FCC Certification Test Report

Client Information:

Applicant:	Guangzhou Maipai Electronics Co.,Ltd.
Applicant add.:	Room 202,No.94,Shinan Road,Xianchong Village,Qiaonan Street, Panyu District of Guangzhou.

Product Information:

Product Name:	USB port(USB dongle)
Model No.:	USB KM-224W
Derivative model No.:	USB KM-211W
Brand Name:	N/A

Applied Standard: FCC Part 15 Subpart B: 2013

Prepared By:

Dongguan Yaxu (AiT) Technology Limited

Add. : No. 22, Jinqianling Third Street, Jitigang, Huangjiang, Dongguan, Guangdong, China.

Date of Receipt:	Aug. 24, 2015	Date of Test:	Aug. 24~ 28, 2015
Date of Issue:	Aug. 28, 2015	Test Result:	Pass

This device described above has been tested by Dongguan Yaxu (AiT) Technology Limited, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

ATT SZ commissioned AiT(Dongguan) to test the device described above, and then AiT(Dongguan) use the UTL(Dongguan)'s test site do this case.

Reviewed by: Seal-Chen **Approved by:**

1 Contents

2 Test Summary

Test	Test Requirement	Test Method	Criterion	Result
Mains Terminals Disturbance Voltage, 150kHz to 30MHz	FCC Part 15 Subpart B: 2013	ANSI C63.4: 2009	Limits	PASS

Radiated Emissions 30MHz to 1GHz	FCC Part 15 Subpart B: 2013	ANSI C63.4: 2009	Limits	PASS
Radiated Emissions 1G Hz to 6GHz	FCC Part 15 Subpart B: 2013	ANSI C63.4: 2009	Limits	PASS
Remark: None				
Model description: According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference being the model name. Therefore only one model **USB KM-224W** was tested in this report.				

2.1 Measurement Uncertainty

The report uncertainty of measurement **y** ± **U**, where expended uncertainty **U** is based on a standard uncertainty Multiplied by a coverage factor of **k=2** , providing a level of confidence of approximately 95% .

No.	Item	Frequency Range	U , Value
1	Power Line Conducted Emission	150KHz~30MHz	1.20 dB
2	Radiated Emission Test	30MHz~1GHz	3.30 dB
3	Radiated Emission Test	1GHz~18GHz	3.30 dB

3 Test Facility

.FCC- Registration No: 713614

DONGGUAN UTL ELECTRONIC TECHNOLOGY CO., LTD.
1F,Hengzheng Bldg, North Road of Station, Nancheng District, Dongguan, Guangdong, China.

3.1 Deviation from standard

None

3.2 Abnormalities from standard conditions

None

4 General Information

4.1 General Description of EUT

Manufacturer:	Guangzhou Maipai Electronics Co.,Ltd.
Manufacturer Address:	Room 202,No.94,Shinan Road,Xianchong Village,Qiaonan Street, Panyu District of Guangzhou.
EUT Name:	USB port(USB dongle)
Model No:	USB KM-224W
FCC ID:	2AFVEUSBTX
Brand Name:	N/A
Derivative model No.:	USB KM-211W
Power Supply Range:	DC 5.0V
Test Power Supply:	DC 5.0V from Lap top , AC 120V/60Hz for laptop adapter
Power Cord:	N/A
Signal Cable:	N/A
HW:	ASY_MA659R1E5_V1.0
SW:	V1.1
Max. operating frequency	115MHz
antenna type and antenna gain	PCB antenna, 0dBi

4.2 Test Location

All tests were performed at:

DONGGUAN UTL ELECTRONIC TECHNOLOGY CO., LTD.
1F,Hengzheng Bldg, North Road of Station, Nancheng District, Dongguan, Guangdong, China.

4.3 Description of Test setup

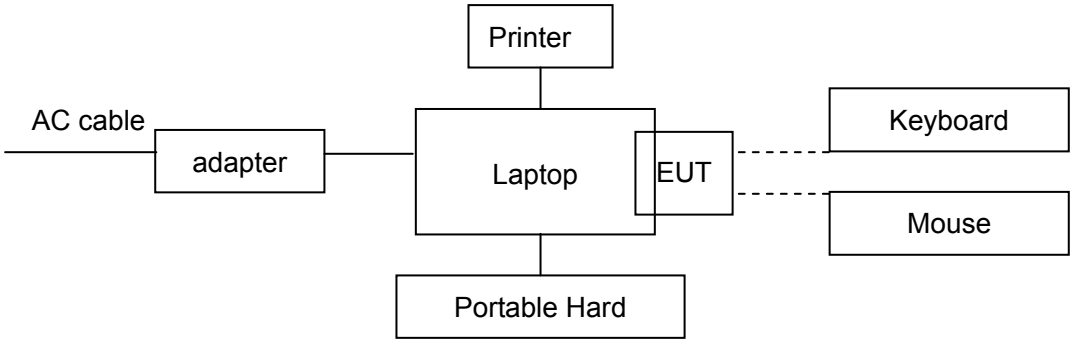
4.3.1 EUT Test Mode

Mode 1	Exchanging data with PC

EUT was tested in normal configuration (Please See following Block diagram)

1. Block diagram of EUT configuration

Mode 1:



4.4 Peripheral List

No.	Equipment	Manufacturer	EMC Compliance	Model No.	Serial No.	Power cord	signal cable
1	Lap top	ASUS	FCC	X401A	X16-96072	N/A	N/A
2	Adapter (laptop)	ASUS	FCC	EXA0703YH	N/A	1.8m/unshielded /detachable	N/A
3	Wireless Mouse	HK	N/A	M7110	N/A	N/A	N/A
4	Wireless Keyboard	HK	N/A	KM-211W	N/A	N/A	N/A
5	Printer	EPSON	CE	STYLUS C45	FY9YC48288	1.5m/unshielded /detachable	1.8m/unshielded /detachable
6	Portable Hard	ALUMINUM	CE	3.5 HDD Storage Box	06832c009	1.8m/unshielded /detachable	1.2m/unshielded /detachable

4.4 EUT Peripheral List

No.	Equipment	Manufacturer	EMC Compliance	Model No.	Serial No.	Power cord	signal cable
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

5 Equipments List for All Test Items

☒ Radiation Test Equipment						
No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	EMI Measuring Receiver	R&S	ESR	101660	2014.12.12	2015.12.11
2	Low Noise Pre Amplifier	Tsj	MLA-10K01-B01-27	1205323	2015.06.20	2016.06.19
3	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9160	9160-3206	2014.12.03	2015.12.02
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2014.09.26	2015.09.25
5	Spectrum Analyzer	ADVANTEST	R3182	150900201	2015.06.20	2016.06.19
6	Low Noise Pre Amplifier	Tsj	MLA-0120-A02-34	2648A04738	2014.12.02	2015.12.01
7	Broadband Horn Antenna	SCHWARZBECK	BBHA9120D	452	2014.12.03	2015.12.02

☒ Conduction Test equipment						
No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	EMI Test Receiver	R&S	ESCI	100124	2015.06.20	2016.06.19
2	LISN	Kyoritsu	KNW-242	8-837-4	2015.06.20	2016.06.19
3	LISN	Kyoritsu	KNW-407	8-1789-3	2015.06.20	2016.06.19
4	Pulse limiter	R&S	ESH3-Z2	0357.8810.54	2014.12.01	2015.11.30
5	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2014.09.25	2015.09.24

Note:

1. ☐ is not applicable in this Test Report. ☒ is applicable in this Test Report.

6 Emission Test Results

6.1 Mains Terminals Disturbance Voltage Measurement

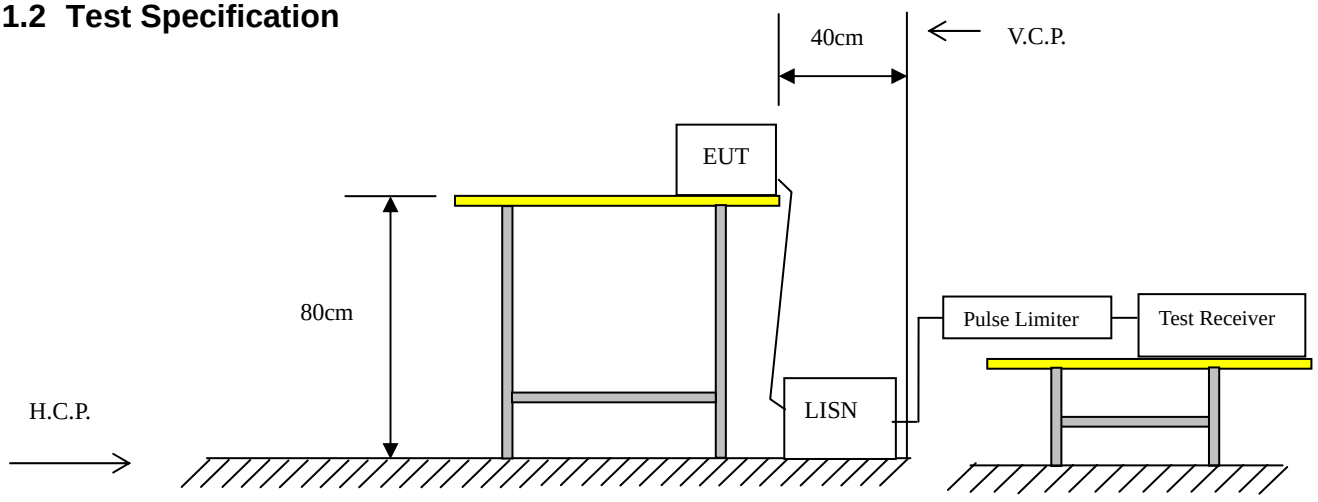
Frequency (MHz)	☐ Class A (dBμV)		☒ Class B (dBμV)	
	Q.P. (Quasi-Peak)	A.V. (Average)	Q.P. (Quasi-Peak)	A.V. (Average)
0.15 ~ 0.50	79	66	66 to 56	56 to 46
0.50 ~ 5.0	73	60	56	46
5.0 ~ 30	73	60	60	50

Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximized peak within 6dB of Average Limit

6.1.1 E.U.T. Operation

Temperature:	25°C	Humidity:	54% RH	Atmospheric Pressure:	101	Kpa
Test Mode:	Mode 1					

6.1.2 Test Specification



EUT was placed upon a wooden test table 0.8m above the horizontal metal reference plane and 0.4m from the vertical ground plane, and it was connected to an AMN. The closest distance between the boundary of the EUT and the surface of the AMN is 0.8m. All peripherals were connected to another AMN, and placed at a distance of 10cm from each other. A spectrum and receiver was connected to the RF output port of the AMN. Both average and quasi-peak value were detected.

