TESTING
No. L2264

Part 15B

TEST REPORT

Product Name	Smartisan T1
Model Name	SM701
FCC ID	2AEUYSM701
Applicant	Smartisan Technology Co., Ltd
Manufacturer	Smartisan Technology Co., Ltd
Date of issue	July 22, 2015

TA Technology (Shanghai) Co., Ltd.

GENERAL SUMMARY

Reference Standard(s)	**FCC Code CFR47 Part15B (2013)** Radio frequency device. **ANSI C63.4 (2009)** Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40GHz.
Conclusion	This portable wireless equipment has been measured in all cases requested by the relevant standards. Test results in Chapter 2 of this test report are below limits specified in the relevant standards. General Judgment : **Pass**
Comment	The test result only responds to the measured sample.

Approved by Guangchang Fan	**Revised by** Wei Liu	**Performed by** Xianqing Li
Guangchang Fan	Jiangpeng Lan	Xianqing Li
Director	EMC Manager	EMC Engineer

TABLE OF CONTENT

1. General Information

1.1. Notes of the test report

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L2264.

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 428261.

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 8510A.

TA Technology (Shanghai) Co., Ltd. guarantees the reliability of the data presented in this test report, which is the results of measurements and tests performed for the items under test on the date and under the conditions stated in this test report and is based on the knowledge and technical facilities available at TA Technology (Shanghai) Co., Ltd. at the time of execution of the test.

TA Technology (Shanghai) Co., Ltd. is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the items under test and the results of the test. The sample under test was selected by the Client.This report only refers to the item that has undergone the test.

The test results in this test report relate only to the devices specified in this report.This report shall not be reproduced except in full without the written approval of **TA Technology (Shanghai) Co., Ltd.**

If the electronic report is inconsistent with the printed one, it should be subject to the latter.

1.2. Testing laboratory

Company:	TA Technology (Shanghai) Co., Ltd.
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1.3. Applicant Information

Company:	Smartisan Technology Co., Ltd
Address:	7th Floor, Motorola Building, 1 East Wangjing Road, Chaoyang District, Beijing, 100102, P.R. China

1.4. Manufacturer Information

Company:	Smartisan Technology Co., Ltd
Address:	7th Floor, Motorola Building, 1 East Wangjing Road, Chaoyang District, Beijing, 100102, P.R. China

1.5. Information of EUT

General information

Product IMEI:	864516020010443
Hardware Version:	MMR500003C
Software Version:	V1.5.0
Antenna Type:	Internal Antenna
Used Host Product:	Lenovo X61
Test Mode:	Data transfer Mode

Ancillary equipment information

Equipment	Lenovo X61	USB cable
SN:	L3-D1224	/
Manufacturer:	/	/

Note：During the test the EUT is in data transfer mode.

1.6. Test Date

The test is performed from June 10, 2015 to June 18, 2015.

2. Test Information

2.1. Summary of test results

Number	Test Case	Clause in FCC Rules	conclusion
1	Radiated Emission	15.109, ANSI C63.4-2009	PASS
2	Conducted Emission	15.107, ANSI C63.4-2009	PASS

