

FCC TEST REPORT

Under
FCC 15 Subpart C, Paragraph 15.233

Prepared For:

SUNGO HOLDING COMPANY LIMITED

RM 1708-1710 NAN FUNG CENTRE, 264-298 CASTLE PEAK ROAD,
TSUEN WAN, NT, HONG KONG.

FCC ID: T6E1607428

EUT: Phone – Cordless LCD Display

Model: 1607428

June 10, 2006

Report Type: Original Report

Test Engineer: Jacky Huang

Test Date: April 7, 2006


Review By: Apollo Liu / Manager

TABLE OF CONTENTS

1. General Information.....	3
1. 1 Notes.....	3
1. 2 Testing Laboratory.....	3
1. 3 Details of Applicant.....	3
1. 4 Application Details.....	3
1. 5 Test Item.....	3
1. 6 Test Standards.....	3
2. Technical Test.....	4
2. 1 Summary of Test Results.....	4
2. 2 Security Code Information.....	4
3. EUT Modifications.....	4
4. Conducted Power Line Test.....	5
4. 1 Test Equipment.....	5
4. 2 Test Procedure.....	5
4. 3 Test Setup.....	5
4. 4 Configuration of The EUT.....	6
4. 5 EUT Operating Condition.....	7
4. 6 Conducted Power Line Emission Limits.....	7
4. 7 Conducted Power Line Test Result.....	7
5. Radiated Emission Test.....	9
5. 1 Test Equipment.....	9
5. 2 Test Procedure.....	9
5. 3 Test Setup.....	9
5. 4 Configuration of The EUT.....	10
5. 5 EUT Operating Condition.....	10
5. 6 Radiated Emission Limit.....	10
5. 7 Radiated Emission Test Result.....	11
6. Modulation Characteristics.....	12
6. 1 Test Equipment.....	12
6. 2 Test Procedure.....	12
6.3 Rules and Specification Limits.....	12
6. 4 Test Result.....	12
7. Frequency Stability Measurement.....	14
7. 1 Test Equipment.....	14
7. 2 Test Procedure.....	14
7. 3 Test Setup.....	14
7. 4 Rules and Specification Limits.....	14
7. 5 Test Result.....	15
8. Photos of Testing.....	16
8. 1 EUT Test Photographs.....	16
8. 2 EUT Detailed Photographs.....	18
9. FCC ID Label.....	27
10. Test Equipment.....	28

1. General Information

1.1 Notes

The test results of this report relate exclusively to the test item specified in 1.5. The KMO Lab does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the KMO Lab.

1.2 Testing Laboratory

Ke Mei Ou Laboratory Co., Ltd.

7A, Jiexiangge, JiahuiXincheng, No.3027, Shennan Rd., Futian, Shenzhen, Guangdong, P.R.China.

Tel: +86 755 83642690 Fax: +86 755 83297077

Email: kmo@kmlab.com

Internet: www.kmlab.com

Site on File with the Federal Communications Commission – United States

Registration Number: 125782

For 3 & 10 meter OATS

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC4986

For 3 & 10 meter OATS

1.3 Details of Applicant

Name : Sungo Holding Company Limited.

Address : Rm 1708-1710 Nan Fung Centre, 264-298 Castle Peak Road., Tsuen Wan, NT, Hong Kong.

Contact : N/A

Tel : N/A

Fax : N/A

1.4 Application Details

Date of Receipt of Application : March 20, 2006

Date of Receipt of Test Item : March 20, 2006

Date of Test : April 4~June 10, 2006

1.5 Test Item

Manufacturer : See Applicant

Brand Name : Innovage, Inc.

Model No. : 1607428

Description : Phone – Cordless LCD Display

Additional Information

Frequency : 46MHz & 49MHz

Maximum Range : N/A

Modulation Mode : FM

Number of Channel : Handset-49.770MHz; Base-46.710MHz

Audio Frequency Response : N/A

Transmitter Antenna : The transmitter has a built in antenna and solder on the PCB

Service Areas : N/A

Power : Handset DC3.6V; Base DC9V

Operating environment Temp. : N/A

1.6 Test Standards

FCC 15 Subpart C, Paragraph 15.233

Note: All radiated measurements were made in all three orthogonal planes. The values reported are the maximum values.

2. Technical Test

2.1 Summary of Test Results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.207	Conducted Test	PASS	Complies
FCC Part 15, Paragraph 15.233 (c) Limit	Field Strength of Fundamental	PASS	Complies.
FCC Part 15 , Paragraph 15.209	Radiated Test	PASS	Complies.
FCC Part 15, Paragraph 15.233 (d)	Modulation Characteristics	PASS	Complies.
FCC Part 15, Paragraph 15.233 (g)	Frequency Tolerance	PASS	Complies.

