TEST REPORT

Reference No.	:	WTS16S0859097-4E V1
FCC ID	:	N2GSL514
Applicant	:	DOPPIO MOBILE INTERNATIONAL LIMITED
Address	:	ROOM 1708,17/f HART AVENUE PLAZA,5-9 HART AVENUE TISM SHA TSUI, Kowloon, Hongkong
Manufacturer	:	TEM MOBILE LIMITED
Address	:	No 1708, Cangsong Building, Tairan 6 Road, Futian ShenZhen, China.
Product Name	:	Mobile Phone
Model No.	:	Doppio SL514
Brand	:	doppio
Standards	:	FCC CFR47 Part 24 Subpart E: 2015 FCC CFR47 Part 27: 2015
Date of Receipt sample	:	Aug. 08, 2016
Date of Test	:	Aug. 09 – Sep. 04, 2016
Date of Issue	:	Sep. 24, 2016
Test Result	:	**Pass**

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

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2 Test Summary

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

3 Contents

Page

1 COVER PAGE 1

2 TEST SUMMARY 2

3 CONTENTS 3

4 REPORT REVISION HISTORY 5

5 GENERAL INFORMATION 6

5.1 GENERAL DESCRIPTION OF E.U.T. 6
5.2 DETAILS OF E.U.T. 6
5.3 TEST MODE 8
5.4 TEST FACILITY 9

6 EQUIPMENT USED DURING TEST 10

6.1 EQUIPMENTS LIST 10
6.2 MEASUREMENT UNCERTAINTY 11
6.3 TEST EQUIPMENT CALIBRATION 11

7 RF OUTPUT POWER 12

7.1 EUT OPERATION 12
7.2 TEST PROCEDURE 12
7.3 TEST RESULT 13

8 PEAK-TO-AVERAGE RATIO 30

8.1 EUT OPERATION 30
8.2 TEST PROCEDURE 30
8.3 TEST RESULT 30

9 BANDWIDTH 31

9.1 EUT OPERATION 31
9.2 TEST PROCEDURE 31
9.3 TEST RESULT 32

10 SPURIOUS EMISSIONS AT ANTENNA TERMINALS 47

10.1 EUT OPERATION 47
10.2 TEST PROCEDURE 47
10.3 TEST RESULT 47

11 SPURIOUS RADIATED EMISSIONS 48

11.1 EUT OPERATION 48
11.2 TEST SETUP 48
11.3 SPECTRUM ANALYZER SETUP 49
11.4 TEST PROCEDURE 50
11.5 SUMMARY OF TEST RESULTS 51

12 BAND EDGE MEASUREMENT 53

12.1 EUT OPERATION 53
12.2 TEST PROCEDURE 53
12.3 TEST RESULT 53

13 FREQUENCY STABILITY 54

13.1 EUT OPERATION 54
13.2 TEST PROCEDURE 54
13.3 TEST RESULT 55

14 RF EXPOSURE.....67

4 Report Revision History

Report No.	Report Version	Description	Issue Date
WTS16S0859097-4E	NONE	Original	Sep. 06, 2016
WTS16S0859097-4E	V1	Version 1	Sep. 22, 2016
WTS16S0859097-4E	V2	Version 2	Sep. 24, 2016

5 General Information

5.1 General Description of E.U.T.

Product Name	: Mobile Phone
Model No.	: Doppio SL514
Model Description	: N/A
GSM Band(s)	: GSM 850/900/1800/1900MHz
GPRS/EGPRS Class	: 12
WCDMA Band(s)	: FDD Band II/V
LTE Bnad(s)	: LTE Band 2/4
Wi-Fi Specification	: 2.4G: 802.11b/g/n HT20 HT40
Bluetooth Version	: Bluetooth v4.0 with BLE
GPS	: Support
NFC	: N/A
Hardware Version	: GBL7359A_MB_P3
Software Version	: GBL7360_0201_V5136
Storage Location	: Internal Storage

5.2 Details of E.U.T.

Operation Frequency	: GSM/GPRS/EGPRS 850: 824~849MHz PCS/GPRS/EGPRS 1900: 1850~1910MHz WCDMA Band II: 1850~1910MHz WCDMA Band V: 824~849MHz LTE Band 2: 1850~1910MHz LTE Band 4: 1710~1755MHz WiFi: 802.11b/g/n HT20: 2412~2462MHz 802.11n HT40: 2422~2452MHz Bluetooth: 2402~2480MHz
Max. RF output power	: GSM 850: 32.80dBm PCS1900: 29.80dBm WCDMA Band II: 22.89dBm WCDMA Band V: 22.62dBm LTE Band 2: 23.79dBm LTE Band 4: 23.99dBm WiFi(2.4G): 9.39dBm Bluetooth: 4.60dBm
Type of Modulation	: GSM,GPRS: GMSK EDGE: GMSK, 8PSK WCDMA: BPSK

	LTE: QPSK, 16QAM WiFi: CCK, OFDM Bluetooth: GFSK, Pi/4 DQPSK,8DPSK
Antenna installation	: GSM/WCDMA/LTE: internal permanent antenna WiFi/Bluetooth: internal permanent antenna
Antenna Gain	: GSM 850: -4.0dBi PCS1900: 0.12dBi WCDMA Band II: 0.12dBi WCDMA Band V: -4.0dBi LTE Band 2: 0.12dBi LTE Band 4: 0dBi WiFi(2.4G): -0.5dBi Bluetooth: -0.5dBi
Technical Data	: Battery DC 3.8V, 2400mAh DC 5V, 1.0A, charging from adapter (Adapter Input: 100-240V~50/60Hz 0.2A)
Adapter	: Manufacture: GiONEE Model No.: TC28
Type of Emission	: LTE Band 2 1.4MHz: 1M16G7D(QPSK), 1M15W7D(16QAM) LTE Band 2 3MHz: 2M72G7D(QPSK), 2M73W7D(16QAM) LTE Band 2 5MHz: 4M50G7D(QPSK), 4M50W7D(16QAM) LTE Band 2 10 MHz: 8M93G7D(QPSK), 8M92W7D(16QAM) LTE Band 2 15MHz: 13M4G7D(QPSK), 13M4W7D(16QAM) LTE Band 2 20MHz: 17M8G7D(QPSK), 17M9W7D(16QAM) LTE Band 4 1.4MHz: 1M15G7D(QPSK), 1M16W7D(16QAM) LTE Band 4 3MHz: 2M73G7D(QPSK), 2M72W7D(16QAM) LTE Band 4 5MHz: 4M50G7D(QPSK), 4M49W7D(16QAM) LTE Band 4 10 MHz: 9M34G7D(QPSK), 8M92W7D(16QAM) LTE Band 4 15MHz: 13M4G7D(QPSK), 13M4W7D(16QAM) LTE Band 4 20MHz: 17M8G7D(QPSK), 17M8W7D(16QAM)

5.3 Test Mode

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

Support Band	Test Mode BW(MHz)	Channel Frequency	Channel Number
LTE Band 2	1.4	1850.7 MHz	18607
		1880.0 MHz	18900
		1909.3 MHz	19193
	3	1851.5 MHz	18615
		1880.0 MHz	18900
		1908.5 MHz	19185
	5	1852.5 MHz	18625
		1880.0 MHz	18900
		1907.5 MHz	19175
	10	1855.0 MHz	18650
		1880.0 MHz	18900
		1905.0 MHz	19150
	15	1857.5 MHz	18675
		1880.0 MHz	18900
		1902.5 MHz	19125
	20	1860.0 MHz	18700
		1880.0 MHz	18900
		1900.0 MHz	19100
LTE Band 4	1.4	1710.7 MHz	19957
		1732.5 MHz	20175
		1754.3 MHz	20393
	3	1711.5 MHz	19965
		1732.5 MHz	20175
		1753.5 MHz	20385
	5	1712.5 MHz	19975
		1732.5 MHz	20175
		1752.5 MHz	20375
	10	1715.0 MHz	20000
		1732.5 MHz	20175
		1750.0 MHz	20350
	15	1717.5 MHz	20025

		1732.5 MHz	20175
		1747.5 MHz	20325
	20	1720.0 MHz	20050
		1732.5 MHz	20175
		1745.0 MHz	20300
Remark: All mode(s) were tested and the worst data was recorded.			

5.4 Test Facility

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

- **IC – Registration No.: 7760A**

  Waltek Services(Shenzhen) Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration number 7760A, October 15, 2015.

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

  Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory `has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, April 29, 2014.

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

  Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory `has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 328995, December 3, 2014.

6 Equipment Used during Test

6.1 Equipments List

RF Conducted Test						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMC Analyzer (9k~26.5GHz)	Agilent	E7405A	MY45114943	Sep.15,2015	Sep.14,2016
2.	Spectrum Analyzer (9k-6GHz)	R&S	FSL6	100959	Sep.15,2015	Sep.14,2016
3.	Humidity Chamber	GF	GTH-225-40-1P	IAA061213	Sep.15,2015	Sep.14,2016
4.	Universal Radio Communication Tester	R&S	CMU 200	112461	Apr.10,2016	Apr.09,2017
3m Semi-anechoic Chamber for Radiated Emissions						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	EMC Analyzer	Agilent	E7405A	MY45114943	Sep.15,2015	Sep.14,2016
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Sep.15,2015	Sep.14,2016
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Apr.18,2016	Apr.17,2017
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	Sep.15,2015	Sep.14,2016
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Apr.18,2016	Apr.17,2017
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	669	Apr.18,2016	Apr.17,2017
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Mar.17,2016	Mar.16,2017
8	Coaxial Cable (above 1GHz)	Top	1000MHz-25GHz	EW02014-7	Apr.09,2016	Apr.08,2017
9	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	Apr.18,2016	Apr.17,2017
10	Universal Radio Communication Tester	R&S	CMU 200	112461	Apr.10,2016	Apr.09,2017
11	Signal Generator	R&S	SMR20	100046	Sep.15,2015	Sep.14,2016
12	Smart Antenna	SCHWARZBECK	HA08	-	Apr.18,2016	Apr.17,2017

6.2 Measurement Uncertainty

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

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(c),27.50(d)
Test Method:	TIA/EIA-603-D:2010
Test Mode:	Transmitting