2.2. Radiated Emission

Ambient condition

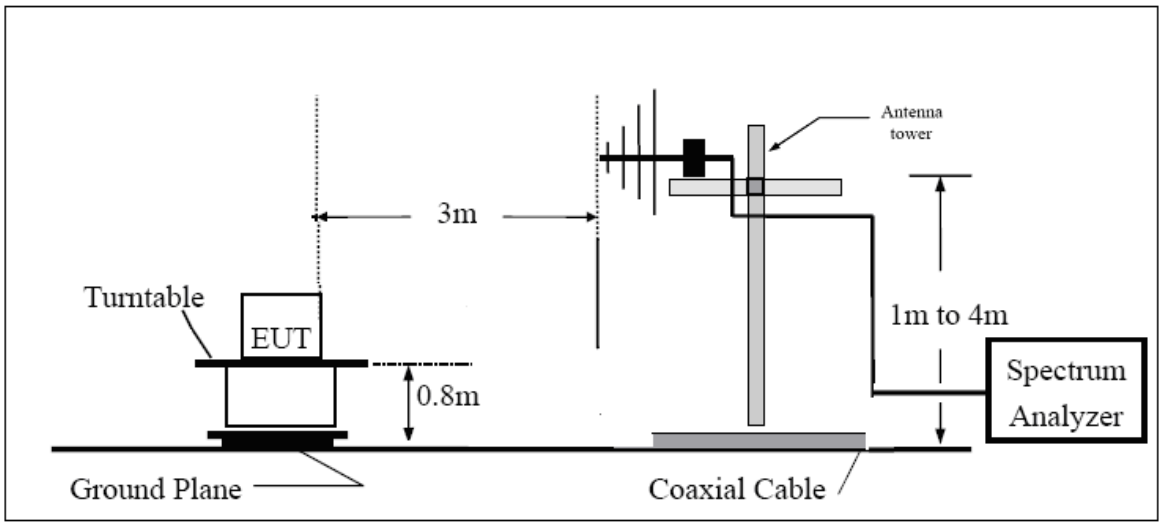
Temperature	Relative humidity	Pressure
24°C~26°C	45%~50%	102.5kPa

Methods of Measurement

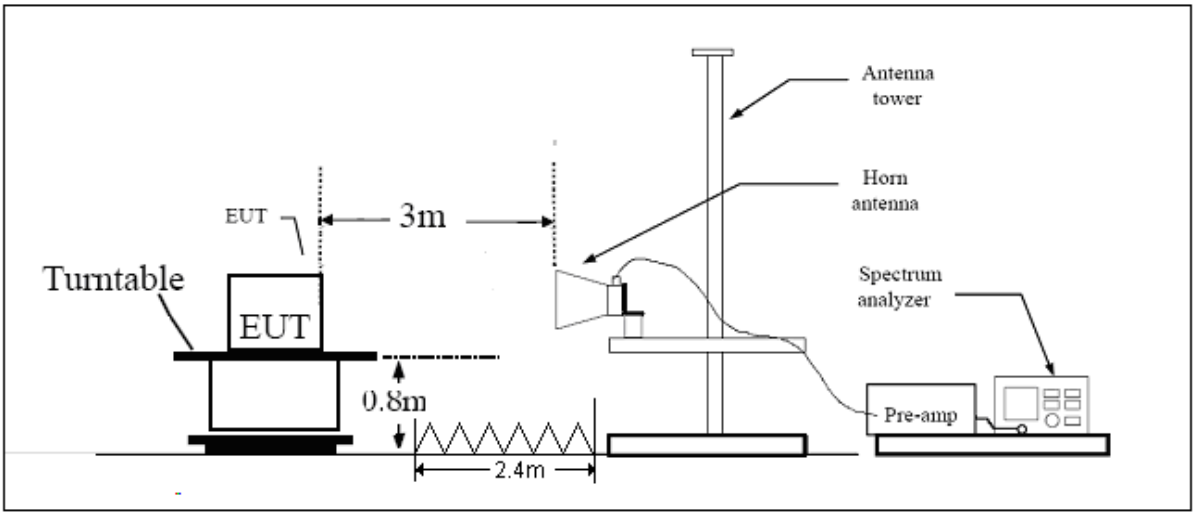
The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The distance between EUT and receive antenna should be 3 meters. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2009. Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier. During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated signal level. During the test, EUT is connected to a laptop via a USB cable in the case of data transfer mode. The EUT is used as the peripheral equipment of the PC. The model of laptop is Lenovo X61 and the serial number of laptop is L3-D1224
The data is transferred from EUT to PC; PC is connected to server via a long LAN cable.
The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. During the test, the EUT is worked at maximum output power.
Set the spectrum analyzer in the following:
Below 1GHz:
RBW=100kHz / VBW=300kHz / Sweep=AUTO
Above 1GHz:
(a) PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO
(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

Test Setup

Below 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Limits

Frequency (MHz)	Field Strength (dBμV/m)	Detector
30 -88	40.0	Quasi-peak
88-216	43.5	Quasi-peak
216 – 960	46.0	Quasi-peak
960-1000	54.0	Quasi-peak
1000-5th harmonic of the highest frequency or 40GHz,which is lower	54 74	Average Peak

