

FCC PART 15.109
MEASUREMENT AND TEST REPORT
FOR

Cosmos Digitech (HK) Co., Ltd

Room 1703, Hip Kwan Commercial Building No., 38 Pitt Road Yaomatei,

Kowloon, Hong Kong

FCC ID: WEVSP56M

Report Concerns: Original Report	Equipment Type: Digital Photo Frame
Model:	<u>SP56M</u>
Report No.:	<u>STR08078117I</u>
Test/Witness Engineer:	<u>Jason</u>
Test Date:	<u>2008-07-23 to 2008-08-04</u>
Issued Date:	<u>2008-08-05</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 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: Cosmos Digitech (HK) Co., Ltd
Address of applicant: Room 1703, Hip Kwan Commercial Building No., 38 Pitt Road Yaomatei, Kowloon, Hong Kong

Manufacturer: HUAXING ELECTRONICS FACTORY
Address of manufacturer: No. 8, Gaoli Road 6, Gaoli Industrial Area, Qinghutou Tangxia Town, Dongguan City, Guangdong, China

General Description of E.U.T

Items	Description
EUT Description:	Digital Photo Frame
Trade Name:	/
Model No.:	SP56M
Adding Model:	CM56
Rated Voltage:	DC 12V
Rated Current:	/
Size:	18X15.5X3.5 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. Test is carried out with SP56M since the others listed in the report have the different appearances only without electronic construction changed.

1.2 Test Standards

The following report is prepared on behalf of the Cosmos Digitech (HK) 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, 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	1.0	Shielded	With Core
Power Cable	1.5	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	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	Aglient	E4402B-ESA	US41192821	2008-01-25	2009-01-24

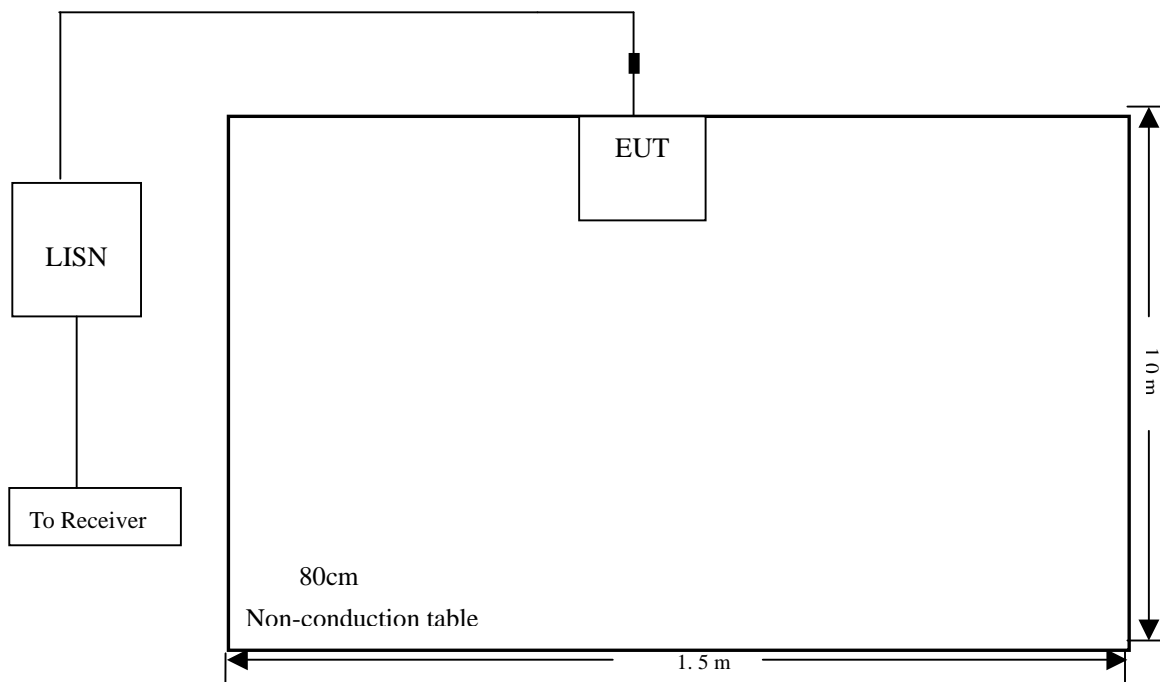
3.3 Test Procedure

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:

-11.8 dBμV at 2.01MHz in the Line mode, Peak detector, 0.15-30MHz

3.7 Conducted Emissions Test Data

LINE CONDUCTED EMISSIONS				FCC 15B CLASS B	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dBμV	QP/Ave/Pk	Line/Neutral	dBμV	dB
2.01	44.2	Pk	Line	56	-11.8
2.80	43.9	Pk	Line	56	-12.2
0.59	43.0	Pk	Line	56	-13.0
0.60	32.1	Ave	Line	46	-13.9
7.28	45.6	Pk	Line	60	-14.4
1.09	31.1	Ave	Line	46	-14.9
2.05	39.9	Pk	Neutral	56	-16.1
0.43	40.8	Pk	Neutral	57.18	-16.4
7.41	33.4	Ave	Line	50	-16.6
2.05	29.2	Ave	Neutral	46	-16.8
0.21	36.3	Ave	Neutral	53.21	-16.9
3.00	29.0	Ave	Line	46	-17.0
4.35	38.6	Pk	Neutral	56	-17.4
0.30	41.8	Pk	Line	60.19	-18.4
0.30	31.7	Ave	Line	50.19	-18.5
0.78	26.7	Ave	Neutral	46	-19.3
3.03	26.7	Ave	Neutral	46	-19.3
0.21	43.4	Pk	Neutral	63.21	-19.8
7.62	40.0	Pk	Neutral	60	-20.0

Note: Emissions attenuation more than 20dB below maximum permissible value are not report.

