EMC Test report

Product Type	:	Network Camera
Applicant	:	VIVOTEK INC.
Address	:	6F, No.192, Lien-Cheng Rd., Chung-Ho , New Taipei City, 235, Taiwan, R.O.C.
Trade Name	:	VIVOTEK
Model Number	:	FE8171V
Test Specification	:	EN 50155: 2007 EN 50121-3-2: 2006
Issue Date	:	Aug. 02, 2011

Issue by

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade City,
Taoyuan County 334, Taiwan R.O.C.
Tel：+886-3-2710188 / Fax：+886-3-2710190

Taiwan Accreditation Foundation accreditation number: 1330

Revision History

Rev.	Issue Date	Revisions	Revised By
00	Aug. 02, 2011	Initial Issue	

Verification of Compliance

Issued Date: 2011/08/02

Product Type	:	Network Camera
Applicant	:	VIVOTEK INC.
Address	:	6F, No.192, Lien-Cheng Rd., Chung-Ho , New Taipei City, 235, Taiwan, R.O.C.
Trade Name	:	VIVOTEK
Model Number	:	FE8171V
EUT Rated Voltage	:	DC 12 - 48V
Test Voltage	:	230 Vac / 50 Hz, 48Vdc
Applicable Standard	:	EN 50155: 2007 EN 50121-3-2: 2006
Test Result	:	Complied
Performing Lab.	:	A Test Lab Techno Corp. No. 140-1, Changan Street, Bade City, Taoyuan County 334, Taiwan R.O.C. Tel：+886-3-2710188 / Fax：+886-3-2710190 Taiwan Accreditation Foundation accreditation number: 1330 http://www.atl-lab.com.tw/e-index.htm

The above equipment has been tested by A Test Lab Techno Corp., and found compliance with the requirements set forth in the Electromagnetic Compatibility Directive 96/48/EC and technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved By	:	Reviewed By	:	
(Manager)	(Miller Lee)	(Testing Engineer)		(Gary Wu)

TABLE OF CONTENTS

1 General Information

1.1. Summary of Test Result

Electromagnetic Compatibility (EMC)				
EN 50155 Reference Clause(s)	Reference standard	Item	Result	Remark
12.2.8.2	EN 50121-3-2 EN 55011	Power Line Conducted Emission Measurement	PASS	Not Applicable (The EUT use DC power source by PoE.)
12.2.8.2	EN 50121-3-2 EN 55011	Radiated Emission Measurement	PASS	Applicable
12.2.7.2	EN 50121-3-2 EN 61000-4-2	Electrostatic Discharge Test	PASS	Applicable
12.2.7.3	EN 50121-3-2 EN 61000-4-4	Transient Burst Susceptibility Test	PASS	Applicable
12.2.8.1	EN 50121-3-2 EN 61000-4-3	Radio- Frequency, Electromagnetic Field Immunity Test	PASS	Applicable
12.2.8.1	EN 50121-3-2 EN 61000-4-6	Radio- Frequency, Conducted Disturbances Immunity Test	PASS	Applicable

The test results of this report relate only to the tested sample(s) identified in this report. Manufacturer or whom it may concern should recognize the pass or fail of the test result.

1.2. Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 2.26 dB.

Conducted Emissions (Telecommunication Ports)

The measurement uncertainty is evaluated as ± 2.26 dB.

Radiated Emission

The measurement uncertainty is evaluated as ± 3.19 dB.

Electrostatic Discharge

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 2005[E], the requirements for measurement uncertainty in ESD testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant ESD standards. The immunity test signal from the ESD system meet the required specifications in IEC 61000-4-2 through the calibration report with the calibrated uncertainty for the waveform of voltage and timing as being 1.52 % and 2.69%.

Radiated susceptibility

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 2005[E], the requirements for measurement uncertainty in RS testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant RS standards. The immunity test signal from the RS system meet the required specifications in IEC 61000-4-3 through the calibration for the uniform field strength and monitoring for the test level with the uncertainty evaluation report for the electrical filed strength as being 2.65 dB.

Electrical fast transient/burst

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in EFT/Burst testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant FT/Burst standards. The immunity test signal from the FT/Burst system meet the required specifications in IEC 61000-4-4 through the calibration report with the calibrated uncertainty for the waveform of voltage. Frequency and timing as being 1.57% and 2.73%.

Conducted susceptibility

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 2005[E], the requirements for measurement uncertainty in CS testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant CS standards. The immunity test signal from the CS system meet the required specifications in IEC 61000-4-6 through the calibration for unmodulated signal and monitoring for the test level with the uncertainty evaluation report for the injected modulated signal level through CDN and EM Clamp/Direct Injection as being 3.68 dB and 2.72 dB.

2 EUT Description

Product	:	Network Camera
Trade Name	:	VIVOTEK
Model Number	:	FE8171V
Applicant	:	VIVOTEK INC. 6F, No.192, Lien-Cheng Rd., Chung-Ho , New Taipei City, 235, Taiwan, R.O.C.
Manufacturer	:	VIVOTEK INC. 5F, No.168, Lien-Cheng Rd., Chung-Ho , New Taipei City, 235, Taiwan, R.O.C.
Component		
Power Adapter	:	ENG, 3A-183WP12 I/P: 100-240VAC, 50-60Hz, 0.6A O/P: 12VDC, 1.5A Shielded, 1.7m, Non-Detachable at Power Adaptor

I/O Port Description：

I/O PORT TYPES	Q'TY	Test Description
1). LAN Port	1	Connected to Notebook or PoE
2). Audio in Port	1	Connected to Microphone
3). Audio out Port	1	Connected to Earphone
4). Power Port	1	Connected to AC Adapter

3 Test Methodology

3.1. Decision of Test Mode

3.1.1 The following test mode(s) were scanned during the preliminary test:

Pre-Test Mode
Mode 1: Normal Operation with Adapter Mode
Mode 2: Normal Operation with PoE Mode

3.1.2 After the preliminary scan, the following test mode was found to produce the highest emission level.

Final Test Mode		
Electromagnetic Compatibility (EMC)	Power Line Conducted Emission	Mode 1
	Radiated Emission	Mode 1 / Mode 2
	ESD	Mode 1 / Mode 2
	EFT	Mode 1 / Mode 2
	RS	Mode 1 / Mode 2
	CS	Mode 1 / Mode 2

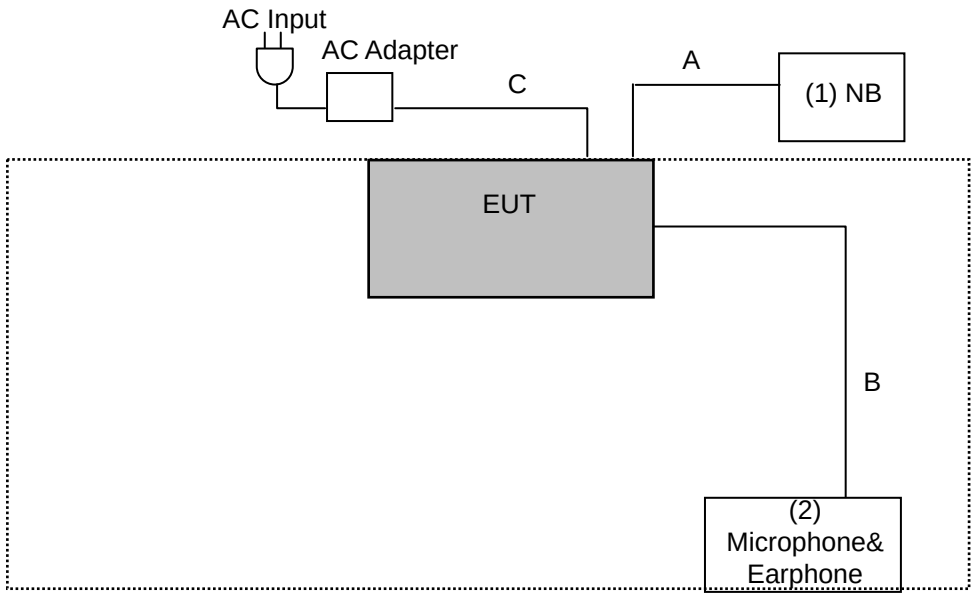
Then, the above highest emission mode of the configuration of the EUT and cable was chosen for all final test items.

3.2. EUT Exercise Software

1. Setup the EUT and simulators as shown on 3.3.
2. Turn on the power of all equipment.
3. The EUT will start to operate and display the video figure from the signal source.
4. The EUT will display “video figure” on monitor.
5. Repeat the above procedure (3) to (4).

3.3. Configuration of Test System Details

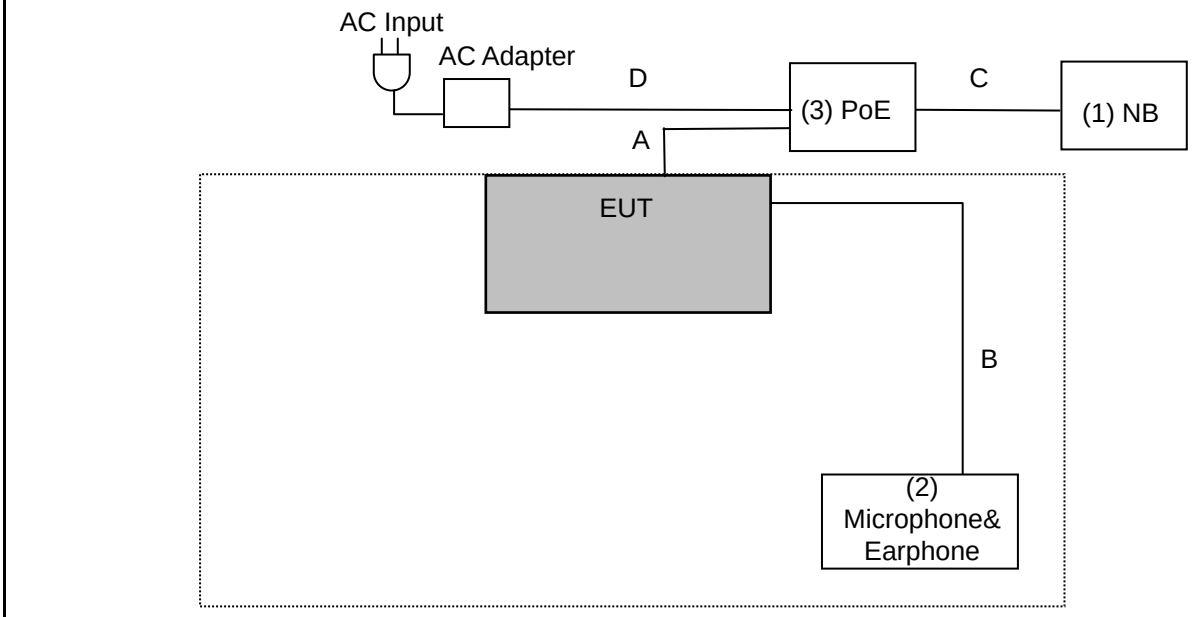
Mode 1



Signal Cable Type		Signal Cable Description
A	LAN Cable	Non-Shielded, 3.0m
B	Microphone & Earphone Cable	Shielded, 1.8m
C	DC Power Cable	Shielded, 1.7m

