

FCC PART 15B
MEASUREMENT AND TEST REPORT
FOR
UNICORN MANUFACTURING LTD.

**UNIT5, 21/F, H.K. WORSTED MILLS IND BLDG, 31-39 WO TONG TSUI ST,
KWAI CHUNG, N.T. HONGKONG**

FCC ID: UTF-DPF0004

Report Concerns: Original Report	Equipment Type: DIGITAL PHOTO FRAME
Model: <u>DPF4000</u>	
Report No.: <u>STR08068181</u>	
Test/Witness Engineer: <u>Seven Song</u>	
Test Date: <u>2008-07-04 to 2008-07-11</u>	
Issued Date: <u>2008-07-12</u>	
Prepared By: SEM.Test Compliance Service Co., Ltd. 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C. (518101)	
Approved & Authorized By:  _____ Jandy So / PSQ Manager	

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permission by SEM.Test Compliance Service Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: UNICORN MANUFACTURING LTD.
Address of applicant: UNIT5, 21/F, H.K. WORSTED MILLS IND BLDG, 31-39WO
TONG TSUI ST, KWAI CHUNG, N.T. HONGKONG

Manufacturer: UNICORN ELEC. (SHENZHEN) CO., LTD.
Address of manufacturer: ZHENG KENG JING VILLAGE, GUAN LAN DISTRICT, BAO
AN, SHENZHEN, CHINA

General Description of E.U.T

Items	Description
EUT Description:	DIGITAL PHOTO FRAME
Trade Name:	/
Model No.:	DP4000
Rated Voltage:	DC 6V Battery
Rated Current:	/
Size:	11.0X10.5X6.0 cm

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 UNICORN MANUFACTURING 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, Subpart B, and section 15.107, and 15.109 rules.

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

1.3 Related Submittal(s)/Grant(s)

No Related Submittal(s).

1.4 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.

1.5 Test Facility

The 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 files which the Registration No.: **994117**. Measurement required was performed at laboratory of SEM.Test Compliance Service Co., Ltd. at 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C. (518101).

1.6 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.

1.7 Accessories Equipment List and Details

Manufacturer	Description	Model	Serial Number
IBM	Notebook	T22	LV14893
TP-LINK	Modem	TM-EC5658V	KT99CTQC-508
Lenovo	Printer	3110	OD65133711480

1.8 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	0.6	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 ± 1.5 dB.

