FCC CFR47 PART 24 SUBPART E
FCC CFR47 PART 27 SUBPART F
FCC CFR47 PART 27 SUBPART H
FCC CFR47 PART 27 SUBPART L
FCC CFR47 PART 27 SUBPART M
FCC CFR47 PART 90 SUBPART S

CERTIFICATION TEST REPORT
GSM/WCDMA/LTE PHONE + BLUETOOTH, DTS/UNII a/b/g/n/ac & NFC

MODEL NUMBER: LG-H791, LGH791, H791

FCC ID: ZNFH791

REPORT NUMBER: 15I21237-E1V1

ISSUE DATE: AUGUST 28, 2015

Prepared for
LG ELECTRONICS MOBILECOMM U.S.A., INC
1000 SYLVAN AVENUE
ENGLEWOOD CLIFFS,
NEW JERSEY, 07632, U.S.A

Prepared by
UL VERIFICATION SERVICES INC.
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
-	07/27/15	Initial Issue	C.OOI

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS 5
2. TEST METHODOLOGY 6
3. FACILITIES AND ACCREDITATION 6
4. CALIBRATION AND UNCERTAINTY 7
4.1. MEASURING INSTRUMENT CALIBRATION 7
4.2. SAMPLE CALCULATION 7
4.3. MEASUREMENT UNCERTAINTY 7
5. EQUIPMENT UNDER TEST 8
5.1. DESCRIPTION OF EUT 8
5.2. MAXIMUM OUTPUT POWER 8
5.1. MAXIMUM OUTPUT POWER (LTE) 9
5.2. DESCRIPTION OF AVAILABLE ANTENNAS 15
5.3. DESCRIPTION OF TEST SETUP 16
6. TEST AND MEASUREMENT EQUIPMENT 19
7. Summary Table 20
8. RF POWER OUTPUT VERIFICATION 21
8.1. GSM/GPRS/EDGE 21
8.1.1. GSM OUTPUT POWER RESULT 22
8.2. UMTS REL 99 24
8.2.1. UMTS REL 99 OUTPUT POWER RESULT 24
8.3. UMTS HSDPA 25
8.3.1. UMTS HSDPA OUTPUT POWER RESULT 26
8.3.2. UMTS HSUPA 28
8.3.3. UMTS HSUPA OUTPUT POWER RESULT 29
8.3.4. DC-HSDPA 31
8.3.5. UMTS DC-HSDPA OUTPUT POWER RESULT 34
8.1. LTE OUTPUT VERIFICATION 36
8.1.1. LTE OUTPUT RESULT 36
9. PEAK TO AVERAGE RATIO 52
9.1. CONDUCTED PEAK TO AVERAGE RESULT 53
10. LIMITS AND CONDUCTED RESULTS 74
10.1. OCCUPIED BANDWIDTH 74

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

10.1.1. OCCUPIED BANDWIDTH RESULTS 75
10.1.2. LTE OCCUPIED BANDWIDTH RESULTS 77
10.1.3. OCCUPIED BANDWIDTH PLOTS 86
10.2. BAND EDGE EMISSIONS 105
10.2.1. BAND EDGE PLOTS 106
10.2.2. EMISSION MASK PLOTS 179
10.3. OUT OF BAND EMISSIONS 199
10.3.1. OUT OF BAND EMISSIONS RESULT 200
10.3.2. OUT OF BAND EMISSIONS PLOTS 211
10.4. FREQUENCY STABILITY 230
10.4.1. FREQUENCY STABILITY RESULTS 231
11. RADIATED TEST RESULTS 236
11.1. RADIATED POWER (ERP & EIRP) 236
11.1.1. ERP/EIRP Results 237
11.1.2. ERP/EIRP PLOTS 251
11.2. FIELD STRENGTH OF SPURIOUS RADIATION 323
11.2.1. SPURIOUS RADIATION PLOTS 324
12. SETUP PHOTOS 396
END OF REPORT 397

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	LG ELECTRONICS MOBILECOMM U.S.A., INC
EUT DESCRIPTION:	GSM/WCDMA/LTE PHONE + BLUETOOTH, DTS/UNII a/b/g/n/ac & NFC
MODEL:	LG-H791, LGH791, H791
SERIAL NUMBER:	1ZBSM, 1ZBSN, 1ZBSP (Conducted), 1ZBR7, 1ZBR8 (Radiated)
DATE TESTED:	JULY 8 –AUGUST 24, 2015

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 22H, 24E, 27F, 27L, 27M	PASS

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL Verification Services Inc. By:

CHOON OOI
CONSUMER TECHNOLOGY DIVISION
PROJECT LEAD
UL VERIFICATION SERVICES INC

Tested By:

STEVEN TRAN
CONSUMER TECHNOLOGY DIVISION
LAB ENGINEER
UL VERIFICATION SERVICES INC

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 22, FCC CFR Part 24, FCC CFR 47 Part 27, and FCC CFR 47 Part 90.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
☒ Chamber A(IC: 2324B-1)	☐ Chamber D(IC: 2324B-4)
☒ Chamber B(IC: 2324B-2)	☐ Chamber E(IC: 2324B-5)
☒ Chamber C(IC: 2324B-3)	☐ Chamber F(IC: 2324B-6)
	☐ Chamber G(IC: 2324B-7)
	☐ Chamber H(IC: 2324B-8)

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

EIRP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – cable loss(between the SG and substitution antenna) + Substitution Antenna Factor (dBi)

ERP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – cable loss(between the SG and substitution antenna)

(Path loss = Signal generator output – PSA reading with substitution antenna)

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB
Radiated Disturbance, 1GHz to 40GHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE PHONE + BLUETOOTH, DTS/UNII a/b/g/n/ac and NFC

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted and radiated ERP / EIRP output powers as follows:

FCC Part 22/24						
Band	Frequency Range(MHz)	Modulation	Conducted		Radiated	
			AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
GSM850	824~849	GMSK	33.16	2070.14		
	824~849	GPRS	33.08	2032.36	29.45	881.05
	824~849	EGPRS	27.08	510.50	24.45	278.61
GSM1900	1850~1910	GMSK	29.53	897.43		
	1850~1910	GPRS	29.60	912.01	30.47	1114.29
	1850~1910	EGPRS	25.70	371.54	26.44	440.55
Band 5	824~849	REL99	24.55	285.10	20.81	120.50
	824~849	HSDPA	24.50	281.84	19.83	96.16
	824~849	HSUPA	23.52	224.91		
Band 4	1710~1755	REL99	23.79	239.33	21.71	148.25
	1710~1755	HSDPA	23.80	239.88	20.11	102.57
	1710~1755	HSUPA	22.80	190.55		
Band 2	1850~1910	REL99	23.87	243.78	26.16	413.05
	1850~1910	HSDPA	23.86	243.22	25.39	345.94
	1850~1910	HSUPA	22.81	190.99		

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

5.1. MAXIMUM OUTPUT POWER (LTE)

The transmitter has a maximum peak conducted and radiated ERP/EIRP output powers as follows:

LTE Band 2

FCC Part 24							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE2	1850~1910	20MHz	QPSK	23.40	223.36	25.79	379.31
			16QAM	22.29	169.43	24.75	298.54
		15MHz	QPSK	23.36	216.77	26.26	422.67
			16QAM	22.20	165.96	24.96	313.33
		10MHz	QPSK	23.36	216.77	25.79	379.31
			16QAM	22.14	163.68	24.66	292.42
		5MHz	QPSK	23.40	218.78	25.40	346.74
			16QAM	22.06	160.69	24.36	272.90
		3MHz	QPSK	23.38	217.77	25.59	362.24
			16QAM	22.89	194.54	25.26	335.74
		1.4MHz	QPSK	23.40	218.78	24.69	294.44
			16QAM	22.17	164.82	24.53	283.79

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 4

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE4	1710~1755	20MHz	QPSK	23.40	218.78	25.69	370.68
			16QAM	22.12	162.93	24.96	313.33
		15MHz	QPSK	23.40	218.78	25.80	380.19
			16QAM	22.40	173.78	24.95	312.61
		10MHz	QPSK	23.40	218.78	25.94	392.64
			16QAM	22.40	173.78	24.83	304.09
		5MHz	QPSK	23.35	216.27	26.38	434.51
			16QAM	22.21	166.34	25.74	374.97
		3MHz	QPSK	23.40	218.78	26.24	420.73
			16QAM	22.36	172.19	25.58	361.41
		1.4MHz	QPSK	23.40	218.78	26.42	438.53
			16QAM	22.35	171.79	25.55	358.92

LTE Band 5

FCC Part 22							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE5	824~849	10MHz	QPSK	24.20	263.03	22.29	169.43
			16QAM	22.90	194.98	22.09	161.81
		5MHz	QPSK	24.1	257.04	22.09	161.81
			16QAM	23.0	199.53	21.73	148.94
		3MHz	QPSK	24.2	263.03	22.21	166.34
			16QAM	23.1	204.17	21.83	152.41
		1.4MHz	QPSK	24.2	263.03	21.84	152.76
			16QAM	23.2	208.93	21.65	146.22

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 7

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	Peak(dBm)	Peak(mW)
LTE7	2500~2570	20MHz	QPSK	22.7	186.21	22.26	168.27
			16QAM	21.7	147.91	21.83	152.41
		15MHz	QPSK	22.6	181.97	21.64	145.88
			16QAM	21.4	138.04	21.17	130.92
		10MHz	QPSK	22.6	181.97	21.66	146.55
			16QAM	21.4	138.04	22.39	173.38
		5MHz	QPSK	22.7	186.21	21.18	131.22
			16QAM	21.5	141.25	20.39	109.40

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 17

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE17	704~716	10MHz	QPSK	23.9	245.47	17.34	54.20
			16QAM	23.0	199.53	17.13	51.64
		5MHz	QPSK	24.0	251.19	17.23	52.84
			16QAM	22.8	190.55	17.07	50.93

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 26 PART 90

FCC Part 90							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE26	814~824	10MHz	QPSK	24.1	257.04	22.26	168.27
			16QAM	22.7	186.21	22.05	160.32
		5MHz	QPSK	24.1	257.04	22.09	161.81
			16QAM	22.9	194.98	21.73	148.94
		3MHz	QPSK	24.1	257.04	22.21	166.34
			16QAM	23.2	208.93	21.83	152.41
		1.4MHz	QPSK	24.1	257.04	21.75	149.62
			16QAM	22.9	194.98	22.14	163.68

LTE Band 26 PART 22

FCC Part 22							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE26	824~849	15MHz	QPSK	24.0	251.19	22.53	179.06
			16QAM	22.8	190.55	22.11	162.55
		10MHz	QPSK	24.1	257.04	22.29	169.43
			16QAM	23.0	199.53	22.09	161.81
		5MHz	QPSK	24.2	263.03	22.0	158.49
			16QAM	23.0	199.53	21.67	146.89
		3MHz	QPSK	24.0	251.19	22.13	163.31
			16QAM	23.2	208.93	21.70	147.91
		1.4MHz	QPSK	24.1	257.04	21.84	152.76
			16QAM	22.9	194.98	21.65	146.22

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 41

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	Peak(dBm)	Peak(mW)
LTE41	2496~2690	20MHz	QPSK	22.9	194.98	20.41	109.90
			16QAM	22.0	158.49	19.2	83.18
		15MHz	QPSK	22.8	190.55	20.62	115.35
			16QAM	21.9	154.88	19.42	87.50
		10MHz	QPSK	23.1	204.17	20.59	114.55
			16QAM	22.2	165.96	19.5	89.13
		5MHz	QPSK	23.2	208.93	19.91	97.95
			16QAM	22.1	162.18	19.41	87.30

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna for the [List the bands supported] with a maximum peak gain as follow:

Frequency (MHz)	Peak Gain (dBi)
GSM850, 824~849MHz	-4.8
GSM1900, 1850~1910MHz	-0.9
Band 5, 824~849MHz	-4.8
Band 4, 1710~1755MHz	-1.1
Band 2, 1850~1910MHz	-0.9
Band 7, 2500~2570MHz	-2.6
Band 17, 704~716MHz	-4.1
Band 26, 814~849MHz	-4.8
Band 41, 2496~2690MHz	-2.6

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

5.3. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC Adapter	LG	MCS-N04WS	SA560000030	DoC
Earphone	LG	-	-	

I/O CABLES (CONDUCTED SETUP)

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	RF Out	1	Spectrum Analyzer	Shielded	None	NA
2	Antenna Port	1	EUT	Shielded	0.1m	NA
3	RF In/Out	1	Communication Test Set	Shielded	1m	NA

I/O CABLES (RADIATED SETUP)

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	USB	1	AC Adapter	Un-shielded	1.2m	No
2	Jack	1	Headset	Shielded	1m	No
3	RF In/out	1	Communication Test Set	Un-shielded	2m	Yes

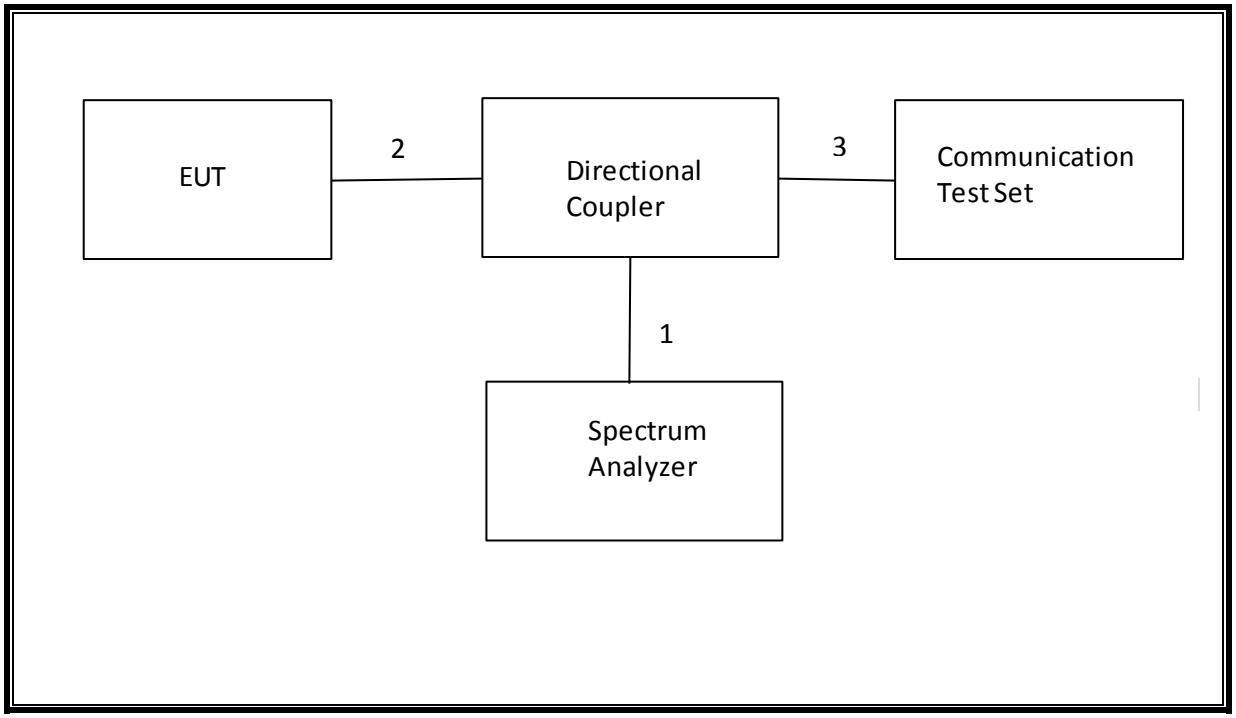
TEST SETUP

The EUT is continuously communicated to the call box during the tests.

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

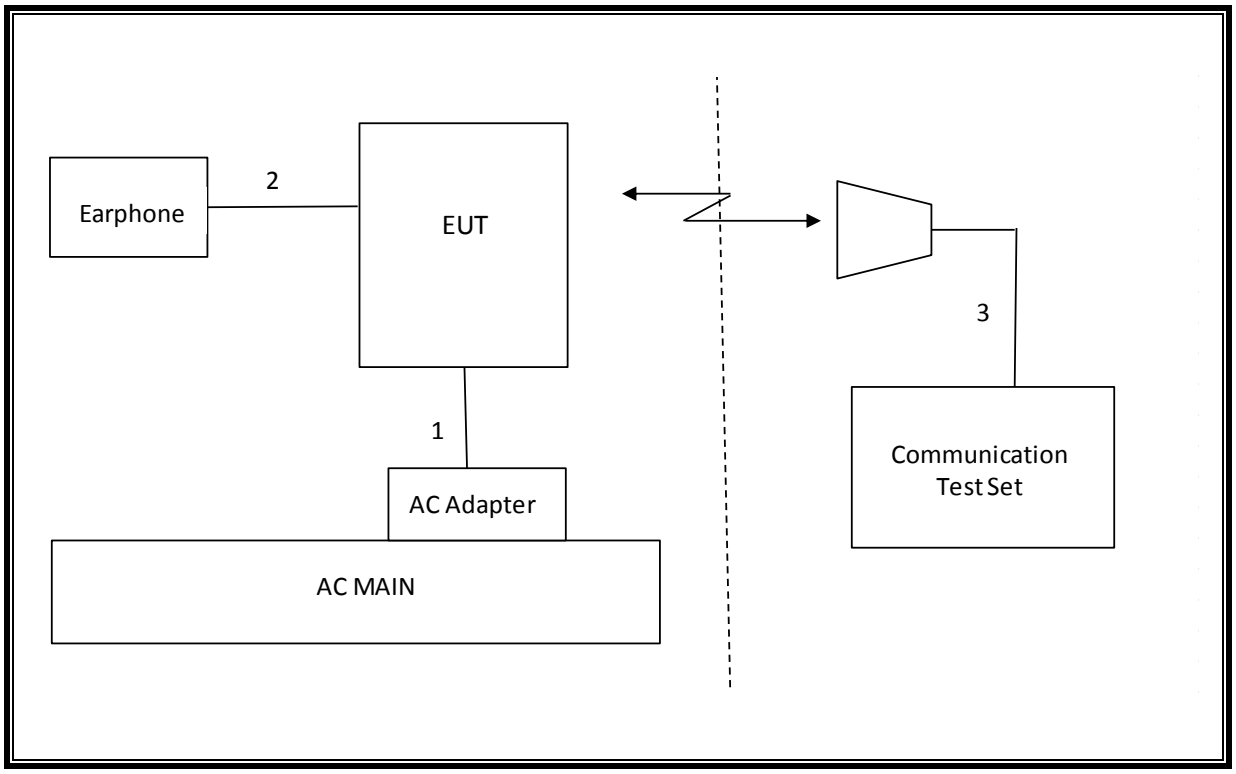
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

7. Summary Table

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Note
2.1049	N/A	Occupied Band width (99%)	N/A	Conducted	Pass	17.95 MHz
22.917(a) 24.238(a) 27.53(g) 90.691	RSS-132(4.5.1) RSS-133(6.5.1) RSS-139(6.5.1)	Band Edge / Conducted Spurious Emission	-13dBm		Pass	-13.7 dBm
27.53(m)	RSS-199(4.5)		-25dBm		Pass	-29.13 dBm
2.1046	N/A	Conducted output power	N/A		Pass	33.16 dBm
27.53(m) 90.691	RSS-199(4.5)	Emission Mask	Refer to page 106		Pass	PASS
22.355 24.235 27.54 90.213	RSS-132(4.3) RSS-133(6.3) RSS-139(6.3) RSS-199(4.3)	Frequency Stability	2.5PPM		Pass	0.012 PPM
22.913(a)(2)	RSS-132(4.4)	Effective Radiated Power	38 dBm	Radiated	Pass	29.45 dBm
27.50(c)(10)	N/A		34.77 dBm		Pass	17.23 dBm
90.635	N/A		50dBm		Pass	22.26 dBm
24.232(c) 27.50(h)(2)	RSS-133(6.4) RSS-199(4.4)	Equivalent Isotropic Radiated Power	33dBm		Pass	30.47 dBm
27.50(d)(4)	RSS-139(6.4)		30dBm		Pass	26.42 dBm
22.917(a) 24.238(a) 27.53(g)	RSS-132(4.5.1) RSS-133(6.5.1) RSS-139(6.5.1)	Radiated Spurious Emission	-13dBm		Pass	-36.1 dBm
27.53(m)	RSS-199(4.5)		-25dBm		Pass	-35.9 dBm

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

8. RF POWER OUTPUT VERIFICATION

8.1. GSM/GPRS/EDGE

Function: Menu select > GSM Mobile Station > GSM 850/900/1800/1900

Press Connection control to choose the different menus

Press RESET > choose all to reset all settings

Connection Press Signal Off to turn off the signal and change settings

Network Support > GSM+GPRS or GSM+EGPRS

Main Service > Packet Data

Service selection > Test Mode A – Auto Slot Config. off

MS Signal Press Slot Config bottom on the right twice to select and change the number of time slots and power setting

> Slot configuration > Uplink/Gamma

> 33 dBm for GPRS 850/900

> 30 dBm for GPRS1800/1900

BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel

Frequency Offset > + 0 Hz

Mode > BCCH and TCH

BCCH Level > -85 dBm (May need to adjust if link is not stable)

BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off

P0> 4 dB

Slot Config > Unchanged (if already set under MS Signal)

TCH > choose desired test channel

Hopping > Off

Main Timeslot > 3 (Default)

Network Coding Scheme > CS4 (GPRS) and MCS5 ~ MCS9 (EGPRS)

Bit Stream > 2E9-1PSR Bit Pattern

AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input

Connection Press Signal On to turn on the signal and change settings

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

8.1.1. GSM OUTPUT POWER RESULT

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)
GSM (Voice)	CS1	1	128	824.2	33.10
			190	836.6	33.09
			251	848.8	33.16
GPRS (GMSK)	CS1	1	128	824.2	33.00
			190	836.6	33.01
			251	848.8	33.08
		2	128	824.2	31.15
			190	836.6	31.06
			251	848.8	31.19
		3	128	824.2	29.15
			190	836.6	29.10
			251	848.8	29.17
		4	128	824.2	27.70
			190	836.6	27.70
			251	848.8	28.15
EGPRS (8PSK)	MCS5	1	128	824.2	27.08
			190	836.6	27.00
			251	848.8	27.05
		2	128	824.2	26.00
			190	836.6	25.80
			251	848.8	26.02
		3	128	824.2	24.86
			190	836.6	24.67
			251	848.8	24.82
		4	128	824.2	24.16
			190	836.6	24.00
			251	848.8	24.08

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)
GSM (Voice)	CS1	1	512	1850.2	29.53
			661	1880.0	29.52
			810	1909.8	29.50
GPRS (GMSK)	CS1	1	512	1850.2	29.60
			661	1880.0	29.55
			810	1909.8	29.50
		2	512	1850.2	27.44
			661	1880.0	27.45
			810	1909.8	27.40
		3	512	1850.2	25.17
			661	1880.0	25.20
			810	1909.8	25.30
		4	512	1850.2	24.36
			661	1880.0	24.37
			810	1909.8	24.46
EGPRS (8PSK)	MCS5	1	512	1850.2	25.58
			661	1880.0	25.50
			810	1909.8	25.70
		2	512	1850.2	24.30
			661	1880.0	24.20
			810	1909.8	24.40
		3	512	1850.2	23.41
			661	1880.0	23.40
			810	1909.8	23.53
		4	512	1850.2	22.45
			661	1880.0	22.45
			810	1909.8	22.60

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

8.2. UMTS REL 99

TEST PROCEDURE

The following summary of these settings are illustrated below:

	Mode	Rel99
	Subtest	-
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	HSDPA FRC	Not Applicable
	HSUPA Test	Not Applicable
	Power Control Algorithm	Algorithm2
	βc	Not Applicable
	βd	Not Applicable
	βec	Not Applicable
	βc/βd	8/15
	βhs	Not Applicable
	βed	Not Applicable

8.2.1. UMTS REL 99 OUTPUT POWER RESULT

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Rel 99 (RMC, 12.2 kbps)	4132	826.4	0.00	24.45
		4183	836.6	0.00	24.50
		4233	846.6	0.00	24.55

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band IV	Rel 99 (RMC, 12.2 kbps)	1312	1712.4	0	23.65
		1413	1732.6	0	23.79
		1513	1752.6	0	23.62

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Rel 99 (RMC, 12.2 kbps)	9262 9662	1852.4	0	23.87
		9400 9800	1880.0	0	23.74
		9538 9937	1907.6	0	23.82

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

8.3. UMTS HSDPA

The following 4 Sub-tests were completed according to Release 5 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

	Mode	Rel5 HSDPA			
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm 2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR (dB)	0	0	0.5	0.5
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs =βhs/βc	30/15			

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

8.3.1. UMTS HSDPA OUTPUT POWER RESULT

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0.00	24.45
		4183	836.6	0.00	24.50
		4233	846.6	0.00	24.48
	Subtest 2	4132	826.4	0.00	24.30
		4183	836.6	0.00	24.20
		4233	846.6	0.00	24.20
	Subtest 3	4132	826.4	0.50	24.00
		4183	836.6	0.50	24.08
		4233	846.6	0.50	24.07
	Subtest 4	4132	826.4	0.50	24.07
		4183	836.6	0.50	24.10
		4233	846.6	0.50	24.08

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band IV	Subtest 1	1312	1712.4	0	23.68
		1413	1732.6	0	23.80
		1513	1752.6	0	23.69
	Subtest 2	1312	1712.4	0	23.70
		1413	1732.6	0	23.82
		1513	1752.6	0	23.70
	Subtest 3	1312	1712.4	0.5	23.18
		1413	1732.6	0.5	23.30
		1513	1752.6	0.5	23.18
	Subtest 4	1312	1712.4	0.5	23.18
		1413	1732.6	0.5	23.32
		1513	1752.6	0.5	23.14

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	23.80
		9400	1880.0	0	23.81
		9538	1907.6	0	23.86
	Subtest 2	9262	1852.4	0	23.82
		9400	1880.0	0	23.74
		9538	1907.6	0	23.80
	Subtest 3	9262	1852.4	0.5	23.32
		9400	1880.0	0.5	23.24
		9538	1907.6	0.5	23.30
	Subtest 4	9262	1852.4	0.5	23.29
		9400	1880.0	0.5	23.22
		9538	1907.6	0.5	23.31

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

8.3.2. UMTS HSUPA

TEST PROCEDURE

The following summary of these settings are illustrated below: (ETSI TS 134.121-1 Table C.11.1)

	Mode	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	P-CPICH (dB)	-10				
	P-CCPCH (dB)	-12				
	SCH (dB)	-12				
	PICH(dB)	-15				
	DPCH (dB)	-9				
	HS-SCCH_1 (dB)	-8				
	HS-PDSCH (dB)	-3				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	Bc	11/15	6/15	15/15	2/15	15/15
	Bd	15/15	15/15	9/15	15/15	15/15
	Bec	209/225	12/15	30/15	2/15	5/15
	βc/βd	11/15	6/15	15/9	2/15	15/15
	Bhs	22/15	12/15	30/15	4/15	30/15
	βed (note1)	1309/225	94/75	47/15 47/15	56/75	134/15
	MPR	0	2	1	2	0
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	Reference E-TFCIs	5	5	2	5	5
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_TFCIs	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO 4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27	

Note1: βed cannot be set directly, it is set by Absolute Grant Value.

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

8.3.3. UMTS HSUPA OUTPUT POWER RESULT

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0.00	23.07
		4183	836.6	0.00	23.14
		4233	846.6	0.00	23.52
	Subtest 2	4132	826.4	2.00	22.68
		4183	836.6	2.00	22.70
		4233	846.6	2.00	22.66
	Subtest 3	4132	826.4	1.00	22.93
		4183	836.6	1.00	22.92
		4233	846.6	1.00	22.90
	Subtest 4	4132	826.4	2.00	22.68
		4183	836.6	2.00	22.70
		4233	846.6	2.00	22.68
	Subtest 5	4132	826.4	0.00	24.56
		4183	836.6	0.00	24.58
		4233	846.6	0.00	24.53

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band IV	Subtest 1	1312	1712.4	0	22.40
		1413	1732.6	0	22.80
		1513	1752.6	0	22.70
	Subtest 2	1312	1712.4	2	21.28
		1413	1732.6	2	21.41
		1513	1752.6	2	21.33
	Subtest 3	1312	1712.4	1	21.80
		1413	1732.6	1	22.08
		1513	1752.6	1	21.95
	Subtest 4	1312	1712.4	2	21.90
		1413	1732.6	2	21.88
		1513	1752.6	2	21.90
	Subtest 5	1312	1712.4	0	23.62
		1413	1732.6	0	23.82
		1513	1752.6	0	23.64

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	22.34
		9400	1880.0	0	22.81
		9538	1907.6	0	22.21
	Subtest 2	9262	1852.4	2	21.90
		9400	1880.0	2	21.90
		9538	1907.6	2	21.87
	Subtest 3	9262	1852.4	1	21.68
		9400	1880.0	1	22.29
		9538	1907.6	1	21.82
	Subtest 4	9262	1852.4	2	21.89
		9400	1880.0	2	21.90
		9538	1907.6	2	21.88
	Subtest 5	9262	1852.4	0	23.88
		9400	1880.0	0	23.75
		9538	1907.6	0	23.80

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

8.3.4. DC-HSDPA

The following tests were completed according to procedures in section 7.3.13 of 3GPP TS34.108 v9.5.0. A summary of these settings are illustrated below:

Downlink Physical Channels are set as per 3GPP TS34.121-1 v9.0.0 E.5.0

Table E.5.0: Levels for HSDPA connection setup

Parameter During Connection setup	Unit	Value
P-CPICH_Ec/Ior	dB	-10
P-CCPCH and SCH_Ec/Ior	dB	-12
PICH _Ec/Ior	dB	-15
HS-PDSCH	dB	off
HS-SCCH_1	dB	off
DPCH_Ec/Ior	dB	-5
OCNS_Ec/Ior	dB	-3.1

Call is set up as per 3GPP TS34.108 v9.5.0 sub clause 7.3.13

The configurations of the fixed reference channels for HSDPA RF tests are described in 3GPP TS 34.121, annex C for FDD and 3GPP TS 34.122.

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table. Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

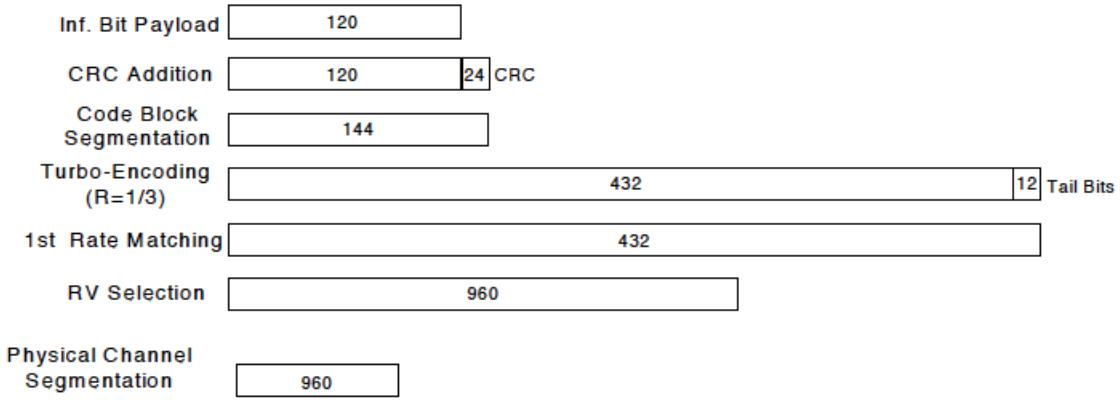


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

The following 4 Sub-tests for HSDPA were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121. A summary of subtest settings are illustrated below:

	Mode	Rel6 HSDPA	Rel6 HSDPA	Rel6 HSDPA	Rel6 HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	βd (SF)	64			
	βc/βd	2/15	12/15	15/8	15/4

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

	βhs	4/15	24/15	30/15	30/15
	MPR	0	0	0.5	0.5
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack Repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	Ahs = βhs/ βc	30/15			

Up commands are set continuously to set the UE to Max power.

