



Report No.: RZA1103-0392EMC_R2



Part 15B


TEST REPORT

Product Name	m1000
Model Name	m1000
FCC ID	WA6M1000
Client	verykool USA Inc

TA Technology (Shanghai) Co., Ltd.



GENERAL SUMMARY

Product Name	m1000	Model Name	m1000
FCC ID	WA6M1000		
Report No.	RZA1103-0392EMC_R2		
Client	verykool USA Inc		
Manufacturer	verykool USA Inc		
Reference Standard(s)	<p>FCC Code CFR47 Part15B (2010-12) Radio frequency device.</p> <p>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.</p>		
Conclusion	<p>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.</p> <p>General Judgment : Pass</p> <p style="text-align: right;">(Stamp) Date of issue: April 27th, 2011</p> 		
Comment	The test result only responds to the measured sample.		

Approved by 杨伟中
Yang Weizhong

Revised by 范广畅
Fan Guangchang

Performed by 梁建明
Liang Jianming

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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
Contact: Yang Weizhong
Telephone: +86-021-50791141/2/3
Fax: +86-021-50791141/2/3-8000
Website: <http://www.ta-shanghai.com>
E-mail: yangweizhong@ta-shanghai.com

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1.3. Applicant Information

Company: verykool USA Inc
Address: 4350 Executive Dr. #100, San Diego, CA 92121, USA
City: San Diego
Postal Code: 92121
Country: USA
Contact: Sunny Choi
Telephone: 858-373-1635
Fax: 858-373-1505

1.4. Manufacturer Information

Company: verykool USA Inc
Address: 4350 Executive Dr. #100, San Diego, CA 92121, USA
City: San Diego
Postal Code: 92121
Country: USA
Telephone: 858-373-1635
Fax: 858-373-1505

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1.5. Information of EUT

General information

Name of EUT:	m1000
IMEI:	356360040022848
Hardware Version:	LQAMG82
Software Version:	LQA00C1.1.0_MG82
Antenna Type:	Internal Antenna
Used Host Product:	IBM T61

Equipment Under Test (EUT) is m1000 with internal antenna. During the test, the EUT connect to the laptop IBM T61.

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 March 26, 2011 to March 28, 2011.

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2. Test Information

2.1. Summary of test results

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

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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 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 spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. During the test, EUT is connected to a laptop via a USB cable in the case of USB mode. The EUT is used as the peripheral equipment of the PC. The model of laptop is IBM T61 8892-BAC and the serial number of laptop is L3-C9644. The phone modem drivers were installed on the laptop to be able to communicate with the EUT by continuously sending a querying text file (AT Command) to the phone using Hyper Terminal during the test.

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:

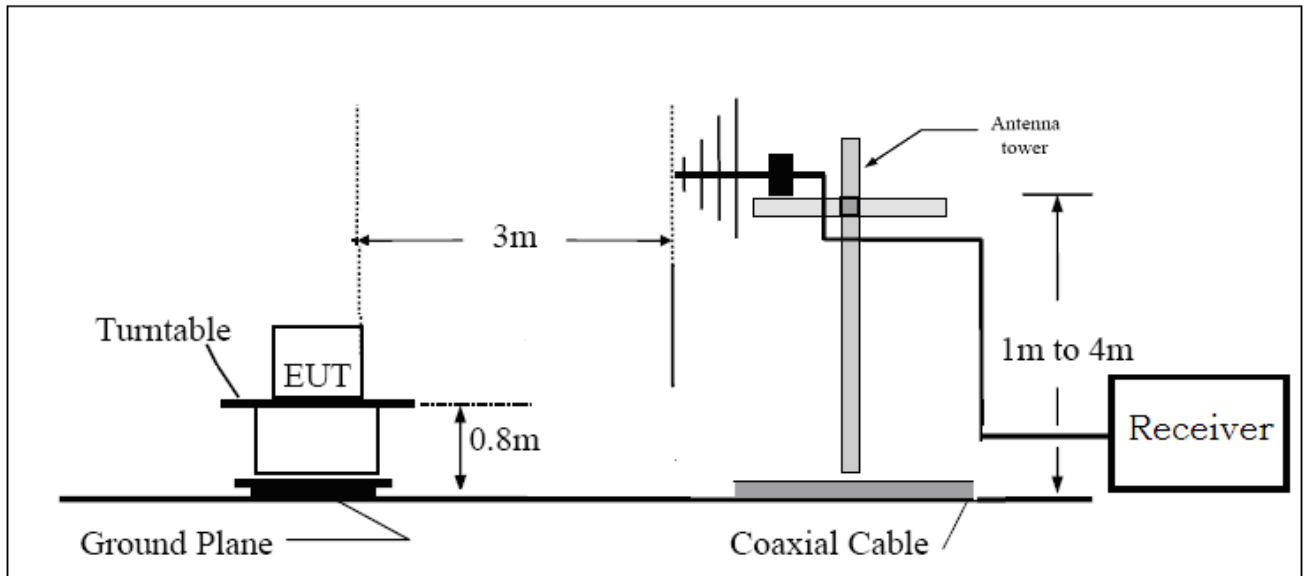
(a) PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

