

FCC CFR47 PART 22H AND 24E CERTIFICATION TEST REPORT

FOR

DUAL BANDS GSM/WCDMA PHONE WITH BLUETOOTH

MODEL NUMBER: LG440-G

FCC ID: ZNFLG440G

REPORT NUMBER: 12U14489-2, REVISION A

ISSUE DATE: SEPTEMBER 14, 2012

Prepared for

LG ELECTRONICS MOBILE COMM 1000 SYLVAN AVE. ENGLEWOOD CLIFFS, NJ 07632

Prepared by

COMPLIANCE CERTIFICATION SERVICES (UL CCS) 47173 BENICIA STREET FREMONT, CA 94538, U.S.A.

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Revision History

DATE: SEPTEMBER 14, 2012

	Issue		
Rev.	Date	Revisions	Revised By
	08/10/12	Initial	T. Chan
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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: LG ELECTRONICS MOBILECOMM

1000 SYLVAN AVE.

ENGLEWOOD CLIFFS, NJ 07632

EUT DESCRIPTION: DUAL BANDS GSM/WCDMA PHONE WITH BLUETOOTH

MODEL: LG440G

SERIAL NUMBER: 204KPYR163002

DATE TESTED: AUGUST 01 and 07, 2012

APPLICABLE STANDARDS

STANDARD TEST RESULTS

FCC PART 22 SUBPART H AND 24 SUBPART E Pass

Compliance Certification Services (UL CCS) 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 CCS 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 CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS 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 CCS By:

Tested By:

THU CHAN ENGINEERING MANAGER

UL CCS

MENGISTU MEKURIA EMC ENGINEER UL CCS

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REPORT NO: 12U14489-2A EUT: DUAL BANDS GSM/WCDMA WITH BLUETOOTH

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, and FCC CFR Part 24.

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3. FACILITIES AND ACCREDITATION

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

UL CCS 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:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) - Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB - 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

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

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

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Dual band GSM/WCDMA Phone with Bluetooth feature.

The manufacturer of the radio module is Qualcomm Co., Ltd.

5.2. MAXIMUM OUTPUT POWER

The RF conducted measurement passed within ± 0.5dBm of the original output power.

The RF radiated measurement with maximum peak ERP / EIRP output powers are as follows:

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Part 22 Cellular Band						
Frequency range	Modulation	ERP				
(MHz)	Modulation	dBm	mW			
826.4 – 846.6	UMTS, Rel 99	26.60	457.1			
020.4 - 040.0	HSDPA, Rel 6	26.97	497.7			

Part 24 PCS Band						
Frequency range	Modulation					
(MHz)	Modulation	dBm	mW			
1852.4-1907.6	UMTS, Rel 99	27.00	501.2			
1032.4-1907.0	HSDPA, Rel 6	27.35	543.3			

5.3. SOFTWARE AND FIRMWARE

The EUT is linked with Agilent 8960 Wireless Communication Test Set.

5.4. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power.

Since the EUT is a portable device, in addition to the peak power measurements verification data shown below, the EUT also investigated on an X, Y and Z orientations and the worst-orientations among them with AC/DC adapter and headset. After the investigations, Y-Orientation with headset were turned out to be the worst case for Cell and PCS bands.

5.5. **DESCRIPTION OF TEST SETUP**

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST								
Description Manufacturer Model Serial Number FCC ID								
AC Adapter	LG	STA-U24WDI	DH1Y0158705	DoC				
Heasdset LG N/A N/A								

I/O CABLES (RADIATED SETUP)

