

TEST REPORT

Reference No...... : WTS17S1093648-2E
FCC ID : 2AC88-R1
Applicant..... : HONGKONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED
Address..... : Suite 603, 6/F, Laws Commercial Plaza, 788 Cheung Sha Wan Road, Kowloon, HongKong
Manufacturer : Shenzhen uCloudlink Network Technology, Co., Ltd
Address..... : 3rd Floor, A Part of Building 1, Shenzhen Software Industry Base, nanshan district xuefu Road Post Code 518057, Shenzhen City, Guangdong Province P.R.China
Product..... : 4G modem
Model(s) : R1
Brand Name..... : GlocalMe
Standards..... : FCC CFR47 Part 22 Subpart H: 2017
FCC CFR47 Part 24 Subpart E: 2017
FCC CFR47 Part 27 Subpart L: 2017
Date of Receipt sample : 2017-10-27
Date of Test : 2017-10-28 to 2017-11-29
Date of Issue..... : 2018-02-25
Test Result..... : Pass

Remarks:

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

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2 Laboratories Introduction

Waltek Services (Shenzhen) Co., Ltd is a professional third-party testing and certification laboratory with multi-year product testing and certification experience, established strictly in accordance with ISO/IEC 17025 requirements, and accredited by ILAC (International Laboratory Accreditation Cooperation) member. A2LA (American Association for Laboratory Accreditation) of USA, Meanwhile, Waltek has got recognition as registration and accreditation laboratory from EMSD (Electrical and Mechanical Services Department), and American Energy star, FCC(The Federal Communications Commission), CEC(California energy efficiency), IC(Industry Canada). It's the strategic partner and data recognition laboratory of international authoritative organizations, such as Intertek(ETL-SEMKO), TÜV Rheinland, TÜV SÜD, etc.



Waltek Services (Shenzhen) Co., Ltd is one of the largest and the most comprehensive third party testing laboratory in China. Our test capability covered four large fields: safety test, Electro Magnetic Compatibility (EMC), and energy performance, wireless radio. As a professional, comprehensive, justice international test organization, we still keep the scientific and rigorous work attitude to help each client satisfy the international standards and assist their product enter into globe market smoothly.

Test Facility:**A. Accreditations for Conformity Assessment (International)**

Country/Region	Accreditation Body	Scope	Note
USA	A2LA (Certificate No.: 4243.01)	FCC ID \ DOC \ VOC	1
Canada		IC ID \ VOC	2
Japan		MIC-T \ MIC-R	-
Europe		EMCD \ RED	-
Taiwan		NCC	-
Hong Kong		OFCA	-
Australia		RCM	-
India	International Services	WPC	-
Thailand		NTC	-
Singapore		IDA	-

Note:

1. FCC Designation No.: CN1201. Test Firm Registration No.: 523476.
2. IC Canada Registration No.: 7760A

B. TCBs and Notify Bodies Recognized Testing Laboratory.

Recognized Testing Laboratory of ...	Notify body number
TUV Rheinland	Optional.
Intertek	
TUV SUD	
SGS	
Phoenix Testlab GmbH	0700
Element Materials Technology Warwick Ltd	0891
Timco Engineering, Inc.	1177
Eurofins Product Service GmbH	0681

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4 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTS17S10936 48-2E	2017-10-27	2017-10-28 to 2017-11- 29	2018-02-25	original	-	Valid

5 General Information

5.1 General Description of E.U.T.

Product:	4G modem
Model(s):	R1
Model Description:	N/A
GSM Band(s):	N/A
GPRS/EGPRS Class:	N/A
WCDMA Band(s):	FDD Band I/II/IV/V/VIII
LTE Band(s):	FDD Band 2/4/5/7/17 TDD Band 41
Wi-Fi Specification:	N/A
Bluetooth Version:	N/A
GPS:	N/A
NFC:	N/A
Hardware Version:	R1 MAIN VA
Software Version:	R1_HTSV1.1.005.007.1711130
Highest frequency (Exclude Radio):	580MHz
Storage Location:	Internal Storage

This EUT has two SIM card slots, and two RF module. We found that RF parameters are the same, when we insert the card 1 and card 2. So we usually performed the test under main card slot 1.

Main board (Modem 1):

The EUT Main board support WCDMA Band I/II/IV/V/VIII, LTE Band 2/4/5/7/17/41 function. It is intended for speech, Multimedia Message Service (MMS) transmission and 4G free roaming hotspot. It is equipped with Wi-Fi functions. For more information see the following datasheet.

Vice board (Modem 2):

The EUT Vice board support WCDMA Band I/II/IV/V/VIII, it is intended for system localization.

5.2 Details of E.U.T.

Operation Frequency:	WCDMA Band II: 1850~1910MHz WCDMA Band V: 824~849MHz WCDMA Band IV: 1710~1755MHz LTE Band 2: 1850~1910MHz LTE Band 4: 1710~1755MHz LTE Band 5: 824~849MHz LTE Band 7: 2500~2570MHz LTE Band 17: 704~716MHz
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	LTE Band 41: 2496~2690MHz
Max. RF output power:	Main Board: WCDMA Band II: 22.89dBm WCDMA Band V: 22.60dBm WCDMA Band IV: 22.61dBm LTE Band 2: 23.09dBm LTE Band 4: 22.92dBm LTE Band 5: 22.63dBm LTE Band 7: 22.04dBm LTE Band 17: 22.85dBm LTE Band 41: 21.74dBm
	Vice Board: WCDMA Band II: 22.60dBm WCDMA Band V: 22.71dBm WCDMA Band IV: 22.70dBm
Type of Modulation:	WCDMA: BPSK, 16QAM LTE: QPSK, 16QAM
Antenna installation:	WCDMA/LTE: internal permanent antenna
Antenna Gain:	WCDMA Band II: 4.79dBi WCDMA Band V: 1.10dBi WCDMA Band IV: 3.93dBi LTE Band 2: 4.79dBi LTE Band 4: 3.93dBi LTE Band 5: 1.10dBi LTE Band 7: 3.39dBi LTE Band 17: 1.12dBi LTE Band 41: 3.99dBi
Ratings:	DC 12V, 2.0A, charging from adapter (Adapter Input: 100-240V~50/60Hz 0.6A)
Adapter:	Manufacture: Shenzhen Fu Jia Electronic Co., Ltd. Model No.: FJ-SW1202000C
Type of Emission:	LTE Band 2 1.4MHz: 1M09G7D(QPSK), 1M09W7D(16QAM) LTE Band 2 3MHz: 2M73G7D(QPSK), 2M73W7D(16QAM) LTE Band 2 5MHz: 4M50G7D(QPSK), 4M50W7D(16QAM) LTE Band 2 10 MHz: 8M92G7D(QPSK), 8M92W7D(16QAM) LTE Band 2 15MHz: 13M5G7D(QPSK), 13M5W7D(16QAM) LTE Band 2 20MHz: 17M9G7D(QPSK), 17M9W7D(16QAM) LTE Band 4 1.4MHz: 1M09G7D(QPSK), 1M09W7D(16QAM) LTE Band 4 3MHz: 2M73G7D(QPSK), 2M73W7D(16QAM) LTE Band 4 5MHz: 4M50G7D(QPSK), 4M50W7D(16QAM)

LTE Band 4 10 MHz: 8M93G7D(QPSK), 8M92W7D(16QAM)
LTE Band 4 15MHz: 13M5G7D(QPSK), 13M5W7D(16QAM)
LTE Band 4 20MHz: 17M9G7D(QPSK), 17M9W7D(16QAM)
LTE Band 5 1.4MHz: 1M09G7D(QPSK), 1M09W7D(16QAM)
LTE Band 5 3MHz: 2M73G7D(QPSK), 2M73W7D(16QAM)
LTE Band 5 5MHz: 4M50G7D(QPSK), 4M50W7D(16QAM)
LTE Band 5 10 MHz: 8M94G7D(QPSK), 8M93W7D(16QAM)
LTE Band 7 5MHz: 4M50G7D(QPSK), 4M50W7D(16QAM)
LTE Band 7 10 MHz: 8M92G7D(QPSK), 8M92W7D(16QAM)
LTE Band 7 15MHz: 13M5G7D(QPSK), 13M5W7D(16QAM)
LTE Band 7 20MHz: 17M9G7D(QPSK), 17M9W7D(16QAM)
LTE Band 17 5MHz: 4M50G7D(QPSK), 4M50W7D(16QAM)
LTE Band 17 10 MHz: 8M90G7D(QPSK), 8M90W7D(16QAM)
LTE Band 41 5MHz: 4M50G7D(QPSK), 4M49W7D(16QAM)
LTE Band 41 10 MHz: 8M92G7D(QPSK), 8M92W7D(16QAM)
LTE Band 41 15 MHz: 13M5G7D(QPSK), 13M5W7D(16QAM)
LTE Band 41 20 MHz: 17M9G7D(QPSK), 17M9W7D(16QAM)

5.3 Test Mode

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

Support Band	Test Mode BW(MHz)	Channel Frequency	Channel Number
LTE Band 2	1.4	1850.7 MHz	18607
		1880.0 MHz	18900
		1909.3 MHz	19193
	3	1851.5 MHz	18615
		1880.0 MHz	18900
		1908.5 MHz	19185
	5	1852.5 MHz	18625
		1880.0 MHz	18900
		1907.5 MHz	19175
	10	1855.0 MHz	18650
		1880.0 MHz	18900
		1905.0 MHz	19150
	15	1857.5 MHz	18675
		1880.0 MHz	18900
		1902.5 MHz	19125
	20	1860.0 MHz	18700
		1880.0 MHz	18900
		1900.0 MHz	19100
LTE Band 4	1.4	1710.7 MHz	19957
		1732.5 MHz	20175
		1754.3 MHz	20393
	3	1711.5 MHz	19965
		1732.5 MHz	20175
		1753.5 MHz	20385
	5	1712.5 MHz	19975
		1732.5 MHz	20175
		1752.5 MHz	20375
	10	1715.0 MHz	20000
		1732.5 MHz	20175
		1750.0 MHz	20350
	15	1717.5 MHz	20025
		1732.5 MHz	20175
		1747.5 MHz	20325
	20	1720.0 MHz	20050
		1732.5 MHz	20175
		1745.0 MHz	20300
LTE Band 5	1.4	824.7 MHz	20407
		836.5 MHz	20525
		848.3 MHz	20643

LTE Band 7	3	825.5 MHz	20415
		836.5 MHz	20525
		847.5 MHz	20635
	5	826.5 MHz	20425
		836.5 MHz	20525
		846.5 MHz	20625
	10	829.0 MHz	20450
		836.5 MHz	20525
		844.0 MHz	20600
	5	2502.5 MHz	20775
		2535 MHz	21100
		2567.5 MHz	21425
	10	2505.0 MHz	20800
		2535 MHz	21100
		2565.0 MHz	21400
	15	2507.5 MHz	20825
		2535 MHz	21100
		2562.5 MHz	21375
	20	2510.0 MHz	20850
		2535 MHz	21100
		2560.0 MHz	21350
LTE Band 17	5	706.5 MHz	23755
		710.0 MHz	23790
		713.5 MHz	23825
	10	709.0 MHz	23780
		710.0 MHz	23790
		711.0 MHz	23800
LTE Band 41	5	2498.5 MHz	39675
		2593.0 MHz	40620
		2687.5MHz	41565
	10	2501.0 MHz	39700
		2593.0 MHz	40620
		2685.0 MHz	41540
	15	2503.5 MHz	39725
		2593.0 MHz	40620
		2682.5 MHz	41515
	20	2687.5 MHz	39750
		2593.0 MHz	40620
		2680.0 MHz	41490
Remark: All mode(s) were tested and the worst data was recorded.			

6 Test Summary

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

7 Equipment Used during Test

7.1 Equipments List

Conducted Emissions Test Site 1#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	100947	2017-09-12	2018-09-11
2.	LISN	R&S	ENV216	101215	2017-09-12	2018-09-11
3.	Cable	Top	TYPE16(3.5M)	-	2017-09-12	2018-09-11
Conducted Emissions Test Site 2#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	101155	2017-09-12	2018-09-11
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	2017-09-12	2018-09-11
3.	Limiter	York	MTS-IMP-136	261115-001-0024	2017-09-12	2018-09-11
4.	Cable	LARGE	RF300	-	2017-09-12	2018-09-11
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	2017-04-29	2018-04-28
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	2017-04-09	2018-04-08
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	2017-04-09	2018-04-08
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	2017-09-12	2018-09-11
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	2017-04-09	2018-04-08
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	2017-04-09	2018-04-08
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	2017-04-13	2018-04-12
8	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	2017-04-13	2018-04-12
9	Signal Generator	R&S	SMR20	100046	2017-09-12	2018-09-11
10	Smart Antenna	SCHWARZBECK	HA08	-	2017-04-09	2018-04-08
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	2017-04-13	2018-04-12
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2017-04-09	2018-04-08

3	Amplifier	Compliance direction systems inc	PAP-0203	22024	2017-04-13	2018-04-12
4	Cable	HUBER+SUHNER	CBL2	525178	2017-04-13	2018-04-12
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	2017-09-12	2018-09-11
2.	Spectrum Analyzer	Agilent	N9020A	MY49100060	2017-09-12	2018-09-11
3.	Universal Radio Communication Tester	R&S	CMW 500	127818	2017-04-13	2018-04-12
4	Signal Analyzer (9k~26.5GHz)	Agilent	N9010A	MY50520207	2017-09-12	2018-09-11

7.2 Measurement Uncertainty

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

7.3 Test Equipment Calibration

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

8 RF OUTPUT POWER

Test Requirement: FCC Part 2.1046, 22.913 (a), 24.232 (c), 27.50(h.2); 27.50(d.4)
Test Method: TIA/EIA-603-D:2010
KDB971168 D01 v02r02
Test Mode: TX transmitting

8.1 EUT Operation

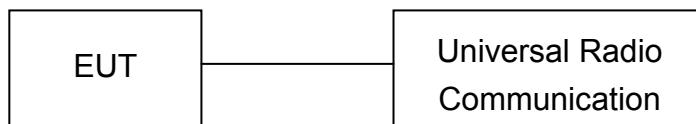
Operating Environment :

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

8.2 Test Procedure

Conducted method:

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



Radiated method:

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

8.3 Test Result

Conducted Power

LTE Band 2:

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
18607	1850.7	QPSK	1	0	22.41	22.0±1	
			1	2	22.54	22.0±1	
			1	5	22.54	22.0±1	
			3	0	22.42	22.0±1	
			3	1	22.52	22.0±1	
			3	2	22.48	22.0±1	
			6	0	21.33	21.5±1	
		16QAM	1	0	22	21.5±1	
			1	2	22.12	21.5±1	
			1	5	22.09	21.5±1	
			3	0	21.58	21.5±1	
			3	1	21.54	21.5±1	
			3	2	21.64	21.5±1	
			6	0	20.63	21.5±1	
1.4MHz	18900	QPSK	1	0	22.03	22.0±1	
			1	2	22.18	22.0±1	
			1	5	22.26	22.0±1	
			3	0	22.1	22.0±1	
			3	1	22.38	22.0±1	
			3	2	22.34	22.0±1	
			6	0	21.29	21.5±1	
		16QAM	1	0	21.44	21.5±1	
			1	2	21.32	21.5±1	
			1	5	21.35	21.5±1	
			3	0	21.11	21.5±1	
			3	1	21.31	21.5±1	
			3	2	21.13	21.5±1	
			6	0	20.99	21.5±1	
19193	1909.3	QPSK	1	0	21.83	22.0±1	
			1	2	22.02	22.0±1	
			1	5	21.97	22.0±1	
			3	0	21.96	22.0±1	
			3	1	22.02	22.0±1	
			3	2	21.97	22.0±1	
			6	0	20.97	21.5±1	
		16QAM	1	0	21.12	21.5±1	
			1	2	20.92	21.5±1	
			1	5	20.99	21.5±1	
			3	0	20.71	21.5±1	
			3	1	21	21.5±1	
			3	2	20.82	21.5±1	
			6	0	21.1	21.5±1	

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
3MHz	18615	1851.5	QPSK	1	0	22.37	22.0±1
				1	8	22.41	21.5±1
				1	14	22.45	21.5±1
				6	0	21.59	21.5±1
				6	4	21.44	21.5±1
				6	9	21.47	21.5±1
				15	0	21.4	21.5±1
			16QAM	1	0	21.73	21.5±1
				1	8	21.65	21.5±1
				1	14	21.7	21.5±1
				6	0	20.8	21.5±1
				6	4	20.57	21.5±1
				6	9	20.71	21.5±1
				15	0	20.39	21.0±1
3MHz	18900	1880	QPSK	1	0	22.18	22.0±1
				1	8	21.97	21.5±1
				1	14	21.85	21.5±1
				6	0	21.29	21.5±1
				6	4	21.31	21.5±1
				6	9	21.3	21.5±1
				15	0	21.42	21.5±1
			16QAM	1	0	21.33	21.5±1
				1	8	21.28	21.5±1
				1	14	21.51	21.5±1
				6	0	20.63	21.5±1
				6	4	20.53	21.5±1
				6	9	20.75	21.5±1
				15	0	20.35	21.0±1
3MHz	19185	1908.5	QPSK	1	0	21.96	22.0±1
				1	8	21.91	21.5±1
				1	14	21.93	21.5±1
				8	0	20.91	21.5±1
				8	4	21	21.5±1
				8	9	21.01	21.5±1
				15	0	21.02	21.5±1
			16QAM	1	0	21.27	21.5±1
				1	8	21.32	21.5±1
				1	14	21.3	21.5±1
				6	0	21.06	21.5±1
				6	4	21.06	21.5±1
				6	9	21	21.5±1
				15	0	20.06	21.0±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
5MHz	18625	1852.5	QPSK	1	0	21.27	21.0±1
				1	12	21.32	21.0±1
				1	24	21.3	21.0±1
				12	0	20.06	21.0±1
				12	6	20.06	21.0±1
				12	11	20.1	21.0±1
				25	0	19.96	20.5±1
			16QAM	1	0	21.27	21.0±1
				1	12	21.32	21.0±1
				1	24	21.3	21.0±1
				12	0	20.06	21.0±1
				12	6	20.06	21.0±1
				12	11	20.02	21.0±1
				25	0	19.96	20.5±1
5MHz	18900	1880	QPSK	1	0	21.91	21.0±1
				1	12	21.86	21.0±1
				1	24	21.81	21.0±1
				12	0	21.39	21.0±1
				12	6	21.36	21.0±1
				12	11	21.31	21.0±1
				25	0	21.43	20.5±1
			16QAM	1	0	21.98	21.0±1
				1	12	21.81	21.0±1
				1	24	21.68	21.0±1
				12	0	20.57	21.0±1
				12	6	20.37	21.0±1
				12	11	20.38	21.0±1
				25	0	20.4	20.5±1
5MHz	19175	1907.5	QPSK	1	0	21.85	21.0±1
				1	12	21.86	21.0±1
				1	24	21.94	21.0±1
				12	0	20.94	21.0±1
				12	6	20.99	21.0±1
				12	11	21.02	21.0±1
				25	0	20.97	20.5±1
			16QAM	1	0	21.25	21.0±1
				1	12	21.18	21.0±1
				1	24	21.41	21.0±1
				12	0	20.08	21.0±1
				12	6	20.02	21.0±1
				12	11	20.12	21.0±1
				25	0	20.04	20.5±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
10MHz	18650	1855	QPSK	1	0	22.62	22.0±1
				1	24	22.44	22.0±1
				1	49	22.27	22.0±1
				25	0	21.63	22.0±1
				25	12	21.33	22.0±1
				25	24	21.37	22.0±1
				50	0	21.42	22.0±1
			16QAM	1	0	22.04	22.0±1
				1	24	21.94	22.0±1
				1	49	21.9	22.0±1
				25	0	20.58	21.0±1
				25	12	20.24	21.0±1
				25	24	20.24	21.0±1
				50	0	20.33	21.0±1
10MHz	18900	1880	QPSK	1	0	22.31	22.0±1
				1	24	22.68	22.0±1
				1	49	21.92	22.0±1
				25	0	21.45	22.0±1
				25	12	21.48	22.0±1
				25	24	21.25	22.0±1
				50	0	21.38	22.0±1
			16QAM	1	0	21.83	22.0±1
				1	24	21.91	22.0±1
				1	49	21.53	22.0±1
				25	0	20.46	21.0±1
				25	12	20.47	21.0±1
				25	24	20.25	21.0±1
				50	0	20.42	21.0±1
10MHz	19150	1905	QPSK	1	0	22.13	22.0±1
				1	24	22.2	22.0±1
				1	49	22.2	22.0±1
				25	0	21.13	22.0±1
				25	12	21.16	22.0±1
				25	24	21.08	22.0±1
				50	0	21.22	22.0±1
			16QAM	1	0	21.34	22.0±1
				1	24	21.36	22.0±1
				1	49	21.26	22.0±1
				25	0	20.21	21.0±1
				25	12	20.22	21.0±1
				25	24	20.18	21.0±1
				50	0	20.12	21.0±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
15MHz	18675	1857.5	QPSK	1	0	22.63	22.0±1
				1	37	22.31	22.0±1
				1	74	22.49	22.0±1
				36	0	21.66	22.0±1
				36	16	21.43	22.0±1
				36	35	21.37	22.0±1
				75	0	21.44	22.0±1
			16QAM	1	0	21.69	21.0±1
				1	37	21.86	21.0±1
				1	74	21.9	21.0±1
				36	0	20.56	21.0±1
				36	16	20.47	21.0±1
				36	35	20.45	21.0±1
				75	0	20.35	21.0±1
15MHz	18900	1880	QPSK	1	0	22.43	22.0±1
				1	37	22.38	22.0±1
				1	74	22.14	22.0±1
				36	0	21.56	22.0±1
				36	16	21.46	22.0±1
				36	35	21.38	22.0±1
				75	0	21.45	22.0±1
			16QAM	1	0	21.83	21.0±1
				1	37	21.96	21.0±1
				1	74	21.37	21.0±1
				36	0	20.61	21.0±1
				36	16	20.46	21.0±1
				36	35	20.36	21.0±1
				75	0	20.43	21.0±1
15MHz	19125	1902.5	QPSK	1	0	22.2	22.0±1
				1	37	22.37	22.0±1
				1	74	22.37	22.0±1
				36	0	21.3	22.0±1
				36	16	21.16	22.0±1
				36	35	21.26	22.0±1
				75	0	21.16	22.0±1
			16QAM	1	0	21.96	21.0±1
				1	37	21.93	21.0±1
				1	74	21.87	21.0±1
				36	0	20.36	21.0±1
				36	16	20.15	21.0±1
				36	35	20.06	21.0±1
				75	0	20.14	21.0±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
20MHz	18700	1860	QPSK	1	0	23.09	22.5±1
				1	49	22.73	22.5±1
				1	99	22.52	22.5±1
				50	0	21.73	22.0±1
				50	24	21.55	22.0±1
				50	49	21.55	22.0±1
				100	0	21.67	22.0±1
	18900	1880	16QAM	1	0	22.48	22.0±1
				1	49	21.98	22.0±1
				1	99	21.55	22.0±1
				50	0	20.76	21.0±1
				50	24	20.53	21.0±1
				50	49	20.6	21.0±1
				100	0	20.51	21.0±1
20MHz	19100	1900	QPSK	1	0	22.33	22.5±1
				1	49	22.89	22.5±1
				1	99	22.57	22.5±1
				50	0	21.69	22.0±1
				50	24	21.57	22.0±1
				50	49	21.38	22.0±1
				100	0	21.5	22.0±1
	16QAM	16QAM	16QAM	1	0	21.81	22.0±1
				1	49	22.22	22.0±1
				1	99	21.06	22.0±1
				50	0	20.75	21.0±1
				50	24	20.57	21.0±1
				50	49	20.39	21.0±1
				100	0	20.61	21.0±1
20MHz	19100	1900	QPSK	1	0	22.08	22.5±1
				1	49	22.24	22.5±1
				1	99	22.04	22.5±1
				50	0	21.17	22.0±1
				50	24	21.17	22.0±1
				50	49	21.31	22.0±1
				100	0	21.17	22.0±1
	16QAM	16QAM	16QAM	1	0	21.52	22.0±1
				1	49	21.49	22.0±1
				1	99	21.45	22.0±1
				50	0	20.12	21.0±1
				50	24	20.29	21.0±1
				50	49	20.17	21.0±1
				100	0	20.18	21.0±1

