



FCC ID: OR7GKM700
Issued on Apr. 21, 2005

Report No.: FR532902

FCC TEST REPORT

CATEGORY : Portable
PRODUCT NAME : Wireless Keyboard
FCC ID. : OR7GKM700
FILING TYPE : Certification
BRAND NAME : TARGUS, GLOBLINK, TRUST, HAMA, SKYWAY, BELTTON,
MASTER CHOICE, CERATECH, CENTRIOS,
LEADERSHIP, CENTRIOS
MODEL NAME : GKM-700
APPLICANT : **Globlink Technology Inc.**
2Fl., 101 Rui-hu Street Nei-hu Taipei Taiwan
MANUFACTURER : The 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.



Lab Code: 200079-0

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255



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History of this test report

Original Report Issue Date: Apr. 21, 2005

Report No.: FR532902

☒ No additional attachment.

☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

CERTIFICATE OF COMPLIANCE

with

47 CFR FCC Part 15 Subpart C (Section 15.249)

PRODUCT NAME : Wireless Keyboard

BRAND NAME : TARGUS, GLOBLINK, TRUST, HAMA, SKYWAY, BELTTON,
MASTER CHOICE, CERATECH, CENTRIOS,
LEADERSHIP, CENTRIOS

MODEL NAME : GKM-700

APPLICANT : **Globlink Technology Inc.**
2Fl., 101 Rui-hu Street Nei-hu Taipei Taiwan

MANUFACTURER : The same as applicant

I **HEREBY** CERTIFY THAT:

The measurements shown in this test report were made in accordance with the procedures given in ANSI C63.4 - 2003 and all test are performed according to 47 CFR FCC Part 15. Testing was carried out on Apr. 15, 2005 at SPORTON International Inc. LAB.



Dr. Alan Lane
Vice General Manager
SPORTON International Inc.



1. General Description of Equipment under Test

1.1. Applicant

Globlink Technology Inc.
2Fl., 101 Rui-hu Street Nei-hu Taipei Taiwan

1.2. Manufacturer

The same as applicant

1.3. Basic Description of Equipment under Test

This product is a Wireless Keyboard with GFSK modulation solution.

1.4. Features of Equipment under Test

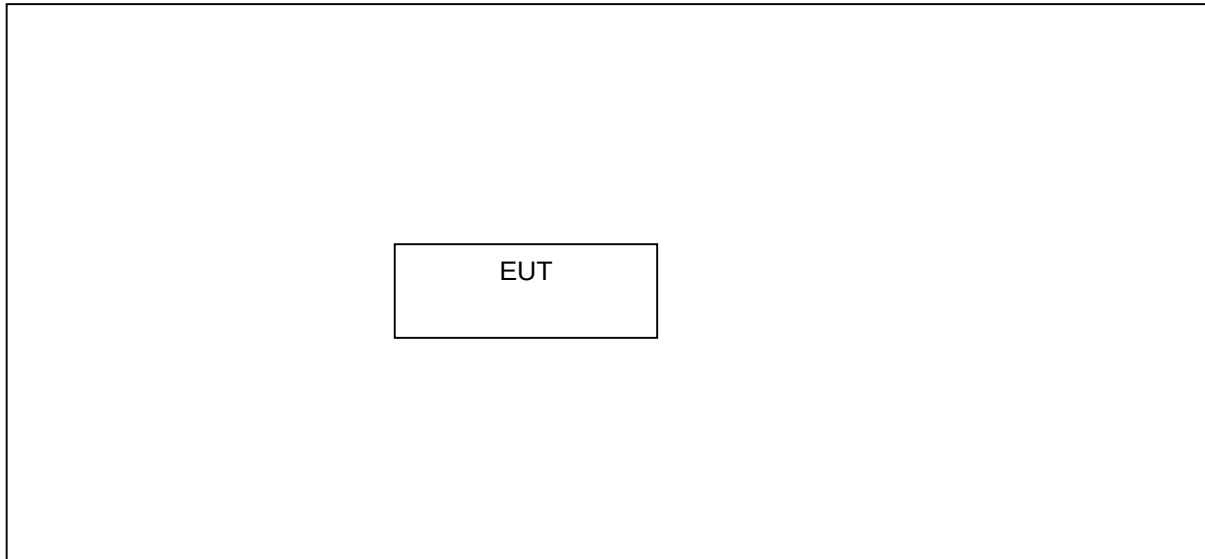
Items	Description
Type of Modulation	: GFSK
Number of Channels	: 8
Frequency Band	: 2423MHz ~ 2477MHz
Carrier Frequency	: See section 1.5 for details
Antenna Type	: Printed Antenna
Testing Duty Cycle	: 100.00%
Power Rating (DC/AC, Voltage)	: 3.3 VDC from battery
Test Power Source	: NA
Temperature Range (Operating)	: 0 ~ 40 °C

