FCC PART 15.109

MEASUREMENT AND TEST REPORT

FOR

UNICORN MANUFACTURING LTD.

Unit5, 21F, H.K. Worsted Mills Ind Bldg 31-39 Wo Tong Tsui St Kwai Chung

N.T

FCC ID: UTF-DPF2401

Report Concerns: Original Report	**Equipment Type:** DIGITAL PHOTO FRAME

Model:	DPF2401
Report No.:	STR09048093I
Test/Witness Engineer:	Susan Su
Test Date:	2009-04-24 to 2009-04-27
Issue Date:	2008-04-28

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 permitted 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, 21F, H.K. Worsted Mills Ind Bldg 31-39 Wo Tong Tsui St Kwai Chung N.T
Manufacturer:	UNICORN ELEC. (SHENZHEN) CO., LTD.
Address of manufacturer:	ZHING 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.:	DPF2401
Rated Voltage:	USB 5V/DC 3V
Packaging Size:	10.2X7.1X2.5 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 15.107, 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 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

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.

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. under the Windows XP terminal.

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	1.4	Unshielded	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.

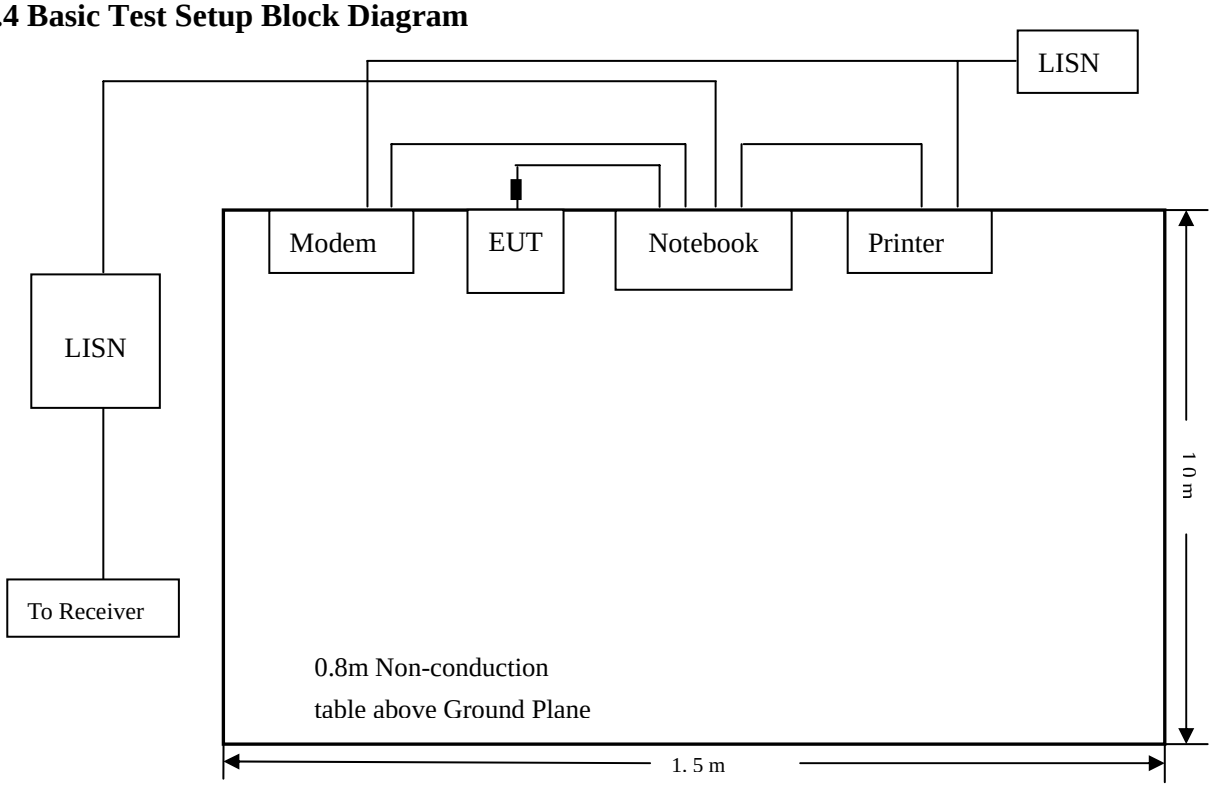
3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2008-07-08	2009-07-07
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2008-07-08	2009-07-07
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2008-07-08	2009-07-07
AMN	Rohde & Schwarz	ESH3-Z5	828304/014	2008-07-08	2009-07-07