3.2 Test Equipment List and Details

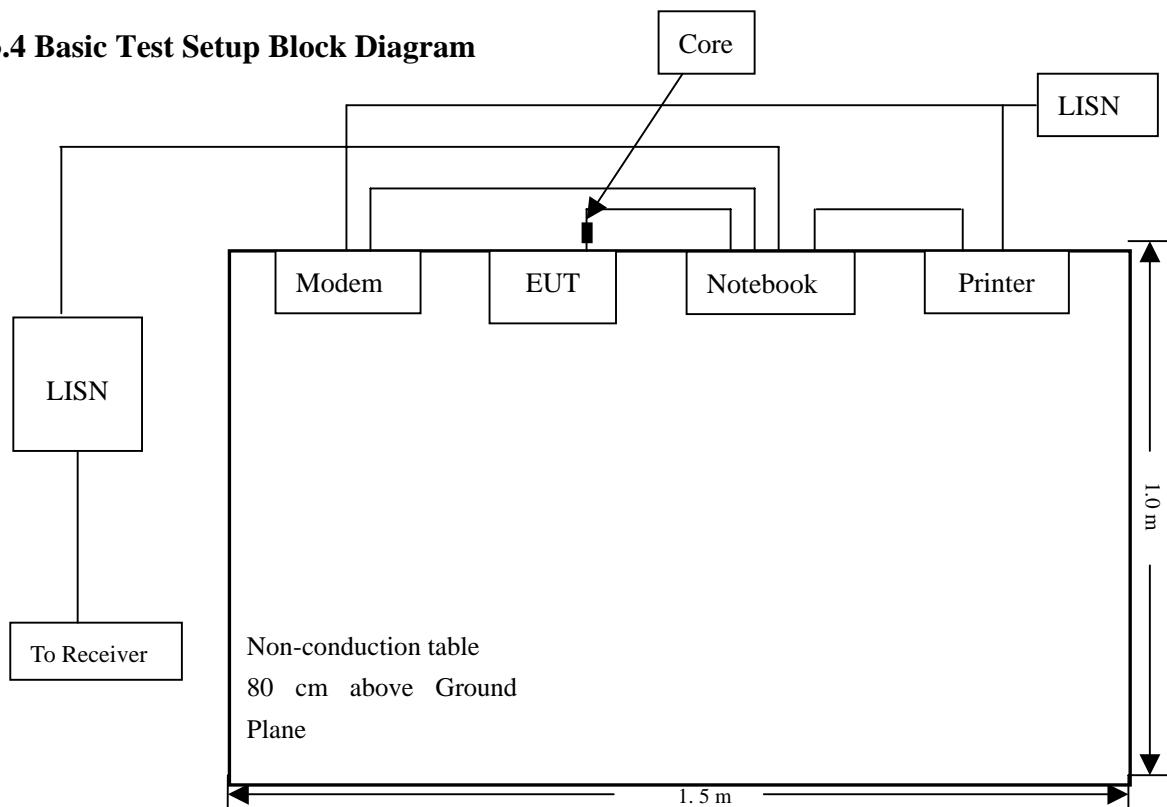
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESCS30	830245/009	2008-01-25	2009-01-24
AMN	Rohde & Schwarz	ESH2-Z5	100002	2008-01-25	2009-01-24
Limiter	Rohde & Schwarz	ESH3-Z2	357.8810.52	2008-01-25	2009-01-24
AMN	Rohde & Schwarz	ESH3-Z5	828304/014	2008-01-25	2009-01-24
Spectrum Analyzer	Agilent	E4402B-ESA	US41192821	2008-01-25	2009-01-24

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:	18° C
Relative Humidity:	55%
ATM Pressure:	1012 mbar

