



TEST REPORT

Product Name: Fingerprint Access Control Reader
Model Number: Smart Gate
Applicant: Cogent System Inc.
17 Floor, Fiyta Hi-tech Building, Gaoxinnanyi Avenue,
Southern District of Hi-tech Park, Nanshan District, Shenzhen,
China.
Manufacturer: Cogent System Inc.
17 Floor, Fiyta Hi-tech Building, Gaoxinnanyi Avenue,
Southern District of Hi-tech Park, Nanshan District, Shenzhen,
China.
Date of Receipt: Jul. 09, 2005
Finished date of Test: Mar.06, 2006

Applicable Standards: 47 CFR Part 15, Subpart C, Class B
ANSI C63.4 :2003

We, **Spectrum Research & Testing Laboratory Inc.**, hereby certify that one sample of the above was tested in **SMQ EMC Lab** with positive results according to the above-mentioned standards. The records in the report are an accurate account of the results. Details of the results are given in the subsequent pages of this report.

Checked By : Julian Chiang , Date: 3. 6. 2006
(Julian Chiang)

Approved By : Johnson Ho Date: March 06, 2006
(Johnson Ho, Director) *JA*



Table of Contents

1.	DOCUMENT POLICY AND TEST STATEMENT	4
1.1	DOCUMENT POLICY	4
1.2	TEST STATEMENT.....	4
1.3	EUT MODIFICATION	4
2.	DESCRIPTION OF EUT AND TEST MODE	5
2.1	GENERAL DESCRIPTION OF EUT	5
2.2	DESCRIPTION OF EUT INTERNAL DEVICE	5
2.3	DESCRIPTION OF TEST MODE.....	5
2.4	DESCRIPTION OF SUPPORT UNIT	6
3.	DESCRIPTION OF APPLIED STANDARDS	6
4	OCCUPIED BANDWIDTH.....	7
4.1	TEST EQUIPMENT	7
4.2	TEST SET-UP	7
4.3	TEST PROCEDURE	7
4.4	EUT OPERATING CONDITION.....	7
4.5	TEST RESULT	8
5.	CONDUCTED EMISSION TEST	9
5.1	CONDUCTED EMISSION LIMIT	9
5.2	TEST EQUIPMENT.....	9
5.3	TEST SETUP	10
5.4	TEST PROCEDURE	10
5.5	EUT OPERATING CONDITION	10
5.6	TEST RESULT	11
6.	RADIATED EMISSION TEST	12
6.1	RADIATED EMISSION LIMIT	12
6.2	TEST EQUIPMENT	13
6.3	TEST SETUP	14
6.4	TEST PROCEDURE	16
6.5	EUT OPERATING CONDITION	16
6.6	RADIATED EMISSION TEST RESULT	17
7	FREQUENCY TOLERANCE.....	19
7.1	FREQUENCY TOLERANCE LIMIT	19
7.2	TEST EQUIPMENT.....	19
7.3	TEST PROCEDURES.....	20
7.4	TEST SETUP	20



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TEST REPORT

Reference No.: A05071507
Report No.: FCCA05071507
FCC ID: TLDSPS-TS
Page: 3 of 25
Date: Mar. 06, 2006

7.5	TEST RESULT	21
8	PHOTOS OF TESTING	22
9.	TERMS OF ABRIVATION	25



**Spectrum Research
& Testing Lab., Inc.**

No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan,
R.O.C.

TEST REPORT

Reference No.: A05071507
Report No.: FCCA05071507
FCC ID: TLDSPS-TS
Page: 4 of 25
Date: Mar. 06, 2006

1. DOCUMENT POLICY AND TEST STATEMENT

1.1 DOCUMENT POLICY

- The report shall not be reproduced except in full, without the written approval of SRT Lab, Inc.
- The report must not be used by the applicant to claim that the product is endorsed by NVLAP, TÜV, NEMKO and SRT.
- The NVLAP logo applies only to the applicable standards specified in this report.

1.2 TEST STATEMENT

- The test results in the report apply only to the unit tested by SRT Lab.
- There was no deviation from the requirements of test standards during the test.
- AC(100-240 Vac50/60 Hz)To DC 12V Adapter, was used during the test.

1.3 EUT MODIFICATION

- No modification in SRT Lab.

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan, R.O.C.	<h1>TEST REPORT</h1>	Reference No.: A05071507 Report No.: FCCA05071507 FCC ID: TLDSPS-TS Page: 5 of 25 Date: Mar. 06, 2006
--	----------------------	---

2. DESCRIPTION OF EUT AND TEST MODE

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Fingerprint Access Control Reader
MODEL NO.	Smart Gate
POWER SUPPLY	12V
FREQUENCY BAND	15.63MHz
NUMBER OF CHANNEL	1
MODULATION TYPE	ASK
BIT RATE OF TRANSMISSION	105.9kbps
ANTENNA TYPE	Directly Matched Antenna
DUTY CYCLE	100%

NOTE :

For more detailed information, please refer to the EUT's specification or user's manual provided by manufacturer.

2.2 DESCRIPTION OF EUT INTERNAL DEVICE

DEVICE	BRAND / MAKER	MODEL #	FCC ID/DOC	REMARK
N/A				

2.3 DESCRIPTION OF TEST MODE

The EUT was test with the desktop pc. The EUT was detecting card, and sending data to desktop pc

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan, R.O.C.	<h1>TEST REPORT</h1>	Reference No.: A05071507 Report No.: FCCA05071507 FCC ID: TLDSPS-TS Page: 6 of 25 Date: Mar. 06, 2006
--	----------------------	---

2.4 DESCRIPTION OF SUPPORT UNIT

The EUT was configured by the requirement of ANSI C63.4:2003 and CISPR 22:2003. All interface ports were connected to the appropriate support units via specific cables. The support units and cables are listed below.

