

## RADIATED SPURIOUS EMISSIONS PORTIONS OF

FCC CFR47 PART 22 SUBPART H
FCC CFR47 PART 24 SUBPART E
INDUSTRY CANADA RSS-132 ISSUE 2
INDUSTRY CANADA RSS-133 ISSUE 5

### **CERTIFICATION TEST REPORT**

**FOR** 

### CDMA1x 850MHz/1900MHz MPERs WRIST WATCH

MODEL: LC-120

FCC ID: ZQR-LC120

REPORT NUMBER: 11U14010-1, Revision A

**ISSUE DATE: OCTOBER 18, 2011** 

Prepared for

LIFECOMM, LLC 2002 SUMMIT BLVD SUITE 1800 ATLANTA, GEORGIA 30319, USA

Prepared by

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

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NVLAP LAB CODE 200065-0

# **Revision History**

Rev.	Issue Date	Revisions	Revised By
	10/10/11	Initial Issue	T. Chan
A	10/18/11	Updated ERP and EIRP Test Results Based On Average Reading	Chin Pang

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# 1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Lifecomm, LLC

2002 Summit Blvd Suite 1800 Atlanta, Georgia 30319, USA

**EUT DESCRIPTION:** CDMA1x 850MHz/1900MHz MPERs Wrist Watch

MODEL: LC120

SERIAL NUMBER: module 4

**DATE TESTED:** SEPTEMBER 28 - 29, 2011

#### **APPLICABLE STANDARDS**

STANDARD TEST RESULTS

FCC PART 22H & 24E PASS (Radiated Portion)
IC RSS-132 ISSUE 2 & RSS-133 ISSUE 5 PASS (Radiated Portion)

Compliance Certification Services, Inc. (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. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For UL CCS By: Tested By:

THU CHAN
ENGINEERING MANAGER

**UL CCS** 

CHIN PANG EMC ENGINEER UL CCS

Chin Pany

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DATE: OCTOBER 18, 2011

# 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 2, FCC CFR 47 Part 22, FCC CFR Part 24, RSS-132 Issue 2, and RSS-133 Issue 5.

# 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 <a href="http://www.ccsemc.com">http://www.ccsemc.com</a>.

# 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 CDMA1 850MHz/1900MHz Wrist Watch.

#### 5.2. **MAXIMUM OUTPUT POWER**

The transmitter has maximum, peak ERP and EIRP output powers as follow:

# **1xRTT CDMA MODE**

824 to 849 MHz Authorized Band

Frequency Range	Modulation	ERP	ERP
		Output Power	Output Power
(MHz)		(dBm)	(mW)
Low CH - 824.70		22.20	166.0
Mid CH - 836.52	1xRTT CDMA2000	22.85	192.8
High CH - 848.31		21.75	149.6

1850 to 1910 MHz Authorized Band

Frequency Range	Modulation	EIRP	EIRP
		Output Power	Output Power
(MHz)		(dBm)	(mW)
Low CH - 1851.25		20.26	106.2
Mid CH - 1880.00	1xRTT CDMA2000	19.28	84.7
High CH - 1908.75		20.08	101.9

#### 5.3. **SOFTWARE AND FIRMWARE**

The EUT is linked with Agilent Communication Test Set.

# 5.4. WORST-CASE CONFIGURATION AND MODE

For radiated tests, X, Y, and Z orientations were investigated and Y position turned out to be the worst case for Cell and PCS bands.

DATE: OCTOBER 18, 2011

#### PROCEDURE USED TO ESTABLISH TEST SIGNAL

#### 3G-CDMA2000 1xRTT

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

Application Rev, License
CDMA2000 Mobil Test B.10.11, L

### 1xRTT

- Call Setup > Shift & Preset
- Protocol Rev > 6 (IS-2000-0)
- Radio Config (RC) > RC2 (Fwd2, Rvs2)
- FCH Service Option (SO) Setup > 55
- Traffic Data Rate > Full
- TDSO SCH Info > F-SCH Parameters > F-SCH Data Rate > 153.6 kbps

> R-SCH Parameters > R-SCH Data Rate > 153.6 kbps

Cell Info > Cell Parameters > System ID (SID) > 331

> Network ID (NID) > 1

Once "Active Cell" show "Connected" then change "Rvs Power Ctrl" from "Active bits" to "All Up bits" to get the maximum power.

