FCC TEST REPORT

FCC ID	: YVV-AEE21222325
Applicant	: Shenzhen AEE Technology CO., LTD
Address	: AEE Hi-Tech Park, Sun Industrial Area, Xili, Nanshan District, Shenzhen, P.R.C 518108
Manufacturer	: The same as above
Address	: The same as above
Equipment Under Test (EUT) :	
Product Name	: Action Camcorder
Model No.	: SD21W, SD22W, SD23W, SD25W
Rules	: FCC CFR47 Part 15 Section 15.107:2010 FCC CFR47 Part 15 Section 15.109:2010
Date of Test	: May 24~June 04, 2013
Date of Issue	: June 05, 2013
Test Result	**: PASS ***

Remark:

* The sample described above has been tested to be in compliance with the requirements of ANSI C63.4:2003. The test results have been reviewed and comply with the rules listed above and found to meet their essential requirements.

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:

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Compiled by:

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Approved by:

Philo Zhong / Manager

2 Test Summary

Test Items	Test Requirement	Result
Conducted Emission	FCC Part 15.107:2010	PASS
Radiated Emission	FCC Part 15.109:2010	PASS

3 Contents

4 General Information

4.1 General Description of E.U.T.

Product Name	: Action Camcorder
Model No.	: SD21W, SD22W, SD23W, SD25W
Model Difference	: All the same(included PCB layout and Schematic) except the model name. the model SD21W is testing sample.
Operation Frequency	: The highest working frequency of the data transmission model is 80Mhz
Type of Modulation	: IEEE 802.11b (CCK/QPSK/BPSK,11Mbps max.) IEEE 802.11g (BPSK/QPSK/16QAM/64QAM,54Mbps max.) IEEE 802.11n (BPSK/QPSK/16QAM/64QAM,HT20:72Mbps max.)
Antenna Gain	: 0dBi
Oscillator	: Crystal 32.768KHz for RTC, 40MHz for RF module

4.2 Details of E.U.T.

Technical Data	: (1)DC 3.7V, 1000mAh powered from battery (For Camera) (2)DC 3.7V, 500mAh powered from battery (For Wi-Fi) (3)DC 5V, 2000mA powered from adapter (INPUT:AC 100-240V, 50/60Hz 0.4A)
Adapter	: Manufacturer: shenzhen Diasinger Digital co.,ltd Model:DS-012W0502000LE

4.3 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A**

  Waltek Services(Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files.

  Registration 7760A, July 12, 2012.

- **FCC – Registration No.: 880581**

  Waltek Services(Shenzhen) 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. Registration 880581, May 26, 2011.

4.4 Test Location

All the tests were performed at:
Waltek Services(Shenzhen) Co., Ltd. at 1/F, Fukangtai Building, West Baima Rd.,Songgang

Street, Baoan District, Shenzhen, China

5 Equipment Used during Test

Conducted Emissions

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	101155	Aug. 13,2012	Aug. 12,2013
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	Aug. 13,2012	Aug. 12,2013
3.	Cable	LARGE	RF300	EW02014-3	Aug.14,2012	Aug. 13,2013

3m Semi-anechoic Chamber for Radiation(TDK) (Test Frequency:32.768kHz~1000MHz)

Item	Equipment	Manufacturer	Model No.	Serial No	Last Calibration Date	Calibration Due Date
1	Test Receiver	R&S	ESCI	101296	Aug.09,2012	Aug.08,2013
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Aug. 13,2012	Aug. 12,2013
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	Aug.11,2012	Aug.10,2013
4	Amplifier	Compliance pirection systems inc	PAP-0203	22024	Apr.07,2013	Apr.06,2014
5	Cable	HUBER+SUHNER	CBL2	525178	Sep.15,2012	Sep.14,2013

Associated Equipment

1	Notebook	IBM	2672-39C	99-8D3W4	-	-

6 Conducted Emission Data

Test Requirement:	FCC Part 15 Section 15.107
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class:	Class B
Limit:	66-56 dBμV between 0.15MHz & 0.5MHz 56 dBμV between 0.5MHz & 5MHz 60 dBμV between 5MHz & 30MHz The tighter limit applies at the band edges.
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