NO	DEVICE	BRAND	MODEL #/ S/N#	FCC ID/DOC	CABLE
1.	Printer	BJC-265SP	EVX81604	DOC	N/A
2.	Adaptor for Printer	AD-300	--	DOC	1.0m unshielded power cord 1.8m unshielded power cord
3.	MODEM	TM-EC5658 V	03402406009	DOC	1.1m unshielded power cord
4.	Adaptor for MODEM	EI-41-AD90 10	--	DOC	1.5m unshielded power cord
5.	Desktop PC	P9111A #AB2	CN31104346	DOC	1.4m shielded power cord
6.	LCD Monitor	P4825	CN3087A026	DOC	1.4m shielded power cord
7.	Adaptor for LCD Monitor	PA-1400-02	3101571101LN	DOC	1.8m shielded data cable 1.0m unshielded data cable
8.	Keyboard	KB-0133	--	DOC	1.8m unshielded power cord
9.	MOUSE	M-S69	--	DOC	1.8m unshielded power cord

NOTE : For the actual test configuration, please refer to the photos of testing.

3. DESCRIPTION OF APPLIED STANDARDS

The EUT is a kind of ITE and according to the specifications provided by the applicant, it must comply with the requirements of the following standards:

47 CFR Part 15 Subpart C, Class B

All tests have been performed and recorded as per the above standards.

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan, R.O.C.	<h1>TEST REPORT</h1>	Reference No.: A05071507 Report No.: FCCA05071507 FCC ID: TLDSPS-TS Page: 7 of 25 Date: Mar. 06, 2006
--	----------------------	---

4 OCCUPIED BANDWIDTH

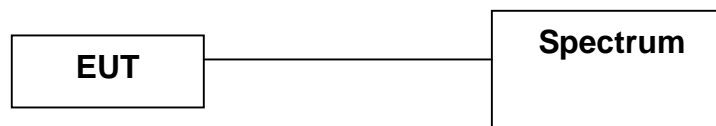
4.1 TEST EQUIPMENT

The following test equipment was used during the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	APR. 2006 R&S

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.2 TEST SET-UP



The EUT was connected to a spectrum through a 50Ω RF cable.

4.3 TEST PROCEDURE

The EUT was operating TX mode.

Printed out the test result from the spectrum by hard copy function.

4.4 EUT OPERATING CONDITION

The EUT was test with the desktop pc. The EUT was detecting card, and sending data to desktop pc

**Spectrum Research
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No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan,
R.O.C.

TEST REPORT

Reference No.: A05071507
Report No.: FCCA05071507
FCC ID: TLDSPS-TS
Page: 8 of 25
Date: Mar. 06, 2006

4.5 TEST RESULT

Temperature: 24 °C

Humidity: 68 %RH

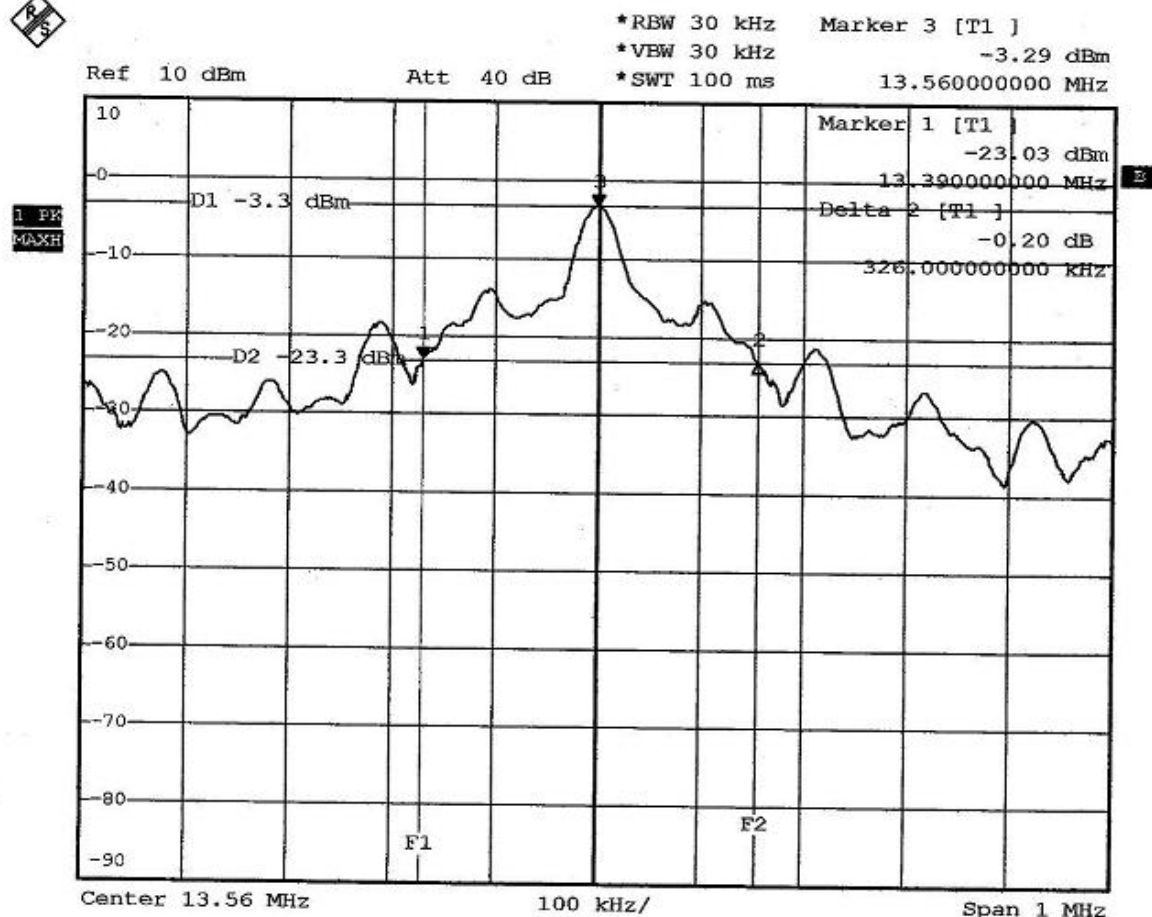
Frequency Range: 15.63MHz

Tested Mode: Reading Card

Spectrum Detector: PK

Tested Date: Mar.6, 2006

Fundamental Frequency (MHz)	20dB Bandwidth (kHz)
13.56	326



 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan, R.O.C.	<h1>TEST REPORT</h1>	Reference No.: A05071507 Report No.: FCCA05071507 FCC ID: TLDSPS-TS Page: 9 of 25 Date: Mar. 06, 2006
--	----------------------	---

