



香 港 標 準 及 檢 定 中 心  
**Hong Kong Standards and Testing Centre**

Date : 2004-12-04  
No. : HM152811

**TEST REPORT**

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**Applicant:**

UBUY Industrial Corporation  
1F, No. 17, Lane 442, Chungcheng Road,  
Yunghe Shih, Taipei Hsien, Taiwan

**Description of Samples:**

Model name: FM Stereo Transmitter  
Model no.: FM700W  
Brand name: N/A  
FCC ID: SSX-FM700W

**Date Samples Received:**

2004-11-04

**Date Tested:**

2004-12-01

**Investigation Requested:**

FCC Part 15 Subpart C

**Conclusions:**

The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.

**Remarks:**

For additional models details, see page 5.

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K C Lee, EMC  
for Chief Executive

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**Appendix A**

List of Measurement Equipment

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**Appendix B**

Photographs

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**1.0 General Details**

**1.1 Test Laboratory**

The Hong Kong Standards and Testing Centre Ltd.  
EMC Laboratory  
10 Dai Wang Street, Taipo Industrial Estate  
New Territories, Hong Kong

Telephone: 852 2666 1888  
Fax: 852 2664 4353

**1.2 Applicant Details**  
**Applicant**

UBUY Industrial Corporation  
1F, No. 17, Lane 442, Chungcheng Road,  
Yunghe Shih, Taipei Hsien, Taiwan

**HKSTC Code Number for Applicant**

**GLT001**

**Manufacturer**

1. Sunwind Electronic Limited.  
Jiumen Zhai, No. 2 Area, Humen Town, Dongguan,  
Guangdong, China
2. Jin Cheng Electronics Manufactory  
Dongguan Shi Dong Cheng Qu Sang Yuan Shi Jing Gong Ye Qu

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**1.3 Equipment Under Test [EUT]**  
**Description of Sample**

Model Name: FM Stereo Transmitter  
Manufacturer: 1. Sunwind Electronic Limited.  
2. Jin Cheng Electronics Manufactory  
Brand Name: N/A  
Additional Brand Name: Clarion, Directed, Prology, Autosonik, Soundlinx,  
Razor, Carmate, Electus, Eurovox, Maplin  
Model Number: FM700W  
Additional Model Number: FM-700W, FM-200W, WFM700W, FM300W,  
RFM200W, AFM2000W, FMM1029W, QM-3800W  
Input Voltage: 12Vd.c

**1.3.1 Description of EUT Operation**

The Equipment Under Test (EUT) is a UBUY Industrial Corporation, FM Stereo Transmitter. The transmitter is a 3 button transmitter. The EUT continues to transmit while button is being pressed. Modulation by IC. and type is frequency modulation.

**1.4 Date of Order**

2004-11-04

**1.5 Submitted Sample(s):**

2 Samples per model

**1.6 Test Duration**

2004-12-01

**1.7 Country of Origin**

China

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**1.8 Additional Information of EUT**

User Manual  
Part List  
Circuit Diagram  
Printed Circuit Board [PCB] Layout  
Block diagram  
FCC ID Label

Submitted

Not Available

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**2.0 Technical Details**

**2.1 Investigations Requested**

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 and ANSI C63.4: 2003 for FCC Certification.

**2.2 Test Standards and Results Summary Tables**

EMISSION Results Summary						
Test Condition	Test Requirement	Test Method	Class / Severity	Test Result		
				Pass	Failed	N/A
Field Strength of Fundamental Emissions & Spurious Emissions	FCC 47CFR 15.239	ANSI C63.4:2003	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radiated Emissions, 30MHz to 1GHz	FCC 47CFR 15.209	ANSI C63.4:2003	Class B	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducted Emissions on AC, 0.15MHz to 30MHz	FCC 47CFR 15.207	ANSI C63.4:2003	Class B	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Note: N/A - Not Applicable

