FCC TEST REPORT

for

47 CFR, Part 15, Subpart C

Equipment	:	Social Alarm
Model No.	:	WTRC
FCC ID	:	GX9WTRC
Filing Type	:	Certification
Applicant	:	**CLIMAX TECHNOLOGY CO., LTD.** 4F, No. 3, Alley 2, Lane 342, Fu-The 1 Road, His-Chin City, Taipei Hsien, Taiwan

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

Table of Contents

History of this test report

Original Report Issue Date: Nov. 28, 2003

■ No additional attachment.

□ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

Certificate No. : F382805

CERTIFICATE OF COMPLIANCE

for

47 CFR, Part 15, Subpart C

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Applicant	:	**CLIMAX TECHNOLOGY CO., LTD.** 4F, No. 3, Alley 2, Lane 342, Fu-The 1 Road, His-Chin City, Taipei Hsien, Taiwan

I **HEREBY** CERTIFY THAT:

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 - 2001** and the energy emitted by this equipment was ***passed*** both radiated and conducted emission limits. Testing was carried out on Nov. 24, 2003 at **SPORTON International Inc.** LAB.

Alex Chen
Manager

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

1. General Description of Equipment under Test

1.1. Applicant

CLIMAX TECHNOLOGY CO., LTD.
4F, No. 3, Alley 2, Lane 342, Fu-The 1 Road,
His-Chin City, Taipei Hsien, Taiwan

1.2. Manufacturer

Same as 1.1.

1.3. Basic Description of Equipment under Test

Equipment	: Social Alarm
Model No.	: WTRC
FCC ID	: GX9WTRC
Trade Name	: CLIMAX
Power Supply Type	: From Battery 3V
AC Power Cord	: N/A

1.4. Feature of Equipment under Test

- Frequency: 433.92MHz
- Demodulation: ASK
- Encoding: PWM
- Baud Rate: 1K pps

2. Test Configuration of Equipment under Test

2.1. Test Manner

a. The EUT has been associated with 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. The complete test system included EUT for EMI test.
c. The following test modes were performed:
   Mode 1: X axes
   Mode 2: Y axes
   Mode 3: Z axes
d. Frequency range investigated: radiation 30 MHz to 5000MHz.
e. Pursuant to 15.231(c) of Part 15. Subpart C, the bandwidth of the emission at the 20dB point shall be no wider than 0.25% of the center frequency for EUT.
   The carrier frequency of EUT is 433.92MHz
   433.92MHz * 0.25% = 1084.8kHz
   The test result is 26.4kHz (as shown in section 2.4 of this test report), which is less than 1084.8kHz. The EUT meet the 20dB point bandwidth requirement.

