TEST REPORT

Reference No.	:	WTS17S0169286E
FCC ID	:	2AKHBFT134
Applicant	:	Fantem Technologies (Shenzhen) Co., Ltd
Address	:	5th Floor,Yingtang Building,South 5th Road,HI-tech Park,Nanshan District,Shenzhen,Guangdong,China
Manufacturer	:	Fantem Technologies (Shenzhen) Co., Ltd.
Address	:	North, 3/F, Yitoa Technology Industrial Park,Baihua Yuan Rd.,The Second Industrial Area,Guangming Sub-districtOffice,Guangming New District,Shenzhen, Guangdong, China
Product Name	:	RemoteLink
Model No.	:	FT134-X
Standards	:	FCC PART15 SUBPART B: 2016
Date of Receipt sample	:	Jan. 10, 2017
Date of Test	:	Jan. 11 – Feb. 21, 2017
Date of Issue	:	Mar. 02, 2017
Test Result	:	**Pass**
Note	:	This report is for unintentional radiators function

Remarks:
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:

Zero Zhou / Test Engineer

Approved by:

Philo Zhong / Manager

1 Contents

Page

2 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTS17S0169286E	Jan. 10, 2017	Jan. 11 – Feb. 21, 2017	Mar. 02, 2017	original	-	Valid

3 General Information

3.1 General Description of E.U.T.

Product Name	:	RemoteLink
Model No.	:	FT134-X
The Highest frequency.	:	32MHz

3.2 Details of E.U.T.

Technical Data : DC 5V by USB from PC

3.3 Standards Applicable for Testing

The tests were performed according to following standards:

FCC PART 15, SUBPART B: Electronic Code of Federal Regulations- Unintentional Radiators 2016

3.4 Test Facility

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

- **IC – Registration No.: 7760A-1**

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-1, October 15, 2015.

- **FCC – Registration No.: 880581**

Waltek Services (Shenzhen) Co., Ltd. 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, April 29, 2014.

- **FCC – Registration No.: 328995**

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 328995 December 3, 2014.

3.5 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test Lab: N/A

Lab address: N/A

Test items: N/A

4 Equipment Used during Test

4.1 Equipments List

Conducted Emissions Test Site 1#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMI Test Receiver	R&S	ESCI	100947	Sep.12,2016	Sep.11,2017
2.	LISN	R&S	ENV216	101215	Sep.12,2016	Sep.11,2017
3.	Cable	Top	TYPE16(3.5M)	-	Sep.12,2016	Sep.11,2017
Conducted Emissions Test Site 2#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMI Test Receiver	R&S	ESCI	101155	Sep.12,2016	Sep.11,2017
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	Sep.12,2016	Sep.11,2017
3.	Limiter	York	MTS-IMP-136	261115-001-0024	Sep.12,2016	Sep.11,2017
4.	Cable	LARGE	RF300	-	Sep.12,2016	Sep.11,2017
3m Semi-anechoic Chamber for Radiation Emissions Test site 1#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	Spectrum Analyzer	R&S	FSP	100091	Apr.29, 2016	Apr.28, 2017
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Apr.09,2016	Apr.08,2017
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Apr.09,2016	Apr.08,2017
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	Sep.12,2016	Sep.11,2017
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Apr.09,2016	Apr.08,2017
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	Apr.09,2016	Apr.08,2017
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Apr.13,2016	Apr.12,2017
8	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	Apr.13,2016	Apr.12,2017
3m Semi-anechoic Chamber for Radiation Emissions Test site 2#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No**	**Last Calibration Date**	**Calibration Due Date**
1	Test Receiver	R&S	ESCI	101296	Apr.13,2016	Apr.12,2017
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	Apr.09,2016	Apr.08,2017
3	Amplifier	Compliance pirection systems inc	PAP-0203	22024	Apr.13,2016	Apr.12,2017
4	Cable	HUBER+SUHNER	CBL2	525178	Apr.13,2016	Apr.12,2017

4.2 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	±3.64dB	(1)
Radiation Emission	30MHz~1000MHz	±5.03dB	(1)
	Above 1GHz	±5.47dB	(1)

(1)This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

5 Test Summary

Test Item	Test Requirement	Class	Test Method	Test Result
Power Line Conducted Emission (150kHz to 30MHz)	FCC PART 15, SUBPART B: 2016	Class B	ANSI C63.4: 2014	C
Radiated Emission (30MHz to 1GHz)	FCC PART 15, SUBPART B: 2016	Class B	ANSI C63.4: 2014	C
Radiated Emission (Above 1GHz)	FCC PART 15, SUBPART B: 2016	Class B	ANSI C63.4: 2014	N/A
Note: C=Compliance; NC=Not Compliance; NT=Not Tested; N/A=Not Applicable.				

