



EN 55022/24 Test Report

Product Name : WIRELESS ACCESS POINT
Model No. : WP546HV

Applicant : Compex Systems Pte Ltd
Address : 135 Joo Seng Road, #08-01 PM Industrial Building
Singapore 368363

Date of Receipt : 19/04/2012
Test Date : 19/04/2012~17/05/2012
Issued Date : 06/06/2012
Report No. : 124S037R-IT-CE-P01V01
Report Version : V1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

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Test Report Certification

Issued Date : 06/06/2012
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Product Name : WIRELESS ACCESS POINT
 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. : WP546HV
 Brand Name : COMPEX
 EUT Voltage : AC 230 V / 50 Hz
 Applicable Standard : EN 55022:2010 Class B
 EN 61000-3-2:2006+A1:2009+A2:2009
 EN 61000-3-3:2008
 EN 55024:2010
 Test Result : Complied
 Performed Location : Suzhou EMC Laboratory
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 Hi-Tech Development Zone., Suzhou, China
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 (Engineering Manager: Marlin Chen)

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/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	:	BSMI, NCC, TAF
Germany	:	TUV Rheinland
Norway	:	Nemko, DNV
USA	:	FCC, NVLAP
Japan	:	VCCI
China	:	CNAS

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site :<http://www.quietek.com/tw/ctg/cts/accreditations.htm>

The address and introduction of Quietek Corporation's laboratories can be founded in our Web site :
<http://www.quietek.com/>

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1. General Information**1.1. EUT Description**

Product Name	WIRELESS ACCESS POINT
Model No.	WP546HV
Brand Name	COMPEX
Component	
AC Adapter	Manufacturer: DVE M/N: DSA-0421S-501 Input: 100-240V~, 1.2A, 50-60Hz Output: 48V, 0.625A

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:

Final Test Mode	
Emission	Mode 1: Normal Operation
Immunity	Mode 1: Normal Operation

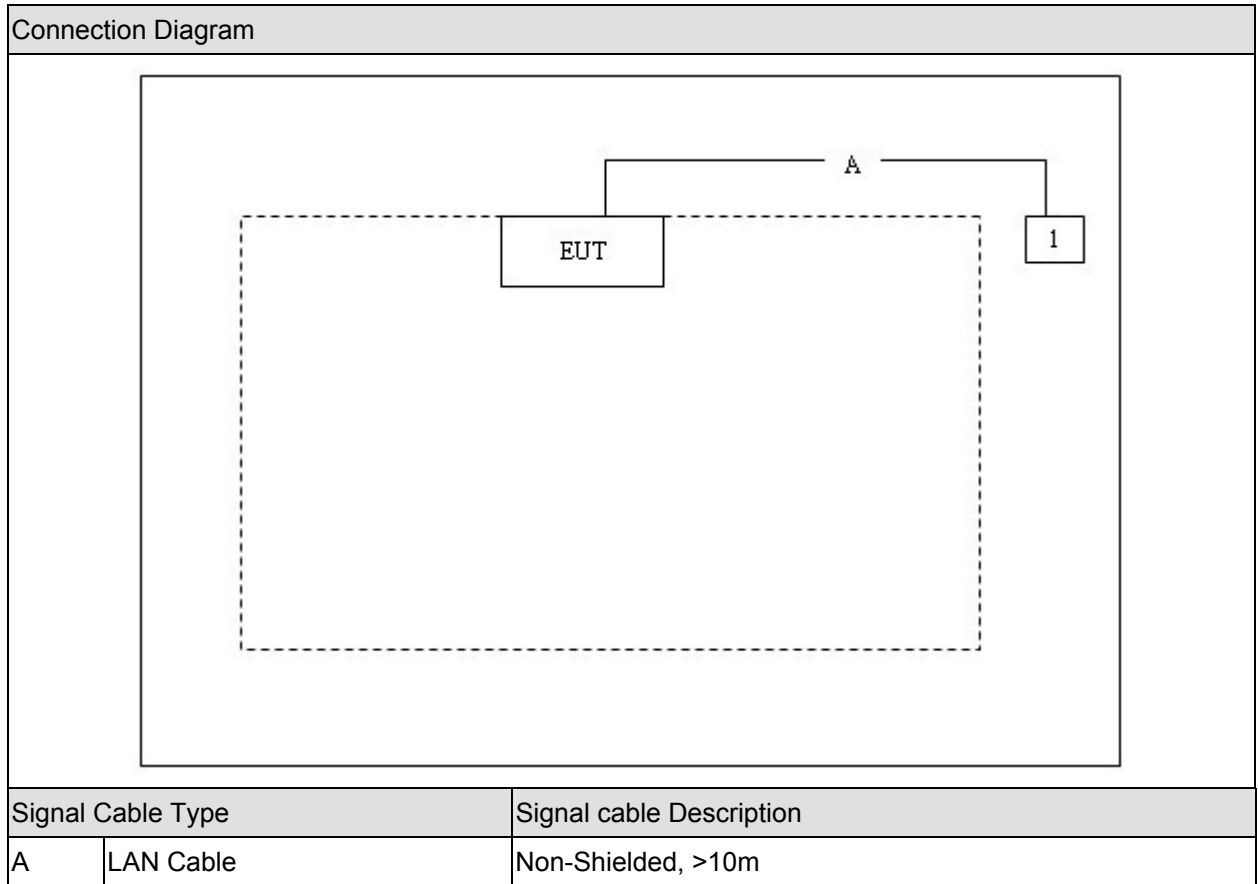
Note: The EUT has two LAN port, we just select the left port for all testing as the customer's requirement.

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	Notebook	DELL	PP19L	JH097 A01	Power by adapter

1.4. Configuration of Tested System



1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	EUT transmit data by LAN cable with notebook.
4	Start to test.

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 disturbance at mains terminals and telecommunication ports	EN 55022:2010 Class B	Yes	No
Radiated disturbance	EN 55022:2010 Class B	Yes	No
Harmonic current emissions	EN 61000-3-2:2006+A1:2009+A2:2009	Yes	No
Voltage fluctuations and flicker	EN 61000-3-3:2008	Yes	No

Immunity			
Performed Test Item	Normative References	Test Performed	Deviation
Electrostatic discharge	IEC 61000-4-2:2008	Yes	No
Radio-frequency electromagnetic field	IEC 61000-4-3:2010	Yes	No
Fast transients	IEC 61000-4-4:2011	Yes	No
Surges	IEC 61000-4-5:2005	Yes	No
Radio-frequency continuous conducted	IEC 61000-4-6:2008	Yes	No
Power-frequency magnetic field	IEC 61000-4-8:2009	Yes	No
Voltage dips and interruptions	IEC 61000-4-11:2004	Yes	No

2.2. List of Test Equipment

Conducted disturbance at mains terminals and telecommunication ports / TR1

Instrument	Manufacturer	Model No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100906	2013.01.13
Two-Line V-Network	R&S	ENV216	101043	2013.04.18
Two-Line V-Network	R&S	ENV216	101044	2012.09.07
Impedance Stabilization Network	Teseq GmbH	ISN T800	30306	2013.02.24
Impedance Stabilization Network	Teseq GmbH	ISN T8-Cat6	29680	2013.02.24
Current Probe	R&S	EZ-17	100255	2013.04.18
50ohm Termination	SHX	TF2	07081401	2012.09.22
50ohm Termination	SHX	TF2	07081402	2012.09.22
50ohm Termination	SHX	TF2	07081403	2012.09.22
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2013.03.02
Coaxial Cable	Suhner	RG 223	TR1-C1	2013.03.02
Temperature/Humidity Meter	zhicheng	ZC1-2	TR1-TH	2013.01.10

Radiated disturbance / AC1

Instrument	Manufacturer	Model No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100175	2012.09.22
EMI Test Receiver	R&S	ESCI	100726	2013.04.18
Spectrum Analyzer	Agilent	N9010A	MY48030494	2013.04.18
Preamplifier	Quietek	AP-025C	CHM-0602008	2013.04.11
Preamplifier	Quietek	AP-025C	CHM-0503006	2013.04.11
Bilog Antenna	Schaffner	CBL6112B	2931	2012.10.18
Bilog Antenna	Schaffner	CBL6112B	2933	2012.10.18
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2012.06.11
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC1-L	2013.03.02
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC1-R	2013.03.02
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC1-C	2013.03.02
Temperature/Humidity Meter	zhicheng	ZC1-2	AC1-TH	2013.01.10

Radiated disturbance / AC2

Instrument	Manufacturer	Model No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100573	2013.04.18
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2012.10.18
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2013.03.02
Temperature/Humidity Meter	zhicheng	ZC1-2	AC2-TH	2013.01.10

Radiated disturbance / AC3

Instrument	Manufacturer	Model No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100176	2012.09.22
Bilog Antenna	Teseq GmbH	CBL6112D	27613	2012.10.18
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC3-C	2013.03.02
Temperature/Humidity Meter	zhicheng	ZC1-2	AC3-TH	2013.01.10

Radiated disturbance / AC5

Instrument	Manufacturer	Model No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2013.04.18
Preamplifier	Miteq	NSP1800-25	1364185	2013.05.04
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2012.06.11
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2013.03.02
Temperature/Humidity Meter	zhicheng	ZC1-2	AC5-TH	2013.01.10

Harmonic current emissions / TR1

Instrument	Manufacturer	Model No.	Serial No.	Cali. Due Date
Power Analyzer	California	PACS-1	72419	2012.11.09
AC Power Source	California	5001iX-208	56741	2012.11.09
Temperature/Humidity Meter	zhicheng	ZC1-2	TR1-TH	2013.01.10

Voltage fluctuation and flicker / TR1

Instrument	Manufacturer	Model No.	Serial No.	Cali. Due Date
Power Analyzer	California	PACS-1	72419	2012.11.09
AC Power Source	California	5001iX-208	56741	2012.11.09
Temperature/Humidity Meter	zhicheng	ZC1-2	TR1-TH	2013.01.10

Electrostatic discharge / TR3

Instrument	Manufacturer	Model No.	Serial No.	Cali. Due Date
ESD Simulator	EM TEST	Dito	V0616101367	2012.05.18
Barometer	Fengyun	DYM3	0506048	2012.09.30
Temperature/Humidity Meter	zhicheng	ZC1-2	TR3-TH	2013.01.10

Radio-frequency electromagnetic field / AC4

Instrument	Manufacturer	Model No.	Serial No.	Cali. Due Date
Signal Generator	R&S	SML03	102324	2012.09.22
Power Meter	Boonton	4231A	144502	2012.09.22
Power Sensor	Boonton	51011-EMC	33859	2012.09.22
Power Meter	Agilent	E4416A	GB41293844	2012.09.22
Power Sensor	Agilent	E9304A	MY41497198	2012.09.22
RF Switch	MF	SW1072	RFSW980005	N/A
Power Amplifier	Schaffner	CBA9413B	43526	NA
Power Amplifier	Schaffner	CBA9428	43516	NA
Directional Coupler	Schaffner	CHA 9652B	0121	N/A
Directional Coupler	A&R	DC7144A	312249	N/A
E-Field Probe Type 8.3	Narda	2244/90.21	AZ-0030	2012.06.11
EMR-20C Radiation Meter	Narda	BN 2244/70	AW-0074	2012.06.11
Bilog Antenna	Schaffner	CBL6141A	4278	N/A
Horn Antenna	A&R	AT4002A	312312	N/A
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC4-TH	2013.01.10

Electrical fast transients / TR2

Instrument	Manufacturer	Model No.	Serial No.	Cali. Due Date
Immunity Test System	Teseq GmbH	NSG 3060	1384	2013.03.30
Automatic Steptransformer	Teseq GmbH	INA6502-CIB	167	2013.01.15
CDN	Teseq GmbH	CDN 3061	1360	2013.03.30
CDN	Teseq GmbH	CDN 3063	1997	2013.03.30
CDN	Teseq GmbH	CDN 8014	32791	2013.02.24
Burst / EFT pulse verification kit	Teseq GmbH	CAS3025	32093	2013.01.15
Temperature/Humidity Meter	zhicheng	ZC1-2	TR2-TH	2013.01.10

Surges / TR2

Instrument	Manufacturer	Model No.	Serial No.	Cali. Due Date
Immunity Test System	Teseq GmbH	NSG 3060	1384	2013.03.30
Automatic Steptransformer	Teseq GmbH	INA6502-CIB	167	2013.01.15
CDN	Teseq GmbH	CDN 3061	1360	2013.03.30
CDN	Teseq GmbH	CDN 3063	1997	2013.03.30
CDN	Teseq GmbH	CDN 118	37349	2013.02.24
Signal Line Coupling Network	Teseq GmbH	CDN 117	31806	2013.02.24
Telecom Surge Module	Teseq GmbH	TSM3751	0078	2013.01.15
Temperature/Humidity Meter	zhicheng	ZC1-2	TR2-TH	2013.01.10

Radio-frequency continuous conducted / TR2

Instrument	Manufacturer	Model No.	Serial No.	Cali. Due Date
RF-Generator	Schaffner	NSG2070	1120	2012.09.22
Attenuator	Schaffner	INA2070-1	2120	2012.09.22
Coupling / Decoupling Network	Schaffner	CDN M016	21249	2012.09.22
Coupling / Decoupling Network	Teseq GmbH	CDN M016	24484	2012.09.01
Coupling / Decoupling Network	Schaffner	CDN T400	19083	2012.09.22
Coupling / Decoupling Network	Teseq GmbH	CDN T400	22461	2012.09.01
Coupling / Decoupling Network	Teseq GmbH	CDN T800	26167	2013.01.13
EM Clamp	Schaffner	KEMZ 801	21041	2012.09.22
Temperature/Humidity Meter	zhicheng	ZC1-2	TR2-TH	2013.01.10

Power-frequency magnetic field / TR2

Instrument	Manufacturer	Model No.	Serial No.	Cali. Due Date
Immunity Test System	Teseq GmbH	NSG 3060	1384	2013.03.30
Automatic Steptransformer	Teseq GmbH	INA6502-CIB	167	2013.01.15
CDN	Teseq GmbH	CDN 3061	1360	2013.03.30
Magnetic field Coil	Teseq GmbH	INA 702	224	2013.01.15
Magnetic Field Generator	Teseq GmbH	MFO 6502	134	2013.01.15
Temperature/Humidity Meter	zhicheng	ZC1-2	TR2-TH	2013.01.10

