

FCC Part 15B

Measurement and Test Report

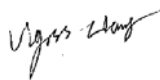
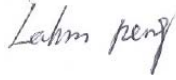

For

EA Excelsior Hangtong Computer Technology Co.,Ltd.

11F, Block A, Tsinghua Unis Infoport, Langshan Rd, Hi-Tech Industrial,

Nanshan, Shenzhen, China

FCC ID: 2AD5QW23

Test Rule(s):	<u>FCC Part 15 Subpart B</u>
Product Description:	<u>2in1</u>
Tested Model:	<u>W23</u>
Report No.:	<u>STR15018025I-4</u>
Tested Date:	<u>2015-01-06 to 2015-01-29</u>
Issued Date:	<u>2015-01-30</u>
Tested By:	<u>Vigoss Liang / Engineer</u> 
Reviewed By:	<u>Lahm Peng / EMC 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 Shenzhen SEM.Test Technology Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: EA Excelsior Hangtong Computer Technology Co.,Ltd.
 Address of applicant: 11F, Block A, Tsinghua Unis Infoport, Langshan Rd,
 Hi-Tech Industrial, Nanshan, Shenzhen, China
 Manufacturer: EA Excelsior Hangtong Computer Technology Co.,Ltd.
 Address of manufacturer: 11F, Block A, Tsinghua Unis Infoport, Langshan Rd,
 Hi-Tech Industrial, Nanshan, Shenzhen, China

General Description of EUT	
Product Name:	2in1
Trade Name:	/
Model No.:	W23
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	AC120V/60Hz; Battery: DC 7.6VV
Rated Current:	3A
Rated Power:	36W
Power Adapter Model:	BSC60-120300
	INPUT:AC100-240V~50-60Hz; OUTPUT:DC12V/3A
Lowest Internal Frequency:	32.768KHz
Highest Internal Frequency:	1GHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the EA Excelsior Hangtong Computer Technology 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 15.205, 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, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, 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.

1.4 Test Facility

FCC – Registration No.: 934118

Shenzhen SEM.Test Technology 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 934118.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

CNAS Registration No.: L4062

Shenzhen SEM.Test Technology 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 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101).

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Full-load	Charging +HDMI Output +USB(Downloading) +TF(Downloading) +Earphone +Burn In Test

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
AC Cable	1.1	Unshielded	Without Ferrite
DC Cable	1.5	Unshielded	With

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Display	DELL	U2410f	50642P246601H(B) ZL

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Earphone Cable	1.2	Unshielded	Without Core
HDMI Cable	1.5	Shielded	With Core

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.107 (a)	Conducted Emissions	Compliant
§ 15.109 (a)	Radiated Emissions	Compliant

N/A: not applicable

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.

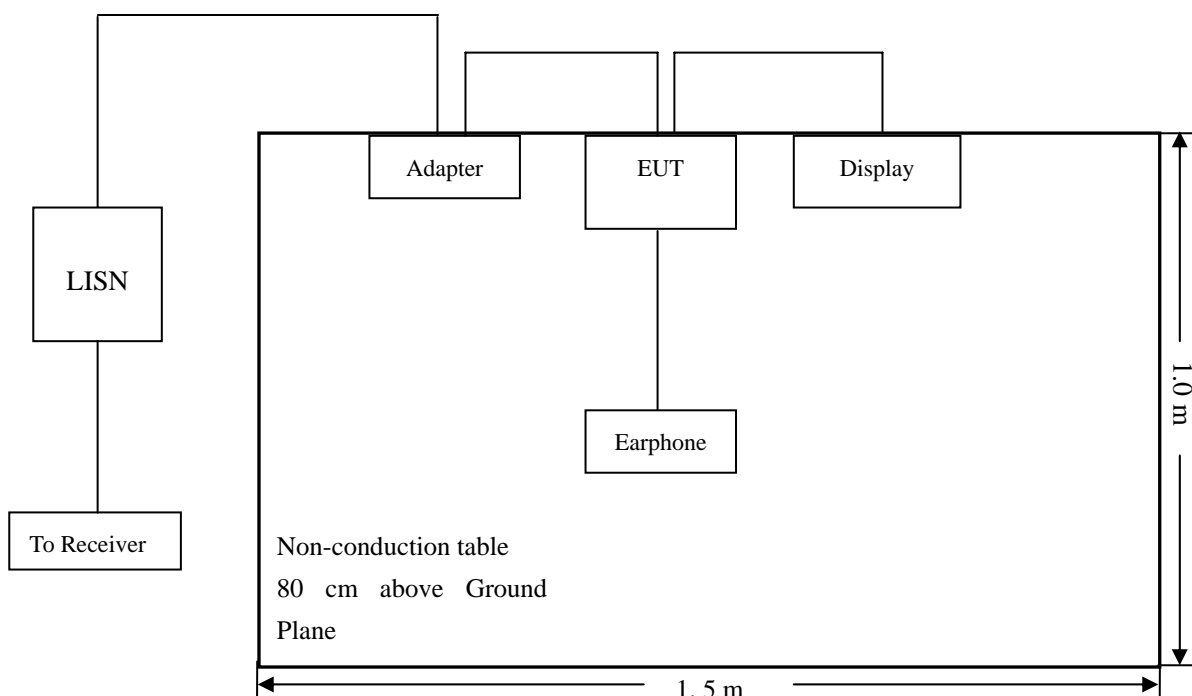
3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2014-05-28	2015-05-27
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2014-05-28	2015-05-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2014-05-28	2015-05-27