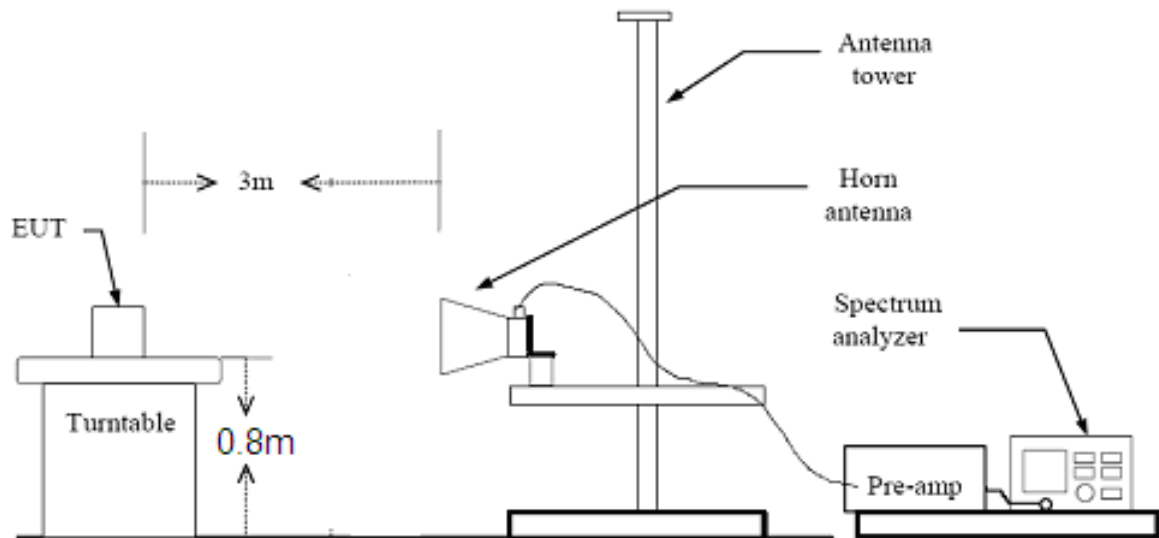
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Test Setup

Below 1GHz



Above 1GHz



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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
1000-5 th 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.

