

FCC Part 15B

Measurement and Test Report

For

Hena Digital Technology (Shenzhen) Co., Ltd

3F, South Tower, Jiuzhou Electric Building, Southern No, 12Rd, High-tech

Industrial Park, Nanshan District, Shenzhen, China

FCC ID: M7C-MID116

Test Rule(s):	<u>FCC Part 15 Subpart B</u>
Product Description:	<u>MID</u>
Tested Model:	<u>MID7317CM</u>
Report No.:	<u>STR13128171I-2</u>
Tested Date:	<u>2013-12-12 to 2013-12-31</u>
Issued Date:	<u>2013-12-31</u>
Tested By:	<u>Lebron Wang / Engineer</u> <i>Lebron Wang</i>
Reviewed By:	<u>Lahm Peng / EMC Manager</u> <i>Lahm peng</i>
Approved & Authorized By:	<u>Jandy so / PSQ Manager</u> <i>Jandyso</i>
Prepared By:	

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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: Hena Digital Technology (Shenzhen) Co., Ltd
 Address of applicant: 3F, South Tower, Jiuzhou Electric Building, Southern No, 12Rd, High-tech Industrial Park, Nanshan District, Shenzhen, China
 Manufacturer: Hena Digital Technology (Shenzhen) Co., Ltd
 Address of manufacturer: 3F, South Tower, Jiuzhou Electric Building, Southern No, 12Rd, High-tech Industrial Park, Nanshan District, Shenzhen, China

General Description of EUT	
Product Name:	MID
Trade Name:	/
Model No.:	MID7317CM
Adding Model(s):	NID-7011,MID7317HCM,MID7317CE,MID7317HCE, MY7317P,MW-7317,MY73**P,MY73*G,MY73**E,MY73**S, MW73**P,MW73**G,MW73**E,MW73**S,MID73**CM, MID73**CE, MID73**HCM, MID73**HCE(** Can be 01-99)
<p><i>Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model MID7317CM, but the circuit and the electronic construction do not change, declared by the manufacturer.</i></p>	

Technical Characteristics of EUT	
Rated Voltage:	DC 3.7V battery; Adapter DC 5V charging
Rated Current:	1.5A
Rated Power:	7.5W
Power Adapter Model:	SDF0500150A1BA
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 Hena Digital Technology (Shenzhen) 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 C63.4-2003, 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.

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	Charging & Playing & HDMI	Connect to Adapter and Display and Earphone
TM2	Downloading	Connected to PC
TM3		

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	0.2	Unshielded	Without Core
Earphone Cable	1.0	Unshielded	Without Core
Adapter Cable	1.1	Unshielded	Without Core

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Notebook Computer	Lenovo	20007	EB12648265
Display	DELL	IN1920C	Q40G18N-700-1B ZA

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
HDMI Cable	1.6	Unshielded	Without 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.