Voltage dips and interruptions / TR2

Instrument	Manufacturer	Model No.	Serial No.	Cali. Due Date
Immunity Test System	Teseq GmbH	NSG 3060	1384	2013.03.30
Automatic Steptransformer	Teseq GmbH	INA6502-CIB	167	2013.01.15
CDN	Teseq GmbH	CDN 3061	1360	2013.03.30
Temperature/Humidity Meter	zhicheng	ZC1-2	TR2-TH	2013.01.10

2.3. Measurement Uncertainty

Conducted disturbance at mains terminals and telecommunication ports / TR1
The maximum measurement uncertainty is evaluated as: 9kHz~30MHz: $\pm 3.35\text{dB}$
Radiated disturbance / AC1
The maximum measurement uncertainty is evaluated as: 30MHz~1GHz: $\pm 4.24\text{dB}$ Above 1GHz: $\pm 5.11\text{dB}$
Radiated disturbance / AC2
The maximum measurement uncertainty is evaluated as: 30MHz~1GHz: $\pm 4.04\text{dB}$
Radiated disturbance / AC3
The maximum measurement uncertainty is evaluated as: 30MHz~1GHz: $\pm 4.23\text{dB}$
Radiated disturbance / AC5
The maximum measurement uncertainty is evaluated as: 30MHz~1GHz: $\pm 4.20\text{dB}$ Above 1GHz: $\pm 5.58\text{dB}$
Harmonic current emissions / TR1
The maximum measurement uncertainty is evaluated as $\pm 0.2\%$.
Voltage fluctuation and flicker / TR1
The maximum measurement uncertainty is evaluated as d_c and d_{max} : $\pm 0.095\%$, P_{st} and P_{it} : $\pm 4\%$, $d_{(t)}$: $\pm 1.5\%$.
Electrostatic discharge / TR3
The maximum measurement uncertainty is evaluated as Voltage: $\pm 1.63\%$, Time: $\pm 2.76\%$.
Radio-frequency electromagnetic field / AC4
The maximum measurement uncertainty is evaluated as $\pm 2.72\text{dB}$.
Electrical fast transients / TR2
The maximum measurement uncertainty is evaluated as Voltage: $\pm 1.63\%$, Frequency: $\pm 2.8 \times 10^{-10}$, Time: $\pm 2.76\%$.
Surges / TR2
The maximum measurement uncertainty is evaluated as Voltage: $\pm 1.63\%$, Time: $\pm 2.76\%$.
Radio-frequency continuous conducted / TR2
The maximum measurement uncertainty is evaluated as $\pm 3.72\text{dB}$.
Power-frequency magnetic field / TR2
The maximum measurement uncertainty is evaluated as $\pm 2.0\%$.
Voltage dips and interruptions / TR2
The maximum measurement uncertainty is evaluated as Voltage: $\pm 1.63\%$, Time: $\pm 2.76\%$.

2.4. Performance Criteria

Performance Criterion A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance Criterion B

After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.

During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test.

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

Performance Criterion C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.

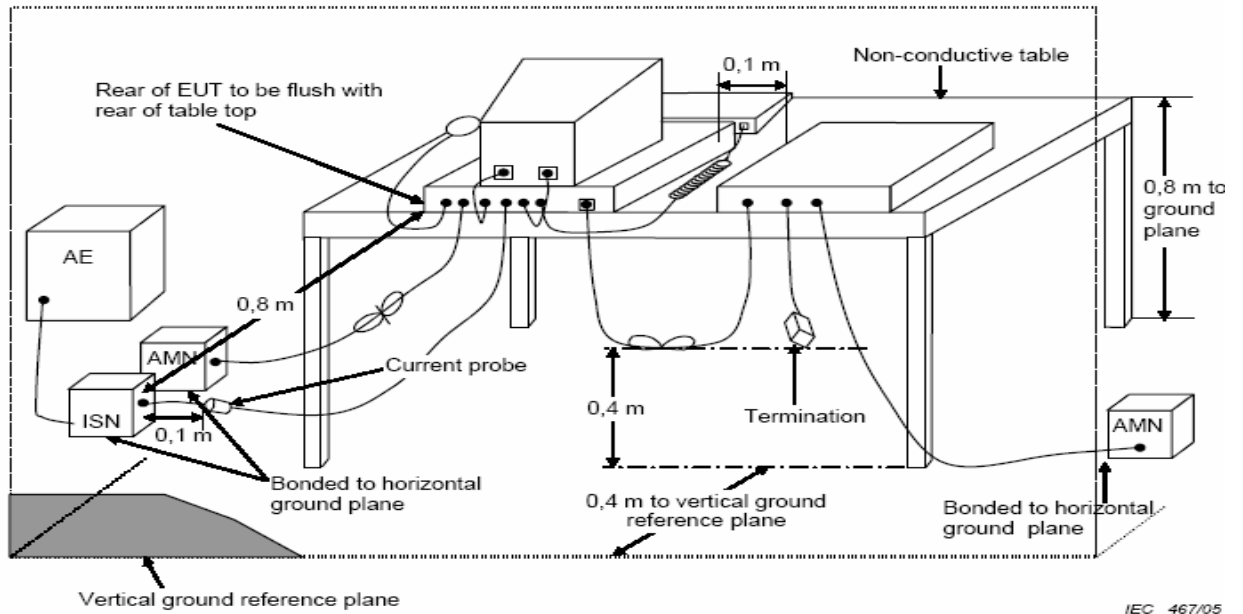
Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

3. Conducted disturbance at mains terminals and telecommunication ports

3.1. Test Specification

According to EMC Standard: EN 55022 Class B

3.2. Test Setup



3.3. Limit

Limits of mains terminal disturbance voltage

Limits for conducted disturbance at the mains ports of class A ITE		
Frequency range MHz	Limits dB(μV)	
	Quasi-peak	Average
0.15 to 0.50	79	66
0.50 to 30	73	60

NOTE: The lower limit shall apply at the transition frequency.

Limits for conducted disturbance at the mains ports of class B ITE		
Frequency range MHz	Limits dB(μV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 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 0.15MHz to 0.50MHz.

Limits of conducted common mode (asymmetric mode) disturbance at telecommunication ports

Limits of conducted common mode (asymmetric mode) disturbance at telecommunication ports in the frequency range 0.15MHz to 30 MHz for class A equipment				
Frequency range MHz	Voltage Limits dB(μV)		Current limits dB(μA)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 to 0.50	97 to 87	84 to 74	53 to 43	40 to 30
0.50 to 30	87	74	43	30

NOTE 1: The limits decrease linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.
 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 150Ω to the telecommunication port under test (conversion factor is $20 \log_{10} 150 / I = 44\text{dB}$).

Limits of conducted common mode (asymmetric mode) disturbance at telecommunication ports in the frequency range 0.15MHz to 30 MHz for class B equipment				
Frequency range MHz	Voltage Limits dB(μV)		Current limits dB(μA)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 to 0.50	84 to 74	74 to 64	40 to 30	30 to 20
0.50 to 30	74	64	30	20

NOTE 1: The limits decrease linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.
 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 150Ω to the telecommunication port under test (conversion factor is $20 \log_{10} 150 / I = 44\text{dB}$).

3.4. Test Procedure

For Main Ports:

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a $50\Omega / 50\mu\text{H}$ or $50\Omega / 50\mu\text{H} + 5\Omega$ coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a $50\Omega / 50\mu\text{H}$ or $50\Omega / 50\mu\text{H} + 5\Omega$ coupling impedance with 50Ω termination.

Both sides of A.C. line are checked for maximum conducted interference.

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

For Telecommunication Ports:

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 150Ω impedance.

Both alternative cables are tested related to the LCL requested.

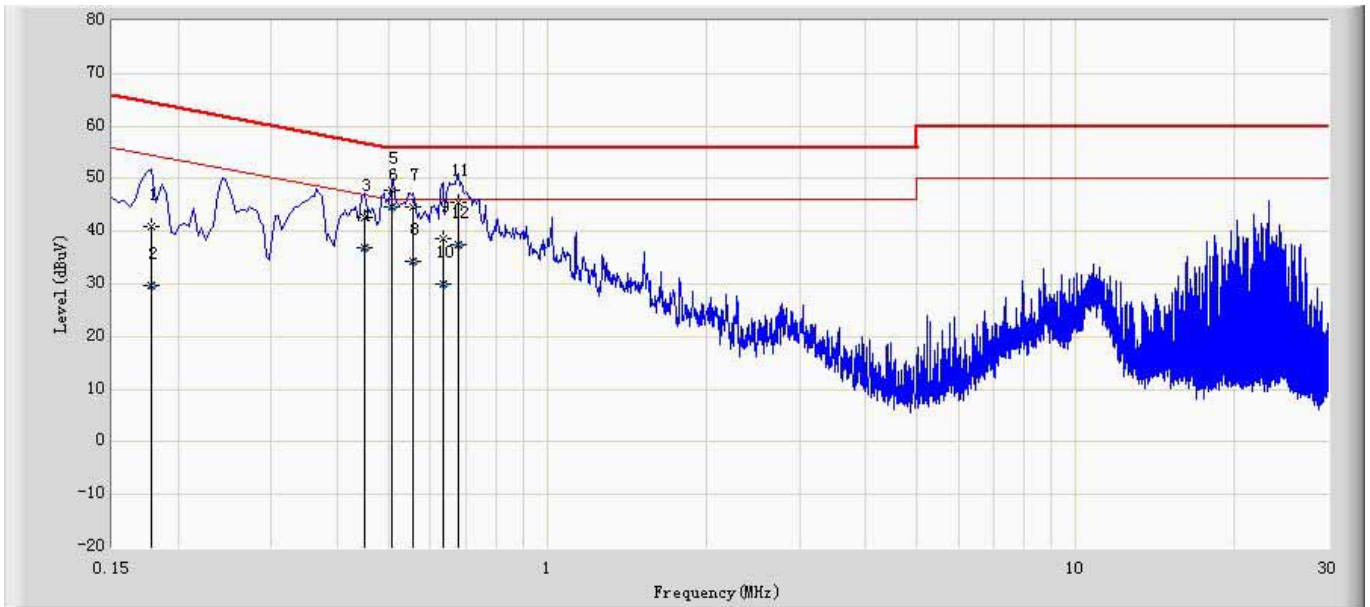
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Deviation from Test Standard

No deviation.

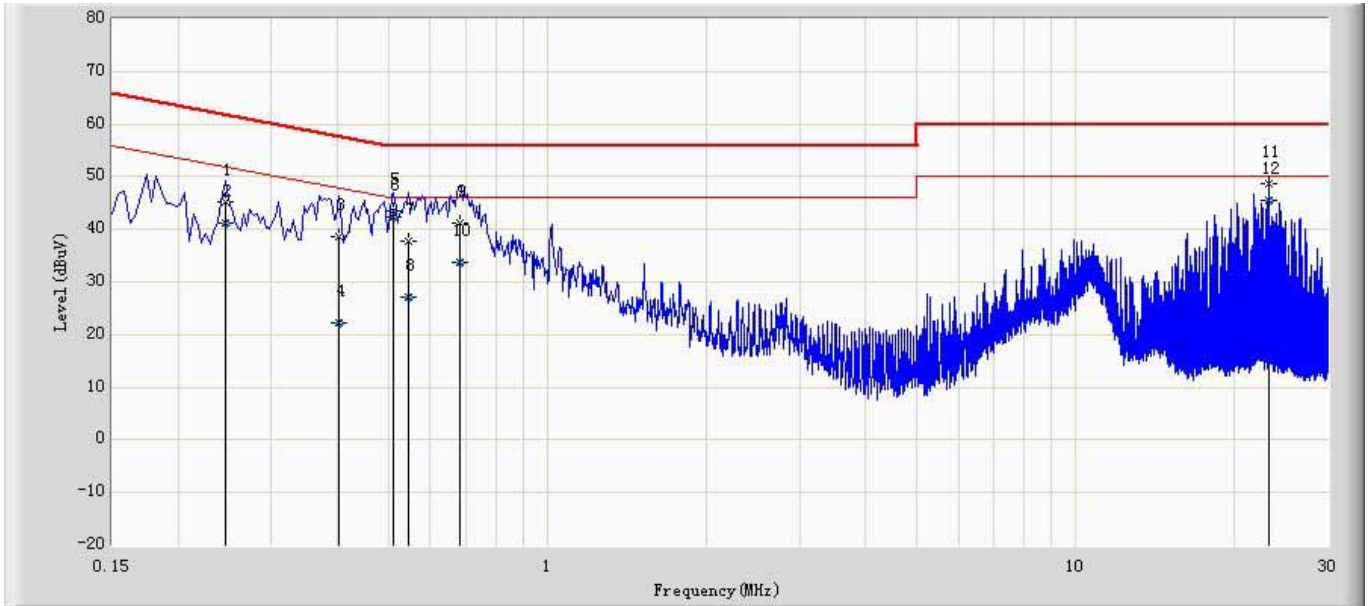
3.6. Test Result

Engineer: Aileen	
Site: TR1	Time: 2012/05/15 - 09:17
Limit: EN55022_CE_Mains_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Line
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 1	



