

FCC PART 15B

MEASUREMENT AND TEST REPORT

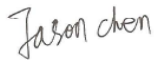
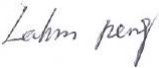

FOR

Shenzhen Zenithink Technologies Co., Ltd

2nd Floor, Building M-3, Maqueling Industrial zone, Nanshan District,

Shenzhen, P.R. China

FCC ID: ZAXE98

Report Concerns: Original Report	Equipment Type: MID
Model:	<u>E98</u>
Report No.:	<u>STR11068177I-2</u>
Test Date:	<u>2011-06-20 to 2011-07-05</u>
Issue Date:	<u>2011-07-11</u>
Tested By:	<u>Jason Chen / Engineer</u> 
Reviewed By:	<u>Lahm Peng / EMC Manager</u> 
Approved & Authorized By:	<u>Jandy so / PSQ Manager</u> 
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd.

TABLE OF CONTENTS

1. GENERAL INFORMATION.....	3
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	3
1.2 TEST STANDARDS.....	3
1.3 TEST METHODOLOGY.....	3
1.4 TEST FACILITY	4
1.5 EUT EXERCISE SOFTWARE	4
1.6 ACCESSORIES EQUIPMENT LIST AND DETAILS	4
1.7 EUT CABLE LIST AND DETAILS	4
2. SUMMARY OF TEST RESULTS	5
3. §15.107 (A)- CONDUCTED EMISSION	6
3.1 MEASUREMENT UNCERTAINTY	6
3.2 TEST EQUIPMENT LIST AND DETAILS	6
3.3 TEST PROCEDURE.....	6
3.4 BASIC TEST SETUP BLOCK DIAGRAM.....	6
3.5 ENVIRONMENTAL CONDITIONS	7
3.6 TEST RECEIVER SETUP	7
3.7 SUMMARY OF TEST RESULTS/PLOTS	7
3.8 CONDUCTED EMISSIONS TEST DATA.....	7
4. §15.109(A)- RADIATED EMISSION	10
4.1 MEASUREMENT UNCERTAINTY	10
4.2 TEST EQUIPMENT LIST AND DETAILS	10
4.3 TEST PROCEDURE.....	10
4.4 TEST RECEIVER SETUP	11
4.5 CORRECTED AMPLITUDE & MARGIN CALCULATION.....	11
4.6 ENVIRONMENTAL CONDITIONS	11
4.7 SUMMARY OF TEST RESULTS/PLOTS	11

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Shenzhen Zenithink Technologies Co., Ltd
Address of applicant: 2nd Floor, Building M-3, Maqueling Industrial zone, Nanshan District, Shenzhen, P.R. China

Manufacturer: Shenzhen Zenithink Technologies Co., Ltd
Address of manufacturer: 2nd Floor, Building M-3, Maqueling Industrial zone, Nanshan District, Shenzhen, P.R. China

General Description of E.U.T

Items	Description
EUT Description:	MID
Trade Name:	ZENITHINK
Model No.:	E98
Rated Voltage:	Battery DC 3.7V with DC 5V Power adaptor
Rated Power:	4W
For more information refer to the circuit diagram form and the user's manual.	

The test data is gathered from a production sample, provided by the manufacturer.

1.2 Test Standards

The following report is prepared on behalf of the Shenzhen Zenithink Technologies Co., Ltd in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15.107, and 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which results in lowering the emission/immunity, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible susceptibility against the tested phenomena. The test modes were adapted accordingly in reference to the Operating Instructions.

1.4 Test Facility

- **FCC – Registration No.: 994117**

SEM.Test Compliance Services Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 994117.

- **Industry Canada (IC) Registration No.: 7673A**

The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

- **CNAS Registration No.: L4062**

Shenzhen SEM.Test Electronics Service Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C (518101)

1.5 EUT Exercise Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the system components. The test software, provided by the customer, is started while the EUT is on to simulate the normal work. under the Windows XP terminal.

1.6 Accessories Equipment List and Details

Description	Manufacturer	Model	Serial Number
Earphone	PHILIPS	SHM1500	N/A
USB Disk	CRUZER FREEDOM	256M	N/A
TF CARD	HC	4GB	N/A
Notebook	ASUS	XR55	N/A

1.7 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Power Cable	1	Unshielded	With Core
Earphone Cable	1.5	Unshielded	Without Core
USB Cable	1	Shielded	With Core

2. SUMMARY OF TEST RESULTS

Description of Test	Result
§15.107 (a) Conducted Emission	Compliant
§15.109(a) Radiated Emission	Compliant

3. §15.107 (a)- CONDUCTED EMISSION

3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2010-12-20	2011-12-19
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2010-12-20	2011-12-19
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2010-12-20	2011-12-19