LTE Band 4:

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
1.4MHz	19957	1710.7	QPSK	1	0	21.25	22.0±1
				1	2	21.98	22.0±1
				1	5	21.78	22.0±1
				3	0	21.98	22.0±1
				3	1	21.86	22.0±1
				3	2	21.76	22.0±1
				6	0	20.81	21.0±1
			16QAM	1	0	20.38	21.0±1
				1	2	20.2	21.0±1
				1	5	20.05	21.0±1
				3	0	20.28	21.0±1
				3	1	20.18	21.0±1
				3	2	20.09	21.0±1
				6	0	20.25	21.0±1
1.4MHz	20175	1732.5	QPSK	1	0	22.37	22.0±1
				1	2	22.38	22.0±1
				1	5	22.23	22.0±1
				3	0	22.45	22.0±1
				3	1	22.64	22.0±1
				3	2	22.58	22.0±1
				6	0	21.53	21.0±1
			16QAM	1	0	21.83	21.0±1
				1	2	21.84	21.0±1
				1	5	21.87	21.0±1
				3	0	21.6	21.0±1
				3	1	21.85	21.0±1
				3	2	21.59	21.0±1
				6	0	20.52	21.0±1
1.4MHz	20393	1754.3	QPSK	1	0	21.97	22.0±1
				1	2	21.86	22.0±1
				1	5	21.76	22.0±1
				3	0	21.84	22.0±1
				3	1	21.8	22.0±1
				3	2	21.74	22.0±1
				6	0	20.73	21.0±1
			16QAM	1	0	20.12	21.0±1
				1	2	20.07	21.0±1
				1	5	20.03	21.0±1
				3	0	20.28	21.0±1
				3	1	20.26	21.0±1
				3	2	20.2	21.0±1
				6	0	20.23	21.0±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
3MHz	19965	1711.5	QPSK	1	0	21.02	21.0±1
				1	8	20.41	21.0±1
				1	14	20.08	21.0±1
				6	0	20.62	21.0±1
				6	4	20.38	21.0±1
				6	9	20.19	21.0±1
				15	0	20.41	21.0±1
			16QAM	1	0	20.07	20.5±1
				1	8	19.55	20.5±1
				1	14	19.26	20.5±1
				8	0	20.02	20.5±1
				8	4	19.78	20.5±1
				8	9	19.61	20.5±1
				15	0	19.77	20.5±1
3MHz	20175	1732.5	QPSK	1	0	22.48	22.0±1
				1	8	22.39	22.0±1
				1	14	22.4	22.0±1
				6	0	21.5	22.0±1
				6	4	21.67	22.0±1
				6	9	21.49	22.0±1
				15	0	21.56	22.0±1
			16QAM	1	0	21.87	21.5±1
				1	8	21.75	21.5±1
				1	14	21.73	21.5±1
				6	0	20.77	21.5±1
				6	4	20.78	21.5±1
				6	9	20.59	21.5±1
				15	0	20.59	21.5±1
3MHz	20385	1753.5	QPSK	1	0	20.32	20.5±1
				1	8	19.91	20.5±1
				1	14	19.76	20.5±1
				6	0	20.01	20.5±1
				6	4	19.87	20.5±1
				6	9	19.75	20.5±1
				15	0	19.9	20.5±1
			16QAM	1	0	19.5	20.5±1
				1	8	19.13	20.5±1
				1	14	19.03	20.5±1
				8	0	19.37	20.5±1
				8	4	19.24	20.5±1
				8	9	19.14	20.5±1
				15	0	19.21	20.5±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
5MHz	19975	1712.5	QPSK	1	0	21.02	20.5±1
				1	49	20.06	20.5±1
				1	99	19.66	20.5±1
				12	0	20.5	20.5±1
				12	24	20.08	20.5±1
				12	49	19.81	20.5±1
				25	0	20.14	20.5±1
			16QAM	1	0	20.33	20.5±1
				1	49	19.44	20.5±1
				1	99	19.12	20.5±1
				12	0	19.87	20.5±1
				12	24	19.46	20.5±1
				12	49	19.21	20.5±1
				25	0	19.51	20.5±1
5MHz	20175	1732.5	QPSK	1	0	22.3	22.5±1
				1	49	22.7	22.5±1
				1	99	22.92	22.5±1
				12	0	21.59	22.5±1
				12	24	21.72	22.5±1
				12	49	21.6	22.5±1
				25	0	21.59	22.5±1
			16QAM	1	0	21.82	21.5±1
				1	49	22.02	21.5±1
				1	99	21.95	21.5±1
				12	0	20.72	21.5±1
				12	24	20.78	21.5±1
				12	49	20.67	21.5±1
				25	0	20.6	21.5±1
5MHz	20375	1752.5	QPSK	1	0	20.8	20.5±1
				1	49	20.06	20.5±1
				1	99	19.84	20.5±1
				12	0	20.4	20.5±1
				12	24	20.06	20.5±1
				12	49	19.89	20.5±1
				25	0	20.11	20.5±1
			16QAM	1	0	20.09	20.5±1
				1	49	19.41	20.5±1
				1	99	19.25	20.5±1
				12	0	19.78	20.5±1
				12	24	19.44	20.5±1
				12	49	19.28	20.5±1
				25	0	19.45	20.5±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
10MHz	20000	1715	QPSK	1	0	20.61	20.0±1
				1	49	19.51	20.0±1
				1	99	20.86	20.0±1
				25	0	20.01	20.0±1
				25	24	19.5	20.0±1
				25	49	19.14	20.0±1
				50	0	19.56	20.0±1
			16QAM	1	0	19.65	19.0±1
				1	49	18.65	19.0±1
				1	99	18.03	19.0±1
				25	0	19.33	19.0±1
				25	24	18.84	19.0±1
				25	49	18.47	19.0±1
				50	0	18.91	19.0±1
10MHz	20175	1732.5	QPSK	1	0	22.87	22.0±1
				1	49	22.63	22.0±1
				1	99	22.67	22.0±1
				25	0	21.63	22.0±1
				25	24	21.76	22.0±1
				25	49	21.57	22.0±1
				50	0	21.64	22.0±1
			16QAM	1	0	22.29	22.0±1
				1	49	22.09	22.0±1
				1	99	22.23	22.0±1
				25	0	20.59	21.5±1
				25	24	20.72	21.5±1
				25	49	20.51	21.5±1
				50	0	20.68	21.5±1
10MHz	20350	1750	QPSK	1	0	21.77	21.0±1
				1	49	20.63	21.0±1
				1	99	20.51	21.0±1
				25	0	21.24	21.0±1
				25	24	20.66	21.0±1
				25	49	20.09	21.0±1
				50	0	20.7	21.0±1
			16QAM	1	0	20.93	20.5±1
				1	49	19.87	20.5±1
				1	99	20.76	20.5±1
				25	0	20.61	20.5±1
				25	24	20.03	20.5±1
				25	49	19.47	20.5±1
				50	0	20.04	20.5±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
15MHz	20025	1717.5	QPSK	1	0	20.75	20.5±1
				1	49	19.13	20.5±1
				1	99	19.77	20.5±1
				36	0	19.79	20.5±1
				36	24	19.2	20.5±1
				36	49	19.23	20.5±1
				75	0	19.44	20.5±1
			16QAM	1	0	19.81	19.0±1
				1	49	18.27	19.0±1
				1	99	18.89	19.0±1
				36	0	19.1	19.0±1
				36	24	18.53	19.0±1
				36	49	18.53	19.0±1
				75	0	18.8	19.0±1
15MHz	20175	1732.5	QPSK	1	0	22.39	22.5±1
				1	49	22.56	22.5±1
				1	99	22.74	22.5±1
				36	0	21.56	22.5±1
				36	24	21.75	22.5±1
				36	49	21.51	22.5±1
				75	0	21.62	22.5±1
			16QAM	1	0	21.86	21.5±1
				1	49	22.03	21.5±1
				1	99	22.25	21.5±1
				36	0	20.76	21.5±1
				36	24	20.76	21.5±1
				36	49	20.62	21.5±1
				75	0	20.67	21.5±1
15MHz	20325	1747.5	QPSK	1	0	22.69	22.0±1
				1	49	21.2	22.0±1
				1	99	21.79	22.0±1
				36	0	21.81	22.0±1
				36	24	21.27	22.0±1
				36	49	21.37	22.0±1
				75	0	21.45	22.0±1
			16QAM	1	0	22.37	21.5±1
				1	49	20.69	21.5±1
				1	99	20.53	21.5±1
				36	0	20.85	20.5±1
				36	24	20.6	20.5±1
				36	49	19.71	20.5±1
				75	0	20.79	20.5±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
20MHz	20050	1720	QPSK	1	0	20.37	21.0±1
				1	49	20.05	21.0±1
				1	99	21.15	21.0±1
				50	0	19.45	20.0±1
				50	24	19.2	20.0±1
				50	49	19.83	20.0±1
				100	0	19.59	20.0±1
			16QAM	1	0	19.97	20.0±1
				1	49	19.72	20.0±1
				1	99	20.75	20.0±1
				50	0	18.8	19.0±1
				50	24	18.53	19.0±1
				50	49	19.11	19.0±1
				100	0	18.92	19.0±1
20MHz	20175	1732.5	QPSK	1	0	22.48	22.0±1
				1	49	22.54	22.0±1
				1	99	22.66	22.0±1
				50	0	21.14	22.0±1
				50	24	21.84	22.0±1
				50	49	21.63	22.0±1
				100	0	21.81	22.0±1
			16QAM	1	0	22.01	21.5±1
				1	49	22.04	21.5±1
				1	99	22.25	21.5±1
				50	0	20.35	21.0±1
				50	24	20.91	21.0±1
				50	49	20.64	21.0±1
				100	0	20.6	21.0±1
20MHz	20300	1745	QPSK	1	0	22.56	22.0±1
				1	49	21.85	22.0±1
				1	99	21.57	22.0±1
				50	0	21.78	22.0±1
				50	24	21.67	22.0±1
				50	49	21.77	22.0±1
				100	0	21.91	22.0±1
			16QAM	1	0	21.85	21.0±1
				1	49	21.44	21.0±1
				1	99	20.16	21.0±1
				50	0	20.75	21.0±1
				50	24	20.56	21.0±1
				50	49	20.11	21.0±1
				100	0	20.81	21.0±1

LTE Band 5:

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
1.4MHz	20407	824.7	QPSK	1	0	22.31	22.0±1
				1	2	22.19	22.0±1
				1	5	22.28	22.0±1
				3	0	22.2	22.0±1
				3	1	22.21	22.0±1
				3	2	22.23	22.0±1
				6	0	21.35	22.0±1
		836.5	16QAM	1	0	21.55	22.0±1
				1	2	22.07	22.0±1
				1	5	22.01	22.0±1
				3	0	21.73	22.0±1
				3	1	21.59	22.0±1
				3	2	21.69	22.0±1
				6	0	20.89	21.0±1
	20525	836.5	QPSK	1	0	22.06	22.0±1
				1	2	22.13	22.0±1
				1	5	22.16	22.0±1
				3	0	22.18	22.0±1
				3	1	22.28	22.0±1
				3	2	22.27	22.0±1
				6	0	21.4	22.0±1
		848.3	16QAM	1	0	21.91	22.0±1
				1	2	21.88	22.0±1
				1	5	21.85	22.0±1
				3	0	21.44	22.0±1
				3	1	21.59	22.0±1
				3	2	21.31	22.0±1
				6	0	20.36	21.0±1
	20634	848.3	QPSK	1	0	22.02	22.0±1
				1	2	22.17	22.0±1
				1	5	22.22	22.0±1
				3	0	22.19	22.0±1
				3	1	22.3	22.0±1
				3	2	22.31	22.0±1
				6	0	21.22	22.0±1
		848.3	16QAM	1	0	21.31	22.0±1
				1	2	21.24	22.0±1
				1	5	21.34	22.0±1
				3	0	21.1	22.0±1
				3	1	21.21	22.0±1
				3	2	21.12	22.0±1
				6	0	20.24	21.0±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)	
3MHz	20415	825.5	QPSK	1	0	22.18	22.0±1	
				1	8	22.48	22.0±1	
				1	14	22.43	22.0±1	
				6	0	21.52	22.0±1	
				6	4	21.53	22.0±1	
				6	9	21.43	22.0±1	
				15	0	21.43	22.0±1	
	20525	836.5	16QAM	1	0	21.48	21.0±1	
				1	8	21.81	21.0±1	
				1	14	21.81	21.0±1	
				8	0	20.79	21.0±1	
				8	4	20.66	21.0±1	
				8	9	20.68	21.0±1	
				15	0	20.56	21.0±1	
	20635	847.5	QPSK	1	0	22.36	22.0±1	
				1	8	22.47	22.0±1	
				1	14	22.15	22.0±1	
				6	0	21.47	22.0±1	
				6	4	21.46	22.0±1	
				6	9	21.55	22.0±1	
				15	0	21.47	22.0±1	
			16QAM	1	0	21.67	21.0±1	
				1	8	21.93	21.0±1	
				1	14	21.48	21.0±1	
				6	0	20.71	21.0±1	
				6	4	20.69	21.0±1	
				6	9	20.67	21.0±1	
				15	0	20.47	21.0±1	
			QPSK	1	0	22.05	22.0±1	
				1	8	21.98	22.0±1	
				1	14	22.03	22.0±1	
				6	0	21.44	22.0±1	
				6	4	21.06	22.0±1	
				6	9	21.41	22.0±1	
				15	0	21.32	22.0±1	
			16QAM	1	0	21.46	21.0±1	
				1	8	21.37	21.0±1	
				1	14	21.42	21.0±1	
				8	0	20.29	21.0±1	
				8	4	20.23	21.0±1	
				8	9	20.26	21.0±1	
				15	0	20.1	21.0±1	

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
5MHz	20425	826.5	QPSK	1	0	22.3	22.0±1
				1	49	22.11	22.0±1
				1	99	22.06	22.0±1
				12	0	21.48	22.0±1
				12	24	21.46	22.0±1
				12	49	21.35	22.0±1
				25	0	21.4	22.0±1
		836.5	16QAM	1	0	21.34	21.0±1
				1	49	20.92	21.0±1
				1	99	20.89	21.0±1
				12	0	20.4	21.0±1
				12	24	20.27	21.0±1
				12	49	20.3	21.0±1
				25	0	20.55	21.0±1
	20525	836.5	QPSK	1	0	22.03	22.0±1
				1	49	21.85	22.0±1
				1	99	22.44	22.0±1
				12	0	21.36	22.0±1
				12	24	21.45	22.0±1
				12	49	21.38	22.0±1
				25	0	21.34	22.0±1
		846.5	16QAM	1	0	21.66	21.0±1
				1	49	21.77	21.0±1
				1	99	21.91	21.0±1
				12	0	20.51	21.0±1
				12	24	20.6	21.0±1
				12	49	20.43	21.0±1
				25	0	20.39	21.0±1
	20625	846.5	QPSK	1	0	22.27	22.0±1
				1	49	22.01	22.0±1
				1	99	22.05	22.0±1
				12	0	21.35	22.0±1
				12	24	21.19	22.0±1
				12	49	21.21	22.0±1
				25	0	21.42	22.0±1
		846.5	16QAM	1	0	21.68	21.0±1
				1	49	20.89	21.0±1
				1	99	21.03	21.0±1
				12	0	20.45	21.0±1
				12	24	20.06	21.0±1
				12	49	20.05	21.0±1
				25	0	20.34	21.0±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
10MHz	20450	829	QPSK	1	0	22.43	22.0±1
				1	49	22.28	22.0±1
				1	99	22.26	22.0±1
				25	0	21.5	22.0±1
				25	24	21.27	22.0±1
				25	49	21.25	22.0±1
				50	0	21.36	22.0±1
			16QAM	1	0	21.42	21.0±1
				1	49	21.43	21.0±1
				1	99	21.25	21.0±1
				25	0	20.45	21.0±1
				25	24	20.32	21.0±1
				25	49	20.31	21.0±1
				50	0	20.46	21.0±1
10MHz	20525	836.5	QPSK	1	0	22.11	22.0±1
				1	49	22.4	22.0±1
				1	99	22.58	22.0±1
				25	0	21.32	22.0±1
				25	24	21.57	22.0±1
				25	49	21.45	22.0±1
				50	0	21.38	22.0±1
			16QAM	1	0	21.43	21.0±1
				1	49	21.52	21.0±1
				1	99	22.26	21.0±1
				25	0	20.33	21.0±1
				25	24	20.56	21.0±1
				25	49	20.52	21.0±1
				50	0	20.35	21.0±1
10MHz	20600	844	QPSK	1	0	22.4	22.0±1
				1	49	22.63	22.0±1
				1	99	22.09	22.0±1
				25	0	21.59	22.0±1
				25	24	21.5	22.0±1
				25	49	21.39	22.0±1
				50	0	21.52	22.0±1
			16QAM	1	0	21.62	21.0±1
				1	49	21.72	21.0±1
				1	99	20.92	21.0±1
				25	0	20.62	21.0±1
				25	24	20.65	21.0±1
				25	49	20.55	21.0±1
				50	0	20.54	21.0±1

LTE Band 7:

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
5MHz	20775	2502.5	QPSK	1	0	21.43	22.0±1
				1	49	21.33	22.0±1
				1	99	21.36	22.0±1
				12	0	20.59	21.0±1
				12	24	20.43	21.0±1
				12	49	20.36	21.0±1
				25	0	20.47	21.0±1
			16QAM	1	0	20.74	21.0±1
				1	49	20.36	21.0±1
				1	99	20.33	21.0±1
				12	0	19.67	20.0±1
				12	24	19.51	20.0±1
				12	49	19.47	20.0±1
				25	0	19.57	20.0±1
5MHz	21100	2535	QPSK	1	0	21.51	22.0±1
				1	49	21.24	22.0±1
				1	99	21.46	22.0±1
				12	0	20.48	21.0±1
				12	24	20.67	21.0±1
				12	49	20.55	21.0±1
				25	0	20.55	21.0±1
			16QAM	1	0	20.57	21.0±1
				1	49	20.33	21.0±1
				1	99	20.47	21.0±1
				12	0	19.65	20.0±1
				12	24	19.57	20.0±1
				12	49	19.54	20.0±1
				25	0	19.61	20.0±1
5MHz	21425	2567.5	QPSK	1	0	21.13	22.0±1
				1	49	21.36	22.0±1
				1	99	21.22	22.0±1
				12	0	20.2	21.0±1
				12	24	20.29	21.0±1
				12	49	20.32	21.0±1
				25	0	20.28	21.0±1
			16QAM	1	0	20.85	21.0±1
				1	49	20.84	21.0±1
				1	99	20.13	21.0±1
				12	0	19.17	20.0±1
				12	24	19.24	20.0±1
				12	49	19.18	20.0±1
				25	0	19.34	20.0±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
10MHz	20800	2505	QPSK	1	0	21.66	22.0±1
				1	49	21.8	22.0±1
				1	99	21.54	22.0±1
				25	0	20.62	21.0±1
				25	24	20.58	21.0±1
				25	49	20.64	21.0±1
				50	0	20.71	21.0±1
			16QAM	1	0	20.83	21.0±1
				1	49	20.48	21.0±1
				1	99	20.75	21.0±1
				25	0	19.64	20.0±1
				25	24	19.63	20.0±1
				25	49	19.76	20.0±1
				50	0	19.73	20.0±1
10MHz	21100	2535	QPSK	1	0	21.61	22.0±1
				1	49	21.83	22.0±1
				1	99	21.63	22.0±1
				25	0	20.62	21.0±1
				25	24	20.63	21.0±1
				25	49	20.59	21.0±1
				50	0	20.64	21.0±1
			16QAM	1	0	20.96	21.0±1
				1	49	20.82	21.0±1
				1	99	20.58	21.0±1
				25	0	19.69	20.0±1
				25	24	19.75	20.0±1
				25	49	19.71	20.0±1
				50	0	19.8	20.0±1
10MHz	21400	2565	QPSK	1	0	21.2	22.0±1
				1	49	21.47	22.0±1
				1	99	21.26	22.0±1
				25	0	20.23	21.0±1
				25	24	20.43	21.0±1
				25	49	20.42	21.0±1
				50	0	20.28	21.0±1
			16QAM	1	0	20.43	21.0±1
				1	49	20.61	21.0±1
				1	99	20.51	21.0±1
				25	0	19.43	20.0±1
				25	24	19.62	20.0±1
				25	49	19.45	20.0±1
				50	0	19.52	20.0±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
15MHz	20825	2507.5	QPSK	1	0	21.92	22.0±1
				1	49	21.54	22.0±1
				1	99	21.66	22.0±1
				36	0	20.6	21.0±1
				36	24	20.59	21.0±1
				36	49	20.71	21.0±1
				75	0	20.78	21.0±1
			16QAM	1	0	20.93	21.0±1
				1	49	20.64	21.0±1
				1	99	21.03	21.0±1
				36	0	19.86	20.0±1
				36	24	19.58	20.0±1
				36	49	19.63	20.0±1
				75	0	19.83	20.0±1
15MHz	21100	2535	QPSK	1	0	21.83	22.0±1
				1	49	21.61	22.0±1
				1	99	21.49	22.0±1
				36	0	20.69	21.0±1
				36	24	20.68	21.0±1
				36	49	20.57	21.0±1
				75	0	20.67	21.0±1
			16QAM	1	0	21.48	21.0±1
				1	49	21.37	21.0±1
				1	99	21.34	21.0±1
				36	0	19.93	20.0±1
				36	24	19.9	20.0±1
				36	49	19.79	20.0±1
				75	0	19.79	20.0±1
15MHz	21375	2562.5	QPSK	1	0	21.48	22.0±1
				1	49	21.17	22.0±1
				1	99	21.57	22.0±1
				36	0	20.38	21.0±1
				36	24	20.28	21.0±1
				36	49	20.45	21.0±1
				75	0	20.34	21.0±1
			16QAM	1	0	21.27	21.0±1
				1	49	21.06	21.0±1
				1	99	21.4	21.0±1
				36	0	19.5	20.0±1
				36	24	19.4	20.0±1
				36	49	19.53	20.0±1
				75	0	19.35	20.0±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
20MHz	20850	2510	QPSK	1	0	21.99	22.0±1
				1	49	21.77	22.0±1
				1	99	21.75	22.0±1
				50	0	20.88	21.0±1
				50	24	20.76	21.0±1
				50	49	20.72	21.0±1
				100	0	20.85	21.0±1
			16QAM	1	0	21.45	21.0±1
				1	49	20.75	21.0±1
				1	99	20.82	21.0±1
				50	0	19.92	20.0±1
				50	24	19.83	20.0±1
				50	49	19.84	20.0±1
				100	0	19.95	20.0±1
20MHz	21100	2535	QPSK	1	0	22	22.0±1
				1	49	22.04	22.0±1
				1	99	21.7	22.0±1
				50	0	20.73	21.0±1
				50	24	20.66	21.0±1
				50	49	20.65	21.0±1
				100	0	20.64	21.0±1
			16QAM	1	0	21.07	21.0±1
				1	49	20.9	21.0±1
				1	99	20.91	21.0±1
				50	0	19.87	20.0±1
				50	24	19.97	20.0±1
				50	49	19.84	20.0±1
				100	0	19.86	20.0±1
20MHz	21350	2560	QPSK	1	0	21.53	22.0±1
				1	49	21.36	22.0±1
				1	99	21.56	22.0±1
				50	0	20.51	21.0±1
				50	24	20.39	21.0±1
				50	49	20.36	21.0±1
				100	0	20.33	21.0±1
			16QAM	1	0	21.08	21.0±1
				1	49	20.54	21.0±1
				1	99	20.57	21.0±1
				50	0	19.41	20.0±1
				50	24	19.48	20.0±1
				50	49	19.46	20.0±1
				100	0	19.36	20.0±1

LTE Band 17:

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
5MHz	23755	706.5	QPSK	1	0	22.31	22.0±1
				1	49	22.51	22.0±1
				1	99	22.3	22.0±1
				12	0	21.33	22.0±1
				12	24	21.5	22.0±1
				12	49	21.44	22.0±1
				25	0	21.34	22.0±1
			16QAM	1	0	21.56	21.0±1
				1	49	21.4	21.0±1
				1	99	21.58	21.0±1
				12	0	20.49	21.0±1
				12	24	20.7	21.0±1
				12	49	20.57	21.0±1
				25	0	20.06	21.0±1
5MHz	23790	710	QPSK	1	0	22.35	22.0±1
				1	49	22.07	22.0±1
				1	99	21.94	22.0±1
				12	0	21.51	22.0±1
				12	24	21.5	22.0±1
				12	49	21.44	22.0±1
				25	0	21.48	22.0±1
			16QAM	1	0	21.46	21.0±1
				1	49	20.96	21.0±1
				1	99	20.97	21.0±1
				12	0	20.38	21.0±1
				12	24	20.5	21.0±1
				12	49	20.28	21.0±1
				25	0	20.5	21.0±1
5MHz	23825	713.5	QPSK	1	0	22.35	22.0±1
				1	49	22.07	22.0±1
				1	99	21.94	22.0±1
				12	0	21.51	22.0±1
				12	24	21.5	22.0±1
				12	49	21.44	22.0±1
				25	0	21.48	22.0±1
			16QAM	1	0	21.46	21.0±1
				1	49	20.96	21.0±1
				1	99	20.97	21.0±1
				12	0	20.38	21.0±1
				12	24	20.5	21.0±1
				12	49	20.28	21.0±1
				25	0	20.5	21.0±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
10MHz	23780	709	QPSK	1	0	22.77	22.0±1
				1	49	22.62	22.0±1
				1	99	21.56	22.0±1
				25	0	21.47	22.0±1
				25	24	21.28	22.0±1
				25	49	21.53	22.0±1
				50	0	21.61	22.0±1
			16QAM	1	0	21.52	21.0±1
				1	49	21.74	21.0±1
				1	99	20.59	21.0±1
				25	0	20.5	21.0±1
				25	24	20.33	21.0±1
				25	49	20.47	21.0±1
				50	0	20.77	21.0±1
10MHz	23790	710	QPSK	1	0	22.43	22.0±1
				1	49	22.85	22.0±1
				1	99	22.39	22.0±1
				25	0	21.54	22.0±1
				25	24	21.41	22.0±1
				25	49	21.37	22.0±1
				50	0	21.47	22.0±1
			16QAM	1	0	22.15	22.0±1
				1	49	22.24	22.0±1
				1	99	21.57	22.0±1
				25	0	20.68	21.0±1
				25	24	20.42	21.0±1
				25	49	20.33	21.0±1
				50	0	20.54	21.0±1
10MHz	23800	711	QPSK	1	0	22.67	22.0±1
				1	49	22.42	22.0±1
				1	99	22.29	22.0±1
				25	0	21.47	22.0±1
				25	24	21.52	22.0±1
				25	49	21.38	22.0±1
				50	0	21.36	22.0±1
			16QAM	1	0	21.79	22.0±1
				1	49	21.54	22.0±1
				1	99	21.61	22.0±1
				25	0	20.66	21.0±1
				25	24	20.51	21.0±1
				25	49	20.32	21.0±1
				50	0	20.52	21.0±1

LTE Band 41:

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
5MHz	39675	2498.5	QPSK	1	0	21.31	21.0±1
				1	49	21.22	21.0±1
				1	99	21.24	21.0±1
				12	0	20.33	21.0±1
				12	24	20.27	21.0±1
				12	49	20.3	21.0±1
				25	0	20.34	21.0±1
			16QAM	1	0	19.85	20.0±1
				1	49	19.71	20.0±1
				1	99	19.75	20.0±1
				12	0	19.13	20.0±1
				12	24	19.19	20.0±1
				12	49	19.13	20.0±1
				25	0	19.43	20.0±1
5MHz	40620	2593	QPSK	1	0	21.2	21.0±1
				1	49	21.25	21.0±1
				1	99	21.26	21.0±1
				12	0	20.24	21.0±1
				12	24	20.23	21.0±1
				12	49	20.25	21.0±1
				25	0	20.19	21.0±1
			16QAM	1	0	20.18	20.0±1
				1	49	20.19	20.0±1
				1	99	20.37	20.0±1
				12	0	19.25	20.0±1
				12	24	19.24	20.0±1
				12	49	19.26	20.0±1
				25	0	19.35	20.0±1
5MHz	41565	2687.5	QPSK	1	0	20.91	21.0±1
				1	49	20.93	21.0±1
				1	99	20.96	21.0±1
				12	0	20.03	21.0±1
				12	24	20.12	21.0±1
				12	49	20.19	21.0±1
				25	0	20.07	21.0±1
			16QAM	1	0	20.13	20.0±1
				1	49	19.94	20.0±1
				1	99	20.1	20.0±1
				12	0	19.37	20.0±1
				12	24	19.16	20.0±1
				12	49	19.33	20.0±1
				25	0	19.16	20.0±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
10MHz	39700	2501	QPSK	1	0	21.37	22.0±1
				1	49	21.38	22.0±1
				1	99	21.53	22.0±1
				25	0	20.48	21.0±1
				25	24	20.45	21.0±1
				25	49	20.33	21.0±1
				50	0	20.36	21.0±1
			16QAM	1	0	21.15	21.0±1
				1	49	21.18	21.0±1
				1	99	21.12	21.0±1
				25	0	19.53	20.0±1
				25	24	19.51	20.0±1
				25	49	19.48	20.0±1
				50	0	19.54	20.0±1
10MHz	40620	2593	QPSK	1	0	21.65	22.0±1
				1	49	21.53	22.0±1
				1	99	21.37	22.0±1
				25	0	20.4	21.0±1
				25	24	20.39	21.0±1
				25	49	20.3	21.0±1
				50	0	20.31	21.0±1
			16QAM	1	0	20.73	21.0±1
				1	49	20.85	21.0±1
				1	99	20.35	21.0±1
				25	0	19.46	20.0±1
				25	24	19.45	20.0±1
				25	49	19.36	20.0±1
				50	0	19.48	20.0±1
10MHz	41540	2585	QPSK	1	0	21.26	22.0±1
				1	49	21.15	22.0±1
				1	99	21.03	22.0±1
				25	0	20.31	21.0±1
				25	24	20.27	21.0±1
				25	49	20.15	21.0±1
				50	0	20.18	21.0±1
			16QAM	1	0	21.58	21.0±1
				1	49	21.44	21.0±1
				1	99	21.51	21.0±1
				25	0	19.16	20.0±1
				25	24	19.23	20.0±1
				25	49	19.11	20.0±1
				50	0	19.26	20.0±1

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
39725	2503.5	QPSK	1	0	21.5	22.0±1	
			1	49	21.36	22.0±1	
			1	99	21.47	22.0±1	
			36	0	20.56	21.0±1	
			36	24	20.53	21.0±1	
			36	49	20.42	21.0±1	
			75	0	20.55	21.0±1	
		16QAM	1	0	21.37	21.0±1	
			1	49	21.25	21.0±1	
			1	99	21.24	21.0±1	
			36	0	19.48	20.0±1	
			36	24	19.46	20.0±1	
			36	49	19.38	20.0±1	
			75	0	19.51	20.0±1	
15MHz	40620	QPSK	1	0	21.64	22.0±1	
			1	49	21.47	22.0±1	
			1	99	21.53	22.0±1	
			36	0	20.44	21.0±1	
			36	24	20.28	21.0±1	
			36	49	20.29	21.0±1	
			75	0	20.3	21.0±1	
		16QAM	1	0	20.96	21.0±1	
			1	49	20.77	21.0±1	
			1	99	20.78	21.0±1	
			36	0	19.56	20.0±1	
			36	24	19.4	20.0±1	
			36	49	19.42	20.0±1	
			75	0	19.45	20.0±1	
41515	2682.5	QPSK	1	0	21.21	22.0±1	
			1	49	21.05	22.0±1	
			1	99	21.07	22.0±1	
			36	0	20.23	21.0±1	
			36	24	20.25	21.0±1	
			36	49	20.16	21.0±1	
			75	0	20.18	21.0±1	
		16QAM	1	0	20.91	21.0±1	
			1	49	20.77	21.0±1	
			1	99	20.87	21.0±1	
			36	0	19.19	20.0±1	
			36	24	19.14	20.0±1	
			36	49	19.03	20.0±1	
			75	0	19.23	20.0±1	

BW(MHz)	Ch	Freq(MHz)	Mode	UL RB Allocation	UL RB Offset	Average Power (dbm)	Tune up limited(dBm)
20MHz	39750	2506	QPSK	1	0	21.6	22.0±1
				1	49	21.74	22.0±1
				1	99	21.55	22.0±1
				50	0	20.64	21.0±1
				50	24	20.56	21.0±1
				50	49	20.43	21.0±1
				100	0	20.49	21.0±1
			16QAM	1	0	20.94	21.0±1
				1	49	21	21.0±1
				1	99	20.58	21.0±1
				50	0	19.58	20.0±1
				50	24	19.48	20.0±1
				50	49	19.4	20.0±1
				100	0	19.56	20.0±1
20MHz	40620	2593	QPSK	1	0	21.72	22.0±1
				1	49	21.54	22.0±1
				1	99	21.52	22.0±1
				50	0	20.5	21.0±1
				50	24	20.38	21.0±1
				50	49	20.24	21.0±1
				100	0	20.33	21.0±1
			16QAM	1	0	20.13	21.0±1
				1	49	20.15	21.0±1
				1	99	20.1	21.0±1
				50	0	19.64	20.0±1
				50	24	19.52	20.0±1
				50	49	19.38	20.0±1
				100	0	19.34	20.0±1
20MHz	41490	2680	QPSK	1	0	21.46	22.0±1
				1	49	21.36	22.0±1
				1	99	21.38	22.0±1
				50	0	20.16	21.0±1
				50	24	20.2	21.0±1
				50	49	20.19	21.0±1
				100	0	20.13	21.0±1
			16QAM	1	0	21.16	21.0±1
				1	49	21.26	21.0±1
				1	99	21.3	21.0±1
				50	0	19.41	20.0±1
				50	24	19.28	20.0±1
				50	49	19.25	20.0±1
				100	0	19.17	20.0±1

ERP and EIRP**LTE Band 2**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	RX Antenna		Substituted			Absolute Level (dBm)	Part 24E	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
LTE Band 2 Channel 18607 – 1.4MHz – QPSK										
1850.70	90.39	96	1.5	H	16.42	0.31	10.40	26.51	33	-6.49
1850.70	90.56	202	2.1	V	17.28	0.31	10.40	27.37	33	-5.63
LTE Band 2 Channel 18900 – 1.4MHz – QPSK										
1880.00	90.63	325	1.2	H	16.78	0.31	10.40	26.87	33	-6.13
1880.00	90.87	194	2.0	V	17.75	0.31	10.40	27.84	33	-5.16
LTE Band 2 Channel 19193 – 1.4MHz – QPSK										
1909.30	89.98	157	1.6	H	16.25	0.32	10.40	26.33	33	-6.67
1909.30	90.15	207	1.9	V	17.19	0.32	10.40	27.27	33	-5.73
LTE Band 2 Channel 18607 – 1.4MHz – 16QAM										
1850.70	90.05	136	2.0	H	16.08	0.31	10.40	26.17	33	-6.83
1850.70	91.06	87	1.5	V	17.78	0.31	10.40	27.87	33	-5.13
LTE Band 2 Channel 18900 – 1.4MHz – 16QAM										
1880.00	90.04	55	2.0	H	16.19	0.31	10.40	26.28	33	-6.72
1880.00	90.58	350	1.1	V	17.46	0.31	10.40	27.55	33	-5.45
LTE Band 2 Channel 19193 – 1.4MHz – 16QAM										
1909.30	90.16	276	1.7	H	16.43	0.32	10.40	26.51	33	-6.49
1909.30	90.35	94	1.9	V	17.39	0.32	10.40	27.47	33	-5.53
LTE Band 2 Channel 18615 – 3MHz – QPSK										
1851.50	90.25	155	1.2	H	16.28	0.31	10.40	26.37	33	-6.63
1851.50	90.97	230	2.1	V	17.69	0.31	10.40	27.78	33	-5.22
LTE Band 2 Channel 18900 – 3MHz – QPSK										
1880.00	90.47	26	2.3	H	16.62	0.31	10.40	26.71	33	-6.29
1880.00	90.61	198	1.3	V	17.49	0.31	10.40	27.58	33	-5.42
LTE Band 2 Channel 19185 – 3MHz – QPSK										
1908.50	90.49	53	1.5	H	16.76	0.32	10.40	26.84	33	-6.16
1908.50	90.53	292	1.9	V	17.57	0.32	10.40	27.65	33	-5.35
LTE Band 2 Channel 18615 – 3MHz – 16QAM										
1851.50	90.29	80	1.5	H	16.32	0.31	10.40	26.41	33	-6.59
1851.50	90.41	208	1.1	V	17.13	0.31	10.40	27.22	33	-5.78
LTE Band 2 Channel 18900 – 3MHz – 16QAM										
1880.00	90.17	235	2.2	H	16.32	0.31	10.40	26.41	33	-6.59
1880.00	90.45	36	1.7	V	17.33	0.31	10.40	27.42	33	-5.58
LTE Band 2 Channel 19185 – 3MHz – 16QAM										
1908.50	90.26	114	2.2	H	16.53	0.32	10.40	26.61	33	-6.39
1908.50	90.55	218	2.1	V	17.59	0.32	10.40	27.67	33	-5.33
LTE Band 2 Channel 18625 – 5MHz – QPSK										
1852.50	90.08	359	2.1	H	16.11	0.31	10.40	26.20	33	-6.80
1852.50	90.54	221	2.4	V	17.26	0.31	10.40	27.35	33	-5.65
LTE Band 2 Channel 18900 – 5MHz – QPSK										
1880.00	90.16	94	1.1	H	16.31	0.31	10.40	26.40	33	-6.60

1880.00	90.51	89	1.8	V	17.39	0.31	10.40	27.48	33	-5.52
LTE Band 2 Channel 19175 – 5MHz – QPSK										
1907.50	90.09	313	1.5	H	16.36	0.32	10.40	26.44	33	-6.56
1907.50	90.48	352	2.5	V	17.52	0.32	10.40	27.60	33	-5.40
LTE Band 2 Channel 18625 – 5MHz – 16QAM										
1852.50	90.03	137	2.1	H	16.06	0.31	10.40	26.15	33	-6.85
1852.50	90.81	350	2.0	V	17.53	0.31	10.40	27.62	33	-5.38
LTE Band 2 Channel 18900 – 5MHz – 16QAM										
1880.00	90.04	24	1.5	H	16.19	0.31	10.40	26.28	33	-6.72
1880.00	90.71	353	2.4	V	17.59	0.31	10.40	27.68	33	-5.32
LTE Band 2 Channel 19175 – 5MHz – 16QAM										
1907.50	90.09	302	1.2	H	16.36	0.32	10.40	26.44	33	-6.56
1907.50	90.32	136	1.7	V	17.36	0.32	10.40	27.44	33	-5.56
LTE Band 2 Channel 18650 – 10MHz – QPSK										
1855.00	90.24	233	1.2	H	16.27	0.31	10.40	26.36	33	-6.64
1855.00	90.52	121	1.4	V	17.24	0.31	10.40	27.33	33	-5.67
LTE Band 2 Channel 18900 – 10MHz – QPSK										
1880.00	90.10	7	2.3	H	16.25	0.31	10.40	26.34	33	-6.66
1880.00	90.45	63	2.3	V	17.33	0.31	10.40	27.42	33	-5.58
LTE Band 2 Channel 19150 – 10MHz – QPSK										
1905.00	90.12	16	1.5	H	16.39	0.32	10.40	26.47	33	-6.53
1905.00	90.51	107	2.3	V	17.55	0.32	10.40	27.63	33	-5.37
LTE Band 2 Channel 18650 – 10MHz – 16QAM										
1855.00	90.18	185	2.1	H	16.21	0.31	10.40	26.30	33	-6.70
1855.00	90.50	32	2.2	V	17.22	0.31	10.40	27.31	33	-5.69
LTE Band 2 Channel 18900 – 10MHz – 16QAM										
1880.00	90.12	267	1.0	H	16.27	0.31	10.40	26.36	33	-6.64
1880.00	90.57	252	1.1	V	17.45	0.31	10.40	27.54	33	-5.46
LTE Band 2 Channel 19150 – 10MHz – 16QAM										
1905.00	90.26	85	1.0	H	16.53	0.32	10.40	26.61	33	-6.39
1905.00	90.48	193	1.2	V	17.52	0.32	10.40	27.60	33	-5.40
LTE Band 2 Channel 18675 – 15MHz – QPSK										
1857.50	90.04	228	1.2	H	16.07	0.31	10.40	26.16	33	-6.84
1857.50	90.58	195	2.1	V	17.30	0.31	10.40	27.39	33	-5.61
LTE Band 2 Channel 18900 – 15MHz – QPSK										
1880.00	90.10	104	1.9	H	16.25	0.31	10.40	26.34	33	-6.66
1880.00	90.37	327	2.1	V	17.25	0.31	10.40	27.34	33	-5.66
LTE Band 2 Channel 19125 – 15MHz – QPSK										
1902.50	90.19	159	1.7	H	16.46	0.32	10.40	26.54	33	-6.46
1902.50	90.56	11	1.6	V	17.60	0.32	10.40	27.68	33	-5.32
LTE Band 2 Channel 18675 – 15MHz – 16QAM										
1857.50	90.25	169	1.5	H	16.28	0.31	10.40	26.37	33	-6.63
1857.50	90.68	26	1.1	V	17.40	0.31	10.40	27.49	33	-5.51
LTE Band 2 Channel 18900 – 15MHz – 16QAM										
1880.00	90.24	151	1.0	H	16.39	0.31	10.40	26.48	33	-6.52
1880.00	90.67	30	2.2	V	17.55	0.31	10.40	27.64	33	-5.36
LTE Band 2 Channel 19125 – 15MHz – 16QAM										

