



# Part 15B

# TEST REPORT

<b>Product Name</b>	PV WEB Data Logger
<b>Model Name</b>	TK-E20-01,TK-E20-08,TK-E20-16, TK-E20-08S,TK-E20-16S,TK-E20-32D
<b>FCC ID</b>	A69ETHERNET01
<b>Client</b>	Shanghai Taoke Network Co.,Ltd

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**GENERAL SUMMARY**

<b>Product Name</b>	PV WEB Data Logger	<b>Model Name</b>	TK-E20-01,TK-E20-08,TK-E20-16, TK-E20-08S,TK-E20-16S,TK-E20-32D
<b>FCC ID</b>	A69ETHERNET01		
<b>Report No.</b>	RZA1108-1393EMC01R2		
<b>Client</b>	Shanghai Taoke Network Co.,Ltd		
<b>Manufacturer</b>	Shanghai Taoke Network Co.,Ltd		
<b>Reference Standard(s)</b>	<p><b>FCC Code CFR47 Part15B (2010-12)</b> Radio frequency device.</p> <p><b>ANSI C63.4 (2003)</b> Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40GHz.</p>		
<b>Conclusion</b>	<p>Test results in Chapter 2 of this test report are below limits specified in the relevant standards.</p> <p>General Judgment : <b>Pass</b></p> <p style="text-align: center;">(Stamp)</p> <p style="text-align: center;">Date of issue: December 12<sup>th</sup>, 2011</p> 		
<b>Comment</b>	The test result only responds to the measured sample.		

Approved by 杨伟中

Director

Revised by 范广勇

EMC Manager

Performed by 刘伟

EMC Engineer

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## 1. General Information

### 1.1. Notes of the test report

**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. This report only refers to the item that has undergone the test.

This report standalone dose not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities. This report can not be used partially or in full for publicity and/or promotional purposes without previous written approval of **TA Technology (Shanghai) Co., Ltd.** and the Accreditation Bodies, if it applies.

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

### 1.2. Testing laboratory

Company: TA Technology (Shanghai) Co., Ltd.  
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong  
City: Shanghai  
Post code: 201201  
Country: P. R. China  
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Telephone: +86-021-50791141/2/3  
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E-mail: [yangweizhong@ta-shanghai.com](mailto:yangweizhong@ta-shanghai.com)

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### 1.3. Applicant Information

Company: Shanghai Taoke Network Co.,Ltd  
Address: Room 201, Building.2, No.215, Rd Yaohua, Dist.Pudong  
City: Shanghai  
Postal Code: /  
Country: P.R.China  
Contact: Lu Jianzhou  
Telephone: +86 013916398386  
Fax: +86 21 60936519

### 1.4. Manufacturer Information

Company: Shanghai Taoke Network Co.,Ltd  
Address: Room 201, Building.2, No.215, Rd Yaohua, Dist.Pudong  
City: Shanghai  
Postal Code: /  
Country: P.R.China  
Telephone: +86 013916398386  
Fax: +86 21 60936519

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**1.5. Information of EUT**

**General information**

Name of EUT:	PV WEB Data Logger
IMEI:	/
Hardware Version:	DAU-SPS-ENT V0.02
Software Version:	V1.00.ENT.002

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### Auxiliary Equipment Details

#### AE1: Charger

Model: YH-S15AV1201000  
Manufacture: Yuhang Electric Appliance Co.,Ltd.  
S/N: /

#### AE1: Notebook

Model: IBM T61  
Manufacture: Lenovo  
S/N: L3-C9644

Equipment Under Test (EUT) is PV WEB Data Logger.

The sample under test was selected by the Client.

Components list please refer to documents of the manufacturer.

### 1.6. Test Date

The test is performed from September 8, 2011 to September 9, 2011.

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## **2. Test Information**

### **2.1. Summary of test results**

<b>Number</b>	<b>Test Case</b>	<b>Clause in FCC Rules</b>	<b>Verdict</b>
1	Radiated Emission	15.109, ANSI C63.4-2003	PASS
2	Conducted Emission	15.107, ANSI C63.4-2003	PASS

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## Test Report

### 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 C63.4-2003. Sweep the whole frequency band through the range from 30MHz to 10GHz. During the test, the height of receive antenna shall be moved from 30MHz to 5<sup>th</sup> harmonic of the highest frequency, 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 spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna.