5. CONDUCTED EMISSION TEST

5.1 CONDUCTED EMISSION LIMIT

FREQUENCY (MHz)	Class A (dB μ V)		Class B (dB μ V)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.5 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

5.2 TEST EQUIPMENT

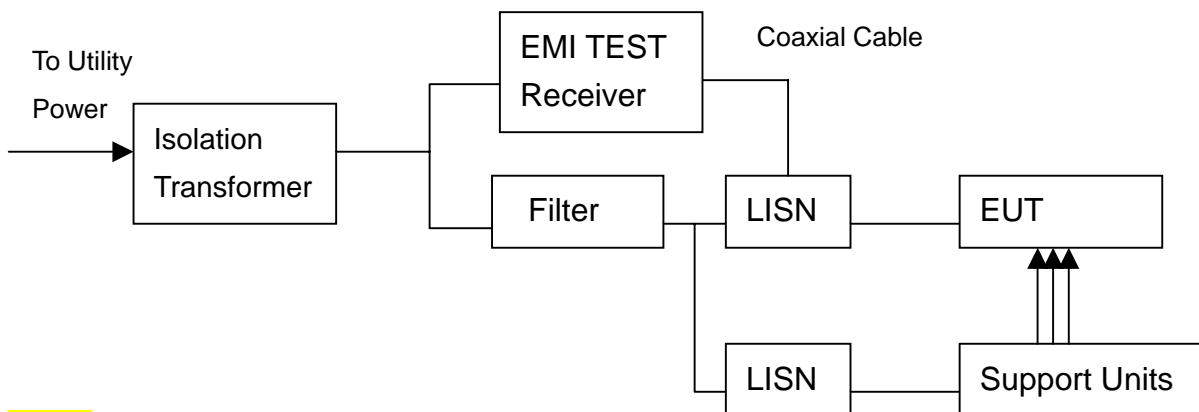
The following test equipment was used for the test:

EQUIPMENT/FACILITIES	MANUFACTURER	MODEL#	SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESCS30	SB2603	Jun.29,2006
AMN	ROHDE & SCHWARZ	ESH2-Z5	SB3321	Jun.29,2006

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.



5.3 TEST SETUP



NOTE:

1. The EUT was put on a wooden table with 0.8m heights above ground plane, and 0.4m away from reference ground plane (> 2mx2m).
2. For the actual test configuration, please refer to the photos of testing.
3. The serial no. of the LISN connected to EUT is 951318.
4. The serial no. of the LISN connected to support units is 924839.

5.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4:2003 and CISPR 22:2003. The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm/50μH as specified. All readings were quasi-peak and average values with 10 kHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. Both lines of the power mains of EUT were measured and the cables connected to EUT and support units were moved to find the maximum emission levels for each frequency. First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data. The procedure is referred on the test procedure of SRT LAB.

5.5 EUT OPERATING CONDITION

The EUT was test with the desktop pc. The EUT was detecting card, and sending data to desktop pc

**Spectrum Research
& Testing Lab., Inc.**No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan,
R.O.C.**TEST REPORT**Reference No.: A05071507
Report No.: FCCA05071507
FCC ID: TLDSPS-TS
Page: 11 of 25
Date: Mar. 06, 2006**5.6 TEST RESULT**

Temperature:	24 °C	Humidity:	68 %RH
Ferquency Range:	0.15 – 30 MHz	Tested Mode:	Reading Card
Receiver Detector:	Q.P. and AV.	Tested Date:	Aug.11, 2005

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dB μ V)		Emission Level (dB μ V)		Limit (dB μ V)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.			Q.P.	AV.
0.850	0.19	45.91	38.91	46.10	39.10	56.00	46.00	-9.90	-6.90
3.420	0.19	51.51	41.51	51.70	41.70	56.00	46.00	-4.30	-4.30
5.124	0.22	51.18	39.48	51.40	39.70	60.00	50.00	-8.60	-10.30
7.254	0.22	49.78	36.98	50.00	37.20	60.00	50.00	-10.00	-12.80
10.590	0.23	48.27	34.97	48.50	35.20	60.00	50.00	-11.50	-14.80
27.695	0.45	49.65	31.55	50.10	32.00	60.00	50.00	-9.90	-18.00

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dB μ V)		Emission Level (dB μ V)		Limit (dB μ V)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.			Q.P.	AV.
2.705	0.17	47.23	31.33	47.40	31.50	56.00	46.00	-8.60	-14.50
3.532	0.19	49.81	37.71	50.00	37.90	56.00	46.00	-6.00	-8.10
4.598	0.21	50.29	38.69	50.50	38.90	56.00	46.00	-5.50	-7.10
6.262	0.22	50.48	37.88	50.70	38.10	60.00	50.00	-9.30	-11.90
12.324	0.24	48.16	36.66	48.40	36.90	60.00	50.00	-11.60	-13.10
29.225	0.30	46.10	35.60	46.40	35.90	60.00	50.00	-13.60	-14.10

NOTE :

1. Measurement uncertainty is +/-1.32dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies were very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan, R.O.C.	<h1>TEST REPORT</h1>	Reference No.: A05071507 Report No.: FCCA05071507 FCC ID: TLDSPS-TS Page: 12 of 25 Date: Mar. 06, 2006
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6. RADIATED EMISSION TEST

6.1 RADIATED EMISSION LIMIT

FCC Part 15, Subpart C Section 15.225.

