FCC Test Report

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

Product Name ： Scanner

Model No. ： IRIScan Express 4

Applicant ： AVISION INC.

Address ： No.20, Creation Rd.1, Science Park, Hsinchu, Taiwan 300 R.O.C.

Date of Receipt ： 2015/05/11

Report No. ： 1550256R-ITUSP01V00

Issued Date ： 2015/05/25

Report Version ： V1.0

DECLARATION OF CONFORMITY

Per FCC Part 2 Section 2. 1077(a)

The following equipment:

Product Name	:	Scanner
Trade Name	:	I.R.I.S.
Model Number	:	IRIScan Express 4
Company Name	:	AVISION INC.

It's herewith confirmed to comply with the requirements of FCC Part 15 Rules. (Class B)
Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

The result of electromagnetic emission has been evaluated by QuieTek EMC laboratory and showed in the test report. (Report No.: QTK- 1550256R-ITUSP01V00)

It is understood that each unit marketed is identical to the device as tested, and
Any changes to the device that could adversely affect the emission
Characteristics will require retest.
The following importer / manufacturer is responsible for this declaration:

Company Name _____

Company Address _____

Telephone _____ Facsimile : _____

Person is responsible for marking this declaration:

_____ _____

Name (Full name) Position / Title

_____ _____

Date Legal Signature

Test Report Certification

Issued Date : 2015/05/25
Report No. : 1550256R-ITUSP01V00

Product Name	:	Scanner
Applicant	:	AVISION INC.
Address	:	No.20, Creation Rd.1, Science Park, Hsinchu, Taiwan 300 R.O.C.
Manufacturer	:	1. AVISION INC. 2. AVISION(Suzhou) CO., LTD.
Model No.	:	IRIScan Express 4
EUT Voltage	:	AC 100-240V, 50-60Hz
Trade Name	:	I.R.I.S.
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart B: 2014 Class B, CISPR 22: 2008, ICES-003 Issue 5: 2012 Class B, ANSI C63.4: 2014
Test Result	:	Complied
Performed Location	:	Hsinchu EMC Laboratory N0. 75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan TEL:+886-3-592-8858 / FAX:+886-3-592-8859

Documented By : Carol Tsai

(Carol Tsai / Engineering Adm. Assistant)

Reviewed By : Eden Chen

(Eden Chen / Assistant Engineer)

Approved By : Arthur Liu

(Arthur Liu / Deputy Manager)

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	**:**	**DNV**
USA	**:**	**FCC**
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://www.quietek.com/english/about/certificates.aspx?bval=5
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/index_en.aspx
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory :
No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

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

TABLE OF CONTENTS

1. General Information

1.1. EUT Description

Product Name	Scanner
Trade Name	I.R.I.S.
Model No.	IRIScan Express 4

Component	
USB Cable	Shielded, 1.2m, one ferrite core bonded.

Note:

1. This EUT is a Scanner.

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: Scan to PC	
Final Test Mode	
Emission	Mode 1: Scan to PC

