



FCC CFR47 PART 15 SUBPART C CLASS II PERMISSIVE CHANGE

CERTIFICATION TEST REPORT

FOR

CELLULAR/AWS/PCS CDMA & AWS/PCS LTE PHONE WITH BLUETHOOTH AND WLAN

MODEL NUMBER: MS770, LG-MS770, LGMS770, LW770, LG-LW770, LGLW770

FCC ID: ZNFMS770

REPORT NUMBER: 12U14456-2

ISSUE DATE: JUNE 14, 2012

Prepared for LG ELECTRONICS MOBILECOMM U.S.A., INC. 1000 SYLVAN AVE. ENGLEWOODS CLIFFS, NJ 07632

Prepared by COMPLIANCE CERTIFICATION SERVICES (UL CCS) 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.	lssue Date	Revisions	Revised By
	06/14/2012	Initial Issue	T. LEE

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	LG ELECTRONICS MOBILECOMM U.S 1000 SYLVAN AVE. ENGLEWOODS CLIFFS, NJ 07632	3.A., INC.	
EUT DESCRIPTION: Cellular/AWS/PCS CDMA & AWS/PCS LTE Phone with Blue and WLAN		LTE Phone with Bluetooth	
MODEL:	MS770, LG-MS770, LGMS770, LW770, LG-LW770, LGLW770		
SERIAL NUMBER:	99000077000285		
DATE TESTED:	JUNE 12, 2012		
	APPLICABLE STANDARDS		
ST	ANDARD	TEST RESULTS	
CFR 47 P	art 15 Subpart C	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:

Ti A

TIM LEE STAFF ENGINEER UL CCS

Tested By:

TOM CHEN EMC ENGINEER UL CCS

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

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 <u>http://www.ccsemc.com</u>.

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 Cellular/AWS/PCS CDMA & AWS/PCS LTE Phone with Bluetooth and WLAN.

The unit supports AFH mode. The manufacturer attested the following.

- It is in compliance with Bluetooth Specification 1.2 or later specification.
- The number of hopping channel in AFH mode is 79 channels
- The output power do not transmit over than 125 mW
- The channel separation is based upon 2/3 of 20 dB channel bandwidth

5.2. MAXIMUM OUTPUT POWER

The measured average power values were within ± 0.5 dB of the original values. Refer to original report number "12U14406-1A FCC IC BLUETOOTH Report" for exact output power values and for all antenna port results.

5.3. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The change filed under this application has the following changes.

- Hardware Changes (Antenna Pattern and OCB Adjustments)
- Other Changes (Shield Can Shape, and components)

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna, with a maximum gain of -0.59 dBi.

5.5. SOFTWARE AND FIRMWARE

The EUT software installed during testing was LAP8960IR120417.

5.5 MODEL DIFFERENCE

Model MS770 is identical to Models LG-MS770, LGMS770, LW770, LG-LW770, and LGLW770 except for model designation.

5.6 WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that Y orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y orientation.

Worst-case data rates as provided by the client were:

GFSK DH5 mode QPSK 2-DH5 mode 8PSK 3-DH5 mode

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5.7 DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description Manufacturer Model Serial Number				
AC ADAPTER	LG ELECTRONICS	MCS-01WR	RA1Z0051473	
HEADSET	LG ELECTRONICS	NA	N/A	

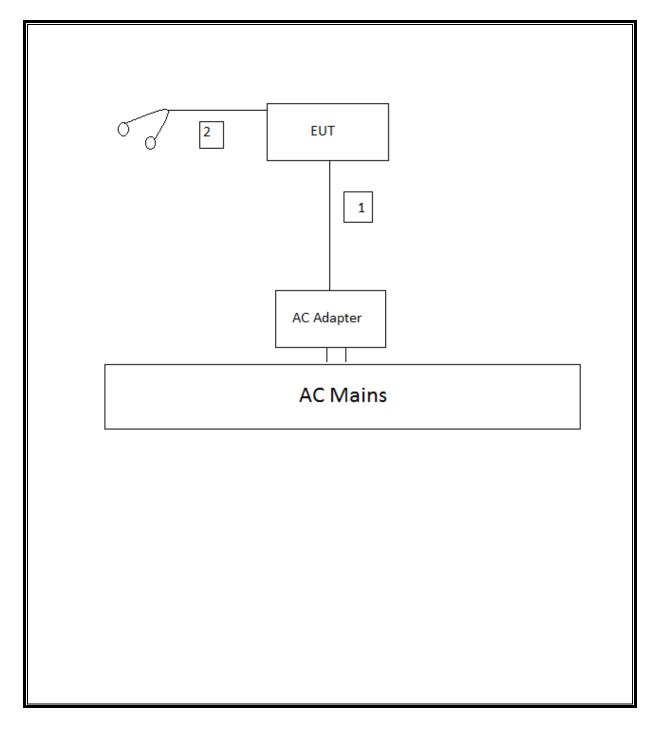
I/O CABLES

I/O Cable List						
Cable	Port	# of identical	Connector	Cable Type	Cable Length	Remarks
No		ports	Туре		(m)	
1	DC	1	MINI USB	UN-SHELDED	1.0m	LG-DLC300 (BA21)
2	AUDIO	1	MINI JACK	UN-SHELDED	1.0m	N/A

