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

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE Phone + Bluetooth & DTS/UNII a/b/g/n + NFC

MODEL NUMBER: LG-D631, D631, LGD631

FCC ID: ZNFD631

REPORT NUMBER: 14U17477-1

ISSUE DATE: April 8, 2014

Prepared for

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

Prepared by

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

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
-	4/8/14	Initial Issue	P. Kim

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.

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 6

5. EQUIPMENT UNDER TEST 7

5.1. DESCRIPTION OF EUT 7

5.2. MAXIMUM OUTPUT POWER 7

5.3. MAXIMUM OUTPUT POWER (LTE) 8

5.4. DESCRIPTION OF AVAILABLE ANTENNAS 9

5.5. DESCRIPTION OF TEST SETUP 10

6. TEST AND MEASUREMENT EQUIPMENT 13

7. Summary Table 14

8. RF POWER OUTPUT VERIFICATION 15

8.1. GSM/GPRS/EDGE 15

8.1.1. GSM OUTPUT POWER RESULT 16

8.2. UMTS REL 99 17

8.2.1. UMTS REL 99 OUTPUT POWER RESULT 17

8.3. UMTS HSDPA 18

8.3.1. UMTS HSDPA OUTPUT POWER RESULT 18

8.3.2. UMTS HSUPA 20

8.3.3. UMTS HSUPA OUTPUT POWER RESULT 21

8.4. LTE OUTPUT VERIFICATION 22

8.4.1. LTE OUTPUT RESULT 22

9. PEAK TO AVERAGE RATIO 26

9.1. CONDUCTED PEAK TO AVERAGE RESULT 26

10. LIMITS AND CONDUCTED RESULTS 32

10.1. OCCUPIED BANDWIDTH 32

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

10.1.1. OCCUPIED BANDWIDTH RESULTS 33
10.1.2. LTE OCCUPIED BANDWIDTH RESULTS 34
10.1.3. OCCUPIED BANDWIDTH PLOTS 37
10.2. BAND EDGE EMISSIONS 44
10.2.1. BAND EDGE PLOTS 45
10.3. OUT OF BAND EMISSIONS 65
10.3.1. OUT OF BAND EMISSIONS RESULT 66
10.3.2. OUT OF BAND EMISSIONS PLOTS 69
10.4. FREQUENCY STABILITY 75
10.4.1. FREQUENCY STABILITY RESULTS 76
11. RADIATED TEST RESULTS 80
11.1. RADIATED POWER (ERP & EIRP) 80
11.1.1. ERP/EIRP Results 80
11.1.2. LTE ERP/EIRP Results 82
11.1.3. ERP/EIRP DATA 85
11.2. FIELD STRENGTH OF SPURIOUS RADIATION 109
11.2.1. SPURIOUS RADIATION DATA 110
12. SETUP PHOTOS 134

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.

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: LG ELECTRONICS MOBILECOMM U.S.A., INC.

EUT DESCRIPTION: GSM/WCDMA/LTE Phone + Bluetooth & DTS/UNII a/b/g/n + NFC

MODEL: LG-D631, D631, LGD631

SERIAL NUMBER: 403KPMZ000323

DATE TESTED: APRIL 2 - 8, 2014

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 22H, 24E, 27E 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: Tested By:

PHILIP KIM
CONSUMER TECHNOLOGY DIVISION
PROGRAM MANAGER
UL Verification Services Inc.

CHARLES VERGONIO
CONSUMER TECHNOLOGY DIVISION
LAB ENGINEER
UL Verification Services Inc.

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

2. TEST METHODOLOGY

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

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ul.com

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

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

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 18000 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 & DTS/UNII a/b/g/n + NFC that is manufactured by (LG).

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 Peak	Conducted		Radiated	
			Peak (dBm)	Peak (mW)	Peak (dBm)	Peak (mW)
GSM850	824~849	GMSK	33.6	2290.87		
	824~849	GPRS	33.6	2290.87	28.201	660.85
	824~849	EGPRS	27.4	549.54	23.971	249.52
GSM1900	1850~1910	GMSK	30.5	1122.02		
	1850~1910	GPRS	30.5	1122.02	29.07	807.24
	1850~1910	EGPRS	26.4	436.52	26.12	409.26

FCC Part 22/24						
Band	Frequency Range(MHz)	Modulation Peak	Conducted		Radiated	
			Avg (dBm)	Avg (mW)	Avg (dBm)	Avg (mW)
Band 5	824~849	REL99	23.7	234.42	20.581	114.31
	824~849	HSDPA	23.7	234.42	20.731	118.33
	824~849	HSUPA	22.9	194.98		
Band 2	1850~1910	REL99	23.6	229.09	23.33	215.28
	1850~1910	HSDPA	23.6	229.09	23.28	212.81
	1850~1910	HSUPA	23.5	223.87		

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.

5.3. MAXIMUM OUTPUT POWER (LTE)

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

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Peak	Conducted		Radiated	
				Avg (dBm)	Avg (mW)	Avg (dBm)	Avg (mW)
LTE17	704~716	10MHz	QPSK	23.61	229.61	17.871	61.25
	704~716	10MHz	16QAM	22.39	173.38	17.011	50.25

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Peak	Conducted		Radiated	
				Avg (dBm)	Avg (mW)	Avg (dBm)	Avg (mW)
LTE17	704~716	5MHz	QPSK	23.61	229.61	17.421	55.22
	704~716	5MHz	16QAM	22.28	169.04	16.301	42.67

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Peak	Conducted		Radiated	
				Avg (dBm)	Avg (mW)	Avg (dBm)	Avg (mW)
LTE5	824~849	10MHz	QPSK	24.02	252.35	20.351	108.42
	824~849	10MHz	16QAM	22.78	189.67	19.351	86.12

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Peak	Conducted		Radiated	
				Avg (dBm)	Avg (mW)	Avg (dBm)	Avg (mW)
LTE5	824~849	5MHz	QPSK	24.06	254.68	19.981	99.56
	824~849	5MHz	16QAM	22.75	188.36	19.001	79.45

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Peak	Conducted		Radiated	
				Avg (dBm)	Avg (mW)	Avg (dBm)	Avg (mW)
LTE4	1710~1755	10MHz	QPSK	24.10	257.04	23.85	242.66

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

	1710~1755	10MHz	16QAM	22.86	193.20	22.81	190.99

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
			Peak	Avg (dBm)	Avg (mW)	Avg (dBm)	Avg (mW)
LTE4	1710~1755	5MHz	QPSK	24.12	258.23	23.57	227.51
	1710~1755	5MHz	16QAM	22.85	192.75	22.24	167.49

FCC Part 24							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
			Peak	Avg (dBm)	Avg (mW)	Avg (dBm)	Avg (mW)
LTE2	1850~1910	10MHz	QPSK	24.05	254.10	23.65	231.74
	1850~1910	10MHz	16QAM	22.84	192.31	22.86	193.2

FCC Part 24							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
			Peak	Avg (dBm)	Avg (mW)	Avg (dBm)	Avg (mW)
LTE2	1850~1910	5MHz	QPSK	24.05	254.10	23.6	229.09
	1850~1910	5MHz	16QAM	22.84	192.31	22.68	185.35

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)
Band 5, 824~849MHz	-3.93
Band 2, 1850~1910MHz	-1.21
Band 4, 1710~1755MHz	0.15
Band 17, 704~716MHz	-3.03

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.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	LG ELECTRONICS	MCS-01WD	DB390078751	N/A
Earphone	LG ELECTRONICS	LG-D631	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	No
2	Jack	1	Headset	Shielded	1m	No
3	RF In/out	1	Communication Test Set	Un-shielded	2m	Yes

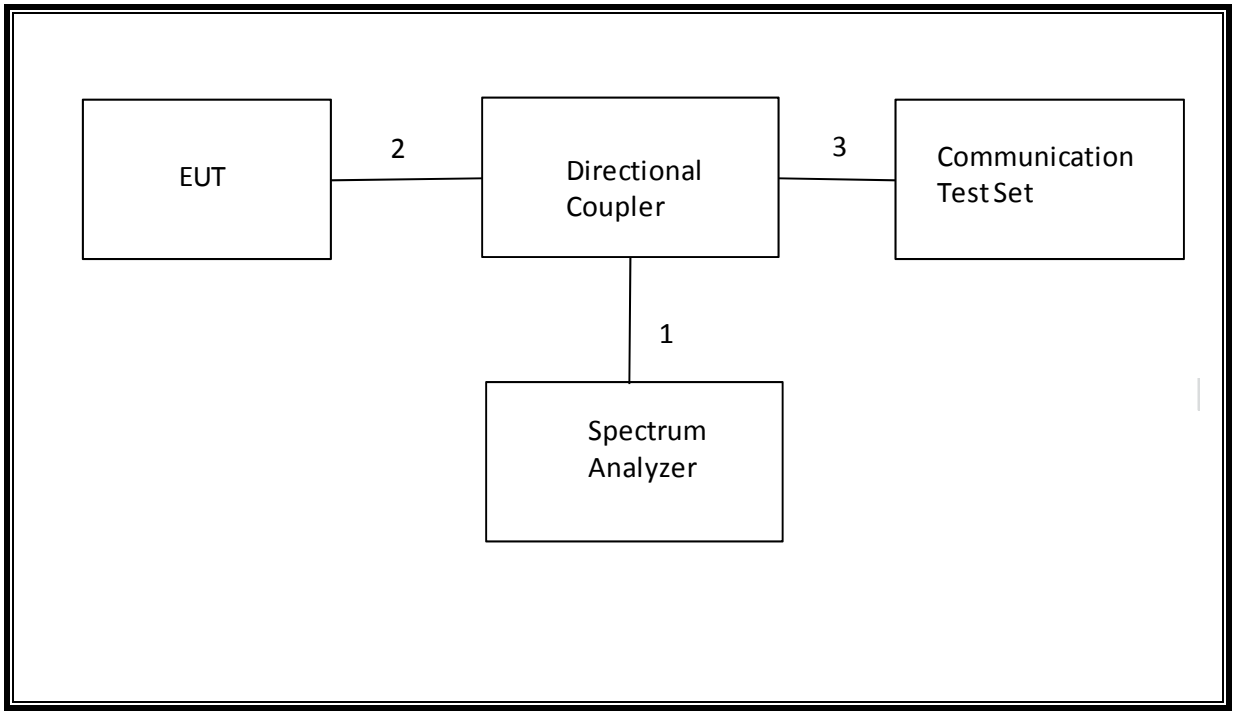
TEST SETUP

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

UL VERIFICATION SERVICES INC. FORM NO: 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.

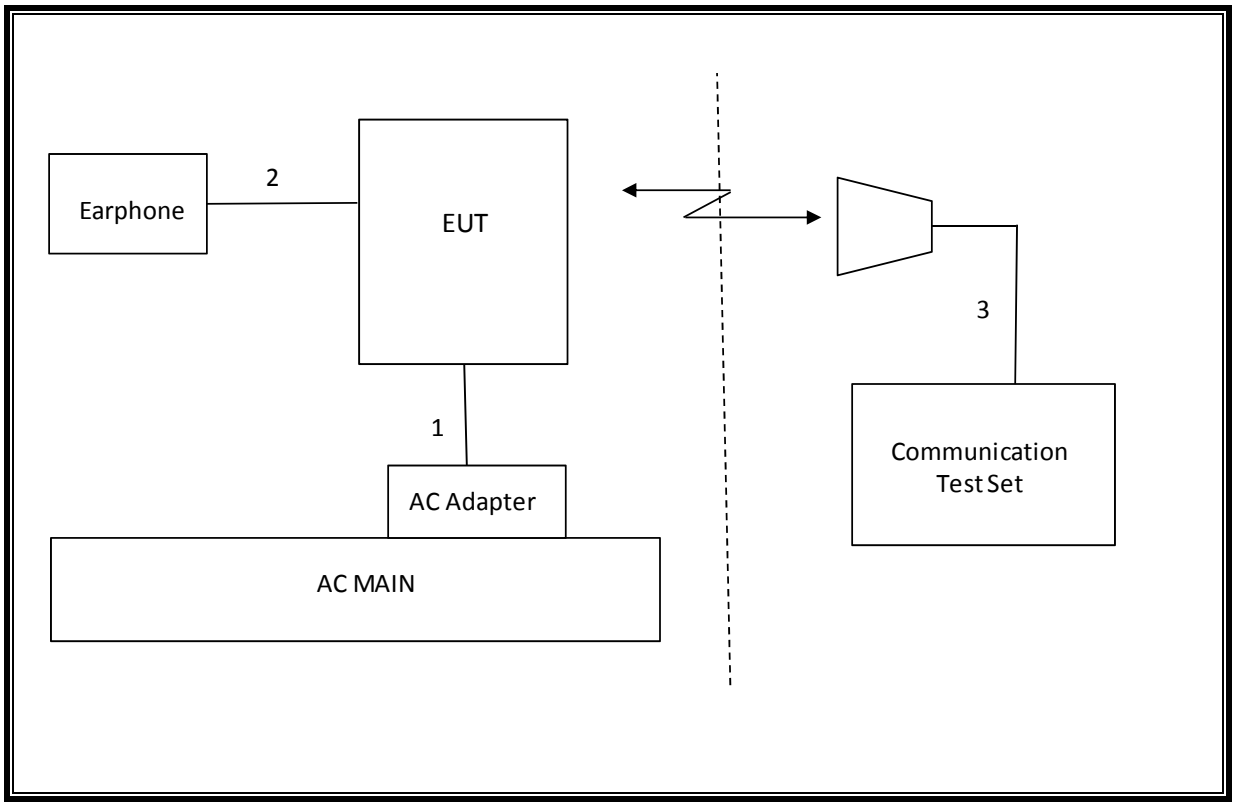
SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



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.

SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



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.

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	02/26/14
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	08/14/14
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/25/14
Antenna, Horn, 18 GHz	EMCO	3115	C00784	09/25/14
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	01/09/15
Communications Test Set	R&S	CMW500	T159	07/02/14
DC power supply, 8 V @ 3 A or 15 V	Agilent / HP	E3610A	None	CNR
Vector signal generator, 6 GHz	Agilent / HP	E4438C	None	07/06/14
Antenna, Tuned Dipole 400~1000	ETS	3121C DB4	C00993	02/14/14
Directional Coupler	RF-Lambda	RFDC5M06G15	None	CNR

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

7. Summary Table

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
2.1049	N/A	Occupied Band width (99%)	N/A	Conducted	Pass	8977KHz
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	-18.415dBm
2.1046	N/A	Conducted output power	N/A		Pass	33.6dBm
22.355 24.235 27.54 90.213	RSS-132(4.3) RSS-133(6.3) RSS-139(6.3) RSS-199(4.3)	Frequency Stability	2.5PPM		Pass	0.017PPM
22.913(a)(2)	RSS-132(4.4)	Effective Radiated Power	38 dBm	Radiated	Pass	28.20dBm
27.50(b)(10)	N/A		34.77 dBm		Pass	
24.232(c) 27.50(d)(4)	RSS-133(6.4) RSS-139(6.4)	Equivalent Isotropic Radiated Power	33dBm 30dBm		Pass	29.07dBm
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	-40.6 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

Band	Mode	Ch.	f(MHz)	1 time slot	2 time slot
				Peak (dBm)	Peak (dBm)
GSM850	GMSK	128	824.2	33.6	
		190	836.6	33.4	
		251	848.8	33.5	
	GPRS	128	824.2	33.6	31.6
		190	836.6	33.3	31.6
		251	848.8	33.4	31.6
	EGPRS	128	824.2	27.4	27.4
		190	836.6	27.3	27.4
		251	848.8	27.1	27.2
GSM1900	GMSK	512	1850.2	30.4	
		661	1880	30.5	
		810	1909.8	30.4	
	GPRS	512	1850.2	30.5	28.3
		661	1880	30.5	28.4
		810	1909.8	30.6	28.5
	EGPRS	512	1850.2	26.4	26.5
		661	1880	26.3	26.4
		810	1909.8	26.2	26.2

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.

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	Ch.	f(MHz)	Conducted Power (dBm) Avg (dBm)
Band 5	REL99	4132	826.4	23.7
		4183	836.6	23.7
		4233	846.6	23.5
Band 2	REL99	9262	1852.4	23.6
		9400	1880	23.6
		9538	1907.6	23.5

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.

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			

8.3.1. UMTS HSDPA OUTPUT POWER RESULT

Band	Mode	Subset	Ch.	f(MHz)	Conducted Power (dBm) Avg (dBm)
Band 5	HSDPA	1	4132	826.4	23.6
			4183	836.6	23.6
			4233	846.6	23.6
		2	4132	826.4	23.7
			4183	836.6	23.6
			4233	846.6	23.5
		3	4132	826.4	23.1
			4183	836.6	23.1
			4233	846.6	23.0
		4	4132	826.4	23.2
			4183	836.6	23.1
			4233	846.6	23.0
Band 2	HSDPA	1	9262	1852.4	23.6

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

			9400	1880	23.6
			9538	1907.6	23.5
		2	9262	1852.4	23.6
			9400	1880	23.5
			9538	1907.6	23.5
		3	9262	1852.4	23.1
			9400	1880	23.1
			9538	1907.6	23.1
		4	9262	1852.4	23.1
			9400	1880	23.0
			9538	1907.6	23.0

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.

8.3.2. UMTS HSUPA

TEST PROCEDURE

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

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

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

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

8.3.3. UMTS HSUPA OUTPUT POWER RESULT

Band	Mode	Subset	Ch.	f(MHz)	Conducted Power (dBm) Avg (dBm)
Band 5	HSUPA	1	4132	826.4	22.9
			4183	836.6	22.6
			4233	846.6	22.8
		2	4132	826.4	21.7
			4183	836.6	21.6
			4233	846.6	21.7
		3	4132	826.4	22.3
			4183	836.6	22.2
			4233	846.6	22.4
		4	4132	826.4	21.5
			4183	836.6	21.7
			4233	846.6	21.7
		5	4132	826.4	23.2
			4183	836.6	23.2
			4233	846.6	23.4
Band 2	HSUPA	1	9262	1852.4	22.9
			9400	1880	22.5
			9538	1907.6	23.5
		2	9262	1852.4	21.7
			9400	1880	21.6
			9538	1907.6	21.5
		3	9262	1852.4	22.4
			9400	1880	22.5
			9538	1907.6	22.1
		4	9262	1852.4	21.6
			9400	1880	21.7
			9538	1907.6	21.7
		5	9262	1852.4	22.8
			9400	1880	23.3
			9538	1907.6	23.3

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.

8.4. LTE OUTPUT VERIFICATION

8.4.1. LTE OUTPUT RESULT

Full Power

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm) 23790 710 MHz
LTE Band 17	10	QPSK	1	0	0	23.61
			1	25	0	23.49
			1	49	0	23.49
			25	0	1	22.48
			25	12	1	22.46
			25	25	1	22.49
			50	0	1	22.51
		16QAM	1	0	1	22.39
			1	25	1	22.27
			1	49	1	22.29
			25	0	2	21.55
			25	12	2	21.47
			25	25	2	21.49
			50	0	2	21.55
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm) 23790 710 MHz
LTE Band 17	5	QPSK	1	0	0	23.61
			1	12	0	23.58
			1	24	0	23.53
			12	0	1	22.49
			12	7	1	22.48
			12	13	1	22.43
			25	0	1	22.48
		16QAM	1	0	1	22.24
			1	12	1	22.24
			1	24	1	22.28
			12	0	2	21.49
			12	7	2	21.49
			12	13	2	21.52
			25	0	2	21.58

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

Full Power

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	24.02	23.95	24.08
			1	25	0	23.99	24.09	23.98
			1	49	0	23.94	24.11	23.94
			25	0	1	22.88	22.87	22.97
			25	12	1	22.86	23.00	22.95
			25	25	1	22.84	23.03	22.96
			50	0	1	22.90	23.10	23.06
		16QAM	1	0	1	22.78	22.77	22.81
			1	25	1	22.72	22.84	22.78
			1	49	1	22.72	22.83	22.66
			25	0	2	22.04	22.03	22.12
			25	12	2	21.97	22.04	22.03
			25	25	2	21.94	22.06	22.03
			50	0	2	22.02	22.14	22.12

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	24.06	24.03	24.16
			1	12	0	24.00	24.01	24.07
			1	24	0	24.03	24.16	24.04
			12	0	1	22.85	22.89	22.97
			12	6	1	22.88	23.04	22.96
			12	13	1	22.83	23.02	22.97
			25	0	1	22.90	23.06	23.00
		16QAM	1	0	1	22.72	22.80	22.80
			1	12	1	22.70	22.78	22.76
			1	24	1	22.75	22.88	22.84
			12	0	2	22.00	21.99	22.08
			12	6	2	22.02	22.12	22.10
			12	13	2	21.99	22.10	22.08
			25	0	2	22.09	22.17	22.20

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

Full Power

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	24.10	24.08	24.07
			1	25	0	24.07	23.95	24.00
			1	49	0	24.07	24.07	24.01
			25	0	1	23.08	23.04	23.00
			25	12	1	23.03	22.99	22.99
			25	25	1	23.05	23.08	23.03
			50	0	1	23.11	23.08	23.02
		16QAM	1	0	1	22.86	22.91	22.88
			1	25	1	22.84	22.83	22.80
			1	49	1	22.85	22.86	22.80
			25	0	2	22.13	22.09	22.02
			25	12	2	22.04	21.99	21.94
			25	25	2	22.09	22.07	21.94
			50	0	2	22.14	22.08	21.95

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	24.01	24.07	24.15
			1	12	0	24.12	24.11	24.04
			1	24	0	24.11	24.11	24.03
			12	0	1	23.03	23.04	22.94
			12	7	1	23.03	23.01	23.00
			12	13	1	23.02	23.04	22.97
			25	0	1	23.09	23.02	22.97
		16QAM	1	0	1	22.84	22.75	22.86
			1	12	1	22.79	22.79	22.71
			1	24	1	22.85	22.83	22.77
			12	0	2	22.08	22.11	21.96
			12	7	2	22.12	22.03	21.98
			12	13	2	22.12	22.07	21.96
			25	0	2	22.20	22.09	22.05

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

Full Power

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	24.05	24.06	24.01
			1	25	0	23.92	24.06	24.04
			1	49	0	24.02	23.99	24.09
			25	0	1	23.03	23.04	23.02
			25	12	1	22.97	22.99	23.01
			25	25	1	23.01	23.07	23.06
			50	0	1	23.03	22.73	23.06
		16QAM	1	0	1	22.84	22.79	22.83
			1	25	1	22.77	22.74	22.80
			1	49	1	22.83	22.78	22.86
			25	0	2	22.12	22.01	22.16
			25	12	2	22.04	21.95	22.14
			25	25	2	21.98	22.04	22.15
			50	0	2	22.03	22.02	22.09

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	23.99	23.98	24.03
			1	12	0	24.05	24.00	24.04
			1	24	0	24.04	24.03	24.07
			12	0	1	23.06	23.02	23.14
			12	7	1	23.01	23.01	23.09
			12	13	1	23.01	23.01	23.09
			25	0	1	23.08	23.00	23.12
		16QAM	1	0	1	22.80	22.75	23.20
			1	12	1	22.84	22.77	23.20
			1	24	1	22.74	22.87	23.20
			12	0	2	22.14	22.03	22.10
			12	7	2	22.14	22.08	22.10
			12	13	2	22.17	22.06	22.08
			25	0	2	22.20	22.14	22.06

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

9. PEAK TO AVERAGE RATIO

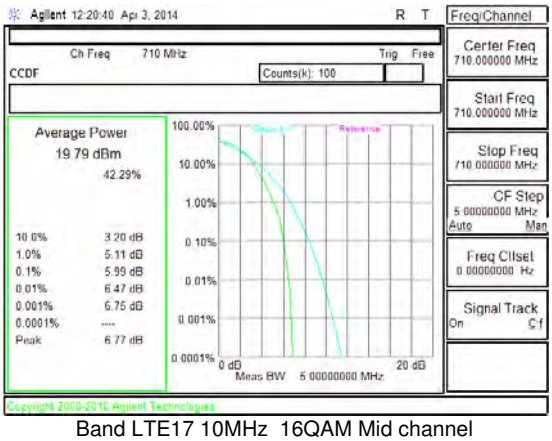
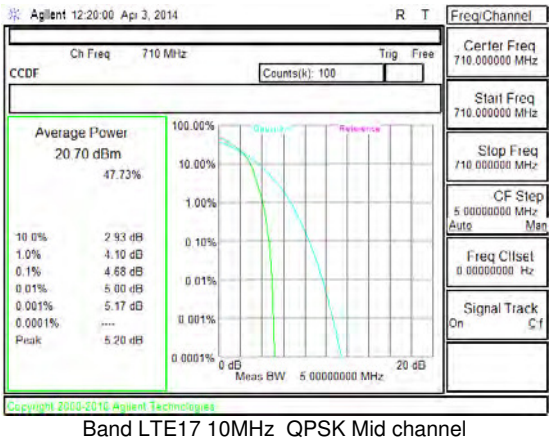
Test Procedure

Per KDB 971168 D01 Power Meas License Digital Systems v02r01

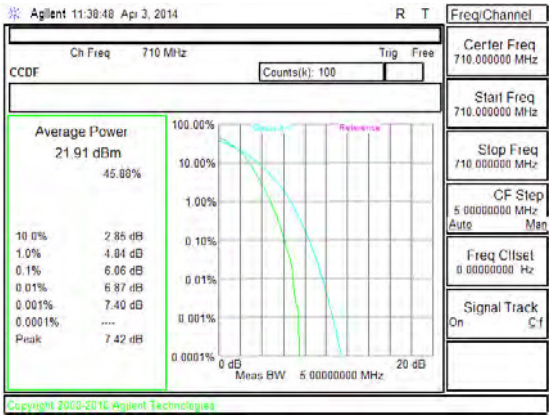
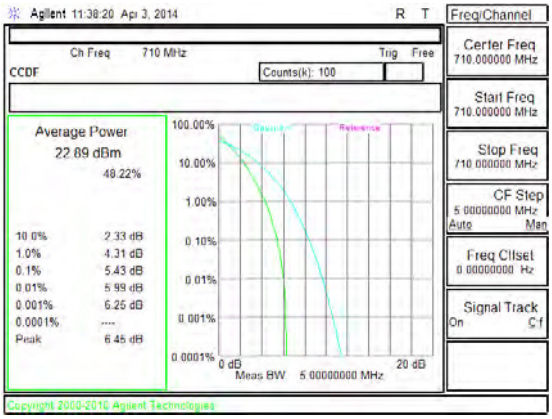
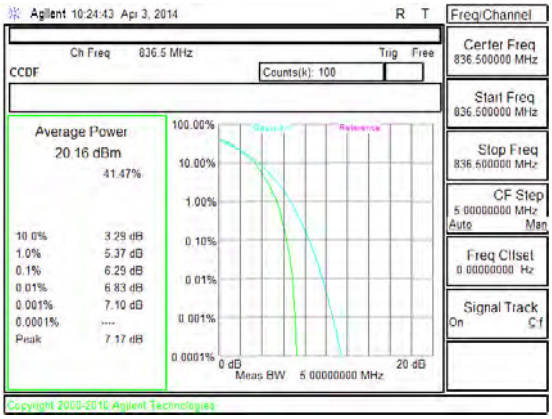
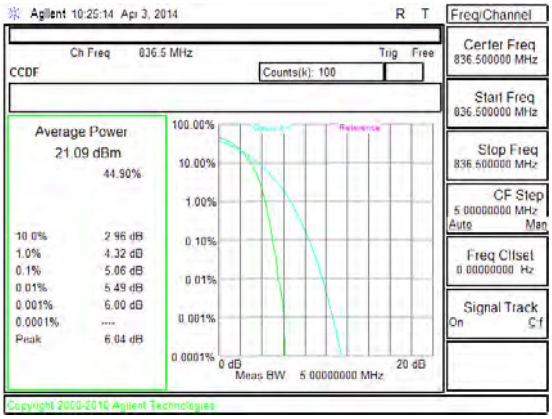
Test Spec

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.

