EMC

TEST REPORT

Responsible Party	: ***SMART CABLING & TRANSMISSION CORP.***
Manufacturer	: ***SMART CABLING & TRANSMISSION CORP.***
Description of Product	: ***Composite Video with Stereo/Digital Audio Maxtrix Switcher***
Trade Name	: ***SC&T***
Model No.	: ***SR0X***
Test Report File No.	: ***11-02-RBF-098***
Date Test Item Received	: ***Feb. 10, 2011***
Date Test Campaign Completed	: ***Sep. 20, 2011***
Date of Issue	: ***Oct. 31, 2011***

Test Performed by

ELECTRONICS TESTING CENTER (ETC) , TAIWAN
No.34, Lin 5, Dingfu Vil., Linkou Dist.,
New Taipei City, Taiwan 24442, R.O.C.
TEL : (02)26023052 FAX : (02)26010910
http:// www.etc.org.tw；e-mail: emc@etc.org.tw

Note : 1. The results of the Test Report relate only to the items tested.
2. The Test Report shall not be reproduced except in full , without the written approval of ETC.

CONTENTS

TEST REPORT CERTIFICATION

Client	: SMART CABLING & TRANSMISSION CORP.
Address	: 10F, No.493, Chung-Cheng Rd., Hsin Tien City, Taipei County, 231, Taiwan
Manufacturer	: SMART CABLING & TRANSMISSION CORP.
Address	: 10F, No.493, Chung-Cheng Rd., Hsin Tien City, Taipei County, 231, Taiwan
EUT	: Composite Video with Stereo/Digital Audio Maxtrix Switcher
Trade name	: SC&T
Model No.	: SR0X
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
(Tien-Lu Liao, Engineer)

Check By : Charles Wang
(Charles Wang, Supervisor)

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:

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

Composite Video with Stereo/Digital Audio Maxtrix Switcher

2.2 Related Information of EUT

Size of EUT	:	110mm x 67mm x 26mm
Power Supply	:	I/P:100-240Vac,50/60Hz,0.2A O/P:DC5V,1A

* 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
Composite Video with Stereo/Digital Audio Maxtrix Switcher *	SMART CABLING & TRANSMISSION CORP.	SR0X	1.49m Non-Shielded AC Adapter power cord 3.0m Non-Shielded RJ-45 Cable*2
PC	DELL	V220	1.8m Unshielded AC Adaptor Power Cord 2.1m Shieled DVI cable with 2 core
Notebook	Lenovo	7298 RN1	1.8m Unshielded AC Adaptor 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	2.45(Mains)
Conducted emission at telecommunication ports	150kHz ~ 30MHz	2.22(Voltage)
		2.88(Current)
Radiated emissions	30MHz ~ 1GHz	3.90(30MHz≦f≦300MHz)
		3.95(300MHz＜f≦1GHz)
	Above 1GHz	4.42(1GHz≦f≦18GHz)

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

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/50Hzand recorded in the applied test report.

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

Test Mode	Test condition
1	Operation Mode (Link)

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 (Operation -Neutral)
Minimum EMI Margin to the limit: -9.52 dB at 0.3997 MHz
[X] – PASS (Operation –Line)
Minimum EMI Margin to the limit: -9.61 dB at 0.2417 MHz

3.1.2 Conducted Telecommunication ports

[X] – PASS (Mode: ISN(Input)-10Mbps-Voltage)
Minimum EMI QP Margin(QP) to the limit: -10.14 dB at 0.3955 MHz
[X] – PASS (Mode: ISN((Input)-100Mbps-Voltage)
Minimum EMI QP Margin(QP) to the limit: -11.55 dB at 0.3997 MHz
[X] – PASS (Mode: ISN(Output)-10Mbps-Voltage)
Minimum EMI QP Margin(QP) to the limit: -16.20 dB at 0.5552 MHz
[X] – PASS (Mode: ISN(Output)-100Mbps-Voltage)
Minimum EMI QP Margin(QP) to the limit: -16.07 dB at 0.3872 MHz

3.1.3 Radiated Emissions

[X] – PASS (Operation -HOR)
Minimum EMI Margin to the limit: -3.50 dB at 624.1000 MHz
[X] – PASS (Operation -VER)
Minimum EMI Margin to the limit: -6.80 dB at 624.1000 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

	Requirement :Criterion B (or better)
[X] - No Degradation of Function	- Satisfies Criterion A
[ ] - Distortion of Function	- Satisfies Criterion B
[ ] - Error of Function	- Satisfies Criterion C

3.2.3 RF Radiated Fields Immunity

	Requirement :Criterion A
[X] - No Degradation of Function	- Satisfies Criterion A
[ ] - Distortion of Function	- Satisfies Criterion B
[ ] - Error of Function	- Satisfies Criterion C

3.2.4 EFT/Burst Immunity

Requirement :Criterion B(or better)

[X] - No Degradation of Function	- Satisfies Criterion A
[ ] - Distortion of Function	- Satisfies Criterion B
[ ] - Error of Function	- Satisfies Criterion C

3.2.5 Surge Immunity

Requirement :Criterion B (or better)

[X] - No Degradation of Function	- Satisfies Criterion A
[ ] - Distortion of Function	- Satisfies Criterion B
[ ] - Error of Function	- Satisfies Criterion C

3.2.6 RF Common Mode Immunity

Requirement :Criterion A

[X] - No Degradation of Function	- Satisfies Criterion A
[ ] - Distortion of Function	- Satisfies Criterion B
[ ] - Error of Function	- Satisfies Criterion C

3.2.7 Power Frequency Magnetic Field Immunity

Requirement :Criterion A

[X] - No Degradation of Function	- Satisfies Criterion A
[ ] - Distortion of Function	- Satisfies Criterion B
[ ] - Error of Function	- Satisfies Criterion C

3.2.8 Voltage Interruptions and Voltage Dips Immunity

Requirement :Criterion C (or better)

[ ] - No Degradation of Function	- Satisfies Criterion A
[X] - Distortion of Function	- Satisfies Criterion B
[ ] - 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	2011/05/09	2012/05/07
LISN	EMCO	3625/2	2011/03/01	2012/02/28
LISN	Rohde & Schwarz	ESH2-Z5	2011/08/24	2012/08/24
Current Probe	Rohde & Schwarz	ESH2-Z1	2010/10/27	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	2011/05/09	2012/05/07

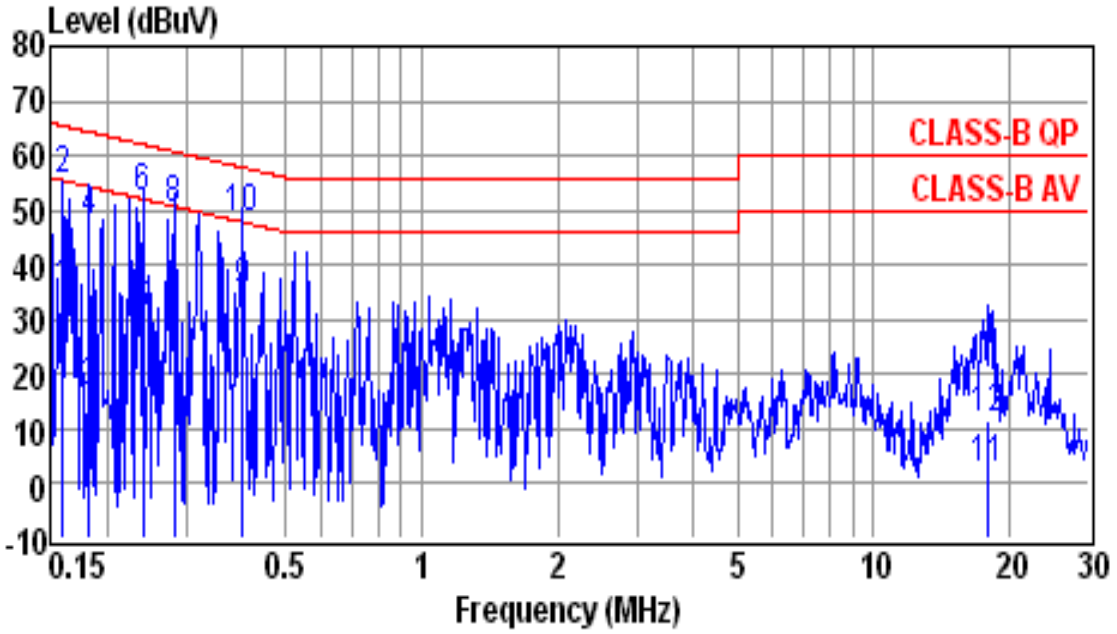
4.1.1.3 Conducted Emissions Test Data

Operating Conditions of The EUT : Operation Mode

Test Date : Sep. 20, 2011

Test Specification	EN 55022:2006/A1:2007 (Class B)
Climatic Condition	Ambient Temperature: 26 °C Relative Humidity: 55 %RH
Power Supply System	AC Power : 230 Vac 50 Hz
Test Set-up	Table-top Equipment

Test data see the next pages.

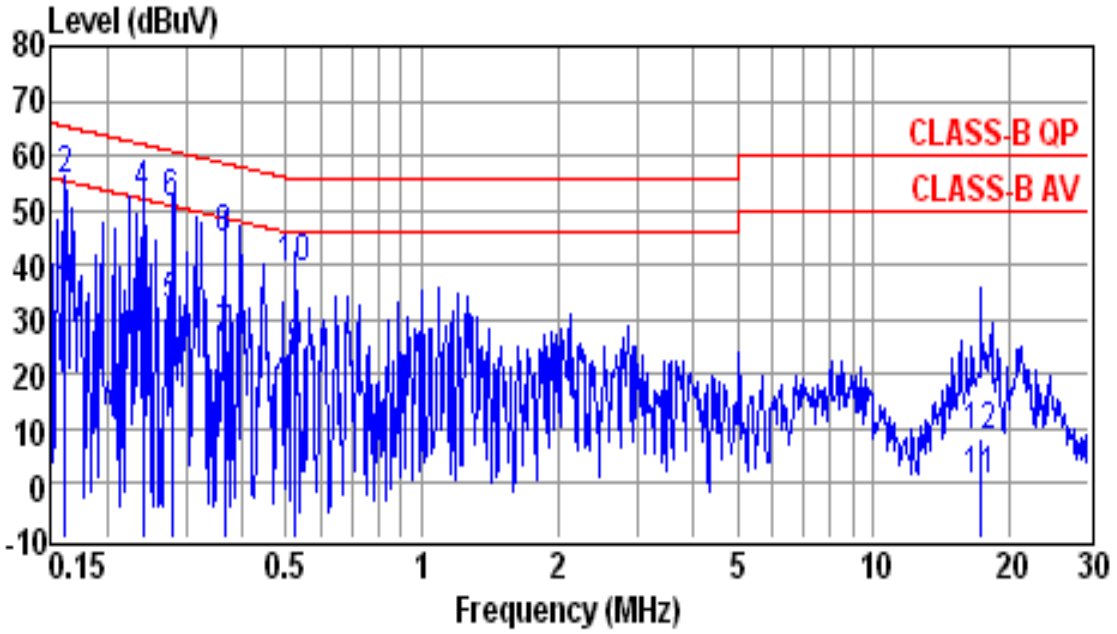


Site	: conducted #1	Date	: 09-20-2011
Condition	: CLASS-B QP	LISN	: NEUTRAL
Tem / Hum	: 26 ℃ / 55%	Test Mode	:
EUT	: 11-02-RBF-098	Power Rating	: 230Vac/50Hz
Memo	:	Memo	:

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.1599	34.67	0.15	34.82	55.47	-20.65	Average
0.1599	55.02	0.15	55.17	65.47	-10.30	QP
0.1835	16.41	0.15	16.56	54.33	-37.77	Average
0.1835	47.76	0.15	47.91	64.33	-16.42	QP
0.2404	30.40	0.16	30.56	52.08	-21.52	Average
0.2404	51.59	0.16	51.75	62.08	-10.33	QP
0.2818	29.95	0.17	30.12	50.76	-20.64	Average
0.2818	49.45	0.17	49.62	60.76	-11.14	QP
0.3997	34.66	0.18	34.84	47.86	-13.02	Average
0.3997	48.16	0.18	48.34	57.86	-9.52	QP
17.8490	1.49	0.77	2.26	50.00	-47.74	Average
17.8490	10.80	0.77	11.57	60.00	-48.43	QP

