

**F C C -**  
**TEST REPORT**

REPORT NO.: 40166/4/200F

# FCC – Test Report

Date: 2005-01-11

No. 40166/4/200F

Page 2 of 13

## FCC listed testlab acc. to Section 2.948 of the FCC - Rules

in compliance with the requirements of  
ANSI C63.4 - 2001

Type reference :

- Product** : SPA CD/MP3 Radio
- Model** : SPA-0860
- Brand** : Aquatic AV

Additional type reference :

- Product** : SPA CD/AM, FM Radio
- Model** : SPA-0880
- Brand** : Aeware

**Product Class** : Communication Receiver (Super Hetrodyne)

**Importer** : SOUNDING AUDIO INDUSTRIAL LIMITED

# **FCC – Test Report**

Date: 2005-01-11

No. 40166/4/200F

Page 3 of 13

## **TABLE OF CONTENTS**

1. **Cover sheet**
2. **Introduction**
3. **Table of Contents**
4. **Laboratory Report**
5. **Summary of Testresults**
6. **Test Equipment List**
7. **Radiated Emission Testprocedure (> 30MHz)**
8. **Radiated Emission Testprocedure (9kHz – 30MHz)**
- 9-12. **Interference Radiation (Datasheet)**
13. **Notes for Radiation Measurement (acc. to ANSI C63.4 - 2001)**

# FCC – Test Report

Date: 2005-01-11

No. 40166/4/200F

Page 4 of 13

## LABORATORY - REPORT

**APPLICANT:** SOUNDING AUDIO INDUSTRIAL LIMITED  
**ADDRESS:** Unit G, 7/F, Stage 2, Wah Fung Industrial Centre  
33-39 Kwai Fung Road, Kwai Chung  
N.T., HONG KONG

**DATE OF SAMPLE RECEIVED:** 2004-10-25

**DATE OF TESTING:** 2004-12-30

### DESCRIPTION OF SAMPLE:

Product: SPA CD/MP3 Radio / SPA CD/AM, FM Radio  
Product class: Communication Receiver (Super Hetrodyne)  
Model number: SPA-0860 / SPA-0880  
Rating: DC 12V (Car Battery)

**INVESTIGATIONS REQUESTED:** Measurements to the relevant clauses of F.C.C. Rules and Regulations Part 15 Subpart B – ‘Unintentional Radiators’

**RESULTS:** See the attached test sheets

**CONCLUSIONS** From the measurement data obtained, the tested sample was considered to have COMPLIED with the requirements for the relevant clauses of Federal Communications Commission Rules as specified above.

---

Authorized Signature

**Remark:** 1. Purpose of those tests in this report is to provide the applicant with the necessary test data of their device for the submission to FCC with application for Equipment Authorization under the FCC Equipment Authorization Program. The tests themselves are not Approval Tests.

2. The conducted emissions test (if applicable) has considered the limits in Sections 15.107 and 15.207 adopted under FCC 02-157 (ETDocket 98-80). The product may be marketed after July 11, 2005, and is not affected by the 15.37(j) transition provisions.

# FCC – Test Report

Date: 2005-01-11

No. 40166/4/200F

Page 5 of 13

## Summary of Test Results

### Interference Radiation:

Test result: O.K.  
Test data: See attached data sheet

### Interference Voltage:

Test result: N.A.  
Test data: N.A.

### PHOTOGRAPH OF THE SAMPLE



# FCC – Test Report

Date: 2005-01-11

No. 40166/4/200F

Page 6 of 13

## TEST EQUIPMENT LIST

Equipment	Manufacturer	Model	Serial No.	Remark
Test Receiver	Rohde & Schwarz	ESH 3	863497/015	150KHz – 30MHz
Test Receiver	Rohde & Schwarz	ESH 3	892580/006	9KHz – 30MHz
Test Receiver	Rohde & Schwarz	ESVP	860688/022	25MHz – 1,000 MHz
Test Receiver	Rohde & Schwarz	ESVP	863512/012	25MHz – 1,000 MHz
Test Receiver	Rohde & Schwarz	ESHS30	839667/002	9KHz – 30MHz
Test Receiver	Rohde & Schwarz	ESVS30	828525/006	25MHz – 1000MHz
Spectrum Analyzer with Q. Peak	Advantest	R3132	140101852	9KHz – 3GHz
Spectrum Analyzer with Q. Peak	Tektronix	2712	B023006	0.15MHz – 1000MHz
Interface for Spectrum 2712	Tektronix	TD3F14A	--	--
Impulse Limiter	Rohde & Schwarz	ESH-3-Z2	--	--
Artificial Mains Network (LISN)	Schwarzbeck	NSLK 8127	8127312	2 x 10A, 50Ω, 50μH 9KHz-30MHz
Artificial Mains Network (LISN)	Schwarzbeck	NSLK 8127	8127309	2 x 10A, 50Ω, 50μH 9KHz-30MHz
Antenna System	Schwarzbeck	BBA 9106 / UHALP 9107	--	30MHz – 1000MHz
Antenna Mast System	Schwarzbeck	AM9104	--	Max. 4 meters height
Loop Antenna	Rohde & Schwarz	HFH2-Z2	871336/48	9KHz-30MHz
Turntable with Controller	Drehtisch	DT312	--	φ120 cm

