

FCC Part 15B

Measurement and Test Report

For

AWOX

93 Place Pierre Duhem, Montpellier, France

FCC ID: A7K-ST2W

Test Rule(s):	<u>FCC Part 15 Subpart B</u>	
Product Description:	<u>HDMI Wi-Fi Smart TV stick 2</u>	
Tested Model:	<u>ST2-W</u>	
Report No.:	<u>STR14038267I-2</u>	
Tested Date:	<u>2014-03-14 to 2014-03-22</u>	
Issued Date:	<u>2014-03-25</u>	
Tested By:	<u>Susan Su / Engineer</u>	<i>Susan Su</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>
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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: AWOX
 Address of applicant: 93 Place Pierre Duhem, Montpellier, France

Manufacturer: SHENZHEN GAEA ELECTRONICS CO., LTD
 Address of manufacturer: 2-3, Datian Xiaoqu, Tongfuyu Industrial Zone, Buyong, Shajing Street, Bao'an District, Shenzhen, Guangdong Province, China

General Description of EUT	
Product Name:	HDMI Wi-Fi Smart TV stick 2
Trade Name:	Awox StrimSTICK
Model No.:	ST2-W
Adding Model(s):	A20
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	DC 5V
Rated Current:	/
Rated Power:	/
Power Adapter Model:	ECF0500100U1BU Input: AC 100-240V, 50-60Hz Output: DC 5V
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 AWOX 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	Playing	/
TM2	/	/
TM3	/	/
TM4	/	/

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
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Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Display	BENQ	VP2212	---
Mouse	DELL	MS111-P	---

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	1.0	Shielded	Without Ferrite
HDMI Cable	0.5	Shielded	Without Ferrite

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.

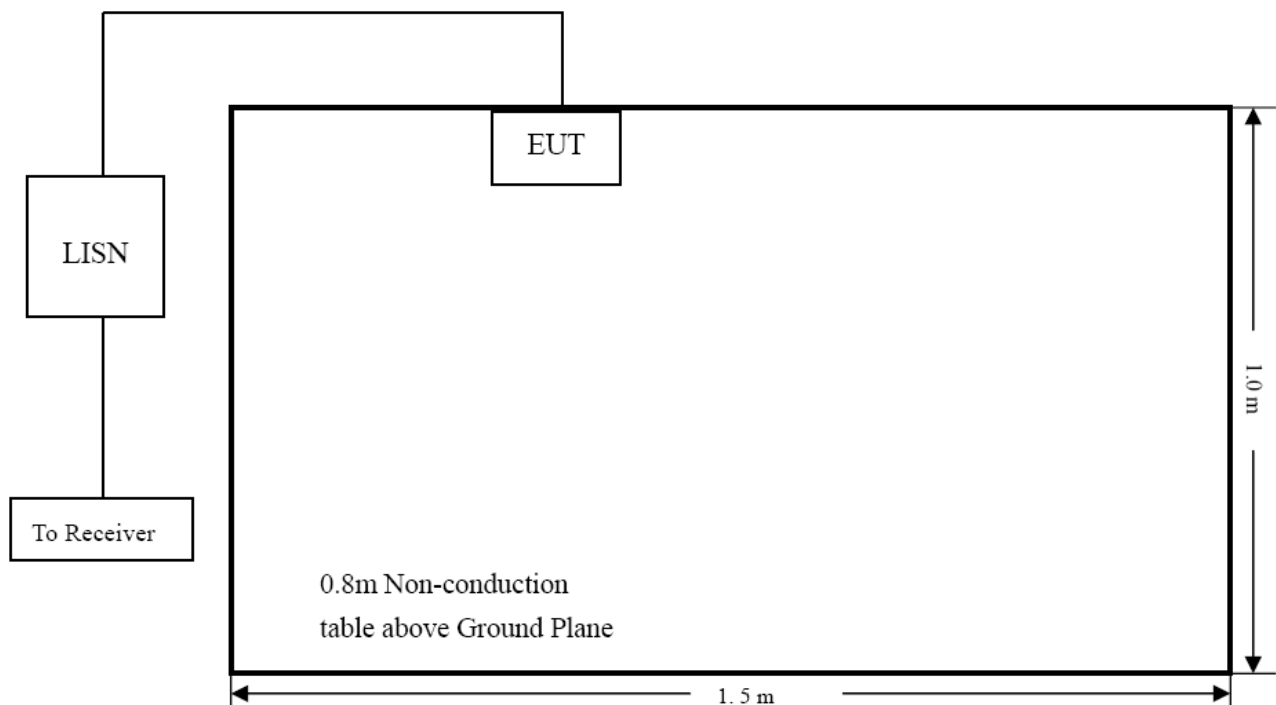
3.2 Test Equipment List and Details

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:

-16.01 dB at 0.510 MHz in the Line mode, Average detector, 0.15-30MHz

3.7 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

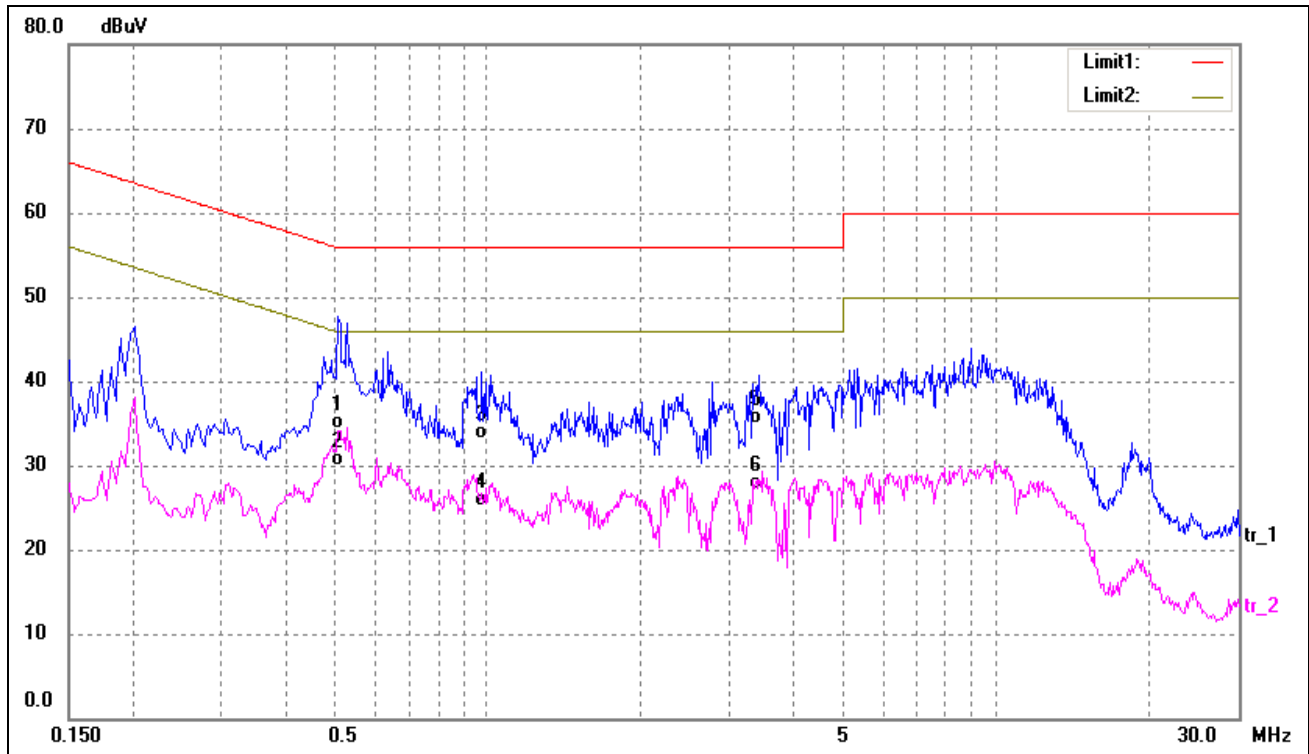
EUT: *HDMI Wi-Fi Smart TV stick 2*

Tested Model: *ST2-W*

Operating Condition: *Playing*

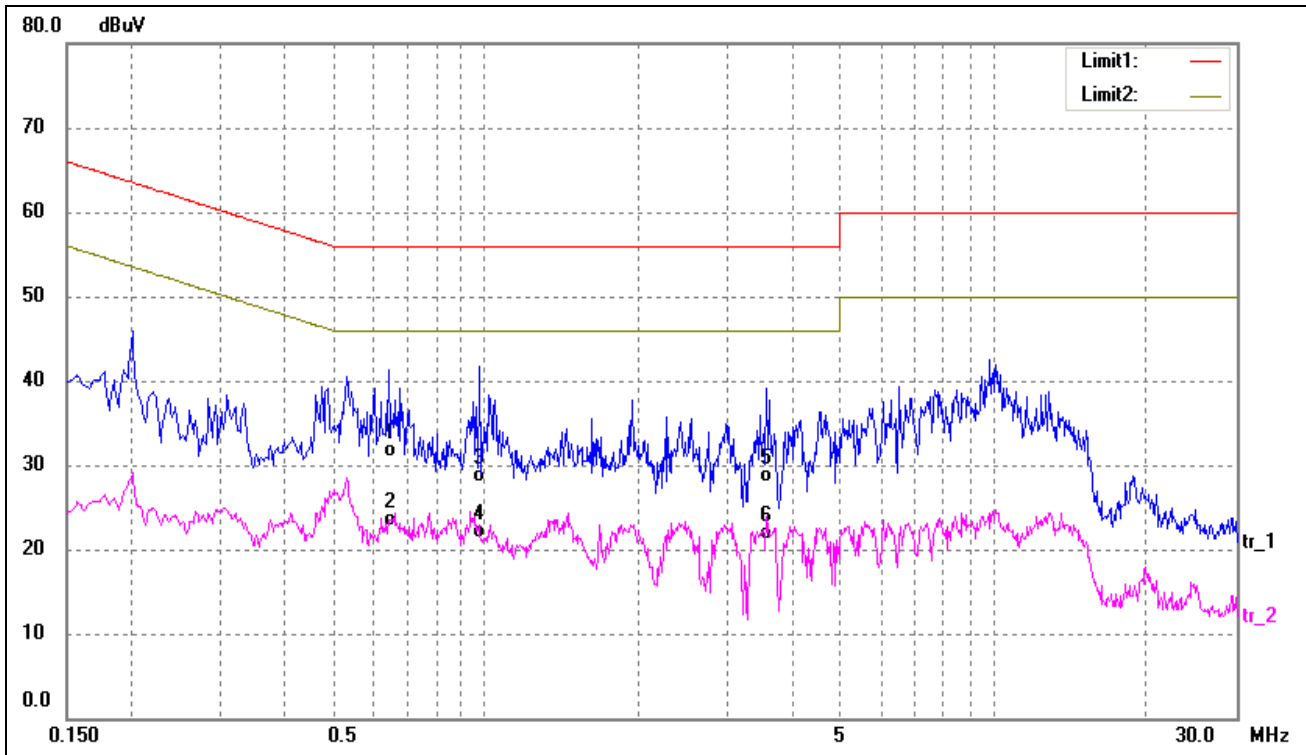
Comment: *AC 120V/60Hz; adapter DC 5V*

Test Specification: *Neutral*



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.5100	24.88	9.51	34.39	56.00	-21.61	QP
2*	0.5100	20.48	9.51	29.99	46.00	-16.01	AVG
3	0.9780	23.07	9.98	33.05	56.00	-22.95	QP
4	0.9780	15.17	9.98	25.15	46.00	-20.85	AVG
5	3.4340	25.00	10.00	35.00	56.00	-21.00	QP
6	3.4340	17.09	10.00	27.09	46.00	-18.91	AVG

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.6460	21.25	9.65	30.90	56.00	-25.10	QP
2*	0.6460	13.08	9.65	22.73	46.00	-23.27	AVG
3	0.9780	18.01	9.98	27.99	56.00	-28.01	QP
4	0.9780	11.35	9.98	21.33	46.00	-24.67	AVG
5	3.5780	17.95	10.00	27.95	56.00	-28.05	QP
6	3.5780	11.08	10.00	21.08	46.00	-24.92	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.

