



FCC ID: Q8604010
Issued on Apr. 05, 2004

Report No.: F431112

FCC TEST REPORT

CATEGORY : Portable End Product

PRODUCT NAME : MP3 Player

FCC ID. : Q8604010

FILING TYPE : Certification

BRAND NAME : Marasst

MODEL NAME : MP Air 3000

APPLICANT : Marasst INC.

8F, No. 49, Sec. 3, Min-Sheng E. Rd., 104 Taipei, Taiwan

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.



1190
ILAC MRA

NVLAP®

Lab Code: 200079-0

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History of this test report

No additional attachment.

Additional attachment were issued as following record:



1. General Description of Equipment under Test

1.1. Applicant

Marasst INC.

8F, No. 49, Sec. 3, Min-Sheng E. Rd., 104 Taipei, Taiwan

1.2. Manufacturer

Same as 1.1

1.3. Basic Description of Equipment under Test

This product is a MP3 wireless player. The technical data has been listed on section "Feature of Equipment under Test". It can be used to download the information from computer via the USB port. It can also play the MP3 music and transmit wirelessly to the FM radio receiver. Also, via the headphone socket, you can hear the FM radio broadcasting.

1.4. Features of Equipment under Test

ITEMS	DECRIPION
Type of Modulation	FM
Carrier Frequencies	87.7MHz / 88.1MHz / 88.5MHz / 88.9MHz
Channel Bandwidth	50kHz
Function Type	Transceiver
Power Rating (DC/AC, Voltage)	1.5 VDC



2. Test Configuration of the Equipment under Test

2.1. Description of the Test

- a. During testing, the equipment was placed on a non-conducting support.
- b. The following test modes were performed:
 - Mode 1. 88.1 MHz
 - Mode 2. 88.9 MHz
- c. The EUT has been programmed to continuously transmit or receive during testing. The used peripherals as well as the configuration fulfill the requirements of ANSI C63.4:2001.
- d. The configuration is operated in a manner which tends to maximize its emission characteristics in a typical application.
- e. 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 1000 MHz



2.3. Description of Test Supporting Units

Support Unit 1. -- Personal Computer (COMPAQ)

FCC ID : N/A
Model No. : Evo D380mx
Power Supply Type : Switching
Power Cord : Non-Shielded
Serial No. : SP0040
Remark : This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 2. – Monitor (VIEWSONIC)

FCC ID : N/A
Model No. : VCDTS21553-3P
Power Supply Type : Switching
Power Cord : Non-Shielded
Serial No. : SP0049
Data Cable : Shielded, 1.7m
Remark : This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 3. -- PS/2 Keyboard (BTC)

FCC ID : N/A
Model No. : 9110
Serial No. : SP0054
Data Cable : Shielded, 1.7m
Remark : This support device was tested to comply with FCC standards and authorized under a declaration of conformity.



Support Unit 4. -- PS/2 Mouse (FujiFilm)

FCC ID : HCA21421325
Model No. : M-S69
Serial No. : SP0041
Data Cable : Shielded, 1.7m
Remark : This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 5. -- Printer (EPSON)

FCC ID : N/A
Model No. : STYLUS COLOR 680
Power Supply Type : Linear
Power Cord : Non-Shielded
Serial No. : SP0048
Data Cable : Shielded, 1.35m

Support Unit 6. -- Modem (ACEEX)

FCC ID : IFAXDM1414
Model No. : DM1414
Power Supply Type : Linear
Power Cord : Non-Shielded
Serial No. : SP0015
Data Cable : Shielded, 1.15m

Support Unit 7. – FM Radio (PANASONIC)

FCC ID : N/A
Model No. : PA-983
Power Supply Type : Linear
Power Cord : Non-Shielded
Serial No. : SP0015
Data Cable : Shielded, 1.15m

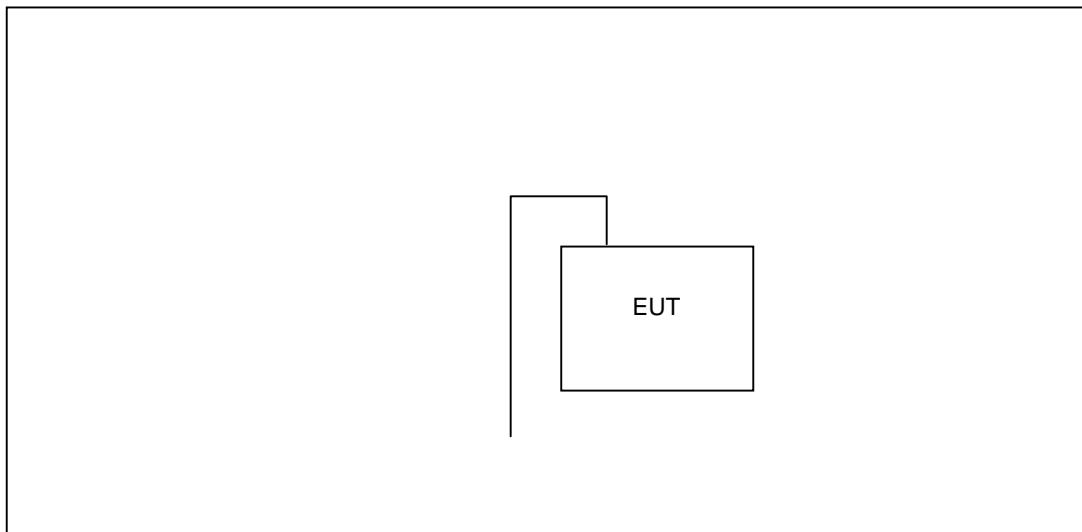


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2.4. Connection Diagram of Test System

MP3 Player (Wireless)



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2.5. Test Software

There are no software required in this test. The channel can be changed from the EUT. The continuously transmitting mode can be reached via the playing the MP3 music for a long time.