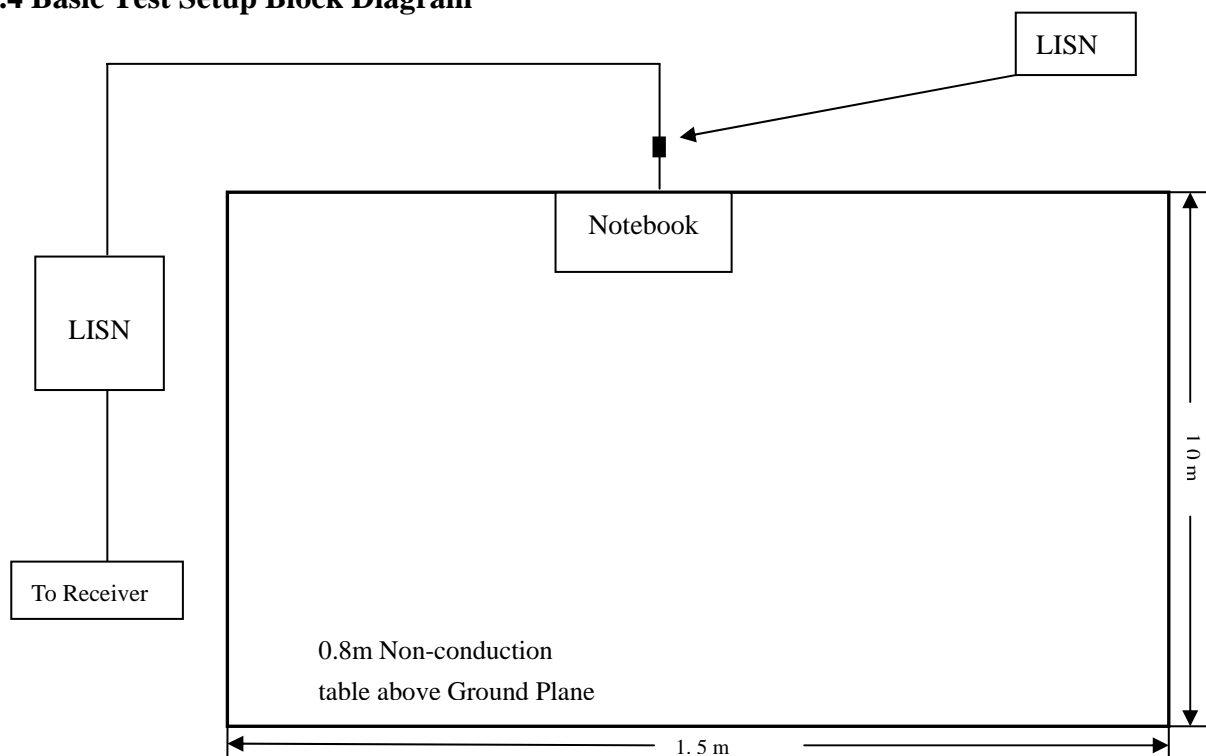
3.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.107 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

3.6 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency 150 kHz
 Stop Frequency..... 30 MHz
 Sweep Speed Auto
 IF Bandwidth..... 10 kHz
 Quasi-Peak Adapter Bandwidth 9 kHz
 Quasi-Peak Adapter Mode Normal

3.7 Summary of Test Results/Plots

According to the data in section 3.8, the EUT complied with the FCC 15B Conducted margin for a Class B device, with the *worst* margin reading of:

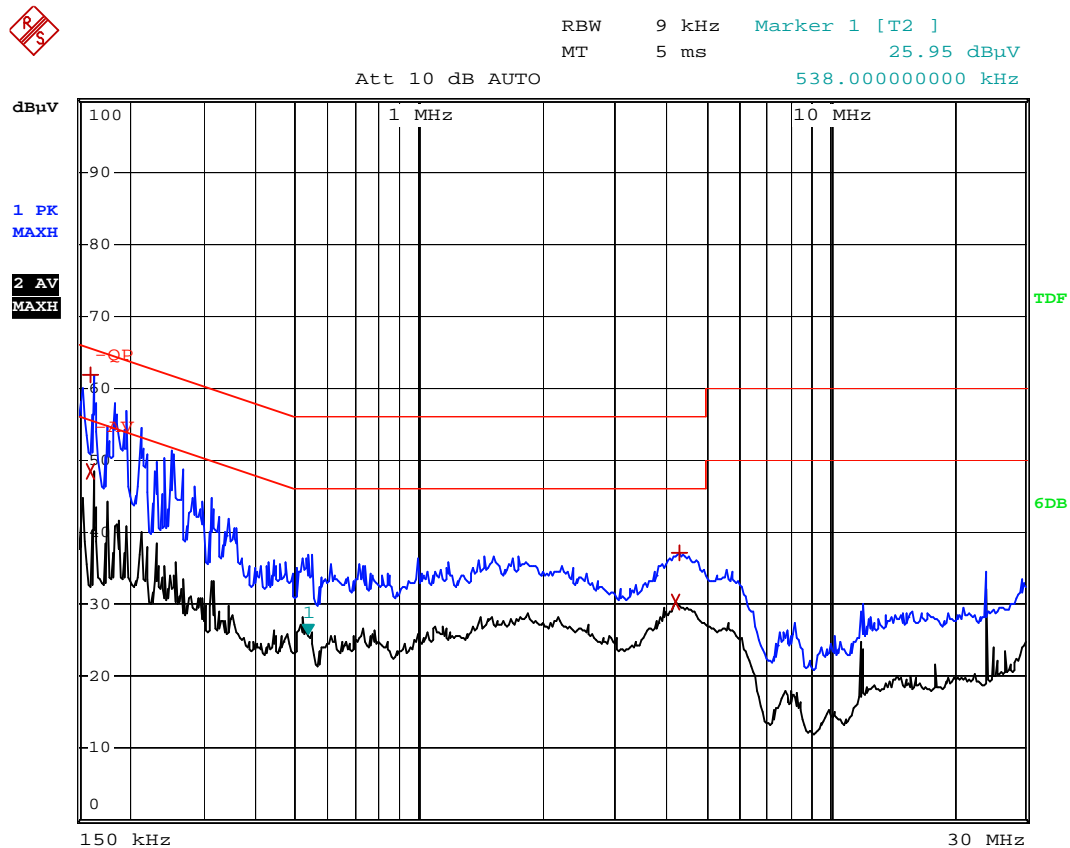
-3.45 dBμV at 0.162 MHz in the Line mode, Pk detector, 0.15-30MHz

