Test Report

Compliance with Industry Canada Interference-Causing Equipment Standard ICES-003

Product Name	：	IPC
Model No.	：	On Demand Switch 3 (RODS3-DEFAULT)
		On Demand Switch 3 (RODS3-S1-DEFAULT)
		On Demand Switch 3 (RODS3-S2-DEFAULT)

Applicant	：	Radware Ltd.
Address	：	22 Raoul Wallenberg St. Tel Aviv, lsrael 69710

Date of Receipt	：	2008/09/22
Issued Date	：	2009/02/20
Report No.	：	092252R-ITCAP01V01
Version	：	V0.3-Draft

Test Report Certification

Issued Date : 2009/02/20
Report No. : 092252R-ITCAP01V01

Product Name	:	IPC
Applicant	:	Radware Ltd.
Address	:	22 Raoul Wallenberg St. Tel Aviv, Israel 69710
Manufacturer	:	NEXCOM International Co., LTD
Model No.	:	On Demand Switch 3 (RODS3-DEFAULT) On Demand Switch 3 (RODS3-S1-DEFAULT) On Demand Switch 3 (RODS3-S2-DEFAULT)
Rated Voltage	:	AC 120 V / 60 Hz
EUT Voltage	:	Power by PC
Trade Name	:	Radware
Applicable Standard	:	ICES-003 Issue 4: 2004 Class A, CISPR 22: 2006
Test Result	:	Complied
Performed Location	:	Quietek Corporation (Linkou Laboratory) No.5-22, Ruei-Shu Valley, Ruei-Ping Tsuen Lin Kuo Shiang, Taipei, 244 Taiwan, R.O.C. TEL:+866-2-8601-3788 / FAX:+886-2-8601-3789

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Approved By :
(Manager / Vincent Lin)

Laboratory Information

We , **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scopes:

Taiwan R.O.C.	**:**	**BSMI, NCC, TAF**
Germany	**:**	**TUV Rheinland**
Norway	**:**	**Nemko, DNV**
USA	**:**	**FCC, NVLAP**
Japan	**:**	**VCCI**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site :http://tw.quietek.com/modules/enterprise/services.php?item=100
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory :
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TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

NVLAP Lab Code : 200347-0

1313

LinKou Testing Laboratory :
No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen, Lin-Kou Shiang, Taipei, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

NVLAP Lab Code: 200533-0

0914

Suzhou (China) Testing Laboratory :
No. 99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., Suzhou,China.
TEL : +86-512-6251-5088 / FAX : +86-512-6251-5098 E-Mail : service@quietek.com

NVLAP Lab Code: 200533-0

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1. General Information

1.1. EUT Description

Product Name	IPC
Trade Name	Radware
Model No.	On Demand Switch 3 (RODS3-DEFAULT) On Demand Switch 3 (RODS3-S1-DEFAULT) On Demand Switch 3 (RODS3-S2-DEFAULT)

Component	
Power Cord Cable	Non-Shielded, 1.8m
LAN Cable	Non-Shielded, 3.0m
Fiber Cable*3	Non-Shielded, 0.4m
Fiber Cable*1	Non-Shielded, 2.0m
Power	ZIPPY, DMRW-6400F
Mother Board	NEXCOM, MEKONG-XGE
HDD	5V/12V VDC, 1.5A/1.5A
DDR	DDR2/ECC/REG/
LAN Card	Mekong-4SFP, 20Q0MEK4S00X1

Note:
The EUT is including three models for different marketing requirement.

1.2. Mode of Operation

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode	
Mode 1: Normal Operation	
Final Test Mode	
Emission	Mode 1: Normal Operation

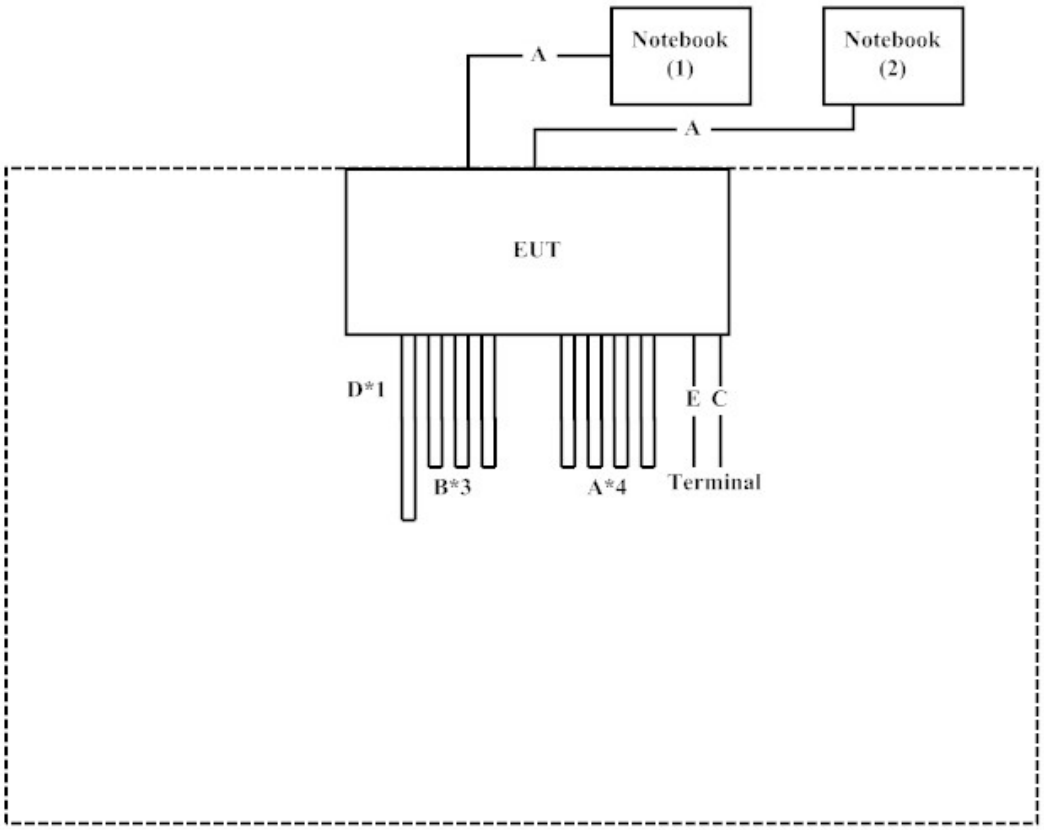
1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	PPT	N/A	Non-Shielded, 1.8m
2	Notebook PC	DELL	PP18L	36119001664	Non-Shielded, 1.8m

1.4. Configuration of Tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	LAN Cable	Non-Shielded, 3.0m, six PCS.
B	Fiber Cable	Non-Shielded, 0.4m, three PCS.
C	RS-232 Cable	Shielded, 1.5m
D	Fiber Cable	Non-Shielded, 2.0m
E	USB Cable	Shielded, 1.5m

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.4.
2	Turn on the power of all equipment.
3	Boot the Notebook from Hard Disk.
4	Data will communicate between Notebook and Notebook through EUT.
5	The Notebook and partner Notebook monitor will show the transmitting and receiving characteristics when the communication is success.
6	Repeat the above procedure (4) to (5).

