



**FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8**

CERTIFICATION TEST REPORT

FOR

GSM AND WCDMA PHONE WITH BLUETOOTH, NFC, AND WLAN

MODEL NUMBER: E960, LGE960, AND LG-E960

FCC ID: ZNFE960

IC ID: 2703C-ZNFE960

REPORT NUMBER: 12U14580-4

ISSUE DATE: AUGUST 24, 2012

Prepared for

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1000 SYLVAN AVENUE
ENGLEWOOD CLIFFS, NEW JERSEY 07632**

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NVLAP LAB CODE 200065-0

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: GSM AND WCDMA PHONE WITH BLUETOOTH, NFC AND WLAN

MODEL: E960, LGE960, AND LG-E960

SERIAL NUMBER: 207KPXV001162 (RADIATED) AND 207KPWQ001161
(CONDUCTED)

DATE TESTED: AUGUST 22 TO 24, 2012

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	Pass
INDUSTRY CANADA RSS-210 Issue 8, Annex 2	Pass
INDUSTRY CANADA RSS-GEN Issue 3	Pass

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:



TIM LEE
STAFF ENGINEER
UL CCS



DOUG ANDERSON
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, 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 <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:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamplifier Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

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

The EUT is BT3.0, 802.11b/g/n 1x1 HT20, GSM/WCDMA 850/1900MHz, Bar Phone with HOTSPOTS and VOIP supported.

The manufacturer of the radio module is LG.

5.1. MAXIMUM OUTPUT POWER

The transmitter maximum E-field at 10m distance is 18.07 dBuV/m

5.2. SOFTWARE AND FIRMWARE

The kernel version installed in the EUT during testing was 3.0.21 Jh.koo@fanta #1 SMP PREEMPT Tue Jul 17 13:18:23 KST 2012.

The Build number installed in the EUT during testing was geeb_att_us-eng 4.0.4 IMM76L b85552b7e test-keys.

5.3. MODEL DIFFERNECE

Models, LG-E960 and LGE960, are identical to Model E960 except for model designation.

5.4. WORST-CASE CONFIGURATION AND MODE

All configurations were tested, EUT with USB charger and and EUT with inductive charger.

Since the EUT is a portable device, an X, Y, and Z orientations, and worst orientations among X, Y, and Y with Headset and/or AC Adapter were investigated to determine the worst case. After the investigation the worst case turned out to be Y-Orientation with an AC Adapter and Headset.

5.5. MODIFICATIONS

A ferrite was added on the Charging Pad's AC Adapter in order to pass 30-1000MHz emissions test. Ferrite: Manufacture: TDK, Serial Number: ZCAT 2035-0930.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

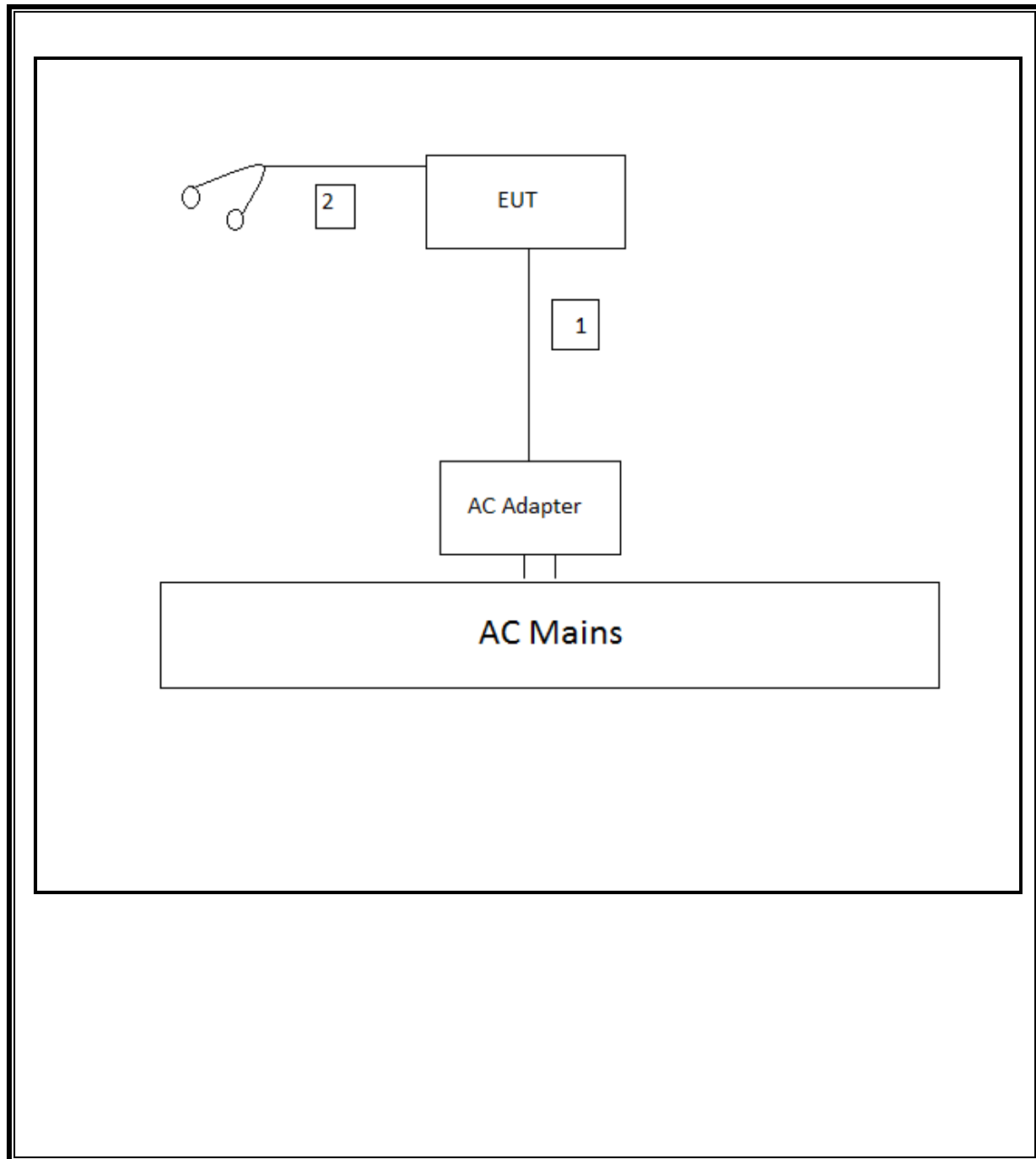
Support Equipment List			
Description	Manufacturer	Model	Serial Number
AC ADAPTER	LG ELECTRONICS	MCS-01WR	RA1Z0051473
HEADSET	LG ELECTRONICS	NA	N/A
AC ADAPTER	LG ELECTRONICS	WCA-D01WT	TA170000040
INDUCTIVE CHARGER	LG ELECTRONICS	WCP-700	A1106WP000029

I/O CABLES

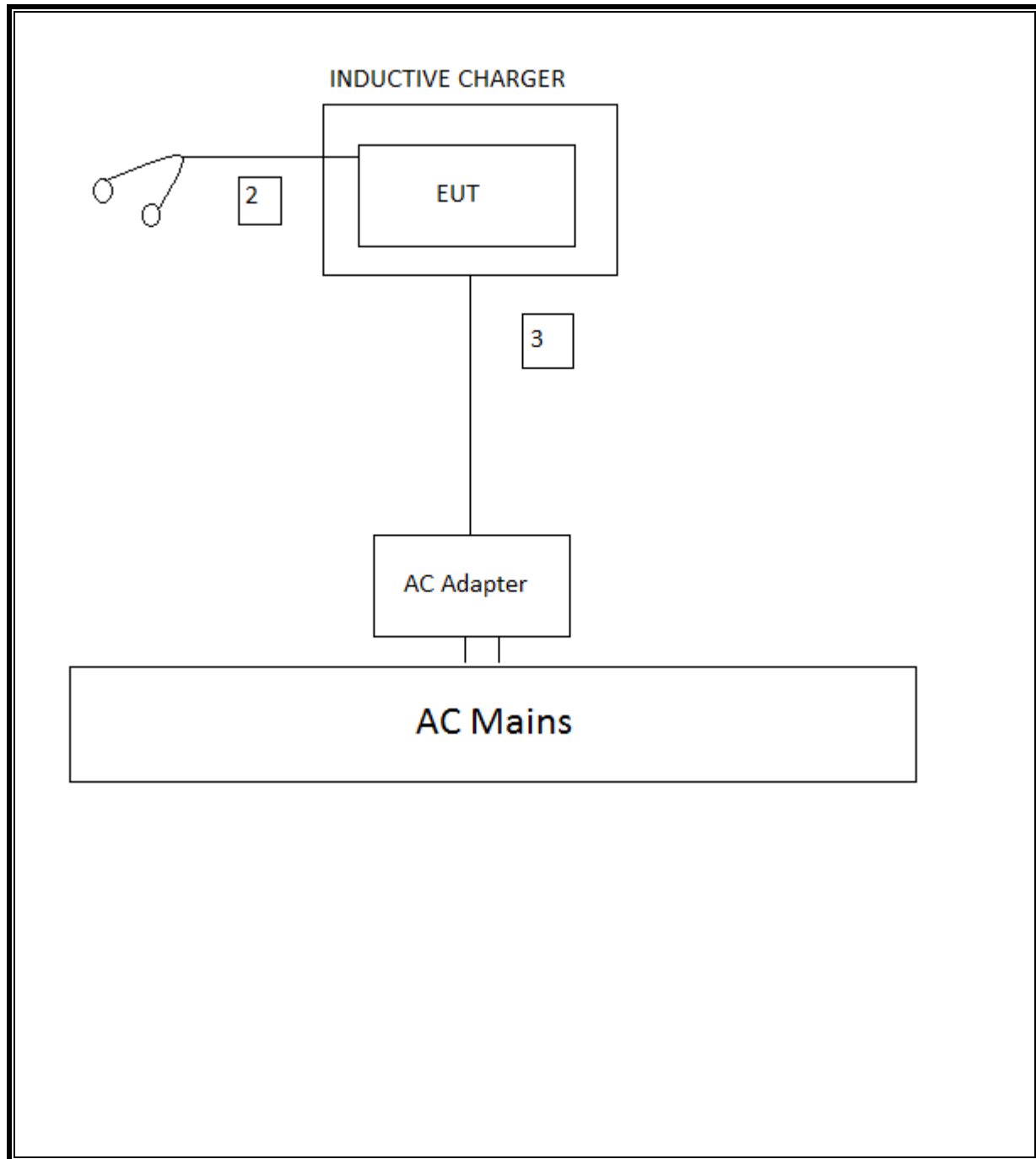
I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC	1	MINI USB	UN-SHELEDDED	1.0m	N/A
2	AUDIO	1	MINI JACK	UN-SHELEDDED	1.2m	N/A
3	DC	1	MINI JACK	UN-SHELEDDED	1.5m	N/A

TEST SETUP

SETUP DIAGRAM WITH USB CHARGER



SETUP DIAGRAM WITH INDUCTIVE CHARGER



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 Date	Cal Due
EMI Receiver, 6.5GHz	Agilent / HP	85462A	N/A	06/19/12	06/19/13
Antenna, Loop, 30 MHz	EMCO	6502	C00593	02/10/11	02/10/13
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01179	2/16/2012	02/16/13
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	8/19/2011	08/19/13
Antenna, Loop, 30 MHz	EMCO	6502	C00593	2/10/2011	02/10/13
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01171	7/16/2011	03/23/13
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00558	11/11/2011	11/11/12
LISN, 30 MHz	FCC	50/250-25-2	C00626	12/13/2011	12/13/12
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	C00930	10/20/2012	10/20/12

7. RADIATED EMISSION TEST RESULTS

7.1. LIMITS AND PROCEDURE

LIMIT

§15.225

IC RSS-210, Section 2.6 (Transmitter)

IC RSS-GEN, Section 6 (Receiver)

(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/ meter at 30 meters.

