



**FCC 47 CFR PART 22 SUBPART H
FCC 47 CFR PART 24 SUBPART E
FCC 47 CFR PART 27 SUBPART L**

CLASS II PERMISSIVE CHANGE

CERTIFICATION TEST REPORT

for

GSM/CDMA/WCDMA + LTE Phone Bluetooth, WLAN (2.4GHz & 5GHz) and NFC

MODEL NUMBER: VS980, LGVS980 and LG-VS980

FCC ID: ZNFVS980

REPORT NUMBER: 13U15600-1, REVISION A

ISSUE DATE: August 7, 2013

Prepared for

LG ELECTRONICS MOBILECOMM U.S.A., INC.

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: GSM/CDMA/WCDMA + LTE Phone Bluetooth, WLAN (2.4GHz & 5GHz) and NFC

MODEL: VS980, LGVS980 and LG-VS980

SERIAL NUMBER: (RADIATED GWC Sample) IMEI: 99000259001001
(RADIATED LTE Sample) IMEI: 99000259001002

DATE TESTED: July 17 – July 24, 2013

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 22H, 24E 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
WISE PROGRAM MANAGER
UL Verification Services Inc.

STEVE TRAN
WISE LAB TECHNICIAN
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 2, FCC CFR 47 Part 22, FCC CFR Part 24, and FCC 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.ccsemc.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:

$$\text{Field Strength (dBuV/m)} = \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Preamp Gain (dB)}$$

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a LTE Phone Bluetooth, WLAN(2.4GHz & 5GHz) and NFC

5.2. MAXIMUM OUTPUT POWER

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

Part 22 Cellular Band			
Frequency range (MHz)	Modulation	ERP	
		dBm	mW
824.2 - 848.8	GPRS	27.58	572.8
824.2 - 848.8	EGPRS	26.69	466.7

Part 24 PCS Band			
Frequency range (MHz)	Modulation	EIRP	
		dBm	mW
1850.2 - 1909.8	GPRS	28.16	654.6
1850.2 - 1909.8	EGPRS	25.90	389.0

Part 22 Band Cellular Band			
Frequency range (MHz)	Modulation	ERP	
		dBm	mW
824.7 - 848.31	CDMA	23.86	243.2
824.7 - 848.31	1xEVDO Rel 0	25.50	354.8

Part 24 PCS Band			
Frequency range (MHz)	Modulation	EIRP	
		dBm	mW
1851.25-1908.75	CDMA	22.68	185.4
1851.25-1908.75	1xEVDO Rel 0	25.15	327.3

Part 22 Band Cellular Band			
Frequency range (MHz)	Modulation	ERP	
		dBm	mW
826.4 - 846	REL 99	20.06	101.4
826.4 - 846	HSUPA	21.19	131.5

Part 24 Band PCS Band			
Frequency range (MHz)	Modulation	EIRP	
		dBm	mW
1852.4-1907.6	REL 99	23.94	247.7
1852.4-1907.6	HSUPA	23.16	207.0

Part 27 LTE Band 4 MODE (5 MHz BANDWIDTH)				
Frequency range (MHz)	Modulation	RB Size and RB offset	EIRP	
			dBm	mW
1712.5-1752.5	QPSK	1/0	22.17	164.8
	16QAM		20.94	124.2

Part 27 LTE Band 4 MODE (10.0- MHz BANDWIDTH)				
Frequency range (MHz)	Modulation	RB Size and RB offset	EIRP	
			dBm	mW
1715-1750	QPSK	1/0	21.42	138.7
	16QAM		19.84	96.4

Part 27 LTE Band 4 MODE (15.0 MHz BANDWIDTH)				
Frequency range (MHz)	Modulation	RB Size and RB offset	EIRP	
			dBm	mW
1717.5-1747.5	QPSK	1/0	22.74	187.9
	16QAM		21.64	145.9

Part 27 LTE Band 4 MODE (20.0 MHz BANDWIDTH)				
Frequency range (MHz)	Modulation	RB Size and RB offset	EIRP	
			dBm	mW
1720.0-1745	QPSK	1/0	22.74	187.9
	16QAM		21.84	152.8

Part 27 LTE Band 13 MODE (10 MHz BANDWIDTH)				
Frequency range (MHz)	Modulation	RB Size and RB offset	ERP	
			dBm	mW
777.0 - 787.0	QPSK	1/0	21.42	138.7
	16QAM		20.40	109.6

5.3. SOFTWARE AND FIRMWARE

The test utility software used during was VS980101A and firmware used was g2_vzw-userdebug 4.2.2 JDQ39B VS980101A,1372818683.

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an integral antenna with a maximum peak gain as follow:

Frequency (MHz)	Gain (dBi)
850MHz	-3.99
1900MHz	-0.27
1700MHz	-2.48
750MHz	-4.13

5.5. WORST-CASE CONFIGURATION AND MODE

Since the EUT is a portable device, to determine the worst/highest emissions, the X, Y, and Z orientations of the EUT with respect to the turntable and the worst among them with wireless charger were investigated. After the investigations, X-Orientation with wireless charger was the worst case for all bands.

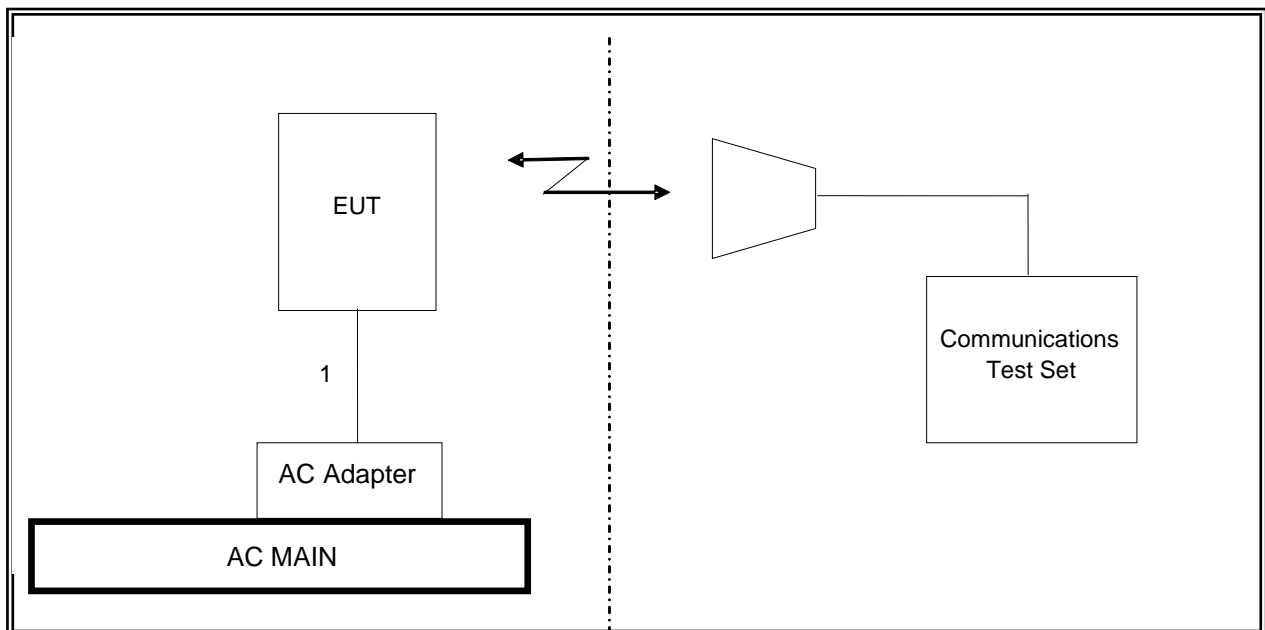
5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

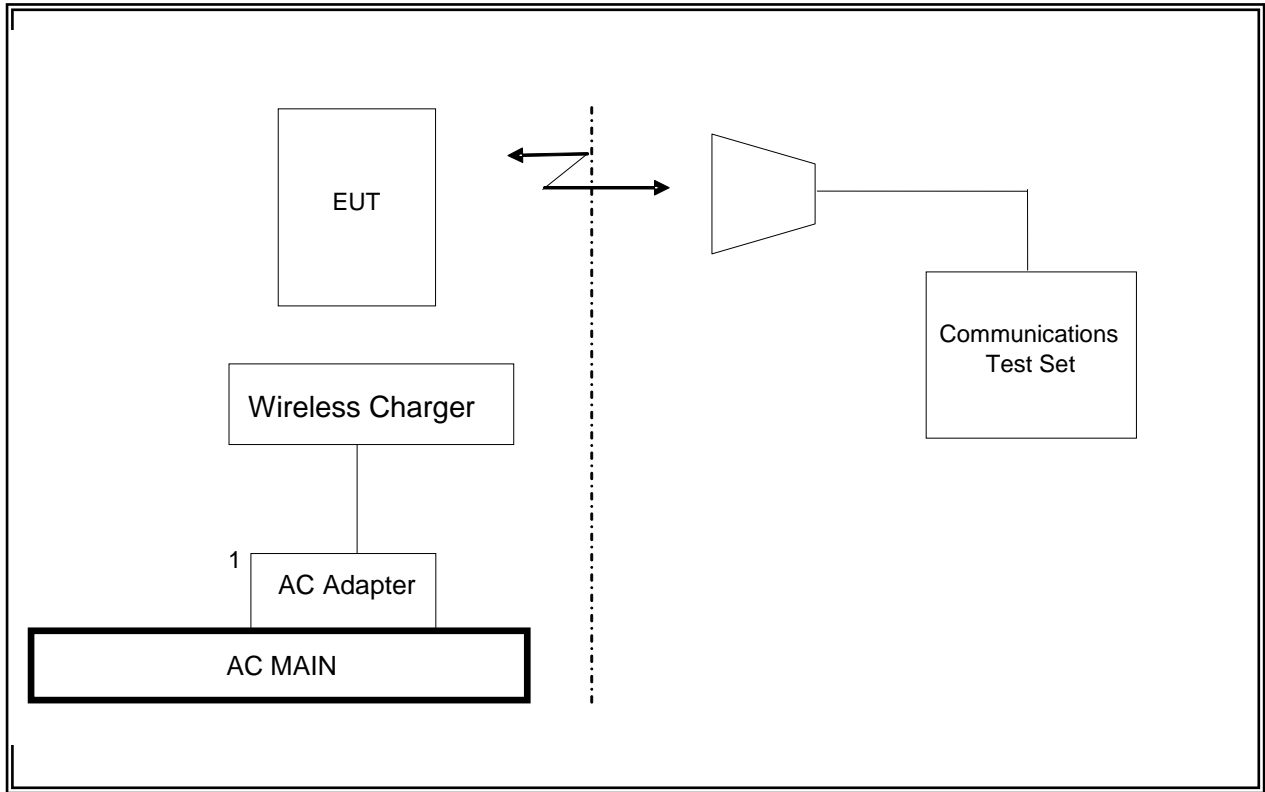
Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	TEN PAO	MC2-04WT2	TA330227563	NA
Wireless Charger	LG	WCP-300	304HYBF000069	NA