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

Emission			
Performed Item	Normative References	Test Performed	Deviation
Conducted Emission	ICES-003 Issue 4:2004 Class A CISPR 22: 2006	Yes	No
Radiated Emission	ICES-003 Issue 4:2004 Class A CISPR 22: 2006	Yes	No

2.2. List of Test Equipment

Conducted Emission / SR1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	R&S	ESCS 30	100366	2008/10/18
LISN	R&S	ENV4200	833209/007	2008/08/12
LISN	R&S	ENV216	100085	2009/02/14
Pulse Limiter	R&S	ESH3-Z2	357.88.10.52	2008/09/04

Radiated Emission / Site3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2704	2008/09/15
Broadband Horn Antenna	Schwarzbeck	BBHA9170	208	2008/07/25
EMI Test Receiver	R&S	ESCS 30	838251/001	2008/03/22
Horn Antenna	Schwarzbeck	BBHA9120D	305	2008/08/10
Pre-Amplifier	QTK	N/A	N/A	2009/01/03
Spectrum Analyzer	Advantest	R3162	101102468	2008/10/24
EMI Test Receiver	R&S	ESI 26	838786/004	2008/05/25
Pre-Amplifier	MITEQ	QMF-4D-18040 0-45-6P	925974	2009/01/03

2.3. Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 2.26 dB.

Radiated Emission

The measurement uncertainty is evaluated as ± 3.19 dB.

2.4. Test Environment

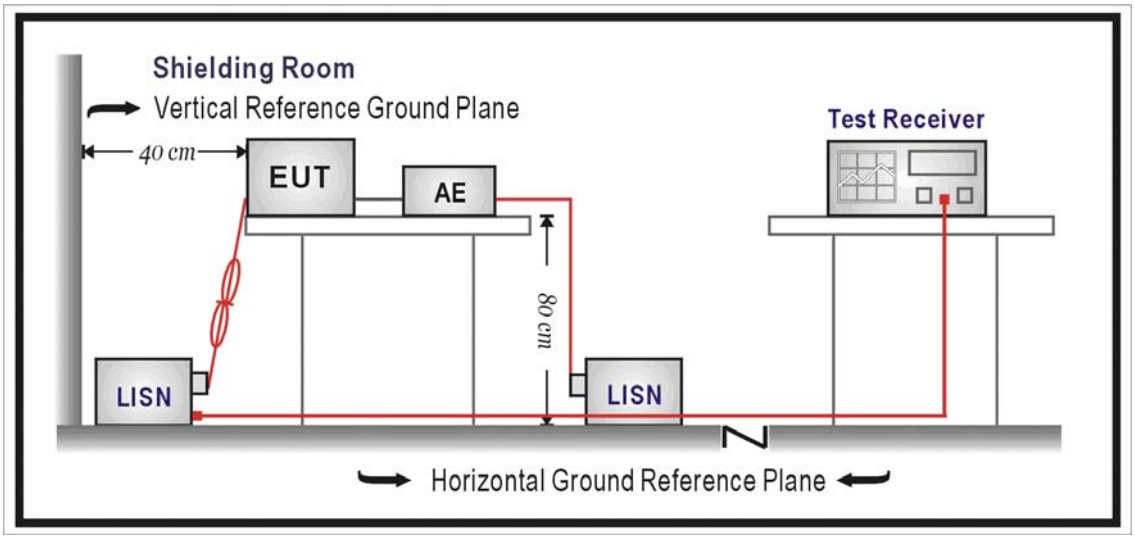
Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	50
	Barometric pressure (mbar)	860-1060	950-1000
Radiated Emission	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	50
	Barometric pressure (mbar)	860-1060	950-1000

3. Conducted Emission

3.1. Test Specification

According to Standard: ICES-003 Issue 4 and CISPR 22

3.2. Test Setup



3.3. Limit

Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	79	66
0.50-5.0	73	60
5.0 - 30	73	60

Remarks: In the above table, the tighter limit applies at the band edges.

3.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed on conducted measurement.

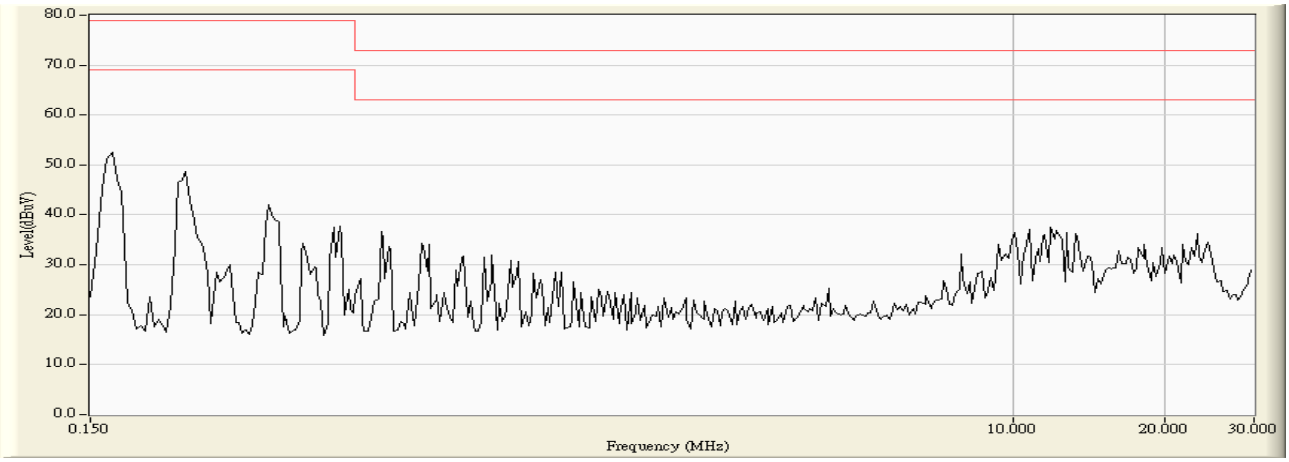
Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Deviation from Test Standard