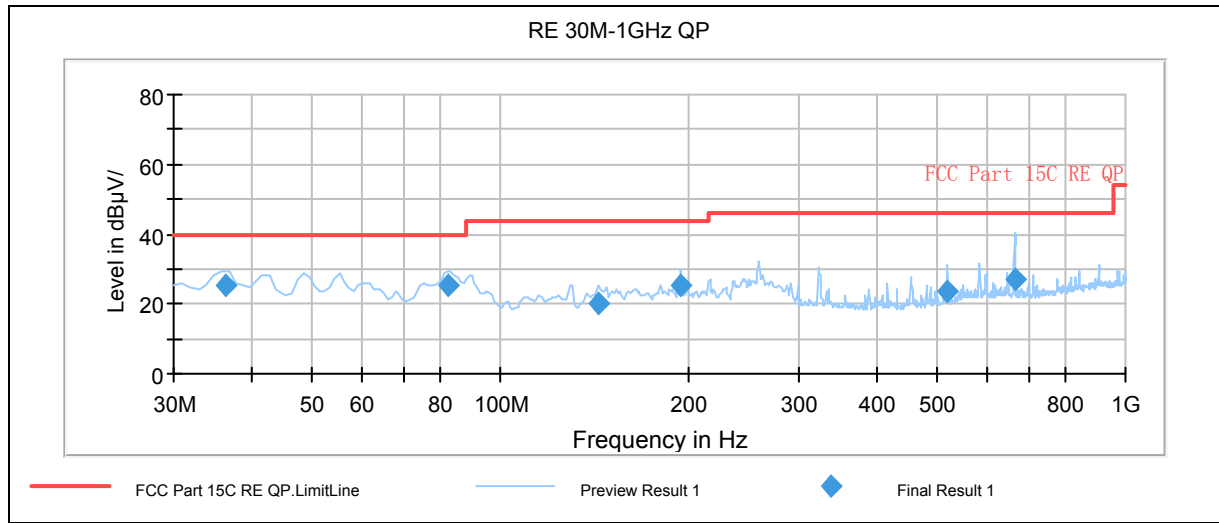
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Test Results

USB Mode



Radiated Emission from 30MHz to 1GHz

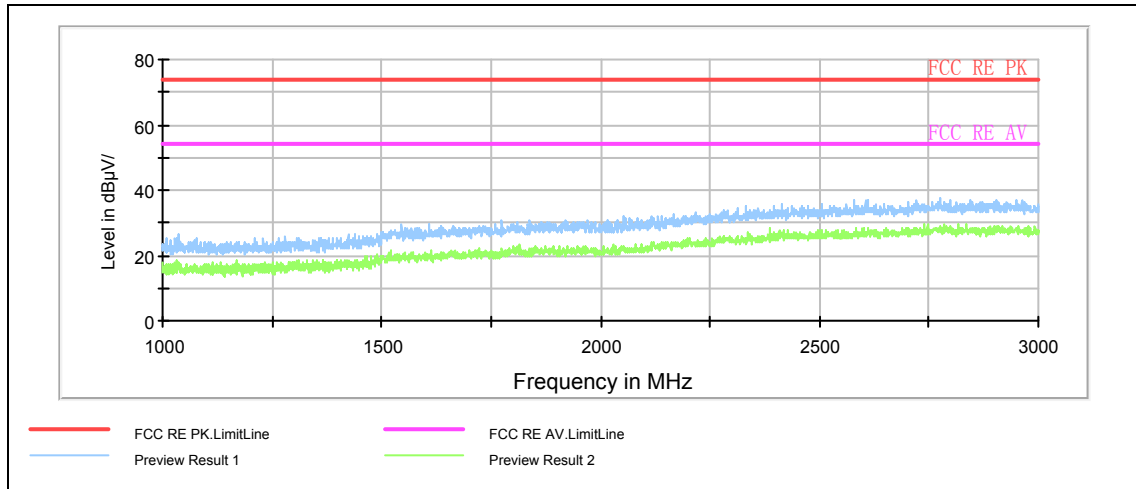
Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Reading value (dBuV/m)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
36.340000	25.1	125.0	V	54.0	47.8	-22.7	14.9	40.0
82.750000	25.1	116.0	V	50.0	54.3	-29.2	14.9	40.0
144.010000	20.4	100.0	V	299.0	51.3	-30.9	23.1	43.5
194.700000	25.1	225.0	V	15.0	53.8	-28.7	18.4	43.5
519.320000	23.8	100.0	V	148.0	44.6	-20.8	22.2	46.0
666.120000	26.8	100.0	V	170.0	45.2	-18.4	19.2	46.0

