FCC CFR47 PART 22 SUBPART H
FCC CFR47 PART 24 SUBPART E
FCC CFR47 PART 27 SUBPART F
FCC CFR47 PART 27 SUBPART L

C2PC CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE PHONE + BLUETOOTH, & 2.4GHz DTS b/g/n

MODEL NUMBER: LG-L33L, LGL33L, L33L, LG-H343, LGH343, H343

FCC ID: ZNFL33L

REPORT NUMBER: 15I19923-E1 REVISION A

ISSUE DATE: MARCH 15, 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
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
--	02/16/15	Initial Issue	D. Coronia
A	03/15/15	Updated standard cover page & page 5, added information page 17	D. Coronia

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 6
4.1. MEASURING INSTRUMENT CALIBRATION 6
4.2. SAMPLE CALCULATION 6
4.3. MEASUREMENT UNCERTAINTY 7
5. EQUIPMENT UNDER TEST 8
5.1. DESCRIPTION OF EUT 8
5.2. MAXIMUM OUTPUT POWER 9
5.3. MAXIMUM OUTPUT POWER (LTE) 10
5.4. DESCRIPTION OF AVAILABLE ANTENNAS 12
5.5. DESCRIPTION OF TEST SETUP 13
6. TEST AND MEASUREMENT EQUIPMENT 16
7. SUMMARY TABLE 17
8. RF POWER OUTPUT VERIFICATION 18
8.1. GSM/GPRS/EDGE 18
8.1.1. GSM OUTPUT POWER RESULT 19
8.2. UMTS REL 99 20
8.2.1. UMTS REL 99 OUTPUT POWER RESULT 20
8.3. UMTS HSDPA 21
8.3.1. UMTS HSDPA OUTPUT POWER RESULT 22
8.4. UMTS HSUPA 23
8.4.1. UMTS HSUPA OUTPUT POWER RESULT 24
8.5. LTE OUTPUT VERIFICATION 25
8.5.1. LTE OUTPUT RESULT 25
9. PEAK TO AVERAGE RATIO 34
9.1. CONDUCTED PEAK TO AVERAGE RESULT 34
10. LIMITS AND CONDUCTED RESULTS 40
10.1. OCCUPIED BANDWIDTH 40
10.1.1. LTE OCCUPIED BANDWIDTH RESULTS 41
10.1.2. OCCUPIED BANDWIDTH PLOTS 44

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

11. BAND EDGE EMISSIONS 49
11.1.1. BAND EDGE PLOTS 50
11.2. OUT OF BAND EMISSIONS 70
11.2.1. OUT OF BAND EMISSIONS RESULT 71
11.2.2. OUT OF BAND EMISSIONS PLOTS.....74
12. RADIATED TEST RESULTS 79
12.1. RADIATED POWER (ERP & EIRP).....79
12.1.1. ERP/EIRP Results.....80
12.1.2. LTE ERP/EIRP Results 81
12.1.3. ERP/EIRP PLOTS.....87
12.2. FIELD STRENGTH OF SPURIOUS RADIATION 131
12.2.1. SPURIOUS RADIATION PLOTS.....132
13. SETUP PHOTOS 176

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, & 2.4GHz DTS b/g/n
MODEL:	LG-L33L, LGL33L, L33L, LG-H343, LGH343, H343
SERIAL NUMBER:	501CYTB000193
DATE TESTED:	FEBRUARY 2-11, 2015

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

DAN CORONIA
CONSUMER TECHNOLOGY DIVISION
WiSE PROJECT LEAD
UL VERIFICATION SERVICES INC

Tested By:

STEVEN TRAN
CONSUMER TECHNOLOGY DIVISION
WiSE 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, and FCC CFR 47 Part 27.

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.

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)

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

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

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

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, & 2.4GHz DTS b/g/n

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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. 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 mW	Conducted		Radiated	
			AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
GSM850	824~849	GPRS	33.70	2344.23	29.042	802.05
		EGPRS	27.70	588.84	26.15	412.10
GSM1900	1850~1910	GPRS	30.60	1148.15	31.154	1304.37
		EGPRS	29.00	794.33	27.71	590.20
Band 5	824~849	REL99	24.20	263.03	19.197	83.12
		HSDPA	24.20	263.03	19.08	80.91
Band 2	1850~1910	REL99	24.20	263.03	24.96	313.33
		HSDPA	24.20	263.03	24.2	263.03

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

5.3. MAXIMUM OUTPUT POWER (LTE)

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

FCC Part 22							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation mW	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE5	824~849	10MHz	QPSK	23.90	245.47	19.28	84.72
			16QAM	23.20	208.93	18.71	74.3
		5MHz	QPSK	23.88	244.34	19.03	79.98
			16QAM	23.20	208.93	18.04	63.68
		3MHz	QPSK	23.80	239.88	18.98	79.07
			16QAM	23.20	208.93	18.4	69.18
		1.4MHz	QPSK	23.76	237.68	19.26	84.33
			16QAM	23.77	238.23	18.48	70.47

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation mW	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE4	1710~1755	20MHz	QPSK	24.20	263.03	23.47	222.38
			16QAM	23.20	208.93	22.73	187.3
		15MHz	QPSK	24.20	263.03	23.77	238.29
			16QAM	23.20	208.93	22.87	193.69
		10MHz	QPSK	24.20	263.03	22.83	191.9
			16QAM	23.20	208.93	22.52	178.69
		5MHz	QPSK	24.20	263.03	23.02	200.35
			16QAM	23.20	208.93	21.89	154.45
		3MHz	QPSK	24.07	255.27	23.80	239.94
			16QAM	23.20	208.93	22.87	193.69
		1.4MHz	QPSK	23.97	249.46	23.48	222.91
			16QAM	23.20	208.93	22.49	177.47

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

FCC Part 24							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation mW	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE2	1850~1910	20MHz	QPSK	24.18	261.82	26.43	439.8
			16QAM	23.20	208.93	25.33	341.4
		15MHz	QPSK	24.20	263.03	26.11	408.73
			16QAM	23.20	208.93	25.23	333.76
		10MHz	QPSK	24.07	255.27	26.09	406.39
			16QAM	23.20	208.93	25.07	321.33
		5MHz	QPSK	24.05	254.10	25.38	344.88
			16QAM	23.20	208.93	24.48	280.33
		3MHz	QPSK	24.20	263.03	25.87	386.26
			16QAM	23.20	208.93	24.97	313.96
		1.4MHz	QPSK	23.84	242.10	26.17	413.89
			16QAM	23.20	208.93	25.27	336.42

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation mW	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE17	704~716	10MHz	QPSK	24.20	263.03	19.54	89.95
			16QAM	23.20	208.93	18.94	78.34
		5MHz	QPSK	24.20	263.03	19.56	90.36
			16QAM	22.60	181.97	18.15	65.31

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

5.4. 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	-3.25
GSM1900, 1850~1910MHz	0.56
Band 5, 824~849MHz	-3.25
Band 2, 1850~1910MHz	-0.56
LTE2, 1850~1910MHz	-0.56
LTE4, 1710~1755MHz	-0.56
LTE5, 824~849MHz	-3.25
LTE17, 704~716MHz	-3.25

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

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC Adapter	LG	MCS-01WR	RD4X0891946	N/A
Earphone	LG	LG-L33L	N/A	N/A

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)

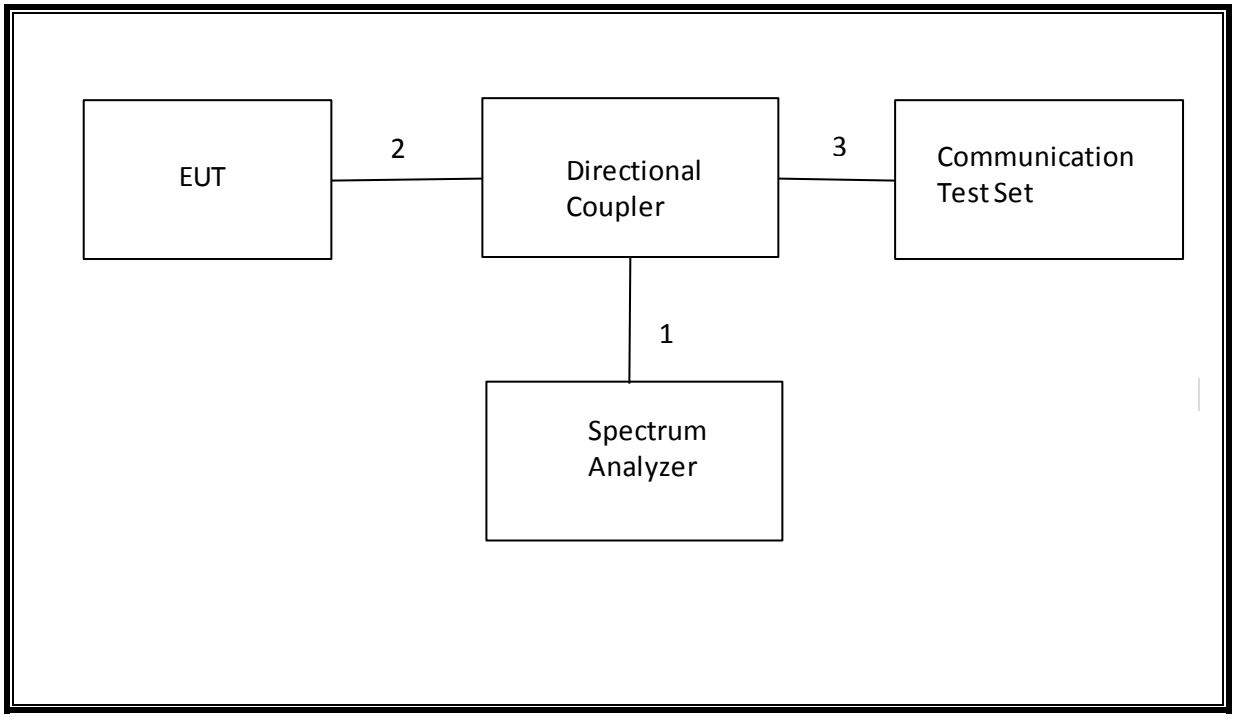
I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	USB	1	AC Adapter	Un-shielded	1.2m	NA
2	Jack	1	Headset	Shielded	1m	NA
3	RF In/out	1	Communication Test Set	Un-shielded	2m	NA

TEST SETUP

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

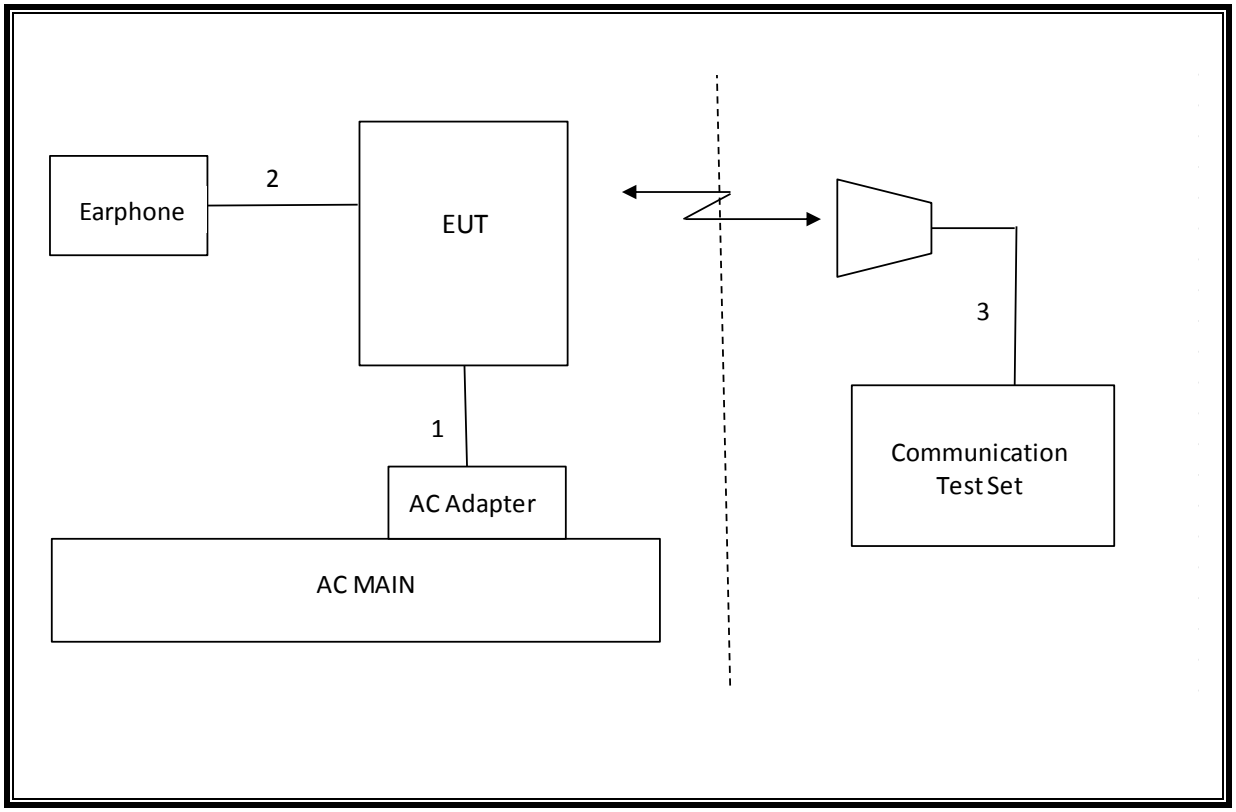
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



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:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01179	02/26/15
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	04/22/15
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/25/15
Antenna, Horn, 18 GHz	EMCO	3115	C00784	10/25/15
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02688	CNR
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	C00930	06/10/15
Communications Test Set	R&S	CMW500	T159	07/02/15
DC power supply, 8 V @ 3 A or 15 V	Agilent / HP	E3610A	None	CNR
Vector signal generator, 6 GHz	Agilent / HP	E4438C	None	06/18/15
Antenna, Tuned Dipole 400~1000	ETS	3121C DB4	C00993	02/14/15
Directional Coupler	RF-Lambda	RFDC5M06G15	None	CNR
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00589	12/17/15

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Radiated Software	UL	UL EMC	Version 9.5, 07/22/14
Conducted Software	UL	UL EMC	Version 9.5, 05/17/14
CLT Software	UL	UL RF	Version 1.0, 02/02/15
Antenna Port Software	UL	UL RF	Version 2.1.1.1, 1/20/15

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

7. SUMMARY TABLE

C2PC Reason:

1. LTE Band 2 and 4 added 1.4/3/15/20MHz bandwidth without hardware change
2. LTE Band 5 added 1.4/3MHz bandwidth without hardware change.
3. Additional model LG-H343, LGH343 & H343.

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	17.94 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	-21.41 dBm
2.1046	N/A	Conducted output power	N/A		Pass	33.7 dBm
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	See Original
22.913(a)(2)	RSS-132(4.4)	Effective Radiated Power	38 dBm	Radiated	Pass	29.04 dBm
27.50(c)(10)	N/A		34.77 dBm		Pass	19.56 dBm
24.232(c) 27.50(h)(2)	RSS-133(6.4) RSS-199(4.4)	Equivalent Isotropic Radiated Power	33dBm		Pass	31.15 dBm
27.50(d)(4)	RSS-139(6.4)		30dBm		Pass	23.77 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	-35.1 dBm

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: CCSUP4701I
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	33.6
			190	836.6	33.7
			251	848.8	33.5
GPRS (GMSK)	CS1	1	128	824.2	33.6
			190	836.6	33.7
			251	848.8	33.5
		2	128	824.2	30.8
			190	836.6	30.8
			251	848.8	30.9
EGPRS (8PSK)	MCS5	1	128	824.2	27.6
			190	836.6	27.7
			251	848.8	27.6
		2	128	824.2	25.7
			190	836.6	25.7
			251	848.8	25.7

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)
GSM (Voice)	CS1	1	512	1850.2	30.5
			661	1880.0	30.5
			810	1909.8	30.6
GPRS (GMSK)	CS1	1	512	1850.2	30.5
			661	1880.0	30.5
			810	1909.8	30.6
		2	512	1850.2	28.9
			661	1880.0	29.0
			810	1909.8	29.0
EGPRS (8PSK)	MCS5	1	512	1850.2	26.0
			661	1880.0	26.0
			810	1909.8	26.1
		2	512	1850.2	24.0
			661	1880.0	24.0
			810	1909.8	24.0

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	24.1
		4183	836.6	0	24.2
		4233	846.6	0	24.2

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	0	24.0
		9400	1880.0	0	24.2
		9538	1907.6	0	24.1

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			

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	24.2
		4183	836.6	0	24.2
		4233	846.6	0	24.2
	Subtest 2	4132	826.4	0	23.9
		4183	836.6	0	24.2
		4233	846.6	0	24.2
	Subtest 3	4132	826.4	0.5	23.5
		4183	836.6	0.5	23.5
		4233	846.6	0.5	23.5
	Subtest 4	4132	826.4	0.5	23.5
		4183	836.6	0.5	23.5
		4233	846.6	0.5	23.7

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	24.2
		9400	1880.0	0	24.2
		9538	1907.6	0	24.2
	Subtest 2	9262	1852.4	0	24.0
		9400	1880.0	0	24.2
		9538	1907.6	0	24.2
	Subtest 3	9262	1852.4	0.5	23.5
		9400	1880.0	0.5	23.7
		9538	1907.6	0.5	23.7
	Subtest 4	9262	1852.4	0.5	23.5
		9400	1880.0	0.5	23.7
		9538	1907.6	0.5	23.7

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

8.4. 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.

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

8.4.1. 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	23.9
		4183	836.6	0	24.0
		4233	846.6	0	24.2
	Subtest 2	4132	826.4	2	22.2
		4183	836.6	2	22.2
		4233	846.6	2	22.2
	Subtest 3	4132	826.4	1	22.5
		4183	836.6	1	22.8
		4233	846.6	1	22.6
	Subtest 4	4132	826.4	2	22.2
		4183	836.6	2	22.2
		4233	846.6	2	22.2
	Subtest 5	4132	826.4	0	23.9
		4183	836.6	0	24.0
		4233	846.6	0	24.2

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	24.1
		9400	1880.0	0	23.2
		9538	1907.6	0	23.7
	Subtest 2	9262	1852.4	2	22.2
		9400	1880.0	2	22.0
		9538	1907.6	2	22.2
	Subtest 3	9262	1852.4	1	22.6
		9400	1880.0	1	22.9
		9538	1907.6	1	22.7
	Subtest 4	9262	1852.4	2	22.2
		9400	1880.0	2	22.0
		9538	1907.6	2	22.2
	Subtest 5	9262	1852.4	0	24.1
		9400	1880.0	0	24.2
		9538	1907.6	0	24.2

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

8.5. LTE OUTPUT VERIFICATION

8.5.1. LTE OUTPUT RESULT

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	24.18	24.20	24.00
			1	49	0	23.76	24.12	23.87
			1	99	0	24.01	23.97	23.91
			50	0	1	22.93	22.85	22.97
			50	24	1	22.91	22.85	22.87
			50	50	1	22.79	22.79	22.84
			100	0	1	22.84	22.91	22.93
		16QAM	1	0	1	22.97	23.20	23.20
			1	49	1	23.10	23.20	23.20
			1	99	1	22.83	23.20	23.20
			50	0	2	21.97	21.83	21.97
			50	24	2	22.01	21.84	21.87
			50	50	2	21.92	21.84	21.76
			100	0	2	21.90	21.89	21.81

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	23.96	24.00	24.20
			1	37	0	24.15	24.20	23.96
			1	74	0	23.99	23.91	23.73
			36	0	1	23.01	22.95	23.02
			36	20	1	22.94	22.92	23.02
			36	39	1	22.91	22.82	22.92
			75	0	1	22.98	22.95	22.94
		16QAM	1	0	1	23.02	23.20	23.20
			1	37	1	23.08	23.20	23.20
			1	74	1	22.93	23.09	23.20
			36	0	2	21.90	22.04	21.99
			36	20	2	22.07	22.00	22.04
			36	39	2	22.05	21.89	21.95
			75	0	2	22.01	21.89	21.97

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	23.94	23.94	24.05
			1	25	0	24.07	23.87	24.07
			1	49	0	23.93	23.78	24.02
			25	0	1	22.95	22.97	23.09
			25	12	1	22.92	22.97	23.01
			25	25	1	22.93	22.83	22.93
			50	0	1	23.00	22.88	23.00
		16QAM	1	0	1	22.79	23.20	23.05
			1	25	1	23.20	23.20	22.71
			1	49	1	23.20	23.20	23.20
			25	0	2	21.96	21.82	22.20
			25	12	2	22.01	21.92	22.01
			25	25	2	22.02	21.84	21.94
			50	0	2	21.99	21.96	22.05

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	23.77	23.93	23.92
			1	12	0	24.02	24.01	24.05
			1	24	0	23.71	23.84	23.76
			12	0	1	22.84	22.87	22.90
			12	7	1	22.85	22.86	22.94
			12	13	1	22.85	22.89	22.92
			25	0	1	22.90	22.89	22.94
		16QAM	1	0	1	23.11	22.97	23.15
			1	12	1	23.03	23.13	23.20
			1	24	1	22.93	23.14	23.20
			12	0	2	21.79	21.88	21.79
			12	7	2	21.94	22.03	21.95
			12	13	2	21.82	21.99	21.94
			25	0	2	21.97	21.86	21.84

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	23.68	23.83	23.91
			1	8	0	23.77	24.20	23.76
			1	14	0	23.64	24.06	23.72
			8	0	1	22.81	22.92	22.85
			8	4	1	22.83	22.92	22.88
			8	7	1	22.87	22.97	23.02
			15	0	1	22.87	22.85	22.99
		16QAM	1	0	1	23.20	23.20	22.51
			1	8	1	23.20	23.20	22.85
			1	14	1	23.20	23.20	22.73
			8	0	2	22.01	21.39	22.08
			8	4	2	22.05	21.53	22.09
			8	7	2	22.17	21.74	22.17
			15	0	2	21.96	21.99	21.98

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	23.84	23.77	23.75
			1	3	0	23.79	23.79	23.71
			1	5	0	23.71	23.81	23.82
			3	0	0	23.90	23.80	23.86
			3	1	0	23.99	23.83	23.79
			3	3	0	23.78	23.82	23.69
			6	0	1	22.82	22.92	22.87
		16QAM	1	0	1	23.20	22.71	23.20
			1	3	1	23.20	23.20	23.20
			1	5	1	23.20	23.20	23.20
			3	0	1	22.83	22.83	22.86
			3	1	1	22.82	22.52	22.97
			3	3	1	22.96	22.63	22.71
			6	0	2	21.89	21.95	21.90

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)		
						20050	20175	20300
						1720 MHz	1732.5 MHz	1745 MHz
LTE Band 4	20	QPSK	1	0	0	24.20	24.20	24.20
			1	49	0	24.09	24.20	24.20
			1	99	0	23.59	24.20	24.20
			50	0	1	22.96	23.00	23.12
			50	24	1	22.95	23.02	23.18
			50	50	1	22.98	23.04	23.07
			100	0	1	23.03	23.09	23.13
		16QAM	1	0	1	23.20	22.98	23.20
			1	49	1	23.20	23.01	22.95
			1	99	1	23.08	22.97	22.84
			50	0	2	22.10	22.09	22.20
			50	24	2	22.10	22.10	22.20
			50	50	2	22.13	22.20	22.20
			100	0	2	22.09	22.15	22.07

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	23.86	24.01	24.12
			1	37	0	23.86	24.20	24.20
			1	74	0	23.78	23.98	24.02
			36	0	1	22.89	22.99	23.15
			36	20	1	22.85	23.00	23.13
			36	39	1	22.91	22.99	23.02
			75	0	1	22.88	23.04	23.01
		16QAM	1	0	1	23.20	23.13	23.20
			1	37	1	23.20	23.20	23.20
			1	74	1	23.20	23.09	23.20
			36	0	2	22.02	22.06	22.20
			36	20	2	22.02	22.13	22.20
			36	39	2	21.98	22.14	22.20
			75	0	2	22.03	22.15	22.15

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	23.95	24.20	24.06
			1	25	0	24.00	24.02	23.92
			1	49	0	23.88	23.80	24.14
			25	0	1	22.86	22.93	23.06
			25	12	1	22.86	22.96	23.01
			25	25	1	22.87	22.99	23.01
			50	0	1	22.86	23.03	23.02
		16QAM	1	0	1	23.20	23.16	23.20
			1	25	1	23.20	23.20	23.20
			1	49	1	22.74	23.20	23.13
			25	0	2	21.95	22.04	22.15
			25	12	2	21.89	22.20	22.15
			25	25	2	21.90	22.06	22.20
			50	0	2	21.90	22.02	21.99

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	23.83	24.00	23.87
			1	12	0	23.95	24.20	24.20
			1	24	0	23.70	24.05	23.96
			12	0	1	22.85	22.92	23.06
			12	7	1	22.80	22.91	23.04
			12	13	1	22.79	22.97	23.06
			25	0	1	22.76	22.96	23.07
		16QAM	1	0	1	22.88	23.13	23.20
			1	12	1	22.79	23.14	23.20
			1	24	1	22.47	22.98	23.20
			12	0	2	21.78	22.20	22.09
			12	7	2	21.73	21.79	22.18
			12	13	2	21.84	22.07	22.06
			25	0	2	22.10	22.02	22.04

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	23.94	23.83	23.81
			1	8	0	23.80	23.79	24.07
			1	14	0	23.81	23.99	23.95
			8	0	1	22.77	23.00	23.02
			8	4	1	22.89	23.02	23.04
			8	7	1	22.70	22.92	22.99
			15	0	1	22.73	22.91	23.04
		16QAM	1	0	1	23.20	23.03	22.77
			1	8	1	23.20	23.09	23.16
			1	14	1	23.20	23.13	23.11
			8	0	2	21.81	22.02	22.00
			8	4	2	22.07	21.61	21.99
			8	7	2	22.00	21.59	22.04
			15	0	2	22.11	22.12	21.92

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	23.63	23.88	23.93
			1	3	0	23.66	23.97	23.96
			1	5	0	23.65	24.03	23.74
			3	0	0	23.91	23.80	23.98
			3	1	0	23.85	23.82	24.00
			3	3	0	23.83	23.83	23.92
			6	0	1	22.70	22.91	22.95
		16QAM	1	0	1	23.20	23.20	22.92
			1	3	1	23.20	22.88	22.90
			1	5	1	23.20	22.88	23.06
			3	0	1	22.74	23.20	23.20
			3	1	1	22.77	22.47	23.20
			3	3	1	22.77	22.94	23.20
			6	0	2	21.92	21.91	22.05

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)		
						20450	20525	20600
						829 MHz	836.5 MHz	844 MHz
LTE Band 5	10	QPSK	1	0	0	23.90	23.89	23.77
			1	25	0	23.65	23.57	23.81
			1	49	0	23.65	23.69	23.77
			25	0	1	22.89	22.82	22.87
			25	12	1	22.82	22.72	22.85
			25	25	1	22.79	22.74	22.85
			50	0	1	22.83	22.77	22.85
		16QAM	1	0	1	23.20	23.20	22.91
			1	25	1	23.20	23.20	22.79
			1	49	1	22.56	23.20	22.49
			25	0	2	21.87	21.86	22.05
			25	12	2	21.71	21.83	22.13
			25	25	2	21.84	21.76	21.82
			50	0	2	21.82	21.75	21.77

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	23.72	23.66	23.81
			1	12	0	23.74	24.20	23.88
			1	24	0	23.59	23.78	23.60
			12	0	1	22.73	22.70	22.81
			12	7	1	22.79	22.66	22.82
			12	13	1	22.75	22.62	22.73
			25	0	1	22.76	22.72	22.83
		16QAM	1	0	1	22.78	22.87	23.20
			1	12	1	23.20	22.86	23.11
			1	24	1	22.83	22.49	22.72
			12	0	2	21.99	21.80	21.91
			12	7	2	22.09	21.76	21.87
			12	13	2	21.88	21.75	21.77
			25	0	2	22.04	21.64	21.76

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	23.71	23.33	23.69
			1	8	0	23.80	23.51	23.54
			1	14	0	23.62	23.38	23.56
			8	0	1	22.81	22.64	22.71
			8	4	1	22.79	22.72	22.69
			8	7	1	22.69	22.63	22.74
			15	0	1	22.73	22.67	22.74
		16QAM	1	0	1	23.06	22.92	23.20
			1	8	1	23.20	23.20	23.20
			1	14	1	23.20	23.20	22.88
			8	0	2	22.00	21.61	21.99
			8	4	2	22.11	21.62	21.89
			8	7	2	21.71	21.62	21.82
			15	0	2	21.74	21.57	21.61

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	23.62	23.64	23.64
			1	3	0	23.54	23.76	23.60
			1	5	0	23.61	23.57	23.59
			3	0	0	23.77	23.56	23.68
			3	1	0	23.72	23.72	23.69
			3	3	0	23.72	23.60	23.62
			6	0	1	22.76	22.69	22.70
		16QAM	1	0	1	23.11	22.77	22.92
			1	3	1	23.20	23.01	22.61
			1	5	1	23.20	23.20	23.20
			3	0	1	22.92	22.61	23.20
			3	1	1	22.83	22.20	22.71
			3	3	1	23.07	22.62	22.76
			6	0	2	22.13	21.66	21.83

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)
						23790
						710 MHz
LTE Band 17	10	QPSK	1	0	0	24.20
			1	25	0	24.20
			1	49	0	24.10
			25	0	1	23.20
			25	12	1	23.20
			25	25	1	23.20
			50	0	1	23.20
		16QAM	1	0	1	23.00
			1	25	1	23.20
			1	49	1	23.20
			25	0	2	21.90
			25	12	2	22.00
			25	25	2	21.90
			50	0	2	22.00

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)
						23790
						710 MHz
LTE Band 17	5	QPSK	1	0	0	24.10
			1	12	0	24.20
			1	24	0	23.80
			12	0	1	22.70
			12	7	1	22.70
			12	13	1	22.70
			25	0	1	22.70
		16QAM	1	0	1	22.60
			1	12	1	22.60
			1	24	1	22.60
			12	0	2	22.00
			12	7	2	22.10
			12	13	2	22.00
			25	0	2	21.80

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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. PEAK TO AVERAGE RATIO

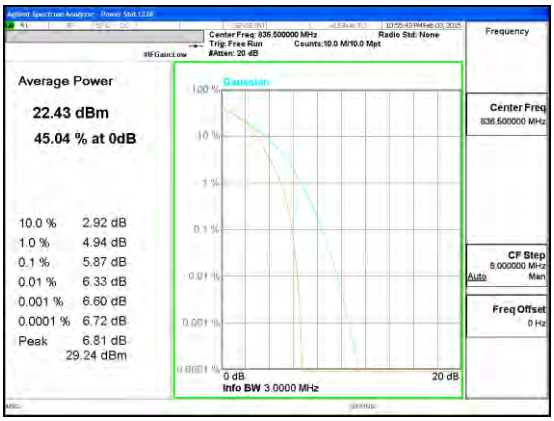
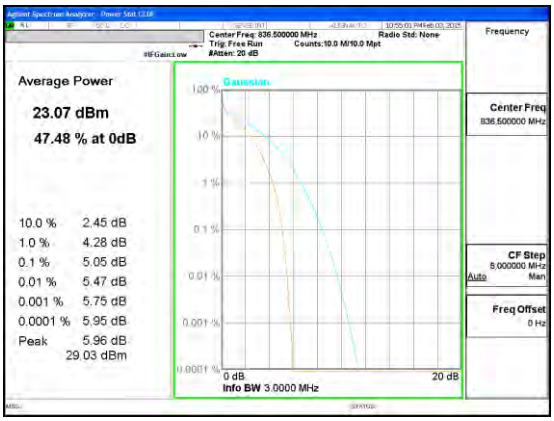
TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

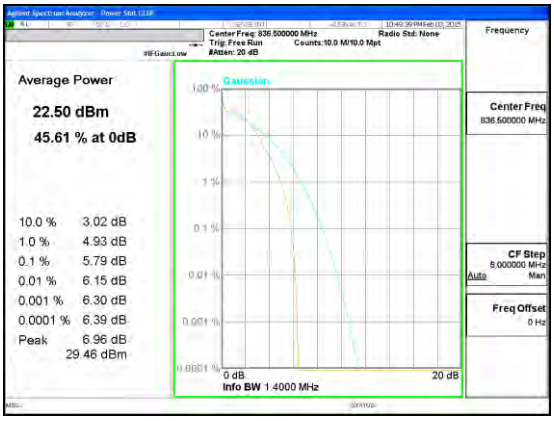
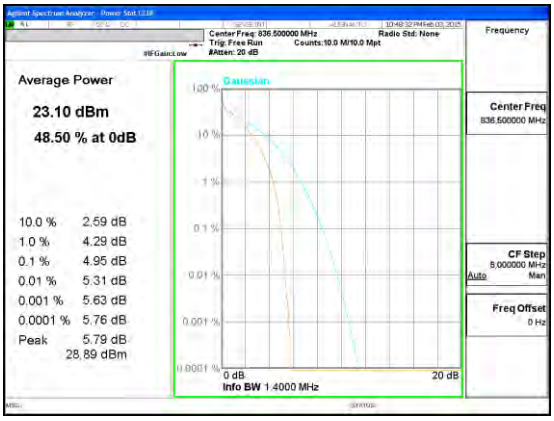
TEST SPEC