3.3 Test Procedure

Test is conducting under the description of ANSI C63.4-2014, 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:	23 °C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

3.6 Summary of Test Results/Plots

According to the data in section 7.6V, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

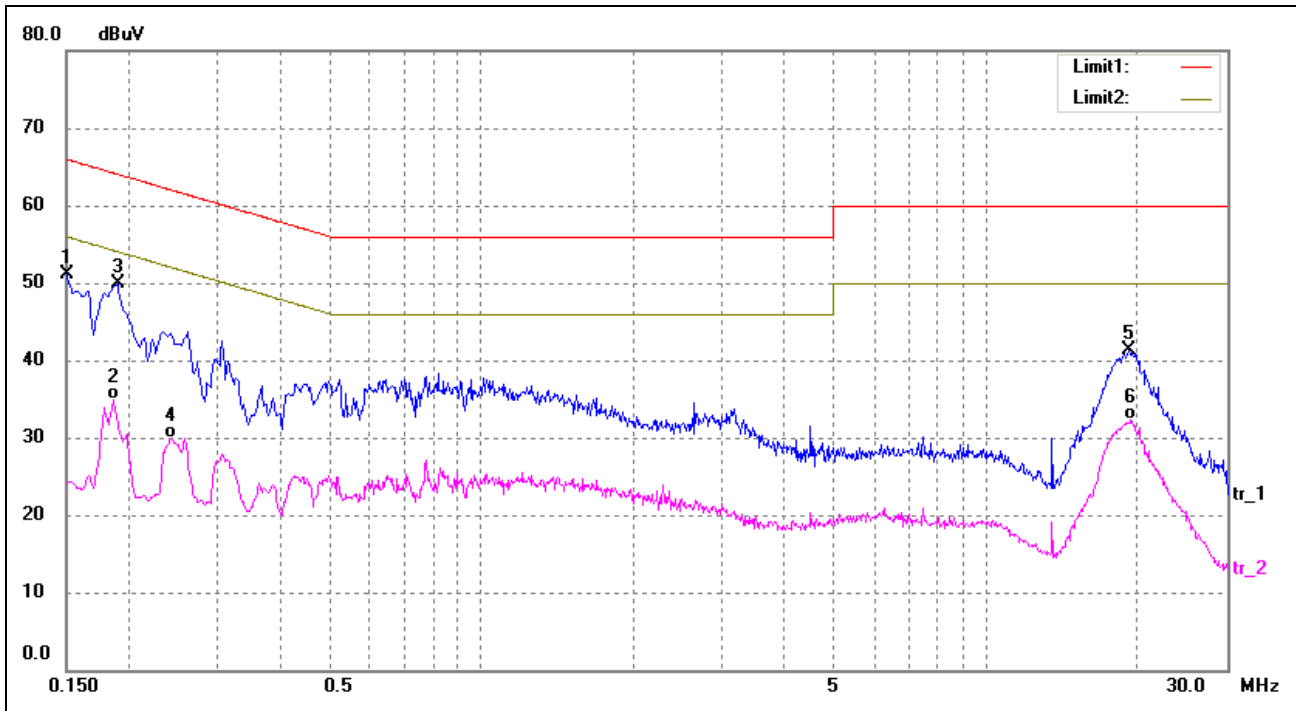
-14.19 dB at 0.1500 MHz in the Neutral, Peak detector, 0.15-30MHz

