FCC PART 15 CLASS B

EMI MEASUREMENT AND TEST REPORT

For

Victory Electronics Hong Kong Co., Ltd.

Room 1102-1103, 11/F, Kowloon Building, 555 Nathan Road, Mongkok, Kowloon, Hong Kong

FCC ID: PU6-ATVD

December 13, 2012

This Report Concerns: Original Report	Equipment Type: Android TV dongle
Test Engineer:	Anna Lv
Test Engineer of performing the tests:	Adam Yang
Report No.:	BST12091024Y-1E-3-2
Receive EUT Date/Test Date:	December 2, 2012 / December 3-12, 2012
Reviewed By:	Mike Moo
Prepared By:	**Shenzhen BST Technology Co.,Ltd.** 3F,Weames Technology Building, No. 10 Kefa Road, Science Park, Nanshan District,Shenzhen,Guangdong,China Tel: 0755-26747751-3 Fax: 0755-26747751-3 ext.826

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1. GENERAL INFORMATION

1.1. Report information

1.1.1.This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that BST approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that BST in any way guarantees the later performance of the product/equipment.

1.1.2.The sample/s mentioned in this report is/are supplied by Applicant, BST therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through BST, unless the applicant has authorized BST in writing to do so.

Test Facility -
The test site used to collect the data is located on the address of
Shenzhen Certification Technology Service Co., Ltd
(FCC Registered Test Site Number: 197647) on
2F, Building B, East Area of Nanchang Second Industrial Zone, Gushu 2nd Road,
Bao'an District, shenzhen 518126, China
The Test Site is constructed and calibrated to meet the FCC requirements.

1.2. Measurement Uncertainty

(95% confidence levels, k=2)

Test Item	**Uncertainty**
Uncertainty for Conduction emission test	2.50dB
Uncertainty for Radiation Emission test (30MHz to 1GHz)	3.04 dB (Polarize: V)
	3.02 dB (Polarize: H)
Uncertainty for Radiation Emission test (1GHz to 25GHz)	3.84dB (Polarize: H)
	3.56dB (Polarize: V)
Uncertainty for radio frequency	1×10^{-9}
Uncertainty for test site temperature and humidity	0.6℃
	3%

2. PRODUCT DESCRIPTION

2.1. EUT Description

Applicant	:	Victory Electronics Hong Kong Co., Ltd.
Address	:	Room 1102-1103, 11/F, Kowloon Building, 555 Nathan Road, Mongkok, Kowloon, Hong Kong
Manufacturer	:	Victory Electronics Hong Kong Co., Ltd.
Address	:	Room 1102-1103, 11/F, Kowloon Building, 555 Nathan Road, Mongkok, Kowloon, Hong Kong
EUT Description	:	Android TV dongle
Trade Name	:	N/A
Model Number	:	ATVD-001, ATVD-002, ATVD-003, ATVD-004, ATVD-005, ATVD-006, ATVD-007, ATVD-008, ATVD-009
Power Supply	:	DC 5V (Powered by Adapter)

The series products have the same circuit diagram, PCB layout, software, RF Module, Features and functionality. The differences are the model name, so, we select ATVD-001 to test.

2.2. Block Diagram of EUT Configuration

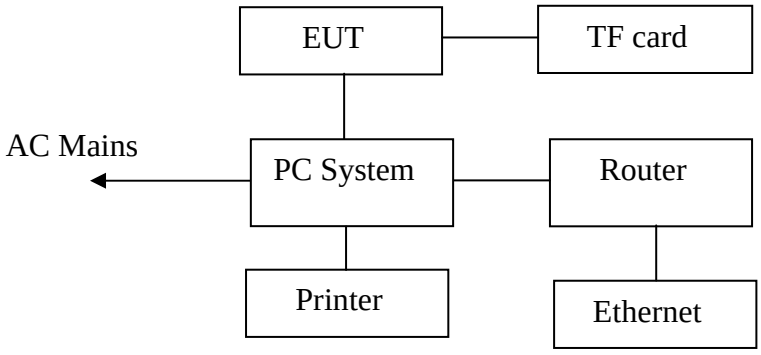


Figure 1 EUT Setup of USB with PC mode

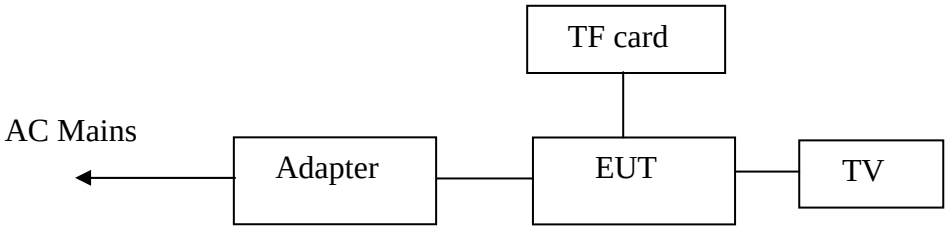


Figure 2 EUT Setup of HDMI with TV mode

2.3. Support Equipment List

Name	Model No	S/N	Manufacturer	Used "Yes/No"
PC system	AM1830	N/A	Acer	Yes
Printer	HP1020	N/A	HP	Yes
Router	PL-R860	N/A	TP-LINK	Yes
TV	LXM-L17AB	N/A	Samsung	Yes
TF card	4G	N/A	Kingston	Yes

2.4. Test Conditions

Temperature: 20~25℃

Relative Humidity: 50~63 %

3. TEST RESULTS SUMMARY

Table 1 Test Results Summary

Test Items	Test Results
Conducted disturbance	Pass
Radiated disturbance	Pass

Remark: “N/A” means “Not applicable.”

Modifications

No modification was made.