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**3.0 Test Results**

**3.1 Emission**

**3.1.1 Radiated Emissions (30 – 1000MHz)**

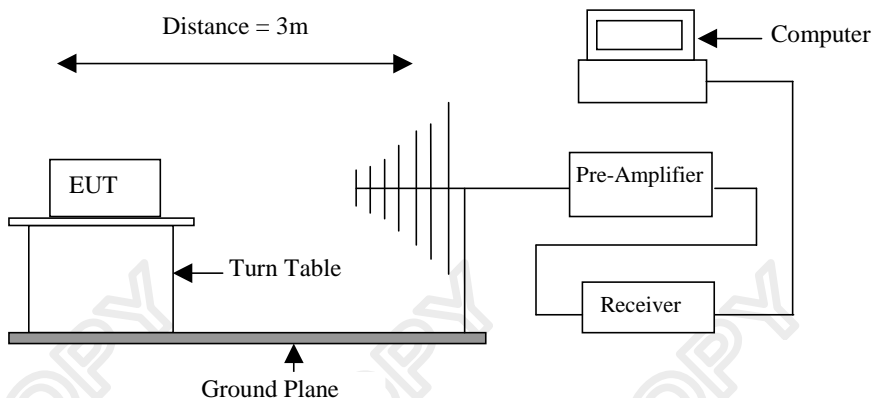
Test Requirement:	FCC 47CFR 15.239
Test Method:	ANSI C63.4:2003
Test Date:	2004-12-12
Mode of Operation:	On mode

**Test Method:**

The sample was placed 0.8m above the ground plane on the OATS \*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

\*: OATS [Open Area Test Site] located at HKSTC with a metal ground plane filled with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 90657 or 607756.

**Test Setup:**



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**Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.239]:**

Frequency Range of Fundamental [MHz]	Peak Limits [ $\mu$ V/m]	Average Limits [ $\mu$ V/m]
88-108	2,500	250

**Results: Channel 1**

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dB $\mu$ V/m	Correction Factor dB $\mu$ V/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
88.30	28.8	9.5	38.3	82.2	2,500	Horizontal

Field Strength of Fundamental Emissions Average Value						
Frequency MHz	Measured Level @3m dB $\mu$ V/m	Correction Factor dB $\mu$ V/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
88.30	28.6	9.5	38.1	80.4	250	Horizontal

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz  $\pm 4.1$ dB

According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

For effective averaging, the bandwidth of the video filter must be smaller than the resolution bandwidth. The higher the ratio of resolution bandwidth to video bandwidth, the greater the averaging will be. Below setting for HP8572A EMI Receiver.

Resolution Bandwidth : 3MHz

Video Bandwidth 1Hz

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**Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:**

Frequency Range [MHz]	Limits [ $\mu$ V/m]
30-88	100
88-216	150
216-960	200
Above 960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

**Results: Channel 1**

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dB $\mu$ V/m	Correction Factor dB $\mu$ V/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
176.60	< 1.0	11.2	< 12.2	< 4.1	150	Vertical
264.90	< 1.0	9.8	< 10.8	< 3.5	150	Vertical
353.20	< 1.0	11.5	< 12.5	< 4.2	150	Vertical
441.50	< 1.0	15.9	< 16.9	< 7.0	200	Vertical
529.80	< 1.0	17.4	< 18.4	< 8.3	200	Vertical
618.10	< 1.0	17.2	< 18.2	< 8.1	200	Vertical
706.40	< 1.0	18.8	< 19.8	< 9.8	200	Vertical
794.70	< 1.0	19.7	< 20.7	< 10.8	200	Vertical
883.00	< 1.0	20.6	< 21.6	< 12.0	200	Vertical

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz  $\pm 4.1$ dB

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**Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.239]:**

Frequency Range of Fundamental [MHz]	Peak Limits [ $\mu$ V/m]	Average Limits [ $\mu$ V/m]
88-108	2,500	250

**Results: Channel 2**

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dB $\mu$ V/m	Correction Factor dB $\mu$ V/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
88.90	27.5	9.4	36.9	70.0	2,500	Horizontal

Field Strength of Fundamental Emissions Average Value						
Frequency MHz	Measured Level @3m dB $\mu$ V/m	Correction Factor dB $\mu$ V/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
88.90	27.3	9.4	36.7	68.4	250	Horizontal

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz  $\pm 4.1$ dB

According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

For effective averaging, the bandwidth of the video filter must be smaller than the resolution bandwidth. The higher the ratio of resolution bandwidth to video bandwidth, the greater the averaging will be. Below setting for HP8572A EMI Receiver.