2.2 Security Code Information

The cordless telephones do not comply with Section 15.214(d) of this Part, the box or other package in which the individual cordless telephone is to be marketed shall carry a statement in a prominent location, visible to the buyer before purchase, which reads as follows:

NOTICE: The base units of some cordless telephones may respond to other nearby units or to radio noise resulting in telephone calls being dialed through this unit without your knowledge and possibly calls being misbilled. In order to protect against such occurrences, this cordless telephone is provided with the following features: (to be completed by the responsible party).

3. EUT Modifications

No modification by Ke Mei Ou Laboratory Co., Ltd.

4. Conducted Power Line Test

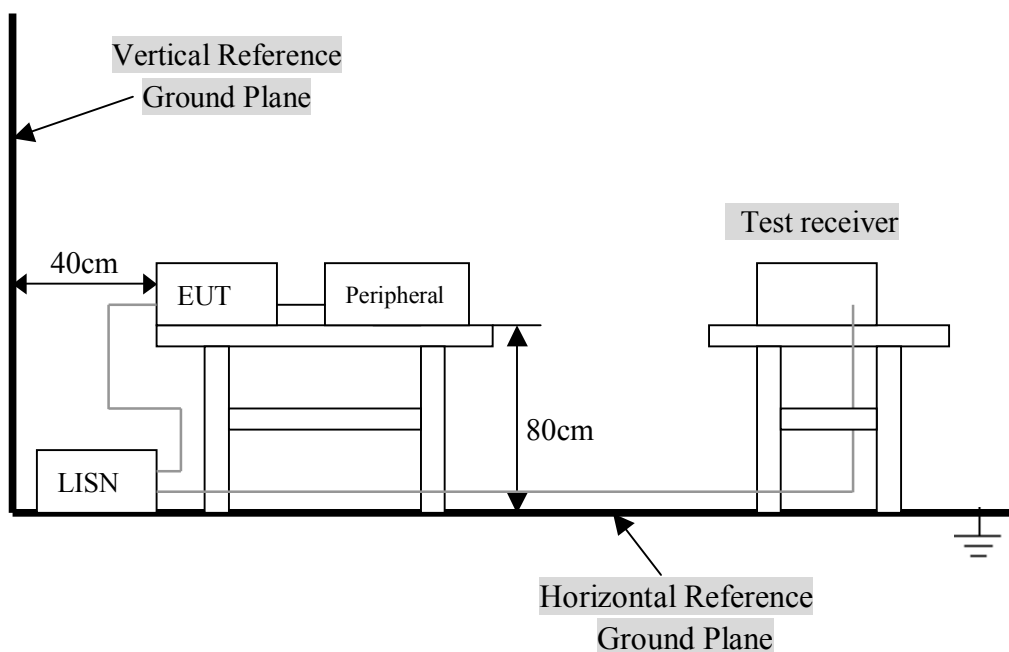
4.1 Test Equipment

Please refer to Section 10 this report.

4.2 Test Procedure

The EUT was tested according to ANSI C63.4 - 2003. The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm / 50 u-Henry as specified by section 5.1 of ANSI C63.4 - 2003. cables and peripherals were moved to find the maximum emission levels for each frequency.

4.3 Test Setup



For the actual test configuration, Please refer to the related items – Photos of Testing.

4. 4 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2003. EUT was setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. All cable were manipulated to produce worst case emission. The handset was powered by a fully charged battery. The antenna of handset was fully extended during radiated emission testing.

For the measurements, the EUT is attached to a nonmetallic support if necessary and placed on the wooden turntable. If the base unit attaches to peripherals, they are connected and operational (as typical as possible). The handset is remotely located as far from the antenna and the base as possible to ensure full power transmission from the base. Else, the base is wired to transmit full power without modulation. All peripherals and cables are listed below.

The equipment two frequencies are provide by EUT. The 2 frequencies of Handset-49.770MHz & Base-46.710MHz were for test.

Note:

- 1) Below 1GHz, the frequency 49.770MHz, 46.710MHz were pre-tested in chamber. The frequency 49.770MHz & 46.710MHz worst case, was chosen for radiated emission test.
- 2) Above 1GHz, the frequency 49.770MHz, 46.710MHz were tested individually.