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:

-8.22 dBμV at 0.514 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
0.514	47.77	Pk	Line	55.99	-8.22
0.278	49.86	Pk	Line	60.97	-11.01
0.210	41.78	Ave	Line	53.19	-11.41
0.166	52.65	Pk	Neutral	65.15	-12.50
0.422	34.16	Ave	Neutral	47.40	-13.24
0.498	41.70	Pk	Neutral	56.02	-14.32
0.210	38.68	Ave	Neutral	53.20	-14.52
1.194	39.95	Pk	Line	55.99	-16.04
0.418	30.28	Ave	Line	47.48	-17.20
4.126	27.50	Ave	Line	45.99	-18.49
0.910	26.47	Ave	Neutral	45.99	-19.52

Plot of Conducted Emissions Test Data

Conducted Disturbance

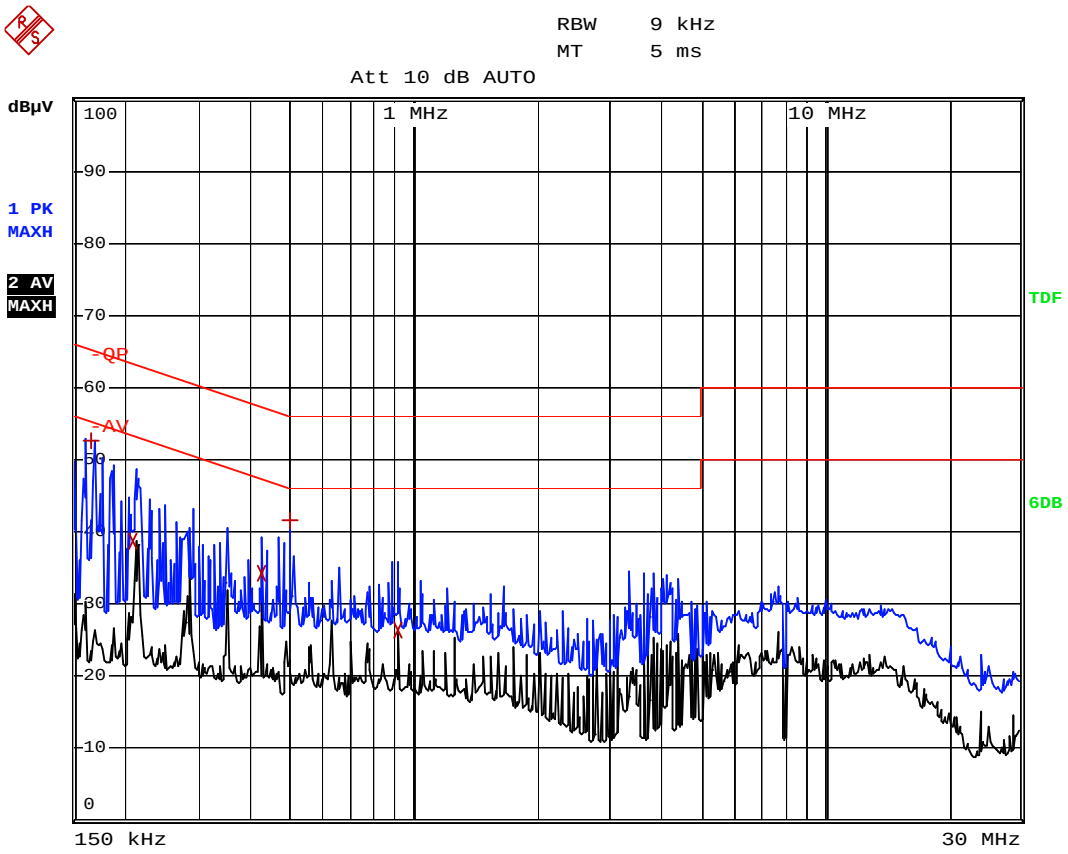
EUT: DIGITAL PHOTO FRAME

M/N: DPF2401

Operating Condition: Running with Program

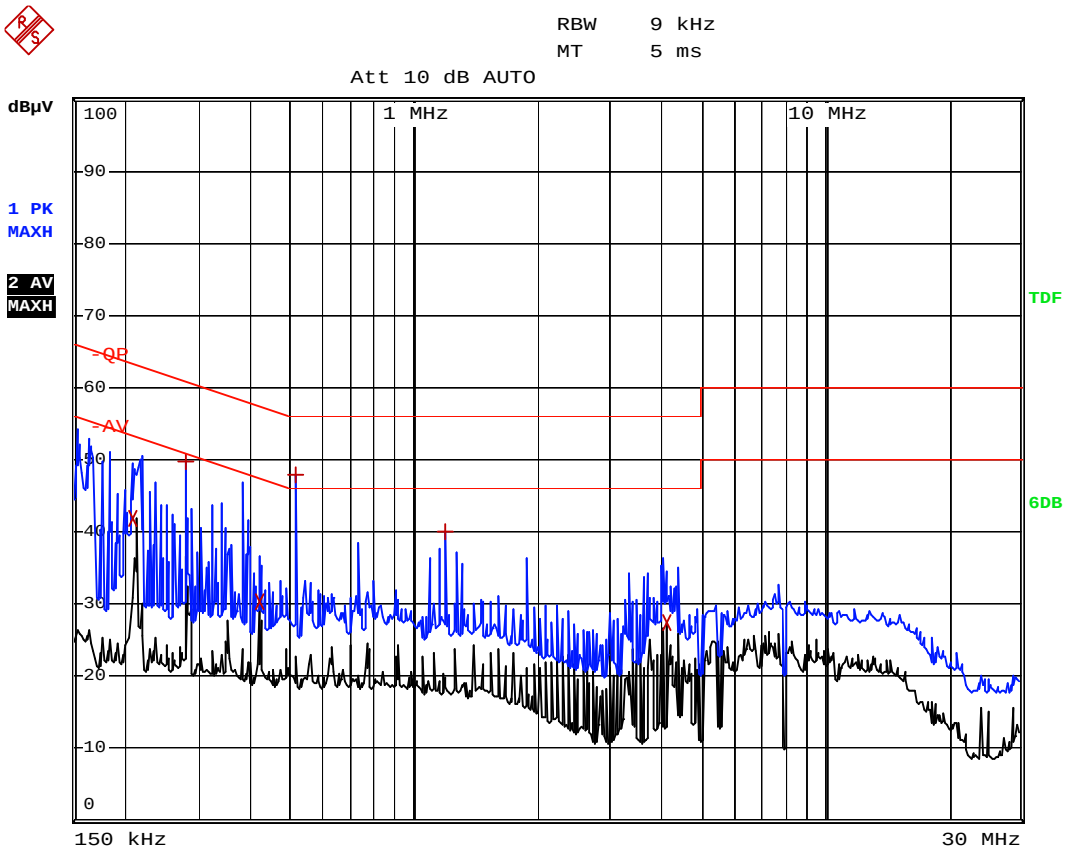
Test Specification: N

Comment: AC 120V/60Hz connect to PC, USB 5V



Plot of Conducted Emissions Test Data

Conducted Disturbance
EUT: DIGITAL PHOTO FRAME
M/N: DPF2401
Operating Condition: Running with Program
Test Specification: L
Comment: AC 120V/60Hz connect to PC, USB 5V