Frequency band (MHz)	Measurement Distance (m)	Field Strength Limit (μV/m)
13.533 – 13.567	30	15848
13.410 – 13.533 13.567 – 13.710	30	334
13.110 – 13.410 13.710 – 14.010	30	106

FCC Part 15, Subpart A Section 15.31(f)(2) Extrapolation factor of 40 dB/decade for measurement distances different then specified in with limits for frequencies below 30 MHz

FCC Part15, Subpart C Section 15.209 limit of radiated emission for frequency below1000MHz. The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

FCC Part 15, Subpart C Section 15.209.

FREQUENCY (MHz)	DISTANCE (m)	FIELD STRENGTH (μV/m)
0.009 - 0.490	300	2400/F(kHz)
0.490 -1.705	300	24000/F(kHz)
1.705 - 30.0	30	30
30 - 88	3	100
88 - 216	3	150
216 - 960	3	200
ABOVE 960	3	500

NOTE :

1. In the emission tables above, the tighter limit applies at the band edges.
2. Distance refers to the distance between measuring instrument, antenna, and the closest point of any part of the device or system.

FCC Part 15, Subpart A Section 15.31(f)(2) Extrapolation factor of 40 dB/decade for measurement distances different then specified in with limits for frequencies below 30 MHz.

FCC Part15, Subpart C Section 15.209 limit of radiated emission for frequency below1000MHz. The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan, R.O.C.	<h1>TEST REPORT</h1>	Reference No.: A05071507 Report No.: FCCA05071507 FCC ID: TLDSPS-TS Page: 13 of 25 Date: Mar. 06, 2006
--	----------------------	--

FREQUENCY (MHz)	DISTANCE (m)	FIELD STRENGTH (dB μ V/m)
30 - 88	3	40.0
88 - 216	3	43.5
216 - 960	3	46.0
Above 960	3	54.0

NOTE :

1. In the emission tables above , the tighter limit applies at the band edges.
2. Distance refers to the distance between measuring instrument, antenna, and the closest point of any part of the device or system.

6.2 TEST EQUIPMENT

The following test equipment was used during the radiated emission test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	20 kHz TO 1 GHz	ROHDE & SCHWARZ	ESCS30/830245/012	OCT. 2006 ETC
BI-LOG ANTENNA	25 MHz TO 2 GHz	EMCO	3143/9509-1141	SEP. 2006 SRT
OATS	3 – 10 M MEASUREMENT	SRT	SRT-1	DEC. 2006 SRT
COAXIAL CABLE	25M	SUNCITY	J400/25M	JUN. 2006 SRT
FILTER	2 LINE, 30A	FIL.COIL	FC-943/869	N/A
FREQUENCY CONVERTER	N/A	APC	AFC-2KBB/F100030031	AUG. 2005 SRT
LOOP ANTENNA	9 kHz TO 30 MHz	SCHWARZ	HFH-Z2/1162 1/2	JAN. 2006 R&S
ANECHOIC CHAMBER	733	SRT	A03/SRT003	N/A

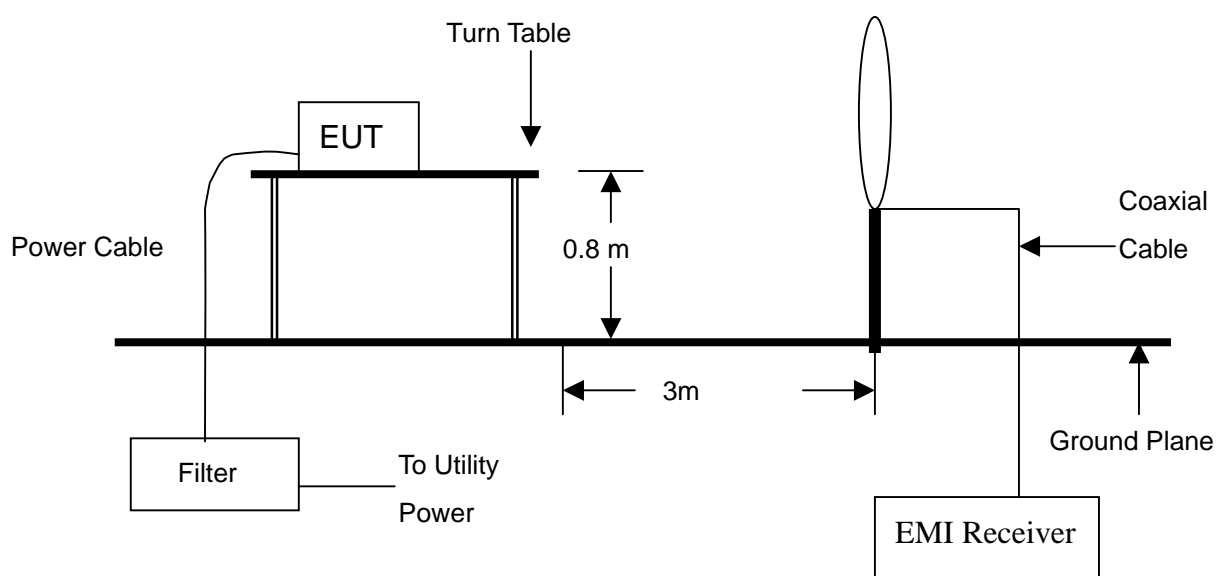
NOTE:

1. The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.
2. The Open Area Test Site (SRT-1) is registered by FCC with No. 90957 and VCCI with No. R-1081.
3. The Open Area Test Site (SRT-2) is registered by FCC with No. 98458 and VCCI with No. R-1168.