A. EUT

Device	Manufacturer	Model #	FCC ID
Phone-Cordless LCD Display	Sungo Holding Company Limited	1607428	T6E1607428

B. Internal Devices

Device	Manufacturer	Model #	FCCID / DoC
N/A			

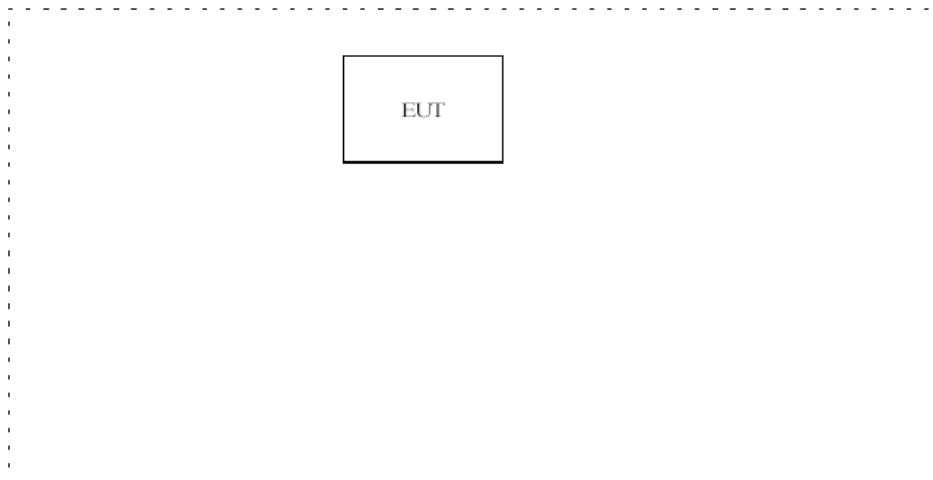
C. Peripherals

Device	Manufacturer	Model # Serial #	FCC ID/ DoC	Cable
N/A				

4. 5 EUT Operating Condition

Operating condition is according to ANSI C63.4 - 2003.

- A. Setup the EUT and simulators as shown on follow.
- B. Enable RF signal and confirm EUT active.
- C. Modulate output capacity of EUT up to specification.



4. 6 Conducted Power Line Emission Limits

FCC Part 15 Paragraph 15.207 (dBuV)		
Frequency Range (MHz)	Class A QP/AV	Class B QP/AV
0.15 – 0.5	79/66	66-56/56-46
0.5 – 5.0	73/60	56/46
5.0 - 30	73/60	60/50

NOTE : In the above table, the tighter limit applies at the band edges.

4. 7 Conducted Power Line Test Result

The frequency spectrum from 0.15 MHz to 30 MHz was investigated. All readings are quasi -peak values with a resolution bandwidth of 9 KHz.

- Temperature : 26 °C
- Humidity : 53 % RH
- Result : **PASSED**

EN55022 Class B							
Frequency (MHz)	Emission (dBuV)		LINE/NEUTRAL	Limit (dBuV)		Margin (dB)	
	QP	AV		QP	AV	QP	AV
0.158	28.50	21.78	LINE	65.57	55.57	-37.07	-33.79
0.210	26.87	21.08	NEUTRAL	63.21	53.21	-36.34	-32.13
0.234	29.61	20.77	LINE	62.31	52.31	-32.70	-31.54
0.350	27.52	20.15	NEUTRAL	58.96	48.96	-31.44	-28.81
0.586	25.93	18.56	LINE	56.00	46.00	-30.07	-27.44
0.526	27.66	18.93	NEUTRAL	56.00	46.00	-28.34	-27.07

Note: NF = No Significant Peak was Found.

Remarks :

- 1.Uncertainty in conducted emission measured is <+/- 2dB.
- 2.QP and AV are abbreviations of quasi-peak and average individually.
- 3.The emission levels of other frequencies were very low against the limit.
- 4.The Quasi-peak emission level also meets average limit and measurement with the average detector is unnecessary.
- 5.Margin Value= Emission Level – Limit Value.