TEST SETUP

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SETUP DIAGRAM FOR TESTS



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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
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	07/14/12
Antenna, Horn, 18 GHz	EMCO	3115	C00945	06/29/12
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	11/11/12
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01016	07/12/12
Horn Antenna, 26.5 GHz	ARA	MWH-1826/B	C00589	07/28/12
Preamplifier, 40 GHz	Miteq	NSP4000-SP2	C00990	03/14/13
Reject Filter, 2.0-2.9 GHz	Micro-Tronics	BRM50702	N02684	CNR
High Pass Filter, 7.6 GHz	Micro-Tronics	HPM13195	N02682	CNR
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01159	04/09/13
Peak Power Meter	Agilent	N1911A	1260847C	08/04/12
Peak Power Sensor	Agilent	E9323A	1244073F	08/04/12
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRM50702	N02685	CNR
EMI Test Receiver, 30MHz	R&S	ESHS 20	N02396	08/19/13
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	12/13/12

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7. RADIATED TEST RESULTS

7.1. LIMITS AND PROCEDURE

<u>LIMITS</u>

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

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7.2. TRANSMITTER ABOVE 1 GHz

7.2.1. BASIC DATA RATE GFSK MODULATION

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

	:07 Jun 12, 2012		R	T Freq/Channel
Project: 12U14456 Ref 110 dB µ∨ Æeak	#Atten 0 dB		Mkr1 2.352 27 58.46 d	Contor Ero
.og 0 IB/				Start Free 2.31000000 GH
12.2 IB				Stop Fre
'4.0 IBu∀	ant more than of a local more than	1 An he he have been a start of the	Angerstander	CF St 8.00000000 MH <u>Auto</u>
31 V2 33 FC				Freq Offse 0.00000000 н
(f): :Tun Swp				Signal Trac
Start 2.310 00 GH Res BW 1 MHz	-	BW 1 MHz	Stop 2.390 00 Sweep 1 ms (601	

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K Agilent 16:29:	10 Jun 12, 2012	, , , R T	Freq/Channel
roject: 12U14456 tef 110 dBµ∨ Peak	#Atten 0 dB	Mkr1 2.389 60 GHz 45.90 dBµ∨	Center Freq 2.3500000 GHz
og 0 B/			Start Freq 2.3100000 GHz
8 B			Stop Freq 2.3900000 GHz
4.0 Βμ∨ gAv			CF Step 8.0000000 MHz <u>Auto Ma</u>
1 V2 3 FC			Freq Offset 0.00000000 Hz
(f): Tun wp			Signal Track On <u>Off</u>
itart 2.310 00 GHz Res BW 1 MHz	#VBW 10 H	Stop 2.390 00 GHz Iz Sweep 6.238 s (601 pts)	

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RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

🔆 Agilent 16:23:	59 Jun 12, 2012	RT	Freq/Channel
Project: 12U14456 &ef 110 dB µ∨ 'Peak	#Atten 0 dB	Mkr1 2.355 33 GHz 59.09 dBµ∨	Center Freq 2.35000000 GHz
.og 0 B/			Start Freq 2.31000000 GHz
2.2			Stop Freq 2.39000000 GHz
4.0 ΒμV	- hale man and a subsection of the second	1 A A A A A A A A A A A A A A A A A A A	CF Step 8.0000000 MHz <u>Auto Ma</u>
11 V2 3 FC			Freq Offset 0.00000000 Hz
(f): Tun /wp			Signal Track
Start 2.310 00 GHz Res BW 1 MHz	#VBW 1 MH	Stop 2.390 00 GHz z Sweep 1 ms (601 pts)	

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Agilent 16:24:	38 Jun 12, 2012	RT	Freq/Channel
roject: 12U14456 . ef 110 dB µ∨ Peak	#Atten 0 dB	Mkr1 2.388 53 GHz 45.91 dBµ∨	Center Freq 2.35000000 GHz
og D B/			Start Freq 2.31000000 GHz
B			Stop Freq 2.39000000 GHz
4.0 Βμ∨ gAv			CF Step 8.00000000 MHz <u>Auto Ma</u>
1 V2			Freq Offset 0.00000000 Hz
(f): Tun wp			Signal Track On <u>Of</u>
tart 2.310 00 GHz Res BW 1 MHz	#VBW 10 H	Stop 2.390 00 GHz Iz Sweep 6.238 s (601 pts)	

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RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

🔆 Agilent 17:42:1	9 Jun 12, 2012			RT	Freq/Channel
Project: 12U14456 Ref 110 dB µ∨ ⁄Peak	#Atten 0 dB		Mkr1 2.	492 272 5 GHz 59.09 dBµ∨	Center Freq 2.49175000 GHz
.og 0 1B/ Dffst					Start Freq 2.48350000 GHz
12.5 IB					Stop Freq 2.5000000 GHz
'4.0 ΙΒμ√ .gAv <i>(turtowniburrho</i>	negeterenskibberskibberekom	1 Millinged Alem	nn tonderroute	when an and the set the set	CF Step 1.6500000 MHz <u>Auto Mar</u>
31 V2 33 FC					Freq Offset 0.00000000 Hz
(f): Tun Swp					Signal Track On <u>Off</u>
Start 2.483 500 0 G Res BW 1 MHz	Hz #VBW 1	MHz	•	500 000 0 GHz 1 ms (601 pts)	

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Agilent 17:43:	52 Jun 12, 2012	RT	Freq/Channel
roject: 12U14456 t ef 110 dB µ∨ Peak	#Atten 0 dB	Mkr1 2.499 367 5 GHz 46.07 dBµ∨	Center Freq 2.49175000 GHz
og 0 B/			Start Freq 2.48350000 GHz
2.5 B			- Stop Freq 2.5000000 GHz
4.0 Βμ∨ gAv			CF Step 1.65000000 MHz <u>Auto Ma</u>
1 V2 3 FC			Freq Offset 0.00000000 Hz
(f): Tun wp			Signal Track On <u>Of</u>
itart 2.483 500 0 G Res BW 1 MHz	Hz #VBW 10 H	Stop 2.500 000 0 GHz Iz Sweep 1.287 s (601 pts)	ļ