6.3 TEST SETUP

measurement frequency 9kHz – 30MHz

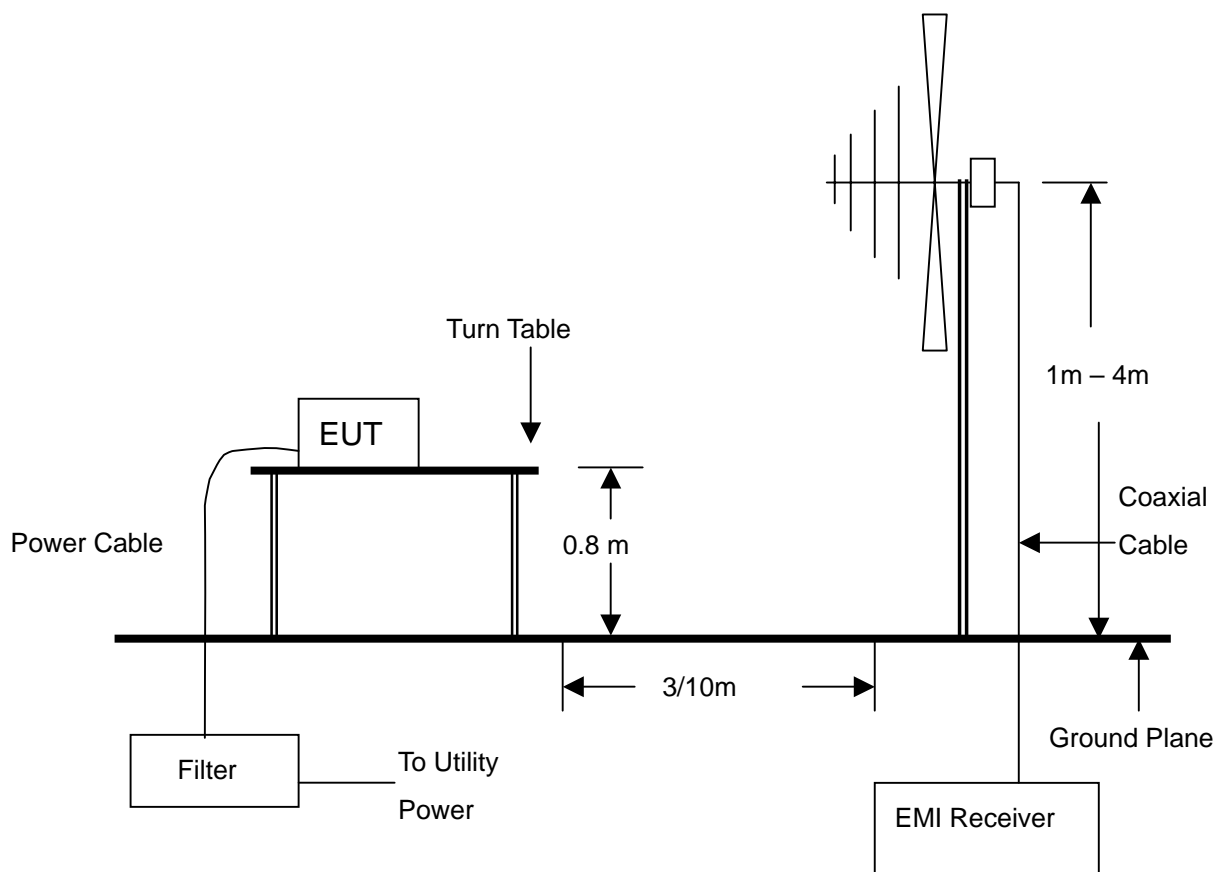


NOTE :

1. The EUT system was put on a wooden table with 0.8m heights above a ground plane.
2. For the actual test configuration, please refer to the photos of testing.



measurement frequency 30MHz – 1000MHz



NOTE :

1. The EUT system was put on a wooden table with 0.8m heights above a ground plane.
2. For the actual test configuration, please refer to the photos of testing.

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan, R.O.C.	<h1>TEST REPORT</h1>	Reference No.: A05071507 Report No.: FCCA05071507 FCC ID: TLDSPS-TS Page: 16 of 25 Date: Mar. 06, 2006
--	----------------------	--

6.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4:2003. The measurements were made at an open area test site with 3 meter measurement distance. The test receiver captured the test result plot and delta mark to 26dBc. Then printed out the plot on screen of the test receiver.

6.5 EUT OPERATING CONDITION

Same as section 4.5 of this report.

**Spectrum Research
& Testing Lab., Inc.**

No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan,
R.O.C.

TEST REPORT

Reference No.: A05071507
Report No.: FCCA05071507
FCC ID: TLDSPS-TS
Page: 17 of 25
Date: Mar. 06, 2006

6.6 RADIATED EMISSION TEST RESULT

Temperature:	28 °C	Humidity:	60 %RH
Frequency Range:	9K-30MHz	Measured Distance:	1m
Receiver Detector:	Q.P.	Tested Mode:	13.56MHz
Tested Date:	Aug. 11, 2005		

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)
(F)13.5601	0.40	19.70	55.0	75.1	109.6	-34.5	45.7
0.9060	0.30	20.60	62.6	83.5	87.5	-4.0	62.8
11.8660	0.30	19.80	18.5	38.6	88.6	-50.1	46.9
12.7120	0.40	19.75	36.3	56.5	88.6	-32.1	35.7
13.0300	0.40	19.75	24.2	44.3	88.6	-44.3	142.6
14.4070	0.40	19.75	34.3	54.5	88.6	-34.1	168.7

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)
(F)13.5601	0.40	19.70	46.4	66.5	109.6	-43.1	135.4
0.9060	0.30	20.60	50.9	71.8	87.5	-15.7	168.7
12.8300	0.40	19.75	31.6	51.8	88.6	-36.8	225.9
14.3560	0.40	19.75	32.4	52.6	88.6	-36.1	216.4
17.8320	0.50	19.80	31.7	52.0	88.6	-36.6	163.1
21.8790	0.60	20.20	28.7	49.5	88.6	-39.1	18.7

- NOTE :**
1. Measurement uncertainty is less than +/- 2dB
 2. "**": Measurement does not apply for this frequency.
 3. Emission Level = Reading Value + Ant. Factor + Cable Loss
 4. $\text{Limit(dBuV/m)} = 20\log\{24000/F(\text{kHz})\}$ (The measurement distance at 300m)
+ $40\log(300/3)$ (The measurement distance at 3m)
 5. The field strength of other emission frequencies were very low against the limit.
 6. (F) : Fundamental frequency of transmitter.