6.1 E.U.T. Operation

Operating Environment:

Temperature: 25.5 °C
Humidity: 51 % RH
Atmospheric Pressure: 1012 mbar

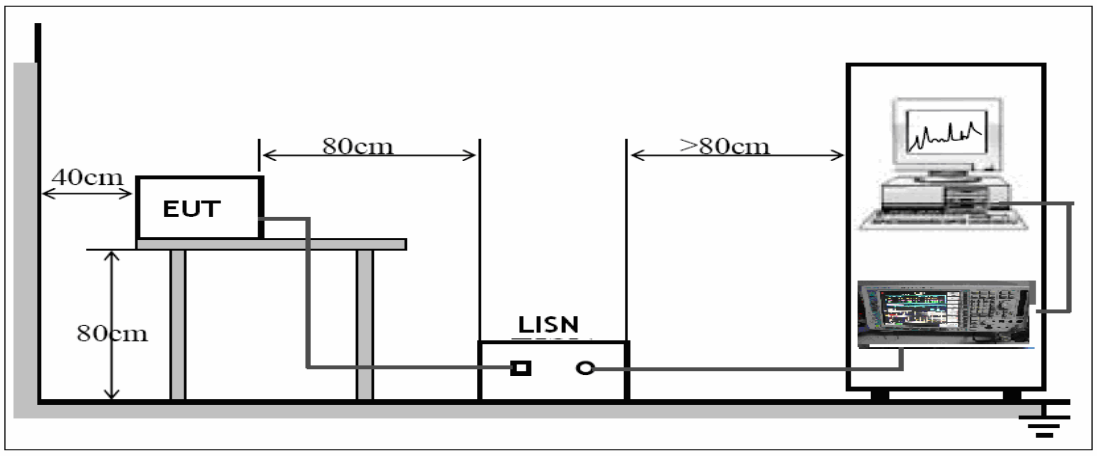
EUT Operation:

The test was performance on PC connecting mode(Data Transmitting), the PC mains were testing. the data is shown as follow.

The EUT was tested according to ANSI C63.4:2003. The frequency spectrum from 150kHz to 30MHz was investigated.
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

6.2 EUT Setup

The EUT was placed on the test table in shielding room.