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

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

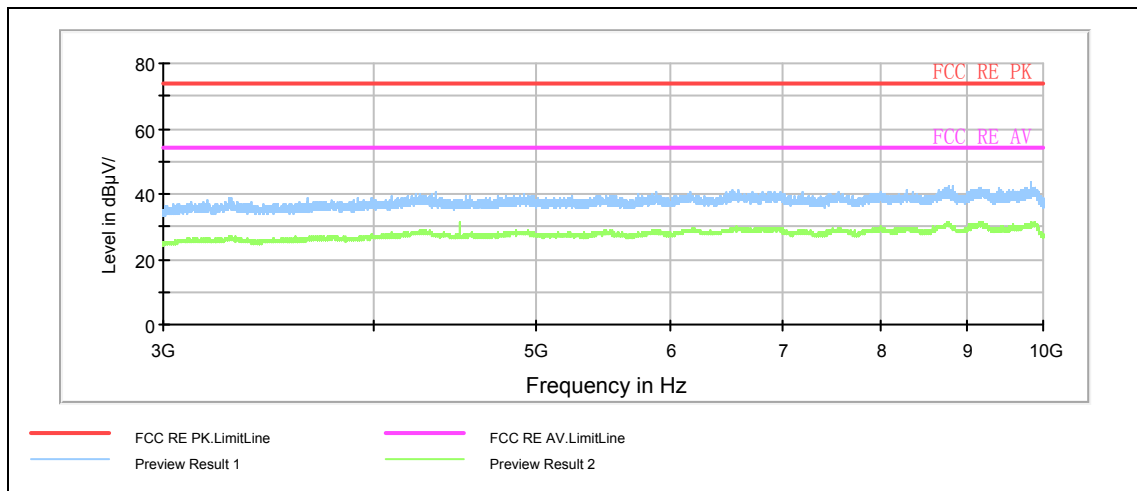
3. Margin = Limit – Quasi-Peak

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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 10GHz

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2.3. Conducted Emission

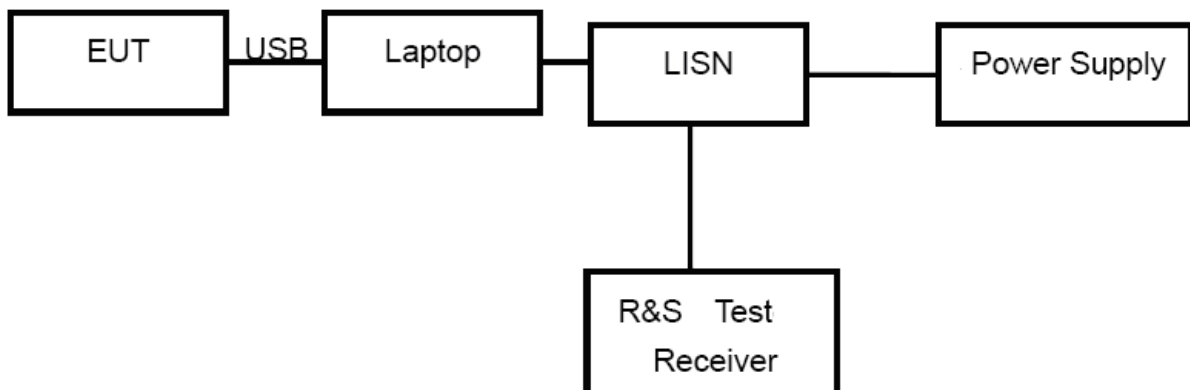
Ambient condition

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 C63.4-2009. 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 USB mode. The EUT is used as the peripheral equipment of the PC. The model of laptop is IBM T61 8892-BAC and the serial number of laptop is L3-C9644. The phone modem drivers were installed on the laptop to be able to communicate with the EUT by continuously sending a querying text file (AT Command) to the phone using Hyper Terminal 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

Frequency (MHz)	Conducted Limits(dB μ V)	
	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.