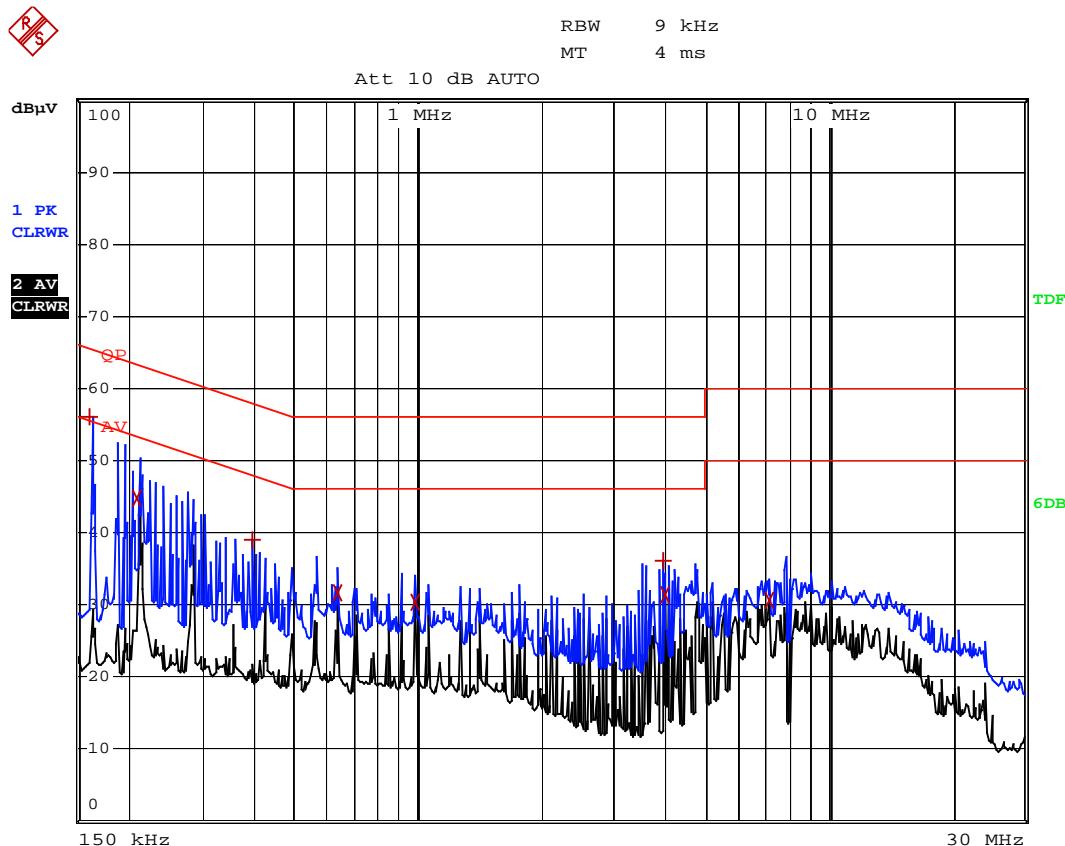
3.6 Summary of Test Results/Plots

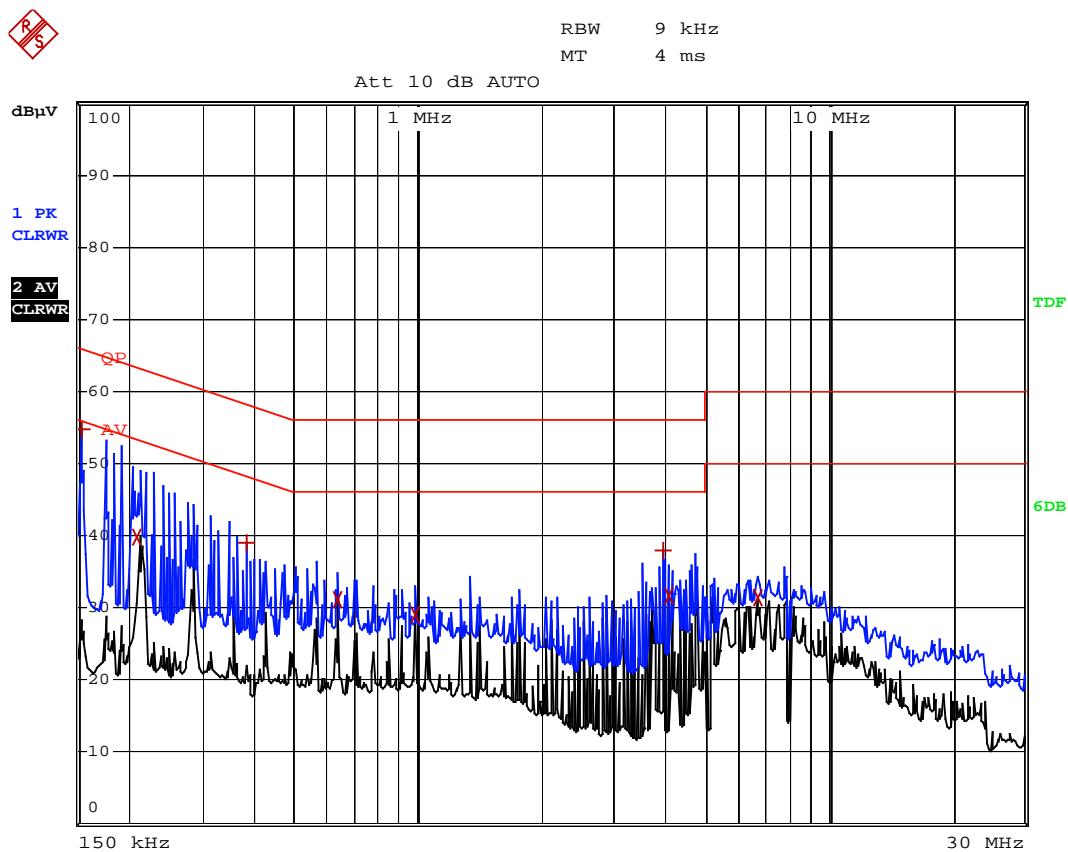
According to the data in section 3.8, the EUT complied with the FCC 15B Conducted margin for a Class B device, with the *worst* margin reading of:

-8.4 dB μ V at 0.21MHz in the Neutral mode, 0.15-30MHz

3.7 Conducted Emissions Test Data

LINE CONDUCTED EMISSIONS				FCC 15B CLASS B	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dB μ V	QP/Ave/Pk	Line/Neutral	dB μ V	dB
0.21	44.85	Ave	Neutral	53.21	-8.4
0.162	56.1	Pk	Neutral	65.36	-9.3
0.154	54.83	Pk	Line	65.78	-11.0
0.21	39.85	Ave	Line	53.21	-13.4
0.634	31.70	Ave	Neutral	46	-14.3
4.086	31.68	Ave	Line	46	-14.3
4.018	31.35	Ave	Neutral	46	-14.7
0.634	31.05	Ave	Line	46	-15.0
0.986	30.42	Ave	Neutral	46	-15.6
0.986	29.03	Ave	Line	46	-17.0
3.946	37.87	Pk	Line	56	-18.1
6.762	31.48	Ave	Line	50	-18.5
0.394	39.01	Pk	Neutral	57.98	-19.0
0.382	39.02	Pk	Line	58.24	-19.2
7.19	30.55	Ave	Neutral	50	-19.5
3.95	36.20	Pk	Neutral	56	-19.8

Plot of Conducted Emissions Test Data*Conducted Disturbance**EUT: DIGITAL PHOTO FRAME**M/N: DPF4000**Operating Condition: Downloading**Test Specification: N**Comment: Connect to PC*

Plot of Conducted Emissions Test Data*Conducted Disturbance**EUT: DIGITAL PHOTO FRAME**M/N: DPF4000**Operating Condition: Downloading**Test Specification: L**Comment: Connect to PC*

4. §15.109(a)- RADIATED EMISSION

4.1 Measurement Uncertainty

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	ROHDE&SCHWARZ	FSEA20	DE25181	2008-01-25	2009-01-24
Positioning Controller	C&C	CC-C-1F	N/A	2008-01-25	2009-01-24
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2008-01-25	2009-01-24
Horn Antenna	SCHWARZBECK	BBHX 9120	9120-426	2008-01-25	2009-01-24
RF Switch	EM	EMSW18	SW060023	2008-01-25	2009-01-24
Amplifier	Agilent	8447F	3113A06717	2008-01-25	2009-01-24
Coaxial Cable	SCHWARZBECK	AK9513	9513-10	2008-01-25	2009-01-24
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	25498514	2008-01-25	2009-01-24

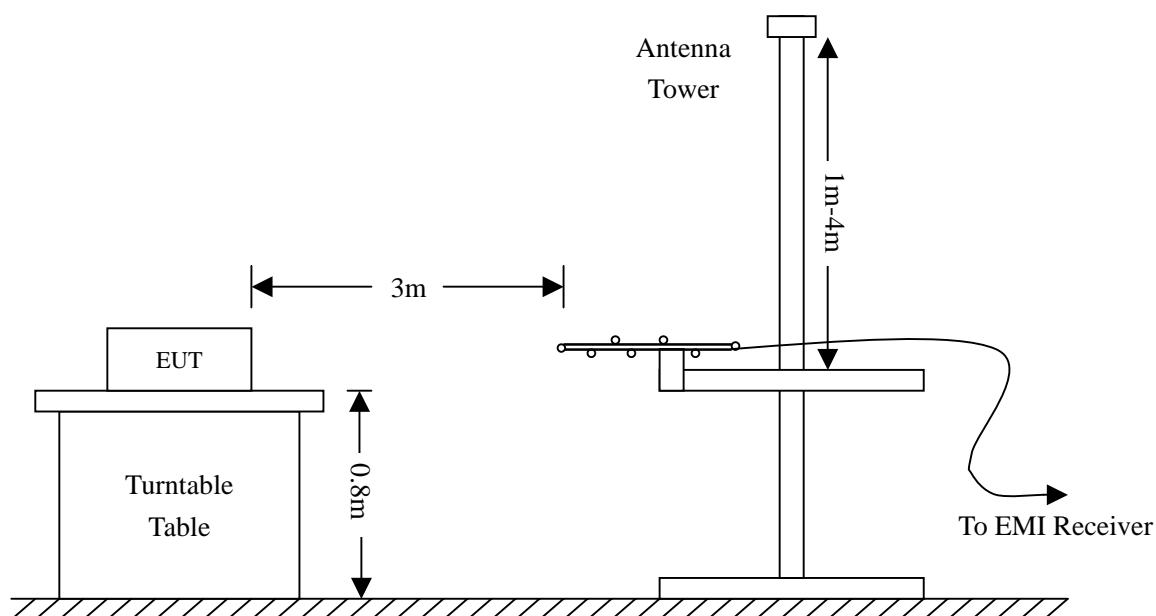
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 3.0 dB.

