				75	0	20.54	21.5±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
20MHz	18700	1860	QPSK	1	0	22.25	22.0±1	/
				1	49	22.2	22.0±1	/
				1	99	22.45	22.0±1	/
				50	0	21.28	22.0±1	1.0
				50	24	21.24	22.0±1	1.0
				50	49	21.26	22.0±1	1.0
				100	0	21.28	22.0±1	1.0
			16QAM	1	0	21.1	21.0±1	1.0
				1	49	21.12	21.0±1	1.0
				1	99	21.27	21.0±1	1.0
				50	0	20.37	21.0±1	1.0
				50	24	20.37	21.0±1	1.0
				50	49	20.53	21.0±1	1.0
				100	0	20.33	21.0±1	1.0
	18900	1880	QPSK	1	0	22.51	22.0±1	/
				1	49	22.54	22.0±1	/
				1	99	22.53	22.0±1	/
				50	0	21.48	22.0±1	1.0
				50	24	21.57	22.0±1	1.0
				50	49	21.48	22.0±1	1.0
				100	0	21.46	22.0±1	1.0
			16QAM	1	0	21.36	21.0±1	1.0
				1	49	21.39	21.0±1	1.0
				1	99	21.34	21.0±1	1.0
				50	0	20.46	21.0±1	1.0
				50	24	20.52	21.0±1	1.0
				50	49	20.49	21.0±1	1.0
				100	0	20.44	21.0±1	1.0
	19100	1900	QPSK	1	0	22.48	22.0±1	/
				1	49	22.58	22.0±1	/
				1	99	22.63	22.0±1	/
				50	0	21.45	22.0±1	1.0
				50	24	21.36	22.0±1	1.0
				50	49	21.39	22.0±1	1.0
				100	0	21.48	22.0±1	1.0
			16QAM	1	0	21.5	21.0±1	1.0
				1	49	21.43	21.0±1	1.0
				1	99	21.5	21.0±1	1.0
				50	0	20.4	21.0±1	1.0
				50	24	20.47	21.0±1	1.0
				50	49	20.47	21.0±1	1.0
				100	0	20.56	21.0±1	1.0

LTE Band 5:

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
1.4MHz	20407	824.7	QPSK	1	0	22.46	22.0±1	/
				1	2	22.5	22.0±1	/
				1	5	22.38	22.0±1	/
				3	0	22.53	22.0±1	/
				3	1	22.46	22.0±1	/
				3	2	22.49	22.0±1	/
				6	0	21.51	22.0±1	1.0
			16QAM	1	0	22.67	22.0±1	1.0
				1	2	22.67	22.0±1	1.0
				1	5	22.65	22.0±1	1.0
				3	0	21.66	22.0±1	1.0
				3	1	21.68	22.0±1	1.0
				3	2	21.68	22.0±1	1.0
				6	0	20.86	20.0±1	1.0
	20525	836.5	QPSK	1	0	22.34	22.0±1	/
				1	2	22.36	22.0±1	/
				1	5	22.38	22.0±1	/
				3	0	22.45	22.0±1	/
				3	1	22.58	22.0±1	/
				3	2	22.55	22.0±1	/
				6	0	21.51	22.0±1	1.0
			16QAM	1	0	22.29	22.0±1	1.0
				1	2	22.32	22.0±1	1.0
				1	5	22.34	22.0±1	1.0
				3	0	21.47	22.0±1	1.0
				3	1	21.41	22.0±1	1.0
				3	2	21.4	22.0±1	1.0
				6	0	20	20.0±1	1.0
	20634	848.3	QPSK	1	0	22.32	22.0±1	/
				1	2	22.46	22.0±1	/
				1	5	22.5	22.0±1	/
				3	0	22.2	22.0±1	/
				3	1	22.48	22.0±1	/
				3	2	22.57	22.0±1	/
				6	0	21.47	22.0±1	1.0
			16QAM	1	0	22.57	22.0±1	1.0
				1	2	22.48	22.0±1	1.0
				1	5	22.47	22.0±1	1.0
				3	0	21.89	22.0±1	1.0
				3	1	21.83	22.0±1	1.0
				3	2	21.78	22.0±1	1.0
				6	0	20.9	20.0±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
3MHz	20415	825.5	QPSK	1	0	22.46	22.0±1	/
				1	8	22.45	22.0±1	/
				1	14	22.43	22.0±1	/
				6	0	21.55	22.0±1	1.0
				6	4	21.54	22.0±1	1.0
				6	9	21.41	22.0±1	1.0
				15	0	21.46	22.0±1	1.0
			16QAM	1	0	21.85	21.0±1	1.0
				1	8	21.89	21.0±1	1.0
				1	14	21.71	21.0±1	1.0
				8	0	20.66	21.0±1	1.0
				8	4	20.73	21.0±1	1.0
				8	9	20.4	21.0±1	1.0
				15	0	20.83	21.0±1	1.0
	20525	836.5	QPSK	1	0	22.37	22.0±1	/
				1	8	22.47	22.0±1	/
				1	14	22.46	22.0±1	/
				6	0	21.45	22.0±1	1.0
				6	4	21.48	22.0±1	1.0
				6	9	21.42	22.0±1	1.0
				15	0	21.47	22.0±1	1.0
			16QAM	1	0	22.31	22.0±1	1.0
				1	8	22.32	22.0±1	1.0
				1	14	22.32	22.0±1	1.0
				6	0	20.86	20.0±1	1.0
				6	4	20.52	20.0±1	1.0
				6	9	20.58	20.0±1	1.0
				15	0	20.42	20.0±1	1.0
	20635	847.5	QPSK	1	0	22.21	22.0±1	/
				1	8	22.35	22.0±1	/
				1	14	22.56	22.0±1	/
				6	0	21.49	22.0±1	1.0
				6	4	21.5	22.0±1	1.0
				6	9	21.46	22.0±1	1.0
				15	0	21.58	22.0±1	1.0
			16QAM	1	0	22.47	22.0±1	1.0
				1	8	22.41	22.0±1	1.0
				1	14	22.42	22.0±1	1.0
				8	0	20.76	20.0±1	1.0
				8	4	20.72	20.0±1	1.0
				8	9	20.73	20.0±1	1.0
				15	0	20.62	20.0±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
5MHz	20425	826.5	QPSK	1	0	22.39	22.0±1	/
				1	49	22.45	22.0±1	/
				1	99	22.34	22.0±1	/
				12	0	21.53	22.0±1	1.0
				12	24	21.4	22.0±1	1.0
				12	49	21.4	22.0±1	1.0
				25	0	21.41	22.0±1	1.0
			16QAM	1	0	21.2	21.0±1	1.0
				1	49	21.07	21.0±1	1.0
				1	99	21	21.0±1	1.0
				12	0	20.67	21.0±1	1.0
				12	24	20.29	21.0±1	1.0
				12	49	20.29	21.0±1	1.0
				25	0	20.44	21.0±1	1.0
	20525	836.5	QPSK	1	0	22.39	22.0±1	/
				1	49	22.48	22.0±1	/
				1	99	22.31	22.0±1	/
				12	0	21.41	22.0±1	1.0
				12	24	21.4	22.0±1	1.0
				12	49	21.43	22.0±1	1.0
				25	0	21.48	22.0±1	1.0
			16QAM	1	0	21.34	21.0±1	1.0
				1	49	21.23	21.0±1	1.0
				1	99	21.05	21.0±1	1.0
				12	0	20.73	21.0±1	1.0
				12	24	20.34	21.0±1	1.0
				12	49	20.37	21.0±1	1.0
				25	0	20.51	21.0±1	1.0
	20625	846.5	QPSK	1	0	22.5	22.0±1	/
				1	49	22.22	22.0±1	/
				1	99	22.57	22.0±1	/
				12	0	21.8	22.0±1	1.0
				12	24	21.53	22.0±1	1.0
				12	49	21.44	22.0±1	1.0
				25	0	21.48	22.0±1	1.0
			16QAM	1	0	21.53	21.0±1	1.0
				1	49	21.33	21.0±1	1.0
				1	99	21.35	21.0±1	1.0
				12	0	20.76	21.0±1	1.0
				12	24	20.74	21.0±1	1.0
				12	49	20.7	21.0±1	1.0
				25	0	20.65	21.0±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
10MHz	20450	829	QPSK	1	0	22.61	22.0±1	/
				1	49	22.45	22.0±1	/
				1	99	22.57	22.0±1	/
				25	0	21.48	22.0±1	1.0
				25	24	21.26	22.0±1	1.0
				25	49	21.56	22.0±1	1.0
				50	0	21.32	22.0±1	1.0
			16QAM	1	0	22.12	22.0±1	1.0
				1	49	21.85	22.0±1	1.0
				1	99	22.1	22.0±1	1.0
				25	0	20.29	20.0±1	1.0
				25	24	20.64	20.0±1	1.0
				25	49	20.33	20.0±1	1.0
				50	0	20.76	20.0±1	1.0
	20525	836.5	QPSK	1	0	22.68	22.0±1	/
				1	49	22.62	22.0±1	/
				1	99	22.55	22.0±1	/
				25	0	21.53	22.0±1	1.0
				25	24	21.53	22.0±1	1.0
				25	49	21.26	22.0±1	1.0
				50	0	21.39	22.0±1	1.0
			16QAM	1	0	21.59	21.0±1	1.0
				1	49	21.62	21.0±1	1.0
				1	99	21.54	21.0±1	1.0
				25	0	20.76	21.0±1	1.0
				25	24	20.44	21.0±1	1.0
				25	49	20.78	21.0±1	1.0
				50	0	20.39	21.0±1	1.0
	20600	844	QPSK	1	0	22.29	22.0±1	/
				1	49	22.25	22.0±1	/
				1	99	22.48	22.0±1	/
				25	0	21.46	22.0±1	1.0
				25	24	21.13	22.0±1	1.0
				25	49	21.51	22.0±1	1.0
				50	0	21.22	22.0±1	1.0
			16QAM	1	0	21.3	21.0±1	1.0
				1	49	21.18	21.0±1	1.0
				1	99	21.55	21.0±1	1.0
				25	0	20.81	21.0±1	1.0
				25	24	20.81	21.0±1	1.0
				25	49	20.78	21.0±1	1.0
				50	0	20.76	21.0±1	1.0

LTE Band 7:

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
5MHz	20775	2502.5	QPSK	1	0	21.47	21.0±1	/
				1	49	21.49	21.0±1	/
				1	99	21.63	21.0±1	/
				12	0	20.63	21.0±1	1.0
				12	24	20.69	21.0±1	1.0
				12	49	20.62	21.0±1	1.0
				25	0	20.66	21.0±1	1.0
			16QAM	1	0	21.12	21.0±1	1.0
				1	49	21.06	21.0±1	1.0
				1	99	21.13	21.0±1	1.0
				12	0	19.75	19.0±1	1.0
				12	24	19.73	19.0±1	1.0
				12	49	19.83	19.0±1	1.0
				25	0	19.86	19.0±1	1.0
	21100	2535	QPSK	1	0	22.06	22.0±1	/
				1	49	22.11	22.0±1	/
				1	99	22.1	22.0±1	/
				12	0	21.16	22.0±1	1.0
				12	24	21.14	22.0±1	1.0
				12	49	21.05	22.0±1	1.0
				25	0	21.11	22.0±1	1.0
			16QAM	1	0	20.8	20.0±1	1.0
				1	49	20.78	20.0±1	1.0
				1	99	20.83	20.0±1	1.0
				12	0	20.16	20.0±1	1.0
				12	24	20.07	20.0±1	1.0
				12	49	20.09	20.0±1	1.0
				25	0	20.37	20.0±1	1.0
	21425	2567.5	QPSK	1	0	22.32	22.0±1	/
				1	49	22.24	22.0±1	/
				1	99	22.27	22.0±1	/
				12	0	21.24	22.0±1	1.0
				12	24	21.21	22.0±1	1.0
				12	49	21.26	22.0±1	1.0
				25	0	21.24	22.0±1	1.0
			16QAM	1	0	21.21	21.0±1	1.0
				1	49	21.17	21.0±1	1.0
				1	99	21.25	21.0±1	1.0
				12	0	20.37	21.0±1	1.0
				12	24	20.35	21.0±1	1.0
				12	49	20.4	21.0±1	1.0
				25	0	20.59	21.0±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
10MHz	20800	2505	QPSK	1	0	21.59	21.0±1	/
				1	49	21.68	21.0±1	/
				1	99	21.73	21.0±1	/
				25	0	20.63	21.0±1	1.0
				25	24	20.85	21.0±1	1.0
				25	49	20.92	21.0±1	1.0
				50	0	20.74	21.0±1	1.0
			16QAM	1	0	21.33	21.0±1	1.0
				1	49	21.4	21.0±1	1.0
				1	99	21.5	21.0±1	1.0
				25	0	19.67	19.0±1	1.0
				25	24	19.76	19.0±1	1.0
				25	49	19.85	19.0±1	1.0
				50	0	19.79	19.0±1	1.0
	21100	2535	QPSK	1	0	22.12	22.0±1	/
				1	49	22.07	22.0±1	/
				1	99	22.17	22.0±1	/
				25	0	21.11	22.0±1	1.0
				25	24	21.03	22.0±1	1.0
				25	49	21.11	22.0±1	1.0
				50	0	21.1	22.0±1	1.0
			16QAM	1	0	21.35	21.0±1	1.0
				1	49	21.33	21.0±1	1.0
				1	99	21.43	21.0±1	1.0
				25	0	20.15	21.0±1	1.0
				25	24	20.22	21.0±1	1.0
				25	49	20.31	21.0±1	1.0
				50	0	20.17	21.0±1	1.0
	21400	2565	QPSK	1	0	22.32	22.0±1	/
				1	49	22.36	22.0±1	/
				1	99	22.32	22.0±1	/
				25	0	21.31	22.0±1	1.0
				25	24	21.38	22.0±1	1.0
				25	49	21.25	22.0±1	1.0
				50	0	21.3	22.0±1	1.0
			16QAM	1	0	21.53	21.0±1	1.0
				1	49	21.42	21.0±1	1.0
				1	99	21.42	21.0±1	1.0
				25	0	20.53	21.0±1	1.0
				25	24	20.53	21.0±1	1.0
				25	49	20.5	21.0±1	1.0
				50	0	20.45	21.0±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
15MHz	20825	2507.5	QPSK	1	0	21.68	21.0±1	/
				1	49	21.69	21.0±1	/
				1	99	21.78	21.0±1	/
				36	0	20.85	21.0±1	1.0
				36	24	20.9	21.0±1	1.0
				36	49	20.82	21.0±1	1.0
				75	0	20.9	21.0±1	1.0
			16QAM	1	0	21.44	21.0±1	1.0
				1	49	21.51	21.0±1	1.0
				1	99	21.57	21.0±1	1.0
				36	0	19.83	19.0±1	1.0
				36	24	19.97	19.0±1	1.0
				36	49	19.99	19.0±1	1.0
				75	0	20.06	19.0±1	1.0
	21100	2535	QPSK	1	0	22.09	22.0±1	/
				1	49	22.1	22.0±1	/
				1	99	22.12	22.0±1	/
				36	0	21.07	22.0±1	1.0
				36	24	21.16	22.0±1	1.0
				36	49	21.11	22.0±1	1.0
				75	0	21.04	22.0±1	1.0
			16QAM	1	0	21.26	21.0±1	1.0
				1	49	21.33	21.0±1	1.0
				1	99	21.29	21.0±1	1.0
				36	0	20.22	21.0±1	1.0
				36	24	20.23	21.0±1	1.0
				36	49	20.17	21.0±1	1.0
				75	0	20.1	21.0±1	1.0
	21375	2562.5	QPSK	1	0	22.29	22.0±1	/
				1	49	22.29	22.0±1	/
				1	99	22.26	22.0±1	/
				36	0	21.27	22.0±1	1.0
				36	24	21.24	22.0±1	1.0
				36	49	21.23	22.0±1	1.0
				75	0	21.25	22.0±1	1.0
			16QAM	1	0	22.32	22.0±1	1.0
				1	49	22.28	22.0±1	1.0
				1	99	22.18	22.0±1	1.0
				36	0	20.41	20.0±1	1.0
				36	24	20.39	20.0±1	1.0
				36	49	20.29	20.0±1	1.0
				75	0	20.41	20.0±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
20MHz	20850	2510	QPSK	1	0	21.64	21.5±1	/
				1	49	21.74	21.5±1	/
				1	99	22.04	21.5±1	/
				50	0	20.87	21.5±1	1.0
				50	24	20.89	21.5±1	1.0
				50	49	20.93	21.5±1	1.0
				100	0	20.81	21.5±1	1.0
			16QAM	1	0	20.66	20.0±1	1.0
				1	49	20.74	20.0±1	1.0
				1	99	20.88	20.0±1	1.0
				50	0	19.96	20.0±1	1.0
				50	24	20.05	20.0±1	1.0
				50	49	20.08	20.0±1	1.0
				100	0	20.05	20.0±1	1.0
	21100	2535	QPSK	1	0	22.05	22.0±1	/
				1	49	22.14	22.0±1	/
				1	99	22.27	22.0±1	/
				50	0	21.14	22.0±1	1.0
				50	24	21.05	22.0±1	1.0
				50	49	21.17	22.0±1	1.0
				100	0	21.06	22.0±1	1.0
			16QAM	1	0	21.5	21.0±1	1.0
				1	49	21.56	21.0±1	1.0
				1	99	21.54	21.0±1	1.0
				50	0	20.28	21.0±1	1.0
				50	24	20.21	21.0±1	1.0
				50	49	20.18	21.0±1	1.0
				100	0	20.12	21.0±1	1.0
	21350	2560	QPSK	1	0	22.41	22.0±1	/
				1	49	22.39	22.0±1	/
				1	99	22.39	22.0±1	/
				50	0	21.2	22.0±1	1.0
				50	24	21.15	22.0±1	1.0
				50	49	21.17	22.0±1	1.0
				100	0	21.13	22.0±1	1.0
			16QAM	1	0	21.32	21.0±1	1.0
				1	49	21.3	21.0±1	1.0
				1	99	21.39	21.0±1	1.0
				50	0	20.29	21.0±1	1.0
				50	24	20.38	21.0±1	1.0
				50	49	20.32	21.0±1	1.0
				100	0	20.39	21.0±1	1.0

LTE Band 12:

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
1.4MHz	23017	699.7	QPSK	1	0	22.61	22.0±1	/
				1	2	22.55	22.0±1	/
				1	5	22.58	22.0±1	/
				3	0	22.52	22.0±1	/
				3	1	22.55	22.0±1	/
				3	2	22.57	22.0±1	/
				6	0	21.52	22.0±1	1.0
			16QAM	1	0	22.46	22.0±1	1.0
				1	2	22.42	22.0±1	1.0
				1	5	22.41	22.0±1	1.0
				3	0	21.54	21.0±1	1.0
				3	1	21.61	21.0±1	1.0
				3	2	21.6	21.0±1	1.0
				6	0	20.7	21.0±1	1.0
	23095	707.5	QPSK	1	0	22.58	22.0±1	/
				1	2	22.65	22.0±1	/
				1	5	22.67	22.0±1	/
				3	0	22.72	22.0±1	/
				3	1	22.7	22.0±1	/
				3	2	22.72	22.0±1	/
				6	0	21.68	22.0±1	1.0
			16QAM	1	0	22.4	22.0±1	1.0
				1	2	22.52	22.0±1	1.0
				1	5	22.47	22.0±1	1.0
				3	0	21.6	22.0±1	1.0
				3	1	21.58	22.0±1	1.0
				3	2	21.63	22.0±1	1.0
				6	0	20.37	20.0±1	1.0
	23173	715.3	QPSK	1	0	22.69	22.0±1	/
				1	2	22.64	22.0±1	/
				1	5	22.61	22.0±1	/
				3	0	22.66	22.0±1	/
				3	1	22.65	22.0±1	/
				3	2	22.59	22.0±1	/
				6	0	21.58	22.0±1	1.0
			16QAM	1	0	22.69	22.0±1	1.0
				1	2	22.67	22.0±1	1.0
				1	5	22.72	22.0±1	1.0
				3	0	22.06	22.0±1	1.0
				3	1	22.01	22.0±1	1.0
				3	2	22.02	22.0±1	1.0
				6	0	20.77	20.0±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
3MHz	23025	700.5	QPSK	1	0	22.52	22.0±1	/
				1	8	22.48	22.0±1	/
				1	14	22.61	22.0±1	/
				8	0	21.69	22.0±1	1.0
				8	4	21.67	22.0±1	1.0
				8	9	21.66	22.0±1	1.0
				15	0	21.59	22.0±1	1.0
			16QAM	1	0	21.92	21.0±1	1.0
				1	8	21.84	21.0±1	1.0
				1	14	21.92	21.0±1	1.0
				8	0	20.65	21.0±1	1.0
				8	4	20.69	21.0±1	1.0
				8	9	20.53	21.0±1	1.0
				15	0	20.58	21.0±1	1.0
	23095	707.5	QPSK	1	0	22.53	22.0±1	/
				1	8	22.67	22.0±1	/
				1	14	22.65	22.0±1	/
				8	0	21.52	22.0±1	1.0
				8	4	21.62	22.0±1	1.0
				8	9	21.62	22.0±1	1.0
				15	0	21.63	22.0±1	1.0
			16QAM	1	0	22.37	21.6±1	1.0
				1	8	22.47	21.6±1	1.0
				1	14	22.51	21.6±1	1.0
				8	0	20.69	21.6±1	1.0
				8	4	21	21.6±1	1.0
				8	9	20.94	21.6±1	1.0
				15	0	20.73	21.6±1	1.0
	23165	714.5	QPSK	1	0	22.76	22.0±1	/
				1	8	22.7	22.0±1	/
				1	14	22.63	22.0±1	/
				8	0	21.63	22.0±1	1.0
				8	4	21.68	22.0±1	1.0
				8	9	21.63	22.0±1	1.0
				15	0	21.64	22.0±1	1.0
			16QAM	1	0	22.66	22.0±1	1.0
				1	8	22.61	22.0±1	1.0
				1	14	22.68	22.0±1	1.0
				8	0	20.89	20.0±1	1.0
				8	4	20.72	20.0±1	1.0
				8	9	20.85	20.0±1	1.0
				15	0	20.63	20.0±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
5MHz	23035	701.5	QPSK	1	0	22.48	22.0±1	/
				1	49	22.5	22.0±1	/
				1	99	22.53	22.0±1	/
				12	0	21.59	22.0±1	1.0
				12	24	21.58	22.0±1	1.0
				12	49	21.53	22.0±1	1.0
				25	0	21.53	22.0±1	1.0
			16QAM	1	0	21.2	21.0±1	1.0
				1	49	21.19	21.0±1	1.0
				1	99	21.29	21.0±1	1.0
				12	0	20.54	21.0±1	1.0
				12	24	20.5	21.0±1	1.0
				12	49	20.55	21.0±1	1.0
				25	0	20.63	21.0±1	1.0
	23095	707.5	QPSK	1	0	22.58	22.0±1	/
				1	49	22.66	22.0±1	/
				1	99	22.54	22.0±1	/
				12	0	21.58	22.0±1	1.0
				12	24	21.63	22.0±1	1.0
				12	49	21.58	22.0±1	1.0
				25	0	21.66	22.0±1	1.0
			16QAM	1	0	21.28	21.0±1	1.0
				1	49	21.43	21.0±1	1.0
				1	99	21.56	21.0±1	1.0
				12	0	20.6	21.0±1	1.0
				12	24	20.87	21.0±1	1.0
				12	49	20.77	21.0±1	1.0
				25	0	20.79	21.0±1	1.0
	23155	713.5	QPSK	1	0	22.56	22.0±1	/
				1	49	22.7	22.0±1	/
				1	99	22.53	22.0±1	/
				12	0	21.66	22.0±1	1.0
				12	24	21.61	22.0±1	1.0
				12	49	21.57	22.0±1	1.0
				25	0	21.58	22.0±1	1.0
			16QAM	1	0	21.46	21.0±1	1.0
				1	49	21.47	21.0±1	1.0
				1	99	21.5	21.0±1	1.0
				12	0	20.64	21.0±1	1.0
				12	24	20.67	21.0±1	1.0
				12	49	20.66	21.0±1	1.0
				25	0	20.65	21.0±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
10MHz	23060	704	QPSK	1	0	22.48	22.0±1	/
				1	49	22.62	22.0±1	/
				1	99	22.57	22.0±1	/
				25	0	21.53	22.0±1	1.0
				25	24	21.63	22.0±1	1.0
				25	49	21.59	22.0±1	1.0
				50	0	21.63	22.0±1	1.0
			16QAM	1	0	21.91	22.0±1	1.0
				1	49	21.97	22.0±1	1.0
				1	99	22.04	22.0±1	1.0
				25	0	20.44	20.0±1	1.0
				25	24	20.53	20.0±1	1.0
				25	49	20.43	20.0±1	1.0
				50	0	20.53	20.0±1	1.0
	23095	707.5	QPSK	1	0	22.63	22.0±1	/
				1	49	22.77	22.0±1	/
				1	99	22.66	22.0±1	/
				25	0	21.56	22.0±1	1.0
				25	24	21.62	22.0±1	1.0
				25	49	21.65	22.0±1	1.0
				50	0	21.7	22.0±1	1.0
			16QAM	1	0	21.7	21.0±1	1.0
				1	49	21.78	21.0±1	1.0
				1	99	21.76	21.0±1	1.0
				25	0	20.57	21.0±1	1.0
				25	24	20.68	21.0±1	1.0
				25	49	20.66	21.0±1	1.0
				50	0	20.81	21.0±1	1.0
	23130	711	QPSK	1	0	22.67	22.0±1	/
				1	49	22.57	22.0±1	/
				1	99	22.6	22.0±1	/
				25	0	21.7	22.0±1	1.0
				25	24	21.69	22.0±1	1.0
				25	49	21.62	22.0±1	1.0
				50	0	21.71	22.0±1	1.0
			16QAM	1	0	21.59	21.0±1	1.0
				1	49	21.8	21.0±1	1.0
				1	99	21.63	21.0±1	1.0
				25	0	20.8	21.0±1	1.0
				25	24	20.79	21.0±1	1.0
				25	49	20.73	21.0±1	1.0
				50	0	20.7	21.0±1	1.0

LTE Band 13:

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
5MHz	23205	779.5	QPSK	1	0	22.21	22.0±1	/
				1	49	22.3	22.0±1	/
				1	99	22.38	22.0±1	/
				12	0	21.47	22.0±1	1.0
				12	24	21.73	22.0±1	1.0
				12	49	21.85	22.0±1	1.0
				25	0	21.77	22.0±1	1.0
			16QAM	1	0	21.73	21.5±1	1.0
				1	49	22.18	21.5±1	1.0
				1	99	22.15	21.5±1	1.0
				12	0	20.78	21.5±1	1.0
				12	24	20.83	21.5±1	1.0
				12	49	20.79	21.5±1	1.0
				25	0	20.91	21.5±1	1.0
	23230	782.0	QPSK	1	0	22.38	22.0±1	/
				1	49	22.47	22.0±1	/
				1	99	22.27	22.0±1	/
				12	0	21.8	22.0±1	1.0
				12	24	21.76	22.0±1	1.0
				12	49	21.36	22.0±1	1.0
				25	0	21.8	22.0±1	1.0
			16QAM	1	0	21.54	21.0±1	1.0
				1	49	21.55	21.0±1	1.0
				1	99	21.04	21.0±1	1.0
				12	0	20.79	21.0±1	1.0
				12	24	20.78	21.0±1	1.0
				12	49	20.79	21.0±1	1.0
				25	0	21	21.0±1	1.0
	23255	784.5	QPSK	1	0	22.42	22.0±1	/
				1	49	22.25	22.0±1	/
				1	99	22.28	22.0±1	/
				12	0	21.38	22.0±1	1.0
				12	24	21.39	22.0±1	1.0
				12	49	21.83	22.0±1	1.0
				25	0	21.4	22.0±1	1.0
			16QAM	1	0	21.69	21.0±1	1.0
				1	49	21.2	21.0±1	1.0
				1	99	21.66	21.0±1	1.0
				12	0	20.85	21.0±1	1.0
				12	24	20.8	21.0±1	1.0
				12	49	20.85	21.0±1	1.0
				25	0	20.93	21.0±1	1.0

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
10MHz	23230	782.0	QPSK	1	0	22.37	22.0±1	/
				1	49	22.48	22.0±1	/
				1	99	22.31	22.0±1	/
				25	0	21.88	22.0±1	1.0
				25	24	21.88	22.0±1	1.0
				25	49	21.34	22.0±1	1.0
				50	0	21.84	22.0±1	1.0
			16QAM	1	0	21.9	21.5±1	1.0
				1	49	22.33	21.5±1	1.0
				1	99	22.35	21.5±1	1.0
				25	0	20.74	21.5±1	1.0
				25	24	20.76	21.5±1	1.0
				25	49	20.77	21.5±1	1.0
				50	0	20.83	21.5±1	1.0

ERP and EIRP**LTE Band 2**

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Part 24E	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE Band 2 Channel 18607 – 1.4MHz – QPSK										
1850.70	80.57	0	1.4	H	6.60	0.31	10.40	16.69	33	-16.31
1850.70	80.70	55	2.3	V	7.42	0.31	10.40	17.51	33	-15.49
LTE Band 2 Channel 18900 – 1.4MHz – QPSK										
1880.00	80.78	97	2.0	H	6.93	0.31	10.40	17.02	33	-15.98
1880.00	80.43	51	2.3	V	7.31	0.31	10.40	17.40	33	-15.60
LTE Band 2 Channel 19193 – 1.4MHz – QPSK										
1909.30	80.87	184	1.8	H	7.14	0.32	10.40	17.22	33	-15.78
1909.30	80.56	354	2.3	V	7.60	0.32	10.40	17.68	33	-15.32
LTE Band 2 Channel 18607 – 1.4MHz – 16QAM										
1850.70	80.83	356	1.4	H	6.86	0.31	10.40	16.95	33	-16.05
1850.70	80.42	132	2.0	V	7.14	0.31	10.40	17.23	33	-15.77
LTE Band 2 Channel 18900 – 1.4MHz – 16QAM										
1880.00	80.36	155	1.8	H	6.51	0.31	10.40	16.60	33	-16.40
1880.00	80.36	185	2.2	V	7.24	0.31	10.40	17.33	33	-15.67
LTE Band 2 Channel 19193 – 1.4MHz – 16QAM										
1909.30	80.41	89	2.2	H	6.68	0.32	10.40	16.76	33	-16.24
1909.30	80.49	137	1.8	V	7.53	0.32	10.40	17.61	33	-15.39
LTE Band 2 Channel 18615 – 3MHz – QPSK										
1851.50	80.92	354	1.9	H	6.95	0.31	10.40	17.04	33	-15.96
1851.50	80.81	93	2.2	V	7.53	0.31	10.40	17.62	33	-15.38
LTE Band 2 Channel 18900 – 3MHz – QPSK										
1880.00	80.85	284	2.0	H	7.00	0.31	10.40	17.09	33	-15.91
1880.00	80.50	359	1.2	V	7.38	0.31	10.40	17.47	33	-15.53
LTE Band 2 Channel 19185 – 3MHz – QPSK										
1908.50	80.87	309	1.7	H	7.14	0.32	10.40	17.22	33	-15.78
1908.50	80.51	228	1.5	V	7.55	0.32	10.40	17.63	33	-15.37
LTE Band 2 Channel 18615 – 3MHz – 16QAM										
1851.50	80.63	221	1.4	H	6.66	0.31	10.40	16.75	33	-16.25
1851.50	80.63	186	2.2	V	7.35	0.31	10.40	17.44	33	-15.56
LTE Band 2 Channel 18900 – 3MHz – 16QAM										
1880.00	80.55	19	1.8	H	6.70	0.31	10.40	16.79	33	-16.21
1880.00	80.54	302	1.8	V	7.42	0.31	10.40	17.51	33	-15.49
LTE Band 2 Channel 19185 – 3MHz – 16QAM										
1908.50	80.82	277	2.0	H	7.09	0.32	10.40	17.17	33	-15.83
1908.50	80.36	239	2.0	V	7.40	0.32	10.40	17.48	33	-15.52
LTE Band 2 Channel 18625 – 5MHz – QPSK										
1852.50	80.87	283	2.3	H	6.90	0.31	10.40	16.99	33	-16.01
1852.50	80.59	144	2.3	V	7.31	0.31	10.40	17.40	33	-15.60

LTE Band 2 Channel 18900 – 5MHz – QPSK										
1880.00	80.62	261	1.8	H	6.77	0.31	10.40	16.86	33	-16.14
1880.00	80.33	80	2.1	V	7.21	0.31	10.40	17.30	33	-15.70
LTE Band 2 Channel 19175 – 5MHz – QPSK										
1907.50	80.72	197	1.3	H	6.99	0.32	10.40	17.07	33	-15.93
1907.50	80.98	317	1.1	V	8.02	0.32	10.40	18.10	33	-14.90
LTE Band 2 Channel 18625 – 5MHz – 16QAM										
1852.50	80.54	233	2.5	H	6.57	0.31	10.40	16.66	33	-16.34
1852.50	80.62	59	1.1	V	7.34	0.31	10.40	17.43	33	-15.57
LTE Band 2 Channel 18900 – 5MHz – 16QAM										
1880.00	80.40	175	1.2	H	6.55	0.31	10.40	16.64	33	-16.36
1880.00	80.68	230	1.8	V	7.56	0.31	10.40	17.65	33	-15.35
LTE Band 2 Channel 19175 – 5MHz – 16QAM										
1907.50	80.42	50	1.8	H	6.45	0.31	10.40	16.54	33	-16.46
1907.50	80.22	197	2.2	V	6.94	0.31	10.40	17.03	33	-15.97
LTE Band 2 Channel 18650 – 10MHz – QPSK										
1855.00	80.47	144	2.2	H	6.50	0.31	10.40	16.59	33	-16.41
1855.00	80.55	94	1.0	V	7.27	0.31	10.40	17.36	33	-15.64
LTE Band 2 Channel 18900 – 10MHz – QPSK										
1880.00	80.65	23	2.1	H	6.80	0.31	10.40	16.89	33	-16.11
1880.00	80.53	225	2.5	V	7.41	0.31	10.40	17.50	33	-15.50
LTE Band 2 Channel 19150 – 10MHz – QPSK										
1905.00	80.40	254	2.3	H	6.67	0.32	10.40	16.75	33	-16.25
1905.00	80.39	258	2.1	V	7.43	0.32	10.40	17.51	33	-15.49
LTE Band 2 Channel 18650 – 10MHz – 16QAM										
1855.00	80.34	168	1.9	H	6.37	0.31	10.40	16.46	33	-16.54
1855.00	80.35	261	2.4	V	7.07	0.31	10.40	17.16	33	-15.84
LTE Band 2 Channel 18900 – 10MHz – 16QAM										
1880.00	80.41	37	1.8	H	6.56	0.31	10.40	16.65	33	-16.35
1880.00	80.47	83	1.6	V	7.35	0.31	10.40	17.44	33	-15.56
LTE Band 2 Channel 19150 – 10MHz – 16QAM										
1905.00	81.00	252	2.1	H	7.27	0.32	10.40	17.35	33	-15.65
1905.00	80.29	15	1.8	V	7.33	0.32	10.40	17.41	33	-15.59
LTE Band 2 Channel 18675 – 15MHz – QPSK										
1857.50	80.88	171	1.2	H	6.91	0.31	10.40	17.00	33	-16.00
1857.50	80.28	260	1.3	V	7.00	0.31	10.40	17.09	33	-15.91
LTE Band 2 Channel 18900 – 15MHz – QPSK										
1880.00	80.61	357	2.4	H	6.76	0.31	10.40	16.85	33	-16.15
1880.00	80.43	220	2.3	V	7.31	0.31	10.40	17.40	33	-15.60
LTE Band 2 Channel 19125 – 15MHz – QPSK										
1902.50	80.77	206	1.2	H	7.04	0.32	10.40	17.12	33	-15.88
1902.50	80.70	329	2.2	V	7.74	0.32	10.40	17.82	33	-15.18
LTE Band 2 Channel 18675 – 15MHz – 16QAM										
1857.50	80.51	203	1.3	H	6.54	0.31	10.40	16.63	33	-16.37
1857.50	80.37	166	2.1	V	7.09	0.31	10.40	17.18	33	-15.82

LTE Band 2 Channel 18900 – 15MHz – 16QAM										
1880.00	80.37	166	1.2	H	6.52	0.31	10.40	16.61	33	-16.39
1880.00	80.47	321	1.3	V	7.35	0.31	10.40	17.44	33	-15.56
LTE Band 2 Channel 19125 – 15MHz – 16QAM										
1902.50	80.55	16	1.4	H	6.82	0.32	10.40	16.90	33	-16.10
1902.50	80.58	187	1.7	V	7.62	0.32	10.40	17.70	33	-15.30
LTE Band 2 Channel 18700 – 20MHz – QPSK										
1860.00	80.88	67	1.5	H	6.91	0.31	10.40	17.00	33	-16.00
1860.00	80.44	226	1.7	V	7.16	0.31	10.40	17.25	33	-15.75
LTE Band 2 Channel 18900 – 20MHz – QPSK										
1880.00	80.72	75	2.4	H	6.87	0.31	10.40	16.96	33	-16.04
1880.00	80.49	30	1.7	V	7.37	0.31	10.40	17.46	33	-15.54
LTE Band 2 Channel 19100 – 20MHz – QPSK										
1900.00	80.31	146	2.2	H	6.46	0.31	10.40	16.55	33	-16.45
1900.00	81.02	62	2.3	V	7.90	0.31	10.40	17.99	33	-15.01
LTE Band 2 Channel 18670 – 20MHz – 16QAM										
1860.00	80.63	180	2.3	H	6.66	0.31	10.40	16.75	33	-16.25
1860.00	80.29	150	2.3	V	7.01	0.31	10.40	17.10	33	-15.90
LTE Band 2 Channel 18900 – 20MHz – 16QAM										
1880.00	80.37	255	1.4	H	6.52	0.31	10.40	16.61	33	-16.39
1880.00	80.43	324	2.4	V	7.31	0.31	10.40	17.40	33	-15.60
LTE Band 2 Channel 19100 – 20MHz – 16QAM										
1900.00	80.29	33	1.7	H	6.56	0.32	10.40	16.64	33	-16.36
1900.00	80.66	350	2.3	V	7.70	0.32	10.40	17.78	33	-15.22