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

8.3.5. UMTS DC-HSDPA OUTPUT POWER RESULT

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0.00	24.47
		4183	836.6	0.00	24.51
		4233	846.6	0.00	24.51
	Subtest 2	4132	826.4	0.00	24.54
		4183	836.6	0.00	24.57
		4233	846.6	0.00	24.54
	Subtest 3	4132	826.4	0.50	24.00
		4183	836.6	0.50	24.05
		4233	846.6	0.50	24.05
	Subtest 4	4132	826.4	0.50	24.00
		4183	836.6	0.50	24.05
		4233	846.6	0.50	23.98

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band IV	Subtest 1	1312	1712.4	0	23.68
		1413	1732.6	0	23.79
		1513	1752.6	0	23.61
	Subtest 2	1312	1712.4	0	23.70
		1413	1732.6	0	23.82
		1513	1752.6	0	23.66
	Subtest 3	1312	1712.4	0.5	23.21
		1413	1732.6	0.5	23.31
		1513	1752.6	0.5	23.13
	Subtest 4	1312	1712.4	0.5	23.19
		1413	1732.6	0.5	23.28
		1513	1752.6	0.5	23.16

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	23.83
		9400	1880.0	0	23.79
		9538	1907.6	0	23.86
	Subtest 2	9262	1852.4	0	23.83
		9400	1880.0	0	23.77
		9538	1907.6	0	23.87
	Subtest 3	9262	1852.4	0.5	23.32
		9400	1880.0	0.5	23.23
		9538	1907.6	0.5	23.35
	Subtest 4	9262	1852.4	0.5	23.24
		9400	1880.0	0.5	23.28
		9538	1907.6	0.5	23.35

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

8.1. LTE OUTPUT VERIFICATION

8.1.1. LTE OUTPUT RESULT

LTE Band 2

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18700	18900	19100
						1860 MHz	1880 MHz	1900 MHz
LTE Band 2	20	QPSK	1	0	0	23.4	23.38	23.4
			1	49	0	23.33	23.16	23.3
			1	99	0	23.13	23.02	23.26
			50	0	1	22.25	22.07	22.14
			50	24	1	22.31	22.07	22.04
			50	50	1	22.19	21.98	22.12
			100	0	1	22.21	22.11	22.16
		16QAM	1	0	1	22.12	22.29	22.12
			1	49	1	22.02	22.13	22.09
			1	99	1	21.82	21.98	22.04
			50	0	2	21.16	20.99	21.05
			50	24	2	21.22	20.97	20.99
			50	50	2	21.1	20.9	21
			100	0	2	21.16	20.96	21.09

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18675	18900	19125
						1857.5 MHz	1880 MHz	1902.5 MHz
LTE Band 2	15	QPSK	1	0	0	23.36	23.35	23.4
			1	37	0	23.32	23.2	23.26
			1	74	0	23.33	23.11	23.2
			36	0	1	22.1	22	22.07
			36	20	1	22.23	22.11	22.15
			36	39	1	22.17	22.03	22.08
			75	0	1	22.15	22.04	22.09
		16QAM	1	0	1	22.2	21.81	21.95
			1	37	1	22.16	21.72	21.86
			1	74	1	21.99	21.56	21.92
			36	0	2	20.98	20.88	21.05
			36	20	2	21.11	20.92	21.11
			36	39	2	21.11	20.86	21
			75	0	2	21.07	20.94	20.92

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18650	18900	19150
						1855 MHz	1880 MHz	1905 MHz
LTE Band 2	10	QPSK	1	0	0	23.3	23.26	23.4
			1	25	0	23.36	23.06	23.27
			1	49	0	23.35	23.16	23.28
			25	0	1	22.06	21.87	22.02
			25	12	1	22.04	22	22.02
			25	25	1	22.03	22	22.06
			50	0	1	22.05	21.98	21.97
		16QAM	1	0	1	22.1	22.14	21.91
			1	25	1	21.98	21.61	21.85
			1	49	1	21.99	22.06	21.9
			25	0	2	20.99	20.72	20.92
			25	12	2	20.98	20.95	20.93
			25	25	2	20.96	21.01	20.93
			50	0	2	20.86	20.95	20.82

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18625	18900	19175
						1852.5 MHz	1880 MHz	1907.5 MHz
LTE Band 2	5	QPSK	1	0	0	23.3	23.37	23.4
			1	12	0	23.17	23.27	23.06
			1	24	0	23.28	23.4	23.38
			12	0	1	22.07	21.97	21.99
			12	7	1	22.07	22.08	22.19
			12	13	1	22.12	21.98	22.17
			25	0	1	22.07	22.08	22.1
		16QAM	1	0	1	21.97	22.15	22.04
			1	12	1	21.82	21.76	21.98
			1	24	1	21.92	22.06	22.05
			12	0	2	21	20.9	20.98
			12	7	2	21.02	20.99	21.05
			12	13	2	21.02	20.9	20.97
			25	0	2	21.08	20.97	20.99

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18615	18900	19185
						1851.5 MHz	1880 MHz	1908.5 MHz
LTE Band 2	3	QPSK	1	0	0	23.16	23.21	23.34
			1	8	0	23.4	23.4	23.34
			1	14	0	23.24	23.24	23.38
			8	0	1	22.04	22.08	22.08
			8	4	1	22.11	22.07	22.15
			8	7	1	22.07	22.09	22.06
			15	0	1	22.06	22.03	22.05
		16QAM	1	0	1	22.13	21.67	22.32
			1	8	1	22.29	21.89	22.06
			1	14	1	22.18	21.82	22.4
			8	0	2	20.97	20.97	20.92
			8	4	2	20.96	21.02	20.94
			8	7	2	20.98	20.93	20.9
			15	0	2	21.03	20.87	20.95

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18607	18900	19193
						1850.7 MHz	1880 MHz	1909.3 MHz
LTE Band 2	1.4	QPSK	1	0	0	23.36	23.27	23.28
			1	3	0	23.37	23.19	23.36
			1	5	0	23.4	23.26	23.31
			3	0	0	23.18	23.23	23.04
			3	1	0	23.23	23.29	23.11
			3	3	0	23.17	23.21	23.07
			6	0	1	22.01	22.01	21.97
		16QAM	1	0	1	22.09	21.7	22.08
			1	3	1	22.08	21.89	22.11
			1	5	1	22.17	21.62	21.94
			3	0	1	21.82	21.84	21.84
			3	1	1	21.79	21.79	21.82
			3	3	1	21.81	21.84	21.85
			6	0	2	20.96	20.96	20.94

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 4

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20050	20175	20300
						1720 MHz	1732.5 MHz	1745 MHz
LTE Band 4	20	QPSK	1	0	0		23.4	
			1	49	0		23.03	
			1	99	0		23.05	
			50	0	1		22.19	
			50	24	1		22.17	
			50	50	1		22.02	
			100	0	1		22.13	
		16QAM	1	0	1		22.12	
			1	49	1		21.88	
			1	99	1		21.85	
			50	0	2		21.14	
			50	24	2		21.17	
			50	50	2		21.04	
			100	0	2		21.15	

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20025	20175	20325
						1717.5 MHz	1732.5 MHz	1747.5 MHz
LTE Band 4	15	QPSK	1	0	0	23.4	23.4	23.35
			1	37	0	23.21	23.2	23.34
			1	74	0	23.06	23.04	23.4
			36	0	1	22.19	22.13	22.16
			36	20	1	22.23	22.13	22.16
			36	39	1	22.09	22.09	22.2
			75	0	1	22.17	22.15	22.24
		16QAM	1	0	1	22.4	21.8	22.05
			1	37	1	22.11	21.59	21.96
			1	74	1	21.93	21.6	22.09
			36	0	2	21.21	21.09	21.29
			36	20	2	21.21	21.07	21.19
			36	39	2	21.1	21.04	21.26
			75	0	2	21.11	21.18	21.21

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20000	20175	20350
						1715 MHz	1732.5 MHz	1750 MHz
LTE Band 4	10	QPSK	1	0	0	23.4	23.38	23.31
			1	25	0	23.4	23.05	23.4
			1	49	0	23.26	23.05	23.4
			25	0	1	22.29	22.06	22.27
			25	12	1	22.23	22.07	22.28
			25	25	1	22.19	21.95	22.32
			50	0	1	22.23	22.03	22.23
		16QAM	1	0	1	22.4	22.27	22.2
			1	25	1	22.22	21.58	22.2
			1	49	1	22.16	21.77	22.37
			25	0	2	21.25	21.03	21.32
			25	12	2	21.31	21.07	21.35
			25	25	2	21.19	20.92	21.36
			50	0	2	21.16	21.03	21.23

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						19975	20175	20375
						1712.5 MHz	1732.5 MHz	1752.5 MHz
LTE Band 4	5	QPSK	1	0	0	23.4	23.25	23.4
			1	12	0	23.01	23.06	23.25
			1	24	0	23.35	23.19	23.4
			12	0	1	22.26	22	22.23
			12	7	1	22.17	21.98	22.28
			12	13	1	22.22	21.92	22.24
			25	0	1	22.19	21.97	22.25
		16QAM	1	0	1	22.21	22.1	22.02
			1	12	1	22.05	21.78	22.12
			1	24	1	22.17	22.02	22.22
			12	0	2	21.23	21.01	21.26
			12	7	2	21.2	20.99	21.28
			12	13	2	21.2	20.97	21.32
			25	0	2	21.24	21	21.28

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						19965	20175	20385
						1711.5 MHz	1732.5 MHz	1753.5 MHz
LTE Band 4	3	QPSK	1	0	0	23.21	23.08	23.4
			1	8	0	23.4	23.16	23.4
			1	14	0	23.28	22.97	23.4
			8	0	1	22.21	21.92	22.3
			8	4	1	22.18	21.99	22.27
			8	7	1	22.09	21.99	22.21
			15	0	1	22.11	21.95	22.26
		16QAM	1	0	1	22.31	21.5	22.36
			1	8	1	22.3	21.74	22.34
			1	14	1	22.3	21.43	22.4
			8	0	2	21.18	20.9	21.24
			8	4	2	21.16	20.99	21.22
			8	7	2	21.16	20.95	21.14
			15	0	2	21.13	20.85	21.23

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						19957	20175	20393
						1710.7 MHz	1732.5 MHz	1754.3 MHz
LTE Band 4	1.4	QPSK	1	0	0	23.4	23	23.32
			1	3	0	23.38	22.99	23.4
			1	5	0	23.4	23.03	23.4
			3	0	0	23.27	23.03	23.21
			3	1	0	23.33	23.04	23.39
			3	3	0	23.31	23.02	23.27
			6	0	1	22.24	21.88	22.31
		16QAM	1	0	1	22.35	21.58	22.24
			1	3	1	22.23	21.72	22.4
			1	5	1	22.33	21.78	22.16
			3	0	1	21.92	21.4	22
			3	1	1	21.91	21.45	22.08
			3	3	1	21.96	21.74	22.04
			6	0	2	21.14	20.92	21.34

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 5

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20450	20525	20600
						829 MHz	836.5 MHz	844 MHz
LTE Band 5	10	QPSK	1	0	0		23.9	
			1	25	0		24.1	
			1	49	0		24.0	
			25	0	1		22.7	
			25	12	1		22.7	
			25	25	1		22.7	
			50	0	1		22.7	
		16QAM	1	0	1		22.8	
			1	25	1		22.8	
			1	49	1		22.9	
			25	0	2		21.7	
			25	12	2		21.7	
			25	25	2		21.6	
			50	0	2		21.6	

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20425	20525	20625
						826.5 MHz	836.5 MHz	846.5 MHz
LTE Band 5	5	QPSK	1	0	0	23.9	24.1	23.9
			1	12	0	23.9	24.0	23.7
			1	24	0	24.0	24.1	23.9
			12	0	1	22.7	22.7	22.6
			12	7	1	22.7	22.7	22.7
			12	13	1	22.7	22.7	22.6
			25	0	1	22.7	22.7	22.6
		16QAM	1	0	1	22.7	23.0	22.7
			1	12	1	22.7	22.5	22.7
			1	24	1	22.7	23.0	22.5
			12	0	2	21.6	21.6	21.6
			12	7	2	21.7	21.7	21.6
			12	13	2	21.7	21.6	21.5
			25	0	2	21.7	21.6	21.5

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20415	20525	20635
						825.5 MHz	836.5 MHz	847.5 MHz
LTE Band 5	3	QPSK	1	0	0	23.9	23.8	23.8
			1	8	0	24.1	24.0	24.2
			1	14	0	24.0	23.8	23.8
			8	0	1	22.7	22.8	22.6
			8	4	1	22.8	22.8	22.6
			8	7	1	22.7	22.8	22.6
			15	0	1	22.8	22.7	22.6
		16QAM	1	0	1	23.0	22.6	23.2
			1	8	1	23.1	22.8	22.7
			1	14	1	23.1	22.6	23.1
			8	0	2	21.6	21.6	21.4
			8	4	2	21.7	21.7	21.4
			8	7	2	21.7	21.7	21.4
			15	0	2	21.8	21.6	21.5

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20407	20525	20643
						824.7 MHz	836.5 MHz	848.3 MHz
LTE Band 5	1.4	QPSK	1	0	0	24.1	23.8	23.8
			1	3	0	24.0	23.8	23.9
			1	5	0	24.2	23.9	23.9
			3	0	0	23.9	23.9	23.7
			3	1	0	23.9	24.0	23.7
			3	3	0	24.0	23.9	23.7
			6	0	1	22.7	22.7	22.6
		16QAM	1	0	1	23.1	22.5	22.7
			1	3	1	23.1	23.0	23.1
			1	5	1	23.2	22.5	22.7
			3	0	1	22.6	22.6	22.5
			3	1	1	22.5	22.6	22.4
			3	3	1	22.6	22.7	22.5
			6	0	2	21.6	21.7	21.5

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 7

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20850	21100	21350
						2510 MHz	2535 MHz	2560 MHz
LTE Band 7	20	QPSK	1	0	0	22.7	22.7	22.5
			1	49	0	22.5	22.7	22.4
			1	99	0	22.5	22.4	22.2
			50	0	1	21.1	21.1	21.0
			50	24	1	21.2	21.0	21.0
			50	50	1	21.1	20.9	20.9
			100	0	1	21.1	21.0	20.9
		16QAM	1	0	1	21.6	21.3	21.2
			1	49	1	21.7	21.5	21.1
			1	99	1	21.5	21.4	20.9
			50	0	2	20.0	19.9	19.8
			50	24	2	20.1	19.8	19.8
			50	50	2	20.0	19.7	19.8
			100	0	2	20.0	19.8	19.7

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20825	21100	21375
						2507.5 MHz	2535 MHz	2562.5 MHz
LTE Band 7	15	QPSK	1	0	0	22.6	22.5	22.6
			1	37	0	22.5	22.5	22.4
			1	74	0	22.5	22.3	22.2
			36	0	1	21.2	20.9	21.0
			36	20	1	21.2	21.0	21.0
			36	39	1	21.2	21.0	20.9
			75	0	1	21.1	21.0	20.9
		16QAM	1	0	1	21.4	21.0	21.1
			1	37	1	21.4	21.0	21.1
			1	74	1	21.2	20.8	20.9
			36	0	2	20.0	19.7	19.7
			36	20	2	20.0	19.8	19.8
			36	39	2	20.0	19.7	19.7
			75	0	2	19.9	19.8	19.8

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20800	21100	21400
						2505 MHz	2535 MHz	2565 MHz
LTE Band 7	10	QPSK	1	0	0	22.4	22.6	22.6
			1	25	0	22.6	22.5	22.5
			1	49	0	22.4	22.6	22.6
			25	0	1	20.9	21.1	20.9
			25	12	1	20.9	21.0	21.0
			25	25	1	20.9	21.1	20.9
			50	0	1	20.9	21.0	20.9
		16QAM	1	0	1	21.2	21.5	21.4
			1	25	1	21.2	21.2	21.3
			1	49	1	21.2	21.4	21.2
			25	0	2	19.7	19.8	19.8
			25	12	2	19.8	19.9	19.9
			25	25	2	19.7	19.9	19.8
			50	0	2	19.7	19.8	19.7

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20775	21100	21425
						2502.5 MHz	2535 MHz	2567.5 MHz
LTE Band 7	5	QPSK	1	0	0	22.4	22.6	22.7
			1	12	0	22.3	22.6	22.4
			1	24	0	22.4	22.7	22.7
			12	0	1	21.3	21.5	21.5
			12	7	1	21.4	21.5	21.5
			12	13	1	21.3	21.5	21.5
			25	0	1	21.4	21.5	21.5
		16QAM	1	0	1	21.1	21.5	21.1
			1	12	1	21.1	21.2	21.2
			1	24	1	21.3	21.5	21.0
			12	0	2	20.1	20.4	20.3
			12	7	2	20.2	20.4	20.3
			12	13	2	20.1	20.3	20.3
			25	0	2	20.2	20.3	20.3

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 17

BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm) 23790 710 MHz
10	QPSK	1	0	0	23.9
		1	25	0	24.1
		1	49	0	23.9
		25	0	1	22.6
		25	12	1	22.7
		25	25	1	22.6
		50	0	1	22.6
	16QAM	1	0	1	22.8
		1	25	1	22.8
		1	49	1	23.0
		25	0	2	21.6
		25	12	2	21.7
		25	25	2	21.6
		50	0	2	21.5
BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm) 23790 710 MHz
5	QPSK	1	0	0	23.9
		1	12	0	23.7
		1	24	0	24.0
		12	0	1	22.5
		12	7	1	22.6
		12	13	1	22.6
		25	0	1	22.7
	16QAM	1	0	1	22.8
		1	12	1	22.6
		1	24	1	22.8
		12	0	2	21.5
		12	7	2	21.6
		12	13	2	21.6
		25	0	2	21.7

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 26

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26765	26865	26965
						831.5 MHz	836.5 MHz	841.5 MHz
LTE Band 26	15	QPSK	1	0	0	23.9	23.8	23.9
			1	37	0	24.2	24.0	23.9
			1	74	0	23.8	23.7	23.7
			36	0	1	22.8	22.7	22.7
			36	20	1	22.8	22.7	22.8
			36	39	1	22.7	22.6	22.7
			75	0	1	22.8	22.6	22.7
		16QAM	1	0	1	22.4	22.7	22.3
			1	37	1	22.7	22.8	22.6
			1	74	1	22.5	22.8	22.7
			36	0	2	21.6	21.5	21.5
			36	20	2	21.7	21.5	21.6
			36	39	2	21.5	21.5	21.4
			75	0	2	21.6	21.5	21.6

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26740	26865	26990
						819 MHz	831.5 MHz	844 MHz
LTE Band 26	10	QPSK	1	0	0	24.0	24.0	24.1
			1	25	0	24.1	24.0	24.0
			1	49	0	24.0	24.0	24.0
			25	0	1	22.9	22.9	22.8
			25	12	1	22.9	22.9	22.9
			25	25	1	22.7	22.8	22.8
			50	0	1	22.8	22.7	22.8
		16QAM	1	0	1	22.7	23.0	22.8
			1	25	1	22.7	22.5	22.7
			1	49	1	22.7	22.9	22.7
			25	0	2	21.7	21.7	21.8
			25	12	2	21.8	21.8	21.9
			25	25	2	21.6	21.6	21.8
			50	0	2	21.6	21.6	21.7

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26715	26865	27015
						816.5 MHz	831.5 MHz	846.5 MHz
LTE Band 26	5	QPSK	1	0	0	24.0	24.1	24.1
			1	12	0	24.0	24.0	23.8
			1	24	0	24.1	24.2	24.0
			12	0	1	22.9	22.8	22.9
			12	7	1	22.9	22.8	22.9
			12	13	1	22.7	22.8	22.8
			25	0	1	22.8	22.9	22.8
		16QAM	1	0	1	22.8	23.0	22.8
			1	12	1	22.5	22.6	22.8
			1	24	1	22.9	22.8	22.6
			12	0	2	21.8	21.8	21.8
			12	7	2	21.8	21.8	21.8
			12	13	2	21.6	21.7	21.7
			25	0	2	21.8	21.7	21.7

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26705	26865	27025
						815.5 MHz	831.5 MHz	847.5 MHz
LTE Band 26	3	QPSK	1	0	0	24.1	24.0	24.1
			1	8	0	24.1	23.9	24.1
			1	14	0	24.0	23.9	24.0
			8	0	1	22.7	22.9	22.8
			8	4	1	22.8	22.9	22.8
			8	7	1	22.7	22.9	22.8
			15	0	1	22.8	22.8	22.8
		16QAM	1	0	1	23.0	22.7	23.1
			1	8	1	23.2	22.8	22.8
			1	14	1	22.8	22.6	22.8
			8	0	2	21.7	21.8	21.6
			8	4	2	21.6	21.8	21.6
			8	7	2	21.7	21.8	21.6
			15	0	2	21.7	21.6	21.8

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26697	26865	27033
						814.7 MHz	831.5 MHz	848.3 MHz
LTE Band 26	1.4	QPSK	1	0	0	24.0	24.1	24.0
			1	3	0	23.9	23.9	24.0
			1	5	0	24.1	24.0	23.9
			3	0	0	23.9	24.1	23.8
			3	1	0	23.9	24.0	23.9
			3	3	0	23.9	24.0	23.8
			6	0	1	22.9	22.8	22.8
		16QAM	1	0	1	23.2	22.5	22.8
			1	3	1	22.9	22.9	22.9
			1	5	1	23.2	22.5	22.7
			3	0	1	22.5	22.6	22.6
			3	1	1	22.4	22.6	22.7
			3	3	1	22.4	22.6	22.6
			6	0	2	21.6	21.7	21.8

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 41

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						39750	40620	41490
						2506 MHz	2593 MHz	2680 MHz
LTE Band 41	20	QPSK	1	0	0	22.8	23.1	22.9
			1	49	0	22.8	22.9	22.5
			1	99	0	22.8	22.6	22.5
			50	0	1	21.5	21.6	21.4
			50	24	1	21.5	21.6	21.4
			50	50	1	21.5	21.5	21.3
			100	0	1	21.5	21.6	21.4
		16QAM	1	0	1	21.7	22.0	22.0
			1	49	1	21.6	22.0	21.8
			1	99	1	21.5	21.7	21.6
			50	0	2	20.5	20.6	20.4
			50	24	2	20.5	20.7	20.3
			50	50	2	20.4	20.5	20.4
			100	0	2	20.5	20.7	20.4

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						39725	40620	41515
						2503.5 MHz	2593 MHz	2682.5 MHz
LTE Band 41	15	QPSK	1	0	0	22.8	22.8	22.9
			1	37	0	22.8	22.7	22.6
			1	74	0	22.7	22.6	22.6
			36	0	1	21.7	21.7	21.6
			36	20	1	21.7	21.7	21.6
			36	39	1	21.7	21.6	21.6
			75	0	1	21.6	21.7	21.6
		16QAM	1	0	1	21.9	21.5	21.6
			1	37	1	21.8	21.6	21.4
			1	74	1	21.5	21.4	21.3
			36	0	2	20.6	20.8	20.6
			36	20	2	20.7	20.7	20.5
			36	39	2	20.6	20.6	20.5
			75	0	2	20.6	20.6	20.6

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						39700	40620	41540
						2501 MHz	2593 MHz	2685 MHz
LTE Band 41	10	QPSK	1	0	0	22.7	23.2	23.0
			1	25	0	22.8	23.1	22.9
			1	49	0	22.7	23.1	22.9
			25	0	1	21.6	21.9	21.6
			25	12	1	21.6	22.1	21.6
			25	25	1	21.7	21.9	21.5
			50	0	1	21.5	22.0	21.5
		16QAM	1	0	1	21.7	22.1	21.5
			1	25	1	21.7	22.2	21.3
			1	49	1	21.6	22.0	21.5
			25	0	2	20.6	21.1	20.5
			25	12	2	20.6	21.2	20.6
			25	25	2	20.7	21.0	20.4
			50	0	2	20.6	21.0	20.6

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						39675	40620	41565
						2498.5 MHz	2593 MHz	2687.5 MHz
LTE Band 41	5	QPSK	1	0	0	22.9	23.0	23.0
			1	12	0	22.4	23.1	22.7
			1	24	0	22.8	23.2	22.8
			12	0	1	21.6	21.9	21.6
			12	7	1	21.5	22.0	21.7
			12	13	1	21.6	22.0	21.6
			25	0	1	21.5	22.0	21.6
		16QAM	1	0	1	21.4	22.0	21.9
			1	12	1	21.2	22.1	21.7
			1	24	1	21.5	22.0	21.8
			12	0	2	20.5	21.0	20.6
			12	7	2	20.6	21.1	20.7
			12	13	2	20.6	20.9	20.6
			25	0	2	20.6	21.0	20.7

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

9. PEAK TO AVERAGE RATIO

Test Procedure

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

Test Spec

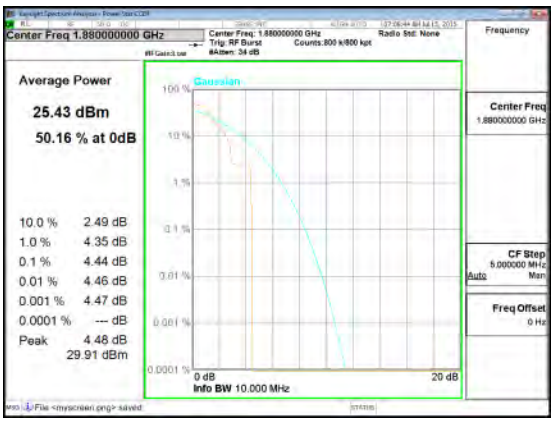
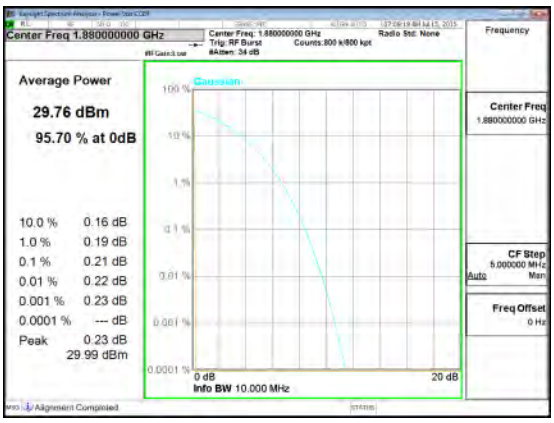
In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

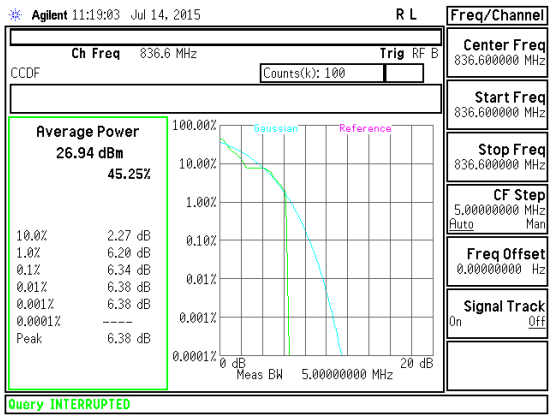
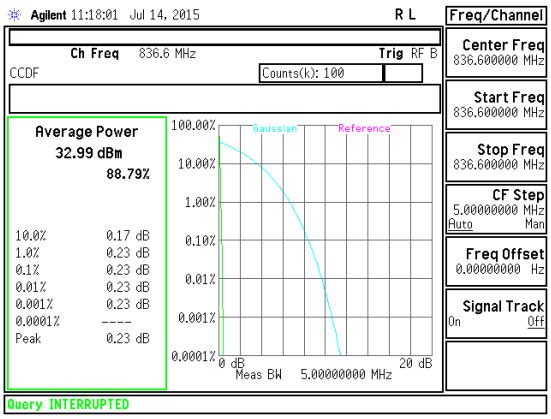
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

9.1. CONDUCTED PEAK TO AVERAGE RESULT

GSM

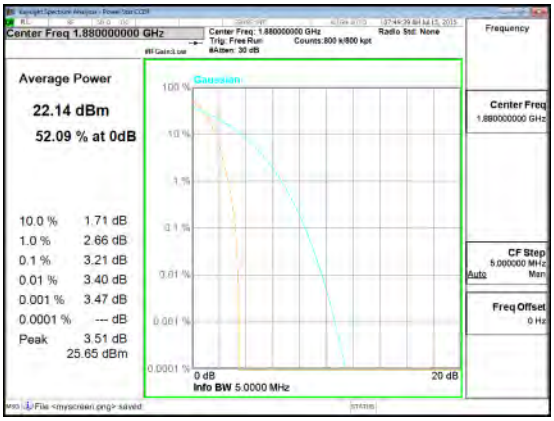
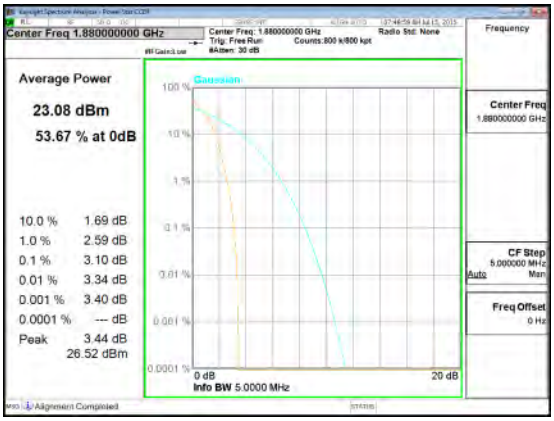
Band GSM1900 EGPRS	 Band GSM1900 EGPRS Mid channel	 Band GSM1900 GPRS Mid channel

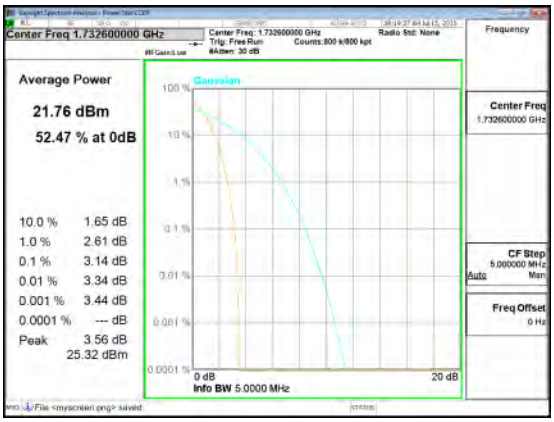
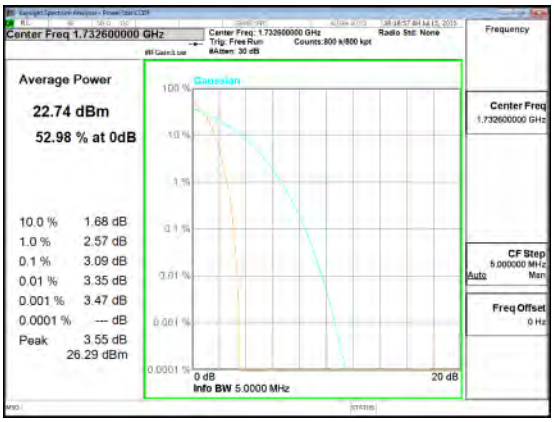
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band GSM850 EGPRS	 Band GSM850 EGPRS Mid channel	 Band GSM850 GPRS Mid channel

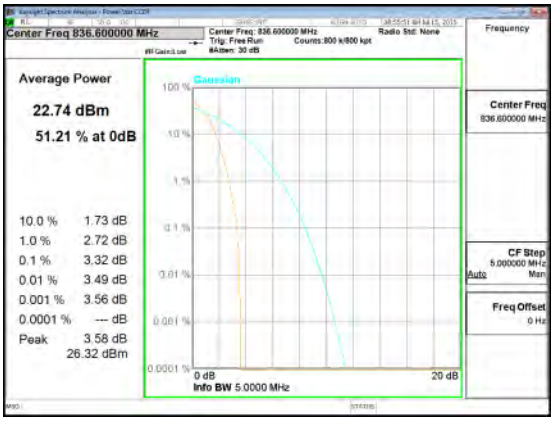
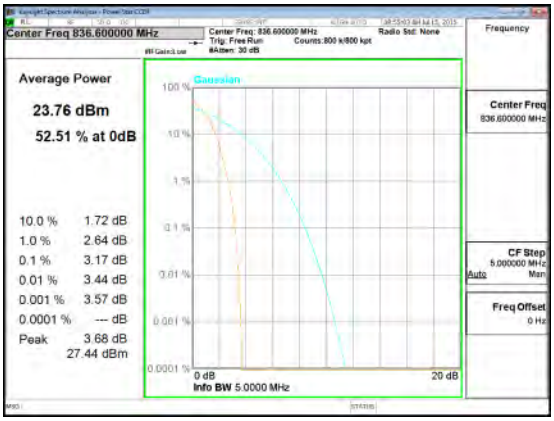
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

WCDMA

Band		
Band 2 HSDPA	 Band WCDMA B2 HSDPA	 Band WCDMA B2 REL99

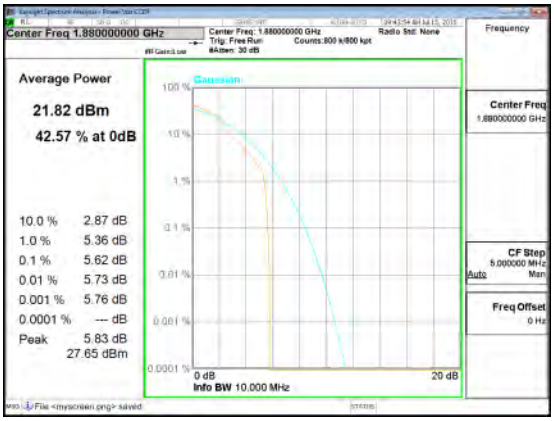
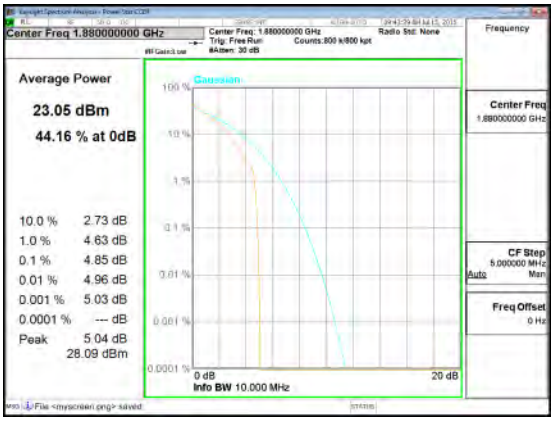
Band		
Band 4 HSDPA	 Band WCDMA B4 HSDPA	 Band WCDMA B4 REL99

