



Report No.: RZA2009-1146BC-2



Part 15B

TEST REPORT

Product Name CDMA Mobile phone

FCC ID QMNRH-128

Model RH-128

Applicant Nokia Inc.

TA Technology (Shanghai) Co., Ltd.



GENERAL SUMMARY

Product Name	CDMA Mobile phone	Model	RH-128
FCC ID	QMNRH-128	Report No.	RZA2009-1146BC-2
Client	Nokia Inc.		
Manufacturer	Nokia Inc.		
Reference Standard(s)	FCC Part 15 Subpart B Radio frequency device. (V10.1.07) ANSI C63.4 Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40GHz. (2003)		
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 (Stamp) Date of issue: September 8th, 2009 		
Comment	The test result only responds to the measured sample.		

Approved by 杨伟中
Yang Weizhong

Revised by 徐凯
Xu kai

Performed by 刘伟
Liu Wei

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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.

1.2. Testing laboratory

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City:	Shanghai
Post code:	201210
Country:	P. R. China
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1.3. Applicant Information

Company: Nokia Inc.
Address: 12278 Scripps Summit Drive 92131
City: San Diego, CA
Postal Code: 92131
Country: USA
Telephone: +1 858 831 5000
Fax: +1 858 831 6500

1.4. Manufacturer Information

Company: Nokia Inc.
Address: 12278 Scripps Summit Drive 92131
City: San Diego, CA
Postal Code: 92131
Country: USA
Telephone: +1 858 831 5000
Fax: +1 858 831 6500

1.5. Information of EUT

General information

Device type:	Portable device		
Name of EUT:	CDMA Mobile phone		
Device operating configurations:			
ESN:	A000000195C0B8		
Operating mode(s):	CDMA Cellular		
Test modulation:	OQPSK		
Emission Designator	1M25F9W		
Antenna type:	internal antenna		
Power supply:	Battery or Charger		
Rated Power Supply Voltage:	3.7V		
Extreme Voltage:	Minimum: 3.4V Maximum: 4.2V		
Extreme Temperature:	Lowest: -30°C Highest: +50°C		
Operating frequency range(s)	Band	Tx (MHz)	Rx (MHz)
	CDMA Cellular	824.7 ~ 848.31	869.7 ~ 893.31
Hardware version:	2000		
Software version:	CL_0700B11_R800_TLC		
Used host products:	IBM T61 (Mode:8892-BAC; S/N:L3-C9644)		

Auxiliary equipment details**AE1: Battery**

Model: BL-4C
Manufacture: Nokia Inc.
IMEI or SN: 0670389462040Q154D21817380

AE2: Travel Adaptor

Model: AC-6U
Manufacture: Nokia Inc.
IMEI or SN: 40904991239614026010675591

AE3:USB Cable

Model: CA-101
IMEI or SN: 07306359124T1206467

AE4: Headset

Model: WH-101 HS-105
Manufacture: 06942879184E2602758

AE5: Notebook

Model: IBM T61 8892-BAC
Manufacture: L3-C9644

Equipment Under Test (EUT) is CDMA Mobile phone with internal antenna. It consists of mobile phone, battery and adaptor (see ANNEX A.1) and the detail about these is in chapter 1.5 in this report. The EUT supports CDMA Cellular.

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 6, 2009 to September 8, 2009.

1.7. Test report revision

Date	Report No	Revision	Description
Sept. 8 ,2009	RZA2009-1146BC	0	First Revision
Sept. 10 ,2009	RZA2009-1146BC-1	1	add change history in the report add test conditions (temperature, humidity and pressure) to all test

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			cases add section to describe the connection of headset and USB cable, also describe how the data transmission between phone and notebook was setup and maintained. Change applicant to Nokia Inc. record SN of the notebook add information about Headset used in testing, re-test if headset was connected during testing have both setup plots for below and above 1GHz measurement for RE test update the result for USB mode for Test update the result for CE test e.g. 6 highest emissions for both Peak and average detector in both L line and N line
Sept. 11 ,2009	RZA2009-1146BC-2	2	1.Note all emissions level measured above 1GHz was more than10dB below the limit of RE measurement.