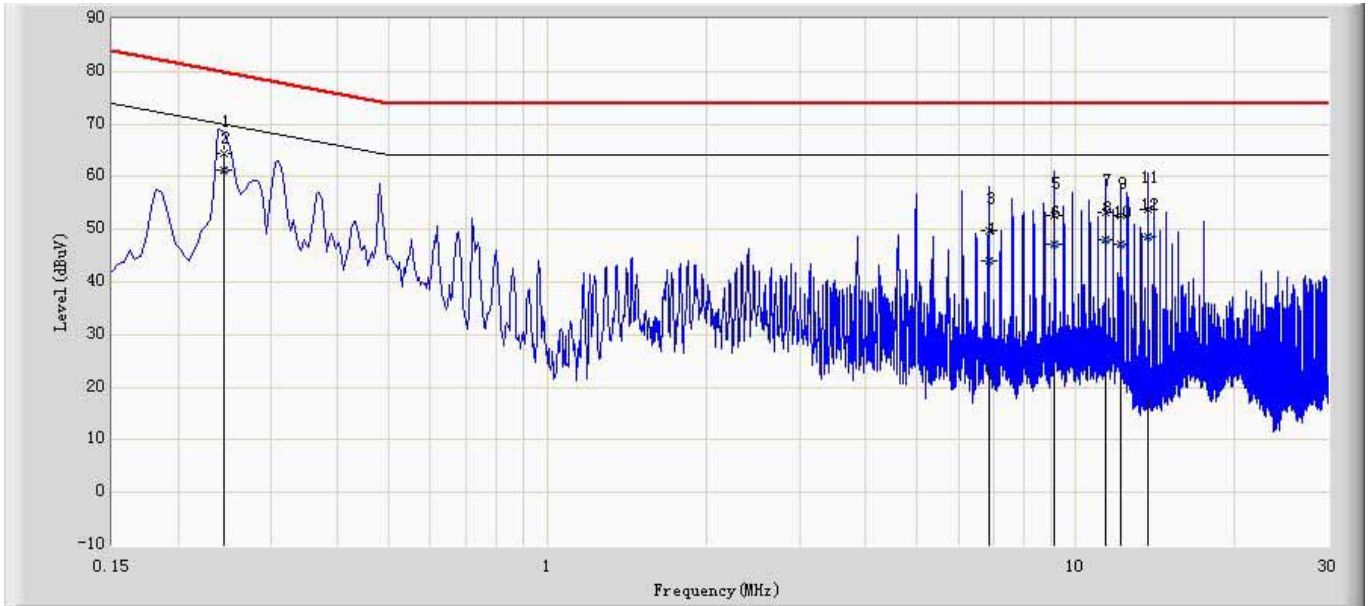
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.178	40.825	30.970	-23.754	64.578	9.855	QP
2		0.178	29.685	19.830	-24.894	54.578	9.855	AV
3		0.450	42.539	32.635	-14.336	56.875	9.904	QP
4		0.450	36.753	26.849	-10.122	46.875	9.904	AV
5		0.508	47.705	37.800	-8.295	56.000	9.905	QP
6	*	0.508	44.605	34.700	-1.395	46.000	9.905	AV
7		0.558	44.736	34.846	-11.264	56.000	9.890	QP
8		0.558	34.325	24.435	-11.675	46.000	9.890	AV
9		0.634	38.701	28.838	-17.299	56.000	9.863	QP
10		0.634	29.918	20.055	-16.082	46.000	9.863	AV
11		0.678	45.660	35.812	-10.340	56.000	9.848	QP
12		0.678	37.472	27.624	-8.528	46.000	9.848	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/15 - 09:24
Limit: EN55022_CE_Mains_ClassB	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Neutral
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 1	



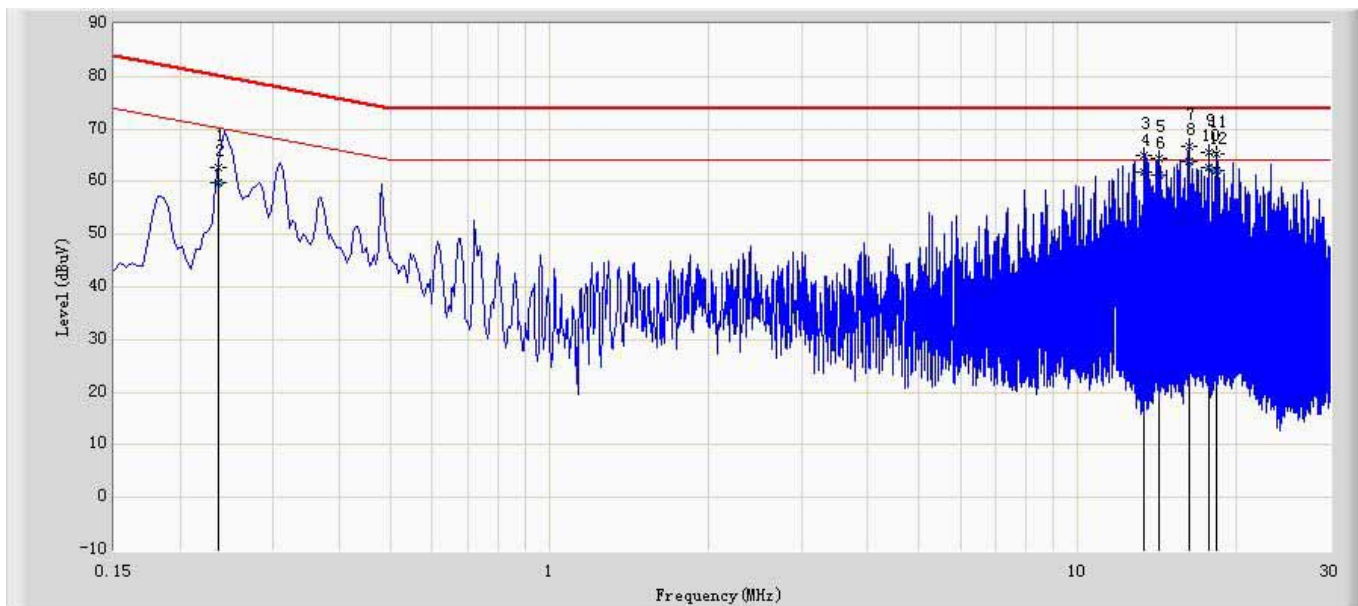
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.246	45.184	35.262	-16.707	61.891	9.923	QP
2		0.246	41.271	31.348	-10.620	51.891	9.923	AV
3		0.402	38.693	28.688	-19.119	57.812	10.005	QP
4		0.402	22.280	12.275	-25.532	47.812	10.005	AV
5		0.510	43.366	33.320	-12.634	56.000	10.046	QP
6	*	0.510	42.421	32.375	-3.579	46.000	10.046	AV
7		0.546	37.874	27.855	-18.126	56.000	10.019	QP
8		0.546	27.063	17.044	-18.937	46.000	10.019	AV
9		0.682	41.080	31.184	-14.920	56.000	9.896	QP
10		0.682	33.609	23.712	-12.391	46.000	9.896	AV
11		23.130	48.641	38.226	-11.359	60.000	10.415	QP
12		23.130	45.616	35.201	-4.384	50.000	10.415	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/15 - 10:06
Limit: EN55022_CE_ISN(Voltage)_ClassB	Margin: 0
Probe: TESEQ-ISN-T800_30306	Polarity:
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 1-10Mbps	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.245	64.393	54.605	-15.544	79.937	9.788	QP
2	*	0.245	61.163	51.374	-8.774	69.937	9.788	AV
3		6.846	49.680	39.762	-24.320	74.000	9.918	QP
4		6.846	43.947	34.029	-20.053	64.000	9.918	AV
5		9.078	52.587	42.646	-21.413	74.000	9.941	QP
6		9.078	47.202	37.261	-16.798	64.000	9.941	AV
7		11.414	53.309	43.325	-20.691	74.000	9.984	QP
8		11.414	47.925	37.941	-16.075	64.000	9.984	AV
9		12.174	52.616	42.604	-21.384	74.000	10.012	QP
10		12.174	47.144	37.133	-16.856	64.000	10.012	AV
11		13.698	53.924	43.867	-20.076	74.000	10.057	QP
12		13.698	48.652	38.595	-15.348	64.000	10.057	AV

Engineer: Aileen	
Site: TR1	Time: 2012/05/15 - 10:11
Limit: EN55022_CE_ISN(Voltage)_ClassB	Margin: 0
Probe: TESEQ-ISN-T800_30306	Polarity:
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 1-100Mbps	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.237	62.717	52.926	-17.496	80.212	9.791	QP
2		0.237	59.725	49.934	-10.487	70.212	9.791	AV
3		13.358	65.046	55.002	-8.954	74.000	10.043	QP
4		13.358	61.713	51.669	-2.287	64.000	10.043	AV
5		14.214	64.485	54.413	-9.515	74.000	10.072	QP
6		14.214	61.239	51.167	-2.761	64.000	10.072	AV
7		16.230	66.815	56.700	-7.185	74.000	10.115	QP
8	*	16.230	63.815	53.700	-0.185	64.000	10.115	AV
9		17.694	65.707	55.568	-8.293	74.000	10.139	QP
10		17.694	62.690	52.551	-1.310	64.000	10.139	AV
11		18.242	65.304	55.147	-8.696	74.000	10.157	QP
12		18.242	62.197	52.040	-1.803	64.000	10.157	AV

3.7. Test Photograph

Test Mode: Mode 1

Description: Front View of Conducted disturbance at mains terminals Test Setup



Test Mode: Mode 1

Description: Side View of Conducted disturbance at mains terminals Test Setup



Test Mode: Mode 1

Description: Front View of Conducted disturbance at telecommunication ports Test Setup (LAN)



Test Mode: Mode 1

Description: Side View of Conducted disturbance at telecommunication ports Test Setup (LAN)



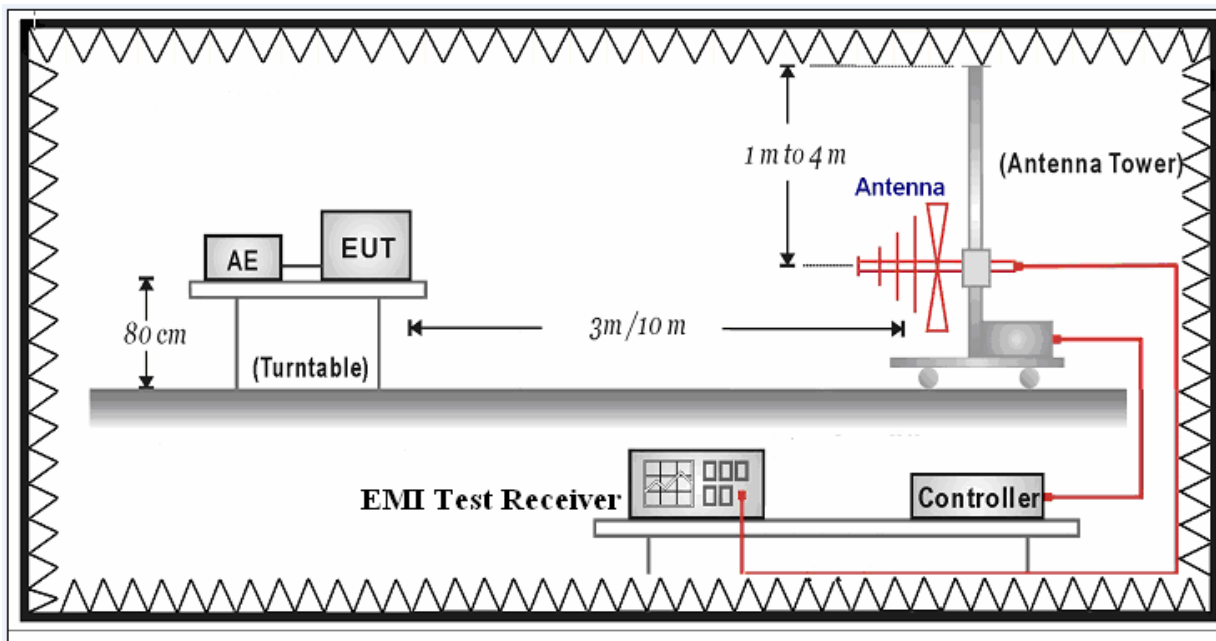
4. Radiated disturbance

4.1. Test Specification

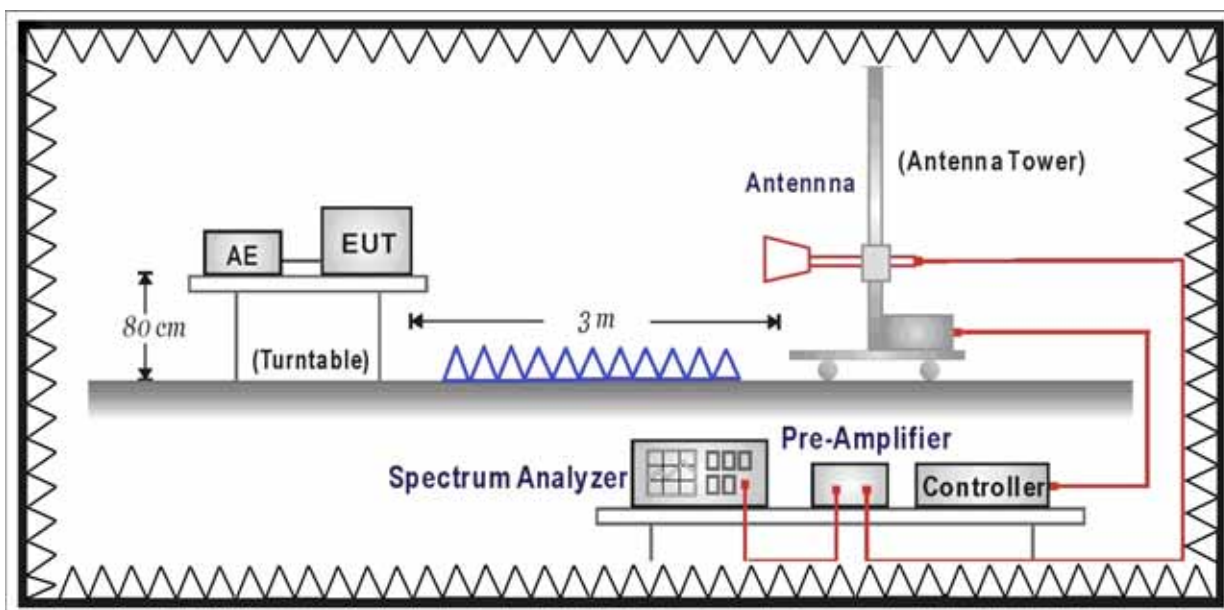
According to EMC Standard: EN 55022 Class B

4.2. Test Setup

Below 1GHz Test Setup



Above 1GHz Test Setup



4.3. Limit

Limits below 1GHz

Limits for radiated disturbance of class A ITE at a measuring distance of 10m	
Frequency range MHz	Quasi-peak limits dB(μV/m)
30 to 230	40
230 to 1000	47

NOTE 1: The lower limit shall apply at the transition frequency.
NOTE 2: Additional provisions may be required for cases where interference occurs.