1902.50	90.15	252	1.1	H	16.42	0.32	10.40	26.50	33	-6.50
1902.50	90.62	73	1.4	V	17.66	0.32	10.40	27.74	33	-5.26
LTE Band 2 Channel 18700 – 20MHz – QPSK										
1860.00	90.13	328	1.7	H	16.16	0.31	10.40	26.25	33	-6.75
1860.00	90.43	144	1.4	V	17.15	0.31	10.40	27.24	33	-5.76
LTE Band 2 Channel 18900 – 20MHz – QPSK										
1880.00	90.14	80	2.4	H	16.29	0.31	10.40	26.38	33	-6.62
1880.00	90.86	205	1.9	V	17.74	0.31	10.40	27.83	33	-5.17
LTE Band 2 Channel 19100 – 20MHz – QPSK										
1900.00	90.02	44	2.3	H	16.29	0.32	10.40	26.37	33	-6.63
1900.00	90.87	226	2.1	V	17.91	0.32	10.40	27.99	33	-5.01
LTE Band 2 Channel 18670 – 20MHz – 16QAM										
1860.00	90.16	133	1.9	H	16.19	0.31	10.40	26.28	33	-6.72
1860.00	90.72	327	1.3	V	17.44	0.31	10.40	27.53	33	-5.47
LTE Band 2 Channel 18900 – 20MHz – 16QAM										
1880.00	90.31	137	2.1	H	16.46	0.31	10.40	26.55	33	-6.45
1880.00	90.65	11	2.2	V	17.53	0.31	10.40	27.62	33	-5.38
LTE Band 2 Channel 19100 – 20MHz – 16QAM										
1900.00	90.07	128	1.9	H	16.34	0.32	10.40	26.42	33	-6.58
1900.00	90.85	256	1.0	V	17.89	0.32	10.40	27.97	33	-5.03

LTE Band 4

Frequency (MHz)	Receiver Reading (dB μ V)	Turn table Angle Degree	RX Antenna		Substituted			Absolute Level (dBm)	Part 27	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
LTE Band 4 Channel 19957 – 1.4MHz – QPSK										
1710.70	91.02	121	1.3	H	16.91	0.30	9.40	26.01	30	-3.99
1710.70	91.58	14	2.3	V	18.05	0.30	9.40	27.15	30	-2.85
LTE Band 4 Channel 20175 – 1.4MHz – QPSK										
1732.50	91.08	53	2.4	H	16.97	0.30	9.40	26.07	30	-3.93
1732.50	92.03	107	1.2	V	18.50	0.30	9.40	27.60	30	-2.40
LTE Band 4 Channel 20393 – 1.4MHz – QPSK										
1754.30	91.54	43	2.3	H	17.43	0.30	9.40	26.53	30	-3.47
1754.30	92.23	76	1.6	V	18.70	0.30	9.40	27.80	30	-2.20
LTE Band 4 Channel 19957 – 1.4MHz – 16QAM										
1710.70	91.48	166	1.2	H	17.37	0.30	9.40	26.47	30	-3.53
1710.70	92.15	248	2.1	V	18.62	0.30	9.40	27.72	30	-2.28
LTE Band 4 Channel 20175 – 1.4MHz – 16QAM										
1732.50	91.45	354	1.6	H	17.34	0.30	9.40	26.44	30	-3.56
1732.50	92.10	72	1.9	V	18.57	0.30	9.40	27.67	30	-2.33
LTE Band 4 Channel 20393 – 1.4MHz – 16QAM										
1754.30	91.63	245	2.2	H	17.52	0.30	9.40	26.62	30	-3.38
1754.30	92.15	9	1.8	V	18.62	0.30	9.40	27.72	30	-2.28
LTE Band 4 Channel 19965 – 3MHz – QPSK										
1711.50	91.04	163	1.6	H	16.93	0.30	9.40	26.03	30	-3.97
1711.50	91.59	341	1.3	V	18.06	0.30	9.40	27.16	30	-2.84

LTE Band 4 Channel 20175 – 3MHz – QPSK										
1732.50	91.43	94	2.2	H	17.32	0.30	9.40	26.42	30	-3.58
1732.50	91.85	128	1.6	V	18.32	0.30	9.40	27.42	30	-2.58
LTE Band 4 Channel 20385 – 3MHz – QPSK										
1753.50	91.26	4	1.7	H	17.15	0.30	9.40	26.25	30	-3.75
1753.50	91.87	238	1.8	V	18.34	0.30	9.40	27.44	30	-2.56
LTE Band 4 Channel 19965 – 3MHz – 16QAM										
1711.50	91.20	104	1.2	H	17.09	0.30	9.40	26.19	30	-3.81
1711.50	91.85	291	1.1	V	18.32	0.30	9.40	27.42	30	-2.58
LTE Band 4 Channel 20175 – 3MHz – 16QAM										
1732.50	91.06	55	1.2	H	16.95	0.30	9.40	26.05	30	-3.95
1732.50	91.54	183	1.1	V	18.01	0.30	9.40	27.11	30	-2.89
LTE Band 4 Channel 20385 – 3MHz – 16QAM										
1753.50	91.05	11	1.2	H	16.94	0.30	9.40	26.04	30	-3.96
1753.50	91.57	174	2.3	V	18.04	0.30	9.40	27.14	30	-2.86
LTE Band 4 Channel 19975 – 5MHz – QPSK										
1712.50	91.06	87	2.3	H	16.95	0.30	9.40	26.05	30	-3.95
1712.50	91.84	290	2.2	V	18.31	0.30	9.40	27.41	30	-2.59
LTE Band 4 Channel 20175 – 5MHz – QPSK										
1732.50	91.36	169	2.1	H	17.25	0.30	9.40	26.35	30	-3.65
1732.50	91.98	331	2.0	V	18.45	0.30	9.40	27.55	30	-2.45
LTE Band 4 Channel 20375 – 5MHz – QPSK										
1752.50	91.35	11	1.9	H	17.24	0.30	9.40	26.34	30	-3.66
1752.50	91.87	37	2.0	V	18.34	0.30	9.40	27.44	30	-2.56
LTE Band 4 Channel 19975 – 5MHz – 16QAM										
1712.50	91.22	186	1.9	H	17.11	0.30	9.40	26.21	30	-3.79
1712.50	91.69	15	2.1	V	18.16	0.30	9.40	27.26	30	-2.74
LTE Band 4 Channel 20175 – 5MHz – 16QAM										
1732.50	91.32	162	1.2	H	17.21	0.30	9.40	26.31	30	-3.69
1732.50	91.95	358	1.6	V	18.42	0.30	9.40	27.52	30	-2.48
LTE Band 4 Channel 20375 – 5MHz – 16QAM										
1752.50	91.23	237	2.4	H	17.12	0.30	9.40	26.22	30	-3.78
1752.50	91.94	148	2.4	V	18.41	0.30	9.40	27.51	30	-2.49
LTE Band 4 Channel 20000 – 10MHz – QPSK										
1715.00	91.30	86	2.5	H	17.19	0.30	9.40	26.29	30	-3.71
1715.00	91.99	297	2.3	V	18.46	0.30	9.40	27.56	30	-2.44
LTE Band 4 Channel 20175 – 10MHz – QPSK										
1732.50	91.12	174	1.4	H	17.01	0.30	9.40	26.11	30	-3.89
1732.50	91.94	29	1.9	V	18.41	0.30	9.40	27.51	30	-2.49
LTE Band 4 Channel 20350 – 10MHz – QPSK										
1750.00	91.24	100	2.0	H	17.13	0.30	9.40	26.23	30	-3.77
1750.00	91.97	161	2.2	V	18.44	0.30	9.40	27.54	30	-2.46
LTE Band 4 Channel 20000 – 10MHz – 16QAM										
1715.00	91.13	127	1.5	H	17.02	0.30	9.40	26.12	30	-3.88
1715.00	91.88	128	1.1	V	18.35	0.30	9.40	27.45	30	-2.55
LTE Band 4 Channel 20175 – 10MHz – 16QAM										
1732.50	91.14	153	1.3	H	17.03	0.30	9.40	26.13	30	-3.87

1732.50	91.96	321	1.2	V	18.43	0.30	9.40	27.53	30	-2.47
LTE Band 4 Channel 20350 – 10MHz – 16QAM										
1750.00	91.21	299	1.8	H	17.10	0.30	9.40	26.20	30	-3.80
1750.00	91.87	174	1.7	V	18.34	0.30	9.40	27.44	30	-2.56
LTE Band 4 Channel 20025 – 15MHz – QPSK										
1717.50	91.17	174	2.3	H	17.06	0.30	9.40	26.16	30	-3.84
1717.50	91.94	120	1.7	V	18.41	0.30	9.40	27.51	30	-2.49
LTE Band 4 Channel 20175 – 15MHz – QPSK										
1732.50	91.31	132	1.2	H	17.20	0.30	9.40	26.30	30	-3.70
1732.50	91.77	198	1.4	V	18.24	0.30	9.40	27.34	30	-2.66
LTE Band 4 Channel 20325 – 15MHz – QPSK										
1747.50	91.02	144	2.1	H	16.91	0.30	9.40	26.01	30	-3.99
1747.50	91.81	1	2.0	V	18.28	0.30	9.40	27.38	30	-2.62
LTE Band 4 Channel 20025 – 15MHz – 16QAM										
1717.50	91.22	203	1.5	H	17.11	0.30	9.40	26.21	30	-3.79
1717.50	91.84	24	1.1	V	18.31	0.30	9.40	27.41	30	-2.59
LTE Band 4 Channel 20175 – 15MHz – 16QAM										
1732.50	91.15	281	2.4	H	17.04	0.30	9.40	26.14	30	-3.86
1732.50	91.64	30	1.6	V	18.11	0.30	9.40	27.21	30	-2.79
LTE Band 4 Channel 20325 – 15MHz – 16QAM										
1747.50	91.20	323	1.3	H	17.09	0.30	9.40	26.19	30	-3.81
1747.50	91.77	171	2.1	V	18.24	0.30	9.40	27.34	30	-2.66
LTE Band 4 Channel 20050 – 20MHz – QPSK										
1720.00	91.19	172	2.4	H	17.08	0.30	9.40	26.18	30	-3.82
1720.00	91.96	133	1.7	V	18.43	0.30	9.40	27.53	30	-2.47
LTE Band 4 Channel 20175 – 20MHz – QPSK										
1732.50	91.44	253	2.1	H	17.33	0.30	9.40	26.43	30	-3.57
1732.50	91.92	139	1.7	V	18.39	0.30	9.40	27.49	30	-2.51
LTE Band 4 Channel 20300 – 20MHz – QPSK										
1745.00	91.13	175	1.3	H	17.02	0.30	9.40	26.12	30	-3.88
1745.00	91.97	134	1.0	V	18.44	0.30	9.40	27.54	30	-2.46
LTE Band 4 Channel 20050 – 20MHz – 16QAM										
1720.00	91.27	290	1.7	H	17.16	0.30	9.40	26.26	30	-3.74
1720.00	91.85	234	1.9	V	18.32	0.30	9.40	27.42	30	-2.58
LTE Band 4 Channel 20175 – 20MHz – 16QAM										
1732.50	91.30	98	2.2	H	17.19	0.30	9.40	26.29	30	-3.71
1732.50	91.99	337	2.3	V	18.46	0.30	9.40	27.56	30	-2.44
LTE Band 4 Channel 20300 – 20MHz – 16QAM										
1745.00	91.04	175	1.6	H	16.93	0.30	9.40	26.03	30	-3.97
1745.00	91.88	52	2.2	V	18.35	0.30	9.40	27.45	30	-2.55

LTE Band 5

Frequency (MHz)	Receiver Reading (dB μ V)	Turn table Angle Degree	RX Antenna		Substituted			Absolute Level (dBm)	Part 22H	
			Height (m)	Polar	SG Level (dBm)	Cable (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
LTE Band 5 Channel 20407 – 1.4MHz – QPSK										
824.70	81.20	280	1.5	H	14.09	0.30	9.40	23.19	38.45	-15.26
824.70	82.63	224	2.3	V	15.10	0.30	9.40	24.20	38.45	-14.25
LTE Band 5 Channel 20525 – 1.4MHz – QPSK										
836.50	81.59	5	1.3	H	14.48	0.30	9.40	23.58	38.45	-14.87
836.50	82.19	58	2.0	V	14.66	0.30	9.40	23.76	38.45	-14.69
LTE Band 5 Channel 20643 – 1.4MHz – QPSK										
848.30	81.28	248	2.4	H	14.17	0.30	9.40	23.27	38.45	-15.18
848.30	82.57	291	1.4	V	15.04	0.30	9.40	24.14	38.45	-14.31
LTE Band 5 Channel 20407 – 1.4MHz – 16QAM										
824.70	81.02	9	2.3	H	13.91	0.30	9.40	23.01	38.45	-15.44
824.70	82.33	287	1.2	V	14.80	0.30	9.40	23.90	38.45	-14.55
LTE Band 5 Channel 20525 – 1.4MHz – 16QAM										
836.50	81.08	31	2.2	H	13.97	0.30	9.40	23.07	38.45	-15.38
836.50	82.91	328	1.2	V	15.38	0.30	9.40	24.48	38.45	-13.97
LTE Band 5 Channel 20643 – 1.4MHz – 16QAM										
848.30	81.56	150	1.9	H	14.45	0.30	9.40	23.55	38.45	-14.90
848.30	82.10	316	2.4	V	14.57	0.30	9.40	23.67	38.45	-14.78
LTE Band 5 Channel 20415 – 3MHz – QPSK										
825.50	81.74	304	1.6	H	14.63	0.30	9.40	23.73	38.45	-14.72
825.50	82.54	260	2.1	V	15.01	0.30	9.40	24.11	38.45	-14.34
LTE Band 5 Channel 20525 – 3MHz – QPSK										
836.50	81.49	183	2.3	H	14.38	0.30	9.40	23.48	38.45	-14.97
836.50	82.32	267	1.8	V	14.79	0.30	9.40	23.89	38.45	-14.56
LTE Band 5 Channel 20635 – 3MHz – QPSK										
847.50	81.30	245	2.2	H	14.19	0.30	9.40	23.29	38.45	-15.16
847.50	82.38	211	1.3	V	14.85	0.30	9.40	23.95	38.45	-14.50
LTE Band 5 Channel 20415 – 3MHz – 16QAM										
825.50	81.57	8	2.2	H	14.46	0.30	9.40	23.56	38.45	-14.89
825.50	82.60	343	1.8	V	15.07	0.30	9.40	24.17	38.45	-14.28
LTE Band 5 Channel 20525 – 3MHz – 16QAM										
836.50	81.29	240	2.5	H	14.18	0.30	9.40	23.28	38.45	-15.17
836.50	82.55	312	1.5	V	15.02	0.30	9.40	24.12	38.45	-14.33
LTE Band 5 Channel 20635 – 3MHz – 16QAM										
847.50	81.15	88	1.2	H	14.04	0.30	9.40	23.14	38.45	-15.31
847.50	82.79	23	1.7	V	15.26	0.30	9.40	24.36	38.45	-14.09
LTE Band 5 Channel 20425 – 5MHz – QPSK										
826.50	81.22	136	1.8	H	14.11	0.30	9.40	23.21	38.45	-15.24
826.50	82.48	11	1.3	V	14.95	0.30	9.40	24.05	38.45	-14.40
LTE Band 5 Channel 20525 – 5MHz – QPSK										
836.50	81.07	270	2.1	H	13.96	0.30	9.40	23.06	38.45	-15.39
836.50	82.66	326	1.0	V	15.13	0.30	9.40	24.23	38.45	-14.22

LTE Band 5 Channel 20625 – 5MHz – QPSK										
846.50	81.40	270	1.1	H	14.29	0.30	9.40	23.39	38.45	-15.06
846.50	82.94	296	1.9	V	15.41	0.30	9.40	24.51	38.45	-13.94
LTE Band 5 Channel 20425 – 5MHz – 16QAM										
826.50	81.65	325	1.1	H	14.54	0.30	9.40	23.64	38.45	-14.81
826.50	82.34	325	1.6	V	14.81	0.30	9.40	23.91	38.45	-14.54
LTE Band 5 Channel 20525 – 5MHz – 16QAM										
836.50	81.21	350	1.3	H	14.10	0.30	9.40	23.20	38.45	-15.25
836.50	82.97	261	1.1	V	15.44	0.30	9.40	24.54	38.45	-13.91
LTE Band 5 Channel 20625 – 5MHz – 16QAM										
846.50	81.45	197	1.2	H	14.34	0.30	9.40	23.44	38.45	-15.01
846.50	82.27	211	2.0	V	14.74	0.30	9.40	23.84	38.45	-14.61
LTE Band 5 Channel 20450 – 10MHz – QPSK										
829.00	81.29	167	1.7	H	14.18	0.30	9.40	23.28	38.45	-15.17
829.00	82.48	141	2.3	V	14.95	0.30	9.40	24.05	38.45	-14.40
LTE Band 5 Channel 20525 – 10MHz – QPSK										
836.50	81.10	189	2.3	H	13.99	0.30	9.40	23.09	38.45	-15.36
836.50	82.52	314	1.1	V	14.99	0.30	9.40	24.09	38.45	-14.36
LTE Band 5 Channel 20600 – 10MHz – QPSK										
844.00	81.17	255	1.9	H	14.06	0.30	9.40	23.16	38.45	-15.29
844.00	82.79	123	2.4	V	15.26	0.30	9.40	24.36	38.45	-14.09
LTE Band 5 Channel 20450 – 10MHz – 16QAM										
829.00	81.27	210	1.4	H	14.16	0.30	9.40	23.26	38.45	-15.19
829.00	82.59	272	2.4	V	15.06	0.30	9.40	24.16	38.45	-14.29
LTE Band 5 Channel 20525 – 10MHz – 16QAM										
836.50	81.12	60	1.9	H	14.01	0.30	9.40	23.11	38.45	-15.34
836.50	82.63	295	2.4	V	15.10	0.30	9.40	24.20	38.45	-14.25
LTE Band 5 Channel 20600 – 10MHz – 16QAM										
844.00	81.20	57	1.5	H	14.09	0.30	9.40	23.19	38.45	-15.26
844.00	82.28	179	2.5	V	14.75	0.30	9.40	23.85	38.45	-14.60

LTE Band 7

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	RX Antenna		Substituted			Absolute Level (dBm)	Part 27	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
LTE Band 7 Channel 20775 – 5MHz – QPSK										
2502.50	88.59	300	2.4	H	14.59	0.43	10.60	24.76	33	-8.24
2502.50	85.96	235	1.9	V	15.68	0.43	10.60	25.85	33	-7.15
LTE Band 7 Channel 21100 – 5MHz – QPSK										
2535.00	89.06	3	2.0	H	15.06	0.43	10.60	25.23	33	-7.77
2535.00	85.94	45	2.1	V	15.66	0.43	10.60	25.83	33	-7.17
LTE Band 7 Channel 21425 – 5MHz – QPSK										
2567.50	89.41	201	1.2	H	15.30	0.43	10.60	25.47	33	-7.53
2567.50	85.97	173	2.3	V	15.78	0.43	10.60	25.95	33	-7.05
LTE Band 7 Channel 20775 – 5MHz – 16QAM										
2502.50	88.98	276	1.9	H	14.98	0.43	10.60	25.15	33	-7.85
2502.50	85.95	268	2.3	V	15.67	0.43	10.60	25.84	33	-7.16
LTE Band 7 Channel 21100 – 5MHz – 16QAM										
2535.00	89.25	266	1.1	H	15.25	0.43	10.60	25.42	33	-7.58
2535.00	85.49	237	1.8	V	15.21	0.43	10.60	25.38	33	-7.62
LTE Band 7 Channel 21425 – 5MHz – 16QAM										
2567.50	89.10	106	1.1	H	14.99	0.43	10.60	25.16	33	-7.84
2567.50	85.27	217	2.3	V	15.08	0.43	10.60	25.25	33	-7.75
LTE Band 7 Channel 20800 – 10MHz – QPSK										
2505.00	88.91	106	1.0	H	14.91	0.43	10.60	25.08	33	-7.92
2505.00	85.45	219	2.1	V	15.17	0.43	10.60	25.34	33	-7.66
LTE Band 7 Channel 21100 – 10MHz – QPSK										
2535.00	88.57	56	1.9	H	14.57	0.43	10.60	24.74	33	-8.26
2535.00	85.69	78	1.1	V	15.41	0.43	10.60	25.58	33	-7.42
LTE Band 7 Channel 21400 – 10MHz – QPSK										
2565.00	88.96	209	2.4	H	14.85	0.43	10.60	25.02	33	-7.98
2565.00	85.17	7	1.5	V	14.98	0.43	10.60	25.15	33	-7.85
LTE Band 7 Channel 20800 – 10MHz – 16QAM										
2505.00	88.90	131	2.2	H	14.90	0.43	10.60	25.07	33	-7.93
2505.00	85.43	82	1.3	V	15.15	0.43	10.60	25.32	33	-7.68
LTE Band 7 Channel 21100 – 10MHz – 16QAM										
2535.00	89.19	172	1.1	H	15.19	0.43	10.60	25.36	33	-7.64
2535.00	85.43	179	1.1	V	15.15	0.43	10.60	25.32	33	-7.68
LTE Band 7 Channel 21400 – 10MHz – 16QAM										
2565.00	89.56	56	2.2	H	15.45	0.43	10.60	25.62	33	-7.38
2565.00	85.84	182	2.1	V	15.65	0.43	10.60	25.82	33	-7.18
LTE Band 7 Channel 20825 – 15MHz – QPSK										
2507.50	89.21	77	2.0	H	15.21	0.43	10.60	25.38	33	-7.62
2507.50	85.53	71	1.1	V	15.25	0.43	10.60	25.42	33	-7.58
LTE Band 7 Channel 21100 – 15MHz – QPSK										
2535.00	89.14	89	1.2	H	15.14	0.43	10.60	25.31	33	-7.69

