



EMC TEST REPORT

Authorized under Declaration of Conformity

According to

EN 55022 : 2010 / AC:2011

EN 61000-3-2: 2006+A2: 2009

EN 61000-3-3 : 2008

EN 55024 : 2010

IEC 61000-4-2 : 2008

IEC 61000-4-3 : 2006+A1:2007+A2:2010

IEC 61000-4-4 : 2012

IEC 61000-4-5 : 2005

IEC 61000-4-6 : 2008

IEC 61000-4-8 : 2009

IEC 61000-4-11 : 2004

Applicant : Intracom Asia Co., Ltd

Address : 4F., No.77, Sec.1, Xintai 5th Rd., Xizhi Dist., New Taipei City
221, Taiwan

Equipment : Fast Ethernet PCI Network Card

Model No. : 509510

Trademark : Intellinet

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History of this test report

☒ Original

☐ Additional attachment as following record:

Attachment No.	Date	Description



CERTIFICATE OF COMPLIANCE

According to

EN 55022 : 2010 / AC:2011

EN 61000-3-2: 2006+A2: 2009

EN 61000-3-3 : 2008

EN 55024 : 2010

IEC 61000-4-2 : 2008

IEC 61000-4-3 : 2006+A1:2007+A2:2010

IEC 61000-4-4 : 2012

IEC 61000-4-5 : 2005

IEC 61000-4-6 : 2008

IEC 61000-4-8 : 2009

IEC 61000-4-11 : 2004

Applicant : Intracom Asia Co., Ltd

Address : 4F., No.77, Sec.1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221,
Taiwan

Equipment : Fast Ethernet PCI Network Card

Model No. : 509510

Trademark : Intellinet

I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **EUROPEAN COUNCIL DIRECTIVE 2004/108/EC& 2014/30/EU**.

The test was carried out on Oct .23~31, 2014 at **CerpPASS Technology(Suzhou) Corp.**

Signature

Miro Chueh/ Technical director



1. Summary of Test Procedure and Test Results

Test Item	Normative References	Test Result
Conducted Emission	EN55022:2010/AC:2011	PASS
Radiated Emission	EN55022:2010/AC:2011	PASS
Harmonics	EN 61000-3-2 : 2006+A2: 2009	PASS
Voltage Fluctuations	EN 61000-3-3: 2008	PASS
Electrostatic Discharge Immunity Test (ESD)	IEC 61000-4-2 : 2008	PASS
Radio Frequency electromagnetic field immunity test (RS)	IEC 61000-4-3 : 2006+A1:2007+A2:2010	PASS
Electrical Fast Transient/ Burst Immunity Test (EFT)	IEC 61000-4-4 : 2012	PASS
Surge Immunity Test	IEC 61000-4-5 : 2005	PASS
Conduction Disturbances induced by Radio-Frequency Fields	IEC 61000-4-6 : 2008	PASS
Power Frequency Magnetic Field Immunity Test	IEC 61000-4-8 : 2009	N/A
Voltage Dips and Voltage Interruptions Immunity Test	IEC 61000-4-11 : 2004	PASS

2. Immunity Testing Performance Criteria Definition

- A. Normal performance within limits specified by the manufacture, requestor or purchaser;
- B. Temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention;
- C. Temporary loss of function or degradation of performance, the correction of which requires operation intervention;
- D. Loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data.



3. Test Configuration of Equipment under Test

3.1. Factory

Intracom Asia Co., Ltd
4F., No.77, Sec.1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221, Taiwan

3.2. Feature of Equipment under Test

Equipment	Fast Ethernet PCI Network Card
Model No:	509510

3.3. Test Manner

a	During testing, the interface cables and equipment positions were varied according to Europe Standard.
b	The complete test system included auxiliary equipment and EUT for EMI test.
c	And then test.
The pre-test modes	
Conducted Emission (Power port)	Test Mode 1: Normal Link
Conducted Emission (Telecom port)	ISN RJ45 10Mbps /100Mbps LINK 10%
Radiated Emission EMS/H-F:	Test Mode 1: Normal Link
The worse case was selected as the final test mode and record in the report	
Test Mode 1: Normal Link	



3.4. Description of Test System

No	Device	Manufacturer	Model No.	Description
1	PC	DELL	Dell Optitle 380	N/A
2	Notebook	SONY	PCG-71811P	R33021
3	LCD Monitor	DELL	U3011T	R43004
4	Printer	HP	DESKJET 400	N/A
5	HDD	N/A	USB 3.0 HDD	N/A
6	USB Mouse	DELL	OXN967	R41108
7	USB Mouse	DELL	MG1090	R41108
8	USB Keyboard	DELL	SK-8115	T3A002

Use Cable:

No.	Cable	Quantity	Description
A	RJ45	1	1m Shielded with two core
B	VGA Cable	1	1.8 Shielded with two core
C	USB Cable	1	1.8 Shielded
D	USB Cable	1	0.4 Unshielded
E	USB Cable	1	1.8 Unshielded
F	USB Cable	1	1.8 Unshielded
G	USB Cable	1	1.8 Unshielded



3.5. General Information of Test

Test Site:	Cerpass Technology (Suzhou) Co.,Ltd
Test Site Location :	No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China
NVLAP LAB Code :	200814-0
FCC Registration Number :	916572, 331395
IC Registration Number :	7290A-1, 7290A-2
VCCI Registration Number :	T-1945 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test below 1GHz G-227 for Radiated emission test above 1GHz
Frequency Range Investigated :	Conducted Emission Test: from 150kHz to 30 MHz Radiated Emission Test: from 30 MHz to 1,000 MHz Radiated Emission Test: from 1GHz to 6GHz
Test Distance :	The test distance of radiated emission below 1GHz from antenna to EUT is 10 M. The test distance of radiated emission above 1GHz from antenna to EUT is 3 M.

LABORATORY ACCREDITATION



3.6. Measurement Uncertainty

Test results and Measurement uncertainty without any relationship in the test report.

Conducted Emission		
The measurement uncertainty is evaluated as ± 2.71 dB.		
Radiated Emission		
(30MHz -1000MHz)	Horizontal	The measurement uncertainty is evaluated as ± 3.59 dB.
	Vertical	The measurement uncertainty is evaluated as ± 3.89 dB
(1G-6GHz)	Horizontal	The measurement uncertainty is evaluated as ± 2.31 dB.
	Vertical	The measurement uncertainty is evaluated as ± 2.15 dB.



4. Test of Conducted Emission

4.1. Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 kHz and return leads of the EUT according to the methods defined in European Standard EN 55022 Clause 9. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 5.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position producing maximum conducted emissions.

Table 1 Class B Line Conducted Emission Limits:

Frequency range (MHz)	Limits (dB μ V)	
	Quasi Peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5. to 30.	60	50
Note 1: The lower limits shall apply at the transition frequencies.		
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.		

Table 2 - Limits of conducted common mode (asymmetric mode) disturbance at telecommunication ports in the frequency range 0.15 MHz to 30 MHz for class B equipment.

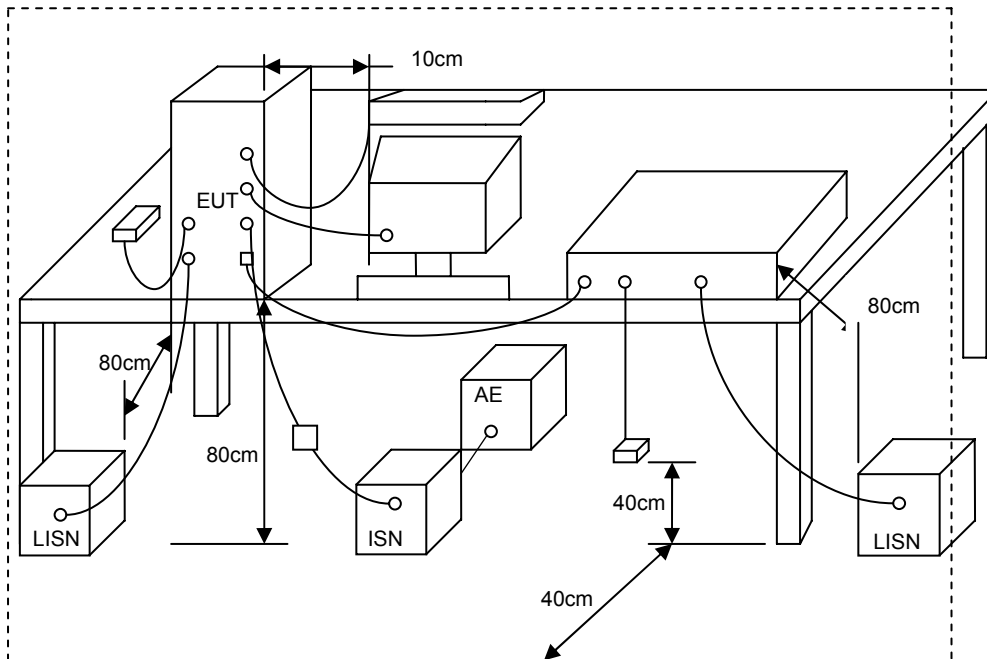
Frequency range (MHz)	Voltage limits dB(μ V)		Current limits dB(μ A)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 to 0.5	84 to 74	74 to 64	40 to 30	30 to 20
0.5 to 30	74	64	30	20
Note 1: The limits decrease linearly with the logarithm of the frequency in the range 0.15 to 0.5 MHz.				
Note 2: The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150 Ω to the telecommunication under test (conversion factor is $20 \log_{10} 150/1 = 44\text{dB}$).				



4.2. Test Procedures

- The EUT was placed on a desk 0.8 meters height from the metal ground plane and 0.4 meter from the conducting wall of the shielding room and it was kept at least 0.8 meters from any other grounded conducting surface.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The CISPR states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched
- Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

4.3. Typical Test Setup



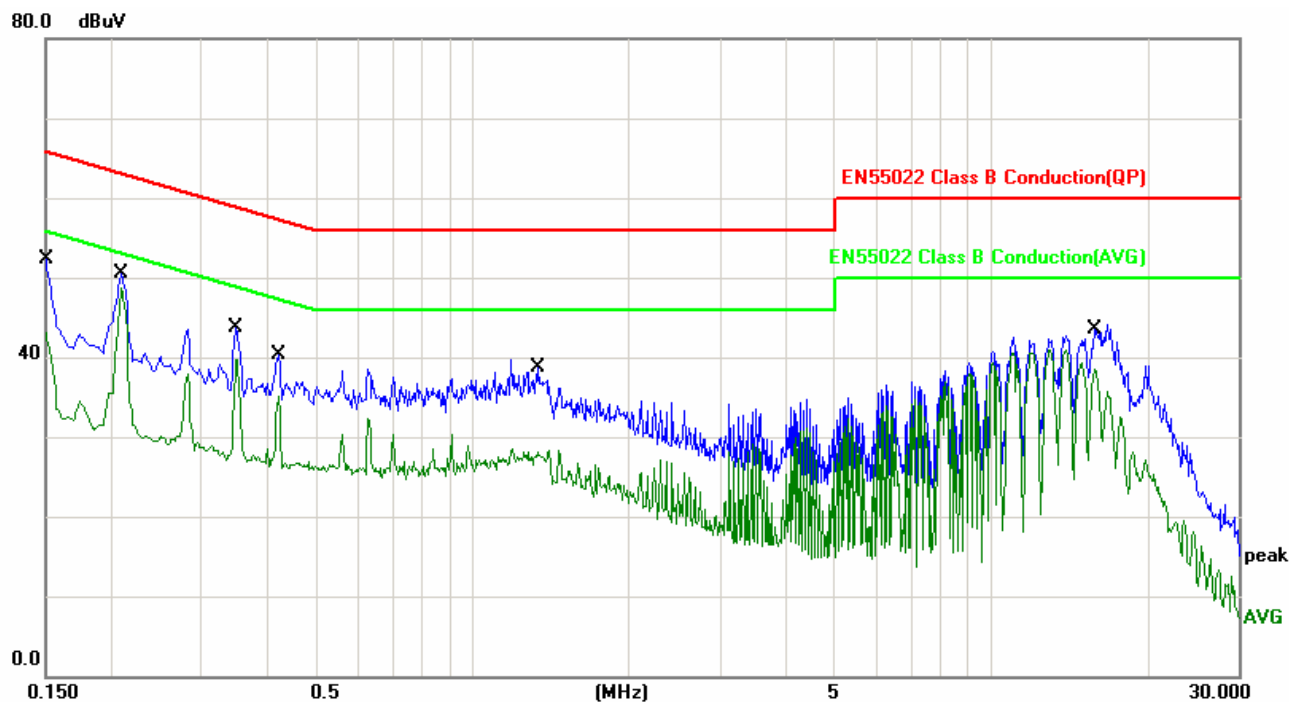
**4.4. Measurement equipment**

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Test Receiver	R&S	ESCI	100565	2014.03.24	2015.03.23
AMN	R&S	ESH2-Z5	100182	2014.09.11	2015.09.10
Two-Line V-Network	R&S	ENV216	100325	2013.12.04	2014.12.03
ISN	FCC	FCC-TLISN-T2-02	20379	2014.03.24	2015.03.23
ISN	FCC	FCC-TLISN-T4-02	20380	2014.03.24	2015.03.23
ISN	FCC	FCC-TLISN-T8-02	20381	2014.03.24	2015.03.23
ISN	TESEQ	ISN ST08	30175	2014.03.24	2015.03.23
Current Probe	R&S	EZ-17	100303	2014.04.04	2015.04.03
Passive Voltage Probe	R&S	ESH2-Z3	100026	2014.03.24	2015.03.23
Pulse Limiter	R&S	ESH3-Z2	100529	2014.03.24	2015.03.23
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-004	2014.03.31	2015.03.30



4.5. Test Data and Result

Test Mode :	Mode 1: Normal Link		
AC Power :	AC 230V/50Hz	Phase :	LINE
Temperature :	22°C	Humidity :	50%
Pressure(mbar) :	1002	Date:	2014/10/23