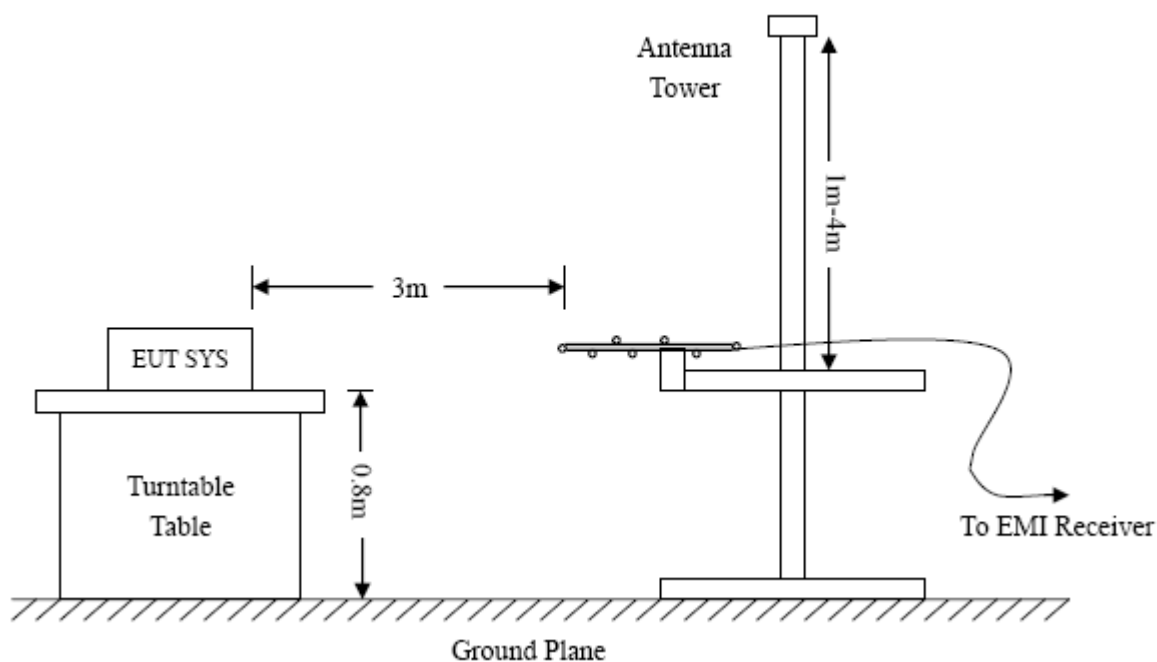
4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	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