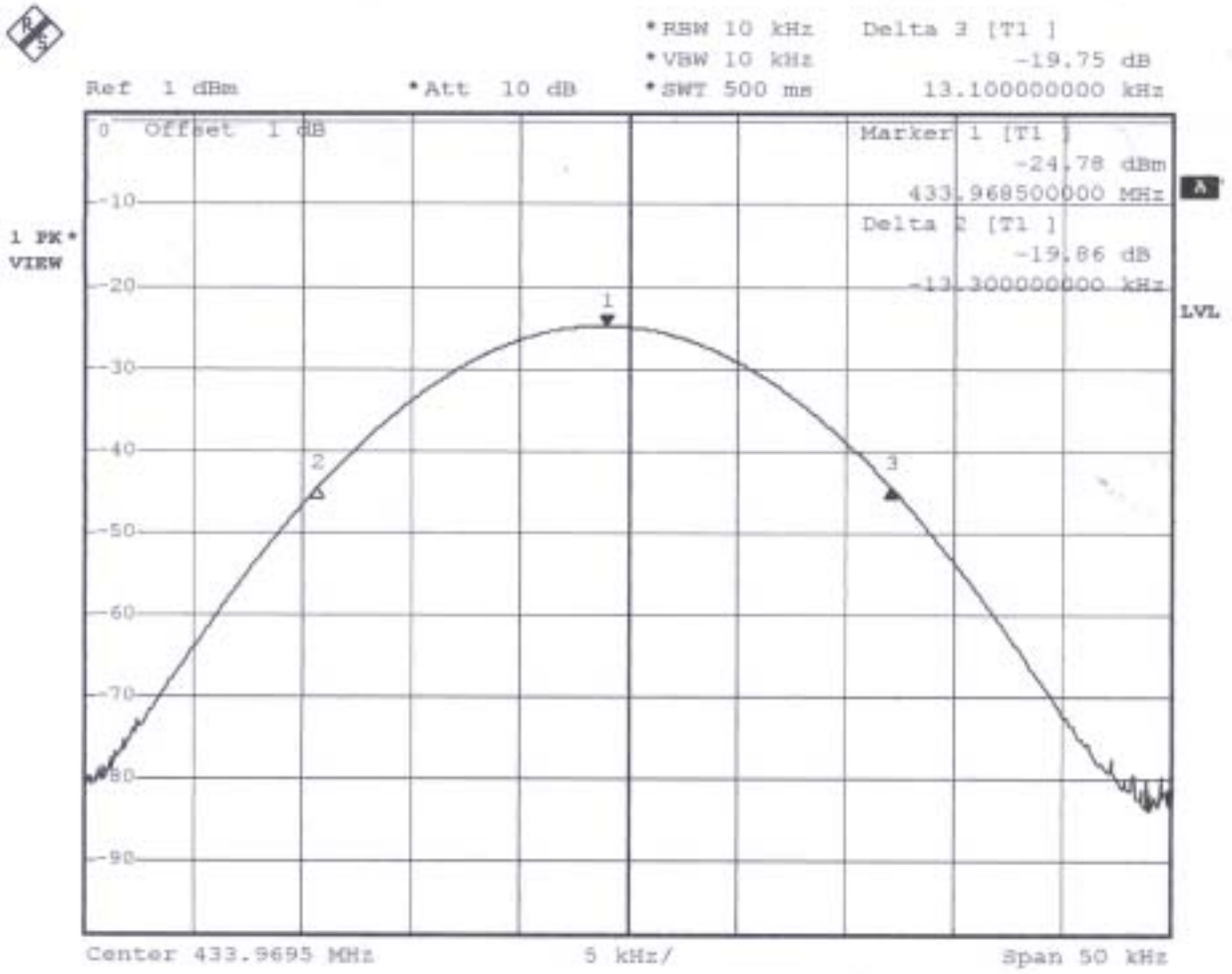
2.2. Description of Test System

The EUT was tested alone. No support device is needed for testing.

2.3. Connection Diagram of Test System

EUT

2.4. A plot shows the EUT meet the requirement of 15.231(c)



a. Use the Radiated method
b. Set RBW of spectrum analyzer to 100KHz and VBW to 100KHz.
c. The 20 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20 dB.
d. 20dB bandwidth= (Delta 3)－(Delta 2)= 26.4kHz

3. Test Software

No test software was used during testing.

4. General Information of Test

4.1. Test Facility

Test Site Location : No. 52, Hwa Ya 1St Road, Hwa Ya Technology Park,
Kwei-Shan Hsiang, TaoYuan Hsien, Taiwan, R.O.C.
TEL : 886-3-3273456
FAX : 886-3-3180055

Test Site No. : 03CH03-HY

4.2. Test Voltage

DC 3V

4.3. Standard for Methods of Measurement

ANSI C63.4-2001

4.4. Test in Compliance with

FCC Part 15, Subpart C 15.231

4.5. Frequency Range Investigated

Radiation: from 30 MHz to 5000 MHz

4.6. Test Distance

The test distance of radiated emission from antenna to EUT is 3 M.

5. Test of Conducted Powerline

The power is from Battery.

Conduction Powerline test is not applicable for this EUT.