6 Emission Test Results

6.1 Power Line Conducted Emission, 150 kHz to 30MHz

Test Requirement ..... : FCC PART 15, SUBPART B

Test Method ..... : ANSI C63.4:2014

Test Result ..... : Pass

Frequency Range ..... : 150kHz to 30MHz

Class ..... : Class B

Limit ..... :

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

6.1.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 23°C

Humidity ..... : 53.6%RH

Atmospheric Pressure..... : 101kPa

EUT Operation:

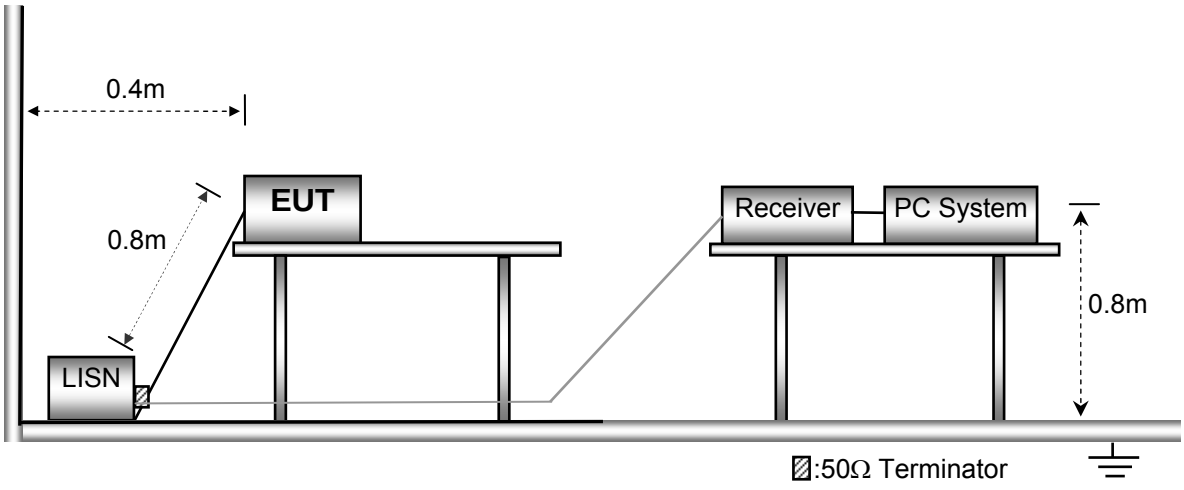
Input Voltage..... : DC 5V by USB form PC

Operating Mode ..... : USB Transmitting

Remark ..... : The worst mode is USB Transmitting mode and the data is shown as follow.

6.1.2 Block Diagram of Test Setup

The Mains Terminals Disturbance Voltage tests were performed in accordance with the ANSI C63.4:2014.