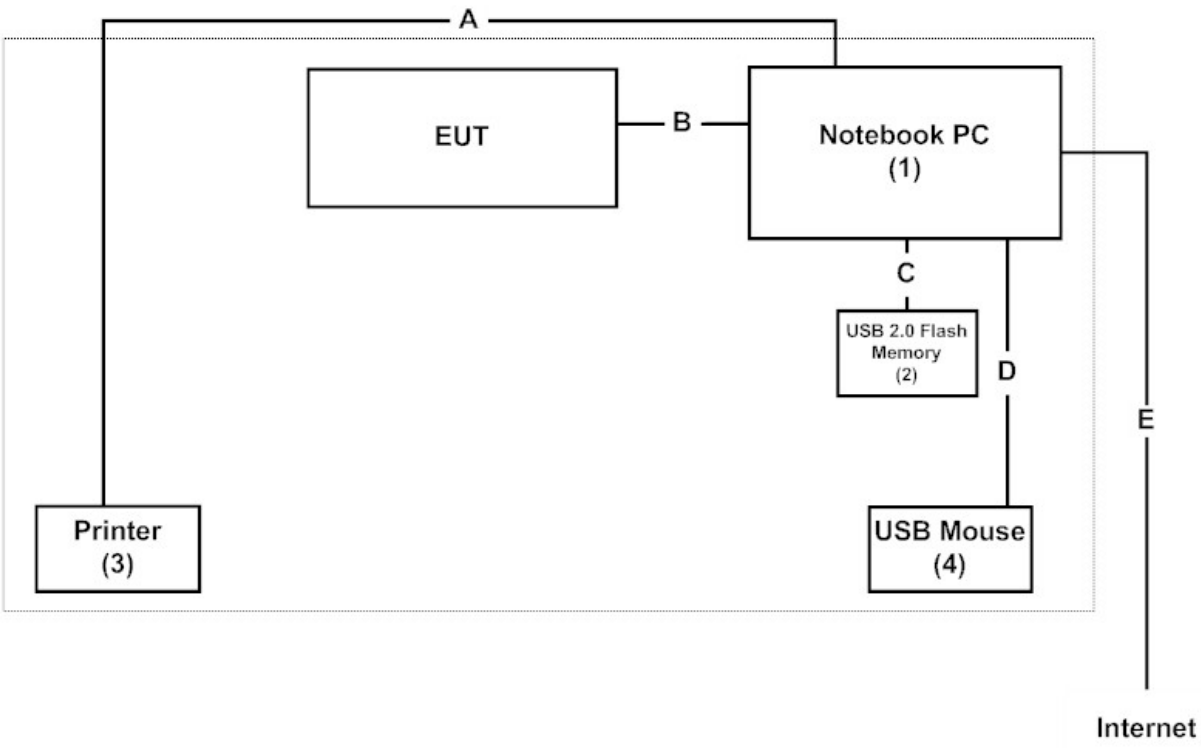
1.3. Tested System Details

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.	FCC ID	Power Cord
1	Notebook PC	HP	NX6320	CNU62D1F5Y	DoC	Non-Shielded, 1.8m
2	USB Mouse	Microsoft	Comfort Optical Mouse 1000	1016222-0	DoC	--
3	USB 2.0 Flash Memory	Apacer	AH223	N/A	DoC	--
4	Printer	HP	C9007A	MY3621M0PS	DoC	Non-Shielded, 3.7m, one ferrite core bonded

1.4. Configuration of Tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	Printer Cable	Shielded, 3m
B	USB Cable	Shielded, 1.2m, one ferrite core bonded.
C	USB Cable	Non-Shielded, 0.9m
D	USB Mouse Cable	Shielded, 1.7m, one ferrite core bonded.
E	LAN Cable	Non-Shielded, 10m

1.5. EUT Exercise Software

1	Test system is in accord with EUT user manual (refer to 1.4 configuration of tested system)
2	Turn on the power of all equipment
3	Boot the notebook PC from Hard Disk.
4	Notebook PC reads test software from disk and then sent to scanner.
5	The EUT will start to operate and scan the video figure into PC.
6	PC will display ” video figure” on monitor.
7	Repeat the above procedure (4) to (6).

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	FCC CFR Title 47 Part 15 Subpart B: 2014 Class B ANSI C63.4: 2014	Yes	No
Radiated Emission	FCC CFR Title 47 Part 15 Subpart B: 2014 Class B ANSI C63.4: 2014	Yes	No

2.2. List of Test Equipment

Conducted Emission/ SR3

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
LISN	R&S	ENV216	100096	2013/08/12
LISN	R&S	ESH3-Z5	836679/022	2014/01/20
Test Receiver	R&S	ESCS 30	825442/017	2014/01/01
Coaxial Cable	Harbour	RG-400	SR3	2013/08/14
Quietek EMI system	Quietek	Version 2.2	SR3	N/A

Radiated Emission/ Site3 (Under 1GHz)

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2797	2013/08/14
Spectrum Analyzer	Advantest	R3132	100803278	2013/11/19
Test Receiver	R&S	ESCS 30	836858/022	2014/01/06
Coaxial Switch	Anritsu	MP59B	M55770	2013/08/14
Coaxial Cable	BELDEN	BELDEN 9913	OATS3	2013/08/14
Quietek EMI system	Quietek	Version 2.2	Site3	N/A

Radiated Emission/ CB1 (Above 1GHz)

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
k Type Cable	Huber Suhner	Sucoflex 102	25623/2	2014/02/21
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120	D743	2014/02/17
Pre-Amplifier	MITEQ	JS41-00104000-58-5P	1438359	2013/05/08
PSA Series Spectrum analyzer	Agilent	E4440A	MY46187335	2014/01/27
Quietek EMI system	Quietek	Version 2.2	CB1	N/A

2.3. Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 2.26 dB.

Radiated Emission (Under 1GHz)

The measurement uncertainty is evaluated as ± 3.43 dB.

Radiated Emission (Above 1GHz)

The measurement uncertainty is evaluated as ± 3.65 dB.