6. Test of Radiated Emission

Radiated emissions from 30 MHz to 5000 MHz were measured with a bandwidth of 120 kHz for 30MHz to 1GHz and 1MHz for above 1GHz according to the methods defines in ANSI C63.4-2001. The EUT was placed on a nonmetallic stand, 0.8 meter above the ground plane, as shown in section 6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

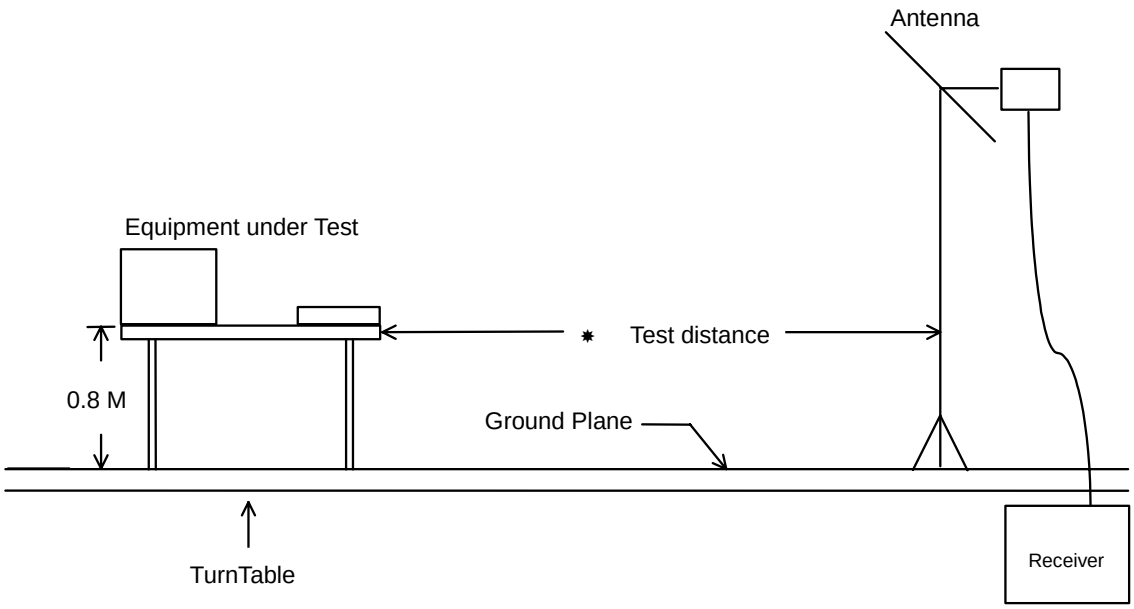
6.1. Major Measuring Instruments

• Amplifier	(HP 8447D)
RF Gain	30 dB
Signal Input	100 KHz to 1.3 GHz
• Amplifier	(MITEQ AFS44)
RF Gain	40 dB
Signal Input	100 MHz to 26.5 GHz
• Spectrum analyzer	(R&S FSP40)
Attenuation	10 dB
Start Frequency	1 GHz
Stop Frequency	5 GHz
Resolution Bandwidth	1 MHz
Video Bandwidth	1 MHz
Signal Input	9 KHz to 40 GHz
• Test Receiver	(SCHAFFNER SCR3501)
Resolution Bandwidth	120 KHz
Frequency Band	9 K – 1 GHz
Quasi-Peak Detector	ON for Quasi-Peak Mode
	OFF for Peak Mode

6.2. Test Procedures

a. The EUT was placed on a rotatable table top 0.8 meter above ground.
b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
c. The table was rotated 360 degrees to determine the position of the highest radiation.
d. The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
f. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
g. If the emission level of the EUT in peak mode was 3 dB lower than the 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 and reported.
h. For testing above 1GHz, the emission level of the EUT in peak mode was more 20dB lower 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.

6.3. Typical Test Setup Layout of Radiated Emission



6.4. Test Result of Radiated Emission

6.4.1. Test Mode: Mode 1

- Test Distance: 3 M
- Temperature: 27°C
- Relative Humidity: 63 %
- Test Date: Nov. 24, 2003
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ The test was passed at the minimum margin that marked by the frame in the following test record

- Spurious Emissions

```
Site       : 03CH03-HY
Condition  : 3m 03CH03-MAT HORIZONTAL
EUT        : Social Alarm
Power      : DC 3V
MODEL      :
MEMO       : TX
MEMO       : X
           : F382805
```

	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	36.210	19.42	-20.58	40.00	34.02	12.38	1.05	28.03	Peak	---	---
2	64.290	13.21	-26.79	40.00	34.99	4.84	1.35	27.97	Peak	---	---
3	124.770	15.30	-28.22	43.52	30.96	10.25	1.94	27.85	Peak	---	---

```
Site       : 03CH03-HY
Condition  : 3m 03CH03-MAT VERTICAL
EUT        : Social Alarm
Power      : DC 3V
MODEL      :
MEMO       : TX
MEMO       : X
           : F382805
```