6.1.3 Measurement Data

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

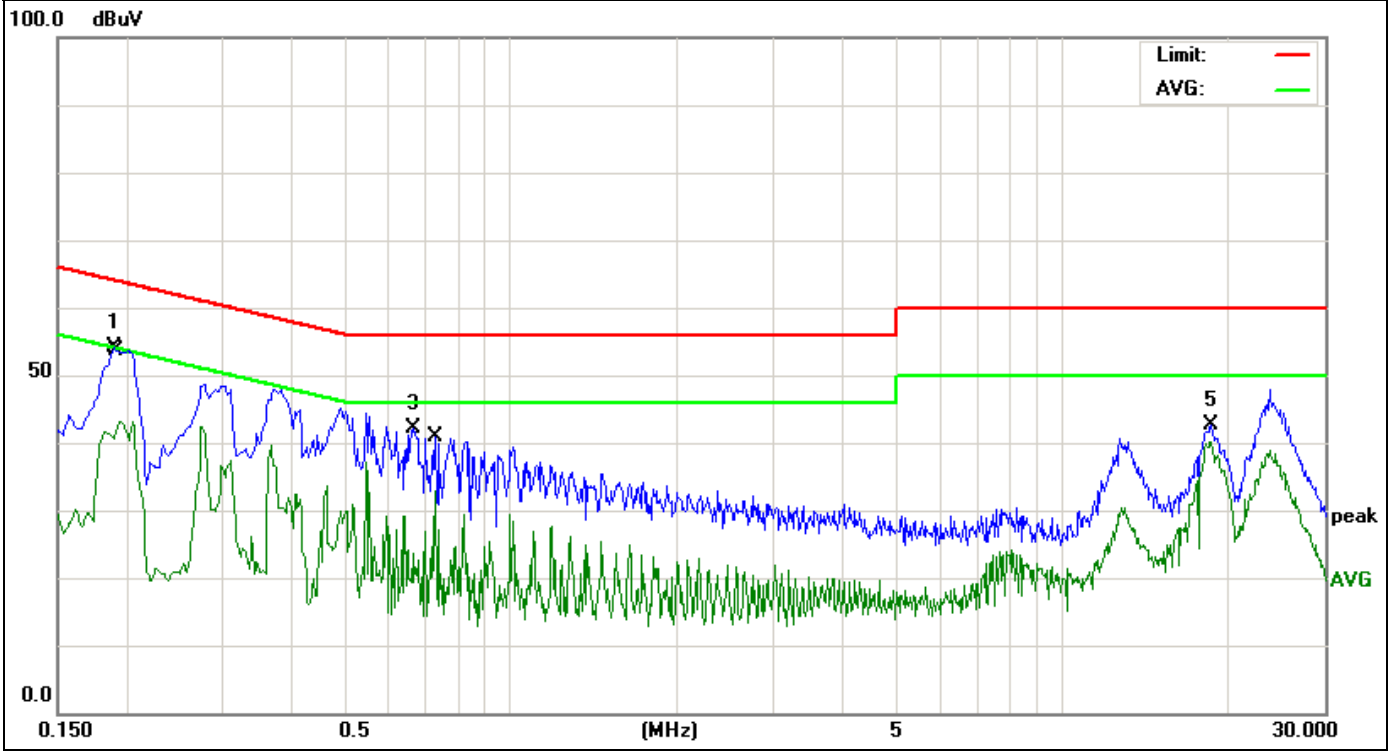
Quasi-peak or average measurements were performed at the frequency which maximum peak emissions were detected.

Please refer to the attached quasi-peak & average measurement data for reference.

Model name:	USB KM-224W	Test Date :	2015-08-26
Test Mode:	Mode 1	Phase :	Line
Test Voltage:	DC 5.0V from laptop, AC 120V/60Hz for laptop adapter		

Frequency (MHz)	Meter Reading (dBµV)	Factor(dB)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Detector
0.1900	43.80	10.22	54.02	64.03	-10.01	Quasi-Peak
0.1940	33.06	10.17	43.23	53.86	-10.63	Average
0.6660	32.06	10.19	42.25	56.00	-13.75	Quasi-Peak
0.7298	22.65	10.17	32.82	46.00	-13.18	Average
18.6935	32.20	10.45	42.65	60.00	-17.35	Quasi-Peak
18.6935	29.64	10.45	40.09	50.00	-9.91	Average