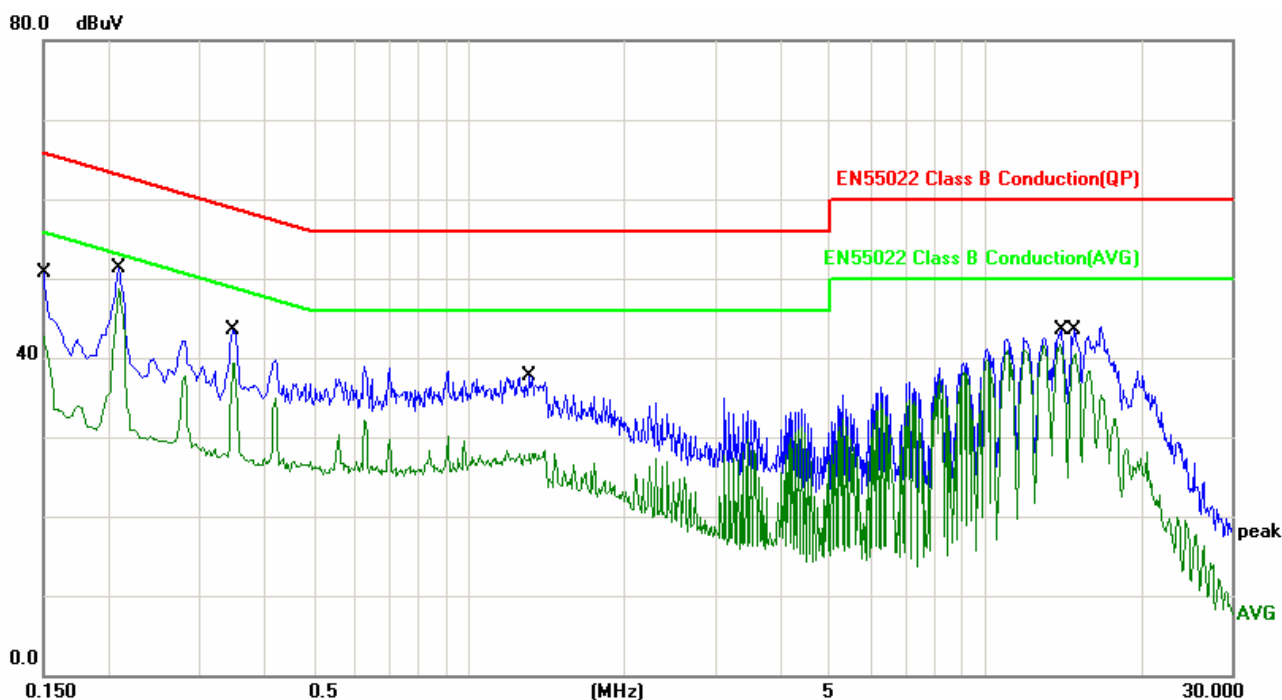


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	9.70	34.97	44.67	65.99	-21.32	QP
2	0.1500	9.70	32.59	42.29	56.00	-13.71	AVG
3	0.2100	9.69	39.67	49.36	63.20	-13.84	QP
4	0.2100	9.69	39.07	48.76	54.28	-5.52	AVG
5	0.3500	9.67	31.75	41.42	58.96	-17.54	QP
6	0.3500	9.67	29.86	39.53	50.28	-10.75	AVG
7	0.4220	9.67	27.83	37.50	57.41	-19.91	QP
8	0.4220	9.67	25.19	34.86	48.23	-13.37	AVG
9	1.3420	9.66	23.75	33.41	56.00	-22.59	QP
10	1.3420	9.66	18.47	28.13	46.00	-17.87	AVG
11	15.8660	10.02	30.06	40.08	60.00	-19.92	QP
12	15.8660	10.02	28.68	38.70	50.00	-11.30	AVG

Note: Measurement Level = Reading Level + Correct Factor+ Attenuator



Test Mode :	Mode 1: Normal Link		
AC Power :	AC 230V/50Hz	Phase :	NEUTRAL
Temperature :	22° C	Humidity :	50%
Pressure(mbar) :	1002	Date:	2014/10/23

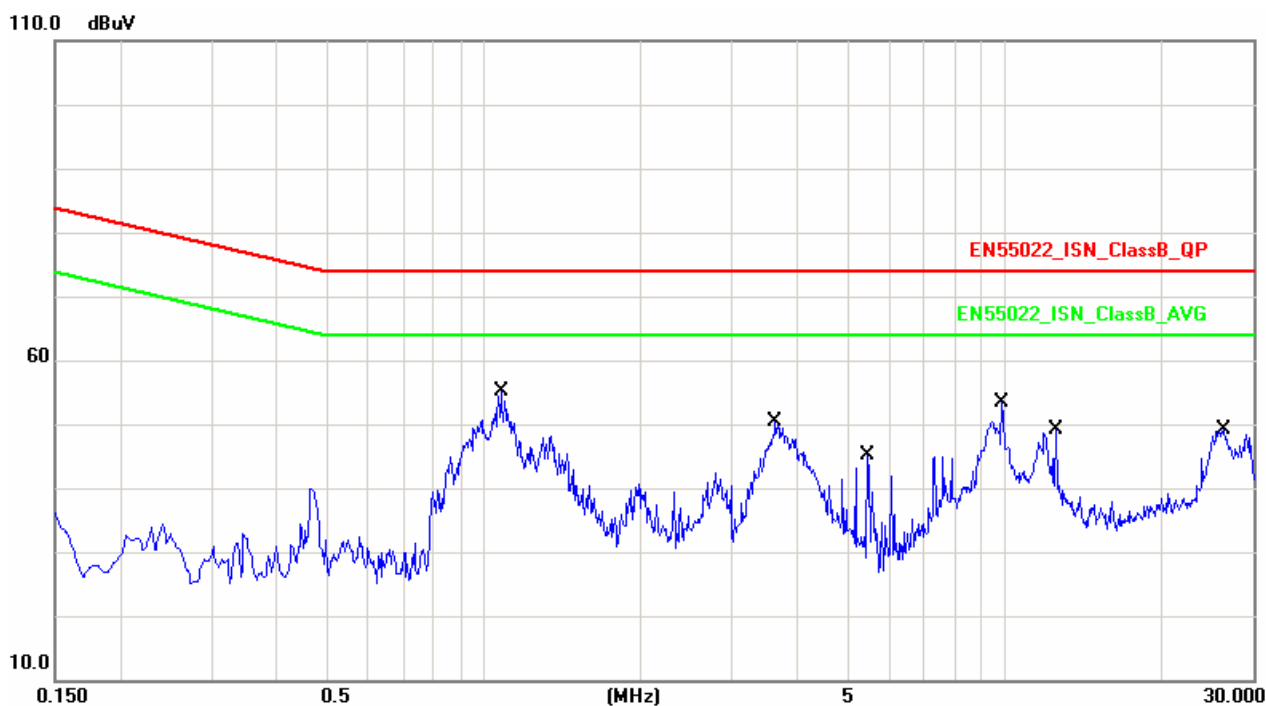


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	9.70	34.81	44.51	65.99	-21.48	QP
2	0.1500	9.70	32.40	42.10	56.00	-13.90	AVG
3	0.2100	9.69	39.68	49.37	63.20	-13.83	QP
4	0.2100	9.69	39.09	48.78	54.28	-5.50	AVG
5	0.3500	9.67	31.77	41.44	58.96	-17.52	QP
6	0.3500	9.67	29.94	39.61	50.28	-10.67	AVG
7	1.3099	9.66	22.47	32.13	56.00	-23.87	QP
8	1.3099	9.66	17.25	26.91	46.00	-19.09	AVG
9	13.9500	9.95	30.63	40.58	60.00	-19.42	QP
10	13.9500	9.95	30.34	40.29	50.00	-9.71	AVG
11	14.8460	9.98	29.71	39.69	60.00	-20.31	QP
12	14.8460	9.98	29.03	39.01	50.00	-10.99	AVG

Note: Measurement Level = Reading Level + Correct Factor+ Attenuator



Test Mode :	ISN RJ45 10Mbps LINK 10%		
AC Power :	AC 230V/50Hz	Phase :	10M
Temperature :	22°C	Humidity :	50%
Pressure(mbar) :	1002	Date:	2014/10/31

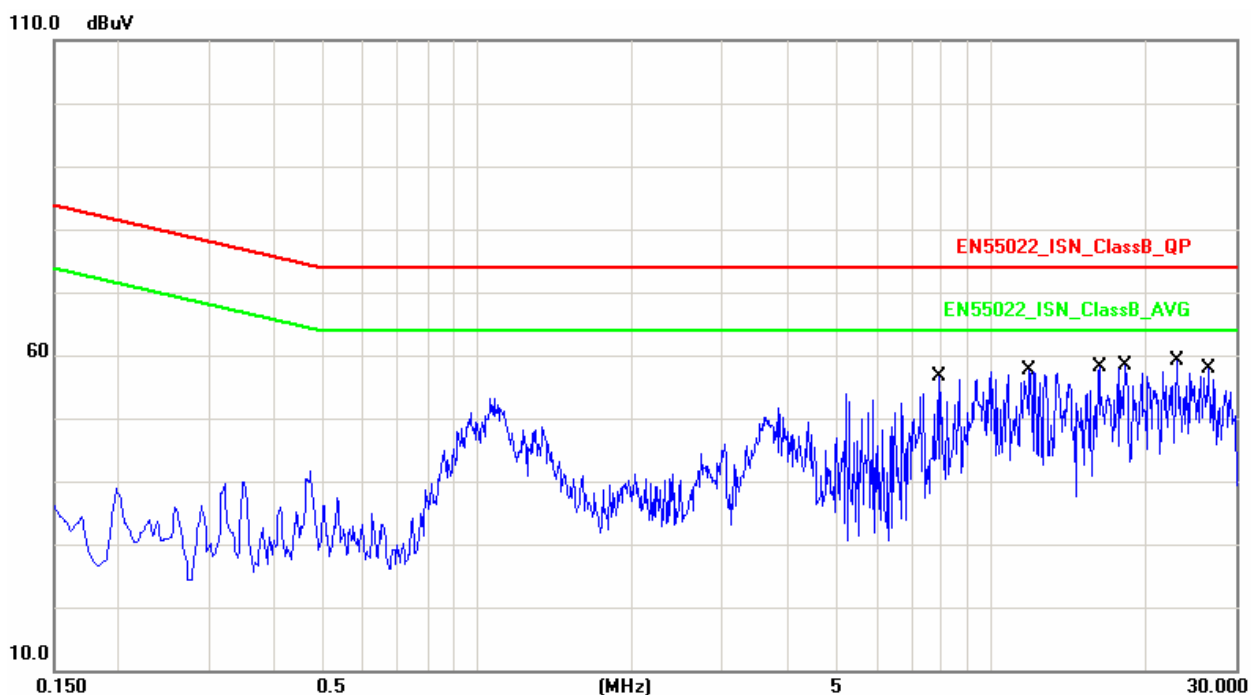


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	1.0820	19.61	29.24	48.85	74.00	-25.15	QP
2	1.0820	19.61	22.91	42.52	64.00	-21.48	AVG
3	3.6380	19.64	26.17	45.81	74.00	-28.19	QP
4	3.6380	19.64	16.70	36.34	64.00	-27.66	AVG
5	5.4660	19.66	3.82	23.48	74.00	-50.52	QP
6	5.4660	19.66	-1.03	18.63	64.00	-45.37	AVG
7	9.9060	19.78	21.51	41.29	74.00	-32.71	QP
8	9.9060	19.78	14.30	34.08	64.00	-29.92	AVG
9	12.5180	19.75	15.74	35.49	74.00	-38.51	QP
10	12.5180	19.75	9.82	29.57	64.00	-34.43	AVG
11	26.3020	19.84	23.44	43.28	74.00	-30.72	QP
12	26.3020	19.84	17.05	36.89	64.00	-27.11	AVG

Note: Measurement Level = Reading Level + Correct Factor+ Attenuator



Test Mode :	ISN RJ45 100M LINK 10%		
AC Power :	AC 230V/50Hz	Phase :	100M
Temperature :	22°C	Humidity :	50%
Pressure(mbar) :	1002	Date:	2014/09/15



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	7.9260	19.69	35.89	55.58	74.00	-18.42	QP
2	7.9260	19.69	32.62	52.31	64.00	-11.69	AVG
3	11.8940	19.76	35.76	55.52	74.00	-18.48	QP
4	11.8940	19.76	33.34	53.10	64.00	-10.90	AVG
5	16.2300	19.74	35.41	55.15	74.00	-18.85	QP
6	16.2300	19.74	34.38	54.12	64.00	-9.88	AVG
7	18.2500	19.78	36.94	56.72	74.00	-17.28	QP
8	18.2500	19.78	37.12	56.90	64.00	-7.10	AVG
9	23.1340	19.81	37.58	57.39	74.00	-16.61	QP
10	23.1340	19.81	37.78	57.59	64.00	-6.41	AVG
11	26.6180	19.85	36.74	56.59	74.00	-17.41	QP
12	26.6180	19.85	36.45	56.30	64.00	-7.70	AVG