7.1 EUT Operation

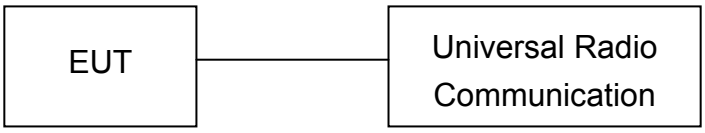
Operating Environment **:**

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	23.37	23.0±1	/
				1	2	23.4	23.0±1	/
				1	5	23.37	23.0±1	/
				3	0	23.39	22.5±1	/
				3	1	23.38	22.5±1	/
				3	2	23.37	22.5±1	/
				6	0	22.28	22.5±1	0.5
			16QAM	1	0	22.35	22.0±1	1.0
				1	2	22.43	22.0±1	1.0
				1	5	22.37	22.0±1	1.0
				3	0	22.32	22.0±1	1.0
				3	1	21.74	22.0±1	1.0
				3	2	21.79	22.0±1	1.0
				6	0	21.06	22.0±1	1.0
	18900	1880	QPSK	1	0	23.38	23.0±1	/
				1	2	23.46	23.0±1	/
				1	5	23.36	23.0±1	/
				3	0	23.41	22.5±1	/
				3	1	23.35	22.5±1	/
				3	2	23.46	22.5±1	/
				6	0	22.63	22.5±1	0.5
			16QAM	1	0	23.05	22.5±1	0.5
				1	2	23.04	22.5±1	0.5
				1	5	23.02	22.5±1	0.5
				3	0	22.99	22.0±1	1.0
				3	1	22.93	22.0±1	1.0
				3	2	22.98	22.0±1	1.0
				6	0	21.57	22.0±1	1.0
	19193	1909.3	QPSK	1	0	23.41	23.0±1	/
				1	2	23.52	23.0±1	/
				1	5	23.45	23.0±1	/
				3	0	23.46	22.5±1	/
				3	1	23.46	22.5±1	/
				3	2	23.42	22.5±1	/
				6	0	22.02	22.5±1	0.5
			16QAM	1	0	22.43	22.0±1	1.0
				1	2	22.48	22.0±1	1.0
				1	5	22.47	22.0±1	1.0
				3	0	22.69	22.0±1	1.0
				3	1	22.66	22.0±1	1.0
				3	2	22.64	22.0±1	1.0
				6	0	21.48	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	23.13	23.0±1	/
				1	8	23.23	23.0±1	/
				1	14	23.17	23.0±1	/
				6	0	22.21	22.5±1	0.5
				6	4	22.27	22.5±1	0.5
				6	9	22.27	22.5±1	0.5
				15	0	22.24	22.5±1	0.5
			16QAM	1	0	22.05	22.0±1	1.0
				1	8	22.05	22.0±1	1.0
				1	14	22.02	22.0±1	1.0
				6	0	21.32	22.0±1	1.0
				6	4	21.28	22.0±1	1.0
				6	9	21.24	22.0±1	1.0
				15	0	21.3	22.0±1	1.0
	18900	1880	QPSK	1	0	23.61	23.0±1	/
				1	8	23.68	23.0±1	/
				1	14	23.61	23.0±1	/
				6	0	22.64	22.5±1	0.5
				6	4	22.68	22.5±1	0.5
				6	9	22.67	22.5±1	0.5
				15	0	22.65	22.5±1	0.5
			16QAM	1	0	23	22.5±1	0.5
				1	8	23.08	22.5±1	0.5
				1	14	23.04	22.5±1	0.5
				6	0	21.79	22.0±1	1.0
				6	4	21.79	22.0±1	1.0
				6	9	21.77	22.0±1	1.0
				15	0	21.68	22.0±1	1.0
	19185	1908.5	QPSK	1	0	23.34	23.0±1	/
				1	8	23.43	23.0±1	/
				1	14	23.4	23.0±1	/
				6	0	22.45	22.5±1	0.5
				6	4	22.48	22.5±1	0.5
				6	9	22.49	22.5±1	0.5
				15	0	22.47	22.5±1	0.5
			16QAM	1	0	22.37	22.0±1	1.0
				1	8	22.37	22.0±1	1.0
				1	14	22.3	22.0±1	1.0
				6	0	21.41	22.0±1	1.0
				6	4	21.46	22.0±1	1.0
				6	9	21.44	22.0±1	1.0
				15	0	21.4	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	23.31	23.0±1	/
				1	12	23.32	23.0±1	/
				1	24	23.34	23.0±1	/
				12	0	22.34	22.5±1	0.5
				12	6	22.35	22.5±1	0.5
				12	11	22.35	22.5±1	0.5
				25	0	22.29	22.5±1	0.5
			16QAM	1	0	22.47	22.0±1	1.0
				1	12	22.47	22.0±1	1.0
				1	24	22.51	22.0±1	1.0
				12	0	21.41	22.0±1	1.0
				12	6	21.43	22.0±1	1.0
				12	11	21.44	22.0±1	1.0
				25	0	21.34	22.0±1	1.0
	18900	1880	QPSK	1	0	23.7	23.0±1	/
				1	12	23.71	23.0±1	/
				1	24	23.73	23.0±1	/
				12	0	22.79	22.5±1	0.5
				12	6	22.78	22.5±1	0.5
				12	11	22.77	22.5±1	0.5
				25	0	22.73	22.5±1	0.5
			16QAM	1	0	23.23	22.5±1	0.5
				1	12	23.25	22.5±1	0.5
				1	24	23.23	22.5±1	0.5
				12	0	21.92	22.0±1	1.0
				12	6	21.89	22.0±1	1.0
				12	11	21.91	22.0±1	1.0
				25	0	21.79	22.0±1	1.0
	19175	1907.5	QPSK	1	0	23.53	23.0±1	/
				1	12	23.53	23.0±1	/
				1	24	23.56	23.0±1	/
				12	0	22.5	22.5±1	0.5
				12	6	22.53	22.5±1	0.5
				12	11	22.52	22.5±1	0.5
				25	0	22.46	22.5±1	0.5
			16QAM	1	0	22.57	22.0±1	1.0
				1	12	22.56	22.0±1	1.0
				1	24	22.53	22.0±1	1.0
				12	0	21.54	22.0±1	1.0
				12	6	21.58	22.0±1	1.0
				12	11	21.6	22.0±1	1.0
				25	0	21.44	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	23.34	23.0±1	/
				1	24	23.4	23.0±1	/
				1	49	23.41	23.0±1	/
				25	0	22.3	22.5±1	0.5
				25	12	22.31	22.5±1	0.5
				25	24	22.25	22.5±1	0.5
				50	0	22.25	22.5±1	0.5
			16QAM	1	0	22.1	22.0±1	1.0
				1	24	22.15	22.0±1	1.0
				1	49	22.15	22.0±1	1.0
				25	0	21.28	22.0±1	1.0
				25	12	21.25	22.0±1	1.0
				25	24	21.29	22.0±1	1.0
				50	0	21.26	22.0±1	1.0
	18900	1880	QPSK	1	0	23.67	23.0±1	/
				1	24	23.69	23.0±1	/
				1	49	23.77	23.0±1	/
				25	0	22.74	22.5±1	0.5
				25	12	22.7	22.5±1	0.5
				25	24	22.71	22.5±1	0.5
				50	0	22.74	22.5±1	0.5
			16QAM	1	0	23.05	22.5±1	0.5
				1	24	23.07	22.5±1	0.5
				1	49	23.1	22.5±1	0.5
				25	0	21.78	22.0±1	1.0
				25	12	21.77	22.0±1	1.0
				25	24	21.79	22.0±1	1.0
				50	0	21.77	22.0±1	1.0
	19150	1905	QPSK	1	0	23.47	23.0±1	/
				1	24	23.44	23.0±1	/
				1	49	23.52	23.0±1	/
				25	0	22.46	22.5±1	0.5
				25	12	22.48	22.5±1	0.5
				25	24	22.51	22.5±1	0.5
				50	0	22.51	22.5±1	0.5
			16QAM	1	0	22.45	22.0±1	1.0
				1	24	22.43	22.0±1	1.0
				1	49	22.49	22.0±1	1.0
				25	0	21.61	22.0±1	1.0
				25	12	21.56	22.0±1	1.0
				25	24	21.59	22.0±1	1.0
				50	0	21.57	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	23.36	23.0±1	/
				1	37	23.34	23.0±1	/
				1	74	23.4	23.0±1	/
				36	0	22.39	22.5±1	0.5
				36	16	22.42	22.5±1	0.5
				36	35	22.42	22.5±1	0.5
				75	0	22.43	22.5±1	0.5
			16QAM	1	0	22.25	22.0±1	1.0
				1	37	22.21	22.0±1	1.0
				1	74	22.34	22.0±1	1.0
				36	0	21.35	22.0±1	1.0
				36	16	21.42	22.0±1	1.0
				36	35	21.41	22.0±1	1.0
				75	0	21.44	22.0±1	1.0
	18900	1880	QPSK	1	0	23.72	23.0±1	/
				1	37	23.7	23.0±1	/
				1	74	23.78	23.0±1	/
				36	0	22.74	22.5±1	0.5
				36	16	22.73	22.5±1	0.5
				36	35	22.75	22.5±1	0.5
				75	0	22.72	22.5±1	0.5
			16QAM	1	0	23.04	22.5±1	0.5
				1	37	23.08	22.5±1	0.5
				1	74	23.07	22.5±1	0.5
				36	0	21.7	22.0±1	1.0
				36	16	21.72	22.0±1	1.0
				36	35	21.73	22.0±1	1.0
				75	0	21.69	22.0±1	1.0
	19125	1902.5	QPSK	1	0	23.41	23.0±1	/
				1	37	23.32	23.0±1	/
				1	74	23.49	23.0±1	/
				36	0	22.4	22.5±1	0.5
				36	16	22.54	22.5±1	0.5
				36	35	22.54	22.5±1	0.5
				75	0	22.55	22.5±1	0.5
			16QAM	1	0	22.81	22.0±1	1.0
				1	37	22.74	22.0±1	1.0
				1	74	22.78	22.0±1	1.0
				36	0	21.45	22.0±1	1.0
				36	16	21.48	22.0±1	1.0
				36	35	21.48	22.0±1	1.0
				75	0	21.57	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	23.39	23.0±1	/
				1	49	23.37	23.0±1	/
				1	99	23.5	23.0±1	/
				50	0	22.39	22.5±1	0.5
				50	24	22.38	22.5±1	0.5
				50	49	22.47	22.5±1	0.5
				100	0	22.42	22.5±1	0.5
			16QAM	1	0	22.92	22.0±1	1.0
				1	49	22.89	22.0±1	1.0
				1	99	23.08	22.0±1	1.0
				50	0	21.37	22.0±1	1.0
				50	24	21.36	22.0±1	1.0
				50	49	21.45	22.0±1	1.0
				100	0	21.42	22.0±1	1.0
	18900	1880	QPSK	1	0	23.7	23.0±1	/
				1	49	23.7	23.0±1	/
				1	99	23.79	23.0±1	/
				50	0	22.85	22.5±1	0.5
				50	24	22.97	22.5±1	0.5
				50	49	22.76	22.5±1	0.5
				100	0	22.73	22.5±1	0.5
			16QAM	1	0	23.14	22.5±1	0.5
				1	49	23.16	22.5±1	0.5
				1	99	23.19	22.5±1	0.5
				50	0	21.79	22.0±1	1.0
				50	24	21.75	22.0±1	1.0
				50	49	21.78	22.0±1	1.0
				100	0	21.77	22.0±1	1.0
	19100	1900	QPSK	1	0	23.64	23.0±1	/
				1	49	23.56	23.0±1	/
				1	99	23.7	23.0±1	/
				50	0	22.59	22.5±1	0.5
				50	24	22.58	22.5±1	0.5
				50	49	22.57	22.5±1	0.5
				100	0	22.58	22.5±1	0.5
			16QAM	1	0	22.99	22.0±1	1.0
				1	49	22.85	22.0±1	1.0
				1	99	22.93	22.0±1	1.0
				50	0	21.57	22.0±1	1.0
				50	24	21.55	22.0±1	1.0
				50	49	21.57	22.0±1	1.0
				100	0	21.58	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	23.87	23.0±1	/
				1	2	23.85	23.0±1	/
				1	5	23.88	23.0±1	/
				3	0	23.15	22.5±1	/
				3	1	23.28	22.5±1	/
				3	2	23.09	22.5±1	/
				6	0	22.83	22.5±1	0.5
			16QAM	1	0	22.97	22.5±1	0.5
				1	2	22.98	22.5±1	0.5
				1	5	22.99	22.5±1	0.5
				3	0	22.99	22.5±1	0.5
				3	1	22.95	22.5±1	0.5
				3	2	22.99	22.5±1	0.5
				6	0	21.98	22.5±1	0.5
	20175	1732.5	QPSK	1	0	23.84	23.0±1	/
				1	2	23.83	23.0±1	/
				1	5	23.83	23.0±1	/
				3	0	23.22	22.5±1	/
				3	1	23.26	22.5±1	/
				3	2	23.16	22.5±1	/
				6	0	22.83	22.5±1	0.5
			16QAM	1	0	23.21	22.5±1	0.5
				1	2	23.16	22.5±1	0.5
				1	5	23.19	22.5±1	0.5
				3	0	23.1	22.5±1	0.5
				3	1	23.04	22.5±1	0.5
				3	2	23.06	22.5±1	0.5
				6	0	21.7	22.5±1	0.5
	20393	1754.3	QPSK	1	0	23.78	23.0±1	/
				1	2	23.78	23.0±1	/
				1	5	23.8	23.0±1	/
				3	0	23.37	22.5±1	/
				3	1	23.17	22.5±1	/
				3	2	23.25	22.5±1	/
				6	0	22.83	22.5±1	0.5
			16QAM	1	0	22.81	22.5±1	0.5
				1	2	22.81	22.5±1	0.5
				1	5	22.85	22.5±1	0.5
				3	0	23.04	22.5±1	0.5
				3	1	23.03	22.5±1	0.5
				3	2	23.04	22.5±1	0.5
				6	0	21.95	22.5±1	0.5