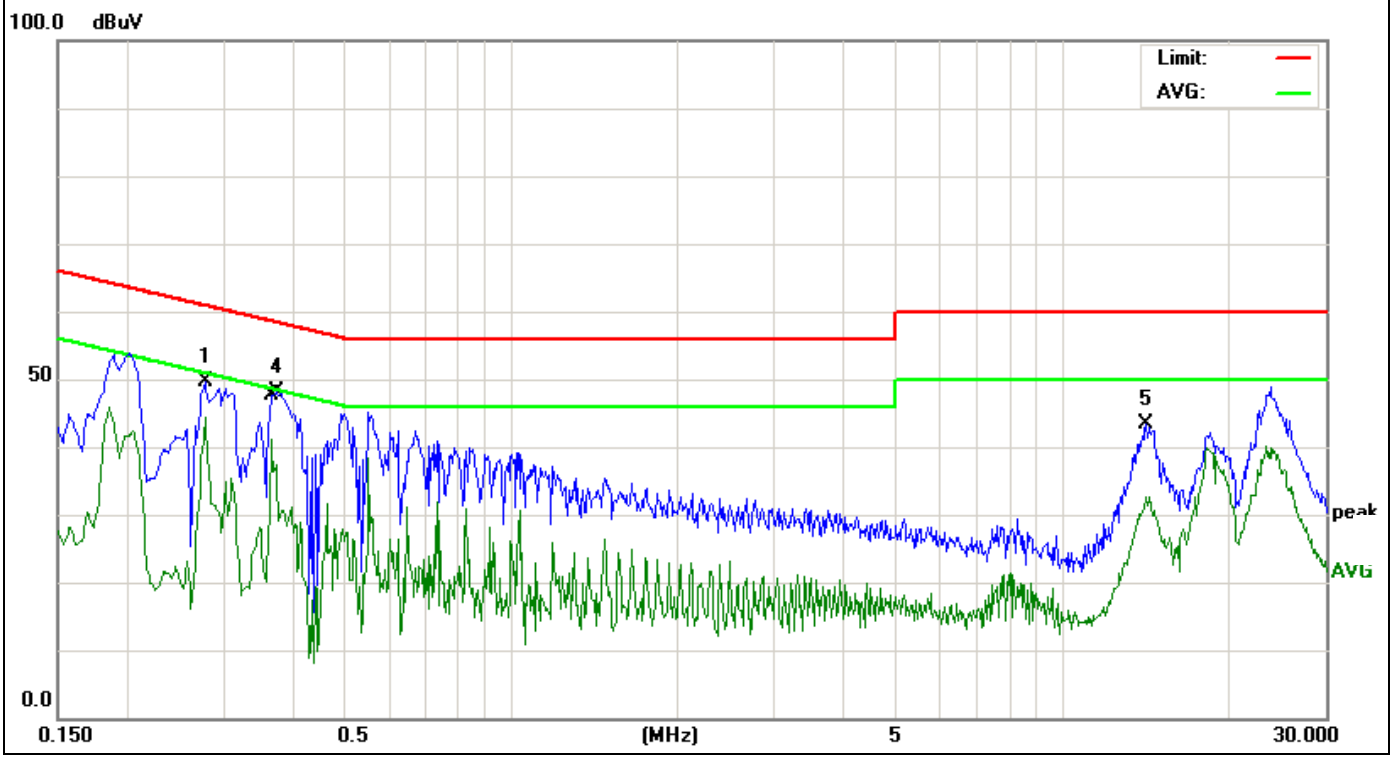
Remark: Factor = LISN factor + Cable Loss + Pulse limiter factor.



Model name:	USB KM-224W	Test Date :	2015-08-26
Test Mode:	Mode 1	Phase :	Neutral
Test Voltage:	DC 5.0V from laptop, AC 120V/60Hz for laptop adapter		

Frequency (MHz)	Meter Reading (dBµV)	Factor(dB)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Detector
0.2779	38.73	10.78	49.51	60.88	-11.37	Quasi-Peak
0.2779	33.57	10.78	44.35	50.88	-6.53	Average
0.3738	37.58	10.53	48.11	58.41	-10.30	Quasi-Peak
0.3659	30.58	10.54	41.12	48.59	-7.47	Average
14.1577	32.99	10.36	43.35	60.00	-16.65	Quasi-Peak
14.1577	22.38	10.36	32.74	50.00	-17.26	Average

Remark: Factor = LISN factor + Cable Loss + Pulse limiter factor.



6.2 Radiated Emission Measurement

Limits of Radiated Emission Measurement

Frequency (MHz)	☐ Class A (10m)	☒ Class B (3m)
	Quasi-Peak dB(μV/m)	Quasi-Peak dB(μV/m)
30 ~ 88	39.0	40.0
88 ~ 216	43.5	43.5
216 ~ 960	46.5	46.0
Above 960	49.5	54.0

Detector:	Peak for pre-scan (120kHz resolution bandwidth) Quasi-Peak if maximum peak within 6dB of limit

