Certificate of Conformity

The products

EUT : WLAN Broadband 802.11g AP Router
Trade Name : SparkLAN
Model No. : WRTR-142; WRTR-142/XXX

This certificate that the above product complies with the essential protection requirements of R&TTE Directive 1999/5/EC
Assessment of compliance of the product with the requirements relating to the following specifications

EN 300 328 V1.6.1(2004-11)
EN 301 489-01 V1.6.1 (2005-09)
EN 301 489-17 V1.2.1 (2002-08)

This declaration is the responsibility or the manufacturer/importer

SparkLAN Communications, Inc.
3F, No. 246, Sec. 1, Neihu Road, Neihu (114), Taipei City, Taiwan R.O.C.

THIS DOC IS ONLY VAILD IN CONNECTION WITH TEST REPORT NUMBER: 07-08-RBF-1438-01, 07-08-RBF-143-02

MANUFACTURER/IMPORTER

(Date)

(Surname, forename, title)
(Company stampe)

TEST LABORATORY

1. The result of the testing report relate only to the item tested.
2. The testing report shall not be reproduced in full, without the written approval of ETC.

2007, 08, 30
(Date)

Signa
Will Yauo
Manager of EMC Testing Department II
Electronics Testing Center, Taiwan

ELECTRONICS TESTING CENTER, TAIWAN
NO. 34. LIN 5. DINGFU TSUEN,
LINKOU SHIANG TAIPEI COUNTY,
TAIWAN, 24442, R.O.C.

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CE

EN 301 489
EMC TEST REPORT

Responsible Party : ***SparkLAN Communications, Inc.***

Manufacturer : ***SparkLAN Communications, Inc.***

Description of Product : ***WLAN Broadband 802.11g AP Router***

Trade Name : ***SparkLAN***

Model No. : ***WRTR-142***

Test Report File No. : ***07-08-RBF-143-02***

Date Test Item Received : ***Aug. 28, 2007***

Date Test Campaign Completed : ***Aug. 30, 2007***

Date of Issue : ***Aug. 30, 2007***

Test Performed by

ELECTRONICS TESTING CENTER (ETC) , TAIWAN

NO. 34. LIN 5. DINGFU TSUEN, LINKOU SHIANG
TAIPEI COUNTY, TAIWAN, 24442, R.O.C.
TEL : (02)26023052 FAX : (02)26010910
http:// www.etc.org.tw ; e-mail:r00@etc.org.tw

CONTENTS

1 TEST REPORT CERTIFICATION

Client	:	SparkLAN Communications, Inc.
Address	:	3F, No. 246, Sec. 1, Neihu Road, Neihu (114), Taipei City, Taiwan, R.O.C.
Manufacturer	:	SparkLAN Communications, Inc.
Address	:	3F, No. 246, Sec. 1, Neihu Road, Neihu (114), Taipei City, Taiwan, R.O.C.
EUT	:	WLAN Broadband 802.11g AP Router
Trade name	:	SparkLAN
Model No.	:	WRTR-142
Data also apply to	:	WRTR-142/XXX
Test specifications	:	
Emissions	:	EN 55022:1998/A1:2000/A2:2003 EN 61000-3-2:2000 EN 61000-3-3:1995/A1:2001
Immunity	:	EN 61000-4-2:1995/A1:1998/A2:2001 EN 61000-4-3:2002 EN 61000-4-4:1995/A1:2001 EN 61000-4-5:1995/A1:2001 EN 61000-4-6:1996/A1:2001 EN 61000-4-11:1994/A1:2001
Regulations applied	:	EN 301 489-01 V1.6.1 (2005-09) EN 301 489-17 V1.2.1 (2002-08)

The testing described in this report has been carried out to the best of our knowledge and ability, and our responsibility is limited to the exercise of reasonable care. This certification is not intended to believe the sellers from their legal and/or contractual obligations.

Test Engineer : Vincent Chang Tien Lu Liao
(Vincent Chang) (Tien-Lu Liao)

Check By : Charles Wang.
(Charles Wang)

Approve & Authorized : Will Yauo
Will Yauo, Manager
EMC Dept. II of ELECTRONICS
TESTING CENTER, TAIWAN

Laboratory Introduction: Electronics Testing Center, Taiwan is recognized, filed and mutual recognition arrangement as following:

❶ ISO9002 : BSMI, TüV Product Service
❷ ISO/IEC 17025 : BSMI, CNLA, DGT, NVLAP, CCIBLAC, UL, Compliance
❸ EN45001 : TüV Rheinland, NEMKO, FIMKO, SGS
❹ Filing : FCC, Industry Canada, VCCI
❺ MRA : Australia, Hong Kong, New Zealand, Singapore, USA, Japan, Korea, China, APLAC through CNLA

2 GENERAL INFORMATIONS

2.1 Description of EUT:

1. Standard IEEE 802.11 b/g
2. Frequency Range: 2.40GHz~2.4835GHz
3. Operating Frequency / Channel: 2.412 ~ 2.472GHz / 13 Channels
4. Modulation Technique:
   Orthogonal frequency division multiplexing (OFDM)
   Direct Sequence Spread Spectrum (CCK, DQPSK, DBPSK)
5. Security 64/128bit WEP WPA WPA2 802.1x and 802.1i

2.2 Related Information of EUT:

Size of EUT	:	160 x 120 x 30 mm
Power Supply	:	I/P: 230Vac 50Hz 140 mA; O/P: 12Vdc 1.0A

Cables dedicated for EUT:

Power Line	:	[X]	Nonshielded	[ ]	Shielded	[ ]	None,	Length: 1.5 m
Control Line		[ ]	Nonshielded	[ ]	Shielded	[X]	None,	Length: m
RJ-45 Line		[X]	Nonshielded	[ ]	Shielded	[ ]	None,	Length: 3.0 m
TEL. Line	:	[ ]	Nonshielded	[ ]	Shielded	[X]	None,	Length: m
Data Line	:	[ ]	Nonshielded	[ ]	Shielded	[X]	None,	Length: m

Cables for interconnecting:

S-Cable	:	[ ]	Nonshielded	[ ]	Shielded	[X]	None,	Length: m

Frequency band	:	2400MHz~2483.5MHz
Radiated Power	:	13.0dBm (Rated)
Transmitter antenna source	:	Integral antenna
Channel spacing	:	5MHz

2.3 Tested Configuration:

The EUT connected with the following peripheral devices.

Product	Manufacturer	Model No.	I/O Cable
WLAN Broadband 802.11g AP Router *	SparkLAN Communications, Inc.	WRTR-142	1.5m Unshielded AC Adaptor Power Cord 3.0m Unshielded RJ-45 Cable *4

Remark "*" means equipment under test.

2.4 Deviations Record:

No deviations were required.

2.5 Modification Record:

No modifications were required. (That is the EUT complied with the requirement as tested.)