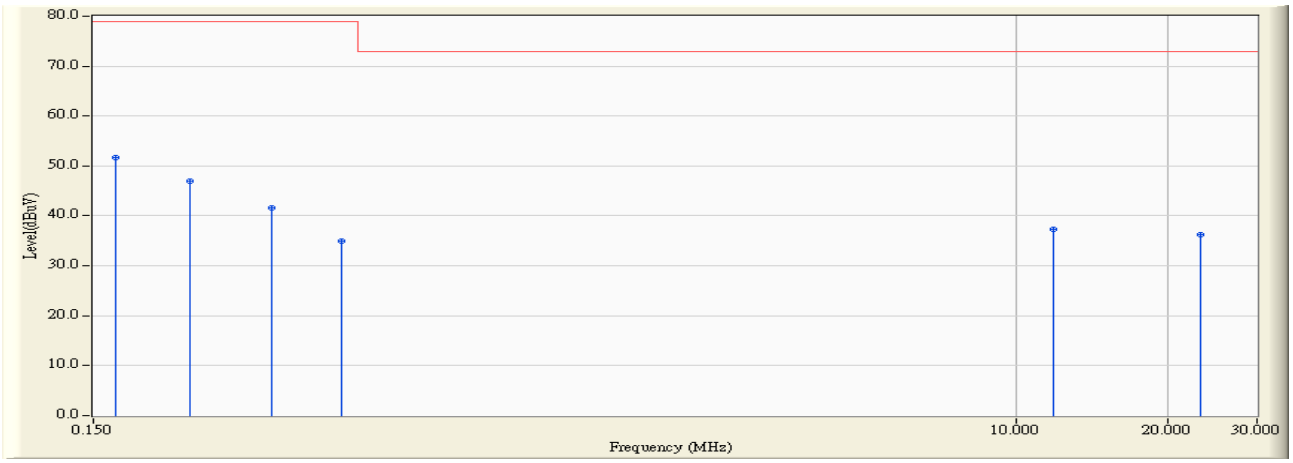
No deviation.

3.6. Test Result

Site : SR1	**Time : 2008/10/27 - 22:43**
Limit : CISPR_A_00M_QP	**Margin : 10**
EUT : IPC	**Probe : ENV-216-L1 - Line1**
Power : AC 120V/60Hz	**Note : Mode 1**



Site : SR1	**Time : 2008/10/27 - 22:45**
Limit : CISPR_A_00M_QP	**Margin : 0**
EUT : IPC	**Probe : ENV-216-L1 - Line1**
Power : AC 120V/60Hz	**Note : Mode 1**

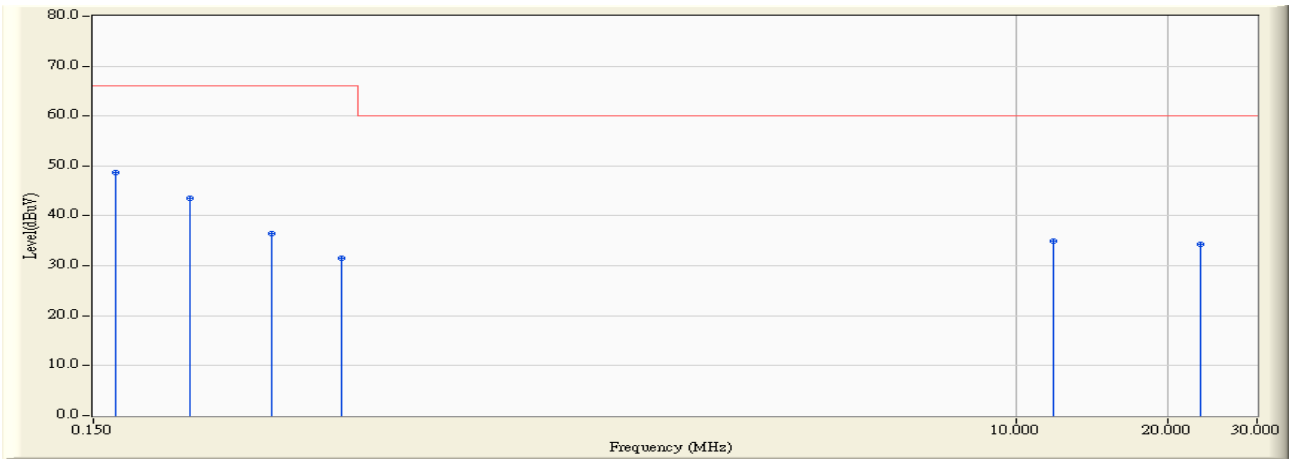


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.166	9.812	41.900	51.712	-27.288	79.000	QUASIPEAK
2		0.233	9.830	37.210	47.040	-31.960	79.000	QUASIPEAK
3		0.338	9.830	31.780	41.610	-37.390	79.000	QUASIPEAK
4		0.464	9.820	25.040	34.860	-44.140	79.000	QUASIPEAK
5		11.892	10.008	27.400	37.408	-35.592	73.000	QUASIPEAK
6		23.129	10.219	26.070	36.289	-36.711	73.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR1	**Time : 2008/10/27 - 22:45**
Limit : CISPR_A_00M_AV	**Margin : 0**
EUT : IPC	**Probe : ENV-216-L1 - Line1**
Power : AC 120V/60Hz	**Note : Mode 1**