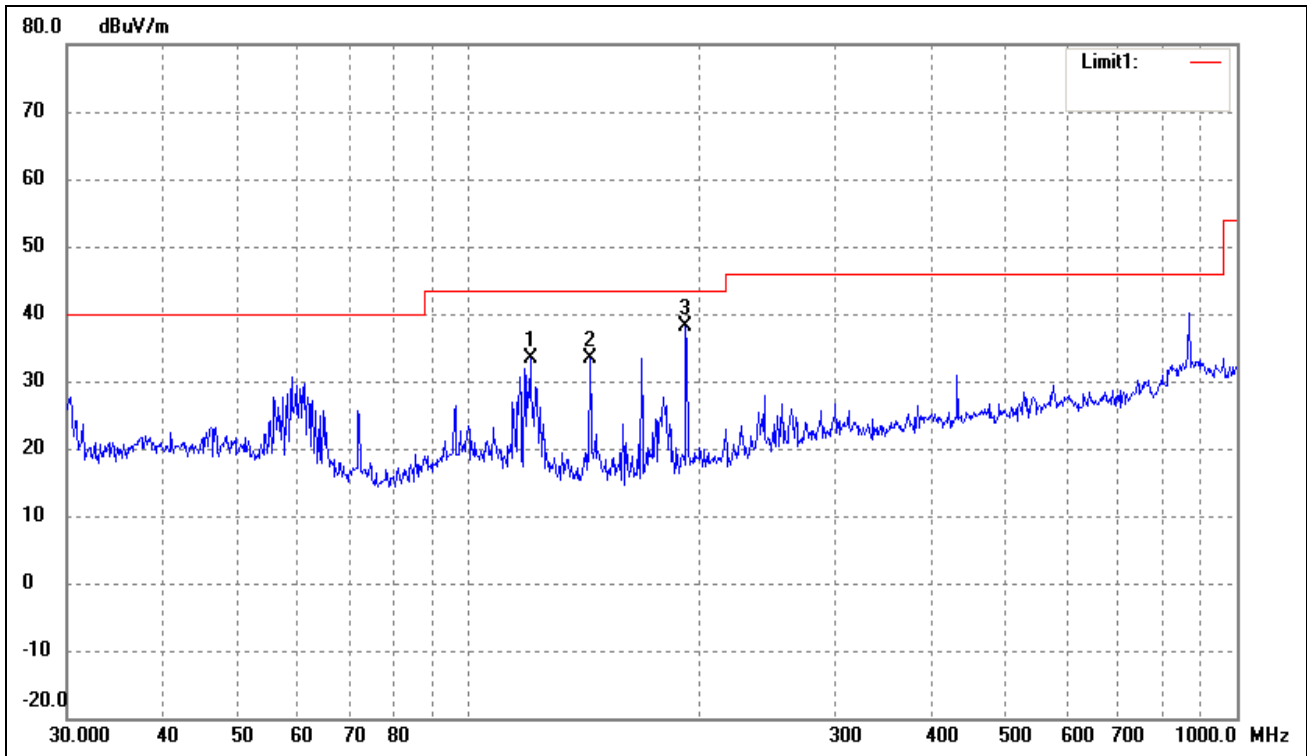
4.7 Summary of Test Results/Plots

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

-5.26 dB at 191.7450 MHz in the Horizontal polarization, 9 kHz to 5 GHz, 3Meters

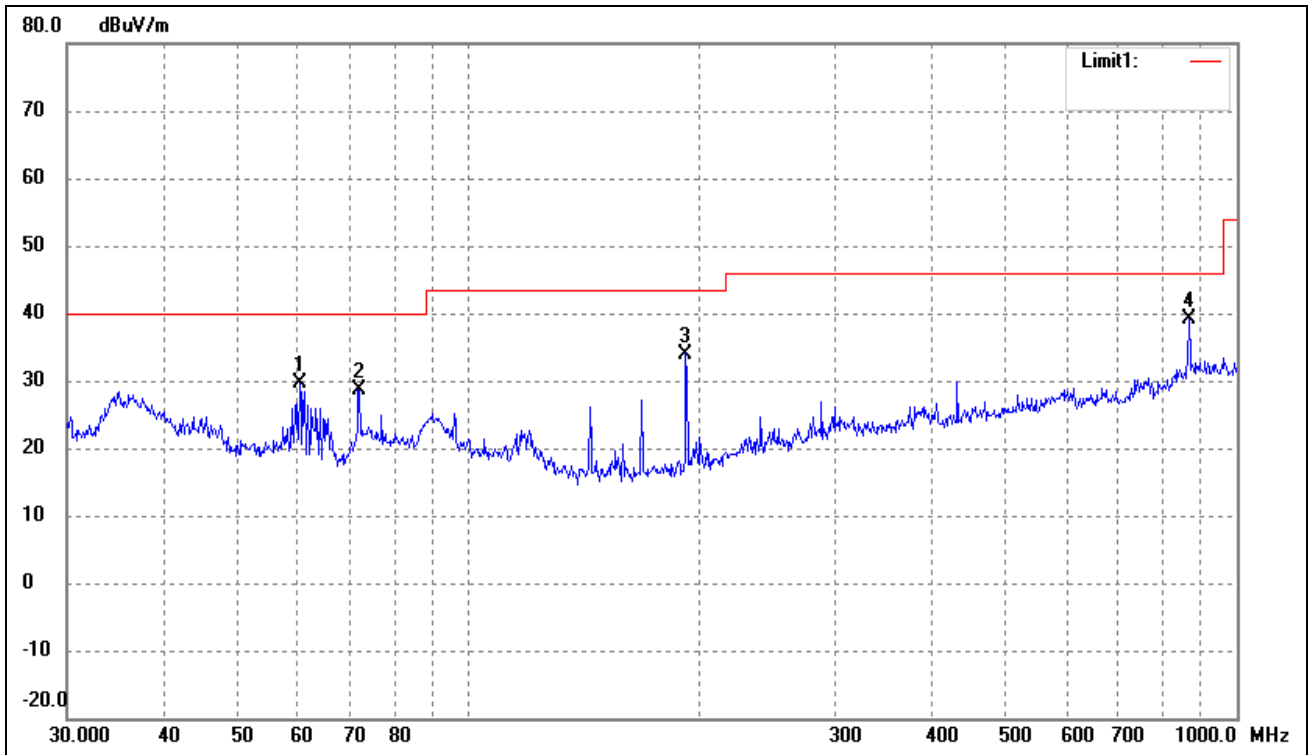
Plot of Radiated Emissions Test Data (Below 1GHz)

EUT: *HDMI Wi-Fi Smart TV stick 2*
 Tested Model: *ST2-W*
 Operating Condition: *TM1*
 Comment: *AC 120V/60Hz; adapter DC 5V*
 Test Specification: *Horizontal*



