


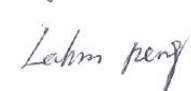

FCC PART 15B
MEASUREMENT AND TEST REPORT
FOR

Sinotech Digital Technology Company Ltd.

Room1105-07, Hongfa Center Mansion, Bao'an Central Area, Shenzhen P.R

China

FCC ID: YSFHSG-X5

Report Concerns: Original Report	Equipment Type: MID
Model:	<u>HSG-X5</u>
Report No.:	<u>STR10098069I-2</u>
Test Date:	<u>2010-09-09 to 2010-09-19</u>
Issue Date:	<u>2010-09-21</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 RELATED SUBMITTAL(S)/GRANT(S)	3
1.4 TEST METHODOLOGY	3
1.5 TEST FACILITY	4
1.6 EUT EXERCISE SOFTWARE	4
1.7 ACCESSORIES EQUIPMENT LIST AND DETAILS	5
1.8 EUT CABLE LIST AND DETAILS	5
1.9 BASIC TEST SETUP BLOCK DIAGRAM.....	5
2. SUMMARY OF TEST RESULTS	6
3. CONDUCTED EMISSIONS	7
3.1 MEASUREMENT UNCERTAINTY	7
3.2 TEST EQUIPMENT LIST AND DETAILS	7
3.3 TEST PROCEDURE.....	7
3.4 BASIC TEST SETUP BLOCK DIAGRAM.....	7
3.5 ENVIRONMENTAL CONDITIONS	8
3.6 SUMMARY OF TEST RESULTS/PLOTS	8
3.7 CONDUCTED EMISSIONS TEST DATA.....	8
4. §15.109(A)- RADIATED EMISSION	11
4.1 MEASUREMENT UNCERTAINTY	11
4.2 TEST EQUIPMENT LIST AND DETAILS	11
4.3 TEST PROCEDURE.....	11
4.4 TEST RECEIVER SETUP	12
4.5 CORRECTED AMPLITUDE & MARGIN CALCULATION.....	12
4.6 ENVIRONMENTAL CONDITIONS	12
4.7 SUMMARY OF TEST RESULTS/PLOTS	12

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Sinotech Digital Technology Company Ltd.
Address of applicant: Room1105-07, Hongfa Center Mansion, Bao'an Central Area, Shenzhen P.R China

Manufacturer: Sinotech Digital Technology Company Ltd.
Address of manufacturer: Room1105-07, Hongfa Center Mansion, Bao'an Central Area, Shenzhen P.R China

General Description of E.U.T

Items	Description
EUT Description:	MID
Trade Name:	DIOO
Model No.:	HSG-X5
Rated Voltage:	DC 7.4V Battery with 9VDC adaptor
Rated Current:	300mA
Packaging Size:	19.5x11.6x1.5 cm
For more information refer to the circuit diagram form and the user's manual.	

Note: The test data is gathered from a production sample, provided by the manufacture.

1.2 Test Standards

The following report is prepared on behalf of the Sinotech Digital Technology Company 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 CE6.0 terminal, the exercise software includes the following features:

- * With a file read and write function for all hard drives or external USB/SD disk and connect to PC mode.
- * A exercise video function that fill the character “H” in the LCD display.
- * Run all I/O port, for exaxmple the USB port, HDMI output port etc.

LCD display setup information:

- * *Set the contrast control to maximum*
- * *Set the brightness control to maximum or at raster extinction if raster extinction occurs at less than maximum brightness.*

In addition, the EUT playing the standard 1kHz audio signal, and plug in the mircophone and headphone so that the microphone and audio port is running.

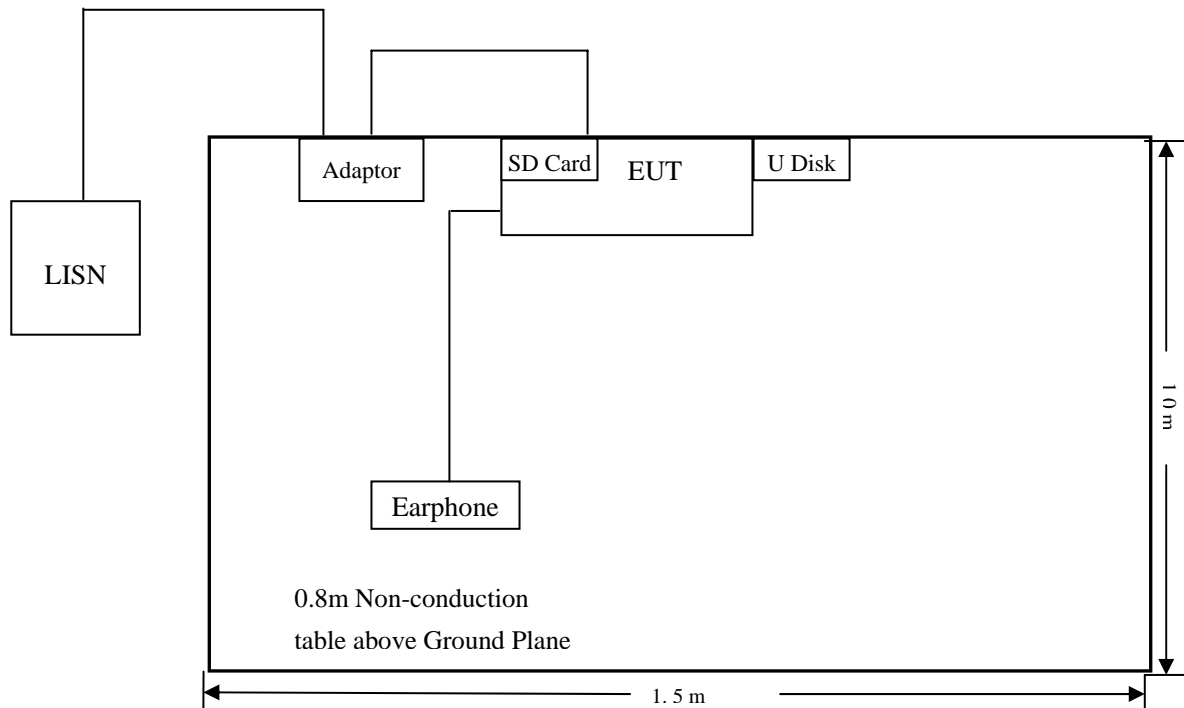
1.7 Accessories Equipment List and Details