TEST SETUP

SETUP DIAGRAM FOR RF RADIATED FUNDAMENTAL TESTS



SETUP DIAGRAM FOR RF RADIATED HARMONIC TESTS



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
Antenna, Horn, 18 GHz	EMCO	3115	C00872	10/25/13
Antenna, Horn, 18 GHz	EMCO	3115	C00945	12/11/13
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01179	02/26/14
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	10/22/13
Communication Test Set	Agilent / HP	E5515C	C01086	03/20/14
Communication Test Set	R & S	CMW500	None	06/28/13
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02689	CNR
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01011	03/06/14
Vector signal generator, 20 GHz	Agilent / HP	E8267C	None	11/20/13

7 RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232 and §27.50

LIMITS

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

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

27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.

27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 2.2.17

The ERP/EIRP power was measured with the spectrum analyzer which attached with receiver antenna via calibrated cable. The measurements have been taken at the low, middle and high channel in each band.

- Set the spectrum analyzer span wide enough or greater than the modulated signal BW.
- Set a spectrum analyzer at peak detection mode with $VBW \geq RBW \geq 26dB$ BW, typically 3MHz for GSM and 5MHz for WCDMA modes respectively.
- Set a marker to point the corresponding peak value.

MODES TESTED

- GPRS and EGPRS
- CDMA and 1xEVDO
- WCDMA and HSUPA
- LTE Band 4 and 13

RESULTS

Mode	Channel	f (MHz)	ERP	
			dBm	mW
GPRS	128	824.20	27.26	532.11
	190	836.60	23.01	199.99
	251	848.80	27.58	572.80
EGPRS	128	824.20	26.01	399.02
	190	836.60	26.69	466.66
	251	848.80	24.27	267.30

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
GPRS	512	1850.20	22.92	195.88
	661	1880.00	28.16	654.64
	810	1909.80	27.60	575.44
EGPRS	512	1850.20	25.54	358.10
	661	1880.00	25.90	389.05
	810	1909.80	25.46	351.56

Mode	Channel	f (MHz)	ERP	
			dBm	mW
CDMA	1013	824.70	22.67	184.93
	384	836.52	22.17	164.82
	777	848.31	23.86	243.22
1xEVDO Rel 0	1013	824.70	25.50	354.81
	384	836.52	24.12	258.23
	777	848.31	25.26	335.74

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
CDMA	25	1851.25	22.68	185.35
	600	1880.00	22.19	165.58
	1175	1908.75	20.96	124.74
1xEVDO Rel 0	25	1851.25	23.69	233.88
	600	1880.00	25.15	327.34
	1175	1908.75	24.39	274.79

Mode	Channel	f (MHz)	ERP	
			dBm	mW
REL99 (V)	4357	826.40	18.82	76.21
	4408	836.60	20.06	101.39
	4458	846.60	17.41	55.08
HSUPA (V)	4357	826.40	20.82	120.78
	4408	836.60	21.19	131.52
	4458	846.60	19.64	92.04

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
REL99 (II)	9662	1852.40	21.17	130.92
	9800	1880.00	23.94	247.74
	9938	1907.60	23.75	237.14
HSUPA (II)	9662	1852.40	22.64	183.65
	9800	1880.00	23.16	207.01
	9938	1907.60	23.11	204.64

EIRP LTE Band 4 (5.0 MHz BAND WIDTH)

Mode	RB Size and RB offset	f (MHz)	EIRP	
			dBm	mW
5.0 MHz BAND QPSK	1/0	1712.5	22.04	159.96
		1732.5	20.64	115.88
		1752.5	22.17	164.82
5.0 MHz BAND 16QAM	1/0	1712.5	19.90	97.72
		1732.5	19.83	96.16
		1752.5	20.94	124.17

EIRP LTE Band 4 (10.0 MHz BAND WIDTH)

Mode	RB Size and RB offset	f (MHz)	EIRP	
			dBm	mW
10.0 MHz BAND QPSK	1/0	1715.0	21.42	138.68
		1732.5	20.24	105.68
		1750.0	21.32	135.52
10.0 MHz BAND 16QAM	1/0	1715.0	20.11	102.57
		1732.5	20.22	105.20
		1750.0	20.40	109.65

EIRP LTE Band 4 (15.0 MHz BAND WIDTH)

Mode	RB Size/RB Offset	f (MHz)	EIRP	
			dBm	mW
15.0 MHz BAND QPSK	1/0	1718.0	22.24	167.49
		1732.5	22.74	187.93
		1748.0	21.34	136.14
15.0 MHz BAND 16QAM	1/0	1718.0	21.09	128.53
		1732.5	21.64	145.88
		1748.0	20.14	103.28

EIRP LTE Band 4 (20.0 MHz BAND WIDTH)

Mode	RB Size/RF Offset	f (MHz)	EIRP	
			dBm	mW
20.0 MHz BAND QPSK	1/0	1720.0	22.64	183.65
		1732.5	22.74	187.93
		1745.0	21.44	139.32
20.0 MHz BAND 16QAM	1/0	1720.0	21.81	151.71
		1732.5	21.84	152.76
		1745.0	20.54	113.24

ERP LTE Band 13 (10 MHz BAND WIDTH)

Mode	RB Size/RF Offset	f (MHz)	ERP	
			dBm	mW
10 MHz QPSK	1/0	782.00	20.50	112.20
10MHz 16QAM		782.00	19.40	87.10

GPRS (Cellular Band)

High Frequency Substitution Measurement Compliance Certification Services Chamber C								
Company:	LG							
Project #:	13U15600							
Date:	07/23/13							
Test Engineer:	Rolly Alegria							
Configuration:	Y position, EUT only							
Mode:	TX, GPRS850, Average							
<u>Test Equipment:</u>								
Receiving: Sunol T243 and Chamber B N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) 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	22.12	V	0.5	0.0	21.62	38.5	-16.8	
824.20	27.76	H	0.5	0.0	27.26	38.5	-11.2	
Mid Ch								
836.60	19.44	H	0.5	0.0	18.94	38.5	-19.5	
836.60	23.51	V	0.5	0.0	23.01	38.5	-15.4	
High Ch								
848.80	20.53	V	0.5	0.0	20.03	38.5	-18.4	
848.80	28.08	H	0.5	0.0	27.58	38.5	-10.9	
Rev. 3.17.11								

EGPRS (Cellular Band)

High Frequency Substitution Measurement Compliance Certification Services Chamber C								
Company:		LG						
Project #:		13U15600						
Date:		07/23/13						
Test Engineer:		TRINA NOOR						
Configuration:		EUT only, Y position, Avg Detector						
Mode:		Tx, EGPRS Mode Cell Band						
Test Equipment:								
Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 208947003) 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	17.26	V	0.6	0.0	16.66	38.5	-21.8	
824.20	26.61	H	0.6	0.0	26.01	38.5	-12.4	
Mid ch								
836.60	14.87	V	0.6	0.0	14.27	38.5	-24.2	
836.60	27.29	H	0.6	0.0	26.69	38.5	-11.8	
High ch								
848.80	18.72	V	0.6	0.0	18.12	38.5	-20.3	
848.80	24.87	H	0.6	0.0	24.27	38.5	-14.2	
Rev. 3.17.11								

GPRS (PCS Band)

High Frequency Fundamental Measurement Compliance Certification Services Chamber B								
Company:		LG						
Project #:		13U15118						
Date:		05/27/13						
Test Engineer:		James Jackson						
Configuration:		EUT W/CHARGER, Y POSITION						
Mode:		Tx, GPRS Mode PCS Band, Avg						
Test Equipment:								
Receiving: Horn T59, and Chamber B SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.850	19.4	V	0.85	8.62	27.13	33.0	-5.9	
1.850	15.3	H	0.85	8.47	22.92	33.0	-10.1	
Mid Ch								
1.880	20.6	V	0.85	8.46	28.16	33.0	-4.8	
1.880	15.2	H	0.85	8.36	22.66	33.0	-10.3	
High Ch								
1.910	20.2	V	0.85	8.30	27.60	33.0	-5.4	
1.910	15.6	H	0.85	8.25	22.96	33.0	-10.0	
Rev. 3.17.11								

EGPRS (PCS Band)

High Frequency Fundamental Measurement Compliance Certification Services Chamber B								
Company:		LG						
Project #:		13U15118						
Date:		05/27/13						
Test Engineer:		James Jackson						
Configuration:		EUT W/CHARGER, Y POSITION						
Mode:		Tx, EGPRS Mode PCS Band, Avg						
Test Equipment:								
Receiving: Horn T59, and Chamber B SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.850	17.8	V	0.85	8.62	25.54	33.0	-7.5	
1.850	12.0	H	0.85	8.47	19.66	33.0	-13.3	
Mid Ch								
1.880	18.3	V	0.85	8.46	25.90	33.0	-7.1	
1.880	14.5	H	0.85	8.36	21.96	33.0	-11.0	
High Ch								
1.910	18.0	V	0.85	8.30	25.46	33.0	-7.5	
1.910	14.3	H	0.85	8.25	21.67	33.0	-11.3	
Rev. 3.17.11								