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. : CO01-HY, 03CH02-HY

3.2. Test Conditions

Normal Voltage : 120V/60Hz

Normal Temperature : 20

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 15.239)

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
5.2	15.239(b)	Peak and Average Power	Pass
5.5	15.107/15.207	AC Power Line Conducted Emission	Not applicable
5.6	15.239(a)	Bandwidth of the operating frequency	Pass
5.7	15.239(c)	Spurious Radiated Emission	Pass
5.8	15.203	Antenna Requirement	Pass



4.2. Peak and Average Power

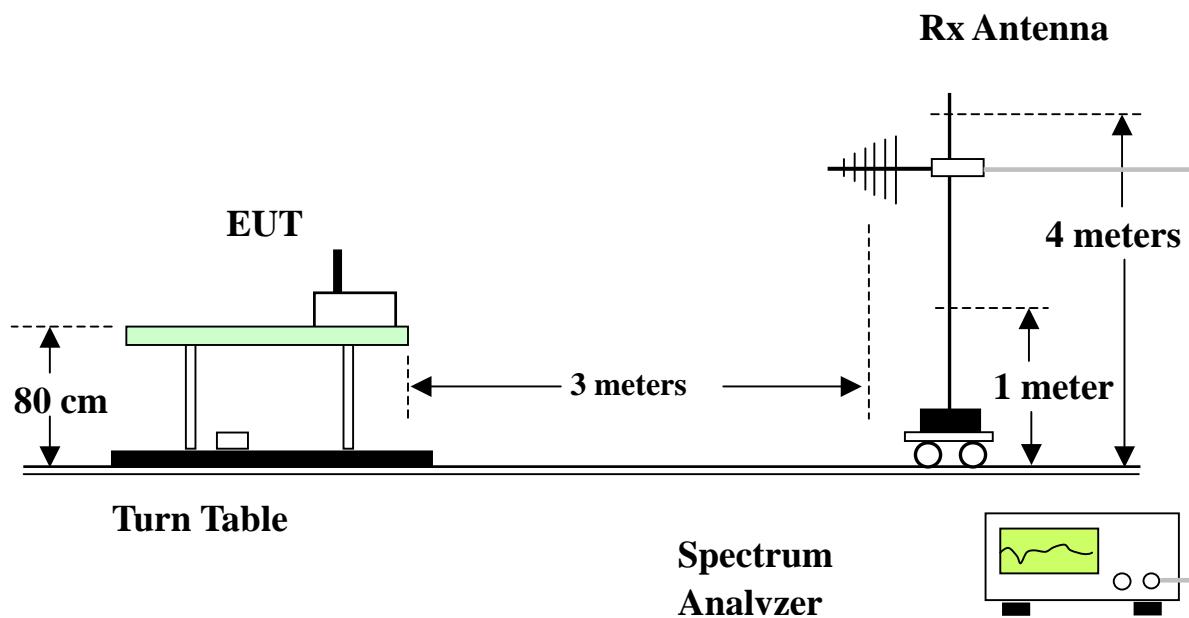
4.2.1. Measuring Instruments

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

4.2.2. 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 to the selected carrier and also power on 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 1 meter and 4 meters above ground to find the maximum carrier field strength of both horizontal and vertical polarization.

4.2.3. Test Setup Layout





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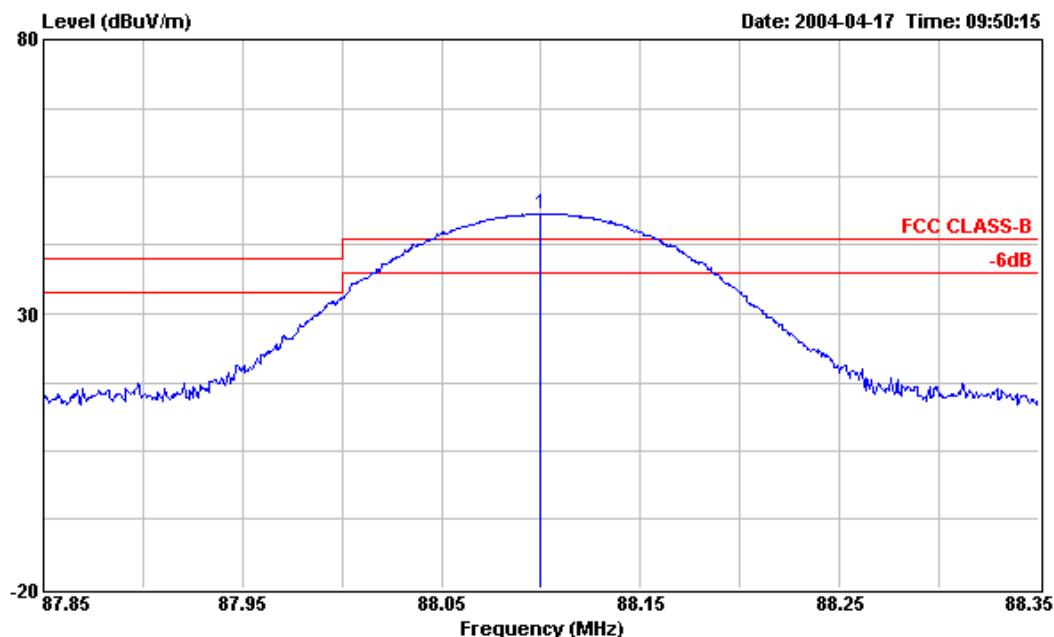
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4.2.4. Test and Limit

