FCC CFR47 PART 15 SUBPART B
ICES-003 ISSUE 4

TEST REPORT

FOR

FIXED OUTDOOR WIRELESS FRAME BASED UNII OFDM ACCESS POINT WITH RADAR DETECTION

MODEL NUMBER: 5480AP US

FCC ID: ABZ89FT7637
IC: 109W-5480G

REPORT NUMBER: 10U13444-3

ISSUE DATE: OCTOBER 25, 2010

Prepared for
MOTOROLA- SCHAUMBUR
1299 E. ALGONQUIN Rd
SCHAUMBURG, ILLINOISE 60156, U.S.A.

Prepared by
COMPLIANCE CERTIFICATION SERVICES
47173 BENICIA STREET
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	10/25/10	Initial Issue	F. Ibrahim

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: MOTOROLA- SCHAUMBUR
1299 E. ALGONQUIN Rd
SCHAUMBURG, ILLINOISE 60156, U.S.A.

EUT DESCRIPTION: FIXED OUTDOOR WIRELESS FRAME BASED UNII OFDM ACCESS POINT WITH RADAR DETECTION

MODEL: 5480AP-US

SERIAL NUMBER: 0A-00-3E-30-2E-0D
0A-00-3E-30-2E-00

DATE TESTED: OCTOBER 4-15, 2010

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART B	Pass
ICES-003 ISSUE 4	Pass

Compliance Certification Services, Inc. (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 CCS based on interpretations and/or observations of test results. 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 CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by 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 CCS By:

FRANK IBRAHIM
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:

THANH NGUYEN
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003 and ICES-003 Issue 4.

3. FACILITIES AND ACCREDITATION

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

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. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Power Line Conducted Emission	+/- 2.3 dB
Radiated Emission	+/- 3.4 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a professionally installed, fixed outdoor, wireless, frame based, UNII OFDM access point with radar detection. It utilizes QPSK, 16QAM and 64QAM modulation with 10MHz and 20MHz bandwidths.

The radio module is manufactured by Motorola

GENERAL INFORMATION

Power Requirements	100-240 VAC / 50-60 Hz
List of frequencies generated or used by the EUT	20MHz, 25MHz, 133MHz

5.2. TEST CONFIGURATIONS

EUT Configuration	Description
Typical Configuration	EUT connected to laptop PC, printer and USB mouse.

5.3. MODE(S) OF OPERATION

Mode	Description
TX ON and pinging	EUT was transmitting and Laptop PC was pinging EUT.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was Canopy 10.5 (Build 2) AP-DES.

5.5. MODIFICATION

Internal contact, grounding ESD clip, part number 39009333001, was used in order to pass radiated emissions.

