TEST REPORT

Reference No......	:	WTS16S1165620-4E V4
FCC ID	:	V5PA920
Applicant.....	:	PAX Technology Limited
Address.....	:	Room 2416, 24/F., Sun Hung Kai Centre, 30 Harbour Road, Wanchai, Hong Kong
Manufacturer	:	PAX Computer Technology (Shenzhen) Co., Ltd.
Address.....	:	4/F, No.3 Building, Software Park, Second Central Science-Tech Road, High-Tech industrial Park, Shenzhen, Guangdong, P.R.C.
Product Name.....	:	Wireless POS Terminal
Model No.	:	A920
Brand……	:	PAX
Standards.....	:	FCC CFR47 Part 22 Subpart H: 2016 FCC CFR47 Part 24 Subpart E: 2016 FCC CFR47 Part 27 Subpart L: 2016
Date of Receipt sample	:	Nov. 11, 2016
Date of Test	:	Nov. 12 – Dec. 06, 2016
Date of Issue.....	:	Dec. 07, 2016
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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2 Laboratories Introduction

Waltek Services Test Group Ltd is a professional third-party testing and certification organization with multi-year product testing and certification experience, established strictly in accordance with ISO/IEC 17025 requirements, and accredited by CNAS (China National Accreditation Service for Conformity Assessment) AQSIQ, CMA and IECEE for CBTL. Meanwhile, Waltek has got recognition as registration and accreditation laboratory from EMSD (Electrical and Mechanical Services Department), and American Energy star, FCC(The Federal Communications Commission), CPSC(Consumer Product Safety Commission), CEC(California energy efficiency), IC(Industry Canada) and ELI(Efficient Lighting Initiative). It's the strategic partner and data recognition laboratory of international authoritative organizations, such as UL, Intertek(ETL-SEMKO), CSA, TÜV Rheinland, TÜV SÜD, etc.

Waltek Services Test Group Ltd. is one of the largest and the most comprehensive third party testing organizations in China, our headquarter located in Shenzhen and have branches in Foshan, Dongguan, Zhongshan, Suzhou,Ningbo and Hong Kong, Our test capability covered four large fields: safety test. ElectroMagnetic Compatibility(EMC), reliablity and energy performance, Chemical test. As a professional, comprehensive, justice international test organization, we still keep the scientific and rigorous work attitude to help each client satisfy the international standards and assist their product enter into globe market smoothly.

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4 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTS16S1165620-4E	Nov. 11, 2016	Nov. 12 – Dec. 06, 2016	Dec. 07, 2016	original	-	Replaced
WTS16S1165620-4E V1	Nov. 11, 2016	Nov. 12 – Dec. 06, 2016	Dec. 30, 2016	Version 1	Updated	Replaced
WTS16S1165620-4E V2	Nov. 11, 2016	Nov. 12 – Dec. 06, 2016	Jan. 03, 2016	Version 2	Updated	Replaced
WTS16S1165620-4E V3	Nov. 11, 2016	Nov. 12 – Dec. 06, 2016	Jan. 05, 2016	Version 3	Updated	Replaced
WTS16S1165620-4E V4	Nov. 11, 2016	Nov. 12 – Dec. 06, 2016	Jan. 06, 2016	Version 4	Updated	Valid

5 General Information

5.1 General Description of E.U.T.

Product Name:	Wireless POS Terminal
Model No.:	A920
Model Description:	N/A
GSM Band(s):	N/A
GPRS/EGPRS Class:	N/A
WCDMA Band(s):	FDD Band II/IV/V
LTE Band(s):	FDD Band 2/4/5/17
Wi-Fi Specification:	2.4G-802.11b/g/n HT20
Bluetooth Version:	Bluetooth v4.0 with BLE
GPS:	Support
NFC:	Support
Hardware Version:	v 01.01.01
Software Version:	24.00.xxxx
Storage Location:	Internal Storage
Note:	This EUT has two SIM card slots, and use same one RF module. We found that RF parameters are the same, when we insert the card 1 and card 2. So we usually performed the test under main card slot 1.

5.2 Details of E.U.T.

Operation Frequency:	WCDMA Band II: 1850~1910MHz WCDMA Band V: 824~849MHz WCDMA Band IV:1710~1755MHz LTE Band 2: 1850~1910MHz LTE Band 4: 1710~1755MHz LTE Band 5: 823~850MHz LTE Band 17: 704-716MHz WiFi: 802.11b/g/n HT20: 2412~2462MHz Bluetooth: 2402~2480MHz NFC:13.56MHZ
Max. RF output power:	WCDMA Band II: 22.67dBm WCDMA Band V: 22.66dBm WCDMA Band IV: 22.13dBm LTE Band 2: 22.22dBm LTE Band 4: 22.08dBm LTE Band 5: 22.91Bm LTE Band 17: 22.83dBm

	WiFi(2.4G): 22.67dBm
	Bluetooth: 10.88dBm
Type of Modulation:	WCDMA: BPSK
	LTE: QPSK, 16QAM
	WiFi: CCK, OFDM
	Bluetooth: GFSK, Pi/4 DQPSK, 8DPSK
	NFC: ASK,2ASK
Antenna installation:	WCDMA/LTE: internal permanent antenna
	WiFi/Bluetooth: internal permanent antenna
	NFC: Loop antenna
Antenna Gain:	WCDMA Band II: 3.0dBi
	WCDMA Band V: 0.5dBi
	WCDMA Band IV: 3.0dBi
	LTE Band 2: 3.0dBi
	LTE Band 4: 3.0dBi
	LTE Band 5: 0.5dBi
	LTE Band 17: 0.5dBi
	WiFi(2.4G): -0.8dBi
	Bluetooth: -0.8dBi
Technical Data:	Battery DC 3.7V, 3400mAh
	DC 5V, 2.0A, charging from adapter (Adapter Input: 100-240V~50/60Hz 0.5A)
Adapter:	Manufacture: SHENZHEN HUNTKEY ELECTRIC CO., LTD.
	Model No.: HKC0115020-1B
Type of Emission:	LTE Band 2 1.4MHz: 1M16G7W(QPSK), 1M16W7D(16QAM)
	LTE Band 2 3MHz: 2M73G7W(QPSK), 2M72W7D(16QAM)
	LTE Band 2 5MHz: 4M48G7W(QPSK), 4M49W7D(16QAM)
	LTE Band 2 10 MHz: 8M93G7W(QPSK), 8M93W7D(16QAM)
	LTE Band 2 15MHz: 13M4G7W(QPSK), 13M4W7D(16QAM)
	LTE Band 2 20MHz: 17M8G7W(QPSK), 17M8W7D(16QAM)
	LTE Band 4 1.4MHz: 1M16G7W(QPSK), 1M16W7D(16QAM)
	LTE Band 4 3MHz: 2M73G7W(QPSK), 2M72W7D(16QAM)
	LTE Band 4 5MHz: 4M49G7W(QPSK), 4M49W7D(16QAM)
	LTE Band 4 10 MHz: 8M93G7W(QPSK), 8M92W7D(16QAM)
	LTE Band 4 15MHz: 13M4G7W(QPSK), 13M4W7D(16QAM)
	LTE Band 4 20MHz: 17M8G7W(QPSK), 17M8W7D(16QAM)
	LTE Band 5 1.4MHz: 1M15G7W(QPSK), 1M15W7D(16QAM)
	LTE Band 5 3MHz: 2M72G7W(QPSK), 2M71W7D(16QAM)
	LTE Band 5 5MHz: 4M48G7W(QPSK), 4M48W7D(16QAM)
	LTE Band 5 10 MHz: 8M93G7W(QPSK), 8M92W7D(16QAM)
	LTE Band 17 5MHz: 4M49G7W(QPSK), 4M49W7D(16QAM)

LTE Band 17 10 MHz: 8M90G7W(QPSK), 8M89W7D(16QAM)

5.3 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 4	1.4	1710.7 MHz	19957
		1732.5 MHz	20175
		1754.3 MHz	20393
	3	1711.5 MHz	19965
		1732.5 MHz	20175
		1753.5 MHz	20385
	5	1712.5 MHz	19975
		1732.5 MHz	20175
		1752.5 MHz	20375
	10	1715.0 MHz	20000
		1732.5 MHz	20175
		1750.0 MHz	20350
	15	1717.5 MHz	20025
		1732.5 MHz	20175
		1747.5 MHz	20325
	20	1720.0 MHz	20050
		1732.5 MHz	20175
		1745.0 MHz	20300
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 17	5	706.5 MHz	23755
		710.0 MHz	23790
		713.5 MHz	23825
	10	709.0 MHz	23780
		710.0 MHz	23790
		711.0 MHz	23800
Remark: All mode(s) were tested and the worst data was recorded.			

5.4 Test Facility

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

- **IC – Registration No.: 7760A**

  Waltek Services(Shenzhen) 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, 2015.

- **FCC Test Site 1#– Registration No.: 880581**

  Waltek Services(Shenzhen) 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 880581, April 29, 2014.

- **FCC Test Site 2#– Registration No.: 328995**

  Waltek Services(Shenzhen) 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 328995, December 3, 2014.

6 Test Summary

Test Items	Test Requirement	Result
RF Output Power	2.1046 22.913 (a) 24.232 (c) 27.50(c) 27.50(d)	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)	PASS
Field Strength of Spurious Radiation	2.1053 22.917 (a) 24.238 (a) 27.53(h)	PASS
Out of band emission	22.917 (a) 24.238 (a) 27.53(h)	PASS
Frequency Stability	2.1055 22.355 24.235 27.5(h) 27.54	PASS
Maximum Permissible Exposure (SAR)	1.1307 2.1093	PASS

7 Equipment Used during Test

7.1 Equipments List

Conducted Emissions Test Site 1#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMI Test Receiver	R&S	ESCI	100947	Sep.12,2016	Sep.11,2017
2.	LISN	R&S	ENV216	101215	Sep.12,2016	Sep.11,2017
3.	Cable	Top	TYPE16(3.5M)	-	Sep.12,2016	Sep.11,2017
Conducted Emissions Test Site 2#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMI Test Receiver	R&S	ESCI	101155	Sep.12,2016	Sep.11,2017
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	Sep.12,2016	Sep.11,2017
3.	Limiter	York	MTS-IMP-136	261115-001-0024	Sep.12,2016	Sep.11,2017
4.	Cable	LARGE	RF300	-	Sep.12,2016	Sep.11,2017
3m Semi-anechoic Chamber for Radiation Emissions Test site 1#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	Spectrum Analyzer	R&S	FSP	100091	Apr.29, 2016	Apr.28, 2017
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Apr.09,2016	Apr.08,2017
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Apr.09,2016	Apr.08,2017
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	Sep.12,2016	Sep.11,2017
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Apr.09,2016	Apr.08,2017
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	Apr.09,2016	Apr.08,2017
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Apr.13,2016	Apr.12,2017
8	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	Apr.13,2016	Apr.12,2017
9	Universal Radio Communication Tester	R&S	CMU 200	112461	Apr.13,2016	Apr.12,2017
10	Signal Generator	R&S	SMR20	100046	Sep.12,2016	Sep.11,2017
11	Smart Antenna	SCHWARZBECK	HA08	-	Apr.09,2016	Apr.08,2017
3m Semi-anechoic Chamber for Radiation Emissions Test site 2#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No**	**Last Calibration Date**	**Calibration Due Date**

1	Test Receiver	R&S	ESCI	101296	Apr.13,2016	Apr.12,2017
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	Apr.09,2016	Apr.08,2017
3	Amplifier	Compliance pirection systems inc	PAP-0203	22024	Apr.13,2016	Apr.12,2017
4	Cable	HUBER+SUHNER	CBL2	525178	Apr.13,2016	Apr.12,2017
RF Conducted Testing						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMC Analyzer (9k~26.5GHz)	Agilent	E7405A	MY45114943	Sep.12,2016	Sep.11,2017
2.	Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep.12,2016	Sep.11,2017
3.	Universal Radio Communication Tester	R&S	CMW 500	127818	Apr.13,2016	Apr.12,2017
4	Signal Analyzer (9k~26.5GHz)	Agilent	N9010A	MY50520207	Sep.12,2016	Sep.11,2017

7.2 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	± 1 x 10^{-6}
RF Power	± 1.0 dB
RF Power Density	± 2.2 dB
Radiated Spurious Emissions test	± 5.03 dB (Bilog antenna 30M~1000MHz)
	± 5.47 dB (Horn antenna 1000M~25000MHz)
Conducted Spurious Emissions test	± 3.64 dB (AC mains 150KHz~30MHz)
Confidence interval：95%. Confidence factor:k=2	

7.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

8 RF OUTPUT POWER

Test Requirement:	FCC Part 2.1046, 22.913 (a), 24.232 (c), 27.50(c.10); 27.50(d.4)
Test Method:	TIA/EIA-603-D:2010
	KDB971168 D01 v02r02
Test Mode:	TX transmitting

8.1 EUT Operation

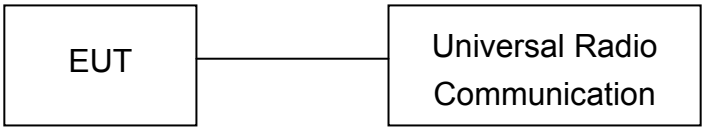
Operating Environment **:**

Temperature:	22.5 °C
Humidity:	52.1 % RH
Atmospheric Pressure:	101.2kPa

8.2 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.

