FCC TEST REPORT

CATEGORY	:	Mobile End Product
PRODUCT NAME	:	Wireless LAN AP
FCC ID.	:	NI3-SI-7800B
FILING TYPE	:	Certification
BRAND NAME	:	SENAO
MODEL NAME	:	SI-7800B
APPLICANT	:	**SENAO INTERNATIONAL CO., LTD.** 2FL, NO. 531 CHUNG CHENG RD., HSIN-TIEN, TAIPEI, TAIWAN, R.O.C. 231
MANUFACTURER	:	Same as Applicant
ISSUED BY	:	**SPORTON INTERNATIONAL INC.** 6F, No. 106, Sec. 1, Hsin Tai Wu Rd., His Chih, Taipei Hsien, Taiwan, R.O.C.

Statements:

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

Certificate or Test Report could not be used by the applicant to claim the product endorsement by CNLA, NVLAP or any agency of U.S. government.

The test equipment used to perform the test are calibrated and traceable to NML/ROC or NIST/USA.

Dr. Alan Lane
Vice General Manager
Sporton International Inc.

Lab Code: 200079-0

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Appendix A. Photographs of EUT ..... A1 ~ A16

History of this test report

■ No additional attachment.

☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

1. General Description of Equipment under Test

1.1. Applicant

SENAO INTERNATIONAL CO., LTD.
2FL, NO. 531 CHUNG CHENG RD., HSIN-TIEN, TAIPEI, TAIWAN, R.O.C. 231

1.2. Manufacturer

Same as 1.1

1.3. Basic Description of Equipment under Test

This product is a Wireless LAN AP with IEEE 802.11b wireless solution. This Wireless LAN AP is powered by an AC to DC adapter or by LAN (POE). The technical data has been listed on section " Features of Equipment under Test " .

1.4. Features of Equipment under Test

ITEMS	DESCRIPTION
Type of Modulation	DBPSK,DQPSK,CCK (802.11b)
Number of Channels	11
Frequency Band	2400MHz ~ 2483.5MHz
Carrier Frequency	Please reference section 1.5
Channel Bandwidth	11.84MHz
Output Power to Antenna	17.54dBm
Antenna Type / Gain	Dipole Antenna / 2dBi
Function Type	Transceiver
Power Rating (DC/AC, Voltage)	12 VDC
Temperature Range (Operating)	0 ~ 55℃
Humidity	15% ~ 95%

1.5. Table for Carrier Frequencies

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412 MHz	5	2432 MHz	9	2452 MHz
2	2417 MHz	6	2437 MHz	10	2457 MHz
3	2422 MHz	7	2442 MHz	11	2462 MHz
4	2427 MHz	8	2447 MHz		

2. Test Configuration of the Equipment under Test

2.1. Description of the Test

a. The EUT has been associated with notebook and peripherals pursuant to ANSI C63.4-2001 and configuration operated in a manner which tended to maximize its emission characteristics in a typical application.
b. There are two selections on the power source for this EUT. One is AC to DC adapter and the other is POE.
c. There are 2 test modes:
   Mode 1: EUT powered by adapter. (Normal test mode)
   Mode 2: EUT powered by POE. (Test mode for extra testing)
d. Extra testing was done on Mode 2 for power line conduction and spurious emission below 1GHz.
e. Spurious emission below 1GHz is independent of channel selection, so only channel 11 was tested.
f. For spurious emission above 1GHz, lowest, middle and highest channel with 11Mbps data rate was tested, and only mode 1 was tested.
g. The configuration is operated in a manner which tends to maximize its emission characteristics in a typical application.
h. 3 meters measurement distance in semi-anechoic chamber was used in this test.

2.2. Frequency Range Investigated

a. Conducted power line test: from 150 kHz to 30 MHz
b. Radiated emission test: from 30 MHz to 25000 MHz

2.3. Description of Test Supporting Units

Support Unit 1. – Printer (EPSON)

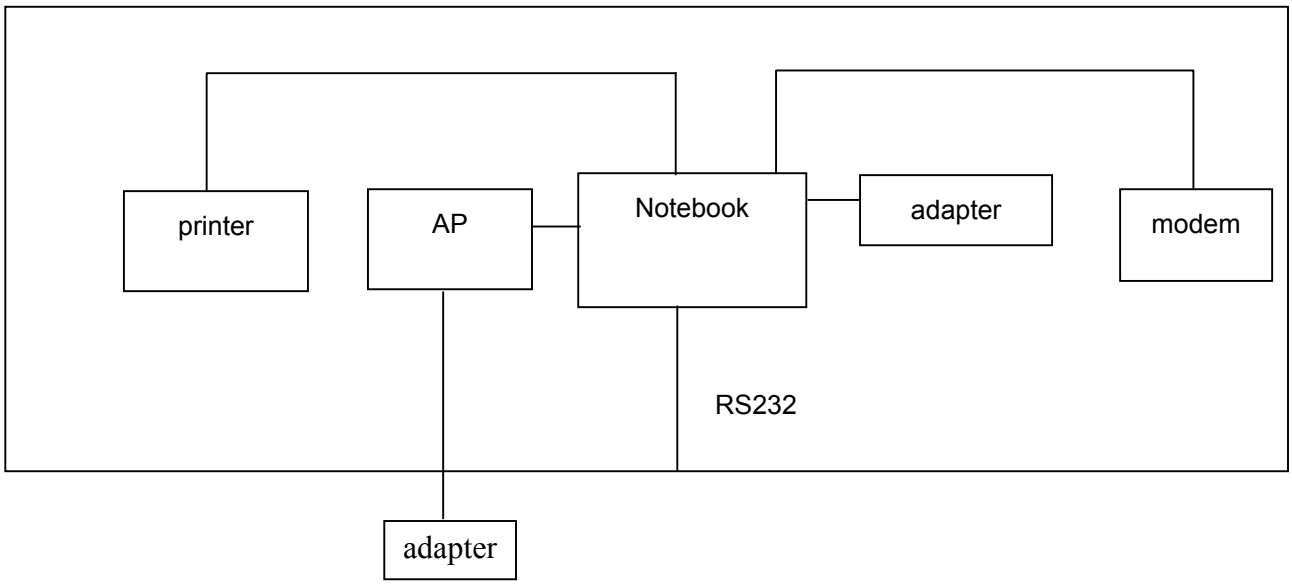
FCC ID	: 38921023
Model No.	: Stylus Color 680
Serial No.	: SP0016
Remark	: This support device was tested to comply with FCC standards and authorized under Declaration of Conformity and data cable is 1.35m of the shielded.

Support Unit 2. – Modem (ACEEX)

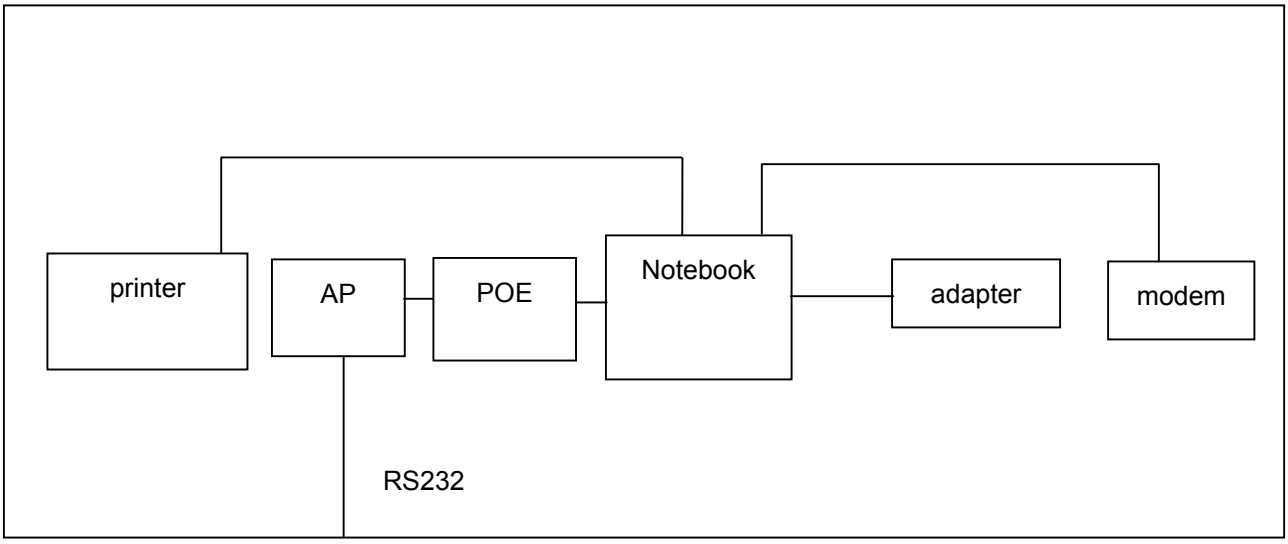
FCC ID	: IFAXDM141
Model No.	: OM141
Serial No.	: N/A
Remark	: This support device was tested to comply with FCC standards and authorized under Declaration of Conformity.

2.4. Connection Diagram of Test System

Test Mode 1: AP powered by Adapter



Test Mode 2: AP powered by POE



2.5. Test Software

Channel & Power Controlling Software: This was provided by the manufacturer and is able to let the test engineer select the operating channel as well as the RF output power. The parameters for channel selection is trying to offer the test engineer the ability to fix the operating channel for testing, both normal data and continuously transmitting modes are allowed, and that for RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

The software mentioned above was installed in the notebook. The channel and power setting of the Wireless LAN AP can be controlled by Notebook through LAN port.