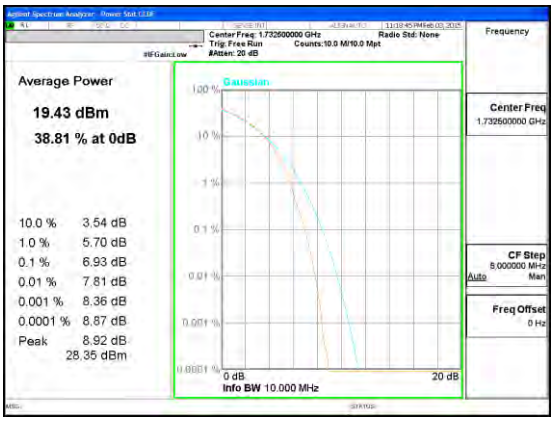
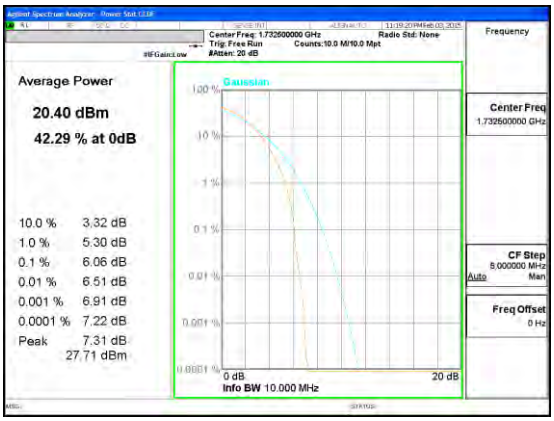
In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

9.1. CONDUCTED PEAK TO AVERAGE RESULT

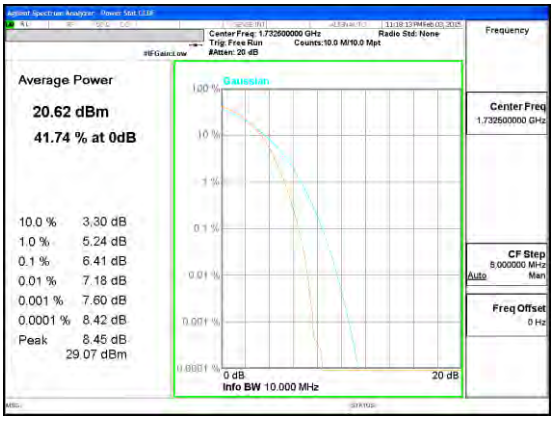
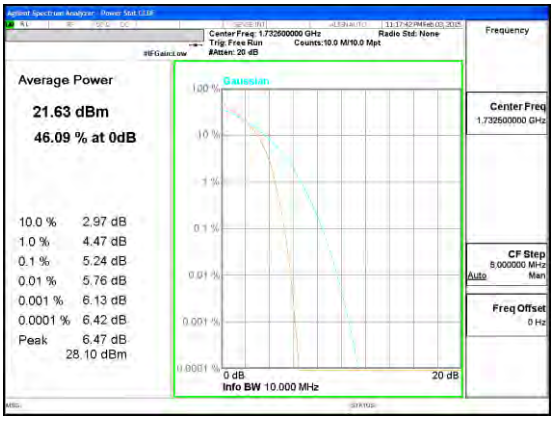
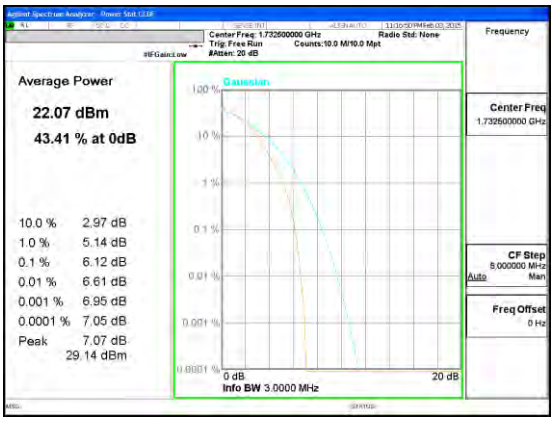
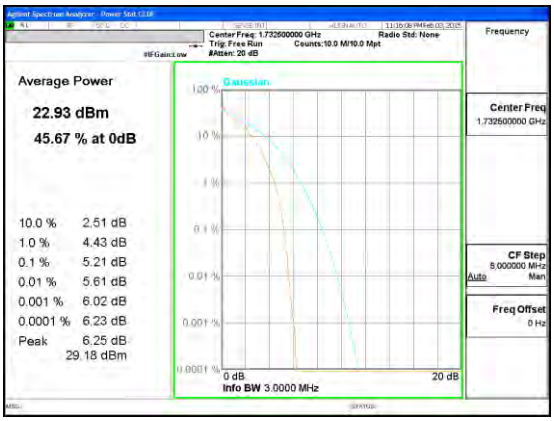
Band LTE5 3MHz 16QAM	 Band LTE5 3MHz 16QAM Mid channel	 Band LTE5 3MHz QPSK Mid channel

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

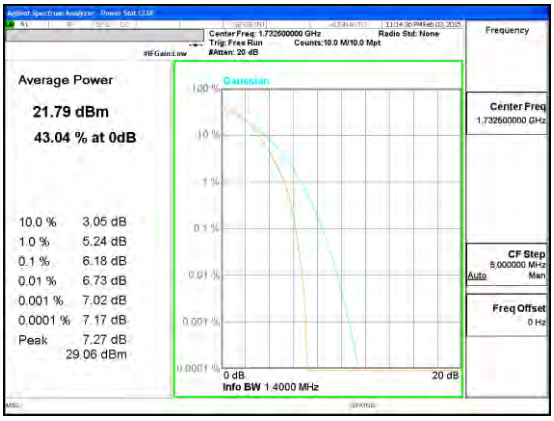
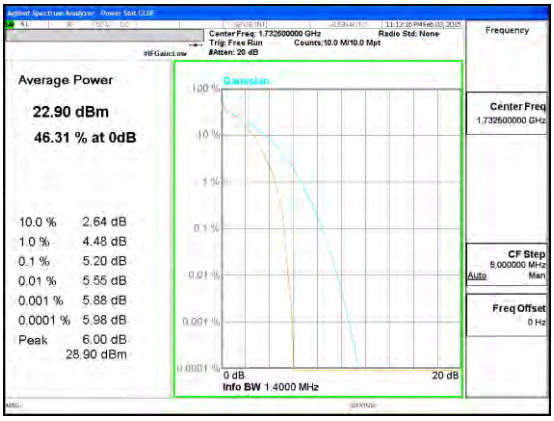
Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz 16QAM Mid channel	 Band LTE5 1.4MHz QPSK Mid channel

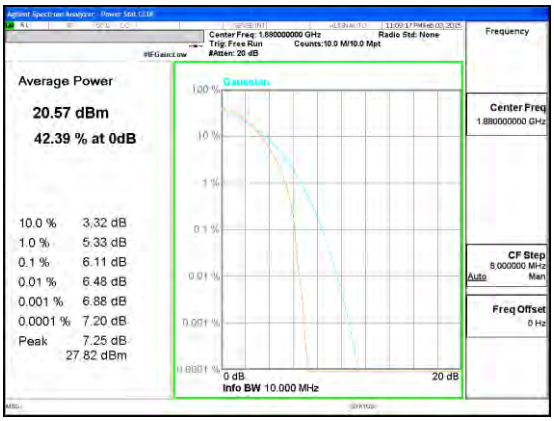
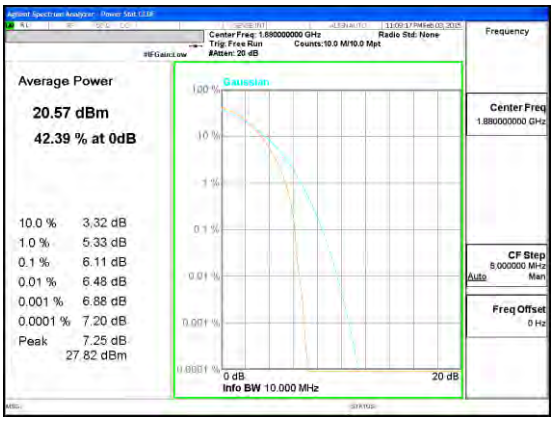
Band LTE4 20MHz 16QAM	 Band LTE4 20MHz 16QAM Mid channel	 Band LTE4 20MHz QPSK Mid channel

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

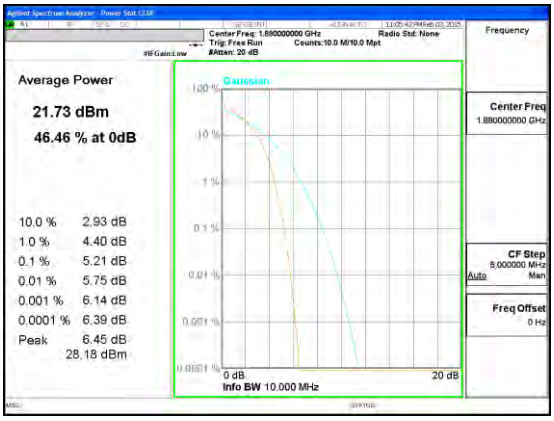
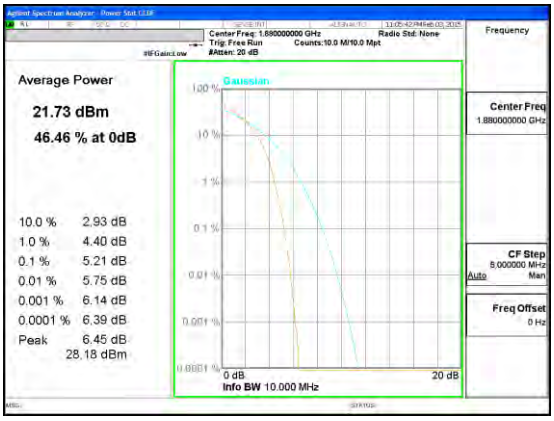
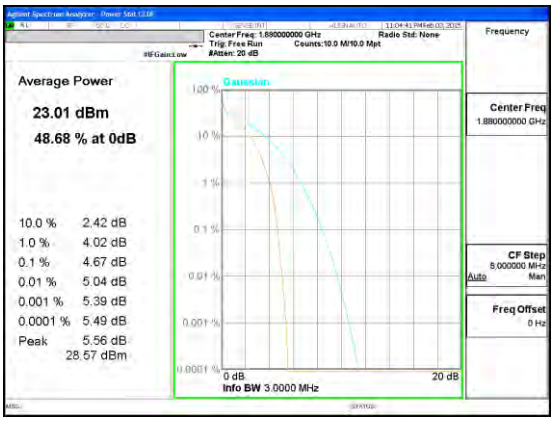
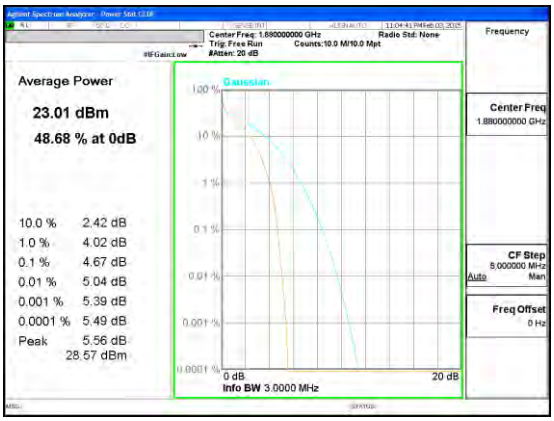
Band LTE4 15MHz 16QAM	 Band LTE4 15MHz 16QAM Mid channel	 Band LTE4 15MHz QPSK Mid channel
Band LTE4 3MHz 16QAM	 Band LTE4 3MHz 16QAM Mid channel	 Band LTE4 3MHz QPSK Mid channel

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

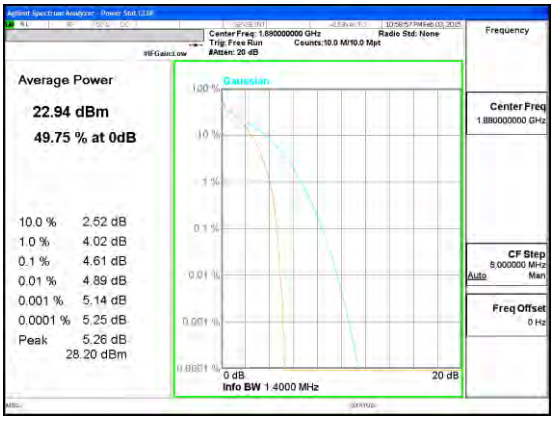
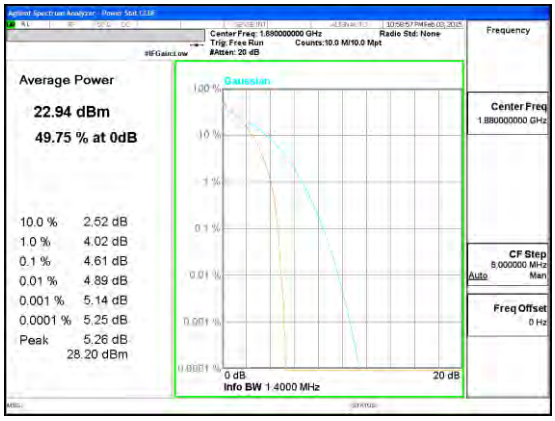
Band LTE4 1.4MHz 16QAM	 Band LTE4 1.4MHz 16QAM Mid channel	 Band LTE4 1.4MHz QPSK Mid channel

Band LTE2 20MHz QPSK	 Band LTE2 20MHz QPSK Mid channel	 Band LTE2 20MHz QPSK Mid channel

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 QPSK Mid channel	 Band LTE2 15MHz QPSK Mid channel
Band LTE2 3MHz QPSK	 Band LTE2 3MHz QPSK Mid channel	 Band LTE2 3MHz QPSK Mid channel

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 QPSK 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.

10. LIMITS AND CONDUCTED RESULTS

10.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

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, LTE

RESULTS

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

10.1.1. LTE OCCUPIED BANDWIDTH RESULTS

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	3	QPSK	15/0	825.5	2.681	2.958
			15/0	836.5	2.683	2.941
			15/0	847.5	2.69	2.976
		16QAM	15/0	825.5	2.691	2.987
			15/0	836.5	2.688	2.97
			15/0	847.5	2.691	2.965
LTE5	1.4	QPSK	6/0	824.7	1.082	1.271
			6/0	836.5	1.084	1.275
			6/0	848.3	1.081	1.27
		16QAM	6/0	824.7	1.09	1.263
			6/0	836.5	1.085	1.298
			6/0	848.3	1.087	1.298

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

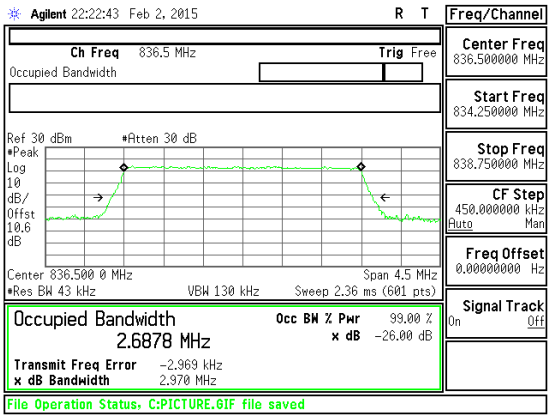
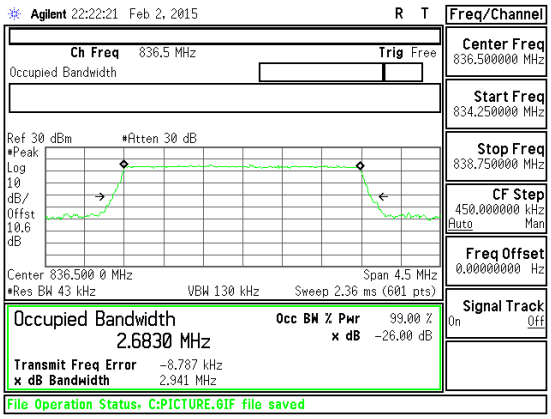
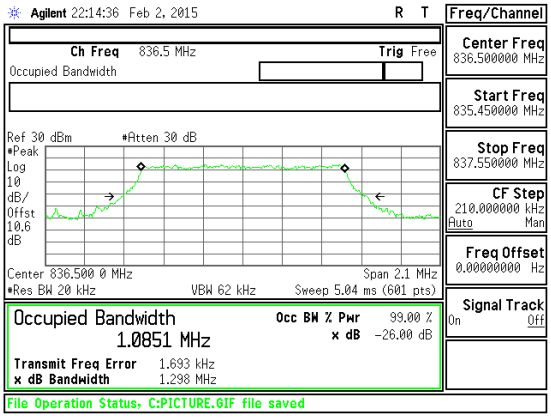
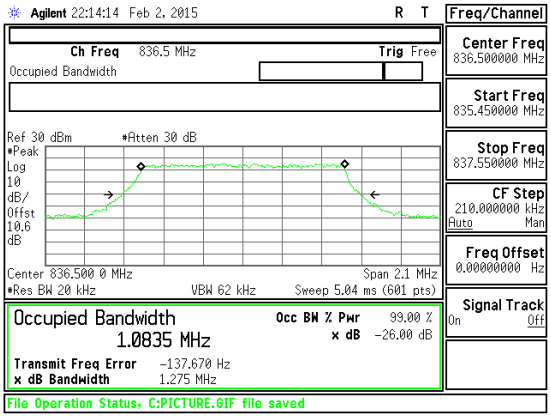
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	20	QPSK	100/0	1720	17.85	19.08
			100/0	1732.5	17.90	19.43
			100/0	1745	17.86	19.20
		16QAM	100/0	1720	17.90	19.28
			100/0	1732.5	17.94	19.33
			100/0	1745	17.85	19.17
	15	QPSK	75/0	1717.5	13.43	14.53
			75/0	1732.5	13.43	14.59
			75/0	1747.5	13.42	14.54
		16QAM	75/0	1717.5	13.44	14.58
			75/0	1732.5	13.43	14.60
			75/0	1747.5	13.44	14.45
	3	QPSK	15/0	1711.5	2.689	2.973
			15/0	1732.5	2.688	2.938
			15/0	1753.5	2.694	2.996
		16QAM	15/0	1711.5	2.693	2.97
			15/0	1732.5	2.686	2.977
			15/0	1753.5	2.683	2.975
	1.4	QPSK	6/0	1710.7	1.085	1.296
			6/0	1732.5	1.084	1.267
			6/0	1754.3	1.079	1.279
		16QAM	6/0	1710.7	1.089	1.316
			6/0	1732.5	1.085	1.266
			6/0	1754.3	1.084	1.302

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	20	QPSK	100/0	1860	17.85	19.16
			100/0	1880	17.92	19.14
			100/0	1900	17.90	19.21
		16QAM	100/0	1860	17.87	19.07
			100/0	1880	17.90	19.25
			100/0	1900	17.88	19.30
	15	QPSK	75/0	1857.5	13.40	14.59
			75/0	1880	13.43	14.64
			75/0	1902.5	13.45	14.57
		16QAM	75/0	1857.5	13.46	14.57
			75/0	1880	13.44	14.63
			75/0	1902.5	13.41	14.58
	3	QPSK	15/0	1851.5	2.682	2.945
			15/0	1880	2.689	2.966
			15/0	1908.5	2.689	2.967
		16QAM	15/0	1851.5	2.681	2.977
			15/0	1880	2.684	2.998
			15/0	1908.5	2.685	2.962
	1.4	QPSK	6/0	1850.7	1.088	1.312
			6/0	1880	1.086	1.281
			6/0	1909.3	1.081	1.283
		16QAM	6/0	1850.7	1.093	1.286
			6/0	1880	1.086	1.292
			6/0	1909.3	1.091	1.313

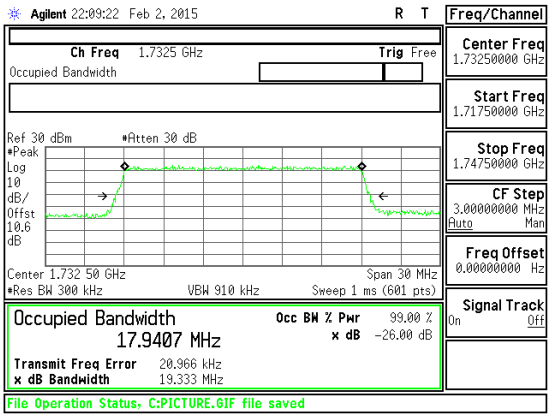
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

10.1.2. OCCUPIED BANDWIDTH PLOTS

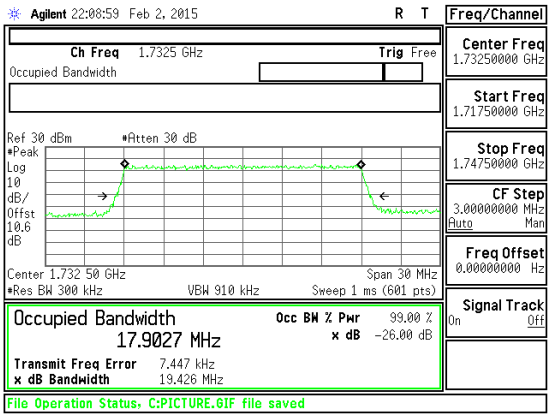
Band LTE5 3MHz 16QAM	 Band LTE5 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 3MHz OBW QPSK Mid Channel FRB.gif
Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 1.4MHz OBW QPSK Mid Channel FRB.gif

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

Band LTE4 20MHz 16QAM

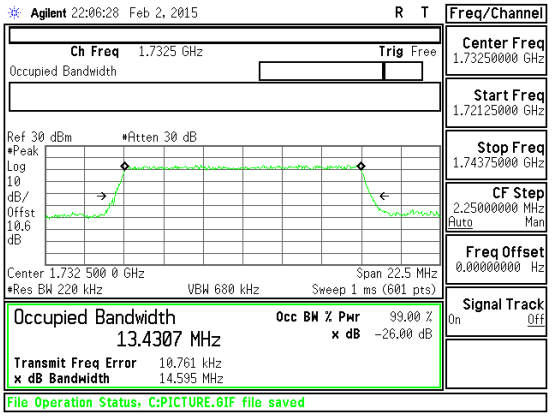


Band LTE4 20MHz OBW 16QAM Mid Channel FRB.gif

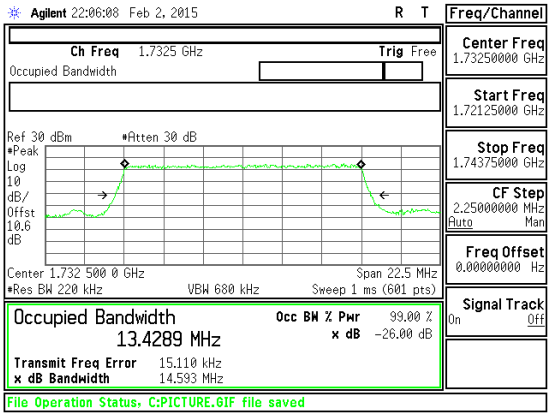


Band LTE4 20MHz OBW QPSK Mid Channel FRB.gif

Band LTE4 15MHz 16QAM



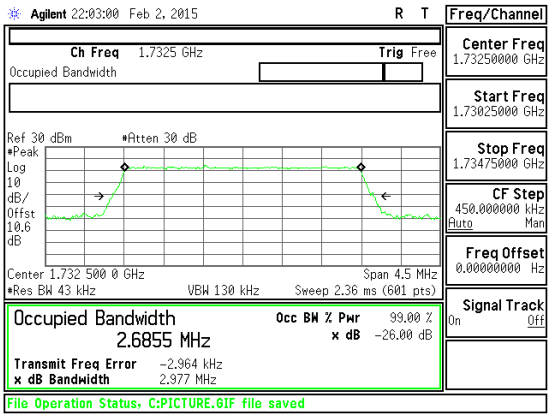
Band LTE4 15MHz OBW 16QAM Mid Channel FRB.gif



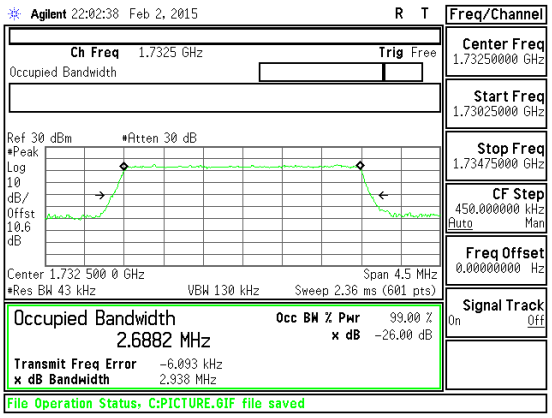
Band LTE4 15MHz OBW QPSK Mid Channel FRB.gif

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

Band LTE4 3MHz 16QAM

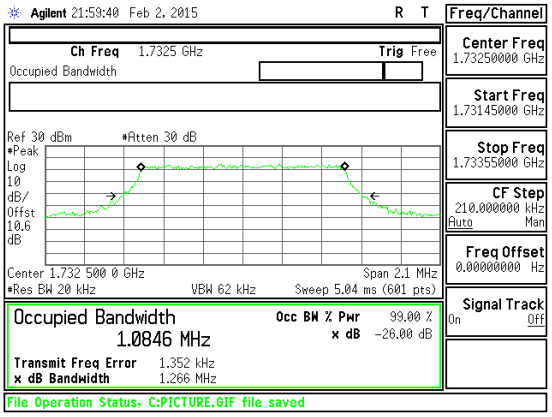


Band LTE4 3MHz OBW 16QAM Mid Channel FRB.gif

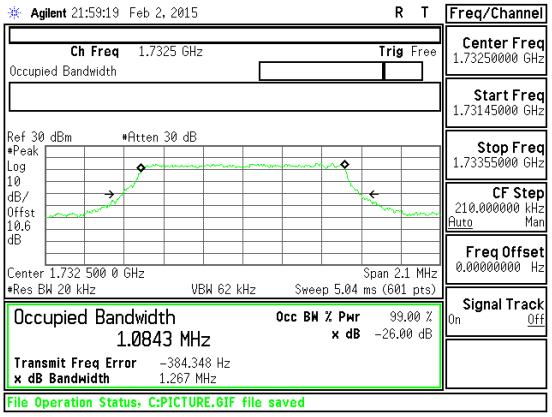


Band LTE4 3MHz OBW QPSK Mid Channel FRB.gif

Band LTE4 1.4MHz 16QAM



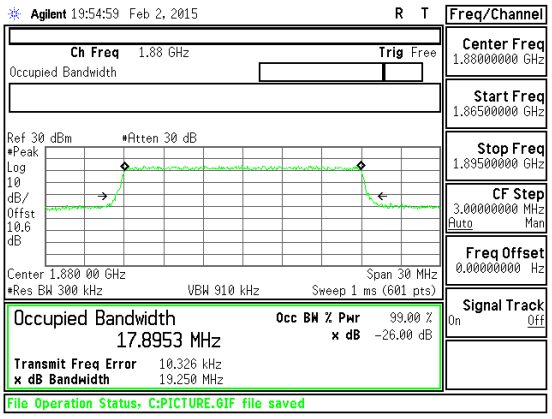
Band LTE4 1.4MHz OBW 16QAM Mid Channel FRB.gif



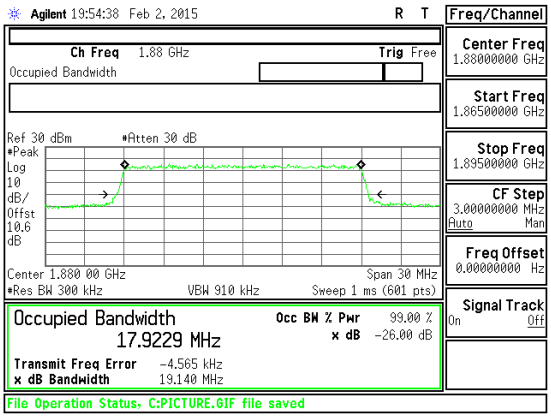
Band LTE4 1.4MHz OBW QPSK Mid Channel FRB.gif

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

Band LTE2 20MHz 16QAM

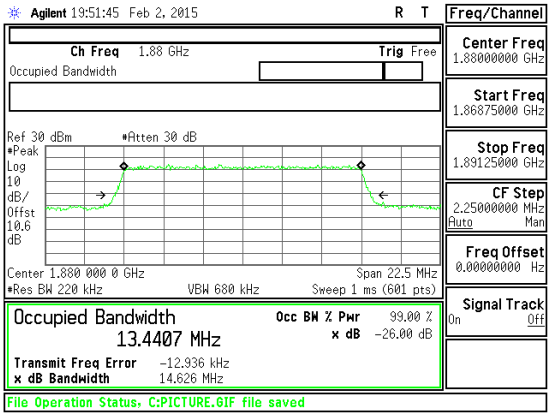


Band LTE2 20MHz OBW 16QAM Mid Channel FRB.gif

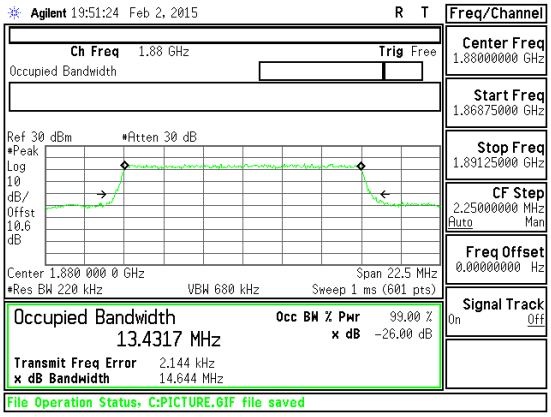


Band LTE2 20MHz OBW QPSK Mid Channel FRB.gif

Band LTE2 15MHz 16QAM



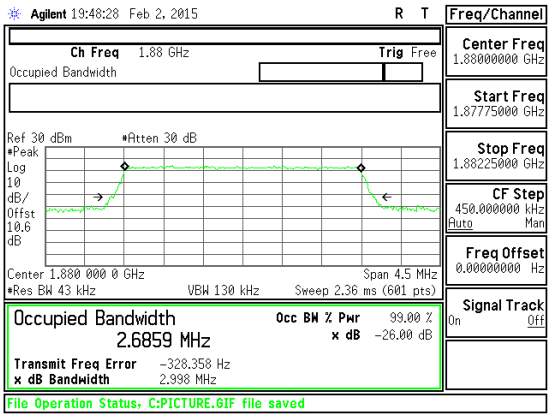
Band LTE2 15MHz OBW 16QAM Mid Channel FRB.gif



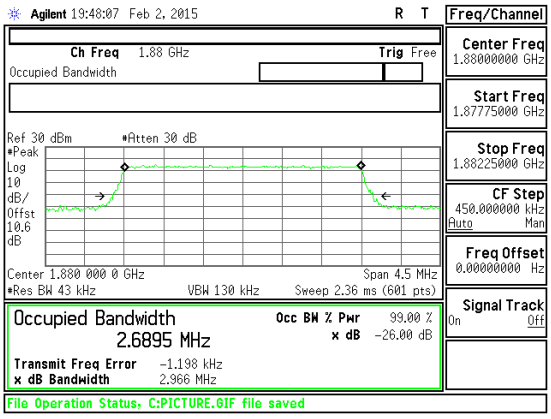
Band LTE2 15MHz OBW QPSK Mid Channel FRB.gif

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

Band LTE2 3MHz 16QAM

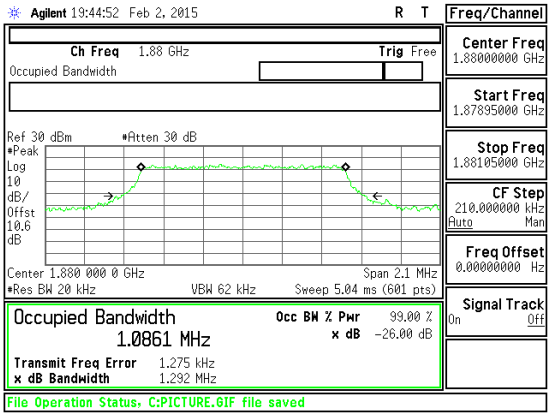


Band LTE2 3MHz OBW 16QAM Mid Channel FRB.gif

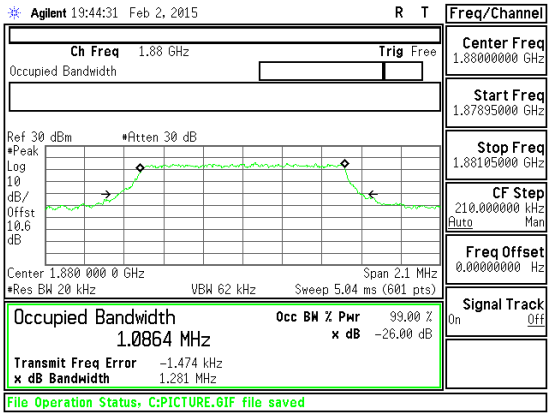


Band LTE2 3MHz OBW QPSK Mid Channel FRB.gif

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.

11. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §24.238, §27. 53

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.

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.