8.3 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	21.8	21.5±1	/
				1	2	21.86	21.5±1	/
				1	5	21.97	21.5±1	/
				3	0	21.92	21.0±1	/
				3	1	21.87	21.0±1	/
				3	2	21.86	21.0±1	/
				6	0	20.94	21.0±1	0.5
			16QAM	1	0	20.65	20.0±1	1.0
				1	2	20.81	20.0±1	1.0
				1	5	20.79	20.0±1	1.0
				3	0	20.89	20.0±1	1.0
				3	1	20.86	20.0±1	1.0
				3	2	20.88	20.0±1	1.0
				6	0	20.07	20.0±1	1.0
	18900	1880	QPSK	1	0	21.73	21.5±1	/
				1	2	21.68	21.5±1	/
				1	5	21.47	21.5±1	/
				3	0	21.51	21.0±1	/
				3	1	21.43	21.0±1	/
				3	2	21.53	21.0±1	/
				6	0	20.55	21.0±1	0.5
			16QAM	1	0	20.62	20.0±1	1.0
				1	2	20.5	20.0±1	1.0
				1	5	20.49	20.0±1	1.0
				3	0	20.46	20.0±1	1.0
				3	1	20.33	20.0±1	1.0
				3	2	20.3	20.0±1	1.0
				6	0	19.2	20.0±1	1.0
	19193	1909.3	QPSK	1	0	21.24	21.5±1	/
				1	2	21.23	21.5±1	/
				1	5	21.18	21.5±1	/
				3	0	21.29	21.0±1	/
				3	1	21.22	21.0±1	/
				3	2	21.18	21.0±1	/
				6	0	20.15	21.0±1	0.5
			16QAM	1	0	19.74	20.0±1	1.0
				1	2	19.69	20.0±1	1.0
				1	5	19.68	20.0±1	1.0
				3	0	20.42	20.0±1	1.0
				3	1	20.37	20.0±1	1.0
				3	2	20.36	20.0±1	1.0
				6	0	19.36	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	18615	1851.5	QPSK	1	0	21.77	21.5±1	/
				1	8	21.95	21.5±1	/
				1	14	21.95	21.5±1	/
				6	0	20.96	21.0±1	0.5
				6	4	21.04	21.0±1	0.5
				6	9	21.02	21.0±1	0.5
				15	0	21.01	21.0±1	0.5
			16QAM	1	0	20.45	20.0±1	1.0
				1	8	20.62	20.0±1	1.0
				1	14	20.55	20.0±1	1.0
				6	0	19.97	20.0±1	1.0
				6	4	20.15	20.0±1	1.0
				6	9	20.17	20.0±1	1.0
				15	0	19.99	20.0±1	1.0
	18900	1880	QPSK	1	0	21.34	21.5±1	/
				1	8	21.44	21.5±1	/
				1	14	21.49	21.5±1	/
				6	0	20.46	21.0±1	0.5
				6	4	20.3	21.0±1	0.5
				6	9	20.34	21.0±1	0.5
				15	0	20.43	21.0±1	0.5
			16QAM	1	0	20.5	20.0±1	1.0
				1	8	20.47	20.0±1	1.0
				1	14	20.48	20.0±1	1.0
				6	0	19.31	20.0±1	1.0
				6	4	19.29	20.0±1	1.0
				6	9	19.14	20.0±1	1.0
				15	0	19.42	20.0±1	1.0
	19185	1908.5	QPSK	1	0	21.57	21.5±1	/
				1	8	21.2	21.5±1	/
				1	14	21.03	21.5±1	/
				6	0	20.45	21.0±1	0.5
				6	4	20.21	21.0±1	0.5
				6	9	20.16	21.0±1	0.5
				15	0	20.24	21.0±1	0.5
			16QAM	1	0	20.08	20.0±1	1.0
				1	8	19.77	20.0±1	1.0
				1	14	19.56	20.0±1	1.0
				6	0	19.5	20.0±1	1.0
				6	4	19.32	20.0±1	1.0
				6	9	19.25	20.0±1	1.0
				15	0	19.27	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	18625	1852.5	QPSK	1	0	21.98	21.5±1	/
				1	12	22.16	21.5±1	/
				1	24	21.98	21.5±1	/
				12	0	21.05	21.0±1	0.5
				12	6	21.07	21.0±1	0.5
				12	11	21.06	21.0±1	0.5
				25	0	21	21.0±1	0.5
			16QAM	1	0	20.72	20.0±1	1.0
				1	12	20.93	20.0±1	1.0
				1	24	20.9	20.0±1	1.0
				12	0	19.91	20.0±1	1.0
				12	6	19.94	20.0±1	1.0
				12	11	20.01	20.0±1	1.0
				25	0	19.93	20.0±1	1.0
	18900	1880	QPSK	1	0	21.39	21.5±1	/
				1	12	21.46	21.5±1	/
				1	24	21.5	21.5±1	/
				12	0	20.33	21.0±1	0.5
				12	6	20.49	21.0±1	0.5
				12	11	20.4	21.0±1	0.5
				25	0	20.41	21.0±1	0.5
			16QAM	1	0	20.28	20.0±1	1.0
				1	12	20.33	20.0±1	1.0
				1	24	20.53	20.0±1	1.0
				12	0	19.42	20.0±1	1.0
				12	6	19.47	20.0±1	1.0
				12	11	19.61	20.0±1	1.0
				25	0	19.43	20.0±1	1.0
	19175	1907.5	QPSK	1	0	21.59	21.5±1	/
				1	12	21.63	21.5±1	/
				1	24	21.28	21.5±1	/
				12	0	20.53	21.0±1	0.5
				12	6	20.47	21.0±1	0.5
				12	11	20.26	21.0±1	0.5
				25	0	20.4	21.0±1	0.5
			16QAM	1	0	20.24	20.0±1	1.0
				1	12	20.29	20.0±1	1.0
				1	24	20.01	20.0±1	1.0
				12	0	19.41	20.0±1	1.0
				12	6	19.53	20.0±1	1.0
				12	11	19.28	20.0±1	1.0
				25	0	19.48	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)
10MHz	18650	1855	QPSK	1	0	21.89	21.5±1	/
				1	24	21.97	21.5±1	/
				1	49	22.13	21.5±1	/
				25	0	21.13	21.0±1	0.5
				25	12	21	21.0±1	0.5
				25	24	21.06	21.0±1	0.5
				50	0	21.11	21.0±1	0.5
			16QAM	1	0	20.53	20.0±1	1.0
				1	24	20.61	20.0±1	1.0
				1	49	20.73	20.0±1	1.0
				25	0	20.05	20.0±1	1.0
				25	12	20.02	20.0±1	1.0
				25	24	20.07	20.0±1	1.0
				50	0	20.02	20.0±1	1.0
	18900	1880	QPSK	1	0	21.48	21.5±1	/
				1	24	21.39	21.5±1	/
				1	49	21.51	21.5±1	/
				25	0	20.37	21.0±1	0.5
				25	12	20.42	21.0±1	0.5
				25	24	20.44	21.0±1	0.5
				50	0	20.37	21.0±1	0.5
			16QAM	1	0	20.58	20.0±1	1.0
				1	24	20.57	20.0±1	1.0
				1	49	20.58	20.0±1	1.0
				25	0	19.4	20.0±1	1.0
				25	12	19.32	20.0±1	1.0
				25	24	19.44	20.0±1	1.0
				50	0	19.43	20.0±1	1.0
	19150	1905	QPSK	1	0	21.35	21.5±1	/
				1	24	21.41	21.5±1	/
				1	49	21.17	21.5±1	/
				25	0	20.42	21.0±1	0.5
				25	12	20.42	21.0±1	0.5
				25	24	20.38	21.0±1	0.5
				50	0	20.42	21.0±1	0.5
			16QAM	1	0	19.98	20.0±1	1.0
				1	24	19.96	20.0±1	1.0
				1	49	19.56	20.0±1	1.0
				25	0	19.45	20.0±1	1.0
				25	12	19.54	20.0±1	1.0
				25	24	19.54	20.0±1	1.0
				50	0	19.49	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)
15MHz	18675	1857.5	QPSK	1	0	21.95	21.5±1	/
				1	37	22.09	21.5±1	/
				1	74	22.06	21.5±1	/
				36	0	21.09	21.0±1	0.5
				36	16	21.05	21.0±1	0.5
				36	35	21.05	21.0±1	0.5
				75	0	21.07	21.0±1	0.5
			16QAM	1	0	20.49	20.0±1	1.0
				1	37	20.68	20.0±1	1.0
				1	74	20.65	20.0±1	1.0
				36	0	20.18	20.0±1	1.0
				36	16	20.19	20.0±1	1.0
				36	35	20.13	20.0±1	1.0
				75	0	20.04	20.0±1	1.0
	18900	1880	QPSK	1	0	21.67	21.5±1	/
				1	37	21.39	21.5±1	/
				1	74	21.52	21.5±1	/
				36	0	20.35	21.0±1	0.5
				36	16	20.45	21.0±1	0.5
				36	35	20.43	21.0±1	0.5
				75	0	20.34	21.0±1	0.5
			16QAM	1	0	20.75	20.0±1	1.5
				1	37	20.47	20.0±1	1.5
				1	74	20.5	20.0±1	1.0
				36	0	19.28	20.0±1	1.0
				36	16	19.39	20.0±1	1.0
				36	35	19.45	20.0±1	1.0
				75	0	19.32	20.0±1	1.0
	19125	1902.5	QPSK	1	0	21.52	21.5±1	/
				1	37	21.33	21.5±1	/
				1	74	21.14	21.5±1	/
				36	0	20.37	21.0±1	0.5
				36	16	20.37	21.0±1	0.5
				36	35	20.44	21.0±1	0.5
				75	0	20.45	21.0±1	0.5
			16QAM	1	0	20.6	20.0±1	1.0
				1	37	20.48	20.0±1	1.0
				1	74	20.26	20.0±1	1.0
				36	0	19.41	20.0±1	1.0
				36	16	19.29	20.0±1	1.0
				36	35	19.38	20.0±1	1.0
				75	0	19.4	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	18700	1860	QPSK	1	0	21.96	21.5±1	/
				1	49	22.22	21.5±1	/
				1	99	21.73	21.5±1	/
				50	0	21.09	21.0±1	0.5
				50	24	21.04	21.0±1	0.5
				50	49	20.96	21.0±1	0.5
				100	0	20.93	21.0±1	0.5
			16QAM	1	0	20.73	20.0±1	1.0
				1	49	20.28	20.0±1	1.0
				1	99	20.84	20.0±1	1.0
				50	0	20.08	20.0±1	1.0
				50	24	20.11	20.0±1	1.0
				50	49	19.94	20.0±1	1.0
				100	0	20.06	20.0±1	1.5
	18900	1880	QPSK	1	0	21.85	21.5±1	/
				1	49	22.18	21.5±1	/
				1	99	21.91	21.5±1	/
				50	0	21.39	21.0±1	0.5
				50	24	21.68	21.0±1	0.5
				50	49	21.17	21.0±1	0.5
				100	0	20.77	21.0±1	0.5
			16QAM	1	0	20.96	20.0±1	1.0
				1	49	20.54	20.0±1	1.0
				1	99	20.7	20.0±1	1.0
				50	0	19.25	20.0±1	1.0
				50	24	19.44	20.0±1	1.0
				50	49	19.35	20.0±1	1.0
				100	0	19.35	20.0±1	1.0
	19100	1900	QPSK	1	0	21.27	21.5±1	/
				1	49	21.36	21.5±1	/
				1	99	21.21	21.5±1	/
				50	0	20.43	21.0±1	0.5
				50	24	20.46	21.0±1	0.5
				50	49	20.39	21.0±1	0.5
				100	0	20.56	21.0±1	0.5
			16QAM	1	0	20.34	20.0±1	1.0
				1	49	20.45	20.0±1	1.0
				1	99	20.29	20.0±1	1.0
				50	0	19.37	20.0±1	1.0
				50	24	19.39	20.0±1	1.0
				50	49	19.39	20.0±1	1.0
				100	0	19.52	20.0±1	1.0

LTE Band 4：

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
1.4MHz	19957	1710.7	QPSK	1	0	22	21.5±1	/
				1	2	21.91	21.5±1	/
				1	5	21.99	21.5±1	/
				3	0	21.23	21.0±1	/
				3	1	21.37	21.0±1	/
				3	2	21.51	21.0±1	/
				6	0	21	21.0±1	0.5
			16QAM	1	0	20.76	20.0±1	1.0
				1	2	20.8	20.0±1	1.0
				1	5	20.79	20.0±1	1.0
				3	0	21.03	20.0±1	1.0
				3	1	20.9	20.0±1	1.0
				3	2	21.02	20.0±1	1.0
				6	0	20	20.0±1	1.0
	20175	1732.5	QPSK	1	0	21.85	21.5±1	/
				1	2	21.81	21.5±1	/
				1	5	21.77	21.5±1	/
				3	0	20.82	21.0±1	/
				3	1	21.12	21.0±1	/
				3	2	21.26	21.0±1	/
				6	0	20.88	21.0±1	0.5
			16QAM	1	0	21.06	20.0±1	1.0
				1	2	20.92	20.0±1	1.0
				1	5	20.86	20.0±1	1.0
				3	0	20.76	20.0±1	1.0
				3	1	20.72	20.0±1	1.0
				3	2	20.74	20.0±1	1.0
				6	0	19.61	20.0±1	1.0
	20393	1754.3	QPSK	1	0	21.73	21.5±1	/
				1	2	21.68	21.5±1	/
				1	5	21.74	21.5±1	/
				3	0	20.76	21.0±1	/
				3	1	21.18	21.0±1	/
				3	2	20.93	21.0±1	/
				6	0	20.33	21.0±1	0.5
			16QAM	1	0	20.28	20.0±1	1.0
				1	2	20.32	20.0±1	1.0
				1	5	20.28	20.0±1	1.0
				3	0	21.03	20.0±1	1.0
				3	1	20.9	20.0±1	1.0
				3	2	20.87	20.0±1	1.0
				6	0	20.02	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	19965	1711.5	QPSK	1	0	21.87	21.5±1	/
				1	8	21.85	21.5±1	/
				1	14	21.78	21.5±1	/
				6	0	20.9	21.0±1	0.5
				6	4	20.8	21.0±1	0.5
				6	9	20.9	21.0±1	0.5
				15	0	20.92	21.0±1	0.5
			16QAM	1	0	20.49	20.0±1	1.0
				1	8	20.44	20.0±1	1.0
				1	14	20.28	20.0±1	1.0
				8	0	20.1	20.0±1	1.0
				8	4	20.05	20.0±1	1.0
				8	9	20.06	20.0±1	1.0
				15	0	19.88	20.0±1	1.0
	20175	1732.5	QPSK	1	0	21.86	21.5±1	/
				1	8	21.87	21.5±1	/
				1	14	21.8	21.5±1	/
				6	0	20.88	21.0±1	0.5
				6	4	20.76	21.0±1	0.5
				6	9	20.74	21.0±1	0.5
				15	0	20.75	21.0±1	0.5
			16QAM	1	0	20.96	20.0±1	1.0
				1	8	20.92	20.0±1	1.0
				1	14	20.89	20.0±1	1.0
				6	0	19.84	20.0±1	1.0
				6	4	19.71	20.0±1	1.0
				6	9	19.63	20.0±1	1.0
				15	0	19.88	20.0±1	1.0
	20385	1753.5	QPSK	1	0	21.63	21.5±1	/
				1	8	21.72	21.5±1	/
				1	14	21.7	21.5±1	/
				6	0	20.71	21.0±1	0.5
				6	4	20.73	21.0±1	0.5
				6	9	20.92	21.0±1	0.5
				15	0	20.74	21.0±1	0.5
			16QAM	1	0	20.22	20.0±1	1.0
				1	8	20.36	20.0±1	1.0
				1	14	20.32	20.0±1	1.0
				6	0	19.66	20.0±1	1.0
				6	4	19.71	20.0±1	1.0
				6	9	19.87	20.0±1	1.0
				15	0	19.64	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	19975	1712.5	QPSK	1	0	22.08	21.5±1	/
				1	49	21.91	21.5±1	/
				1	99	21.88	21.5±1	/
				12	0	20.95	21.0±1	0.5
				12	24	20.8	21.0±1	0.5
				12	49	20.85	21.0±1	0.5
				25	0	20.88	21.0±1	0.5
			16QAM	1	0	20.8	20.0±1	1.0
				1	49	20.64	20.0±1	1.0
				1	99	20.71	20.0±1	1.0
				12	0	20.02	20.0±1	1.0
				12	24	19.81	20.0±1	1.0
				12	49	19.85	20.0±1	1.0
				25	0	19.82	20.0±1	1.0
	20175	1732.5	QPSK	1	0	21.84	21.5±1	/
				1	49	21.75	21.5±1	/
				1	99	21.8	21.5±1	/
				12	0	20.85	21.0±1	0.5
				12	24	20.77	21.0±1	0.5
				12	49	20.78	21.0±1	0.5
				25	0	20.73	21.0±1	0.5
			16QAM	1	0	20.81	20.0±1	1.0
				1	49	20.82	20.0±1	1.0
				1	99	20.87	20.0±1	1.0
				12	0	19.94	20.0±1	1.0
				12	24	19.85	20.0±1	1.5
				12	49	19.76	20.0±1	1.0
				25	0	19.72	20.0±1	1.0
	20375	1752.5	QPSK	1	0	21.87	21.5±1	/
				1	49	21.81	21.5±1	/
				1	99	21.93	21.5±1	/
				12	0	20.67	21.0±1	0.5
				12	24	20.64	21.0±1	0.5
				12	49	20.7	21.0±1	0.5
				25	0	20.59	21.0±1	0.5
			16QAM	1	0	20.52	20.0±1	1.0
				1	49	20.54	20.0±1	1.0
				1	99	20.68	20.0±1	1.0
				12	0	19.65	20.0±1	1.0
				12	24	19.66	20.0±1	1.0
				12	49	19.69	20.0±1	1.0
				25	0	19.67	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)
10MHz	20000	1715	QPSK	1	0	21.86	21.5±1	/
				1	49	21.89	21.5±1	/
				1	99	21.91	21.5±1	/
				25	0	20.88	21.0±1	0.5
				25	24	20.85	21.0±1	0.5
				25	49	20.96	21.0±1	0.5
				50	0	20.85	21.0±1	0.5
			16QAM	1	0	20.47	20.0±1	1.0
				1	49	20.45	20.0±1	1.0
				1	99	20.49	20.0±1	1.0
				25	0	19.92	20.0±1	1.0
				25	24	19.93	20.0±1	1.0
				25	49	19.99	20.0±1	1.0
				50	0	19.87	20.0±1	1.0
	20175	1732.5	QPSK	1	0	21.81	21.5±1	/
				1	49	21.78	21.5±1	/
				1	99	21.75	21.5±1	/
				25	0	20.76	21.0±1	0.5
				25	24	20.77	21.0±1	0.5
				25	49	20.71	21.0±1	0.5
				50	0	20.72	21.0±1	0.5
			16QAM	1	0	20.9	20.0±1	1.0
				1	49	20.92	20.0±1	1.0
				1	99	20.9	20.0±1	1.0
				25	0	19.75	20.0±1	1.0
				25	24	19.73	20.0±1	1.0
				25	49	19.68	20.0±1	1.0
				50	0	19.67	20.0±1	1.0
	20350	1750	QPSK	1	0	21.57	21.5±1	/
				1	49	21.59	21.5±1	/
				1	99	21.74	21.5±1	/
				25	0	20.63	21.0±1	0.5
				25	24	20.68	21.0±1	0.5
				25	49	20.7	21.0±1	0.5
				50	0	20.6	21.0±1	0.5
			16QAM	1	0	20.2	20.0±1	1.0
				1	49	20.27	20.0±1	1.0
				1	99	20.3	20.0±1	1.0
				25	0	19.72	20.0±1	1.0
				25	24	19.69	20.0±1	1.0
				25	49	19.7	20.0±1	1.0
				50	0	19.65	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)
15MHz	20025	1717.5	QPSK	1	0	21.92	21.5±1	/
				1	49	21.98	21.5±1	/
				1	99	21.88	21.5±1	/
				36	0	20.85	21.0±1	0.5
				36	24	20.88	21.0±1	0.5
				36	49	20.93	21.0±1	0.5
				75	0	20.75	21.0±1	0.5
			16QAM	1	0	20.43	20.0±1	1.0
				1	49	20.45	20.0±1	1.0
				1	99	20.46	20.0±1	1.0
				36	0	19.91	20.0±1	1.0
				36	24	19.88	20.0±1	1.0
				36	49	19.91	20.0±1	1.0
				75	0	19.82	20.0±1	1.0
	20175	1732.5	QPSK	1	0	21.92	21.5±1	/
				1	49	21.81	21.5±1	/
				1	99	21.82	21.5±1	/
				36	0	20.74	21.0±1	0.5
				36	24	20.77	21.0±1	0.5
				36	49	20.6	21.0±1	0.5
				75	0	20.67	21.0±1	0.5
			16QAM	1	0	20.97	20.0±1	1.0
				1	49	20.91	20.0±1	1.0
				1	99	20.95	20.0±1	1.0
				36	0	19.73	20.0±1	1.0
				36	24	19.72	20.0±1	1.0
				36	49	19.59	20.0±1	1.0
				75	0	19.69	20.0±1	1.0
	20325	1747.5	QPSK	1	0	21.71	21.5±1	/
				1	49	21.63	21.5±1	/
				1	99	21.71	21.5±1	/
				36	0	20.53	21.0±1	0.5
				36	24	20.62	21.0±1	0.5
				36	49	20.62	21.0±1	0.5
				75	0	20.56	21.0±1	0.5
			16QAM	1	0	20.89	20.0±1	1.0
				1	49	20.82	20.0±1	1.0
				1	99	20.92	20.0±1	1.0
				36	0	19.52	20.0±1	1.0
				36	24	19.6	20.0±1	1.0
				36	49	19.51	20.0±1	1.0
				75	0	19.53	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	20050	1720	QPSK	1	0	21.91	21.5±1	/
				1	49	21.85	21.5±1	/
				1	99	21.81	21.5±1	/
				50	0	20.88	21.0±1	0.5
				50	24	21.11	21.0±1	0.5
				50	49	20.8	21.0±1	0.5
				100	0	20.81	21.0±1	0.5
			16QAM	1	0	21	20.0±1	1.0
				1	49	21.01	20.0±1	1.0
				1	99	20.97	20.0±1	1.0
				50	0	19.94	20.0±1	1.0
				50	24	19.8	20.0±1	1.0
				50	49	19.76	20.0±1	1.0
				100	0	19.75	20.0±1	1.0
	20175	1732.5	QPSK	1	0	21.78	21.5±1	/
				1	49	21.71	21.5±1	/
				1	99	21.76	21.5±1	/
				50	0	21.29	21.0±1	0.5
				50	24	21.38	21.0±1	0.5
				50	49	20.91	21.0±1	0.5
				100	0	20.74	21.0±1	0.5
			16QAM	1	0	20.96	20.0±1	1.0
				1	49	20.89	20.0±1	1.0
				1	99	20.95	20.0±1	1.0
				50	0	19.58	20.0±1	1.0
				50	24	19.67	20.0±1	1.0
				50	49	19.6	20.0±1	1.0
				100	0	19.69	20.0±1	1.0
	20300	1745	QPSK	1	0	21.73	21.5±1	/
				1	49	21.59	21.5±1	/
				1	99	21.76	21.5±1	/
				50	0	20.62	21.0±1	0.5
				50	24	20.58	21.0±1	0.5
				50	49	20.67	21.0±1	0.5
				100	0	20.64	21.0±1	0.5
			16QAM	1	0	20.81	20.0±1	1.0
				1	49	20.62	20.0±1	1.0
				1	99	20.9	20.0±1	1.0
				50	0	19.61	20.0±1	1.0
				50	24	19.6	20.0±1	1.0
				50	49	19.59	20.0±1	1.0
				100	0	19.57	20.0±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	22.44	22.0±1	/
				1	2	22.3	22.0±1	/
				1	5	22.3	22.0±1	/
				3	0	22.11	21.5±1	/
				3	1	22.04	21.5±1	/
				3	2	22.17	21.5±1	/
				6	0	21.44	21.5±1	0.5
			16QAM	1	0	21.29	21.0±1	1.0
				1	2	21.25	21.0±1	1.0
				1	5	21.22	21.0±1	1.0
				3	0	21.45	21.0±1	1.0
				3	1	21.39	21.0±1	1.0
				3	2	21.39	21.0±1	1.0
				6	0	20.53	21.0±1	1.0
	20525	836.5	QPSK	1	0	22.89	22.0±1	/
				1	2	22.9	22.0±1	/
				1	5	22.91	22.0±1	/
				3	0	22.38	21.5±1	/
				3	1	22.22	21.5±1	/
				3	2	22.35	21.5±1	/
				6	0	21.81	21.5±1	0.5
			16QAM	1	0	21.88	21.0±1	1.0
				1	2	21.92	21.0±1	1.0
				1	5	21.71	21.0±1	1.0
				3	0	21.51	21.0±1	1.0
				3	1	21.78	21.0±1	1.0
				3	2	21.44	21.0±1	1.0
				6	0	20.85	21.0±1	1.0
	20634	848.3	QPSK	1	0	22.7	22.0±1	/
				1	2	22.57	22.0±1	/
				1	5	22.56	22.0±1	/
				3	0	21.94	21.5±1	/
				3	1	21.67	21.5±1	/
				3	2	21.72	21.5±1	/
				6	0	21.18	21.5±1	0.5
			16QAM	1	0	21.21	21.0±1	1.0
				1	2	21.15	21.0±1	1.0
				1	5	21.13	21.0±1	1.0
				3	0	21.82	21.0±1	1.0
				3	1	21.8	21.0±1	1.0
				3	2	21.76	21.0±1	1.0
				6	0	20.88	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	20415	825.5	QPSK	1	0	22.27	22.0±1	/
				1	8	22.09	22.0±1	/
				1	14	22.07	22.0±1	/
				6	0	21.38	21.5±1	0.5
				6	4	21.26	21.5±1	0.5
				6	9	21.18	21.5±1	0.5
				15	0	21.29	21.5±1	0.5
			16QAM	1	0	20.96	21.0±1	1.0
				1	8	20.78	21.0±1	1.0
				1	14	20.75	21.0±1	1.0
				8	0	20.49	21.0±1	1.0
				8	4	20.39	21.0±1	1.0
				8	9	20.37	21.0±1	1.0
				15	0	20.41	21.0±1	1.0
	20525	836.5	QPSK	1	0	22.78	22.0±1	/
				1	8	22.87	22.0±1	/
				1	14	22.78	22.0±1	/
				6	0	21.95	21.5±1	0.5
				6	4	21.94	21.5±1	0.5
				6	9	21.99	21.5±1	0.5
				15	0	21.9	21.5±1	0.5
			16QAM	1	0	21.81	21.0±1	1.0
				1	8	21.58	21.0±1	1.0
				1	14	21.43	21.0±1	1.0
				6	0	20.9	21.0±1	1.0
				6	4	20.93	21.0±1	1.0
				6	9	20.99	21.0±1	1.0
				15	0	20.99	21.0±1	1.0
	20635	847.5	QPSK	1	0	22.58	22.0±1	/
				1	8	22.65	22.0±1	/
				1	14	22.48	22.0±1	/
				6	0	21.7	21.5±1	0.5
				6	4	21.72	21.5±1	0.5
				6	9	21.64	21.5±1	0.5
				15	0	21.6	21.5±1	0.5
			16QAM	1	0	21.19	21.0±1	1.0
				1	8	21.21	21.0±1	1.0
				1	14	21.04	21.0±1	1.0
				8	0	20.76	21.0±1	1.0
				8	4	20.8	21.0±1	1.0
				8	9	20.75	21.0±1	1.0
				15	0	20.63	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	20425	826.5	QPSK	1	0	22.35	22.0±1	/
				1	49	22.18	22.0±1	/
				1	99	22.14	22.0±1	/
				12	0	21.26	21.5±1	0.5
				12	24	21.09	21.5±1	0.5
				12	49	21.19	21.5±1	0.5
				25	0	21.12	21.5±1	0.5
			16QAM	1	0	21.17	21.0±1	1.0
				1	49	21.03	21.0±1	1.0
				1	99	21.05	21.0±1	1.0
				12	0	20.3	21.0±1	1.0
				12	24	20.15	21.0±1	1.0
				12	49	20.25	21.0±1	1.0
				25	0	20.14	21.0±1	1.0
	20525	836.5	QPSK	1	0	22.83	22.0±1	/
				1	49	22.87	22.0±1	/
				1	99	22.75	22.0±1	/
				12	0	21.89	21.5±1	0.5
				12	24	21.93	21.5±1	0.5
				12	49	21.81	21.5±1	0.5
				25	0	21.85	21.5±1	0.5
			16QAM	1	0	21.87	21.0±1	1.0
				1	49	21.96	21.0±1	1.0
				1	99	21.83	21.0±1	1.0
				12	0	20.97	21.0±1	1.0
				12	24	21.04	21.0±1	1.0
				12	49	20.94	21.0±1	1.0
				25	0	20.93	21.0±1	1.0
	20625	846.5	QPSK	1	0	22.61	22.0±1	/
				1	49	22.74	22.0±1	/
				1	99	22.67	22.0±1	/
				12	0	21.47	21.5±1	0.5
				12	24	21.65	21.5±1	0.5
				12	49	21.59	21.5±1	0.5
				25	0	21.48	21.5±1	0.5
			16QAM	1	0	21.3	21.0±1	1.0
				1	49	21.4	21.0±1	1.0
				1	99	21.45	21.0±1	1.0
				12	0	20.56	21.0±1	1.0
				12	24	20.8	21.0±1	1.0
				12	49	20.75	21.0±1	1.0
				25	0	20.63	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	22.2	22.0±1	/
				1	49	22.05	22.0±1	/
				1	99	22.59	22.0±1	/
				25	0	21.19	21.5±1	0.5
				25	24	21.24	21.5±1	0.5
				25	49	21.41	21.5±1	0.5
				50	0	21.18	21.5±1	0.5
			16QAM	1	0	20.88	21.0±1	1.0
				1	49	20.74	21.0±1	1.0
				1	99	21.27	21.0±1	1.0
				25	0	20.27	21.0±1	1.0
				25	24	20.22	21.0±1	1.0
				25	49	20.5	21.0±1	1.0
				50	0	20.25	21.0±1	1.0
	20525	836.5	QPSK	1	0	22.55	22.0±1	/
				1	49	22.82	22.0±1	/
				1	99	22.46	22.0±1	/
				25	0	21.76	21.5±1	0.5
				25	24	21.79	21.5±1	0.5
				25	49	21.69	21.5±1	0.5
				50	0	21.65	21.5±1	0.5
			16QAM	1	0	21.72	21.0±1	1.0
				1	49	22.04	21.0±1	1.0
				1	99	21.75	21.0±1	1.0
				25	0	20.86	21.0±1	1.0
				25	24	20.81	21.0±1	1.0
				25	49	20.84	21.0±1	1.0
				50	0	20.78	21.0±1	1.0
	20600	844	QPSK	1	0	22.51	22.0±1	/
				1	49	22.26	22.0±1	/
				1	99	22.46	22.0±1	/
				25	0	21.47	21.5±1	0.5
				25	24	21.45	21.5±1	0.5
				25	49	21.5	21.5±1	0.5
				50	0	21.4	21.5±1	0.5
			16QAM	1	0	21.2	21.0±1	1.0
				1	49	20.95	21.0±1	1.0
				1	99	21.05	21.0±1	1.0
				25	0	20.55	21.0±1	1.0
				25	24	20.52	21.0±1	1.0
				25	49	20.69	21.0±1	1.0
				50	0	20.52	21.0±1	1.0