3. Test Location and Standards

3.1. Test Location

Test Location : Sporton Hwa Ya Testing Building

Address : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
Tel: +886 3 327 3456 Fax: +886 3 318 0055

Test Site No. : CO04-HY, 03CH03-HY

3.2. Test Conditions

Normal Voltage	: 120V/60Hz (power adapter)
Extreme Voltage	: 138V and 102V (power adapter)
Normal Temperature	: 20 ℃
Extreme Temperature	: -20 ℃ and 50 ℃

3.3. Standards for Methods of Measurement

Here is the list of the standards followed in this test report.

ANSI C63.4-2001

47 CFR Part 15 Subpart C (Section 15.247)

3.4. DoC Statement

This EUT is also classified as a device of computer peripheral Class B which DoC has to be followed. It has been verified according to the rule of 47 CFR part 15 Subpart B, and found that all the requirements has been fulfilled.

4. List of Measurements

4.1. Summary of the Test Results

Applied Standard: 47 CFR Part 15 and Part 2			
Paragraph	**FCC Rule**	**Description of Test**	**Result**
5.1	15.247(a)(2)	6dB Spectrum Bandwidth (DSSS System)	Pass
5.2	15.247(b)	Maximum Peak Output Power	Pass
5.3	15.247(d)	Peak Power Spectral Density	Pass
5.4	15.247(c)	Band Edges Emission	Pass
5.5	15.107/15.207	AC Power Line Conducted Emission	Pass
5.6	15.209/15.247(c)	Spurious Radiated Emission	Pass
5.7	15.203	Antenna Requirement	Pass

5. Test Result

5.1. Test of 6dB Spectrum Bandwidth (DSSS System)

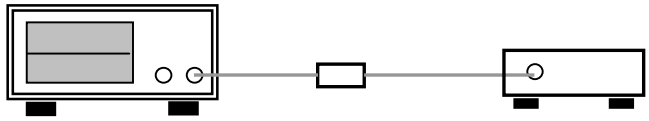
5.1.1. Measuring Instruments

Item 9 of the table on section 6.

5.1.2. Test Procedures

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 100KHz and VBW to 100KHz.
3. The 6dB bandwidth is defined as the spectrum width with level higher than 6dB below the peak level.
4. Repeat above 1~3 points for the middle and highest channel of the EUT.

5.1.3. Test Setup Layout

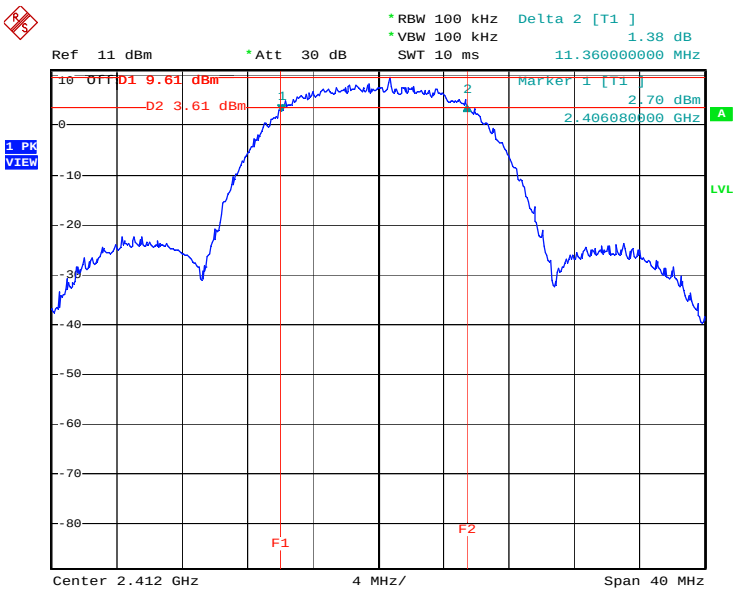


5.1.4. Test Result : See spectrum analyzer plots below

- Temperature: 21.9°C
- Relative Humidity: 60 %
- Duty cycle of the equipment during the test: 100%

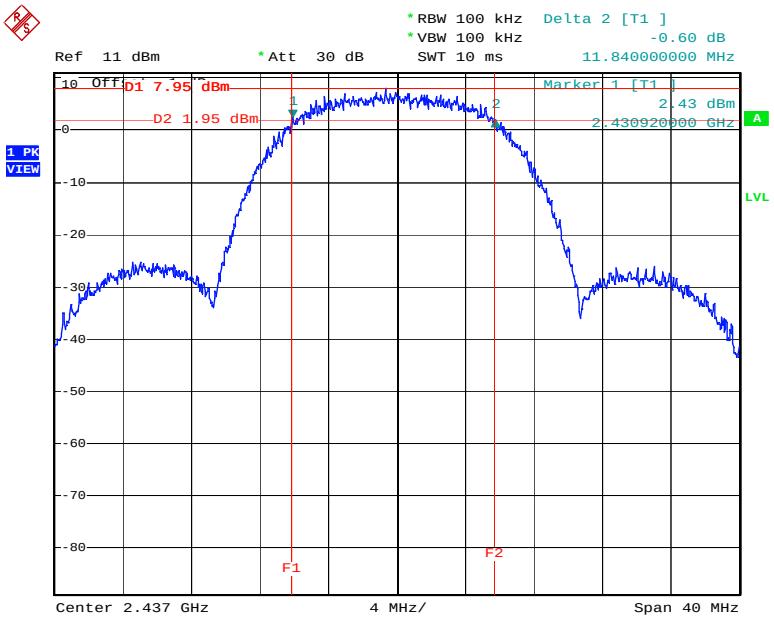
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Min. Limit (MHz)
01	2412	11.36	0.5
06	2437	11.84	0.5
11	2462	12.26	0.5

(Channel 01)：



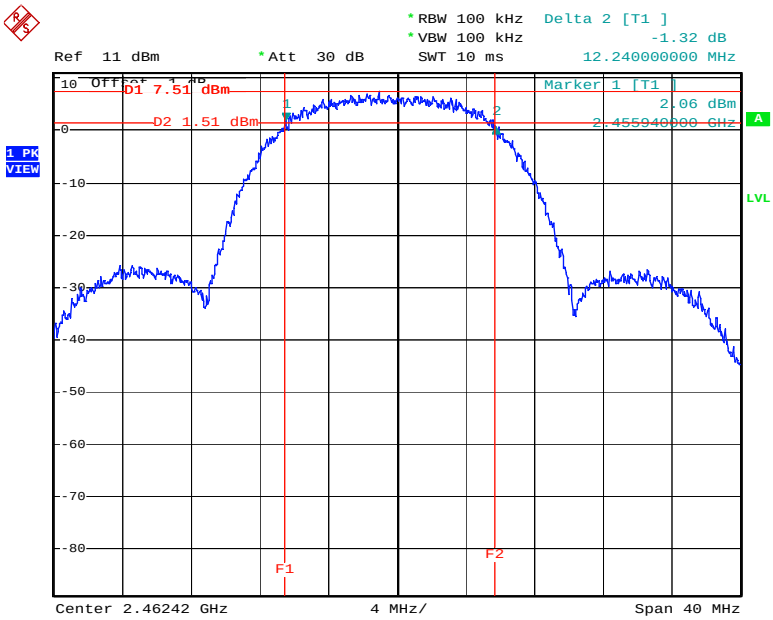
Date: 24.JUN.2004 23:01:28

(Channel 06)：



Date: 24.JUN.2004 23:11:45

(Channel 11) :



Date: 24.JUN.2004 23:17:27

5.2. Test of Maximum Peak Output Power

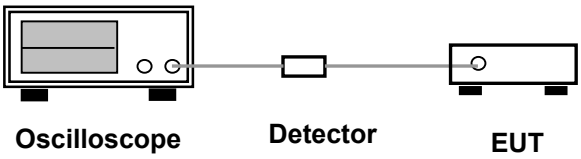
5.2.1. Measuring Instruments

Item 9 of the table on section 6.

5.2.2. Test Procedures

1. The transmitter output was connected to the vertical channel of the oscilloscope through a detector.
2. Observe the duty cycle X from the oscilloscope and the record the detected voltage level A.
3. Replace the EUT via the signal generator, calibrate the reading via the carrier frequency.
4. The duty cycle X has to be calibrated on the output power of the signal generator.
5. Repeated the 1~4 for the middle and highest channel of the EUT.

5.2.3. Test Setup Layout



5.2.4. Test Result：See spectrum analyzer plots below

- Temperature: 21.9°C
- Relative Humidity: 60 %
- Duty cycle of the equipment during the test : 100%

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mWatt)	Limits (dBm)
01	2412	17.26	53.21	30 dBm
06	2437	17.54	56.75	30 dBm
11	2462	17.35	54.33	30 dBm

5.3. Test of Peak Power Spectral Density

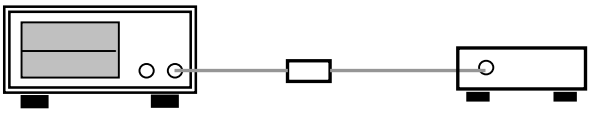
5.3.1. Measuring Instruments

Item 9 of the table on section 6.

