



FCC CFR47 PART 15 SUBPART C

FOR

CELLULAR/PCS GSM&WCDMA WITH BLUETOOTH&WLAN

MODEL NUMBER: LG840G

FCC ID: ZNFLG840G

REPORT NUMBER: 12U14354-2, Revision A ISSUE DATE: June 20, 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

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Page 2 of 93

TABLE OF CONTENTS

1.	ATTE	STATION OF TEST RESULTS	5
2.	TEST	METHODOLOGY	6
3.	FACIL	ITIES AND ACCREDITATION	6
4.	CALIE	BRATION AND UNCERTAINTY	6
4	.1. N	IEASURING INSTRUMENT CALIBRATION	6
4	.2. S	AMPLE CALCULATION	6
4	.3. N	IEASUREMENT UNCERTAINTY	6
5.	EQUI	PMENT UNDER TEST	7
5	.1. D	ESCRIPTION OF EUT	7
5	.2. N	IAXIMUM OUTPUT POWER	7
5	.3. D	ESCRIPTION OF AVAILABLE ANTENNAS	7
5	. <i>4.</i> S	OFTWARE AND FIRMWARE	7
5	. <i>5.</i> И	VORST-CASE CONFIGURATION AND MODE	8
5	.6. D	ESCRIPTION OF TEST SETUP	9
6.	TEST	AND MEASUREMENT EQUIPMENT	11
7.	ANTE	NNA PORT TEST RESULTS	12
7	.1. 8	02.11b MODE IN THE 2.4 GHz BAND	12
	7.1.1.	6 dB BANDWIDTH	12
	7.1.2.	99% BANDWIDTH	16 20
	7.1.4.	AVERAGE POWER	20
	7.1.5.	POWER SPECTRAL DENSITY	25
	7.1.6.	CONDUCTED SPURIOUS EMISSIONS	29
7	.2. 8 721	02.11g MODE IN THE 2.4 GHz BAND 6 dв ваможиртн	36
	7.2.1.	99% BANDWIDTH	40
	7.2.3.	OUTPUT POWER	44
	7.2.4.		48
	7.2.5.	CONDUCTED SPURIOUS EMISSIONS	49 53
8.	RADI	ATED TEST RESULTS	60
е. 8	1 1	IMITS AND PROCEDURE	60
0	8.1.1.	TX ABOVE 1 GHz FOR 802.11b 1TX MODE IN THE 2.4 GHz BAND	61
	8.1.2.	TX ABOVE 1 GHz FOR 802.11g 1TX MODE IN THE 2.4 GHz BAND	70
8	.2. И	VORST-CASE BELOW 1 GHz	79
9.	AC PC	OWER LINE CONDUCTED EMISSIONS	82
		Page 3 of 93	
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10.	SETUP PHOTOS	86

Page 4 of 93

1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	LG ELECTRONICS MOBILECOMM 1000 SYLVAN AVE. ENGLEWOODS CLIFFS, NJ 07632	U.S.A., INC.
EUT DESCRIPTION:	CELLULAR/PCS GSM&WCDMA W	ITH BLUETOOTH&WLAN
MODEL:	LG840G	
SERIAL NUMBER:	203KPDT156258	
DATE TESTED:	APRIL 04-APRIL 27, 2012	
	APPLICABLE STANDARDS	
ST	NDARD	TEST RESULTS
CFR 47 Pa	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:

Tested By:

Ti M

TIM LEE STAFF ENGINEER UL CCS DENNIS HUANG EMC ENGINEER UL CCS

Page 5 of 93

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 cell phone that features Cellular/PCS GSM&WCDMA with Bluetooth & WLAN

The WLAN radio module is manufactured by Qualcomm.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	18.18	65.77
2412 - 2462	802.11g	21.70	147.91

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna, with a maximum gain of -1.41 dBi.

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was LG840G-V08i-MAR-21-2012-A

Page 7 of 93

5.5. 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 Z orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Z orientation.

Based on the manufacturer's attestation that the nominal output power is reduced as the data rate increases, the data rates tested represent the highest power and worst-case with respect to EMC performance.

Worst-case data rates were as follows:

802.11b mode: 1 Mbps 802.11g mode: 6 Mbps

Page 8 of 93

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List					
Description Manufacturer Model Serial Number					
AC ADAPTER	LG ELECTRONICS	STA-U13WT	TA15000001		
IEADSET 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	N/A	
2	AUDIO	1	MINI JACK	UN-SHELDED	1.0m	Volume control on cable	

TEST SETUP

The EUT was tested with AC adapter and earphones.