LTE Band 17：

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	MPR (dB)
5MHz	23755	706.5	QPSK	1	0	22.8	22.0±1	/
				1	49	22.75	22.0±1	/
				1	99	22.43	22.0±1	/
				12	0	21.79	21.5±1	0.5
				12	24	21.71	21.5±1	0.5
				12	49	21.55	21.5±1	0.5
				25	0	21.54	21.5±1	0.5
			16QAM	1	0	21.78	21.0±1	1.0
				1	49	21.74	21.0±1	1.0
				1	99	21.51	21.0±1	1.0
				12	0	20.91	21.0±1	1.0
				12	24	20.72	21.0±1	1.0
				12	49	20.57	21.0±1	1.0
				25	0	20.64	21.0±1	1.0
	23790	710	QPSK	1	0	22.57	22.0±1	/
				1	49	22.58	22.0±1	/
				1	99	22.59	22.0±1	/
				12	0	21.51	21.5±1	0.5
				12	24	21.44	21.5±1	0.5
				12	49	21.44	21.5±1	0.5
				25	0	21.44	21.5±1	0.5
			16QAM	1	0	21.31	21.0±1	1.0
				1	49	21.3	21.0±1	1.0
				1	99	21.33	21.0±1	1.0
				12	0	20.34	21.0±1	1.0
				12	24	20.39	21.0±1	1.0
				12	49	20.35	21.0±1	1.0
				25	0	20.37	21.0±1	1.0
	23825	713.5	QPSK	1	0	22.52	22.0±1	/
				1	49	22.5	22.0±1	/
				1	99	22.13	22.0±1	/
				12	0	21.47	21.5±1	0.5
				12	24	21.42	21.5±1	0.5
				12	49	21.3	21.5±1	0.5
				25	0	21.38	21.5±1	0.5
			16QAM	1	0	21.23	21.0±1	1.0
				1	49	21.25	21.0±1	1.0
				1	99	20.93	21.0±1	1.0
				12	0	20.44	21.0±1	1.0
				12	24	20.39	21.0±1	1.0
				12	49	20.32	21.0±1	1.0
				25	0	20.28	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	23780	709	QPSK	1	0	22.77	22.0±1	/
				1	49	22.39	22.0±1	/
				1	99	22.43	22.0±1	/
				25	0	21.56	21.5±1	0.5
				25	24	21.51	21.5±1	0.5
				25	49	21.35	21.5±1	0.5
				50	0	21.42	21.5±1	0.5
			16QAM	1	0	21.28	21.0±1	1.0
				1	49	21.02	21.0±1	1.0
				1	99	20.98	21.0±1	1.0
				25	0	20.57	21.0±1	1.0
				25	24	20.44	21.0±1	1.0
				25	49	20.3	21.0±1	1.0
				50	0	20.3	21.0±1	1.0
	23790	710	QPSK	1	0	22.83	22.0±1	/
				1	49	22.65	22.0±1	/
				1	99	22.42	22.0±1	/
				25	0	21.54	21.5±1	0.5
				25	24	21.47	21.5±1	0.5
				25	49	21.36	21.5±1	0.5
				50	0	21.43	21.5±1	0.5
			16QAM	1	0	21.86	21.0±1	1.0
				1	49	21.54	21.0±1	1.0
				1	99	21.59	21.0±1	1.0
				25	0	20.45	21.0±1	1.0
				25	24	20.32	21.0±1	1.0
				25	49	20.33	21.0±1	1.0
				50	0	20.33	21.0±1	1.0
	23800	711	QPSK	1	0	22.64	22.0±1	/
				1	49	22.28	22.0±1	/
				1	99	22.03	22.0±1	/
				25	0	21.48	21.5±1	0.5
				25	24	21.35	21.5±1	0.5
				25	49	21.29	21.5±1	0.5
				50	0	21.4	21.5±1	0.5
			16QAM	1	0	21.24	21.0±1	1.0
				1	49	20.92	21.0±1	1.0
				1	99	20.63	21.0±1	1.0
				25	0	20.44	21.0±1	1.0
				25	24	20.33	21.0±1	1.0
				25	49	20.36	21.0±1	1.0
				50	0	20.32	21.0±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	79.27	192	1.8	H	5.30	0.31	10.40	15.39	33	-17.61
1850.70	84.79	318	1.6	V	11.51	0.31	10.40	21.60	33	-11.40
LTE Band 2 Channel 18900 – 1.4MHz – QPSK										
1880.00	79.06	82	2.3	H	5.21	0.31	10.40	15.30	33	-17.70
1880.00	84.88	175	1.3	V	11.76	0.31	10.40	21.85	33	-11.15
LTE Band 2 Channel 19193 – 1.4MHz – QPSK										
1909.30	78.72	137	1.2	H	4.99	0.32	10.40	15.07	33	-17.93
1909.30	84.92	106	2.1	V	11.96	0.32	10.40	22.04	33	-10.96
LTE Band 2 Channel 18607 – 1.4MHz – 16QAM										
1850.70	79.88	152	1.3	H	5.91	0.31	10.40	16.00	33	-17.00
1850.70	84.41	20	1.0	V	11.13	0.31	10.40	21.22	33	-11.78
LTE Band 2 Channel 18900 – 1.4MHz – 16QAM										
1880.00	76.55	84	1.7	H	2.70	0.31	10.40	12.79	33	-20.21
1880.00	84.28	274	2.1	V	11.16	0.31	10.40	21.25	33	-11.75
LTE Band 2 Channel 19193 – 1.4MHz – 16QAM										
1909.30	77.03	2	2.0	H	3.30	0.32	10.40	13.38	33	-19.62
1909.30	84.80	347	1.9	V	11.84	0.32	10.40	21.92	33	-11.08
LTE Band 2 Channel 18615 – 3MHz – QPSK										
1851.50	79.95	26	2.3	H	5.98	0.31	10.40	16.07	33	-16.93
1851.50	84.86	314	2.3	V	11.58	0.31	10.40	21.67	33	-11.33
LTE Band 2 Channel 18900 – 3MHz – QPSK										
1880.00	77.95	244	2.3	H	4.10	0.31	10.40	14.19	33	-18.81
1880.00	84.44	10	1.5	V	11.32	0.31	10.40	21.41	33	-11.59
LTE Band 2 Channel 19185 – 3MHz – QPSK										
1908.50	77.04	253	1.8	H	3.31	0.32	10.40	13.39	33	-19.61
1908.50	84.29	37	2.2	V	11.33	0.32	10.40	21.41	33	-11.59
LTE Band 2 Channel 18615 – 3MHz – 16QAM										
1851.50	79.07	351	1.6	H	5.10	0.31	10.40	15.19	33	-17.81
1851.50	84.96	67	1.4	V	11.68	0.31	10.40	21.77	33	-11.23
LTE Band 2 Channel 18900 – 3MHz – 16QAM										
1880.00	76.52	51	1.5	H	2.67	0.31	10.40	12.76	33	-20.24
1880.00	84.59	139	2.3	V	11.47	0.31	10.40	21.56	33	-11.44
LTE Band 2 Channel 19185 – 3MHz – 16QAM										
1908.50	77.66	125	2.1	H	3.93	0.32	10.40	14.01	33	-18.99
1908.50	84.53	293	2.3	V	11.57	0.32	10.40	21.65	33	-11.35
LTE Band 2 Channel 18625 – 5MHz – QPSK										
1852.50	79.27	67	1.3	H	5.30	0.31	10.40	15.39	33	-17.61
1852.50	84.87	23	1.2	V	11.59	0.31	10.40	21.68	33	-11.32
LTE Band 2 Channel 18900 – 5MHz – QPSK										