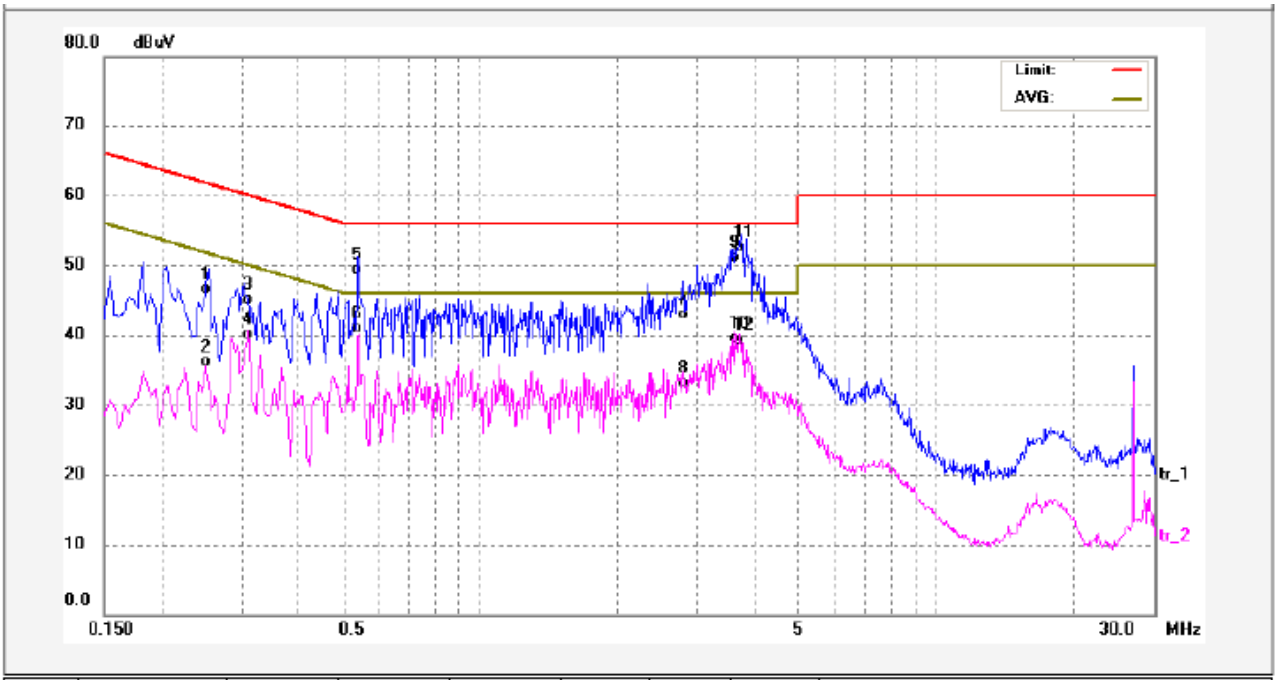


6.3 Conducted Emission Test Result

An initial pre-scan was performed on the live and neutral lines.