3.8 Conducted Emissions Test Data

LINE CONDUCTED EMISSIONS				FCC 15 CLASS B	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dBμV	QP/Ave/Pk	Line/Neutral	dBμV	dB
0.162	61.90	Pk	Line	65.35	-3.45
0.158	61.88	Pk	Neutral	65.56	-3.68
0.158	49.81	AV	Neutral	45.50	-5.75
0.162	48.31	AV	Line	55.35	-7.04
4.706	32.19	AV	Neutral	46.00	-13.80
4.23	30.27	AV	Line	46.00	-15.72
4.706	39.54	Pk	Neutral	56.00	-16.45
4.138	37.05	Pk	Line	56.00	-18.94

Comment: AC 120V/60Hz

Date: 5.JUL.2011 10:30:35

Plot of Conducted Emissions Test Data*Conducted Disturbance**EUT: MID**M/N: E98**Operating Condition: Running with Program**Test Specification: L**Comment: AC 120V/60Hz*

Date: 5.JUL.2011 10:28:57

4. §15.109(a)- RADIATED EMISSION

4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Equipment List and Details

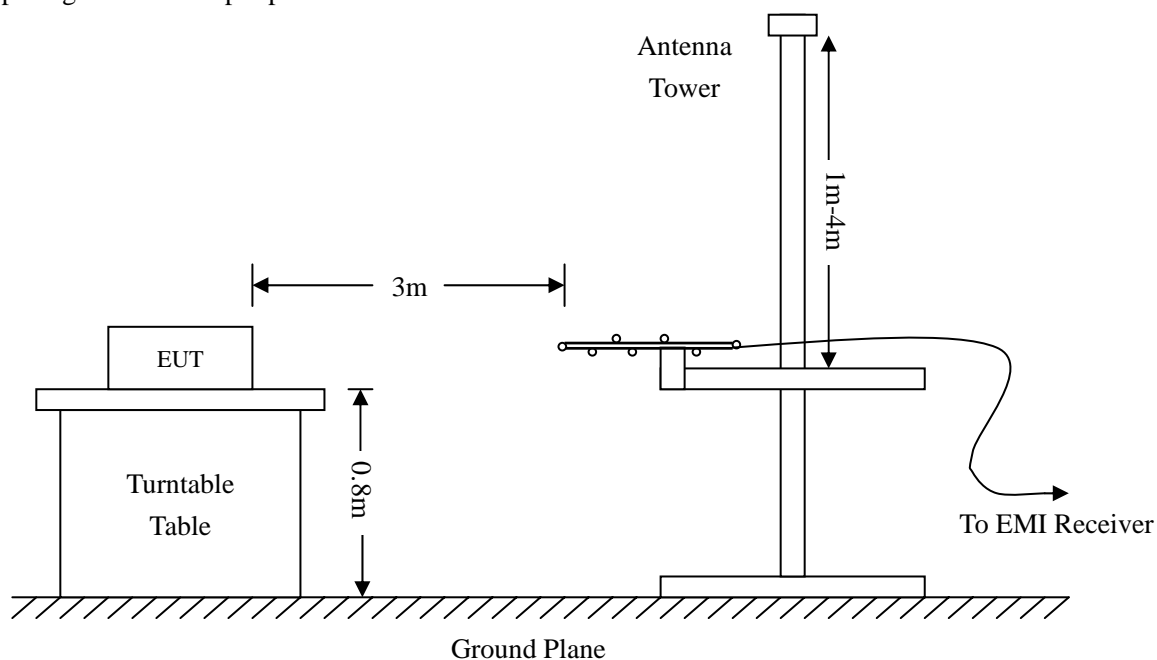
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2010-12-20	2011-12-19
EMI Test Receiver	R&S	ESVB	825471/005	2010-12-20	2011-12-19
Positioning Controller	C&C	CC-C-1F	N/A	2010-12-20	2011-12-19
RF Switch	EM	EMSW18	SW060023	2010-12-20	2011-12-19
Pre-amplifier	Agilent	8447F	3113A06717	2010-12-20	2011-12-19
Pre-amplifier	Compliance Direction	PAP-0118	24002	2010-12-20	2011-12-19
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2011-01-09	2012-01-08
Horn Antenna	ETS	3117	00086197	2011-01-09	2012-01-08

4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.205 and FCC Part 15.109 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.



4.4 Test Receiver Setup

During the radiated emission test, the test receiver was set with the following configurations:

Start Frequency 30 MHz
 Stop Frequency..... 1000 MHz
 Sweep Speed Auto
 IF Bandwidth..... 100 kHz
 Quasi-Peak Adapter Bandwidth 120 kHz
 Quasi-Peak Adapter Mode Normal

4.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15B Limit}$$

4.6 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

4.7 Summary of Test Results/Plots

According to the data, the EUT complied with the FCC Part 15B Class B standards, and had the worst margin of:

-2.60dB μ V at 425.0280MHz in the Horizontal polarization, Running with Program And Charging Mode 30 MHz to 1 GHz, 3Meters

-1.29dB μ V at 33.7986MHz in the Vertical polarization, Downloading Mode 30 MHz to 1 GHz, 3Meters