4.2 Test Equipment List and Details

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

Start Frequency	30 MHz
Stop Frequency	1000 MHz
Sweep Speed	Auto
IF Bandwidth	10 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

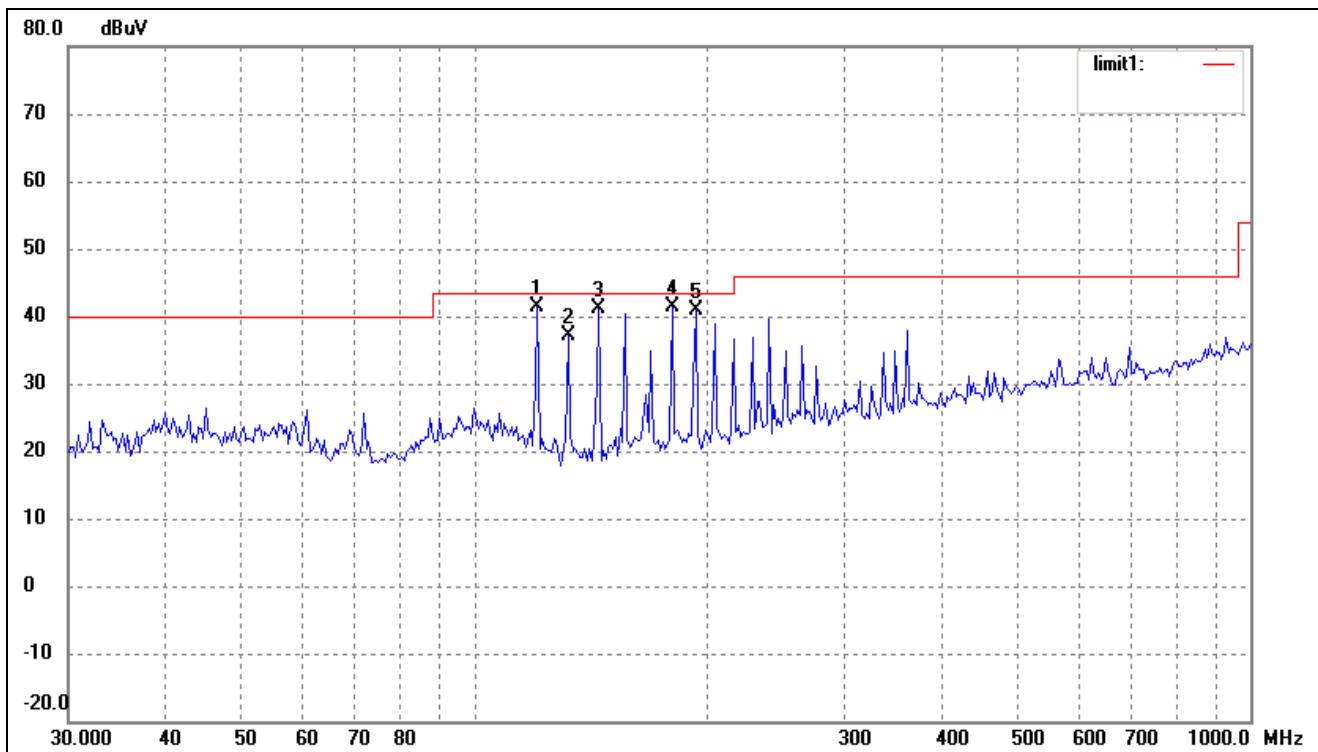
Temperature:	22° C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