Limits for radiated disturbance of class B ITE at a measuring distance of 10m	
Frequency range MHz	Quasi-peak limits dB(μV/m)
30 to 230	30
230 to 1000	37

NOTE 1: The lower limit shall apply at the transition frequency.
NOTE 2: Additional provisions may be required for cases where interference occurs.

Limits above 1GHz

Limits for radiated disturbance of class A ITE at a measuring distance of 3m		
Frequency range GHz	Average limit dB(μV/m)	Peak-peak dB(μV/m)
1 to 3	56	76
3 to 6	60	80

NOTE: The lower limit applies at transition frequency.

Limits for radiated disturbance of class B ITE at a measuring distance of 3m		
Frequency range GHz	Average limit dB(μV/m)	Peak-peak dB(μV/m)
1 to 3	50	70
3 to 6	54	74

NOTE: The lower limit applies at transition frequency.

4.4. Test Procedure

The EUT and its simulators are placed on a turntable which is 0.8 meter above ground. The turntable 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 for below 1GHz and 3 meters for above 1GHz.

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 changed during radiated measurement.

The bandwidth below 1GHz setting on the receiver is 120kHz and above 1GHz is 1MHz.

Conditional testing procedure:

The highest internal source of an EUT is defined as the highest frequency generated or used within the EUT or on which the EUT operates or tunes.

If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz.

If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz.

If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz.

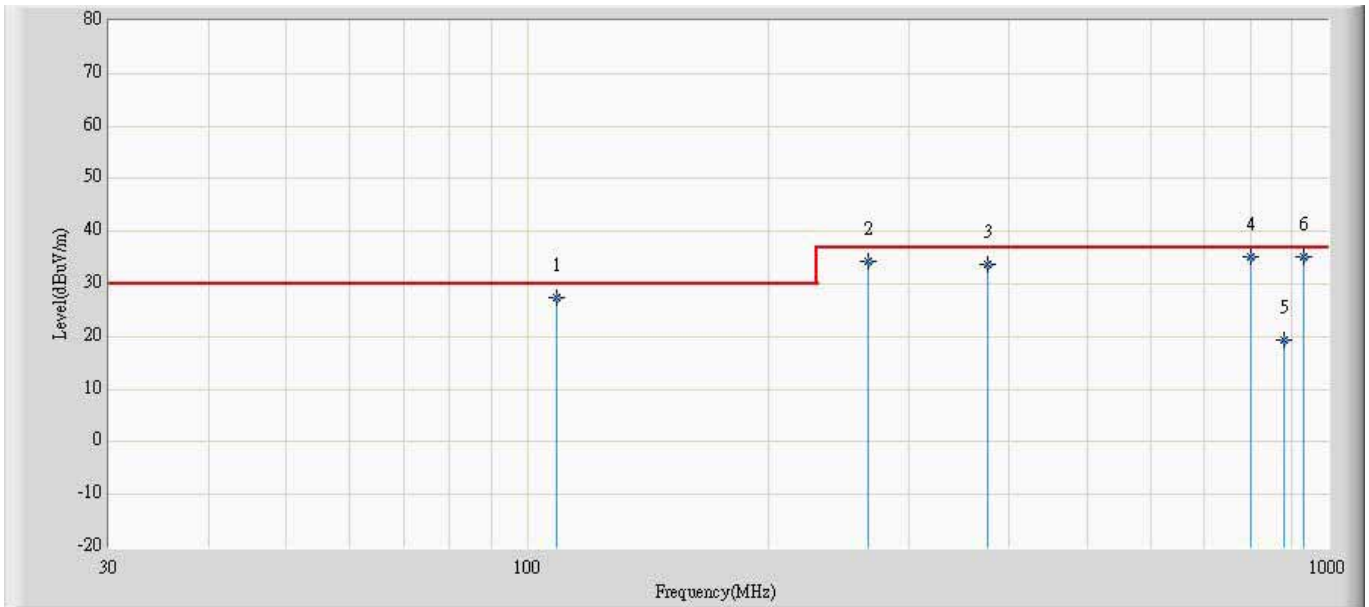
If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 6 GHz, whichever is less.

4.5. Deviation from Test Standard

No deviation.

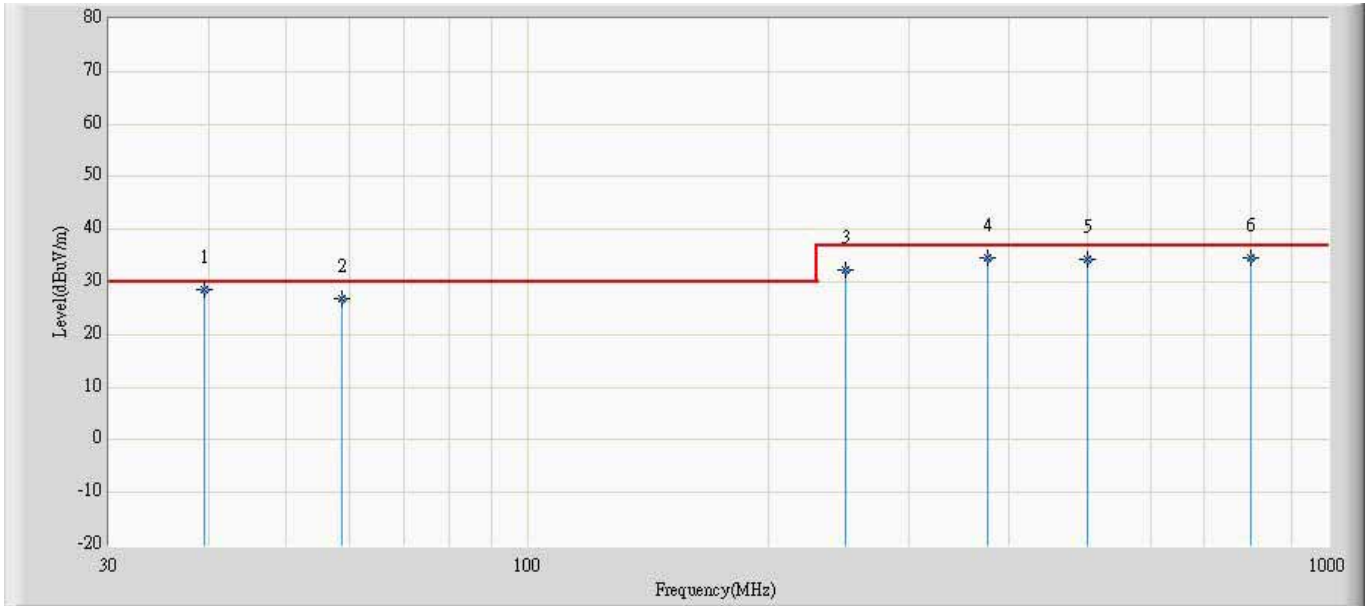
4.6. Test Result

Engineer: Aileen	
Site: AC1	Time: 2012/05/14 - 19:54
Limit: EN55022_RE(10m)_ClassB	Margin: 0
Probe: CBL6112B_2931(30-1000MHz)	Polarity: Horizontal
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 1	



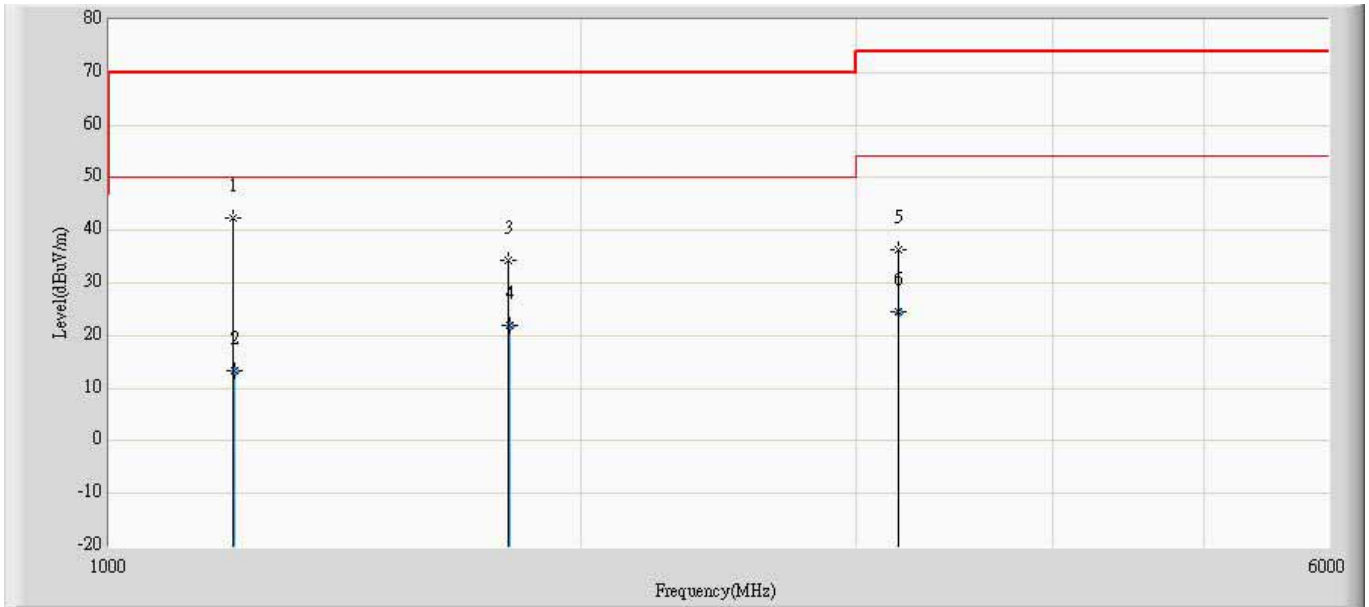
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		108.829	27.284	37.481	-2.716	30.000	-10.196	QP
2		266.669	34.282	42.149	-2.718	37.000	-7.867	QP
3		374.994	33.761	37.453	-3.239	37.000	-3.692	QP
4		799.982	35.132	31.729	-1.868	37.000	3.403	QP
5		883.337	19.319	15.115	-17.681	37.000	4.204	QP
6	*	933.325	35.312	30.742	-1.688	37.000	4.570	QP

Engineer: Aileen	
Site: AC1	Time: 2012/05/14 - 19:55
Limit: EN55022_RE(10m)_ClassB	Margin: 0
Probe: CBL6112B_2933(30-1000MHz)	Polarity: Vertical
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	39.505	28.623	37.897	-1.377	30.000	-9.273	QP
2		58.741	26.824	43.215	-3.176	30.000	-16.391	QP
3		249.999	32.389	41.847	-4.611	37.000	-9.458	QP
4		374.995	34.676	39.258	-2.324	37.000	-4.582	QP
5		500.010	34.348	36.132	-2.652	37.000	-1.784	QP
6		800.004	34.461	32.156	-2.539	37.000	2.304	QP

Engineer: Aileen	
Site: AC5	Time: 2012/05/15 - 15:22
Limit: EN55022_RE(3m)_ClassB	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Horizontal
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 1	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1		*	1200.000	42.438	64.450	-27.562	70.000	-22.012	PK
2			1202.358	13.355	35.364	-36.645	50.000	-22.008	AV
3			1800.000	34.234	54.769	-35.766	70.000	-20.535	PK
4			1801.326	21.834	42.365	-28.166	50.000	-20.531	AV
5			3190.000	36.259	52.151	-37.741	74.000	-15.893	PK
6			3191.364	24.466	40.365	-29.534	54.000	-15.900	AV

Engineer: Aileen	
Site: AC5	Time: 2012/05/15 - 15:22
Limit: EN55022_RE(3m)_ClassB	Margin: 0
Probe: BBHA 9120D_499(1-18GHz)	Polarity: Vertical
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode1	

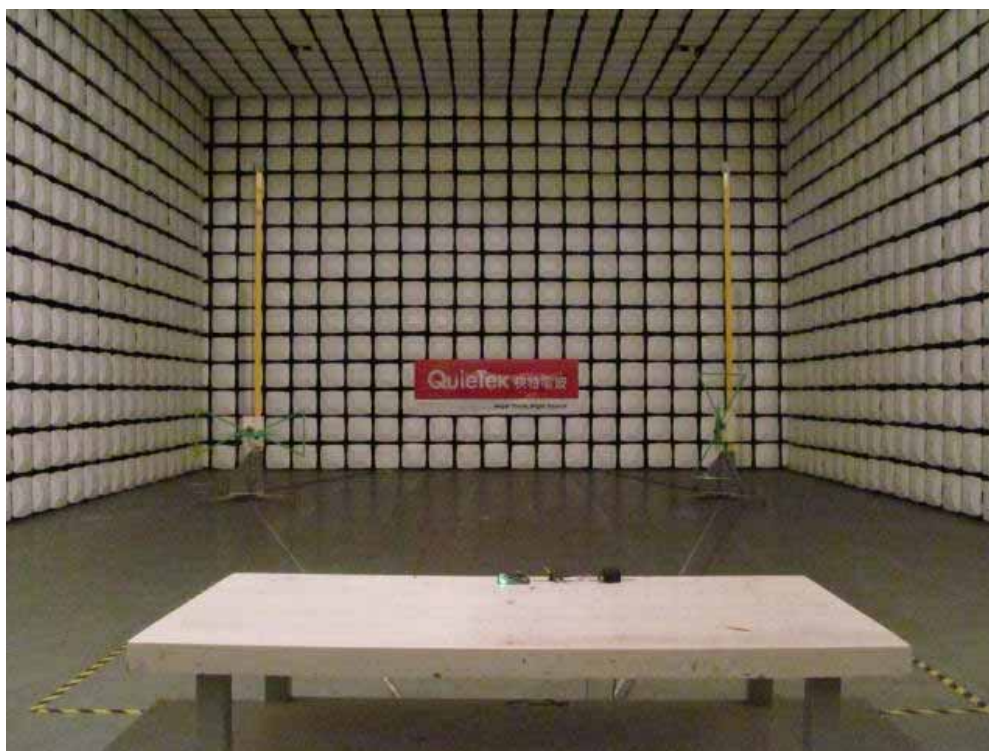


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type
1			1131.600	23.975	46.236	-26.025	50.000	-22.261	AV
2			1132.500	38.471	60.727	-31.529	70.000	-22.255	PK
3		*	1399.500	27.424	48.364	-22.576	50.000	-20.939	AV
4			1400.000	41.473	62.412	-28.527	70.000	-20.939	PK
5			2100.000	38.638	56.709	-31.362	70.000	-18.071	PK
6			2100.321	3.314	21.381	-46.686	50.000	-18.067	AV