Description	Manufacturer	Model	Serial Number
USB Disk	Lenovo	T180	/
Notebook	ASUS	X50	/
LCD Display	ACER	VP2212	/

1.8 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
DC Power Cable	1.5	Unshielded	Without Core
Earphone Cable	1.1	Unshielded	Without Core

1.9 Basic Test Setup Block Diagram



2. SUMMARY OF TEST RESULTS

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

3. CONDUCTED EMISSIONS

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

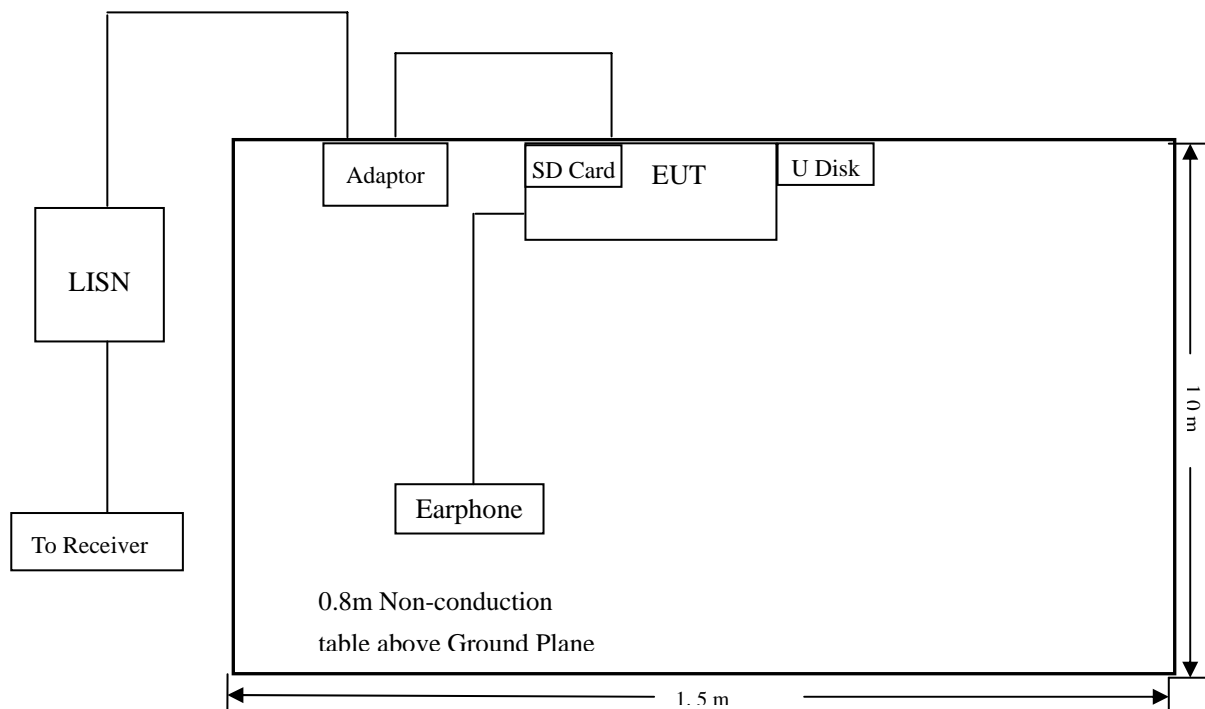
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2010-08-12	2011-08-11
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2010-08-12	2011-08-11
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2010-08-12	2011-08-11

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

3.3 Test Procedure

Test is conducting under the description of 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.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	20° C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

3.6 Summary of Test Results/Plots

According to the data in section 3.7, the EUT complied with the FCC 15.107 Conducted margin for a Class B device, with the *worst* margin reading of:

-1.15 dB μ V at 23.986 MHz in the Neutral Ave Detector, 0.15-30MHz

3.7 Conducted Emissions Test Data

LINE CONDUCTED EMISSIONS				FCC 15.107	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dB μ V	QP/Ave/Pk	Line/Neutral	dB μ V	dB
23.986	48.84	Ave	Neutral	50.00	-1.15
23.886	46.65	Ave	Line	50.00	-3.34
0.354	54.53	Pk	Line	58.86	-4.33
0.434	52.40	Pk	Line	57.16	-4.76
23.986	54.93	Pk	Neutral	60.00	-5.06
0.930	48.57	Pk	Line	56.00	-7.42
1.186	48.43	Pk	Neutral	56.00	-7.56
1.182	37.12	Ave	Line	46.00	-8.87
0.354	39.06	Ave	Line	48.86	-9.80
0.546	34.50	Ave	Line	46.00	-11.49
2.258	44.28	Pk	Line	56.00	-11.71
1.186	34.21	Ave	Neutral	46.00	-11.78
2.362	34.50	Ave	Line	46.00	-11.84
23.986	48.04	Pk	Line	60.00	-11.95
2.366	43.67	Pk	Neutral	56.00	-12.33
11.994	36.72	Ave	Line	50.00	-13.27
0.154	52.20	Pk	Neutral	65.77	-13.57
2.366	32.20	Ave	Neutral	46.00	-13.79
0.526	41.50	Pk	Neutral	56.00	-14.49
11.994	43.02	Pk	Line	60.00	-16.97
0.582	28.56	Ave	Neutral	46.00	-17.43
0.174	36.42	Ave	Neutral	54.76	-18.34
11.99	40.29	Pk	Neutral	60.00	-19.70