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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 C63.4-2003	PASS
2	Conducted Emission	15.107, ANSI C63.4-2003	PASS

2.2. Radiated Emission

Ambient condition:

Temperature	Relative humidity	Pressure
25°C	60%	102.5kPa

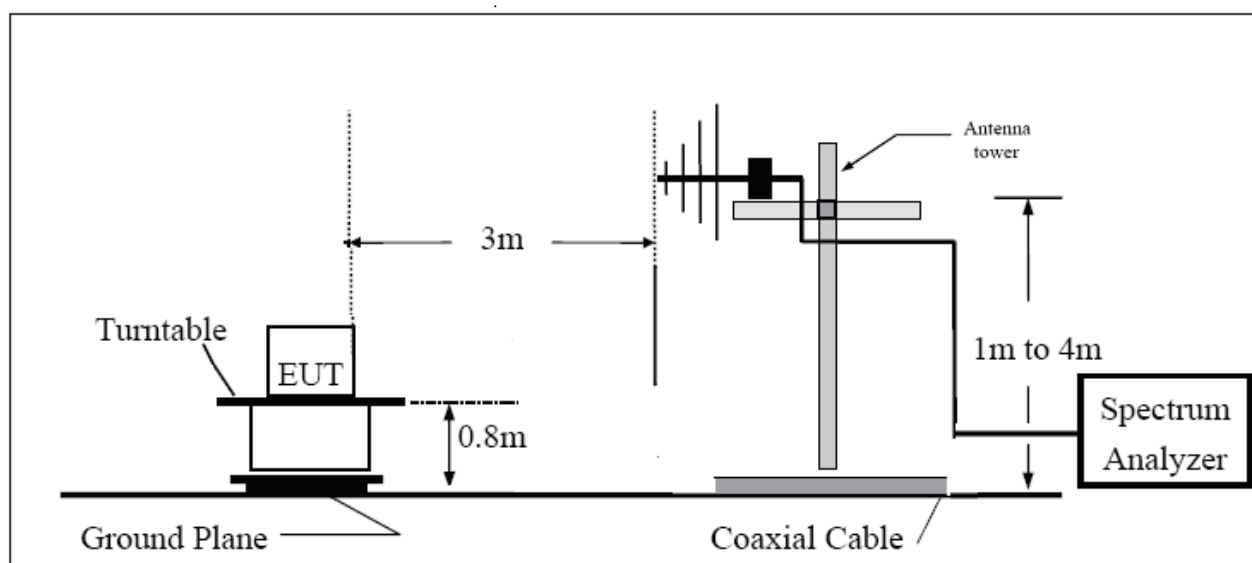
Methods of Measurement

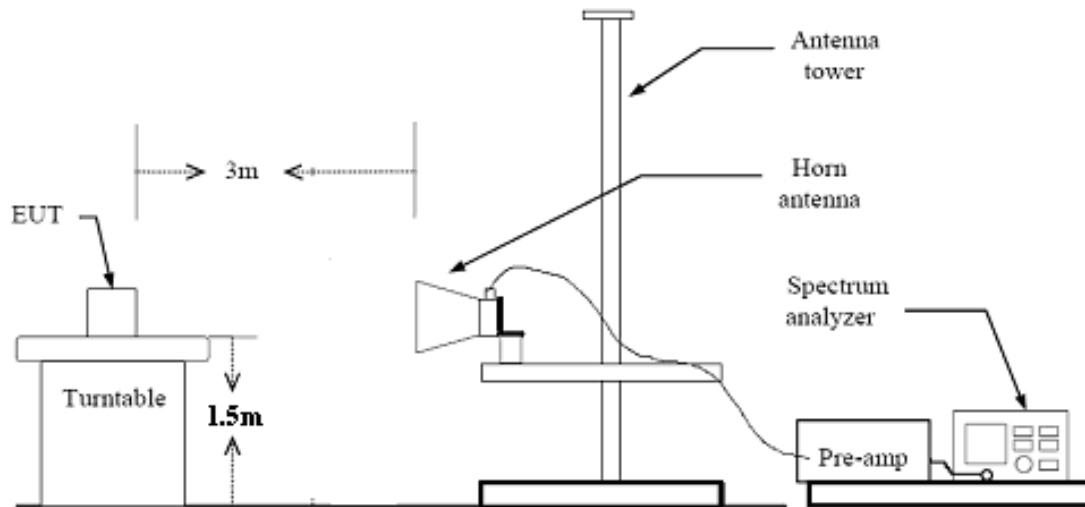
The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The distance between EUT and receive antenna should be 3 meters. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2003. Sweep the whole frequency band through the range from 30MHz to 6GHz. 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.