Resolution Bandwidth : 3MHz

Video Bandwidth 1Hz

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**Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:**

Frequency Range [MHz]	Limits [ $\mu$ V/m]
30-88	100
88-216	150
216-960	200
Above 960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

**Results: Channel 2**

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dB $\mu$ V/m	Correction Factor dB $\mu$ V/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
177.80	< 1.0	11.2	< 12.2	< 4.1	150	Vertical
266.70	< 1.0	9.8	< 10.8	< 3.5	150	Vertical
355.60	< 1.0	11.5	< 12.5	< 4.2	150	Vertical
444.50	< 1.0	15.9	< 16.9	< 7.0	200	Vertical
533.40	< 1.0	17.4	< 18.4	< 8.3	200	Vertical
622.30	< 1.0	17.2	< 18.2	< 8.1	200	Vertical
711.20	< 1.0	18.8	< 19.8	< 9.8	200	Vertical
800.10	< 1.0	19.7	< 20.7	< 10.8	200	Vertical
889.00	< 1.0	20.6	< 21.6	< 12.0	200	Vertical

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz  $\pm 4.1$ dB

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**Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.239]:**

Frequency Range of Fundamental [MHz]	Peak Limits [ $\mu$ V/m]	Average Limits [ $\mu$ V/m]
88-108	2,500	250

**Results: Channel 3**

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dB $\mu$ V/m	Correction Factor dB $\mu$ V/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
107.30	22.8	10.0	32.8	43.7	2,500	Horizontal

Field Strength of Fundamental Emissions Average Value						
Frequency MHz	Measured Level @3m dB $\mu$ V/m	Correction Factor dB $\mu$ V/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
107.30	22.7	10.0	32.7	43.2	250	Horizontal

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz  $\pm 4.1$ dB

According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

For effective averaging, the bandwidth of the video filter must be smaller than the resolution bandwidth. The higher the ratio of resolution bandwidth to video bandwidth, the greater the averaging will be. Below setting for HP8572A EMI Receiver.

Resolution Bandwidth : 3MHz

Video Bandwidth 1Hz

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**Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:**

Frequency Range [MHz]	Limits [ $\mu$ V/m]
30-88	100
88-216	150
216-960	200
Above 960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

**Results: Channel 3**

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dB $\mu$ V/m	Correction Factor dB $\mu$ V/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
214.60	< 1.0	11.2	< 12.2	< 4.1	150	Vertical
321.90	< 1.0	9.8	< 10.8	< 3.5	150	Vertical
429.20	< 1.0	11.5	< 12.5	< 4.2	150	Vertical
536.50	< 1.0	15.9	< 16.9	< 7.0	200	Vertical
643.80	< 1.0	17.4	< 18.4	< 8.3	200	Vertical
751.10	< 1.0	17.2	< 18.2	< 8.1	200	Vertical
858.40	< 1.0	18.8	< 19.8	< 9.8	200	Vertical
965.70	< 1.0	19.7	< 20.7	< 10.8	200	Vertical
1073.00	< 1.0	20.6	< 21.6	< 12.0	200	Vertical

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz  $\pm 4.1$ dB

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**Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.239]:**

Frequency Range of Fundamental [MHz]	Peak Limits [ $\mu$ V/m]	Average Limits [ $\mu$ V/m]
88-108	2,500	250

**Results: Channel 4**

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dB $\mu$ V/m	Correction Factor dB $\mu$ V/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
107.90	20.1	9.9	30.0	31.6	2,500	Horizontal

Field Strength of Fundamental Emissions Average Value						
Frequency MHz	Measured Level @3m dB $\mu$ V/m	Correction Factor dB $\mu$ V/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
107.90	19.9	9.9	29.8	30.9	250	Horizontal

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz  $\pm 4.1$ dB

According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

For effective averaging, the bandwidth of the video filter must be smaller than the resolution bandwidth. The higher the ratio of resolution bandwidth to video bandwidth, the greater the averaging will be. Below setting for HP8572A EMI Receiver.

