



## Certificate of Conformity

The products

**EUT** : HDMI CAT5 Extender Series  
**Trade Name** : SHE  
**Model No.** : Transmitter: HE0XXXXT  
Receiver: HE0XXXXR

which produced by

**SMART HOME ENGINEERING CORP.**  
**10F, No.493, Chung-Cheng Rd., Hsin Tien City, Taipei County, 231, Taiwan**

Has been tested by Electronics Testing Center, Taiwan ETC  
And was found to comply with the EMC requirements of Directive 2004/108/EC on the basis of

**EN 55022:2006/A1:2007(Class B)**  
**EN 61000-3-2:2006/A1:2009/A2:2009**  
**EN 61000-3-3:2008**

**EN 55024:1998/A1:2001/A2:2003**

Signature

Will Yauo

Manager of EMC Testing Department II  
Electronics Testing Center, Taiwan



Report Number : 11-02-RBF-090

Date of Issue: Oct. 05, 2011

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# ***EMC***

## ***TEST REPORT***

Responsible Party : ***SMART HOME ENGINEERING CORP.***

Manufacturer : ***10F, No.493, Chung-Cheng Rd., Hsin Tien City,  
Taipei County, 231, Taiwan***

Description of Product : ***HDMI CAT5 Extender Series***

Trade Name : ***SHE***

Model No. : ***Transmitter: HE0XXXXT  
Receiver: HE0XXXXR***

Test Report File No. : ***11-02-RBF-090***

Date Test Item Received : ***Feb. 19, 2011***

Date Test Campaign Completed : ***Mar. 23, 2011***

Date of Issue : ***Oct. 05, 2011***

Test Performed by

ELECTRONICS TESTING CENTER (ETC) , TAIWAN

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## 1 TEST REPORT CERTIFICATION

Client : SMART HOME ENGINEERING CORP.

Address : 10F, No.493, Chung-Cheng Rd., Hsin Tien City, Taipei County, 231, Taiwan

Manufacturer : SMART HOME ENGINEERING CORP.

Address : 10F, No.493, Chung-Cheng Rd., Hsin Tien City, Taipei County, 231, Taiwan

EUT : HDMI CAT5 Extender Series

Trade name : SHE

Model No. : Transmitter: HE0XXXXT  
Receiver: HE0XXXXR

Serial Model : ----

Test specifications :

Emissions : EN 55022:2006/A1:2007 (Class B)  
EN 61000-3-2:2006/A1:2009/A2:2009  
EN 61000-3-3:2008

Immunity : IEC61000-4-2:2008  
IEC61000-4-3:2006/A1:2007/A2:2010  
IEC61000-4-4:2004/A1:2010  
IEC61000-4-5:2005  
IEC61000-4-6:2008  
IEC61000-4-8:2009  
IEC61000-4-11:2004

Regulations applied :

Emissions : EN 55022:2006/A1:2007 (Class B)  
EN 61000-3-2:2006/A1:2009/A2:2009  
EN 61000-3-3:2008

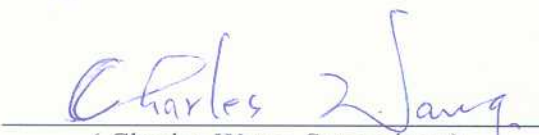
Immunity : EN 55024:1998/A1:2001/A2:2003

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 relieve the sellers from their legal and/or contractual obligations. Besides, the "Comment Issues" highlight above is important information for this test report. Responsible must read carefully about the description.


Test Engineer :

  
( Tien-Lu Liao, Engineer )

Check By :

  
( Charles Wang, Supervisor )

Approve &amp; Authorized :

  
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:

- ① ISO9002 : BSMI, TÜV Product Service
- ② ISO/IEC 17025 : BSMI, CNLA, DGT, NVLAP, CCIBLAC, UL, Compliance
- ③ EN45001 : TÜV-Rheinland, NEMKO, FIMKO, SGS
- ④ Filing : FCC, Industry Canada, VCCI
- ⑤ MRA : Australia, Hong Kong, New Zealand, Singapore, USA, Japan, Korea, China, APLAC through CNLA

## 2 GENERAL INFORMATIONS

### 2.1 Description of EUT

#### HDMI CAT5 Extender Series

### 2.2 Related Information of EUT

Size of EUT	: Transmitter: 90 x 50 x 26 mm Receiver:90 x 50 x 26 mm
Power Supply	: Adaptor Model No.: PHSWF0502000E I/P: 100-240Vac 50/60Hz ,0.5A; O/P: DC 5V, 2A
Highest working Frequency	: > 108MHz
HDMI Cable	: <input type="checkbox"/> Nonshielded <input checked="" type="checkbox"/> Shielded <input type="checkbox"/> None, Length: <u>1.53</u> m*2
AC Power Cord	: <input checked="" type="checkbox"/> Nonshielded <input type="checkbox"/> Shielded <input type="checkbox"/> None, Length: <u>1.47</u> m*2
RJ-45 Cable	: <input checked="" type="checkbox"/> Nonshielded <input type="checkbox"/> Shielded <input type="checkbox"/> None, Length: <u>1.8</u> m

\* For more detailed features, please refer to User's Manual.

### 2.3 Tested Configuration

The EUT connected with other devices.

Following peripheral devices and interface cables were connected during the measurement:

Device	Manufacture	Model	Description
HDMI CAT5 Extender Series	SMART HOME ENGINEERING CORP.	HE0XXXX.	1.53m*2 Shielded HDMI Cable 1.47m*2 Non-Shielded AV Cable*2 1.8m Non-Shielded RJ-45 Cable
DVD Player	Pioneer	DV-410V	1.6m Unshielded AC Power Cord
LCD TV	TECO	TL-2096RV	1.8m Unshielded AC Power Cord

Remark “\*” means equipment under test.

## 2.4 Deviation Record

No deviations were required.

---

## 2.5 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Uncertainty
Conducted emissions	150kHz ~ 30MHz	2.45dB(Mains)
Conducted emission at telecommunication ports	150kHz ~ 30MHz	2.22 dB(Voltage)
		2.88 dB(Current)
Radiated emissions	30MHz ~ 1GHz	3.90dB(30MHz < f < 300MHz)
		3.95 dB(300MHz < f < 1GHz)
	Above 1GHz	4.42 dB(1GHz < f < 18GHz)

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 2.6 Description of Test Mode

The EUT is designed with AC power supply of 100-240Vac, 50-60Hz or radiated emission evaluation, 230Vac/50Hz had been covered during the pre-test. The worst radiated emission data was found at 230Vac/50Hz and recorded in the applied test report.

The EUT has been pre-tested under following modes, and mode 1 are the worst case for final emission test.

Test Mode	Test condition
1	Data Link operation

## 2.7 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 (Transmitter)-Neutral**

Minimum EMI Margin(QP) to the limit: -31.12 dB at 0.2521 MHz

**[X]–PASS (Transmitter)-Line**

Minimum EMI Margin(QP) to the limit: -27.80 dB at 6.3520 MHz

**[X]–PASS (Receiver)-Neutral**

Minimum EMI Margin(QP) to the limit: -25.93 dB at 0.1656 MHz

**[X]–PASS (Receiver)-Line**

Minimum EMI Margin(QP) to the limit: -24.19 dB at 6.1860 MHz

##### 3.1.2 Conducted Telecommunication ports

Not Applicable

##### 3.1.3 Radiated Emissions

**[X] – PASS (Transmitter -HOR)**

Minimum EMI Margin to the limit: -4.50 dB at 249.7800 MHz

**[X] – PASS (Transmitter -VER)**

Minimum EMI Margin to the limit: -3.00 dB at 56.5600 MHz

**[X] – PASS (Receiver -HOR)**

Minimum EMI Margin to the limit: -5.20 dB at 500.2000 MHz

**[X] – PASS (Receiver -VER)**

Minimum EMI Margin to the limit: -4.30 dB at 65.1000 MHz

**3.1.4 Harmonics Current Emissions****[X] –PASS**

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

**3.1.5 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 A :** The EUT continued to operate as intended. No degradation of performance or loss of function was allowed below a performance level specified by the manufacturer, when the EUT was used as intended.

**Performance criterion B :** The EUT continued to operate as intended after the test. No degradation of performance or loss of function was allowed below a performance level specified by the manufacturer, when the EUT was used as intended. During the test, degradation of performance was however allowed. No change of actual operating state or stored data was allowed.

**Performance criterion C :** Temporary loss of function was allowed, provided the function was self recoverable or could be restored by the operation of the controls.

### 3.2.2 Electrostatic Discharge Immunity (Transmitter/Receiver)

#### Requirement :Criterion B (or better)

- |  |                         |
|--|-------------------------|
| <input type="checkbox"/> - No Degradation of Function        | - Satisfies Criterion A |
| <input checked="" type="checkbox"/> - Distortion of Function | - Satisfies Criterion B |
| <input type="checkbox"/> - Error of Function                 | - Satisfies Criterion C |

### 3.2.3 RF Radiated Fields Immunity (Transmitter/Receiver)

#### Requirement :Criterion A

- |  |                         |
|--|-------------------------|
| <input checked="" type="checkbox"/> - No Degradation of Function | - Satisfies Criterion A |
| <input type="checkbox"/> - Distortion of Function                | - Satisfies Criterion B |
| <input type="checkbox"/> - Error of Function                     | - Satisfies Criterion C |

## 3.2.4 EFT/Burst Immunity (Transmitter/Receiver)

**Requirement :Criterion B(or better)**

- |  |                         |
|--|-------------------------|
| <input type="checkbox"/> - No Degradation of Function        | - Satisfies Criterion A |
| <input checked="" type="checkbox"/> - Distortion of Function | - Satisfies Criterion B |
| <input type="checkbox"/> - Error of Function                 | - Satisfies Criterion C |

## 3.2.5 Surge Immunity (Transmitter/Receiver)

**Requirement :Criterion B (or better)**

- |  |                         |
|--|-------------------------|
| <input checked="" type="checkbox"/> - No Degradation of Function | - Satisfies Criterion A |
| <input type="checkbox"/> - Distortion of Function                | - Satisfies Criterion B |
| <input type="checkbox"/> - Error of Function                     | - Satisfies Criterion C |

## 3.2.6 RF Common Mode Immunity(Transmitter/Receiver)

**Requirement :Criterion A**

- |  |                         |
|--|-------------------------|
| <input checked="" type="checkbox"/> - No Degradation of Function | - Satisfies Criterion A |
| <input type="checkbox"/> - Distortion of Function                | - Satisfies Criterion B |
| <input type="checkbox"/> - Error of Function                     | - Satisfies Criterion C |

## 3.2.7 Power Frequency Magnetic Field Immunity (Transmitter/Receiver)

**Requirement :Criterion A**

- |  |                         |
|--|-------------------------|
| <input checked="" type="checkbox"/> - No Degradation of Function | - Satisfies Criterion A |
| <input type="checkbox"/> - Distortion of Function                | - Satisfies Criterion B |
| <input type="checkbox"/> - Error of Function                     | - Satisfies Criterion C |