4. TEST EQUIPMENT USED

Equipment/Facilities	Manufacturer	Model	Serial no.	Date of Cal.	Cal. Interval
3m Semi-Anechoic Chamber	Changzhou Chengyu	EC3048	N/A	May 5, 2012	1 Year
Broadband antenna	SCHWARZBECK	VULB 9168	VULB9168-438	Aug. 14, 2012	1 Year
Horn antenna	R&S	HF906	10027	Aug. 14, 2012	1 Year
ETS Horn Antenna	ETS	3160	SEL0076	May 8, 2012	1 Year
Loop Antenna	SCHWARZECK	HFRA 5165	9365	Feb. 25, 2012	1 Year
Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	Apr. 6, 2012	1 Year
Spectrum analyzer	Agilent	E4443A	MY46185649	Apr. 6, 2012	1 Year
Spectrum analyzer	Agilent	E4440A	MY46187335	Apr. 6, 2012	1 Year
Test receiver	R&S	ESCI	100492	Apr. 6, 2012	1 Year
Test receiver	R&S	ESCI	101202	Apr. 6, 2012	1 Year
L.I.S.N.	SCHWARZBECK	NSLK8126	8126466	Apr. 6, 2012	1 Year
L.I.S.N.	SCHWARZBECK	NSLK8126	8126487	Apr. 6, 2012	1 Year
Cable	Resenberger	N/A	NO.1	Apr. 6, 2012	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Apr. 6, 2012	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Apr. 6, 2012	1 Year
Pre-amplifier	SCHWARZBECK	BBV9743	9743-019	Apr. 6, 2012	1 Year
Pre-amplifier	R&S	AFS33-18002650-30-8P-44	SEL0080	Apr. 6, 2012	1 Year

5. CONDUCTED EMISSION TEST

5.1. Block Diagram of Test Setup

5.1.1.Block Diagram of connection between the EUT and the simulators

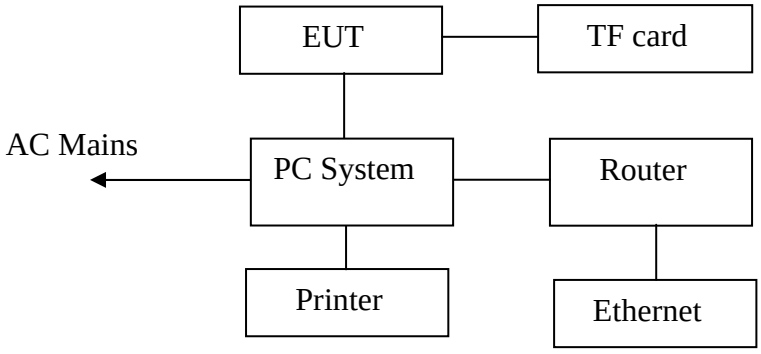


Figure 1 EUT Setup of USB with PC mode

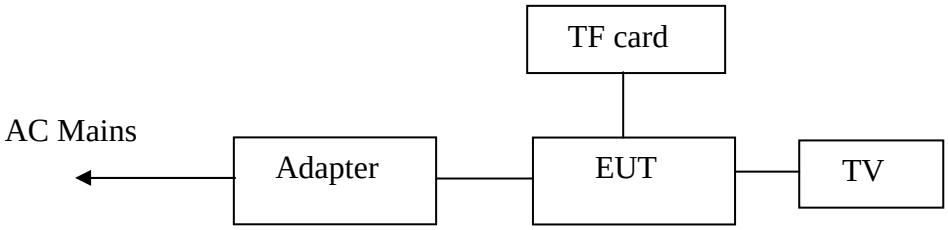
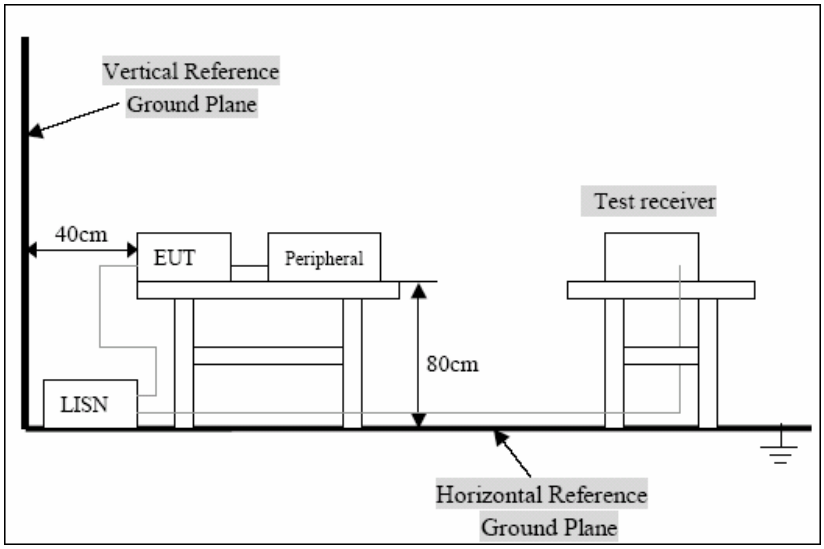


Figure 2 EUT Setup of HDMI with TV mode

5.1.2.Test Setup Diagram



5.2. Test Standard

FCC Part 15 CLASS B

ANSI C63.4 2003

5.3. Conducted Emission Limit(Class B)

Frequency MHz			Limits dB(μV)	
			Quasi-peak Level	Average Level
0.15	~	0.50	66 ~ 56*	56 ~ 46*
0.50	~	5.00	56	46
5.00	~	30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

5.4. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet FCC Part 15 requirement and operating in a manner, which tends to maximize its emission characteristics in a normal application.

5.5. Operating Condition of EUT

5.5.1.Setup the EUT and simulators as shown in Section 5.1.

5.5.2.Turn on the power of all equipments.

5.5.3.Let the EUT work in test modes (USB with PC mode & HDMI with TV mode) and test it.