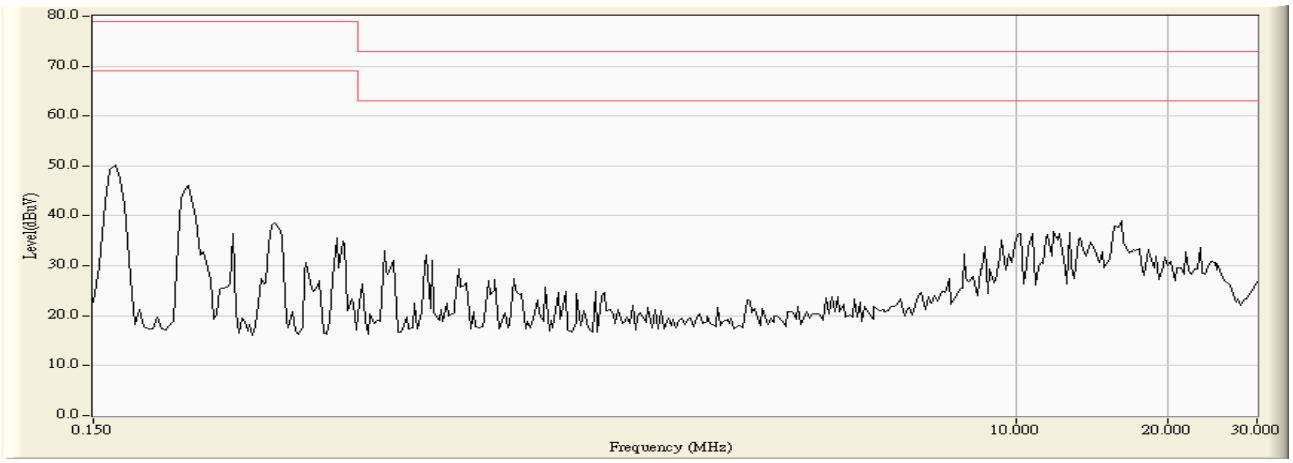


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.166	9.812	38.810	48.622	-17.378	66.000	AVERAGE
2		0.233	9.830	33.660	43.490	-22.510	66.000	AVERAGE
3		0.338	9.830	26.730	36.560	-29.440	66.000	AVERAGE
4		0.464	9.820	21.650	31.470	-34.530	66.000	AVERAGE
5		11.892	10.008	25.000	35.008	-24.992	60.000	AVERAGE
6		23.129	10.219	24.010	34.229	-25.771	60.000	AVERAGE

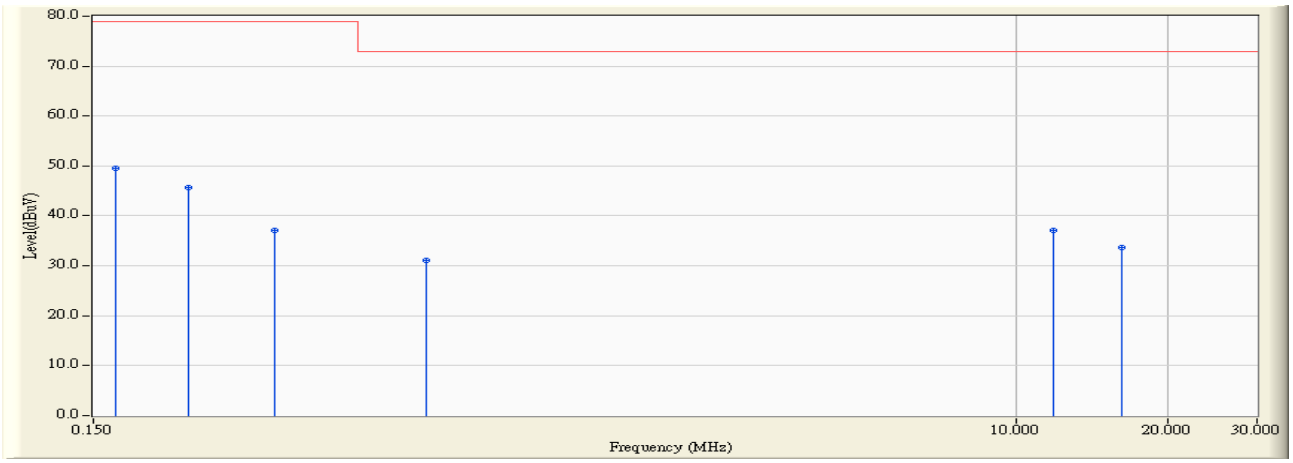
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR1	**Time : 2008/10/27 - 22:45**
Limit : CISPR_A_00M_QP	**Margin : 10**
EUT : IPC	**Probe : ENV-216-N - Line2**
Power : AC 120V/60Hz	**Note : Mode 1**



Site : SR1	**Time : 2008/10/27 - 22:47**
Limit : CISPR_A_00M_QP	**Margin : 0**
EUT : IPC	**Probe : ENV-216-N - Line2**
Power : AC 120V/60Hz	**Note : Mode 1**