Standard	15.239 (b)	Limit	AV : 48dBuV/m
Freq. Range	Carrier frequencies		PK : 68 dBuV/m

4.2.5. Test Results

Polarization: Horizontal (88.1MHz)



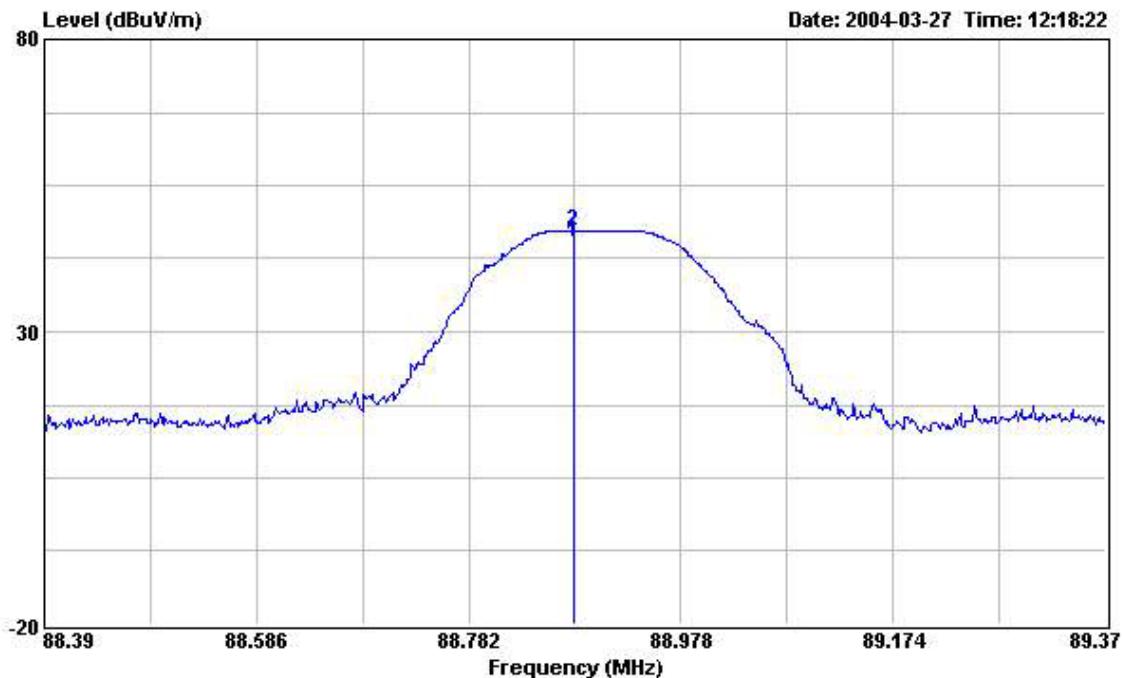
Freq	Level	Over Limit	Limit	Read Line	Probe Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
MHz	dBuV/m	dB	dBuV/m	dBuV	dB		dB	dB		cm	deg
1 X	88.100	48.14	4.64	43.50	66.20	9.40	0.46	27.92	Peak	---	---



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Polarization: Horizontal (88.9MHz)



Freq	Level	Over Limit		Read Line	Probe Factor	Cable Preamp		Remark	Ant Pos	Table Pos
		MHz	dBuV/m	dB	dBuV/m	dB	dB			
1	88.880	45.21	-----	-----	64.30	9.98	1.69	30.76 Average	400	76
2	88.880	47.30	-----	-----	66.39	9.98	1.69	30.76 Peak	400	76

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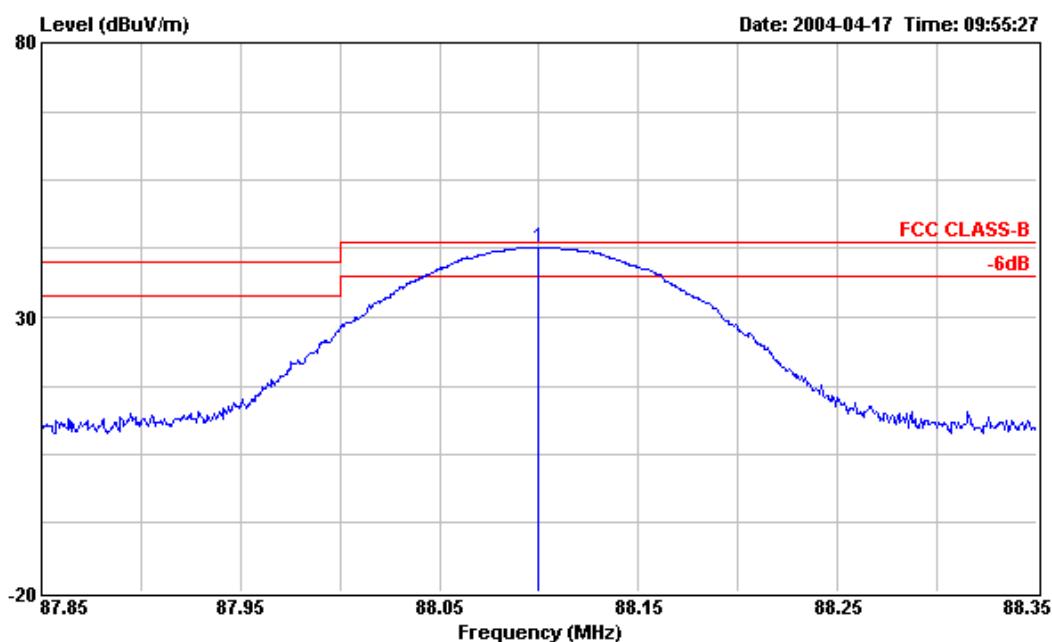
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Polarization: Vertical (88.1MHz)