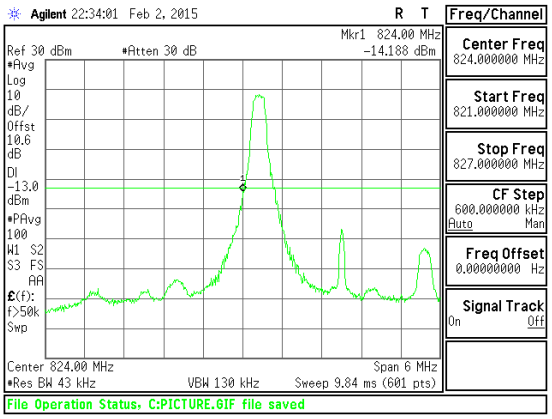
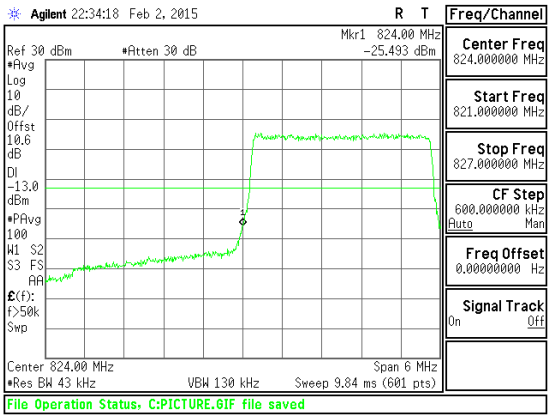
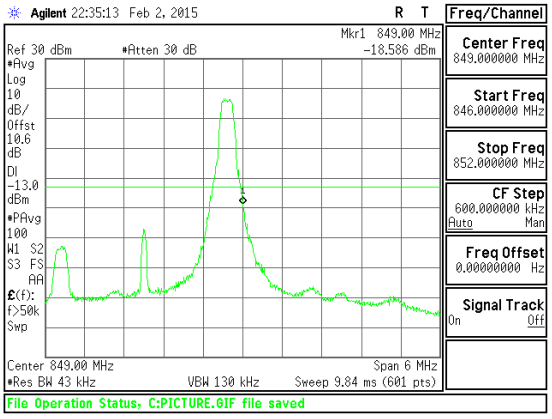
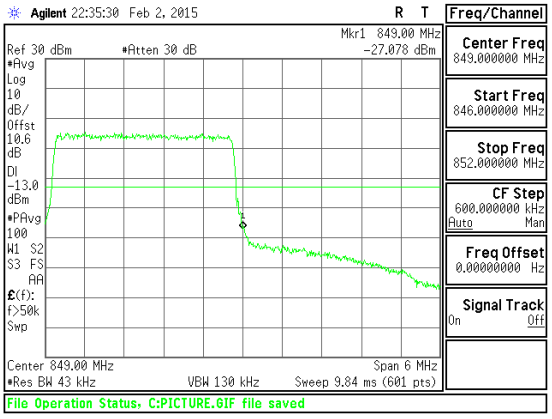
MODES TESTED

GSM, WCDMA, LTE

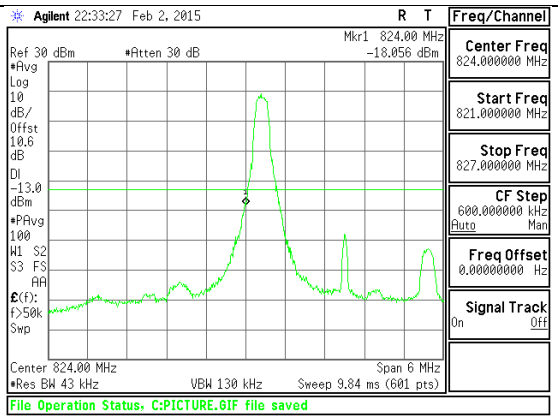
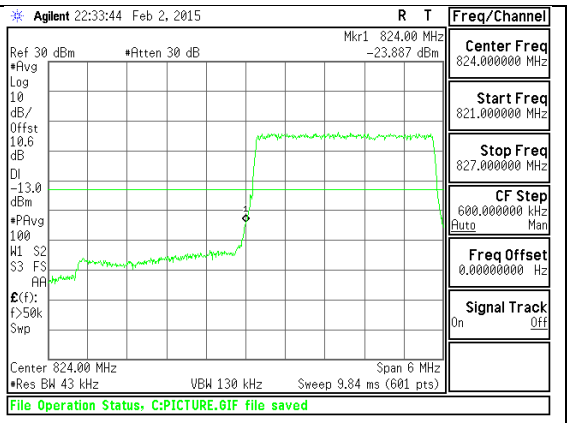
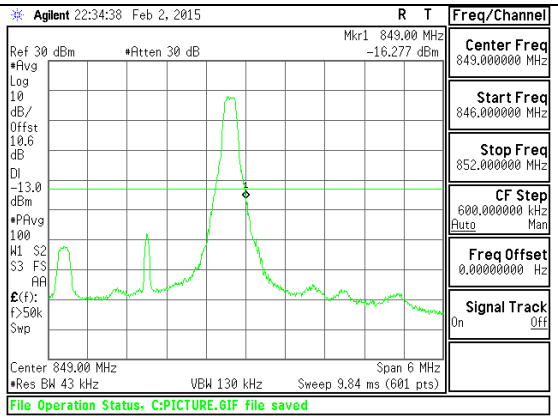
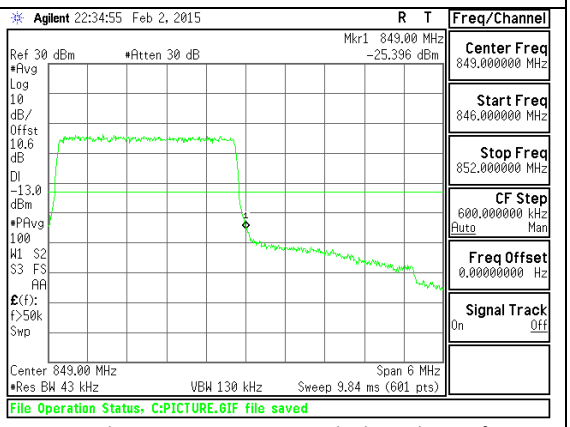
RESULTS

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

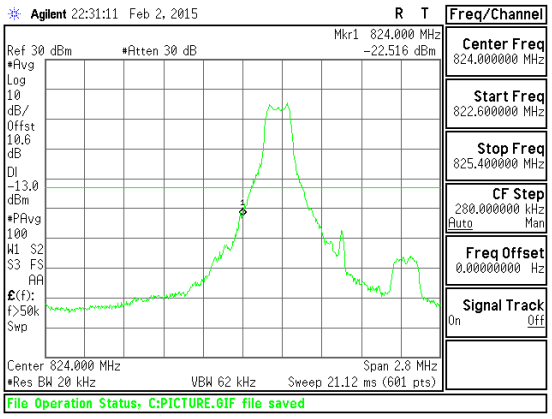
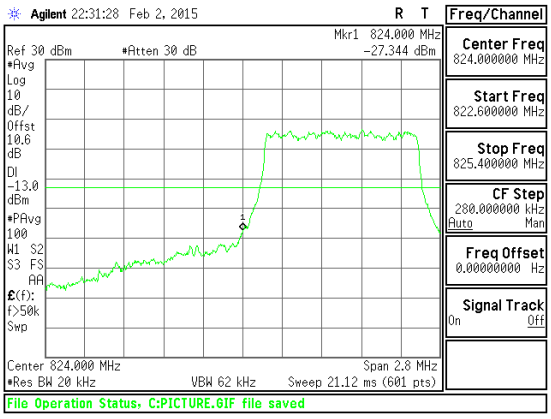
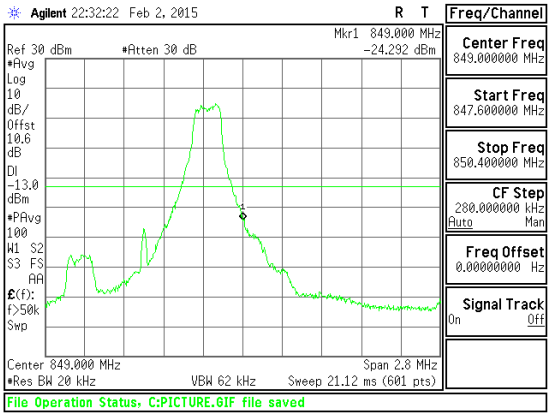
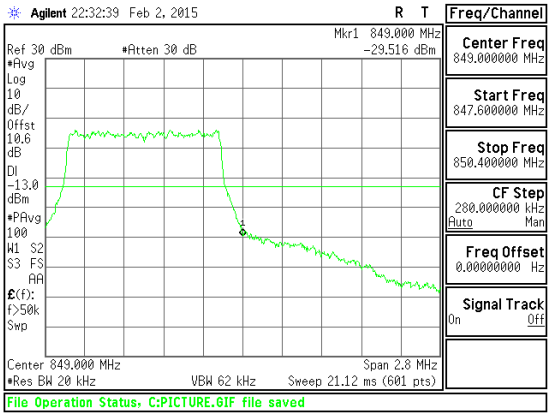
11.1.1. BAND EDGE PLOTS

Band LTE5 3MHz 16QAM	 Band LTE5 3MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 3MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 3MHz 16QAM	 Band LTE5 3MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 3MHz CBE 16QAM High Channel FRB.gif

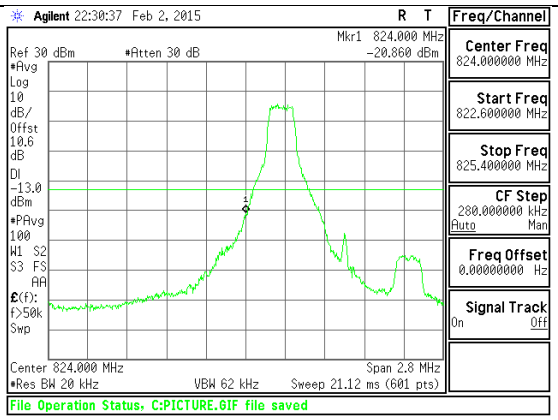
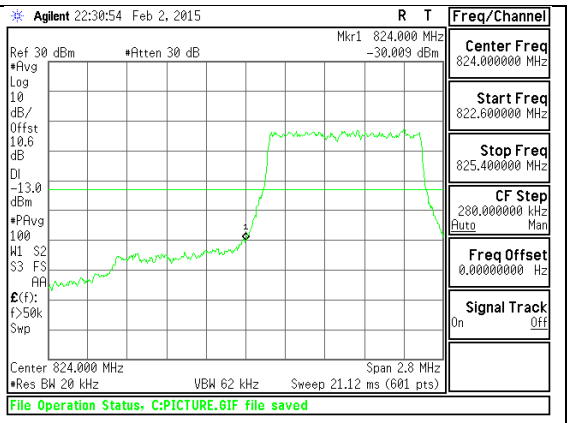
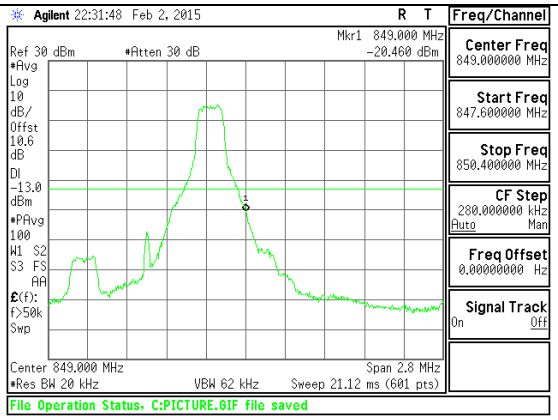
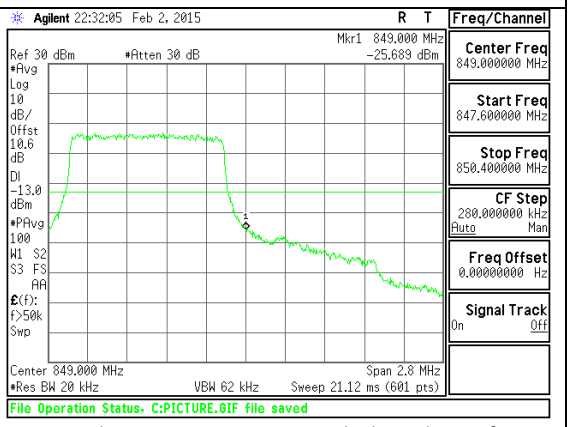
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE5 3MHz QPSK	 Band LTE5 3MHz CBE QPSK Low Channel 1RB.gif	 Band LTE5 3MHz CBE QPSK Low Channel FRB.gif
Band LTE5 3MHz QPSK	 Band LTE5 3MHz CBE QPSK High Channel 1RB.gif	 Band LTE5 3MHz CBE QPSK High Channel FRB.gif

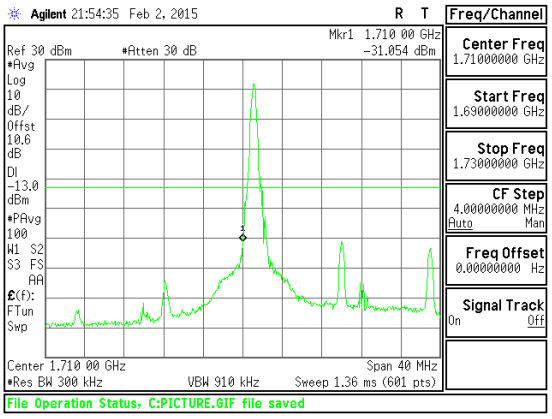
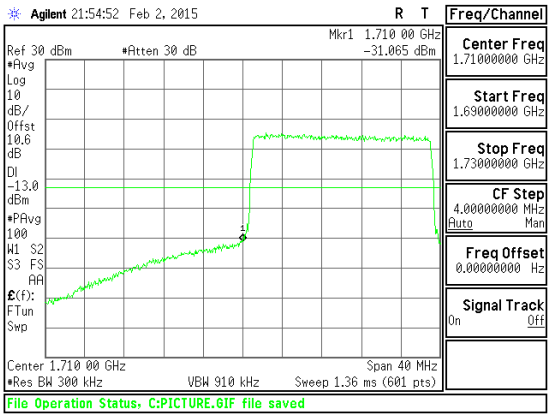
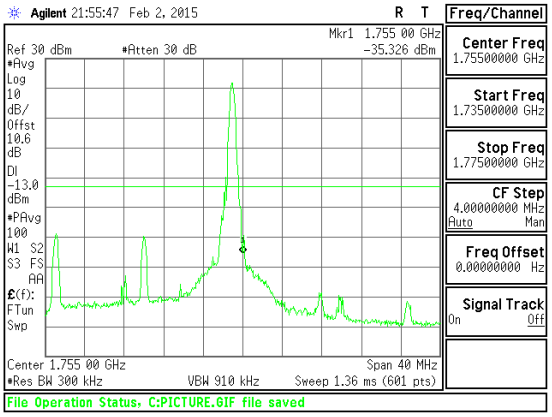
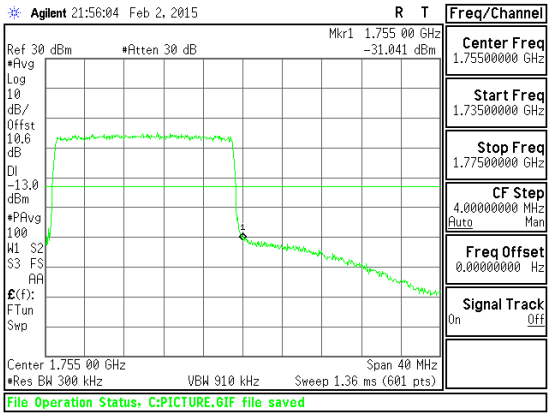
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 1.4MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 1.4MHz CBE 16QAM High Channel FRB.gif

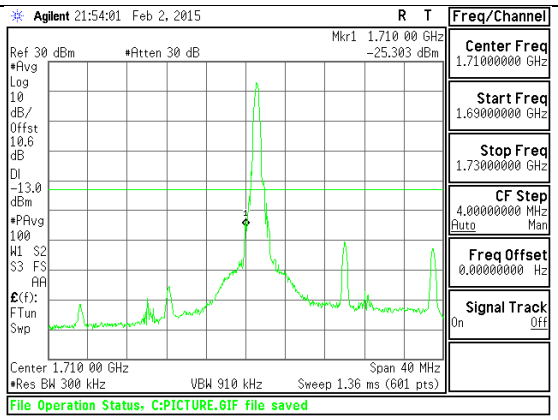
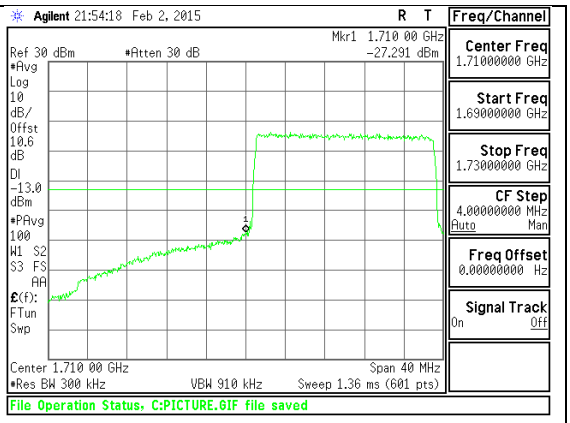
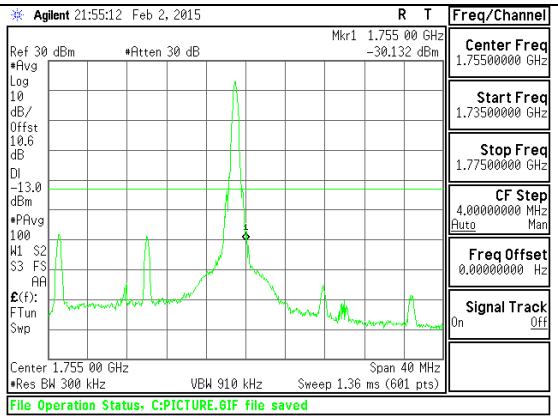
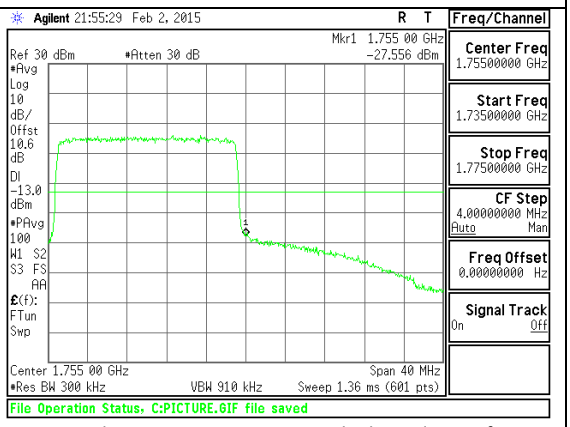
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE5 1.4MHz QPSK	 Band LTE5 1.4MHz CBE QPSK Low Channel 1RB.gif	 Band LTE5 1.4MHz CBE QPSK Low Channel FRB.gif
Band LTE5 1.4MHz QPSK	 Band LTE5 1.4MHz CBE QPSK High Channel 1RB.gif	 Band LTE5 1.4MHz CBE QPSK High Channel FRB.gif

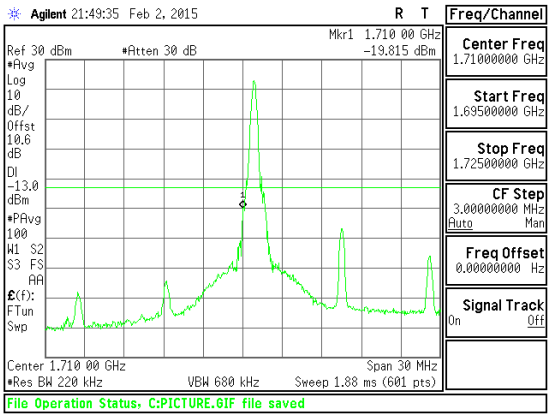
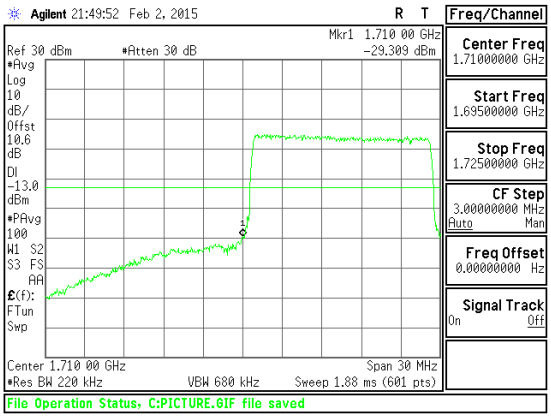
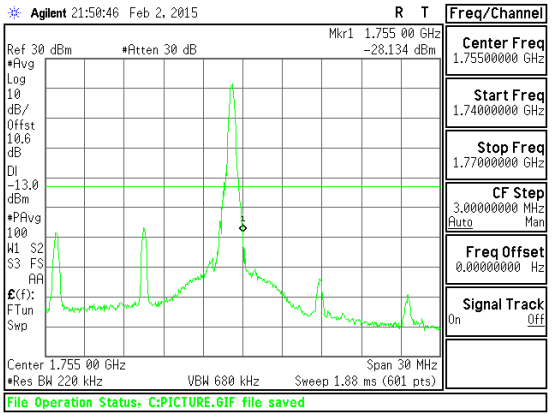
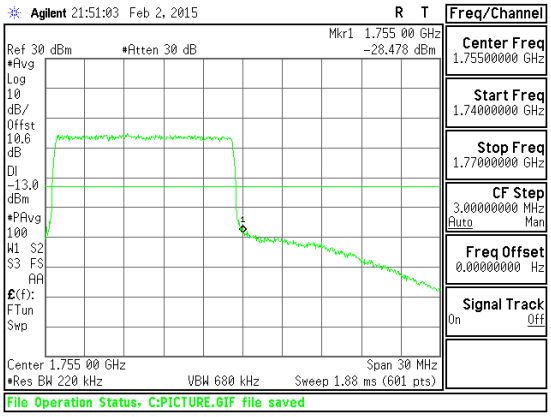
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

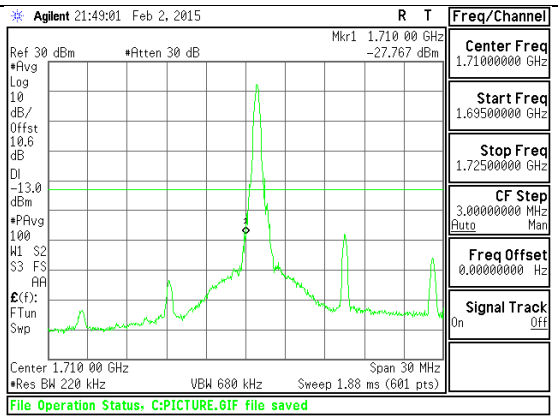
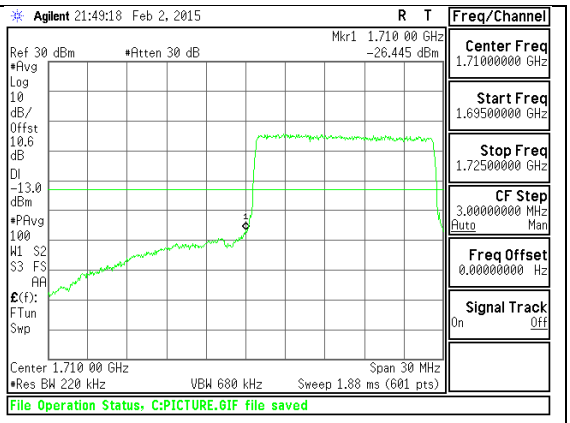
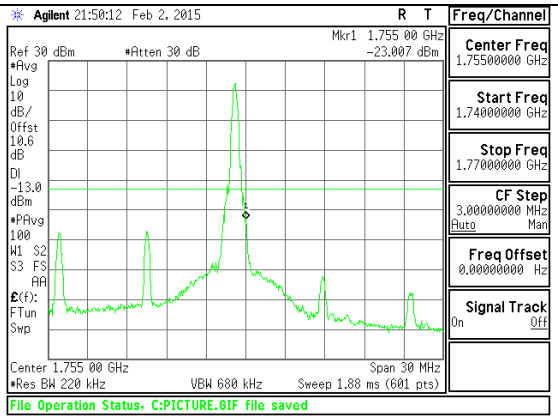
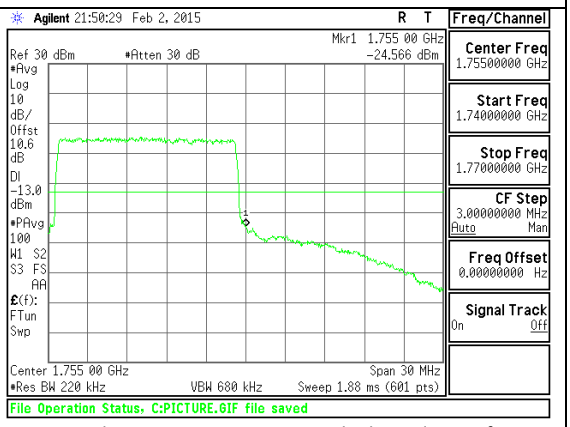
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

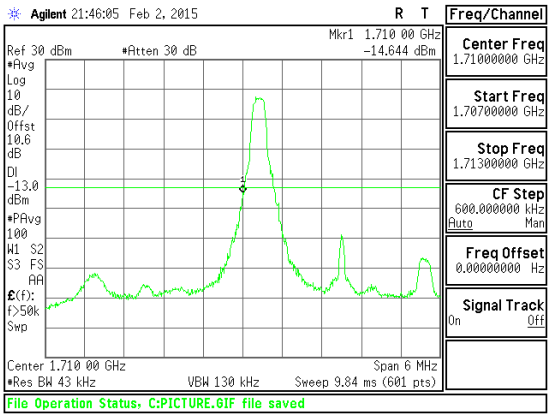
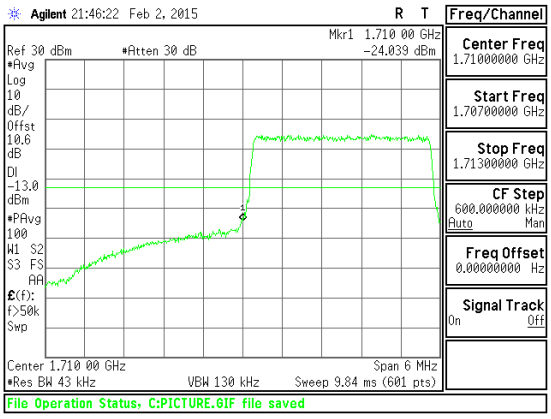
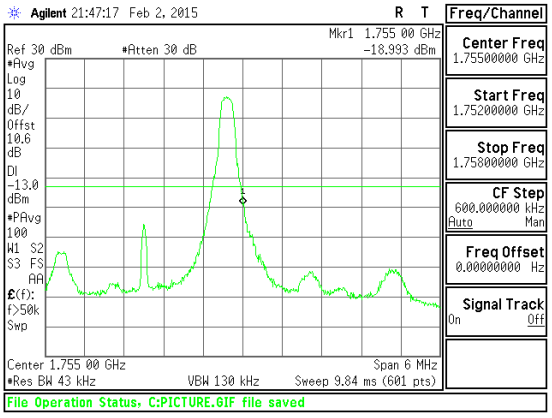
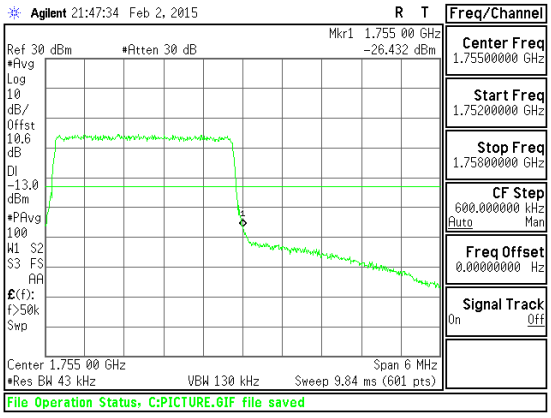
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

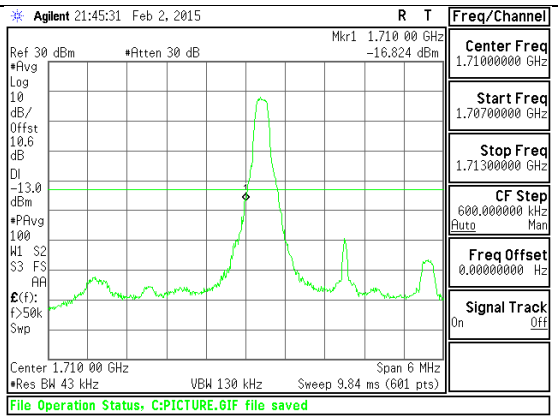
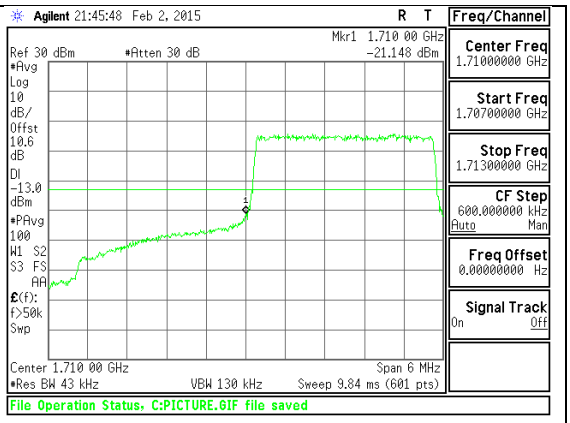
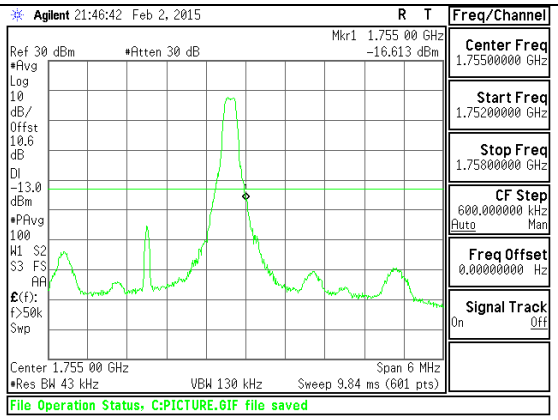
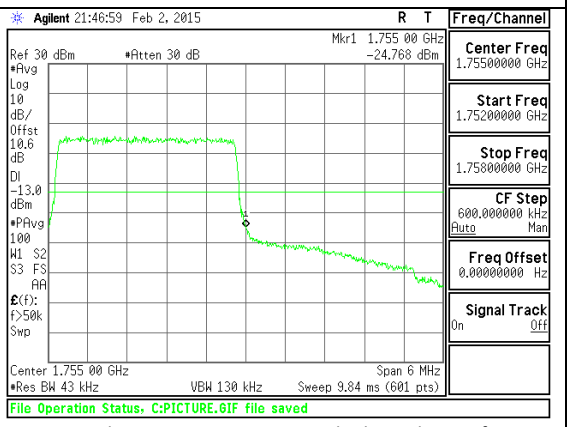
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

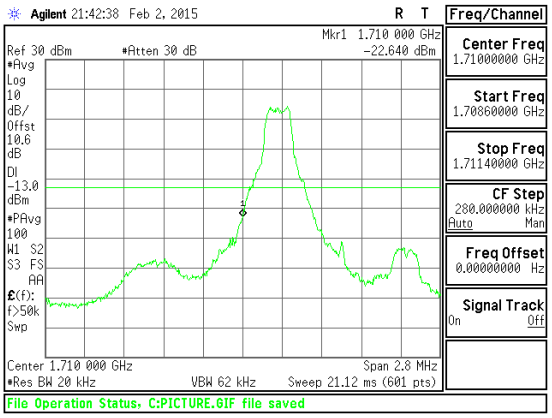
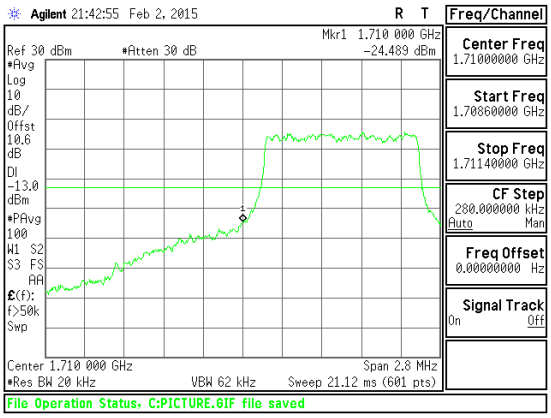
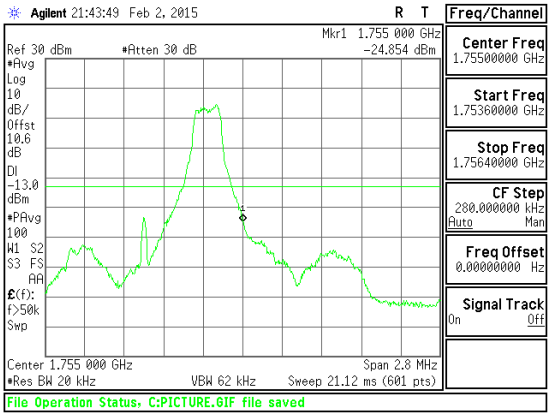
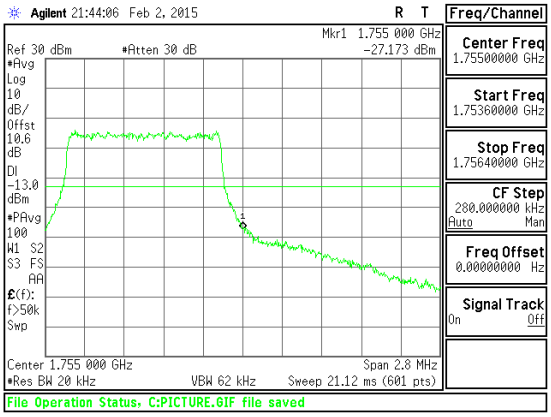
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE4 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