Conducted Emission

EN55022

EUT: Phone-Cordless LCD Display, M/N: 1607428

Manufacturer: SUNGO HOLDING COMPANY LIMITED

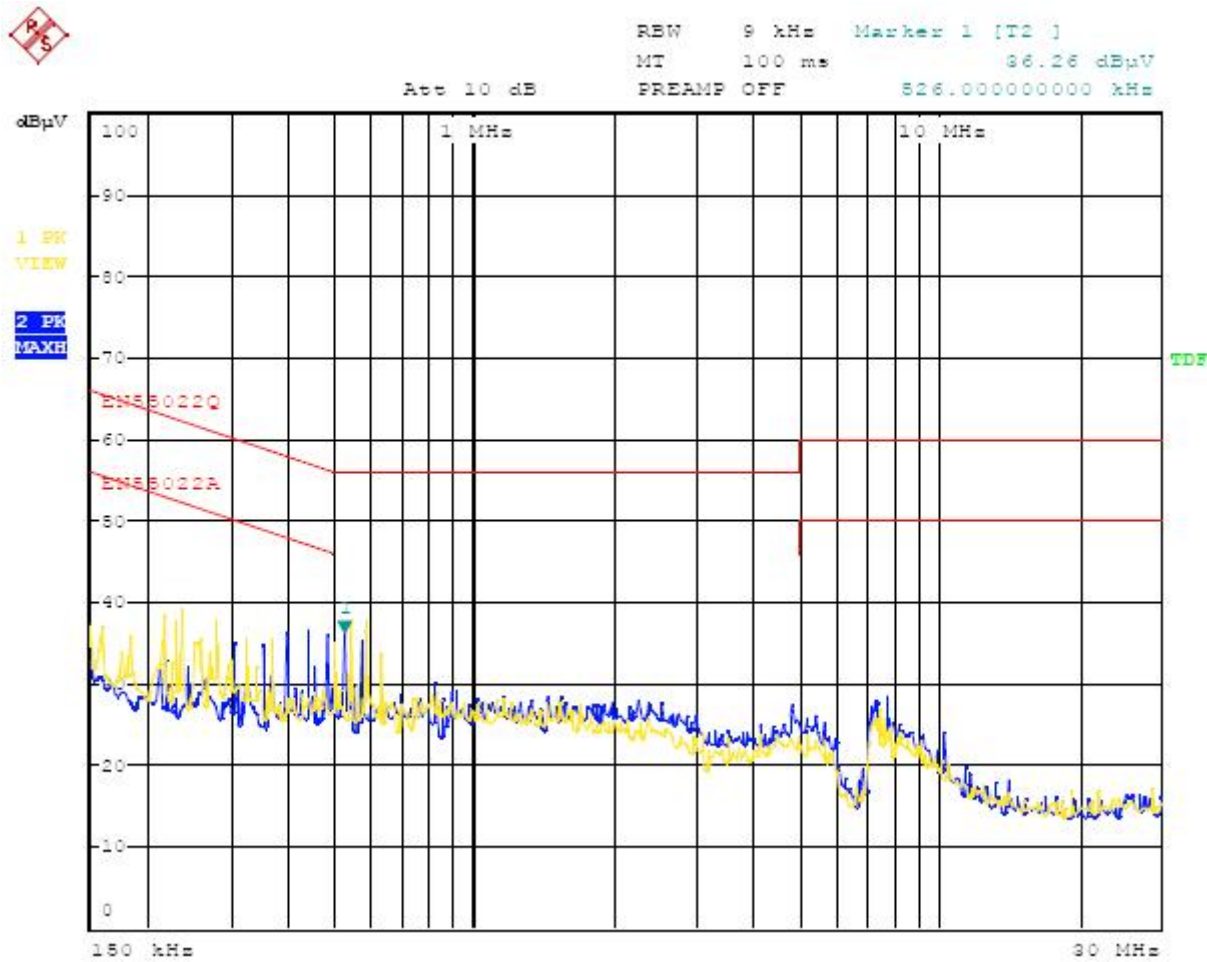
Operating Condition: Charger

Test Site: Ke Mei Ou Laboratory

Operator: Peter Lin

Test Specification: LINE&NEUTRAL

Comment:



5. Radiated Emission Test

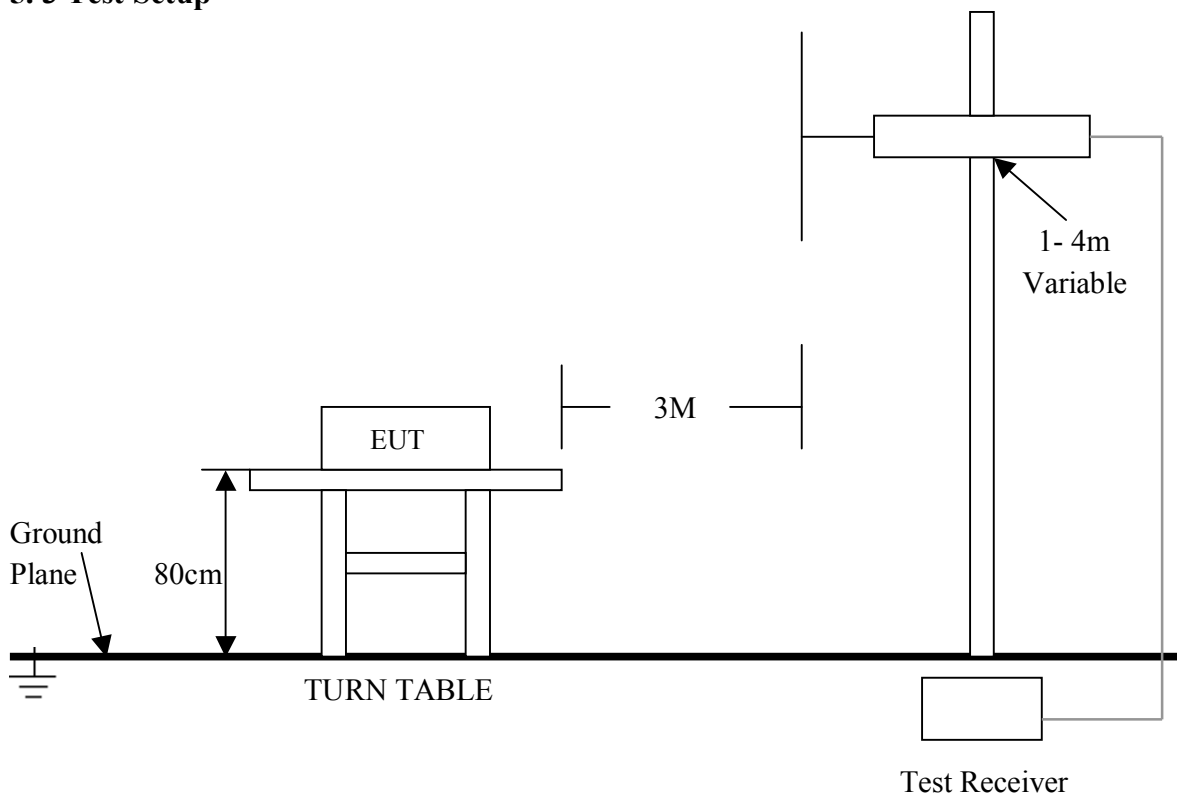
5.1 Test Equipment

Please refer to Section 10 this report.

5.2 Test Procedure

1. The EUT was tested according to ANSI C63.4 - 2003. The radiated test was performed at Ke Mei Ou Laboratory. This site is on file with the FCC laboratory division, Registration No. 125782.
2. The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2003.
3. The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz. All readings are above 1 GHz , peak values with a resolution bandwidth of 1 MHz . Measurements were made at 3 meters.
4. The emissions from the EUT were measured continuously at every azimuth by rotating the turntable. The Receiving antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency. Emissions below 30MHz were measured with a loop antenna while emission above 30MHz were measured using a broadband E-field antenna.
5. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
6. Both the horizontal and vertical field components were measured above 30 MHz while below 30 MHz the antenna was rotated in 3 axes.

5.3 Test Setup



For the actual test configuration , please refer to the related items – Photos of Testing.

5. 4 Configuration of The EUT

Same as section 4 . 4 of this report

5. 5 EUT Operating Condition

Same as section 4 . 5 of this report.

5. 6 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below :

A. FCC Part 15 Subpart C Paragraph 15.233 Limit

Fundamental Frequency (MHz)	Field Strength of Fundamental	
	uV/m	dBuV/m
43.71 – 44.49, 46.60 – 46.98, 48.75 – 49.51 and 49.66 – 50.0	10000	80.0

- Note:**
- (1) RF Voltage (dBuV) = 20 log RF Voltage (uV)
 - (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
 - (3) The emission limit in this paragraph is based on measurement instrumentation employing an average detector. Measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

B. Frequencies in restricted band are complied to limit on Paragraph 15.209.

Frequency (MHz)	Distance (m)	Field Strength (dBuV/m)
30 - 88	3	40.0
88 - 216	3	43.5
216 - 960	3	46.0
Above 960	3	54.0

- Note:**
- (1) RF Voltage (dBuV) = 20 log RF Voltage (uV)
 - (2) In the Above Table, the tighter limit applies at the band edges.
 - (3) Distance refers to the distance in meters between the measuring instrument antenna and the

5. 7 Radiated Emission Test Result

A. Fundamental Radiated Emission Data

Product : Phone – Cordless LCD Display Test Mode : Handset & Base
 Test Item : Fundamental Radiated Emission Data Temperature : 25 °C
 Test Voltage : Handset DC3.6V(Battery); Base DC9V Humidity : 50%RH
 Test Result : **PASS**

Handset

Freq. (MHz)	Emission (dBuV/m)	HORIZ / VERT	Limits (dBuV/m)	Margin (dB)
49.770	56.90	HORIZ	80	-23.10
49.770	78.27	VERT	80	-1.73

Base

Freq. (MHz)	Emission (dBuV/m)	HORIZ / VERT	Limits (dBuV/m)	Margin (dB)
46.710	51.01	HORIZ	80	-28.99
46.710	73.90	VERT	80	-6.10

Note: (1) All Readings are Peak value.
 (2) Emission Level = Reading Level + Probe Factor + Cable Loss.
 (3) The average measurement was not performed when the peak measured data under the limit of average detection.