5.3.2. Test Procedures

1. The transmitter output is connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 3kHz and VBW to 30kHz.
3. Mark the frequency with maximum peak power as the center of the display of the spectrum
4. Set the span to 1.5MHz and the sweep time to 500s and record the maximum peak value.
5. Repeated the 1~4 for the middle and highest channel of the EUT.

5.3.3. Test Setup Layout

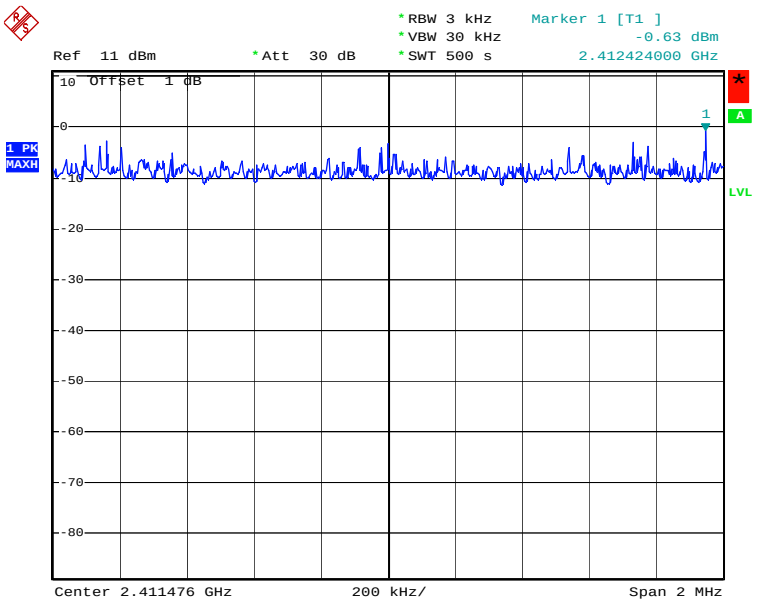


5.3.4. Test Result : See spectrum analyzer plots below

- Temperature: 21.9°C
- Relative Humidity: 60 %
- Duty cycle of the equipment during the test: 100%

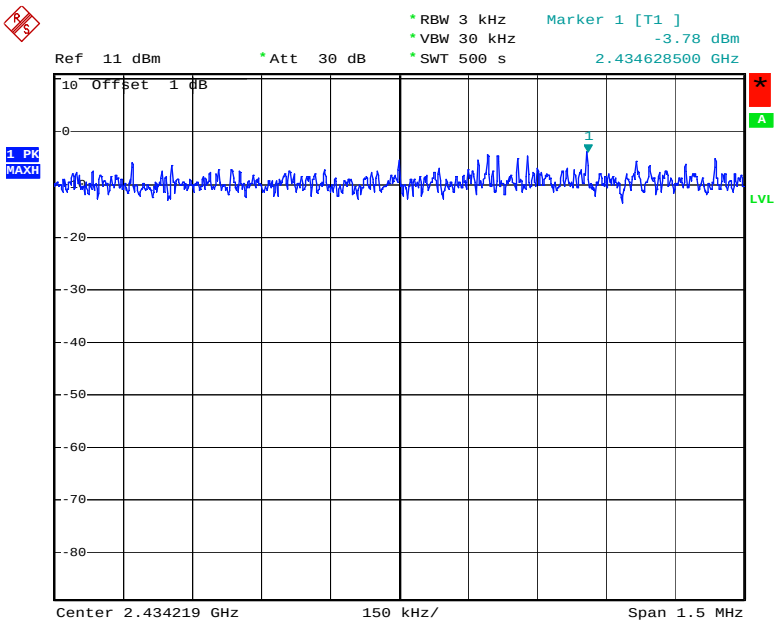
Channel	Frequency (MHz)	Power Density (dBm)	Limits (dBm)
01	2412	-0.63	8
06	2437	-3.78	8
11	2462	-3.83	8

(Channel 01) :



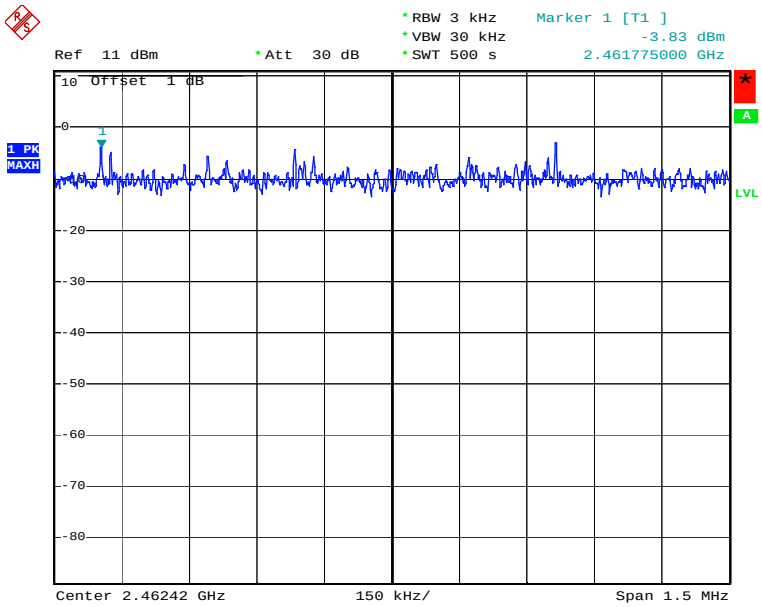
Date: 24.JUN.2004 23:03:12

(Channel 06) :



Date: 24.JUN.2004 23:13:32

(Channel 11) :



Date: 24.JUN.2004 23:15:34

5.4. Test of Band Edges Emission

5.4.1. Measuring Instruments

Item 9 of the table on section 6.

5.4.2. Test Procedures

1. The transmitter is set to the lowest channel.
2. The transmitter output was connected to the spectrum analyzer via a cable and cable loss is used as the offset of the spectrum analyzer.
3. Set both RBW of spectrum analyzer to 1MHz and VBW to 300kHz with convenient frequency span including 100MHz bandwidth from lower band edge.
4. The lowest band edges emission was measured and recorded.
5. The transmitter set to the highest channel and repeated 2~4.

5.4.3. Test Result

(A) Left Edge

The band edge emission plot shows 47.42dB delta between carrier maximum power and local maximum emission in the restricted band.

CH01 Carrier power strength (dBμV/m)	Delta (dB)	The maximum field strength in restrict band (dBμV/m)	Limit (dBμV/m)	Margin (dB)
100.50	47.42	53.08	54.00	-0.92

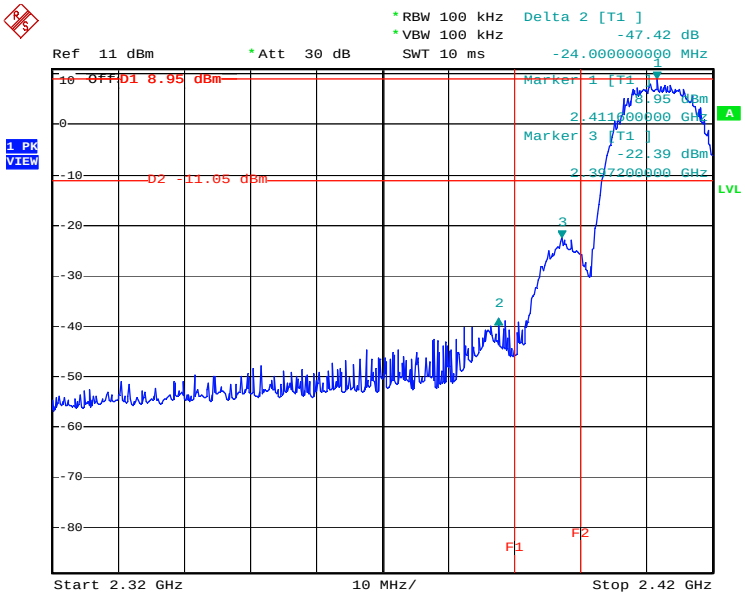
(B) Right Edge

The band edge emission plot shows 51.15dB delta between carrier maximum power and local maximum emission in the restricted band.

CH11 Carrier power strength (dBμV/m)	Delta (dB)	The maximum field strength in restrict band (dBμV/m)	Limit (dBμV/m)	Margin (dB)
100.15	51.15	49.00	54.00	-5.00

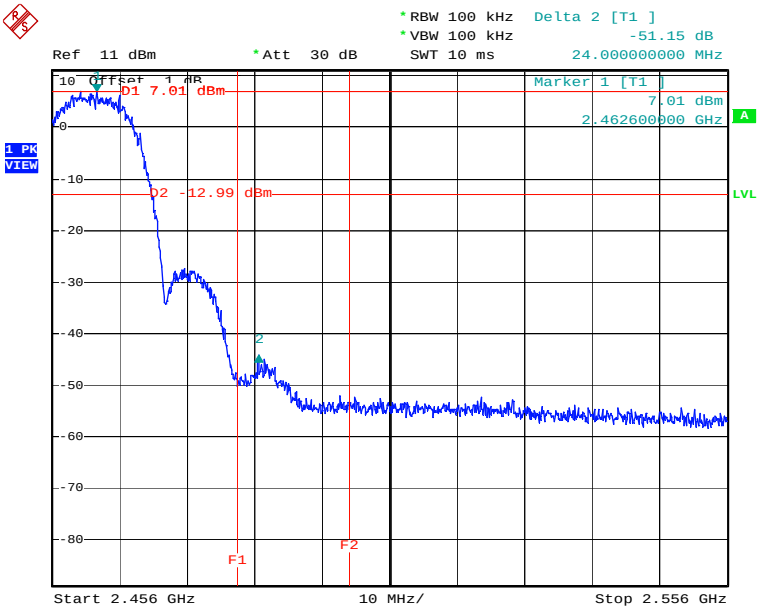
∗The maximum field strength in restricted band is the emission of carrier power strength subtract to the delta between carrier maximum power and local maximum emission in the restricted band.