3 SUMMARY OF TEST RESULTS

3.1 Emissions:

3.1.1 Conducted Emissions

[X]–PASS (Mode: Operation Mode(802.11B)- Neutral)

Minimum EMI Margin(QP) to the limit: -5.1 dB at 0.403 MHz

[X]–PASS (Mode: Operation Mode(802.11B) -Line)

Minimum EMI Margin(QP) to the limit: -3.0 dB at 0.536 MHz

[X]–PASS (Mode: Operation Mode(802.11G)- Neutral)

Minimum EMI Margin(QP) to the limit: -2.5 dB at 0.540 MHz

[X]–PASS (Mode: Operation Mode(802.11G) -Line)

Minimum EMI Margin(QP) to the limit: -5.9 dB at 0.720 MHz

3.1.2 Radiated Emissions

[X]–PASS (Mode: Operation Mode(802.11B))

Minimum EMI Margin to the limit: -1.5 dB at 199.920 MHz

[X]–PASS (Mode: Operation Mode(802.11G))

Minimum EMI Margin to the limit: -1.6 dB at 199.920 MHz

3.1.3 Harmonics Current Emissions

[X]-PASS

The harmonics current values were under the limits of the class A equipment of the EN 61000-3-2.

3.1.4 Voltage Fluctuations and Flicker

[X]-PASS

The voltage fluctuations and flicker values were under the limits of the EN 61000-3-3 requirements.

3.2 Immunity:

3.2.1 Immunity Criteria:

The results of all of the immunity tests performed on the EUT were evaluated according to the following criteria, and according to the manufacturer's specifications for the EUT:

Performance criterion CT : The performance criteria A shall apply. Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an ACKnowledgement (ACK) or Not ACKnowlegdgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the correctly interpreted.

Performance criterion TT : The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5000ms duration, for which performance criteria C shall apply. Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. Iin systems using acknowledgement signals, it is recognized that an acknowledgement (ACK) or notacknowledgement (NACK) transmission may occur, and steps should be taken to that any transmission resulting from the application of the test is correctly interpreted.

Performance criterion CR: The performance criteria A shall apply. Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criterion TR: The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5000ms duration for which performance criteria C shall apply. Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of test is correctly interpreted.

Performance table

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

Note1：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. Iin some cases the specified minimum performance level may be replaced by a permissible degradation or 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.

Note2：No degradation of performance of performance after the test is understood as no degradation below a minimum performance level specified by the manufacture 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 manufacture 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.

3.2.2 Electrostatic Discharge Immunity:

Requirement :Criterion B (or better)

[X] applicable **[ ] not applicable**

Requirement :Criteria **[X] TT** **[X] TR**

-Satisfies criterion **[X] A** **[ ] B**

3.2.3 RF Radiated Fields Immunity:

Requirement :Criterion A

[X] applicable **[ ] not applicable**

Requirement :Criteria **[X] CT** **[X] CR**

-Satisfies criterion **[X] A** **[ ] B**

3.2.4 EFT/Burst Immunity:

Requirement :Criterion B (or better)

[X] applicable	**[ ] not applicable**	
Requirement :Criteria	**[X] TT**	**[X] TR**
-Satisfies criterion	**[X] A**	**[ ] B**

3.2.5 Surge Immunity:

Requirement :Criterion B (or better)

[X] applicable	**[ ] not applicable**	
Requirement :Criteria	**[X] TT**	**[X] TR**
-Satisfies criterion	**[X] A**	**[ ] B**

3.2.6 RF Common Mode Immunity:

Requirement :Criterion A

[X] applicable	**[ ] not applicable**	
Requirement :Criteria	**[X] CT**	**[X] CR**
-Satisfies criterion	**[X] A**	**[ ] B**

3.2.7 Voltage Interruptions and Voltage Dips Immunity:

Requirement :Criterion C (or better)

[X] applicable	**[ ] not applicable**		
Requirement :Criteria	**[X] TT**	**[X] TR**	
-Satisfies criterion	**[ ] A**	**[X] B**	**[ ] C**

4 TEST DATA & RELATED INFORMATIONS

4.1 Emissions:

4.1.1 Conducted Emissions Test:

4.1.1.1 Conducted Emissions Test Data:

Operating Conditions of The EUT : Operation Mode(802.11B)

Test Date : Aug. 29, 2007

Test Specification	EN 55022:1998/A1:2000/A2:2003 (Class B)			
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	ESCI	2006/12/25	2007/12/24
LISN	EMCO	3825/2	2006/10/09	2007/10/08
LISN	Rohde & Schwarz	ESH2-Z5	2006/09/13	2007/09/12
Climatic Condition	Ambient Temperature: 20 °C		Relative Humidity: 65 %RH	
Power Supply System	AC Power : 230 Vac 50 Hz			
Test Set-up	Table-top Equipment			

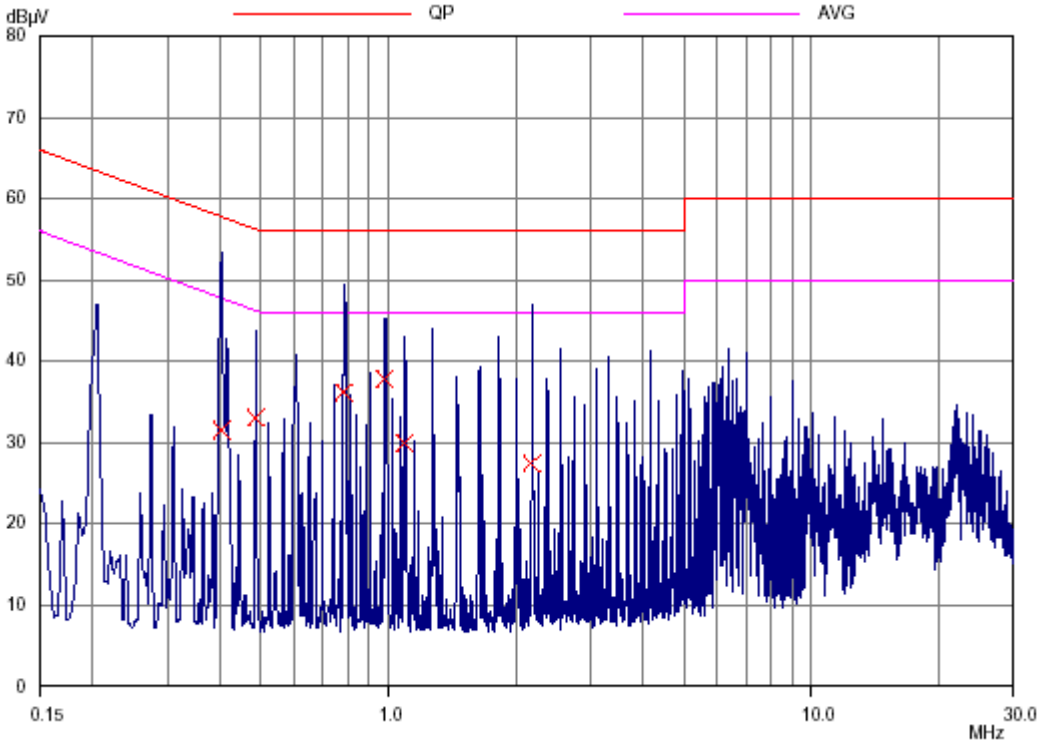
Test data see the next pages.