Note :

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



Site	: conducted #1	Date	: 09-20-2011
Condition	: CLASS-B QP	LISN	: LINE
Tem / Hum	: 26 ℃ / 55%	Test Mode	:
EUT	: 11-02-RBF-098	Power Rating	: 230Vac/50Hz
Memo	:	Memo	:

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.1624	34.24	0.15	34.39	55.34	-20.95	Average
0.1624	54.96	0.15	55.11	65.34	-10.23	QP
0.2417	30.75	0.16	30.91	52.04	-21.13	Average
0.2417	52.27	0.16	52.43	62.04	-9.61	QP
0.2788	31.69	0.16	31.85	50.85	-19.00	Average
0.2788	50.85	0.16	51.01	60.85	-9.84	QP
0.3653	25.84	0.18	26.02	48.61	-22.59	Average
0.3653	44.14	0.18	44.32	58.61	-14.29	QP
0.5238	23.09	0.19	23.28	46.00	-22.72	Average
0.5238	38.97	0.19	39.16	56.00	-16.84	QP
17.2910	-0.64	0.75	0.11	50.00	-49.89	Average
17.2910	7.66	0.75	8.41	60.00	-51.59	QP

Note :

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

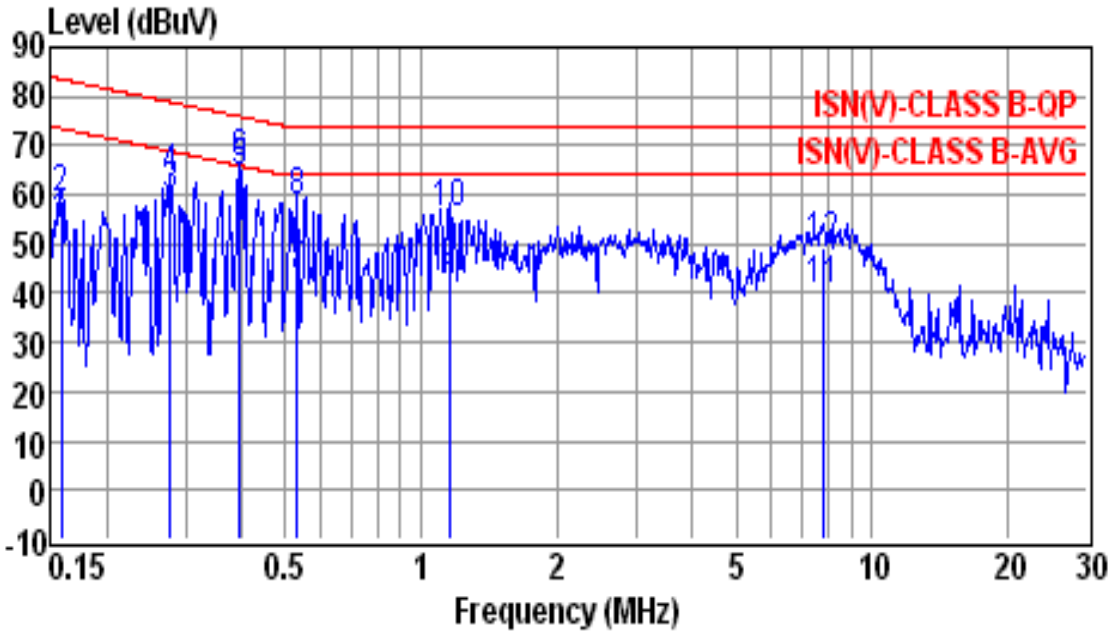
4.1.1.4 Conducted Emissions Test Setup Photos

4.1.2 Conducted Telecommunication ports Test

4.1.2.1 Conducted Telecommunication ports Test Data

Test Specification	EN 55022:2006/A1:2007 (Class B)
Test Set-up	Table-top Equipment

Test data see the next pages.

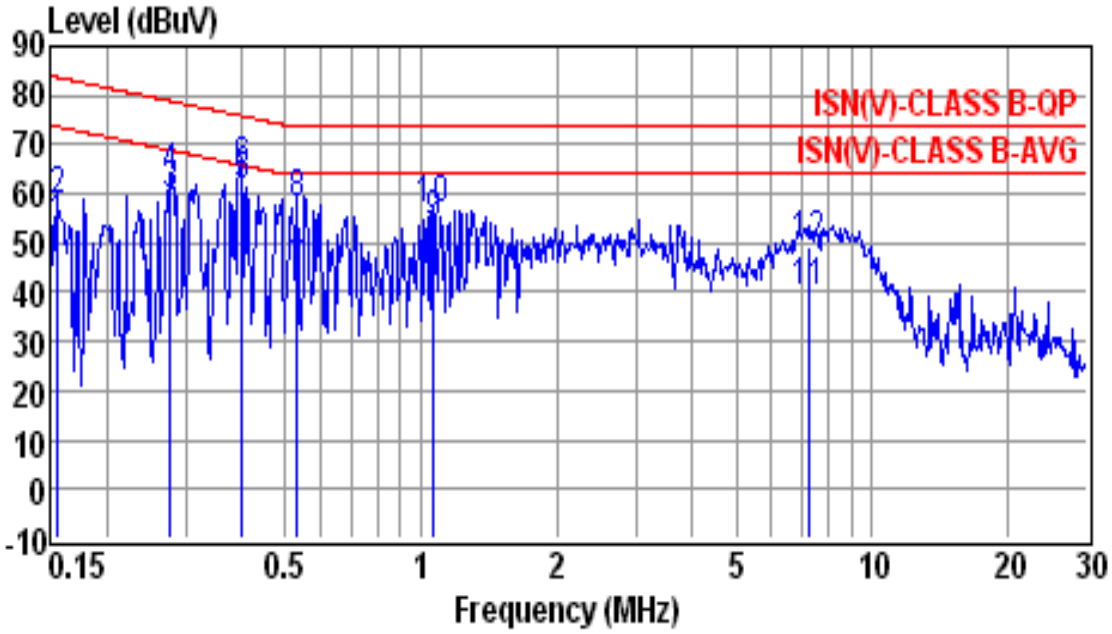


Site	: conducted #1	Date	: 09-20-2011
Condition	: ISN(V)-CLASS B-QP	LISN	:
Tem / Hum	: 26 ℃ / 55%	Test Mode	: 10Mbps
EUT	: 11-02-RBF-098	Power Rating	: 230Vac/50Hz
Memo	: RJ45(Input)-10Mbps	Memo	:

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.1590	43.58	9.95	53.53	73.52	-19.99	Average
0.1590	49.13	9.95	59.08	83.52	-24.44	QP
0.2773	49.68	9.93	59.61	68.90	-9.29	Average
0.2773	53.02	9.93	62.95	78.90	-15.95	QP
0.3955	54.30	9.91	64.21	65.95	-1.74	Average
0.3955	55.90	9.91	65.81	75.95	-10.14	QP
0.5322	33.52	9.90	43.42	64.00	-20.58	Average
0.5322	48.20	9.90	58.10	74.00	-15.90	QP
1.1530	33.80	9.90	43.70	64.00	-20.30	Average
1.1530	45.80	9.90	55.70	74.00	-18.30	QP
7.8520	30.12	9.94	40.06	64.00	-23.94	Average
7.8520	39.24	9.94	49.18	74.00	-24.82	QP

Note :

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

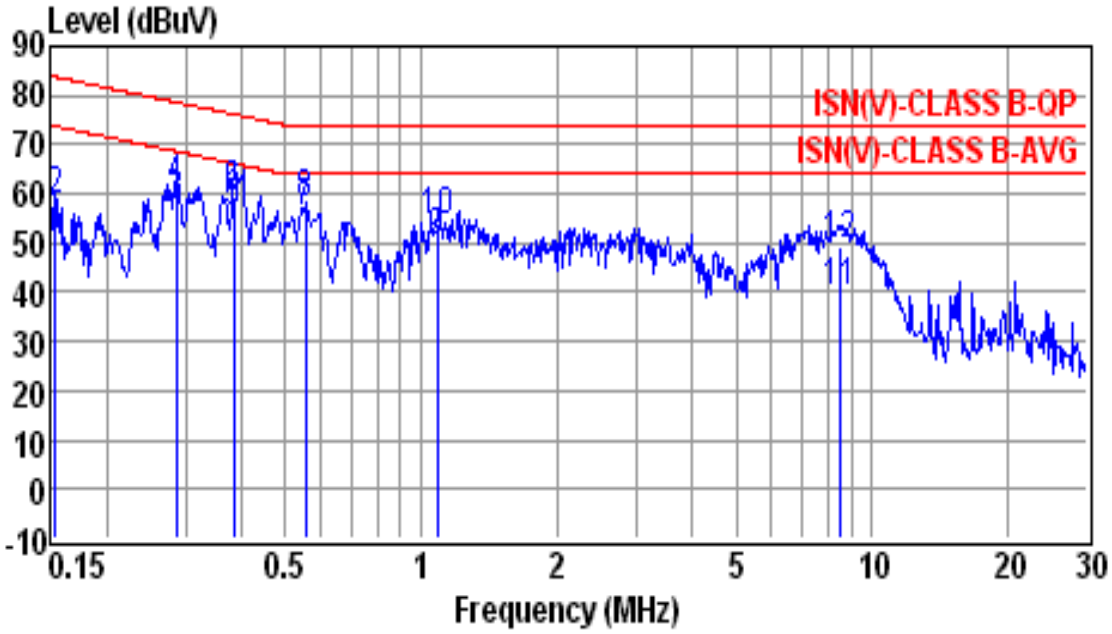


Site	: conducted #1	Date	: 09-20-2011
Condition	: ISN(V)-CLASS B-QP	LISN	:
Tem / Hum	: 26 ℃ / 55%	Test Mode	: 100Mbps
EUT	: 11-02-RBF-098	Power Rating	: 230Vac/50Hz
Memo	: RJ45(Input)-100Mbps	Memo	:

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.1565	43.03	9.95	52.98	73.65	-20.67	Average
0.1565	48.47	9.95	58.42	83.65	-25.23	QP
0.2773	49.72	9.93	59.65	68.90	-9.25	Average
0.2773	53.04	9.93	62.97	78.90	-15.93	QP
0.3997	51.20	9.91	61.11	65.86	-4.75	Average
0.3997	54.40	9.91	64.31	75.86	-11.55	QP
0.5322	33.64	9.90	43.54	64.00	-20.46	Average
0.5322	48.00	9.90	57.90	74.00	-16.10	QP
1.0650	43.39	9.90	53.29	64.00	-10.71	Average
1.0650	46.78	9.90	56.68	74.00	-17.32	QP
7.2130	29.77	9.94	39.71	64.00	-24.29	Average
7.2130	39.43	9.94	49.37	74.00	-24.63	QP

Note :

