CE

Test Report

Product Name ： WIRELESS-N NETWORK MINI PCI ADAPTER

Model No. ： IWAVEPORT WLM200NX

Applicant ： Compex Systems Pte Ltd

Address ： 135 Joo Seng Road, #08-01 PM Industrial Building
Singapore 368363

Date of Receipt ： 2008/09/10

Issued Date ： 2008/10/31

Report No. ： 089S061R-RF-CE-P02V01

Test Report Certification

Issued Date : 2008/10/31
Report No. : 089S061R-RF-CE-P02V01

QuieTek

Product Name	:	WIRELESS-N NETWORK MINI PCI ADAPTER
Applicant	:	Compex Systems Pte Ltd
Address	:	135 Joo Seng Road, #08-01 PM Industrial Building Singapore 368363
Manufacturer	:	Compex Systems Pte Ltd
Address	:	135 Joo Seng Road, #08-01 PM Industrial Building Singapore 368363
Model No.	:	IWAVEPORT WLM200NX
Rated Voltage	:	AC 230 V / 50 Hz
EUT Voltage	:	DC 3.3V
Trade Name	:	COMPEX
Applicable Standard	:	ETSI EN 301 489-1 V1.6.1 (2005-09) ETSI EN 301 489-17 V1.2.1 (2002-08)
Test Result	:	Complied
Performed Location	:	SuZhou EMC laboratory No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., SuZhou, China TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098

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(Marlin Chen)

Approved By : Gene Zhang
(Gene Zhang)

Laboratory Information

We , **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited by the following accreditation Bodies in compliance with ISO 17025, EN 45001 and Guide 25:

Taiwan R.O.C.	**:**	**BSMI, DGT, CNLA**
Germany	**:**	**TUV Rheinland**
Norway	**:**	**Nemko, DNV**
USA	**:**	**FCC, NVLAP**
Japan	**:**	**VCCI**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : http://tw.quietek.com/modules/myalbum/
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

NVLAP Lab Code : 200347-0 1313

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NVLAP Lab Code: 200533-0 0914

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NVLAP Lab Code : 200743-0 1596

TABLE OF CONTENTS

1. General Information

1.1. EUT Description

Product Name	WIRELESS-N NETWORK MINI PCI ADAPTER
Trade Name	COMPEX
Model No.	IWAVEPORT WLM200NX

802.11a/b/g/n Antenna List

Antenna	Manufacturer	Model No.	Peak Gain
Combined Antenna	Exceltek Electronics (Kunshan) Co.,Ltd	C0053-ANG0004	2.0 dBi

1.2. Mode of Operation

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode	
EMI	Mode 1: Communication by WLAN
EMS	Mode 1: Communication by WLAN Mode 2: Standby

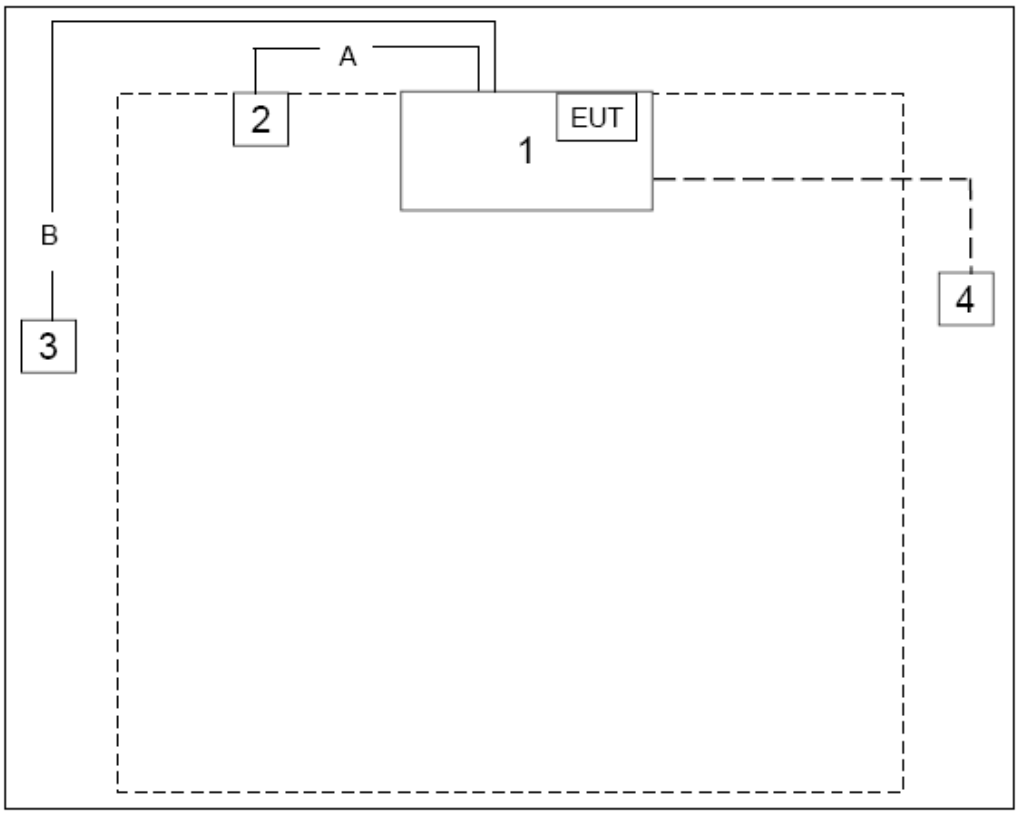
1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Router Frame	Compex	B-543W	N/A	N/A
2	Adapter	DVE	DSA-15P-24	N/A	N/A
3	Notebook	DELL	PP19L	JH097 A01	Power by adapter
4	MacBook	Apple	MB061CH	W8732B4TZ5V	Power by adapter

1.4. Configuration of Tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	Power Cable	Non-Shielded, 1.8m
B	LAN Cable	Non-Shielded, >10m

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	Use “Ping” function; make Notebook communication with another Notebook by wireless.

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

Emission			
Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission (AC input/output Ports)	EN 55022: 2006 Class B	Yes	No
Conducted Emissions (DC input/output Ports)	EN 55022: 2006 Class B CISPR 25: 2002	N/A	N/A
Conducted Emissions (Telecommunication Ports)	EN 55022: 2006 Class B	Yes	No
Radiated Emission	EN 55022: 2006 Class B	Yes	No
Harmonic Current Emission	EN 61000-3-2: 2006	Yes	No
Voltage Fluctuations and Flicker	EN 61000-3-3: 1995+A1: 2001+A2: 2005	Yes	No

Immunity			
Performed Test Item	Normative References	Test Performed	Deviation
Electrostatic Discharge	EN 61000-4-2: 1995+A1: 1998+A2: 2001	N/A	N/A
RF Electromagnetic Field	EN 61000-4-3: 2006	Yes	No
Fast Transients Common Mode	EN 61000-4-4: 2004	Yes	No
Surges	EN 61000-4-5: 2006	Yes	No
RF Common Mode	EN 61000-4-6: 2007	Yes	No
Voltage Dips and Interruption	EN 61000-4-11: 2004	Yes	No
Transients and Surges	ISO 7637-2: 2004	N/A	N/A

2.2. List of Test Equipment

Conducted Emission / SR-1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	R&S	ESCI	100726	2008/06/28
Two-Line V-Network	R&S	ENV216	100013	2008/06/28
Two-Line V-Network	R&S	ENV216	100014	2008/06/28
V-Network	R&S	ESH3-Z6	100248	2008/06/28
V-Network	R&S	ESH3-Z6	100249	2008/06/28
ISN	Schaffner	ISN T400	21648	2007/11/15
Balanced Telecom ISN	Fischer	FCC-TLISN-T2-02	20352	2008/03/02
Balanced Telecom ISN	Fischer	FCC-TLISN-T4-02	20353	2008/03/02
Balanced Telecom ISN	Fischer	FCC-TLISN-T8-02	20354	2008/03/02
Current Probe	R&S	EZ-17	100255	2008/04/18
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2007/11/25
50ohm Termination	SHX	TF2	07081401	2008/09/28
50ohm Termination	SHX	TF2	07081402	2008/09/28
50ohm Termination	SHX	TF2	07081403	2008/09/28
Coaxial Cable	Luthi	RG214	519358	2007/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH004	2008/03/31

Radiated Emission / AC-1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4403B	MY45102715	N/A
Spectrum Analyzer	Agilent	E4403B	MY45102798	N/A
EMI Test Receiver	R&S	ESCI	100175	2007/11/15
Preamplifier	Quietek	AP-025C	QT-AP001	2007/11/22
Preamplifier	Quietek	AP-025C	QT-AP002	2007/11/22
Bilog Type Antenna	Schaffner	CBL6112B	2933	2007/11/22
Bilog Type Antenna	Schaffner	CBL6112B	2931	2007/11/25
50ohm Coaxial Switch	Anritsu	MP59B	6200447303	2007/11/25
50ohm Coaxial Switch	Anritsu	MP59B	6200464461	2007/11/25
50ohm Coaxial Switch	Anritsu	MP59B	6200447305	2007/11/25
Coaxial Cable	Huber+Suhner	AC1-L	01	2007/11/25
Coaxial Cable	Huber+Suhner	AC1-R	02	2007/11/25
Coaxial Cable	Huber+Suhner	AC1-C	03	2007/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH001	2008/03/31

Radiated Emission / AC-2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4408B	MY45102679	2008/06/28
EMI Test Receiver	R&S	ESCI	100573	2008/05/10
Preamplifier	Quietek	AP-025C	QT-AP003	2007/11/25
Preamplifier	Quietek	AP-180C	CHM-0602012	2007/11/25
Bilog Type Antenna	Schaffner	CBL6112B	2932	2007/11/22
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	496	2007/11/25
50ohm Coaxial Switch	Anritsu	MP59B	6200447304	2007/11/25
Coaxial Cable	Huber+Suhner	AC2-C	04	2007/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH002	2008/03/31

Radiated Emission / AC-3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2008/04/24
EMI Test Receiver	R&S	ESCI	100176	2007/11/15
Preamplifier	Quietek	AP-025C	QT-AP004	2007/11/25
Preamplifier	Quietek	AP-180C	CHM-0602012	2007/11/25
Bilog Type Antenna	Schaffner	CBL6112D	22254	2007/11/22
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	496	2007/11/25
50ohm Coaxial Switch	Anritsu	MP59B	6200464463	200711/25
Coaxial Cable	Huber+Suhner	AC3-C	05	2007/11/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH003	2008/03/31

Harmonic Current Emission / SR-1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
AC Power Source	California	5001iX-208	56741	2007/11/29
Power Analyzer	California	PACS-1	72419	2007/11/29
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH004	2008/03/31

Voltage Fluctuation and Flicker / SR-1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
AC Power Source	California	5001iX-208	56741	2007/11/29
Power Analyzer	California	PACS-1	72419	2007/11/29
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH004	2008/03/31

Electrostatic Discharge / SR-3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
ESD Simulator	KeyTek	MZ-15/EC	0511209	2007/11/01
ESD Simulator	EM TEST	dito	V0616101367	2008/08/08
Barometer	Fengyun	DYM3	0506048	2007/11/29
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH006	2007/03/31

RF Electromagnetic Field / AC-4

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Signal Generator	R&S	SML03	102324	2008/10/21
Power Meter	Boonton	4231A	144502	2008/10/21
Power Sensor	Boonton	51011-EMC	33859	2008/10/21
RF Switch Network	Schaffner	RFS N100	21799	N/A
Power Amplifier	Schaffner	CBA9428	43516	N/A
Power Amplifier	Schaffner	CBA9413B	43526	N/A
Directional Coupler	A&R	DC7144A	312249	N/A
Directional Coupler	Schaffner	CHA 9652B	0121	N/A
Electric Field Probe Type 8.3	narda	2244/90.21	AZ-0030	2008/07/30
Electromagnetic Radiation Meter	narda	2244/70	AW-0074	2008/07/30
Bilog Type Antenna	Schaffner	CBL6141A	4278	N/A
Horn Antenna	A&R	AT4002A	312312	N/A
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2008/03/09

Fast Transients Common Mode / SR-2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Immunity Test System	KeyTek	EMCpro	508273	2008/05/10
CCL	KeyTek	CCL	0510181	2008/05/10
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH005	2008/03/31

Surges / SR-2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Immunity Test System	KeyTek	EMCpro	508273	2008/05/10
Coupler/Decoupler Telecom line	KeyTek	CM-TELCD	0506277	N/A
Coupler/Decoupler Signal line	KeyTek	CM-I/OCD	0508206	N/A
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH005	2008/03/31

RF Common Mode / SR-2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
RF-Generator	Schaffner	NSG2070	1120	2007/11/12
Attenuator	Schaffner	INA2070-1	2120	2007/11/12
CDN	Schaffner	CDN M016	21249	2007/11/12
CDN	Teseq GmbH	CDN M016	24484	2008/09/03
CDN	Schaffner	CDN T400	19083	2007/11/12
CDN	Teseq GmbH	CDN T400	22461	2008/09/03
EM Clamp	Schaffner	KEMZ 801	21041	2007/11/12
50ohm Termination	SHX	TF2	07081404	2008/09/28
50ohm Termination	SHX	TF2	07081405	2008/09/28
50ohm Termination	SHX	TF2	07081406	2008/09/28
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH005	2008/03/31

Voltage Dips and Interruption / SR-2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Immunity Test System	KeyTek	EMCpro	508273	2008/05/10
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH005	2008/03/31

*Transients and Surges / No.4 Shielded Rom

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Transient Generator	Schaffner	MT5510-750-0034	67	2008/10/01
Burst Generator	Schaffner	FT5530-70-0033r01	74	2008/10/01
Load Dump Generator	Schaffner	LD5505-750-0045r01	35	2008/10/01
Impedance Generator	Schaffner	RM5505-750-057r01	14	2008/10/01
Power Amplifier Generator	Schaffner	PA5840-75	/ 581-0005	2008/10/01
Function/Wave Generator	Schaffner	FG5620-750-0051-00	35	2008/10/01

Note: “*” means this test is performed in HsinChu Testing Laboratory.

2.3. Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 2.26 dB.

Radiated Emission

The measurement uncertainty is evaluated as ± 3.19 dB.

Harmonic Current Emission

The measurement uncertainty is evaluated as ± 1.2 %.

Voltage Fluctuations and Flicker

The measurement uncertainty is evaluated as ± 1.5 %.

Electrostatic Discharge

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in ESD testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant ESD standards. The immunity test signal from the ESD system meet the required specifications in IEC 61000-4-2 through the calibration report with the calibrated uncertainty for the waveform of voltage and timing as being 1.63% and 2.76%.

RF Electromagnetic Field

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in RS testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant RS standards. The immunity test signal from the RS system meet the required specifications in IEC 61000-4-3 through the calibration for the uniform field strength and monitoring for the test level with the uncertainty evaluation report for the electrical filed strength as being 2.72 dB.

Fast Transients Common Mode

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in EFT/Burst testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant EFT/Burst standards. The immunity test signal from the EFT/Burst system meet the required specifications in IEC 61000-4-4 through the calibration report with the calibrated uncertainty for the waveform of voltage. Frequency and timing as being 1.63% and 2.76%.

Surges

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in Surge testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant Surge standards. The immunity test signal from the Surge system meet the required specifications in IEC 61000-4-5 through the calibration report with the calibrated uncertainty for the waveform of voltage and timing as being 1.63% and 2.76%.

RF Common Mode

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in CS testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant CS standards. The immunity test signal from the CS system meet the required specifications in IEC 61000-4-6 through the calibration for unmodulated signal and monitoring for the test level with the uncertainty evaluation report for the injected modulated signal level through CDN and EM Clamp/Direct Injection as being 3.72 dB and 2.78 dB.

Voltage Dips and Interruption

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in DIP testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant DIP standards. The immunity test signal from the DIP system meet the required specifications in IEC 61000-4-11 through the calibration report with the calibrated uncertainty for the waveform of voltage and timing as being 1.63% and 2.76%.

Transients and Surges

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in Transients and Surges testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant DIP standards. The immunity test signal from the Transients and Surges system meet the required specifications in ISO 7637-2 through the calibration report with the calibrated uncertainty for the waveform of voltage and timing as being 1.60% and 2.60%.

2.4. Test Environment

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	56
	Barometric pressure (mbar)	860-1060	950-1000
Radiated Emission	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	56
	Barometric pressure (mbar)	860-1060	950-1000
Harmonic Current Emission	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	56
	Barometric pressure (mbar)	860-1060	950-1000
Voltage Fluctuations and Flicker	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	56
	Barometric pressure (mbar)	860-1060	950-1000
Electrostatic Discharge	Temperature (°C)	15-35	25
	Humidity (%RH)	30-60	56
	Barometric pressure (mbar)	860-1060	950-1000
RF Electromagnetic Field	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	56
	Barometric pressure (mbar)	860-1060	950-1000
Fast Transients Common Mode	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	56
	Barometric pressure (mbar)	860-1060	950-1000
Surges	Temperature (°C)	15-35	25
	Humidity (%RH)	10-75	56
	Barometric pressure (mbar)	860-1060	950-1000
RF Common Mode	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	56
	Barometric pressure (mbar)	860-1060	950-1000
Voltage Dips and Interruption	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	56
	Barometric pressure (mbar)	860-1060	950-1000

Transients and Surges	Temperature (°C)	15-35	--
	Humidity (%RH)	25-75	--
	Barometric pressure (mbar)	860-1060	--

2.5. Performance criteria

The performance criteria criteria are used to take a decision on whether a radio equipment passes or fails immunity tests.
For the purpose of the present document four categories of performance criteria apply:

- performance criteria for continuous phenomena applied to transmitters;
- performance criteria for transient phenomena applied to transmitters;
- performance criteria for continuous phenomena applied to receivers;
- performance criteria for transient phenomena applied to receivers.

Normally, the performance criteria depend on the type of radio equipment. Thus, the present document only contains general performance criteria commonly used for the assessment of radio equipment. More specific and product-related performance criteria for a dedicated type of radio equipment may be found in the part of EN 301 489 series [22] dealing with the particular type of radio equipment.

(1) Performance criteria for continuous phenomena applied to transmitters and receivers

If no further details are given in the relevant part of EN 301 489 series [22] dealing with the particular type of radio equipment, the following general performance criteria for continuous phenomena shall apply.

During and after the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed a permissible performance level specified by the manufacturer when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.

During the test the EUT shall not unintentionally transmit or change its actual operating state and stored data.

If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deduced from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

(2) Performance criteria for transient phenomena applied to transmitters and receivers

If no further details are given in the relevant part of EN 301 489 series [22] dealing with the particular type of radio equipment, the following general performance criteria for transient phenomena shall apply.

After the test, the apparatus shall continue to operate as intended. No degradation of performance or

loss of function is allowed below a permissible performance level specified by the manufacturer, when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.

During the EMC exposure to an electromagnetic phenomenon, a degradation of performance is, however, allowed. No change of the actual mode of operation (e.g. unintended transmission) or stored data is allowed.