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RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

tart 2.483 500 0 0 Res BW 1 MHz		#VBW 1 MHz	•	00 000 0 GHz ms (601 pts)	
Tun wp					On <u>Of</u>
(f):					Signal Track
1 V2					Freq Offset 0.00000000 Hz
Bµ∨ 1 6	antital and the second defended	when be any work when	n the and the second second	nnoulounn	CF Step 1.6500000 MHz <u>Auto Ma</u>
2.5 B I 4.0					Stop Freq 2.5000000 GHz
D B/					Start Freq 2.48350000 GHz
roject: 12U14456 ef 110 dBµ∨ Peak oq	#Atten 0 dB		MKr1 2.4	83 967 5 GHz 59.12 dBµ∨	Center Freq 2.49175000 GHz
Agilent 17:29:	01 Jun 12, 2012		NI 4 2 4	R T 83 967 5 GHz	Freq/Channel

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Agilent 17:34:	26 Jun 12, 2012	R T	Freq/Channel
roject: 12U14456 ef 110 dB µ∨ Peak	#Atten 0 dB	Mkr1 2.499 477 5 GHz 46.06 dBµ∨	Center Freq 2.49175000 GHz
og D B/			Start Freq 2.48350000 GHz
2.5			- Stop Freq 2.5000000 GHz
4.0 Βμ∨ gAv			CF Step 1.65000000 MHz <u>Auto Ma</u>
1 V2 3 FC			Freq Offset 0.00000000 Hz
(f): Tun wp			Signal Track On <u>Of</u>
tart 2.483 500 0 (Res BW 1 MHz	GHz #VBW 10	Stop 2.500 000 0 GHz Hz Sweep 1.287 s (601 pts)	

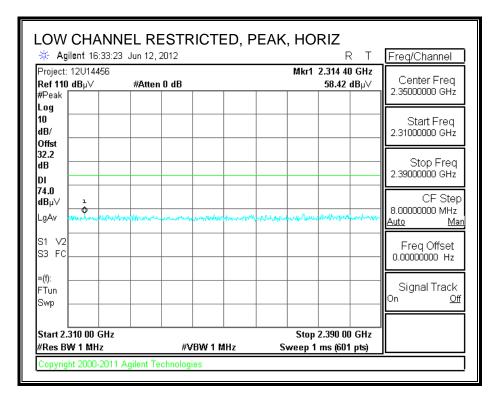
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HARMONICS AND SPURIOUS EMISSIONS

roject #:		Test Engr: Tom Chen											
ompany: est Target:		Date: 06/12/12											
est Target:		12U1445											
0	Company: LG E			nc.									
ode Oner:		FCC Cla											
		GFSK, T	X mode										
f		Measurem	nent Freq	uency	Amp	Preamp 0	Gain			Average	Field Stren	gth Limit	
Di	ist	Distance	to Anten	na	D Corr	Distance	Correc	t to 3 me	ters	Peak Fie	ld Strength	Limit	
Re	ead	Analyzer	Reading		Avg	0		trength @		0	s. Average		
Al		Antenna			Peak	Calculate			ength	Margin v	s. Peak Lir	nit	
CI	L	Cable Los	s		HPF	High Pas	s Filter						
fI	Dist	Read	AF	CL	Amp	D Corr	Fltr	Corr.	Limit	Margin	Ant. Pol.	Det.	Notes
GHz ((m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP	
402 MHz G	~~~~~												
~~~~~	3.0	46.9	33.1	6.3	-34.8	0.0	0.0	51.4	74.0	-22.6	H	P	
	3.0	39.6	33.1	6.3	-34.8	0.0	0.0	34.1	54.0	- <u>19.9</u>	H V	A	
	3.0 3.0	56.6 49.0	<u>33.1</u> 33.1	<u>6.3</u> 6.3	-34.8 -34.8	0.0 0.0	0.0 0.0	61.2 43.6	74.0 54.0	-12.8 -10.4	V V	P A	
441 MHz G	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	47.0	- 33.1	0.3	-34.0	0.0	0.0	43.0	34.0	-10.4	<b>v</b>	1	
	3.0	52.6	33.1	6.3	-34.8	0.0	0.0	57.3	74.0	-16.7	v	Р	
~~~~~	3.0	45.4	33.1	6.3	-34.8	0.0	0.0	40.1	54.0	-13.9	V	Ā	
	3.0	44.4	33.1	6.3	-34.8	0.0	0.0	49.1	74.0	-24.9	Н	Р	
	3.0	37.0	33.1	6.3	-34.8	0.0	0.0	31.7	54.0	-22.3	Н	А	
480 MHz G		40.0											
	3.0	49.8	33.2	6.4	-34.8	0.0	0.0	54.6	74.0	-19.4	V	P	
	3.0 3.0	42.5 44.2	<u>33.2</u> 33.2	6.4 6.4	-34.8 -34.8	0.0	0.0 0.0	37.3 49.0	54.0 74.0	-16.7 -25.0	V H	A P	
	3.0 3.0	44.2 36.8	<u> </u>	<u>0.4</u> 6.4	-34.8	0.0	0.0	<u>49.0</u> 31.6	74.0 54.0	-25.0	H H	A	
ev. 4.1.2.7	2.0	50.0	JJ.4	U. 7	0.40	0.0	0.0	1 51.0	54.0			A 1	