Plot of Radiation Emissions Test Data

Radiated Disturbance

EUT: MID

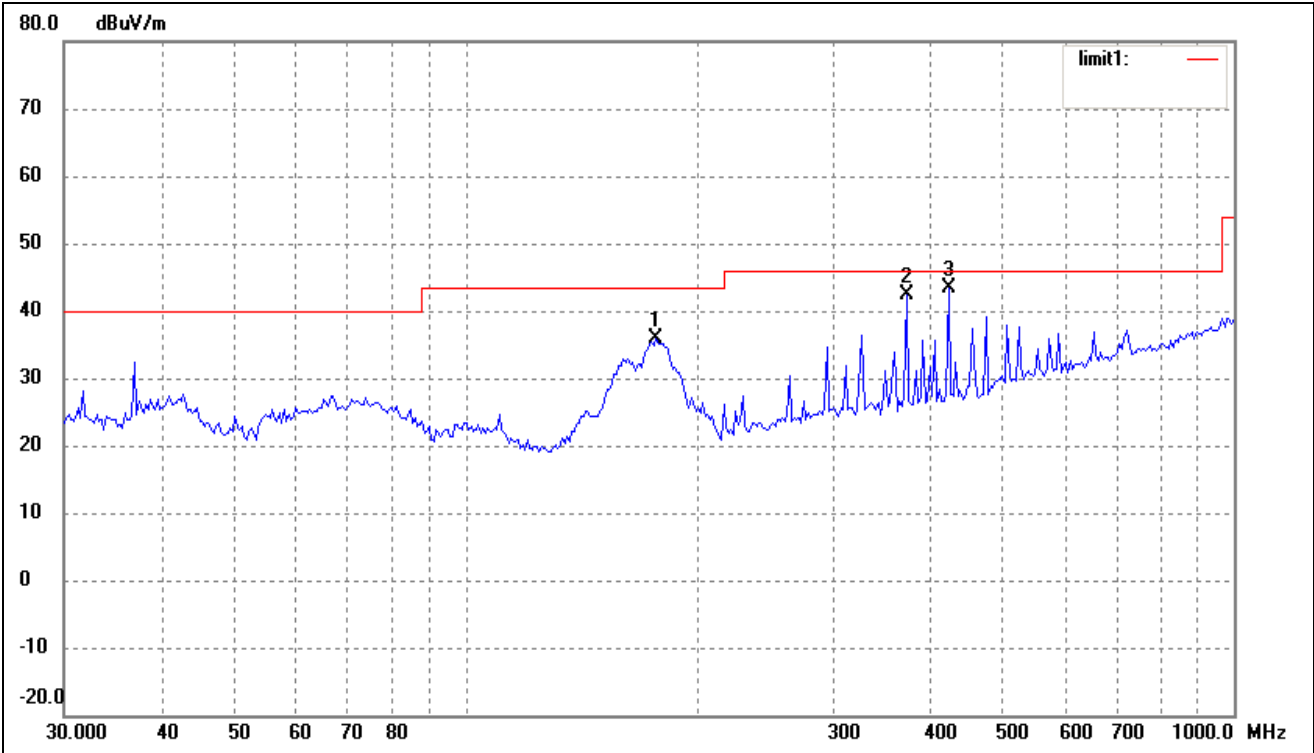
M/N: E98

Operating Condition: Running with Program And Charging

Test Specification: Horizontal & Vertical

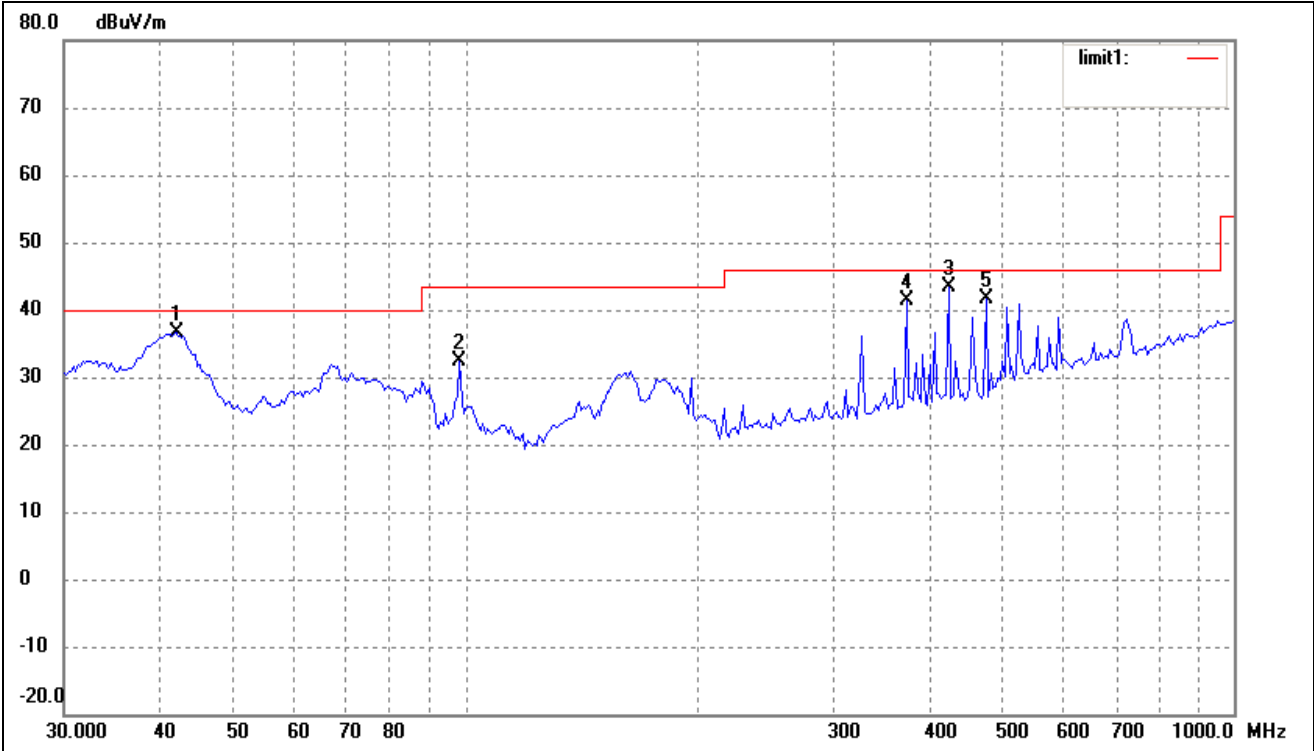
Comment: AC 120V/60Hz

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	176.8878	30.55	5.41	35.96	43.50	-7.54	360	200	peak
2	374.6226	31.34	11.11	42.45	46.00	-3.55	223	124	QP
3	425.0280	31.83	11.57	43.40	46.00	-2.60	112	205	QP

Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	42.0066	28.44	8.17	36.61	40.00	-3.39	226	112	QP
2	98.1419	24.02	8.30	32.32	43.50	-11.18	360	100	peak
3	425.0280	31.75	11.57	43.32	46.00	-2.68	125	224	QP
4	374.6226	30.16	11.11	41.27	46.00	-4.73	106	124	QP
5	475.4991	29.34	12.30	41.64	46.00	-4.36	102	220	QP

Plot of Radiation Emissions Test Data (1-6GHz)

Radiated Disturbance

EUT: MID

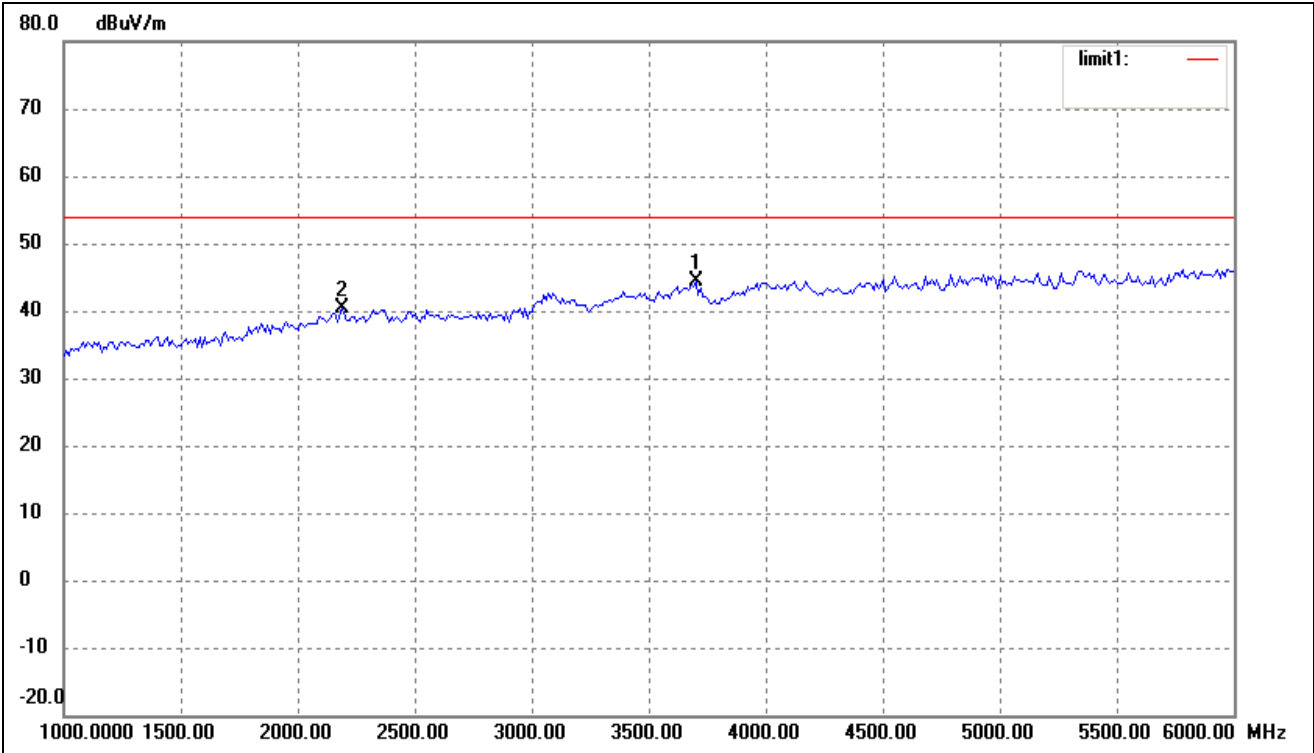
M/N: E98