Note: Measurement Level = Reading Level + Correct Factor+ Attenuator

Test engineer: Cerpass

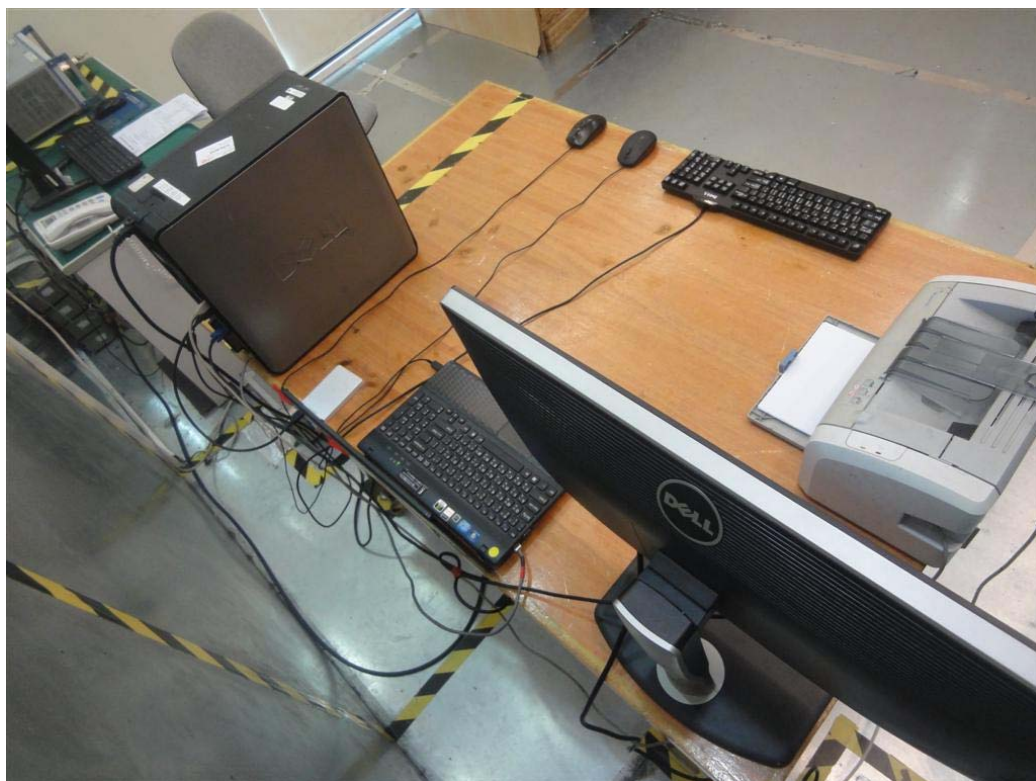


4.6. Test Photographs

Front View



Rear View



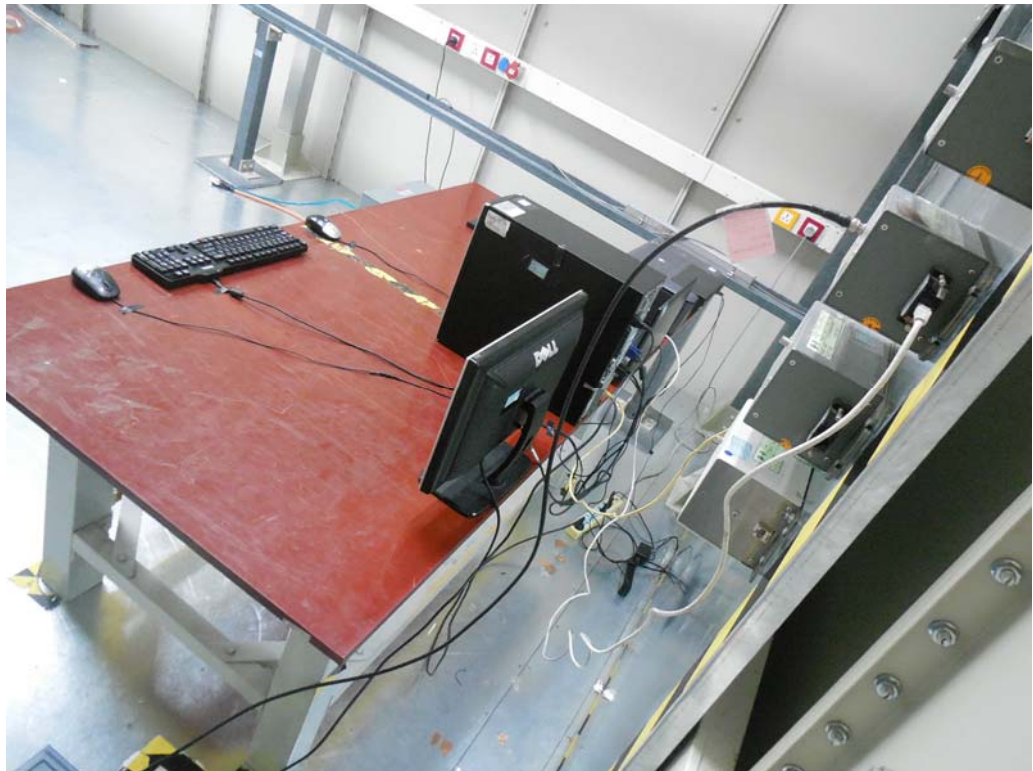


ISN 10M&100M

Front View



Rear View





5. Test of Radiated Emission

5.1. Test Limit

Table – Limits for radiated disturbance of class B ITE at a measuring distance of 3 m

Frequency range MHz	Quasi-peak limits dB(μ V/m)
30 to 230	40
230 to 1000	47
NOTE 1 The lower limit shall apply at the transition frequency.	
NOTE 2 Additional provisions may be required for cases where interference occurs.	

The EUT shall meet the limits of below Table when measured in accordance with the method described in European Standard EN 55022 Clause 10 and the conditional testing procedure described below.

Table – Limits for radiated disturbance of class B ITE at a measuring distance of 3 m

Frequency range GHz	Average limit dB(μ V/m)	Peak limits dB(μ V/m)
1 to 3	50	70
3 to 6	54	74
NOTE The lower limit applies at the transition frequency.		

• Conditional testing procedure:

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

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

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

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

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



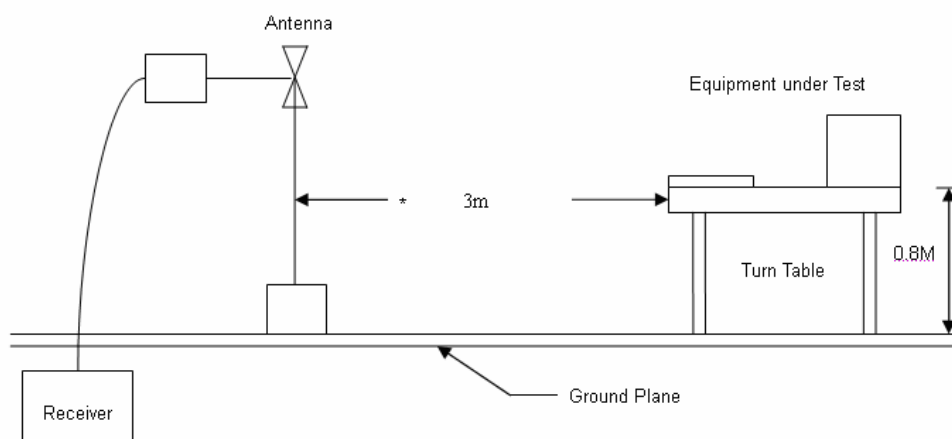
5.2. Test Procedures

- a. The EUT was placed on a relatable table top 0.8 meter above ground.
- b. The EUT was set 3/10 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.

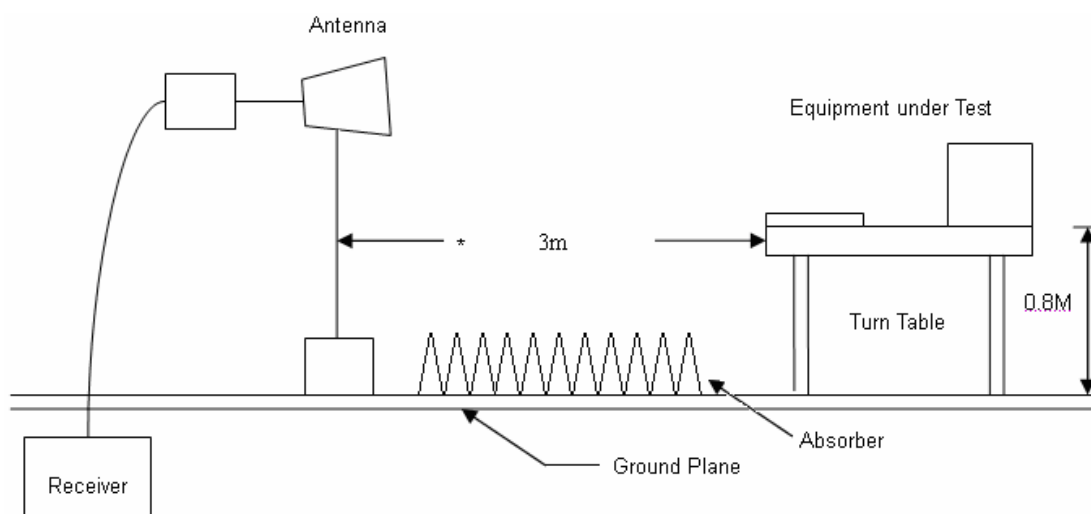


5.3. Typical test Setup

Below 1GHz Test Setup



Above 1GHz Test Setup



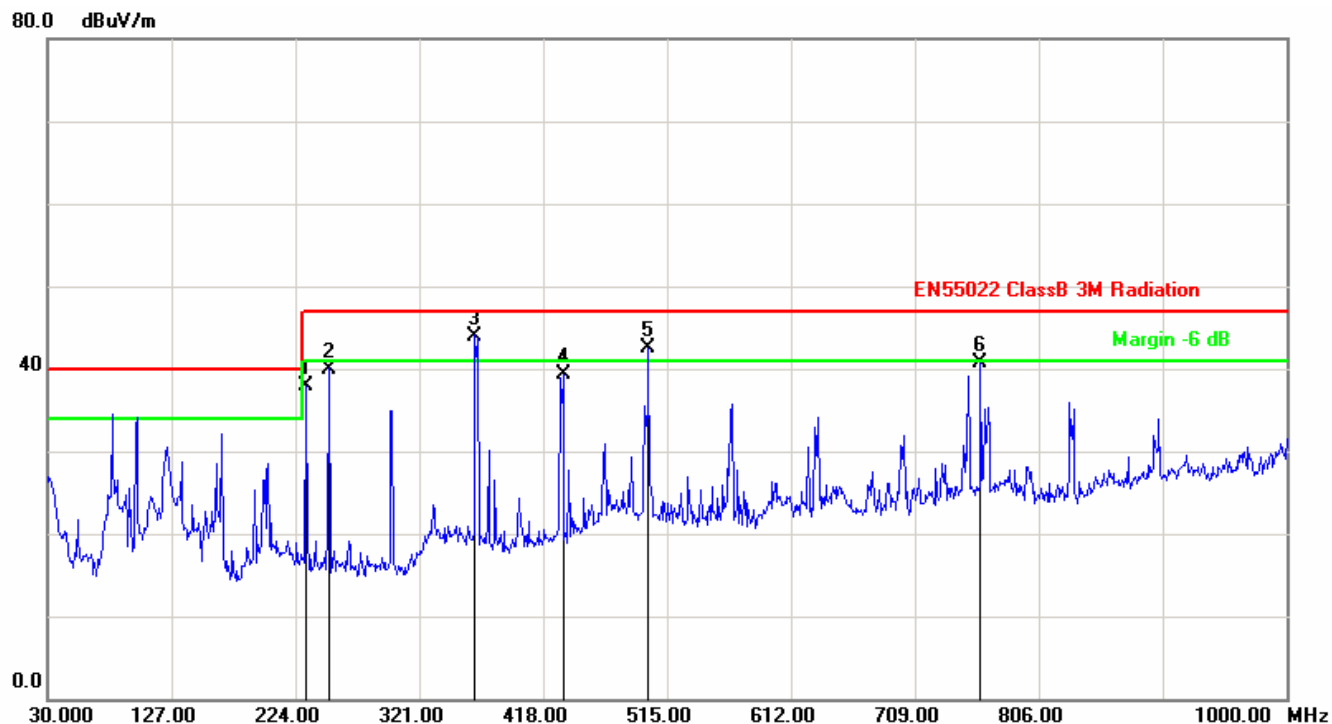
**5.4. Measurement equipment**

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
EMI Test Receiver	R&S	ESCI	100853	2014.03.01	2015.02.28
Preamplifier	HP	8447F	3113A05915	2014.03.01	2015.02.28
Preamplifier	FIELD	AFS44-00101800 -25-10P-44	1579008	2013.11.27	2014.11.26
Ultra Broadband Antenna	SCHAFFNER	CBL6112D	22241	2014.03.04	2015. 03.03
Broad-Band Horn Antenna	Sunol	DRH-118	A072913	2014.10.16	2014.10.15
Spectrum Analyzer	Agilent	E4407B	MY45118947	2014.07.18	2015.07.17
Temperature/ Humidity Meter	VICHY	CTH-608	N/A	2014.03.04	2015.03.03



5.5. Test Result and Data (30MHz ~ 1000MHz)

Test Mode :	Test Mode 1: Normal Link		
AC Power :	AC 230V/50Hz	Ant. Polarization:	Horizontal
Temp :	23℃	Humidity :	52%
Pressure(mbar) :	1002	Date :	2014/10/23