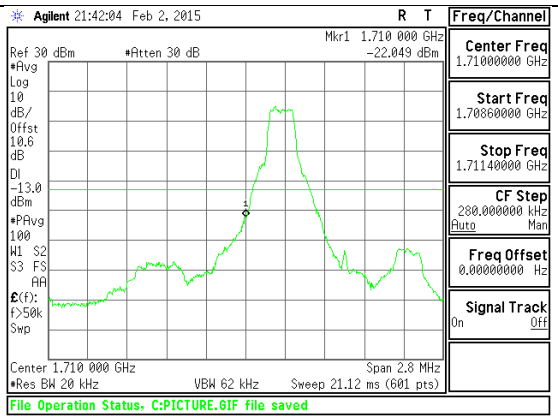
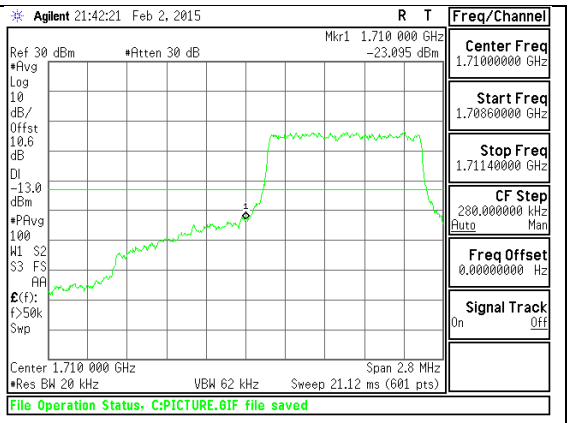
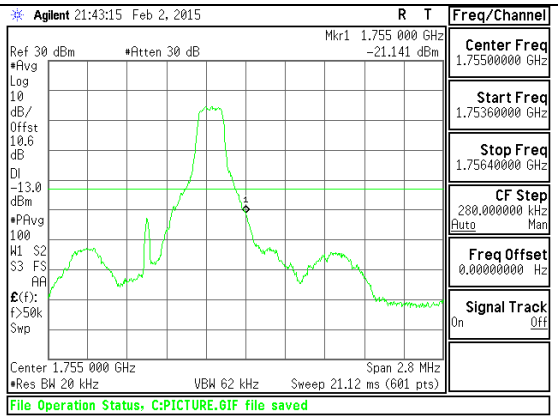
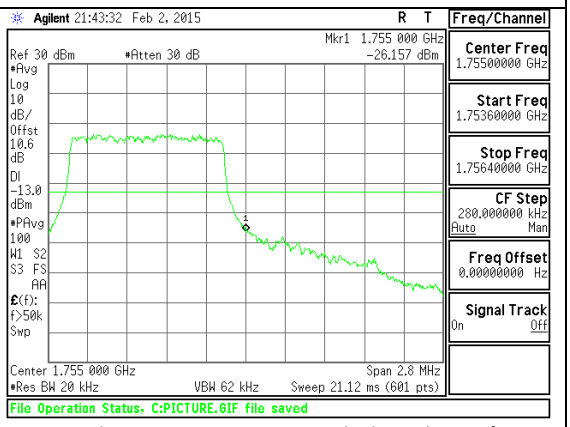
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

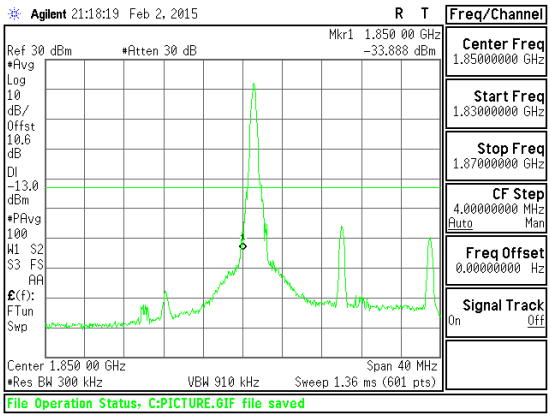
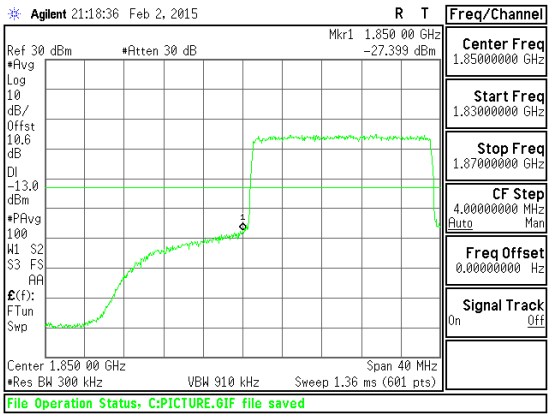
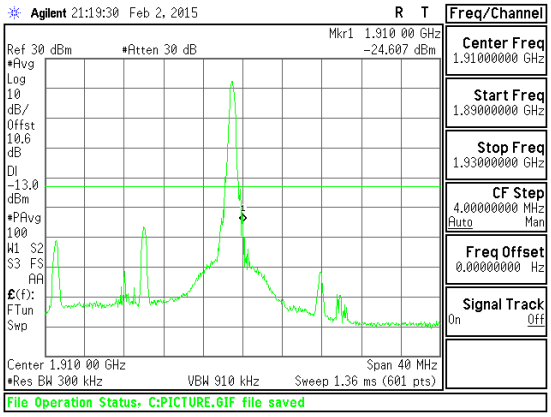
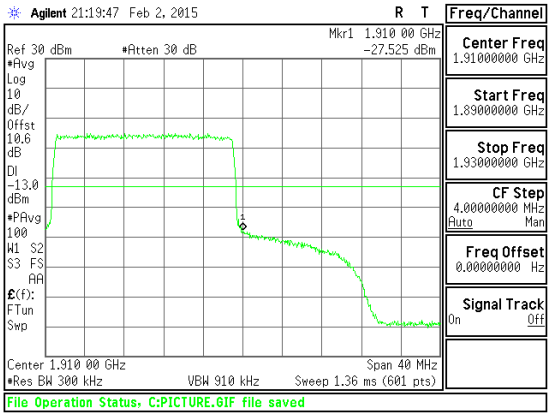
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

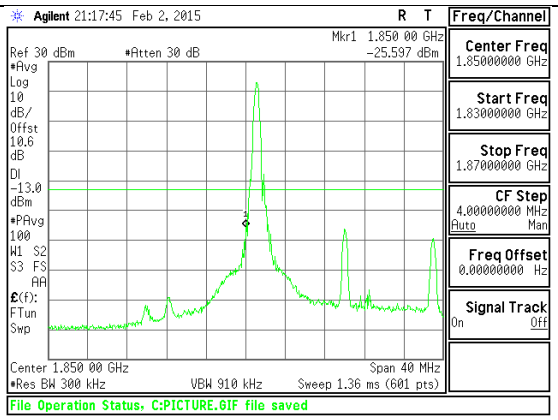
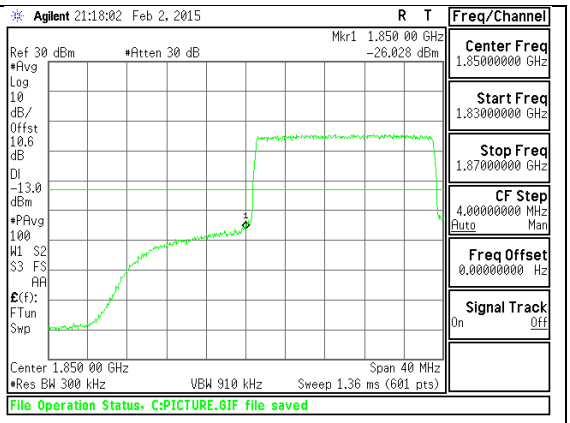
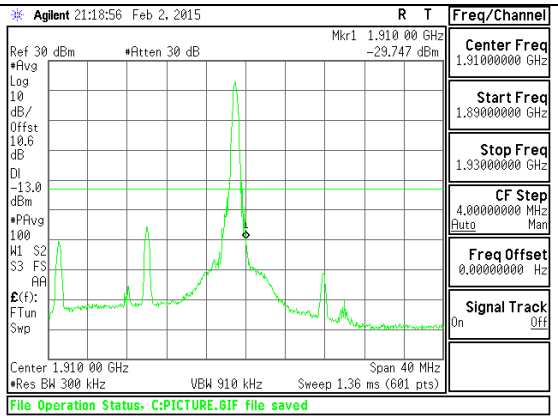
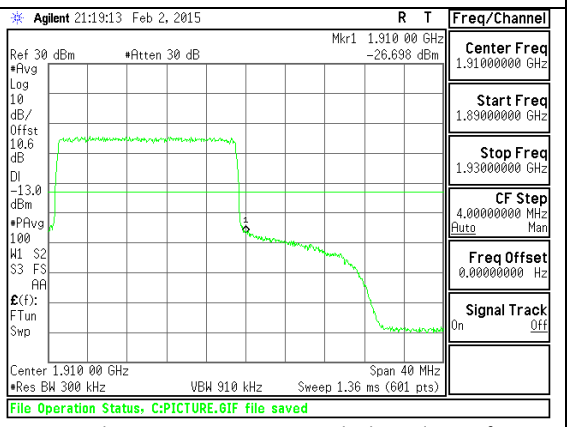
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

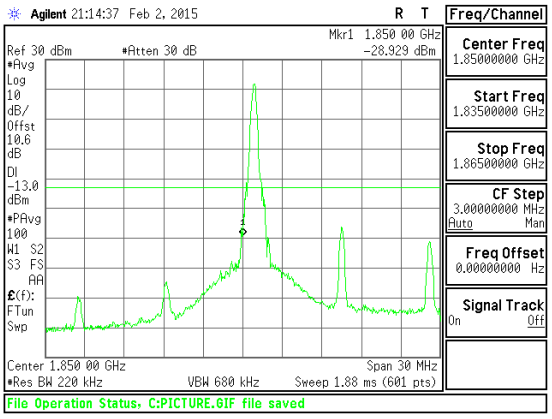
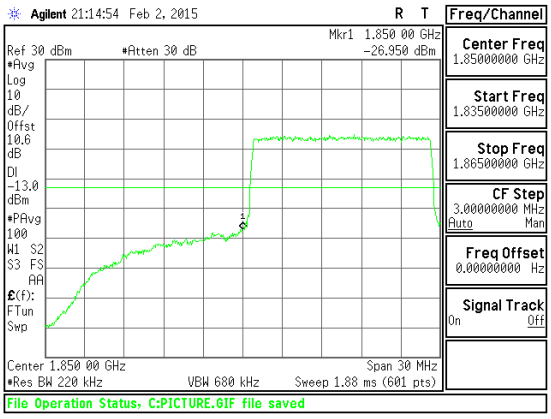
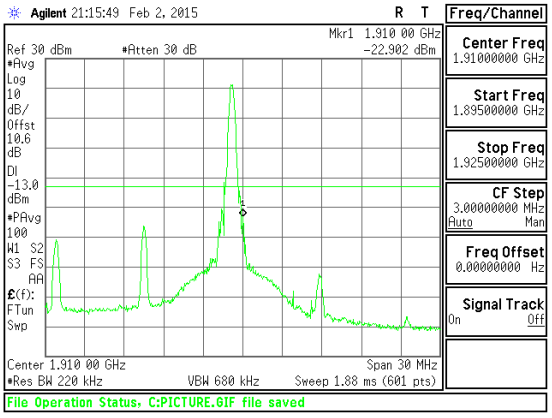
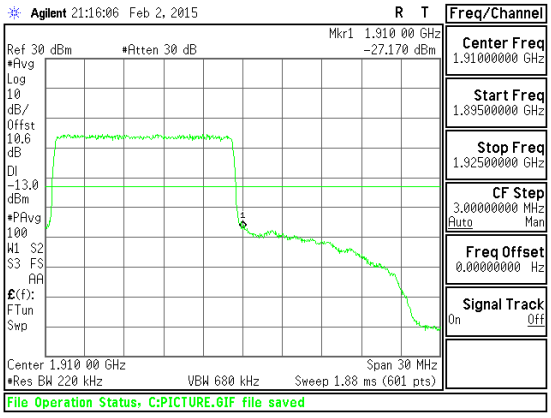
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

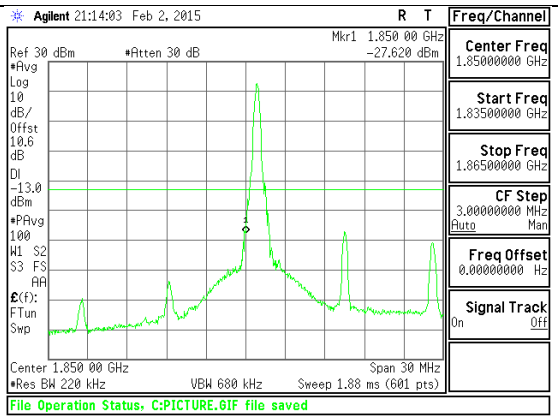
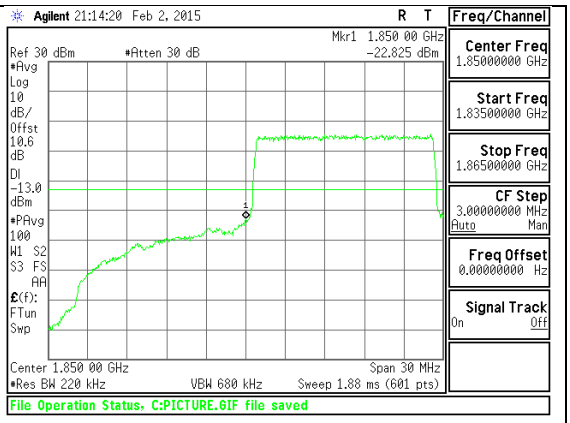
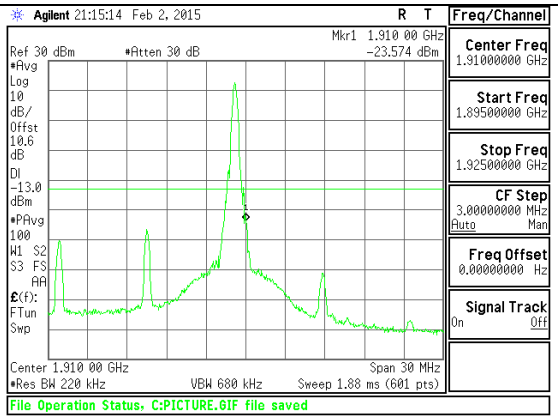
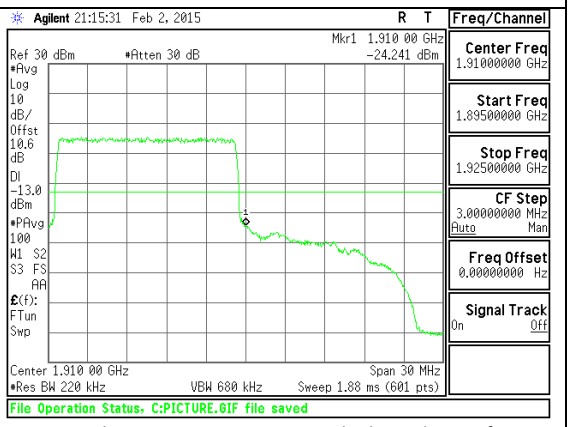
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

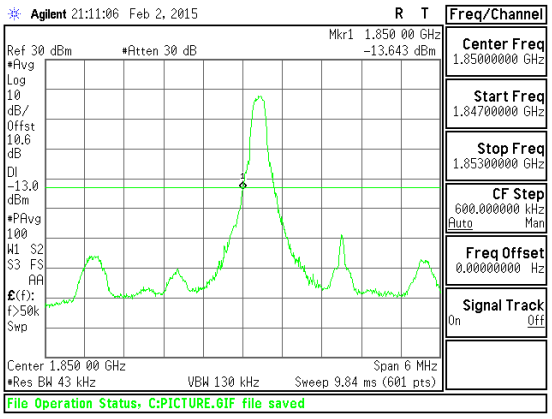
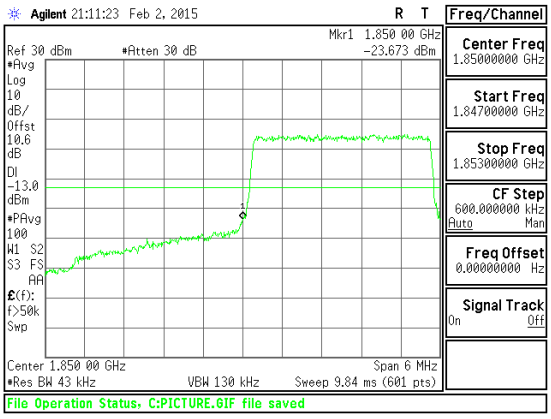
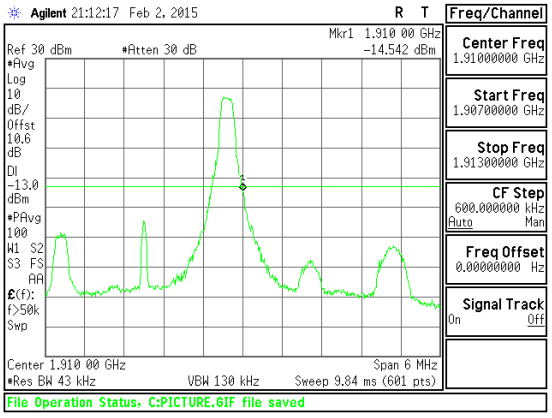
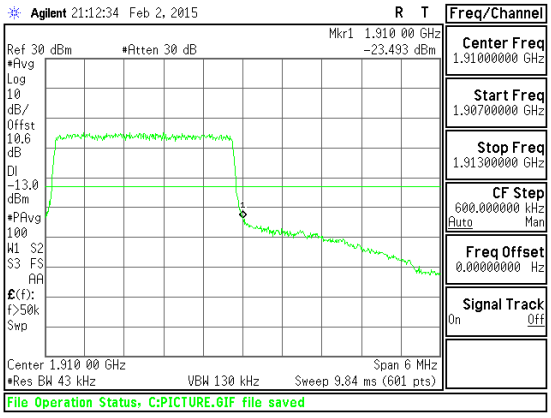
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

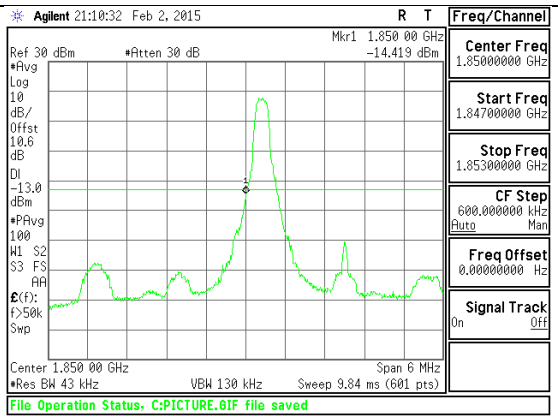
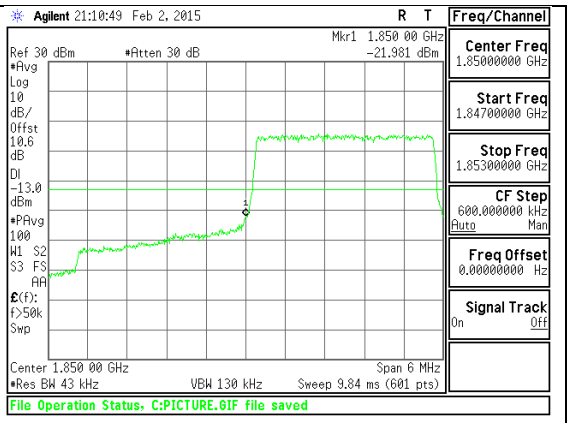
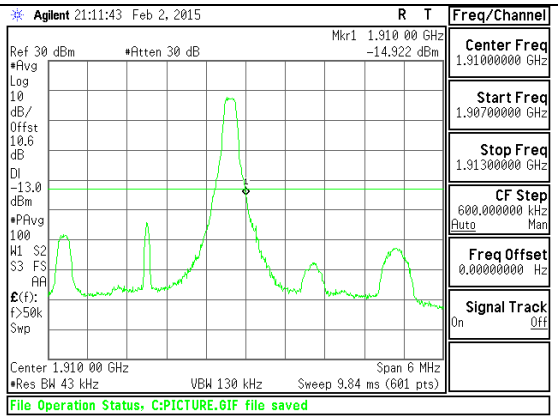
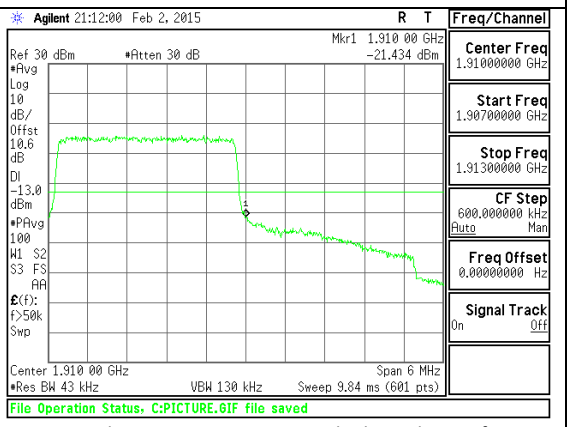
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

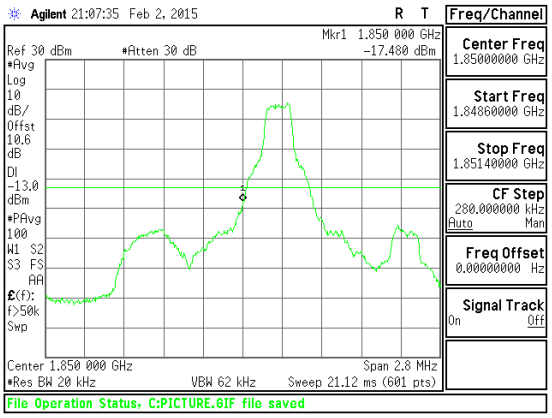
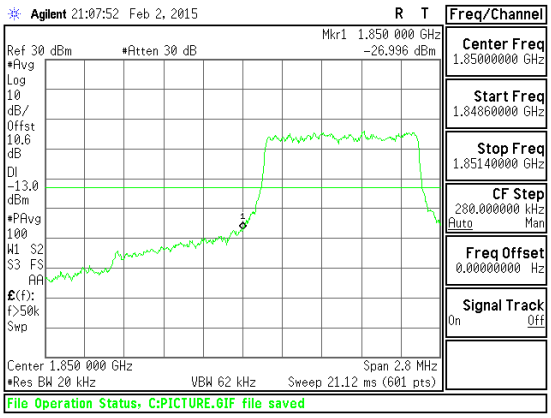
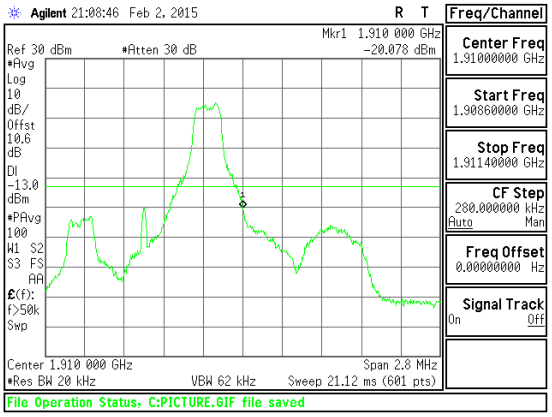
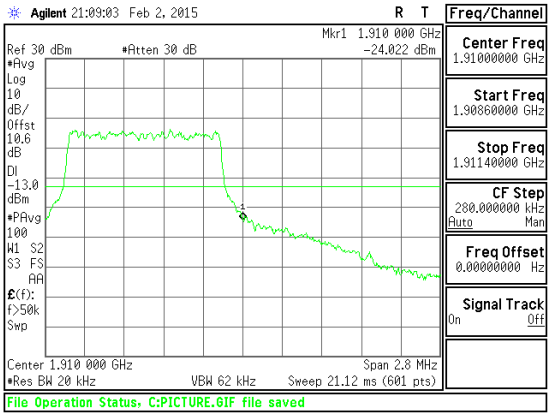
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE2 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

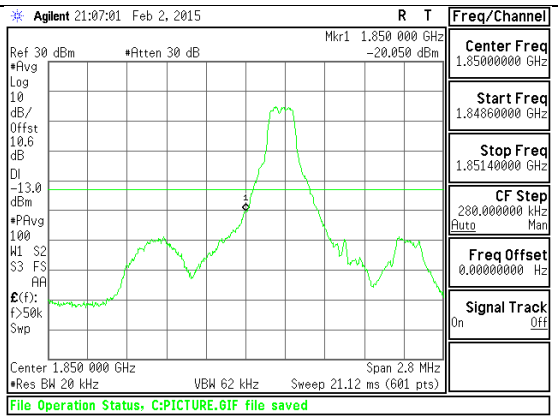
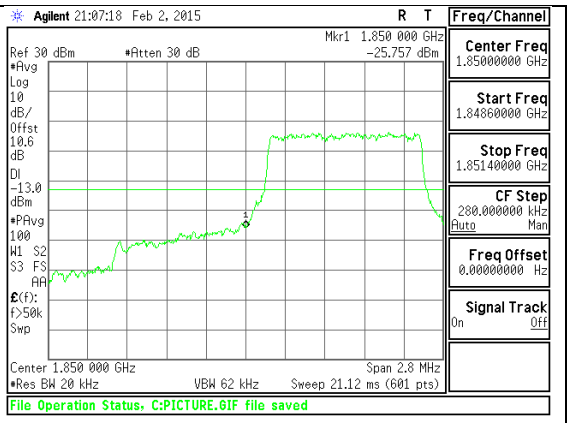
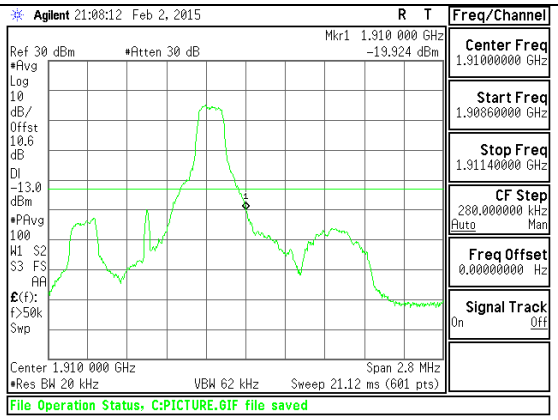
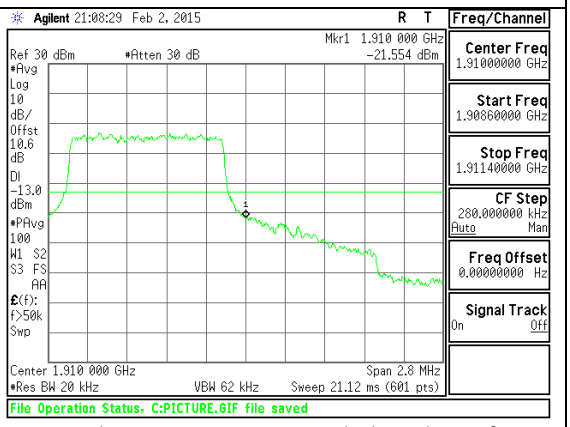
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

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.

11.2. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §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) For mobile station, the attenuation factor shall be not less than 43+10Log(P)dB at the channel edge and (55+10Log(P)dB) at 5.5MHz from the channel edges.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

MODES TESTED

GSM, WCDMA, LTE

RESULTS

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

11.2.1. OUT OF BAND EMISSIONS RESULT

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	3	QPSK	825.5	-33.63	-13	-20.63
			836.5	-33.26	-13	-20.26
			847.5	-33.30	-13	-20.30
		16QAM	825.5	-33.03	-13	-20.03
			836.5	-32.29	-13	-19.29
			847.5	-33.39	-13	-20.39
	1.4	QPSK	824.7	-33.10	-13	-20.10
			836.5	-33.49	-13	-20.49
			848.3	-32.92	-13	-19.92
		16QAM	824.7	-33.63	-13	-20.63
			836.5	-33.36	-13	-20.36
			848.3	-33.04	-13	-20.04

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

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	20	QPSK	1720	-22.83	-13	-9.83
			1732.5	-23.16	-13	-10.16
			1745	-22.49	-13	-9.49
		16QAM	1720	-25.27	-13	-12.27
			1732.5	-24.32	-13	-11.32
			1745	-22.80	-13	-9.80
	15	QPSK	1717.5	-24.67	-13	-11.67
			1732.5	-25.43	-13	-12.43
			1747.5	-22.78	-13	-9.78
		16QAM	1717.5	-21.51	-13	-8.51
			1732.5	-27.81	-13	-14.81
			1747.5	-26.24	-13	-13.24
	3	QPSK	1711.5	-22.66	-13	-9.66
			1732.5	-24.54	-13	-11.54
			1753.5	-26.18	-13	-13.18
		16QAM	1711.5	-21.41	-13	-8.41
			1732.5	-25.67	-13	-12.67
			1753.5	-26.77	-13	-13.77
	1.4	QPSK	1710.7	-21.44	-13	-8.44
			1732.5	-25.85	-13	-12.85
			1754.3	-25.61	-13	-12.61
		16QAM	1710.7	-22.27	-13	-9.27
			1732.5	-26.69	-13	-13.69
			1754.3	-23.71	-13	-10.71

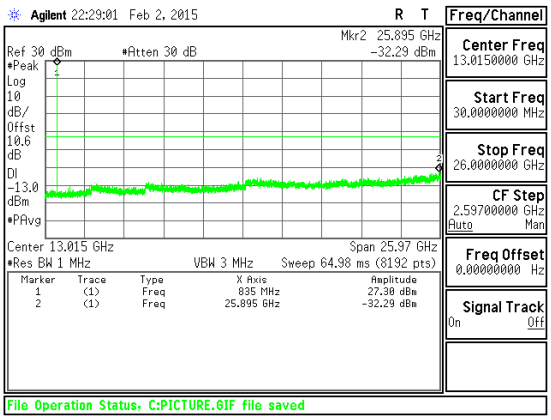
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE2	20	QPSK	1860	-23.16	-13	-10.16
			1880	-23.91	-13	-10.91
			1900	-23.35	-13	-10.35
		16QAM	1860	-23.89	-13	-10.89
			1880	-24.44	-13	-11.44
			1900	-23.49	-13	-10.49
	15	QPSK	1857.5	-27.05	-13	-14.05
			1880	-24.75	-13	-11.75
			1902.5	-24.60	-13	-11.60
		16QAM	1857.5	-27.51	-13	-14.51
			1880	-26.42	-13	-13.42
			1902.5	-24.06	-13	-11.06
	3	QPSK	1851.5	-33.24	-13	-20.24
			1880	-33.19	-13	-20.19
			1908.5	-33.18	-13	-20.18
		16QAM	1851.5	-33.48	-13	-20.48
			1880	-32.98	-13	-19.98
			1908.5	-33.52	-13	-20.52
	1.4	QPSK	1850.7	-33.27	-13	-20.27
			1880	-33.36	-13	-20.36
			1909.3	-33.05	-13	-20.05
		16QAM	1850.7	-33.49	-13	-20.49
			1880	-33.35	-13	-20.35
			1909.3	-33.58	-13	-20.58

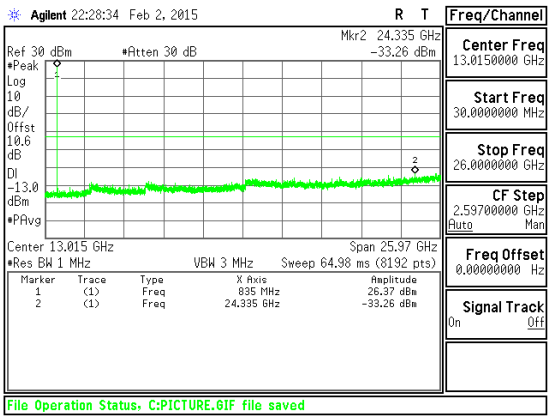
UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