## 3.2.8 Voltage Interruptions and Voltage Dips Immunity (Transmitter/Receiver)

**Requirement :Criterion C (or better)**

- |  |                         |
|--|-------------------------|
| <input type="checkbox"/> - No Degradation of Function        | - Satisfies Criterion A |
| <input checked="" type="checkbox"/> - Distortion of Function | - Satisfies Criterion B |
| <input type="checkbox"/> - Error of Function                 | - Satisfies Criterion C |

## 4 TEST DATA & RELATED INFORMATIONS

### 4.1 Emissions

#### 4.1.1 Conducted Emissions Test

##### 4.1.1.1 Limit of Conducted Emission Measurement

Frequency (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15-0.5	79	66	66-56	56-46
0.5-5	73	60	56	46
5-30	73	60	60	50

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

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

##### 4.1.1.2 Test Instruments

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	ESCI	2011/02/03	2012/05/02
LISN	EMCO	3625/2	2010/02/08	2012/02/28
LISN	Rohde & Schwarz	ESH2-Z5	2010/07/16	2011/08/09
Current Probe	Rohde & Schwarz	ESH2-Z1	2010/10/01	2011/10/26
ISN	FCC	FCC-TLISN-T2-02	2010/10/08	2011/10/07
ISN	RCC	FCC-TLISN-T4-02	2010/10/08	2011/10/07
ISN	RCC	FCC-TLISN-T8-02	2010/10/08	2011/10/07
EMI Test Receiver	Rohde & Schwarz	ESCI	2011/02/03	2012/05/02

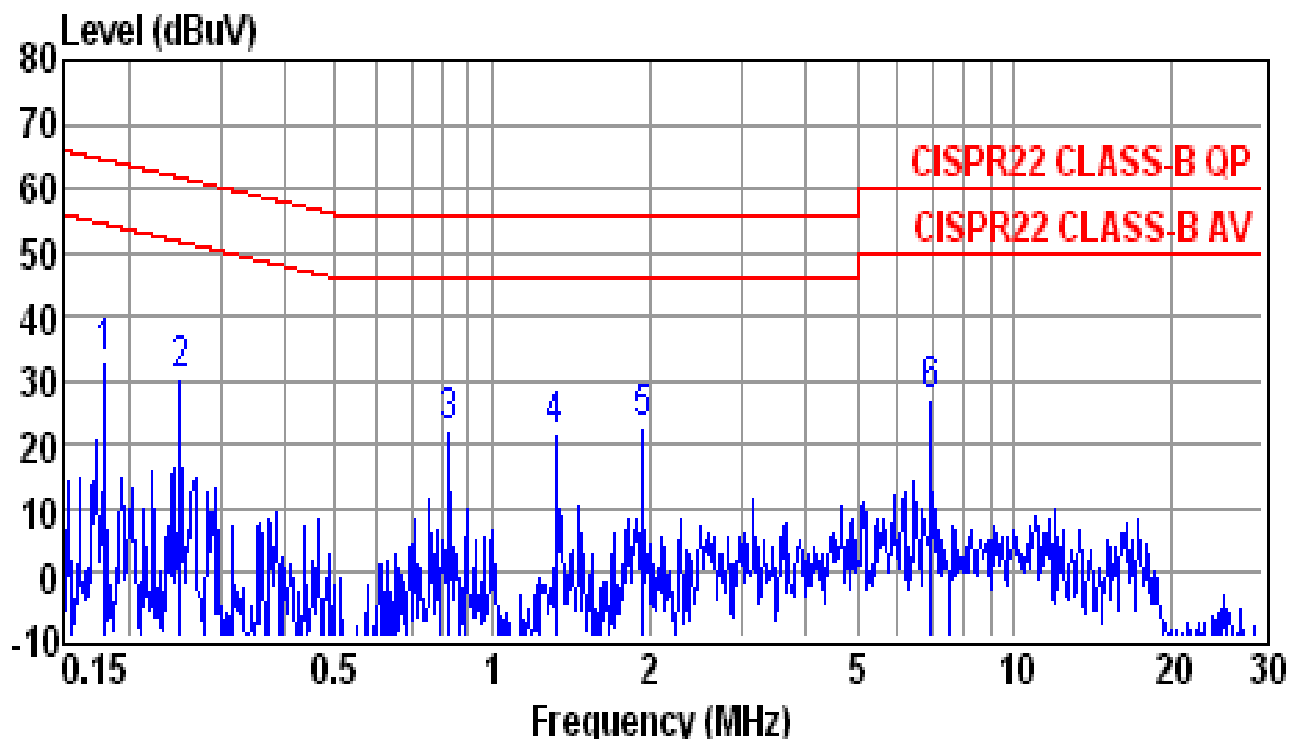
## 4.1.1.3 Conducted Emissions Test Data

1. Operating Conditions of The EUT : Transmitter

Test Date : Mar. 21, 2011

Test Specification	EN 55022:2006/A1:2007 (Class B)	
Climatic Condition	Ambient Temperature: <u>20</u> °C	Relative Humidity: <u>56</u> %RH
Power Supply System	AC Power : <u>230</u> Vac <u>50</u> Hz	
Test Set-up	Table-top Equipment	

**Test data see the next pages.**

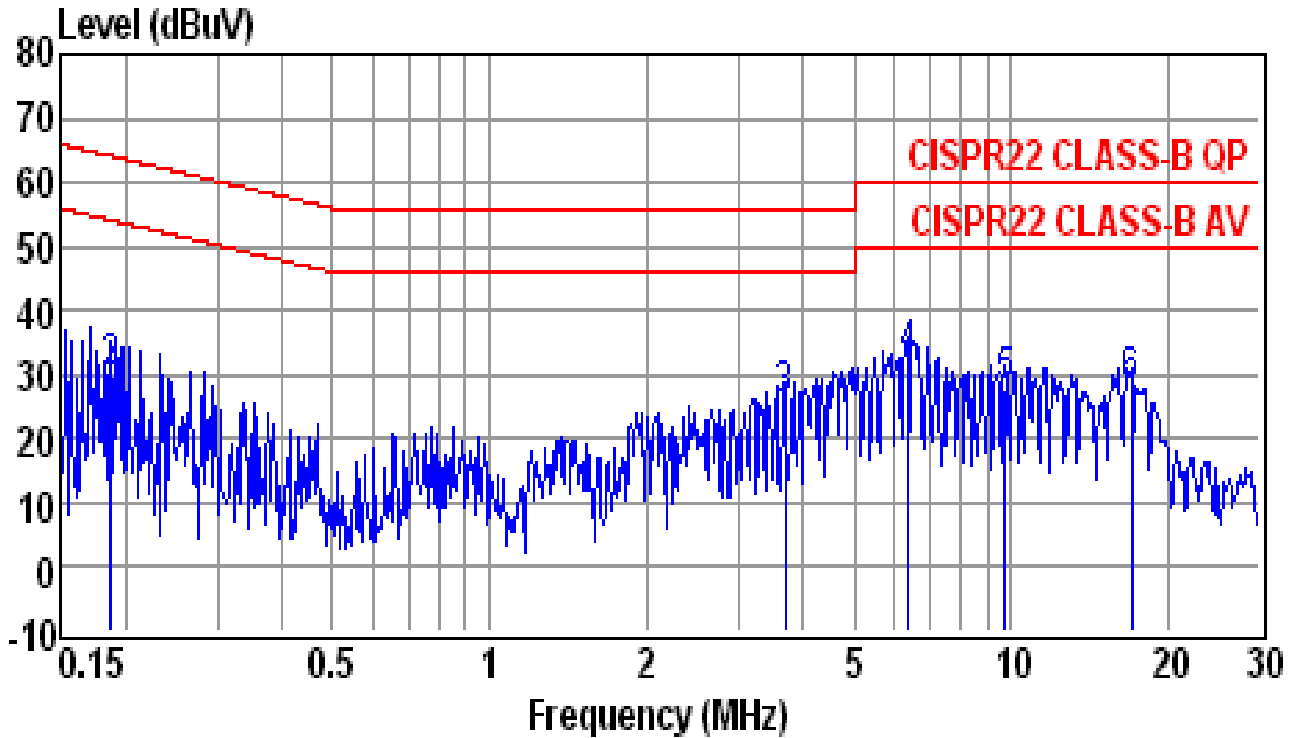


Site	: conducted #1	Date	: 03-21-2011
Condition	: CISPR22 CLASS-B QP	LISN	: NEUTRAL
Tem / Hum	: 20 / 56%	Test Mode	:
EUT	: 11-02-RBF-090	Power Rating	: 230VAC/50Hz
Memo	:	Memo	:

Freq (MHz)	Reading (dBUV)	Factor (dB)	Emission Level (dBUV)	Limit Line (dBUV)	Over Limit (dB)	Remark
0.1806	32.37	0.50	32.87	64.46	-31.59	QP
0.2521	30.07	0.50	30.57	61.69	-31.12	QP
0.8261	21.55	0.55	22.10	56.00	-33.90	QP
1.3240	21.01	0.57	21.58	56.00	-34.42	QP
1.9390	22.02	0.60	22.62	56.00	-33.38	QP
6.9140	26.23	0.79	27.02	60.00	-32.98	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss



Site	: conducted #1	Date	: 03-21-2011
Condition	: CISPR22 CLASS-B QP	LISN	: LINE
Tem / Hum	: 20 / 56%	Test Mode	:
EUT	: 11-02-RBF-090	Power Rating	: 230VAC/50Hz
Memo	:	Memo	:

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.1500	34.85	0.49	35.34	66.00	-30.66	QP
0.1874	29.56	0.50	30.06	64.15	-34.09	QP
3.7000	25.14	0.68	25.82	56.00	-30.18	QP
6.3520	31.43	0.77	32.20	60.00	-27.80	QP
9.7570	27.11	0.85	27.96	60.00	-32.04	QP
17.0180	26.51	1.03	27.54	60.00	-32.46	QP

Note :