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

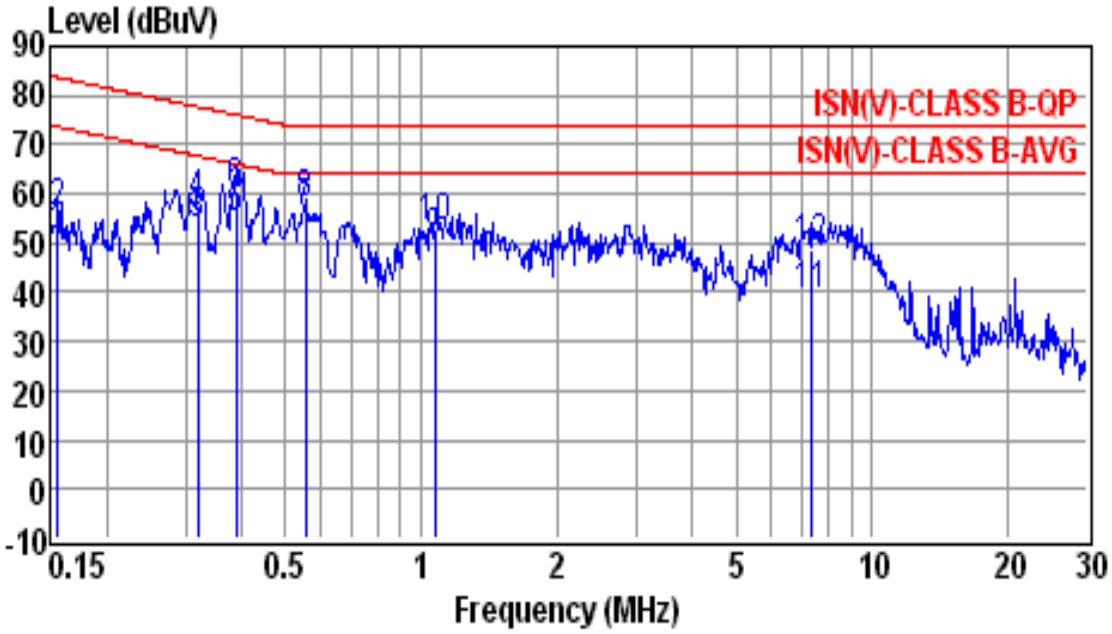


Site	: conducted #1	Date	: 09-20-2011
Condition	: ISN(V)-CLASS B-QP	LISN	:
Tem / Hum	: 26 ℃ / 55%	Test Mode	: 10Mbps
EUT	: 11-02-RBF-098	Power Rating	: 230Vac/50Hz
Memo	: RJ45(Output)-10Mbps	Memo	:

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.1540	43.42	9.95	53.37	73.78	-20.41	Average
0.1540	48.10	9.95	58.05	83.78	-25.73	QP
0.2863	47.75	9.92	57.67	68.63	-10.96	Average
0.2863	50.88	9.92	60.80	78.63	-17.83	QP
0.3832	46.16	9.91	56.07	66.21	-10.14	Average
0.3832	49.43	9.91	59.34	76.21	-16.87	QP
0.5552	45.75	9.90	55.65	64.00	-8.35	Average
0.5552	47.90	9.90	57.80	74.00	-16.20	QP
1.0880	40.23	9.90	50.13	64.00	-13.87	Average
1.0880	44.17	9.90	54.07	74.00	-19.93	QP
8.5010	29.58	9.93	39.51	64.00	-24.49	Average
8.5010	39.57	9.93	49.50	74.00	-24.50	QP

Note :

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



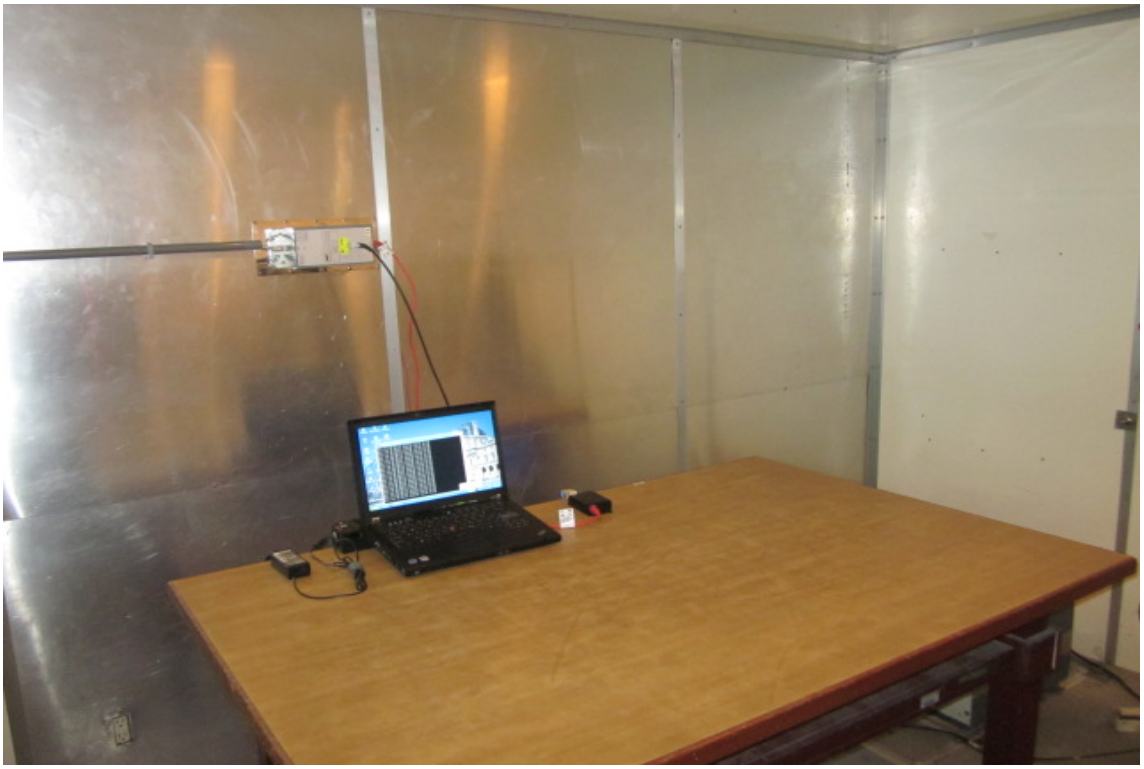
Site	: conducted #1	Date	: 09-20-2011
Condition	: ISN(V)-CLASS B-QP	LISN	:
Tem / Hum	: 26 ℃ / 55%	Test Mode	: 100Mbps
EUT	: 11-02-RBF-098	Power Rating	: 230Vac/50Hz
Memo	: RJ45(Output)-100Mbps	Memo	:

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.1565	41.13	9.95	51.08	73.65	-22.57	Average
0.1565	45.98	9.95	55.93	83.65	-27.72	QP
0.3200	43.61	9.92	53.53	67.71	-14.18	Average
0.3200	47.97	9.92	57.89	77.71	-19.82	QP
0.3872	44.66	9.91	54.57	66.12	-11.55	Average
0.3872	50.14	9.91	60.05	76.12	-16.07	QP
0.5552	45.93	9.90	55.83	64.00	-8.17	Average
0.5552	47.94	9.90	57.84	74.00	-16.16	QP
1.0710	39.76	9.90	49.66	64.00	-14.34	Average
1.0710	42.68	9.90	52.58	74.00	-21.42	QP
7.3680	29.13	9.94	39.07	64.00	-24.93	Average
7.3680	38.90	9.94	48.84	74.00	-25.16	QP

Note :

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

4.1.2.2 Conducted Telecommunication ports Test Photos



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
230-1000	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	2011/05/13	2012/05/11
Amplifier	HP	8447D	2011/05/27	2012/05/25
Spectrum	Advantest	R3162	2011/03/03	2012/03/01
Bi-Log Antenna	Schaffner	CBL 6111	2011/06/07	2012/06/05
Test Receiver	Rohde & Schwarz	ESU40	2011/08/29	2012/08/27
Amplifier	HP	8449B	2010/12/29	2011/12/28
Horn Antenna	EMCO	3115	2011/05/30	2012/05/28

4.1.3.3 Radiated Emissions Test Data

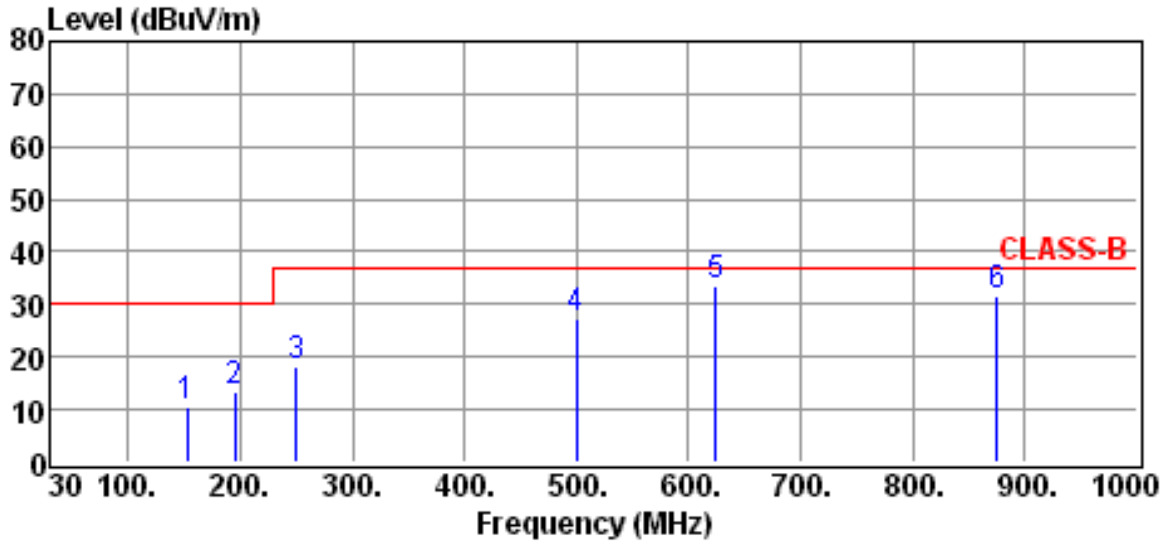
Operating Conditions of The EUT : Operation Mode

Test Date : Sep. 21, 2011

Test Specification	EN 55022:2006/A1:2007 (Class B)
Climatic Condition	Ambient Temperature: 30 °C Relative Humidity: 56 %RH
Power Supply System	AC Power : 230 Vac 50 Hz
Test Set-up	Table-top Equipment

Test data see the next pages.

(30MHz to 1GHz)

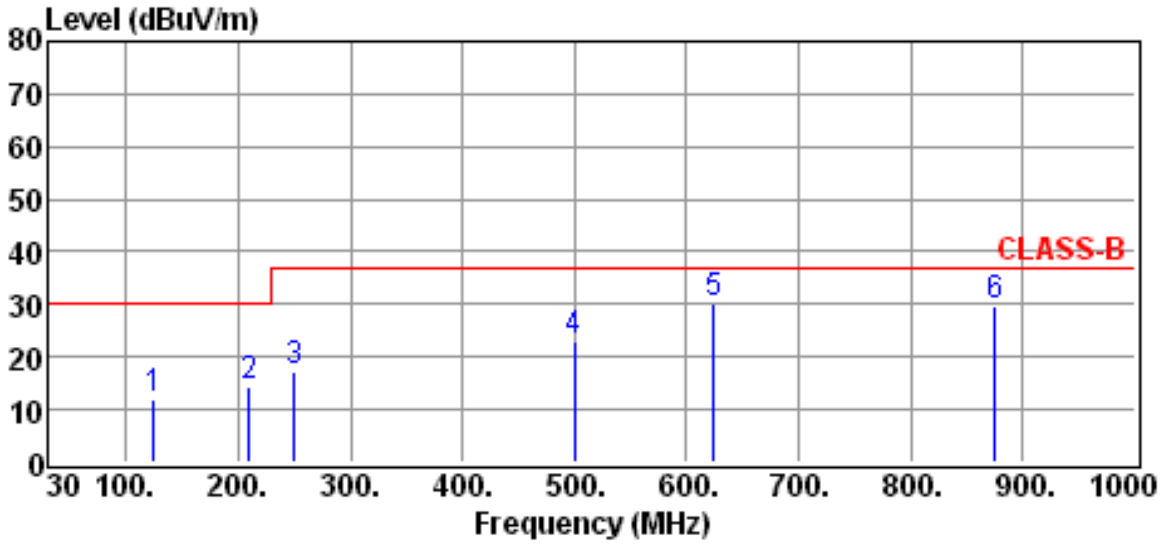


Site	:Open site #2	Date	:2011-09-21
EUT	:11-02-RBF-098	Ant. Pol.	:HORIZONTAL
Model	:	Detector	:QP
Power Rating	:230Vac/50Hz	Engineer	:
Limit	:CLASS-B	Temp.	:30 ˚C
Memo	:	Humi.	:56 %