1880.00	78.87	304	2.1	H	5.02	0.31	10.40	15.11	33	-17.89
1880.00	84.28	143	2.5	V	11.16	0.31	10.40	21.25	33	-11.75
LTE Band 2 Channel 19175 – 5MHz – QPSK										
1907.50	77.63	250	1.1	H	3.90	0.32	10.40	13.98	33	-19.02
1907.50	84.97	82	1.5	V	12.01	0.32	10.40	**22.09**	33	-10.91
LTE Band 2 Channel 18625 – 5MHz – 16QAM										
1852.50	79.61	108	1.1	H	5.64	0.31	10.40	15.73	33	-17.27
1852.50	84.37	271	1.2	V	11.09	0.31	10.40	21.18	33	-11.82
LTE Band 2 Channel 18900 – 5MHz – 16QAM										
1880.00	76.15	222	1.7	H	2.30	0.31	10.40	12.39	33	-20.61
1880.00	84.01	357	2.2	V	10.89	0.31	10.40	20.98	33	-12.02
LTE Band 2 Channel 19175 – 5MHz – 16QAM										
1907.50	76.46	177	1.4	H	2.73	0.32	10.40	12.81	33	-20.19
1907.50	84.40	151	1.5	V	11.44	0.32	10.40	21.52	33	-11.48
LTE Band 2 Channel 18650 – 10MHz – QPSK										
1855.00	78.29	277	1.1	H	4.32	0.31	10.40	14.41	33	-18.59
1855.00	84.29	246	1.3	V	11.01	0.31	10.40	21.10	33	-11.90
LTE Band 2 Channel 18900 – 10MHz – QPSK										
1880.00	79.76	3	1.3	H	5.91	0.31	10.40	16.00	33	-17.00
1880.00	84.09	333	2.3	V	10.97	0.31	10.40	21.06	33	-11.94
LTE Band 2 Channel 19150 – 10MHz – QPSK										
1905.00	78.69	359	1.9	H	4.96	0.32	10.40	15.04	33	-17.96
1905.00	84.91	323	2.2	V	11.95	0.32	10.40	22.03	33	-10.97
LTE Band 2 Channel 18650 – 10MHz – 16QAM										
1855.00	78.85	132	1.3	H	4.88	0.31	10.40	14.97	33	-18.03
1855.00	84.67	16	2.1	V	11.39	0.31	10.40	21.48	33	-11.52
LTE Band 2 Channel 18900 – 10MHz – 16QAM										
1880.00	78.79	290	1.8	H	4.94	0.31	10.40	15.03	33	-17.97
1880.00	84.08	278	1.4	V	10.96	0.31	10.40	21.05	33	-11.95
LTE Band 2 Channel 19150 – 10MHz – 16QAM										
1905.00	77.95	268	1.7	H	4.22	0.32	10.40	14.30	33	-18.70
1905.00	84.18	91	2.0	V	11.22	0.32	10.40	21.30	33	-11.70
LTE Band 2 Channel 18675 – 15MHz – QPSK										
1857.50	78.05	85	2.0	H	4.08	0.31	10.40	14.17	33	-18.83
1857.50	84.79	140	1.7	V	11.51	0.31	10.40	21.60	33	-11.40
LTE Band 2 Channel 18900 – 15MHz – QPSK										
1880.00	77.78	243	2.0	H	3.93	0.31	10.40	14.02	33	-18.98
1880.00	84.91	154	2.4	V	11.79	0.31	10.40	21.88	33	-11.12
LTE Band 2 Channel 19125 – 15MHz – QPSK										
1902.50	77.46	55	1.2	H	3.73	0.32	10.40	13.81	33	-19.19
1902.50	84.50	283	1.6	V	11.54	0.32	10.40	21.62	33	-11.38
LTE Band 2 Channel 18675 – 15MHz – 16QAM										
1857.50	77.91	225	1.8	H	3.94	0.31	10.40	14.03	33	-18.97
1857.50	84.34	254	1.4	V	11.06	0.31	10.40	21.15	33	-11.85
LTE Band 2 Channel 18900 – 15MHz – 16QAM										
1880.00	77.44	314	1.5	H	3.59	0.31	10.40	13.68	33	-19.32
1880.00	84.44	19	2.1	V	11.32	0.31	10.40	21.41	33	-11.59

LTE Band 2 Channel 19125 – 15MHz – 16QAM										
1902.50	77.06	121	1.1	H	3.33	0.32	10.40	13.41	33	-19.59
1902.50	84.85	297	2.2	V	11.89	0.32	10.40	**21.97**	33	-11.03
LTE Band 2 Channel 18700 – 20MHz – QPSK										
1860.00	78.12	216	1.2	H	4.15	0.31	10.40	14.24	33	-18.76
1860.00	84.80	309	1.8	V	11.52	0.31	10.40	21.61	33	-11.39
LTE Band 2 Channel 18900 – 20MHz – QPSK										
1880.00	76.09	335	1.3	H	2.24	0.31	10.40	12.33	33	-20.67
1880.00	84.57	61	2.3	V	11.45	0.31	10.40	21.54	33	-11.46
LTE Band 2 Channel 19100 – 20MHz – QPSK										
1900.00	79.38	45	1.0	H	5.65	0.32	10.40	15.73	33	-17.27
1900.00	84.86	246	1.7	V	11.90	0.32	10.40	**21.98**	33	-11.02
LTE Band 2 Channel 18670 – 20MHz – 16QAM										
1860.00	79.61	18	1.2	H	5.64	0.31	10.40	15.73	33	-17.27
1860.00	84.28	40	2.2	V	11.00	0.31	10.40	21.09	33	-11.91
LTE Band 2 Channel 18900 – 20MHz – 16QAM										
1880.00	78.20	74	2.5	H	4.35	0.31	10.40	14.44	33	-18.56
1880.00	84.16	93	2.1	V	11.04	0.31	10.40	21.13	33	-11.87
LTE Band 2 Channel 19100 – 20MHz – 16QAM										
1900.00	79.11	138	1.4	H	5.38	0.32	10.40	15.46	33	-17.54
1900.00	84.17	273	1.9	V	11.21	0.32	10.40	**21.29**	33	-11.71

LTE Band 4

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 4 Channel 19957 – 1.4MHz – QPSK										
1710.70	76.90	221	1.5	H	2.79	0.31	10.40	12.88	30	-17.12
1710.70	84.40	329	2.5	V	10.87	0.31	10.40	20.96	30	-9.04
LTE Band 4 Channel 20175 – 1.4MHz – QPSK										
1732.50	77.29	117	1.6	H	3.18	0.30	9.40	12.28	30	-17.72
1732.50	84.99	21	1.3	V	11.46	0.30	9.40	20.56	30	-9.44
LTE Band 4 Channel 20393 – 1.4MHz – QPSK										
1754.30	76.76	167	1.7	H	2.65	0.30	9.40	11.75	30	-18.25
1754.30	84.75	62	1.4	V	11.22	0.30	9.40	20.32	30	-9.68
LTE Band 4 Channel 19957 – 1.4MHz – 16QAM										
1710.70	78.34	183	1.0	H	4.23	0.30	9.40	13.33	30	-16.67
1710.70	84.74	175	2.3	V	11.21	0.30	9.40	20.31	30	-9.69
LTE Band 4 Channel 20175 – 1.4MHz – 16QAM										
1732.50	77.02	292	1.7	H	2.91	0.30	9.40	12.01	30	-17.99
1732.50	84.91	152	2.0	V	11.38	0.30	9.40	20.48	30	-9.52
LTE Band 4 Channel 20393 – 1.4MHz – 16QAM										
1754.30	79.99	294	2.3	H	5.88	0.30	9.40	14.98	30	-15.02
1754.30	84.06	73	2.0	V	10.53	0.30	9.40	19.63	30	-10.37
LTE Band 4 Channel 19965 – 3MHz – QPSK										
1711.50	76.39	286	1.7	H	2.28	0.30	9.40	11.38	30	-18.62

1711.50	84.83	263	1.4	V	11.30	0.30	9.40	20.40	30	-9.60
LTE Band 4 Channel 20175 – 3MHz – QPSK										
1732.50	79.54	65	1.5	H	5.43	0.30	9.40	14.53	30	-15.47
1732.50	84.71	36	1.4	V	11.18	0.30	9.40	20.28	30	-9.72
LTE Band 4 Channel 20385 – 3MHz – QPSK										
1753.50	77.13	208	1.3	H	3.02	0.30	9.40	12.12	30	-17.88
1753.50	84.55	85	2.0	V	11.02	0.30	9.40	20.12	30	-9.88
LTE Band 4 Channel 19965 – 3MHz – 16QAM										
1711.50	79.94	342	1.3	H	5.83	0.30	9.40	14.93	30	-15.07
1711.50	84.62	49	2.1	V	11.09	0.30	9.40	20.19	30	-9.81
LTE Band 4 Channel 20175 – 3MHz – 16QAM										
1732.50	79.85	84	1.2	H	5.74	0.30	9.40	14.84	30	-15.16
1732.50	84.67	232	1.1	V	11.14	0.30	9.40	20.24	30	-9.76
LTE Band 4 Channel 20385 – 3MHz – 16QAM										
1753.50	78.24	84	1.0	H	4.13	0.30	9.40	13.23	30	-16.77
1753.50	84.91	105	1.1	V	11.38	0.30	9.40	20.48	30	-9.52
LTE Band 4 Channel 19975 – 5MHz – QPSK										
1712.50	78.64	133	2.2	H	4.53	0.30	9.40	13.63	30	-16.37
1712.50	84.68	81	2.3	V	11.15	0.30	9.40	20.25	30	-9.75
LTE Band 4 Channel 20175 – 5MHz – QPSK										
1732.50	77.69	315	1.4	H	3.58	0.31	10.40	13.67	30	-16.33
1732.50	84.37	340	2.3	V	10.84	0.31	10.40	20.93	30	-9.07
LTE Band 4 Channel 20375 – 5MHz – QPSK										
1752.50	79.15	5	2.0	H	5.04	0.32	10.40	15.12	30	-14.88
1752.50	84.32	180	1.2	V	10.79	0.32	10.40	20.87	30	-9.13
LTE Band 4 Channel 19975 – 5MHz – 16QAM										
1712.50	78.01	283	1.7	H	3.90	0.31	10.40	13.99	30	-16.01
1712.50	84.50	180	1.8	V	10.97	0.31	10.40	21.06	30	-8.94
LTE Band 4 Channel 20175 – 5MHz – 16QAM										
1732.50	79.41	237	1.2	H	5.30	0.31	10.40	15.39	30	-14.61
1732.50	84.59	145	2.1	V	11.06	0.31	10.40	21.15	30	-8.85
LTE Band 4 Channel 20375 – 5MHz – 16QAM										
1752.50	76.13	343	1.8	H	2.02	0.32	10.40	12.10	30	-17.90
1752.50	84.49	20	1.8	V	10.96	0.32	10.40	21.04	30	-8.96
LTE Band 4 Channel 20000 – 10MHz – QPSK										
1715.00	76.71	183	1.6	H	2.60	0.31	10.40	12.69	30	-17.31
1715.00	84.22	66	2.2	V	10.69	0.31	10.40	20.78	30	-9.22
LTE Band 4 Channel 20175 – 10MHz – QPSK										
1732.50	76.14	245	2.0	H	2.03	0.31	10.40	12.12	30	-17.88
1732.50	84.24	277	1.3	V	10.71	0.31	10.40	20.80	30	-9.20
LTE Band 4 Channel 20350 – 10MHz – QPSK										
1750.00	78.24	115	2.4	H	4.13	0.32	10.40	14.21	30	-15.79
1750.00	84.21	159	2.1	V	10.68	0.32	10.40	20.76	30	-9.24
LTE Band 4 Channel 20000 – 10MHz – 16QAM										
1715.00	76.49	92	1.2	H	2.38	0.31	10.40	12.47	30	-17.53
1715.00	84.68	133	2.0	V	11.15	0.31	10.40	21.24	30	-8.76
LTE Band 4 Channel 20175 – 10MHz – 16QAM										

1732.50	78.92	245	1.2	H	4.81	0.31	10.40	14.90	30	-15.10
1732.50	84.83	170	2.2	V	11.30	0.31	10.40	**21.39**	30	-8.61
LTE Band 4 Channel 20350 – 10MHz – 16QAM										
1750.00	77.70	166	1.1	H	3.59	0.32	10.40	13.67	30	-16.33
1750.00	84.64	103	2.1	V	11.11	0.32	10.40	21.19	30	-8.81
LTE Band 4 Channel 20025 – 15MHz – QPSK										
1717.50	77.23	229	1.3	H	3.12	0.31	10.40	13.21	30	-16.79
1717.50	84.68	194	1.3	V	11.15	0.31	10.40	21.24	30	-8.76
LTE Band 4 Channel 20175 – 15MHz – QPSK										
1732.50	77.02	136	1.6	H	2.91	0.31	10.40	13.00	30	-17.00
1732.50	84.06	67	2.3	V	10.53	0.31	10.40	20.62	30	-9.38
LTE Band 4 Channel 20325 – 15MHz – QPSK										
1747.50	77.82	340	1.8	H	3.71	0.32	10.40	13.79	30	-16.21
1747.50	84.36	323	2.1	V	10.83	0.32	10.40	20.91	30	-9.09
LTE Band 4 Channel 20025 – 15MHz – 16QAM										
1717.50	78.48	229	1.5	H	4.37	0.31	10.40	14.46	30	-15.54
1717.50	84.63	3	1.3	V	11.10	0.31	10.40	21.19	30	-8.81
LTE Band 4 Channel 20175 – 15MHz – 16QAM										
1732.50	79.47	120	1.6	H	5.36	0.31	10.40	15.45	30	-14.55
1732.50	84.37	224	2.1	V	10.84	0.31	10.40	20.93	30	-9.07
LTE Band 4 Channel 20325 – 15MHz – 16QAM										
1747.50	78.53	192	2.1	H	4.42	0.32	10.40	14.50	30	-15.50
1747.50	84.07	111	1.1	V	10.54	0.32	10.40	20.62	30	-9.38
LTE Band 4 Channel 20050 – 20MHz – QPSK										
1720.00	78.03	247	1.9	H	3.92	0.31	10.40	14.01	30	-15.99
1720.00	84.94	75	1.3	V	11.41	0.31	10.40	**21.50**	30	-8.50
LTE Band 4 Channel 20175 – 20MHz – QPSK										
1732.50	78.03	317	1.6	H	3.92	0.31	10.40	14.01	30	-15.99
1732.50	84.13	175	1.8	V	10.60	0.31	10.40	20.69	30	-9.31
LTE Band 4 Channel 20300 – 20MHz – QPSK										
1745.00	76.77	265	2.2	H	2.66	0.32	10.40	12.74	30	-17.26
1745.00	84.23	342	1.5	V	10.70	0.32	10.40	20.78	30	-9.22
LTE Band 4 Channel 20050 – 20MHz – 16QAM										
1720.00	76.65	347	1.6	H	2.54	0.31	10.40	12.63	30	-17.37
1720.00	84.44	349	2.1	V	10.91	0.31	10.40	21.00	30	-9.00
LTE Band 4 Channel 20175 – 20MHz – 16QAM										
1732.50	77.33	304	1.0	H	3.22	0.31	10.40	13.31	30	-16.69
1732.50	84.09	260	1.8	V	10.56	0.31	10.40	20.65	30	-9.35
LTE Band 4 Channel 20300 – 20MHz – 16QAM										
1745.00	77.98	171	2.0	H	3.87	0.32	10.40	13.95	30	-16.05
1745.00	84.58	209	2.1	V	11.05	0.32	10.40	**21.13**	30	-8.87

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	77.32	109	2.3	H	10.21	0.30	9.40	19.31	38.45	-19.14
824.70	84.21	350	1.2	V	16.68	0.30	9.40	25.78	38.45	-12.67
LTE Band 5 Channel 20525 – 1.4MHz – QPSK										
836.50	78.43	157	2.4	H	11.32	0.30	9.40	20.42	38.45	-18.03
836.50	84.47	44	2.3	V	16.94	0.30	9.40	26.04	38.45	-12.41
LTE Band 5 Channel 20643 – 1.4MHz – QPSK										
848.30	78.72	315	1.8	H	11.61	0.30	9.40	20.71	38.45	-17.74
848.30	84.48	309	1.4	V	16.95	0.30	9.40	26.05	38.45	-12.40
LTE Band 5 Channel 20407 – 1.4MHz – 16QAM										
824.70	78.59	70	1.6	H	11.48	0.30	9.40	20.58	38.45	-17.87
824.70	84.41	238	1.2	V	16.88	0.30	9.40	25.98	38.45	-12.47
LTE Band 5 Channel 20525 – 1.4MHz – 16QAM										
836.50	77.81	273	1.8	H	10.70	0.30	9.40	19.80	38.45	-18.65
836.50	84.52	249	2.2	V	16.99	0.30	9.40	26.09	38.45	-12.36
LTE Band 5 Channel 20643 – 1.4MHz – 16QAM										
848.30	79.84	309	1.4	H	12.73	0.30	9.40	21.83	38.45	-16.62
848.30	84.55	152	1.9	V	17.02	0.30	9.40	26.12	38.45	-12.33
LTE Band 5 Channel 20415 – 3MHz – QPSK										
825.50	79.92	142	2.0	H	12.81	0.30	9.40	21.91	38.45	-16.54
825.50	84.93	159	2.3	V	17.40	0.30	9.40	26.50	38.45	-11.95
LTE Band 5 Channel 20525 – 3MHz – QPSK										
836.50	77.25	68	2.3	H	10.14	0.30	9.40	19.24	38.45	-19.21
836.50	84.51	202	1.1	V	16.98	0.30	9.40	26.08	38.45	-12.37
LTE Band 5 Channel 20635 – 3MHz – QPSK										
847.50	76.46	123	2.4	H	9.35	0.30	9.40	18.45	38.45	-20.00
847.50	84.36	203	1.9	V	16.83	0.30	9.40	25.93	38.45	-12.52
LTE Band 5 Channel 20415 – 3MHz – 16QAM										
825.50	76.71	195	1.9	H	9.60	0.30	9.40	18.70	38.45	-19.75
825.50	84.85	353	2.3	V	17.32	0.30	9.40	26.42	38.45	-12.03
LTE Band 5 Channel 20525 – 3MHz – 16QAM										
836.50	78.69	277	1.0	H	11.58	0.30	9.40	20.68	38.45	-17.77
836.50	84.93	72	1.4	V	17.40	0.30	9.40	26.50	38.45	-11.95
LTE Band 5 Channel 20635 – 3MHz – 16QAM										
847.50	77.72	107	1.3	H	10.61	0.30	9.40	19.71	38.45	-18.74
847.50	84.72	110	2.1	V	17.19	0.30	9.40	26.29	38.45	-12.16
LTE Band 5 Channel 20425 – 5MHz – QPSK										
826.50	76.34	36	2.2	H	9.23	0.30	9.40	18.33	38.45	-20.12
826.50	84.64	224	1.7	V	17.11	0.30	9.40	26.21	38.45	-12.24
LTE Band 5 Channel 20525 – 5MHz – QPSK										
836.50	78.63	106	1.5	H	11.52	0.30	9.40	20.62	38.45	-17.83