2535.00	85.58	197	2.2	V	15.30	0.43	10.60	25.47	33	-7.53
LTE Band 7 Channel 21375 – 15MHz – QPSK										
2562.50	89.06	253	1.1	H	14.95	0.43	10.60	25.12	33	-7.88
2562.50	85.67	357	1.1	V	15.48	0.43	10.60	25.65	33	-7.35
LTE Band 7 Channel 20825 – 15MHz – 16QAM										
2507.50	89.04	69	1.9	H	15.04	0.43	10.60	25.21	33	-7.79
2507.50	85.62	231	1.7	V	15.34	0.43	10.60	25.51	33	-7.49
LTE Band 7 Channel 21100 – 15MHz – 16QAM										
2535.00	89.10	35	1.2	H	15.10	0.43	10.60	25.27	33	-7.73
2535.00	85.87	92	1.0	V	15.59	0.43	10.60	25.76	33	-7.24
LTE Band 7 Channel 21375 – 15MHz – 16QAM										
2562.50	88.95	287	2.4	H	14.84	0.43	10.60	25.01	33	-7.99
2562.50	85.82	123	1.2	V	15.63	0.43	10.60	25.80	33	-7.20
LTE Band 7 Channel 20850 – 20MHz – QPSK										
2510.00	88.76	346	1.4	H	14.76	0.43	10.60	24.93	33	-8.07
2510.00	85.19	253	1.3	V	14.91	0.43	10.60	25.08	33	-7.92
LTE Band 7 Channel 21100 – 20MHz – QPSK										
2535.00	88.75	51	1.2	H	14.75	0.43	10.60	24.92	33	-8.08
2535.00	85.29	223	2.1	V	15.01	0.43	10.60	25.18	33	-7.82
LTE Band 7 Channel 21350 – 20MHz – QPSK										
2560.00	88.63	336	1.5	H	14.52	0.43	10.60	24.69	33	-8.31
2560.00	85.86	47	2.4	V	15.67	0.43	10.60	25.84	33	-7.16
LTE Band 7 Channel 20850 – 20MHz – 16QAM										
2510.00	88.97	245	1.4	H	14.97	0.43	10.60	25.14	33	-7.86
2510.00	85.36	167	2.4	V	15.08	0.43	10.60	25.25	33	-7.75
LTE Band 7 Channel 21100 – 20MHz – 16QAM										
2535.00	88.77	76	1.8	H	14.77	0.43	10.60	24.94	33	-8.06
2535.00	85.81	124	1.6	V	15.53	0.43	10.60	25.70	33	-7.30
LTE Band 7 Channel 21350 – 20MHz – 16QAM										
2560.00	88.84	108	1.6	H	14.73	0.43	10.60	24.90	33	-8.10
2560.00	85.79	2	2.3	V	15.60	0.43	10.60	25.77	33	-7.23

LTE Band 17

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Part 27	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE Band 17 Channel 23755 – 5MHz – QPSK										
706.50	95.26	344	1.8	H	24.26	0.20	0.00	24.06	34.77	-10.71
706.50	96.89	309	1.1	V	24.61	0.20	0.00	24.41	34.77	-10.36
LTE Band 17 Channel 23790 – 5MHz – QPSK										
710.00	94.89	209	2.3	H	23.89	0.20	0.00	23.69	34.77	-11.08
710.00	96.98	7	1.8	V	24.70	0.20	0.00	24.50	34.77	-10.27
LTE Band 17 Channel 23825 – 5MHz – QPSK										
713.50	94.87	223	1.7	H	23.87	0.20	0.00	23.67	34.77	-11.10
713.50	96.56	237	1.1	V	24.28	0.20	0.00	24.08	34.77	-10.69
LTE Band 17 Channel 23755 – 5MHz – 16QAM										
706.50	94.86	210	1.4	H	23.86	0.20	0.00	23.66	34.77	-11.11
706.50	96.99	116	1.3	V	24.71	0.20	0.00	24.51	34.77	-10.26
LTE Band 17 Channel 23790 – 5MHz – 16QAM										
710.00	94.39	156	1.6	H	23.39	0.20	0.00	23.19	34.77	-11.58
710.00	96.75	251	2.5	V	24.47	0.20	0.00	24.27	34.77	-10.50
LTE Band 17 Channel 23825 – 5MHz – 16QAM										
713.50	94.38	96	1.8	H	23.38	0.20	0.00	23.18	34.77	-11.59
713.50	96.58	84	2.1	V	24.30	0.20	0.00	24.10	34.77	-10.67
LTE Band 17 Channel 23780 – 10MHz – QPSK										
709.00	94.87	234	1.5	H	23.87	0.20	0.00	23.67	34.77	-11.10
709.00	97.03	341	1.2	V	24.75	0.20	0.00	24.55	34.77	-10.22
LTE Band 17 Channel 23790 – 10MHz – QPSK										
710.00	95.03	136	1.7	H	24.03	0.20	0.00	23.83	34.77	-10.94
710.00	96.97	76	1.6	V	24.69	0.20	0.00	24.49	34.77	-10.28
LTE Band 17 Channel 23800 – 10MHz – QPSK										
711.00	95.06	13	1.5	H	24.06	0.20	0.00	23.86	34.77	-10.91
711.00	96.94	256	1.4	V	24.66	0.20	0.00	24.46	34.77	-10.31
LTE Band 17 Channel 23780 – 10MHz – 16QAM										
709.00	95.84	56	2.3	H	24.84	0.20	0.00	24.64	34.77	-10.13
709.00	97.25	258	2.0	V	24.97	0.20	0.00	24.77	34.77	-10.00
LTE Band 17 Channel 23790 – 10MHz – 16QAM										
710.00	95.08	255	1.6	H	24.08	0.20	0.00	23.88	34.77	-10.89
710.00	96.88	285	2.1	V	24.60	0.20	0.00	24.40	34.77	-10.37
LTE Band 17 Channel 23800 – 10MHz – 16QAM										
711.00	95.14	58	2.0	H	24.14	0.20	0.00	23.94	34.77	-10.83
711.00	97.04	24	1.7	V	24.76	0.20	0.00	24.56	34.77	-10.21

LTE Band 41

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 41 Channel 39675 – 5MHz – QPSK										
2498.50	88.10	196	1.1	H	14.10	0.43	10.60	24.27	33	-8.73
2498.50	90.67	13	2.1	V	15.39	0.43	10.60	25.56	33	-7.44
LTE Band 41 Channel 40620 – 5MHz – QPSK										
2593.00	88.76	269	1.1	H	14.76	0.43	10.60	24.93	33	-8.07
2593.00	90.85	288	2.2	V	15.57	0.43	10.60	25.74	33	-7.26
LTE Band 41 Channel 41565 – 5MHz – QPSK										
2687.50	88.26	58	1.7	H	14.15	0.43	10.60	24.32	33	-8.68
2687.50	90.68	316	1.3	V	15.49	0.43	10.60	25.66	33	-7.34
LTE Band 41 Channel 39675 – 5MHz – 16QAM										
2498.50	88.58	83	1.0	H	14.58	0.43	10.60	24.75	33	-8.25
2498.50	90.59	251	1.2	V	15.31	0.43	10.60	25.48	33	-7.52
LTE Band 41 Channel 40620 – 5MHz – 16QA										
2593.00	88.48	83	2.3	H	14.48	0.43	10.60	24.65	33	-8.35
2593.00	91.02	116	1.4	V	15.74	0.43	10.60	25.91	33	-7.09
LTE Band 41 Channel 41565 – 5MHz – 16QAM										
2687.50	88.29	317	1.1	H	14.18	0.43	10.60	24.35	33	-8.65
2687.50	90.96	181	1.2	V	15.77	0.43	10.60	25.94	33	-7.06
LTE Band 41 Channel 39700 – 10MHz – QPSK										
2501.00	88.75	317	1.3	H	14.75	0.43	10.60	24.92	33	-8.08
2501.00	90.51	337	1.2	V	15.23	0.43	10.60	25.40	33	-7.60
LTE Band 41 Channel 40620 – 10MHz – QPSK										
2593.00	88.53	244	1.7	H	14.53	0.43	10.60	24.70	33	-8.30
2593.00	90.80	160	1.5	V	15.52	0.43	10.60	25.69	33	-7.31
LTE Band 41 Channel 41540 – 10MHz – QPSK										
2685.00	88.22	53	2.5	H	14.11	0.43	10.60	24.28	33	-8.72
2685.00	90.87	46	1.5	V	15.68	0.43	10.60	25.85	33	-7.15
LTE Band 41 Channel 39700 – 10MHz – 16QAM										
2501.00	88.57	286	1.2	H	14.57	0.43	10.60	24.74	33	-8.26
2501.00	90.68	221	2.2	V	15.40	0.43	10.60	25.57	33	-7.43
LTE Band 41 Channel 40620 – 10MHz – 16QAM										
2593.00	88.29	339	1.3	H	14.29	0.43	10.60	24.46	33	-8.54
2593.00	90.57	206	1.4	V	15.29	0.43	10.60	25.46	33	-7.54
LTE Band 41 Channel 41540 – 10MHz – 16QAM										
2685.00	88.34	89	2.2	H	14.23	0.43	10.60	24.40	33	-8.60
2685.00	90.81	265	1.9	V	15.62	0.43	10.60	25.79	33	-7.21
LTE Band 41 Channel 39725 – 15MHz – QPSK										
2503.50	88.50	131	2.2	H	14.50	0.43	10.60	24.67	33	-8.33
2503.50	90.63	325	1.8	V	15.35	0.43	10.60	25.52	33	-7.48
LTE Band 41 Channel 40620 – 15MHz – QPSK										
2593.00	88.49	188	2.3	H	14.49	0.43	10.60	24.66	33	-8.34

2593.00	90.61	220	1.2	V	15.33	0.43	10.60	25.50	33	-7.50
LTE Band 41 Channel 41515 – 15MHz – QPSK										
2682.50	88.23	164	2.0	H	14.12	0.43	10.60	24.29	33	-8.71
2682.50	90.37	261	1.4	V	15.18	0.43	10.60	25.35	33	-7.65
LTE Band 41 Channel 39725 – 15MHz – 16QAM										
2503.50	88.33	329	1.5	H	14.33	0.43	10.60	24.50	33	-8.50
2503.50	90.90	67	2.3	V	15.62	0.43	10.60	25.79	33	-7.21
LTE Band 41 Channel 40620 – 15MHz – 16QAM										
2593.00	88.15	234	2.5	H	14.15	0.43	10.60	24.32	33	-8.68
2593.00	90.80	256	1.7	V	15.52	0.43	10.60	25.69	33	-7.31
LTE Band 41 Channel 41515 – 15MHz – 16QAM										
2682.50	88.52	293	2.2	H	14.41	0.43	10.60	24.58	33	-8.42
2682.50	90.83	184	1.2	V	15.64	0.43	10.60	25.81	33	-7.19
LTE Band 41 Channel 39750 – 20MHz – QPSK										
2506.00	88.48	267	1.1	H	14.48	0.43	10.60	24.65	33	-8.35
2506.00	90.96	150	2.5	V	15.68	0.43	10.60	25.85	33	-7.15
LTE Band 41 Channel 40620 – 20MHz – QPSK										
2593.00	88.12	302	1.7	H	14.12	0.43	10.60	24.29	33	-8.71
2593.00	90.84	99	1.4	V	15.56	0.43	10.60	25.73	33	-7.27
LTE Band 41 Channel 41490 – 20MHz – QPSK										
2680.00	88.40	72	1.2	H	14.29	0.43	10.60	24.46	33	-8.54
2680.00	90.50	9	1.3	V	15.31	0.43	10.60	25.48	33	-7.52
LTE Band 41 Channel 39750 – 20MHz – 16QAM										
2506.00	88.41	108	1.9	H	14.41	0.43	10.60	24.58	33	-8.42
2506.00	90.69	302	2.0	V	15.41	0.43	10.60	25.58	33	-7.42
LTE Band 41 Channel 40620 – 20MHz – 16QAM										
2593.00	88.36	306	1.1	H	14.36	0.43	10.60	24.53	33	-8.47
2593.00	90.60	357	2.4	V	15.32	0.43	10.60	25.49	33	-7.51
LTE Band 41 Channel 41490 – 20MHz – 16QAM										
2680.00	88.54	99	1.7	H	14.43	0.43	10.60	24.60	33	-8.40
2680.00	90.66	107	1.8	V	15.47	0.43	10.60	25.64	33	-7.36

9 Peak-to-Average Ratio

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

Test Method: N/A

Test Mode: TX transmitting

9.1 EUT Operation

Operating Environment :

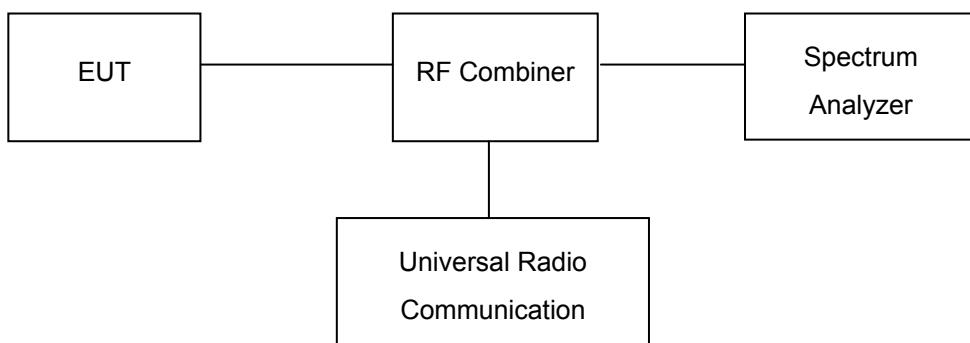
Temperature: 22.5 °C

Humidity: 52.3% RH

Atmospheric Pressure: 101.2kPa

9.2 Test Procedure

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



9.3 Test Result

PASS

LTE Band

Please refer to the Appendix Band 2/4/5/7/17/41 LTE Peak to Average Ratio.

10 BANDWIDTH

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

10.1 EUT Operation

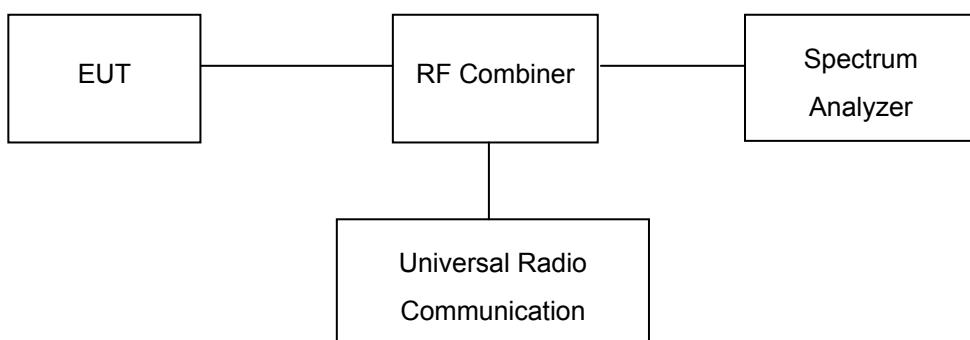
Operating Environment :

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

10.2 Test Procedure

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

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



10.3 Test Result

LTE Band 2 (Part 24E):

BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
1.4	18607	1850.7	QPSK	1.09	1.24
			16QAM	1.09	1.25
1.4	18900	1880	QPSK	1.09	1.24
			16QAM	1.09	1.23
1.4	19193	1909.3	QPSK	1.09	1.25
			16QAM	1.09	1.24
3	18615	1851.5	QPSK	2.72	2.96
			16QAM	2.72	2.96
3	18900	1880	QPSK	2.73	2.97
			16QAM	2.73	2.96
3	19185	1908.5	QPSK	2.72	2.96
			16QAM	2.72	2.96
5	18625	1852.5	QPSK	4.5	4.84
			16QAM	4.5	4.82
5	18900	1880	QPSK	4.5	4.84
			16QAM	4.5	4.85
5	19175	1907.5	QPSK	4.48	4.83
			16QAM	4.49	4.82
10	18650	1855	QPSK	8.92	9.37
			16QAM	8.92	9.35
10	18900	1880	QPSK	8.91	9.35
			16QAM	8.91	9.32
10	19150	1905	QPSK	8.9	9.31
			16QAM	8.89	9.32
15	18675	1857.5	QPSK	13.47	14.24
			16QAM	13.47	14.23
15	18900	1880	QPSK	13.44	14.24
			16QAM	13.42	14.23
15	19125	1902.5	QPSK	13.42	14.22
			16QAM	13.43	14.22
20	18700	1860	QPSK	17.93	18.74

			16QAM	17.92	18.75
20	18900	1880	QPSK	17.83	18.72
			16QAM	17.83	18.72
20	19100	1900	QPSK	17.9	18.75
			16QAM	17.91	18.76

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	1.24
			16QAM	1.09	1.25
1.4	2.175	1732.5	QPSK	1.09	1.24
			16QAM	1.09	1.23
1.4	20393	1754.3	QPSK	1.09	1.24
			16QAM	1.09	1.25
3	19965	1711.5	QPSK	2.72	2.96
			16QAM	2.72	2.96
3	2.175	1732.5	QPSK	2.73	2.97
			16QAM	2.73	2.97
3	2.385	1753.5	QPSK	2.73	2.96
			16QAM	2.72	2.97
5	19975	1712.5	QPSK	4.5	4.87
			16QAM	4.5	4.85
5	20175	1732.5	QPSK	4.5	4.86
			16QAM	4.5	4.84
5	20375	1752.5	QPSK	4.49	4.86
			16QAM	4.5	4.86
10	2000	1715	QPSK	8.92	9.37
			16QAM	8.92	9.39
10	20175	1732.5	QPSK	8.92	9.35
			16QAM	8.92	9.37
10	20350	1750	QPSK	8.93	9.37
			16QAM	8.92	9.37
15	20025	1717.5	QPSK	13.46	14.25
			16QAM	13.46	14.25
15	20175	1732.5	QPSK	13.47	14.25

			16QAM	13.46	14.26
15	20325	1747.5	QPSK	13.45	14.24
			16QAM	13.45	14.24
			QPSK	17.9	18.75
20	20050	1720	16QAM	17.9	18.77
			QPSK	17.9	18.77
			16QAM	17.9	18.76
20	20175	1732.5	QPSK	17.85	18.74
			16QAM	17.85	18.75
			QPSK	17.85	18.75

LTE Band 5 (Part 22H):

BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
1.4	20407	824.7	QPSK	1.09	1.27
			16QAM	1.09	1.28
1.4	20525	836.5	QPSK	1.09	1.28
			16QAM	1.09	1.28
1.4	20643	848.3	QPSK	1.09	1.29
			16QAM	1.09	1.27
3	20415	825.5	QPSK	2.72	2.98
			16QAM	2.72	2.99
3	20525	836.5	QPSK	2.72	2.97
			16QAM	2.72	2.97
3	20635	847.5	QPSK	2.73	2.99
			16QAM	2.73	2.98
5	20425	826.5	QPSK	4.5	4.87
			16QAM	4.49	4.84
5	20525	836.5	QPSK	4.49	4.83
			16QAM	4.49	4.85
5	20625	846.5	QPSK	4.49	4.84
			16QAM	4.5	4.87
10	20450	829.0	QPSK	8.94	9.5
			16QAM	8.93	9.47
10	20525	836.5	QPSK	8.92	9.41
			16QAM	8.91	9.36
10	20600	844.0	QPSK	8.92	9.38
			16QAM	8.93	9.35

LTE Band 7 (Part 27):

BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
5	20775	2502.5	QPSK	4.5	4.89
			16QAM	4.5	4.85
5	21100	2535	QPSK	4.5	4.85
			16QAM	4.5	4.86
5	21425	2567.5	QPSK	4.49	4.84
			16QAM	4.49	4.86
10	20850	2510	QPSK	8.92	9.43
			16QAM	8.91	9.41
10	21100	2535	QPSK	8.91	9.4
			16QAM	8.91	9.38
10	21400	2565	QPSK	8.92	9.38
			16QAM	8.92	9.4
15	20800	2505	QPSK	13.45	14.29
			16QAM	13.46	14.27
15	21100	2535	QPSK	13.46	14.27
			16QAM	13.45	14.26
15	21375	2562.5	QPSK	13.47	14.3
			16QAM	13.47	14.28
20	20825	2507.5	QPSK	17.88	18.77
			16QAM	17.88	18.79
20	21100	2535	QPSK	17.87	18.77
			16QAM	17.87	18.78
20	21350	2560	QPSK	17.9	18.82
			16QAM	17.91	18.8

LTE Band 17 (Part 27):

BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
5	23755	706.5	QPSK	4.5	4.83
			16QAM	4.5	4.84
5	23790	710	QPSK	4.48	4.78
			16QAM	4.48	4.78