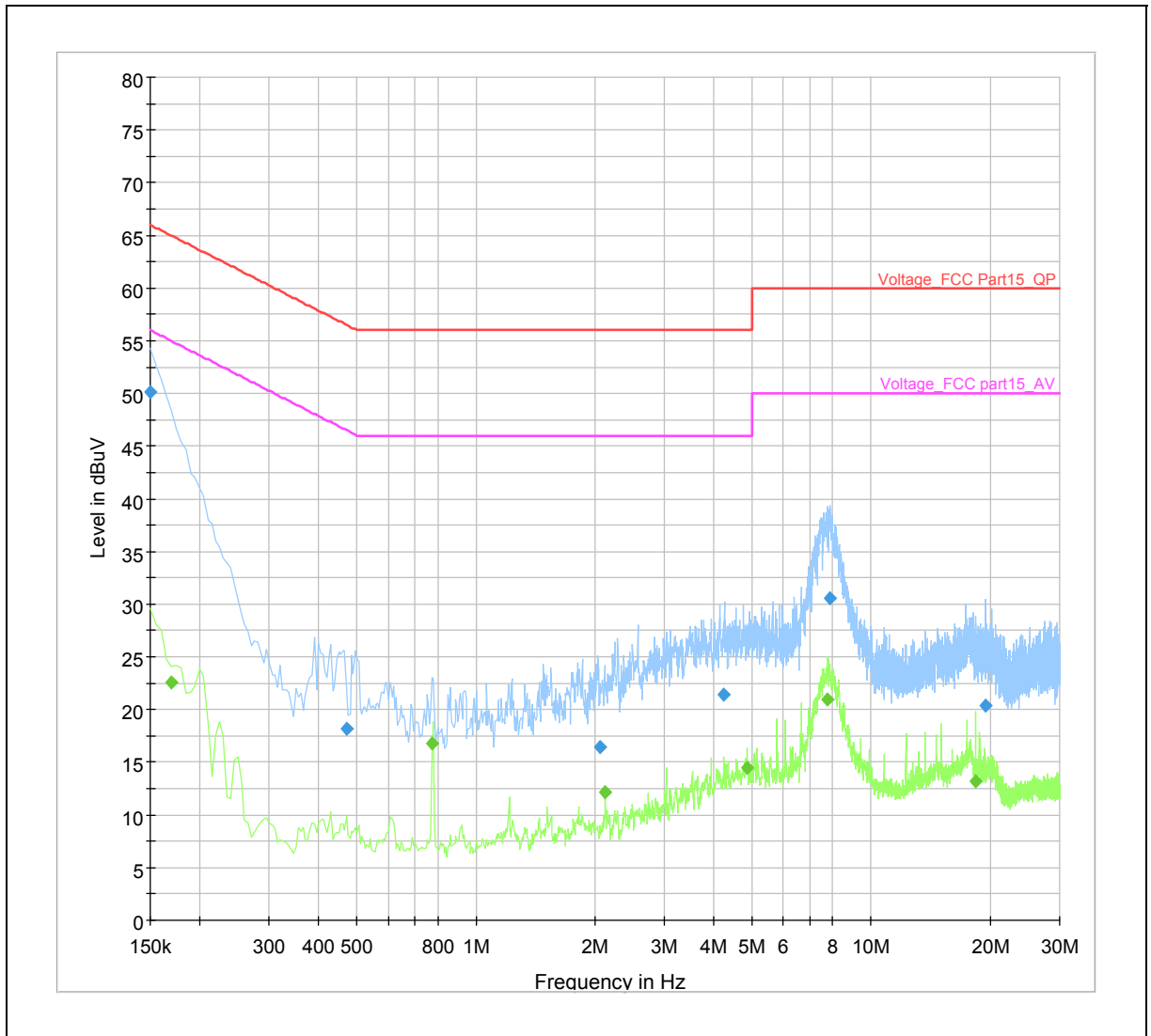
Measurement Uncertainty

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.