2.4. Test Environment

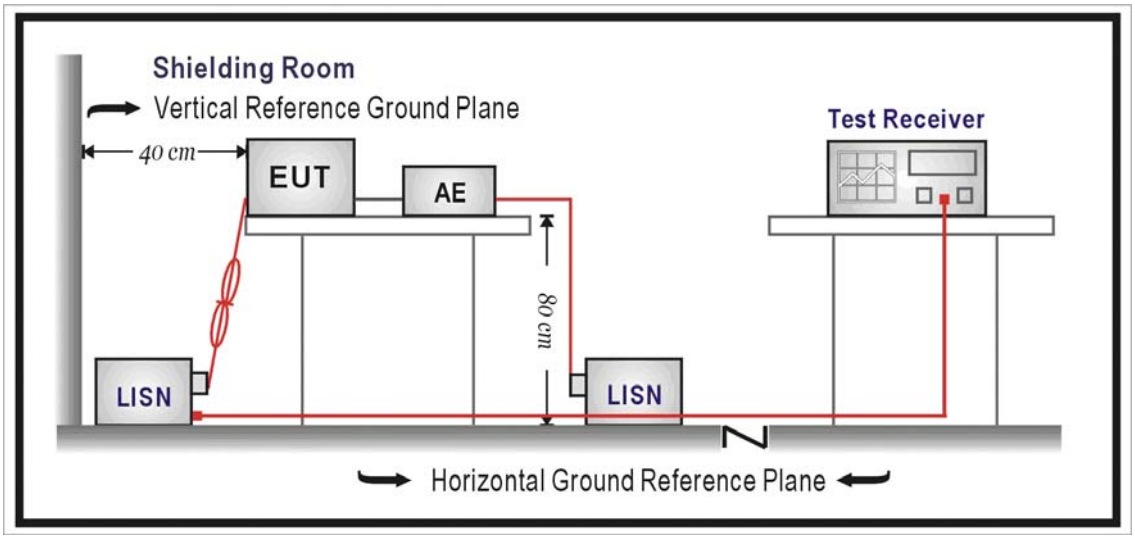
Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	50
	Barometric pressure (mbar)	860-1060	950-1000
Radiated Emission	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	65
	Barometric pressure (mbar)	860-1060	950-1000

3. Conducted Emission

3.1. Test Specification

According to Standard : FCC Part 15 Subpart B, ANSI C63.4

3.2. Test Setup



3.3. Limit

Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 – 46
0.50-5.0	56	46
5.0 - 30	60	50

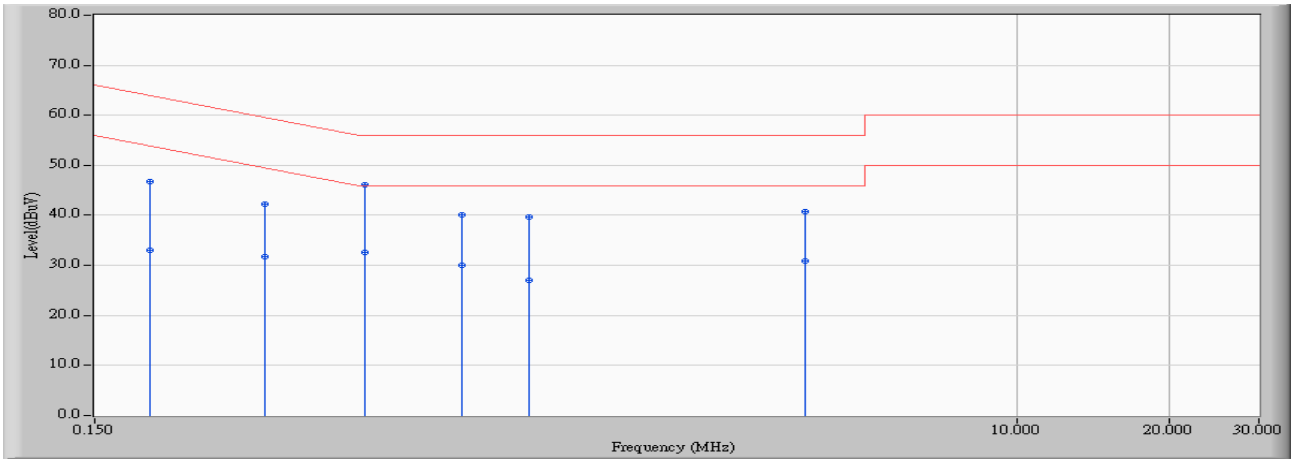
Remarks: In the above table, the tighter limit applies at the band edges.