Page 9 of 93

SETUP DIAGRAM FOR TESTS



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Page 10 of 93

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 Du					
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	07/12/12	
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00558	11/11/12	
Antenna, Horn, 18 GHz	EMCO	3115	C00783	06/29/12	
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01016	07/12/12	
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00589	07/28/12	
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRM50702	N02685	CNR	
Antenna, Horn, 40 GHz	ARA	MWH-2640/B	C00981	06/14/12	
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01161	12/16/12	
Preamplifier, 40 GHz	Miteq	NSP4000-SP2	C00990	08/02/12	
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01012	09/02/12	
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	11/10/12	
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI7	1000741	07/06/12	
Peak Power Meter	Agilent / HP	E4416A	C00963	03/22/13	
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/12	

Page 11 of 93

7. ANTENNA PORT TEST RESULTS

7.1. 802.11b MODE IN THE 2.4 GHz BAND

7.1.1.6 dB BANDWIDTH

<u>LIMITS</u>

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

Channel Frequency		6 dB Bandwidth	Minimum Limit	
	(MHz)	(MHz)	(MHz)	
Low	2412	8.092	0.5	
Middle	2437	8.104	0.5	
High	2462	8.104	0.5	

Page 12 of 93

6 dB BANDWIDTH



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Page 13 of 93



Page 14 of 93



Page 15 of 93

7.1.2. 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

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	2412	12.715
Middle	2437	12.7474
High	2462	12.6545

Page 16 of 93

99% BANDWIDTH



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Page 17 of 93

99% BANDWIDTH MID CH	Freq/Channel
Ch Freq 2.437 GHz Trig Free Occupied Bandwidth Averages: 100	Center Freq 2.43700000 GHz
	Start Freq 2.42200000 GHz
Ref 25 dBm Atten 30 dB #Samp	Stop Freq 2.45200000 GHz CF Step 3.00000000 MHz <u>Auto Man</u>
Center 2.437 00 GHz Span 30 MHz #Res BW 300 kHz VBW 910 kHz Sweep 1.04 ms (601 pts)	Freq Offset 0.00000000 Hz
Occupied Bandwidth Occ BW % Pwr 99.00 % 12.7474 MHz x dB -6.00 dB -6.00 dB	Signal Irack On <u>Off</u>
Transmit Freq Error 21.812 kHz x dB Bandwidth 7.729 MHz* Copyright 2000-2010 Agilent Technologies	

Page 18 of 93



Page 19 of 93

7.1.3. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

RESULTS

Channel	Frequency	Peak Power	Output	Limit	Margin
		Reading	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	2412	18	18.00	30	-12.00
Middle	2437	18.17	18.17	30	-11.83
High	2462	18.18	18.18	30	-11.82

OUTPUT POWER



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Page 21 of 93



Page 22 of 93

OUTPUT P Agilent 11:59	OWER HIGH	СН		RТ	Freq/Channel
Ref 25 dBm #Peak	Atten 30 dB		∆ M Band Pwr	kr1 8.10 MHz 18.18 dBm	Center Freq 2.46200000 GHz
Log 10 dB/ Offst	1R 2			1.	Start Freq 2.45600000 GHz
10.7 dB					Stop Freq 2.46800000 GHz
PAvg					CF Step 1.20000000 MHz <u>Auto Mar</u>
M1 S2 S3 FC AA					Freq Offset 0.00000000 Hz
¤(f): FTun Swp					Signal Track On <u>Off</u>
Center 2.462 00 G #Res BW 1 MHz	GHz VI	BW 3 MHz	Sweep 1	Span 12 MHz ms (601 pts)	
Copyright 2000-20	10 Agilent Technologi	es			

Page 23 of 93

7.1.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 10.7 dB (including 10 dB pad and 0.7dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency	Power
	(MHz)	(dBm)
Low	2412	15.21
Middle	2437	15.35
High	2462	15.42

Page 24 of 93

7.1.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST PROCEDURE

Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

RESULTS

Channel	Frequency	PPSD	Limit	Margin
	(MHz)	(dBm)	(dBm)	(dB)
Low	2412	-7.34	8	-15.34
Middle	2437	-6.88	8	-14.88
High	2462	-7.02	8	-15.02

Page 25 of 93

POWER SPECTRAL DENSITY



Page 26 of 93



Page 27 of 93

		110) т	
Ref 15 dBm	2:06:51 Apr 9, 20 Atten 3	80 dB			Mkr1 2	⊷ 461 500. 7.02-	GHz dBm	Center Freq 2.46200000 GHz
HPeak Log 10 dB/		1						Start Freq 2.45700000 GHz
Offst 4.5 dB	prpr	m	Z	L.	w	L_	L.	Stop Freq
DI 8.0 dBm								CF Step 1.0000000 MHz
M1 S2 S3 FC								<u>Auto Man</u> Freq Offset
AA ¤(f): f>50k								Signal Track
Swp Center 2.462	000 GHz					Span 1	10 MHz	<u></u>
#Res BW 100 kHz #VBW 300 kHz Sweep 1 ms (601 pts) Copyright 2000-2010 Agilent Technologies								