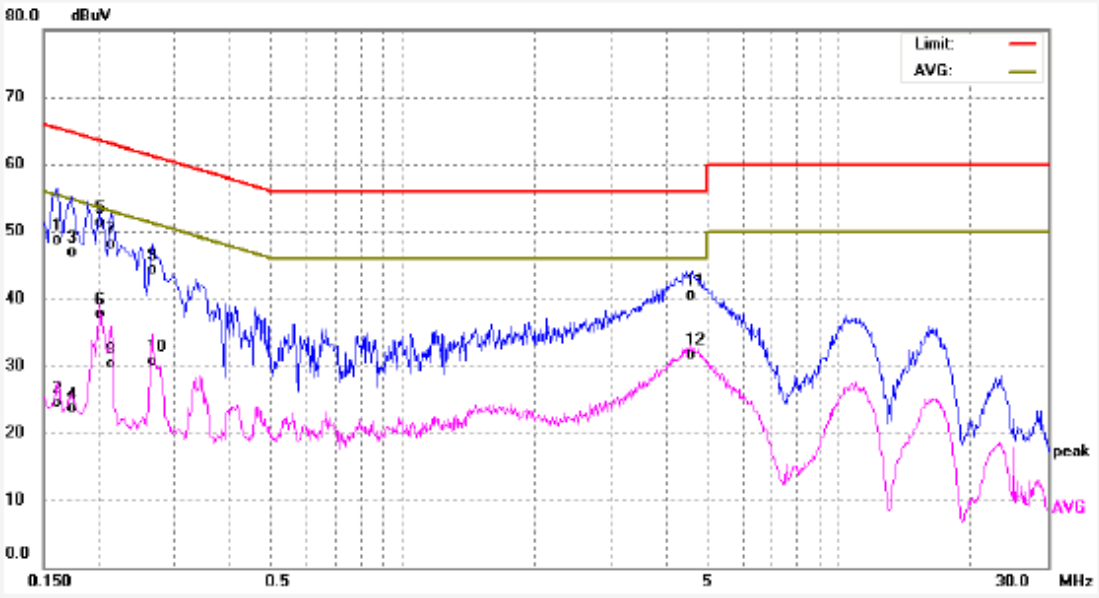


6.1.3 Measurement Data

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. According to the data in section 5.1.4, the EUT complied with the FCC PART 15, SUBPART B standards.

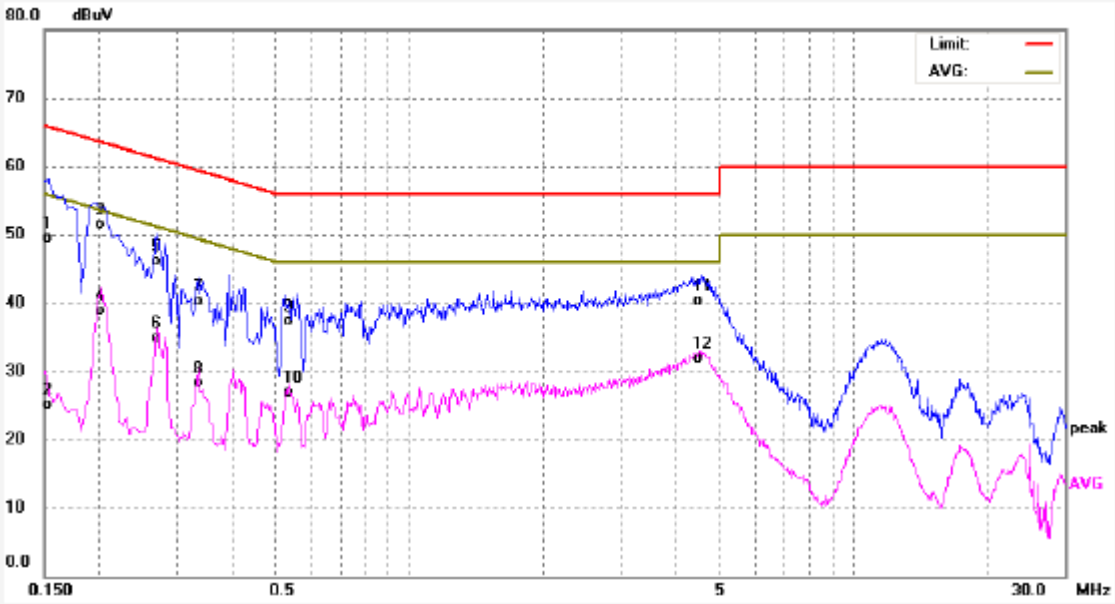
6.1.4 Power Line Conducted Emission Test Data

Live Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1620	38.71	9.94	48.65	65.36	-16.71	QP	
2	0.1620	14.48	9.94	24.42	55.36	-30.94	AVG	
3	0.1740	37.13	9.86	46.99	64.76	-17.77	QP	
4	0.1740	13.76	9.86	23.62	54.76	-31.14	AVG	
5	0.2020	41.35	9.88	51.23	63.52	-12.29	QP	
6	0.2020	27.77	9.88	37.65	53.52	-15.87	AVG	
7	0.2140	38.28	9.91	48.19	63.04	-14.85	QP	
8	0.2140	20.33	9.91	30.24	53.04	-22.80	AVG	
9	0.2660	34.33	10.00	44.33	61.24	-16.91	QP	
10	0.2660	20.68	10.00	30.68	51.24	-20.56	AVG	
11	4.6060	30.18	10.26	40.44	56.00	-15.56	QP	
12	4.6060	21.47	10.26	31.73	46.00	-14.27	AVG	