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	23.85	23.0±1	/
				1	8	23.88	23.0±1	/
				1	14	23.8	23.0±1	/
				6	0	22.9	22.5±1	0.5
				6	4	22.91	22.5±1	0.5
				6	9	22.91	22.5±1	0.5
				15	0	22.89	22.5±1	0.5
			16QAM	1	0	22.77	22.5±1	0.5
				1	8	22.78	22.5±1	0.5
				1	14	22.7	22.5±1	0.5
				8	0	22.03	22.5±1	0.5
				8	4	22.02	22.5±1	0.5
				8	9	22.01	22.5±1	0.5
				15	0	21.92	22.5±1	0.5
	20175	1732.5	QPSK	1	0	23.82	23.0±1	/
				1	8	23.86	23.0±1	/
				1	14	23.82	23.0±1	/
				6	0	22.85	22.5±1	0.5
				6	4	22.86	22.5±1	0.5
				6	9	22.86	22.5±1	0.5
				15	0	22.84	22.5±1	0.5
			16QAM	1	0	23.16	22.5±1	0.5
				1	8	23.21	22.5±1	0.5
				1	14	23.18	22.5±1	0.5
				6	0	21.93	22.5±1	0.5
				6	4	21.95	22.5±1	0.5
				6	9	21.93	22.5±1	0.5
				15	0	21.87	22.5±1	0.5
	20385	1753.5	QPSK	1	0	23.75	23.0±1	/
				1	8	23.8	23.0±1	/
				1	14	23.78	23.0±1	/
				6	0	22.84	22.5±1	0.5
				6	4	22.86	22.5±1	0.5
				6	9	22.88	22.5±1	0.5
				15	0	22.85	22.5±1	0.5
			16QAM	1	0	22.79	22.5±1	0.5
				1	8	22.81	22.5±1	0.5
				1	14	22.79	22.5±1	0.5
				8	0	21.85	22.5±1	0.5
				8	4	21.89	22.5±1	0.5
				8	9	21.9	22.5±1	0.5
				15	0	21.79	22.5±1	0.5

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	23.9	23.0±1	/
				1	49	23.9	23.0±1	/
				1	99	23.84	23.0±1	/
				12	0	22.93	22.5±1	0.5
				12	24	22.91	22.5±1	0.5
				12	49	22.92	22.5±1	0.5
				25	0	22.87	22.5±1	0.5
			16QAM	1	0	23.09	22.5±1	0.5
				1	49	23.07	22.5±1	0.5
				1	99	23.02	22.5±1	0.5
				12	0	22.02	22.5±1	0.5
				12	24	22.02	22.5±1	0.5
				12	49	22	22.5±1	0.5
				25	0	21.9	22.5±1	0.5
	20175	1732.5	QPSK	1	0	23.83	23.0±1	/
				1	49	23.89	23.0±1	/
				1	99	23.83	23.0±1	/
				12	0	22.9	22.5±1	0.5
				12	24	22.88	22.5±1	0.5
				12	49	22.88	22.5±1	0.5
				25	0	22.85	22.5±1	0.5
			16QAM	1	0	23.35	22.5±1	0.5
				1	49	23.39	22.5±1	0.5
				1	99	23.33	22.5±1	0.5
				12	0	22.04	22.5±1	0.5
				12	24	22.03	22.5±1	0.5
				12	49	22.04	22.5±1	0.5
				25	0	21.9	22.5±1	0.5
	20375	1752.5	QPSK	1	0	23.87	23.0±1	/
				1	49	23.9	23.0±1	/
				1	99	23.88	23.0±1	/
				12	0	22.89	22.5±1	0.5
				12	24	22.88	22.5±1	0.5
				12	49	22.89	22.5±1	0.5
				25	0	22.85	22.5±1	0.5
			16QAM	1	0	22.92	22.5±1	0.5
				1	49	22.94	22.5±1	0.5
				1	99	22.93	22.5±1	0.5
				12	0	21.93	22.5±1	0.5
				12	24	21.93	22.5±1	0.5
				12	49	21.92	22.5±1	0.5
				25	0	21.8	22.5±1	0.5

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	23.97	23.0±1	/
				1	49	23.96	23.0±1	/
				1	99	23.92	23.0±1	/
				25	0	22.94	22.5±1	0.5
				25	24	22.93	22.5±1	0.5
				25	49	22.96	22.5±1	0.5
				50	0	22.97	22.5±1	0.5
			16QAM	1	0	22.9	22.5±1	0.5
				1	49	22.8	22.5±1	0.5
				1	99	22.86	22.5±1	0.5
				25	0	21.98	22.5±1	0.5
				25	24	21.95	22.5±1	0.5
				25	49	21.97	22.5±1	0.5
				50	0	21.95	22.5±1	0.5
	20175	1732.5	QPSK	1	0	23.87	23.0±1	/
				1	49	23.84	23.0±1	/
				1	99	23.87	23.0±1	/
				25	0	22.84	22.5±1	0.5
				25	24	22.85	22.5±1	0.5
				25	49	22.87	22.5±1	0.5
				50	0	22.88	22.5±1	0.5
			16QAM	1	0	23.17	22.5±1	0.5
				1	49	23.15	22.5±1	0.5
				1	99	23.21	22.5±1	0.5
				25	0	21.87	22.5±1	0.5
				25	24	21.88	22.5±1	0.5
				25	49	21.92	22.5±1	0.5
				50	0	21.91	22.5±1	0.5
	20350	1750	QPSK	1	0	23.82	23.0±1	/
				1	49	23.74	23.0±1	/
				1	99	23.81	23.0±1	/
				25	0	22.81	22.5±1	0.5
				25	24	22.81	22.5±1	0.5
				25	49	22.82	22.5±1	0.5
				50	0	22.85	22.5±1	0.5
			16QAM	1	0	22.87	22.5±1	0.5
				1	49	22.75	22.5±1	0.5
				1	99	22.82	22.5±1	0.5
				25	0	21.92	22.5±1	0.5
				25	24	21.9	22.5±1	0.5
				25	49	21.91	22.5±1	0.5
				50	0	21.88	22.5±1	0.5

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	23.98	23.0±1	/
				1	49	23.97	23.0±1	/
				1	99	23.99	23.0±1	/
				36	0	22.99	22.5±1	0
				36	24	23.01	22.5±1	0.5
				36	49	23.03	22.5±1	0.5
				75	0	23.02	22.5±1	0.5
			16QAM	1	0	22.9	22.5±1	0.5
				1	49	22.87	22.5±1	0.5
				1	99	22.9	22.5±1	0.5
				36	0	21.96	22.5±1	0.5
				36	24	21.98	22.5±1	0.5
				36	49	22	22.5±1	0.5
				75	0	22	22.5±1	0.5
	20175	1732.5	QPSK	1	0	23.9	23.0±1	/
				1	49	23.89	23.0±1	/
				1	99	23.92	23.0±1	/
				36	0	22.9	22.5±1	0.5
				36	24	22.91	22.5±1	0.5
				36	49	22.9	22.5±1	0.5
				75	0	22.91	22.5±1	0.5
			16QAM	1	0	23.21	22.5±1	0.5
				1	49	23.22	22.5±1	0.5
				1	99	23.29	22.5±1	0.5
				36	0	21.91	22.5±1	0.5
				36	24	21.92	22.5±1	0.5
				36	49	21.92	22.5±1	0.5
				75	0	21.91	22.5±1	0.5
	20325	1747.5	QPSK	1	0	23.96	23.0±1	/
				1	49	23.89	23.0±1	/
				1	99	23.95	23.0±1	/
				36	0	22.94	22.5±1	0.5
				36	24	22.92	22.5±1	0.5
				36	49	22.92	22.5±1	0.5
				75	0	22.95	22.5±1	0.5
			16QAM	1	0	23.35	22.5±1	0.5
				1	49	23.2	22.5±1	0.5
				1	99	23.24	22.5±1	0.5
				36	0	21.86	22.5±1	0.5
				36	24	21.85	22.5±1	0.5
				36	49	21.86	22.5±1	0.5
				75	0	21.91	22.5±1	0.5