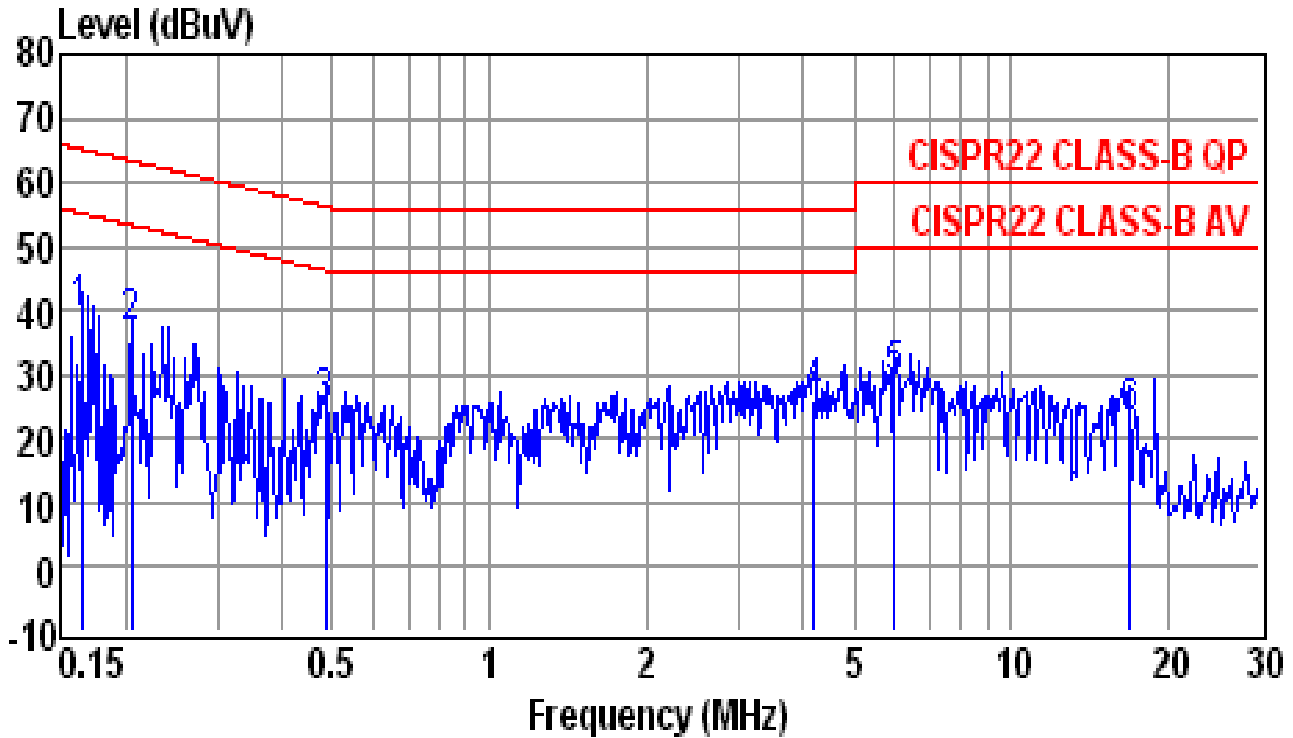
1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss

2. Operating Conditions of The EUT : Receiver

Test Date : Mar. 21, 2011

Test Specification	EN 55022:2006/A1:2007 (Class B)
Climatic Condition	Ambient Temperature: <u>20</u> °C                      Relative Humidity: <u>56</u> %RH
Power Supply System	AC Power : <u>230</u> Vac <u>50</u> Hz
Test Set-up	Table-top Equipment

**Test data see the next pages.**

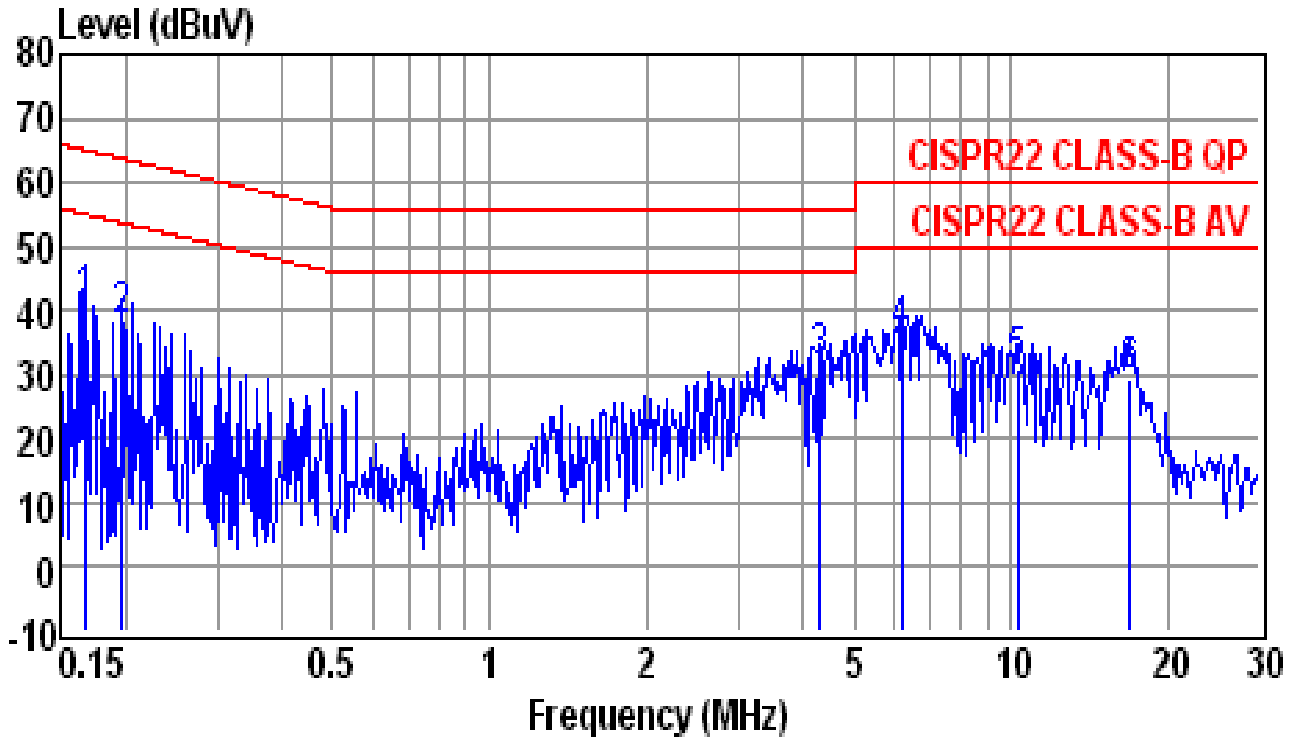


Site	: conducted #1	Date	: 03-21-2011
Condition	: CISPR22 CLASS-B QP	LISN	: NEUTRAL
Tem / Hum	: 20 / 56%	Test Mode	:
EUT	: 11-02-RBF-090	Power Rating	: 230VAC/50Hz
Memo	:	Memo	:

Freq (MHz)	Reading (dBUV)	Factor (dB)	Emission Level (dBUV)	Limit Line (dBUV)	Over Limit (dB)	Remark
0.1650	38.78	0.50	39.28	65.21	-25.93	QP
0.2051	36.28	0.50	36.78	63.40	-26.62	QP
0.4838	24.10	0.53	24.63	56.27	-31.64	QP
4.2020	25.47	0.70	26.17	56.00	-29.83	QP
5.9930	27.80	0.76	28.56	60.00	-31.44	QP
16.9280	21.79	1.03	22.82	60.00	-37.18	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss



Site	: conducted #1	Date	: 03-21-2011
Condition	: CISPR22 CLASS-B QP	LISN	: LINE
Tem / Hum	: 20 / 56%	Test Mode	:
EUT	: 11-02-RBF-090	Power Rating	: 230VAC/50Hz
Memo	:	Memo	:

Freq (MHz)	Reading (dBUV)	Factor (dB)	Emission Level (dBUV)	Limit Line (dBUV)	Over Limit (dB)	Remark
0.1677	40.30	0.49	40.79	65.08	-24.29	QP
0.1965	37.46	0.50	37.96	63.76	-25.80	QP
4.2920	30.76	0.70	31.46	56.00	-24.54	QP
6.1860	35.05	0.76	35.81	60.00	-24.19	QP
10.2880	30.33	0.86	31.19	60.00	-28.81	QP
16.9280	28.53	1.03	29.56	60.00	-30.44	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss

## 4.1.1.4 Conducted Emissions Test Setup Photos

(Mode: Transmitter)



(Mode: Receiver)



4.1.2 Conducted Telecommunication ports Test

4.1.2.1 Conducted Telecommunication ports Test Data

**Not Applicable**

## 4.1.3 Radiated Emissions Test

## 4.1.3.1 Limit of Radiated Emission Measurement.

Frequency (MHz)	Class A (at 10m)	Class B (at 10m)
	Quasi-peak (dBuV/m)	Quasi-peak (dBuV/m)
30-230	40	30
230-100	47	37

Frequency (MHz)	Class A (at 3m)		Class B (at 3m)	
	Peak (dBuV/m)	Average (dBuV/m)	Peak (dBuV/m)	Average (dBuV/m)
1000-3000	76	56	70	50
3000-6000	80	60	74	54

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

2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

**Frequency range of radiated measurement**

Highest frequency generated or used within the EUT or on which the WUT operates or tunes (MHz)	Upper frequency of measurement rang (MHz)
Below 108	1000
108-500	2000
500-1000	5000
Above 1000	Up to 5 times of the highest frequency to 6 GHz, whichever is less

## 4.1.3.2 Test Instruments

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Test Receiver	Rohde & Schwarz	ESVS30	2010/05/14	2011/05/13
Amplifier	HP	8447D	2010/10/08	2011/10/07
Spectrum	Advantest	R3162	2010/03/01	2012/03/01
Bi-Log Antenna	Schaffner	CBL 6111	2010/06/07	2011/06/05
Test Receiver	Rohde & Schwarz	ESU40	2010/08/05	2011/08/04
Amplifier	HP	8449B	2010/12/29	2011/12/28
Horn Antenna	EMCO	3115	2010/05/30	2011/05/28

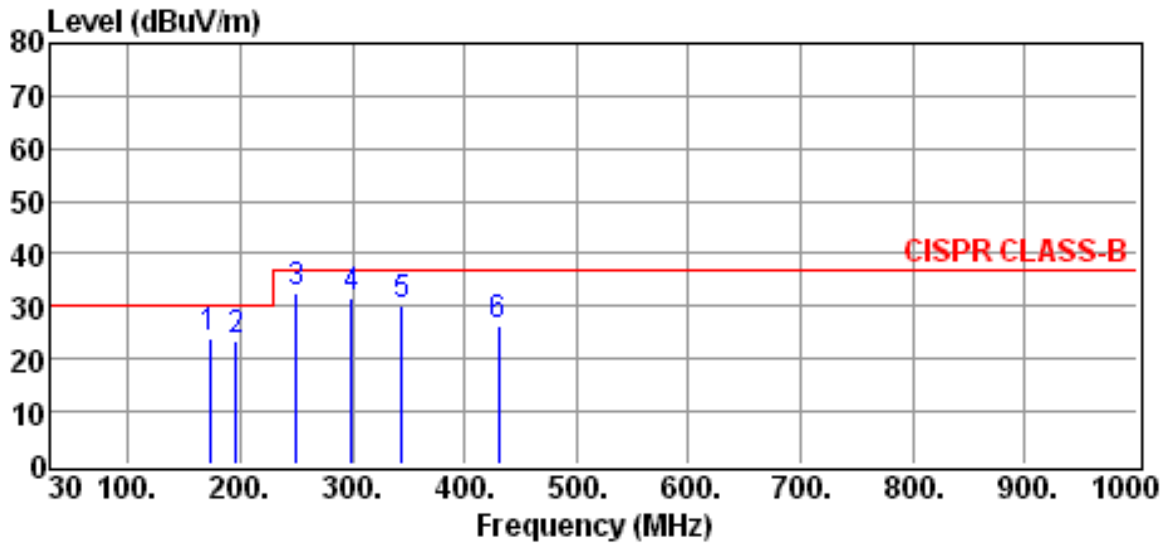
## 4.1.3.3 Radiated Emissions Test Data

1. Operating Conditions of The EUT : Transmitter

Test Date : Mar. 21, 2011

Test Specification	EN 55022:2006/A1:2007 (Class B)
Climatic Condition	Ambient Temperature: <u>18</u> °C      Relative Humidity: <u>65</u> %RH
Power Supply System	AC Power : <u>230</u> Vac <u>50</u> Hz
Test Set-up	Table-top Equipment