7.6V Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

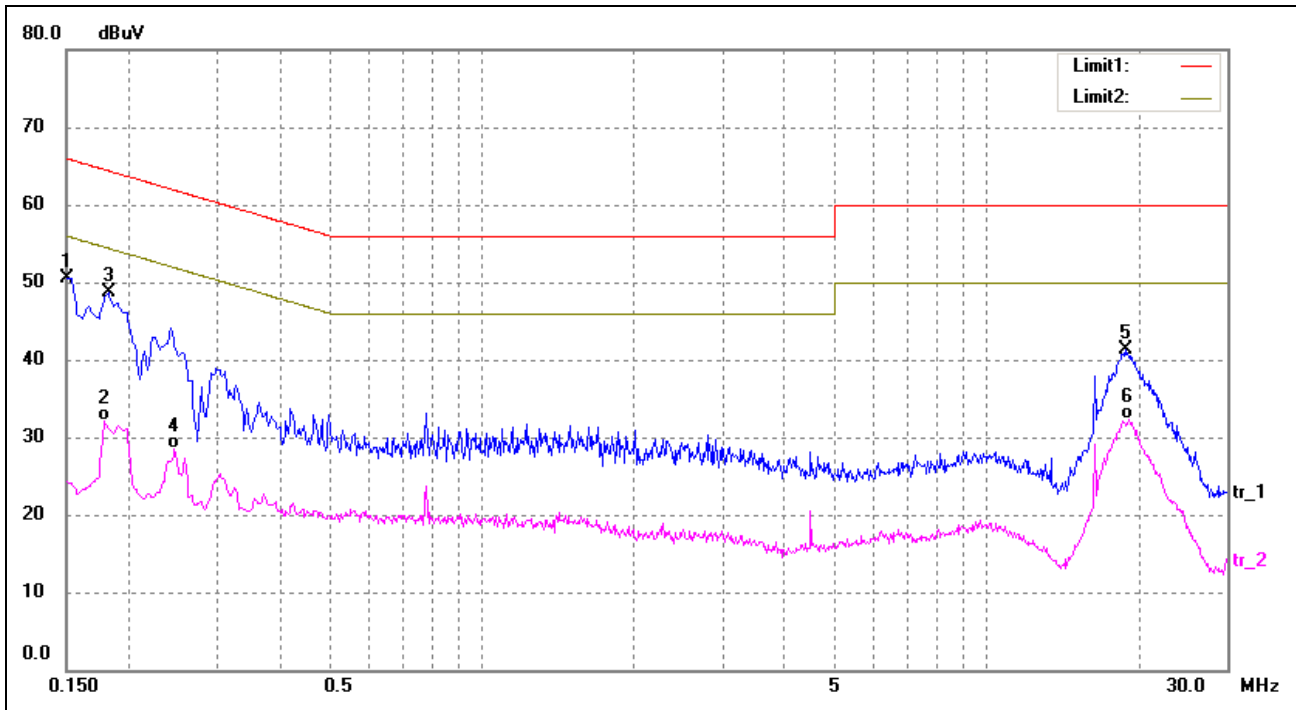
EUT: 2in1
 Tested Model: W23
 Operating Condition: TM1
 Comment: AC 120V/60Hz

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	41.61	9.50	51.11	66.00	-14.89	peak
2	0.1860	25.48	9.50	34.98	54.21	-19.23	AVG
3	0.1900	40.35	9.50	49.85	64.04	-14.19	peak
4	0.2420	20.42	9.50	29.92	52.03	-22.11	AVG
5	19.1260	29.48	11.83	41.31	60.00	-18.69	peak
6	19.3300	20.40	11.87	32.27	50.00	-17.73	AVG

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	41.08	9.50	50.58	66.00	-15.42	peak
2	0.1780	22.64	9.50	32.14	54.58	-22.44	AVG
3	0.1820	39.28	9.50	48.78	64.39	-15.61	peak
4	0.2460	19.01	9.50	28.51	51.89	-23.38	AVG
5	18.8780	29.59	11.78	41.37	60.00	-18.63	peak
6	19.1820	20.41	11.84	32.25	50.00	-17.75	AVG