Devices Description					
Product		Manufacturer	Model Number	Serial Number	Power Cord
(1)	Notebook	DELL	D531	CN-OXM006-48643-87A-3398	Non-Shielded, 2.0m
(2)	Microphone & Earphone	N/A	N/A	N/A	N/A

Mode 2



Signal Cable Type		Signal Cable Description
A	LAN Cable	Non-Shielded, 1.8m
B	Microphone & Earphone Cable	Shielded, 1.8m
C	LAN Cable	Non-Shielded, 3.0m
D	DC Power Cable	Shielded, 1.8m with one core

Devices Description					
Product		Manufacturer	Model Number	Serial Number	Power Cord
(1)	Notebook	DELL	D531	CN-OXM006-48643-87A-3398	Non-Shielded, 2.0m
(2)	Microphone & Earphone	N/A	N/A	N/A	N/A
(3)	Power over Ethernet Adapter Injector	LINKSYS	WAPPOE	N/A	Shielded, 1.8m with one core

4 Electromagnetic Compatibility (EMC) Test

4.1. Conducted Emission Measurement

4.1.1. Limit

Reference to EN 50155 clause 12.2.8.2 and EN 50121-3-2 table 5

Frequency (MHz)	Quasi-peak
0.15 - 0.5	99
0.50 - 30.0	93

4.1.2. Test Instruments

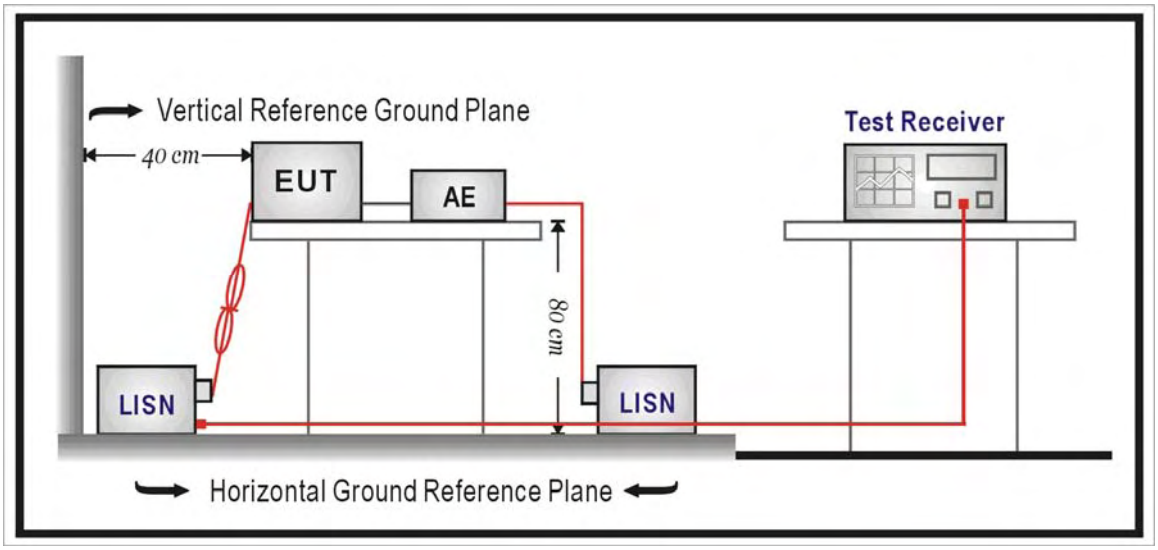
Describe	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	06/30/2011	(1)
LISN	R&S	ENV216	101040	03/04/2011	(1)
LISN	R&S	ENV216	101041	03/04/2011	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

4.1.3. Test Setup

A.C. Mains Setup

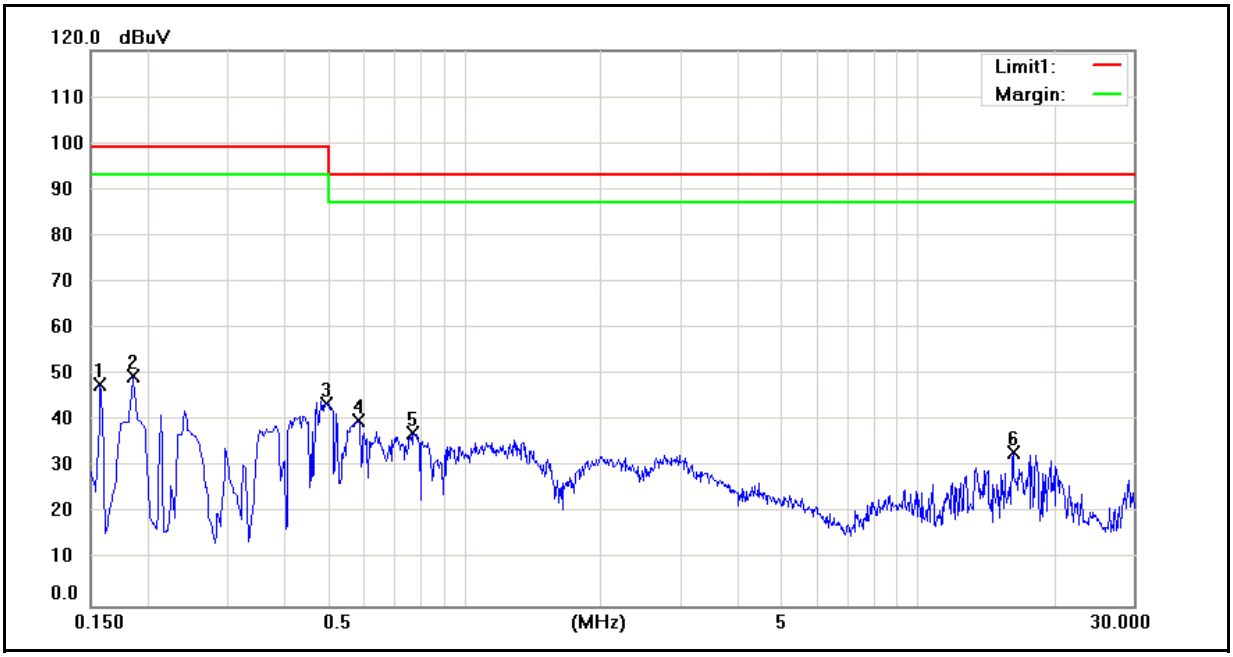


4.1.4. Test Procedure

Test Procedures were referred to EN 55011 sub-clause 7

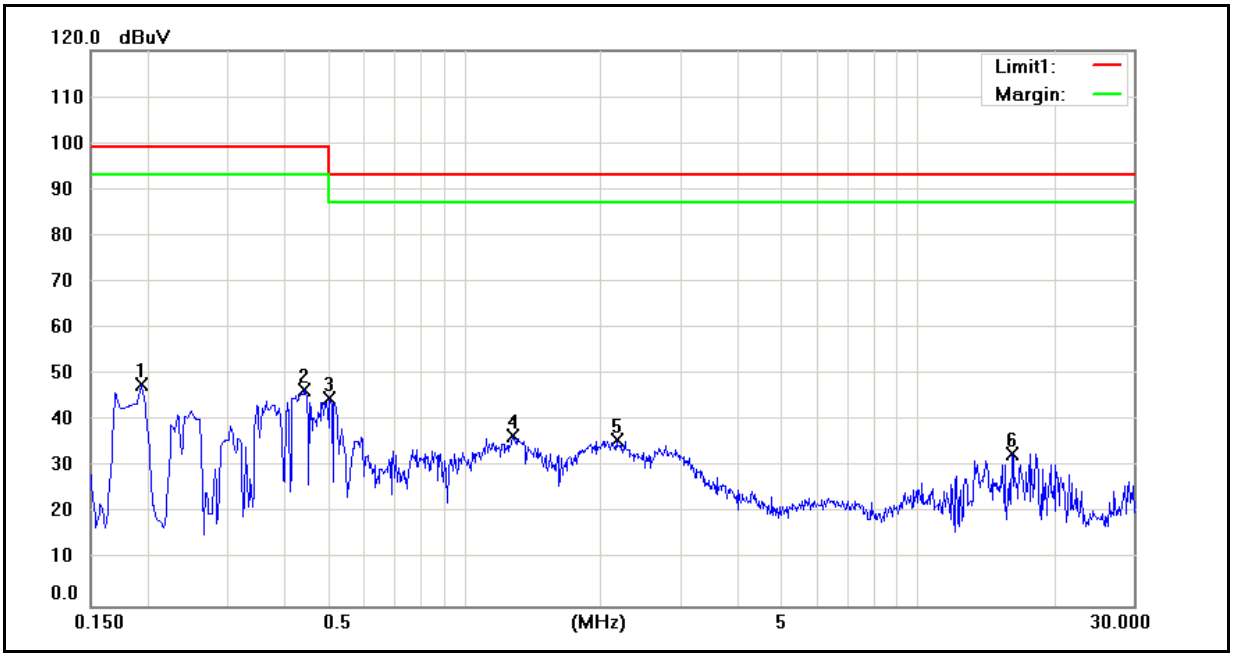
4.1.5. Test Result

Standard:	EN 55022 Class B	Line:	L1
Test item:	Conducted Emission	Power:	AC 230V/50Hz
Model:	FE8171V	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 1	Date:	2011/07/22
		Test By:	Gary Wu
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	Correction factor (dB)	QP result (dBuV)	QP limit (dBuV)	QP margin (dB)	Remark
1	0.1580	27.60	10.07	37.67	99.00	-61.33	Pass
2	0.1860	33.42	10.06	43.48	99.00	-55.52	Pass
3	0.4994	32.93	9.93	42.86	99.00	-56.14	Pass
4	0.5860	28.34	9.89	38.23	93.00	-54.77	Pass
5	0.7740	25.20	9.82	35.02	93.00	-57.98	Pass
6	16.2300	21.39	10.19	31.58	93.00	-61.42	Pass

Standard:	EN 55022 Class B	Line:	N
Test item:	Conducted Emission	Power:	AC 230V/50Hz
Model:	FE8171V	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 1	Date:	2011/07/22
		Test By:	Gary Wu
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	Correction factor (dB)	QP result (dBuV)	QP limit (dBuV)	QP margin (dB)	Remark
1	0.1940	33.62	10.13	43.75	99.00	-55.25	Pass
2	0.4460	33.72	10.03	43.75	99.00	-55.25	Pass
3	0.5060	33.10	10.01	43.11	93.00	-49.89	Pass
4	1.2820	24.57	9.77	34.34	93.00	-58.66	Pass
5	2.1780	23.75	9.76	33.51	93.00	-59.49	Pass
6	16.1660	20.83	10.24	31.07	93.00	-61.93	Pass