**Test data see the next pages.**

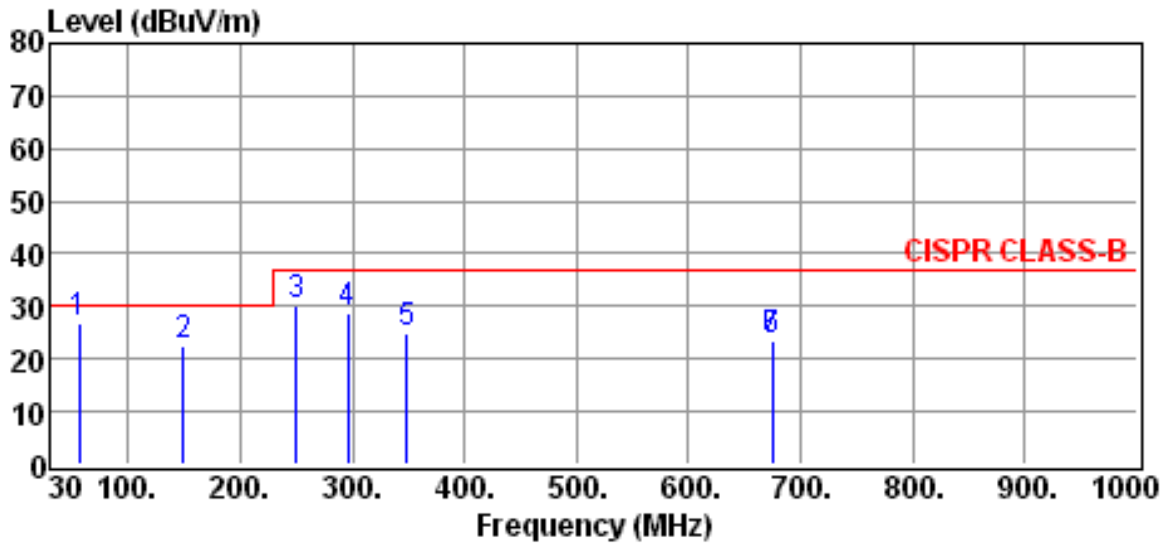


Site	:Open site #2	Date	:2011-03-21
EUT	:TX	Ant. Pol.	:HORIZONTAL
Model	:Operation	Detector	:
Power Rating		:230VAC/50HZ	Engineer :
Limit	:CISPR CLASS-B	Temp.	:18 °C
Memo	:	Humi.	:65 %

Freq MHz	Reading dBUV	Correction Factor dB	Result dBUV/m	Limits dBUV/m	Over limit dB
172.5500	11.86	12.24	24.10	30.00	-5.90
196.3900	11.58	12.02	23.60	30.00	-6.40
249.7800	16.33	16.17	32.50	37.00	-4.50
299.3700	14.36	17.04	31.40	37.00	-5.60
344.1000	11.78	18.22	30.00	37.00	-7.00
430.2000	5.12	21.18	26.30	37.00	-10.70

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result



Site	:Open site #2	Date	:2011-03-21
EUT	:TX	Ant. Pol.	:VERTICAL
Model	:Operation	Detector	:
Power Rating		:230VAC/50HZ	Engineer :
Limit	:CISPR CLASS-B	Temp.	:18 °C
Memo	:	Humi.	:65 %

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB
56.5600	18.61	8.39	27.00	30.00	-3.00
149.7800	9.12	13.28	22.40	30.00	-7.60
249.7800	14.03	16.17	30.20	37.00	-6.80
296.3900	11.74	16.96	28.70	37.00	-8.30
349.0000	6.65	18.35	25.00	37.00	-12.00
674.5000	-3.08	26.58	23.50	37.00	-13.50
674.5000	-3.08	26.58	23.50	37.00	-13.50

Note :

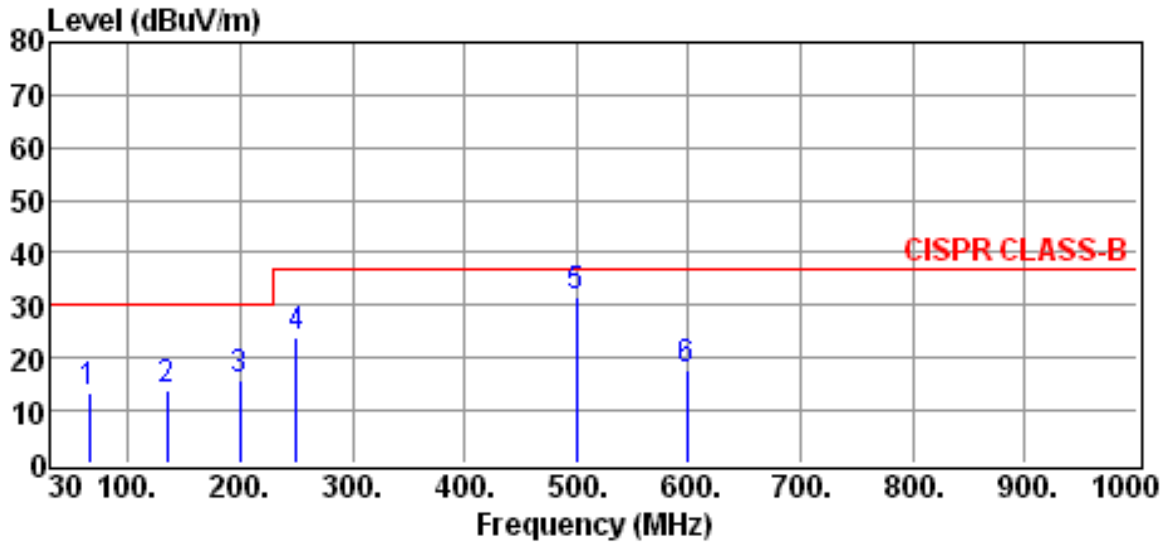
1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result

2. Operating Conditions of The EUT : Receiver

Test Date : Mar. 21, 2011

Test Specification	EN 55022:2006/A1:2007 (Class B)
Climatic Condition	Ambient Temperature: <u>18</u> °C                      Relative Humidity: <u>65</u> %RH
Power Supply System	AC Power : <u>230</u> Vac <u>50</u> Hz
Test Set-up	Table-top Equipment

**Test data see the next pages.**

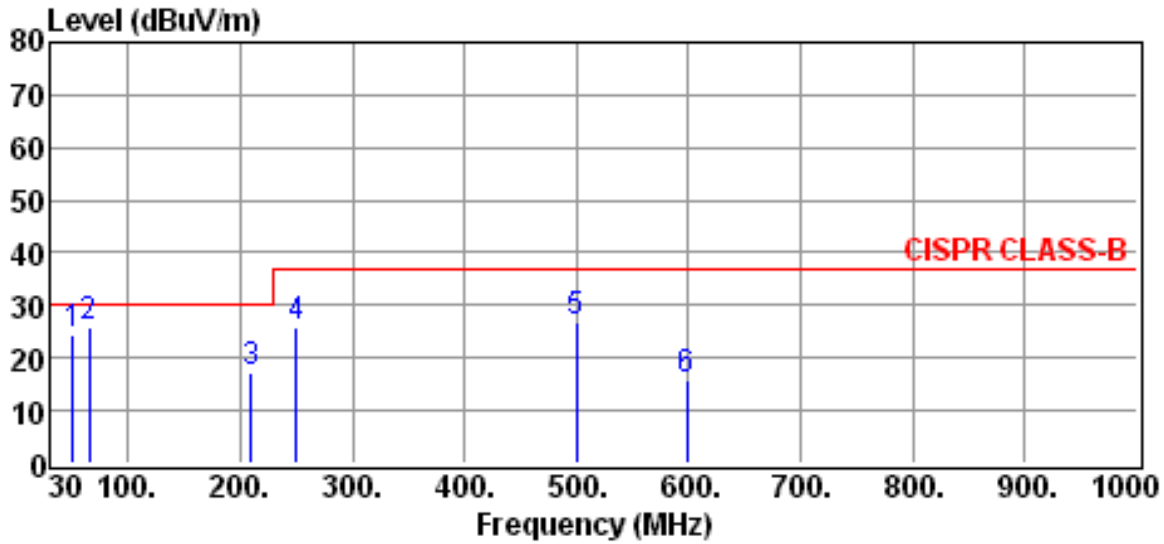


Site	:Open site #2	Date	:2011-03-21
EUT	:RX	Ant. Pol.	:HORIZONTAL
Model	:Operation	Detector	:
Power Rating		:230VAC/50HZ	Engineer :
Limit	:CISPR CLASS-B	Temp.	:18 °C
Memo	:	Humi.	:65 %

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB
65.1000	5.20	8.20	13.40	30.00	-16.60
134.4900	-0.03	13.83	13.80	30.00	-16.20
200.1000	3.53	12.17	15.70	30.00	-14.30
250.0500	7.73	16.17	23.90	37.00	-13.10
500.2000	8.80	23.00	31.80	37.00	-5.20
598.9000	-7.44	25.24	17.80	37.00	-19.20

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result



Site :Open site #2 Date :2011-03-21  
 EUT :RX Ant. Pol. :VERTICAL  
 Model :Operation Detector :  
 Power Rating :230VAC/50HZ Engineer :  
 Limit :CISPR CLASS-B Temp. :18 °C  
 Memo : Humi. :65 %

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB
50.2500	15.23	9.37	24.60	30.00	-5.40
65.1000	17.50	8.20	25.70	30.00	-4.30
209.8200	4.95	12.25	17.20	30.00	-12.80
250.0500	9.83	16.17	26.00	37.00	-11.00
500.2000	3.60	23.00	26.60	37.00	-10.40
598.9000	-9.24	25.24	16.00	37.00	-21.00

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result

## 4.1.3.4 Radiated Emissions Test Setup Photos

(Mode: Transmitter)



(Mode: Receiver)