Operating Condition: Running with Program And Charging

Test Specification: Horizontal & Vertical

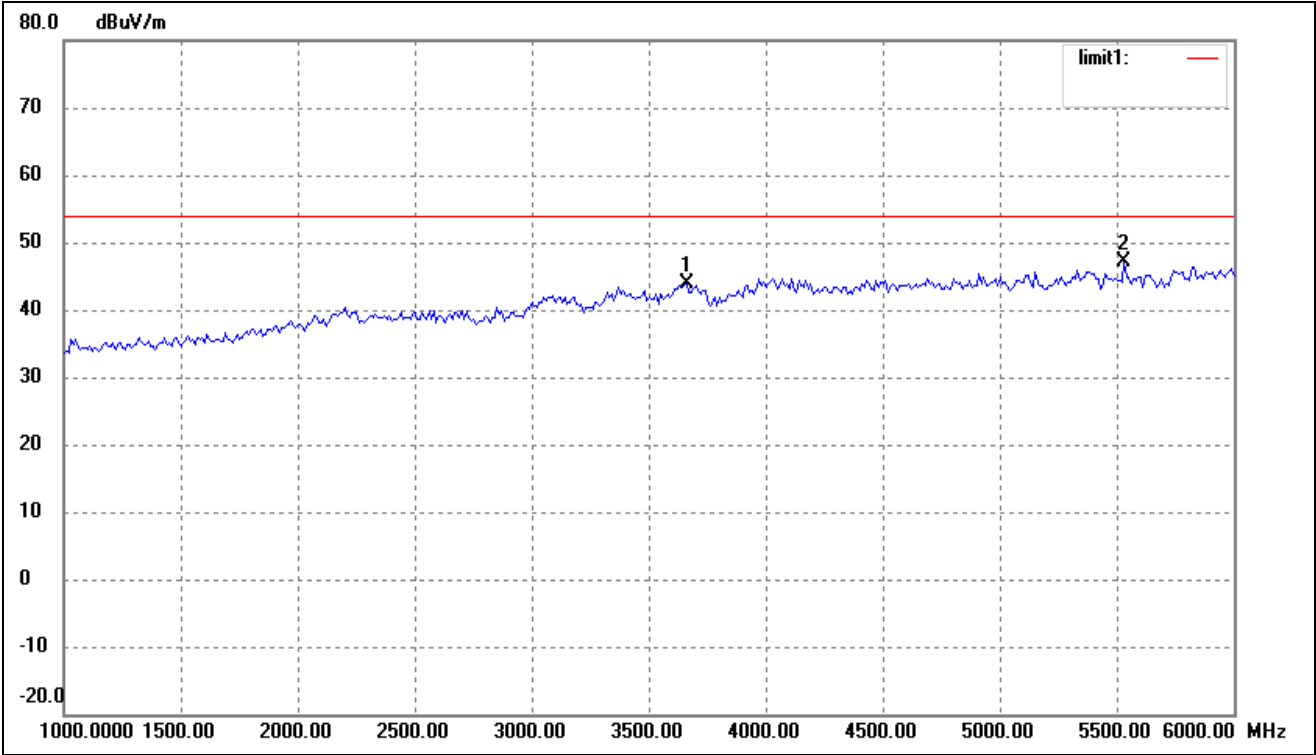
Comment: AC 120V/60Hz

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	3700.000	50.16	-5.68	44.48	54.00	-9.52	360	200	peak
2	2190.000	48.27	-7.80	40.47	54.00	-13.53	0	200	peak

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	3660.000	49.69	-5.73	43.96	54.00	-10.04	0	200	peak
2	5530.000	51.22	-3.98	47.24	54.00	-6.76	0	200	peak