CDMA (Cellular Band)

High Frequency Substitution Measurement Compliance Certification Services Chamber C								
<p>Company: LG Project #: 13U15600 Date: 07/22/13 Test Engineer: TRINA NOOR Configuration: Z position, W WIRELESS, Avg Detector Mode: CDMA 850</p>								
Test Equipment:								
Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 208947003) 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								
824.70	23.27	V	0.6	0.0	22.67	38.5	-15.8	
824.70	13.68	H	0.6	0.0	13.08	38.5	-25.4	
Mid ch								
836.52	22.77	V	0.6	0.0	22.17	38.5	-16.3	
836.52	14.38	H	0.6	0.0	13.78	38.5	-24.7	
High Ch								
848.31	24.46	V	0.6	0.0	23.86	38.5	-14.6	
848.31	11.76	H	0.6	0.0	11.16	38.5	-27.3	
Rev. 3.17.11								

1xEVDO Rel 0 (Cellular Band)

High Frequency Substitution Measurement Compliance Certification Services Chamber C								
<p>Company: LG Project #: 13U15600 Date: 07/23/13 Test Engineer: TRINA NOOR Configuration: Z position, EUT only, Avg Detector Mode: CDMA 850 EV-DO</p>								
<p>Test Equipment: Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT) Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 208947003) Warehouse.</p>								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.70	26.10	V	0.6	0.0	25.50	38.5	-12.9	
824.70	15.05	H	0.6	0.0	14.45	38.5	-24.0	
Mid ch								
836.52	24.72	V	0.6	0.0	24.12	38.5	-14.3	
836.52	15.06	H	0.6	0.0	14.46	38.5	-24.0	
High Ch								
848.31	25.86	V	0.6	0.0	25.26	38.5	-13.2	
848.31	13.02	H	0.6	0.0	12.42	38.5	-26.0	
Rev. 3.17.11								

CDMA (PCS Band)

High Frequency Fundamental Measurement Compliance Certification Services Chamber C								
Company:		LG						
Project #:		13U15600						
Date:		07/22/13						
Test Engineer:		James Jackson						
Configuration:		EUT, X position w charger , Avg detector						
Mode:		TX, CDMA PCS						
Test Equipment:								
Receiving: Horn T73, and Chamber B SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.250	8.5	V	0.85	8.38	16.00	33.0	-17.0	
1851.250	14.9	H	0.85	8.59	22.68	33.0	-10.3	
Mid Ch								
1.880	11.8	V	0.85	8.26	19.19	33.0	-13.8	
1.880	14.5	H	0.85	8.55	22.19	33.0	-10.8	
High Ch								
1908.750	11.6	V	0.85	8.21	18.95	33.0	-14.1	
1908.750	13.3	H	0.85	8.54	20.96	33.0	-12.0	
Rev. 3.17.11								

1xEVDO Rel 0 (PCS Band)

High Frequency Fundamental Measurement Compliance Certification Services Chamber C								
Company:		LG						
Project #:		13U15600						
Date:		07/23/13						
Test Engineer:		James Jackson						
Configuration:		EUT, X position w/charger, Avg detector						
Mode:		TX, CMDA EV-DO 1900, AVG detector						
Test Equipment:								
Receiving: Horn T73, and Chamber B SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.250	11.0	V	0.85	8.38	18.57	33.0	-14.4	
1851.250	14.2	H	0.85	8.59	21.89	33.0	-11.1	
Mid Ch								
1.880	13.1	V	0.85	8.26	20.47	33.0	-12.5	
1.880	16.5	H	0.85	8.55	24.18	33.0	-8.8	
High Ch								
1908.750	12.1	V	0.85	8.21	19.41	33.0	-13.6	
1908.750	14.9	H	0.85	8.54	22.55	33.0	-10.5	
Rev. 3.17.11								

UMTS 850 REL 99 (Cellular Band)

High Frequency Substitution Measurement Compliance Certification Services Chamber B								
Company: LG								
Project #: 13U15600								
Date: 07/23/13								
Test Engineer: James Jackson								
Configuration: Y position, EUT only, Avg Detector								
Mode: WCDMA, Rel 99 850								
Test Equipment:								
Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 208947003) 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	11.52	V	0.6	0.0	10.92	38.5	-27.5	
826.40	19.42	H	0.6	0.0	18.82	38.5	-19.6	
Mid ch								
836.60	10.24	V	0.6	0.0	9.64	38.5	-28.8	
836.60	20.66	H	0.6	0.0	20.06	38.5	-18.4	
High Ch								
846.60	9.58	V	0.6	0.0	8.98	38.5	-29.5	
846.60	18.01	H	0.6	0.0	17.41	38.5	-21.0	
Rev. 3.17.11								

UMTS 1900 REL 99 (PCS Band)

High Frequency Fundamental Measurement Compliance Certification Services Chamber B								
Company:		LG						
Project #:		13U15600						
Date:		07/23/13						
Test Engineer:		James Jackson						
Configuration:		EUT, x position w/ charger, Avg detector						
Mode:		TX, UMTS REL 99 1900						
Test Equipment:								
Receiving: Horn T73, and Chamber B SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.400	8.7	V	0.85	8.38	16.21	33.0	-16.8	
1852.400	13.4	H	0.85	8.59	21.17	33.0	-11.8	
Mid Ch								
1.880	8.3	V	0.85	8.26	15.72	33.0	-17.3	
1.880	16.2	H	0.85	8.55	23.94	33.0	-9.1	
High Ch								
1907.600	7.9	V	0.85	8.21	15.26	33.0	-17.7	
1907.600	16.1	H	0.85	8.54	23.75	33.0	-9.3	
Rev. 3.17.11								

UMTS 850 HSUPA (Cellular Band)

**High Frequency Substitution Measurement
 Compliance Certification Services Chamber B**

Company: LG
Project #: 13U15600
Date: 07/23/13
Test Engineer: James Jackson
Configuration: Y Configuration, EUT charger, Avg detector
Mode: WCDMA HSUPA 850

Test Equipment:

Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 208947003) 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	16.40	V	0.6	0.0	15.80	38.5	-22.6	
826.40	21.42	H	0.6	0.0	20.82	38.5	-17.6	
Mid ch								
836.60	15.60	V	0.6	0.0	15.00	38.5	-23.4	
836.60	21.79	H	0.6	0.0	21.19	38.5	-17.3	
High Ch								
846.60	16.05	V	0.6	0.0	15.45	38.5	-23.0	
846.60	20.24	H	0.6	0.0	19.64	38.5	-18.8	

Rev. 3.17.11

UMTS 1900 HSDPA (PCS Band)

High Frequency Fundamental Measurement Compliance Certification Services Chamber B								
Company:		LG						
Project #:		13U15600						
Date:		07/23/13						
Test Engineer:		James Jackson						
Configuration:		EUT, y position w/ charger, Avg detector						
Mode:		TX, UMTS HSUPA Subset 5 1900						
Test Equipment:								
Receiving: Horn T73, and Chamber B SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.400	15.1	V	0.85	8.38	22.64	33.0	-10.4	
1852.400	12.0	H	0.85	8.59	19.70	33.0	-13.3	
Mid Ch								
1.880	15.8	V	0.85	8.26	23.16	33.0	-9.8	
1.880	13.9	H	0.85	8.55	21.60	33.0	-11.4	
High Ch								
1907.600	15.8	V	0.85	8.21	23.11	33.0	-9.9	
1907.600	13.2	H	0.85	8.54	20.88	33.0	-12.1	
Rev. 3.17.11								

LTE BAND 4

EIRP LTE QPSK Band 4 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber F								
Company:		LG						
Project #:		13U15600						
Date:		07/16/13						
Test Engineer:		Kiya Kedida						
Configuration:		EUT Only						
Mode:		LTE band 4, 5MHz BW						
		QPSK, Average, RB1-0						
Test Equipment:								
Receiving: Horn T120, and Chamber F SMA Cables								
Substitution: Horn T59 Substitution, 8ft SMA Cable (208955002) Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.713	13.2	V	1.50	8.17	19.90	33.0	-13.1	
1.713	15.3	H	1.50	8.20	22.04	33.0	-11.0	
Mid Ch								
1.733	13.3	V	1.50	8.11	19.95	33.0	-13.0	
1.733	14.0	H	1.50	8.13	20.64	33.0	-12.4	
High Ch								
1.754	14.6	V	1.50	8.06	21.18	33.0	-11.8	
1.754	15.6	H	1.50	8.07	22.17	33.0	-10.8	
Rev. 3.17.11								

EIRP LTE 16QAM Band 4 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber F								
Company:		LG						
Project #:		13U15600						
Date:		07/16/13						
Test Engineer:		Kiya Kedida						
Configuration:		EUT Only						
Mode:		LTE band 4, 5MHz BW 16QAM Average, RB1-0						
Test Equipment:								
Receiving: Horn T120, and Chamber F SMA Cables								
Substitution: Horn T59 Substitution, 8ft SMA Cable (208955002) Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.713	11.5	V	1.50	8.17	18.13	33.0	-14.9	
1.713	13.2	H	1.50	8.20	19.90	33.0	-13.1	
Mid Ch								
1.733	12.2	V	1.50	8.11	18.81	33.0	-14.2	
1.733	13.2	H	1.50	8.13	19.83	33.0	-13.2	
High Ch								
1.754	13.8	V	1.50	8.06	20.34	33.0	-12.7	
1.754	14.4	H	1.50	8.07	20.94	33.0	-12.1	
Rev. 3.17.11								

EIRP LTE QPSK Band 4 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		LG						
Project #:		13U15600						
Date:		07/17/13						
Test Engineer:		Kiya Kedida						
Configuration:		EUT Only with charger						
Mode:		LTE band 4, 10MHz BW						
		QPSK, Average, RB1-0						
Test Equipment:								
Receiving: Horn T344, and Chamber B SMA Cables								
Substitution: Horn T60 Substitution, 4ft SMA Cable (244639001) Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.715	14.1	V	0.85	8.16	21.42	30.0	-8.6	
1.715	12.9	H	0.85	8.59	20.64	30.0	-9.4	
Mid Ch								
1.733	13.7	V	0.85	8.11	20.97	30.0	-9.0	
1.733	12.4	H	0.85	8.69	20.24	30.0	-9.8	
High Ch								
1.750	14.1	V	0.85	8.07	21.32	30.0	-8.7	
1.750	13.1	H	0.85	8.79	21.07	30.0	-8.9	
Rev. 3.17.11								