Freq	Level	Over Limit	Limit	Read Line	Probe Level	Cable Factor	Preamp Loss Factor	Remark	Ant Pos	Table Pos
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1 !	88.100	42.66	-0.84	43.50	60.72	9.40	0.46	27.92 Peak	---	---

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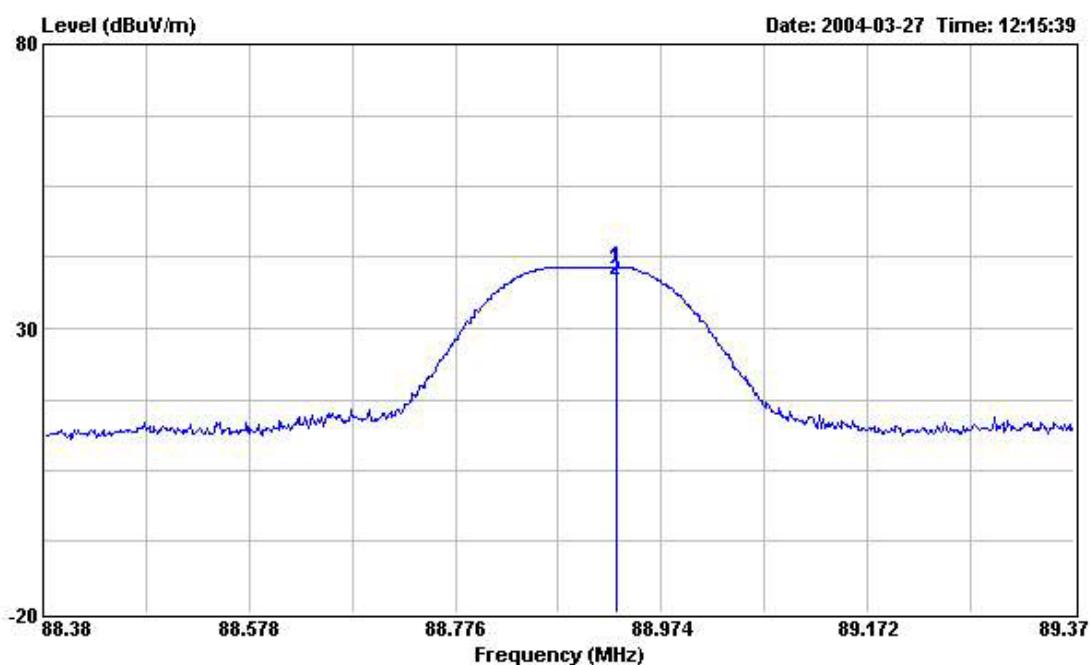
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Polarization: Vertical (88.9MHz)



Freq MHz	Level dBuV/m	Over Limit	Limit Line	Read Level dBuV	Probe Factor	Cable Loss dB	Preamp Factor	Remark	Ant Pos	Table Pos
		dB	dBuV/m	dB	dB	dB	dB		cm	deg
1	88.930	40.78	-----	59.87	9.98	1.69	30.76	Peak	400	360
2	88.930	38.51	-----	57.60	9.98	1.69	30.76	Average	400	360

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4.3. Bandwidth of the operating frequency