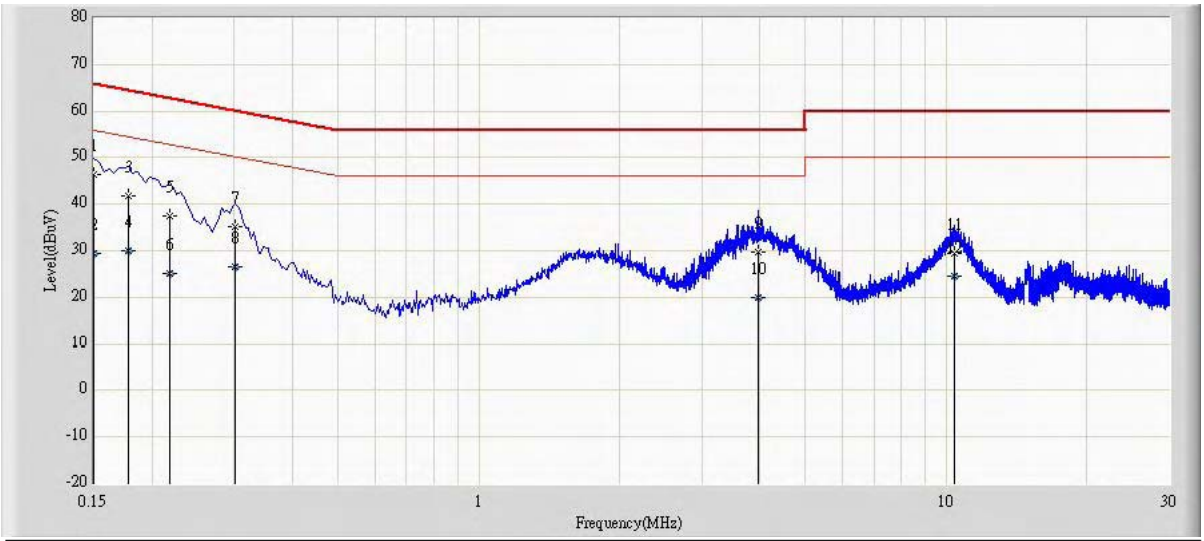
5.6. Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver is used to test the emissions form both sides of AC line. The bandwidth of EMI test receiver is set at 9kHz.

5.7. Test Result

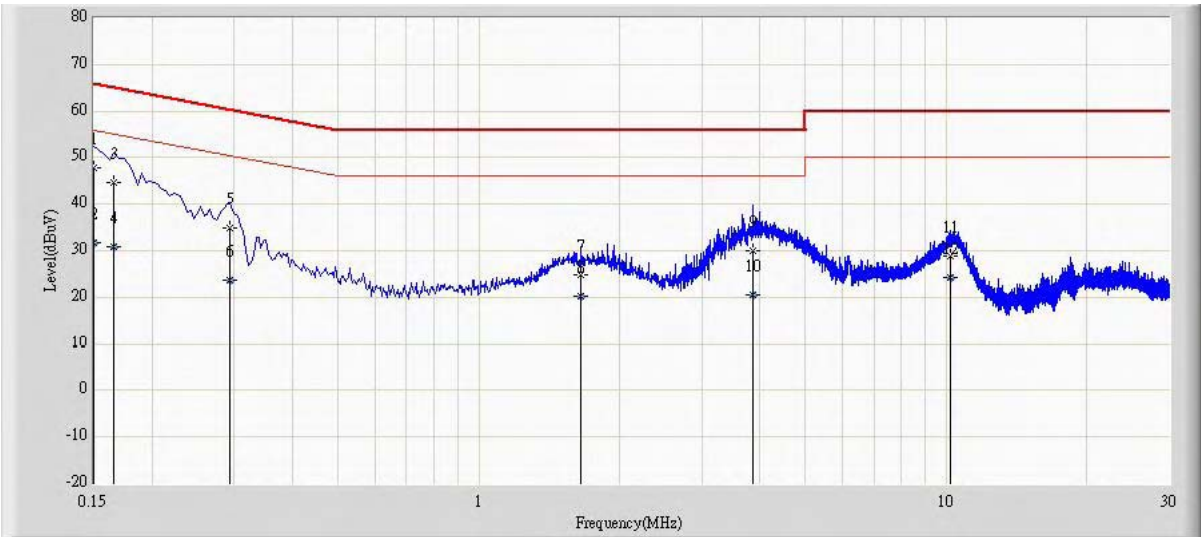
Pass

Test mode: USB with PC mode L Line



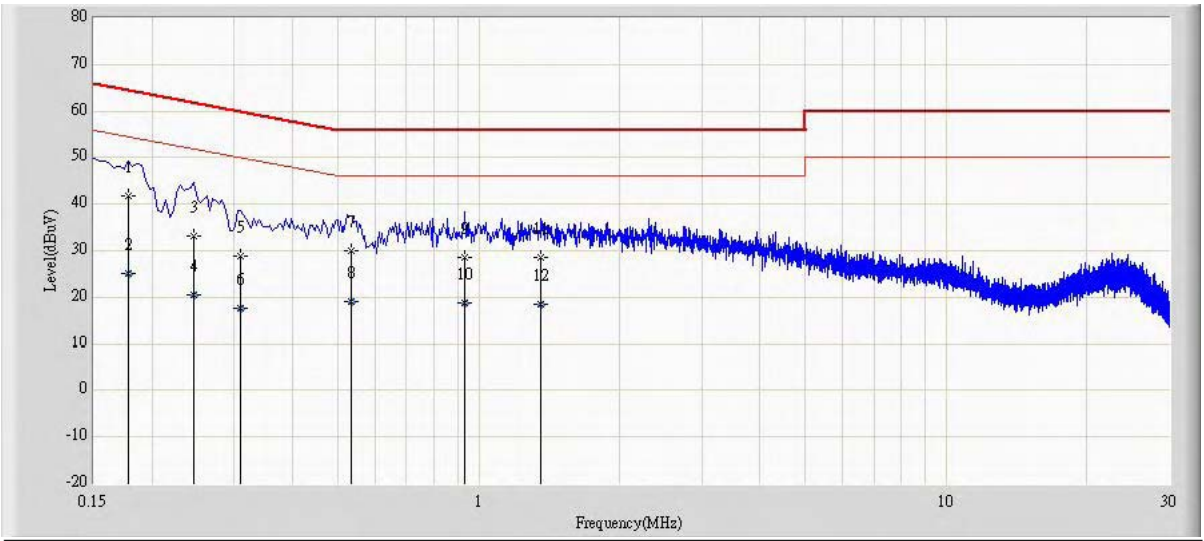
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1	*	0.150	46.336	36.656	-19.664	66.000	9.680	QP
2		0.150	29.428	19.748	-26.572	56.000	9.680	AV
3		0.178	41.807	32.140	-22.771	64.578	9.668	QP
4		0.178	30.007	20.339	-24.572	54.578	9.668	AV
5		0.218	37.388	27.737	-25.506	62.895	9.652	QP
6		0.218	25.175	15.524	-27.719	52.895	9.652	AV
7		0.302	35.079	25.422	-25.108	60.188	9.657	QP
8		0.302	26.644	16.987	-23.543	50.188	9.657	AV
9		3.950	29.746	19.953	-26.254	56.000	9.793	QP
10		3.950	19.810	10.017	-26.190	46.000	9.793	AV
11		10.394	29.519	19.555	-30.481	60.000	9.964	QP
12		10.394	24.646	14.682	-25.354	50.000	9.964	AV