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB
152.8500	-2.59	13.29	10.70	30.00	-19.30
194.7000	-0.96	14.46	13.50	30.00	-16.50
250.0500	2.87	15.43	18.30	37.00	-18.70
500.2000	2.11	24.99	27.10	37.00	-9.90
624.1000	7.20	26.30	33.50	37.00	-3.50
875.4000	0.96	30.54	31.50	37.00	-5.50

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The expanded uncertainty of the radiated emission tests is 3.53 dB.
4. The margin value=Limit - Result



Site	:Open site #2	Date	:2011-09-21
EUT	:11-02-RBF-098	Ant. Pol.	:VERTICAL
Model	:	Detector	:QP
Power Rating	:230Vac/50Hz	Engineer	:
Limit	:CLASS-B	Temp.	:30 ˚C
Memo	:	Humi.	:56 %

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB
124.7700	-1.48	13.68	12.20	30.00	-17.80
209.8200	0.47	13.93	14.40	30.00	-15.60
250.0500	1.97	15.43	17.40	37.00	-19.60
500.2000	-1.99	24.99	23.00	37.00	-14.00
624.1000	3.90	26.30	30.20	37.00	-6.80
875.4000	-0.94	30.54	29.60	37.00	-7.40

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The expanded uncertainty of the radiated emission tests is 3.53 dB.
4. The margin value=Limit - Result

(Above 1GHz)

Not Applicable

4.1.3.4 Radiated Emissions Test Setup Photos

(30MHz to 1GHz)

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

4.1.4.2 Harmonics Current Emissions Test Data

Operating Conditions of The EUT : Operation Mode

Test Date : Sep. 23, 2011

Test Specification	EN 61000-3-2:2006/A1:2009/A2:2009	
Climatic Condition	Ambient Temperature: 28 °C	Relative Humidity: 49 %RH
Power Supply System	AC Power : 230 Vac 50 Hz	
Test Set-up	Table-top Equipment	

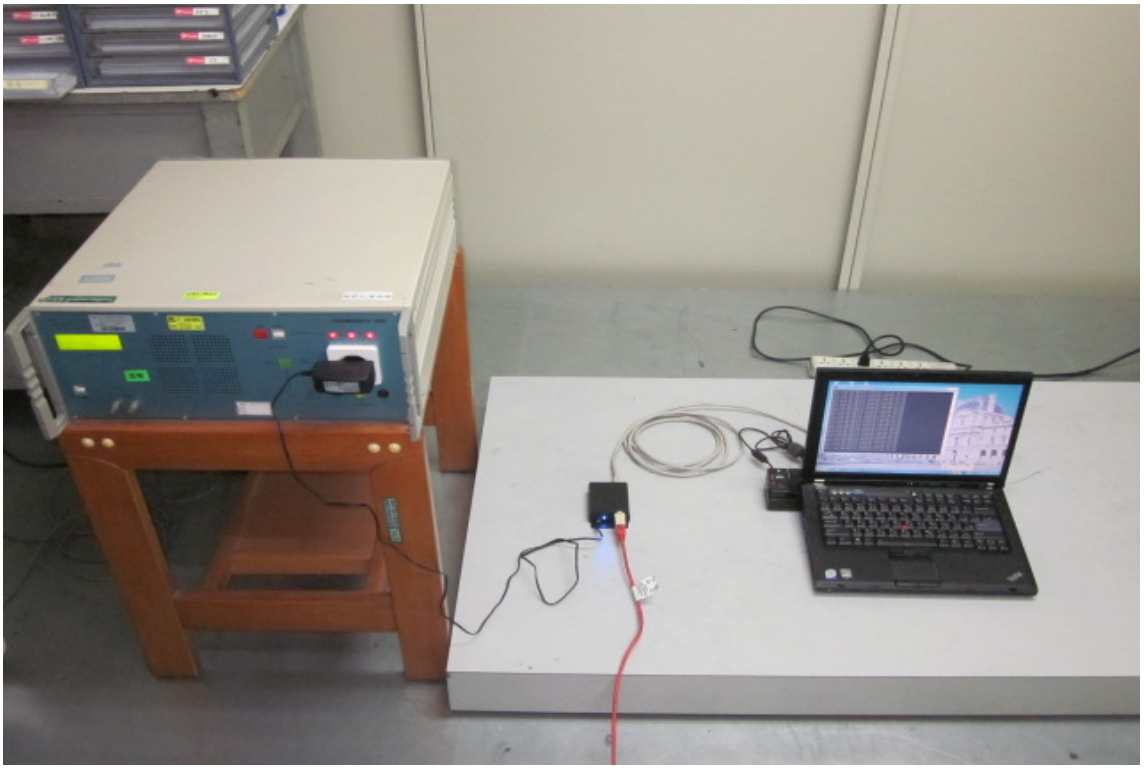
Test data see the next pages.

Urms =	229.9V	Freq =	50	Range:	0.25 A
Irms =	0.026A	Ipk =	0.136A	cf =	5.289
P =	2.657W	S =	5.922VA	pf =	0.449
THDi =	90.30%	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	0.0116	0.0116		21	1050	0	0.0044	0.1071
2	100	0	0.0004	1.08	22	1100	0	0.0004	0.0836
3	150	0.0092	0.0092	2.3	23	1150	0	0.0038	0.0978
4	200	0	0.0004	0.43	24	1200	0	0.0004	0.0767
5	250	0.009	0.009	1.14	25	1250	0	0.0032	0.09
6	300	0	0.0004	0.3	26	1300	0	0.0004	0.0708
7	350	0.0087	0.0087	0.77	27	1350	0	0.0027	0.0833
8	400	0	0.0004	0.23	28	1400	0	0.0004	0.0657
9	450	0.0083	0.0083	0.4	29	1450	0	0.0022	0.0776
10	500	0	0.0004	0.184	30	1500	0	0.0004	0.0613
11	550	0.0077	0.0078	0.33	31	1550	0	0.0019	0.0726
12	600	0	0.0004	0.1533	32	1600	0	0.0003	0.0575
13	650	0.0071	0.0072	0.21	33	1650	0	0.0017	0.0682
14	700	0	0.0004	0.1314	34	1700	0	0.0003	0.0541
15	750	0.0065	0.0065	0.15	35	1750	0	0.0016	0.0643
16	800	0	0.0004	0.115	36	1800	0	0.0003	0.0511
17	850	0.0058	0.0058	0.1324	37	1850	0	0.0015	0.0608
18	900	0	0.0004	0.1022	38	1900	0	0.0003	0.0484
19	950	0.0051	0.0051	0.1184	39	1950	0	0.0015	0.0577
20	1000	0	0.0004	0.092	40	2000	0	0.0003	0.046

4.1.4.3 Harmonics Current Emissions Test Setup Photos



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

4.1.5.2 Voltage Fluctuations and Flicker Test Data

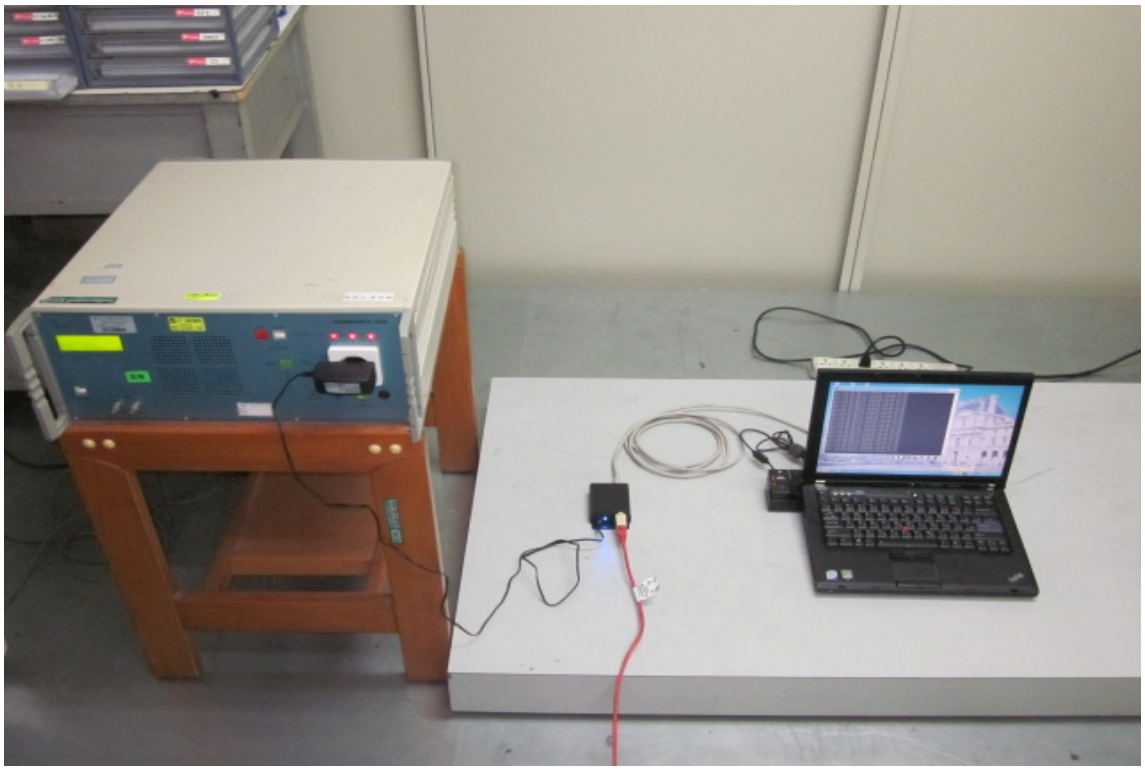
Operating Conditions of The EUT : Operation Mode

Test Date : Sep. 23, 2011

Test Specification	EN 61000-3-3:2008
Climatic Condition	Ambient Temperature: 28 °C Relative Humidity: 49 %RH
Power Supply System	AC Power : 230 Vac 50 Hz
Test Set-up	Table-top Equipment

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

4.1.5.3 Voltage Fluctuations and Flicker Test Setup Photos



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

Test data see the next pages.

Operating Conditions of The EUT : Operation Mode

Test Date : Sep. 23, 2011

Test Specification	IEC 61000-4-2:2008
Climatic Condition	Ambient Temperature: 28 °C Relative Humidity: 48 %RH
	Atmospheric Pressure : 990 mbar
Power Supply System	AC Power : 230 Vac 50 Hz
Test Set-up	Table-top Equipment

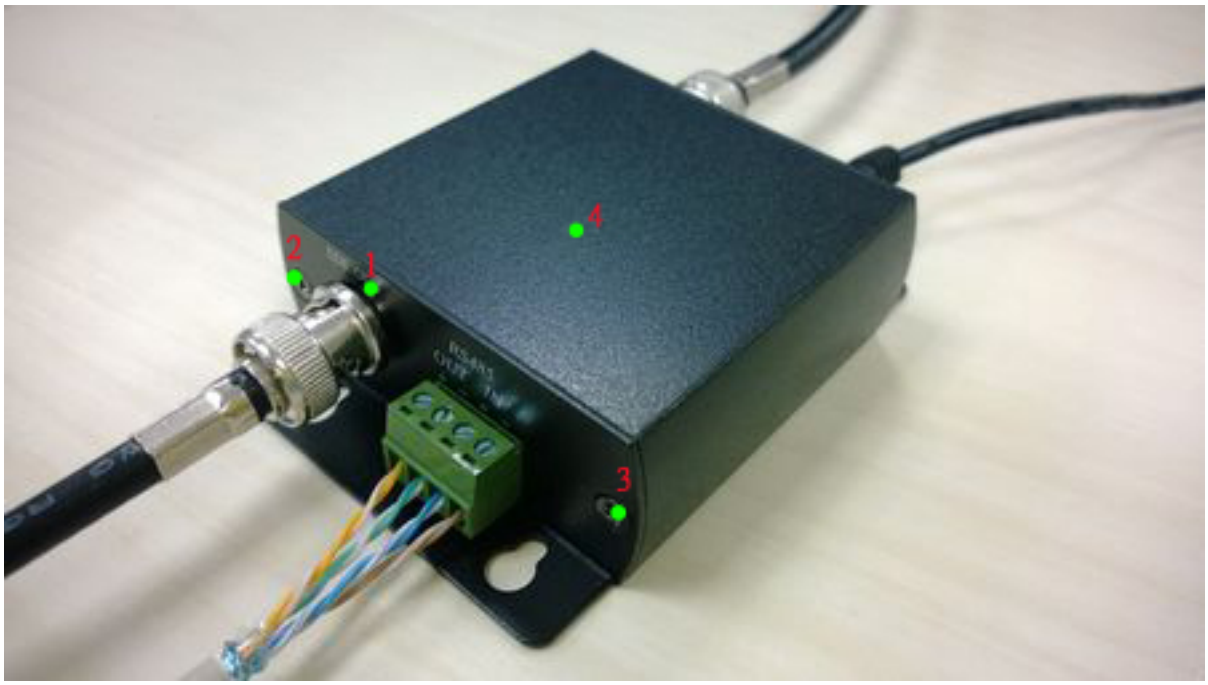
Energy-Storage Capacitor	: 150 pF	Contact Discharge Times	: 25 times/each condition
Discharge Resistor	: 330 Ω	Air Discharge Times	: 10 times/each condition