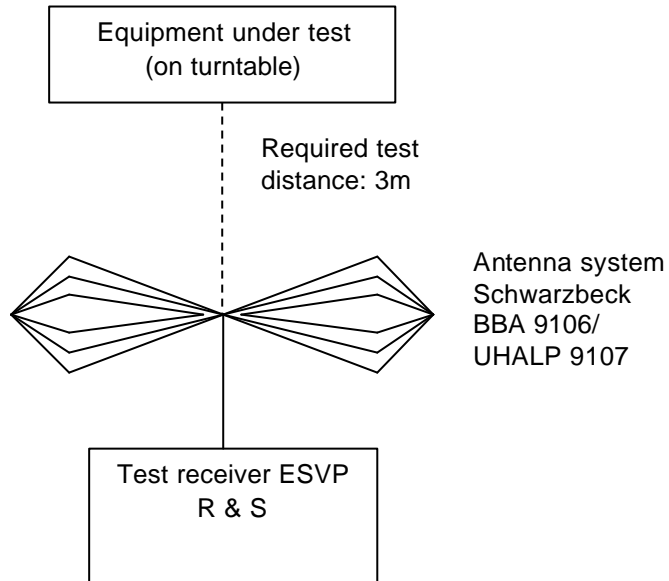
# FCC – Test Report

Date: 2005-01-11

No. 40166/4/200F

Page 7 of 13

## Radiated Emission Testprocedure (> 30MHz)



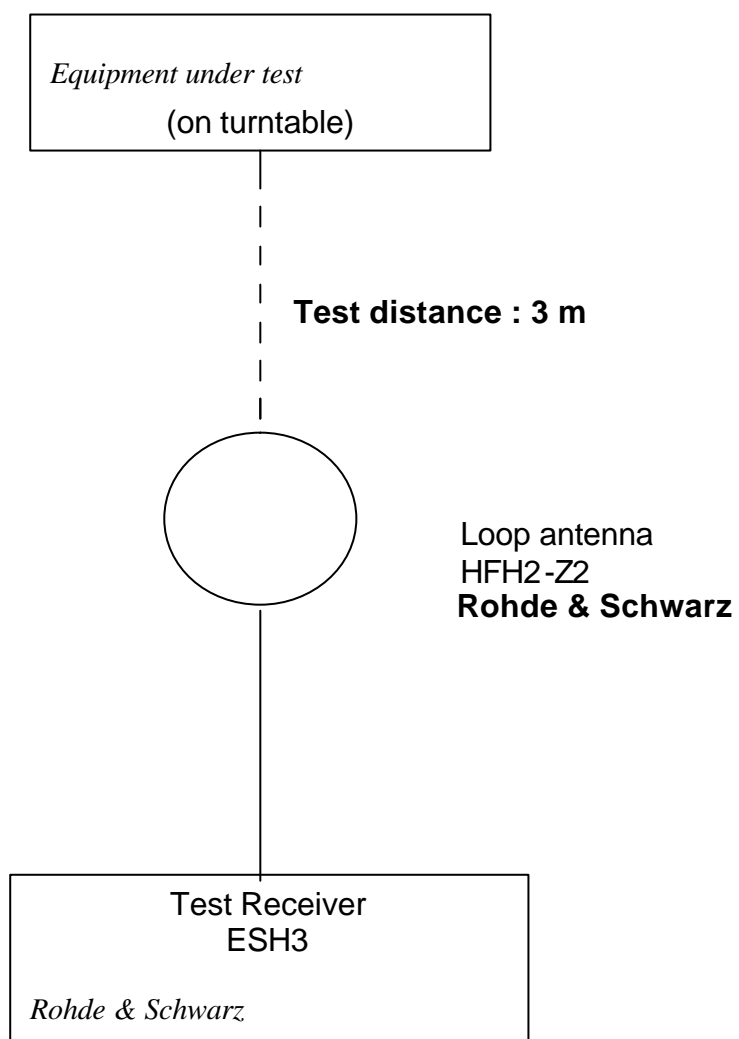
# FCC – Test Report

Date: 2005-01-11

No. 40166/4/200F

Page 8 of 13

## Radiated Emission Test Procedure ( 9kHz – 30MHz)





# U1

Interference Radiation 30MHz to 1000MHz  
According to: FCC Part 15 Subpart B

Date : 2005-01-11  
Page 9 of 13

**IECC Ref:** 40166/4/200F  
**Model:** SPA-0860  
**Applicant:** SOUNDING AUDIO INDUSTRIAL LIMITED  
**Ser.Nr.:** 1  
**Set under test :** SPA CD/MP3 Radio  
**Oper. Mode:** FM Mode  
**InterFreq:** 10.7 MHz

Test Equipment  
Receiver: ESVP Rohde & Schwarz  
Antenna: Schwarzbeck BBA 9106  
and UHALP 9107

Receiving - frequency (MHz)	Oscillator-frequency (MHz)	Harmonics	Reading dB $\mu$ V	Polarization	Correction - factor (dB)	Testresult dB $\mu$ V/m	Limit dB( $\mu$ V/m)
89.7	100.4	1	21	H	10.4	31.4	43.5
	200.8	2	20	H	16.5	36.5	43.5
	301.2	3	18	H	16.3	34.3	46.0
	401.6	4	< 16	H	18.3	< 34.3	46.0
	502.0	5	< 16	H	19.7	< 35.7	46.0
	602.4	6	< 16	H	20.9	< 36.9	46.0
	702.8	7	< 16	H	22.4	< 38.4	46.0