Plot of Conducted Emissions Test Data

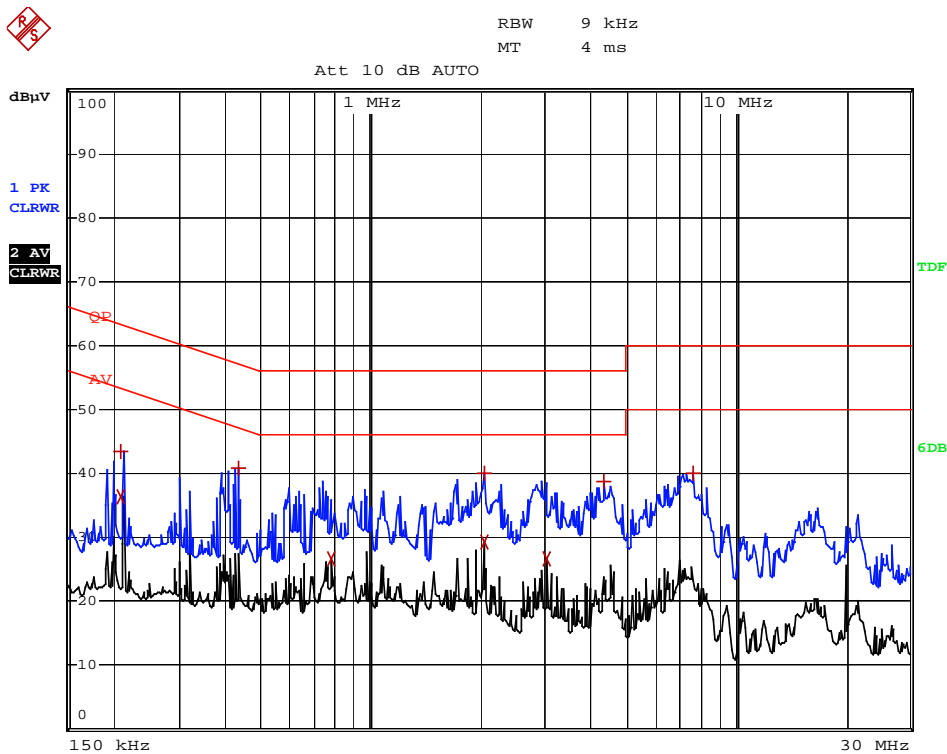
Conducted Disturbance

EUT: Digital Photo Frame

M/N: SP56M

Operating Condition: Playing

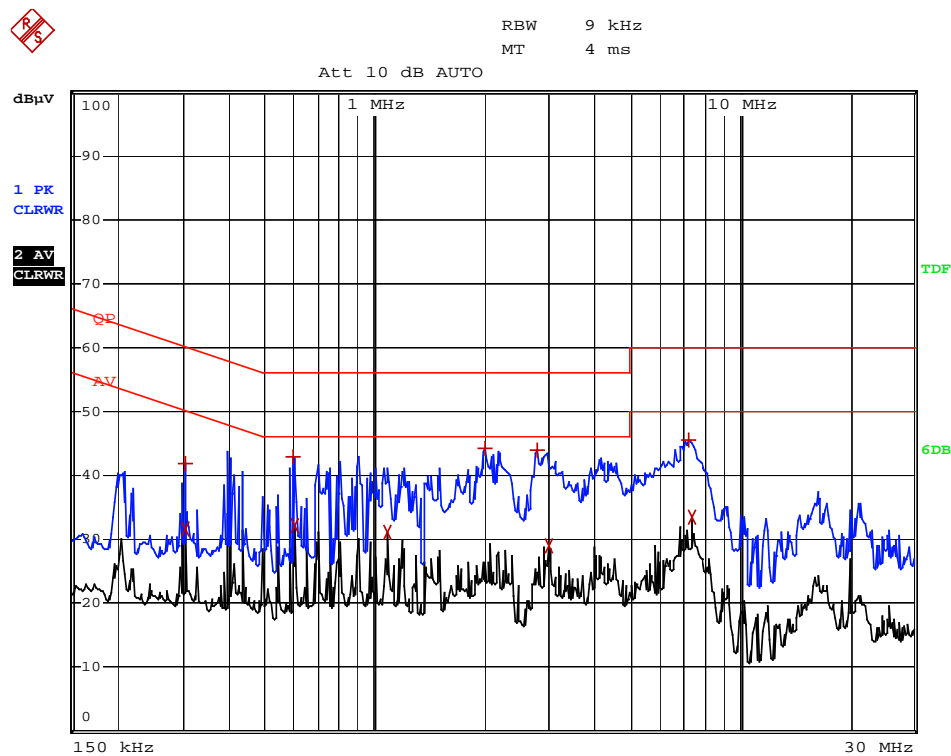
Test Specification: N



Date: 31.JUL.2008 18:02:06

Plot of Conducted Emissions Test Data

Conducted Disturbance
EUT: Digital Photo Frame
M/N: SP56M
Operating Condition: Playing
Test Specification: L



Date: 31.JUL.2008 18:03:29

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.

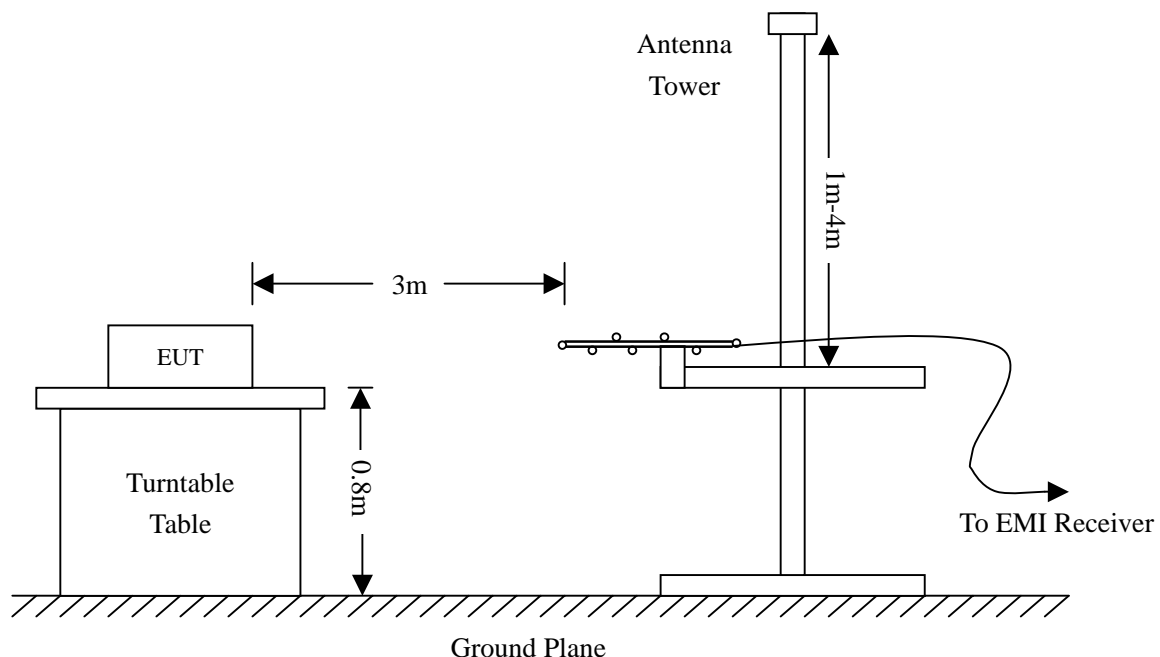
4.2 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	ROHDE&SCHWARZ	FSEA20	DE25181	2008-01-25	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