If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deduced from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

(3) Performance criteria for equipment which does not provide a continuous communication link

For radio equipment which does not provide a continuous communication link, the performance criteria described in clauses (1) and (2) are not appropriate, then the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/or after the immunity tests. The performance specification shall be included in the product description and documentation. The related specifications set out in clause 5.3 of EN 301 489-1 V1.6.1 (2005-09) have also to be taken into account.

The performance criteria specified by the manufacturer shall give the same degree of immunity protection as called for in clauses (1) and (2).

(4) Performance criteria for ancillary equipment tested on a stand alone basis

If ancillary equipment is intended to be tested on a stand alone basis, the performance criteria described in clauses (1) and (2) are not appropriate, then the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/or after the immunity tests. The performance specification shall be included in the product description and documentation. The related specifications set out in clause 5.3 of EN 301 489-1 V1.6.1 (2005-09) have also to be taken into account.

The performance criteria specified by the manufacturer shall give the same degree of immunity protection as called for in clauses (1) and (2).

Performance table

Performance criteria		
Criteria	**During Test**	**After test**
A	● Shall operate as intended ● May show degradation of performance (see note 1) ● Shall be no loss of function ● Shall be no unintentional transmissions	● Shall operate as intended ● Shall be no degradation of performance (see note 2) ● Shall be no loss of function ● Shall be no loss of stored data or user programmable functions
B	● May show loss of function (one or more) ● May show degradation of performance (see note 1) ● No unintentional transmission	● Functions shall be self-recoverable ● Shall operate as intended after recovering ● Shall be no degradation of performance (see note 2) ● Shall be no loss of stored data or user programmable functions
C	● May be loss of function (one or more)	● Functions shall be recoverable by the operator ● Shall operate as intended after recovering ● Shall be no degradation of performance (see note 2)

Note 1: Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance.

If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

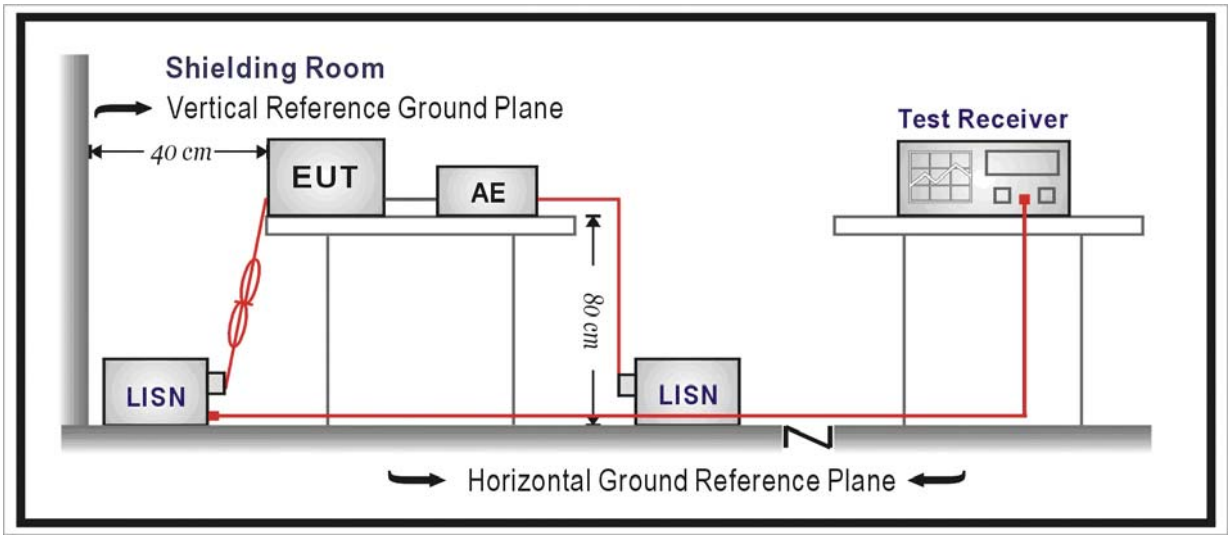
Note 2: No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

3. Conducted Emission (AC input/output Ports)

3.1. Test Specification

According to EMC Standard: EN 55022 Class B

3.2. Test Setup



3.3. Limit

Limits for conducted emissions of equipment intended to be used in telecommunication centers only		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	79	66
0.50 - 30	73	60

Note: The lower limit shall apply at the transition frequencies.

Limits for Conducted Emissions		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

3.4. Test Procedure

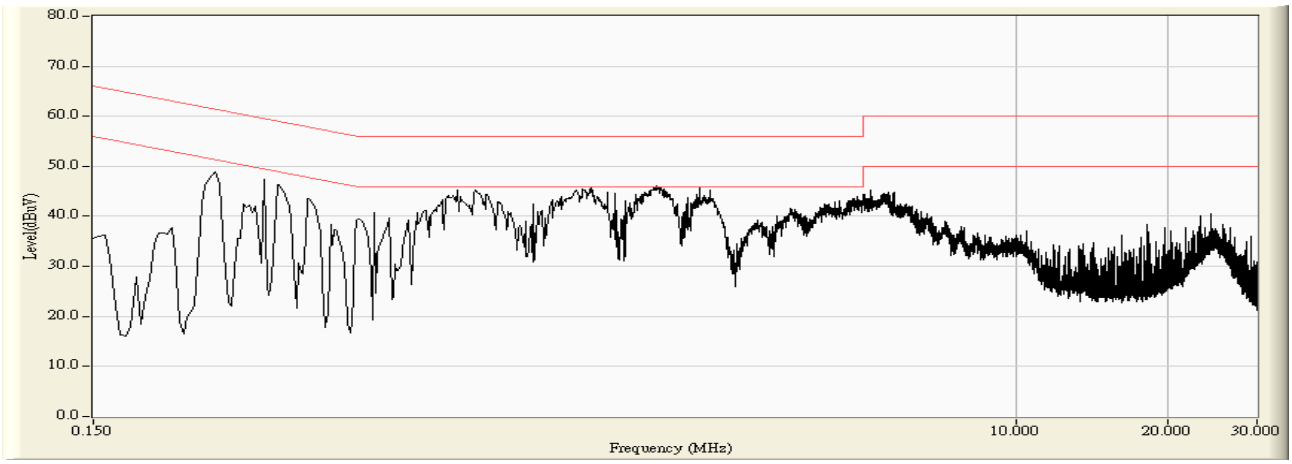
The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.
(Please refers to the block diagram of the test setup and photographs.)
Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed on conducted measurement.
Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Deviation from Test Standard

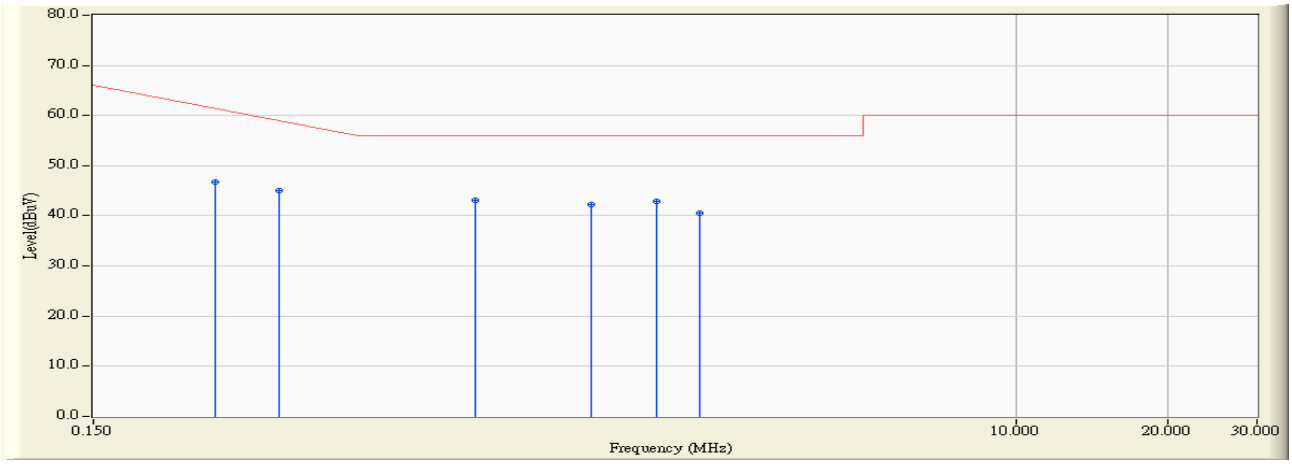
No deviation.

3.6. Test Result

Engineer : Jame	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	**Time : 2008/10/16 - 12:07**
Limit : EN55022_B_00M_QP	**Margin : 10**
EUT : WIRELESS-N NETWORK MINI PCI ADAPTER	**Probe : ENV216_100014(0.009-30MHz) - Line1**
Power : AC 230V/50Hz	**Note : Mode 1: Communication by WLAN**

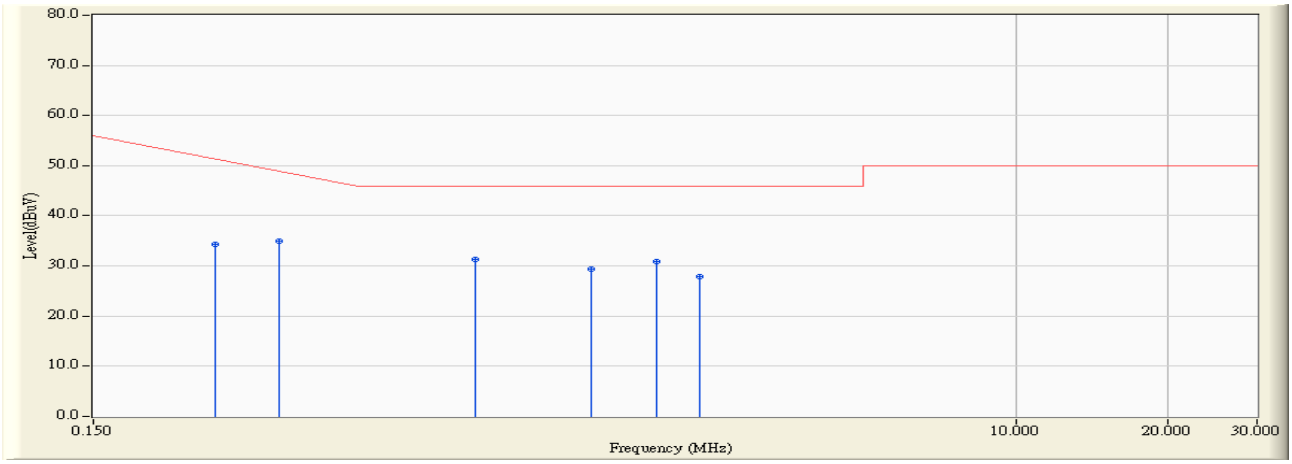


Engineer : Jame	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	**Time : 2008/10/16 - 12:10**
Limit : EN55022_B_00M_QP	**Margin : 0**
EUT : WIRELESS-N NETWORK MINI PCI ADAPTER	**Probe : ENV216_100014(0.009-30MHz) - Line1**
Power : AC 230V/50Hz	**Note : Mode 1: Communication by WLAN**



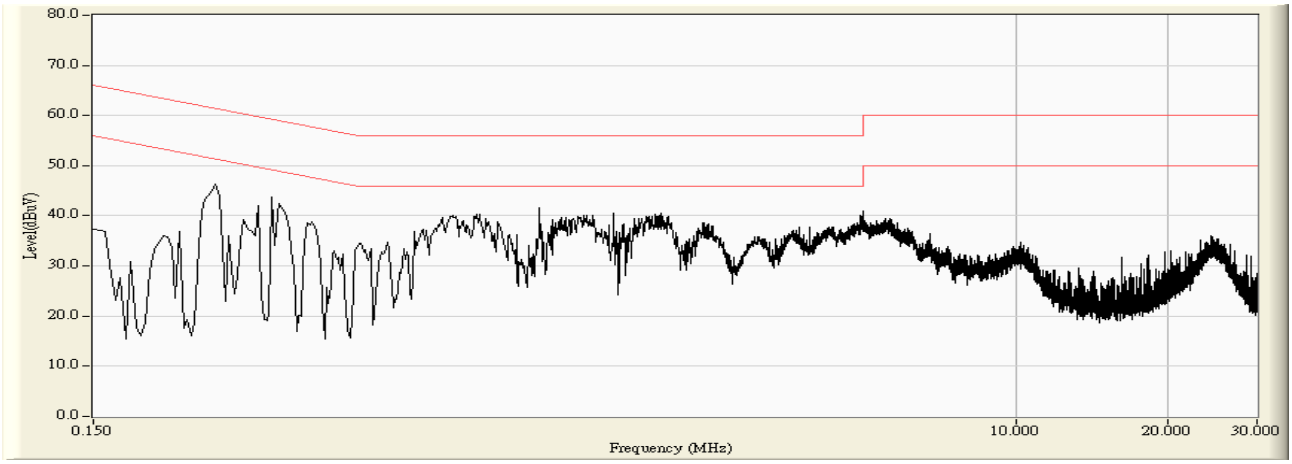
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.262	9.469	37.300	46.769	-16.031	62.800	QUASIPEAK
2		0.350	9.537	35.500	45.037	-15.249	60.286	QUASIPEAK
3	*	0.854	9.706	33.500	43.206	-12.794	56.000	QUASIPEAK
4		1.446	9.710	32.500	42.210	-13.790	56.000	QUASIPEAK
5		1.950	9.680	33.300	42.980	-13.020	56.000	QUASIPEAK
6		2.370	9.710	30.800	40.510	-15.490	56.000	QUASIPEAK

Engineer : Jame	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	**Time : 2008/10/16 - 12:10**
Limit : EN55022_B_00M_AV	**Margin : 0**
EUT : WIRELESS-N NETWORK MINI PCI ADAPTER	**Probe : ENV216_100014(0.009-30MHz) - Line1**
Power : AC 230V/50Hz	**Note : Mode 1: Communication by WLAN**

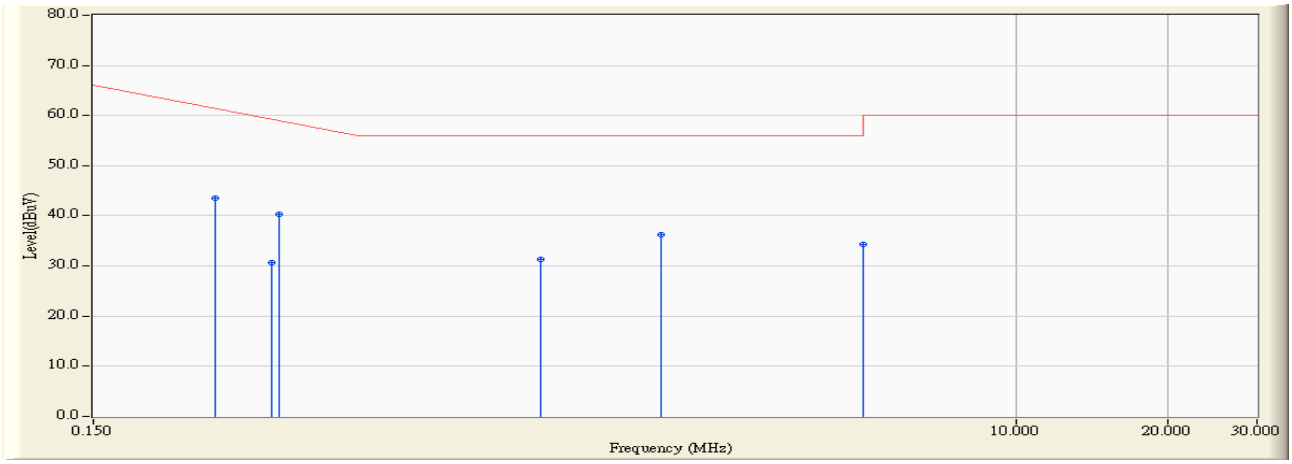


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.262	9.469	24.800	34.269	-18.531	52.800	AVERAGE
2		0.350	9.537	25.400	34.937	-15.349	50.286	AVERAGE
3	*	0.854	9.706	21.600	31.306	-14.694	46.000	AVERAGE
4		1.446	9.710	19.700	29.410	-16.590	46.000	AVERAGE
5		1.950	9.680	21.200	30.880	-15.120	46.000	AVERAGE
6		2.370	9.710	18.100	27.810	-18.190	46.000	AVERAGE

Engineer : Jame	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	**Time : 2008/10/16 - 12:14**
Limit : EN55022_B_00M_QP	**Margin : 10**
EUT : WIRELESS-N NETWORK MINI PCI ADAPTER	**Probe : ENV216_100014(0.009-30MHz) - Line2**
Power : AC 230V/50Hz	**Note : Mode 1: Communication by WLAN**

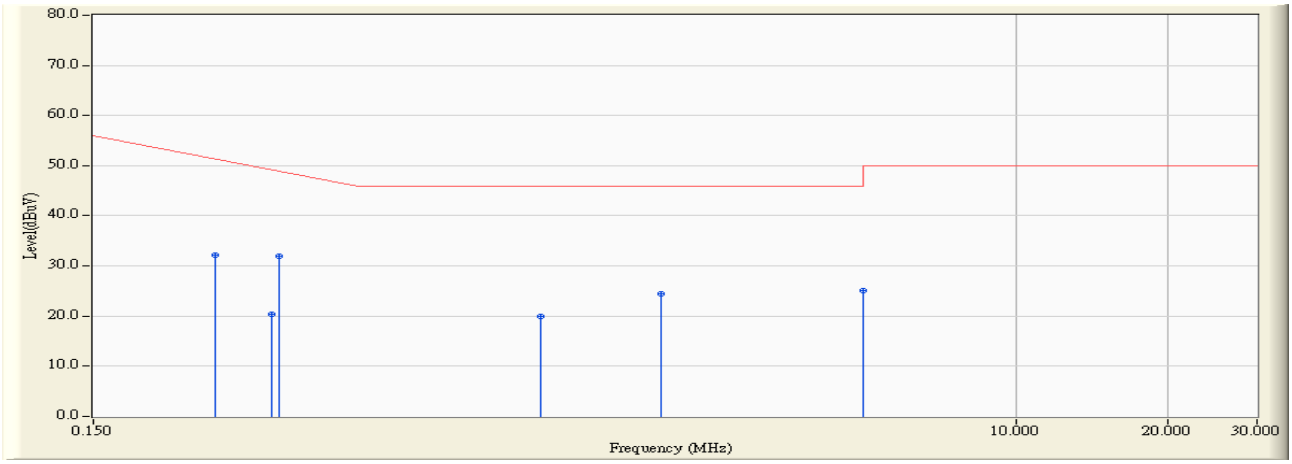


Engineer : Jame	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	**Time : 2008/10/16 - 12:17**
Limit : EN55022_B_00M_QP	**Margin : 0**
EUT : WIRELESS-N NETWORK MINI PCI ADAPTER	**Probe : ENV216_100014(0.009-30MHz) - Line2**
Power : AC 230V/50Hz	**Note : Mode 1: Communication by WLAN**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.262	9.584	34.000	43.584	-19.216	62.800	QUASIPEAK
2		0.338	9.600	21.100	30.700	-29.929	60.629	QUASIPEAK
3		0.350	9.604	30.800	40.404	-19.882	60.286	QUASIPEAK
4		1.146	9.760	21.600	31.360	-24.640	56.000	QUASIPEAK
5		1.994	9.660	26.600	36.260	-19.740	56.000	QUASIPEAK
6		4.978	9.730	24.500	34.230	-21.770	56.000	QUASIPEAK