(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110– 14.010 MHz and shall not exceed the general radiated emission limits in § 15.209 as follows:

§15.209 (a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (µV/m)	Measurement Distance (m)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 – 88	100**	3
88 - 216	150**	3
216 – 960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

Formula for converting the field strength from uV/m to dBuV/m is:

Limit (dBuV/m) = 20 log limit (uV/m)

In addition:

§15.209 (d) The emission limits shown the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

§15.209 (d) The provisions in §§ 15.225, measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated under this part.

TEST PROCEDURE

ANSI C63.4

The EUT is an intentional radiator that incorporates a digital device, the highest fundamental frequency generated or used in the device is 19.2 MHz; therefore, the frequency range was investigated from 30 MHz to the 10th harmonic of the highest fundamental frequency, or 1000 MHz.

RESULTS

No non-compliance noted:

7.1.1. FUNDAMENTAL AND SPURIOUS EMISSIONS (0.15 – 30 MHz)

STAND ALONE:

FCC Part 15, Subpart B & C												10 Meter Distance Measurement At Open Field	
Company: LG													
Project #: 12U14580													
Model #: E960 (Battery Powered)													
Doug Anderson													
Date: 08/21/12													
Frequency (MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	AF (dB/m)	Distance Correction (dB)	PK Corrected Reading (dBuV/m)	AV Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	PK Margin (dB)	AV Margin (dB)	Notes	
Loop Antenna Face On:													
13.56	25.3	22.2	N/A	10.56	-19.08	13.67	N/A	84.00	N/A	-70.3	N/A	Fundamental @ 10m Dist	
13.41	15	10.3	N/A	10.54	-19.08	1.76	N/A	50.48	N/A	-48.7	N/A	13.41-13.553MHz Spurious @ 10m	
13.553	18.1	12.9	N/A	10.56	-19.08	4.37	N/A	50.48	N/A	-46.1	N/A	13.41-13.553MHz Spurious @ 10m	
13.567	18.5	13.6	N/A	10.56	-19.08	5.07	N/A	50.48	N/A	-45.4	N/A	13.567-13.710MHz Spurious @ 10m	
13.71	16.6	11.8	N/A	10.57	-19.08	3.29	N/A	40.51	N/A	-37.2	N/A	13.567-13.710MHz Spurious @ 10m	
13.11	14.4	10	N/A	10.51	-19.08	1.43	N/A	40.51	N/A	-39.1	N/A	13.110-13.410MHz Spurious @ 10m	
13.41	15	10.3	N/A	10.54	-19.08	1.76	N/A	40.51	N/A	-38.8	N/A	13.110-13.410MHz Spurious @ 10m	
13.71	16.6	11.8	N/A	10.57	-19.08	3.29	N/A	40.51	N/A	-37.2	N/A	13.710-14.010MHz Spurious @ 10m	
14.01	17.3	11.4	N/A	10.6	-19.08	2.92	N/A	29.54	N/A	-26.6	N/A	13.710-14.010MHz Spurious @ 10m	
27.12	17.2	12.4	N/A	9.046	-19.08	2.36	N/A	29.54	N/A	-27.2	N/A	14.010-30MHz Spurious @ 10m	
Loop Antenna Face Off:													
13.56	24.2	21.8	N/A	10.56	-19.08	13.27	N/A	84.00	N/A	-70.7	N/A	Fundamental @ 10m Dist	
13.41	14.8	10	N/A	10.54	-19.08	1.46	N/A	50.48	N/A	-49.0	N/A	13.41-13.553MHz Spurious @ 10m	
13.553	17.1	12.6	N/A	10.56	-19.08	4.07	N/A	50.48	N/A	-46.4	N/A	13.41-13.553MHz Spurious @ 10m	
13.567	17.5	13.6	N/A	10.56	-19.08	5.07	N/A	50.48	N/A	-45.4	N/A	13.567-13.710MHz Spurious @ 10m	
13.71	15.5	9.8	N/A	10.57	-19.08	1.29	N/A	40.51	N/A	-39.2	N/A	13.567-13.710MHz Spurious @ 10m	
13.11	15.7	9.8	N/A	10.51	-19.08	1.23	N/A	40.51	N/A	-39.3	N/A	13.110-13.410MHz Spurious @ 10m	
13.41	14.8	10	N/A	10.54	-19.08	1.46	N/A	40.51	N/A	-39.1	N/A	13.110-13.410MHz Spurious @ 10m	
13.71	15.5	9.8	N/A	10.57	-19.08	1.29	N/A	40.51	N/A	-39.2	N/A	13.710-14.010MHz Spurious @ 10m	
14.01	14.8	10	N/A	10.6	-19.08	1.52	N/A	29.54	N/A	-28.0	N/A	13.710-14.010MHz Spurious @ 10m	
27.12	16.4	10.5	N/A	9.046	-19.08	0.46	N/A	29.54	N/A	-29.1	N/A	14.010-30MHz Spurious @ 10m	

* No more emissions were found up to 30MHz

Note: The emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 10000Mhz. Radiated emission limits in these three bands are based on measurements employing an average detector.

P.K. = Peak
Q.P. = Quasi Peak Reading
A.F. = Antenna factor

Rev. 10.23.09

USB CHARGER:

FCC Part 15, Subpart B & C 10 Meter Distance Measurement At Open Field

Company: LG
Project #: 12U14580
Model #: E960 (USB Charger)
Doug Anderson
Date: 08/21/12

Frequency (MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	AF dB/m	Distance Correction (dB)	PK Corrected Reading (dBuV/m)	AV Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	PK Margin (dB)	AV Margin (dB)	Notes
Loop Antenna Face On:												
13.56	28.8	26.6	N/A	10.56	-19.08	18.07	N/A	84.00	N/A	-65.9	N/A	Fundamental @ 10m Dist
13.41	17.6	12	N/A	10.54	-19.08	3.46	N/A	50.48	N/A	-47.0	N/A	13.41-13.553MHz Spurious @ 10m
13.553	28.3	26.4	N/A	10.56	-19.08	17.87	N/A	50.48	N/A	-32.6	N/A	13.41-13.553MHz Spurious @ 10m
13.567	28.7	26.4	N/A	10.56	-19.08	17.87	N/A	50.48	N/A	-32.6	N/A	13.567-13.710MHz Spurious @ 10m
13.71	16.8	12.1	N/A	10.57	-19.08	3.59	N/A	40.51	N/A	-36.9	N/A	13.567-13.710MHz Spurious @ 10m
13.11	16.9	11.7	N/A	10.51	-19.08	3.13	N/A	40.51	N/A	-37.4	N/A	13.110-13.410MHz Spurious @ 10m
13.41	17.6	12	N/A	10.54	-19.08	3.46	N/A	40.51	N/A	-37.1	N/A	13.110-13.410MHz Spurious @ 10m
13.71	16.8	12.1	N/A	10.57	-19.08	3.59	N/A	40.51	N/A	-36.9	N/A	13.710-14.010MHz Spurious @ 10m
14.01	18.1	12.3	N/A	10.6	-19.08	3.82	N/A	29.54	N/A	-25.7	N/A	13.710-14.010MHz Spurious @ 10m
27.12	15.1	10.2	N/A	9.046	-19.08	0.16	N/A	29.54	N/A	-29.4	N/A	14.010-30MHz Spurious @ 10m
Loop Antenna Face Off:												
13.56	22.6	18.9	N/A	10.56	-19.08	10.37	N/A	84.00	N/A	-73.6	N/A	Fundamental @ 10m Dist
13.41	16.5	10.2	N/A	10.54	-19.08	1.66	N/A	50.48	N/A	-48.8	N/A	13.41-13.553MHz Spurious @ 10m
13.553	21.4	18.3	N/A	10.56	-19.08	9.77	N/A	50.48	N/A	-40.7	N/A	13.41-13.553MHz Spurious @ 10m
13.567	22.4	18.3	N/A	10.56	-19.08	9.77	N/A	50.48	N/A	-40.7	N/A	13.567-13.710MHz Spurious @ 10m
13.71	14.3	10.4	N/A	10.57	-19.08	1.89	N/A	40.51	N/A	-38.6	N/A	13.567-13.710MHz Spurious @ 10m
13.11	14.1	10.1	N/A	10.51	-19.08	1.53	N/A	40.51	N/A	-39.0	N/A	13.110-13.410MHz Spurious @ 10m
13.41	16.5	10.2	N/A	10.54	-19.08	1.66	N/A	40.51	N/A	-38.9	N/A	13.110-13.410MHz Spurious @ 10m
13.71	20	12.2	N/A	10.57	-19.08	3.69	N/A	40.51	N/A	-36.8	N/A	13.710-14.010MHz Spurious @ 10m
14.01	15.7	11.9	N/A	10.6	-19.08	3.42	N/A	29.54	N/A	-26.1	N/A	13.710-14.010MHz Spurious @ 10m
27.12	17.1	11.2	N/A	9.046	-19.08	1.16	N/A	29.54	N/A	-28.4	N/A	14.010-30MHz Spurious @ 10m

* No more emissions were found up to 30MHz

Note: The emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 10000Mhz. Radiated emission limits in these three bands are based on measurements employing an average detector.