\ 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	---	---	---	---	---	---	---	---	---	---	---	---
$P_{1,}P_{6\sim}P_{8}$	A	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---
$P_{2}\sim P_{5,}$ $P_{9\sim}P_{10}$	---	---	---	---	---	---	---	---	A	A	A	A	A	A	---	---

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

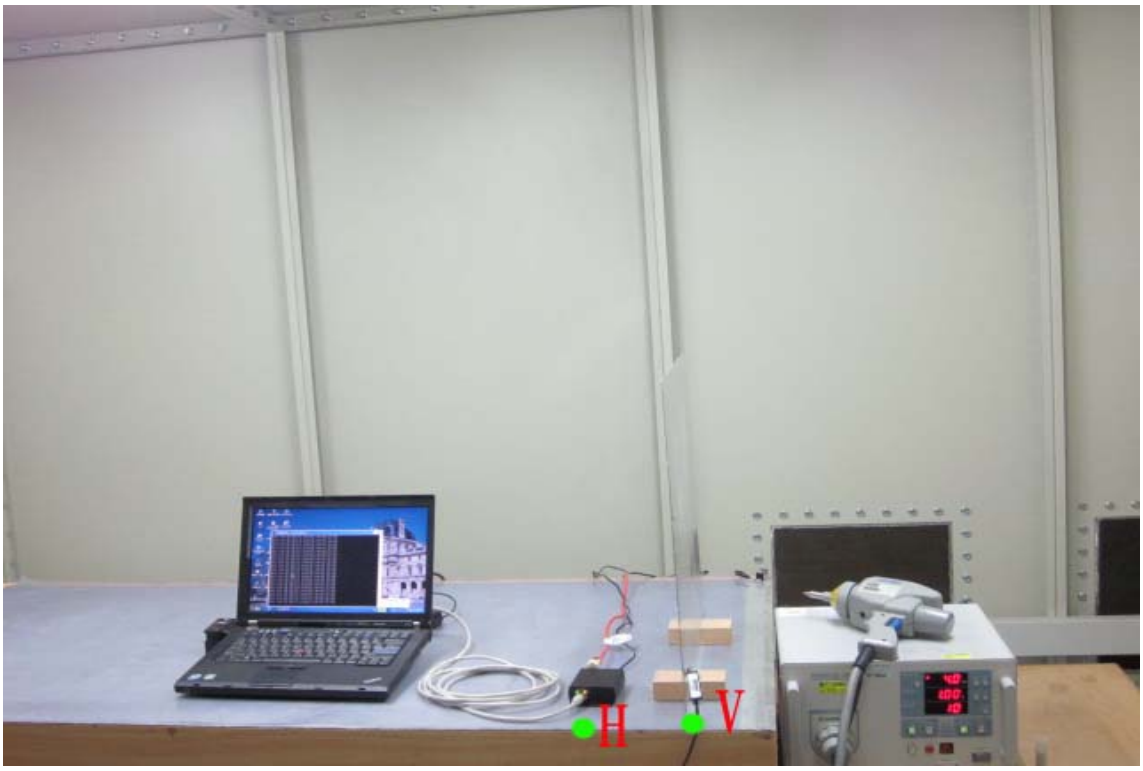
" A " means the EUT's function was correct normal performance during the test.

TEST POINTS



TEST POINTS

4.2.1.3 Electrostatic Discharge Immunity Test Setup Photos



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	2011/08/31	2012/08/29
Amplifier	Ophir	5172	N/A	N/A
Amplifier	Ophir	5127	N/A	N/A
POWER METER	Booton	4232A	2011/08/05	2012/08/03

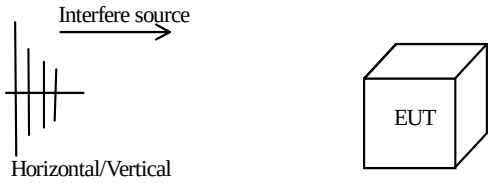
4.2.2.2 RF Radiated Fields Immunity Test Data

Test data see the next pages.

Operating Conditions of The EUT : Operation Mode

Test Date : Sep. 23, 2011

Test Specification	IEC 61000-4-3:2006/A1:2007/A2:2010
Climatic Condition	Ambient Temperature: 28 °C Relative Humidity: 55 %RH
	Atmospheric Pressure : 990 mbar
Power Supply System	AC Power : 230 Vac 50 Hz
Test Set-up	Table-top Equipment



Frequency Range: 80 MHz ~ 1000 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	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

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	2011/08/16	2012/08/14

4.2.3.2 EFT/Burst Immunity Test Data

Test data see the next pages.

Operating Conditions of The EUT : Operation Mode

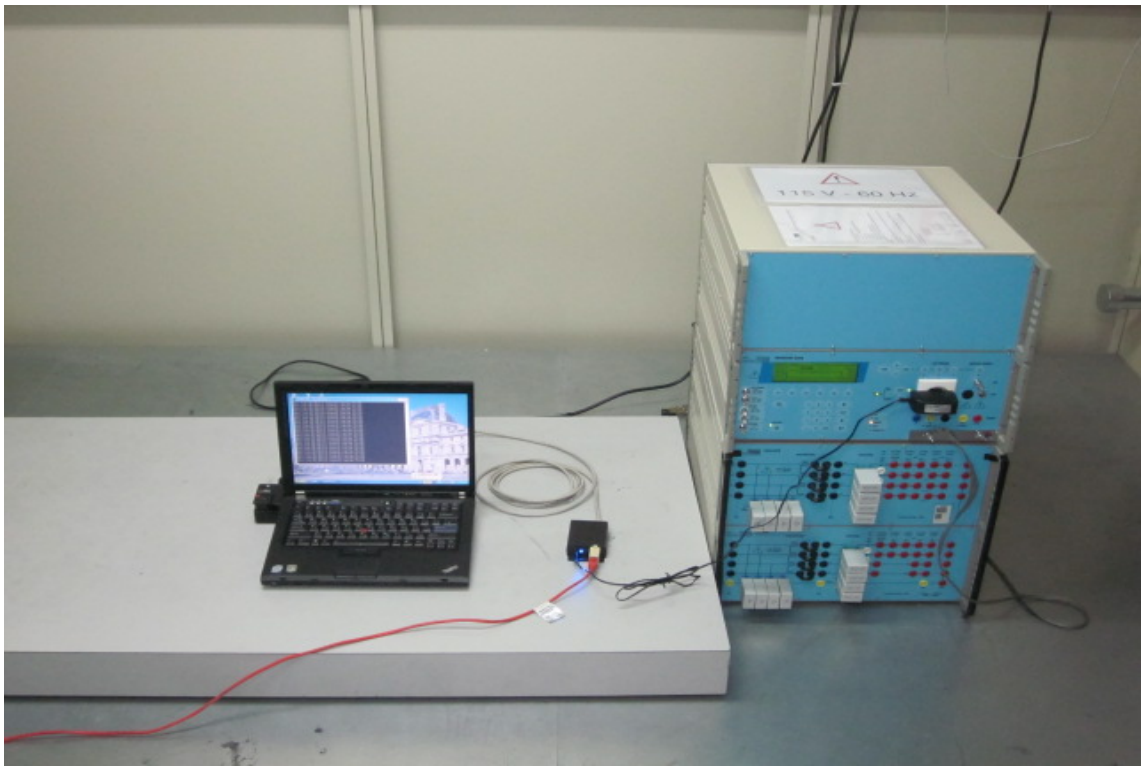
Test Date : Sep. 23, 2011

Test Specification	IEC 61000-4-4:2004/A1:2010	
Climatic Condition	Ambient Temperature: 28 °C	Relative Humidity: 49 %RH
	Atmospheric Pressure : 990 mbar	
Power Supply System	AC Power : 230 Vac 50 Hz	
Test Set-up	Table-top Equipment	

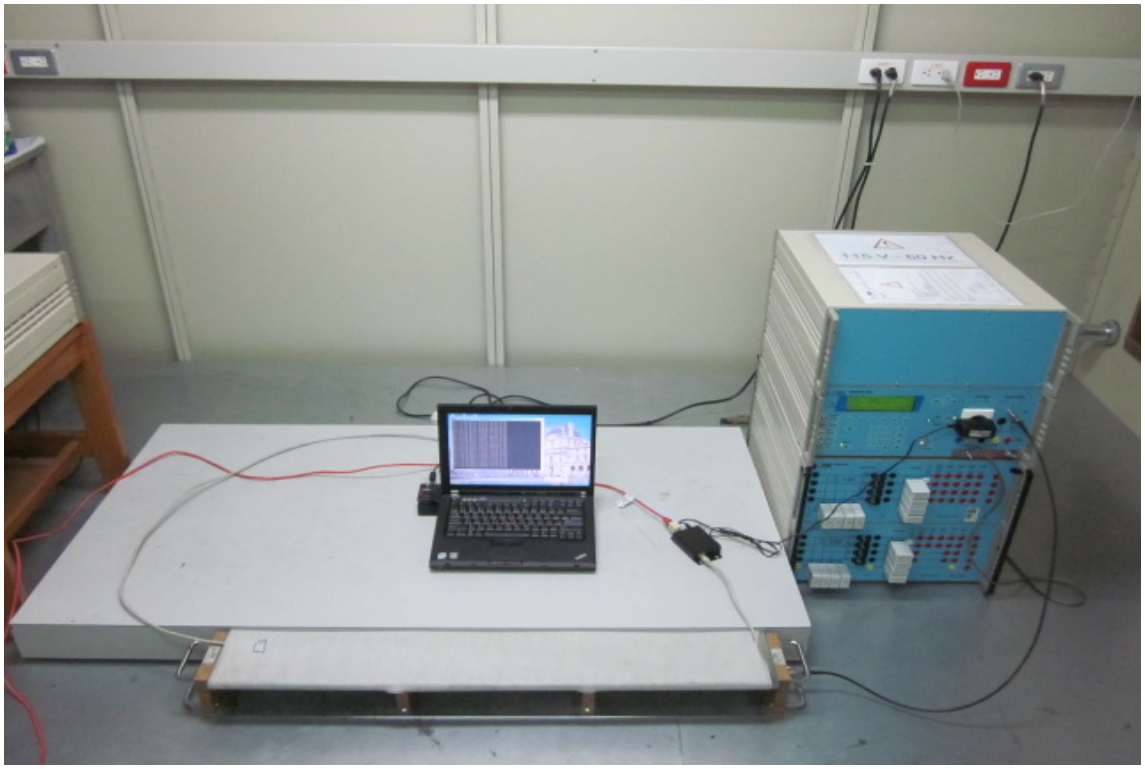
Pulse : 5 /50ns Burst : 15ms /300ms		Repetition Rate : 5kHz	Test time : 1 min/each condition
\Voltage\Polarity\ \Test Point\Mode\Result\		1.0 kV	
		+	-
Power Line	L	A	A
	N	A	A
	L-N	A	A
\Voltage\Polarity\ \Test Point\Mode\Result\		0.5 kV	
		+	-
RJ-45 (Input)		A	A
RJ-45 (Output)		A	A