1.5. Table for Carrier Frequencies

Channel	Frequency	Channel	Frequency
01	2423 MHz	05	2453 MHz
02	2431 MHz	06	2461 MHz
03	2439 MHz	07	2469 MHz
04	2447 MHz	08	2477 MHz

2. Test Configuration of the Equipment under Test

2.1. Connection Diagram of Test System



2.2. Test Mode Description

Spurious emission below 1GHz is independent of channel selection, so only channel 08 was tested. AC conduction emission is independent of channel selection, so only channel 08 was tested. The EUT is hand held device, so configurations of EUT placing alone, X, Y and Z axes were tested in this report.

2.3. Test Supporting Units

Support unit	Brand	Model No.	FCC ID	Data cable (m)
Notebook	DELL	PP01L	Doc	-

3. General Information of Test

3.1. Test Facility

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiag, Tao Yuan Hsien, Taiwan, R.O.C.
: TEL 886-3-327-3456
: FAX 886-3-318-0055
Test Site No : 03CH03-HY

3.2. Test Conditions

Normal Voltage : 3.3V
Extreme Voltages : NA
Normal Temperature : 20°C
Extreme Temperature : 0 °C and 40 °C

3.3. Standards for Methods of Measurement

ANSI C63.4-2003
47 CFR Part 15 Subpart C (Section 15.249)

3.4. Frequency Range Investigated

Radiated emission test: from 30 MHz to 10th carrier harmonic

3.5. Test Distance

The test distance of radiated emission (30MHz~1GHz) test from antenna to EUT is 3 M.
The test distance of radiated emission (1GHz~10th carrier harmonic) test from antenna to EUT is 3 M.



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	15.249	Maximum Carrier Field Strength	Pass
5.2	15.249	Band Edges Emission	Pass
5.3	15.207	AC Power Line Conducted Emission	NA
5.4	15.209/15.249	Spurious Radiated Emission	Pass
5.5	15.203	Antenna Requirement	Pass

5. Test Result

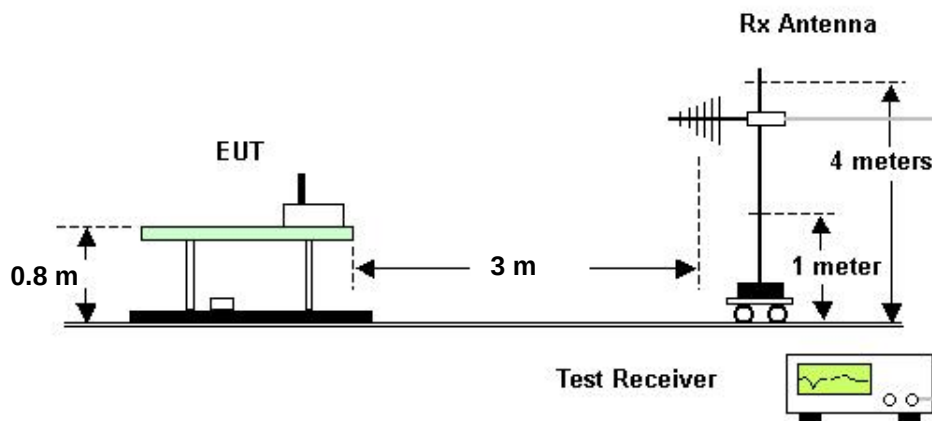
5.1. Maximum Carrier Field Strength

5.1.1. Measuring Instruments

Item 6~17 of the table on section 6.