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. Test Result

Site : SR3	**Time : 2013/03/25 - 16:13**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR3_LISN(16A)-2_0813 - Line1	**Power : AC 120V/60Hz**
EUT : Scanner	**Note :**

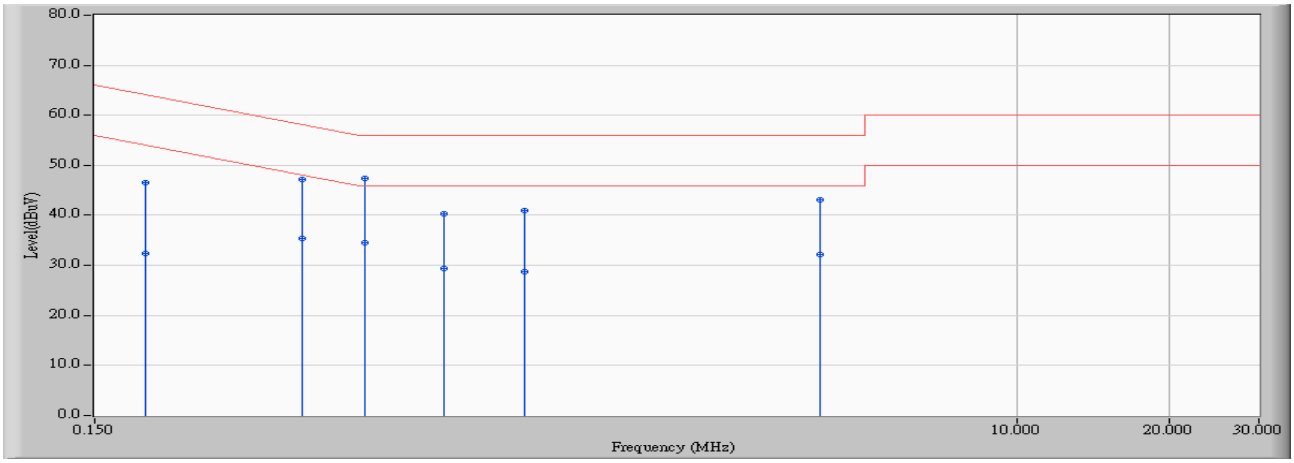


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.193	9.692	37.150	46.842	-17.066	63.908	QUASIPEAK
2		0.193	9.692	23.370	33.062	-20.846	53.908	AVERAGE
3		0.326	9.730	32.570	42.300	-17.258	59.558	QUASIPEAK
4		0.326	9.730	21.960	31.690	-17.868	49.558	AVERAGE
5	*	0.513	9.834	36.280	46.113	-9.887	56.000	QUASIPEAK
6		0.513	9.834	22.690	32.523	-13.477	46.000	AVERAGE
7		0.798	9.897	30.290	40.186	-15.814	56.000	QUASIPEAK
8		0.798	9.897	20.140	30.036	-15.964	46.000	AVERAGE
9		1.080	9.942	29.750	39.692	-16.308	56.000	QUASIPEAK
10		1.080	9.942	17.110	27.052	-18.948	46.000	AVERAGE
11		3.802	10.065	30.610	40.675	-15.325	56.000	QUASIPEAK
12		3.802	10.065	20.740	30.805	-15.195	46.000	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 : SR3	**Time : 2013/03/25 - 16:18**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR3_LISN(16A)-2_0813 - Line2	**Power : AC 120V/60Hz**
EUT : Scanner	**Note :**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.189	9.653	36.990	46.643	-17.435	64.078	QUASIPEAK
2		0.189	9.653	22.790	32.443	-21.635	54.078	AVERAGE
3		0.384	9.754	37.410	47.164	-11.020	58.184	QUASIPEAK
4		0.384	9.754	25.740	35.494	-12.690	48.184	AVERAGE
5	*	0.513	9.824	37.510	47.333	-8.667	56.000	QUASIPEAK
6		0.513	9.824	24.800	34.623	-11.377	46.000	AVERAGE
7		0.736	9.873	30.390	40.263	-15.737	56.000	QUASIPEAK
8		0.736	9.873	19.510	29.383	-16.617	46.000	AVERAGE
9		1.064	9.931	30.950	40.881	-15.119	56.000	QUASIPEAK
10		1.064	9.931	18.850	28.781	-17.219	46.000	AVERAGE
11		4.072	10.030	33.000	43.030	-12.970	56.000	QUASIPEAK
12		4.072	10.030	22.230	32.260	-13.740	46.000	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.