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	23.95	23.0±1	/
				1	49	23.87	23.0±1	/
				1	99	24.01	23.0±1	/
				50	0	23	22.5±1	0.5
				50	24	22.97	22.5±1	0.5
				50	49	23.01	22.5±1	0.5
				100	0	22.97	22.5±1	0.5
			16QAM	1	0	23.43	22.5±1	0.5
				1	49	23.4	22.5±1	0.5
				1	99	23.35	22.5±1	0.5
				50	0	22.02	22.5±1	0.5
				50	24	22.01	22.5±1	0.5
				50	49	22.02	22.5±1	0.5
				100	0	22	22.5±1	0.5
	20175	1732.5	QPSK	1	0	23.89	23.0±1	/
				1	49	23.8	23.0±1	/
				1	99	23.94	23.0±1	/
				50	0	22.88	22.5±1	0.5
				50	24	22.91	22.5±1	0.5
				50	49	23.07	22.5±1	0.5
				100	0	22.87	22.5±1	0.5
			16QAM	1	0	23.31	22.5±1	0.5
				1	49	23.27	22.5±1	0.5
				1	99	23.41	22.5±1	0.5
				50	0	21.89	22.5±1	0.5
				50	24	21.9	22.5±1	0.5
				50	49	21.95	22.5±1	0.5
				100	0	21.89	22.5±1	0.5
	20300	1745	QPSK	1	0	23.95	23.0±1	/
				1	49	23.87	23.0±1	/
				1	99	23.98	23.0±1	/
				50	0	22.95	22.5±1	0.5
				50	24	22.91	22.5±1	0.5
				50	49	22.9	22.5±1	0.5
				100	0	22.92	22.5±1	0.5
			16QAM	1	0	23.35	22.5±1	0.5
				1	49	23.26	22.5±1	0.5
				1	99	23.32	22.5±1	0.5
				50	0	21.94	22.5±1	0.5
				50	24	21.92	22.5±1	0.5
				50	49	21.88	22.5±1	0.5
				100	0	21.92	22.5±1	0.5

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	78.22	164	1.0	H	4.25	0.31	10.40	14.34	33	-18.66
1850.70	84.59	93	1.4	V	11.31	0.31	10.40	21.40	33	-11.60
LTE Band 2 Channel 18900 – 1.4MHz – QPSK										
1880.00	78.42	274	1.6	H	4.57	0.31	10.40	14.66	33	-18.34
1880.00	84.26	115	1.8	V	11.14	0.31	10.40	21.23	33	-11.77
LTE Band 2 Channel 19193 – 1.4MHz – QPSK										
1909.30	77.80	50	1.3	H	4.07	0.32	10.40	14.15	33	-18.85
1909.30	84.34	358	2.4	V	11.38	0.32	10.40	21.46	33	-11.54
LTE Band 2 Channel 18607 – 1.4MHz – 16QAM										
1850.70	77.90	104	2.2	H	3.93	0.31	10.40	14.02	33	-18.98
1850.70	84.86	172	1.6	V	11.58	0.31	10.40	21.67	33	-11.33
LTE Band 2 Channel 18900 – 1.4MHz – 16QAM										
1880.00	79.16	157	1.8	H	5.31	0.31	10.40	15.40	33	-17.60
1880.00	84.22	347	2.1	V	11.10	0.31	10.40	21.19	33	-11.81
LTE Band 2 Channel 19193 – 1.4MHz – 16QAM										
1909.30	77.17	1	1.6	H	3.44	0.32	10.40	13.52	33	-19.48
1909.30	84.04	319	1.1	V	11.08	0.32	10.40	21.16	33	-11.84
LTE Band 2 Channel 18615 – 3MHz – QPSK										
1850.70	77.61	198	1.6	H	3.64	0.31	10.40	13.73	33	-19.27
1850.70	84.12	39	1.4	V	10.84	0.31	10.40	20.93	33	-12.07
LTE Band 2 Channel 18900 – 3MHz – QPSK										
1880.00	76.74	294	2.3	H	2.89	0.31	10.40	12.98	33	-20.02
1880.00	84.65	116	2.0	V	11.53	0.31	10.40	21.62	33	-11.38
LTE Band 2 Channel 19185 – 3MHz – QPSK										
1909.30	78.94	178	2.0	H	5.21	0.32	10.40	15.29	33	-17.71
1909.30	84.55	206	2.0	V	11.59	0.32	10.40	21.67	33	-11.33
LTE Band 2 Channel 18615 – 3MHz – 16QAM										
1850.70	77.41	268	2.0	H	3.44	0.31	10.40	13.53	33	-19.47
1850.70	84.22	271	2.3	V	10.94	0.31	10.40	21.03	33	-11.97
LTE Band 2 Channel 18900 – 3MHz – 16QAM										
1880.00	77.48	175	2.1	H	3.63	0.31	10.40	13.72	33	-19.28
1880.00	84.50	309	2.1	V	11.38	0.31	10.40	21.47	33	-11.53
LTE Band 2 Channel 19185 – 3MHz – 16QAM										
1909.30	77.50	145	1.4	H	3.77	0.32	10.40	13.85	33	-19.15
1909.30	84.96	218	2.2	V	12.00	0.32	10.40	22.08	33	-10.92
LTE Band 2 Channel 18625 – 5MHz – QPSK										
1850.70	79.42	311	2.5	H	5.45	0.31	10.40	15.54	33	-17.46
1850.70	84.20	157	2.3	V	10.92	0.31	10.40	21.01	33	-11.99
LTE Band 2 Channel 18900 – 5MHz – QPSK										
1880.00	79.88	81	1.0	H	6.03	0.31	10.40	16.12	33	-16.88

1880.00	84.29	102	1.3	V	11.17	0.31	10.40	21.26	33	-11.74
LTE Band 2 Channel 19175 – 5MHz – QPSK										
1909.30	79.93	312	2.1	H	6.20	0.32	10.40	16.28	33	-16.72
1909.30	84.45	131	1.1	V	11.49	0.32	10.40	21.57	33	-11.43
LTE Band 2 Channel 18625 – 5MHz – 16QAM										
1850.70	79.66	17	2.4	H	5.69	0.31	10.40	15.78	33	-17.22
1850.70	84.09	13	1.3	V	10.81	0.31	10.40	20.90	33	-12.10
LTE Band 2 Channel 18900 – 5MHz – 16QAM										
1880.00	78.77	356	1.9	H	4.92	0.31	10.40	15.01	33	-17.99
1880.00	84.50	38	1.1	V	11.38	0.31	10.40	21.47	33	-11.53
LTE Band 2 Channel 19175 – 5MHz – 16QAM										
1909.30	76.79	266	1.0	H	3.06	0.32	10.40	13.14	33	-19.86
1909.30	84.64	276	1.8	V	11.68	0.32	10.40	21.76	33	-11.24
LTE Band 2 Channel 18650 – 10MHz – QPSK										
1850.70	76.27	41	1.8	H	2.30	0.31	10.40	12.39	33	-20.61
1850.70	84.37	155	1.8	V	11.09	0.31	10.40	21.18	33	-11.82
LTE Band 2 Channel 18900 – 10MHz – QPSK										
1880.00	78.43	333	2.4	H	4.58	0.31	10.40	14.67	33	-18.33
1880.00	84.17	73	1.9	V	11.05	0.31	10.40	21.14	33	-11.86
LTE Band 2 Channel 19150 – 10MHz – QPSK										
1909.30	76.63	232	1.3	H	2.90	0.32	10.40	12.98	33	-20.02
1909.30	84.24	91	2.4	V	11.28	0.32	10.40	21.36	33	-11.64
LTE Band 2 Channel 18650 – 10MHz – 16QAM										
1850.70	77.54	327	1.1	H	3.57	0.31	10.40	13.66	33	-19.34
1850.70	84.05	300	2.0	V	10.77	0.31	10.40	20.86	33	-12.14
LTE Band 2 Channel 18900 – 10MHz – 16QAM										
1880.00	77.16	303	1.7	H	3.31	0.31	10.40	13.40	33	-19.60
1880.00	84.85	173	2.5	V	11.73	0.31	10.40	21.82	33	-11.18
LTE Band 2 Channel 19150 – 10MHz – 16QAM										
1909.30	76.68	172	1.5	H	2.95	0.32	10.40	13.03	33	-19.97
1909.30	84.68	152	2.5	V	11.72	0.32	10.40	21.80	33	-11.20
LTE Band 2 Channel 18675 – 15MHz – QPSK										
1850.70	76.95	296	2.3	H	2.98	0.31	10.40	13.07	33	-19.93
1850.70	84.59	265	1.9	V	11.31	0.31	10.40	21.40	33	-11.60
LTE Band 2 Channel 18900 – 15MHz – QPSK										
1880.00	76.49	290	1.9	H	2.64	0.31	10.40	12.73	33	-20.27
1880.00	84.66	219	1.6	V	11.54	0.31	10.40	21.63	33	-11.37
LTE Band 2 Channel 19125 – 15MHz – QPSK										
1909.30	79.14	132	1.1	H	5.41	0.32	10.40	15.49	33	-17.51
1909.30	84.47	94	1.9	V	11.51	0.32	10.40	21.59	33	-11.41
LTE Band 2 Channel 18675 – 15MHz – 16QAM										
1850.70	77.91	225	1.8	H	3.94	0.31	10.40	14.03	33	-18.97
1850.70	84.34	254	1.4	V	11.06	0.31	10.40	21.15	33	-11.85
LTE Band 2 Channel 18900 – 15MHz – 16QAM										
1880.00	77.44	314	1.5	H	3.59	0.31	10.40	13.68	33	-19.32
1880.00	84.44	19	2.1	V	11.32	0.31	10.40	21.41	33	-11.59
LTE Band 2 Channel 19125 – 15MHz – 16QAM										
1909.30	77.06	121	1.1	H	3.33	0.32	10.40	13.41	33	-19.59