Plot of Radiation Emissions Test Data

Radiated Disturbance

EUT: MID

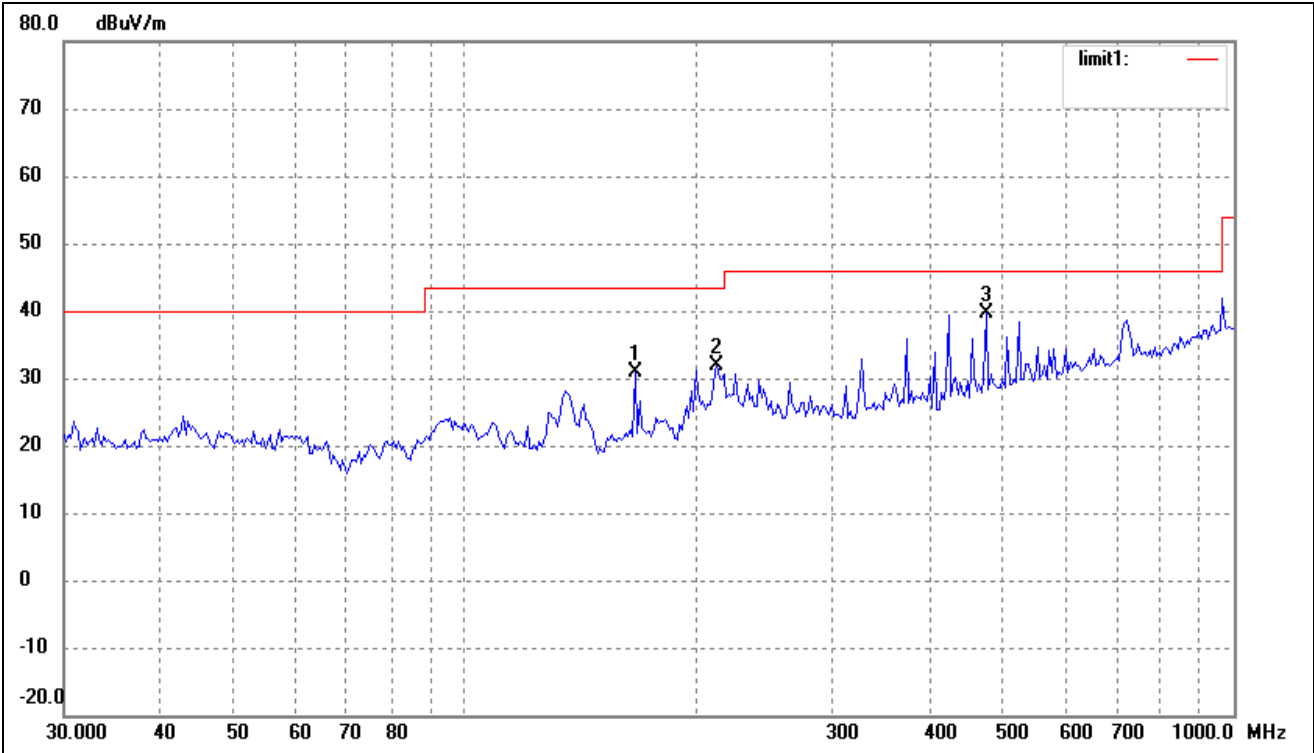
M/N: E98

Operating Condition: Downloading

Test Specification: Horizontal & Vertical

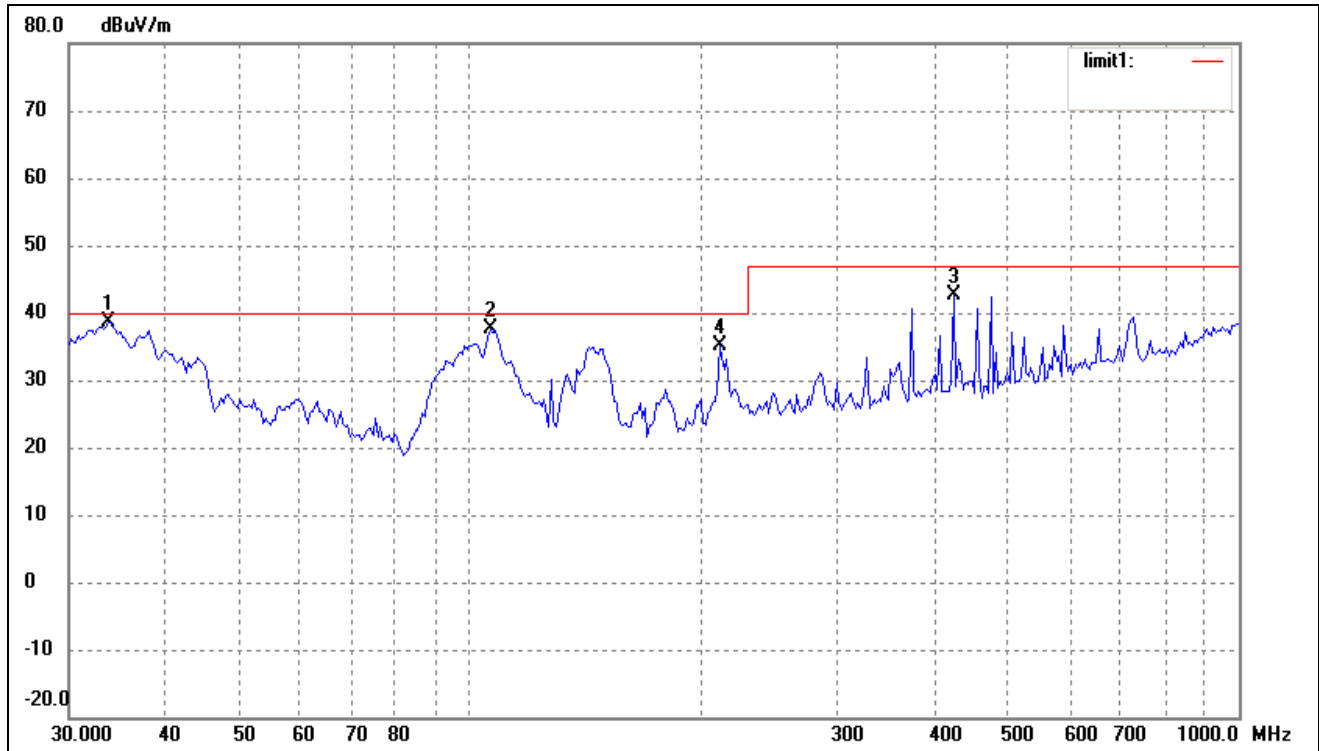
Comment: AC 120V/60Hz

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	166.0680	26.04	4.75	30.79	43.50	-12.71	0	200	peak
2	212.2695	24.79	7.01	31.80	43.50	-11.70	0	200	peak
3	475.4991	27.28	12.30	39.58	46.00	-6.42	360	200	peak

Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	33.7986	31.94	6.77	38.71	40.00	-1.29	221	110	QP
2	106.0126	29.60	7.93	37.53	40.00	-2.47	102	200	QP
3	425.0280	31.13	11.57	42.70	47.00	-4.30	354	120	QP
4	210.7860	28.05	6.97	35.02	40.00	-4.98	227	224	QP

Plot of Radiation Emissions Test Data (1-6GHz)