Engineer : Jame	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	**Time : 2008/10/16 - 12:17**
Limit : EN55022_B_00M_AV	**Margin : 0**
EUT : WIRELESS-N NETWORK MINI PCI ADAPTER	**Probe : ENV216_100014(0.009-30MHz) - Line2**
Power : AC 230V/50Hz	**Note : Mode 1: Communication by WLAN**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.262	9.584	22.500	32.084	-20.716	52.800	AVERAGE
2		0.338	9.600	10.700	20.300	-30.329	50.629	AVERAGE
3	*	0.350	9.604	22.400	32.004	-18.282	50.286	AVERAGE
4		1.146	9.760	10.200	19.960	-26.040	46.000	AVERAGE
5		1.994	9.660	14.700	24.360	-21.640	46.000	AVERAGE
6		4.978	9.730	15.400	25.130	-20.870	46.000	AVERAGE

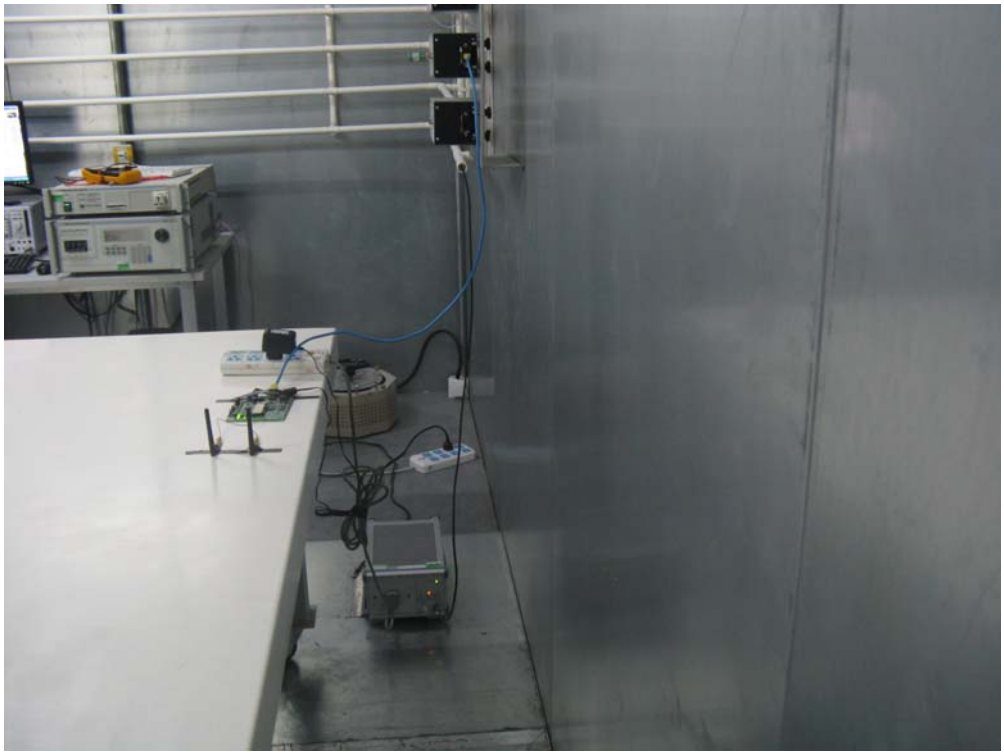
3.7. Test Photograph

Test Mode: Mode 1: Communication by WLAN

Description: Front View of Conducted Emission Test Setup (AC input/output Ports)

Test Mode: Mode 1: Communication by WLAN

Description: Back View of Conducted Emission Test Setup (AC input/output Ports)

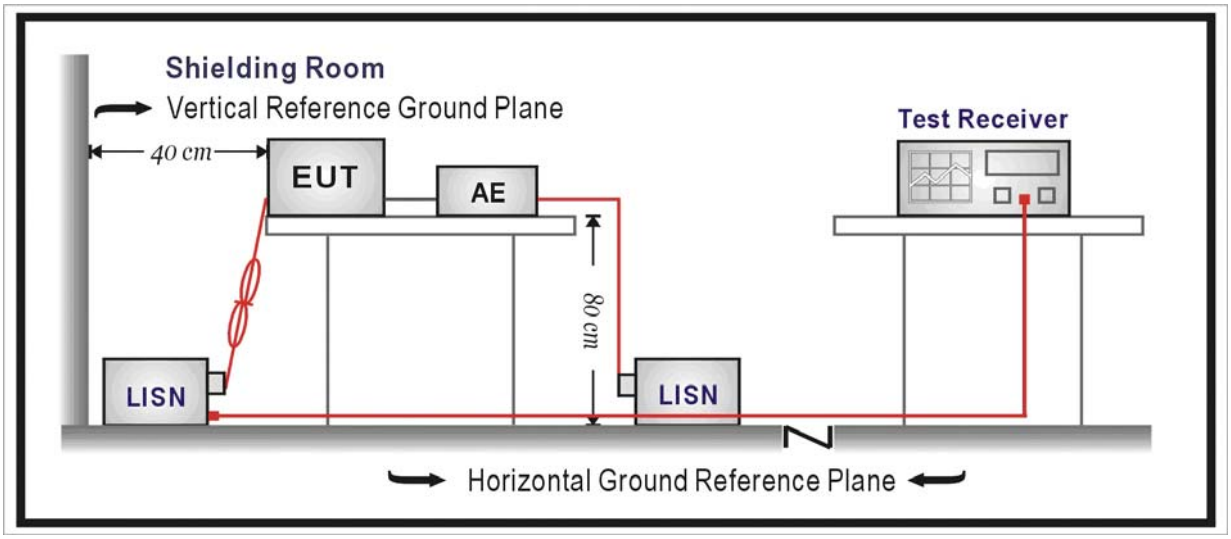


4. Conducted Emission (DC input/output Ports)

4.1. Test Specification

According to EMC Standard: EN 55022 Class B and CISPR 25

4.2. Test Setup



4.3. Limit

Limits for conducted emissions of equipment intended to be used in telecommunication centers only		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	79	66
0.50 - 30	73	60

Note: The lower limit shall apply at the transition frequencies.

Limits for Conducted Emissions		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

4.4. Test Procedure

The EUT and simulators are connected to the main power through a Artificial Mains Networks (AMN). For radio and ancillary equipment for fixed use, the Artificial Mains Networks (AMN) shall be used and be connected to a DC power source. For mobile radio and ancillary equipment intended to be connected to the vehicles's onboard DC mains, an Artificial Network (AN) shall be used and be connected to a DC power source.

(Please refers to the block diagram of the test setup and photographs.)

Both sides of D.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

4.5. Deviation from Test Standard

No deviation.

4.6. Test Result

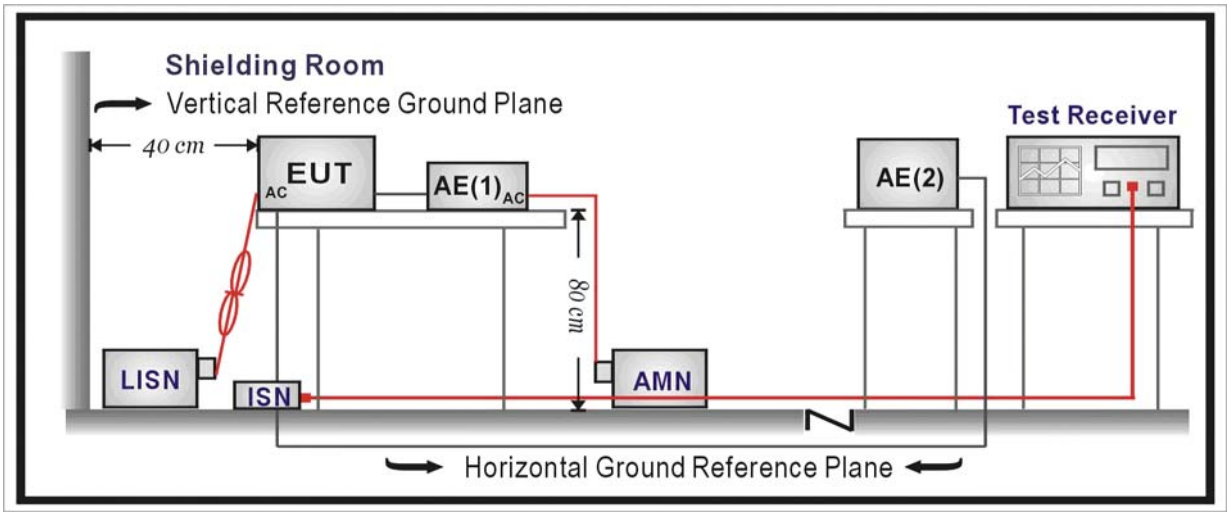
The EUT has an AC/DC power supply, then the measurement only shall be performed on the AC power input port, so this test item needn't perform.

5. Conducted Emissions (Telecommunication Ports)

5.1. Test Specification

According to EMC Standard: EN 55022 Class B

5.2. Test Setup



5.3. Limit

Limits for conducted emissions from telecommunication ports of equipment intended for use in telecommunication centres only				
Frequency (MHz)	Voltage		Current	
	QP (dBuV)	AV (dBuV)	QP (dBuA)	AV (dBuA)
0.15 - 0.50	97 - 87	84 - 74	53 - 43	40 - 30
0.50 - 30	87	74	43	30

Note 1: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

Note 2: The current and voltage disturbance limits are derived for use with an Impedance Stabilization Network (ISN), which presents a common mode (asymmetric mode) impedance of 150 ohm to the telecommunication port under test (conversion factor is 20 log150/I = 44 dB).

Limits for conducted emissions from telecommunication ports				
Frequency (MHz)	Voltage		Current	
	QP (dBuV)	AV (dBuV)	QP (dBuA)	AV (dBuA)
0.15 - 0.50	84 - 74	74 - 64	40 - 30	30 - 20
0.50 - 30	74	64	30	20

Note 1: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

Note 2: The current and voltage disturbance limits are derived for use with an Impedance Stabilization Network (ISN) which presents common mode (asymmetric mode) impedance of 150 ohm to the telecommunication port under test (conversion factor is 20 log150/I = 44 dB).

Note 3: The emission requirement only applies to telecommunication ports. The provisional relaxation of 10 dB will be reviewed no later than 3 years after the date of withdrawal based on the results and interference cases seen in this period. Wherever possible it is recommended to comply with the limits without the provisional relaxation.

5.4. Test Procedure

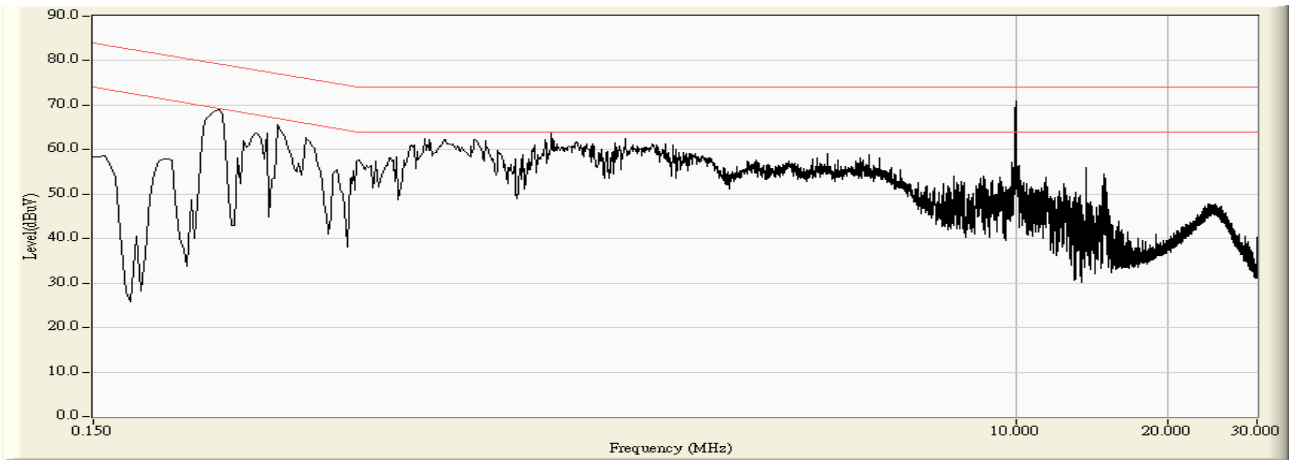
The mains voltage shall be supplied to the EUT via the LISN when the measurement of telecommunication port is performed. The common mode disturbances at the telecommunication port shall be connected to the ISN, which is 150 ohm impedance.
Both alternative cables are tested related to the LCL requested. The measurement range is from 150kHz to 30MHz. The bandwidth of measurement is set to 9kHz.

5.5. Deviation from Test Standard

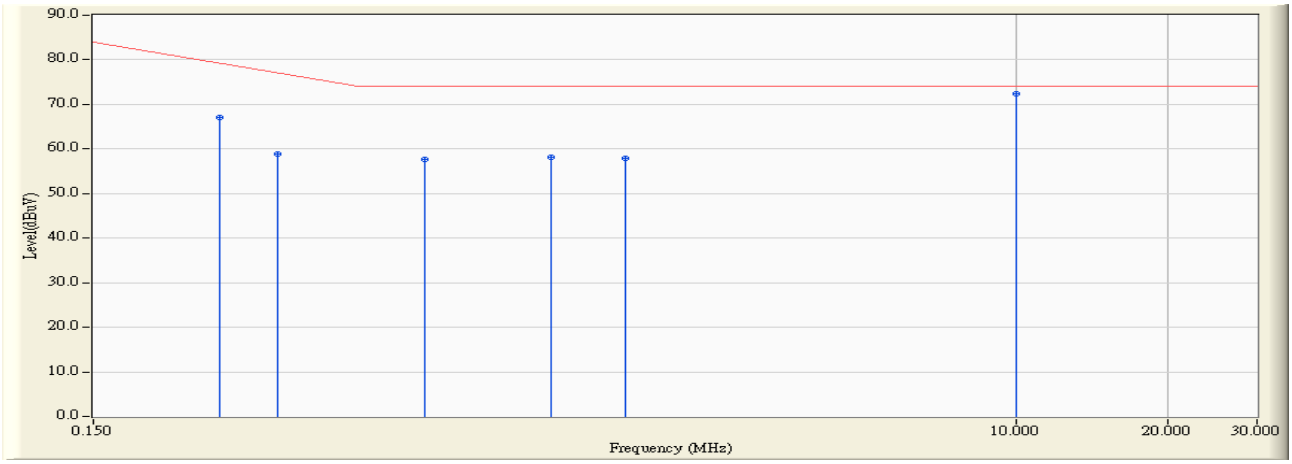
No deviation.

5.6. Test Result

Engineer : Jame	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	**Time : 2008/10/16 - 12:49**
Limit : ISN_Voltage_B_00M_QP	**Margin : 0**
EUT : WIRELESS-N NETWORK MINI PCI ADAPTER	**Probe : FCC-TLISN-T4_20353(0.15-30MHz) - Line1**
Power : AC 230V/50Hz	**Note : LAN-10Mbps**

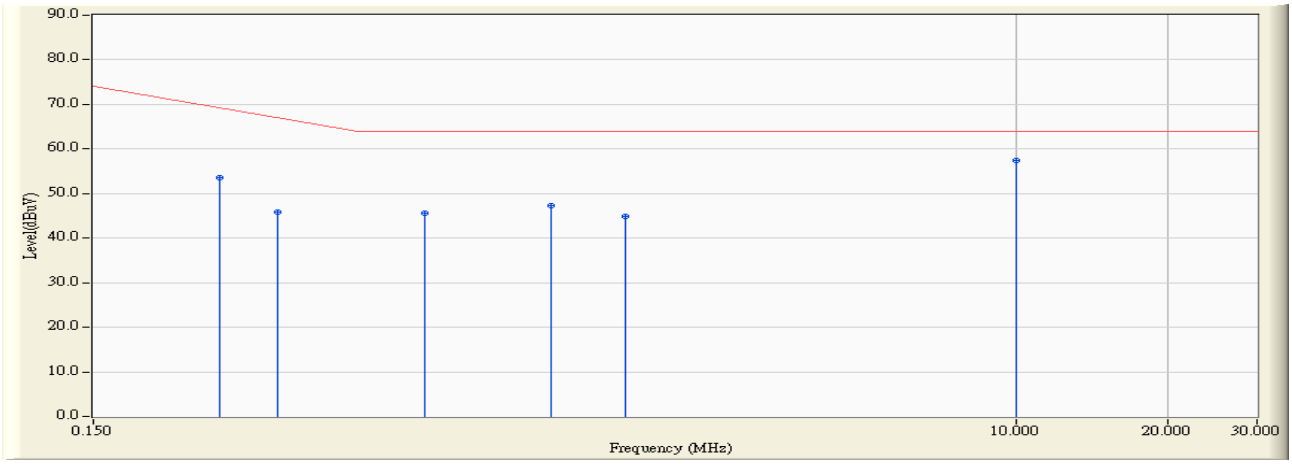


Engineer : Jame	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	**Time : 2008/10/16 - 12:58**
Limit : ISN_Voltage_B_00M_QP	**Margin : 0**
EUT : WIRELESS-N NETWORK MINI PCI ADAPTER	**Probe : FCC-TLISN-T4_20353(0.15-30MHz) - Line1**
Power : AC 230V/50Hz	**Note : LAN-10Mbps**