Page 28 of 93

7.1.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

Page 29 of 93

RESULTS

SPURIOUS EMISSIONS, LOW CHANNEL



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Page 30 of 93

LOW CH	SPUI 2:23:01 /	RIOU Apr 9, 201	S 12					F	RТ	Freq/Channel
Ref 25 dBm #Peak		Atten 30)dB				Mk	ar1 4.82 -36.46	1 GHz dBm	Center Freq 13.0150000 GHz
Log 10 dB/										Start Freq 30.000000 MHz
Offst 10.7 dB										Stop Freq 26.000000 GHz
-11.9 dBm LgAv										CF Step 2.59700000 GHz Auto Man
M1 S2 S3 FS					Ministration Law		a la cluba chain			Freq Offset 0.00000000 Hz
AA ¤(f): ₩₩₩ FTun Swp	ulutur.		esterique e							Signal Track On <u>Off</u>
Start 30 MHz Stop 26.000 GHz #VBW 300 kHz Sweep 2.482 s (2001 pts)										
Copyright 200	0-2010 Ag	jilent Tecl	hnologie	es	MIL	2466	, 21402	5 (2.001	p taj	

Page 31 of 93

SPURIOUS EMISSIONS, MID CHANNEL



Page 32 of 93

🔆 Agilent 12	2:21:22 Apr 9, 2	012				R	Т	Freq/Channel
Ref 25 dBm #Peak	Atten	30 dB			Mkr	1 4.873 -37.57	iGHz dBm	Center Freq 13.0150000 GHz
Log 10 dB/								Start Freq 30.0000000 MHz
10.7 dB DI								Stop Freq 26.000000 GHz
-11.9 dBm LgAv	1							CF Step 2.59700000 GHz <u>Auto Mar</u>
M1 S2 S3 FS AA		Paratile interne	And the state	مالاردار بالاط	ه ا نتهاده اوریان	اربغوروسانه	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Freq Offset 0.00000000 Hz
¤(t): FTun Swp								Signal Track On <u>Off</u>
Start 30 MHz Stop 26.000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (2001 pts)								

Page 33 of 93

SPURIOUS EMISSIONS, HIGH CHANNEL



Page 34 of 93

Agilent 12:	24:14 Apr 9, 20)12			RТ	Freq/Channel
Ref 25 dBm #Peak	Atten 3	30 dB		Mk	r1 4.925 GHz -38.16 dBm	Center Freq 13.0150000 GHz
Log 10 dB/						Start Freq 30.0000000 MHz
dB DI						Stop Freq 26.0000000 GHz
-11.9 dBm LgAv	1					CF Step 2.59700000 GHz <u>Auto Mar</u>
M1 S2 S3 FS AA		Million de la calificación de la	Inter Protocol and the	An internet in the same of	-	Freq Offset 0.00000000 Hz
¤(f): ^{deserver} FTun Swp						Signal Track ^{On <u>Off</u>}
Start 30 MHz Stop 26.000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (2001 pts)						

Page 35 of 93

7.2. 802.11g MODE IN THE 2.4 GHz BAND

7.2.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

Channel	Frequency	6 dB Bandwidth	Minimum Limit
	(MHz)	(MHz)	(MHz)
Low	2412	16.184	0.5
Middle	2437	15.92	0.5
High	2462	16.064	0.5

Page 36 of 93
6 dB BANDWIDTH



Page 37 of 93



Page 38 of 93

Agricity	5.20.24	Apr 0, 20	112					10.00		
20 dBm		Atten 2	0 dB	1		1	Δ Mkr1	16.064 -0.1	1 dB	Center Fre 2.46200000 GH
	IR Qu	anor	anger and	allow a	permeters	mar		1 ¥ ¢		Start Free 2.4500000 GH
st	$\left \right $									Stop Fre 2.47400000 GH
n _{uluyy} h w	/								- clawoo	CF St 2.40000000 MH <u>Auto N</u>
S2 FS										Freq Offse 0.00000000 H
IN VP										Signal Trac
iter 2.462	000 GHz		VP	W 010 I			1 001 m	Span 2	24 MHz	

Page 39 of 93

7.2.2. 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

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	2412	16.057
Middle	2437	16.1294
High	2462	16.085

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Page 40 of 93

99% BANDWIDTH



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Page 41 of 93

Ch Freq 2.4	2012 37 GHz	Averages: 100	Trig Free	Center Freq 2.43700000 GHz
	Ľ			Start Freq 2.42200000 GHz
Ref 25 dBm Atter #Samp Log	1 30 dB	II ba alke wife east for Lymp 👁		Stop Freq 2.45200000 GHz
10 dB/ Offst 10.7 dB/ dB/ dB/ dB/ dB/ dB/ dB/ dB/	ana a an a			CF Step 3.0000000 MHz <u>Auto Ma</u>
Center 2.437 00 GHz #Res BW 300 kHz	VBW 910 kHz	Sweep 1.04 r	Span 30 MHz ns (601 pts)	Freq Offset 0.00000000 Hz
Occupied Bandw 16.1	idth 294 MHz	Occ BW % Pwr x dB	99.00 % -6.00 dB	Signal Track On <u>Off</u>
Transmit Freq Error x dB Bandwidth	-15.600 kHz 14.717 MHz*			