5.1.2. Test Procedures

1. Configure the EUT according to ANSI C63.4.
2. The turn table was rotated by 360 degrees to determine the position of the highest radiation.
3. 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.
4. For carrier field strength 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.
5. For carrier field strength emission, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
6. Test Setup Layout





5.1.3. Test Result

- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Wayne Hsu

Channel	Frequency	Level	Over Limit	Limit Line	Read Level	Detector
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	
01	2423 MHz	81.91	-12.09	94.00	51.64	Peak
01	2423 MHz	63.19	-50.81	114.00	32.92	Average
04	2447 MHz	79.29	-14.71	94.00	48.96	Peak
04	2447 MHz	60.57	-53.43	114.00	30.24	Average
08	2477 MHz	84.63	-9.37	94.00	54.23	Peak
08	2477 MHz	65.91	-8.09	114.00	35.51	Average

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

5.2. Band Edges Emission

5.2.1. Measuring Instruments

Item 6~17 of the table on section 6.

5.2.2. Test Procedures

1. The transmitter is set to the lowest and highest channel.
2. Configure the EUT according to ANSI C63.4.
3. The turn table was rotated by 360 degrees to determine the position of the highest radiation.
4. 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.
5. For band edge 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.
6. For band edge emission, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.

5.2.3. Test Result

Temperature: 26°C

Relative Humidity: 64%

Duty Cycle of the Equipment During the Test: 100.00%

Test Engineer: Wayne Hsu

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
2389.990	55.20	-18.80	25.02	74.00	30.18	Peak
2389.990	43.04	-10.96	12.86	54.00	30.18	Average
2422.860	81.91	7.91	51.64	74.00	30.27	Peak
2422.860	63.19	9.19	32.92	54.00	30.27	Average
2447.180	79.29	5.29	48.96	74.00	30.33	Peak
2447.180	60.57	6.57	30.24	54.00	30.33	Average
2477.580	84.63	10.63	54.23	74.00	30.40	Peak
2477.580	65.91	11.91	35.51	54.00	30.40	Average

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level*.

Level* : The max field strength in the restricted bands.



5.3. AC Power Line Conducted Emission

It is not required to test the item because the EUT is powered by batteries.

5.4. Spurious Radiated Emission

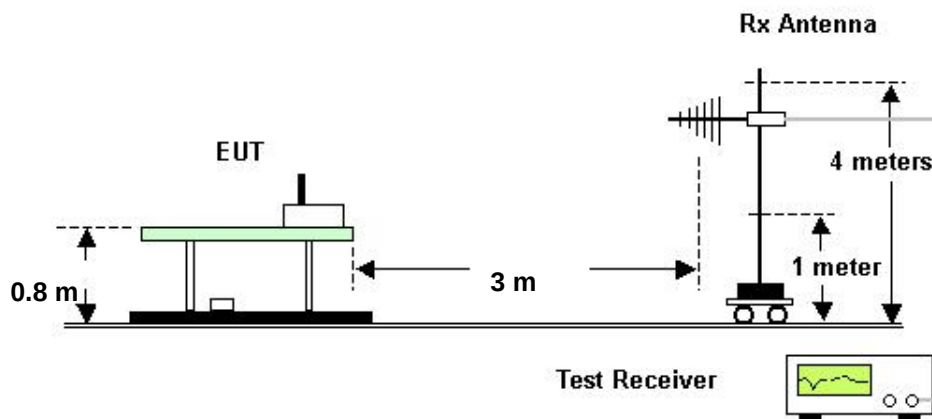
5.4.1. Measuring Instruments

Please reference item 6~17 in chapter 6 for the instruments used for testing.

5.4.2. Test Procedures

1. Configure the EUT according to ANSI C63.4.
2. The EUT was placed on the top of the turn table 0.8 meter above ground.
3. 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.
4. Power on the EUT and all the supporting units.
5. The turn table was rotated by 360 degrees to determine the position of the highest radiation.
6. 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.
7. 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.
8. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
9. For emission above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
10. 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.
11. 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.