**Spectrum Research
& Testing Lab., Inc.**No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan,
R.O.C.**TEST REPORT**Reference No.: A05071507
Report No.: FCCA05071507
FCC ID: TLDSPS-TS
Page: 18 of 25
Date: Mar. 06, 2006

Temperature:	24°C	Humidity:	63 %RH
Ferquency Range:	30 -1000MHz	Measured Distance:	3m
Receiver Detector:	Q.P	Tested Mode:	Reading Card
Tested Date:	Aug.11, 2005		

Antenna Polarization:Horizontal

Frequenc y (MHz)	Cable Loss (dB)	Antenn a Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
30.006	0.9	18.8	11.5	31.2	40.0	-8.8	90	2.5
71.337	1.4	7.53	20.3	29.2	40.0	-10.8	43	1.8
86.65	1.7	10.34	27.1	39	40.0	-1.0	181	1.5
196.84	2.4	9.87	19.42	31.69	43.5	-11.81	180	1.5
311.86	2.9	14.04	22.0	38.9	46.0	-7.9	113.2	1.03
458.74	3.4	16.84	16.84	37.08	46	-8.92	223.1	1.45

Antenna Polarization:Vertical

Frequenc y (MHz)	Cable Loss (dB)	Antenn a Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
35.533	1.2	16.46	19.8	37.5	40.0	-2.5	180	1.0
52.012	1.2	6.89	30.0	38.1	40.0	-1.9	120	1.0
85.152	1.6	10.05	27.2	38.8	40.0	-1.2	90	1.2
125.06	1.9	12.75	19.5	34.15	43.5	-9.35	256.2	1.2
326.82	3.1	14.7	16.33	34.13	46	-11.87	41.6	1.0
423.82	3.2	15.84	18.04	37.08	46	8.92	352.8	3.88

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "**": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan, R.O.C.	<h1>TEST REPORT</h1>	Reference No.: A05071507 Report No.: FCCA05071507 FCC ID: TLDSPS-TS Page: 19 of 25 Date: Mar. 06, 2006
--	----------------------	--

7 FREQUENCY TOLERANCE

7.1 FREQUENCY TOLERANCE LIMIT

Carrier frequency(MHz)	LIMIT
13.56	+/- 0.01%

7.2 TEST EQUIPMENT

The following test equipment was used for the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	MAR. 2006 R & S
TEMPERATURE & HUMIDITY CHAMBER	-70 to 180°C 0 to 100%	KSON	THS-D4H+-150/ 1801	JUN. 2006 ETC
MULTIMETER	N/A	HP	E23377A	AUG. 2006 ETC
DC POWER SUPPLY	0 to 20Vdc 0 to 50A	Lurich	RPS-1512MB/ 910054	Calibrated by multimeter

NOTE : The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

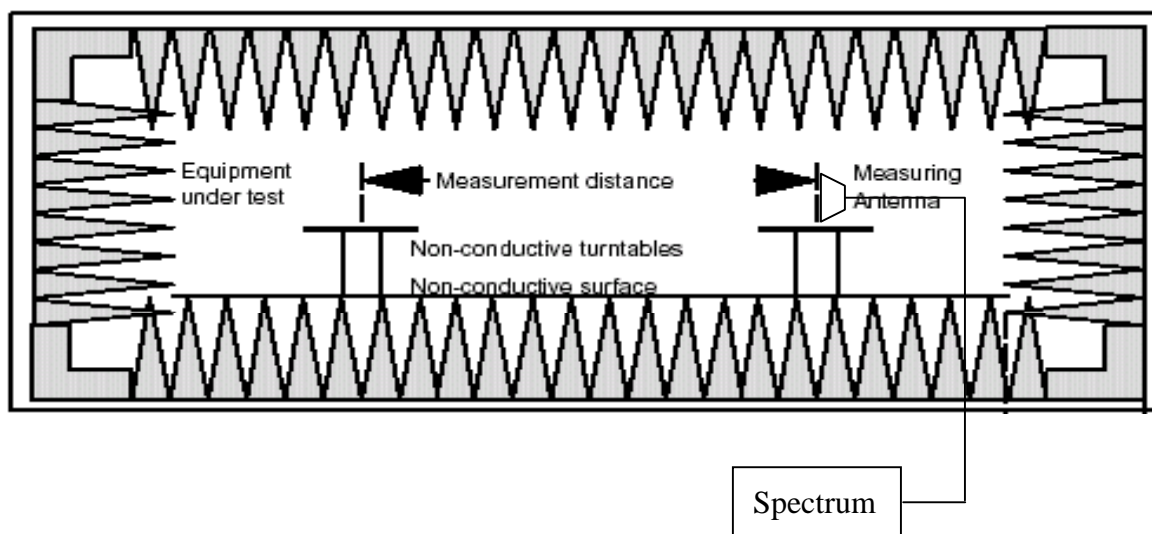


7.3 TEST PROCEDURES

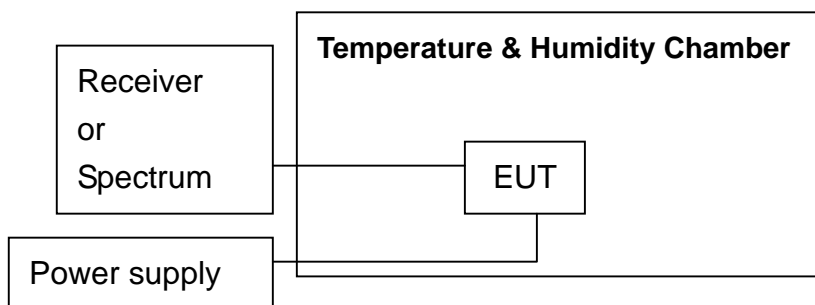
Please refer to Sub clause 15.225 (e) of . 47 CFR Part 15 Subpart C

7.4 TEST SETUP

The EUT was s placed on a turntable at a fully anechoic chamber (see configure below). It was adjusted to the maximum output power during the test.



Then tested unit was stayed in a Temperature & Humidity chamber and supplied with power source for extreme condition(see configure below). It was adjusted to the maximum output power during the test.



 Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan, R.O.C.	<h1>TEST REPORT</h1>	Reference No.: A05071507 Report No.: FCCA05071507 FCC ID: TLDSPS-TS Page: 21 of 25 Date: Mar. 06, 2006
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7.5 TEST RESULT

Temperature:	20°C	Humidity:	55%RH
Test Mode:	Tx	Tested Date:	Aug. 11, 2005
Test result:	Pass		

For European Union:

Temperature (°C)		Voltage (V)		Fundamental Frequency (MHz)	Frequency Tolerance (KHz)
normal	20	Low	10.2	13.56044	0.43
		Normal	12	13.56021	0.20
		High	13.8	13.56070	0.70
Low	-20	Low	10.2	13.56024	0.24
		Normal	12	13.56043	0.43
		High	13.8	13.56038	0.38
High	55	Low	10.2	13.56042	0.42
		Normal	12	13.56047	0.47
		High	13.8	13.56028	0.28
Limit					1.35
Measurement uncertainty				+/- 1x10 ⁻⁵	

NOTE : The fundamental frequency is 13.56MHz. The limit of the frequency tolerance is 0.01% of fundamental frequency. The value is 13.56MHz × 0.01% = 0.001356MHz=1.356kHz



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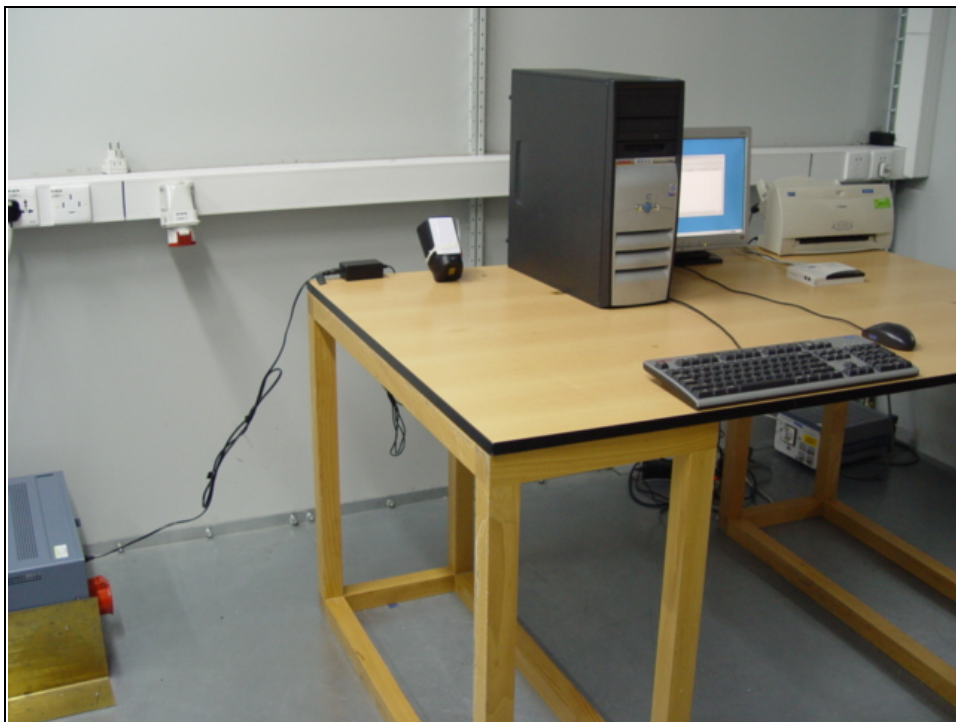
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R.O.C.

TEST REPORT

Reference No.: A05071507
Report No.: FCCA05071507
FCC ID: TLDSPS-TS
Page: 22 of 25
Date: Mar. 06, 2006

8 PHOTOS OF TESTING

- Conducted test :





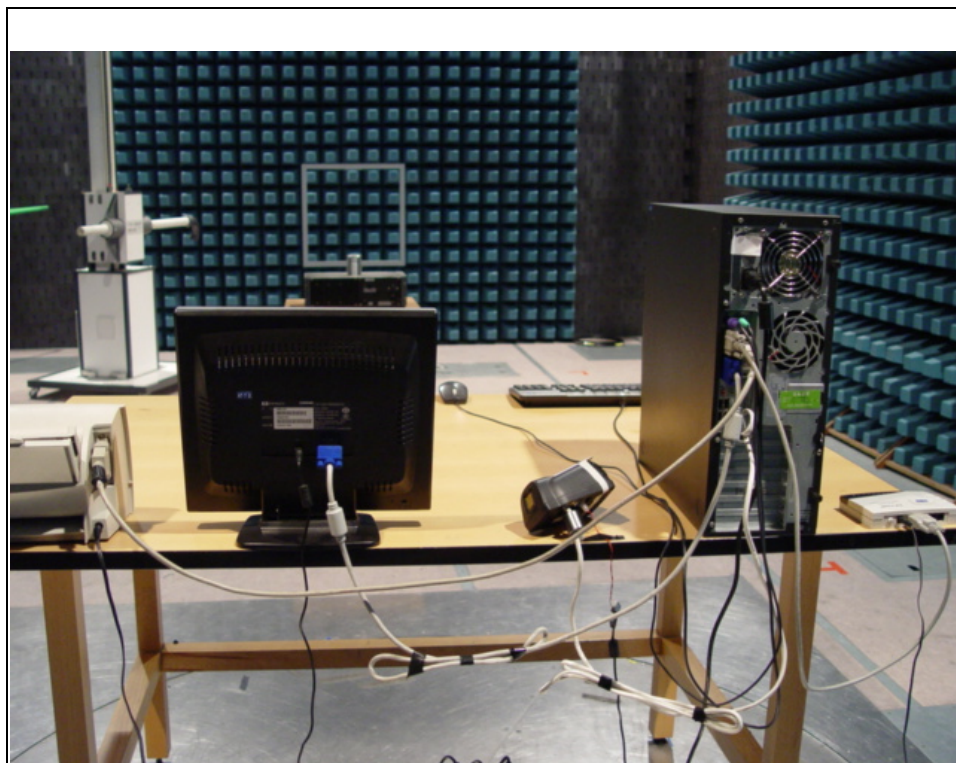
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TEST REPORT