P.K. = Peak
Q.P. = Quasi Peak Reading
A.F. = Antenna factor

Rev. 10.23.09

INDUCTIVE CHARGER:

FCC Part 15, Subpart B & C

10 Meter Distance Measurement At Open Field

Company: LG
Project #: 12U14580
Model #: E960 (Inductive Charger)
Doug Anderson
Date: 08/21/12

Frequency (MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	AF dB/m	Distance Correction (dB)	PK Corrected Reading (dBuV/m)	AV Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	PK Margin (dB)	AV Margin (dB)	Notes
Loop Antenna Face On:												
13.56	22.6	19.4	N/A	10.56	-19.08	10.87	N/A	84.00	N/A	-73.1	N/A	Fundamental @ 10m Dist
13.41	14.7	10.6	N/A	10.54	-19.08	2.06	N/A	50.48	N/A	-48.4	N/A	13.41-13.553MHz Spurious @ 10m
13.553	23.4	19.4	N/A	10.56	-19.08	10.87	N/A	50.48	N/A	-39.6	N/A	13.41-13.553MHz Spurious @ 10m
13.567	23.6	19.5	N/A	10.56	-19.08	10.97	N/A	50.48	N/A	-39.5	N/A	13.567-13.710MHz Spurious @ 10m
13.71	15.2	10.7	N/A	10.57	-19.08	2.19	N/A	40.51	N/A	-38.3	N/A	13.567-13.710MHz Spurious @ 10m
13.11	13.9	10.1	N/A	10.51	-19.08	1.53	N/A	40.51	N/A	-39.0	N/A	13.110-13.410MHz Spurious @ 10m
13.41	14.7	10.6	N/A	10.54	-19.08	2.06	N/A	40.51	N/A	-38.5	N/A	13.110-13.410MHz Spurious @ 10m
13.71	15.2	10.7	N/A	10.57	-19.08	2.19	N/A	40.51	N/A	-38.3	N/A	13.710-14.010MHz Spurious @ 10m
14.01	17.3	12.2	N/A	10.6	-19.08	3.72	N/A	29.54	N/A	-25.8	N/A	13.710-14.010MHz Spurious @ 10m
27.12	15.6	10.4	N/A	9.046	-19.08	0.36	N/A	29.54	N/A	-29.2	N/A	14.010-30MHz Spurious @ 10m
Loop Antenna Face Off:												
13.56	22.1	19.6	N/A	10.56	-19.08	11.07	N/A	84.00	N/A	-72.9	N/A	Fundamental @ 10m Dist
13.41	15.1	9.4	N/A	10.54	-19.08	0.86	N/A	50.48	N/A	-49.6	N/A	13.41-13.553MHz Spurious @ 10m
13.553	16.3	11.5	N/A	10.56	-19.08	2.97	N/A	50.48	N/A	-47.5	N/A	13.41-13.553MHz Spurious @ 10m
13.567	18.6	13.1	N/A	10.56	-19.08	4.57	N/A	50.48	N/A	-45.9	N/A	13.567-13.710MHz Spurious @ 10m
13.71	15.8	10.3	N/A	10.57	-19.08	1.79	N/A	40.51	N/A	-38.7	N/A	13.567-13.710MHz Spurious @ 10m
13.11	14.2	10.1	N/A	10.51	-19.08	1.53	N/A	40.51	N/A	-39.0	N/A	13.110-13.410MHz Spurious @ 10m
13.41	15.1	9.4	N/A	10.54	-19.08	0.86	N/A	40.51	N/A	-39.7	N/A	13.110-13.410MHz Spurious @ 10m
13.71	15.8	10.3	N/A	10.57	-19.08	1.79	N/A	40.51	N/A	-38.7	N/A	13.710-14.010MHz Spurious @ 10m
14.01	14.2	10.3	N/A	10.6	-19.08	1.82	N/A	29.54	N/A	-27.7	N/A	13.710-14.010MHz Spurious @ 10m
27.12	20.5	10.9	N/A	9.046	-19.08	0.86	N/A	29.54	N/A	-28.7	N/A	14.010-30MHz Spurious @ 10m

* No more emissions were found up to 30MHz

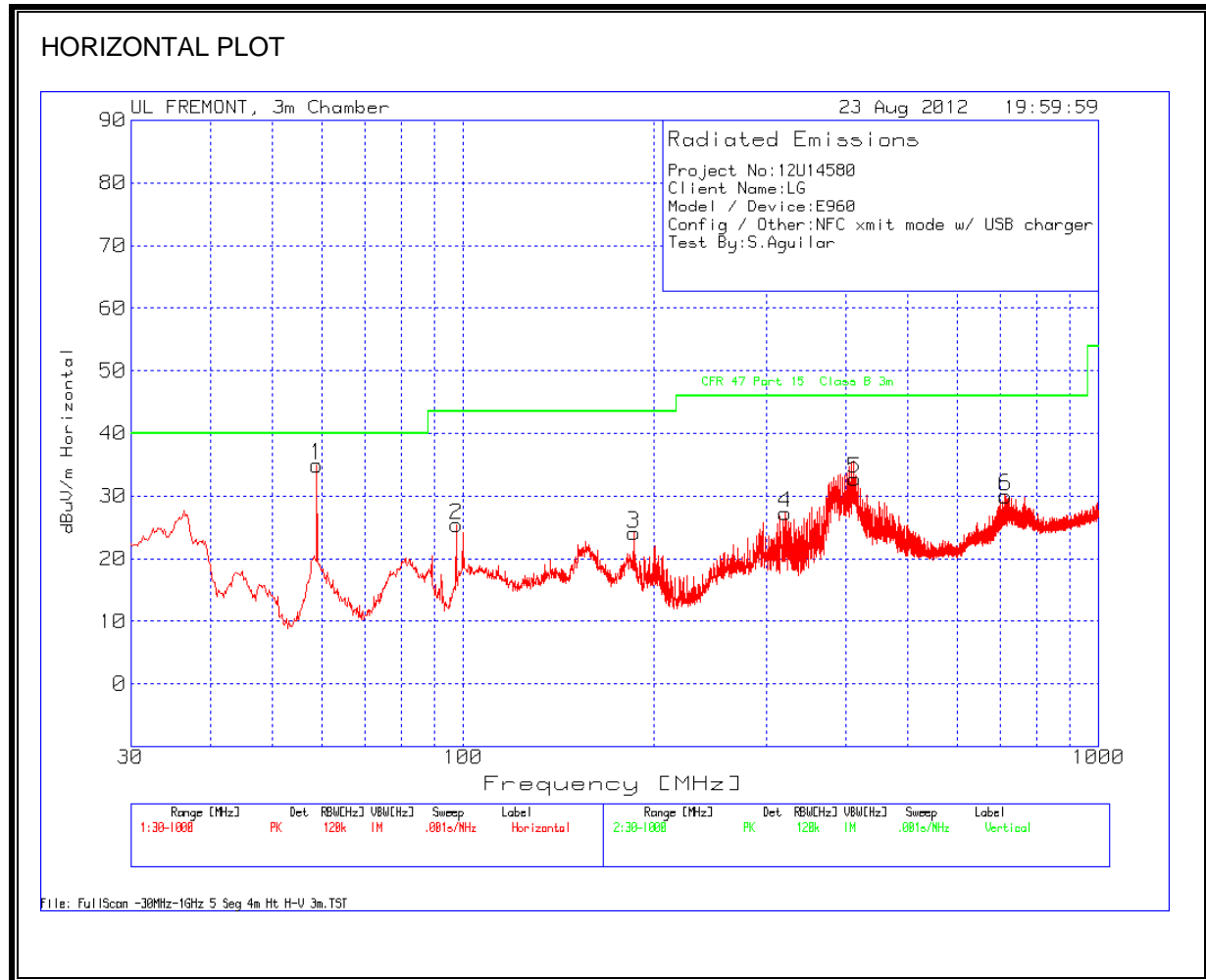
Note: The emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 10000MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

P.K. = Peak
Q.P. = Quasi Peak Reading
A.F. = Antenna factor

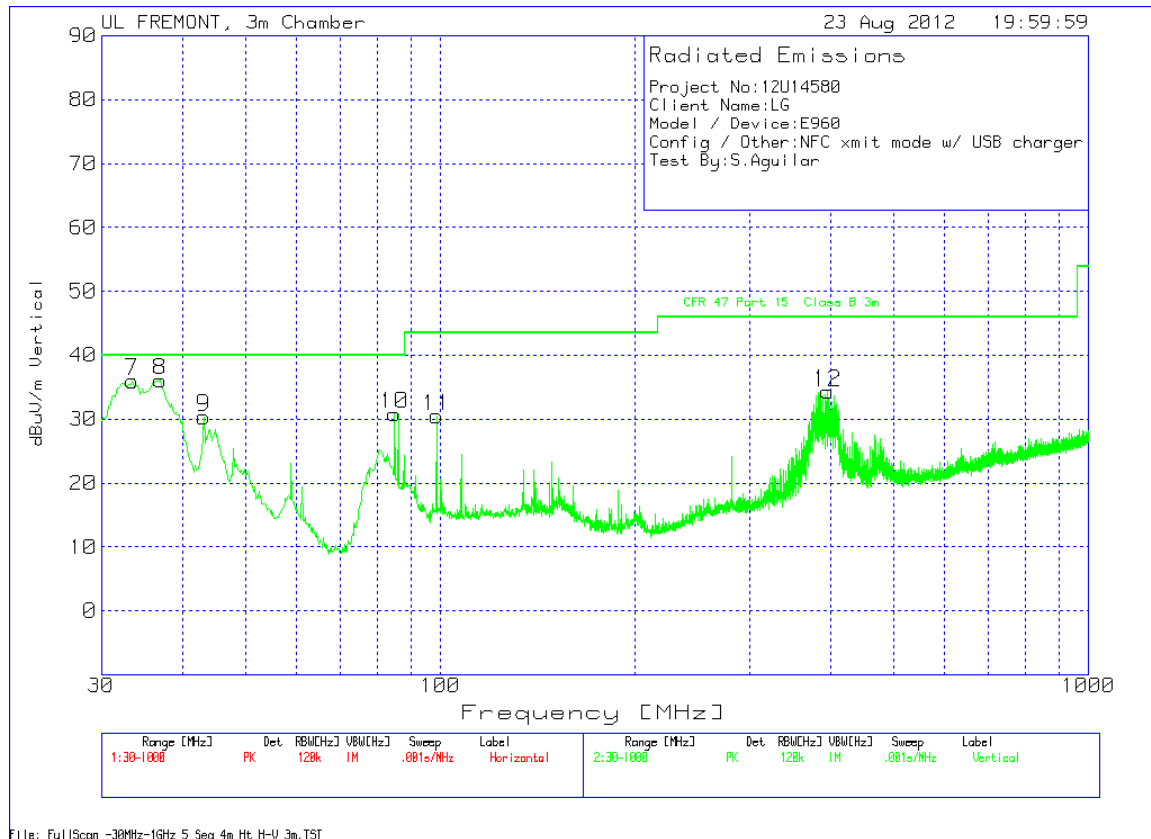
Rev. 10.23.09

7.1.2. TX SPURIOUS EMISSION 30 TO 1000 MHz

USB CHARGER (WORST CASE):



VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

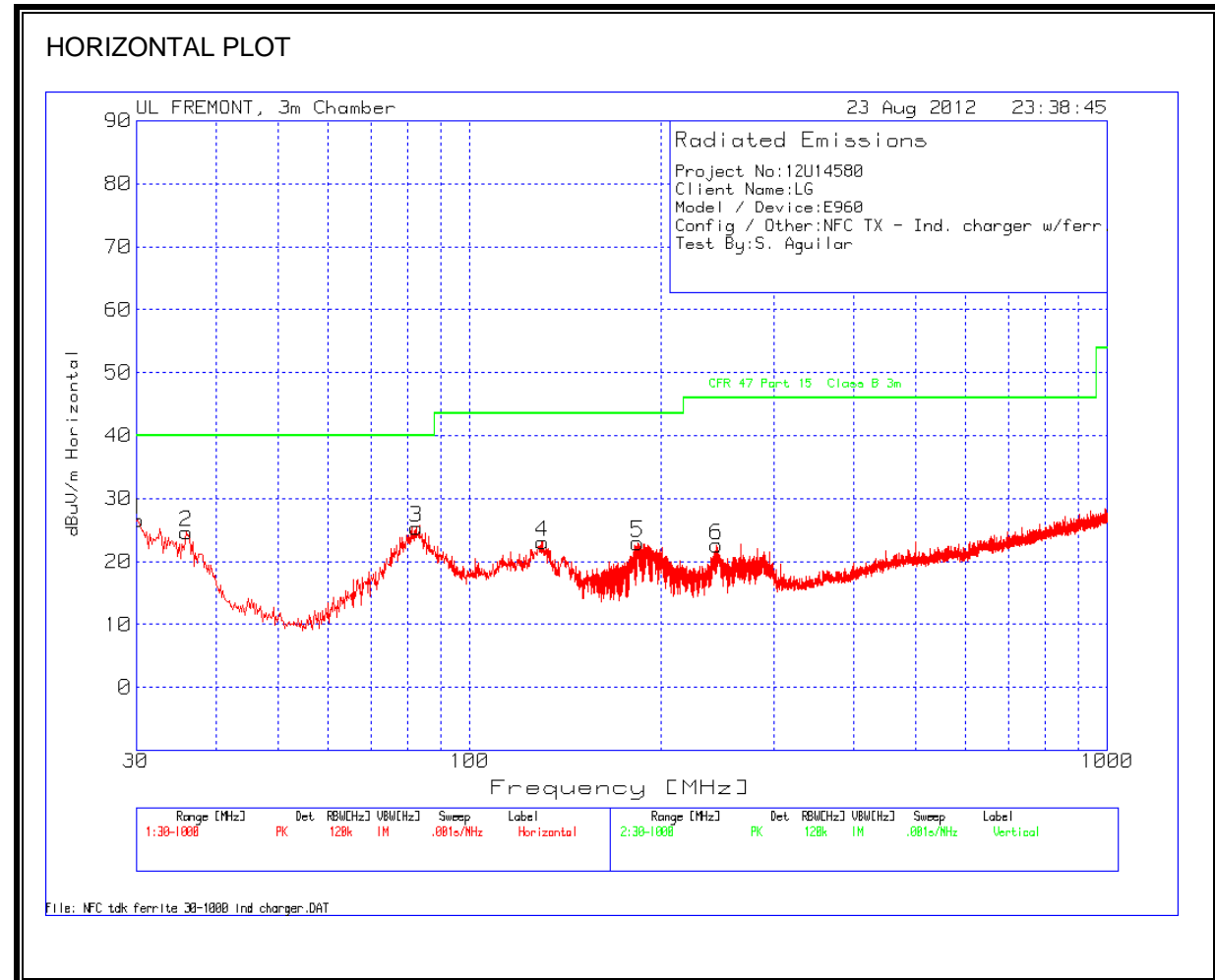
Company Name: LG
Project: 12U14580
Date: 8/23/2012
Configuraiton: EUT + USB Adapter + Headset
Mode: NFC , Worst Case
Tested by: S.Aguilar

Test Frequency [MHz]	Meter Reading [dB(μV)]	Detector	Pre Amp Factor [dB]	Antenna Factor [dB/m]	Corrected [dB(μV/m)]	Class C PK limit [dB(μV/m)]	QP Margin [dB]	Height [cm]	Polarity
Range 1 30 - 1000MHz									
58.8829	55.06	PK	-27.2	7.1	34.96	40	-5.04	400	Horz
97.6519	43.12	PK	-26.9	9.2	25.42	43.5	-18.08	400	Horz
185.6575	39.17	PK	-25.9	10.8	24.07	43.5	-19.43	201	Horz
321.9305	38.8	PK	-25.3	13.8	27.3	46	-18.7	101	Horz
413.4253	42.44	PK	-25.7	16	32.74	46	-13.26	101	Horz
714.4664	34.83	PK	-25.1	20.3	30.03	46	-15.97	101	Horz
Range 2 30 - 1000MHz									
33.4892	44.81	PK	-27.5	18.7	36.01	40	-3.99	100	Vert
36.9784	47.51	PK	-27.4	16	36.11	40	-3.89	100	Vert
43.1815	46.36	PK	-27.4	11.4	30.36	40	-9.64	301	Vert
85.052	50.44	PK	-27	7.4	30.84	40	-9.16	301	Vert
98.8149	47.9	PK	-26.9	9.5	30.5	43.5	-13	100	Vert
396.1731	44.69	PK	-25.6	15.2	34.29	46	-11.71	100	Vert

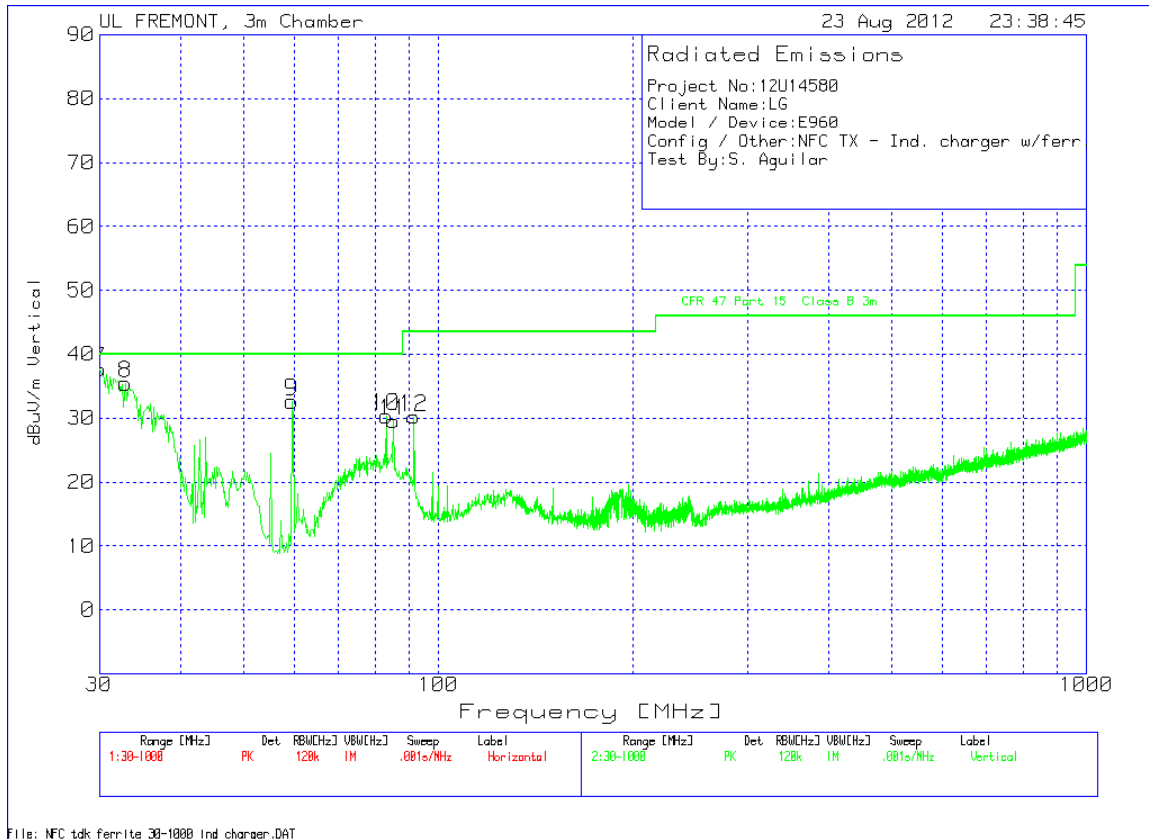
PK - Peak detector

QP - Quasi-peak detector

INDUCTIVE CHARGER:



VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

Company Name: LG
Project: 12U14580
Date: 8/23/2012
Configuraiton: EUT + Ind. Charge Pad + Headset
Mode: NFC TX Mode , Worst Case
Tested by: S.Aguilar