7.2.2. ENHANCED DATA RATE 8PSK MODULATION

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



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🤄 Agilent 16:34:	31 Jun 12, 2012	RT	Freq/Channel
roject: 12U14456 . ef 110 dB µ∨ Peak	#Atten 0 dB	Mkr1 2.388 93 GHz 45.84 dBμ∀	Center Freq 2.35000000 GHz
og D B/			Start Freq 2.31000000 GHz
B			Stop Freq 2.3900000 GHz
4.0 Βμ∨ gAv			CF Step 8.0000000 MHz <u>Auto Ma</u>
1 V2			Freq Offset 0.00000000 Hz
(f): Tun wp			Signal Track On <u>Of</u>
tart 2.310 00 GHz Res BW 1 MHz	#VBW 10 H	Stop 2.390 00 GHz z Sweep 6.238 s (601 pts)	

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RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

🗧 Agilent 16:36:	42 Jun 12, 2012	R T	Freq/Channel
roject: 12U14456 t ef 110 dB µ∨ Peak	#Atten 0 dB	Mkr1 2.340 53 GHz 59.15 dBµ∨	Center Freq 2.3500000 GHz
og 0 B/			Start Freq 2.31000000 GHz
B			Stop Freq 2.39000000 GHz
4.0 ΒμV	nation for some have a state of the second states o	manipularia front have now in a provident the	CF Step 8.0000000 MHz <u>Auto Ma</u>
11 V2 3 FC			Freq Offset 0.00000000 Hz
(f): Tun /wp			Signal Track On <u>Off</u>
tart 2.310 00 GHz Res BW 1 MHz	#VBW 1 MHz	Stop 2.390 00 GHz Sweep 1 ms (601 pts)	

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Agilent 16:37:	30 Jun 12, 2012	RT	Freq/Channel
roject: 12U14456 ef 110 dB µ∨ Peak	#Atten 0 dB	Mkr1 2.388 27 GHz 45.85 dBµ∨	Center Freq 2.35000000 GHz
og) B/			Start Freq 2.31000000 GHz
B			Stop Freq 2.3900000 GHz
4.0 Βμ∨ gAv			CF Step 8.00000000 MHz <u>Auto Ma</u>
1 V2			Freq Offset 0.00000000 Hz
(f): Tun wp			Signal Track On <u>Of</u>
tart 2.310 00 GHz Res BW 1 MHz	#VBW 10 H	Stop 2.390 00 GHz z Sweep 6.238 s (601 pts)	

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RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

🌾 Agilent 17:50:1	10 Jun 12, 2012			RT	Freq/Channel
Project: 12U14456 Ref 110 dB µ∨ ⁄Peak	#Atten 0 dB		Mkr1 2.49	93 867 5 GHz 59.18 dBµ∨	Center Freq 2.49175000 GHz
.og 0 1B/ Dffst					Start Freq 2.48350000 GHz
12.5 IB					Stop Freq 2.5000000 GHz
'4.0 ΙΒμ√ .gAv ^M ~-4-4mb+444	ortuitentustellittetennedellitteten	withorstown	า ผู้ในว่างานที่ไม่เหตุการกา	alisahlati, wang Pangatana	CF Step 1.6500000 MHz <u>Auto Mar</u>
31 V2 33 FC					Freq Offset 0.00000000 Hz
i(f): :Tun Swp					Signal Track On <u>Off</u>
Start 2.483 500 0 G Res BW 1 MHz	Hz #VBW	1 MHz	•)0 000 0 GHz ms (601 pts)	

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🔆 Agilent 17:50:	57 Jun 12, 2012	RT	Freq/Channel
Project: 12U14456 8 ef 110 dB µ∨ Peak	#Atten 0 dB	Mkr1 2.499 092 5 GHz 46.05 dBµ∨	Center Freq 2.49175000 GHz
og 0 B/			Start Freq 2.48350000 GHz
B			Stop Freq 2.5000000 GHz
4.0 Βμ∨ gAv			CF Step 1.65000000 MHz <u>Auto Ma</u>
1 V2 3 FC			Freq Offset 0.00000000 Hz
(f): Tun wp			Signal Track On <u>Off</u>
itart 2.483 500 0 G Res BW 1 MHz	Hz #VBW 10	Stop 2.500 000 0 GHz Hz Sweep 1.287 s (601 pts)	

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RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

Agilent 17:06:	27 Jun 12, 2012			RT	Freq/Channel
roject: 12U14456 t ef 110 dB µ∨ Peak	#Atten 0 dB		Mkr1 2.487	020 0 GHz 59.01 dBµ∨	Center Freq 2.49175000 GHz
og 0 B/					Start Freq 2.48350000 GHz
2.5 B					Stop Freq 2.5000000 GHz
1 4.0 Βμ√ gAv ∽~hherman	L All All All All All All All All All All	mathema		havendershire	CF Step 1.6500000 MHz <u>Auto M</u> ar
11 V2 3 FC					Freq Offset 0.00000000 Hz
(f): Tun /wp					Signal Track On <u>Off</u>
tart 2.483 500 0 G Res BW 1 MHz		W 1 MHz	Stop 2.500 Sweep 1 m		

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Agilent 17:07:	13 Jun 12, 2012	RT	Freq/Channel
roject: 12U14456 ef 110 dB µ∨ Peak	#Atten 0 dB	Mkr1 2.499 147 5 GHz 46.06 dBµ∨	Center Freq 2.49175000 GHz
og) B/			Start Freq 2.48350000 GHz
B			Stop Freq 2.5000000 GHz
4.0 Вµ∨ gAv			CF Step 1.6500000 MHz <u>Auto Ma</u>
1 V2			Freq Offset 0.00000000 Hz
f): Tun wp			Signal Track On <u>Of</u>
tart 2.483 500 0 G Res BW 1 MHz	GHz #VBW 10	Stop 2.500 000 0 GHz Hz Sweep 1.287 s (601 pts)	