Test Setup

Below 1GHz



Above 1GHz**Limits**

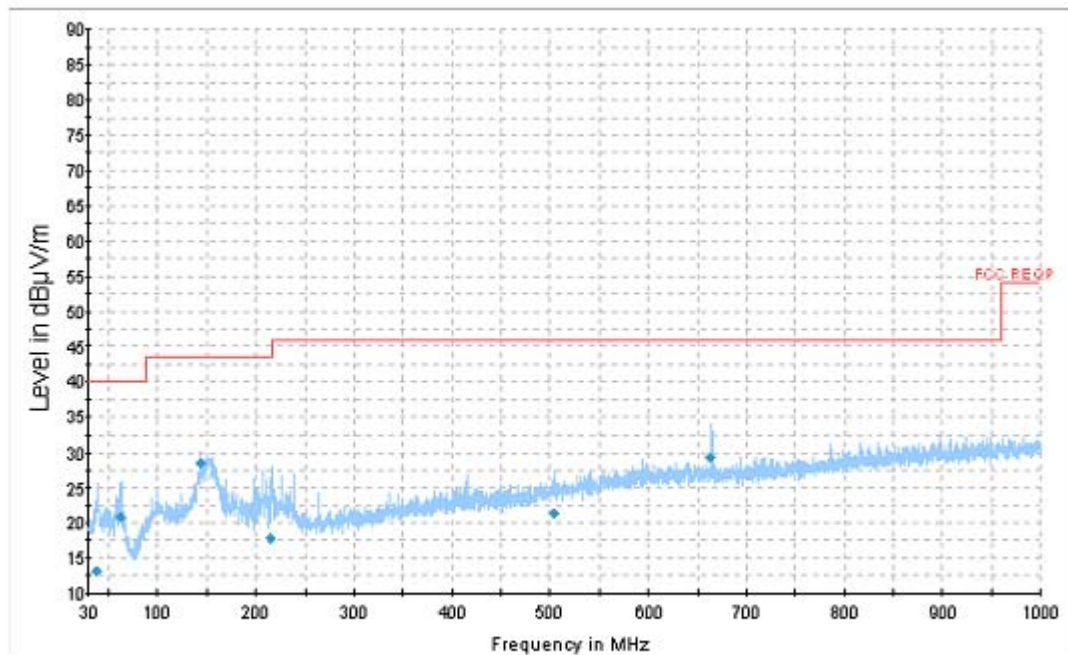
Frequency (MHz)	Field Strength (dB μ V/m)	Detector
30 -88	40.0	Quasi-peak
88-216	43.5	Quasi-peak
216 – 960	46.0	Quasi-peak
960-1000	54.0	Quasi-peak
1000-5 th harmonic of the highest frequency or 40GHz, which is lower	54 74	Average Peak

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.

