TEST REPORT

Reference No.	:	WTD21D02012811W002
FCC ID	:	2APJQ-WC30895A
Applicant	:	KEEPWAY INDUSTRIAL(ASIA)CO.,LTD
Address	:	Flat D, 8/F., Successlnd.Bld G., No.17, SheungHeiSt., SanPoKong, Kowloon, Hongkong
Manufacturer	:	HUARUI TECHNOLOGY(SHENZHEN)CO.,LTD
Address	:	401, building 3, No.32,Dafu Road, Zhangge community, Fucheng street, Longhua District, Shenzhen, China
Product	:	Covert Wireless Trail Camera
Model(s)	:	WC30-A, CT895A
Standards	:	FCC CFR47 Part 24 Subpart E: 2018 FCC CFR47 Part 27 Subpart L: 2018
Date of Receipt sample	:	2021-02-24
Date of Test	:	2021-02-25 to 2021-03-15
Date of Issue	:	2021-03-15
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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3 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTD21D02012811W002	2021-02-24	2021-02-25 to 2021-03-15	2021-03-15	original	-	Valid

4 General Information

4.1 General Description of E.U.T.

Product:	Covert Wireless Trail Camera
Model(s):	WC30-A, CT895A
Model Description:	Only the model name is different，So choose the model WC30-A for testing
WCDMA Band(s):	FDD Band II/IV/V
LTE Band(s):	FDD Band 2/4/12
Hardware Version:	KT895MV07
Software Version:	CT895ANC2Lx146018
Highest frequency (Exclude Radio):	26MHz
Storage Location:	Internal Storage

4.2 Details of E.U.T.

Operation Frequency:	LTE Band 2: 1850~1910MHz LTE Band 4: 1710~1755MHz LTE Band 12: 699~716MHz
Max. RF output power:	LTE Band 2: 21.26dBm LTE Band 4: 21.57dBm LTE Band 12: 23.30dBm
Type of Modulation:	LTE: QPSK, 16QAM
Antenna installation:	LTE: External antenna with RP-SMA connector
Antenna Gain:	LTE Band 2: 1.0dBi LTE Band 4: 1.0dBi LTE Band 12: 1.0dBi
Ratings:	DC 9V
Type of Emission:	LTE Band 2 1.4MHz: 1M09G7D(QPSK), 1M09W7D(16QAM) LTE Band 2 3MHz: 2M69G7D(QPSK), 2M68W7D(16QAM) LTE Band 2 5MHz: 4M49G7D(QPSK), 4M49W7D(16QAM) LTE Band 2 10 MHz: 8M92G7D(QPSK), 8M91W7D(16QAM) LTE Band 2 15MHz: 13M4G7D(QPSK), 13M4W7D(16QAM) LTE Band 2 20MHz: 17M9G7D(QPSK), 17M9W7D(16QAM) LTE Band 4 1.4MHz: 1M09G7D(QPSK), 1M09W7D(16QAM) LTE Band 4 3MHz: 2M69G7D(QPSK), 2M68W7D(16QAM) LTE Band 4 5MHz: 4M49G7D(QPSK), 4M49W7D(16QAM) LTE Band 4 10 MHz: 8M91G7D(QPSK), 8M90W7D(16QAM) LTE Band 4 15MHz: 13M4G7D(QPSK), 13M4W7D(16QAM) LTE Band 4 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), 4M49W7D(16QAM)
LTE Band 12 10MHz: 8M93G7D(QPSK), 8M93W7D(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 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 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
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 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 22.917 24.238 27.53(a)	PASS
Spurious Emissions at Antenna Terminal	2.1051 24.238 (a) 27.53(h) 27.53(m)(4)	PASS
Field Strength of Spurious Radiation	2.1053 24.238 (a) 27.53(h) 27.53(m)(4)	PASS
Out of band emission	24.238 (a) 27.53(h) 27.53(m)(4)	PASS
Frequency Stability	2.1055 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

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	2020-04-20	2021-04-19
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	2020-04-20	2021-04-19
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	2020-08-22	2021-08-21
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	2020-04-20	2021-04-19
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	2020-04-25	2021-04-24
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	2020-04-20	2021-04-19
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	2020-04-20	2021-04-19
8	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	2020-04-20	2021-04-19
9	Universal Radio Communication Tester	R&S	CMU 200	112461	2020-04-20	2021-04-19
10	Signal Generator	R&S	SMR20	100046	2020-07-30	2021-07-29
11	Smart Antenna	SCHWARZBECK	HA08	-	2020-04-20	2021-04-19
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	2020-04-20	2021-04-19
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2020-04-25	2021-04-24
3	Amplifier	Compliance pirection systems inc	PAP-0203	22024	2020-04-20	2021-04-19
4	Cable	HUBER+SUHNER	CBL2	525178	2020-04-20	2021-04-19
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	2020-07-30	2021-07-29
2.	Spectrum Analyzer (9k-6GHz)	R&S	FSL6	100959	2020-07-30	2021-07-29

3.	Universal Radio Communication Tester	R&S	CMU 200	112461	2020-07-30	2021-07-29
4	Signal Analyzer (9k~26.5GHz)	Agilent	N9010A	MY50520207	2020-07-30	2021-07-29

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	

6.3 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.

7 RF OUTPUT POWER

Test Requirement:	FCC Part 2.1046, 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

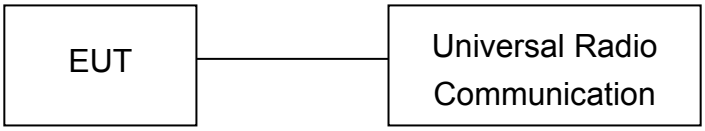
Operating Environment **:**

Temperature:	22.5 °C
Humidity:	52.1 % 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	21.05	23.0±1	/
				1	2	21.79	23.0±1	/
				1	5	21.26	23.0±1	/
				3	0	21.2	23.0±1	/
				3	1	21.22	23.0±1	/
				3	2	21.17	23.0±1	/
				6	0	20.08	22.0±1	1.0
			16QAM	1	0	19.99	22.0±1	1.0
				1	2	20.02	22.0±1	1.0
				1	5	19.98	22.0±1	1.0
				3	0	20.37	22.0±1	1.0
				3	1	20.39	22.0±1	1.0
				3	2	20.33	22.0±1	1.0
				6	0	19.18	22.0±1	1.0
	18900	1880	QPSK	1	0	20.9	23.0±1	/
				1	2	20.89	23.0±1	/
				1	5	20.58	23.0±1	/
				3	0	20.69	23.0±1	/
				3	1	20.66	23.0±1	/
				3	2	20.59	23.0±1	/
				6	0	19.74	22.0±1	1.0
			16QAM	1	0	19.89	22.0±1	1.0
				1	2	20.12	22.0±1	1.0
				1	5	20.02	22.0±1	1.0
				3	0	20.09	22.0±1	1.0
				3	1	20.06	22.0±1	1.0
				3	2	20	22.0±1	1.0
				6	0	18.96	22.0±1	1.0
	19193	1909.3	QPSK	1	0	20.86	23.0±1	/
				1	2	21.02	23.0±1	/
				1	5	21.13	23.0±1	/
				3	0	21.23	23.0±1	/
				3	1	21.15	23.0±1	/
				3	2	21.05	23.0±1	/
				6	0	20.23	22.0±1	1.0
			16QAM	1	0	19.92	22.0±1	1.0
				1	2	19.97	22.0±1	1.0
				1	5	19.84	22.0±1	1.0
				3	0	20.21	22.0±1	1.0
				3	1	20.07	22.0±1	1.0
				3	2	19.96	22.0±1	1.0

				6	0	19.01	22.0±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	20.93	23.0±1	/
				1	8	20.73	23.0±1	/
				1	14	20.95	23.0±1	/
				6	0	19.81	22.0±1	1.0
				6	4	19.82	22.0±1	1.0
				6	9	19.75	22.0±1	1.0
				15	0	19.9	22.0±1	1.0
			16QAM	1	0	20.01	22.0±1	1.0
				1	8	19.4	22.0±1	1.0
				1	14	19.68	22.0±1	1.0
				6	0	18.81	22.0±1	1.0
				6	4	18.87	22.0±1	1.0
				6	9	18.91	22.0±1	1.0
				15	0	18.89	22.0±1	1.0
	18900	1880	QPSK	1	0	20.51	23.0±1	/
				1	8	20.29	23.0±1	/
				1	14	20.43	23.0±1	/
				6	0	19.67	22.0±1	1.0
				6	4	19.53	22.0±1	1.0
				6	9	19.44	22.0±1	1.0
				15	0	19.51	22.0±1	1.0
			16QAM	1	0	19.3	22.0±1	1.0
				1	8	19.25	22.0±1	1.0
				1	14	19.34	22.0±1	1.0
				6	0	18.58	22.0±1	1.0
				6	4	18.52	22.0±1	1.0
				6	9	18.5	22.0±1	1.0
				15	0	18.65	22.0±1	1.0
	19185	1908.5	QPSK	1	0	21.01	23.0±1	/
				1	8	20.86	23.0±1	/
				1	14	21.01	23.0±1	/
				6	0	19.94	22.0±1	1.0
				6	4	19.8	22.0±1	1.0
				6	9	19.77	22.0±1	1.0
				15	0	19.94	22.0±1	1.0
			16QAM	1	0	19.98	22.0±1	1.0
				1	8	20.17	22.0±1	1.0
				1	14	20.1	22.0±1	1.0
				6	0	19.21	22.0±1	1.0
				6	4	19.07	22.0±1	1.0
				6	9	18.89	22.0±1	1.0
				15	0	19.09	22.0±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	20.9	23.0±1	/
				1	12	20.78	23.0±1	/
				1	24	20.85	23.0±1	/
				12	0	19.88	22.0±1	1.0
				12	6	19.98	22.0±1	1.0
				12	11	19.93	22.0±1	1.0
				25	0	19.98	22.0±1	1.0
			16QAM	1	0	19.5	22.0±1	1.0
				1	12	19.43	22.0±1	1.0
				1	24	19.31	22.0±1	1.0
				12	0	18.92	22.0±1	1.0
				12	6	18.67	22.0±1	1.0
				12	11	18.87	22.0±1	1.0
				25	0	18.88	22.0±1	1.0
	18900	1880	QPSK	1	0	20.47	23.0±1	/
				1	12	20.34	23.0±1	/
				1	24	20.36	23.0±1	/
				12	0	19.52	22.0±1	1.0
				12	6	19.45	22.0±1	1.0
				12	11	19.49	22.0±1	1.0
				25	0	19.55	22.0±1	1.0
			16QAM	1	0	19.58	22.0±1	1.0
				1	12	19.47	22.0±1	1.0
				1	24	19.48	22.0±1	1.0
				12	0	18.41	22.0±1	1.0
				12	6	18.42	22.0±1	1.0
				12	11	18.48	22.0±1	1.0
				25	0	18.62	22.0±1	1.0
	19175	1907.5	QPSK	1	0	20.82	23.0±1	/
				1	12	20.9	23.0±1	/
				1	24	20.9	23.0±1	/
				12	0	19.78	22.0±1	1.0
				12	6	19.86	22.0±1	1.0
				12	11	19.95	22.0±1	1.0
				25	0	19.77	22.0±1	1.0
			16QAM	1	0	19.59	22.0±1	1.0
				1	12	19.7	22.0±1	1.0
				1	24	19.32	22.0±1	1.0
				12	0	18.67	22.0±1	1.0
				12	6	18.81	22.0±1	1.0
				12	11	18.79	22.0±1	1.0
				25	0	18.83	22.0±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	20.85	23.0±1	/
				1	24	20.64	23.0±1	/
				1	49	20.71	23.0±1	/
				25	0	19.71	22.0±1	1.0
				25	12	19.76	22.0±1	1.0
				25	24	19.64	22.0±1	1.0
				50	0	19.68	22.0±1	1.0
			16QAM	1	0	19.8	22.0±1	1.0
				1	24	19.61	22.0±1	1.0
				1	49	19.59	22.0±1	1.0
				25	0	18.79	22.0±1	1.0
				25	12	18.92	22.0±1	1.0
				25	24	18.71	22.0±1	1.0
				50	0	18.74	22.0±1	1.0
	18900	1880	QPSK	1	0	20.54	23.0±1	/
				1	24	20.72	23.0±1	/
				1	49	20.29	23.0±1	/
				25	0	19.48	22.0±1	1.0
				25	12	19.56	22.0±1	1.0
				25	24	19.4	22.0±1	1.0
				50	0	19.47	22.0±1	1.0
			16QAM	1	0	19.37	22.0±1	1.0
				1	24	19.34	22.0±1	1.0
				1	49	18.91	22.0±1	1.0
				25	0	18.61	22.0±1	1.0
				25	12	18.57	22.0±1	1.0
				25	24	18.55	22.0±1	1.0
				50	0	18.59	22.0±1	1.0
	19150	1905	QPSK	1	0	20.74	23.0±1	/
				1	24	21.18	23.0±1	/
				1	49	20.96	23.0±1	/
				25	0	19.69	22.0±1	1.0
				25	12	19.78	22.0±1	1.0
				25	24	19.96	22.0±1	1.0
				50	0	19.78	22.0±1	1.0
			16QAM	1	0	18.98	22.0±1	1.0
				1	24	20.5	22.0±1	1.0
				1	49	20.3	22.0±1	1.0
				25	0	18.93	22.0±1	1.0
				25	12	19.1	22.0±1	1.0
				25	24	19.11	22.0±1	1.0
				50	0	18.84	22.0±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	20.83	23.0±1	/
				1	37	20.63	23.0±1	/
				1	74	20.65	23.0±1	/
				36	0	19.74	22.0±1	1.0
				36	16	19.77	22.0±1	1.0
				36	35	19.7	22.0±1	1.0
				75	0	19.71	22.0±1	1.0
			16QAM	1	0	19.89	22.0±1	1.0
				1	37	19.56	22.0±1	1.0
				1	74	19.59	22.0±1	1.0
				36	0	18.74	22.0±1	1.0
				36	16	18.71	22.0±1	1.0
				36	35	18.71	22.0±1	1.0
				75	0	18.74	22.0±1	1.0
	18900	1880	QPSK	1	0	20.68	23.0±1	/
				1	37	20.44	23.0±1	/
				1	74	20.43	23.0±1	/
				36	0	19.56	22.0±1	1.0
				36	16	19.48	22.0±1	1.0
				36	35	19.38	22.0±1	1.0
				75	0	19.54	22.0±1	1.0
			16QAM	1	0	19.59	22.0±1	1.0
				1	37	19.33	22.0±1	1.0
				1	74	19	22.0±1	1.0
				36	0	18.55	22.0±1	1.0
				36	16	18.6	22.0±1	1.0
				36	35	18.49	22.0±1	1.0
				75	0	18.64	22.0±1	1.0
	19125	1902.5	QPSK	1	0	20.48	23.0±1	/
				1	37	20.46	23.0±1	/
				1	74	20.86	23.0±1	/
				36	0	19.71	22.0±1	1.0
				36	16	19.88	22.0±1	1.0
				36	35	19.81	22.0±1	1.0
				75	0	19.67	22.0±1	1.0
			16QAM	1	0	20.1	22.0±1	1.0
				1	37	20.18	22.0±1	1.0
				1	74	20.04	22.0±1	1.0
				36	0	18.6	22.0±1	1.0
				36	16	18.77	22.0±1	1.0
				36	35	18.74	22.0±1	1.0
				75	0	18.63	22.0±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	20.99	23.0±1	/
				1	49	20.81	23.0±1	/
				1	99	20.19	23.0±1	/
				50	0	19.82	22.0±1	1.0
				50	24	19.68	22.0±1	1.0
				50	49	19.59	22.0±1	1.0
				100	0	19.6	22.0±1	1.0
			16QAM	1	0	19.95	22.0±1	1.0
				1	49	19.85	22.0±1	1.0
				1	99	19.23	22.0±1	1.0
				50	0	18.91	22.0±1	1.0
				50	24	18.76	22.0±1	1.0
				50	49	18.68	22.0±1	1.0
				100	0	18.66	22.0±1	1.0
	18900	1880	QPSK	1	0	20.35	23.0±1	/
				1	49	20.78	23.0±1	/
				1	99	20.24	23.0±1	/
				50	0	19.49	22.0±1	1.0
				50	24	19.55	22.0±1	1.0
				50	49	19.4	22.0±1	1.0
				100	0	19.5	22.0±1	1.0
			16QAM	1	0	19.02	22.0±1	1.0
				1	49	19.78	22.0±1	1.0
				1	99	19	22.0±1	1.0
				50	0	18.61	22.0±1	1.0
				50	24	18.66	22.0±1	1.0
				50	49	18.4	22.0±1	1.0
				100	0	18.57	22.0±1	1.0
	19100	1900	QPSK	1	0	20.8	23.0±1	/
				1	49	20.84	23.0±1	/
				1	99	20.95	23.0±1	/
				50	0	19.64	22.0±1	1.0
				50	24	19.64	22.0±1	1.0
				50	49	19.63	22.0±1	1.0
				100	0	19.71	22.0±1	1.0
			16QAM	1	0	19.39	22.0±1	1.0
				1	49	19.33	22.0±1	1.0
				1	99	19.81	22.0±1	1.0
				50	0	18.48	22.0±1	1.0
				50	24	18.69	22.0±1	1.0
				50	49	18.67	22.0±1	1.0
				100	0	18.68	22.0±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	21.24	23.0±1	/
				1	2	21.54	23.0±1	/
				1	5	21.47	23.0±1	/
				3	0	21.31	23.0±1	/
				3	1	21.41	23.0±1	/
				3	2	21.4	23.0±1	/
				6	0	20.32	22.0±1	1.0
			16QAM	1	0	20.65	22.0±1	1.0
				1	2	20.28	22.0±1	1.0
				1	5	20.48	22.0±1	1.0
				3	0	20.45	22.0±1	1.0
				3	1	20.64	22.0±1	1.0
				3	2	20.64	22.0±1	1.0
				6	0	19.39	22.0±1	1.0
	20175	1732.5	QPSK	1	0	21.23	23.0±1	/
				1	2	21.44	23.0±1	/
				1	5	21.17	23.0±1	/
				3	0	21.57	23.0±1	/
				3	1	21.48	23.0±1	/
				3	2	21.36	23.0±1	/
				6	0	20.63	22.0±1	1.0
			16QAM	1	0	20.38	22.0±1	1.0
				1	2	20.31	22.0±1	1.0
				1	5	20.32	22.0±1	1.0
				3	0	20.57	22.0±1	1.0
				3	1	20.56	22.0±1	1.0
				3	2	20.34	22.0±1	1.0
				6	0	19.5	22.0±1	1.0
	20393	1754.3	QPSK	1	0	21.32	23.0±1	/
				1	2	21.34	23.0±1	/
				1	5	21.33	23.0±1	/
				3	0	21.49	23.0±1	/
				3	1	21.31	23.0±1	/
				3	2	21.37	23.0±1	/
				6	0	20.45	22.0±1	1.0
			16QAM	1	0	20.43	22.0±1	1.0
				1	2	20.41	22.0±1	1.0
				1	5	20.06	22.0±1	1.0
				3	0	20.33	22.0±1	1.0
				3	1	20.24	22.0±1	1.0
				3	2	20.27	22.0±1	1.0
				6	0	19.66	22.0±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	21.16	23.0±1	/
				1	8	21.41	23.0±1	/
				1	14	21.33	23.0±1	/
				6	0	20.18	22.0±1	1.0
				6	4	20.38	22.0±1	1.0
				6	9	20.37	22.0±1	1.0
				15	0	20.31	22.0±1	1.0
			16QAM	1	0	20.1	22.0±1	1.0
				1	8	20.47	22.0±1	1.0
				1	14	20.37	22.0±1	1.0
				8	0	19.12	22.0±1	1.0
				8	4	18.99	22.0±1	1.0
				8	9	19.32	22.0±1	1.0
				15	0	18.99	22.0±1	1.0
	20175	1732.5	QPSK	1	0	21.27	23.0±1	/
				1	8	21.17	23.0±1	/
				1	14	21.24	23.0±1	/
				6	0	20.25	22.0±1	1.0
				6	4	20.19	22.0±1	1.0
				6	9	20.15	22.0±1	1.0
				15	0	20.33	22.0±1	1.0
			16QAM	1	0	19.94	22.0±1	1.0
				1	8	19.48	22.0±1	1.0
				1	14	19.56	22.0±1	1.0
				6	0	19.39	22.0±1	1.0
				6	4	19.15	22.0±1	1.0
				6	9	19.09	22.0±1	1.0
				15	0	19.36	22.0±1	1.0
	20385	1753.5	QPSK	1	0	21.01	23.0±1	/
				1	8	21.11	23.0±1	/
				1	14	21.27	23.0±1	/
				6	0	20.17	22.0±1	1.0
				6	4	20.14	22.0±1	1.0
				6	9	20.15	22.0±1	1.0
				15	0	20.29	22.0±1	1.0
			16QAM	1	0	20.14	22.0±1	1.0
				1	8	20.21	22.0±1	1.0
				1	14	20	22.0±1	1.0
				8	0	19.28	22.0±1	1.0
				8	4	19.44	22.0±1	1.0
				8	9	19.34	22.0±1	1.0
				15	0	19.25	22.0±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	20.97	23.0±1	/
				1	49	21.02	23.0±1	/
				1	99	20.97	23.0±1	/
				12	0	19.89	22.0±1	1.0
				12	24	20.1	22.0±1	1.0
				12	49	20.06	22.0±1	1.0
				25	0	19.88	22.0±1	1.0
			16QAM	1	0	19.47	22.0±1	1.0
				1	49	19.91	22.0±1	1.0
				1	99	19.7	22.0±1	1.0
				12	0	18.81	22.0±1	1.0
				12	24	18.91	22.0±1	1.0
				12	49	19.17	22.0±1	1.0
				25	0	19.05	22.0±1	1.0
	20175	1732.5	QPSK	1	0	20.96	23.0±1	/
				1	49	20.87	23.0±1	/
				1	99	20.97	23.0±1	/
				12	0	20.05	22.0±1	1.0
				12	24	19.99	22.0±1	1.0
				12	49	19.93	22.0±1	1.0
				25	0	20.04	22.0±1	1.0
			16QAM	1	0	20.15	22.0±1	1.0
				1	49	19.64	22.0±1	1.0
				1	99	19.67	22.0±1	1.0
				12	0	18.99	22.0±1	1.0
				12	24	19.03	22.0±1	1.0
				12	49	18.97	22.0±1	1.0
				25	0	19.19	22.0±1	1.0
	20375	1752.5	QPSK	1	0	20.87	23.0±1	/
				1	49	21.04	23.0±1	/
				1	99	21.03	23.0±1	/
				12	0	20.04	22.0±1	1.0
				12	24	19.94	22.0±1	1.0
				12	49	20.13	22.0±1	1.0

				25	0	20.1	22.0±1	1.0
			16QAM	1	0	19.68	22.0±1	1.0
				1	49	19.66	22.0±1	1.0
				1	99	19.52	22.0±1	1.0
				12	0	18.99	22.0±1	1.0
				12	24	19.06	22.0±1	1.0
				12	49	19.07	22.0±1	1.0
				25	0	19.27	22.0±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	21.01	23.0±1	/
				1	49	21.17	23.0±1	/
				1	99	21.4	23.0±1	/
				25	0	19.96	22.0±1	1.0
				25	24	20.08	22.0±1	1.0
				25	49	20.14	22.0±1	1.0
				50	0	19.99	22.0±1	1.0
			16QAM	1	0	20.21	22.0±1	1.0
				1	49	20.4	22.0±1	1.0
				1	99	20.64	22.0±1	1.0
				25	0	18.81	22.0±1	1.0
				25	24	19.22	22.0±1	1.0
				25	49	19.27	22.0±1	1.0
				50	0	18.99	22.0±1	1.0
	20175	1732.5	QPSK	1	0	20.94	23.0±1	/
				1	49	20.99	23.0±1	/
				1	99	20.91	23.0±1	/
				25	0	19.92	22.0±1	1.0
				25	24	19.87	22.0±1	1.0
				25	49	19.84	22.0±1	1.0
				50	0	19.88	22.0±1	1.0
			16QAM	1	0	20.13	22.0±1	1.0
				1	49	19.23	22.0±1	1.0
				1	99	19.62	22.0±1	1.0
				25	0	19.17	22.0±1	1.0
				25	24	18.88	22.0±1	1.0
				25	49	18.93	22.0±1	1.0
				50	0	18.8	22.0±1	1.0
	20350	1750	QPSK	1	0	20.75	23.0±1	/
				1	49	21.06	23.0±1	/
				1	99	20.84	23.0±1	/
				25	0	19.61	22.0±1	1.0
				25	24	19.84	22.0±1	1.0