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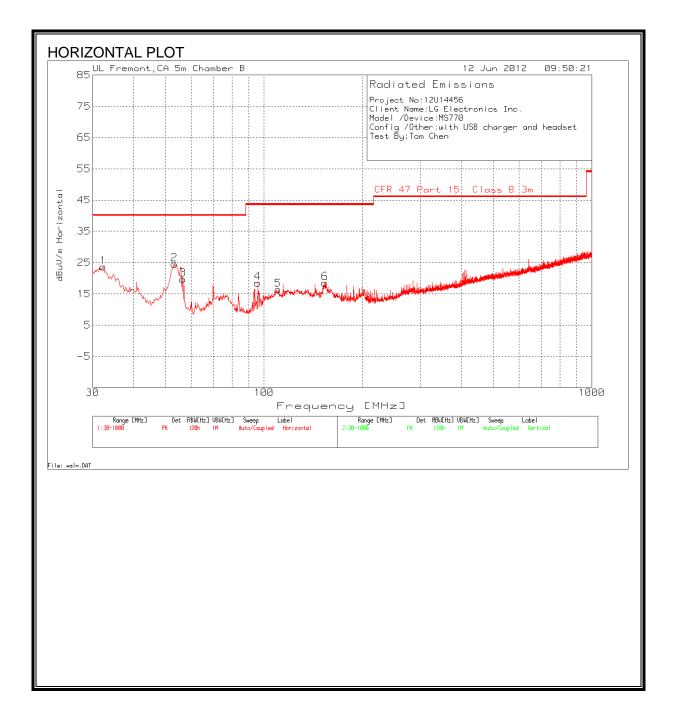
HARMONICS AND SPURIOUS EMISSIONS

Test Engr: Date: Project #: Company: Test Target: Mode Oper:		Tom Che 06/12/12 12U1445 LG Elect FCC Cla 8PSK T	6 ronics I Iss B	nc.									
	f Dist Read AF CL	Analyzer Reading Avg Antenna Factor Peak Cable Loss HPF			Preamp Gain Distance Correct to 3 meters Average Field Strength @ 3 m Calculated Peak Field Strength High Pass Filter			Average Field Strength Limit Peak Field Strength Limit Margin vs. Average Limit Margin vs. Peak Limit					
f	Dist	Read	AF	CL	Amp	D Corr	Fltr	Corr.	Limit		Ant. Pol.		Notes
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	aBu V/m	dBuV/m	dB	V/H	P/A/QP	
2402 MHz 4.804	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	55.9	33.1	63	-34.8	0.0	0.0	60 5	74.0	12.5	v	Р	
4.804 4.804	3.0	55.9 46.0	<u>33.1</u> 33.1	6.3 6.3	- <u>34.8</u> -34.8	0.0 0.0	0.0	60.5 40.5	74.0 54.0	-13.5 -13.5	V V	A	
4.804 4.804	3.0	46.0 45.3	<u> </u>	0.3 6.3	-34.8	0.0	0.0	40.5 49.8	54.0 74.0	-13.5	и Н	A P	
4.804	3.0	45.5 36.7	33.1	6.3	-34.8	0.0	0.0	<u>49.8</u> 31.2	74.0 54.0	-24.2	н Н	A	
4.004 2441 MHz						0.0		····	2 7.0				
4.882	3.0	43.2	33.1	6.3	-34.8	0.0	0.0	47.9	74.0	-26.1	Н	Р	
4.882	3.0	34.2	33.1	6.3	-34.8	0.0	0.0	28.9	54.0	-25.1	Н	Α	
4.882	3.0	51.8	33.1	6.3	-34.8	0.0	0.0	56.4	74.0	-17.6	V	Р	
4.882	3.0	43.3	33.1	6.3	-34.8	0.0	0.0	37.9	54.0	-16.1	V	A	
2480 MHz													
4.960	3.0	47.3	33.2	6.4	-34.8	0.0	0.0	52.1	74.0	-21.9	V	Р	
4.960	3.0	38.6	33.2	6.4	-34.8	0.0	0.0	33.3	54.0	-20.7	<u>V</u>	<u>A</u>	
<u>4.960</u>	3.0	42.1	33.2	6.4	-34.8	0.0	0.0	46.8	74.0	-27.2	V	P	
4.960 Rev. 4.1.2	3.0	32.7	33.2	6.4	-34.8	0.0	0.0	27.4	54.0	-26.6	V	A	
<u>Note: No</u>	omer el		were de	lected	above t	ne syster	<u>11 11018</u>	<u>e 1100F.</u>					

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7.3. WORST-CASE BELOW 1 GHz

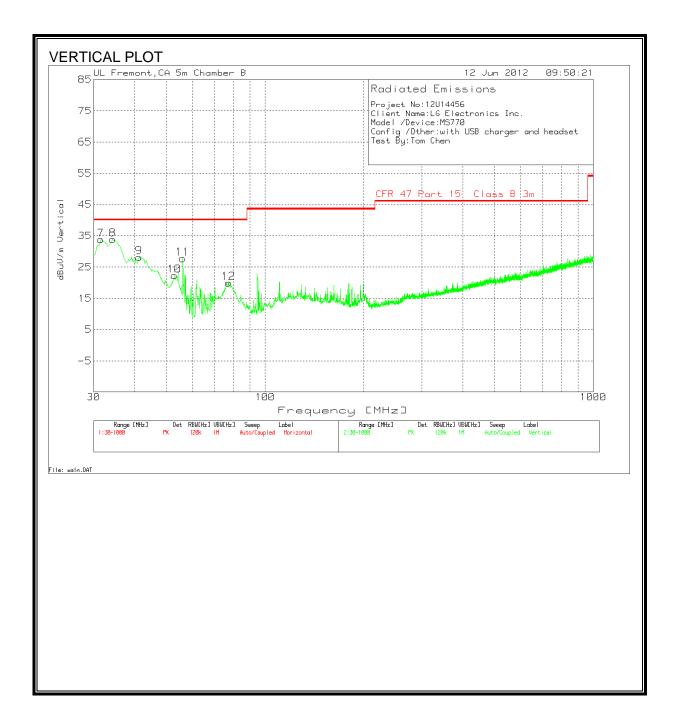
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