5.6. DETAILS OF TESTED SYSTEM

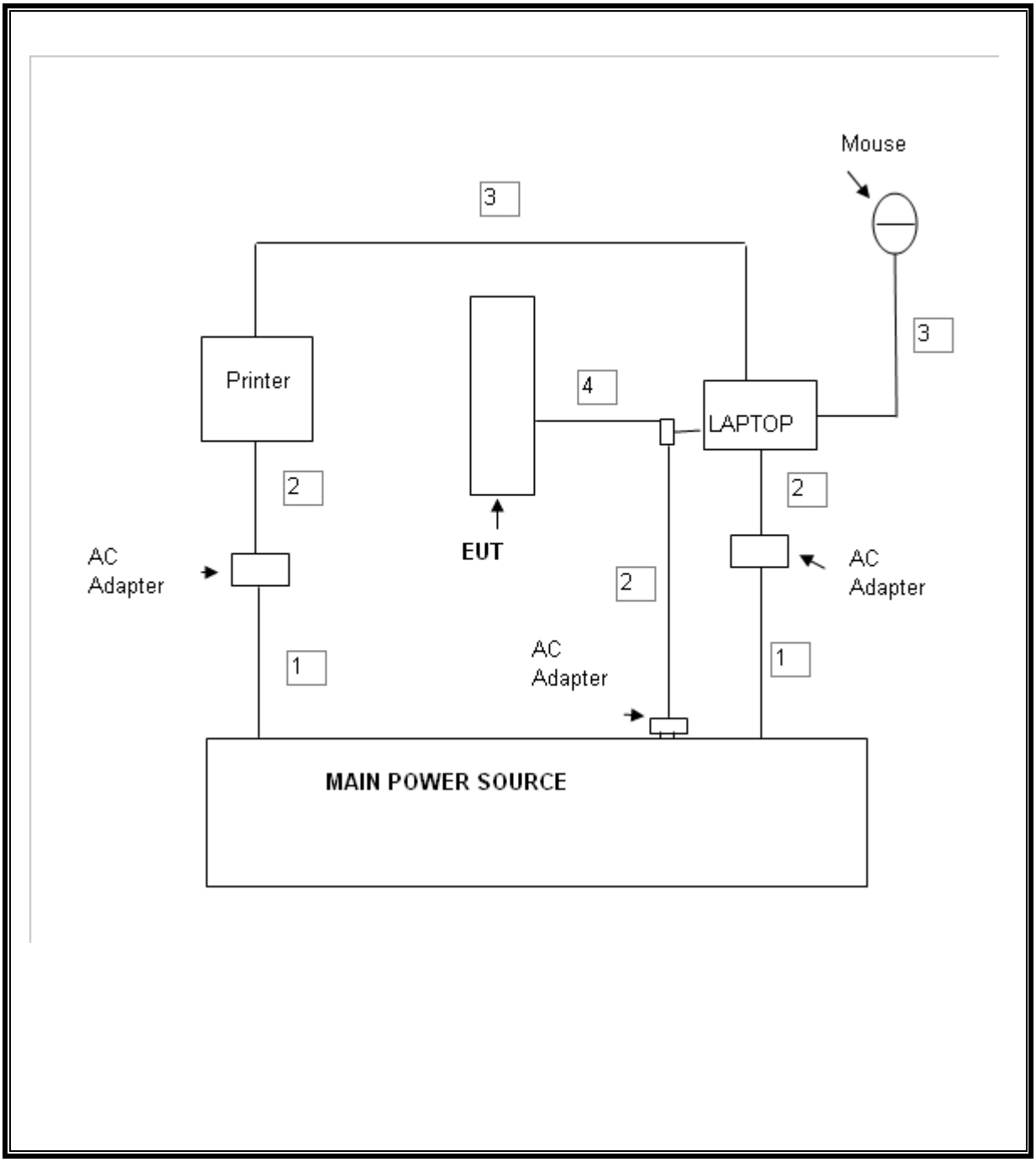
SUPPORT EQUIPMENT & PERIPHERALS

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Printer	HP	7850	MY56K1304B	DoC
AC Adapter	HP	0957-2084	5175480604	DoC
Laptop	Dell	Latitude D620	CCSC01091	DoC
AC Adapter	Dell	LA65NS0-00	CN0DF263-71615	DoC
USB Mouse	Dell	M-UK DELL3	831890-0000	DoC

I/O CABLES

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	AC	2	US 115V	Un-shielded	1.5m	N/A
2	DC	3	DC Plug	Un-shielded	1.5m	Ferrite at DC end
3	USB	2	USB	Shielded	1.5m	N/A
4	WLAN	1	RJ45	Un-shielded	1.5m	N/A

TEST SETUP DIAGRAM



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**	**Serial Number**	**Cal Due**
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	4/5/2011
Antenna, Horn, 18 GHz	EMCO	3115	C00783	4/22/2011
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01016	1/14/2011
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	12/1/2010
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	12/1/2011

7. TEST RESULTS

7.1. RADIATED EMISSIONS

TEST PROCEDURE

ANSI C63.4

The highest clock frequency generated or used in the EUT is 1330 MHz; therefore the frequency range was investigated from 30 MHz to 6650 MHz.

LIMIT

§15.109 (g) As an alternative to the radiated emission limits shown in paragraphs (a) and (b) of this section, digital devices may be shown to comply with the standards contained in Third Edition of the International Special Committee on Radio Interference (CISPR), Pub. 22, "Information Technology Equipment—Radio Disturbance Characteristics—Limits and Methods of Measurement" (incorporated by reference, see §15.38). In addition:

(1) The test procedure and other requirements specified in this part shall continue to apply to digital devices.