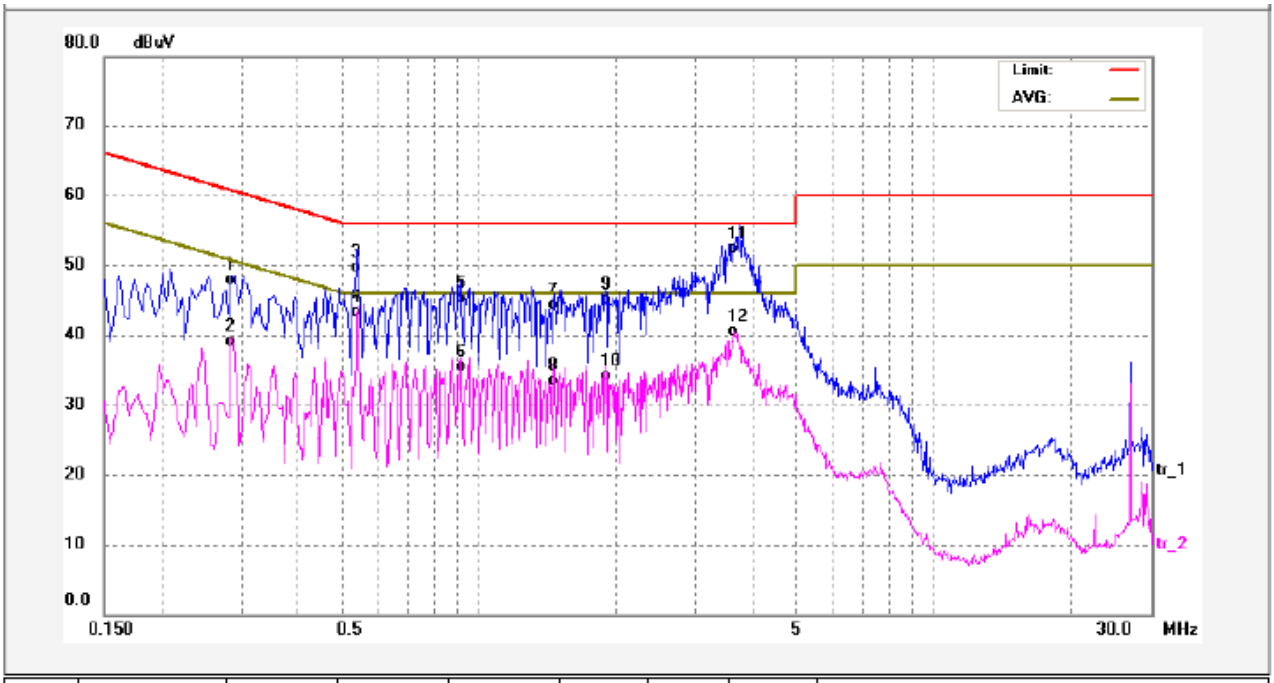
Test mode: Data Transmitting with PC

Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.2508	34.50	11.30	45.80	61.73	-15.93	QP	
2	0.2508	23.91	11.30	35.21	51.73	-16.52	AVG	
3	0.3100	32.91	11.30	44.21	59.97	-15.76	QP	
4	0.3100	28.05	11.30	39.35	49.97	-10.62	AVG	
5	0.5380	37.22	11.32	48.54	56.00	-7.46	QP	
6	0.5380	28.87	11.32	40.19	46.00	-5.81	AVG	
7	2.7860	30.93	11.21	42.14	56.00	-13.86	QP	
8	2.7860	21.16	11.21	32.37	46.00	-13.63	AVG	
9	3.6380	39.06	11.22	50.28	56.00	-5.72	QP	
10	3.6380	27.41	11.22	38.63	46.00	-7.37	AVG	
11	3.7540	40.57	11.22	51.79	56.00	-4.21	QP	
12	3.7540	27.21	11.22	38.43	46.00	-7.57	AVG	

Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.2860	35.72	11.30	47.02	60.64	-13.62	QP	
2	0.2860	26.93	11.30	38.23	50.64	-12.41	AVG	
3	0.5420	37.64	11.32	48.96	56.00	-7.04	QP	
4	0.5420	31.18	11.32	42.50	46.00	-3.50	AVG	
5	0.9100	33.34	11.23	44.57	56.00	-11.43	QP	
6	0.9100	23.41	11.23	34.64	46.00	-11.36	AVG	
7	1.4580	32.22	11.19	43.41	56.00	-12.59	QP	
8	1.4580	21.48	11.19	32.67	46.00	-13.33	AVG	
9	1.9060	33.09	11.20	44.29	56.00	-11.71	QP	
10	1.9060	22.15	11.20	33.35	46.00	-12.65	AVG	
11	3.6580	40.20	11.22	51.42	56.00	-4.58	QP	
12	3.6580	28.53	11.22	39.75	46.00	-6.25	AVG	

7 Radiation Emission Data

Test Requirement:	FCC Part 15 Section 15.109
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	32.768kHz to 1GHz
Measurement Distance:	3m
Class:	Class B
Limit:	40.0 dBμV/m between 30MHz & 88MHz for Quasi-Peak
	43.5 dBμV/m between 88MHz & 216MHz for Quasi-Peak
	46.0 dBμV/m between 216MHz & 960MHz for Quasi-Peak
	54.0 dBμV/m above 960MHz & 1GHz for Quasi-Peak
	54.0 dBuV/m above 1GHz for AV
	74.0 dBuV/m above 1GHz for Peak
	The tighter limit applies at the band edges.
Detector:	Peak for pre-scan (120kHz resolution bandwidth)
	Quasi-Peak if maximised peak within 6dB of limit

7.1 E.U.T. Operation

Operating Environment:

Temperature: 25.5 °C

Humidity: 51 % RH

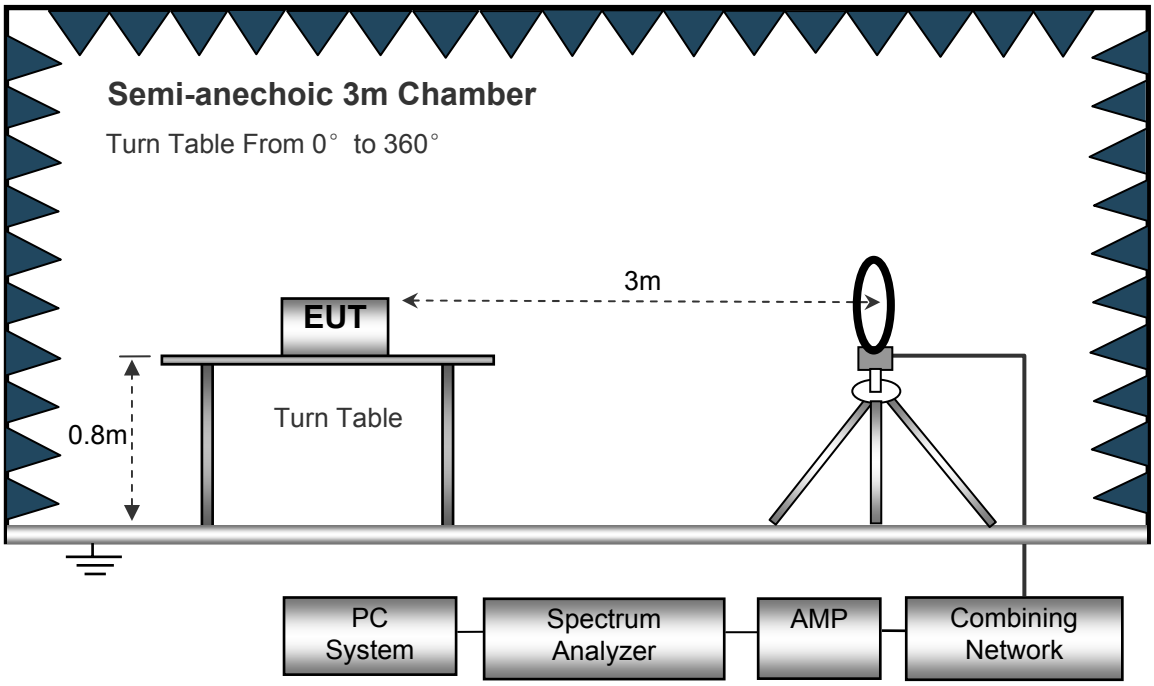
Atmospheric Pressure: 1012 mbar

EUT Operation:

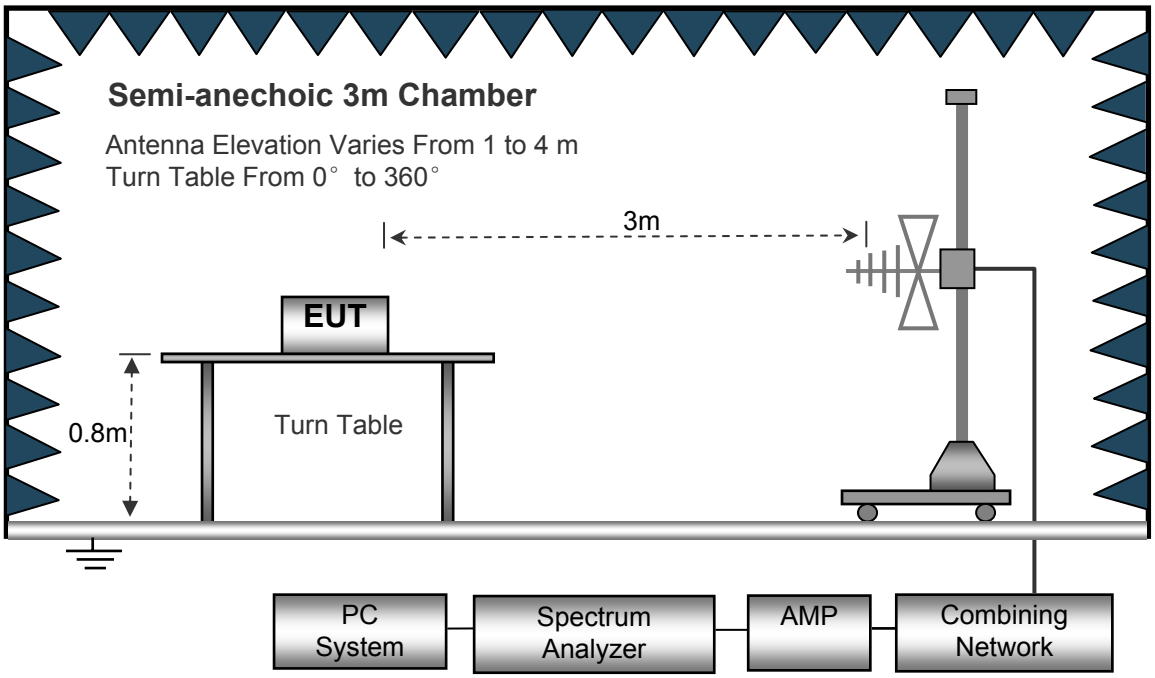
The pre-test was performance on Data Transmitting(power input by battery), the data is shown as follow. .

7.2 EUT Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site.
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



7.3 Spectrum Analyzer Setup

According to FCC Part15 B Rules, the system was tested 32.768kHz to 1GHz.