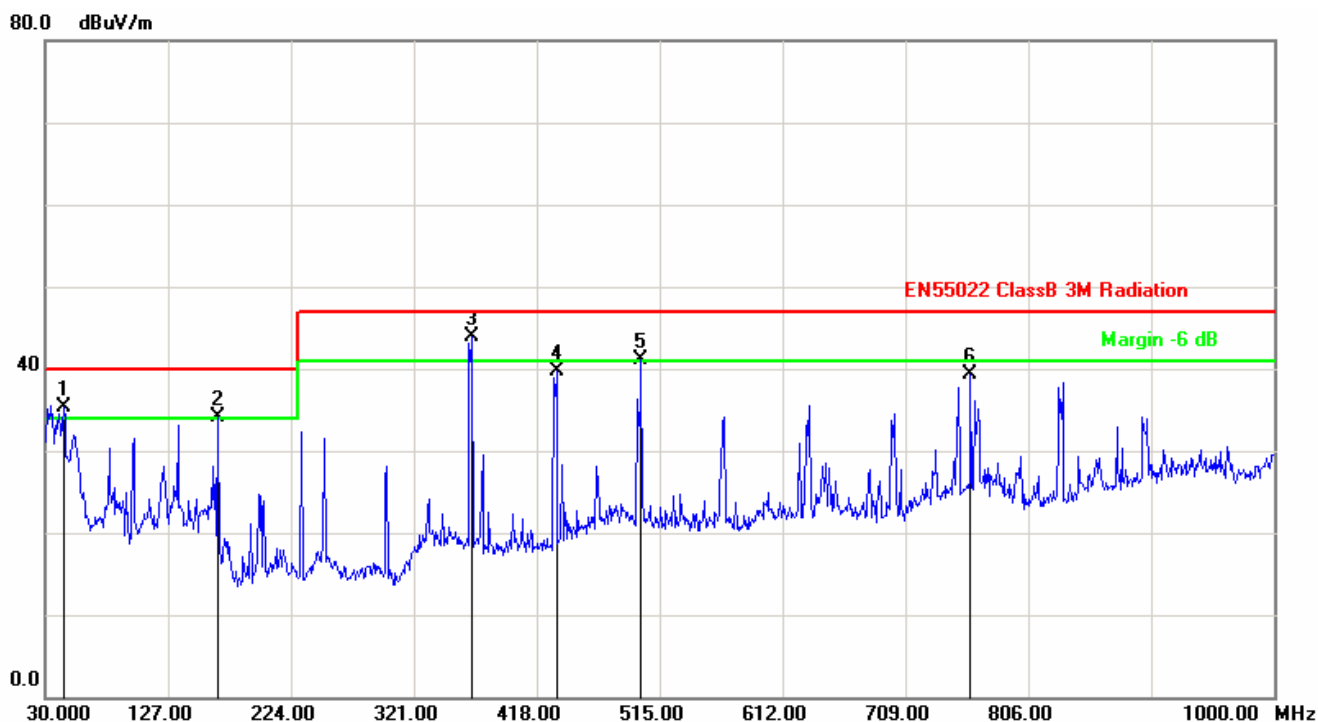


No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	232.7300	-9.44	47.29	37.85	47.00	-9.15	peak	100	22
2	250.1900	-8.37	48.37	40.00	47.00	-7.00	peak	100	75
3	364.6500	-4.54	48.50	43.96	47.00	-3.04	peak	200	121
4	433.5200	-4.46	43.69	39.23	47.00	-7.77	peak	200	245
5	500.4500	-2.20	44.66	42.46	47.00	-4.54	peak	200	312
6	760.4100	1.78	39.00	40.78	47.00	-6.22	peak	200	88

Note: Measurement Level = Reading Level + Correct Factor



Test Mode :	Test Mode 1: Normal Link		
AC Power :	AC 230V/50Hz	Ant. Polarization:	Vertical
Temp :	23℃	Humidity :	52%
Pressure(mbar) :	1002	Date :	2014/10/23



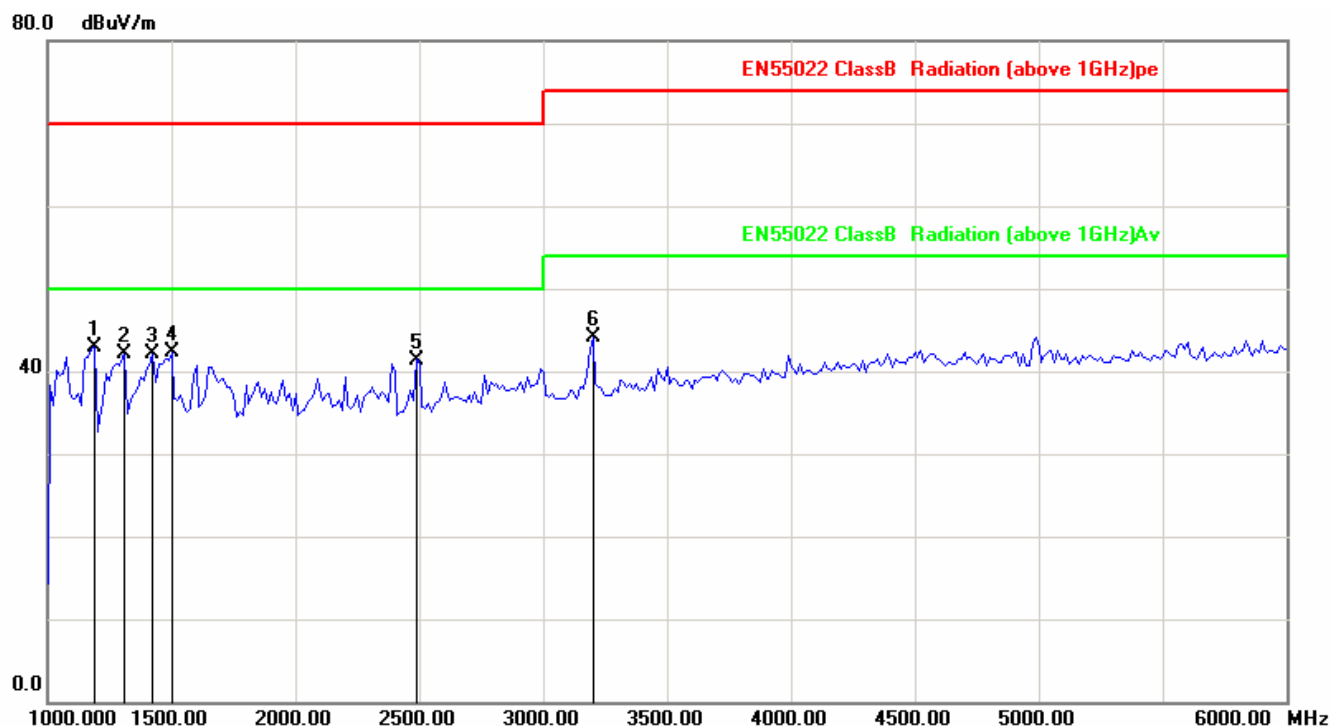
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	44.5500	-12.12	47.43	35.31	40.00	-4.69	peak	100	37
2	165.8000	-12.26	46.28	34.02	40.00	-5.98	peak	100	58
3	366.5900	-4.60	48.50	43.90	47.00	-3.10	peak	100	99
4	433.5200	-4.46	44.18	39.72	47.00	-7.28	peak	200	159
5	500.4500	-2.20	43.32	41.12	47.00	-5.88	peak	200	246
6	760.4100	1.78	37.58	39.36	47.00	-7.64	peak	100	6

Note: Measurement Level = Reading Level + Correct Factor



5.6. Test Result and Data (1000MHz ~ 6000MHz)

Test Mode :	Test Mode 1: Normal Link		
AC Power :	AC 230V/50Hz	Ant. Polarization:	Horizontal
Temp :	23℃	Humidity :	52%
Pressure(mbar) :	1002	Date :	2014/10/30

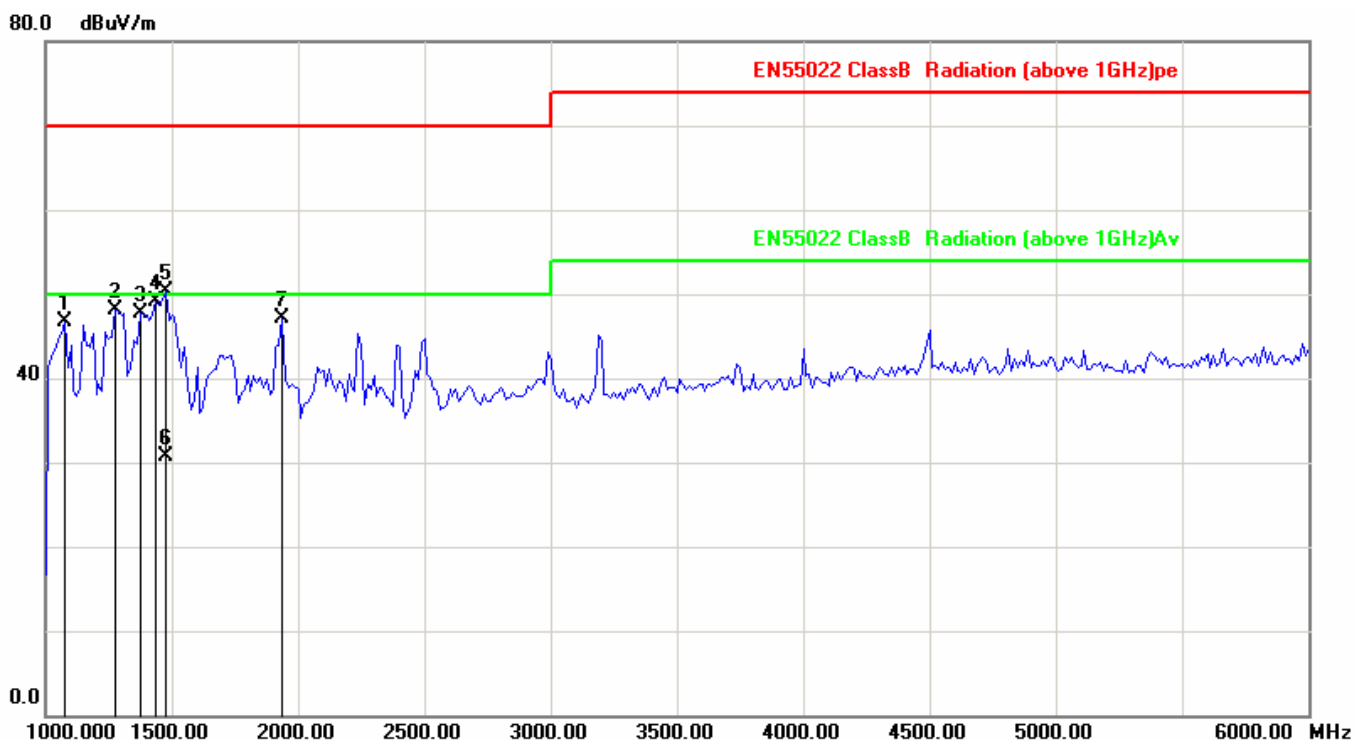


No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	1187.500	-10.46	53.34	42.88	70.00	-27.12	peak	100	116
2	1312.500	-9.32	51.49	42.17	70.00	-27.83	peak	100	128
3	1425.000	-8.29	50.35	42.06	70.00	-27.94	peak	100	356
4	1500.000	-7.61	49.84	42.23	70.00	-27.77	peak	100	301
5	2487.500	-2.63	44.03	41.40	70.00	-28.60	peak	100	283
6	3200.000	1.82	42.25	44.07	74.00	-29.93	peak	100	140

Note: Measurement Level = Reading Level + Correct Factor



Test Mode :	Test Mode 1: Normal Link		
AC Power :	AC 230V/50Hz	Ant. Polarization:	Vertical
Temp :	23℃	Humidity :	52%
Pressure(mbar) :	1002	Date :	2014/10/30



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	1075.000	-11.49	58.12	46.63	70.00	-23.37	peak	100	101
2	1275.000	-9.66	57.78	48.12	70.00	-21.88	peak	100	230
3	1375.000	-8.75	56.36	47.61	70.00	-22.39	peak	100	194
4	1437.500	-8.18	57.25	49.07	70.00	-20.93	peak	100	62
5	1475.000	-7.84	58.07	50.23	70.00	-19.77	peak	100	155
6	1475.000	-7.84	38.62	30.78	50.00	-19.22	AVG	100	155
7	1937.500	-5.09	52.26	47.17	70.00	-22.83	peak	100	32