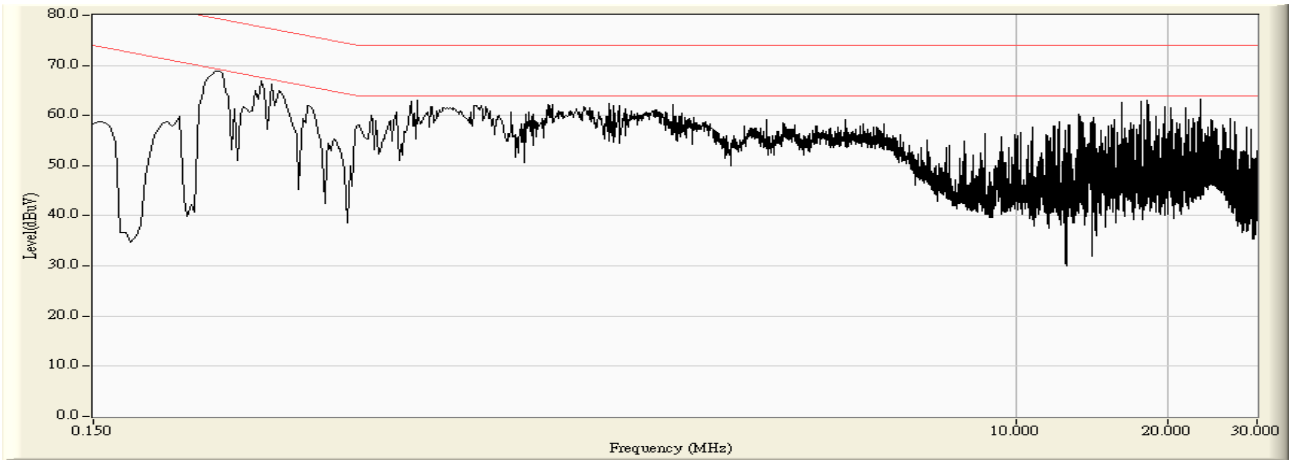
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.266	9.850	57.200	67.050	-13.636	80.686	QUASIPEAK
2		0.346	9.844	49.000	58.844	-19.556	78.400	QUASIPEAK
3		0.678	9.820	47.900	57.720	-16.280	74.000	QUASIPEAK
4		1.206	9.790	48.400	58.190	-15.810	74.000	QUASIPEAK
5		1.690	9.780	48.100	57.880	-16.120	74.000	QUASIPEAK
6	*	10.002	9.900	62.400	72.300	-1.700	74.000	QUASIPEAK

Engineer : Jame	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	**Time : 2008/10/16 - 12:58**
Limit : ISN_Voltage_B_00M_AV	**Margin : 0**
EUT : WIRELESS-N NETWORK MINI PCI ADAPTER	**Probe : FCC-TLISN-T4_20353(0.15-30MHz) - Line1**
Power : AC 230V/50Hz	**Note : LAN-10Mbps**

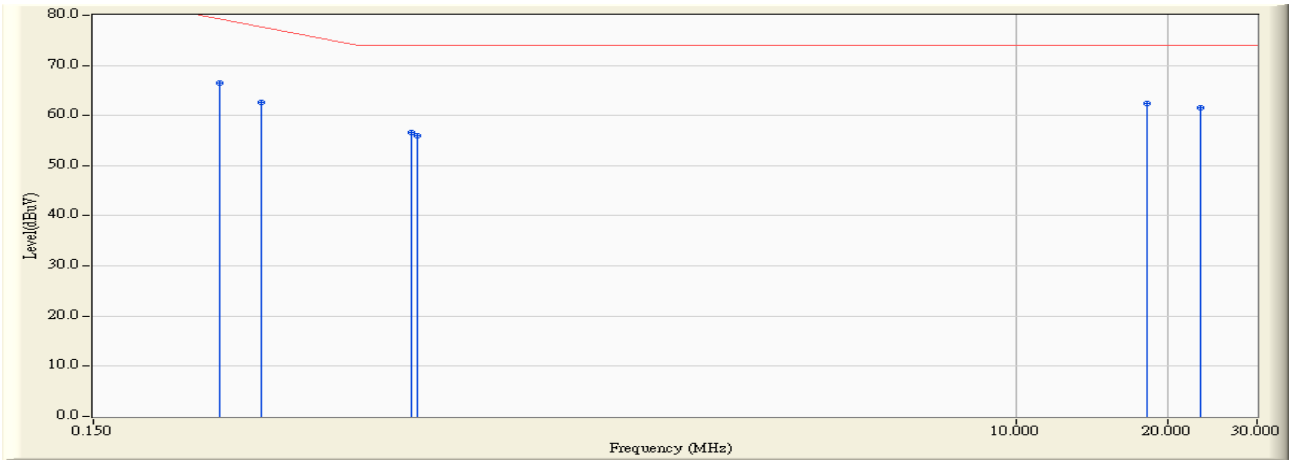


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.266	9.850	43.800	53.650	-17.036	70.686	AVERAGE
2		0.346	9.844	35.900	45.744	-22.656	68.400	AVERAGE
3		0.678	9.820	35.900	45.720	-18.280	64.000	AVERAGE
4		1.206	9.790	37.500	47.290	-16.710	64.000	AVERAGE
5		1.690	9.780	35.100	44.880	-19.120	64.000	AVERAGE
6	*	10.002	9.900	47.600	57.500	-6.500	64.000	AVERAGE

Engineer : Jame	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	**Time : 2008/10/16 - 12:36**
Limit : ISN_Voltage_B_00M_QP	**Margin : 10**
EUT : WIRELESS-N NETWORK MINI PCI ADAPTER	**Probe : FCC-TLISN-T4_20353(0.15-30MHz) - Line1**
Power : AC 230V/50Hz	**Note : LAN-100Mbps**

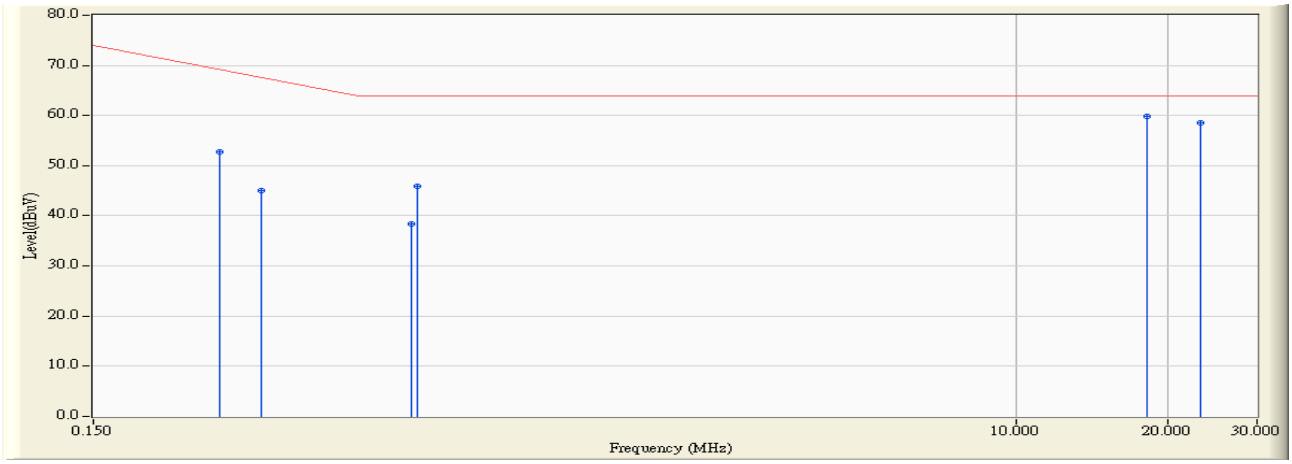


Engineer : Jame	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	**Time : 2008/10/16 - 12:40**
Limit : ISN_Voltage_B_00M_QP	**Margin : 0**
EUT : WIRELESS-N NETWORK MINI PCI ADAPTER	**Probe : FCC-TLISN-T4_20353(0.15-30MHz) - Line1**
Power : AC 230V/50Hz	**Note : LAN-100Mbps**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.266	9.850	56.600	66.450	-14.236	80.686	QUASIPEAK
2		0.322	9.850	52.700	62.550	-16.536	79.086	QUASIPEAK
3		0.638	9.827	46.800	56.627	-17.373	74.000	QUASIPEAK
4		0.654	9.821	46.100	55.921	-18.079	74.000	QUASIPEAK
5	*	18.242	9.990	52.400	62.390	-11.610	74.000	QUASIPEAK
6		23.130	10.050	51.600	61.650	-12.350	74.000	QUASIPEAK

Engineer : Jame	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	**Time : 2008/10/16 - 12:40**
Limit : ISN_Voltage_B_00M_AV	**Margin : 0**
EUT : WIRELESS-N NETWORK MINI PCI ADAPTER	**Probe : FCC-TLISN-T4_20353(0.15-30MHz) - Line1**
Power : AC 230V/50Hz	**Note : LAN-100Mbps**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.266	9.850	43.000	52.850	-17.836	70.686	AVERAGE
2		0.322	9.850	35.100	44.950	-24.136	69.086	AVERAGE
3		0.638	9.827	28.600	38.427	-25.573	64.000	AVERAGE
4		0.654	9.821	36.000	45.821	-18.179	64.000	AVERAGE
5	*	18.242	9.990	49.800	59.790	-4.210	64.000	AVERAGE
6		23.130	10.050	48.600	58.650	-5.350	64.000	AVERAGE

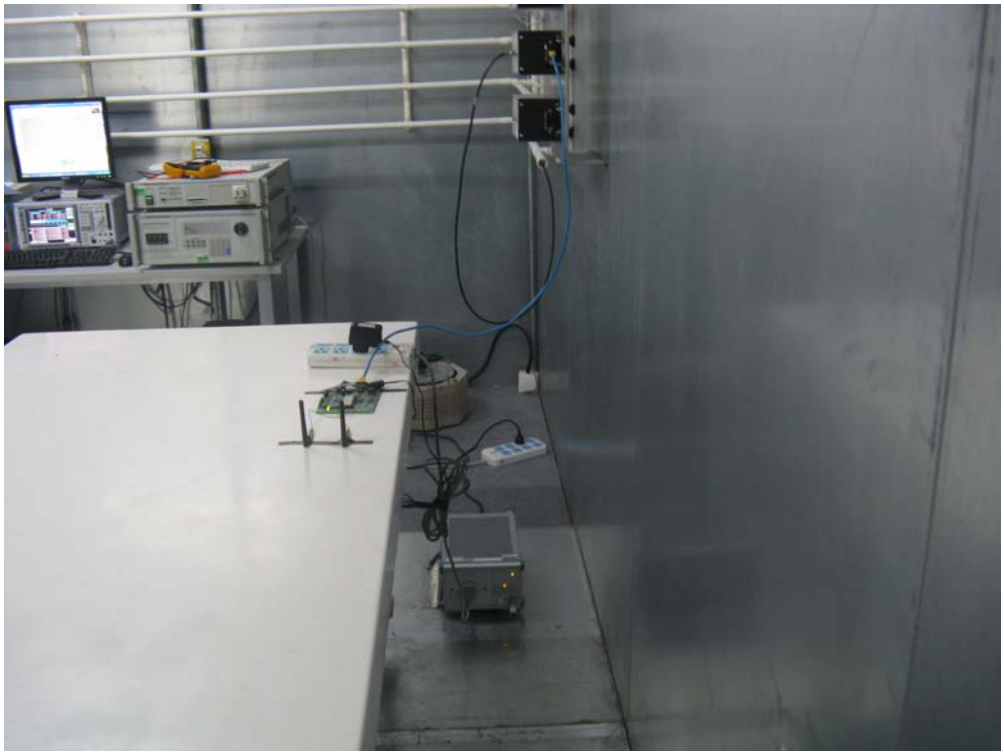
5.7. Test Photograph

Test Mode: Mode 1: Communication by WLAN

Description: Front View of Conducted Emission Test Setup for LAN

Test Mode: Mode 1: Communication by WLAN

Description: Back View of Conducted Emission Test Setup for LAN

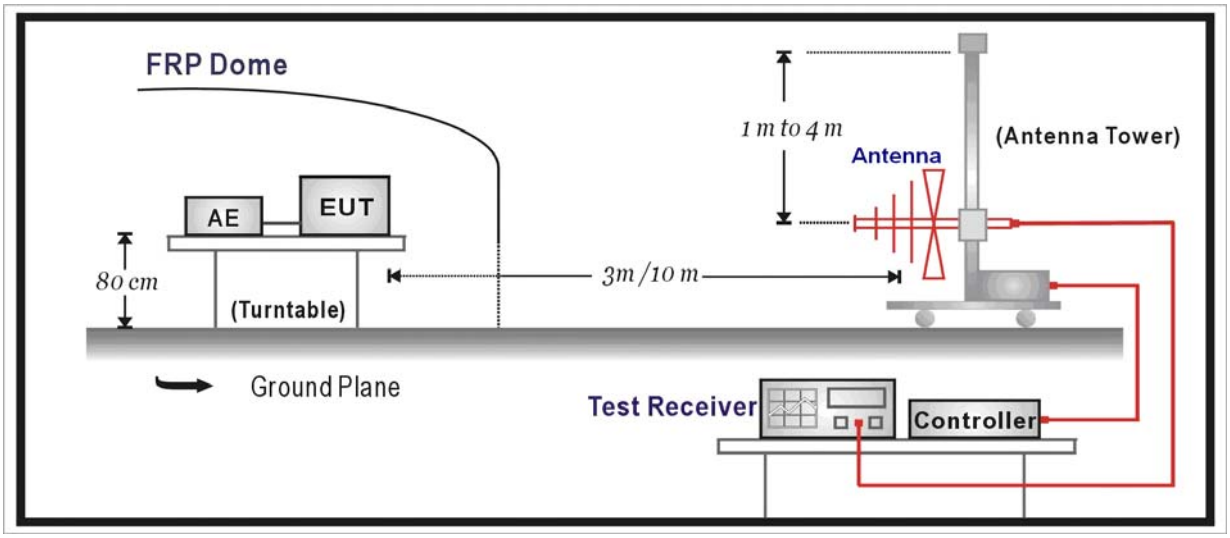


6. Radiated Emission

6.1. Test Specification

According to EMC Standard: EN 55022 Class B

6.2. Test Setup



6.3. Limit

Limits for radiated emissions from ancillary equipment intended for use in telecommunication centers only, and measured on a stand alone basis		
Frequency (MHz)	Distance (m)	QP (dBuV/m)
30 - 230	10	40
230 - 1000	10	47

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Limits for radiated emissions from ancillary equipment, measured on a stand-alone basis		
Frequency (MHz)	Distance (m)	QP (dBuV/m)
30 - 230	10	30
230 - 1000	10	37

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

6.4. Test Procedure

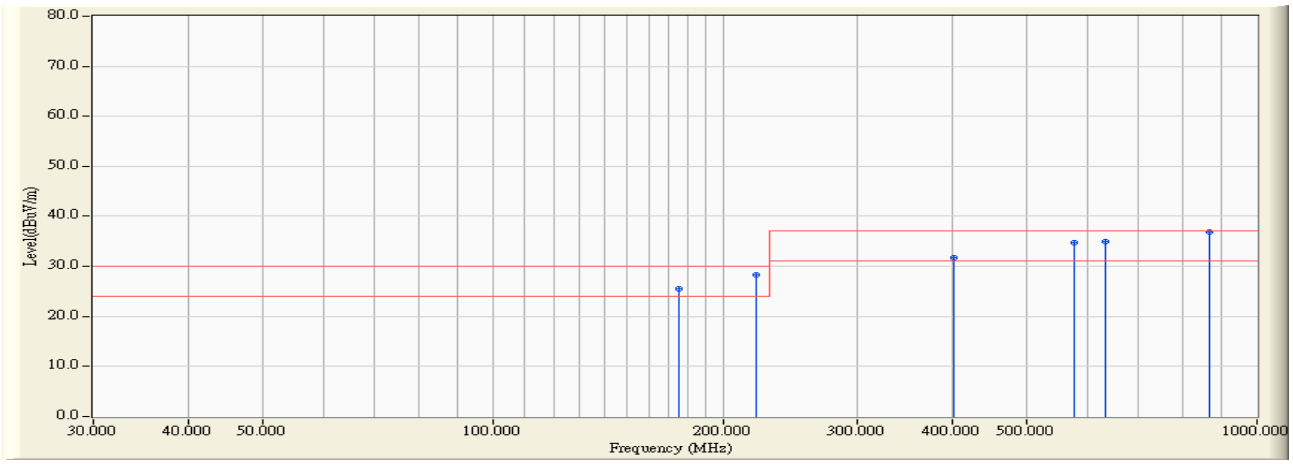
The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.
The EUT was positioned such that the distance from antenna to the EUT was 10 meters.
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.
Radiated emissions were invested over the frequency range from 30MHz to1GHz using a receiver bandwidth of 120kHz.

6.5. Deviation from Test Standard

No deviation.

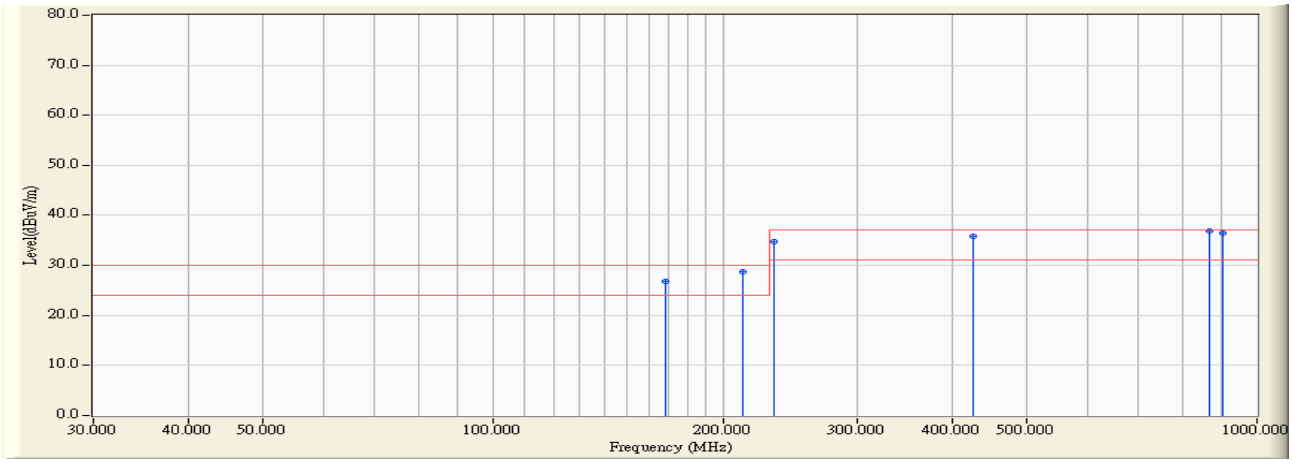
6.6. Test Result

Engineer : Jame	
Site : AC-1 (10m Semi-Anechoic Chamber)	**Time : 2008/10/27 - 10:22**
Limit : EN55022_B_10M_QP	**Margin : 6**
EUT : WIRELESS-N NETWORK MINI PCI ADAPTER	**Probe : CBL6112B_2931(30-2000MHz) - HORIZONTAL**
Power : AC 230V/50Hz	**Note : Communication**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		175.500	-12.330	37.774	25.444	-4.556	30.000	QUASIPEAK	100.000	223.000
2		221.480	-11.972	40.216	28.244	-1.756	30.000	QUASIPEAK	101.000	114.000
3		401.025	-3.409	35.178	31.769	-5.231	37.000	QUASIPEAK	112.000	183.000
4		575.625	0.529	34.187	34.716	-2.284	37.000	QUASIPEAK	100.000	315.000
5		633.815	0.635	34.235	34.870	-2.130	37.000	QUASIPEAK	110.000	324.000
6	*	866.650	3.164	33.625	36.790	-0.210	37.000	QUASIPEAK	100.000	284.000