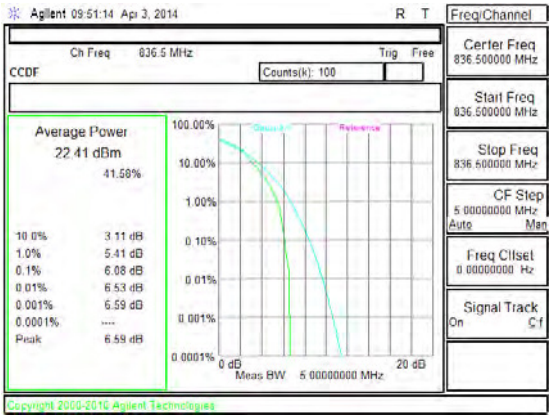
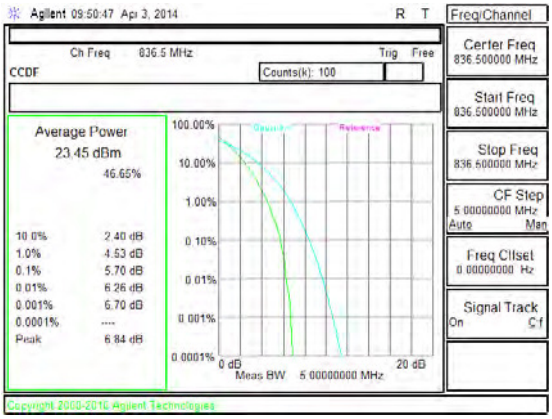
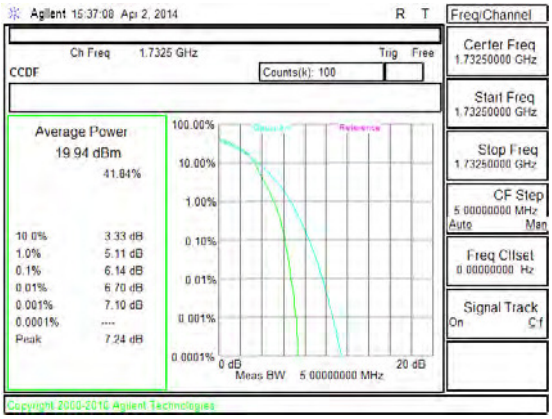
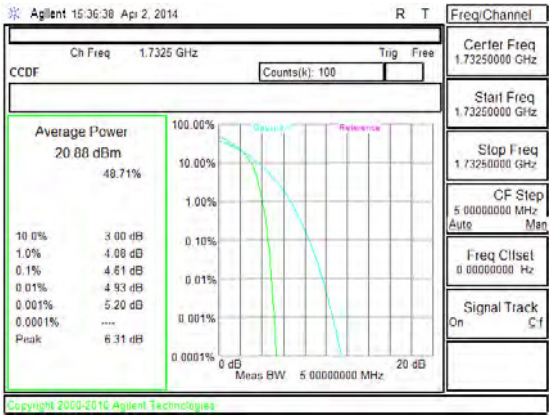
9.1. CONDUCTED PEAK TO AVERAGE RESULT

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

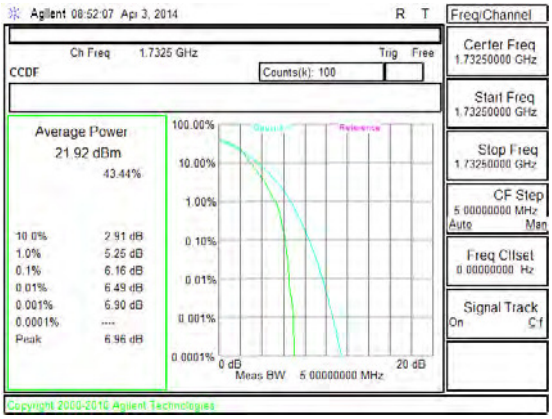
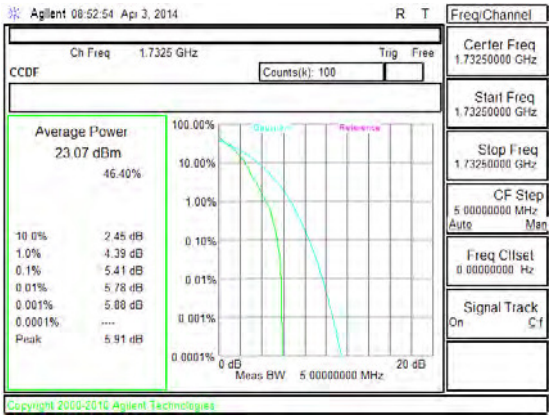
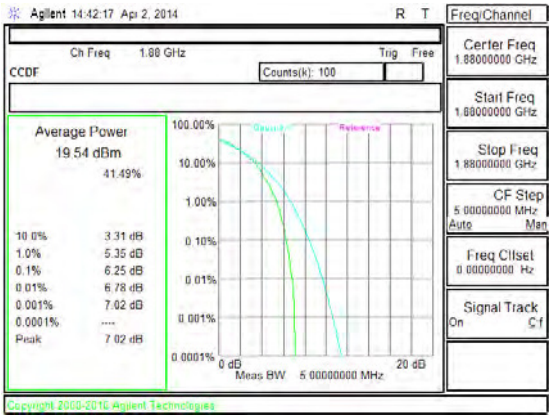
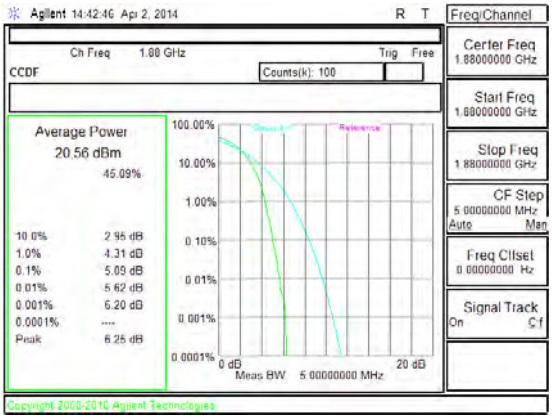
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE17 5MHz 16QAM	 Band LTE17 5MHz 16QAM Mid channel	 Band LTE17 5MHz QPSK Mid channel
Band LTE5 10MHz 16QAM	 Band LTE5 10MHz 16QAM Mid channel	 Band LTE5 10MHz QPSK Mid channel

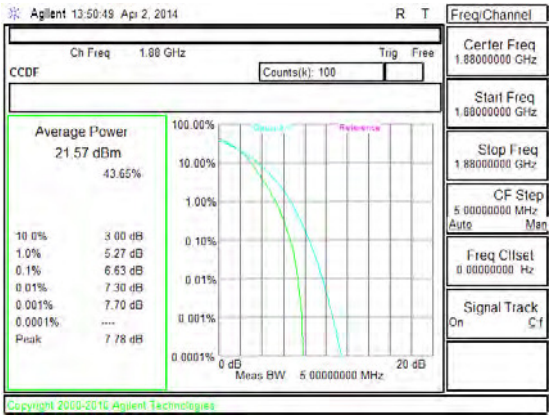
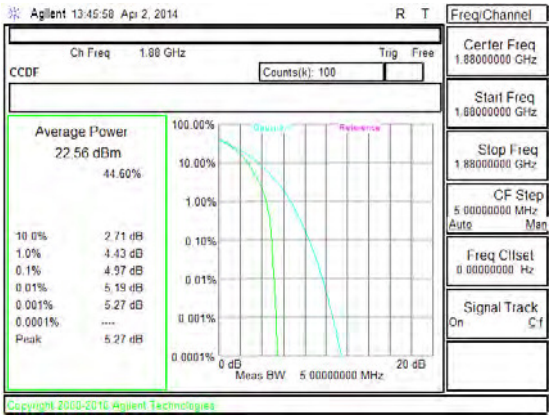
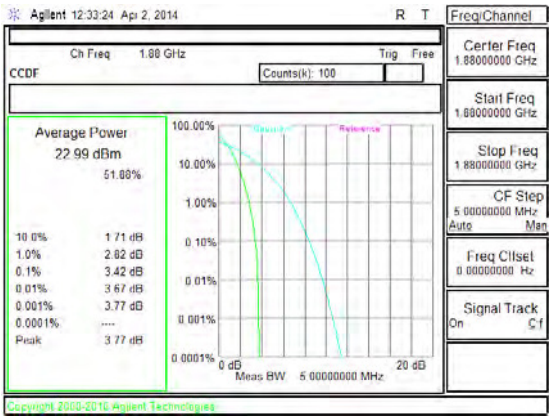
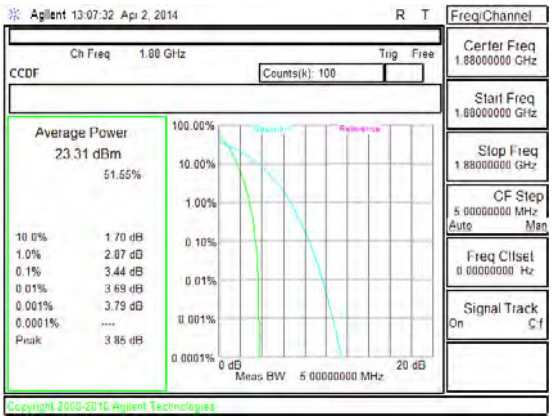
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE5 5MHz 16QAM	 Band LTE5 5MHz 16QAM Mid channel	 Band LTE5 5MHz QPSK Mid channel
Band LTE4 10MHz 16QAM	 Band LTE4 10MHz 16QAM Mid channel	 Band LTE4 10MHz QPSK Mid channel

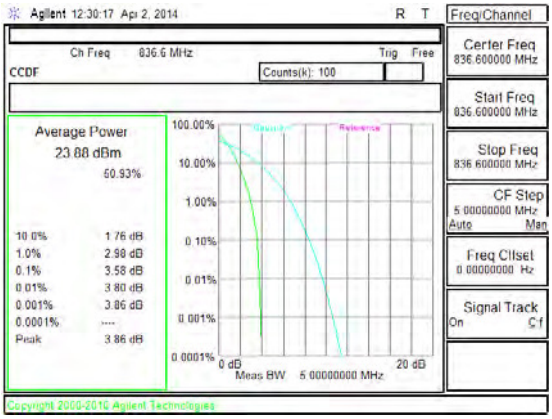
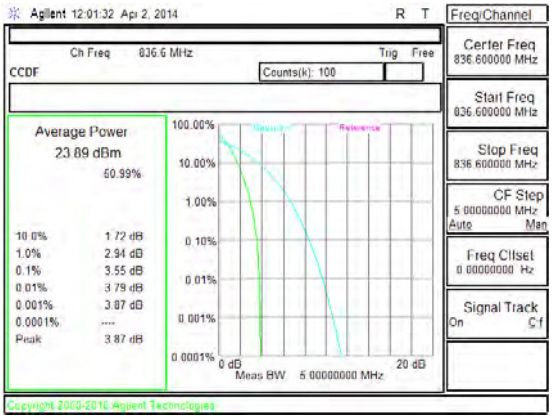
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE4 5MHz 16QAM	 Band LTE4 5MHz 16QAM Mid channel	 Band LTE4 5MHz QPSK Mid channel
Band LTE2 10MHz 16QAM	 Band LTE2 10MHz 16QAM Mid channel	 Band LTE2 10MHz QPSK Mid channel

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

Band LTE2 5MHz 16QAM	 Band LTE2 5MHz 16QAM Mid channel	 Band LTE2 5MHz QPSK Mid channel
Band Band 2 HSDPA	 Band WCDMA B2 HSDPA	 Band WCDMA B2 REL99

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

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

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

10. LIMITS AND CONDUCTED RESULTS

10.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049
IC: RSS-132, 4.5; RSS-133, 6.5

LIMITS

For reporting purposes only

TEST PROCEDURE

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

(KDB 971168 D01 Power Meas License Digital Systems v02r01 - 06/07/2013)

MODES TESTED

GSM 850/1900 & WCDMA B2/B5 & LTE B2/B4/B5/B17

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.

10.1.1. OCCUPIED BANDWIDTH RESULTS

Band	Mode	Channel	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
GSM850	GPRS	128	824.2	240	310
		190	836.6	246	317
		251	848.8	248	316
	EGPRS	128	824.2	245	308
		190	836.6	243	317
		251	848.8	244	320
GSM1900	GPRS	512	1850.2	239	315
		661	1880	242	319
		810	1909.8	241	313
	EGPRS	512	1850.2	240	303
		661	1880	240	302
		810	1909.8	244	305
Band 5	REL99	4132	826.4	4159	4620
		4183	836.6	4139	4610
		4233	846.6	4150	4617
	HSDPA	4132	826.4	4135	4620
		4183	836.6	4148	4599
		4233	846.6	4131	4626
Band 2	REL99	9262	1852.4	4138	4626
		9400	1880	4146	4638
		9538	1907.6	4146	4645
	HSDPA	9262	1852.4	4145	4628
		9400	1880	4136	4620
		9538	1907.6	4141	4641

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

10.1.2. LTE OCCUPIED BANDWIDTH RESULTS

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
LTE17	10	QPSK	50/0	709	8948	9674
			50/0	710	8961	9658
			50/0	711	8962	9902
		16QAM	50/0	709	8959	9706
			50/0	710	8966	9774
			50/0	711	8977	9698

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
LTE17	5	QPSK	25/0	706.5	4477	4892
			25/0	710	4477	4890
			25/0	713.5	4492	4906
		16QAM	25/0	706.5	4480	4899
			25/0	710	4479	4892
			25/0	713.5	4482	4933

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
LTE5	10	QPSK	50/0	829	8946	9677
			50/0	836.5	8941	9787
			50/0	844	8943	9740
		16QAM	50/0	829	8963	9659
			50/0	836.5	8958	9703
			50/0	844	8958	9763

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
LTE5	5	QPSK	25/0	826.5	4461	4924
			25/0	836.5	4478	4877
			25/0	846.5	4469	4897
		16QAM	25/0	826.5	4472	4953
			25/0	836.5	4476	4930

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.

			25/0	846.5	4478	4916

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
LTE4	10	QPSK	50/0	1715	8945	9688
			50/0	1732.5	8950	9713
			50/0	1750	8949	9664
		16QAM	50/0	1715	8928	9669
			50/0	1732.5	8967	9753
			50/0	1750	8960	9723

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
LTE4	5	QPSK	25/0	1712.5	4479	4943
			25/0	1732.5	4480	4902
			25/0	1752.5	4468	4888
		16QAM	25/0	1712.5	4484	4868
			25/0	1732.5	4479	4948
			25/0	1752.5	4462	4898

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
LTE2	10	QPSK	50/0	1855	8950	9778
			50/0	1880	8952	9763
			50/0	1905	8939	9686
		16QAM	50/0	1855	8968	9698
			50/0	1880	8940	9792
			50/0	1905	8921	9652

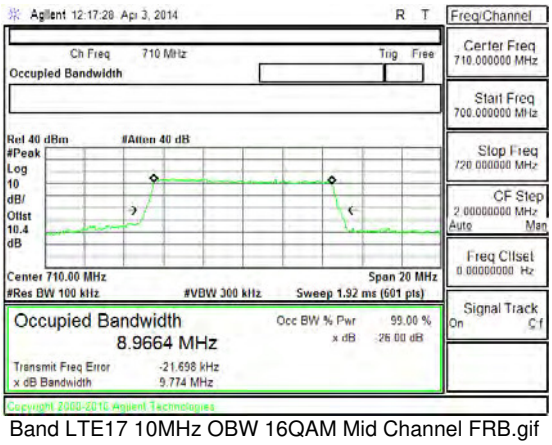
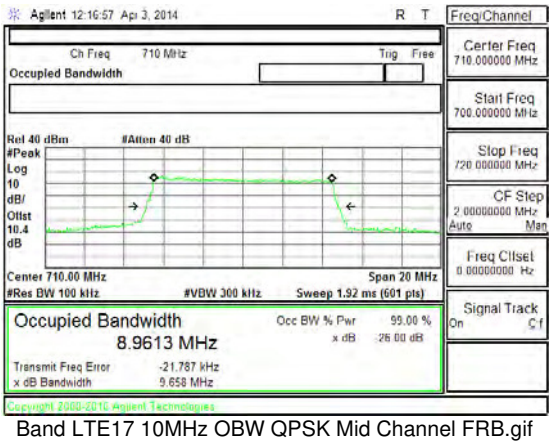
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
LTE2	5	QPSK	25/0	1852.5	4536	5082
			25/0	1880	4553	5045
			25/0	1907.5	4522	5039
		16QAM	25/0	1852.5	4535	5039

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

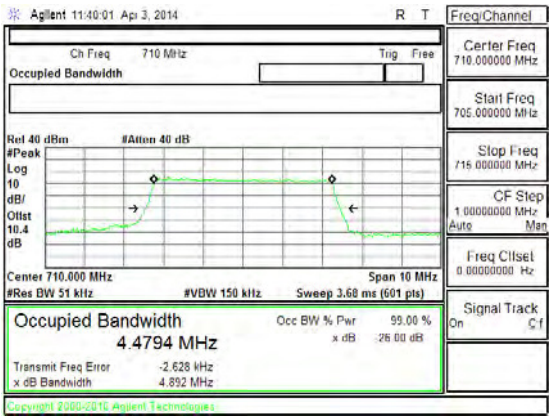
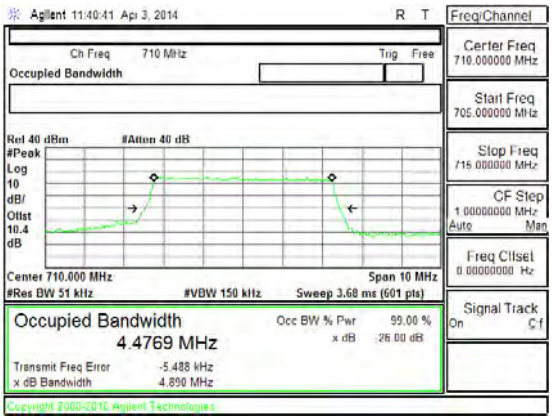
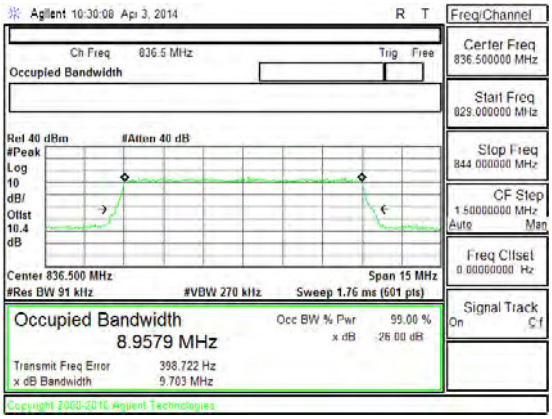
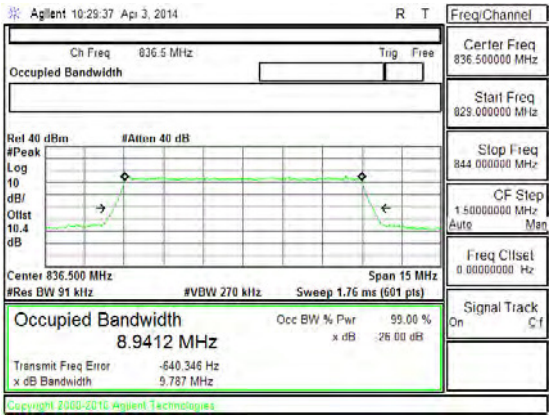
			25/0	1880	4554	5106
			25/0	1907.5	4548	5054

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

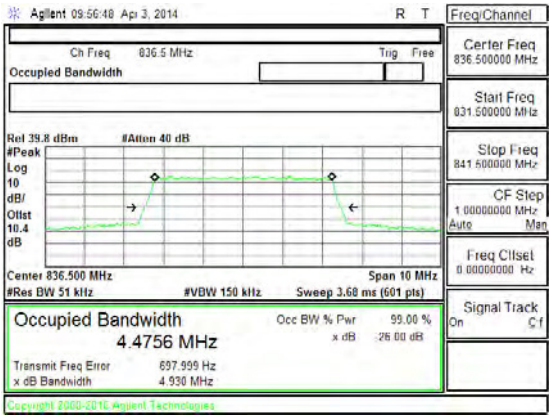
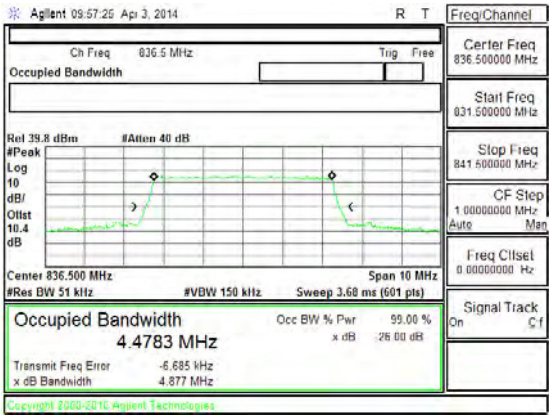
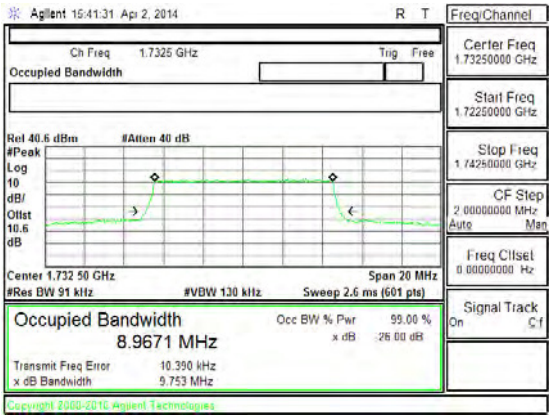
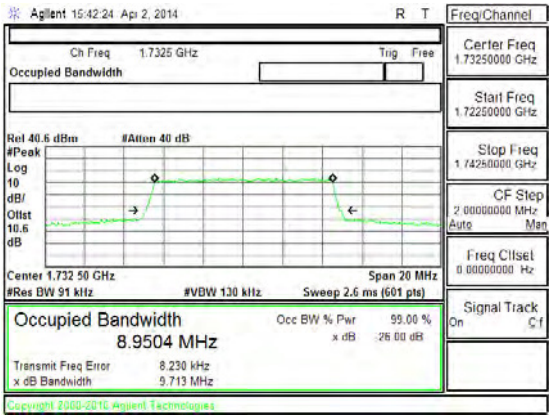
10.1.3. OCCUPIED BANDWIDTH PLOTS

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

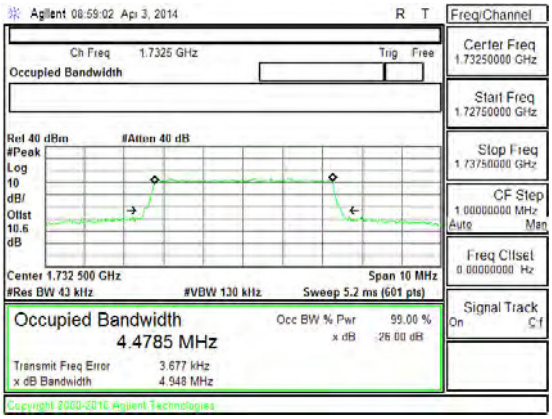
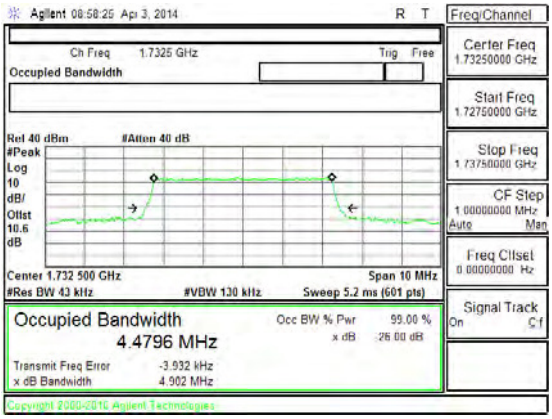
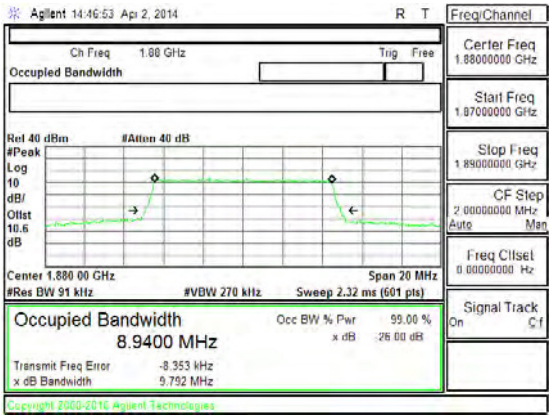
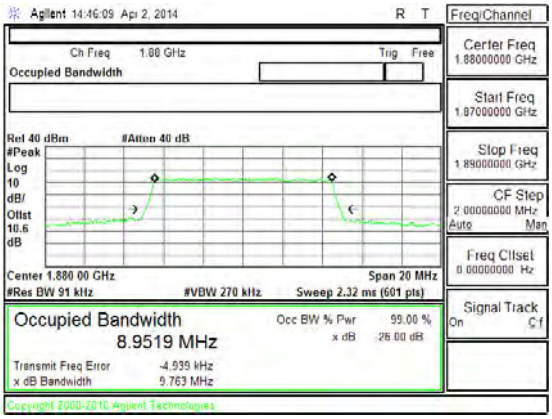
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE17 5MHz 16QAM	 Band LTE17 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE17 5MHz OBW QPSK Mid Channel FRB.gif
Band LTE5 10MHz 16QAM	 Band LTE5 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 10MHz OBW QPSK Mid Channel FRB.gif

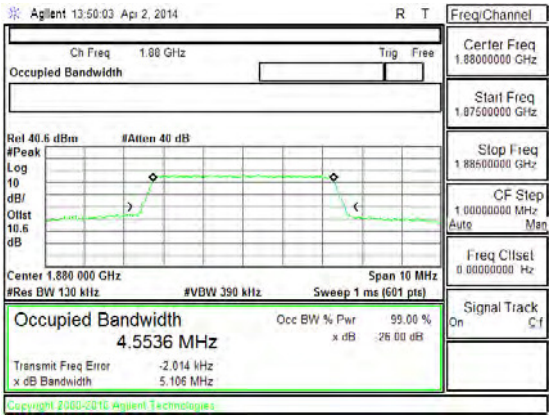
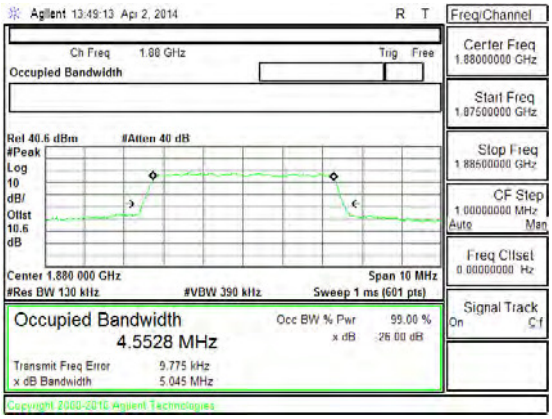
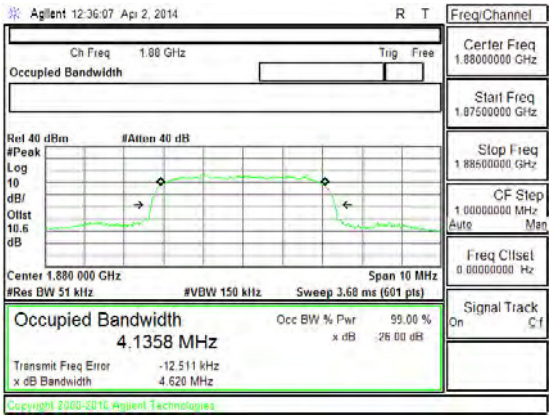
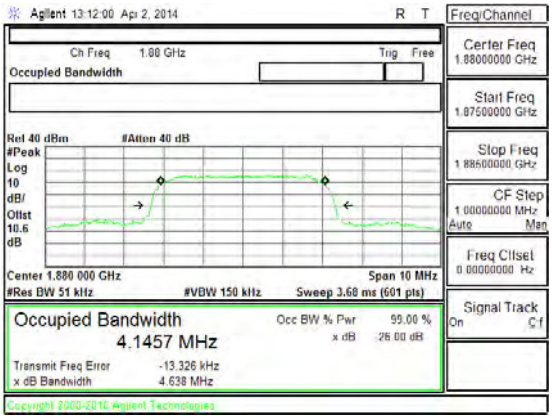
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE5 5MHz 16QAM	 Band LTE5 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 5MHz OBW QPSK Mid Channel FRB.gif
Band LTE4 10MHz 16QAM	 Band LTE4 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 10MHz OBW QPSK Mid Channel FRB.gif