Plot of Conducted Emissions Test Data

Conducted Disturbance

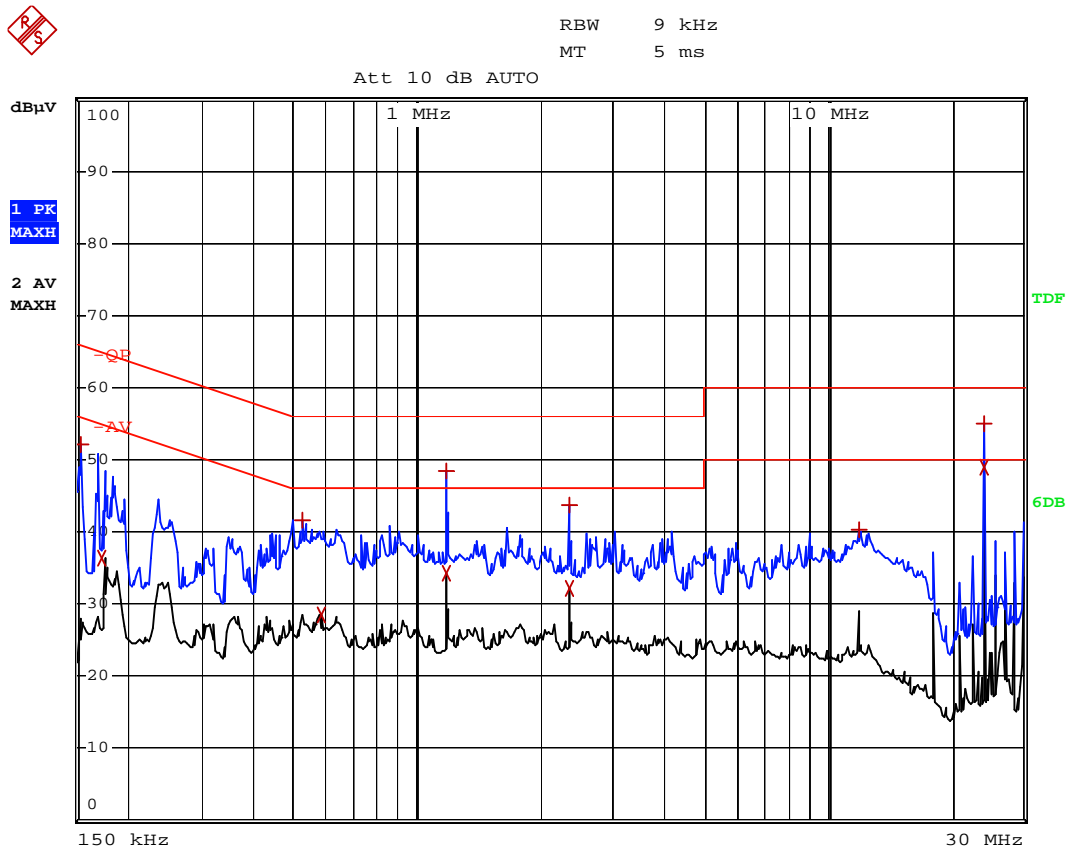
EUT: MID

M/N: HSG-X5

Operating Condition: Running with program

Test Specification: N

Comment: AC 120V/60Hz/Adapter 9V



Plot of Conducted Emissions Test Data

Conducted Disturbance

EUT: MID

M/N: HSG-X5

Operating Condition: Running with program

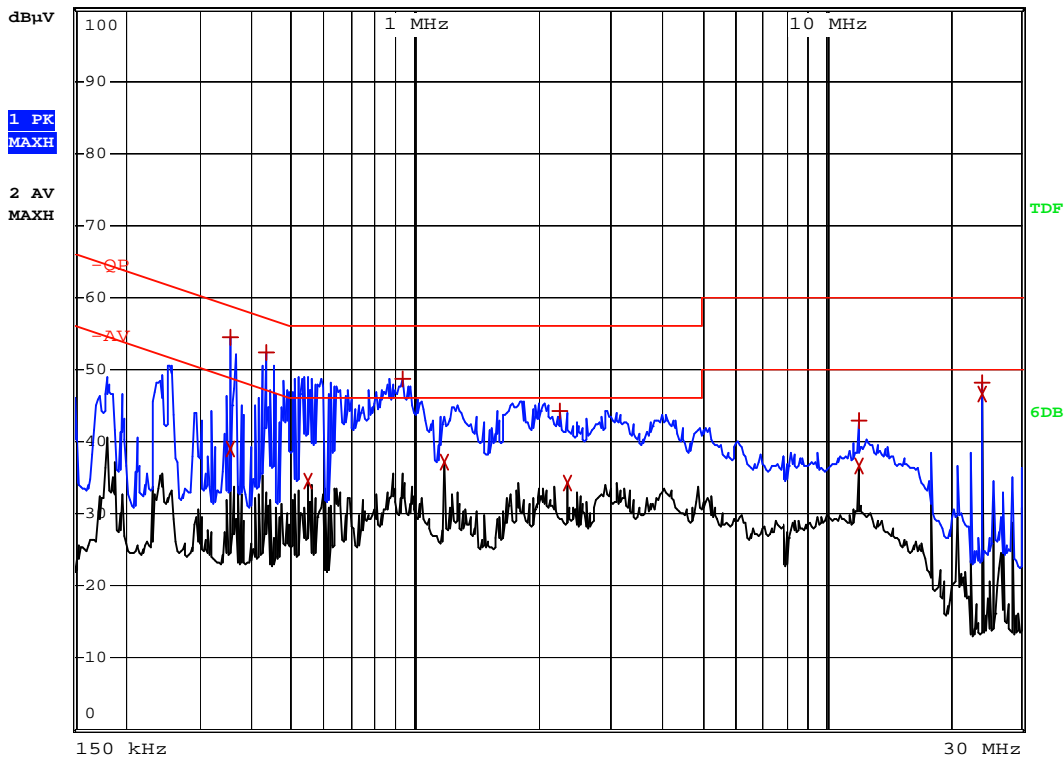
Test Specification: L

Comment: AC 120V/60Hz/Adapter 9V



RBW 9 kHz
MT 5 ms

Att 10 dB AUTO



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

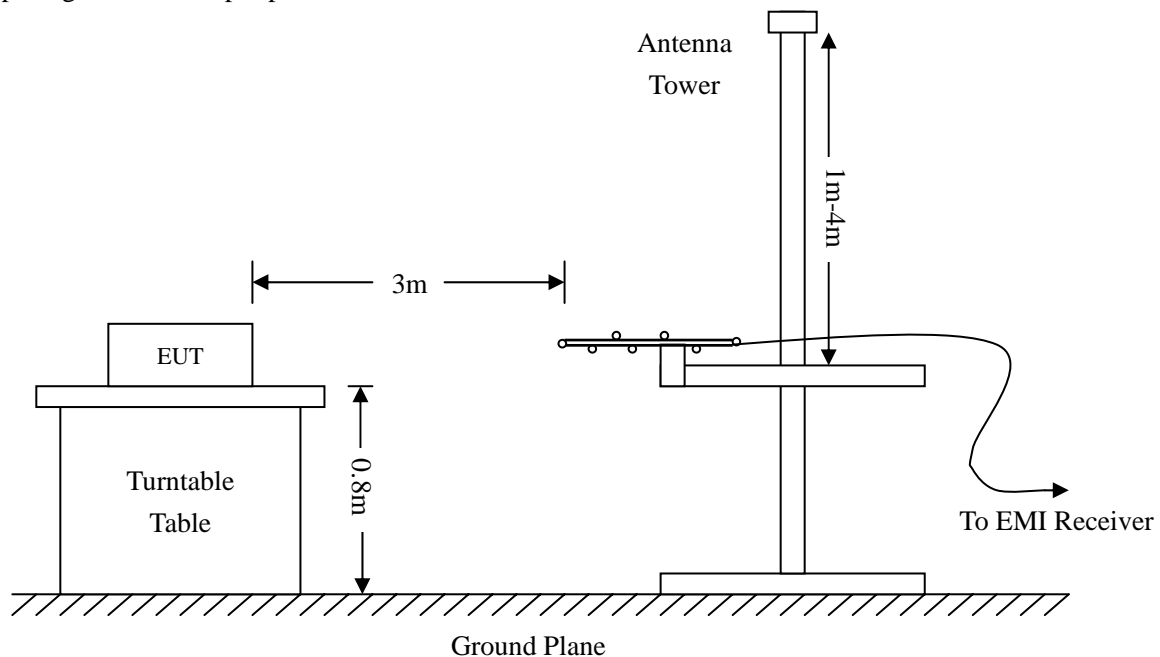
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2010-04-16	2011-04-15
EMI Test Receiver	R&S	ESVB	825471/005	2010-08-12	2011-08-11
Positioning Controller	C&C	CC-C-1F	N/A	2010-08-12	2011-08-11
RF Switch	EM	EMSW18	SW060023	2010-08-12	2011-08-11
Pre-amplifier	Agilent	8447F	3113A06717	2010-08-12	2011-08-11
Pre-amplifier	Compliance Direction	PAP-0118	24002	2010-08-12	2011-08-11
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2010-07-21	2011-07-20
Horn Antenna	ETS	3117	00086197	2010-07-21	2011-07-20