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

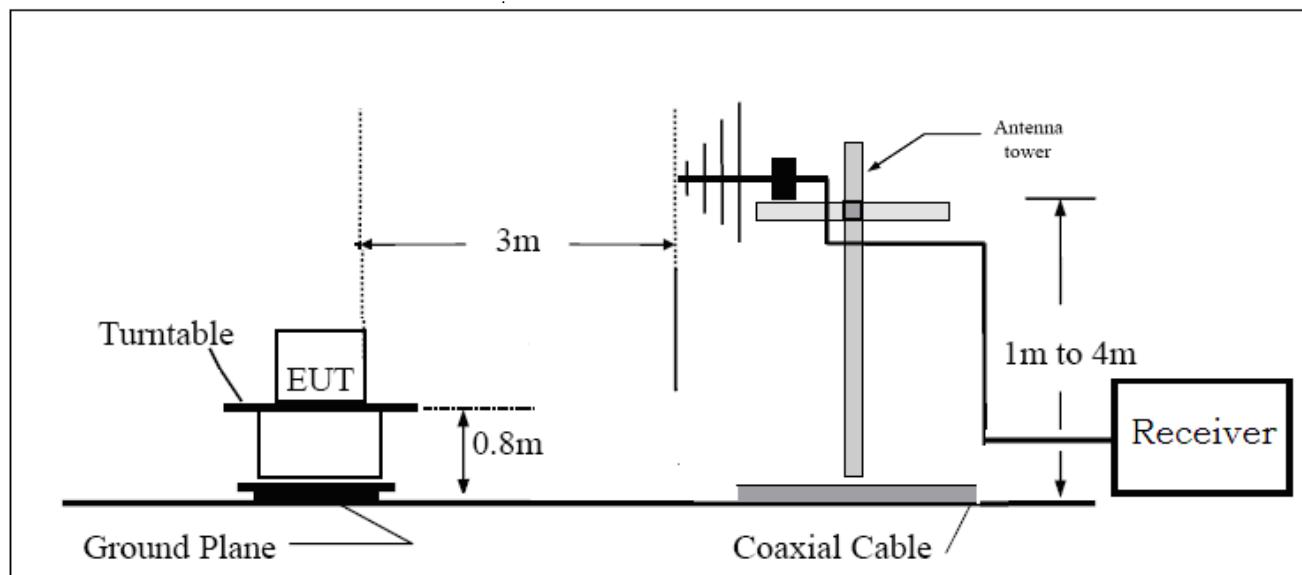
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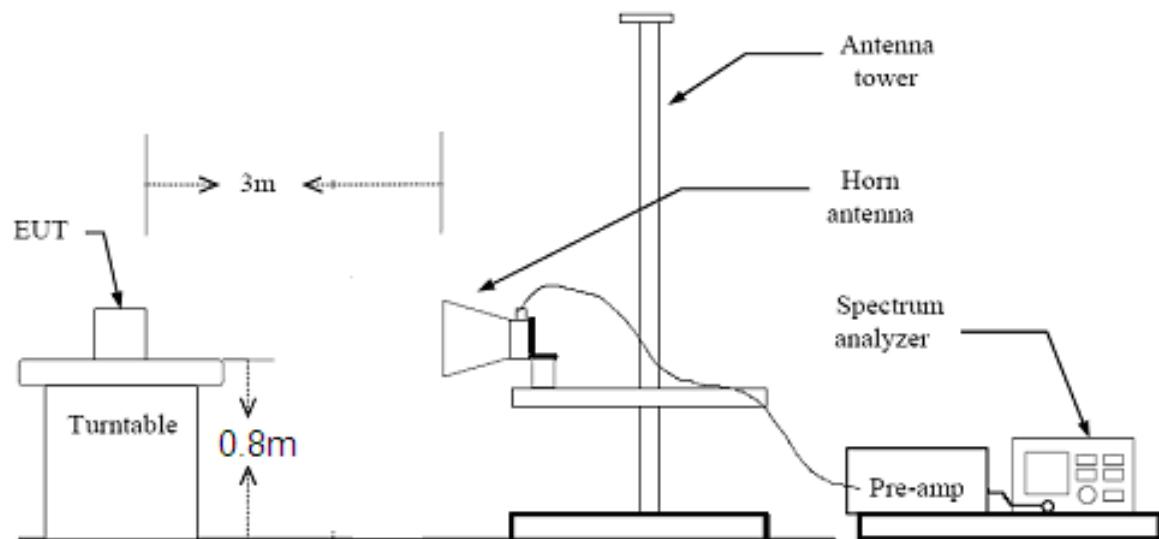
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**Test Setup**