				25	49	19.91	22.0±1	1.0
				50	0	19.78	22.0±1	1.0
			16QAM	1	0	19.55	22.0±1	1.0
				1	49	19.73	22.0±1	1.0
				1	99	19.51	22.0±1	1.0
				25	0	18.61	22.0±1	1.0
				25	24	19.03	22.0±1	1.0
				25	49	19.2	22.0±1	1.0
				50	0	18.73	22.0±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	21.57	23.0±1	/
				1	49	21.03	23.0±1	/
				1	99	21.04	23.0±1	/
				36	0	19.95	22.0±1	1.0
				36	24	20	22.0±1	1.0
				36	49	20.16	22.0±1	1.0
				75	0	19.98	22.0±1	1.0
			16QAM	1	0	19.64	22.0±1	1.0
				1	49	20.59	22.0±1	1.0
				1	99	20.6	22.0±1	1.0
				36	0	18.87	22.0±1	1.0
				36	24	19.1	22.0±1	1.0
				36	49	18.98	22.0±1	1.0
				75	0	18.99	22.0±1	1.0
	20175	1732.5	QPSK	1	0	20.85	23.0±1	/
				1	49	20.67	23.0±1	/
				1	99	20.51	23.0±1	/
				36	0	19.86	22.0±1	1.0
				36	24	19.69	22.0±1	1.0
				36	49	19.78	22.0±1	1.0
				75	0	19.77	22.0±1	1.0
			16QAM	1	0	19.83	22.0±1	1.0
				1	49	19.1	22.0±1	1.0
				1	99	19.29	22.0±1	1.0
				36	0	18.96	22.0±1	1.0
				36	24	18.79	22.0±1	1.0
				36	49	18.77	22.0±1	1.0
				75	0	18.95	22.0±1	1.0
	20325	1747.5	QPSK	1	0	20.53	23.0±1	/
				1	49	20.48	23.0±1	/
				1	99	20.67	23.0±1	/
				36	0	19.52	22.0±1	1.0
				36	24	19.52	22.0±1	1.0
				36	49	19.87	22.0±1	1.0
				75	0	19.63	22.0±1	1.0

			16QAM	1	0	20.03	22.0±1	1.0
				1	49	20.75	22.0±1	1.0
				1	99	20.31	22.0±1	1.0
				36	0	18.52	22.0±1	1.0
				36	24	18.73	22.0±1	1.0
				36	49	18.78	22.0±1	1.0
				75	0	18.68	22.0±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	21.01	23.0±1	/
				1	49	21.11	23.0±1	/
				1	99	20.62	23.0±1	/
				50	0	19.96	22.0±1	1.0
				50	24	20.07	22.0±1	1.0
				50	49	20.02	22.0±1	1.0
				100	0	19.95	22.0±1	1.0
			16QAM	1	0	19.79	22.0±1	1.0
				1	49	19.85	22.0±1	1.0
				1	99	19.46	22.0±1	1.0
				50	0	19.02	22.0±1	1.0
				50	24	19.23	22.0±1	1.0
				50	49	19.17	22.0±1	1.0
				100	0	19.13	22.0±1	1.0
	20175	1732.5	QPSK	1	0	21.3	23.0±1	/
				1	49	20.85	23.0±1	/
				1	99	20.65	23.0±1	/
				50	0	19.86	22.0±1	1.0
				50	24	19.72	22.0±1	1.0
				50	49	19.65	22.0±1	1.0
				100	0	19.81	22.0±1	1.0
			16QAM	1	0	20.22	22.0±1	1.0
				1	49	19.54	22.0±1	1.0
				1	99	19.12	22.0±1	1.0
				50	0	18.96	22.0±1	1.0
				50	24	18.53	22.0±1	1.0
				50	49	18.56	22.0±1	1.0
				100	0	18.85	22.0±1	1.0
	20300	1745	QPSK	1	0	20.58	23.0±1	/
				1	49	20.55	23.0±1	/
				1	99	20.64	23.0±1	/
				50	0	19.72	22.0±1	1.0
				50	24	19.58	22.0±1	1.0
				50	49	19.58	22.0±1	1.0
				100	0	19.63	22.0±1	1.0
			16QAM	1	0	19.5	22.0±1	1.0
				1	49	19.36	22.0±1	1.0

				1	99	19.4	22.0±1	1.0
				50	0	18.75	22.0±1	1.0
				50	24	18.48	22.0±1	1.0
				50	49	18.58	22.0±1	1.0
				100	0	18.48	22.0±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	22.81	23.0±1	/
				1	2	22.7	23.0±1	/
				1	5	23.06	23.0±1	/
				3	0	22.87	23.0±1	/
				3	1	22.76	23.0±1	/
				3	2	22.82	23.0±1	/
				6	0	21.98	22.0±1	1.0
			16QAM	1	0	21.95	22.0±1	1.0
				1	2	21.68	22.0±1	1.0
				1	5	21.66	22.0±1	1.0
				3	0	21.96	22.0±1	1.0
				3	1	21.96	22.0±1	1.0
				3	2	21.83	22.0±1	1.0
				6	0	21.22	22.0±1	1.0
	23095	707.5	QPSK	1	0	22.56	23.0±1	/
				1	2	22.73	23.0±1	/
				1	5	22.72	23.0±1	/
				3	0	22.69	23.0±1	/
				3	1	22.88	23.0±1	/
				3	2	22.8	23.0±1	/
				6	0	21.9	22.0±1	1.0
			16QAM	1	0	21.77	22.0±1	1.0
				1	2	21.75	22.0±1	1.0
				1	5	21.73	22.0±1	1.0
				3	0	21.83	22.0±1	1.0
				3	1	21.83	22.0±1	1.0
				3	2	21.95	22.0±1	1.0
				6	0	20.64	22.0±1	1.0
	23173	715.3	QPSK	1	0	22.79	23.0±1	/
				1	2	23.01	23.0±1	/
				1	5	23.17	23.0±1	/
				3	0	22.83	23.0±1	/
				3	1	23.09	23.0±1	/
				3	2	22.74	23.0±1	/
				6	0	21.87	22.0±1	1.0
			16QAM	1	0	21.69	22.0±1	1.0

				1	2	21.78	22.0±1	1.0
				1	5	22	22.0±1	1.0
				3	0	21.64	22.0±1	1.0
				3	1	22.51	22.0±1	1.0
				3	2	22.19	22.0±1	1.0
				6	0	20.95	22.0±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	22.81	23.0±1	/
				1	8	22.84	23.0±1	/
				1	14	22.72	23.0±1	/
				8	0	22	22.0±1	1.0
				8	4	22	22.0±1	1.0
				8	9	21.9	22.0±1	1.0
				15	0	21.99	22.0±1	1.0
			16QAM	1	0	21.83	22.0±1	1.0
				1	8	21.7	22.0±1	1.0
				1	14	21.57	22.0±1	1.0
				8	0	20.81	22.0±1	1.0
				8	4	20.86	22.0±1	1.0
				8	9	20.67	22.0±1	1.0
				15	0	20.94	22.0±1	1.0
	23095	707.5	QPSK	1	0	22.97	23.0±1	/
				1	8	23.04	23.0±1	/
				1	14	22.98	23.0±1	/
				8	0	21.8	22.0±1	1.0
				8	4	21.89	22.0±1	1.0
				8	9	22.07	22.0±1	1.0
				15	0	21.81	22.0±1	1.0
			16QAM	1	0	21.86	22.0±1	1.0
				1	8	21.58	22.0±1	1.0
				1	14	21.63	22.0±1	1.0
				8	0	20.77	22.0±1	1.0
				8	4	20.79	22.0±1	1.0
				8	9	21.01	22.0±1	1.0
				15	0	20.85	22.0±1	1.0
	23165	714.5	QPSK	1	0	22.78	23.0±1	/
				1	8	22.7	23.0±1	/
				1	14	22.72	23.0±1	/
				8	0	21.93	22.0±1	1.0
				8	4	21.88	22.0±1	1.0
				8	9	21.9	22.0±1	1.0
				15	0	21.92	22.0±1	1.0
			16QAM	1	0	22.11	22.0±1	1.0
				1	8	21.62	22.0±1	1.0
				1	14	21.64	22.0±1	1.0
				8	0	20.9	22.0±1	1.0
				8	4	20.83	22.0±1	1.0
				8	9	20.65	22.0±1	1.0
				15	0	20.59	22.0±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	22.84	23.0±1	/
				1	49	22.7	23.0±1	/
				1	99	22.84	23.0±1	/
				12	0	22.02	22.0±1	1.0
				12	24	21.77	22.0±1	1.0
				12	49	21.72	22.0±1	1.0
				25	0	21.93	22.0±1	1.0
			16QAM	1	0	21.69	22.0±1	1.0
				1	49	21.35	22.0±1	1.0
				1	99	21.2	22.0±1	1.0
				12	0	21.01	22.0±1	1.0
				12	24	20.68	22.0±1	1.0
				12	49	20.73	22.0±1	1.0
				25	0	20.98	22.0±1	1.0
	23095	707.5	QPSK	1	0	22.72	23.0±1	/
				1	49	22.85	23.0±1	/
				1	99	22.91	23.0±1	/
				12	0	21.88	22.0±1	1.0
				12	24	21.97	22.0±1	1.0
				12	49	21.95	22.0±1	1.0
				25	0	21.89	22.0±1	1.0
			16QAM	1	0	21.95	22.0±1	1.0
				1	49	21.91	22.0±1	1.0
				1	99	21.88	22.0±1	1.0
				12	0	20.72	22.0±1	1.0
				12	24	21.01	22.0±1	1.0
				12	49	21	22.0±1	1.0
				25	0	20.97	22.0±1	1.0
	23155	713.5	QPSK	1	0	22.81	23.0±1	/
				1	49	22.88	23.0±1	/
				1	99	22.5	23.0±1	/
				12	0	21.93	22.0±1	1.0
				12	24	21.84	22.0±1	1.0
				12	49	21.77	22.0±1	1.0
				25	0	21.76	22.0±1	1.0
			16QAM	1	0	21.84	22.0±1	1.0
				1	49	21.15	22.0±1	1.0
				1	99	21.43	22.0±1	1.0
				12	0	20.69	22.0±1	1.0
				12	24	20.85	22.0±1	1.0
				12	49	20.77	22.0±1	1.0
				25	0	20.77	22.0±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	23.05	23.0±1	/
				1	49	23.11	23.0±1	/
				1	99	22.78	23.0±1	/
				25	0	21.65	22.0±1	1.0
				25	24	21.81	22.0±1	1.0
				25	49	21.83	22.0±1	1.0
				50	0	21.77	22.0±1	1.0
			16QAM	1	0	21.68	22.0±1	1.0
				1	49	21.65	22.0±1	1.0
				1	99	21.71	22.0±1	1.0
				25	0	20.74	22.0±1	1.0
				25	24	20.83	22.0±1	1.0
				25	49	20.75	22.0±1	1.0
				50	0	20.79	22.0±1	1.0
	23095	707.5	QPSK	1	0	22.73	23.0±1	/
				1	49	23.06	23.0±1	/
				1	99	22.61	23.0±1	/
				25	0	21.74	22.0±1	1.0
				25	24	21.89	22.0±1	1.0
				25	49	21.89	22.0±1	1.0
				50	0	21.77	22.0±1	1.0
			16QAM	1	0	21.45	22.0±1	1.0
				1	49	21.62	22.0±1	1.0
				1	99	21.53	22.0±1	1.0
				25	0	20.82	22.0±1	1.0
				25	24	20.91	22.0±1	1.0
				25	49	20.84	22.0±1	1.0
				50	0	20.63	22.0±1	1.0
	23130	711	QPSK	1	0	22.73	23.0±1	/
				1	49	23.3	23.0±1	/
				1	99	22.53	23.0±1	/
				25	0	21.91	22.0±1	1.0
				25	24	21.87	22.0±1	1.0
				25	49	21.82	22.0±1	1.0
				50	0	21.83	22.0±1	1.0
			16QAM	1	0	21.56	22.0±1	1.0
				1	49	21.98	22.0±1	1.0
				1	99	21.56	22.0±1	1.0
				25	0	21.13	22.0±1	1.0
				25	24	20.91	22.0±1	1.0
				25	49	20.78	22.0±1	1.0
				50	0	20.8	22.0±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	85.60	33	2.3	H	11.63	0.31	10.40	21.72	33	-11.28
1850.70	85.00	325	1.6	V	11.72	0.31	10.40	21.81	33	-11.19
LTE Band 2 Channel 18900 – 1.4MHz – QPSK										
1909.30	85.54	138	1.9	H	11.81	0.32	10.40	21.89	33	-11.11
1909.30	84.70	323	1.7	V	11.74	0.32	10.40	21.82	33	-11.18
LTE Band 2 Channel 19193 – 1.4MHz – QPSK										
1909.30	85.54	138	1.9	H	11.81	0.32	10.40	21.89	33	-11.11
1909.30	84.70	323	1.7	V	11.74	0.32	10.40	21.82	33	-11.18
LTE Band 2 Channel 18607 – 1.4MHz – 16QAM										
1850.70	85.63	329	1.7	H	11.66	0.31	10.40	21.75	33	-11.25
1850.70	84.89	212	1.7	V	11.61	0.31	10.40	21.70	33	-11.30
LTE Band 2 Channel 18900 – 1.4MHz – 16QAM										
1880.00	85.83	152	2.3	H	11.98	0.31	10.40	22.07	33	-10.93
1880.00	84.87	131	1.4	V	11.75	0.31	10.40	21.84	33	-11.16
LTE Band 2 Channel 19193 – 1.4MHz – 16QAM										
1909.30	85.43	194	1.7	H	11.70	0.32	10.40	21.78	33	-11.22
1909.30	84.65	211	2.2	V	11.69	0.32	10.40	21.77	33	-11.23
LTE Band 2 Channel 18615 – 3MHz – QPSK										
1851.50	85.90	141	1.6	H	11.93	0.31	10.40	22.02	33	-10.98
1851.50	85.10	151	1.4	V	11.82	0.31	10.40	21.91	33	-11.09
LTE Band 2 Channel 18900 – 3MHz – QPSK										
1880.00	85.49	235	2.3	H	11.64	0.31	10.40	21.73	33	-11.27
1880.00	85.02	241	1.4	V	11.90	0.31	10.40	21.99	33	-11.01
LTE Band 2 Channel 19185 – 3MHz – QPSK										
1908.50	85.30	236	2.4	H	11.57	0.32	10.40	21.65	33	-11.35
1908.50	84.87	48	1.2	V	11.91	0.32	10.40	21.99	33	-11.01
LTE Band 2 Channel 18615 – 3MHz – 16QAM										
1851.50	85.43	288	2.4	H	11.46	0.31	10.40	21.55	33	-11.45
1851.50	85.00	95	1.6	V	11.72	0.31	10.40	21.81	33	-11.19
LTE Band 2 Channel 18900 – 3MHz – 16QAM										

1880.00	85.47	278	1.1	H	11.62	0.31	10.40	21.71	33	-11.29
1880.00	84.81	340	2.4	V	11.69	0.31	10.40	21.78	33	-11.22
LTE Band 2 Channel 19185 – 3MHz – 16QAM										
1908.50	85.89	115	1.8	H	12.16	0.32	10.40	22.24	33	-10.76
1908.50	84.75	108	1.4	V	11.79	0.32	10.40	21.87	33	-11.13
LTE Band 2 Channel 18625 – 5MHz – QPSK										
1852.50	85.78	129	1.2	H	11.81	0.31	10.40	21.90	33	-11.10
1852.50	84.69	171	1.0	V	11.41	0.31	10.40	21.50	33	-11.50
LTE Band 2 Channel 18900 – 5MHz – QPSK										
1880.00	85.58	39	1.9	H	11.73	0.31	10.40	21.82	33	-11.18
1880.00	84.92	35	1.8	V	11.80	0.31	10.40	21.89	33	-11.11
LTE Band 2 Channel 19175 – 5MHz – QPSK										
1907.50	85.46	72	2.3	H	11.73	0.32	10.40	21.81	33	-11.19
1907.50	84.85	67	2.3	V	11.89	0.32	10.40	21.97	33	-11.03
LTE Band 2 Channel 18625 – 5MHz – 16QAM										
1852.50	85.60	131	1.3	H	11.63	0.31	10.40	21.72	33	-11.28
1852.50	85.10	120	1.3	V	11.82	0.31	10.40	21.91	33	-11.09
LTE Band 2 Channel 18900 – 5MHz – 16QAM										
1880.00	85.44	358	1.4	H	11.59	0.31	10.40	21.68	33	-11.32
1880.00	85.00	177	2.1	V	11.88	0.31	10.40	21.97	33	-11.03
LTE Band 2 Channel 19175 – 5MHz – 16QAM										
1907.50	85.59	191	2.2	H	11.86	0.32	10.40	21.94	33	-11.06
1907.50	84.97	294	1.9	V	12.01	0.32	10.40	22.09	33	-10.91
LTE Band 2 Channel 18650 – 10MHz – QPSK										
1855.00	85.33	170	2.4	H	11.36	0.31	10.40	21.45	33	-11.55
1855.00	85.46	317	1.9	V	12.18	0.31	10.40	22.27	33	-10.73
LTE Band 2 Channel 18900 – 10MHz – QPSK										
1880.00	85.41	65	1.6	H	11.56	0.31	10.40	21.65	33	-11.35
1880.00	85.63	26	2.1	V	12.51	0.31	10.40	22.60	33	-10.40
LTE Band 2 Channel 19150 – 10MHz – QPSK										
1905.00	85.76	183	1.3	H	12.03	0.32	10.40	22.11	33	-10.89
1905.00	85.49	285	1.5	V	12.53	0.32	10.40	22.61	33	-10.39
LTE Band 2 Channel 18650 – 10MHz – 16QAM										
1855.00	85.86	16	1.7	H	11.89	0.31	10.40	21.98	33	-11.02
1855.00	85.37	188	1.2	V	12.09	0.31	10.40	22.18	33	-10.82
LTE Band 2 Channel 18900 – 10MHz – 16QAM										

1880.00	85.53	211	1.4	H	11.68	0.31	10.40	21.77	33	-11.23
1880.00	85.59	279	1.3	V	12.47	0.31	10.40	22.56	33	-10.44
LTE Band 2 Channel 19150 – 10MHz – 16QAM										
1905.00	85.82	303	1.4	H	12.09	0.32	10.40	22.17	33	-10.83
1905.00	85.04	131	2.1	V	12.08	0.32	10.40	22.16	33	-10.84
LTE Band 2 Channel 18675 – 15MHz – QPSK										
1857.50	85.67	18	1.5	H	11.70	0.31	10.40	21.79	33	-11.21
1857.50	85.15	88	2.1	V	11.87	0.31	10.40	21.96	33	-11.04
LTE Band 2 Channel 18900 – 15MHz – QPSK										
1880.00	85.76	355	2.2	H	11.91	0.31	10.40	22.00	33	-11.00
1880.00	85.65	60	1.4	V	12.53	0.31	10.40	22.62	33	-10.38
LTE Band 2 Channel 19125 – 15MHz – QPSK										
1902.50	85.51	354	1.3	H	11.78	0.32	10.40	21.86	33	-11.14
1902.50	85.41	49	1.7	V	12.45	0.32	10.40	22.53	33	-10.47
LTE Band 2 Channel 18675 – 15MHz – 16QAM										
1857.50	85.40	235	2.0	H	11.43	0.31	10.40	21.52	33	-11.48
1857.50	85.52	259	1.9	V	12.24	0.31	10.40	22.33	33	-10.67
LTE Band 2 Channel 18900 – 15MHz – 16QAM										
1880.00	85.87	56	1.2	H	12.02	0.31	10.40	22.11	33	-10.89
1880.00	85.00	161	2.4	V	11.88	0.31	10.40	21.97	33	-11.03
LTE Band 2 Channel 19125 – 15MHz – 16QAM										
1902.50	85.72	120	1.4	H	11.99	0.32	10.40	22.07	33	-10.93
1902.50	85.00	250	1.0	V	12.04	0.32	10.40	22.12	33	-10.88
LTE Band 2 Channel 18700 – 20MHz – QPSK										
1860.00	86.80	300	2.3	H	12.83	0.31	10.40	22.92	33	-10.08
1860.00	86.00	18	2.2	V	12.72	0.31	10.40	22.81	33	-10.19
LTE Band 2 Channel 18900 – 20MHz – QPSK										
1880.00	86.71	356	1.5	H	12.86	0.31	10.40	22.95	33	-10.05
1880.00	86.00	89	2.5	V	12.88	0.31	10.40	22.97	33	-10.03
LTE Band 2 Channel 19100 – 20MHz – QPSK										
1900.00	86.60	349	2.3	H	12.87	0.32	10.40	22.95	33	-10.05
1900.00	85.96	31	2.4	V	13.00	0.32	10.40	23.08	33	-9.92
LTE Band 2 Channel 18670 – 20MHz – 16QAM										
1860.00	87.00	3	1.9	H	13.03	0.31	10.40	23.12	33	-9.88
1860.00	85.45	321	2.2	V	12.17	0.31	10.40	22.26	33	-10.74
LTE Band 2 Channel 18900 – 20MHz – 16QAM										

1880.00	86.85	287	2.4	H	13.00	0.31	10.40	23.09	33	-9.91
1880.00	86.00	37	2.4	V	12.88	0.31	10.40	22.97	33	-10.03
LTE Band 2 Channel 19100 – 20MHz – 16QAM										
1900.00	86.49	360	2.0	H	12.76	0.32	10.40	22.84	33	-10.16
1900.00	86.00	166	1.4	V	13.04	0.32	10.40	23.12	33	-9.88

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	87.00	309	1.1	H	12.89	0.30	9.40	21.99	30	-8.01
1710.70	86.20	72	1.8	V	12.67	0.30	9.40	21.77	30	-8.23
LTE Band 4 Channel 20175 – 1.4MHz – QPSK										
1732.50	86.85	281	2.1	H	12.74	0.30	9.40	21.84	30	-8.16
1732.50	86.20	108	1.4	V	12.67	0.30	9.40	21.77	30	-8.23
LTE Band 4 Channel 20393 – 1.4MHz – QPSK										
1754.30	87.00	269	2.1	H	12.89	0.30	9.40	21.99	30	-8.01
1754.30	86.10	22	1.9	V	12.57	0.30	9.40	21.67	30	-8.33
LTE Band 4 Channel 19957 – 1.4MHz – 16QAM										
1710.70	87.01	164	1.8	H	12.90	0.30	9.40	22.00	30	-8.00
1710.70	86.05	280	1.7	V	12.52	0.30	9.40	21.62	30	-8.38
LTE Band 4 Channel 20175 – 1.4MHz – 16QAM										
1732.50	87.00	118	1.4	H	12.89	0.30	9.40	21.99	30	-8.01
1732.50	86.15	123	1.7	V	12.62	0.30	9.40	21.72	30	-8.28
LTE Band 4 Channel 20393 – 1.4MHz – 16QAM										
1754.30	86.88	49	2.4	H	12.77	0.30	9.40	21.87	30	-8.13
1754.30	86.47	151	2.3	V	12.94	0.30	9.40	22.04	30	-7.96
LTE Band 4 Channel 19965 – 3MHz – QPSK										
1711.50	87.23	92	2.5	H	13.12	0.30	9.40	22.22	30	-7.78
1711.50	86.42	50	1.7	V	12.89	0.30	9.40	21.99	30	-8.01
LTE Band 4 Channel 20175 – 3MHz – QPSK										
1732.50	86.97	176	2.3	H	12.86	0.30	9.40	21.96	30	-8.04
1732.50	86.50	334	2.2	V	12.97	0.30	9.40	22.07	30	-7.93
LTE Band 4 Channel 20385 – 3MHz – QPSK										
1753.50	86.74	174	2.1	H	12.63	0.30	9.40	21.73	30	-8.27