LTE Band 5

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Part 22H	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE Band 5 Channel 20407 – 1.4MHz – QPSK										
824.70	68.75	0	2.3	H	1.64	0.30	9.40	10.74	38.45	-27.71
824.70	68.48	236	1.3	V	0.95	0.30	9.40	10.05	38.45	-28.40
LTE Band 5 Channel 20525 – 1.4MHz – QPSK										
836.50	68.77	73	1.3	H	1.66	0.30	9.40	10.76	38.45	-27.69
836.50	68.59	45	1.0	V	1.06	0.30	9.40	10.16	38.45	-28.29
LTE Band 5 Channel 20643 – 1.4MHz – QPSK										
848.30	68.76	238	1.8	H	1.65	0.30	9.40	10.75	38.45	-27.70
848.30	68.77	326	2.0	V	1.24	0.30	9.40	10.34	38.45	-28.11
LTE Band 5 Channel 20407 – 1.4MHz – 16QAM										
824.70	68.92	326	2.0	H	1.81	0.30	9.40	10.91	38.45	-27.54
824.70	68.74	180	2.1	V	1.21	0.30	9.40	10.31	38.45	-28.14
LTE Band 5 Channel 20525 – 1.4MHz – 16QAM										
836.50	68.56	177	2.2	H	1.45	0.30	9.40	10.55	38.45	-27.90
836.50	68.79	196	2.0	V	1.26	0.30	9.40	10.36	38.45	-28.09
LTE Band 5 Channel 20643 – 1.4MHz – 16QAM										
848.30	68.59	40	1.1	H	1.48	0.30	9.40	10.58	38.45	-27.87
848.30	68.88	108	1.8	V	1.35	0.30	9.40	10.45	38.45	-28.00
LTE Band 5 Channel 20415 – 3MHz – QPSK										
825.50	68.49	116	1.6	H	1.38	0.30	9.40	10.48	38.45	-27.97
825.50	68.99	172	1.0	V	1.46	0.30	9.40	10.56	38.45	-27.89
LTE Band 5 Channel 20525 – 3MHz – QPSK										
836.50	68.86	140	1.7	H	1.75	0.30	9.40	10.85	38.45	-27.60
836.50	68.79	260	2.5	V	1.26	0.30	9.40	10.36	38.45	-28.09
LTE Band 5 Channel 20635 – 3MHz – QPSK										
847.50	68.79	331	1.7	H	1.68	0.30	9.40	10.78	38.45	-27.67
847.50	68.93	30	1.4	V	1.40	0.30	9.40	10.50	38.45	-27.95
LTE Band 5 Channel 20415 – 3MHz – 16QAM										
825.50	68.68	130	1.4	H	1.57	0.30	9.40	10.67	38.45	-27.78
825.50	68.49	157	1.5	V	0.96	0.30	9.40	10.06	38.45	-28.39
LTE Band 5 Channel 20525 – 3MHz – 16QAM										
836.50	68.71	89	1.7	H	1.60	0.30	9.40	10.70	38.45	-27.75
836.50	68.73	90	1.2	V	1.20	0.30	9.40	10.30	38.45	-28.15
LTE Band 5 Channel 20635 – 3MHz – 16QAM										
847.50	68.51	256	1.1	H	1.40	0.30	9.40	10.50	38.45	-27.95
847.50	68.89	232	1.9	V	1.36	0.30	9.40	10.46	38.45	-27.99
LTE Band 5 Channel 20425 – 5MHz – QPSK										
826.50	68.70	259	1.9	H	1.59	0.30	9.40	10.69	38.45	-27.76
826.50	68.74	0	1.8	V	1.21	0.30	9.40	10.31	38.45	-28.14

LTE Band 5 Channel 20525 – 5MHz – QPSK										
836.50	68.90	315	2.2	H	1.79	0.30	9.40	10.89	38.45	-27.56
836.50	68.87	1	2.2	V	1.34	0.30	9.40	10.44	38.45	-28.01
LTE Band 5 Channel 20625 – 5MHz – QPSK										
846.50	68.66	194	1.3	H	1.55	0.30	9.40	10.65	38.45	-27.80
846.50	68.91	135	2.3	V	1.38	0.30	9.40	10.48	38.45	-27.97
LTE Band 5 Channel 20425 – 5MHz – 16QAM										
826.50	68.62	241	2.2	H	1.51	0.30	9.40	10.61	38.45	-27.84
826.50	68.33	195	2.2	V	0.80	0.30	9.40	9.90	38.45	-28.55
LTE Band 5 Channel 20525 – 5MHz – 16QAM										
836.50	68.69	83	1.9	H	1.58	0.30	9.40	10.68	38.45	-27.77
836.50	68.74	110	2.0	V	1.21	0.30	9.40	10.31	38.45	-28.14
LTE Band 5 Channel 20625 – 5MHz – 16QAM										
846.50	68.78	115	1.5	H	1.67	0.30	9.40	10.77	38.45	-27.68
846.50	68.89	12	1.6	V	1.36	0.30	9.40	10.46	38.45	-27.99
LTE Band 5 Channel 20450 – 10MHz – QPSK										
829.00	68.74	106	1.8	H	1.63	0.30	9.40	10.73	38.45	-27.72
829.00	68.71	156	1.1	V	1.18	0.30	9.40	10.28	38.45	-28.17
LTE Band 5 Channel 20525 – 10MHz – QPSK										
836.50	69.16	284	1.1	H	2.05	0.30	9.40	11.15	38.45	-27.30
836.50	68.80	132	2.2	V	1.27	0.30	9.40	10.37	38.45	-28.08
LTE Band 5 Channel 20600 – 10MHz – QPSK										
844.00	68.58	65	2.3	H	1.47	0.30	9.40	10.57	38.45	-27.88
844.00	68.86	348	1.5	V	1.33	0.30	9.40	10.43	38.45	-28.02
LTE Band 5 Channel 20450 – 10MHz – 16QAM										
829.00	68.39	347	1.4	H	1.28	0.30	9.40	10.38	38.45	-28.07
829.00	69.18	327	2.0	V	1.65	0.30	9.40	10.75	38.45	-27.70
LTE Band 5 Channel 20525 – 10MHz – 16QAM										
836.50	68.93	268	1.5	H	1.82	0.30	9.40	10.92	38.45	-27.53
836.50	68.98	350	1.4	V	1.45	0.30	9.40	10.55	38.45	-27.90
LTE Band 5 Channel 20600 – 10MHz – 16QAM										
844.00	68.37	75	1.8	H	1.26	0.30	9.40	10.36	38.45	-28.09
844.00	68.82	218	2.1	V	1.29	0.30	9.40	10.39	38.45	-28.06

LTE Band 7

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Part 27	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE Band 7 Channel 20775 – 5MHz – QPSK										
2502.50	86.09	262	1.6	H	12.09	0.43	10.60	22.26	33	-10.74
2502.50	83.20	339	1.6	V	12.92	0.43	10.60	23.09	33	-9.91
LTE Band 7 Channel 21100 – 5MHz – QPSK										
2535.00	86.17	313	1.6	H	12.17	0.43	10.60	22.34	33	-10.66
2535.00	83.22	40	1.8	V	12.94	0.43	10.60	23.11	33	-9.89
LTE Band 7 Channel 21425 – 5MHz – QPSK										
2567.50	86.15	32	1.3	H	12.04	0.43	10.60	22.21	33	-10.79
2567.50	83.03	100	1.3	V	12.84	0.43	10.60	23.01	33	-9.99
LTE Band 7 Channel 20775 – 5MHz – 16QAM										
2502.50	86.29	145	1.7	H	12.29	0.43	10.60	22.46	33	-10.54
2502.50	82.94	216	1.9	V	12.66	0.43	10.60	22.83	33	-10.17
LTE Band 7 Channel 21100 – 5MHz – 16QAM										
2535.00	85.71	351	2.0	H	11.71	0.43	10.60	21.88	33	-11.12
2535.00	82.91	138	2.3	V	12.63	0.43	10.60	22.80	33	-10.20
LTE Band 7 Channel 21425 – 5MHz – 16QAM										
2567.50	85.79	72	2.0	H	11.68	0.43	10.60	21.85	33	-11.15
2567.50	83.16	147	2.4	V	12.97	0.43	10.60	23.14	33	-9.86
LTE Band 7 Channel 20800 – 10MHz – QPSK										
2505.00	86.01	135	1.4	H	12.01	0.43	10.60	22.18	33	-10.82
2505.00	83.05	246	2.3	V	12.77	0.43	10.60	22.94	33	-10.06
LTE Band 7 Channel 21100 – 10MHz – QPSK										
2535.00	86.15	36	1.0	H	12.15	0.43	10.60	22.32	33	-10.68
2535.00	83.04	199	2.1	V	12.76	0.43	10.60	22.93	33	-10.07
LTE Band 7 Channel 21400 – 10MHz – QPSK										
2565.00	85.88	312	1.3	H	11.77	0.43	10.60	21.94	33	-11.06
2565.00	82.86	99	1.8	V	12.67	0.43	10.60	22.84	33	-10.16
LTE Band 7 Channel 20800 – 10MHz – 16QAM										
2505.00	86.46	47	1.4	H	12.46	0.43	10.60	22.63	33	-10.37
2505.00	83.05	207	1.2	V	12.77	0.43	10.60	22.94	33	-10.06
LTE Band 7 Channel 21100 – 10MHz – 16QAM										
2535.00	85.90	107	1.8	H	11.79	0.43	10.60	21.96	33	-11.04
2535.00	83.14	59	1.5	V	12.95	0.43	10.60	23.12	33	-9.88
LTE Band 7 Channel 21400 – 10MHz – 16QAM										
2565.00	85.83	312	1.5	H	11.72	0.43	10.60	21.89	33	-11.11
2565.00	83.18	238	2.4	V	12.99	0.43	10.60	23.16	33	-9.84
LTE Band 7 Channel 20825 – 15MHz – QPSK										
2507.50	86.04	120	1.4	H	12.04	0.43	10.60	22.21	33	-10.79
2507.50	82.87	256	2.3	V	12.59	0.43	10.60	22.76	33	-10.24

LTE Band 7 Channel 21100 – 15MHz – QPSK										
2535.00	86.17	98	1.3	H	12.17	0.43	10.60	22.34	33	-10.66
2535.00	83.25	356	1.5	V	12.97	0.43	10.60	23.14	33	-9.86
LTE Band 7 Channel 21375 – 15MHz – QPSK										
2562.50	86.22	201	1.4	H	12.11	0.43	10.60	22.28	33	-10.72
2562.50	82.92	130	2.2	V	12.73	0.43	10.60	22.90	33	-10.10
LTE Band 7 Channel 20825 – 15MHz – 16QAM										
2507.50	86.32	175	2.2	H	12.32	0.43	10.60	22.49	33	-10.51
2507.50	83.08	36	2.4	V	12.80	0.43	10.60	22.97	33	-10.03
LTE Band 7 Channel 21100 – 15MHz – 16QAM										
2535.00	85.99	145	1.9	H	11.99	0.43	10.60	22.16	33	-10.84
2535.00	83.19	119	1.9	V	12.91	0.43	10.60	23.08	33	-9.92
LTE Band 7 Channel 21375 – 15MHz – 16QAM										
2562.50	86.34	160	2.4	H	12.23	0.43	10.60	22.40	33	-10.60
2562.50	82.84	113	1.5	V	12.65	0.43	10.60	22.82	33	-10.18
LTE Band 7 Channel 20850 – 20MHz – QPSK										
2510.00	85.74	207	1.4	H	11.74	0.43	10.60	21.91	33	-11.09
2510.00	82.83	173	1.0	V	12.55	0.43	10.60	22.72	33	-10.28
LTE Band 7 Channel 21100 – 20MHz – QPSK										
2535.00	86.09	216	1.6	H	12.09	0.43	10.60	22.26	33	-10.74
2535.00	83.45	194	2.1	V	13.17	0.43	10.60	23.34	33	-9.66
LTE Band 7 Channel 21350 – 20MHz – QPSK										
2560.00	86.01	8	2.3	H	11.90	0.43	10.60	22.07	33	-10.93
2560.00	83.12	193	2.1	V	12.93	0.43	10.60	23.10	33	-9.90
LTE Band 7 Channel 20850 – 20MHz – 16QAM										
2510.00	85.96	104	1.4	H	11.96	0.43	10.60	22.13	33	-10.87
2510.00	82.69	179	2.4	V	12.41	0.43	10.60	22.58	33	-10.42
LTE Band 7 Channel 21100 – 20MHz – 16QAM										
2535.00	85.63	2	2.1	H	11.63	0.43	10.60	21.80	33	-11.20
2535.00	83.35	26	1.9	V	13.07	0.43	10.60	23.24	33	-9.76
LTE Band 7 Channel 21350 – 20MHz – 16QAM										
2560.00	85.97	69	2.2	H	11.86	0.43	10.60	22.03	33	-10.97
2560.00	83.06	353	1.6	V	12.87	0.43	10.60	23.04	33	-9.96