Mode: Operation Mode(802.11B) Neutral

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.403	52.4	44.2	0.3	52.7	44.5	57.8	47.8	-5.1	-3.3
0.485	43.4	41.4	0.3	43.7	41.7	56.3	46.3	-12.6	-4.6
0.786	47.8	41.3	0.3	48.1	41.6	56.0	46.0	-7.9	-4.4
0.982	45.6	41.4	0.3	45.9	41.7	56.0	46.0	-10.1	-4.3
1.093	43.2	40.2	0.3	43.5	40.5	56.0	46.0	-12.5	-5.5
2.183	43.8	39.8	0.5	44.3	40.3	56.0	46.0	-11.7	-5.7

Notes: 1) Place of measurement: EMC LAB. of the ETC
2) The EUT was placed 0.8m above reference ground plane.
3) The symbol of "----" means the Q.P. value is under the limit for AVG. so, the AVG. value doesn't need to be measured.
4) The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: Operation Mode(802.11B) Neutral

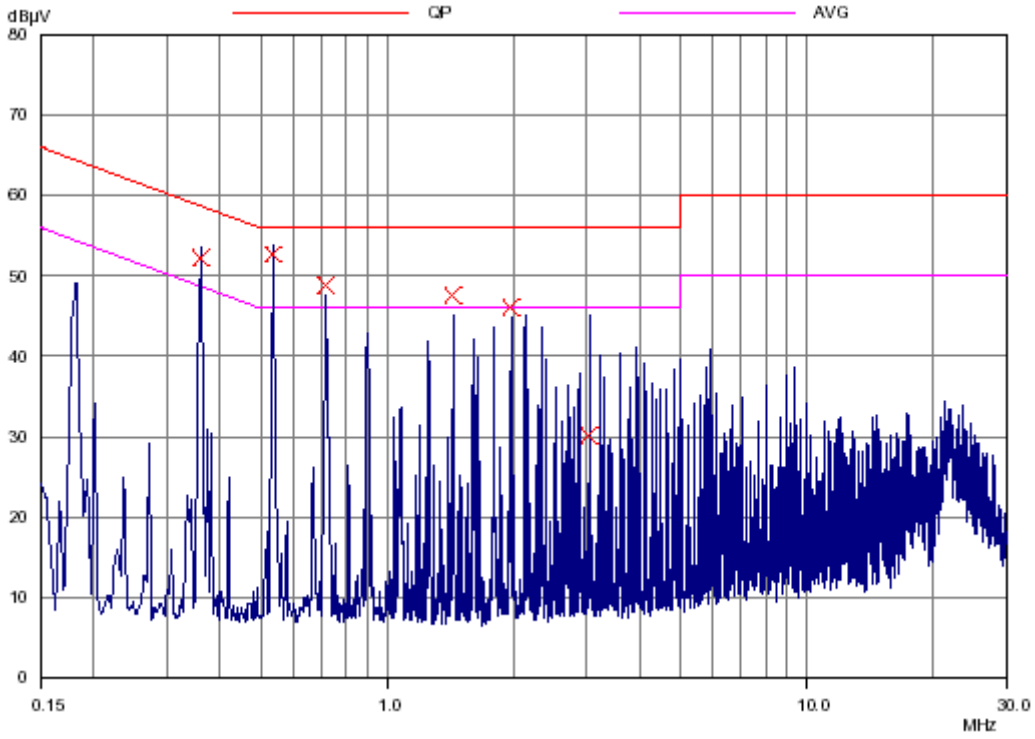


Mode: Operation Mode(802.11B) Line

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.360	52.2	44.1	0.3	52.5	44.4	58.7	48.7	-6.2	-4.3
0.536	52.7	42.4	0.3	53.0	42.7	56.0	46.0	-3.0	-3.3
0.716	48.8	41.2	0.3	49.1	41.5	56.0	46.0	-6.9	-4.5
1.437	47.6	41.2	0.4	48.0	41.6	56.0	46.0	-8.0	-4.4
1.976	46.0	40.9	0.5	46.5	41.4	56.0	46.0	-9.5	-4.6
3.046	30.1	----	0.6	30.7	----	56.0	46.0	-25.3	----

Notes: 1) Place of measurement: EMC LAB. of the ETC
2) The EUT was placed 0.8m above reference ground plane.
3) The symbol of "----" means the Q.P. value is under the limit for AVG. so, the AVG. value doesn't need to be measured.
4) The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: Operation Mode(802.11B) Line



Operating Conditions of The EUT : Operation Mode(802.11G)

Test Date : Aug. 29, 2007

Test Specification	EN 55022:1998/A1:2000/A2:2003 (Class B)			
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	ESCI	2006/12/25	2007/12/24
LISN	EMCO	3825/2	2006/10/09	2007/10/08
LISN	Rohde & Schwarz	ESH2-Z5	2006/09/13	2007/09/12
Climatic Condition	Ambient Temperature: 20 °C		Relative Humidity: 65 %RH	
Power Supply System	AC Power : 230 Vac 50 Hz			
Test Set-up	Table-top Equipment			

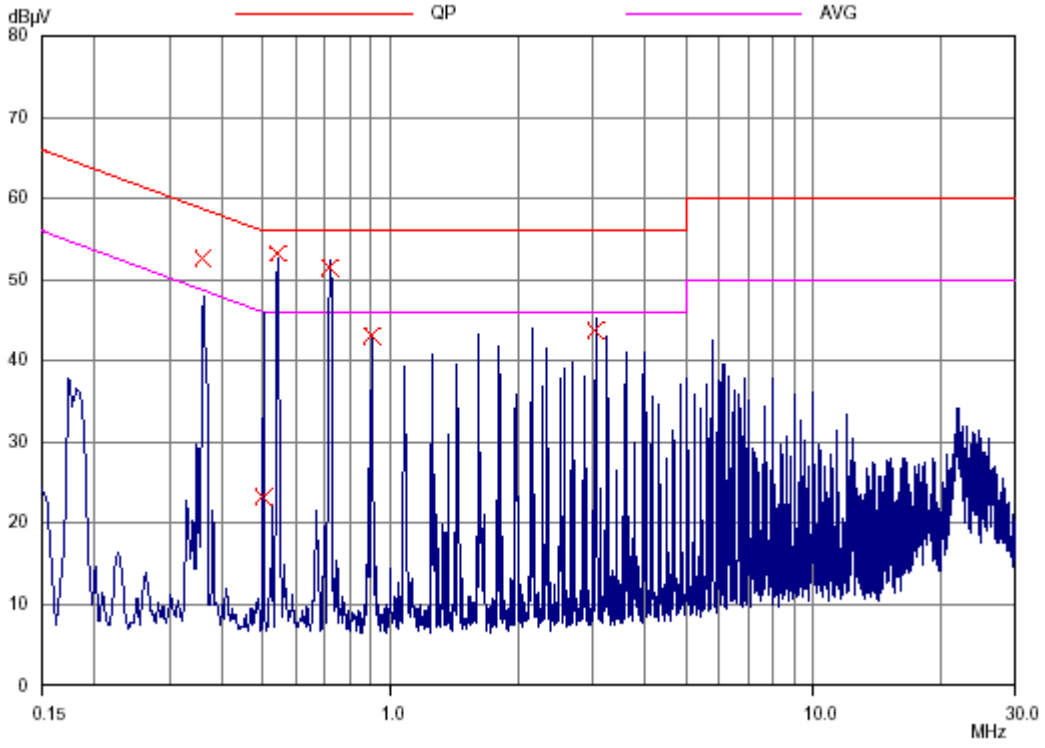
Test data see the next pages.