## 4.1.4 Harmonics Current Emissions Test

## 4.1.4.1 Test Instruments

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Harmonics-1000	EMC-Partner	Harmonics-1000	2010/12/17	2011/12/16

## 4.1.4.1 Harmonics Current Emissions Test Data

1. Operating Conditions of The EUT : Transmitter

Test Date : Mar. 21, 2011

Test Specification	EN 61000-3-2:2006
Climatic Condition	Ambient Temperature: <u>20</u> °C      Relative Humidity: <u>49</u> %RH
Power Supply System	AC Power : <u>230</u> Vac <u>50</u> Hz
Test Set-up	Table-top Equipment

**Test data see the next pages.**

Urms = 229.9V Freq = 49.987 Range: 0.25 A

Irms = 0.030A Ipk = 0.163A cf = 5.48

P = 2.908W S = 6.848VA pf = 0.425

THDi = 91.50% 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	0.0126	0.0126		21	1050	0.0058	0.0058	0.1071
2	100	0	0.0007	1.08	22	1100	0	0.0006	0.0836
3	150	0.0102	0.0103	2.3	23	1150	0.0051	0.0051	0.0978
4	200	0	0.0007	0.43	24	1200	0	0.0005	0.0767
5	250	0.0101	0.0101	1.14	25	1250	0	0.0044	0.09
6	300	0	0.0007	0.3	26	1300	0	0.0005	0.0708
7	350	0.0098	0.0098	0.77	27	1350	0	0.0038	0.0833
8	400	0	0.0007	0.23	28	1400	0	0.0005	0.0657
9	450	0.0094	0.0094	0.4	29	1450	0	0.0031	0.0776
10	500	0	0.0007	0.184	30	1500	0	0.0005	0.0613
11	550	0.009	0.009	0.33	31	1550	0	0.0026	0.0726
12	600	0	0.0007	0.1533	32	1600	0	0.0005	0.0575
13	650	0.0084	0.0085	0.21	33	1650	0	0.0021	0.0682
14	700	0	0.0007	0.1314	34	1700	0	0.0004	0.0541
15	750	0.0078	0.0078	0.15	35	1750	0	0.0016	0.0643
16	800	0	0.0006	0.115	36	1800	0	0.0004	0.0511
17	850	0.0072	0.0072	0.1324	37	1850	0	0.0013	0.0608
18	900	0	0.0006	0.1022	38	1900	0	0.0004	0.0484
19	950	0.0065	0.0065	0.1184	39	1950	0	0.0011	0.0577
20	1000	0	0.0006	0.092	40	2000	0	0.0004	0.046

2. Operating Conditions of The EUT : Receiver

Test Date : Mar. 21, 2011

Test Specification	EN 61000-3-2:2006
Climatic Condition	Ambient Temperature: <u>20</u> °C                      Relative Humidity: <u>49</u> %RH
Power Supply System	AC Power : <u>230</u> Vac <u>50</u> Hz
Test Set-up	Table-top Equipment

**Test data see the next pages.**

Urms = 229.9V Freq = 50 Range: 0.5 A

Irms = 0.054A Ipk = 0.263A cf = 4.825

P = 5.412W S = 12.52VA pf = 0.432

THDi = 90.80% THDu = 0.10% Class A

Test - Time : 3min -100%

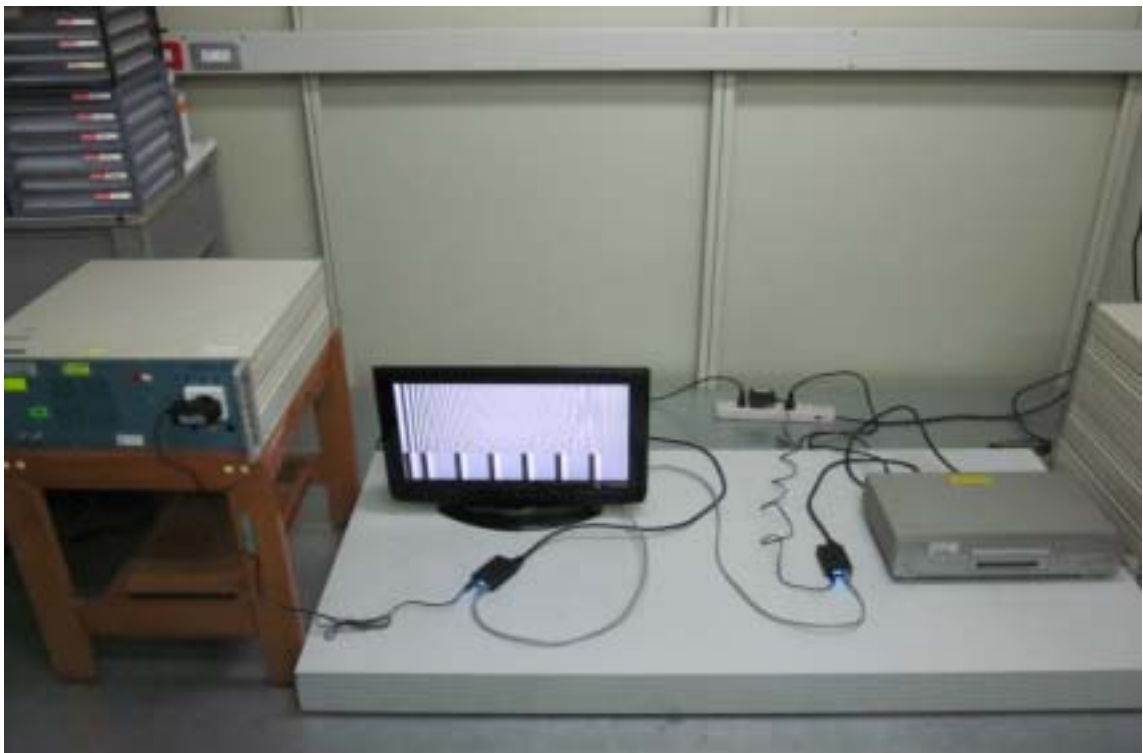
Test completed, Result: PASSED

Order	Freq. [Hz]	Iavg [A]	Imax [A]	Limit [A]	Order	Freq. [Hz]	Iavg [A]	Imax [A]	Limit [A]
1	50	0.0234	0.0237		21	1050	0.0076	0.0076	0.1071
2	100	0	0.0007	1.08	22	1100	0	0.0007	0.0836
3	150	0.021	0.0211	2.3	23	1150	0.006	0.0061	0.0978
4	200	0	0.0007	0.43	24	1200	0	0.0007	0.0767
5	250	0.0203	0.0205	1.14	25	1250	0	0.0048	0.09
6	300	0	0.0007	0.3	26	1300	0	0.0006	0.0708
7	350	0.0194	0.0195	0.77	27	1350	0	0.0038	0.0833
8	400	0	0.0007	0.23	28	1400	0	0.0006	0.0657
9	450	0.0181	0.0182	0.4	29	1450	0	0.0032	0.0776
10	500	0	0.0007	0.184	30	1500	0	0.0006	0.0613
11	550	0.0165	0.0167	0.33	31	1550	0	0.0029	0.0726
12	600	0	0.0007	0.1533	32	1600	0	0.0006	0.0575
13	650	0.0148	0.015	0.21	33	1650	0	0.0028	0.0682
14	700	0	0.0007	0.1314	34	1700	0	0.0006	0.0541
15	750	0.013	0.0131	0.15	35	1750	0	0.0028	0.0643
16	800	0	0.0007	0.115	36	1800	0	0.0006	0.0511
17	850	0.0111	0.0112	0.1324	37	1850	0	0.0028	0.0608
18	900	0	0.0007	0.1022	38	1900	0	0.0005	0.0484
19	950	0.0093	0.0094	0.1184	39	1950	0	0.0026	0.0577
20	1000	0	0.0007	0.092	40	2000	0	0.0005	0.046

4.1.4.2 Harmonics Current Emissions Test Setup Photos  
(Mode: Transmitter)



(Mode: Receiver)



## 4.1.5 Voltage Fluctuations and Flicker Test

### 4.1.5.1 Test Instruments

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Harmonics-1000	EMC-Partner	Harmonics-1000	2010/12/17	2011/12/16

### 4.1.5.1 Voltage Fluctuations and Flicker Test Data

#### 1. Operating Conditions of The EUT : Transmitter

Test Date : Mar. 21, 2011

Test Specification	EN 61000-3-3:2008		
Climatic Condition	Ambient Temperature: <u>20</u> °C	Relative Humidity: <u>49</u> %RH	
Power Supply System	AC Power : <u>230</u> Vac <u>50</u> Hz		
Test Set-up	Table-top Equipment		

	Test Data	Limit	Pass or Fail
<b>Plt</b>	0.072	0.65	Pass
<b>Pst</b>	0.072	1.00	Pass
<b>dt</b>	0.00 ms	500 ms	Pass
<b>dmax</b>	0.00 %	4.0 %	Pass
<b>dc</b>	0.00 %	3.3 %	Pass

2.Operating Conditions of The EUT : Receiver

Test Date : Mar. 21, 2011

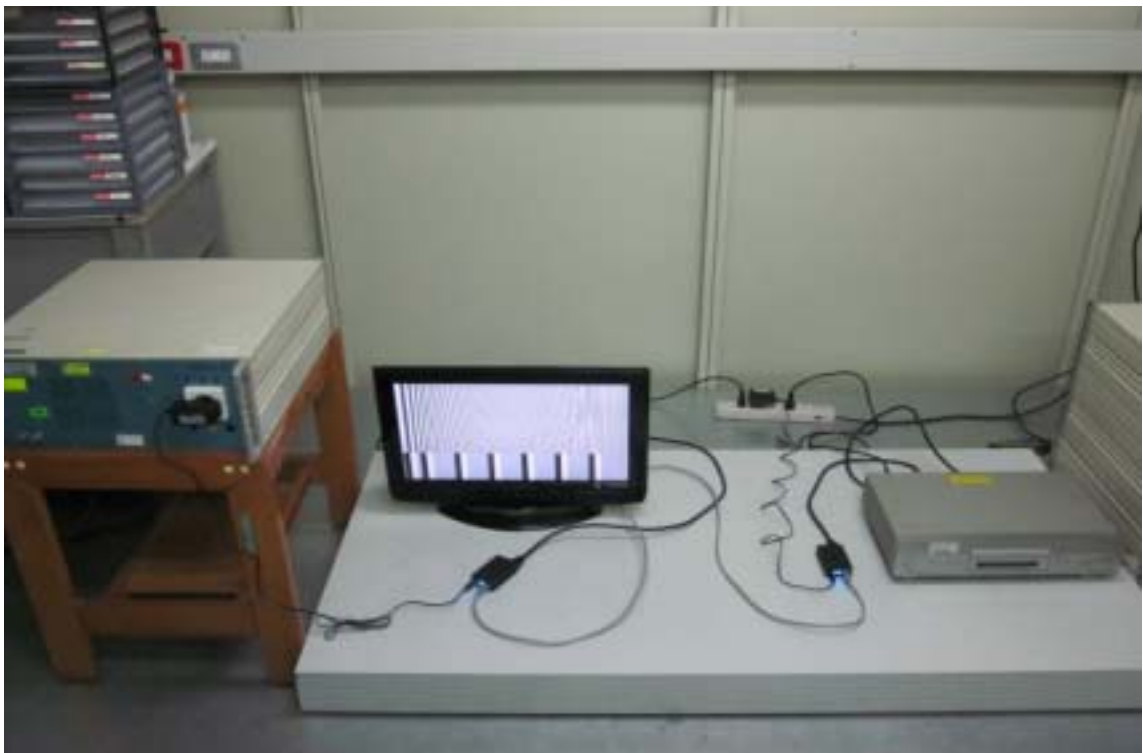
Test Specification	EN 61000-3-3:2008		
Climatic Condition	Ambient Temperature: <u>20</u> °C	Relative Humidity: <u>49</u> %RH	
Power Supply System	AC Power : <u>230</u> Vac <u>50</u> Hz		
Test Set-up	Table-top Equipment		