4. Radiated Emissions

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

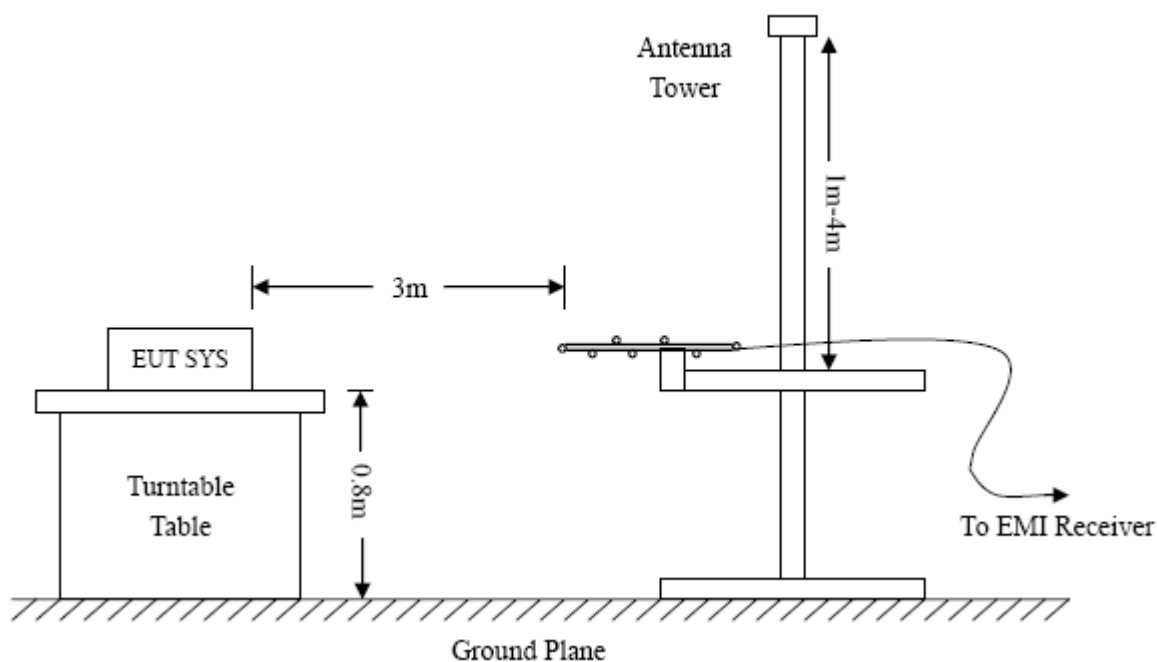
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2014-05-28	2015-05-27
EMI Test Receiver	R&S	ESVB	825471/005	2014-05-28	2015-05-27
Pre-amplifier	Agilent	8447F	3113A06717	2014-05-28	2015-05-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2014-05-28	2015-05-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2014-05-24	2015-05-23
Horn Antenna	ETS	3117	00086197	2014-05-24	2015-05-23
Loop Antenna	SCHWARZECK	HFRA 5165	9365	2014-05-24	2015-05-23

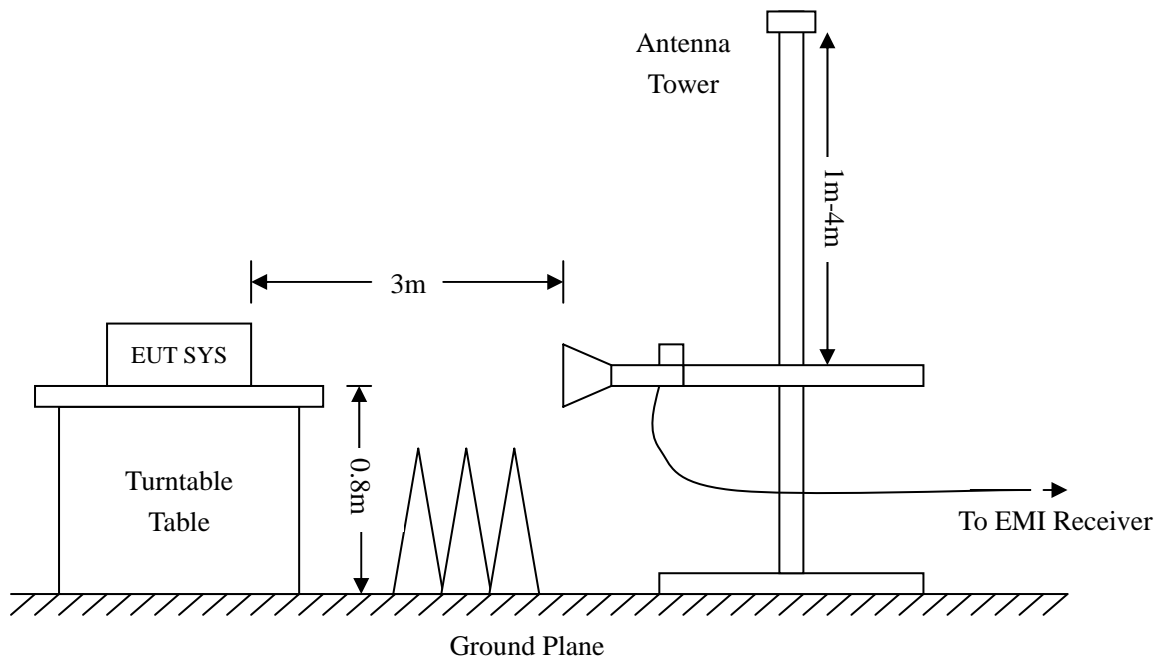
4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the 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