Test Results

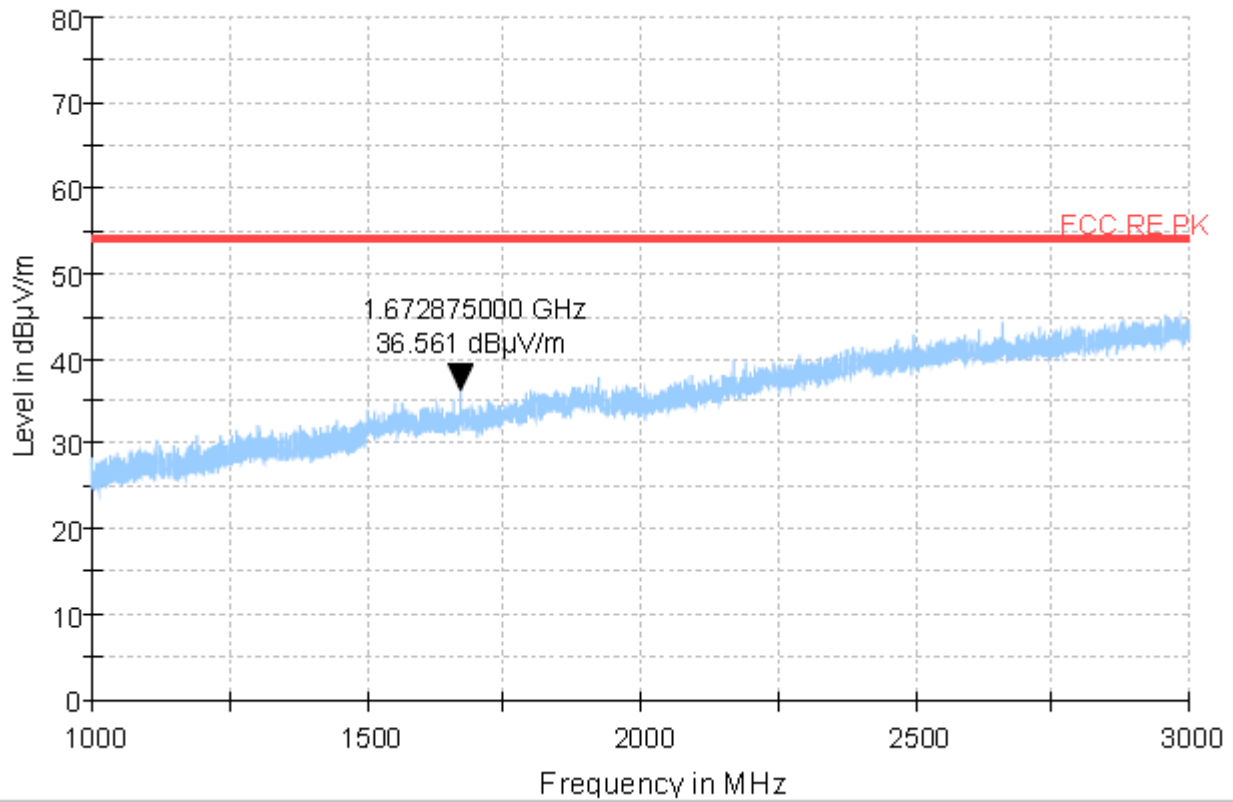
USB Mode



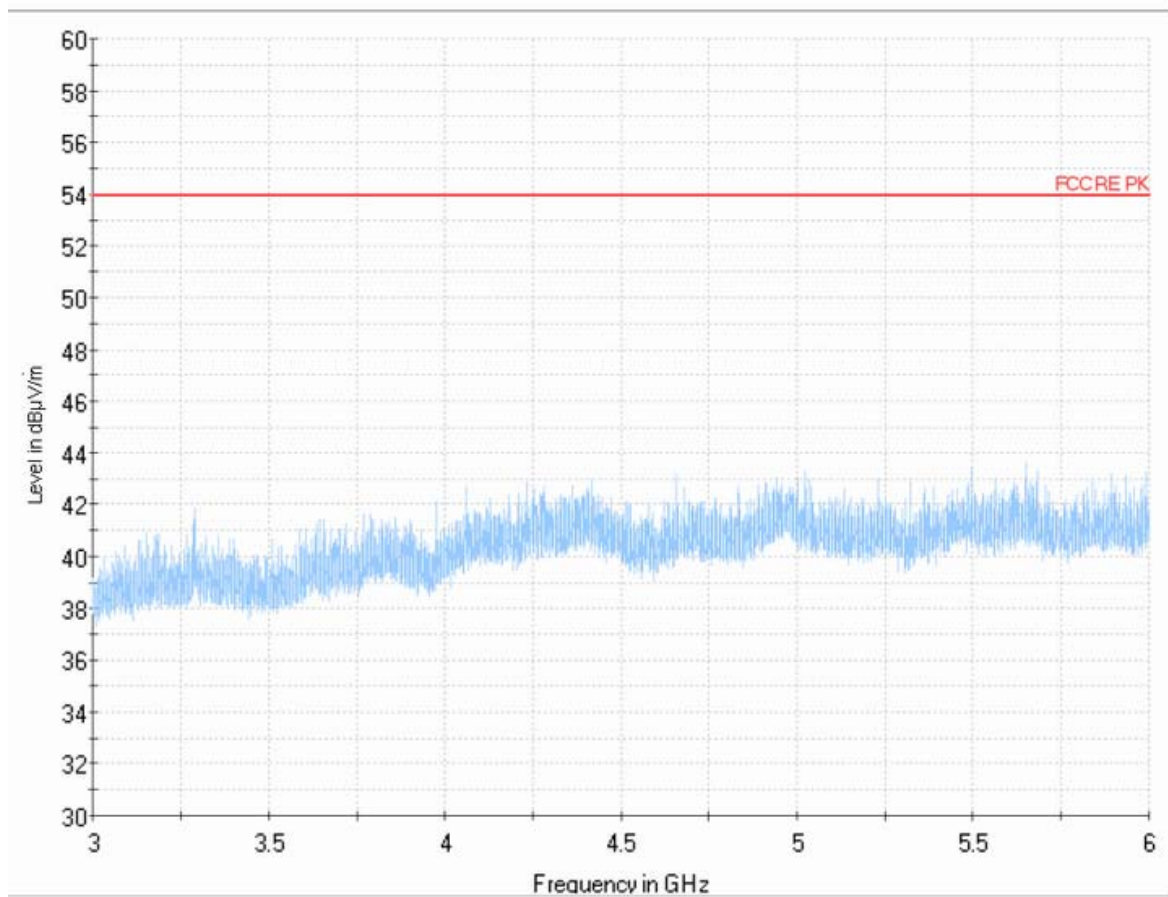
Radiated Emission from 30MHz to 1GHz

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBμV/m)
38.673750	13.1	128	V	152	26.9	40.0
62.528750	20.9	100	V	142	19.1	40.0
143.98500	28.4	100	V	4	12.1	43.5
215.93075	17.8	150	H	278	25.7	43.5
504.08750	21.5	178	V	135	25.9	46.0
664.03400	29.2	100	V	188	16.8	46.0