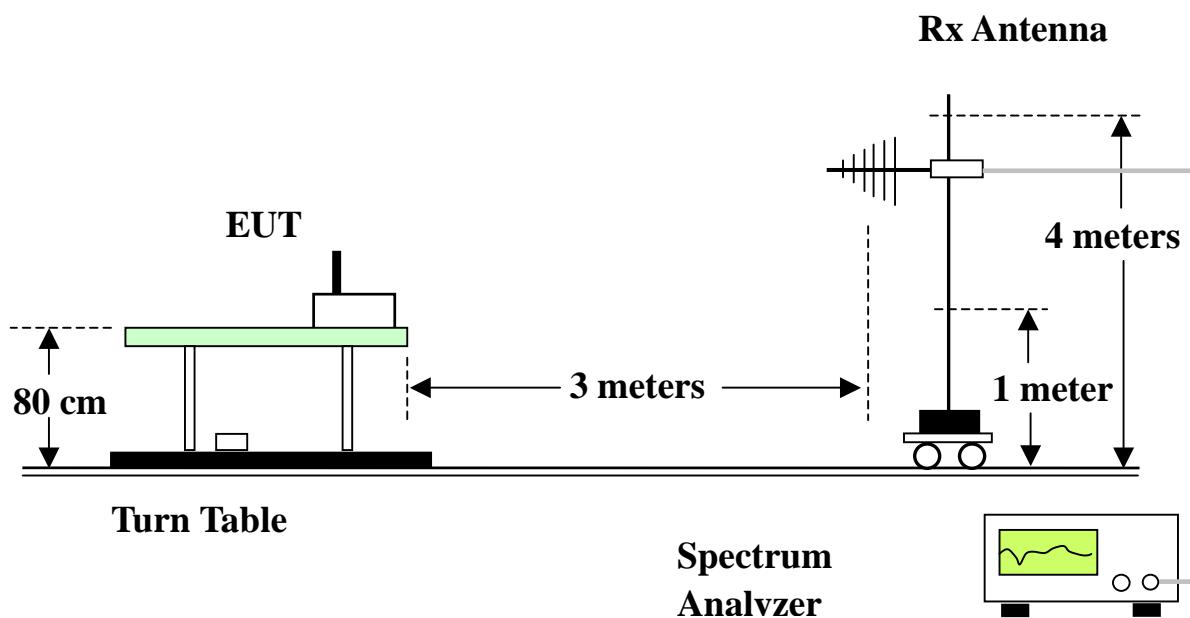
4.3.1. Measuring Instruments

Item 1~9 of the table on section 5.

4.3.2. 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) Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.