Measurement Uncertainty

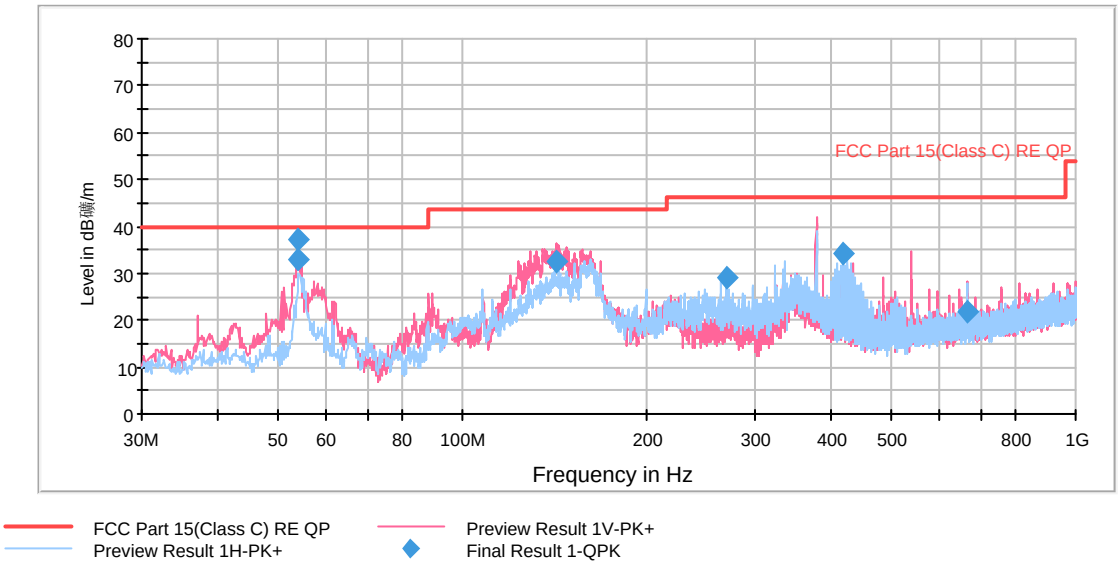
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96. U= 3.92 dB.

Test Results

Note: The processor operate frequency is 2.5GHz

Data transfer Mode

RE 30M-1GHz QP



Note: This graph displays the maximum values of horizontal and vertical by software.

Note: a font (Level in dBµV/m)in the test plot =(level in dBuv/m)

Radiated Emission from 30MHz to 1GHz

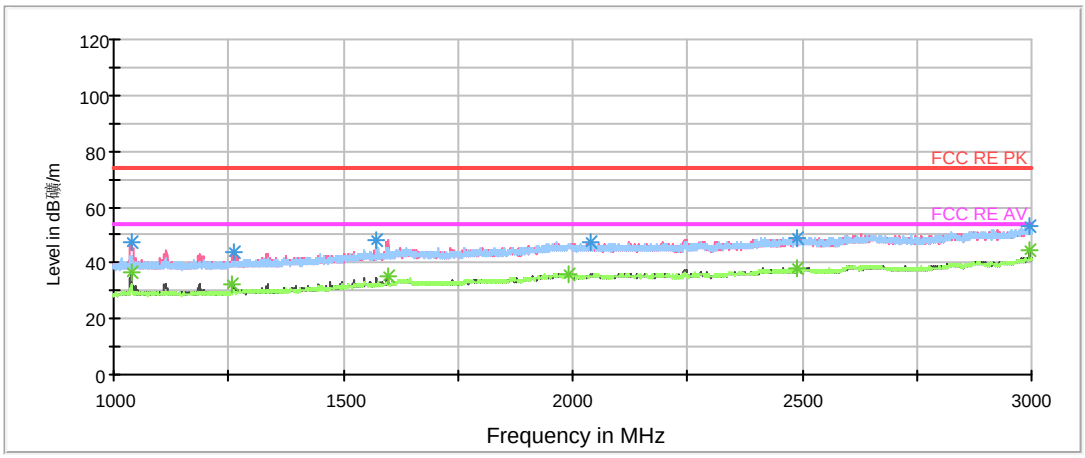
Frequency (MHz)	Quasi-Peak (dBuV/m)	Reading value (dBuV/m	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
53.899413	33.1	55.4	101.0	V	202.0	-22.3	6.9	40.0
54.072481	37.2	59.5	100.0	V	248.0	-22.3	2.8	40.0
142.400860	32.4	61.8	129.0	V	27.0	-29.4	11.1	43.5
269.718750	29.2	53.3	129.0	H	277.0	-24.1	16.8	46.0
419.204500	34.3	54.9	100.0	H	149.0	-20.6	11.7	46.0
663.923750	22.0	38.1	100.0	V	292.0	-16.1	24.0	46.0