Note: Measurement Level = Reading Level + Correct Factor

Test engineer: Seben

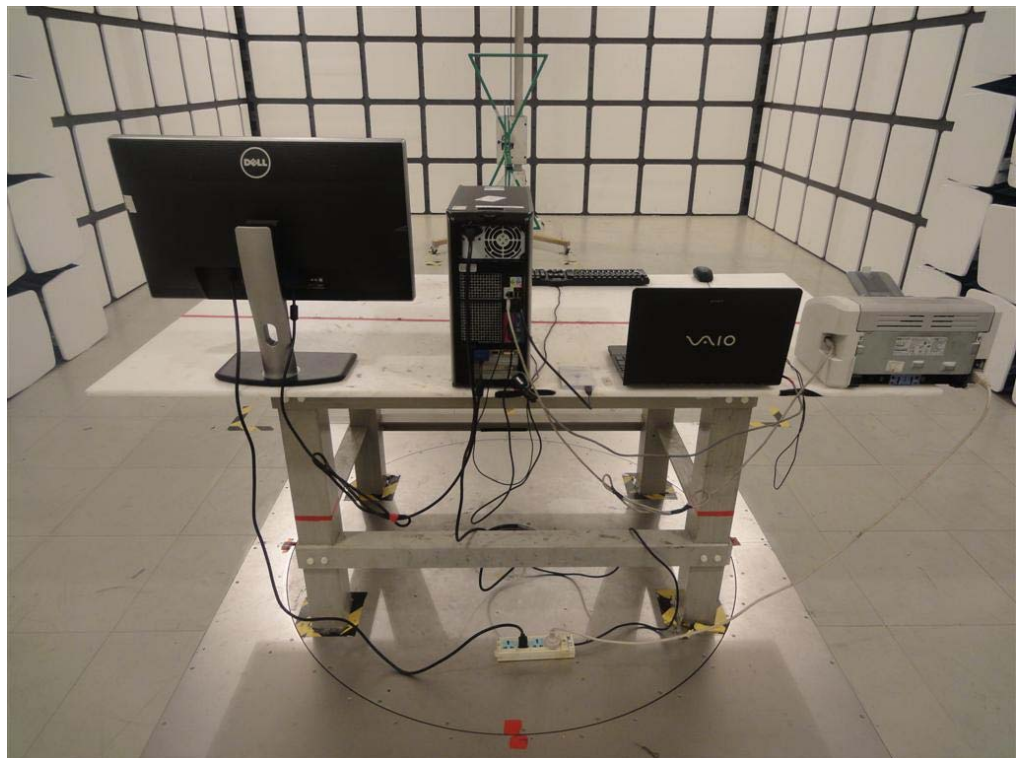


5.7. Test Photographs (30MHz ~ 1000MHz)

Front View



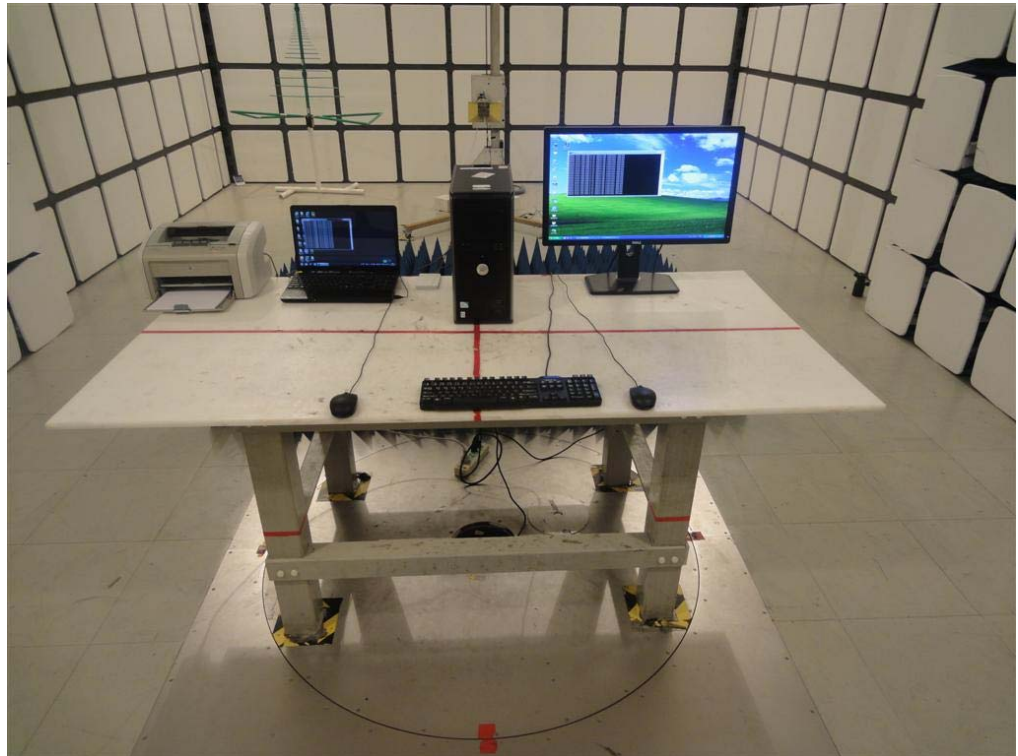
Rear View



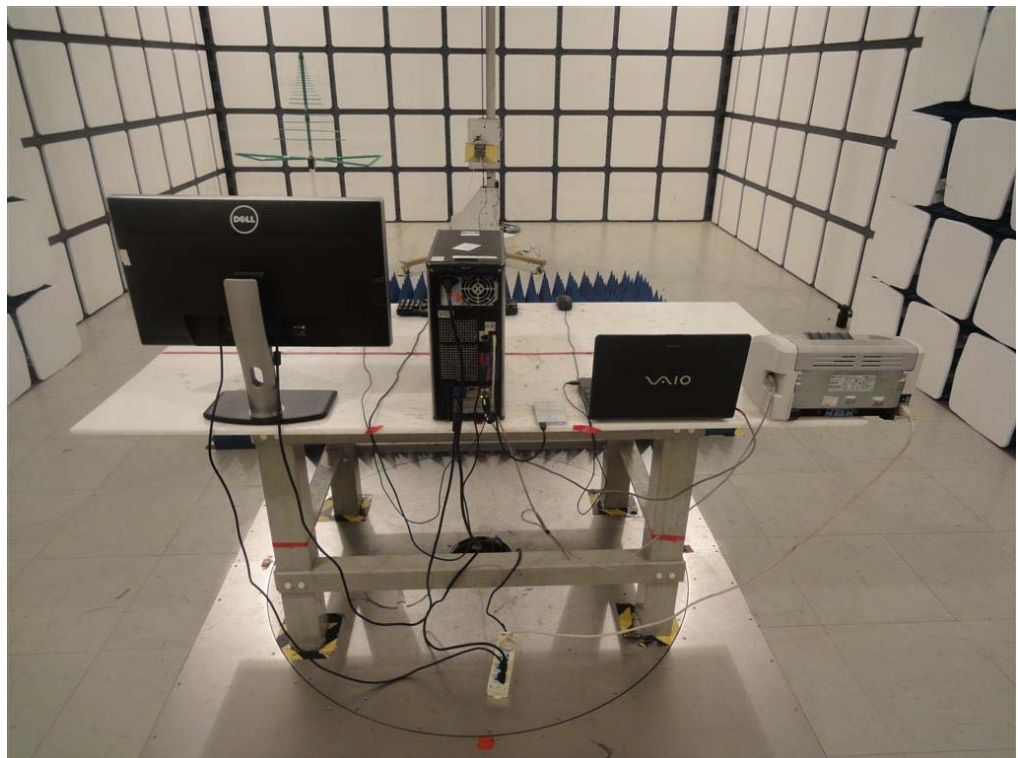


5.8. Test Photographs (1000MHz ~ 6000MHz)

Front View



Rear View





6. Harmonics Test

6.1. Limits Of Harmonics Current Measurement

Limits for Class A equipment		Limits for Class D equipment		
Harmonics Order n	Max. Permissible harmonics current A	Harmonics Order n	Max. Permissible harmonics current per watt mA/W	Max. Permissible harmonics current A
Odd harmonics		Odd Harmonics only		
3	2.30	3	3.4	2.30
5	1.14	5	1.9	1.14
7	0.77	7	1.0	0.77
9	0.40	9	0.5	0.40
11	0.33	11	0.35	0.33
13	0.21	13	0.30	0.21
15<=n<=39	0.15 × 15/n	15<=n<=39	3.85/n	0.15 x15/n
Even harmonics				
2	1.08			
4	0.43			
6	0.30			
8<=n<=40	0.23 × 8/n			

NOTE:

- Class A and Class D are classified according to item section 5 of EN 61000-3-2.
- According go section 7 of EN 61000-3-2, the above limits for all equipment except for lighting equipment are for all applications having a rated power > 75 W and no limits apply for equipment with a rated power up to and including 75 W.

6.2. Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Power Source	TESEQ	NSG 1007-3	1330A03972	2014.10.15	2015.10.14
Harmonic & Flicker Tester	TESEQ	CCN 1000-1	1330A03972	2014.10.15	2015.10.14
Temperature/Humidity Meter	mingle	ETH529	N/A	2014.11.06	2015.11.05



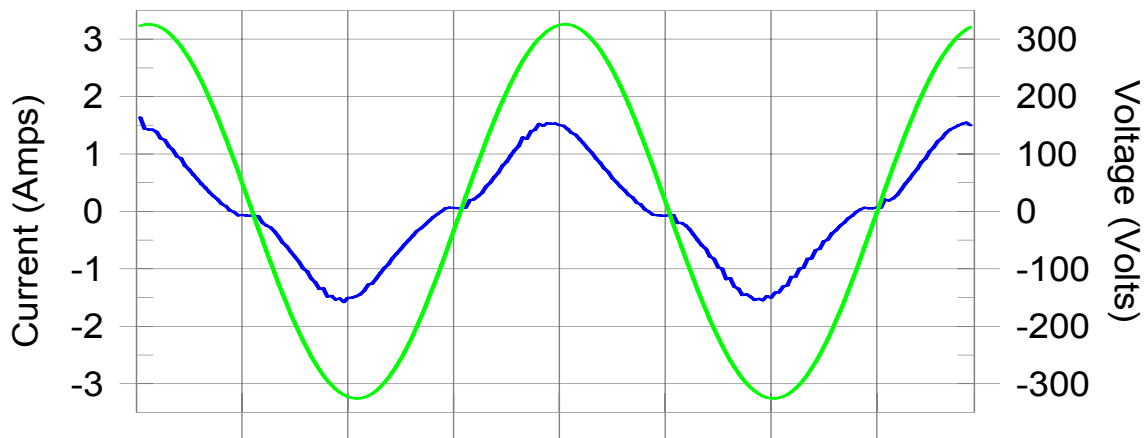
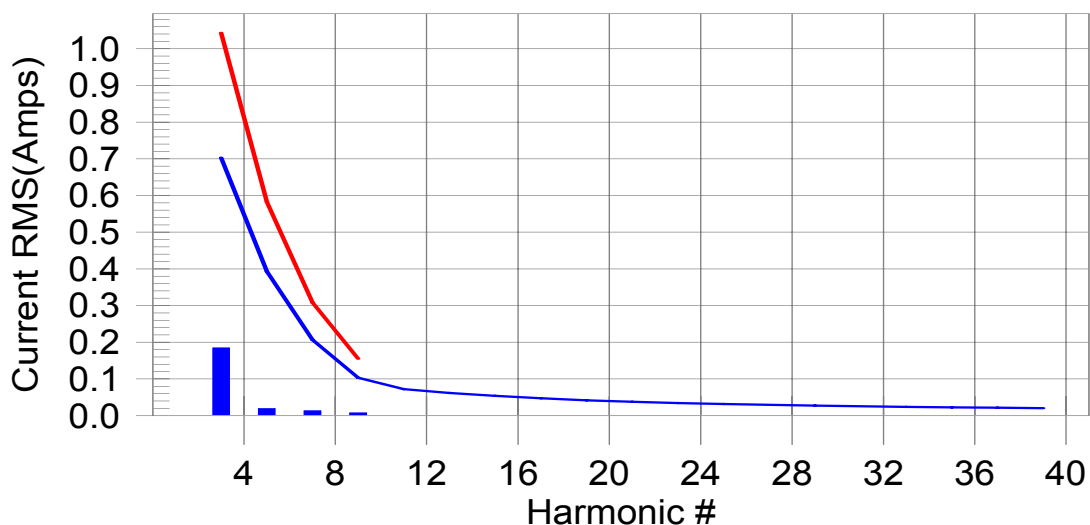
6.3. Test Result and Data

Basic Standard	:	EN 61000-3-2
Final Test Result	:	PASS
Test Mode	:	Mode 1: Normal Link
Temperature	:	22℃
Humidity	:	50 %
Atmospheric Pressure	:	100 kPa
Test Data	:	Oct.25,2014

**Harmonics – Class-D per Ed. 3.2 (2009)(Run time) incl. inter-harmonics**

EUT: Fast Ethernet PCI Network Card
Test category: Class-D per Ed. 3.2 (2009) (European limits)
Test date: 2014-10-25 Start time: 16:56:57 End time: 17:12:18
Test duration (min): 15 Data file name: H-010605.cts_data
Comment: 509510
Customer: Intracom Asia Co., Ltd
Test Result: Pass Source qualification: Normal
Current & voltage waveforms

-

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

Test result: Pass Worst harmonic was #3 with 25.99% of the limit.

**Current Test Result Summary (Run time)**

EUT: Fast Ethernet PCI Network Card

Tested by: Wayne

Test category: Class-D per Ed. 3.2 (2009) (European limits)

Test Margin: 100

Test date: 2014-10-25

Start time: 16:56:57

End time: 17:12:18

Test duration (min): 15

Data file name: H-010605.cts_data

Comment: 509510

Customer: Intracom Asia Co., Ltd

Test Result: Pass

Source qualification: Normal

THC(A): 0.18

I-THD(%): 20.27

POHC(A): 0.000

POHC Limit(A): 0.089

Highest parameter values during test:

V_RMS (Volts): 230.50

Frequency(Hz): 50.00

I_Peak (Amps): 1.844

I_RMS (Amps): 0.932

I_Fund (Amps): 0.913

Crest Factor: 1.985

Power (Watts): 206.8

Power Factor: 0.963

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.000						
3	0.183	0.703	26.0	0.185	1.044	17.71	Pass
4	0.000						
5	0.019	0.393	4.8	0.019	0.582	3.33	Pass
6	0.000						
7	0.013	0.207	6.3	0.013	0.308	4.36	Pass
8	0.000						
9	0.007	0.103	7.2	0.008	0.155	4.98	Pass
10	0.000						
11	0.004	0.072	5.9	0.000	0.000	0.00	Pass
12	0.000						
13	0.004	0.062	5.8	0.000	0.000	0.00	Pass
14	0.000						
15	0.004	0.054	6.8	0.000	0.000	0.00	Pass
16	0.000						
17	0.004	0.048	8.9	0.000	0.000	0.00	Pass
18	0.000						
19	0.004	0.042	8.8	0.000	0.000	0.00	Pass
20	0.000						
21	0.004	0.038	9.7	0.000	0.000	0.00	Pass
22	0.000						
23	0.003	0.035	10.0	0.000	0.000	0.00	Pass
24	0.000						
25	0.003	0.032	10.6	0.000	0.000	0.00	Pass
26	0.000						
27	0.003	0.030	9.3	0.000	0.000	0.00	Pass
28	0.000						
29	0.003	0.027	9.4	0.000	0.000	0.00	Pass
30	0.000						
31	0.002	0.026	9.3	0.000	0.000	0.00	Pass
32	0.000						
33	0.002	0.024	9.8	0.000	0.000	0.00	Pass
34	0.000						
35	0.002	0.023	8.5	0.000	0.000	0.00	Pass
36	0.000						
37	0.002	0.022	10.2	0.000	0.000	0.00	Pass
38	0.000						
39	0.002	0.020	11.4	0.000	0.000	0.00	Pass
40	0.000						

Note: Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

**Voltage Source Verification Data (Run time)**

EUT: Fast Ethernet PCI Network Card Tested by: Wayne
Test category: Class-D per Ed. 3.2 (2009) (European limits) Test Margin: 100
Test date: 2014-10-25 Start time: 16:56:57 End time: 17:12:18
Test duration (min): 15 Data file name: H-010605.cts_data
Comment: 509510

Customer: Intracom Asia Co., Ltd

Test Result: Pass Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms):	230.50	Frequency(Hz):	50.00
I_Peak (Amps):	1.844	I_RMS (Amps):	0.932
I_Fund (Amps):	0.913	Crest Factor:	1.985
Power (Watts):	206.8	Power Factor:	0.963

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.078	0.461	16.92	OK
3	0.464	2.074	22.37	OK
4	0.051	0.461	11.13	OK
5	0.021	0.922	2.23	OK
6	0.023	0.461	4.92	OK
7	0.047	0.691	6.79	OK
8	0.018	0.461	3.89	OK
9	0.069	0.461	14.91	OK
10	0.018	0.461	3.85	OK
11	0.034	0.230	14.58	OK
12	0.014	0.230	5.91	OK
13	0.018	0.230	7.86	OK
14	0.004	0.230	1.91	OK
15	0.015	0.230	6.54	OK
16	0.011	0.230	4.92	OK
17	0.010	0.230	4.49	OK
18	0.014	0.230	5.99	OK
19	0.011	0.230	4.56	OK
20	0.013	0.230	5.47	OK
21	0.006	0.230	2.53	OK
22	0.006	0.230	2.68	OK
23	0.008	0.230	3.49	OK
24	0.004	0.230	1.84	OK
25	0.006	0.230	2.57	OK
26	0.004	0.230	1.74	OK
27	0.008	0.230	3.60	OK
28	0.004	0.230	1.59	OK
29	0.007	0.230	3.25	OK
30	0.003	0.230	1.42	OK
31	0.004	0.230	1.92	OK
32	0.002	0.230	1.06	OK
33	0.006	0.230	2.51	OK
34	0.003	0.230	1.35	OK
35	0.005	0.230	1.97	OK
36	0.002	0.230	0.92	OK
37	0.005	0.230	2.18	OK
38	0.002	0.230	1.02	OK
39	0.005	0.230	2.09	OK
40	0.006	0.230	2.68	OK



6.4. Test Photographs





7. Voltage Fluctuations Test

7.1. Test Procedure

The equipment shall be tested under the conditions of **Clause 5**.