11.2.2. OUT OF BAND EMISSIONS PLOTS

Band LTE5 3MHz 16QAM

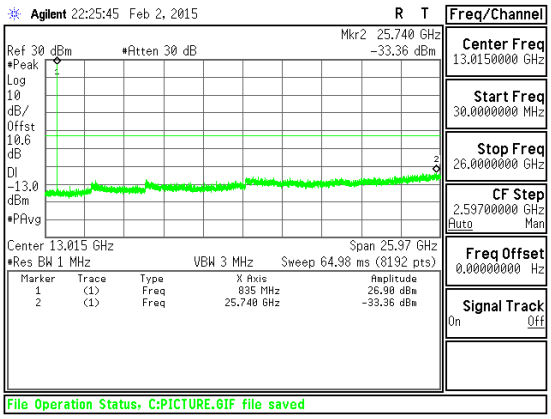


Band LTE5 3MHz CSE 16QAM Mid channel

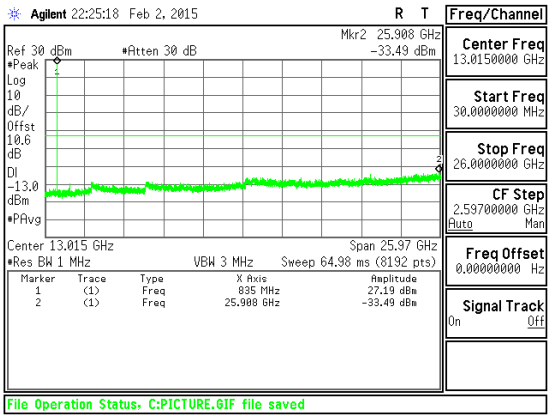


Band LTE5 3MHz CSE QPSK Mid channel

Band LTE5 1.4MHz 16QAM



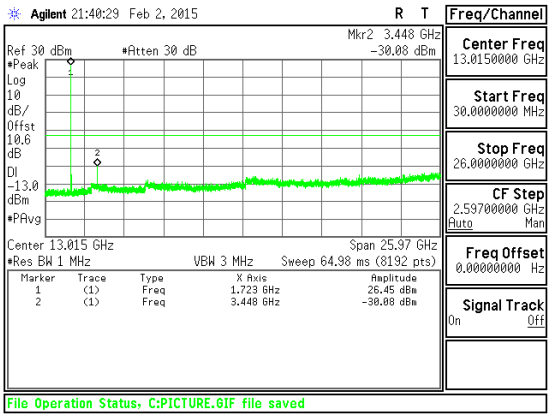
Band LTE5 1.4MHz CSE 16QAM Mid channel



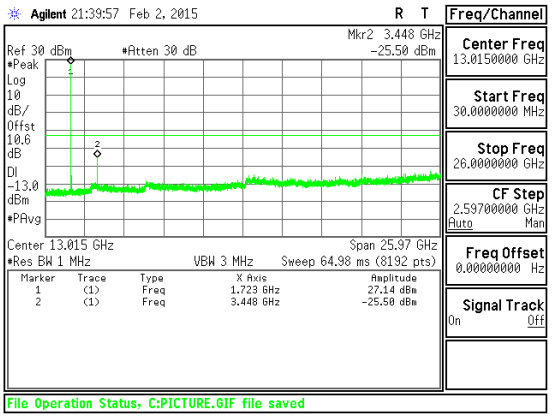
Band LTE5 1.4MHz CSE QPSK Mid channel

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

Band LTE4 20MHz 16QAM

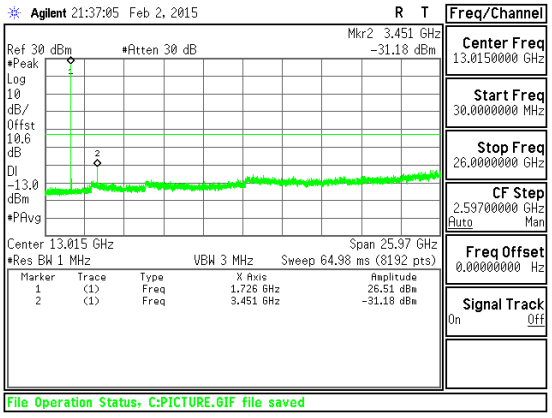


Band LTE4 20MHz CSE 16QAM Mid channel

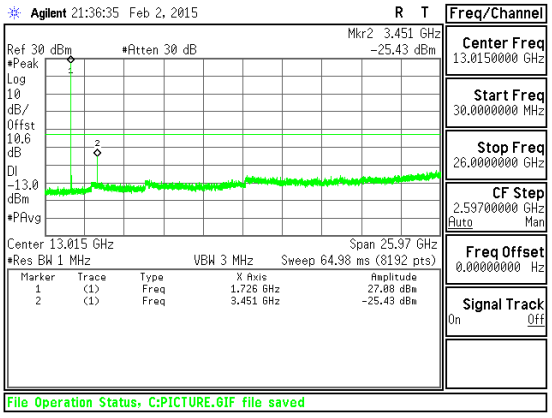


Band LTE4 20MHz CSE QPSK Mid channel

Band LTE4 15MHz 16QAM



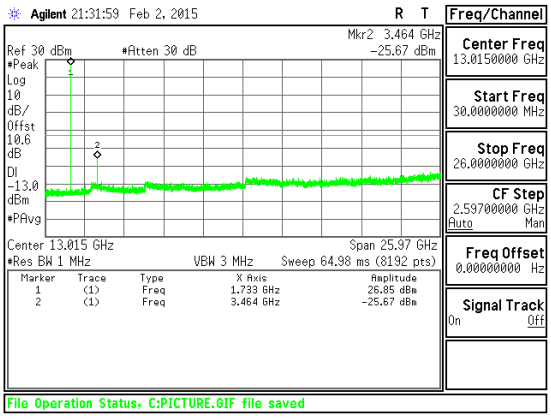
Band LTE4 15MHz CSE 16QAM Mid channel



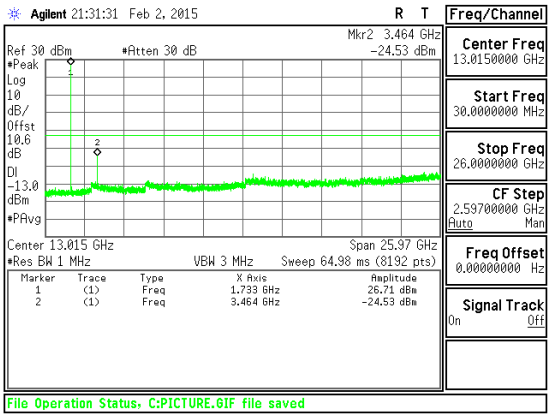
Band LTE4 15MHz CSE QPSK Mid channel

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

Band LTE4 3MHz 16QAM

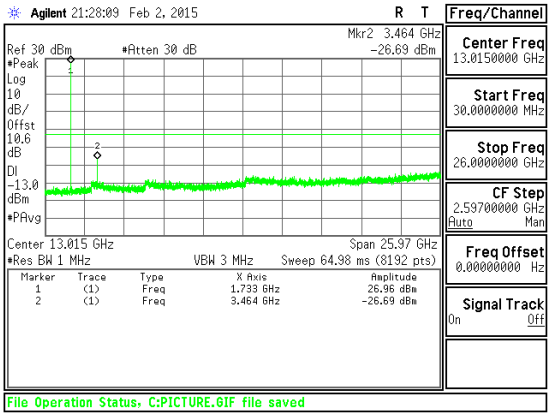


Band LTE4 3MHz CSE 16QAM Mid channel

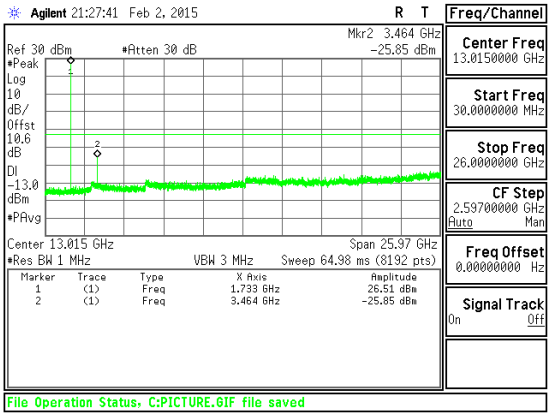


Band LTE4 3MHz CSE QPSK Mid channel

Band LTE4 1.4MHz 16QAM



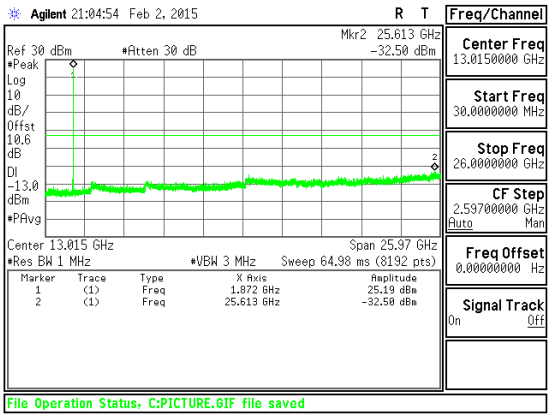
Band LTE4 1.4MHz CSE 16QAM Mid channel



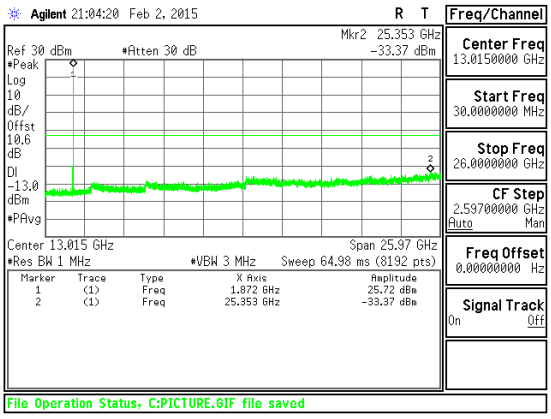
Band LTE4 1.4MHz CSE QPSK Mid channel

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

Band LTE2 20MHz 16QAM

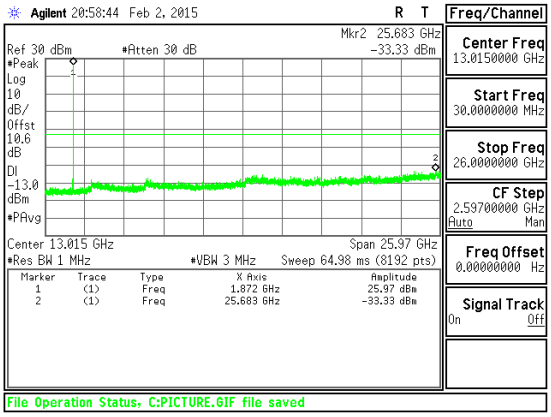


Band LTE2 20MHz CSE 16QAM Mid channel

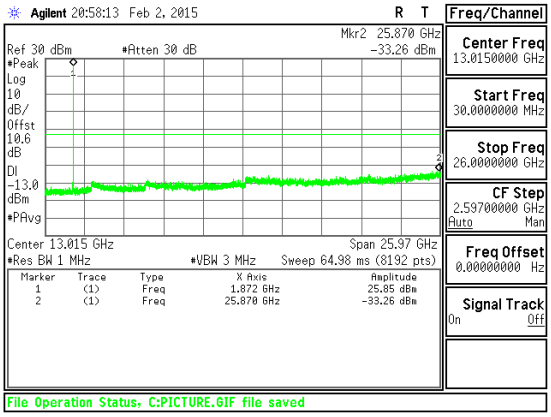


Band LTE2 20MHz CSE QPSK Mid channel

Band LTE2 15MHz 16QAM

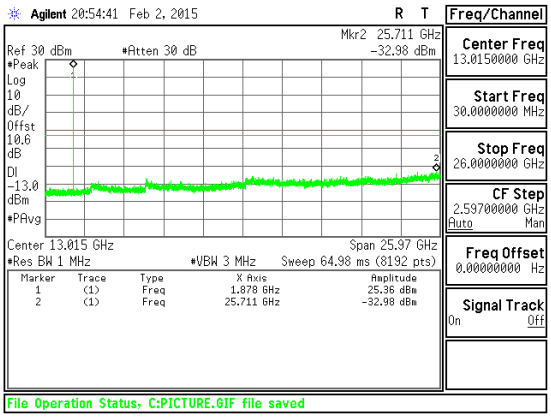
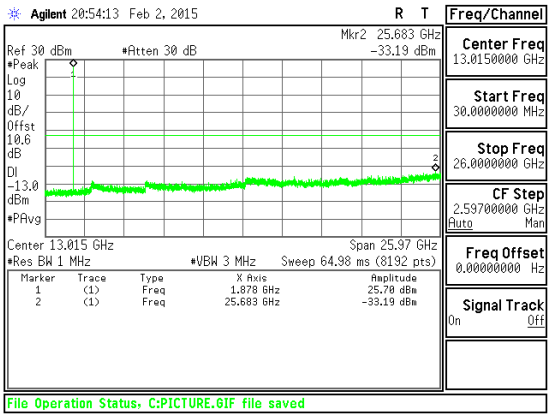
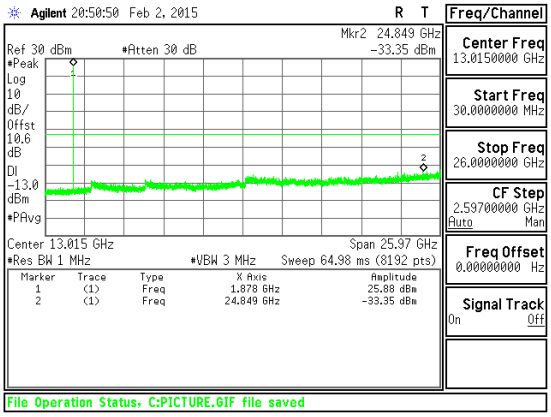
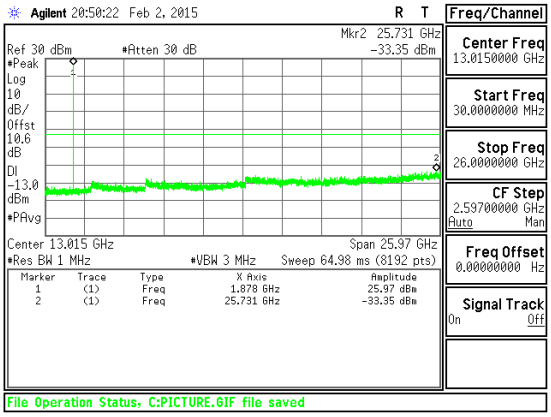


Band LTE2 15MHz CSE 16QAM Mid channel



Band LTE2 15MHz CSE 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 CSE 16QAM Mid channel	 Band LTE2 3MHz CSE QPSK Mid channel
Band LTE2 1.4MHz 16QAM	 Band LTE2 1.4MHz CSE 16QAM Mid channel	 Band LTE2 1.4MHz CSE QPSK Mid channel

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

12. RADIATED TEST RESULTS

12.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.

LIMITS

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

27.50(b) - (10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP. (LTE B13)

27.50(c) - (10) Portable stations (hand-held devices) are limited to 3 watts ERP; (LTE B17)

27.50(d) - (4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.(Band 4)

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17; PSA setting reference to 971168 D01 v02r02

For peak power measurement with a PSA:

a) Set the RBW ≥ OBW; b) Set VBW ≥ 3 × RBW; c) Set span ≥ 2 x RBW; d) Sweep time = auto couple; e) Detector = peak; f) Ensure that the number of measurement points ≥ span/RBW; g) Trace mode = max hold;

For average power measurement with a PSA:

a) Set span to at least 1.5 times the OBW; b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz; c) Set VBW ≥ 3 x RBW; d) Set number of points in sweep ≥ 2 × span / RBW; e) Sweep time = auto-couple; f) Detector = RMS (power averaging); g) Use free run trigger If burst duty cycle ≥ 98; h) Use trigger to capture bursts If burst duty cycle < 98; i) Trace average at least 100 traces in power averaging (*i.e.*, RMS) mode. j) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function.

MODES TESTED

GSM, WCDMA, and LTE

TEST RESULTS

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

12.1.1. ERP/EIRP Results

Band	Mode	Channel	f(MHz)	EIRP	
				dBm	mW
Band 2	REL99	9262	1852.4	24.96	313.33
		9400	1880	24.29	268.53
		9538	1907.6	24.81	302.69
	HSDPA	9262	1852.4	24.17	261.22
		9400	1880	24.11	257.63
		9538	1907.6	24.2	263.03

Band	Mode	Channel	f(MHz)	ERP	
				dBm	mW
Band 5	REL99	4132	826.4	18.773	75.39
		4183	836.6	18.9544	78.6
		4233	846.6	19.197	83.12
	HSDPA	4132	826.4	19.08	80.91
		4183	836.6	18.881	77.29
		4233	846.6	18.906	77.73

Band	Mode	Channel	f(MHz)	EIRP	
				dBm	mW
GSM1900	GPRS	512	1850.2	31.154	1304.37
		661	1880	30.64	1158.78
		810	1909.8	30.41	1099.01
	EGPRS	512	1850.2	27.64	580.76
		661	1880	27.71	590.20
		810	1909.8	27.31	538.27

Band	Mode	Channel	f(MHz)	ERP	
				dBm	mW
GSM850	GPRS	128	824.2	29.042	802.05
		190	836.6	28.249	668.19
		251	848.8	28.54	714.5
	EGPRS	128	824.2	26.15	412.10
		190	836.6	24.86	306.20
		251	848.8	24.56	285.76

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

12.1.2. LTE ERP/EIRP Results

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP	
					dBm	mW
LTE17	10	QPSK	1/0	709	19.54	89.95
			1/0	710	19.52	89.54
			1/0	711	19.54	89.95
		16QAM	1/0	709	18.81	76.03
			1/0	710	18.58	72.11
			1/0	711	18.94	78.34

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP	
					dBm	mW
LTE17	5	QPSK	1/0	706.5	19.56	90.36
			1/0	710	17.32	53.95
			1/0	713.5	18.92	77.98
		16QAM	1/0	706.5	18.15	65.31
			1/0	710	17.17	52.12
			1/0	713.5	17.88	61.38

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP	
					dBm	mW
LTE5	10	QPSK	1/0	829	19.28	84.72
			1/0	836.5	17.45	55.59
			1/0	844	18.06	63.97
		16QAM	1/0	829	18.71	74.3
			1/0	836.5	16.83	48.19
			1/0	844	16.94	49.43

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)	ERP	
					dBm	mW
LTE5	5	QPSK	1/0	826.5	19.03	79.98
			1/0	836.5	17.49	56.1
			1/0	846.5	17.98	62.81
		16QAM	1/0	826.5	18.04	63.68
			1/0	836.5	16.51	44.77
			1/0	846.5	16.64	46.13

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP	
					dBm	mW
LTE5	3	QPSK	1/0	825.5	18.98	79.07
			1/0	836.5	17.36	54.45
			1/0	847.5	17.83	60.67
		16QAM	1/0	825.5	18.4	69.18
			1/0	836.5	16.83	48.19
			1/0	847.5	17.17	52.12

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP	
					dBm	mW
LTE5	1.4	QPSK	1/0	824.7	19.26	84.33
			1/0	836.5	17.32	53.95
			1/0	848.3	17.87	61.24
		16QAM	1/0	824.7	18.48	70.47
			1/0	836.5	16.5	44.67
			1/0	848.3	16.9	48.98

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)	EIRP	
					dBm	mW
LTE4	20	QPSK	1/0	1720	23.3068	214.13
			1/0	1732.5	23.47105	222.38
			1/0	1745	23.3953	218.54
		16QAM	1/0	1720	22.4168	174.45
			1/0	1732.5	22.47105	176.65
			1/0	1745	22.7253	187.3

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	EIRP	
					dBm	mW
LTE4	15	QPSK	1/0	1717.5	23.22595	210.18
			1/0	1732.5	23.77105	238.29
			1/0	1747.5	23.10615	204.46
		16QAM	1/0	1717.5	22.32595	170.84
			1/0	1732.5	22.87105	193.69
			1/0	1747.5	22.21615	166.58

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	EIRP	
					dBm	mW
LTE4	10	QPSK	1/0	1715	22.830838	191.9
			1/0	1732.5	23.52105	224.96
			1/0	1750	22.731262	187.55
		16QAM	1/0	1715	21.950838	156.71
			1/0	1732.5	22.52105	178.69
			1/0	1750	21.581262	143.92

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)	EIRP	
					dBm	mW
LTE4	5	QPSK	1/0	1712.5	22.18425	165.36
			1/0	1732.5	22.72105	187.11
			1/0	1752.5	23.01785	200.35
		16QAM	1/0	1712.5	21.24425	133.18
			1/0	1732.5	21.82105	152.09
			1/0	1752.5	21.88785	154.45

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	EIRP	
					dBm	mW
LTE4	3	QPSK	1/0	1711.5	23.23791	210.76
			1/0	1732.5	23.80105	239.94
			1/0	1753.5	23.59419	228.78
		16QAM	1/0	1711.5	22.34791	171.71
			1/0	1732.5	22.87105	193.69
			1/0	1753.5	22.69419	185.96

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	EIRP	
					dBm	mW
LTE4	1.4	QPSK	1/0	1710.7	23.000838	199.56
			1/0	1732.5	23.07105	202.82
			1/0	1754.3	23.481262	222.91
		16QAM	1/0	1710.7	22.050838	160.36
			1/0	1732.5	21.97105	157.44
			1/0	1754.3	22.491262	177.47

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)	EIRP	
					dBm	mW
LTE2	20	QPSK	1/0	1860	26.4326	439.8
			1/0	1880	25.6788	369.73
			1/0	1900	25.355	343.16
		16QAM	1/0	1860	25.3326	341.4
			1/0	1880	24.7688	299.83
			1/0	1900	24.255	266.38

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	EIRP	
					dBm	mW
LTE2	15	QPSK	1/0	1857.5	26.114325	408.73
			1/0	1880	25.5088	355.53
			1/0	1902.5	25.562225	359.93
		16QAM	1/0	1857.5	25.234325	333.76
			1/0	1880	24.5688	286.34
			1/0	1902.5	24.462225	279.4

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	EIRP	
					dBm	mW
LTE2	10	QPSK	1/0	1855	25.68605	370.34
			1/0	1880	25.8388	383.6
			1/0	1905	26.08945	406.39
		16QAM	1/0	1855	24.73605	297.58
			1/0	1880	24.8688	306.82
			1/0	1905	25.06945	321.33

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)	EIRP	
					dBm	mW
LTE2	5	QPSK	1/0	1852.5	25.337775	341.8
			1/0	1880	25.75	375.84
			1/0	1907.5	25.376675	344.88
		16QAM	1/0	1852.5	24.337775	271.5
			1/0	1880	24.4688	279.82
			1/0	1907.5	24.476675	280.33

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	EIRP	
					dBm	mW
LTE2	3	QPSK	1/0	1851.5	25.528465	357.15
			1/0	1880	25.8688	386.26
			1/0	1908.5	25.679565	369.79
		16QAM	1/0	1851.5	24.638465	290.97
			1/0	1880	24.9688	313.96
			1/0	1908.5	24.779565	300.58

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	EIRP	
					dBm	mW
LTE2	1.4	QPSK	1/0	1850.7	25.839017	383.62
			1/0	1880	26.1688	413.89
			1/0	1909.3	25.081877	322.25
		16QAM	1/0	1850.7	24.939017	311.82
			1/0	1880	25.2688	336.42
			1/0	1909.3	24.181877	261.93

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

12.1.3. ERP/EIRP PLOTS

Band

LTE17

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 02/08/15
Test Engineer: O. Stoelting
Configuration: Z-pos EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 17 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid T243, and Chamber B SMA Cables
Substitution: Dipole T416, ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
709.00	19.71	V	0.9	0.0	18.81	34.8	-16.0	
709.00	13.31	H	0.9	0.0	12.41	34.8	-22.4	
Mid Ch								
710.00	19.48	V	0.9	0.0	18.58	34.8	-16.2	
710.00	13.48	H	0.9	0.0	12.58	34.8	-22.2	
High Ch								
711.00	19.84	V	0.9	0.0	18.94	34.8	-15.8	
711.00	13.54	H	0.9	0.0	12.64	34.8	-22.1	

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

Band

LTE17

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 02/08/15
Test Engineer: O. Stoelting
Configuration: Z-pos EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 17 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Hybrid T243, and Chamber B SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
709.00	20.44	V	0.9	0.0	19.54	34.8	-15.2	
709.00	13.76	H	0.9	0.0	12.86	34.8	-21.9	
Mid Ch								
710.00	20.42	V	0.9	0.0	19.52	34.8	-15.3	
710.00	13.93	H	0.9	0.0	13.03	34.8	-21.7	
High Ch								
711.00	20.44	V	0.9	0.0	19.54	34.8	-15.2	
711.00	14.26	H	0.9	0.0	13.36	34.8	-21.4	

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

Band

LTE17

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 02/08/15
Test Engineer: O. Stoelting
Configuration: Z-pos EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 17 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Hybrid T243, and Chamber B SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
706.50	19.05	V	0.9	0.0	18.15	34.8	-16.6	
706.50	10.15	H	0.9	0.0	9.25	34.8	-25.5	
Mid Ch								
710.00	18.07	V	0.9	0.0	17.17	34.8	-17.6	
710.00	13.16	H	0.9	0.0	12.26	34.8	-22.5	
High Ch								
713.50	18.78	V	0.9	0.0	17.88	34.8	-16.9	
713.50	13.18	H	0.9	0.0	12.28	34.8	-22.5	

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

Band

LTE17

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 02/08/15
Test Engineer: O. Stoelting
Configuration: Z-pos EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 17 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Hybrid T243, and Chamber B SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
706.50	20.46	V	0.9	0.0	19.56	34.8	-15.2	
706.50	11.90	H	0.9	0.0	11.00	34.8	-23.8	
Mid Ch								
710.00	18.22	V	0.9	0.0	17.32	34.8	-17.5	
710.00	14.00	H	0.9	0.0	13.10	34.8	-21.7	
High Ch								
713.50	19.82	V	0.9	0.0	18.92	34.8	-15.9	
713.50	14.81	H	0.9	0.0	13.91	34.8	-20.9	

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

Band

LTE5

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 02/08/15
Test Engineer: O. Stoelting
Configuration: Z-pos EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 5 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Hybrid T243, and Chamber B SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
829.00	19.61	V	0.9	0.0	18.71	38.5	-19.8	
829.00	10.24	H	0.9	0.0	9.34	38.5	-29.2	
Mid Ch								
836.50	17.73	V	0.9	0.0	16.83	38.5	-21.7	
836.50	11.16	H	0.9	0.0	10.26	38.5	-28.2	
High Ch								
844.00	17.84	V	0.9	0.0	16.94	38.5	-21.6	
844.00	9.79	H	0.9	0.0	8.89	38.5	-29.6	

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

Band

LTE5

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 02/08/15
Test Engineer: O. Stoelting
Configuration: Z-pos EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 5 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Hybrid T243, and Chamber B SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
829.00	20.18	V	0.9	0.0	19.28	38.5	-19.2	
829.00	10.38	H	0.9	0.0	9.48	38.5	-29.0	
Mid Ch								
836.50	18.35	V	0.9	0.0	17.45	38.5	-21.1	
836.50	11.43	H	0.9	0.0	10.53	38.5	-28.0	
High Ch								
844.00	18.96	V	0.9	0.0	18.06	38.5	-20.4	
844.00	10.15	H	0.9	0.0	9.25	38.5	-29.3	

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

Band

LTE5

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 02/08/15
Test Engineer: O. Stoelting
Configuration: Z-pos EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 5 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Hybrid T243, and Chamber B SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.50	18.94	V	0.9	0.0	18.04	38.5	-20.5	
826.50	9.50	H	0.9	0.0	8.60	38.5	-29.9	
Mid Ch								
836.50	17.41	V	0.9	0.0	16.51	38.5	-22.0	
836.50	10.18	H	0.9	0.0	9.28	38.5	-29.2	
High Ch								
846.50	17.54	V	0.9	0.0	16.64	38.5	-21.9	
846.50	9.34	H	0.9	0.0	8.44	38.5	-30.1	

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

Band

LTE5

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 02/08/15
Test Engineer: O. Stoelting
Configuration: Z-pos EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 5 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Hybrid T243, and Chamber B SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.50	19.93	V	0.9	0.0	19.03	38.5	-19.5	
826.50	10.39	H	0.9	0.0	9.49	38.5	-29.0	
Mid Ch								
836.50	18.39	V	0.9	0.0	17.49	38.5	-21.0	
836.50	0.95	H	0.9	0.0	0.05	38.5	-38.5	
High Ch								
846.50	18.88	V	0.9	0.0	17.98	38.5	-20.5	
846.50	11.28	H	0.9	0.0	10.38	38.5	-28.1	

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

Band

LTE5

3MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 02/08/15
Test Engineer: O. Stoelting
Configuration: Z-pos EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 5 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Hybrid T243, and Chamber B SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
825.50	19.30	V	0.9	0.0	18.40	38.5	-20.1	
825.50	9.71	H	0.9	0.0	8.81	38.5	-29.7	
Mid Ch								
836.50	17.73	V	0.9	0.0	16.83	38.5	-21.7	
836.50	10.15	H	0.9	0.0	9.25	38.5	-29.3	
High Ch								
847.50	18.07	V	0.9	0.0	17.17	38.5	-21.3	
847.50	8.74	H	0.9	0.0	7.84	38.5	-30.7	

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

Band

LTE5

3MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 02/08/15
Test Engineer: O. Stoelting
Configuration: Z-pos EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 5 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Hybrid T243, and Chamber B SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
825.50	19.88	V	0.9	0.0	18.98	38.5	-19.5	
825.50	10.74	H	0.9	0.0	9.84	38.5	-28.7	
Mid Ch								
836.50	18.26	V	0.9	0.0	17.36	38.5	-21.1	
836.50	11.03	H	0.9	0.0	10.13	38.5	-28.4	
High Ch								
847.50	18.73	V	0.9	0.0	17.83	38.5	-20.7	
847.50	9.69	H	0.9	0.0	8.79	38.5	-29.7	

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

Band

LTE5

1.4MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 02/08/15
Test Engineer: O. Stoelting
Configuration: Z-pos EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 5 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Hybrid T243, and Chamber B SMA Cables
Substitution: Dipole T416, ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.70	19.38	V	0.9	0.0	18.48	38.5	-20.0	
824.70	9.35	H	0.9	0.0	8.45	38.5	-30.1	
Mid Ch								
836.50	17.40	V	0.9	0.0	16.50	38.5	-22.0	
836.50	9.16	H	0.9	0.0	8.26	38.5	-30.2	
High Ch								
848.30	17.80	V	0.9	0.0	16.90	38.5	-21.6	
848.30	9.97	H	0.9	0.0	9.07	38.5	-29.4	

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

Band

LTE5

1.4MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 02/08/15
Test Engineer: O. Stoelting
Configuration: Z-pos EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 5 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Hybrid T243, and Chamber B SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.70	20.16	V	0.9	0.0	19.26	38.5	-19.2	
824.70	10.52	H	0.9	0.0	9.62	38.5	-28.9	
Mid Ch								
836.50	18.22	V	0.9	0.0	17.32	38.5	-21.2	
836.50	9.98	H	0.9	0.0	9.08	38.5	-29.4	
High Ch								
848.30	18.77	V	0.9	0.0	17.87	38.5	-20.6	
848.30	10.51	H	0.9	0.0	9.61	38.5	-28.9	

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

Band

LTE4

20MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T1345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1720.00	13.70	V	0.9	8.2	21.02	30.0	-9.0	
1720.00	15.10	H	0.9	8.2	22.42	30.0	-7.6	
Mid Ch								
1732.50	12.40	V	0.9	8.2	19.67	30.0	-10.3	
1732.50	15.20	H	0.9	8.2	22.47	30.0	-7.5	
High Ch								
1745.00	13.70	V	0.9	8.1	20.93	30.0	-9.1	
1745.00	15.50	H	0.9	8.1	22.73	30.0	-7.3	

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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

20MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T1345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1720.00	14.56	V	0.9	8.2	21.88	30.0	-8.1	
1720.00	15.99	H	0.9	8.2	23.31	30.0	-6.7	
Mid Ch								
1732.50	13.10	V	0.9	8.2	20.37	30.0	-9.6	
1732.50	16.20	H	0.9	8.2	23.47	30.0	-6.5	
High Ch								
1745.00	14.82	V	0.9	8.1	22.05	30.0	-8.0	
1745.00	16.17	H	0.9	8.1	23.40	30.0	-6.6	

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

Band

LTE4

15MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T1345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1717.50	13.10	V	0.9	8.2	20.43	30.0	-9.6	
1717.50	15.00	H	0.9	8.2	22.33	30.0	-7.7	
Mid Ch								
1732.50	12.30	V	0.9	8.2	19.57	30.0	-10.4	
1732.50	15.60	H	0.9	8.2	22.87	30.0	-7.1	
High Ch								
1747.50	13.60	V	0.9	8.1	20.82	30.0	-9.2	
1747.50	15.00	H	0.9	8.1	22.22	30.0	-7.8	

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

Band

LTE4

15MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T1345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1717.50	14.05	V	0.9	8.2	21.38	30.0	-8.6	
1717.50	15.90	H	0.9	8.2	23.23	30.0	-6.8	
Mid Ch								
1732.50	13.28	V	0.9	8.2	20.55	30.0	-9.4	
1732.50	16.50	H	0.9	8.2	23.77	30.0	-6.2	
High Ch								
1747.50	14.46	V	0.9	8.1	21.68	30.0	-8.3	
1747.50	15.89	H	0.9	8.1	23.11	30.0	-6.9	

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

Band

LTE4

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1715.00	12.20	V	0.9	8.3	19.55	30.0	-10.4	
1715.00	14.60	H	0.9	8.3	21.95	30.0	-8.0	
Mid Ch								
1732.50	13.70	V	0.9	8.2	20.97	30.0	-9.0	
1732.50	15.25	H	0.9	8.2	22.52	30.0	-7.5	
High Ch								
1750.00	13.37	V	0.9	8.1	20.56	30.0	-9.4	
1750.00	14.39	H	0.9	8.1	21.58	30.0	-8.4	

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

Band

LTE4

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1715.00	13.26	V	0.9	8.3	20.61	30.0	-9.4	
1715.00	15.48	H	0.9	8.3	22.83	30.0	-7.2	
Mid Ch								
1732.50	14.56	V	0.9	8.2	21.83	30.0	-8.2	
1732.50	16.25	H	0.9	8.2	23.52	30.0	-6.5	
High Ch								
1750.00	14.07	V	0.9	8.1	21.26	30.0	-8.7	
1750.00	15.54	H	0.9	8.1	22.73	30.0	-7.3	

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

Band

LTE4

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1712.50	12.70	V	0.9	8.2	20.04	30.0	-10.0	
1712.50	13.90	H	0.9	8.2	21.24	30.0	-8.8	
Mid Ch								
1732.50	13.30	V	0.9	8.2	20.57	30.0	-9.4	
1732.50	14.55	H	0.9	8.2	21.82	30.0	-8.2	
High Ch								
1752.50	12.57	V	0.9	8.1	19.77	30.0	-10.2	
1752.50	14.69	H	0.9	8.1	21.89	30.0	-8.1	