**Below 1GHz**



**Above 1GHz**



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### Limits

Frequency (MHz)	Field Strength (dB $\mu$ V/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
1000-5 <sup>th</sup> harmonic of the highest frequency or 40GHz,which is lower	54 74	Average Peak

### Measurement Uncertainty

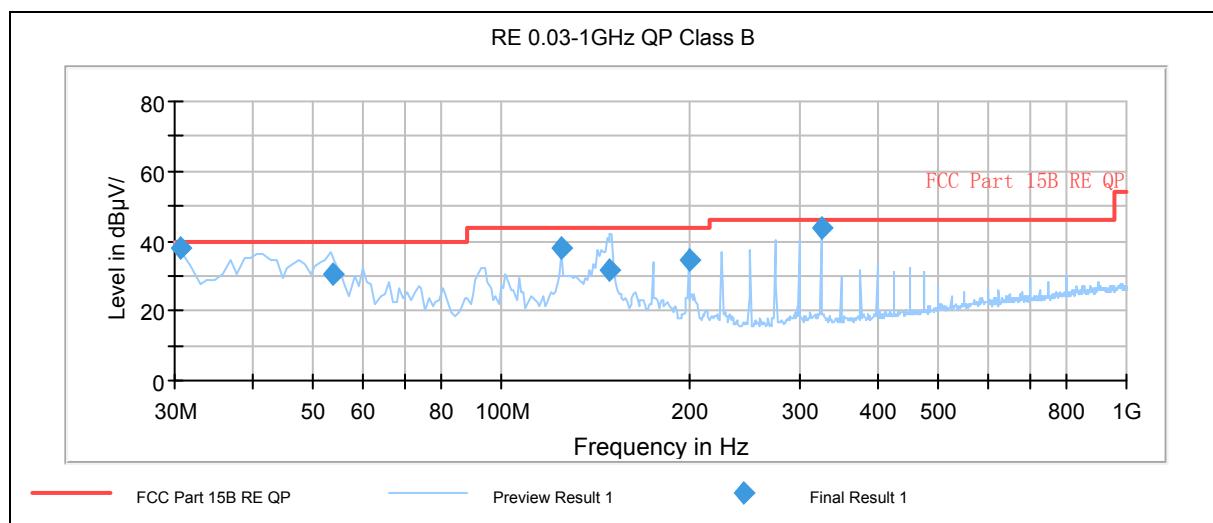
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .  $U = 3.92$  dB.

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**Test Results**



Radiated Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
30.600000	37.9	100.0	V	267.0	60.4	-22.5	2.1	40.0
53.560000	30.8	100.0	V	42.0	55.6	-24.8	9.2	40.0
125.020000	38.0	100.0	V	319.0	68.1	-30.1	5.5	43.5
149.350000	31.8	100.0	V	339.0	63.1	-31.3	11.7	43.5
200.030000	34.3	100.0	V	0.0	63.4	-29.1	9.2	43.5
325.040000	43.9	100.0	H	79.0	69.3	-25.4	3.1	47.0