Neutral Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1539	39.53	10.02	49.55	65.78	-16.23	QP	
2	0.1539	15.09	10.02	25.11	55.78	-30.67	AVG	
3	0.2020	41.61	9.88	51.49	63.52	-12.03	QP	
4	0.2020	28.99	9.88	38.87	53.52	-14.65	AVG	
5	0.2700	36.14	10.00	46.14	61.12	-14.98	QP	
6	0.2700	24.85	10.00	34.85	51.12	-16.27	AVG	
7	0.3339	30.37	10.03	40.40	59.35	-18.95	QP	
8	0.3339	18.26	10.03	28.29	49.35	-21.06	AVG	
9	0.5340	27.24	10.07	37.31	56.00	-18.69	QP	
10	0.5340	16.77	10.07	26.84	46.00	-19.16	AVG	
11	4.5260	30.09	10.26	40.35	56.00	-15.65	QP	
12	4.5260	21.74	10.26	32.00	46.00	-14.00	AVG	

6.2 Radiation Emission, 30MHz to 1000MHz

Test Requirement ..... : FCC PART 15, SUBPART B

Test Method ..... : ANSI C63.4:2014

Test Result ..... : Pass

Frequency Range ..... : 30MHz to 1000MHz

Class. : Class B

Limit..... :

Frequency (MHz)	Distance (Meter)	Limit (dBμV/m)
		Quasi-peak
30 to 88	3	40
88 to 216	3	43.5
216 to 960	3	46
960 to 1000	3	54

6.2.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 23°C

Humidity ..... : 54.1%RH

Atmospheric Pressure..... : 101kPa

EUT Operation:

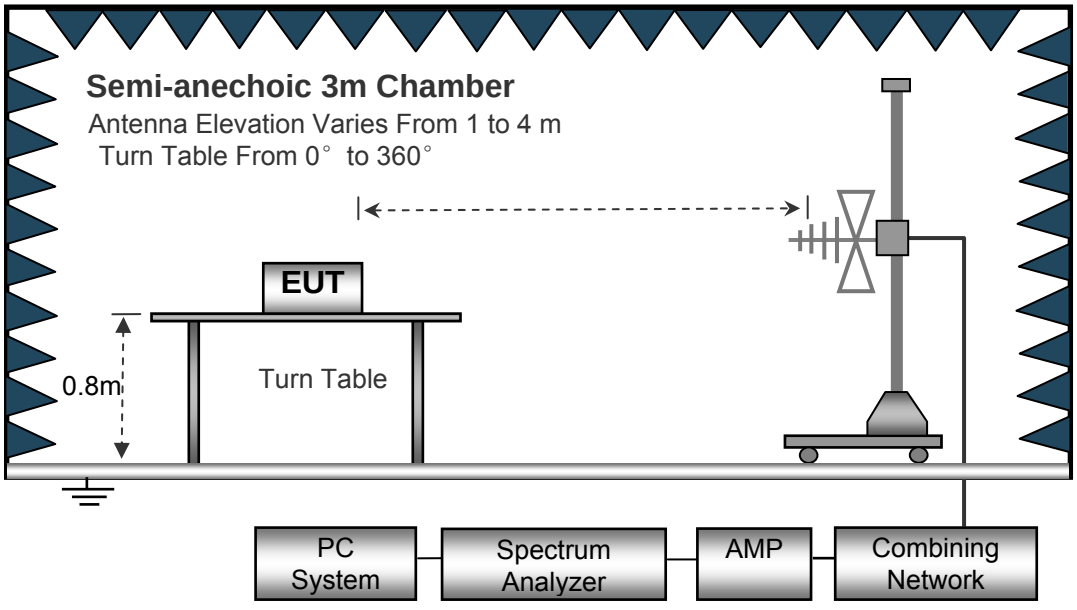
Input Voltage..... : DC 5V by USB form PC

Operating Mode ..... : USB Transmitting

Remark ..... : The worst mode is USB Transmitting mode and the data is shown as follow.

6.2.2 Block Diagram of Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4:2014.



6.2.3 Test Procedure

1. The EUT is placed on a turntable. the EUT 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. Except as otherwise indicated in paragraphs §15.33 (b) (2) or §15.33 (b)(3) of this section, for an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

Result: So the Frequency range of radiated form: 30MHz to 1GHz.