Note: all emissions level measured above 1GHz was more than 10dB below the limit



Radiated Emission from 1GHz to 3GHz



Radiated Emission from 3 GHz to 6 GHz

2.3. Conducted Emission

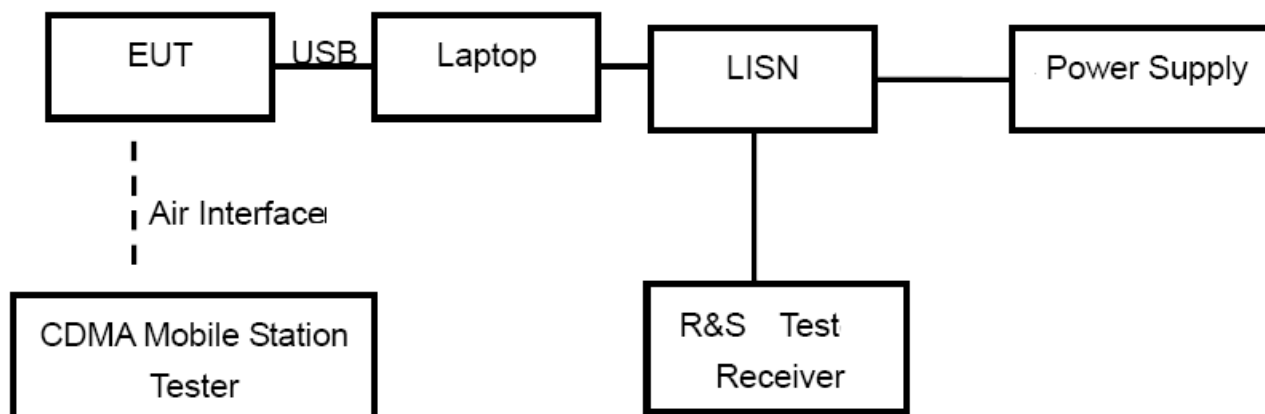
Ambient condition

Temperature	Relative humidity	Pressure
25°C	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. 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.

Test Setup



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

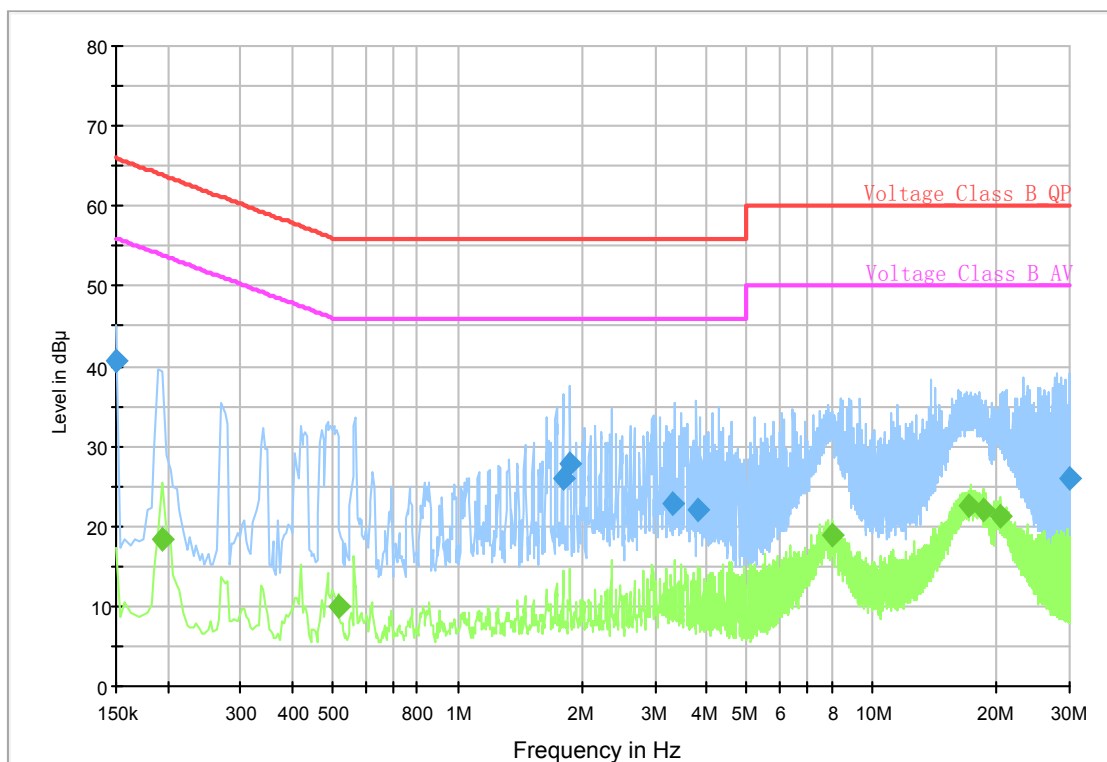
*: Decreases with the logarithm of the frequency.

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.