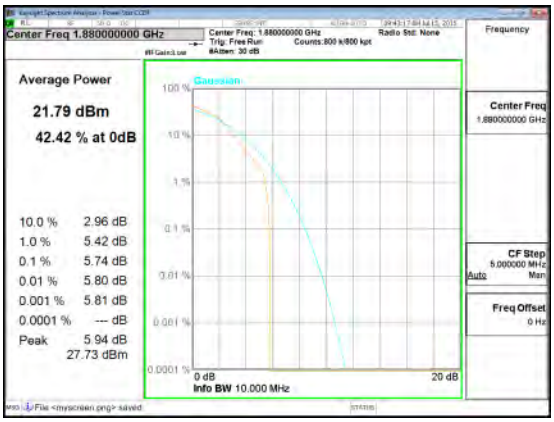
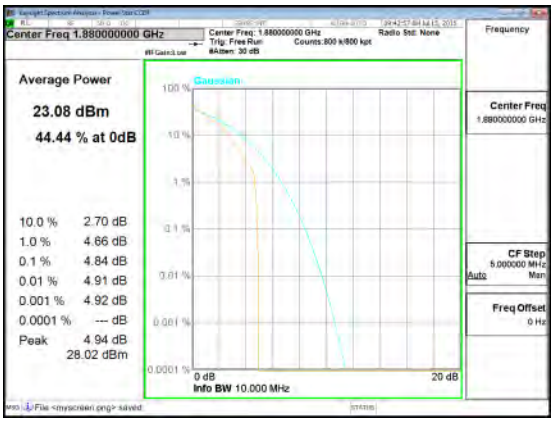
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band Band 5 HSDPA	 Band WCDMA B5 HSDPA	 Band WCDMA B5 REL99

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

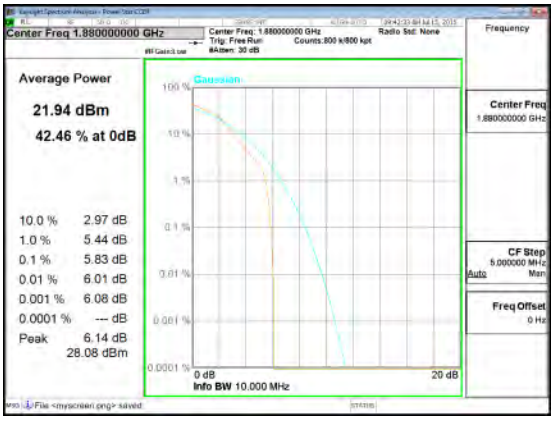
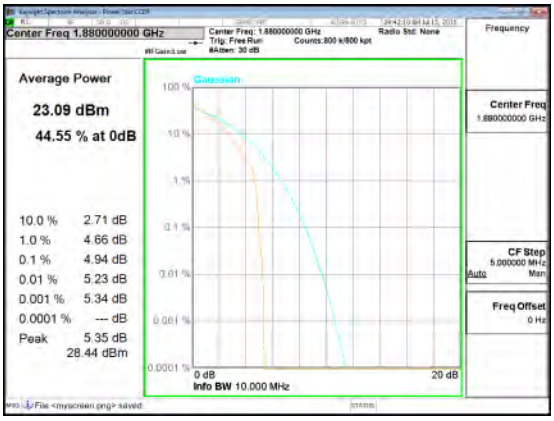
LTE Band 2

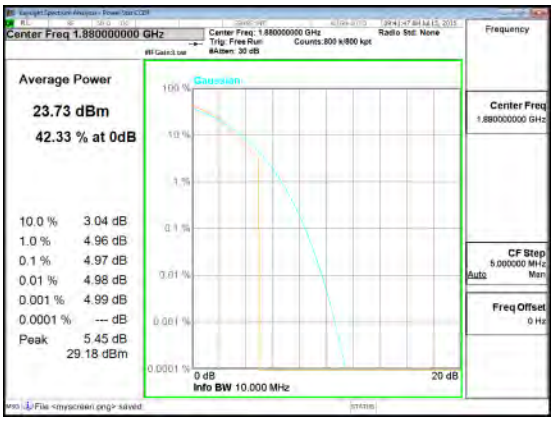
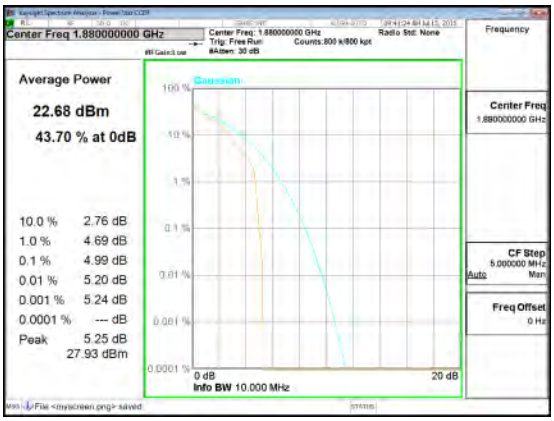
Band LTE2 20MHz 16QAM	 Band LTE2 20MHz 16QAM Mid channel	 Band LTE2 20MHz QPSK Mid channel

Band LTE2 15MHz 16QAM	 Band LTE2 15MHz 16QAM Mid channel	 Band LTE2 15MHz QPSK Mid channel

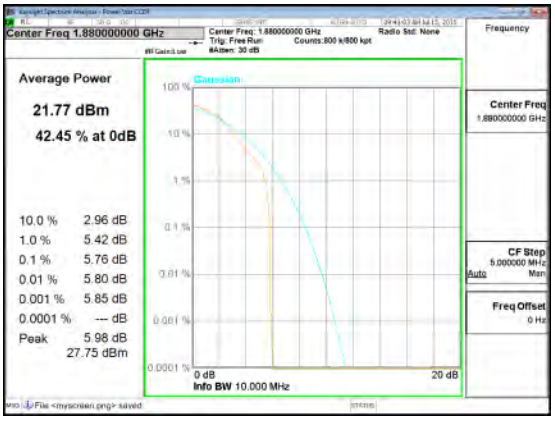
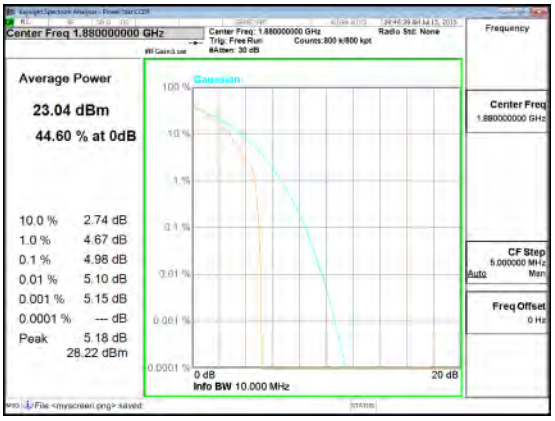
UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

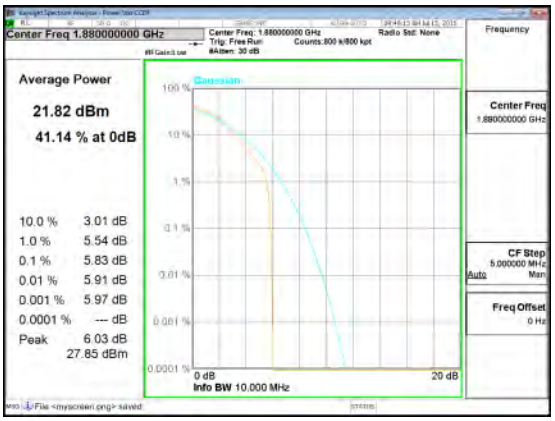
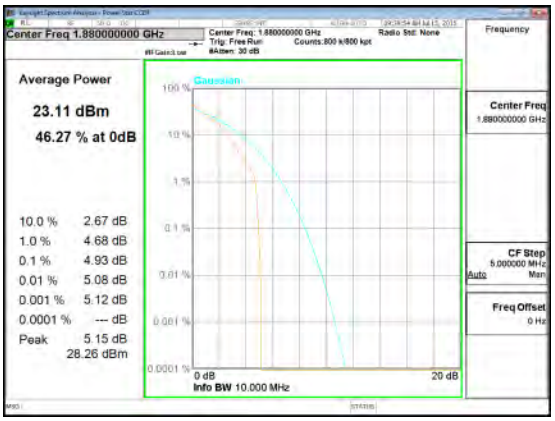
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE2 10MHz 16QAM	 Band LTE2 10MHz 16QAM Mid channel	 Band LTE2 10MHz QPSK Mid channel

Band LTE2 5MHz 16QAM	 Band LTE2 5MHz 16QAM Mid channel	 Band LTE2 5MHz QPSK Mid channel

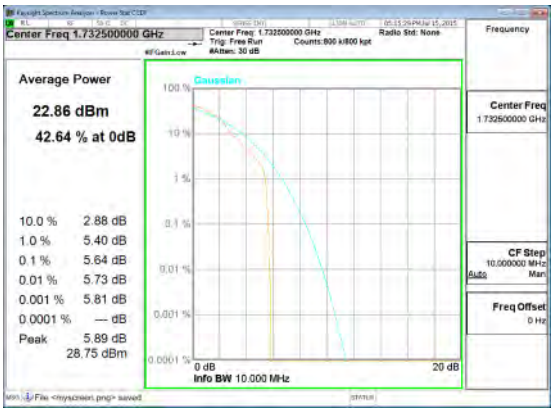
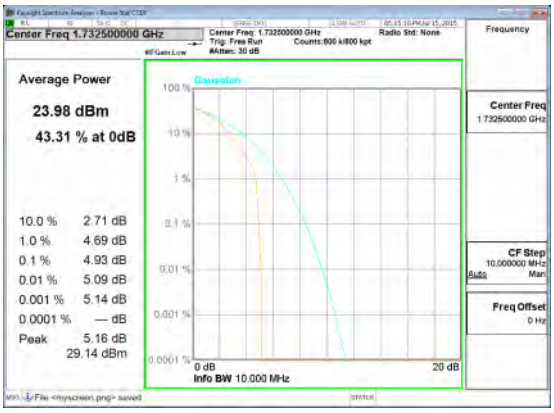
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

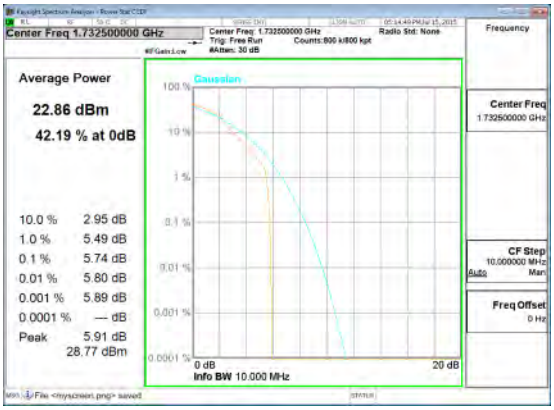
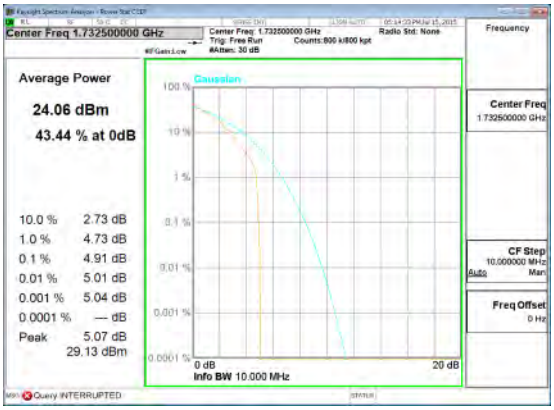
Band LTE2 3MHz 16QAM	 Band LTE2 3MHz 16QAM Mid channel	 Band LTE2 3MHz QPSK Mid channel

Band LTE2 1.4MHz 16QAM	 Band LTE2 1.4MHz 16QAM Mid channel	 Band LTE2 1.4MHz QPSK Mid channel

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

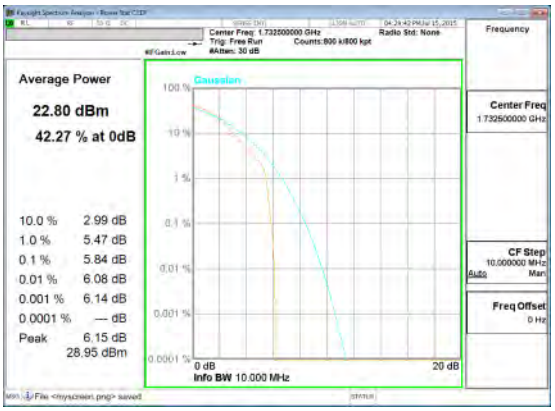
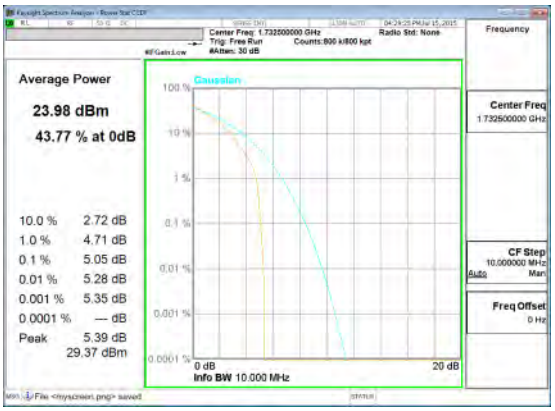
LTE Band 4

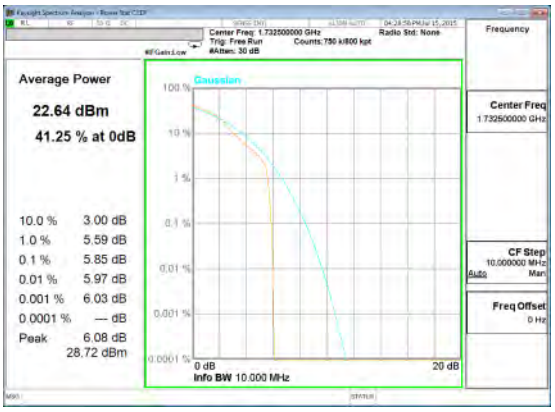
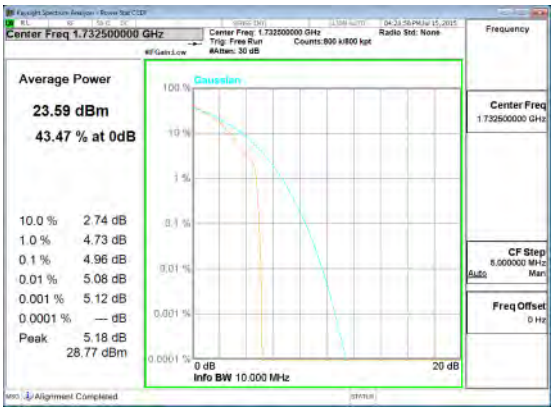
Band LTE4 20MHz 16QAM	 Band LTE4 20MHz 16QAM Mid channel	 Band LTE4 20MHz QPSK Mid channel

Band LTE4 15MHz 16QAM	 Band LTE4 15MHz 16QAM Mid channel	 Band LTE4 15MHz QPSK Mid channel

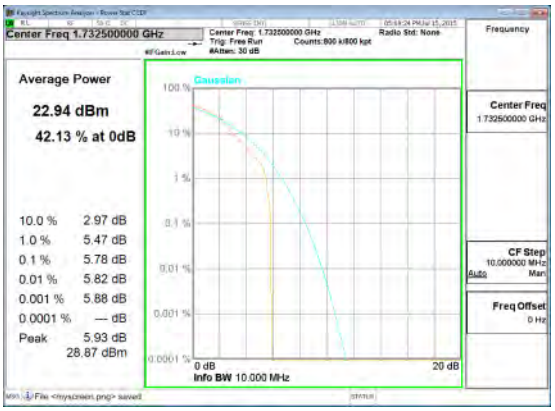
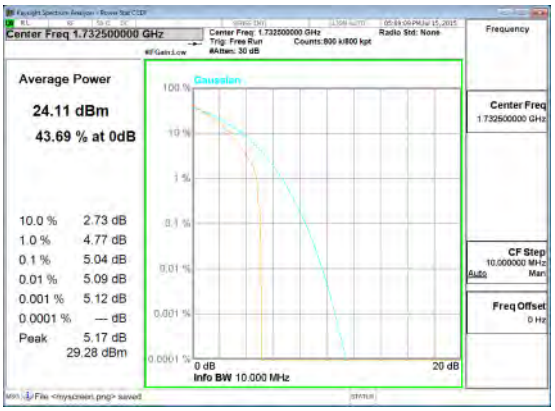
UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

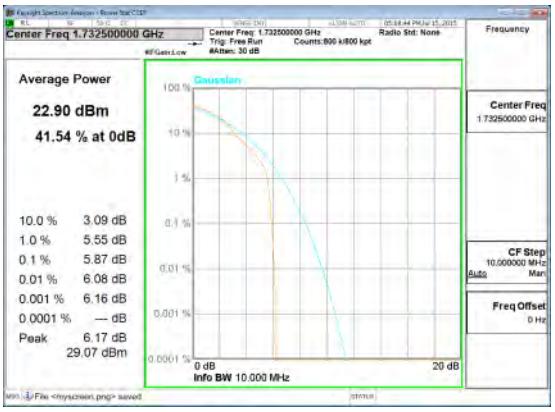
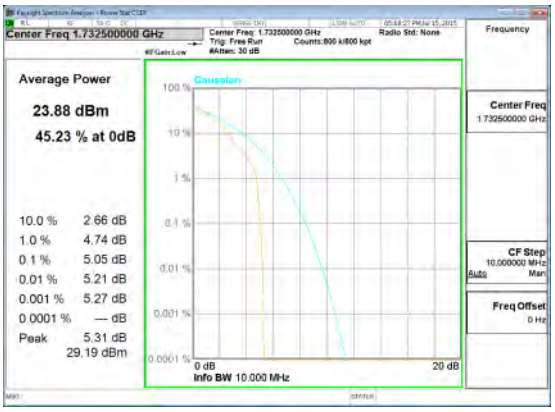
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE4 10MHz 16QAM	 Band LTE4 10MHz 16QAM Mid channel	 Band LTE4 10MHz QPSK Mid channel

Band LTE4 5MHz 16QAM	 Band LTE4 5MHz 16QAM Mid channel	 Band LTE4 5MHz QPSK Mid channel

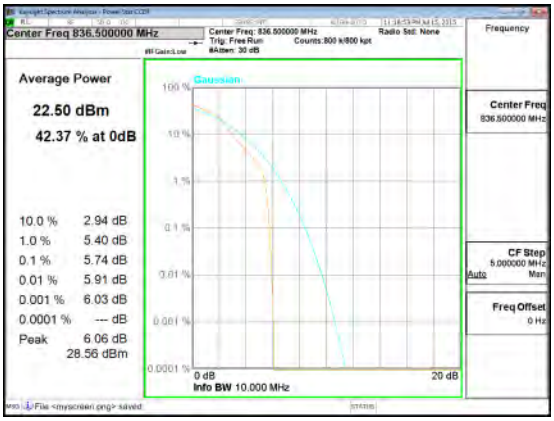
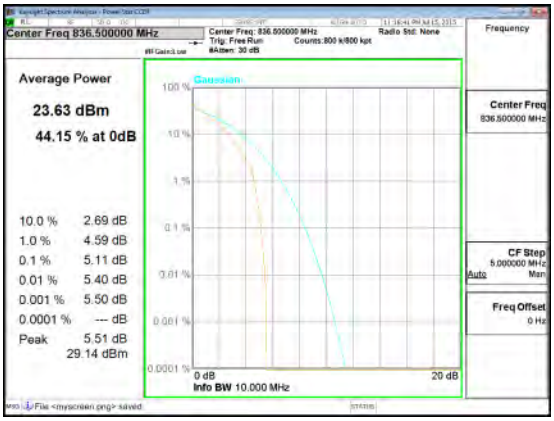
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

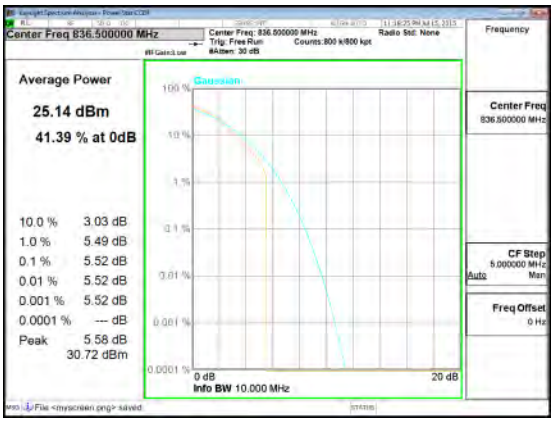
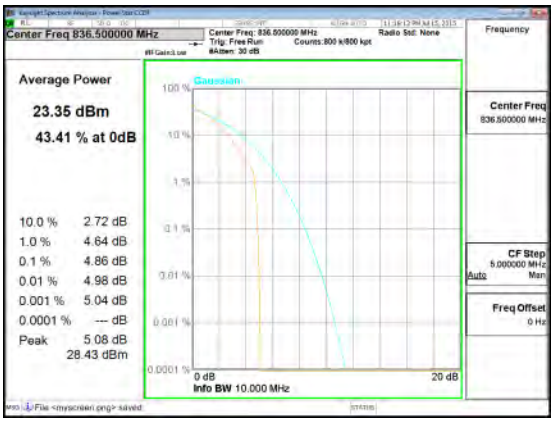
Band LTE4 3MHz 16QAM	 Band LTE4 3MHz 16QAM Mid channel	 Band LTE4 3MHz QPSK Mid channel

Band LTE4 1.4MHz 16QAM	 Band LTE4 1.4MHz 16QAM Mid channel	 Band LTE4 1.4MHz QPSK Mid channel

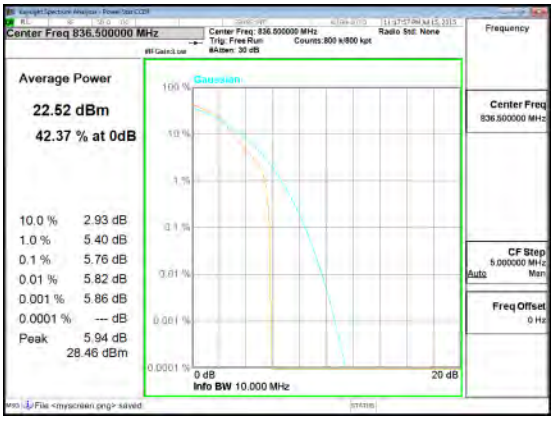
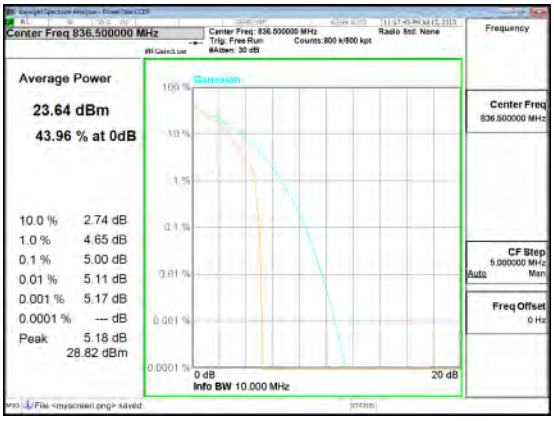
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

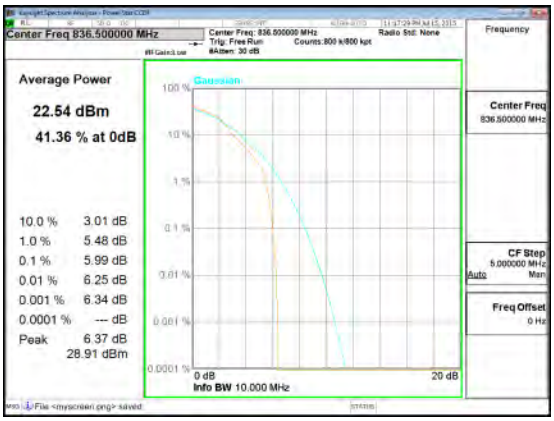
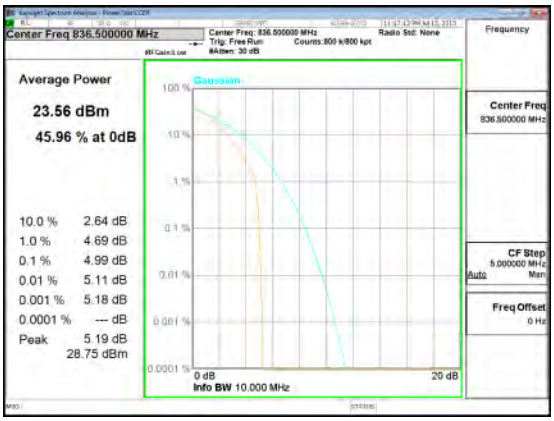
LTE Band 5

Band LTE5 10MHz 16QAM	 Band LTE5 10MHz 16QAM Mid channel	 Band LTE5 10MHz QPSK Mid channel

Band LTE5 5MHz 16QAM	 Band LTE5 5MHz 16QAM Mid channel	 Band LTE5 5MHz QPSK Mid channel

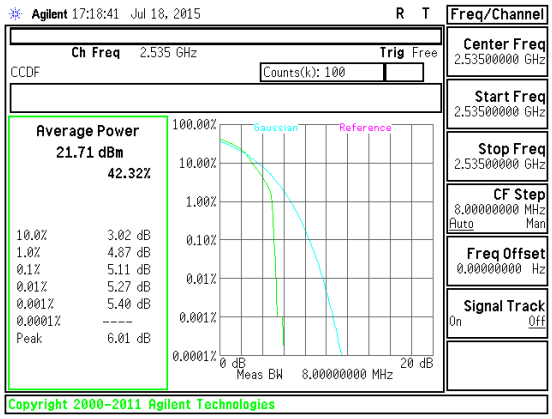
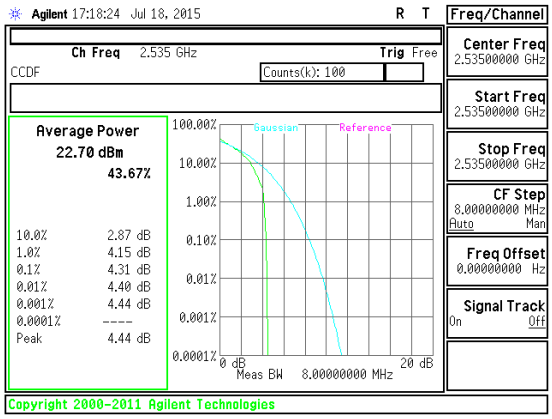
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

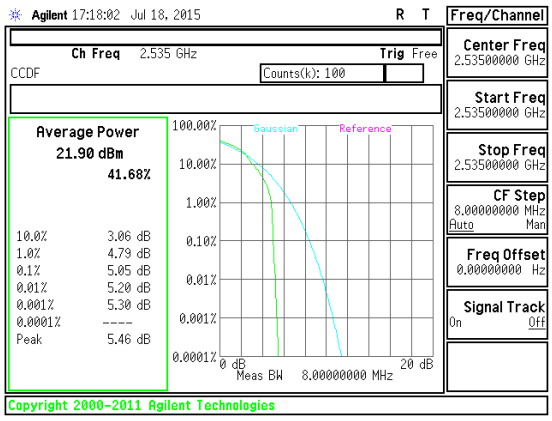
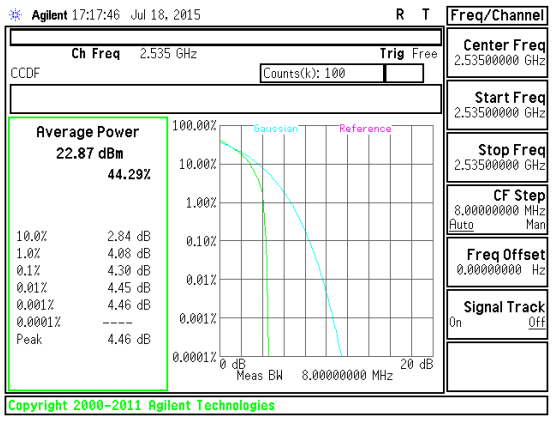
Band LTE5 3MHz 16QAM	 Band LTE5 3MHz 16QAM Mid channel	 Band LTE5 3MHz QPSK Mid channel

Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz 16QAM Mid channel	 Band LTE5 1.4MHz QPSK Mid channel

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 7

Band LTE7 20MHz 16QAM	 Band LTE7 20MHz 16QAM Mid channel	 Band LTE7 20MHz QPSK Mid channel

Band LTE7 15MHz 16QAM	 Band LTE7 15MHz 16QAM Mid channel	 Band LTE7 15MHz QPSK Mid channel

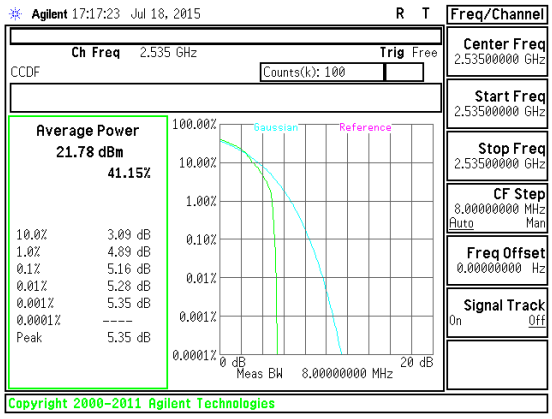
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band

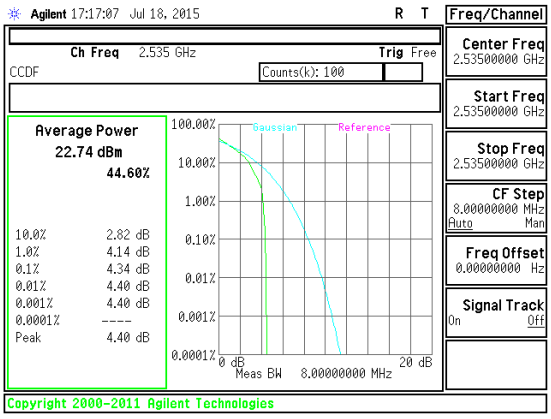
LTE7

10MHz

16QAM



Band LTE7 10MHz 16QAM Mid channel



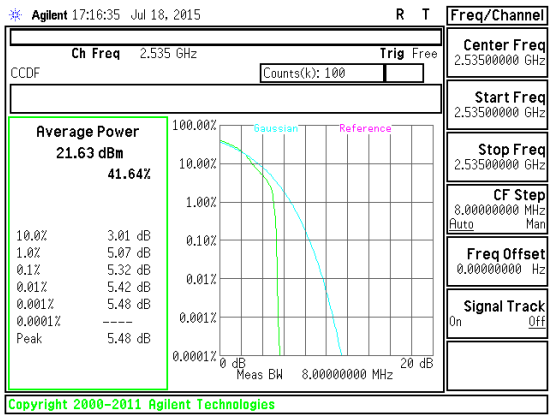
Band LTE7 10MHz QPSK Mid channel

Band

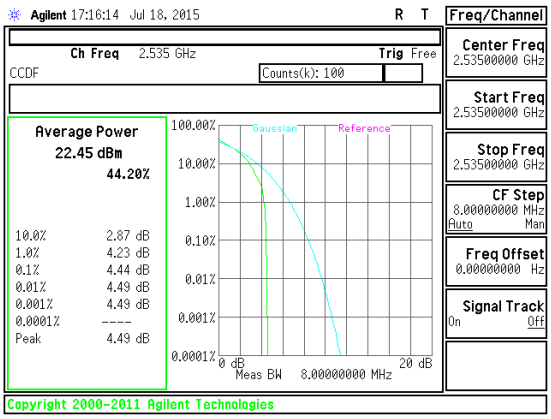
LTE7

5MHz

16QAM



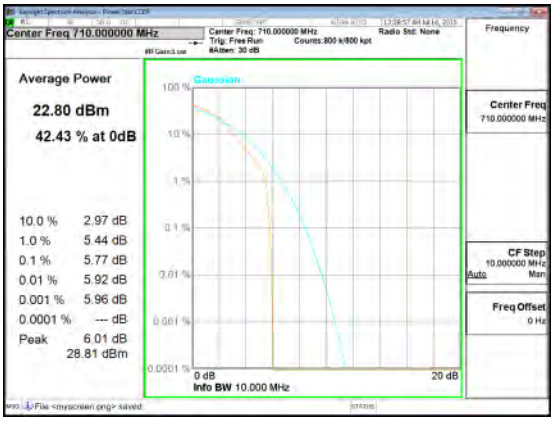
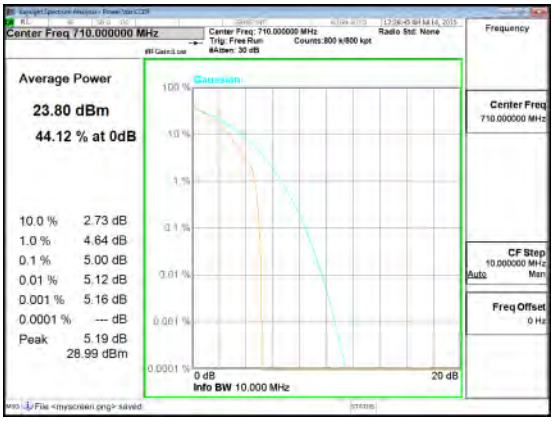
Band LTE7 5MHz 16QAM Mid channel

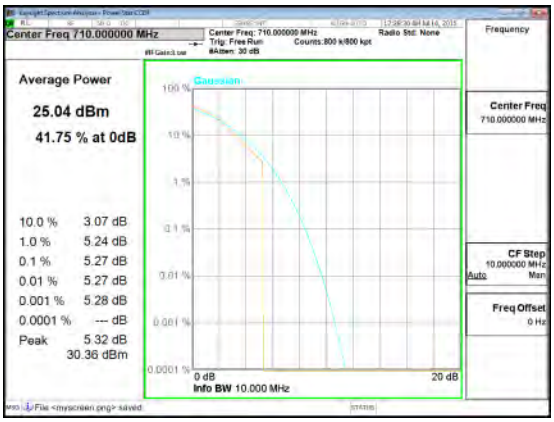
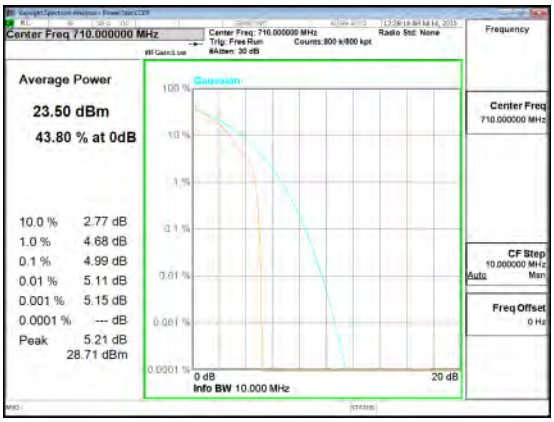