4. §15.109(a)- RADIATED EMISSION

4.1 Measurement Uncertainty

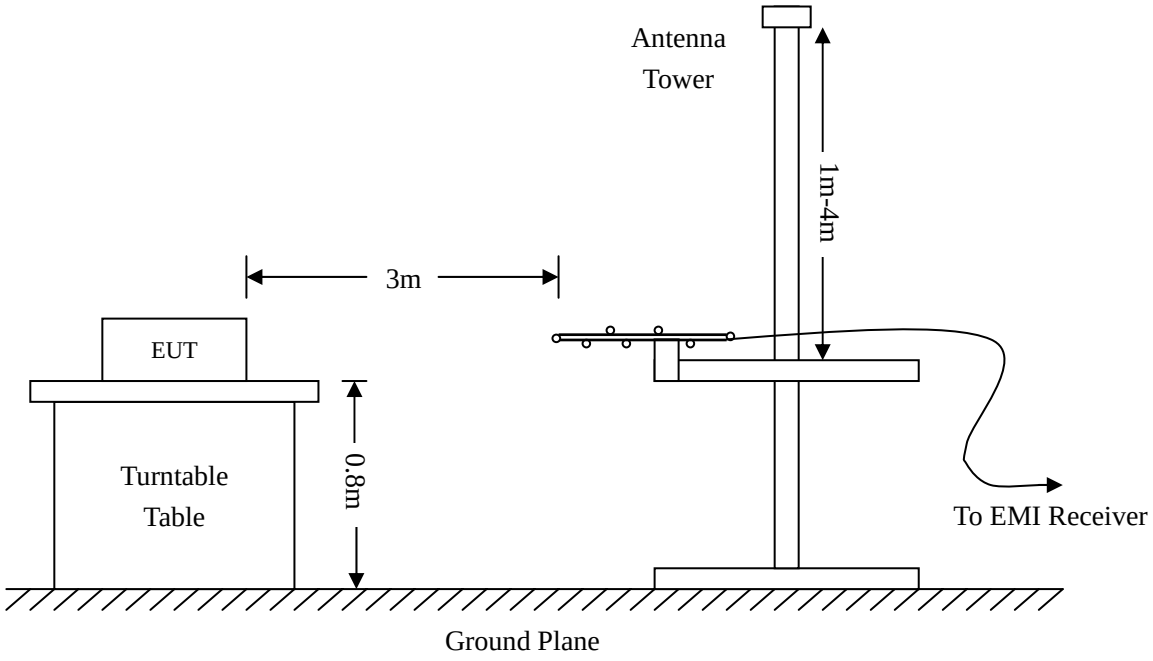
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 3.0 dB.

4.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	ROHDE&SCHWARZ	FSEA20	DE25181	2008-07-08	2009-07-07
Positioning Controller	C&C	CC-C-1F	N/A	2008-07-08	2009-07-07
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2008-07-08	2009-07-07
Horn Antenna	SCHWARZBECK	BBHX 9120	9120-426	2008-07-08	2009-07-07
RF Switch	EM	EMSW18	SW060023	2008-07-08	2009-07-07
Amplifier	Agilent	8447F	3113A06717	2008-07-08	2009-07-07
Coaxial Cable	SCHWARZBECK	AK9513	9513-10	2008-07-08	2009-07-07
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	25498514	2008-07-08	2009-07-07

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:

Corr. Ampl. = Indicated Reading – Corr. Factor

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

Margin = Corr. Ampl. – 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 15B Class B standards, and had the worst margin of:

-1.47 dBμV at **193.1366 MHz** in the **Horizontal** polarization, **downloading** mode, **30 MHz to 1 GHz, 3Meters**

-12.07 dBμV at **379.1780 MHz** in the **Horizontal** polarization, **playing** mode, **30 MHz to 1 GHz, 3Meters**