Below 30MHz

Sweep Speed	Auto
IF Bandwidth	10KHz
Video Bandwidth	10KHz
Resolution Bandwidth	10KHz

30MHz ~ 1GHz

Sweep Speed	Auto
IF Bandwidth	120 KHz
Video Bandwidth	100KHz
Quasi-Peak Adapter Bandwidth	120 KHz
Quasi-Peak Adapter Mode	Normal
Resolution Bandwidth	100KHz

7.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are performed in X(normal uses) axis positioning.

7.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBμV means the emission is 7dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Class B Limit

7.6 Summary of Test Results

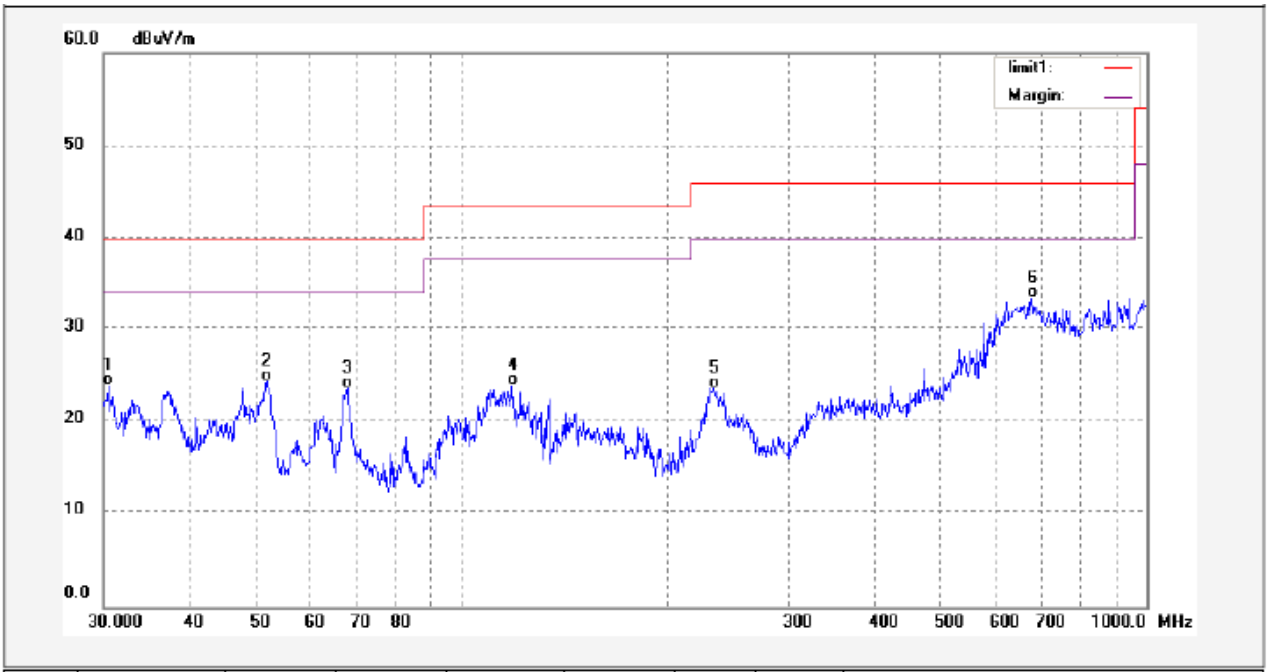
Test Frequency :Below 30MHz

After pretest,we found no higher emission than background level, the data does not been shown in the test report.