Test mode: USB with PC mode N Line



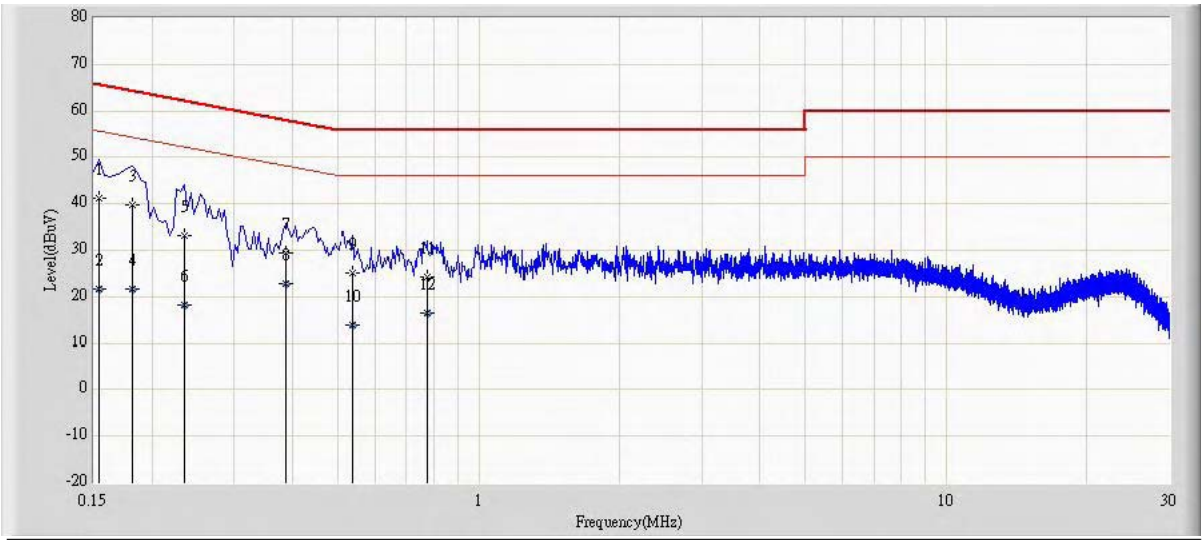
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1	*	0.150	47.943	38.333	-18.057	66.000	9.610	QP
2		0.150	31.755	22.144	-24.245	56.000	9.610	AV
3		0.166	44.599	34.977	-20.560	65.158	9.622	QP
4		0.166	30.773	21.151	-24.386	55.158	9.622	AV
5		0.294	34.832	25.129	-25.578	60.411	9.704	QP
6		0.294	23.593	13.890	-26.817	50.411	9.704	AV
7		1.654	24.965	15.245	-31.035	56.000	9.720	QP
8		1.654	20.148	10.428	-25.852	46.000	9.720	AV
9		3.854	29.922	20.127	-26.078	56.000	9.795	QP
10		3.854	20.588	10.793	-25.412	46.000	9.795	AV
11		10.238	28.960	18.956	-31.040	60.000	10.004	QP
12		10.238	24.368	14.364	-25.632	50.000	10.004	AV

Test mode: HDMI with TV mode L Line



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1	*	0.178	41.898	32.230	-22.681	64.578	9.668	QP
2		0.178	25.011	15.344	-29.567	54.578	9.668	AV
3		0.246	33.297	23.644	-28.594	61.891	9.653	QP
4		0.246	20.444	10.791	-31.447	51.891	9.653	AV
5		0.310	28.764	19.107	-31.206	59.970	9.657	QP
6		0.310	17.580	7.923	-32.390	49.970	9.657	AV
7		0.534	30.057	20.376	-25.943	56.000	9.682	QP
8		0.534	19.180	9.498	-26.820	46.000	9.682	AV
9		0.934	28.603	18.903	-27.397	56.000	9.700	QP
10		0.934	18.814	9.114	-27.186	46.000	9.700	AV
11		1.358	28.541	18.836	-27.459	56.000	9.705	QP
12		1.358	18.582	8.877	-27.418	46.000	9.705	AV

Test mode: HDMI with TV mode N Line



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1	*	0.154	41.293	31.686	-24.488	65.781	9.607	QP
2		0.154	21.621	12.014	-34.161	55.781	9.607	AV
3		0.182	39.768	30.104	-24.626	64.394	9.663	QP
4		0.182	21.600	11.937	-32.794	54.394	9.663	AV
5		0.234	33.026	23.319	-29.280	62.307	9.708	QP
6		0.234	18.256	8.548	-34.051	52.307	9.708	AV
7		0.386	29.290	19.592	-28.860	58.149	9.698	QP
8		0.386	22.679	12.982	-25.470	48.149	9.698	AV
9		0.538	25.085	15.385	-30.915	56.000	9.700	QP
10		0.538	13.791	4.091	-32.209	46.000	9.700	AV
11		0.774	24.321	14.621	-31.679	56.000	9.700	QP
12		0.774	16.543	6.843	-29.457	46.000	9.700	AV