Mode: Operation Mode(802.11G) Neutral

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.360	52.5	44.2	0.3	52.8	44.5	58.7	48.7	-5.9	-4.2
0.501	40.2	38.9	0.3	40.5	39.2	56.0	46.0	-15.5	-6.8
0.540	53.2	44.2	0.3	53.5	44.5	56.0	46.0	-2.5	-1.5
0.720	51.4	41.2	0.3	51.7	41.5	56.0	46.0	-4.3	-4.5
0.903	43.4	40.2	0.3	43.7	40.5	56.0	46.0	-12.3	-5.5
3.058	43.6	40.3	0.6	44.2	40.9	56.0	46.0	-11.8	-5.1

Notes: 1) Place of measurement: EMC LAB. of the ETC
2) The EUT was placed 0.8m above reference ground plane.
3) The symbol of "----" means the Q.P. value is under the limit for AVG. so, the AVG. value doesn't need to be measured.
4) The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: Operation Mode(802.11G) Neutral

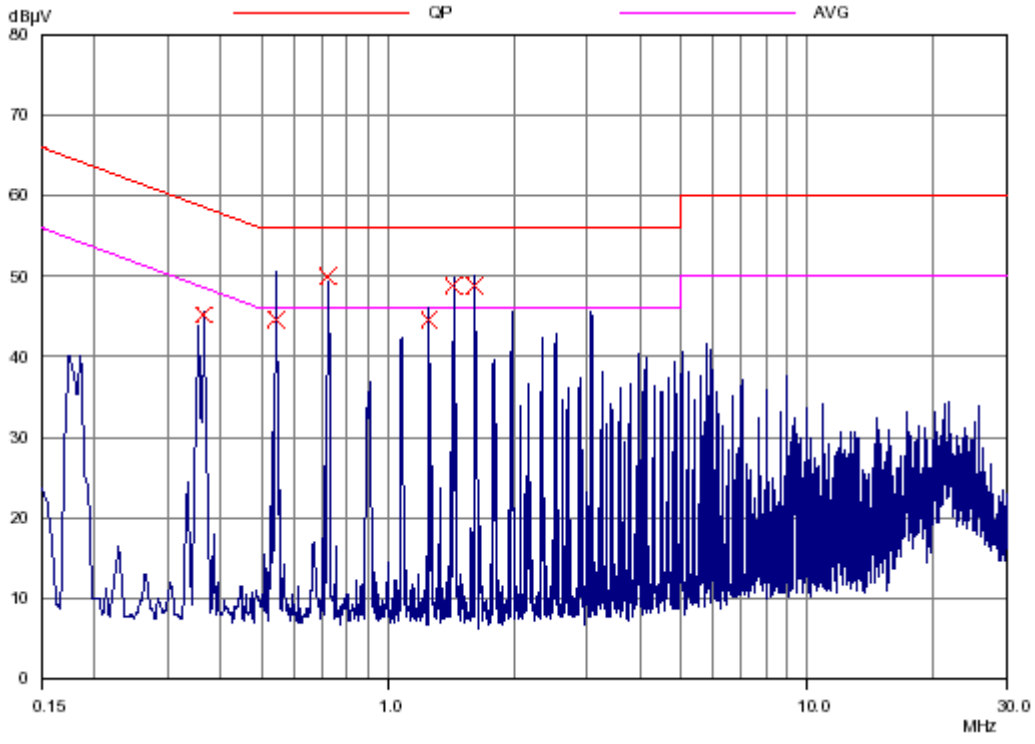


Mode: Operation Mode(802.11G) Line

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.364	45.2	41.2	0.3	45.5	41.5	58.6	48.6	-13.2	-7.2
0.544	44.6	38.9	0.3	44.9	39.2	56.0	46.0	-11.1	-6.8
0.720	49.8	41.2	0.3	50.1	41.5	56.0	46.0	-5.9	-4.5
1.257	44.6	40.4	0.4	45.0	40.8	56.0	46.0	-11.0	-5.2
1.437	48.8	41.4	0.4	49.2	41.8	56.0	46.0	-6.8	-4.2
1.617	48.8	41.8	0.4	49.2	42.2	56.0	46.0	-6.8	-3.8

Notes: 1) Place of measurement: EMC LAB. of the ETC
2) The EUT was placed 0.8m above reference ground plane.
3) The symbol of "----" means the Q.P. value is under the limit for AVG. so, the AVG. value doesn't need to be measured.
4) The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: Operation Mode(802.11G) Line



4.1.1.2 Conducted Emissions Test Setup Photos:

4.1.2 Radiated Emissions Test:

4.1.2.1 Radiated Emissions Test Data:

Operating Conditions of The EUT : Operation Mode(802.11B)

Test Date : Aug. 29, 2007

Test Specification	EN 55022:1998/A1:2000/A2:2003 (Class B)			
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Test Receiver	Rohde & Schwarz	ESCS 30	2006/12/23	2007/12/22
Amplifier	HP	8447D	2007/05/23	2008/05/21
Spectrum	Advantest	R3162	2007/01/20	2008/01/19
Bi-Log Antenna	Schaffner	CBL 6111	2006/12/22	2007/12/21
Climatic Condition	Ambient Temperature: 20 °C		Relative Humidity: 65 %RH	
Power Supply System	AC Power : 230 Vac 50 Hz			
Test Set-up	Table-top Equipment			

Emission Freq. (MHz)	Meter Reading (dB μV) HOR.	Meter Reading (dB μV) VERT.	CORR'd Factor (dB)	Result (dB μV/m) HOR.	Result (dB μV/m) VERT.	Limit (dBuV/m)	Margins (dB)
199.920	41.8	40.8	-13.3	28.5	27.5	30.0	-1.5
249.780	37.5	37.9	-9.2	28.3	28.7	37.0	-8.3
323.800	42.5	39.5	-8.1	34.4	31.4	37.0	-2.6
539.400	38.4	37.5	-3.5	34.9	34.0	37.0	-2.1
648.600	38.3	35.4	-3.1	35.2	32.3	37.0	-1.8
755.700	35.3	32.7	0.1	35.4	32.8	37.0	-1.6

Notes: 1) Place of Measurement: Measuring site of the ETC

2) Measurement Distance: 10 m

3) Height of table on which the EUT was placed: 0.8 m

4) Height of Receiving Antenna: 1 - 4 m

5) Remark "----" means that the emissions level is too low to be measured.