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:

Measurement From 30MHz to 1000MHz:

Sweep Speed Auto
 IF Bandwidth..... 100 kHz
 Video Bandwidth..... 300 kHz

During the radiated emission test for above 1GHz, the test receiver was set with the following configurations:

For peak detector:

RBW = 1000kHz, VBW = 3000kHz, Sweep Time = Auto

For average detector:

RBW = 1000kHz, VBW = 10Hz, Sweep Time = Auto

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

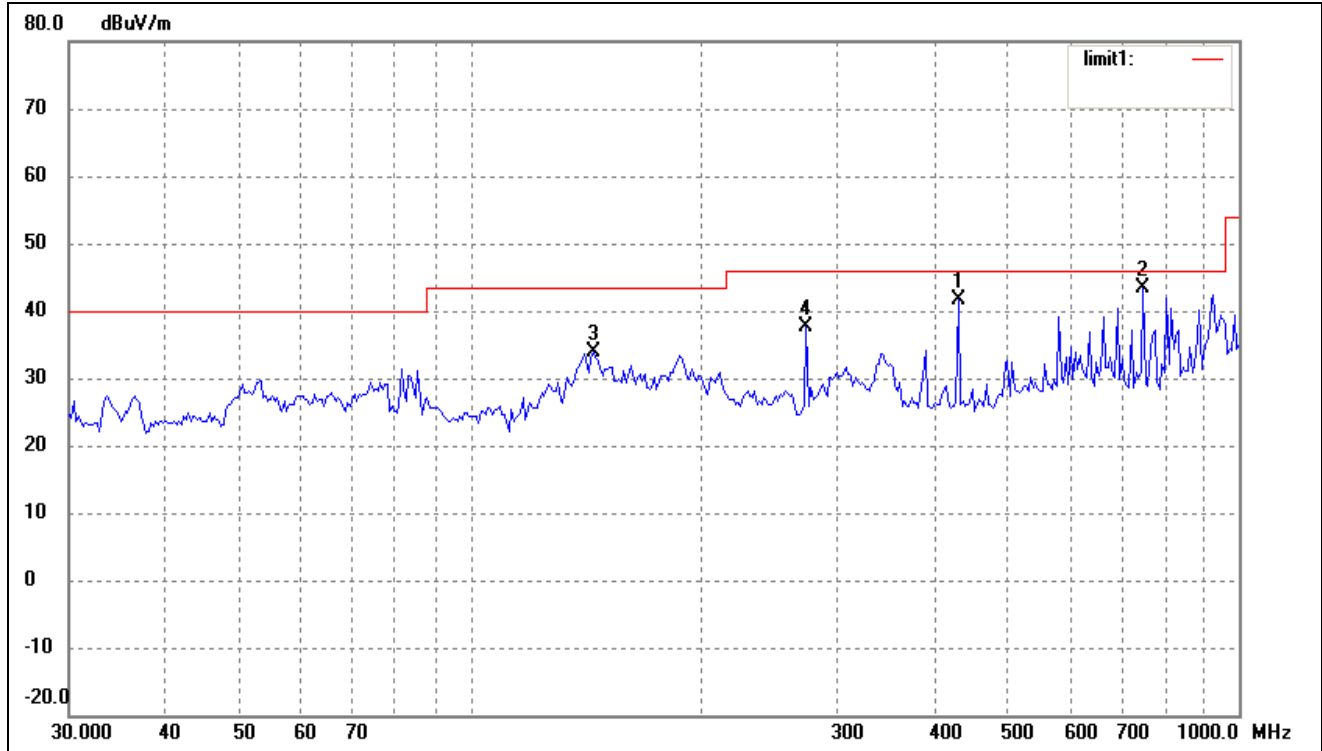
4.7 Summary of Test Results/Plots

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

-2.69 dB μ V at 750.1082MHz in the Horizontal polarization, for Playing & Charging Mode, 30 MHz to 2 GHz, 3Meters

-3.08 dB μ V at 724.2611MHz in the Vertical polarization, for HDMI output Mode, 30 MHz to 2 GHz, 3Meters

-3.10 dB μ V at 506.4791MHz in the Horizontal polarization, for Downloading Mode, 30 MHz to 2 GHz, 3Meters