836.50	84.19	97	1.1	V	16.66	0.30	9.40	25.76	38.45	-12.69
LTE Band 5 Channel 20625 – 5MHz – QPSK										
846.50	76.85	335	2.1	H	9.74	0.30	9.40	18.84	38.45	-19.61
846.50	84.77	193	1.9	V	17.24	0.30	9.40	26.34	38.45	-12.11
LTE Band 5 Channel 20425 – 5MHz – 16QAM										
826.50	78.62	172	1.1	H	11.51	0.30	9.40	20.61	38.45	-17.84
826.50	84.93	92	2.0	V	17.40	0.30	9.40	26.50	38.45	-11.95
LTE Band 5 Channel 20525 – 5MHz – 16QAM										
836.50	78.24	357	1.5	H	11.13	0.30	9.40	20.23	38.45	-18.22
836.50	84.96	32	1.4	V	17.43	0.30	9.40	26.53	38.45	-11.92
LTE Band 5 Channel 20625 – 5MHz – 16QAM										
846.50	76.16	226	1.1	H	9.05	0.30	9.40	18.15	38.45	-20.30
846.50	84.54	317	1.5	V	17.01	0.30	9.40	26.11	38.45	-12.34
LTE Band 5 Channel 20450 – 10MHz – QPSK										
829.00	79.67	55	1.1	H	12.56	0.30	9.40	21.66	38.45	-16.79
829.00	84.95	111	2.1	V	17.42	0.30	9.40	**26.52**	38.45	-11.93
LTE Band 5 Channel 20525 – 10MHz – QPSK										
836.50	78.03	7	1.3	H	10.92	0.30	9.40	20.02	38.45	-18.43
836.50	84.08	355	1.3	V	16.55	0.30	9.40	25.65	38.45	-12.80
LTE Band 5 Channel 20600 – 10MHz – QPSK										
844.00	77.65	287	1.2	H	10.54	0.30	9.40	19.64	38.45	-18.81
844.00	84.91	3	2.1	V	17.38	0.30	9.40	26.48	38.45	-11.97
LTE Band 5 Channel 20450 – 10MHz – 16QAM										
829.00	76.32	236	2.1	H	9.21	0.30	9.40	18.31	38.45	-20.14
829.00	84.99	46	1.4	V	17.46	0.30	9.40	**26.56**	38.45	-11.89
LTE Band 5 Channel 20525 – 10MHz – 16QAM										
836.50	77.41	316	1.8	H	10.30	0.30	9.40	19.40	38.45	-19.05
836.50	84.28	199	2.0	V	16.75	0.30	9.40	25.85	38.45	-12.60
LTE Band 5 Channel 20600 – 10MHz – 16QAM										
844.00	77.18	101	2.0	H	10.07	0.30	9.40	19.17	38.45	-19.28
844.00	84.00	276	1.5	V	16.47	0.30	9.40	25.57	38.45	-12.88

LTE Band 17

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 17 Channel 23755 – 5MHz – QPSK										
706.50	76.57	324	2.3	H	5.57	0.20	0.00	5.37	30	-24.63
706.50	81.73	122	1.4	V	9.45	0.20	0.00	**9.25**	30	-20.75
LTE Band 17 Channel 23790 – 5MHz – QPSK										
710.00	79.95	209	1.9	H	8.95	0.20	0.00	8.75	30	-21.25
710.00	81.44	293	2.0	V	9.16	0.20	0.00	8.96	30	-21.04
LTE Band 17 Channel 23825 – 5MHz – QPSK										
713.50	76.44	159	1.1	H	5.44	0.20	0.00	5.24	30	-24.76
713.50	81.12	135	1.0	V	8.84	0.20	0.00	8.64	30	-21.36
LTE Band 17 Channel 23755 – 5MHz – 16QAM										
706.50	77.84	312	2.0	H	6.84	0.20	0.00	6.64	30	-23.36
706.50	81.40	166	2.4	V	9.12	0.20	0.00	8.92	30	-21.08
LTE Band 17 Channel 23790 – 5MHz – 16QAM										
710.00	79.29	99	2.0	H	8.29	0.20	0.00	8.09	30	-21.91
710.00	81.60	163	1.6	V	9.32	0.20	0.00	9.12	30	-20.88
LTE Band 17 Channel 23825 – 5MHz – 16QAM										
713.50	79.62	308	1.5	H	8.62	0.20	0.00	8.42	30	-21.58
713.50	81.75	9	1.7	V	9.47	0.20	0.00	**9.27**	30	-20.73
LTE Band 17 Channel 23780 – 10MHz – QPSK										
709.00	78.35	214	2.2	H	7.35	0.20	0.00	7.15	30	-22.85
709.00	81.61	289	1.0	V	9.33	0.20	0.00	**9.13**	30	-20.87
LTE Band 17 Channel 23790 – 10MHz – QPSK										
710.00	78.99	194	1.8	H	7.99	0.20	0.00	7.79	30	-22.21
710.00	81.06	192	2.0	V	8.78	0.20	0.00	8.58	30	-21.42
LTE Band 17 Channel 23800 – 10MHz – QPSK										
711.00	77.33	19	1.9	H	6.33	0.20	0.00	6.13	30	-23.87
711.00	81.49	251	1.7	V	9.21	0.20	0.00	9.01	30	-20.99
LTE Band 17 Channel 23780 – 10MHz – 16QAM										
709.00	76.67	81	1.5	H	5.67	0.20	0.00	5.47	30	-24.53
709.00	81.38	159	1.4	V	9.10	0.20	0.00	8.90	30	-21.10
LTE Band 17 Channel 23790 – 10MHz – 16QAM										
710.00	78.77	197	1.0	H	7.77	0.20	0.00	7.57	30	-22.43
710.00	81.43	346	1.4	V	9.15	0.20	0.00	**8.95**	30	-21.05
LTE Band 17 Channel 23800 – 10MHz – 16QAM										
711.00	77.56	259	1.5	H	6.56	0.20	0.00	6.36	30	-23.64
711.00	81.10	126	2.2	V	8.82	0.20	0.00	8.62	30	-21.38

9 Peak-to-Average Ratio

Test Requirement: 24.232 (d), 27.50(d)

Test Method: N/A

Test Mode: TX transmitting

9.1 EUT Operation

Operating Environment **:**

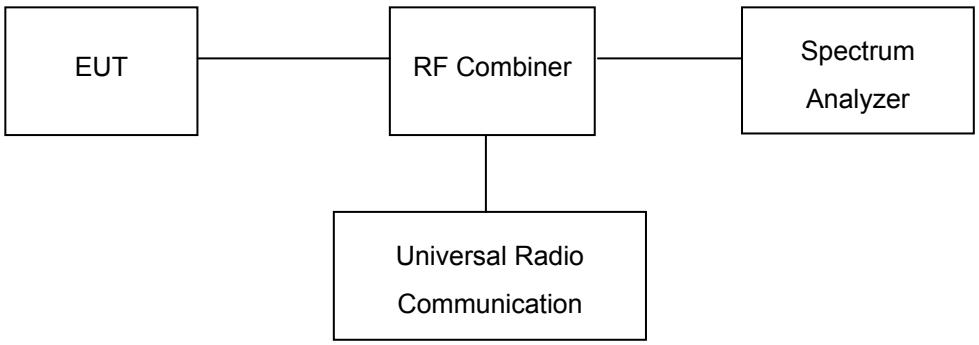
Temperature: 22.5 °C

Humidity: 52.3% RH

Atmospheric Pressure: 101.2kPa

9.2 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%.



9.3 Test Result

PASS

LTE Band

Please refer to the Appendix Band 2/4/17 LTE Peak to Average Ratio.

10 BANDWIDTH

Test Requirement:	FCC Part 2.1049, 22.917, 22.905, 24.238, 27.53(a)
Test Method:	TIA/EIA-603-D:2010
	KDB971168 D01 v02r02
Test Mode:	TX transmitting

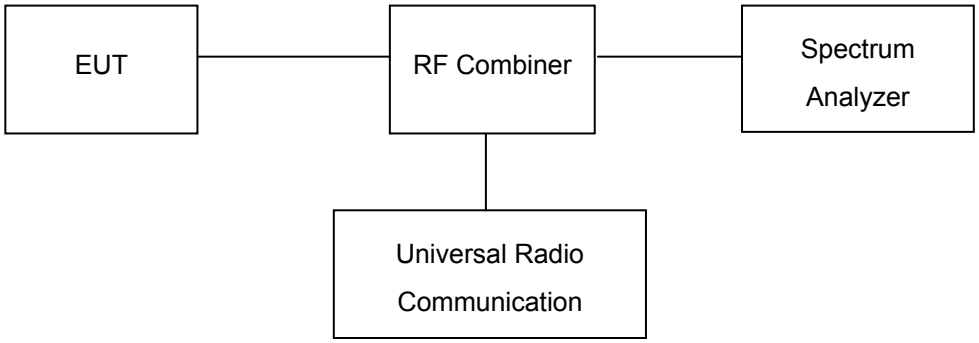
10.1 EUT Operation

Operating Environment **:**

Temperature:	22.5 °C
Humidity:	52.3% RH
Atmospheric Pressure:	101.2kPa

10.2 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 at 3 kHz (Cellular /PCS) and the 26 dB & 99%bandwidth was recorded.



10.3 Test Result

LTE Band 2 (Part 24E):

BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
1.4	18607	1850.7	QPSK	1.15	1.34
			16QAM	1.15	1.34
1.4	18900	1880	QPSK	1.16	1.35
			16QAM	1.16	1.34
1.4	19193	1909.3	QPSK	1.16	1.35
			16QAM	1.15	1.36
3	18615	1851.5	QPSK	2.72	3
			16QAM	2.72	2.98
3	18900	1880	QPSK	2.72	2.98
			16QAM	2.72	2.99
3	19185	1908.5	QPSK	2.73	3
			16QAM	2.72	3
5	18625	1852.5	QPSK	4.48	4.88
			16QAM	4.48	4.81
5	18900	1880	QPSK	4.48	4.84
			16QAM	4.49	4.86
5	19175	1907.5	QPSK	4.48	4.85
			16QAM	4.49	4.86
10	18650	1855	QPSK	8.91	9.35
			16QAM	8.91	9.34
10	18900	1880	QPSK	8.92	9.36
			16QAM	8.91	9.34
10	19150	1905	QPSK	8.93	9.44
			16QAM	8.93	9.42
15	18675	1857.5	QPSK	13.35	13.92
			16QAM	13.34	13.89
15	18900	1880	QPSK	13.36	13.92
			16QAM	13.36	13.89

15	19125	1902.5	QPSK	13.37	13.96
			16QAM	13.38	13.95
20	18700	1860	QPSK	17.81	18.39
			16QAM	17.79	18.4
20	18900	1880	QPSK	17.83	18.45
			16QAM	17.83	18.45
20	19100	1900	QPSK	17.82	18.44
			16QAM	17.82	18.48

LTE Band 4 (Part 27):

BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
1.4	19957	1710.7	QPSK	1.15	1.34
			16QAM	1.15	1.35
1.4	2.175	1732.5	QPSK	1.16	1.35
			16QAM	1.16	1.34
1.4	20393	1754.3	QPSK	1.16	1.35
			16QAM	1.15	1.35
3	19965	1711.5	QPSK	2.72	2.99
			16QAM	2.72	2.98
3	2.175	1732.5	QPSK	2.73	2.99
			16QAM	2.72	2.99
3	2.385	1753.5	QPSK	2.73	2.99
			16QAM	2.72	2.99
5	19975	1712.5	QPSK	4.49	4.86
			16QAM	4.49	4.81
5	20175	1732.5	QPSK	4.49	4.84
			16QAM	4.49	4.83
5	20375	1752.5	QPSK	4.48	4.82
			16QAM	4.49	4.86
10	2000	1715	QPSK	8.92	9.37
			16QAM	8.91	9.38

10	20175	1732.5	QPSK	8.92	9.4
			16QAM	8.92	9.35
10	20350	1750	QPSK	8.93	9.41
			16QAM	8.92	9.4
15	20025	1717.5	QPSK	13.35	13.94
			16QAM	13.35	13.89
15	20175	1732.5	QPSK	13.36	13.9
			16QAM	13.35	13.93
15	20325	1747.5	QPSK	13.37	13.98
			16QAM	13.37	13.98
20	20050	1720	QPSK	17.79	18.38
			16QAM	17.79	18.4
20	20175	1732.5	QPSK	17.8	18.42
			16QAM	17.81	18.43
20	20300	1745	QPSK	17.84	18.51
			16QAM	17.84	18.54

LTE Band 5 (Part 22H):

BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
1.4	20407	824.7	QPSK	1.15	1.33
			16QAM	1.15	1.33
1.4	20525	836.5	QPSK	1.15	1.34
			16QAM	1.15	1.32
1.4	20643	848.3	QPSK	1.15	1.33
			16QAM	1.15	1.34
3	20415	825.5	QPSK	2.71	2.98
			16QAM	2.71	2.96
3	20525	836.5	QPSK	2.71	2.97
			16QAM	2.71	2.97
3	20635	847.5	QPSK	2.72	2.96
			16QAM	2.71	2.97
5	20425	826.5	QPSK	4.48	4.78
			16QAM	4.48	4.78

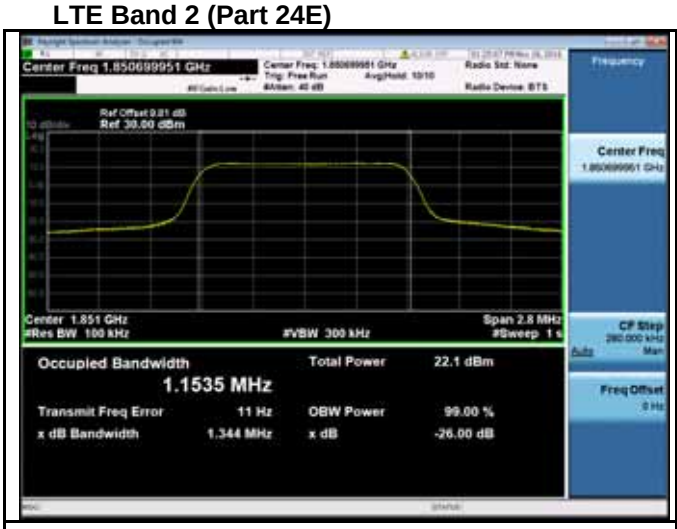
5	20525	836.5	QPSK	4.47	4.77
			16QAM	4.47	4.8
5	20625	846.5	QPSK	4.47	4.81
			16QAM	4.47	4.82
10	20450	829.0	QPSK	8.93	9.39
			16QAM	8.92	9.36
10	20525	836.5	QPSK	8.89	9.28
			16QAM	8.89	9.25
10	20600	844.0	QPSK	8.92	9.32
			16QAM	8.92	9.32

LTE Band 17 (Part 27):

BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
5	23755	706.5	QPSK	4.48	4.82
			16QAM	4.48	4.79
5	23790	710	QPSK	4.47	4.8
			16QAM	4.47	4.79
5	23825	713.5	QPSK	4.49	4.79
			16QAM	4.49	4.81
10	23780	709	QPSK	8.88	9.3
			16QAM	8.88	9.27
10	23790	710	QPSK	8.88	9.26
			16QAM	8.88	9.24
10	23800	711	QPSK	8.9	9.28
			16QAM	8.89	9.27

Test Plots

LTE Band 2 (Part 24E)