(2) If, in accordance with §15.33 of this part, measurements must be performed above 1000 MHz, compliance above 1000 MHz shall be demonstrated with the emission limit in paragraph (a) or (b) of this section, as appropriate. Measurements above 1000 MHz may be performed at the distance specified in the CISPR 22 publications for measurements below 1000 MHz provided the limits in paragraphs (a) and (b) of this section are extrapolated to the new measurement distance using an inverse linear distance extrapolation factor (20 dB/decade), e.g., the radiated limit above 1000 MHz for a Class B digital device is 150 uV/m, as measured at a distance of 10 meters.

(3) The measurement distances shown in CISPR Pub. 22, including measurements made in accordance with this paragraph above 1000 MHz, are considered, for the purpose of §15.31(f)(4) of this part, to be the measurement distances specified in this part.

(4) If the radiated emissions are measured to demonstrate compliance with the alternative standards in this paragraph, compliance must also be demonstrated with the conducted limits shown in §15.107(e).

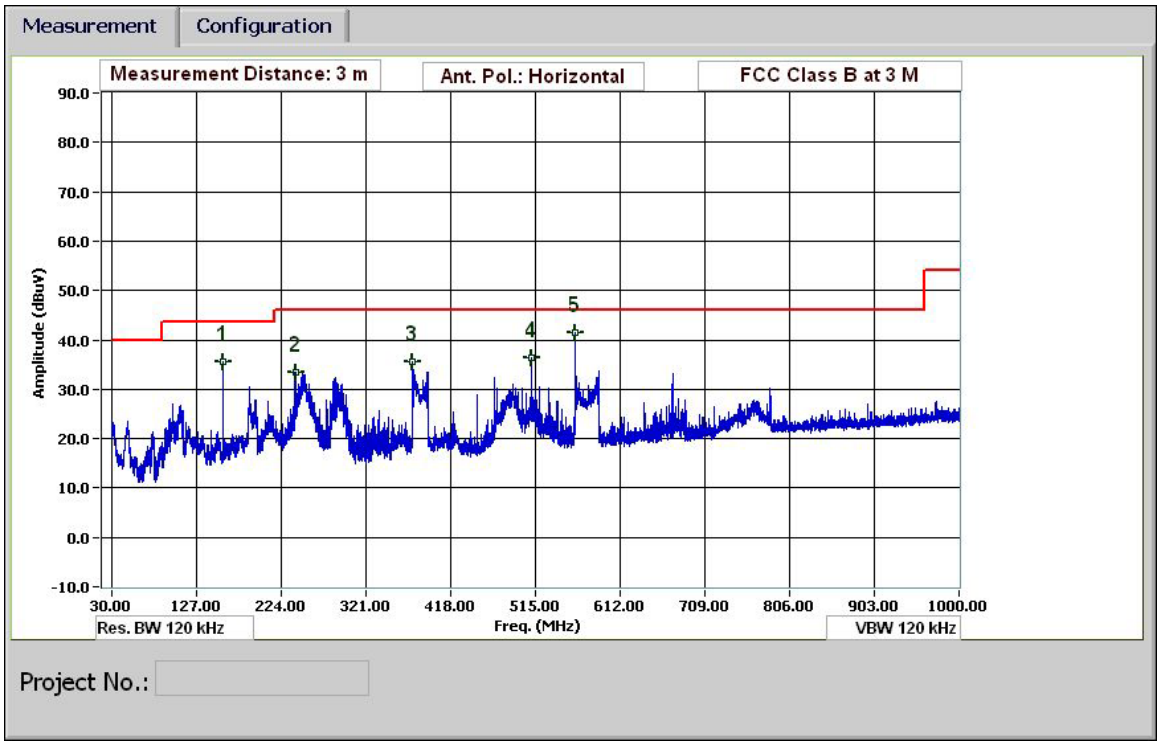
Limits for radiated disturbance of Class B ITE at measuring distance of 10 m	
Frequency range (MHz)	Quasi-peak limits (dBµV/m)
30 to 230	30
230 to 1000	37
Note: The lower limit shall apply at the transition frequency.	