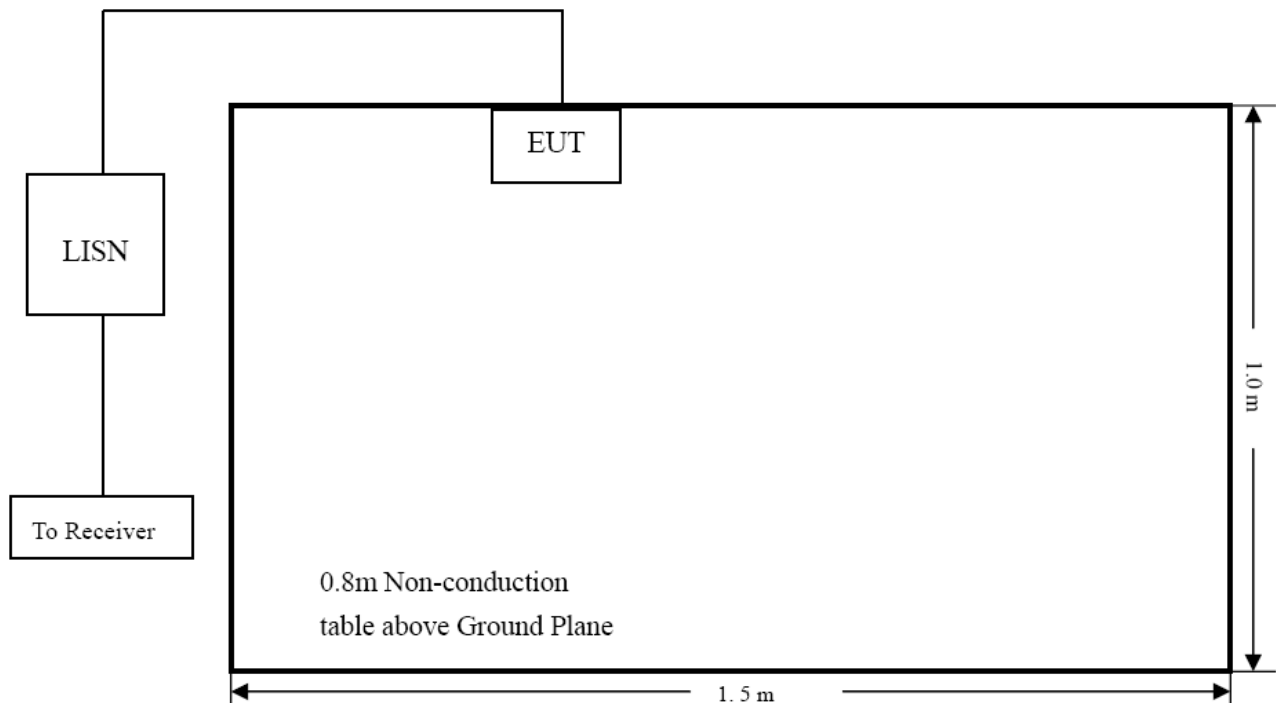
3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2013-05-07	2014-05-06
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2013-05-07	2014-05-06
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2013-05-07	2014-05-06

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:	23 °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 Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

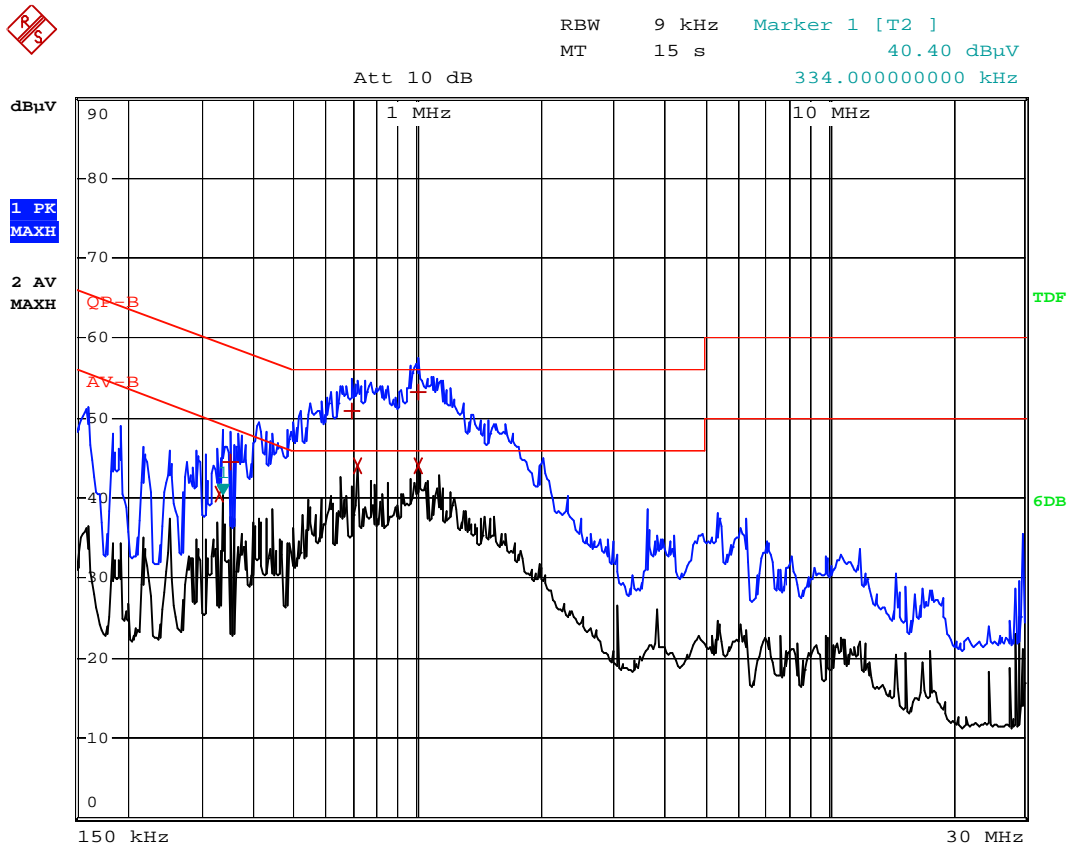
-1.01 dB at 0.774 MHz in the **Line, Average** detector, 0.15-30MHz