Resolution Bandwidth : 3MHz

Video Bandwidth 1Hz

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**Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:**

Frequency Range [MHz]	Limits [ $\mu$ V/m]
30-88	100
88-216	150
216-960	200
Above 960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

**Results: Channel 4**

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dB $\mu$ V/m	Correction Factor dB $\mu$ V/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
215.80	< 1.0	11.2	< 12.2	< 4.1	150	Vertical
323.70	< 1.0	9.8	< 10.8	< 3.5	150	Vertical
431.60	< 1.0	11.5	< 12.5	< 4.2	150	Vertical
539.50	< 1.0	15.9	< 16.9	< 7.0	200	Vertical
647.40	< 1.0	17.4	< 18.4	< 8.3	200	Vertical
755.30	< 1.0	17.2	< 18.2	< 8.1	200	Vertical
863.20	< 1.0	18.8	< 19.8	< 9.8	200	Vertical
971.10	< 1.0	19.7	< 20.7	< 10.8	200	Vertical
1079.00	< 1.0	20.6	< 21.6	< 12.0	200	Vertical

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz  $\pm 4.1$ dB

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**3.1.2 Conducted Emissions (0.15MHz to 30MHz)**

Test Requirement:	FCC 47CFR 15.107
Test Method:	ANSI C63.4:2003
Test Date:	N/A
Mode of Operation:	N/A

**Results:** N/A

The EUT is operated by a single source of internal battery power [located in the battery compartment], therefore power line conducted emission was deemed unnecessary.

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**3.2 20B Bandwidth of Fundamental Emission**

Test Requirement:	FCC 47 CFR 15.227
Test Method:	ANSI C63.4:2003 (Section 13.1.7)
Test Date:	2004-12-12
Mode of Operation:	On mode

**Test Method:**

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

**Test Setup:**

As Test Setup of clause 3.1.1 in this test report.

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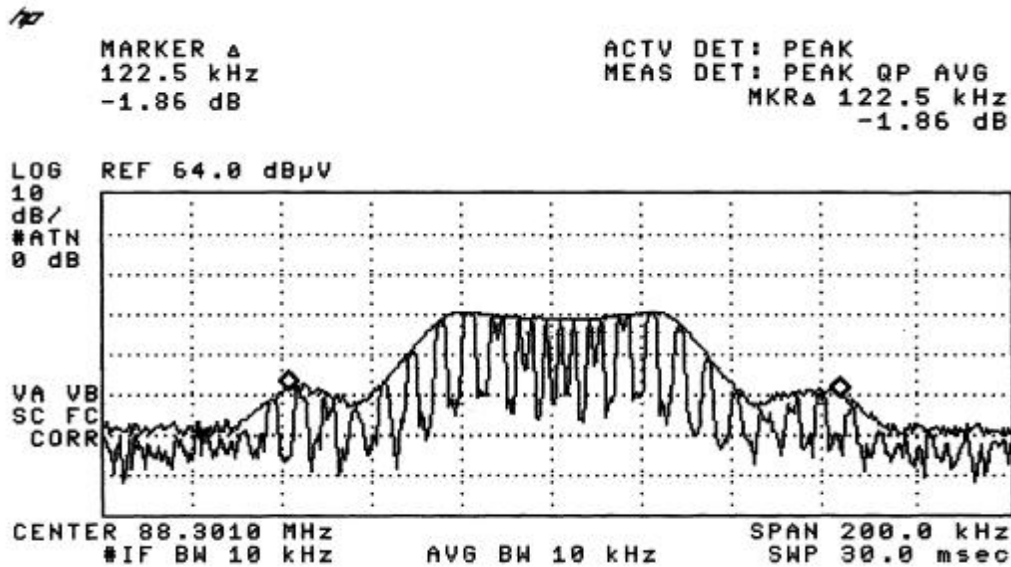
**Limits for 20dB Bandwidth of Fundamental Emission:**

Frequency Range [MHz]	20dB Bandwidth [kHz]	FCC Limits [kHz]
88.3	122.5	200

**Result: Channel 1**

The following figure is the measured bandwidth of Fundamental Emission.