Page 42 of 93

99% BANDWIDTH HIGH CH	RT	Freq/Channel
Ch Freq 2.462 GHz Occupied Bandwidth	Trig Free Averages: 100	Center Freq 2.46200000 GHz
		Start Freq 2.44700000 GHz
Ref 25 dBm Atten 30 dB #Samp Log Atten 20 dB		Stop Freq 2.47700000 GHz
10 71449-14 7499-14 749-140-14 749-140-140-140-140-140-140-140-140-140-140	ar nei fu infra i aveni franklak Maria Maria	CF Step 3.0000000 MHz <u>Auto Man</u>
dB	Span 30 MHz	Freq Offset 0.00000000 Hz
#Res BW 300 kHz VBW 910	kHz Sweep 1.04 ms (601 pts)	Signal Track
Occupied Bandwidth 16.0850 MHz	Occ BW % Pwr 99.00 % x dB -6.00 dB	On <u>Off</u>
Transmit Freq Error -32.928 kHz x dB Bandwidth 14.712 MHz*		
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Page 43 of 93

7.2.3. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

RESULTS

Channel	Frequency	Peak Power	Output	Limit	Margin
		Reading	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dB)
Low	2412	21.7	21.70	30	-8.30
Middle	2437	21.6	21.60	30	-8.40
High	2462	21.59	21.59	30	-8.41

Page 44 of 93

OUTPUT POWER



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Page 45 of 93



Page 46 of 93



Page 47 of 93

7.2.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 12.7 dB (including 10 dB pad and 0.7 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency	Power
	(MHz)	(dBm)
Low	2412	13.06
Middle	2437	13.17
High	2462	13.20

Page 48 of 93

7.2.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST PROCEDURE

Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

RESULTS

Channel	Frequency	PPSD	Limit	Margin
	(MHz)	(dBm)	(dBm)	(dB)
Low	2412	-11.74	8	-19.74
Middle	2437	-11.61	8	-19.61
High	2462	-11.43	8	-19.43

Page 49 of 93

POWER SPECTRAL DENSITY



Page 50 of 93



Page 51 of 93

* Agilent 12:10:1	7 Apr 9, 2012			RТ	Freq/Channel
Ref 15 dBm #Peak	Atten 30 dB		Mkr1	2.463 27 GHz -11.43 dBm	Center Freq 2.46200000 GHz
Log 10 dB/					Start Freq 2.45200000 GHz
Offst 4.5 dB	Manhan	halan punk	on have the second	mhunhy	Stop Freq 2.47200000 GHz
8.0 dBm LgAv					CF Step 2.00000000 MHz Auto Mar
M1 S2 S3 FC					Freq Offset 0.00000000 Hz
¤(f): FTun Swp					Signal Track ^{On <u>Off</u>}
Center 2.462 00 G #Res BW 100 kHz	Hz #1	/BW 300 kHz	Sweep 1.92	Span 20 MHz 2 ms (601 pts)	

Page 52 of 93

7.2.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

Page 53 of 93

RESULTS

SPURIOUS EMISSIONS, LOW CHANNEL



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Page 54 of 93

								1
Ref 25 dBm		Atten 30 d	В			45.83	dBm	Center Freq 13.0150000 GHz
Log								
10 dB/								Start Freq 30.000000 MHz
Offst								
dB DI								Stop Freq 26.0000000 GHz
-16.5 dBm								CF Step
LgAv								2.59700000 GHz <u>Auto Ma</u>
M1 S2	1							Freq Offset
AA		and the first state	and the interstation	a the second second	manus lun asiriakita	alast the state of	Profile Hangard	0.00000000 Hz
⊐(f): FTun								Signal Track
Swp								Un <u>Ut</u>

Page 55 of 93

SPURIOUS EMISSIONS, MID CHANNEL



Page 56 of 93

Aglient 12:30:	37 Apr 9, 2012		R		Freq/Channel
Ref 25 dBm #Peak	Atten 30 dB		MKr1 4.873 -47.09 (GHZ IBm	Center Freq 13.0150000 GHz
Log 10 dB/					Start Freq 30.000000 MHz
dB					Stop Freq 26.000000 GHz
-16.5 dBm LgAv					CF Step 2.59700000 GHz <u>Auto Ma</u>
M1 S2 S3 FS AA		tenter for a start for the	the state of the s	ale and the second	Freq Offset 0.00000000 Hz
¤(f): •••••••• FTun Swp					Signal Track On <u>Off</u>
Start 30 MHz	#\/BW	300 kHz Sw	Stop 26.000	GHz Î	

Page 57 of 93

SPURIOUS EMISSIONS, HIGH CHANNEL



Page 58 of 93

- Aglient 12:32:	J1 Apr 9, 2012		R I	Freq/Channel
Ref 25 dBm #Peak	Atten 30 dB		Mkr1 4.925 GHz -47.72 dBm	Center Freq 13.0150000 GHz
Log 10 dB/				Start Freq 30.0000000 MHz
DI				Stop Freq 26.000000 GHz
-16.5 dBm LgAv				CF Step 2.59700000 GHz <u>Auto Ma</u>
M1 S2 S3 FS AA		A State of the sta	A Martin and a start of the sta	Freq Offset 0.00000000 Hz
¤(f): FTun Swp				Signal Track On <u>Off</u>
Start 30 MHz #Res BW 100 kHz	#VBW	300 kHz Swaa	Stop 26.000 GHz	

Page 59 of 93

8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

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 spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable 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.