Frequency :9kHz-30MHz
 RBW=10KHz,
 VBW =30KHz
 Sweep time= Auto
 Trace = max hold
 Detector function = peak

Frequency :30MHz-1GHz
 RBW=120KHz,
 VBW=300KHz
 Sweep time= Auto
 Trace = max hold
 Detector function = peak, QP

Frequency :Above 1GHz
 RBW=1MHz,
 VBW=3MHz(Peak), 10Hz(AV)
 Sweep time= Auto
 Trace = max hold
 Detector function = peak, AV

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 a Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.109(a) Limit}$$

4.6 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

4.7 Summary of Test Results/Plots

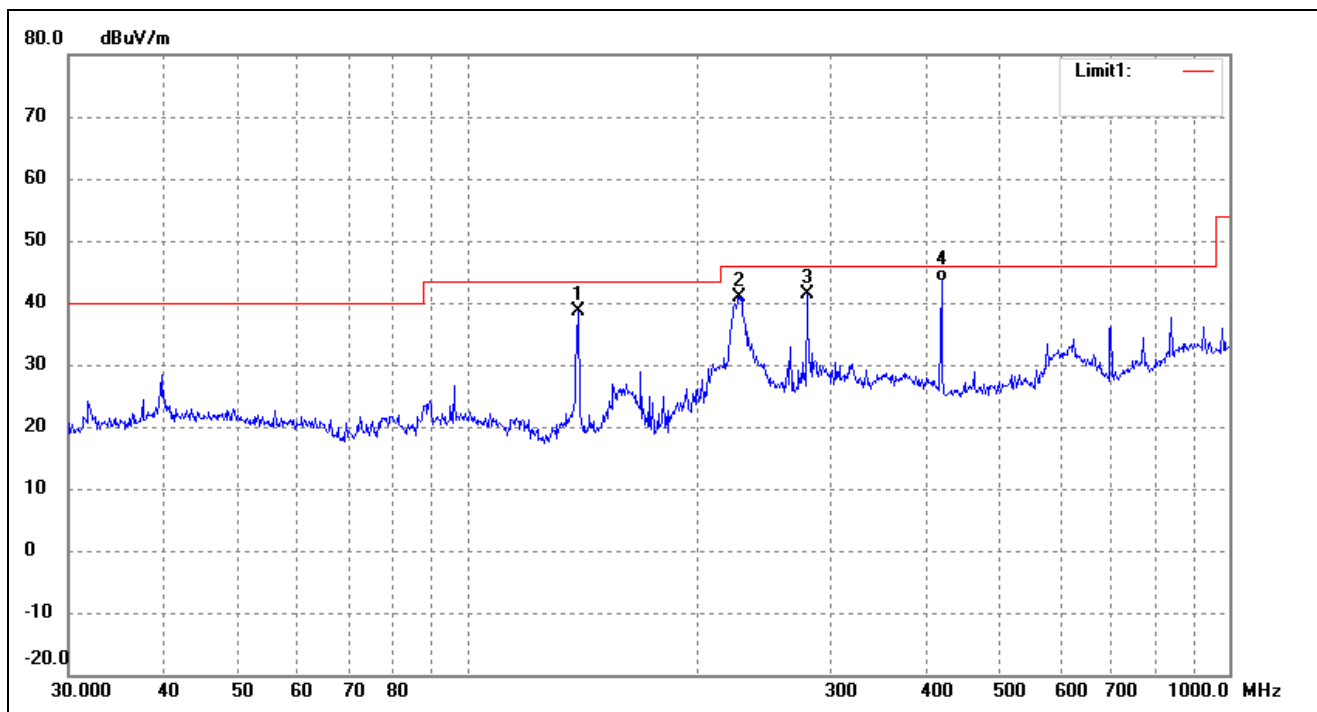
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-2.37 dB at 419.1081 MHz in the Vertical polarization, 9 kHz to 1 GHz, 3Meters