The total impedance of the test circuit, excluding the appliance under test, but including the internal impedance of the supply source, shall be equal to the reference impedance. The stability and tolerance of the reference impedance shall be adequate to ensure that the overall accuracy of $\pm 8\%$ is achieved during the whole assessment procedure.

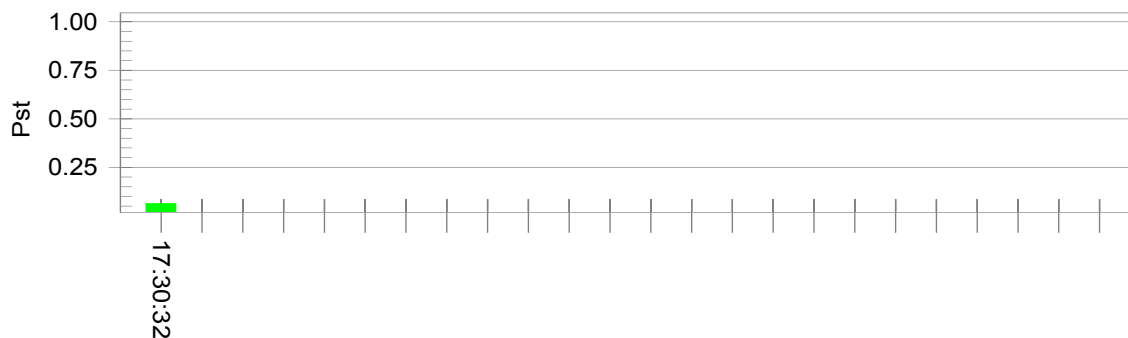
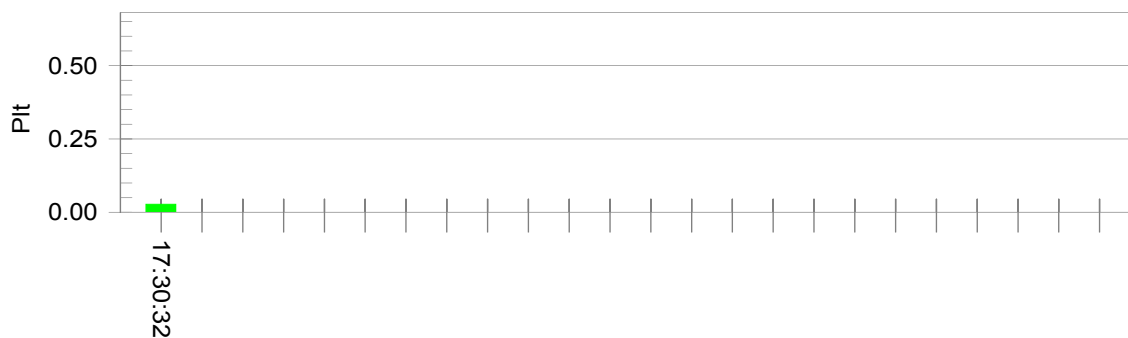
7.2. Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Power Source	TESEQ	NSG 1007-3	1330A03972	2014.10.15	2015.10.14
Harmonic & Flicker Tester	TESEQ	CCN 1000-1	1330A03972	2014.10.15	2015.10.14
Temperature/Humidity Meter	mingle	ETH529	N/A	2014.11.06	2015.11.05



7.3. Test Result and Data

Basic Standard	:	EN 61000-3-3
Final Test Result	:	PASS
Test Mode	:	Mode 1: Normal Link
Temperature	:	22℃
Humidity	:	50%
Atmospheric Pressure	:	100 kPa
Test Data	:	Oct.25,2014

**Flicker Test Summary per EN/IEC61000-3-3 (Run time)****EUT: Fast Ethernet PCI Network Card****Tested by: Wayne****Test category: All parameters (European limits)****Test Margin: 100****Test date: 2014-10-25****Start time: 17:20:12****End time: 17:30:33****Test duration (min): 10****Data file name: F-010606.cts_data****Comment: 509510****Customer: Intracom Asia Co., Ltd****Test Result: Pass****Status: Test Completed****Pst_i and limit line****European Limits****Plt and limit line****Parameter values recorded during the test:****Vrms at the end of test (Volt): 230.35****Highest dt (%): 0.00****Time(mS) > dt: 0.0****Highest dc (%): 0.00****Highest dmax (%): 0.00****Highest Pst (10 min. period): 0.064****Highest Plt (2 hr. period): 0.028****Test limit (%): 3.30 Pass****Test limit (mS): 500.0 Pass****Test limit (%): 3.30 Pass****Test limit (%): 4.00 Pass****Test limit: 1.000 Pass****Test limit: 0.650 Pass**



7.4. Test Photographs





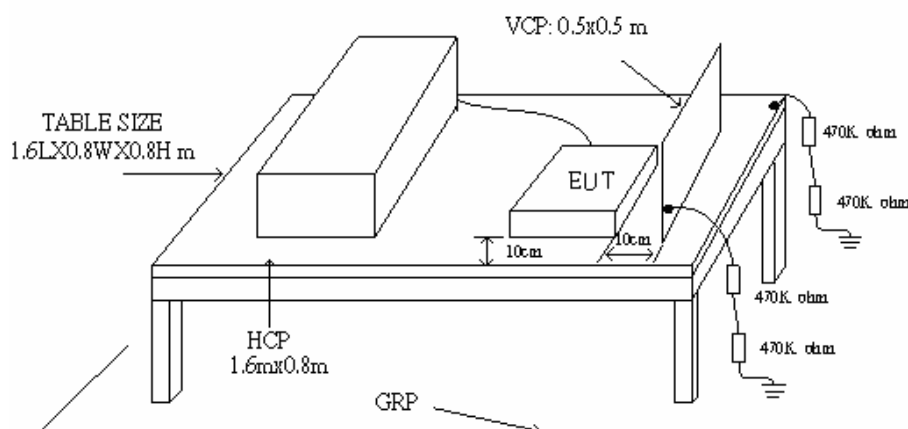
8. Electrostatic Discharge Immunity Test

8.1. Test Procedure

- a. In the case of air discharge testing the climatic conditions shall be within the following ranges:
 - ambient temperature: 15°C to 35°C;
 - relative humidity : 30% to 60%;
 - atmospheric pressure : 86 KPa (860 hPa) to 106 KPa (1060 hPa).
- b. Test programs and software shall be chosen so as to exercise all normal modes of operation of the EUT. The use of special exercising software is encouraged, but permitted only where it can be shown that the EUT is being comprehensively exercised.
- c. The test voltage shall be increased from the minimum to the selected test severity level, in order to determine any threshold of failure. The final severity level should not exceed the product specification value in order to avoid damage to the equipment.
- d. The test shall be performed with both air discharge and contact discharge. On reselected points at least 10 single discharges (in the most sensitive polarity) shall be applied on air discharge. On reselected points at least 25 single discharges (in the most sensitive polarity) shall be applied on contact discharge.
- e. For the time interval between successive single discharges an initial value of one second is recommended. Longer intervals may be necessary to determine whether a system failure has occurred.
- f. In the case of contact discharges, the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.
- g. In the case of painted surface covering a conducting substrate, the following procedure shall be adopted :
 - ✧ If the coating is not declared to be an insulating coating by the equipment manufacturer, then the pointed tip of the generator shall penetrate the coating so as to make contact with the conducting substrate.
 - ✧ Coating declared as insulating by the manufacturer shall only be submitted to the air discharge.
 - ✧ The contact discharge test shall not be applied to such surfaces.
- h. In the case of air discharges, the round discharge tip of the discharge electrode shall be approached as fast as possible (without causing mechanical damage) to touch the EUT . After each discharge, the ESD generator (discharge electrode) shall be removed from the EUT. The generator is then retriggered for a new single discharge. This procedure shall be repeated until the discharges are completed. In the case of an air discharge test, the discharge switch, which is used for contact discharge, shall be closed.



8.2. Test Setup for Tests Performed in Laboratory



The test setup consists of the test generator, EUT and auxiliary instrumentation necessary to perform DIRECT and INDIRECT application of discharges to the EUT as applicable, in the following manner :

- a. Contact Discharge to the conductive surfaces and to coupling plane;
- b. Air Discharge at insulating surfaces.

The preferred test method is that of type tests performed in laboratories and the only accepted method of demonstrating conformance with this standard. The EUT was arranged as closely as possible to arrangement in final installed conditions.

A ground reference plane was provided on the floor of the test site. It was a metallic sheet (copper or aluminum) of 0.25 mm, minimum thickness; other metallic may be used but they shall have at least 0.65 mm thickness. In the Exclusive Certification Corp., we provided 1 mm thickness stainless steel ground reference plane. The minimum size of the ground reference plane is 2.5 m x 2.5 m, the exact size depending on the dimensions of the EUT. It was connected to the protective grounding system.

The EUT was arranged and connected according to its functional requirements. A distance of 1m minimum was provided between the EUT and the wall of the lab. and any other metallic structure. In cases where this length exceeds the length necessary to apply the discharges to the selected points, the excess length shall, where possible, be placed non-inductively off the ground reference plane and shall not come closer than 0.2m to other conductive parts in the test setup.

Where the EUT is installed on a metal table, the table was connected to the reference plane via a cable with a 470k ohm resistor located at each end, to prevent a build-up of charge. The test setup was consist a wooden table, 0.8m high, standing on the ground reference plane. A HCP, 1.6 m x 0.8 m, was placed on the table. The EUT and cables was isolated from the HCP by an insulating support 0.5 mm thick. The VCP size, 0.5 m x 0.5 m.



8.3. Test Severity Levels

Contact Discharge		Air Discharge	
Level	Test Voltage (kV) of Contact discharge	Level	Test Voltage (kV) of Air Discharge
1	± 2	1	± 2
2	± 4	2	± 4
3	± 6	3	± 8
4	± 8	4	± 15
X	Specified	X	Specified
Remark: "X" is an open level.			

8.4. Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
ESD Simulator	TESEQ	NSG437	575	2014.03.03	2015.03. 02
Temperature/ Humidity Meter	VICHY	CTH-608	N/A	2014.03.04	2015.03.03



8.5. Test Result and Data

Basic Standard	:	IEC 61000-4-2
Final Test Result	:	PASS
Pass performance criteria	:	B
Test Voltage	:	$\pm 2 / \pm 4 / \pm 8$ kV for air discharge, $\pm 2 / \pm 4$ kV for contact discharge
Temperature	:	20°C
Relative Humidity	:	50 %
Atmospheric Pressure	:	100 kPa
Test Date	:	Oct.27,2014

Mode 1: Normal Link																
	Contact Discharge								Air Discharge							
	25 times / each								10 times / each							
Voltage	2 kV		4 kV		6 kV		8 kV		2 kV		4 kV		8 kV		10 kV	
Point\Polarity	+	—	+	—	+	—	+	—	+	—	+	—	+	—	+	—
HCP	A	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---
VCP	A	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---
Screw	A	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---
Case	A	A	A	A	---	---	---	---	---	---	---	---	---	---	---	---
NIC Port	---	---	---	---	---	---	---	---	A	A	A	A	A	A	---	---

Test engineer: Seben



8.6. Test Photographs





9. Radio Frequency electromagnetic field immunity test

9.1. Test Procedure

- a. The equipment to be tested is placed in the center of the enclosure on a wooden table. The equipment is then connected to power and signal leads according to pertinent installation instructions.
- b. The antenna which is enabling the complete frequency range of 80-1000 MHz is placed 3m away from the equipment. The required field strength is determined by placing the field strength meter(s) on top of or directly alongside the equipment under test and monitoring the field strength meter via a remote field strength indicator outside the enclosure while adjusting the continuous-wave to the applicable antennae.
- c. The test is normally performed with the antenna facing the most sensitive side of the EUT. The polarization of the field generated by the bucolical antenna necessitates testing each position twice, once with the antenna positioned vertically and again with the antenna positioned horizontally. The circular polarization of the field from the log-spiral antenna makes a change of position of the antenna unnecessary.
- d. At each of the above conditions, the frequency range is swept 80-1000 MHz, pausing to adjust the R.F. signal level or to switch oscillators and antenna. The rate of sweep is in the order of 1.5×10^{-3} decades/s. The sensitive frequencies or frequencies of dominant interest may be discretely analyzed.



9.2. Test Severity Levels

Frequency Band : 80-1000 MHz	
Level	Test field strength (V/m)
1	1
2	3
3	10
X	Specified
Remark: "X" is an open class.	