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

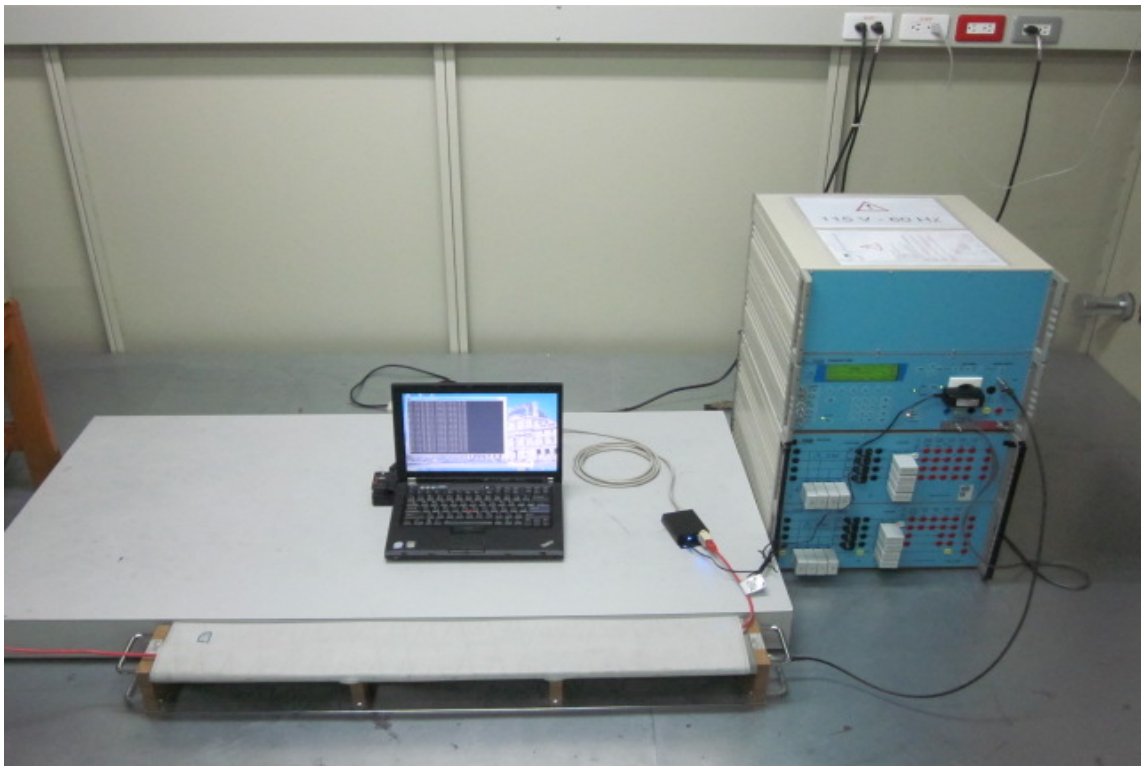
4.2.3.3 EFT/Burst Immunity Test Setup Photos



Test Mode: RJ-45 (Input)



Test Mode: RJ-45 (Output)



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	2011/08/16	2012/08/14

4.2.4.2 Surge Immunity Test Data

Test data see the next pages.

Operating Conditions of The EUT : Operation Mode

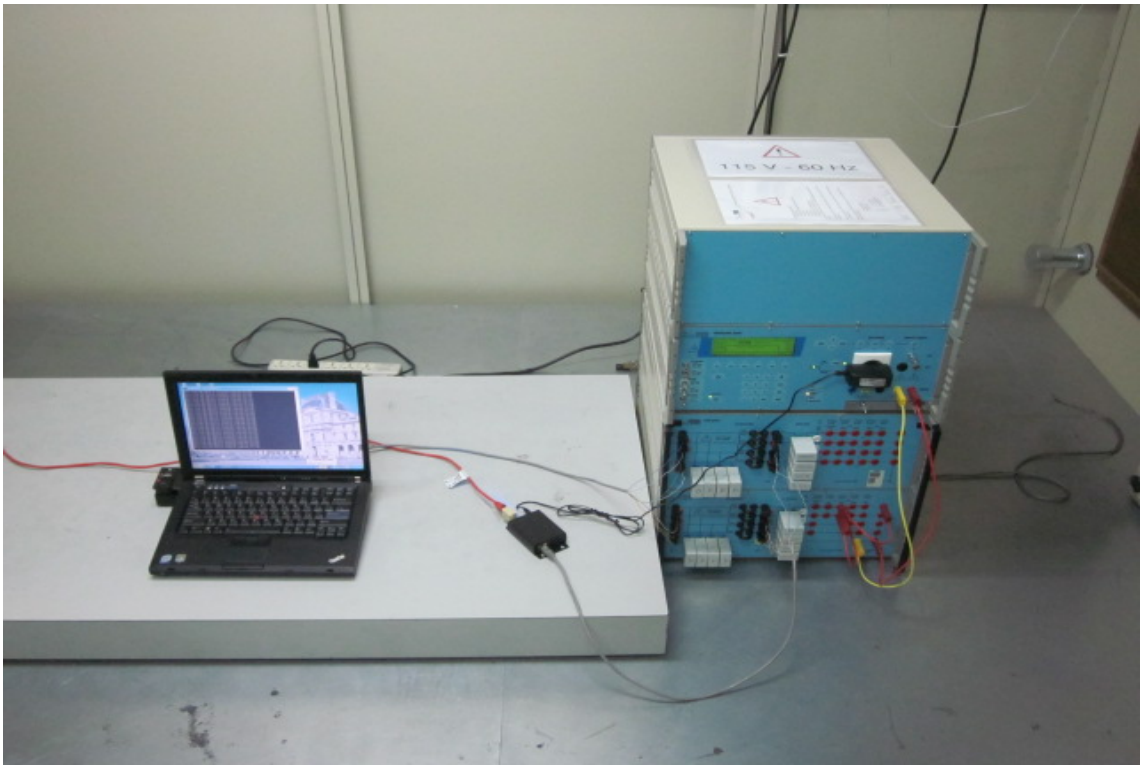
Test Date : Sep. 23, 2011

Test Specification	IEC 61000-4-5:2005
Climatic Condition	Ambient Temperature: 28 °C Relative Humidity: 49 %RH
	Atmospheric Pressure : 990 mbar
Power Supply System	AC Power: 230 Vac 50 Hz
Test Set-up	Table-top Equipment

Waveform : 1.2/50μs(8/20μs)			Repetition rate : 60 sec		Times : 5 time/each condition	
\Phase \Voltage \Mode \Polarity \Result			**0°**	**90°**	**180°**	**270°**
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



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	2010/11/17	2011/11/16
M2+3 CDN-KIT	FRANKONIA	M2+3	2010/10/08	2011/10/07
SCHAFFUER	CS-CLAMP	KEMZ801	2011/08/01	2012/07/30

4.2.5.2 RF Common Mode Immunity Test Data

Test data see the next pages.

Operating Conditions of The EUT : Operation Mode

Test Date : Sep. 23, 2011

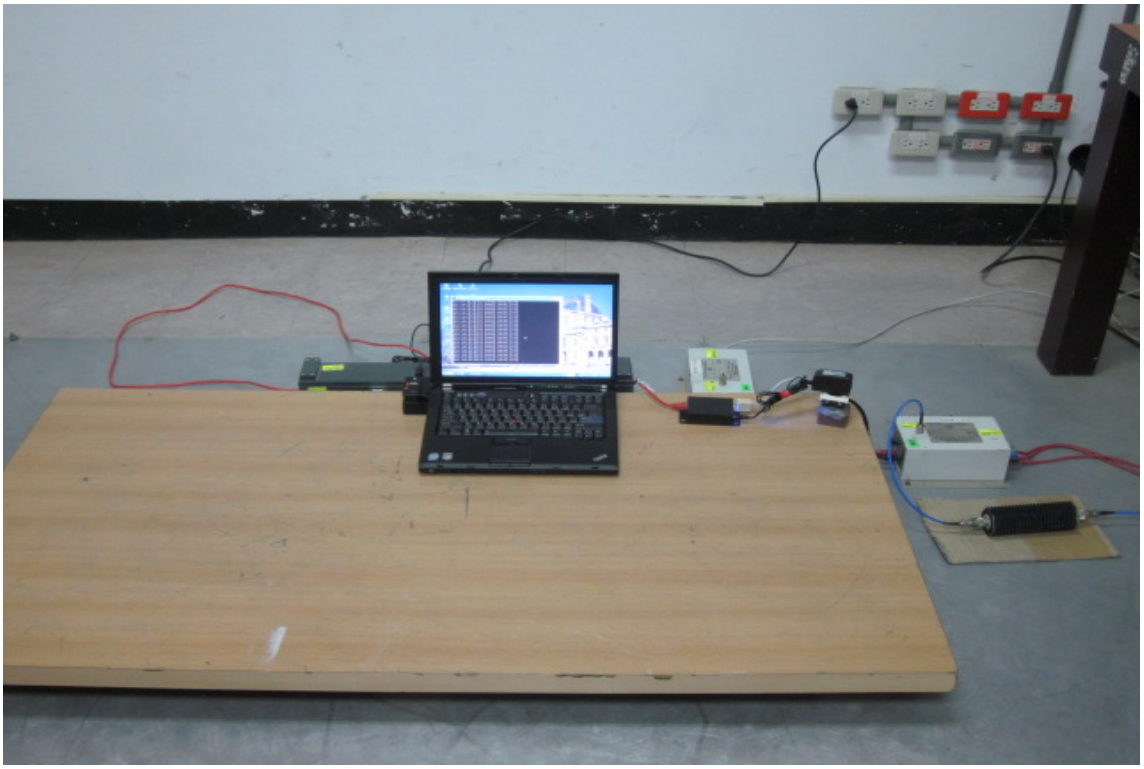
Test Specification	IEC 61000-4-6:2008
Climatic Condition	Ambient Temperature: 28 °C Relative Humidity: 55 %RH
Power Supply System	AC Power : 230 Vac 50 Hz
Test Set-up	Table-top Equipment

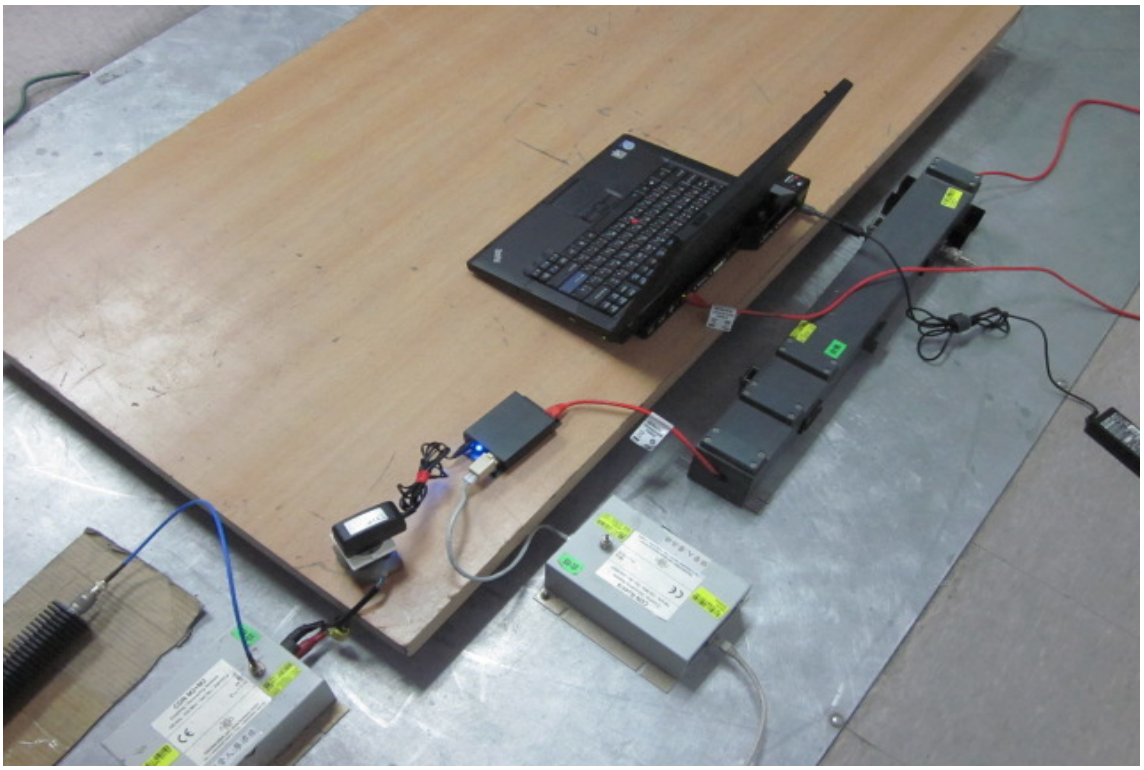
Frequency Range ：0.15 MHz ~ 80 MHz		Test Level ：3 Vrms	Modulation (AM 1kHz 80%)
Sweep Rate	：≤ 1.5×10^{-3} decades/s	Step Size ：≤ 1 % of preceding frequency value	Dwell Time ：2.9 s