5.4.3. Test Setup Layout





5.4.4. CH 08 / 2477 MHz (for emission below 1GHz)

- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Wayne Hsu

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
92.900	18.89	-24.61	38.90	43.50	-20.01	Peak
102.590	23.15	-20.35	43.36	43.50	-20.21	Peak
119.590	19.03	-24.47	36.38	43.50	-17.35	Peak
333.600	16.40	-29.60	30.68	46.00	-14.28	Peak
381.600	19.32	-26.68	32.36	46.00	-13.04	Peak
406.400	22.46	-23.54	34.73	46.00	-12.27	Peak

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
42.750	19.01	-20.99	36.24	40.00	-17.23	Peak
92.900	18.31	-25.19	38.32	43.50	-20.01	Peak
119.590	13.70	-29.80	31.05	43.50	-17.35	Peak
432.000	21.01	-24.99	33.09	46.00	-12.08	Peak
938.400	34.83	-11.17	38.75	46.00	-3.92	Peak
957.600	36.38	-9.62	39.71	46.00	-3.33	Peak

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

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

5.4.5. CH 01 / 2423 MHz (for emission above 1GHz)

- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Wayne Hsu

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
2720.000	66.43	-7.57	74.66	74.00	-8.23	Peak
2720.000	47.71	-6.29	55.94	54.00	-8.23	Average
4846.000	36.72	-17.28	40.98	54.00	-4.26	Average
4846.000	68.23	-5.77	72.49	74.00	-4.26	Peak
7268.000	41.09	-12.91	40.99	54.00	0.10	Average
7268.000	59.81	-14.19	59.71	74.00	0.10	Peak

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
2720.000	68.96	-5.04	77.19	74.00	-8.23	Peak
2720.000	51.24	-2.76	59.47	54.00	-8.23	Average
4846.000	47.49	-6.51	51.75	54.00	-4.26	Average
4846.000	66.21	-7.79	70.47	74.00	-4.26	Peak
7268.000	39.14	-14.86	39.04	54.00	0.10	Average
7268.000	57.86	-16.14	57.76	74.00	0.10	Peak

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

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



5.4.6. CH 04 / 2447 MHz (for emission above 1GHz)

- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Wayne Hsu

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
2572.000	71.99	-2.01	80.83	74.00	-8.84	Peak
4896.000	69.31	-4.69	73.47	74.00	-4.16	Peak
4896.000	50.59	-3.41	54.75	54.00	-4.16	Average
7340.000	59.28	-14.72	58.93	74.00	0.35	Peak
7340.000	40.56	-13.44	40.21	54.00	0.35	Average

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
2716.000	63.94	-10.06	72.17	74.00	-8.23	Peak
2716.000	45.25	-8.75	53.48	54.00	-8.23	Average
4896.000	51.25	-2.75	55.41	54.00	-4.16	Average
4896.000	69.97	-4.03	74.13	74.00	-4.16	Peak
7340.000	38.93	-15.07	38.58	54.00	0.35	Average
7340.000	57.65	-16.35	57.30	74.00	0.35	Peak

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

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



5.4.7. CH 08 / 2477 MHz (for emission above 1GHz)

- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Wayne Hsu

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
2572.000	57.68	-16.32	66.52	74.00	-8.84	Peak
2716.000	53.76	-20.24	61.99	74.00	-8.23	Peak
2716.000	35.04	-18.96	43.27	54.00	-8.23	Average
4956.000	68.93	-5.07	72.93	74.00	-4.00	Peak
4956.000	50.12	-3.88	54.12	54.00	-4.00	Average
7428.000	59.63	-14.37	58.96	74.00	0.67	Peak
7428.000	40.24	-13.76	39.57	54.00	0.67	Average

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
2572.000	59.14	-14.86	67.98	74.00	-8.84	Peak
2716.000	58.62	-15.38	66.85	74.00	-8.23	Peak
2716.000	39.90	-14.10	48.13	54.00	-8.23	Average
4956.000	63.73	-10.27	67.73	74.00	-4.00	Peak
4956.000	49.01	-4.99	53.01	54.00	-4.00	Average
7428.000	56.89	-17.11	56.22	74.00	0.67	Peak
7428.000	38.17	-15.83	37.50	54.00	0.67	Average

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

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

5.4.8. Photographs of Radiated Emission Test Configuration

FRONT VIEW



REAR VIEW





5.5. Antenna Requirements

5.5.1. 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.

5.5.2. Antenna Connected Construction

There is no antenna connector for printed antenna.