Limits for radiated disturbance of Class B ITE at measuring distance of 3 m		
Frequency range (MHz)	Peak limits (dBµV/m)	Average limits (dBµV/m)
Above 1000	74	54

RESULTS

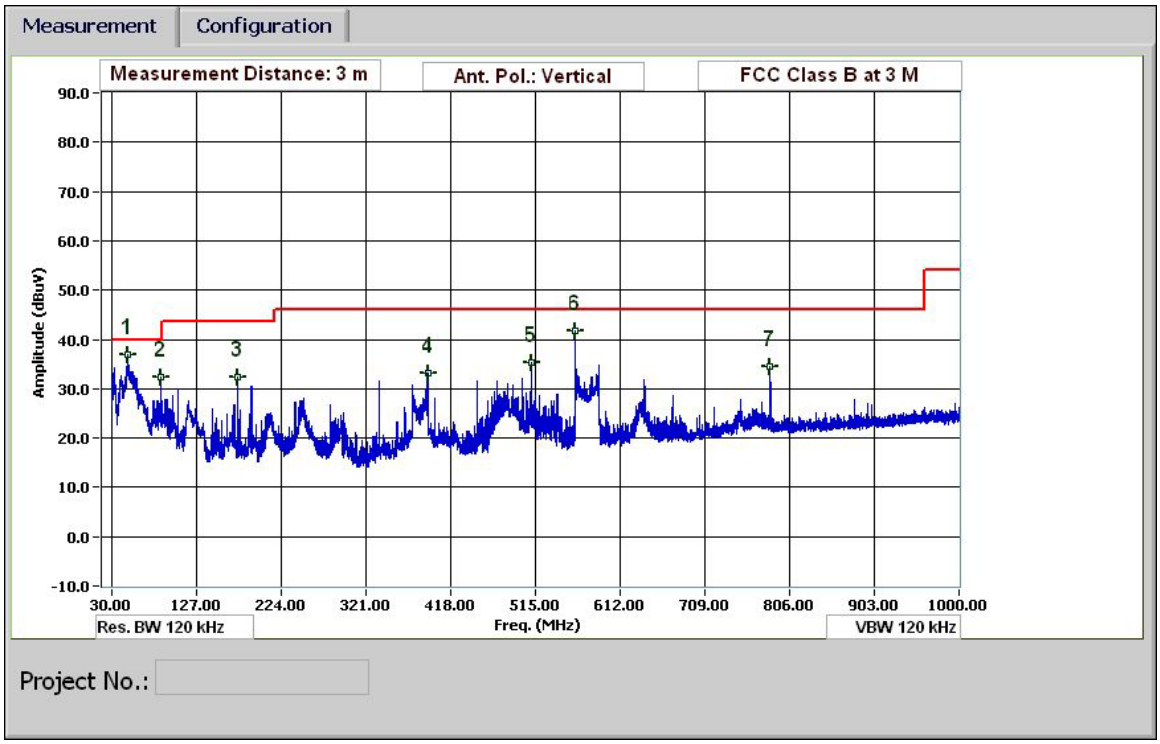
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



EMI DATA

30-1000MHz Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Thanh Nguyen
Date: 10/13/10
Project #: 10U13444
Company: Motorola
Test Target: FCC Part 15 Class B
Mode Oper: Normal, digital setup with peripheral.

f	Measurement Frequency	Amp	Preamp Gain
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters
Read	Analyzer Reading	Filter	Filter Insert Loss
AF	Antenna Factor	Corr.	Calculated Field Strength
CL	Cable Loss	Limit	Field Strength Limit