LTE Band 12

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Part 27	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE Band 12 Channel 23017 – 1.4MHz – QPSK										
699.70	83.49	68	1.7	H	12.49	0.20	0.00	12.29	34.77	-22.48
699.70	83.57	152	2.2	V	11.29	0.20	0.00	11.09	34.77	-23.68
LTE Band 12 Channel 23095 – 1.4MHz – QPSK										
707.50	83.32	216	1.5	H	12.32	0.20	0.00	12.12	34.77	-22.65
707.50	83.60	40	1.5	V	11.32	0.20	0.00	11.12	34.77	-23.65
LTE Band 12 Channel 23173 – 1.4MHz – QPSK										
715.30	83.54	334	2.0	H	12.54	0.20	0.00	12.34	34.77	-22.43
715.30	83.20	138	1.5	V	10.92	0.20	0.00	10.72	34.77	-24.05
LTE Band 12 Channel 23017 – 1.4MHz – 16QAM										
699.70	83.34	15	1.2	H	12.34	0.20	0.00	12.14	34.77	-22.63
699.70	83.33	289	2.1	V	11.05	0.20	0.00	10.85	34.77	-23.92
LTE Band 12 Channel 23095 – 1.4MHz – 16QAM										
707.50	83.79	225	1.4	H	12.79	0.20	0.00	12.59	34.77	-22.18
707.50	83.67	67	1.3	V	11.39	0.20	0.00	11.19	34.77	-23.58
LTE Band 12 Channel 23173 – 1.4MHz – 16QAM										
715.30	83.25	138	2.5	H	12.25	0.20	0.00	12.05	34.77	-22.72
715.30	83.23	228	2.5	V	10.95	0.20	0.00	10.75	34.77	-24.02
LTE Band 12 Channel 23025 – 3MHz – QPSK										
700.50	83.13	309	1.1	H	12.13	0.20	0.00	11.93	34.77	-22.84
700.50	83.67	235	2.3	V	11.39	0.20	0.00	11.19	34.77	-23.58
LTE Band 12 Channel 23095 – 3MHz – QPSK										
707.50	83.76	8	2.1	H	12.76	0.20	0.00	12.56	34.77	-22.21
707.50	83.40	360	1.1	V	11.12	0.20	0.00	10.92	34.77	-23.85
LTE Band 12 Channel 23165 – 3MHz – QPSK										
714.50	83.55	169	1.9	H	12.55	0.20	0.00	12.35	34.77	-22.42
714.50	83.39	169	1.1	V	11.11	0.20	0.00	10.91	34.77	-23.86
LTE Band 12 Channel 23025 – 3MHz – 16QAM										
700.50	83.49	248	2.0	H	12.49	0.20	0.00	12.29	34.77	-22.48
700.50	83.50	302	1.6	V	11.22	0.20	0.00	11.02	34.77	-23.75
LTE Band 12 Channel 23095 – 3MHz – 16QAM										
707.50	83.11	196	1.8	H	12.11	0.20	0.00	11.91	34.77	-22.86
707.50	83.25	97	1.3	V	10.97	0.20	0.00	10.77	34.77	-24.00
LTE Band 12 Channel 23165 – 3MHz – 16QAM										
714.50	83.45	207	2.4	H	12.45	0.20	0.00	12.25	34.77	-22.52
714.50	83.78	287	2.4	V	11.50	0.20	0.00	11.30	34.77	-23.47
LTE Band 12 Channel 23035 – 5MHz – QPSK										
701.50	83.84	17	2.3	H	12.84	0.20	0.00	12.64	34.77	-22.13
701.50	83.39	101	1.4	V	11.11	0.20	0.00	10.91	34.77	-23.86
LTE Band 12 Channel 23095 – 5MHz – QPSK										

707.50	83.59	102	1.4	H	12.59	0.20	0.00	12.39	34.77	-22.38
707.50	83.41	165	1.2	V	11.13	0.20	0.00	10.93	34.77	-23.84
LTE Band 12 Channel 23155 – 5MHz – QPSK										
713.50	83.78	18	1.4	H	12.78	0.20	0.00	12.58	34.77	-22.19
713.50	83.50	324	1.6	V	11.22	0.20	0.00	11.02	34.77	-23.75
LTE Band 12 Channel 23035 – 5MHz – 16QAM										
701.50	83.29	235	2.4	H	12.29	0.20	0.00	12.09	34.77	-22.68
701.50	83.63	133	1.1	V	11.35	0.20	0.00	11.15	34.77	-23.62
LTE Band 12 Channel 23095 – 5MHz – 16QAM										
707.50	83.42	48	1.4	H	12.42	0.20	0.00	12.22	34.77	-22.55
707.50	83.50	85	1.5	V	11.22	0.20	0.00	11.02	34.77	-23.75
LTE Band 12 Channel 23155 – 5MHz – 16QAM										
713.50	83.53	80	1.8	H	12.53	0.20	0.00	12.33	34.77	-22.44
713.50	83.38	311	1.6	V	11.10	0.20	0.00	10.90	34.77	-23.87
LTE Band 12 Channel 23060 – 10MHz – QPSK										
704.00	83.75	191	1.2	H	12.75	0.20	0.00	12.55	34.77	-22.22
704.00	83.80	162	2.3	V	11.52	0.20	0.00	11.32	34.77	-23.45
LTE Band 12 Channel 23095 – 10MHz – QPSK										
707.50	83.90	82	1.4	H	12.90	0.20	0.00	12.70	34.77	-22.07
707.50	83.39	106	2.0	V	11.11	0.20	0.00	10.91	34.77	-23.86
LTE Band 12 Channel 23130 – 10MHz – QPSK										
711.00	83.60	174	2.2	H	12.60	0.20	0.00	12.40	34.77	-22.37
711.00	83.80	347	1.4	V	11.52	0.20	0.00	11.32	34.77	-23.45
LTE Band 12 Channel 23060 – 10MHz – 16QAM										
704.00	83.16	161	2.5	H	12.16	0.20	0.00	11.96	34.77	-22.81
704.00	83.15	78	1.7	V	10.87	0.20	0.00	10.67	34.77	-24.10
LTE Band 12 Channel 23095 – 10MHz – 16QAM										
707.50	83.84	55	2.1	H	12.84	0.20	0.00	12.64	34.77	-22.13
707.50	83.56	143	1.9	V	11.28	0.20	0.00	11.08	34.77	-23.69
LTE Band 12 Channel 23130 – 10MHz – 16QAM										
711.00	83.52	86	2.4	H	12.52	0.20	0.00	12.32	34.77	-22.45
711.00	83.24	216	1.6	V	10.96	0.20	0.00	10.76	34.77	-24.01

LTE Band 13

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Part 27	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE Band 13 Channel 23205 – 5MHz – QPSK										
779.50	83.85	91	1.1	H	12.85	0.20	0.00	12.65	34.77	-22.12
779.50	84.71	140	1.5	V	12.43	0.20	0.00	12.23	34.77	-22.54
LTE Band 13 Channel 23230 – 5MHz – QPSK										
782.00	83.55	348	2.3	H	12.55	0.20	0.00	12.35	34.77	-22.42
782.00	84.11	209	1.3	V	11.83	0.20	0.00	11.63	34.77	-23.14
LTE Band 13 Channel 23255 – 5MHz – QPSK										
784.50	83.81	78	1.4	H	12.81	0.20	0.00	12.61	34.77	-22.16
784.50	84.01	175	1.6	V	11.73	0.20	0.00	11.53	34.77	-23.24
LTE Band 13 Channel 23205 – 5MHz – 16QAM										
779.50	83.89	14	2.4	H	12.89	0.20	0.00	12.69	34.77	-22.08
779.50	83.82	6	1.9	V	11.54	0.20	0.00	11.34	34.77	-23.43
LTE Band 13 Channel 23230 – 5MHz – 16QAM										
782.00	83.96	336	2.1	H	12.96	0.20	0.00	12.76	34.77	-22.01
782.00	83.94	322	1.7	V	11.66	0.20	0.00	11.46	34.77	-23.31
LTE Band 13 Channel 23255 – 5MHz – 16QAM										
784.50	83.92	232	1.4	H	12.92	0.20	0.00	12.72	34.77	-22.05
784.50	83.46	34	2.3	V	11.18	0.20	0.00	10.98	34.77	-23.79
LTE Band 13 Channel 23230 – 10MHz – QPSK										
782.00	84.03	122	1.8	H	13.03	0.20	0.00	12.83	34.77	-21.94
782.00	83.82	104	1.5	V	11.54	0.20	0.00	11.34	34.77	-23.43
LTE Band 13 Channel 23230 – 10MHz – 16QAM										
782.00	83.98	346	2.3	H	12.98	0.20	0.00	12.78	34.77	-21.99
782.00	83.83	205	2.1	V	11.55	0.20	0.00	11.35	34.77	-23.42

8 Peak-to-Average Ratio

Test Requirement:	24.232 (d), 27.50(d)
Test Method:	N/A
Test Mode:	TX transmitting

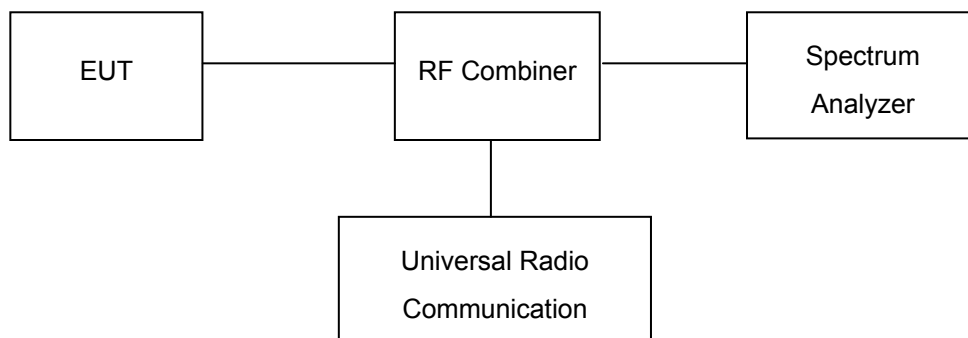
8.1 EUT Operation

Operating Environment :

Temperature:	25.4 °C
Humidity:	58.1 % RH
Atmospheric Pressure:	101.2kPa

8.2 Test Procedure

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. Set EUT to transmit at maximum output power.
3. When the duty cycle is less than 98%, then signal gating will be implemented on the spectrum analyzer by triggering from the system simulator.
4. Set the CCDF (Complementary Cumulative Distribution Function) option of the spectrum analyzer. Record the maximum PAPR level associated with a probability of 0.1%.



8.3 Test Result

PASS

LTE Band

Please refer to the Appendix Band 2/5/7/12/13 LTE Peak to Average Ratio.

9 Bandwidth

Test Requirement:	FCC Part 2.1049, 22.917, 22.905, 24.238, 27.53(a)
Test Method:	ANSI C63.26:2015 ANSI/TIA-603-E:2016
Test Mode:	TX transmitting

9.1 EUT Operation

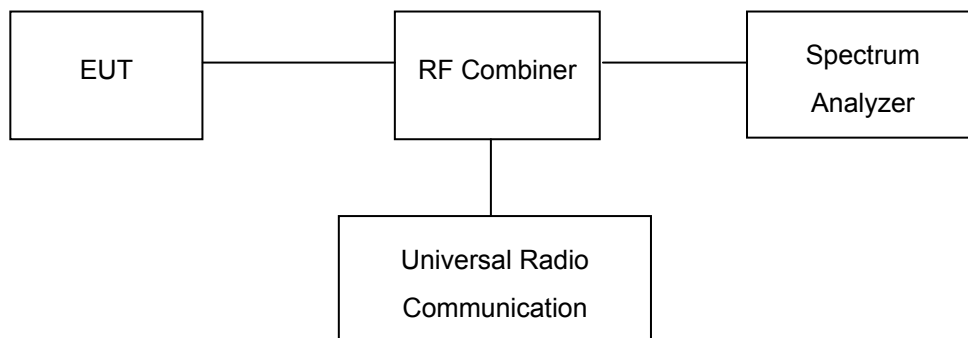
Operating Environment :

Temperature:	25.4 °C
Humidity:	58.1 % RH
Atmospheric Pressure:	101.2kPa

9.2 Test Procedure

The RF output of the transmitter was connected to the wireless test set and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set in the range of 1 to 5 % of the anticipated OBW and the 26 dB & 99%bandwidth was recorded.



9.3 Test Result

PASS

LTE Band

Please refer to the Appendix Band 2/5/7/12/13 LTE Transmitter Occupied Bandwidth(SA).

10 Spurious Emissions at Antenna Terminals

Test Requirement:	FCC Part 2.1051, 22.917(a), 24.238(a), 27.53(h), 27.53(m)(4)
Test Method:	ANSI C63.26:2015 ANSI/TIA-603-E:2016
Test Mode:	TX transmitting

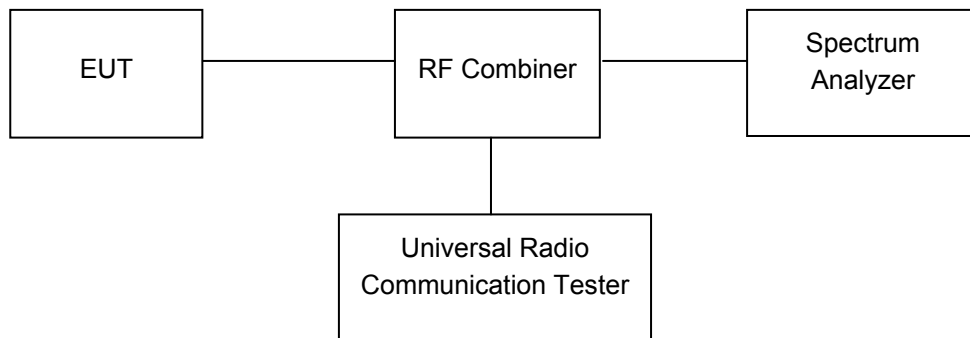
10.1 EUT Operation

Operating Environment :

Temperature:	25.4 °C
Humidity:	58.1 % RH
Atmospheric Pressure:	101.2kPa

10.2 Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonics.



10.3 Test Result

PASS

LTE Band

Please refer to the Appendix Band 2/5/7/12/13 LTE Transmitter Spurious Emissions.