3.7 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

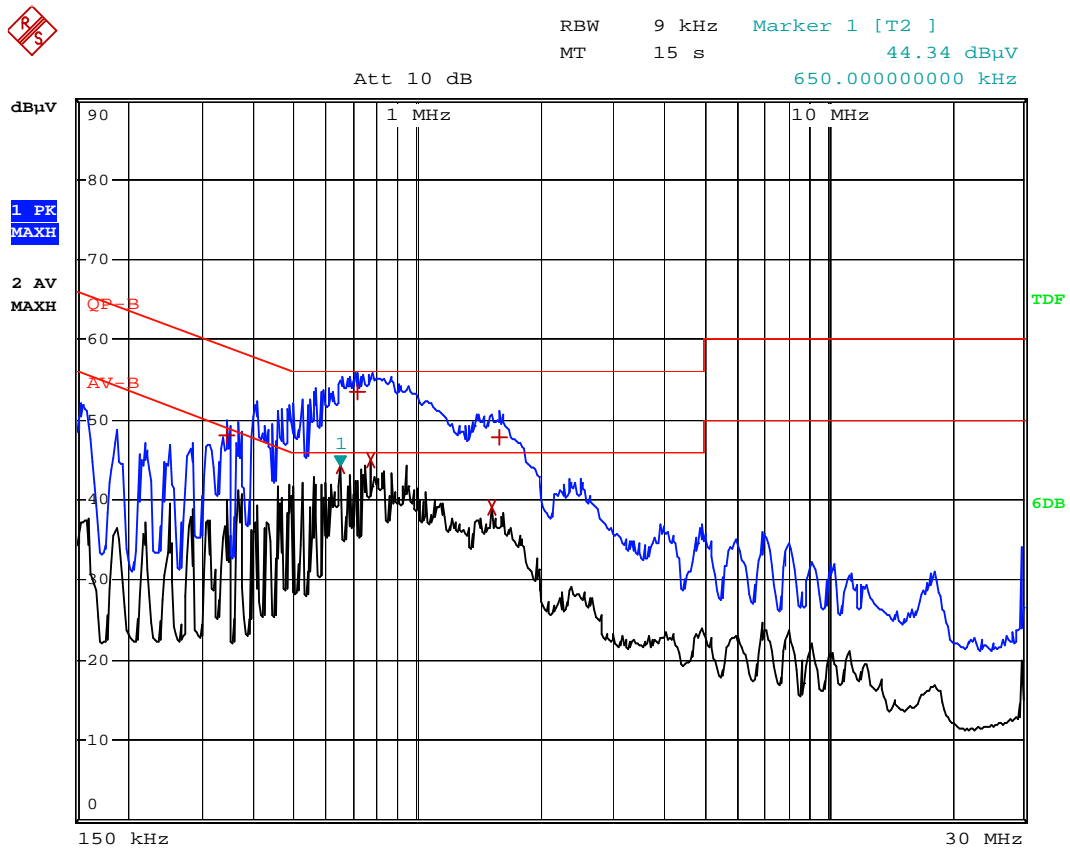
EUT: MID
 Tested Model: MID7317CM
 Operating Condition: Charging & Playing
 Comment: AC 120V/60Hz; Adapter DC 5V/1.5A