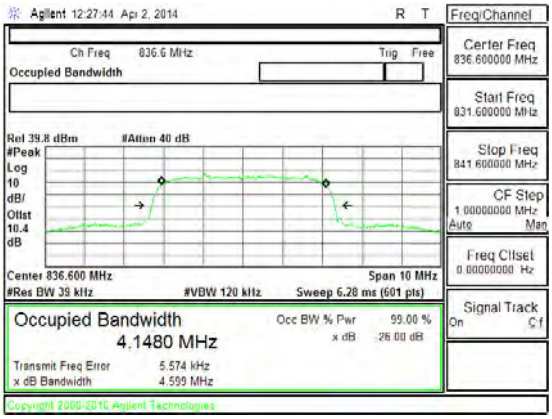
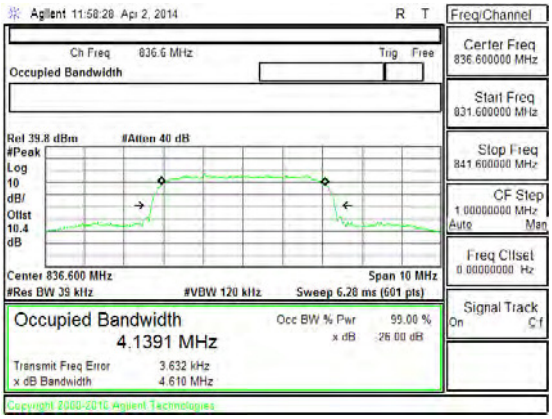
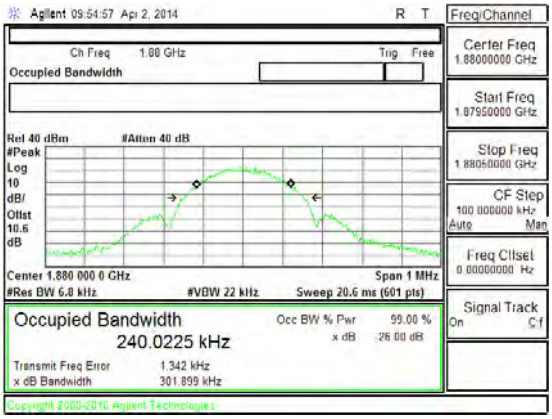
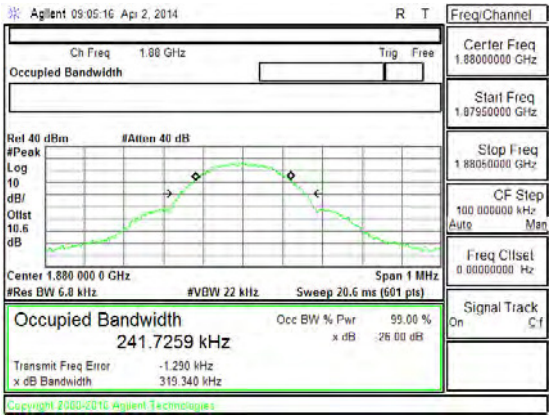
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE4 5MHz 16QAM	 Band LTE4 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 5MHz OBW QPSK Mid Channel FRB.gif
Band LTE2 10MHz 16QAM	 Band LTE2 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 10MHz OBW QPSK Mid Channel FRB.gif

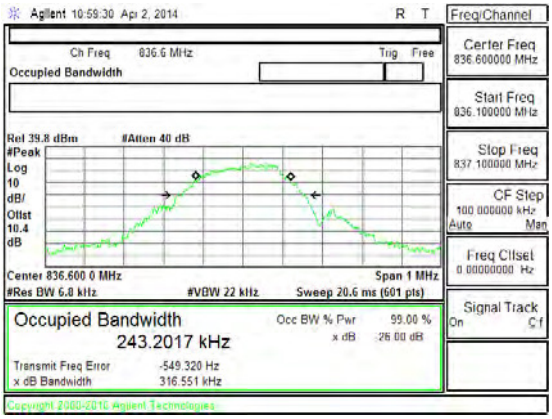
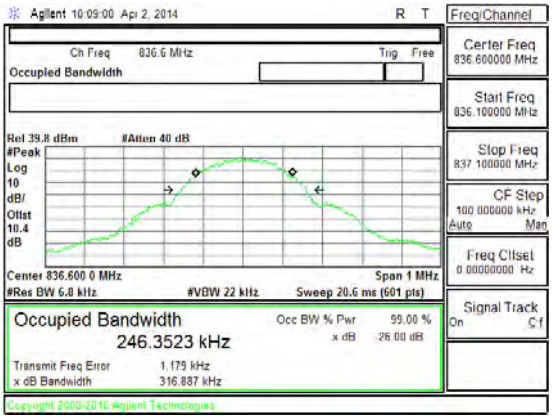
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE2 5MHz 16QAM	 Band LTE2 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 5MHz OBW QPSK Mid Channel FRB.gif
Band Band 2	 Band WCDMA B2 HSDPA OBW	 Band WCDMA B2 REL99 OBW

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

Band Band 5	 Band WCDMA B5 HSDPA OBW	 Band WCDMA B5 REL99 OBW
Band GSM1900	 Band GSM1900 EGPRS OBW Mid channel	 Band GSM1900 GPRS OBW Mid channel

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

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

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

10.2. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §24.238

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 v02r01
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

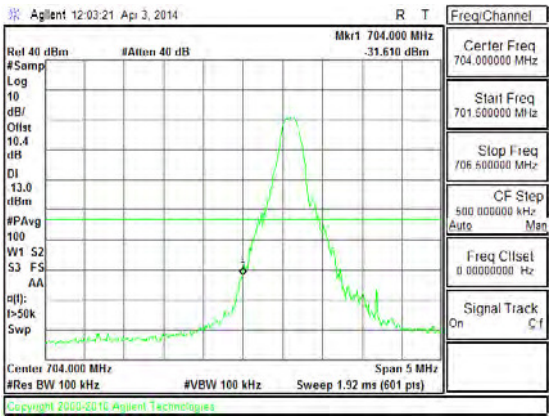
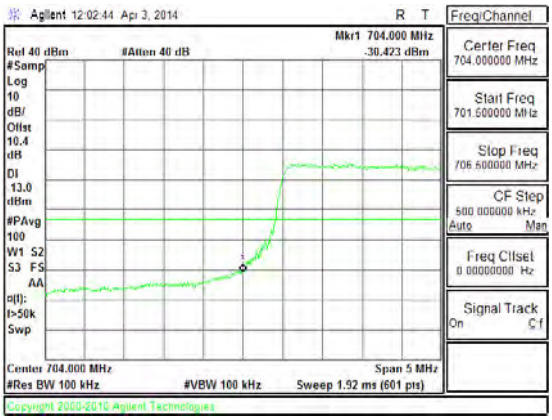
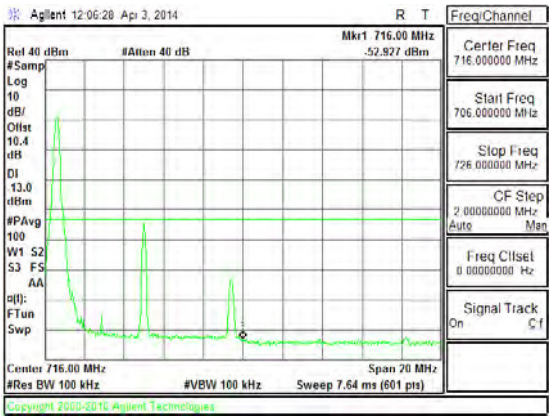
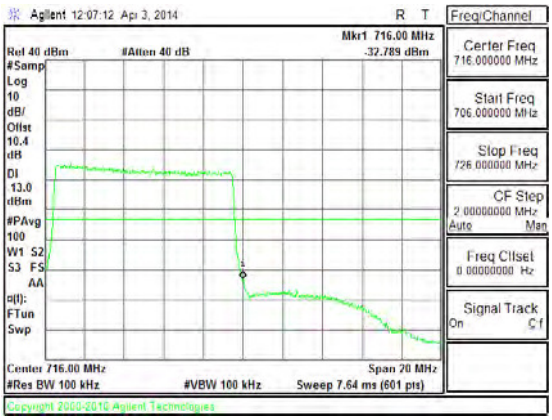
GSM 850/1900 & WCDMA B2/B5 & LTE B2/B4/B5/B17

RESULTS

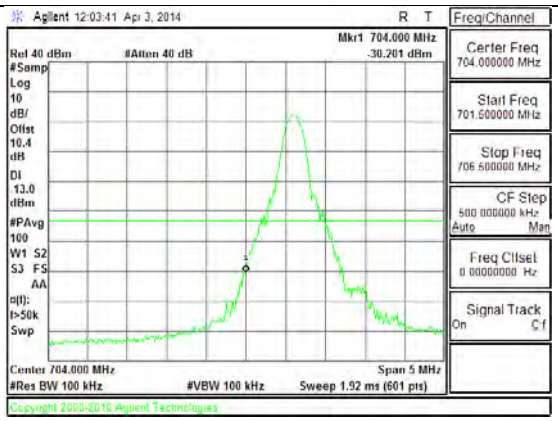
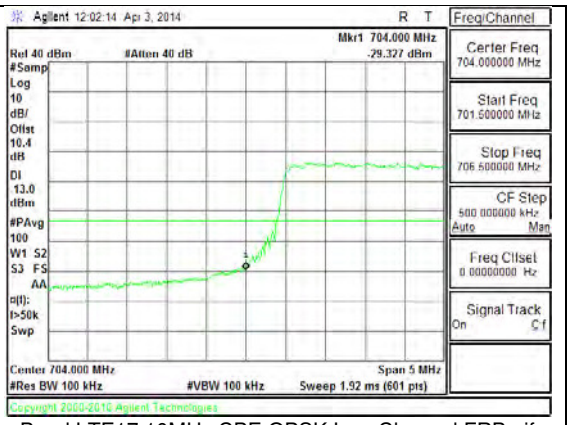
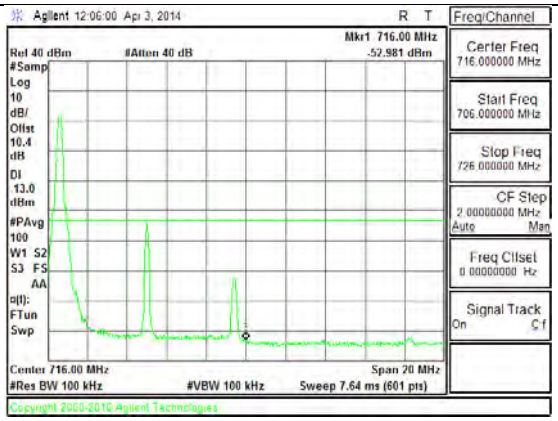
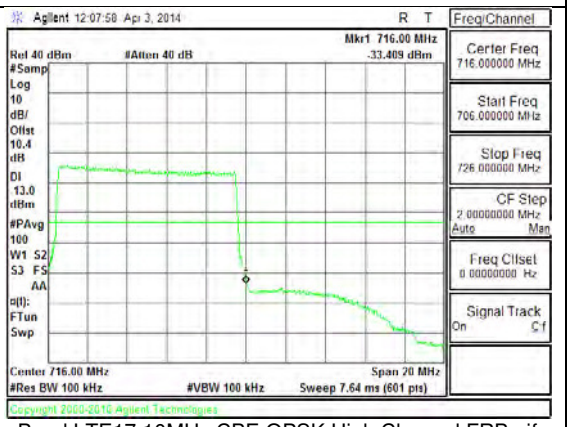
UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

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

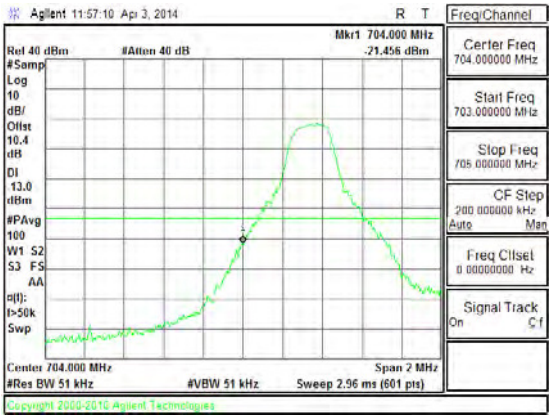
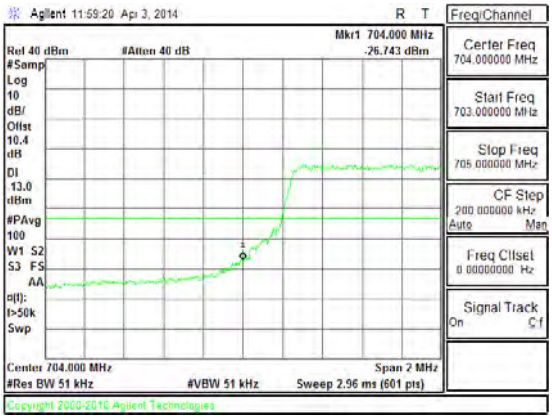
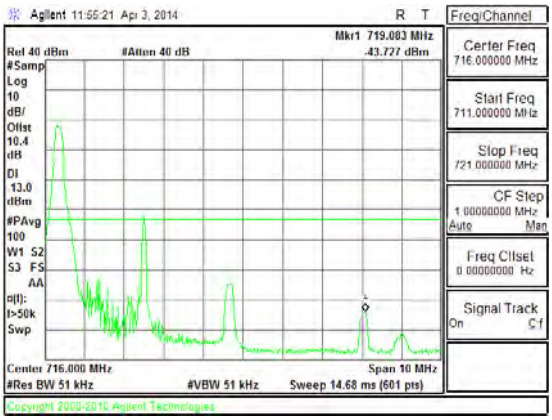
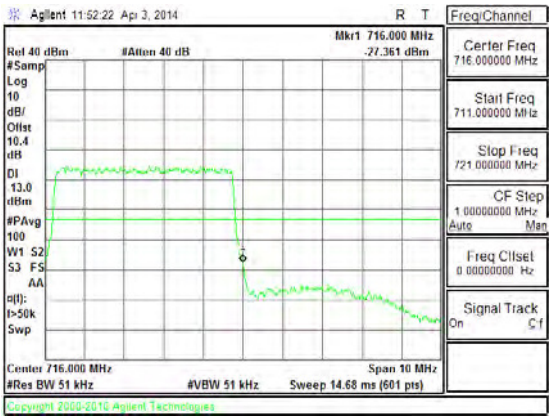
10.2.1. BAND EDGE PLOTS

Band LTE17 10MHz 16QAM	 Band LTE17 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE17 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE17 10MHz 16QAM	 Band LTE17 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE17 10MHz CBE 16QAM High Channel FRB.gif

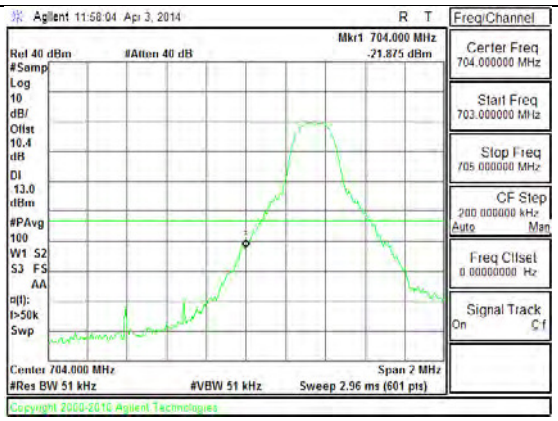
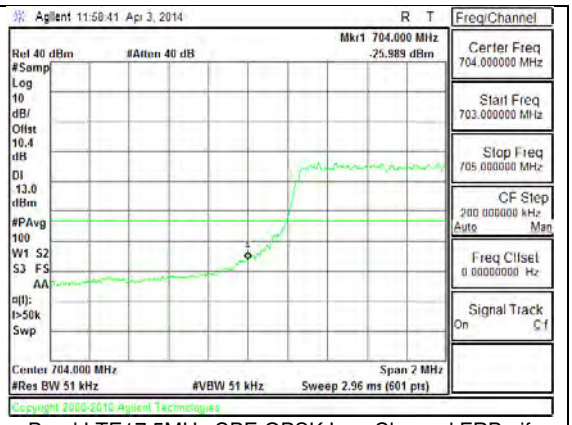
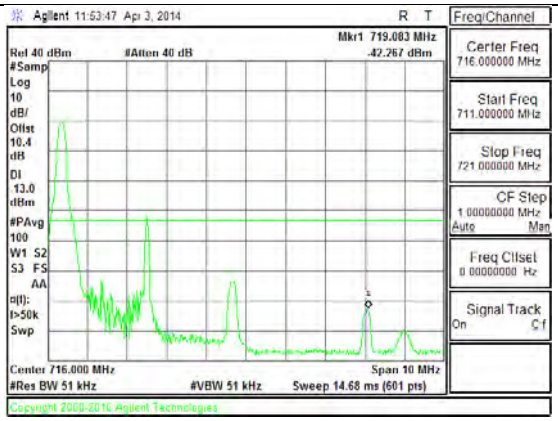
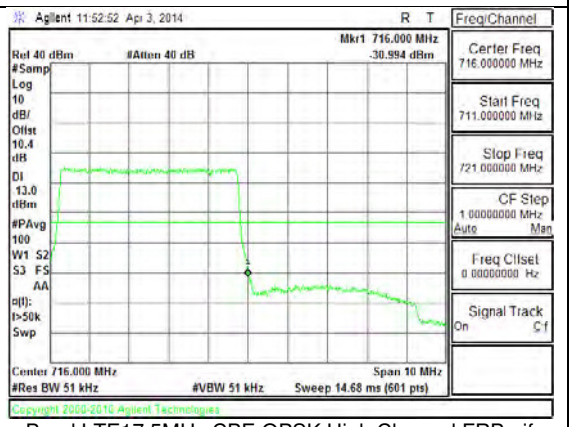
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE17 10MHz QPSK	 Band LTE17 10MHz CBE QPSK Low Channel 1RB.gif	 Band LTE17 10MHz CBE QPSK Low Channel FRB.gif
Band LTE17 10MHz QPSK	 Band LTE17 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE17 10MHz CBE QPSK High Channel FRB.gif

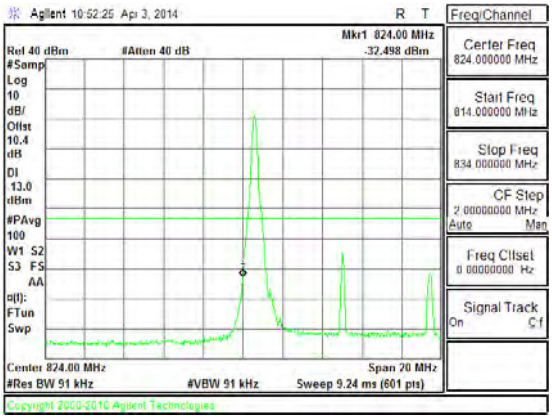
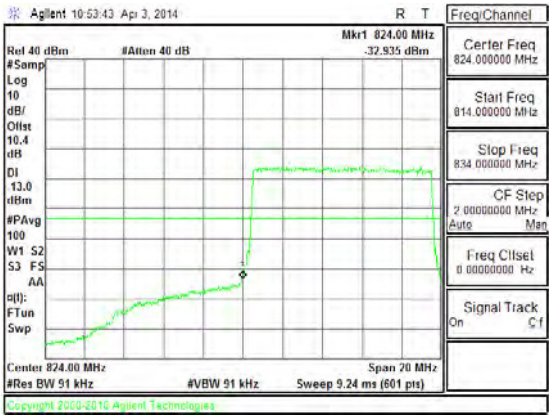
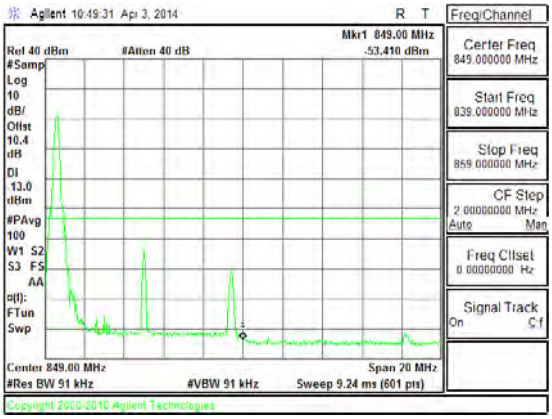
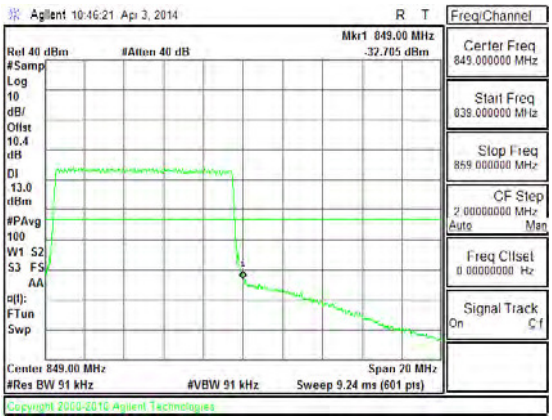
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE17 5MHz 16QAM	 Band LTE17 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE17 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE17 5MHz 16QAM	 Band LTE17 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE17 5MHz CBE 16QAM High Channel FRB.gif

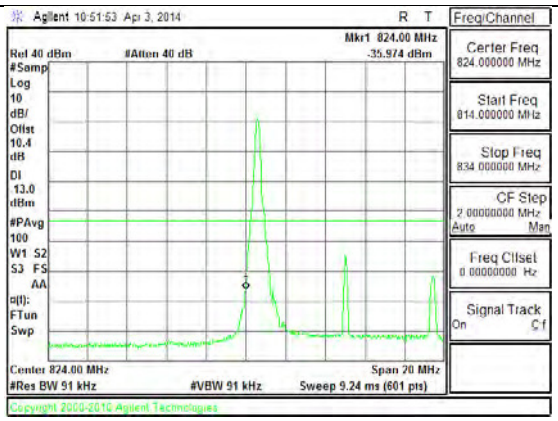
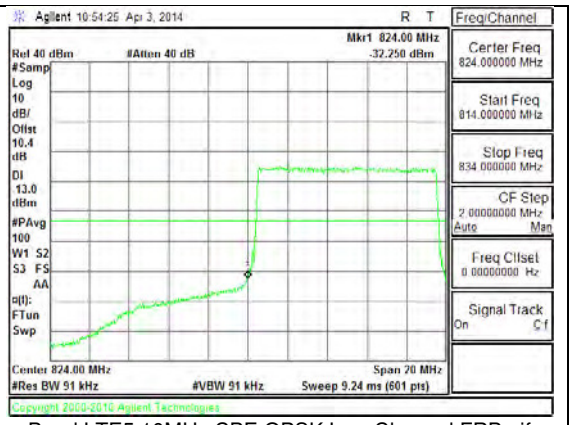
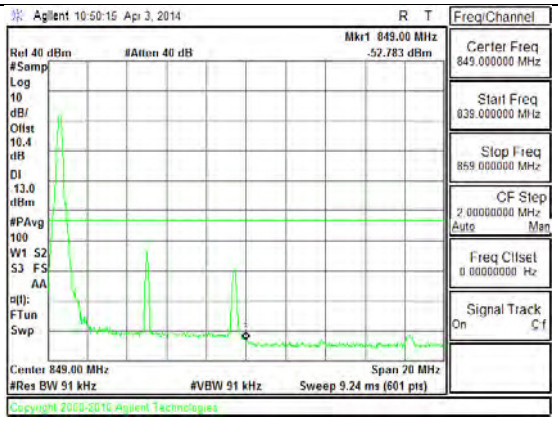
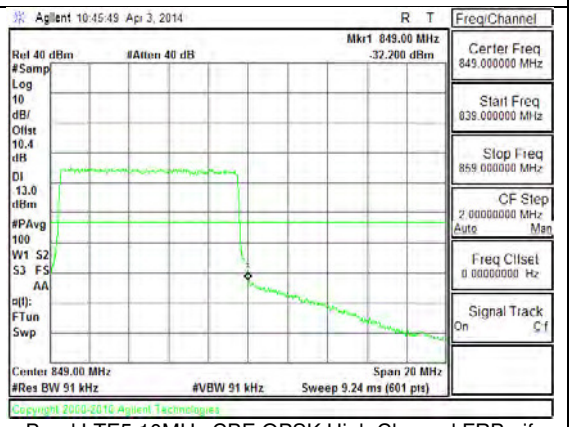
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE17 5MHz QPSK	 Band LTE17 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE17 5MHz CBE QPSK Low Channel FRB.gif
Band LTE17 5MHz QPSK	 Band LTE17 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE17 5MHz CBE QPSK High Channel FRB.gif