Test Frequency [MHz]	Meter Reading [dB(μV)]	Detector	Pre Amp Factor [dB]	Antenna Factor [dB/m]	Corrected [dB(μV/m)]	Class B PK limit [dB(μV/m)]	QP Margin [dB]	Height [cm]	Polarity
Range 1 30 - 1000MHz									
30.1938	32.96	PK	-27.5	21.1	26.56	40	-13.44	201	Horz
36.0092	35.22	PK	-27.4	16.8	24.62	40	-15.38	400	Horz
82.532	44.87	PK	-27	7.5	25.37	40	-14.63	400	Horz
130.2178	35.86	PK	-26.5	13.7	23.06	43.5	-20.44	301	Horz
183.3313	38.09	PK	-26	10.9	22.99	43.5	-20.51	201	Horz
244.1986	36.3	PK	-25.4	11.7	22.6	46	-23.4	100	Horz
Range 2 30 - 1000MHz									
30	43.97	PK	-27.5	21.2	37.67	40	-2.33	101	Vert
31.9926	42.85	QP	-27.5	19.8	35.15	40	-4.85	101	Vert
32.9077	43.88	PK	-27.5	19.1	35.48	40	-4.52	101	Vert
59.4644	52.77	PK	-27.2	7.1	32.67	40	-7.33	101	Vert
83.1135	49.89	PK	-27	7.5	30.39	40	-9.61	101	Vert
85.2458	49.16	PK	-27	7.4	29.56	40	-10.44	400	Vert
91.6427	49.33	PK	-26.9	7.8	30.23	43.5	-13.27	101	Vert

PK - Peak detector

QP - Quasi-peak detector

8. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207

IC RSS-GEN, Section 7.2.2

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Notes: 1. The lower limit shall apply at the transition frequencies 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

TEST PROCEDURE

ANSI C63.4

RESULTS

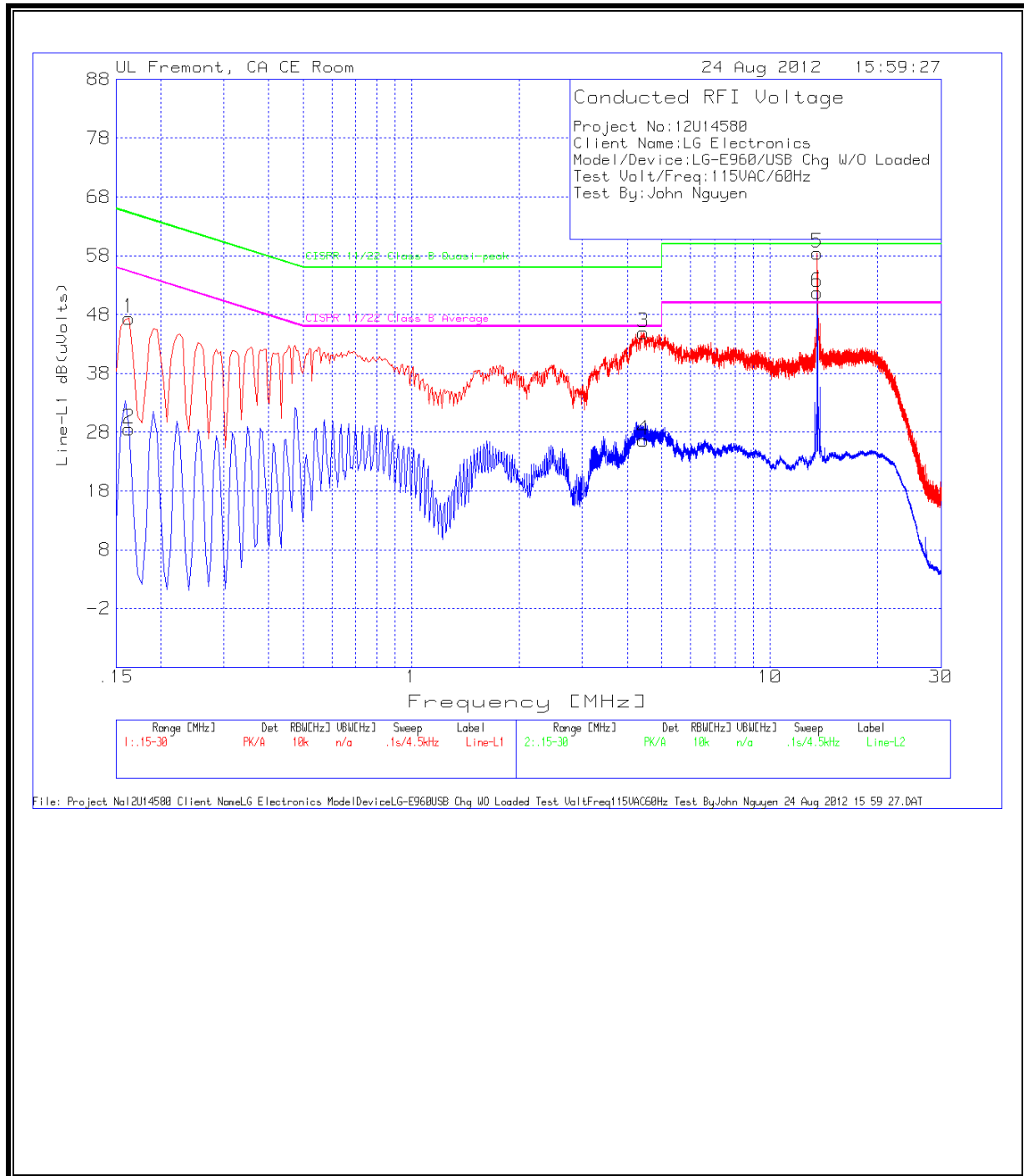
No non-compliance noted.

8.1. USB CHARGER (w/o 50 ohm Load)

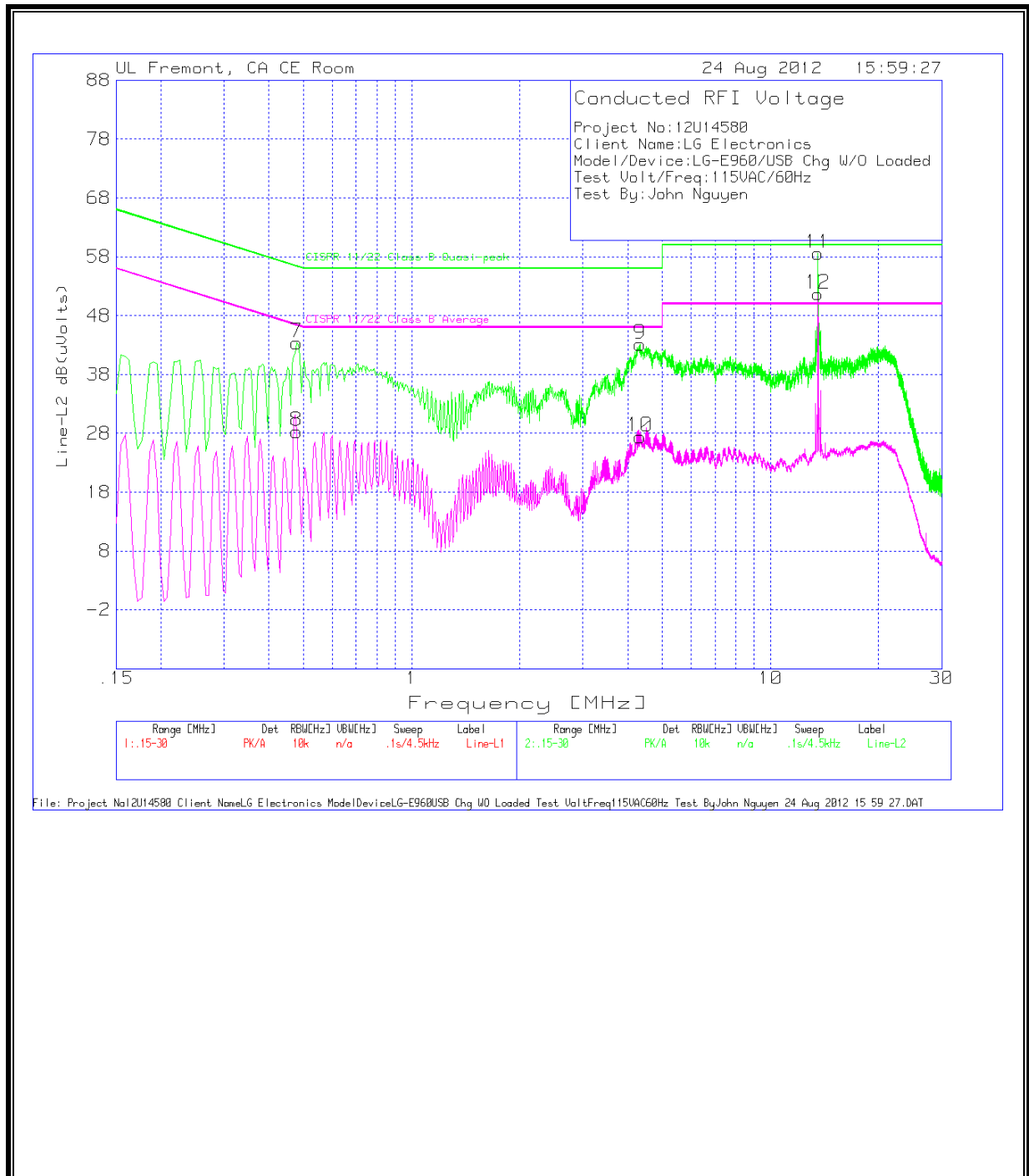
6 WORST EMISSIONS

Project No:12U14580									
Client Name:LG Electronics									
Model/Device:LG-E960/USB Chg W/O Loaded									
Test Volt/Freq:115VAC/60Hz									
Test By:John Nguyen									
Line-L1 .15 - 30MHz									
Test	Meter Reading	Detector	T24 IL	LC Cables	dB(uVolts)	CISPR	Margin	CISPR	Margin
0.1635	47.34	PK	0.1	0	47.44	65.3	-17.86	-	-
0.1635	28.47	Av	0.1	0	28.57	-	-	55.3	-26.73
4.434	44.74	PK	0.1	0.1	44.94	56	-11.06	-	-
4.434	26.45	Av	0.1	0.1	26.65	-	-	46	-19.35
13.56	58.04	PK	0.2	0.2	58.44	60	-1.56	-	-
13.56	51.39	Av	0.2	0.2	51.79	-	-	50	1.79
Line-L2 .15 - 30MHz									
Test	Meter Reading	Detector	T24 IL	LC Cables	dB(uVolts)	CISPR	Margin	CISPR	Margin
0.4785	43.27	PK	0.1	0	43.37	56.4	-13.03	-	-
0.4785	28.16	Av	0.1	0	28.26	-	-	46.4	-18.14
4.3305	42.89	PK	0.1	0.1	43.09	56	-12.91	-	-
4.3305	27.24	Av	0.1	0.1	27.44	-	-	46	-18.56
13.56	58.14	PK	0.2	0.2	58.54	60	-1.46	-	-
13.56	51.3	Av	0.2	0.2	51.7	-	-	50	1.7
Project No:12U14580									
Client Name:LG Electronics									
Model/Device:LG-E960/USB Chg W/O Loaded									
Test Volt/Freq:115VAC/60Hz									
Test By:John Nguyen									