**20dB Bandwidth of Fundamental Emission**



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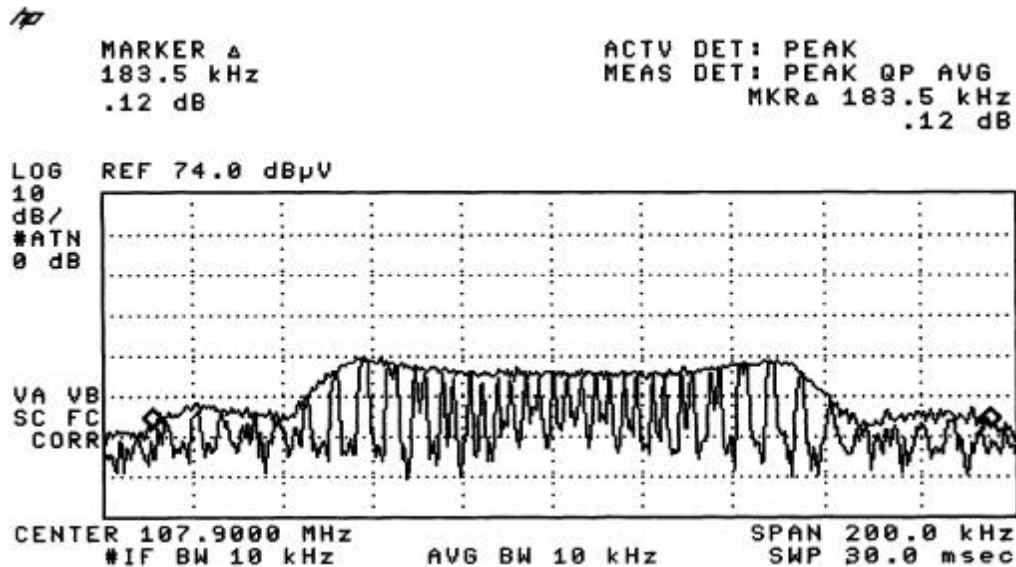
**Limits for 20dB Bandwidth of Fundamental Emission:**

Frequency Range [MHz]	20dB Bandwidth [kHz]	FCC Limits [kHz]
107.9	183.5	200

**Result: Channel 4**

The following figure is the measured bandwidth of Fundamental Emission.

**20dB Bandwidth of Fundamental Emission**



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**Appendix A**

**List of Measurement Equipment**

**Radiated Emission**

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL
EM007	SPECTRUM ANALYZER	HEWLETT PACKARD	HP85660B	3144A21192	15/06/04
EM008	SPECTRUM ANALYZER DISPLAY	HEWLETT PACKARD	HP85662A	3144A20514	15/06/04
EM009	QUASI PEAK ADAPTOR	HEWLETT PACKARD	HP85650A	3303A01702	15/06/04
EM010	RF PRESELECTOR	HEWLETT PACKARD	HP85685A	3221A01410	15/06/04
EM011	ATTENUATOR/SWITCH	HEWLETT PACKARD	HP11713A	2508A10595	15/06/04
EM012	PRE-AMPLIFIER	HEWLETT PACKARD	HP8449B	3008A00262	15/06/04
EM013	CONTROLLER (COMPUTER), COLOR MONITOR, KEYBOARD & MOUSE FLOPPY DRIVE	HEWLETT PACKARD HEWLETT PACKARD HEWLETT PACKARD	HP9000 HP A1097C HP9133L	6226A60314 3151J39517 2623A02468	15/06/04
EM020	HORN ANTENNA	EMCO	3115	4032	30/07/03
EM022	LOOP ANTENNA	EMCO	6502	1189-2424	30/07/03
EM072	SIGNAL GENERATOR	HEWLETT PACKARD	8640B	1948A11892	N/A
EM083	HKSTC OPEN AREA TEST SITE	HKSTC	N/A	N/A	08/02/03
EM131	PORTABLE SPECTRUM ANALYSER	HEWLETT PACKARD	8595EM	3710A00155	13/01/04
EM145	EMI TEST RECEIVER	R & S	ESCS 30	830245/021	04/10/04
EM219	BICONILOG ANTENNA	EMCO	3142C	00029071	28/10/03
EM195	ANTENNA POSITIONING MAST	EMCO	2075	2368	N/A
EM196	MULTI-DEVICE CONTROLLER	EMCO	2090	1662	N/A