6. 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, 2004	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP40	100004	9KHZ~4GHz	Aug. 31, 2004	Radiation (03CH03-HY)
Amplifier	Schaffner	CPA9231A	18667	9KHz – 2GHz	Jan. 04, 2005	Radiation (03CH03-HY)
Biconical Antenna	SCHWARZBECK	VHBB 9124	301	30MHz – 200MHz	Jul. 23, 2004	Radiation (03CH03-HY)
Log Antenna	SCHWARZBECK	VUSLP 9111	221	200MHz -1GHz	Jul. 23, 2004	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz~1GHz	Dec. 02, 2004	Radiation (03CH03-HY)
Amplifier	MITEQ	AFS44	879984	1GHz~26.5GHz	Mar. 25, 2005	Radiation (03CH03-HY)
Horn Antenna	COMPOWER	AH-118	10092	1GHz – 18GHz	Feb. 18, 2005	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	154	15GHz~40GHz	Jun. 09, 2004	Radiation (03CH03-HY)
RF Cable-HIGH	SUHNER	SUCOFLES 106	SN30094/6	1GHz~26.5GHz	Mar. 05, 2005	Radiation (03CH03-HY)

※ Calibration Interval of instruments listed above is one year.

7. Company Profile

SPORTON Lab. was established in 1986 with one shielded room: the first private EMI test facility, offering local manufacturers an alternative EMI test facility apart from ERSO. In 1988, one 3M and 10M/3M open area test site were setup and also obtained official accreditation from FCC, VCCI and NEMKO. In 1993, a Safety laboratory was founded and obtained accreditation from UL of USA, CSA of Canada and TUV (Rhineland & PS) of Germany. In 1995, one EMC lab, including EMI and EMS test facilities was setup. In 1997, SPORTON Group has provided financial expense to relocate the headquarter to Orient Scientific Park in Taipei Hsien to offer more comprehensive, more qualified and better service to local suppliers and manufactures. In 1999, Safety Group and Component Group were setup. In 2001, SPORTON has established 3M/10M chamber in Hwa Ya Technology Park.

7.1. Certificate of Accreditation

Taiwan	BSMI, CNLA, DGT
USA	FCC, NVLAP, UL
EU	Nemko, TUV
Japan	VCCI
Canada	Industry Canada

7.2. Test Location

SHIJR	ADD : 6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C. TEL : 02-2696-2468 FAX : 02-2696-2255
HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 03-327-3456 FAX : 03-318-0055
LINKOU	ADD : No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C TEL : 02-2601-1640 FAX : 02-2601-1695
DUNGHU	ADD : No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C. TEL : 02-2631-4739 FAX : 02-2631-9740
JUNGHE	ADD : 7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C. TEL : 02-8227-2020 FAX : 02-8227-2626
NEIHU	ADD : 4Fl., No. 339, Hsin Hu 2 nd Rd., Taipei 114, Taiwan, R.O.C. TEL : 02-2794-8886 FAX : 02-2794-9777

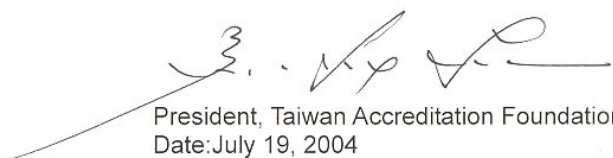
8. CNLA Certificate of Accreditation

Test Lab. : Sporton International Inc.
Accreditation Number : 1190
Originally Accredited : 2003/12/15
Effective Period : 2003/12/15~2006/12/14
Accredited Scope : 47 CFR Part 15 Subpart C (9kHz~40GHz)



Taiwan Accreditation Foundation
Chinese National Laboratory Accreditation
Certificate of Accreditation

Accreditation Criteria: ISO 17025
Accreditation Number: 1190
Organization/Laboratory: EMC & Wireless Communications Laboratory, Sporton International Inc.
Originally Accredited: December 15, 2003
Effective Period: December 15, 2003 To December 14, 2006
Accredited Scope: Electrical Testing Field, 7 items, details shown in the following pages.
Specific Accreditation Program: Recognition and Approval of Designated Laboratory for Commodities Inspection


President, Taiwan Accreditation Foundation
Date: July 19, 2004

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