EIRP LTE 16QAM Band 4 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		LG						
Project #:		13U15600						
Date:		07/17/13						
Test Engineer:		Kiya Kedida						
Configuration:		EUT Only with charger						
Mode:		LTE band 4, 10MHz BW 16QAM, Average, RB1-0						
Test Equipment:								
Receiving: Horn T344, and Chamber B SMA Cables								
Substitution: Horn T60 Substitution, 4ft SMA Cable (244639001) Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.715	12.8	V	0.85	8.16	20.11	30.0	-9.9	
1.715	11.6	H	0.85	8.59	19.34	30.0	-10.7	
Mid Ch								
1.733	13.0	V	0.85	8.11	20.22	30.0	-9.8	
1.733	11.3	H	0.85	8.69	19.11	30.0	-10.9	
High Ch								
1.750	13.2	V	0.85	8.07	20.40	30.0	-9.6	
1.750	11.9	H	0.85	8.79	19.84	30.0	-10.2	
Rev. 3.17.11								

EIRP LTE QPSK Band 4 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber F								
Company:		LG						
Project #:		13U15600						
Date:		07/18/13						
Test Engineer:		Kiya Kedida						
Configuration:		EUT Only						
Mode:		LTE band 4, 15MHz BW QPSK, Average, RB1-0						
Test Equipment:								
Receiving: Horn T344, and Chamber B SMA Cables								
Substitution: Horn T60 Substitution, 4ft SMA Cable (244639001) Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.718	14.8	V	0.85	8.16	22.11	30.0	-7.9	
1.718	14.5	H	0.85	8.59	22.24	30.0	-7.8	
Mid Ch								
1.733	14.4	V	0.85	8.11	21.66	30.0	-8.3	
1.733	14.9	H	0.85	8.69	22.74	30.0	-7.3	
High Ch								
1.748	12.9	V	0.85	8.07	20.12	30.0	-9.9	
1.748	13.4	H	0.85	8.79	21.34	30.0	-8.7	
Rev. 3.17.11								

EIRP LTE 16QAM Band 4 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber F								
Company:		LG						
Project #:		13U15600						
Date:		07/18/13						
Test Engineer:		Kiya Kedida						
Configuration:		EUT Only						
Mode:		LTE band 4, 15MHz BW 16QAM, Average, RB1-0						
Test Equipment:								
Receiving: Horn T344, and Chamber B SMA Cables								
Substitution: Horn T60 Substitution, 4ft SMA Cable (244639001) Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.718	13.5	V	0.85	8.16	20.81	30.0	-9.2	
1.718	13.4	H	0.85	8.59	21.09	30.0	-8.9	
Mid Ch								
1.733	13.4	V	0.85	8.11	20.66	30.0	-9.3	
1.733	13.8	H	0.85	8.69	21.64	30.0	-8.4	
High Ch								
1.748	11.8	V	0.85	8.07	19.02	30.0	-11.0	
1.748	12.2	H	0.85	8.79	20.14	30.0	-9.9	
Rev. 3.17.11								

EIRP LTE QPSK Band 4 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D							
Company:	LG						
Project #:	13U15600						
Date:	07/18/13						
Test Engineer:	Kiya Kedida						
Configuration:	EUT Only						
Mode:	LTE band 4, 20MHz BW QPSK, Average, RB1-0						
Test Equipment:							
Receiving: Horn T344, and Chamber B SMA Cables							
Substitution: Horn T60 Substitution, 4ft SMA Cable (244639001) Warehouse							
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)
Low Ch							
1.720	15.3	V	0.85	8.16	22.61	30.0	-7.4
1.720	14.9	H	0.85	8.59	22.64	30.0	-7.4
Mid Ch							
1.733	14.1	V	0.85	8.11	21.36	30.0	-8.6
1.733	14.9	H	0.85	8.69	22.74	30.0	-7.3
High Ch							
1.745	13.2	V	0.85	8.07	20.42	30.0	-9.6
1.745	13.5	H	0.85	8.79	21.44	30.0	-8.6
Rev. 3.17.11							

EIRP LTE 16QAM Band4 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		LG						
Project #:		13U15600						
Date:		07/18/13						
Test Engineer:		Kiya Kedida						
Configuration:		EUT Only						
Mode:		LTE band 4, 20MHz BW 16QAM, Average, RB1-0						
Test Equipment:								
Receiving: Horn T344, and Chamber B SMA Cables								
Substitution: Horn T60 Substitution, 4ft SMA Cable (244639001) Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.720	14.5	V	0.85	8.16	21.81	30.0	-8.2	
1.720	14.0	H	0.85	8.59	21.74	30.0	-8.3	
Mid Ch								
1.733	12.8	V	0.85	8.11	20.06	30.0	-9.9	
1.733	14.0	H	0.85	8.69	21.84	30.0	-8.2	
High Ch								
1.745	12.1	V	0.85	8.07	19.32	30.0	-10.7	
1.745	12.6	H	0.85	8.79	20.54	30.0	-9.5	
Rev. 3.17.11								

LTE BAND 13

ERP LTE QPSK and 16 QAM, Band 13 (10 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		LG						
Project #:		13U15600						
Date:		07/19/13						
Test Engineer:		Kiya Kedida						
Configuration:		EUT Only with charger						
Mode:		TX, LTE BAND 13 QPSK and 16QAM, 10MHz, Average						
Test Equipment:								
Receiving: Sunoi T402, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
RB=I-0, QPSK								
782.00	11.90	V	0.5	0.0	11.40	38.5	-27.0	
782.00	21.00	H	0.5	0.0	20.50	38.5	-17.9	
RB=I-0, 16QAM								
782.00	10.70	V	0.5	0.0	10.20	38.5	-28.2	
782.00	19.90	H	0.5	0.0	19.40	38.5	-19.0	
Rev. 3.17.11								

7.2 FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

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

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.

§27.53 (g) For operations in the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB.

§27.53 (h) For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.

TEST PROCEDURE

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

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

MODES TESTED

- GPRS and EGPRS
- CDMA RTT, EV-DO
- UMTS, REL 99, and HSDPA

- LTE Band 4 and 17

RESULTS

GPRS (Cellular Band)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/30/13							
Test Engineer:		Charles Vergonio							
Configuration:		X position with wireless ac							
Mode:		Tx, 850MHz GPRS MODE							
Chamber		Pre-amplifier		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, 824.2MHz									
1.648	-25.8	V	3.0	37.4	1.0	-62.2	-13.0	-49.2	
2.473	-20.5	V	3.0	36.4	1.0	-55.9	-13.0	-42.9	
3.297	-25.7	V	3.0	35.8	1.0	-60.5	-13.0	-47.5	
1.648	-20.1	H	3.0	37.4	1.0	-56.5	-13.0	-43.5	
2.473	-18.5	H	3.0	36.4	1.0	-53.9	-13.0	-40.9	
3.297	-25.6	H	3.0	35.8	1.0	-60.4	-13.0	-47.4	
Mid Ch, 836.6MHz									
1.673	-27.4	V	3.0	37.3	1.0	-63.8	-13.0	-50.8	
2.510	-21.1	V	3.0	36.4	1.0	-56.5	-13.0	-43.5	
3.346	-25.8	V	3.0	35.8	1.0	-60.6	-13.0	-47.6	
1.673	-27.3	H	3.0	37.3	1.0	-63.7	-13.0	-50.7	
2.510	-18.6	H	3.0	36.4	1.0	-53.9	-13.0	-40.9	
3.346	-25.7	H	3.0	35.8	1.0	-60.5	-13.0	-47.5	
High Ch, 848.8MHz									
1.698	-25.2	V	3.0	37.3	1.0	-61.5	-13.0	-48.5	
2.547	-19.8	V	3.0	36.3	1.0	-55.1	-13.0	-42.1	
3.395	-24.2	V	3.0	35.7	1.0	-58.9	-13.0	-45.9	
1.698	-18.9	H	3.0	37.3	1.0	-55.2	-13.0	-42.2	
2.547	-19.0	H	3.0	36.3	1.0	-54.3	-13.0	-41.3	
3.395	-25.0	H	3.0	35.7	1.0	-59.7	-13.0	-46.7	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

EGPRS (Cellular Band)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/30/13							
Test Engineer:		James J.							
Configuration:		X position with wireless ac							
Mode:		Tx, 850MHz EGPRS MODE							
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, 824.2MHz									
1.648	-27.4	V	3.0	37.4	1.0	-63.8	-13.0	-50.8	
2.472	-20.6	V	3.0	36.4	1.0	-56.0	-13.0	-43.0	
3.297	-26.1	V	3.0	35.8	1.0	-60.9	-13.0	-47.9	
1.648	-23.2	H	3.0	37.4	1.0	-59.6	-13.0	-46.6	
2.472	-15.4	H	3.0	36.4	1.0	-50.8	-13.0	-37.8	
3.297	-25.0	H	3.0	35.8	1.0	-59.8	-13.0	-46.8	
Mid Ch, 836.6MHz									
1.673	-28.4	V	3.0	37.3	1.0	-64.7	-13.0	-51.7	
2.511	-21.3	V	3.0	36.4	1.0	-56.6	-13.0	-43.6	
3.348	-25.9	V	3.0	35.7	1.0	-60.6	-13.0	-47.6	
1.674	-28.4	H	3.0	37.3	1.0	-64.7	-13.0	-51.7	
2.508	-18.9	H	3.0	36.4	1.0	-54.2	-13.0	-41.2	
3.348	-26.4	H	3.0	35.7	1.0	-61.1	-13.0	-48.1	
High Ch, 848.8MHz									
1.697	-25.9	V	3.0	37.3	1.0	-62.3	-13.0	-49.3	
2.546	-23.0	V	3.0	36.3	1.0	-58.3	-13.0	-45.3	
3.384	-25.0	V	3.0	35.7	1.0	-59.7	-13.0	-46.7	
1.697	-18.9	H	3.0	37.3	1.0	-55.2	-13.0	-42.2	
2.546	-19.0	H	3.0	36.3	1.0	-54.3	-13.0	-41.3	
3.384	-25.1	H	3.0	35.7	1.0	-59.8	-13.0	-46.8	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