Margin Margin vs. Limit

f MHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Pad dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant. High cm	Table Angle Degree	Notes
Digital device															
48.721	3.0	52.5	8.8	0.6	29.6	0.0	0.0	32.2	40.0	-7.8	V	QP	100.0	0 - 360	
85.682	3.0	53.5	7.5	0.8	29.6	0.0	0.0	32.3	40.0	-7.7	V	P	100.0	0 - 360	
174.606	3.0	50.5	9.9	1.2	29.2	0.0	0.0	32.3	43.5	-11.2	V	P	100.0	0 - 360	
391.575	3.0	45.7	14.9	1.9	29.3	0.0	0.0	33.2	46.0	-12.8	V	P	100.0	0 - 360	
510.02	3.0	46.0	16.9	2.2	29.7	0.0	0.0	35.4	46.0	-10.6	V	P	100.0	0 - 360	
560.062	3.0	51.5	17.7	2.3	29.7	0.0	0.0	41.8	46.0	-4.2	V	P	100.0	0 - 360	
783.991	3.0	40.2	20.7	2.8	29.2	0.0	0.0	34.5	46.0	-11.5	V	P	100.0	0 - 360	
Digital device															
157.925	3.0	52.4	11.2	1.1	29.3	0.0	0.0	35.4	43.5	-8.1	H	P	100.0	0 - 360	
240.009	3.0	49.0	11.8	1.4	28.8	0.0	0.0	33.4	46.0	-12.6	H	P	100.0	0 - 360	
374.534	3.0	48.5	14.6	1.8	29.2	0.0	0.0	35.7	46.0	-10.3	H	P	100.0	0 - 360	
510.02	3.0	47.1	16.9	2.2	29.7	0.0	0.0	36.4	46.0	-9.6	H	P	100.0	0 - 360	
559.942	3.0	49.8	17.7	2.3	29.7	0.0	0.0	40.1	46.0	-5.9	H	QP	100.0	0 - 360	

Rev. 1.27.09
Note: No other emissions were detected above the system noise floor.

SPURIOUS EMISSIONS ABOVE 1 GHz (WORST-CASE CONFIGURATION)

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company: Motorola
Project #: 10U13444
Date: 10/15/10
Test Engineer: Thanh Nguyen
Configuration: Digital device with peripheral
Mode: Normal Operation and pinging to support device.

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T59; S/N: 3245 @3m	T145 Agilent 3008A0056			FCC Class B

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter
3' cable 22807700	12' cable 22807600	20' cable 22807500		

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
1.025	3.0	43.7	32.2	24.0	2.4	-36.1	0.0	0.0	34.0	22.5	74	54	-40.0	-31.5	V
2.687	3.0	44.0	34.5	29.1	4.1	-35.2	0.0	0.0	42.0	32.5	74	54	-32.0	-21.5	V
4.930	3.0	54.2	36.7	32.9	5.9	-34.9	0.0	0.0	58.1	40.5	74	54	-15.9	-13.5	V
1.120	3.0	46.6	36.6	24.4	2.5	-36.1	0.0	0.0	37.4	27.4	74	54	-36.6	-26.6	H
1.225	3.0	44.6	35.6	24.8	2.6	-36.0	0.0	0.0	36.0	27.0	74	54	-38.0	-27.0	H
1.550	3.0	51.3	37.3	26.0	3.0	-35.7	0.0	0.0	44.6	30.5	74	54	-29.4	-23.5	H
5.869	3.0	44.4	32.1	33.8	6.5	-35.1	0.0	0.0	49.5	37.3	74	54	-24.5	-16.7	H
No other emissions were detected above the the															

Rev. 07.22.09

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

7.2. AC MAINS LINE CONDUCTED EMISSIONS

TEST PROCEDURE

ANSI C63.4

LIMIT

§15.107 (a) Except for Class A digital devices, for equipment 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 μH/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.