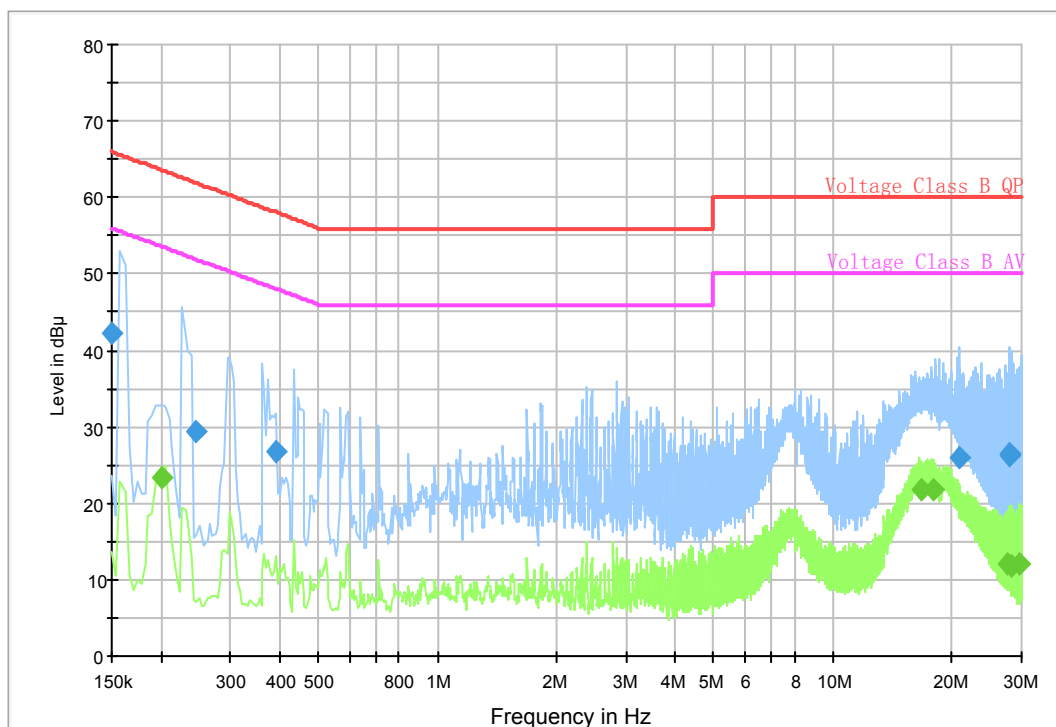
Test Results

Voltage_L



L line

Voltage_N



N line

Conducted Emission from 150 KHz to 30 MHz

Frequency (MHz)	Detector	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)
7.633	Average	N	20.4	50.0	29.6
17.213	Average	L	22.7	50	27.3
17.233	Average	N	23.7	50.0	26.3
18.553	Average	L	22.1	50	27.9
18.597	Average	N	24.2	50.0	25.8
20.333	Average	L	21.2	50	28.8
0.15	Quasi-peak	L	40.6	66	25.4
0.449	Quasi-peak	N	28.5	56.9	28.4
1.805	Quasi-peak	L	25.8	56	30.2
1.869	Quasi-peak	L	27.8	56	28.2
17.245	Quasi-peak	N	29.7	60.0	30.3
18.893	Quasi-peak	N	31.2	60.0	28.8

3. Main Test Instruments

No.	Name	Type	Manufacturer	Serial Number	Calibration Date	Valid Period
01	Base Station Simulator	CMU200	R&S	118133	2009-06-02	One year
02	Signal Analyzer	FSV	R&S	100815	2009-06-29	One year
03	Signal generator	SMR27	R&S	1606.6000.02	2009-06-29	One year
04	EMI Test Receiver	ESCI	R&S	100948	2009-07-02	One year
05	Trilog Antenna	VULB 9163	SCHWARZB ECK	9163-391	2009-05-14	One year
06	Horn Antenna	HF907	R&S	100126	2009-05-20	One year
07	LISN	EMCO	3816/2	00084033	2007-12-26	two year
08	Semi-Anechoic Chamber	9.6*6.7*6.6m	ETS-Lindgren	NA	NA	NA
09	Shielding room	5*4*4m	ETS-Lindgren	NA	NA	NA
10	EMI test software	ES-K1	R&S	NA	NA	NA

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

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ANNEX A: EUT Test Setup