GPRS (PCS Band)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:									
Test Engineer:		James Jackson							
Configuration:		X position with wireless ac							
Mode:		Tx, 1900MHz GPRS MODE							
Chamber		Pre-amplifier			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, 1850.2MHz									
3.700	-20.7	V	3.0	35.4	1.0	-55.1	-13.0	-42.1	
5.551	-16.6	V	3.0	34.7	1.0	-50.3	-13.0	-37.3	
7.401	-20.7	V	3.0	34.9	1.0	-54.6	-13.0	-41.6	
3.700	-22.9	H	3.0	35.4	1.0	-57.3	-13.0	-44.3	
5.551	-16.1	H	3.0	34.7	1.0	-49.8	-13.0	-36.8	
7.401	-19.9	H	3.0	34.9	1.0	-53.8	-13.0	-40.8	
Mid Ch, 1880MHz									
3.760	-15.1	V	3.0	35.3	1.0	-49.5	-13.0	-36.5	
5.640	-15.9	V	3.0	34.7	1.0	-49.6	-13.0	-36.6	
7.520	-15.7	V	3.0	34.9	1.0	-49.6	-13.0	-36.6	
3.760	-16.1	H	3.0	35.3	1.0	-50.5	-13.0	-37.5	
5.640	-15.4	H	3.0	34.7	1.0	-49.1	-13.0	-36.1	
7.520	-13.4	H	3.0	34.9	1.0	-47.3	-13.0	-34.3	
High Ch, 1909.8MHz									
3.820	-12.4	V	3.0	35.3	1.0	-46.7	-13.0	-33.7	
5.729	-16.8	V	3.0	34.7	1.0	-50.6	-13.0	-37.6	
7.639	-19.2	V	3.0	35.0	1.0	-53.1	-13.0	-40.1	
3.820	-15.0	H	3.0	35.3	1.0	-49.3	-13.0	-36.3	
5.729	-16.7	H	3.0	34.7	1.0	-50.4	-13.0	-37.4	
7.639	-19.4	H	3.0	35.0	1.0	-53.3	-13.0	-40.3	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

EGPRS (PCS Band)

Compliance Certification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/30/13							
Test Engineer:		James Jackson							
Configuration:		X position with wireless ac							
Mode:		Tx, 1900MHz EGPRS MODE							
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, 1850.2MHz									
3.700	-24.1	V	3.0	35.4	1.0	-58.5	-13.0	-45.5	
5.551	-20.5	V	3.0	34.7	1.0	-54.2	-13.0	-41.2	
7.401	-21.0	V	3.0	34.9	1.0	-54.9	-13.0	-41.9	
3.700	-24.6	H	3.0	35.4	1.0	-59.0	-13.0	-46.0	
5.551	-22.0	H	3.0	34.7	1.0	-55.7	-13.0	-42.7	
7.401	-19.9	H	3.0	34.9	1.0	-53.8	-13.0	-40.8	
Mid Ch, 1880MHz									
3.760	-21.1	V	3.0	35.3	1.0	-55.4	-13.0	-42.4	
5.640	-19.1	V	3.0	34.7	1.0	-52.9	-13.0	-39.9	
7.520	-18.9	V	3.0	34.9	1.0	-52.8	-13.0	-39.8	
3.760	-22.6	H	3.0	35.3	1.0	-57.0	-13.0	-44.0	
5.640	-22.4	H	3.0	34.7	1.0	-56.1	-13.0	-43.1	
7.520	-19.5	H	3.0	34.9	1.0	-53.4	-13.0	-40.4	
High Ch, 1909.8MHz									
3.820	-21.2	V	3.0	35.3	1.0	-55.5	-13.0	-42.5	
5.729	-22.0	V	3.0	34.7	1.0	-55.7	-13.0	-42.7	
7.639	-20.4	V	3.0	35.0	1.0	-54.4	-13.0	-41.4	
3.820	-21.6	H	3.0	35.3	1.0	-55.9	-13.0	-42.9	
5.729	-21.7	H	3.0	34.7	1.0	-55.4	-13.0	-42.4	
7.639	-18.8	H	3.0	35.0	1.0	-52.8	-13.0	-39.8	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

CDMA RTT (BC0)

Compliance Certification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/18/13							
Test Engineer:		TRINA NOOR							
Configuration:		Z position with wireless ac							
Mode:		Tx, CDMA CELL							
Chamber		Pre-amplifier			Filter		Limit		
5m Chamber B		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, 824.70MHz									
1.650	-21.7	V	3.0	37.4	1.0	-58.1	-13.0	-45.1	
2.474	-19.2	V	3.0	36.4	1.0	-54.6	-13.0	-41.6	
3.288	-19.3	V	3.0	35.8	1.0	-54.1	-13.0	-41.1	
1.650	-20.7	H	3.0	37.4	1.0	-57.1	-13.0	-44.1	
2.474	-22.9	H	3.0	36.4	1.0	-58.3	-13.0	-45.3	
3.288	-20.1	H	3.0	35.8	1.0	-54.9	-13.0	-41.9	
Mid Ch, 836.25MHz									
1.673	-21.8	V	3.0	37.3	1.0	-58.1	-13.0	-45.1	
2.500	-18.6	V	3.0	36.4	1.0	-54.0	-13.0	-41.0	
3.346	-18.3	V	3.0	35.8	1.0	-53.1	-13.0	-40.1	
1.673	-21.2	H	3.0	37.3	1.0	-57.6	-13.0	-44.6	
2.500	-21.7	H	3.0	36.4	1.0	-57.1	-13.0	-44.1	
3.346	-19.6	H	3.0	35.8	1.0	-54.3	-13.0	-41.3	
1.696	-22.0	V	3.0	37.3	1.0	-58.3	-13.0	-45.3	
2.545	-19.8	V	3.0	36.3	1.0	-55.1	-13.0	-42.1	
3.393	-19.9	V	3.0	35.7	1.0	-54.6	-13.0	-41.6	
1.696	-20.9	H	3.0	37.3	1.0	-57.2	-13.0	-44.2	
2.545	-22.0	H	3.0	36.3	1.0	-57.3	-13.0	-44.3	
3.393	-19.2	H	3.0	35.7	1.0	-53.9	-13.0	-40.9	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

CDMA EV-DO (BC0)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/30/13							
Test Engineer:		James Jackson							
Configuration:		x position with wireless ac							
Mode:		Tx,EVDO-A CELL							
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, 824.70MHz									
1.649	-19.3	V	3.0	37.4	1.0	-55.6	-13.0	-42.6	
2.475	-25.4	V	3.0	36.4	1.0	-60.8	-13.0	-47.8	
3.299	-19.3	V	3.0	35.8	1.0	-54.1	-13.0	-41.1	
1.649	-21.3	H	3.0	37.4	1.0	-57.7	-13.0	-44.7	
2.475	-26.6	H	3.0	36.4	1.0	-62.0	-13.0	-49.0	
3.299	-20.0	H	3.0	35.8	1.0	-54.8	-13.0	-41.8	
Mid Ch, 836.52MHz									
1.673	-22.1	V	3.0	37.3	1.0	-58.5	-13.0	-45.5	
2.509	-19.5	V	3.0	36.4	1.0	-54.8	-13.0	-41.8	
3.345	-19.7	V	3.0	35.8	1.0	-54.5	-13.0	-41.5	
1.673	-21.6	H	3.0	37.3	1.0	-57.9	-13.0	-44.9	
2.509	-21.1	H	3.0	36.4	1.0	-56.4	-13.0	-43.4	
3.345	-20.2	H	3.0	35.8	1.0	-55.0	-13.0	-42.0	
High Ch, 848.31MHz									
1.696	-21.5	V	3.0	37.3	1.0	-57.8	-13.0	-44.8	
2.545	-19.9	V	3.0	36.3	1.0	-55.2	-13.0	-42.2	
3.393	-20.0	V	3.0	35.7	1.0	-54.7	-13.0	-41.7	
1.696	-18.6	H	3.0	37.3	1.0	-54.9	-13.0	-41.9	
2.545	-22.4	H	3.0	36.3	1.0	-57.7	-13.0	-44.7	
3.393	-20.2	H	3.0	35.7	1.0	-54.9	-13.0	-41.9	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

CDMA RTT (BC1)

Compliance Certification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U1566							
Date:		07/30/13							
Test Engineer:		James Jackson							
Configuration:		X position with wireless ac							
Mode:		Tx, CDMA PCS							
Chamber		Pre-amplifier			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, 1851.3MHz									
3.702	-24.9	V	3.0	35.4	1.0	-59.3	-13.0	-46.3	
5.553	-23.7	V	3.0	34.7	1.0	-57.4	-13.0	-44.4	
7.404	-18.2	V	3.0	34.9	1.0	-52.1	-13.0	-39.1	
3.702	-26.1	H	3.0	35.4	1.0	-60.5	-13.0	-47.5	
5.553	-22.4	H	3.0	34.7	1.0	-56.1	-13.0	-43.1	
7.404	-16.9	H	3.0	34.9	1.0	-50.9	-13.0	-37.9	
Mid Ch, 1880MHz									
3.760	-24.6	V	3.0	35.3	1.0	-59.0	-13.0	-46.0	
5.640	-22.4	V	3.0	34.7	1.0	-56.1	-13.0	-43.1	
7.520	-17.1	V	3.0	34.9	1.0	-51.0	-13.0	-38.0	
3.760	-24.5	H	3.0	35.3	1.0	-58.9	-13.0	-45.9	
5.640	-22.2	H	3.0	34.7	1.0	-55.9	-13.0	-42.9	
7.520	-17.3	H	3.0	34.9	1.0	-51.2	-13.0	-38.2	
High Ch, 1908.8MHz									
3.817	-24.3	V	3.0	35.3	1.0	-58.6	-13.0	-45.6	
5.726	-22.7	V	3.0	34.7	1.0	-56.5	-13.0	-43.5	
7.635	-13.6	V	3.0	34.9	1.0	-47.6	-13.0	-34.6	
3.817	-24.1	H	3.0	35.3	1.0	-58.4	-13.0	-45.4	
5.726	-22.1	H	3.0	34.7	1.0	-55.8	-13.0	-42.8	
7.635	-13.2	H	3.0	34.9	1.0	-47.2	-13.0	-34.2	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