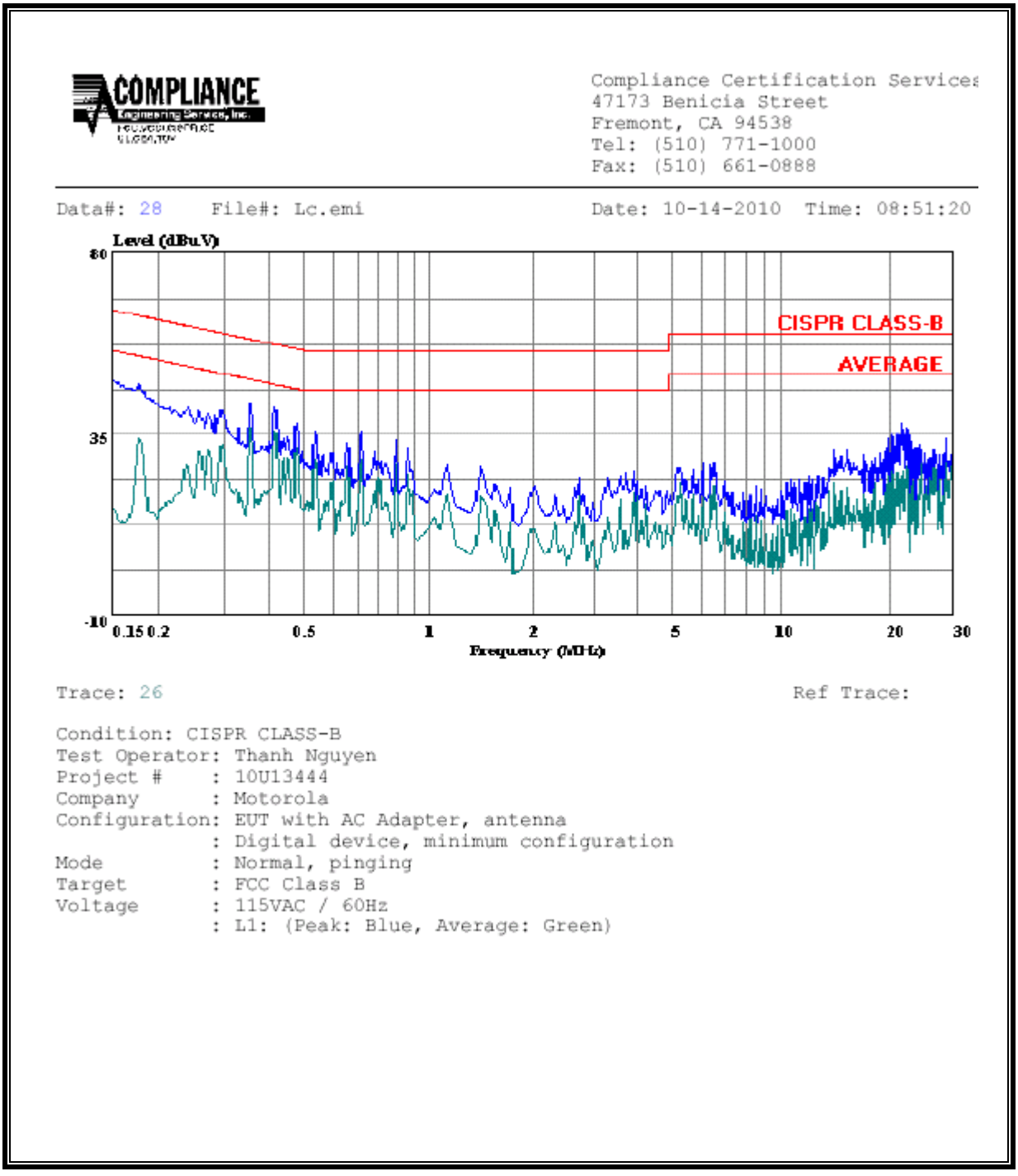
Frequency range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Notes: 1. The lower limit shall apply at the transition frequencies 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

RESULTS

6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.18	47.64	--	34.03	0.00	64.63	54.63	-16.99	-20.60	L1
0.72	35.88	--	28.96	0.00	56.00	46.00	-20.12	-17.04	L1
21.49	37.77	--	26.70	0.00	60.00	50.00	-22.23	-23.30	L1
0.36	44.62	--	37.88	0.00	58.82	48.82	-14.20	-10.94	L2
0.71	36.66	--	30.30	0.00	56.00	46.00	-19.34	-15.70	L2
28.60	36.82	--	29.11	0.00	60.00	50.00	-23.18	-20.89	L2
6 Worst Data									