(Channel 01)：



Date: 24.JUN.2004 22:58:46

(Channel 11)：



Date: 24.JUN.2004 23:20:47

Observation： All emissions in the 100kHz bandwidth are 20dB lower than the carrier strength.

5.5. Test of AC Power Line Conducted Emission

5.5.1. Measuring Instruments

Please reference item 1~7 in chapter 6 for the instruments used for testing.

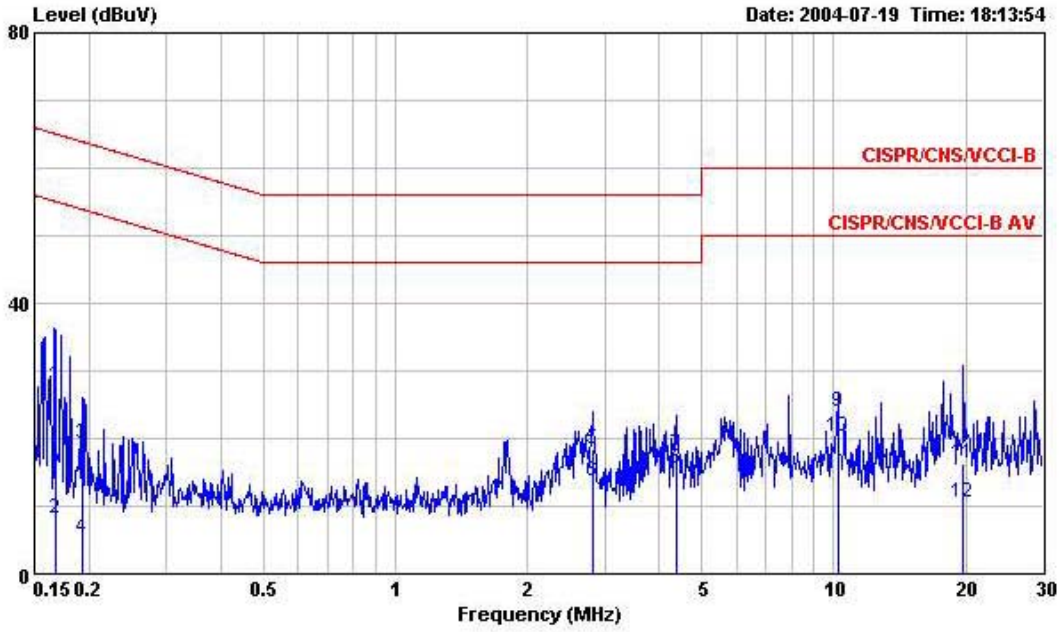
5.5.2. Test Procedures

1. Configure the EUT according to ANSI C63.4.
2. The EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connected to the other LISNs. The LISN should provides 50uH/50ohms coupling impedance.
5. The frequency range from 150 KHz to 30 MHz was searched.
6. Use the Channel & Power Controlling software to make the EUT working on selected channel and expected output power, then use the “H” Patter Generator software to make the supporting equipments stay on working condition.
7. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
8. The measurement has to be done between each power line and ground at the power terminal for each RF channel. Only one RF channel has to be investigated since this test is independent with the RF channel selection.

5.5.3. Test Result of Conducted Emission

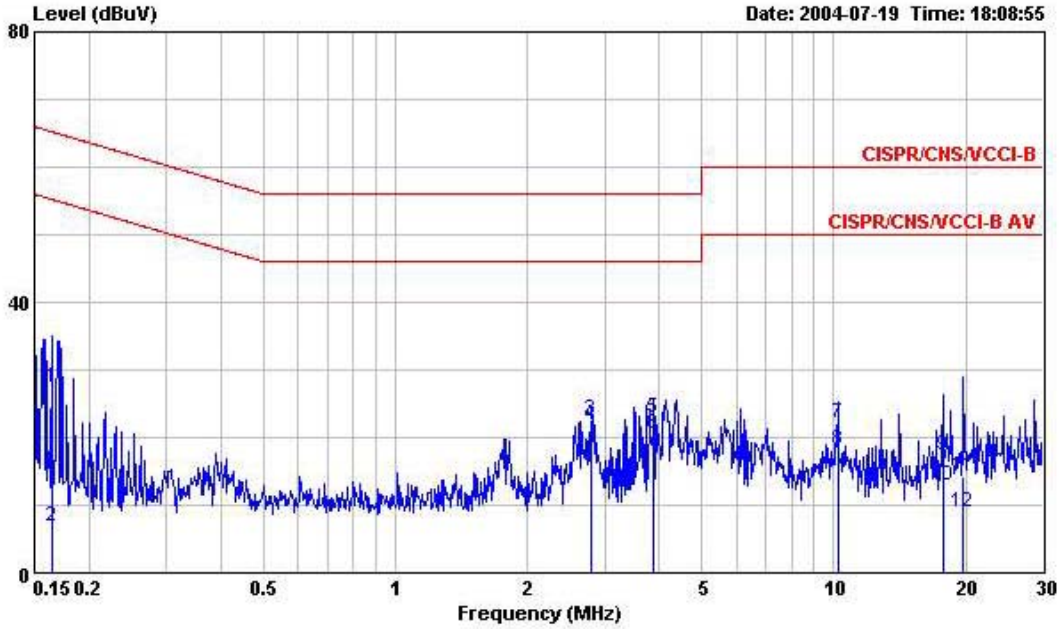
Test Mode	Mode 1	Tested By	Jason Chang
Temperature / Humidity	24 deg. C / 60%		

Line to Ground



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1678780	27.77	-37.29	65.06	27.66	0.10	0.01	QP
2	0.1678780	8.04	-47.02	55.06	7.93	0.10	0.01	Average
3	0.1934380	19.30	-44.59	63.89	19.19	0.10	0.01	QP
4	0.1934380	5.30	-48.59	53.89	5.19	0.10	0.01	Average
5	2.810	18.29	-37.71	56.00	18.10	0.15	0.04	QP
6	2.810	13.65	-32.35	46.00	13.46	0.15	0.04	Average
7	4.361	17.64	-38.36	56.00	17.37	0.20	0.07	QP
8	4.361	15.48	-30.52	46.00	15.21	0.20	0.07	Average
9	10.242	23.82	-36.18	60.00	23.51	0.20	0.11	QP
10	10.242	20.34	-29.66	50.00	20.03	0.20	0.11	Average
11	19.740	16.38	-43.62	60.00	15.89	0.29	0.20	QP
12	19.740	10.64	-39.36	50.00	10.15	0.29	0.20	Average

Neutral to Ground



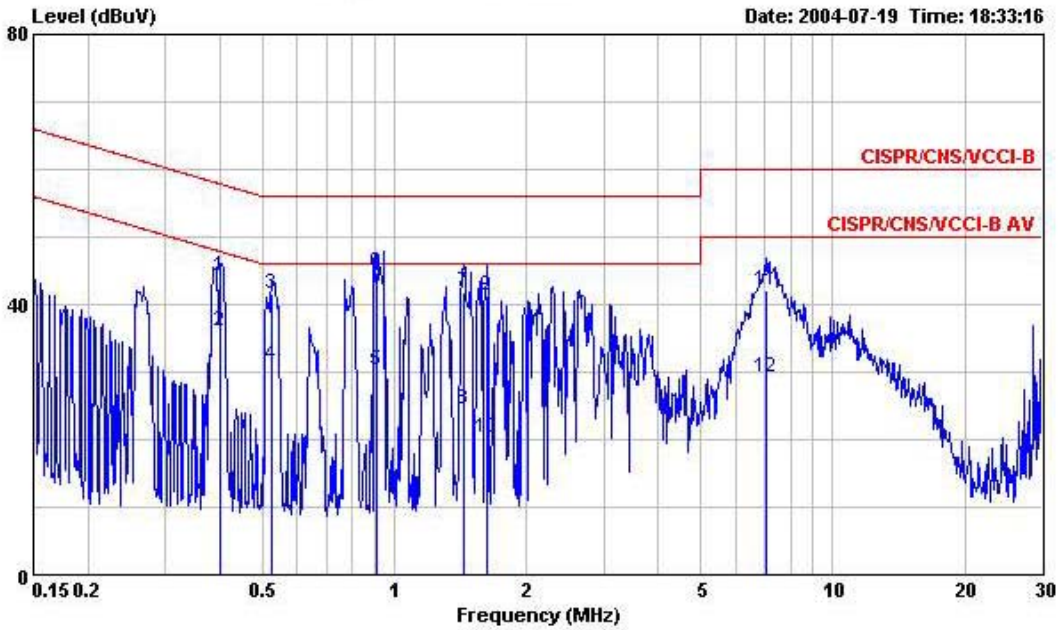
	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1641380	27.26	-37.99	65.25	27.15	0.10	0.01	QP
2	0.1641380	6.82	-48.43	55.25	6.71	0.10	0.01	Average
3	2.806	22.72	-33.28	56.00	22.58	0.10	0.04	QP
4	2.806	21.93	-24.07	46.00	21.79	0.10	0.04	Average
5	3.866	22.78	-33.22	56.00	22.61	0.10	0.07	QP
6	3.866	20.53	-25.47	46.00	20.36	0.10	0.07	Average
7	10.240	22.11	-37.89	60.00	21.80	0.20	0.11	QP
8	10.240	18.19	-31.81	50.00	17.88	0.20	0.11	Average
9	17.755	17.25	-42.75	60.00	16.81	0.26	0.18	QP
10	17.755	12.80	-37.20	50.00	12.36	0.26	0.18	Average
11	19.740	14.22	-45.78	60.00	13.73	0.29	0.20	QP
12	19.740	9.01	-40.99	50.00	8.52	0.29	0.20	Average