Remark: 1. Quasi-Peak = Reading value + Correction factor

2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

3. Margin = Limit – Quasi-Peak

RE 1G-3GHz PK+AV



FCC RE PK
Preview Result 1V-PK+
Preview Result 1H-PK+
Data Reduction Result 1 [2]-PK+
FCC RE AV
Preview Result 2V-AVG
Preview Result 2H-AVG
Data Reduction Result 2 [2]-AVG

Note: Blue trace uses the peak detection Green trace uses the average detection
This graph displays the maximum values of horizontal and vertical by software.

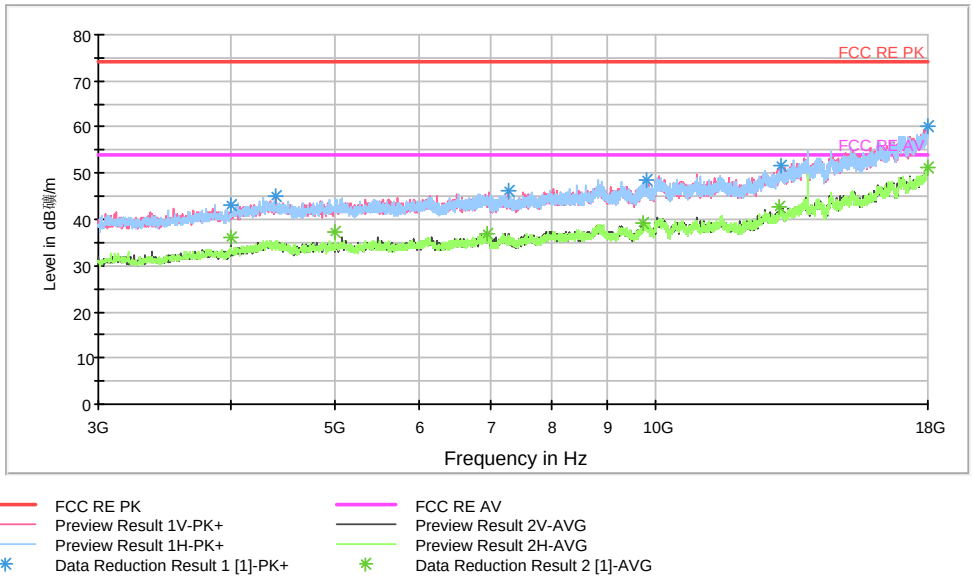
Note: a font (Level in dBµV/m)in the test plot =(level in dBuv/m)

Radiated Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1038.250000	47.1	57.0	101.0	V	36.0	-9.9	26.9	74
1260.750000	44.0	53.3	101.0	V	48.0	-9.3	30.0	74
1571.250000	47.9	54.7	101.0	V	115.0	-6.8	26.1	74
2040.250000	47.2	50.2	101.0	V	82.0	-3.0	26.8	74
2489.500000	49.2	49.6	101.0	H	122.0	-0.4	24.8	74
2995.000000	52.8	54.2	101.0	V	0.0	-1.4	21.2	74