1909.30	84.85	297	2.2	V	11.89	0.32	10.40	21.97	33	-11.03
LTE Band 2 Channel 18700 – 20MHz – QPSK										
1850.70	78.12	216	1.2	H	4.15	0.31	10.40	14.24	33	-18.76
1850.70	84.80	309	1.8	V	11.52	0.31	10.40	21.61	33	-11.39
LTE Band 2 Channel 18900 – 20MHz – QPSK										
1880.00	76.09	335	1.3	H	2.24	0.31	10.40	12.33	33	-20.67
1880.00	84.57	61	2.3	V	11.45	0.31	10.40	21.54	33	-11.46
LTE Band 2 Channel 19100 – 20MHz – QPSK										
1909.30	79.38	45	1.0	H	5.65	0.32	10.40	15.73	33	-17.27
1909.30	84.86	246	1.7	V	11.90	0.32	10.40	21.98	33	-11.02
LTE Band 2 Channel 18670 – 20MHz – 16QAM										
1850.70	79.61	18	1.2	H	5.64	0.31	10.40	15.73	33	-17.27
1850.70	84.28	40	2.2	V	11.00	0.31	10.40	21.09	33	-11.91
LTE Band 2 Channel 18900 – 20MHz – 16QAM										
1880.00	78.20	74	2.5	H	4.35	0.31	10.40	14.44	33	-18.56
1880.00	84.16	93	2.1	V	11.04	0.31	10.40	21.13	33	-11.87
LTE Band 2 Channel 19100 – 20MHz – 16QAM										
1909.30	79.11	138	1.4	H	5.38	0.32	10.40	15.46	33	-17.54
1909.30	84.17	273	1.9	V	11.21	0.32	10.40	21.29	33	-11.71

LTE Band 4

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Part 27	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE Band 4 Channel 19957 – 1.4MHz – QPSK										
1710.70	76.90	221	1.5	H	2.79	0.31	10.40	12.88	30	-17.12
1710.70	84.40	329	2.5	V	10.87	0.31	10.40	20.96	30	-9.04
LTE Band 4 Channel 20175 – 1.4MHz – QPSK										
1710.70	77.29	117	1.6	H	3.18	0.30	9.40	12.28	30	-17.72
1710.70	84.99	21	1.3	V	11.46	0.30	9.40	20.56	30	-9.44
LTE Band 4 Channel 20393 – 1.4MHz – QPSK										
1732.50	76.76	167	1.7	H	2.65	0.30	9.40	11.75	30	-18.25
1732.50	84.75	62	1.4	V	11.22	0.30	9.40	20.32	30	-9.68
LTE Band 4 Channel 19957 – 1.4MHz – 16QAM										
1754.30	78.34	183	1.0	H	4.23	0.30	9.40	13.33	30	-16.67
1754.30	84.74	175	2.3	V	11.21	0.30	9.40	20.31	30	-9.69
LTE Band 4 Channel 20175 – 1.4MHz – 16QAM										
1710.70	77.02	292	1.7	H	2.91	0.30	9.40	12.01	30	-17.99
1710.70	84.91	152	2.0	V	11.38	0.30	9.40	20.48	30	-9.52
LTE Band 4 Channel 20393 – 1.4MHz – 16QAM										
1732.50	79.99	294	2.3	H	5.88	0.30	9.40	14.98	30	-15.02
1732.50	84.06	73	2.0	V	10.53	0.30	9.40	19.63	30	-10.37
LTE Band 4 Channel 19965 – 3MHz – QPSK										
1754.30	76.39	286	1.7	H	2.28	0.30	9.40	11.38	30	-18.62
1754.30	84.83	263	1.4	V	11.30	0.30	9.40	20.40	30	-9.60
LTE Band 4 Channel 20175 – 3MHz – QPSK										
1710.70	79.54	65	1.5	H	5.43	0.30	9.40	14.53	30	-15.47

1710.70	84.71	36	1.4	V	11.18	0.30	9.40	20.28	30	-9.72
LTE Band 4 Channel 20385 – 3MHz – QPSK										
1732.50	77.13	208	1.3	H	3.02	0.30	9.40	12.12	30	-17.88
1732.50	84.55	85	2.0	V	11.02	0.30	9.40	20.12	30	-9.88
LTE Band 4 Channel 19965 – 3MHz – 16QAM										
1754.30	79.94	342	1.3	H	5.83	0.30	9.40	14.93	30	-15.07
1754.30	84.62	49	2.1	V	11.09	0.30	9.40	20.19	30	-9.81
LTE Band 4 Channel 20175 – 3MHz – 16QAM										
1710.70	79.85	84	1.2	H	5.74	0.30	9.40	14.84	30	-15.16
1710.70	84.67	232	1.1	V	11.14	0.30	9.40	20.24	30	-9.76
LTE Band 4 Channel 20385 – 3MHz – 16QAM										
1732.50	78.24	84	1.0	H	4.13	0.30	9.40	13.23	30	-16.77
1732.50	84.91	105	1.1	V	11.38	0.30	9.40	20.48	30	-9.52
LTE Band 4 Channel 19975 – 5MHz – QPSK										
1754.30	78.64	133	2.2	H	4.53	0.30	9.40	13.63	30	-16.37
1754.30	84.68	81	2.3	V	11.15	0.30	9.40	20.25	30	-9.75
LTE Band 4 Channel 20175 – 5MHz – QPSK										
1732.50	77.69	315	1.4	H	3.58	0.31	10.40	13.67	30	-16.33
1732.50	84.37	340	2.3	V	10.84	0.31	10.40	20.93	30	-9.07
LTE Band 4 Channel 20375 – 5MHz – QPSK										
1752.50	79.15	5	2.0	H	5.04	0.32	10.40	15.12	30	-14.88
1752.50	84.32	180	1.2	V	10.79	0.32	10.40	20.87	30	-9.13
LTE Band 4 Channel 19975 – 5MHz – 16QAM										
1712.50	78.01	283	1.7	H	3.90	0.31	10.40	13.99	30	-16.01
1712.50	84.50	180	1.8	V	10.97	0.31	10.40	21.06	30	-8.94
LTE Band 4 Channel 20175 – 5MHz – 16QAM										
1732.50	79.41	237	1.2	H	5.30	0.31	10.40	15.39	30	-14.61
1732.50	84.59	145	2.1	V	11.06	0.31	10.40	21.15	30	-8.85
LTE Band 4 Channel 20375 – 5MHz – 16QAM										
1752.50	76.13	343	1.8	H	2.02	0.32	10.40	12.10	30	-17.90
1752.50	84.49	20	1.8	V	10.96	0.32	10.40	21.04	30	-8.96
LTE Band 4 Channel 20000 – 10MHz – QPSK										
1715.00	76.71	183	1.6	H	2.60	0.31	10.40	12.69	30	-17.31
1715.00	84.22	66	2.2	V	10.69	0.31	10.40	20.78	30	-9.22
LTE Band 4 Channel 20175 – 10MHz – QPSK										
1732.50	76.14	245	2.0	H	2.03	0.31	10.40	12.12	30	-17.88
1732.50	84.24	277	1.3	V	10.71	0.31	10.40	20.80	30	-9.20
LTE Band 4 Channel 20350 – 10MHz – QPSK										
1750.00	78.24	115	2.4	H	4.13	0.32	10.40	14.21	30	-15.79
1750.00	84.21	159	2.1	V	10.68	0.32	10.40	20.76	30	-9.24
LTE Band 4 Channel 20000 – 10MHz – 16QAM										
1715.00	76.49	92	1.2	H	2.38	0.31	10.40	12.47	30	-17.53
1715.00	84.68	133	2.0	V	11.15	0.31	10.40	21.24	30	-8.76
LTE Band 4 Channel 20175 – 10MHz – 16QAM										
1732.50	78.92	245	1.2	H	4.81	0.31	10.40	14.90	30	-15.10
1732.50	84.83	170	2.2	V	11.30	0.31	10.40	21.39	30	-8.61
LTE Band 4 Channel 20350 – 10MHz – 16QAM										
1750.00	77.70	166	1.1	H	3.59	0.32	10.40	13.67	30	-16.33

1750.00	84.64	103	2.1	V	11.11	0.32	10.40	21.19	30	-8.81
LTE Band 4 Channel 20025 – 15MHz – QPSK										
1717.50	77.23	229	1.3	H	3.12	0.31	10.40	13.21	30	-16.79
1717.50	84.68	194	1.3	V	11.15	0.31	10.40	21.24	30	-8.76
LTE Band 4 Channel 20175 – 15MHz – QPSK										
1732.50	77.02	136	1.6	H	2.91	0.31	10.40	13.00	30	-17.00
1732.50	84.06	67	2.3	V	10.53	0.31	10.40	20.62	30	-9.38
LTE Band 4 Channel 20325 – 15MHz – QPSK										
1747.50	77.82	340	1.8	H	3.71	0.32	10.40	13.79	30	-16.21
1747.50	84.36	323	2.1	V	10.83	0.32	10.40	20.91	30	-9.09
LTE Band 4 Channel 20025 – 15MHz – 16QAM										
1717.50	78.48	229	1.5	H	4.37	0.31	10.40	14.46	30	-15.54
1717.50	84.63	3	1.3	V	11.10	0.31	10.40	21.19	30	-8.81
LTE Band 4 Channel 20175 – 15MHz – 16QAM										
1732.50	79.47	120	1.6	H	5.36	0.31	10.40	15.45	30	-14.55
1732.50	84.37	224	2.1	V	10.84	0.31	10.40	20.93	30	-9.07
LTE Band 4 Channel 20325 – 15MHz – 16QAM										
1747.50	78.53	192	2.1	H	4.42	0.32	10.40	14.50	30	-15.50
1747.50	84.07	111	1.1	V	10.54	0.32	10.40	20.62	30	-9.38
LTE Band 4 Channel 20050 – 20MHz – QPSK										
1720.00	78.03	247	1.9	H	3.92	0.31	10.40	14.01	30	-15.99
1720.00	84.94	75	1.3	V	11.41	0.31	10.40	21.50	30	-8.50
LTE Band 4 Channel 20175 – 20MHz – QPSK										
1732.50	78.03	317	1.6	H	3.92	0.31	10.40	14.01	30	-15.99
1732.50	84.13	175	1.8	V	10.60	0.31	10.40	20.69	30	-9.31
LTE Band 4 Channel 20300 – 20MHz – QPSK										
1745.00	76.77	265	2.2	H	2.66	0.32	10.40	12.74	30	-17.26
1745.00	84.23	342	1.5	V	10.70	0.32	10.40	20.78	30	-9.22
LTE Band 4 Channel 20050 – 20MHz – 16QAM										
1720.00	76.65	347	1.6	H	2.54	0.31	10.40	12.63	30	-17.37
1720.00	84.44	349	2.1	V	10.91	0.31	10.40	21.00	30	-9.00
LTE Band 4 Channel 20175 – 20MHz – 16QAM										
1732.50	77.33	304	1.0	H	3.22	0.31	10.40	13.31	30	-16.69
1732.50	84.09	260	1.8	V	10.56	0.31	10.40	20.65	30	-9.35
LTE Band 4 Channel 20300 – 20MHz – 16QAM										
1745.00	77.98	65	1.3	H	3.87	0.30	9.40	12.97	30	-17.03
1745.00	84.58	338	2.3	V	11.05	0.30	9.40	20.15	30	-9.85