4.7. Test Photograph

Test Mode: Mode 1

Description: Radiated disturbance Test Setup (Below 1GHz)



Test Mode: Mode 1

Description: Radiated disturbance Test Setup (Above 1GHz)

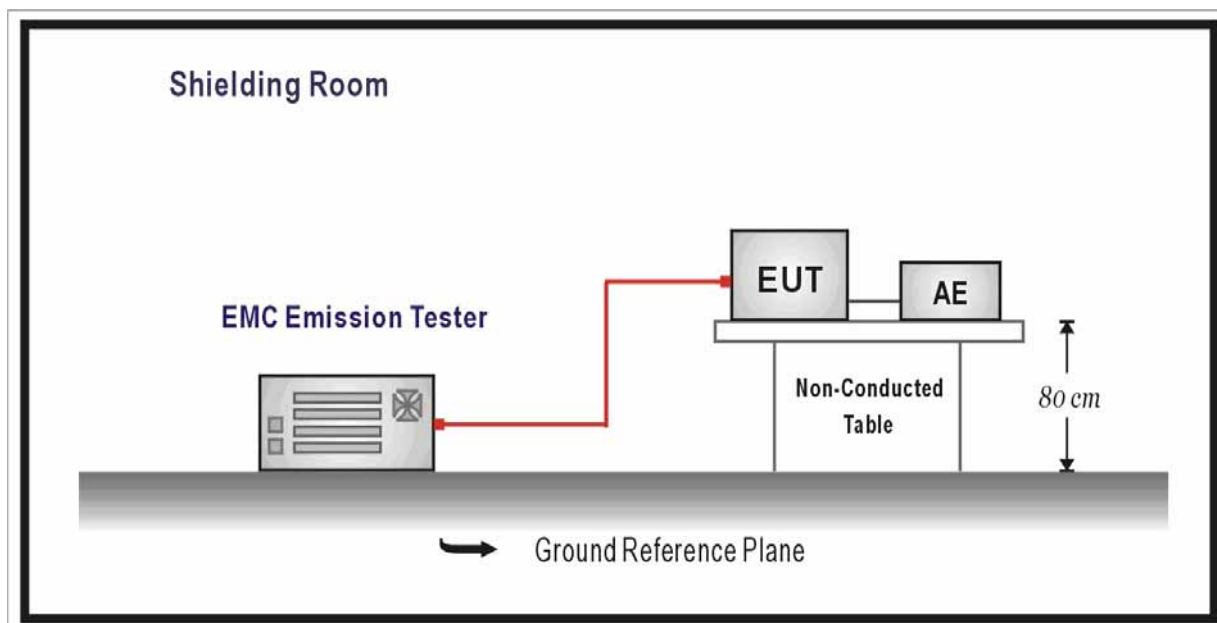


5. Harmonic current emissions

5.1. Test Specification

According to EMC Standard: EN 61000-3-2

5.2. Test Setup



5.3. 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	$8 \leq n \leq 40$	$0.23 * 8/n$
11	0.33		
13	0.21		
$15 \leq n \leq 39$	$0.15 * 15/n$		

(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	$30 \cdot \lambda^*$
5	10
7	7
9	5
$11 \leq n \leq 39$ (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
$11 \leq n \leq 39$ (odd harmonics only)	$3.85/n$	See limit of Class A

5.4. 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.

5.5. Deviation from Test Standard

No deviation.

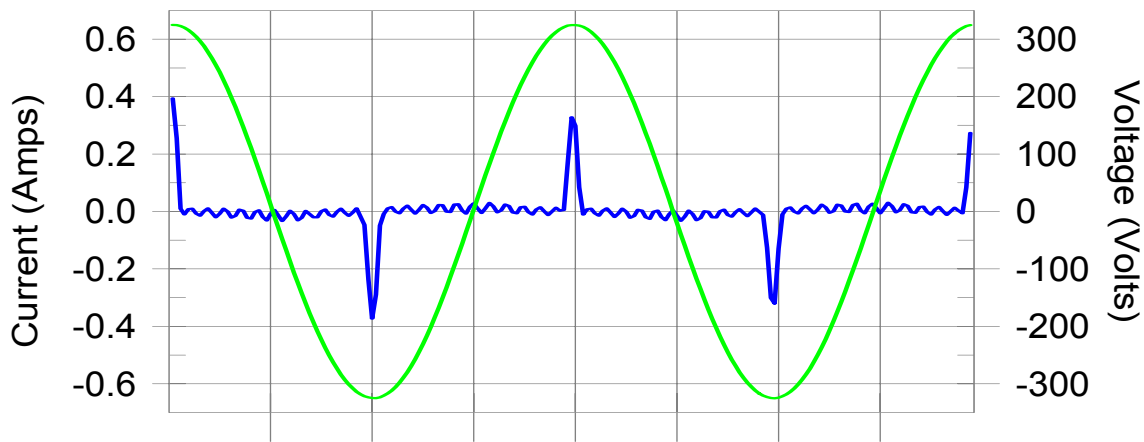
5.6. Test Result

Product	WIRELESS ACCESS POINT		
Test Item	Harmonic Current Emission		
Test Mode	Mode 1		
Date of Test	2012/05/16	Test Site	TR-1

Test Result: Pass

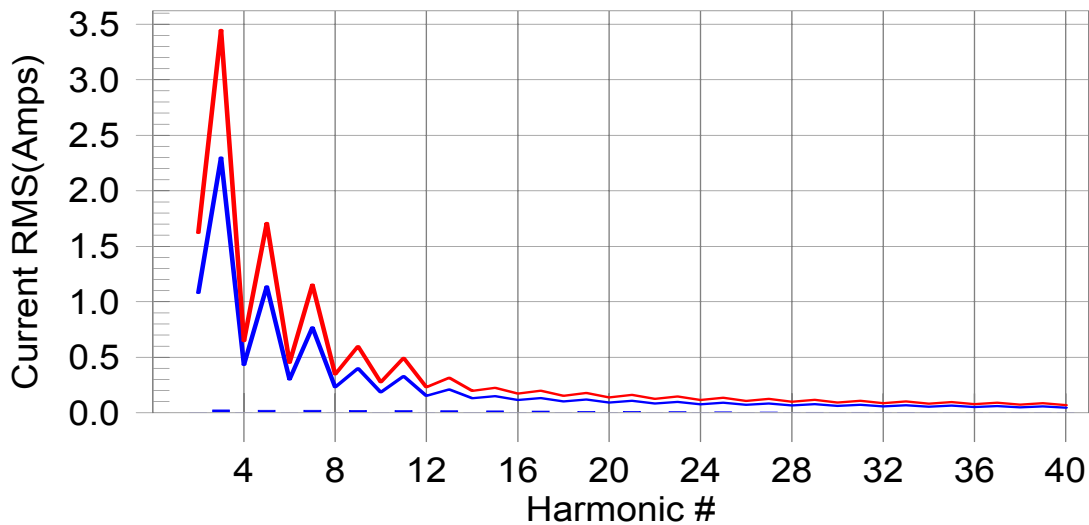
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line

European Limits



Test result: Pass

Test Result: Pass Source qualification: Normal
 THC(A): 0.06 I-THD(%): 244.04 POHC(A): 0.019 POHC Limit(A): 0.251
 Highest parameter values during test:

V_RMS (Volts): 229.99	Frequency(Hz): 50.00
I_Peak (Amps): 0.394	I_RMS (Amps): 0.070
I_Fund (Amps): 0.026	Crest Factor: 5.758
Power (Watts): 5.9	Power Factor: 0.376

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	0.1	0.001	1.620	0.09	Pass
3	0.023	2.300	1.0	0.025	3.450	0.73	Pass
4	0.001	0.430	0.2	0.001	0.645	0.17	Pass
5	0.023	1.140	2.0	0.024	1.710	1.38	Pass
6	0.000	0.300	0.1	0.001	0.450	0.11	Pass
7	0.022	0.770	2.8	0.022	1.155	1.95	Pass
8	0.000	0.230	0.2	0.001	0.345	0.21	Pass
9	0.021	0.400	5.2	0.021	0.600	3.56	Pass
10	0.000	0.184	0.2	0.001	0.276	0.23	Pass
11	0.020	0.330	5.9	0.020	0.495	4.01	Pass
12	0.000	0.153	0.2	0.000	0.230	0.18	Pass
13	0.018	0.210	8.6	0.018	0.315	5.82	Pass
14	0.000	0.131	0.2	0.000	0.197	0.23	Pass
15	0.017	0.150	11.0	0.017	0.225	7.47	Pass
16	0.000	0.115	0.2	0.000	0.173	0.21	Pass
17	0.015	0.132	11.2	0.015	0.199	7.55	Pass
18	0.000	0.102	0.2	0.000	0.153	0.18	Pass
19	0.013	0.118	11.1	0.013	0.178	7.46	Pass
20	0.000	0.092	0.1	0.000	0.138	0.16	Pass
21	0.011	0.107	10.6	0.012	0.161	7.15	Pass
22	0.000	0.084	0.1	0.000	0.125	0.14	Pass
23	0.010	0.098	9.9	0.010	0.147	6.65	Pass
24	0.000	0.077	0.1	0.000	0.115	0.11	Pass
25	0.008	0.090	8.9	0.008	0.135	6.02	Pass
26	0.000	0.071	0.1	0.000	0.106	0.10	Pass
27	0.006	0.083	7.8	0.007	0.125	5.24	Pass
28	0.000	0.066	0.1	0.000	0.099	0.10	Pass
29	0.005	0.078	6.5	0.005	0.116	4.41	Pass
30	0.000	0.061	0.1	0.000	0.092	0.12	Pass
31	0.004	0.073	5.2	0.004	0.109	3.52	Pass
32	0.000	0.058	0.1	0.000	0.086	0.14	Pass
33	0.003	0.068	3.9	0.003	0.102	2.67	Pass
34	0.000	0.054	0.2	0.000	0.081	0.15	Pass
35	0.002	0.064	2.7	0.002	0.096	1.88	Pass
36	0.000	0.051	0.2	0.000	0.077	0.17	Pass
37	0.001	0.061	1.7	0.001	0.091	1.21	Pass
38	0.000	0.048	0.2	0.000	0.073	0.18	Pass
39	0.001	0.058	1.2	0.001	0.087	0.82	Pass
40	0.000	0.046	0.2	0.000	0.069	0.18	Pass

- 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.
- 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.

5.7. Test Photograph

Test Mode: Mode 1

Description: Harmonic current emissions Test Setup

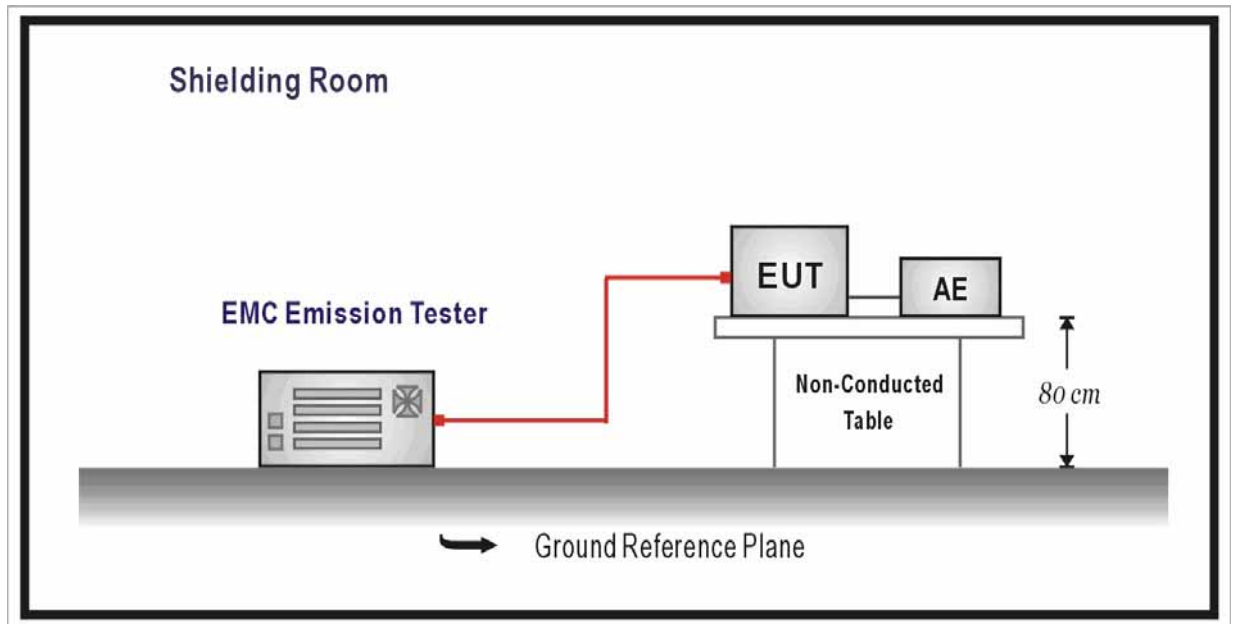


6. Voltage fluctuations and flicker

6.1. Test Specification

According to EMC Standard: EN 61000-3-3

6.2. Test Setup



6.3. Limit

The following limits apply:

- the value of P_{st} shall not be greater than 1.0;
- the value of P_{1t} shall not be greater than 0.65;
- the value of $d(t)$ during a voltage change shall not exceed 3.3% for more than 500ms;
- 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.