Band LTE7 5MHz QPSK Mid channel

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

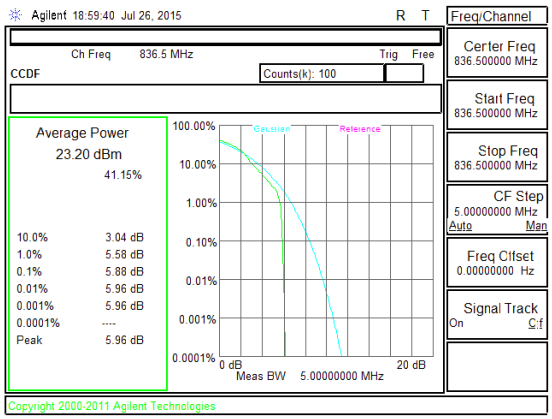
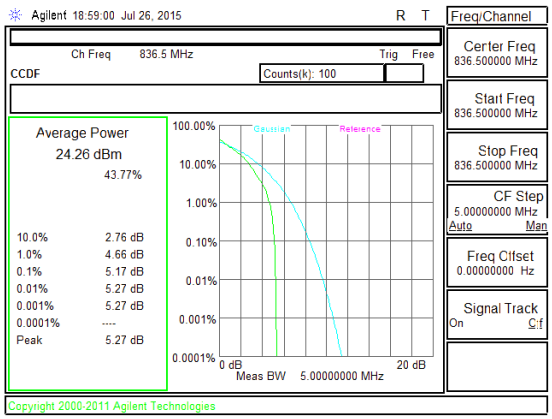
LTE Band 17

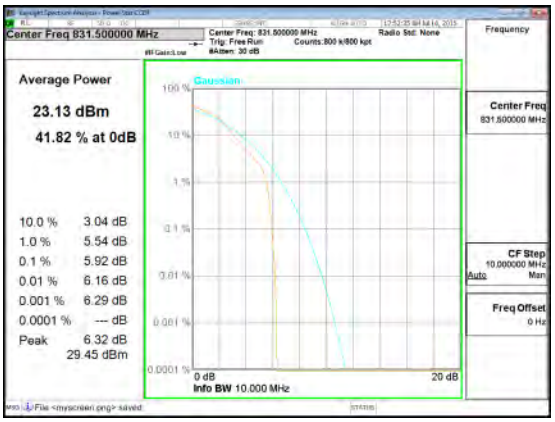
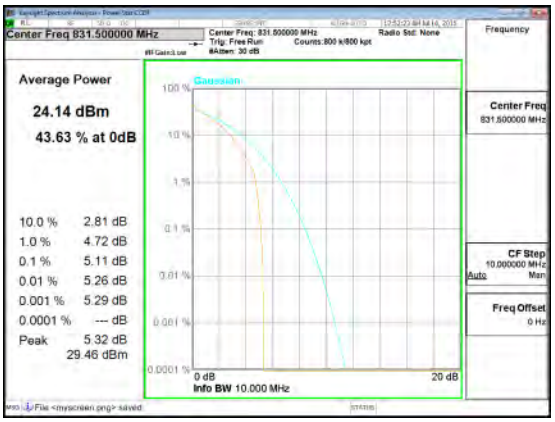
Band LTE17 10MHz 16QAM	 Band LTE17 10MHz 16QAM Mid channel	 Band LTE17 10MHz QPSK Mid channel

Band LTE17 5MHz 16QAM	 Band LTE17 5MHz 16QAM Mid channel	 Band LTE17 5MHz QPSK Mid channel

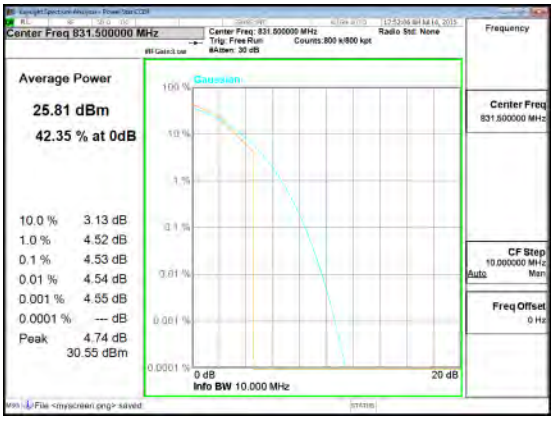
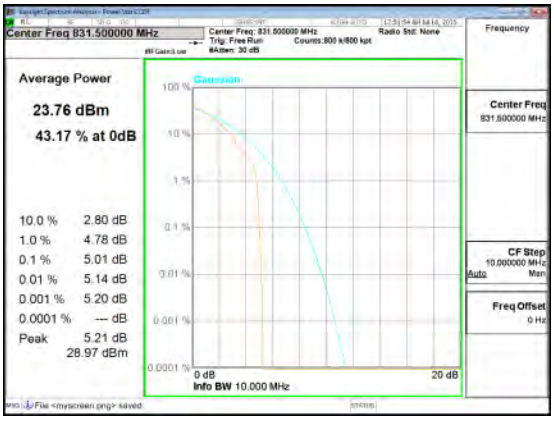
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

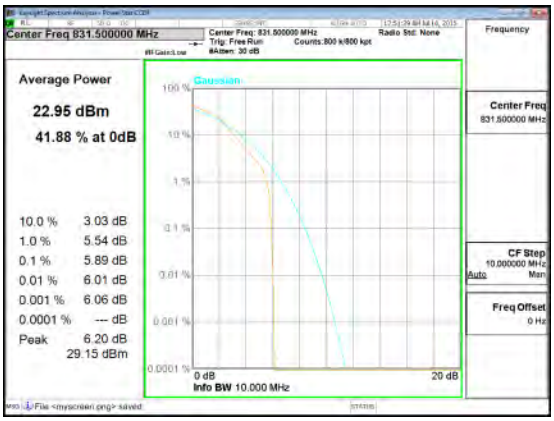
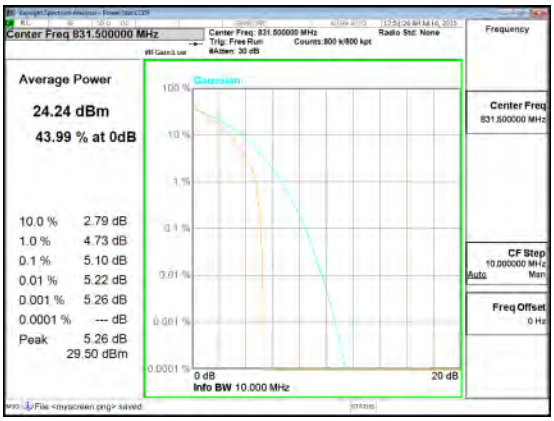
LTE Band 26

Band LTE26 15MHz 16QAM	 Band LTE26 15MHz 16QAM Mid channel	 Band LTE26 15MHz QPSK Mid channel

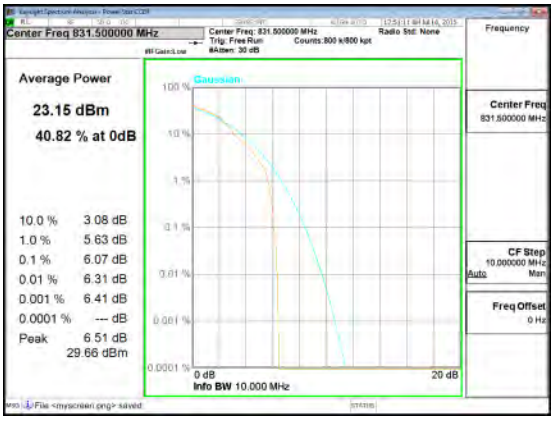
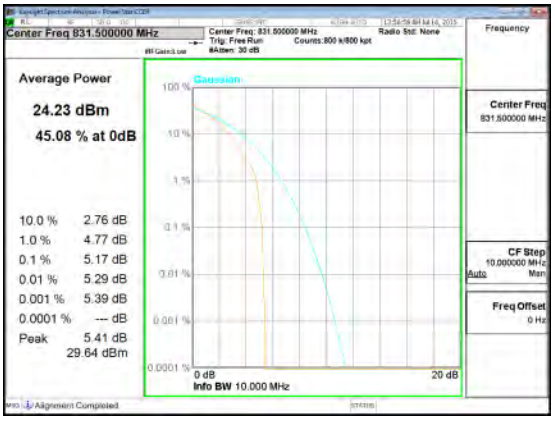
Band LTE26 10MHz 16QAM	 Band LTE26 10MHz 16QAM Mid channel	 Band LTE26 10MHz QPSK Mid channel

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE26 5MHz 16QAM	 Band LTE26 5MHz 16QAM Mid channel	 Band LTE26 5MHz QPSK Mid channel

Band LTE26 3MHz 16QAM	 Band LTE26 3MHz 16QAM Mid channel	 Band LTE26 3MHz QPSK Mid channel

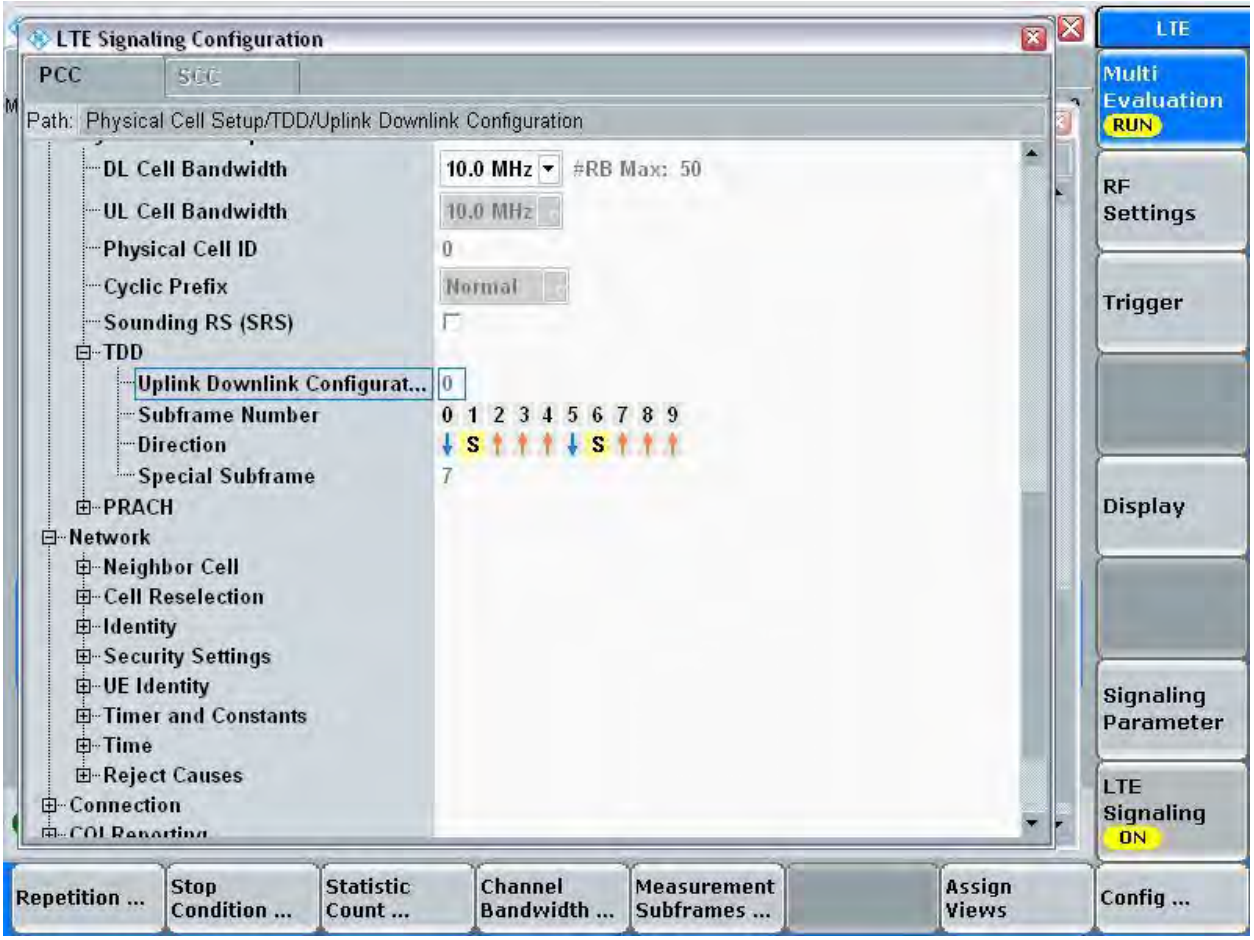
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE26 1.4MHz 16QAM	 Band LTE26 1.4MHz 16QAM Mid channel	 Band LTE26 1.4MHz QPSK Mid channel

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 41

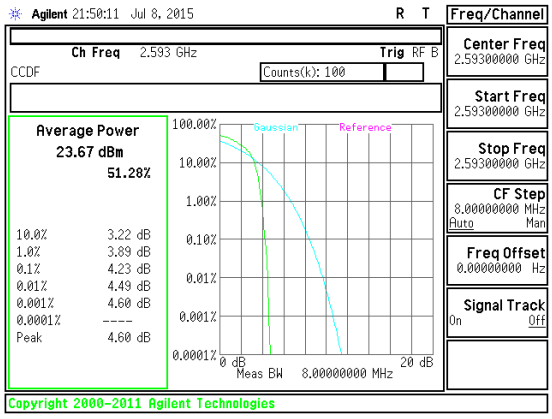
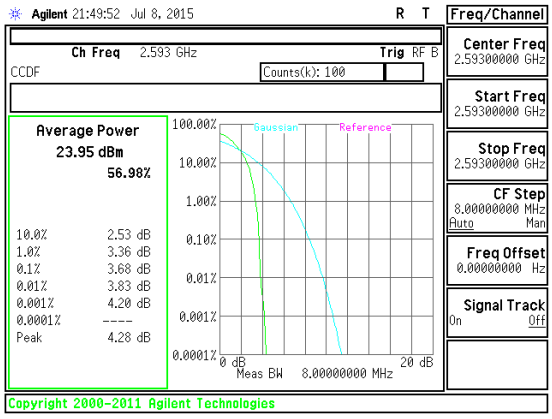
Sub frame setting:

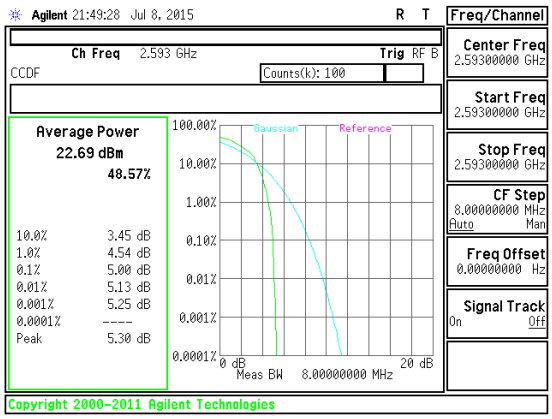
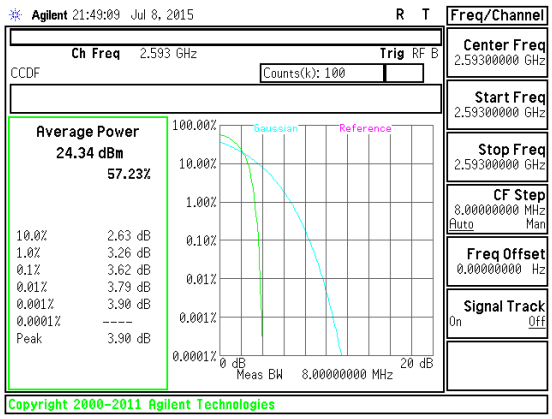


So average reading need apply 4.44dB duty cycle factor (20log (6/10)).

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE41 20MHz 16QAM	 Band LTE41 20MHz 16QAM Mid channel	 Band LTE41 20MHz QPSK Mid channel

Band LTE41 15MHz 16QAM	 Band LTE41 15MHz 16QAM Mid channel	 Band LTE41 15MHz QPSK Mid channel

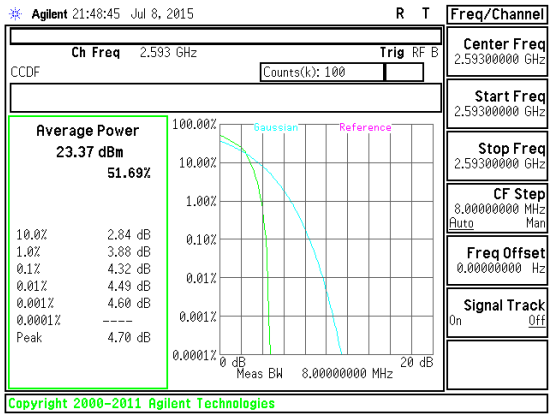
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band

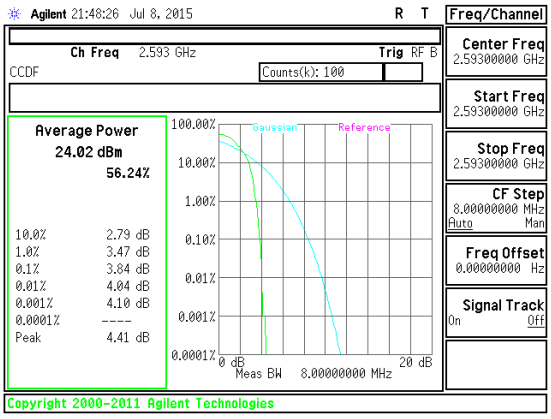
LTE41

10MHz

16QAM



Band LTE41 10MHz 16QAM Mid channel



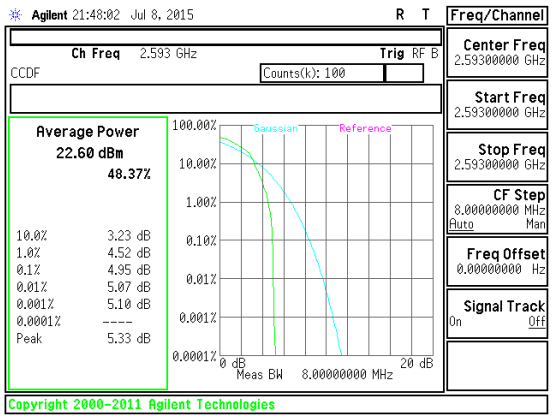
Band LTE41 10MHz QPSK Mid channel

Band

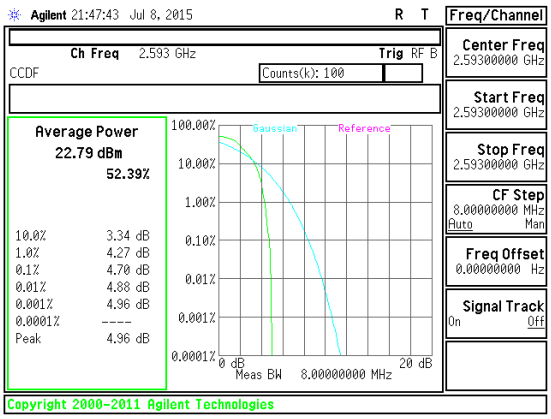
LTE41

5MHz

16QAM



Band LTE41 5MHz 16QAM Mid channel



Band LTE41 5MHz QPSK Mid channel

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

10. LIMITS AND CONDUCTED RESULTS

10.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

IC: RSS-132, 4.5; RSS-133, 6.5

LIMITS

For reporting purposes only

TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

(KDB 971168 D01 Power Meas License Digital Systems v02r02)

MODES TESTED

GSM, WCDMA, and LTE

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

10.1.1. OCCUPIED BANDWIDTH RESULTS

GSM

Band	Mode	Channel	f (MHz)	99% BW (kHz)	-26dB (kHz)
GSM 850	GPRS	128	824.2	243.6	310.9
		190	836.6	249.7	315.1
		251	848.8	242.9	312.8
	EGPRS	128	824.2	226.9	282
		190	836.6	244.9	312.6
		251	848.8	234.7	296.6
GSM 1900	GPRS	512	1850.2	246.0	319.1
		661	1880	242.5	314.7
		810	1909.8	244.9	318.0
	EGPRS	512	1850.2	246.0	319.0
		661	1880	238.3	314.1
		810	1909.8	245.2	308.2

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

WCDMA

Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB (MHz)
Band 5	REL99	4132	826.4	4.137	4.698
		4183	836.6	4.138	4.686
		4233	846.6	4.124	4.700
	HSDPA	4132	826.4	4.148	4.690
		4183	836.6	4.148	4.691
		4233	846.6	4.142	4.700
Band 4	REL99	9262	1712.4	4.141	4.711
		9400	1732.6	4.131	4.709
		9538	1752.6	4.143	4.703
	HSDPA	9262	1712.4	4.168	4.698
		9400	1732.6	4.137	4.705
		9538	1752.6	4.155	4.686
Band 2	REL99	9262	1852.4	4.151	4.710
		9400	1880	4.148	4.696
		9538	1907.6	4.149	4.690
	HSDPA	9262	1852.4	4.157	4.687
		9400	1880	4.155	4.688
		9538	1907.6	4.163	4.708

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

10.1.2. LTE OCCUPIED BANDWIDTH RESULTS

LTE Band 2

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE2	20	16QAM	100/0	1860	17.933	19.315
			100/0	1880	17.915	19.297
			100/0	1900	17.929	19.455
		QPSK	100/0	1860	17.936	19.438
			100/0	1880	17.931	19.398
			100/0	1900	17.943	19.567
	15	16QAM	75/0	1857.5	13.459	14.563
			75/0	1880	13.440	14.582
			75/0	1902.5	13.439	14.598
		QPSK	75/0	1857.5	13.457	14.590
			75/0	1880	13.459	14.596
			75/0	1902.5	13.453	14.663
	10	16QAM	50/0	1855	8.957	9.806
			50/0	1880	8.954	9.720
			50/0	1905	8.986	9.762
		QPSK	50/0	1855	8.972	9.724
			50/0	1880	8.979	9.707
			50/0	1905	8.966	9.727
	5	16QAM	25/0	1852.5	4.497	4.979
			25/0	1880	4.488	4.932
			25/0	1907.5	4.483	4.896
		QPSK	25/0	1852.5	4.507	4.957
			25/0	1880	4.497	4.927
			25/0	1907.5	4.485	4.923

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE2	3	16QAM	15/0	1851.5	2.700	2.975
			15/0	1880	2.697	2.996
			15/0	1908.5	2.695	3.005
		QPSK	15/0	1851.5	2.698	2.985
			15/0	1880	2.696	2.997
			15/0	1908.5	2.705	3.003
	1.4	16QAM	6/0	1850.7	1.083	1.235
			6/0	1880	1.085	1.237
			6/0	1909.3	1.094	1.241
		QPSK	6/0	1850.7	1.086	1.229
			6/0	1880	1.081	1.229
			6/0	1909.3	1.085	1.229

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 4

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	20	16QAM	100/0	1720	17.916	19.354
			100/0	1732.5	17.898	19.436
			100/0	1745	17.930	19.315
		QPSK	100/0	1720	17.931	19.373
			100/0	1732.5	17.934	19.453
			100/0	1745	17.955	19.413
	15	16QAM	75/0	1717.5	13.439	14.507
			75/0	1732.5	13.434	14.549
			75/0	1747.5	13.450	14.627
		QPSK	75/0	1717.5	13.449	14.593
			75/0	1732.5	13.439	14.645
			75/0	1747.5	13.478	14.609
	10	16QAM	50/0	1715	8.994	9.781
			50/0	1732.5	8.959	9.753
			50/0	1750	8.967	9.746
		QPSK	50/0	1715	8.962	9.837
			50/0	1732.5	8.954	9.753
			50/0	1750	8.995	9.817
	5	16QAM	25/0	1712.5	4.487	4.938
			25/0	1732.5	4.481	4.915
			25/0	1752.5	4.501	4.958
		QPSK	25/0	1712.5	4.499	4.938
			25/0	1732.5	4.486	4.930
			25/0	1752.5	4.508	4.961

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	3	16QAM	15/0	1711.5	2.705	3.007
			15/0	1732.5	2.698	2.998
			15/0	1753.5	2.696	3.007
		QPSK	15/0	1711.5	2.694	2.984
			15/0	1732.5	2.697	2.980
			15/0	1753.5	2.704	2.993
	1.4	16QAM	6/0	1710.7	1.083	1.237
			6/0	1732.5	1.084	1.235
			6/0	1754.3	1.093	1.239
		QPSK	6/0	1710.7	1.087	1.239
			6/0	1732.5	1.081	1.228
			6/0	1754.3	1.085	1.230

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 5

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	10	16QAM	50/0	829	8.981	9.739
			50/0	836.5	8.946	9.745
			50/0	844	8.976	9.741
		QPSK	50/0	829	8.973	9.801
			50/0	836.5	8.965	9.696
			50/0	844	8.949	9.761
	5	16QAM	25/0	826.5	4.502	4.975
			25/0	836.5	4.488	4.937
			25/0	846.5	4.482	4.913
		QPSK	25/0	826.5	4.509	4.967
			25/0	836.5	4.492	4.928
			25/0	846.5	4.480	4.917
	3	16QAM	15/0	825.5	2.701	2.992
			15/0	836.5	2.699	2.994
			15/0	847.5	2.694	3.003
		QPSK	15/0	825.5	2.698	2.978
			15/0	836.5	2.699	2.994
			15/0	847.5	2.705	2.990
	1.4	16QAM	6/0	824.7	1.083	1.235
			6/0	836.5	1.084	1.232
			6/0	848.3	1.094	1.240
		QPSK	6/0	824.7	1.086	1.229
			6/0	836.5	1.080	1.226
			6/0	848.3	1.085	1.230

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 7

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE7	20	16QAM	100/0	2510	17.82	19.11
			100/0	2535	17.79	19.08
			100/0	2560	17.81	19.03
		QPSK	100/0	2510	17.81	19.04
			100/0	2535	17.85	19.10
			100/0	2560	17.82	19.05
	15	16QAM	75/0	2507.5	13.37	14.36
			75/0	2535	13.34	14.43
			75/0	2562.5	13.35	14.33
		QPSK	75/0	2507.5	13.40	14.37
			75/0	2535	13.36	14.44
			75/0	2562.5	13.40	14.51
	10	16QAM	50/0	2505	8.98	9.727
			50/0	2535	8.931	9.654
			50/0	2565	8.931	9.577
		QPSK	50/0	2505	8.952	9.646
			50/0	2535	8.962	9.62
			50/0	2565	8.951	9.576
	5	16QAM	25/0	2502.5	4.501	4.918
			25/0	2535	4.492	4.936
			25/0	2567.5	4.51	4.961
		QPSK	25/0	2502.5	4.491	4.926
			25/0	2535	4.498	4.948
			25/0	2567.5	4.508	4.917

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 17

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE17	10	16QAM	50/0	709	8.967	9.792
			50/0	710	8.944	9.707
			50/0	711	8.962	9.738
		QPSK	50/0	709	8.960	9.799
			50/0	710	8.962	9.694
			50/0	711	8.954	9.808
	5	16QAM	25/0	706.5	4.492	4.945
			25/0	710	4.483	4.914
			25/0	713.5	4.499	4.960
		QPSK	25/0	706.5	4.500	4.926
			25/0	710	4.482	4.930
			25/0	713.5	4.501	4.955

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 26

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE26	15	16QAM	75/0	831.5	13.442	14.66
			75/0	836.5	13.428	14.49
			75/0	841.5	13.438	14.63
		QPSK	75/0	831.5	13.463	14.63
			75/0	836.5	13.412	14.57
			75/0	841.5	13.445	14.66
	10	16QAM	50/0	819	8.971	9.796
			50/0	831.5	8.954	9.697
			50/0	844	8.984	9.743
		QPSK	50/0	819	8.971	9.777
			50/0	831.5	8.987	9.750
			50/0	844	8.958	9.770
	5	16QAM	25/0	816.5	4.503	4.966
			25/0	831.5	4.495	4.946
			25/0	846.5	4.481	4.914
		QPSK	25/0	816.5	4.505	4.971
			25/0	831.5	4.498	4.924
			25/0	846.5	4.484	4.918
	3	16QAM	15/0	815.5	2.706	3.006
			15/0	831.5	2.698	2.997
			15/0	847.5	2.696	3.016
		QPSK	15/0	815.5	2.698	2.983
			15/0	831.5	2.699	3.002
			15/0	847.5	2.700	2.995
	1.4	16QAM	6/0	814.7	1.085	1.241
			6/0	831.5	1.085	1.236
			6/0	848.3	1.096	1.246
		QPSK	6/0	814.7	1.088	1.235
			6/0	831.5	1.082	1.231
			6/0	848.3	1.084	1.232

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

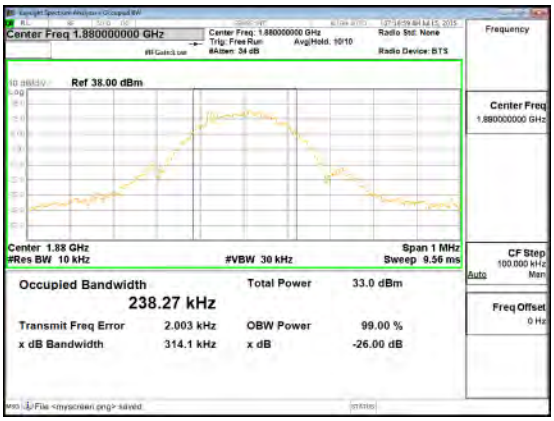
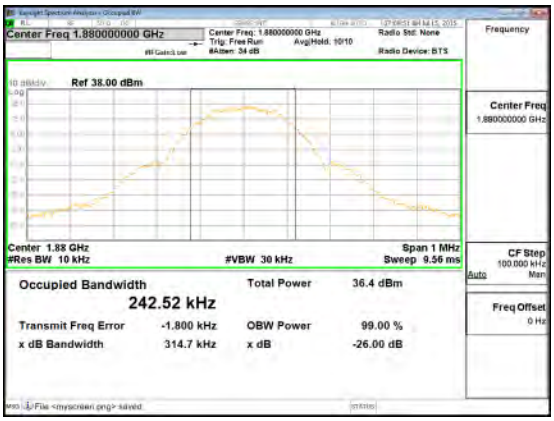
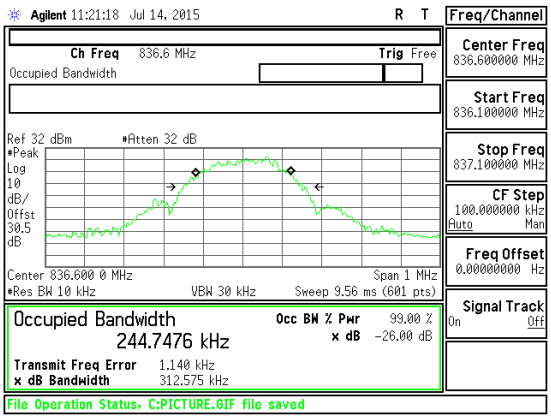
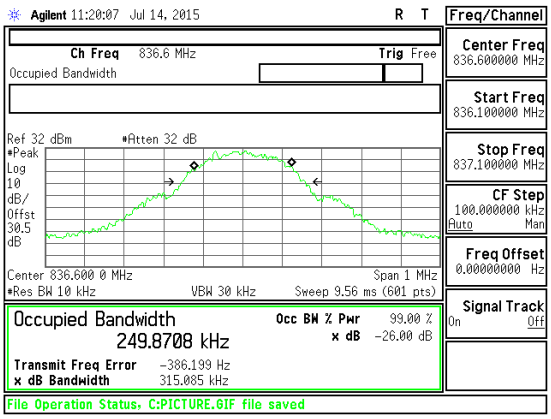
LTE Band 41

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE41	20	16QAM	100/0	2506	17.87	19.14
			100/0	2593	17.86	19.55
			100/0	2680	17.86	19.19
		QPSK	100/0	2506	17.91	19.07
			100/0	2593	17.88	18.90
			100/0	2680	17.82	19.17
	15	16QAM	75/0	2503.5	13.40	14.42
			75/0	2593	13.41	15.04
			75/0	2682.5	13.41	14.21
		QPSK	75/0	2503.5	13.45	14.47
			75/0	2593	13.42	15.08
			75/0	2682.5	13.41	14.69
	10	16QAM	50/0	2501	8.923	9.583
			50/0	2593	8.956	9.565
			50/0	2685	8.946	9.771
		QPSK	50/0	2501	8.952	9.582
			50/0	2593	8.916	9.670
			50/0	2685	8.980	9.590
	5	16QAM	25/0	2498.5	4.470	4.940
			25/0	2593	4.493	4.914
			25/0	2687.5	4.493	4.923
		QPSK	25/0	2498.5	4.487	4.834
			25/0	2593	4.479	4.876
			25/0	2687.5	4.499	4.845