Worst-case Measurement Result @ Low, Middle and High Channel

Worst-case Measurement Result for Low, Middle and High Channel under Radio Configuration RC2 and Service Option 55.

# 5.5. DESCRIPTION OF TEST SETUP

# **SUPPORT EQUIPMENT**

PERIPHERAL SUPPORT EQUIPMENT LIST						
Description Manufacturer Model Serial Number FCC ID						
Laptop	HP	nc6400	CND71753T	DoC		
AC Adapter	HP	PA-1900-18H2	597950DLLVADK1	DoC		
Charger	Foxlink	WS-227-40	W1051557189	DoC		
Charging base fixture	Qualcomm	NA	NA	NA		

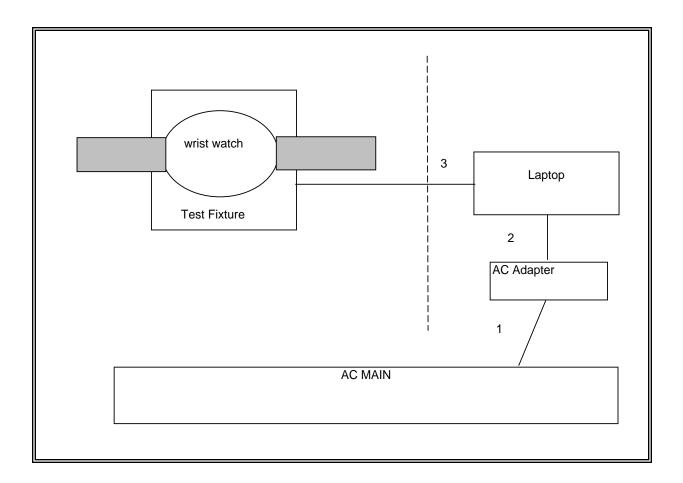
### I/O CABLES

	I/O CABLE LIST					
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	2m	NA
2	DC	1	DC	Un-shielded	2m	NA
3	USB	1	USB	Un-shielded	1m	connect EUT to Laptop

## **TEST SETUP**

The EUT is stand-alone unit. The laptop is for setup purpose.

# **SETUP DIAGRAM FOR TESTS**



# 6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST							
Description	Manufacturer Model		Asset	Cal Due			
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01178	08/15/12			
Communications Test Set	Agilent / HP	E5515C	C01086	06/17/12			
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	01/27/12			
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	07/12/12			
Dipole	Speag	D900V2	N/A	11/16/11			
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02689`	CNR			
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR			
Vector signal generator, 6 GHz	Agilent / HP	E4438C	N/A	06/09/12			
Antenna, Horn, 18 GHz	EMCO	3115	C00943	CNR			
Antenna, Horn, 18 GHz	EMCO	3115	C00783	06/29/12			
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01016	07/16/12			

# 7. LIMITS AND RESULTS

# 7.1. RADIATED OUTPUT POWER

### **LIMITS**

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

24.232(b) & RSS133 § 6.4 Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

RSS-132 § 4.4 The maximum ERP shall be 6.3 Watts for mobile stations.

#### **TEST PROCEDURE**

ANSI / TIA / EIA 603 Clause 2.2.17, RSS-132 & RSS-133

This section reports the maximum instantaneous peak ERP of the intentional transmitter using a peak detector per Part 22 measurement detector settings, and the maximum average EIRP of the intentional transmitter using an average detector per Part 24 measurement detector settings. The maximum instantaneous peak ERP can be expected to be different from the maximum average conducted power plus the antenna gain in dBd.