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Detector
1	120.2766	29.32	4.00	33.32	43.50	-10.18	360	100	peak
2	143.8295	31.04	2.45	33.49	43.50	-10.01	360	100	peak
3*	191.7450	34.95	3.29	38.24	43.50	-5.26	360	100	peak

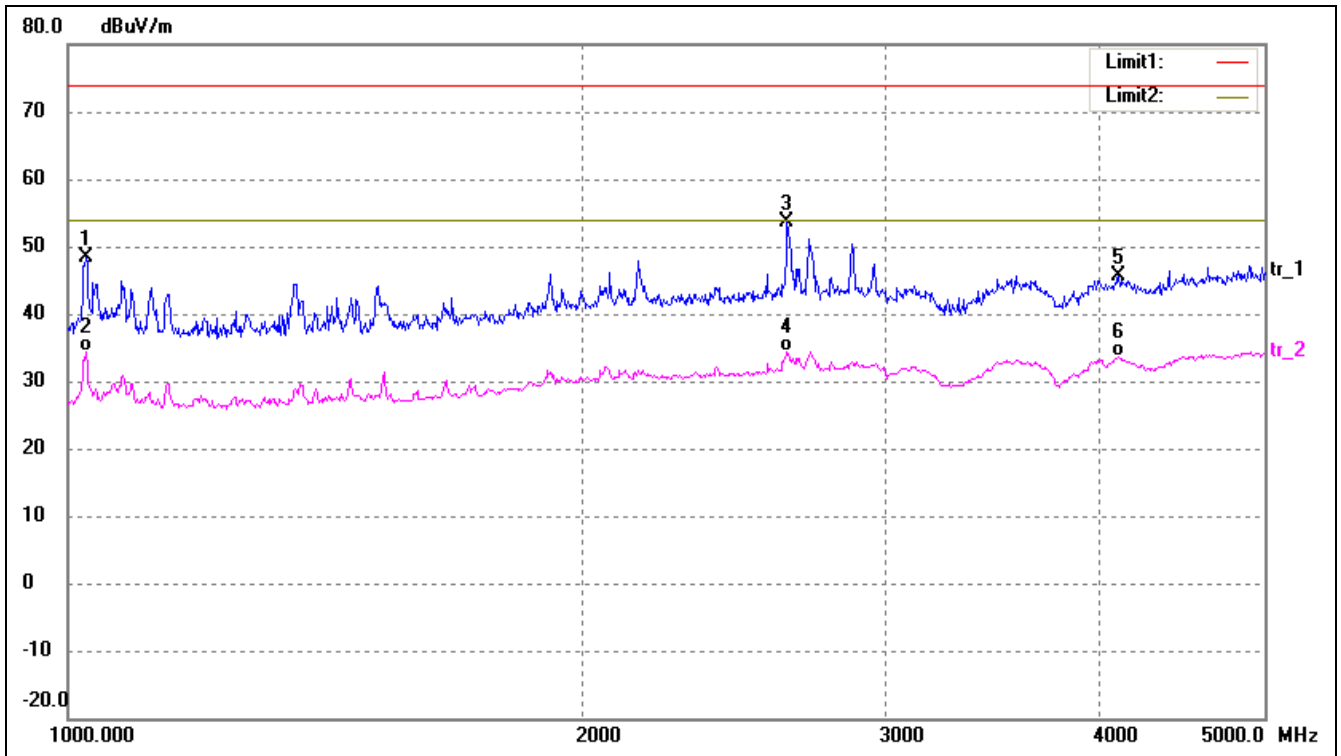
Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Detector
1	60.2801	24.36	5.29	29.65	40.00	-10.35	360	100	peak
2	72.0843	26.72	1.94	28.66	40.00	-11.34	360	100	peak
3	191.7450	30.71	3.29	34.00	43.50	-9.50	360	100	peak
4*	866.0879	22.65	16.45	39.10	46.00	-6.90	360	100	peak