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 -6dBμV means the emission is 6dBμV 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

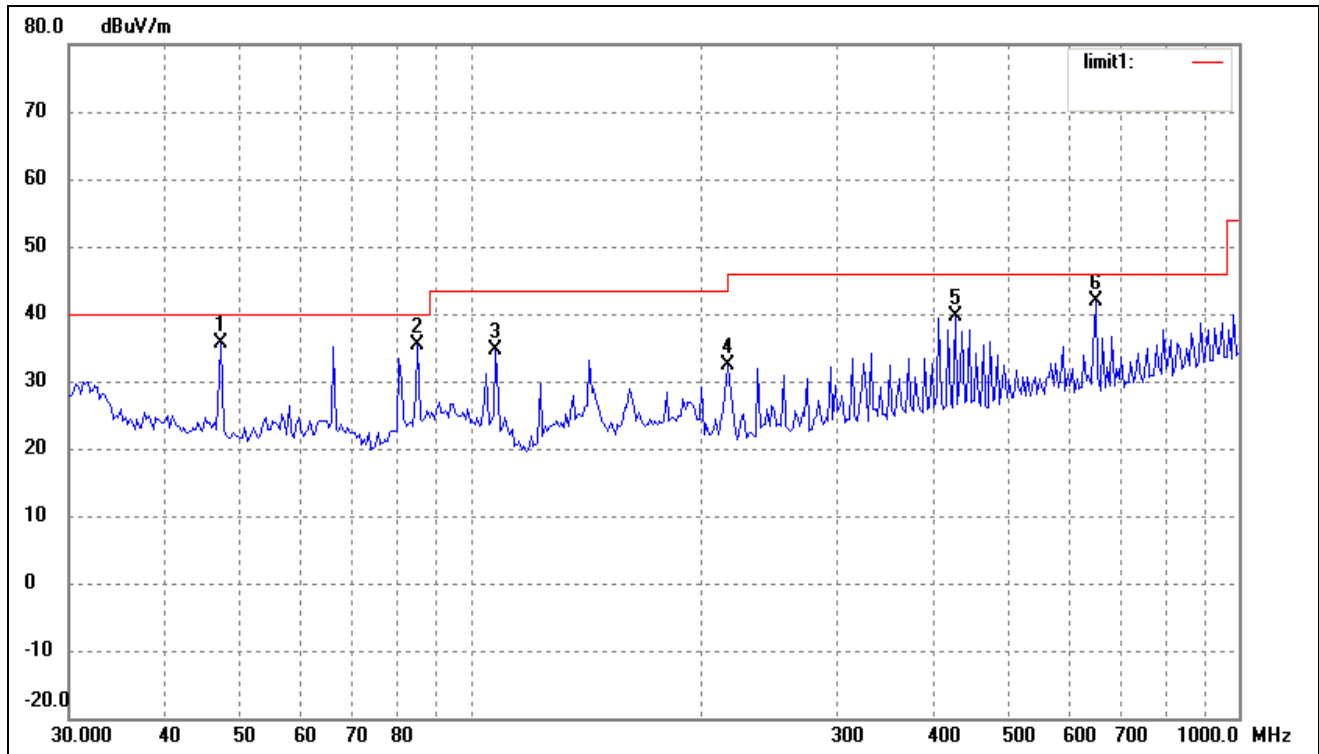
Temperature:	22° C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