	<b>Test Data</b>	<b>Limit</b>	<b>Pass or Fail</b>
<b>Plt</b>	0.072	0.65	Pass
<b>Pst</b>	0.072	1.00	Pass
<b>dt</b>	0.00 ms	500 ms	Pass
<b>dmax</b>	0.00 %	4.0 %	Pass
<b>dc</b>	0.00 %	3.3 %	Pass

#### 4.1.5.2 Voltage Fluctuations and Flicker Test Setup Photos (Mode: Transmitter)



#### (Mode: Receiver)



## 4.2 Immunity

### 4.2.1 Electrostatic Discharge Immunity Test

#### 4.2.1.1 Test Instruments

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Electrostatic Discharge Simulator	Noiseken	ESS2002	2010/10/08	2011/10/07

#### 4.2.1.2 Electrostatic Discharge Immunity Test Data

##### 1. Operating Conditions of The EUT : Transmitter

Test Date : Mar. 21, 2011

Test Specification	IEC 61000-4-2:2008		
Climatic Condition	Ambient Temperature: <u>20</u> °C		Relative Humidity: <u>48</u> %RH
	Atmospheric Pressure : 990 mbar		
Power Supply System	AC Power : <u>230</u> Vac <u>50</u> Hz		
Test Set-up	Table-top Equipment		

Energy-Storage Capacitor	: <u>150</u> pF		Contact Discharge Times	: <u>25</u> times/each condition												
Discharge Resistor	: <u>330</u> Ω		Air Discharge Times	: <u>10</u> times/each condition												
\ Discharge Mode	<b>Contact Discharge</b>								<b>Air Discharge</b>							
\ESD Voltage	<u>2</u> kV		<u>4</u> kV		___ kV		___ kV		<u>2</u> kV		<u>4</u> kV		<u>8</u> kV		___ kV	
\Points\Result\Polarity	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
VCP	A	A	B	B	---	---	---	---	---	---	---	---	---	---	---	---
HCP	A	A	B	B	---	---	---	---	---	---	---	---	---	---	---	---
P1,P7~P10	---	---	---	---	---	---	---	---	A	A	B	B	B	B	---	---
P2~P6	A	A	B	B	---	---	---	---	---	---	---	---	---	---	---	---

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

“ A ” means the EUT’s function was correct normal performance during the test.

“ B ” means the EUT’s function was temporary loss of function or degradation of

performance during the test. After test, the EUT recovers its normal performance, without operator intervention.

## 2. Operating Conditions of The EUT : Receiver

Test Date : Mar. 21, 2011

Test Specification	IEC 61000-4-2:2008		
Climatic Condition	Ambient Temperature: <u>20</u> °C		Relative Humidity: <u>48</u> %RH
	Atmospheric Pressure : 990 mbar		
Power Supply System	AC Power : <u>230</u> Vac <u>50</u> Hz		
Test Set-up	Table-top Equipment		

Energy-Storage Capacitor	: <u>150</u> pF	Contact Discharge Times	: <u>25</u> times/each condition													
Discharge Resistor	: <u>330</u> Ω	Air Discharge Times	: <u>10</u> times/each condition													
\ Discharge Mode	<b>Contact Discharge</b>				<b>Air Discharge</b>											
\ ESD Voltage	<u>2</u> kV	<u>4</u> kV	___ kV	___ kV	<u>2</u> kV	<u>4</u> kV	<u>8</u> kV	___ kV								
\ Points \ Result \ Polarity	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
VCP	A	A	B	B	---	---	---	---	---	---	---	---	---	---	---	---
HCP	A	A	B	B	---	---	---	---	---	---	---	---	---	---	---	---
P1,P7~P10	---	---	---	---	---	---	---	---	A	A	B	B	B	B	---	---
P2~P6	A	A	B	B	---	---	---	---	---	---	---	---	---	---	---	---

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

“ A ” means the EUT’s function was correct normal performance during the test.

“ B ” means the EUT’s function was temporary loss of function or degradation of performance during the test. After test, the EUT recovers its normal performance, without operator intervention.

TEST POINTS

(Mode: Transmitter)



TEST POINTS

(Mode: Receiver)



#### 4.2.1.3 Electrostatic Discharge Immunity Test Setup Photos (Mode: Transmitter)



(Mode: Receiver)



## 4.2.2 RF Radiated Fields Immunity Test

### 4.2.2.1 Test Instruments

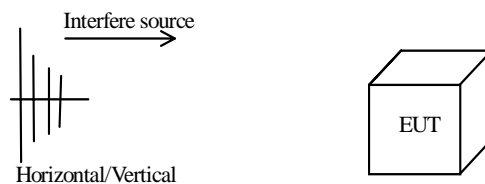
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Antenna	AR	AT5080	N/A	N/A
signal Generator	Aglient	E4421B	2010/08/03	2011/08/02
Amplifier	Ophir	5172	N/A	N/A
Amplifier	Ophir	5127	N/A	N/A
POWER METER	Booton	4232A	2010/08/06	2011/08/05

### 4.2.2.2 RF Radiated Fields Immunity Test Data

#### 1. Operating Conditions of The EUT : Transmitter

Test Date : Mar. 21, 2011

Test Specification	IEC 61000-4-3:2006/A1:2007/A2:2010	
Climatic Condition	Ambient Temperature: <u>21</u> °C	Relative Humidity: <u>56</u> %RH
	Atmospheric Pressure : 990 mbar	
Power Supply System	AC Power : <u>230</u> Vac <u>50</u> Hz	
Test Set-up	Table-top Equipment	



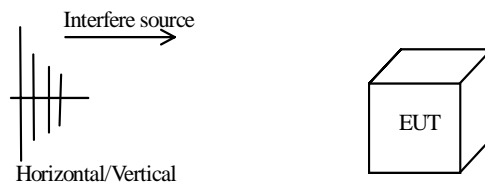
Frequency Range:	<u>80</u> MHz ~ <u>1000</u> MHz	Field Strength: <u>3</u> V/m	Modulation (AM 1KHz 80%)
Sweep Rate	: $\leq 1.5 \times 10^{-3}$ decades/s	Step Size	: $\leq 1\%$ of preceding frequency value
Dwell time	: 2.9 s		
Frequency Range (MHz)	Antenna-Polarization	Direction of Device	Test Result
80~1000	Horizontal	front	A
		rear	A
		left	A
		right	A
80~1000	Vertical	front	A
		rear	A
		left	A
		right	A

Note : "A" means the EUT's function was correct normal performance during the test.

## 2. Operating Conditions of The EUT : Receiver

Test Date : Mar. 21, 2011

Test Specification	IEC 61000-4-3:2006/A1:2007/A2:2010	
Climatic Condition	Ambient Temperature: <u>21</u> °C	Relative Humidity: <u>56</u> %RH
	Atmospheric Pressure : 990 mbar	
Power Supply System	AC Power : <u>230</u> Vac <u>50</u> Hz	
Test Set-up	Table-top Equipment	



Frequency Range: <u>80</u> MHz ~ <u>1000</u> MHz	Field Strength: <u>3</u> V/m	Modulation (AM 1KHz 80%)	
Sweep Rate : $\leq 1.5 \times 10^{-3}$ decades/s	Step Size : $\leq 1$ % of preceding frequency value	Dwell time : 2.9 s	
Frequency Range (MHz)	Antenna-Polarization	Direction of Device	Test Result
80~1000	Horizontal	front	A
		rear	A
		left	A
		right	A
80~1000	Vertical	front	A
		rear	A
		left	A
		right	A

Note : “A” means the EUT’s function was correct normal performance during the test.

4.2.2.3 RF Radiated Fields Immunity Test Setup Photos  
(Mode: Transmitter)



(Mode: Receiver)



## 4.2.3 EFT/Burst Immunity Test

### 4.2.3.1 Test Instruments

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
EMC Immunity Tester	EMC-PARTNER	TRANSIENT-1000	2010/08/17	2011/08/16

### 4.2.3.2 EFT/Burst Immunity Test Data

#### 1. Operating Conditions of The EUT : Transmitter

Test Date : Mar. 21, 2011

Test Specification	IEC 61000-4-4:2004/A1:2010		
Climatic Condition	Ambient Temperature: <u>20</u> °C	Relative Humidity: <u>49</u> %RH	
	Atmospheric Pressure : 990 mbar		
Power Supply System	AC Power: <u>230</u> Vac <u>50</u> Hz		
Test Set-up	Table-top Equipment		

Pulse : 5 /50ns Burst : 15ms /300ms		Repetition Rate : <u>5kHz</u>	
\Voltage\Polarity\ \Test Point\Mode\Result\  Power Line		<u>1.0 kV</u>	
		+	-
L		B	B
N		B	B
L-N		B	B
\Voltage\Polarity\ \Test Point\Mode\Result\  RJ-45 (LAN)		<u>0.5 kV</u>	
		+	-
		B	B

Note : “B” means the EUT’s function was temporary loss of function or degradation of performance during the test. After test, the EUT recovers its normal performance, without operator intervention.

## 2.Operating Conditions of The EUT : Receiver

Test Date : Mar. 21, 2011

Test Specification	IEC 61000-4-4:2004/A1:2010	
Climatic Condition	Ambient Temperature: <u>20</u> °C	Relative Humidity: <u>49</u> %RH
	Atmospheric Pressure : 990 mbar	
Power Supply System	AC Power: <u>230</u> Vac <u>50</u> Hz	
Test Set-up	Table-top Equipment	

Pulse : 5 /50ns Burst : 15ms /300ms		Repetition Rate : <u>5kHz</u>	
\Voltage\Polarity\ \Test Point\Mode\Result\		<u>1.0 kV</u>	
		+	-
Power Line	L	B	B
	N	B	B
	L-N	B	B
\Voltage\Polarity\ \Test Point\Mode\Result\		<u>0.5 kV</u>	
		+	-
RJ-45 (LAN)		B	B

Note : “B” means the EUT’s function was temporary loss of function or degradation of performance during the test. After test, the EUT recovers its normal performance, without operator intervention.