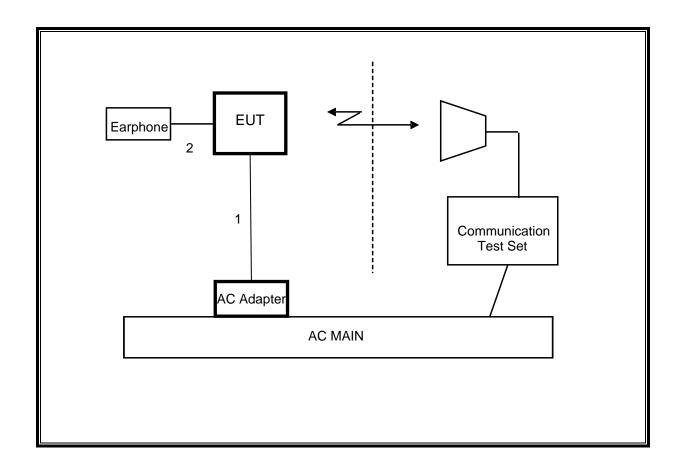
	I/O CABLE LIST									
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks				
1	DC Power	1	Mini-USB	Shielded	1.2 m	NA				
2	Audio	1	Mini-Jack	Un-Shielded	1.5 m	Mic on Cable				

TEST SETUP

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

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SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



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6. TEST AND MEASUREMENT EQUIPMENT

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

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TEST EQUIPMENT LIST							
Description	Manufacturer	Model	Asset	Cal Due			
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	11/07/12			
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01011	03/23/13			
Antenna, Horn, 18 GHz	EMCO	3115	C00943	CNR			
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/18/12			
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00986	03/22/13			
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/15/12			
Radio Communication Analizer	Anritsu	MT8820C	1100481	07/13/13			
Vector signal generator, 6 GHz	Agilent / HP	E4438C	None	07/06/13			
Antenna, Tuned Dipole 400~1000	ETS	3121C DB4	C00993	08/16/12			
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02686	CNR			
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02688	CNR			

7. RADIATED TEST RESULTS

7.1.1. 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.

TEST PROCEDURE

ANSI / TIA / EIA 603C

MODES TESTED

- UMTS REL. 99
- HSDPA REL 6

RESULTS

CELLULAR BAND (ERP)

			ERP	
Mode	Channel	f (MHz)	dBm	mW
	4357	826.40	26.55	451.86
UMTS, Rel 99	4408	836.60	26.53	449.78
	4458	846.60	26.60	457.09
	4357	826.40	26.79	477.53
HSDPA, Rel 6	4408	836.60	26.28	424.62
	4458	846.60	26.97	497.74

PCS BAND (EIRP)

			EIRP		
Mode	Channel	f (MHz)	dBm	mW	
	9662	1852.40	25.96	394.46	
UMTS,REL 99	9800	1880.00	27.00	501.19	
	9938	1907.60	26.50	446.68	
	9662	1852.40	25.46	351.56	
HSDPA, Rel 6	9800	1880.00	27.35	543.25	
	9938	1907.60	27.31	538.27	

ERP WCDMA REL 99, 850MHz BAND

High Frequency Substitution Measurement

Compliance Certification Services Chamber B

Company: LG ELECTRONICS
Project #: 12u14489

Project #: 12u14489 **Date:** 08/08/12

Test Engineer: MENGISTU MEKURIA
Configuration: EUT with Earphone
Mode: TX, 850 MHz BAND, WCDAM

Test Equipment:

Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)

Substitution: Dipole S/N: 1629, 4ft SMA Cable (245182002) Warehouse.