1753.50	86.20	330	2.0	V	12.67	0.30	9.40	21.77	30	-8.23
LTE Band 4 Channel 19965 – 3MHz – 16QAM										
1711.50	87.03	153	2.3	H	12.92	0.30	9.40	22.02	30	-7.98
1711.50	86.96	149	2.4	V	13.43	0.30	9.40	22.53	30	-7.47
LTE Band 4 Channel 20175 – 3MHz – 16QAM										
1732.50	86.58	152	2.2	H	12.47	0.30	9.40	21.57	30	-8.43
1732.50	86.84	12	1.3	V	13.31	0.30	9.40	22.41	30	-7.59
LTE Band 4 Channel 20385 – 3MHz – 16QAM										
1753.50	87.01	151	1.9	H	12.90	0.30	9.40	22.00	30	-8.00
1753.50	86.73	346	1.2	V	13.20	0.30	9.40	22.30	30	-7.70
LTE Band 4 Channel 19975 – 5MHz – QPSK										
1712.50	86.78	55	2.5	H	12.67	0.30	9.40	21.77	30	-8.23
1712.50	87.01	70	1.3	V	13.48	0.30	9.40	22.58	30	-7.42
LTE Band 4 Channel 20175 – 5MHz – QPSK										
1732.50	87.41	263	2.2	H	13.30	0.30	9.40	22.40	30	-7.60
1732.50	87.30	270	1.3	V	13.77	0.30	9.40	22.87	30	-7.13
LTE Band 4 Channel 20375 – 5MHz – QPSK										
1752.50	86.85	206	1.3	H	12.74	0.30	9.40	21.84	30	-8.16
1752.50	86.57	344	2.2	V	13.04	0.30	9.40	22.14	30	-7.86
LTE Band 4 Channel 19975 – 5MHz – 16QAM										
1712.50	87.16	182	2.4	H	13.05	0.30	9.40	22.15	30	-7.85
1712.50	87.11	192	2.3	V	13.58	0.30	9.40	22.68	30	-7.32
LTE Band 4 Channel 20175 – 5MHz – 16QAM										
1732.50	87.10	352	1.4	H	12.99	0.30	9.40	22.09	30	-7.91
1732.50	86.96	186	1.2	V	13.43	0.30	9.40	22.53	30	-7.47
LTE Band 4 Channel 20375 – 5MHz – 16QAM										
1752.50	87.20	231	1.7	H	13.09	0.30	9.40	22.19	30	-7.81
1752.50	87.02	156	1.2	V	13.49	0.30	9.40	22.59	30	-7.41
LTE Band 4 Channel 20000 – 10MHz – QPSK										
1715.00	87.26	153	1.1	H	13.15	0.30	9.40	22.25	30	-7.75
1715.00	87.25	268	1.4	V	13.72	0.30	9.40	22.82	30	-7.18
LTE Band 4 Channel 20175 – 10MHz – QPSK										
1732.50	86.86	184	1.3	H	12.75	0.30	9.40	21.85	30	-8.15
1732.50	86.86	72	1.5	V	13.33	0.30	9.40	22.43	30	-7.57
LTE Band 4 Channel 20350 – 10MHz – QPSK										
1750.00	87.23	332	2.1	H	13.12	0.30	9.40	22.22	30	-7.78

1750.00	86.88	235	2.0	V	13.35	0.30	9.40	22.45	30	-7.55
LTE Band 4 Channel 20000 – 10MHz – 16QAM										
1715.00	86.93	331	2.2	H	12.82	0.30	9.40	21.92	30	-8.08
1715.00	86.87	325	1.3	V	13.34	0.30	9.40	22.44	30	-7.56
LTE Band 4 Channel 20175 – 10MHz – 16QAM										
1732.50	86.85	93	1.5	H	12.74	0.30	9.40	21.84	30	-8.16
1732.50	87.09	205	1.4	V	13.56	0.30	9.40	22.66	30	-7.34
LTE Band 4 Channel 20350 – 10MHz – 16QAM										
1750.00	87.12	86	1.4	H	13.01	0.30	9.40	22.11	30	-7.89
1750.00	86.87	266	1.2	V	13.34	0.30	9.40	22.44	30	-7.56
LTE Band 4 Channel 20025 – 15MHz – QPSK										
1717.50	86.73	243	1.4	H	12.62	0.30	9.40	21.72	30	-8.28
1717.50	87.00	271	2.1	V	13.47	0.30	9.40	22.57	30	-7.43
LTE Band 4 Channel 20175 – 15MHz – QPSK										
1732.50	87.06	140	2.4	H	12.95	0.30	9.40	22.05	30	-7.95
1732.50	86.92	259	1.4	V	13.39	0.30	9.40	22.49	30	-7.51
LTE Band 4 Channel 20325 – 15MHz – QPSK										
1747.50	87.14	109	1.1	H	13.03	0.30	9.40	22.13	30	-7.87
1747.50	86.79	90	1.5	V	13.26	0.30	9.40	22.36	30	-7.64
LTE Band 4 Channel 20025 – 15MHz – 16QAM										
1717.50	87.02	88	2.4	H	12.91	0.30	9.40	22.01	30	-7.99
1717.50	86.81	227	2.0	V	13.28	0.30	9.40	22.38	30	-7.62
LTE Band 4 Channel 20175 – 15MHz – 16QAM										
1732.50	86.69	154	1.9	H	12.58	0.30	9.40	21.68	30	-8.32
1732.50	87.13	238	1.6	V	13.60	0.30	9.40	22.70	30	-7.30
LTE Band 4 Channel 20325 – 15MHz – 16QAM										
1747.50	87.11	304	1.8	H	13.00	0.30	9.40	22.10	30	-7.90
1747.50	87.02	277	1.0	V	13.49	0.30	9.40	22.59	30	-7.41
LTE Band 4 Channel 20050 – 20MHz – QPSK										
1720.00	88.00	54	1.3	H	13.89	0.30	9.40	22.99	30	-7.01
1720.00	87.50	178	1.2	V	13.97	0.30	9.40	23.07	30	-6.93
LTE Band 4 Channel 20175 – 20MHz – QPSK										
1732.50	88.01	7	1.7	H	13.90	0.30	9.40	23.00	30	-7.00
1732.50	87.46	257	2.4	V	13.93	0.30	9.40	23.03	30	-6.97
LTE Band 4 Channel 20300 – 20MHz – QPSK										
1745.00	88.04	56	1.8	H	13.93	0.30	9.40	23.03	30	-6.97

1745.00	87.50	307	1.8	V	13.97	0.30	9.40	23.07	30	-6.93
LTE Band 4 Channel 20050 – 20MHz – 16QAM										
1720.00	88.00	321	1.3	H	13.89	0.30	9.40	22.99	30	-7.01
1720.00	87.59	251	1.3	V	14.06	0.30	9.40	23.16	30	-6.84
LTE Band 4 Channel 20175 – 20MHz – 16QAM										
1732.50	88.05	121	1.5	H	13.94	0.30	9.40	23.04	30	-6.96
1732.50	87.63	110	1.0	V	14.10	0.30	9.40	23.20	30	-6.80
LTE Band 4 Channel 20300 – 20MHz – 16QAM										
1745.00	88.03	189	1.6	H	13.92	0.30	9.40	23.02	30	-6.98
1745.00	87.51	35	1.7	V	13.98	0.30	9.40	23.08	30	-6.92

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	94.30	160	1.1	H	23.30	0.20	0.00	23.10	34.77	-11.67
699.70	95.80	183	1.3	V	23.52	0.20	0.00	23.32	34.77	-11.45
LTE Band 12 Channel 23095 – 1.4MHz – QPSK										
707.50	94.38	185	2.5	H	23.38	0.20	0.00	23.18	34.77	-11.59
707.50	95.60	31	1.3	V	23.32	0.20	0.00	23.12	34.77	-11.65
LTE Band 12 Channel 23173 – 1.4MHz – QPSK										
715.30	94.50	264	1.6	H	23.50	0.20	0.00	23.30	34.77	-11.47
715.30	95.40	8	1.7	V	23.12	0.20	0.00	22.92	34.77	-11.85
LTE Band 12 Channel 23017 – 1.4MHz – 16QAM										
699.70	94.25	338	2.3	H	23.25	0.20	0.00	23.05	34.77	-11.72
699.70	95.80	89	2.1	V	23.52	0.20	0.00	23.32	34.77	-11.45
LTE Band 12 Channel 23095 – 1.4MHz – 16QAM										
707.50	93.95	207	1.0	H	22.95	0.20	0.00	22.75	34.77	-12.02
707.50	95.60	64	2.3	V	23.32	0.20	0.00	23.12	34.77	-11.65
LTE Band 12 Channel 23173 – 1.4MHz – 16QAM										
715.30	94.61	23	1.4	H	23.61	0.20	0.00	23.41	34.77	-11.36
715.30	95.60	256	1.7	V	23.32	0.20	0.00	23.12	34.77	-11.65
LTE Band 12 Channel 23025 – 3MHz – QPSK										
700.50	93.86	158	2.2	H	22.86	0.20	0.00	22.66	34.77	-12.11
700.50	95.70	270	2.4	V	23.42	0.20	0.00	23.22	34.77	-11.55

LTE Band 12 Channel 23095 – 3MHz – QPSK										
707.50	94.16	142	1.0	H	23.16	0.20	0.00	22.96	34.77	-11.81
707.50	95.60	242	1.5	V	23.32	0.20	0.00	23.12	34.77	-11.65
LTE Band 12 Channel 23165 – 3MHz – QPSK										
714.50	94.16	312	1.8	H	23.16	0.20	0.00	22.96	34.77	-11.81
714.50	95.87	311	1.1	V	23.59	0.20	0.00	23.39	34.77	-11.38
LTE Band 12 Channel 23025 – 3MHz – 16QAM										
700.50	94.18	33	2.5	H	23.18	0.20	0.00	22.98	34.77	-11.79
700.50	95.49	272	1.8	V	23.21	0.20	0.00	23.01	34.77	-11.76
LTE Band 12 Channel 23095 – 3MHz – 16QAM										
707.50	94.23	190	1.4	H	23.23	0.20	0.00	23.03	34.77	-11.74
707.50	95.48	11	2.2	V	23.20	0.20	0.00	23.00	34.77	-11.77
LTE Band 12 Channel 23165 – 3MHz – 16QAM										
714.50	94.29	152	1.0	H	23.29	0.20	0.00	23.09	34.77	-11.68
714.50	95.63	142	1.6	V	23.35	0.20	0.00	23.15	34.77	-11.62
LTE Band 12 Channel 23035 – 5MHz – QPSK										
701.50	94.31	61	1.8	H	23.31	0.20	0.00	23.11	34.77	-11.66
701.50	95.80	273	1.6	V	23.52	0.20	0.00	23.32	34.77	-11.45
LTE Band 12 Channel 23095 – 5MHz – QPSK										
707.50	95.00	67	1.6	H	24.00	0.20	0.00	23.80	34.77	-10.97
707.50	95.68	74	1.3	V	23.40	0.20	0.00	23.20	34.77	-11.57
LTE Band 12 Channel 23155 – 5MHz – QPSK										
713.50	94.01	94	1.7	H	23.01	0.20	0.00	22.81	34.77	-11.96
713.50	95.30	68	1.4	V	23.02	0.20	0.00	22.82	34.77	-11.95
LTE Band 12 Channel 23035 – 5MHz – 16QAM										
701.50	94.73	148	2.0	H	23.73	0.20	0.00	23.53	34.77	-11.24
701.50	95.90	355	2.1	V	23.62	0.20	0.00	23.42	34.77	-11.35
LTE Band 12 Channel 23095 – 5MHz – 16QAM										
707.50	94.62	21	1.6	H	23.62	0.20	0.00	23.42	34.77	-11.35
707.50	95.89	360	1.4	V	23.61	0.20	0.00	23.41	34.77	-11.36
LTE Band 12 Channel 23155 – 5MHz – 16QAM										
713.50	94.47	81	1.6	H	23.47	0.20	0.00	23.27	34.77	-11.50
713.50	95.87	50	2.3	V	23.59	0.20	0.00	23.39	34.77	-11.38
LTE Band 12 Channel 23060 – 10MHz – QPSK										
704.00	95.80	303	2.3	H	24.80	0.20	0.00	24.60	34.77	-10.17
704.00	97.00	221	2.0	V	24.72	0.20	0.00	24.52	34.77	-10.25

LTE Band 12 Channel 23095 – 10MHz – QPSK										
707.50	95.69	343	1.8	H	24.69	0.20	0.00	24.49	34.77	-10.28
707.50	97.10	333	1.6	V	24.82	0.20	0.00	24.62	34.77	-10.15
LTE Band 12 Channel 23130 – 10MHz – QPSK										
711.00	95.71	63	2.4	H	24.71	0.20	0.00	24.51	34.77	-10.26
711.00	97.20	316	2.2	V	24.92	0.20	0.00	24.72	34.77	-10.05
LTE Band 12 Channel 23060 – 10MHz – 16QAM										
704.00	95.63	219	1.9	H	24.63	0.20	0.00	24.43	34.77	-10.34
704.00	97.06	4	2.2	V	24.78	0.20	0.00	24.58	34.77	-10.19
LTE Band 12 Channel 23095 – 10MHz – 16QAM										
707.50	95.66	52	1.4	H	24.66	0.20	0.00	24.46	34.77	-10.31
707.50	97.05	109	2.3	V	24.77	0.20	0.00	24.57	34.77	-10.20
LTE Band 12 Channel 23130 – 10MHz – 16QAM										
711.00	95.69	164	1.6	H	24.69	0.20	0.00	24.49	34.77	-10.28
711.00	97.03	219	1.1	V	24.75	0.20	0.00	24.55	34.77	-10.22

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 **:**

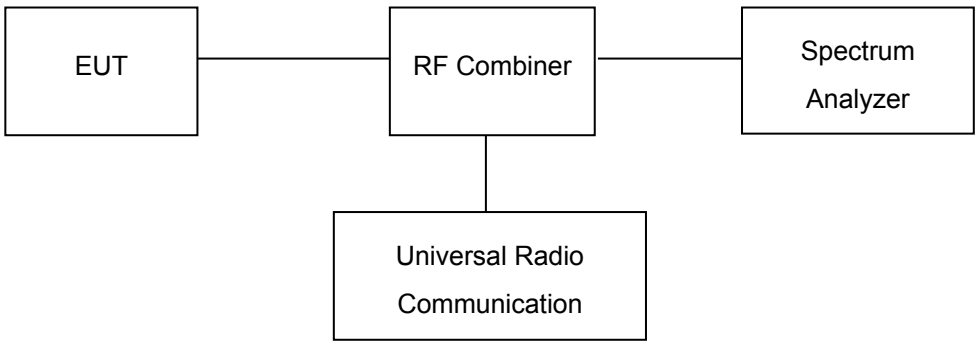
Temperature: 22.5 °C

Humidity: 52.3% 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 Annex B. LTE Peak to Average Ratio for LTE Band 2/4/12.

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

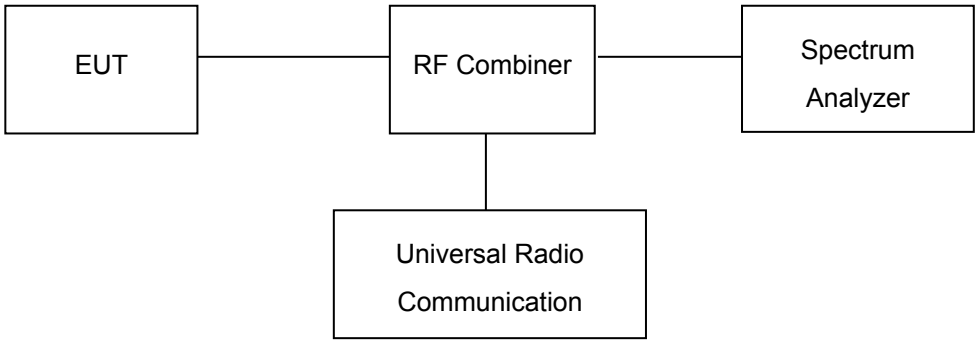
9.1 EUT Operation

Operating Environment **:**

Temperature:	22.5 °C
Humidity:	52.3% 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

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	1.09	1.27
			16QAM	1.09	1.27
1.4	18900	1880	QPSK	1.09	1.29
			16QAM	1.09	1.29
1.4	19193	1909.3	QPSK	1.09	1.28
			16QAM	1.09	1.28
3	18615	1851.5	QPSK	2.68	2.89
			16QAM	2.68	2.9
3	18900	1880	QPSK	2.69	2.94
			16QAM	2.68	2.93
3	19185	1908.5	QPSK	2.68	2.91
			16QAM	2.68	2.92
5	18625	1852.5	QPSK	4.49	4.86
			16QAM	4.49	4.84
5	18900	1880	QPSK	4.49	4.86
			16QAM	4.49	4.87
5	19175	1907.5	QPSK	4.48	4.84
			16QAM	4.48	4.83
10	18650	1855	QPSK	8.92	9.41
			16QAM	8.91	9.39
10	18900	1880	QPSK	8.9	9.41
			16QAM	8.9	9.39
10	19150	1905	QPSK	8.89	9.3
			16QAM	8.88	9.31
15	18675	1857.5	QPSK	13.43	14.25
			16QAM	13.43	14.24
15	18900	1880	QPSK	13.41	14.24
			16QAM	13.39	14.23
15	19125	1902.5	QPSK	13.37	14.2
			16QAM	13.38	14.2
20	18700	1860	QPSK	17.86	18.75

			16QAM	17.86	18.74
20	18900	1880	QPSK	17.79	18.72
			16QAM	17.79	18.74
20	19100	1900	QPSK	17.83	18.72
			16QAM	17.84	18.71

LTE Band 4 (Part 27):

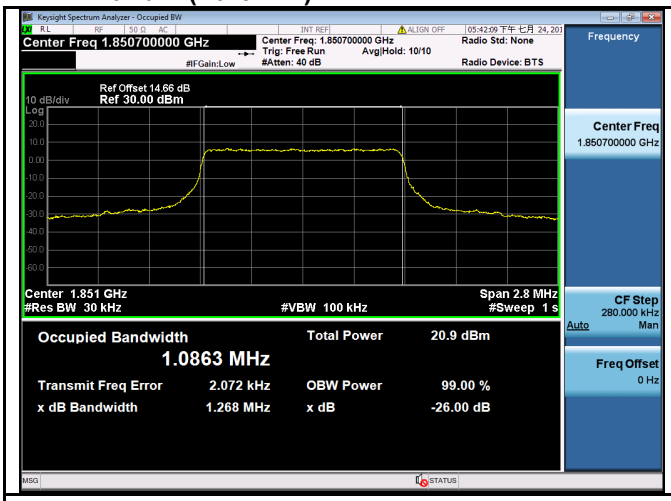
BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
1.4	19957	1710.7	QPSK	1.09	1.25
			16QAM	1.08	1.25
1.4	2.175	1732.5	QPSK	1.09	1.26
			16QAM	1.09	1.25
1.4	20393	1754.3	QPSK	1.09	1.33
			16QAM	1.09	1.29
3	19965	1711.5	QPSK	2.68	2.89
			16QAM	2.68	2.88
3	2.175	1732.5	QPSK	2.68	2.91
			16QAM	2.68	2.91
3	2.385	1753.5	QPSK	2.69	2.94
			16QAM	2.68	2.93
5	19975	1712.5	QPSK	4.49	4.83
			16QAM	4.49	4.81
5	20175	1732.5	QPSK	4.49	4.83
			16QAM	4.49	4.85
5	20375	1752.5	QPSK	4.48	4.85
			16QAM	4.49	4.85
10	2000	1715	QPSK	8.91	9.34
			16QAM	8.9	9.35
10	20175	1732.5	QPSK	8.9	9.36
			16QAM	8.89	9.32
10	20350	1750	QPSK	8.9	9.33
			16QAM	8.89	9.32
15	20025	1717.5	QPSK	13.4	14.21
			16QAM	13.4	14.21
15	20175	1732.5	QPSK	13.42	14.21

			16QAM	13.4	14.21
15	20325	1747.5	QPSK	13.41	14.21
			16QAM	13.41	14.21
20	20050	1720	QPSK	17.77	18.69
			16QAM	17.78	18.7
20	20175	1732.5	QPSK	17.82	18.71
			16QAM	17.81	18.71
20	20300	1745	QPSK	17.87	18.76
			16QAM	17.87	18.74

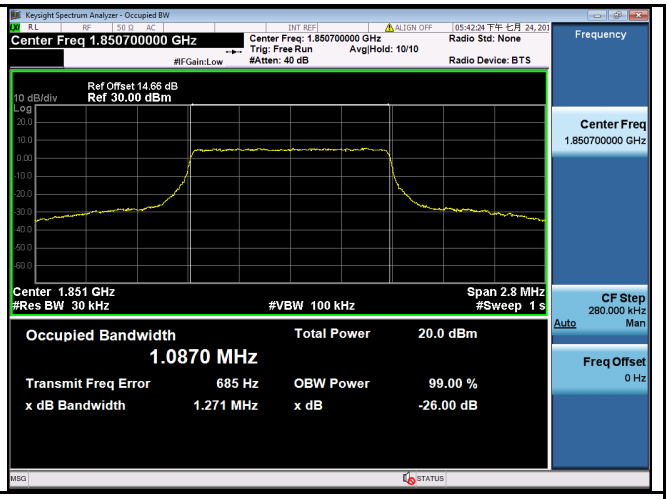
LTE Band 12 (Part 27):

BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
1.4	23017	699.7	QPSK	1.09	1.25
			16QAM	1.09	1.26
1.4	23095	707.5	QPSK	1.09	1.24
			16QAM	1.09	1.26
1.4	23173	715.3	QPSK	1.09	1.25
			16QAM	1.09	1.24
3	23025	700.5	QPSK	2.68	2.89
			16QAM	2.68	2.87
3	23095	707.5	QPSK	2.68	2.89
			16QAM	2.68	2.87
3	23165	714.5	QPSK	2.69	2.91
			16QAM	2.68	2.91
5	23035	701.5	QPSK	4.49	4.85
			16QAM	4.49	4.8
5	23095	707.5	QPSK	4.49	4.82
			16QAM	4.49	4.82
5	23155	713.5	QPSK	4.49	4.82
			16QAM	4.49	4.84
10	23060	704	QPSK	8.93	9.43
			16QAM	8.93	9.42
10	23095	707.5	QPSK	8.9	9.34
			16QAM	8.9	9.3
10	23130	711	QPSK	8.89	9.31
			16QAM	8.89	9.3

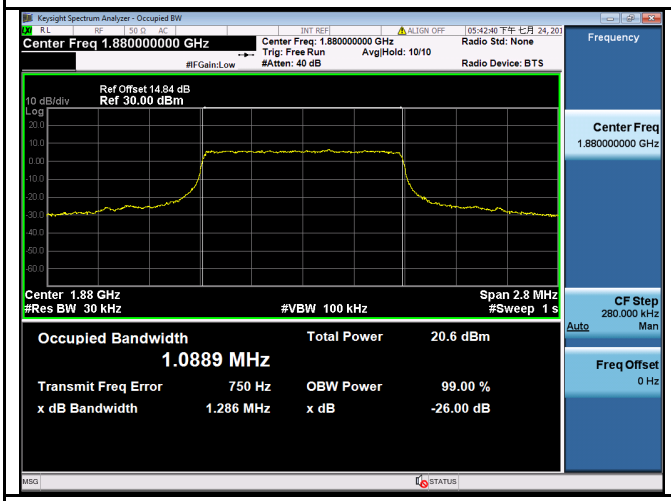
Test Plots
LTE Band 2 (Part 24E)