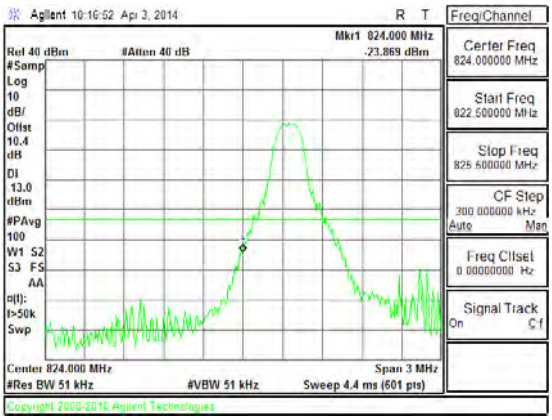
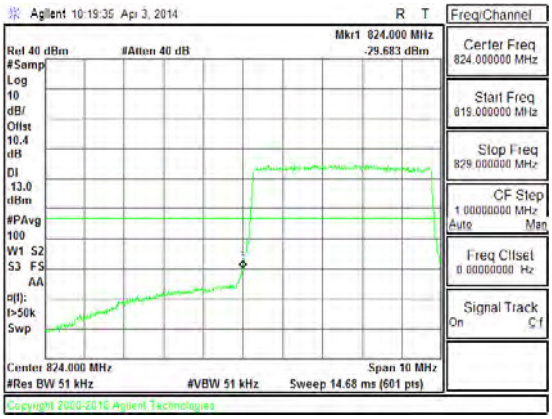
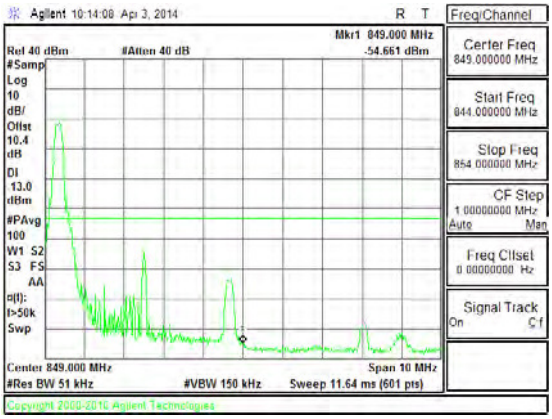
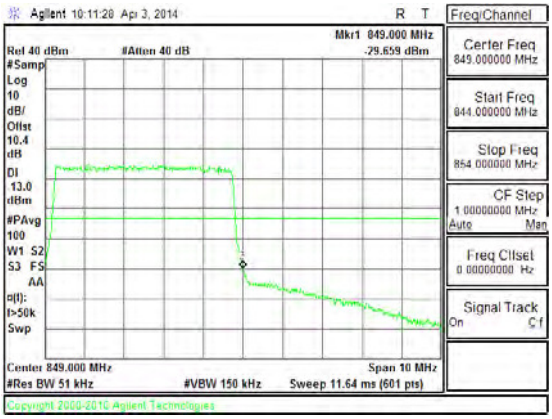
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE5 10MHz 16QAM	 Band LTE5 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 10MHz 16QAM	 Band LTE5 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 10MHz CBE 16QAM High Channel FRB.gif

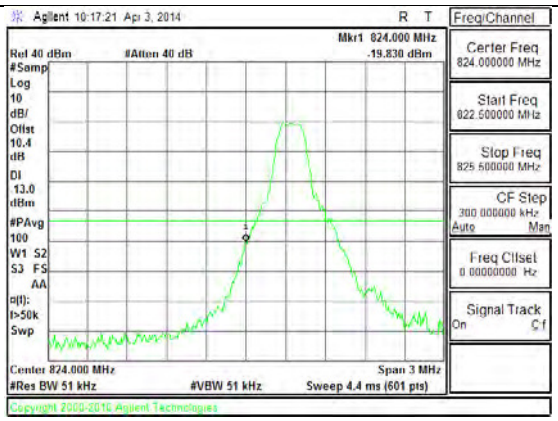
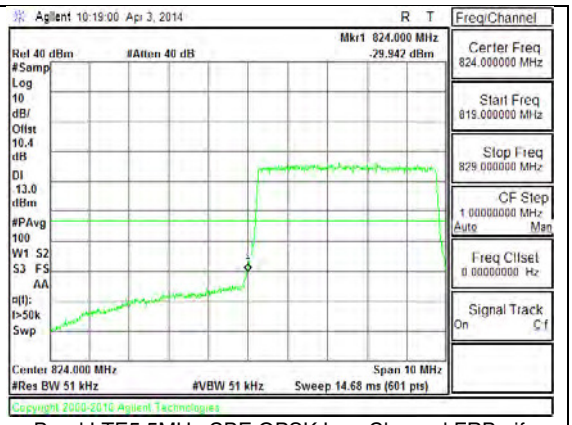
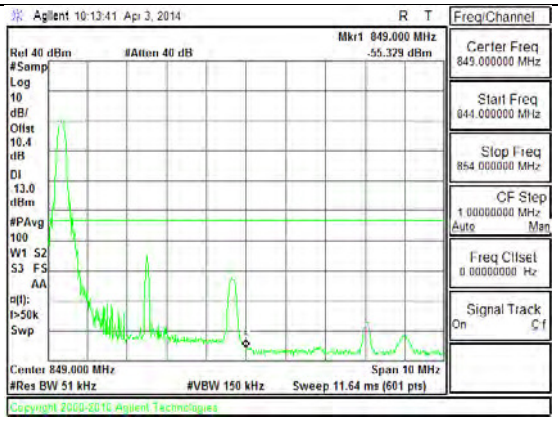
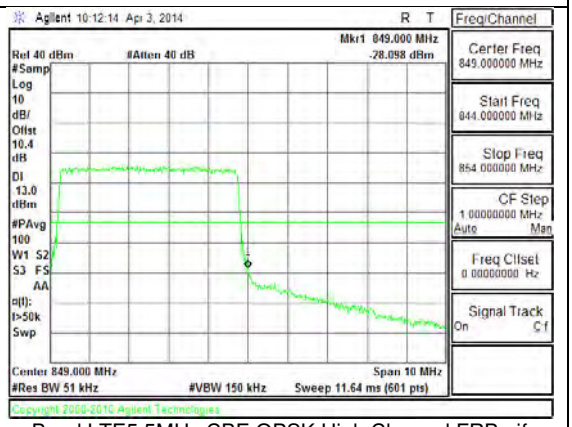
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE5 10MHz QPSK	 Band LTE5 10MHz CBE QPSK Low Channel 1RB.gif	 Band LTE5 10MHz CBE QPSK Low Channel FRB.gif
Band LTE5 10MHz QPSK	 Band LTE5 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE5 10MHz CBE QPSK High Channel FRB.gif

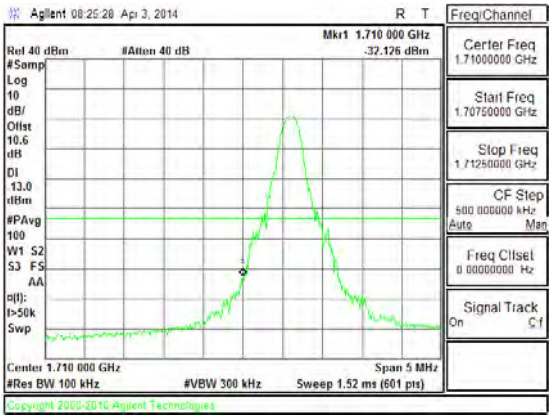
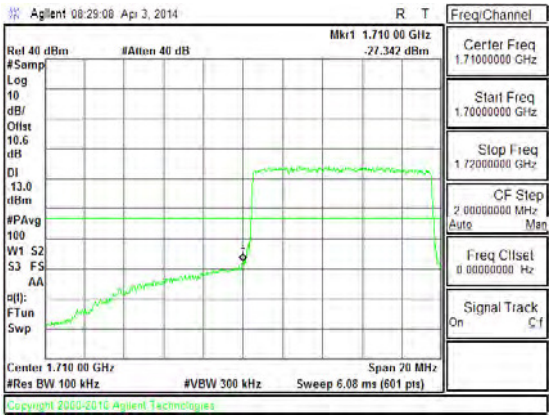
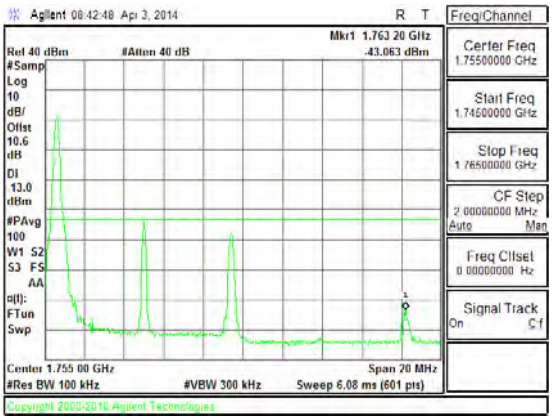
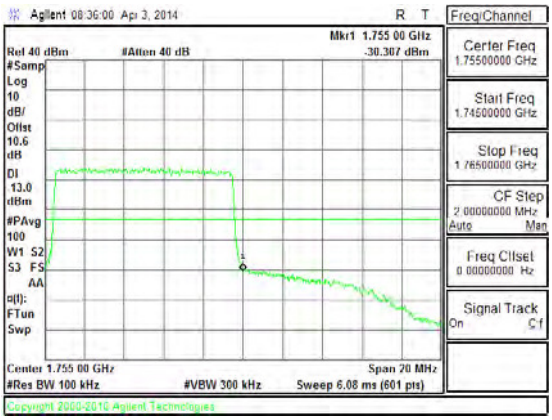
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE5 5MHz 16QAM	 Band LTE5 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 5MHz 16QAM	 Band LTE5 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 5MHz CBE 16QAM High Channel FRB.gif

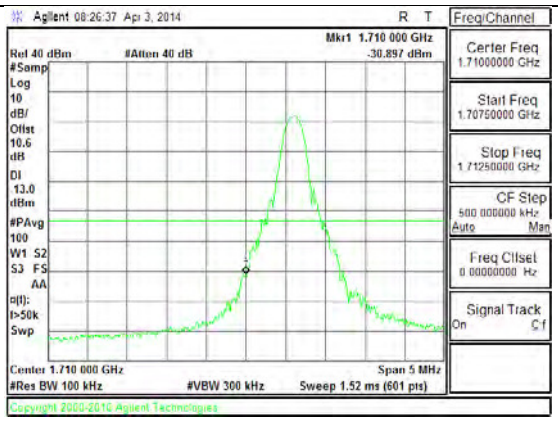
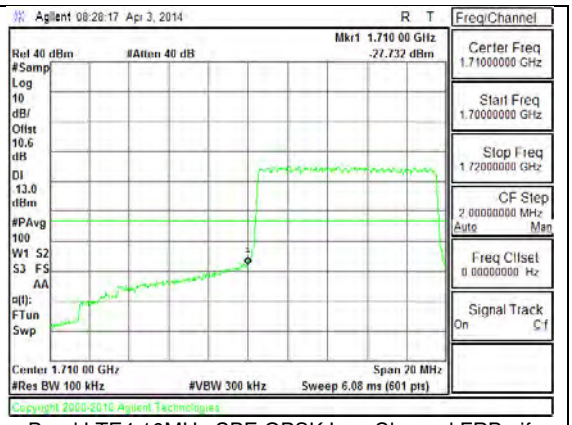
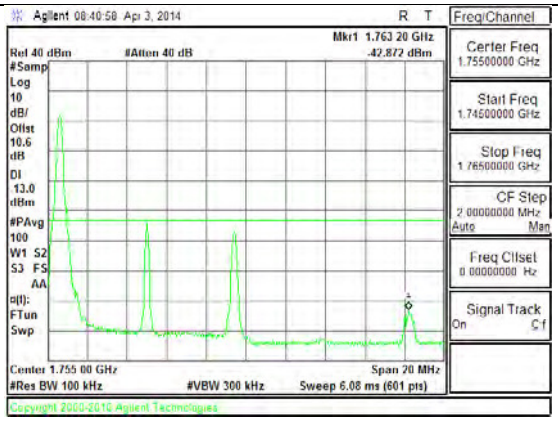
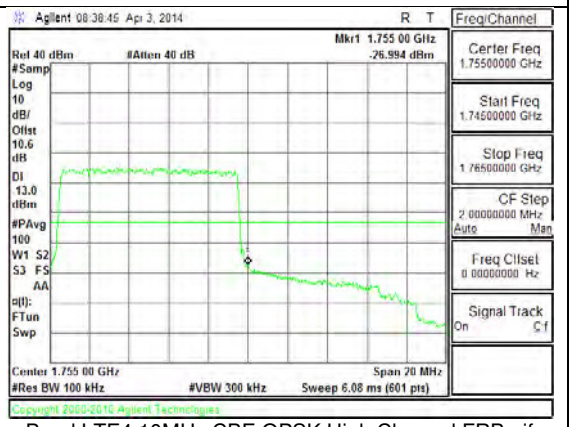
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE5 5MHz QPSK	 Band LTE5 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE5 5MHz CBE QPSK Low Channel FRB.gif
Band LTE5 5MHz QPSK	 Band LTE5 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE5 5MHz CBE QPSK High Channel FRB.gif

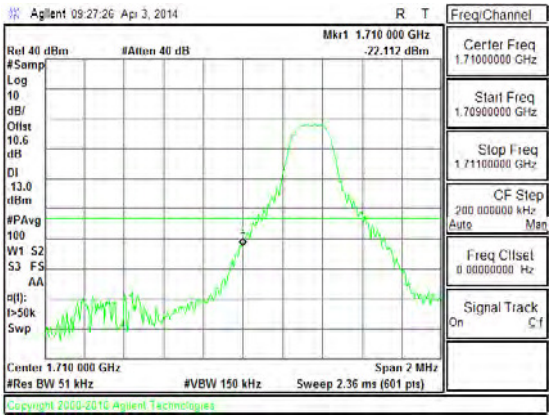
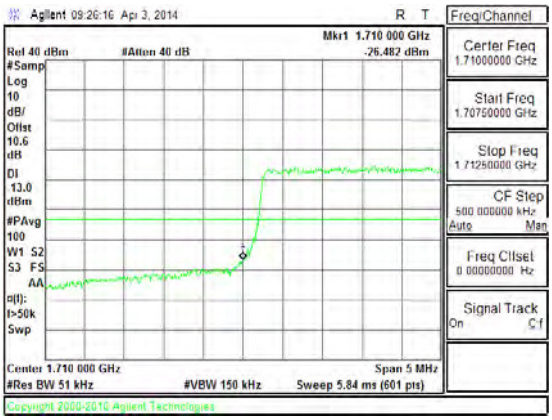
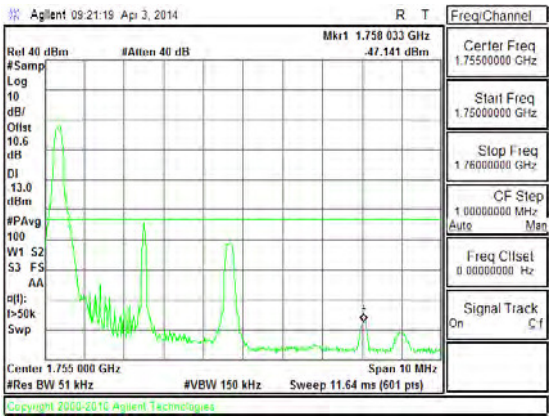
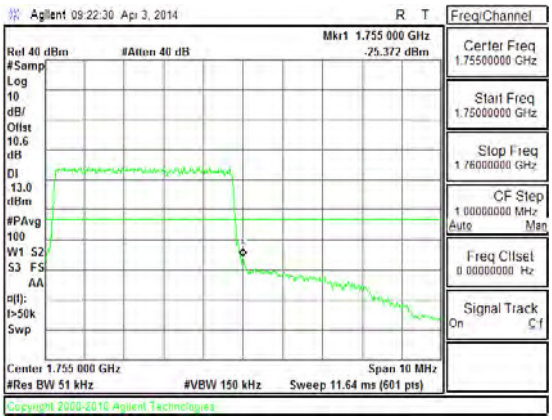
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

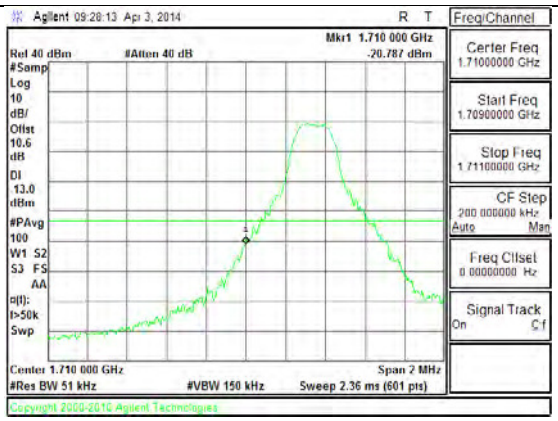
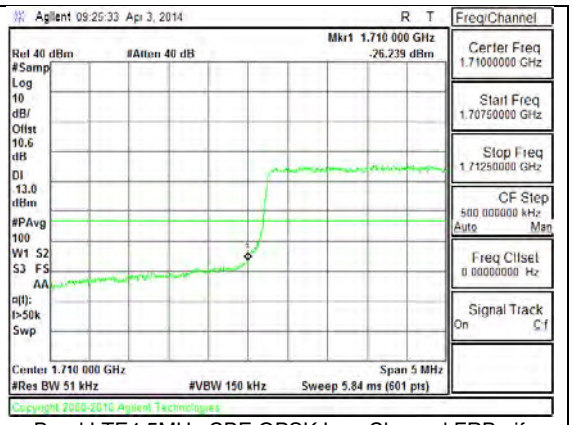
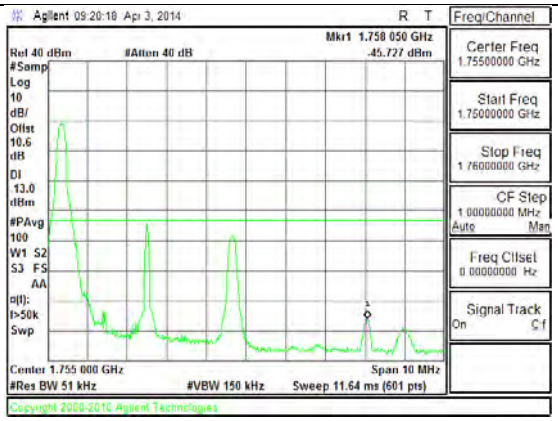
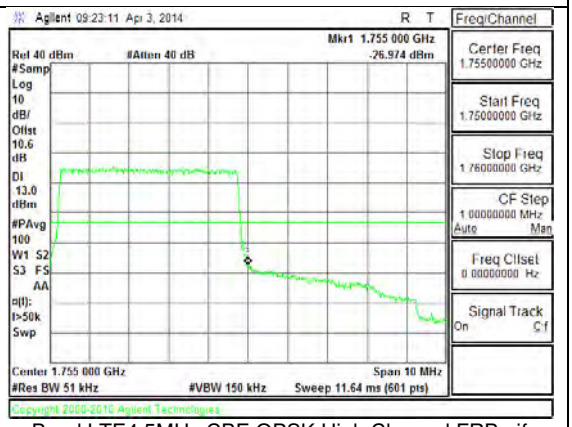
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

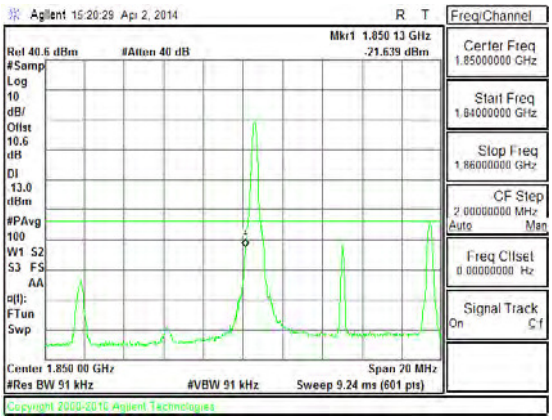
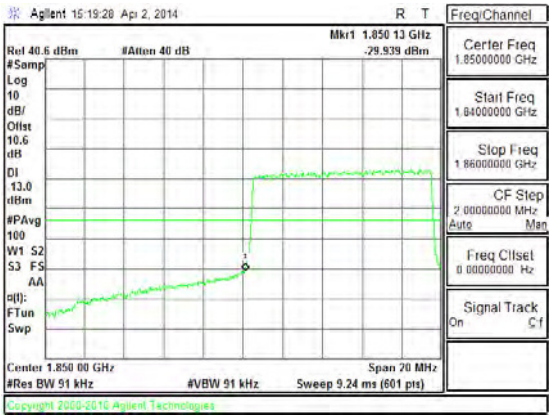
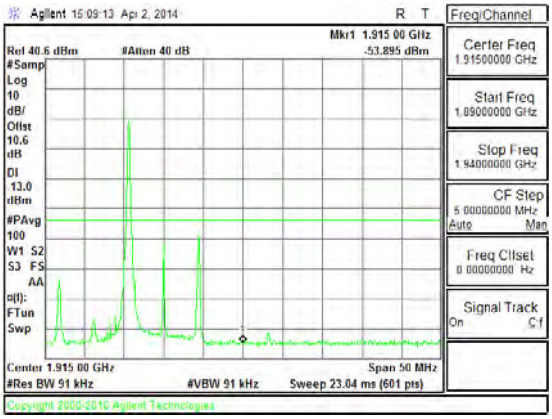
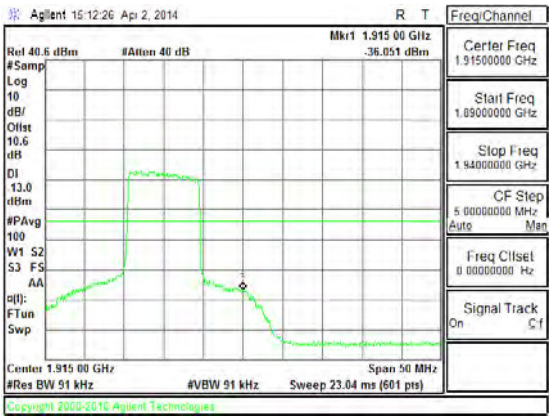
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

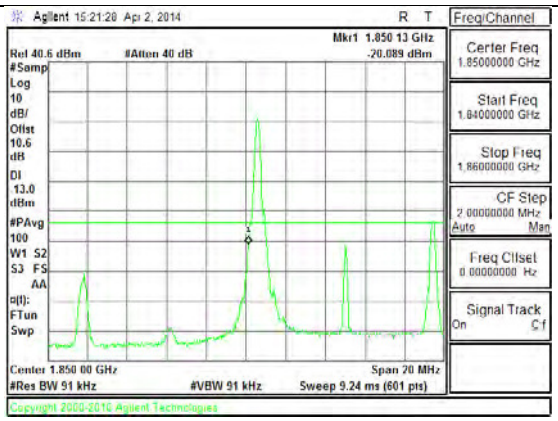
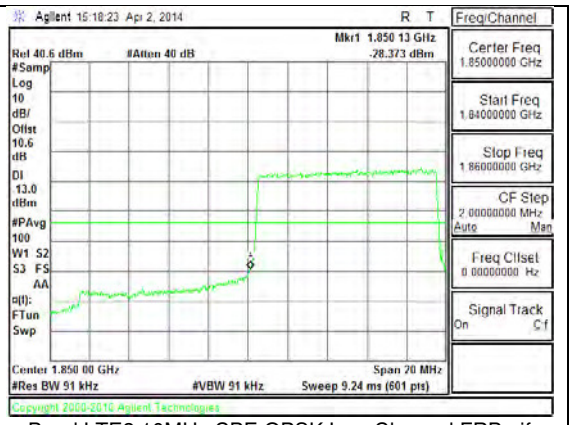
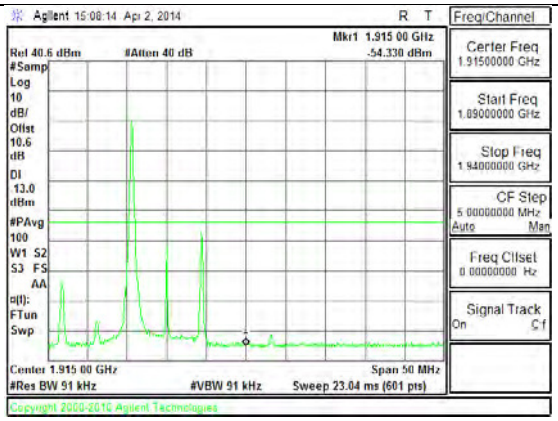
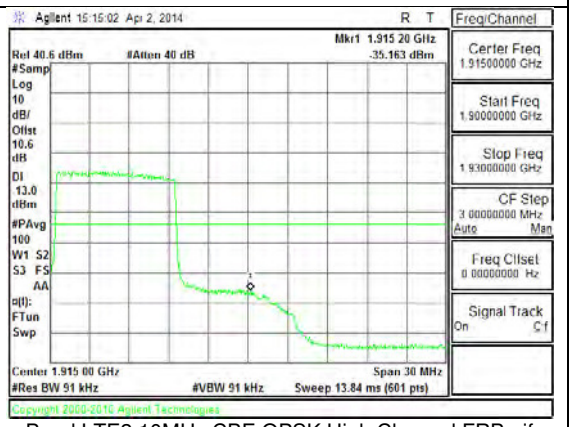
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

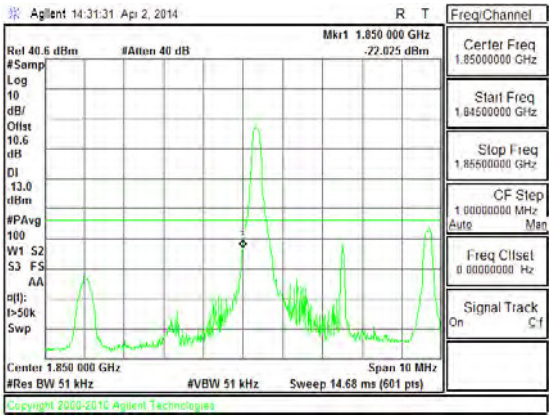
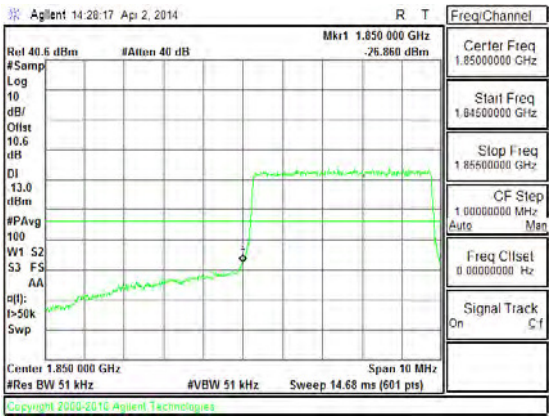
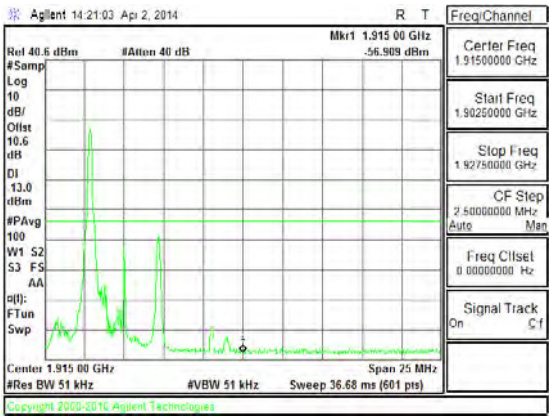
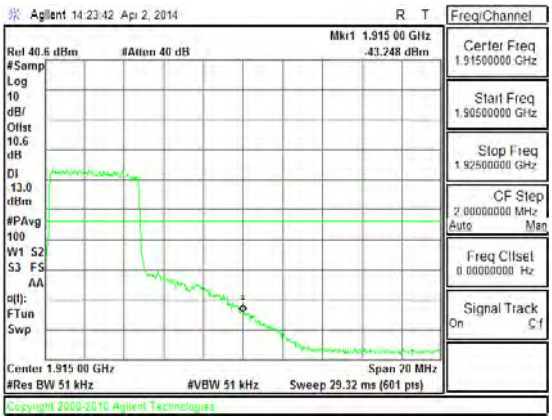
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