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SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)



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Project No:12U14456 Image: Margin Project No:12U14456 Image: Margin Polariti Client Name:LG Electronics Inc. Model /Device:MS770 Image: Margin Polariti Config /Other:with USB charger and headset Image: Margin Polariti Image: Margin Polariti Test By:Tom Chen Image: Margin Polariti Image: Margin Polariti Image: Margin Polariti Horizontal 30 - 1000MHz Image: Margin Polariti Image: Margin Polariti Image: Margin Polariti 32.3261 33.21 PK 19.6 -29.2 23.61 40 -16.39 Horz 56.5568 41.39 PK 7.3 -29 19.69 40 -20.31 Horz 95.7134 38.1 PK 9 -28.6 18.5 43.5 -25 Horz 110.4456 32.16 PK 12.7 -28.5 16.36 43.5 -25 Horz 153.4792 34 PK 12.5 -28 18.5 43.5 -25 Horz 153.4792 34 PK 12.5 -28 18.5 <	HORIZONTAL AND VERTICAL DATA									
Client Name:LG Electronics Inc. Model / Device:MS770 A A A A Config /Other:with USB charger and headset Image: Config /Other:with USB charger a										
Model / Device:MS770 Image: Model / Device:MS770 Image: MS770 Image: MS770 <thimage: ms770<="" th=""> Image: MS770</thimage:>			onics Inc.							
Config /Other:with USB charger and headset Image: Config /Other										
Test By:Tom Chen Image: Constraint of the c				and headset						
Image: Margin bound boun			Ū							
Test Meter T122 Sunol Bilog.TXT SmB Amp Path 30- 1000MHz (dB) CFR 47 Part 15 Class B Margin Polarit 32.3261 33.21 PK 19.6 -29.2 23.61 40 -16.39 Horz 53.2614 46.13 PK 7.4 -29 24.53 40 -15.47 Horz 56.5568 41.39 PK 7.3 -29 19.69 40 -20.31 Horz 95.7134 38.1 PK 9 -28.6 18.5 43.5 -25 Horz 110.4456 32.16 PK 12.7 -28.5 16.36 43.5 -25 Horz 153.4792 34 PK 12.5 -28 18.5 43.5 -25 Horz Vertical 30 - 1000MHz T122 Sunol SmB Amp Bilog.TXT Path 30- IS Class B Margin Polarit 31.5508 42.82 PK 20.3 -29.3 33.82 40 -6.18 Vert 34.2646 44.88 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>										
Test Frequency Meter Reading Detector Bilog.TXT (dB) Path 30- 1000MHz (dB) 15 Class B dBuV/m Margin Polarit 32.3261 33.21 PK 19.6 -29.2 23.61 40 -16.39 Horz 53.2614 46.13 PK 7.4 -29 24.53 40 -15.47 Horz 56.5568 41.39 PK 7.3 -29 19.69 40 -20.31 Horz 95.7134 38.1 PK 9 -28.6 18.5 43.5 -25 Horz 110.4456 32.16 PK 12.7 -28.5 16.36 43.5 -25 Horz 153.4792 34 PK 12.5 -28 18.5 43.5 -25 Horz Vertical 30 - 1000MHz Image: Transition of the transition	Horizontal 3	0 - 1000MF	łz							
Frequency Reading Detector (dB) 1000MHz (dB) dBuV/m 3m Margin Polarit 32.3261 33.21 PK 19.6 -29.2 23.61 40 -16.39 Horz 53.2614 46.13 PK 7.4 -29 24.53 40 -15.47 Horz 56.5568 41.39 PK 7.3 -29 19.69 40 -20.31 Horz 95.7134 38.1 PK 9 -28.6 18.5 43.5 -25 Horz 110.4456 32.16 PK 12.7 -28.5 16.36 43.5 -27.14 Horz 153.4792 34 PK 12.5 -28 18.5 43.5 -25 Horz Vertical 30 - 1000MHz Image: PK 12.5 -28 18.5 43.5 -25 Horz Test Meter T122 Sunol SmB Amp CFR 47 Part 15 Class B Margin Polarit 31.5508				T122 Sunol	5mB Amp		CFR 47 Part			
32.3261 33.21 PK 19.6 -29.2 23.61 40 -16.39 Horz 53.2614 46.13 PK 7.4 -29 24.53 40 -15.47 Horz 56.5568 41.39 PK 7.3 -29 19.69 40 -20.31 Horz 95.7134 38.1 PK 9 -28.6 18.5 43.5 -25 Horz 110.4456 32.16 PK 12.7 -28.5 16.36 43.5 -27.14 Horz 153.4792 34 PK 12.5 -28 18.5 43.5 -25 Horz Vertical 30 - 1000MHz	Test	Meter		Bilog.TXT	Path 30-		15 Class B			