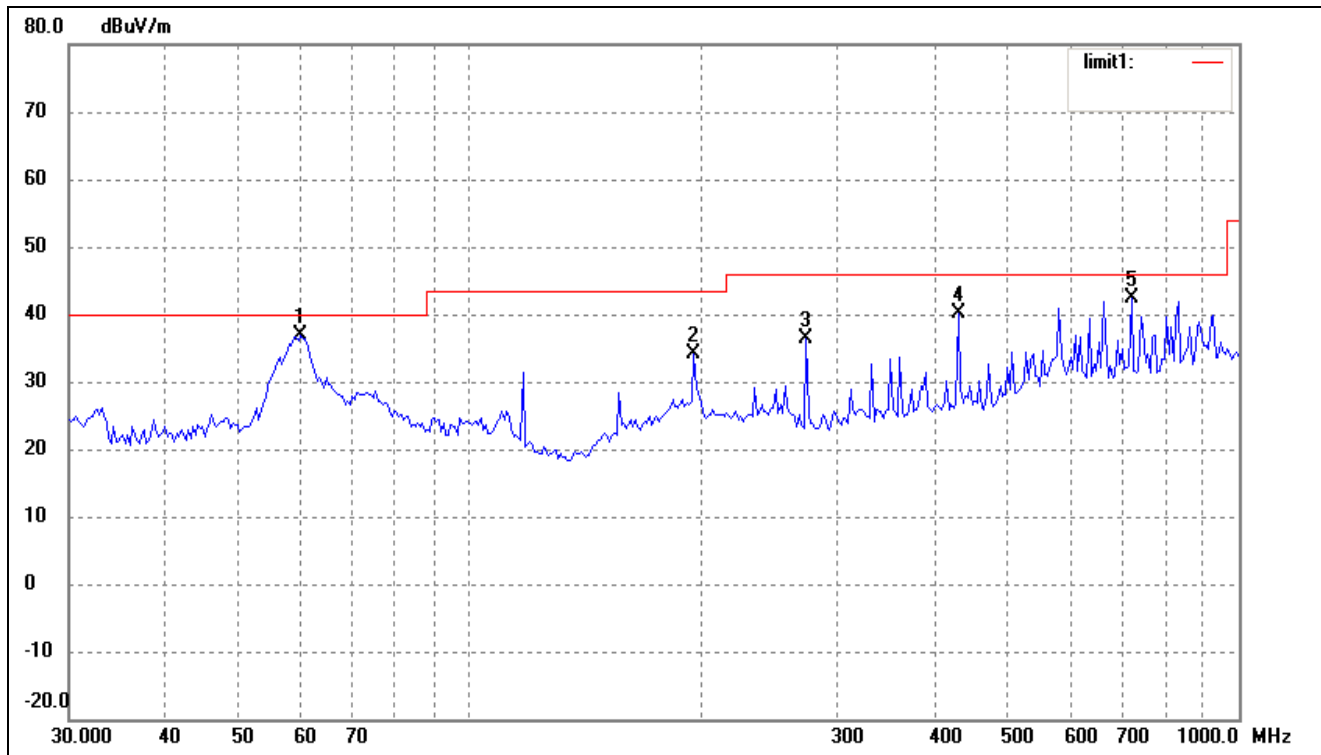
Plot of Radiation Emissions Test Data*Radiated Disturbance**EUT: MID**M/N: HSG-X5**Operating Condition: Playing & Charging**Test Specification: Horizontal & Vertical**Comment: AC 120V/60Hz/Adapter 9V**Horizontal*

No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	431.0316	31.28	10.45	41.73	46.00	-4.27	226	112	QP
2	750.1082	28.30	15.01	43.31	46.00	-2.69	124	124	QP
3	144.3348	30.58	3.26	33.84	43.50	-9.66	360	100	peak
4	273.2341	29.46	8.27	37.73	46.00	-8.27	360	100	peak