6.4. 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.

6.5. Deviation from Test Standard

No deviation.

6.6. Test Result

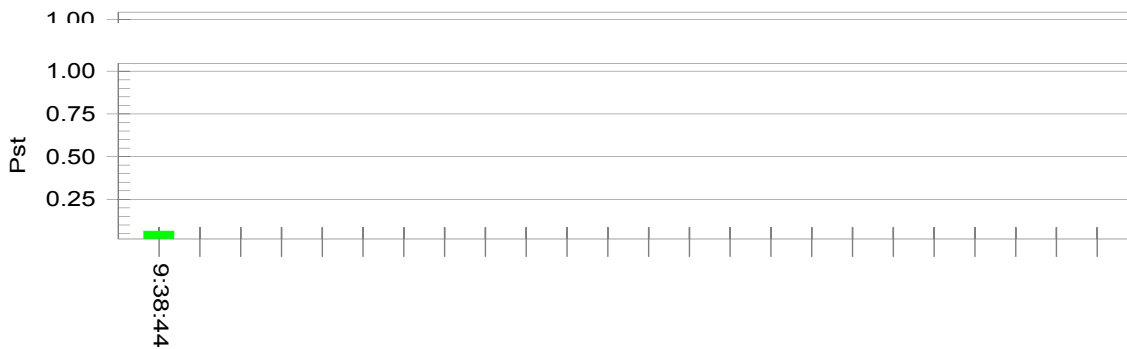
Product	WIRELESS ACCESS POINT		
Test Item	Voltage Fluctuations and Flicker		
Test Mode	Mode 1		
Date of Test	2012/05/16	Test Site	TR-1

Test Result: Pass

Status: Test Completed

Pst_i and limit line

European Limits



Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.88			
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

6.7. Test Photograph

Test Mode: Mode 1

Description: Voltage fluctuations and flicker Test Setup

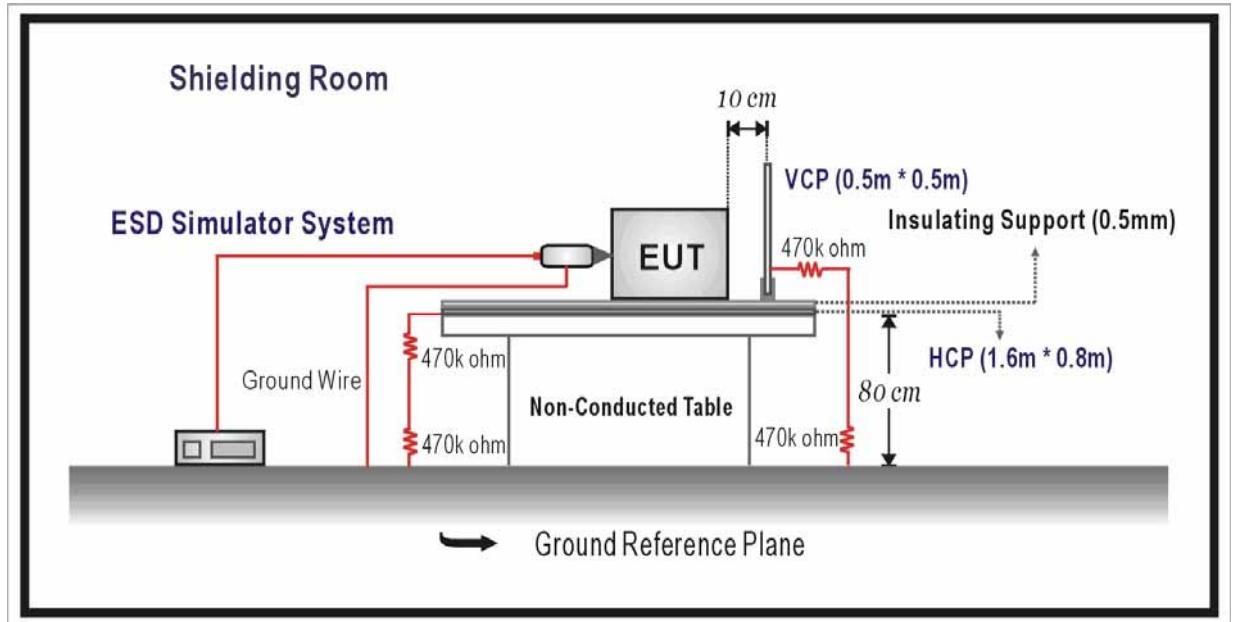


7. Electrostatic discharge

7.1. Test Specification

According to EMC Standard: IEC 61000-4-2

7.2. Test Setup



7.3. Limit

Environmental phenomenon	Test specification	Units	Performance criterion
Enclosure port			
Electrostatic discharge	±4 (Contact discharge)	kV (Charge voltage)	B
	±8 (Air discharge)	kV (Charge voltage)	

7.4. 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.

7.5. Deviation from Test Standard

No deviation.

7.6. Test Result

Test Mode	Mode 1		
Test Site	TR-3	Date of Test	2012/05/09
Temperature	22°C	Humidity	43%RH
Barometric Pressure	101kPa	Test Engineer	Aileen

Air Discharge			
Test Location	Test Level	Observation	Result
No applicable discharge point	± 2, ± 4, ± 8	Note 1	Pass

Contact Discharge			
Test Location	Test Level	Observation	Result
No applicable discharge point	± 2, ± 4	Note 1	Pass

Horizontal Coupling			
Test Location	Test Level	Observation	Result
Front	± 2, ± 4	Note 1	Pass
Rear	± 2, ± 4	Note 1	Pass
Left	± 2, ± 4	Note 1	Pass
Right	± 2, ± 4	Note 1	Pass

Vertical Coupling			
Test Location	Test Level	Observation	Result
Front	± 2, ± 4	Note 1	Pass
Rear	± 2, ± 4	Note 1	Pass
Left	± 2, ± 4	Note 1	Pass
Right	± 2, ± 4	Note 1	Pass

Note: There is no any degradation of performance and function.

7.7. Test Photograph

Test Mode: Mode 1

Description: Electrostatic discharge Test Setup

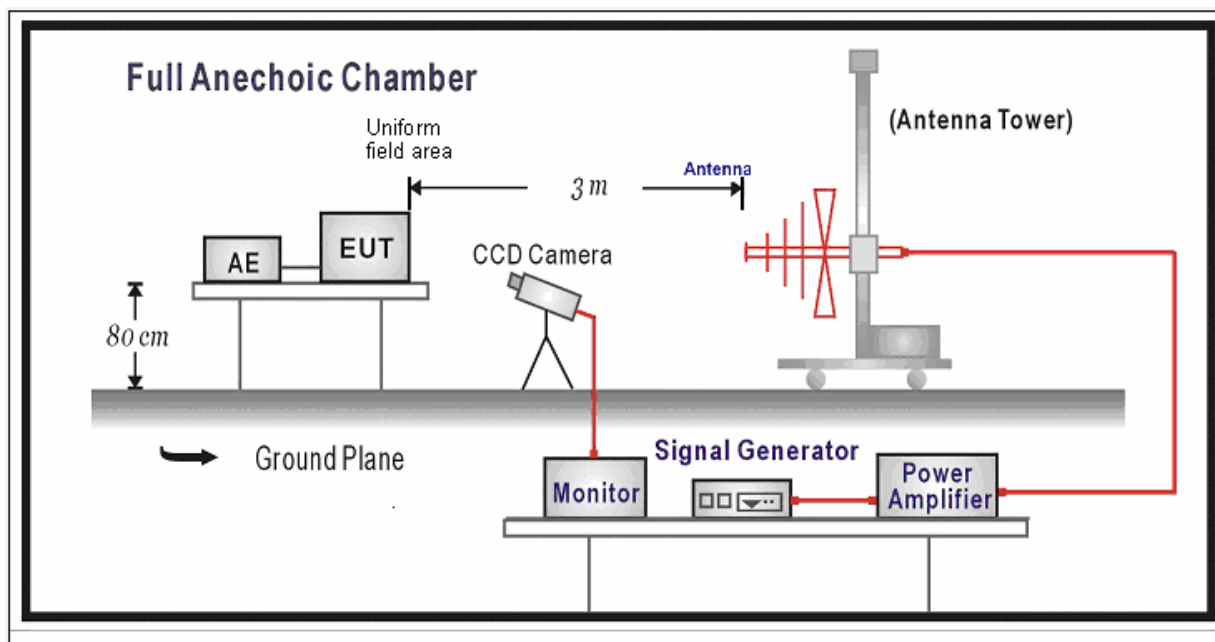


8. Radio-frequency electromagnetic field

8.1. Test Specification

According to EMC Standard: IEC 61000-4-3

8.2. Test Setup



8.3. Limit

Environmental phenomenon	Test specification	Units	Performance criterion
Enclosure port			
Radio-frequency electromagnetic field	80 - 1000	MHz	A
	3	V/m (unmodulated, r.m.s)	
	80	% AM (1kHz)	
NOTE: The frequency range is scanned as specified. However, when specified in Annex A, an additional comprehensive functional test shall be carried out at a limited number of frequencies. The selected frequencies are: 80, 120, 160, 230, 434, 460, 600, 863 and 900MHz ($\pm 1\%$).			

8.4. 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	3V/m
2.	Radiated Signal	AM 80% Modulated with 1kHz
3.	Scanning Frequency	80 - 1000MHz
4.	Dwell Time	3 Seconds
5.	Frequency Step Size Δf	1%

8.5. Deviation from Test Standard

No deviation.

8.6. Test Result

Test Mode	Mode 1		
Test Site	AC-4	Date of Test	2012/05/09
Temperature	22°C	Humidity	43%RH
Barometric Pressure	101kPa	Test Engineer	Aileen

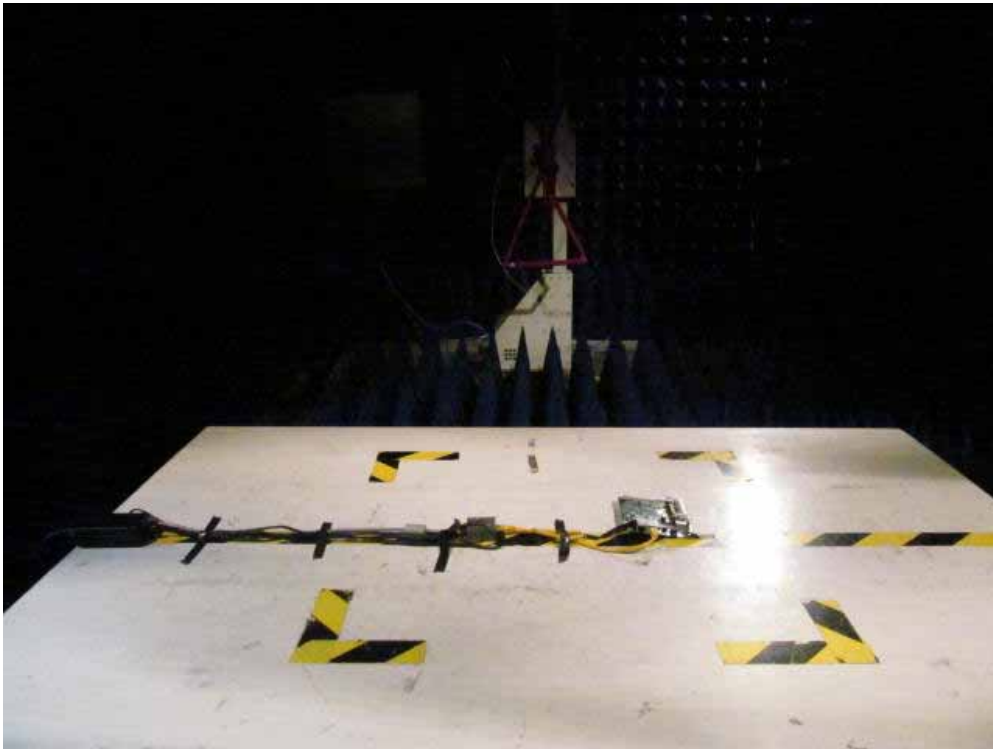
Frequency (MHz)	Polarity	Position	Field Strength (V/m)	Observation	Result
80-1000	Horizontal	Front	3	Note	Pass
80-1000	Vertical	Front	3	Note	Pass
80-1000	Horizontal	Rear	3	Note	Pass
80-1000	Vertical	Rear	3	Note	Pass
80-1000	Horizontal	Left	3	Note	Pass
80-1000	Vertical	Left	3	Note	Pass
80-1000	Horizontal	Right	3	Note	Pass
80-1000	Vertical	Right	3	Note	Pass

Note: There is no any degradation of performance and function.