	803.2	8	< 16	H	23.7	< 39.7	46.0
	903.6	9	< 16	H	25.1	< 41.1	46.0
98.3	109.0	1	21	H	11.7	32.7	43.5
	218.0	2	20	H	17.0	37.0	46.0
	327.0	3	18	H	16.8	34.8	46.0
	436.0	4	< 16	H	18.8	< 34.8	46.0
	545.0	5	< 16	H	20.2	< 36.2	46.0
	654.0	6	< 16	H	21.7	< 37.7	46.0
	763.0	7	< 16	H	23.2	< 39.2	46.0
	872.0	8	< 16	H	24.7	< 40.7	46.0
	981.0	9	< 16	H	26.2	< 42.2	54.0
107.9	118.6	1	21	H	12.7	33.7	43.5
	237.2	2	20	H	17.4	37.4	46.0
	355.8	3	18	H	17.5	35.5	46.0
	474.4	4	< 16	H	19.4	< 35.4	46.0
	593.0	5	< 16	H	20.8	< 36.8	46.0
	711.6	6	< 16	H	22.6	< 38.6	46.0
	830.2	7	< 16	H	24.1	< 40.1	46.0
	948.8	8	< 16	H	25.8	< 41.8	46.0

The measurements indicate that the test unit meets the FCC requirements.

# U1

Interference Radiation 30MHz to 1000MHz  
According to: FCC Part 15 Subpart B

Date : 2005-01-11  
Page 10 of 13

**IECC Ref:** 40166/4/200F  
**Model:** SPA-0860  
**Applicant:** SOUNDING AUDIO INDUSTRIAL LIMITED  
**Ser.Nr.:** 1  
**Set under test :** SPA CD/MP3 Radio  
**Oper. Mode:** FM Mode  
**InterFreq:** 10.7 MHz

Test Equipment  
Receiver: ESVP Rohde & Schwarz  
Antenna: Schwarzbeck BBA 9106  
and UHALP 9107