4.1.6. Test Photograph

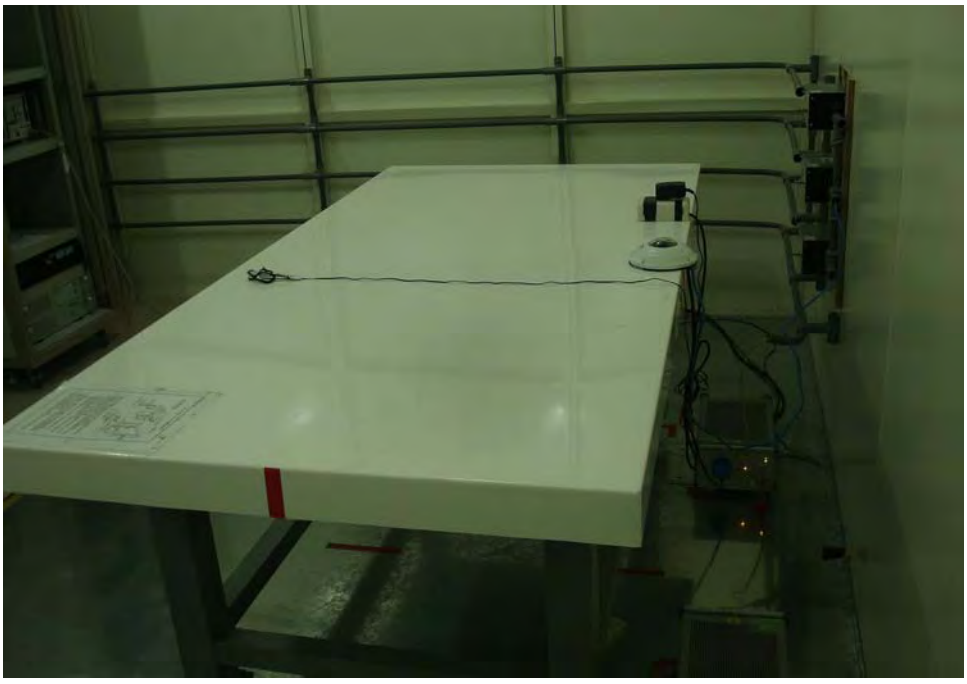
A.C. Mains:

Test Mode : Mode 1

Description : Front View of Conducted Test

Test Mode : Mode 1

Description : Back View of Conducted Test



4.2. Radiated Interference Measurement

4.2.1. Limit

Reference to EN 50155 clause 12.2.8.2 and EN 50121-3-2 table 6

Frequency (MHz)	Quasi-peak
30 - 230	40.0
230 - 1000	47.0

4.2.2. Test Instruments

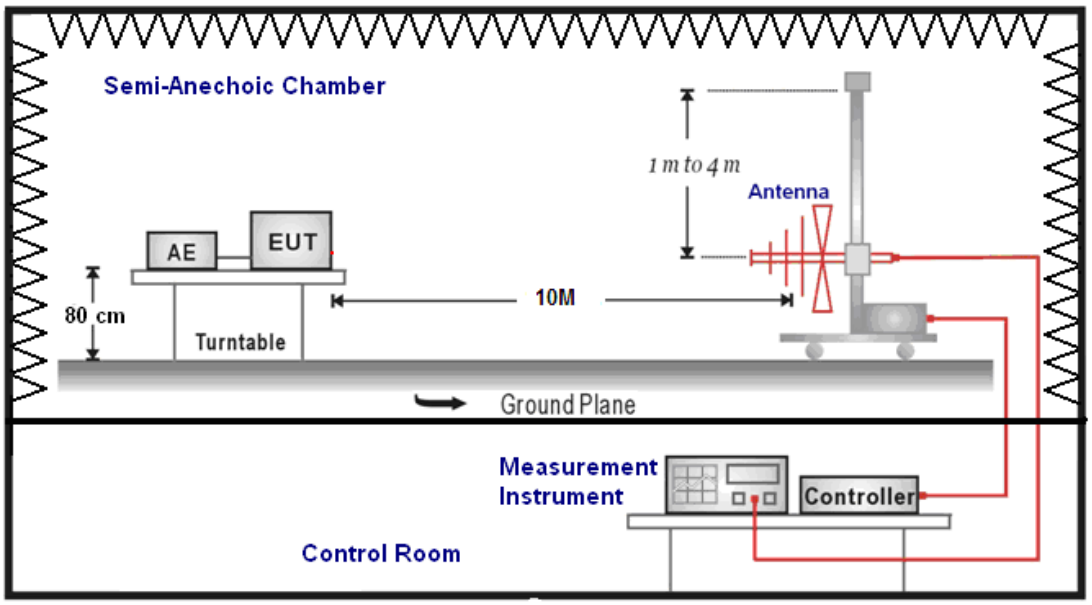
10 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Pre Amplifier	Agilent	8447D	2944A11120	01/11/2011	(1)
Pre Amplifier	Agilent	8447D	2944A11119	01/11/2011	(1)
Test Receiver	R&S	ESCI	100722	10/14/2010	(1)
Test Receiver	R&S	ESCI	101000	12/15/2010	(1)
Broadband Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB 9160	9160-3268	07/01/2011	(1)
Broadband Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB 9160	9160-3273	12/30/2010	(1)
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/29/2011	(1)
Horn Antenna (18~40GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	06/28/2011	(1)
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

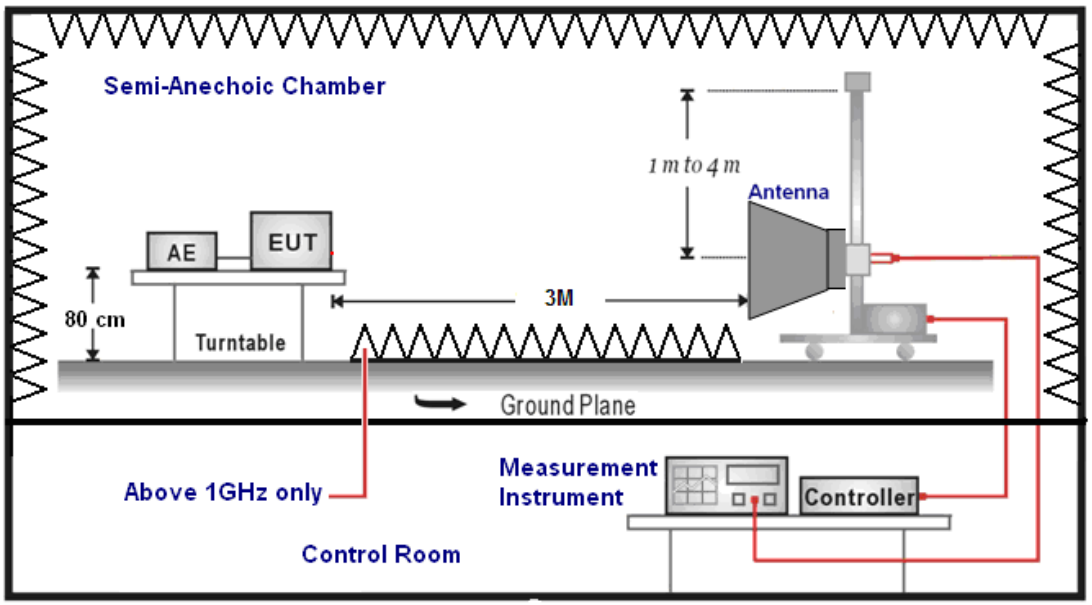
NOTE: N.C.R. = No Calibration Request.

4.2.3. Setup

Below 1GHz



Above 1GHz

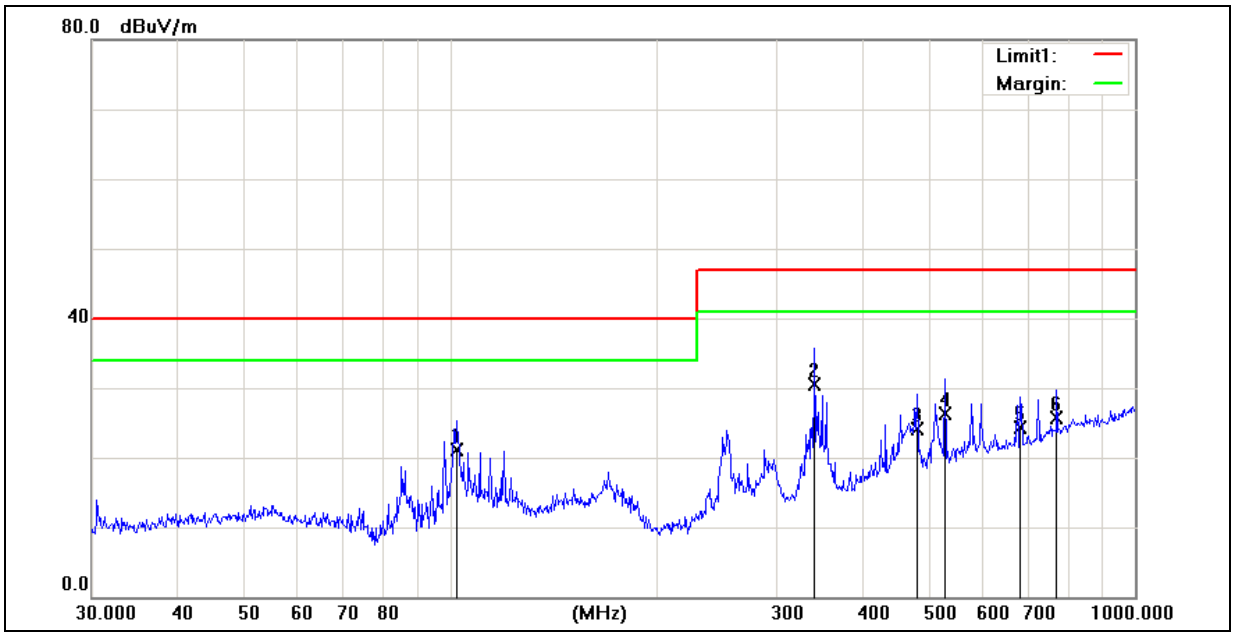


4.2.4. Test Procedure

Test Procedures were referred to EN 55011 sub-clause 7

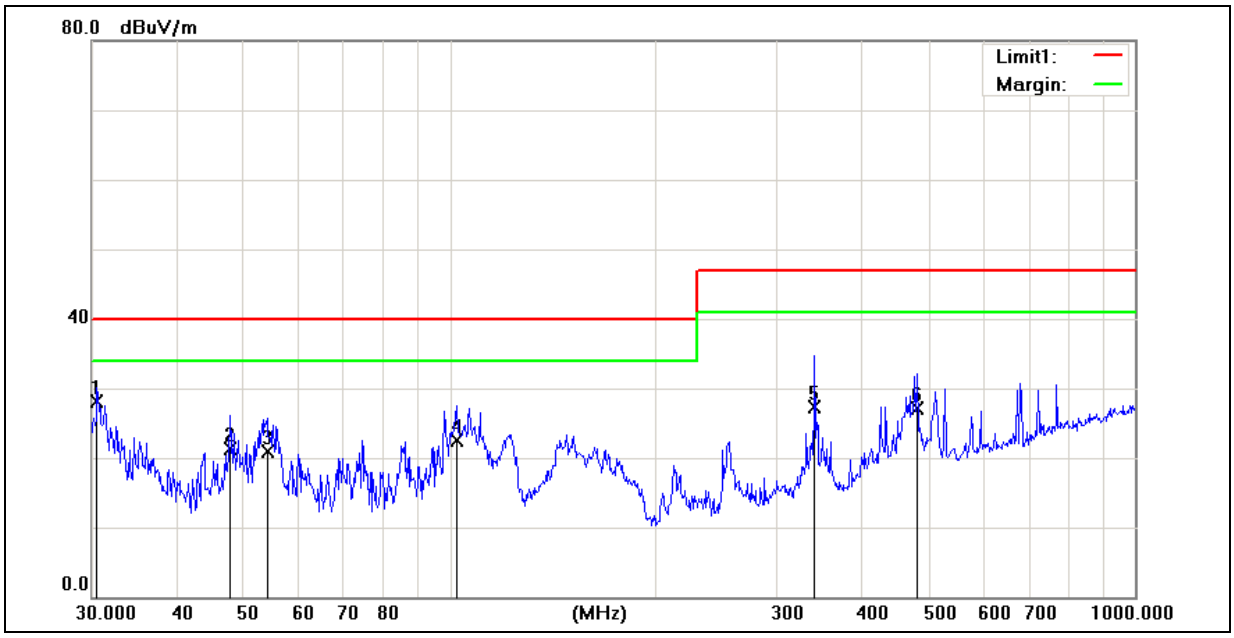
4.2.5. Test Result

Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiated Emission	Power:	AC 230V/50Hz
Model:	FE8171V	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 1	Date:	2011/07/20
Ant.Polar.:	Horizontal	Test By:	Gary Wu