Test Frequency : 30MHz ~ 1000MHz

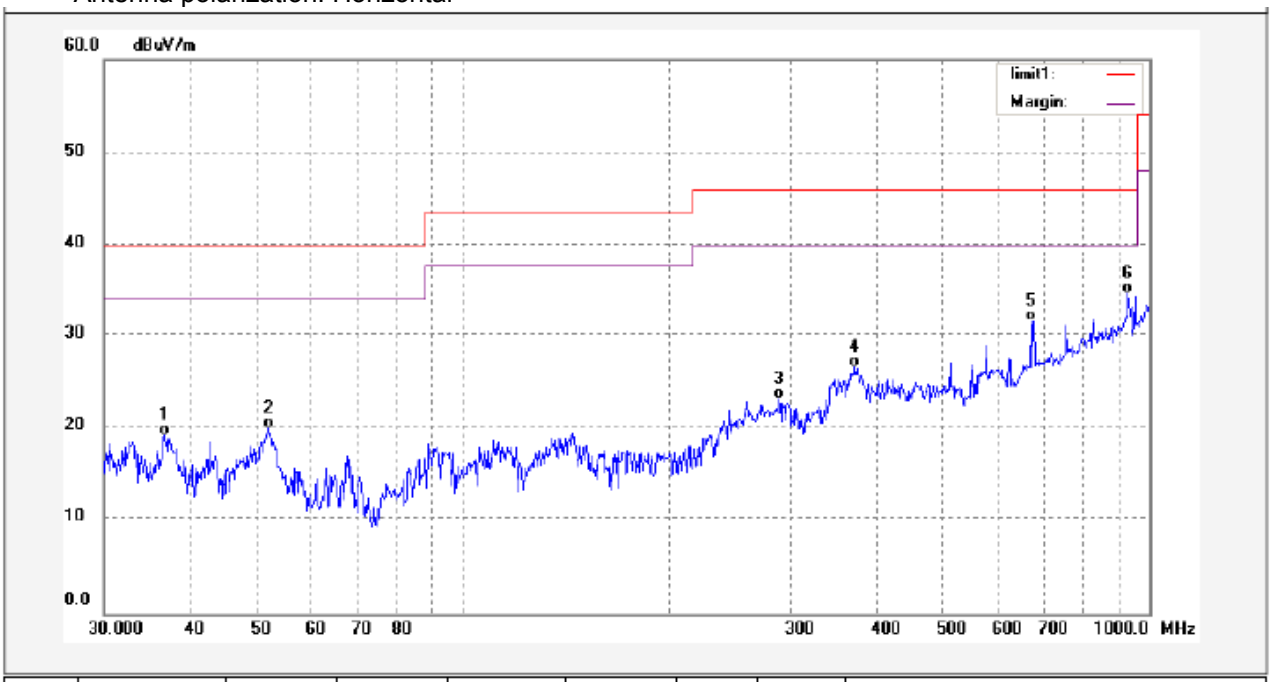
Test mode: Data Transmitting with PC (power by battery input)

Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	30.4246	7.61	16.29	23.90	40.00	-16.10	QP	
2	51.8998	9.73	14.59	24.32	40.00	-15.68	QP	
3	68.0241	13.29	10.40	23.69	40.00	-16.31	QP	
4	118.5114	11.87	12.10	23.97	43.50	-19.53	QP	
5	233.4881	8.31	15.30	23.61	46.00	-22.39	QP	
6	679.4346	7.51	25.81	33.32	46.00	-12.68	QP	