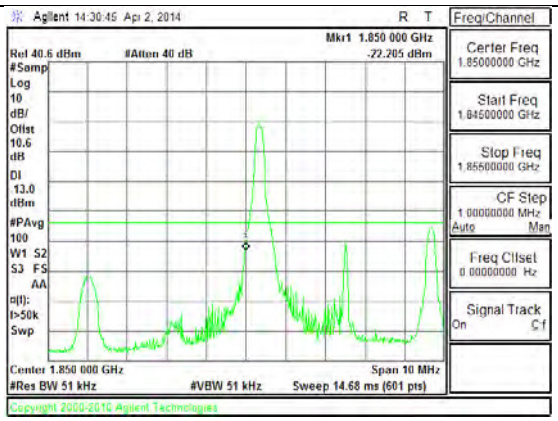
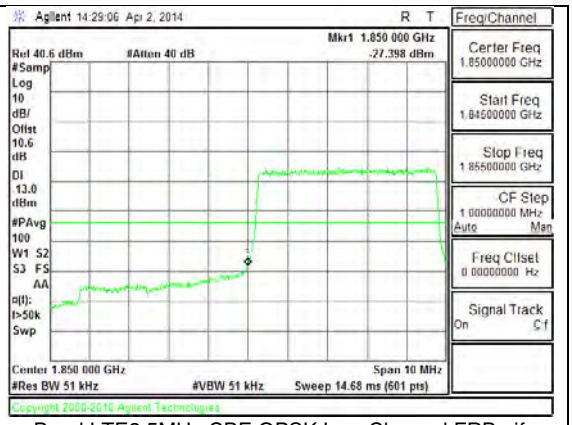
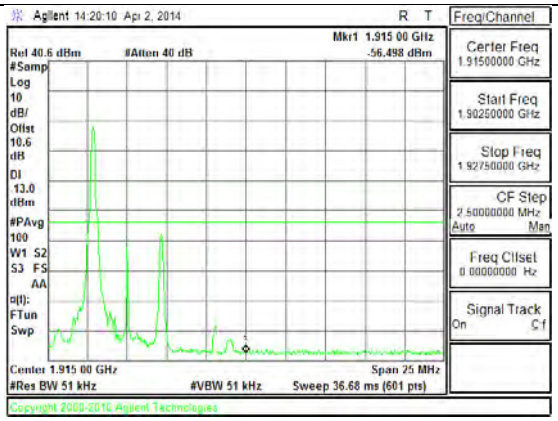
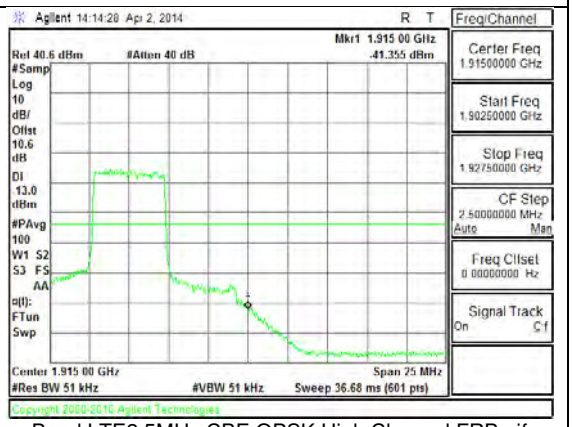
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

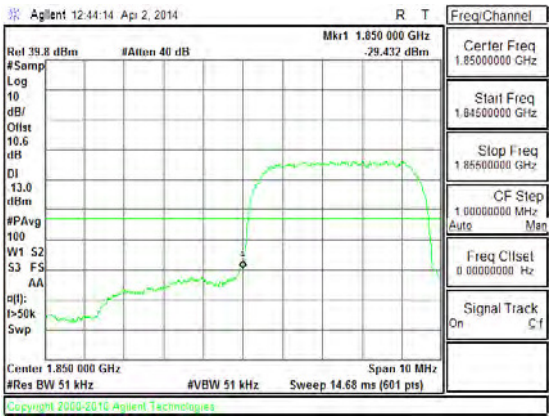
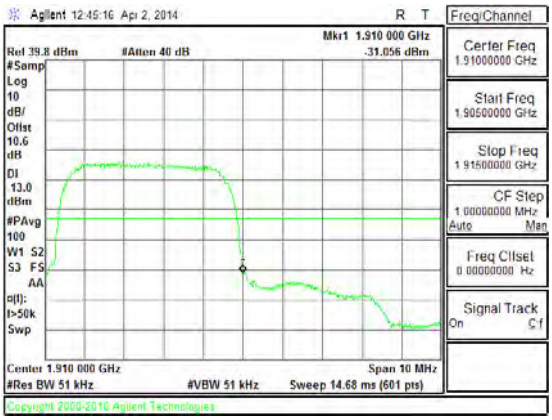
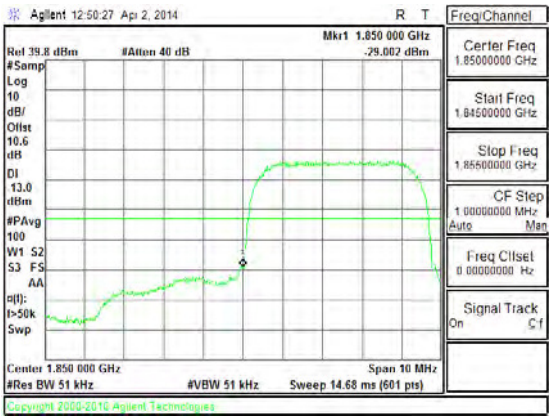
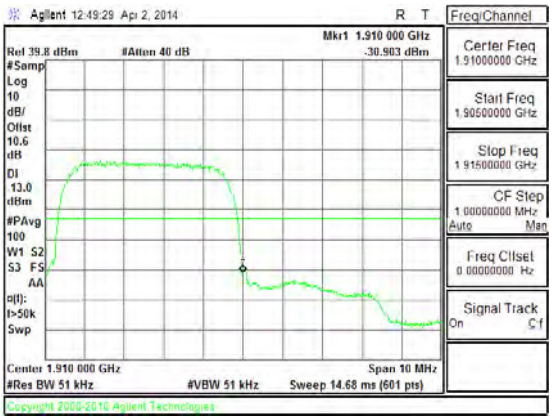
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

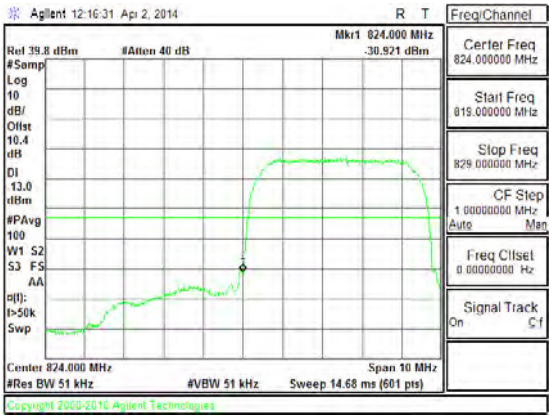
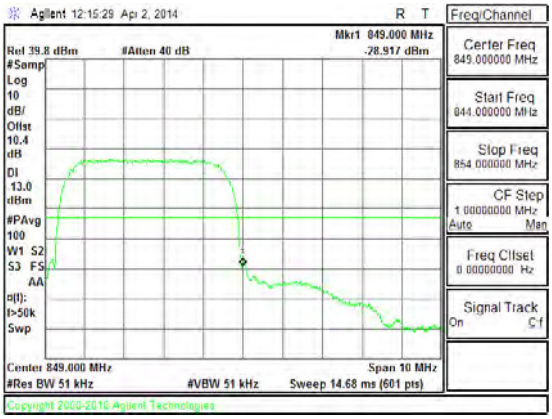
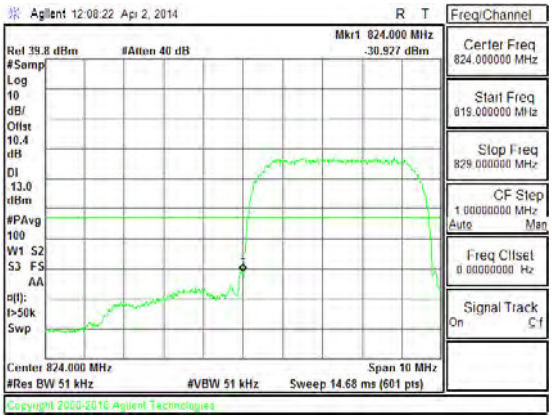
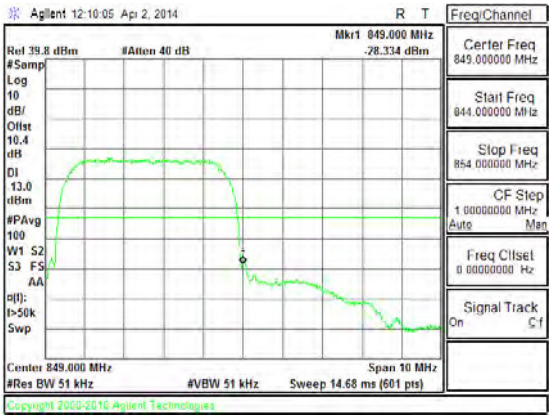
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

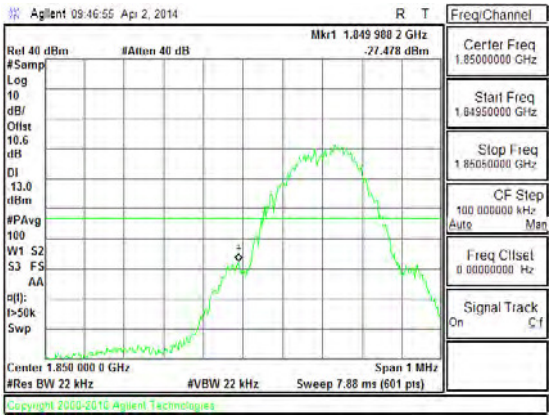
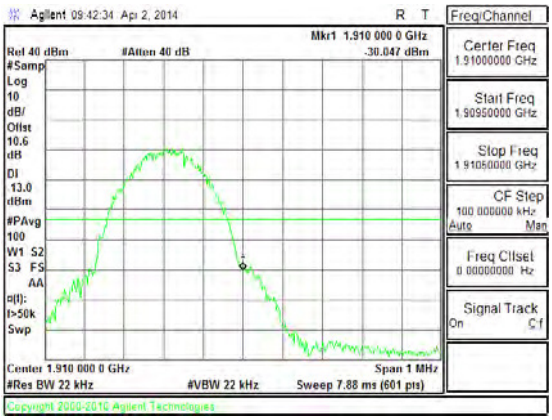
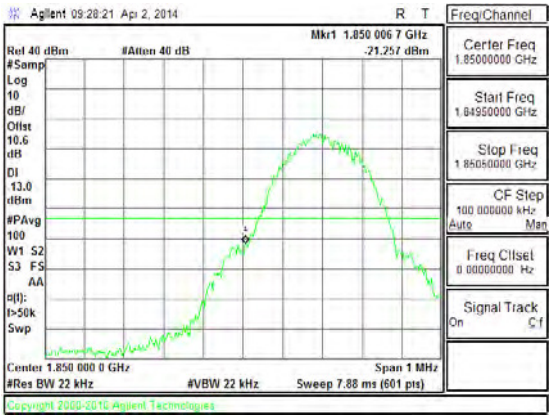
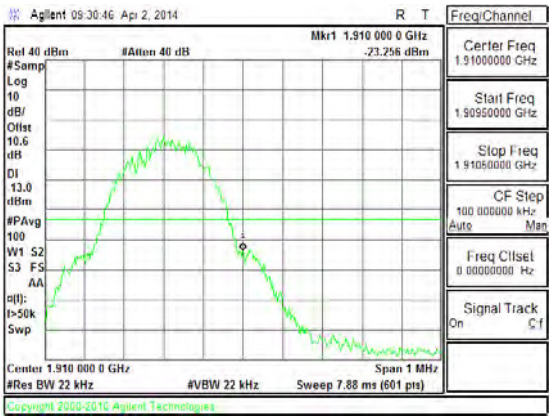
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

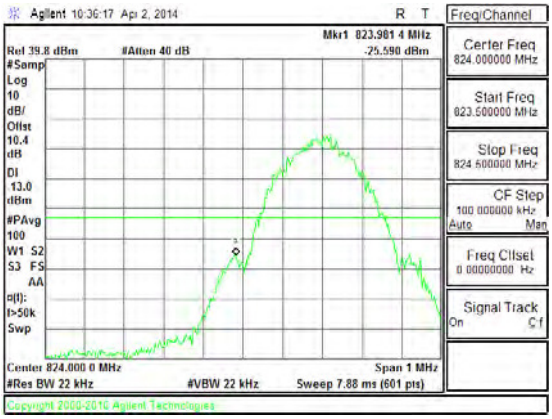
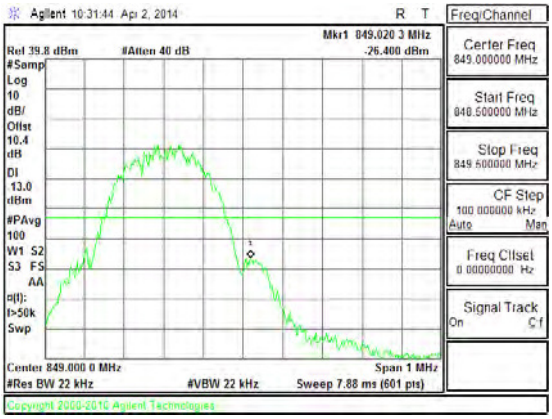
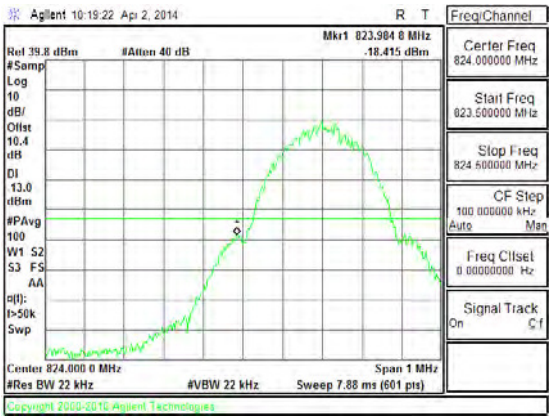
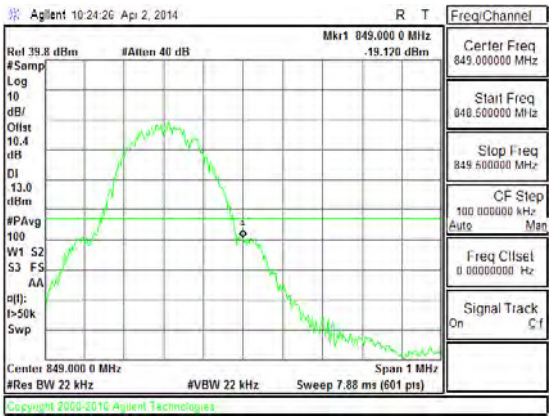
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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

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

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

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

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

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

10.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238 and §27

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 v02r01

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 850/1900 & WCDMA B2/B5 & LTE B2/B4/B5/B17

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.

10.3.1. OUT OF BAND EMISSIONS RESULT

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE17	10	QPSK	709	-26.42	-13	-13.42
			710	-26.47	-13	-13.47
			711	-25.59	-13	-12.59
		16QAM	709	-26.45	-13	-13.45
			710	-26.58	-13	-13.58
			711	-25.3	-13	-12.3

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE17	5	QPSK	706.5	-26.01	-13	-13.01
			710	-26.57	-13	-13.57
			713.5	-25.69	-13	-12.69
		16QAM	706.5	-26.23	-13	-13.23
			710	-26.53	-13	-13.53
			713.5	-27.28	-13	-14.28

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	10	QPSK	829	-26.19	-13	-13.19
			836.5	-25.97	-13	-12.97
			844	-25.92	-13	-12.92
		16QAM	829	-26.19	-13	-13.19
			836.5	-26.02	-13	-13.02
			844	-26	-13	-13

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	5	QPSK	826.5	-26.25	-13	-13.25
			836.5	-25.67	-13	-12.67
			846.5	-25.52	-13	-12.52
		16QAM	826.5	-25.41	-13	-12.41
			836.5	-26.53	-13	-13.53
			846.5	-24.98	-13	-11.98

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	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	10	QPSK	1715	-26.47	-13	-13.47
			1732.5	-25.65	-13	-12.65
			1750	-26.47	-13	-13.47
		16QAM	1715	-25.95	-13	-12.95
			1732.5	-25.03	-13	-12.03
			1750	-25.53	-13	-12.53

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	5	QPSK	1712.5	-26.35	-13	-13.35
			1732.5	-25.66	-13	-12.66
			1752.5	-26.43	-13	-13.43
		16QAM	1712.5	-25.96	-13	-12.96
			1732.5	-25.94	-13	-12.94
			1752.5	-25.08	-13	-12.08

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE2	10	QPSK	1855	-26.27	-13	-13.27
			1880	-25.28	-13	-12.28
			1905	-25.68	-13	-12.68
		16QAM	1855	-25.71	-13	-12.71
			1880	-25.31	-13	-12.31
			1905	-25.75	-13	-12.75

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE2	5	QPSK	1852.5	-26.88	-13	-13.88
			1880	-25.75	-13	-12.75
			1907.5	-26.02	-13	-13.02
		16QAM	1852.5	-25.68	-13	-12.68
			1880	-25.09	-13	-12.09

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

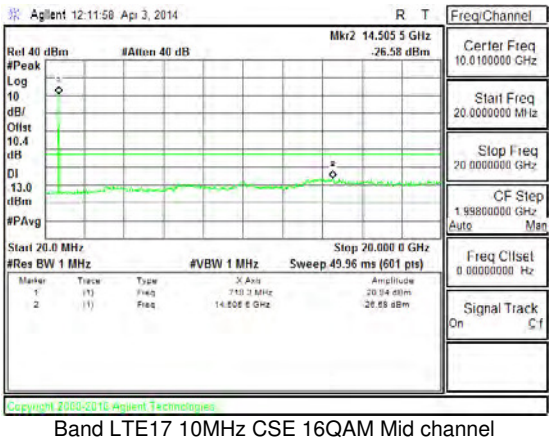
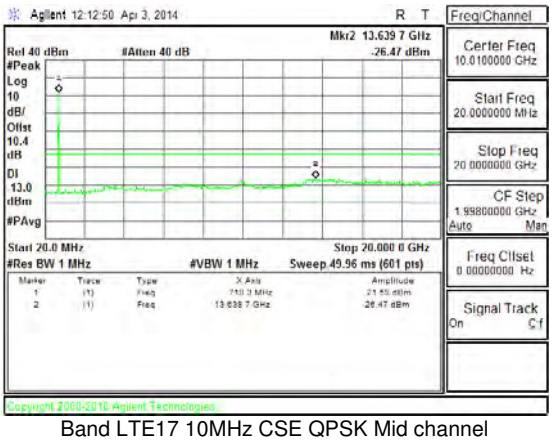
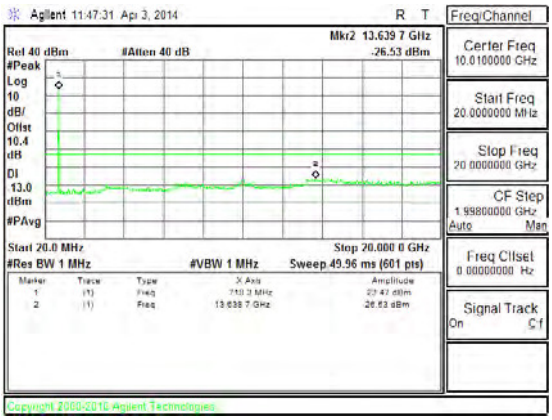
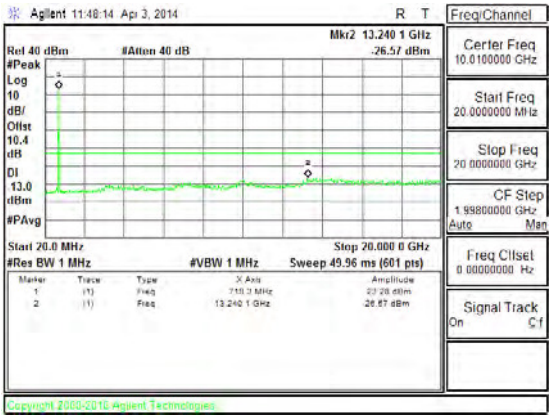
			1907.5	-25.46	-13	-12.46

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
GSM850	GPRS	824.2	-26.78	-13	-13.78
		836.6	-26.75	-13	-13.75
		848.8	-26.84	-13	-13.84
	EGPRS	824.2	-26.47	-13	-13.47
		836.6	-27.85	-13	-14.85
		848.8	-24.8	-13	-11.8
GSM1900	GPRS	1850.2	-25.56	-13	-12.56
		1880	-25.82	-13	-12.82
		1909.8	-25.98	-13	-12.98
	EGPRS	1850.2	-26.58	-13	-13.58
		1880	-26.51	-13	-13.51
		1909.8	-26.24	-13	-13.24
Band 5	REL99	826.4	-25.76	-13	-12.76
		836.6	-26.38	-13	-13.38
		846.6	-25.69	-13	-12.69
	HSDPA	826.4	-25.63	-13	-12.63
		836.6	-27.26	-13	-14.26
		846.6	-25.64	-13	-12.64
Band 2	REL99	1852.4	-24.92	-13	-11.92
		1880	-25.68	-13	-12.68
		1907.6	-23.97	-13	-10.97
	HSDPA	1852.4	-25.48	-13	-12.48
		1880	-26.62	-13	-13.62
		1907.6	-26.51	-13	-13.51

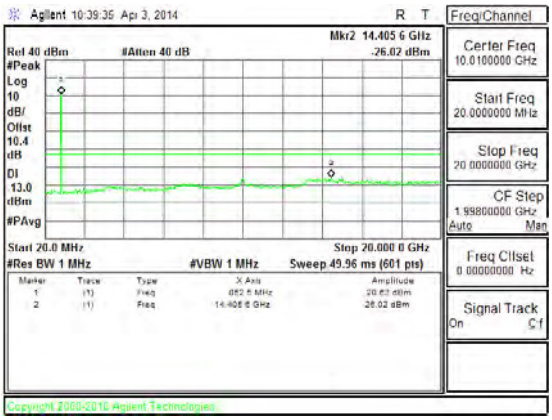
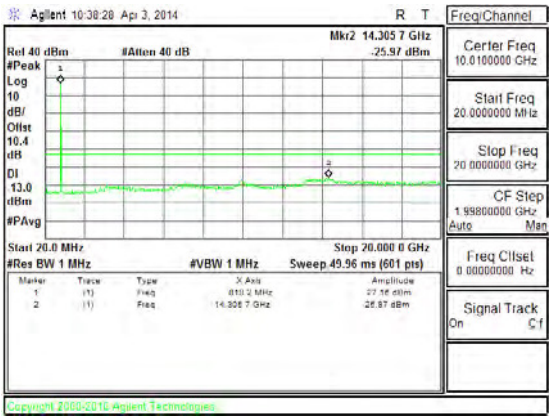
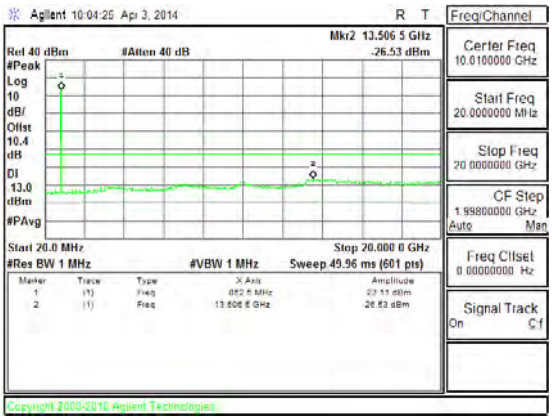
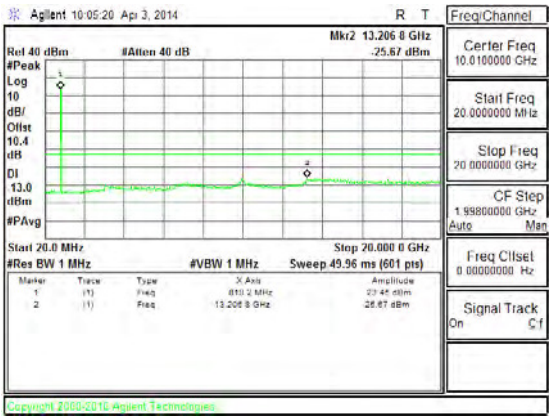
UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

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

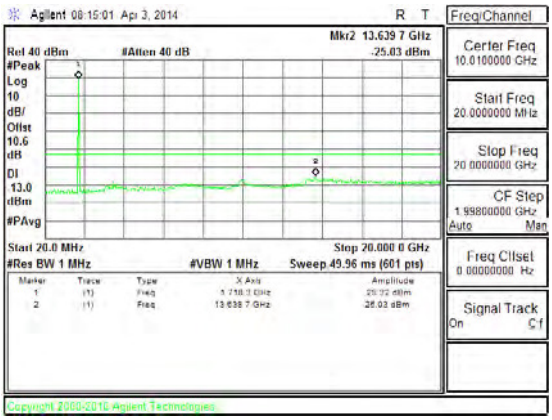
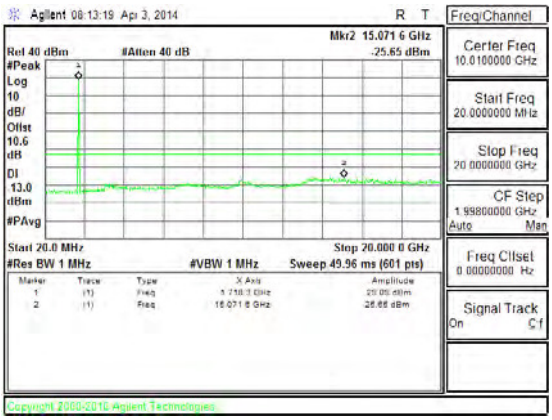
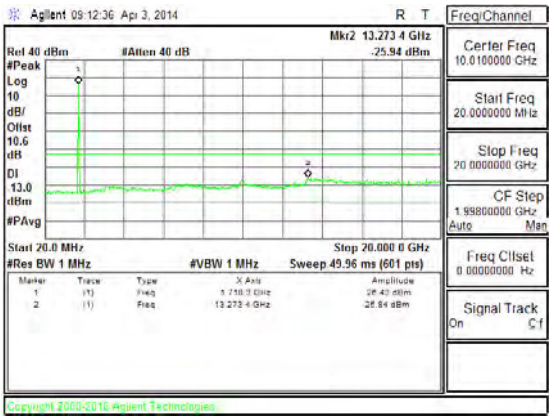
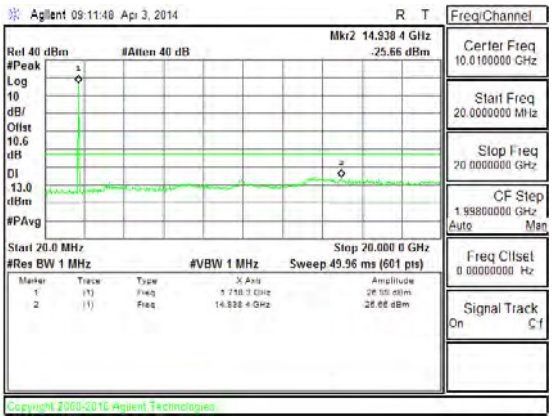
10.3.2. OUT OF BAND EMISSIONS PLOTS

Band LTE17 10MHz	 Band LTE17 10MHz CSE 16QAM Mid channel	 Band LTE17 10MHz CSE QPSK Mid channel
Band LTE17 5MHz	 Band LTE17 5MHz CSE 16QAM Mid channel	 Band LTE17 5MHz CSE QPSK Mid channel