53.2614 46.13 PK 7.4 -29 24.53 40 -15.47 Horz 56.5568 41.39 PK 7.3 -29 19.69 40 -20.31 Horz 95.7134 38.1 PK 9 -28.6 18.5 43.5 -25 Horz 110.4456 32.16 PK 12.7 -28.5 16.36 43.5 -27.14 Horz 153.4792 34 PK 12.7 -28.5 16.36 43.5 -25 Horz 153.4792 34 PK 12.5 -28 18.5 43.5 -25 Horz Vertical 30 - 1000MHz Test Meter T122 Sunol SmB Amp CFR 47 Part 15 Class B Frequency Reading Detector (dB) 1000MHz (dB) dBuV/m 3m Margin Polarit 31.5508 42.82 PK 20.3 -29.3 33.82 40 -6.12 Vert	Frequency	Reading	Detector	(dB)	1000MHz (dB)	dBuV/m	3m	Margin	Polarity	
56.5568 41.39 PK 7.3 -29 19.69 40 -20.31 Horz 95.7134 38.1 PK 9 -28.6 18.5 43.5 -25 Horz 110.4456 32.16 PK 12.7 -28.5 16.36 43.5 -27.14 Horz 153.4792 34 PK 12.5 -28 18.5 43.5 -25 Horz Vertical 30 - 1000MHz	32.3261	33.21	PK	19.6	-29.2	23.61	40	-16.39	Horz	
95.7134 38.1 PK 9 -28.6 18.5 43.5 -25 Horz 110.4456 32.16 PK 12.7 -28.5 16.36 43.5 -27.14 Horz 153.4792 34 PK 12.5 -28 18.5 43.5 -27.14 Horz Vertical 30 - 1000MHz	53.2614	46.13	PK	7.4	-29	24.53	40	-15.47	Horz	
110.4456 32.16 PK 12.7 -28.5 16.36 43.5 -27.14 Horz 153.4792 34 PK 12.5 -28 18.5 43.5 -25 Horz Vertical 30 - 1000MHz T122 Sunol Bilog.TXT Prequency Reading Detector G(B) 1000MHz (dB) GBuV/m Margin Polarit 31.5508 42.82 PK 20.3 -29.3 33.82 40 -6.18 Vert 34.2646 44.88 PK 18.2 -29.2 33.88 40 -6.12 Vert 41.243 44.54 PK 12.8 -29.2 28.14 40 -11.86 Vert	56.5568	41.39	РК	7.3	-29	19.69	40	-20.31	Horz	
153.4792 34 PK 12.5 -28 18.5 43.5 -25 Horz Vertical 30 - 1000MHz	95.7134	38.1	РК	9	-28.6	18.5	43.5	-25	Horz	
Vertical 30 - 1000MHz T122 Sunol SmB Amp CFR 47 Part Meter Test Meter Bilog.TXT Path 30- 15 Class B Margin Polarit 31.5508 42.82 PK 20.3 -29.3 33.82 40 -6.18 Vert 34.2646 44.88 PK 18.2 -29.2 33.88 40 -6.12 Vert 41.243 44.54 PK 7.5 -29 22.29 40 -11.86 Vert	110.4456	32.16	PK	12.7	-28.5	16.36	43.5	-27.14	Horz	
Test Meter T122 Sunol 5mB Amp CFR 47 Part Meter Frequency Reading Detector (dB) Path 30- 15 Class B 3m Margin Polarit 31.5508 42.82 PK 20.3 -29.3 33.82 40 -6.18 Vert 34.2646 44.88 PK 18.2 -29.2 33.88 40 -6.12 Vert 41.243 44.54 PK 12.8 -29.2 28.14 40 -11.86 Vert 52.8737 43.79 PK 7.5 -29 22.29 40 -17.71 Vert	153.4792	34	PK	12.5	-28	18.5	43.5	-25	Horz	
Test Meter T122 Sunol 5mB Amp CFR 47 Part Meter Frequency Reading Detector (dB) Path 30- 15 Class B 3m Margin Polarit 31.5508 42.82 PK 20.3 -29.3 33.82 40 -6.18 Vert 34.2646 44.88 PK 18.2 -29.2 33.88 40 -6.12 Vert 41.243 44.54 PK 12.8 -29.2 28.14 40 -11.86 Vert 52.8737 43.79 PK 7.5 -29 22.29 40 -17.71 Vert										
Test Meter Bilog.TXT (dB) Path 30- 1000MHz (dB) 15 Class B dBuV/m Margin Polarit 31.5508 42.82 PK 20.3 -29.3 33.82 40 -6.18 Vert 34.2646 44.88 PK 18.2 -29.2 33.88 40 -6.12 Vert 41.243 44.54 PK 12.8 -29.2 28.14 40 -11.86 Vert 52.8737 43.79 PK 7.5 -29 22.29 40 -17.71 Vert	Vertical 30 -	1000MHz								
Frequency Reading Detector (dB) 1000MHz (dB) dBuV/m 3m Margin Polarit 31.5508 42.82 PK 20.3 -29.3 33.82 40 -6.18 Vert 34.2646 44.88 PK 18.2 -29.2 33.88 40 -6.12 Vert 41.243 44.54 PK 12.8 -29.2 28.14 40 -11.86 Vert 52.8737 43.79 PK 7.5 -29 22.29 40 -17.71 Vert										
31.5508 42.82 PK 20.3 -29.3 33.82 40 -6.18 Vert 34.2646 44.88 PK 18.2 -29.2 33.88 40 -6.12 Vert 41.243 44.54 PK 12.8 -29.2 28.14 40 -11.86 Vert 52.8737 43.79 PK 7.5 -29 22.29 40 -17.71 Vert				-						
34.2646 44.88 PK 18.2 -29.2 33.88 40 -6.12 Vert 41.243 44.54 PK 12.8 -29.2 28.14 40 -11.86 Vert 52.8737 43.79 PK 7.5 -29 22.29 40 -17.71 Vert		_						-	Polarity	
41.243 44.54 PK 12.8 -29.2 28.14 40 -11.86 Vert 52.8737 43.79 PK 7.5 -29 22.29 40 -17.71 Vert										
52.8737 43.79 PK 7.5 -29 22.29 40 -17.71 Vert										
55.9752 49.56 PK 7.2 -29 27.76 40 -12.24 Vert	55.9752			7.2		27.76	40			
77.2982 40.73 PK 8 -28.8 19.93 40 -20.07 Vert	77.2982	40.73	PK	8	-28.8	19.93	40	-20.07	Vert	