9.3. Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Signal Generator	R&S	SML03	103287	2014.03.24	2015.03.23
Power Sensor	R&S	NR P-Z91	100383	2014.03.24	2015.03.23
Power Sensor	R&S	NRP-Z91	100384	2014.03.24	2015.03.23
Power Meter	R&S	NRP	101206	2014.03.24	2015.03.23
Power Amplifier	BONN	BLWA0830-16 0/100/40D	076659	2014.03.24	2015.03.23
Istropic Electric Field Probe	EST.LINDGRE N	HI-6105	137445	2014.09.03	2015.09.02
EMS Antenna	R&S	HL046E	100028	N/A	N/A
Temperature/ Humidity Meter	feiyang	N/A	101	2014.03.31	2015.03.30



9.4. Test Result and Data

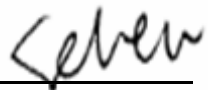
Basic Standard	:	IEC 61000-4-3
Final Test Result	:	PASS
Pass performance criteria	:	A
Frequency Range	:	80~1000 MHz
Temperature	:	22°C
Relative Humidity	:	52%
Atmospheric Pressure	:	100 kPa
Test Date	:	Oct.31,2014

Mode 1: Normal Link

Modulation : AM 80% , 1KHz sine wave , Dwell time: 3 S

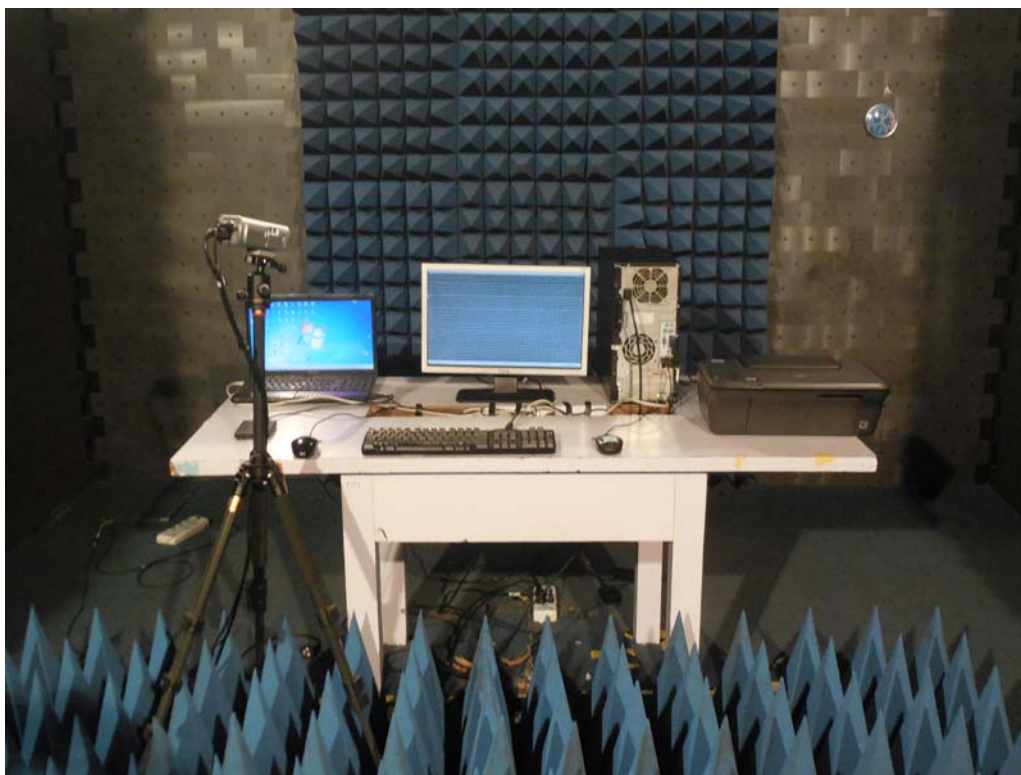
Frequency Step Size : 1 % of preceding frequency value

Frequency (MHz)	Antenna Polarization	face	Field strength (V/m)	Result
80~1000	Horizontal & Vertical	Front	3 V/m	A
80~1000	Horizontal & Vertical	Rear	3 V/m	A
80~1000	Horizontal & Vertical	Left	3 V/m	A
80~1000	Horizontal & Vertical	Right	3 V/m	A

Test engineer: 



9.5. Test Photographs





10. Electrical Fast Transient/ Burst Immunity Test

10.1. Test Procedure

- a. In order to minimize the effect of environmental parameters on test results, the climatic conditions when test is carrying out shall comply with the following requirements:
 - ✧ ambient temperature: 15°C to 35°C;
 - ✧ relative humidity : 45% to 75%;
 - ✧ Atmospheric pressure: 86 Kpa (860 hPa) to 106 Kpa (1060 hPa).
- b. In order to minimize the effect of environmental parameters on test results, the electromagnetic environment of the laboratory shall not influence the test results.
- c. The variety and diversity of equipment and systems to be tested make it difficult to establish general criteria for the evaluation of the effects of fast transients/bursts on equipment and systems.
- d. Test on Power Line:
 - ✧ The EFT/B-generator was located on the GRP.. The length from the EFT/B-generator to the EUT is not exceeding 1 m.
 - ✧ The EFT/B-generator provides the ability to apply the test voltage in a non-symmetrical condition to the power supply input terminals of the EUT.
- e. Test on Communication Lines
 - ✧ The coupling clamp is composed of a clamp unit for housing the cable (length more than 3 m), and was placed on the GRP.
 - ✧ The coupling clamp provides the ability of coupling the fast transient/bursts to the cable under test.
- f. The test results may be classified on the basic of the operating conditions and the functional specification of the equipment under test, according to the following performance criteria :
 - ✧ Normal performance within the specification limits.
 - ✧ Temporary degradation or loss of function or performance which is self-recoverable.
 - ✧ Temporary degradation or loss of function or performance which requires operator intervention or system reset.
 - ✧ Degradation or loss of function which is not recoverable due to damage of equipment (components).



10.2. Test Severity Levels

The following test severity levels are recommended for the fast transient/burst test :

Open circuit output test voltage $\pm 10\%$		
Level	On Power Supply	On I/O signal, data and control line
1	0.5 kV	0.25 kV
2	1.0 kV	0.50 kV
3	2.0 kV	1.00 kV
4	4.0 kV	2.00 kV
X	Specified	Specified

Remark : “ X ” is an open level. The level is subject to negotiation between the user and the manufacturer or is specified by the manufacturer.

10.3. Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
TRANSIENT	EMCPARTNER	TRA2000IN6	901	2014.03.24	2015.03.23
CDN	EMCPARTNER	CDN2000-06-32	121	2014.03.24	2015.03.23
Coupling clamp	EMCPARTNER	CN-EFT1000	547	2014.03.24	2015.03.23
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-005	2014.03.31	2015.03.30

**10.4. Test Result and Data**

Basic Standard	:	IEC 61000-4-4
Final Test Result	:	PASS
Pass performance criteria	:	B
Test Voltage	:	On Power Supply -- ± 1.0 kV On I/O signal, data and control line -- ± 0.5 kV
Temperature	:	21°C
Relative Humidity	:	51 %
Atmospheric Pressure	:	100 kPa
Test Date	:	Oct.27,2014

Mode 1: Normal Link

Pulse : 5/50 ns		Repetition Rate: <u>5 kHz</u>			
Burst : 15m/300ms					
Test time : 1 min/each condition					
Voltage/ Mode/ Polarity/ Result/ Phase		<u>0.5 kV</u>		<u>1.0 kV</u>	
		+	—	+	—
Power Line	L	---	---	A	A
	N	---	---	A	A
	L-N	---	---	A	A
	PE	---	---	A	A
	L-PE	---	---	A	A
	N-PE	---	---	A	A
	L-N-PE	---	---	A	A
Signal Line	RJ 45	A	A	---	---

Test engineer:



10.5. Test Photographs



LAN





11. Surge Immunity Test

11.1. Test Procedure

a. Climatic conditions

The climatic conditions shall comply with the following requirements :

- ✧ ambient temperature : 15 °C to 35 °C
- ✧ relative humidity : 10 % to 75 %
- ✧ atmospheric pressure : 86 kPa to 106 kPa (860 hPa to 1060 hPa)

b. Electromagnetic conditions

the electromagnetic environment of the laboratory shall not influence the test results.

c. The test shall be performed according the test plan that shall specify the test set-up with

- ✧ generator and other equipment utilized;
- ✧ test level (voltage/current);
- ✧ generator source impedance;
- ✧ internal or external generator trigger;
- ✧ number of tests : at least five positive and five negative at the selected points;
- ✧ repetition rate : maximum 1/min.
- ✧ inputs and outputs to be tested;
- ✧ representative operating conditions of the EUT;
- ✧ sequence of application of the surge to the circuit;
- ✧ phase angle in the case of AC. power supply;
- ✧ actual installation conditions, for example :

AC : neutral earthed,

DC : (+) or (-) earthed to simulated the actual earthing conditions.

- d. If not otherwise specified the surges have to be applied synchronized to the voltage phase at the zero-crossing and the peak value of the AC. voltage wave (positive and negative).
- e. The surges have to be applied line to line and line(s) and earth. When testing line to earth, the test voltage has to be applied successively between each of the lines and earth, if there is no other specification.
- f. The test procedure shall also consider the non-linear current-voltage characteristics of the equipment under test. Therefore the test voltage has to be increased by steps up to the test level specified in the product standard or test plan.
- g. All lower levels including the selected test level shall be satisfied. For testing the secondary protection, the output voltage of the generator shall be increased up to the worst-case voltage breakdown level (let-through level) of the primary protection.
- h. If the actual operating signal sources are not available, that may be simulated. Under no circumstances may the test level exceed the product specification. The test shall be carried out according to a test plan.
- i. To find all critical points of the duty cycle of the equipment, a sufficient number of positive and negative test pulses shall be applied. For acceptance test previously unstressed equipment shall be used to the protection devices shall be replaced.



11.2. Test Severity Level

Level	Open-circuit test voltage, $\pm 10\%$, kV
1	0.5
2	1.0
3	2.0
4	4.0
X	Specified
NOTE: "X" is an open class. This level can be specified in the product specification.	

11.3. Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
TRANSIENT	EMCPARTNER	TRA2000IN6	901	2014.03.24	2015.03.23
CDN	EMCPARTNER	CDN-UTP8	021	2014.03.24	2015.03.23
CDN	EMCPARTNER	CDN2000-06-32	121	2014.03.24	2015.03.23
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-005	2014.03.31	2015.03.30

**11.4. Test Result and Data**

Basic Standard	:	IEC 61000-4-5
Final Test Result	:	PASS
Pass performance criteria	:	B
Test Voltage	:	Input AC Power Port -- $\pm 0.5/1.0$ kV for Line to Line $\pm 0.5/1.0 /2.0$ kV for Line to Ground
Temperature	:	21°C
Relative Humidity	:	51 %
Atmospheric Pressure	:	100 kPa
Test Date	:	Oct.27,2014

Power Port

Mode 1: Normal Link

Test Voltage:230V/50Hz						
Waveform : 1.2/50 μ s(8/20 μ s) Repetition rate : 60 sec Time : 20 time/each condition						
/Phase Voltage / Mode / Polarity / Result			0°	90°	180°	270°
<u>0.5/1.0</u> kV	L-N	+	A	A	A	A
		—	A	A	A	A
<u>0.5/1.0/2.0</u> kV	L-PE	+	A	A	A	A
		—	A	A	A	A
	N-PE	+	A	A	A	A
		—	A	A	A	A

Waveform :10/700 μ s Repetition rate : 60 sec Time : 5 time/each condition				
Voltage	<u>0.5</u> kV		<u>1</u> kV	
Mode / Polarity / Result	+	—	+	—
RJ45	A	A	B	B

Test engineer: Ceben



11.5. Test Photographs



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12. Conduction Disturbances induced by Radio-Frequency Fields

12.1. Test Procedure

- a. The EUT shall be operated within its intended climatic conditions. The temperature and relative humidity should be recorded.
- b. This test method test can be performed without using a sell shielded enclosure. This is because the disturbance levels applied and the geometry of the setups are not likely to radiated a high amount of energy, especially at the lower frequencies. If under certain circumstances the radiated energy is too high, a shielded enclosure has to be used.
- c. The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn while the other non-excited RF-input ports of the coupling devices are terminated by a 50 ohm load resistor.
- d. The frequency range is swept from 150 KHz to 80 MHz, using the signal levels established during the setting process, and with the disturbance signal 80% amplitude modulated with a 1KHz sign wave, pausing to adjust the RF-signal level or to switch coupling devices as necessary. The rate of sweep shall no exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall no exceed 1% of the start and thereafter 1% of the preceding frequency value.
- e. The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies e.g. clock frequency (ies) and harmonics or frequencies of dominant interest shall be analyzed separately.
- f. An alternative test procedure may be adopted, wherein the frequency range is swept incrementally, with a step size not exceeding 4% of the start ad thereafter 4% of the preceding frequency value. The test level should be at least twice the value of the specified test level.
- g. In cases of dispute, the test procedure using a step size not exceeding 1% of the start and thereafter 1% of preceding frequency value shall take precedence.
- h. Attempts should be made to fully exercise the EUT during testing, and to fully interrogate all exercise modes selected for susceptibility.
- i. The use of special exercising programs is recommended.
- j. Testing shall be performed according to a Test Plan, which shall be included in the test report.
- k. It may be necessary to carry out some investigatory testing in order to establish some aspects of the test plan.



12.2. Test Severity Levels

Level	Voltage Level (EMF),
1	1 V
2	3 V
3	10 V
x	Specified
NOTE - x is an open class. This level can be specified in the product specification.	