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

Band

LTE4

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1712.50	13.70	V	0.9	8.2	21.04	30.0	-9.0	
1712.50	14.84	H	0.9	8.2	22.18	30.0	-7.8	
Mid Ch								
1732.50	14.25	V	0.9	8.2	21.52	30.0	-8.5	
1732.50	15.45	H	0.9	8.2	22.72	30.0	-7.3	
High Ch								
1752.50	13.67	V	0.9	8.1	20.87	30.0	-9.1	
1752.50	15.82	H	0.9	8.1	23.02	30.0	-7.0	

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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

3MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn T1345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1711.50	12.80	V	0.9	8.2	20.15	30.0	-9.9	
1711.50	15.00	H	0.9	8.2	22.35	30.0	-7.7	
Mid Ch								
1732.50	12.60	V	0.9	8.2	19.87	30.0	-10.1	
1732.50	15.60	H	0.9	8.2	22.87	30.0	-7.1	
High Ch								
1753.50	13.30	V	0.9	8.1	20.49	30.0	-9.5	
1753.50	15.50	H	0.9	8.1	22.69	30.0	-7.3	

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

Band

LTE4

3MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn T1345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1711.50	13.82	V	0.9	8.2	21.17	30.0	-8.8	
1711.50	15.89	H	0.9	8.2	23.24	30.0	-6.8	
Mid Ch								
1732.50	13.54	V	0.9	8.2	20.81	30.0	-9.2	
1732.50	16.53	H	0.9	8.2	23.80	30.0	-6.2	
High Ch								
1753.50	14.38	V	0.9	8.1	21.57	30.0	-8.4	
1753.50	16.40	H	0.9	8.1	23.59	30.0	-6.4	

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

Band

LTE4

1.4MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn T1345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1710.70	12.48	V	0.9	8.3	19.83	30.0	-10.2	
1710.70	14.70	H	0.9	8.3	22.05	30.0	-7.9	
Mid Ch								
1732.50	12.96	V	0.9	8.2	20.23	30.0	-9.8	
1732.50	14.70	H	0.9	8.2	21.97	30.0	-8.0	
High Ch								
1754.30	13.30	V	0.9	8.1	20.49	30.0	-9.5	
1754.30	15.30	H	0.9	8.1	22.49	30.0	-7.5	

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

Band

LTE4

1.4MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn T1345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1710.70	13.38	V	0.9	8.3	20.73	30.0	-9.3	
1710.70	15.65	H	0.9	8.3	23.00	30.0	-7.0	
Mid Ch								
1732.50	13.63	V	0.9	8.2	20.90	30.0	-9.1	
1732.50	15.80	H	0.9	8.2	23.07	30.0	-6.9	
High Ch								
1754.30	14.17	V	0.9	8.1	21.36	30.0	-8.6	
1754.30	16.29	H	0.9	8.1	23.48	30.0	-6.5	

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

Band

LTE2

20MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1860.00	13.35	V	0.9	7.9	20.33	33.0	-12.7	
1860.00	18.35	H	0.9	7.9	25.33	33.0	-7.7	
Mid Ch								
1880.00	13.20	V	0.9	7.9	20.17	33.0	-12.8	
1880.00	17.80	H	0.9	7.9	24.77	33.0	-8.2	
High Ch								
1900.00	11.99	V	0.9	7.9	18.95	33.0	-14.1	
1900.00	17.30	H	0.9	7.9	24.26	33.0	-8.7	

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

Band

LTE2

20MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1860.00	14.44	V	0.9	7.9	21.42	33.0	-11.6	
1860.00	19.45	H	0.9	7.9	26.43	33.0	-6.6	
Mid Ch								
1880.00	13.75	V	0.9	7.9	20.72	33.0	-12.3	
1880.00	18.71	H	0.9	7.9	25.68	33.0	-7.3	
High Ch								
1900.00	12.85	V	0.9	7.9	19.81	33.0	-13.2	
1900.00	18.40	H	0.9	7.9	25.36	33.0	-7.6	

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

Band

LTE2

15MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1857.50	13.35	V	0.9	7.9	20.33	33.0	-12.7	
1857.50	18.25	H	0.9	7.9	25.23	33.0	-7.8	
Mid Ch								
1880.00	13.10	V	0.9	7.9	20.07	33.0	-12.9	
1880.00	17.60	H	0.9	7.9	24.57	33.0	-8.4	
High Ch								
1902.50	12.29	V	0.9	7.9	19.25	33.0	-13.7	
1902.50	17.50	H	0.9	7.9	24.46	33.0	-8.5	

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

Band

LTE2

15MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1857.50	14.45	V	0.9	7.9	21.43	33.0	-11.6	
1857.50	19.13	H	0.9	7.9	26.11	33.0	-6.9	
Mid Ch								
1880.00	13.83	V	0.9	7.9	20.80	33.0	-12.2	
1880.00	18.54	H	0.9	7.9	25.51	33.0	-7.5	
High Ch								
1902.50	13.14	V	0.9	7.9	20.10	33.0	-12.9	
1902.50	18.60	H	0.9	7.9	25.56	33.0	-7.4	

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

Band

LTE2

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1855.00	12.05	V	0.9	7.9	19.04	33.0	-14.0	
1855.00	17.75	H	0.9	7.9	24.74	33.0	-8.3	
Mid Ch								
1880.00	12.30	V	0.9	7.9	19.27	33.0	-13.7	
1880.00	17.90	H	0.9	7.9	24.87	33.0	-8.1	
High Ch								
1905.00	12.59	V	0.9	7.9	19.56	33.0	-13.4	
1905.00	18.10	H	0.9	7.9	25.07	33.0	-7.9	

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

Band

LTE2

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1855.00	13.05	V	0.9	7.9	20.04	33.0	-13.0	
1855.00	18.70	H	0.9	7.9	25.69	33.0	-7.3	
Mid Ch								
1880.00	13.01	V	0.9	7.9	19.98	33.0	-13.0	
1880.00	18.87	H	0.9	7.9	25.84	33.0	-7.2	
High Ch								
1905.00	13.49	V	0.9	7.9	20.46	33.0	-12.5	
1905.00	19.12	H	0.9	7.9	26.09	33.0	-6.9	

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

Band

LTE2

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/3/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.50	12.15	V	0.9	7.9	19.14	33.0	-13.9	
1852.50	17.35	H	0.9	7.9	24.34	33.0	-8.7	
Mid Ch								
1880.00	12.89	V	0.9	7.9	19.86	33.0	-13.1	
1880.00	17.50	H	0.9	7.9	24.47	33.0	-8.5	
High Ch								
1907.50	12.24	V	0.9	7.9	19.22	33.0	-13.8	
1907.50	17.50	H	0.9	7.9	24.48	33.0	-8.5	

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

Band

LTE2

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.50	13.15	V	0.9	7.9	20.14	33.0	-12.9	
1852.50	18.35	H	0.9	7.9	25.34	33.0	-7.7	
Mid Ch								
1880.00	13.77	V	0.9	7.9	20.74	33.0	-12.3	
1880.00	18.75	H	0.9	7.9	25.75	33.0	-7.3	
High Ch								
1907.50	13.29	V	0.9	7.9	20.27	33.0	-12.7	
1907.50	18.40	H	0.9	7.9	25.38	33.0	-7.6	

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

Band

LTE2

3MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.50	13.85	V	0.9	7.9	20.84	33.0	-12.2	
1851.50	17.65	H	0.9	7.9	24.64	33.0	-8.4	
Mid Ch								
1880.00	12.40	V	0.9	7.9	19.37	33.0	-13.6	
1880.00	18.00	H	0.9	7.9	24.97	33.0	-8.0	
High Ch								
1908.50	12.09	V	0.9	7.9	19.07	33.0	-13.9	
1908.50	17.80	H	0.9	7.9	24.78	33.0	-8.2	

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

Band

LTE2

3MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.50	14.68	V	0.9	7.9	21.67	33.0	-11.3	
1851.50	18.54	H	0.9	7.9	25.53	33.0	-7.5	
Mid Ch								
1880.00	13.20	V	0.9	7.9	20.17	33.0	-12.8	
1880.00	18.90	H	0.9	7.9	25.87	33.0	-7.1	
High Ch								
1908.50	12.89	V	0.9	7.9	19.87	33.0	-13.1	
1908.50	18.70	H	0.9	7.9	25.68	33.0	-7.3	

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

Band

LTE2

1.4MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1850.70	13.75	V	0.9	7.9	20.74	33.0	-12.3	
1850.70	17.95	H	0.9	7.9	24.94	33.0	-8.1	
Mid Ch								
1880.00	12.40	V	0.9	7.9	19.37	33.0	-13.6	
1880.00	18.30	H	0.9	7.9	25.27	33.0	-7.7	
High Ch								
1909.30	12.29	V	0.9	7.9	19.27	33.0	-13.7	
1909.30	17.20	H	0.9	7.9	24.18	33.0	-8.8	

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

Band

LTE2

1.4MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19923
Date: 2/9/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1850.70	14.64	V	0.9	7.9	21.63	33.0	-11.4	
1850.70	18.85	H	0.9	7.9	25.84	33.0	-7.2	
Mid Ch								
1880.00	13.29	V	0.9	7.9	20.26	33.0	-12.7	
1880.00	19.20	H	0.9	7.9	26.17	33.0	-6.8	
High Ch								
1909.30	13.18	V	0.9	7.9	20.16	33.0	-12.8	
1909.30	18.10	H	0.9	7.9	25.08	33.0	-7.9	

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

Band

Band 2

HSDPA

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber C

Company: LG
Project #: 15I19923
Date: 02/10/15
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: HSDPA B2

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.40	15.05	V	0.9	8.0	22.16	33.0	-10.8	
1852.40	17.06	H	0.9	8.0	24.17	33.0	-8.8	
Mid Ch								
1880.00	14.00	V	0.9	8.0	21.11	33.0	-11.9	
1880.00	17.00	H	0.9	8.0	24.11	33.0	-8.9	
High Ch								
1907.60	13.89	V	0.9	8.0	21.00	33.0	-12.0	
1907.60	17.09	H	0.9	8.0	24.20	33.0	-8.8	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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

Band

Band 2

REL99

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber C

Company: LG
Project #: 15I19923
Date: 02/10/15
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: Rel99 B2

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.40	15.45	V	0.9	8.0	22.56	33.0	-10.4	
1852.40	17.85	H	0.9	8.0	24.96	33.0	-8.0	
Mid Ch								
1880.00	14.71	V	0.9	8.0	21.82	33.0	-11.2	
1880.00	17.18	H	0.9	8.0	24.29	33.0	-8.7	
High Ch								
1907.60	14.49	V	0.9	8.0	21.60	33.0	-11.4	
1907.60	17.70	H	0.9	8.0	24.81	33.0	-8.2	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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

Band

Band 5

HSDPA

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: LG
Project #: 15I19923
Date: 02/08/15
Test Engineer: O. Stoelting
Configuration: Z-pos EUT Only
Location: Chamber B
Mode: HSDPA Band 5 Fundamentals

Test Equpment:
Receiving: Hybrid T243, and Chamber B SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.40	19.98	V	0.9	0.0	19.08	38.5	-19.4	
826.40	13.10	H	0.9	0.0	12.20	38.5	-26.3	
Mid Ch								
836.60	19.78	V	0.9	0.0	18.88	38.5	-19.6	
836.60	13.81	H	0.9	0.0	12.91	38.5	-25.6	
High Ch								
846.60	19.81	V	0.9	0.0	18.91	38.5	-19.6	
846.60	14.01	H	0.9	0.0	13.11	38.5	-25.4	

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

Band

Band 5

REL99

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: LG
Project #: 15I19923
Date: 02/08/15
Test Engineer: O. Stoelting
Configuration: Z-pos EUT Only
Location: Chamber B
Mode: Rel99 Band 5 Fundamentals

Test Equpment:
Receiving: Hybrid T243, and Chamber B SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.40	19.67	V	0.9	0.0	18.77	38.5	-19.7	
826.40	13.74	H	0.9	0.0	12.84	38.5	-25.7	
Mid Ch								
836.60	19.85	V	0.9	0.0	18.95	38.5	-19.5	
836.60	13.59	H	0.9	0.0	12.69	38.5	-25.8	
High Ch								
846.60	20.10	V	0.9	0.0	19.20	38.5	-19.3	
846.60	13.41	H	0.9	0.0	12.51	38.5	-26.0	

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

Band

GSM 1900

EGPRS

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber C

Company: LG
Project #: 15I19923
Date: 2/10/215
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: EGPRS 1900

Test Equipment:
Receiving: Horn T119 and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1850.20	18.65	V	0.9	8.0	25.76	33.0	-7.2	
1850.20	20.53	H	0.9	8.0	27.64	33.0	-5.4	
Mid Ch								
1880.00	18.40	V	0.9	8.0	25.51	33.0	-7.5	
1880.00	20.60	H	0.9	8.0	27.71	33.0	-5.3	
High Ch								
1909.80	17.79	V	0.9	8.0	24.90	33.0	-8.1	
1909.80	20.20	H	0.9	8.0	27.31	33.0	-5.7	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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

Band

GSM 1900

GPRS

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber C

Company: LG
Project #: 15I19923
Date: 2/10/215
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: GPRS 1900

Test Equipment:
Receiving: Horn T119 and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1850.20	22.73	V	0.9	8.0	29.84	33.0	-3.2	
1850.20	24.04	H	0.9	8.0	31.15	33.0	-1.8	
Mid Ch								
1880.00	22.10	V	0.9	8.0	29.21	33.0	-3.8	
1880.00	23.53	H	0.9	8.0	30.64	33.0	-2.4	
High Ch								
1909.80	21.39	V	0.9	8.0	28.50	33.0	-4.5	
1909.80	23.30	H	0.9	8.0	30.41	33.0	-2.6	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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

Band

GSM 850

EGPRS

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: LG
Project #: 15I19923
Date: 02/08/15
Test Engineer: O. Stoelting
Configuration: Z-pos EUT Only
Mode: EGPRS850

Test Equipment:
Receiving: Hybrid T243, and Chamber B SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.20	27.05	V	0.9	0.0	26.15	38.5	-12.3	
824.20	16.98	H	0.9	0.0	16.08	38.5	-22.4	
Mid Ch								
836.60	25.76	V	0.9	0.0	24.86	38.5	-13.6	
836.60	18.18	H	0.9	0.0	17.28	38.5	-21.2	
High Ch								
848.80	25.46	V	0.9	0.0	24.56	38.5	-13.9	
848.80	17.87	H	0.9	0.0	16.97	38.5	-21.5	

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

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

Band

GSM 850

GPRS

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: LG
Project #: 15I19923
Date: 02/08/15
Test Engineer: O. Stoelting
Configuration: Z-pos EUT Only
Mode: GPRS850

Test Equipment:
Receiving: Hybrid T243, and Chamber B SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.20	29.94	V	0.9	0.0	29.04	38.5	-9.4	
824.20	20.32	H	0.9	0.0	19.42	38.5	-19.0	
Mid Ch								
836.60	29.15	V	0.9	0.0	28.25	38.5	-10.2	
836.60	21.57	H	0.9	0.0	20.67	38.5	-17.8	
High Ch								
848.80	29.44	V	0.9	0.0	28.54	38.5	-9.9	
848.80	21.79	H	0.9	0.0	20.90	38.5	-17.6	

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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.

12.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.53

LIMIT

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.

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

MODES TESTED

GSM, WCDMA, and LTE

RESULTS

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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.

12.2.1. SPURIOUS RADIATION PLOTS

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/11/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber B
Mode: LTE_16QAM Band 17 Harmonics, 10MHz Bandwidth

Band
LTE17
10MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch, 710									
1420.00	-29.4	V	3.0	37.3	1.0	-65.7	-13.0	-52.7	
2130.00	-20.3	V	3.0	36.6	1.0	-55.9	-13.0	-42.9	
2840.00	-25.2	V	3.0	36.4	1.0	-60.6	-13.0	-47.6	
1420.00	-28.8	H	3.0	37.3	1.0	-65.1	-13.0	-52.1	
2130.00	-22.2	H	3.0	36.6	1.0	-57.8	-13.0	-44.8	
2840.00	-25.9	H	3.0	36.4	1.0	-61.3	-13.0	-48.3	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/11/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber B
Mode: LTE_QPSK Band 17 Harmonics, 10MHz Bandwidth

Band
LTE17
10MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch, 710									
1420.00	-29.0	V	3.0	37.3	1.0	-65.4	-13.0	-52.4	
2130.00	-20.0	V	3.0	36.6	1.0	-55.5	-13.0	-42.5	
2840.00	-24.9	V	3.0	36.4	1.0	-60.3	-13.0	-47.3	
1420.00	-28.4	H	3.0	37.3	1.0	-64.8	-13.0	-51.8	
2130.00	-21.9	H	3.0	36.6	1.0	-57.5	-13.0	-44.5	
2840.00	-25.5	H	3.0	36.4	1.0	-60.9	-13.0	-47.9	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/11/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber B
Mode: LTE_16QAM Band 17 Harmonics, 5MHz Bandwidth

Band	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 706.5									
LTE17	1413.00	-30.4	V	3.0	37.4	1.0	-66.7	-13.0	-53.7	
	2119.50	-19.2	V	3.0	36.6	1.0	-54.8	-13.0	-41.8	
	2826.00	-25.3	V	3.0	36.4	1.0	-60.7	-13.0	-47.7	
5MHz	1413.00	-29.2	H	3.0	37.4	1.0	-65.5	-13.0	-52.5	
	2119.50	-23.7	H	3.0	36.6	1.0	-59.3	-13.0	-46.3	
	2826.00	-26.0	H	3.0	36.4	1.0	-61.4	-13.0	-48.4	
16QAM	Mid Ch, 710									
	1420.00	-27.1	V	3.0	37.3	1.0	-63.5	-13.0	-50.5	
	2130.00	-17.4	V	3.0	36.6	1.0	-53.0	-13.0	-40.0	
	2840.00	-25.4	V	3.0	36.4	1.0	-60.7	-13.0	-47.7	
	1420.00	-24.8	H	3.0	37.3	1.0	-61.2	-13.0	-48.2	
	2130.00	-19.4	H	3.0	36.6	1.0	-54.9	-13.0	-41.9	
	2840.00	-26.1	H	3.0	36.4	1.0	-61.5	-13.0	-48.5	
	High Ch, 713.5									
	1427.00	-24.6	V	3.0	37.3	1.0	-60.9	-13.0	-47.9	
	2140.50	-20.9	V	3.0	36.6	1.0	-56.4	-13.0	-43.4	
	2854.00	-24.9	V	3.0	36.4	1.0	-60.3	-13.0	-47.3	
	1427.00	-20.7	H	3.0	37.3	1.0	-57.1	-13.0	-44.1	
	2140.50	-21.3	H	3.0	36.6	1.0	-56.9	-13.0	-43.9	
	2854.00	-26.1	H	3.0	36.4	1.0	-61.5	-13.0	-48.5	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/11/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber B
Mode: LTE_QPSK Band 17 Harmonics, 5MHz Bandwidth

Band
LTE17
5MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 706.5									
1413.00	-30.0	V	3.0	37.4	1.0	-66.4	-13.0	-53.4	
2119.50	-18.9	V	3.0	36.6	1.0	-54.4	-13.0	-41.4	
2826.00	-25.0	V	3.0	36.4	1.0	-60.4	-13.0	-47.4	
1413.00	-28.8	H	3.0	37.4	1.0	-65.2	-13.0	-52.2	
2119.50	-23.4	H	3.0	36.6	1.0	-58.9	-13.0	-45.9	
2826.00	-25.7	H	3.0	36.4	1.0	-61.1	-13.0	-48.1	
Mid Ch, 710									
1420.00	-26.8	V	3.0	37.3	1.0	-63.2	-13.0	-50.2	
2130.00	-17.1	V	3.0	36.6	1.0	-52.6	-13.0	-39.6	
2840.00	-25.0	V	3.0	36.4	1.0	-60.4	-13.0	-47.4	
1420.00	-24.5	H	3.0	37.3	1.0	-60.8	-13.0	-47.8	
2130.00	-19.1	H	3.0	36.6	1.0	-54.6	-13.0	-41.6	
2840.00	-25.8	H	3.0	36.4	1.0	-61.2	-13.0	-48.2	
High Ch, 713.5									
1427.00	-24.3	V	3.0	37.3	1.0	-60.6	-13.0	-47.6	
2140.50	-20.5	V	3.0	36.6	1.0	-56.1	-13.0	-43.1	
2854.00	-24.6	V	3.0	36.4	1.0	-60.0	-13.0	-47.0	
1427.00	-20.4	H	3.0	37.3	1.0	-56.7	-13.0	-43.7	
2140.50	-21.0	H	3.0	36.6	1.0	-56.6	-13.0	-43.6	
2854.00	-25.8	H	3.0	36.4	1.0	-61.2	-13.0	-48.2	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/11/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset
Location: Chamber B
Mode: LTE_16QAM Band 5 Harmonics, 10MHz Bandwidth

Band	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 829									
	1658.00	-24.1	V	3.0	37.0	1.0	-60.1	-13.0	-47.1	
LTE5	2487.00	-25.2	V	3.0	36.4	1.0	-60.7	-13.0	-47.7	
	3316.00	-25.0	V	3.0	36.1	1.0	-60.2	-13.0	-47.2	
10MHz	1658.00	-24.1	H	3.0	37.0	1.0	-60.1	-13.0	-47.1	
	2487.00	-27.2	H	3.0	36.4	1.0	-62.6	-13.0	-49.6	
16QAM	3316.00	-24.6	H	3.0	36.1	1.0	-59.7	-13.0	-46.7	
	Mid Ch, 836.5									
	1673.00	-19.5	V	3.0	37.0	1.0	-55.5	-13.0	-42.5	
	2509.50	-23.9	V	3.0	36.4	1.0	-59.3	-13.0	-46.3	
	3346.00	-24.6	V	3.0	36.1	1.0	-59.7	-13.0	-46.7	
	1673.00	-18.3	H	3.0	37.0	1.0	-54.3	-13.0	-41.3	
	2509.50	-24.9	H	3.0	36.4	1.0	-60.3	-13.0	-47.3	
	3346.00	-23.8	H	3.0	36.1	1.0	-58.9	-13.0	-45.9	
	High Ch, 844									
	1688.00	-20.0	V	3.0	37.0	1.0	-55.9	-13.0	-42.9	
	2532.00	-26.3	V	3.0	36.4	1.0	-61.7	-13.0	-48.7	
	3376.00	-24.3	V	3.0	36.1	1.0	-59.4	-13.0	-46.4	
	1688.00	-21.7	H	3.0	37.0	1.0	-57.7	-13.0	-44.7	
	2532.00	-27.7	H	3.0	36.4	1.0	-63.1	-13.0	-50.1	
	3376.00	-24.4	H	3.0	36.1	1.0	-59.5	-13.0	-46.5	

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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.

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/11/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset
Location: Chamber B
Mode: LTE_QPSK Band 5 Harmonics, 10MHz Bandwidth

Band
LTE5
10MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 829									
1658.00	-23.7	V	3.0	37.0	1.0	-59.7	-13.0	-46.7	
2487.00	-24.9	V	3.0	36.4	1.0	-60.3	-13.0	-47.3	
3316.00	-24.7	V	3.0	36.1	1.0	-59.8	-13.0	-46.8	
1658.00	-23.7	H	3.0	37.0	1.0	-59.8	-13.0	-46.8	
2487.00	-26.9	H	3.0	36.4	1.0	-62.3	-13.0	-49.3	
3316.00	-24.2	H	3.0	36.1	1.0	-59.4	-13.0	-46.4	
Mid Ch, 836.5									
1673.00	-19.2	V	3.0	37.0	1.0	-55.2	-13.0	-42.2	
2509.50	-23.6	V	3.0	36.4	1.0	-59.0	-13.0	-46.0	
3346.00	-24.3	V	3.0	36.1	1.0	-59.4	-13.0	-46.4	
1673.00	-17.9	H	3.0	37.0	1.0	-53.9	-13.0	-40.9	
2509.50	-24.6	H	3.0	36.4	1.0	-60.0	-13.0	-47.0	
3346.00	-23.5	H	3.0	36.1	1.0	-58.6	-13.0	-45.6	
High Ch, 844									
1688.00	-19.6	V	3.0	37.0	1.0	-55.6	-13.0	-42.6	
2532.00	-25.9	V	3.0	36.4	1.0	-61.3	-13.0	-48.3	
3376.00	-24.0	V	3.0	36.1	1.0	-59.1	-13.0	-46.1	
1688.00	-21.4	H	3.0	37.0	1.0	-57.4	-13.0	-44.4	
2532.00	-27.3	H	3.0	36.4	1.0	-62.7	-13.0	-49.7	
3376.00	-24.1	H	3.0	36.1	1.0	-59.2	-13.0	-46.2	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/11/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset
Location: Chamber B
Mode: LTE_16QAM Band 5 Harmonics, 5MHz Bandwidth

Band
LTE5
5MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.5									
1653.00	-23.4	V	3.0	37.0	1.0	-59.4	-13.0	-46.4	
2479.50	-18.7	V	3.0	36.4	1.0	-54.1	-13.0	-41.1	
3306.00	-23.0	V	3.0	36.1	1.0	-58.1	-13.0	-45.1	
1653.00	-22.9	H	3.0	37.0	1.0	-58.9	-13.0	-45.9	
2479.50	-26.1	H	3.0	36.4	1.0	-61.5	-13.0	-48.5	
3306.00	-22.5	H	3.0	36.1	1.0	-57.6	-13.0	-44.6	
Mid Ch, 836.5									
1673.00	-22.3	V	3.0	37.0	1.0	-58.3	-13.0	-45.3	
2509.50	-24.3	V	3.0	36.4	1.0	-59.8	-13.0	-46.8	
3346.00	-25.0	V	3.0	36.1	1.0	-60.1	-13.0	-47.1	
1673.00	-18.5	H	3.0	37.0	1.0	-54.5	-13.0	-41.5	
2509.50	-25.7	H	3.0	36.4	1.0	-61.1	-13.0	-48.1	
3346.00	-24.6	H	3.0	36.1	1.0	-59.7	-13.0	-46.7	
High Ch, 846.5									
1693.00	-18.6	V	3.0	37.0	1.0	-54.6	-13.0	-41.6	
2539.50	-26.2	V	3.0	36.4	1.0	-61.6	-13.0	-48.6	
3386.00	-24.0	V	3.0	36.1	1.0	-59.1	-13.0	-46.1	
1693.00	-16.9	H	3.0	37.0	1.0	-52.9	-13.0	-39.9	
2539.50	-27.6	H	3.0	36.4	1.0	-63.0	-13.0	-50.0	
3386.00	-24.5	H	3.0	36.1	1.0	-59.6	-13.0	-46.6	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/11/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset
Location: Chamber B
Mode: LTE_QPSK Band 5 Harmonics, 5MHz Bandwidth

Band
LTE5
5MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.5									
1653.00	-23.0	V	3.0	37.0	1.0	-59.0	-13.0	-46.0	
2479.50	-18.3	V	3.0	36.4	1.0	-53.8	-13.0	-40.8	
3306.00	-22.6	V	3.0	36.1	1.0	-57.7	-13.0	-44.7	
1653.00	-22.5	H	3.0	37.0	1.0	-58.5	-13.0	-45.5	
2479.50	-25.7	H	3.0	36.4	1.0	-61.1	-13.0	-48.1	
3306.00	-22.1	H	3.0	36.1	1.0	-57.3	-13.0	-44.3	
Mid Ch, 836.5									
1673.00	-21.9	V	3.0	37.0	1.0	-57.9	-13.0	-44.9	
2509.50	-24.0	V	3.0	36.4	1.0	-59.4	-13.0	-46.4	
3346.00	-24.6	V	3.0	36.1	1.0	-59.7	-13.0	-46.7	
1673.00	-18.1	H	3.0	37.0	1.0	-54.1	-13.0	-41.1	
2509.50	-25.3	H	3.0	36.4	1.0	-60.7	-13.0	-47.7	
3346.00	-24.2	H	3.0	36.1	1.0	-59.3	-13.0	-46.3	
High Ch, 846.5									
1693.00	-18.2	V	3.0	37.0	1.0	-54.2	-13.0	-41.2	
2539.50	-25.8	V	3.0	36.4	1.0	-61.2	-13.0	-48.2	
3386.00	-23.7	V	3.0	36.1	1.0	-58.8	-13.0	-45.8	
1693.00	-16.5	H	3.0	37.0	1.0	-52.5	-13.0	-39.5	
2539.50	-27.2	H	3.0	36.4	1.0	-62.7	-13.0	-49.7	
3386.00	-24.1	H	3.0	36.1	1.0	-59.2	-13.0	-46.2	

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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.

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/11/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset
Location: Chamber B
Mode: LTE_16QAM Band 5 Harmonics, 3MHz Bandwidth

Band
LTE5
3MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 825.5									
1651.00	-22.1	V	3.0	37.0	1.0	-58.2	-13.0	-45.2	
2476.50	-26.4	V	3.0	36.4	1.0	-61.8	-13.0	-48.8	
3302.00	-25.2	V	3.0	36.2	1.0	-60.4	-13.0	-47.4	
1651.00	-23.1	H	3.0	37.0	1.0	-59.1	-13.0	-46.1	
2476.50	-27.9	H	3.0	36.4	1.0	-63.4	-13.0	-50.4	
3302.00	-24.5	H	3.0	36.2	1.0	-59.7	-13.0	-46.7	
Mid Ch, 836.5									
1673.00	-21.5	V	3.0	37.0	1.0	-57.5	-13.0	-44.5	
2509.50	-25.3	V	3.0	36.4	1.0	-60.7	-13.0	-47.7	
3346.00	-24.7	V	3.0	36.1	1.0	-59.9	-13.0	-46.9	
1673.00	-20.3	H	3.0	37.0	1.0	-56.3	-13.0	-43.3	
2509.50	-25.8	H	3.0	36.4	1.0	-61.2	-13.0	-48.2	
3346.00	-25.0	H	3.0	36.1	1.0	-60.1	-13.0	-47.1	
High Ch, 847.5									
1695.00	-16.5	V	3.0	37.0	1.0	-52.5	-13.0	-39.5	
2542.50	-26.0	V	3.0	36.4	1.0	-61.4	-13.0	-48.4	
3390.00	-24.2	V	3.0	36.1	1.0	-59.3	-13.0	-46.3	
1695.00	-18.2	H	3.0	37.0	1.0	-54.2	-13.0	-41.2	
2542.50	-27.8	H	3.0	36.4	1.0	-63.2	-13.0	-50.2	
3390.00	-24.5	H	3.0	36.1	1.0	-59.6	-13.0	-46.6	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/11/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset
Location: Chamber B
Mode: LTE_QPSK Band 5 Harmonics, 3MHz Bandwidth

Band	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 825.5									
	1651.00	-21.8	V	3.0	37.0	1.0	-57.8	-13.0	-44.8	
LTE5	2476.50	-26.1	V	3.0	36.4	1.0	-61.5	-13.0	-48.5	
	3302.00	-24.9	V	3.0	36.2	1.0	-60.1	-13.0	-47.1	
	1651.00	-22.7	H	3.0	37.0	1.0	-58.8	-13.0	-45.8	
3MHz	2476.50	-27.6	H	3.0	36.4	1.0	-63.0	-13.0	-50.0	
	3302.00	-24.2	H	3.0	36.2	1.0	-59.4	-13.0	-46.4	
QPSK	Mid Ch, 836.5									
	1673.00	-21.2	V	3.0	37.0	1.0	-57.2	-13.0	-44.2	
	2509.50	-25.0	V	3.0	36.4	1.0	-60.4	-13.0	-47.4	
	3346.00	-24.4	V	3.0	36.1	1.0	-59.5	-13.0	-46.5	
	1673.00	-20.0	H	3.0	37.0	1.0	-56.0	-13.0	-43.0	
	2509.50	-25.5	H	3.0	36.4	1.0	-60.9	-13.0	-47.9	
	3346.00	-24.6	H	3.0	36.1	1.0	-59.8	-13.0	-46.8	
	High Ch, 847.5									
	1695.00	-16.2	V	3.0	37.0	1.0	-52.2	-13.0	-39.2	
	2542.50	-25.7	V	3.0	36.4	1.0	-61.1	-13.0	-48.1	
	3390.00	-23.9	V	3.0	36.1	1.0	-59.0	-13.0	-46.0	
	1695.00	-17.9	H	3.0	37.0	1.0	-53.9	-13.0	-40.9	
	2542.50	-27.5	H	3.0	36.4	1.0	-62.9	-13.0	-49.9	
	3390.00	-24.2	H	3.0	36.1	1.0	-59.3	-13.0	-46.3	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/11/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset
Location: Chamber B
Mode: LTE_16QAM Band 5 Harmonics, 1.4MHz Bandwidth

Band

LTE5

1.4MHz

16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.7									
1649.40	-24.3	V	3.0	37.0	1.0	-60.3	-13.0	-47.3	
2474.10	-25.4	V	3.0	36.4	1.0	-60.8	-13.0	-47.8	
3298.80	-24.3	V	3.0	36.2	1.0	-59.4	-13.0	-46.4	
1649.40	-23.0	H	3.0	37.0	1.0	-59.0	-13.0	-46.0	
2474.10	-27.4	H	3.0	36.4	1.0	-62.8	-13.0	-49.8	
3298.80	-25.3	H	3.0	36.2	1.0	-60.4	-13.0	-47.4	
Mid Ch, 836.5									
1673.00	-21.9	V	3.0	37.0	1.0	-57.9	-13.0	-44.9	
2509.50	-25.1	V	3.0	36.4	1.0	-60.5	-13.0	-47.5	
3346.00	-25.4	V	3.0	36.1	1.0	-60.6	-13.0	-47.6	
1673.00	-19.3	H	3.0	37.0	1.0	-55.3	-13.0	-42.3	
2509.50	-26.0	H	3.0	36.4	1.0	-61.4	-13.0	-48.4	
3346.00	-24.7	H	3.0	36.1	1.0	-59.9	-13.0	-46.9	
High Ch, 848.3									
1696.60	-20.7	V	3.0	37.0	1.0	-56.7	-13.0	-43.7	
2544.90	-25.8	V	3.0	36.4	1.0	-61.2	-13.0	-48.2	
3393.20	-24.2	V	3.0	36.1	1.0	-59.3	-13.0	-46.3	
1696.60	-15.3	H	3.0	37.0	1.0	-51.2	-13.0	-38.2	
2544.90	-28.1	H	3.0	36.4	1.0	-63.5	-13.0	-50.5	
3393.20	-24.7	H	3.0	36.1	1.0	-59.7	-13.0	-46.7	

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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.