Engineer : Jame	
Site : AC-1 (10m Semi-Anechoic Chamber)	**Time : 2008/10/27 - 10:25**
Limit : EN55022_B_10M_QP	**Margin : 6**
EUT : WIRELESS-N NETWORK MINI PCI ADAPTER	**Probe : CBL6112B_2931(30-2000MHz) - VERTICAL**
Power : AC 230V/50Hz	**Note : Communication**

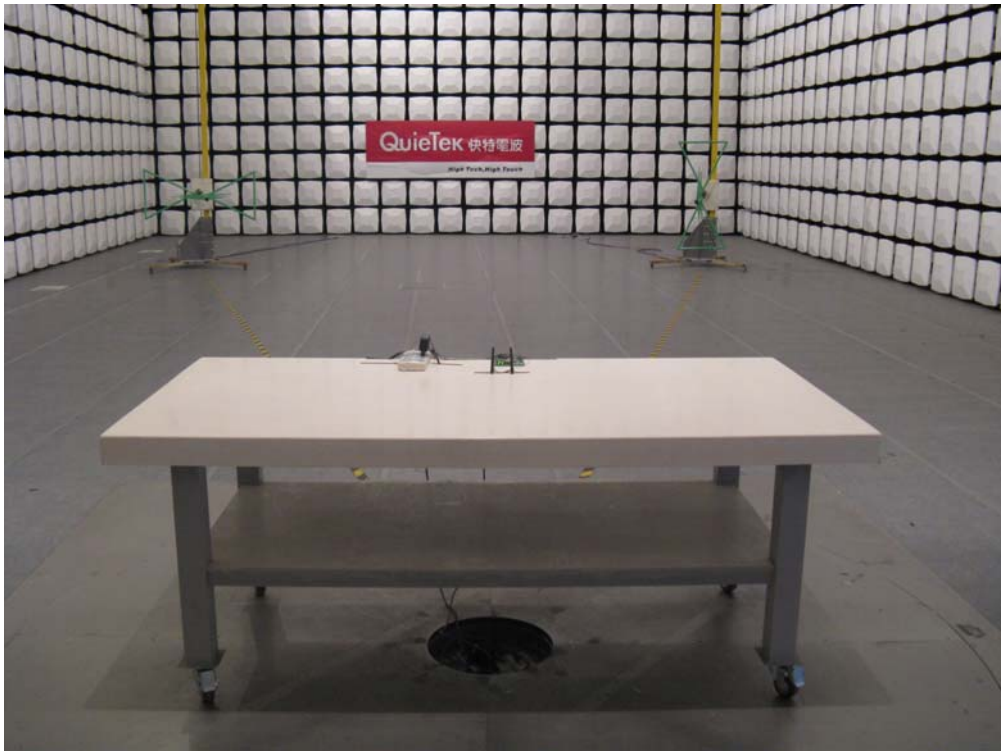


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		168.005	-11.860	38.700	26.841	-3.159	30.000	QUASIPEAK	230.900	225.800
2		212.600	-12.090	40.800	28.710	-1.290	30.000	QUASIPEAK	144.000	55.000
3		233.325	-10.491	45.213	34.722	-2.278	37.000	QUASIPEAK	100.000	324.000
4		425.275	-2.621	38.514	35.893	-1.107	37.000	QUASIPEAK	100.000	201.000
5	*	866.650	3.164	33.625	36.790	-0.210	37.000	QUASIPEAK	194.000	343.200
6		900.575	3.359	33.117	36.476	-0.524	37.000	QUASIPEAK	184.000	274.000

6.7. Test Photograph

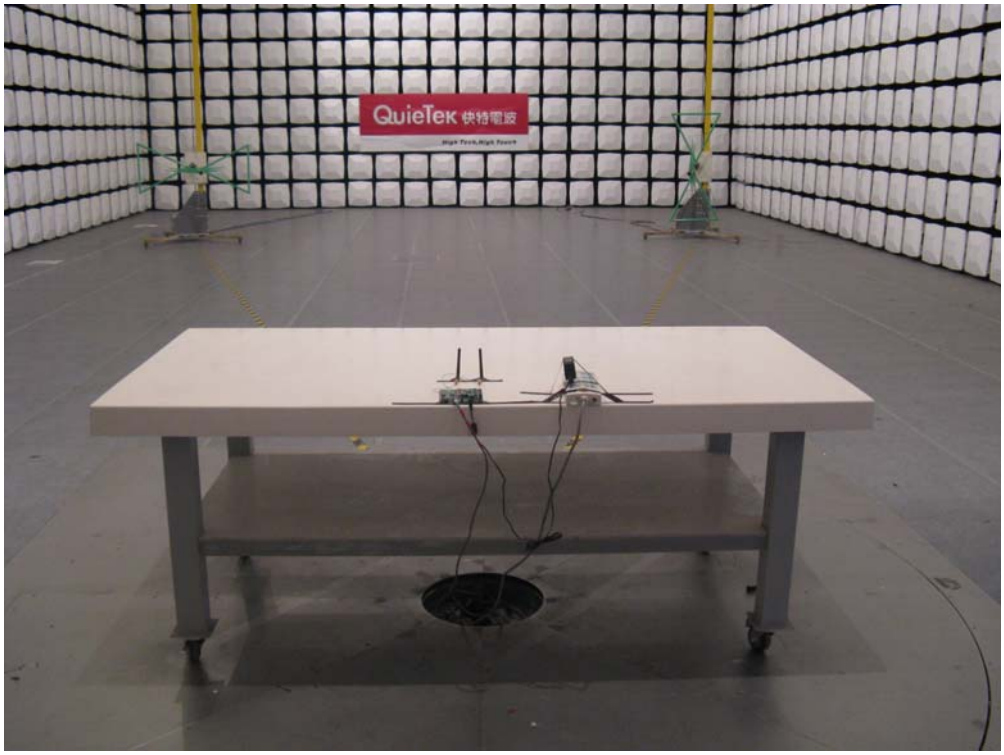
Test Mode : Mode 1: Communication by WLAN

Description : Front View of Radiated Emission Test Setup



Test Mode : Mode 1: Communication by WLAN

Description : Back View of Radiated Emission Test Setup

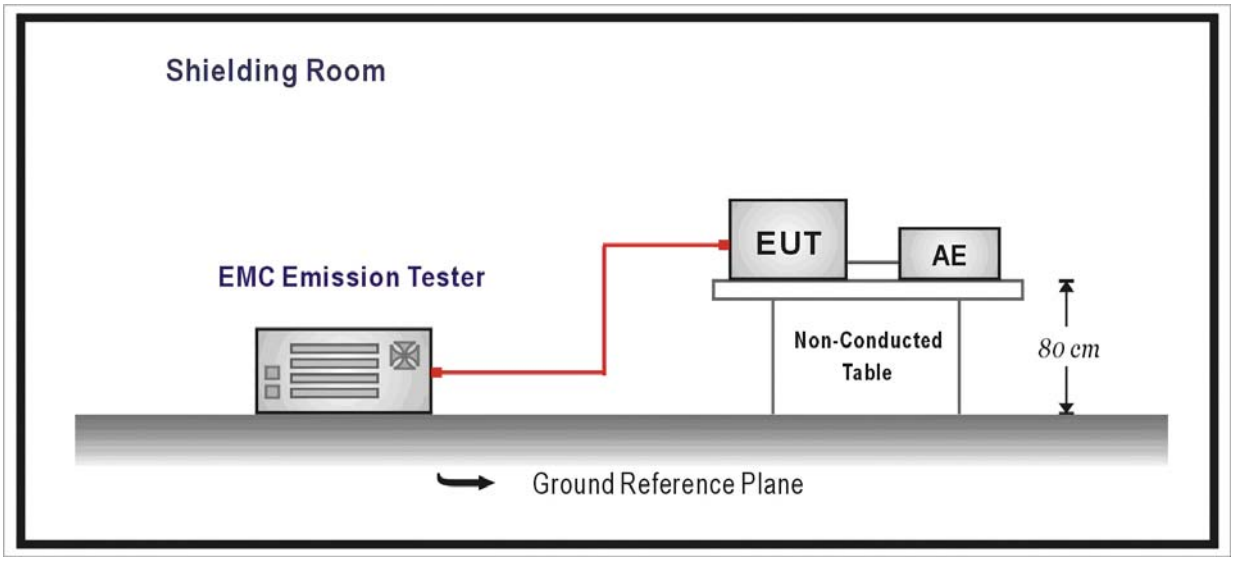


7. Harmonic Current Emission

7.1. Test Specification

According to EMC Standard: EN 61000-3-2

7.2. Test Setup



7.3. Limit

(a) Limits of Class A Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current A	Harmonics Order n	Maximum Permissible harmonic current A
Odd harmonics		Even harmonics	
3	2.30	2	1.08
5	1.14	4	0.43
7	0.77	6	0.30
9	0.40	8 ≤ n ≤ 40	0.23 * 8/n
11	0.33		
13	0.21		
15 ≤ n ≤ 39	0.15 * 15/n		

(b) Limits of Class B Harmonics Currents

For Class B equipment, the harmonic of the input current shall not exceed the maximum permissible values given in table that is the limit of Class A multiplied by a factor of 1.5.

(c) Limits of Class C Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current Expressed as a percentage of the input current at the fundamental frequency %
2	2
3	30 · λ*
5	10
7	7
9	5
11 ≤ n ≤ 39 (odd harmonics only)	3
∗λ is the circuit power factor	

(d) Limits of Class D Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current per watt mA/W	Maximum Permissible harmonic current A
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
11 ≤ n ≤ 39 (odd harmonics only)	3.85/n	See limit of Class A

7.4. Test Procedure

The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.94 times and 1.06 times shall be performed.

7.5. Deviation from Test Standard

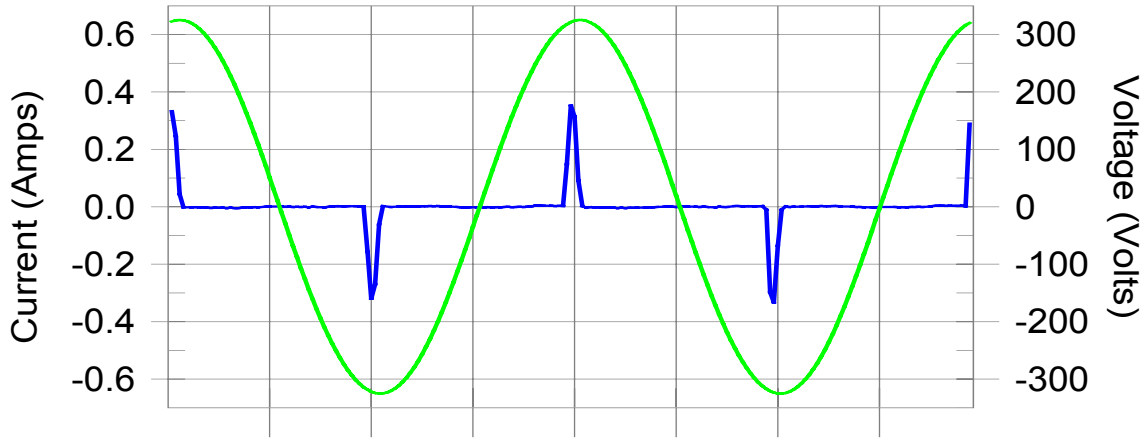
No deviation.

7.6. Test Result

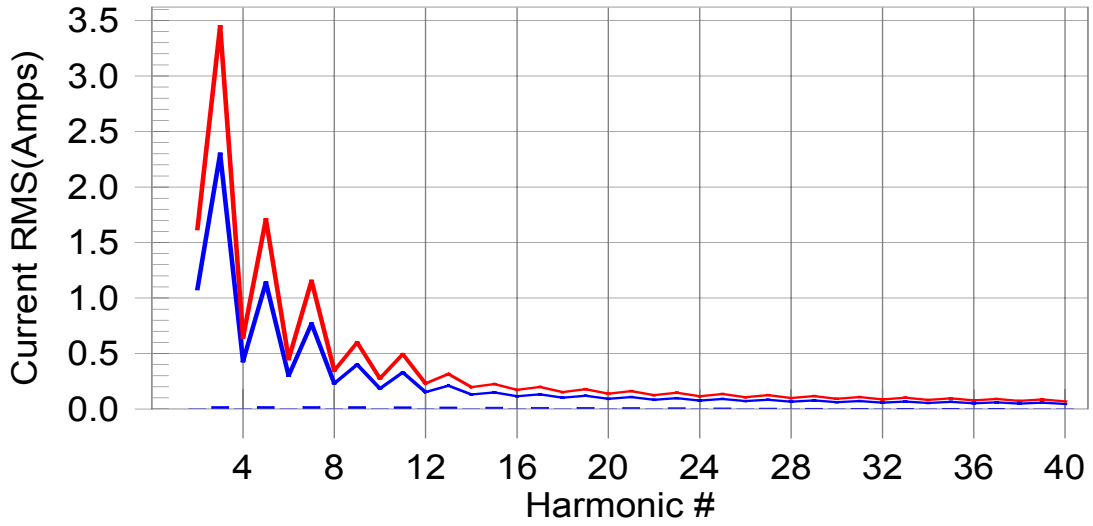
Product	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	Harmonic Current Emission
Test Mode	Mode 1: Communication by WLAN
Date of Test	2008/10/16
Test Site	SR-1

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass **Worst harmonic was #19 with 11.80% of the limit.**

Test Result: Pass **Source qualification: Normal**
THC(A): 0.06 **I-THD(%): 273.40** **POHC(A): 0.022** **POHC Limit(A): 0.271**
Highest parameter values during test:

V_RMS (Volts):	**230.08**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**0.379**	**I_RMS (Amps):**	**0.067**
I_Fund (Amps):	**0.024**	**Crest Factor:**	**5.727**
Power (Watts):	**5.4**	**Power Factor:**	**0.358**

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.000	1.080	0.0	0.001	1.620	0.08	Pass
3	0.023	2.300	1.0	0.024	3.450	0.69	Pass
4	0.000	0.430	0.0	0.001	0.645	0.15	Pass
5	0.022	1.140	2.0	0.023	1.710	1.32	Pass
6	0.000	0.300	0.0	0.001	0.450	0.13	Pass
7	0.022	0.770	2.8	0.022	1.155	1.90	Pass
8	0.000	0.230	0.0	0.000	0.345	0.12	Pass
9	0.021	0.400	5.2	0.021	0.600	3.46	Pass
10	0.000	0.184	0.0	0.001	0.276	0.18	Pass
11	0.020	0.330	5.9	0.020	0.495	3.98	Pass
12	0.000	0.153	0.0	0.001	0.230	0.22	Pass
13	0.018	0.210	8.7	0.018	0.315	5.85	Pass
14	0.000	0.131	0.0	0.000	0.197	0.23	Pass
15	0.017	0.150	11.3	0.017	0.225	7.57	Pass
16	0.000	0.115	0.0	0.000	0.173	0.25	Pass
17	0.015	0.132	11.7	0.016	0.199	7.83	Pass
18	0.000	0.102	0.0	0.000	0.153	0.30	Pass
19	0.014	0.118	11.8	0.014	0.178	7.89	Pass
20	0.000	0.092	0.0	0.000	0.138	0.32	Pass
21	0.012	0.107	11.6	0.013	0.161	7.77	Pass
22	0.000	0.084	0.0	0.000	0.125	0.34	Pass
23	0.011	0.098	11.1	0.011	0.147	7.44	Pass
24	0.000	0.077	0.0	0.000	0.115	0.36	Pass
25	0.009	0.090	10.4	0.009	0.135	6.99	Pass
26	0.000	0.071	0.0	0.000	0.106	0.38	Pass
27	0.008	0.083	9.5	0.008	0.125	6.39	Pass
28	0.000	0.066	0.0	0.000	0.099	0.38	Pass
29	0.007	0.078	8.5	0.007	0.116	5.73	Pass
30	0.000	0.061	0.0	0.000	0.092	0.39	Pass
31	0.005	0.073	7.4	0.005	0.109	4.94	Pass
32	0.000	0.058	0.0	0.000	0.086	0.39	Pass
33	0.000	0.068	0.0	0.004	0.102	4.22	Pass
34	0.000	0.054	0.0	0.000	0.081	0.39	Pass
35	0.000	0.064	0.0	0.003	0.096	3.49	Pass
36	0.000	0.051	0.0	0.000	0.077	0.37	Pass
37	0.000	0.061	0.0	0.003	0.091	2.86	Pass
38	0.000	0.048	0.0	0.000	0.073	0.37	Pass
39	0.000	0.058	0.0	0.002	0.087	2.36	Pass
40	0.000	0.046	0.0	0.000	0.069	0.31	Pass

1. **Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.**
2. **According to EN61000-3-2 paragraph 7 the note 1 and 2 are valid for all applications having an active input power >75W. Others the result should be pass.**

7.7. Test Photograph

Test Mode: Mode 1: Communication by WLAN

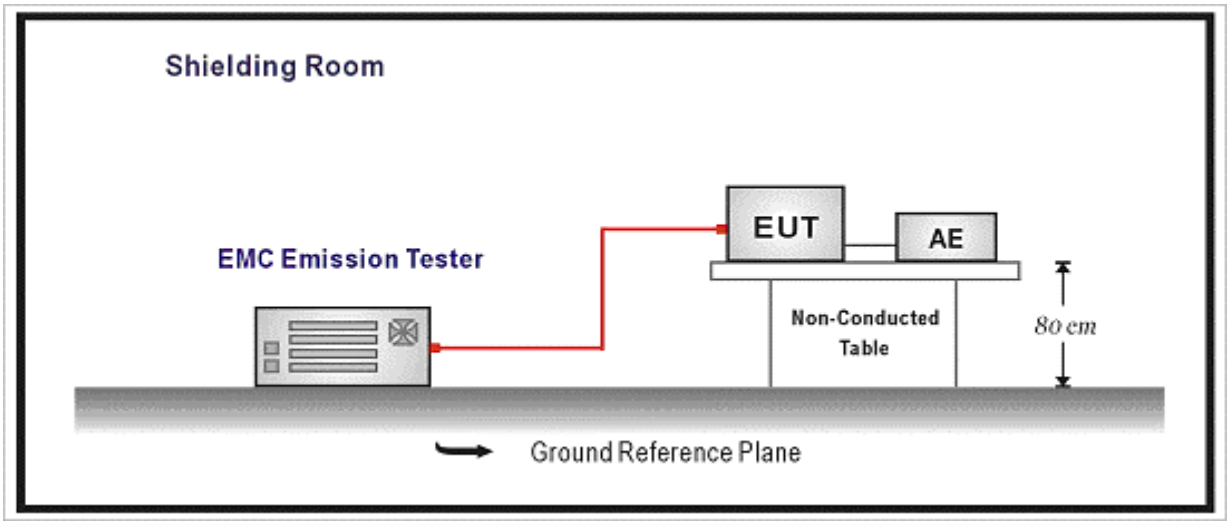
Description: Harmonic Current Emission Test Setup

8. Voltage Fluctuation and Flicker

8.1. Test Specification

According to EMC Standard: EN 61000-3-3

8.2. Test Setup



8.3. Limit

The following limits apply:

- the value of P_{st} shall not be greater than 1.0;
- the value of P_{lt} shall not be greater than 0.65;
- the value of d(t) during a voltage change shall not exceed 3.3 % for more than 500 ms;
- the relative steady-state voltage change, d_c, shall not exceed 3.3 %;
- the maximum relative voltage change, d_{max}, shall not exceed;

a) 4 % without additional conditions;

b) 6 % for equipment which is:

- switched manually, or
- switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption.