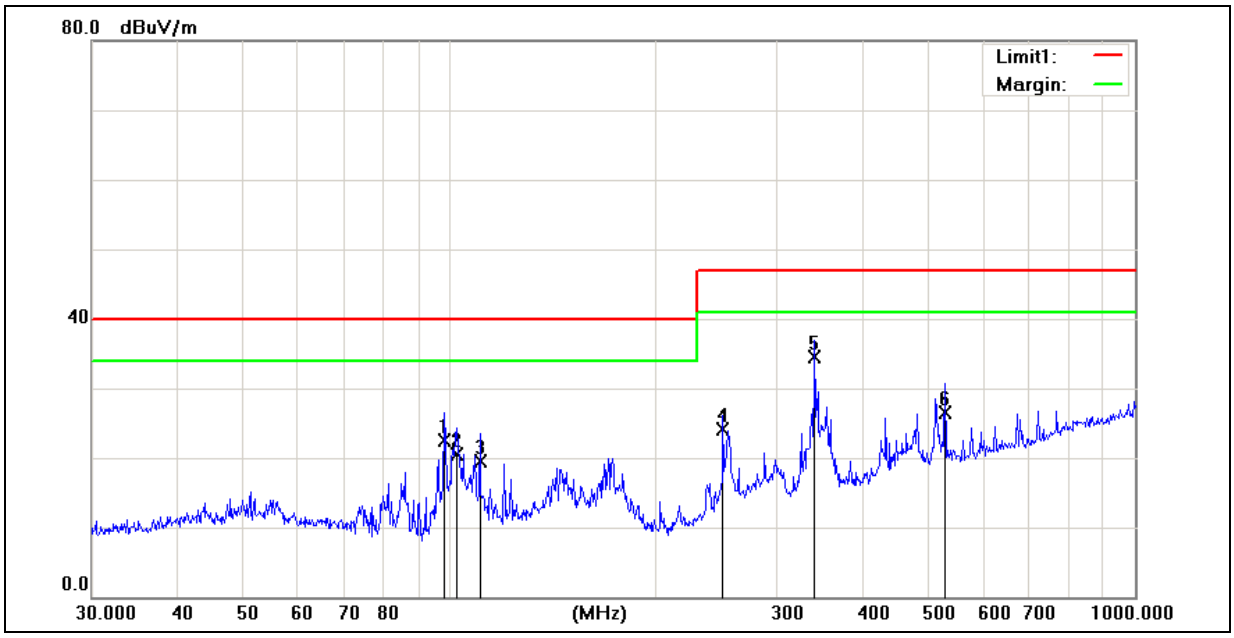
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
1	102.3597	37.57	-16.47	21.10	40.00	-18.90	400	105	QP
2	340.7817	40.77	-10.27	30.50	47.00	-16.50	399	0	QP
3	480.5276	31.53	-7.33	24.20	47.00	-22.80	300	44	QP
4	528.2458	32.84	-6.54	26.30	47.00	-20.70	200	43	QP
5	679.9600	27.88	-3.48	24.40	47.00	-22.60	200	189	QP
6	768.7481	27.12	-1.42	25.70	47.00	-21.30	100	139	QP

Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiated Emission	Power:	AC 230V/50Hz
Model:	FE8171V	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 1	Date:	2011/07/20
Ant.Polar.:	Vertical	Test By:	Gary Wu



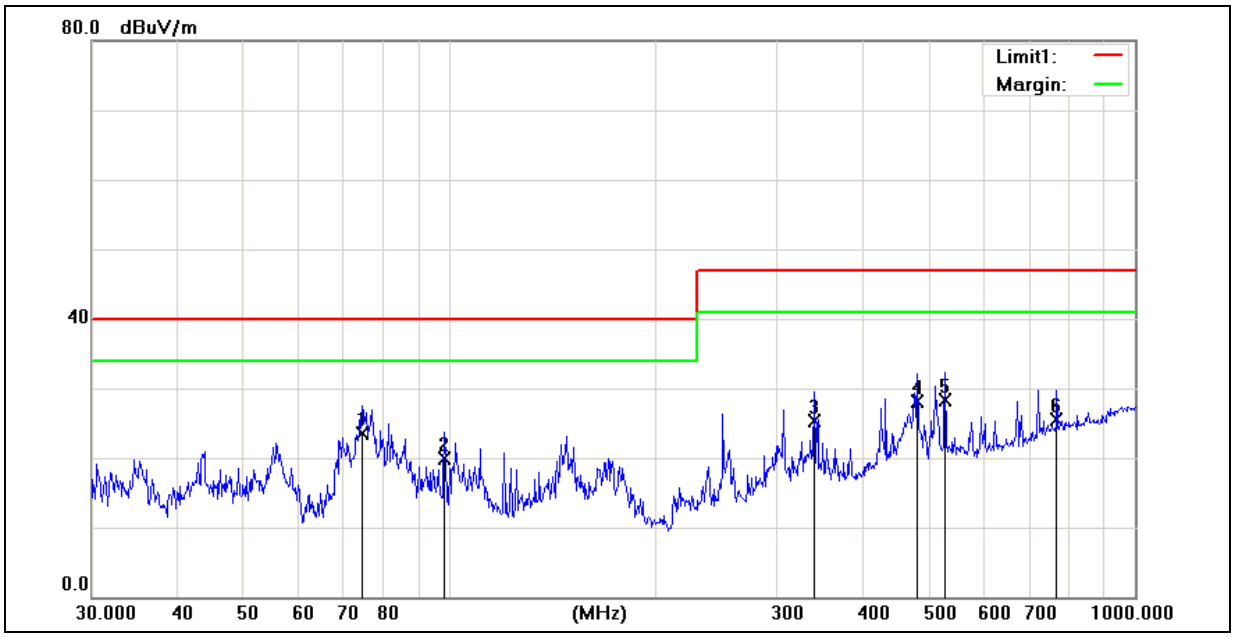
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
1	30.5306	43.70	-15.60	28.10	40.00	-11.90	100	149	QP
2	47.8260	35.38	-14.08	21.30	40.00	-18.70	100	354	QP
3	54.0711	34.98	-14.08	20.90	40.00	-19.10	100	294	QP
4	102.3597	38.86	-16.36	22.50	40.00	-17.50	199	41	QP
5	340.7817	36.85	-9.45	27.40	47.00	-19.60	200	360	QP
6	480.5276	33.35	-6.15	27.20	47.00	-19.80	100	0	QP

Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiated Emission	Power:	DC 48V
Model:	FE8171V	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	2011/07/20
Ant.Polar.:	Horizontal	Test By:	Gary Wu



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
1	98.1420	39.84	-17.24	22.60	40.00	-17.40	400	123	QP
2	102.3597	36.97	-16.47	20.50	40.00	-19.50	400	98	QP
3	110.5687	34.57	-15.07	19.50	40.00	-20.50	400	130	QP
4	250.3012	37.07	-12.87	24.20	47.00	-22.80	400	74	QP
5	340.7817	44.77	-10.27	34.50	47.00	-12.50	300	246	QP
6	528.2458	33.14	-6.54	26.60	47.00	-20.40	400	274	QP

Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiated Emission	Power:	DC 48V
Model:	FE8171V	Temp.(℃)/Hum.(%RH):	26(℃)/60%RH
Mode:	Mode 2	Date:	2011/07/20
Ant.Polar.:	Vertical	Test By:	Gary Wu

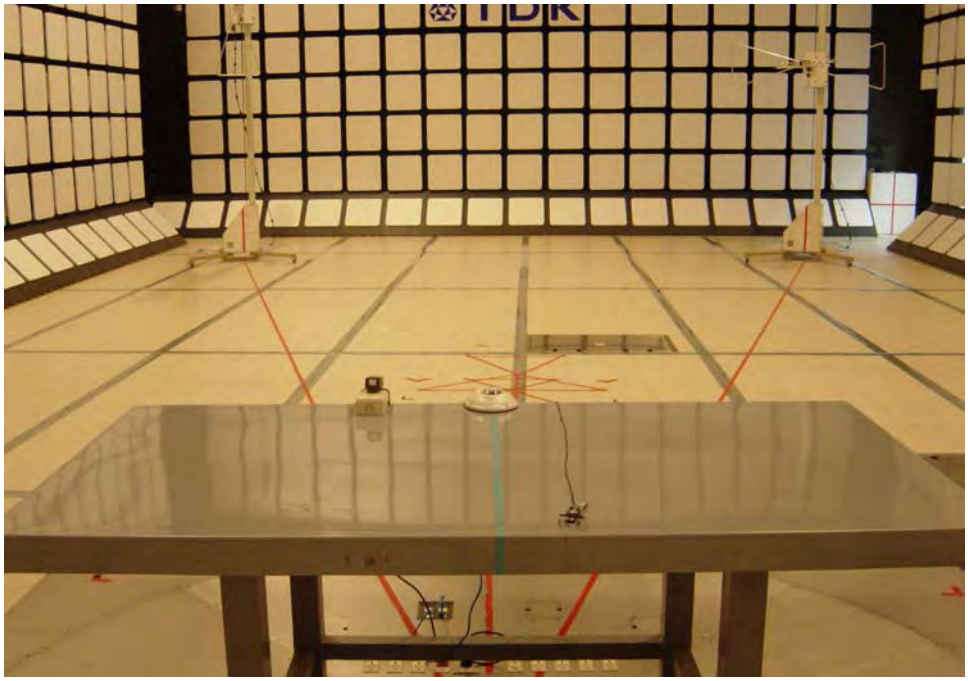


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
1	74.3955	40.64	-17.04	23.60	40.00	-16.40	200	266	QP
2	98.1420	37.04	-17.14	19.90	40.00	-20.10	400	330	QP
3	340.7817	34.75	-9.45	25.30	47.00	-21.70	200	0	QP
4	480.5276	34.25	-6.15	28.10	47.00	-18.90	100	216	QP
5	528.2458	33.50	-5.20	28.30	47.00	-18.70	100	74	QP
6	768.7481	24.75	0.75	25.50	47.00	-21.50	400	22	QP