(dBm)				ERP	Limit	Margin	Notes
((H/V)	(dB)	(dBd)	(dBm)	(dBm)	(dB)	
23.80	V	0.5	0.0	23.30	38.5	-15.1	
27.05	Н	0.5	0.0	26.55	38.5	-11.9	
21.88	V	0.5	0.0	21.38	38.5	-17.1	
27.03	Н	0.5	0.0	26.53	38.5	-11.9	
21.56	V	0.5	0.0	21.06	38.5	-17.4	
27.10	Н	0.5	0.0	26.60	38.5	-11.8	
	23.80 27.05 21.88 27.03 21.56 27.10	27.05 H 21.88 V 27.03 H 21.56 V 27.10 H	23.80 V 0.5 27.05 H 0.5 21.88 V 0.5 27.03 H 0.5 21.56 V 0.5 27.10 H 0.5	23.80 V 0.5 0.0 27.05 H 0.5 0.0 21.88 V 0.5 0.0 27.03 H 0.5 0.0 21.56 V 0.5 0.0	23.80 V 0.5 0.0 23.30 27.05 H 0.5 0.0 26.55 21.88 V 0.5 0.0 21.38 27.03 H 0.5 0.0 26.53 21.56 V 0.5 0.0 21.06 27.10 H 0.5 0.0 26.60	23.80 V 0.5 0.0 23.30 38.5 27.05 H 0.5 0.0 26.55 38.5 21.88 V 0.5 0.0 21.38 38.5 27.03 H 0.5 0.0 26.53 38.5 21.56 V 0.5 0.0 21.06 38.5 27.10 H 0.5 0.0 26.60 38.5	23.80 V 0.5 0.0 23.30 38.5 .15.1 27.05 H 0.5 0.0 26.55 38.5 .11.9 21.88 V 0.5 0.0 21.38 38.5 .17.1 27.03 H 0.5 0.0 26.53 38.5 .11.9 21.56 V 0.5 0.0 21.06 38.5 .17.4 27.10 H 0.5 0.0 26.60 38.5 .11.8

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ERP HSDPA REL 6, 850MHz BAND

High Frequency Substitution Measurement

FCC ID: ZNFLG440G

Compliance Certification Services Chamber B

Company: LG ELECTRONICS

Project #: 12|1459 Date: 08/02/12

Test Engineer: MENGISTU MEKURIA Configuration: EUT with Earphone Mode: TX, 850 MHz BAND, HSDPA

Test Equipment:

Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)

Substitution: Dipole S/N: 1629, 4ft SMA Cable (245182002) Warehouse.

f	SG reading	Ant. Pol.	Cable Loss	Antenna Gain	ERP	Limit	Margin	Notes
MHz	(dBm)	(H/V)	(dB)	(dBd)	(dBm)	(dBm)	(dB)	
Low Ch								
826.40	21.89	V	0.5	0.0	21.39	38.5	-17.1	
826.40	27.29	Н	0.5	0.0	26.79	38.5	-11.7	
Mid Ch								
836.60	22.45	V	0.5	0.0	21.95	38.5	-16.5	
836.60	26.78	Н	0.5	0.0	26.28	38.5	-12.2	
High Ch								
846.60	22.56	V	0.5	0.0	22.06	38.5	-16.4	
846.60	27.47	Н	0.5	0.0	26.97	38.5	-11.5	

EIRP WCDMA REL 99, 1900MHz BAND

High Frequency Fundamental Measurement

Compliance Certification Services Chamber B

 Company:
 LG ELECTRONICS

 Project #:
 12l1459

 Date:
 08/01/12

Test Engineer: MENGISTU MEKURIA
Configuration: EUT with Earphone
Mode: TX, 1900 MHz BAND, WCDMA

Test Equipment:

Receiving: Horn T59, and Camber B SMA Cables

Substitution: Horn T217 Substitution, 4ft SMA Cable (245182002) Warehouse

f	SG reading	Ant. Pol.	Cable Loss	Antenna Gain	EIRP	Limit	Delta	Notes
GHz	(dBm)	(H/V)	(dB)	(dBi)	(dBm)	(dBm)	(dB)	
1.852	12.2	V	0.85	8.62	19.93	33.0	-13.1	
1.852	18.3	Н	0.85	8.47	25.96	33.0	-7.0	
1.880	13.7	V	0.85	8.46	21.33	33.0	-11.7	
1.880	19.5	Н	0.85	8.36	27.00	33.0	-6.0	
1.908	15.0	V	0.85	8.30	22.41	33.0	-10.6	
1.908	19.1	Н	0.85	8.25	26.50	33.0	-6.5	