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:

-4.01 dBμV at 651.383 MHz in the Vertical polarization, (Playing) 30 MHz to 1 GHz, 3Meters

-3.43 dBμV at 421.328 MHz in the Vertical polarization, (Downloading) 30 MHz to 1 GHz, 3Meters

Plot of Radiation Emissions Test Data*Radiated Emission**EUT: Digital Photo Frame**M/N: SP56M**Operating Condition: Playing**Test Specification: Horizontal & Vertical**(Horizontal)*

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	47.3688	27.45	8.11	35.56	40.00	-4.44	253	100	QP
2	85.4769	29.79	5.62	35.41	40.00	-4.59	251	110	QP
3	107.7854	26.77	7.77	34.54	43.50	-8.96	215	130	peak
4	216.1197	25.11	7.15	32.26	46.00	-13.74	115	128	peak
5	427.2920	27.92	11.66	39.58	46.00	-6.42	156	114	peak
6	651.3831	27.45	14.35	41.80	46.00	-4.20	214	105	QP

Plot of Radiation Emissions Test Data

Radiated Emission

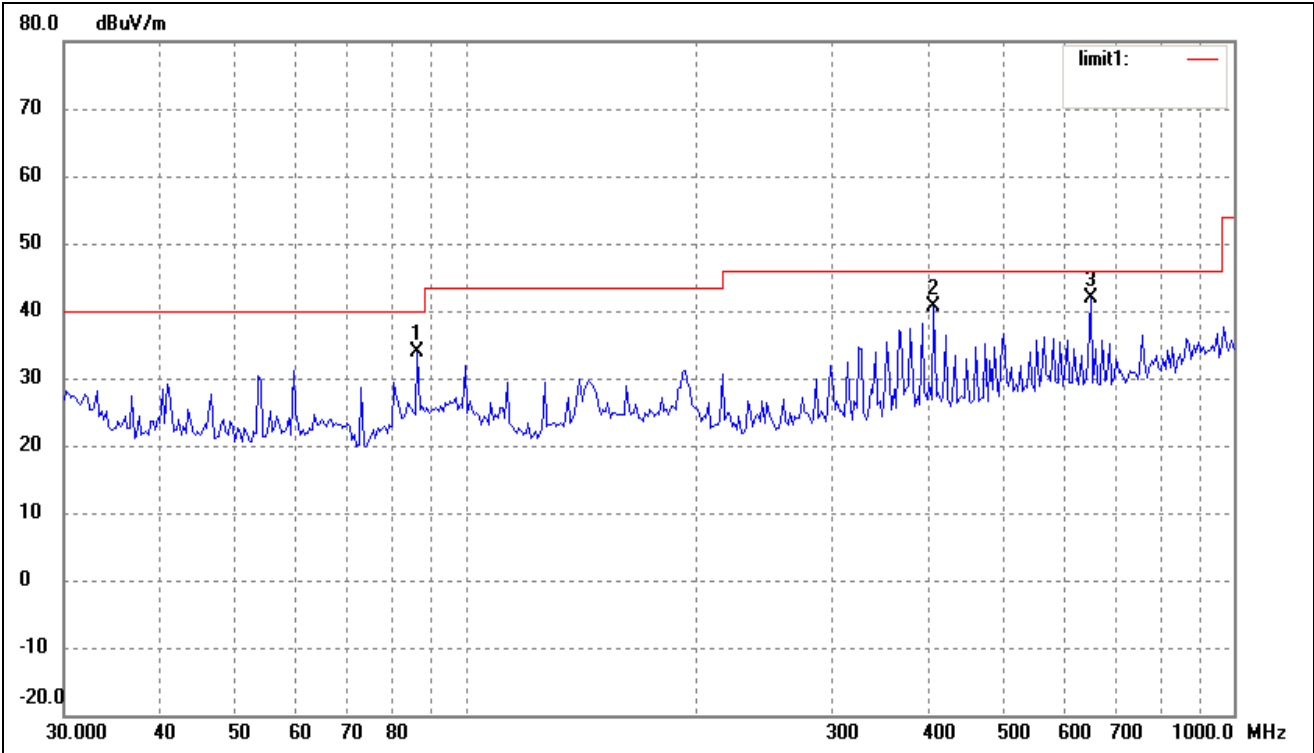
EUT: Digital Photo Frame

M/N: SP56M

Operating Condition: Playing

Test Specification: Horizontal & Vertical

(Vertical)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	86.6867	27.81	6.02	33.83	40.00	-6.17	229	100	peak
2	406.7820	29.20	11.39	40.59	46.00	-5.41	215	117	QP
3	651.3831	27.64	14.35	41.99	46.00	-4.01	223	105	QP

Plot of Radiation Emissions Test Data

Radiated Emission

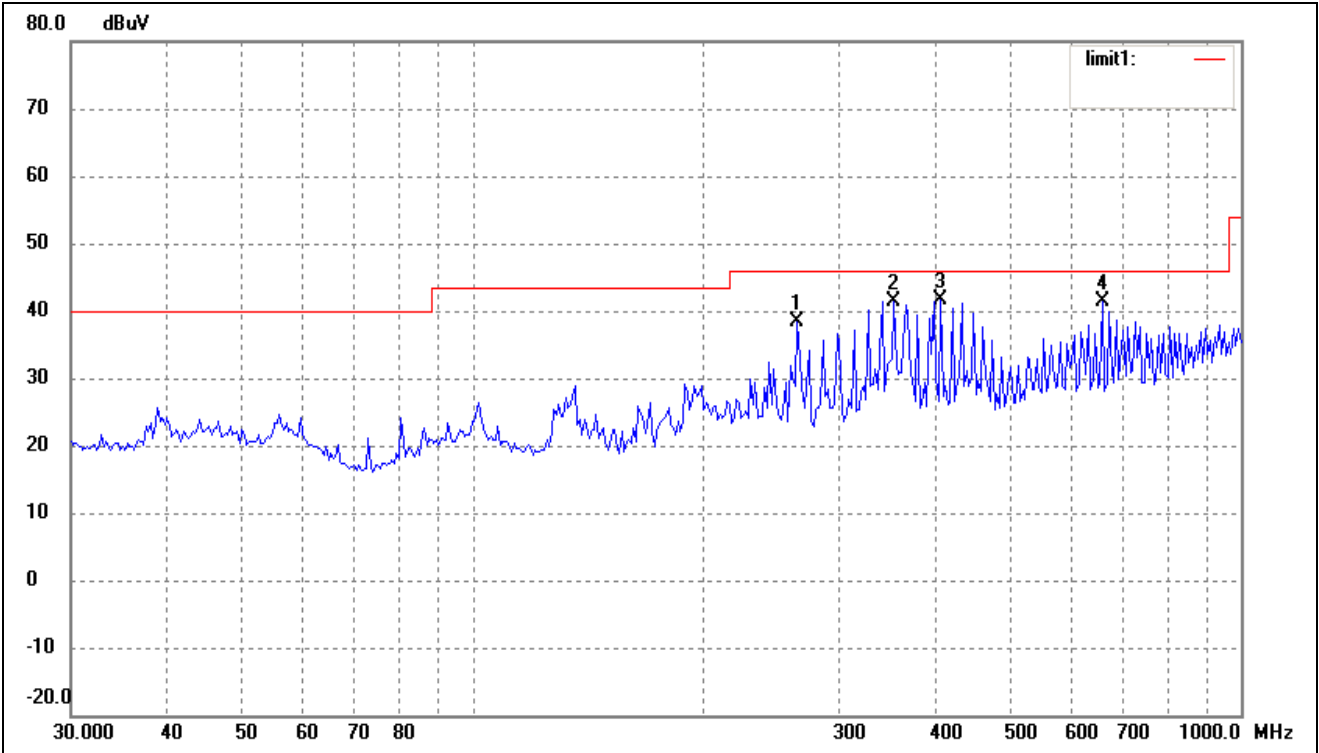
EUT: Digital Photo Frame

M/N: SP56M

Operating Condition: Downloading

Test Specification: Horizontal & Vertical

(Horizontal)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)	(°)	(cm)	
1	264.9708	29.21	9.10	38.31	46.00	-7.69	226	120	peak
2	353.4472	30.74	10.75	41.49	46.00	-4.51	215	112	QP
3	406.7819	30.12	11.39	41.51	46.00	-4.49	218	107	QP
4	660.6024	26.94	14.37	41.31	46.00	-4.69	220	104	QP