LINE 1 RESULTS



LINE 2 RESULTS

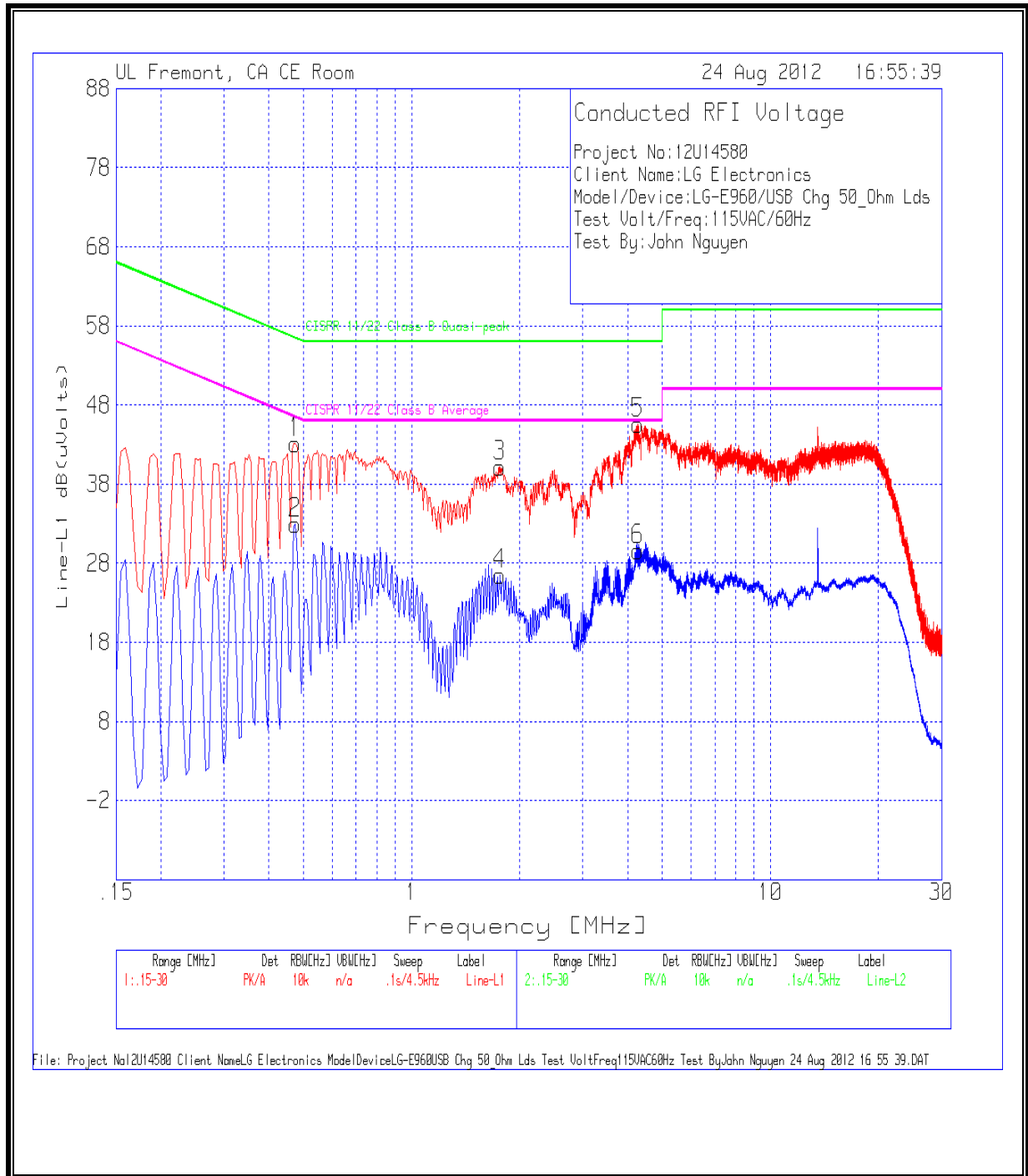


8.2. USB CHARGER (with 50 ohm Load)

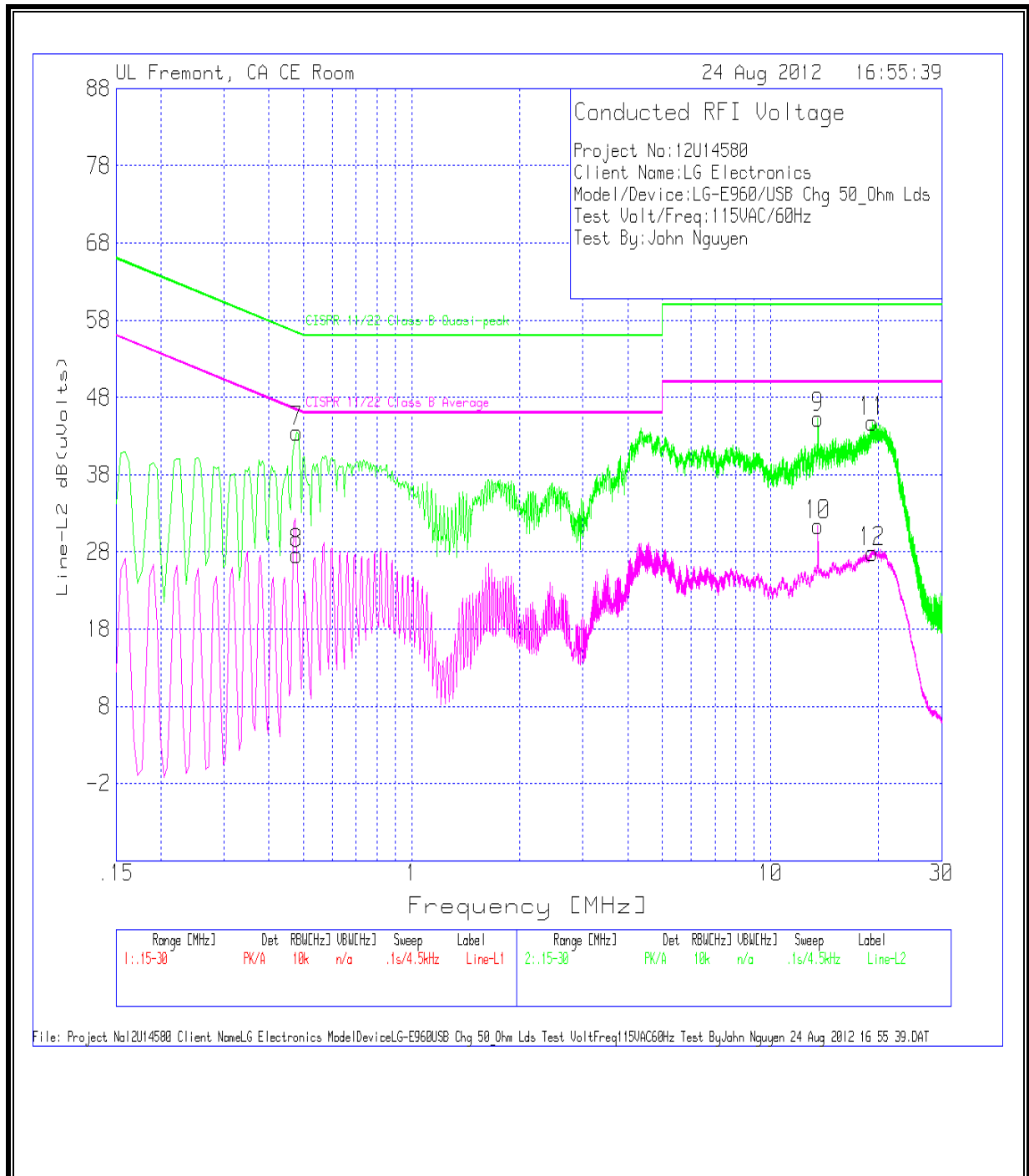
6 WORST EMISSIONS

Project No:	12U14580								
Client Name:	LG Electronics								
Model/Device:	LG-E960/USB Chg 50_Ohm Lds								
Test Volt/Freq:	115VAC/60Hz								
Test By:	John Nguyen								
Line-L1 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin	CISPR 11/22 Class B Average	Margin
0.474	43.08	PK	0.1	0	43.18	56.4	-13.22	-	-
0.474	32.86	Av	0.1	0	32.96	-	-	46.4	-13.44
1.7655	40	PK	0.1	0.1	40.2	56	-15.8	-	-
1.7655	26.36	Av	0.1	0.1	26.56	-	-	46	-19.44
4.263	45.34	PK	0.1	0.1	45.54	56	-10.46	-	-
4.263	29.37	Av	0.1	0.1	29.57	-	-	46	-16.43
Line-L2 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L2.TXT (dB)	LC Cables 2&3.TXT (dB)	dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin	CISPR 11/22 Class B Average	Margin
0.4785	43.41	PK	0.1	0	43.51	56.4	-12.89	-	-
0.4785	27.58	Av	0.1	0	27.68	-	-	46.4	-18.72
13.56	44.94	PK	0.2	0.2	45.34	60	-14.66	-	-
13.56	31.05	Av	0.2	0.2	31.45	-	-	50	-18.55
19.203	44.31	PK	0.3	0.2	44.81	60	-15.19	-	-
19.203	27.47	Av	0.3	0.2	27.97	-	-	50	-22.03
Project No:12U14580									
Client Name:LG Electronics									
Model/Device:LG-E960/USB Chg 50_Ohm Lds									
Test Volt/Freq:115VAC/60Hz									
Test By:John Nguyen									