#### **RESULTS**

			ERP / EIRP		
Mode	Channel	f (MHz)	dBm	mW	
CDMA2000	1013	824.70	22.20	165.96	
Cell	384	836.52	22.85	192.75	
Cell	777	848.31	21.75	149.62	
CDMA2000	25	1851.25	20.26	106.17	
PCS	600	1880.00	19.28	84.72	
1 03	1175	1908.75	20.08	101.86	

# **1xRTT CDMA**

#### **CELL OUTPUT POWER (ERP)**

High Frequency Substitution Measurement Compliance Certification Services Chamber B

 Company:
 Qualcomm

 Project #:
 11U14010

 Date:
 09/28/11

 Test Engineer:
 Chin Pang

 Configuration:
 EUT ALONE

Mode: TX, CELL BAND CDMA2000, 1xRTT MODE

EUT: Wrist Watch

Test Equipment:

Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT) Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f	SG reading	Ant. Pol.	Cable Loss	Antenna Gain	ERP	Limit	Margin	Notes
MHz	(dBm)	(H/V)	(dB)	(dBd)	(dBm)	(dBm)	(dB)	
								•
824.70	11.47	V	0.5	0.0	10.97	38.5	-27.5	
824.70	22.70	Н	0.5	0.0	22.20	38.5	-16.2	
836.52	10.57	V	0.5	0.0	10.07	38.5	-28.4	
836.52	23.35	Н	0.5	0.0	22.85	38.5	-15.6	
848.31	11.02	V	0.5	0.0	10.52	38.5	-27.9	
848.31	22.25	Н	0.5	0.0	21.75	38.5	-16.7	

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#### **PCS OUTPUT POWER (EIRP)**

High Frequency Fundamental Measurement Compliance Certification Services Chamber B

 Company:
 Qualcomm

 Project #:
 11l14010

 Date:
 09/28/11

 Test Engineer:
 Chin Pang

 Configuration:
 EUTALONE

Mode: TX, PCS BAND CDMA2000, 1xRTT MODE

Wrist Watch

Test Equipment:

Receiving: Horn T59, and Camber B SMA Cables

Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse

f	SG reading	Ant. Pol.	Cable Loss	Antenna Gain	EIRP	Limit	Delta	Notes
GHz	(dBm)	(H/V)	(dB)	(dBi)	(dBm)	(dBm)	(dB)	
1.851	13.1	V	0.85	8.01	20.26	33.0	-12.7	
1.851	12.7	Н	0.85	8.01	19.86	33.0	-13.1	
1.880	12.0	V	0.85	8.13	19.28	33.0	-13.7	
1.880	11.0	Н	0.85	8.13	18.28	33.0	-14.7	
1.909	12.8	V	0.85	8.13	20.08	33.0	-12.9	
1.909	12.1	Н	0.85	8.13	19.33	33.0	-13.7	
	.*		^ <i>/</i>	·				

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# 7.2. FIELD STRENGTH OF SPURIOUS RADIATION

# **LIMIT**

§22.917 (e) and §24.238 (a), RSS-132 § 4.5.1, & RSS-133 § 6.5.1 (a) (i) & (b): Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

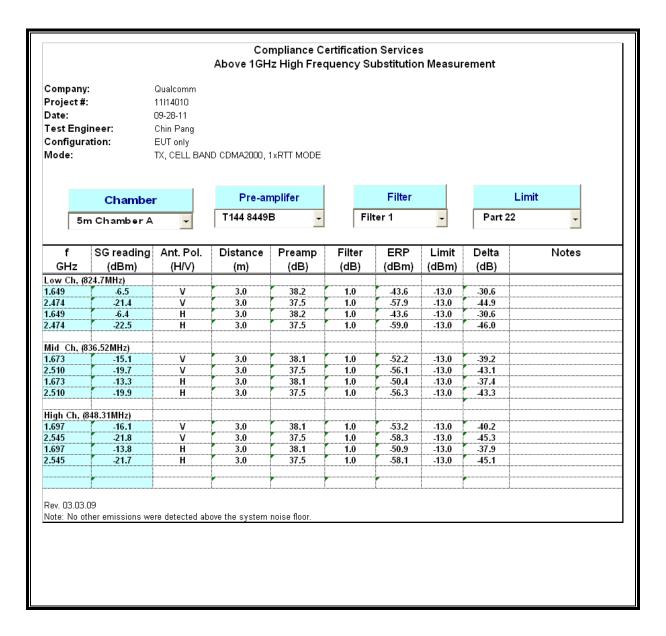
### **TEST PROCEDURE**

ANSI / TIA / EIA 603 Clause 3.2.12 & FCC 22.917 (b) & FCC 24.238 (b), (g)(1)(2)(3), RSS-132 & RSS-133