4.7 Summary of Test Results/Plots

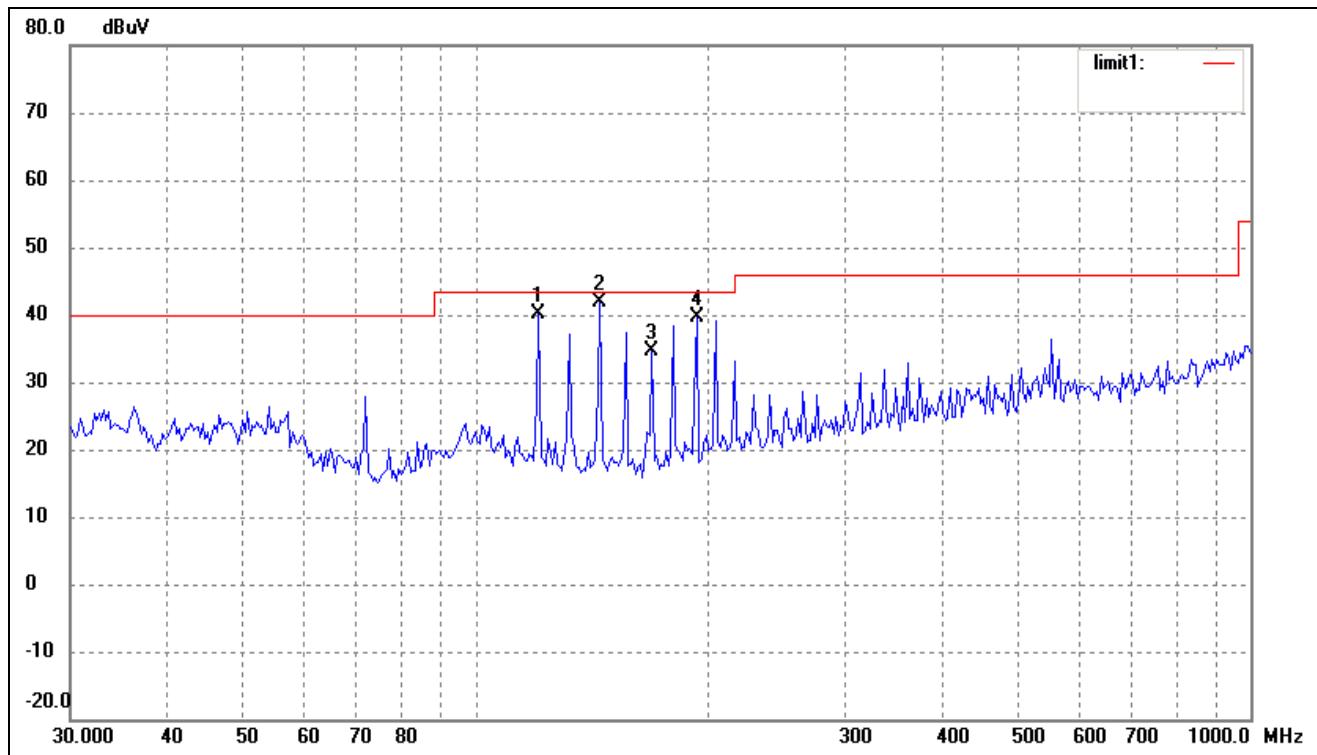
According to the data, the EUT complied with the FCC 15B Class B standards, and had the worst margin of:

-1.69 dB μ V at 144.7898 MHz in the **Vertical** polarization, Downloading Mode, **30 MHz to 1 GHz, 3Meters**