Vertical

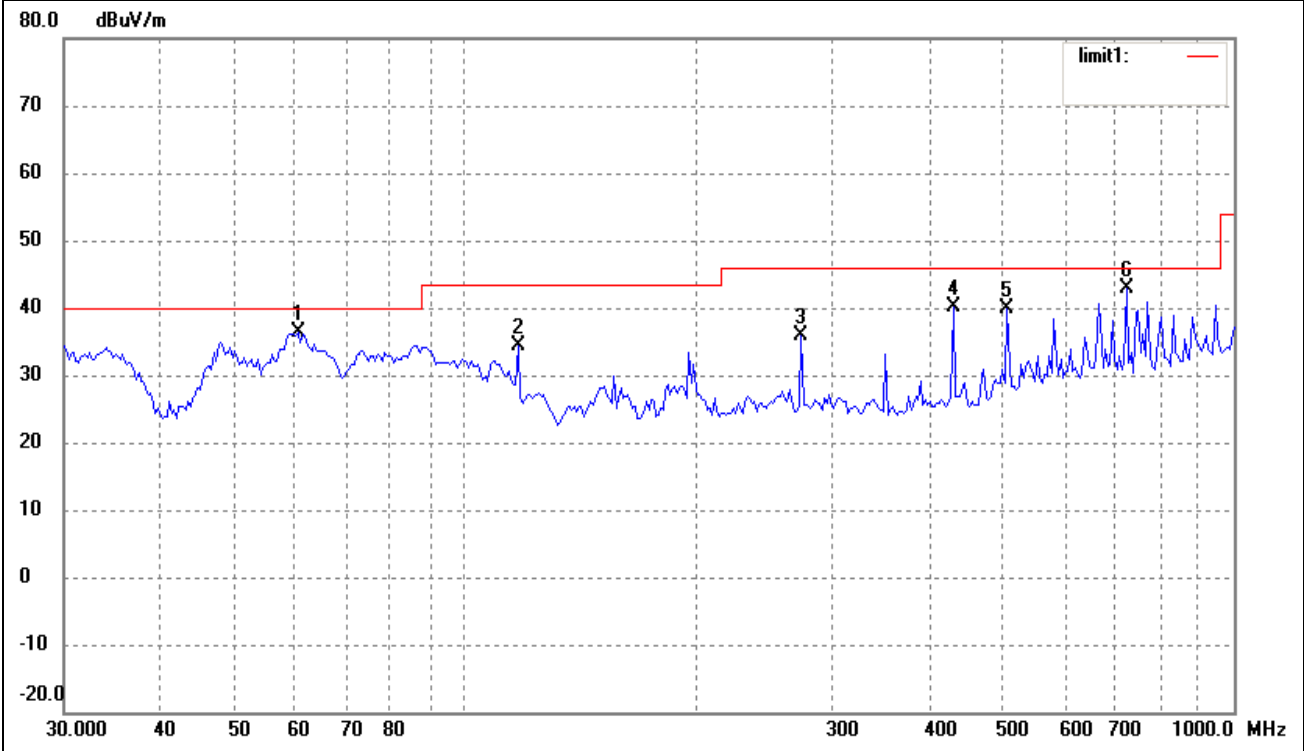


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	226	122	QP
1	33.5623	28.08	6.61	34.69	40.00	-5.31	360	100	peak
2	54.0711	23.85	7.50	31.35	40.00	-8.65	205	204	QP
3	140.3420	32.01	3.22	35.23	43.50	-8.27	126	105	QP
4	750.1082	26.00	15.01	41.01	46.00	-4.99	226	122	QP

*Radiated Disturbance**EUT: MID**M/N: HSG-X5**Operating Condition: Running with Program(HDMI OUT)**Test Specification: Horizontal & Vertical**Comment: Comment: AC 120V/60Hz/Adapter 9V**Horizontal*

No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	60.0690	29.61	7.16	36.77	40.00	-3.23	224	234	QP
2	195.1365	28.40	5.67	34.07	43.50	-9.43	360	100	peak
3	273.2341	28.07	8.27	36.34	46.00	-9.66	360	100	peak
4	431.0316	29.70	10.45	40.15	46.00	-5.85	216	141	QP
5	724.2611	27.64	14.74	42.38	46.00	-3.62	119	208	QP

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	60.4919	29.34	6.99	36.33	40.00	-3.67	164	206	QP
2	116.9495	28.64	5.78	34.42	43.50	-9.08	109	148	QP
3	273.2341	27.70	8.27	35.97	46.00	-10.03	360	200	peak
4	431.0316	29.66	10.45	40.11	46.00	-5.89	360	200	peak
5	506.4791	26.77	13.01	39.78	46.00	-6.22	360	100	peak
6	724.2611	28.18	14.74	42.92	46.00	-3.08	228	126	QP