3.6. Test Photograph

Test Mode : Mode 1: Scan to PC

Description : Front View of Conducted Emission Test Setup

Test Mode : Mode 1: Scan to PC

Description : Back View of Conducted Emission Test Setup

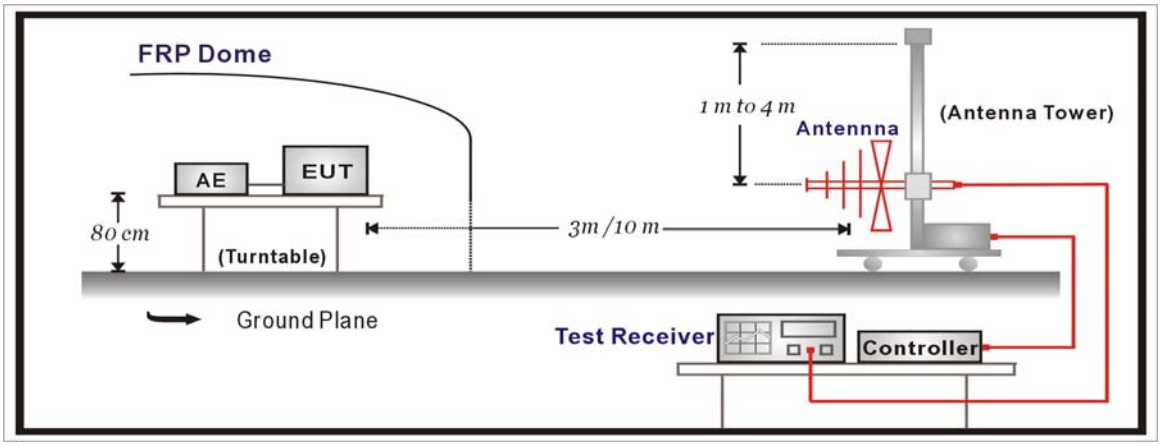
4. Radiated Emission

4.1. Test Specification

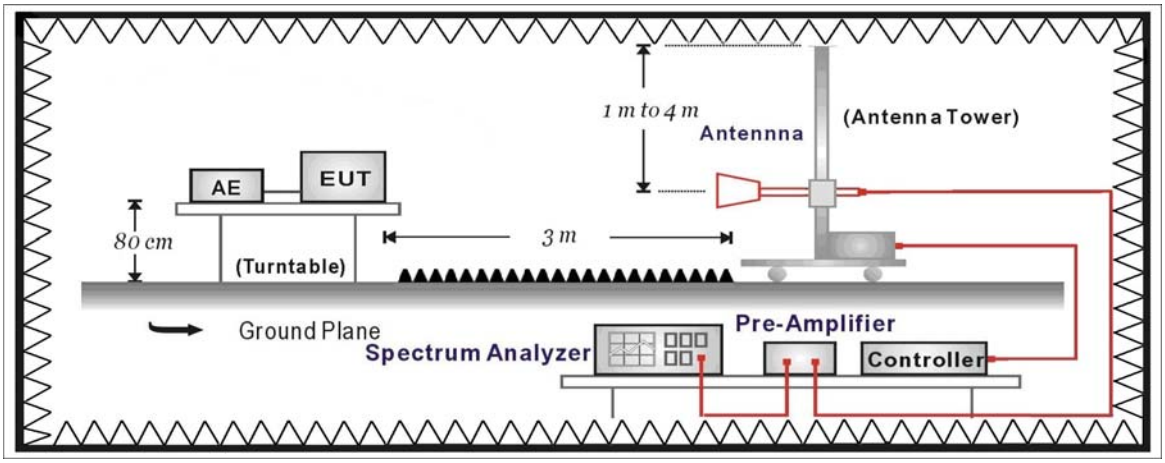
According to EMC Standard : FCC Part 15 Subpart B, ANSI C63.4

4.2. Test Setup

Under 1GHz Test Setup



Above 1GHz Test Setup



4.3. Limit

Under 1GHz test shall not exceed the following value:

Limits		
Frequency (MHz)	Distance (m)	dBuV/m
30 – 230	10	30
230 – 1000	10	37

Limits		
Frequency (MHz)	Distance (m)	dBuV/m
30-88	3	40
88-216	3	43.5
216-960	3	46
Above 960	3	54

Remark:

1. The tighter limit shall apply at the edge between two frequency bands.
1. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
2. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

Above 1GHz test shall not exceed the following value:

FCC Part 15 Subpart B Paragraph 15.109 Limits (dBuV/m)			
Frequency (MHz)	Distance (m)	Peak (dBuV/m)	Average (dBuV/m)
Above 1000	3	74	54

Remark:

1. 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 and 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.

For an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the folowing table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5^{th} harmonic of the highest frequency or 40 GHz, whichever is lower

On any frequency or frequencies below or equal to 1000 MHz, the radiated limits shown are based on measuring equipment employing a quasi-peak detector function and above 1000 MHz, the radiated limits shown are based measuring equipment employing an average detector function.

When average radiated emission measurement are included emission measurement Above 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