CDMA EV-DO (BC1)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/30/13							
Test Engineer:		James Jackson							
Configuration:		X position with wireless ac							
Mode:		Tx, EVDO-A PCS							
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, 1851.3MHz									
3.702	-19.1	V	3.0	35.4	1.0	-53.5	-13.0	-40.5	
5.554	-15.7	V	3.0	34.7	1.0	-49.4	-13.0	-36.4	
7.405	-16.4	V	3.0	34.9	1.0	-50.3	-13.0	-37.3	
3.702	-18.4	H	3.0	35.4	1.0	-52.8	-13.0	-39.8	
5.554	-15.8	H	3.0	34.7	1.0	-49.5	-13.0	-36.5	
7.405	-15.8	H	3.0	34.9	1.0	-49.7	-13.0	-36.7	
Mid Ch, 1880MHz									
3.760	-18.8	V	3.0	35.3	1.0	-53.1	-13.0	-40.1	
5.640	-17.1	V	3.0	34.7	1.0	-50.8	-13.0	-37.8	
7.520	-14.0	V	3.0	34.9	1.0	-48.0	-13.0	-35.0	
3.760	-19.7	H	3.0	35.3	1.0	-54.1	-13.0	-41.1	
5.640	-16.9	H	3.0	34.7	1.0	-50.6	-13.0	-37.6	
7.520	-14.6	H	3.0	34.9	1.0	-48.5	-13.0	-35.5	
High Ch, 1908.8MHz									
3.817	-19.0	V	3.0	35.3	1.0	-53.3	-13.0	-40.3	
5.726	-17.8	V	3.0	34.7	1.0	-51.6	-13.0	-38.6	
7.630	-12.2	V	3.0	34.9	1.0	-46.1	-13.0	-33.1	
3.817	-20.0	H	3.0	35.3	1.0	-54.3	-13.0	-41.3	
5.726	-17.8	H	3.0	34.7	1.0	-51.5	-13.0	-38.5	
7.630	-12.0	H	3.0	34.9	1.0	-45.9	-13.0	-32.9	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

WCDMA REL 99 (Cellular Band)

Compliance Certification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/30/13							
Test Engineer:		James Jackson							
Configuration:		X position with wireless ac							
Mode:		Tx, WCDMA CELL							
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, 826.4MHz									
1.665	-27.7	V	3.0	37.4	1.0	-64.1	-13.0	-51.1	
2.479	-25.6	V	3.0	36.4	1.0	-61.0	-13.0	-48.0	
3.306	-26.0	V	3.0	35.8	1.0	-60.8	-13.0	-47.8	
1.652	-27.1	H	3.0	37.4	1.0	-63.5	-13.0	-50.5	
2.479	-26.8	H	3.0	36.4	1.0	-62.2	-13.0	-49.2	
3.306	-26.1	H	3.0	35.8	1.0	-60.9	-13.0	-47.9	
Mid Ch, 836MHz									
1.672	-27.6	V	3.0	37.3	1.0	-64.0	-13.0	-51.0	
2.508	-24.8	V	3.0	36.4	1.0	-60.2	-13.0	-47.2	
3.344	-25.6	V	3.0	35.8	1.0	-60.4	-13.0	-47.4	
1.672	-25.5	H	3.0	37.3	1.0	-61.9	-13.0	-48.9	
2.508	-27.4	H	3.0	36.4	1.0	-62.7	-13.0	-49.7	
3.344	-25.3	H	3.0	35.8	1.0	-60.0	-13.0	-47.0	
High Ch, 846MHz									
1.692	-20.4	V	3.0	37.3	1.0	-56.7	-13.0	-43.7	
2.538	-25.3	V	3.0	36.3	1.0	-60.7	-13.0	-47.7	
3.384	-25.2	V	3.0	35.7	1.0	-59.9	-13.0	-46.9	
1.692	-7.8	H	3.0	37.3	1.0	-44.1	-13.0	-31.1	
2.538	-26.7	H	3.0	36.3	1.0	-62.1	-13.0	-49.1	
3.384	-26.2	H	3.0	35.7	1.0	-61.0	-13.0	-48.0	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

WCDMA HSUPA (Cellular Band)

Compliance Certification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15420							
Date:									
Test Engineer:		James J							
Configuration:		X position with wireless ac							
Mode:		Tx, 850MHz WCDMA HSUPA MODE							
Chamber		Pre-amplifier			Filter		Limit		
3m Chamber		T145 8449B			Filter 1		FCC Part 22		
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (826.4MHz)									
1.653	-27.5	V	3.0	35.5	1.0	-62.0	-13.0	-49.0	
1.653	-27.7	H	3.0	35.5	1.0	-62.2	-13.0	-49.2	
2.479	-23.9	V	3.0	35.4	1.0	-58.3	-13.0	-45.3	
2.479	-27.2	H	3.0	35.4	1.0	-61.7	-13.0	-48.7	
3.306	-25.8	V	3.0	35.5	1.0	-60.3	-13.0	-47.3	
3.306	-26.0	H	3.0	35.5	1.0	-60.5	-13.0	-47.5	
Mid Channel (836.MHz)									
1.672	-27.4	V	3.0	35.5	1.0	-62.0	-13.0	-49.0	
1.672	-27.8	H	3.0	35.5	1.0	-62.3	-13.0	-49.3	
2.508	-24.8	V	3.0	35.4	1.0	-59.2	-13.0	-46.2	
2.508	-22.1	H	3.0	35.4	1.0	-56.5	-13.0	-43.5	
3.344	-25.2	V	3.0	35.5	1.0	-59.7	-13.0	-46.7	
3.344	-25.0	H	3.0	35.5	1.0	-59.5	-13.0	-46.5	
High Channel (846.6MHz)									
1.692	-12.3	V	3.0	35.5	1.0	-46.8	-13.0	-33.8	
1.692	-3.3	H	3.0	35.5	1.0	-37.8	-13.0	-24.8	
2.538	-25.7	V	3.0	35.4	1.0	-60.1	-13.0	-47.1	
2.538	-26.8	H	3.0	35.4	1.0	-61.2	-13.0	-48.2	
3.384	-25.9	V	3.0	35.5	1.0	-60.4	-13.0	-47.4	
3.384	-25.9	H	3.0	35.5	1.0	-60.4	-13.0	-47.4	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

WCDMA REL 99 (PCS Band)

Compliance Certification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/30/13							
Test Engineer:		James Jackson							
Configuration:		X position with wireless ac							
Mode:		Tx, WCDMA PCS							
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	-24.4	V	3.0	35.4	1.0	-58.8	-13.0	-45.8	
5.557	-22.9	V	3.0	34.7	1.0	-56.6	-13.0	-43.6	
7.409	-21.0	V	3.0	34.9	1.0	-54.9	-13.0	-41.9	
3.705	-24.7	H	3.0	35.4	1.0	-59.1	-13.0	-46.1	
5.557	-22.9	H	3.0	34.7	1.0	-56.6	-13.0	-43.6	
7.409	-19.5	H	3.0	34.9	1.0	-53.5	-13.0	-40.5	
Mid Ch, 1880MHz									
3.760	-20.8	V	3.0	35.3	1.0	-55.1	-13.0	-42.1	
5.640	-23.8	V	3.0	34.7	1.0	-57.5	-13.0	-44.5	
7.520	-20.3	V	3.0	34.9	1.0	-54.3	-13.0	-41.3	
3.760	-21.5	H	3.0	35.3	1.0	-55.8	-13.0	-42.8	
5.640	-22.5	H	3.0	34.7	1.0	-56.2	-13.0	-43.2	
7.520	-19.2	H	3.0	34.9	1.0	-53.2	-13.0	-40.2	
High Ch, 1907.6MHz									
3.815	-23.4	V	3.0	35.3	1.0	-57.7	-13.0	-44.7	
5.723	-23.0	V	3.0	34.7	1.0	-56.7	-13.0	-43.7	
7.630	-20.7	V	3.0	34.9	1.0	-54.6	-13.0	-41.6	
3.815	-23.5	H	3.0	35.3	1.0	-57.8	-13.0	-44.8	
5.723	-22.2	H	3.0	34.7	1.0	-55.9	-13.0	-42.9	
7.630	-19.8	H	3.0	34.9	1.0	-53.7	-13.0	-40.7	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

WCDMA HSUPA (PCS Band)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15420							
Date:									
Test Engineer:		James Jackson							
Configuration:		x pos. with wireless							
Mode:		Tx, 1900MHz WCDMA HSUPA MODE							
Chamber		Pre-amplifer			Filter		Limit		
3m Chamber		T145 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	-21.3	V	3.0	35.4	1.0	-55.6	-13.0	-42.6	
3.705	-19.3	H	3.0	35.4	1.0	-53.7	-13.0	-40.7	
5.557	-22.7	V	3.0	35.4	1.0	-57.1	-13.0	-44.1	
5.557	-22.9	H	3.0	35.4	1.0	-57.4	-13.0	-44.4	
7.409	-20.8	V	3.0	35.7	1.0	-55.5	-13.0	-42.5	
7.409	-20.1	H	3.0	35.7	1.0	-54.9	-13.0	-41.9	
Mid Ch, 1880.0MHz									
3.760	-19.6	V	3.0	35.3	1.0	-53.9	-13.0	-40.9	
3.760	-19.0	H	3.0	35.3	1.0	-53.3	-13.0	-40.3	
5.640	-23.5	V	3.0	35.4	1.0	-57.9	-13.0	-44.9	
5.640	-22.7	H	3.0	35.4	1.0	-57.2	-13.0	-44.2	
7.520	-21.4	V	3.0	35.7	1.0	-56.1	-13.0	-43.1	
7.520	-19.9	H	3.0	35.7	1.0	-54.6	-13.0	-41.6	
High Ch, 1907.6MHz									
3.815	-21.4	V	3.0	35.3	1.0	-55.7	-13.0	-42.7	
3.815	-19.6	H	3.0	35.3	1.0	-53.9	-13.0	-40.9	
5.723	-22.7	V	3.0	35.4	1.0	-57.1	-13.0	-44.1	
5.723	-22.8	H	3.0	35.4	1.0	-57.3	-13.0	-44.3	
7.630	-20.6	V	3.0	35.7	1.0	-55.3	-13.0	-42.3	
7.630	-20.0	H	3.0	35.7	1.0	-54.7	-13.0	-41.7	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