#### 4.2.3.3 EFT/Burst Immunity Test Setup Photos (Mode: Transmitter)



RJ-45



(Mode: Receiver)



RJ-45



## 4.2.4 Surge Immunity Test

### 4.2.4.1 Test Instruments

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
EMC Immunity Tester	EMC-PARTNER	TRANSIENT-1000	2010/08/17	2011/08/16

### 4.2.4.2 Surge Immunity Test Data

#### 1. Operating Conditions of The EUT : Transmitter

Test Date : Mar. 22, 2011

Test Specification	IEC 61000-4-5:2005		
Climatic Condition	Ambient Temperature: <u>20</u> °C	Relative Humidity: <u>49</u> %RH	
	Atmospheric Pressure : 990 mbar		
Power Supply System	AC Power: <u>230</u> Vac <u>50</u> Hz		
Test Set-up	Table-top Equipment		

Waveform : 1.2/50µs(8/20µs)		Repetition rate : <u>60</u> sec		Times : <u>5</u> time/each condition			
\Voltage \Mode \Polarity \Phase \Result		<b>0°</b>	<b>90°</b>	<b>180°</b>	<b>270°</b>		
0.5kV	L - N	+	A	A	A	A	
		-	A	A	A	A	
1.0kV	L - N	+	A	A	A	A	
		-	A	A	A	A	

Note : "A" means the EUT's function was correct normal performance during the test.

## 2. Operating Conditions of The EUT : Receiver

Test Date : Mar. 22, 2011

Test Specification	IEC 61000-4-5:2005		
Climatic Condition	Ambient Temperature: <u>20</u> °C	Relative Humidity: <u>49</u> %RH	
	Atmospheric Pressure : <u>990</u> mbar		
Power Supply System	AC Power: <u>230</u> Vac <u>50</u> Hz		
Test Set-up	Table-top Equipment		

Waveform : 1.2/50µs(8/20µs)			Repetition rate : <u>60</u> sec		Times : <u>5</u> time/each condition	
\Voltage \Mode \Polarity \Phase \Result			<b>0°</b>	<b>90°</b>	<b>180°</b>	<b>270°</b>
0.5kV	L – N	+	A	A	A	A
		–	A	A	A	A
1.0kV	L – N	+	A	A	A	A
		–	A	A	A	A

Note : “A” means the EUT’s function was correct normal performance during the test.

#### 4.2.4.3 Surge Immunity Test Setup Photos (Mode: Transmitter)



#### (Mode: Receiver)



## 4.2.5 RF Common Mode Immunity Test

## 4.2.5.1 Test Instruments

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
CS TESTER	FRANKONIA	CIT-10	2010/11/18	2011/11/17
M2+3 CDN-KIT	FRANKONIA	M2+3	2010/10/08	2011/10/07
SCHAFFUER	CS-CLAMP	KEMZ801	2010/11/18	2011/11/17

## 4.2.5.2 RF Common Mode Immunity Test Data

1. Operating Conditions of The EUT : Transmitter

Test Date : Mar. 23, 2011

Test Specification	IEC 61000-4-6:2008		
Climatic Condition	Ambient Temperature: <u>21</u> °C	Relative Humidity: <u>56</u> %RH	
Power Supply System	AC Power : <u>230</u> Vac <u>50</u> Hz		
Test Set-up	Table-top Equipment		

Frequency Range	: 0.15 MHz ~ 80 MHz	Test Level	: 3 Vrms	Modulation (AM 1kHz 80%)
Sweep Rate	: $\leq 1.5 \times 10^{-3}$ decades/s	Step Size	: $\leq 1$ % of preceding frequency value	
			Dwell Time : <u>2.9</u> s	
Frequency Range (MHz)	Tested Line		Test Result	
0.15~80	M2		A	
0.15~80	RJ-45 (clamp)		A	

Note : "A" means the EUT's function was correct normal performance during the test.

2. Operating Conditions of The EUT : Receiver

Test Date : Mar. 23, 2011

Test Specification	IEC 61000-4-6:2008	
Climatic Condition	Ambient Temperature: <u>21</u> °C	Relative Humidity: <u>56</u> %RH
Power Supply System	AC Power : <u>230</u> Vac <u>50</u> Hz	
Test Set-up	Table-top Equipment	

Frequency Range : 0.15 MHz ~ 80 MHz		Test Level : 3 Vrms	Modulation (AM 1kHz 80%)
Sweep Rate	: $\leq 1.5 \times 10^{-3}$ decades/s	Step Size : $\leq 1$ % of preceding frequency value	Dwell Time : <u>2.9</u> s
Frequency Range (MHz)	Tested Line	Test Result	
0.15~80	M2	A	
0.15~80	RJ-45 (clamp)	A	

Note : "A" means the EUT's function was correct normal performance during the test.

#### 4.2.5.3 RF Common Mode Immunity Test Setup Photos (Mode: Transmitter)



(Mode: Receiver)



## 4.2.6 Power Frequency Magnetic Field Immunity Test

### 4.2.6.1 Test Instruments

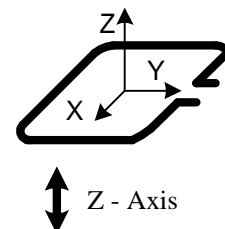
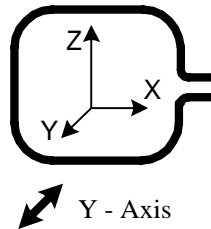
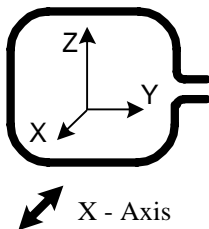
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
EMC Immunity Tester	EMC-PARTNER	TRANSIENT-1000	2010/08/17	2011/08/16
Mfgenerator	EMC-PAPTNER	MF-1000	2011/03/09	2012/03/08

### 4.2.6.2 Power Frequency Magnetic Field Immunity Test Data

#### 1. Operating Conditions of The EUT : Transmitter

Test Date : Mar. 21, 2011

Test Specification	IEC61000-4-8:2009	
Climatic Condition	Ambient Temperature: <u>21</u> °C	Relative Humidity: <u>49</u> %RH
	Atmospheric Pressure : <u>990</u> mbar	
Power Supply System	AC Power : <u>230</u> Vac <u>50</u> Hz	
Test Set-up	Table-top Equipment	



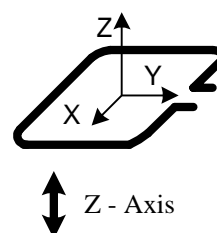
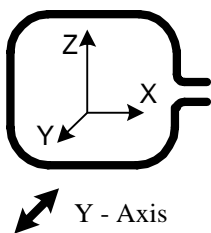
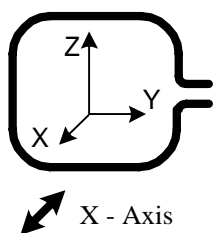
Magnetic field frequency : <u>50</u> Hz		Continuous magnetic field strength : <u>1</u> A/m
Magnetic field direction	Testing result	
X - Axis	A	
Y - Axis	A	
Z - Axis	A	

Note : "A" means the EUT's function was correct normal performance during the test.

2.Operating Conditions of The EUT : Receiver

Test Date : Mar. 21, 2011

Test Specification	IEC61000-4-8:2009	
Climatic Condition	Ambient Temperature: <u>21</u> °C	Relative Humidity: <u>49</u> %RH
	Atmospheric Pressure : <u>990</u> mbar	
Power Supply System	AC Power : <u>230</u> Vac <u>50</u> Hz	
Test Set-up	Table-top Equipment	



Magnetic field frequency : <u>50</u> Hz		Continuous magnetic field strength : <u>1</u> A/m
Magnetic field direction	Testing result	
X - Axis	A	
Y - Axis	A	
Z - Axis	A	

Note : “A” means the EUT’s function was correct normal performance during the test.

#### 4.2.6.3 Power Frequency Magnetic Field Immunity Test Setup Photos (Mode: Transmitter)



(Mode: Receiver)



## 4.2.7 Voltage Interruptions and Voltage Dips Immunity Test

## 4.2.7.1 Test Instruments

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
EMC Immunity Tester	EMC-PARTNER	TRANSIENT-1000	2010/08/17	2011/08/16

## 4.2.7.2 Voltage Interruptions and Voltage Dips Immunity Test Data

**Test data see the next pages.**

1. Operating Conditions of The EUT : Transmitter

Test Date : Mar. 22, 2011

Test Specification	IEC 61000-4-11:2004	
Climatic Condition	Ambient Temperature: <u>21</u> °C	Relative Humidity: <u>49</u> %RH
Power Supply System	AC Power: <u>240</u> Vac <u>50</u> Hz	
Test Set-up	Table-top Equipment	

Test mode	Voltage dips	Durations (periods)	Interval(s)	Times	Phase	Result
Voltage interruptions	>95%	250	10	3	0°/180°	B
Voltage dips in %U <sub>T</sub>	>95%	0.5	10	3	0°/180°	B
	30%	25	10	3	0°/180°	A

Note : “A” means the EUT’s function was correct normal performance during the test.

“B” means the EUT’s function was temporary loss of function or degradation of performance during the test. After test, the EUT recovers its normal performance, without operator intervention.

2. Operating Conditions of The EUT : Transmitter

Test Date : Mar. 21, 2011

Test Specification	IEC 61000-4-11:2004	
Climatic Condition	Ambient Temperature: <u>21</u> °C	Relative Humidity: <u>49</u> %RH
Power Supply System	AC Power: <u>100</u> Vac <u>60</u> Hz	
Test Set-up	Table-top Equipment	

Test mode	Voltage dips	Durations (periods)	Interval(s)	Times	Phase	Result
Voltage interruptions	>95%	300	10	3	0°/180°	B
Voltage dips in %U <sub>T</sub>	>95%	0.5	10	3	0°/180°	B
	30%	30	10	3	0°/180°	A

Note : “A” means the EUT’s function was correct normal performance during the test.

“B” means the EUT’s function was temporary loss of function or degradation of performance during the test. After test, the EUT recovers its normal performance, without operator intervention.

3. Operating Conditions of The EUT : Receiver

Test Date : Mar. 22, 2011

Test Specification	IEC 61000-4-11:2004	
Climatic Condition	Ambient Temperature: <u>21</u> °C	Relative Humidity: <u>49</u> %RH
Power Supply System	AC Power: <u>240</u> Vac <u>50</u> Hz	
Test Set-up	Table-top Equipment	

Test mode	Voltage dips	Durations (periods)	Interval(s)	Times	Phase	Result
Voltage interruptions	>95%	250	10	3	0°/180°	B
Voltage dips in %U <sub>T</sub>	>95%	0.5	10	3	0°/180°	B
	30%	25	10	3	0°/180°	A

Note : “A” means the EUT’s function was correct normal performance during the test.