Page 60 of 93

8.1.1. TX ABOVE 1 GHz FOR 802.11b 1TX MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



Page 61 of 93

C Aylient 14.55.1	0 Apr4,2012			R I	
roject: ef 104.3 dB µ∨ Peak 	#Atten 0 dB		Mkr1	2.387 07 GHz 39.87 dBµ∨	Center Freq 2.35000000 GHz
Dg) B/					Start Freq 2.31000000 GHz
ffst 33 B					Stop Freq 2.39000000 GHz
I.0 Вµ∨ јАv					CF Step 8.0000000 MHz <u>Auto Ma</u>
1 V2 3 FC					Freq Offset 0.00000000 Hz
f): Гun wp					Signal Track
tart 2.310 00 GHz		/B)M(10 Hz	Sween 6-23	2.390 00 GHz	

Page 62 of 93

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



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Page 63 of 93

a Aglient 14:28:	37 Apr 4, 2012			R I	Freq/Channel
roject: ef 104.3 dBµ∨ ⊃eak	#Atten 0 dB		Mkr1	2.387 07 GHz 37.53 dBµ∨	Center Freq 2.35000000 GHz
)					Start Freq 2.31000000 GHz
nst 33 B					Stop Freq 2.39000000 GHz
l.0 3μ∨ JAv					CF Step 8.0000000 MHz <u>Auto Ma</u>
1 V2 3 FC					Freq Offset 0.00000000 Hz
f): Гun wp					Signal Track On <u>Of</u>
tart 2.310 00 GHz Res BW(1 MHz	<u> </u>	/B)M(10 Hz	Stop	2.390 00 GHz	

Page 64 of 93

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



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Page 65 of 93

Irojoot:			ML-1 2.40	1 202 5 CH ₂	<u>ה</u> ור
loject. tef 104.6 dB µ∨ Peak	#Atten 0 dB		WRIT 2.45	39.22 dBµ∨	Center Freq 2.49175000 GHz
og O B/					Start Freq 2.48350000 GHz
.57 B					Stop Freq 2.5000000 GHz
4.0 Βμ∨ gAv					CF Step 1.6500000 MHz <u>Auto Ma</u>
11 V2		\$			Freq Offset 0.00000000 Hz
(f): Tun Wp					Signal Track On <u>Of</u>
itart 2.483 500 0 GF Res BW 1 MHz	lz #\	/BW 10 Hz	Stop 2.50	0 000 0 GHz s (601 pts)	

Page 66 of 93

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



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Page 67 of 93

Project:			Mkr1 2.49	91 227 5 GHz	
Ref 104.6 dBµ∨ Peak □ □ □	#Atten 0 dB		MIRT 2.4	37.92 dBµ∨	Center Freq 2.49175000 GHz
.og O					Start Fred
IB/					2.48350000 GHz
.57 IB					Stop Freq 2.5000000 GHz
// /4.0 Bµ∀					CF Ster
.gAv					1.65000000 MHz <u>Auto Ma</u>
31 V2 33 FC		1 \$			Freq Offset 0.00000000 Hz
(f): Tun					Signal Track
Swp					
Start 2.483 500 0 (GHz		Stop 2.50	00 000 0 GHz	Î