LTE band 2 - Low CH QPSK-1.4

LTE band 2 - Low CH 16QAM-1.4

LTE band 2 - Middle CH QPSK-1.4

LTE band 2 - Middle CH 16QAM-1.4

LTE band 2 - High CH QPSK-1.4

LTE band 2 - High CH 16QAM-1.4

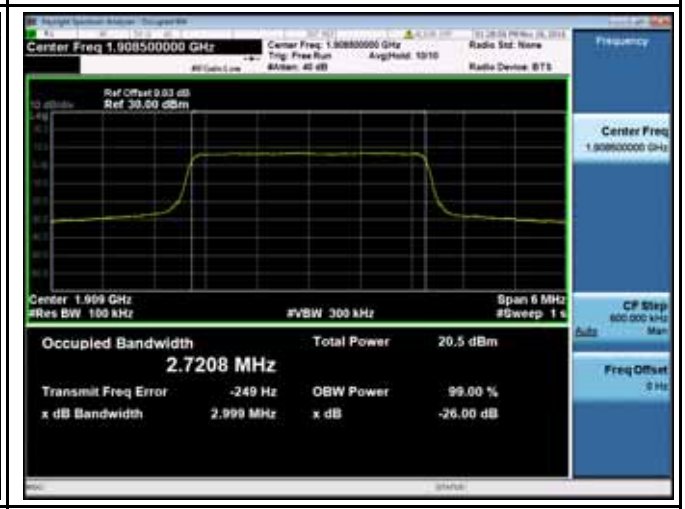
LTE band 2 - Low CH QPSK-3

LTE band 2 - Low CH 16QAM-3

LTE band 2 - Middle CH QPSK-3

LTE band 2 - Middle CH 16QAM-3

LTE band 2 - High CH QPSK-3



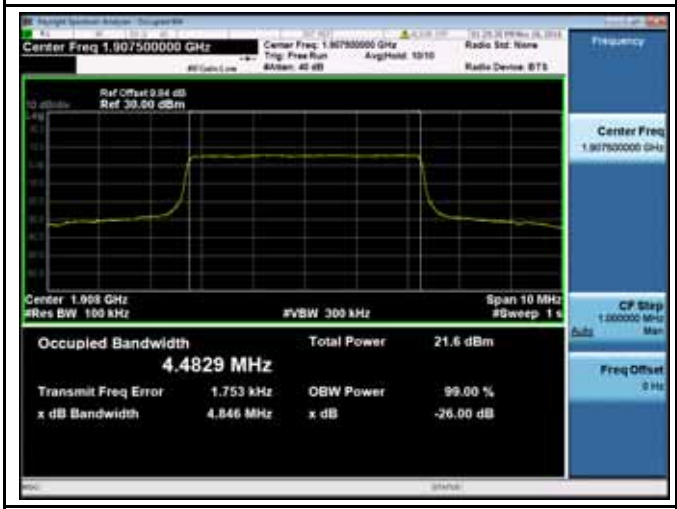
LTE band 2 - High CH 16QAM-3

LTE band 2 - Low CH QPSK-5

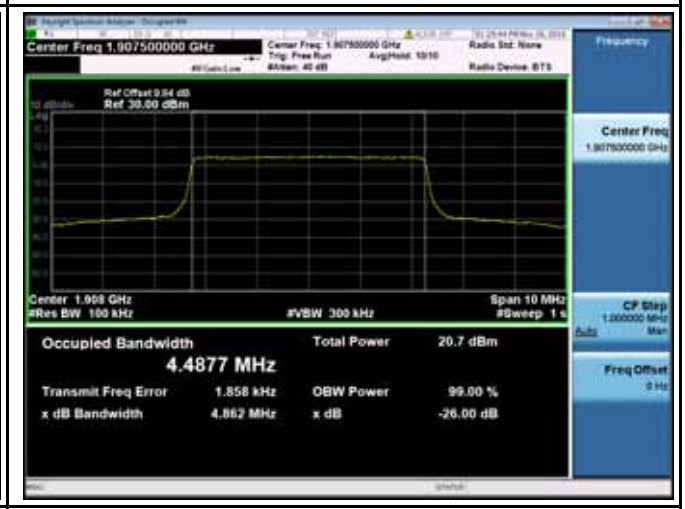
LTE band 2 - Low CH 16QAM-5

LTE band 2 - Middle CH QPSK-5

LTE band 2 - Middle CH 16QAM-5



LTE band 2 - High CH QPSK-5



LTE band 2 - High CH 16QAM-5

LTE band 2 - Low CH QPSK-10

LTE band 2 - Low CH 16QAM-10

LTE band 2 - Middle CH QPSK-10

LTE band 2 - Middle CH 16QAM-10

LTE band 2 - High CH QPSK-10

LTE band 2 - High CH 16QAM-10

LTE band 2 - Low CH QPSK-15

LTE band 2 - Low CH 16QAM-15

LTE band 2 - Middle CH QPSK-15

LTE band 2 - Middle CH 16QAM-15

LTE band 2 - High CH QPSK-15

LTE band 2 - High CH 16QAM-15

LTE band 2 - Low CH QPSK-20

LTE band 2 - Low CH 16QAM-20

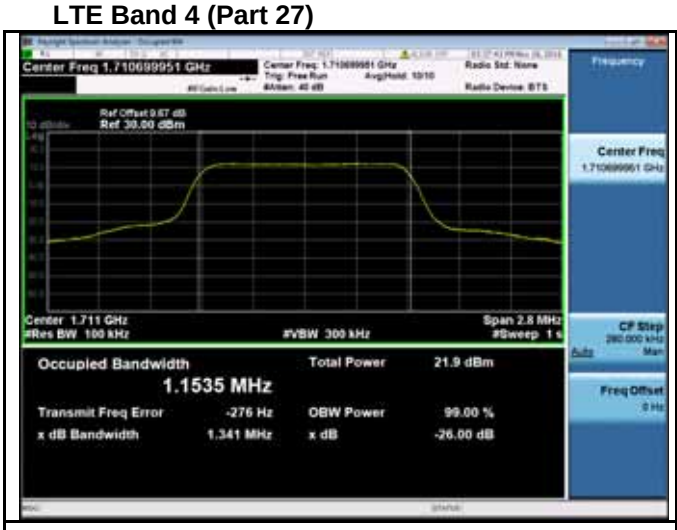
LTE band 2 - Middle CH QPSK-20

LTE band 2 - Middle CH 16QAM-20

LTE band 2 - High CH QPSK-20

LTE band 2 - High CH 16QAM-20

LTE Band 4 (Part 27)



LTE band 4 - Low CH QPSK-1.4

LTE band 4 - Low CH 16QAM-1.4

LTE band 4 - Middle CH QPSK-1.4

LTE band 4 - Middle CH 16QAM-1.4

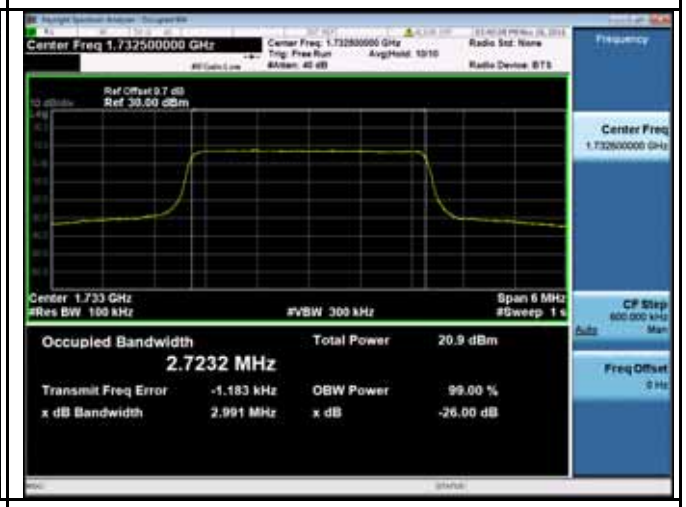
LTE band 4 - High CH QPSK-1.4

LTE band 4 - High CH 16QAM-1.4

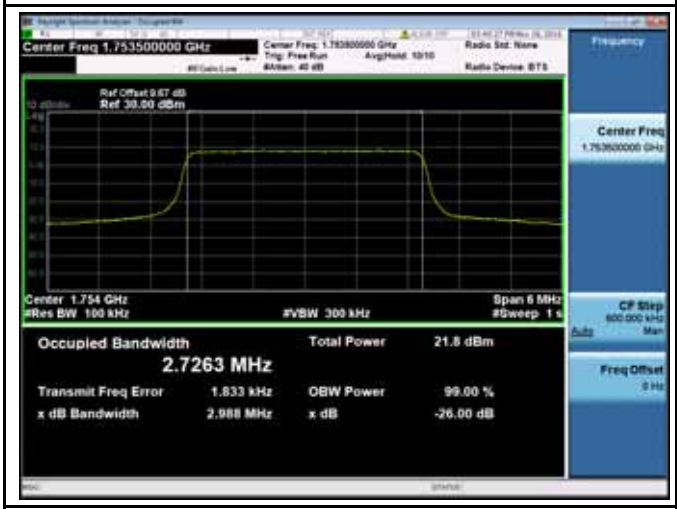
LTE band 4 - Low CH QPSK-3

LTE band 4 - Low CH 16QAM-3

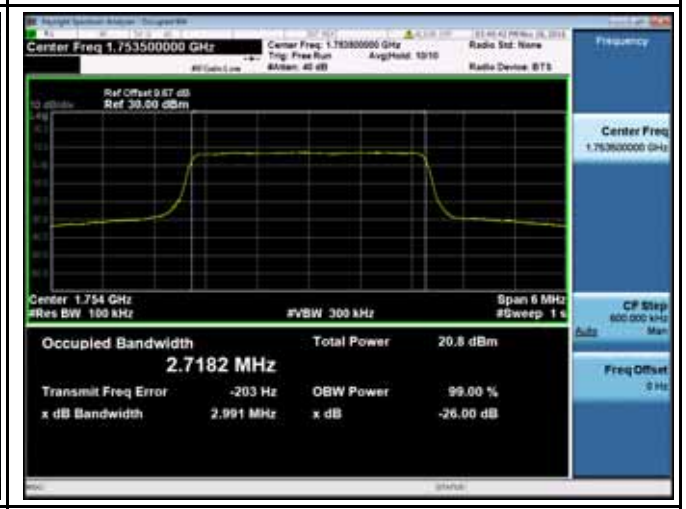
LTE band 4 - Middle CH QPSK-3



LTE band 4 - Middle CH 16QAM-3



LTE band 4 - High CH QPSK-3



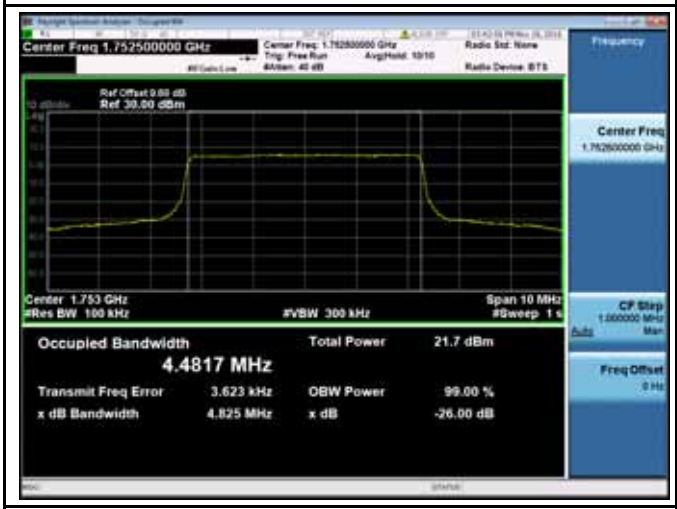
LTE band 4 - High CH 16QAM-3

LTE band 4 - Low CH QPSK-5

LTE band 4 - Low CH 16QAM-5

LTE band 4 - Middle CH QPSK-5

LTE band 4 - Middle CH 16QAM-5



LTE band 4 - High CH QPSK-5

LTE band 4 - High CH 16QAM-5

LTE band 4 - Low CH QPSK-10

LTE band 4 - Low CH 16QAM-10

LTE band 4 - Middle CH QPSK-10

LTE band 4 - Middle CH 16QAM-10

LTE band 4 - High CH QPSK-10

LTE band 4 - High CH 16QAM-10

LTE band 4 - Low CH QPSK-15

LTE band 4 - Low CH 16QAM-15

LTE band 4 - Middle CH QPSK-15

LTE band 4 - Middle CH 16QAM-15

LTE band 4 - High CH QPSK-15

LTE band 4 - High CH 16QAM-15

LTE band 4 - Low CH QPSK-20

LTE band 4 - Low CH 16QAM-20

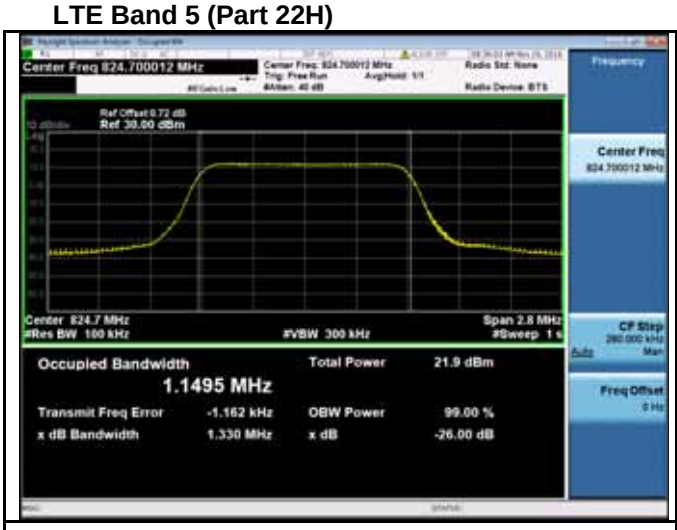
LTE band 4 - Middle CH QPSK-20

LTE band 4 - Middle CH 16QAM-20

LTE band 4 - High CH QPSK-20

LTE band 4 - High CH 16QAM-20

LTE Band 5 (Part 22H)



LTE band 5 - Low CH QPSK-1.4

LTE band 5 - Low CH 16QAM-1.4

LTE band 5 - Middle CH QPSK-1.4

LTE band 5 - Middle CH 16QAM-1.4

LTE band 5 - High CH QPSK-1.4

LTE band 5 - High CH 16QAM-1.4

LTE band 5 - Low CH QPSK-3

LTE band 5 - Low CH 16QAM-3

LTE band 5 - Middle CH QPSK-3

LTE band 5 - Middle CH 16QAM-3

LTE band 5 - High CH QPSK-3

LTE band 5 - High CH 16QAM-3

LTE band 5 - Low CH QPSK-5

LTE band 5 - Low CH 16QAM-5

LTE band 5 - Middle CH QPSK-5

LTE band 5 - Middle CH 16QAM-5

LTE band 5 - High CH QPSK-5

LTE band 5 - High CH 16QAM-5

LTE band 5 - Low CH QPSK-10

LTE band 5 - Low CH 16QAM-10

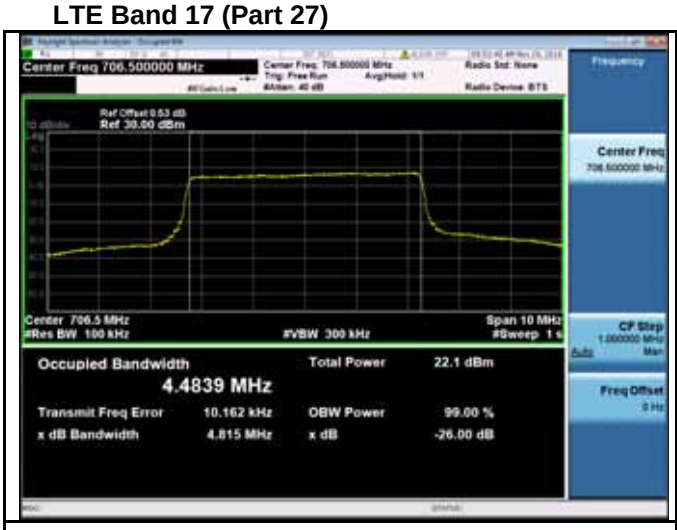
LTE band 5 - Middle CH QPSK-10

LTE band 5 - Middle CH 16QAM-10

LTE band 5 - High CH QPSK-10

LTE band 5 - High CH 16QAM-10

LTE Band 17 (Part 27)

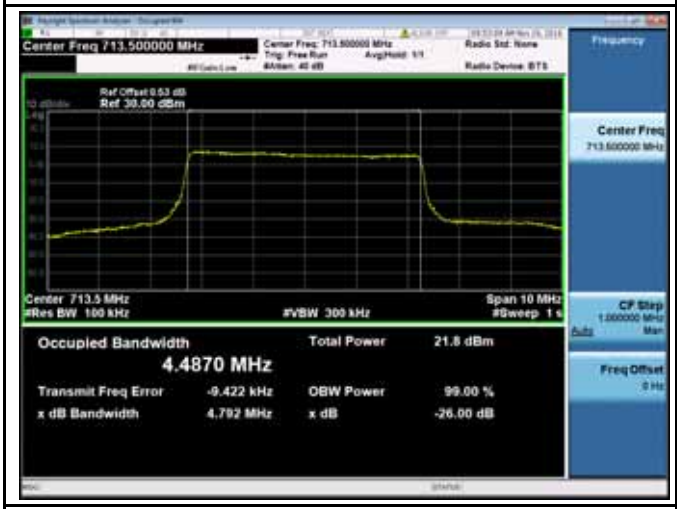


LTE band 17 - Low CH QPSK-5

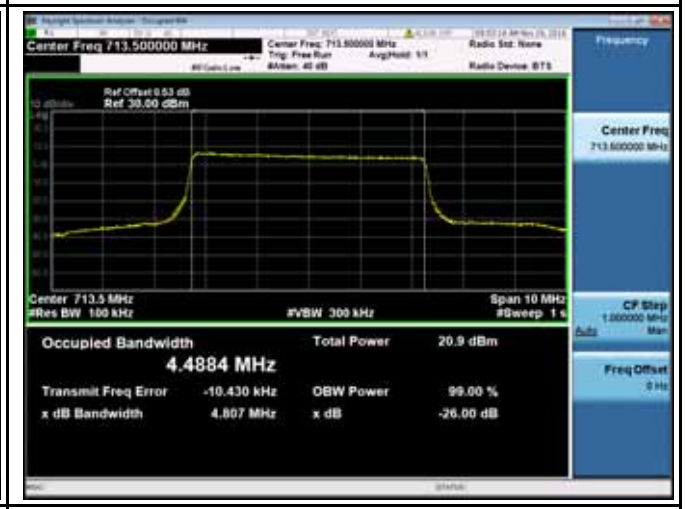
LTE band 17 - Low CH 16QAM-5

LTE band 17 - Middle CH QPSK-5

LTE band 17 - Middle CH 16QAM-5



LTE band 17 - High CH QPSK-5



LTE band 17 - High CH 16QAM-5

LTE band 17 - Low CH QPSK-10

LTE band 17 - Low CH 16QAM-10

LTE band 17 - Middle CH QPSK-10

LTE band 17 - Middle CH 16QAM-10

LTE band 17 - High CH QPSK-10

LTE band 17 - High CH 16QAM-10

11 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Test Requirement:	FCC Part 2.1051, 22.917(a), 24.238(a), 27.53(h)
Test Method:	TIA/EIA-603-D:2010
	KDB971168 D01 v02r02
Test Mode:	TX transmitting

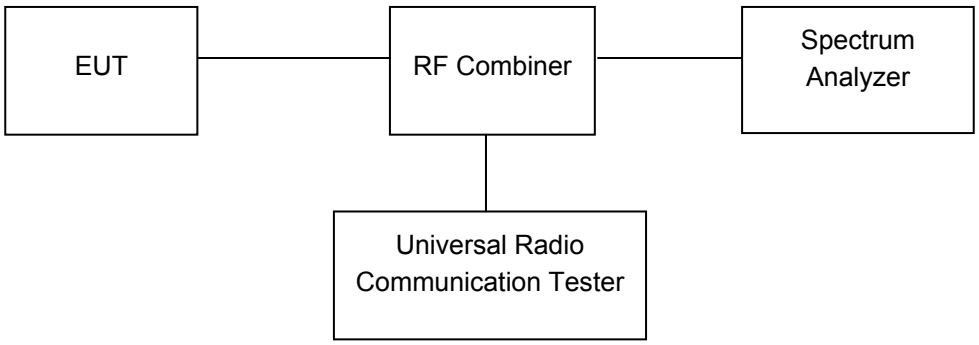
11.1 EUT Operation

Operating Environment **:**

Temperature:	23.5 °C
Humidity:	52.1 % RH
Atmospheric Pressure:	101.3kPa

11.2 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.