LTE band 2 - Low CH QPSK-1.4

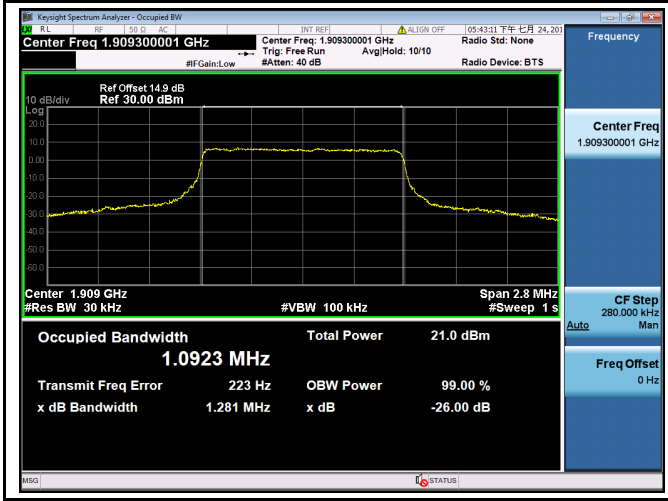


LTE band 2 - Low CH 16QAM-1.4

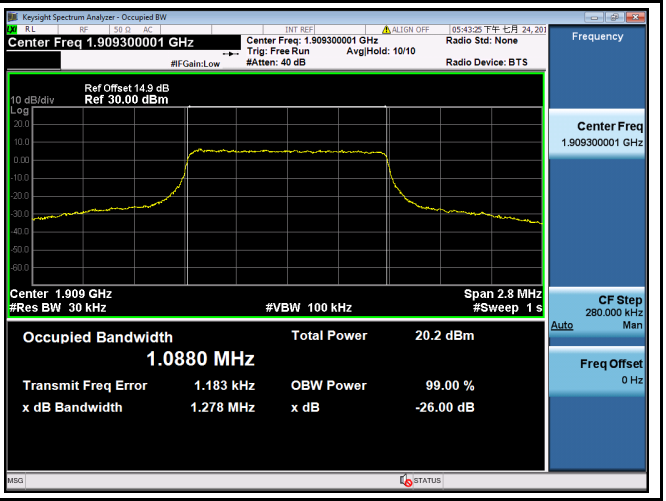


LTE band 2 - Middle CH QPSK-1.4

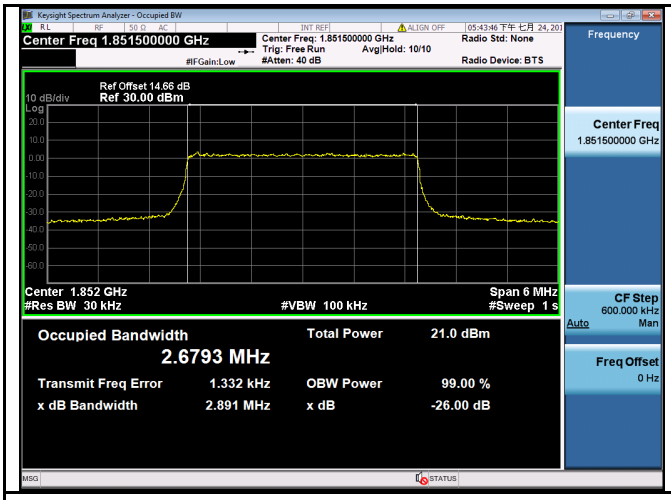
LTE band 2 - Middle CH 16QAM-1.4



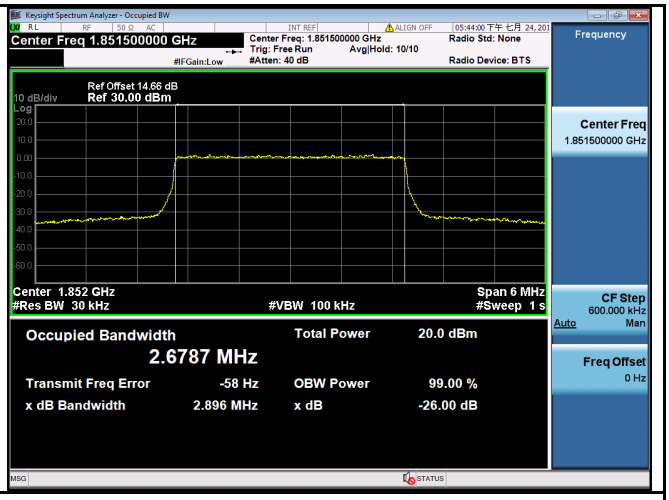
LTE band 2 - High CH QPSK-1.4



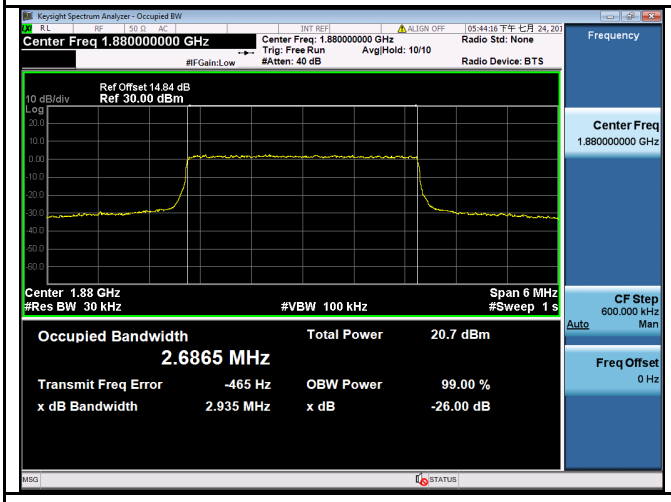
LTE band 2 - High CH 16QAM-1.4



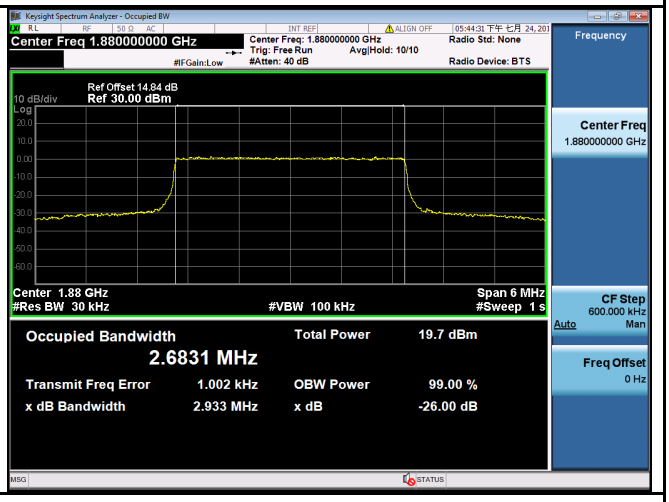
LTE band 2 - Low CH QPSK-3



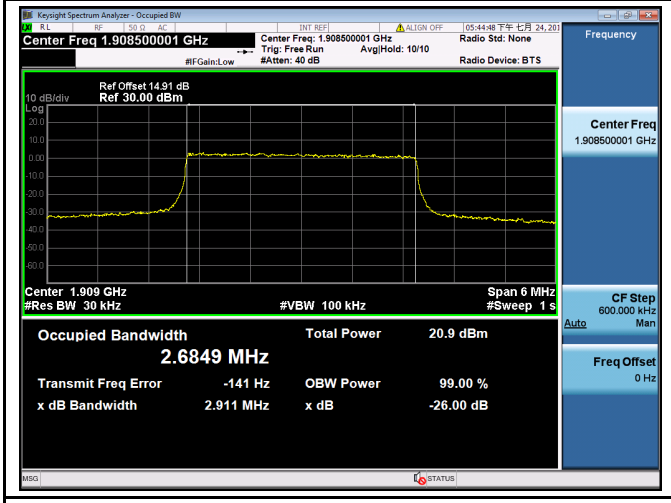
LTE band 2 - Low CH 16QAM-3



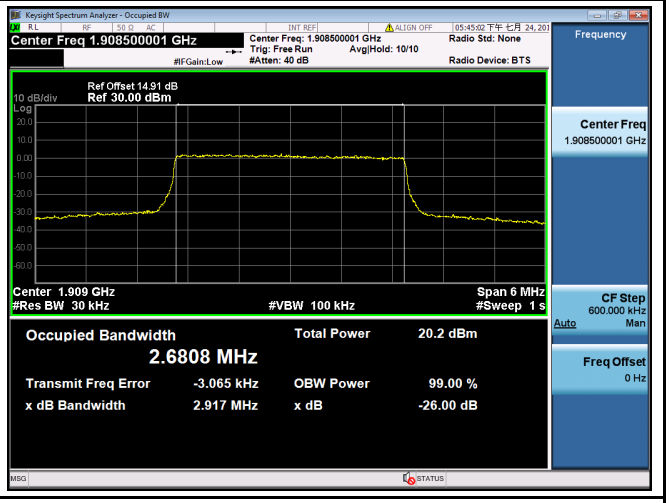
LTE band 2 - Middle CH QPSK-3



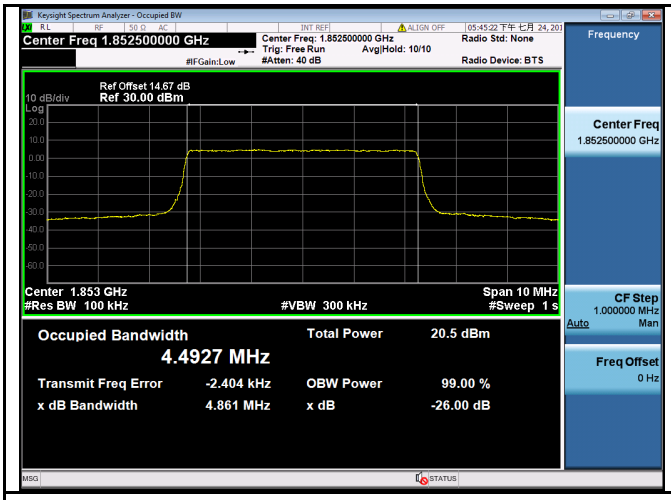
LTE band 2 - Middle CH 16QAM-3



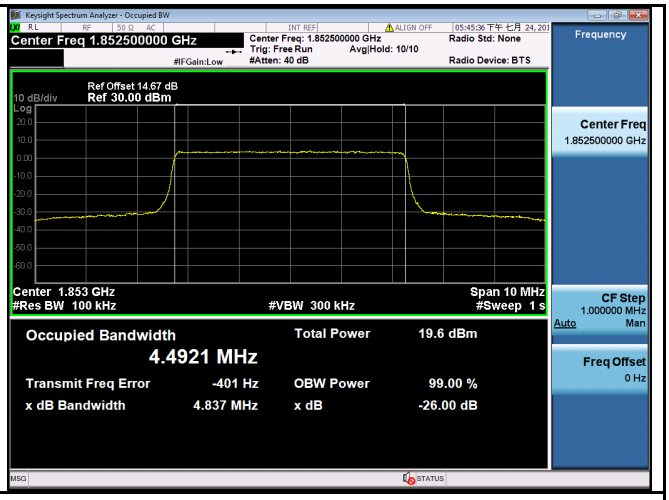
LTE band 2 - High CH QPSK-3



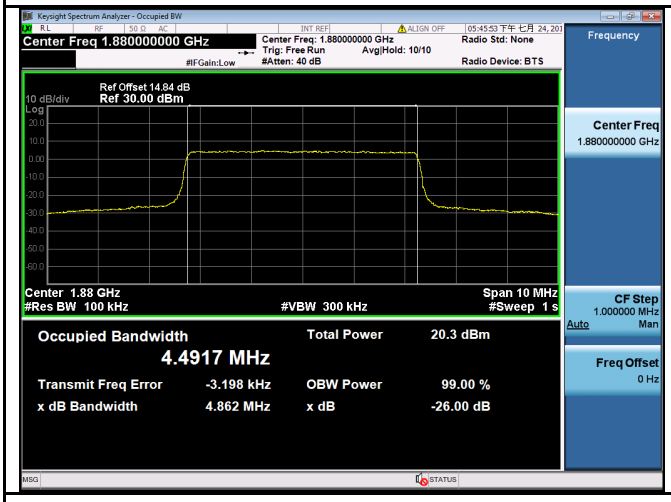
LTE band 2 - High CH 16QAM-3



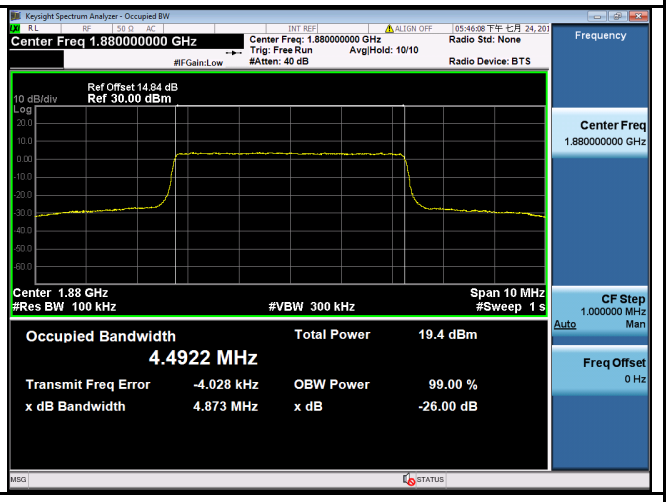
LTE band 2 - Low CH QPSK-5



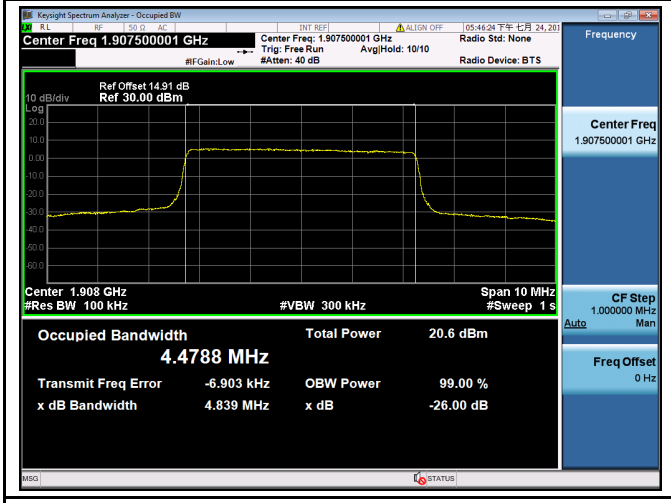
LTE band 2 - Low CH 16QAM-5



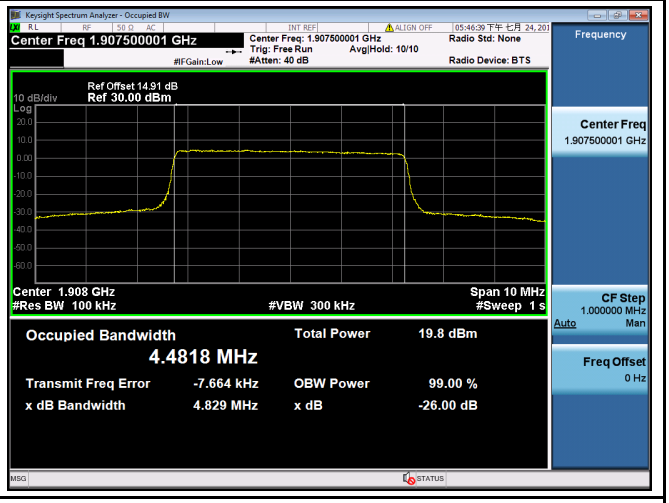
LTE band 2 - Middle CH QPSK-5



LTE band 2 - Middle CH 16QAM-5

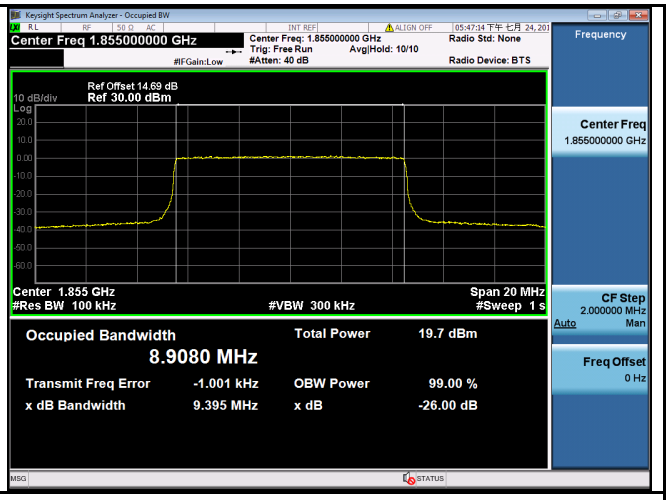


LTE band 2 - High CH QPSK-5

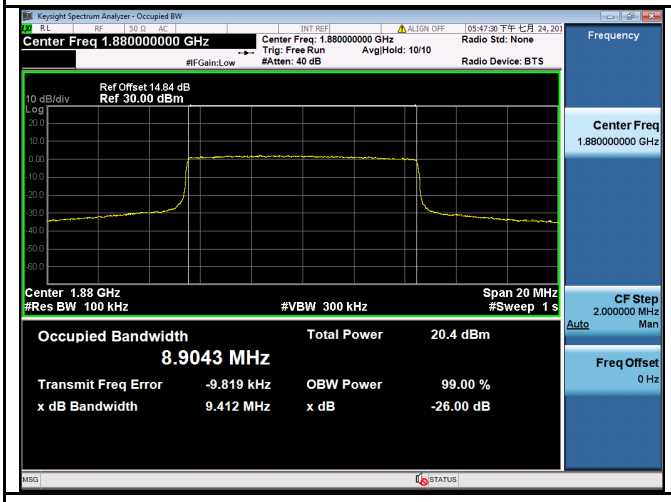


LTE band 2 - High CH 16QAM-5

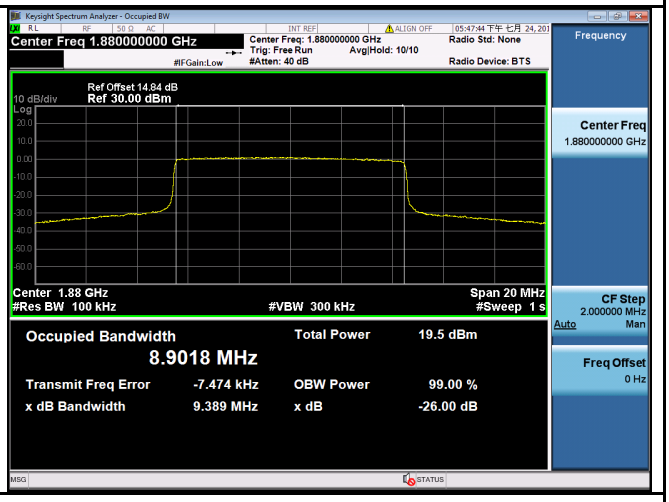
LTE band 2 - Low CH QPSK-10



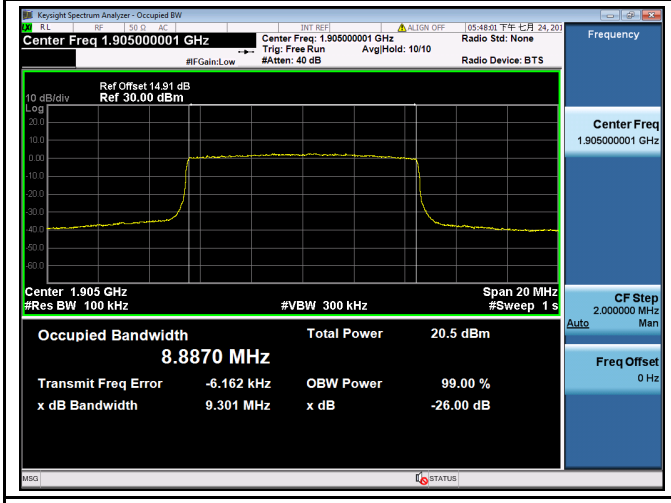
LTE band 2 - Low CH 16QAM-10



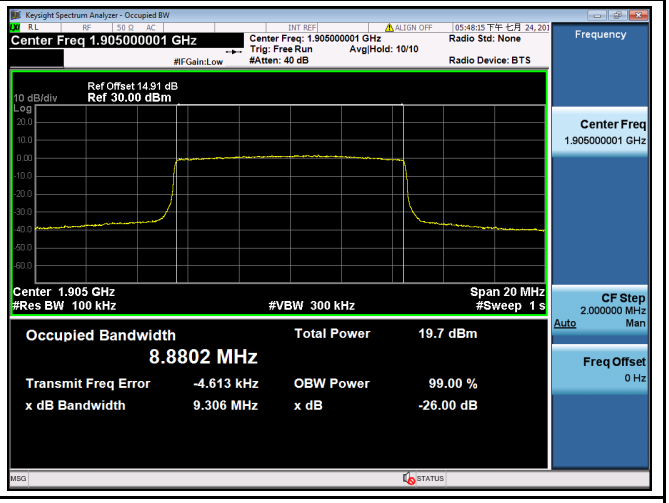
LTE band 2 - Middle CH QPSK-10



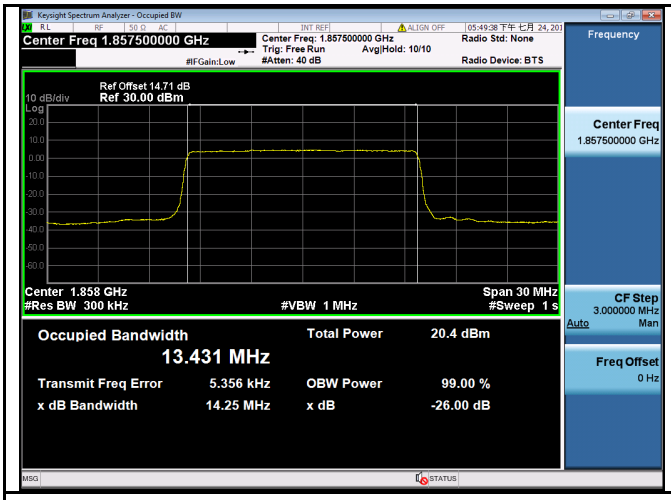
LTE band 2 - Middle CH 16QAM-10



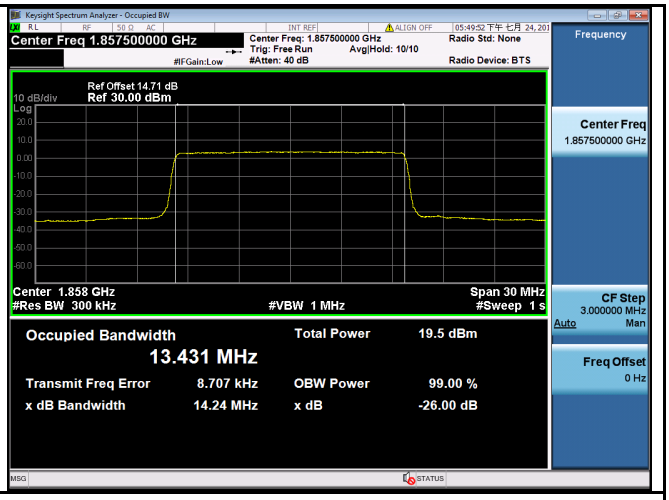
LTE band 2 - High CH QPSK-10



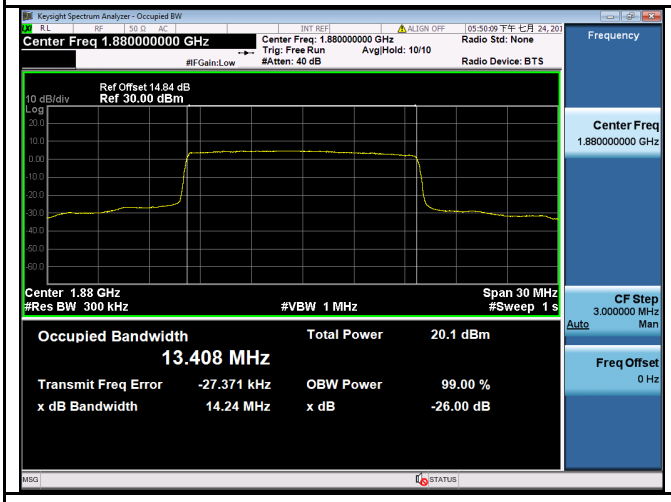
LTE band 2 - High CH 16QAM-10



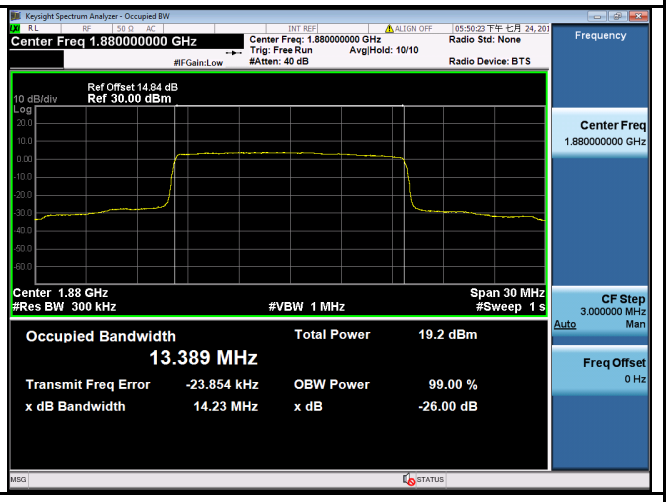
LTE band 2 - Low CH QPSK-15



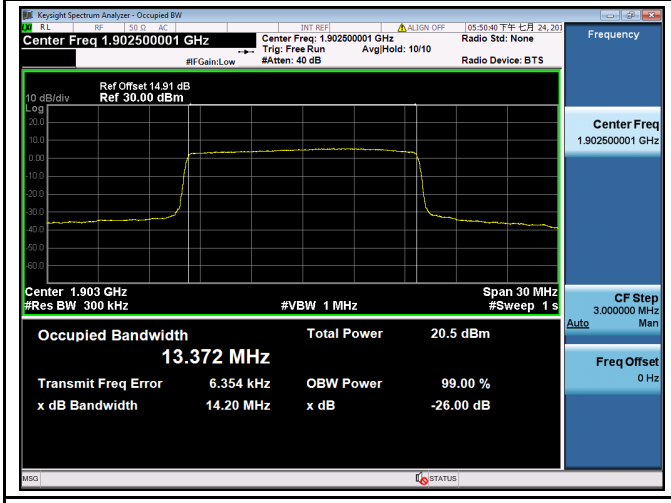
LTE band 2 - Low CH 16QAM-15



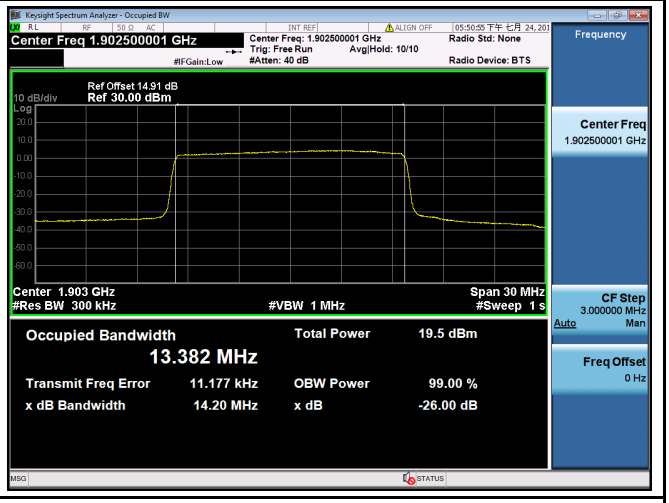
LTE band 2 - Middle CH QPSK-15



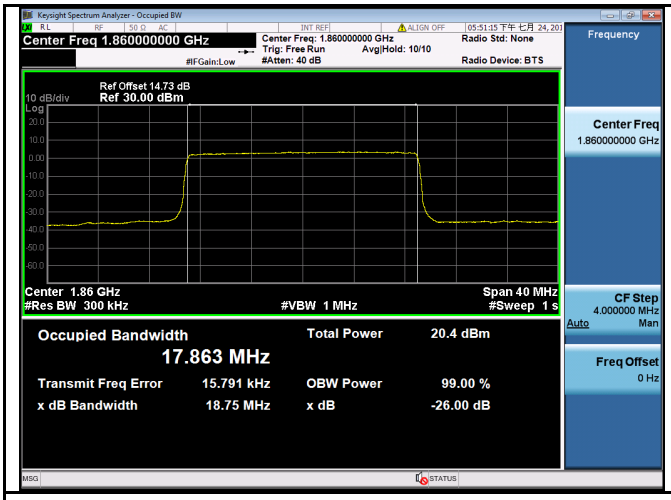
LTE band 2 - Middle CH 16QAM-15



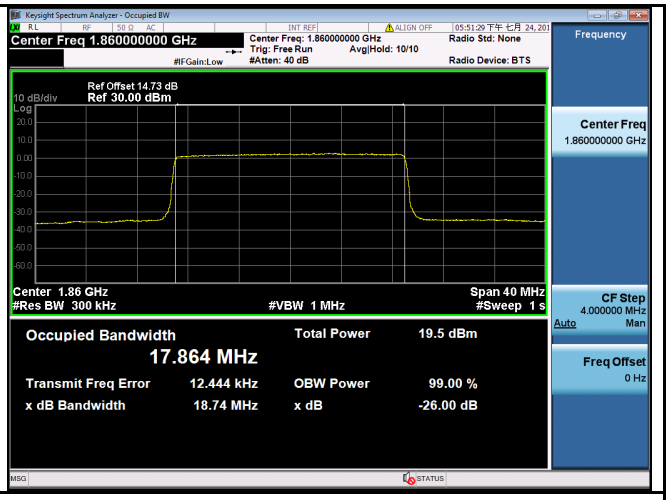
LTE band 2 - High CH QPSK-15



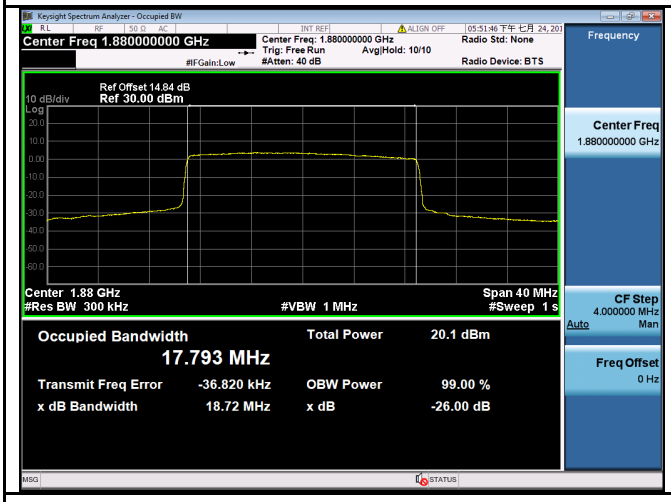
LTE band 2 - High CH 16QAM-15



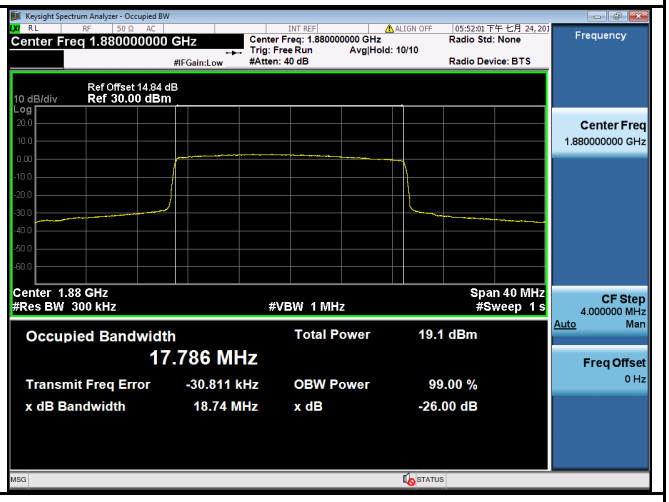
LTE band 2 - Low CH QPSK-20



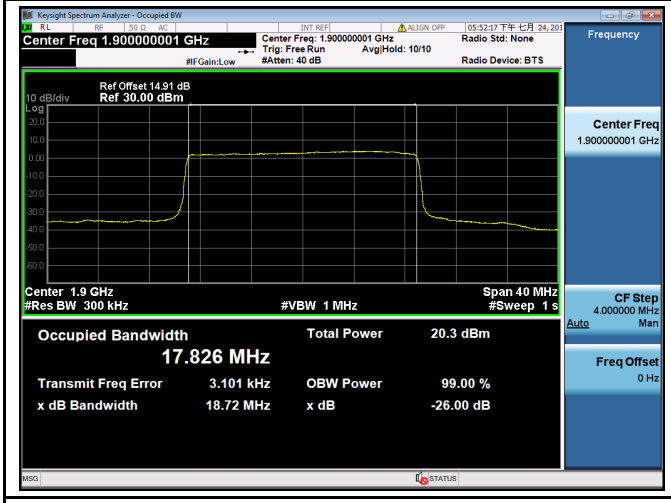
LTE band 2 - Low CH 16QAM-20



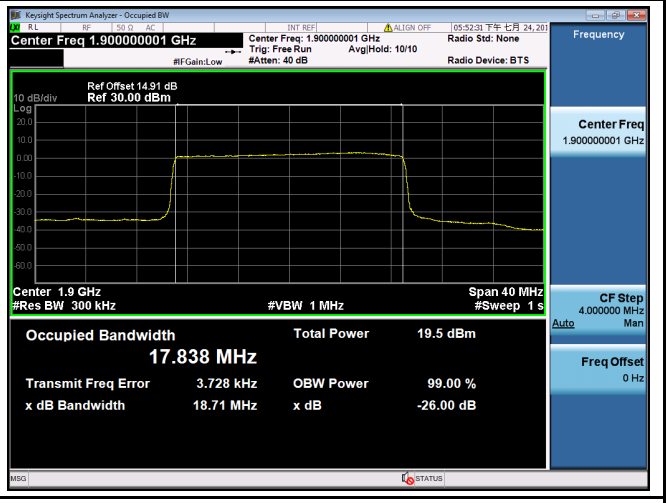
LTE band 2 - Middle CH QPSK-20



LTE band 2 - Middle CH 16QAM-20

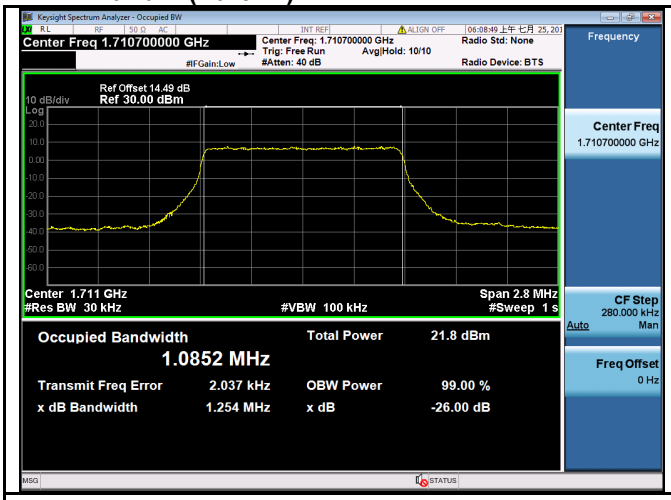


LTE band 2 - High CH QPSK-20

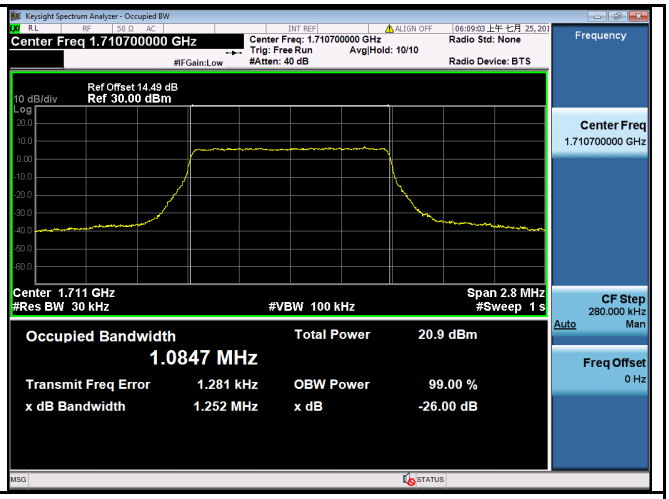


LTE band 2 - High CH 16QAM-20

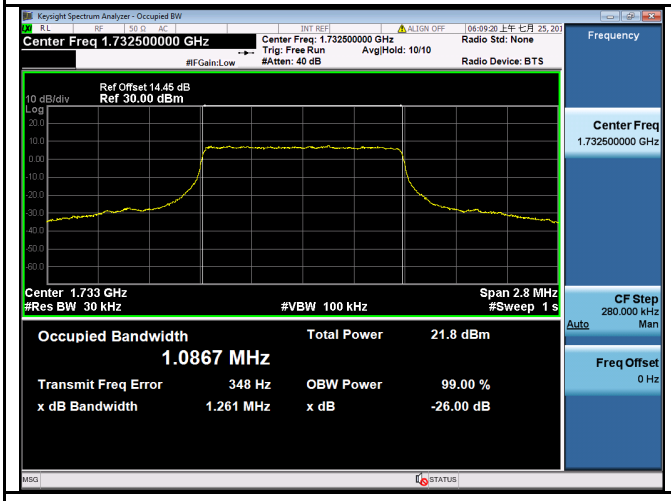
LTE Band 4 (Part 27)