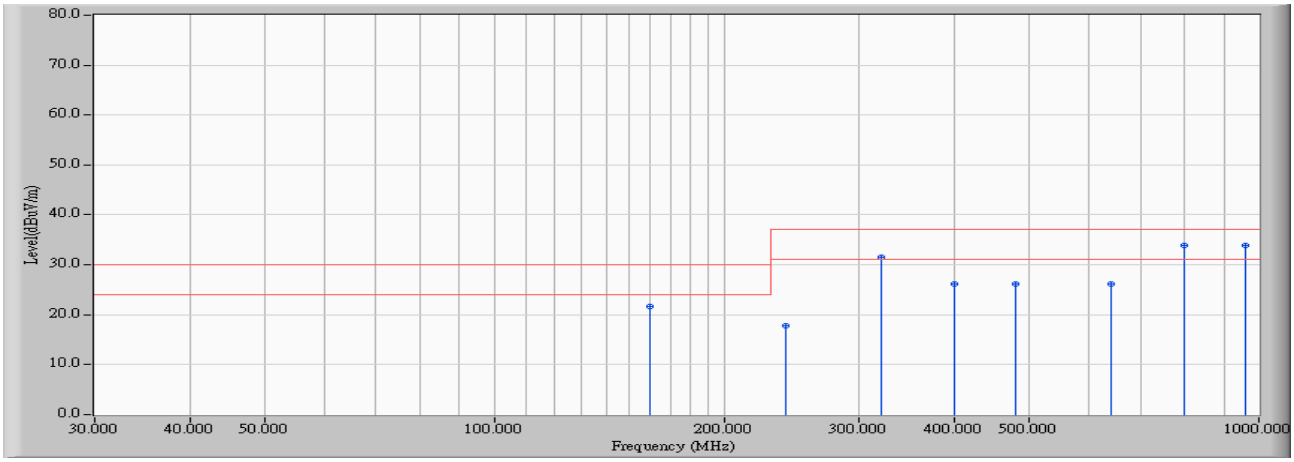
For class A, the measurement distance between the EUT and antenna is 10 meters for under 1GHz and 3 meters for above 1GHz.

For class B, the measurement distance between the EUT and antenna is 10 meters for under 1GHz and 3 meters for above 1GHz.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30) is 120 kHz and above 1GHz is 1MHz.

4.5. Test Result

Site : SITE3	**Time : 2013/03/25 - 10:50**
Limit : CISPR_B_10M_QP	**Margin : 6**
Probe : Site3_10M-3_0815 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : Scanner	**Note :**

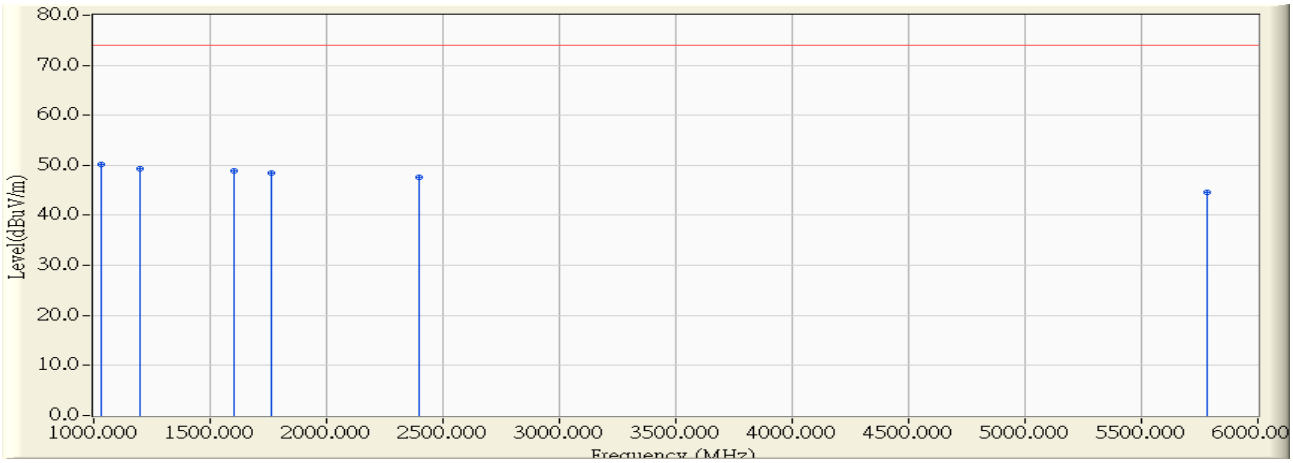


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		160.000	13.588	8.070	21.658	-8.342	30.000	QUASIPEAK
2		240.025	13.917	3.900	17.817	-19.183	37.000	QUASIPEAK
3		320.000	19.408	12.100	31.508	-5.492	37.000	QUASIPEAK
4		400.045	21.726	4.420	26.146	-10.854	37.000	QUASIPEAK
5		480.050	22.690	3.420	26.109	-10.891	37.000	QUASIPEAK
6		640.070	24.247	1.920	26.167	-10.833	37.000	QUASIPEAK
7		800.000	30.914	2.960	33.874	-3.126	37.000	QUASIPEAK
8	*	960.000	32.763	1.120	33.883	-3.117	37.000	QUASIPEAK

Note:

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

Site : CB1	**Time : 2013/03/26 - 14:50**
Limit : FCC_B_(Above_1G)_3M_PK	**Margin : 0**
Probe : CB1_CISPR_22_B(above1G)-1_0901 - HORIZONTAL	**Power : AC 120V / 60Hz**
EUT : Scanner	**Note :**

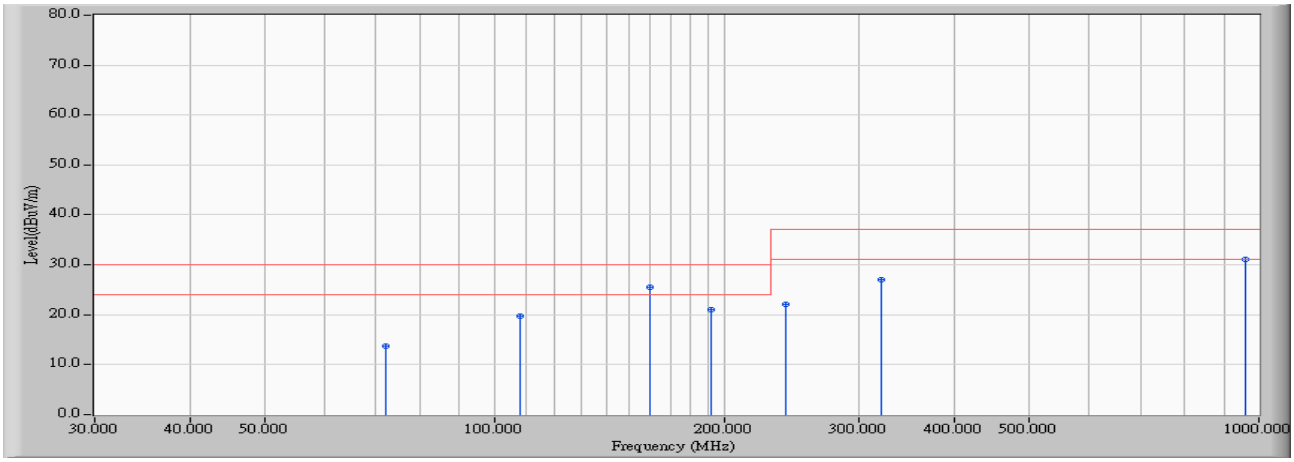


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	1030.000	-8.581	58.806	50.225	-23.775	74.000	PEAK
2		1200.000	-7.764	57.067	49.303	-24.697	74.000	PEAK
3		1600.000	-6.000	54.811	48.811	-25.189	74.000	PEAK
4		1760.000	-5.484	54.055	48.571	-25.429	74.000	PEAK
5		2400.000	-3.282	50.841	47.559	-26.441	74.000	PEAK
6		5780.000	4.263	40.410	44.673	-29.327	74.000	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. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : SITE3	**Time : 2013/03/25 - 10:35**
Limit : CISPR_B_10M_QP	**Margin : 6**
Probe : Site3_10M-3_0815 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : Scanner	**Note :**