4.2.6. Test Photograph

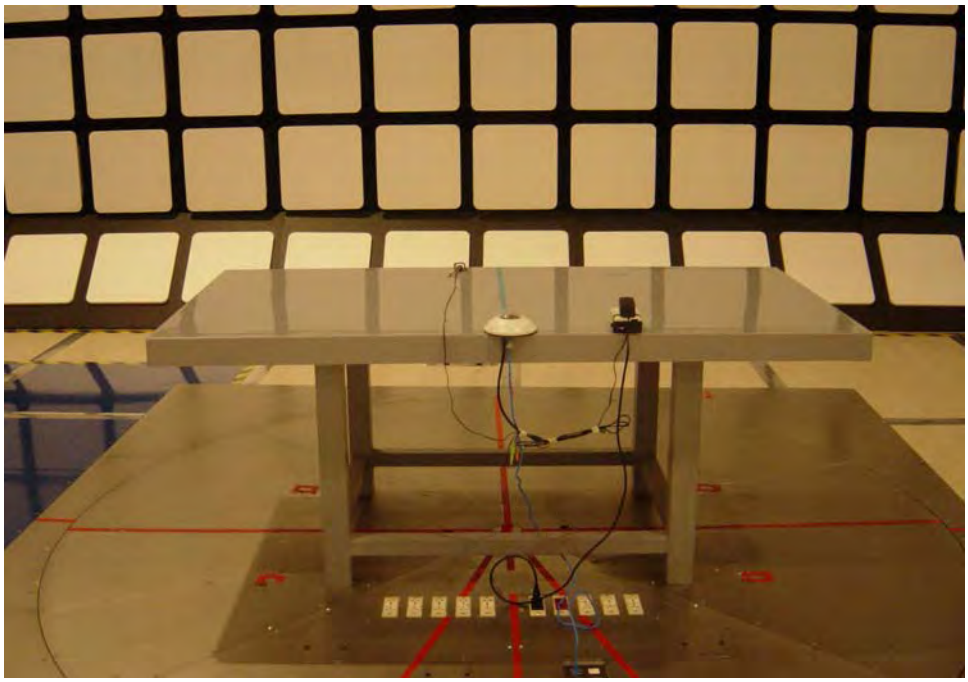
Test Mode : Mode 1

Description : Front View of Radiated Emission Test_Below 1GHz



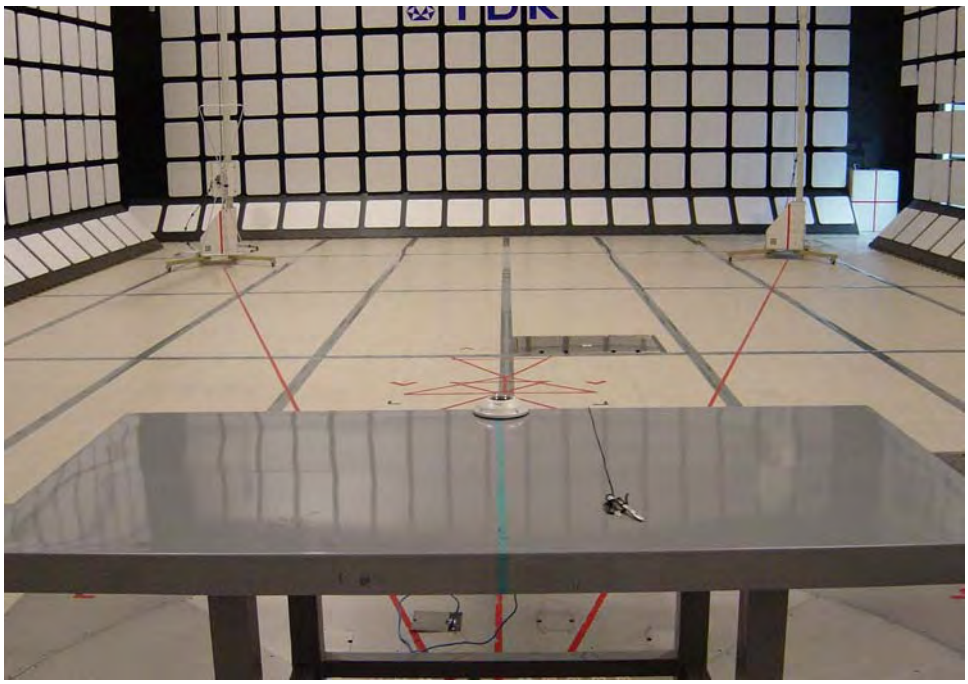
Test Mode : Mode 1

Description : Back View of Radiated Emission Test_Below 1GHz



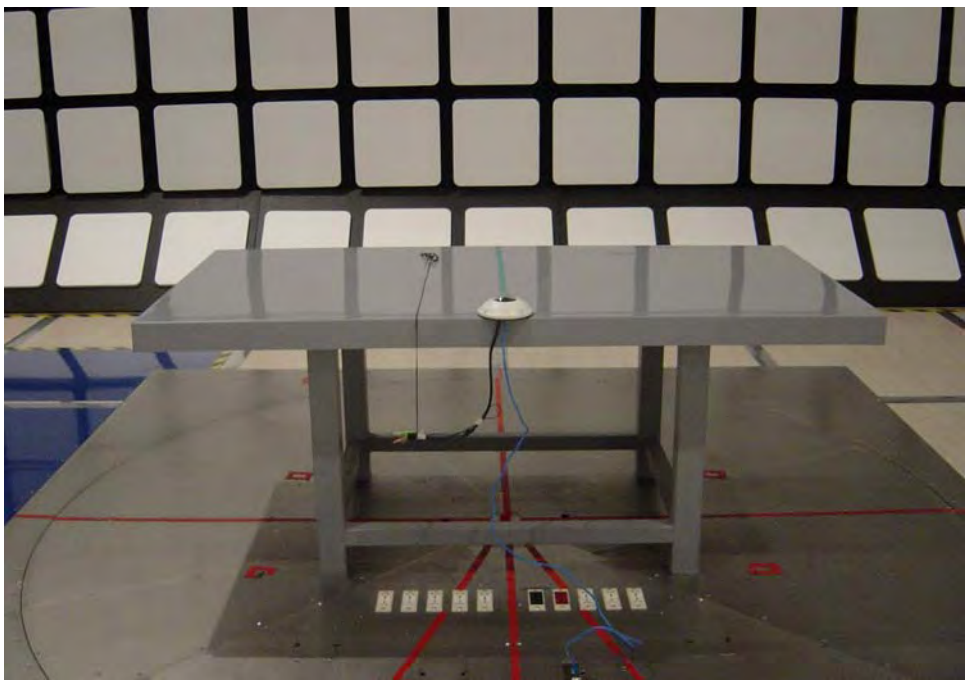
Test Mode : Mode 2

Description : Front View of Radiated Emission Test_Below 1GHz



Test Mode : Mode 2

Description : Back View of Radiated Emission Test_Below 1GHz



4.3. Electrostatic Discharge (ESD) Measurement

4.3.1. Test Specification

Reference to EN 50155 clause 12.2.7.2 and EN 50121-3-2 table 9

Test Specification	Performance Criterion
Air Discharge: ±8 kV	B
Contact Discharge: ±6 kV	

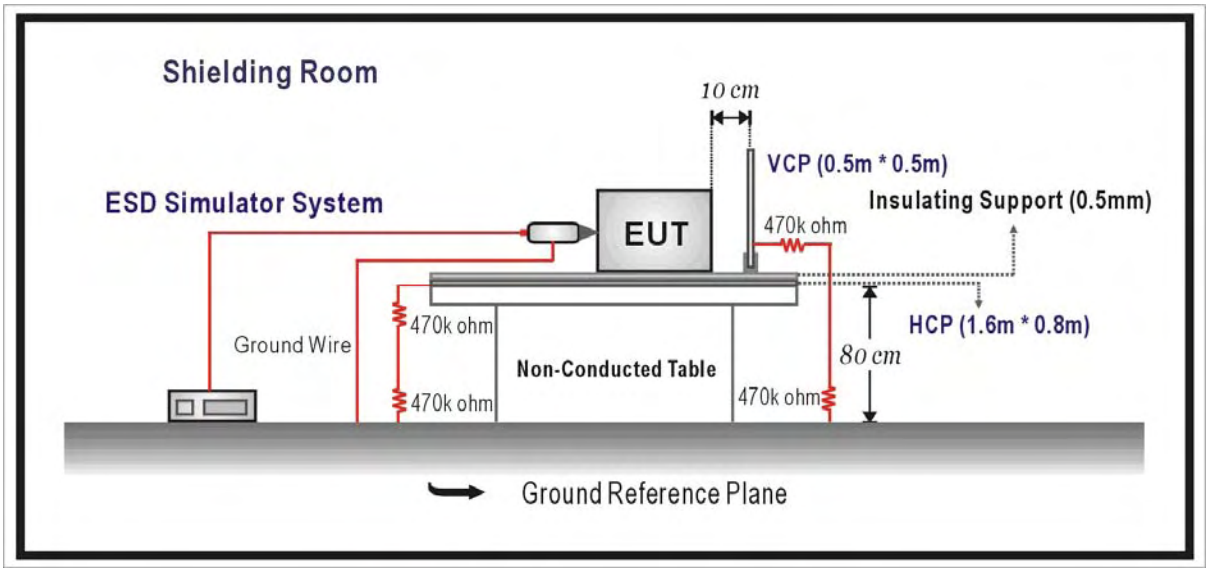
4.3.2. Test Instrument

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Discharge Gun	Noiseken	ESS-2002	NOISE-ESS-2002CM	03/15/2011	(1)
0.8m Height Wooden Table	N/A	N/A	N/A	N.C.R.	-----
Test Site	ATL	TE04	TE04	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

4.3.3. Setup



4.3.4. Test Procedure

Test Procedures were referred to EN 61000-4-2 sub-clause 8

4.3.5. Test Result

Product	Network Camera		
Test Item	Electrostatic Discharge		
Test Mode	Mode 1		
Date of Test	07/27/2011	Test Site	TE04

Air Discharge												
Test Points	Test Levels								Results			
	± 2 kV	Performance Criterion		± 4 kV	Performance Criterion		± 8 kV	Performance Criterion		Pass	Fail	Observation
Front	☒	☒A	☐B	☒	☒A	☐B	☒	☒A	☐B	☒	☐	---
Back	☒	☒A	☐B	☒	☒A	☐B	☒	☒A	☐B	☒	☐	---
Left	☐	☐A	☐B	☐	☐A	☐B	☐	☐A	☐B	☐	☐	---
Right	☐	☐A	☐B	☐	☐A	☐B	☐	☐A	☐B	☐	☐	---
Top	☐	☐A	☐B	☐	☐A	☐B	☐	☐A	☐B	☐	☐	---
Bottom	☐	☐A	☐B	☐	☐A	☐B	☐	☐A	☐B	☐	☐	---

Contact Discharge												
Test Points	Test Levels								Results			
	± 2 kV	Performance Criterion		± 4 kV	Performance Criterion		± 6 kV	Performance Criterion		Pass	Fail	Observation
Front	☒	☒A	☐B	☒	☒A	☐B	☒	☒A	☐B	☒	☐	---
Back	☒	☒A	☐B	☒	☒A	☐B	☒	☒A	☐B	☒	☐	---
Left	☐	☐A	☐B	☐	☐A	☐B	☐	☐A	☐B	☐	☐	---
Right	☐	☐A	☐B	☐	☐A	☐B	☐	☐A	☐B	☐	☐	---
Top	☐	☐A	☐B	☐	☐A	☐B	☐	☐A	☐B	☐	☐	---
Bottom	☐	☐A	☐B	☐	☐A	☐B	☐	☐A	☐B	☐	☐	---

