

FCC/MELLC. OCT 01 1998

FCC TEST REPORT

for

PART 18, SUBPART C

EQUIPMENT : INDUCTION WOKTOP

MODEL NO. : SR-8210

F C C I D : LFUSUN8210

FILING TYPE : Original Grant

APPLICANT : **SUNPENTOWN ELECTRIC CO., LTD.**
1R., 16F, No. 248, Sec. 3, Nan-King E. Rd.,
Taipei, Taiwan, R.O.C.

- The test result refers exclusively to the test presented test model / sample.
- Without the written authorization of the test lab., the Test Report may not be copied.

SPORTON INTERNATIONAL INC.

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

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FCC TEST REPORT

REPORT NO. : F890211

CERTIFICATE NO. : F890211

CERTIFICATE OF COMPLIANCE

for

PART 18, SUBPART C

EQUIPMENT : INDUCTION WOKTOP

MODEL NO. : SR-8210

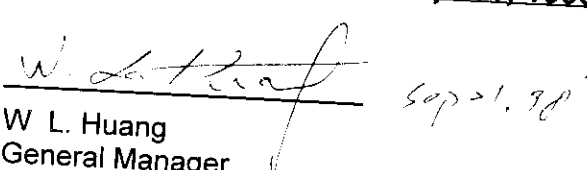
F C C I D : LFUSUN8210

APPLICANT : SUNPENTOWN ELECTRIC CO., LTD.
1R., 16F, No. 248, Sec. 3, Nan-King E. Rd.,
Taipei, Taiwan, R.O.C.

I HEREBY CERTIFY THAT :

The measurement shown in this report were made in accordance with the procedures given in **FCC/OET MP-5 (1986)** and the energy emitted by this equipment was **passed** both radiated and conducted emissions **Class B** limits.

Testing was carried out on **Sep. 08, 1998** at **SPORTON International Inc.**


W L. Huang
General Manager

SPORTON INTERNATIONAL INC.

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

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID : LFUSUN8210

PAGE NUMBER : 3 OF 22

ISSUED DATE : Sep. 14, 1998

1. GENERAL DESCRIPTION OF EQUIPMENT UNDER TEST**1.1. APPLICANT****SUNPENTOWN ELECTRIC CO., LTD.**1R., 16F, No. 248, Sec. 3, Nan-King E. Rd.,
Taipei, Taiwan, R.O.C.**1.2. MANUFACTURER**

Same as 1.1

1.3. BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

EQUIPMENT : INDUCTION WOKTOP

MODEL NO. : SR-8210

FCC ID: LFUSUN8210

TRADE NAME : MR. INDUCTION

POWER SUPPLY TYPE : Linear

POWER CORD : Non-shielded

1.4. FEATURE OF EQUIPMENT UNDER TEST

<< SR-8210 >>

Rated Voltage	208-240V, 60Hz, 50Hz
Power Output	2400W(208V), 2500W(220V), 230V(2600W)
Dimensions : in (mm)	16 (400)L × 16 (400)W × 6 (155)H
Weight : lb (Kg)	13 lb (5.9Kg)
Power Range	App.400W-2400, 2500W or 2600W
Power Cord	6ft (2m)

2. TEST CONFIGURATION OF EQUIPMENT UNDER TEST

2.1. TEST MANNER

- a. The EUT pursuant to FCC/OET MP-5 (1986) and configuration operated in a manner which tended to maximize its emission characteristics in a typical application.
- b. Frequency range investigated: Conduction 10 KHz to 30 MHz, Radiation 9 KHz to 30 MHz.
- c. Before testing, the engineer turns on the power of the equipment to make it work normally during testing.

2.2. DESCRIPTION OF TEST SYSTEM

There is only a test equipment on the table. No support unit was needed while testing.

3. EUT OPERATION CONDITION

1. Turn on the power of the INDUCTION WOKTOP (EUT).
2. Choose the EUT operation switch to "WARM" mode.
3. Adjust the temperature setting to maximum.
4. Change the EUT operation switch to "COOK" mode.
5. Adjust the temperature setting to maximum.