11 Spurious Radiated Emissions

Test Requirement:	FCC Part 2.1053, 22.917, 24.238, 27.53(h), 27.53(m)(4)
Test Method:	ANSI C63.26:2015 ANSI/TIA-603-E:2016
Test Mode:	TX transmitting

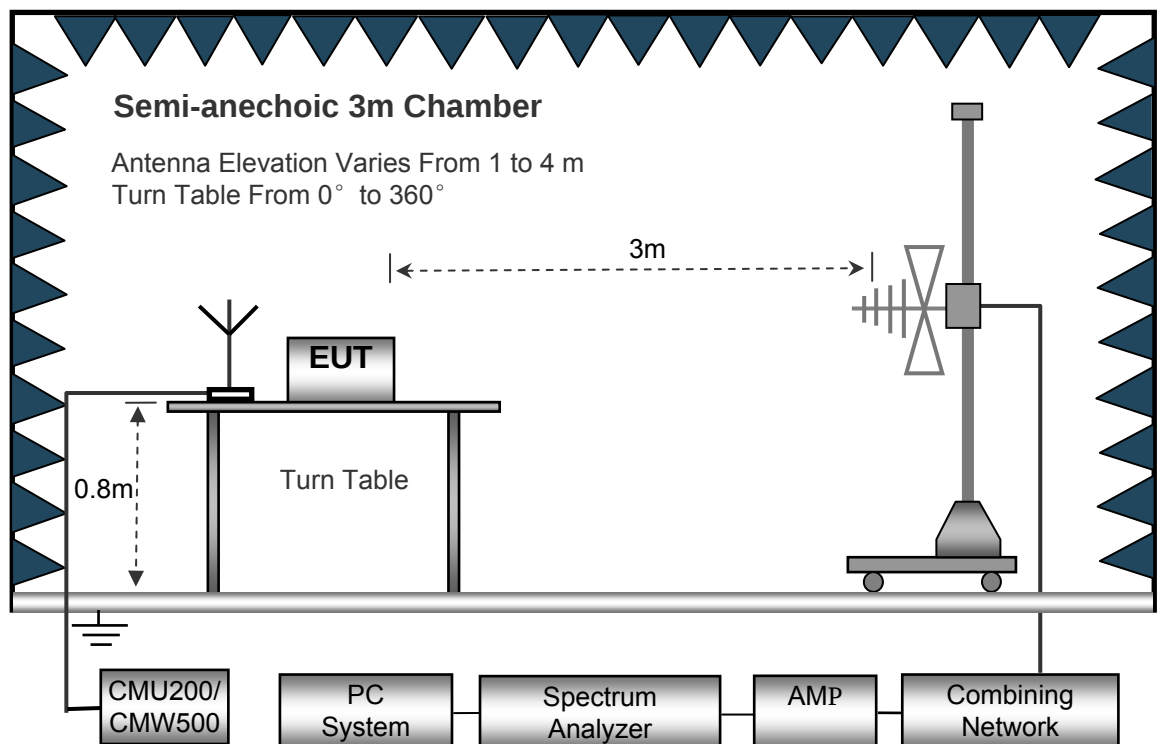
11.1 EUT Operation

Operating Environment :

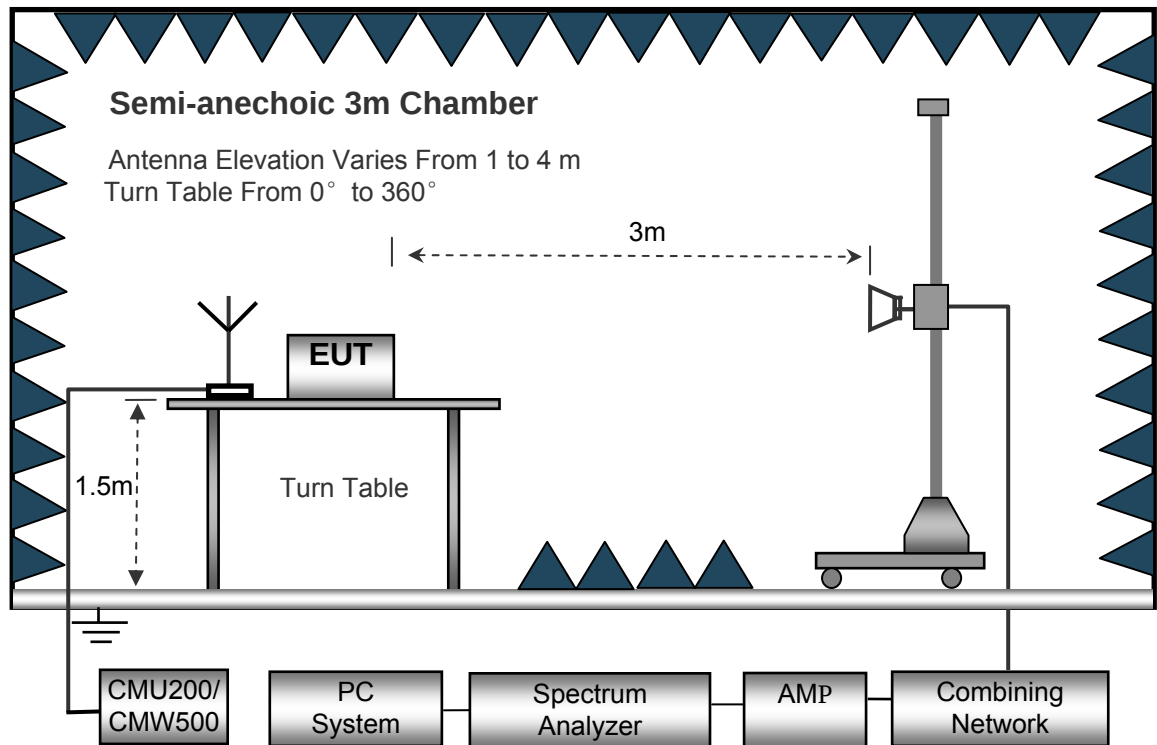
Temperature:	25.9 °C
Humidity:	61.7 % RH
Atmospheric Pressure:	101.1kPa

11.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site. The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



11.3 Spectrum Analyzer Setup

- 30MHz ~ 1GHz
- Sweep Speed Auto
 - Detector PK
 - Resolution Bandwidth..... 100kHz
 - Video Bandwidth..... 300kHz
- Above 1GHz
- Sweep Speed Auto
 - Detector PK
 - Resolution Bandwidth..... 1MHz
 - Video Bandwidth..... 3MHz
 - Detector Ave.
 - Resolution Bandwidth..... 1MHz
 - Video Bandwidth..... 10Hz

11.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m for below 1GHz and 1.5m for above 1GHz above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from 30MHz up to the tenth harmonic of the highest fundamental frequency.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the Z position. So the data shown was the Z position only.
7. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = $10 \lg (\text{TXpwr in Watts}/0.001)$ – the absolute level
Spurious attenuation limit in dB = $43 + 10 \lg (\text{power out in Watts})$
8. Repeat above procedures until the measurements for all frequencies are completed.

11.5 Summary of Test Results

Remark: Test performed from 30MHz to 10th harmonics with low/middle/high channels, only the worst data were recorded.

LTE Band 2

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 2 Channel 18607										
311.28	54.23	116	2.0	H	-56.28	0.15	0.00	-56.43	-13.00	-43.43
311.28	57.97	334	1.3	V	-49.62	0.15	0.00	-49.77	-13.00	-36.77
3701.40	61.29	44	1.1	H	-50.25	2.37	12.50	-40.12	-13.00	-27.12
3701.40	63.28	147	1.2	V	-46.53	2.37	12.50	-36.40	-13.00	-23.40
5552.10	50.99	312	1.9	H	-58.62	2.86	12.90	-48.58	-13.00	-35.58
5552.10	55.13	50	1.1	V	-53.75	2.86	12.90	-43.71	-13.00	-30.71
LTE BAND 2 Channel 18900										
311.28	53.27	61	2.0	H	-57.24	0.15	0.00	-57.39	-13.00	-44.39
311.28	58.58	347	1.8	V	-49.01	0.15	0.00	-49.16	-13.00	-36.16
3760.00	54.12	358	1.7	H	-57.42	2.37	12.50	-47.29	-13.00	-34.29
3760.00	55.73	186	1.7	V	-54.08	2.37	12.50	-43.95	-13.00	-30.95
5640.00	44.46	137	1.5	H	-65.15	2.86	12.90	-55.11	-13.00	-42.11
5640.00	48.60	142	1.8	V	-60.28	2.86	12.90	-50.24	-13.00	-37.24
LTE BAND 2 Channel 19193										
311.28	54.85	83	1.6	H	-55.66	0.15	0.00	-55.81	-13.00	-42.81
311.28	60.24	182	1.0	V	-47.35	0.15	0.00	-47.50	-13.00	-34.50
3818.60	46.08	143	1.6	H	-64.77	2.37	12.60	-54.54	-13.00	-41.54
3818.60	50.08	9	1.8	V	-59.23	2.37	12.60	-49.00	-13.00	-36.00
5727.90	36.36	179	1.8	H	-72.99	2.86	12.90	-62.95	-13.00	-49.95
5727.90	42.04	273	1.9	V	-66.46	2.86	12.90	-56.42	-13.00	-43.42

LTE Band 5

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 5 Channel 20407										
205.79	60.67	184	2.0	H	-49.84	0.15	0.00	-49.99	-13.00	-36.99
205.79	64.40	20	1.5	V	-43.19	0.15	0.00	-43.34	-13.00	-30.34
1649.40	66.25	312	1.7	H	-46.80	2.34	12.40	-36.74	-13.00	-23.74
1649.40	60.78	188	1.7	V	-50.37	2.34	12.40	-40.31	-13.00	-27.31
2474.10	53.81	21	1.2	H	-55.60	2.79	12.70	-45.69	-13.00	-32.69
2474.10	45.70	328	1.0	V	-63.07	2.79	12.70	-53.16	-13.00	-40.16
LTE BAND 5 Channel 20525										
205.79	61.10	252	2.1	H	-49.41	0.15	0.00	-49.56	-13.00	-36.56
205.79	64.23	133	1.3	V	-43.36	0.15	0.00	-43.51	-13.00	-30.51
1673.00	58.38	283	1.9	H	-54.67	2.37	12.50	-44.54	-13.00	-31.54
1673.00	53.61	279	1.8	V	-57.54	2.37	12.50	-47.41	-13.00	-34.41
2509.50	47.06	203	1.7	H	-62.35	2.79	12.70	-52.44	-13.00	-39.44
2509.50	38.76	259	1.0	V	-70.01	2.79	12.70	-60.10	-13.00	-47.10
LTE BAND 5 Channel 20643										
205.79	60.60	308	1.8	H	-49.91	0.15	0.00	-50.06	-13.00	-37.06
205.79	65.21	181	1.8	V	-42.38	0.15	0.00	-42.53	-13.00	-29.53
1696.60	50.56	338	1.4	H	-62.08	2.37	12.50	-51.95	-13.00	-38.95
1696.60	45.63	211	1.4	V	-65.10	2.37	12.50	-54.97	-13.00	-41.97
2544.90	41.06	295	1.6	H	-68.52	2.81	12.80	-58.53	-13.00	-45.53
2544.90	32.72	236	1.7	V	-76.08	2.81	12.80	-66.09	-13.00	-53.09

LTE Band 7

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 7 Channel 20775										
368.20	39.06	126	1.1	H	-71.45	0.15	0.00	-71.60	-25.00	-46.60
368.20	45.32	153	1.5	V	-62.27	0.15	0.00	-62.42	-25.00	-37.42
5005.00	56.20	267	1.1	H	-53.04	2.79	12.70	-43.13	-25.00	-18.13
5005.00	60.94	17	1.1	V	-47.83	2.79	12.70	-37.92	-25.00	-12.92
7507.50	44.23	139	1.0	H	-62.31	3.12	11.50	-53.93	-25.00	-28.93
7507.50	48.01	163	2.2	V	-57.42	3.12	11.50	-49.04	-25.00	-24.04
LTE BAND 7 Channel 21100										
368.20	38.90	279	1.2	H	-71.61	0.15	0.00	-71.76	-25.00	-46.76
368.20	45.84	287	1.4	V	-61.75	0.15	0.00	-61.90	-25.00	-36.90
5070.00	49.30	228	1.9	H	-59.94	2.37	12.50	-49.81	-25.00	-24.81
5070.00	52.91	4	1.4	V	-55.86	2.37	12.50	-45.73	-25.00	-20.73
7605.00	36.85	4	1.8	H	-69.69	3.12	11.50	-61.31	-25.00	-36.31
7605.00	41.03	174	1.7	V	-64.40	3.12	11.50	-56.02	-25.00	-31.02
LTE BAND 7 Channel 21425										
368.20	39.72	198	1.4	H	-70.79	0.15	0.00	-70.94	-25.00	-45.94
368.20	42.02	174	2.0	V	-65.57	0.15	0.00	-65.72	-25.00	-40.72
5135.00	43.00	1	1.3	H	-66.41	2.37	12.50	-56.28	-25.00	-31.28
5135.00	46.45	140	1.9	V	-62.32	2.37	12.50	-52.19	-25.00	-27.19
7702.50	30.03	87	1.4	H	-75.20	3.12	11.50	-66.82	-25.00	-41.82
7702.50	33.78	66	1.2	V	-71.11	3.12	11.50	-62.73	-25.00	-37.73