11.3 Test Result

PASS

LTE Band

Please refer to the Appendix Band 2/4/5/17 LTE Transmitter Spurious Emissions.

12 SPURIOUS RADIATED EMISSIONS

Test Requirement:	FCC Part 2.1053, 22.917, 24.238, 27.53(h)
Test Method:	TIA/EIA-603-D:2010
	KDB971168 D01 v02r02
Test Mode:	TX transmitting

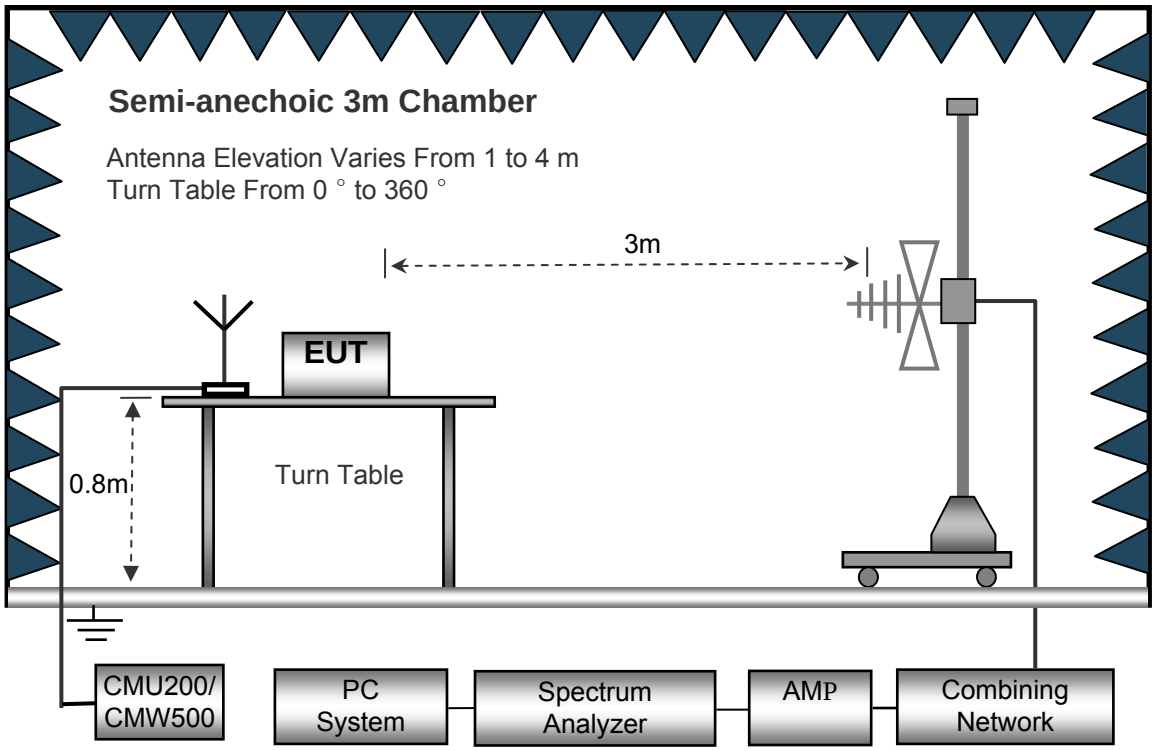
12.1 EUT Operation

Operating Environment **:**

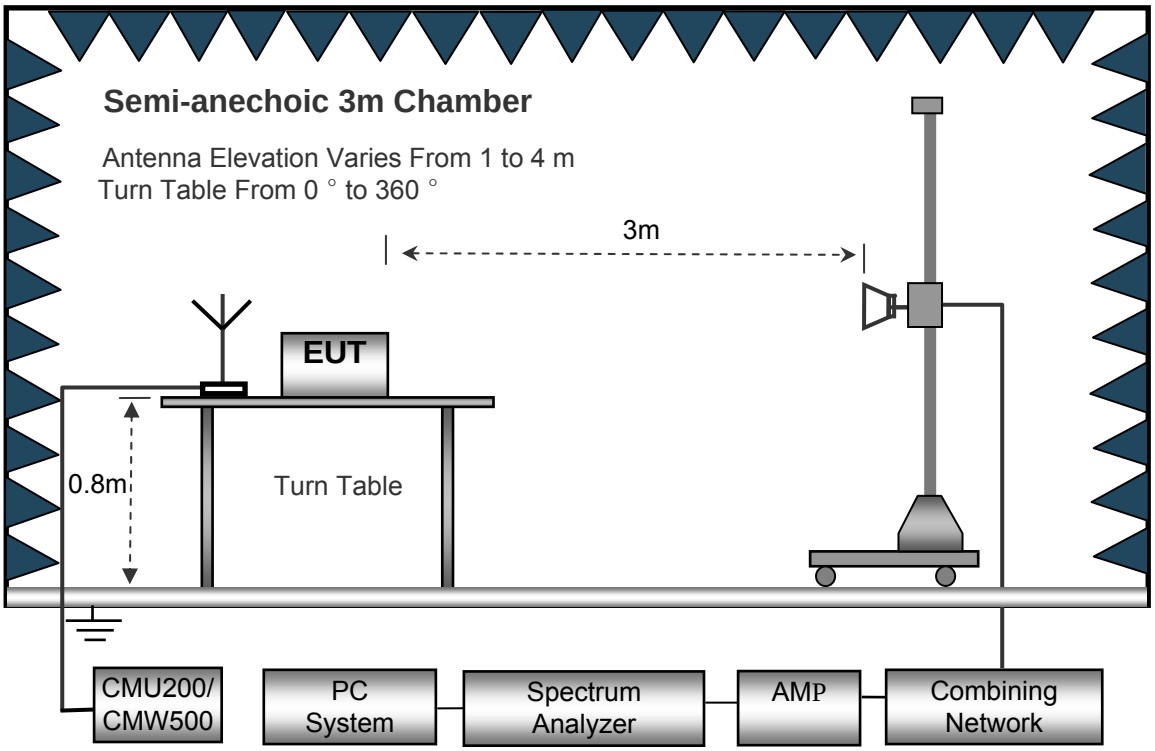
Temperature:	23.5 °C
Humidity:	52.1 % RH
Atmospheric Pressure:	101.2kPa

12.2 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.



12.3 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

12.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m 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 (TXpwr in Watts/0.001) – the absolute level
   Spurious attenuation limit in dB = 43 + 10 Log10 (power out in Watts)
8. Repeat above procedures until the measurements for all frequencies are completed.

12.5 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										
216.37	46.97	177	1.7	H	-63.54	0.15	0.00	-63.69	-13.00	-50.69
216.37	37.84	296	1.1	V	-69.75	0.15	0.00	-69.90	-13.00	-56.90
3701.40	65.95	58	1.7	H	-45.59	2.37	12.50	-35.46	-13.00	-22.46
3701.40	59.98	144	1.5	V	-49.83	2.37	12.50	-39.70	-13.00	-26.70
5552.10	53.58	172	1.1	H	-56.03	2.86	12.90	-45.99	-13.00	-32.99
5552.10	44.73	360	1.5	V	-64.15	2.86	12.90	-54.11	-13.00	-41.11
LTE BAND 2 Channel 18900										
216.37	47.10	105	1.9	H	-63.41	0.15	0.00	-63.56	-13.00	-50.56
216.37	38.55	344	1.8	V	-69.04	0.15	0.00	-69.19	-13.00	-56.19
3760.00	58.53	182	1.3	H	-53.01	2.37	12.50	-42.88	-13.00	-29.88
3760.00	53.43	300	1.2	V	-56.38	2.37	12.50	-46.25	-13.00	-33.25
5640.00	46.10	7	2.0	H	-63.51	2.86	12.90	-53.47	-13.00	-40.47
5640.00	37.40	33	1.6	V	-71.48	2.86	12.90	-61.44	-13.00	-48.44
LTE BAND 2 Channel 19193										
216.37	46.55	115	1.4	H	-63.96	0.15	0.00	-64.11	-13.00	-51.11
216.37	37.74	247	1.8	V	-69.85	0.15	0.00	-70.00	-13.00	-57.00
3818.60	51.58	141	1.8	H	-59.27	2.37	12.60	-49.04	-13.00	-36.04
3818.60	47.15	28	2.0	V	-62.16	2.37	12.60	-51.93	-13.00	-38.93
5727.90	38.80	343	1.9	H	-70.55	2.86	12.90	-60.51	-13.00	-47.51
5727.90	29.87	87	1.6	V	-78.63	2.86	12.90	-68.59	-13.00	-55.59

LTE Band 4

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 4 Channel 19957										
216.37	38.35	284	1.0	H	-72.16	0.15	0.00	-72.31	-13.00	-59.31
216.37	29.33	344	1.8	V	-78.26	0.15	0.00	-78.41	-13.00	-65.41
3421.40	65.95	106	1.6	H	-47.10	2.34	12.40	-37.04	-13.00	-24.04
3421.40	59.98	2	1.7	V	-51.17	2.34	12.40	-41.11	-13.00	-28.11
5132.10	53.58	317	1.2	H	-55.83	2.79	12.70	-45.92	-13.00	-32.92
5132.10	44.73	132	1.7	V	-64.04	2.79	12.70	-54.13	-13.00	-41.13
LTE BAND 4 Channel 20175										
216.37	39.16	237	2.2	H	-71.35	0.15	0.00	-71.50	-13.00	-58.50
216.37	29.93	159	1.2	V	-77.66	0.15	0.00	-77.81	-13.00	-64.81
3465.00	59.85	248	1.6	H	-53.20	2.37	12.50	-43.07	-13.00	-30.07
3465.00	52.36	287	1.0	V	-58.79	2.37	12.50	-48.66	-13.00	-35.66
5197.50	46.96	21	1.6	H	-62.45	2.79	12.70	-52.54	-13.00	-39.54
5197.50	36.74	295	1.2	V	-72.03	2.79	12.70	-62.12	-13.00	-49.12
LTE BAND 4 Channel 20393										
216.37	38.39	178	1.6	H	-72.12	0.15	0.00	-72.27	-13.00	-59.27
216.37	29.64	294	1.9	V	-77.95	0.15	0.00	-78.10	-13.00	-65.10
3508.60	52.86	314	2.0	H	-59.78	2.37	12.50	-49.65	-13.00	-36.65
3508.60	45.01	334	1.7	V	-65.72	2.37	12.50	-55.59	-13.00	-42.59
5262.90	40.30	65	2.0	H	-69.28	2.81	12.80	-59.29	-13.00	-46.29
5262.90	29.98	336	1.8	V	-78.82	2.81	12.80	-68.83	-13.00	-55.83

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										
199.38	40.22	89	1.7	H	-70.29	0.15	0.00	-70.44	-13.00	-57.44
199.38	31.36	342	1.7	V	-76.23	0.15	0.00	-76.38	-13.00	-63.38
1649.40	65.95	57	1.6	H	-47.10	2.34	12.40	-37.04	-13.00	-24.04
1649.40	59.98	157	2.2	V	-51.17	2.34	12.40	-41.11	-13.00	-28.11
2474.10	53.58	150	1.4	H	-55.83	2.79	12.70	-45.92	-13.00	-32.92
2474.10	44.73	126	1.1	V	-64.04	2.79	12.70	-54.13	-13.00	-41.13
LTE BAND 5 Channel 20525										
199.38	40.70	133	1.7	H	-69.81	0.15	0.00	-69.96	-13.00	-56.96
199.38	30.84	149	1.2	V	-76.75	0.15	0.00	-76.90	-13.00	-63.90
1673.00	59.53	180	1.9	H	-53.52	2.37	12.50	-43.39	-13.00	-30.39
1673.00	53.16	60	2.0	V	-57.99	2.37	12.50	-47.86	-13.00	-34.86
2509.50	46.43	25	1.9	H	-62.98	2.79	12.70	-53.07	-13.00	-40.07
2509.50	38.20	232	2.2	V	-70.57	2.79	12.70	-60.66	-13.00	-47.66
LTE BAND 5 Channel 20643										
199.38	41.52	288	1.5	H	-68.99	0.15	0.00	-69.14	-13.00	-56.14
199.38	31.44	89	1.2	V	-76.15	0.15	0.00	-76.30	-13.00	-63.30
1696.60	53.23	318	1.1	H	-59.41	2.37	12.50	-49.28	-13.00	-36.28
1696.60	45.30	14	1.9	V	-65.43	2.37	12.50	-55.30	-13.00	-42.30
2544.90	39.40	171	2.0	H	-70.18	2.81	12.80	-60.19	-13.00	-47.19
2544.90	32.20	309	1.4	V	-76.60	2.81	12.80	-66.61	-13.00	-53.61

LTE Band 17

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 17 Channel 23755										
216.37	39.01	65	1.4	H	-71.50	0.15	0.00	-71.65	-13.00	-58.65
216.37	31.56	189	2.0	V	-76.03	0.15	0.00	-76.18	-13.00	-63.18
1413.00	65.95	153	1.4	H	-44.29	2.79	12.70	-34.38	-13.00	-21.38
1413.00	59.98	272	1.9	V	-51.79	2.79	12.70	-41.88	-13.00	-28.88
2119.50	53.58	52	2.0	H	-58.96	3.12	11.50	-50.58	-13.00	-37.58
2119.50	44.73	60	1.0	V	-68.70	3.12	11.50	-60.32	-13.00	-47.32
LTE BAND 17 Channel 23790										
216.37	39.21	298	1.8	H	-71.30	0.15	0.00	-71.45	-13.00	-58.45
216.37	31.72	135	1.3	V	-75.87	0.15	0.00	-76.02	-13.00	-63.02
1420.00	59.53	110	1.5	H	-50.71	2.37	12.50	-40.58	-13.00	-27.58
1420.00	53.89	112	1.5	V	-57.88	2.37	12.50	-47.75	-13.00	-34.75
2130.00	47.24	266	1.5	H	-65.30	3.12	11.50	-56.92	-13.00	-43.92
2130.00	38.62	54	2.2	V	-74.81	3.12	11.50	-66.43	-13.00	-53.43
LTE BAND 17 Channel 23825										
216.37	38.32	351	2.0	H	-72.19	0.15	0.00	-72.34	-13.00	-59.34
216.37	32.08	202	1.3	V	-75.51	0.15	0.00	-75.66	-13.00	-62.66
1427.00	52.24	353	1.5	H	-58.00	2.37	12.50	-47.87	-13.00	-34.87
1427.00	46.41	105	2.1	V	-65.36	2.37	12.50	-55.23	-13.00	-42.23
2140.50	39.48	52	1.7	H	-73.06	3.12	11.50	-64.68	-13.00	-51.68
2140.50	30.74	339	1.7	V	-82.69	3.12	11.50	-74.31	-13.00	-61.31

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

2) Margin = Limit- Absolute Level

13 Band Edge Measurement

Test Requirement:	FCC Part 2.1051, 22.917(a), 24.238(a), 27.53(h)
Test Method:	TIA/EIA-603-D:2010
	KDB971168 D01 v02r02
Test Mode:	TX transmitting

13.1 EUT Operation

Operating Environment **:**

Temperature:	23.5 °C
Humidity:	52.3 % RH
Atmospheric Pressure:	101.3kPa

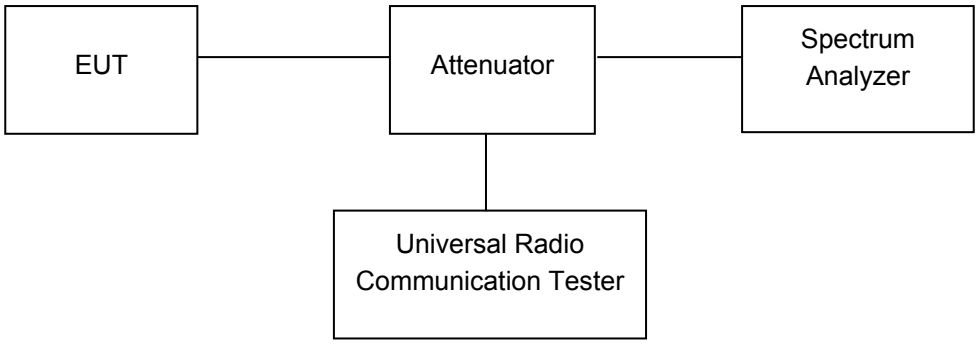
13.2 Test Procedure

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.

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



13.3 Test Result

PASS

LTE Band

Please refer to the Appendix Band 2/4/5/17 LTE Band Edge.