Frequency (MHz)	Average (dBuV/m)	Reading value	Height (cm)	Polarization	Azimuth (deg)	Correct Factor	Margin (dB)	Limit (dBuV/m)
1038.250000	36.8	46.7	101.0	V	36.0	-9.9	17.2	54
1260.750000	31.2	40.5	101.0	V	48.0	-9.3	22.8	54
1571.250000	34.8	41.6	101.0	V	115.0	-6.8	19.2	54
2040.250000	35.5	38.5	101.0	V	82.0	-3.0	18.5	54
2489.500000	37.2	37.6	101.0	H	122.0	-0.4	16.8	54
2995.000000	44.2	45.6	101.0	V	0.0	-1.4	9.8	54

RE 3-18GHz PK+AV



Note: Blue trace uses the peak detection Green trace uses the average detection
This graph displays the maximum values of horizontal and vertical by software.

Note: a font (Level in dBµV/m)in the test plot =(level in dBuv/m)

Radiated Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3999.375000	43.2	44.1	101.0	V	144.0	-0.9	30.8	74
4404.375000	44.9	47.4	101.0	V	0.0	-2.5	29.1	74
7263.750000	46.1	53.7	101.0	V	175.0	-7.6	27.9	74
9802.500000	48.5	59.8	101.0	H	73.0	-11.3	25.5	74
13113.750000	51.5	65.8	101.0	H	133.0	-14.3	22.5	74
17988.750000	60.2	84.7	101.0	V	26.0	-24.5	13.8	74

Frequency (MHz)	Average (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
3999.375000	36.2	37.1	101.0	V	144.0	-0.9	17.8	54
4404.375000	34.7	37.2	101.0	V	0.0	-2.5	19.3	54
7263.750000	35.7	43.3	101.0	V	175.0	-7.6	18.3	54
9802.500000	38.5	49.8	101.0	H	73.0	-11.3	15.5	54
13113.750000	42.0	56.3	101.0	H	133.0	-14.3	12.0	54
17988.750000	50.6	75.1	101.0	V	26.0	-24.5	3.4	54

2.3. Conducted Emission

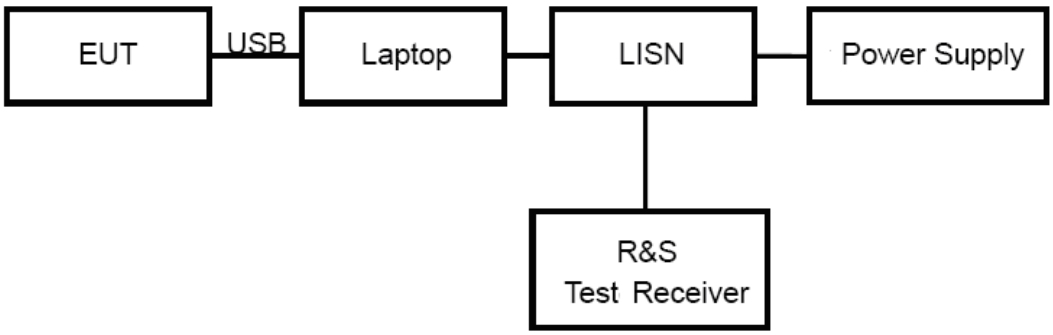
Ambient condition

Temperature	Relative humidity	Pressure
24°C ~26°C	50%~55%	102.5kPa

Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2009. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz.The measurement result should include both L line and N line. During the test, EUT is connected to a laptop via a USB cable in the case of data transfer mode. The EUT is used as the peripheral equipment of the PC. The model of laptop is Lenovo X61 and the serial number of laptop is L3-D1224

Test Setup



Note: Power Supply is AC Power source and it is used to change the voltage from 230V/50Hz to 120V/60Hz.