LTE Band 12

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 12 Channel 23017										
216.58	50.64	320	1.3	H	-59.87	0.15	0.00	-60.02	-13.00	-47.02
216.58	63.12	234	2.2	V	-44.47	0.15	0.00	-44.62	-13.00	-31.62
1399.40	66.12	356	1.8	H	-46.93	2.34	12.40	-36.87	-13.00	-23.87
1399.40	68.81	26	1.5	V	-42.34	2.34	12.40	-32.28	-13.00	-19.28
2099.10	54.29	120	1.3	H	-55.12	2.79	12.70	-45.21	-13.00	-32.21
2099.10	59.58	201	1.3	V	-49.19	2.79	12.70	-39.28	-13.00	-26.28
LTE BAND 12 Channel 23095										
216.58	51.00	35	1.1	H	-59.51	0.15	0.00	-59.66	-13.00	-46.66
216.58	63.00	175	2.0	V	-44.59	0.15	0.00	-44.74	-13.00	-31.74
1415.00	58.65	120	1.1	H	-54.40	2.37	12.50	-44.27	-13.00	-31.27
1415.00	61.71	58	1.7	V	-49.44	2.37	12.50	-39.31	-13.00	-26.31
2122.50	47.99	201	1.2	H	-61.42	2.79	12.70	-51.51	-13.00	-38.51
2122.50	52.22	73	1.2	V	-56.55	2.79	12.70	-46.64	-13.00	-33.64
LTE BAND 12 Channel 23173										
216.58	50.32	26	1.2	H	-60.19	0.15	0.00	-60.34	-13.00	-47.34
216.58	63.11	227	1.3	V	-44.48	0.15	0.00	-44.63	-13.00	-31.63
1430.60	50.94	23	1.1	H	-61.70	2.37	12.50	-51.57	-13.00	-38.57
1430.60	54.53	125	1.4	V	-56.20	2.37	12.50	-46.07	-13.00	-33.07
2145.90	40.33	180	1.9	H	-69.25	2.81	12.80	-59.26	-13.00	-46.26
2145.90	44.88	201	1.9	V	-63.92	2.81	12.80	-53.93	-13.00	-40.93

LTE Band 13

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 13 Channel 23205										
197.35	51.40	360	1.4	H	-59.11	0.15	0.00	-59.26	-13.00	-46.26
197.35	65.22	18	1.7	V	-42.37	0.15	0.00	-42.52	-13.00	-29.52
1559.00	66.81	8	1.0	H	-50.24	2.34	12.40	-40.18	-13.00	-27.18
1559.00	65.75	171	1.9	V	-45.40	2.34	12.40	-35.34	-13.00	-22.34
2338.50	53.71	276	1.8	H	-55.70	2.79	12.70	-45.79	-13.00	-32.79
2338.50	58.89	295	1.4	V	-49.88	2.79	12.70	-39.97	-13.00	-26.97
LTE BAND 13 Channel 23230										
197.35	51.66	229	2.1	H	-58.85	0.15	0.00	-59.00	-13.00	-46.00
197.35	65.62	266	1.9	V	-41.97	0.15	0.00	-42.12	-13.00	-29.12
1564.00	60.47	300	1.1	H	-52.58	2.37	12.50	-42.45	-13.00	-29.45
1564.00	58.41	194	1.1	V	-52.74	2.37	12.50	-42.61	-13.00	-29.61
2346.00	47.02	161	2.0	H	-62.39	2.79	12.70	-52.48	-13.00	-39.48
2346.00	52.18	80	2.0	V	-56.59	2.79	12.70	-46.68	-13.00	-33.68
LTE BAND 13 Channel 23255										
197.35	51.91	217	1.4	H	-58.60	0.15	0.00	-58.75	-13.00	-45.75
197.35	66.58	277	2.0	V	-41.01	0.15	0.00	-41.16	-13.00	-28.16
1569.00	54.29	244	1.8	H	-58.35	2.37	12.50	-48.22	-13.00	-35.22
1569.00	51.29	263	2.1	V	-59.44	2.37	12.50	-49.31	-13.00	-36.31
2353.50	40.83	87	1.5	H	-68.75	2.81	12.80	-58.76	-13.00	-45.76
2353.50	44.52	151	1.5	V	-64.28	2.81	12.80	-54.29	-13.00	-41.29

Note: 1) Absolute Level = SG Level - Cable loss + Antenna Gain

2) Margin = Absolute Level - Limit

12 Band Edge Measurement

Test Requirement:	FCC Part 2.1051, 22.917(a), 24.238(a), 27.53(h), 27.53(m)(4)
Test Method:	ANSI C63.26:2015 ANSI/TIA-603-E:2016
Test Mode:	TX transmitting

12.1 EUT Operation

Operating Environment :	
Temperature:	25.4 °C
Humidity:	58.1 % RH
Atmospheric Pressure:	101.2kPa

12.2 Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

According to FCC Part 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the TX transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

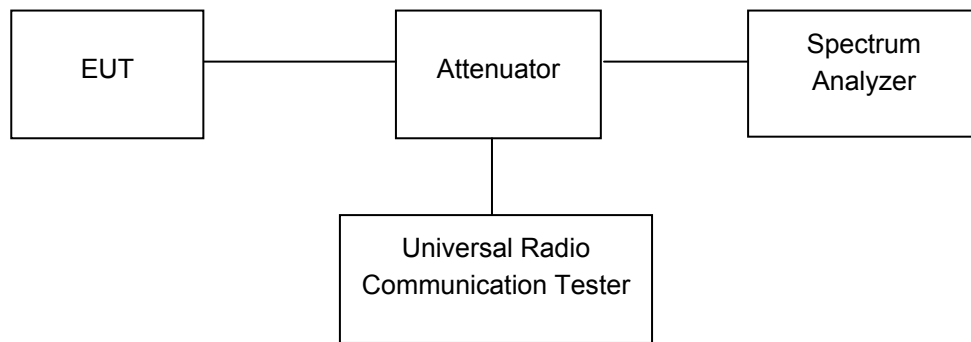
According to FCC Part 24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the TX transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to FCC Part 27.53(h), Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

According to FCC 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 than $43 + 10 \log(P)$ 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.

The center of the spectrum analyzer was set to block edge frequency



12.3 Test Result

PASS

LTE Band

Please refer to the Appendix Band 2/5/7/12/13 LTE Band Edge.

13 Frequency Stability

Test Requirement:	FCC Part 2.1055, 22.355, 24.235, 27.5(h),27.54
Test Method:	ANSI C63.26:2015 ANSI/TIA-603-E:2016
Test Mode:	TX transmitting

13.1 EUT Operation

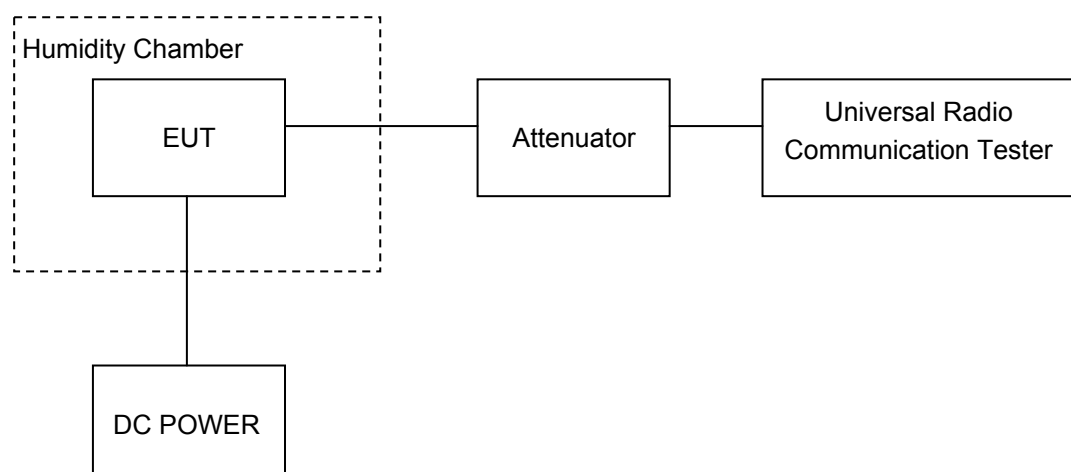
Operating Environment :	
Temperature:	25.4 °C
Humidity:	58.1 % RH
Atmospheric Pressure:	101.2kPa

13.2 Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: For hand carried, battery powered equipment; reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



13.3 Test Result

LTE Band 2

Test Frequency:1880.0MHz QPSK 1.4MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	16	0.0085	2.5
40		0	0.0000	2.5
30		2	0.0011	2.5
20		9	0.0048	2.5
10		15	0.0080	2.5
0		-8	-0.0043	2.5
-10		-2	-0.0011	2.5
-20		16	0.0085	2.5
-30		15	0.0080	2.5
20	3.42	15	0.0080	2.5
20	4.18	5	0.0027	2.5

Test Frequency:1880.0MHz 16QAM 1.4MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	17	0.0090	2.5
40		-6	-0.0032	2.5
30		-8	-0.0043	2.5
20		12	0.0064	2.5
10		14	0.0074	2.5
0		6	0.0032	2.5
-10		19	0.0101	2.5
-20		15	0.0080	2.5
-30		14	0.0074	2.5
20	3.42	12	0.0064	2.5
20	4.18	7	0.0037	2.5

LTE Band 2

Test Frequency:1880.0MHz QPSK 3MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	2	0.0011	2.5
40		11	0.0059	2.5
30		14	0.0074	2.5
20		10	0.0053	2.5
10		1	0.0005	2.5
0		1	0.0005	2.5
-10		-11	-0.0059	2.5
-20		-6	-0.0032	2.5
-30		19	0.0101	2.5
20	3.42	1	0.0005	2.5
20	4.18	19	0.0101	2.5

Test Frequency:1880.0MHz 16QAM 3MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	15	0.0080	2.5
40		23	0.0122	2.5
30		17	0.0090	2.5
20		15	0.0080	2.5
10		11	0.0059	2.5
0		22	0.0117	2.5
-10		-12	-0.0064	2.5
-20		-11	-0.0059	2.5
-30		14	0.0074	2.5
20	3.42	17	0.0090	2.5
20	4.18	23	0.0122	2.5

LTE Band 2

Test Frequency:1880.0MHz QPSK 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	-4	-0.0021	2.5
40		-7	-0.0037	2.5
30		17	0.0090	2.5
20		11	0.0059	2.5
10		18	0.0096	2.5
0		13	0.0069	2.5
-10		17	0.0090	2.5
-20		18	0.0096	2.5
-30		6	0.0032	2.5
20	3.42	10	0.0053	2.5
20	4.18	20	0.0106	2.5

Test Frequency:1880.0MHz 16QAM 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	16	0.0085	2.5
40		6	0.0032	2.5
30		11	0.0059	2.5
20		12	0.0064	2.5
10		17	0.0090	2.5
0		21	0.0112	2.5
-10		20	0.0106	2.5
-20		-10	-0.0053	2.5
-30		-9	-0.0048	2.5
20	3.42	9	0.0048	2.5
20	4.18	16	0.0085	2.5

LTE Band 2

Test Frequency:1880.0MHz QPSK 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	13	0.0069	2.5
40		20	0.0106	2.5
30		7	0.0037	2.5
20		14	0.0074	2.5
10		18	0.0096	2.5
0		-13	-0.0069	2.5
-10		-5	-0.0027	2.5
-20		23	0.0122	2.5
-30		15	0.0080	2.5
20	3.42	11	0.0059	2.5
20	4.18	12	0.0064	2.5

Test Frequency:1880.0MHz 16QAM 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	-10	-0.0053	2.5
40		-8	-0.0043	2.5
30		20	0.0106	2.5
20		13	0.0069	2.5
10		11	0.0059	2.5
0		12	0.0064	2.5
-10		15	0.0080	2.5
-20		11	0.0059	2.5
-30		18	0.0096	2.5
20	3.42	20	0.0106	2.5
20	4.18	6	0.0032	2.5

LTE Band 2

Test Frequency:1880.0MHz QPSK 15MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	11	0.0059	2.5
40		17	0.0090	2.5
30		17	0.0090	2.5
20		16	0.0085	2.5
10		17	0.0090	2.5
0		15	0.0080	2.5
-10		-8	-0.0043	2.5
-20		-4	-0.0021	2.5
-30		25	0.0133	2.5
20	3.42	14	0.0074	2.5
20	4.18	25	0.0133	2.5

Test Frequency:1880.0MHz 16QAM 15MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	8	0.0043	2.5
40		14	0.0074	2.5
30		18	0.0096	2.5
20		12	0.0064	2.5
10		8	0.0043	2.5
0		-11	-0.0059	2.5
-10		-6	-0.0032	2.5
-20		14	0.0074	2.5
-30		15	0.0080	2.5
20	3.42	21	0.0112	2.5
20	4.18	9	0.0048	2.5

LTE Band 2

Test Frequency:1880.0MHz QPSK 20MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	20	0.0106	2.5
40		5	0.0027	2.5
30		7	0.0037	2.5
20		14	0.0074	2.5
10		10	0.0053	2.5
0		21	0.0112	2.5
-10		20	0.0106	2.5
-20		-4	-0.0021	2.5
-30		-9	-0.0048	2.5
20	3.42	18	0.0096	2.5
20	4.18	13	0.0069	2.5