8.7. Test Photograph

Test Mode: Mode 1

Description: Radio-frequency electromagnetic field Test Setup

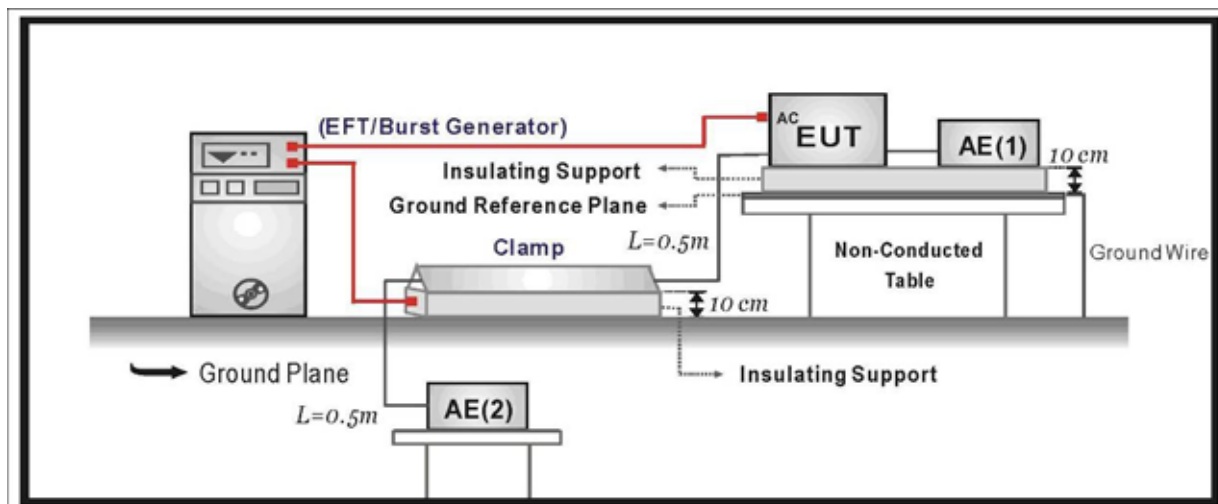


9. Fast transients

9.1. Test Specification

According to EMC Standard: IEC 61000-4-4

9.2. Test Setup



9.3. Limit

Environmental phenomenon	Test specification	Units	Performance criterion
Input a.c. power ports			
Fast transients	±1.0 5/50 5	kV (Peak) Tr/Th (ns) Repetition frequency (kHz)	B
Input d.c. power ports			
Fast transients	±0.5 5/50 5	kV (peak) Tr/Th (ns) Repetition frequency (kHz)	B
Signal ports and telecommunication ports (See Note)			
Fast transients	±0.5 5/50 5	kV (peak) Tr/Th (ns) Repetition frequency (kHz)	B
NOTE: Applicable only to cables which according to the manufacturer’s specification supports communication on cable lengths greater than 3m.			

9.4. 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 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 conductors is impressed with burst noise for 1 minute.

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

For signal and telecommunication ports:

The EFT interference signal is through a coupling clamp device couples to the signal of the EUT with burst noise for 1 minute.

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

9.5. Deviation from Test Standard

No deviation.

9.6. Test Result

Test Mode	Mode 1		
Test Site	TR-2	Date of Test	2012/05/10
Temperature	22°C	Humidity	43%RH
Barometric Pressure	101kPa	Test Engineer	Aileen

Inject Line	Polarity	Test Level (kV)	Test Duration (second)	Inject Method	Observation	Result
L	+	1	60	Direct	Note	Pass
L	-	1	60	Direct	Note	Pass
N	+	1	60	Direct	Note	Pass
N	-	1	60	Direct	Note	Pass
L+N	+	1	60	Direct	Note	Pass
L+N	-	1	60	Direct	Note	Pass
L+N+PE	+	1	60	Direct	Note	Pass
L+N+PE	-	1	60	Direct	Note	Pass
LAN	+	0.5	60	Direct	Note	Pass
LAN	-	0.5	60	Direct	Note	Pass

Note: There was no change compared with initial operation during the test.

9.7. Test Photograph

Test Mode: Mode 1

Description: Fast transients Test Setup (Main)



Test Mode: Mode 1

Description: Fast transients Test Setup (LAN)

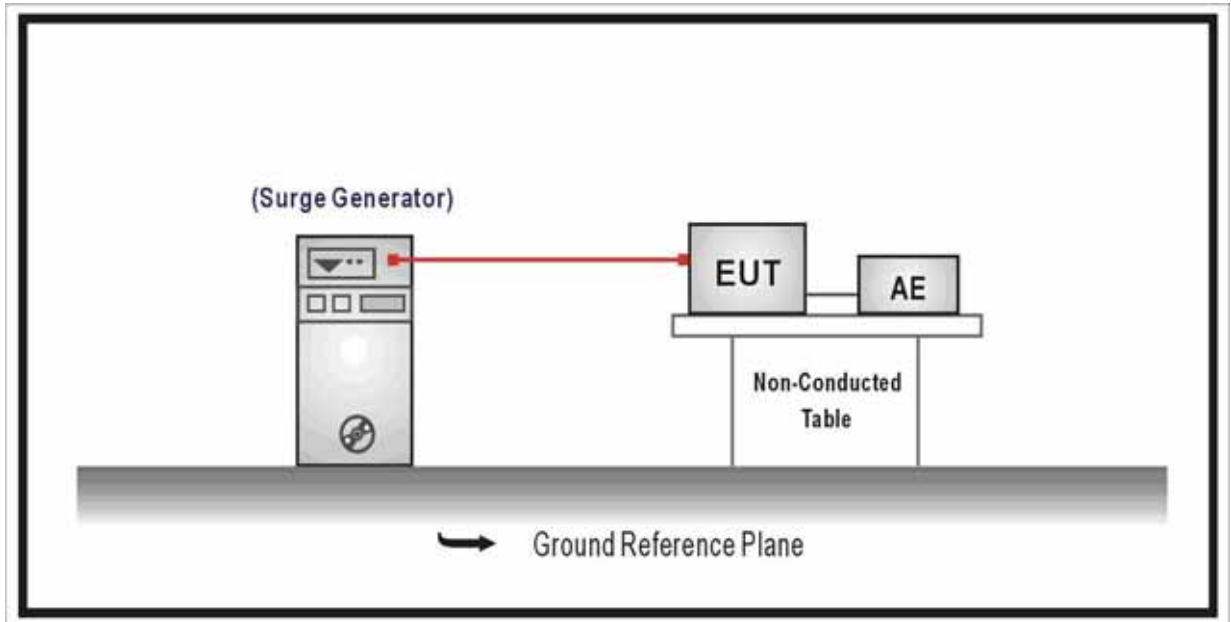


10. Surges

10.1. Test Specification

According to EMC Standard: IEC 61000-4-5

10.2. Test Setup



10.3. Limit

Environmental phenomenon	Test specification	Units	Performance criterion
Input a.c. power ports (See Note 1)			
Surges	1.2/50 (8/20)	Tr/Th (us)	B
	1 line to line	kV (Peak)	
	2 line to earth (ground)	kV (Peak)	
Input d.c. power ports (See Note 2)			
Surges	1.2/50 (8/20)	Tr/Th (us)	B
	0.5	kV (Peak)	
Signal ports and telecommunication ports (See Note 2 and 3)			
Surges	1.2/50 (8/20)	Tr/Th (us)	B
	Line to Ground	1 kV (peak)	
NOTE 1: When the manufacturer specifies protection measures and it is impractical to simulate these measures during the tests, then the applied test levels shall be reduced to 0.5kV and 1kV.			
NOTE 2: Applicable only to ports which according to the manufacturer's specification may connect directly to outdoor cables.			
NOTE 3: Where normal functioning cannot be achieved because of the impact of the CDN on the EUT, no test shall be required.			

10.4. Test Procedure

The EUT is placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m minimum and 0.65mm thick minimum 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 0⁰, 90⁰, 180⁰, 270⁰ and the peak value of the a.c. voltage wave. (Positive and negative)

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

For signal and telecommunication ports:

The signal line of EUT is connected to coupling and decoupling network that directly couples the surge interference signal.

Only Line to ground is impressed with a sequence of five surge voltages with interval of 1 minute.

10.5. Deviation from Test Standard

No deviation.

10.6. Test Result

Test Mode	Mode 1		
Test Site	TR-2	Date of Test	2012/05/10
Temperature	22°C	Humidity	43%RH
Barometric Pressure	101kPa	Test Engineer	Aileen

Inject Line	Polarity	Angle (degree)	Test Level (kV)	Test Interval (second)	Observation	Result
L+N	+	0	1	60	Note	Pass
L+N	-	0	1	60	Note	Pass
L+N	+	90	1	60	Note	Pass
L+N	-	90	1	60	Note	Pass
L+N	+	180	1	60	Note	Pass
L+N	-	180	1	60	Note	Pass
L+N	+	270	1	60	Note	Pass
L+N	-	270	1	60	Note	Pass
L+PE	+	0	2	60	Note	Pass
L+PE	-	0	2	60	Note	Pass
L+PE	+	90	2	60	Note	Pass
L+PE	-	90	2	60	Note	Pass
L+PE	+	180	2	60	Note	Pass
L+PE	-	180	2	60	Note	Pass
L+PE	+	270	2	60	Note	Pass
L+PE	-	270	2	60	Note	Pass
N+PE	+	0	2	60	Note	Pass
N+PE	-	0	2	60	Note	Pass
N+PE	+	90	2	60	Note	Pass
N+PE	-	90	2	60	Note	Pass
N+PE	+	180	2	60	Note	Pass
N+PE	-	180	2	60	Note	Pass
N+PE	+	270	2	60	Note	Pass
N+PE	-	270	2	60	Note	Pass

Note: There was no change compared with initial operation during the test.

10.7. Test Photograph

Test Mode: Mode 1

Description: Surges Test Setup (Input a.c. power ports)



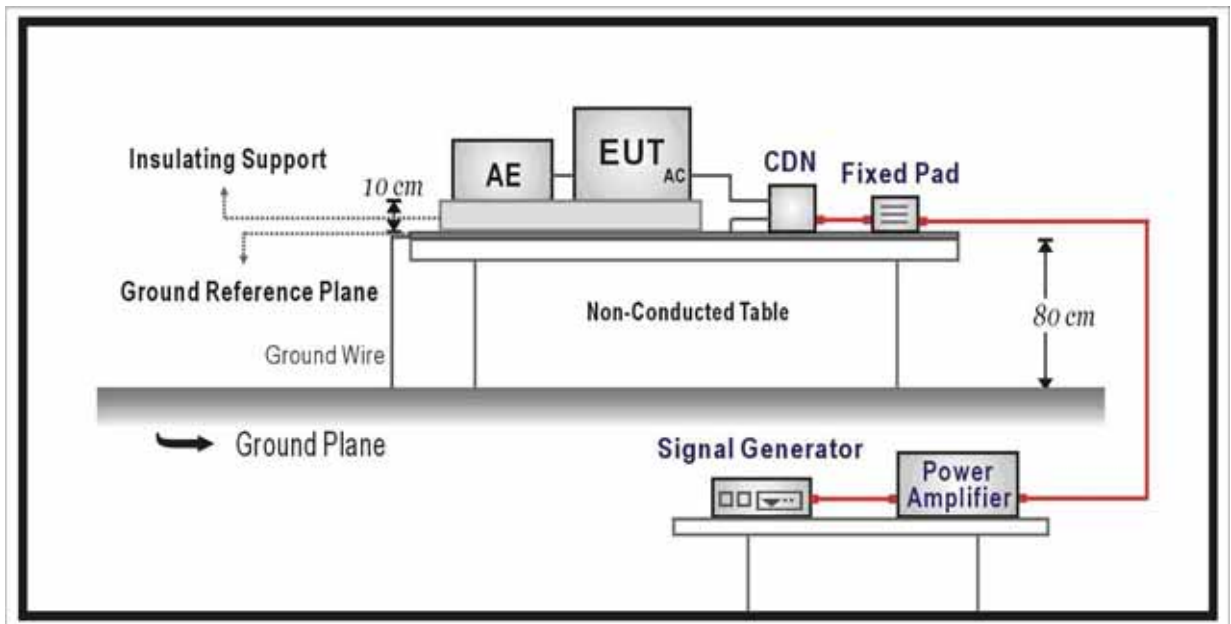
11. Radio-frequency continuous conducted

11.1. Test Specification

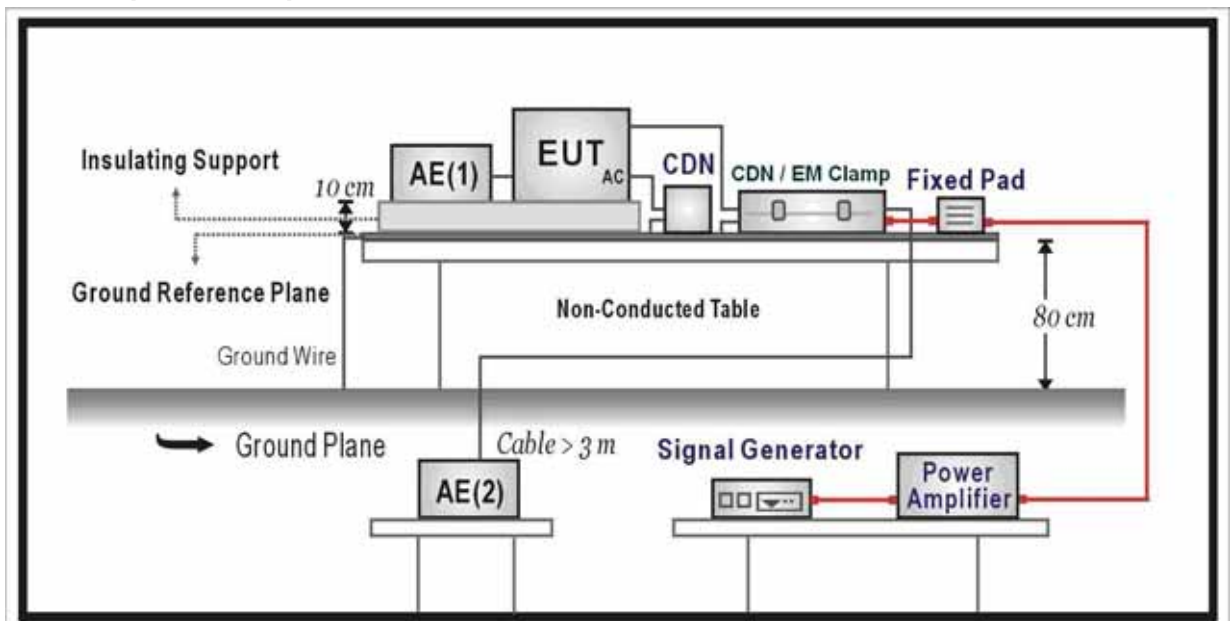
According to EMC Standard: IEC 61000-4-6

11.2. Test Setup

CDN Test Setup



EM Clamp Test Setup



11.3. Limit

Environmental phenomenon	Test specification	Units	Performance criterion
Input a.c. power ports (See Note 1)			
Radio-frequency	0.15 - 80	MHz	A
continuous	3	V (unmodulated, r.m.s)	
conducted	80	% AM (1kHz)	
Input d.c. power ports (See Note 1)			
Radio-frequency	0.15 - 80	MHz	A
continuous	3	V (unmodulated, r.m.s)	
conducted	80	% AM (1kHz)	
Signal ports and telecommunication ports (See Note 1 and 3)			
Radio-frequency	0.15 - 80	MHz	A
continuous	3	V (unmodulated, r.m.s)	
conducted	80	% AM (1kHz)	
NOTE 1: The frequency range is scanned as specified. However, when specified in Annex A, an additional comprehensive functional test shall be carried out at a limited number of frequencies. The selected frequencies for conducted test are: 0.2; 1; 7.1; 13.56; 21; 27.12 and 40.68MHz ($\pm 1\%$).			
NOTE 2: 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, and a ground reference plane on the table, EUT is placed upon table and use a 0.1m insulation between the EUT and ground reference plane.