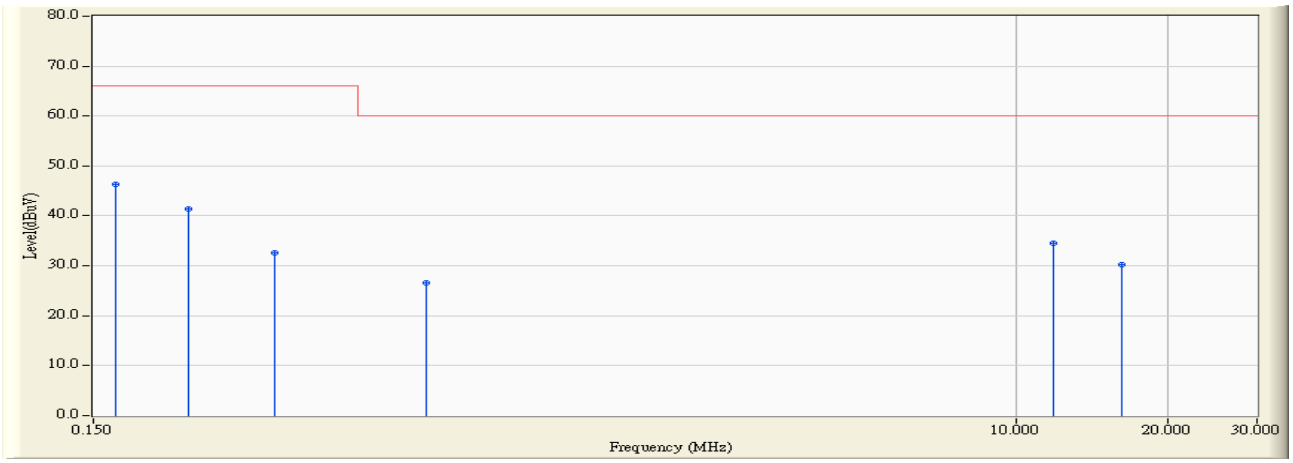


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.166	9.868	39.730	49.598	-29.402	79.000	QUASIPEAK
2		0.232	9.860	35.820	45.680	-33.320	79.000	QUASIPEAK
3		0.342	9.849	27.250	37.099	-41.901	79.000	QUASIPEAK
4		0.681	9.830	21.320	31.150	-41.850	73.000	QUASIPEAK
5		11.892	10.018	27.000	37.018	-35.982	73.000	QUASIPEAK
6		16.228	10.220	23.460	33.680	-39.320	73.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR1	**Time : 2008/10/27 - 22:47**
Limit : CISPR_A_00M_AV	**Margin : 0**
EUT : IPC	**Probe : ENV-216-N - Line2**
Power : AC 120V/60Hz	**Note : Mode 1**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.166	9.868	36.560	46.428	-19.572	66.000	AVERAGE
2		0.232	9.860	31.430	41.290	-24.710	66.000	AVERAGE
3		0.342	9.849	22.740	32.589	-33.411	66.000	AVERAGE
4		0.681	9.830	16.730	26.560	-33.440	60.000	AVERAGE
5		11.892	10.018	24.500	34.518	-25.482	60.000	AVERAGE
6		16.228	10.220	20.060	30.280	-29.720	60.000	AVERAGE

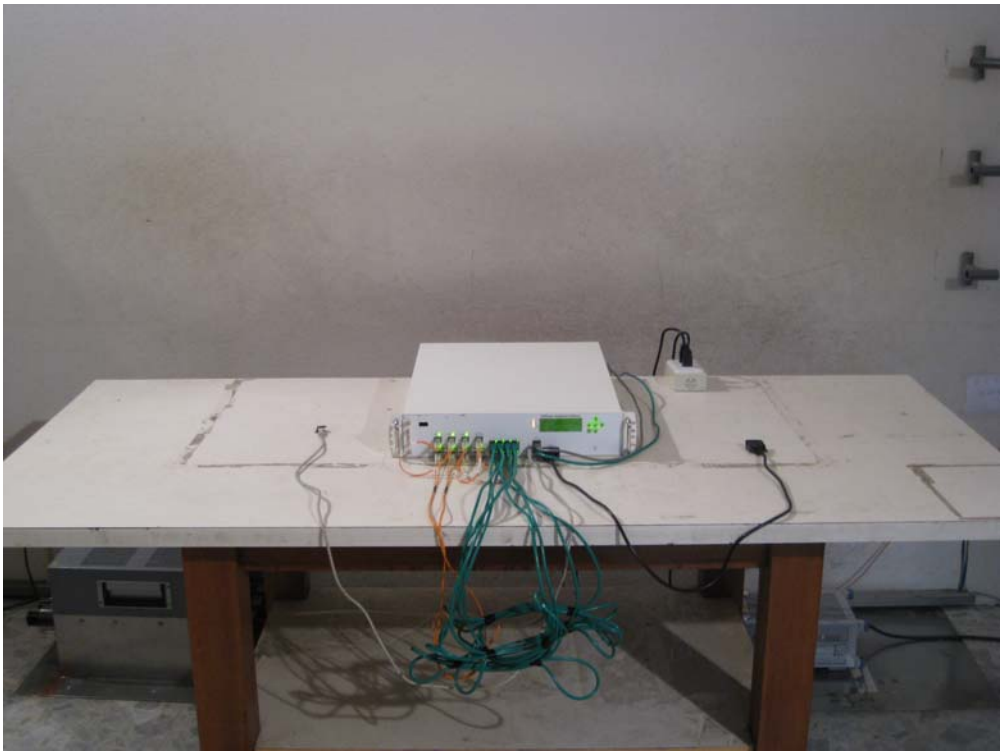
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3.7. Test Photograph

Test Mode : Mode 1: Normal Operation

Description : Front View of Conducted Test



Test Mode : Mode 1: Normal Operation

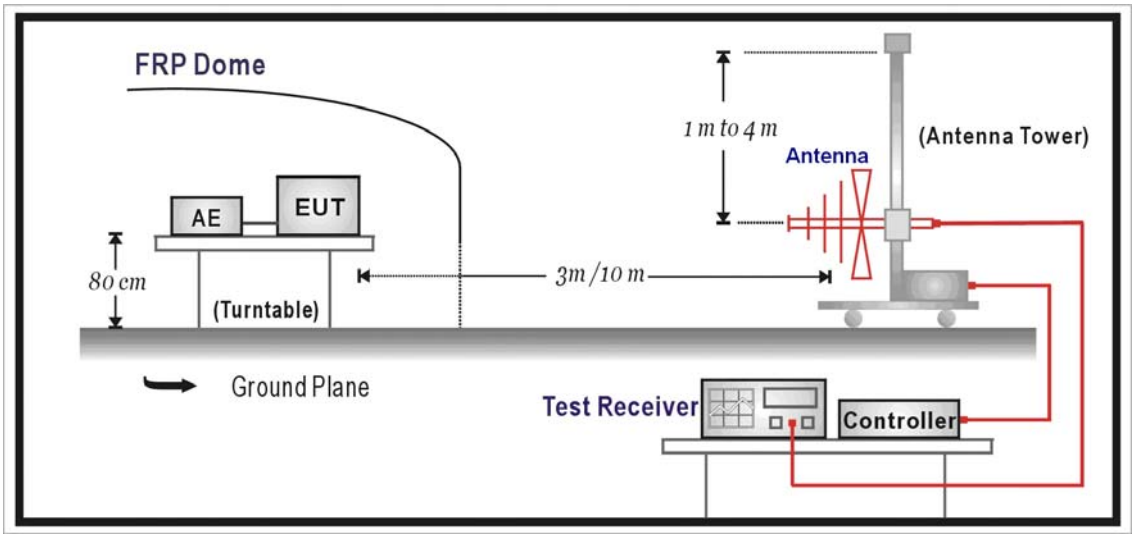
Description : Back View of Conducted Test

4. Radiated Emission

4.1. Test Specification

According to EMC Standard : ICES-003 Issue 4 and CISPR 22

4.2. Test Setup



4.3. Limit

Limits		
Frequency (MHz)	Distance (m)	dBuV/m
30 – 230	10	40
230 – 1000	10	47

Remark:

1. The tighter limit shall apply at the edge between two frequency bands.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.4. Test Procedure

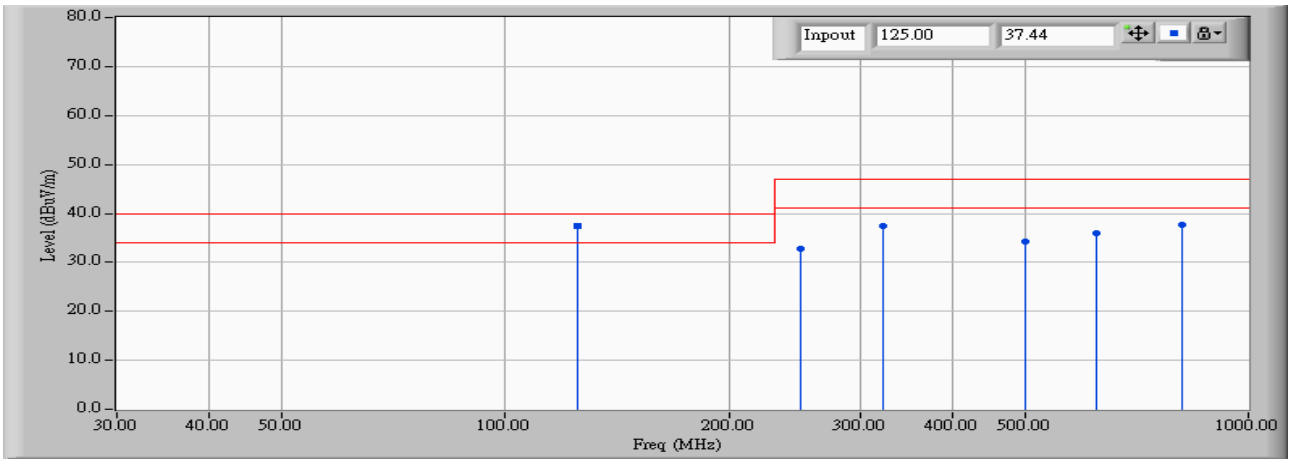
The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.
The EUT was positioned such that the distance from antenna to the EUT was 10 meters.
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.
Radiated emissions were invested over the frequency range from 30MHz to1GHz using a receiver bandwidth of 120kHz. Radiated was performed at an antenna to EUT distance of 10 meters.

4.5. Deviation from Test Standard

No deviation.

4.6. Test Result

Site : OATS-3	**Time : 2008/10/27 - 17:36**
Limit : CISPR_A_10M_QP	**Margin : 6**
EUT : IPC	**Probe : 2007_Site2(2921) - HORIZONTAL**
Power : AC 120V/60Hz	**Note : Mode 1**

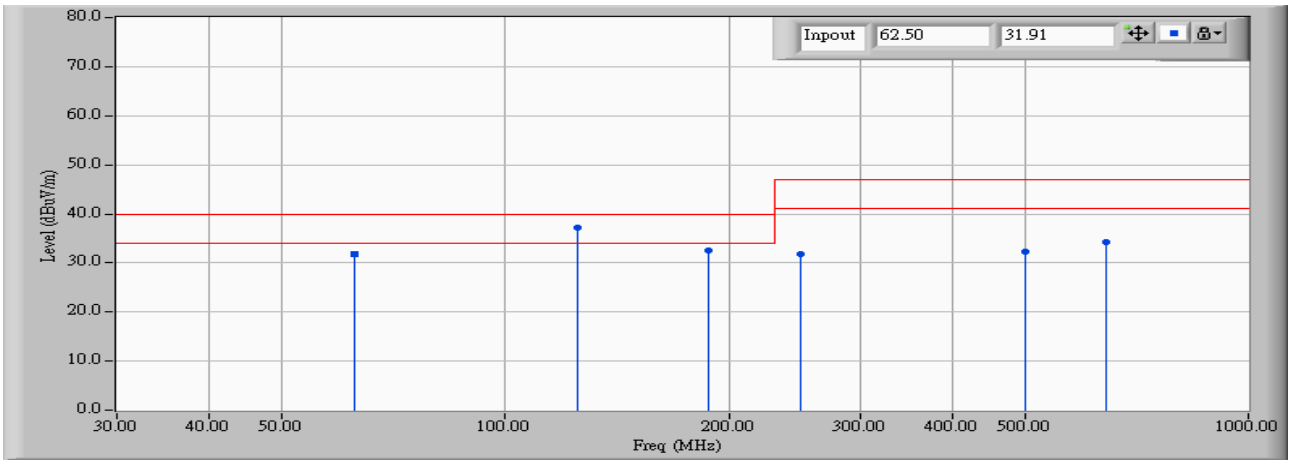


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	125.000	14.741	22.700	37.441	-2.559	40.000	QUASIPEAK
2		250.000	15.948	16.750	32.698	-14.302	47.000	QUASIPEAK
3		322.270	17.766	19.700	37.466	-9.534	47.000	QUASIPEAK
4		500.038	21.906	12.330	34.236	-12.764	47.000	QUASIPEAK
5		625.000	23.740	12.300	36.040	-10.960	47.000	QUASIPEAK
6		812.540	25.997	11.710	37.707	-9.293	47.000	QUASIPEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : OATS-3	**Time : 2008/10/27 - 17:34**
Limit : CISPR_A_10M_QP	**Margin : 6**
EUT : IPC	**Probe : 2007_Site2(2921) - VERTICAL**
Power : AC 120V/60Hz	**Note : Mode 1**