Test Specification: Neutral



EDIT PEAK LIST (Prescan Results)			
Trace1:	QP-B		
Trace2:	AV-B		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
2 Average	334 kHz	40.39	-8.95
1 Quasi Peak	350 kHz	44.57	-14.38
1 Quasi Peak	690 kHz	50.89	-5.11
2 Average	718 kHz	43.95	-2.04
1 Quasi Peak	1.006 MHz	53.25	-2.74
2 Average	1.01 MHz	43.96	-2.03

Test Specification: Line



EDIT PEAK LIST (Prescan Results)			
Trace1:	QP-B		
Trace2:	AV-B		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Quasi Peak	342 kHz	48.10	-11.04
2 Average	650 kHz	44.33	-1.66
1 Quasi Peak	718 kHz	53.61	-2.38
2 Average	774 kHz	44.99	-1.01
2 Average	1.518 MHz	39.07	-6.92
1 Quasi Peak	1.586 MHz	47.80	-8.19

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

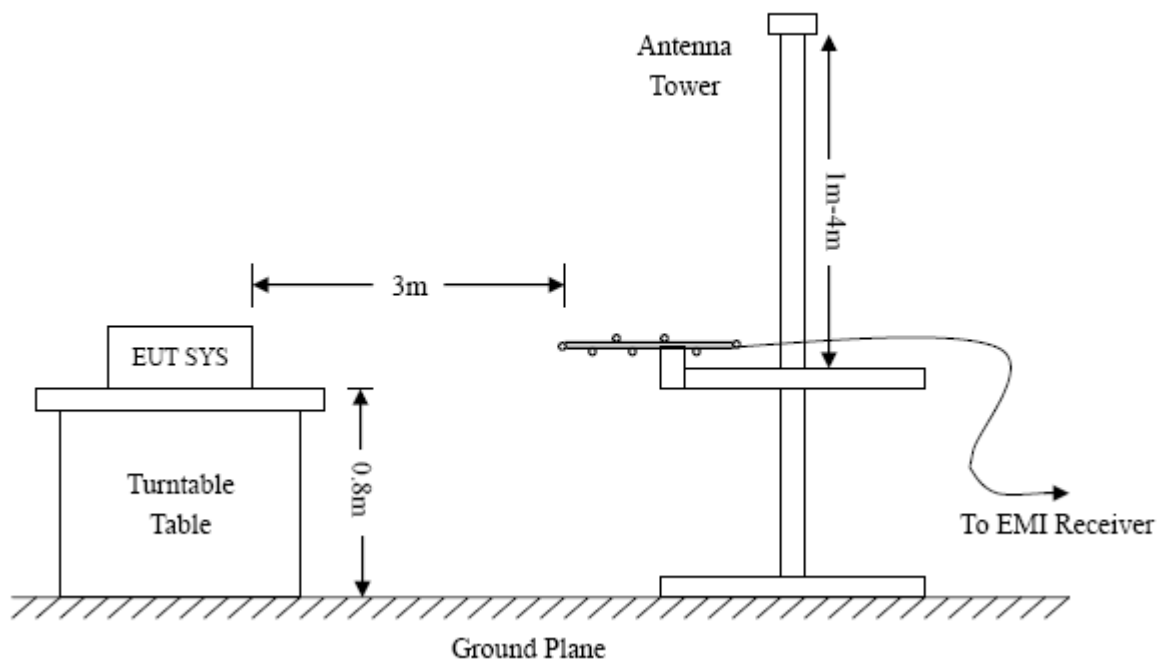
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2013-05-07	2014-05-06
EMI Test Receiver	R&S	ESVB	825471/005	2013-05-07	2014-05-06
Pre-amplifier	Agilent	8447F	3113A06717	2013-05-07	2014-05-06
Pre-amplifier	Compliance Direction	PAP-0118	24002	2013-05-07	2014-05-06
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2013-04-20	2014-04-19
Horn Antenna	ETS	3117	00086197	2013-04-20	2014-04-19
Loop Antenna	SCHWARZECK	HFRA 5165	9365	2013-04-20	2014-04-19