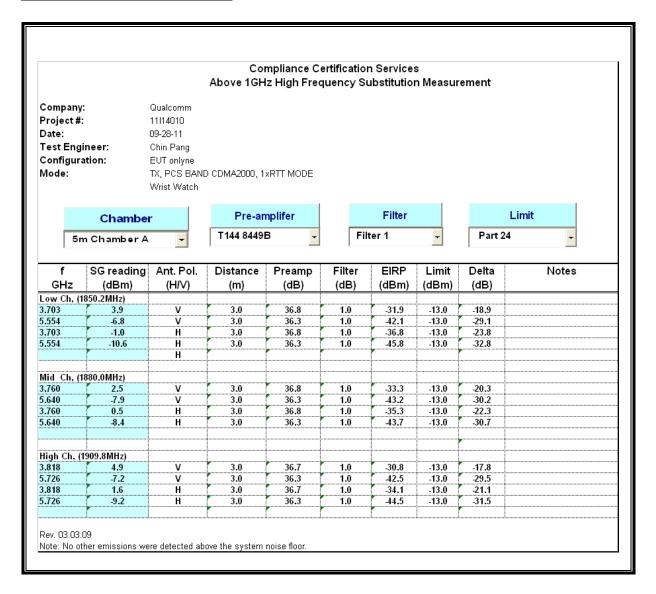
# **RESULTS**

# **1xRTT CDMA**

## **CELL SPURIOUS & HARMONIC (ERP)**



## PCS Spurious & Harmonic (EIRP)



#### 7.3. RECEIVER SPURIOUS EMISSIONS

### LIMIT

RSS-Gen 7.2.2

Spurious Emission Limits for Receivers:

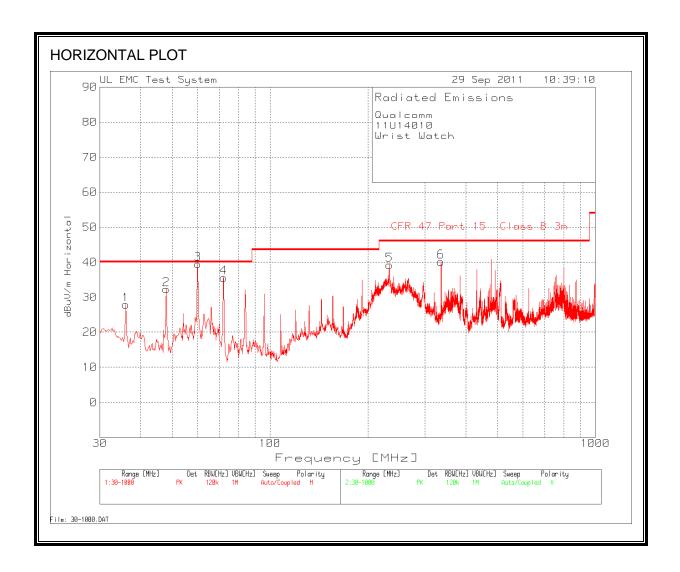
Spurious Frequency (MHz)	Field Strength (microvolts/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960	500

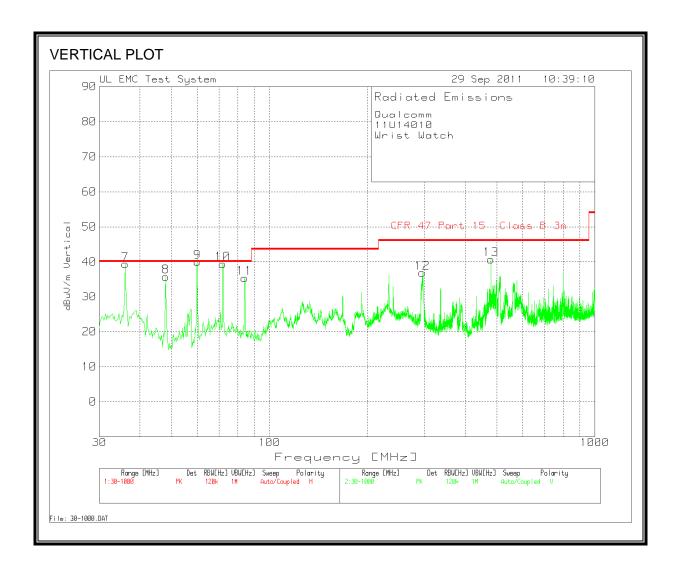
# **TEST PROCEDURE**

The search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (local oscillator frequency, intermediate frequency or carrier frequency), or 30 MHz, whichever is the higher, to at least 3 times the highest tunable and local oscillator frequencies.