B. General Radiated Emission Data

Product : Phone – Cordless LCD Display Test Mode : Handset & Base
 Test Item : General Radiated Emission Data Temperature : 25 °C
 Test Voltage : Handset DC3.6V(Battery); Base DC9V Humidity : 50%RH
 Test Result : **PASS**

Handset

Freq. (MHz)	Emission (dBuV/m)	HORIZ / VERT	Limits (dBuV/m)	Margin (dB)
99.540	31.57	HORIZ	43.5	-11.93
99.540	28.15	VERT	43.5	-15.35
149.310	28.27	HORZ	43.5	-15.23
149.310	28.19	VERT	43.5	-15.31
199.080	27.47	HORZ	43.5	-16.03
199.080	25.67	VERT	43.5	-17.83

Base

Freq. (MHz)	Emission (dBuV/m)	HORIZ / VERT	Limits (dBuV/m)	Margin (dB)
93.420	36.67	HORIZ	43.5	-6.83
93.420	36.91	VERT	43.5	-6.59
140.130	31.82	HORZ	43.5	-11.68
140.130	34.14	VERT	43.5	-9.36
186.840	30.76	HORZ	43.5	-12.74
186.840	28.82	VERT	43.5	-14.68

Note: (1) All Reading Levels below 1GHz are Quasi-Peak, above are peak and average value.
 (2) Emission Level = Reading Level + Probe Factor + Cable Loss.

6. Modulation Characteristics

6.1 Test Equipment

Please refer to Section 10 this report.

6.2 Test Procedure

The EUT was operated in turn under the standard test conditions specified, and at the maximum output power. An external 2.5kHz audio signal was couple to the standard input port and adjusted to a level which produced 85% of the measured “Maximum Frequency Deviation”. In this case, the base station and the handset modulation in-band emission, meet the requirement at maximum frequency deviation. Levels for compliance have therefore been evaluated at these levels. Any internal modulation source that normally operates on a continuous basis was disabled.

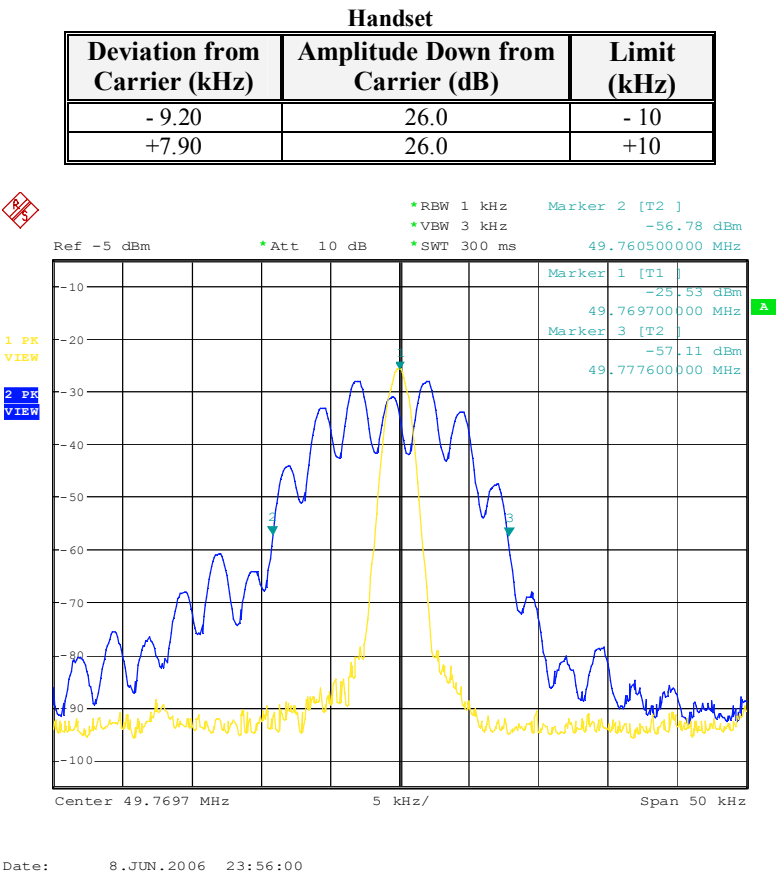
A portion of the radio frequency power delivered by the transmitter into the standard output termination was coupled to a spectrum analyzer.