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

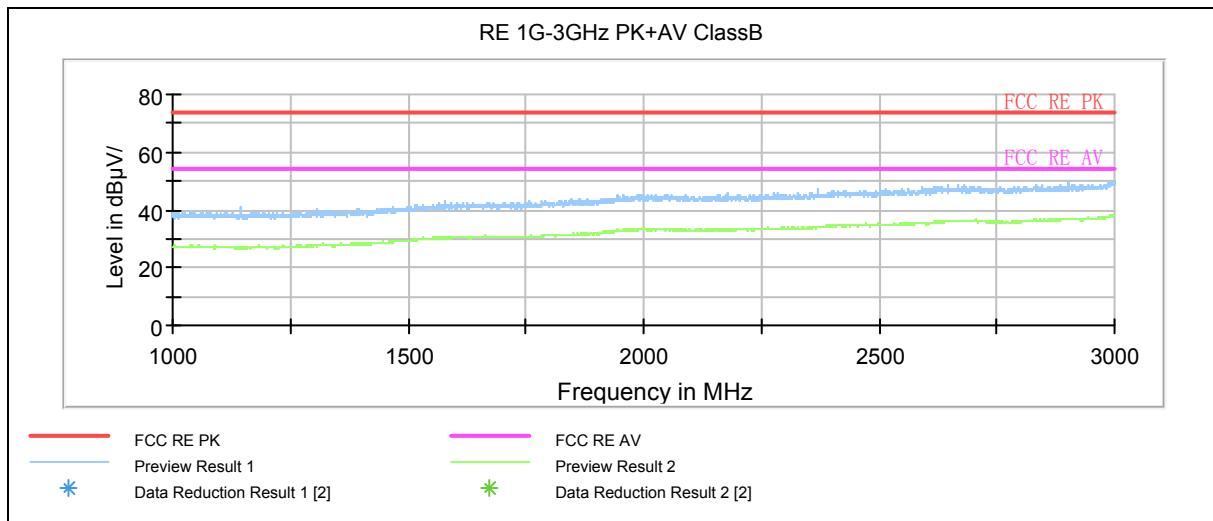
2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

3. Margin = Limit – Quasi-Peak

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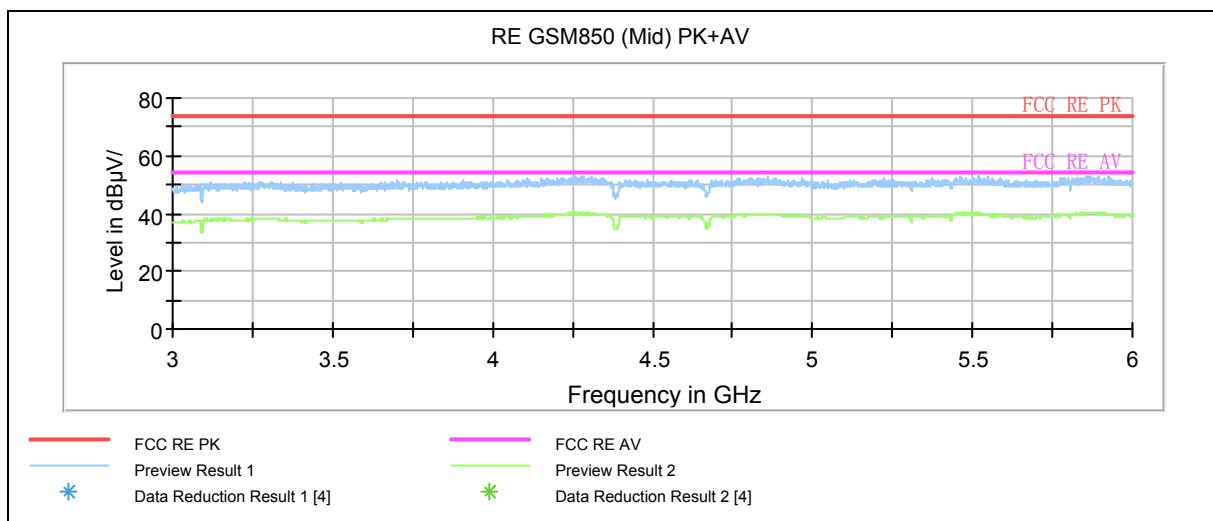
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Note: Blue trace uses the peak detection    Green trace uses the average detection