Note: The cycling frequency will be further limited by the P_{st} and P_{1t} limit.

For example: a d_{max} of 6%producing a rectangular voltage change characteristic twice per hour will give a P_{1t} of about 0.65.

c) 7 % for equipment which is:
- attended whilst in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn mowers, portable tools such as electric drills), or
- switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.

P_{st} and P_{1t} requirements shall not be applied to voltage changes caused by manual switching.

8.4. Test Procedure

The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.94 times and 1.06 times shall be performed.

8.5. Deviation from Test Standard

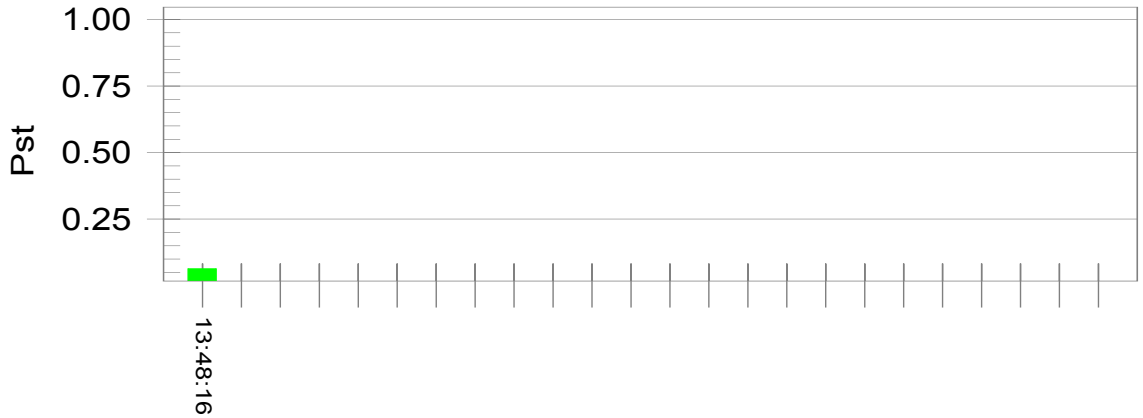
No deviation.

8.6. Test Result

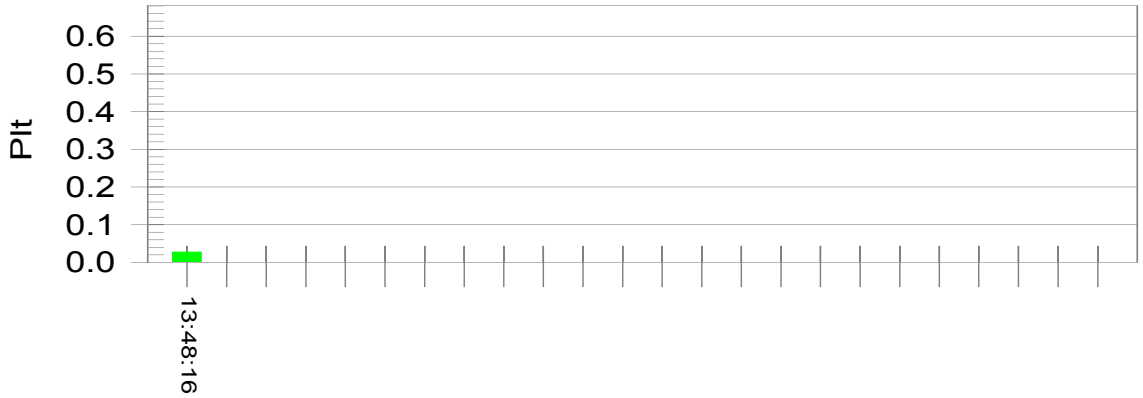
Product	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	Voltage Fluctuation and Flicker
Test Mode	Mode 1: Communication by WLAN
Date of Test	2008/10/16
Test Site	SR-1

Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	**230.07**			
Highest dt (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Time(mS) > dt:	**0.0**	**Test limit (mS):**	**0.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.00**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.064**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.028**	**Test limit:**	**0.650**	**Pass**

8.7. Test Photograph

Test Mode : Mode 1: Communication by WLAN

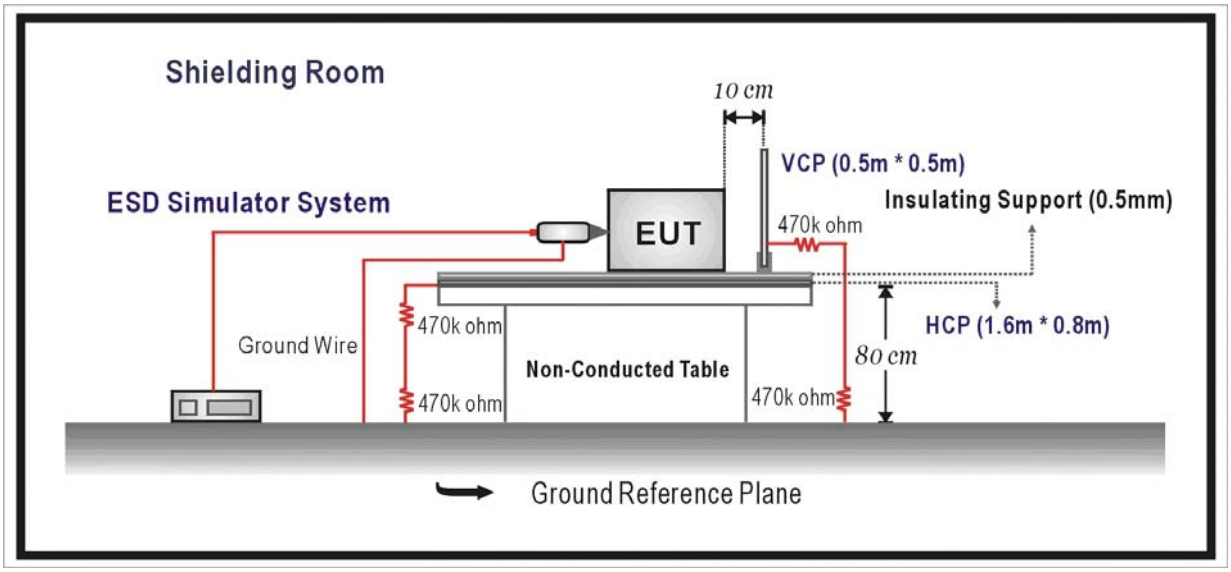
Description : Voltage Fluctuation and Flicker Test Setup

9. Electrostatic Discharge

9.1. Test Specification

According to Standard: EN 61000-4-2

9.2. Test Setup



9.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port				
	Electrostatic Discharge	kV(Charge Voltage)	±8 Air Discharge ±4 Contact Discharge	B

9.4. Test Procedure

Direct application of discharges to the EUT:

Contact discharge was applied only to conductive surfaces of the EUT.

Air discharges were applied only to non-conductive surfaces of the EUT.

During the test, it was performed with single discharges. For the single discharge time between successive single discharges will be keep longer 1 second. It was at least ten single discharges with positive and negative at the same selected point.

The selected point, which was performed with electrostatic discharge, was marked on the red label of the EUT.

Indirect application of discharges to the EUT:

Vertical Coupling Plane (VCP):

The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

9.5. Deviation from Test Standard

No deviation.

9.6. Test Result

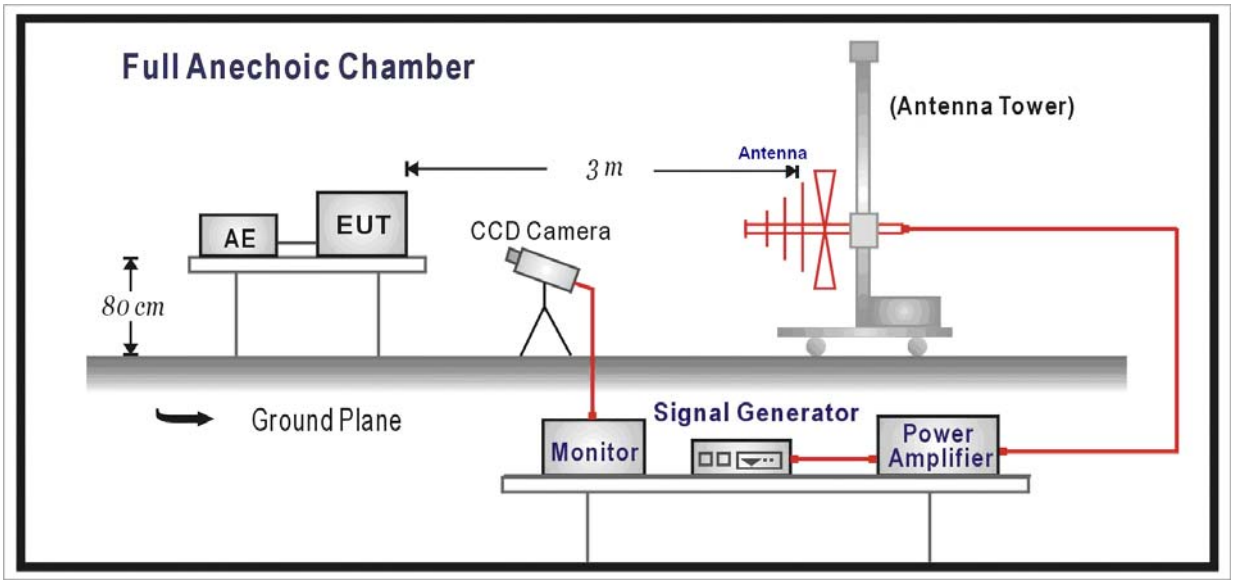
As the EUT is the Wireless Network Card, and has no frame, so this item needn’t perform.

10. RF Electromagnetic Field

10.1. Test Specification

According to Standard: EN 61000-4-3

10.2. Test Setup



10.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port (See Note)				
	Radio-Frequency Electromagnetic Field Amplitude Modulated	MHz V/m(Un-modulated, rms) % AM (1kHz)	80-1000, 1400-2000 3 80	A

10.4. Test Procedure

The EUT and load, which are placed on a table that is 0.8 meter above ground, are placed with one coincident with the calibration plane such that the distance from antenna to the EUT was 3 meters.

Both horizontal and vertical polarization of the antenna and four sides of the EUT are set on measurement.

In order to judge the EUT performance, a CCD camera is used to monitor EUT screen.

All the scanning conditions are as follows:

	Condition of Test	Remarks
1.	Field Strength	3 V/m Level 2
2.	Radiated Signal	AM 80% Modulated with 1kHz
3.	Scanning Frequency	80 - 1000MHz, 1400 – 2000MHz
4	Dwell Time	3 Seconds
5.	Frequency step size Δf	1%
6.	The rate of Swept of Frequency	1.5 x 10^{-3} decades/s

10.5. Deviation from Test Standard

No deviation.

10.6. Test Result

Product	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	RF Electromagnetic Field
Test Mode	Mode 1: Communication by WLAN
Date of Test	2008/10/17
Test Site	AC-4

Frequency (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/m)	Required Criteria	Complied to Criteria	Results
80-1000 1400-2000	Front	H	3	A	A	Pass
80-1000 1400-2000	Front	V	3	A	A	Pass
80-1000 1400-2000	Back	H	3	A	A	Pass
80-1000 1400-2000	Back	V	3	A	A	Pass

☒ Meet criteria A: Operate as intended during and after the test

☐ Meet criteria B: Operate as intended after the test

☐ Meet criteria C: Loss/Error of function

☒ Additional Information

- ☐ EUT stopped operation and could / could not be reset by operator at_____V/m, at frequency_____MHz.
- ☒ No false alarms or other malfunctions were observed during or after the test.

Product	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	RF Electromagnetic Field
Test Mode	Mode 2: Standby
Date of Test	2008/10/17
Test Site	AC-4

Frequency (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/m)	Required Criteria	Complied to Criteria	Results
80-1000 1400-2000	Front	H	3	A	A	Pass
80-1000 1400-2000	Front	V	3	A	A	Pass
80-1000 1400-2000	Back	H	3	A	A	Pass
80-1000 1400-2000	Back	V	3	A	A	Pass
80-1000 1400-2000	Right	H	3	A	A	Pass
80-1000 1400-2000	Right	V	3	A	A	Pass
80-1000 1400-2000	Left	H	3	A	A	Pass
80-1000 1400-2000	Left	V	3	A	A	Pass

☒ Meet criteria A: Operate as intended during and after the test

☐ Meet criteria B: Operate as intended after the test

☐ Meet criteria C: Loss/Error of function

☒ Additional Information

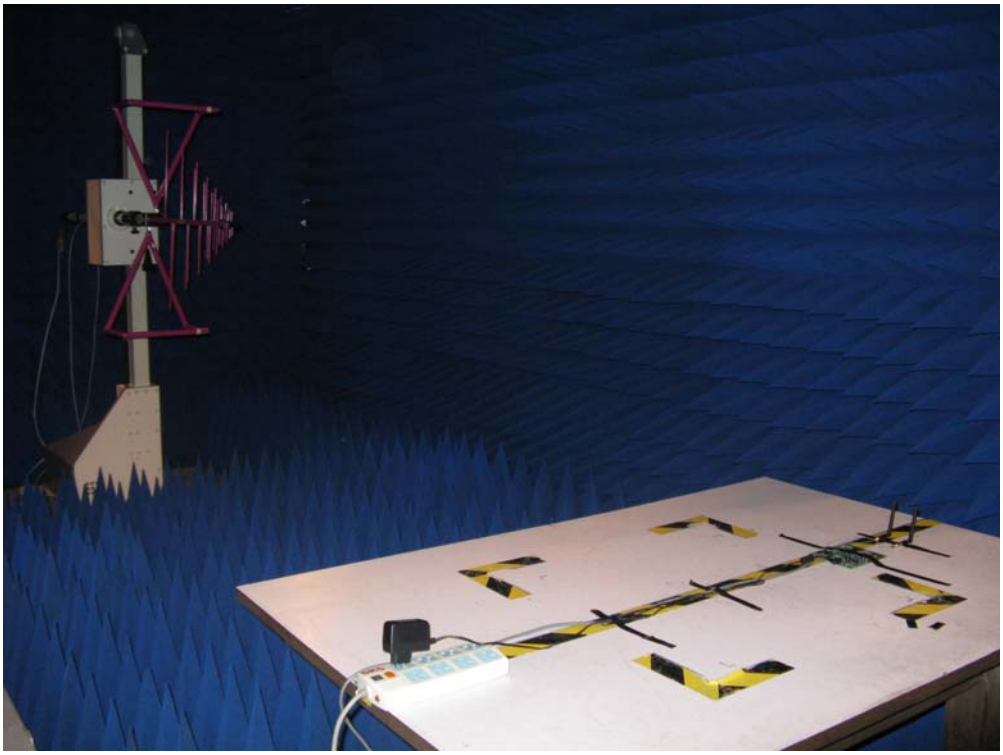
☐ EUT stopped operation and could / could not be reset by operator at_____V/m, at frequency_____MHz.

☒ No false alarms or other malfunctions were observed during or after the test.

10.7. Test Photograph

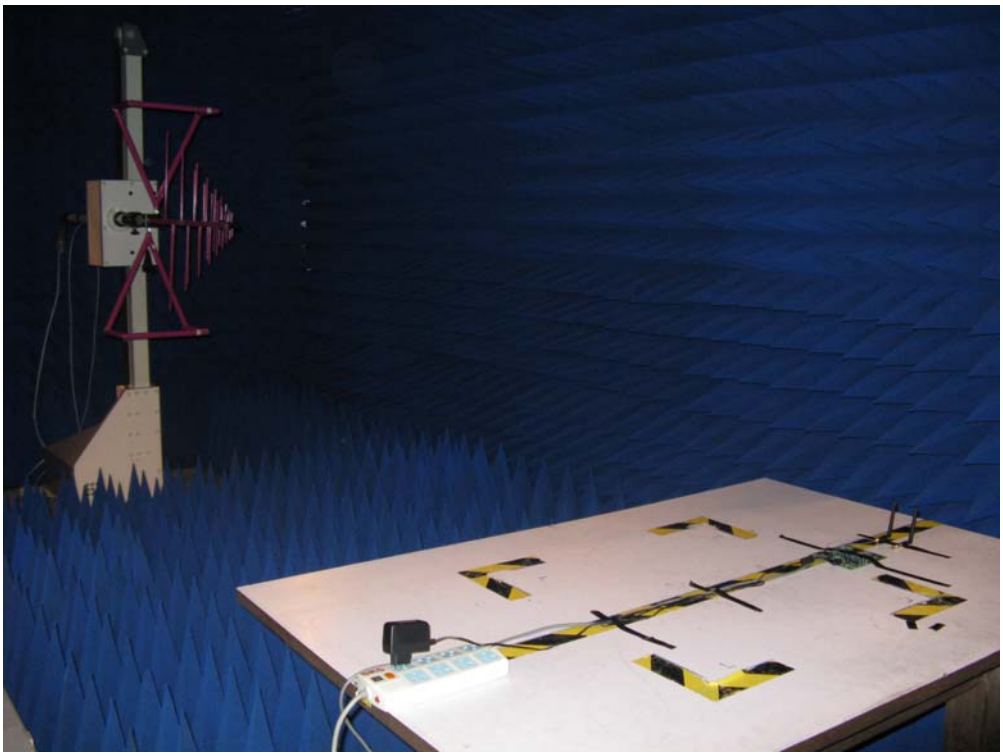
Test Mode: Mode 1: Communication by WLAN

Description: RF Electromagnetic Field Test Setup



Test Mode: Mode 2: Standby

Description: RF Electromagnetic Field Test Setup

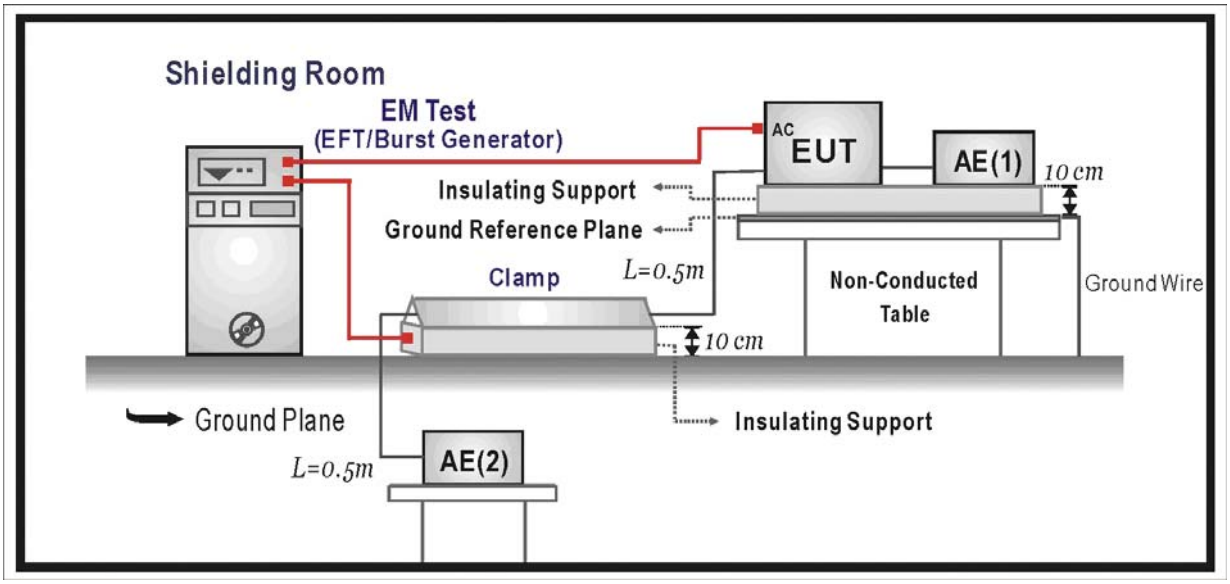


11. Fast Transients Common Mode

11.1. Test Specification

According to Standard: EN 61000-4-4

11.2. Test Setup



11.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Signal Ports and Telecommunication Ports (See Note)				
	Fast Transients Common Mode	kV (Peak) Tr/Th ns Rep. Frequency kHz	±0.5 5/50 5	B
Input D.C. Power Ports				
	Fast Transients Common Mode	kV (Peak) Tr/Th ns Rep. Frequency kHz	±0.5 5/50 5	B
Input A.C. Power Ports				
	Fast Transients Common Mode	kV (Peak) Tr/Th ns Rep. Frequency kHz	±1 5/50 5	B

Note: Applicable only to cables which according to the manufacturer's specification supports communication on cable lengths greater than 3m.