8 Peak-to-Average Ratio

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

Test Method: N/A

Test Mode: Transmitting

8.1 EUT Operation

Operating Environment **:**

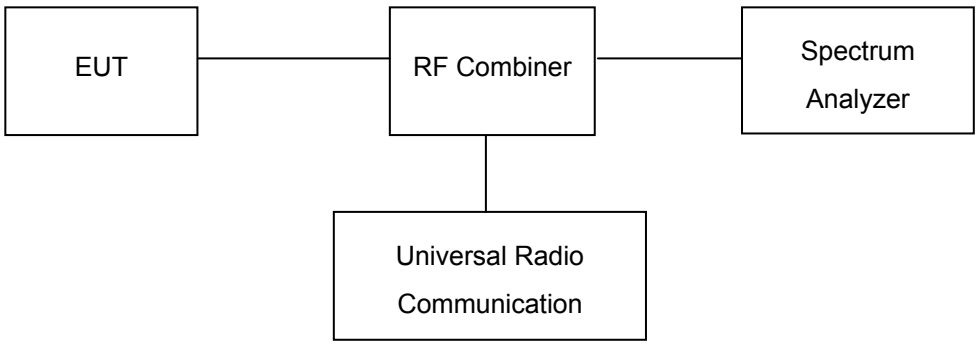
Temperature: 22.5 °C

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 Appendix Band 2/4 LTE Peak to Average Ratio.

9 BANDWIDTH

Test Requirement: FCC Part 2.1049, 24.238, 27.53(a)

Test Method: TIA/EIA-603-D:2010

Test Mode: Transmitting

9.1 EUT Operation

Operating Environment **:**

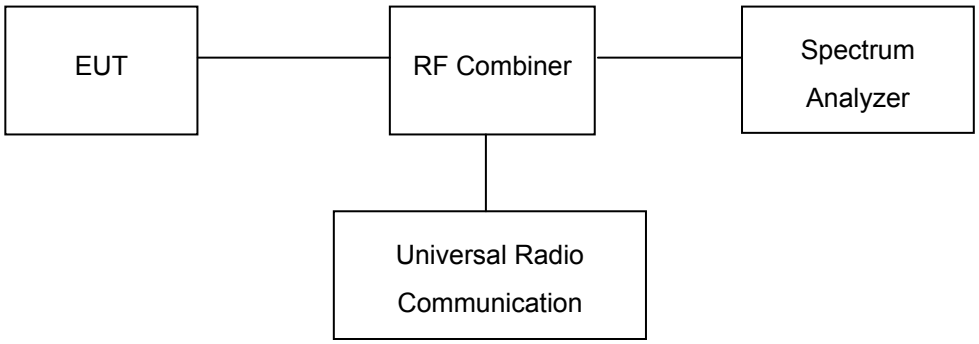
Temperature: 22.5 °C

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 at 3 kHz (Cellular /PCS) 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	1.15	1.34
			16QAM	1.15	1.33
1.4	18900	1880	QPSK	1.15	1.33
			16QAM	1.16	1.33
1.4	19193	1909.3	QPSK	1.16	1.34
			16QAM	1.15	1.33
3	18615	1851.5	QPSK	2.72	2.96
			16QAM	2.72	2.96
3	18900	1880	QPSK	2.73	2.96
			16QAM	2.73	2.96
3	19185	1908.5	QPSK	2.73	2.96
			16QAM	2.72	2.96
5	18625	1852.5	QPSK	4.5	4.88
			16QAM	4.5	4.87
5	18900	1880	QPSK	4.5	4.84
			16QAM	4.5	4.85
5	19175	1907.5	QPSK	4.49	4.84
			16QAM	4.5	4.86
10	18650	1855	QPSK	8.93	9.44
			16QAM	8.92	9.4
10	18900	1880	QPSK	8.92	9.33
			16QAM	8.91	9.35
10	19150	1905	QPSK	8.92	9.37
			16QAM	8.92	9.37
15	18675	1857.5	QPSK	13.38	14.01
			16QAM	13.37	13.99
15	18900	1880	QPSK	13.38	13.9
			16QAM	13.37	13.94

15	19125	1902.5	QPSK	13.38	13.96
			16QAM	13.38	13.95
20	18700	1860	QPSK	17.84	18.44
			16QAM	17.83	18.48
20	18900	1880	QPSK	17.83	18.41
			16QAM	17.84	18.4
20	19100	1900	QPSK	17.84	18.48
			16QAM	17.85	18.47

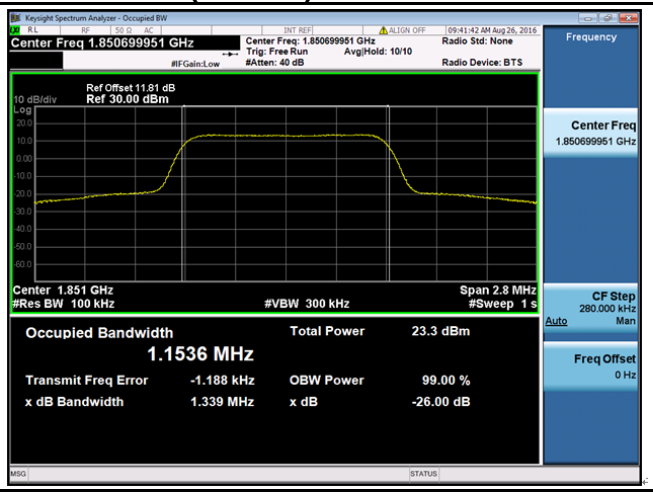
LTE Band 4 (Part 27):

BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
1.4	19957	1710.7	QPSK	1.15	1.33
			16QAM	1.15	1.33
1.4	20175	1732.5	QPSK	1.15	1.33
			16QAM	1.16	1.33
1.4	20393	1754.3	QPSK	1.16	1.34
			16QAM	1.15	1.33
3	19965	1711.5	QPSK	2.72	2.95
			16QAM	2.72	2.95
3	20175	1732.5	QPSK	2.72	2.96
			16QAM	2.72	2.96
3	20385	1753.5	QPSK	2.73	2.96
			16QAM	2.72	2.96
5	19975	1712.5	QPSK	4.5	4.83
			16QAM	4.49	4.82
5	20175	1732.5	QPSK	4.5	4.84
			16QAM	4.49	4.84
5	20375	1752.5	QPSK	4.49	4.83
			16QAM	4.49	4.84
10	20000	1715	QPSK	9.34	10
			16QAM	8.91	9.34

10	20175	1732.5	QPSK	8.92	9.34
			16QAM	8.92	9.37
10	20350	1750	QPSK	8.91	9.36
			16QAM	8.91	9.34
15	20025	1717.5	QPSK	13.37	13.93
			16QAM	13.36	13.92
15	20175	1732.5	QPSK	13.39	13.89
			16QAM	13.38	13.95
15	20325	1747.5	QPSK	13.36	13.93
			16QAM	13.36	13.89
20	20050	1720	QPSK	17.83	18.37
			16QAM	17.82	18.41
20	20175	1732.5	QPSK	17.84	18.43
			16QAM	17.84	18.42
20	20300	1745	QPSK	17.81	18.42
			16QAM	17.82	18.45

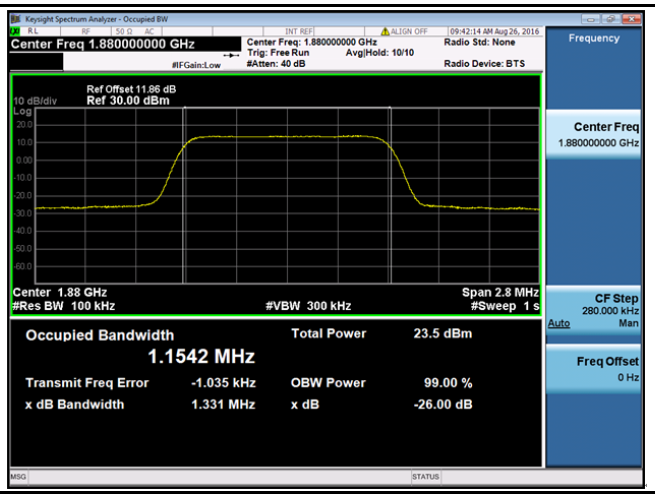
Test Plots

LTE Band 2 (Part 24E)