6. RADIATED EMISSION MEASUREMENT

6.1. Block Diagram of EUT Configuration

6.1.1.Block Diagram of connection between the EUT and the simulators

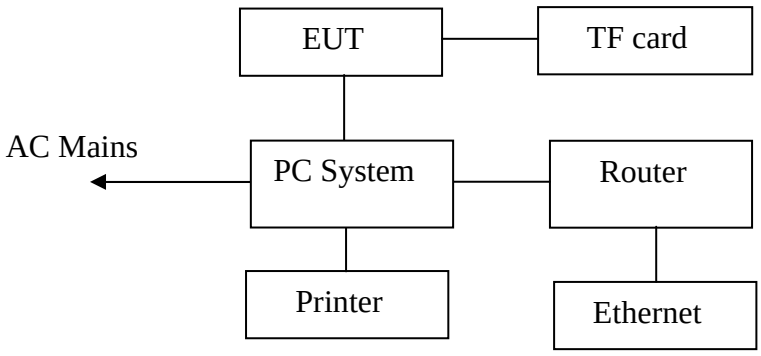


Figure 1 EUT Setup of USB with PC mode

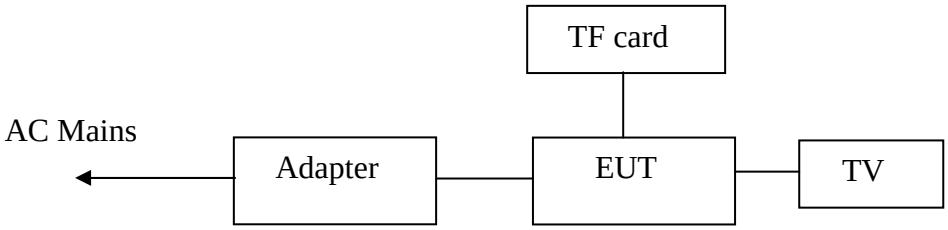
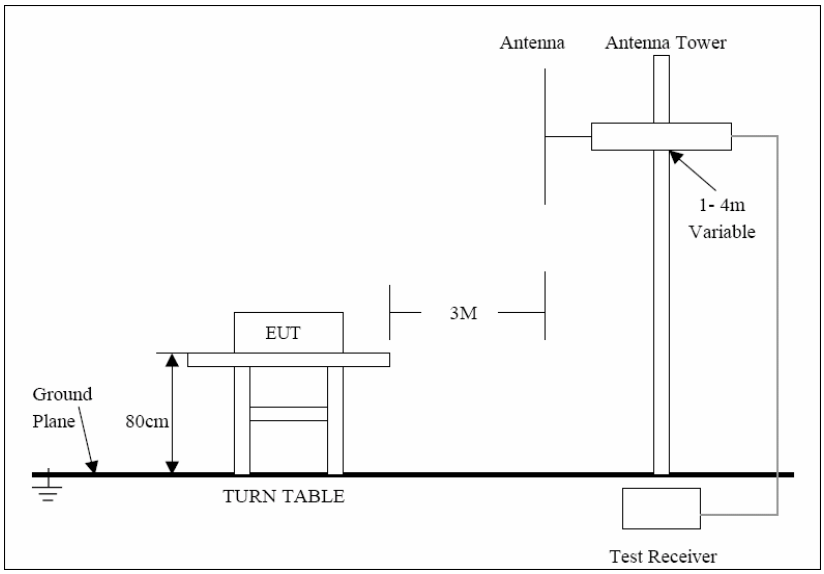


Figure 2 EUT Setup of HDMI with TV mode

6.1.2.Semi-anechoic Chamber Test Setup Diagram



6.2. Test Standard

FCC Part 15 CLASS B
ANSI C63.4 2003

6.3. Radiated Emission Limit(Class B)

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dBμV/m)
30 ~ 88	3	40.0
88 ~ 216	3	43.5
216 ~ 960	3	46.0
Above 1000	3	54.0

Note**:**(1) The smaller limit shall apply at the edge between two frequency bands.
(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT or system.

6.4. EUT Configuration on Test

The following equipment are installed on Radiated Emission Measurement to meet the Commission requirements and operating regulations in a manner which tends to maximize Its emission characteristics in normal application.

6.5. Operating Condition of EUT

6.5.1.Setup the EUT as shown on Section 6.1

6.5.2.Turn on the power of all equipments.

6.5.3.Let the EUT work in test modes (USB with PC mode & HDMI with TV mode) and test it.

6.6. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Calibrated Loop antenna is used as receiving antenna for frequencies below 30MHz, Calibrated Bilog antenna is used as receiving antenna for frequencies between 30 MHz and 1 GHz, Calibrated Horn antenna is used as receiving antenna for frequencies above 1000MHz. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement.

Through three orthogonal axes to determine which attitude and equipment arrangement produces the highest emission relative to the limit. Pretest x, y, z position of EUT, final, select the worst case x position test and record the test results in the report.

The bandwidth of test receiver is set at 9kHz in below 30MHz and set at 120kHz in 30-1000MHz, and set at 1MHz in 1-18GHz.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Peak detector and Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.
The frequency range from 9kHz to 1000MHz is checked.All the test results are listed in Section 6.7. The measurements greater than 20dB below the limit are not report.