Reference No.: A05071507
Report No.: FCCA05071507
FCC ID: TLDSPS-TS
Page: 23 of 25
Date: Mar. 06, 2006

- Radiated test : 9kHz – 30MHz





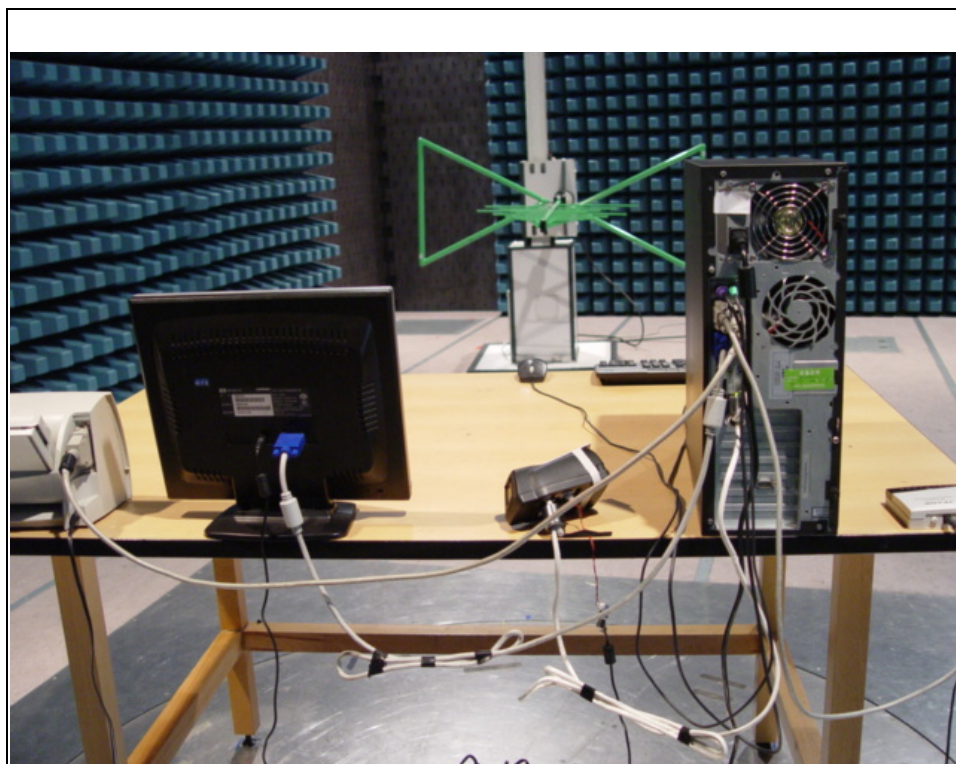
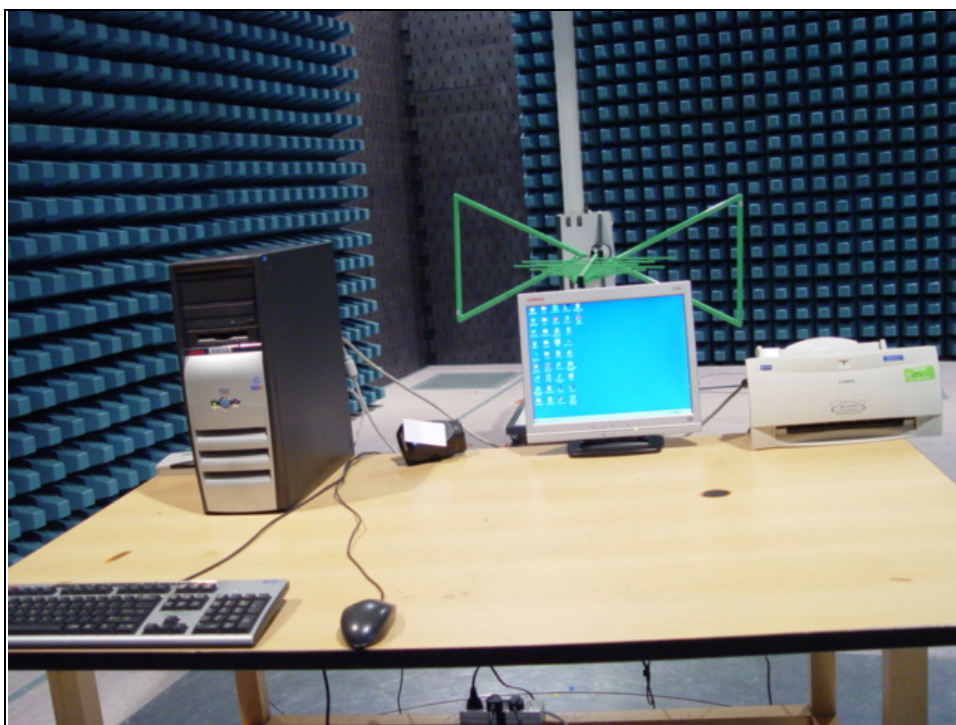
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TEST REPORT

Reference No.: A05071507
Report No.: FCCA05071507
FCC ID: TLDSPS-TS
Page: 24 of 25
Date: Mar. 06, 2006

- Radiated test : 30MHz – 1000MHz



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TEST REPORT

Reference No.: A05071507
Report No.: FCCA05071507
FCC ID: TLDSPS-TS
Page: 25 of 25
Date: Mar. 06, 2006

9. TERMS OF ABRIVATION

AV.	Average detection
AZ(°)	Turn table azimuth
Correct.	Correction
EL(m)	Antenna height (meter)
EUT	Equipment Under Test
Horiz.	Horizontal direction
LISN	Line Impedance Stabilization Network
NSA	Normalized Site Attenuation
Q.P.	Quasi-peak detection
SRT Lab	Spectrum Research & Testing Laboratory, Inc.
Vert.	Vertical direction