Radiated Emission from 1GHz to 3GHz



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

Radiated Emission from 3GHz to 6GHz

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### 2.3. Conducted Emission

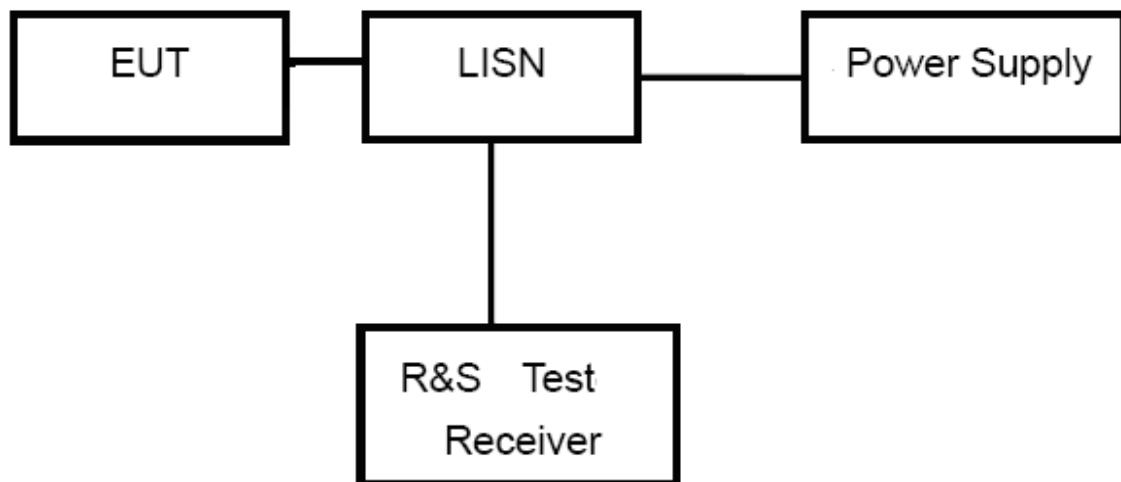
#### Ambient condition

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 C63.4-2003. 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, and the EUT is worked at maximum output power.

#### Test Setup



Note: Power Supply is AC Power source and it is used to change the voltage from 220V/50Hz to 110V/60Hz.

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**Limits**

<b>Frequency (MHz)</b>	<b>Conducted Limits(dB<math>\mu</math>V)</b>	
	<b>Quasi-peak</b>	<b>Average</b>
0.15 - 0.5	66 to 56 <sup>*</sup>	56 to 46 <sup>*</sup>
0.5 - 5	56	46
5 - 30	60	50

<sup>\*</sup>: Decreases with the logarithm of the frequency.

**Measurement Uncertainty**

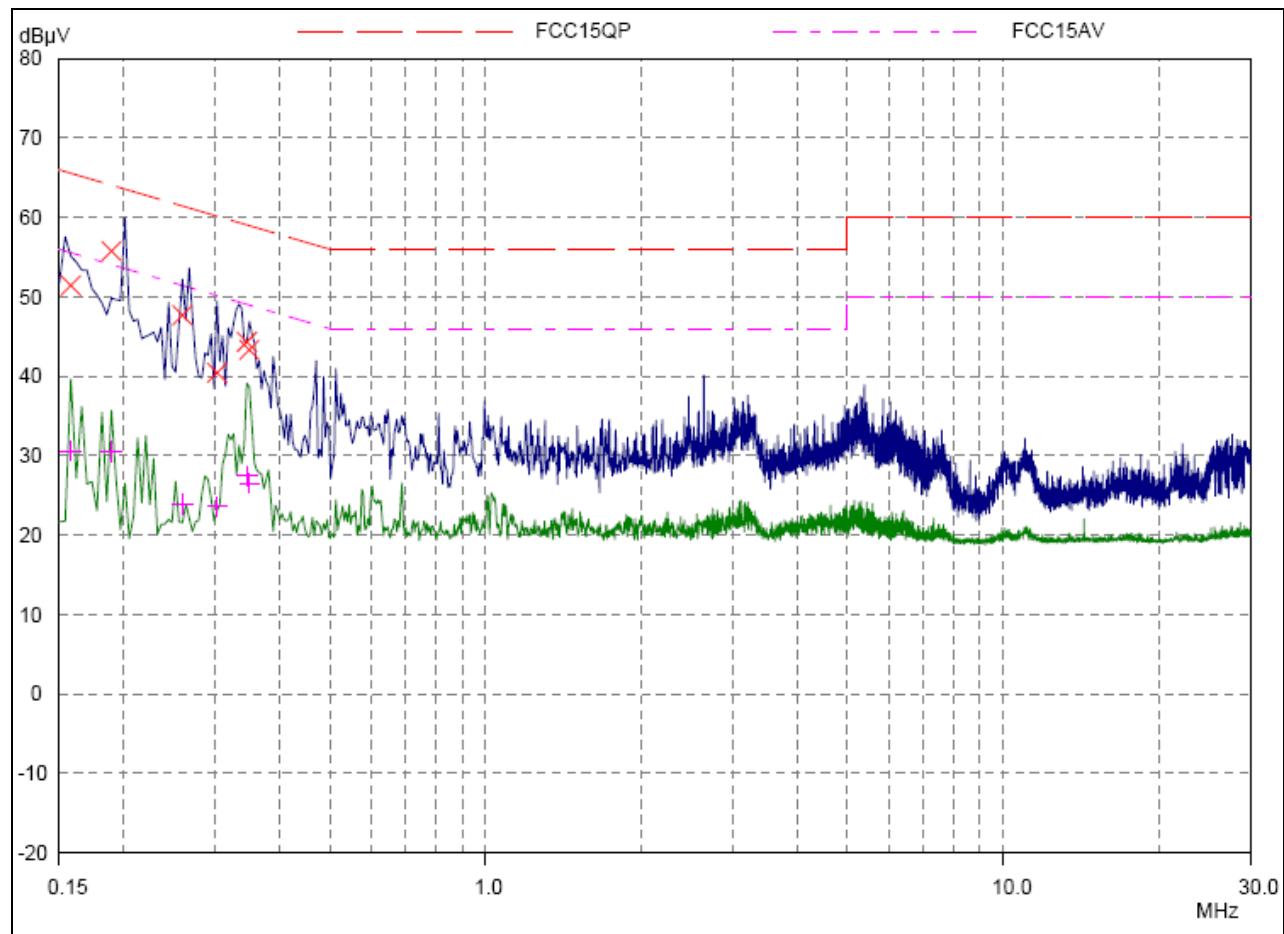
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .  $U = 2.69$  dB.