For input a.c. and d.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.

For signal and telecommunication 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.

	Condition of Test	Remarks
1.	Field Strength	3V
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%

11.5. Deviation from Test Standard

No deviation.

11.6. Test Result

Test Mode	Mode 1		
Test Site	TR-2	Date of Test	2012/05/10
Temperature	22°C	Humidity	43%RH
Barometric Pressure	101kPa	Test Engineer	Aileen

Frequency (MHz)	Inject Voltage (V)	Inject Ports	Inject Method	Observation	Result
0.15-80	3	AC Mains	CDN M016-M3	Note	Pass
0.15-80	3	Lan Port	CDN T400-LAN	Note	Pass

Note: There was no change compared with initial operation during the test.

11.7. Test Photograph

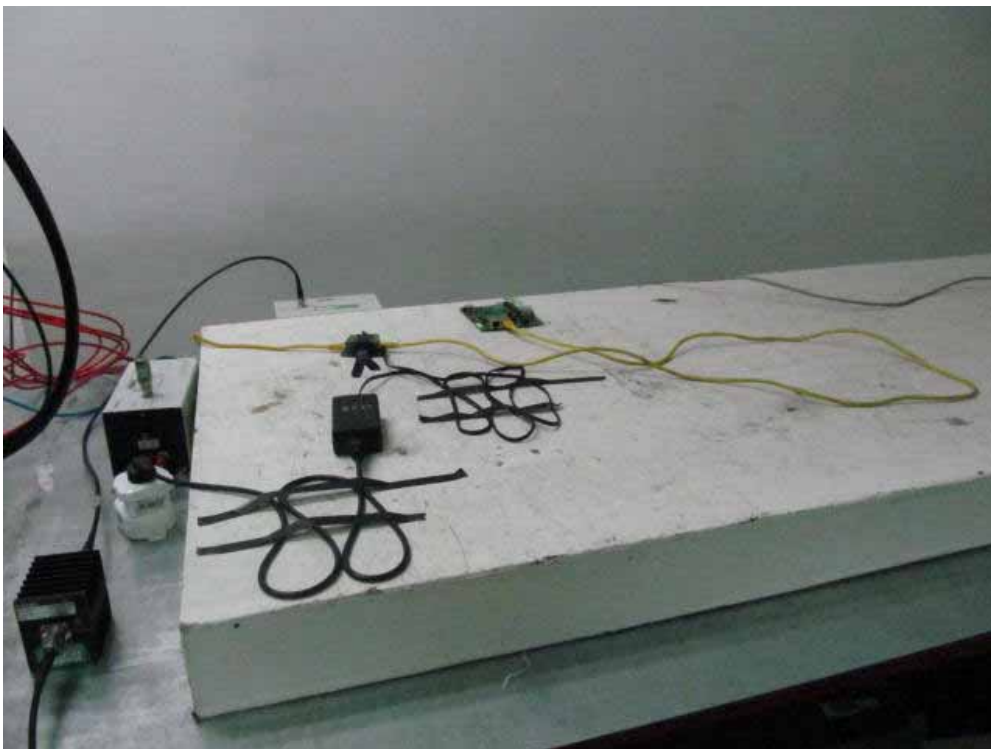
Test Mode: Mode 1

Description: Radio-frequency continuous conducted Test Setup (Input a.c. power ports)



Test Mode: Mode 1

Description: Radio-frequency continuous conducted Test Setup (LAN)

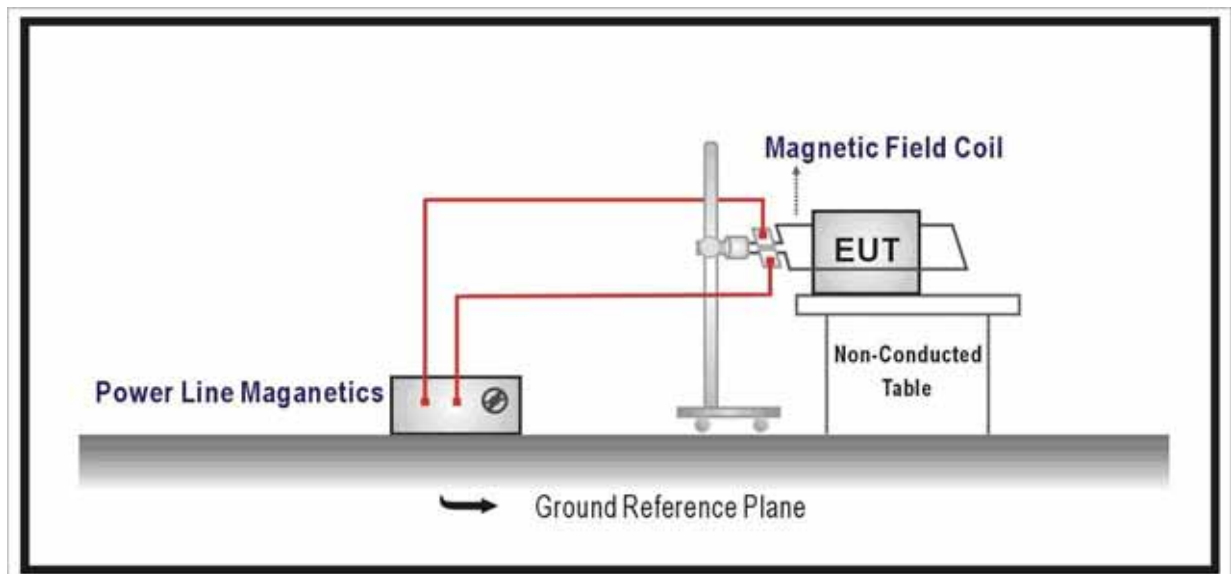


12. Power-frequency magnetic field

12.1. Test Specification

According to EMC Standard: IEC 61000-4-8

12.2. Test Setup



12.3. Limit

Environmental phenomenon	Test specification	Units	Performance criterion
Enclosure port			
Power-frequency magnetic field	50 1	Hz A/m (r.m.s)	A
NOTE: Applicable only to equipment containing devices susceptible to magnetic fields, such as CRT monitors, Hall elements, electrodynamic microphones, magnetic field sensors, etc.			

12.4. Test Procedure

The EUT is placed on a table which is 0.8 meter above a metal ground plane measured at least 1m*1m minimum. The test magnetic field shall be placed at central of the induction coil. The test magnetic Field shall be applied 10 minutes by the immersion method to the EUT, and the induction coil shall be rotated by 90° in order to expose the EUT to the test field with different orientation (X, Y, Z Orientations).

12.5. Deviation from Test Standard

No deviation.

12.6. Test Result

Test Site	TR-2	Date of Test	2012.05.10
EUT	WIRELESS ACCESS POINT	Test Voltage	AC 230V / 50Hz
Temperature	25°C	Humidity	48%RH
Barometric Pressure	101kPa	Test Engineer	Aileen
Test Mode	Mode 1		

Test Coil Position	Frequency (Hz)	Magnetic Strength (A/m)	Test Result Criterion	Observation	Result
X Axis	50	1	A	Note	Pass
Y Axis	50	1	A	Note	Pass
Z Axis	50	1	A	Note	Pass

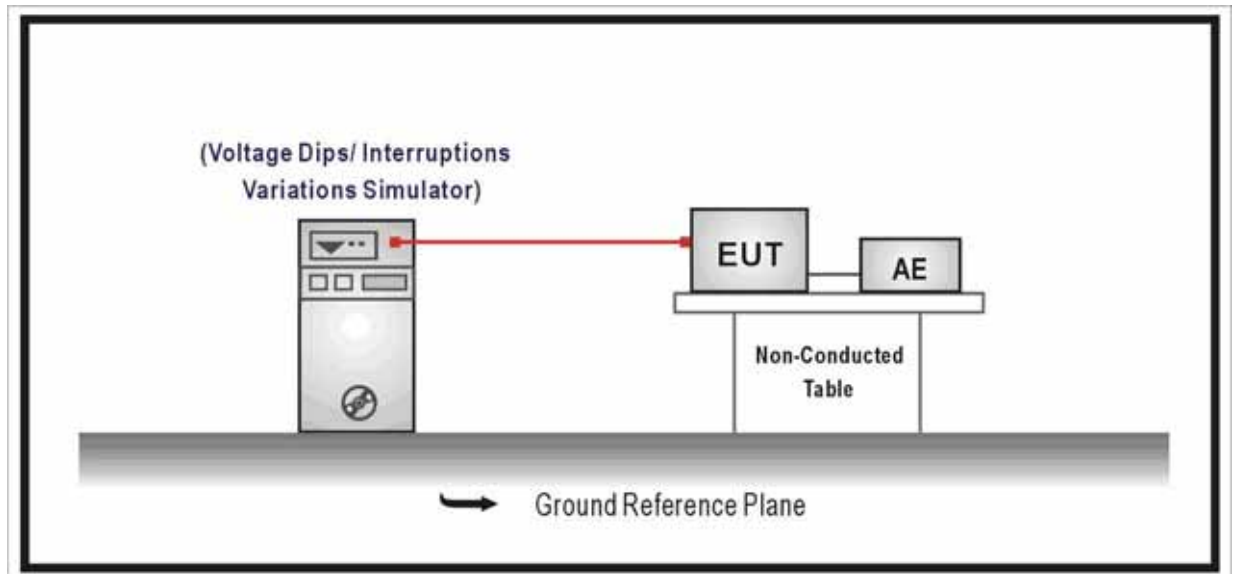
NOTE: There was no change compared with initial operation during the test.

13. Voltage dips and interruptions

13.1. Test Specification

According to EMC Standard: IEC 61000-4-11

13.2. Test Setup



13.3. Limit

Environmental phenomenon	Test specification	Units	Performance criterion
Input a.c. power ports			
Voltage dips	>95	% reduction period	B
	0.5		
	30 25	% reduction periods	C
Voltage interruptions	>95	% reduction periods	C
	250		
NOTE: Changes to occur at 0 degree crossover point of the voltage waveform.			

13.4. Test Procedure

The EUT is placed on a table which is 0.8 meter above a metal ground plane measured 1m*1m minimum, and 0.65mm thick minimum, 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 and 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.

13.5. Deviation from Test Standard

No deviation.

13.6. Test Result

Test Mode	Mode 1		
Test Site	TR-2	Date of Test	2012.05.11
Temperature	23°C	Humidity	46%RH
Barometric Pressure	101kPa	Test Engineer	Aileen

Voltage % Residual	Test Duration (ms)	Observation	Result
0	10	Note 1	Pass
0	20	Note 1	Pass
70	500	Note 1	Pass
0	5000	Note 1, 2	Pass

NOTE 1: There was no change compared with initial operation during the test.

NOTE 2: The power of EUT has been shut down during the test, but recoverable by user after the test.

13.7. Test Photograph

Test Mode: Mode 1

Description: Voltage dips and interruptions Test Setup



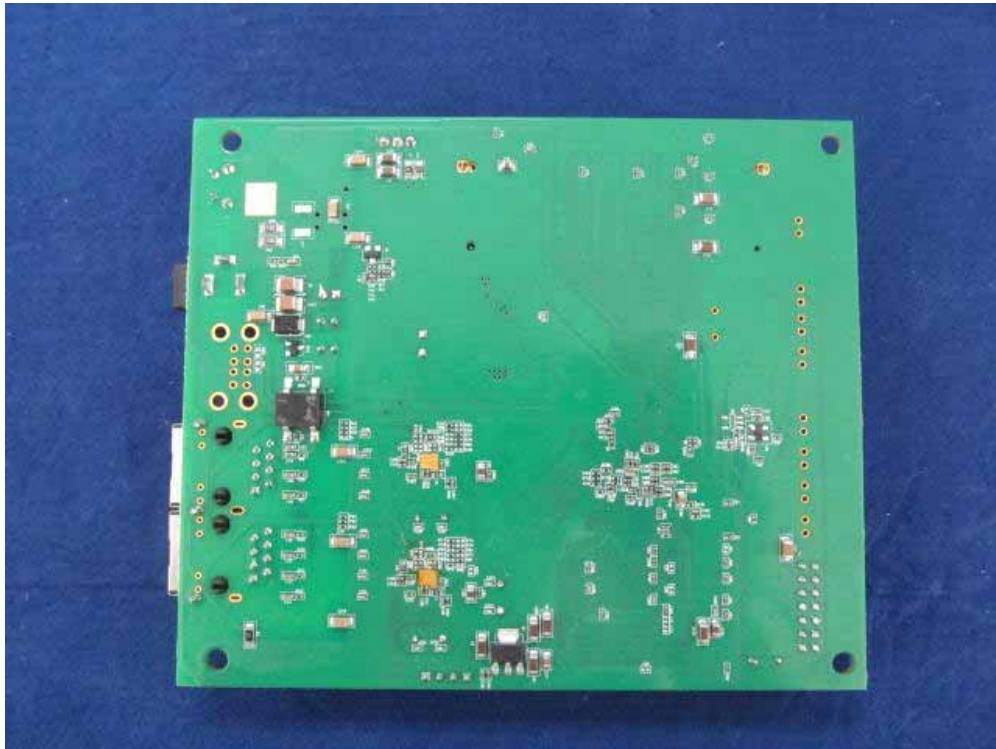
14. Attachment

EUT Photograph

(1) EUT Photo



(2) EUT Photo



(3) EUT Photo



(4) EUT Photo



(5) EUT Photo



(6) EUT Photo