LINE 1 RESULTS



LINE 2 RESULTS

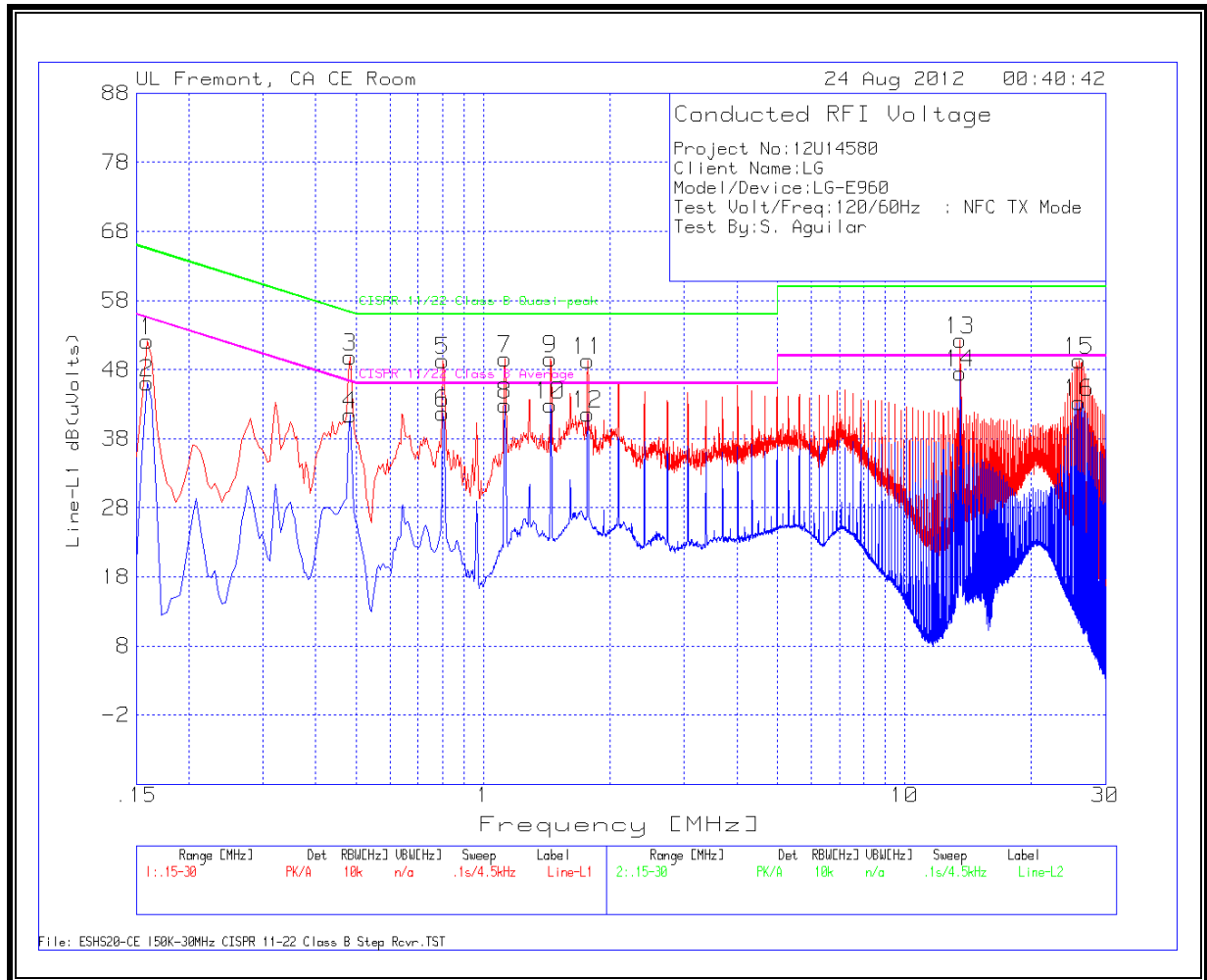


8.3. INDUCTIVE CHARGER (w/o 50 ohm Load)

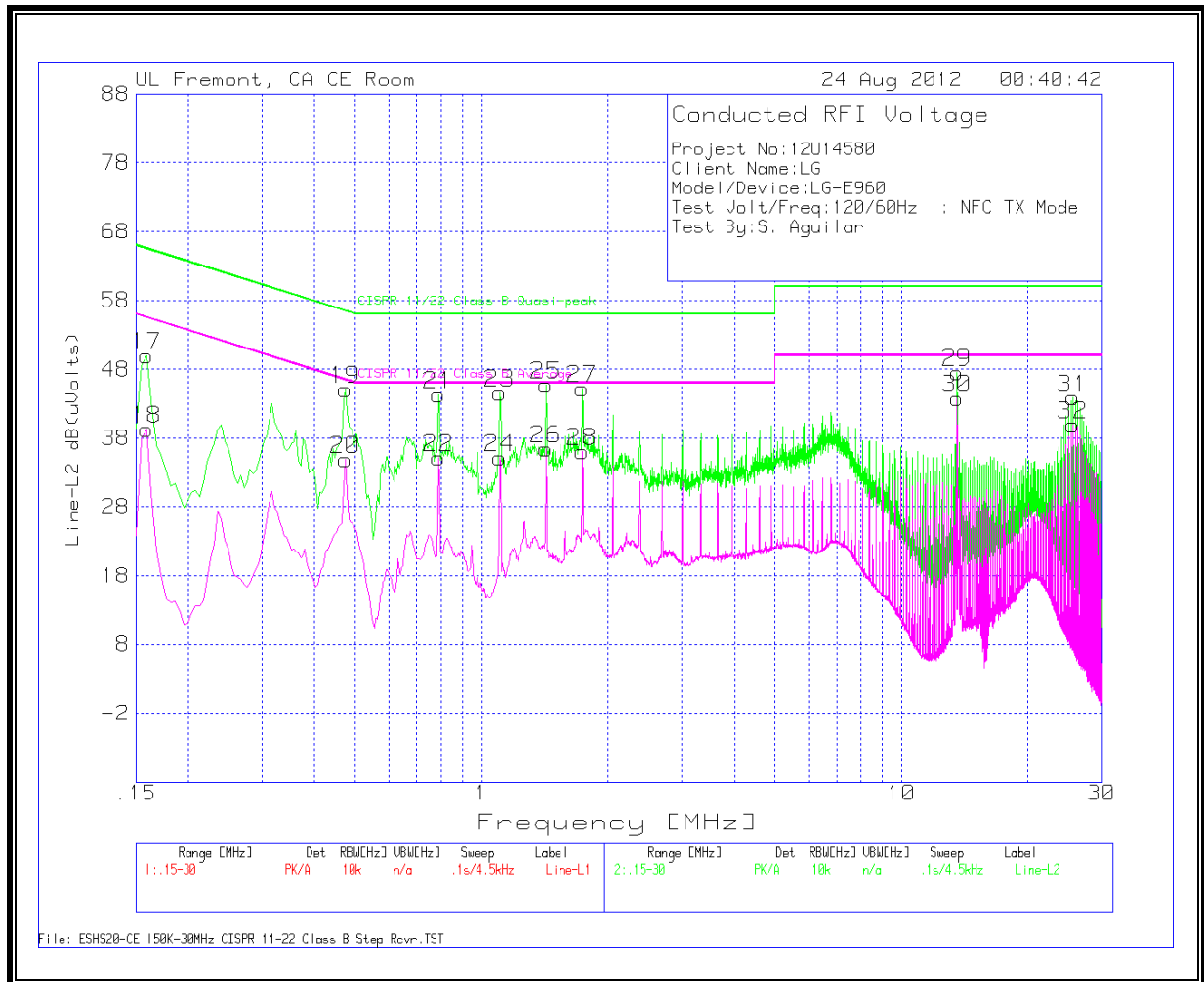
6 WORST EMISSIONS

Project No:12U14580									
Client Name:LG									
Model/Device:LG-E960									
Test Volt/Freq:120/60Hz : NFC TX Mode									
Test By:S. Aguilar									
Line-L1 .15 - 30MHz									
Test Frequency (MHz)	Meter Reading dB(uVolts)	Detector	T24 LISN (dB)	LC Cables (dB)	dB(uVolts)	FCC Class B QP Limit	Margin	FCC Class B Avg. Limit	Margin
0.159	52.07	PK	0.1	0	52.17	65.5	-13.33	-	-
0.159	45.98	Av	0.1	0	46.08	-	-	55.5	-9.42
0.483	49.71	PK	0.1	0	49.81	56.3	-6.49	-	-
0.483	41.33	Av	0.1	0	41.43	-	-	46.3	-4.87
0.8025	49.19	PK	0.1	0	49.29	56	-6.71	-	-
0.8025	41.67	Av	0.1	0	41.77	-	-	46	-4.23
1.1265	49.48	PK	0.1	0	49.58	56	-6.42	-	-
1.1265	42.72	Av	0.1	0	42.82	-	-	46	-3.18
1.446	49.41	PK	0.1	0.1	49.61	56	-6.39	-	-
1.446	42.71	Av	0.1	0.1	42.91	-	-	46	-3.09
1.77	49.15	PK	0.1	0.1	49.35	56	-6.65	-	-
1.77	41.33	Av	0.1	0.1	41.53	-	-	46	-4.47
13.56	51.94	PK	0.2	0.2	52.34	60	-7.66	-	-
13.56	47.09	Av	0.2	0.2	47.49	-	-	50	-2.51
25.9665	48.56	PK	0.5	0.3	49.36	60	-10.64	-	-
25.9665	42.49	Av	0.5	0.3	43.29	-	-	50	-6.71
Line-L2 .15 - 30MHz									
Test Frequency (MHz)	Meter Reading dB(uVolts)	Detector	T24 LISN (dB)	LC Cables (dB)	dB(uVolts)	FCC Class B QP Limit	Margin	FCC Class B Avg. Limit	Margin
0.159	49.9	PK	0.1	0	50	65.5	-15.5	-	-
0.159	39.21	Av	0.1	0	39.31	-	-	55.5	-16.19
0.474	44.91	PK	0.1	0	45.01	56.4	-11.39	-	-
0.474	34.8	Av	0.1	0	34.9	-	-	46.4	-11.5
0.789	44.21	PK	0.1	0	44.31	56	-11.69	-	-
0.789	35.03	Av	0.1	0	35.13	-	-	46	-10.87
1.104	44.35	PK	0.1	0.1	44.55	56	-11.45	-	-
1.104	34.91	Av	0.1	0.1	35.11	-	-	46	-10.89
1.4235	45.48	PK	0.1	0.1	45.68	56	-10.32	-	-
1.4235	36.19	Av	0.1	0.1	36.39	-	-	46	-9.61
1.7385	45.05	PK	0.1	0.1	45.25	56	-10.75	-	-
1.7385	35.88	Av	0.1	0.1	36.08	-	-	46	-9.92
13.56	47.11	PK	0.2	0.2	47.51	60	-12.49	-	-
13.56	43.37	Av	0.2	0.2	43.77	-	-	50	-6.23
25.611	43.04	PK	0.5	0.3	43.84	60	-16.16	-	-
25.611	39.14	Av	0.5	0.3	39.94	-	-	50	-10.06
PK - Peak detector									
QP - Quasi-Peak detector									
Av - Average detector									