6) The expanded uncertainty of the radiated emission tests is 3.53 dB.

Operating Conditions of The EUT : Operation Mode(802.11G)

Test Date : Aug. 29, 2007

Test Specification	EN 55022:1998/A1:2000/A2:2003 (Class B)			
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Test Receiver	Rohde & Schwarz	ESCS 30	2006/12/23	2007/12/22
Amplifier	HP	8447D	2007/05/23	2008/05/21
Spectrum	Advantest	R3162	2007/01/20	2008/01/19
Bi-Log Antenna	Schaffner	CBL 6111	2006/12/22	2007/12/21
Climatic Condition	Ambient Temperature: 20 °C		Relative Humidity: 65 %RH	
Power Supply System	AC Power : 230 Vac 50 Hz			
Test Set-up	Table-top Equipment			

Emission **Freq.** (MHz)	**Meter Reading** (dB μ V)		CORR'd **Factor** (dB)	**Result** (dB μ V/m)		**Limit** (dBuV/m)	**Margins** (dB)
	HOR.	**VERT.**		**HOR.**	**VERT.**		
199.920	41.7	40.7	-13.3	28.4	27.4	30.0	-1.6
249.780	37.7	37.8	-9.2	28.5	28.6	37.0	-8.4
500.200	37.6	38.0	-4.2	33.4	33.8	37.0	-3.2
539.400	37.9	35.9	-3.5	34.4	32.4	37.0	-2.6
648.600	38.0	35.9	-3.1	34.9	32.8	37.0	-2.1
755.700	35.0	33.0	0.1	35.1	33.1	37.0	-1.9

Notes: 1) Place of Measurement: Measuring site of the ETC

2) Measurement Distance: 10 m

3) Height of table on which the EUT was placed: 0.8 m

4) Height of Receiving Antenna: 1 - 4 m

5) Remark "----" means that the emissions level is too low to be measured.

6) The expanded uncertainty of the radiated emission tests is 3.53 dB.

4.1.2.2 Radiated Emissions Test Setup Photos:

4.1.3 Harmonics Current Emissions Test :

4.1.3.1 Harmonics Current Emissions Test Data:

Operating Conditions of The EUT : Operation Mode

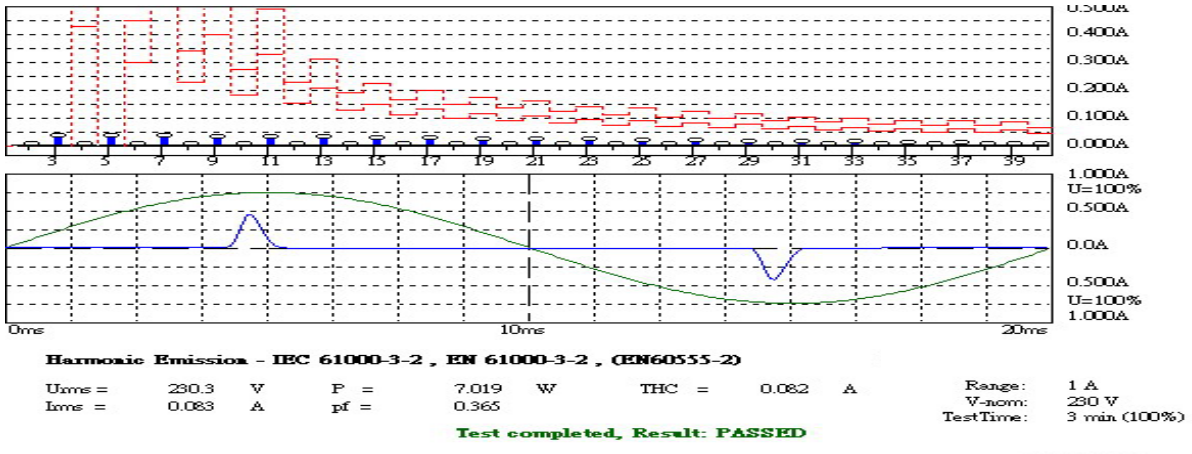
Test Date : Aug. 28, 2007

Test Specification	EN 61000-3-2:2000			
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Hormonics-1000	EMC-Partner	Hormonics-1000	2006/11/27	2007/11/26
Climatic Condition	Ambient Temperature: 22 °C		Relative Humidity: 49 %RH	
Power Supply System	AC Power : 230 Vac 50 Hz			
Test Set-up	Table-top Equipment			

Test data see the next pages.

ETC
Operator :
Unit :
Serialnumber :
Remarks :
Urms = 230.3V Freq = 49.984 Range: 1A
Irms = 0.083A Ipk = 0.479A cf = 5.737
P = 7.019W S = 19.23VA pf = 0.365
THDi = 93.20% THDu = 0.10% Class A
Test - Time : 3min -100%
Test completed, Result: PASSED

Order	Freq. [Hz]	Iavg [A]	Imax [A]	Limit [A]	Order	Freq. [Hz]	Iavg [A]	Imax [A]	Limit [A]
1	50	0.0321	0.0322		21	1050	0.0166	0.0168	0.1071
2	100	0	0.0005	1.08	22	1100	0	0.0011	0.0836
3	150	0.0294	0.0294	2.3	23	1150	0.0147	0.0149	0.0978
4	200	0	0.0005	0.43	24	1200	0	0.001	0.0767
5	250	0.0289	0.0289	1.14	25	1250	0.0128	0.0131	0.09
6	300	0	0.0006	0.3	26	1300	0	0.001	0.0708
7	350	0.0281	0.0281	0.77	27	1350	0.0111	0.0114	0.0833
8	400	0	0.0007	0.23	28	1400	0	0.0009	0.0657
9	450	0.027	0.027	0.4	29	1450	0.0095	0.0098	0.0776
10	500	0	0.0009	0.184	30	1500	0	0.0009	0.0613
11	550	0.0256	0.0257	0.33	31	1550	0.0081	0.0084	0.0726
12	600	0	0.0009	0.1533	32	1600	0	0.0008	0.0575
13	650	0.024	0.0242	0.21	33	1650	0.0069	0.0071	0.0682
14	700	0	0.001	0.1314	34	1700	0	0.0007	0.0541
15	750	0.0223	0.0225	0.15	35	1750	0.0059	0.0061	0.0643
16	800	0	0.001	0.115	36	1800	0	0.0006	0.0511
17	850	0.0204	0.0206	0.1324	37	1850	0.0036	0.0052	0.0608
18	900	0	0.0011	0.1022	38	1900	0	0.0005	0.0484
19	950	0.0185	0.0187	0.1184	39	1950	0	0.0046	0.0577
20	1000	0	0.0011	0.092	40	2000	0	0.0005	0.046