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Test Results

USB Mode

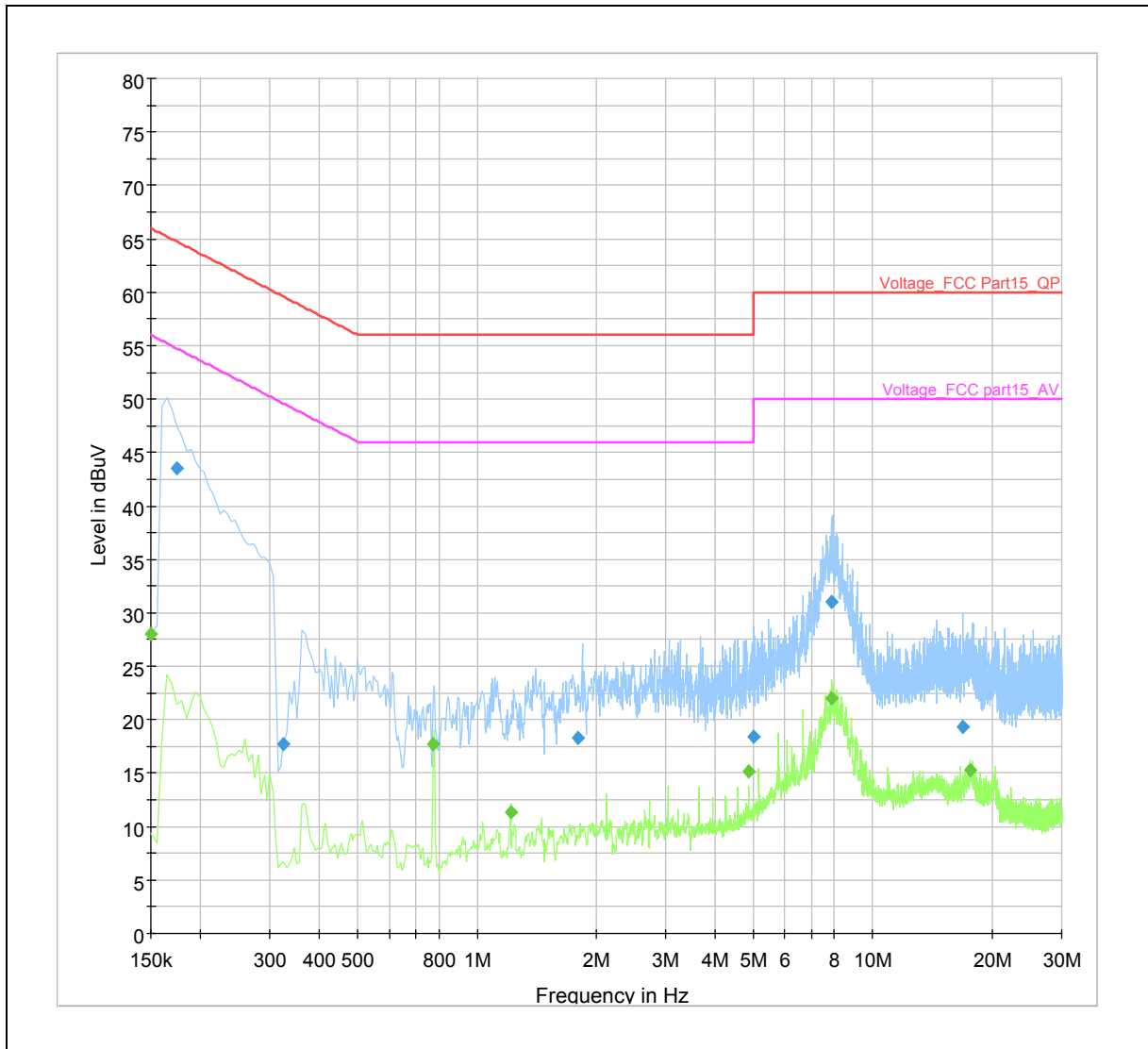


Note: Blue trace uses the peak detection Green trace uses the average detection

L line

Conducted Emission from 150 KHz to 30 MHz

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

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Frequency (MHz)	Detector	Line	Reading Value(dB μ V)	Emission Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Corr. Factor (dB)
0.150000	Average	N	18.0	28.1	56.0	27.9	10.1
0.775000	Average	N	7.6	17.7	46.0	28.3	10.1
0.775000	Average	L	6.7	16.8	46.0	29.2	10.1
4.855000	Average	N	5.0	15.1	46.0	30.9	10.1
7.775000	Average	L	10.8	20.9	50.0	29.1	10.1
7.890000	Average	N	11.9	22.0	50.0	28.0	10.1
0.150000	Quasi-peak	L	40.0	50.1	66.0	15.9	10.1
0.175000	Quasi-peak	N	33.4	43.5	64.7	21.2	10.1
1.800000	Quasi-peak	N	8.2	18.3	56.0	37.7	10.1
4.240000	Quasi-peak	L	11.3	21.4	56.0	34.6	10.1
7.865000	Quasi-peak	L	20.4	30.5	60.0	29.5	10.1
7.870000	Quasi-peak	N	20.9	31.0	60.0	29.0	10.1