For the tested points to EUT, please refer to attached page. (Blue arrow mark for Air Discharge and red arrow mark for Contact Discharge)

Discharge To Horizontal Coupling Plane									
Side of EUT	Test Levels				Results				
	± 2 kV	± 4 kV	± 6 kV	± 8 kV	Pass	Fail	Performance Criterion		Observation
Front	☒	☒	☒	☐	☒	☐	☒A	☐B	---
Back	☒	☒	☒	☐	☒	☐	☒A	☐B	---
Left	☒	☒	☒	☐	☒	☐	☒A	☐B	---
Right	☒	☒	☒	☐	☒	☐	☒A	☐B	---

Discharge To Vertical Coupling Plane									
Side of EUT	Test Levels				Results				
	± 2 kV	± 4 kV	± 6 kV	± 8 kV	Pass	Fail	Performance Criterion		Observation
Front	☒	☒	☒	☐	☒	☐	☒A	☐B	---
Back	☒	☒	☒	☐	☒	☐	☒A	☐B	---
Left	☒	☒	☒	☐	☒	☐	☒A	☐B	---
Right	☒	☒	☒	☐	☒	☐	☒A	☐B	---

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

Product	Network Camera		
Test Item	Electrostatic Discharge		
Test Mode	Mode 2		
Date of Test	07/27/2011	Test Site	TE04

Air Discharge												
Test Points	Test Levels								Results			
	± 2 kV	Performance Criterion		± 4 kV	Performance Criterion		± 8 kV	Performance Criterion		Pass	Fail	Observation
Front	☒	☒A	☐B	☒	☒A	☐B	☒	☒A	☐B	☒	☐	---
Back	☒	☒A	☐B	☒	☒A	☐B	☒	☒A	☐B	☒	☐	---
Left	☐	☐A	☐B	☐	☐A	☐B	☐	☐A	☐B	☐	☐	---
Right	☐	☐A	☐B	☐	☐A	☐B	☐	☐A	☐B	☐	☐	---
Top	☐	☐A	☐B	☐	☐A	☐B	☐	☐A	☐B	☐	☐	---
Bottom	☐	☐A	☐B	☐	☐A	☐B	☐	☐A	☐B	☐	☐	---

Contact Discharge												
Test Points	Test Levels								Results			
	± 2 kV	Performance Criterion		± 4 kV	Performance Criterion		± 6 kV	Performance Criterion		Pass	Fail	Observation
Front	☒	☒A	☐B	☒	☒A	☐B	☒	☒A	☐B	☒	☐	---
Back	☒	☒A	☐B	☒	☒A	☐B	☒	☒A	☐B	☒	☐	---
Left	☐	☐A	☐B	☐	☐A	☐B	☐	☐A	☐B	☐	☐	---
Right	☐	☐A	☐B	☐	☐A	☐B	☐	☐A	☐B	☐	☐	---
Top	☐	☐A	☐B	☐	☐A	☐B	☐	☐A	☐B	☐	☐	---
Bottom	☐	☐A	☐B	☐	☐A	☐B	☐	☐A	☐B	☐	☐	---

For the tested points to EUT, please refer to attached page. (Blue arrow mark for Air Discharge and red arrow mark for Contact Discharge)

Discharge To Horizontal Coupling Plane									
Side of EUT	Test Levels				Results				
	± 2 kV	± 4 kV	± 6 kV	± 8 kV	Pass	Fail	Performance Criterion		Observation
Front	☒	☒	☒	☐	☒	☐	☒A	☐B	---
Back	☒	☒	☒	☐	☒	☐	☒A	☐B	---
Left	☒	☒	☒	☐	☒	☐	☒A	☐B	---
Right	☒	☒	☒	☐	☒	☐	☒A	☐B	---

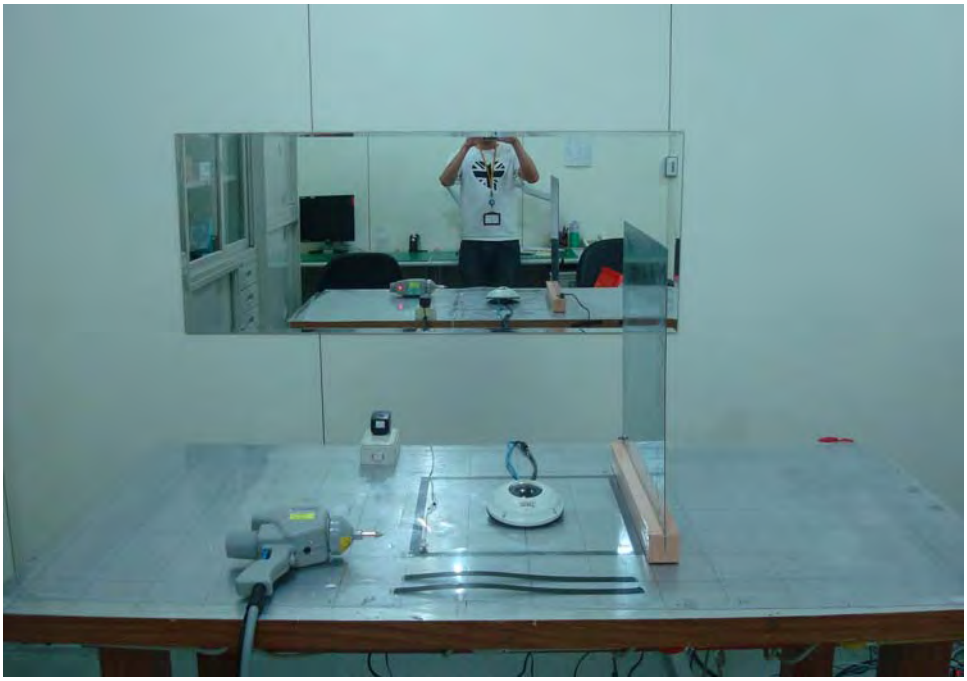
Discharge To Vertical Coupling Plane									
Side of EUT	Test Levels				Results				
	± 2 kV	± 4 kV	± 6 kV	± 8 kV	Pass	Fail	Performance Criterion		Observation
Front	☒	☒	☒	☐	☒	☐	☒A	☐B	---
Back	☒	☒	☒	☐	☒	☐	☒A	☐B	---
Left	☒	☒	☒	☐	☒	☐	☒A	☐B	---
Right	☒	☒	☒	☐	☒	☐	☒A	☐B	---

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

4.3.6. Test Photograph

Test Mode : Mode 1

Description : Front View of ESD Test



Test Mode : Mode 1

Description : Close View of ESD Test

Test Mode : Mode 1

Description : Close View of ESD Test

Test Mode : Mode 1

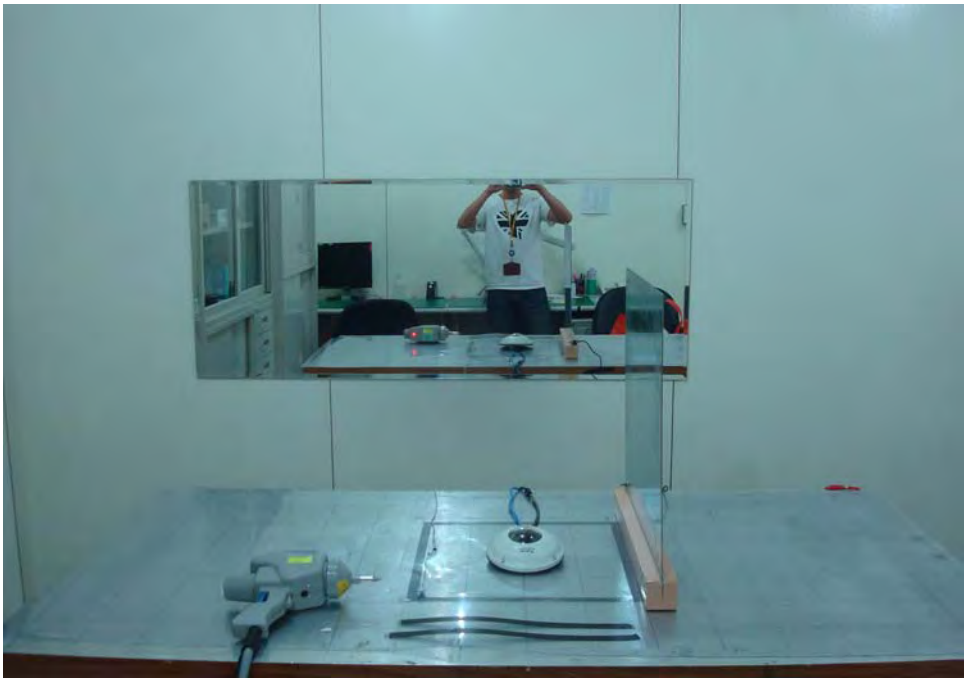
Description : Close View of ESD Test

Test Mode : Mode 1

Description : Close View of ESD Test

Test Mode : Mode 2

Description : Front View of ESD Test



Test Mode : Mode 2

Description : Close View of ESD Test

Test Mode : Mode 2

Description : Close View of ESD Test

Test Mode : Mode 2

Description : Close View of ESD Test

Test Mode : Mode 2

Description : Close View of ESD Test

4.4. Transient Burst Susceptibility (EFT) Measurement

4.4.1. Test Specification

Reference to EN 50155 clause 12.2.7.3 and EN 50121-3-2 table 7 & 8 5 kHz Repetition frequency

Test Specification	Performance Criterion
AC power ports: ±2 kV	A
DC power ports: ±2 kV	
Signal ports: ±2 kV	

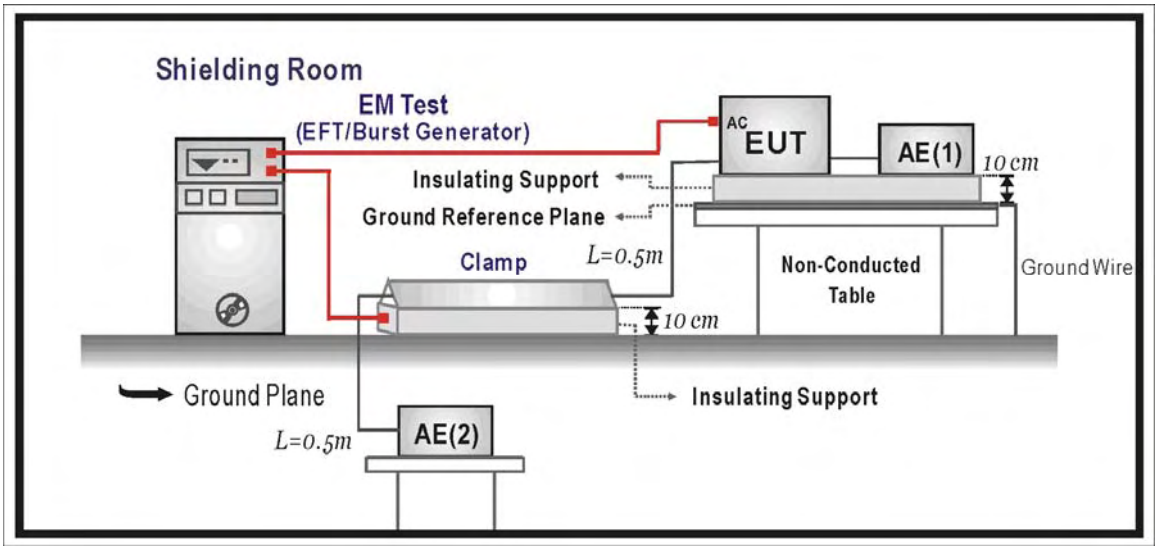
4.4.2. Test Instrument

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
EMC Immunity Tester	EMC-PARTNER AG	TRANSIENT 2000IN6	952	02/08/2011	(1)
Test Site	ATL	TE08	TE08	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