Plot of Radiation Emissions Test Data

Radiated Disturbance

EUT: DIGITAL PHOTO FRAME

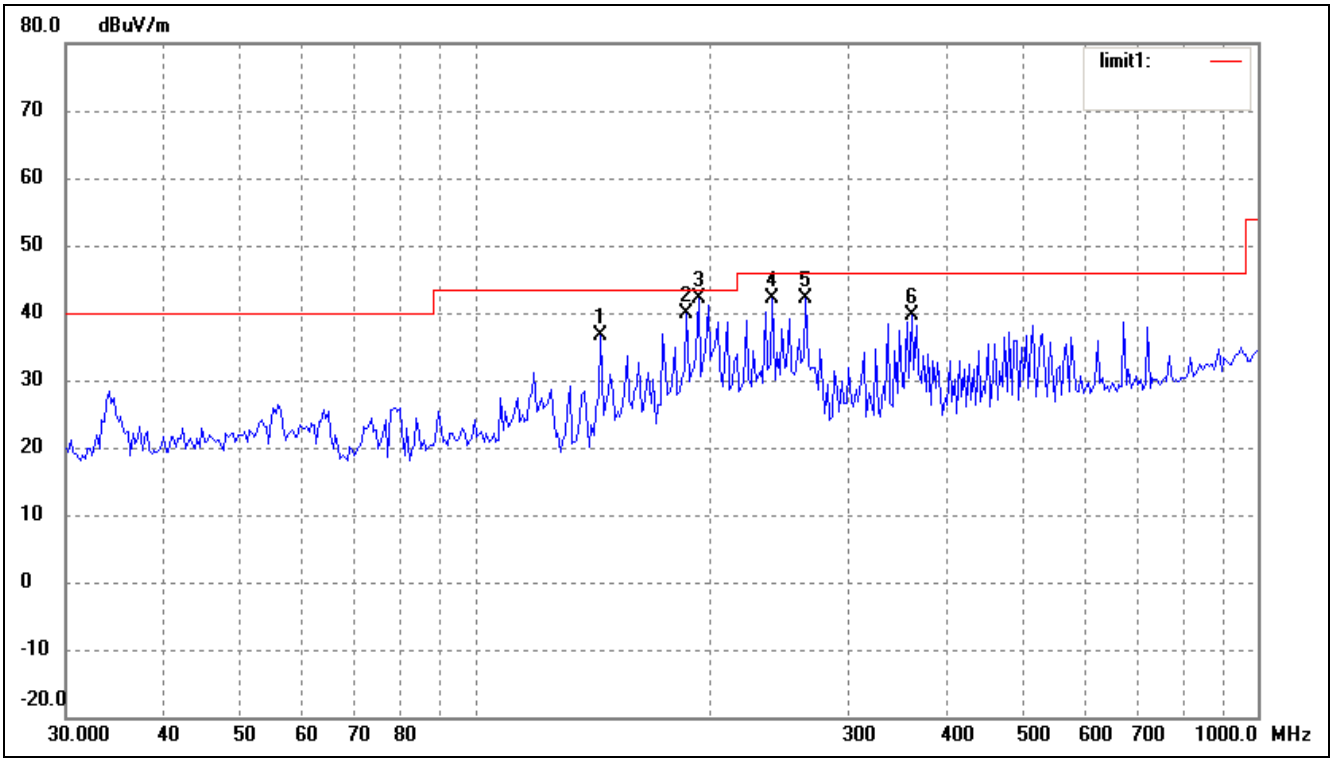
M/N: DPF2401

Operating Condition: Downloading

Test Specification: Horizontal & Vertical

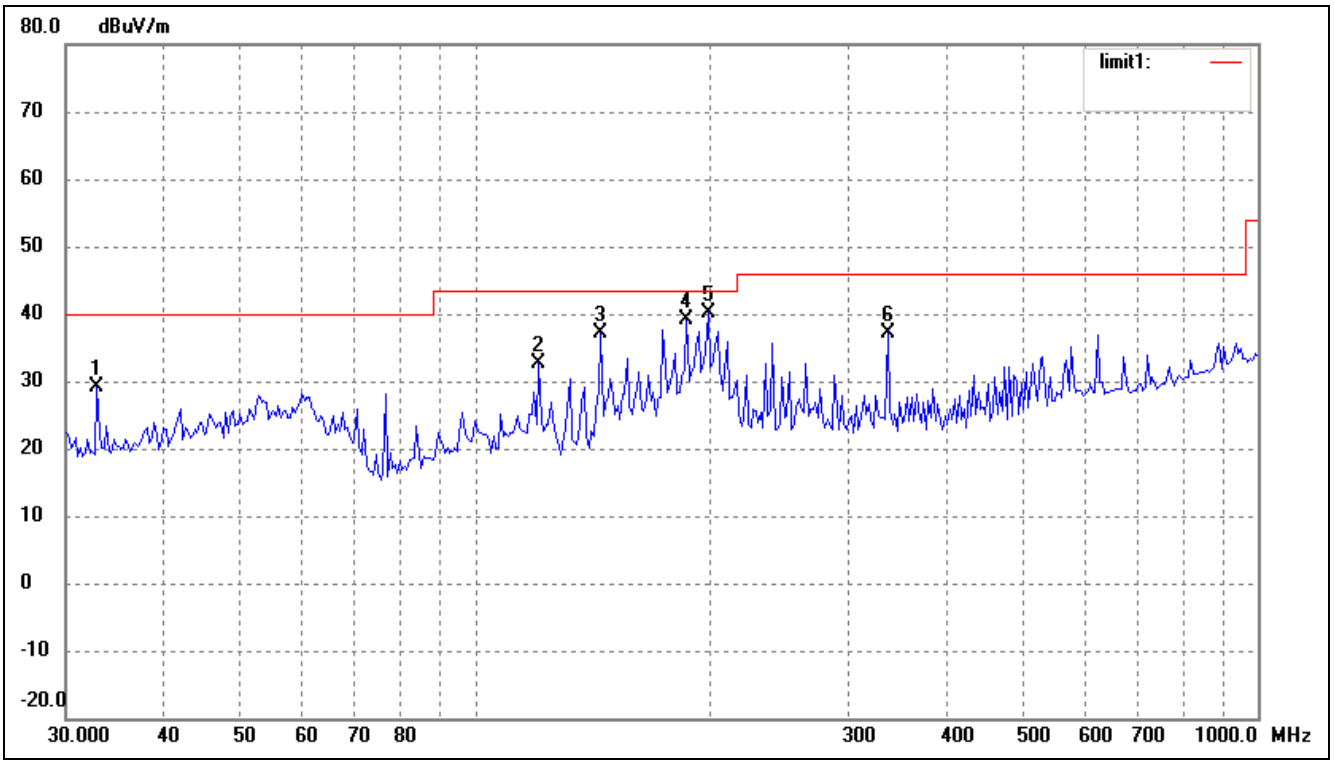
Comment: AC 120V/60Hz connect to PC, USB 5V

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	144.7899	33.37	3.26	36.63	43.50	-6.87	115	100	peak
2	186.4684	34.56	5.35	39.91	43.50	-3.59	46	100	QP
3	193.1366	36.36	5.67	42.03	43.50	-1.47	349	110	QP
4	240.1442	34.58	7.44	42.02	46.00	-3.98	48	100	QP
5	264.9709	34.14	8.06	42.20	46.00	-3.80	76	100	QP
6	360.9775	29.98	9.66	39.64	46.00	-6.36	128	200	peak