4.1.3.2 Harmonics Current Emissions Test Setup Photos :

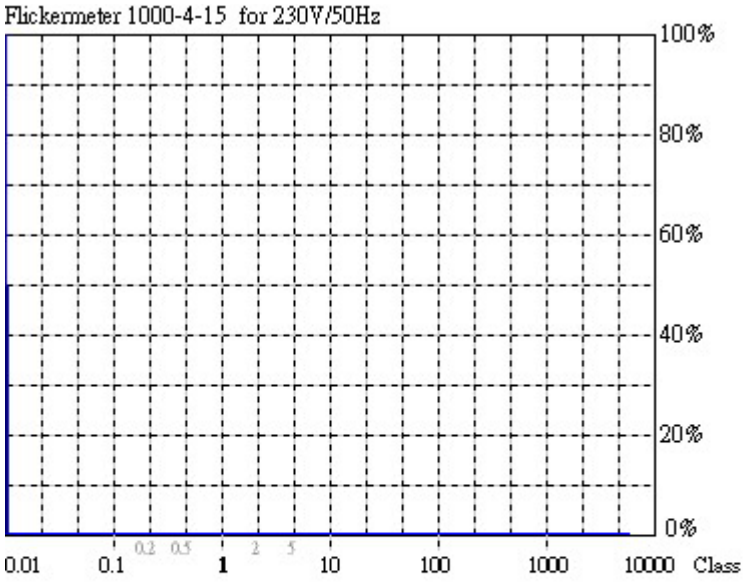
4.1.4 Voltage Fluctuations and Flicker Test:

4.1.4.1 Voltage Fluctuations and Flicker Test Data:

Test Date : Aug. 28, 2007

Test Specification	EN 61000-3-3:1995/A1:2001			
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Hormonics-1000	EMC-Partner	Hormonics-1000	2006/11/27	2007/11/26
Climatic Condition	Ambient Temperature: 22 °C		Relative Humidity: 49 %RH	
Power Supply System	AC Power : 230 Vac 50 Hz			
Test Set-up	Table-top Equipment			

Operating Conditions of The EUT : Operation Mode



Actual Flicker (Fli): 0.00

Short-term Flicker (Pst): 0.07
Limit (Pst): 1.00

Long-term Flicker (Plt): 0.07
Limit (Plt): 0.65

Maximum Relative Volt. Change (dmax): 0.00%
Limit (dmax): 4.00%

Relative Steady-state Voltage Change (dc): 0.00%
Limit (dc): 3.30%

Maximum Interval exceeding 3.30% (dt): 0.00ms
Limit (dt>Lim): 500ms

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)

Urms =	230.3	V	P =	7.019	W
Irms =	0.083	A	pf =	0.369	

Range: 1 A
V-nom: 230 V
TestTime: 10 min (100%)

Test completed, Result: PASSED

HAR-1000 EMC-Partner

4.1.4.2 Voltage Fluctuations and Flicker Test Setup Photos:

4.2 Immunity:

4.2.1 Electrostatic Discharge Immunity Test :

4.2.1.1 Electrostatic Discharge Immunity Test Data:

Operating Conditions of The EUT : Operation Mode

Test Date : Aug. 28, 2007

Test Specification	EN 61000-4-2:1995/A1:1998/A2:2001			
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Electrostatic Discharge Simulator	Noiseken	ESS2002	2006/08/28	2007/08/29
Climatic Condition	Ambient Temperature: 20 °C Relative Humidity: 50 %RH			
	Atmospheric Pressure : 990 mbar			
Power Supply System	AC Power : 230 Vac 50 Hz			
Test Set-up	Table-top Equipment			

Energy-Storage Capacitor : 150 pF	Contact Discharge Times : 25 times/each condition
Discharge Resistor : 330 Ω	Air Discharge Times : 10 times/each condition

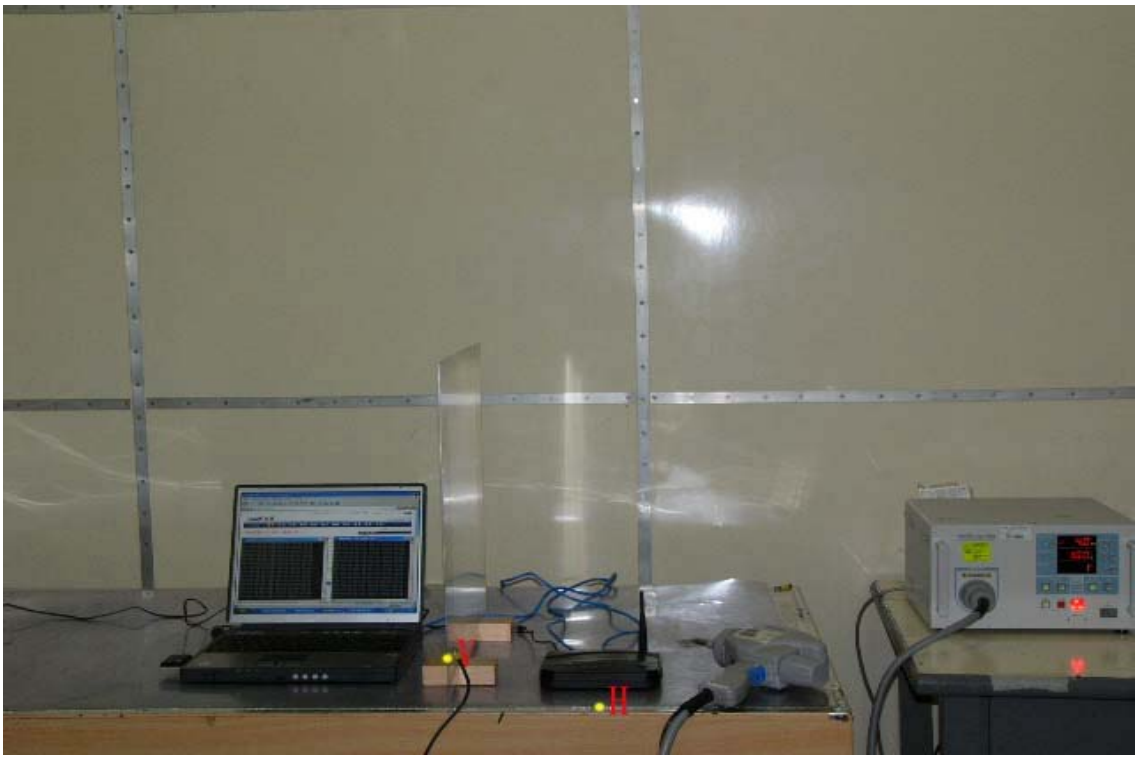
\ Discharge Mode	Contact Discharge								Air Discharge							
\ESD Voltage	2 kV		4 kV		___ kV		___ kV		2 kV		4 kV		8 kV		___ kV	
\Points\Result\Polarity	+	−	+	−	+	−	+	−	+	−	+	−	+	−	+	−
VCP	A	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---
HCP	A	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---
P_1~P_{10}	---	---	---	---	---	---	---	---	A	A	A	A	A	A	---	---
P_{11}	A	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---

Note : "---"means the test could not be carrier out.