LINE 1 RESULTS



LINE 2 RESULTS

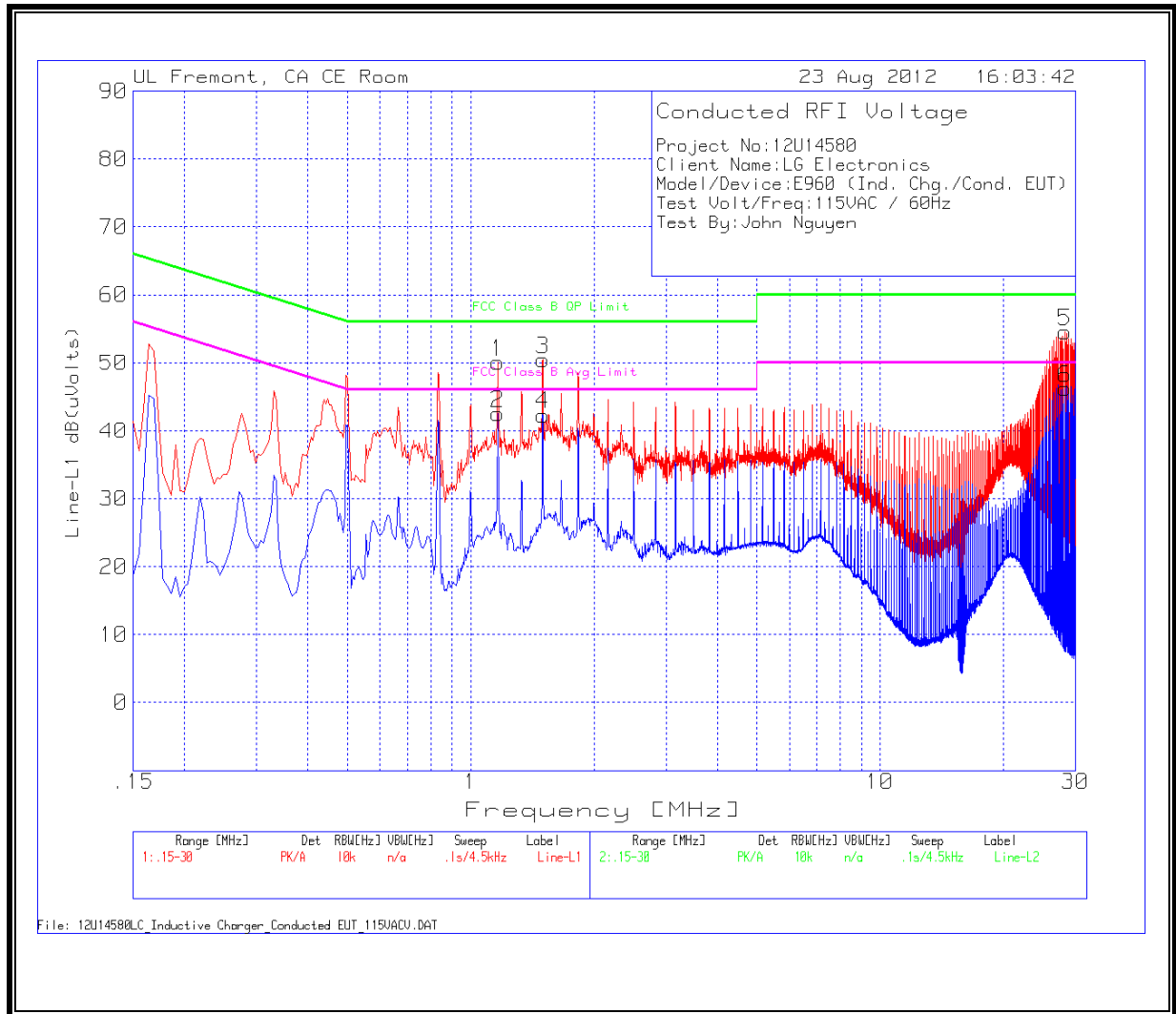


8.4. INDUCTIVE CHARGER (with 50 ohm Load)

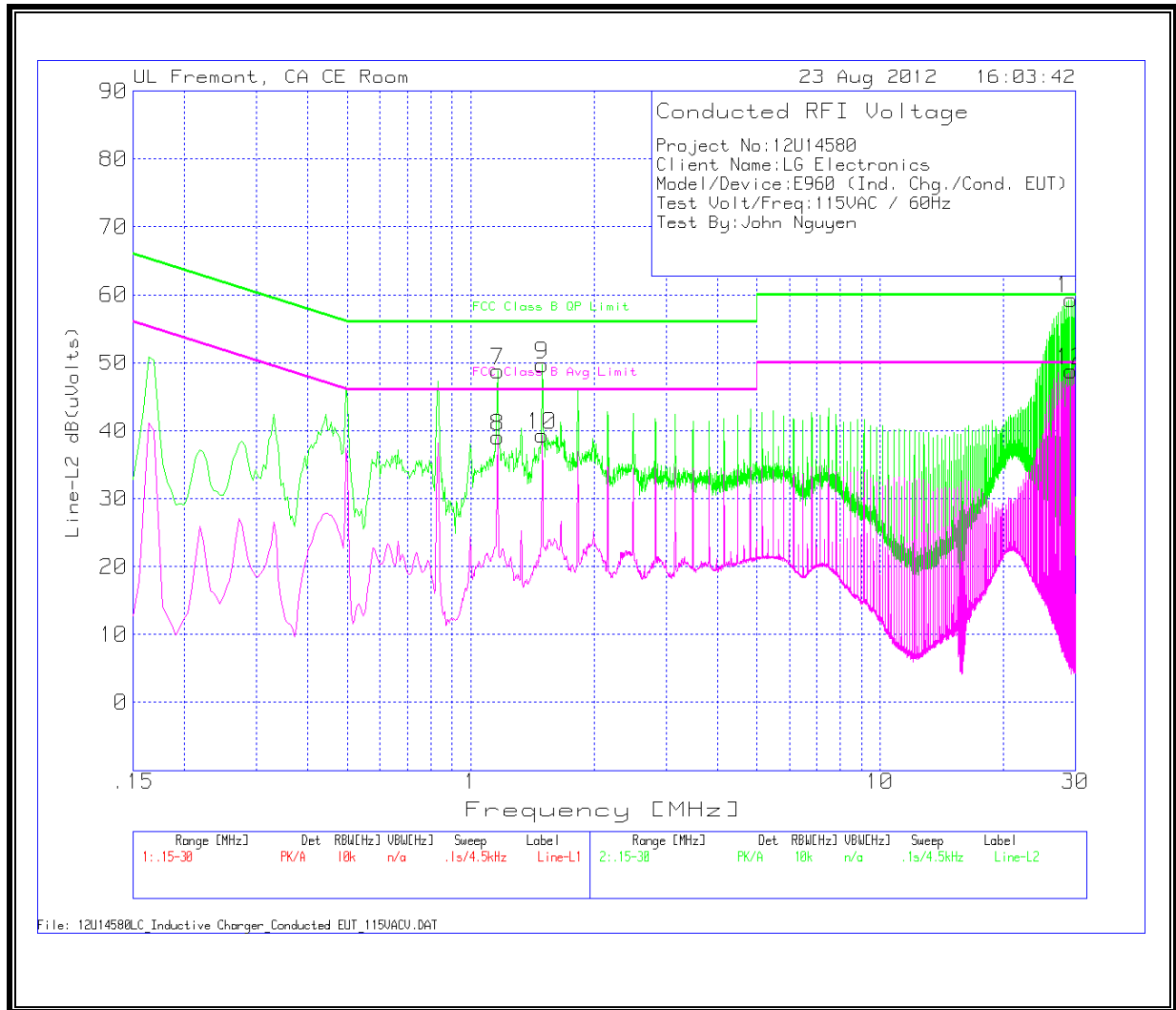
6 WORST EMISSIONS

Project No: 12U14580									
Client Name: LG Electronics									
Model/Device: E960 (Ind. Chg./Cond. EUT)									
Test Volt/Freq: 115VAC / 60Hz									
Test By: John Nguyen									
Line-L1 .15 - 30MHz									
Test Frequency (MHz)	Meter Reading dB(uVolts)	Detector	T24 LISN (dB)	LC Cables (dB)	dB(uVolts)	FCC Class B QP Limit	Margin	FCC Class B Avg Limit	Margin
1.1625	49.94	PK	0.1	0.1	50.14	56	-5.86	-	-
1.1625	42.29	Av	0.1	0.1	42.49	-	-	46	-3.51
1.5	50.29	PK	0.1	0.1	50.49	56	-5.51	-	-
1.5	42.15	Av	0.1	0.1	42.35	-	-	46	-3.65
28.248	53.8	PK	0.5	0.3	54.6	60	-5.4	-	-
28.248	45.48	Av	0.5	0.3	46.28	-	-	50	-3.72
Line-L2 .15 - 30MHz									
Test Frequency (MHz)	Meter Reading dB(uVolts)	Detector	T24 LISN (dB)	LC Cables (dB)	dB(uVolts)	FCC Class B QP Limit	Margin	FCC Class B Avg Limit	Margin
1.1625	48.73	PK	0.1	0	48.83	56	-7.17	-	-
1.1625	38.96	Av	0.1	0	39.06	-	-	46	-6.94
1.4955	49.53	PK	0.1	0.1	49.73	56	-6.27	-	-
1.4955	39.16	Av	0.1	0.1	39.36	-	-	46	-6.64
29.2245	58.57	PK	0.5	0.3	59.37	60	-0.63	-	-
29.2245	47.97	Av	0.5	0.3	48.77	-	-	50	-1.23
PK - Peak detector									
QP - Quasi-Peak detector									
Av - Average detector									

LINE 1 RESULTS



LINE 2 RESULTS



9. FREQUENCY STABILITY

LIMIT

§15.225 (e) The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency, over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 2.3.1 and 2.3.2

RESULTS

No non-compliance noted.

Reference Frequency: EUT Channel 13.56 MHz @ 20°C				
Limit: ± 100 ppm = 135.599 kHz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
115.00	50	13.5599175	0.014	± 100
115.00	40	13.5599295	0.005	± 100
115.00	30	13.5599338	0.002	± 100
115.00	20	13.5599362	0.000	± 100
115.00	10	13.5599766	-0.030	± 100
115.00	0	13.5599881	-0.038	± 100
115.00	-10	13.5599879	-0.038	± 100
115.00	-20	13.5599646	-0.021	± 100
97.15	20	13.5599357	0.000	± 100
132.25	20	13.5599347	0.001	± 100

10. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Frequency (MHz)	99% Bandwidth (KHz)
13.56	1.0585

99% BANDWIDTH