### **RESULTS**

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





Qualcomm	ı								
11U14010									
Wrist Wate	ch								
Range 1 30	  - 1000MH	z							
Frequency	Reading	Detector	Cable.TX [dB]	PreAmp [dB]	Bilog Factors	dBuV/m	Part 15B 3m	Margin	Polarity
36.0092	39.27	PK	0.9	-29.5	17.2	27.87	40	-12.13	Horz
48.0276	51.53	PK	1	-29.4	9.2	32.33	40	-7.67	Horz
60.046	59.8	PK	1.2	-29.4	7.9	39.5	40	-0.5	Horz
60.0032	51.89	QP	1.2	-29.4	7.9	31.59	40	-8.41	Horz
72.0643	55.71	PK	1.2	-29.4	8.1	35.61	40	-4.39	Horz
233.1495	54.05	PK	2.1	-28.8	11.9	39.25	46	-6.75	Horz
335.8873	52.46	PK	2.5	-28.7	13.9	40.16	46	-5.84	Horz
Range 2 30		Z							
Frequency		Detector	Cable.TX [dB]		Bilog Factors		Part 15B 3m		Polarity
36.0092	50.75	PK	0.9	-29.5	17.2	39.35	40	-0.65	Vert
35.9987	39.55	QP	0.9	-29.5	17.3	28.25	40	-11.75	Vert
48.0276	55.03	PK	1	-29.4	9.2	35.83	40	-4.17	Vert
60.046	60.29	PK	1.2	-29.4	7.9	39.99	40	-0.01	Vert
60.046	49.99	QP	1.2	-29.4	7.9	29.69	40	-10.31	Vert
71.8705	59.5	PK	1.2	-29.4	8.1	39.4	40	-0.6	Vert
72.003	47.74	QP	1.2	-29.4	8.1	27.64	40	-12.36	Vert
83.8889	55.91	PK	1.3	-29.4	7.6	35.41	40	-4.59	Vert
294.5983	49.98	PK	2.4	-28.6	13.1	36.88	46	-9.12	Vert
480.1079	50.66	PK	3	-29.3	16.4	40.76	46	-5.24	Vert

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# SPURIOUS EMISSIONS ABOVE 1000 MHz (WORST-CASE CONFIGURATION)

Note: No emissions were detected above the system noise floor.

#### 7.4. POWER LINE CONDUCTED EMISSION

### **LIMIT**

RSS-Gen 7.2.2

Except when the requirements applicable to a given device state otherwise, for any licenceexempt radio communication device equipped to operate from the public utility AC power supply, either directly or indirectly, the radio frequency voltage that is conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in Table 2. The tighter limit applies at the frequency range boundaries.

Table 2 – AC Power Lines Conducted Emission Limits

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.