Limits

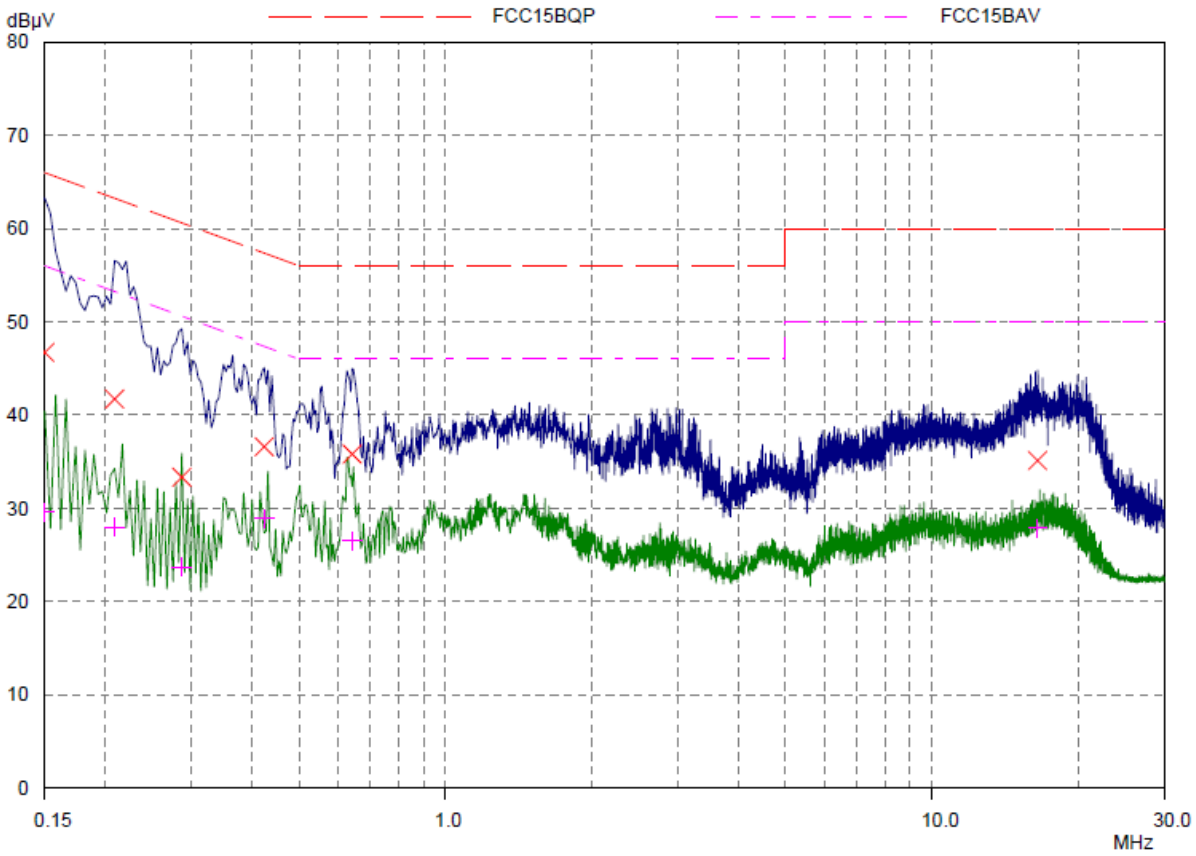
Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96. U= 2.69 dB.