Remark: 1. Emission level = Reading value + Correction factor

2. Margin = Limit – Emission level

3. Correction Factor = Insertion loss + Cable loss

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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	2010-06-28	One year
02	Signal generator	SMR27	R&S	100365	2010-07-01	One year
03	EMI Test Receiver	ESCI	R&S	100948	2010-07-01	One year
04	Trilog Antenna	VULB 9163	SCHWARZB ECK	9163-201	2010-06-29	Two years
05	Horn Antenna	HF907	R&S	100126	2009-07-02	Two years
06	LISN	ENV216	EMCO	101171	2010-04-16	Three years
07	AC Power Source	AFC-11005G	APC	F309040118	2009-08-03	Three years
08	Semi-Anechoic Chamber	9.6*6.7*6.6m	ETS-Lindgren	NA	NA	NA
09	EMI test software	ES-K1	R&S	NA	NA	NA

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

ANNEX A: The EUT Appearance and Test Setup

A.1 EUT Appearance



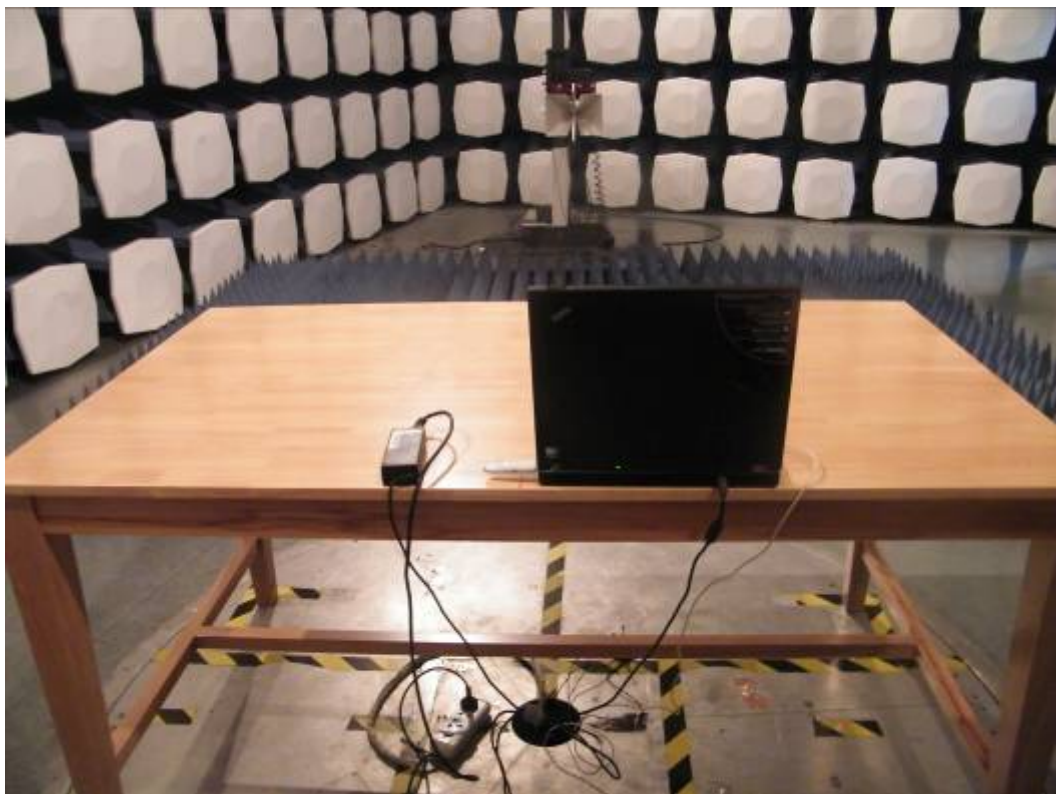
Picture 1 EUT

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A.2 Test Setup



a: Below 1GHz



b: Above 1GHz

Picture 2 Radiated Emission Test Setup

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a: Front View



b: Back View

Picture 3 Conducted Emission Test Setup