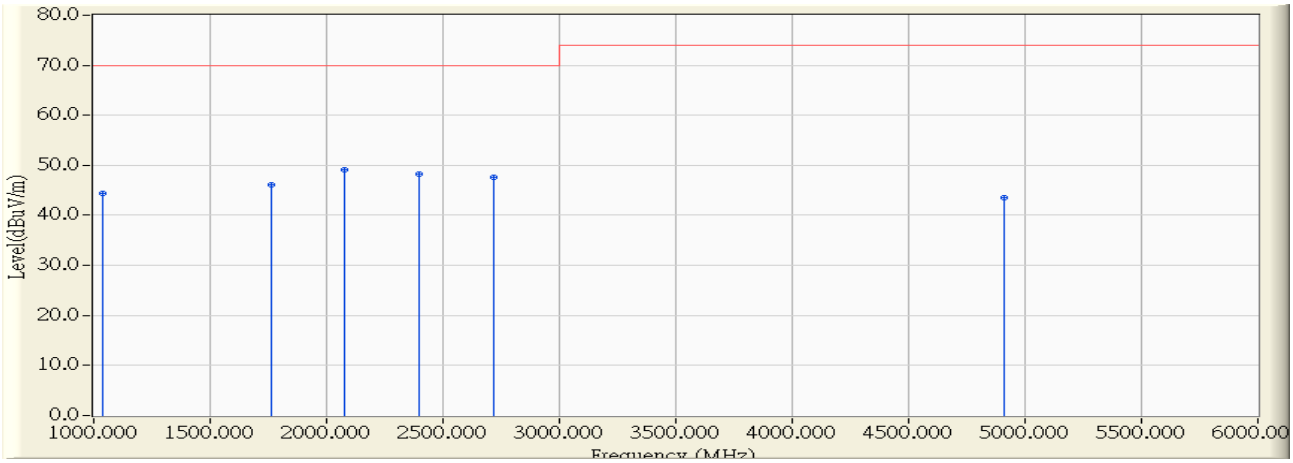


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		71.940	8.563	5.140	13.703	-16.297	30.000	QUASIPEAK
2		108.000	13.515	6.290	19.805	-10.195	30.000	QUASIPEAK
3	*	160.015	15.464	10.040	25.503	-4.497	30.000	QUASIPEAK
4		192.000	12.138	8.930	21.068	-8.932	30.000	QUASIPEAK
5		240.000	15.243	6.900	22.143	-14.857	37.000	QUASIPEAK
6		320.025	16.956	10.140	27.096	-9.904	37.000	QUASIPEAK
7		960.100	30.127	1.070	31.197	-5.803	37.000	QUASIPEAK

Note:

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

Site : CB1	**Time : 2013/03/26 - 14:47**
Limit : CISPR_22_B_(Above_1G)_3M_PK	**Margin : 0**
Probe : CB1_CISPR_22_B(above1G)-1_0901 - VERTICAL	**Power : AC 120V / 60Hz**
EUT : Scanner	**Note :**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		1040.000	-8.533	52.825	44.292	-25.708	70.000	PEAK
2		1760.000	-5.484	51.548	46.064	-23.936	70.000	PEAK
3	*	2080.000	-4.430	53.607	49.177	-20.823	70.000	PEAK
4		2400.000	-3.282	51.471	48.189	-21.811	70.000	PEAK
5		2720.000	-2.181	49.814	47.633	-22.367	70.000	PEAK
6		4910.000	2.423	41.121	43.544	-30.456	74.000	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. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

4.6. Test Photograph

Test Mode : Mode 1: Scan to PC

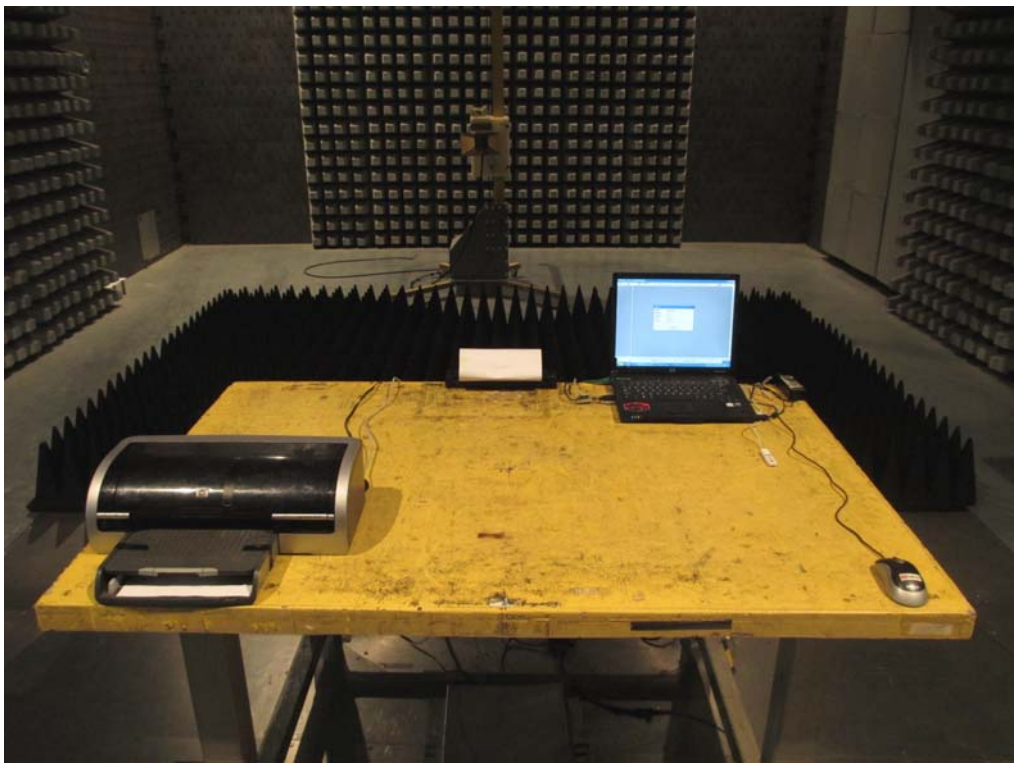
Description : Front View of Radiated Emission Test Setup

Test Mode : Mode 1: Scan to PC

Description : Back View of Radiated Emission Test Setup

Test Mode : Mode 1: Scan to PC

Description : Front View of Radiated Emission Test Setup (Horn)



Test Mode : Mode 1: Scan to PC

Description : Back View of Radiated Emission Test Setup (Horn)

5. Attachment

➢ EUT Photograph

(1) EUT Photo

(2) EUT Photo