If the cordless telephone contained an internal modulation source that normally operates continuously or for more than three(3) seconds, then the above test was also repeated with the external 2.5kHz disconnected.

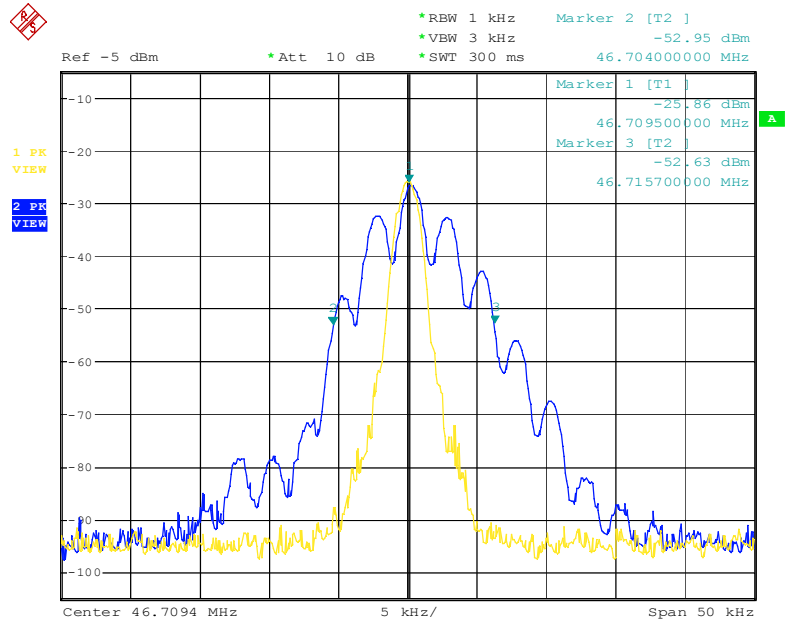
6.3 Rules and Specification Limits

According to § 15.233(d), The fundamental emission shall be confined within a 20 kHz band and shall be centered on a carrier frequency shown above, as adjusted by the frequency tolerance of the transmitter at the time testing is performed. Modulation products outside of this 20 kHz band shall be attenuated at least 26 dB below the level of the unmodulated carrier or to the general limits in Section 15.209, whichever permits the higher emission levels. Emissions on any frequency more than 20 kHz removed from the center frequency shall consist solely of unwanted emissions and shall not exceed the general radiated emission limits in Section 15.209. Tests to determine compliance with these requirements shall be performed using an appropriate input signal as prescribed in Section 2.989 of this Chapter

6.4 Test Result



Base		
Deviation from Carrier (kHz)	Amplitude Down from Carrier (dB)	Limit (kHz)
- 5.50	26.0	- 10
+6.20	26.0	+10



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7. Frequency Stability Measurement

7.1 Test Equipment

Please refer to Section 10 this report.

7.2 Test Procedure

Two stability tests were performed -- Frequency stability versus input voltage and frequency stability versus temperature. For both measurements, a 1 GHz frequency counter with temperature controlled time base is used.

The counter is coupled to the transmitter by coiling a pickup wire over the transmitter antenna or directly attaching it to the antenna, assuming a 50Ω antenna is used.

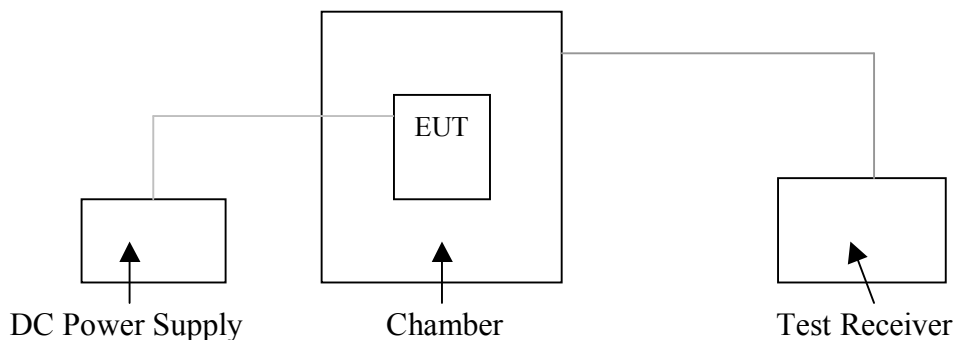
The frequency stability is measured at room temperature by varying the supply voltage (AC or DC, as required) from 85% through 115% of normal operating voltage. This test is not applicable if the unit uses battery power. For battery powered equipment, the batteries are new and fully charged.