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/11/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset
Location: Chamber B
Mode: LTE_QPSK Band 5 Harmonics, 1.4MHz Bandwidth

Band
LTE5
1.4MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.7									
1649.40	-23.9	V	3.0	37.0	1.0	-60.0	-13.0	-47.0	
2474.10	-25.0	V	3.0	36.4	1.0	-60.4	-13.0	-47.4	
3298.80	-23.9	V	3.0	36.2	1.0	-59.1	-13.0	-46.1	
1649.40	-22.6	H	3.0	37.0	1.0	-58.6	-13.0	-45.6	
2474.10	-27.0	H	3.0	36.4	1.0	-62.4	-13.0	-49.4	
3298.80	-24.9	H	3.0	36.2	1.0	-60.1	-13.0	-47.1	
Mid Ch, 836.5									
1673.00	-21.6	V	3.0	37.0	1.0	-57.6	-13.0	-44.6	
2509.50	-24.8	V	3.0	36.4	1.0	-60.2	-13.0	-47.2	
3346.00	-25.1	V	3.0	36.1	1.0	-60.2	-13.0	-47.2	
1673.00	-18.9	H	3.0	37.0	1.0	-54.9	-13.0	-41.9	
2509.50	-25.6	H	3.0	36.4	1.0	-61.1	-13.0	-48.1	
3346.00	-24.4	H	3.0	36.1	1.0	-59.5	-13.0	-46.5	
High Ch, 848.3									
1696.60	-20.3	V	3.0	37.0	1.0	-56.3	-13.0	-43.3	
2544.90	-25.4	V	3.0	36.4	1.0	-60.9	-13.0	-47.9	
3393.20	-23.9	V	3.0	36.1	1.0	-59.0	-13.0	-46.0	
1696.60	-14.9	H	3.0	37.0	1.0	-50.9	-13.0	-37.9	
2544.90	-27.7	H	3.0	36.4	1.0	-63.1	-13.0	-50.1	
3393.20	-24.3	H	3.0	36.1	1.0	-59.4	-13.0	-46.4	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/7/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber B
Mode: LTE_16QAM Band 4 Harmonics, 20MHz Bandwidth

Band	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1720									
LTE4	3440.00	-7.6	V	3.0	36.0	1.0	-42.7	-13.0	-29.7	
	5160.00	-14.1	V	3.0	35.4	1.0	-48.5	-13.0	-35.5	
	6880.00	-16.7	V	3.0	35.7	1.0	-51.4	-13.0	-38.4	
20MHz	3440.00	-9.9	H	3.0	36.0	1.0	-45.0	-13.0	-32.0	
	5160.00	-12.1	H	3.0	35.4	1.0	-46.5	-13.0	-33.5	
	6880.00	-16.6	H	3.0	35.7	1.0	-51.3	-13.0	-38.3	
16QAM	Mid Ch, 1732.5									
	3465.00	-10.7	V	3.0	36.0	1.0	-45.7	-13.0	-32.7	
	5197.50	-11.3	V	3.0	35.4	1.0	-45.7	-13.0	-32.7	
	6930.00	-10.7	V	3.0	35.7	1.0	-45.3	-13.0	-32.3	
	3465.00	-7.1	H	3.0	36.0	1.0	-42.2	-13.0	-29.2	
	5197.50	-6.7	H	3.0	35.4	1.0	-41.1	-13.0	-28.1	
	6930.00	-4.5	H	3.0	35.7	1.0	-39.2	-13.0	-26.2	
	High Ch, 1745									
	3490.00	-2.5	V	3.0	36.0	1.0	-37.5	-13.0	-24.5	
	5235.00	-10.4	V	3.0	35.4	1.0	-44.8	-13.0	-31.8	
	6980.00	-17.7	V	3.0	35.7	1.0	-52.4	-13.0	-39.4	
	3490.00	-3.7	H	3.0	36.0	1.0	-38.7	-13.0	-25.7	
	5235.00	-9.0	H	3.0	35.4	1.0	-43.5	-13.0	-30.5	
	6980.00	-15.7	H	3.0	35.7	1.0	-50.4	-13.0	-37.4	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/7/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber B
Mode: LTE_QPSK Band 4 Harmonics, 20MHz Bandwidth

Band
LTE4
20MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1720									
3440.00	-7.3	V	3.0	36.0	1.0	-42.4	-13.0	-29.4	
5160.00	-13.8	V	3.0	35.4	1.0	-48.2	-13.0	-35.2	
6880.00	-16.4	V	3.0	35.7	1.0	-51.1	-13.0	-38.1	
3440.00	-9.6	H	3.0	36.0	1.0	-44.7	-13.0	-31.7	
5160.00	-11.8	H	3.0	35.4	1.0	-46.2	-13.0	-33.2	
6880.00	-16.3	H	3.0	35.7	1.0	-51.0	-13.0	-38.0	
Mid Ch, 1732.5									
3465.00	-10.4	V	3.0	36.0	1.0	-45.4	-13.0	-32.4	
5197.50	-11.0	V	3.0	35.4	1.0	-45.4	-13.0	-32.4	
6930.00	-10.4	V	3.0	35.7	1.0	-45.0	-13.0	-32.0	
3465.00	-7.4	H	3.0	36.0	1.0	-42.4	-13.0	-29.4	
5197.50	-5.6	H	3.0	35.4	1.0	-40.0	-13.0	-27.0	
6930.00	-4.2	H	3.0	35.7	1.0	-38.9	-13.0	-25.9	
High Ch, 1745									
3490.00	-2.2	V	3.0	36.0	1.0	-37.2	-13.0	-24.2	
5235.00	-10.1	V	3.0	35.4	1.0	-44.5	-13.0	-31.5	
6980.00	-17.4	V	3.0	35.7	1.0	-52.1	-13.0	-39.1	
3490.00	-3.4	H	3.0	36.0	1.0	-38.4	-13.0	-25.4	
5235.00	-8.7	H	3.0	35.4	1.0	-43.2	-13.0	-30.2	
6980.00	-15.4	H	3.0	35.7	1.0	-50.1	-13.0	-37.1	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/7/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber B
Mode: LTE_16QAM Band 4 Harmonics, 15MHz Bandwidth

Band: LTE4 15MHz 16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1717.5									
3435.00	-3.7	V	3.0	36.1	1.0	-38.7	-13.0	-25.7	
5152.50	-9.8	V	3.0	35.4	1.0	-44.3	-13.0	-31.3	
6870.00	-18.3	V	3.0	35.7	1.0	-52.9	-13.0	-39.9	
3435.00	-1.1	H	3.0	36.1	1.0	-36.1	-13.0	-23.1	
5152.50	-11.1	H	3.0	35.4	1.0	-45.5	-13.0	-32.5	
6870.00	-20.8	H	3.0	35.7	1.0	-55.5	-13.0	-42.5	
Mid Ch, 1732.5									
3465.00	-7.8	V	3.0	36.0	1.0	-42.9	-13.0	-29.9	
5197.50	-17.2	V	3.0	35.4	1.0	-51.6	-13.0	-38.6	
6930.00	-15.9	V	3.0	35.7	1.0	-50.6	-13.0	-37.6	
3465.00	-5.0	H	3.0	36.0	1.0	-40.0	-13.0	-27.0	
5197.50	-16.5	H	3.0	35.4	1.0	-50.9	-13.0	-37.9	
6930.00	-15.1	H	3.0	35.7	1.0	-49.8	-13.0	-36.8	
High Ch, 1747.5									
3495.00	-2.4	V	3.0	36.0	1.0	-37.5	-13.0	-24.5	
5242.50	-12.2	V	3.0	35.4	1.0	-46.6	-13.0	-33.6	
6990.00	-17.5	V	3.0	35.7	1.0	-52.2	-13.0	-39.2	
3495.00	-5.3	H	3.0	36.0	1.0	-40.3	-13.0	-27.3	
5242.50	-12.7	H	3.0	35.4	1.0	-47.2	-13.0	-34.2	
6990.00	-15.8	H	3.0	35.7	1.0	-50.5	-13.0	-37.5	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/7/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber B
Mode: LTE_QPSK Band 4 Harmonics, 15MHz Bandwidth

Band
LTE4
15MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1717.5									
3435.00	-3.3	V	3.0	36.1	1.0	-38.4	-13.0	-25.4	
5152.50	-9.5	V	3.0	35.4	1.0	-43.9	-13.0	-30.9	
6870.00	-17.9	V	3.0	35.7	1.0	-52.6	-13.0	-39.6	
3435.00	-0.7	H	3.0	36.1	1.0	-35.8	-13.0	-22.8	
5152.50	-10.7	H	3.0	35.4	1.0	-45.1	-13.0	-32.1	
6870.00	-20.5	H	3.0	35.7	1.0	-55.1	-13.0	-42.1	
Mid Ch, 1732.5									
3465.00	-7.5	V	3.0	36.0	1.0	-42.5	-13.0	-29.5	
5197.50	-16.8	V	3.0	35.4	1.0	-51.3	-13.0	-38.3	
6930.00	-15.5	V	3.0	35.7	1.0	-50.2	-13.0	-37.2	
3465.00	-4.6	H	3.0	36.0	1.0	-39.7	-13.0	-26.7	
5197.50	-16.1	H	3.0	35.4	1.0	-50.5	-13.0	-37.5	
6930.00	-14.8	H	3.0	35.7	1.0	-49.4	-13.0	-36.4	
High Ch, 1747.5									
3495.00	-2.1	V	3.0	36.0	1.0	-37.1	-13.0	-24.1	
5242.50	-11.8	V	3.0	35.4	1.0	-46.3	-13.0	-33.3	
6990.00	-17.1	V	3.0	35.7	1.0	-51.8	-13.0	-38.8	
3495.00	-4.9	H	3.0	36.0	1.0	-40.0	-13.0	-27.0	
5242.50	-12.4	H	3.0	35.4	1.0	-46.8	-13.0	-33.8	
6990.00	-15.5	H	3.0	35.7	1.0	-50.1	-13.0	-37.1	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/7/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber B
Mode: LTE_16QAM Band 4 Harmonics, 10MHz Bandwidth

Band
LTE4
10MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1715									
3430.00	-2.5	V	3.0	36.1	1.0	-37.6	-13.0	-24.6	
5145.00	-10.0	V	3.0	35.4	1.0	-44.4	-13.0	-31.4	
6860.00	-17.8	V	3.0	35.7	1.0	-52.5	-13.0	-39.5	
3430.00	-0.5	H	3.0	36.1	1.0	-35.5	-13.0	-22.5	
5145.00	-9.2	H	3.0	35.4	1.0	-43.6	-13.0	-30.6	
6860.00	-16.5	H	3.0	35.7	1.0	-51.2	-13.0	-38.2	
Mid Ch, 1732.5									
3465.00	-5.8	V	3.0	36.0	1.0	-40.8	-13.0	-27.8	
5197.50	-10.4	V	3.0	35.4	1.0	-44.8	-13.0	-31.8	
6930.00	-18.2	V	3.0	35.7	1.0	-52.8	-13.0	-39.8	
3465.00	-4.4	H	3.0	36.0	1.0	-39.5	-13.0	-26.5	
5197.50	-10.5	H	3.0	35.4	1.0	-44.9	-13.0	-31.9	
6930.00	-16.8	H	3.0	35.7	1.0	-51.5	-13.0	-38.5	
High Ch, 1750									
3500.00	-4.3	V	3.0	36.0	1.0	-39.3	-13.0	-26.3	
5250.00	-13.8	V	3.0	35.4	1.0	-48.3	-13.0	-35.3	
7000.00	-18.2	V	3.0	35.7	1.0	-52.9	-13.0	-39.9	
3500.00	-9.7	H	3.0	36.0	1.0	-44.7	-13.0	-31.7	
5250.00	-13.2	H	3.0	35.4	1.0	-47.6	-13.0	-34.6	
7000.00	-16.5	H	3.0	35.7	1.0	-51.1	-13.0	-38.1	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/7/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber B
Mode: LTE_QPSK Band 4 Harmonics, 10MHz Bandwidth

Band
LTE4
10MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1715									
3430.00	-2.3	V	3.0	36.1	1.0	-37.3	-13.0	-24.3	
5145.00	-9.7	V	3.0	35.4	1.0	-44.1	-13.0	-31.1	
6860.00	-17.5	V	3.0	35.7	1.0	-52.2	-13.0	-39.2	
3430.00	-0.2	H	3.0	36.1	1.0	-35.3	-13.0	-22.3	
5145.00	-8.9	H	3.0	35.4	1.0	-43.4	-13.0	-30.4	
6860.00	-16.2	H	3.0	35.7	1.0	-50.9	-13.0	-37.9	
Mid Ch, 1732.5									
3465.00	-5.5	V	3.0	36.0	1.0	-40.6	-13.0	-27.6	
5197.50	-10.1	V	3.0	35.4	1.0	-44.5	-13.0	-31.5	
6930.00	-17.9	V	3.0	35.7	1.0	-52.6	-13.0	-39.6	
3465.00	-4.1	H	3.0	36.0	1.0	-39.2	-13.0	-26.2	
5197.50	-10.2	H	3.0	35.4	1.0	-44.7	-13.0	-31.7	
6930.00	-16.5	H	3.0	35.7	1.0	-51.2	-13.0	-38.2	
High Ch, 1750									
3500.00	-4.0	V	3.0	36.0	1.0	-39.0	-13.0	-26.0	
5250.00	-13.6	V	3.0	35.4	1.0	-48.0	-13.0	-35.0	
7000.00	-18.0	V	3.0	35.7	1.0	-52.6	-13.0	-39.6	
3500.00	-9.4	H	3.0	36.0	1.0	-44.4	-13.0	-31.4	
5250.00	-12.9	H	3.0	35.4	1.0	-47.3	-13.0	-34.3	
7000.00	-16.2	H	3.0	35.7	1.0	-50.9	-13.0	-37.9	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/7/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber B
Mode: LTE_16QAM Band 4 Harmonics, 5MHz Bandwidth

Band
LTE4
5MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.5									
3425.00	-3.6	V	3.0	36.1	1.0	-38.7	-13.0	-25.7	
5137.50	-9.5	V	3.0	35.4	1.0	-43.9	-13.0	-30.9	
6850.00	-17.7	V	3.0	35.7	1.0	-52.4	-13.0	-39.4	
3425.00	-1.6	H	3.0	36.1	1.0	-36.6	-13.0	-23.6	
5137.50	-10.1	H	3.0	35.4	1.0	-44.5	-13.0	-31.5	
6850.00	-16.5	H	3.0	35.7	1.0	-51.1	-13.0	-38.1	
Mid Ch, 1732.5									
3465.00	-3.8	V	3.0	36.0	1.0	-38.8	-13.0	-25.8	
5197.50	-14.1	V	3.0	35.4	1.0	-48.5	-13.0	-35.5	
6930.00	-17.7	V	3.0	35.7	1.0	-52.3	-13.0	-39.3	
3465.00	-4.7	H	3.0	36.0	1.0	-39.8	-13.0	-26.8	
5197.50	-12.2	H	3.0	35.4	1.0	-46.6	-13.0	-33.6	
6930.00	-16.9	H	3.0	35.7	1.0	-51.5	-13.0	-38.5	
High Ch, 1752.5									
3505.00	-4.3	V	3.0	36.0	1.0	-39.3	-13.0	-26.3	
5257.50	-4.2	V	3.0	35.4	1.0	-38.7	-13.0	-25.7	
7010.00	-17.6	V	3.0	35.7	1.0	-52.3	-13.0	-39.3	
3505.00	-10.7	H	3.0	36.0	1.0	-45.7	-13.0	-32.7	
5257.50	-14.6	H	3.0	35.4	1.0	-49.1	-13.0	-36.1	
7010.00	-15.4	H	3.0	35.7	1.0	-50.1	-13.0	-37.1	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/7/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber B
Mode: LTE_QPSK Band 4 Harmonics, 5MHz Bandwidth

Band
LTE4
5MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.5									
3425.00	-3.4	V	3.0	36.1	1.0	-38.4	-13.0	-25.4	
5137.50	-9.3	V	3.0	35.4	1.0	-43.7	-13.0	-30.7	
6850.00	-17.4	V	3.0	35.7	1.0	-52.1	-13.0	-39.1	
3425.00	-1.3	H	3.0	36.1	1.0	-36.4	-13.0	-23.4	
5137.50	-9.8	H	3.0	35.4	1.0	-44.3	-13.0	-31.3	
6850.00	-16.2	H	3.0	35.7	1.0	-50.9	-13.0	-37.9	
Mid Ch, 1732.5									
3465.00	-3.5	V	3.0	36.0	1.0	-38.5	-13.0	-25.5	
5197.50	-13.8	V	3.0	35.4	1.0	-48.2	-13.0	-35.2	
6930.00	-17.4	V	3.0	35.7	1.0	-52.1	-13.0	-39.1	
3465.00	-4.5	H	3.0	36.0	1.0	-39.5	-13.0	-26.5	
5197.50	-11.9	H	3.0	35.4	1.0	-46.3	-13.0	-33.3	
6930.00	-16.6	H	3.0	35.7	1.0	-51.3	-13.0	-38.3	
High Ch, 1752.5									
3505.00	-4.1	V	3.0	36.0	1.0	-39.1	-13.0	-26.1	
5257.50	-4.0	V	3.0	35.4	1.0	-38.4	-13.0	-25.4	
7010.00	-17.3	V	3.0	35.7	1.0	-52.0	-13.0	-39.0	
3505.00	-10.4	H	3.0	36.0	1.0	-45.4	-13.0	-32.4	
5257.50	-14.4	H	3.0	35.4	1.0	-48.8	-13.0	-35.8	
7010.00	-15.7	H	3.0	35.7	1.0	-50.4	-13.0	-37.4	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/7/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber B
Mode: LTE_16QAM Band 4 Harmonics, 3MHz Bandwidth

Band	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1711.5									
LTE4	3423.00	-3.2	V	3.0	36.1	1.0	-38.3	-13.0	-25.3	
	5134.50	-10.5	V	3.0	35.4	1.0	-44.9	-13.0	-31.9	
	6846.00	-18.7	V	3.0	35.7	1.0	-53.4	-13.0	-40.4	
3MHz	3423.00	-0.7	H	3.0	36.1	1.0	-35.8	-13.0	-22.8	
	5134.50	-11.9	H	3.0	35.4	1.0	-46.3	-13.0	-33.3	
	6846.00	-16.7	H	3.0	35.7	1.0	-51.4	-13.0	-38.4	
16QAM	Mid Ch, 1732.5									
	3465.00	-3.6	V	3.0	36.0	1.0	-38.6	-13.0	-25.6	
	5197.50	-10.3	V	3.0	35.4	1.0	-44.7	-13.0	-31.7	
	6930.00	-18.5	V	3.0	35.7	1.0	-53.2	-13.0	-40.2	
	3465.00	-4.0	H	3.0	36.0	1.0	-39.0	-13.0	-26.0	
	5197.50	-12.7	H	3.0	35.4	1.0	-47.1	-13.0	-34.1	
	6930.00	-16.1	H	3.0	35.7	1.0	-50.7	-13.0	-37.7	
	High Ch, 1753.5									
	3507.00	-11.5	V	3.0	36.0	1.0	-46.5	-13.0	-33.5	
	5260.50	-13.4	V	3.0	35.4	1.0	-47.9	-13.0	-34.9	
	7014.00	-17.5	V	3.0	35.7	1.0	-52.2	-13.0	-39.2	
	3507.00	-13.8	H	3.0	36.0	1.0	-48.8	-13.0	-35.8	
	5260.50	-11.3	H	3.0	35.4	1.0	-45.8	-13.0	-32.8	
	7014.00	-15.9	H	3.0	35.7	1.0	-50.6	-13.0	-37.6	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/7/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber B
Mode: LTE_QPSK Band 4 Harmonics, 3MHz Bandwidth

Band
LTE4
3MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1711.5									
3423.00	-2.8	V	3.0	36.1	1.0	-37.9	-13.0	-24.9	
5134.50	-10.1	V	3.0	35.4	1.0	-44.5	-13.0	-31.5	
6846.00	-18.3	V	3.0	35.7	1.0	-53.0	-13.0	-40.0	
3423.00	-0.3	H	3.0	36.1	1.0	-35.4	-13.0	-22.4	
5134.50	-11.6	H	3.0	35.4	1.0	-46.0	-13.0	-33.0	
6846.00	-16.4	H	3.0	35.7	1.0	-51.0	-13.0	-38.0	
Mid Ch, 1732.5									
3465.00	-3.3	V	3.0	36.0	1.0	-38.3	-13.0	-25.3	
5197.50	-9.9	V	3.0	35.4	1.0	-44.4	-13.0	-31.4	
6930.00	-18.2	V	3.0	35.7	1.0	-52.8	-13.0	-39.8	
3465.00	-3.7	H	3.0	36.0	1.0	-38.7	-13.0	-25.7	
5197.50	-12.3	H	3.0	35.4	1.0	-46.8	-13.0	-33.8	
6930.00	-15.7	H	3.0	35.7	1.0	-50.4	-13.0	-37.4	
High Ch, 1753.5									
3507.00	-11.1	V	3.0	36.0	1.0	-46.1	-13.0	-33.1	
5260.50	-13.1	V	3.0	35.4	1.0	-47.5	-13.0	-34.5	
7014.00	-17.2	V	3.0	35.7	1.0	-51.9	-13.0	-38.9	
3507.00	-13.4	H	3.0	36.0	1.0	-48.4	-13.0	-35.4	
5260.50	-11.0	H	3.0	35.4	1.0	-45.4	-13.0	-32.4	
7014.00	-15.6	H	3.0	35.7	1.0	-50.3	-13.0	-37.3	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/7/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber B
Mode: LTE_16QAM Band 4 Harmonics, 1.4MHz Bandwidth

Band: LTE4 1.4MHz 16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1710.7									
3421.40	-4.6	V	3.0	36.1	1.0	-39.6	-13.0	-26.6	
5132.10	-9.6	V	3.0	35.4	1.0	-44.0	-13.0	-31.0	
6842.80	-18.4	V	3.0	35.7	1.0	-53.1	-13.0	-40.1	
3421.40	-1.8	H	3.0	36.1	1.0	-36.9	-13.0	-23.9	
5132.10	-10.3	H	3.0	35.4	1.0	-44.7	-13.0	-31.7	
6842.80	-16.1	H	3.0	35.7	1.0	-50.8	-13.0	-37.8	
Mid Ch, 1732.5									
3465.00	-3.3	V	3.0	36.0	1.0	-38.4	-13.0	-25.4	
5197.50	-13.0	V	3.0	35.4	1.0	-47.4	-13.0	-34.4	
6930.00	-18.1	V	3.0	35.7	1.0	-52.8	-13.0	-39.8	
3465.00	-4.3	H	3.0	36.0	1.0	-39.3	-13.0	-26.3	
5197.50	-13.2	H	3.0	35.4	1.0	-47.6	-13.0	-34.6	
6930.00	-16.5	H	3.0	35.7	1.0	-51.2	-13.0	-38.2	
High Ch, 1754.3									
3508.60	-11.6	V	3.0	36.0	1.0	-46.6	-13.0	-33.6	
5262.90	-12.9	V	3.0	35.4	1.0	-47.4	-13.0	-34.4	
7017.20	-18.2	V	3.0	35.7	1.0	-52.9	-13.0	-39.9	
3508.60	-14.1	H	3.0	36.0	1.0	-49.1	-13.0	-36.1	
5262.90	-12.3	H	3.0	35.4	1.0	-46.7	-13.0	-33.7	
7017.20	-16.4	H	3.0	35.7	1.0	-51.1	-13.0	-38.1	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/7/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber B
Mode: LTE_QPSK Band 4 Harmonics, 1.4MHz Bandwidth

Band
LTE4
1.4MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1710.7									
3421.40	-4.2	V	3.0	36.1	1.0	-39.3	-13.0	-26.3	
5132.10	-9.3	V	3.0	35.4	1.0	-43.7	-13.0	-30.7	
6842.80	-18.1	V	3.0	35.7	1.0	-52.7	-13.0	-39.7	
3421.40	-1.5	H	3.0	36.1	1.0	-36.6	-13.0	-23.6	
5132.10	-9.9	H	3.0	35.4	1.0	-44.4	-13.0	-31.4	
6842.80	-15.8	H	3.0	35.7	1.0	-50.4	-13.0	-37.4	
Mid Ch, 1732.5									
3465.00	-3.0	V	3.0	36.0	1.0	-38.0	-13.0	-25.0	
5197.50	-12.7	V	3.0	35.4	1.0	-47.1	-13.0	-34.1	
6930.00	-17.8	V	3.0	35.7	1.0	-52.5	-13.0	-39.5	
3465.00	-3.9	H	3.0	36.0	1.0	-39.0	-13.0	-26.0	
5197.50	-12.9	H	3.0	35.4	1.0	-47.3	-13.0	-34.3	
6930.00	-16.2	H	3.0	35.7	1.0	-50.9	-13.0	-37.9	
High Ch, 1754.3									
3508.60	-11.3	V	3.0	36.0	1.0	-46.3	-13.0	-33.3	
5262.90	-12.6	V	3.0	35.4	1.0	-47.1	-13.0	-34.1	
7017.20	-17.8	V	3.0	35.7	1.0	-52.5	-13.0	-39.5	
3508.60	-13.8	H	3.0	36.0	1.0	-48.8	-13.0	-35.8	
5262.90	-11.9	H	3.0	35.4	1.0	-46.4	-13.0	-33.4	
7017.20	-16.1	H	3.0	35.7	1.0	-50.8	-13.0	-37.8	

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

UL Verification Services Chamber B
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 02/06/15
Test Engineer: O. Stoelting
Configuration: X-pos EUT w/ AC Adaptor and HS
Mode: LTE2 16QAM 20MHz Harm

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 24

Band

LTE2

20MHz

16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1860MHz									
3.720	-14.9	V	3.0	35.4	1.0	-49.3	-13.0	-36.3	
5.580	-19.0	V	3.0	34.7	1.0	-52.7	-13.0	-39.7	
7.440	-19.0	V	3.0	34.9	1.0	-52.9	-13.0	-39.9	
3.720	-20.7	H	3.0	35.4	1.0	-55.1	-13.0	-42.1	
5.580	-17.3	H	3.0	34.7	1.0	-51.0	-13.0	-38.0	
7.440	-17.3	H	3.0	34.9	1.0	-51.2	-13.0	-38.2	
Mid Ch,1880MHz									
3.760	-15.5	V	3.0	35.3	1.0	-49.9	-13.0	-36.9	
5.640	-18.7	V	3.0	34.7	1.0	-52.4	-13.0	-39.4	
7.520	-16.3	V	3.0	34.9	1.0	-50.2	-13.0	-37.2	
3.760	-20.6	H	3.0	35.3	1.0	-54.9	-13.0	-41.9	
5.640	-17.4	H	3.0	34.7	1.0	-51.1	-13.0	-38.1	
7.520	-17.1	H	3.0	34.9	1.0	-51.0	-13.0	-38.0	
High Ch, 1900MHz									
3.800	-20.2	V	3.0	35.3	1.0	-54.5	-13.0	-41.5	
5.700	-18.7	V	3.0	34.7	1.0	-52.4	-13.0	-39.4	
7.600	-15.5	V	3.0	34.9	1.0	-49.5	-13.0	-36.5	
3.800	-19.9	H	3.0	35.3	1.0	-54.2	-13.0	-41.2	
5.700	-16.7	H	3.0	34.7	1.0	-50.4	-13.0	-37.4	
7.600	-15.2	H	3.0	34.9	1.0	-49.1	-13.0	-36.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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.

UL Verification Services Chamber B
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 02/06/15
Test Engineer: O. Stoelting
Configuration: X-pos EUT w/ AC Adaptor and HS
Mode: LTE2 QPSK 20MHz Harm

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 24

Band
LTE2
20MHz
QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1860MHz									
3.720	-15.2	V	3.0	35.4	1.0	-49.6	-13.0	-36.6	
5.580	-19.2	V	3.0	34.7	1.0	-52.9	-13.0	-39.9	
7.440	-18.9	V	3.0	34.9	1.0	-52.8	-13.0	-39.8	
3.720	-20.2	H	3.0	35.4	1.0	-54.5	-13.0	-41.5	
5.580	-17.1	H	3.0	34.7	1.0	-50.9	-13.0	-37.9	
7.440	-16.9	H	3.0	34.9	1.0	-50.8	-13.0	-37.8	
Mid Ch,1880MHz									
3.760	-15.3	V	3.0	35.3	1.0	-49.6	-13.0	-36.6	
5.640	-18.3	V	3.0	34.7	1.0	-52.1	-13.0	-39.1	
7.520	-16.2	V	3.0	34.9	1.0	-50.1	-13.0	-37.1	
3.760	-20.7	H	3.0	35.3	1.0	-55.0	-13.0	-42.0	
5.640	-17.8	H	3.0	34.7	1.0	-51.5	-13.0	-38.5	
7.520	-17.0	H	3.0	34.9	1.0	-51.0	-13.0	-38.0	
High Ch, 1900MHz									
3.800	-20.4	V	3.0	35.3	1.0	-54.7	-13.0	-41.7	
5.700	-19.0	V	3.0	34.7	1.0	-52.7	-13.0	-39.7	
7.600	-14.2	V	3.0	34.9	1.0	-48.1	-13.0	-35.1	
3.800	-20.3	H	3.0	35.3	1.0	-54.6	-13.0	-41.6	
5.700	-16.1	H	3.0	34.7	1.0	-49.9	-13.0	-36.9	
7.600	-15.5	H	3.0	34.9	1.0	-49.5	-13.0	-36.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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.