4. GENERAL INFORMATION OF TEST

4.1. TEST FACILITY

This test was carried out by SPORTON INTERNATIONAL INC. in an openarea test site.

Openarea Test Site Location : No. 3, Lane 238, Kang Lo Street, Nei Hwu District,
Taipei 11424, Taiwan, R.O.C.

TEL : 886-2-2631-4739

FAX : 886-2-2631-9740

4.2. STANDARD FOR METHODS OF MEASUREMENT

FCC/OET MP-5 (1986)

4.3 .TEST IN COMPLIANCE WITH

FCC PART 18, SUBPART C

4.4. FREQUENCY RANGE INVESTIGATED

- a. Conduction : from 10 KHz to 30 MHz
- b. Radiation : from 9 KHz to 30 MHz.

4.5. TEST DISTANCE

The test distance of radiated emission from antenna to EUT is 10M.

5. TEST OF CONDUCTED POWERLINE

Conducted Emissions were measured from 10 KHz to 30 MHz with a bandwidth of 10 KHz for 150KHz to 30MHz and 200Hz for 10KHz to 150KHz on the 230VAC power and return leads of the EUT according to the methods defined in FCC/OET MP-5(1986). The EUT was placed on a nonmetallic stand in a shielded room 0.4 meters above the ground plane as shown in Section 5.3. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

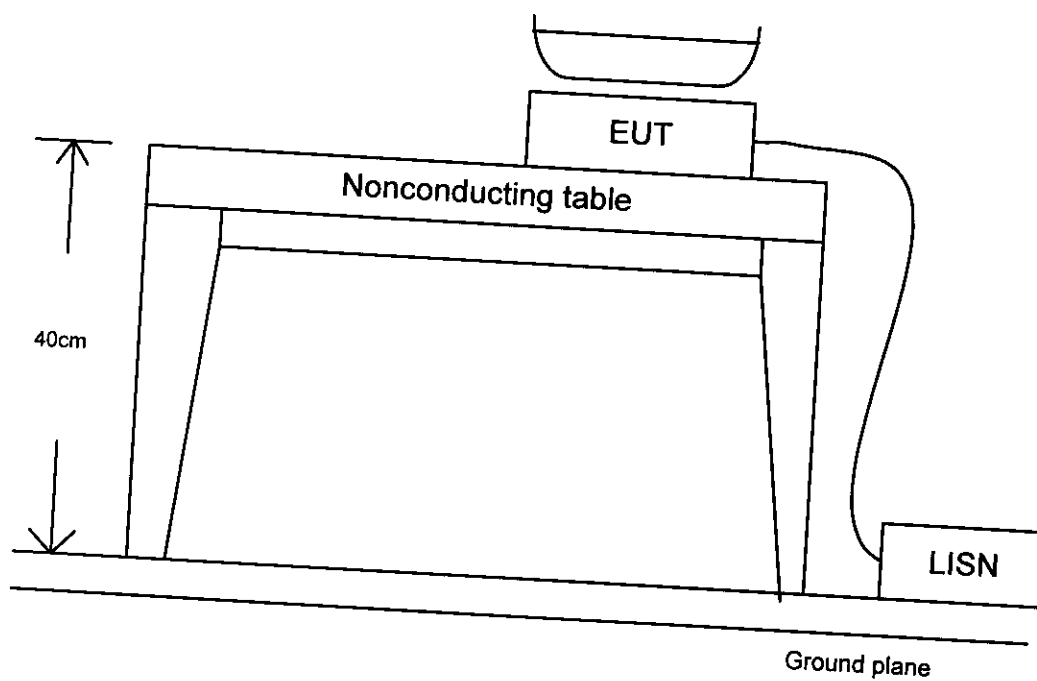
5.1. MAJOR MEASURING INSTRUMENTS

• Test Receiver	(R&S ESH3)	
Attenuation	0 dB	0 dB
Start Frequency	15 KHz	10 KHz
Stop Frequency	30 MHz	15 KHz
Step MHz	0.007 MHz	0.007 MHz
IF Bandwidth	200Hz	10KHz

5.2. TEST PROCEDURES

- a. The EUT was connected to power mains (230VAC/60Hz) through a line impedance stabilization network (LISN). This provides 50 ohm coupling impedance for the measuring instrument. The FCC states that a 50 ohm, 5 microhenry LISN should be used, Both sides of AC line were checked for maximum conducted interference.