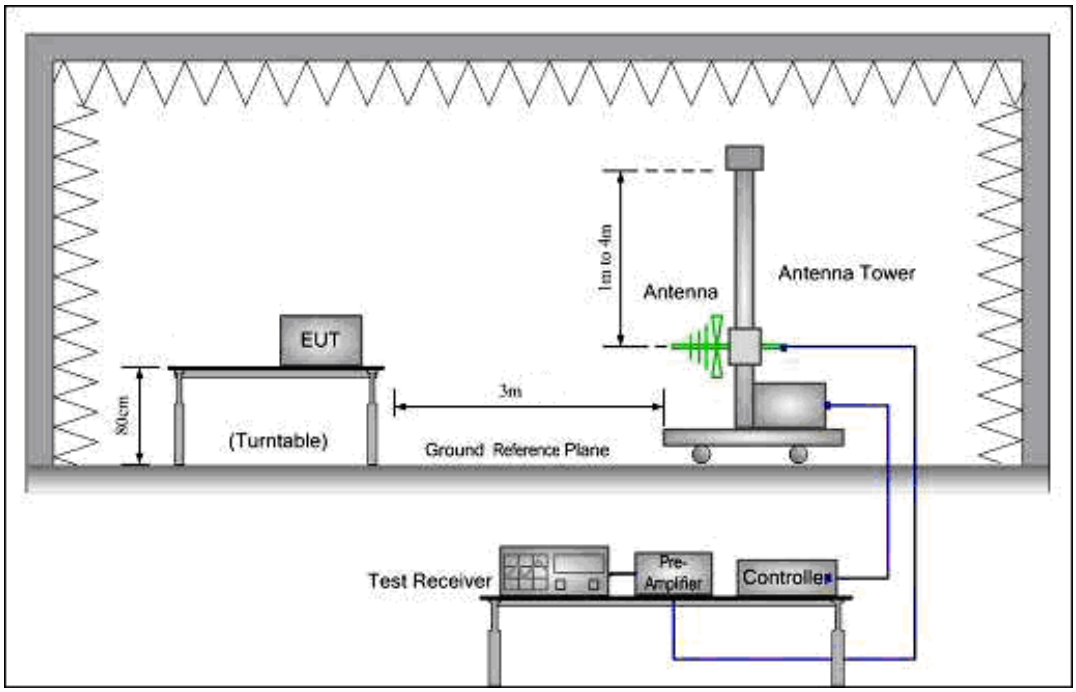
6.2.1 E.U.T. Operation

Temperature:	25°C	Humidity:	55% RH	Atmospheric Pressure:	101	Kpa
Test Mode:	Mode 1					

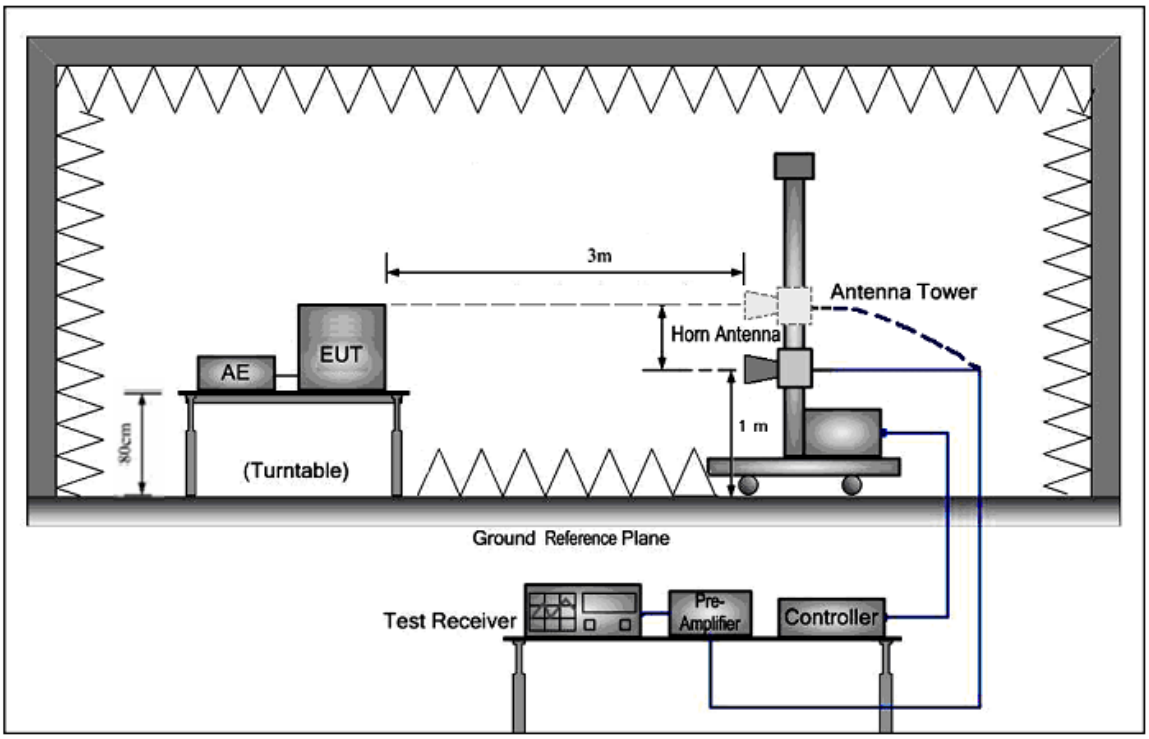
6.2.2 Test Specification

EUT was placed upon a wooden test table which was placed on the turn table 0.8m above the horizontal metal ground plane, and operating in the mode as mentioned above. A receiving antenna was placed 3m away from the EUT. During testing, turn around the turn table and move the antenna from 1m to 4m to find the maximum field-strength reading. All peripherals were placed at a distance of 10cm between each other. Both horizontal and vertical antenna polarities were tested.

1) 30 MHz to 1 GHz emissions:



2) 1 GHz to 6 GHz emissions:



6.2.3 Measurement Data

An initial pre-scan was performed in the 3m chamber using the spectrum analyzers in peak detection mode. The EUT was measured by Biology antenna with 2 orthogonal polarities and peak emissions from the EUT were detected within 6dB of the class B limit line.

The following quasi-peak measurements were performed on the EUT.