4.4.3. Setup



4.4.4. Test Procedure

Test Procedures were referred to EN 61000-4-4 sub-clause 8

4.4.5. Test Result

Product	Network Camera		
Test Item	Transient Burst Susceptibility (EFT)		
Test Mode	Mode 1		
Date of Test	07/26/2011	Test Site	TE08

Test Point	Test Level (kV)	Performance Criterion	Result
L	± 2	☒A ☐B ☐C	PASS
N	± 2	☒A ☐B ☐C	PASS
L+N	± 2	☒A ☐B ☐C	PASS
LAN Port	± 2	☒A ☐B ☐C	PASS

Product	Network Camera		
Test Item	Transient Burst Susceptibility (EFT)		
Test Mode	Mode 2		
Date of Test	07/26/2011	Test Site	TE08

Test Point	Test Level (kV)	Performance Criterion	Result
LAN Port	± 2	☒A ☐B ☐C	PASS

Note: * “A”: The apparatus shall continue to operate as intended during and after the test, no degradation of performance or loss of function.

4.4.6. Test Photograph

Test Mode : Mode 1

Description : Front View of EFT Test – AC power, LAN Port

Test Mode : Mode 2

Description : Front View of EFT Test – LAN Port

4.5. Radio- Frequency, Electromagnetic Field Immunity (RS) Measurement

4.5.1. Test Specification

Reference to EN 50155 clause 12.2.8.1 and EN 50121-3-2 table 9

Test Specification	Performance Criterion
The frequency steps: 1%, Log sweep, Dwell time: 3.0 sec.	
Frequency range: 80 to 1000 MHz, Field strength: 20 V/m, 80% AM (1kHz) (Note: For equipment mounted in network communication center a severity level of 10V/m may be used.)	A
Frequency range: 1400 to 2100 MHz, Field strength: 10 V/m, 80% AM (1kHz)	
Frequency range: 2100 to 2500 MHz, Field strength: 5 V/m, 80% AM (1kHz)	

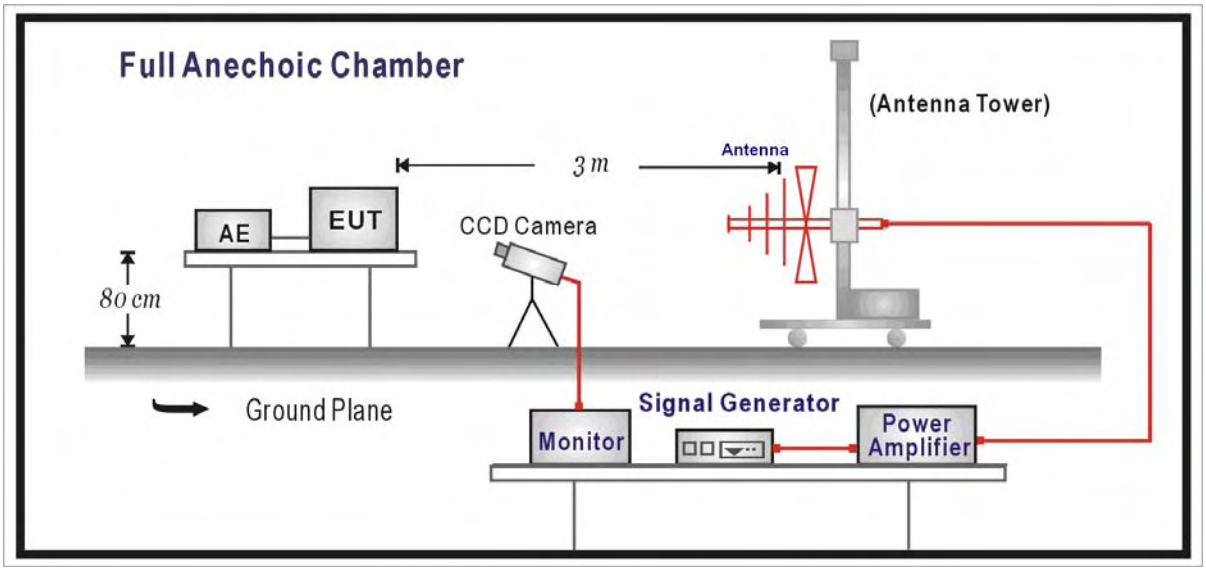
4.5.2. Test Instrument

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
SMB 100A SIGNAL GENERATOR	R&S	SMB100A	100724	02/23/2011	(1)
NRP-Z91 POWER SENSOR	R&S	NRP-Z91	100611	07/06/2011	(1)
NRP-Z91 POWER SENSOR	R&S	NRP-Z91	100612	07/07/2011	(1)
NRP POWER METER	R&S	NRP	101591	07/07/2011	(1)
Log-periodic Antenna	R&S	HL046	100046	N.C.R.	-----
Solid State Power Amplifier	BONN ELEKTRONIK	BLWA 0830-160/100/40D	87050	N.C.R.	-----
Broad-Band Horn Antenna	Schwarzbeck Mess-Elektronik	BBHA 9120	BBHA 9120 E388	N.C.R.	-----
Test Site	ATL	TE07	888009	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

4.5.3. Setup



4.5.4. Test Procedure

Test Procedures were referred to EN 61000-4-3 sub-clause 8

4.5.5. Test Result

Product	Network Camera				
Test Item	Radiated Susceptibility				
Test Mode	Mode 1				
Position	0°, 90°, 180°, 270°				
Date of Test	07/26/2011			Test Site	TE07
Frequency (MHz)	Polarity	Field Strength (V/m)	AM (1kHz) (%)	Performance Criterion	Result
80 ~ 1000	H	20	80	☒A ☐B ☐C	PASS
80 ~ 1000	V	20	80	☒A ☐B ☐C	PASS
1400 ~ 2100	H	10	80	☒A ☐B ☐C	PASS
1400 ~ 2100	V	10	80	☒A ☐B ☐C	PASS
2100 ~ 2500	H	5	80	☒A ☐B ☐C	PASS
2100 ~ 2500	V	5	80	☒A ☐B ☐C	PASS

Product	Network Camera				
Test Item	Radiated Susceptibility				
Test Mode	Mode 2				
Position	0°, 90°, 180°, 270°				
Date of Test	07/26/2011			Test Site	TE07
Frequency (MHz)	Polarity	Field Strength (V/m)	AM (1kHz) (%)	Performance Criterion	Result
80 ~ 1000	H	20	80	☒A ☐B ☐C	PASS
80 ~ 1000	V	20	80	☒A ☐B ☐C	PASS
1400 ~ 2100	H	10	80	☒A ☐B ☐C	PASS
1400 ~ 2100	V	10	80	☒A ☐B ☐C	PASS
2100 ~ 2500	H	5	80	☒A ☐B ☐C	PASS
2100 ~ 2500	V	5	80	☒A ☐B ☐C	PASS

Note: * “A”: The apparatus shall continue to operate as intended during and after the test, no degradation of performance or loss of function.

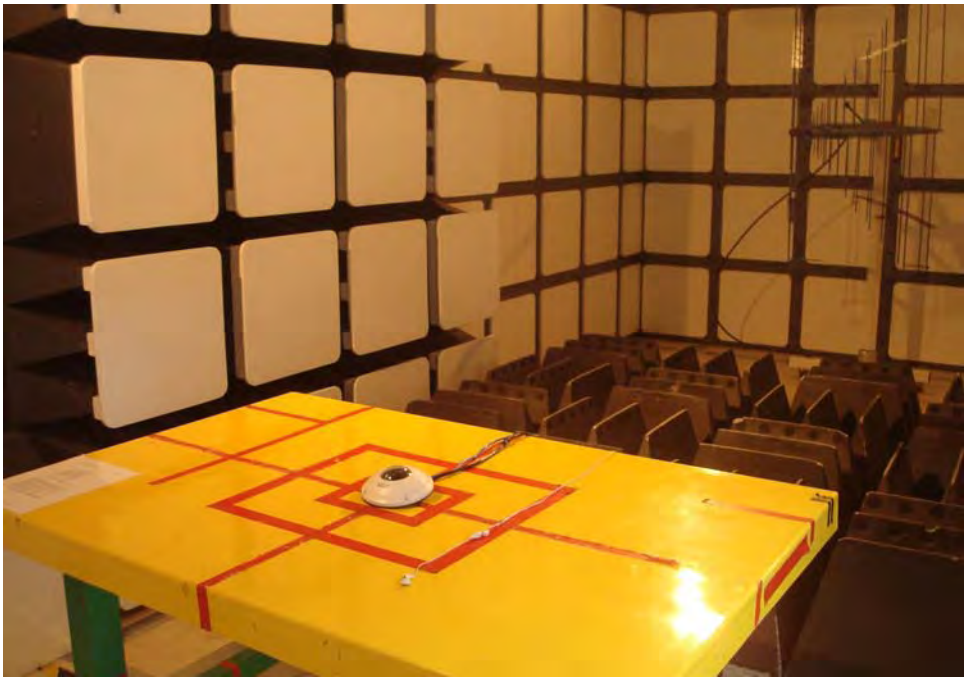
4.5.6. Test Photograph

Test Mode : Mode 1

Description : Front View of RS Test

Test Mode : Mode 2

Description : Front View of RS Test



4.6. Radio- Frequency, Conducted Disturbances Immunity (CS) Measurement

4.6.1. Test Specification

Reference to EN 50155 clause 12.2.8.1 and EN 50121-3-2 table 7 & 8

Test Specification	Performance Criterion
Frequency range: 0.15 to 80 MHz, Field strength: 10 V, 80% AM (1kHz)	
Input AC power ports	A
Input DC power ports	
Signal ports	