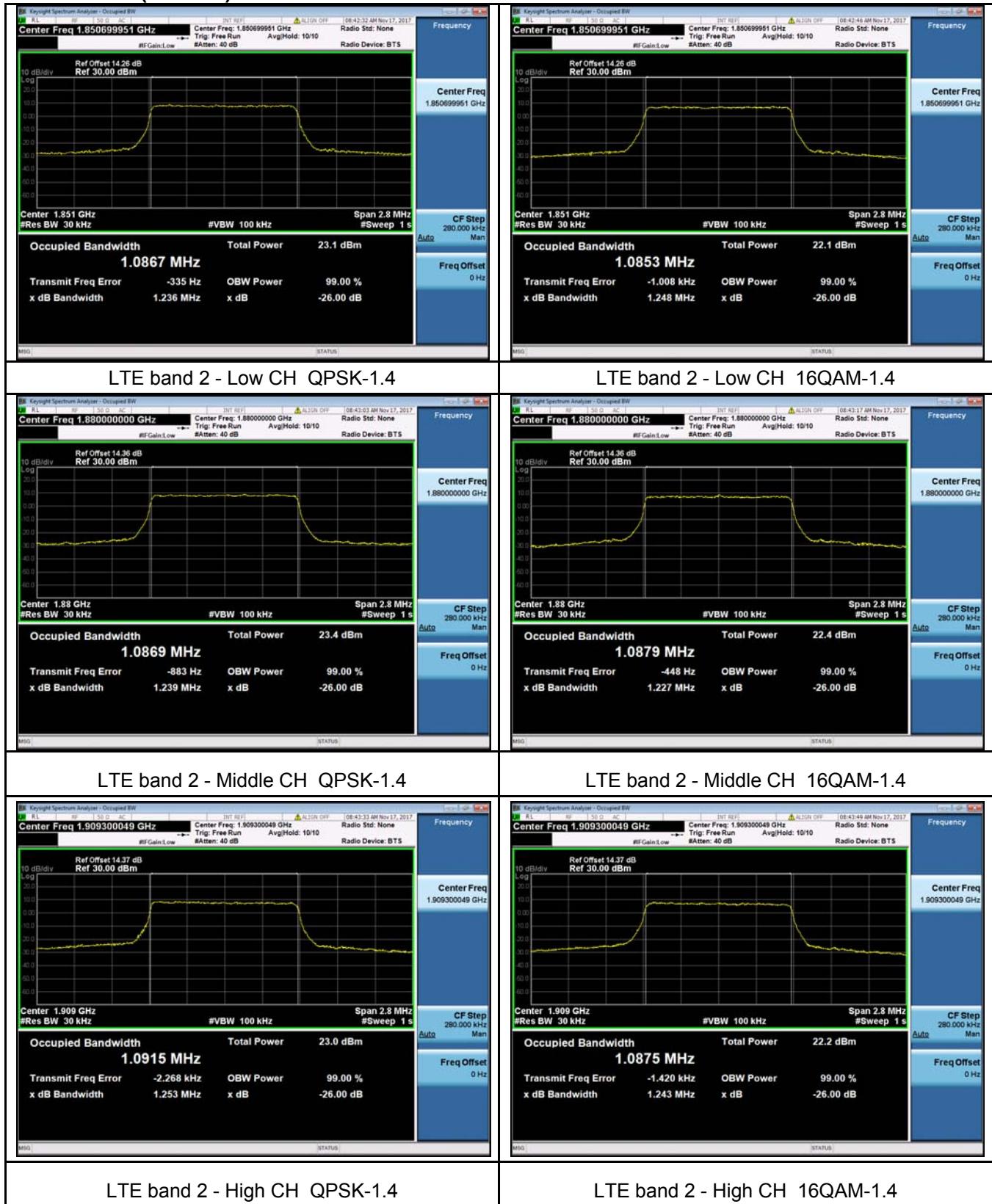
5	23825	713.5	QPSK	4.48	4.78
			16QAM	4.49	4.77
10	23780	709	QPSK	8.9	9.3
			16QAM	8.9	9.29
10	23790	710	QPSK	8.89	9.29
			16QAM	8.89	9.28
10	23800	711	QPSK	8.88	9.27
			16QAM	8.88	9.25

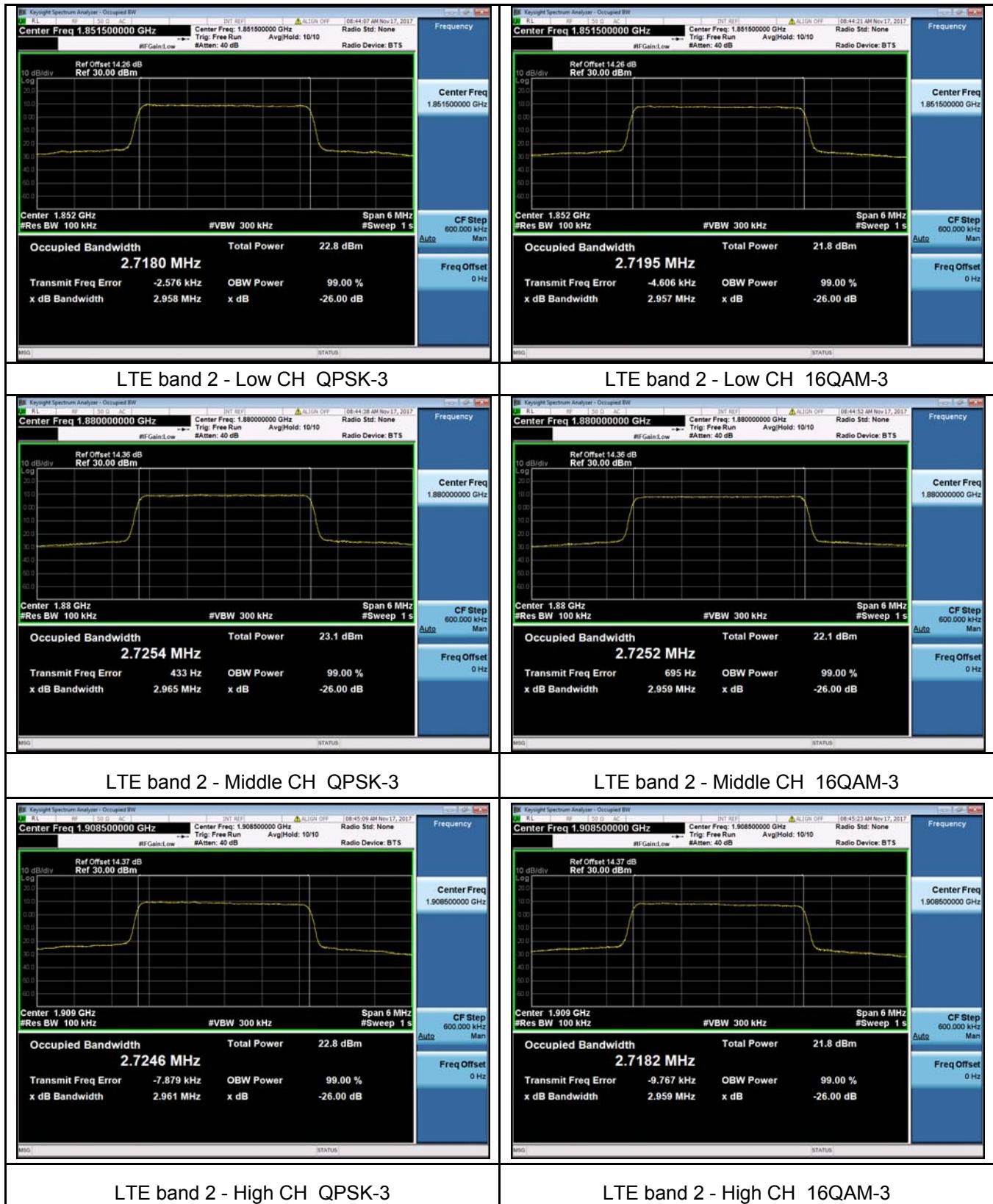
LTE Band 41 (Part 27):

BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
5	39675	2498.5	QPSK	4.5	4.83
			16QAM	4.49	4.82
5	40620	2593	QPSK	4.5	4.8
			16QAM	4.49	4.8
5	41565	2687.5	QPSK	4.49	4.79
			16QAM	4.49	4.82
10	39700	2501	QPSK	8.91	9.36
			16QAM	8.92	9.36
10	40620	2593	QPSK	8.91	9.38
			16QAM	8.91	9.31
10	41540	2685	QPSK	8.92	9.31
			16QAM	8.92	9.39
15	39725	2503.5	QPSK	13.45	14.24
			16QAM	13.45	14.24
15	40620	2593	QPSK	13.45	14.25
			16QAM	13.45	14.24
15	41515	2682.5	QPSK	13.43	14.23
			16QAM	13.44	14.23
20	39750	2506	QPSK	17.88	18.75
			16QAM	17.87	18.75
20	40620	2593	QPSK	17.87	18.75
			16QAM	17.88	18.74
20	41490	2680	QPSK	17.86	18.73
			16QAM	17.87	18.73

Test Plots

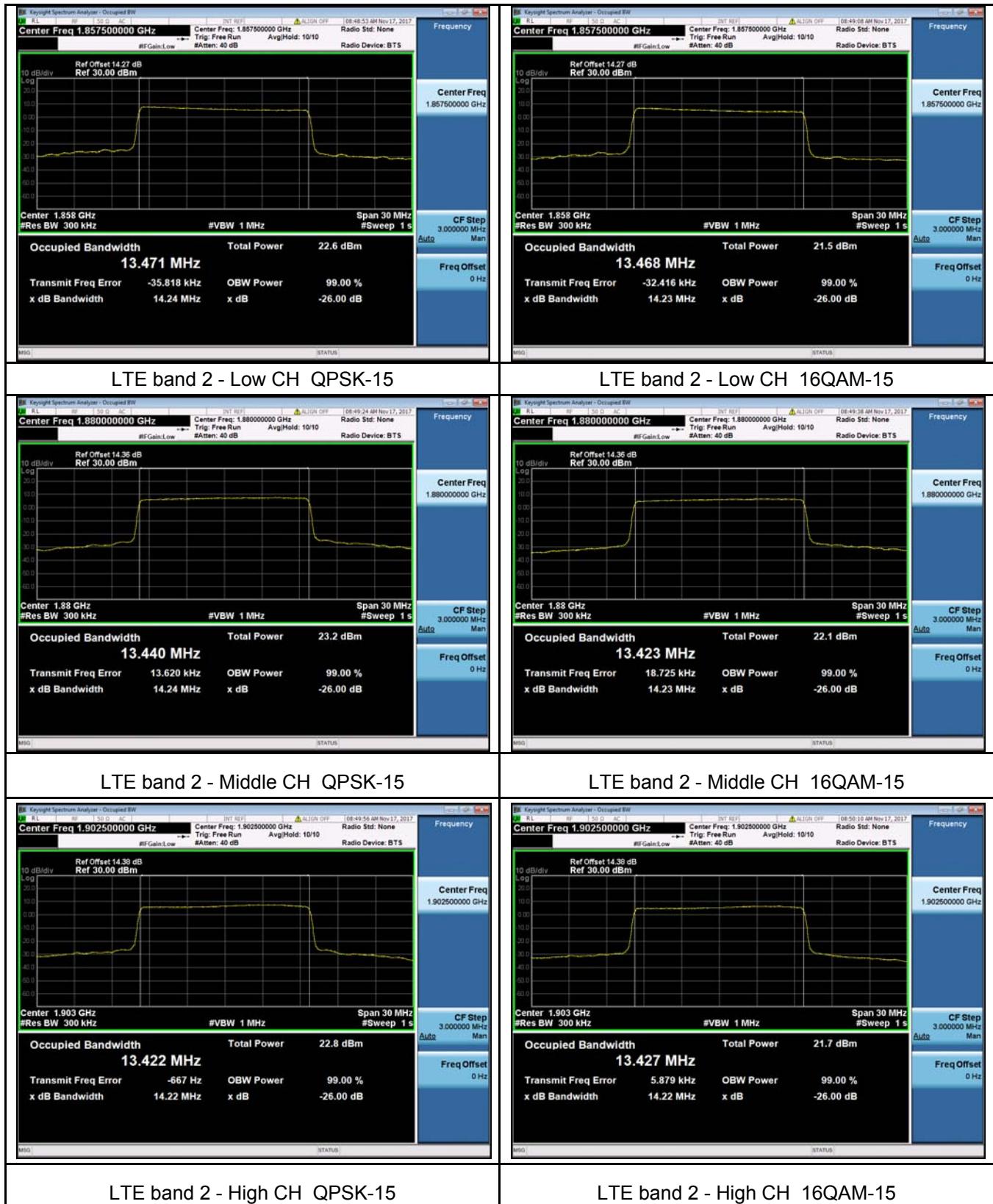
LTE Band 2 (Part 24E)