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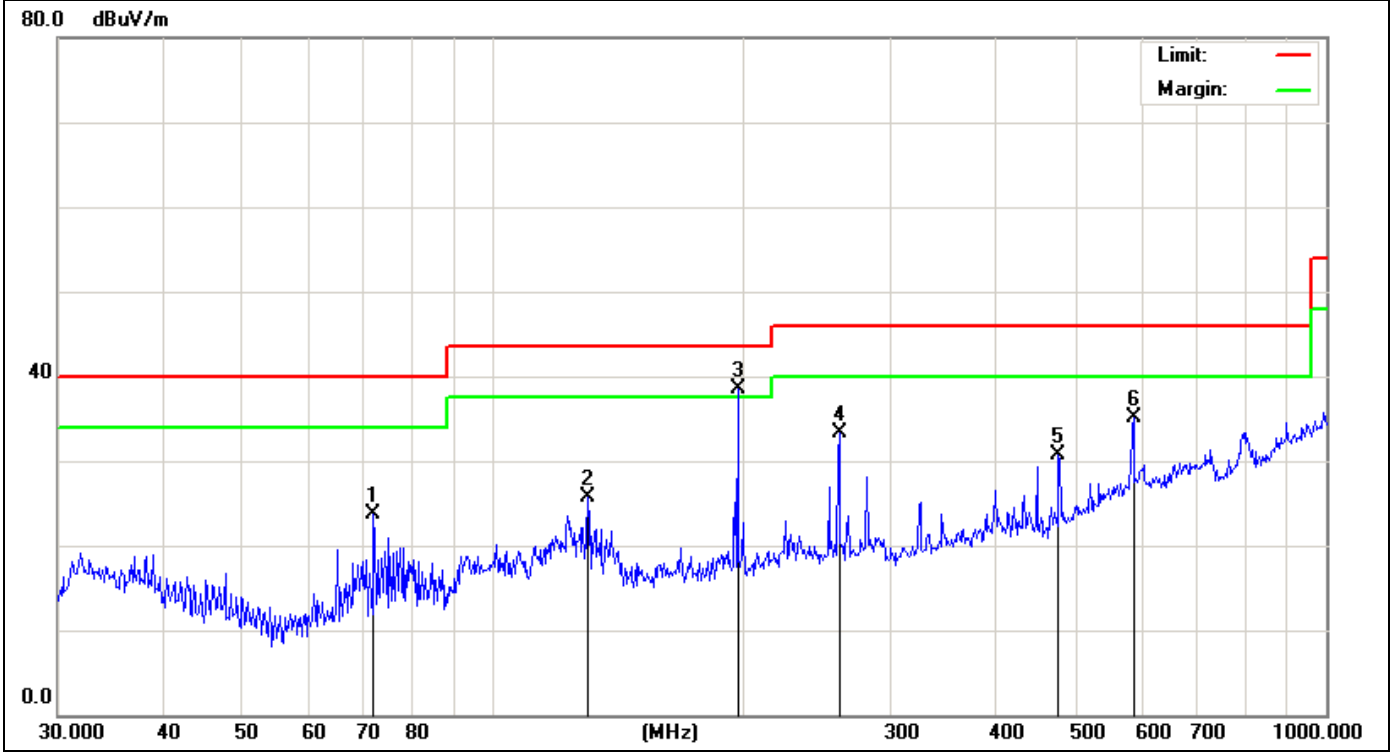
30 MHz to 1 GHz emissions

Model name:	USB KM-224W	Test Date :	2015-08-26
Test Mode:	Mode 1	Phase :	Vertical
Test Voltage:	DC 5.0V from laptop, AC 120V/60Hz for laptop adapter		

Frequency (MHz)	Meter Reading (dBµV)	Factor(dB)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Detector
71.8320	42.72	-19.07	23.65	40.00	-16.35	Quasi-Peak
129.9226	40.61	-14.93	25.68	43.50	-17.82	Quasi-Peak
196.5098	53.32	-14.79	38.53	43.50	-4.97	Quasi-Peak
260.1444	44.19	-10.83	33.36	46.00	-12.64	Quasi-Peak
477.1694	36.68	-5.97	30.71	46.00	-15.29	Quasi-Peak
586.8437	37.46	-2.35	35.11	46.00	-10.89	Quasi-Peak