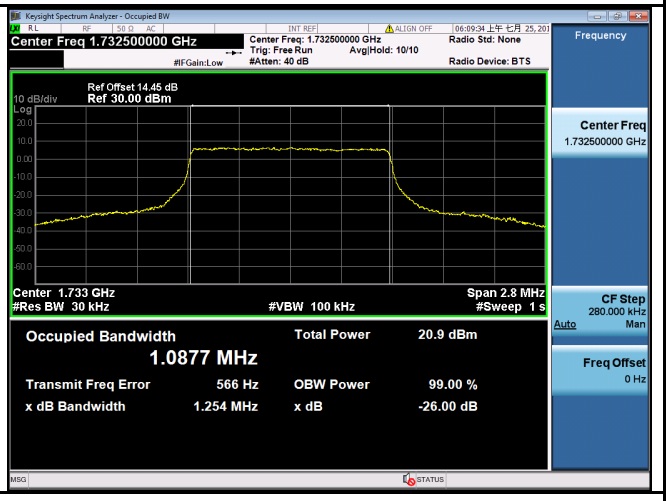
LTE band 4 - Low CH QPSK-1.4



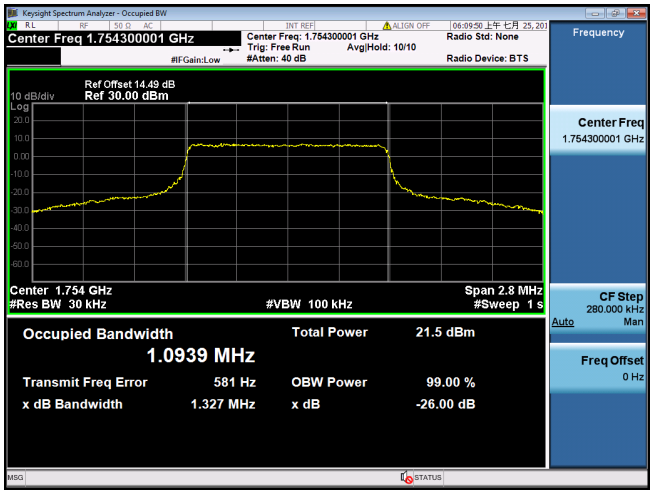
LTE band 4 - Low CH 16QAM-1.4



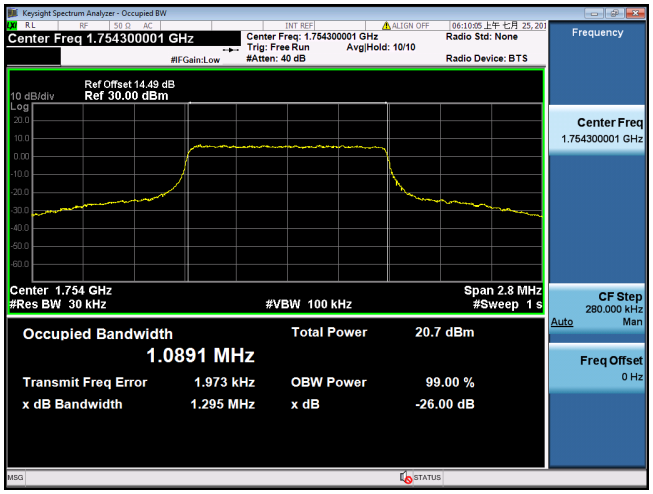
LTE band 4 - Middle CH QPSK-1.4



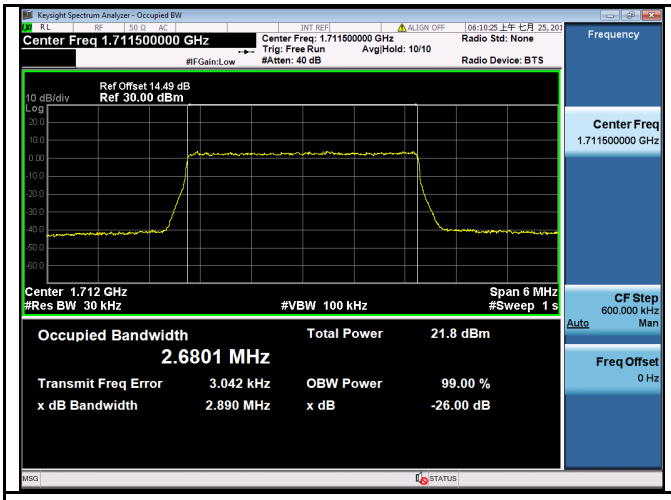
LTE band 4 - Middle CH 16QAM-1.4



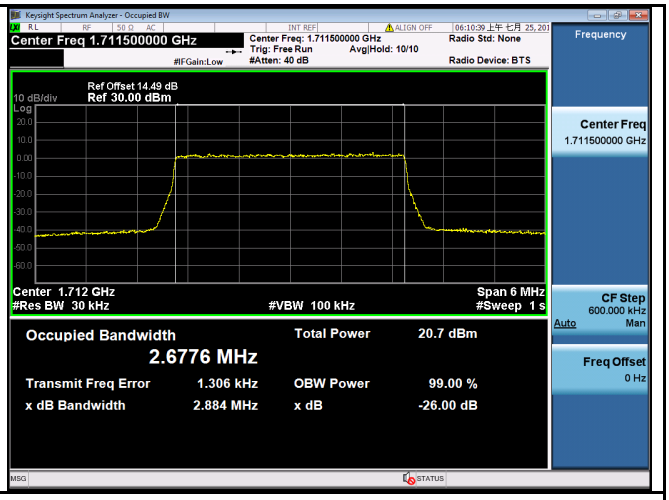
LTE band 4 - High CH QPSK-1.4



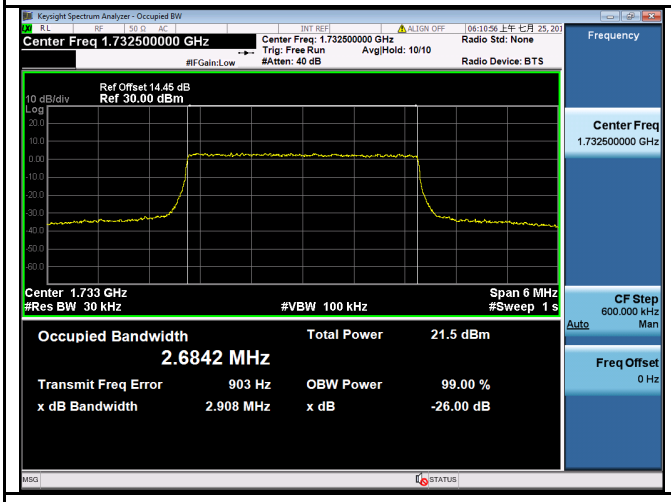
LTE band 4 - High CH 16QAM-1.4



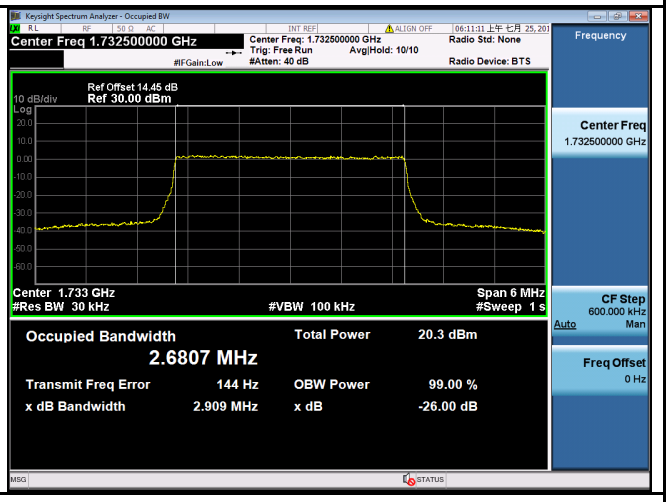
LTE band 4 - Low CH QPSK-3



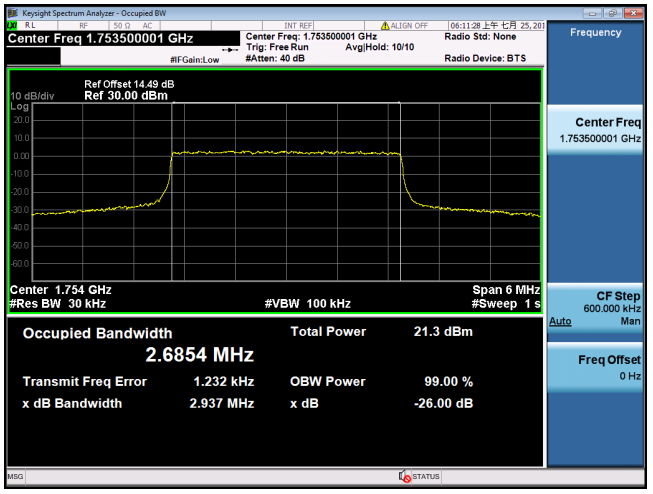
LTE band 4 - Low CH 16QAM-3



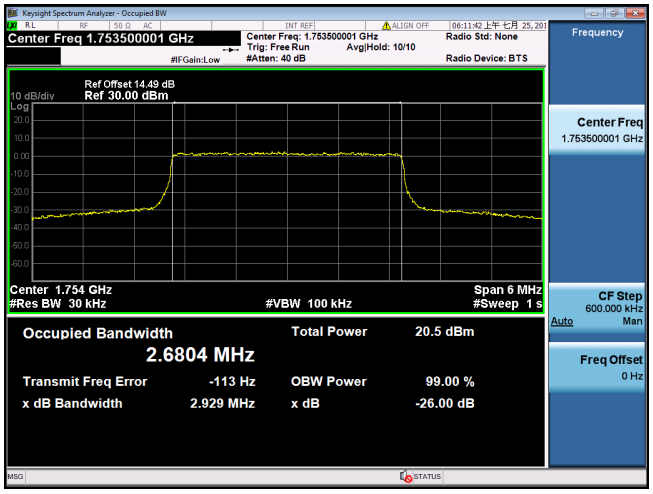
LTE band 4 - Middle CH QPSK-3



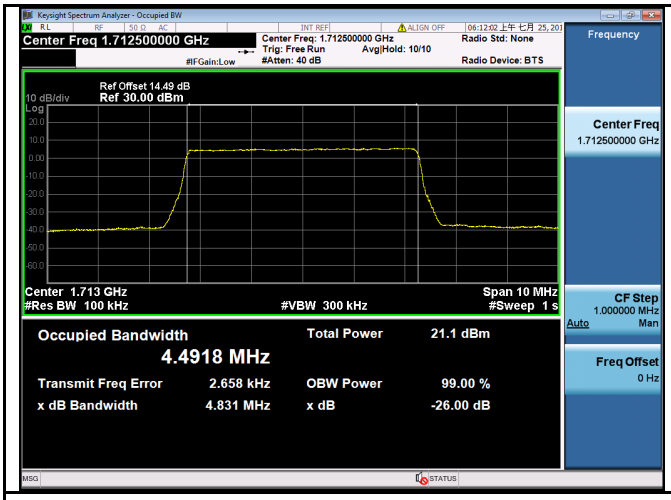
LTE band 4 - Middle CH 16QAM-3



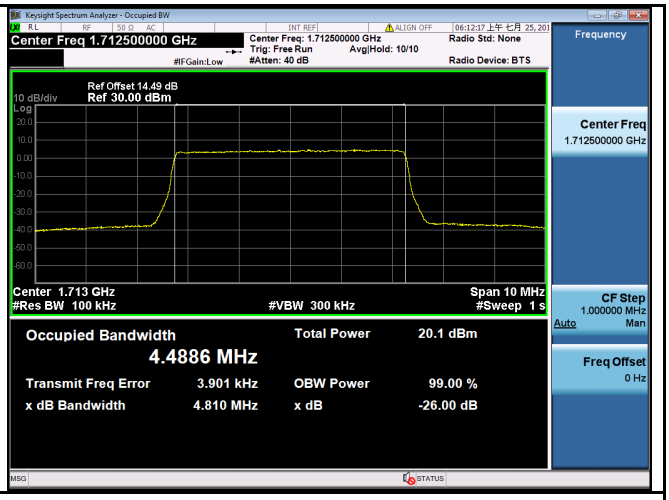
LTE band 4 - High CH QPSK-3



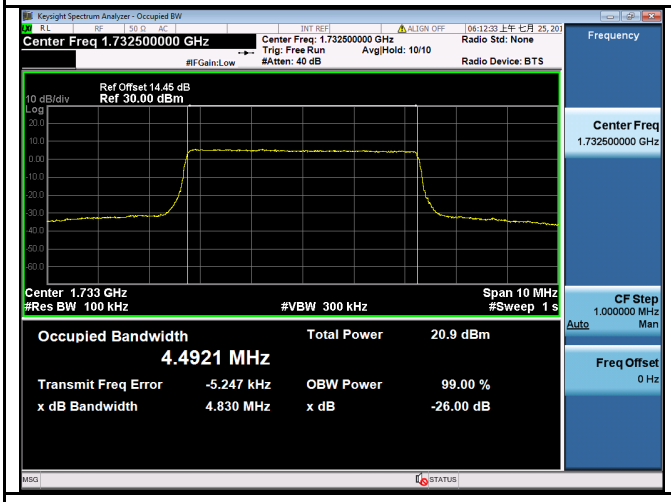
LTE band 4 - High CH 16QAM-3



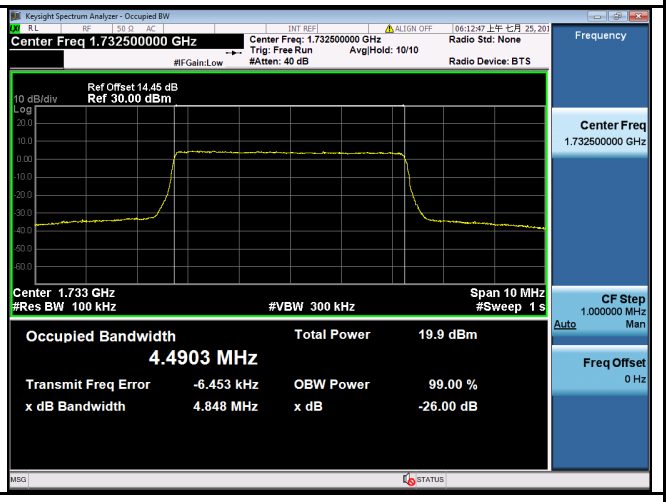
LTE band 4 - Low CH QPSK-5



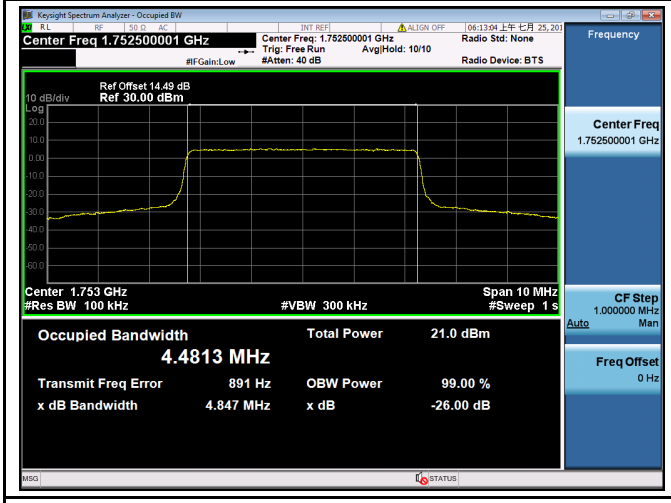
LTE band 4 - Low CH 16QAM-5



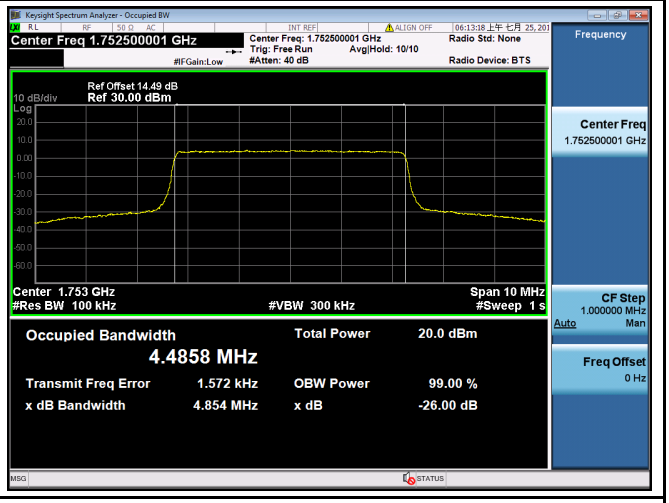
LTE band 4 - Middle CH QPSK-5



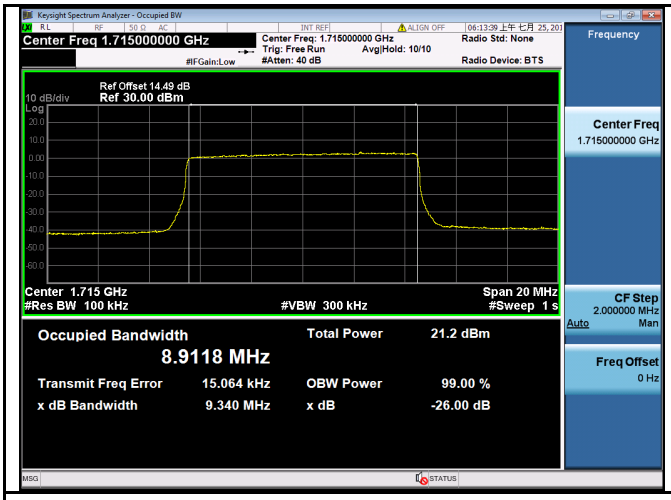
LTE band 4 - Middle CH 16QAM-5



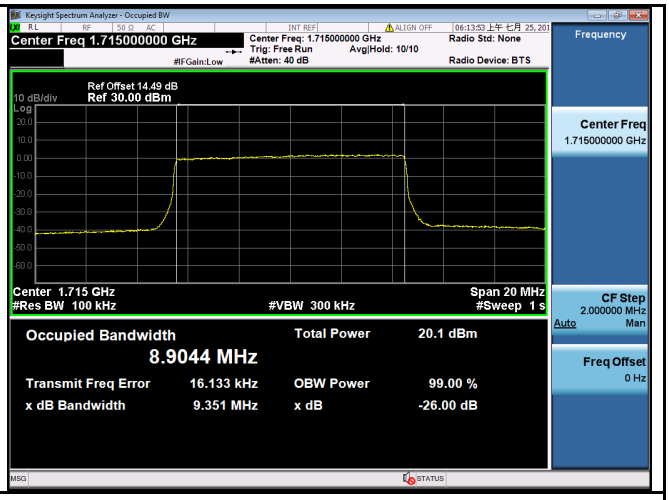
LTE band 4 - High CH QPSK-5



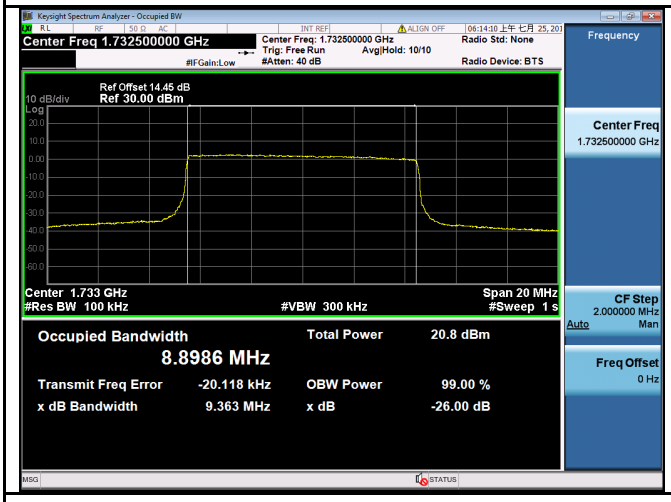
LTE band 4 - High CH 16QAM-5