Test Engineer : Jason

Jason Chang

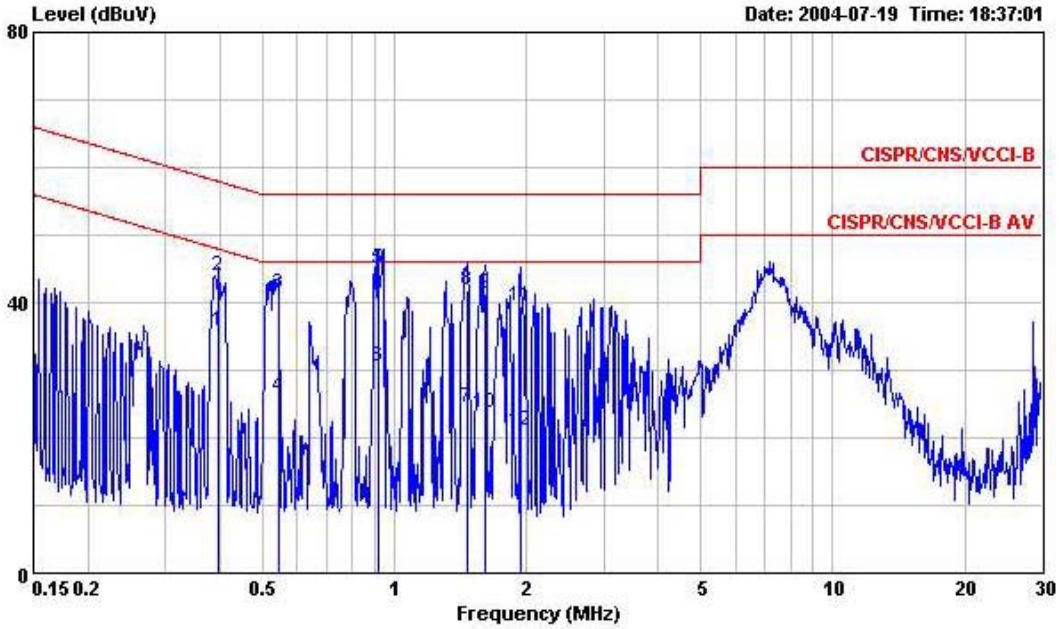
Test Mode	Mode 2	Tested By	Jason Chang
Temperature / Humidity	24 deg. C / 60%		

Line to Ground



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.3997440	44.22	-13.64	57.86	44.10	0.10	0.02	QP
2	0.3997440	36.07	-11.79	47.86	35.95	0.10	0.02	Average
3	0.5237620	41.49	-14.51	56.00	41.36	0.10	0.03	QP
4	0.5237620	31.05	-14.95	46.00	30.92	0.10	0.03	Average
5	0.9135710	30.31	-15.69	46.00	30.17	0.10	0.04	Average
6	0.9135710	44.86	-11.14	56.00	44.72	0.10	0.04	QP
7	1.440	41.87	-14.13	56.00	41.74	0.10	0.03	QP
8	1.440	24.52	-21.48	46.00	24.39	0.10	0.03	Average
9	1.630	41.34	-14.66	56.00	41.21	0.10	0.03	QP
10	1.630	20.31	-25.69	46.00	20.18	0.10	0.03	Average
11	7.060	42.06	-17.94	60.00	41.77	0.20	0.09	QP
12	7.060	29.18	-20.82	50.00	28.89	0.20	0.09	Average

Neutral to Ground



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.3976320	35.78	-12.12	47.90	35.66	0.10	0.02	Average
2	0.3976320	43.82	-14.08	57.90	43.70	0.10	0.02	QP
3	0.5435530	41.37	-14.63	56.00	41.24	0.10	0.03	QP
4	0.5435530	25.96	-20.04	46.00	25.83	0.10	0.03	Average
5	@0.9184250	45.00	-11.00	56.00	44.86	0.10	0.04	QP
6	0.9184250	30.44	-15.56	46.00	30.30	0.10	0.04	Average
7	1.470	24.47	-21.53	46.00	24.34	0.10	0.03	Average
8	1.470	41.78	-14.22	56.00	41.65	0.10	0.03	QP
9	1.610	41.34	-14.66	56.00	41.21	0.10	0.03	QP
10	1.610	23.66	-22.34	46.00	23.53	0.10	0.03	Average
11	1.940	39.48	-16.52	56.00	39.36	0.10	0.02	QP
12	1.940	21.07	-24.93	46.00	20.95	0.10	0.02	Average

Test Engineer : Jason

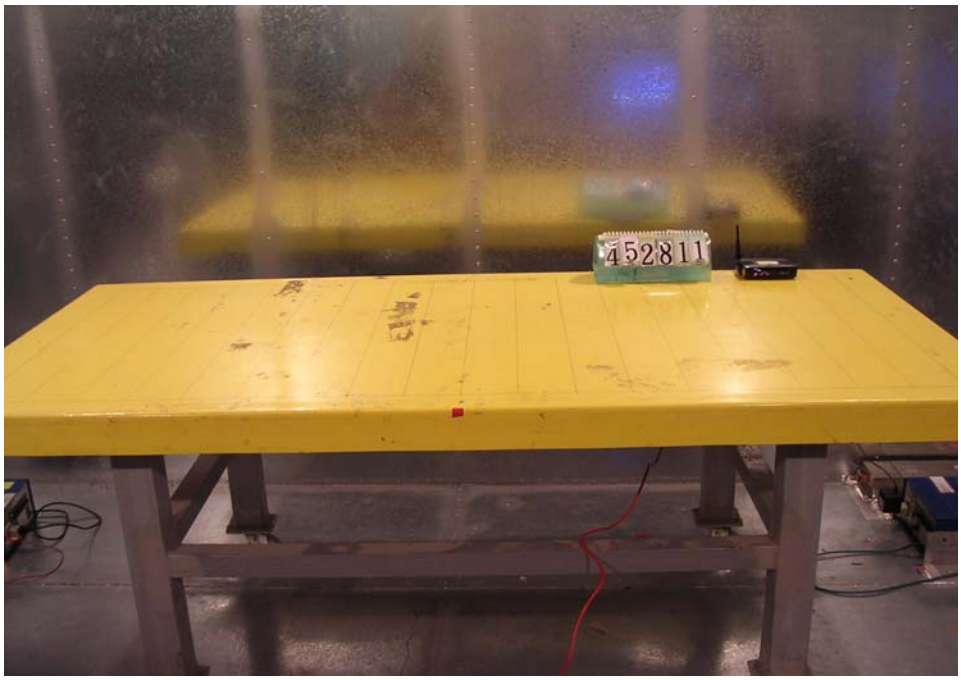
Jason Chang

5.5.4. Photographs of Conducted Emission Test Configuration

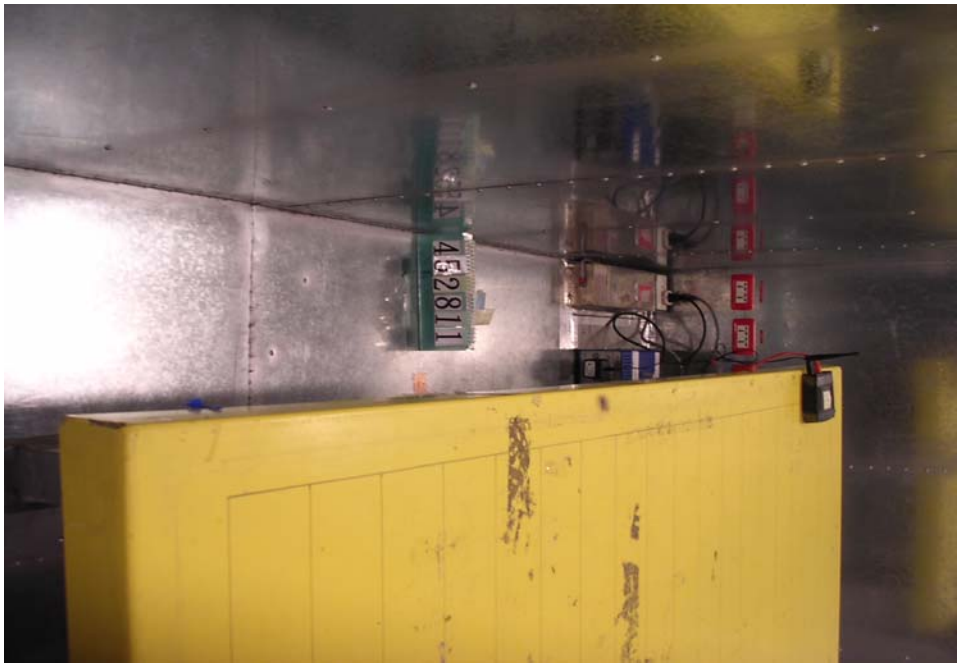
- The photographs show the configuration that generates the maximum emission.