5.3. TYPICAL TEST SETUP LAYOUT OF CONDUCTED POWERLINE



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5.4. TEST RESULT OF AC POWERLINE CONDUCTED EMISSION

- Frequency Range of Test : from 10 KHz to 30 MHz
- All emissions not reported here are more than 10 dB below the prescribed limit.
- Temperature : 30°C
- Relative Humidity : 65 % RH
- Operation switch mode: High (2600W)
- Test Date : Sep. 08, 1998

The Conducted Emission test was passed at Line 0.021 MHz / 67.60 dBuV.

Frequency (MHz)	Line / Neutral	Meter Reading		Limits		Margin (dB)
		(dBuV)	(uV)	(dBuV)	(uV)	
0.021	L	67.60	2398.83	79.69	9644.63	-12.09
0.043	L	49.90	312.61	79.06	8971.34	-29.16
0.063	L	43.20	144.54	78.49	8400.12	-35.29
0.022	N	65.90	1972.42	79.66	9612.96	-13.76
0.042	N	55.00	562.34	79.09	9000.90	-24.09
0.063	N	45.60	190.55	78.49	8400.12	-32.89

Test Engineer :

Alex Chen
Alex Chen

ALL
LIMITS
ARE
CORRECT

SPORTON International Inc.

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REPORT NO. : F890211

5.4.1. TEST RESULT OF AC POWERLINE CONDUCTED EMISSION

- Frequency Range of Test : from 10 KHz to 30 MHz
- All emissions not reported here are more than 10 dB below the prescribed limit.
- Temperature : 30°C
- Relative Humidity : 65 % RH
- Operation switch mode : Low (400W)
- Test Date : Sep. 08, 1998

The Conducted Emission test was passed at Line 0.648 MHz / 45.10 dBuV.

Frequency (MHz)	Line / Neutral	Meter Reading		Limits		Margin (dB)
		(dBuV)	(uV)	(dBuV)	(uV)	
0.030	L	59.60	954.99	79.43	9363.29	-19.83
0.059	L	49.10	285.10	78.60	8511.38	-29.50
0.648	L	45.10	179.89	60.00	1000.00	-14.90
0.296	N	45.80	194.98	71.83	3903.27	-26.03
0.059	N	43.60	151.36	78.60	8511.38	-35.00
0.643	N	42.10	127.35	60.00	1000.00	-17.90

Test Engineer :

Alex Chen

Alex Chen

NO
LIMITS
ARE
CORRECT

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6. TEST OF RADIATED EMISSION

Radiated emissions from 9KHz to 30MHz were measured with a bandwidth of 9 KHz for 150KHz to 30MHz and 200Hz for 9KHz to 150KHz according to the methods defines in FCC/OET MP-5(1986). The EUT was placed on a nonmetallic stand in the open-field site, 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