5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

6. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

7. Repeat above procedures until the measurements for all frequencies are complete.

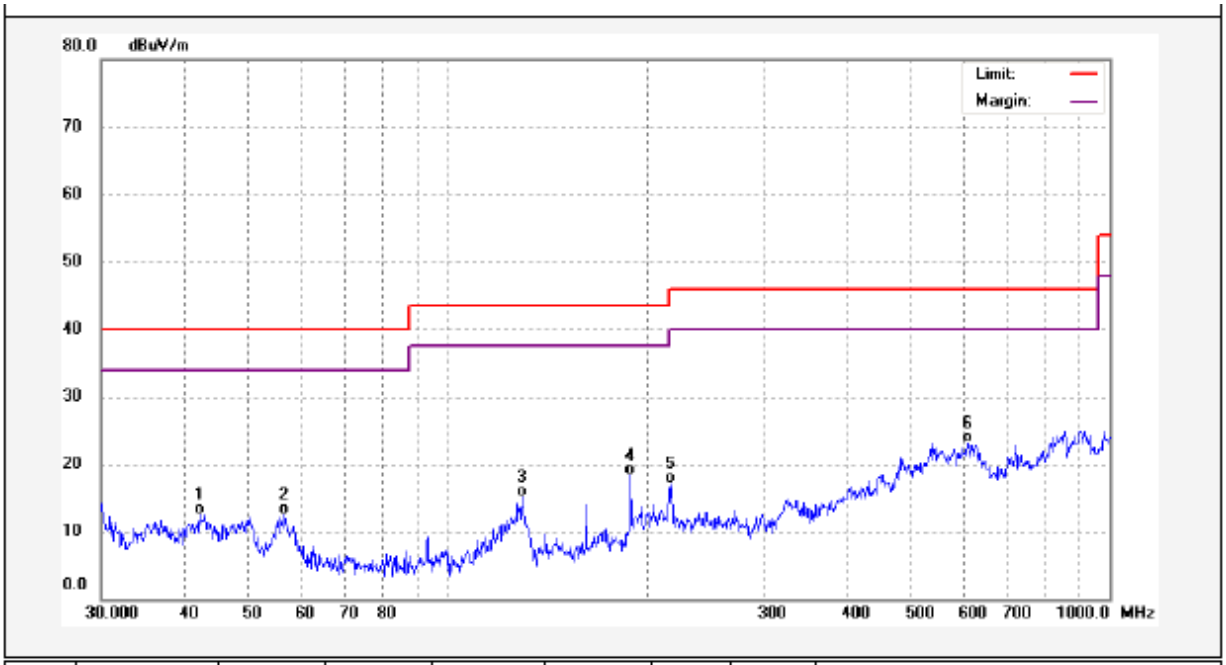
8. The radiation measurements are tested under 3-axes(X, Y, Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), after pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

6.2.4 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Antenna Vertical Polarization and Antenna Horizontal Polarization. Quasi-peak measurements were performed if peak emissions were within 6dB of the Quasi-peak limit line.

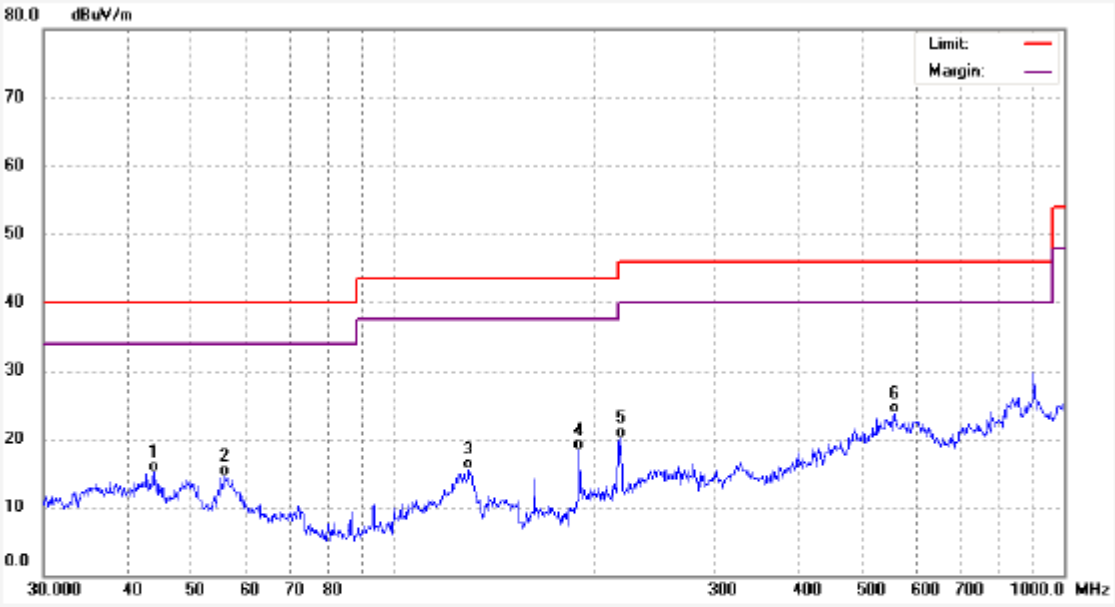
6.2.5 Radiated Emission Test Data, 30MHz to 1000MHz