UL Verification Services Chamber B
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 02/06/15
Test Engineer: O. Stoelting
Configuration: X-pos EUT w/ AC Adaptor and HS
Mode: LTE2 16QAM 15MHz Harm

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 24

Band
LTE2
15MHz
16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1857.5MHz									
3.715	-15.4	V	3.0	35.4	1.0	-49.8	-13.0	-36.8	
5.573	-17.3	V	3.0	34.7	1.0	-51.0	-13.0	-38.0	
7.430	-17.3	V	3.0	34.9	1.0	-51.2	-13.0	-38.2	
3.715	-20.3	H	3.0	35.4	1.0	-54.7	-13.0	-41.7	
5.573	-15.9	H	3.0	34.7	1.0	-49.7	-13.0	-36.7	
7.430	-17.2	H	3.0	34.9	1.0	-51.1	-13.0	-38.1	
Mid Ch,1880MHz									
3.760	-18.4	V	3.0	35.3	1.0	-52.8	-13.0	-39.8	
5.640	-16.9	V	3.0	34.7	1.0	-50.6	-13.0	-37.6	
7.520	-18.8	V	3.0	34.9	1.0	-52.8	-13.0	-39.8	
3.760	-18.0	H	3.0	35.3	1.0	-52.4	-13.0	-39.4	
5.640	-16.5	H	3.0	34.7	1.0	-50.2	-13.0	-37.2	
7.520	-17.1	H	3.0	34.9	1.0	-51.0	-13.0	-38.0	
High Ch, 1902.5MHz									
3.805	-18.2	V	3.0	35.3	1.0	-52.5	-13.0	-39.5	
5.708	-15.4	V	3.0	34.7	1.0	-49.1	-13.0	-36.1	
7.610	-17.9	V	3.0	34.9	1.0	-51.9	-13.0	-38.9	
3.805	-19.1	H	3.0	35.3	1.0	-53.4	-13.0	-40.4	
5.708	-14.7	H	3.0	34.7	1.0	-48.4	-13.0	-35.4	
7.610	-16.9	H	3.0	34.9	1.0	-50.8	-13.0	-37.8	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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

UL Verification Services Chamber B
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 02/06/15
Test Engineer: O. Stoelting
Configuration: X-pos EUT w/ AC Adaptor and HS
Mode: LTE2 QPSK 15MHz Harm

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 24

Band
LTE2
15MHz
QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1857.5MHz									
3.715	-14.6	V	3.0	35.4	1.0	-49.0	-13.0	-36.0	
5.573	-16.9	V	3.0	34.7	1.0	-50.6	-13.0	-37.6	
7.430	-15.9	V	3.0	34.9	1.0	-49.9	-13.0	-36.9	
3.715	-20.2	H	3.0	35.4	1.0	-54.6	-13.0	-41.6	
5.573	-15.2	H	3.0	34.7	1.0	-48.9	-13.0	-35.9	
7.430	-17.1	H	3.0	34.9	1.0	-51.0	-13.0	-38.0	
Mid Ch,1880MHz									
3.760	-18.1	V	3.0	35.3	1.0	-52.5	-13.0	-39.5	
5.640	-16.5	V	3.0	34.7	1.0	-50.2	-13.0	-37.2	
7.520	-18.9	V	3.0	34.9	1.0	-52.8	-13.0	-39.8	
3.760	-17.9	H	3.0	35.3	1.0	-52.2	-13.0	-39.2	
5.640	-17.1	H	3.0	34.7	1.0	-50.9	-13.0	-37.9	
7.520	-17.1	H	3.0	34.9	1.0	-51.0	-13.0	-38.0	
High Ch, 1902.5MHz									
3.805	-19.2	V	3.0	35.3	1.0	-53.5	-13.0	-40.5	
5.708	-15.3	V	3.0	34.7	1.0	-49.0	-13.0	-36.0	
7.610	-18.5	V	3.0	34.9	1.0	-52.4	-13.0	-39.4	
3.805	-19.1	H	3.0	35.3	1.0	-53.4	-13.0	-40.4	
5.708	-14.5	H	3.0	34.7	1.0	-48.2	-13.0	-35.2	
7.610	-16.8	H	3.0	34.9	1.0	-50.8	-13.0	-37.8	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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

UL Verification Services Chamber B
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 02/06/15
Test Engineer: O. Stoelting
Configuration: X-pos EUT w/ AC Adaptor and HS
Mode: LTE2 16QAM 10MHz Harm

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 24

Band

LTE2

10MHz

16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1855MHz									
3.710	-15.8	V	3.0	35.4	1.0	-50.2	-13.0	-37.2	
5.565	-18.6	V	3.0	34.7	1.0	-52.4	-13.0	-39.4	
7.420	-18.6	V	3.0	34.9	1.0	-52.6	-13.0	-39.6	
3.710	-20.3	H	3.0	35.4	1.0	-54.7	-13.0	-41.7	
5.565	-17.6	H	3.0	34.7	1.0	-51.3	-13.0	-38.3	
7.420	-16.9	H	3.0	34.9	1.0	-50.9	-13.0	-37.9	
Mid Ch,1880MHz									
3.760	-14.6	V	3.0	35.3	1.0	-48.9	-13.0	-35.9	
5.640	-18.3	V	3.0	34.7	1.0	-52.0	-13.0	-39.0	
7.520	-18.8	V	3.0	34.9	1.0	-52.7	-13.0	-39.7	
3.760	-14.6	H	3.0	35.3	1.0	-48.9	-13.0	-35.9	
5.640	-16.4	H	3.0	34.7	1.0	-50.1	-13.0	-37.1	
7.520	-17.1	H	3.0	34.9	1.0	-51.0	-13.0	-38.0	
High Ch, 1905MHz									
3.810	-17.4	V	3.0	35.3	1.0	-51.7	-13.0	-38.7	
5.715	-18.1	V	3.0	34.7	1.0	-51.8	-13.0	-38.8	
7.620	-16.6	V	3.0	34.9	1.0	-50.6	-13.0	-37.6	
3.810	-18.2	H	3.0	35.3	1.0	-52.5	-13.0	-39.5	
5.715	-14.6	H	3.0	34.7	1.0	-48.4	-13.0	-35.4	
7.620	-16.8	H	3.0	34.9	1.0	-50.8	-13.0	-37.8	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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.

UL Verification Services Chamber B
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 02/06/15
Test Engineer: O. Stoelting
Configuration: X-pos EUT w/ AC Adaptor and HS
Mode: LTE2 QPSK 10MHz Harm

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 24

Band

LTE2

10MHz

QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1855MHz									
3.710	-16.2	V	3.0	35.4	1.0	-50.6	-13.0	-37.6	
5.565	-18.7	V	3.0	34.7	1.0	-52.4	-13.0	-39.4	
7.420	-18.7	V	3.0	34.9	1.0	-52.6	-13.0	-39.6	
3.710	-20.2	H	3.0	35.4	1.0	-54.6	-13.0	-41.6	
5.565	-17.4	H	3.0	34.7	1.0	-51.1	-13.0	-38.1	
7.420	-17.0	H	3.0	34.9	1.0	-50.9	-13.0	-37.9	
Mid Ch,1880MHz									
3.760	-14.1	V	3.0	35.3	1.0	-48.5	-13.0	-35.5	
5.640	-18.7	V	3.0	34.7	1.0	-52.4	-13.0	-39.4	
7.520	-19.0	V	3.0	34.9	1.0	-52.9	-13.0	-39.9	
3.760	-15.6	H	3.0	35.3	1.0	-49.9	-13.0	-36.9	
5.640	-17.2	H	3.0	34.7	1.0	-50.9	-13.0	-37.9	
7.520	-17.3	H	3.0	34.9	1.0	-51.2	-13.0	-38.2	
High Ch, 1905MHz									
3.810	-17.6	V	3.0	35.3	1.0	-51.9	-13.0	-38.9	
5.715	-18.2	V	3.0	34.7	1.0	-51.9	-13.0	-38.9	
7.620	-17.2	V	3.0	34.9	1.0	-51.2	-13.0	-38.2	
3.810	-18.5	H	3.0	35.3	1.0	-52.8	-13.0	-39.8	
5.715	-14.7	H	3.0	34.7	1.0	-48.5	-13.0	-35.5	
7.620	-16.5	H	3.0	34.9	1.0	-50.4	-13.0	-37.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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

UL Verification Services Chamber B
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 02/06/15
Test Engineer: O. Stoelting
Configuration: X-pos EUT w/ AC Adaptor and HS
Mode: LTE2 16QAM 5MHz Harm

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 24

Band

LTE2

5MHz

16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.5MHz									
3.705	-13.7	V	3.0	35.4	1.0	-48.1	-13.0	-35.1	
5.558	-18.2	V	3.0	34.7	1.0	-52.0	-13.0	-39.0	
7.410	-18.0	V	3.0	34.9	1.0	-52.0	-13.0	-39.0	
3.705	-20.5	H	3.0	35.4	1.0	-54.9	-13.0	-41.9	
5.558	-15.8	H	3.0	34.7	1.0	-49.5	-13.0	-36.5	
7.410	-17.2	H	3.0	34.9	1.0	-51.1	-13.0	-38.1	
Mid Ch,1880MHz									
3.760	-16.9	V	3.0	35.3	1.0	-51.3	-13.0	-38.3	
5.640	-15.5	V	3.0	34.7	1.0	-49.2	-13.0	-36.2	
7.520	-18.9	V	3.0	34.9	1.0	-52.8	-13.0	-39.8	
3.760	-16.9	H	3.0	35.3	1.0	-51.3	-13.0	-38.3	
5.640	-16.4	H	3.0	34.7	1.0	-50.1	-13.0	-37.1	
7.520	-16.3	H	3.0	34.9	1.0	-50.3	-13.0	-37.3	
High Ch, 1907.5MHz									
3.815	-18.2	V	3.0	35.3	1.0	-52.5	-13.0	-39.5	
5.723	-18.0	V	3.0	34.7	1.0	-51.7	-13.0	-38.7	
7.630	-17.8	V	3.0	34.9	1.0	-51.8	-13.0	-38.8	
3.815	-19.9	H	3.0	35.3	1.0	-54.1	-13.0	-41.1	
5.723	-16.6	H	3.0	34.7	1.0	-50.3	-13.0	-37.3	
7.630	-16.1	H	3.0	34.9	1.0	-50.1	-13.0	-37.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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.

UL Verification Services Chamber B
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 02/06/15
Test Engineer: O. Stoelting
Configuration: X-pos EUT w/ AC Adaptor and HS
Mode: LTE2 QPSK 5MHz Harm

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 24

Band
LTE2
5MHz
QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.5MHz									
3.705	-13.4	V	3.0	35.4	1.0	-47.8	-13.0	-34.8	
5.558	-17.9	V	3.0	34.7	1.0	-51.6	-13.0	-38.6	
7.410	-16.8	V	3.0	34.9	1.0	-50.8	-13.0	-37.8	
3.705	-20.5	H	3.0	35.4	1.0	-54.9	-13.0	-41.9	
5.558	-15.2	H	3.0	34.7	1.0	-48.9	-13.0	-35.9	
7.410	-17.4	H	3.0	34.9	1.0	-51.3	-13.0	-38.3	
Mid Ch,1880MHz									
3.760	-17.5	V	3.0	35.3	1.0	-51.9	-13.0	-38.9	
5.640	-15.7	V	3.0	34.7	1.0	-49.4	-13.0	-36.4	
7.520	-19.0	V	3.0	34.9	1.0	-52.9	-13.0	-39.9	
3.760	-16.7	H	3.0	35.3	1.0	-51.1	-13.0	-38.1	
5.640	-15.9	H	3.0	34.7	1.0	-49.7	-13.0	-36.7	
7.520	-16.9	H	3.0	34.9	1.0	-50.8	-13.0	-37.8	
High Ch, 1907.5MHz									
3.815	-17.6	V	3.0	35.3	1.0	-51.9	-13.0	-38.9	
5.723	-17.4	V	3.0	34.7	1.0	-51.1	-13.0	-38.1	
7.630	-17.4	V	3.0	34.9	1.0	-51.3	-13.0	-38.3	
3.815	-19.0	H	3.0	35.3	1.0	-53.3	-13.0	-40.3	
5.723	-15.5	H	3.0	34.7	1.0	-49.3	-13.0	-36.3	
7.630	-15.6	H	3.0	34.9	1.0	-49.5	-13.0	-36.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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

UL Verification Services Chamber B
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 02/06/15
Test Engineer: O. Stoelting
Configuration: X-pos EUT w/ AC Adaptor and HS
Mode: LTE2_3M_HARM_16QAM

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T343 8449B	Filter 1	Part 24

Band
LTE2
3MHz
16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1851.5MHz									
3.703	-14.4	V	3.0	35.4	1.0	-48.8	-13.0	-35.8	
5.554	-17.0	V	3.0	34.7	1.0	-50.7	-13.0	-37.7	
7.406	-16.3	V	3.0	34.9	1.0	-50.2	-13.0	-37.2	
3.703	-19.6	H	3.0	35.4	1.0	-54.0	-13.0	-41.0	
5.554	-17.7	H	3.0	34.7	1.0	-51.4	-13.0	-38.4	
7.406	-17.2	H	3.0	34.9	1.0	-51.1	-13.0	-38.1	
Mid Ch, 1880.0MHz									
3.760	-11.9	V	3.0	35.3	1.0	-46.3	-13.0	-33.3	
5.640	-14.3	V	3.0	34.7	1.0	-48.0	-13.0	-35.0	
7.520	-14.9	V	3.0	34.9	1.0	-48.9	-13.0	-35.9	
3.760	-15.0	H	3.0	35.3	1.0	-49.4	-13.0	-36.4	
5.640	-17.1	H	3.0	34.7	1.0	-50.8	-13.0	-37.8	
7.520	-17.2	H	3.0	34.9	1.0	-51.2	-13.0	-38.2	
High Ch, 1908.5 MHz									
3.817	-20.5	V	3.0	35.3	1.0	-54.7	-13.0	-41.7	
5.725	-18.6	V	3.0	34.7	1.0	-52.4	-13.0	-39.4	
7.634	-9.1	V	3.0	34.9	1.0	-43.0	-13.0	-30.0	
3.817	-17.6	H	3.0	35.3	1.0	-51.9	-13.0	-38.9	
5.725	-17.2	H	3.0	34.7	1.0	-50.9	-13.0	-37.9	
7.634	-15.5	H	3.0	34.9	1.0	-49.4	-13.0	-36.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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

UL Verification Services Chamber B
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 02/06/15
Test Engineer: O. Stoelting
Configuration: X-pos EUT w/ AC Adaptor and HS
Mode: LTE2_3M_HARM_QPSK

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T343 8449B	Filter 1	Part 24

Band
LTE2
3MHz
QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1851.5MHz									
3.703	-14.9	V	3.0	35.4	1.0	-49.3	-13.0	-36.3	
5.554	-16.5	V	3.0	34.7	1.0	-50.2	-13.0	-37.2	
7.406	-16.5	V	3.0	34.9	1.0	-50.4	-13.0	-37.4	
3.703	-19.9	H	3.0	35.4	1.0	-54.3	-13.0	-41.3	
5.554	-17.0	H	3.0	34.7	1.0	-50.7	-13.0	-37.7	
7.406	-17.3	H	3.0	34.9	1.0	-51.2	-13.0	-38.2	
Mid Ch, 1880.0MHz									
3.760	-13.5	V	3.0	35.3	1.0	-47.8	-13.0	-34.8	
5.640	-15.3	V	3.0	34.7	1.0	-49.0	-13.0	-36.0	
7.520	-15.7	V	3.0	34.9	1.0	-49.6	-13.0	-36.6	
3.760	-15.3	H	3.0	35.3	1.0	-49.7	-13.0	-36.7	
5.640	-17.1	H	3.0	34.7	1.0	-50.8	-13.0	-37.8	
7.520	-17.3	H	3.0	34.9	1.0	-51.2	-13.0	-38.2	
High Ch, 1908.5 MHz									
3.817	-20.0	V	3.0	35.3	1.0	-54.3	-13.0	-41.3	
5.725	-19.0	V	3.0	34.7	1.0	-52.8	-13.0	-39.8	
7.634	-12.4	V	3.0	34.9	1.0	-46.4	-13.0	-33.4	
3.817	-18.5	H	3.0	35.3	1.0	-52.8	-13.0	-39.8	
5.725	-17.0	H	3.0	34.7	1.0	-50.7	-13.0	-37.7	
7.634	-15.8	H	3.0	34.9	1.0	-49.8	-13.0	-36.8	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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

UL Verification Services Chamber B
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 02/06/15
Test Engineer: O. Stoelting
Configuration: X-pos EUT w/ AC Adaptor and HS
Mode: LTE2_1.4M_HARM_16QAM

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T343 8449B	Filter 1	Part 24

Band
LTE2
1.4MHz
16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1851.0MHz									
3.702	-16.1	V	3.0	35.4	1.0	-50.5	-13.0	-37.5	
5.553	-19.4	V	3.0	34.7	1.0	-53.1	-13.0	-40.1	
7.404	-18.7	V	3.0	34.9	1.0	-52.6	-13.0	-39.6	
3.702	-20.1	H	3.0	35.4	1.0	-54.5	-13.0	-41.5	
5.553	-17.3	H	3.0	34.7	1.0	-51.0	-13.0	-38.0	
7.404	-17.2	H	3.0	34.9	1.0	-51.2	-13.0	-38.2	
Mid Ch, 1880.0MHz									
3.760	-12.1	V	3.0	35.3	1.0	-46.4	-13.0	-33.4	
5.640	-14.8	V	3.0	34.7	1.0	-48.5	-13.0	-35.5	
7.520	-18.7	V	3.0	34.9	1.0	-52.6	-13.0	-39.6	
3.760	-20.7	H	3.0	35.3	1.0	-55.0	-13.0	-42.0	
5.640	-15.4	H	3.0	34.7	1.0	-49.1	-13.0	-36.1	
7.520	-16.6	H	3.0	34.9	1.0	-50.6	-13.0	-37.6	
High Ch, 1908 MHz									
3.816	-17.0	V	3.0	35.3	1.0	-51.3	-13.0	-38.3	
5.724	-17.6	V	3.0	34.7	1.0	-51.4	-13.0	-38.4	
7.632	-16.2	V	3.0	34.9	1.0	-50.2	-13.0	-37.2	
3.816	-17.6	H	3.0	35.3	1.0	-51.9	-13.0	-38.9	
5.724	-14.3	H	3.0	34.7	1.0	-48.1	-13.0	-35.1	
7.632	-16.0	H	3.0	34.9	1.0	-49.9	-13.0	-36.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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.

UL Verification Services Chamber B
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 02/06/15
Test Engineer: O. Stoelting
Configuration: X-pos EUT w/ AC Adaptor and HS
Mode: LTE2_1.4M_HARM_QPSK

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T343 8449B	Filter 1	Part 24

Band
LTE2
1.4MHz
QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1851.0MHz									
3.702	-16.1	V	3.0	35.4	1.0	-50.5	-13.0	-37.5	
5.553	-18.9	V	3.0	34.7	1.0	-52.6	-13.0	-39.6	
7.404	-18.8	V	3.0	34.9	1.0	-52.8	-13.0	-39.8	
3.702	-19.9	H	3.0	35.4	1.0	-54.3	-13.0	-41.3	
5.553	-17.1	H	3.0	34.7	1.0	-50.8	-13.0	-37.8	
7.404	-17.3	H	3.0	34.9	1.0	-51.2	-13.0	-38.2	
Mid Ch, 1880.0MHz									
3.760	-11.3	V	3.0	35.3	1.0	-45.6	-13.0	-32.6	
5.640	-15.3	V	3.0	34.7	1.0	-49.0	-13.0	-36.0	
7.520	-18.6	V	3.0	34.9	1.0	-52.6	-13.0	-39.6	
3.760	-20.7	H	3.0	35.3	1.0	-55.0	-13.0	-42.0	
5.640	-15.1	H	3.0	34.7	1.0	-48.8	-13.0	-35.8	
7.520	-16.2	H	3.0	34.9	1.0	-50.1	-13.0	-37.1	
High Ch, 1908 MHz									
3.816	-18.3	V	3.0	35.3	1.0	-52.6	-13.0	-39.6	
5.724	-17.3	V	3.0	34.7	1.0	-51.0	-13.0	-38.0	
7.632	-17.0	V	3.0	34.9	1.0	-50.9	-13.0	-37.9	
3.816	-18.4	H	3.0	35.3	1.0	-52.7	-13.0	-39.7	
5.724	-15.4	H	3.0	34.7	1.0	-49.1	-13.0	-36.1	
7.632	-16.0	H	3.0	34.9	1.0	-49.9	-13.0	-36.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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.

UL Verification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 02/06/15
Test Engineer: O. Stoelting
Configuration: X-pos EUT w/ AC Adaptor and HS
Location: Chamber B
Mode: HSDPA Band 2 Harmonics

Band

Band 2

HSDPA

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4									
3704.80	-18.7	V	3.0	35.9	1.0	-53.6	-13.0	-40.6	
5557.20	-19.0	V	3.0	35.5	1.0	-53.5	-13.0	-40.5	
7409.60	-17.5	V	3.0	35.7	1.0	-52.3	-13.0	-39.3	
3704.80	-20.8	H	3.0	35.9	1.0	-55.6	-13.0	-42.6	
5557.20	-17.2	H	3.0	35.5	1.0	-51.7	-13.0	-38.7	
7409.60	-17.1	H	3.0	35.7	1.0	-51.8	-13.0	-38.8	
Mid Ch, 1880									
3760.00	-17.6	V	3.0	35.8	1.0	-52.5	-13.0	-39.5	
5640.00	-18.9	V	3.0	35.5	1.0	-53.3	-13.0	-40.3	
7520.00	-18.0	V	3.0	35.7	1.0	-52.7	-13.0	-39.7	
3760.00	-22.3	H	3.0	35.8	1.0	-57.1	-13.0	-44.1	
5640.00	-18.2	H	3.0	35.5	1.0	-52.7	-13.0	-39.7	
7520.00	-16.6	H	3.0	35.7	1.0	-51.3	-13.0	-38.3	
High Ch, 1907.6									
3815.20	-18.7	V	3.0	35.8	1.0	-53.5	-13.0	-40.5	
5722.80	-19.3	V	3.0	35.5	1.0	-53.8	-13.0	-40.8	
7630.40	-17.3	V	3.0	35.8	1.0	-52.0	-13.0	-39.0	
3815.20	-19.5	H	3.0	35.8	1.0	-54.3	-13.0	-41.3	
5722.80	-18.4	H	3.0	35.5	1.0	-52.9	-13.0	-39.9	
7630.40	-16.2	H	3.0	35.8	1.0	-51.0	-13.0	-38.0	

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

Band

Band 2

REL99

UL Verification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 02/06/15
Test Engineer: O. Stoelting
Configuration: X-pos EUT w/ AC Adaptor and HS
Location: Chamber B
Mode: Rel99 Band 2 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4									
3704.80	-18.8	V	3.0	35.9	1.0	-53.6	-13.0	-40.6	
5557.20	-18.9	V	3.0	35.5	1.0	-53.4	-13.0	-40.4	
7409.60	-17.4	V	3.0	35.7	1.0	-52.2	-13.0	-39.2	
3704.80	-22.4	H	3.0	35.9	1.0	-57.3	-13.0	-44.3	
5557.20	-18.8	H	3.0	35.5	1.0	-53.3	-13.0	-40.3	
7409.60	-17.0	H	3.0	35.7	1.0	-51.7	-13.0	-38.7	
Mid Ch, 1880									
3760.00	-20.7	V	3.0	35.8	1.0	-55.5	-13.0	-42.5	
5640.00	-18.2	V	3.0	35.5	1.0	-52.7	-13.0	-39.7	
7520.00	-17.7	V	3.0	35.7	1.0	-52.4	-13.0	-39.4	
3760.00	-20.9	H	3.0	35.8	1.0	-55.7	-13.0	-42.7	
5640.00	-18.4	H	3.0	35.5	1.0	-52.9	-13.0	-39.9	
7520.00	-17.0	H	3.0	35.7	1.0	-51.7	-13.0	-38.7	
High Ch, 1907.6									
3815.20	-19.6	V	3.0	35.8	1.0	-54.4	-13.0	-41.4	
5722.80	-19.3	V	3.0	35.5	1.0	-53.8	-13.0	-40.8	
7630.40	-17.1	V	3.0	35.8	1.0	-51.8	-13.0	-38.8	
3815.20	-21.4	H	3.0	35.8	1.0	-56.2	-13.0	-43.2	
5722.80	-18.2	H	3.0	35.5	1.0	-52.7	-13.0	-39.7	
7630.40	-16.3	H	3.0	35.8	1.0	-51.0	-13.0	-38.0	

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

Band

Band 5

HSDPA

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/11/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset
Location: Chamber A
Mode: HSDPA Band 5 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4									
1652.80	-25.7	V	3.0	37.0	1.0	-61.7	-13.0	-48.7	
2479.20	-25.7	V	3.0	36.4	1.0	-61.1	-13.0	-48.1	
3305.60	-24.4	V	3.0	36.1	1.0	-59.6	-13.0	-46.6	
1652.80	-24.9	H	3.0	37.0	1.0	-60.9	-13.0	-47.9	
2479.20	-25.9	H	3.0	36.4	1.0	-61.3	-13.0	-48.3	
3305.60	-25.0	H	3.0	36.1	1.0	-60.1	-13.0	-47.1	
Mid Ch, 836.6									
1673.20	-24.8	V	3.0	37.0	1.0	-60.8	-13.0	-47.8	
2509.80	-24.9	V	3.0	36.4	1.0	-60.3	-13.0	-47.3	
3346.40	-25.1	V	3.0	36.1	1.0	-60.2	-13.0	-47.2	
1673.20	-23.0	H	3.0	37.0	1.0	-59.0	-13.0	-46.0	
2509.80	-26.0	H	3.0	36.4	1.0	-61.4	-13.0	-48.4	
3346.40	-23.8	H	3.0	36.1	1.0	-58.9	-13.0	-45.9	
High Ch, 846.6									
1693.20	-23.4	V	3.0	37.0	1.0	-59.4	-13.0	-46.4	
2539.80	-25.6	V	3.0	36.4	1.0	-61.0	-13.0	-48.0	
3386.40	-24.0	V	3.0	36.1	1.0	-59.1	-13.0	-46.1	
1693.20	-20.9	H	3.0	37.0	1.0	-56.8	-13.0	-43.8	
2539.80	-27.4	H	3.0	36.4	1.0	-62.8	-13.0	-49.8	
3386.40	-24.5	H	3.0	36.1	1.0	-59.6	-13.0	-46.6	

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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

Band 5

REL99

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/11/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset
Location: Chamber A
Mode: Rel99 Band 5 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4									
1652.80	-24.3	V	3.0	37.0	1.0	-60.3	-13.0	-47.3	
2479.20	-24.7	V	3.0	36.4	1.0	-60.1	-13.0	-47.1	
3305.60	-24.4	V	3.0	36.1	1.0	-59.6	-13.0	-46.6	
1652.80	-24.7	H	3.0	37.0	1.0	-60.7	-13.0	-47.7	
2479.20	-25.0	H	3.0	36.4	1.0	-60.5	-13.0	-47.5	
3305.60	-24.2	H	3.0	36.1	1.0	-59.4	-13.0	-46.4	
Mid Ch, 836.6									
1673.20	-24.4	V	3.0	37.0	1.0	-60.4	-13.0	-47.4	
2509.80	-25.3	V	3.0	36.4	1.0	-60.7	-13.0	-47.7	
3346.40	-24.8	V	3.0	36.1	1.0	-59.9	-13.0	-46.9	
1673.20	-23.2	H	3.0	37.0	1.0	-59.2	-13.0	-46.2	
2509.80	-25.9	H	3.0	36.4	1.0	-61.3	-13.0	-48.3	
3346.40	-23.8	H	3.0	36.1	1.0	-59.0	-13.0	-46.0	
High Ch, 846.6									
1693.20	-23.1	V	3.0	37.0	1.0	-59.1	-13.0	-46.1	
2539.80	-24.5	V	3.0	36.4	1.0	-59.9	-13.0	-46.9	
3386.40	-23.7	V	3.0	36.1	1.0	-58.8	-13.0	-45.8	
1693.20	-20.2	H	3.0	37.0	1.0	-56.2	-13.0	-43.2	
2539.80	-27.2	H	3.0	36.4	1.0	-62.7	-13.0	-49.7	
3386.40	-24.1	H	3.0	36.1	1.0	-59.2	-13.0	-46.2	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 02/06/15
Test Engineer: O. Stoelting
Configuration: X-pos EUT w/ AC Adaptor and HS
Mode: EGPRS1900 Harm

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T34 8449B	Filter 1	Part 24

Band

GSM 1900

EGPRS

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2MHz									
3.700	-20.7	V	3.0	35.4	1.0	-55.1	-13.0	-42.1	
5.551	-19.8	V	3.0	34.7	1.0	-53.5	-13.0	-40.5	
7.401	-12.3	V	3.0	34.9	1.0	-46.2	-13.0	-33.2	
3.700	-22.4	H	3.0	35.4	1.0	-56.8	-13.0	-43.8	
5.551	-19.2	H	3.0	34.7	1.0	-52.9	-13.0	-39.9	
7.401	-14.3	H	3.0	34.9	1.0	-48.2	-13.0	-35.2	
Mid Ch, 1880.0MHz									
3.760	-21.6	V	3.0	35.3	1.0	-55.9	-13.0	-42.9	
5.640	-19.5	V	3.0	34.7	1.0	-53.3	-13.0	-40.3	
7.520	-13.0	V	3.0	34.9	1.0	-46.9	-13.0	-33.9	
3.760	-22.1	H	3.0	35.3	1.0	-56.4	-13.0	-43.4	
5.640	-18.9	H	3.0	34.7	1.0	-52.7	-13.0	-39.7	
7.520	-10.2	H	3.0	34.9	1.0	-44.1	-13.0	-31.1	
High Ch, 1909.8MHz									
3.820	-21.6	V	3.0	35.3	1.0	-55.9	-13.0	-42.9	
5.729	-19.3	V	3.0	34.7	1.0	-53.0	-13.0	-40.0	
7.639	-8.0	V	3.0	35.0	1.0	-42.0	-13.0	-29.0	
3.820	-21.3	H	3.0	35.3	1.0	-55.6	-13.0	-42.6	
5.729	-18.8	H	3.0	34.7	1.0	-52.5	-13.0	-39.5	
7.639	-11.1	H	3.0	35.0	1.0	-45.1	-13.0	-32.1	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 02/06/15
Test Engineer: O. Stoelting
Configuration: X-pos EUT w/ AC Adaptor and HS
Mode: GPRS1900 Harm

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T34 8449B	Filter 1	Part 24

Band

GSM 1900 GPRS

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2MHz									
3.700	-22.1	V	3.0	35.4	1.0	-56.5	-13.0	-43.5	
5.551	-19.8	V	3.0	34.7	1.0	-53.5	-13.0	-40.5	
7.401	-14.3	V	3.0	34.9	1.0	-48.2	-13.0	-35.2	
3.700	-22.4	H	3.0	35.4	1.0	-56.8	-13.0	-43.8	
5.551	-16.0	H	3.0	34.7	1.0	-49.8	-13.0	-36.8	
7.401	-14.6	H	3.0	34.9	1.0	-48.5	-13.0	-35.5	
Mid Ch, 1880.0MHz									
3.760	-21.8	V	3.0	35.3	1.0	-56.1	-13.0	-43.1	
5.640	-19.3	V	3.0	34.7	1.0	-53.0	-13.0	-40.0	
7.520	-10.1	V	3.0	34.9	1.0	-44.1	-13.0	-31.1	
3.760	-22.0	H	3.0	35.3	1.0	-56.3	-13.0	-43.3	
5.640	-17.5	H	3.0	34.7	1.0	-51.2	-13.0	-38.2	
7.520	-8.3	H	3.0	34.9	1.0	-42.2	-13.0	-29.2	
High Ch, 1909.8MHz									
3.820	-21.2	V	3.0	35.3	1.0	-55.5	-13.0	-42.5	
5.729	-17.8	V	3.0	34.7	1.0	-51.5	-13.0	-38.5	
7.639	-17.6	V	3.0	35.0	1.0	-51.5	-13.0	-38.5	
3.820	-21.8	H	3.0	35.3	1.0	-56.1	-13.0	-43.1	
5.729	-14.2	H	3.0	34.7	1.0	-48.0	-13.0	-35.0	
7.639	-14.4	H	3.0	35.0	1.0	-48.4	-13.0	-35.4	

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

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/11/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset
Location: Chamber B
Mode: EGPRS 850 MHz Harmonics

Band

GSM 850

EGPRS

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2									
1648.40	-31.4	V	3.0	37.0	1.0	-67.5	-13.0	-54.5	
2472.60	-26.7	V	3.0	36.4	1.0	-62.2	-13.0	-49.2	
3296.80	-25.4	V	3.0	36.2	1.0	-60.6	-13.0	-47.6	
1648.40	-31.2	H	3.0	37.0	1.0	-67.2	-13.0	-54.2	
2472.60	-29.2	H	3.0	36.4	1.0	-64.6	-13.0	-51.6	
3296.80	-25.8	H	3.0	36.2	1.0	-61.0	-13.0	-48.0	
Mid Ch, 836.6									
1673.20	-30.3	V	3.0	37.0	1.0	-66.3	-13.0	-53.3	
2509.80	-26.4	V	3.0	36.4	1.0	-61.8	-13.0	-48.8	
3346.40	-25.9	V	3.0	36.1	1.0	-61.0	-13.0	-48.0	
1673.20	-31.4	H	3.0	37.0	1.0	-67.4	-13.0	-54.4	
2509.80	-27.7	H	3.0	36.4	1.0	-63.1	-13.0	-50.1	
3346.40	-25.9	H	3.0	36.1	1.0	-61.0	-13.0	-48.0	
High Ch, 848.8									
1697.60	-30.2	V	3.0	37.0	1.0	-66.1	-13.0	-53.1	
2546.40	-27.1	V	3.0	36.4	1.0	-62.5	-13.0	-49.5	
3395.20	-25.4	V	3.0	36.1	1.0	-60.5	-13.0	-47.5	
1697.60	-30.6	H	3.0	37.0	1.0	-66.5	-13.0	-53.5	
2546.40	-28.3	H	3.0	36.4	1.0	-63.7	-13.0	-50.7	
3395.20	-25.2	H	3.0	36.1	1.0	-60.3	-13.0	-47.3	

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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.

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19923
Date: 2/11/2015
Test Engineer: S,Tran
Configuration: EUT , AC Adapter, Headset
Location: Chamber B
Mode: GPRS 850 MHz Harmonics

Band

GSM 850

GPRS

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2									
1648.40	-30.1	V	3.0	37.0	1.0	-66.1	-13.0	-53.1	
2472.60	-25.4	V	3.0	36.4	1.0	-60.9	-13.0	-47.9	
3296.80	-24.1	V	3.0	36.2	1.0	-59.2	-13.0	-46.2	
1648.40	-29.8	H	3.0	37.0	1.0	-65.9	-13.0	-52.9	
2472.60	-27.8	H	3.0	36.4	1.0	-63.3	-13.0	-50.3	
3296.80	-24.5	H	3.0	36.2	1.0	-59.7	-13.0	-46.7	
Mid Ch, 836.6									
1673.20	-28.9	V	3.0	37.0	1.0	-64.9	-13.0	-51.9	
2509.80	-25.0	V	3.0	36.4	1.0	-60.4	-13.0	-47.4	
3346.40	-24.6	V	3.0	36.1	1.0	-59.7	-13.0	-46.7	
1673.20	-30.1	H	3.0	37.0	1.0	-66.1	-13.0	-53.1	
2509.80	-26.4	H	3.0	36.4	1.0	-61.8	-13.0	-48.8	
3346.40	-24.6	H	3.0	36.1	1.0	-59.7	-13.0	-46.7	
High Ch, 848.8									
1697.60	-28.8	V	3.0	37.0	1.0	-64.8	-13.0	-51.8	
2546.40	-25.8	V	3.0	36.4	1.0	-61.2	-13.0	-48.2	
3395.20	-24.1	V	3.0	36.1	1.0	-59.1	-13.0	-46.1	
1697.60	-29.2	H	3.0	37.0	1.0	-65.2	-13.0	-52.2	
2546.40	-27.0	H	3.0	36.4	1.0	-62.4	-13.0	-49.4	
3395.20	-23.9	H	3.0	36.1	1.0	-59.0	-13.0	-46.0	

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