11.4. Test Procedure

The EUT is placed on a table that is 0.8 meter height. A ground reference plane is placed on the table, and uses a 0.1m insulation between the EUT and ground reference plane.
The minimum area of the ground reference plane is 1m*1m, and 0.65mm thick min, and projected beyond the EUT by at least 0.1m on all sides.

For signal and telecommunication ports:
The EFT interference signal is through a coupling clamp device couples to the signal and control lines of the EUT with burst noise for 1minute.

For input A.C. and D.C. power ports:
The EUT is connected to the power mains through a coupling device that directly couples the EFT/B interference signal.
Each of the Line and Neutral conductors is impressed with burst noise for 1 minute.

The length of the signal and power lines between the coupling device and the EUT is 0.5m.

11.5. Deviation from Test Standard

No deviation.

11.6. Test Result

Product	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	Fast Transients Common Mode
Test Mode	Mode 1: Communication by WLAN
Date of Test	2008/10/17
Test Site	SR-2

Inject Line	Polarity	Voltage (kV)	Inject Time (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L+N	±	1	60	Direct	B	A	Pass
LAN	±	0.5	60	Clamp	B	A	Pass

☒ Meet criteria A: Operate as intended during and after the test

☐ Meet criteria B: Operate as intended after the test

☐ Meet criteria C: Loss/Error of function

☒ Additional Information

☐ EUT stopped operation and could / could not be reset by operator at_____kV of Line_____.

☒ No false alarms or other malfunctions were observed during or after the test.

Product	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	Fast Transients Common Mode
Test Mode	Mode 2: Standby
Date of Test	2008/10/17
Test Site	SR-2

Inject Line	Polarity	Voltage (kV)	Inject Time (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L+N	±	1	60	Direct	B	A	Pass
LAN	±	0.5	60	Clamp	B	A	Pass

☒ Meet criteria A: Operate as intended during and after the test

☐ Meet criteria B: Operate as intended after the test

☐ Meet criteria C: Loss/Error of function

☒ Additional Information

☐ EUT stopped operation and could / could not be reset by operator at_____kV of Line_____.

☒ No false alarms or other malfunctions were observed during or after the test.

11.7. Test Photograph

Test Mode: Mode 1: Communication by WLAN

Description: Fast Transients Common Mode Test Setup for Main

Test Mode: Mode 1: Communication by WLAN

Description: Fast Transients Common Mode Test Setup for LAN

Test Mode: Mode 2: Standby

Description: Fast Transients Common Mode Test Setup for Main

Test Mode: Mode 2: Standby

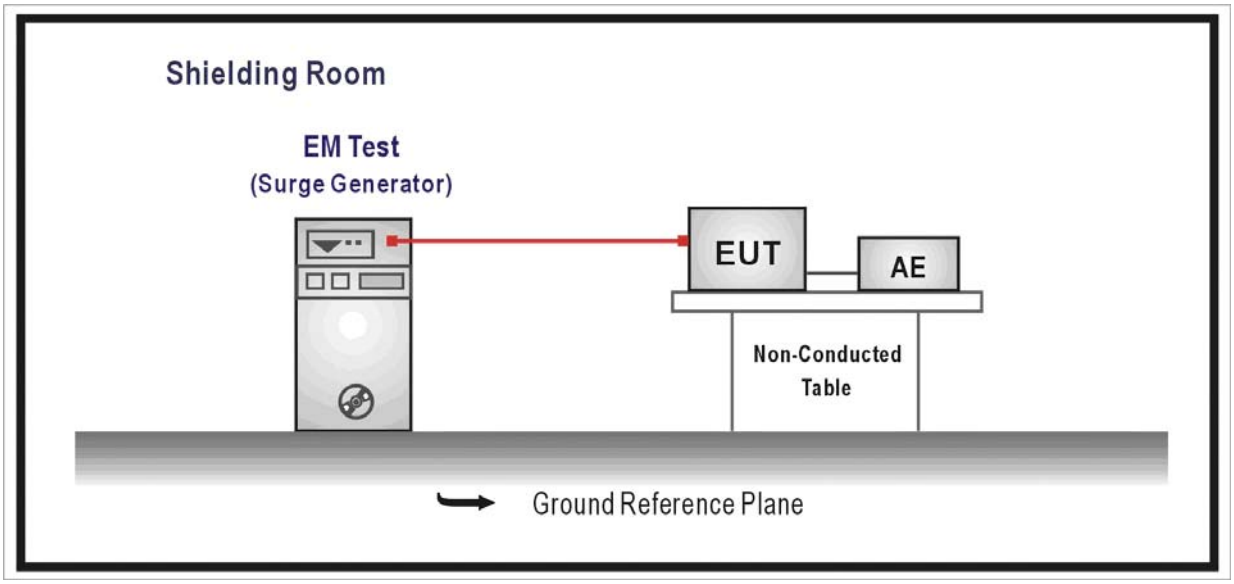
Description: Fast Transients Common Mode Test Setup for LAN

12. Surges

12.1. Test Specification

According to Standard: EN 61000-4-5

12.2. Test Setup



12.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Telecommunication ports directly connected to outdoor cables				
	Surges Line to Ground	Tr/Th us kV	1.2/50 (8/20) ± 1	B
Telecommunication ports directly connected to indoor cables (See Note(2))				
	Surges Line to Ground	Tr/Th us kV	1.2/50 (8/20) ± 0.5	B
AC Power Ports (See Note(3))				
	Surges Line to Line Line to Ground	Tr/Th us kV kV	1.2/50 (8/20) ± 1 ± 2	B

Note 1: Where normal functioning cannot be achieved because of the impact of the CDN on the EUT, no immunity test shall be required.

Note 2: In telecommunications centres 0.5 kV line to ground shall be used.

Note 3: In telecom centres 1 kV line to ground and 0.5 kV line to line shall be used.

12.4. Test Procedure

The EUT and its load are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min. And projected beyond the EUT by at least 0.1m on all sides. The length of power cord between the coupling device and the EUT shall be 2m or less.

For input A.C. and D.C. power ports:

The EUT is connected to the power mains through a coupling device that directly couples the Surge interference signal.

The surge noise shall be applied synchronized to the voltage phase at 0^0, 90^0, 180^0, 270^0 and the peak value of the a.c. voltage wave. (Positive and negative)

Each of Line-Earth and Line-Line is impressed with a sequence of five surge voltages with interval of 1 min.

12.5. Deviation from Test Standard

No deviation.

12.6. Test Result

Product	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	Surges
Test Mode	Mode 1: Communication by WLAN
Date of Test	2008/10/17
Test Site	SR-2

Inject Line	Polarity	Angle	Voltage (kV)	Time Interval (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L-N	±	0	1	60	Direct	B	A	Pass
L-N	±	90	1	60	Direct	B	A	Pass
L-N	±	180	1	60	Direct	B	A	Pass
L-N	±	270	1	60	Direct	B	A	Pass

Note: The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

☒ Meet criteria A: Operate as intended during and after the test

☐ Meet criteria B: Operate as intended after the test

☐ Meet criteria C: Loss/Error of function

☒ Additional Information

- ☐ EUT stopped operation and could / could not be reset by operator at_____kV of Line_____.
- ☒ No false alarms or other malfunctions were observed during or after the test.

Product	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	Surges
Test Mode	Mode 2: Standby
Date of Test	2008/10/17
Test Site	SR-2

Inject Line	Polarity	Angle	Voltage (kV)	Time Interval (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L-N	±	0	1	60	Direct	B	A	Pass
L-N	±	90	1	60	Direct	B	A	Pass
L-N	±	180	1	60	Direct	B	A	Pass
L-N	±	270	1	60	Direct	B	A	Pass

Note: The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

☒ Meet criteria A: Operate as intended during and after the test

☐ Meet criteria B: Operate as intended after the test

☐ Meet criteria C: Loss/Error of function

☒ Additional Information

☐ EUT stopped operation and could / could not be reset by operator at_____kV of Line_____.

☒ No false alarms or other malfunctions were observed during or after the test.

12.7. Test Photograph

Test Mode: Mode 1: Communication by WLAN

Description: Surges Test Setup for Main

Test Mode: Mode 2: Standby

Description: Surges Test Setup for Main

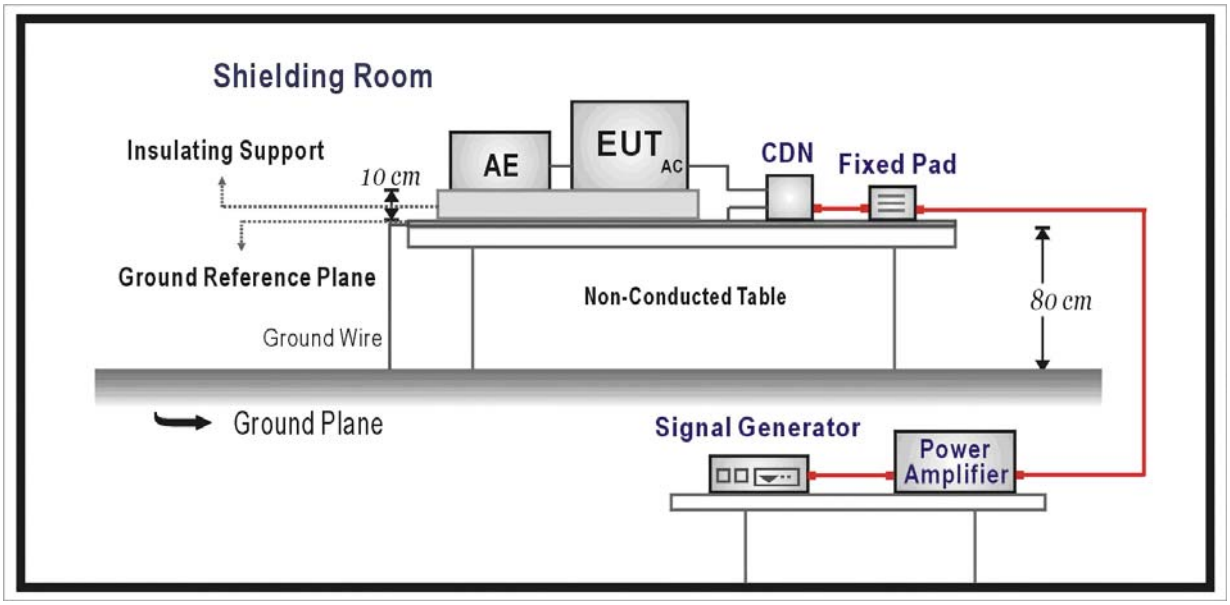
13. RF Common Mode

13.1. Test Specification

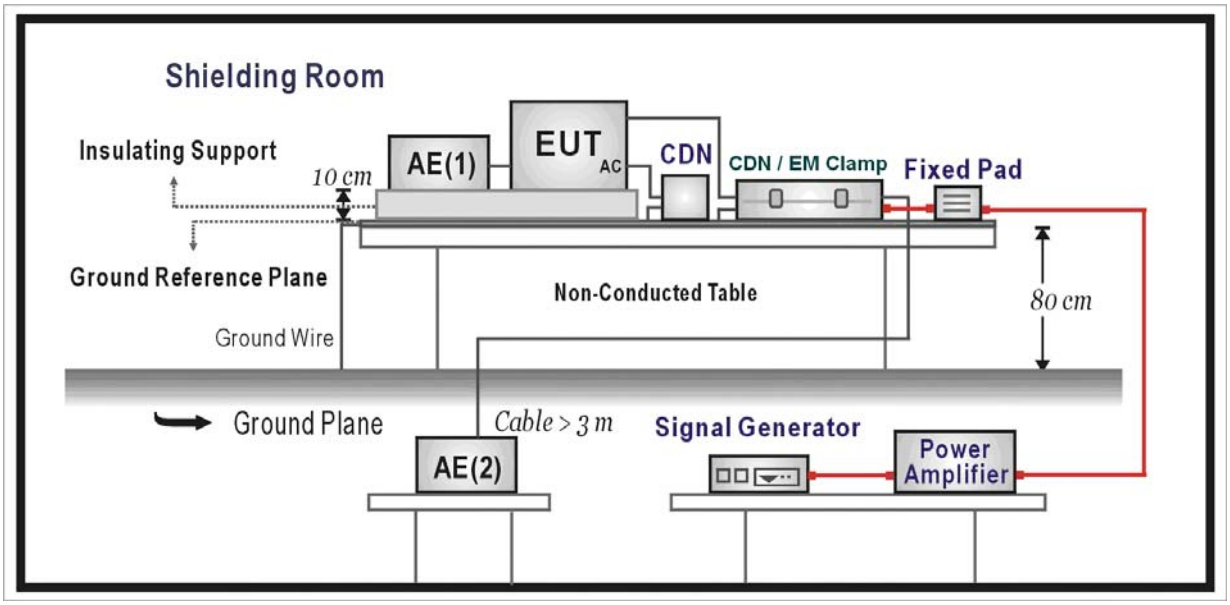
According to Standard: EN 61000-4-6

13.2. Test Setup

CDN Test Setup



EM Clamp Test Setup



13.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Signal Ports, Telecommunication Ports, Control Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A
D.C. Power Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A
A.C. Power Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A

13.4. Test Procedure

The EUT are placed on a table that is 0.8 meter height, and a Ground reference plane on the table, EUT are placed upon table and use a 0.1m insulation between the EUT and Ground reference plane.

For signal ports, telecommunication ports and control ports:
The disturbance signal is through a coupling and decoupling networks (CDN) or EM-clamp device couples to the signal and Telecommunication lines of the EUT.

For input D.C. and A.C. power ports:
The EUT is connected to the power mains through a coupling and decoupling networks for power supply lines. And directly couples the disturbances signal into EUT.
Used CDN-M2 for two wires or CDN-M3 for three wires.

All the scanning conditions are as follows:

	Condition of Test	Remarks
1.	Field Strength	3V Level 2
2.	Radiated Signal	AM 80% Modulated with 1kHz
3.	Scanning Frequency	0.15 - 80MHz
4	Dwell Time	3 Seconds
5.	Frequency step size Δf	1%
6.	The rate of Swept of Frequency	1.5 x 10^{-3} decades/s

13.5. Deviation from Test Standard

No deviation.

13.6. Test Result

Product	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	RF Common Mode
Test Mode	Mode 1: Communication by WLAN
Date of Test	2008/10/17
Test Site	SR-2

Frequency (MHz)	Voltage (V)	Inject Method	Inject Ports	Required Criteria	Complied to Criteria	Result
0.15-80	3	CDN	AC IN	A	A	Pass
0.15-80	3	CDN	LAN	A	A	Pass

☒ Meet criteria A: Operate as intended during and after the test

☐ Meet criteria B: Operate as intended after the test

☐ Meet criteria C: Loss/Error of function

☒ Additional Information

☐ EUT stopped operation and could / could not be reset by operator at_____V, at frequency_____MHz.

☒ No false alarms or other malfunctions were observed during or after the test.

Product	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	RF Common Mode
Test Mode	Mode 2: Standby
Date of Test	2008/10/17
Test Site	SR-2

Frequency (MHz)	Voltage (V)	Inject Method	Inject Ports	Required Criteria	Complied to Criteria	Result
0.15-80	3	CDN	AC IN	A	A	Pass
0.15-80	3	CDN	LAN	A	A	Pass

☒ Meet criteria A: Operate as intended during and after the test

☐ Meet criteria B: Operate as intended after the test

☐ Meet criteria C: Loss/Error of function

☒ Additional Information

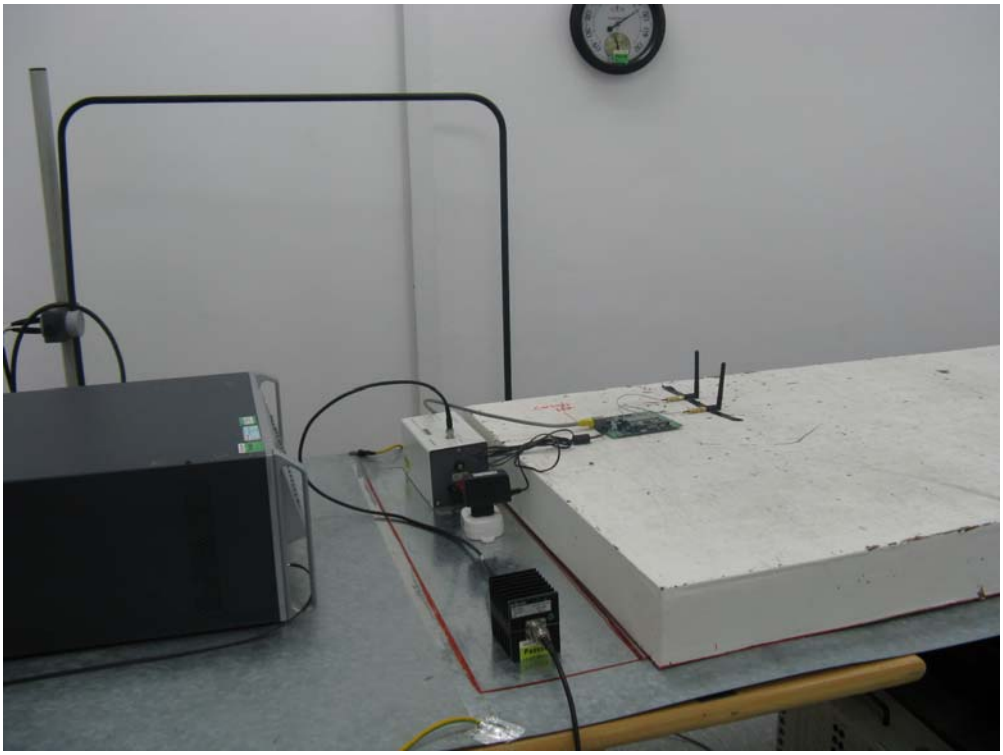
☐ EUT stopped operation and could / could not be reset by operator at_____V, at frequency_____MHz.