Test Results

Data transfer Mode



Final Measurement Results

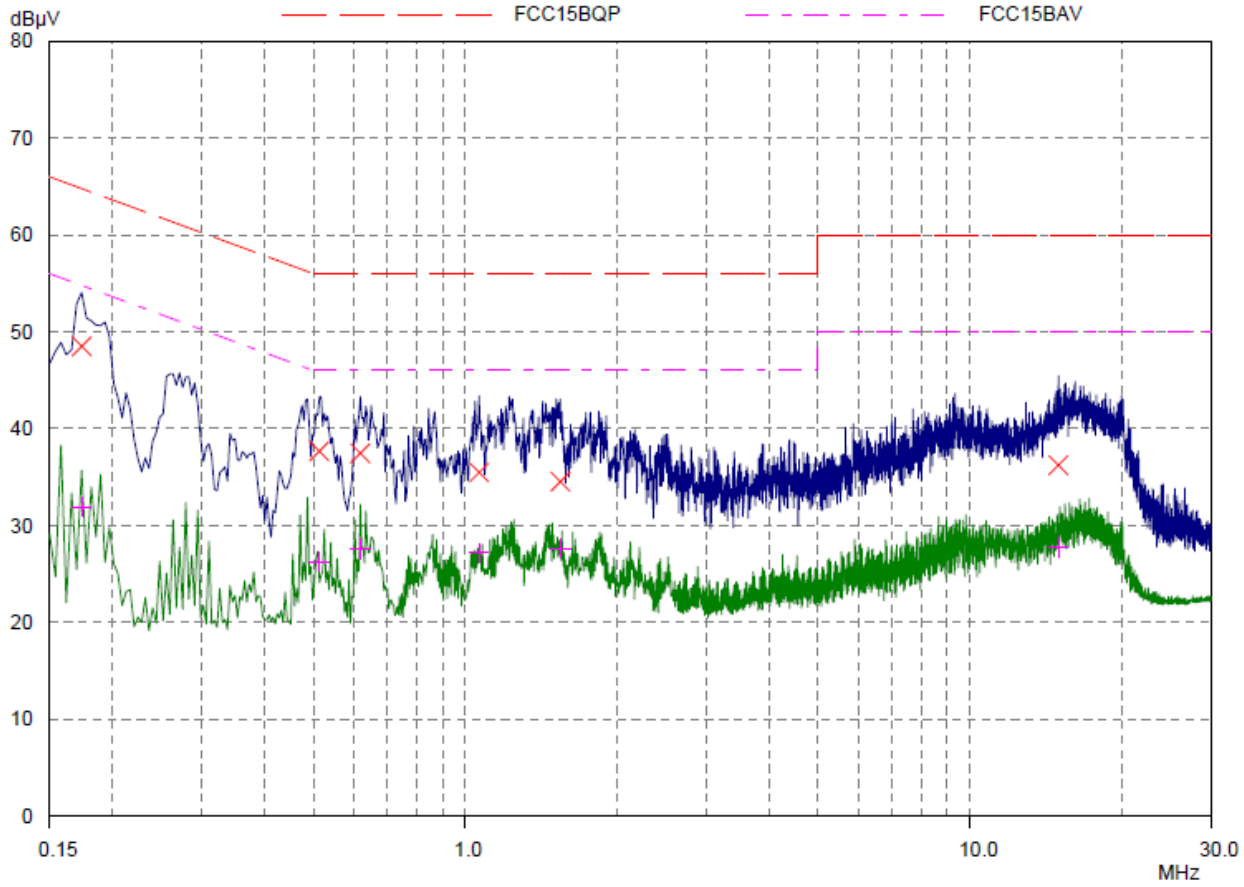
Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.15	46.72	66.00	19.28	L1	gnd
0.20859	41.73	63.26	21.53	L1	gnd
0.28671	33.35	60.62	27.27	L1	gnd
0.42343	36.60	57.38	20.78	L1	gnd
0.64218	35.82	56.00	20.18	L1	gnd
16.48203	35.12	60.00	24.88	L1	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.15	29.57	56.00	26.43	L1	gnd
0.20859	27.97	53.26	25.29	L1	gnd
0.28671	23.72	50.62	26.90	L1	gnd
0.42343	28.89	47.38	18.49	L1	gnd
0.64218	26.51	46.00	19.49	L1	gnd
16.48203	27.86	50.00	22.14	L1	gnd

Note: Blue trace uses the peak detection Green trace uses the average detection

L line

Conducted Emission from 150 KHz to 30 MHz



Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB	Phase -	PE -
0.17343	48.50	64.79	16.29	N	gnd
0.51327	37.68	56.00	18.32	N	gnd
0.61875	37.46	56.00	18.54	N	gnd
1.06406	35.49	56.00	20.51	N	gnd
1.54062	34.54	56.00	21.46	N	gnd
14.97031	36.24	60.00	23.76	N	gnd

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB	Phase -	PE -
0.17343	31.92	54.79	22.87	N	gnd
0.51327	26.32	46.00	19.68	N	gnd
0.61875	27.64	46.00	18.36	N	gnd
1.06406	27.17	46.00	18.83	N	gnd
1.54062	27.65	46.00	18.35	N	gnd
14.97031	27.73	50.00	22.27	N	gnd

Note: Blue trace uses the peak detection Green trace uses the average detection
N line
Conducted Emission from 150 KHz to 30 MHz