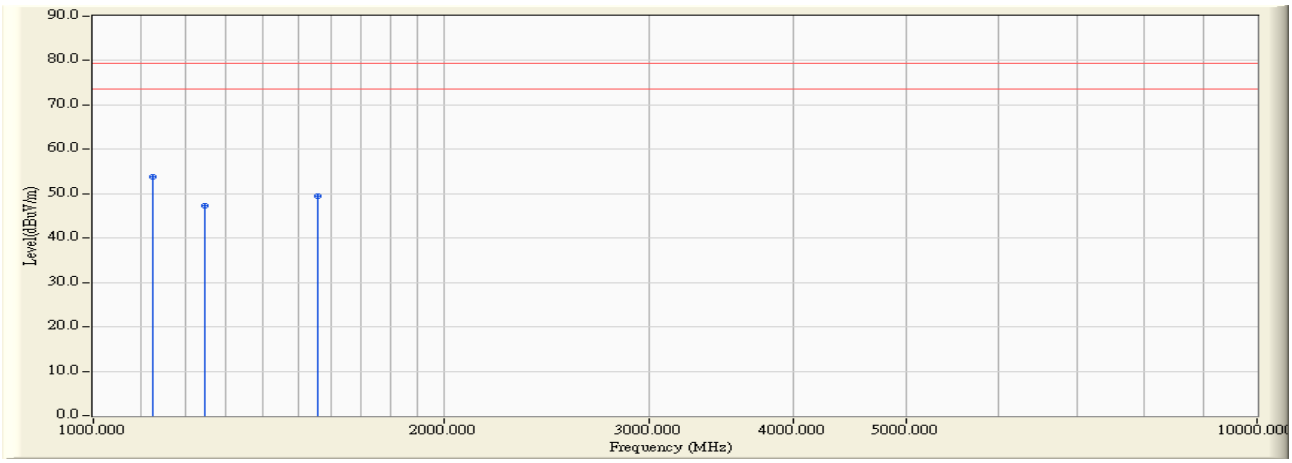


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		62.501	7.810	24.100	31.910	-8.090	40.000	QUASIPEAK
2	*	125.000	14.741	22.400	37.141	-2.859	40.000	QUASIPEAK
3		187.500	12.140	20.370	32.510	-7.490	40.000	QUASIPEAK
4		250.019	15.949	15.860	31.809	-15.191	47.000	QUASIPEAK
5		500.000	21.905	10.500	32.405	-14.595	47.000	QUASIPEAK
6		644.560	23.952	10.400	34.351	-12.649	47.000	QUASIPEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : OATS-3	**Time : 2008/10/28 - 01:02**
Limit : FCC_A_(Above_1G)_3M_PK	**Margin : 6**
EUT : IPC	**Probe : 9120D_1-18G_Horn - HORIZONTAL**
Power : AC 120V/60Hz	**Note : Mode 1**

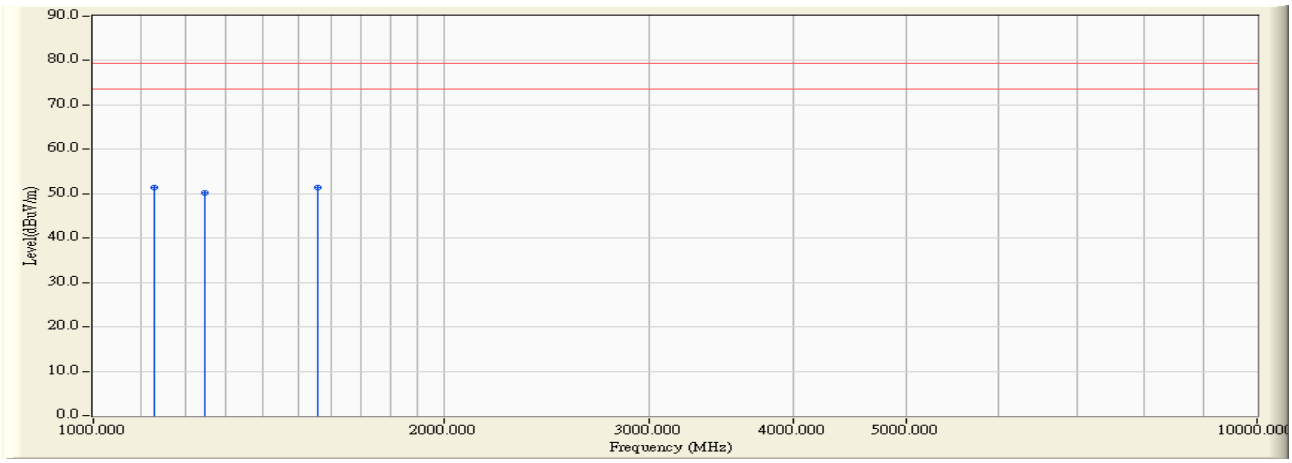


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	1125.000	-6.325	60.130	53.804	-25.696	79.500	PEAK
2		1248.000	-5.913	53.300	47.387	-32.113	79.500	PEAK
3		1561.000	-5.014	54.590	49.576	-29.924	79.500	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : OATS-3	**Time : 2008/10/28 - 01:12**
Limit : FCC_A_(Above_1G)_3M_PK	**Margin : 6**
EUT : IPC	**Probe : 9120D_1-18G_Horn - VERTICAL**
Power : AC 120V/60Hz	**Note : Mode 1**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		1128.000	-6.318	57.610	51.293	-28.207	79.500	PEAK
2		1248.000	-5.913	56.180	50.267	-29.233	79.500	PEAK
3	*	1561.000	-5.014	56.450	51.436	-28.064	79.500	PEAK

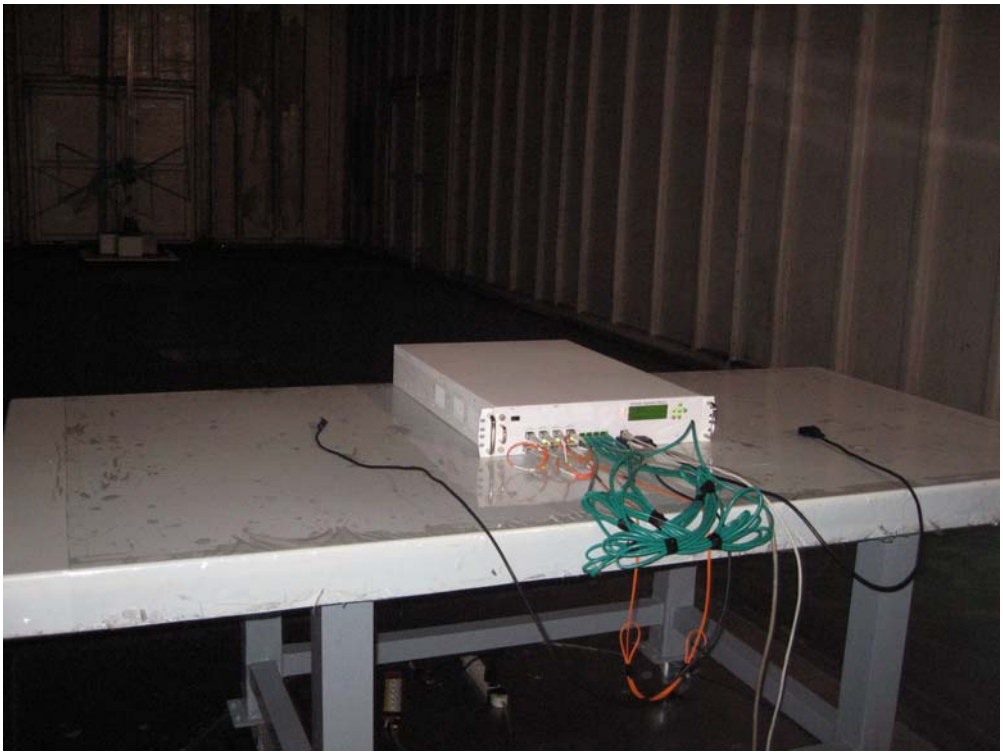
Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