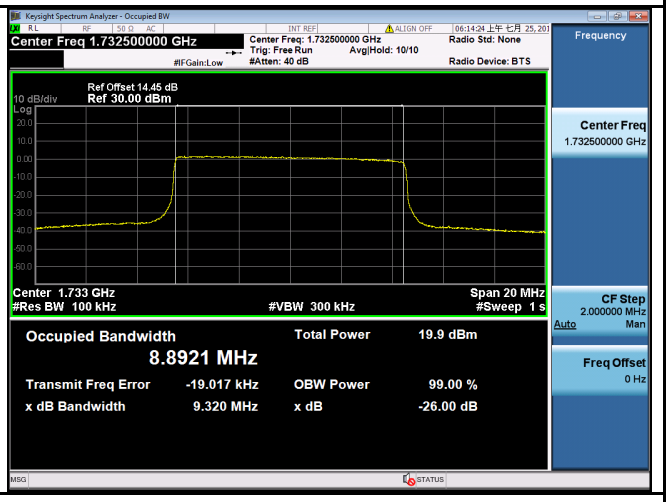
LTE band 4 - Low CH QPSK-10



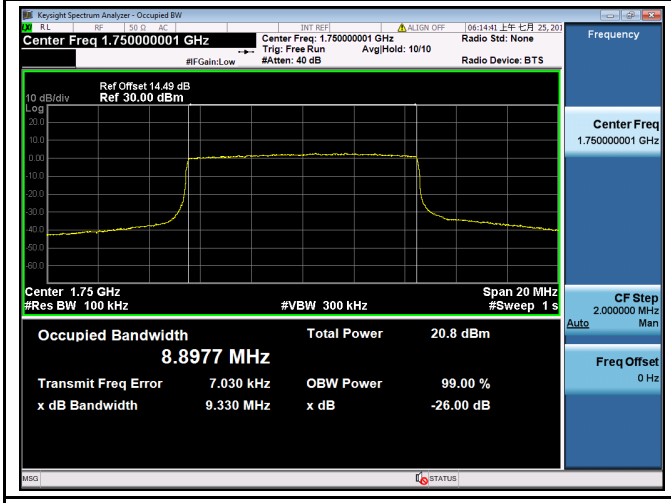
LTE band 4 - Low CH 16QAM-10



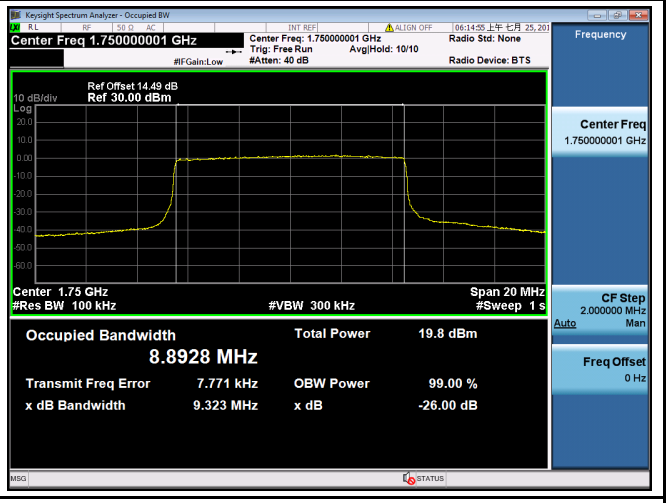
LTE band 4 - Middle CH QPSK-10



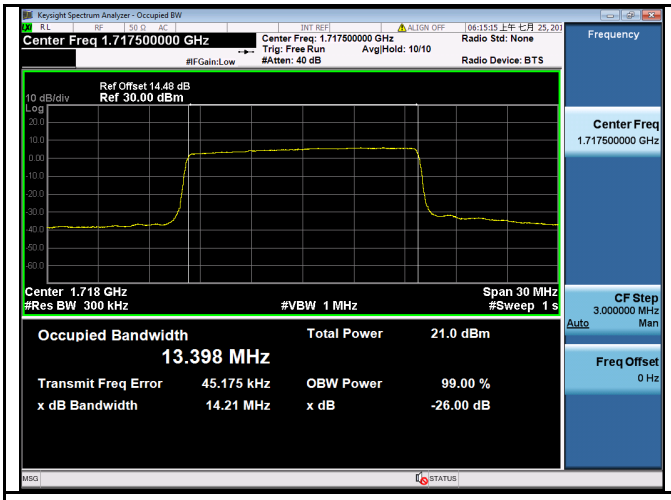
LTE band 4 - Middle CH 16QAM-10



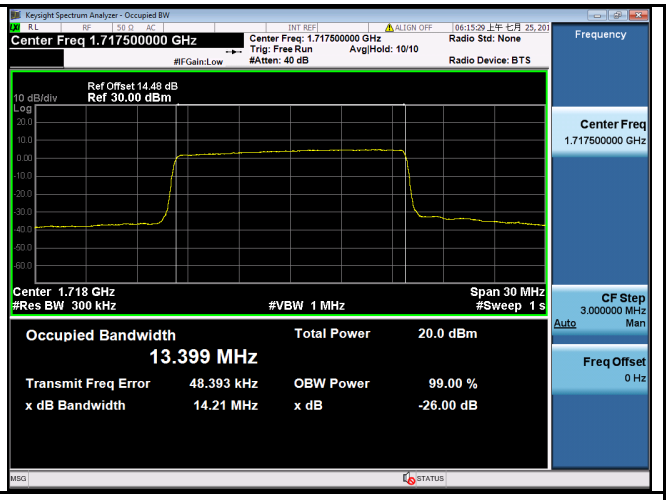
LTE band 4 - High CH QPSK-10



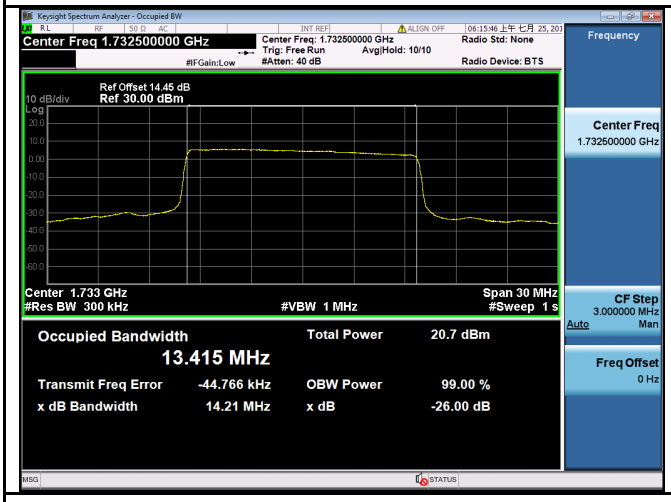
LTE band 4 - High CH 16QAM-10



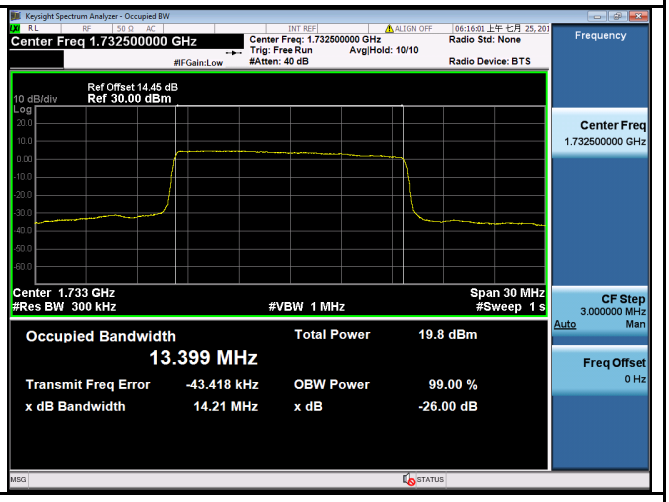
LTE band 4 - Low CH QPSK-15



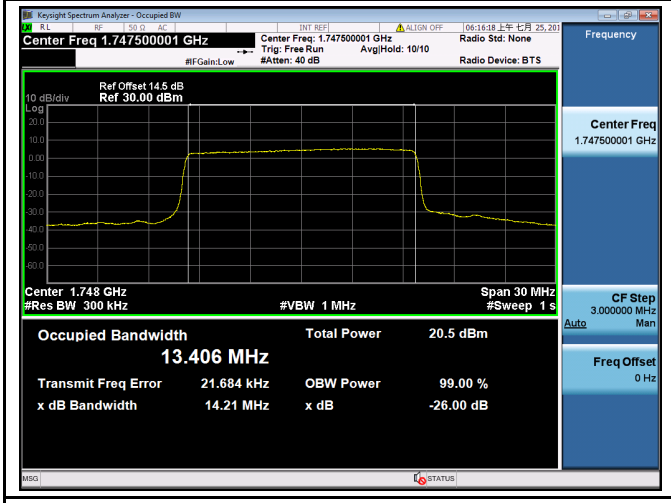
LTE band 4 - Low CH 16QAM-15



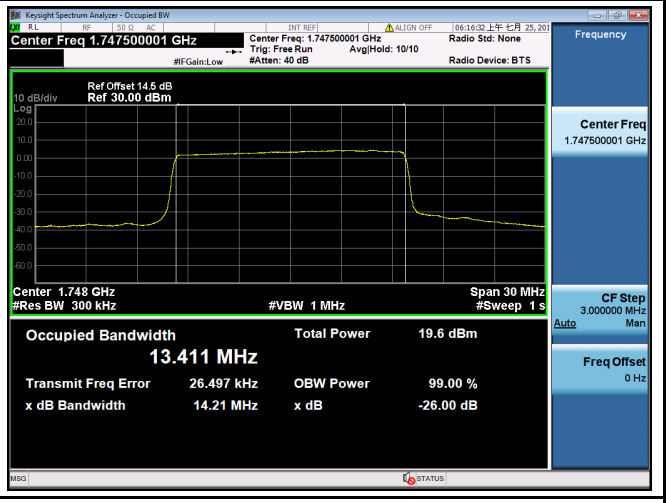
LTE band 4 - Middle CH QPSK-15



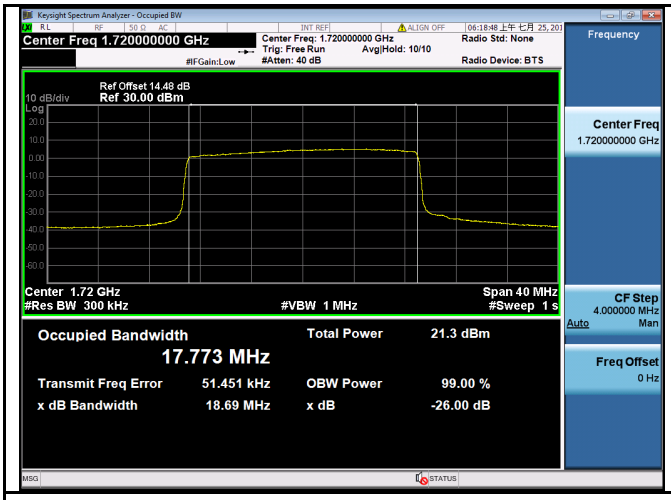
LTE band 4 - Middle CH 16QAM-15



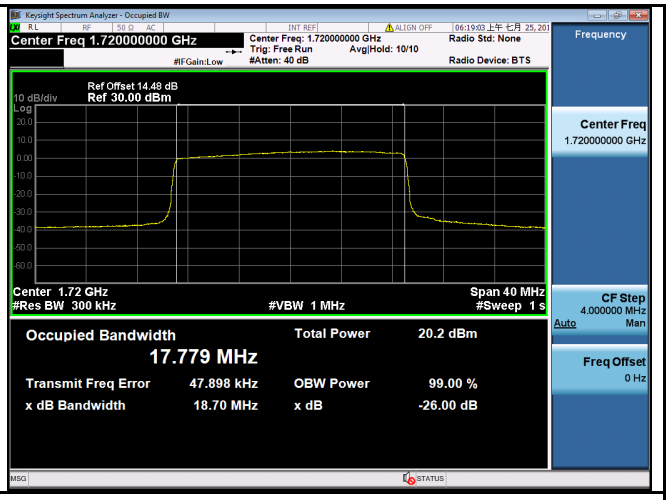
LTE band 4 - High CH QPSK-15



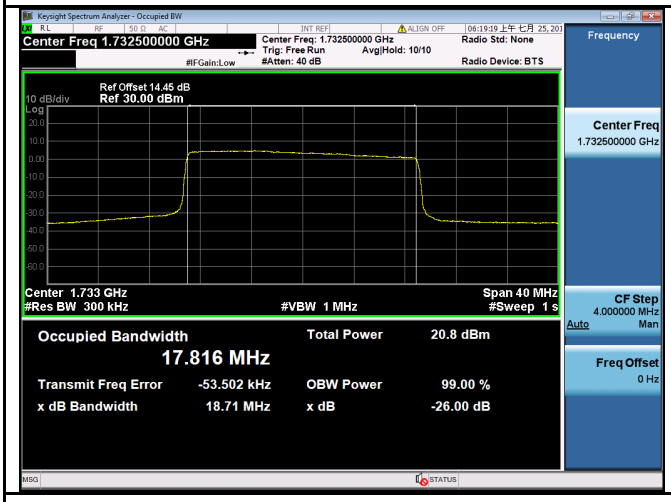
LTE band 4 - High CH 16QAM-15



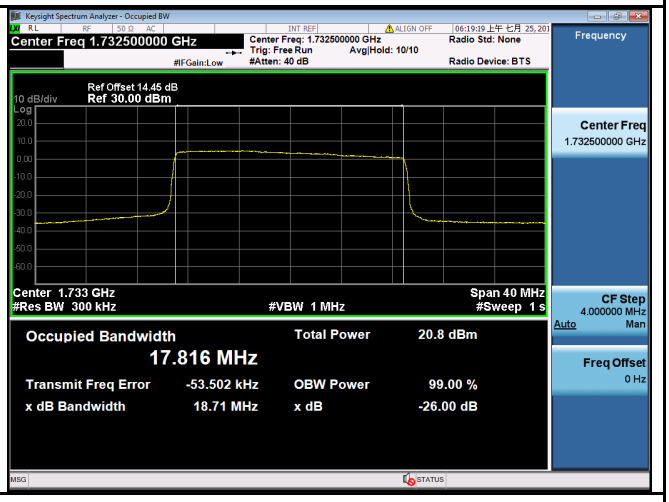
LTE band 4 - Low CH QPSK-20



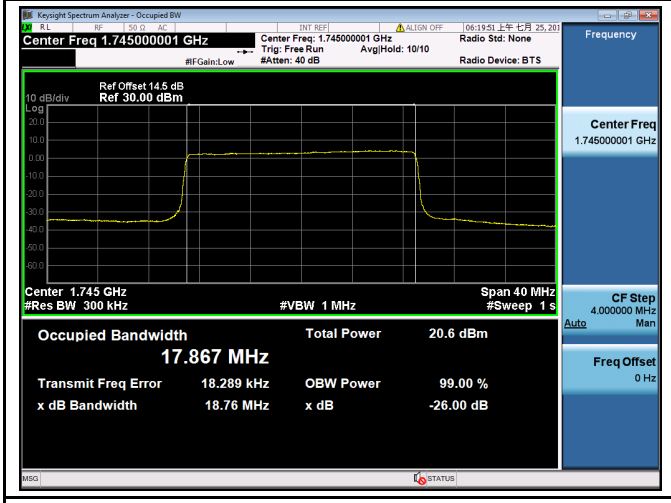
LTE band 4 - Low CH 16QAM-20



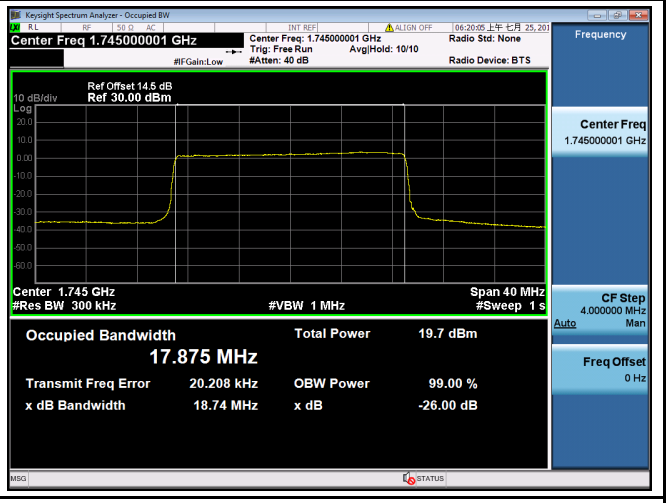
LTE band 4 - Middle CH QPSK-20



LTE band 4 - Middle CH 16QAM-20

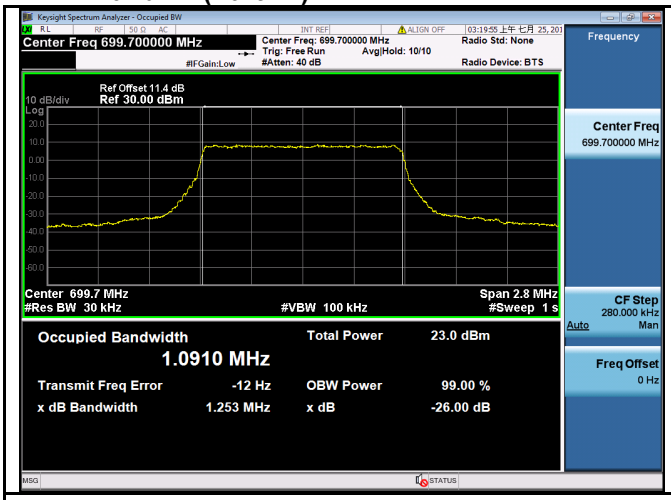


LTE band 4 - High CH QPSK-20

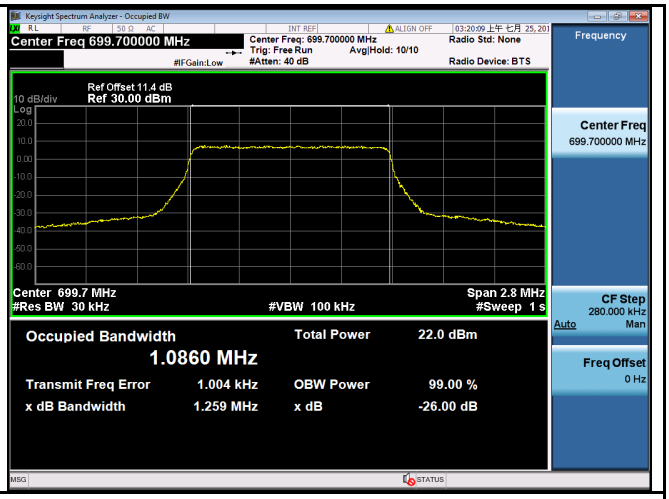


LTE band 4 - High CH 16QAM-20

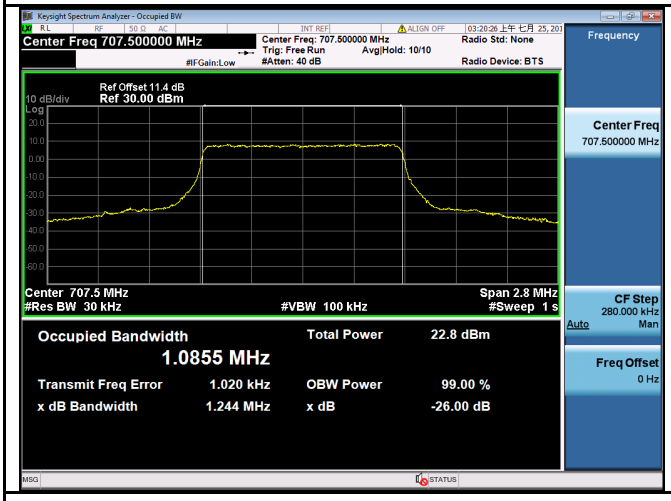
LTE Band 12 (Part 27)