4.3.3. Test Setup Layout



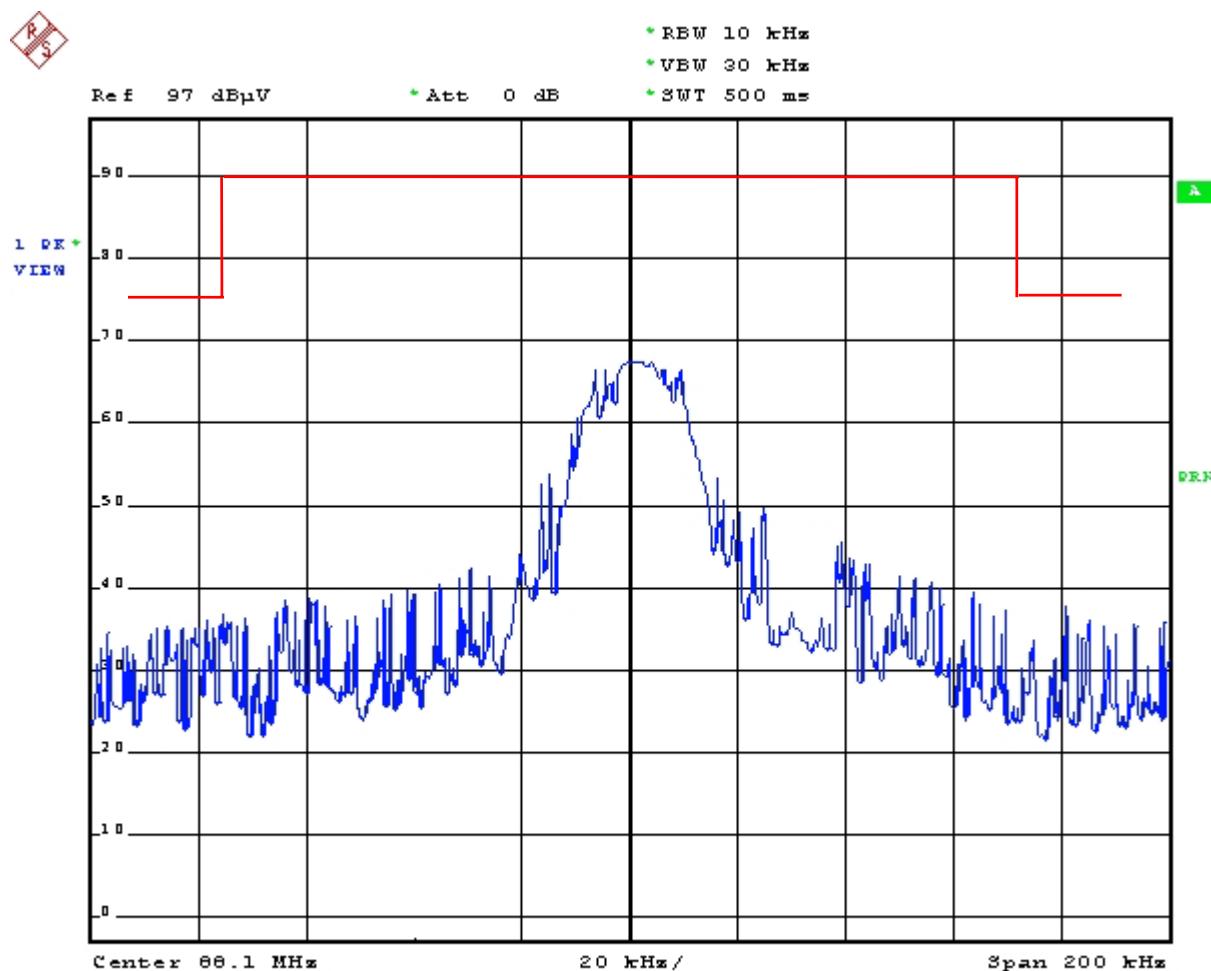


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4.3.4. Test Result

Polarization : 88.1MHz



Date: 19.APR.2004 21:23:10

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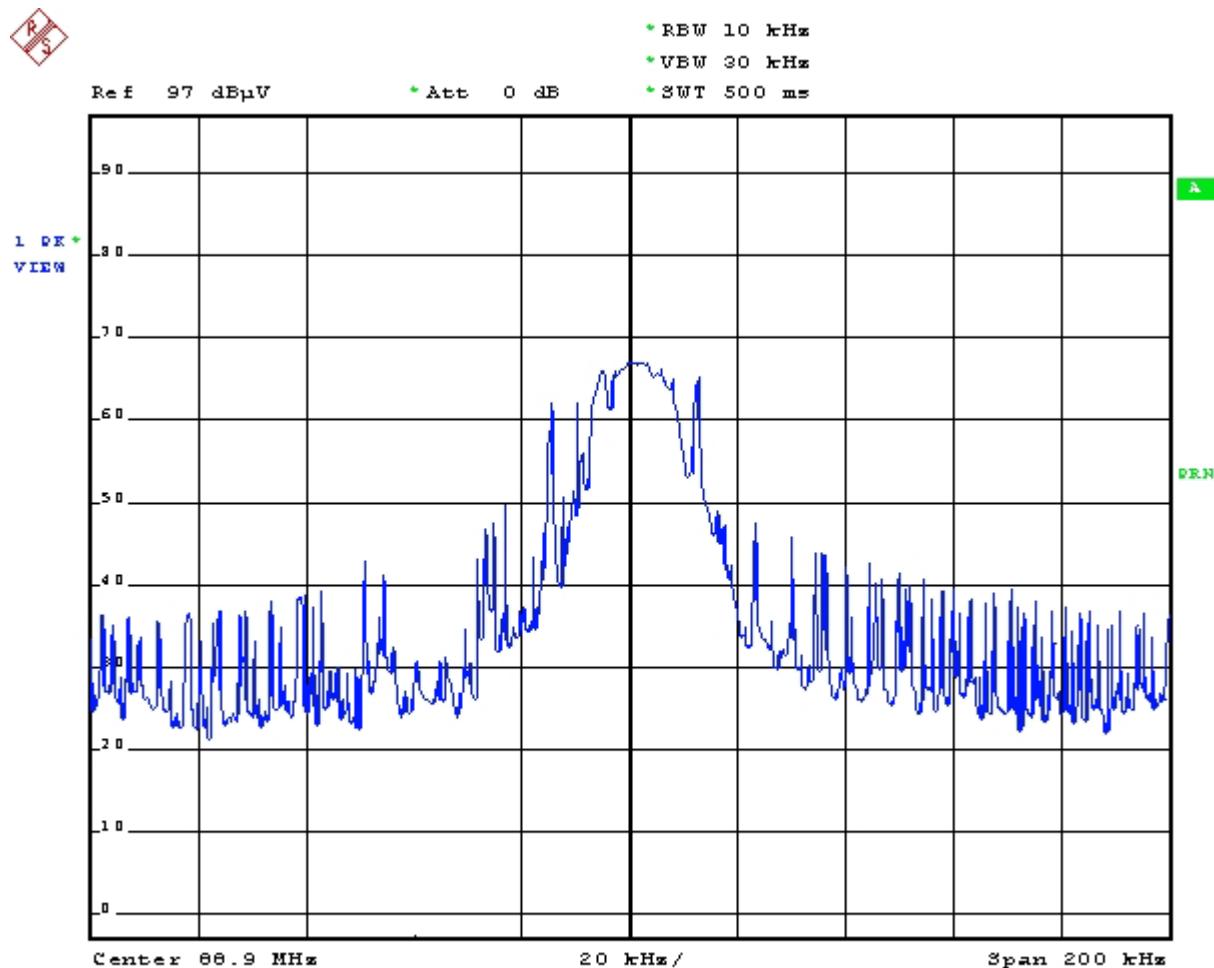
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Polarization : 88.9MHz



Date: 19.APR.2004 21:24:04

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4.4. Test of Spurious Radiated Emission