" A " means the EUT function was correct during the test.

TEST POINTS

4.2.1.2 Electrostatic Discharge Immunity Test Setup Photos :



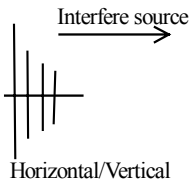
4.2.2 RF Radiated Fields Immunity Test :

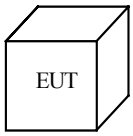
4.2.2.1 RF Radiated Fields Immunity Test Data:

Operating Conditions of The EUT : Operation Mode

Test Date : Aug. 28, 2007

Test Specification	EN 61000-4-3:2002			
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Antenna	AR	AT5080	N/A	N/A
Signal Generator	Aglient	E4421B	2007/07/04	2008/07/03
Amplifier	Ophir	5172	N/A	N/A
Amplifier	Ophir	5127	N/A	N/A
POWER METER	Booton	4232A	2007/07/04	2008/07/03
Climatic Condition	Ambient Temperature: 23 °C		Relative Humidity: 51 %RH	
Power Supply System	AC Power : 230 Vac 50 Hz			
Test Set-up	Table-top Equipment			





Frequency Range: 80 MHz ~ 2000 MHz		Field Strength: 3 V/m		Modulation (AM 1kHz 80%)	
Sweep Rate : ≤ 1.5×10-3 decades/s		Step Size : ≤ 1 % of preceding frequency value		Dwell time : 2.9 s	
Frequency Range (MHz)		Antenna-Polarization	Direction of Device	Test Result	
80-1000	1400-2000	Horizontal	front	A	
			rear	A	
			left	A	
			right	A	
80-1000	1400-2000	Vertical	front	A	
			rear	A	
			left	A	
			right	A	

Note : " A " means the EUT function was correct during the test.

4.2.2.2 RF Radiated Fields Immunity Test Setup Photos :

4.2.3 EFT/Burst Immunity Test :

4.2.3.1 EFT/Burst Immunity Test Data:

Operating Conditions of The EUT : Operation Mode

Test Date : Aug. 29, 2007

Test Specification	EN 61000-4-4:1995/A1:2001			
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
EMC Immunity Tester	EMC-PARTNER	TRANSIENT-1000	2006/11/22	2007/11/21
Climatic Condition	Ambient Temperature: 22 °C Relative Humidity: 49 %RH			
	Atmospheric Pressure : 990 mbar			
Power Supply System	AC Power : 100 Vac 60 Hz/ AC Power : 240 Vac 50 Hz			
Test Set-up	Table-top Equipment			

Pulse :5/50ns Burst :15m/300ms		Repetition Rate: 2.5kHz above 2.0kV 5kHz below and equal 2.0kV	Test time: 1 min/each condition
\Voltage\Polarity\		1.0 kV	
\Test Point\Mode\Result\		+	-
Power Line	L	A	A
	N	A	A
	L – N	A	A
\Voltage\Polarity\		0.5 kV	
\Test Point\Mode\Result\		+	-
RJ-45 (WAN)		A	A
RJ-45 (LAN)		A	A

Note : " A " means the EUT function was correct during the test.

4.2.3.2 EFT/Burst Immunity Test Setup Photos:

RJ-45(Clamp)

4.2.4 Surge Immunity Test :

4.2.4.1 Surge Immunity Test Data:

Operating Conditions of The EUT : Operation Mode

Test Date : Aug. 29, 2007

Test Specification	EN 61000-4-5:1995/A1:2001			
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
EMC Immunity Tester	EMC-PARTNER	TRANSIENT-1000	2006/11/22	2007/11/21
Climatic Condition	Ambient Temperature: 22 °C Relative Humidity: 49 %RH			
	Atmospheric Pressure : 990 mbar			
Power Supply System	AC Power : 100 Vac 60 Hz/ AC Power : 240 Vac 50 Hz			
Test Set-up	Table-top Equipment			

Waveform : 1.2/50μs(8/20μs)		Repetition rate : 60 sec	Times : 1 time/each condition				
\Voltage \Mode \Polarity \Result \Phase			**0°**	**90°**	**180°**	**270°**	**360°**
0.5 kV	L – N	+	A	A	A	A	A
		–	A	A	A	A	A
1.0 kV	L – N	+	A	A	A	A	A
		–	A	A	A	A	A

Note : " A " means the EUT function was correct during the test.

4.2.4.2 Surge Immunity Test Setup Photos :

4.2.5 RF Common Mode Immunity Test :

4.2.5.1 RF Common Mode Immunity Test Data:

Operating Conditions of The EUT : Operation Mode

Test Date : Aug. 29, 2007

Test Specification	EN 61000-4-6:1996/A1:2001			
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
CS TESTER	FRANKONIA	CIT-10	2007/08/16	2008/08/14
M2+3 CDN-KIT	FRANKONIA	M2+3	2007/08/16	2008/08/14
SCHAFFUER	CS-CLAMP	KEMZ801	2007/08/16	2008/08/14
Climatic Condition	Ambient Temperature: 23 °C Relative Humidity: 51 %RH			
	Atmospheric Pressure : 990 mbar			
Power Supply System	AC Power : 230 Vac 50 Hz			
Test Set-up	Table-top Equipment			

Frequency Range : 0.15 MHz ~ 80 MHz	Field Strength : 3 V/m	Modulation (AM 1kHz 80%)
Sweep Rate : ≤ 1.5×10^{-3} decades/s	Step Size : ≤ 1 % of preceding frequency value	Dwell Time : 2.9 s

Frequency Range (MHz)	Tested Line	Test Result
0.15~80	Power Line (M2)	A
0.15~80	RJ-45(WAN)	A
0.15~80	RJ-45(LAN)	A

Note : " A " means the EUT function was correct during the test.

4.2.5.2 RF Common Mode Immunity Test Setup Photos :

4.2.6 Voltage Interruptions and Voltage Dips Immunity Test :

4.2.6.1 Voltage Interruptions and Voltage Dips Immunity Test Data:

Operating Conditions of The EUT : Operation Mode

Test Date : Aug. 29, 2007

Test Specification	EN 61000-4-11:1994/A1:2001			
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
EMC Immunity Tester	EMC-PARTNER	TRANSIENT-1000	2006/11/22	2007/11/21
Climatic Condition	Ambient Temperature: 22 °C Relative Humidity: 49 %RH			
	Atmospheric Pressure : 990 mbar			
Power Supply System	AC Power : 230 Vac 50 Hz/			
Test Set-up	Table-top Equipment			

Test mode	Voltage dips	Durations (ms)	Interval(s)	Times	Phase	Result
Voltage interruptions	>95%	5000	10	12	$0^o/180^o$	B
Voltage dips in $\%U_T$	60%	100	10	12	$0^o/180^o$	A
	30%	10	10	12	$0^o/180^o$	A

Note : " A " means the EUT function was correct during the test.