Mode 1

FRONT VIEW



REAR VIEW

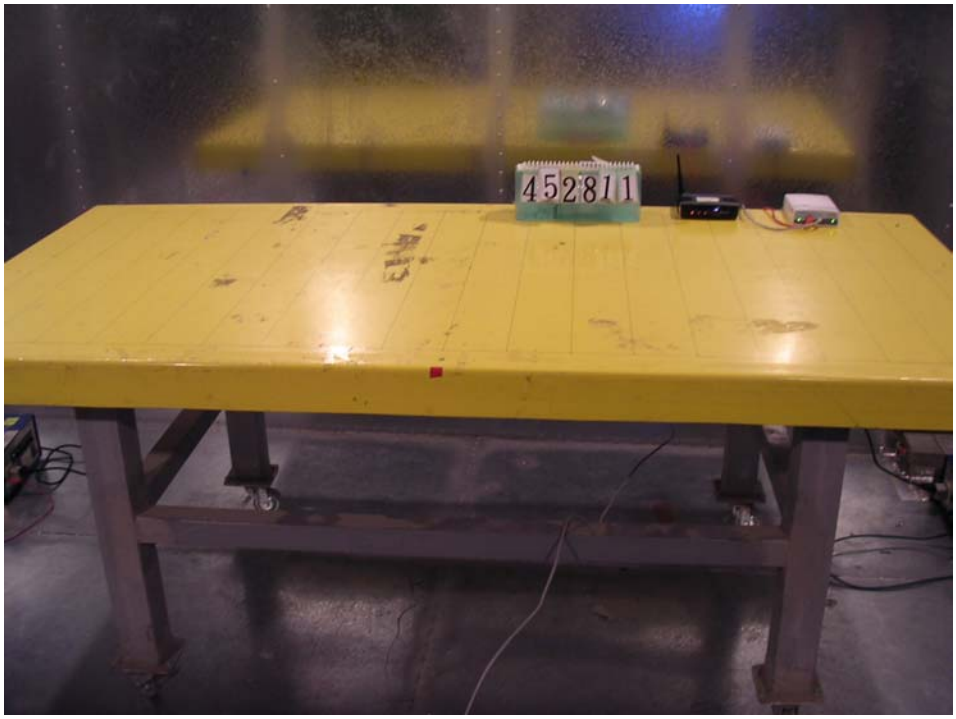


SIDE VIEW

- The photographs show the configuration that generates the maximum emission.

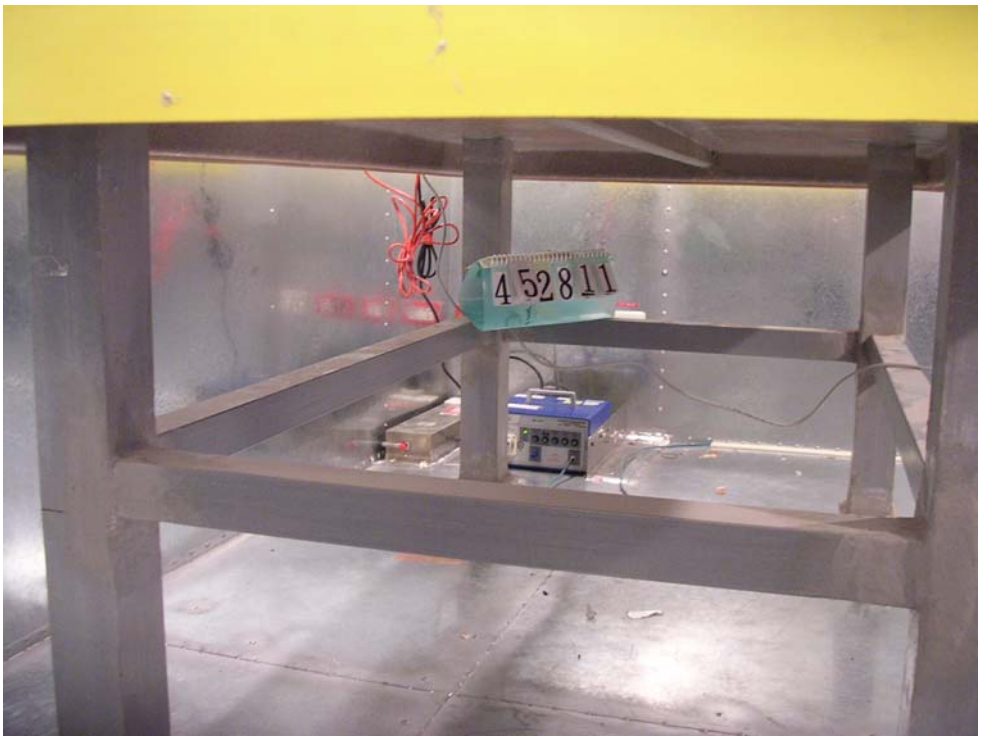
Mode 2

FRONT VIEW



REAR VIEW

SIDE VIEW



5.6. Test of Spurious Radiated Emission

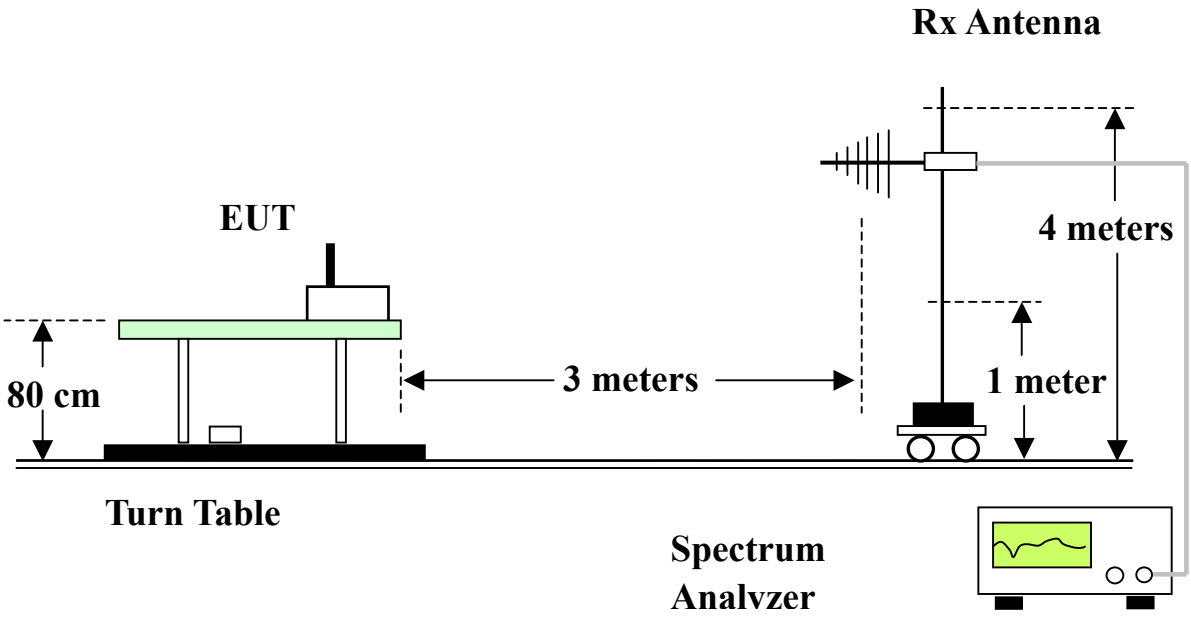
5.6.1. Measuring Instruments

Please reference item 8~19 in chapter 6 for the instruments used for testing.

5.6.2. Test Procedures

a) Configure the EUT according to ANSI C63.4.
b) The EUT was placed on the top of the turn table 0.8 meter above ground.
c) The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turn table.
d) Power on the EUT and all the supporting units.
e) The turn table was rotated by 360 degrees to determine the position of the highest radiation.
f) The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization.
g) For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turn table was rotated (from 0 degree to 360 degrees) to find the maximum reading.
h) Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
i) For emission above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
j) If the emission level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz and average method for above the 1GHz. the reported.
k) For testing above 1GHz, the emission level of the EUT in peak mode was 20dB higher than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

5.6.3. Test Setup Layout



5.6.4. Test Results and Limit

Note:
Emission level (dBuV/m) = 20 log Emission level (uV/m)
Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

Test Mode	Mode 1 CH11	**Temperature**	25 deg. C	**Tested By**	Steve Chen
Freq. Range	30MHz~1GHz	**Humidity**	64%		

(A) Polarization: Horizontal

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	82.190	26.00	-14.00	40.00	42.72	9.65	1.56	27.93	Peak	---	---
2	123.500	27.21	-16.29	43.50	42.22	10.86	1.98	27.85	Peak	---	---
3	143.900	26.52	-16.98	43.50	40.22	11.99	2.12	27.81	Peak	---	---
1	320.000	33.43	-12.57	46.00	43.26	14.37	3.20	27.40	Peak	---	---
2	576.000	35.26	-10.74	46.00	41.41	18.41	4.22	28.78	Peak	---	---
3	938.400	37.58	-8.42	46.00	38.73	21.66	5.45	28.26	Peak	100	53