Radiated Disturbance

EUT: MID

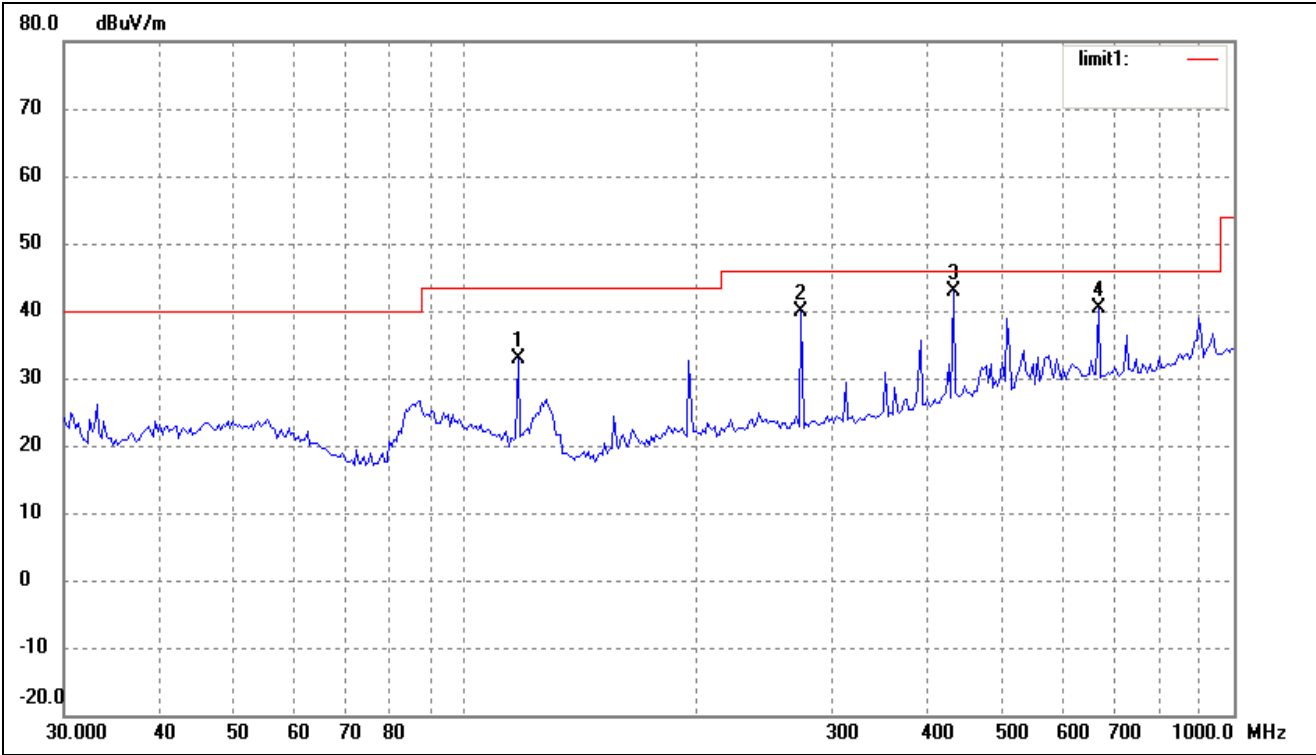
M/N: HSG-X5

Operating Condition: Downloading

Test Specification: Horizontal & Vertical

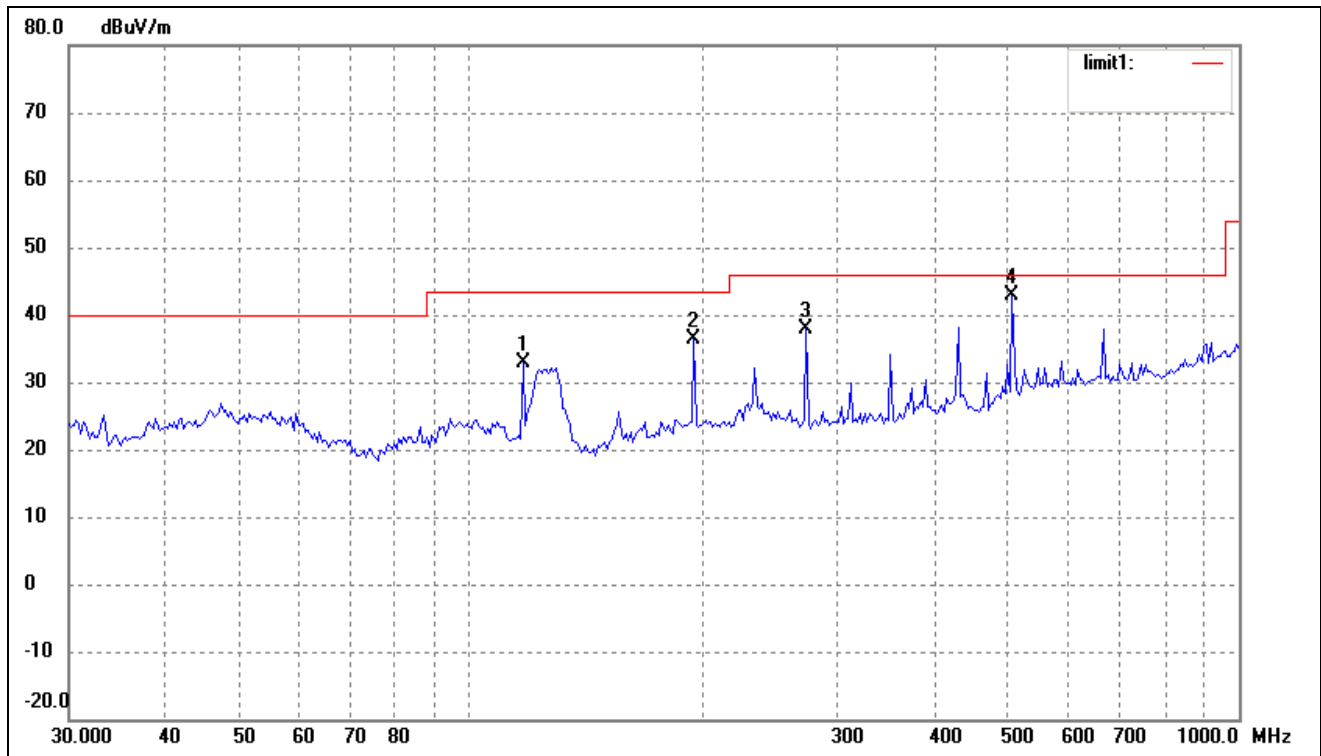
Comment: Comment: AC 120V/60Hz/Adapter 9V

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	116.9495	27.00	5.78	32.78	43.50	-10.72	360	200	peak
2	273.2341	31.65	8.27	39.92	46.00	-6.08	360	200	peak
3	431.0316	32.39	10.45	42.84	46.00	-3.16	228	108	QP
4	665.8034	26.03	14.39	40.42	46.00	-5.58	106	241	QP

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	116.9495	27.06	5.78	32.84	43.50	-10.66	360	100	peak
2	195.1365	30.81	5.67	36.48	43.50	-7.02	360	200	peak
3	273.2341	29.72	8.27	37.99	46.00	-8.01	360	200	peak
4	506.4791	29.89	13.01	42.90	46.00	-3.10	218	105	QP

Note: Testing is carried out with frequency rang 30MHz to 2GHz, which above 1GHz is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

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