3. Main Test Instruments

No.	Name	Type	Manufacturer	Serial Number	Calibration Date	Expiration Time	Valid Period
01	EMI Test Receiver	ESCI	R&S	100948	2014-06-28	2015-06-27	1 year
02	Trilog Antenna	VULB 9163	SCHWARZBECK	9163-201	2013-06-19	2016-06-18	3 years
03	Signal Analyzer	FSV30	R&S	100815	2014-06-28	2015-06-27	1 year
04	Horn Antenna	HF907	R&S	100126	2012-07-01	2015-06-30	3 years
05	Horn Antenna	3160-09	ETS-Lindgren	00102643	2012-07-01	2015-06-30	3 years
06	EMI Test Receiver	ESCS30	R&S	100138	2015-01-13	2016-01-12	1 year
07	LISN	ENV216	R&S	101171	2015-04-10	2016-04-09	1 year

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

ANNEX A： The EUT Appearance and Test Setup

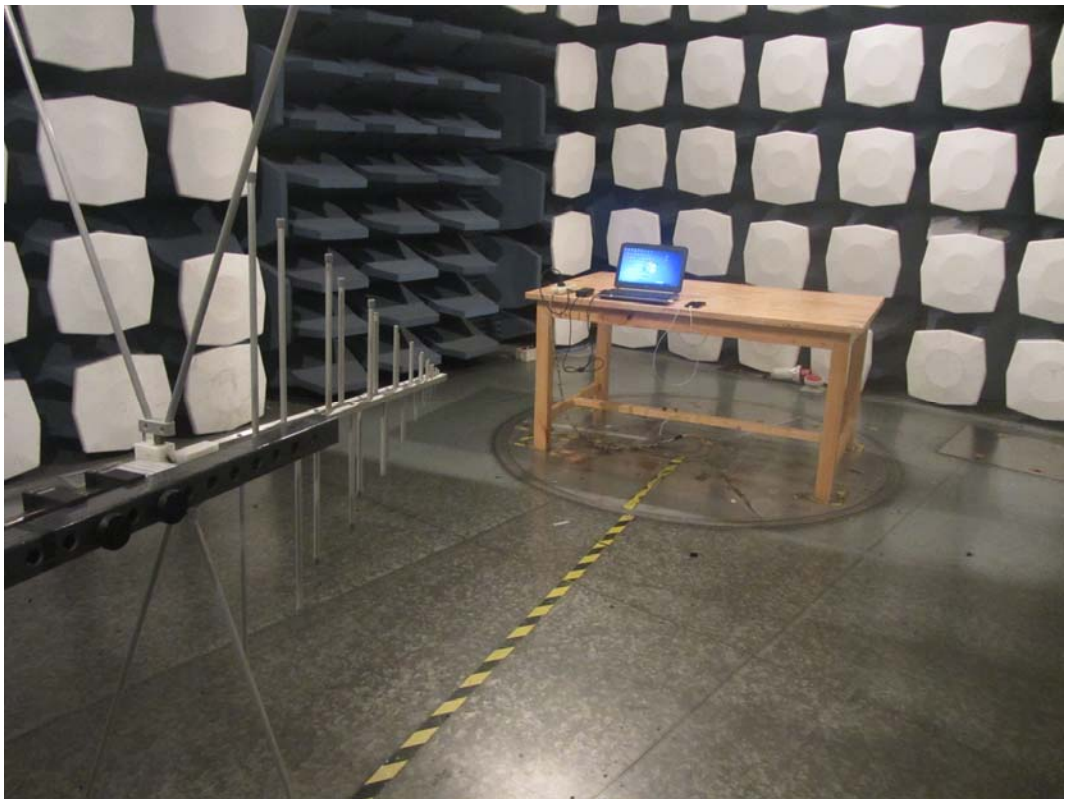
A.1 EUT Appearance

a: EUT

b: Adapter

Picture 1 EUT

A.2 Test Setup



a: Below 1GHz

b: Above 1GHz

Picture 2 Radiated Emission Test Setup

Picture 3 Conducted Emission Test Setup