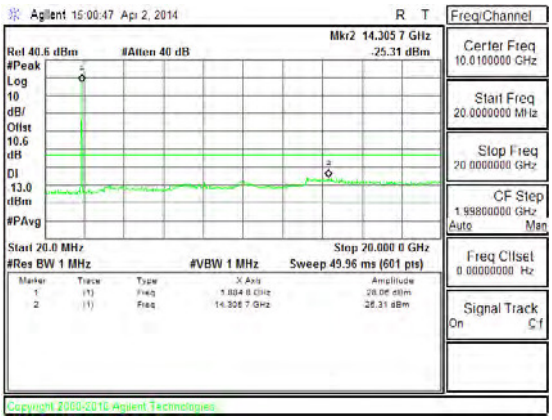
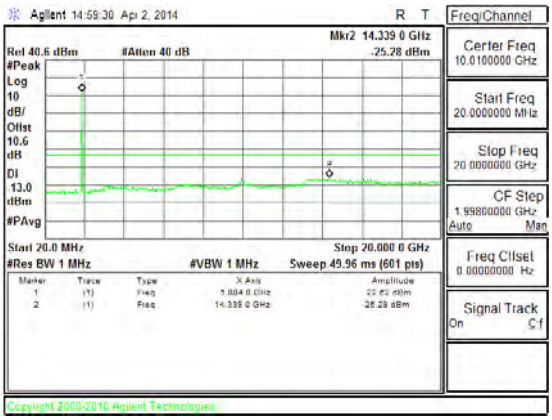
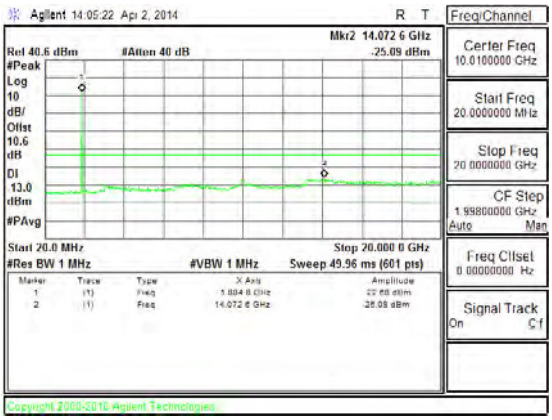
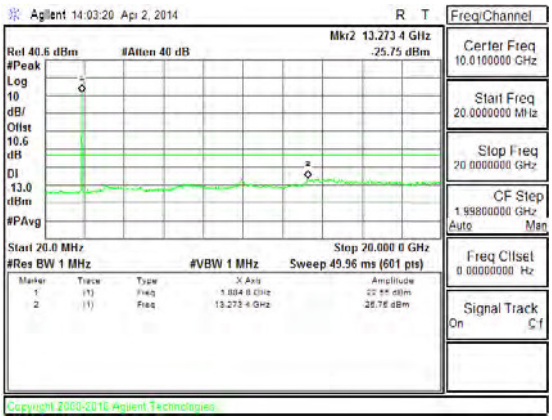
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE5 10MHz	 Band LTE5 10MHz CSE 16QAM Mid channel	 Band LTE5 10MHz CSE QPSK Mid channel
Band LTE5 5MHz	 Band LTE5 5MHz CSE 16QAM Mid channel	 Band LTE5 5MHz CSE QPSK Mid channel

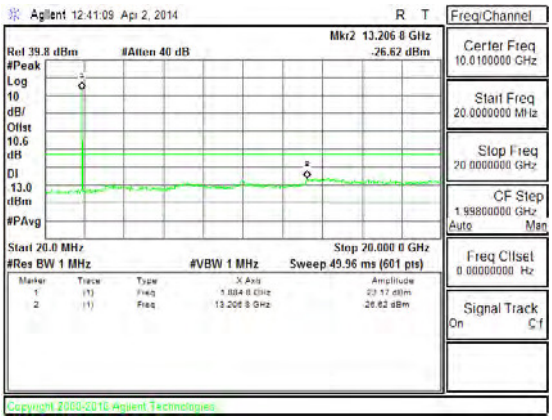
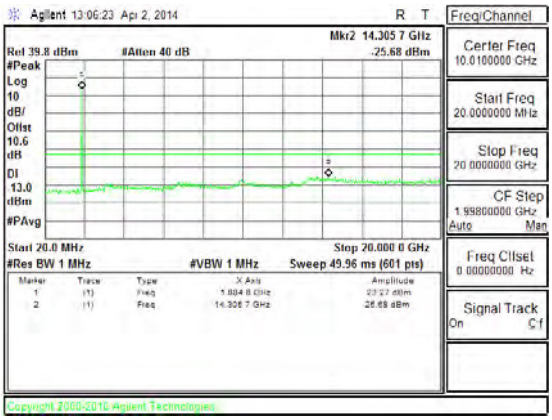
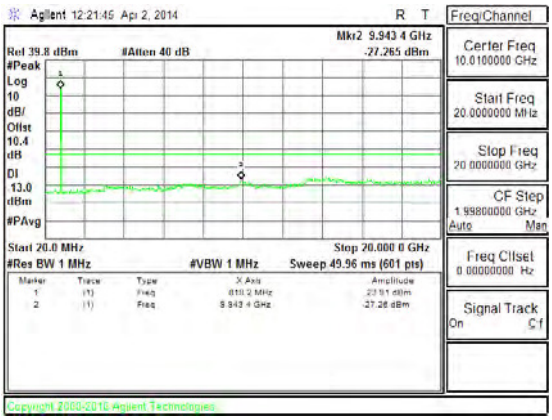
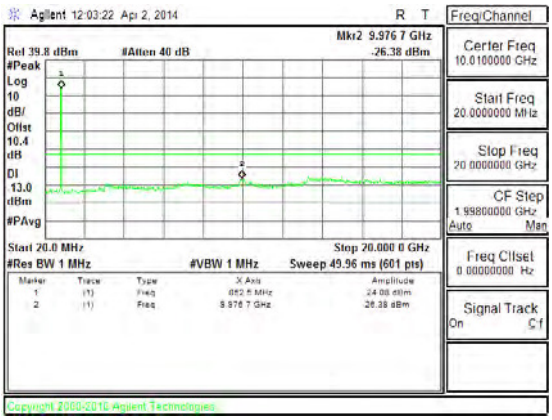
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE4 10MHz	 Band LTE4 10MHz CSE 16QAM Mid channel	 Band LTE4 10MHz CSE QPSK Mid channel
Band LTE4 5MHz	 Band LTE4 5MHz CSE 16QAM Mid channel	 Band LTE4 5MHz CSE QPSK Mid channel

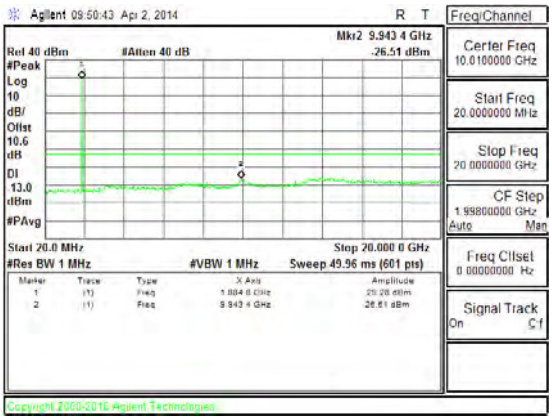
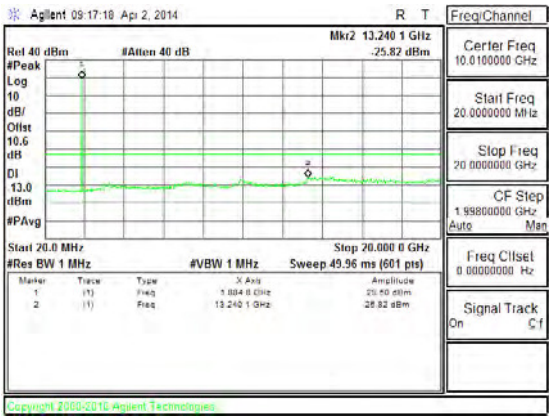
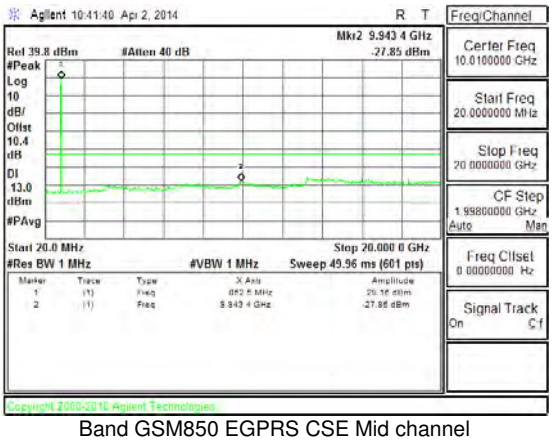
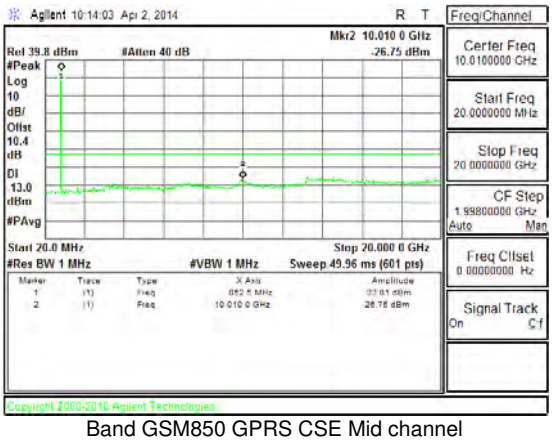
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

Band LTE2 10MHz	 Band LTE2 10MHz CSE 16QAM Mid channel	 Band LTE2 10MHz CSE QPSK Mid channel
Band LTE2 5MHz	 Band LTE2 5MHz CSE 16QAM Mid channel	 Band LTE2 5MHz CSE QPSK Mid channel

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

Band Band 2	 Band WCDMA B2 HSDPA CSE	 Band WCDMA B2 REL99 CSE
Band Band 5	 Band WCDMA B5 HSDPA CSE	 Band WCDMA B5 REL99 CSE

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

Band GSM1900	 Band GSM1900 EGPRS CSE Mid channel	 Band GSM1900 GPRS CSE Mid channel
Band GSM850	 Band GSM850 EGPRS CSE Mid channel	 Band GSM850 GPRS CSE Mid channel

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

10.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, and §27.54

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

§24.235 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

§27.54 - The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r01

RESULTS

See the following pages.

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

10.4.1. FREQUENCY STABILITY RESULTS

BAND V, Channel 4183, Freq: 836.6MHz – MID CHANNEL

Limit: +- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	836.599997	0.007	2.5
3.80	40	836.599995	0.010	2.5
3.80	30	836.600002	0.001	2.5
3.80	***20***	***836.600003***	***0***	***2.5***
3.80	10	836.600002	0.001	2.5
3.80	0	836.600003	0.000	2.5
3.80	-10	836.600003	0.000	2.5
3.80	-20	836.599996	0.008	2.5
3.80	-30	836.599998	0.006	2.5

Reference Frequency: Mid Channel 836.6 MHz @ 20ºC Limit: +- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measureed with Time Elapse		
			Delta (ppm)	Limit (ppm)
3.80	***20***	***836.600003***	***0.00000***	***2.5***
4.30	20	836.600004	*-0.00120*	2.5
3.40	20	836.599997	*0.00717*	2.5

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.

BAND II, Channel 9400 Freq: 1880MHz– MID CHANNEL

Reference Frequency: PC S Mid Channel 1880MHz @ 20°C Limit: to stay +- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1880.000007	0.001	2.5
3.80	40	1880.000007	0.001	2.5
3.80	30	1880.000006	0.001	2.5
3.80	***20***	***1880.000008***	***0***	***2.5***
3.80	10	1880.000005	0.002	2.5
3.80	0	1880.000006	0.001	2.5
3.80	-10	1880.000007	0.001	2.5
3.80	-20	1880.000009	-0.001	2.5
3.80	-30	1880.000008	0.000	2.5

Reference Frequency: PCS Mid Channel 1880 MHz @ 20°C Limit: to stay +- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***1880.000008***	***0***	***2.5***
4.30	20	1880.000009	*-0.001*	2.5
3.40	20	1880.000006	*0.001*	2.5

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.

LTE BAND 17 – MID CHANNEL

Reference Frequency: Mid Channel 710 MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 1775.000 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	709.999996	-0.003	2.5
3.80	40	709.999996	-0.003	2.5
3.80	30	709.999995	-0.001	2.5
3.80	***20***	***709.999994***	***0***	***2.5***
3.80	10	709.999991	0.004	2.5
3.80	0	710.000006	-0.017	2.5
3.80	-10	710.000005	-0.015	2.5
3.80	-20	710.000004	-0.014	2.5
3.80	-30	710.000003	-0.013	2.5

Reference Frequency: Mid Channel 710.000010 MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 1775.000 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measureed with Time Elapse		
			Delta (ppm)	Limit (ppm)
3.80	***20***	***709.999994***	***0.00000***	***2.5***
4.30	20	709.999995	*-0.00141*	2.5
3.40	20	709.999993	*0.00141*	2.5

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

LTE BAND 4 – MID CHANNEL

Reference Frequency: PCS Mid Channel 1732.5MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4331.250 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1732.499990	0.002	2.5
3.80	40	1732.499995	-0.001	2.5
3.80	30	1732.499991	0.002	2.5
3.80	***20***	***1732.499994***	***0***	***2.5***
3.80	10	1732.499993	0.001	2.5
3.80	0	1732.499992	0.001	2.5
3.80	-10	1732.499993	0.001	2.5
3.80	-20	1732.499991	0.002	2.5
3.80	-30	1732.499993	0.001	2.5

Reference Frequency: PCS Mid Channel 1732.500012 MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4331.250 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measureed with Time Elapse		
			Delta (ppm)	Limit (ppm)
3.80	***20***	***1732.499994***	***0.00000***	***2.5***
4.30	20	1732.499992	*0.00115*	2.5
3.40	20	1732.499991	*0.00173*	2.5

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.

11. RADIATED TEST RESULTS

11.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232.

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.

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

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17

TEST RESULTS

11.1.1. ERP/EIRP Results

Band	Mode	Channel	f(MHz)	EIRP	
				dBm	mW
Band 2	REL99	9262	1852.4	23.33	215.28
		9400	1880	22.96	197.7
		9538	1907.6	22.6	181.97
	HSDPA	9262	1852.4	23.28	212.81
		9400	1880	22.87	193.64
		9538	1907.6	22.27	168.66

Band	Mode	Channel	f(MHz)	ERP	
				dBm	mW
Band 5	REL99	4132	826.4	20.581	114.31
		4183	836.6	20.551	113.53
		4233	846.6	20.171	104.02
	HSDPA	4132	826.4	19.461	88.33
		4183	836.6	20.731	118.33
		4233	846.6	20.281	106.68

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

Band	Mode	Channel	f(MHz)	EIRP	
				dBm	mW
GSM1900	GPRS	512	1850.2	29.07	807.24
		661	1880	28.95	785.24
		810	1909.8	27.62	578.1
	EGPRS	512	1850.2	26.12	409.26
		661	1880	25.18	329.61
		810	1909.8	24.69	294.44

Band	Mode	Channel	f(MHz)	ERP	
				dBm	mW
GSM850	GPRS	128	824.2	27.581	572.93
		190	836.6	28.201	660.85
		251	848.8	27.931	621.01
	EGPRS	128	824.2	23.971	249.52
		190	836.6	23.747	236.97
		251	848.8	23.617	229.99

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

11.1.2. LTE ERP/EIRP Results

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE17	10	QPSK	1/0	709	17.871	61.25
			1/0	710	17.661	58.36
			1/0	711	17.321	53.96
		16QAM	1/0	709	17.011	50.25
			1/0	710	16.911	49.1
			1/0	711	16.611	45.82

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE17	5	QPSK	1/0	706.5	17.421	55.22
			1/0	710	17.381	54.71
			1/0	713.5	17.271	53.35
		16QAM	1/0	706.5	16.301	42.67
			1/0	710	16.271	42.37
			1/0	713.5	16.091	40.65

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE5	10	QPSK	1/0	829	19.611	91.43
			1/0	836.5	20.341	108.17
			1/0	844	20.351	108.42
		16QAM	1/0	829	18.521	71.14
			1/0	836.5	19.351	86.12
			1/0	844	19.191	83

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE5	5	QPSK	1/0	826.5	19.071	80.74

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.

			1/0	836.5	19.981	99.56
			1/0	846.5	19.831	96.18
		16QAM	1/0	826.5	18.041	63.69
			1/0	836.5	18.761	75.18
			1/0	846.5	19.001	79.45

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	10	QPSK	1/0	1715	23.33	215.28
			1/0	1732.5	23.85	242.66
			1/0	1750	23.58	228.03
		16QAM	1/0	1715	22.81	190.99
			1/0	1732.5	22.71	186.64
			1/0	1750	22.76	188.8

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	5	QPSK	1/0	1712.5	22.81	190.99
			1/0	1732.5	23.57	227.51
			1/0	1752.5	23.42	219.79
		16QAM	1/0	1712.5	21.53	142.23
			1/0	1732.5	22.24	167.49
			1/0	1752.5	22.2	165.96

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	10	QPSK	1/0	1855	23.65	231.74
			1/0	1880	22.53	179.06
			1/0	1905	23.07	202.77
		16QAM	1/0	1855	22.86	193.2
			1/0	1880	21.37	137.09

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.

			1/0	1905	21.77	150.31

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	5	QPSK	1/0	1852.5	23.6	229.09
			1/0	1880	22.62	182.81
			1/0	1907.5	22.36	172.19
		16QAM	1/0	1852.5	22.68	185.35
			1/0	1880	21.27	133.97
			1/0	1907.5	20.94	124.17

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.

11.1.3. ERP/EIRP DATA

Band

LTE17

10MHz

16QAM

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

Company: LG Electronics
Project #: 14U17477
Date: 04/08/14
Test Engineer: Charles Vergonio
Configuration: EUT ONLY/ Y Orientation
Mode: LTE17 10MHz FUND 16QAM

Test Equipment:
Receiving: Sunol T477, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) 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								
709.00	9.39	V	0.9	0.0	8.49	34.8	-26.3	
709.00	17.91	H	0.9	0.0	17.01	34.8	-17.8	
Mid Ch								
710.00	9.19	V	0.9	0.0	8.29	34.8	-26.5	
710.00	17.81	H	0.9	0.0	16.91	34.8	-17.9	
High Ch								
711.00	8.99	V	0.9	0.0	8.09	34.8	-26.7	
711.00	17.51	H	0.9	0.0	16.61	34.8	-18.2	

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.

Band

LTE17

10MHz

QPSK

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

Company: LG Electronics
Project #: 14U17477
Date: 04/08/14
Test Engineer: Charles Vergonio
Configuration: EUT ONLY/ Y Orientation
Mode: LTE17 10MHz FUND QPSK

Test Equipment:
Receiving: Sunol T477, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) 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								
709.00	10.11	V	0.9	0.0	9.21	34.8	-25.6	
709.00	18.77	H	0.9	0.0	17.87	34.8	-16.9	
Mid Ch								
710.00	9.97	V	0.9	0.0	9.07	34.8	-25.7	
710.00	18.56	H	0.9	0.0	17.66	34.8	-17.1	
High Ch								
711.00	9.36	V	0.9	0.0	8.46	34.8	-26.3	
711.00	18.22	H	0.9	0.0	17.32	34.8	-17.4	

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.

Band

LTE17

5MHz

16QAM

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

Company: LG Electronics
Project #: 14U17477
Date: 04/08/14
Test Engineer: Charles Vergonio
Configuration: EUT ONLY/ Y Orientation
Mode: LTE17 5MHz FUND 16QAM

Test Equipment:
Receiving: Sunol T477, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) 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								
706.50	9.38	V	0.9	0.0	8.48	34.8	-26.3	
706.50	17.20	H	0.9	0.0	16.30	34.8	-18.5	
Mid Ch								
710.00	9.09	V	0.9	0.0	8.19	34.8	-26.6	
710.00	17.17	H	0.9	0.0	16.27	34.8	-18.5	
High Ch								
713.50	8.52	V	0.9	0.0	7.62	34.8	-27.1	
713.50	16.99	H	0.9	0.0	16.09	34.8	-18.7	

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.

Band

LTE17

5MHz

QPSK

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

Company: LG Electronics
Project #: 14U17477
Date: 04/08/14
Test Engineer: Charles Vergonio
Configuration: EUT ONLY/ Y Orientation
Mode: LTE17 5MHz FUND QPSK

Test Equipment:
Receiving: Sunol T477, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) 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								
706.50	10.15	V	0.9	0.0	9.25	34.8	-25.5	
706.50	18.32	H	0.9	0.0	17.42	34.8	-17.3	
Mid Ch								
710.00	10.01	V	0.9	0.0	9.11	34.8	-25.7	
710.00	18.28	H	0.9	0.0	17.38	34.8	-17.4	
High Ch								
713.50	9.58	V	0.9	0.0	8.68	34.8	-26.1	
713.50	18.17	H	0.9	0.0	17.27	34.8	-17.5	

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.

Band

LTE5

10MHz

16QAM

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

Company: LG Electronics
Project #: 14U17477
Date: 04/08/14
Test Engineer: Charles Vergonio
Configuration: EUT ONLY/ Y Orientation
Mode: LTE5 10MHz FUND 16QAM

Test Equipment:
Receiving: Sunol T477, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) 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								
829.00	13.79	V	0.9	0.0	12.89	38.5	-25.6	
829.00	19.42	H	0.9	0.0	18.52	38.5	-19.9	
Mid Ch								
836.50	14.10	V	0.9	0.0	13.20	38.5	-25.2	
836.50	20.25	H	0.9	0.0	19.35	38.5	-19.1	
High Ch								
844.00	13.87	V	0.9	0.0	12.97	38.5	-25.5	
844.00	20.09	H	0.9	0.0	19.19	38.5	-19.3	

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.

Band

LTE5

10MHz

QPSK

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

Company: LG Electronics
Project #: 14U17477
Date: 04/08/14
Test Engineer: Charles Vergonio
Configuration: EUT ONLY/ Y Orientation
Mode: LTE5 10MHz FUND QPSK

Test Equipment:
Receiving: Sunol T477, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) 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								
829.00	14.88	V	0.9	0.0	13.98	38.5	-24.5	
829.00	20.51	H	0.9	0.0	19.61	38.5	-18.8	
Mid Ch								
836.50	15.10	V	0.9	0.0	14.20	38.5	-24.2	
836.50	21.24	H	0.9	0.0	20.34	38.5	-18.1	
High Ch								
844.00	14.98	V	0.9	0.0	14.08	38.5	-24.4	
844.00	21.25	H	0.9	0.0	20.35	38.5	-18.1	

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.

Band

LTE5

5MHz

16QAM

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

Company: LG Electronics
Project #: 14U17477
Date: 04/08/14
Test Engineer: Charles Vergonio
Configuration: EUT ONLY/ Y Orientation
Mode: LTE5 5MHz FUND 16QAM

Test Equipment:
Receiving: Sunol T477, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) 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								
826.50	14.70	V	0.9	0.0	13.80	38.5	-24.6	
826.50	18.94	H	0.9	0.0	18.04	38.5	-20.4	
Mid Ch								
836.50	14.04	V	0.9	0.0	13.14	38.5	-25.3	
836.50	19.66	H	0.9	0.0	18.76	38.5	-19.7	
High Ch								
846.50	13.84	V	0.9	0.0	12.94	38.5	-25.5	
846.50	19.90	H	0.9	0.0	19.00	38.5	-19.4	

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.

Band

LTE5

5MHz

QPSK

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

Company: LG Electronics
Project #: 14U17477
Date: 04/08/14
Test Engineer: Charles Vergonio
Configuration: EUT ONLY/ Y Orientation
Mode: LTE5 5MHz FUND QPSK

Test Equipment:
Receiving: Sunol T477, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) 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								
826.50	15.40	V	0.9	0.0	14.50	38.5	-23.9	
826.50	19.97	H	0.9	0.0	19.07	38.5	-19.4	
Mid Ch								
836.50	15.11	V	0.9	0.0	14.21	38.5	-24.2	
836.50	20.88	H	0.9	0.0	19.98	38.5	-18.5	
High Ch								
846.50	14.40	V	0.9	0.0	13.50	38.5	-24.9	
846.50	20.73	H	0.9	0.0	19.83	38.5	-18.6	

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.