	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	38.370	24.06	-15.94	40.00	39.49	11.53	1.07	28.03	Peak	---	---
2	62.940	24.12	-15.88	40.00	45.84	4.94	1.31	27.97	Peak	100	120
3	86.970	22.10	-17.90	40.00	40.51	8.10	1.42	27.93	Peak	---	---

- For 1GHz ~ 5GHz
  Remark: Frequency from 1000MHz to 5000MHz, the emission emitted by the EUT is too low to be measured

- Field strength of fundamental and harmonics

Frequency	Polarity	Antenna Factor	Cable Loss	Reading	Limits		Emission Level		Margin	Detect
(MHz)		(dB/m)	(dB)	(dBuV)	(dBuV/m)	(uV/m)	(dBuV/m)	(uV/m)	(dB)	Mode
433.970	H	15.11	3.64	43.36	80.83	11002.72	62.11	1274.97	-18.72	Peak
433.980	V	15.11	3.64	28.14	80.83	11002.72	46.89	221.05	-33.94	Peak
867.840	H/V						-			Peak
1301.760	H/V						-			Peak
1735.980	H	26.33	5.15	10.04	60.83	1100.27	41.52	119.12	-19.31	Peak
1735.940	V	26.32	5.15	10.27	60.83	1100.27	41.74	122.18	-19.09	Peak
2169.920	H	27.74	5.89	12.79	60.83	1100.27	46.42	209.41	-14.41	Peak
2169.710	V	27.74	5.89	13.83	60.83	1100.27	47.46	236.05	-13.37	Peak
2603.520	H/V						-			Peak
3037.440	H/V						-			Peak
3471.360	H/V						-			Peak
3905.280	H/V						-			Peak
4339.200	H/V						-			Peak

Remark " - ": Except for the above listed emission, the emission of the EUT is too low to be measured. "

Test Engineer: Steve

Steve Chen

6.4.2. Test Mode: Mode 2

- Test Distance: 3 M
- Temperature: 27°C
- Relative Humidity: 63 %
- Test Date: Nov. 24, 2003
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ The test was passed at the minimum margin that marked by the frame in the following test record

- Spurious Emissions

```
Site       : 03CH03-HY
Condition  : 3m 03CH03-MAT HORIZONTAL
EUT        : Social Alarm
Power      : DC 3V
MODEL      :
MEMO       : TX
MEMO       : Y
           : F382805
```

	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	30.000	16.75	-23.25	40.00	28.53	15.35	0.92	28.05	Peak	---	---
2	36.210	16.64	-23.36	40.00	31.24	12.38	1.05	28.03	Peak	---	---
3	65.100	11.76	-28.24	40.00	33.62	4.78	1.33	27.97	Peak	---	---
1	307.000	22.70	-23.24	46.02	35.43	11.59	3.10	27.34	Peak	---	---

```
Site       : 03CH03-HY
Condition  : 3m 03CH03-MAT VERTICAL
EUT        : Social Alarm
Power      : DC 3V
MODEL      :
MEMO       : TX
MEMO       : Y
           : F382805
```

	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	38.100	24.80	-15.20	40.00	40.12	11.64	1.07	28.03	Peak	100	123
2	62.940	21.96	-18.04	40.00	43.68	4.94	1.31	27.97	Peak	---	---
3	147.180	23.11	-20.41	43.52	39.05	9.65	2.21	27.80	Peak	---	---

➢ For 1GHz ~ 5GHz
Remark: Frequency from 1000MHz to 5000MHz, the emission emitted by the EUT is too low to be measured