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## Test Results



L line

### Final Measurement Results

Frequency MHz	QP Level dB $\mu$ V	QP Limit dB $\mu$ V	QP Delta dB	Phase
------------------	------------------------	------------------------	----------------	-------

0.15781	51.44	65.58	14.14	L1
0.18906	55.76	64.08	8.32	L1
0.25937	47.70	61.45	13.75	L1
0.30234	40.44	60.18	19.74	L1
0.34531	44.34	59.07	14.73	L1
0.34921	43.32	58.98	15.66	L1

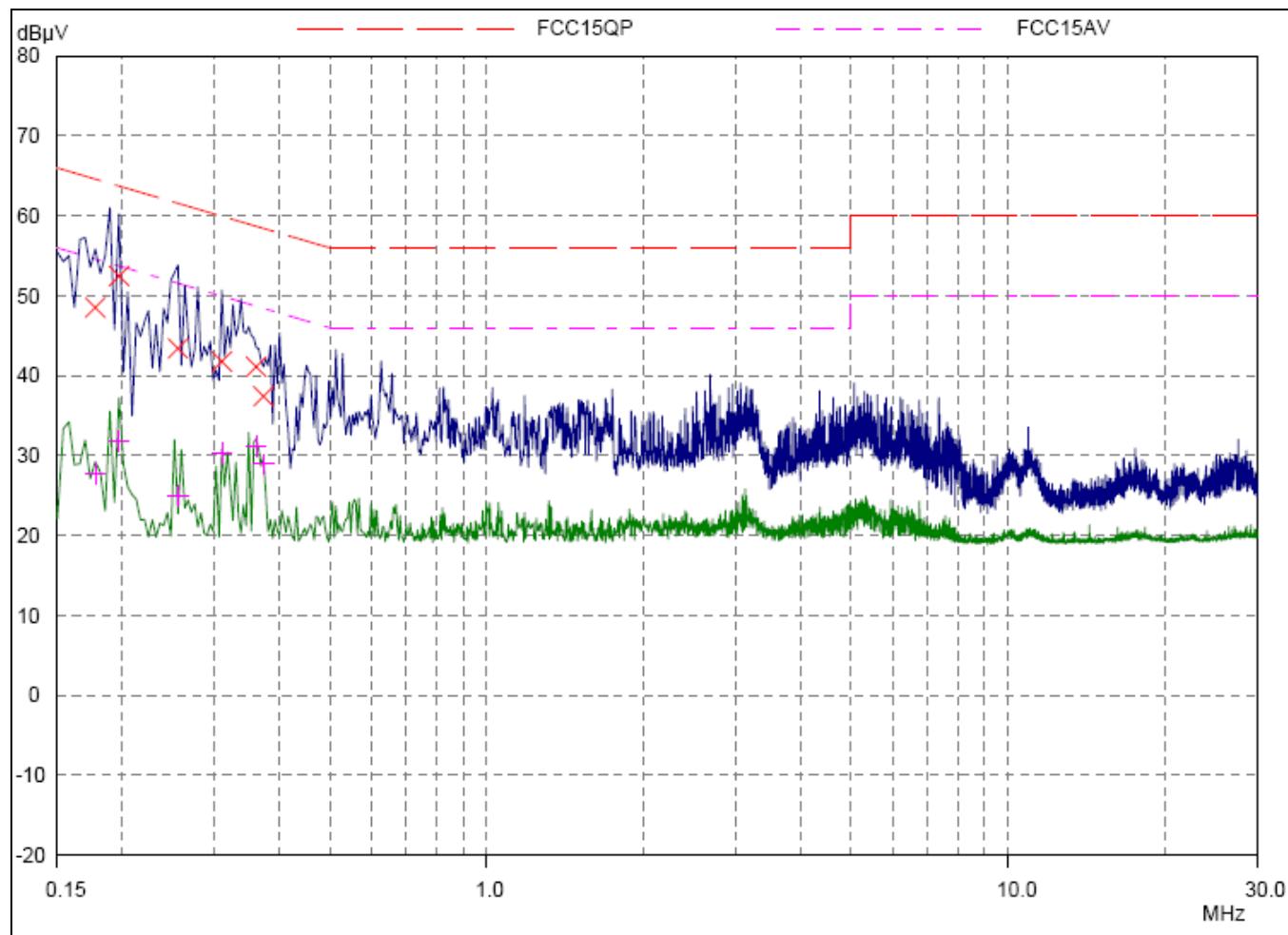
Frequency MHz	AV Level dB $\mu$ V	AV Limit dB $\mu$ V	AV Delta dB	Phase
------------------	------------------------	------------------------	----------------	-------

0.15781	30.62	55.58	24.96	L1
0.18906	30.54	54.08	23.54	L1
0.25937	23.96	51.45	27.49	L1
0.30234	23.60	50.18	26.58	L1
0.34531	27.47	49.07	21.60	L1
0.34921	26.53	48.98	22.45	L1

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**N line**  
**Final Measurement Results**

Frequency MHz	QP Level dB $\mu$ V	QP Limit dB $\mu$ V	QP Delta dB	Phase
------------------	------------------------	------------------------	----------------	-------

0.17734	48.54	64.61	16.07	N