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

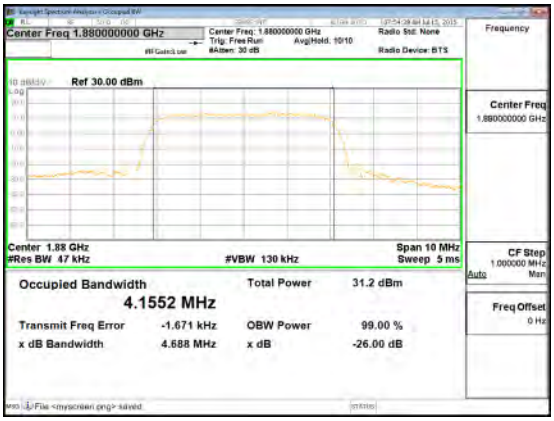
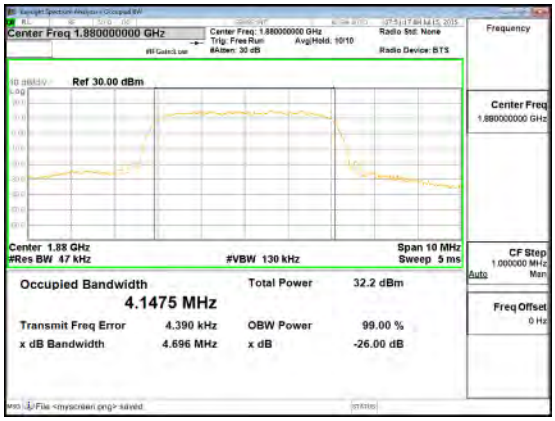
10.1.3. OCCUPIED BANDWIDTH PLOTS

GSM

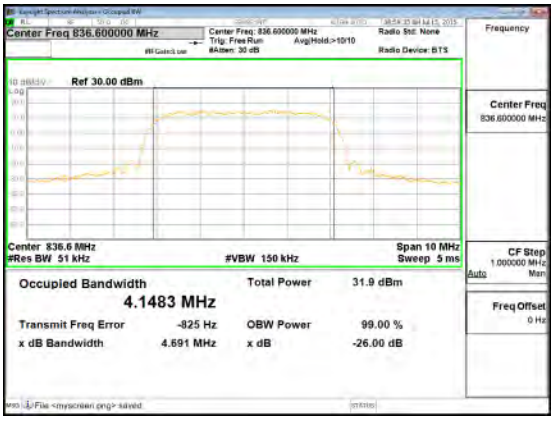
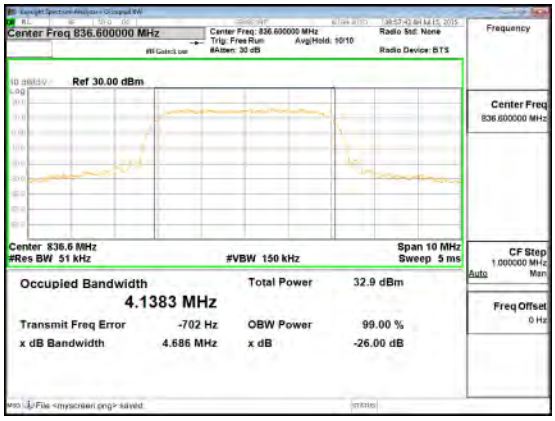
Band GSM 1900 EGPRS	 Band GSM1900 EGPRS OBW Mid channel	 Band GSM1900 GPRS OBW Mid channel
Band GSM 850 EGPRS	 Band GSM850 EGPRS OBW Mid channel	 Band GSM850 GPRS OBW Mid channel

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

WCDMA

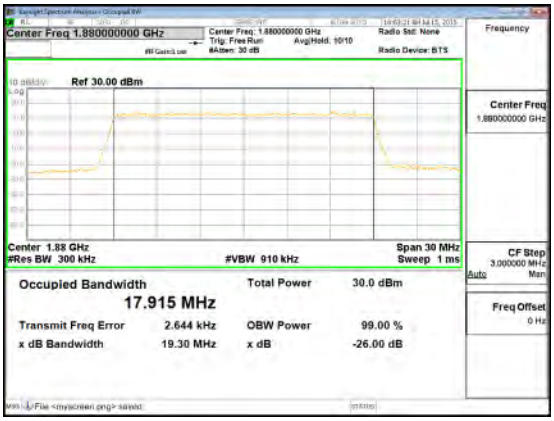
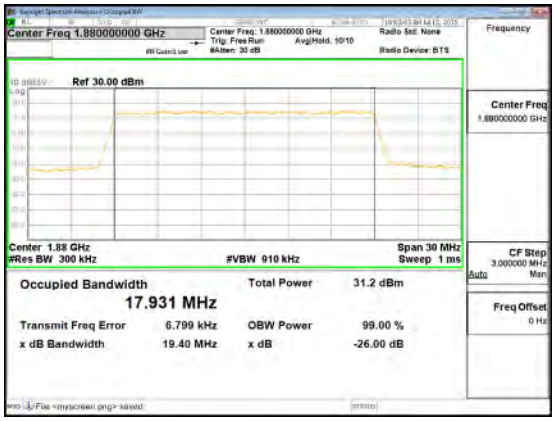
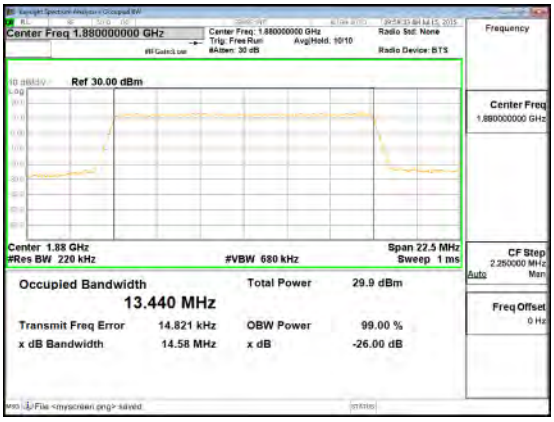
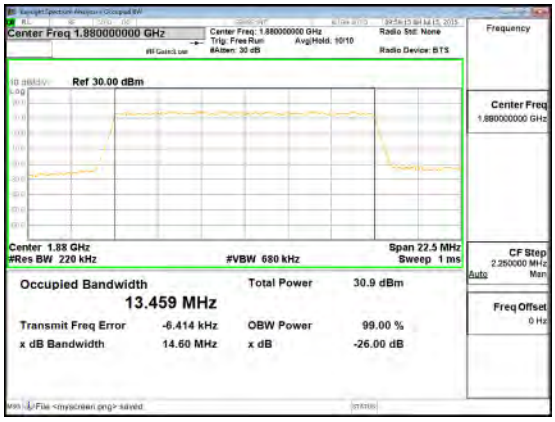
Band		
Band 2 HSDPA	 Band WCDMA B2 HSDPA OBW	 Band WCDMA B2 REL99 OBW
Band 4 HSDPA	 Band WCDMA B4 HSDPA OBW	 Band WCDMA B4 REL99 OBW

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

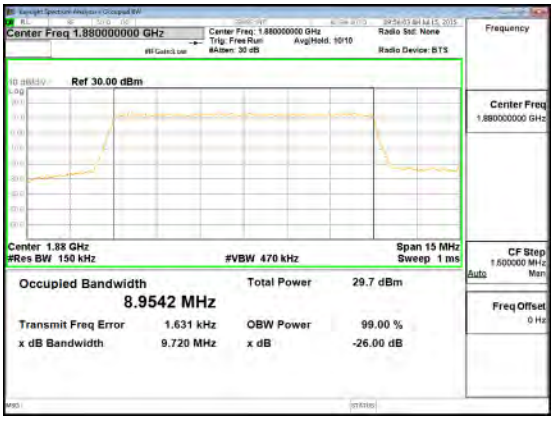
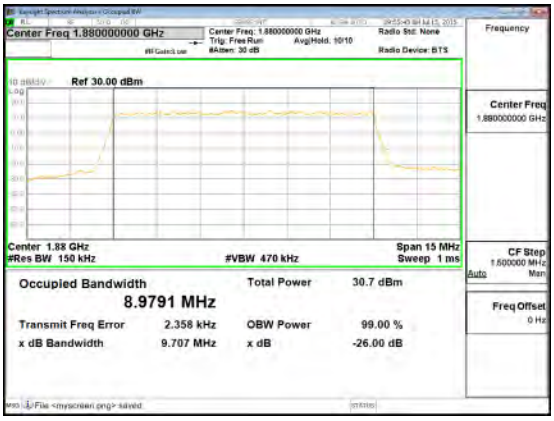
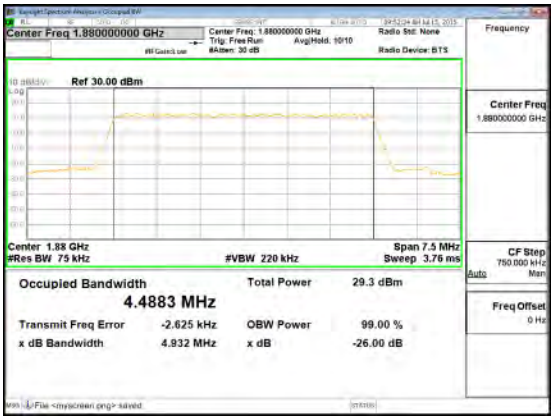
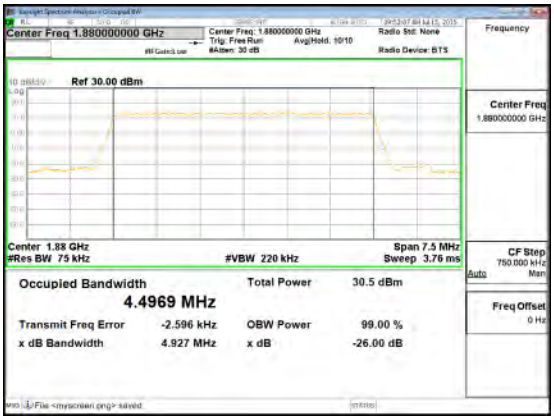
Band Band 5 HSDPA	 Band WCDMA B5 HSDPA OBW	 Band WCDMA B5 REL99 OBW

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

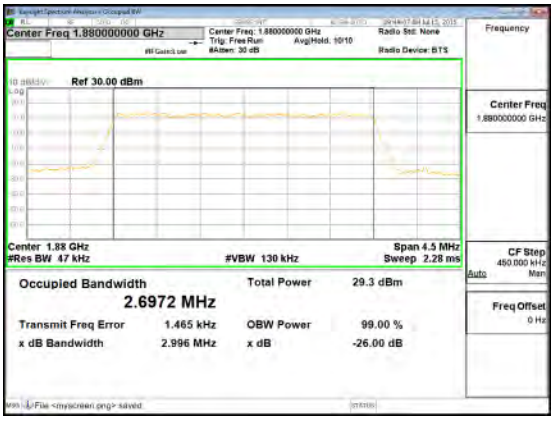
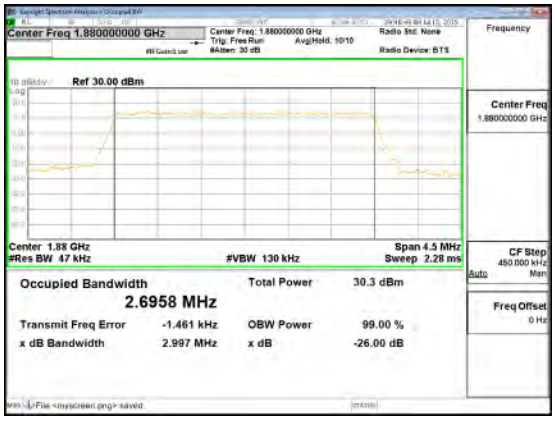
LTE Band 2

Band LTE2 20MHz 16QAM	 Band LTE2 20MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 20MHz OBW QPSK Mid Channel FRB.gif
Band LTE2 15MHz 16QAM	 Band LTE2 15MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 15MHz OBW QPSK Mid Channel FRB.gif

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

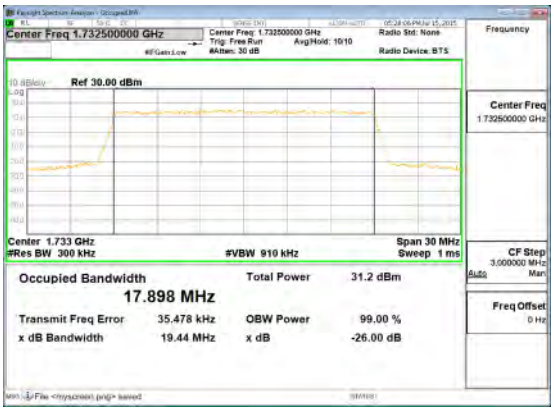
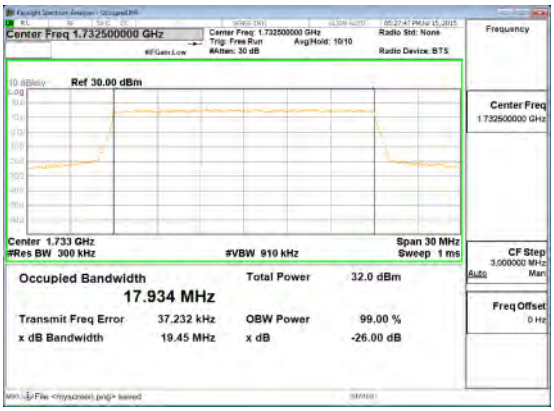
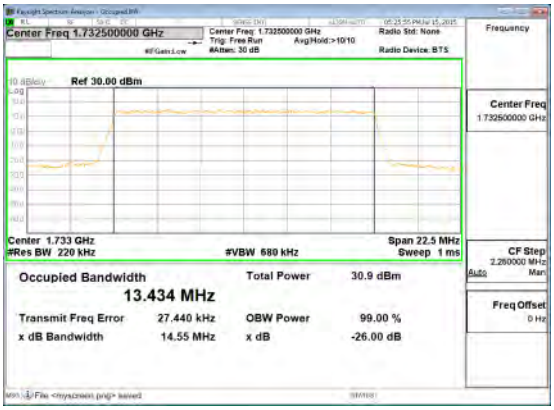
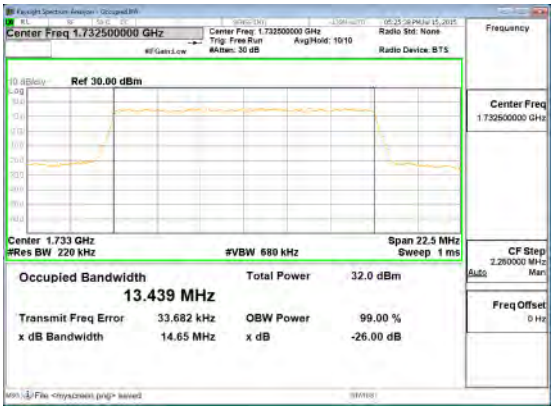
Band LTE2 10MHz 16QAM	 Band LTE2 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 10MHz OBW QPSK Mid Channel FRB.gif
Band LTE2 5MHz 16QAM	 Band LTE2 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 5MHz OBW QPSK Mid Channel FRB.gif

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

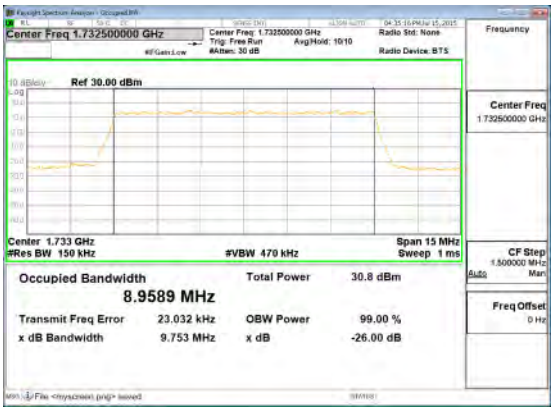
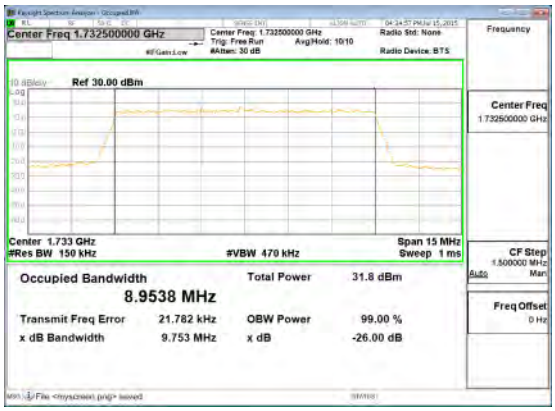
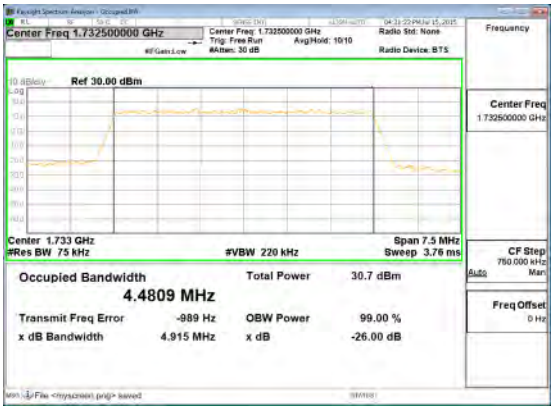
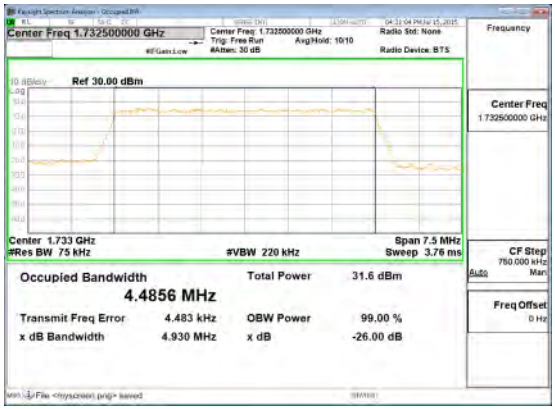
Band LTE2 3MHz 16QAM	 Band LTE2 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 3MHz OBW QPSK Mid Channel FRB.gif
Band LTE2 1.4MHz 16QAM	 Band LTE2 1.4MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 1.4MHz OBW QPSK Mid Channel FRB.gif

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

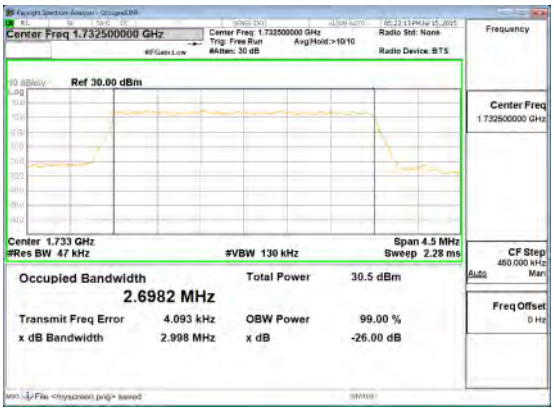
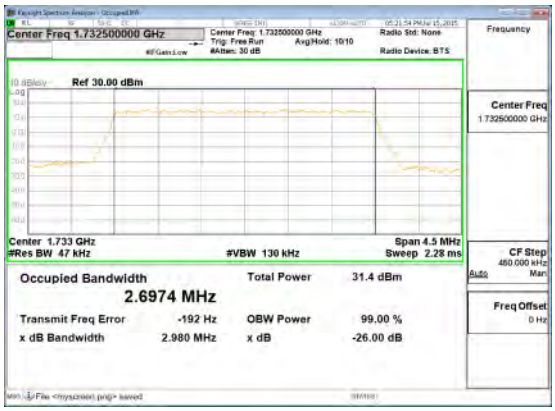
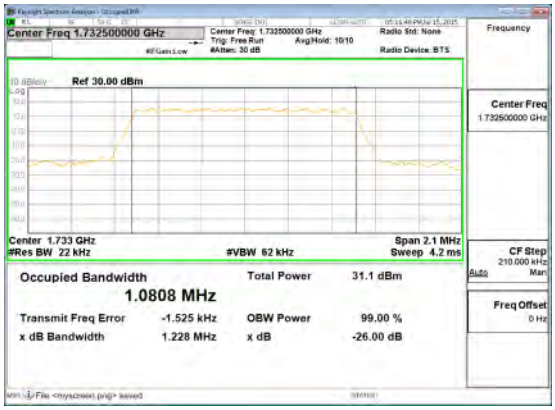
LTE Band 4

Band LTE4 20MHz 16QAM	 Band LTE4 20MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 20MHz OBW QPSK Mid Channel FRB.gif
Band LTE4 15MHz 16QAM	 Band LTE4 15MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 15MHz OBW QPSK Mid Channel FRB.gif

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

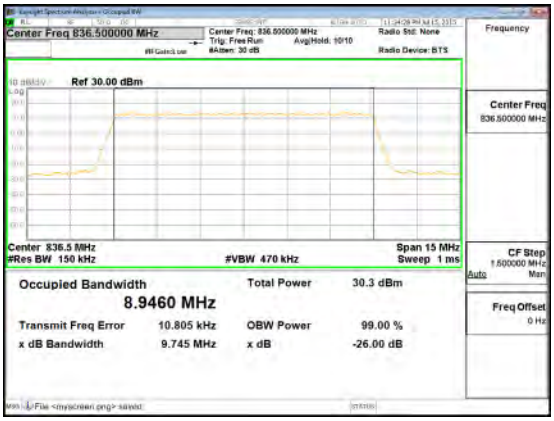
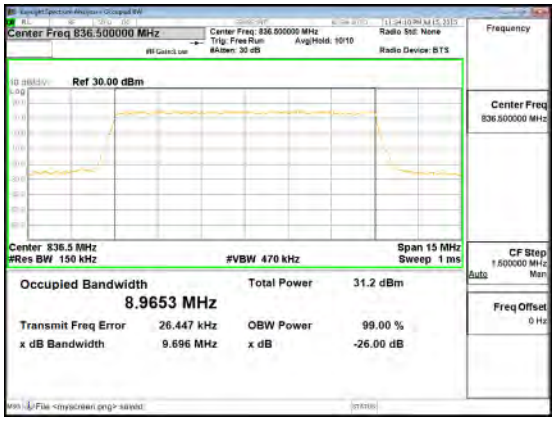
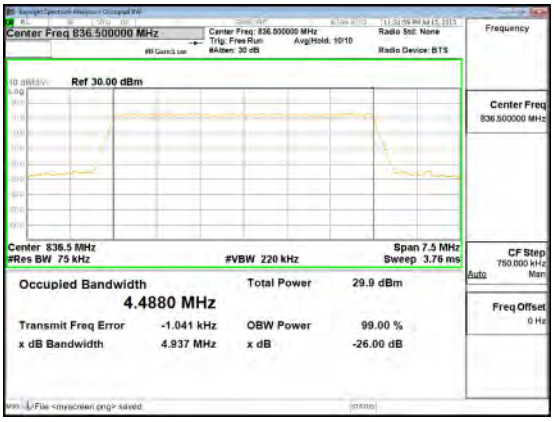
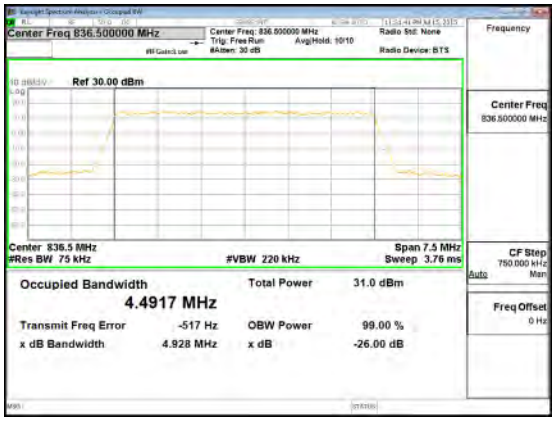
Band LTE4 10MHz 16QAM	 Band LTE4 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 10MHz OBW QPSK Mid Channel FRB.gif
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 5MHz OBW QPSK Mid Channel FRB.gif

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

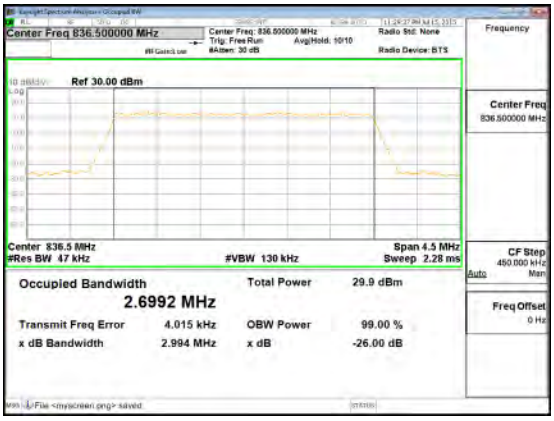
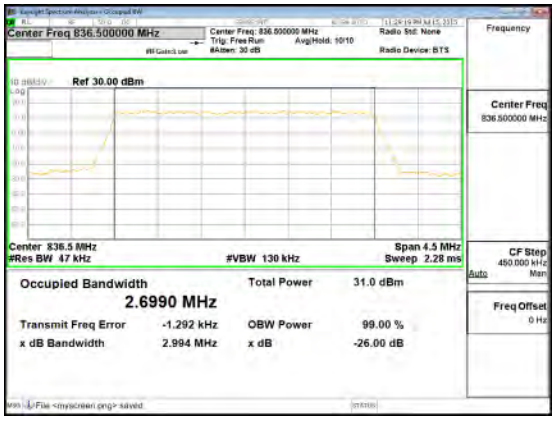
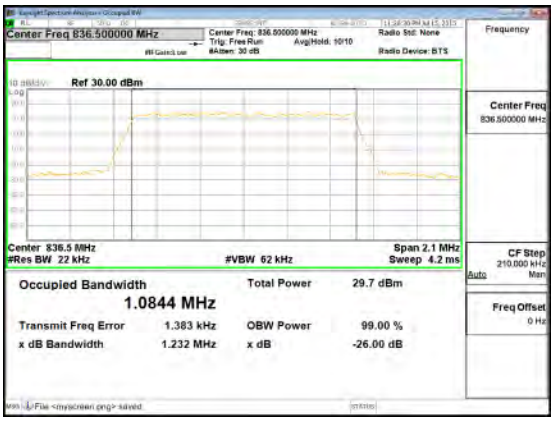
Band LTE4 3MHz 16QAM	 Band LTE4 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 3MHz OBW QPSK Mid Channel FRB.gif
Band LTE4 1.4MHz 16QAM	 Band LTE4 1.4MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 1.4MHz OBW QPSK Mid Channel FRB.gif

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 5

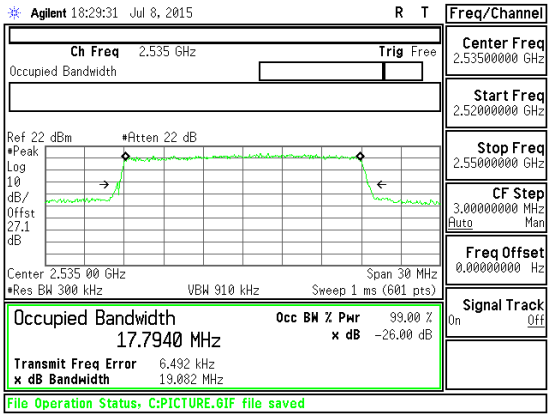
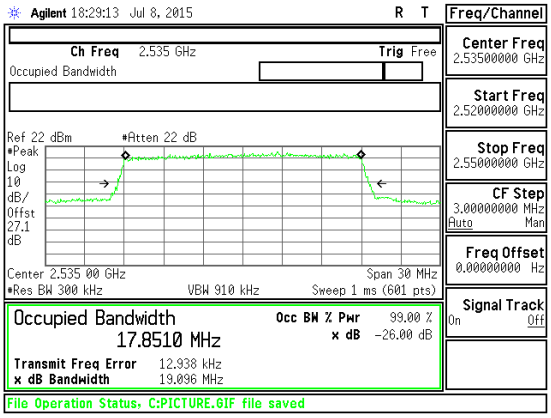
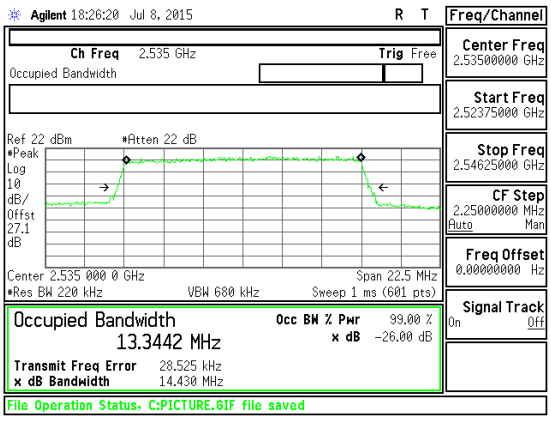
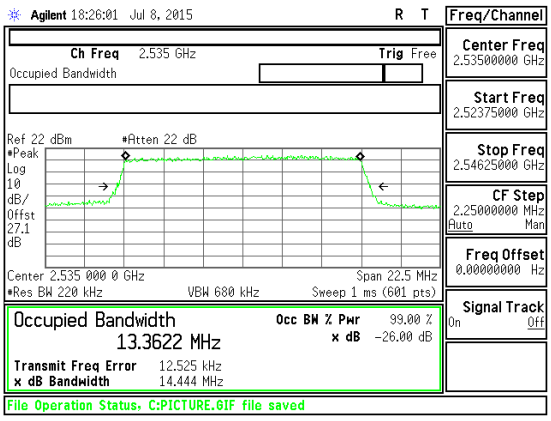
Band LTE5 10MHz 16QAM	 Band LTE5 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 10MHz OBW QPSK Mid Channel FRB.gif
Band LTE5 5MHz 16QAM	 Band LTE5 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 5MHz OBW QPSK Mid Channel FRB.gif

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE5 3MHz 16QAM	 Band LTE5 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 3MHz OBW QPSK Mid Channel FRB.gif
Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 1.4MHz OBW QPSK Mid Channel FRB.gif

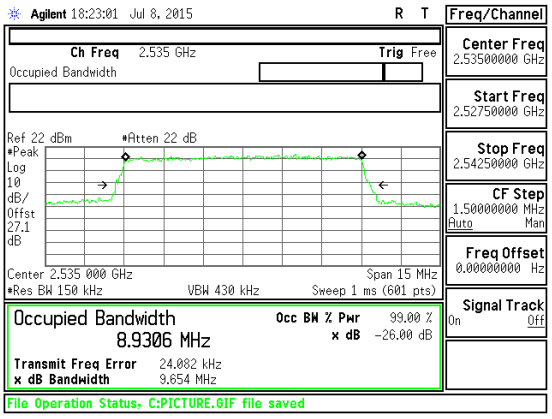
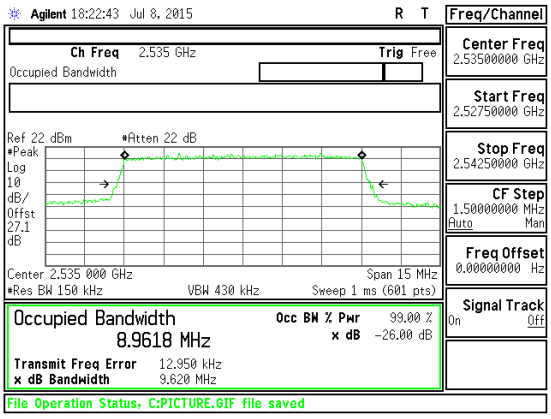
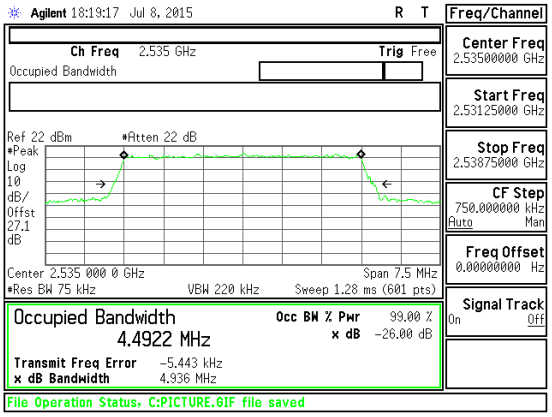
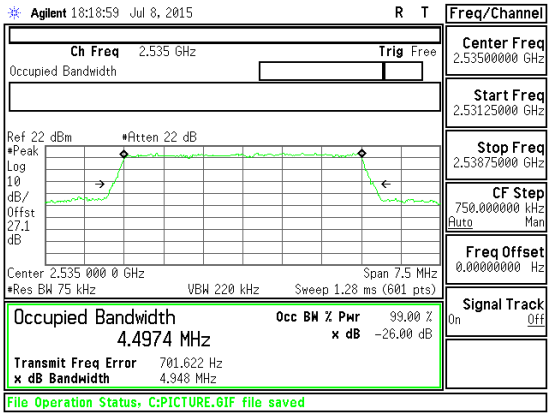
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 7

Band LTE7 20MHz 16QAM	 Band LTE7 20MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE7 20MHz OBW QPSK Mid Channel FRB.gif
Band LTE7 15MHz 16QAM	 Band LTE7 15MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE7 15MHz OBW QPSK Mid Channel FRB.gif