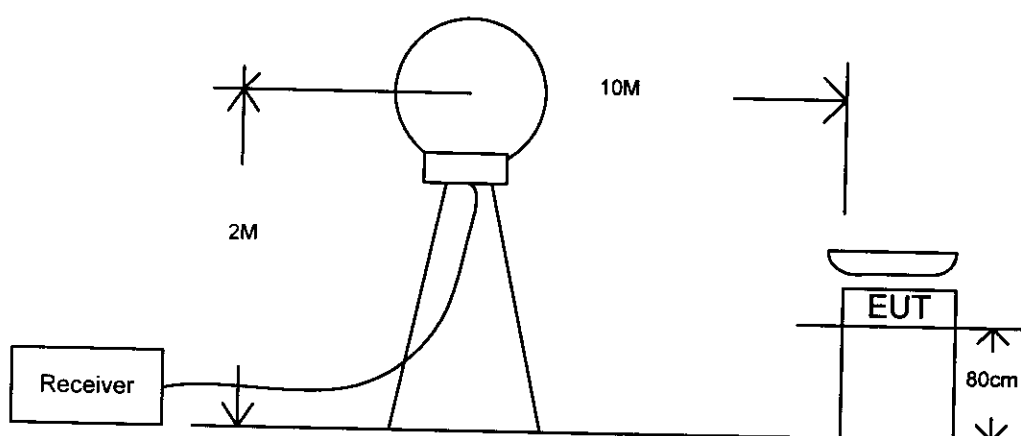
• Test Receiver	(R&S ESH3)	
Attenuation	0 dB	0 dB
Start Frequency	15 KHz	9 KHz
Stop Frequency	30 MHz	15 KHz
Step MHz	0.007 MHz	0.007 MHz
IF Bandwidth	200Hz	10KHz

- Note: 1. For the EUT operating frequency below 1.705MHz, the frequency rang of measurement which is according to the Commission rule 18.309 is from 9KHz to 30MHz.*
- 2. Distance refers to the distance in meters between the measuring antenna and the closet point of EUT.*

6.2. TEST PROCEDURES

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 10 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 shielded balanced loop antenna is varied between one meter and two 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 turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system (R/S ESH3) to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 6 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 6 dB margin will be repeated one by one using the quasi-peak method and reported.

6.3. TYPICAL TEST SETUP LAYOUT OF RADIATED EMISSION



6.4. TEST RESULT OF RADIATED EMISSION

- Frequency Range of Test : from 9KHz to 30 MHz
- Test Distance : 10 M
- Temperature : 35°C
- Relative Humidity : 70% RH
- Operation switch mode: High (2600W)
- Test Date : Sep. 08, 1998
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Sample Calculation at 0.085MHz
Corrected Reading = 0.29 + 69.31 = 69.60 (dBuV/m)

The Radiated Emission test was passed at minimum margin

Horizontal 0.024 MHz / 69.60 dBuV

Frequency (MHz)	Polarity	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	(uV/m)	Emission (dBuV/m)	Level (uV/m)	Margin (dB)
0.024	H	0.29	69.31	73.10	4519	69.60	3019.95	-3.50
0.047	H	0.33	41.87	73.10	4519	42.20	128.82	-30.90
0.071	H	0.20	37.90	73.10	4519	38.10	80.35	-35.00
0.024	V	0.29	46.81	73.10	4519	47.10	226.46	-26.00
0.047	V	0.33	40.47	73.10	4519	40.80	109.65	-32.30
0.071	V	0.20	38.00	73.10	4519	38.20	81.28	-34.90

Test Engineer :

Alex Chen

Alex Chen



1500 uV/m @ 30 m
corrected to 10 m
using $20 \log (30/10) = 9.54$

FCC TEST REPORT

REPORT NO. : F890211

6.4.1. TEST RESULT OF RADIATED EMISSION

- Frequency Range of Test : from 9KHz to 30 MHz
 - Test Distance : 10 M
 - Temperature : 35°C
 - Relative Humidity : 70% RH
 - Operation switch mode : Low (400W)
 - Test Date : Sep. 08, 1998
-
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
 - Sample Calculation at 0.024MHz
Corrected Reading = 0.29 + 54.31 = 54.60 (dBuV/m)

The Radiated Emission test was passed at minimum margin

Vertical 0.024 MHz / 61.30 dBuV

Frequency (MHz)	Polarity	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m) (uV/m)	Emission (dBuV/m)	Level (uV/m)	Margin (dB)
0.024	H	0.29	54.31	73.10 4519	54.60	537.03	-18.50
0.047	H	0.33	47.97	73.10 4519	48.30	260.02	-24.80
0.071	H	0.20	39.90	73.10 4519	40.10	101.16	-33.00
0.024	V	0.29	61.01	73.10 4519	61.30	1161.45	-11.80
0.047	V	0.33	45.97	73.10 4519	46.30	206.54	-26.80
0.071	V	0.20	37.10	73.10 4519	37.30	73.28	-35.80

Test Engineer :

Alex Chen

Alex Chen

SPORTON International Inc.