☒ No false alarms or other malfunctions were observed during or after the test.

13.7. Test Photograph

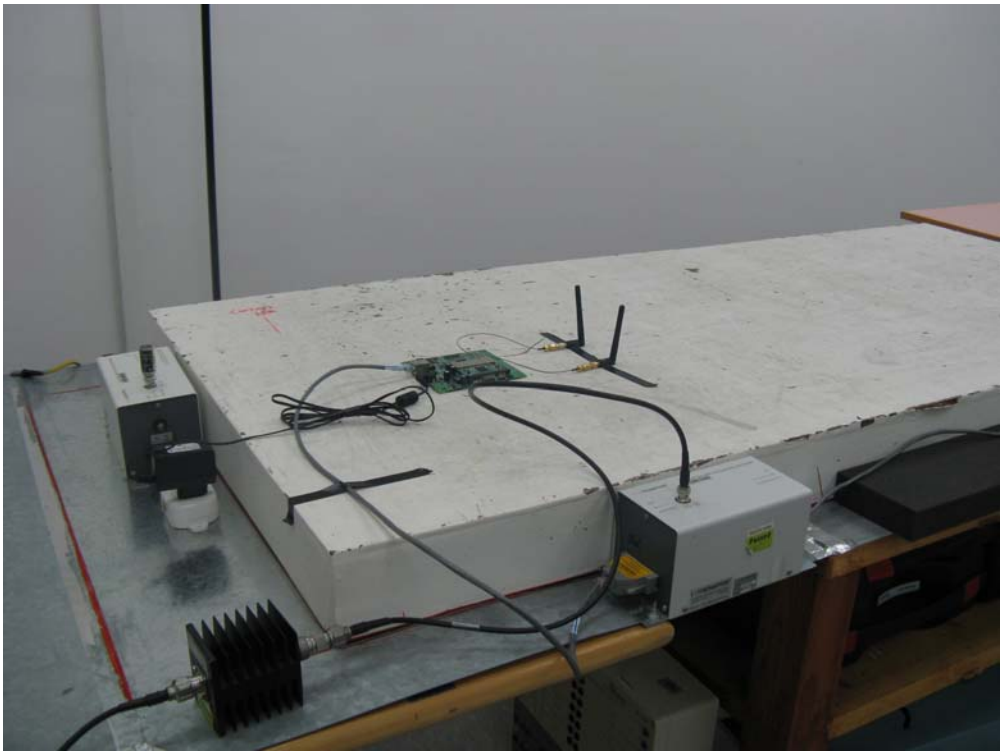
Test Mode: Mode 1: Communication by WLAN

Description: RF Common Mode Test Setup for Main



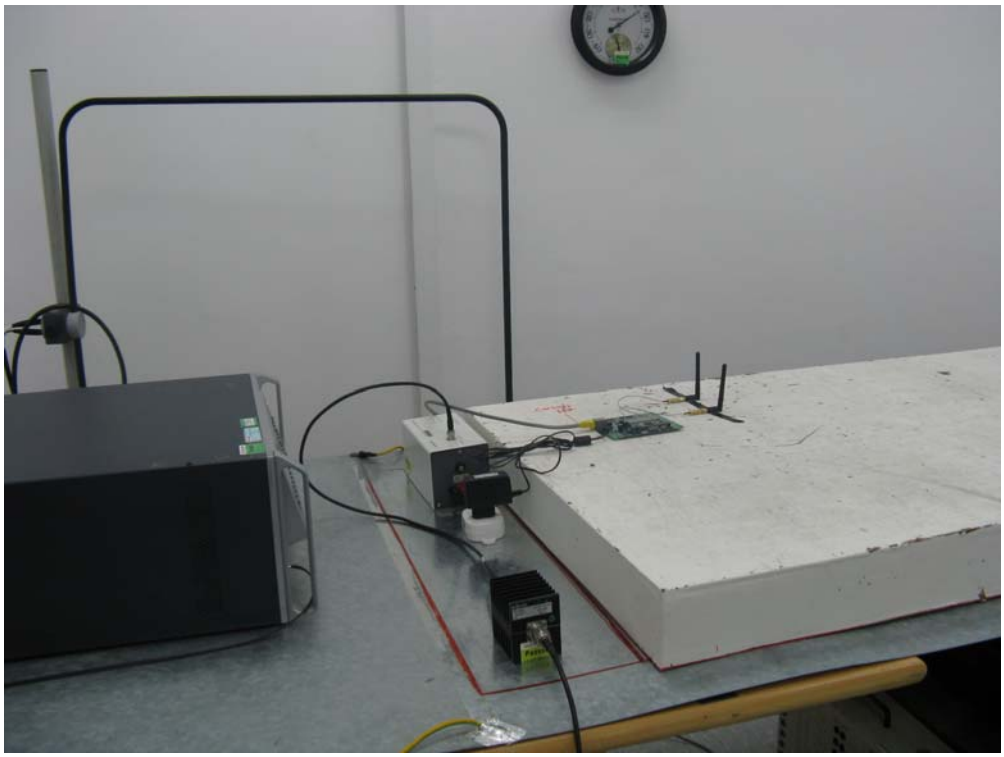
Test Mode: Mode 1: Communication by WLAN

Description: RF Common Mode Test Setup for LAN



Test Mode: Mode 2: Standby

Description: RF Common Mode Test Setup for Main



Test Mode: Mode 2: Standby

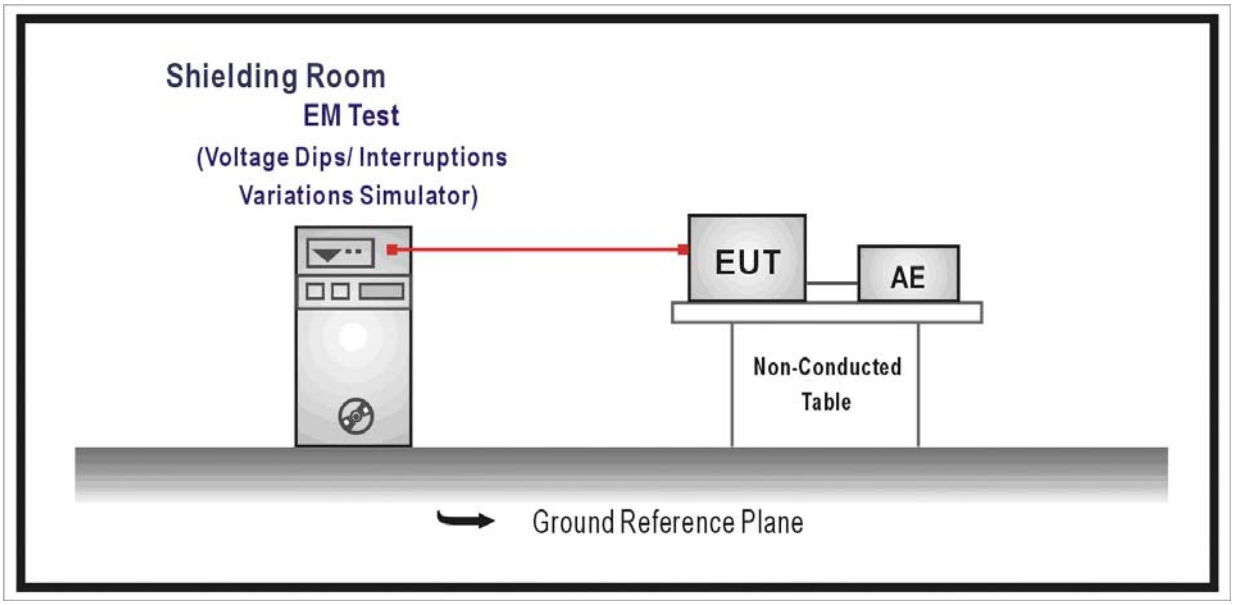
Description: RF Common Mode Test Setup for LAN

14. Voltage Dips and Interruption

14.1. Test Specification

According to Standard: EN 61000-4-11

14.2. Test Setup



14.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Input A.C. Power Ports				
	Voltage Dips	% Reduction ms	30 10	C
		% Reduction ms	60 100	B
	Voltage Interruptions	% Reduction ms	>95 5000	C

14.4. Test Procedure

The EUT and its load are placed on a table which is 0.8 meter above a metal ground plane measured 1m*1m min. And 0.65mm thick min. And projected beyond the EUT by at least 0.1m on all sides. The power cord shall be used the shortest power cord as specified by the manufacturer.

For Voltage Dips/ Interruptions test:

The selection of test voltage is based on the rated power range. If the operation range is large than 20% of lower power range, both end of specified voltage shall be tested. Otherwise, the typical voltage specification is selected as test voltage.

The EUT is connected to the power mains through a coupling device that directly couples to the Voltage Dips and Interruption Generator.

Voltage phase shifting are shall occur at 0^0, 45^0, 90^0, 135^0, 180^0, 225^0, 270^0, 315^0 of the voltage.

14.5. Deviation from Test Standard

No deviation.

14.6. Test Result

Product	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	Voltage Dips and Interruption
Test Mode	Mode 1: Communication by WLAN
Date of Test	2008/10/17
Test Site	SR-2

Voltage Dips and Interruption Reduction (%)	Angle	Test Duration (ms)	Required Criteria	Complied to Criteria	Test Result
30(161V)	0	10	B	A	Pass
30(161V)	45	10	B	A	Pass
30(161V)	90	10	B	A	Pass
30(161V)	135	10	B	A	Pass
30(161V)	180	10	B	A	Pass
30(161V)	225	10	B	A	Pass
30(161V)	270	10	B	A	Pass
30(161V)	315	10	B	A	Pass
60(92V)	0	100	C	A	Pass
60(92V)	45	100	C	A	Pass
60(92V)	90	100	C	A	Pass
60(92V)	135	100	C	A	Pass
60(92V)	180	100	C	A	Pass
60(92V)	225	100	C	A	Pass
60(92V)	270	100	C	A	Pass
60(92V)	315	100	C	A	Pass
>95(0V)	0	5000	C	C	Pass
>95(0V)	45	5000	C	C	Pass
>95(0V)	90	5000	C	C	Pass
>95(0V)	135	5000	C	C	Pass
>95(0V)	180	5000	C	C	Pass
>95(0V)	225	5000	C	C	Pass
>95(0V)	270	5000	C	C	Pass
>95(0V)	315	5000	C	C	Pass

☒ Meet criteria A: Operate as intended during and after the test

☐ Meet criteria B: Operate as intended after the test

☒ Meet criteria C: Loss/Error of function

☒ Additional Information

- ☐ EUT stopped operation and could / could not be reset by operator at_____V, at_____angle.
- ☒ No false alarms or other malfunctions were observed during or after the test.

Product	WIRELESS-N NETWORK MINI PCI ADAPTER
Test Item	Voltage Dips and Interruption
Test Mode	Mode 2: Standby
Date of Test	2008/10/17
Test Site	SR-2

Voltage Dips and Interruption Reduction (%)	Angle	Test Duration (ms)	Required Criteria	Complied to Criteria	Test Result
30(161V)	0	10	B	A	Pass
30(161V)	45	10	B	A	Pass
30(161V)	90	10	B	A	Pass
30(161V)	135	10	B	A	Pass
30(161V)	180	10	B	A	Pass
30(161V)	225	10	B	A	Pass
30(161V)	270	10	B	A	Pass
30(161V)	315	10	B	A	Pass
60(92V)	0	100	C	A	Pass
60(92V)	45	100	C	A	Pass
60(92V)	90	100	C	A	Pass
60(92V)	135	100	C	A	Pass
60(92V)	180	100	C	A	Pass
60(92V)	225	100	C	A	Pass
60(92V)	270	100	C	A	Pass
60(92V)	315	100	C	A	Pass
>95(0V)	0	5000	C	C	Pass
>95(0V)	45	5000	C	C	Pass
>95(0V)	90	5000	C	C	Pass
>95(0V)	135	5000	C	C	Pass
>95(0V)	180	5000	C	C	Pass
>95(0V)	225	5000	C	C	Pass
>95(0V)	270	5000	C	C	Pass
>95(0V)	315	5000	C	C	Pass

☒ Meet criteria A: Operate as intended during and after the test

☐ Meet criteria B: Operate as intended after the test

☒ Meet criteria C: Loss/Error of function

☒ Additional Information

- ☐ EUT stopped operation and could / could not be reset by operator at_____V, at_____angle.
- ☒ No false alarms or other malfunctions were observed during or after the test.

14.7. Test Photograph

Test Mode : Mode 1: Communication by WLAN

Description : Voltage Dips and Interruption Test Setup

Test Mode : Mode 2: Standby

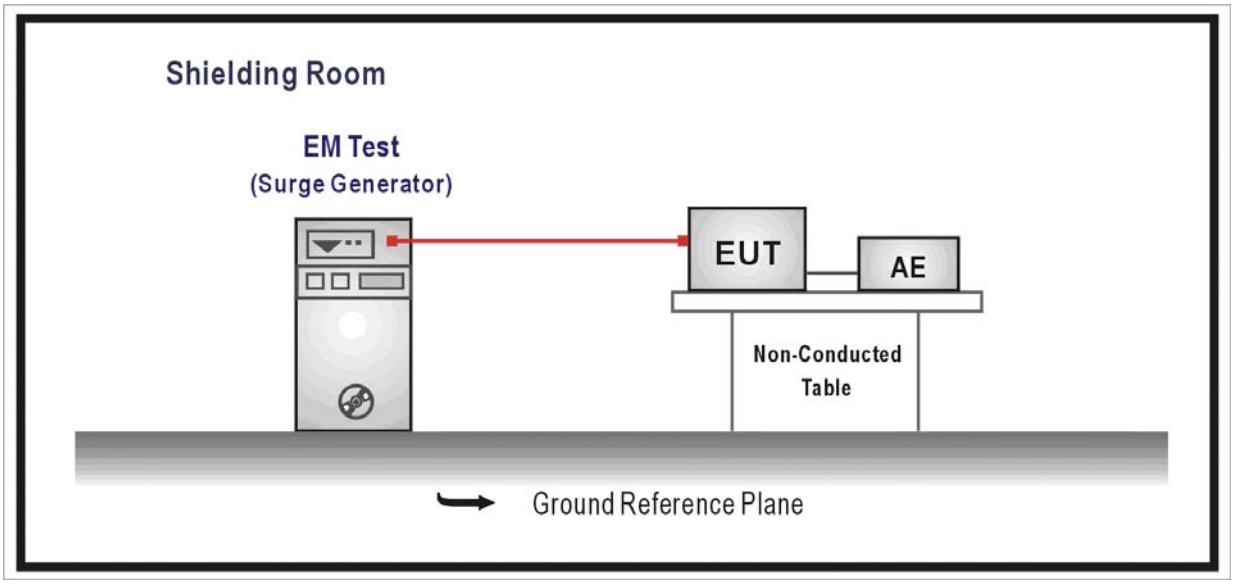
Description : Voltage Dips and Interruption Test Setup

15. Transients and surges

15.1. Test Specification

According to Standard: ISO 7637-2

15.2. Test Setup



15.3. Limit

EUT applying pulses 1, 2a, 2b, 3a, 3b, and 4, using immunity test level Ⅲ. For the purpose of EMC testing it is sufficient to apply pulses 1, 2a and 4, 10 times each, and apply the test pulses 3a and 3b for 20 minutes each.

15.4. Test Procedure

Test requirements for 12 V DC powered equipment:

Where the manufacturer in his installation documentation requires the radio equipment to have a direct connection to the 12 V main vehicle battery the requirements in a) shall apply.

Where the manufacturer does not require the radio equipment to have a direct connection to the 12 V main vehicle battery the requirements in a) and b) shall apply:

Pulse 3a and 3b, level II, with the test time reduced to 5 min for each;

Pulse 4, level II, 5 pulses, with the characteristics as follows:

Vs = -5 V; Va = -2.5 V; t6 = 25 ms; t7 = 50 ms; t8 = 5 s; tf = 5 ms; pulse cycle time: 60 s

Pulse, level II: t1 = 2.5 s; 10 pulses;

Pulse 2, level II: t1 = 2.5 s; 10 pulses;

Pulse 7, 5 pulses.

Where the manufacturer declares that the radio equipment requires a direct connection to the main vehicle battery, and therefore the tests in accordance with the requirements b) are not carried out, this shall be stated in the test report.

Test requirements for 24 V DC powered equipment:

Where the manufacturer in his installation documentation requires the radio equipment to have a direct connection to the 24 V main vehicle battery the requirements in c) shall apply.

Where the manufacturer does not require the radio equipment to have a direct connection to the 24 V main vehicle battery the requirements in c) and d) shall apply:

c) Pulse 3a and 3b, level II, with the test time reduced to 5 min for each;

Pulse 4, level II, 5 pulses, with the characteristics as follows:

Vs = -10 V; Va = -5 V; t6 = 25 ms; t7 = 50 ms; t8 = 5 s; tf = 10 ms; pulse cycle time: 60 s

d) Pulse 1a, level II: t1 = 2.5 s; Ri = 25 Ω; 10 pulses;

Pulse 2b, level II: t1 = 2.5 s; Ri = 100 Ω; 10 pulses;

Pulse 2, 10 pulses.

Where the manufacturer declares that the radio equipment requires a direct connection to the main vehicle battery, and therefore the tests in accordance with the requirements d) are not carried out, this shall be stated in the test report.

Radio and ancillary equipment designed to operate at both DC power voltages shall be tested in both configurations.

15.5. Deviation from Test Standard

No deviation.

15.6. Test Result

The EUT is not used for vehicular, so the test item is not necessary performed.

16. Attachment

➢ EUT Photograph

(1) EUT Photo

(2) EUT Photo

(3) EUT Photo