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 15.109 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	Frequency :30MHz-1GHz	Frequency :Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW =30KHz	VBW=300KHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak, QP	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 -6dBμV means the emission is 6dBμV 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

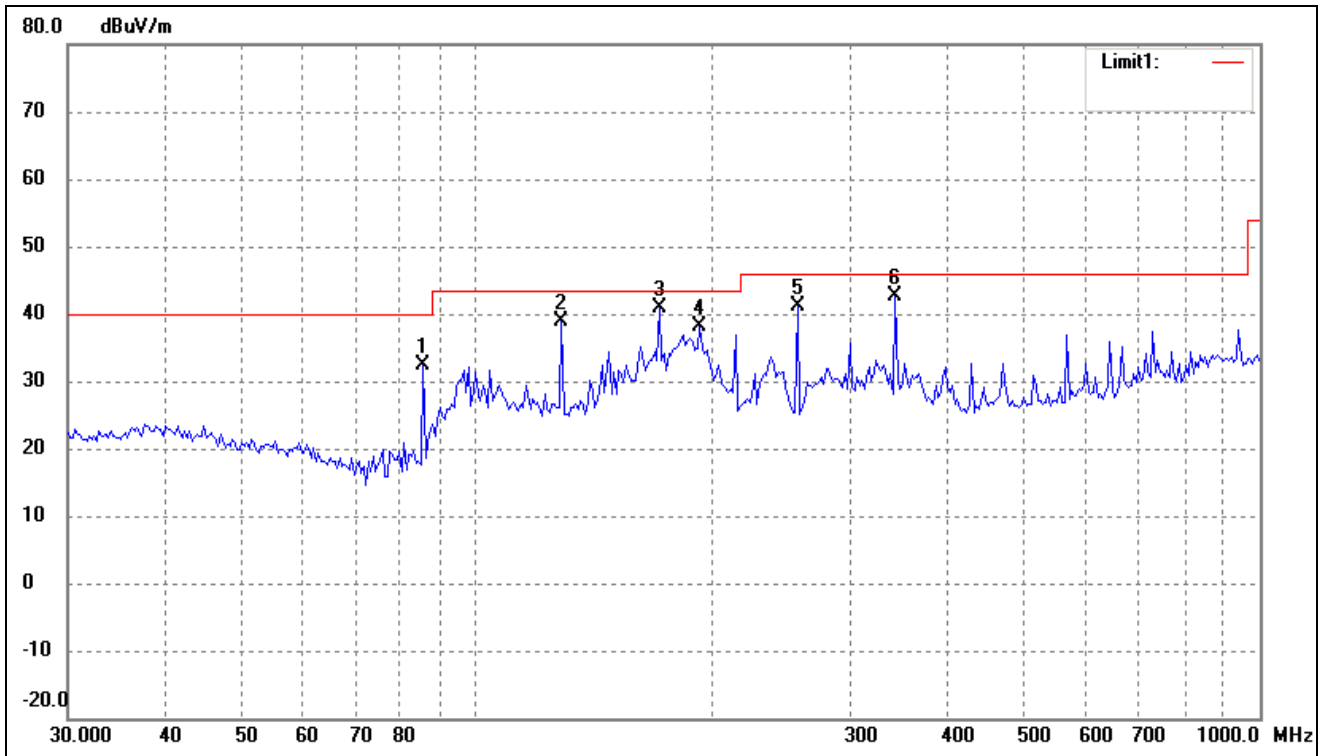
4.7 Summary of Test Results/Plots

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

-2.59 dB at 128.1129 MHz in the Vertical polarization, 9 kHz to 6 GHz, 3Meters