6.7. Test Result

PASS

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	USB with PC mode	Test Engineer:	Adam Yang

For below 30MHz

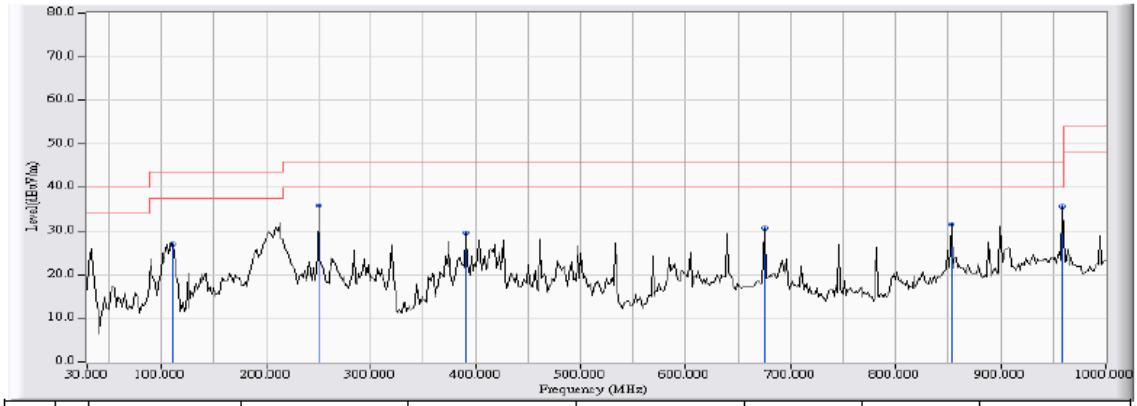
Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμA/m)	Correct Factor (dB)	Result (dBAV/m)	Limit (dBAV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. Measurement Level = Reading Level + Correct Factor.

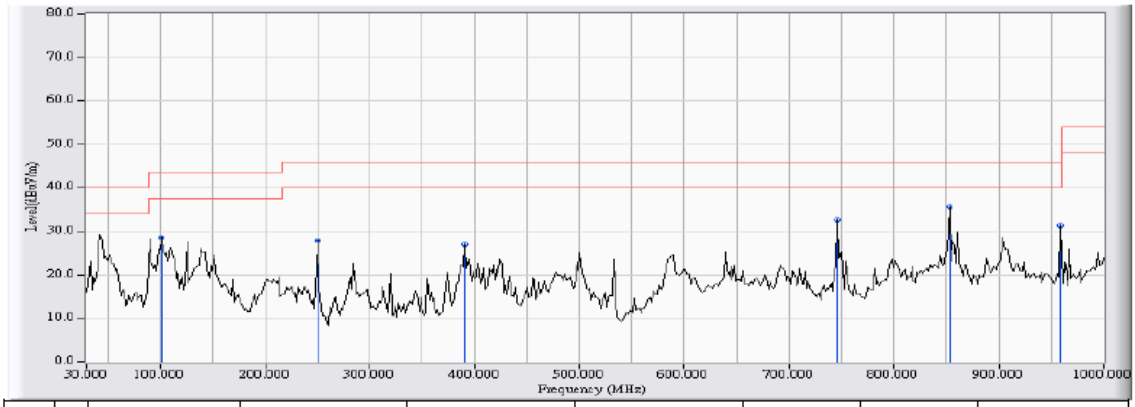
For 30MHz-1GHz

Horizontal polarization



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		110.833	-15.426	42.345	26.918	-16.582	43.500	QUASIPEAK
2	*	249.867	-13.345	49.121	35.776	-10.224	46.000	QUASIPEAK
3		390.517	-9.163	38.857	29.694	-16.306	46.000	QUASIPEAK
4		675.050	-3.408	34.034	30.627	-15.373	46.000	QUASIPEAK
5		852.883	-0.749	32.283	31.534	-14.466	46.000	QUASIPEAK
6		959.583	1.179	34.368	35.547	-10.453	46.000	QUASIPEAK

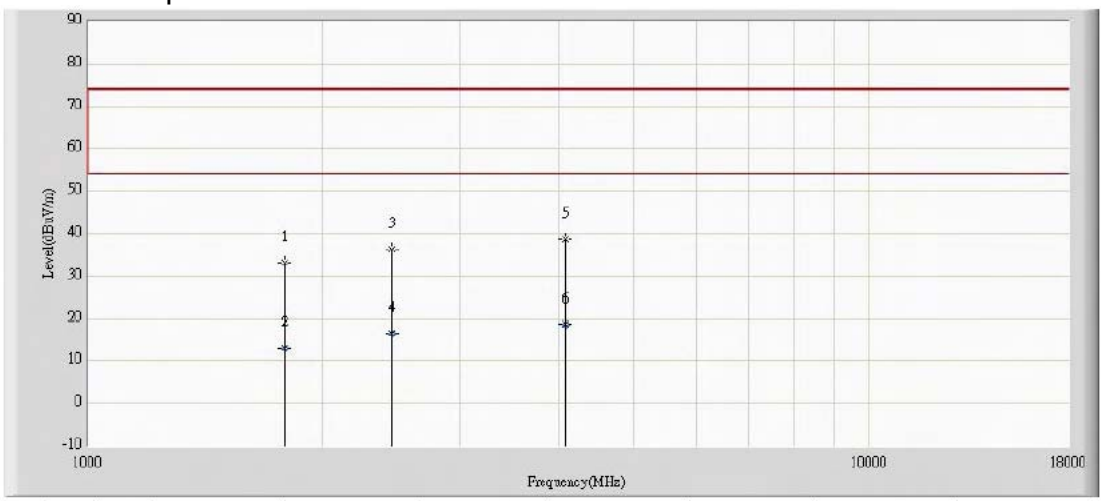
Vertical polarization



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		101.133	-11.753	40.243	28.490	-15.010	43.500	QUASIPEAK
2		249.867	-14.145	41.950	27.805	-18.195	46.000	QUASIPEAK
3		390.517	-7.860	34.959	27.099	-18.901	46.000	QUASIPEAK
4		746.183	-5.396	38.023	32.627	-13.373	46.000	QUASIPEAK
5	*	852.883	-2.700	38.346	35.645	-10.355	46.000	QUASIPEAK
6		959.583	-5.055	36.405	31.350	-14.650	46.000	QUASIPEAK