14 FREQUENCY STABILITY

Test Requirement:	FCC Part 2.1055, 22.355, 24.235, 27.5(h),27.54
Test Method:	TIA/EIA-603-D:2010
	KDB971168 D01 v02r02
Test Mode:	TX transmitting

14.1 EUT Operation

Operating Environment **:**

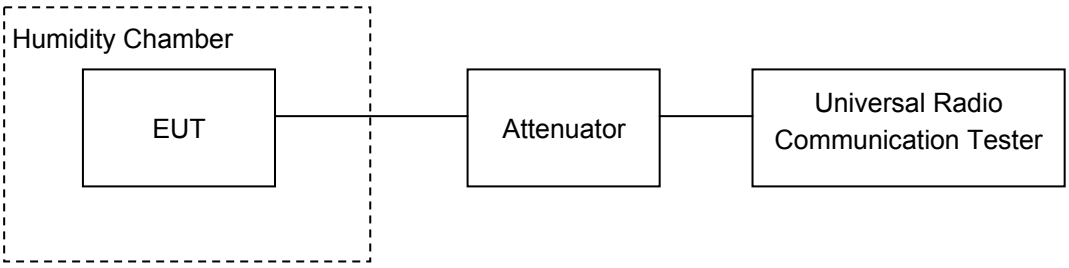
Temperature:	22.9 °C
Humidity:	52.0 % RH
Atmospheric Pressure:	101.3kPa

14.2 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.



14.3 Test Result

LTE Band 2

Test Frequency:1880.0MHz QPSK 1.4MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	5	0.0027	2.5
40		6	0.0032	2.5
30		15	0.0080	2.5
20		6	0.0032	2.5
10		11	0.0059	2.5
0		-1	-0.0005	2.5
-10		15	0.0080	2.5
-20		7	0.0037	2.5
-30		13	0.0069	2.5
20	3.3	15	0.0080	2.5
20	4.2	11	0.0059	2.5

T Test Frequency:1880.0MHz 16QAM 1.4MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	3	0.0016	2.5
40		11	0.0059	2.5
30		3	0.0016	2.5
20		7	0.0037	2.5
10		5	0.0027	2.5
0		8	0.0043	2.5
-10		3	0.0016	2.5
-20		11	0.0059	2.5
-30		14	0.0074	2.5
20	3.3	0	0.0000	2.5
20	4.2	0	0.0000	2.5

LTE Band 2

Test Frequency:1880.0MHz QPSK 3MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	1	0.0005	2.5
40		-1	-0.0005	2.5
30		0	0.0000	2.5
20		-4	-0.0021	2.5
10		-1	-0.0005	2.5
0		-10	-0.0053	2.5
-10		-11	-0.0059	2.5
-20		-13	-0.0069	2.5
-30		3	0.0016	2.5
20	3.3	1	0.0005	2.5
20	4.2	-7	-0.0037	2.5

Test Frequency:1880.0MHz 16QAM 3MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	10	0.0053	2.5
40		-4	-0.0021	2.5
30		5	0.0027	2.5
20		2	0.0011	2.5
10		4	0.0021	2.5
0		11	0.0059	2.5
-10		10	0.0053	2.5
-20		1	0.0005	2.5
-30		2	0.0011	2.5
20	3.3	9	0.0048	2.5
20	4.2	2	0.0011	2.5

LTE Band 2

Test Frequency:1880.0MHz QPSK 5MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	5	0.0027	2.5
40		9	0.0048	2.5
30		9	0.0048	2.5
20		8	0.0037	2.5
10		10	0.0053	2.5
0		1	0.0005	2.5
-10		-2	-0.0011	2.5
-20		2	0.0011	2.5
-30		14	0.0074	2.5
20	3.3	-1	-0.0005	2.5
20	4.2	1	0.0005	2.5

Test Frequency:1880.0MHz 16QAM 5MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	3	0.0016	2.5
40		-4	-0.0021	2.5
30		-1	-0.0005	2.5
20		-3	-0.0021	2.5
10		1	0.0005	2.5
0		-4	-0.0021	2.5
-10		-6	-0.0032	2.5
-20		4	0.0021	2.5
-30		1	0.0005	2.5
20	3.3	-12	-0.0064	2.5
20	4.2	5	0.0027	2.5

LTE Band 2

Test Frequency:1880.0MHz QPSK 10MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	4	0.0021	2.5
40		-6	-0.0032	2.5
30		0	0.0000	2.5
20		4	0.0011	2.5
10		10	0.0053	2.5
0		-4	-0.0021	2.5
-10		5	0.0027	2.5
-20		2	0.0011	2.5
-30		8	0.0043	2.5
20	3.3	-4	-0.0021	2.5
20	4.2	4	0.0021	2.5

Test Frequency:1880.0MHz 16QAM 10MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	15	0.0080	2.5
40		9	0.0048	2.5
30		3	0.0016	2.5
20		7	0.0037	2.5
10		-1	-0.0005	2.5
0		-2	-0.0011	2.5
-10		4	0.0021	2.5
-20		10	0.0053	2.5
-30		0	0.0000	2.5
20	3.3	0	0.0000	2.5
20	4.2	6	0.0032	2.5

LTE Band 2

Test Frequency:1880.0MHz QPSK 15MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	9	0.0048	2.5
40		-2	-0.0011	2.5
30		3	0.0016	2.5
20		2	0.0011	2.5
10		-3	-0.0016	2.5
0		10	0.0053	2.5
-10		2	0.0011	2.5
-20		4	0.0021	2.5
-30		5	0.0027	2.5
20	3.3	4	0.0021	2.5
20	4.2	-4	-0.0021	2.5

Test Frequency:1880.0MHz 16QAM 15MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	-7	-0.0037	2.5
40		-1	-0.0005	2.5
30		-4	-0.0021	2.5
20		1	0.0005	2.5
10		-3	-0.0016	2.5
0		3	0.0016	2.5
-10		0	0.0000	2.5
-20		-6	-0.0032	2.5
-30		-3	-0.0016	2.5
20	3.3	6	0.0032	2.5
20	4.2	-8	-0.0043	2.5

LTE Band 2

Test Frequency:1880.0MHz QPSK 20MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	0	0.0000	2.5
40		-2	-0.0011	2.5
30		-6	-0.0032	2.5
20		1	0.0005	2.5
10		3	0.0016	2.5
0		-4	-0.0021	2.5
-10		7	0.0037	2.5
-20		-1	-0.0005	2.5
-30		1	0.0005	2.5
20	3.3	2	0.0011	2.5
20	4.2	9	0.0048	2.5

Test Frequency:1880.0MHz 16QAM 20MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	7	0.0037	2.5
40		-3	-0.0016	2.5
30		7	0.0037	2.5
20		0	0.0000	2.5
10		5	0.0027	2.5
0		-4	-0.0021	2.5
-10		-3	-0.0016	2.5
-20		8	0.0043	2.5
-30		1	0.0005	2.5
20	3.3	8	0.0043	2.5
20	4.2	5	0.0027	2.5

LTE Band 4

Test Frequency:1732.5MHz QPSK 1.4MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	7	0.0040	2.5
40		-6	-0.0035	2.5
30		1	0.0006	2.5
20		1	0.0006	2.5
10		-2	-0.0012	2.5
0		9	0.0052	2.5
-10		0	0.0000	2.5
-20		-6	-0.0035	2.5
-30		9	0.0052	2.5
20	3.3	4	0.0023	2.5
20	4.2	-3	-0.0017	2.5

Test Frequency:1732.5MHz 16QAM 1.4MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	1	0.0006	2.5
40		14	0.0081	2.5
30		12	0.0069	2.5
20		7	0.0040	2.5
10		13	0.0075	2.5
0		11	0.0063	2.5
-10		14	0.0081	2.5
-20		2	0.0012	2.5
-30		10	0.0058	2.5
20	3.3	4	0.0023	2.5
20	4.2	6	0.0035	2.5

LTE Band 4

Test Frequency:1732.5MHz QPSK 3MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	2	0.0012	2.5
40		-1	-0.0006	2.5
30		1	0.0006	2.5
20		4	0.0023	2.5
10		-1	-0.0006	2.5
0		-3	-0.0017	2.5
-10		-2	-0.0012	2.5
-20		7	0.0040	2.5
-30		4	0.0023	2.5
20	3.3	-4	-0.0023	2.5
20	4.2	-3	-0.0017	2.5

Test Frequency:1732.5MHz 16QAM 3MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	9	0.0052	2.5
40		9	0.0052	2.5
30		-6	-0.0035	2.5
20		2	0.0012	2.5
10		4	0.0023	2.5
0		11	0.0063	2.5
-10		0	0.0000	2.5
-20		9	0.0052	2.5
-30		-2	-0.0012	2.5
20	3.3	3	0.0017	2.5
20	4.2	2	0.0012	2.5

LTE Band 4

Test Frequency:1732.5MHz QPSK 5MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	-3	-0.0017	2.5
40		-7	-0.0040	2.5
30		2	0.0012	2.5
20		2	0.0012	2.5
10		-6	-0.0035	2.5
0		-6	-0.0035	2.5
-10		-7	-0.0040	2.5
-20		-2	-0.0012	2.5
-30		-2	-0.0012	2.5
20	3.3	5	0.0029	2.5
20	4.2	10	0.0058	2.5

Test Frequency:1732.5MHz 16QAM 5MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	0	0.0000	2.5
40		9	0.0052	2.5
30		9	0.0052	2.5
20		5	0.0029	2.5
10		4	0.0023	2.5
0		6	0.0035	2.5
-10		6	0.0035	2.5
-20		5	0.0029	2.5
-30		9	0.0052	2.5
20	3.3	-2	-0.0012	2.5
20	4.2	12	0.0069	2.5

LTE Band 4

Test Frequency:1732.5MHz QPSK 10MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	-6	-0.0035	2.5
40		-3	-0.0017	2.5
30		-4	-0.0023	2.5
20		3	0.0017	2.5
10		7	0.0040	2.5
0		-2	-0.0012	2.5
-10		3	0.0017	2.5
-20		-2	-0.0012	2.5
-30		5	0.0029	2.5
20	3.3	-1	-0.0006	2.5
20	4.2	0	0.0000	2.5

Test Frequency:1732.5MHz 16QAM 10MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	11	0.0063	2.5
40		2	0.0012	2.5
30		11	0.0063	2.5
20		3	0.0017	2.5
10		2	0.0012	2.5
0		-1	-0.0006	2.5
-10		12	0.0069	2.5
-20		-5	-0.0029	2.5
-30		11	0.0063	2.5
20	3.3	-4	-0.0023	2.5
20	4.2	8	0.0046	2.5

LTE Band 4

Test Frequency:1732.5MHz QPSK 15MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	1	0.0006	2.5
40		7	0.0040	2.5
30		1	0.0006	2.5
20		1	0.0006	2.5
10		-5	-0.0029	2.5
0		0	0.0000	2.5
-10		6	0.0035	2.5
-20		-2	-0.0012	2.5
-30		0	0.0000	2.5
20	3.3	4	0.0023	2.5
20	4.2	-4	-0.0023	2.5

Test Frequency:1732.5MHz 16QAM 15MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	9	0.0052	2.5
40		6	0.0035	2.5
30		2	0.0012	2.5
20		4	0.0023	2.5
10		-3	-0.0017	2.5
0		13	0.0075	2.5
-10		10	0.0058	2.5
-20		7	0.0040	2.5
-30		1	0.0006	2.5
20	3.3	11	0.0063	2.5
20	4.2	-5	-0.0029	2.5

LTE Band 4

Test Frequency:1732.5MHz QPSK 20MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	-1	-0.0006	2.5
40		-4	-0.0023	2.5
30		-8	-0.0046	2.5
20		-5	-0.0029	2.5
10		-6	-0.0035	2.5
0		-11	-0.0063	2.5
-10		-13	-0.0075	2.5
-20		-8	-0.0046	2.5
-30		1	0.0006	2.5
20	3.3	-5	-0.0029	2.5
20	4.2	-13	-0.0075	2.5

Test Frequency:1732.5MHz 16QAM 20MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	3	0.0017	2.5
40		3	0.0017	2.5
30		-10	-0.0058	2.5
20		-4	-0.0023	2.5
10		-9	-0.0052	2.5
0		4	0.0023	2.5
-10		-4	-0.0023	2.5
-20		-3	-0.0017	2.5
-30		-13	-0.0075	2.5
20	3.3	-12	-0.0069	2.5
20	4.2	-3	-0.0017	2.5

LTE Band 5

Test Frequency:2535MHz QPSK 5MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	4	0.0016	2.5
40		4	0.0016	2.5
30		12	0.0047	2.5
20		5	0.0020	2.5
10		7	0.0028	2.5
0		10	0.0039	2.5
-10		11	0.0043	2.5
-20		3	0.0012	2.5
-30		13	0.0051	2.5
20	3.3	1	0.0004	2.5
20	4.2	-2	-0.0008	2.5

Test Frequency:2535MHz 16QAM 5MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	6	0.0024	2.5
40		4	0.0016	2.5
30		-6	-0.0024	2.5
20		3	0.0012	2.5
10		11	0.0043	2.5
0		-3	-0.0012	2.5
-10		-5	-0.0020	2.5
-20		4	0.0016	2.5
-30		8	0.0032	2.5
20	3.3	-1	-0.0004	2.5
20	4.2	-5	-0.0020	2.5

LTE Band 5

Test Frequency:2535MHz QPSK 10MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	1	0.0004	2.5
40		7	0.0028	2.5
30		10	0.0039	2.5
20		1	0.0004	2.5
10		7	0.0028	2.5
0		7	0.0028	2.5
-10		5	0.0020	2.5
-20		-8	-0.0032	2.5
-30		-4	-0.0016	2.5
20	3.3	7	0.0028	2.5
20	4.2	-4	-0.0016	2.5

Test Frequency:2535MHz 16QAM 10MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	4	0.0016	2.5
40		0	0.0000	2.5
30		-5	-0.0020	2.5
20		3	0.0012	2.5
10		11	0.0043	2.5
0		-5	-0.0020	2.5
-10		4	0.0016	2.5
-20		-4	-0.0016	2.5
-30		11	0.0043	2.5
20	3.3	-5	-0.0020	2.5
20	4.2	9	0.0036	2.5

LTE Band 5

Test Frequency:2535MHz QPSK 15MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	4	0.0016	2.5
40		4	0.0016	2.5
30		0	0.0000	2.5
20		3	0.0012	2.5
10		4	0.0016	2.5
0		6	0.0024	2.5
-10		7	0.0028	2.5
-20		1	0.0004	2.5
-30		6	0.0024	2.5
20	3.3	-5	-0.0020	2.5
20	4.2	9	0.0036	2.5

Test Frequency:2535MHz 16QAM 15MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	3	0.0012	2.5
40		8	0.0032	2.5
30		5	0.0020	2.5
20		6	0.0024	2.5
10		-1	-0.0004	2.5
0		13	0.0051	2.5
-10		6	0.0024	2.5
-20		-1	-0.0004	2.5
-30		12	0.0047	2.5
20	3.3	5	0.0020	2.5
20	4.2	14	0.0055	2.5

LTE Band 5

Test Frequency:2535MHz QPSK 20MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	10	0.0039	2.5
40		-6	-0.0024	2.5
30		11	0.0043	2.5
20		3	0.0012	2.5
10		6	0.0024	2.5
0		-2	-0.0008	2.5
-10		12	0.0047	2.5
-20		9	0.0036	2.5
-30		4	0.0016	2.5
20	3.3	-5	-0.0020	2.5
20	4.2	10	0.0039	2.5

Test Frequency:2535MHz 16QAM 20MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	6	0.0024	2.5
40		-5	-0.0020	2.5
30		-7	-0.0028	2.5
20		-2	-0.0008	2.5
10		0	0.0000	2.5
0		-1	-0.0004	2.5
-10		-3	-0.0012	2.5
-20		0	0.0000	2.5
-30		0	0.0000	2.5
20	3.3	-10	-0.0039	2.5
20	4.2	-1	-0.0004	2.5

LTE Band 17

Test Frequency: 710.0MHz QPSK 5MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	3	0.0012	2.5
40		-6	-0.0024	2.5
30		5	0.0020	2.5
20		2	0.0008	2.5
10		7	0.0028	2.5
0		3	0.0012	2.5
-10		8	0.0032	2.5
-20		7	0.0028	2.5
-30		5	0.0020	2.5
20	3.3	3	0.0012	2.5
20	4.2	9	0.0036	2.5

Test Frequency: 710.0MHz 16QAM 5MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	5	0.0020	2.5
40		1	0.0004	2.5
30		0	0.0000	2.5
20		5	0.0020	2.5
10		5	0.0020	2.5
0		0	0.0000	2.5
-10		1	0.0004	2.5
-20		0	0.0000	2.5
-30		1	0.0004	2.5
20	3.3	13	0.0051	2.5
20	4.2	-1	-0.0004	2.5

LTE Band 17

Test Frequency: 710.0MHz QPSK 10MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	3	0.0012	2.5
40		10	0.0039	2.5
30		17	0.0067	2.5
20		8	0.0032	2.5
10		1	0.0004	2.5
0		1	0.0004	2.5
-10		15	0.0059	2.5
-20		14	0.0055	2.5
-30		7	0.0028	2.5
20	3.3	3	0.0012	2.5
20	4.2	1	0.0004	2.5

Test Frequency: 710.0MHz 16QAM 10MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	7	0.0028	2.5
40		10	0.0039	2.5
30		3	0.0012	2.5
20		2	0.0008	2.5
10		1	0.0004	2.5
0		1	0.0004	2.5
-10		7	0.0028	2.5
-20		7	0.0028	2.5
-30		10	0.0039	2.5
20	3.3	5	0.0020	2.5
20	4.2	-5	-0.0020	2.5

15 RF Exposure

Remark: refer to SAR test report: WTS16S1165622E.

16 Photographs of test setup and EUT.

Note: Please refer to appendix: WTS16S1165620E_Photo.

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