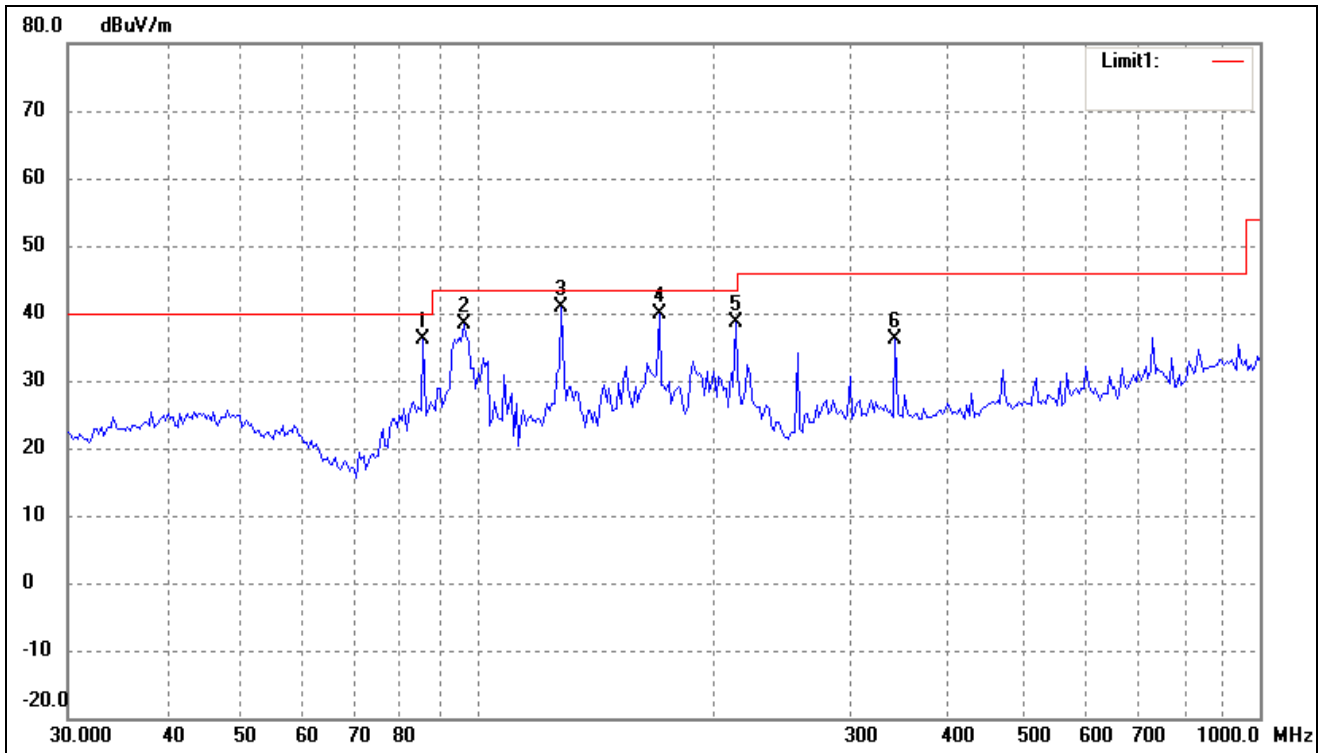
Plot of Radiated Emissions Test Data

EUT: MID
 Tested Model: MID7317CM
 Operating Condition: Charging & Playing & HDMI
 Comment: AC 120V/60Hz; Adapter DC 5V/1.5A
 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	85.2981	30.02	2.39	32.41	40.00	-7.59	168	100	peak
2	128.1129	35.40	3.37	38.77	43.50	-4.73	125	100	peak
3	170.7925	38.22	2.68	40.90	43.50	-2.60	148	100	peak
4	192.4185	34.88	3.33	38.21	43.50	-5.29	125	100	peak
5	256.5210	34.23	6.92	41.15	46.00	-4.85	155	100	peak
6	341.9787	33.92	8.77	42.69	46.00	-3.31	178	100	peak