12.3. Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Conducted immunity test system	FRANKONIA	CIT-10/75	102D1294	2014.03.24	2015.03.23
EM Injection clamp	FCC	F-203I-23MM	536	2014.03.24	2015.03.23
CDN	FRANKONIA	CDN-T2	A3010029	2014.03.24	2015.03.23
CDN	FRANKONIA	CDN-T4	A3015017	2014.03.24	2015.03.23
CDN	FRANKONIA	CDN-T8	A3022010	2014.03.24	2015.03.23
CDN	FRANKONIA	CDN-M2	A3002037	2014.03.24	2015.03.23
CDN	FRANKONIA	CDN-M2+M3	A3011102	2014.03.24	2015.03.23
CDN	FCC	CDN-M5/32	A3013024	2014.03.24	2015.03.23
6 dB Attenuator	FRANKONIA	N/A	N/A	2014.03.24	2015.03.23
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-005	2014.03.31	2015.03.30

**12.4. Test Result and Data**

Basic Standard	:	IEC 61000-4-6
Final Test Result	:	PASS
Pass performance criteria	:	A
Coupling mode	:	CDN-(M2+M3) for AC power ports CDN-T4 for signal ports EM-Clamp for signal ports
Temperature	:	21°C
Relative Humidity	:	51%
Atmospheric Pressure	:	100 kPa
Test Date	:	Oct.27,2014

Test Mode 1: Normal Link

Frequency : 0.15~80MHz, Modulation : AM 80%,1KHz sine wave, Dwell time: 2.9s Frequency Step Size : 1 % of preceding frequency value			
Frequency	Test mode	Voltage(V)	Result
0.15 ~ 100MHz	Power(M3)	3	A
0.15 ~ 100MHz	RJ45	3	A

Test engineer: _____



12.5. Test Photographs



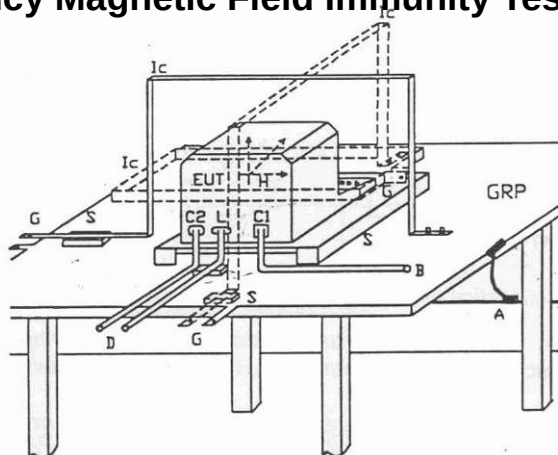
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13. Power Frequency Magnetic Field Immunity Tests

13.1. Test Setup



GPR	: Ground plane	C1	: Power supply circuit
A	: Safety earth	C2	: Signal circuit
S	: Insulating support	L	: Communication line
EUT	: Equipment under test	B	: To power supply source
Lc	: Induction coil	D	: To signal source, simulator
E	: Earth terminal	G	: To the test generator

13.2. Test Severity Levels

Level	Magnetic field strength A/m
1	1
2	3
3	10
4	30
5	100
X ¹⁾	special
NOTE 1 "X" is an open level. This level can be given in the product specification.	

13.3. Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
TRANSIENT	EMCPARTNER	TRA2000IN6	901	2014.03.09	2015.03.08
H-Filed-Loop	EMCPARTNER	MF1000-1	144	2014.03.09	2015.03.08
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-005	2014.03.09	2015.03.08



13.4. Test Result and Data

Not Applicable



14. Voltage Dips and Voltage Interruptions Immunity Test Setup

14.1. Test Conditions

1. Source voltage and frequency : 230V / 50Hz, Single phase.
2. Test of interval : 10 sec.
3. Level and duration : Sequence of 3 dips/interrupts.
4. Voltage rise (and fall) time : 1 ~ 5 μ s.
5. Test severity :

Voltage dips and Interrupt reduction (%)	Test Duration (period)
>95%	250
30%	25
>95%	0.5

14.2. Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
TRANSIENT	EMCPARTNER	TRA2000IN6	901	2014.03.24	2015.03.23
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-005	2014.03.31	2015.03.30

**14.3. Test Result and Data**

Basic Standard	:	IEC 61000-4-11
Final Test Result	:	PASS
Pass performance Criteria	:	C for voltage interruption, B for voltage dips
Required performance Criteria	:	C for voltage interruption, B/C for voltage dips
Temperature	:	21°C
Relative Humidity	:	51%
Atmospheric Pressure	:	100 kPa
Test Date	:	Oct.27,2014

Test Mode 1: Normal Link										
Voltage(UT): AC 230 V 50 Hz Interval(s) : 10s Times : 3										
Test mod	Test level UT %	Durations (period / ms)	Phase / Result							
			0	45	90	135	180	225	270	315
Voltage interruptions	>95%	250	C	C	C	C	C	C	C	C
Voltage dips	30%	25	B	B	B	B	B	B	B	B
	>95%	0.5	B	B	B	B	B	B	B	B

Test engineer:



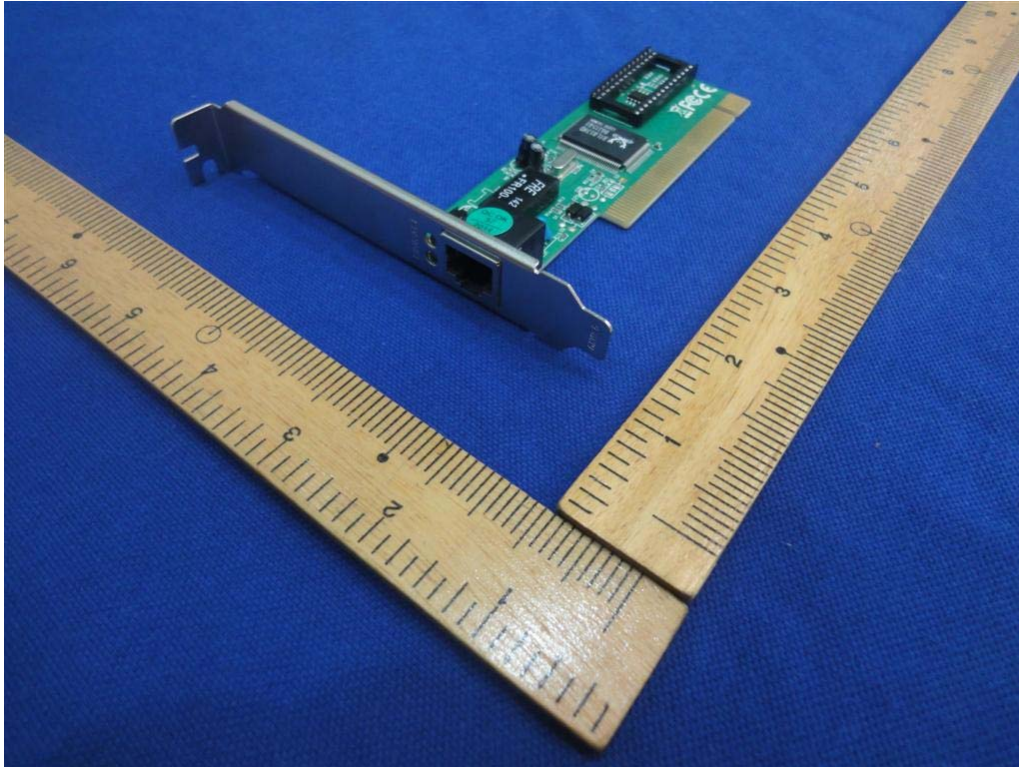
14.4. Test Photographs



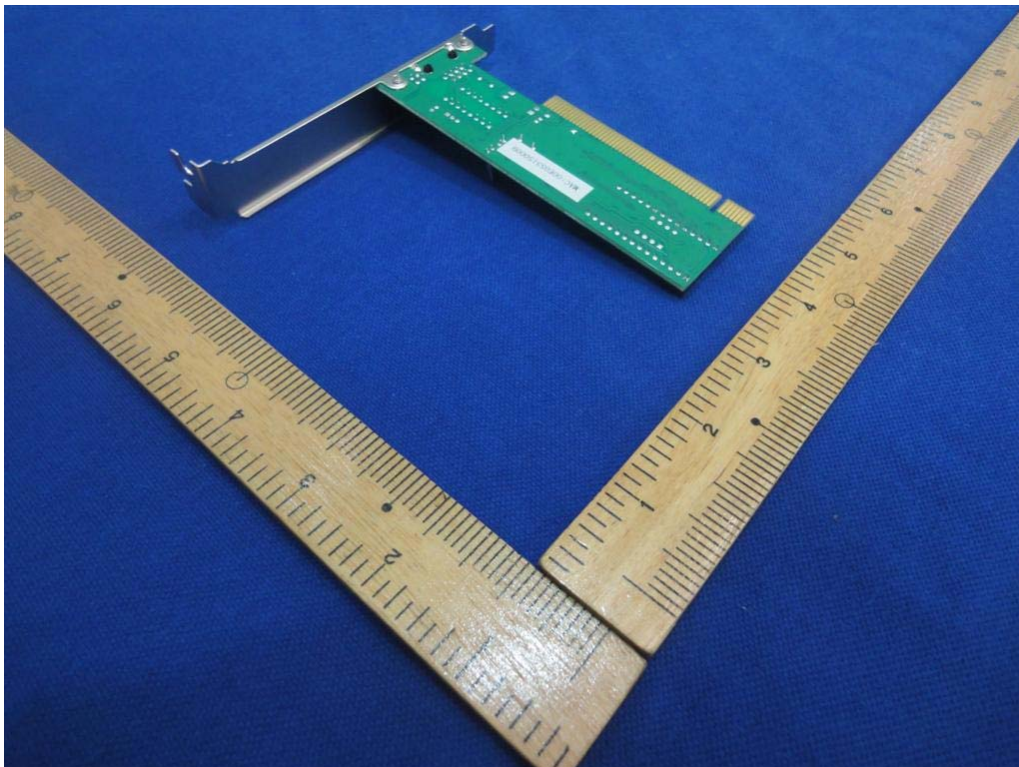


15. Photographs of EUT

1) EUT Photo

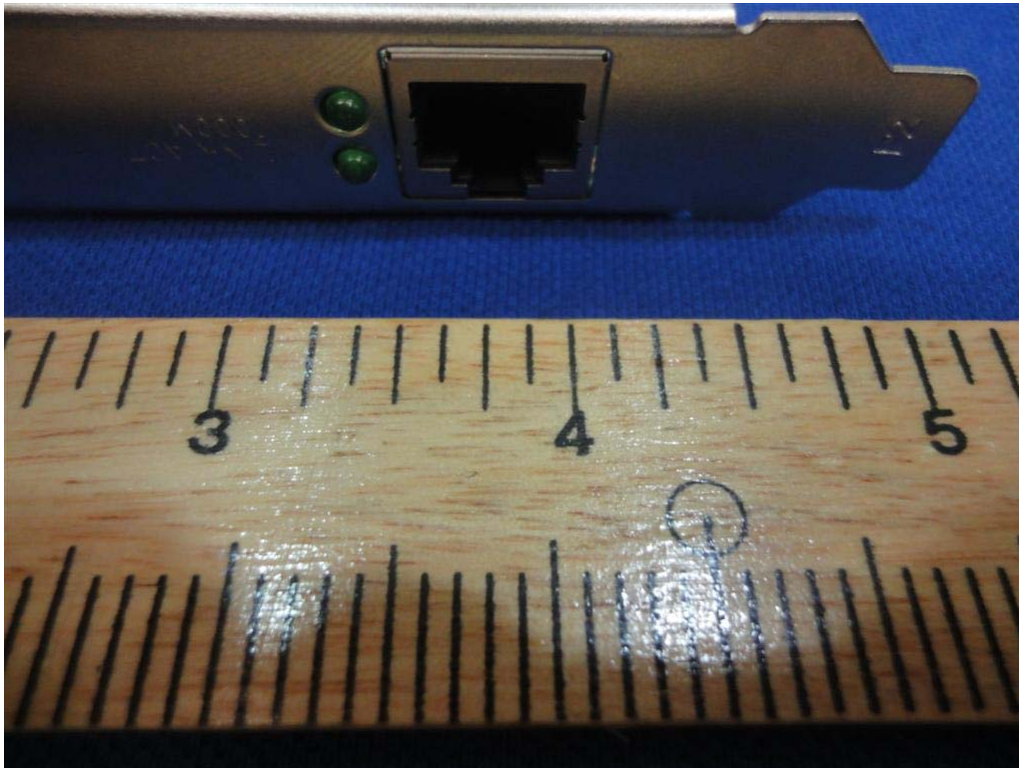


2) EUT Photo

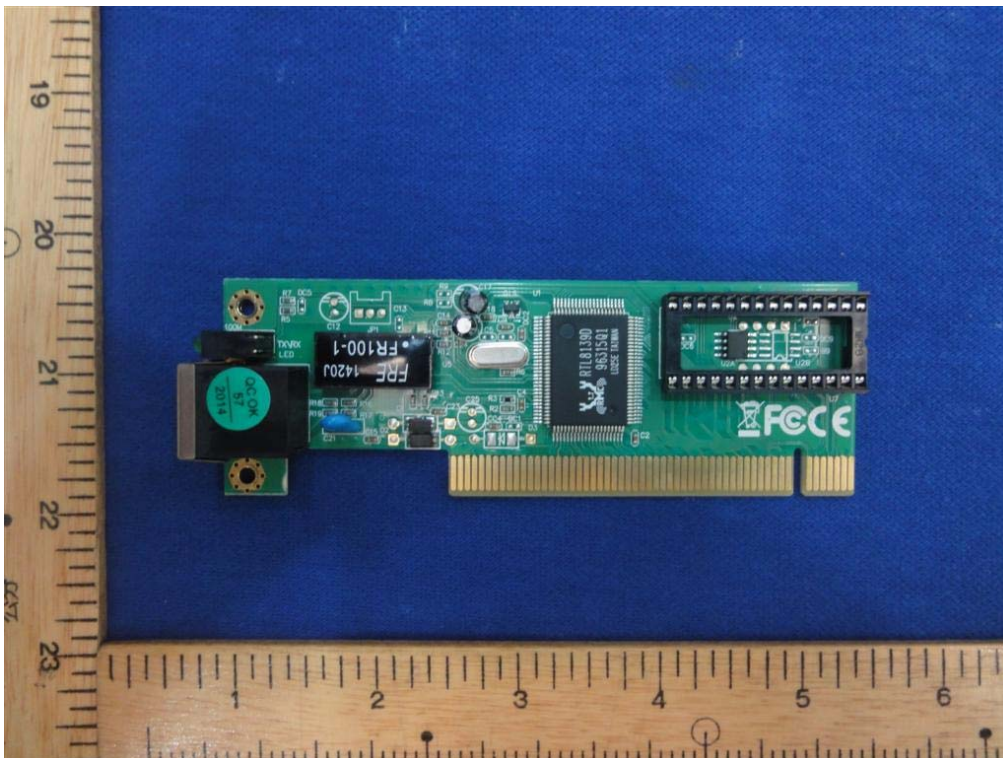




3) EUT Photo



4) EUT Photo





5) EUT Photo