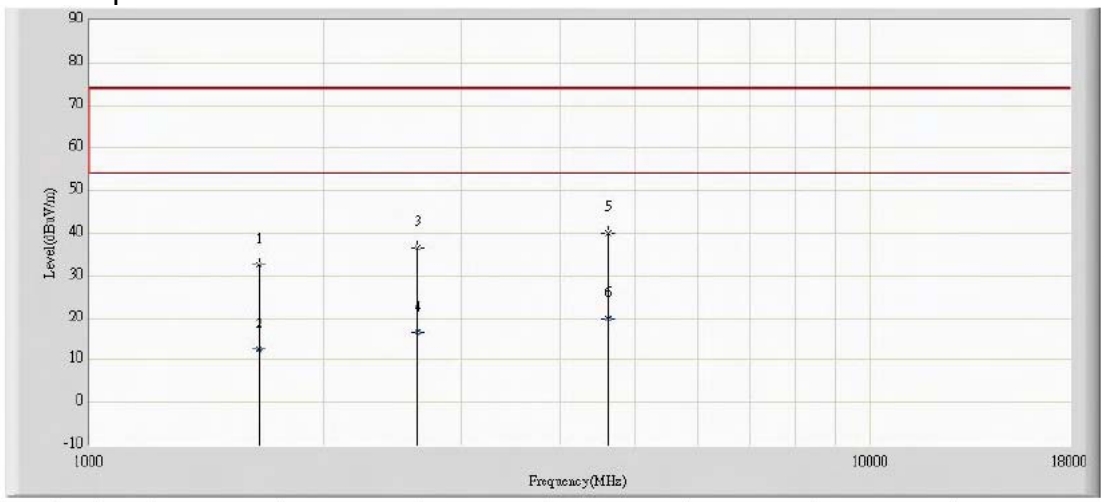
For above 1GHz

Horizontal polarization



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			1782.000	33.120	53.760	-40.880	74.000	-20.640	PK
2			1782.000	12.908	33.548	-41.092	54.000	-20.640	AV
3			2453.500	36.127	53.312	-37.873	74.000	-17.185	PK
4			2453.500	16.313	33.498	-37.687	54.000	-17.185	AV
5		*	4085.500	38.583	52.558	-35.417	74.000	-13.975	PK
6			4085.500	18.470	32.445	-35.530	54.000	-13.975	AV

Vertical polarization



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			1646.000	32.552	53.503	-41.448	74.000	-20.951	PK
2			1646.000	12.546	33.497	-41.454	54.000	-20.951	AV
3			2632.000	36.597	53.419	-37.403	74.000	-16.822	PK
4			2632.000	16.419	33.241	-37.581	54.000	-16.822	AV
5			4612.500	39.935	52.457	-34.065	74.000	-12.521	PK
6		*	4612.500	19.962	32.484	-34.038	54.000	-12.521	AV

Date of Test:	Deceber 10, 2012	Temperature:	24°C
EUT:	Android TV dongle	Humidity:	58%
Model No.:	ATVD-001	Power Supply:	AC 120V/60Hz
Test Mode:	HDMI with TV mode	Test Engineer:	Adam Yang

For below 30MHz

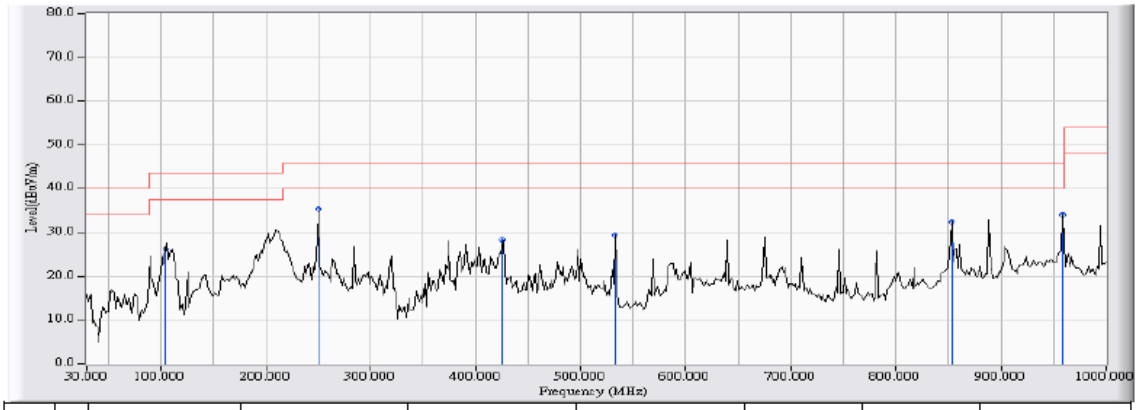
Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμA/m)	Correct Factor (dB)	Result (dBAV/m)	Limit (dBAV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	Horizontal

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. Measurement Level = Reading Level + Correct Factor.

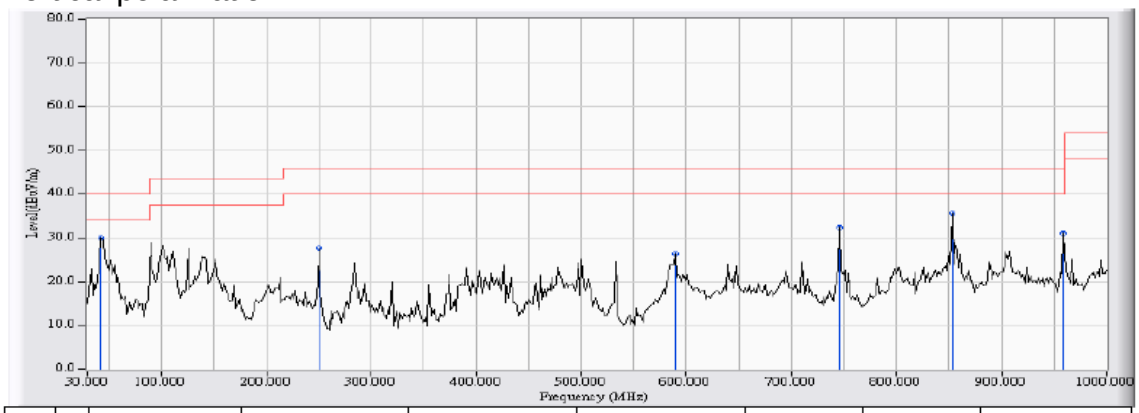
For 30MHz-1GHz

Horizontal polarization



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		104.367	-15.488	41.565	26.077	-17.423	43.500	QUASIPEAK
2	*	249.867	-13.345	48.698	35.353	-10.647	46.000	QUASIPEAK
3		426.083	-5.040	33.280	28.240	-17.760	46.000	QUASIPEAK
4		532.783	-8.888	38.257	29.369	-16.631	46.000	QUASIPEAK
5		852.883	-0.749	33.168	32.419	-13.581	46.000	QUASIPEAK
6		959.583	1.179	32.975	34.154	-11.846	46.000	QUASIPEAK