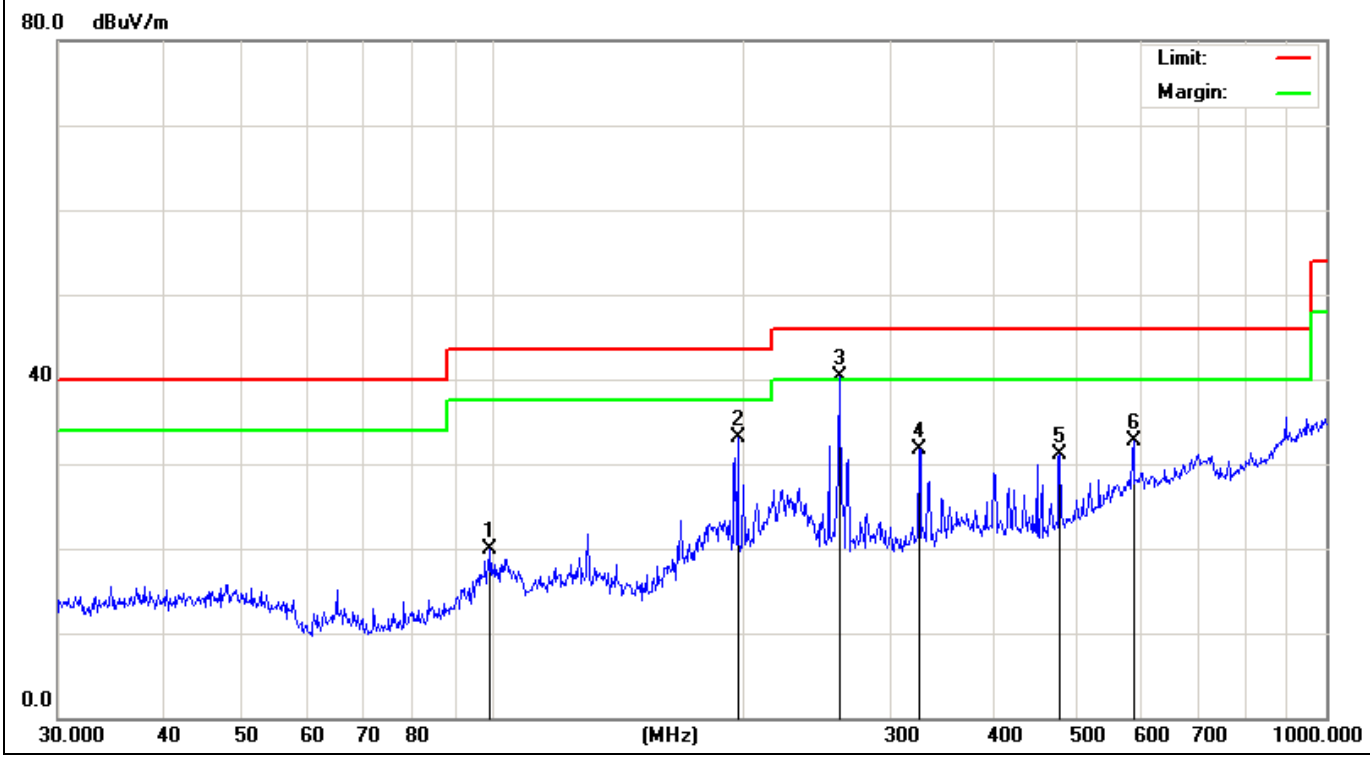
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Model name:	USB KM-224W	Test Date :	2015-08-26
Test Mode:	Mode 1	Phase :	Horizontal
Test Voltage:	DC 5.0V from laptop, AC 120V/60Hz for laptop adapter		

Frequency (MHz)	Meter Reading (dBμV)	Factor(dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Detector
99.1797	35.92	-16.09	19.83	43.50	-23.67	Quasi-Peak
196.5098	47.40	-14.22	33.18	43.50	-10.32	Quasi-Peak
260.1444	51.09	-10.83	40.26	46.00	-5.74	Quasi-Peak
324.4561	40.54	-8.75	31.79	46.00	-14.21	Quasi-Peak
478.8456	37.10	-5.94	31.16	46.00	-14.84	Quasi-Peak
586.8437	35.08	-2.35	32.73	46.00	-13.27	Quasi-Peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



1 GHz to 6 GHz emissions

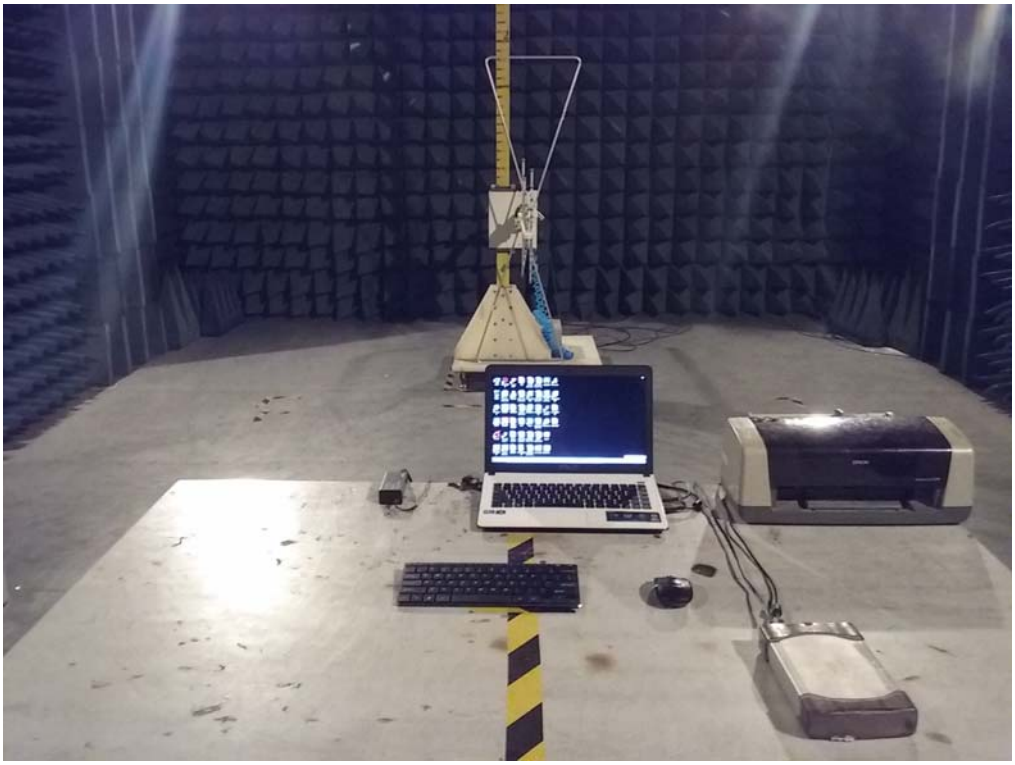
Model name:	USB KM-224W	Test Date :	2015-08-26
Test Mode:	Mode 1	Test Voltage:	DC 5.0V from laptop, AC 120V/60Hz for laptop adapter