EIRP HSDPA REL 6, 1900MHz BAND

High Frequency Fundamental Measurement Compliance Certification Services Chamber B

Company: LG ELECTRONICS
Project #: 12l1459

Test Engineer: MENGISTU MEKURIA
Configuration: EUT with Earphone
Mode: TX, 1900 MHz BAND, HSDPA

08/02/12

Test Equipment:

Date:

Receiving: Horn T59, and Camber B SMA Cables

Substitution: Horn T217 Substitution, 4ft SMA Cable (245182002) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
1.852	13.3	V	0.85	8.62	21.04	33.0	-12.0	
1.852	17.8	Н	0.85	8.47	25.46	33.0	-7.5	
1.880	14.2	V	0.85	8.46	21.83	33.0	-11.2	
1.880	19.8	Н	0.85	8.36	27.35	33.0	-5.7	
1.908	15.4	V	0.85	8.30	22.81	33.0	-10.2	
1.908	19.9	Н	0.85	8.25	27.31	33.0	-5.7	

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7.1.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238

LIMIT

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

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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.

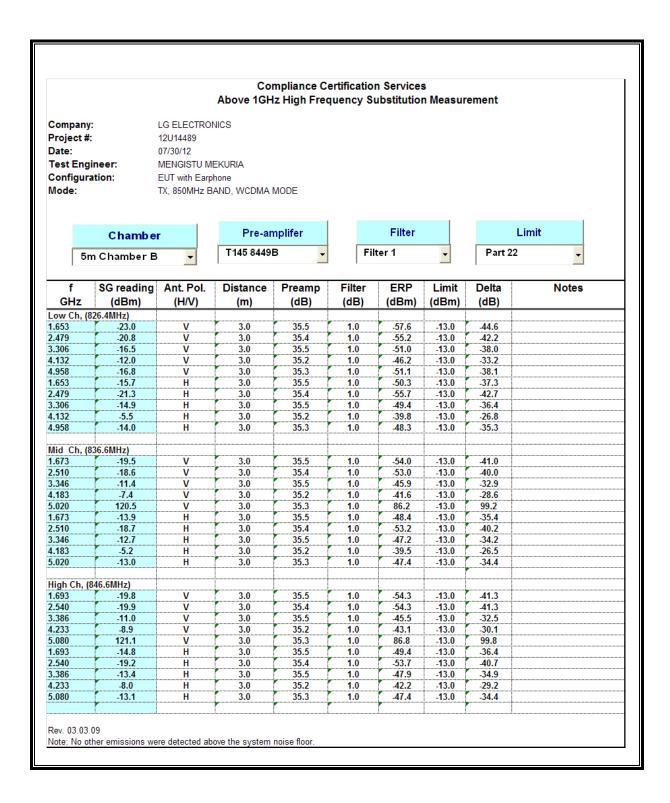
For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth 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