Antenna polarization: Horizontal



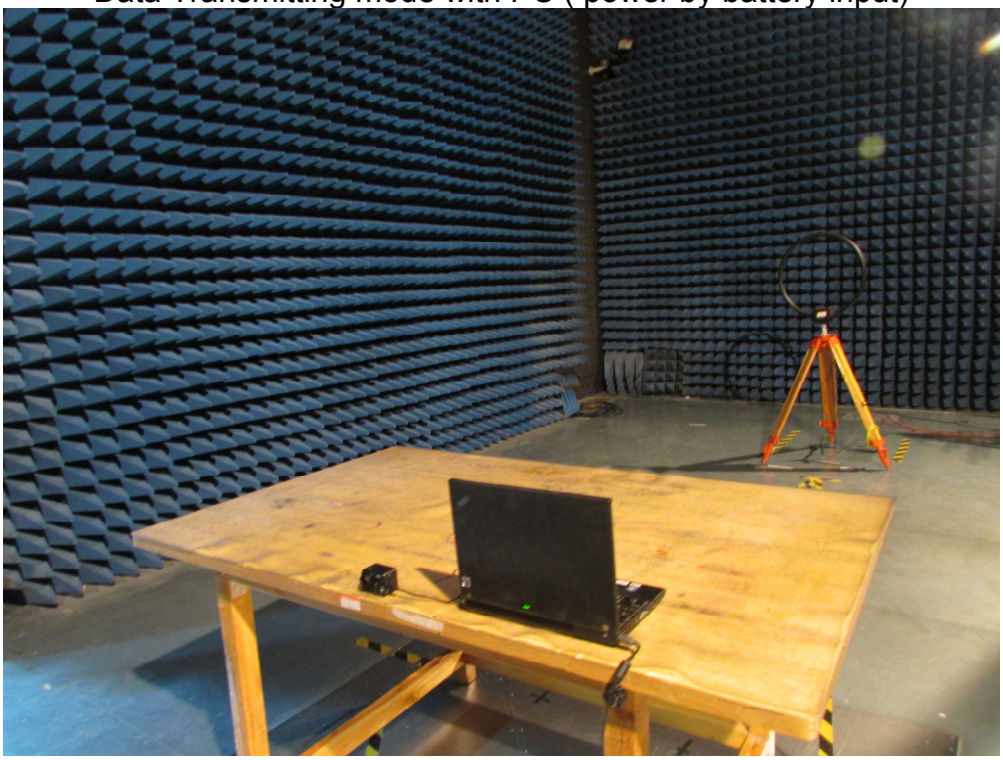
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	36.7811	2.77	16.48	19.25	40.00	-20.75	QP	
2	52.0826	5.43	14.57	20.00	40.00	-20.00	QP	
3	289.2987	6.91	16.29	23.20	46.00	-22.80	QP	
4	372.5748	6.89	19.72	26.61	46.00	-19.39	QP	
5	672.3104	5.88	25.70	31.58	46.00	-14.42	QP	
6	932.1405	3.24	31.36	34.60	46.00	-11.40	QP	

8 Photographs – Test Setup

8.1 Photograph – Radiation Emission Test Setup

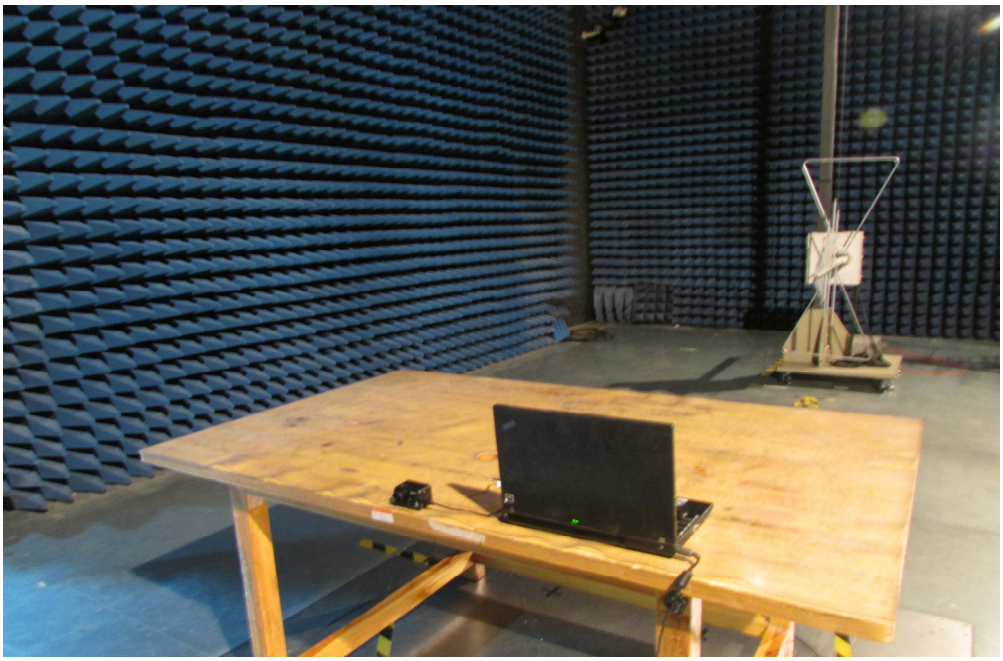
Below 30MHz

Data Transmitting mode with PC (power by battery input)



30MHz to 1GHz

Data Transmitting mode with (power by battery input)



8.2 Photograph – Conducted Emission Test Setup

Data Transmitting mode with PC (PC mains)

9 Photographs –Constructional Details

Refer to test report No.: YVV-AEE21222325_Part15C Wifi Test Report

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