Frequency (MHz)	Meter Reading (dBμV)	Factor(dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Detector
Vertical						
1310.693	43.21	-10.32	32.89	74.00	-41.11	Peak
1310.693	30.57	-10.32	20.25	54.00	-33.75	Average
1855.505	42.74	-9.44	33.30	74.00	-40.70	Peak
1855.505	30.22	-9.44	20.78	54.00	-33.22	Average
2498.247	45.14	-4.84	40.30	74.00	-33.70	Peak
2498.247	33.85	-4.84	29.01	54.00	-24.99	Average
3327.664	45.18	-1.02	44.16	74.00	-29.84	Peak
3327.664	32.74	-1.02	31.72	54.00	-22.28	Average
4719.315	45.99	5.07	51.06	74.00	-22.94	Peak
4719.315	33.62	5.07	38.69	54.00	-15.31	Average
5417.471	44.22	4.13	48.35	74.00	-25.65	Peak
5417.471	32.06	4.13	36.19	54.00	-17.81	Average
Horizontal						
1273.651	42.58	-10.40	32.18	74.00	-41.82	Peak
1273.651	30.05	-10.40	19.65	54.00	-34.35	Average
1752.110	42.79	-9.48	33.31	74.00	-40.69	Peak
1752.110	30.67	-9.48	21.19	54.00	-32.81	Average
2445.105	43.32	-5.32	38.00	74.00	-36.00	Peak
2445.105	31.82	-5.32	26.50	54.00	-27.50	Average
3549.384	44.94	-0.02	44.92	74.00	-29.08	Peak
3549.384	32.16	-0.02	32.14	54.00	-21.86	Average
4577.733	46.22	5.02	51.24	74.00	-22.76	Peak
4577.733	34.05	5.02	39.07	54.00	-14.93	Average
5407.773	44.46	4.16	48.62	74.00	-25.38	Peak
5407.773	32.10	4.16	36.26	54.00	-17.74	Average

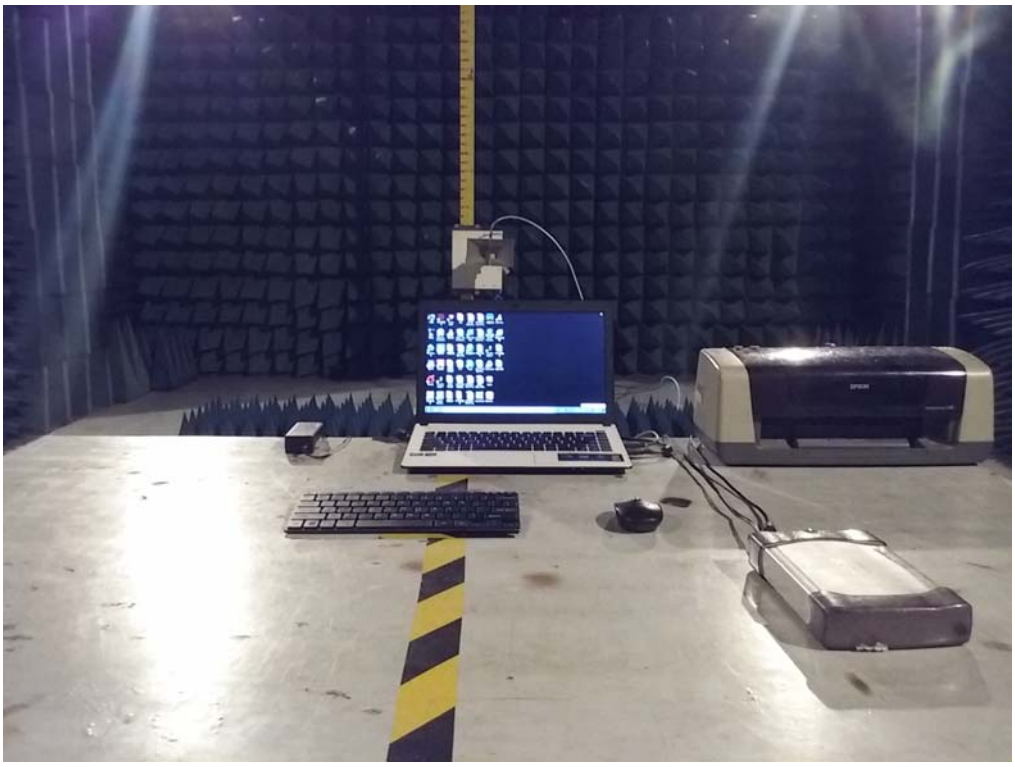
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

6.2.4 Test Setup photograph

30 MHz to 1 GHz emissions



1 GHz to 6 GHz emissions



6.3 Conducted Measurement Photos

****End of report****