Plot of Radiation Emissions Test Data

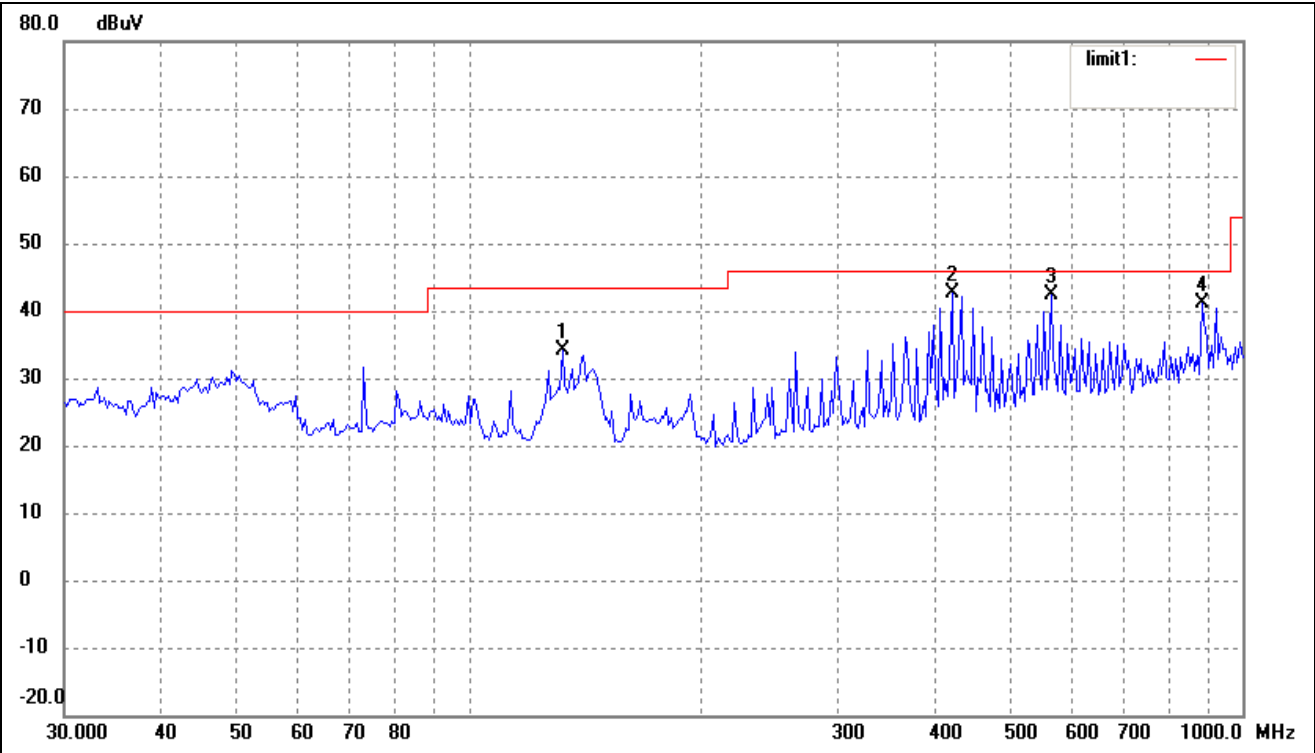
Radiated Emission

EUT: Digital Photo Frame

M/N: SP56M

Operating Condition: Downloading

Test Specification: Horizontal & Vertical
(Vertical)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)	(°)	(cm)	
1	132.1490	29.62	4.43	34.05	43.50	-9.45	231	120	peak
2	421.3287	31.15	11.42	42.57	46.00	-3.43	225	110	QP
3	565.9776	28.82	13.57	42.39	46.00	-3.61	214	114	QP
4	887.3977	24.29	16.72	41.01	46.00	-4.99	210	105	QP

*** END OF REPORT ***