0.19687	52.48	63.74	11.26	N
0.25546	43.42	61.58	18.16	N
0.31015	41.80	59.97	18.17	N
0.36093	41.12	58.71	17.59	N
0.37265	37.44	58.44	21.00	N

Frequency MHz	AV Level dB $\mu$ V	AV Limit dB $\mu$ V	AV Delta dB	Phase
------------------	------------------------	------------------------	----------------	-------

0.17734	27.76	54.61	26.85	N
0.19687	31.86	53.74	21.88	N
0.25546	24.93	51.58	26.65	N
0.31015	30.29	49.97	19.68	N
0.36093	31.18	48.71	17.53	N
0.37265	28.94	48.44	19.50	N

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### 3. Main Test Instruments

No.	Name	Type	Manufacturer	Serial Number	Calibration Date	Valid Period
01	Signal Analyzer	FSV	R&S	100815	2011-06-27	One year
02	EMI Test Receiver	ESCI	R&S	100948	2011-06-30	One year
03	Trilog Antenna	VULB 9163	SCHWARZB ECK	9163-201	2011-06-29	Two years
04	Horn Antenna	HF907	R&S	100126	2011-07-01	Two years
05	EMI Test Receiver	ESCS30	R&S	100138	2011-01-17	One year
06	LISN	ENV216	R&S	101171	2010-04-16	Two years
07	Semi-Anechoic Chamber	9.6*6.7*6.6m	ETS-Lindgren	NA	NA	NA
08	EMI test software	ES-K1	R&S	NA	NA	NA

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