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

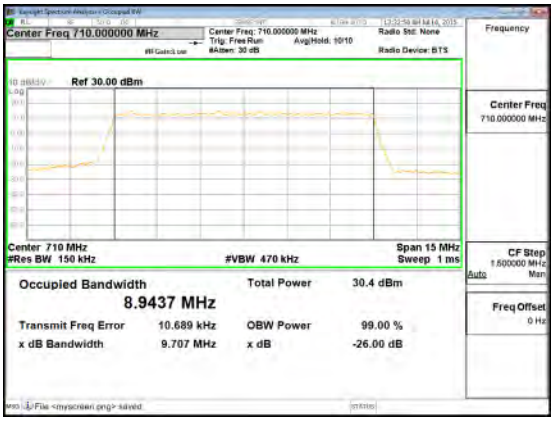
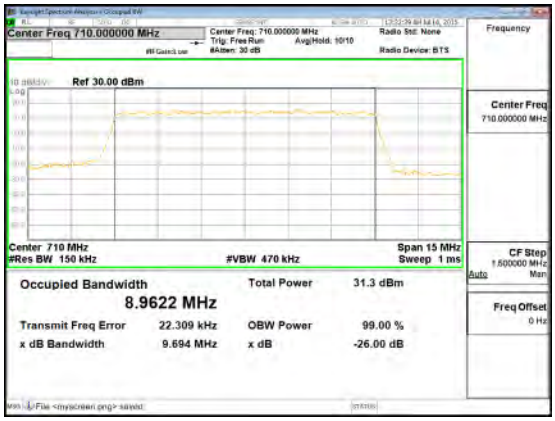
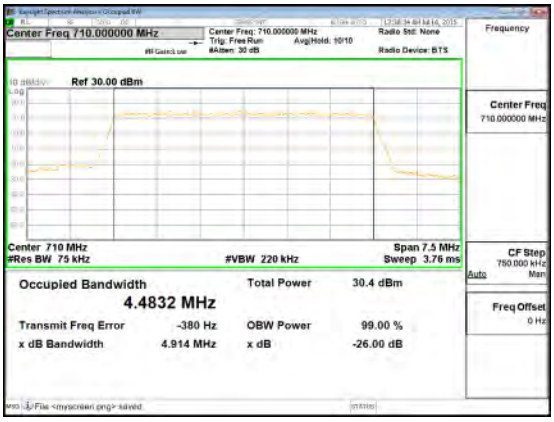
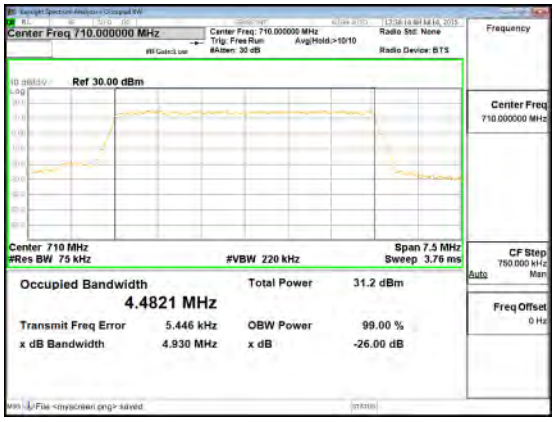
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE7 10MHz 16QAM	 Band LTE7 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE7 10MHz OBW QPSK Mid Channel FRB.gif
Band LTE7 5MHz 16QAM	 Band LTE7 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE7 5MHz OBW QPSK Mid Channel FRB.gif

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

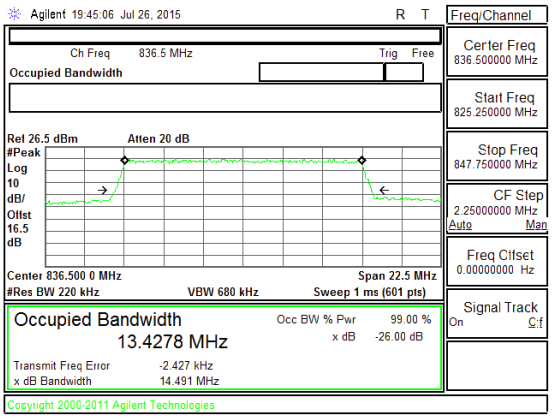
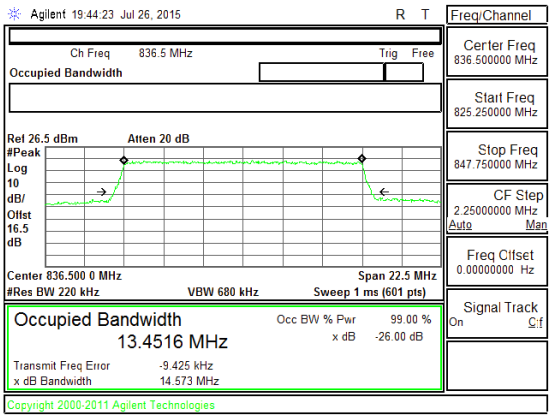
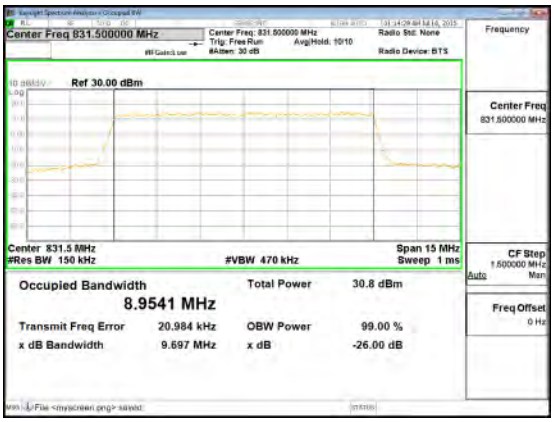
LTE Band 17

Band LTE17 10MHz 16QAM	 Band LTE17 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE17 10MHz OBW QPSK Mid Channel FRB.gif
Band LTE17 5MHz 16QAM	 Band LTE17 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE17 5MHz OBW QPSK Mid Channel FRB.gif

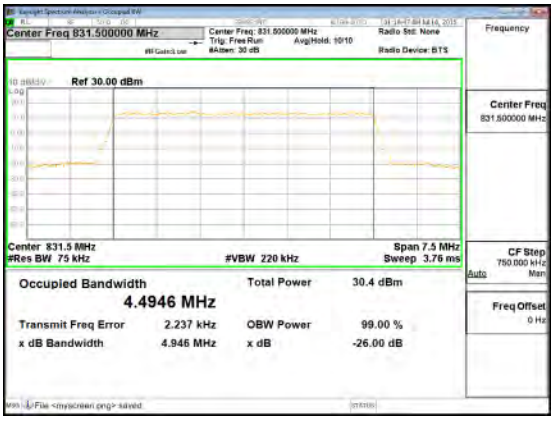
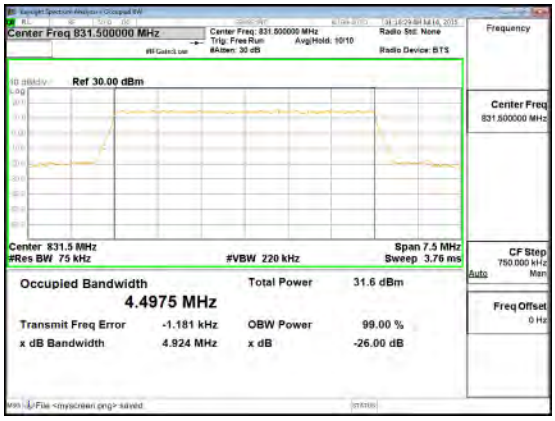
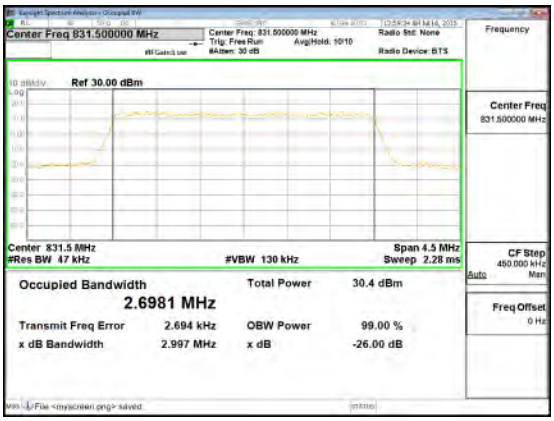
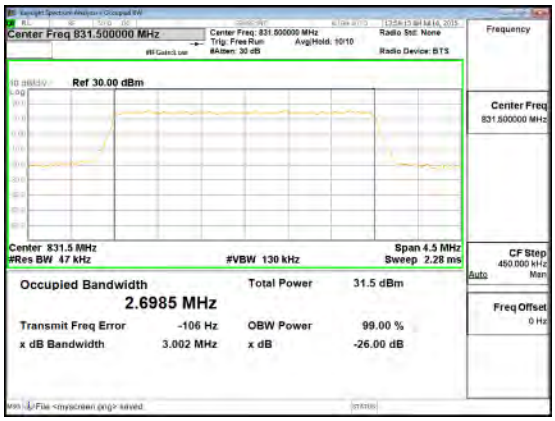
UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 26

Band LTE26 15MHz 16QAM	 Band LTE26 15MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE26 15MHz OBW QPSK Mid Channel FRB.gif
Band LTE26 10MHz 16QAM	 Band LTE26 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE26 10MHz OBW QPSK Mid Channel FRB.gif

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

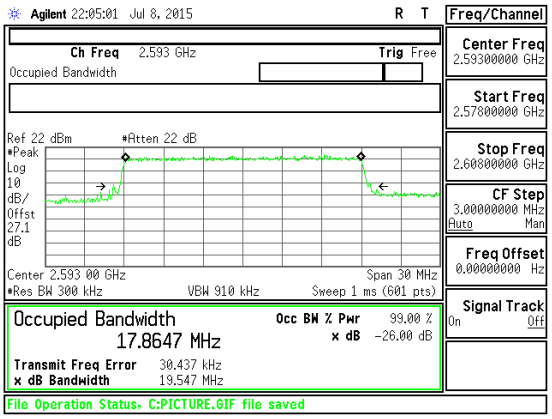
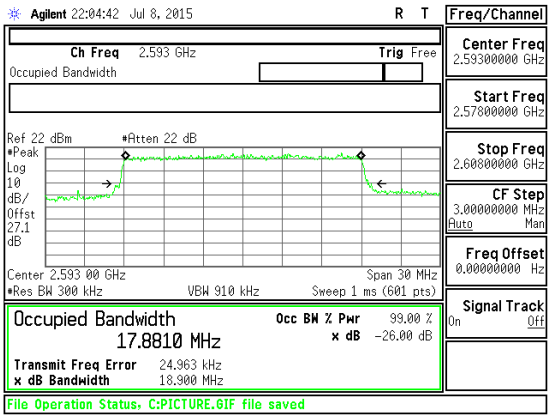
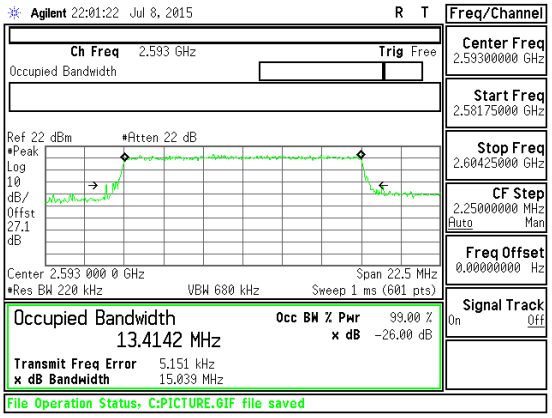
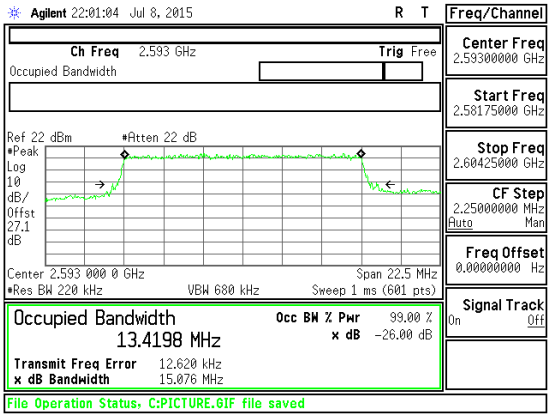
Band LTE26 5MHz 16QAM	 Band LTE26 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE26 5MHz OBW QPSK Mid Channel FRB.gif
Band LTE26 3MHz 16QAM	 Band LTE26 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE26 3MHz OBW QPSK Mid Channel FRB.gif

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE26 1.4MHz 16QAM	 Band LTE26 1.4MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE26 1.4MHz OBW QPSK Mid Channel FRB.gif

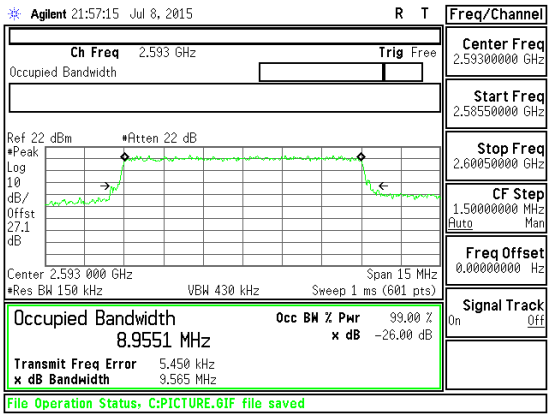
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

LTE Band 41

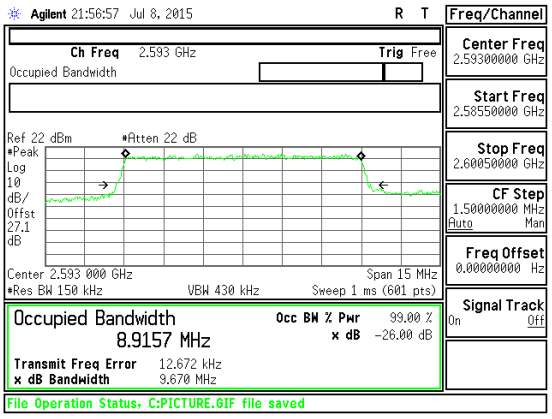
Band LTE41 20MHz 16QAM	 Band LTE41 20MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE41 20MHz OBW QPSK Mid Channel FRB.gif
Band LTE41 15MHz 16QAM	 Band LTE41 15MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE41 15MHz OBW QPSK Mid Channel FRB.gif

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE41 10MHz 16QAM

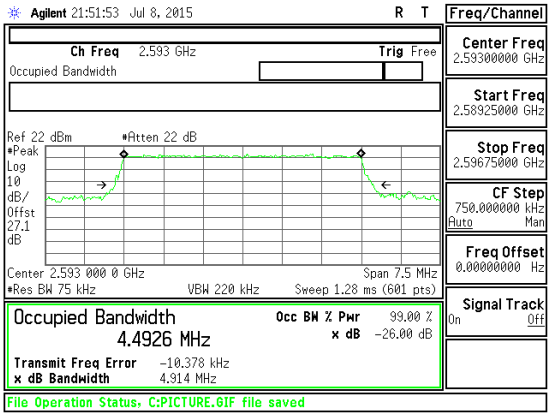


Band LTE41 10MHz OBW 16QAM Mid Channel FRB.gif

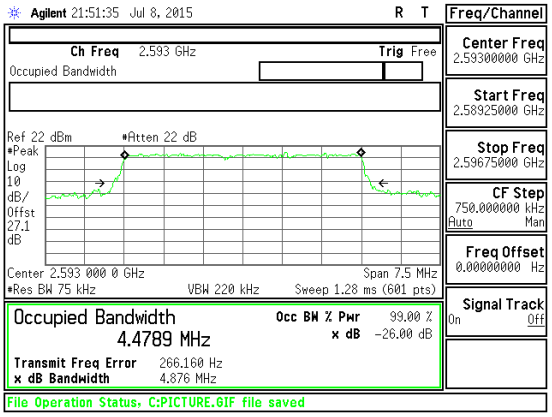


Band LTE41 10MHz OBW QPSK Mid Channel FRB.gif

Band LTE41 5MHz 16QAM



Band LTE41 5MHz OBW 16QAM Mid Channel FRB.gif



Band LTE41 5MHz OBW QPSK Mid Channel FRB.gif

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

10.2. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §24.238, §27. 53 and § 90.691

LIMITS

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

Part 27: (m)(4) (4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Part 90:
(a)(1)For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.
(a)(2)For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz. {NOTE: Use 100 kHz reference bandwidth.}

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02
The transmitter output was connected to an Agilent 8960 or a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

MODES TESTED

GSM, WCDMA, and LTE

RESULTS

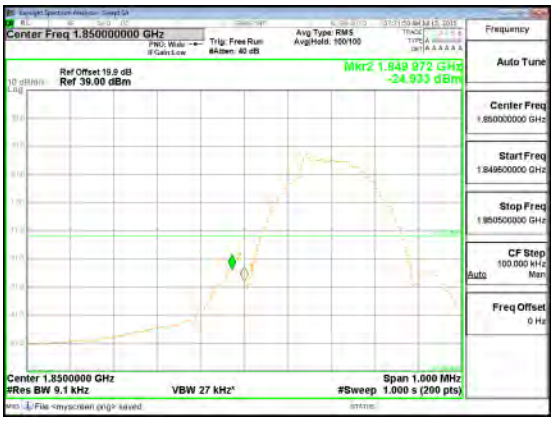
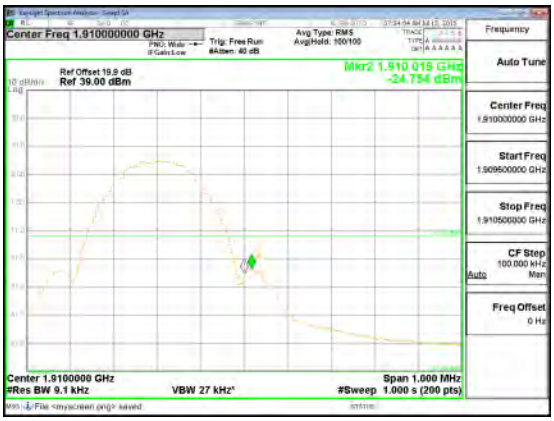
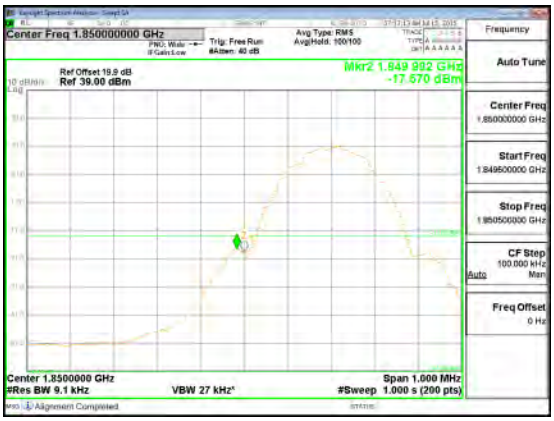
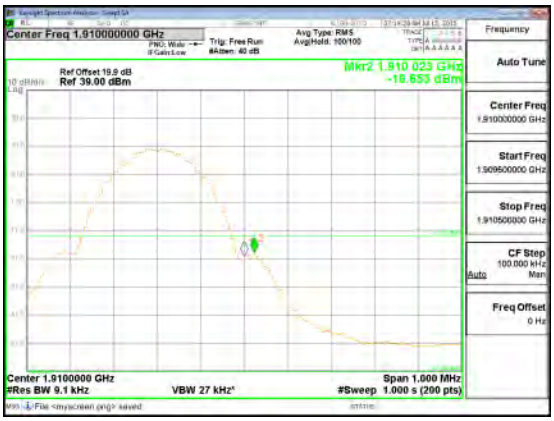
Note: GSM reading need add 9dB DCCF factor due to duty cycle is 12.5% during test.

LTE 41 Reading need apply 4.44dB duty cycle factor (20log (6/10)).

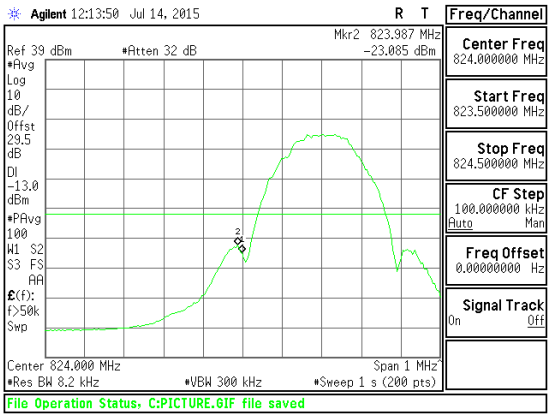
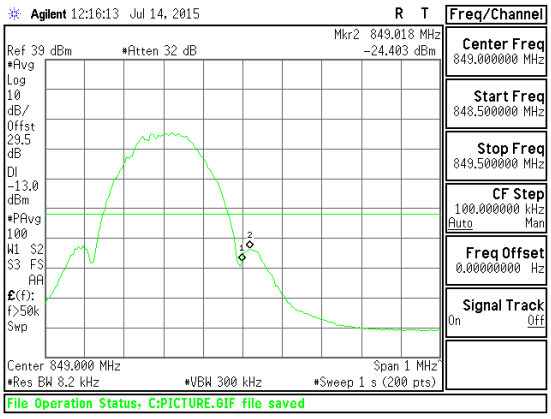
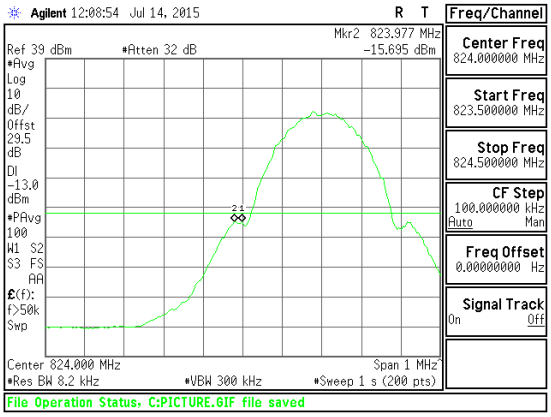
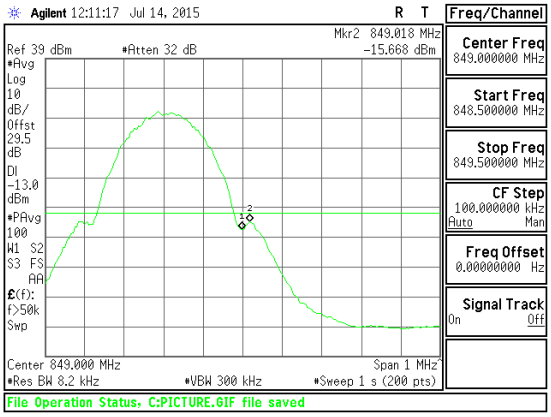
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

10.2.1. BAND EDGE PLOTS

GSM

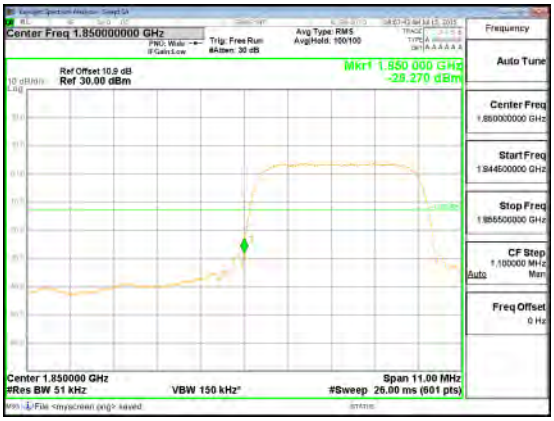
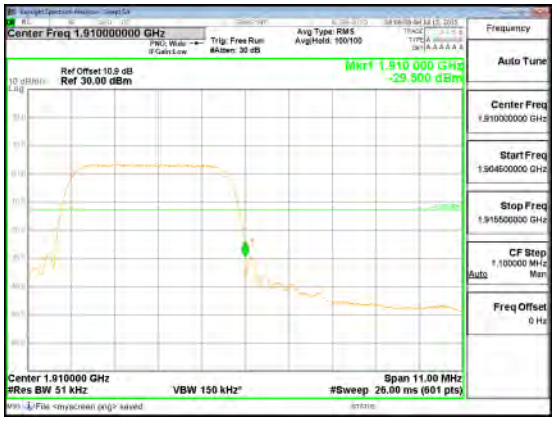
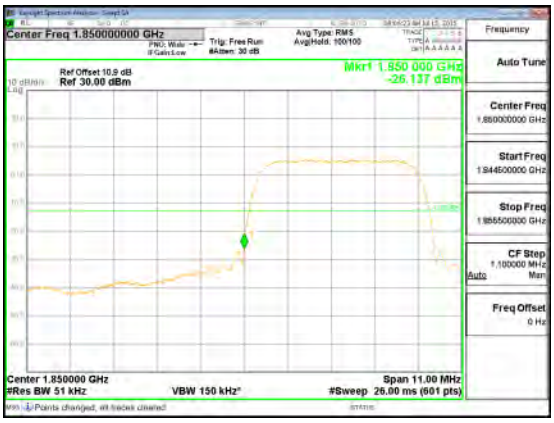
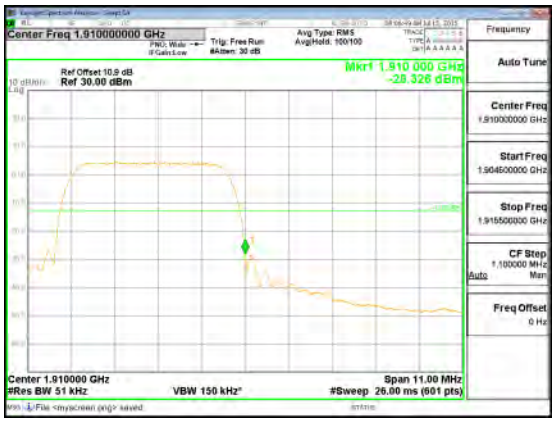
Band GSM 1900 EGPRS	 Band GSM1900 EGPRS CBE Low channel	 Band GSM1900 EGPRS CBE High channel
Band GSM 1900 GPRS	 Band GSM1900 GPRS CBE Low channel	 Band GSM1900 GPRS CBE High channel

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

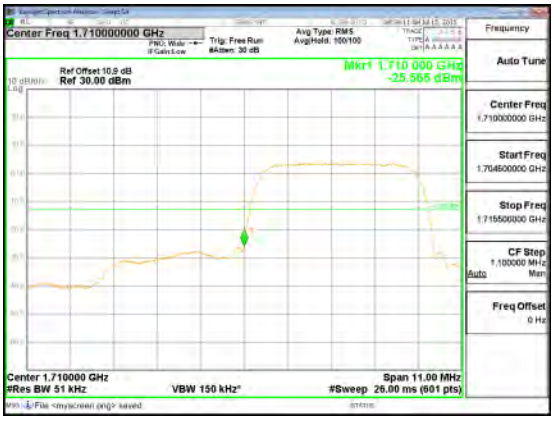
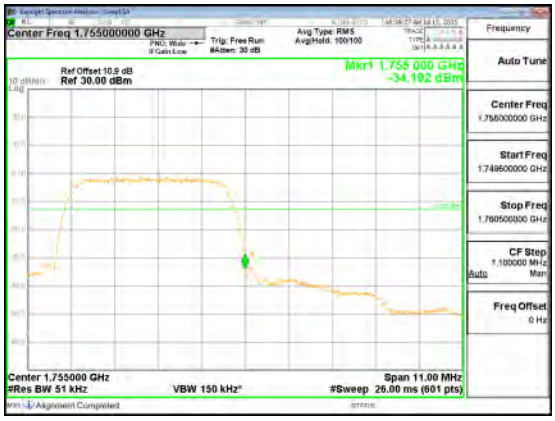
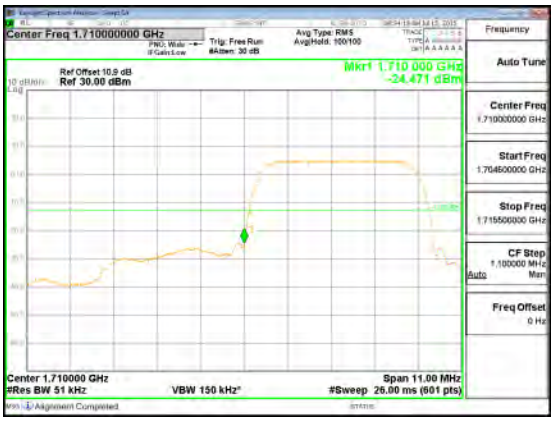
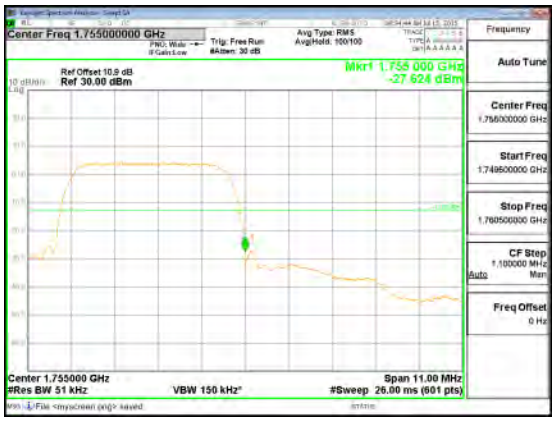
Band GSM 850 EGPRS	 Band GSM850 EGPRS CBE Low channel	 Band GSM850 EGPRS CBE High channel
Band GSM 850 GPRS	 Band GSM850 GPRS CBE Low channel	 Band GSM850 GPRS CBE High channel

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

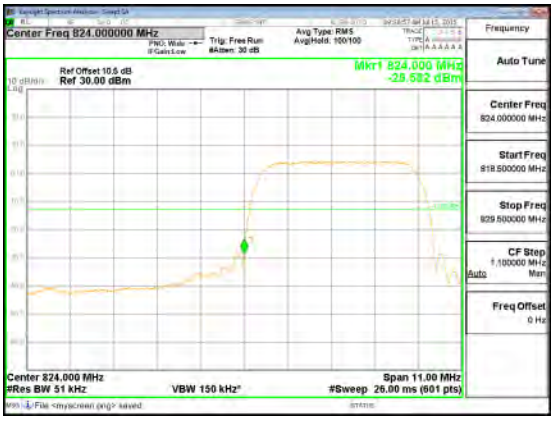
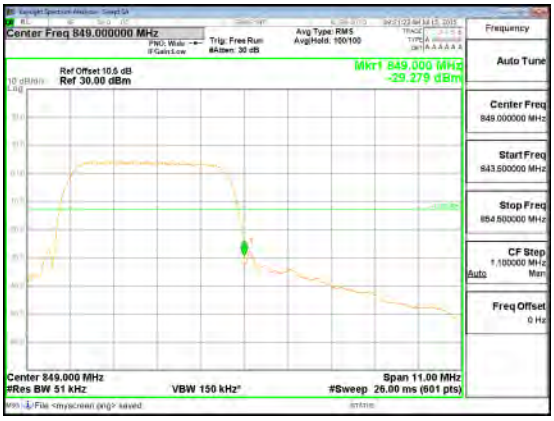
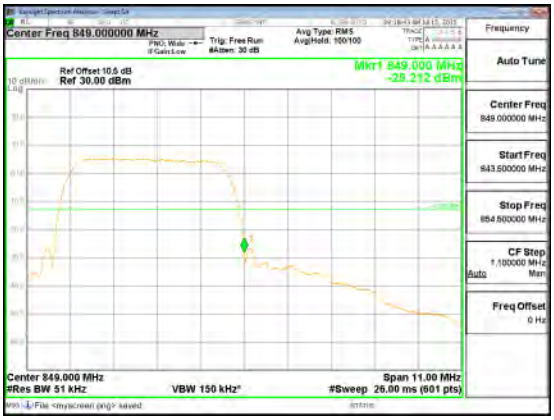
WCDMA

Band Band 2 HSDPA	 Band WCDMA B2 HSDPA CBE	 Band WCDMA B2 HSDPA CBE
Band Band 2 REL99	 Band WCDMA B2 REL99 CBE	 Band WCDMA B2 REL99 CBE

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

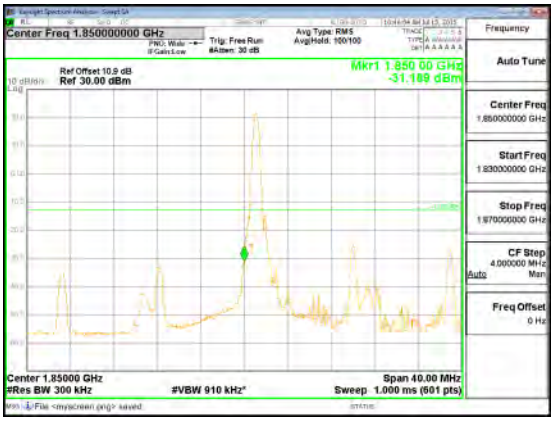
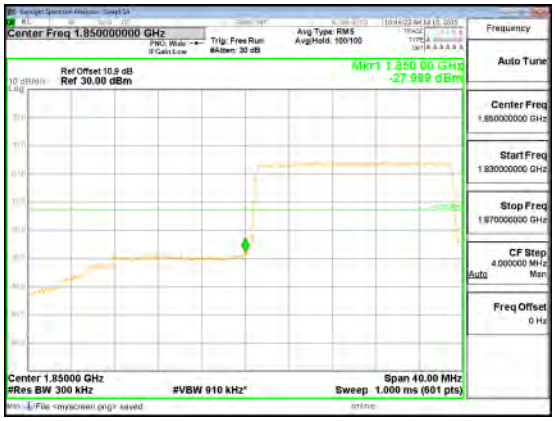
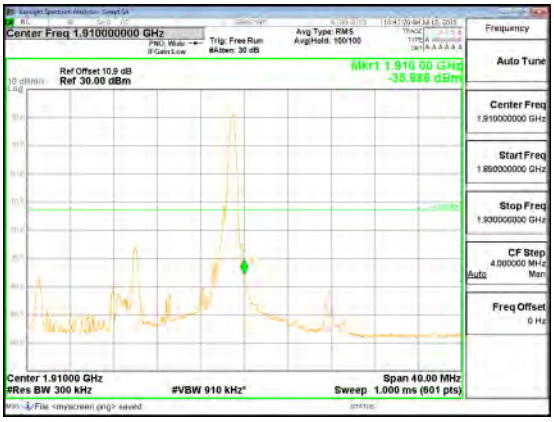
Band Band 4 HSDPA	 Band WCDMA B4 HSDPA CBE	 Band WCDMA B4 HSDPA CBE
Band Band 4 REL99	 Band WCDMA B4 REL99 CBE	 Band WCDMA B4 REL99 CBE