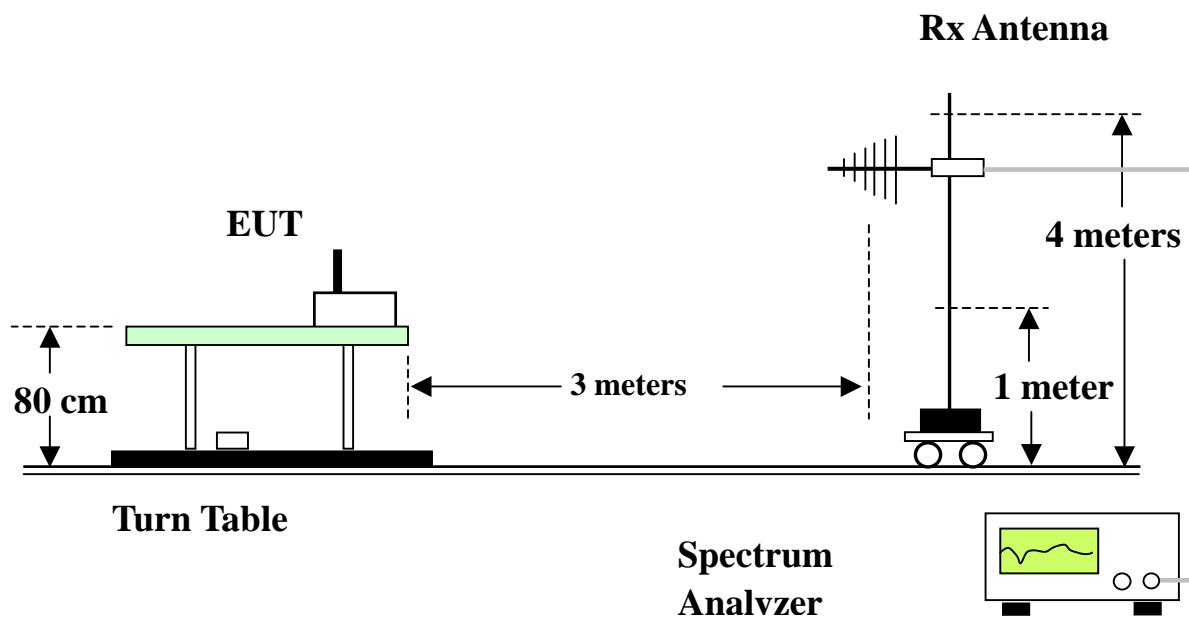
4.4.1. Measuring Instruments

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

4.4.2. Test Procedures

- g) Configure the EUT according to ANSI C63.4.
- h) The EUT was placed on the top of the turn table 0.8 meter above ground.
- i) 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.
- j) Power on the EUT and all the supporting units.
- k) The turn table was rotated by 360 degrees to determine the position of the highest radiation.
- l) 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.
- m) 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.
- n) Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- o) For emission above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
- p) 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.
- q) 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.

4.4.3. Test Setup Layout





4.4.4. Test Results and Limit

Note:

Emission level (dB_{uV}/m) = 20 log Emission level (uV/m)

Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

Test Mode	Mode 1 (88.1MHz)	Temperature	24.4deg. C	Tested By	Steve Chen
Freq. Range	30MHz~1GHz	Humidity	52 %		

(A) Polarization: Horizontal

Freq	Level	Over Limit		Read Line		Probe	Cable Preamp		Ant Pos	Table Pos
		Limit	Line	Level	Factor	Loss	Factor	Remark		
MHz	dB _{uV/m}	dB	dB _{uV/m}	dB _{uV}	dB	dB	dB	cm	deg	
1 X	88.140	47.93	4.43	43.50	65.99	9.40	0.46	27.92 Peak	---	---
1	243.200	29.05	-16.95	46.00	42.96	12.69	0.93	27.53 Peak	---	---
2	329.600	30.69	-15.31	46.00	42.27	14.82	1.05	27.45 Peak	---	---
3	896.800	34.24	-11.76	46.00	39.80	21.07	1.68	28.31 Peak	---	---

(B) Polarization: Vertical

Freq	Level	Over Limit		Read Line		Probe	Cable Preamp		Ant Pos	Table Pos
		Limit	Line	Level	Factor	Loss	Factor	Remark		
MHz	dB _{uV/m}	dB	dB _{uV/m}	dB _{uV}	dB	dB	dB	cm	deg	
1 !	88.140	42.54	-0.96	43.50	60.60	9.40	0.46	27.92 Peak	---	---
1	243.200	24.33	-21.67	46.00	38.24	12.69	0.93	27.53 Peak	---	---
2	384.800	22.48	-23.52	46.00	33.55	15.49	1.16	27.72 Peak	---	---
3	503.200	20.81	-25.19	46.00	30.76	17.38	1.37	28.70 Peak	---	---



Test Mode	Mode 2 (88.9MHz)	Temperature	24.4 deg. C	Tested By	Steve Chen
Freq. Range	30MHz~1GHz	Humidity	52%		

(A) Polarization: Horizontal

Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Ant	Table
		Line	Limit	Level	Factor	Loss	Factor		
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	Pos	Pos
1	124.500	27.08	-16.42	43.50	44.22	11.48	2.03	30.65	Peak
2	248.970	32.25	-13.75	46.00	46.46	13.32	2.92	30.45	Peak
3	256.530	34.00	-12.00	46.00	48.16	13.33	2.95	30.44	Peak
1	385.400	32.04	-13.96	46.00	43.36	15.53	3.55	30.40	Peak
2	416.900	32.06	-13.94	46.00	42.23	16.35	3.78	30.30	Peak
3	503.000	31.17	-14.83	46.00	38.51	18.28	4.18	29.80	Peak

(B) Polarization: Vertical

Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Ant	Table
		Line	Limit	Level	Factor	Loss	Factor		
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	Pos	Pos
1	244.380	23.45	-22.55	46.00	38.07	12.98	2.86	30.46	Peak
2	248.970	23.92	-22.08	46.00	38.13	13.32	2.92	30.45	Peak
3	256.530	26.74	-19.26	46.00	40.90	13.33	2.95	30.44	Peak
1	596.100	24.36	-21.64	46.00	30.05	19.56	4.45	29.70	Peak
2	638.100	24.70	-21.30	46.00	30.13	19.50	4.69	29.62	Peak
3	931.400	28.62	-17.38	46.00	29.55	21.90	6.07	28.90	Peak