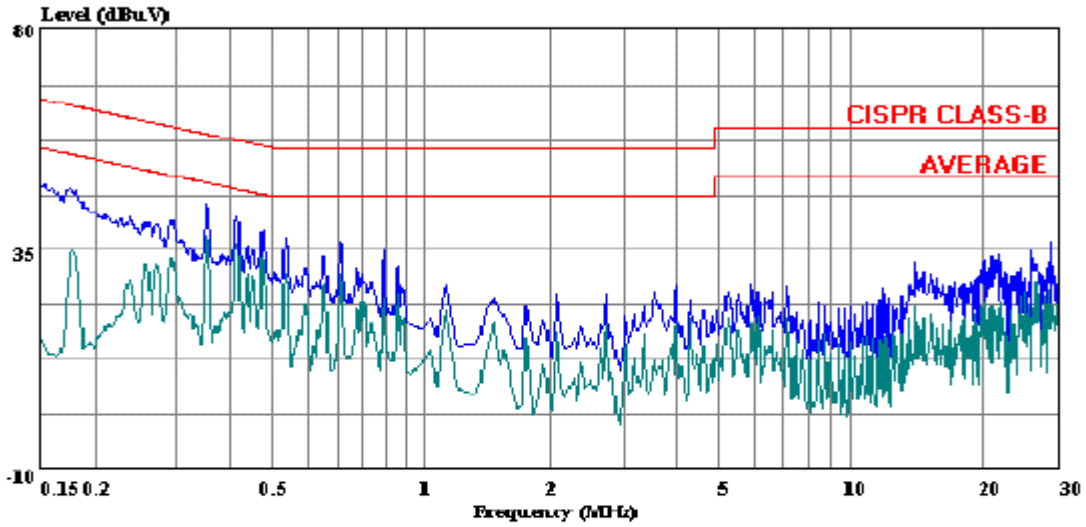
LINE 1 RESULTS



LINE 2 RESULTS

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 21 File#: Lc.emi Date: 10-14-2010 Time: 08:39:48



Trace: 19 Ref Trace:

Condition: CISPR CLASS-B
Test Operator: Thanh Nguyen
Project # : 10U13444
Company : Motorola
Configuration: EUT with AC Adapter, antenna
: Digital device, minimum configuration
Mode : Normal, pinging
Target : FCC Class B
Voltage : 115VAC / 60Hz
: L2: (Peak: Blue, Average: Green)

8. SETUP PHOTOS

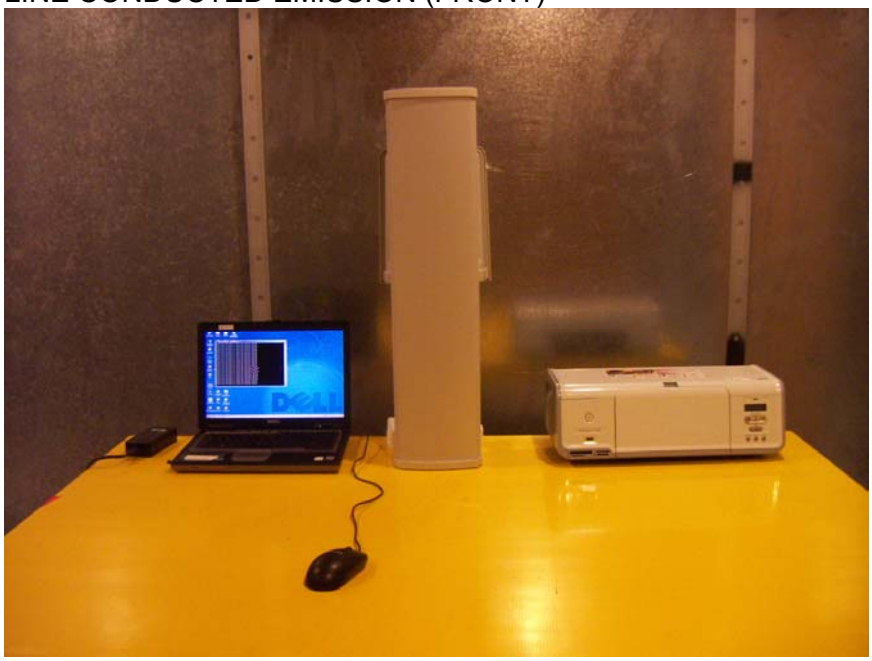
RADIATED EMISSION

RADIATED EMISSIONS (FRONT)