-14.29 dB μ V at 182.5785 MHz in the **Horizontal** polarization, Playing Mode, **30 MHz to 1 GHz, 3Meters**

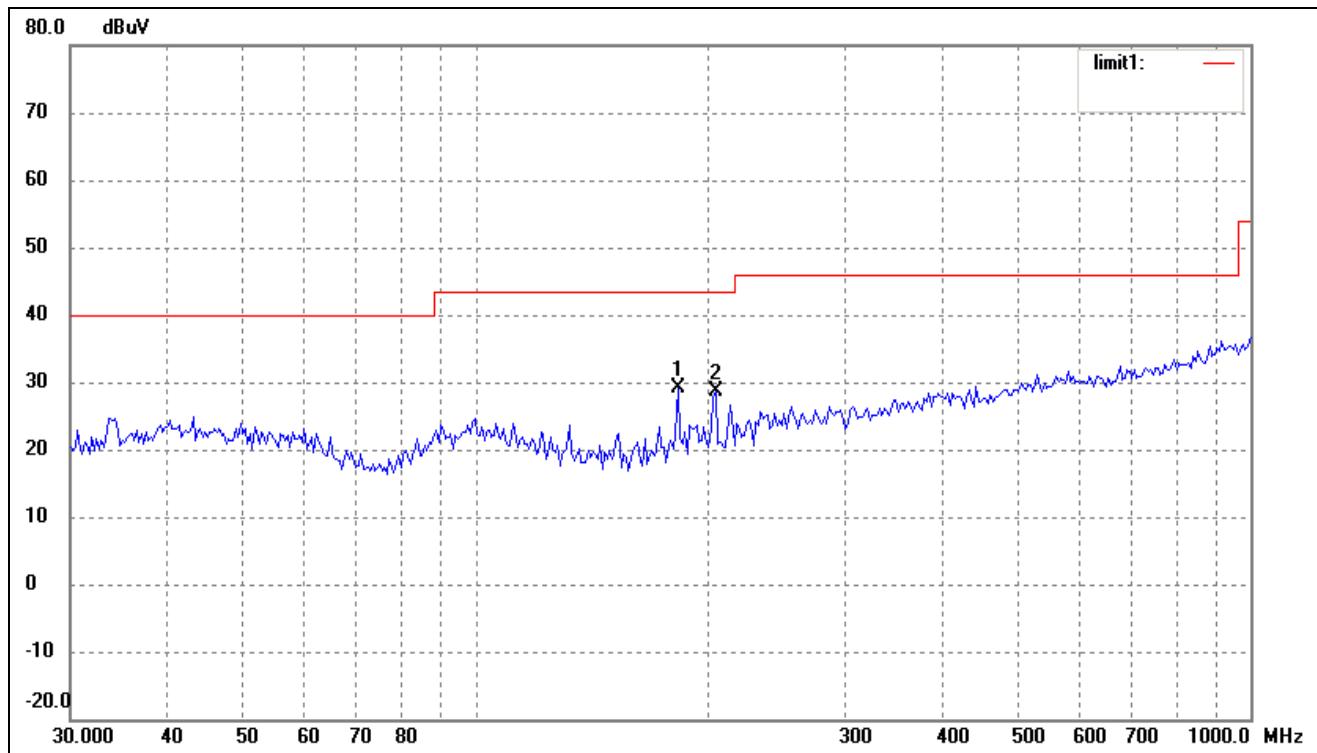
Plot of Radiation Emissions Test Data*Radiated Emission**EUT: DIGITAL PHOTO FRAME**M/N: DPF4000**Operating Condition: Downloading & Playing**Test Specification: Horizontal & Vertical**Downloading (Horizontal)*

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	120.6118	35.49	5.87	41.36	43.50	-2.14	120	130	peak
2	132.1490	32.78	4.43	37.21	43.50	-6.29	270	120	peak
3	144.7898	37.20	4.01	41.21	43.50	-2.29	60	100	peak
4	180.0303	35.86	5.64	41.50	43.50	-2.00	180	110	peak
5	193.1365	34.32	6.56	40.88	43.50	-2.62	90	110	peak