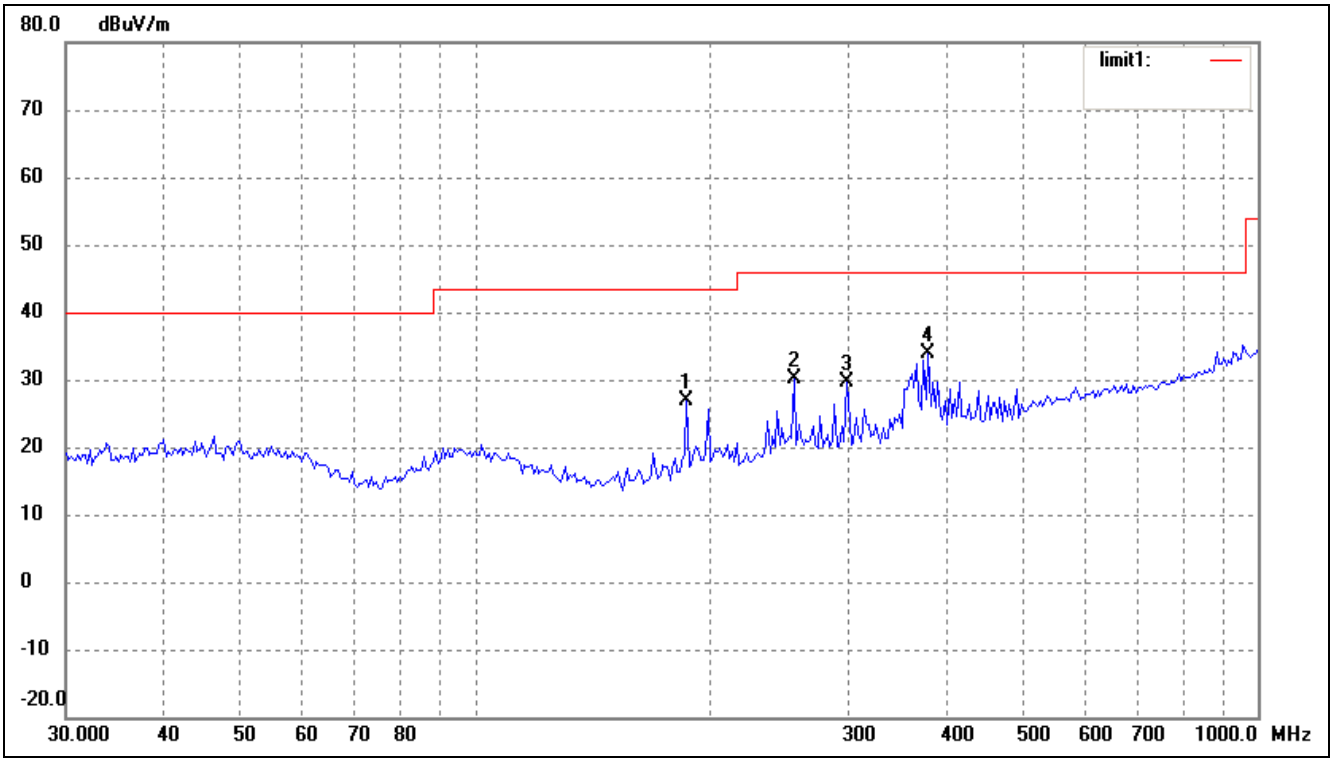
Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	32.8697	22.41	6.61	29.02	40.00	-10.98	215	100	peak
2	120.6118	27.37	5.19	32.56	43.50	-10.94	30	200	peak
3	144.7899	33.80	3.26	37.06	43.50	-6.44	16	200	peak
4	186.4684	33.67	5.35	39.02	43.50	-4.48	97	100	QP
5	198.6424	34.40	5.68	40.08	43.50	-3.42	46	100	QP
6	336.4817	28.06	9.16	37.22	46.00	-8.78	346	100	peak