### **RESULTS**

# **6 WORST EMISSIONS**

# **AC ADAPTER**

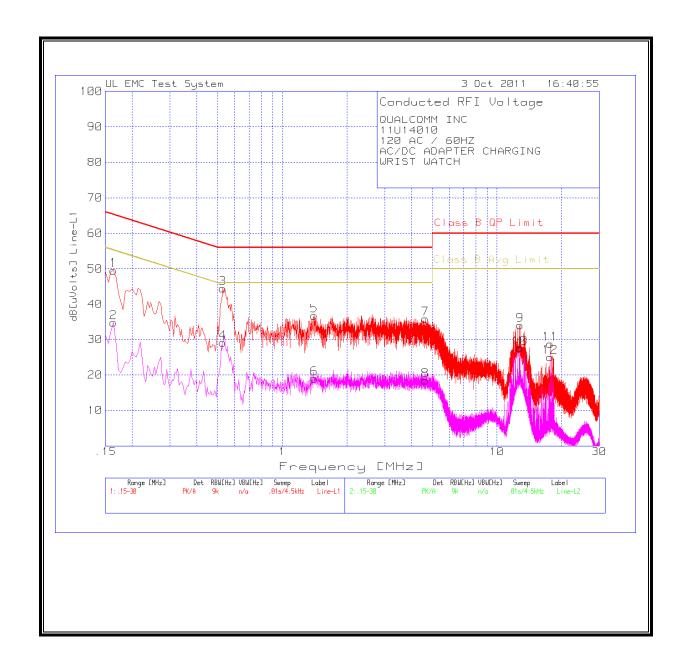
QUALCO									
11U14010									
120 AC / 6									
	DAPTER CH	HARGING							
WRIST W	ATCH .								
Line-L1 .15									
	Meter Rea		LISN [dB]			Class B Q		Class B A	
0.1635			0	0	49.59			55.3	
0.1635			0	0	34.81	65.3	-30.49	55.3	
0.528			0	0	44.48	56	-11.52	46	
0.528	29.13	Av	0	0	29.13	56	-26.87	46	
1.41	36.69	PK	0	0	36.69	56	-19.31	46	-9.31
1.41	18.99	Av	0	0	18.99	56	-37.01	46	-27.01
4.641	35.83	PK	0	0	35.83	56	-20.17	46	-10.17
4.641	18.39	Αv	0	0	18.39	56	-37.61	46	-27.61
12.8085	34.01	PK	0	0	34.01	60	-25.99	50	-15.99
12.8085	27.58	Αv	0	0	27.58	60	-32.42	50	-22.42
17.6955	28.74	PK	0	0	28.74	60	-31.26	50	-21.26
17.6955	25.03	Av	0	0	25.03	60	-34.97	50	-24.97
Line-L2 .15	5 - 30MHz								
Test Frequ	Meter Rea	Detector	LISN [dB]	Conducted	dB[uVolts]	Class B Q	Margin	Class B A	Margin
0.15			Ó	0	46.11	66	-19.89	56	
0.15			0	0	25.44	66	-40.56	56	-30.56
0.5505			0	0	39.91	56	-16.09	46	
0.5505			0	0	28.64		-27.36		
1.536	31.02		0	0	31.02		-24.98	46	
1.536			Ō	Ō	18.12	56	-37.88	46	
4.938	30.14		ō	Ō	30.14	56	-25.86	46	-15.86
4.938	14.04		ō	Ō	14.04	56	-41.96	46	-31.96
12.75			ō	Ō	32.51	60	-27.49	50	-17.49
12.75			ō	Ō	26.58		-33.42		
17.6955	28.82		ō	0	28.82	60	-31.18		
17.6955	25.55		ō	Ō	25.55	60	-34.45	50	
					20.00				210