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8. AC POWER LINE CONDUCTED EMISSIONS

<u>LIMITS</u>

FCC §15.207 (a)

RSS-Gen 7.2.2

Frequency of Emission (MHz)	Conducted I	.imit (dBuV)
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

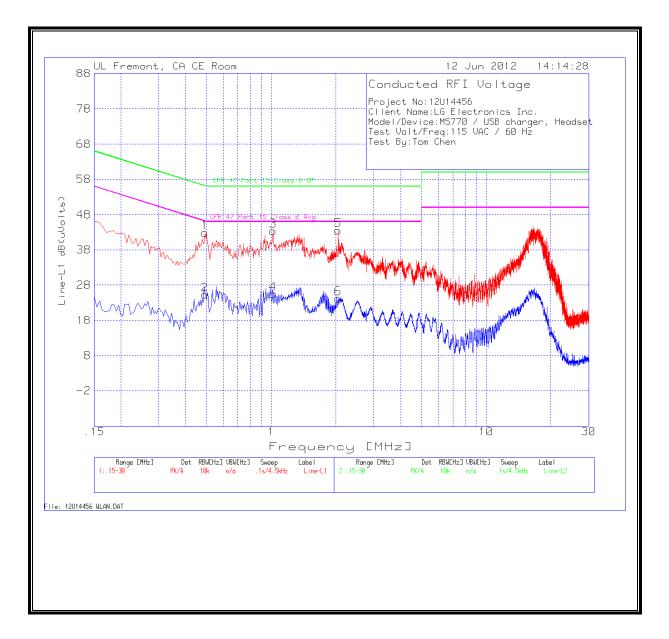
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6 WORST EMISSIONS

Project No:1	12U14456								
Client Name	e:LG Electro	onics Inc.							
Model/Devi	ce:MS770	/ USB charg	ger, Headse	et					
Test Volt/Fr	eq:115 VA	C / 60 Hz							
Test By:Tom	Chen								
Line-L1 .15 -	30MHz								
			T24 IL	LC Cables		CFR 47 Part		CFR 47 Part	
Test	Meter		L1.TXT	1&3.TXT	dB(uVolt	15 Class B		15 Class B	
Frequency	Reading	Detector	(dB)	(dB)	s)	QP	Margin	Avg	Margin
0.492	42.82	РК	0.1	0	42.92	56.1	-13.18	-	-
0.492	25.18	Av	0.1	0	25.28	-	-	46.1	-20.82
1.023	43.27	РК	0.1	0	43.37	56	-12.63	-	-
1.023	25.33	Av	0.1	0	25.43	-	-	46	-20.57
2.049	43.29	РК	0.1	0.1	43.49	56	-12.51	-	-
2.049	23.93	Av	0.1	0.1	24.13	-	-	46	-21.87
Line-L2 .15 -	30MHz								
			T24 IL	LC Cables		CFR 47 Part		CFR 47 Part	
Test	Meter		L2.TXT	2&3.TXT	dB(uVolt			15 Class B	
Frequency		Detector	(dB)	(dB)	s)	QP	Margin	Avg	Margin
0.4965				. ,		GF 56.1		-	IVIAISIII
0.4965			0.1	0			-10.01	- 46.1	24.82
1.347			0.1	0.1	37.31	- 56	18.69	-	- 24.02
1.347			0.1	0.1	18.77		- 10.09	- 46	27.23
2.553			0.1	0.1	32.24	56	-23.76	-	- 27.25
			0.1	0.1	15.52	-	-	46	-30.48
2.553							1		
2.553									
2.553 Project No:1									
	12U14456	onics Inc.							
Project No:1	12U14456 e:LG Electro		ger, Headse	et					
Project No:2 Client Name	12U14456 e:LG Electro ce:MS770 /	/ USB char	ger, Headse	et					
Project No:2 Client Name Model/Devi	12U14456 e:LG Electro ce:MS770 / req:115 VA(/ USB char	ger, Headse	et					

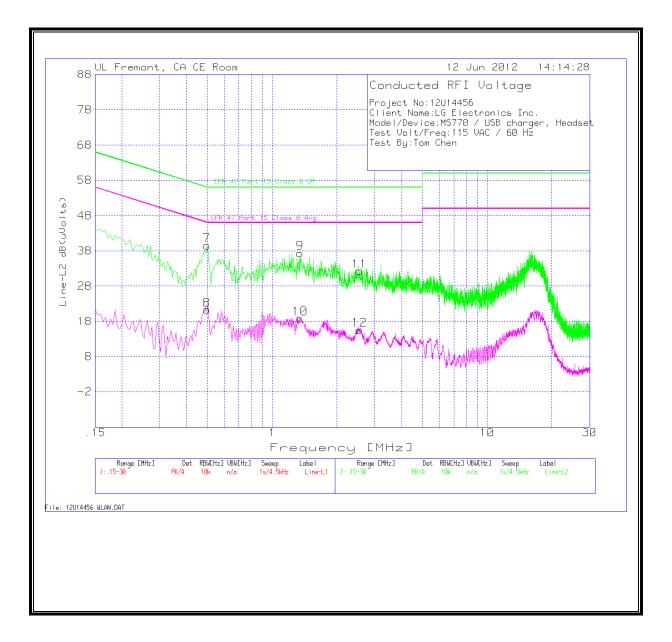
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LINE 1 RESULTS



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LINE 2 RESULTS



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