" B " means the EUT's function was fail during the test. After test, the EUT operate as intended without operator intervention.

4.2.6.2 Voltage Interruptions and Voltage Dips Immunity Test Setup Photos :

CONSTRUCTION PHOTOS OF EUT

A. EUT

1. Top View of EUT

2. Front View of EUT

CONSTRUCTION PHOTOS OF EUT

3. Side View of EUT

4. Rear View of EUT

CONSTRUCTION PHOTOS OF EUT

5. Side View of EUT

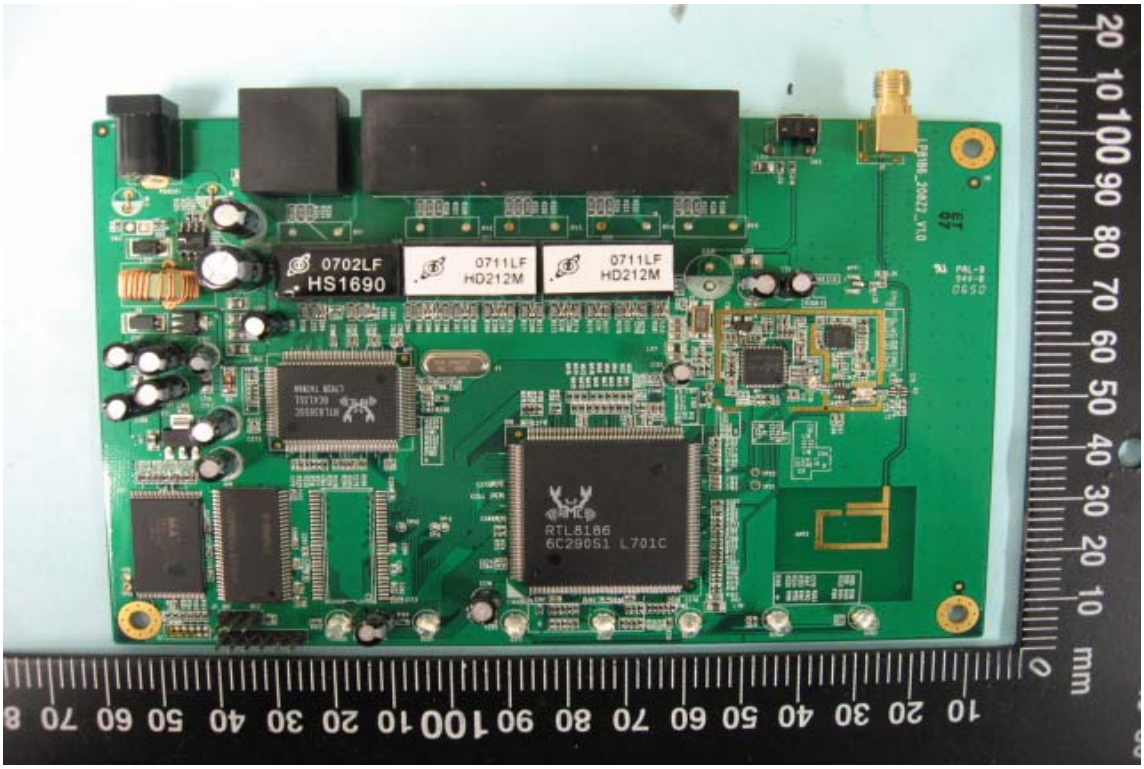
6. Bottom View of EUT

CONSTRUCTION PHOTOS OF EUT

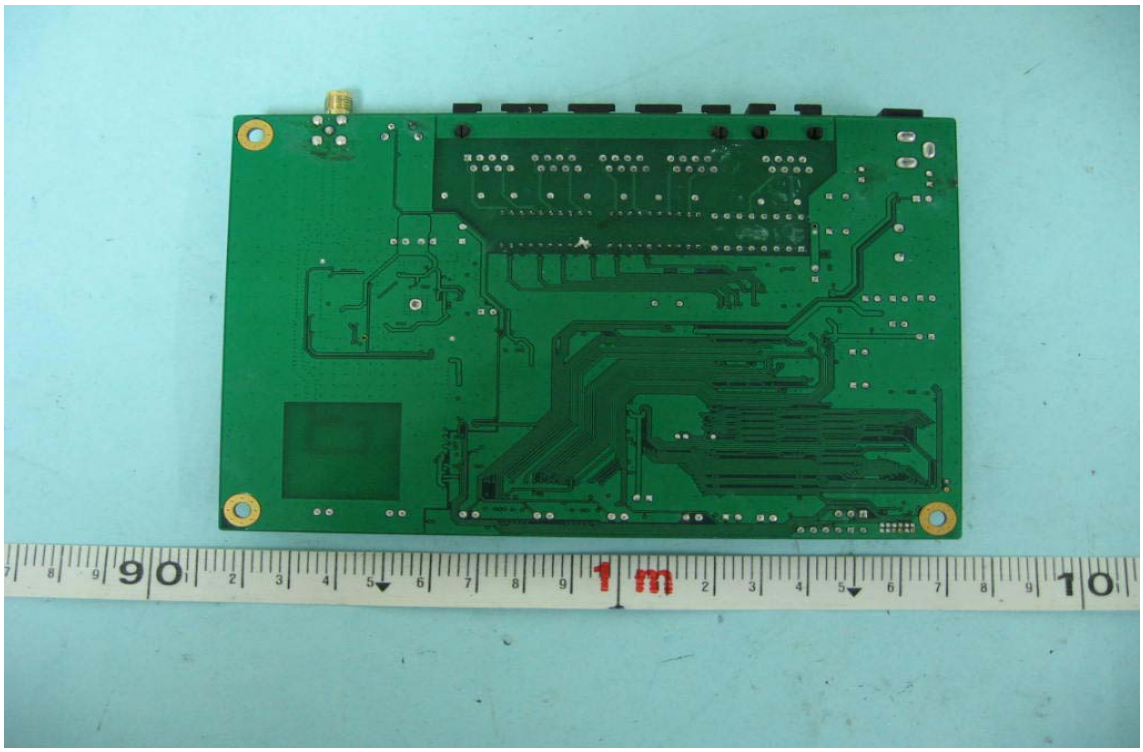
7. Internal View of EUT

CONSTRUCTION PHOTOS OF EUT

8. Component View of PCB



9. Solder View of PCB



CONSTRUCTION PHOTOS OF EUT

B. Adapter

1. Top View of Adapter

2. Side View of Adapter