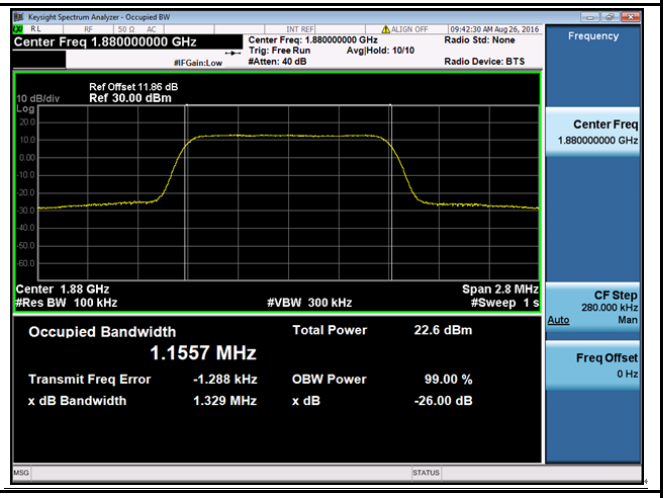


LTE band 2 - Low CH QPSK-1.4

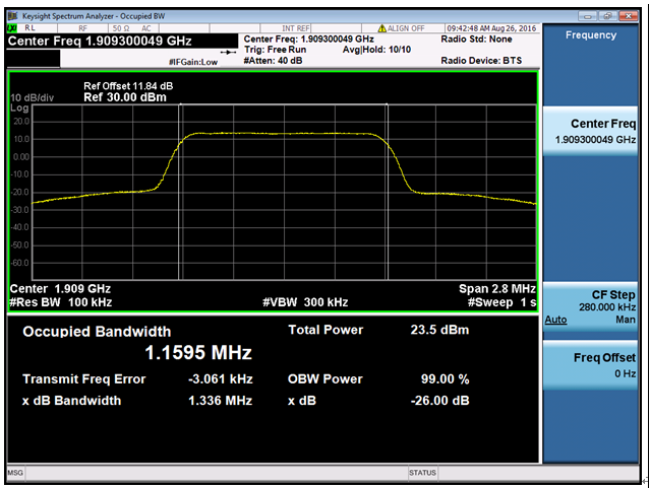
LTE band 2 - Low CH 16QAM-1.4



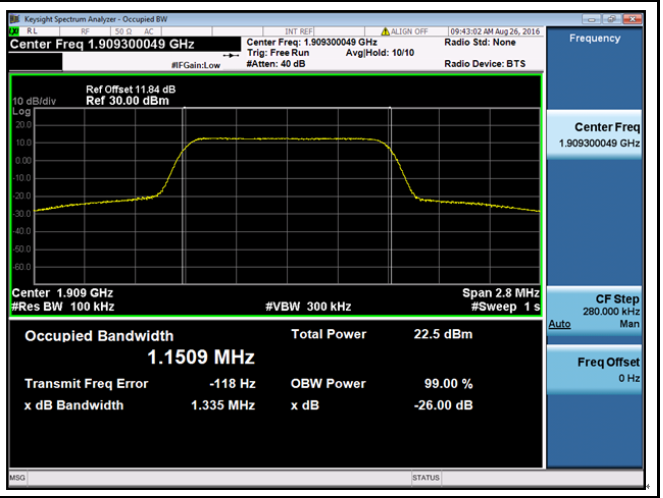
LTE band 2 - Middle CH QPSK-1.4



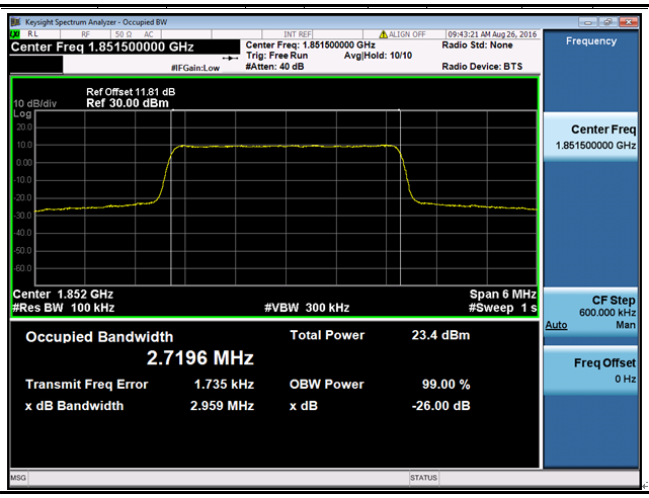
LTE band 2 - Middle CH 16QAM-1.4



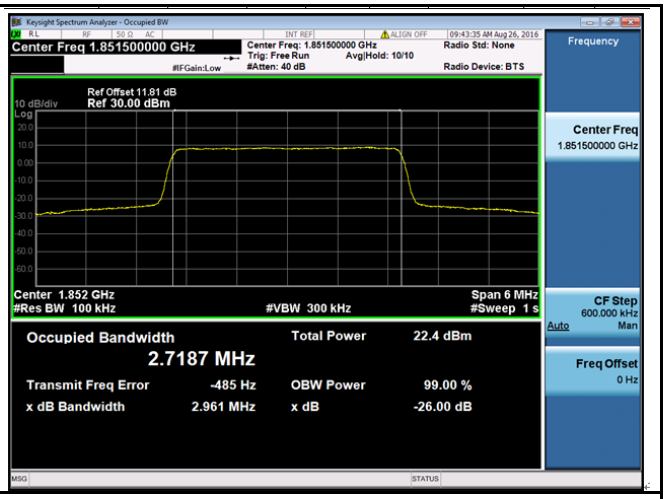
LTE band 2 - High CH QPSK-1.4



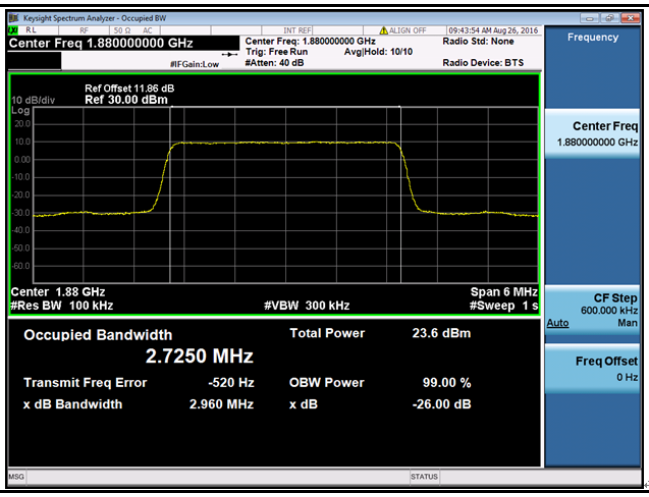
LTE band 2 - High CH 16QAM-1.4



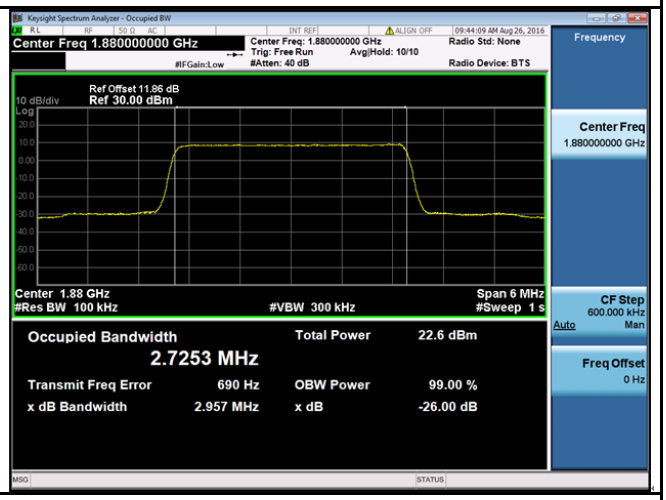
LTE band 2 - Low CH QPSK-3



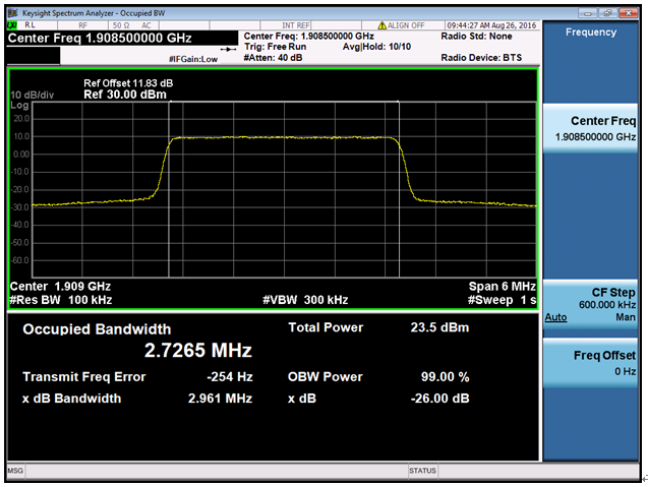
LTE band 2 - Low CH 16QAM-3



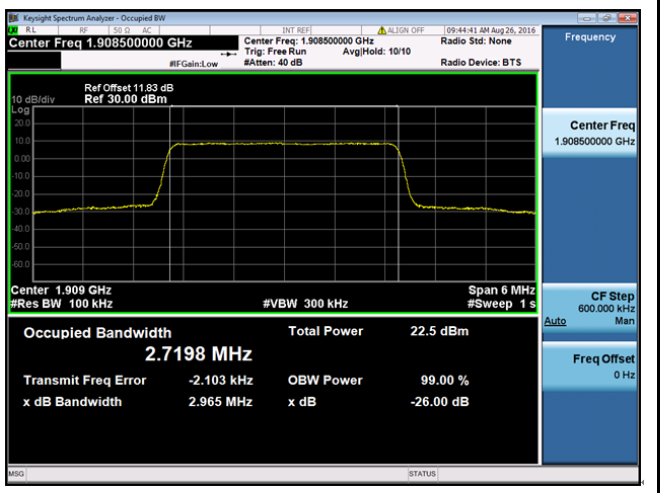
LTE band 2 - Middle CH QPSK-3



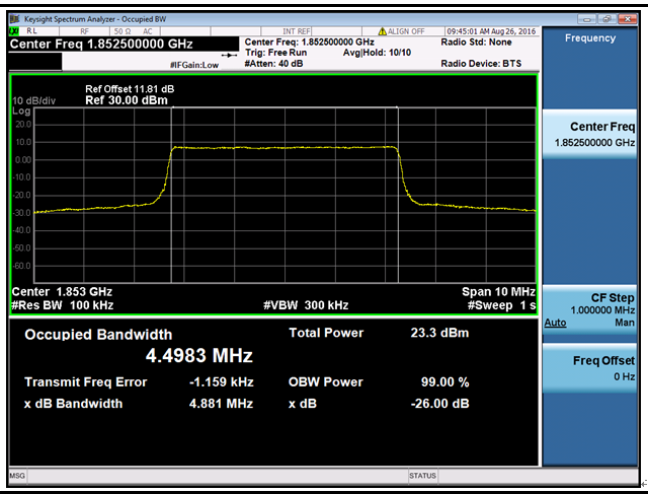
LTE band 2 - Middle CH 16QAM-3



LTE band 2 - High CH QPSK-3

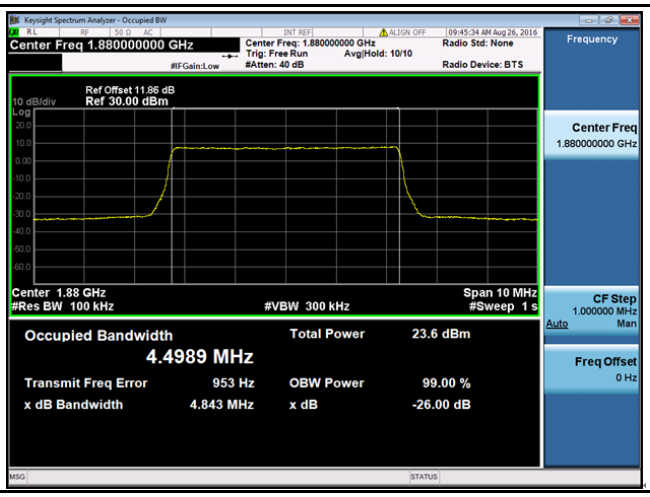