Antenna Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	42.3022	26.96	-14.47	12.49	40.00	-27.51	QP	
2	56.7917	31.05	-18.51	12.54	40.00	-27.46	QP	
3	129.9226	27.81	-12.71	15.10	43.50	-28.40	QP	
4	189.0743	35.63	-17.38	18.25	43.50	-25.25	QP	
5	217.5443	34.41	-17.40	17.01	46.00	-28.99	QP	
6	609.9217	32.75	-9.58	23.17	46.00	-22.83	QP	

Antenna Polarization: Horizontal

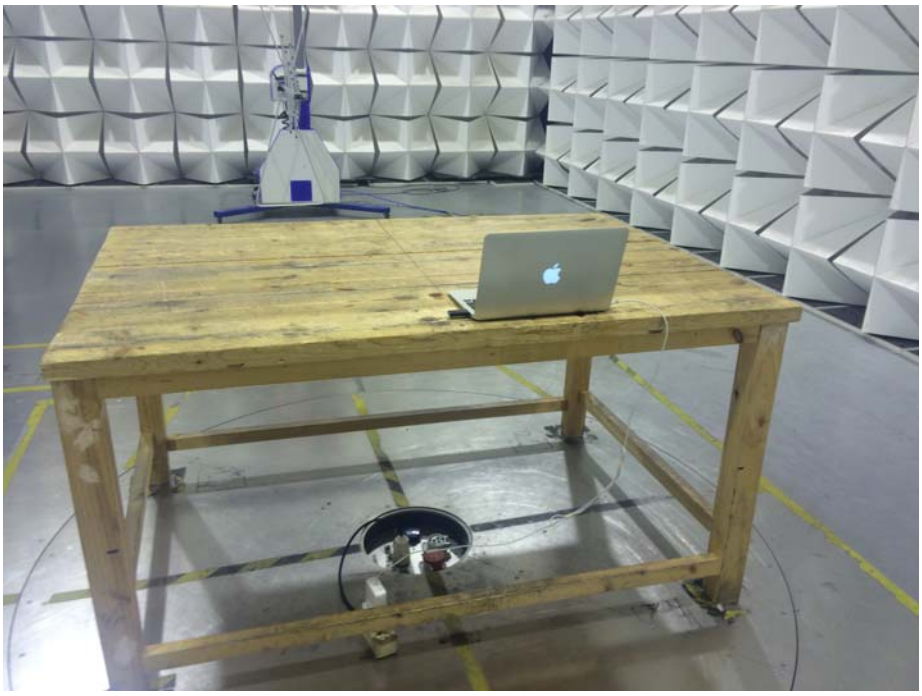


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	43.8119	29.82	-14.71	15.11	40.00	-24.89	QP	
2	56.0007	32.93	-18.35	14.58	40.00	-25.42	QP	
3	129.4677	28.37	-12.80	15.57	43.50	-27.93	QP	
4	189.0743	35.63	-17.38	18.25	43.50	-25.25	QP	
5	218.3085	37.40	-17.37	20.03	46.00	-25.97	QP	
6	558.7302	32.23	-8.46	23.77	46.00	-22.23	QP	

7 Photographs – Model FT134-X 15B Test Setup Photos

7.1 Photograph –Power Line Conducted Emission Test Setup at Test 2#

7.2 Photograph – Radiated Emission Test Setup for 30MHz~1000MHz at Test Site 2#



8 Photographs - Constructional Details

Note: Please refer to appendix: WTS17S0169285E_Photos.

======End of Report======