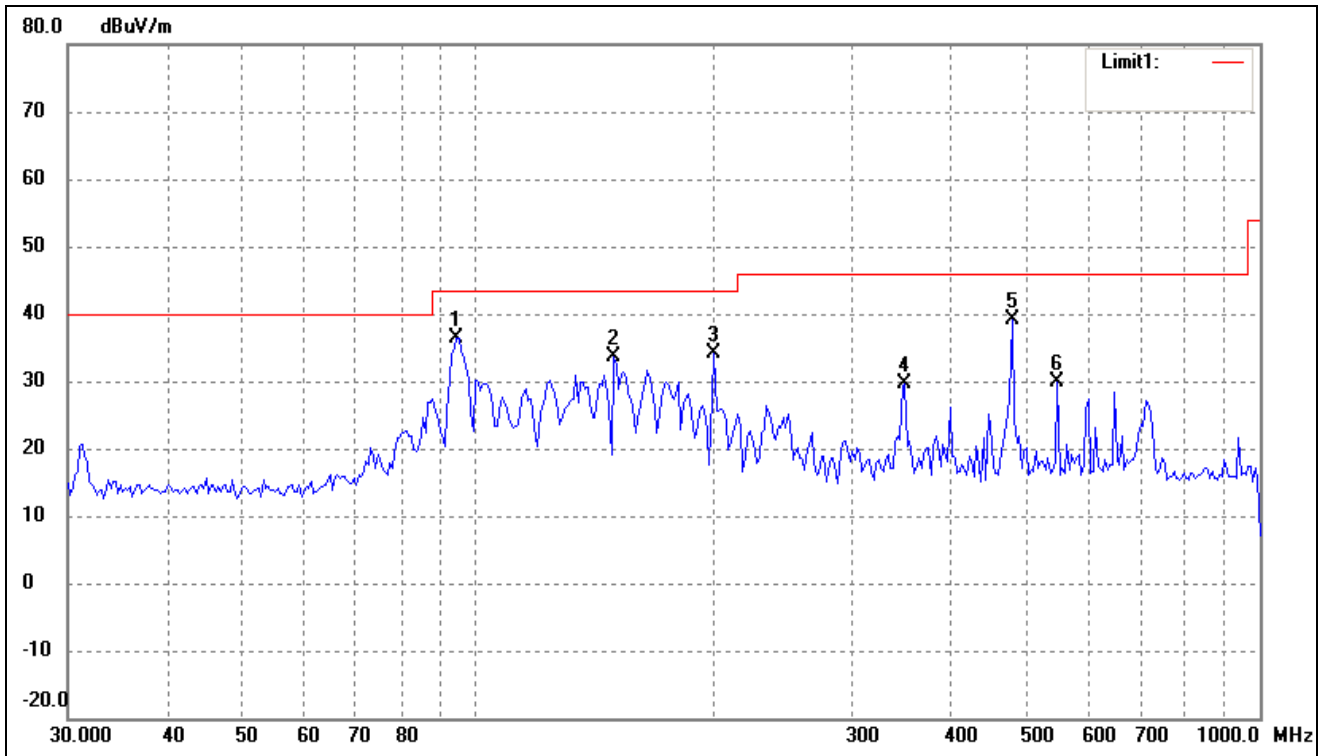
Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	85.2981	33.63	2.39	36.02	40.00	-3.98	145	100	peak
2	96.0986	33.13	5.14	38.27	43.50	-5.23	125	100	peak
3	128.1129	37.54	3.37	40.91	43.50	-2.59	165	100	peak
4	170.7925	37.31	2.68	39.99	43.50	-3.51	178	100	peak
5	213.7633	33.97	4.66	38.63	43.50	-4.87	225	100	peak
6	341.9787	27.39	8.77	36.16	46.00	-9.84	250	100	peak