(B) Polarization: Vertical

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	60.260	31.13	-8.87	40.00	47.66	10.15	1.30	27.98	Peak	---	---
2	79.470	26.78	-13.22	40.00	43.73	9.45	1.54	27.94	Peak	---	---
3	144.750	32.14	-11.36	43.50	45.77	12.04	2.14	27.81	Peak	---	---
1	320.000	32.20	-13.80	46.00	42.03	14.37	3.20	27.40	Peak	---	---
2	899.200	30.14	-15.86	46.00	32.02	21.08	5.34	28.30	Peak	---	---
3	938.400	37.48	-8.52	46.00	38.63	21.66	5.45	28.26	Peak	---	---

Test Mode	Mode 2 CH11	Temperature	25 deg. C	Tested By	Steve Chen
Freq. Range	30MHz~1GHz	Humidity	64%		

(A) Polarization: Horizontal

		Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	!	106.500	40.41	-3.09	43.50	56.24	10.22	1.84	27.89	QP	152	169
2	!	111.430	40.31	-3.19	43.50	55.85	10.46	1.88	27.88	QP	---	---
3	!	198.300	39.19	-4.31	43.50	49.57	14.76	2.56	27.70	QP	---	---
1		265.600	37.03	-8.97	46.00	49.04	12.50	2.93	27.44	QP	---	---
2		829.600	37.83	-8.17	46.00	40.61	20.67	5.20	28.65	QP	---	---
3		996.000	38.49	-15.51	54.00	38.81	22.20	5.68	28.20	QP	---	---

(B) Polarization: Vertical

		Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	!	33.910	35.80	-4.20	40.00	49.57	13.27	1.00	28.04	QP	---	---
2	!	106.500	40.17	-3.33	43.50	56.00	10.22	1.84	27.89	QP	---	---
3	!	112.620	37.86	-5.64	43.50	53.36	10.48	1.89	27.87	QP	---	---
1		551.200	33.68	-12.32	46.00	40.48	17.80	4.15	28.75	QP	---	---
2		666.400	36.21	-9.79	46.00	41.17	19.12	4.65	28.73	QP	---	---
3		1000.000	39.59	-14.41	54.00	39.87	22.23	5.69	28.20	QP	---	---

Test Mode	Mode 1 CH01	Temperature	25 deg. C	Tested By	Steve Chen
Freq. Range	1GHz~25GHz	Humidity	64%		

(A) Polarization: Horizontal

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1564.000	38.06	-15.94	54.00	51.73	25.49	1.49	40.65	Average	---	---
2	1590.000	38.97	-15.03	54.00	52.54	25.59	1.50	40.66	Average	---	---
3	2372.000	45.95	-8.05	54.00	57.29	28.09	1.70	41.13	Average	---	---
1	4822.000	47.23	-6.77	54.00	53.90	33.23	2.47	42.37	Average	---	---

(B) Polarization: Vertical

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1588.000	43.97	-10.03	54.00	57.55	25.58	1.50	40.66	Average	---	---
2	2324.000	57.70	-16.30	74.00	69.11	27.97	1.72	41.10	Peak	---	---
3	2324.000	47.89	-6.11	54.00	59.30	27.97	1.72	41.10	Average	---	---
4	2508.000	47.94	-6.06	54.00	58.81	28.47	1.86	41.20	Average	102	151
1	4822.000	51.84	-22.16	74.00	58.51	33.23	2.47	42.37	Peak	---	---
2	4822.000	47.51	-6.49	54.00	54.18	33.23	2.47	42.37	Average	---	---

Test Mode	Mode 1 CH06	Temperature	25 deg. C	Tested By	Steve Chen
Freq. Range	1GHz~25GHz	Humidity	64%		

(A) Polarization: Horizontal

1	1196.000	37.75	-16.25	54.00	52.46	24.38	1.22	40.31	Average	---	---
2	2372.000	45.05	-8.95	54.00	56.39	28.09	1.70	41.13	Average	---	---
3	2508.000	40.51	-13.49	54.00	51.38	28.47	1.86	41.20	Average	---	---
1	4876.000	45.25	-8.75	54.00	51.82	33.35	2.52	42.44	Average	---	---

(B) Polarization: Vertical

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1588.000	44.00	-10.00	54.00	57.58	25.58	1.50	40.66	Average	---	---
2	2348.000	57.40	-16.60	74.00	68.81	28.03	1.68	41.12	Peak	---	---
3	2348.000	44.75	-9.25	54.00	56.16	28.03	1.68	41.12	Average	---	---
4	2526.000	49.68	-4.32	54.00	60.48	28.53	1.87	41.20	Average	---	---
1	4876.000	50.65	-3.35	54.00	57.22	33.35	2.52	42.44	Average	105	216

Test Mode	Mode 1 CH11	**Temperature**	25 deg. C	**Tested By**	Steve Chen
Freq. Range	1GHz~25GHz	**Humidity**	64%		

(A) Polarization: Horizontal

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1564.000	38.82	-15.18	54.00	52.49	25.49	1.49	40.65	Average	---	---
2	2310.000	45.69	-8.31	54.00	57.10	27.93	1.75	41.09	Average	---	---
3	2508.000	41.17	-12.83	54.00	52.04	28.47	1.86	41.20	Average	---	---
1	4924.000	45.26	-8.74	54.00	51.84	33.46	2.47	42.51	Average	---	---

(B) Polarization: Vertical

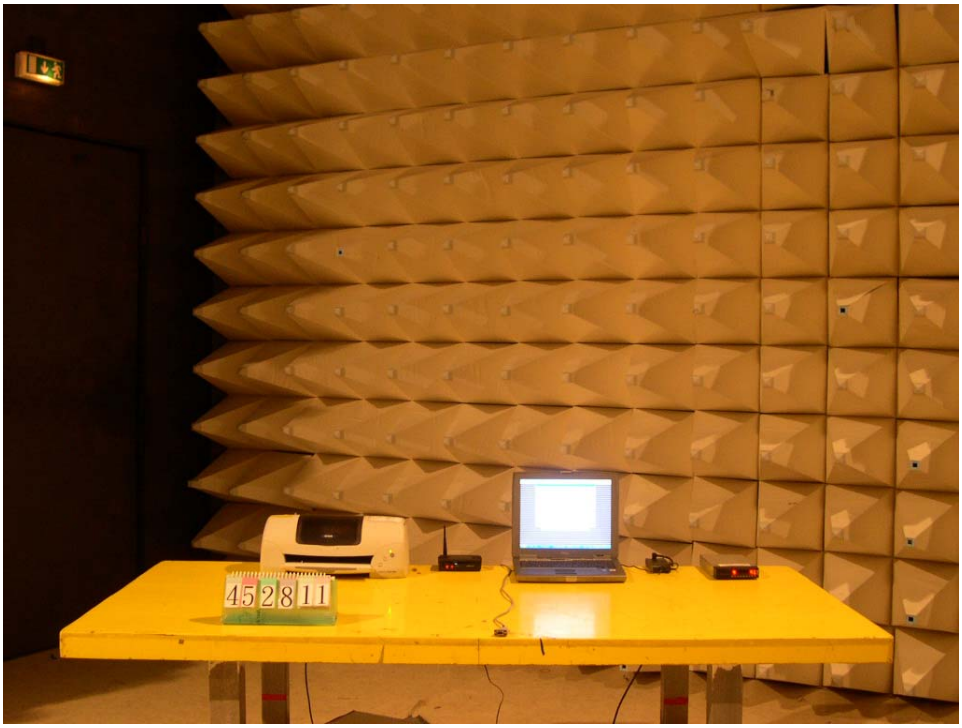
	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1596.000	43.58	-10.42	54.00	57.12	25.61	1.51	40.66	Average	---	---
2	2342.000	56.47	-17.53	74.00	67.88	28.01	1.69	41.11	Peak	---	---
3	2342.000	44.72	-9.28	54.00	56.13	28.01	1.69	41.11	Average	---	---
4	2510.000	49.17	-4.83	54.00	60.04	28.47	1.86	41.20	Average	107	218
1	4924.000	48.21	-5.79	54.00	54.79	33.46	2.47	42.51	Average	---	---

5.6.5. Photographs of Radiated Emission Test Configuration

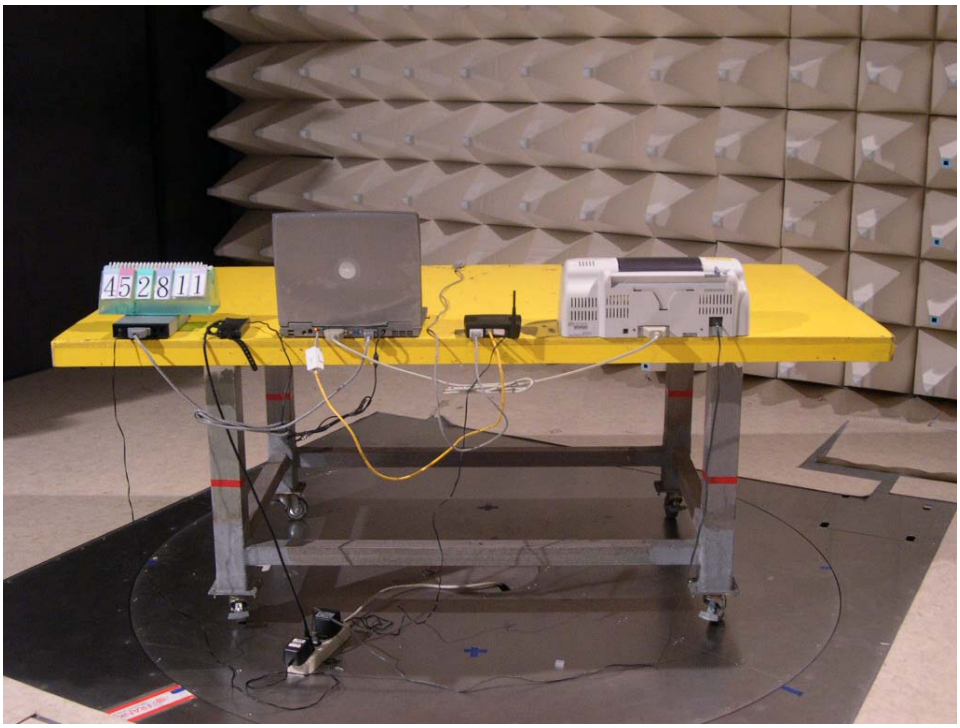
- The photographs show the configuration that generates the maximum emission.