4.6.2. Test Instrument

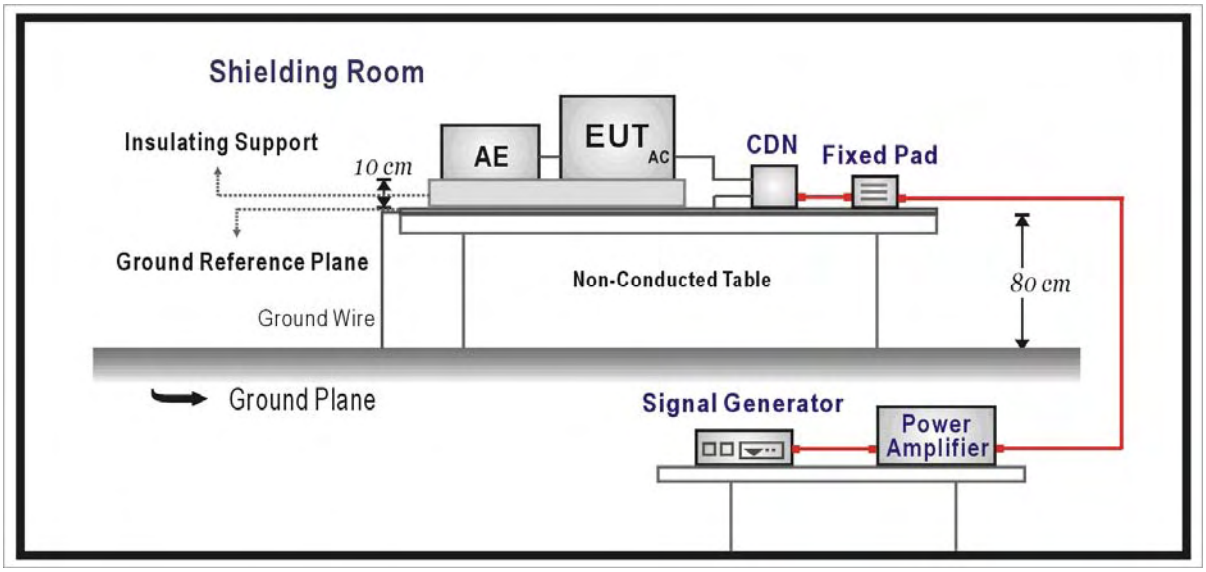
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Signal Line Coupling Decoupling Network	FCC	FCC-801--T2-RJ11	8017	07/07/2011	(1)
Signal Line Coupling Decoupling Network	FCC	FCC-801--T4-RJ45	8018	07/07/2011	(1)
Signal Line Coupling Decoupling Network	FCC	FCC-801-M2/M3-16A 8030	8030	07/07/2011	(1)
EM Injection Clamp	FCC	F-203I-23MM	8576	07/07/2011	(1)
Amplifiers	ar	75A250A	328729	07/07/2011	(1)
Dual Directional Coupler	ar	DC2600M2	329049	07/07/2011	(1)
IMS INTEGR. MEAS.SYSTEM F.EMS	R&S	IMS	100019	07/07/2011	(1)
NRP-Z91 POWER SENSOR	R&S	NRP-Z91	100613	07/07/2011	(1)
Signal Generator Module	R&S	SM300 Module	102209	N.C.R.	-----
De-coupling Network	FCC	F-203I-23MM-DCN	8234	N.C.R.	-----
Test Site	ATL	TE08	TE08	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

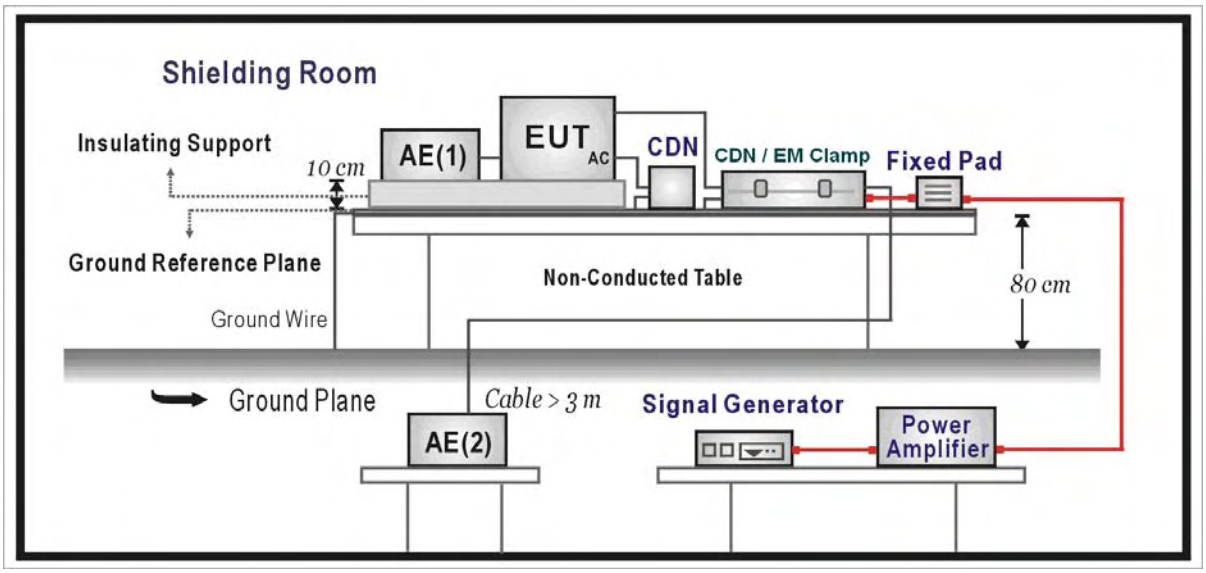
NOTE: N.C.R. = No Calibration Request.

4.6.3. Setup

CDN Method



EM Clamp Method



4.6.4. Test Procedure

Test Procedures were referred to EN 61000-4-6 sub-clause 8

4.6.5. Test Result

Product	Network Camera					
Test Item	Conducted Susceptibility					
Test Mode	Mode 1					
Date of Test	07/26/2011			Test Site	TE08	
Frequency Band (MHz)	Field Strength (Vrms)	AM (1kHz) (%)	Inject Port	Inject Method	Performance Criterion	Result
0.15 ~ 80	10	80	CDN-M2	Direct	☒A ☐B ☐C	PASS
0.15 ~ 80	10	80	LAN Port (100Mbps)	Clamp	☒A ☐B ☐C	PASS

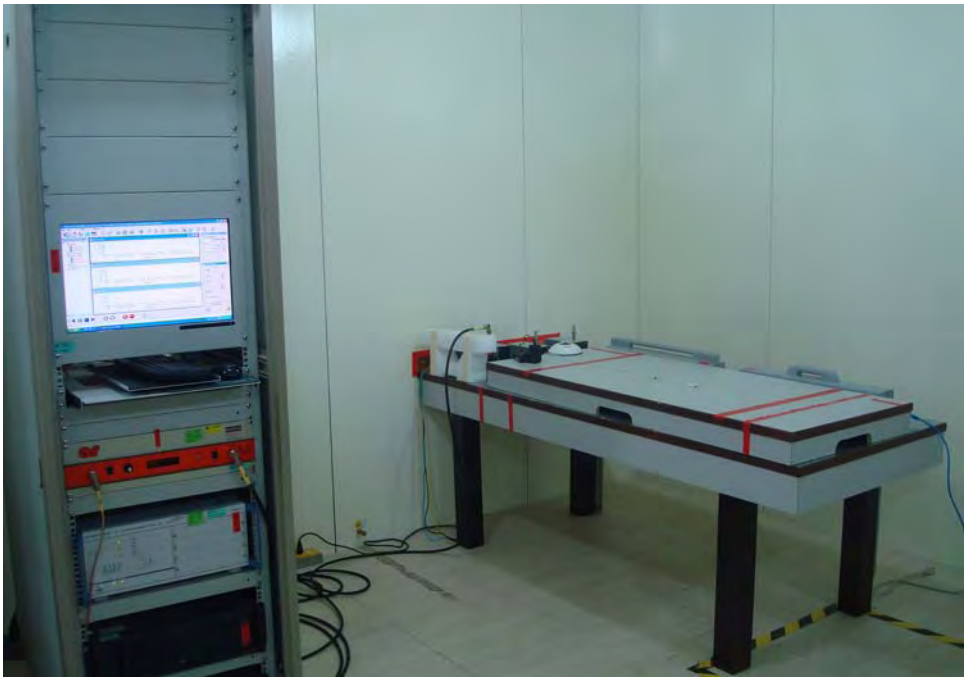
Product	Network Camera					
Test Item	Conducted Susceptibility					
Test Mode	Mode 2					
Date of Test	07/26/2011			Test Site	TE08	
Frequency Band (MHz)	Field Strength (Vrms)	AM (1kHz) (%)	Inject Port	Inject Method	Performance Criterion	Result
0.15 ~ 80	10	80	LAN Port (100Mbps)	Clamp	☒A ☐B ☐C	PASS

Note: * “A”: The apparatus shall continue to operate as intended during and after the test, no degradation of performance or loss of function.

4.6.6. Test Photograph

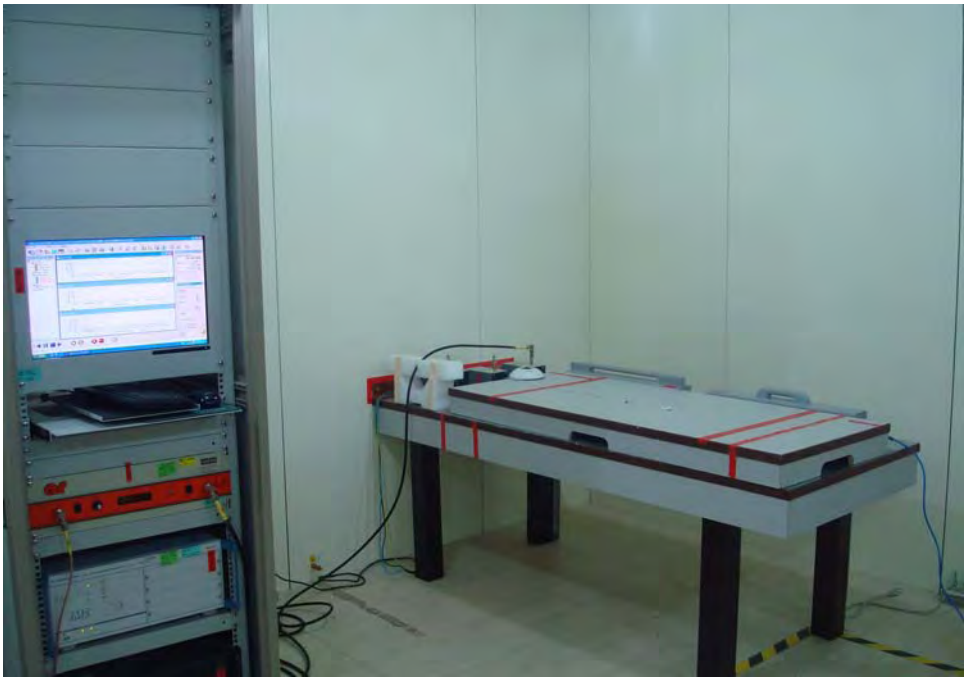
Test Mode : Mode 1

Description : Front View of CS Test – AC Power, LAN Port



Test Mode : Mode 2

Description : Front View of CS Test – LAN Port



5 EUT Photograph

(1) EUT Photo

(2) EUT Photo

(3) EUT Photo

(4) EUT Photo

(5) EUT Photo


SWITCH-MODE
POWER SUPPLY
MODEL: 3A-183WP12
INPUT:100-240V~,50-60Hz,0.6A
OUTPUT: 12V ⎓ 1.5A
FOR I.T.E. USE ONLY
EFFICIENCY LEVEL V
LISTED
E163743
LPS
Intertek
1110 A
MADE IN CHINA