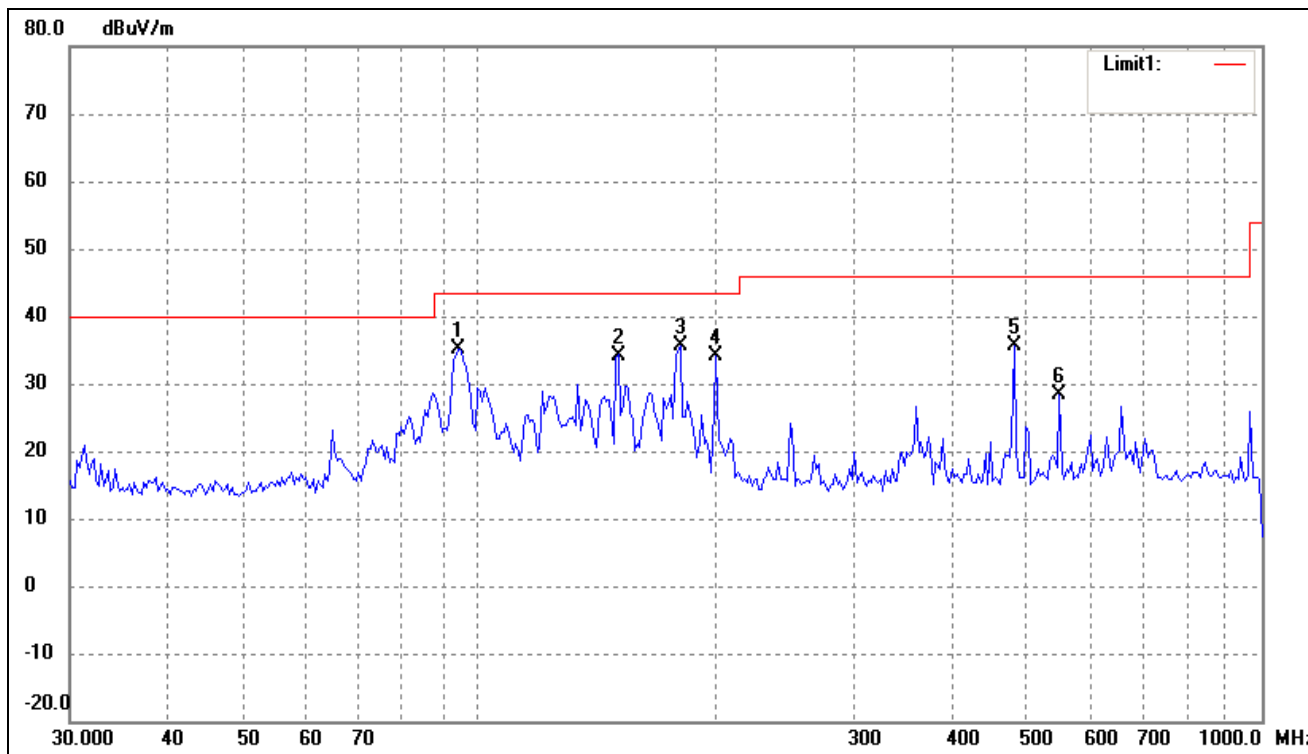
Plot of Radiated Emissions Test Data

EUT: MID
 Tested Model: MID7317CM
 Operating Condition: Downloading
 Comment: AC 120V/60Hz; Adapter DC 5V/1.5A
 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	94.0979	31.75	4.64	36.39	43.50	-7.11	125	100	peak
2	149.4857	31.19	2.50	33.69	43.50	-9.81	145	100	peak
3	200.6881	30.45	3.72	34.17	43.50	-9.33	178	100	peak
4	351.7079	20.64	9.02	29.66	46.00	-16.34	165	100	peak
5	482.2156	28.83	10.19	39.02	46.00	-6.98	185	100	peak
6	550.9480	18.46	11.42	29.88	46.00	-16.12	225	100	peak

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	94.0979	30.53	4.64	35.17	43.50	-8.33	102	100	peak
2	150.5378	31.75	2.50	34.25	43.50	-9.25	152	100	peak
3	180.6488	32.86	2.78	35.64	43.50	-7.86	145	100	peak
4	200.6881	30.36	3.72	34.08	43.50	-9.42	165	100	peak
5	482.2156	25.43	10.19	35.62	46.00	-10.38	122	100	peak
6	550.9480	16.96	11.42	28.38	46.00	-17.62	184	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 6GHz and test data are not provided.

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