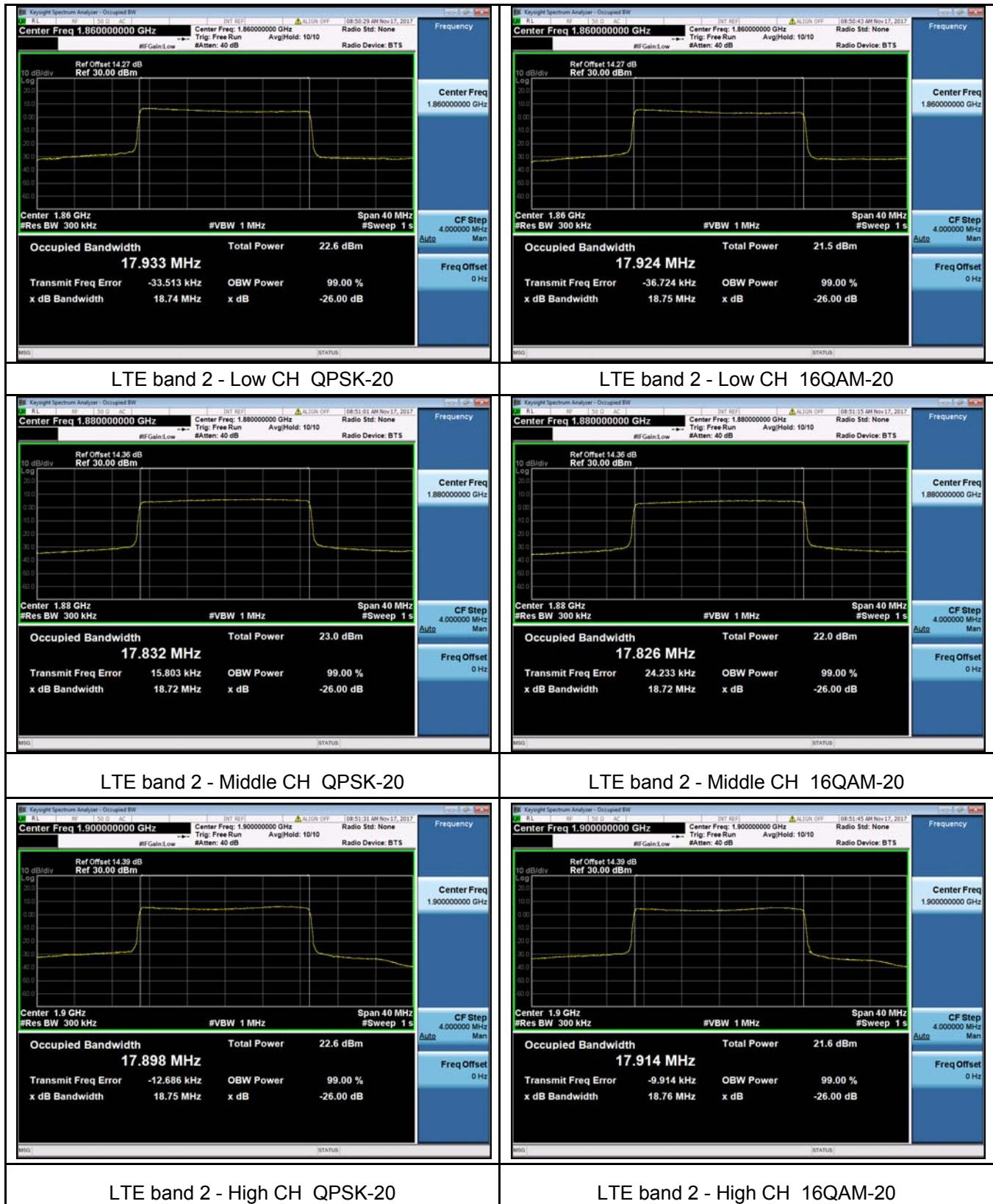




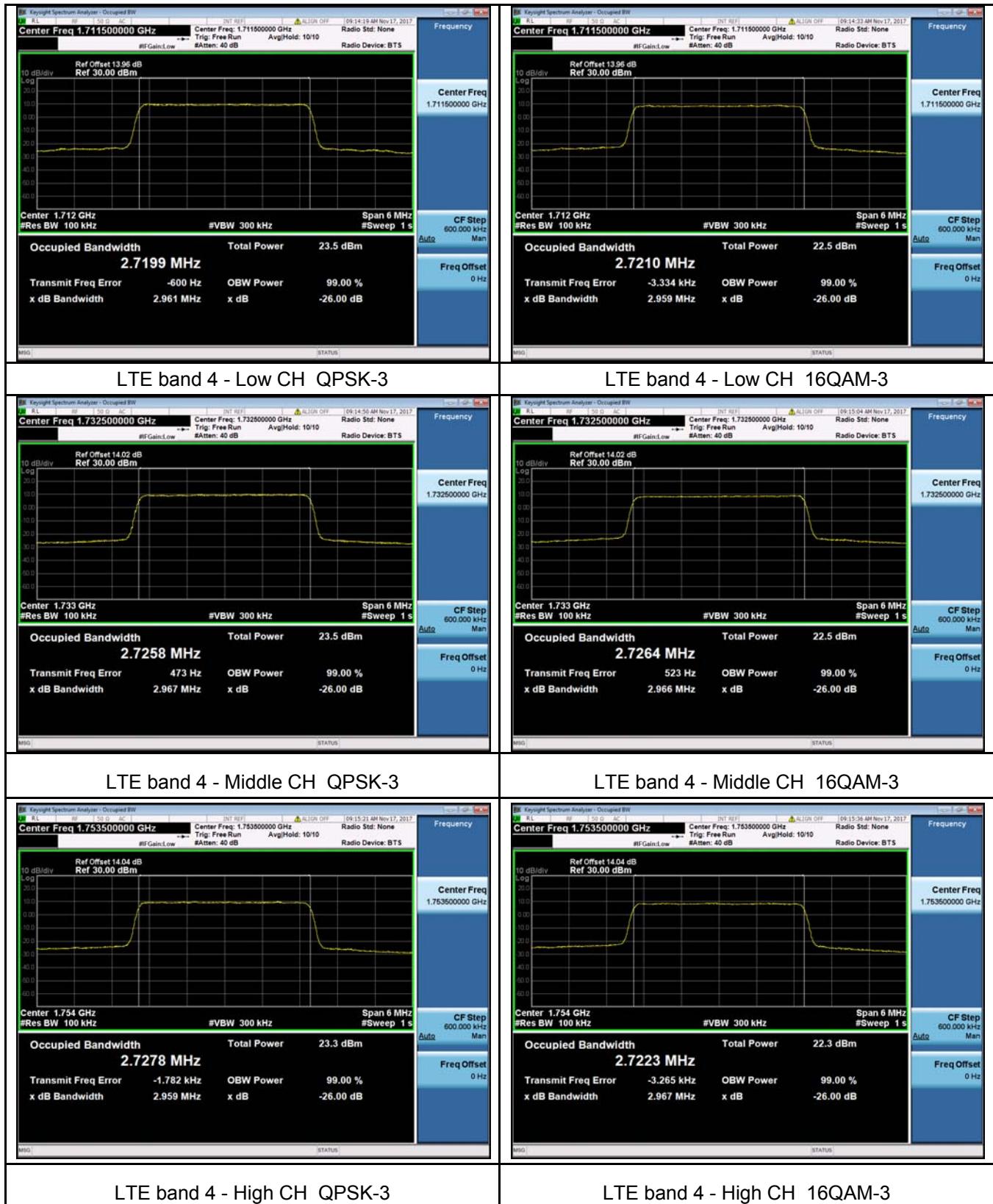


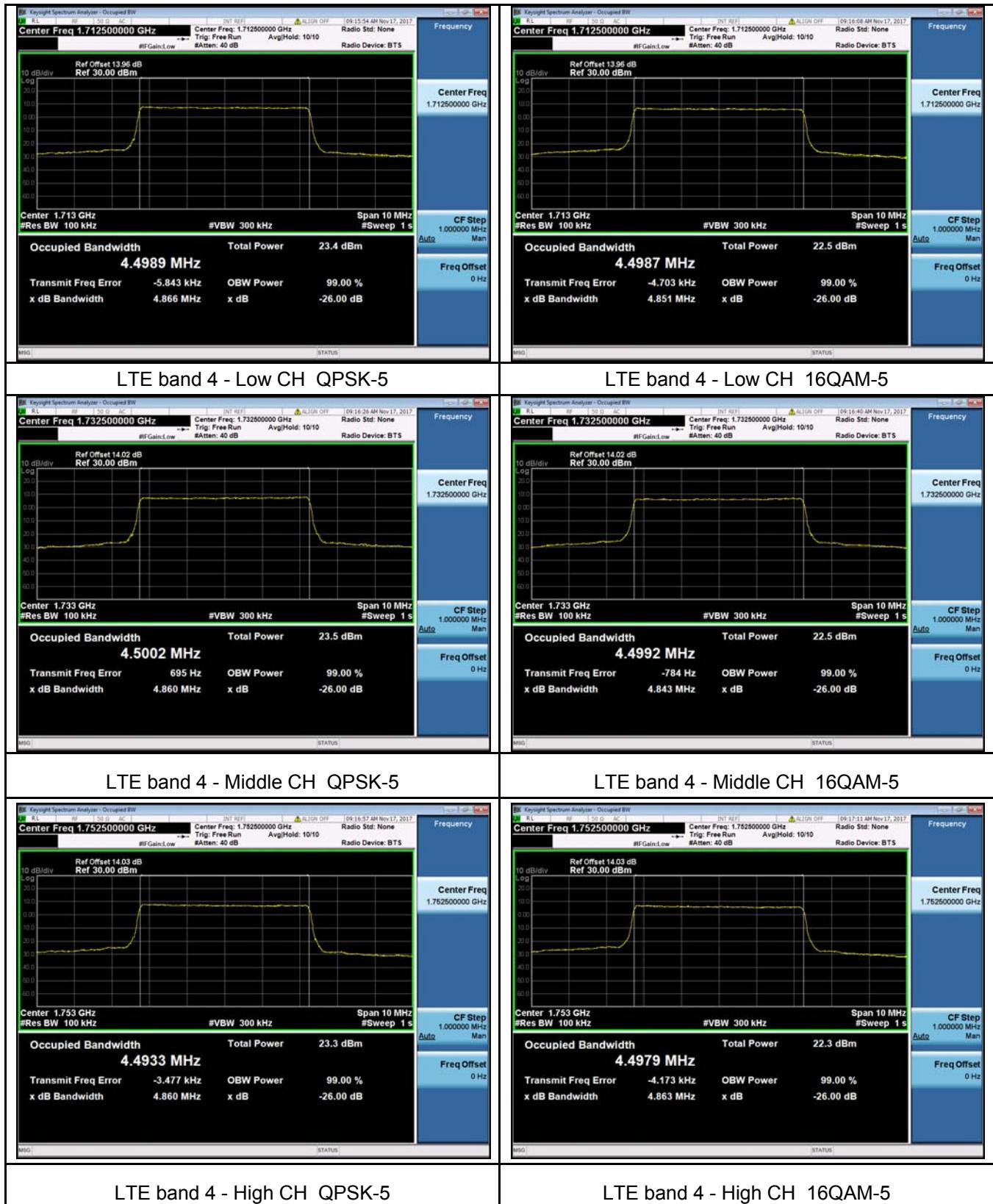


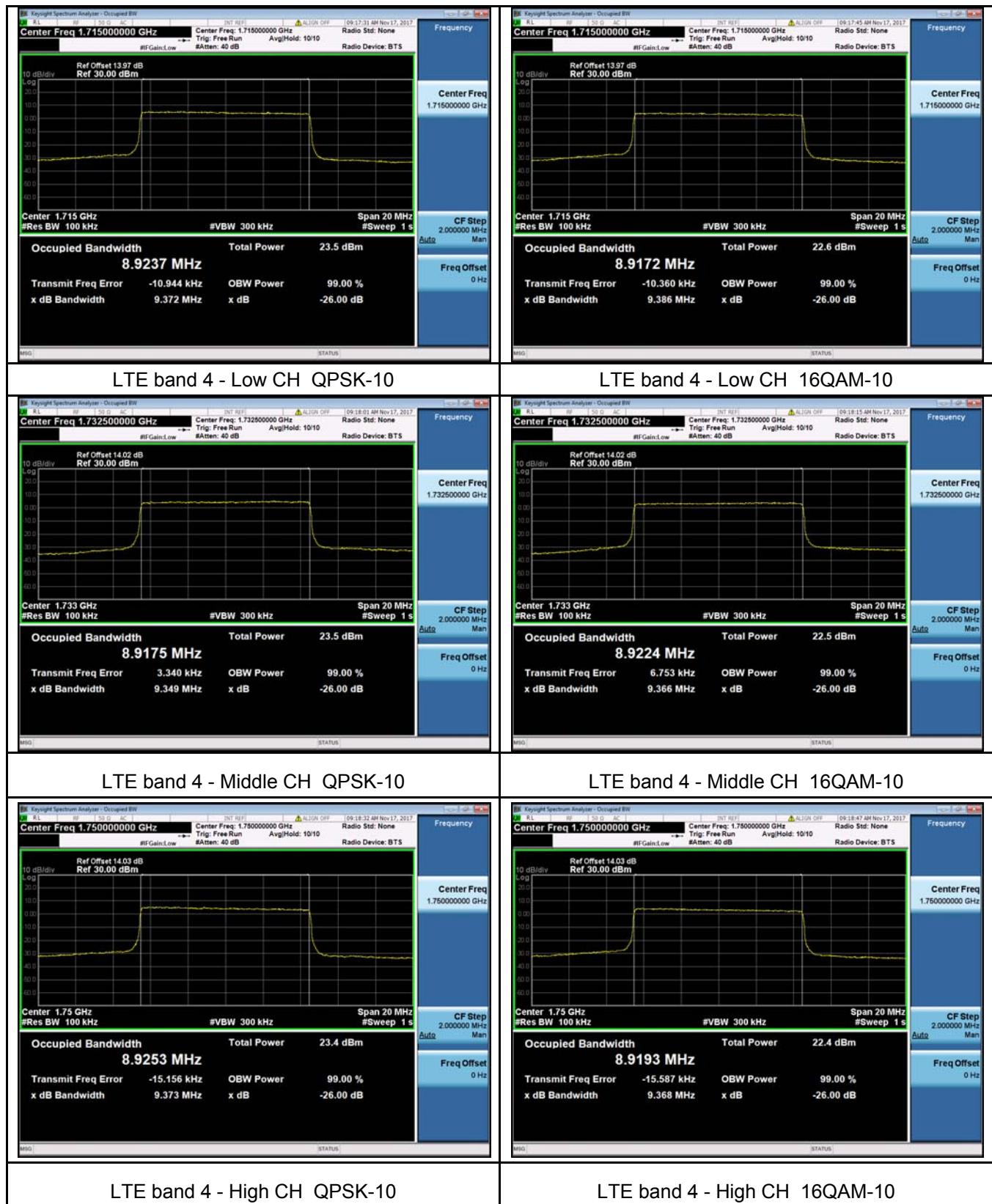


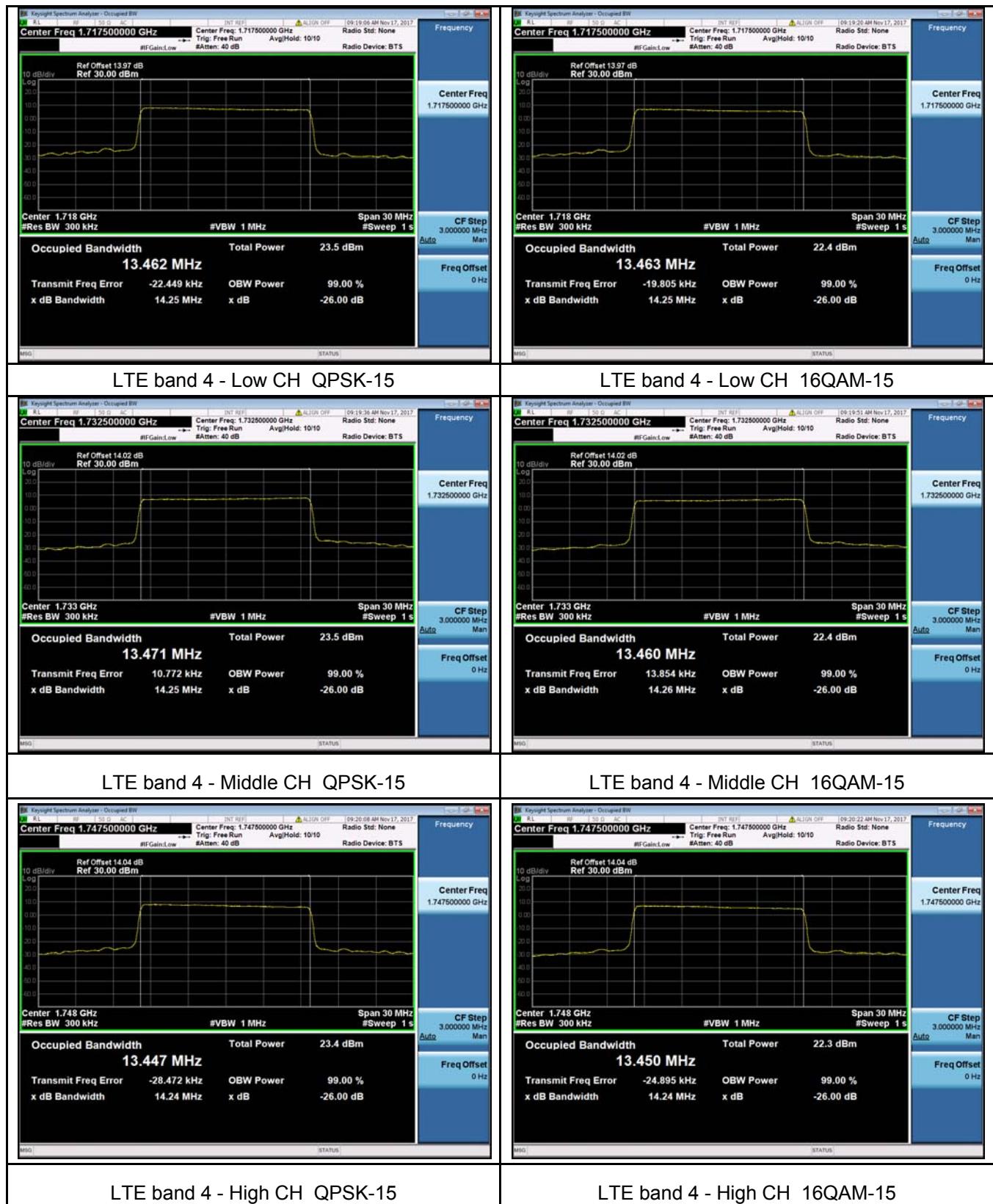


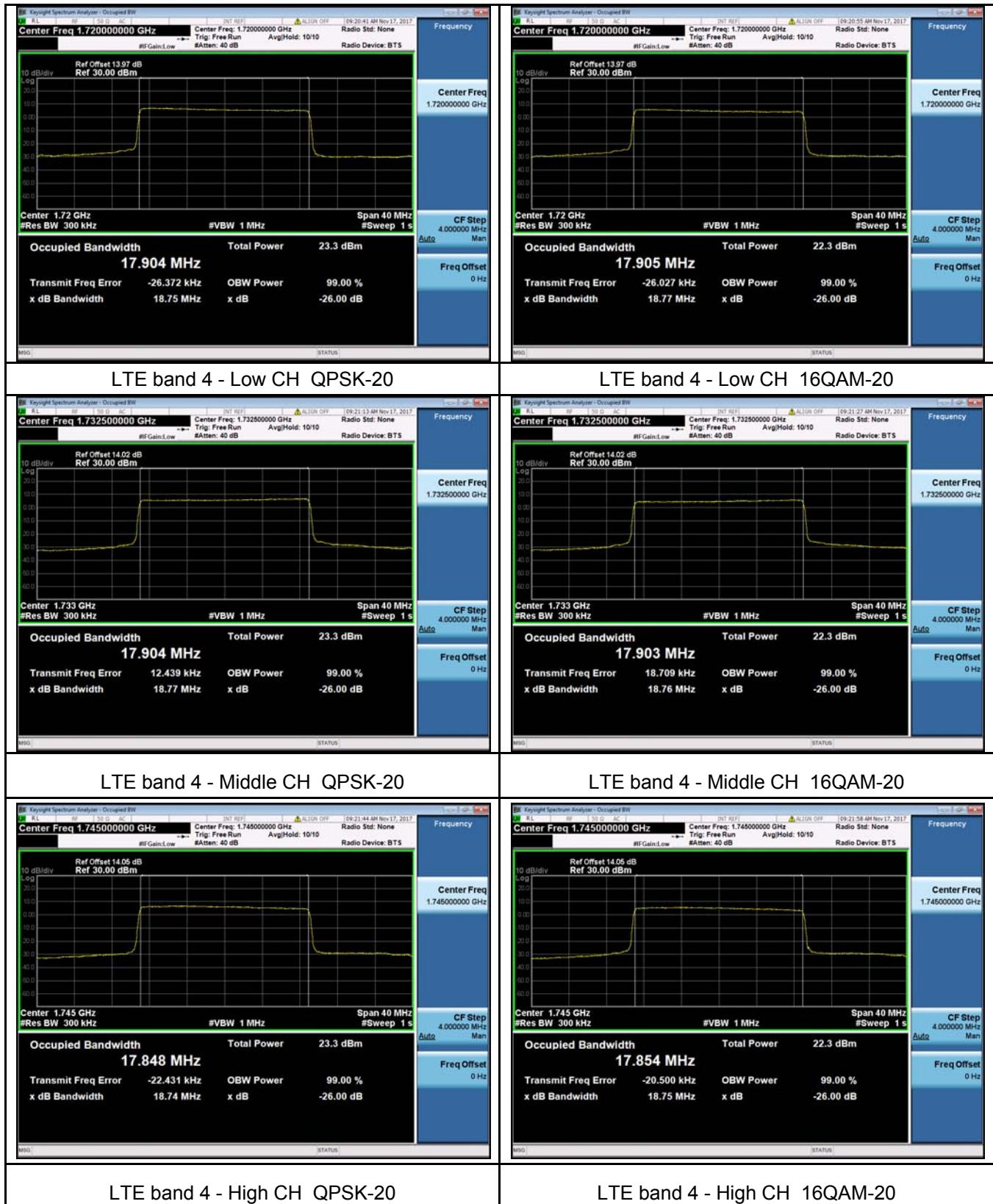
LTE Band 4 (Part 27)

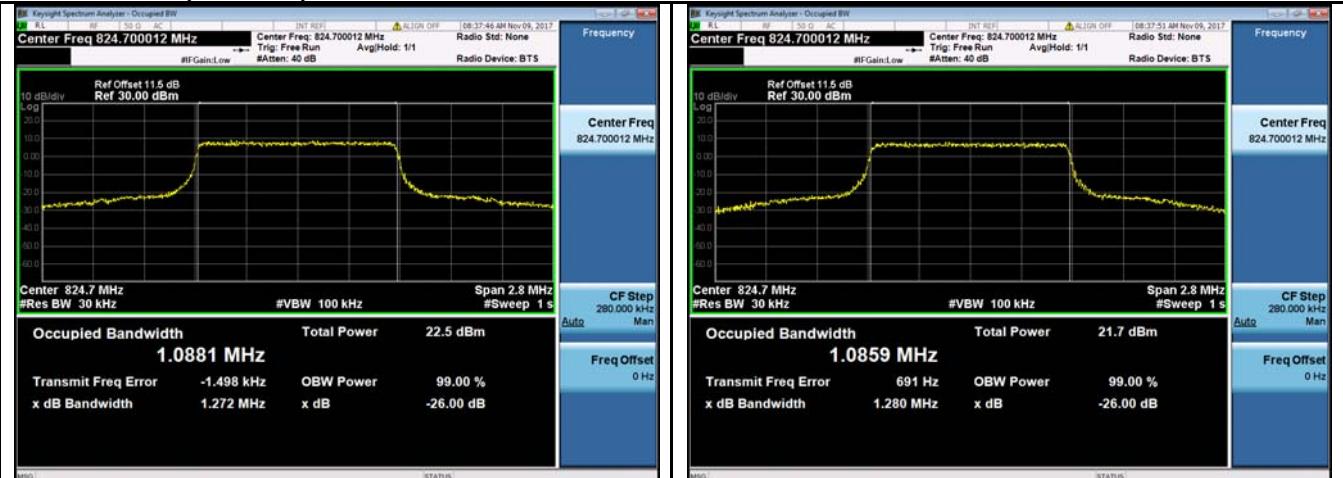






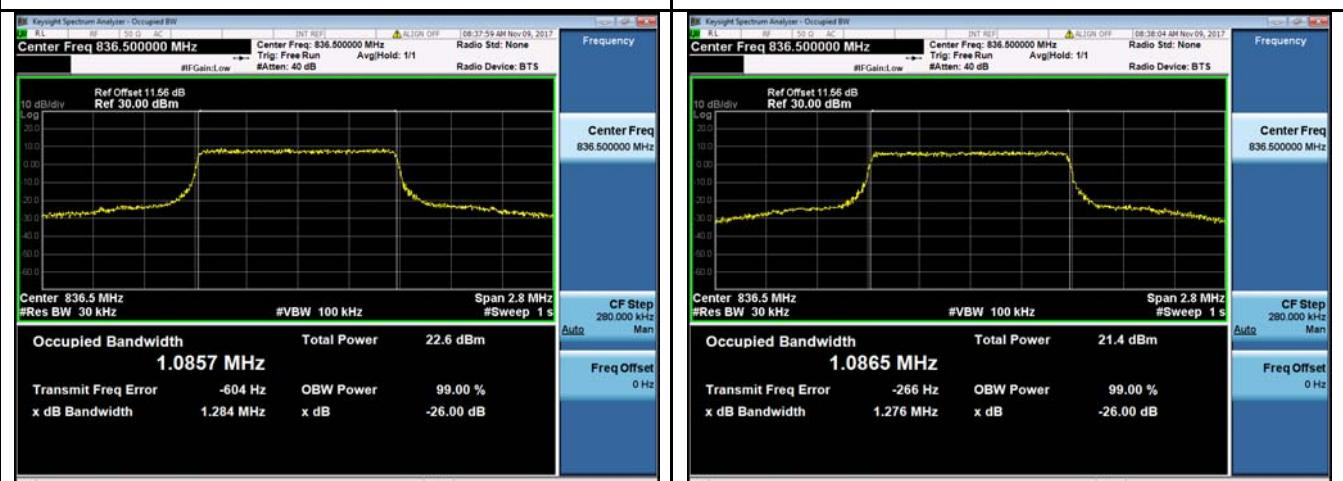




LTE Band 5 (Part 22H)