Receiving - frequency (MHz)	Oscillator-frequency (MHz)	Harmonics	Reading dB $\mu$ V	Polarization	Correction - factor (dB)	Testresult dB $\mu$ V/m	Limit dB( $\mu$ V/m)
89.7	100.4	1	21	V	10.4	31.4	43.5
	200.8	2	20	V	16.5	36.5	43.5
	301.2	3	< 16	V	16.3	< 32.3	46.0
	401.6	4	< 16	V	18.3	< 34.3	46.0
	502.0	5	< 16	V	19.7	< 35.7	46.0
	602.4	6	< 16	V	20.9	< 36.9	46.0
	702.8	7	< 16	V	22.4	< 38.4	46.0
	803.2	8	< 16	V	23.7	< 39.7	46.0
	903.6	9	< 16	V	25.1	< 41.1	46.0
98.3	109.0	1	20	V	11.7	31.7	43.5
	218.0	2	18	V	17.0	35.0	46.0
	327.0	3	< 16	V	16.8	< 32.8	46.0
	436.0	4	< 16	V	18.8	< 34.8	46.0
	545.0	5	< 16	V	20.2	< 36.2	46.0
	654.0	6	< 16	V	21.7	< 37.7	46.0
	763.0	7	< 16	V	23.2	< 39.2	46.0
	872.0	8	< 16	V	24.7	< 40.7	46.0
	981.0	9	< 16	V	26.2	< 42.2	54.0
107.9	118.6	1	21	V	12.7	33.7	43.5
	237.2	2	20	V	17.4	37.4	46.0
	355.8	3	18	V	17.5	35.5	46.0
	474.4	4	< 16	V	19.4	< 35.4	46.0
	593.0	5	< 16	V	20.8	< 36.8	46.0
	711.6	6	< 16	V	22.6	< 38.6	46.0
	830.2	7	< 16	V	24.1	< 40.1	46.0
	948.8	8	< 16	V	25.8	< 41.8	46.0

The measurements indicate that the test unit meets the FCC requirements.

# IT 5/6

Interference Radiation 30MHz-1000MHz  
Acc: FCC Part 15 Subpart B

Date : 2005-01-11  
Page 11 of 13

**IECC Ref:** 40166/4/200F  
**Model:** SPA-0860  
**Applicant:** SOUNDING AUDIO INDUSTRIAL LIMITED  
**Ser.Nr.:** 1  
**Set under test:** SPA CD/MP3 Radio  
**Operating mode:** MP3 mode

Test Equipment  
Receiver: ESVP Rohde & Schwarz  
Antenna: Schwarzbeck BBA 9106  
and UHALP 9107

Frequency (MHz)	Horz. Reading dB(µV)	Vert. Reading dB(µV)	Antenna Factor (dB)	Horiz. Test Result dB(µV/m)	Vert. Test Result dB(µV/m)	Limit dB(µV/m)
30	< 16	< 16	18.4	< 34.4	< 34.4	40.0
33.9	< 16	< 16	16.8	< 32.8	< 32.8	40.0
36	< 16	< 16	16.1	< 32.1	< 32.1	40.0
43.2	< 16	< 16	13.7	< 29.7	< 29.7	40.0
50.8	< 16	< 16	11.4	< 27.4	< 27.4	40.0
54	< 16	< 18	10.3	< 26.3	< 28.3	40.0
67.7	< 16	< 16	6.7	< 22.7	< 22.7	40.0
84.6	< 16	< 16	7.7	< 23.7	< 23.7	40.0
101.5	< 16	< 16	10.5	< 26.5	< 26.5	43.5
108	< 16	< 16	11.5	< 27.5	< 27.5	43.5
118.5	< 16	< 16	12.7	< 28.7	< 28.7	43.5
135.5	< 16	< 16	14.2	< 30.2	< 30.2	43.5
152.4	< 16	< 16	15.2	< 31.2	< 31.2	43.5
162	< 16	< 16	15.6	< 31.6	< 31.6	43.5
169.3	< 16	< 16	15.8	< 31.8	< 31.8	43.5
186.2	< 16	< 16	16.2	< 32.2	< 32.2	43.5
203.1	< 16	< 16	16.6	< 32.6	< 32.6	43.5
220	< 16	< 16	17.0	< 33.0	< 33.0	46.0
237.1	< 16	< 16	17.4	< 33.4	< 33.4	46.0
254	< 16	< 16	17.9	< 33.9	< 33.9	46.0
271	< 16	< 16	18.4	< 34.4	< 34.4	46.0
287.9	< 16	< 16	19.3	< 35.3	< 35.3	46.0
304.9	< 16	< 16	16.4	< 32.4	< 32.4	46.0
400	< 16	< 16	18.3	< 34.3	< 34.3	46.0
500	< 16	< 16	19.7	< 35.7	< 35.7	46.0
1000	< 16	< 16	26.5	< 42.5	< 42.5	54.0

The measurements indicate that the test unit meets the FCC requirements.