LTE Band 4, QPSK (5 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/23/13							
Test Engineer:		Kiya Kedida							
Configuration:		EUT with wireless ac							
Mode:		TX, LTE band 4, 5MHz BW, QPSK							
Chamber		Pre-amplifier			Filter		Limit		
3m Chamber D		T145 8449B			Filter 1		Part 27		
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1717.5 MHz)									
3.435	-25.2	V	3.0	30.4	1.0	-54.6	-13.0	-41.6	
5.153	-29.9	V	3.0	28.7	1.0	-57.6	-13.0	-44.6	
6.870	-26.2	V	3.0	27.1	1.0	-52.3	-13.0	-39.3	
3.435	-25.6	H	3.0	30.4	1.0	-55.0	-13.0	-42.0	
5.153	-27.3	H	3.0	28.7	1.0	-55.0	-13.0	-42.0	
6.870	-26.1	H	3.0	27.1	1.0	-52.2	-13.0	-39.2	
Mid Ch, (1732.5 MHz)									
3.452	-24.1	V	3.0	30.4	1.0	-53.5	-13.0	-40.5	
5.178	-30.0	V	3.0	28.7	1.0	-57.8	-13.0	-44.8	
6.904	-26.6	V	3.0	27.1	1.0	-52.7	-13.0	-39.7	
3.452	-24.6	H	3.0	30.4	1.0	-54.0	-13.0	-41.0	
5.178	-28.7	H	3.0	28.7	1.0	-56.4	-13.0	-43.4	
6.904	-25.5	H	3.0	27.1	1.0	-51.6	-13.0	-38.6	
High Ch, (1747.5 MHz)									
3.495	-24.3	V	3.0	30.4	1.0	-53.7	-13.0	-40.7	
5.243	-29.8	V	3.0	28.7	1.0	-57.5	-13.0	-44.5	
6.990	-26.3	V	3.0	27.0	1.0	-52.3	-13.0	-39.3	
3.495	-24.7	H	3.0	30.4	1.0	-54.0	-13.0	-41.0	
5.243	-28.3	H	3.0	28.7	1.0	-56.0	-13.0	-43.0	
6.990	-24.3	H	3.0	27.0	1.0	-50.3	-13.0	-37.3	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

LTE Band 4, 16QAM (5 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/23/13							
Test Engineer:		Kiya Kedida							
Configuration:		EUT with wireless ac							
Mode:		TX, LTE band 4, 5MHz BW, 16QAM							
Chamber		Pre-amplifier			Filter		Limit		
3m Chamber D		T145 8449B			Filter 1		Part 27		
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1717.5 MHz)									
3.435	-26.1	V	3.0	30.4	1.0	-55.5	-13.0	-42.5	
5.153	-30.8	V	3.0	28.7	1.0	-58.5	-13.0	-45.5	
6.870	-27.1	V	3.0	27.1	1.0	-53.2	-13.0	-40.2	
3.435	-26.5	H	3.0	30.4	1.0	-55.9	-13.0	-42.9	
5.153	-28.2	H	3.0	28.7	1.0	-55.9	-13.0	-42.9	
6.870	-26.9	H	3.0	27.1	1.0	-53.0	-13.0	-40.0	
Mid Ch, (1732.5 MHz)									
3.452	-25.0	V	3.0	30.4	1.0	-54.4	-13.0	-41.4	
5.178	-31.0	V	3.0	28.7	1.0	-58.8	-13.0	-45.8	
6.904	-27.5	V	3.0	27.1	1.0	-53.6	-13.0	-40.6	
3.452	-25.4	H	3.0	30.4	1.0	-54.8	-13.0	-41.8	
5.178	-29.5	H	3.0	28.7	1.0	-57.2	-13.0	-44.2	
6.904	-26.4	H	3.0	27.1	1.0	-52.5	-13.0	-39.5	
High Ch, (1747.5 MHz)									
3.495	-25.1	V	3.0	30.4	1.0	-54.5	-13.0	-41.5	
5.243	-30.6	V	3.0	28.7	1.0	-58.3	-13.0	-45.3	
6.990	-27.1	V	3.0	27.0	1.0	-53.1	-13.0	-40.1	
3.495	-25.6	H	3.0	30.4	1.0	-54.9	-13.0	-41.9	
5.243	-29.2	H	3.0	28.7	1.0	-56.9	-13.0	-43.9	
6.990	-25.1	H	3.0	27.0	1.0	-51.1	-13.0	-38.1	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

LTE Band 4, QPSK (10 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/23/13							
Test Engineer:		Kiya Kedida							
Configuration:		EUT with wireless ac							
Mode:		TX, LTE band 4, 10MHz BW, QPSK							
Chamber		Pre-amplifier			Filter		Limit		
3m Chamber D		T145 8449B			Filter 1		Part 27		
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	-25.4	V	3.0	26.5	1.0	-50.9	-13.0	-37.9	
5.145	-29.4	V	3.0	24.4	1.0	-52.7	-13.0	-39.7	
6.860	-26.5	V	3.0	23.2	1.0	-48.7	-13.0	-35.7	
3.430	-24.7	H	3.0	26.5	1.0	-50.1	-13.0	-37.1	
5.145	-27.2	H	3.0	24.4	1.0	-50.5	-13.0	-37.5	
6.860	-25.6	H	3.0	23.2	1.0	-47.8	-13.0	-34.8	
Mid Ch, (1732.5 MHz)									
3.456	-25.0	V	3.0	26.4	1.0	-50.4	-13.0	-37.4	
5.184	-29.4	V	3.0	24.3	1.0	-52.8	-13.0	-39.8	
6.912	-26.9	V	3.0	23.2	1.0	-49.1	-13.0	-36.1	
3.456	-24.9	H	3.0	26.4	1.0	-50.3	-13.0	-37.3	
5.184	-28.2	H	3.0	24.3	1.0	-51.5	-13.0	-38.5	
6.912	-25.2	H	3.0	23.2	1.0	-47.4	-13.0	-34.4	
High Ch, (1750 MHz)									
3.491	-24.2	V	3.0	26.4	1.0	-49.6	-13.0	-36.6	
5.237	-29.2	V	3.0	24.3	1.0	-52.5	-13.0	-39.5	
6.983	-27.4	V	3.0	23.1	1.0	-49.5	-13.0	-36.5	
3.491	-25.6	H	3.0	26.4	1.0	-51.0	-13.0	-38.0	
5.237	-28.7	H	3.0	24.3	1.0	-51.9	-13.0	-38.9	
6.983	-25.2	H	3.0	23.1	1.0	-47.3	-13.0	-34.3	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

LTE Band 4, 16QAM (10 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/23/13							
Test Engineer:		Kiya Kedida							
Configuration:		EUT with wireless ac							
Mode:		TX, LTE band 4, 10MHz BW, 16QAM							
Chamber		Pre-amplifier			Filter		Limit		
3m Chamber D		T145 8449B			Filter 1		Part 27		
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	-26.3	V	3.0	26.5	1.0	-51.8	-13.0	-38.8	
5.145	-30.3	V	3.0	24.4	1.0	-53.6	-13.0	-40.6	
6.860	-27.4	V	3.0	23.2	1.0	-49.6	-13.0	-36.6	
3.430	-25.6	H	3.0	26.5	1.0	-51.0	-13.0	-38.0	
5.145	-28.2	H	3.0	24.4	1.0	-51.5	-13.0	-38.5	
6.860	-26.4	H	3.0	23.2	1.0	-48.6	-13.0	-35.6	
Mid Ch, (1732.5 MHz)									
3.456	-25.8	V	3.0	26.4	1.0	-51.2	-13.0	-38.2	
5.184	-30.2	V	3.0	24.3	1.0	-53.6	-13.0	-40.6	
6.912	-27.8	V	3.0	23.2	1.0	-50.0	-13.0	-37.0	
3.456	-25.7	H	3.0	26.4	1.0	-51.1	-13.0	-38.1	
5.184	-29.0	H	3.0	24.3	1.0	-52.3	-13.0	-39.3	
6.912	-26.0	H	3.0	23.2	1.0	-48.2	-13.0	-35.2	
High Ch, (1750 MHz)									
3.491	-25.1	V	3.0	26.4	1.0	-50.5	-13.0	-37.5	
5.237	-30.0	V	3.0	24.3	1.0	-53.3	-13.0	-40.3	
6.983	-28.3	V	3.0	23.1	1.0	-50.4	-13.0	-37.4	
3.491	-26.5	H	3.0	26.4	1.0	-51.9	-13.0	-38.9	
5.237	-29.5	H	3.0	24.3	1.0	-52.7	-13.0	-39.7	
6.983	-26.0	H	3.0	23.1	1.0	-48.1	-13.0	-35.1	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