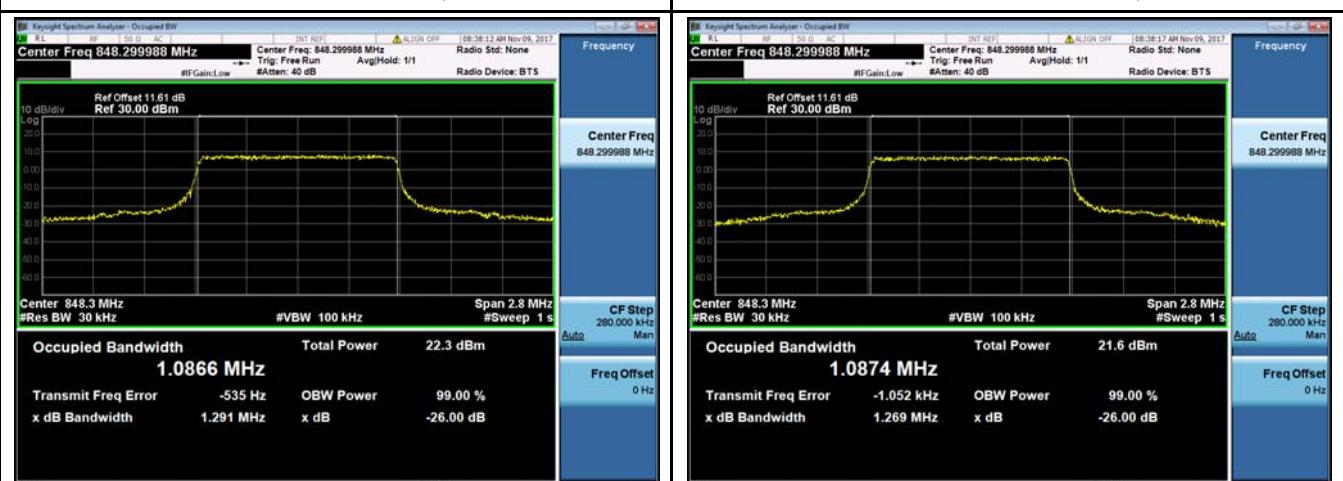
LTE band 5 - Low CH QPSK-1.4

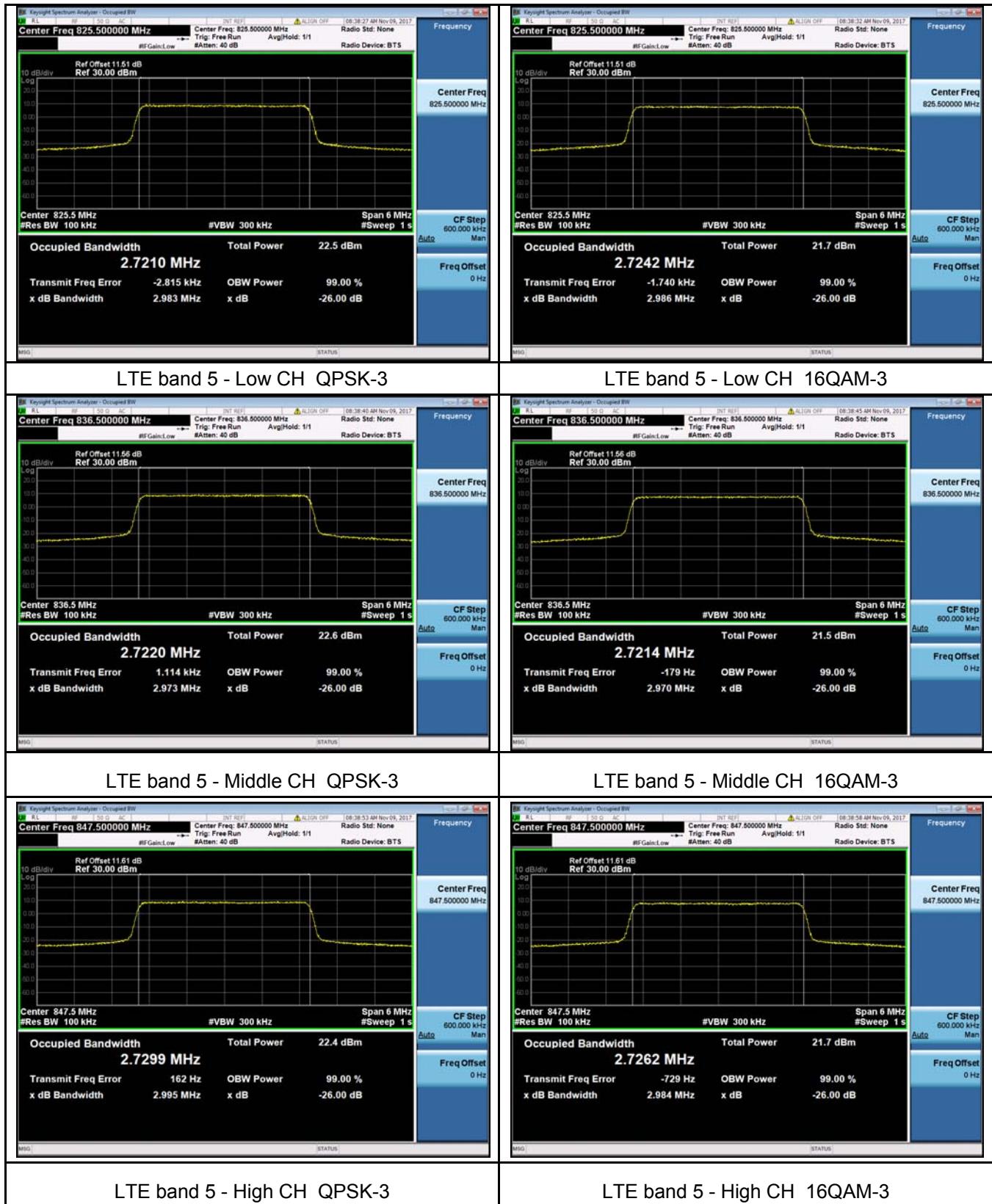
LTE band 5 - Low CH 16QAM-1.4

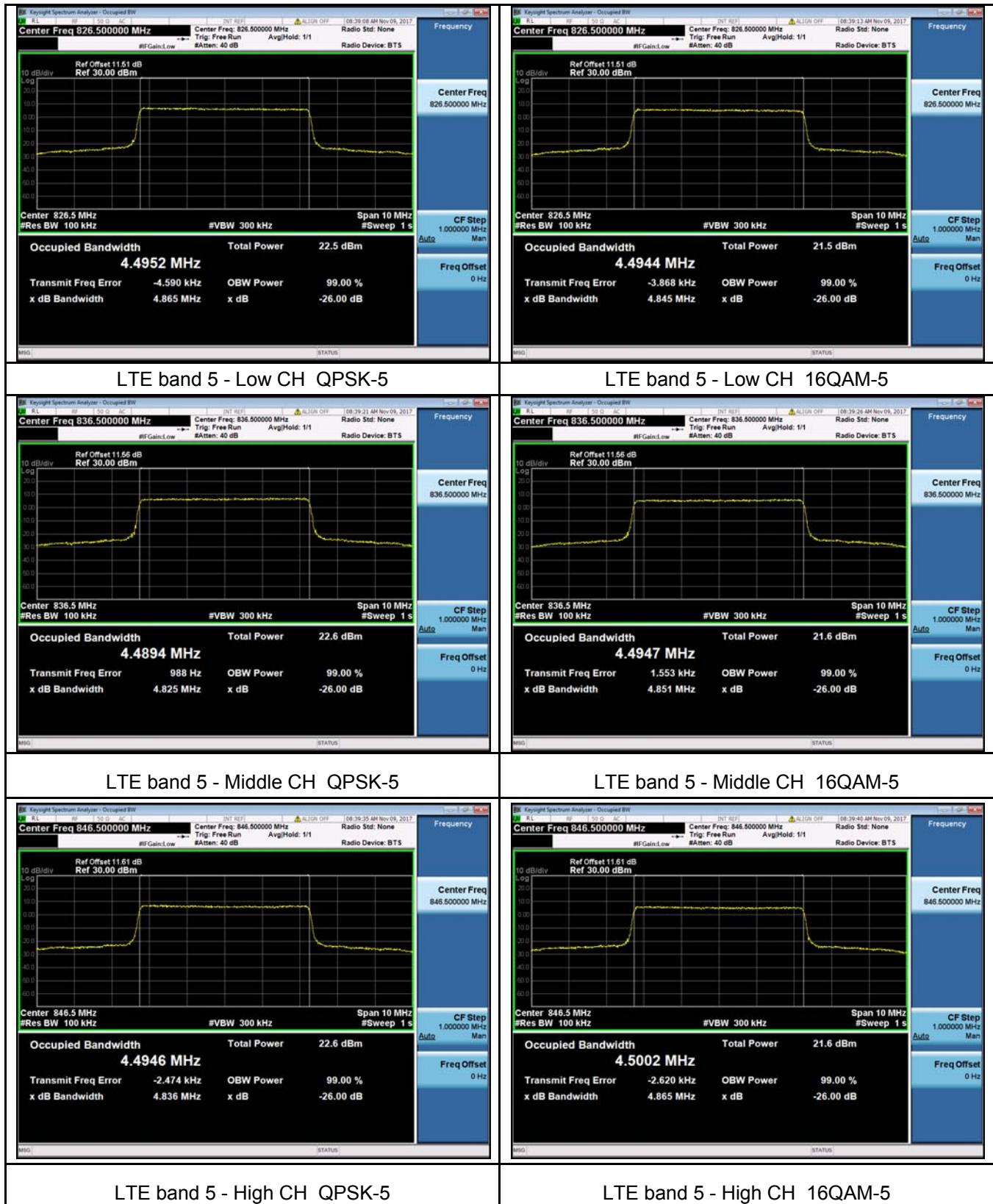


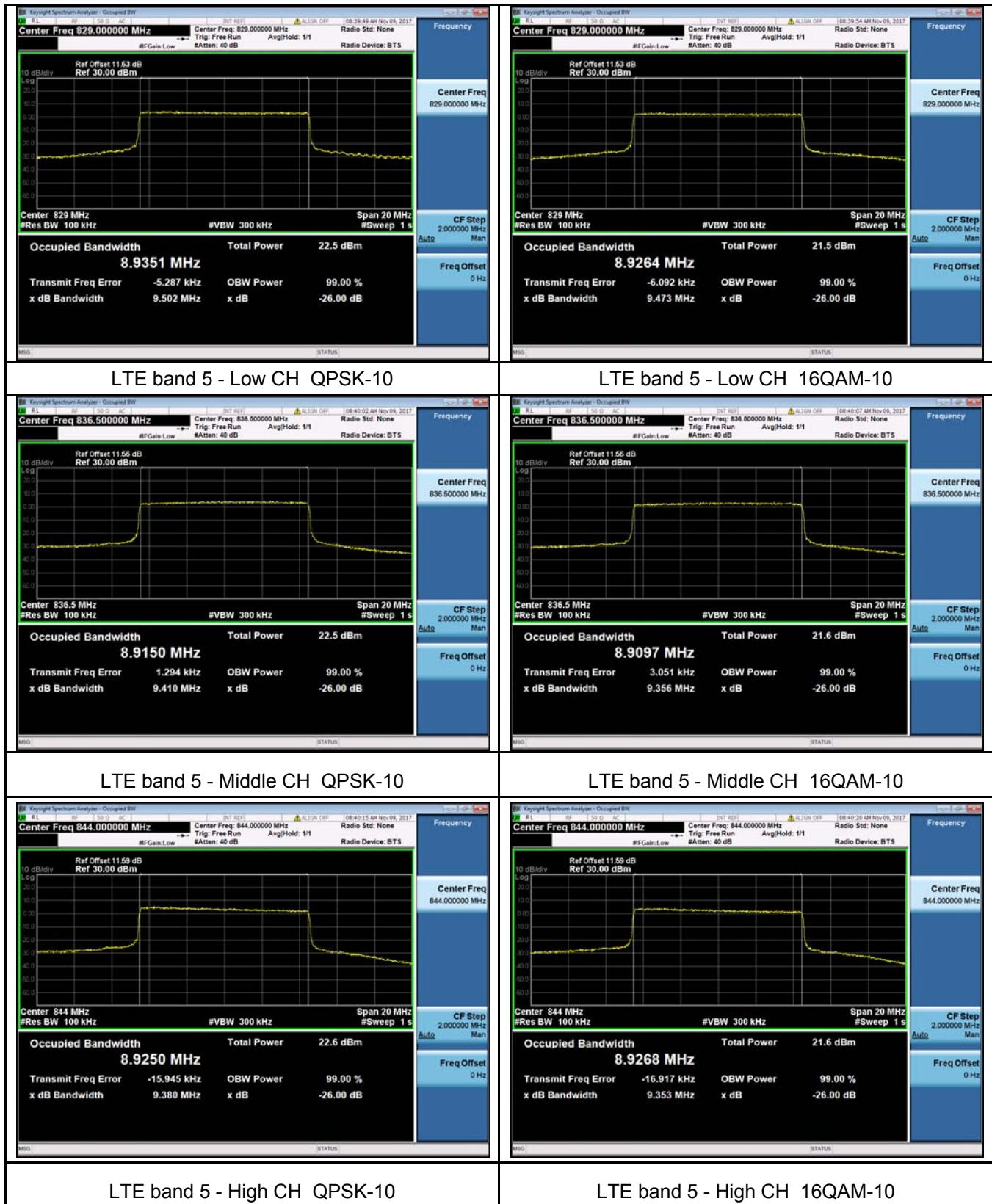
LTE band 5 - Middle CH QPSK-1.4

LTE band 5 - Middle CH 16QAM-1.4



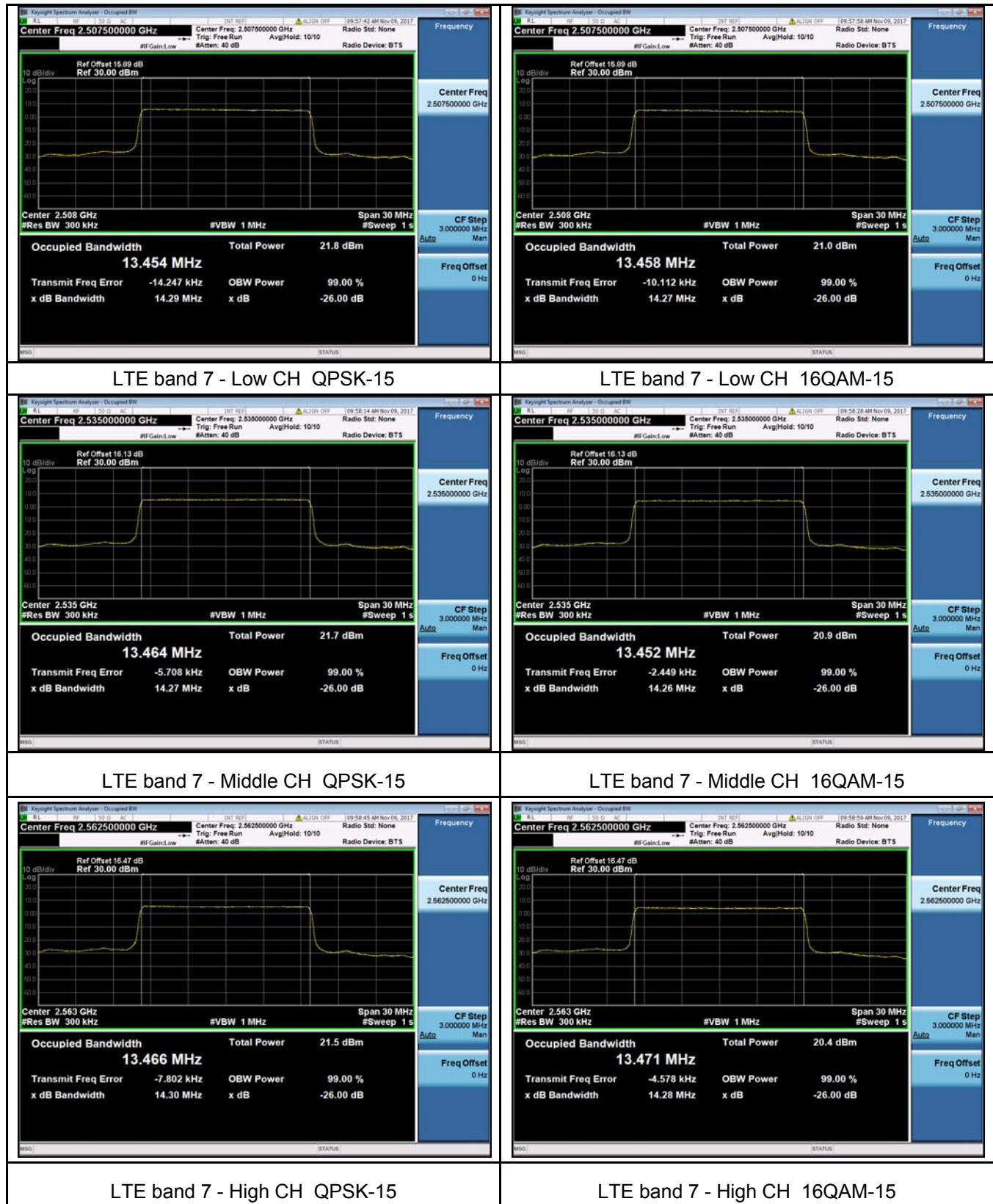


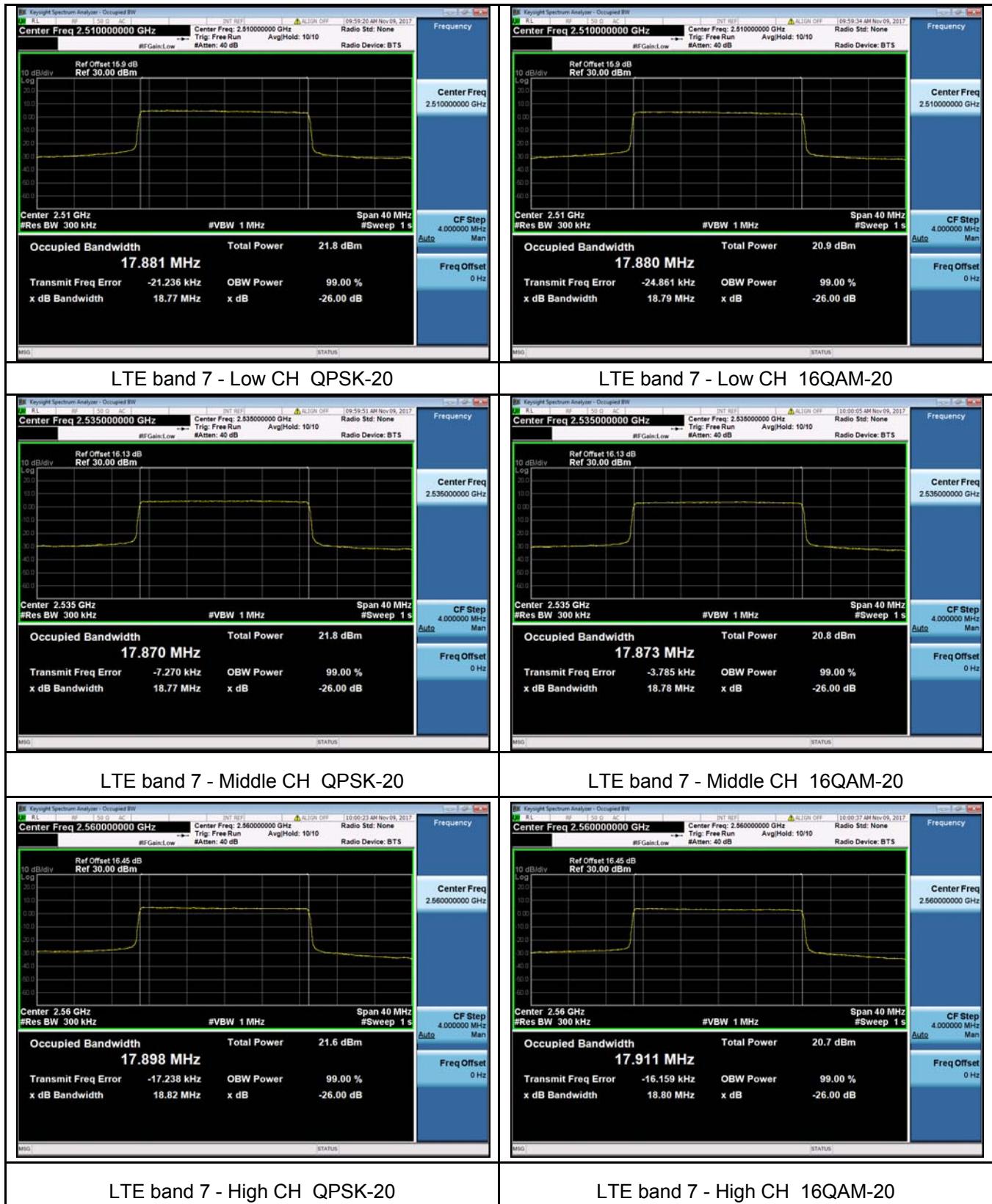


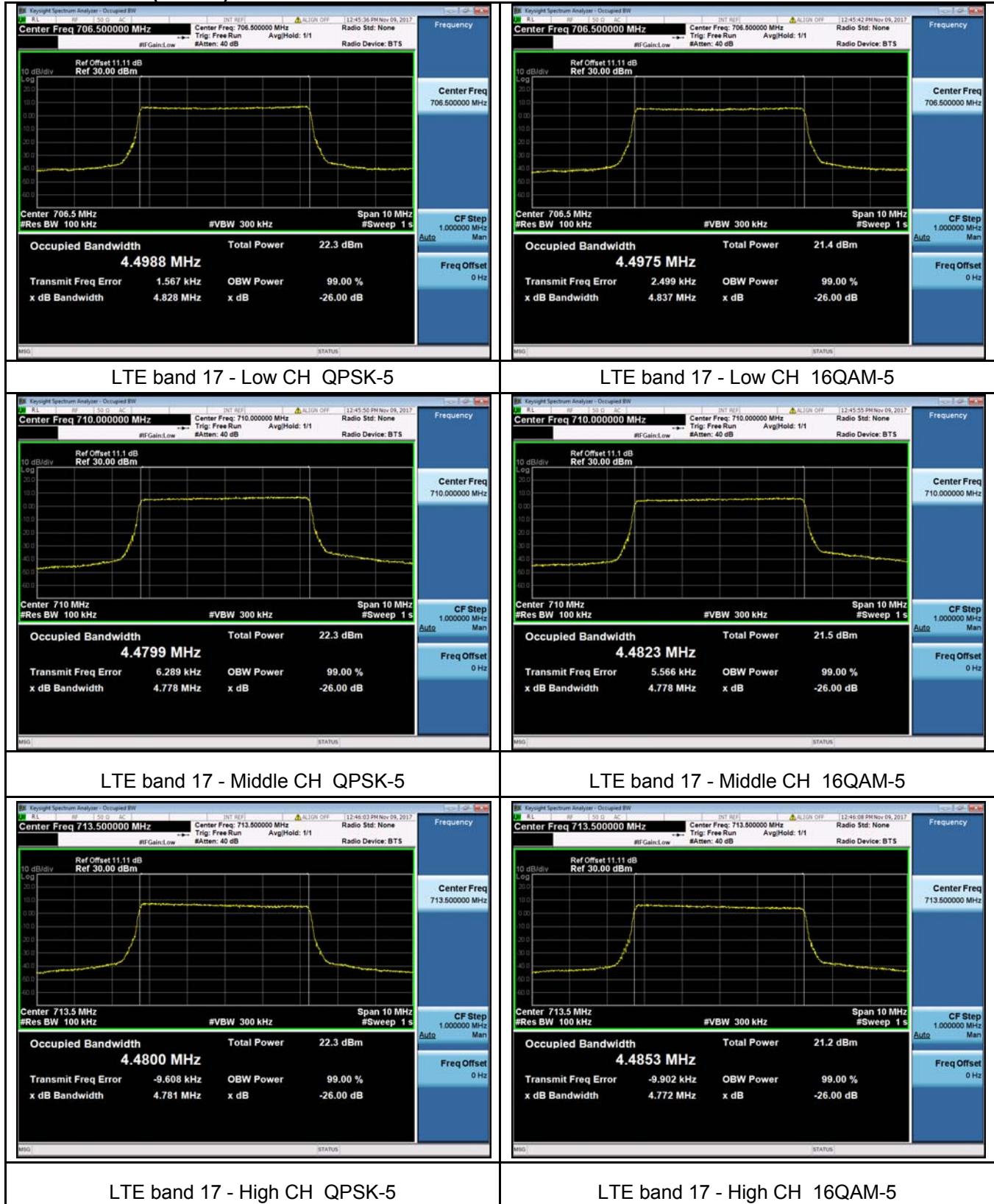


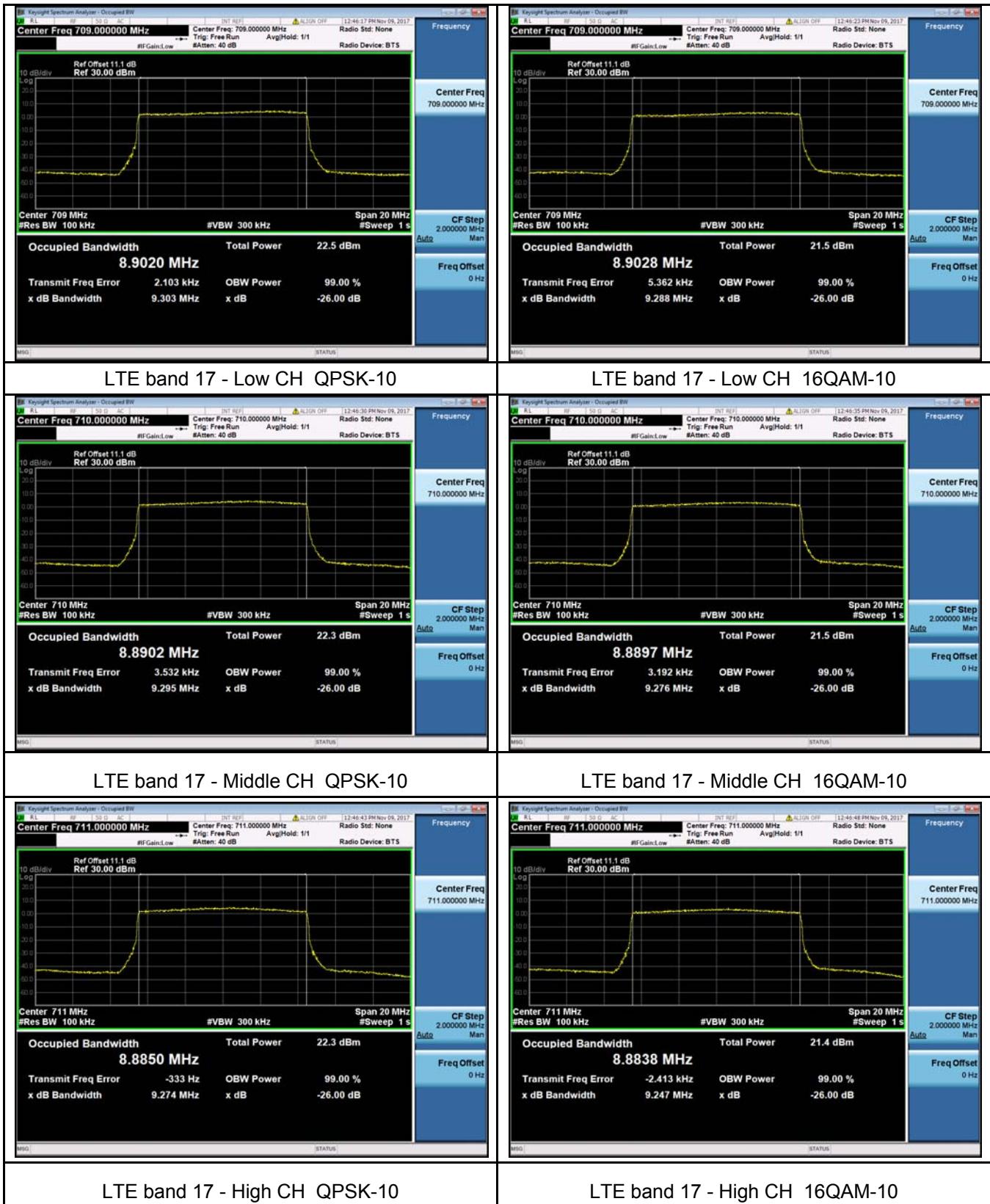
LTE Band 7 (Part 27)







LTE Band 17 (Part 27)



LTE Band 41(Part 27)