4.7. Test Photograph

Test Mode : Mode 1: Normal Operation

Description : Front View of Radiated Test

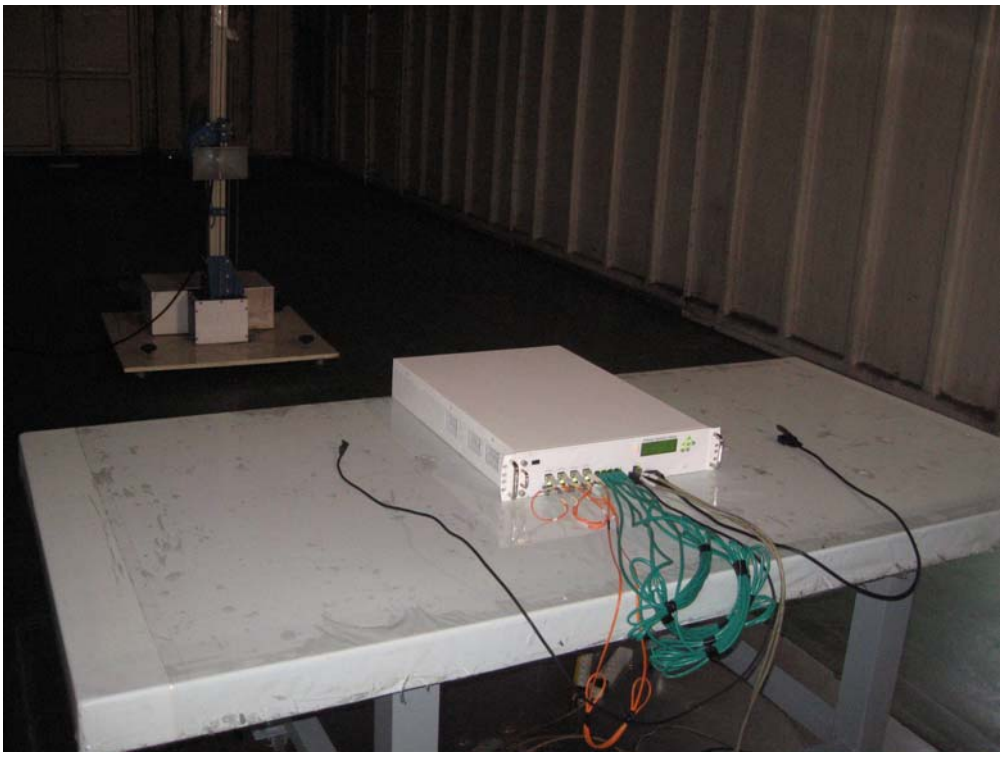


Test Mode : Mode 1: Normal Operation

Description : Back View of Radiated Test

Test Mode : Mode 1: Normal Operation

Description : Front View of High Frequency Radiated Test



5. Attachment

➢ EUT Photograph

(1) EUT Photo

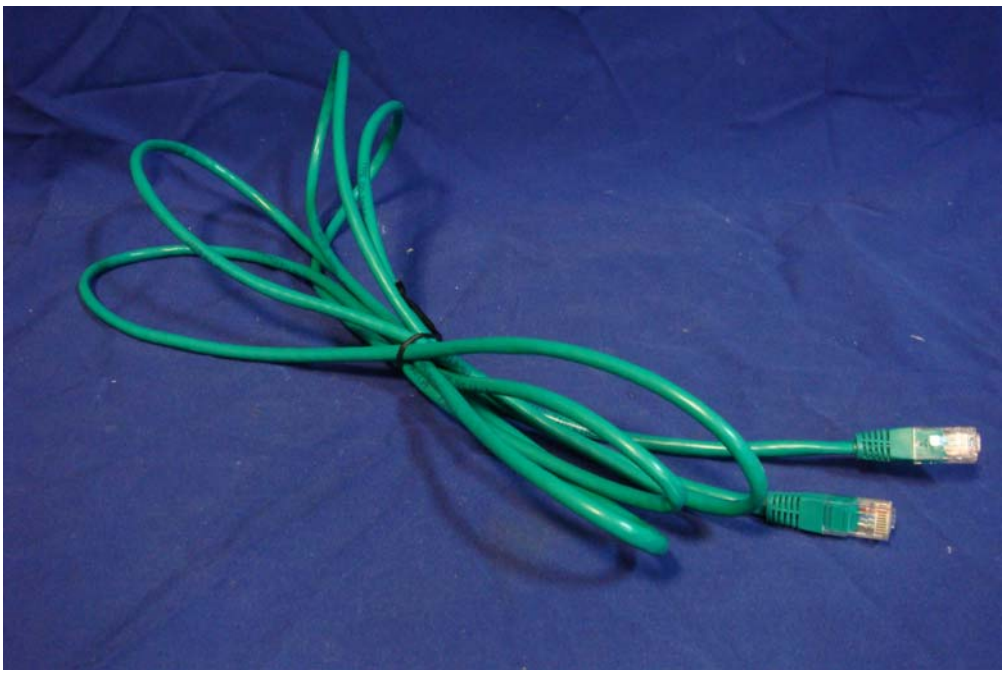
(2) EUT Photo

(3) EUT Photo

(4) EUT Photo

(5) EUT Photo

(6) EUT Photo



(7) EUT Photo