- Field strength of fundamental and harmonics

Frequency	Polarity	Antenna Factor	Cable Loss	Reading	Limits		Emission Level		Margin	Detect
(MHz)		(dB/m)	(dB)	(dBuV)	(dBuV/m)	(uV/m)	(dBuV/m)	(uV/m)	(dB)	Mode
433.980	H	15.11	3.64	33.93	80.83	11002.72	52.68	430.53	-28.15	Peak
433.980	V	15.11	3.64	39.95	80.83	11002.72	58.70	860.99	-22.13	Peak
867.840	H						-			Peak
867.960	V	19.22	5.18	5.32	60.83	1100.27	29.72	30.62	-31.11	Peak
1301.760	H/V						-			Peak
1735.680	H						-			Peak
1735.840	V	26.33	5.15	10.47	60.83	1100.27	41.95	125.17	-18.88	Peak
2169.880	H	27.74	5.89	10.60	60.83	1100.27	44.23	162.74	-16.60	Peak
2169.870	V	27.74	5.89	15.82	60.83	1100.27	49.45	296.82	-11.38	Peak
2603.520	H/V						-			Peak
3037.440	H/V						-			Peak
3471.360	H/V						-			Peak
3905.280	H/V						-			Peak
4339.200	H/V						-			Peak

Remark " - ": Except for the above listed emission, the emission of the EUT is too low to be measured. "

Test Engineer: Steve

Steve Chen

6.4.3. Test Mode: Mode 3

- Test Distance: 3 M
- Temperature: 27°C
- Relative Humidity: 63 %
- Test Date: Nov. 24, 2003
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ The test was passed at the minimum margin that marked by the frame in the following test record

- Spurious Emissions

```
Site       : 03CH03-HY
Condition  : 3m 03CH03-MAT HORIZONTAL
EUT        : Social Alarm
Power      : DC 3V
MODEL      :
MEMO       : TX
MEMO       : Z
           : F382805
```

	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	36.210	17.36	-22.64	40.00	31.96	12.38	1.05	28.03	Peak	---	---
2	64.290	14.15	-25.85	40.00	35.93	4.84	1.35	27.97	Peak	---	---
3	296.490	18.88	-27.14	46.02	31.93	11.39	2.87	27.31	Peak	---	---

```
Site       : 03CH03-HY
Condition  : 3m 03CH03-MAT VERTICAL
EUT        : Social Alarm
Power      : DC 3V
MODEL      :
MEMO       : TX
MEMO       : Z
           : F382805
```

	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	38.370	22.96	-17.04	40.00	38.39	11.53	1.07	28.03	Peak	---	---
2	143.130	25.25	-18.27	43.52	40.92	9.99	2.15	27.81	Peak	---	---
3	197.940	30.58	-12.94	43.52	48.54	7.29	2.45	27.70	Peak	100	135

➢ For 1GHz ~ 5GHz
Remark: Frequency from 1000MHz to 5000MHz, the emission emitted by the EUT is too low to be measured

- Field strength of fundamental and harmonics

Frequency	Polarity	Antenna Factor	Cable Loss	Reading	Limits		Emission Level		Margin	Detect
(MHz)		(dB/m)	(dB)	(dBuV)	(dBuV/m)	(uV/m)	(dBuV/m)	(uV/m)	(dB)	Mode
433.980	H	15.11	3.64	34.10	80.83	11002.72	52.85	439.04	-27.98	Peak
433.980	V	15.11	3.64	40.76	80.83	11002.72	59.51	945.15	-21.32	Peak
867.840	H						-			Peak
867.950	V	19.22	5.18	4.65	60.83	1100.27	29.05	28.35	-31.78	Peak
1301.760	H/V						-			Peak
1735.680	H/V						-			Peak
2169.800	H	27.74	5.89	10.39	60.83	1100.27	44.02	158.85	-16.81	Peak
2169.910	V	27.74	5.89	13.69	60.83	1100.27	47.32	232.27	-13.51	Peak
2603.520	H/V						-			Peak
3037.440	H/V						-			Peak
3471.360	H/V						-			Peak
3905.280	H/V						-			Peak
4339.200	H/V						-			Peak

Remark " - ": Except for the above listed emission, the emission of the EUT is too low to be measured. "

Test Engineer: Steve

Steve Chen

7. EMI Suppression Component List

No EMI suppression components.