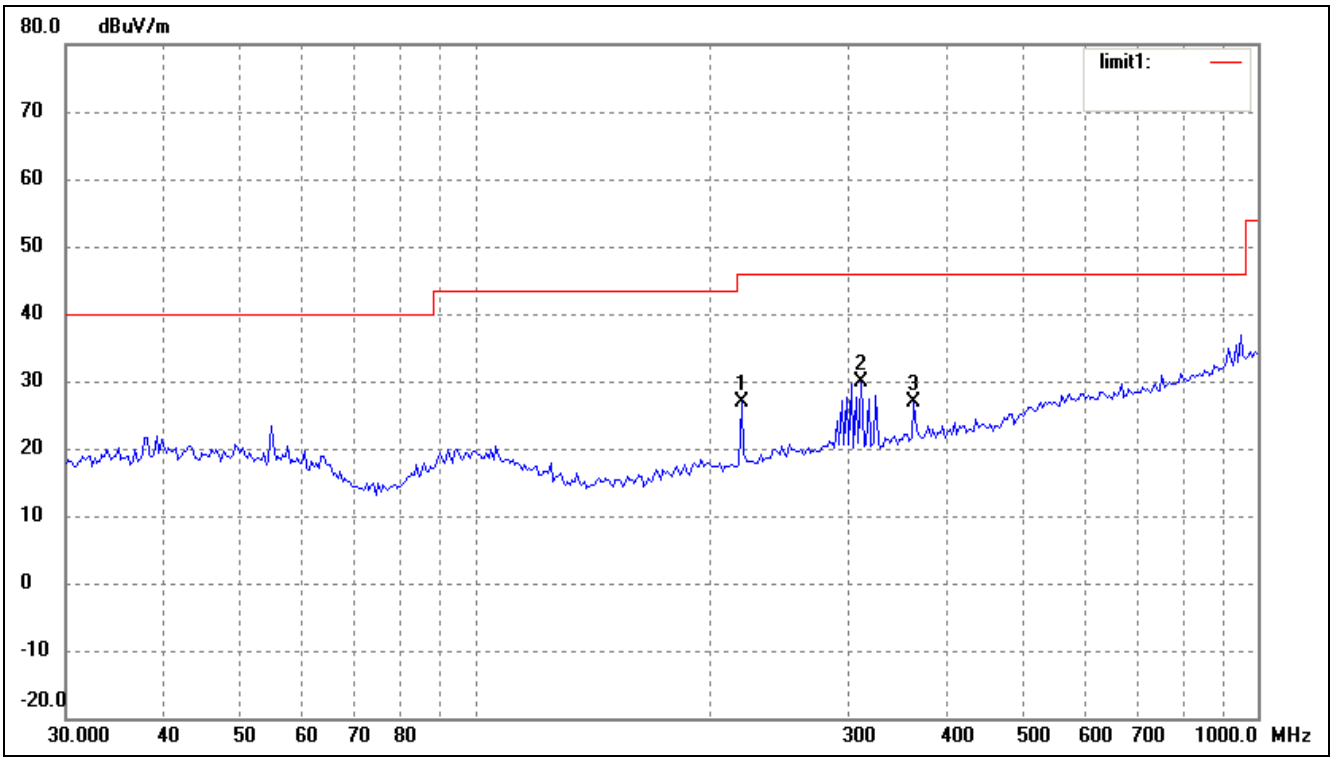
Radiated Disturbance
EUT: DIGITAL PHOTO FRAME
M/N: DPF2401
Operating Condition: Playing
Test Specification: Horizontal & Vertical
Comment: DC 3V

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	186.4684	21.53	5.35	26.88	43.50	-16.62	25	100	peak
2	255.8226	22.36	7.82	30.18	46.00	-15.82	64	100	peak
3	298.5932	20.88	8.63	29.51	46.00	-16.49	189	100	peak
4	379.1780	24.02	9.91	33.93	46.00	-12.07	120	100	peak

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	219.1785	20.53	6.31	26.84	46.00	-19.16	316	100	peak
2	311.4519	21.18	8.75	29.93	46.00	-16.07	87	100	peak
3	363.5231	17.23	9.70	26.93	46.00	-19.07	119	100	peak

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