# IT 5/6

Interference Radiation 30MHz-1000MHz  
Acc: FCC Part 15 Subpart B

Date : 2005-01-11  
Page 12 of 13

**IECC Ref:** 40166/4/200F  
**Model:** SPA-0860  
**Applicant:** SOUNDING AUDIO INDUSTRIAL LIMITED  
**Ser.Nr.:** 1  
**Set under test:** SPA CD/MP3 Radio  
**Operating mode:** Weather Band

Test Equipment  
Receiver: ESVP Rohde & Schwarz  
Antenna: Schwarzbeck BBA 9106  
and UHALP 9107

## CH 1 : 162.5 MHz

Frequency (MHz)	Horz. Reading dB(µV)	Vert. Reading dB(µV)	Antenna Factor (dB)	Horiz. Test Result dB(µV/m)	Vert. Test Result dB(µV/m)	Limit dB(µV/m)
30	< 16	< 16	18.4	< 34.4	< 34.4	40.0
60	< 16	< 16	8.4	< 24.4	< 24.4	40.0
90	< 16	< 16	8.8	< 24.8	< 24.8	43.5
151.8	< 16	< 16	15.1	< 31.1	< 31.1	43.5
218.2	< 16	< 16	17.0	< 33.0	< 33.0	46.0
500	< 16	< 16	19.7	< 35.7	< 35.7	46.0
1000	< 16	< 16	26.5	< 42.5	< 42.5	54.0

## CH 2 : 162.4 MHz

Frequency (MHz)	Horz. Reading dB(µV)	Vert. Reading dB(µV)	Antenna Factor (dB)	Horiz. Test Result dB(µV/m)	Vert. Test Result dB(µV/m)	Limit dB(µV/m)
30	< 16	< 16	18.4	< 34.4	< 34.4	40.0
60	< 16	< 16	8.4	< 24.4	< 24.4	40.0
90	< 16	< 16	8.8	< 24.8	< 24.8	43.5
151.8	< 16	< 16	15.1	< 31.1	< 31.1	43.5
214.4	< 16	< 16	16.9	< 32.9	< 32.9	43.5
500	< 16	< 16	19.7	< 35.7	< 35.7	46.0
1000	< 16	< 16	26.5	< 42.5	< 42.5	54.0

## CH 3 : 162.47 MHz

Frequency (MHz)	Horz. Reading dB(µV)	Vert. Reading dB(µV)	Antenna Factor (dB)	Horiz. Test Result dB(µV/m)	Vert. Test Result dB(µV/m)	Limit dB(µV/m)
30	< 16	< 16	18.4	< 34.4	< 34.4	40.0
60	< 16	< 16	8.4	< 24.4	< 24.4	40.0
90	< 16	< 16	8.8	< 24.8	< 24.8	43.5
151.8	< 16	< 16	15.1	< 31.1	< 31.1	43.5
216.3	< 16	< 16	16.9	< 32.9	< 32.9	46.0
500	< 16	< 16	19.7	< 35.7	< 35.7	46.0
1000	< 16	< 16	26.5	< 42.5	< 42.5	54.0

The measurements indicate that the test unit meets the FCC requirements.

## Notes for Radiation Measurement

**1. Measurement facility:**

Measurement facility located at Fanling (Hong Kong), placed on file with the FCC Pursuant to Section 2.948 of the FCC Rules.

**2. Distance between the EUT and measuring antenna:**

3 meters.

**3. Measuring instrumentations:**

Rohde & Schwarz ESVP Test Receiver ( 20 - 1300 MHz ) with a CISPR weighting QP detector, 6 dB bandwidth set at 120 KHz.

**4. Measuring antenna:**

Broad-band antenna for the frequency range 30 - 300 MHz and frequency range 300 - 1000 MHz, connected with 10 meters coaxial cable. Cable loss of the coaxial cable included in the Antenna Factor for measurement data. The antennas are capable of measuring both horizontal and vertical polarizations.

Loop antenna for the frequency range 9KHz – 30MHz, connected with 10 meters coaxial cable. Cable loss of the coaxial cable included in the measurement data. The center of the loop 1. m above the ground plane, positioned with its plane vertical at the specified distance and rotated about its vertical axis and placed horizontal for maximum response at each azimuth about the EUT.

**5. Frequency range scanned:**

The frequency range 30 - 1000 MHz has been scanned. Readings of the highest emissions relating to the limit were reported as above.

**6. Arrangement of EUT:**

During the test, the sample was operated at rated supply voltage and arranged for maximum emissions. To find the maximum emission (30MHz – 1000MHz), the antenna was raised from 1 to 4 meters and was stopped at the maximum emission point.

**7. Measuring Procedure:**

In **accordance** with the relevant sections of the American National Standards Institute (ANSI) C63.4-2001 ' Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9KHz to 40GHz' .