Page 68 of 93

HARMONICS AND SPURIOUS EMISSIONS

Test Engr	:	Vien Tra	m												
Date:		04/04/12													
Project #	12U14254														
Company: LG															
Company. EC Test Targate 15 205															
Mode On	er:	802.11b	Tx												
	f	Measuren	nent Fred	mency	Amp	Preamp (Gain			Average	Field Stren	oth Limit			
	Dist	Distance	to Anter	ina	D Corr	Distance	Correc	t to 3 me	ters	Peak Fie	ld Strength	Limit			
	Read	Analyzer	Reading		Avg	Average	Field St	rength @	3 m	Margin v	s. Average	Limit			
	AF	Antenna	Factor		Peak	Calculate	d Peak	Field Stre	ength	Margin v	/s. Peak Lir	nit			
	CL	Cable Los	ss		HPF	High Pas	s Filter				i cun Ell				
f	Dist	Read	AF	CL	Amp	D Corr	Fltr	Corr.	Limit	Margin	Ant. Pol.	Det.	Ant.High	Table Angle	Notes
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/OP	cm	Degree	
Low Cha	nnel . 24	112MHz		1											
4.824	3.0	38.7	33.1	6.8	-34.1	0.0	0.0	44.5	74.0	-29.5	v	Р	109.0	187.0	
4.824	3.0	31.1	33.1	6.8	-34.1	0.0	0.0	36.9	54.0	-17.1	v	A	109.0	187.0	
4.824	3.0	39.3	33.1	6.8	-34.1	0.0	0.0	45.1	74.0	-28.9	, H	P	117.0	122.0	
4.824	3.0	30.7	33.1	6.8	-34.1	0.0	0.0	36.5	54.0	-17.5	Н	Ā	117.0	122.0	
Mid Chai	nnel - 24	37MHz		1											
4.874	3.0	38.2	33.1	6.8	-34.0	0.0	0.0	44.1	74.0	-29.9	V	Р	98.0	340.0	
4.874	3.0	28.8	33.1	6.8	-34.0	0.0	0.0	34.7	54.0	-19.3	V	A	98.0	340.0	
7.311	3.0	35.9	35.8	9.1	-33.1	0.0	0.0	47.7	74.0	-26.3	V	Р	101.0	137.0	
7.311	3.0	25.2	35.8	9.1	-33.1	0.0	0.0	37.0	54.0	-17.0	V	A	101.0	137.0	
12.185	3.0	33.8	39.5	12.0	-32.5	0.0	0.0	52.7	74.0	-21.3	V	Р	117.0	169.0	
12.185	3.0	21.1	39.5	12.0	-32.5	0.0	0.0	40.0	54.0	-14.0	V	A	117.0	169.0	
4.874	3.0	38.0	33.1	6.8	-34.0	0.0	0.0	43.9	74.0	-30.1	H	Р	117.0	123.0	
4.874	3.0	30.7	33.1	6.8	-34.0	0.0	0.0	36.6	54.0	-17.4	Н	<u>A</u>	117.0	123.0	
7.311	3.0	40.2	35.8	9.1	-33.1	0.0	0.0	52.0	74.0	-22.0	H	P	119.0	239.0	
7.311	3.0	33.3	35.8	9.1	-33.1	0.0	0.0	45.1	54.0	-8.9	H	A	119.0	239.0	
12.185	3.0	34.0	39.5	12.0	-32.5	0.0	0.0	52.9	74.0	-21.1	H	<u>Р</u>	158.0	113.0	
12.185	3.0	<u> 21.1</u>	39.5	12.0	-32.5	0.0	0.0	40.1	54.0	-13.9	Н	<u>A</u>	158.0	113.0	
		36.0	22.2	6.8	34.0	0.0	0.0	42.0	74.0	21 1	V	D	116.0	01.0	
4.924	3.0	28.3	33.2	6.8	-34.0	0.0	0.0	34.3	54.0	-10 7	v	1 A	116.0	91.0	
7 386	3.0	36.4	35.9	9.1	-33.1	0.0	0.0	48.3	74.0	-25.7	v	P	99.0	159.0	
7.386	3.0	25.2	35.9	9.1	-33.1	0.0	0.0	37.1	54.0	-16.9	v	A	99.0	159.0	
4.924	3.0	38.2	33.2	6.8	-34.0	0.0	0.0	44.2	74.0	-29.8	Н	<u>.</u> Р	98.0	123.0	
	3.0	29.3	33.2	6.8	-34.0	0.0	0.0	35.3	54.0	-18.7	Н	A	98.0	123.0	
4.924		28.0	35.0	91	-33.1	0.0	0.0	50.0	74.0	-24.0	H	Р	100.0	229.0	
4.924 7.386	3.0	1													

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8.1.2. TX ABOVE 1 GHz FOR 802.11g 1TX MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



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Page 70 of 93

e Aglient 15:03:1	3 Apr4,2012			RI	Freq/Channel
roject: ef 104.3 dB µ∨ ⊃eak 	#Atten 0 dB		Mkr1	2.386 00 GHz 40.14 dBµ∨	Center Freq 2.35000000 GHz
og) B/					Start Freq 2.31000000 GHz
ffst 33 B					- Stop Freq 2.39000000 GHz
I.0 Βμ∨ 3Av					CF Ste 8.00000000 MHz Auto Mi
1 V2 3 FC					Freq Offset 0.00000000 Hz
f): Tun wp					Signal Track
tart 2.310 00 GHz		B)&(10 H2	Sween 6.23	2.390 00 GHz	

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Page 71 of 93

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



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Page 72 of 93
B/			2.31000000 GHz
.33 B			Stop Freq 2.39000000 GHz
4.0 BuV			CF Ster
gAv			- 8.0000000 MHz <u>Auto M</u> a
11 V2 13 FC	 	~	Freq Offset
(f):			 Signal Track

Page 73 of 93

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



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Page 74 of 93

oject:		Mkr1	2.483 582 5 GHz			
e f 104.6 dB µ∀ Peak	#Atten 0 dB		40.12 dBµ∨	Center Fred 2.49175000 GH		
)g						
3/				2.48350000 GHz		
ifst 57 3				Stop Fred		
.0						
3 μ∨				CF Ste 1.65000000 MHz <u>Auto M</u>		
1 ∨2 0 3 FC				Freq Offset 0.00000000 Hz		
): Tun				Signal Track		
vp						
art 2.483 500 0 GH	lz	Stop	2.500 000 0 GHz	ļ		