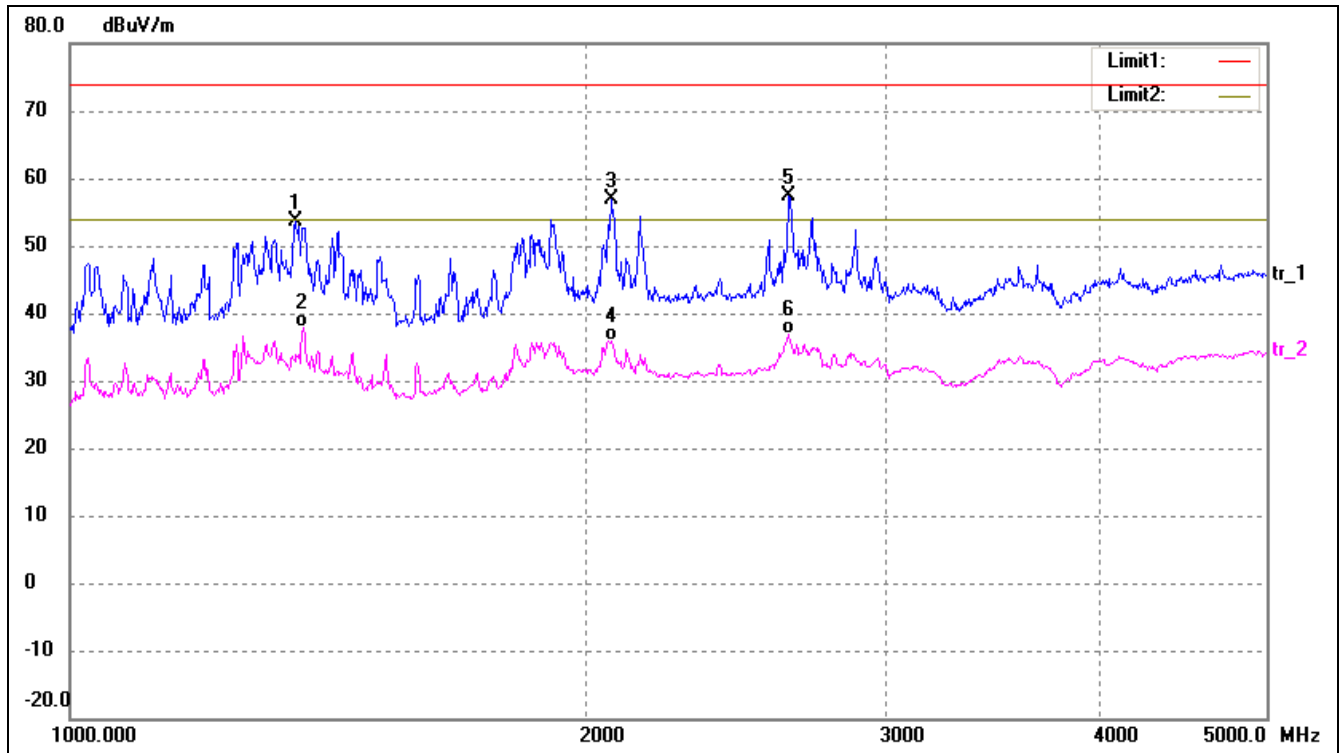
Plot of Radiated Emissions Test Data (Above 1GHz)

EUT: *HDMI Wi-Fi Smart TV stick 2*
 Tested Model: *ST2-W*
 Operating Condition: *TM1*
 Comment: *AC 120V/60Hz; adapter DC 5V*
 Test Specification: *Horizontal*



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Detector
1	1024.435	57.22	-8.96	48.26	74.00	-25.74	147	100	peak
2	1024.435	43.23	-8.96	34.27	54.00	-19.73	36	100	AVG
3	2630.758	56.70	-3.09	53.61	74.00	-20.39	244	100	peak
4*	2630.758	37.47	-3.09	34.38	54.00	-19.62	265	100	AVG
5	4108.617	46.15	-0.57	45.58	74.00	-28.42	17	100	peak
6	4108.617	34.14	-0.57	33.57	54.00	-20.43	360	100	AVG

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Detector
1	1353.338	61.80	-8.23	53.57	74.00	-20.43	247	100	peak
2*	1368.671	46.19	-8.19	38.00	54.00	-16.00	36	100	AVG
3	2069.829	61.11	-4.26	56.85	74.00	-17.15	247	100	peak
4	2073.163	40.25	-4.25	36.00	54.00	-18.00	125	100	AVG
5	2626.528	60.37	-3.09	57.28	74.00	-16.72	126	100	peak
6	2626.528	40.00	-3.09	36.91	54.00	-17.09	66	100	AVG

Note: Testing is carried out with frequency rang 9kHz to the 6GHz, The measurements greater than 20dB below the limit from 9kHz to 6GHz and test data are not provided.

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