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





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	2011/08/16	2012/08/14
Mfgenerator	EMC-PAPTNER	MF-1000	2011/03/08	2012/03/06

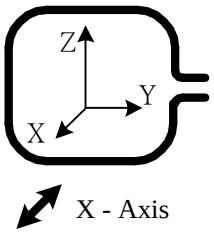
4.2.6.2 Power Frequency Magnetic Field Immunity Test Data:

Test data see the next pages.

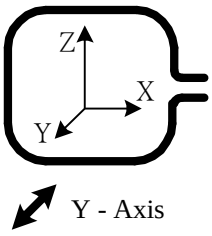
Operating Conditions of The EUT : Operation Mode

Test Date : Sep. 23, 2011

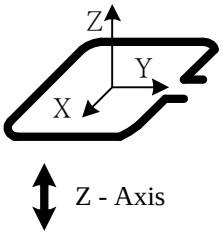
Test Specification	IEC61000-4-8:2009
Climatic Condition	Ambient Temperature: 28 °C Relative Humidity: 49 %RH
	Atmospheric Pressure : 990 mbar
Power Supply System	AC Power : 230 Vac 50 Hz
Test Set-up	Table-top Equipment



X - Axis



Y - Axis

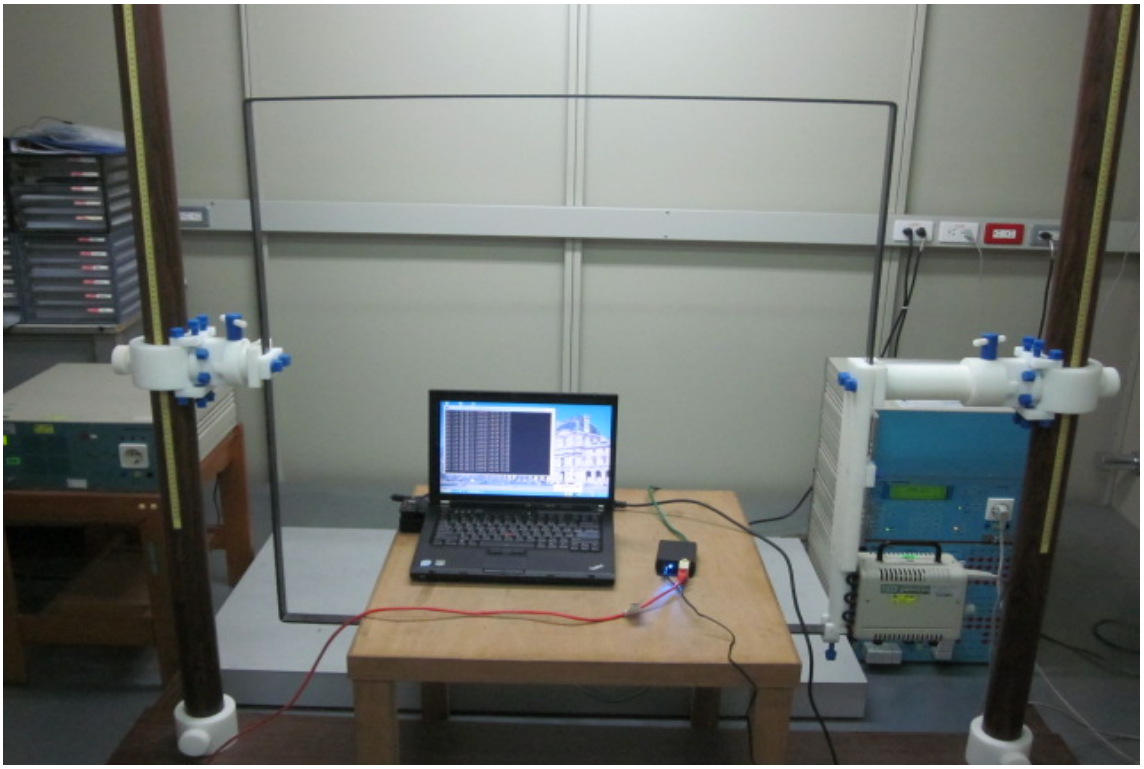


Z - Axis

Magnetic field frequency : 50 Hz	Continuous magnetic field strength : 1 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



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	2011/08/16	2012/08/14

4.2.7.2 Voltage Interruptions and Voltage Dips Immunity Test Data

Test data see the next pages.

Operating Conditions of The EUT : Operation Mode

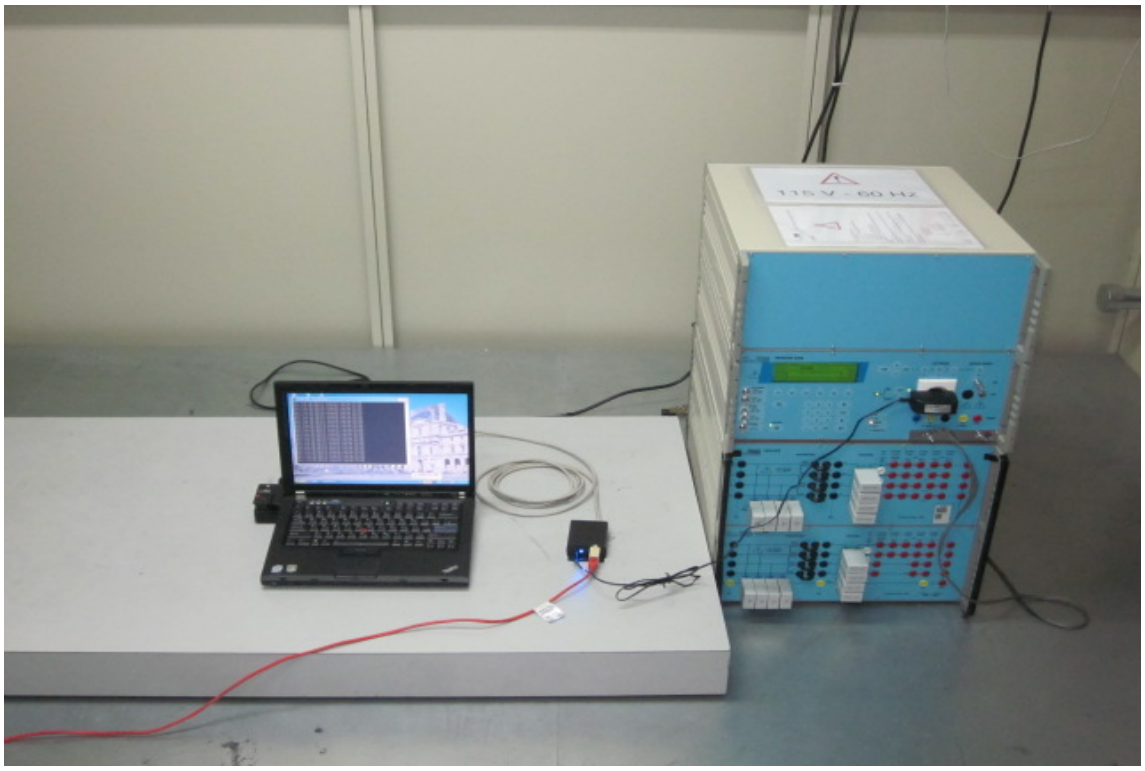
Test Date : Sep. 23, 2011

Test Specification	IEC 61000-4-11:2004
Climatic Condition	Ambient Temperature: 28 °C Relative Humidity: 49 %RH
Power Supply System	AC Power: 100 Vac 60 Hz; AC Power: 240 Vac 50 Hz
Test Set-up	Table-top Equipment

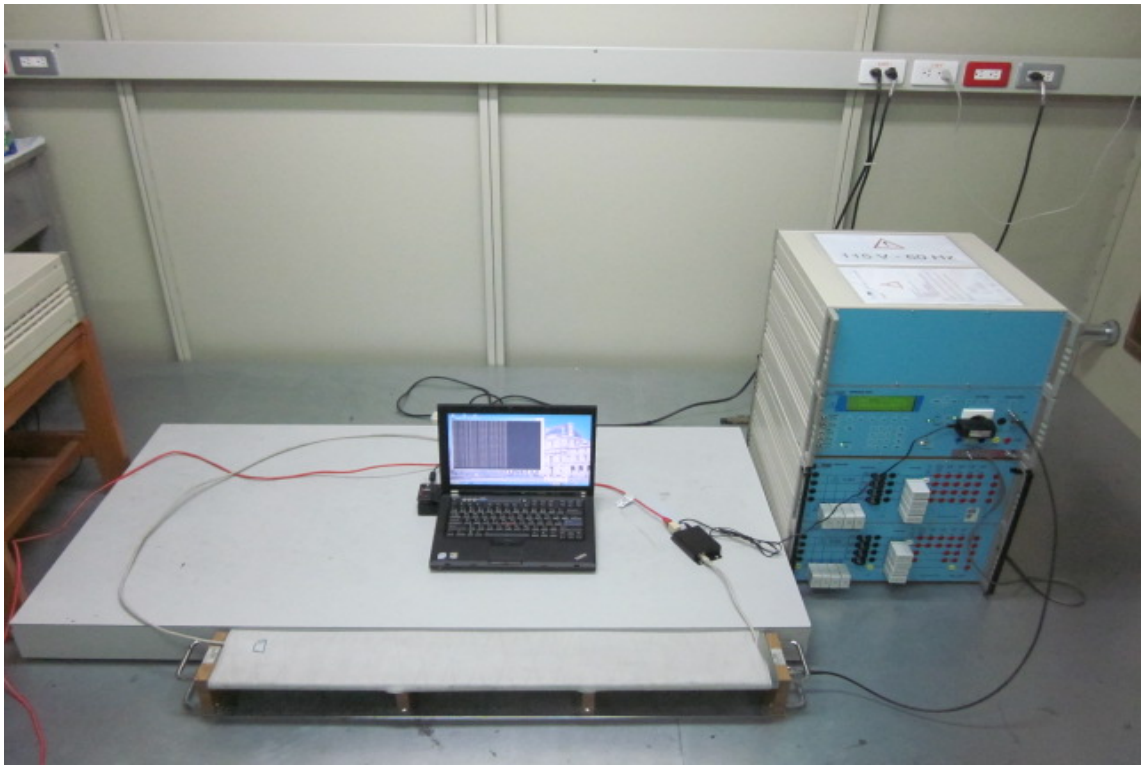
Test mode	Voltage dips	Durations (periods)	Interval(s)	Times	Phase	Result
Voltage interruptions	>95%	250	10	3	$0^o/180^o$	B
	>95%	300	10	3	$0^o/180^o$	B
Voltage dips in $\%U_T$	>95%	0.5	10	3	$0^o/180^o$	B
	30%	25	10	3	$0^o/180^o$	B
	30%	30	10	3	$0^o/180^o$	B

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.