LTE band 2 - High CH 16QAM-3

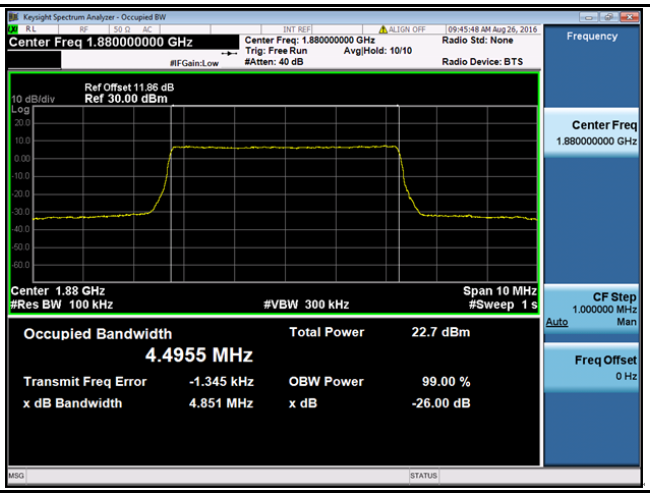


LTE band 2 - Low CH QPSK-5

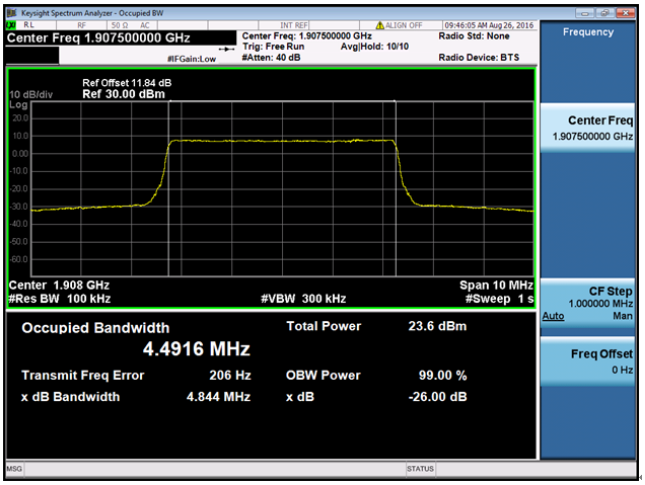
LTE band 2 - Low CH 16QAM-5



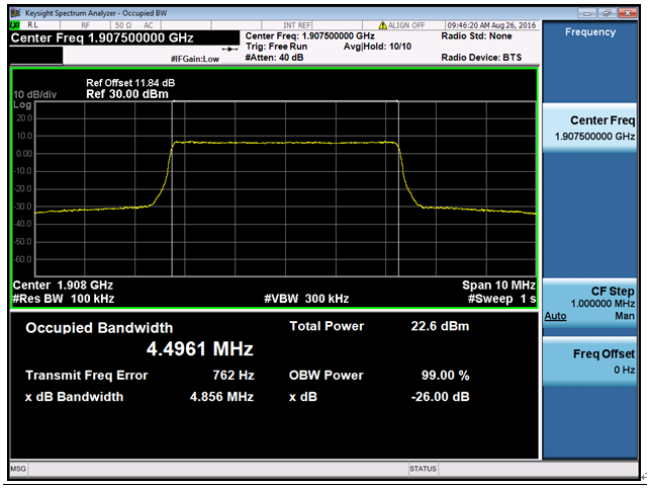
LTE band 2 - Middle CH QPSK-5



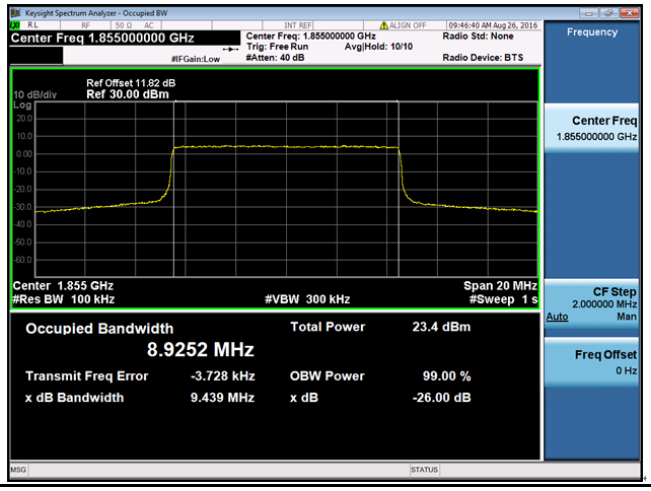
LTE band 2 - Middle CH 16QAM-5



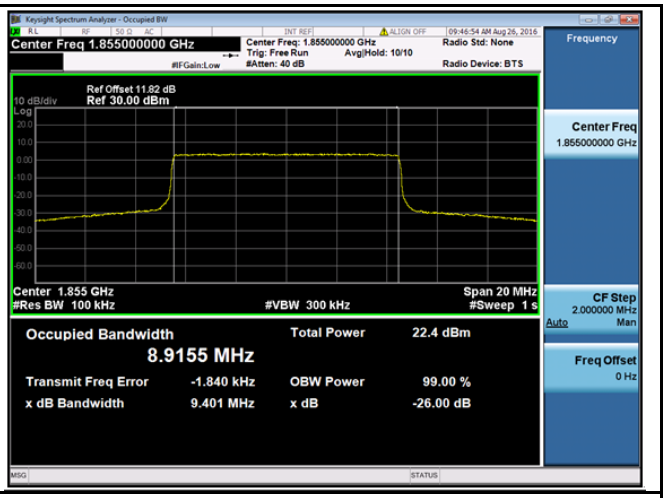
LTE band 2 - High CH QPSK-5



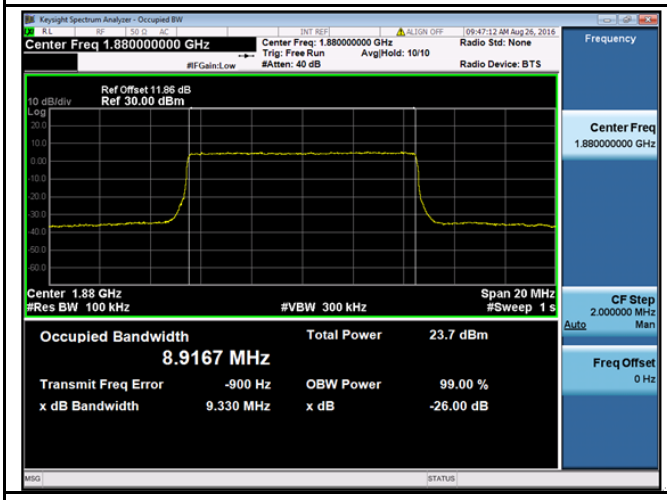
LTE band 2 - High CH 16QAM-5



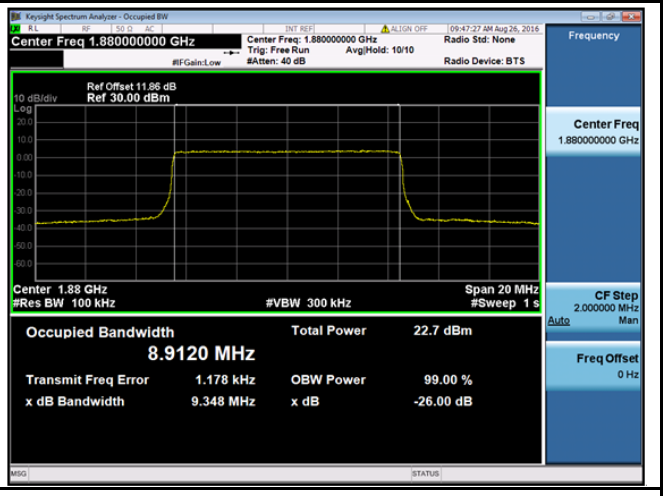
LTE band 2 - Low CH QPSK-10



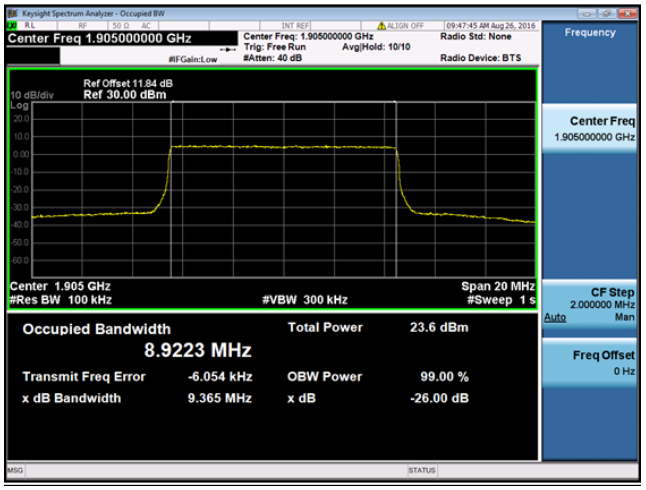
LTE band 2 - Low CH 16QAM-10



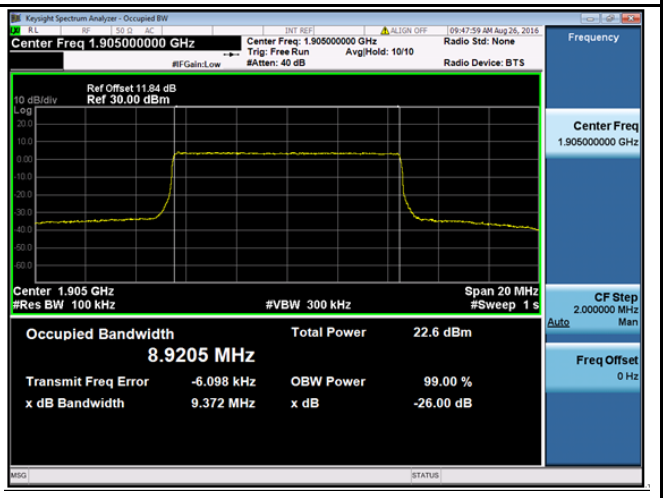
LTE band 2 - Middle CH QPSK-10



LTE band 2 - Middle CH 16QAM-10



LTE band 2 - High CH QPSK-10



LTE band 2 - High CH 16QAM-10