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

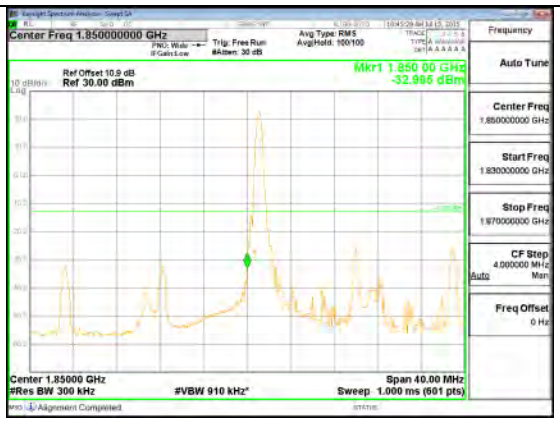
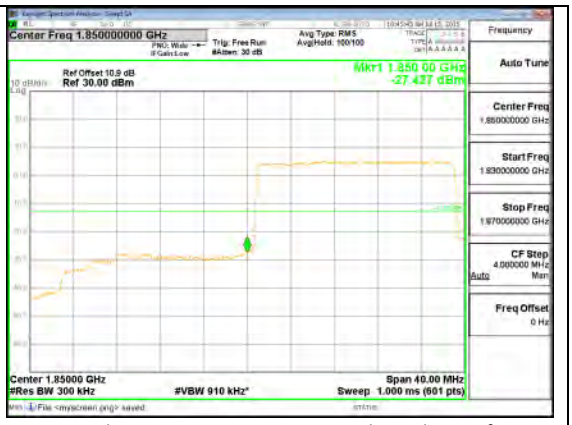
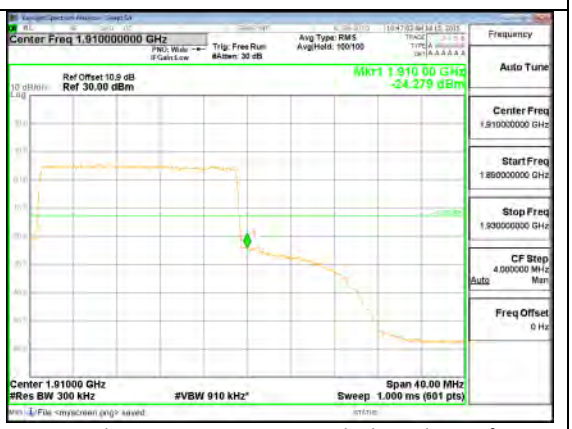
Band Band 5 HSDPA	 Band WCDMA B5 HSDPA CBE	 Band WCDMA B5 HSDPA CBE
Band Band 5 REL99	 Band WCDMA B5 REL99 CBE	 Band WCDMA B5 REL99 CBE

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

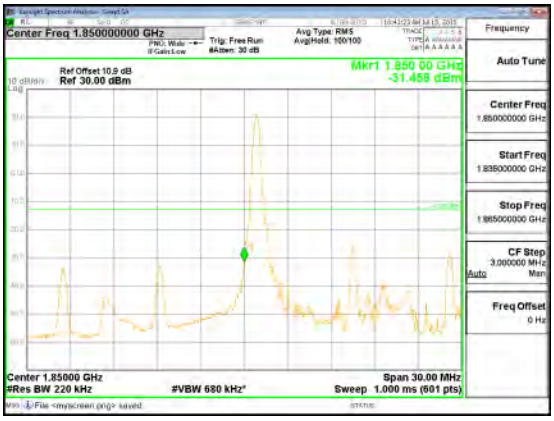
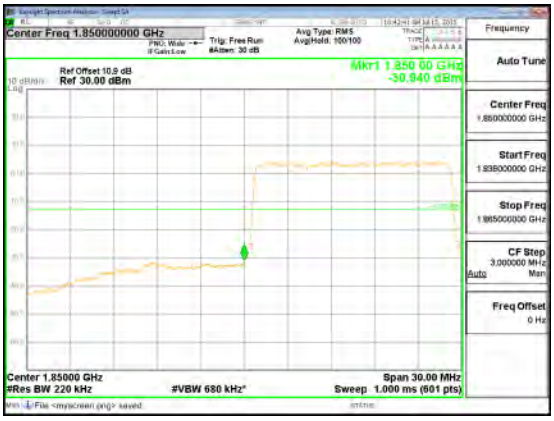
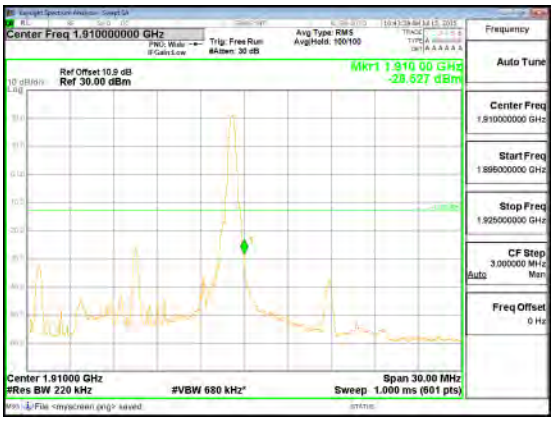
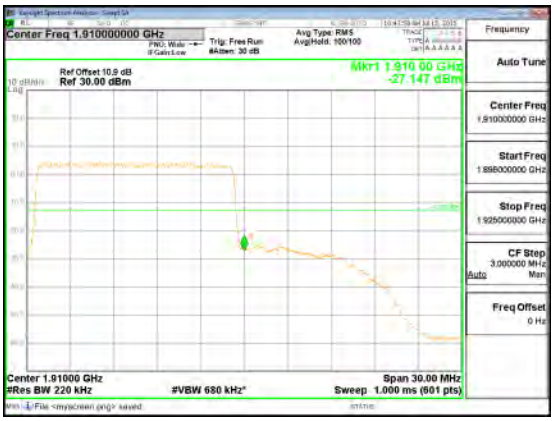
LTE Band 2

Band LTE2 20MHz 16QAM	 Band LTE2 20MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 20MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 20MHz 16QAM	 Band LTE2 20MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 20MHz CBE 16QAM High Channel FRB.gif

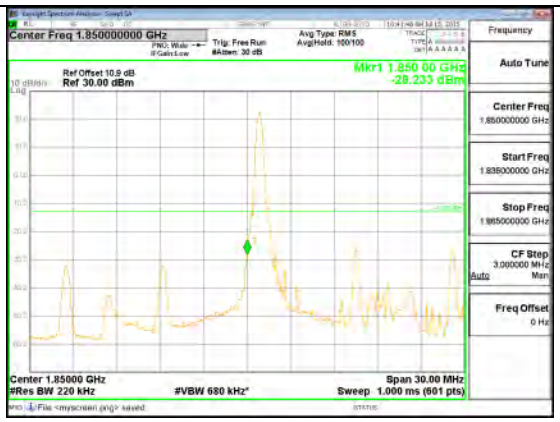
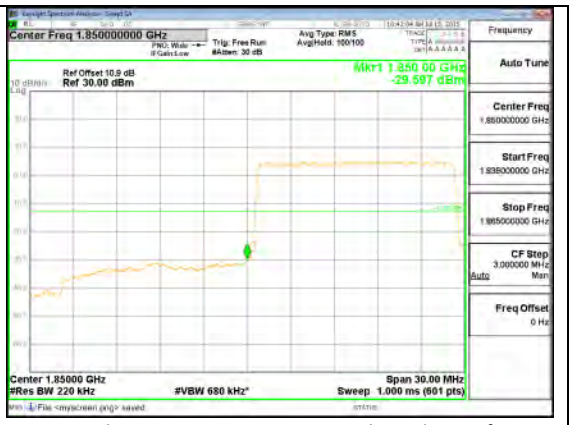
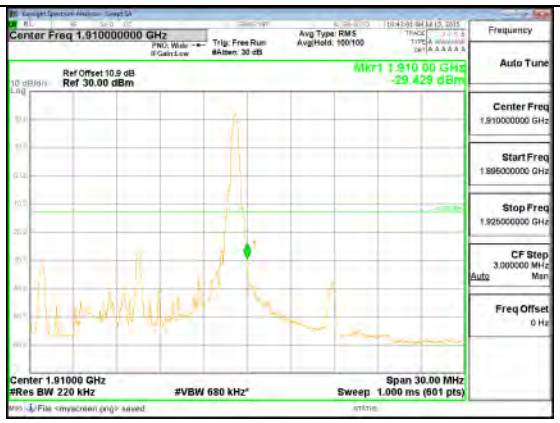
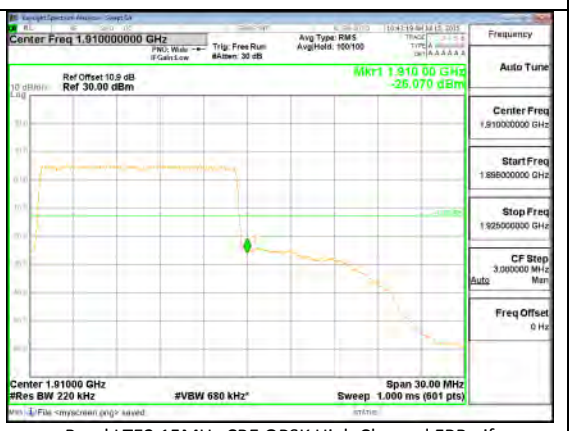
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE2 20MHz QPSK	 Band LTE2 20MHz CBE QPSK Low Channel 1RB.gif	 Band LTE2 20MHz CBE QPSK Low Channel FRB.gif
Band LTE2 20MHz QPSK	 Band LTE2 20MHz CBE QPSK High Channel 1RB.gif	 Band LTE2 20MHz CBE QPSK High Channel FRB.gif

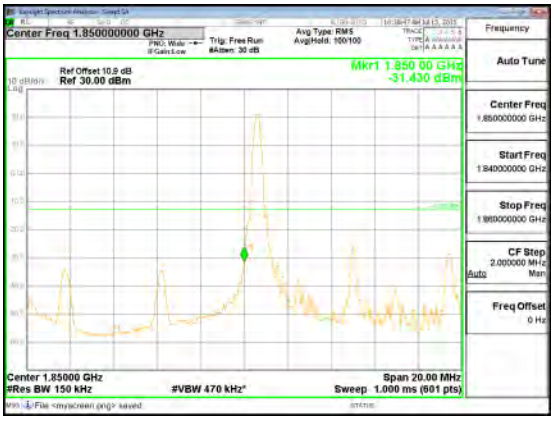
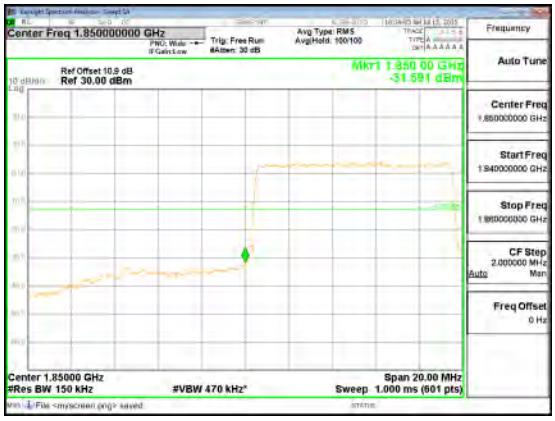
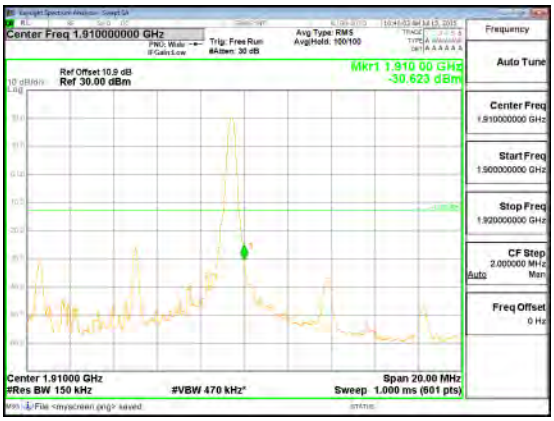
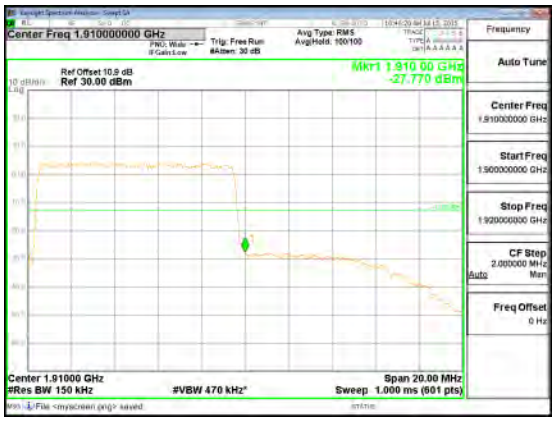
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE2 15MHz 16QAM	 Band LTE2 15MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 15MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 15MHz 16QAM	 Band LTE2 15MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 15MHz CBE 16QAM High Channel FRB.gif

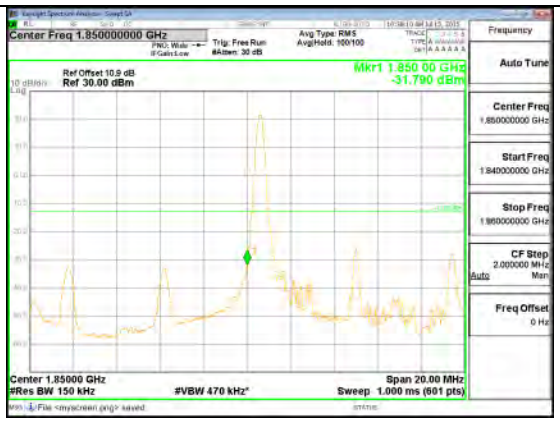
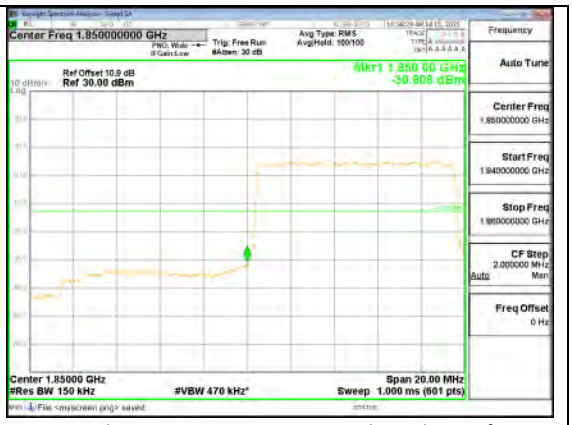
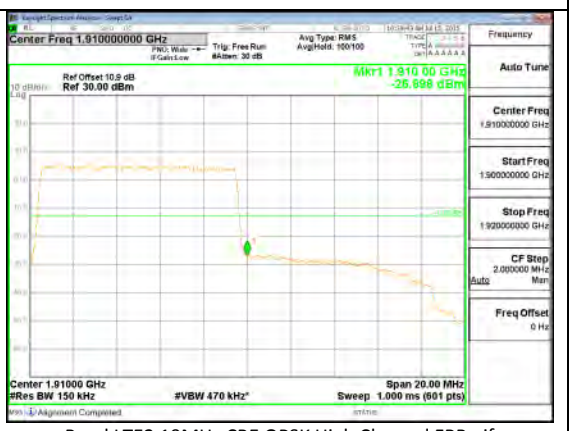
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE2 15MHz QPSK	 Band LTE2 15MHz CBE QPSK Low Channel 1RB.gif	 Band LTE2 15MHz CBE QPSK Low Channel FRB.gif
Band LTE2 15MHz QPSK	 Band LTE2 15MHz CBE QPSK High Channel 1RB.gif	 Band LTE2 15MHz CBE QPSK High Channel FRB.gif

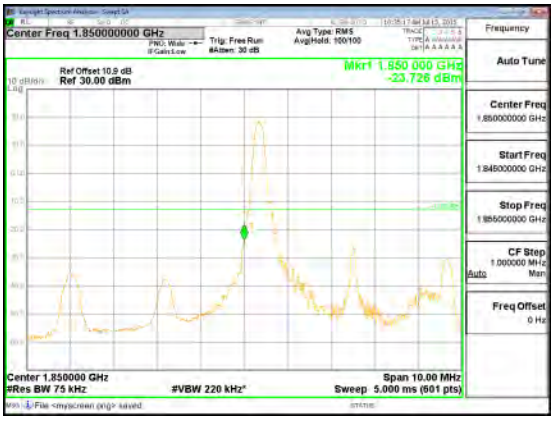
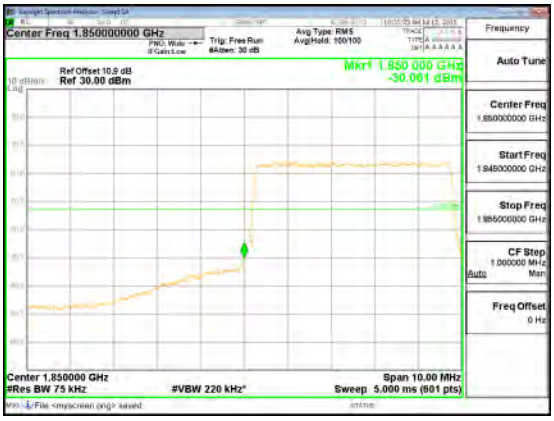
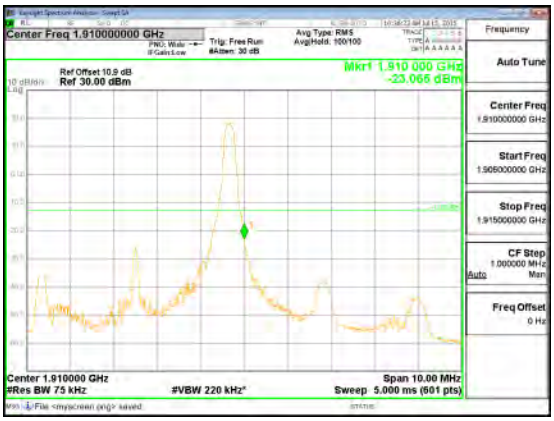
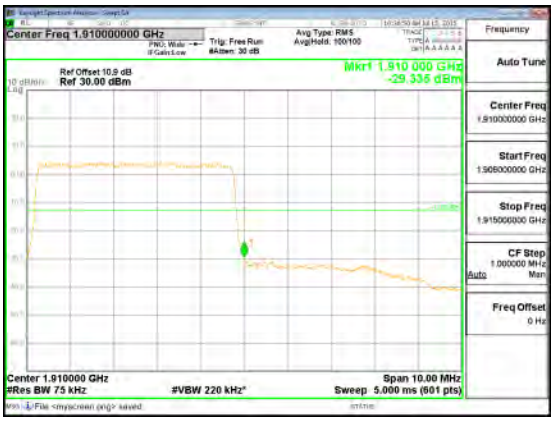
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE2 10MHz 16QAM	 Band LTE2 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 10MHz 16QAM	 Band LTE2 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 10MHz CBE 16QAM High Channel FRB.gif

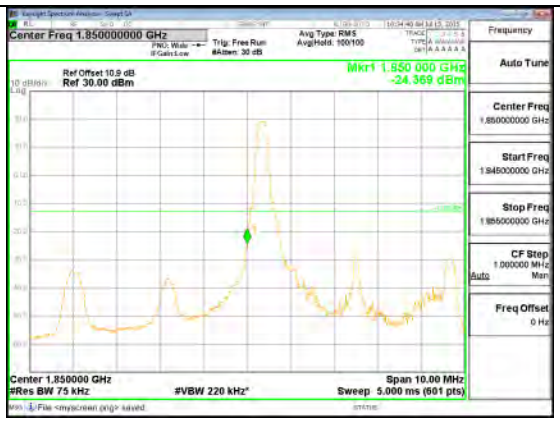
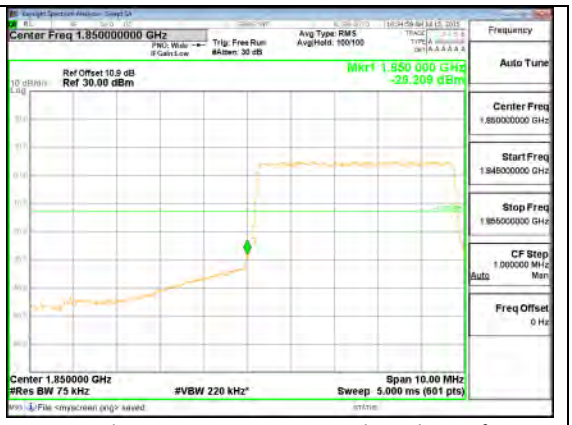
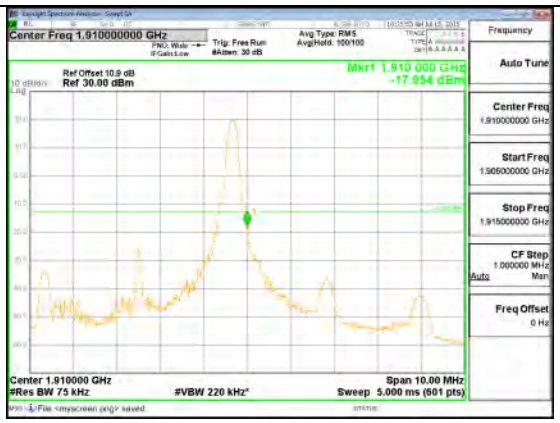
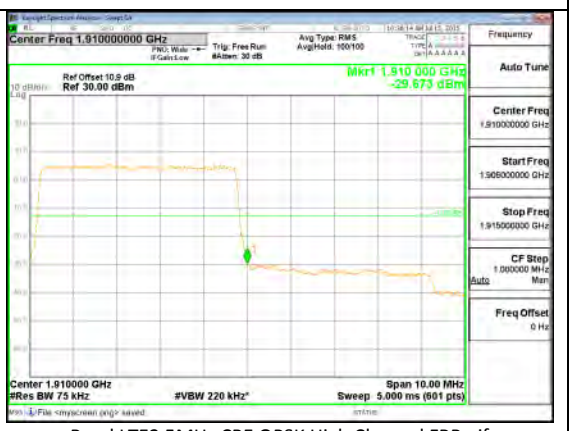
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE2 10MHz QPSK	 Band LTE2 10MHz CBE QPSK Low Channel 1RB.gif	 Band LTE2 10MHz CBE QPSK Low Channel FRB.gif
Band LTE2 10MHz QPSK	 Band LTE2 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE2 10MHz CBE QPSK High Channel FRB.gif

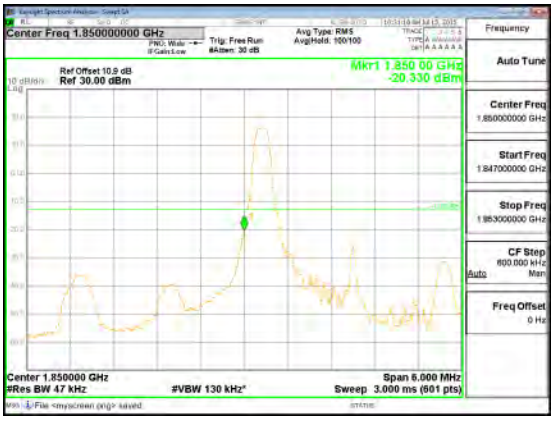
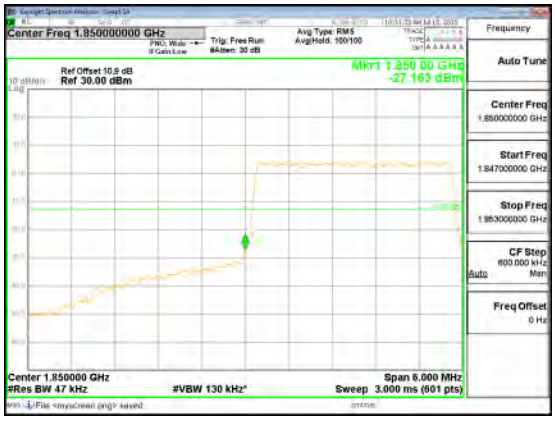
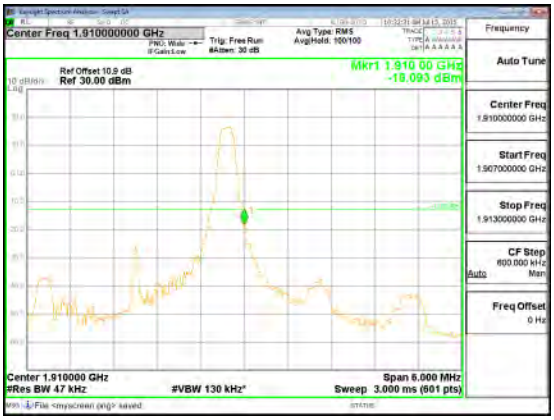
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE2 5MHz 16QAM	 Band LTE2 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 5MHz 16QAM	 Band LTE2 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 5MHz CBE 16QAM High Channel FRB.gif

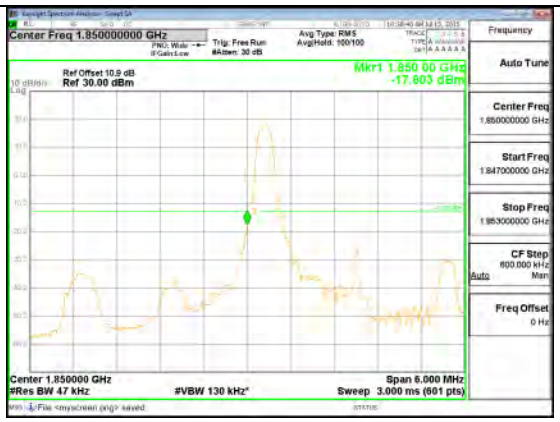
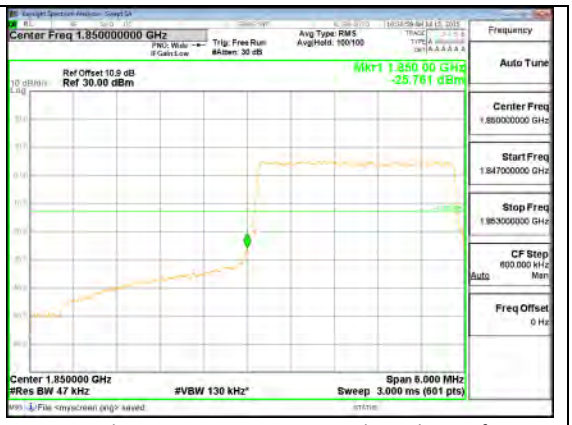
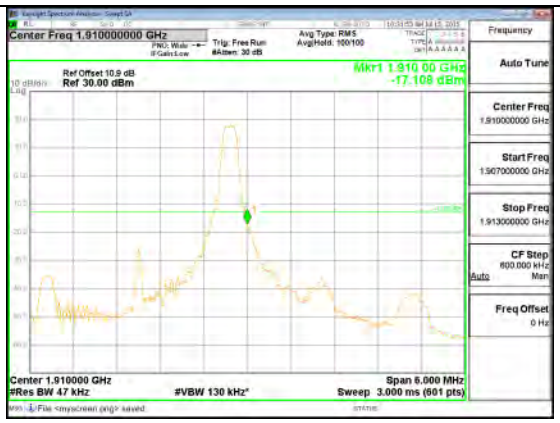
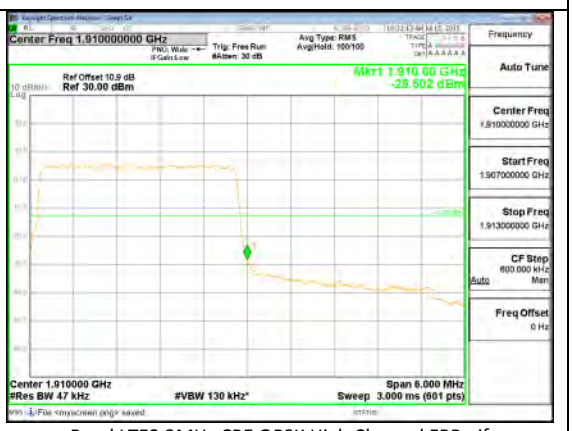
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE2 5MHz QPSK	 Band LTE2 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE2 5MHz CBE QPSK Low Channel FRB.gif
Band LTE2 5MHz QPSK	 Band LTE2 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE2 5MHz CBE QPSK High Channel FRB.gif

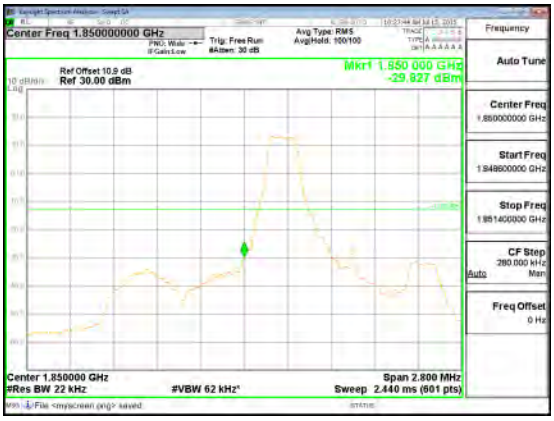
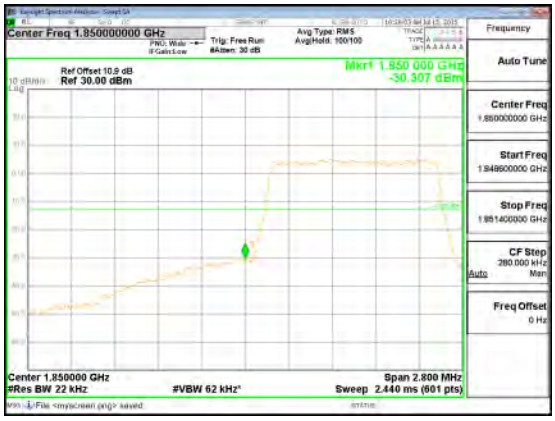
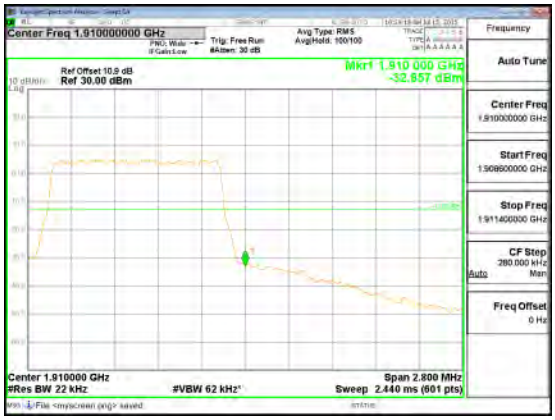
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE2 3MHz 16QAM	 Band LTE2 3MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 3MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 3MHz 16QAM	 Band LTE2 3MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 3MHz CBE 16QAM High Channel FRB.gif

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

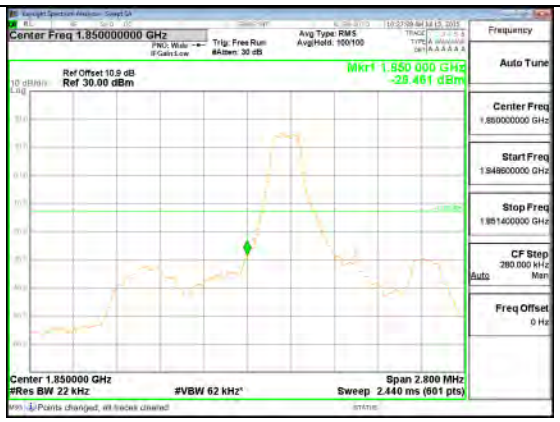
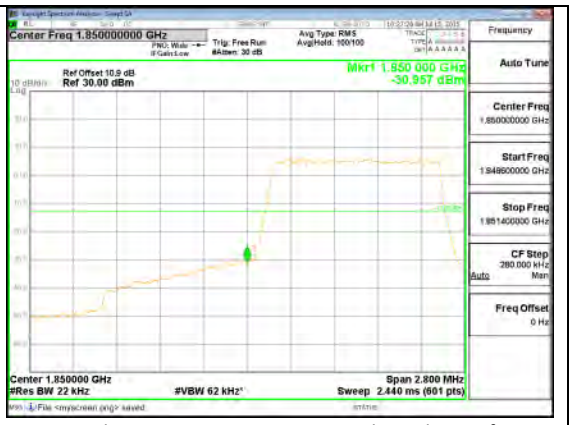
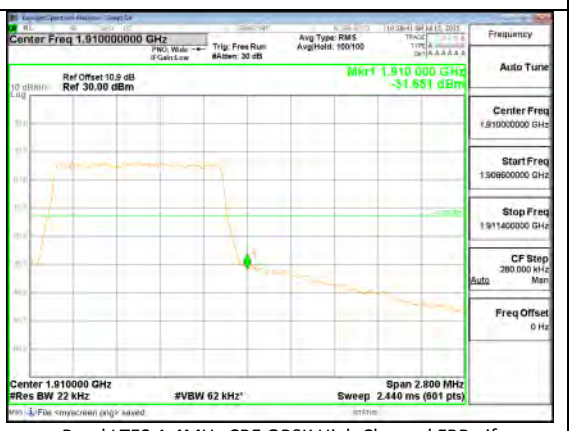
Band LTE2 3MHz QPSK	 Band LTE2 3MHz CBE QPSK Low Channel 1RB.gif	 Band LTE2 3MHz CBE QPSK Low Channel FRB.gif
Band LTE2 3MHz QPSK	 Band LTE2 3MHz CBE QPSK High Channel 1RB.gif	 Band LTE2 3MHz CBE QPSK High Channel FRB.gif