Plot of Radiated Emissions Test Data

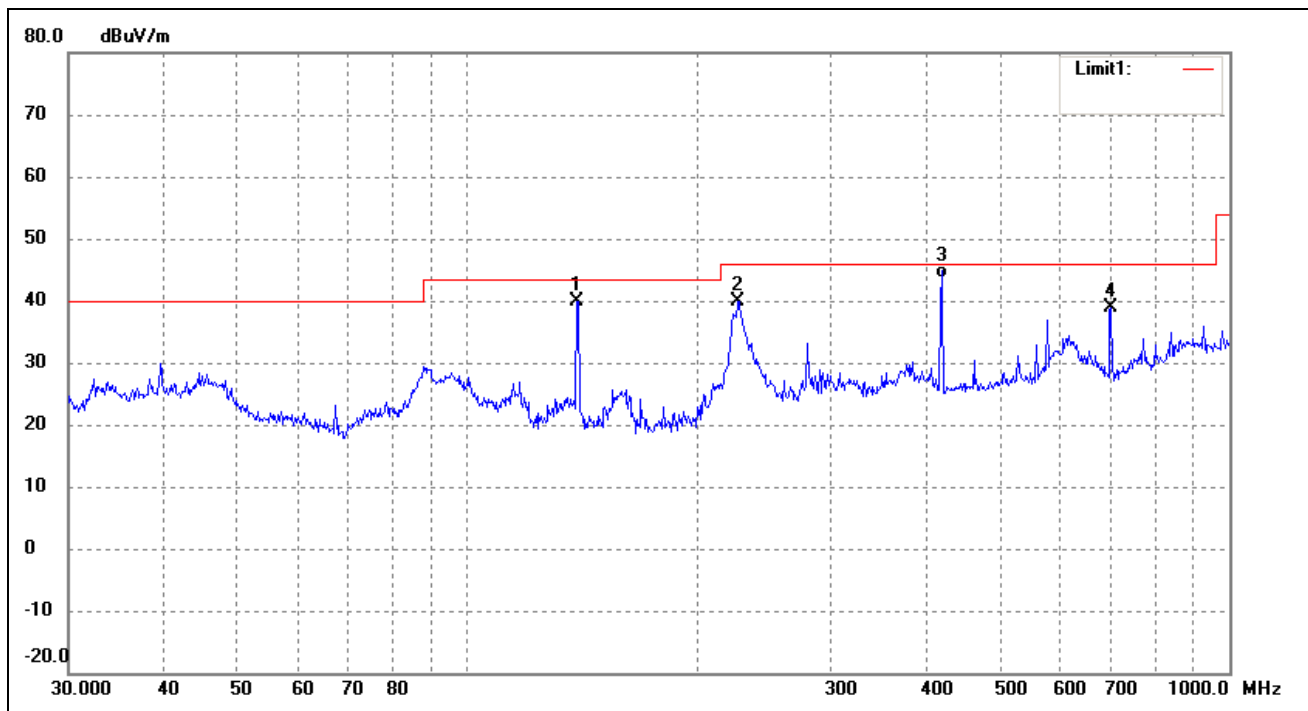
EUT: 2in1
Tested Model: W23
Operating Condition: TM1
Comment: AC 120V/60Hz

Test Specification: Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	139.8507	36.12	2.42	38.54	43.50	-4.96	58	150	peak
2	227.6906	35.35	5.57	40.92	46.00	-5.08	326	100	peak
3	279.0436	33.00	8.34	41.34	46.00	-4.66	29	120	peak
4	419.1080	34.01	9.42	43.43	46.00	-2.57	209	100	QP

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	139.3613	37.42	2.46	39.88	43.50	-3.62	51	100	peak
2	226.8936	34.37	5.53	39.90	46.00	-6.10	308	100	peak
3	419.1081	34.21	9.42	43.63	46.00	-2.37	120	100	QP
4	699.3046	25.12	17.6V6	38.88	46.00	-7.12	359	100	peak
5	139.3613	37.42	2.46	39.88	43.50	-3.62	359	100	peak

Note: Testing is carried out with frequency rang 9kHz to the 6GHz, which above 1GHz is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

The measurements greater than 20dB below the limit from 9kHz to 30MHz and test data are not provided.

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