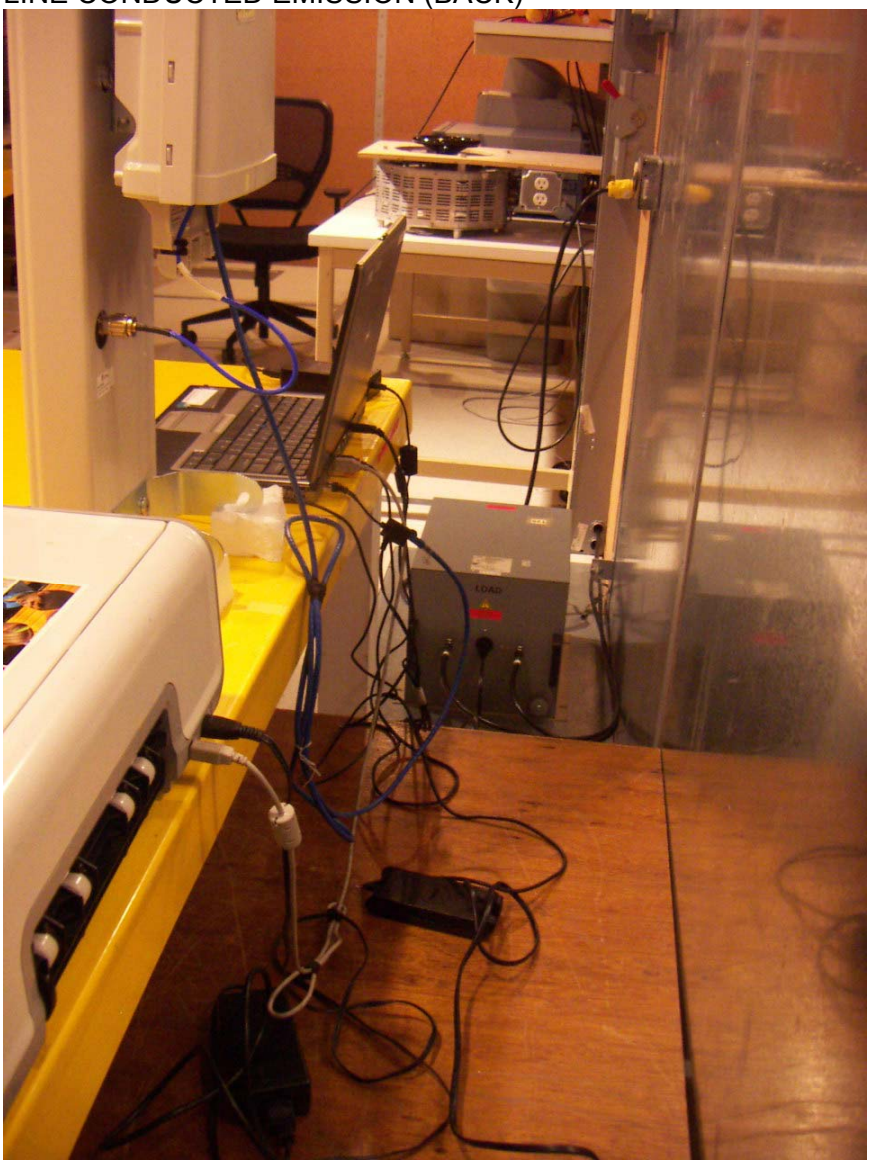
RADIATED EMISSIONS (BACK)

AC MAINS LINE CONDUCTED EMISSION

LINE CONDUCTED EMISSION (FRONT)



LINE CONDUCTED EMISSION (BACK)



END OF REPORT