- UMTS REL. 99
- HSDPA REL 6

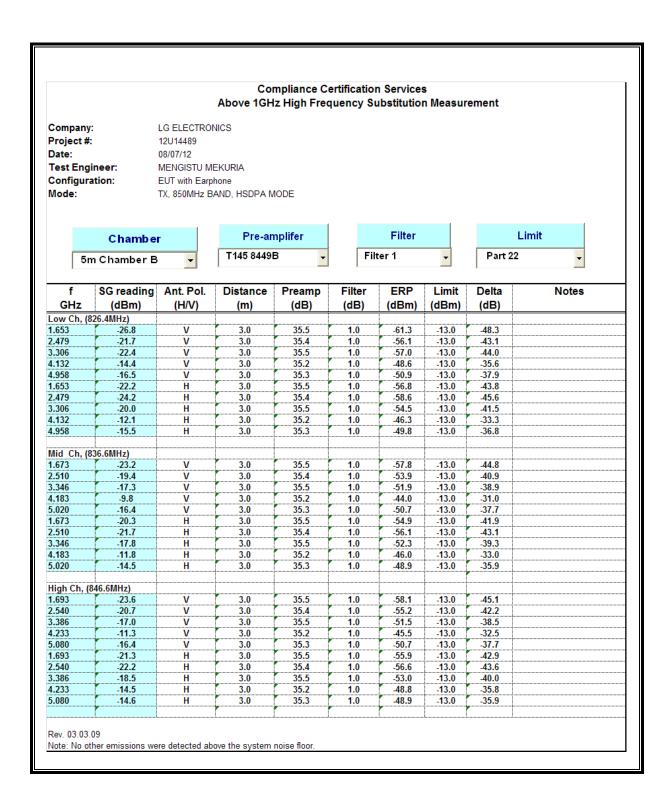
RESULTS

ERP WCDMA REL 99, CELL BAND



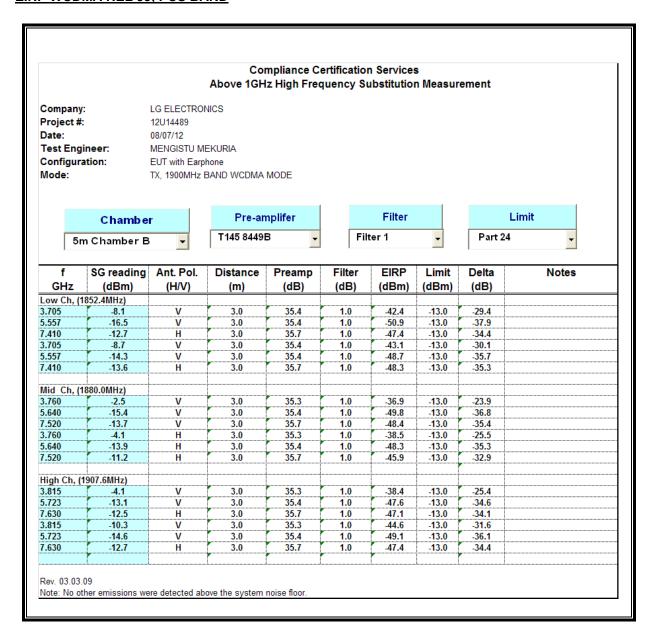
DATE: SEPTEMBER 14, 2012

ERP HSDPA REL 6, CELL BAND



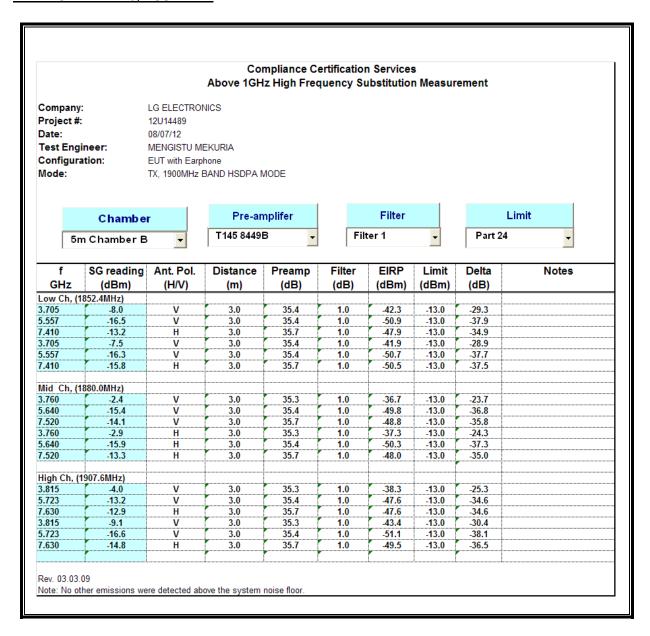
DATE: SEPTEMBER 14, 2012

EIRP WCDMA REL 99, PCS BAND



DATE: SEPTEMBER 14, 2012

EIRP HSDPA REL 6, PCS BAND



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