Band

LTE4

10MHz

16QAM

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

Company: LG Electronics
Project #: 14U17477
Date: 04/03/14
Test Engineer: Charles Vergonio
Configuration: EUT Only
Mode: LTE B4 10MHz 16QAM

Test Equipment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1715.00	7.53	V	0.9	8.3	14.97	30.0	-15.0	
1715.00	15.37	H	0.9	8.3	22.81	30.0	-7.2	
Mid Ch								
1732.50	9.06	V	0.9	8.2	16.41	30.0	-13.6	
1732.50	15.36	H	0.9	8.2	22.71	30.0	-7.3	
High Ch								
1750.00	8.53	V	0.9	8.2	15.88	30.0	-14.1	
1750.00	15.41	H	0.9	8.2	22.76	30.0	-7.2	

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

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

10MHz

QPSK

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

Company: LG Electronics
Project #: 14U17477
Date: 04/03/14
Test Engineer: Charles Vergonio
Configuration: EUT Only
Mode: LTE B2 10MHz QPSK

Test Equipment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1715.00	8.56	V	0.9	8.3	16.00	30.0	-14.0	
1715.00	15.89	H	0.9	8.3	23.33	30.0	-6.7	
Mid Ch								
1732.50	10.00	V	0.9	8.2	17.35	30.0	-12.7	
1732.50	16.50	H	0.9	8.2	23.85	30.0	-6.2	
High Ch								
1750.00	8.95	V	0.9	8.2	16.30	30.0	-13.7	
1750.00	16.23	H	0.9	8.2	23.58	30.0	-6.4	

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

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

5MHz

16QAM

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

Company: LG Electronics
Project #: 14U17477
Date: 04/03/14
Test Engineer: Charles Vergonio
Configuration: EUT Only
Mode: LTE B4 5MHz 16QAM

Test Equipment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1712.50	6.62	V	0.9	8.3	14.06	30.0	-15.9	
1712.50	14.09	H	0.9	8.3	21.53	30.0	-8.5	
Mid Ch								
1732.50	8.40	V	0.9	8.2	15.75	30.0	-14.3	
1732.50	14.89	H	0.9	8.2	22.24	30.0	-7.8	
High Ch								
1752.50	7.93	V	0.9	8.2	15.28	30.0	-14.7	
1752.50	14.85	H	0.9	8.2	22.20	30.0	-7.8	

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

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

5MHz

QPSK

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

Company: LG Electronics
Project #: 14U17477
Date: 04/03/14
Test Engineer: Charles Vergonio
Configuration: EUT Only
Mode: LTE B4 5MHz QPSK

Test Equipment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1712.50	7.72	V	0.9	8.3	15.16	30.0	-14.8	
1712.50	15.37	H	0.9	8.3	22.81	30.0	-7.2	
Mid Ch								
1732.50	9.86	V	0.9	8.2	17.21	30.0	-12.8	
1732.50	16.22	H	0.9	8.2	23.57	30.0	-6.4	
High Ch								
1752.50	9.28	V	0.9	8.2	16.63	30.0	-13.4	
1752.50	16.07	H	0.9	8.2	23.42	30.0	-6.6	

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

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

LTE2

10MHz

16QAM

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

Company: LG Electronics
Project #: 14U17477
Date: 04/03/14
Test Engineer: Charles Vergonio
Configuration: EUT Only
Mode: LTE B2 10MHz 16QAM

Test Equipment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1855.00	9.36	V	0.9	7.9	16.41	33.0	-16.6	
1855.00	15.81	H	0.9	7.9	22.86	33.0	-10.1	
Mid Ch								
1880.00	8.76	V	0.9	7.9	15.81	33.0	-17.2	
1880.00	14.32	H	0.9	7.9	21.37	33.0	-11.6	
High Ch								
1905.00	9.50	V	0.9	7.8	16.45	33.0	-16.6	
1905.00	14.82	H	0.9	7.8	21.77	33.0	-11.2	

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

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

LTE2

10MHz

QPSK

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

Company: LG Electronics
Project #: 14U17477
Date: 04/03/14
Test Engineer: Charles Vergonio
Configuration: EUT Only
Mode: LTE B2 10MHz QPSK

Test Equipment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1855.00	10.35	V	0.9	7.9	17.40	33.0	-15.6	
1855.00	16.60	H	0.9	7.9	23.65	33.0	-9.4	
Mid Ch								
1880.00	9.90	V	0.9	7.9	16.95	33.0	-16.1	
1880.00	15.48	H	0.9	7.9	22.53	33.0	-10.5	
High Ch								
1905.00	10.10	V	0.9	7.8	17.05	33.0	-16.0	
1905.00	16.12	H	0.9	7.8	23.07	33.0	-9.9	

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

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

LTE2

5MHz

16QAM

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

Company: LG Electronics
Project #: 14U17477
Date: 04/03/14
Test Engineer: Charles Vergonio
Configuration: EUT Only
Mode: LTE B2 5MHz 16QAM

Test Equipment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.50	10.05	V	0.9	7.9	17.10	33.0	-15.9	
1852.50	15.63	H	0.9	7.9	22.68	33.0	-10.3	
Mid Ch								
1880.00	10.90	V	0.9	7.9	17.95	33.0	-15.1	
1880.00	14.22	H	0.9	7.9	21.27	33.0	-11.7	
High Ch								
1907.50	10.69	V	0.9	7.8	17.64	33.0	-15.4	
1907.50	13.99	H	0.9	7.8	20.94	33.0	-12.1	

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

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

LTE2

5MHz

QPSK

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

Company: LG Electronics
Project #: 14U17477
Date: 04/03/14
Test Engineer: Charles Vergonio
Configuration: EUT Only
Mode: LTE B2 5MHz QPSK

Test Equipment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.50	11.75	V	0.9	7.9	18.80	33.0	-14.2	
1852.50	16.55	H	0.9	7.9	23.60	33.0	-9.4	
Mid Ch								
1880.00	11.68	V	0.9	7.9	18.73	33.0	-14.3	
1880.00	15.57	H	0.9	7.9	22.62	33.0	-10.4	
High Ch								
1907.50	11.51	V	0.9	7.8	18.46	33.0	-14.5	
1907.50	15.41	H	0.9	7.8	22.36	33.0	-10.6	

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

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 2

HSDPA

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

Company: LG Electronics
Project #:
Date: 04/02/14
Test Engineer: Charles Vergonio
Configuration: EUT Only
Mode: WCDMA HSDPA B2

Test Equipment:
Receiving: Horn T345, 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 (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.40	9.55	V	0.9	7.9	16.60	33.0	-16.4	
1852.40	16.23	H	0.9	7.9	23.28	33.0	-9.7	
Mid Ch								
1880.00	10.00	V	0.9	7.9	17.05	33.0	-16.0	
1880.00	15.82	H	0.9	7.9	22.87	33.0	-10.1	
High Ch								
1907.60	9.70	V	0.9	7.8	16.65	33.0	-16.4	
1907.60	15.32	H	0.9	7.8	22.27	33.0	-10.7	

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

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 2

REL99

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

Company: LG Electronics
Project #:
Date: 04/02/14
Test Engineer: Charles Vergonio
Configuration: EUT Only
Mode: WCDMA REL99 B2

Test Equipment:
Receiving: Horn T345, 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 (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.40	9.75	V	0.9	7.9	16.80	33.0	-16.2	
1852.40	16.28	H	0.9	7.9	23.33	33.0	-9.7	
Mid Ch								
1880.00	10.56	V	0.9	7.9	17.61	33.0	-15.4	
1880.00	15.91	H	0.9	7.9	22.96	33.0	-10.0	
High Ch								
1907.60	9.80	V	0.9	7.8	16.75	33.0	-16.3	
1907.60	15.65	H	0.9	7.8	22.60	33.0	-10.4	

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

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

HSDPA

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

Company: LG Electronics
Project #:
Date: 04/02/14
Test Engineer: Charles Vergonio
Configuration: EUT Only
Mode: WCDMA HSDPA B5

Test Equipment:
Receiving: Sunol T243, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) 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								
826.40	15.23	V	0.9	0.0	14.33	38.5	-24.1	
826.40	20.36	H	0.9	0.0	19.46	38.5	-19.0	
Mid Ch								
836.60	14.92	V	0.9	0.0	14.02	38.5	-24.4	
836.60	21.63	H	0.9	0.0	20.73	38.5	-17.7	
High Ch								
846.60	15.47	V	0.9	0.0	14.57	38.5	-23.9	
846.60	21.18	H	0.9	0.0	20.28	38.5	-18.2	

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.

Band

Band 5

REL99

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

Company: LG Electronics
Project #:
Date: 04/02/14
Test Engineer: Charles Vergonio
Configuration: EUT Only
Mode: WCDMA REL99 B5

Test Equipment:
Receiving: Sunol T243, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) 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								
826.40	15.30	V	0.9	0.0	14.40	38.5	-24.0	
826.40	21.48	H	0.9	0.0	20.58	38.5	-17.9	
Mid Ch								
836.60	14.66	V	0.9	0.0	13.76	38.5	-24.7	
836.60	21.45	H	0.9	0.0	20.55	38.5	-17.9	
High Ch								
846.60	14.81	V	0.9	0.0	13.91	38.5	-24.5	
846.60	21.07	H	0.9	0.0	20.17	38.5	-18.3	

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.

Band

GSM1900

EGPRS

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

Company: LG Electronics
Project #:
Date: 04/02/14
Test Engineer: Charles Vergonio
Configuration: EUT Only
Mode: GSM1900 EGPRS

Test Equipment:
Receiving: Horn T345, 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 (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1850.20	16.30	V	0.9	7.9	23.35	33.0	-9.7	
1850.20	19.07	H	0.9	7.9	26.12	33.0	-6.9	
Mid Ch								
1880.00	16.30	V	0.9	7.9	23.35	33.0	-9.7	
1880.00	18.13	H	0.9	7.9	25.18	33.0	-7.8	
High Ch								
1909.80	16.26	V	0.9	7.8	23.21	33.0	-9.8	
1909.80	17.74	H	0.9	7.8	24.69	33.0	-8.3	

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

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

GSM1900

GPRS

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

Company: LG Electronics
Project #:
Date: 04/02/14
Test Engineer: Charles Vergonio
Configuration: EUT Only
Mode: GSM1900 GPRS

Test Equipment:
Receiving: Horn T345, 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 (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1850.20	18.99	V	0.9	7.9	26.04	33.0	-7.0	
1850.20	22.02	H	0.9	7.9	29.07	33.0	-3.9	
Mid Ch								
1880.00	18.80	V	0.9	7.9	25.85	33.0	-7.2	
1880.00	21.90	H	0.9	7.9	28.95	33.0	-4.1	
High Ch								
1909.80	18.70	V	0.9	7.8	25.65	33.0	-7.4	
1909.80	20.67	H	0.9	7.8	27.62	33.0	-5.4	

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

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

GSM850

EGPRS

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

Company: LG Electronics
Project #:
Date: 04/02/14
Test Engineer: Charles Vergonio
Configuration: EUT Only
Mode: GSM850 EGPRS 850MHz

Test Equipment:
Receiving: Sunol T243, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) 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	20.50	V	0.9	0.0	19.60	38.5	-18.8	
824.20	24.87	H	0.9	0.0	23.97	38.5	-14.5	
Mid Ch								
836.60	19.27	V	0.9	0.0	18.37	38.5	-20.1	
836.60	24.65	H	0.9	0.0	23.75	38.5	-14.7	
High Ch								
848.80	19.09	V	0.9	0.0	18.19	38.5	-20.3	
848.80	24.52	H	0.9	0.0	23.62	38.5	-14.8	

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.

Band

GSM850

GPRS

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

Company: LG Electronics
Project #:
Date: 04/02/14
Test Engineer: Charles Vergonio
Configuration: EUT Only
Mode: GSM850 GPRS 850MHz

Test Equipment:
Receiving: Sunol T243, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) 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	23.51	V	0.9	0.0	22.61	38.5	-15.8	
824.20	28.48	H	0.9	0.0	27.58	38.5	-10.9	
Mid Ch								
836.60	22.46	V	0.9	0.0	21.56	38.5	-16.9	
836.60	29.10	H	0.9	0.0	28.20	38.5	-10.2	
High Ch								
848.80	21.52	V	0.9	0.0	20.62	38.5	-17.8	
848.80	28.83	H	0.9	0.0	27.93	38.5	-10.5	

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.

11.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238

LIMIT

§22.917 (e) and §24.238 (a): Out of band emissions. 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.

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.

11.2.1. SPURIOUS RADIATION DATA

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/05/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: TX, LTE B17 10MHz har 16QAM

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T145 8449B	Filter 1	Part 22

Band

LTE17

10MHz

16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (709MHz)									
1.418	-27.8	V	3.0	33.1	1.0	-59.9	-13.0	-46.9	
2.127	-25.7	V	3.0	31.6	1.0	-56.3	-13.0	-43.3	
2.836	-28.6	V	3.0	31.0	1.0	-58.6	-13.0	-45.6	
1.418	-29.3	H	3.0	33.1	1.0	-61.4	-13.0	-48.4	
2.127	-27.9	H	3.0	31.6	1.0	-58.5	-13.0	-45.5	
2.836	-30.1	H	3.0	31.0	1.0	-60.2	-13.0	-47.2	
Mid Ch, (710MHz)									
1.420	-26.7	V	3.0	33.1	1.0	-58.8	-13.0	-45.8	
2.130	-26.1	V	3.0	31.6	1.0	-56.7	-13.0	-43.7	
2.840	-29.5	V	3.0	31.0	1.0	-59.5	-13.0	-46.5	
1.420	-29.8	H	3.0	33.1	1.0	-61.9	-13.0	-48.9	
2.130	-28.3	H	3.0	31.6	1.0	-58.9	-13.0	-45.9	
2.840	-29.6	H	3.0	31.0	1.0	-59.7	-13.0	-46.7	
High Ch, (711MHz)									
1.422	-27.8	V	3.0	33.1	1.0	-59.9	-13.0	-46.9	
2.133	-26.5	V	3.0	31.6	1.0	-57.0	-13.0	-44.0	
2.844	-29.4	V	3.0	31.0	1.0	-59.4	-13.0	-46.4	
1.422	-29.6	H	3.0	33.1	1.0	-61.7	-13.0	-48.7	
2.133	-27.2	H	3.0	31.6	1.0	-57.8	-13.0	-44.8	
2.844	-30.2	H	3.0	31.0	1.0	-60.2	-13.0	-47.2	

Rev. 03.03.09

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

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/05/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: TX, LTE B17 10MHz har QPSK

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T145 8449B	Filter 1	Part 22

Band

LTE17

10MHz

QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (709MHz)									
1.418	-26.8	V	3.0	33.1	1.0	-58.9	-13.0	-45.9	
2.127	-26.6	V	3.0	31.6	1.0	-57.2	-13.0	-44.2	
2.836	-29.2	V	3.0	31.0	1.0	-59.2	-13.0	-46.2	
1.418	-29.2	H	3.0	33.1	1.0	-61.2	-13.0	-48.2	
2.127	-28.0	H	3.0	31.6	1.0	-58.6	-13.0	-45.6	
2.836	-30.1	H	3.0	31.0	1.0	-60.1	-13.0	-47.1	
Mid Ch, (710MHz)									
1.420	-27.2	V	3.0	33.1	1.0	-59.3	-13.0	-46.3	
2.130	-25.7	V	3.0	31.6	1.0	-56.3	-13.0	-43.3	
2.840	-29.4	V	3.0	31.0	1.0	-59.5	-13.0	-46.5	
1.420	-29.5	H	3.0	33.1	1.0	-61.6	-13.0	-48.6	
2.130	-27.9	H	3.0	31.6	1.0	-58.5	-13.0	-45.5	
2.840	-29.5	H	3.0	31.0	1.0	-59.6	-13.0	-46.6	
High Ch, (711MHz)									
1.422	-27.1	V	3.0	33.1	1.0	-59.2	-13.0	-46.2	
2.133	-25.7	V	3.0	31.6	1.0	-56.2	-13.0	-43.2	
2.844	-29.1	V	3.0	31.0	1.0	-59.2	-13.0	-46.2	
1.422	-28.9	H	3.0	33.1	1.0	-61.0	-13.0	-48.0	
2.133	-28.0	H	3.0	31.6	1.0	-58.6	-13.0	-45.6	
2.844	-30.2	H	3.0	31.0	1.0	-60.3	-13.0	-47.3	

Rev. 03.03.09

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

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/05/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: TX, LTE B17 5MHz har 16QAM

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T145 8449B	Filter 1	Part 22

Band

LTE17

5MHz

16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (706.5MHz)									
1.413	-26.4	V	3.0	33.1	1.0	-58.5	-13.0	-45.5	
2.120	-25.9	V	3.0	31.6	1.0	-56.5	-13.0	-43.5	
2.826	-29.8	V	3.0	31.0	1.0	-59.9	-13.0	-46.9	
1.413	-28.9	H	3.0	33.1	1.0	-61.0	-13.0	-48.0	
2.120	-28.1	H	3.0	31.6	1.0	-58.7	-13.0	-45.7	
2.826	-30.3	H	3.0	31.0	1.0	-60.3	-13.0	-47.3	
Mid Ch, (710MHz)									
1.420	-27.7	V	3.0	33.1	1.0	-59.8	-13.0	-46.8	
2.130	-26.2	V	3.0	31.6	1.0	-56.8	-13.0	-43.8	
2.840	-29.6	V	3.0	31.0	1.0	-59.6	-13.0	-46.6	
1.420	-29.4	H	3.0	33.1	1.0	-61.5	-13.0	-48.5	
2.130	-27.6	H	3.0	31.6	1.0	-58.2	-13.0	-45.2	
2.840	-29.5	H	3.0	31.0	1.0	-59.6	-13.0	-46.6	
High Ch, (713.5MHz)									
1.427	-27.1	V	3.0	33.1	1.0	-59.2	-13.0	-46.2	
2.141	-25.5	V	3.0	31.6	1.0	-56.0	-13.0	-43.0	
2.854	-28.9	V	3.0	31.0	1.0	-58.9	-13.0	-45.9	
1.427	-29.5	H	3.0	33.1	1.0	-61.6	-13.0	-48.6	
2.141	-28.1	H	3.0	31.6	1.0	-58.6	-13.0	-45.6	
2.854	-29.5	H	3.0	31.0	1.0	-59.5	-13.0	-46.5	

Rev. 03.03.09

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.

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/05/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: TX, LTE B17 5MHz har QPSK

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T145 8449B	Filter 1	Part 22

Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, (706.5MHz)									
LTE17	1.413	-26.8	V	3.0	33.1	1.0	-58.9	-13.0	-45.9	
	2.120	-26.5	V	3.0	31.6	1.0	-57.1	-13.0	-44.1	
5MHz	2.826	-30.0	V	3.0	31.0	1.0	-60.0	-13.0	-47.0	
	1.413	-28.9	H	3.0	33.1	1.0	-60.9	-13.0	-47.9	
QPSK	2.120	-27.5	H	3.0	31.6	1.0	-58.1	-13.0	-45.1	
	2.826	-30.3	H	3.0	31.0	1.0	-60.4	-13.0	-47.4	
	Mid Ch, (710MHz)									
	1.420	-27.4	V	3.0	33.1	1.0	-59.5	-13.0	-46.5	
	2.130	-26.2	V	3.0	31.6	1.0	-56.8	-13.0	-43.8	
	2.840	-29.3	V	3.0	31.0	1.0	-59.3	-13.0	-46.3	
	1.420	-29.2	H	3.0	33.1	1.0	-61.3	-13.0	-48.3	
	2.130	-27.5	H	3.0	31.6	1.0	-58.1	-13.0	-45.1	
	2.840	-29.8	H	3.0	31.0	1.0	-59.8	-13.0	-46.8	
	High Ch, (713.5MHz)									
	1.427	-26.7	V	3.0	33.1	1.0	-58.8	-13.0	-45.8	
	2.141	-25.7	V	3.0	31.6	1.0	-56.2	-13.0	-43.2	
	2.854	-29.0	V	3.0	31.0	1.0	-59.0	-13.0	-46.0	
	1.427	-29.2	H	3.0	33.1	1.0	-61.3	-13.0	-48.3	
	2.141	-27.8	H	3.0	31.6	1.0	-58.3	-13.0	-45.3	
	2.854	-29.0	H	3.0	31.0	1.0	-59.0	-13.0	-46.0	

Rev. 03.03.09

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.

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/05/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: TX, LTE BAND 5, 10MHz BW,16QAM

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

Band

LTE5

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 Channel (829MHz)									
1.658	-26.8	V	3.0	37.4	1.0	-63.2	-13.0	-50.2	
2.487	-21.9	V	3.0	36.4	1.0	-57.3	-13.0	-44.3	
3.316	-21.3	V	3.0	35.8	1.0	-56.1	-13.0	-43.1	
1.658	-26.9	H	3.0	37.4	1.0	-63.3	-13.0	-50.3	
2.487	-24.1	H	3.0	36.4	1.0	-59.5	-13.0	-46.5	
3.316	-21.2	H	3.0	35.8	1.0	-56.0	-13.0	-43.0	
Mid Channel (836.5MHz)									
1.673	-26.9	V	3.0	37.3	1.0	-63.2	-13.0	-50.2	
2.509	-23.6	V	3.0	36.4	1.0	-58.9	-13.0	-45.9	
3.346	-23.1	V	3.0	35.8	1.0	-57.9	-13.0	-44.9	
1.673	-27.3	H	3.0	37.3	1.0	-63.6	-13.0	-50.6	
2.509	-25.0	H	3.0	36.4	1.0	-60.4	-13.0	-47.4	
3.346	-22.5	H	3.0	35.8	1.0	-57.3	-13.0	-44.3	
High Channel (844MHz)									
1.688	-26.8	V	3.0	37.3	1.0	-63.1	-13.0	-50.1	
2.532	-24.2	V	3.0	36.3	1.0	-59.6	-13.0	-46.6	
3.376	-23.0	V	3.0	35.7	1.0	-57.7	-13.0	-44.7	
1.688	-28.0	H	3.0	37.3	1.0	-64.3	-13.0	-51.3	
2.532	-25.9	H	3.0	36.3	1.0	-61.3	-13.0	-48.3	
3.376	-22.1	H	3.0	35.7	1.0	-56.8	-13.0	-43.8	

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

1.0

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.

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/05/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: TX, LTE BAND 5, 10MHz BW,QPSK

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

Band

LTE5

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 Channel (829MHz)									
1.658	-26.3	V	3.0	37.4	1.0	-62.7	-13.0	-49.7	
2.487	-21.8	V	3.0	36.4	1.0	-57.2	-13.0	-44.2	
3.316	-20.9	V	3.0	35.8	1.0	-55.7	-13.0	-42.7	
1.658	-26.6	H	3.0	37.4	1.0	-63.0	-13.0	-50.0	
2.487	-24.4	H	3.0	36.4	1.0	-59.8	-13.0	-46.8	
3.316	-21.0	H	3.0	35.8	1.0	-55.8	-13.0	-42.8	
Mid Channel (836.5MHz)									
1.673	-26.8	V	3.0	37.3	1.0	-63.2	-13.0	-50.2	
2.509	-23.3	V	3.0	36.4	1.0	-58.6	-13.0	-45.6	
3.346	-22.7	V	3.0	35.8	1.0	-57.4	-13.0	-44.4	
1.673	-27.0	H	3.0	37.3	1.0	-63.4	-13.0	-50.4	
2.509	-24.7	H	3.0	36.4	1.0	-60.1	-13.0	-47.1	
3.346	-22.7	H	3.0	35.8	1.0	-57.4	-13.0	-44.4	
High Channel (844MHz)									
1.688	-26.1	V	3.0	37.3	1.0	-62.4	-13.0	-49.4	
2.532	-24.1	V	3.0	36.3	1.0	-59.4	-13.0	-46.4	
3.376	-22.1	V	3.0	35.7	1.0	-56.8	-13.0	-43.8	
1.688	-27.7	H	3.0	37.3	1.0	-64.0	-13.0	-51.0	
2.532	-25.7	H	3.0	36.3	1.0	-61.0	-13.0	-48.0	
3.376	-22.0	H	3.0	35.7	1.0	-56.7	-13.0	-43.7	

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

1.0

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.

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/05/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: TX, LTE BAND 5, 5MHz BW,16QAM

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

Band

LTE5

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 Channel (826.5MHz)									
1.653	-27.1	V	3.0	37.4	1.0	-63.4	-13.0	-50.4	
2.479	-22.2	V	3.0	36.4	1.0	-57.6	-13.0	-44.6	
3.306	-20.6	V	3.0	35.8	1.0	-55.4	-13.0	-42.4	
1.653	-27.2	H	3.0	37.4	1.0	-63.6	-13.0	-50.6	
2.479	-25.5	H	3.0	36.4	1.0	-60.8	-13.0	-47.8	
3.306	-21.6	H	3.0	35.8	1.0	-56.4	-13.0	-43.4	
Mid Channel (836.5MHz)									
1.673	-27.8	V	3.0	37.3	1.0	-64.2	-13.0	-51.2	
2.509	-23.3	V	3.0	36.4	1.0	-58.6	-13.0	-45.6	
3.346	-22.3	V	3.0	35.8	1.0	-57.1	-13.0	-44.1	
1.673	-26.9	H	3.0	37.3	1.0	-63.2	-13.0	-50.2	
2.509	-25.2	H	3.0	36.4	1.0	-60.6	-13.0	-47.6	
3.346	-23.1	H	3.0	35.8	1.0	-57.8	-13.0	-44.8	
High Channel (846.5MHz)									
1.693	-27.4	V	3.0	37.3	1.0	-63.7	-13.0	-50.7	
2.539	-23.9	V	3.0	36.3	1.0	-59.2	-13.0	-46.2	
3.386	-21.7	V	3.0	35.7	1.0	-56.4	-13.0	-43.4	
1.693	-28.1	H	3.0	37.3	1.0	-64.4	-13.0	-51.4	
2.539	-25.4	H	3.0	36.3	1.0	-60.8	-13.0	-47.8	
3.386	-21.5	H	3.0	35.7	1.0	-56.2	-13.0	-43.2	

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

1.0

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.

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/05/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: TX, LTE BAND 5, 5MHz BW,QPSK

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

Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Channel (826.5MHz)									
LTE5	1.653	-27.0	V	3.0	37.4	1.0	-63.3	-13.0	-50.3	
	2.479	-21.8	V	3.0	36.4	1.0	-57.2	-13.0	-44.2	
5MHz	3.306	-20.4	V	3.0	35.8	1.0	-55.2	-13.0	-42.2	
	1.653	-26.9	H	3.0	37.4	1.0	-63.3	-13.0	-50.3	
QPSK	2.479	-24.2	H	3.0	36.4	1.0	-59.6	-13.0	-46.6	
	3.306	-20.7	H	3.0	35.8	1.0	-55.5	-13.0	-42.5	
	Mid Channel (836.5MHz)									
	1.673	-26.4	V	3.0	37.3	1.0	-62.7	-13.0	-49.7	
	2.509	-22.7	V	3.0	36.4	1.0	-58.1	-13.0	-45.1	
	3.346	-22.6	V	3.0	35.8	1.0	-57.3	-13.0	-44.3	
	1.673	-26.4	H	3.0	37.3	1.0	-62.8	-13.0	-49.8	
	2.509	-24.6	H	3.0	36.4	1.0	-60.0	-13.0	-47.0	
	3.346	-21.3	H	3.0	35.8	1.0	-56.0	-13.0	-43.0	
	High Channel (846.5MHz)									
	1.693	-26.8	V	3.0	37.3	1.0	-63.1	-13.0	-50.1	
	2.539	-24.2	V	3.0	36.3	1.0	-59.5	-13.0	-46.5	
	3.386	-21.4	V	3.0	35.7	1.0	-56.1	-13.0	-43.1	
	1.693	-27.6	H	3.0	37.3	1.0	-63.9	-13.0	-50.9	
	2.539	-25.8	H	3.0	36.3	1.0	-61.2	-13.0	-48.2	
	3.386	-21.8	H	3.0	35.7	1.0	-56.6	-13.0	-43.6	

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

1.0

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.

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/05/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: TX, LTE band 4, 10MHz BW, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T145 8449B	Filter 1	Part 24

Band: LTE4 10MHz 16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1715 MHz)									
3.430	-20.4	V	3.0	30.4	1.0	-49.8	-13.0	-36.8	
5.145	-19.9	V	3.0	28.8	1.0	-47.7	-13.0	-34.7	
6.860	-16.6	V	3.0	27.1	1.0	-42.8	-13.0	-29.8	
3.430	-21.4	H	3.0	30.4	1.0	-50.9	-13.0	-37.9	
5.145	-19.8	H	3.0	28.8	1.0	-47.6	-13.0	-34.6	
6.860	-15.4	H	3.0	27.1	1.0	-41.5	-13.0	-28.5	
Mid Ch, (1732.5 MHz)									
3.465	-22.1	V	3.0	30.4	1.0	-51.5	-13.0	-38.5	
5.198	-19.1	V	3.0	28.7	1.0	-46.8	-13.0	-33.8	
6.930	-15.8	V	3.0	27.1	1.0	-41.9	-13.0	-28.9	
3.465	-21.2	H	3.0	30.4	1.0	-50.6	-13.0	-37.6	
5.198	-19.3	H	3.0	28.7	1.0	-47.0	-13.0	-34.0	
6.930	-15.1	H	3.0	27.1	1.0	-41.2	-13.0	-28.2	
High Ch, (1750 MHz)									
3.500	-21.7	V	3.0	30.4	1.0	-51.1	-13.0	-38.1	
5.250	-20.3	V	3.0	28.7	1.0	-47.9	-13.0	-34.9	
7.000	-16.2	V	3.0	27.0	1.0	-42.2	-13.0	-29.2	
3.500	-23.1	H	3.0	30.4	1.0	-52.5	-13.0	-39.5	
5.250	-18.9	H	3.0	28.7	1.0	-46.6	-13.0	-33.6	
7.000	-15.0	H	3.0	27.0	1.0	-41.0	-13.0	-28.0	

Rev. 03.03.09

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.