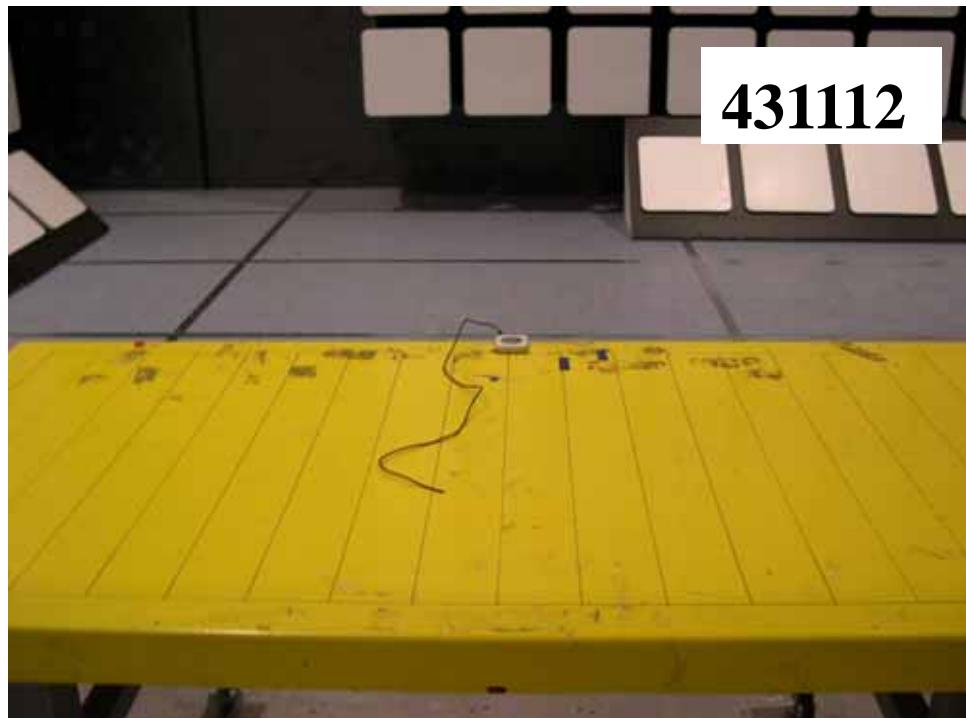
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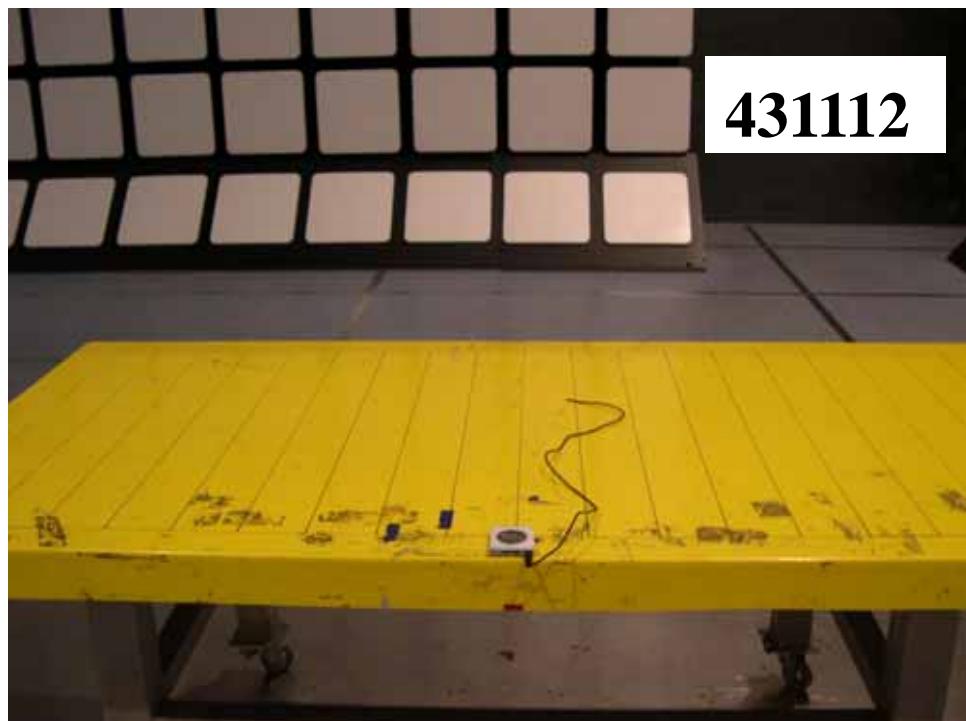
4.4.5. Photographs of Radiated Emission Test Configuration

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

FRONT VIEW



REAR VIEW





4.5. Antenna Requirements

4.5.1. 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.

4.5.2. Antenna Connected Construction

The antenna used in this product is wire antenna.



5. List of Measuring Equipments Used

Items	Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
1	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz~1GHz 3m	Jun. 14, 2003	Radiation (03CH02-HY)
2	Spectrum Analyzer	R&S	FSP7	838858/039	9KHz – 30GHz	Feb. 05, 2004	Radiation (03CH02-HY)
3	Receiver	SCHAFFNER	SCR 3501	416	9 KHz –1GHz	Feb. 26, 2004	Radiation (03CH02-HY)
4	Amplifier	ADVANTEST	BB525C	CH300001	9KHz – 3GHz	Nov. 21, 2003	Radiation (03CH02-HY)
5	Bilog Antenna	SCHAFFNER	CBL61128	2723	30MHz –2GHz	Dec. 03, 2003	Radiation (03CH02-HY)
6	Turn Table	HD	DS 420	420/649/00	0 ~ 360 degree	N/A	Radiation (03CH02-HY)
7	Antenna Mast	HD	MA 240	240/559/00	1 m - 4 m	N/A	Radiation (03CH02-HY)
8	RF Cable-R03m	Jye Bao	RG142	CB020	30MHz~1GHz	Dec. 02, 2003	Radiation (03CH02-HY)
9	RF Cable-HIGH	Jye Bao	RG142	CB030-HIGH	1GHz~29.5GHz	Dec. 05, 2003	Radiation

Calibration Interval of instruments listed above is one year.