LTE Band 4, QPSK (15MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/23/13							
Test Engineer:		Kiya Kedida							
Configuration:		EUT with wireless ac							
Mode:		TX, LTE band 4, 15MHz BW, QPSK							
Chamber		Pre-amplifier			Filter		Limit		
3m Chamber D		T145 8449B			Filter 1		Part 27		
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)									
3.420	-24.8	V	3.0	26.5	1.0	-50.3	-13.0	-37.3	
5.138	-29.5	V	3.0	24.4	1.0	-52.8	-13.0	-39.8	
6.855	-25.9	V	3.0	23.2	1.0	-48.1	-13.0	-35.1	
3.420	-25.1	H	3.0	26.5	1.0	-50.5	-13.0	-37.5	
5.138	-27.2	H	3.0	24.4	1.0	-50.6	-13.0	-37.6	
6.855	-25.0	H	3.0	23.2	1.0	-47.2	-13.0	-34.2	
Mid Ch, (1732.5 MHz)									
3.465	-24.3	V	3.0	26.4	1.0	-49.7	-13.0	-36.7	
5.198	-26.4	V	3.0	24.3	1.0	-49.7	-13.0	-36.7	
6.930	-27.1	V	3.0	23.1	1.0	-49.2	-13.0	-36.2	
3.465	-24.7	H	3.0	26.4	1.0	-50.1	-13.0	-37.1	
5.198	-28.6	H	3.0	24.3	1.0	-51.9	-13.0	-38.9	
6.930	-25.9	H	3.0	23.1	1.0	-48.0	-13.0	-35.0	
High Ch, (1752.5 MHz)									
3.505	-24.7	V	3.0	26.4	1.0	-50.1	-13.0	-37.1	
5.258	-29.9	V	3.0	24.3	1.0	-53.1	-13.0	-40.1	
7.010	-27.9	V	3.0	23.1	1.0	-50.0	-13.0	-37.0	
3.505	-24.8	H	3.0	26.4	1.0	-50.2	-13.0	-37.2	
5.258	-29.1	H	3.0	24.3	1.0	-52.3	-13.0	-39.3	
7.010	-25.9	H	3.0	23.1	1.0	-48.0	-13.0	-35.0	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

LTE Band 4, 16QAM (15MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/23/13							
Test Engineer:		Kiya Kedida							
Configuration:		EUT with wireless ac							
Mode:		TX, LTE band 4, 15MHz BW, 16QAM							
Chamber		Pre-amplifier			Filter		Limit		
3m Chamber D		T145 8449B			Filter 1		Part 27		
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)									
3.420	-25.7	V	3.0	26.5	1.0	-51.2	-13.0	-38.2	
5.138	-30.4	V	3.0	24.4	1.0	-53.8	-13.0	-40.8	
6.855	-26.8	V	3.0	23.2	1.0	-49.0	-13.0	-36.0	
3.420	-26.0	H	3.0	26.5	1.0	-51.5	-13.0	-38.5	
5.138	-28.2	H	3.0	24.4	1.0	-51.6	-13.0	-38.6	
6.855	-26.0	H	3.0	23.2	1.0	-48.2	-13.0	-35.2	
Mid Ch, (1732.5 MHz)									
3.465	-25.3	V	3.0	26.4	1.0	-50.7	-13.0	-37.7	
5.198	-27.4	V	3.0	24.3	1.0	-50.7	-13.0	-37.7	
6.930	-28.1	V	3.0	23.1	1.0	-50.2	-13.0	-37.2	
3.465	-25.6	H	3.0	26.4	1.0	-51.0	-13.0	-38.0	
5.198	-29.7	H	3.0	24.3	1.0	-53.0	-13.0	-40.0	
6.930	-26.9	H	3.0	23.1	1.0	-49.0	-13.0	-36.0	
High Ch, (1752.5 MHz)									
3.505	-25.6	V	3.0	26.4	1.0	-51.0	-13.0	-38.0	
5.258	-30.8	V	3.0	24.3	1.0	-54.1	-13.0	-41.1	
7.010	-28.9	V	3.0	23.1	1.0	-51.0	-13.0	-38.0	
3.505	-25.7	H	3.0	26.4	1.0	-51.1	-13.0	-38.1	
5.258	-29.9	H	3.0	24.3	1.0	-53.2	-13.0	-40.2	
7.010	-26.9	H	3.0	23.1	1.0	-49.0	-13.0	-36.0	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

LTE Band 4, QPSK (20 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/24/13							
Test Engineer:		Kiya Kedida							
Configuration:		EUT with wireless ac							
Mode:		TX, LTE band 4, 20MHz BW, QPSK							
Chamber		Pre-amplifier			Filter		Limit		
3m Chamber D		T145 8449B			Filter 1		Part 27		
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1720 MHz)									
3.423	-24.7	V	3.0	30.4	1.0	-54.2	-13.0	-41.2	
5.133	-29.8	V	3.0	28.8	1.0	-57.6	-13.0	-44.6	
6.843	-25.1	V	3.0	27.1	1.0	-51.3	-13.0	-38.3	
3.423	-25.7	H	3.0	30.4	1.0	-55.1	-13.0	-42.1	
5.133	-28.3	H	3.0	28.8	1.0	-56.0	-13.0	-43.0	
6.843	-25.0	H	3.0	27.1	1.0	-51.2	-13.0	-38.2	
Mid Ch, (1732.5 MHz)									
3.447	-24.8	V	3.0	30.4	1.0	-54.2	-13.0	-41.2	
5.198	-30.2	V	3.0	28.7	1.0	-57.9	-13.0	-44.9	
6.948	-27.0	V	3.0	27.0	1.0	-53.0	-13.0	-40.0	
3.447	-24.7	H	3.0	30.4	1.0	-54.1	-13.0	-41.1	
5.198	-26.6	H	3.0	28.7	1.0	-54.3	-13.0	-41.3	
6.948	-25.6	H	3.0	27.0	1.0	-51.6	-13.0	-38.6	
High Ch, (1745 MHz)									
3.470	-24.1	V	3.0	30.4	1.0	-53.5	-13.0	-40.5	
5.206	-30.3	V	3.0	28.7	1.0	-58.0	-13.0	-45.0	
6.942	-27.4	V	3.0	27.1	1.0	-53.4	-13.0	-40.4	
3.470	-26.1	H	3.0	30.4	1.0	-55.5	-13.0	-42.5	
5.206	-25.8	H	3.0	28.7	1.0	-53.5	-13.0	-40.5	
6.942	-26.3	H	3.0	27.1	1.0	-52.3	-13.0	-39.3	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

LTE Band 4, 16QAM (20MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/24/13							
Test Engineer:		Kiya Kedida							
Configuration:		EUT with wireless ac							
Mode:		TX, LTE band 4, 20MHz BW, QPSK							
Chamber		Pre-amplifier			Filter		Limit		
3m Chamber D		T145 8449B			Filter 1		Part 27		
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1720 MHz)									
3.423	-25.5	V	3.0	30.4	1.0	-55.0	-13.0	-42.0	
5.133	-30.6	V	3.0	28.8	1.0	-58.4	-13.0	-45.4	
6.843	-25.9	V	3.0	27.1	1.0	-52.1	-13.0	-39.1	
3.423	-26.6	H	3.0	30.4	1.0	-56.0	-13.0	-43.0	
5.133	-29.1	H	3.0	28.8	1.0	-56.8	-13.0	-43.8	
6.843	-25.9	H	3.0	27.1	1.0	-52.1	-13.0	-39.1	
Mid Ch, (1732.5 MHz)									
3.447	-25.6	V	3.0	30.4	1.0	-55.0	-13.0	-42.0	
5.198	-31.1	V	3.0	28.7	1.0	-58.8	-13.0	-45.8	
6.948	-28.0	V	3.0	27.0	1.0	-54.0	-13.0	-41.0	
3.447	-25.4	H	3.0	30.4	1.0	-54.8	-13.0	-41.8	
5.198	-27.5	H	3.0	28.7	1.0	-55.2	-13.0	-42.2	
6.948	-26.3	H	3.0	27.0	1.0	-52.3	-13.0	-39.3	
High Ch, (1745 MHz)									
3.470	-25.0	V	3.0	30.4	1.0	-54.4	-13.0	-41.4	
5.206	-31.2	V	3.0	28.7	1.0	-58.9	-13.0	-45.9	
6.942	-28.3	V	3.0	27.1	1.0	-54.3	-13.0	-41.3	
3.470	-27.0	H	3.0	30.4	1.0	-56.4	-13.0	-43.4	
5.206	-26.5	H	3.0	28.7	1.0	-54.2	-13.0	-41.2	
6.942	-27.3	H	3.0	27.1	1.0	-53.3	-13.0	-40.3	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

LTE Band 13, QPSK and 16 QAM (10MHz BANDWIDTH)

Compliance Certification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		LG							
Project #:		13U15600							
Date:		07/24/13							
Test Engineer:		Trina Noor							
Configuration:		EUT with wireless ac							
Mode:		TX, LTE band 13, 10MHz, QPSK/16QAM							
Chamber		Pre-amplifier			Filter		Limit		
3m Chamber		T145 8449B			Filter 1		Part 27		
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
QPSK									
Mid Ch, (782 MHz)									
1.564	-15.6	V	3.0	30.7	1.0	-45.3	-13.0	-32.3	
2.346	-24.9	V	3.0	28.9	1.0	-52.8	-13.0	-39.8	
3.128	-20.4	V	3.0	26.8	1.0	-46.3	-13.0	-33.3	
1.564	-20.4	H	3.0	30.7	1.0	-50.1	-13.0	-37.1	
2.346	-22.3	H	3.0	28.9	1.0	-50.2	-13.0	-37.2	
3.128	-23.3	H	3.0	26.8	1.0	-49.2	-13.0	-36.2	
16QAM									
Mid Ch, (782 MHz)									
1.564	-16.2	V	3.0	30.7	1.0	-45.9	-13.0	-32.9	
2.346	-23.5	V	3.0	28.9	1.0	-51.4	-13.0	-38.4	
3.128	-19.8	V	3.0	26.8	1.0	-45.7	-13.0	-32.7	
1.564	-19.8	H	3.0	30.7	1.0	-49.5	-13.0	-36.5	
2.346	-23.1	H	3.0	28.9	1.0	-51.0	-13.0	-38.0	
3.128	-24.4	H	3.0	26.8	1.0	-50.2	-13.0	-37.2	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									