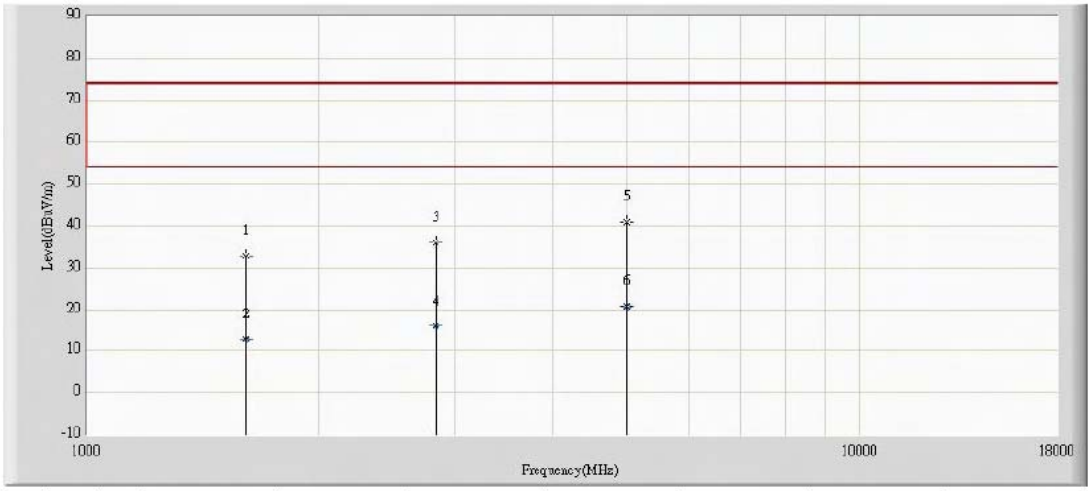
Vertical polarization



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	42.933	-11.665	41.639	29.974	-10.026	40.000	QUASIPEAK
2		249.867	-14.145	41.815	27.670	-18.330	46.000	QUASIPEAK
3		589.367	-4.433	30.800	26.368	-19.632	46.000	QUASIPEAK
4		746.183	-5.396	37.740	32.344	-13.656	46.000	QUASIPEAK
5		852.883	-2.700	38.197	35.496	-10.504	46.000	QUASIPEAK
6		959.583	-5.055	36.252	31.197	-14.803	46.000	QUASIPEAK

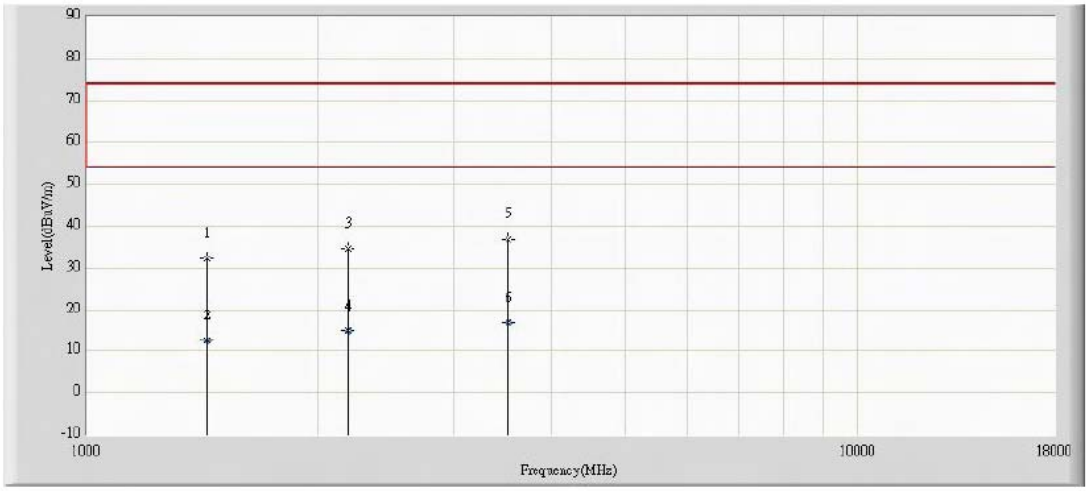
For above 1GHz

Horizontal polarization



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			1603.500	32.815	53.747	-41.185	74.000	-20.933	PK
2			1603.500	12.759	33.691	-41.241	54.000	-20.933	AV
3			2827.500	35.836	52.396	-38.164	74.000	-16.560	PK
4			2827.500	15.856	32.416	-38.144	54.000	-16.560	AV
5			5012.000	40.803	52.037	-33.197	74.000	-11.234	PK
6		*	5012.000	20.811	32.045	-33.189	54.000	-11.234	AV

Vertical polarization



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			1433.500	32.377	53.338	-41.623	74.000	-20.960	PK
2			1433.500	12.455	33.416	-41.545	54.000	-20.960	AV
3			2181.500	34.625	52.008	-39.375	74.000	-17.382	PK
4			2181.500	14.623	32.005	-39.377	54.000	-17.382	AV
5			3524.500	36.747	52.075	-37.253	74.000	-15.328	PK
6		*	3524.500	16.846	32.174	-37.154	54.000	-15.328	AV