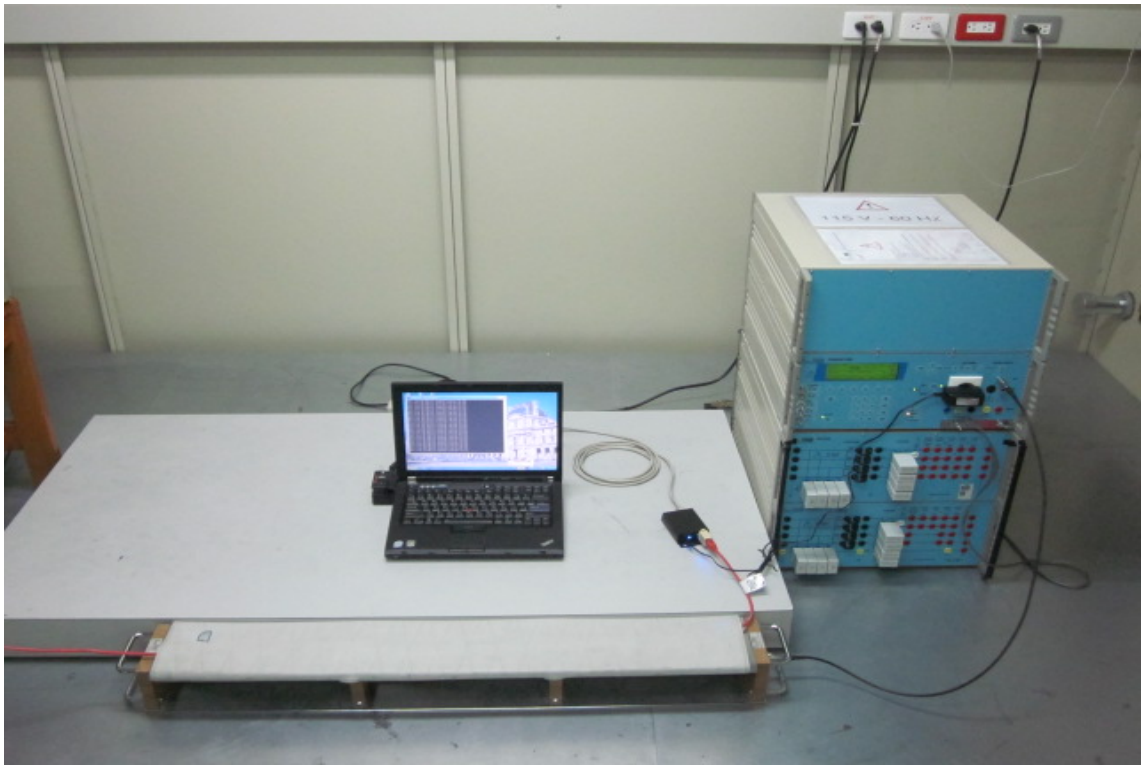
4.2.7.3 Voltage Interruptions and Voltage Dips Immunity Test Setup Photos



Test Mode: (RJ45 Input)



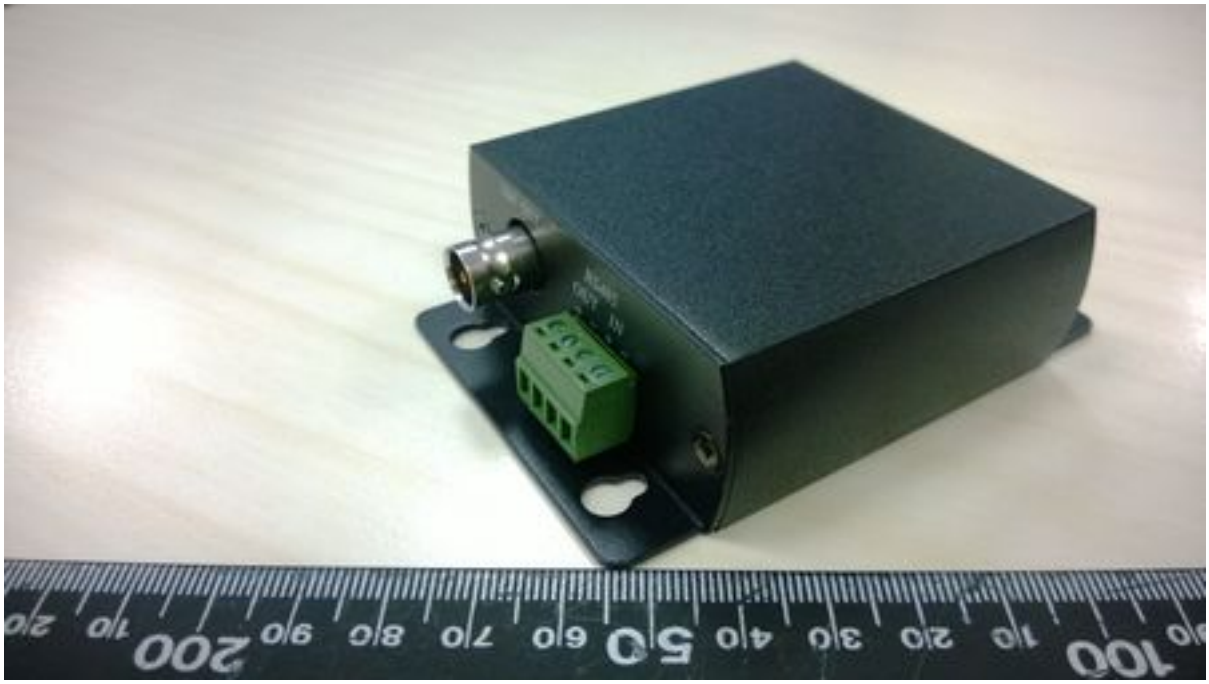
Test Mode: (RJ45 Output)



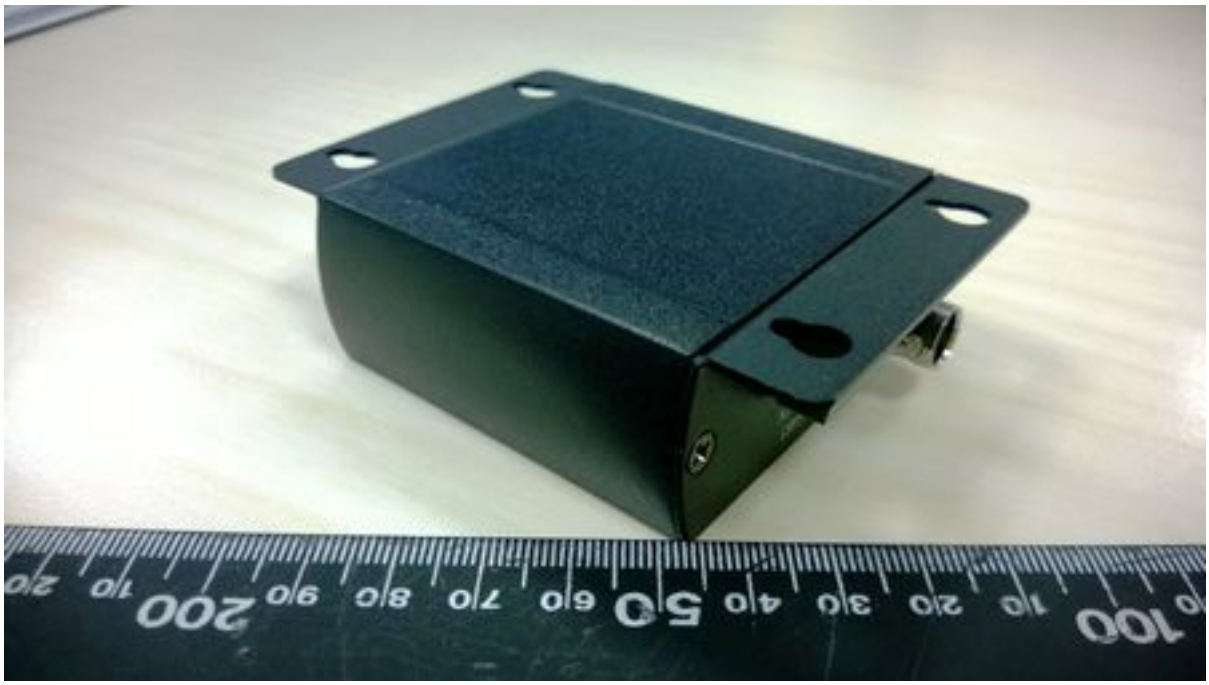
CONSTRUCTED PHOTOS of EUT

(A)FUT

1. Side View of EUT



2. Side View of EUT



CONSTRUCTED PHOTOS of EUT

3. Side View of EUT

4. Internal View of EUT

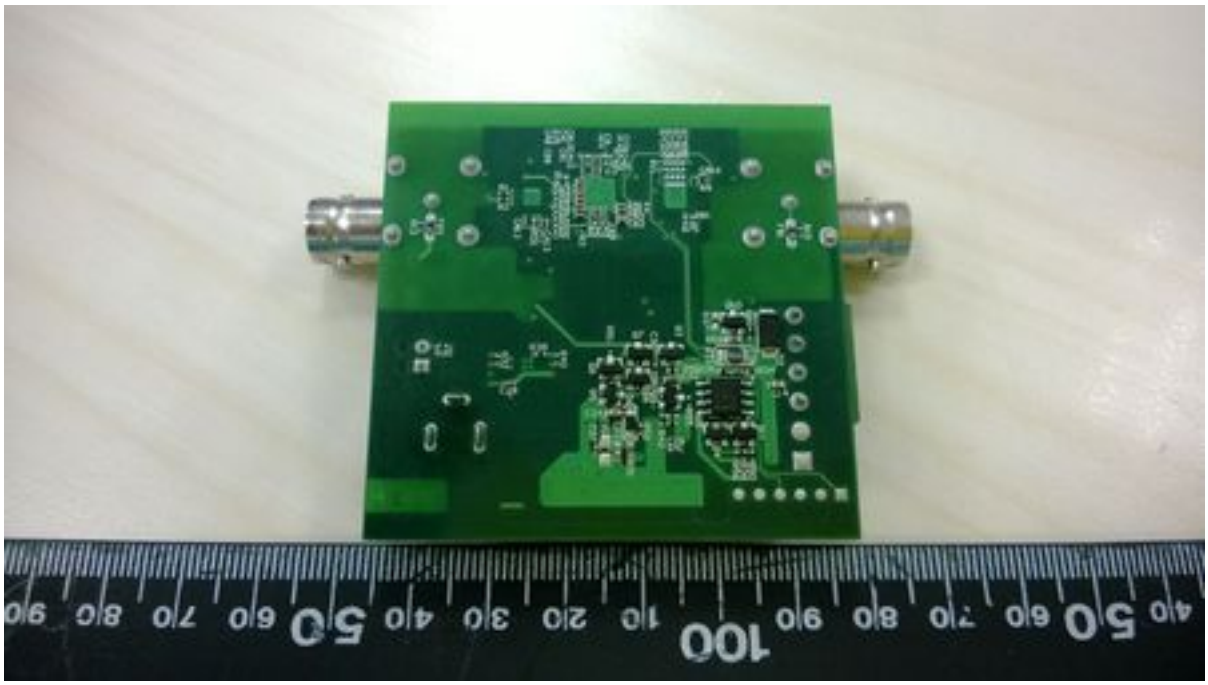
CONSTRUCTED PHOTOS of EUT

5. Component View of PCB

6. Component View of PCB

CONSTRUCTED PHOTOS of EUT

7.Solder View of PCB



CONSTRUCTED PHOTOS of EUT

B)Adapter

1. Total View of Adapter

2. Top View of Adapter

CONSTRUCTED PHOTOS of EUT

3 Side View of Adapter

4.Side View of Adapter

CONSTRUCTED PHOTOS of EUT

5.Bottom View of Adapter