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/05/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: TX, LTE band 4, 10MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T145 8449B	Filter 1	Part 24

Band

LTE4

10MHz

QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1715 MHz)									
3.430	-20.4	V	3.0	30.4	1.0	-49.8	-13.0	-36.8	
5.145	-19.8	V	3.0	28.8	1.0	-47.5	-13.0	-34.5	
6.860	-16.5	V	3.0	27.1	1.0	-42.6	-13.0	-29.6	
3.430	-21.3	H	3.0	30.4	1.0	-50.8	-13.0	-37.8	
5.145	-19.6	H	3.0	28.8	1.0	-47.4	-13.0	-34.4	
6.860	-15.4	H	3.0	27.1	1.0	-41.6	-13.0	-28.6	
Mid Ch, (1732.5 MHz)									
3.465	-21.9	V	3.0	30.4	1.0	-51.3	-13.0	-38.3	
5.198	-19.2	V	3.0	28.7	1.0	-46.9	-13.0	-33.9	
6.930	-16.2	V	3.0	27.1	1.0	-42.3	-13.0	-29.3	
3.465	-21.2	H	3.0	30.4	1.0	-50.6	-13.0	-37.6	
5.198	-19.2	H	3.0	28.7	1.0	-46.9	-13.0	-33.9	
6.930	-15.2	H	3.0	27.1	1.0	-41.2	-13.0	-28.2	
High Ch, (1750 MHz)									
3.500	-21.5	V	3.0	30.4	1.0	-50.9	-13.0	-37.9	
5.250	-19.7	V	3.0	28.7	1.0	-47.4	-13.0	-34.4	
7.000	-15.5	V	3.0	27.0	1.0	-41.5	-13.0	-28.5	
3.500	-22.5	H	3.0	30.4	1.0	-51.9	-13.0	-38.9	
5.250	-19.3	H	3.0	28.7	1.0	-47.0	-13.0	-34.0	
7.000	-14.6	H	3.0	27.0	1.0	-40.6	-13.0	-27.6	

Rev. 03.03.09

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

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/05/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: TX, LTE band 4, 5MHz BW, 16 QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T145 8449B	Filter 1	Part 24

Band

LTE4

5MHz

16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1712.5 MHz)									
3.425	-20.6	V	3.0	30.4	1.0	-50.0	-13.0	-37.0	
5.138	-19.7	V	3.0	28.8	1.0	-47.5	-13.0	-34.5	
6.850	-16.6	V	3.0	27.1	1.0	-42.8	-13.0	-29.8	
3.425	-22.8	H	3.0	30.4	1.0	-52.2	-13.0	-39.2	
5.138	-19.1	H	3.0	28.8	1.0	-46.8	-13.0	-33.8	
6.850	-15.9	H	3.0	27.1	1.0	-42.0	-13.0	-29.0	
Mid Ch, (1732.5 MHz)									
3.465	-20.8	V	3.0	30.4	1.0	-50.2	-13.0	-37.2	
5.198	-20.2	V	3.0	28.7	1.0	-47.9	-13.0	-34.9	
6.930	-16.7	V	3.0	27.1	1.0	-42.7	-13.0	-29.7	
3.465	-22.0	H	3.0	30.4	1.0	-51.4	-13.0	-38.4	
5.198	-19.0	H	3.0	28.7	1.0	-46.7	-13.0	-33.7	
6.930	-15.8	H	3.0	27.1	1.0	-41.9	-13.0	-28.9	
High Ch, (1752.5 MHz)									
3.505	-22.3	V	3.0	30.4	1.0	-51.7	-13.0	-38.7	
5.258	-20.2	V	3.0	28.6	1.0	-47.9	-13.0	-34.9	
7.010	-15.2	V	3.0	27.0	1.0	-41.2	-13.0	-28.2	
3.505	-22.9	H	3.0	30.4	1.0	-52.3	-13.0	-39.3	
5.258	-19.3	H	3.0	28.6	1.0	-47.0	-13.0	-34.0	
7.010	-15.6	H	3.0	27.0	1.0	-41.6	-13.0	-28.6	

Rev. 03.03.09

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

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/05/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: TX, LTE band 4, 5MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T145 8449B	Filter 1	Part 24

Band: LTE4 5MHz QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1712.5 MHz)									
3.425	-19.8	V	3.0	30.4	1.0	-49.2	-13.0	-36.2	
5.138	-20.0	V	3.0	28.8	1.0	-47.7	-13.0	-34.7	
6.850	-16.6	V	3.0	27.1	1.0	-42.7	-13.0	-29.7	
3.425	-22.1	H	3.0	30.4	1.0	-51.6	-13.0	-38.6	
5.138	-19.0	H	3.0	28.8	1.0	-46.8	-13.0	-33.8	
6.850	-15.6	H	3.0	27.1	1.0	-41.7	-13.0	-28.7	
Mid Ch, (1732.5 MHz)									
3.465	-21.1	V	3.0	30.4	1.0	-50.5	-13.0	-37.5	
5.198	-20.1	V	3.0	28.7	1.0	-47.8	-13.0	-34.8	
6.930	-16.3	V	3.0	27.1	1.0	-42.3	-13.0	-29.3	
3.465	-22.5	H	3.0	30.4	1.0	-51.9	-13.0	-38.9	
5.198	-19.0	H	3.0	28.7	1.0	-46.7	-13.0	-33.7	
6.930	-15.8	H	3.0	27.1	1.0	-41.8	-13.0	-28.8	
High Ch, (1752.5 MHz)									
3.505	-22.1	V	3.0	30.4	1.0	-51.5	-13.0	-38.5	
5.258	-19.8	V	3.0	28.6	1.0	-47.5	-13.0	-34.5	
7.010	-16.0	V	3.0	27.0	1.0	-42.0	-13.0	-29.0	
3.505	-22.6	H	3.0	30.4	1.0	-52.0	-13.0	-39.0	
5.258	-18.5	H	3.0	28.6	1.0	-46.1	-13.0	-33.1	
7.010	-14.8	H	3.0	27.0	1.0	-40.8	-13.0	-27.8	

Rev. 03.03.09

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

Band

LTE2

10MHz

16QAM

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/05/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: LTE2_10M_16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1855.0MHz									
3.710	-21.5	V	3.0	35.4	1.0	-55.9	-13.0	-42.9	
5.565	-19.1	V	3.0	34.7	1.0	-52.8	-13.0	-39.8	
7.420	-15.2	V	3.0	34.9	1.0	-49.2	-13.0	-36.2	
3.710	-22.7	H	3.0	35.4	1.0	-57.1	-13.0	-44.1	
5.565	-19.6	H	3.0	34.7	1.0	-53.3	-13.0	-40.3	
7.420	-14.9	H	3.0	34.9	1.0	-48.8	-13.0	-35.8	
Mid Ch, 1880.0MHz									
3.760	-22.3	V	3.0	35.3	1.0	-56.6	-13.0	-43.6	
5.640	-18.8	V	3.0	34.7	1.0	-52.6	-13.0	-39.6	
7.520	-14.9	V	3.0	34.9	1.0	-48.8	-13.0	-35.8	
3.760	-22.1	H	3.0	35.3	1.0	-56.4	-13.0	-43.4	
5.640	-18.0	H	3.0	34.7	1.0	-51.7	-13.0	-38.7	
7.520	-15.2	H	3.0	34.9	1.0	-49.2	-13.0	-36.2	
High Ch, 1905 MHz									
3.810	-21.6	V	3.0	35.3	1.0	-55.9	-13.0	-42.9	
5.715	-18.5	V	3.0	34.7	1.0	-52.2	-13.0	-39.2	
7.620	-15.8	V	3.0	34.9	1.0	-49.7	-13.0	-36.7	
3.810	-22.1	H	3.0	35.3	1.0	-56.4	-13.0	-43.4	
5.715	-18.5	H	3.0	34.7	1.0	-52.2	-13.0	-39.2	
7.620	-14.3	H	3.0	34.9	1.0	-48.2	-13.0	-35.2	

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.

Band

LTE2

10MHz

QPSK

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/05/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: LTE2_10M_QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1855.0MHz									
3.710	-21.4	V	3.0	35.4	1.0	-55.7	-13.0	-42.7	
5.565	-19.2	V	3.0	34.7	1.0	-52.9	-13.0	-39.9	
7.420	-15.9	V	3.0	34.9	1.0	-49.8	-13.0	-36.8	
3.710	-22.3	H	3.0	35.4	1.0	-56.7	-13.0	-43.7	
5.565	-18.4	H	3.0	34.7	1.0	-52.2	-13.0	-39.2	
7.420	-14.6	H	3.0	34.9	1.0	-48.5	-13.0	-35.5	
Mid Ch, 1880.0MHz									
3.760	-22.1	V	3.0	35.3	1.0	-56.5	-13.0	-43.5	
5.640	-18.2	V	3.0	34.7	1.0	-51.9	-13.0	-38.9	
7.520	-15.5	V	3.0	34.9	1.0	-49.5	-13.0	-36.5	
3.760	-21.9	H	3.0	35.3	1.0	-56.2	-13.0	-43.2	
5.640	-18.3	H	3.0	34.7	1.0	-52.0	-13.0	-39.0	
7.520	-14.0	H	3.0	34.9	1.0	-47.9	-13.0	-34.9	
High Ch, 1905 MHz									
3.810	-21.4	V	3.0	35.3	1.0	-55.6	-13.0	-42.6	
5.715	-18.6	V	3.0	34.7	1.0	-52.3	-13.0	-39.3	
7.620	-15.7	V	3.0	34.9	1.0	-49.6	-13.0	-36.6	
3.810	-21.9	H	3.0	35.3	1.0	-56.2	-13.0	-43.2	
5.715	-18.1	H	3.0	34.7	1.0	-51.9	-13.0	-38.9	
7.620	-14.6	H	3.0	34.9	1.0	-48.6	-13.0	-35.6	

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.

Band

LTE2

5MHz

16QAM

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/05/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: LTE2_5M_16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 24

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	-21.5	V	3.0	35.4	1.0	-55.9	-13.0	-42.9	
5.557	-19.5	V	3.0	34.7	1.0	-53.2	-13.0	-40.2	
7.410	-15.7	V	3.0	34.9	1.0	-49.6	-13.0	-36.6	
3.705	-22.2	H	3.0	35.4	1.0	-56.6	-13.0	-43.6	
5.557	-18.4	H	3.0	34.7	1.0	-52.1	-13.0	-39.1	
7.410	-15.1	H	3.0	34.9	1.0	-49.0	-13.0	-36.0	
Mid Ch, 1880.0MHz									
3.760	-21.7	V	3.0	35.3	1.0	-56.0	-13.0	-43.0	
5.640	-19.3	V	3.0	34.7	1.0	-53.0	-13.0	-40.0	
7.520	-16.0	V	3.0	34.9	1.0	-49.9	-13.0	-36.9	
3.760	-22.5	H	3.0	35.3	1.0	-56.8	-13.0	-43.8	
5.640	-18.2	H	3.0	34.7	1.0	-51.9	-13.0	-38.9	
7.520	-14.7	H	3.0	34.9	1.0	-48.6	-13.0	-35.6	
High Ch, 1907.5 MHz									
3.815	-22.9	V	3.0	35.3	1.0	-57.2	-13.0	-44.2	
5.722	-20.2	V	3.0	34.7	1.0	-53.9	-13.0	-40.9	
7.630	-14.4	V	3.0	34.9	1.0	-48.4	-13.0	-35.4	
3.815	-22.1	H	3.0	35.3	1.0	-56.4	-13.0	-43.4	
5.722	-18.1	H	3.0	34.7	1.0	-51.8	-13.0	-38.8	
7.630	-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.

Band

LTE2

5MHz

QPSK

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/05/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: LTE2_5M_QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 24

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	-21.3	V	3.0	35.4	1.0	-55.7	-13.0	-42.7	
5.557	-19.0	V	3.0	34.7	1.0	-52.8	-13.0	-39.8	
7.410	-15.7	V	3.0	34.9	1.0	-49.6	-13.0	-36.6	
3.705	-22.0	H	3.0	35.4	1.0	-56.4	-13.0	-43.4	
5.557	-18.6	H	3.0	34.7	1.0	-52.3	-13.0	-39.3	
7.410	-15.0	H	3.0	34.9	1.0	-48.9	-13.0	-35.9	
Mid Ch, 1880.0MHz									
3.760	-21.8	V	3.0	35.3	1.0	-56.1	-13.0	-43.1	
5.640	-18.9	V	3.0	34.7	1.0	-52.6	-13.0	-39.6	
7.520	-15.9	V	3.0	34.9	1.0	-49.9	-13.0	-36.9	
3.760	-22.2	H	3.0	35.3	1.0	-56.5	-13.0	-43.5	
5.640	-18.1	H	3.0	34.7	1.0	-51.9	-13.0	-38.9	
7.520	-14.8	H	3.0	34.9	1.0	-48.7	-13.0	-35.7	
High Ch, 1907.5 MHz									
3.815	-22.7	V	3.0	35.3	1.0	-57.0	-13.0	-44.0	
5.722	-19.7	V	3.0	34.7	1.0	-53.4	-13.0	-40.4	
7.630	-14.2	V	3.0	34.9	1.0	-48.1	-13.0	-35.1	
3.815	-22.9	H	3.0	35.3	1.0	-57.2	-13.0	-44.2	
5.722	-18.9	H	3.0	34.7	1.0	-52.6	-13.0	-39.6	
7.630	-14.9	H	3.0	34.9	1.0	-48.8	-13.0	-35.8	

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.

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/04/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: Tx, 1900MHz HSDPA

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

Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1852.4MHz									
Band 2 HSDPA	3.705	-21.9	V	3.0	35.4	1.0	-56.3	-13.0	-43.3	
	5.557	-19.1	V	3.0	34.7	1.0	-52.8	-13.0	-39.8	
	7.409	-15.7	V	3.0	34.9	1.0	-49.6	-13.0	-36.6	
	3.705	-23.2	H	3.0	35.4	1.0	-57.6	-13.0	-44.6	
	5.557	-18.6	H	3.0	34.7	1.0	-52.3	-13.0	-39.3	
	7.409	-14.2	H	3.0	34.9	1.0	-48.1	-13.0	-35.1	
	Mid Ch, 1880MHz									
	3.760	-23.0	V	3.0	35.3	1.0	-57.3	-13.0	-44.3	
	5.640	-18.3	V	3.0	34.7	1.0	-52.1	-13.0	-39.1	
	7.520	-16.0	V	3.0	34.9	1.0	-49.9	-13.0	-36.9	
	3.760	-22.2	H	3.0	35.3	1.0	-56.5	-13.0	-43.5	
	5.640	-17.7	H	3.0	34.7	1.0	-51.4	-13.0	-38.4	
	7.520	-14.9	H	3.0	34.9	1.0	-48.9	-13.0	-35.9	
	High Ch, 1907.6MHz									
	3.815	-21.5	V	3.0	35.3	1.0	-55.8	-13.0	-42.8	
	5.723	-17.9	V	3.0	34.7	1.0	-51.7	-13.0	-38.7	
	7.630	-16.2	V	3.0	34.9	1.0	-50.1	-13.0	-37.1	
	3.815	-21.6	H	3.0	35.3	1.0	-55.9	-13.0	-42.9	
	5.723	-16.9	H	3.0	34.7	1.0	-50.7	-13.0	-37.7	
	7.630	-14.8	H	3.0	34.9	1.0	-48.7	-13.0	-35.7	

Rev. 03.03.09

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 2

REL99

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/04/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: Tx, 1900MHz Rel 99

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

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4MHz									
3.705	-21.7	V	3.0	35.4	1.0	-56.1	-13.0	-43.1	
5.557	-18.7	V	3.0	34.7	1.0	-52.4	-13.0	-39.4	
7.409	-15.6	V	3.0	34.9	1.0	-49.5	-13.0	-36.5	
3.705	-21.8	H	3.0	35.4	1.0	-56.2	-13.0	-43.2	
5.557	-17.9	H	3.0	34.7	1.0	-51.6	-13.0	-38.6	
7.409	-14.4	H	3.0	34.9	1.0	-48.3	-13.0	-35.3	
Mid Ch, 1880MHz									
3.760	-22.3	V	3.0	35.3	1.0	-56.6	-13.0	-43.6	
5.640	-18.6	V	3.0	34.7	1.0	-52.4	-13.0	-39.4	
7.520	-15.9	V	3.0	34.9	1.0	-49.8	-13.0	-36.8	
3.760	-21.8	H	3.0	35.3	1.0	-56.1	-13.0	-43.1	
5.640	-18.0	H	3.0	34.7	1.0	-51.7	-13.0	-38.7	
7.520	-14.9	H	3.0	34.9	1.0	-48.8	-13.0	-35.8	
High Ch, 1907.6MHz									
3.815	-21.5	V	3.0	35.3	1.0	-55.8	-13.0	-42.8	
5.723	-17.9	V	3.0	34.7	1.0	-51.6	-13.0	-38.6	
7.630	-15.8	V	3.0	34.9	1.0	-49.7	-13.0	-36.7	
3.815	-20.6	H	3.0	35.3	1.0	-54.9	-13.0	-41.9	
5.723	-16.9	H	3.0	34.7	1.0	-50.6	-13.0	-37.6	
7.630	-15.0	H	3.0	34.9	1.0	-48.9	-13.0	-35.9	

Rev. 03.03.09

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

Band

Band 5

HSDPA

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/04/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: WCDMA_HSDPA_ 850

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

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.40MHz									
1.652	-28.1	V	3.0	37.4	1.0	-64.4	-13.0	-51.4	
2.479	-22.4	V	3.0	36.4	1.0	-57.8	-13.0	-44.8	
3.306	-22.8	V	3.0	35.8	1.0	-57.6	-13.0	-44.6	
1.652	-27.1	H	3.0	37.4	1.0	-63.5	-13.0	-50.5	
2.479	-25.1	H	3.0	36.4	1.0	-60.5	-13.0	-47.5	
3.306	-22.9	H	3.0	35.8	1.0	-57.7	-13.0	-44.7	
Mid Ch, 836.6MHz									
1.673	-27.2	V	3.0	37.3	1.0	-63.5	-13.0	-50.5	
2.510	-22.3	V	3.0	36.4	1.0	-57.6	-13.0	-44.6	
3.346	-23.4	V	3.0	35.8	1.0	-58.2	-13.0	-45.2	
1.673	-28.7	H	3.0	37.3	1.0	-65.0	-13.0	-52.0	
2.510	-25.6	H	3.0	36.4	1.0	-61.0	-13.0	-48.0	
3.346	-22.7	H	3.0	35.8	1.0	-57.5	-13.0	-44.5	
High Ch, 846.6MHz									
1.693	-27.9	V	3.0	37.3	1.0	-64.2	-13.0	-51.2	
2.539	-24.3	V	3.0	36.3	1.0	-59.7	-13.0	-46.7	
3.386	-22.8	V	3.0	35.7	1.0	-57.5	-13.0	-44.5	
1.693	-27.2	H	3.0	37.3	1.0	-63.5	-13.0	-50.5	
2.539	-24.8	H	3.0	36.3	1.0	-60.1	-13.0	-47.1	
3.386	-22.3	H	3.0	35.7	1.0	-57.0	-13.0	-44.0	

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.

Band

Band 5

REL99

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/04/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: WCDMA_Rel 99_ 850

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

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.40MHz									
1.652	-28.0	V	3.0	37.4	1.0	-64.4	-13.0	-51.4	
2.479	-21.4	V	3.0	36.4	1.0	-56.8	-13.0	-43.8	
3.306	-22.8	V	3.0	35.8	1.0	-57.6	-13.0	-44.6	
1.652	-27.0	H	3.0	37.4	1.0	-63.4	-13.0	-50.4	
2.479	-25.1	H	3.0	36.4	1.0	-60.4	-13.0	-47.4	
3.306	-23.1	H	3.0	35.8	1.0	-57.9	-13.0	-44.9	
Mid Ch, 836.6MHz									
1.673	-27.9	V	3.0	37.3	1.0	-64.2	-13.0	-51.2	
2.510	-22.0	V	3.0	36.4	1.0	-57.4	-13.0	-44.4	
3.346	-23.6	V	3.0	35.8	1.0	-58.3	-13.0	-45.3	
1.673	-28.3	H	3.0	37.3	1.0	-64.6	-13.0	-51.6	
2.510	-24.0	H	3.0	36.4	1.0	-59.4	-13.0	-46.4	
3.346	-22.7	H	3.0	35.8	1.0	-57.4	-13.0	-44.4	
High Ch, 846.6MHz									
1.693	-27.1	V	3.0	37.3	1.0	-63.4	-13.0	-50.4	
2.539	-24.2	V	3.0	36.3	1.0	-59.5	-13.0	-46.5	
3.386	-22.1	V	3.0	35.7	1.0	-56.8	-13.0	-43.8	
1.693	-26.4	H	3.0	37.3	1.0	-62.7	-13.0	-49.7	
2.539	-24.7	H	3.0	36.3	1.0	-60.0	-13.0	-47.0	
3.386	-21.9	H	3.0	35.7	1.0	-56.6	-13.0	-43.6	

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.

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/04/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: EGPRS 1900

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 24

Band: GSM1900 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, 1850MHz									
3.700	-20.3	V	3.0	35.4	1.0	-54.7	-13.0	-41.7	
5.550	-18.8	V	3.0	34.7	1.0	-52.5	-13.0	-39.5	
7.400	-14.4	V	3.0	34.9	1.0	-48.3	-13.0	-35.3	
3.700	-20.7	H	3.0	35.4	1.0	-55.1	-13.0	-42.1	
5.550	-17.9	H	3.0	34.7	1.0	-51.7	-13.0	-38.7	
7.400	-13.1	H	3.0	34.9	1.0	-47.0	-13.0	-34.0	
Mid Ch, 1880.0MHz									
3.760	-20.4	V	3.0	35.3	1.0	-54.8	-13.0	-41.8	
5.640	-19.3	V	3.0	34.7	1.0	-53.0	-13.0	-40.0	
7.520	-13.1	V	3.0	34.9	1.0	-47.0	-13.0	-34.0	
3.760	-22.3	H	3.0	35.3	1.0	-56.6	-13.0	-43.6	
5.640	-14.6	H	3.0	34.7	1.0	-48.4	-13.0	-35.4	
7.520	-11.5	H	3.0	34.9	1.0	-45.4	-13.0	-32.4	
High Ch, 1909.8 MHz									
3.820	-18.7	V	3.0	35.3	1.0	-52.9	-13.0	-39.9	
5.729	-15.6	V	3.0	34.7	1.0	-49.4	-13.0	-36.4	
7.639	-12.8	V	3.0	35.0	1.0	-46.7	-13.0	-33.7	
3.820	-19.5	H	3.0	35.3	1.0	-53.8	-13.0	-40.8	
5.729	-15.3	H	3.0	34.7	1.0	-49.0	-13.0	-36.0	
7.639	-12.8	H	3.0	35.0	1.0	-46.8	-13.0	-33.8	

Rev. 03.03.09

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.

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/04/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: GPRS 1900

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 24

Band: GSM1 900 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, 1850MHz									
3.700	-20.3	V	3.0	35.4	1.0	-54.7	-13.0	-41.7	
5.550	-18.3	V	3.0	34.7	1.0	-52.1	-13.0	-39.1	
7.400	-12.9	V	3.0	34.9	1.0	-46.8	-13.0	-33.8	
3.700	-21.0	H	3.0	35.4	1.0	-55.4	-13.0	-42.4	
5.550	-15.7	H	3.0	34.7	1.0	-49.5	-13.0	-36.5	
7.400	-12.4	H	3.0	34.9	1.0	-46.3	-13.0	-33.3	
Mid Ch, 1880.0MHz									
3.760	-20.5	V	3.0	35.3	1.0	-54.8	-13.0	-41.8	
5.640	-18.4	V	3.0	34.7	1.0	-52.2	-13.0	-39.2	
7.520	-11.7	V	3.0	34.9	1.0	-45.6	-13.0	-32.6	
3.760	-20.5	H	3.0	35.3	1.0	-54.8	-13.0	-41.8	
5.640	-12.2	H	3.0	34.7	1.0	-45.9	-13.0	-32.9	
7.520	-10.6	H	3.0	34.9	1.0	-44.5	-13.0	-31.5	
High Ch, 1909.8 MHz									
3.820	-18.0	V	3.0	35.3	1.0	-52.3	-13.0	-39.3	
5.729	-15.0	V	3.0	34.7	1.0	-48.7	-13.0	-35.7	
7.639	-11.6	V	3.0	35.0	1.0	-45.5	-13.0	-32.5	
3.820	-18.6	H	3.0	35.3	1.0	-52.9	-13.0	-39.9	
5.729	-12.6	H	3.0	34.7	1.0	-46.4	-13.0	-33.4	
7.639	-11.5	H	3.0	35.0	1.0	-45.4	-13.0	-32.4	

Rev. 03.03.09

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.

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/04/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: EGPRS 850

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

Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 824.2MHz									
GSM850 EGPRS	1.648	-27.5	V	3.0	37.4	1.0	-63.9	-13.0	-50.9	
	2.473	-24.0	V	3.0	36.4	1.0	-59.4	-13.0	-46.4	
	3.297	-22.2	V	3.0	35.8	1.0	-57.0	-13.0	-44.0	
	1.648	-18.6	H	3.0	37.4	1.0	-55.0	-13.0	-42.0	
	2.473	-25.9	H	3.0	36.4	1.0	-61.3	-13.0	-48.3	
	3.297	-22.7	H	3.0	35.8	1.0	-57.5	-13.0	-44.5	
	Mid Ch, 836.6MHz									
	1.673	-25.3	V	3.0	37.3	1.0	-61.6	-13.0	-48.6	
	2.510	-21.9	V	3.0	36.4	1.0	-57.2	-13.0	-44.2	
	3.346	-22.2	V	3.0	35.8	1.0	-56.9	-13.0	-43.9	
	1.673	-25.4	H	3.0	37.3	1.0	-61.8	-13.0	-48.8	
	2.510	-22.2	H	3.0	36.4	1.0	-57.5	-13.0	-44.5	
	3.346	-23.0	H	3.0	35.8	1.0	-57.8	-13.0	-44.8	
	High Ch, 848.8MHz									
	1.698	-27.9	V	3.0	37.3	1.0	-64.2	-13.0	-51.2	
	2.547	-24.4	V	3.0	36.3	1.0	-59.7	-13.0	-46.7	
	3.395	-22.0	V	3.0	35.7	1.0	-56.7	-13.0	-43.7	
	1.698	-20.4	H	3.0	37.3	1.0	-56.7	-13.0	-43.7	
	2.547	-21.3	H	3.0	36.3	1.0	-56.6	-13.0	-43.6	
	3.395	-22.9	H	3.0	35.7	1.0	-57.6	-13.0	-44.6	

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.

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17477
Date: 04/04/14
Test Engineer: R. Alegre
Configuration: EUT with AC charger
Mode: GPRS 850

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

Band

GSM850

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, 824.2MHz									
1.648	-26.2	V	3.0	37.4	1.0	-62.5	-13.0	-49.5	
2.473	-22.5	V	3.0	36.4	1.0	-57.9	-13.0	-44.9	
3.297	-23.0	V	3.0	35.8	1.0	-57.8	-13.0	-44.8	
1.648	-19.6	H	3.0	37.4	1.0	-56.0	-13.0	-43.0	
2.473	-25.1	H	3.0	36.4	1.0	-60.5	-13.0	-47.5	
3.297	-23.2	H	3.0	35.8	1.0	-58.0	-13.0	-45.0	
Mid Ch, 836.6MHz									
1.673	-25.2	V	3.0	37.3	1.0	-61.5	-13.0	-48.5	
2.510	-21.5	V	3.0	36.4	1.0	-56.8	-13.0	-43.8	
3.346	-22.1	V	3.0	35.8	1.0	-56.9	-13.0	-43.9	
1.673	-25.3	H	3.0	37.3	1.0	-61.7	-13.0	-48.7	
2.510	-22.1	H	3.0	36.4	1.0	-57.5	-13.0	-44.5	
3.346	-23.0	H	3.0	35.8	1.0	-57.7	-13.0	-44.7	
High Ch, 848.8MHz									
1.698	-26.3	V	3.0	37.3	1.0	-62.6	-13.0	-49.6	
2.547	-23.7	V	3.0	36.3	1.0	-59.0	-13.0	-46.0	
3.395	-22.3	V	3.0	35.7	1.0	-57.0	-13.0	-44.0	
1.698	-19.6	H	3.0	37.3	1.0	-55.9	-13.0	-42.9	
2.547	-21.9	H	3.0	36.3	1.0	-57.3	-13.0	-44.3	
3.395	-22.2	H	3.0	35.7	1.0	-56.9	-13.0	-43.9	

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.