**Conducted Emission**

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL
EM078	VARIAC	SHANGHAI VOLTAGE	TDGC-3/0.5	N/A	CM
EM081	SMALL SCREENED ROOM	MIKO INST HK	N/A	N/A	17/10/03
EM119	LISN	R & S	ESH3-Z5	0831.5518.52	01/10/02
EM127	ISOLATION TRANSFORMER 220 TO 300	WING SUN	N/A	N/A	CM
EM142	PULSES LIMITER	R & S	ESH3Z2	357.8810.52	07/07/03
EM181	EMI TEST RECEIVER	R & S	ESIB7	100072	06/01/04
EM154	SHIELDING ROOM	SIEMENA MATSUSHITA COMPONENTS	N/A	803-740-057- 99A	17/10/03
EM197	LISN	EMCO	4825/2	1193	08/04/03

**Remarks:**

CM Corrective Maintenance  
N/A Not Applicable or Not Available  
TBD To Be Determined

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**Appendix B**

**Photographs of EUT**

**Front View of the product**



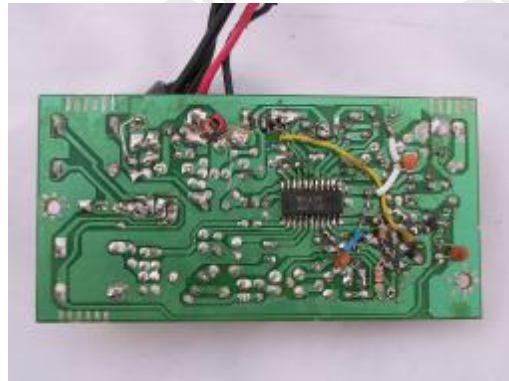
**Rear View of the product**



**Inner Circuit Top View**



**Inner Circuit Bottom View**



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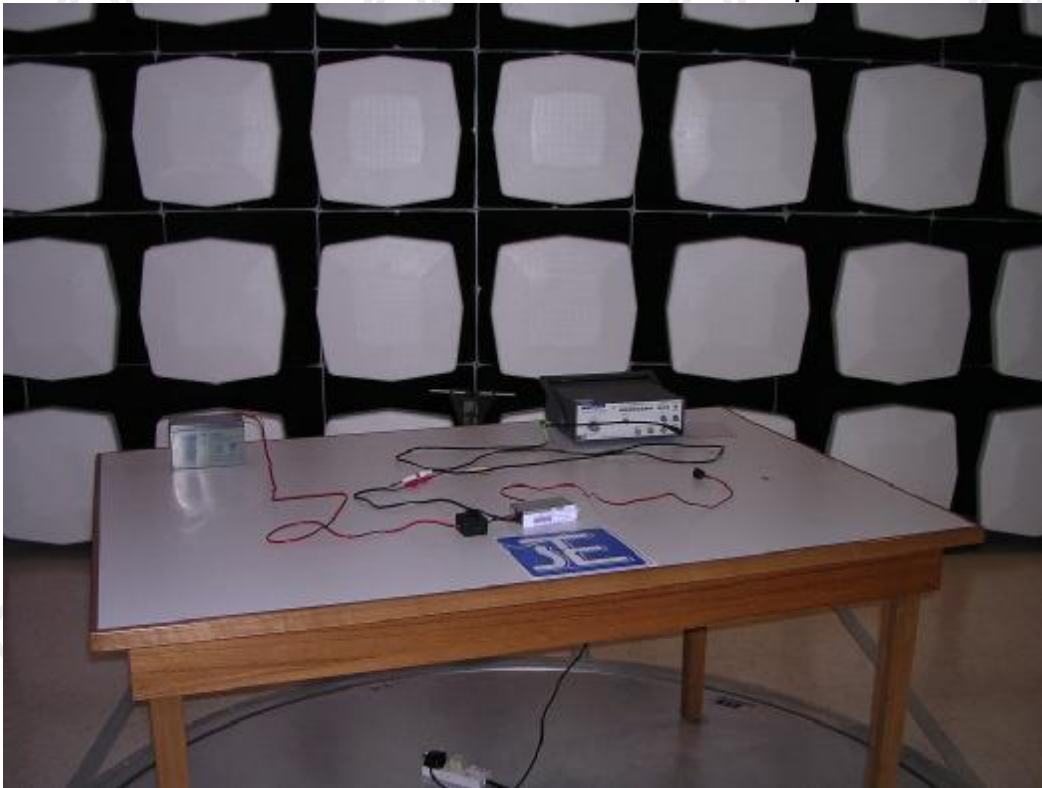
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Measurement of Radiated Emission Test Set Up



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