8. Antenna Factor & Cable Loss

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30	15.35	1.01
35	13.63	1.04
40	11.11	1.09
45	10.59	1.24
50	6.47	1.43
55	5.83	1.39
60	5.18	1.59
65	4.81	1.41
70	4.43	1.43
75	5.10	1.55
80	5.91	1.56
85	7.33	1.62
90	8.74	1.41
95	9.05	1.81
100	9.36	1.68
110	9.65	1.73
120	9.97	1.79
130	10.51	1.93
140	10.32	2.06
150	9.42	2.09
160	8.09	2.12
170	7.43	2.12
180	7.60	2.12
190	7.43	2.21
200	7.26	2.29
220	9.11	2.42
240	10.88	2.54
260	11.75	2.66
280	11.55	2.76
300	11.36	2.85
320	12.03	3.10
340	12.69	3.36
360	13.33	3.49
380	14.00	3.50
400	14.63	3.51
450	15.33	3.55
500	16.03	3.81
550	16.65	4.05
600	17.29	4.23
650	17.64	4.63
700	18.00	4.74
750	18.39	4.95
800	18.79	5.06
850	19.10	5.18
900	19.42	5.40
950	19.58	5.91
1000	19.75	5.58
1000	24.10	3.92
2000	27.40	5.66
3000	30.00	7.20
4000	32.60	9.36
5000	33.40	9.16

9. List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz~1GHz 3m	Jun. 21, 2003	Radiation (03CH03-HY)
Spectrum analyzer	R&S	FSP40	100004	9KHZ~40GHz	Aug. 07, 2003	Radiation (03CH03-HY)
Receiver	SCHAFFNER	SCR 3501	417	9 KHz –1GHz	Feb. 20, 2003	Radiation (03CH03-HY)
Amplifier	HP	8447D	2944A09072	100KHz – 1.3GHz	Nov. 05, 2003	Radiation (03CH03-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2687	30MHz –2GHz	Dec. 21, 2002	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz~1GHz	Jan. 02, 2003	Radiation (03CH03-HY)
Amplifier	MITEQ	AFS44	879981	100MHz~26.5GHz	Jul. 23, 2003	Radiation (03CH03-HY)
Horn Antenna	COM-POWER	AH-118	10094	1GHz – 18GHz	Apr. 10, 2003	Radiation (03CH03-HY)
Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170154	15GHz~40GHz	Jun. 02, 2003	Radiation (03CH03-HY)

※ Calibration Interval of instruments listed above is one year, except for Horn Antenna, BBHA9170.

※ Calibration Interval of Horn Antenna, BBHA9170, is three years.

10. Uncertainty of Test Site

Uncertainty of Radiated Emission Measurement

Contribution	Probability Distribution	3m
Antenna factor calibration	normal(k=2)	±1
cable loss calibration	normal(k=2)	±0.3
RCV/SPA specification	rectangular	±2
Antenna Directivity	rectangular	±3
Antenna Factor V.S. Height	rectangular	±2
Antenna Factor Interpolation for Frequency	rectangular	±0.25
site imperfection	rectangular	±2
Mismatch Receiver VSWR Γ1=0.09 Antenna VSWR Γ2=0.67 Uncertainty=20log(1-Γ1*Γ2)	U-shaped	±0.54
combined standard uncertainty Ue(y)	normal	±2.7
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	normal (k=2)	±5.4

$U=\sqrt{\{(1/2)^2+(0.3/2)^2+(2^2+0.5^2+2^2+0.25^2+2^2)/3+(0.54)^2/2\}}=2.2$ for 10m test distance

$U=\sqrt{\{(1/2)^2+(0.3/2)^2+(2^2+3^2+2^2+0.25^2+2^2)/3+(0.54)^2/2\}}=2.7$ for 3m test distance

Uncertainty of Conducted Emission Measurement

Contribution	Probability Distribution	150KHz – 30MHz
Cable and I/P attenuator calibration	normal(k=2)	±0.3
RCV/SPA specification	rectangular	±2
LISN coupling specification	rectangular	±1.5
Transducer factor frequency interpolation	rectangular	±0.2
Mismatch Receiver VSWR Γ1=0.09 LISN VSWR Γ2=0.33 Uncertainty=20log(1-Γ1*Γ2)	U-shaped	0.2
combined standard uncertainty Ue(y)	normal	±1.66
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	normal (k=2)	±3.32

$U=\sqrt{\{(0.3/2)^2+(2^2+1.5^2+0.2^2)/3+(0.2)^2/2\}}=1.66$