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE2 1.4MHz 16QAM	 Band LTE2 1.4MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 1.4MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 1.4MHz 16QAM	 Band LTE2 1.4MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 1.4MHz CBE 16QAM High Channel FRB.gif

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

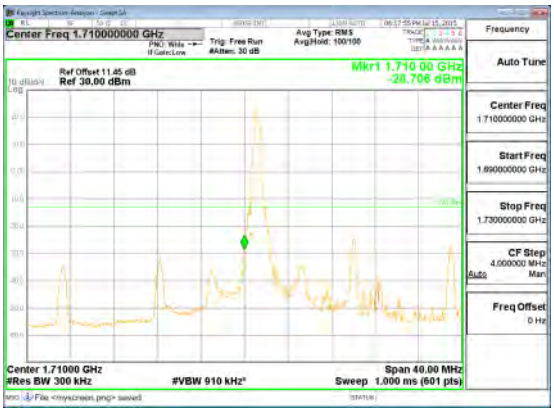
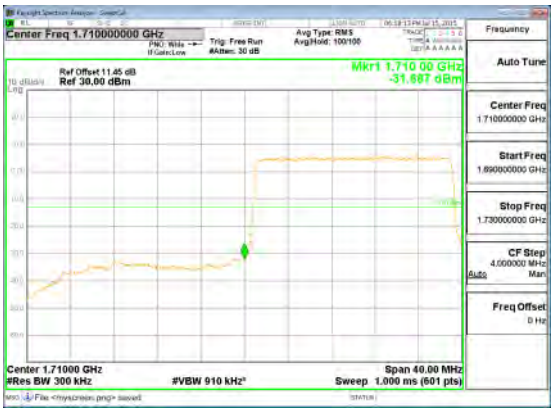
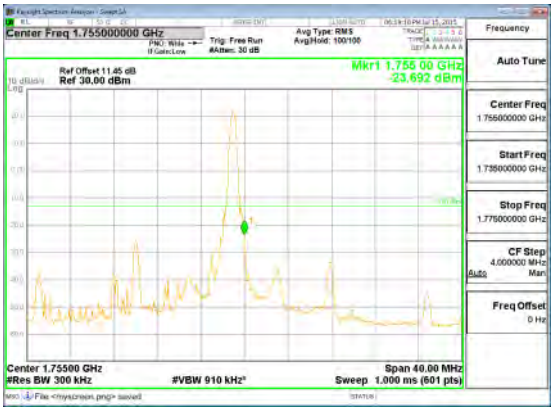
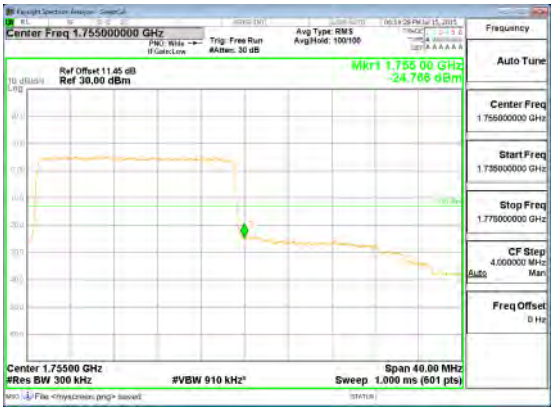
Band LTE2 1.4MHz QPSK	 Band LTE2 1.4MHz CBE QPSK Low Channel 1RB.gif	 Band LTE2 1.4MHz CBE QPSK Low Channel FRB.gif
Band LTE2 1.4MHz QPSK	 Band LTE2 1.4MHz CBE QPSK High Channel 1RB.gif	 Band LTE2 1.4MHz CBE QPSK High Channel FRB.gif

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

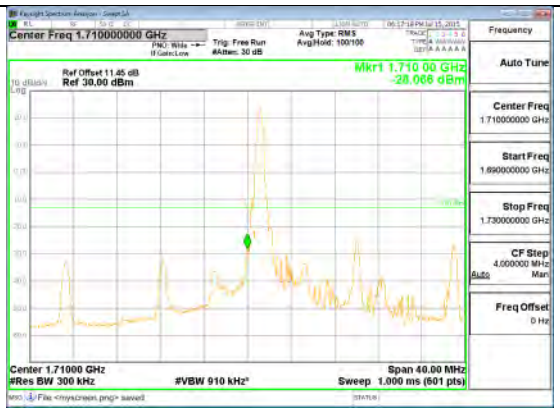
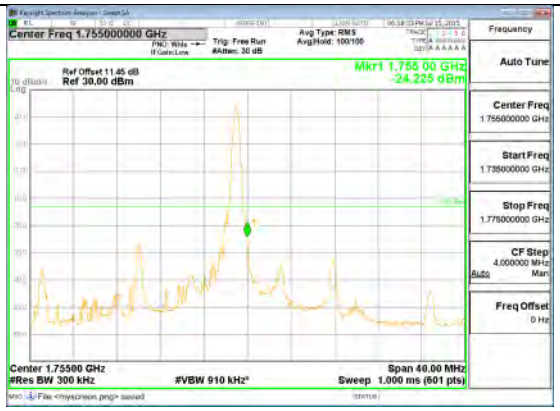
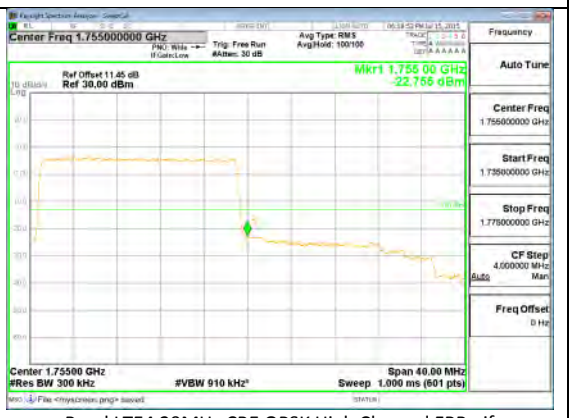
UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

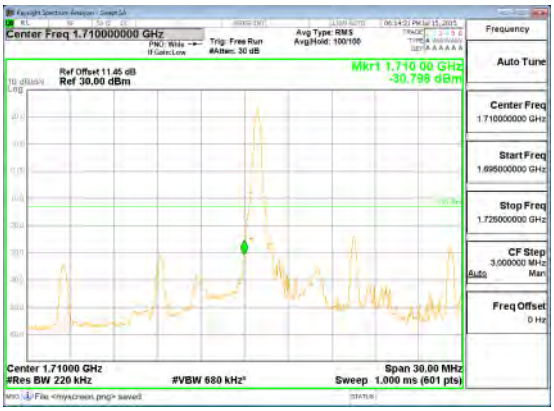
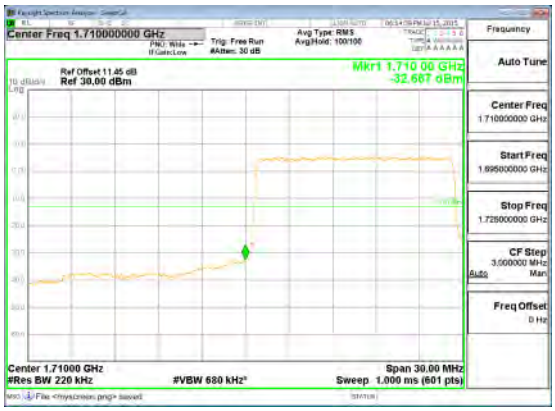
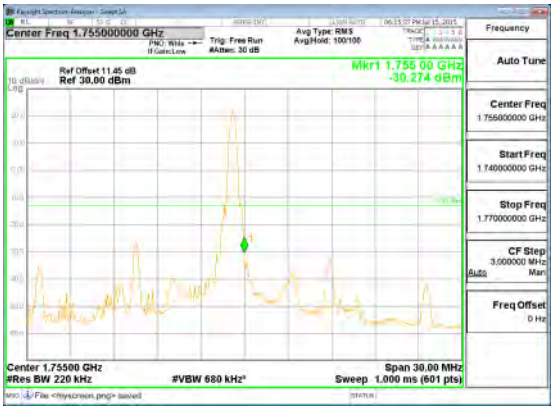
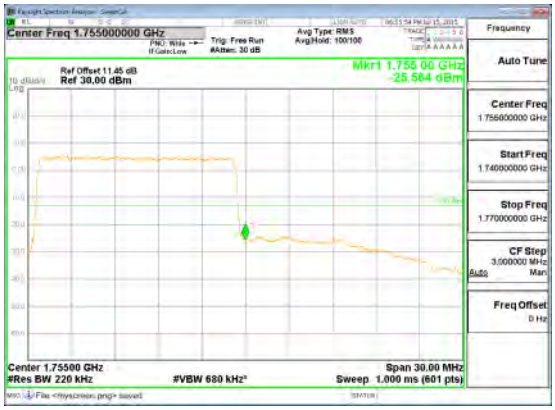
LTE Band 4

Band LTE4 20MHz 16QAM	 Band LTE4 20MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 20MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 20MHz 16QAM	 Band LTE4 20MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 20MHz CBE 16QAM High Channel FRB.gif

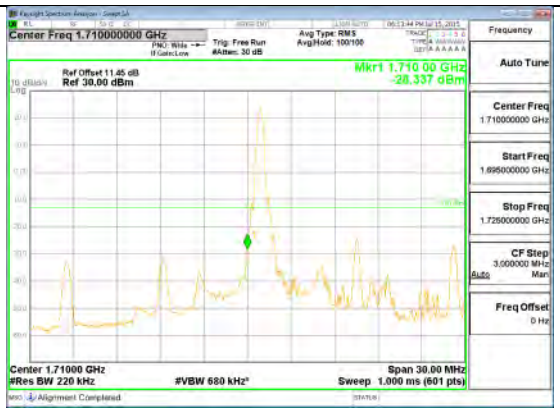
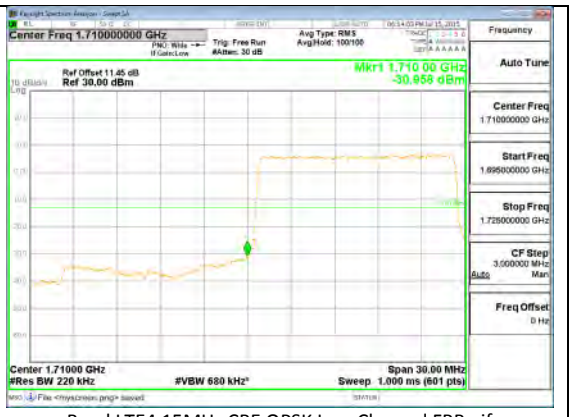
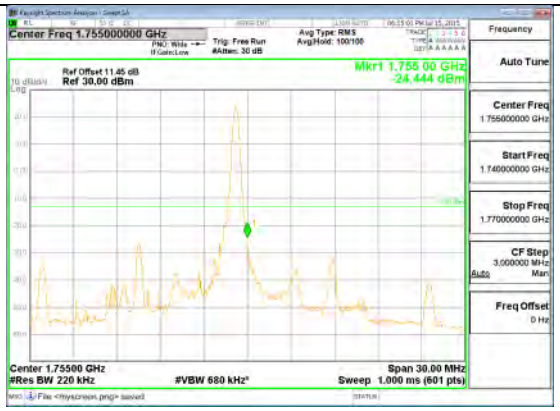
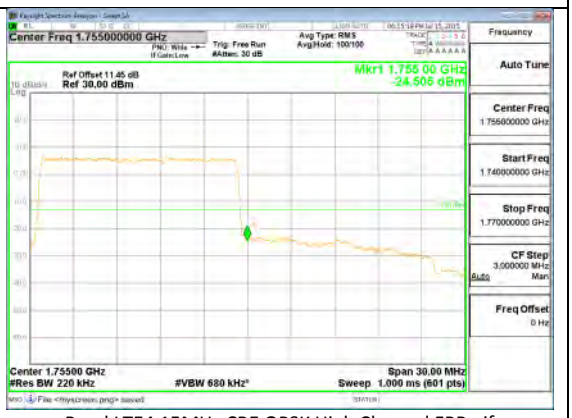
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE4 20MHz QPSK	 Band LTE4 20MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 20MHz CBE QPSK Low Channel FRB.gif
Band LTE4 20MHz QPSK	 Band LTE4 20MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 20MHz CBE QPSK High Channel FRB.gif

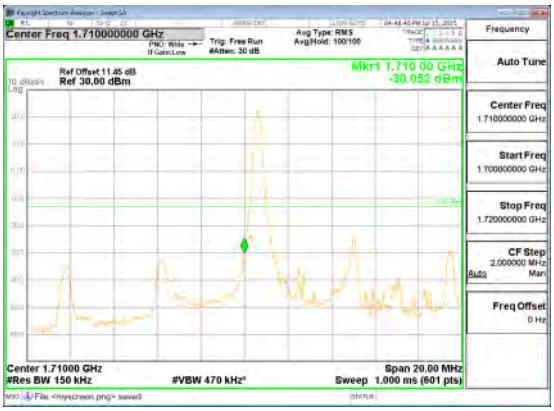
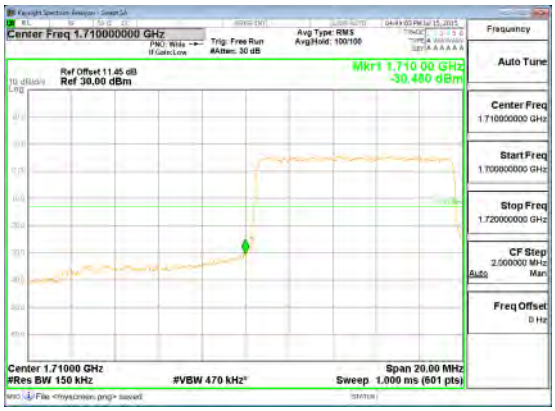
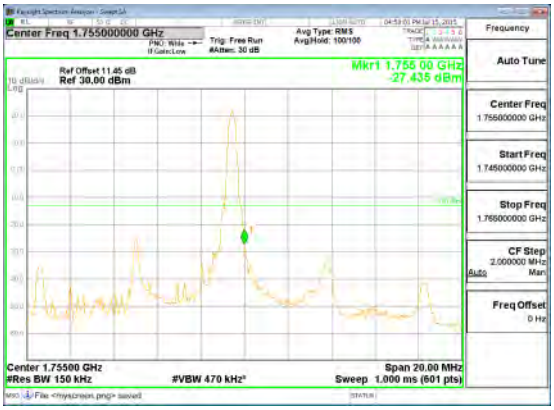
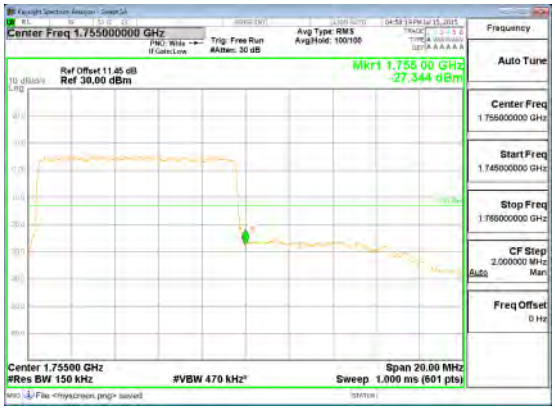
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE4 15MHz 16QAM	 Band LTE4 15MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 15MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 15MHz 16QAM	 Band LTE4 15MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 15MHz CBE 16QAM High Channel FRB.gif

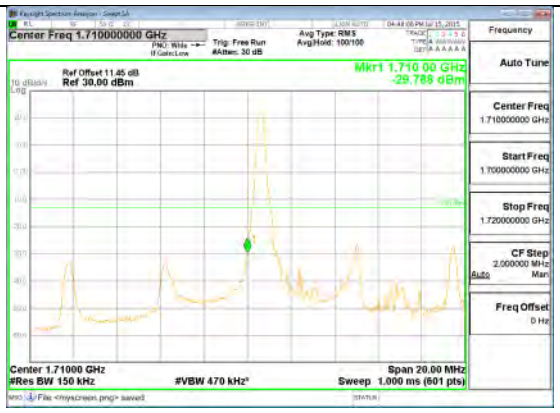
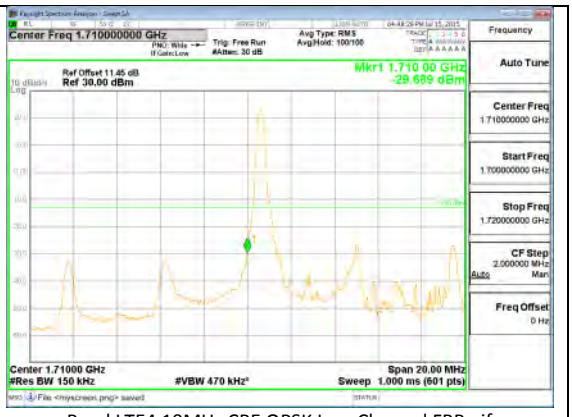
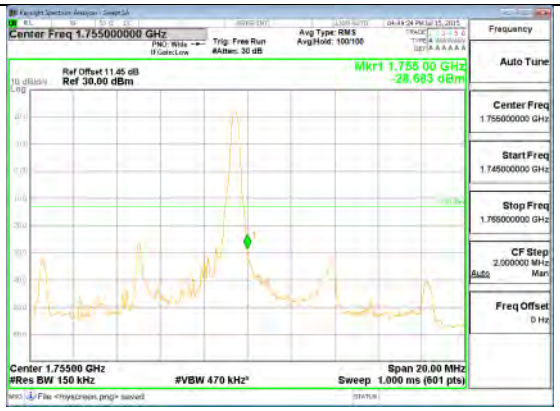
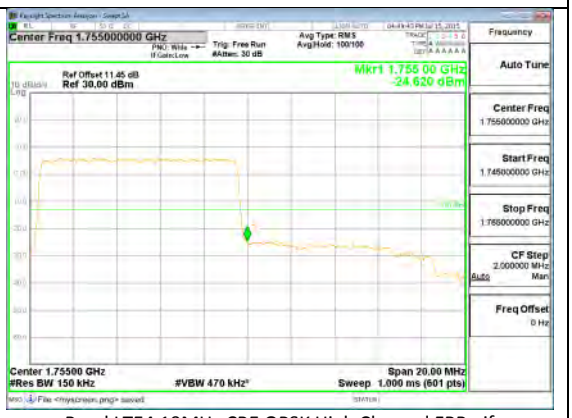
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE4 15MHz QPSK	 Band LTE4 15MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 15MHz CBE QPSK Low Channel FRB.gif
Band LTE4 15MHz QPSK	 Band LTE4 15MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 15MHz CBE QPSK High Channel FRB.gif

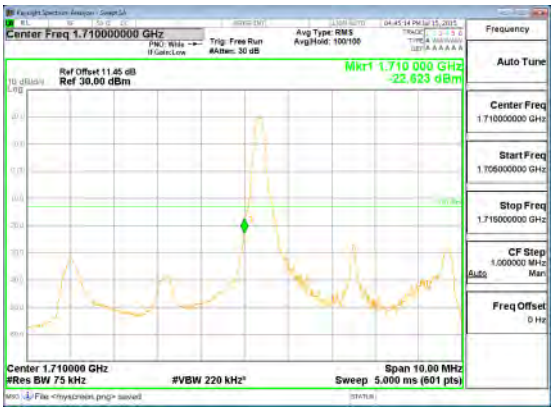
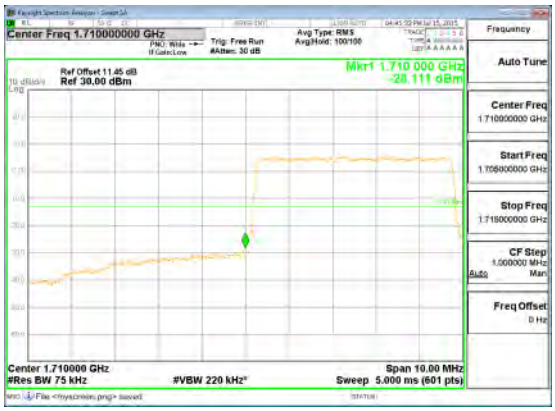
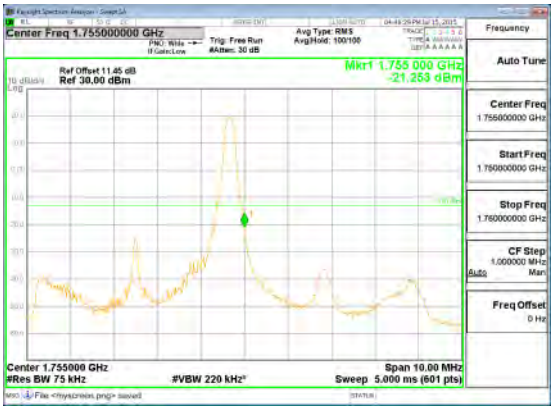
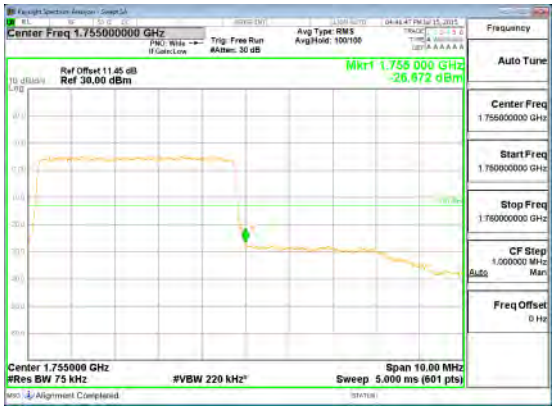
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE4 10MHz 16QAM	 Band LTE4 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 10MHz 16QAM	 Band LTE4 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 10MHz CBE 16QAM High Channel FRB.gif

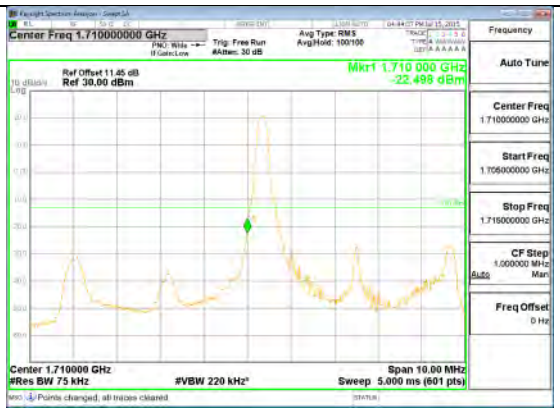
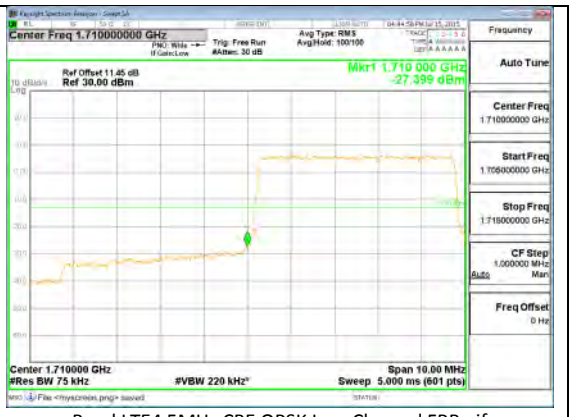
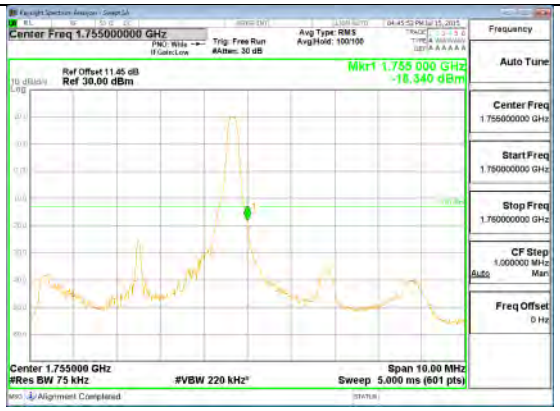
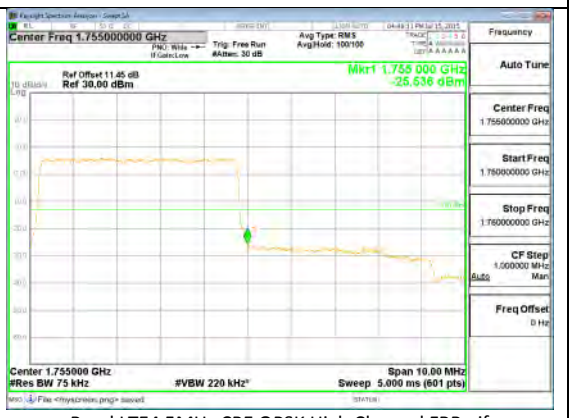
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE4 10MHz QPSK	 Band LTE4 10MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 10MHz CBE QPSK Low Channel FRB.gif
Band LTE4 10MHz QPSK	 Band LTE4 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 10MHz CBE QPSK High Channel FRB.gif

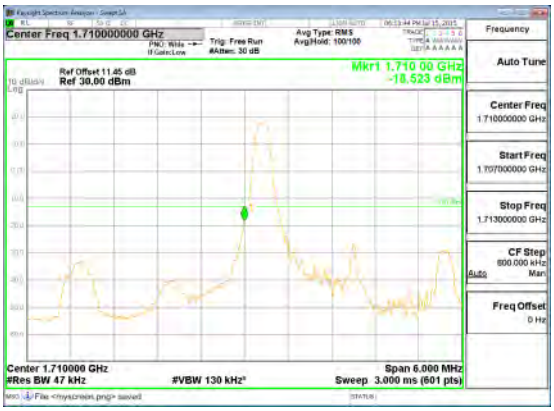
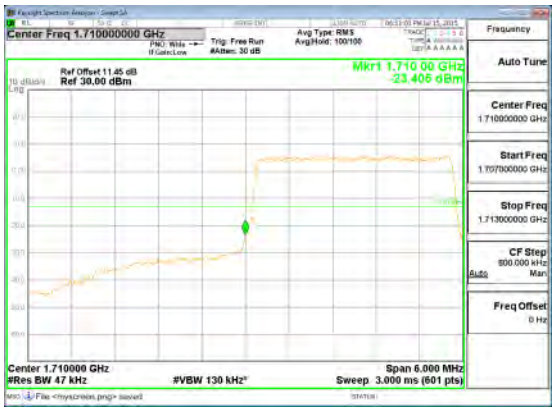
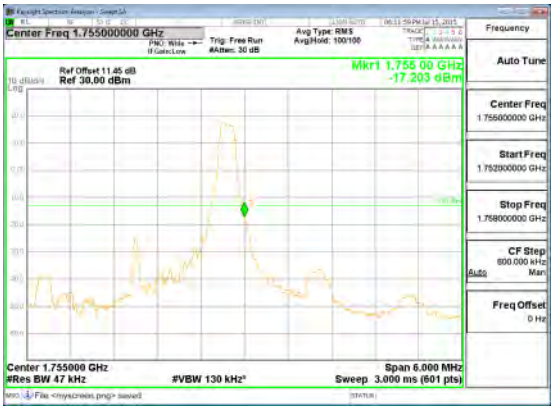
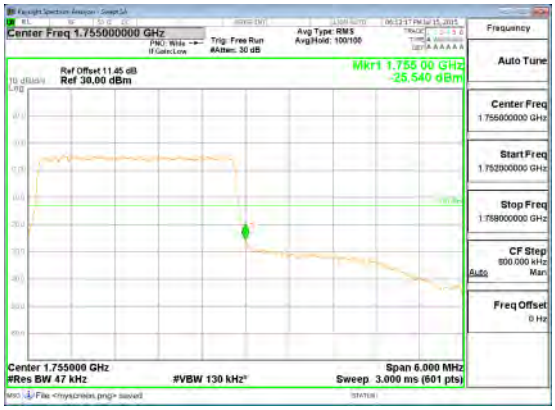
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE4 5MHz 16QAM	 Band LTE4 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 5MHz CBE 16QAM High Channel FRB.gif

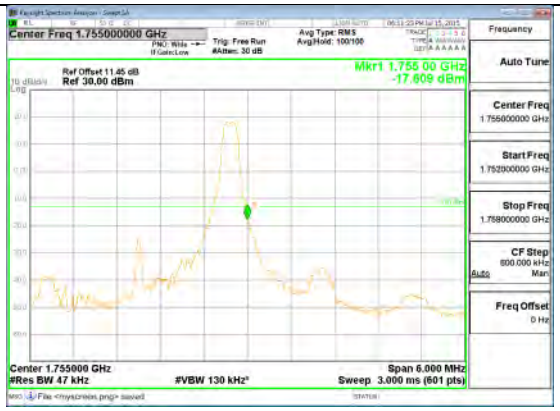
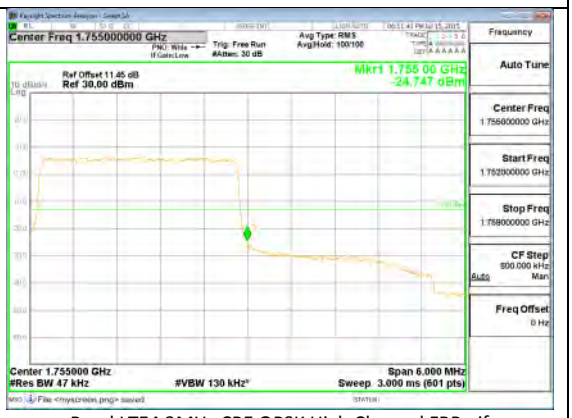
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE4 5MHz QPSK	 Band LTE4 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 5MHz CBE QPSK Low Channel FRB.gif
Band LTE4 5MHz QPSK	 Band LTE4 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 5MHz CBE QPSK High Channel FRB.gif

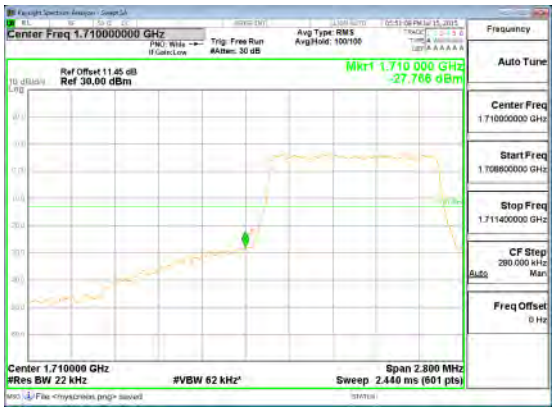
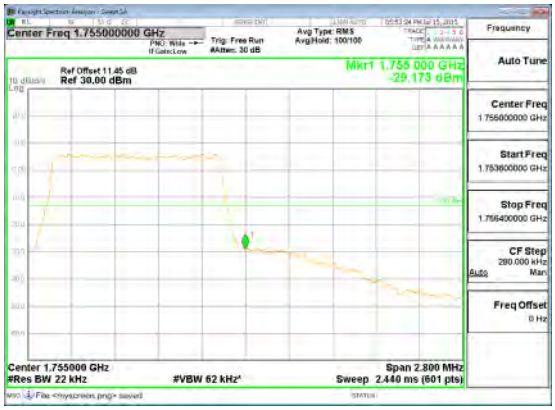
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE4 3MHz 16QAM	 Band LTE4 3MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 3MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 3MHz 16QAM	 Band LTE4 3MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 3MHz CBE 16QAM High Channel FRB.gif

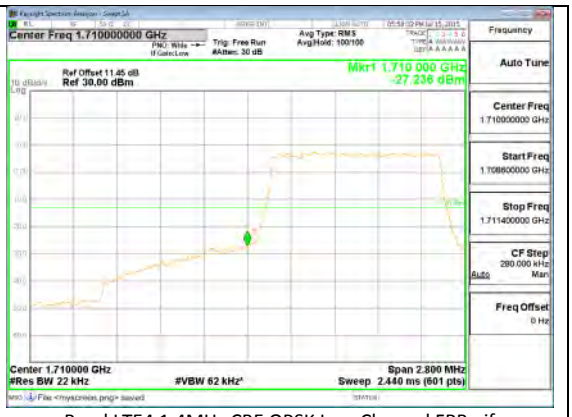
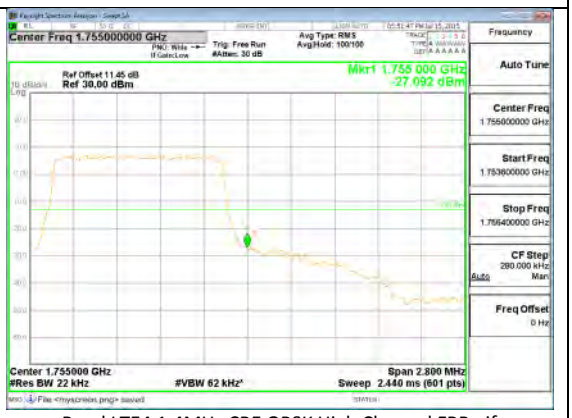
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE4 3MHz QPSK	 Band LTE4 3MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 3MHz CBE QPSK Low Channel FRB.gif
Band LTE4 3MHz QPSK	 Band LTE4 3MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 3MHz CBE QPSK High Channel FRB.gif

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE4 1.4MHz 16QAM	 Band LTE4 1.4MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 1.4MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 1.4MHz 16QAM	 Band LTE4 1.4MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 1.4MHz CBE 16QAM High Channel FRB.gif

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE4 1.4MHz QPSK	 Band LTE4 1.4MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 1.4MHz CBE QPSK Low Channel FRB.gif
Band LTE4 1.4MHz QPSK	 Band LTE4 1.4MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 1.4MHz CBE QPSK High Channel FRB.gif

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.