LTE band 12 - Low CH QPSK-1.4

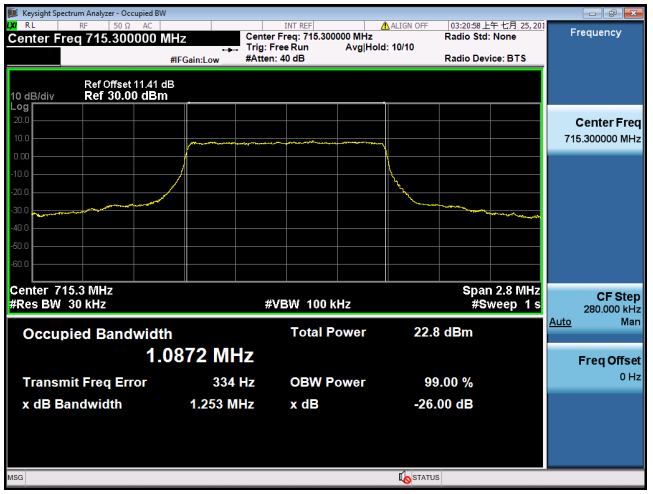


LTE band 12 - Low CH 16QAM-1.4



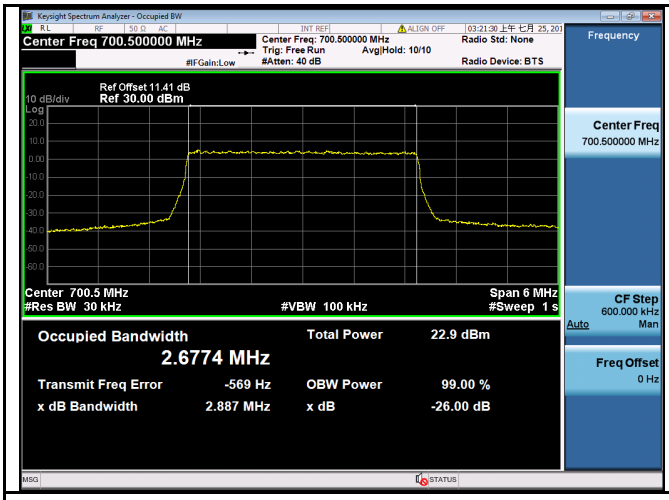
LTE band 12 - Middle CH QPSK-1.4

LTE band 12 - Middle CH 16QAM-1.4

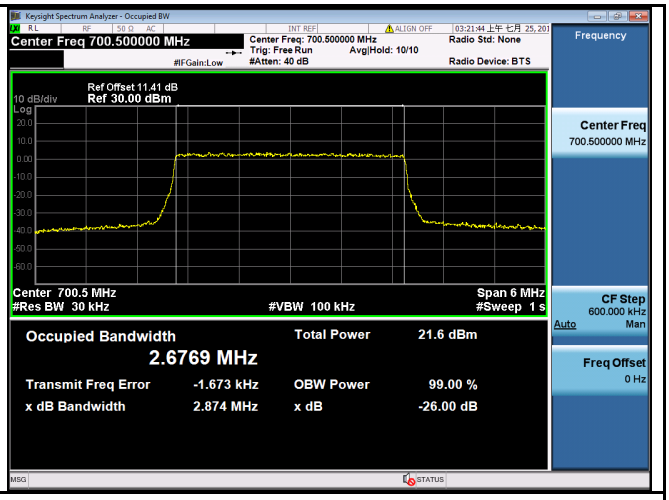


LTE band 12 - High CH QPSK-1.4

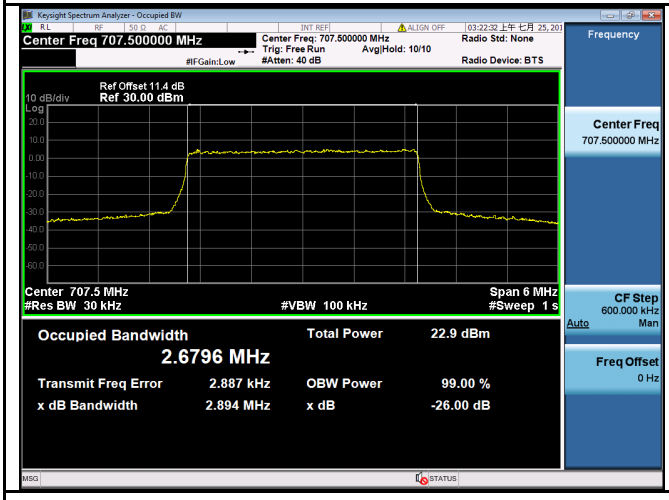
LTE band 12 - High CH 16QAM-1.4



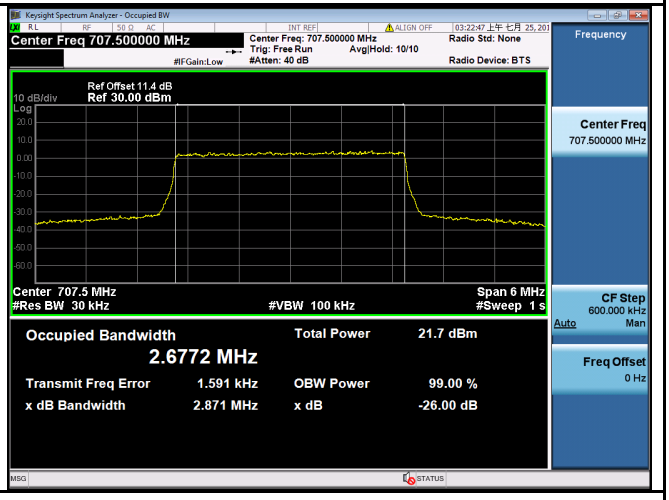
LTE band 12 - Low CH QPSK-3



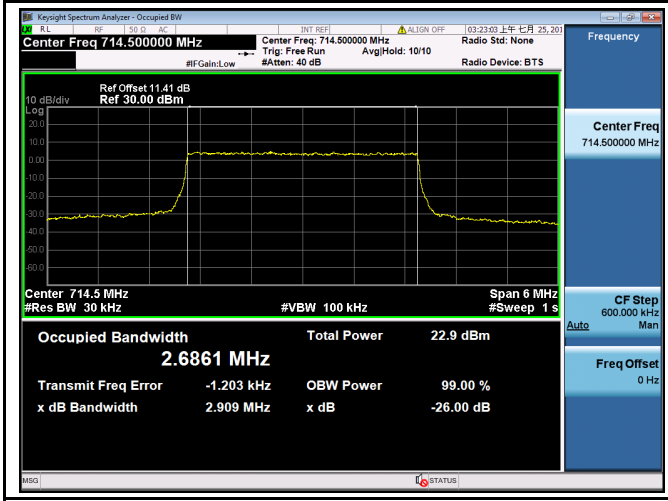
LTE band 12 - Low CH 16QAM-3



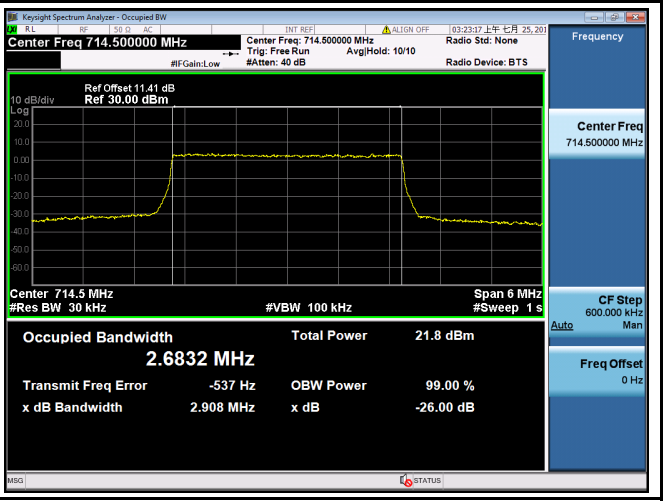
LTE band 12 - Middle CH QPSK-3



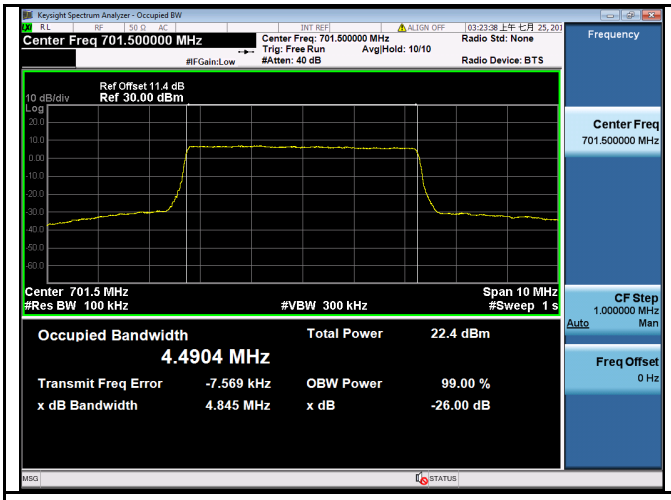
LTE band 12 - Middle CH 16QAM-3



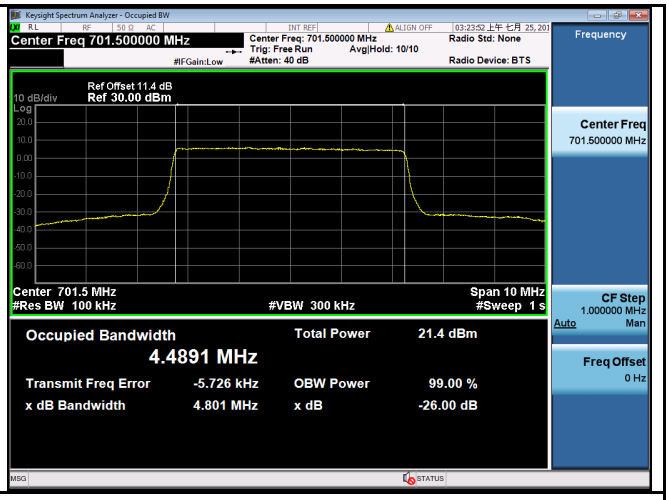
LTE band 12 - High CH QPSK-3



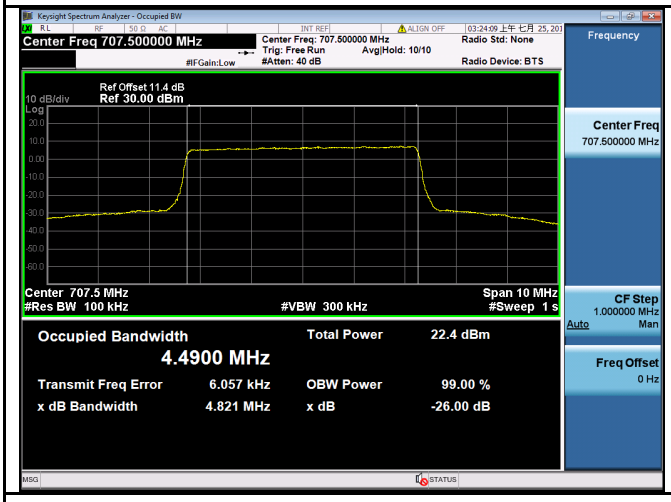
LTE band 12 - High CH 16QAM-3



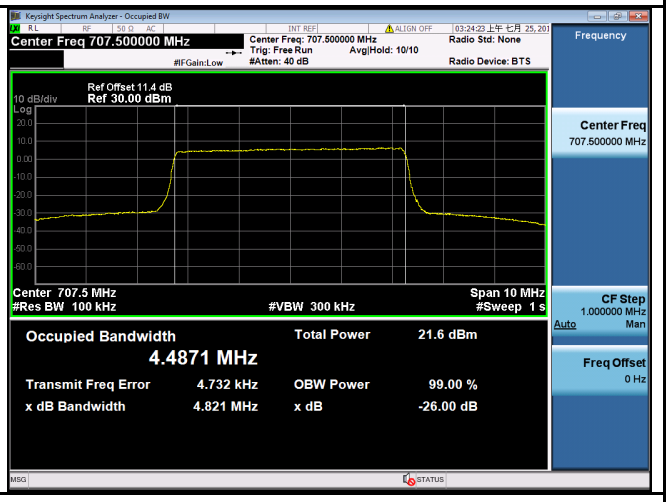
LTE band 12 - Low CH QPSK-5



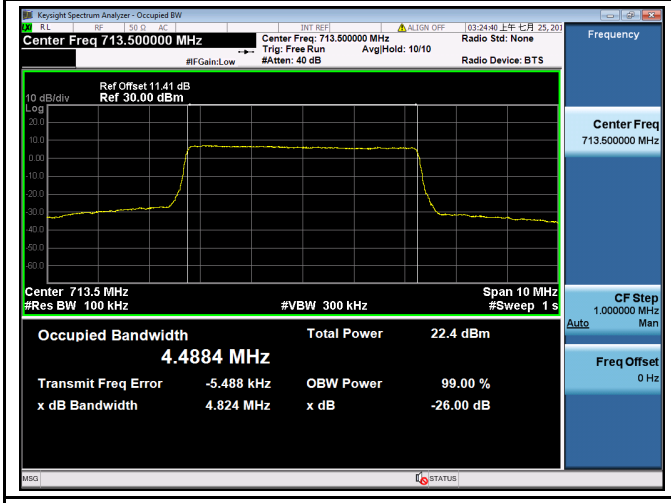
LTE band 12 - Low CH 16QAM-5



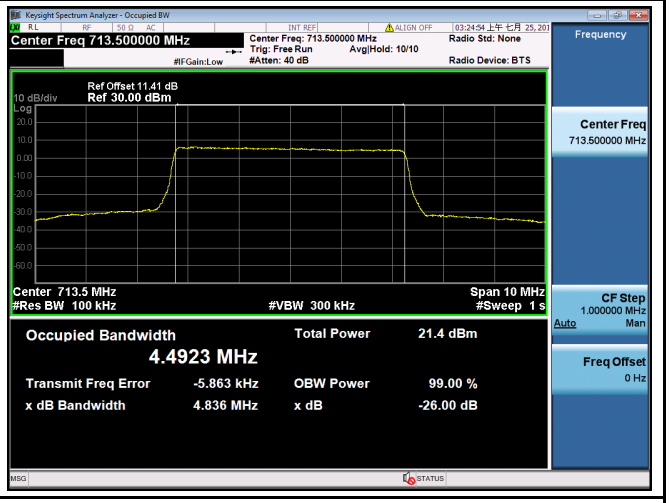
LTE band 12 - Middle CH QPSK-5



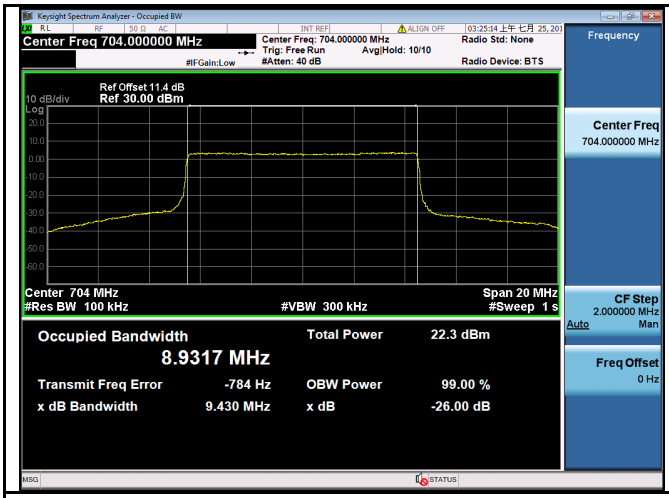
LTE band 12 - Middle CH 16QAM-15



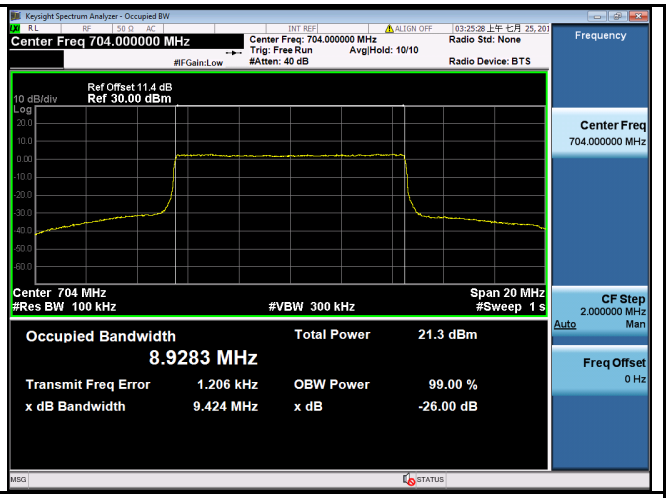
LTE band 12 - High CH QPSK-55



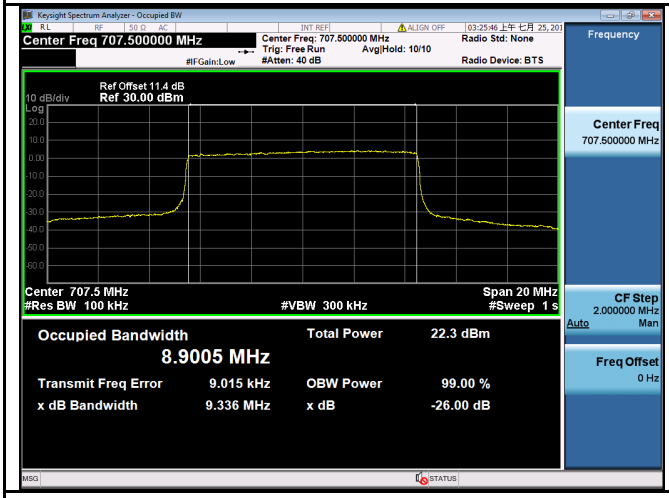
LTE band 12 - High CH 16QAM-5



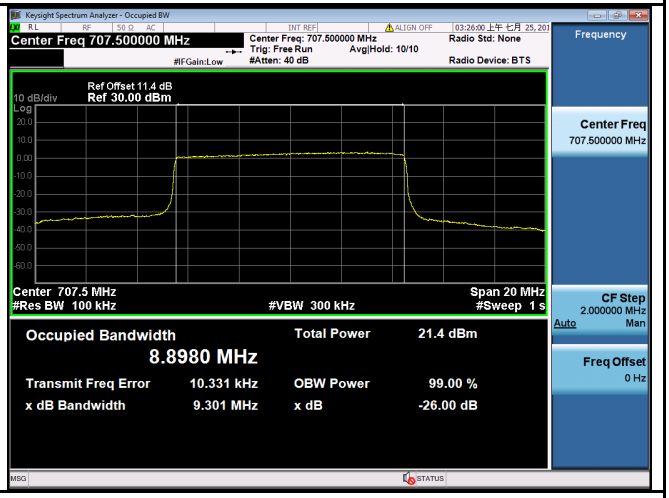
LTE band 12 - Low CH QPSK-10



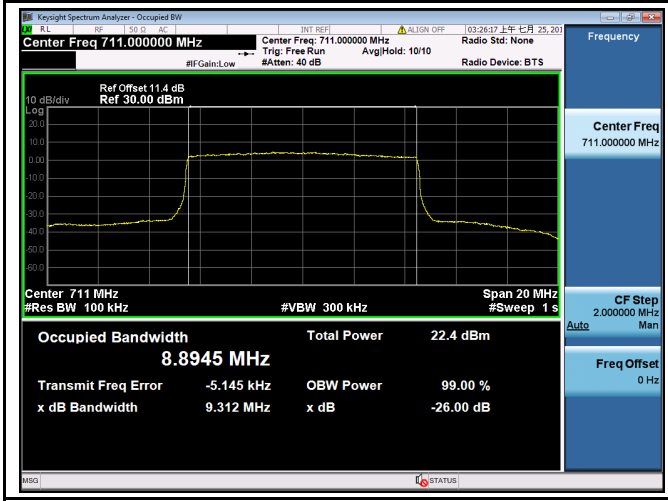
LTE band 12 - Low CH 16QAM-10



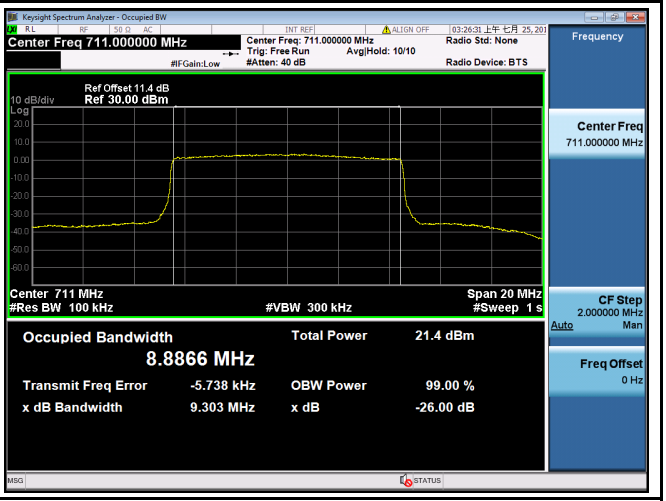
LTE band 12 - Middle CH QPSK-10



LTE band 12 - Middle CH 16QAM-10



LTE band 7 - High CH QPSK-10



LTE band 7 - High CH 16QAM-10

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

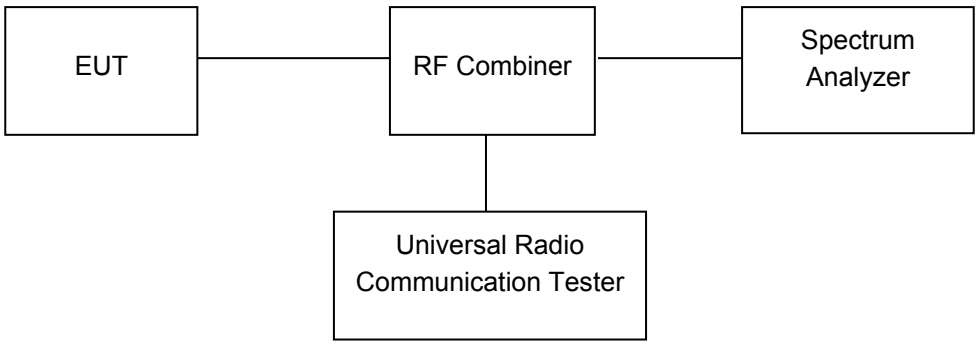
10.1 EUT Operation

Operating Environment **:**

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

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 Annex C. LTE Transmitter Spurious Emissions for LTE Band 2/4/12.

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

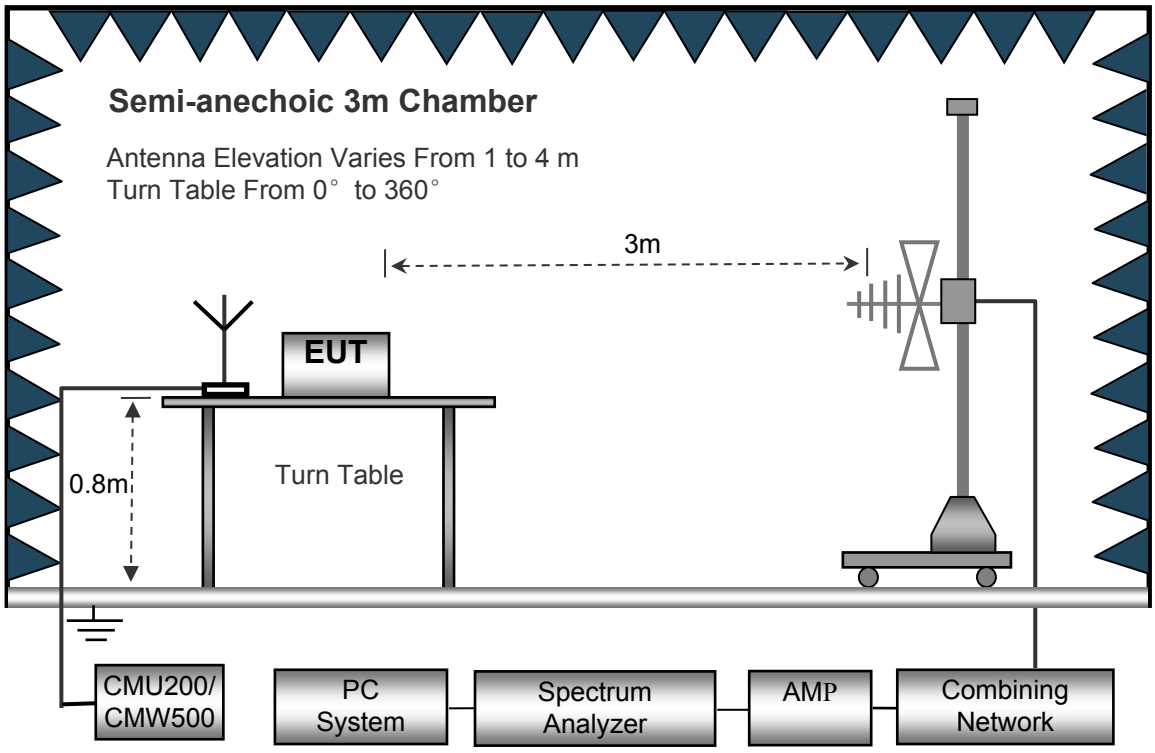
11.1 EUT Operation

Operating Environment :

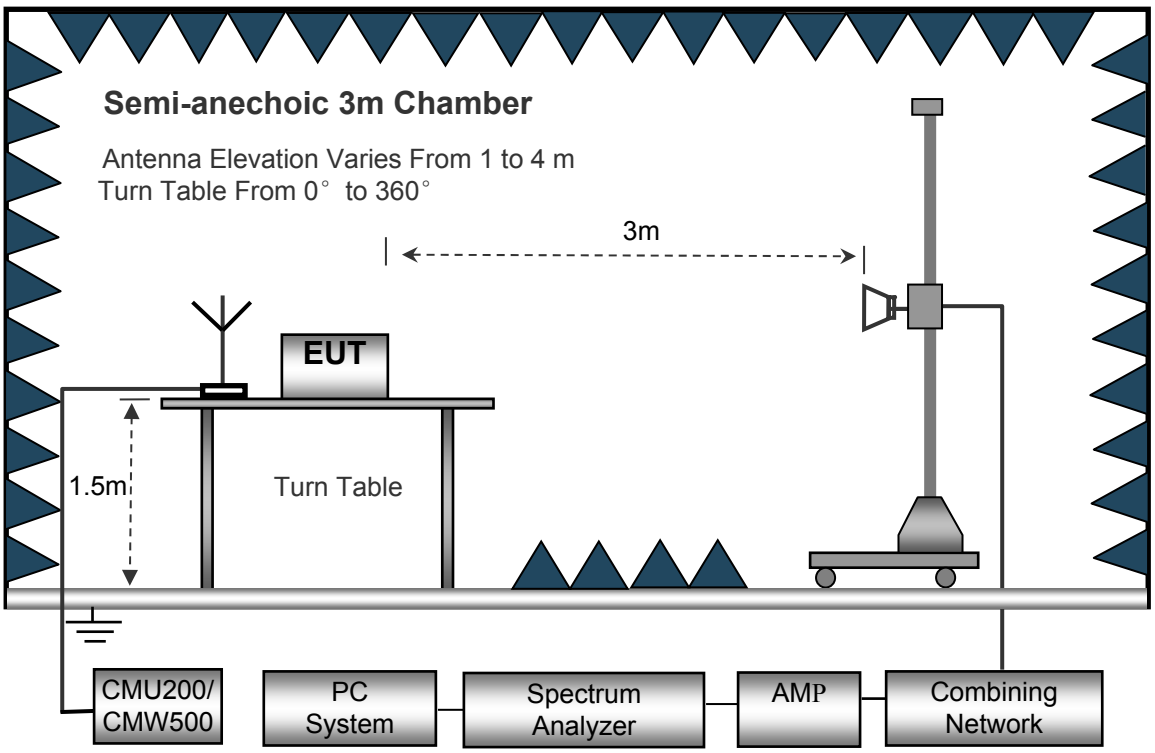
Temperature:	23.5 °C
Humidity:	52.1 % RH
Atmospheric Pressure:	101.2kPa

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.



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

11.3 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 (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.

11.4 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										
223.12	45.48	92	1.3	H	-65.03	0.15	0.00	-65.18	-13.00	-52.18
223.12	38.68	91	1.7	V	-68.91	0.15	0.00	-69.06	-13.00	-56.06
3701.40	65.95	247	2.1	H	-45.59	2.37	12.50	-35.46	-13.00	-22.46
3701.40	59.98	347	1.3	V	-49.83	2.37	12.50	-39.70	-13.00	-26.70
5552.10	53.58	294	2.0	H	-56.03	2.86	12.90	-45.99	-13.00	-32.99
5552.10	44.73	256	2.1	V	-64.15	2.86	12.90	-54.11	-13.00	-41.11
LTE BAND 2 Channel 18900										
223.12	45.27	267	1.2	H	-65.24	0.15	0.00	-65.39	-13.00	-52.39
223.12	38.37	44	1.8	V	-69.22	0.15	0.00	-69.37	-13.00	-56.37
3760.00	58.75	89	1.1	H	-52.79	2.37	12.50	-42.66	-13.00	-29.66
3760.00	53.03	295	1.3	V	-56.78	2.37	12.50	-46.65	-13.00	-33.65
5640.00	46.22	316	1.5	H	-63.39	2.86	12.90	-53.35	-13.00	-40.35
5640.00	37.48	161	2.0	V	-71.40	2.86	12.90	-61.36	-13.00	-48.36
LTE BAND 2 Channel 19193										
223.12	44.46	189	1.8	H	-66.05	0.15	0.00	-66.20	-13.00	-53.20
223.12	38.93	295	2.0	V	-68.66	0.15	0.00	-68.81	-13.00	-55.81
3818.60	52.68	256	1.0	H	-58.17	2.37	12.60	-47.94	-13.00	-34.94
3818.60	45.12	206	1.1	V	-64.19	2.37	12.60	-53.96	-13.00	-40.96
5727.90	38.76	160	1.4	H	-70.59	2.86	12.90	-60.55	-13.00	-47.55
5727.90	30.69	317	1.0	V	-77.81	2.86	12.90	-67.77	-13.00	-54.77

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										
223.12	37.79	351	1.0	H	-72.72	0.15	0.00	-72.87	-13.00	-59.87
223.12	30.66	7	2.1	V	-76.93	0.15	0.00	-77.08	-13.00	-64.08
3421.40	65.95	307	1.6	H	-47.10	2.34	12.40	-37.04	-13.00	-24.04
3421.40	59.98	290	2.0	V	-51.17	2.34	12.40	-41.11	-13.00	-28.11
5132.10	53.58	216	1.9	H	-55.83	2.79	12.70	-45.92	-13.00	-32.92
5132.10	44.73	174	2.2	V	-64.04	2.79	12.70	-54.13	-13.00	-41.13
LTE BAND 4 Channel 20175										
223.12	37.15	198	1.4	H	-73.36	0.15	0.00	-73.51	-13.00	-60.51
223.12	30.67	208	1.6	V	-76.92	0.15	0.00	-77.07	-13.00	-64.07
3465.00	58.81	288	2.0	H	-54.24	2.37	12.50	-44.11	-13.00	-31.11
3465.00	52.03	203	1.9	V	-59.12	2.37	12.50	-48.99	-13.00	-35.99
5197.50	46.30	81	1.7	H	-63.11	2.79	12.70	-53.20	-13.00	-40.20
5197.50	38.65	94	2.1	V	-70.12	2.79	12.70	-60.21	-13.00	-47.21
LTE BAND 4 Channel 20393										
223.12	37.60	37	2.1	H	-72.91	0.15	0.00	-73.06	-13.00	-60.06
223.12	31.17	79	1.8	V	-76.42	0.15	0.00	-76.57	-13.00	-63.57
3508.60	52.01	223	1.7	H	-60.63	2.37	12.50	-50.50	-13.00	-37.50
3508.60	45.12	86	1.6	V	-65.61	2.37	12.50	-55.48	-13.00	-42.48
5262.90	39.14	250	2.1	H	-70.44	2.81	12.80	-60.45	-13.00	-47.45
5262.90	30.79	245	2.0	V	-78.01	2.81	12.80	-68.02	-13.00	-55.02

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										
223.12	41.06	6	1.5	H	-69.45	0.15	0.00	-69.60	-25.00	-44.60
223.12	30.15	94	1.7	V	-77.44	0.15	0.00	-77.59	-25.00	-52.59
5005.00	58.24	115	2.1	H	-51.00	2.79	12.70	-41.09	-25.00	-16.09
5005.00	52.33	117	1.9	V	-56.44	2.79	12.70	-46.53	-25.00	-21.53
7507.50	45.64	228	2.0	H	-60.90	3.12	11.50	-52.52	-25.00	-27.52
7507.50	38.70	74	2.1	V	-66.73	3.12	11.50	-58.35	-25.00	-33.35
LTE BAND 12 Channel 23095										
223.12	40.66	65	1.2	H	-69.85	0.15	0.00	-70.00	-25.00	-45.00
223.12	29.47	324	1.3	V	-78.12	0.15	0.00	-78.27	-25.00	-53.27
5070.00	50.26	286	1.4	H	-58.98	2.37	12.50	-48.85	-25.00	-23.85
5070.00	45.03	267	1.7	V	-63.74	2.37	12.50	-53.61	-25.00	-28.61
7605.00	37.89	36	1.5	H	-68.65	3.12	11.50	-60.27	-25.00	-35.27
7605.00	32.10	297	1.2	V	-73.33	3.12	11.50	-64.95	-25.00	-39.95
LTE BAND 12 Channel 23173										
223.12	40.76	33	1.4	H	-69.75	0.15	0.00	-69.90	-25.00	-44.90
223.12	30.22	275	2.1	V	-77.37	0.15	0.00	-77.52	-25.00	-52.52
5135.00	44.09	8	1.4	H	-65.32	2.37	12.50	-55.19	-25.00	-30.19