Test Frequency:1880.0MHz 16QAM 20MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	19	0.0101	2.5
40		-7	-0.0037	2.5
30		-3	-0.0016	2.5
20		13	0.0069	2.5
10		16	0.0085	2.5
0		9	0.0048	2.5
-10		20	0.0106	2.5
-20		5	0.0027	2.5
-30		12	0.0064	2.5
20	3.42	7	0.0037	2.5
20	4.18	5	0.0027	2.5

LTE Band 5

Test Frequency:836.5MHz QPSK 1.4MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	-2	-0.0024	2.5
40		9	0.0108	2.5
30		-3	-0.0036	2.5
20		5	0.0060	2.5
10		3	0.0036	2.5
0		4	0.0048	2.5
-10		11	0.0132	2.5
-20		5	0.0060	2.5
-30		9	0.0108	2.5
20	3.42	10	0.0120	2.5
20	4.18	3	0.0036	2.5

Test Frequency:836.5MHz 16QAM 1.4MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	8	0.0096	2.5
40		-2	-0.0024	2.5
30		4	0.0048	2.5
20		6	0.0072	2.5
10		13	0.0155	2.5
0		11	0.0132	2.5
-10		7	0.0084	2.5
-20		4	0.0048	2.5
-30		14	0.0167	2.5
20	3.42	7	0.0084	2.5
20	4.18	4	0.0048	2.5

LTE Band 5

Test Frequency:836.5MHz QPSK 3MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	-3	-0.0036	2.5
40		-2	-0.0024	2.5
30		7	0.0084	2.5
20		4	0.0048	2.5
10		9	0.0108	2.5
0		-1	-0.0012	2.5
-10		11	0.0132	2.5
-20		-4	-0.0048	2.5
-30		3	0.0036	2.5
20	3.42	2	0.0024	2.5
20	4.18	-1	-0.0012	2.5

Test Frequency:836.5MHz 16QAM 3MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	10	0.0120	2.5
40		1	0.0012	2.5
30		11	0.0132	2.5
20		7	0.0084	2.5
10		12	0.0143	2.5
0		9	0.0108	2.5
-10		14	0.0167	2.5
-20		8	0.0096	2.5
-30		4	0.0048	2.5
20	3.42	-2	-0.0024	2.5
20	4.18	7	0.0084	2.5

LTE Band 5

Test Frequency:836.5MHz QPSK 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	0	0.0000	2.5
40		0	0.0000	2.5
30		13	0.0155	2.5
20		4	0.0048	2.5
10		1	0.0012	2.5
0		-2	-0.0024	2.5
-10		1	0.0012	2.5
-20		6	0.0072	2.5
-30		7	0.0084	2.5
20	3.42	-3	-0.0036	2.5
20	4.18	11	0.0132	2.5

Test Frequency:836.5MHz 16QAM 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	12	0.0143	2.5
40		4	0.0048	2.5
30		9	0.0108	2.5
20		5	0.0060	2.5
10		7	0.0084	2.5
0		-3	-0.0036	2.5
-10		12	0.0143	2.5
-20		0	0.0000	2.5
-30		-3	-0.0036	2.5
20	3.42	0	0.0000	2.5
20	4.18	3	0.0036	2.5

LTE Band 5

Test Frequency:836.5MHz QPSK 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	2	0.0024	2.5
40		0	0.0000	2.5
30		5	0.0060	2.5
20		4	0.0048	2.5
10		3	0.0036	2.5
0		7	0.0084	2.5
-10		0	0.0000	2.5
-20		-4	-0.0048	2.5
-30		-4	-0.0048	2.5
20	3.42	8	0.0096	2.5
20	4.18	1	0.0012	2.5

Test Frequency:836.5MHz 16QAM 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	6	0.0072	2.5
40		11	0.0132	2.5
30		-1	-0.0012	2.5
20		5	0.0060	2.5
10		7	0.0084	2.5
0		-1	-0.0012	2.5
-10		4	0.0048	2.5
-20		3	0.0036	2.5
-30		6	0.0072	2.5
20	3.42	8	0.0096	2.5
20	4.18	2	0.0024	2.5

LTE Band 7

Test Frequency:2535MHz QPSK 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	16	0.0063	2.5
40		-1	-0.0004	2.5
30		14	0.0055	2.5
20		8	0.0032	2.5
10		11	0.0043	2.5
0		3	0.0012	2.5
-10		-12	-0.0047	2.5
-20		-5	-0.0020	2.5
-30		14	0.0055	2.5
20	3.42	5	0.0020	2.5
20	4.18	6	0.0024	2.5

Test Frequency:2535MHz 16QAM 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	15	0.0059	2.5
40		16	0.0063	2.5
30		12	0.0047	2.5
20		9	0.0036	2.5
10		10	0.0039	2.5
0		-11	-0.0043	2.5
-10		-6	-0.0024	2.5
-20		15	0.0059	2.5
-30		1	0.0004	2.5
20	3.42	5	0.0020	2.5
20	4.18	18	0.0071	2.5

LTE Band 7

Test Frequency:2535MHz QPSK 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	13	0.0051	2.5
40		-10	-0.0039	2.5
30		-2	-0.0008	2.5
20		10	0.0039	2.5
10		2	0.0008	2.5
0		3	0.0012	2.5
-10		17	0.0067	2.5
-20		6	0.0024	2.5
-30		18	0.0071	2.5
20	3.42	13	0.0051	2.5
20	4.18	18	0.0071	2.5

Test Frequency:2535MHz 16QAM 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	17	0.0067	2.5
40		13	0.0051	2.5
30		12	0.0047	2.5
20		9	0.0036	2.5
10		3	0.0012	2.5
0		6	0.0024	2.5
-10		17	0.0067	2.5
-20		-12	-0.0047	2.5
-30		-3	-0.0012	2.5
20	3.42	14	0.0055	2.5
20	4.18	12	0.0047	2.5

LTE Band 7

Test Frequency:2535MHz QPSK 15MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	13	0.0051	2.5
40		10	0.0039	2.5
30		5	0.0020	2.5
20		12	0.0047	2.5
10		13	0.0051	2.5
0		16	0.0063	2.5
-10		4	0.0016	2.5
-20		17	0.0067	2.5
-30		-11	-0.0043	2.5
20	3.42	-7	-0.0028	2.5
20	4.18	18	0.0071	2.5

Test Frequency:2535MHz 16QAM 15MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	17	0.0067	2.5
40		13	0.0051	2.5
30		4	0.0016	2.5
20		11	0.0043	2.5
10		5	0.0020	2.5
0		17	0.0067	2.5
-10		-8	-0.0032	2.5
-20		-10	-0.0039	2.5
-30		12	0.0047	2.5
20	3.42	13	0.0051	2.5
20	4.18	16	0.0063	2.5

LTE Band 7

Test Frequency:2535MHz QPSK 20MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	20	0.0079	2.5
40		-10	-0.0039	2.5
30		-5	-0.0020	2.5
20		13	0.0051	2.5
10		18	0.0071	2.5
0		18	0.0071	2.5
-10		15	0.0059	2.5
-20		21	0.0083	2.5
-30		7	0.0028	2.5
20	3.42	18	0.0071	2.5
20	4.18	5	0.0020	2.5

Test Frequency:2535MHz 16QAM 20MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	7	0.0028	2.5
40		5	0.0020	2.5
30		18	0.0071	2.5
20		10	0.0039	2.5
10		16	0.0063	2.5
0		2	0.0008	2.5
-10		15	0.0059	2.5
-20		14	0.0055	2.5
-30		-4	-0.0016	2.5
20	3.42	-12	-0.0047	2.5
20	4.18	18	0.0071	2.5

LTE Band 12

Test Frequency:707.5MHz QPSK 1.4MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	-3	-0.0042	2.5
40		11	0.0155	2.5
30		-2	-0.0028	2.5
20		2	0.0028	2.5
10		-3	-0.0042	2.5
0		-3	-0.0042	2.5
-10		11	0.0155	2.5
-20		3	0.0042	2.5
-30		7	0.0099	2.5
20	3.42	3	0.0042	2.5
20	4.18	6	0.0085	2.5

Test Frequency:707.5MHz 16QAM 1.4MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	5	0.0071	2.5
40		-7	-0.0099	2.5
30		3	0.0042	2.5
20		1	0.0014	2.5
10		-2	-0.0028	2.5
0		-3	-0.0042	2.5
-10		-4	-0.0057	2.5
-20		-5	-0.0071	2.5
-30		1	0.0014	2.5
20	3.42	5	0.0071	2.5
20	4.18	3	0.0042	2.5

LTE Band 12

Test Frequency:707.5MHz QPSK 3MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	4	0.0057	2.5
40		0	0.0000	2.5
30		4	0.0057	2.5
20		0	0.0000	2.5
10		-8	-0.0113	2.5
0		-5	-0.0071	2.5
-10		-9	-0.0127	2.5
-20		-6	-0.0085	2.5
-30		-4	-0.0057	2.5
20	3.42	-2	-0.0028	2.5
20	4.18	-6	-0.0085	2.5

Test Frequency:707.5MHz 16QAM 3MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	-5	-0.0071	2.5
40		-9	-0.0127	2.5
30		1	0.0014	2.5
20		-1	-0.0014	2.5
10		6	0.0085	2.5
0		-5	-0.0071	2.5
-10		-2	-0.0028	2.5
-20		0	0.0000	2.5
-30		3	0.0042	2.5
20	3.42	-4	-0.0057	2.5
20	4.18	6	0.0085	2.5

LTE Band 12

Test Frequency:707.5MHz QPSK 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	-5	-0.0071	2.5
40		-3	-0.0042	2.5
30		9	0.0127	2.5
20		1	0.0014	2.5
10		-6	-0.0085	2.5
0		-7	-0.0099	2.5
-10		9	0.0127	2.5
-20		-7	-0.0099	2.5
-30		4	0.0057	2.5
20	3.42	4	0.0057	2.5
20	4.18	-4	-0.0057	2.5

Test Frequency:707.5MHz 16QAM 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	-1	-0.0014	2.5
40		1	0.0014	2.5
30		6	0.0085	2.5
20		-2	-0.0028	2.5
10		1	0.0014	2.5
0		6	0.0085	2.5
-10		-7	-0.0099	2.5
-20		6	0.0085	2.5
-30		2	0.0028	2.5
20	3.42	0	0.0000	2.5
20	4.18	2	0.0028	2.5

LTE Band 12

Test Frequency:707.5MHz QPSK 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	2	0.0028	2.5
40		-5	-0.0071	2.5
30		-8	-0.0113	2.5
20		0	0.0000	2.5
10		7	0.0099	2.5
0		-6	-0.0085	2.5
-10		4	0.0057	2.5
-20		3	0.0042	2.5
-30		-1	-0.0014	2.5
20	3.42	8	0.0113	2.5
20	4.18	4	0.0057	2.5

Test Frequency:707.5MHz 16QAM 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	-2	-0.0028	2.5
40		1	0.0014	2.5
30		7	0.0099	2.5
20		1	0.0014	2.5
10		-6	-0.0085	2.5
0		-4	-0.0057	2.5
-10		-8	-0.0113	2.5
-20		5	0.0071	2.5
-30		-7	-0.0099	2.5
20	3.42	6	0.0085	2.5
20	4.18	-1	-0.0014	2.5

LTE Band 13

Test Frequency: 782.0MHz QPSK 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	8	0.0102	2.5
40		2	0.0026	2.5
30		-3	-0.0038	2.5
20		1	0.0013	2.5
10		3	0.0038	2.5
0		1	0.0013	2.5
-10		-2	-0.0026	2.5
-20		6	0.0077	2.5
-30		10	0.0128	2.5
20	3.42	-7	-0.0090	2.5
20	4.18	-7	-0.0090	2.5

Test Frequency: 782.0MHz 16QAM 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	-6	-0.0077	2.5
40		0	0.0000	2.5
30		-2	-0.0026	2.5
20		0	0.0000	2.5
10		-7	-0.0090	2.5
0		1	0.0013	2.5
-10		2	0.0026	2.5
-20		7	0.0090	2.5
-30		-3	-0.0038	2.5
20	3.42	-2	-0.0026	2.5
20	4.18	5	0.0064	2.5

LTE Band 13

Test Frequency: 782.0MHz QPSK 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	0	0.0000	2.5
40		-6	-0.0077	2.5
30		6	0.0077	2.5
20		2	0.0026	2.5
10		4	0.0051	2.5
0		4	0.0051	2.5
-10		0	0.0000	2.5
-20		0	0.0000	2.5
-30		6	0.0077	2.5
20	3.42	6	0.0077	2.5
20	4.18	5	0.0064	2.5

Test Frequency: 782.0MHz 16QAM 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.8	-9	-0.0115	2.5
40		3	0.0038	2.5
30		4	0.0051	2.5
20		-1	-0.0013	2.5
10		-2	-0.0026	2.5
0		-7	-0.0090	2.5
-10		3	0.0038	2.5
-20		-4	-0.0051	2.5
-30		-5	-0.0064	2.5
20	3.42	0	0.0000	2.5
20	4.18	-1	-0.0013	2.5

14 RF Exposure

Remark: refer to SAR test report: WTD24D08190450W006.

15 Photographs of test setup and EUT.

Note: Please refer to Appendix-SWK-Photos.

===== End of Report =====