Page 75 of 93

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



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Page 76 of 93

'roject:			Mkr1 2.48	33 500 0 GHz			
lef 104.6 dB µ∨ Peak	#Atten 0 dB			38.14 dBµ∨			
og O B/					Start Freq 2.48350000 GHz		
.57					Stop Freq 2.5000000 GHz		
4.0 Βμ∨ gAv					CF Step 1.65000000 MHz <u>Auto Ma</u>		
11 V2					Freq Offset 0.00000000 Hz		
(f): Tun Wp					Signal Track On <u>Of</u>		
itart 2.483 500 0 G	Hz #1/DM	10 Ца	00 000 0 GHz				

Page 77 of 93

HARMONICS AND SPURIOUS EMISSIONS

Test Engr		Vien Tra	n												
Date:		04/04/12													
Project #	:	12U1425	4												
Company	iy: LG														
Test Targ	et:	15.205													
Mode Op	er:	802.11g	Tx												
	f	Measuren	nent Free	juency	Amp	Preamp 0	Gain			Average	Field Stren	gth Limit			
	Dist	Distance	to Anten	ina	D Corr	Distance	Correc	t to 3 me	ters	Peak Fie	ld Strength	Limit			
	Read	Analyzer	Reading		Avg	Average	Field S	rength @	3 m	Margin	vs. Average	Limit			
	AF	Antenna	Factor		Peak	Calculate	d Peak	Field Stre	ength	Margin	vs. Peak Lii	mit			
	CL	Cable Los	ss		HPF	High Pas	s Filter								
f	Diet	Read	AF	CL	Amr	DCorr	Fltr	Corr	Limit	Margin	Ant Pol	Det	Ant High	Table Angle	Notes
GH7	(m)	dBuV	dB/m		dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	- Det. Ρ/Δ/ΟΡ	em	Degree	Notes
Low Cho	nnol 2	112MHz	ub/m		<u> </u>		ub	aba v/m	ubu v/m		•//11	1/1/Q1	- Chi	Degree	
4.824	3.0	39.4	33.1	6.8	-34.1	0.0	0.0	45.2	74.0	-28.8	н	Р	140.0	98.0	*****
4.824	3.0	25.9	33.1	6.8	-34.1	0.0	0.0	31.7	54.0	-22.3	н	A	140.0	98.0	
4.824	3.0	38.9	33.1	6.8	-34.1	0.0	0.0	44.8	74.0	-29.2	v	P	111.0	185.0	
4.824	3.0	26.3	33.1	6.8	-34.1	0.0	0.0	32.1	54.0	-21.9	V	Ā	111.0	185.0	
Mid Cha	nnel - 24	37MHz													
4.874	3.0	38.1	33.1	6.8	-34.0	0.0	0.0	44.0	74.0	-30.0	H	Р	128.0	114.0	
4.874	3.0	25.7	33.1	6.8	-34.0	0.0	0.0	31.6	54.0	-22.4	H	А	128.0	114.0	
7.311	3.0	48.1	35.8	9.1	-33.1	0.0	0.0	59.9	74.0	-14.1	Н	Р	110.0	230.0	
7.311	3.0	32.1	35.8	9.1	-33.1	0.0	0.0	43.9	54.0	-10.1	H	A	110.0	230.0	
12.185	3.0	32.9	39.5	12.0	-32.5	0.0	0.0	51.9	74.0	-22.1	H	Р	100.0	70.0	
12.185	3.0	21.1	39.5	12.0	-32.5	0.0	0.0	40.0	54.0	-14.0	H	A	100.0	70.0	
4.874	3.0	37.1	33.1	6.8	-34.0	0.0	0.0	53.0	74.0	-31.0	<u>v</u>	P	98.0	339.0	
4.874	3.0	25.7	33.1	6.8	-34.0	0.0	0.0	41.6	54.0	-22.4	<u>V</u>	<u>A</u>	98.0	339.0	
7.311	3.0	42.0	35.8	9.1	-33.1	0.0	0.0	63.8	74.0	-20.2	V	P	116.0	298.0	
7.311	3.0	27.1	35.8	9.1	-33.1	0.0	0.0	48.9	54.0	-15.1	V	A	116.0	298.0	
12.185	3.0	33.2	39.5	12.0	-32.5	0.0	0.0	02.1 50.0	74.0	-21.9	V V	P	99.0	296.0	
12.105 High Ch	<u>3.0</u>	1 21.1 2462MH#	39.5	12.0	-34.5	0.0	0.0	50.0	54.0	-14.0	<u>v</u>	<u>A</u>	99.0	290.0	
4 924	30	38.6	33.2	6.8	-34.0	0.0	0.0	44.6	74.0	-29.4	н	Р	130.0	116.0	
4.924	3.0	25.7	33.2	6.8	-34.0	0.0	0.0	31.7	54.0	-22.3	н	A	130.0	116.0	
7.386	3.0	47.6	35.9	9.1	-33.1	0.0	0.0	59.6	74.0	-14.4	H	P	120.0	243.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
7.386	3.0	29.4	35.9	9.1	-33.1	0.0	0.0	41.4	54.0	-12.6	H	Ā	120.0	243.0	
4.924	3.0	37.5	33.2	6.8	-34.0	0.0	0.0	43.5	74.0	-30.5	V	P	112.0	316.0	
4.924	3.0	25.0	33.2	6.8	-34.0	0.0	0.0	31.0	54.0	-23.0	V	A	112.0	316.0	
	3.0	38.3	35.9	9.1	-33.1	0.0	0.0	50.3	74.0	-23.7	V	Р	100.0	155.0	
7.386						Amount 1000000000000000000000000000000000000	y//	****************		·····	7	·····	7	·	