# **SUPPORT LAPTOP**

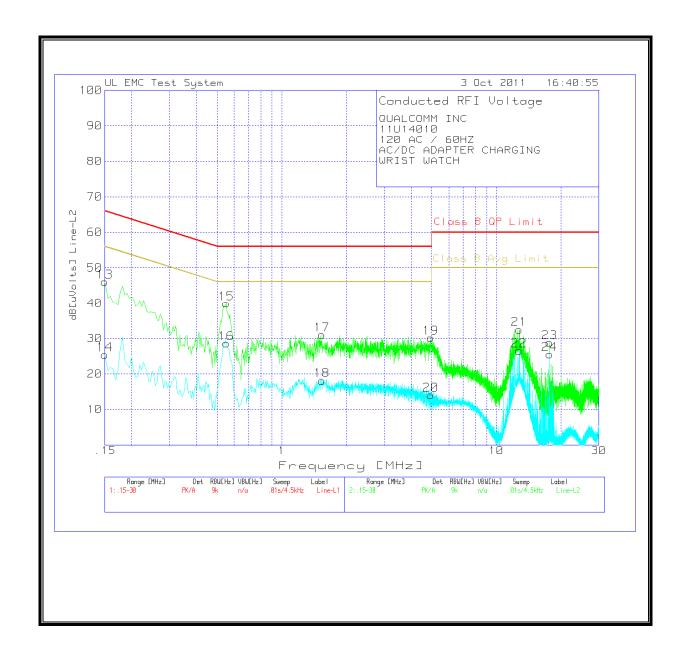
QUALCON	AM INC								
11U14010									
120 AC / 8									
	LE TO LAF	TOP							
OOD OND		101							
Line-L1 .15	i - 30MHz								
Test Frequ		Detector	LISN [dB]	Conducted	dB[uVolts]	Class B Q	Margin	Class B Av	Margin
0.159	55.42		0	0	55.42		-10.08	55.5	
0.159	22.71		ō	Ō	22.71	65.5	-42.79	55.5	
0.1905	51.14		0	0	51.14	64	-12.86	54	
0.1905	38.17	Av	0	0	38.17	64	-25.83	54	-15.83
0.267	45.73	PK	0	0	45.73	61.2	-15.47	51.2	-5.47
0.267	32.15	Av	0	0	32.15	61.2	-29.05	51.2	-19.05
3.7725	41.75	PK	0	0	41.75	56	-14.25	46	-4.25
3.7725	30.26	Av	0	0	30.26	56	-25.74	46	-15.74
10.068	36.37	PK	0	0	36.37	60	-23.63	50	-13.63
10.068	24.67	Av	0	0	24.67	60	-35.33	50	-25.33
24	45.06	PK	0	0	45.06	60	-14.94	50	-4.94
24	28.63	Αv	0	0	28.63	60	-31.37	50	-21.37
Line-L2 .15	i - 30MHz								
Test Frequ	Meter Rea	Detector	LISN [dB]	Conducted	dB[uVolts]	Class B Q	Margin	Class B Av	Margin
0.1995	51.65	PK	0	0	51.65		-11.95	53.6	-1.95
0.1995	36.29		0	0	36.29	63.6	-27.31	53.6	-17.31
0.258	45.72	PK	0	0	45.72	61.5	-15.78	51.5	-5.78
0.258	30.54		0	0	30.54	61.5	-30.96	51.5	
3.903	34.24	PK	0	0	34.24	56	-21.76	46	
3.903	23.59	Av	0	0	23.59	56	-32.41	46	-22.41
5.8155	30.09		0	0	30.09	60	-29.91	50	
5.8155	22.29		0	0	22.29	60	-37.71	50	
15.999	36.78		0	0	36.78	60	-23.22	50	
15.999	26.87		0	0	26.87	60	-33.13	50	
25.1295	35.59		0	0	35.59	60	-24.41	50	
25.1295	25.32	Av	0	0	25.32	60	-34.68	50	-24.68

# **AC ADAPTER**

### **LINE 1 RESULTS**



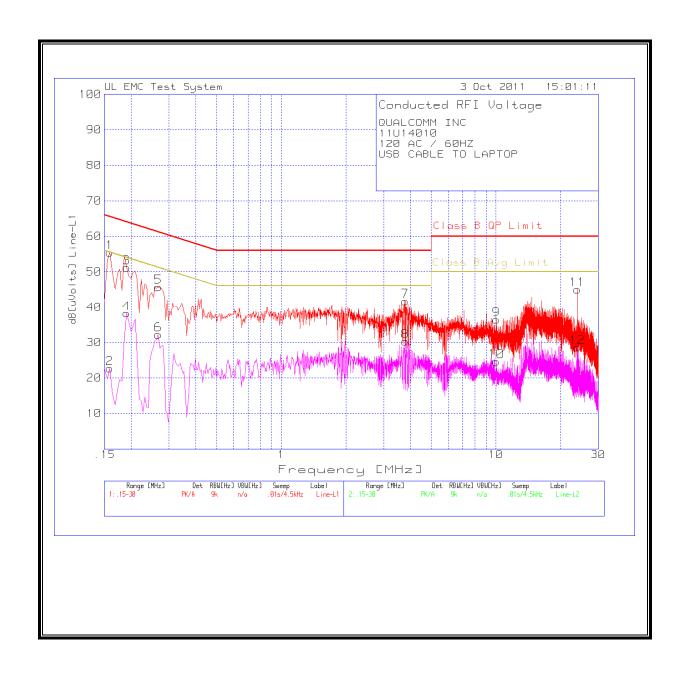
## **LINE 2 RESULTS**



FAX: (510) 661-0888

# **EUT WITH LAPTOP**

### **LINE 1 RESULTS**



## **LINE 2 RESULTS**