Radiated Disturbance

EUT: MID

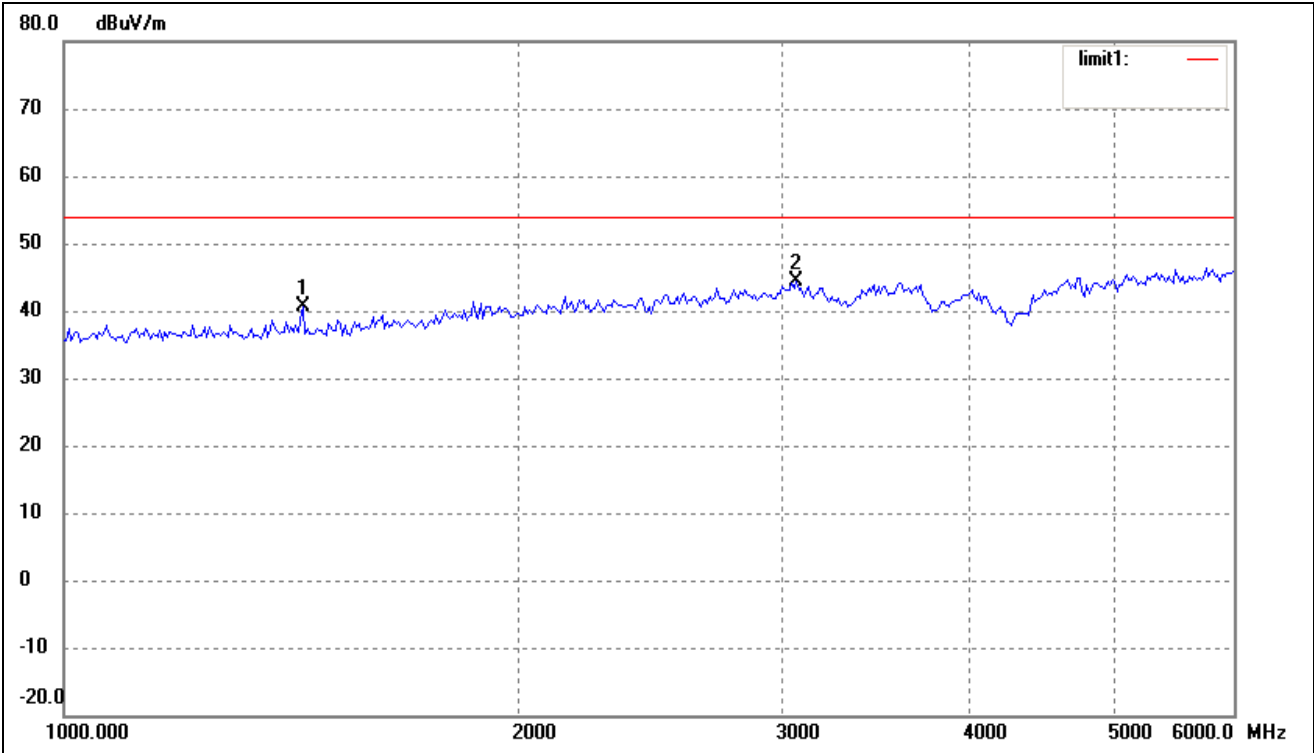
M/N: E98

Operating Condition: Downloading

Test Specification: Horizontal & Vertical

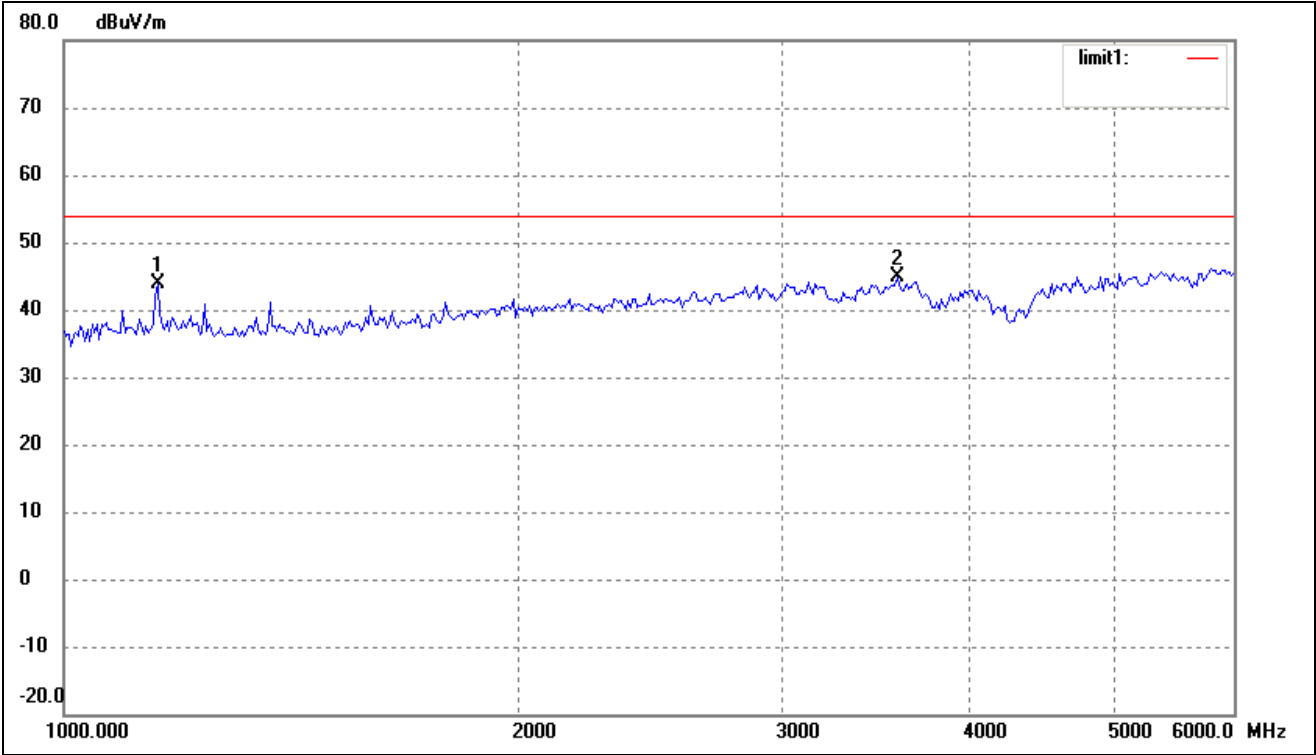
Comment: AC 120V/60Hz

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	1441.262	51.87	-11.34	40.53	54.00	-13.47	0	200	peak
2	3069.889	50.68	-6.20	44.48	54.00	-9.52	0	200	peak

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	1154.123	55.60	-11.78	43.82	54.00	-10.18	360	100	peak
2	3581.325	50.58	-5.81	44.77	54.00	-9.23	0	200	peak

***** END OF REPORT *****