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Page 78 of 93

8.2. WORST-CASE BELOW 1 GHz

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



Page 79 of 93

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



Page 80 of 93

REPORT NO: 12U14354-2A FCC ID: ZNFLG840G

TEST DATA

Project No:12U14354 Client Name:LG Electronic Inc

- Model:LG 840G
- Config:Tx Worst Case Test By:Dennis Huang

Test Frequency	Raw Reading (dBuV/m)	Detector	Amplifier + Cable Loss [dB]	Bilog Antenna Loss [dB]	Corrected Reading (dBuV/m)	Part 15 Class B Limit (dBuV/m)	Margin	Antenna Height [cm]	Polarity
35.6215	41.47	PK	-27.5	17.2	31.17	40	-8.83	400	Horz
71.4828	47.61	PK	-27.1	8.1	28.61	40	-11.39	200	Horz
84.4704	49.25	PK	-27.1	7.4	29.55	40	-10.45	400	Horz
118.781	37.52	PK	-26.7	13.9	24.72	43.5	-18.78	300	Horz
172.6699	39.51	PK	-26.5	11.4	24.41	43.5	-19.09	200	Horz
276.5707	34.99	PK	-25.9	13.4	22.49	46	-23.51	100	Horz

Test Frequency	Raw Reading (dBuV/m)	Detector	Amplifier + Cable Loss [dB]	Bilog Antenna Loss [dB]	Corrected Reading (dBuV/m)	Part 15 Class B Limit (dBuV/m)	Margin	Ant Height [cm]	Polarity
35.4277	53.75	PK	-27.5	17.3	43.55	40	3.55	100	Vert
35.3563	43.84	QP	-27.5	17.3	33.64	40	-6.36	139	Vert
59.8521	48.1	PK	-27.2	7.3	28.2	40	-11.8	100	Vert
82.1443	50.65	PK	-27	7.5	31.15	40	-8.85	200	Vert
108.5072	42.92	PK	-26.8	12.4	28.52	43.5	-14.98	100	Vert
144.3685	41.98	PK	-26.6	12.4	27.78	43.5	-15.72	100	Vert
830 7734	30.11	PK	-23.1	21.2	28 21	46	-17 79	300	Vert

PK - Peak detector

QP - Quasi-Peak detector

LnAv - Linear Average detector

- LgAv Log Average detector
- Av Average detector
- CAV CISPR Average detector RMS - RMS detection
- CRMS CISPR RMS detection
- Text File: below 1ghz.TXT
- File: below 1ghz.DAT

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

Frequency of Emission (MHz)	Conducted Limit (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

ANSI C63.4

RESULTS

Page 82 of 93

<u>6 WORST EMISSIONS</u>

Project No	:12U14354	ļ							
Client Nar	ne:LG Elec	tronics Inc							
Model/De	vice:LG840)G							
Test Volt/Freq:120V 60Hz									
Test By:Jir	nmy Viet								
Line-L1.15	5 - 30MHz								
Test Frequ	Meter Rea	Detector	T24 IL L1.T	LC Cables	dB[uVolts	CISPR 11/2	Margin	CISPR 11/2	Margin
0.3795	37.67	РК	0.1	0	37.77	58.3	-20.53	-	-
0.3795	33.68	Av	0.1	0	33.78	-	-	48.3	-14.52
1.7745	21.41	РК	0.1	0.1	21.61	56	-34.39	-	-
1.7745	14.94	Av	0.1	0.1	15.14	-	-	46	-30.86
11.913	25.25	РК	0.2	0.2	25.65	60	-34.35	-	-
11.913	14.83	Av	0.2	0.2	15.23	-	-	50	-34.77
Line-L2.15	5 - 30MHz								
Test Frequ	Meter Rea	Detector	T24 IL L2.T	LC Cables	dB[uVolts	CISPR 11/2	Margin	CISPR 11/2	Margin
0.3795	35.64	РК	0.1	0	35.74	58.3	-22.56	-	-
0.3795	26.25	Av	0.1	0	26.35	-	-	48.3	-21.95
1.761	18.66	РК	0.1	0.1	18.86	56	-37.14	-	-
1.761	7.24	Av	0.1	0.1	7.44	-	-	46	-38.56
11.895	24.76	РК	0.2	0.2	25.16	60	-34.84	-	-
11.895	12.79	Av	0.2	0.2	13.19	-	-	50	-36.81
Project No:12U14354									
Client Nar	ne:LG Elec	tronics Inc							
Model/De	vice:LG840)G							
Test Volt/	Freq:120V	60Hz							
Test By:Jir	nmy Viet								

Page 83 of 93

LINE 1 RESULTS



Page 84 of 93

LINE 2 RESULTS



Page 85 of 93