“B” means the EUT’s function was temporary loss of function or degradation of performance during the test. After test, the EUT recovers its normal performance, without operator intervention.

4. Operating Conditions of The EUT : Receiver

Test Date : Mar. 21, 2011

Test Specification	IEC 61000-4-11:2004
Climatic Condition	Ambient Temperature: <u>21</u> °C                      Relative Humidity: <u>49</u> %RH
Power Supply System	AC Power: <u>100</u> Vac <u>60</u> Hz
Test Set-up	Table-top Equipment

Test mode	Voltage dips	Durations (periods)	Interval(s)	Times	Phase	Result
Voltage interruptions	>95%	300	10	3	0°/180°	B
Voltage dips in %U <sub>T</sub>	>95%	0.5	10	3	0°/180°	B
	30%	30	10	3	0°/180°	A

Note : “A” means the EUT’s function was correct normal performance during the test.

“B” means the EUT’s function was temporary loss of function or degradation of performance during the test. After test, the EUT recovers its normal performance, without operator intervention.

4.2.7.3 Voltage Interruptions and Voltage Dips Immunity Test Setup Photos  
(Mode: Transmitter)



(Mode: Receiver)



**CONSTRUCTED PHOTOS of EUT**

(Mode: Transmitter)

1. Side View of EUT



2. Side View of EUT



**CONSTRUCTED PHOTOS of EUT**

3. Side View of EUT



4. Side View of EUT



**CONSTRUCTED PHOTOS of EUT**

5. Internal View of EUT

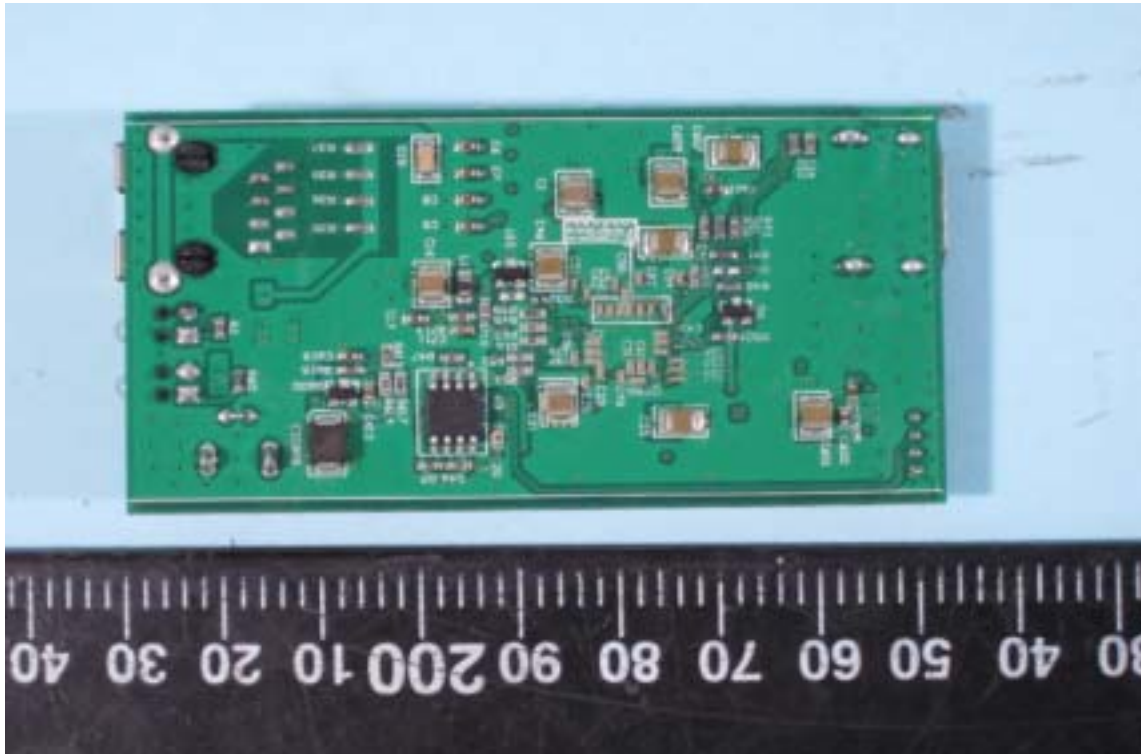


6. Component View of PCB



**CONSTRUCTED PHOTOS of EUT**

## 7. Solder View of PCB



## 8. Total View of Adapter



**CONSTRUCTED PHOTOS of EUT**

9. Side View of Adapter



10. Side View of Adapter



**CONSTRUCTED PHOTOS of EUT**

## 11. Top View of Adapter



## 12. Bottom View of Adapter



**CONSTRUCTED PHOTOS of EUT**

(Mode: Receiver)

1. Side View of EUT



2. Side View of EUT



**CONSTRUCTED PHOTOS of EUT**

3. Side View of EUT

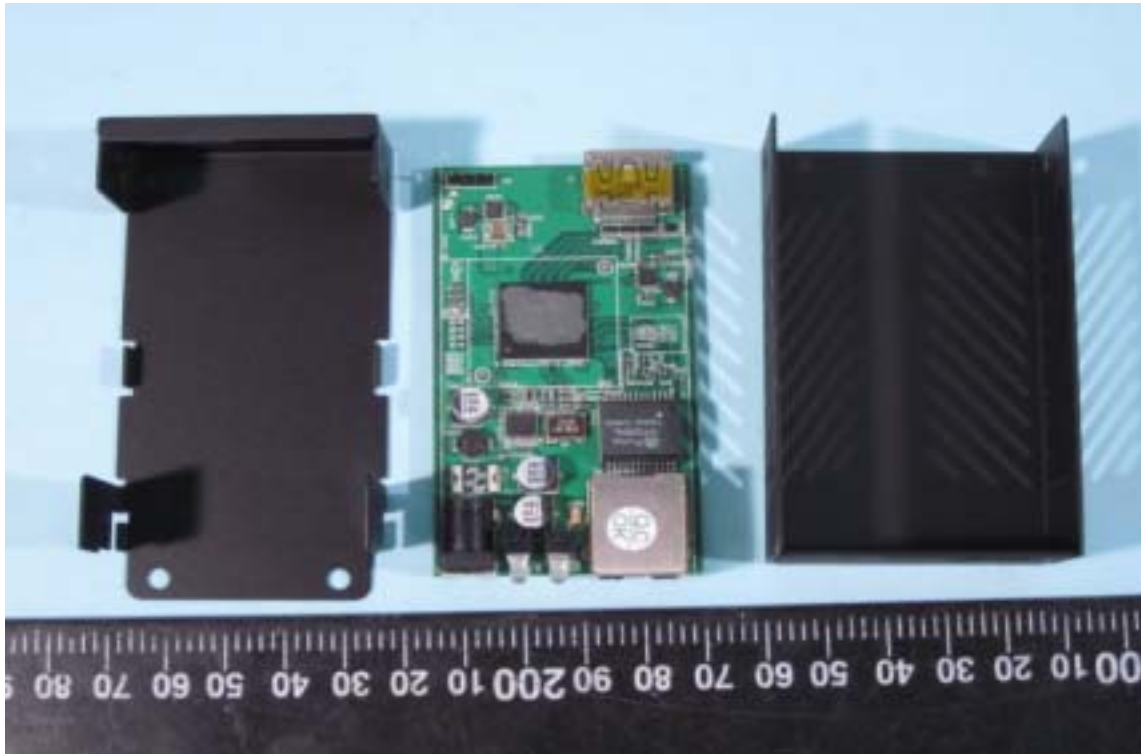


4. Side View of EUT



**CONSTRUCTED PHOTOS of EUT**

5. Internal View of EUT

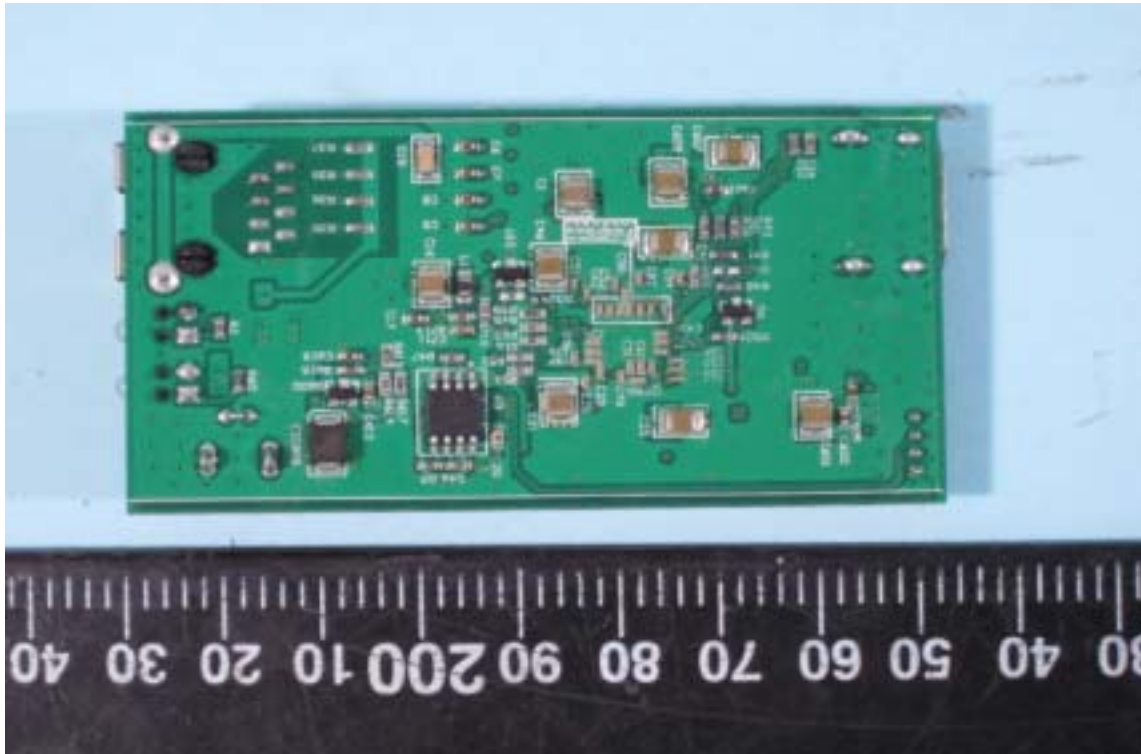


6. Component View of PCB



**CONSTRUCTED PHOTOS of EUT**

## 7. Solder View of PCB



## 8. Total View of Adapter



**CONSTRUCTED PHOTOS of EUT**

9. Side View of Adapter



10. Side View of Adapter



**CONSTRUCTED PHOTOS of EUT**

## 11. Top View of Adapter



## 12. Bottom View of Adapter