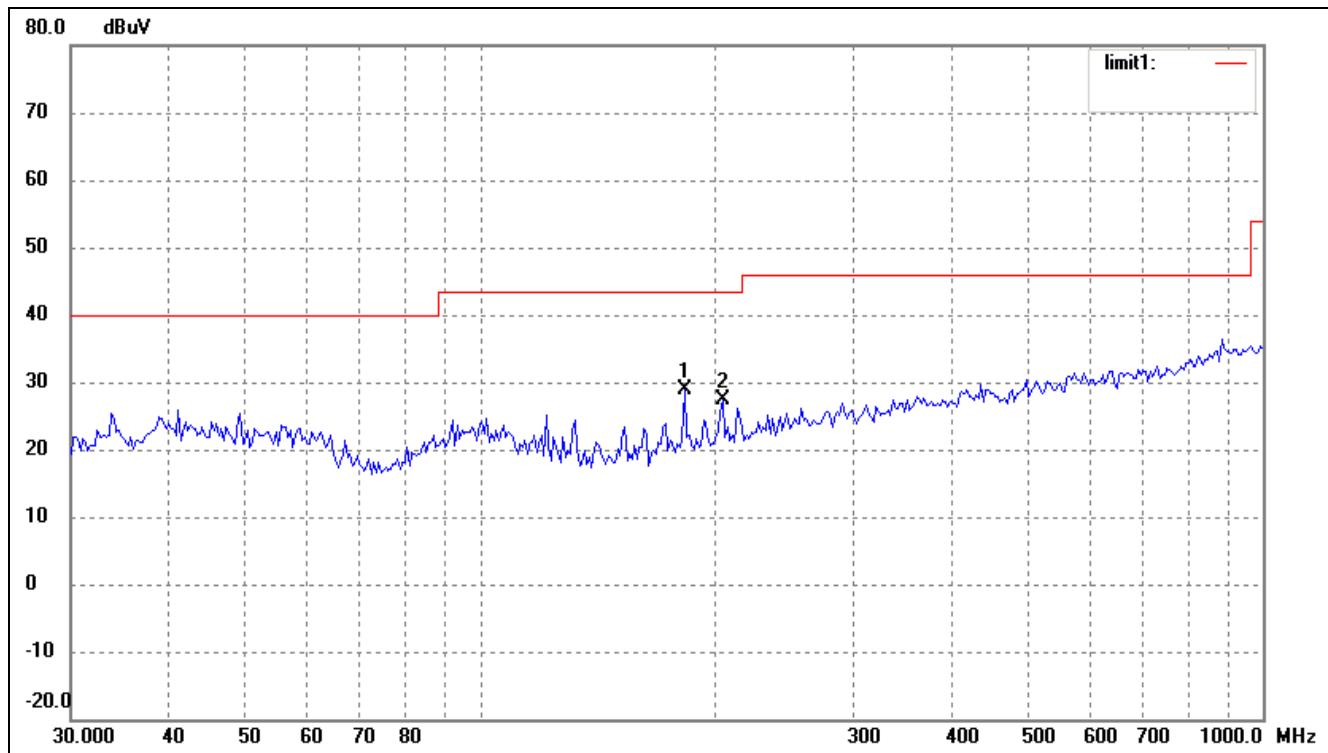
Downloading (Vertical)

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	120.6118	34.18	5.87	40.05	43.50	-3.45	270	110	peak
2	144.7898	37.80	4.01	41.81	43.50	-1.69	60	110	peak
3	168.9970	29.66	4.85	34.51	43.50	-8.99	180	120	peak
4	193.1365	33.06	6.56	39.62	43.50	-3.88	120	100	peak

Playing (Horizontal)



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	182.5785	23.33	5.88	29.21	43.50	-14.29	120	115	peak
2	204.3052	21.79	6.73	28.52	43.50	-14.98	45	110	peak

Playing (Vertical)

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	182.5785	23.00	5.88	28.88	43.50	-14.62	90	120	peak
2	204.3052	20.60	6.73	27.33	43.50	-16.17	60	110	peak