Mode 1

FRONT VIEW



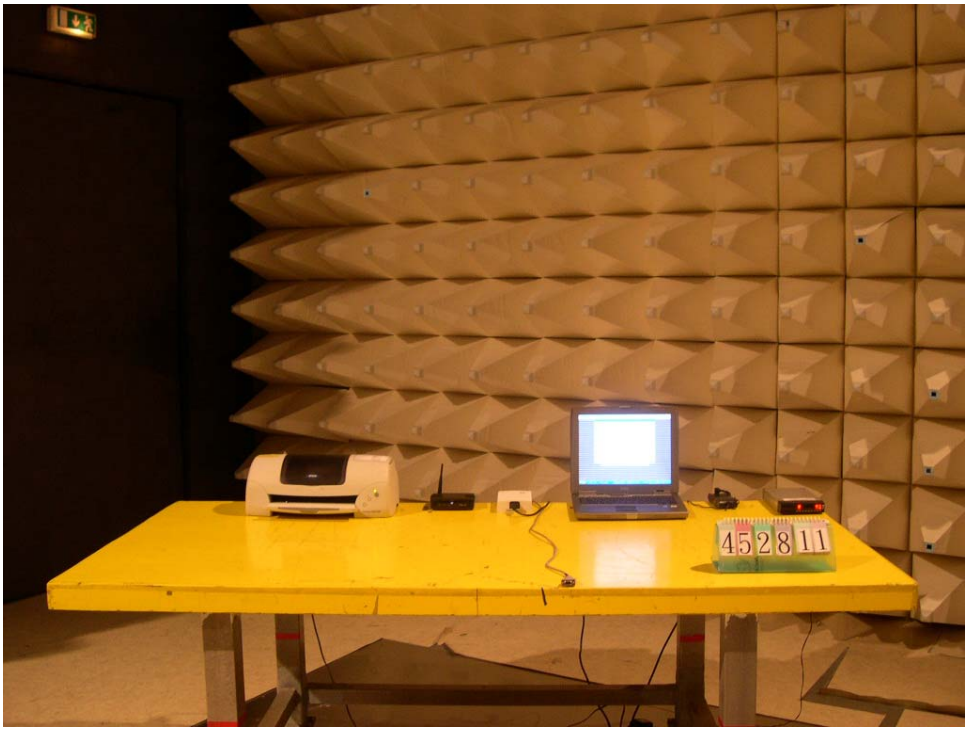
REAR VIEW



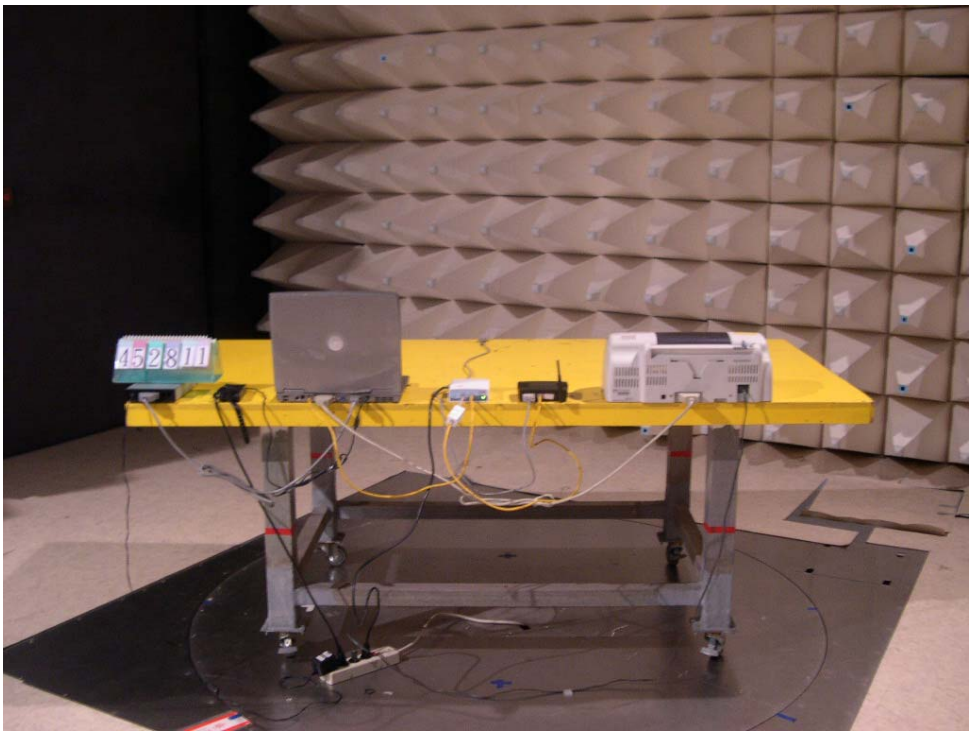
- The photographs show the configuration that generates the maximum emission.

Mode 2

FRONT VIEW



REAR VIEW



5.7. Antenna Requirements

5.7.1. Standard Applicable

47 CFR Part15 Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

47 CFR Part15 Section 15.247 (b):

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

If the intentional radiator is used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

5.7.2. Antenna Connected Construction

The maximum antenna gain used in this product is dipole antenna, and USL is the antenna connector in this equipment.

6. List of Measuring Equipments Used

Items	Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
1	EMC Receiver	R&S	ESCS 30	100174	9 KHz – 2.75 GHz	Feb. 16, 2004	Conduction (CO04-HY)
2	LISN	MessTec	NNB-2/16Z	2001/004	9 KHz – 30 MHz	Jun. 09, 2004	Conduction (CO04-HY)
3	LISN (Support Unit)	MessTec	NNB-2/16Z	99041	9 KHz – 30 MHz	Apr. 27, 2004	Conduction (CO04-HY)
4	EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	Conduction (CO04-HY)
5	RF Cable-CON	UTIFLEX	3102-26886-4	CB044	9KHz~30MHz	Apr. 21, 2004	Conduction (CO04-HY)
6	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz~1GHz 3m	Jun. 20, 2004	Radiation (03CH03-HY)
7	Spectrum analyzer	R&S	FSP40	100004	9KHZ~40GHz	Aug. 23, 2003	Radiation (03CH03-HY)
8	Amplifier	HP	8447D	2944A09072	100KHz – 1.3GHz	Nov. 05, 2003	Radiation (03CH03-HY)
9	Biconical Antenna	SCHWARZBECK	VHBB 9124	301	30MHz –200MHz	Jul. 24, 2003	Radiation (03CH03-HY)
10	Log Antenna	SCHWARZBECK	VUSLP 9111	221	200MHz -1GHz	Jul. 24, 2003	Radiation (03CH03-HY)
11	RF Cable-R03m	Jye Bao	RG142	CB021	30MHz~1GHz	Dec. 03, 2003	Radiation (03CH03-HY)
12	Amplifier	MITEQ	AFS44	879981	100MHz~26.5GHz	Jul. 23, 2003	Radiation (03CH03-HY)
13	Horn Antenna	EMCO	3115	6821	1GHz – 18GHz	Sep. 12, 2003	Radiation (03CH03-HY)
14	Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	Radiation (03CH03-HY)
15	Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
16	Horn Antenna	Schwarzbeck	BBHA9170	154	15GHz~40GHz	Jun. 01, 2004	Radiation (03CH03-HY)
17	RF Cable-HIGH	Jye Bao	RG142	CB030-HIGH	1GHz~29.5GHz	Dec. 05, 2003	Radiation (03CH03-HY)

※ Calibration Interval of instruments listed above is one year.

Items	Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
18	Spectrum analyzer	R&S	FSP7	838858/014	9KHZ~7GHZ	Sep. 03, 2003	Conducted (TH01-HY)
19	Power meter	R&S	NRVS	100967	DC~40GHz	Mar. 02, 2004	Conducted (TH01-HY)
20	Power sensor	R&S	NRV-Z51	100666	DC~40GHz	Mar 18, 2004	Conducted (TH01-HY)
21	Power Sensor	R&S	NRV-Z32	836953/060	30MHz-6GHz	Mar. 11, 2004	Conducted (TH01-HY)
22	AC power source	G.W.	GPC-6030D	C671845	DC 1V~60V	Nov. 06, 2003	Conducted (TH01-HY)
23	Temp. and Humidity Chamber	KSON	THS-C3L	612	N/A	Oct. 01, 2003	Conducted (TH01-HY)
24	RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz~7GHz	Jan. 01, 2004	Conducted (TH01-HY)
25	RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz~1GHz	Jan. 01, 2004	Conducted (TH01-HY)

※ Calibration Interval of instruments listed above is one year.