5135.00	38.46	61	1.3	V	-70.31	2.37	12.50	-60.18	-25.00	-35.18
7702.50	29.93	248	1.3	H	-75.30	3.12	11.50	-66.92	-25.00	-41.92
7702.50	25.01	100	1.7	V	-79.88	3.12	11.50	-71.50	-25.00	-46.50

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

12.2 Test Procedure

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

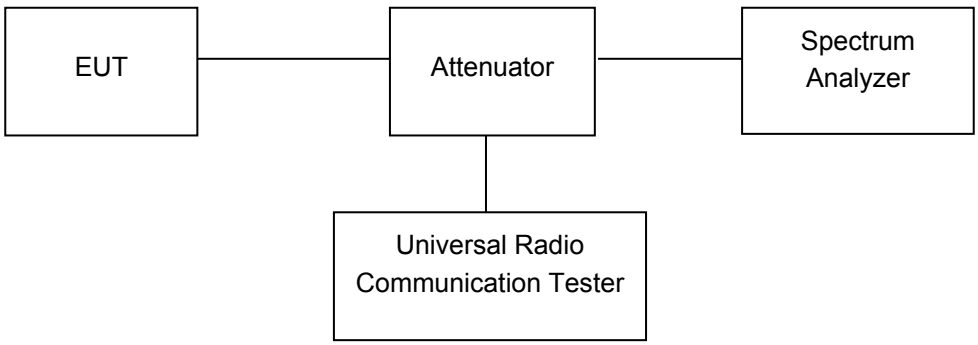
According to FCC Part 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the TX transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

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 that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

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



12.3 Test Result

PASS

LTE Band

Please refer to the Annex E. LTE Band Edge for LTE Band 2/4/12 LTE.

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 **:**

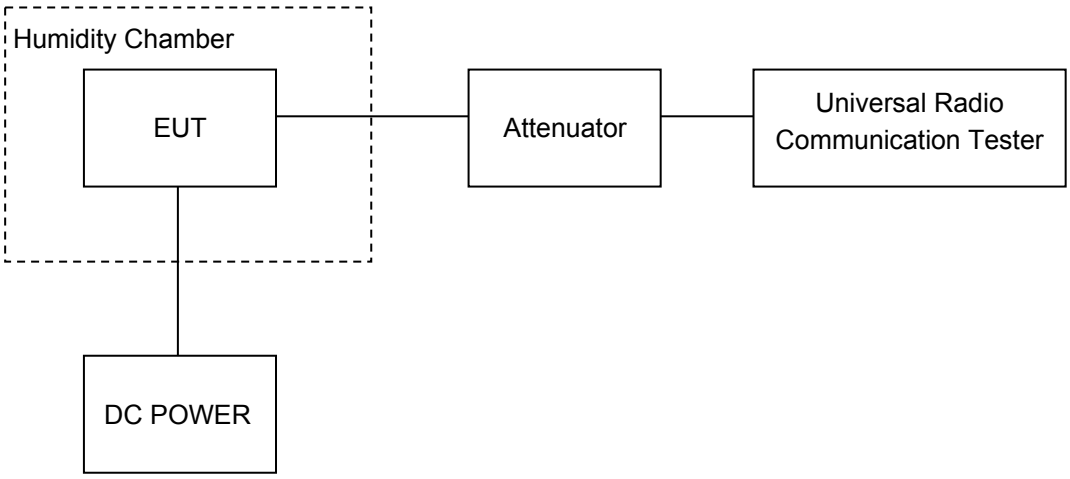
Temperature:	22.9 °C
Humidity:	52.0 % RH
Atmospheric Pressure:	101.3kPa

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 (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	-5	-0.0027	2.5
40		4	0.0021	2.5
30		6	0.0032	2.5
20		1	0.0005	2.5
10		-3	-0.0016	2.5
0		-8	-0.0043	2.5
-10		-2	-0.0011	2.5
-20		4	0.0021	2.5
-30		3	0.0016	2.5
20	8.1	-1	-0.0005	2.5
20	9.9	3	0.0016	2.5

T Test Frequency:1880.0MHz 16QAM 1.4MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	0	0.0000	2.5
20	9.9	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	9	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	8.1	1	0.0005	2.5
20	9.9	-7	-0.0037	2.5

Test Frequency:1880.0MHz 16QAM 3MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	9	0.0048	2.5
20	9.9	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	9	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	8.1	-1	-0.0005	2.5
20	9.9	1	0.0005	2.5

Test Frequency:1880.0MHz 16QAM 5MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	-12	-0.0064	2.5
20	9.9	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	9	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	8.1	-4	-0.0021	2.5
20	9.9	4	0.0021	2.5

Test Frequency:1880.0MHz 16QAM 10MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	0	0.0000	2.5
20	9.9	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	9	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	8.1	4	0.0021	2.5
20	9.9	-4	-0.0021	2.5

Test Frequency:1880.0MHz 16QAM 15MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	-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	8.1	6	0.0032	2.5
20	9.9	-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	9	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	8.1	2	0.0011	2.5
20	9.9	9	0.0048	2.5

Test Frequency:1880.0MHz 16QAM 20MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	8	0.0043	2.5
20	9.9	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	9	-6	-0.0035	2.5
40		-6	-0.0035	2.5
30		5	0.0029	2.5
20		2	0.0010	2.5
10		2	0.0012	2.5
0		3	0.0017	2.5
-10		-6	-0.0035	2.5
-20		0	0.0000	2.5
-30		11	0.0063	2.5
20	8.1	10	0.0058	2.5
20	9.9	-6	-0.0035	2.5

Test Frequency:1732.5MHz 16QAM 1.4MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	4	0.0023	2.5
20	9.9	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	9	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	8.1	-4	-0.0023	2.5
20	9.9	-3	-0.0017	2.5

Test Frequency:1732.5MHz 16QAM 3MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	3	0.0017	2.5
20	9.9	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	9	-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	8.1	5	0.0029	2.5
20	9.9	10	0.0058	2.5

Test Frequency:1732.5MHz 16QAM 5MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	-2	-0.0012	2.5
20	9.9	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	9	-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	8.1	-1	-0.0006	2.5
20	9.9	0	0.0000	2.5

Test Frequency:1732.5MHz 16QAM 10MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	-4	-0.0023	2.5
20	9.9	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	9	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	8.1	4	0.0023	2.5
20	9.9	-4	-0.0023	2.5

Test Frequency:1732.5MHz 16QAM 15MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	11	0.0063	2.5
20	9.9	-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	9	-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	8.1	-5	-0.0029	2.5
20	9.9	-13	-0.0075	2.5

Test Frequency:1732.5MHz 16QAM 20MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	-12	-0.0069	2.5
20	9.9	-3	-0.0017	2.5

LTE Band 12

Test Frequency:707.5MHz QPSK 1.4MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	5	0.0020	2.5
40		7	0.0028	2.5
30		-5	-0.0020	2.5
20		3	0.0012	2.5
10		2	0.0008	2.5
0		11	0.0043	2.5
-10		7	0.0028	2.5
-20		6	0.0024	2.5
-30		-1	-0.0004	2.5
20	8.1	-5	-0.0020	2.5
20	9.9	6	0.0024	2.5

Test Frequency:707.5MHz 16QAM 1.4MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	-1	-0.0004	2.5
20	9.9	-5	-0.0020	2.5

LTE Band 12

Test Frequency:707.5MHz QPSK 3MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	7	0.0028	2.5
20	9.9	-4	-0.0016	2.5

Test Frequency:707.5MHz 16QAM 3MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	-5	-0.0020	2.5
20	9.9	9	0.0036	2.5

LTE Band 12

Test Frequency:707.5MHz QPSK 5MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	-5	-0.0020	2.5
20	9.9	9	0.0036	2.5

Test Frequency:707.5MHz 16QAM 5MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	5	0.0020	2.5
20	9.9	14	0.0055	2.5

LTE Band 12

Test Frequency:707.5MHz QPSK 10MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	-5	-0.0020	2.5
20	9.9	10	0.0039	2.5

Test Frequency:707.5MHz 16QAM 10MHz				
Temperature (℃)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	9	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	8.1	-10	-0.0039	2.5
20	9.9	-1	-0.0004	2.5

14 RF Exposure

Remark: refer to MPE test report: WTD21D02012811W003.

15 Photographs of test setup and EUT.

Note: Please refer to appendix: Appendix-WC30-A-Photos.

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