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7. ANTENNA FACTOR AND CABLE LOSS

Frequency (MHz)	Cable Loss (dB)
0.01	0.4
0.02	0.2
0.04	0.4
0.06	0.2
0.10	0.2
0.20	0.3
0.40	0.4
0.60	0.3
0.80	0.3
1.00	0.3
2.00	0.2
4.00	0.3
6.00	0.1
8.00	0.0
10.00	0.2
20.00	0.1
30.00	0.1

Remark : The R&S test receiver will automatically offset the antenna factor, therefore, the reading value shown on the R&S test receiver is included receiving value added antenna factor.

8. LIST OF MEASURING EQUIPMENT USED

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Test Receiver	R&S	ESH3	893495/013	9 KHz - 30MHz	April 13, 1998	Conduction
Test Receiver	R&S	ESVP	893610/003	20MHz - 1.3 GHz	April 13, 1998	Conduction
Spectrum Monitor	R & S	EZM	894987/011	N/A	April 13, 1998	Conduction
LISN	EMCO	3825/2	9510-2484	50 ohm / 50 μ H	Nov. 29, 1997	Conduction
Loop Antenna	R&S	HFH2- Z2.335.471 1.52	N/A	9KHz-30MHz	Dec. 22, 1997	Radiation
Turn Table	EMCO	1060-1.211	9507-1805	0 ~360 degree	N/A	Radiation

5.4. TEST RESULT OF AC POWERLINE CONDUCTED EMISSION

- Frequency Range of Test : from 10Khz to 30MHz
- Temperature : 30°C
- Relative Humidity : 65 % RH
- Operation switch mode : High (2600W)
- Working frequency : 21KHz
- Test date : Sep. 08, 1998

The Conducted Emission test was passed at Line 0.0213MHz / 67.6dBuV.

Frequency (MHz)	Line / Neutral	Meter Reading		Limits		Margin
		(dBuV)	(uV)	(dBuV)	(uV)	
0.0213	L	67.60	2398.83	79.68	9635.12	-12.08
0.0433	L	49.90	312.61	79.05	8962.49	-29.15
0.0632	L	43.20	144.54	78.48	8394.60	-35.28
0.1050	L	38.00	79.43	60.00	1000.00	-22.00
0.0223	N	65.90	1972.42	79.65	9603.48	-13.75
0.0421	N	55.00	562.34	79.08	8997.94	-24.08
0.0631	N	45.60	190.55	78.48	8397.36	-32.88
0.1049	N	36.10	63.83	60.00	1000.00	-23.90

5.4.1. TEST RESULT OF AC POWERLINE CONDUCTED EMISSION

- Frequency Range of Test : from 10Khz to 30MHz
- Temperature : 30°C
- Relative Humidity : 65 % RH
- Operation switch mode : Low (400W)
- Working frequency : 28KHz
- Test date : Sep. 08, 1998

The Conducted Emission test was passed at Line 13.9350MHz / 43.2dBuV.

Frequency (MHz)	Line / Neutral	Meter Reading		Limits		Margin
		(dBuV)	(uV)	(dBuV)	(uV)	(dB)
0.0296	L	59.60	954.99	79.44	9375.62	-19.84
0.0592	L	48.10	285.10	78.59	8505.78	-29.49
0.6480	L	45.10	179.89	48.00	251.19	-2.90
13.8310	L	40.10	101.16	48.00	251.19	-7.90
0.2960	N	45.80	194.98	60.00	1000.00	-14.20
0.0587	N	43.60	151.36	78.61	8519.78	-35.01
0.6430	N	42.10	127.35	48.00	251.19	-5.90
13.7130	N	37.10	71.61	48.00	251.19	-10.90