Stability versus temperature testing is carried out with the environmental chamber. The following procedure is followed during testing:

- Cool the device to -20°C and allow it to stabilize for 30 minutes. Record the frequency.
- Heat the oven to $+50^{\circ}\text{C}$ and allow it to stabilize for 30 minutes. Record the frequency of operation.
- Compare the measurements and a room temperature measurement against the assigned frequency tolerance.

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency.

7.3 Test Setup



7.4 Rules and Specification Limits

According to § 15.233(g), The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency. The tolerance shall be maintained for a temperature variation of -20°C to $+50^{\circ}\text{C}$ at normal supply voltage, and for variation in the primary voltage from 85% to 115% of the rated supply voltage at a temperature of 20°C . For battery operated equipment, the equipment tests shall be performed using a new battery.

7.5 Test Result

Base Frequency Stability versus Source Voltage

Condition	Power Supplied (Vac)	Frequency Measured (kHz)	Frequency Tolerance %	Assigned Frequency (kHz)	Tolerance Limit
Norminal	120.0	46.70940	-0.001285	46.7100	±0.01%
85%	102.0	46.70952	-0.001028	46.7100	±0.01%
115%	138.0	46.70891	-0.002334	46.7100	±0.01%

Frequency Stability versus Temperature

Temperature Condition(°C)	Power Supplied (Vac)	Frequency Measured (kHz)	Frequency Tolerance %	Assigned Frequency (kHz)	Tolerance Limit
-20	120.0	46.71013	0.000278	46.7100	±0.01%
25	120.0	46.70940	-0.001285	46.7100	±0.01%
50	120.0	46.70925	-0.001606	46.7100	±0.01%

Handset Frequency Stability versus Temperature

Temperature Condition(°C)	Power Supplied (Vdc)	Frequency Measured (kHz)	Frequency Tolerance %	Assigned Frequency (kHz)	Tolerance Limit
-20	New Battery	49.76926	-0.001487	49.7700	±0.01%
25	New Battery	49.76970	-0.000603	49.7700	±0.01%
50	New Battery	49.76971	-0.000583	49.7700	±0.01%

Note: The EUT meet the standard.

8. Photos of Testing

8.1 EUT Test Photographs

Conducted emission test view



Radiated emission test view



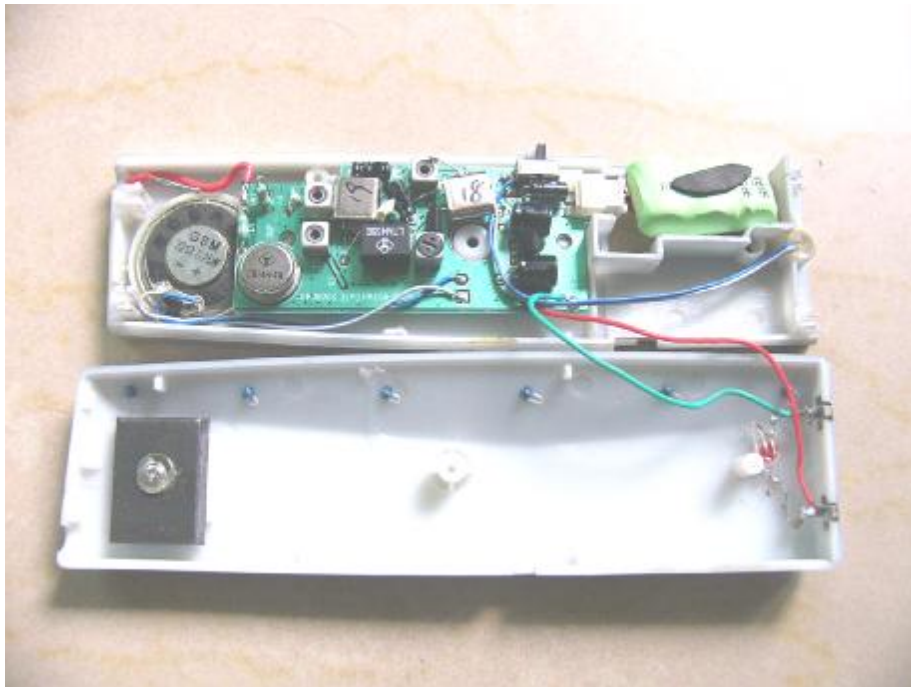


8. 2 EUT Detailed Photographs

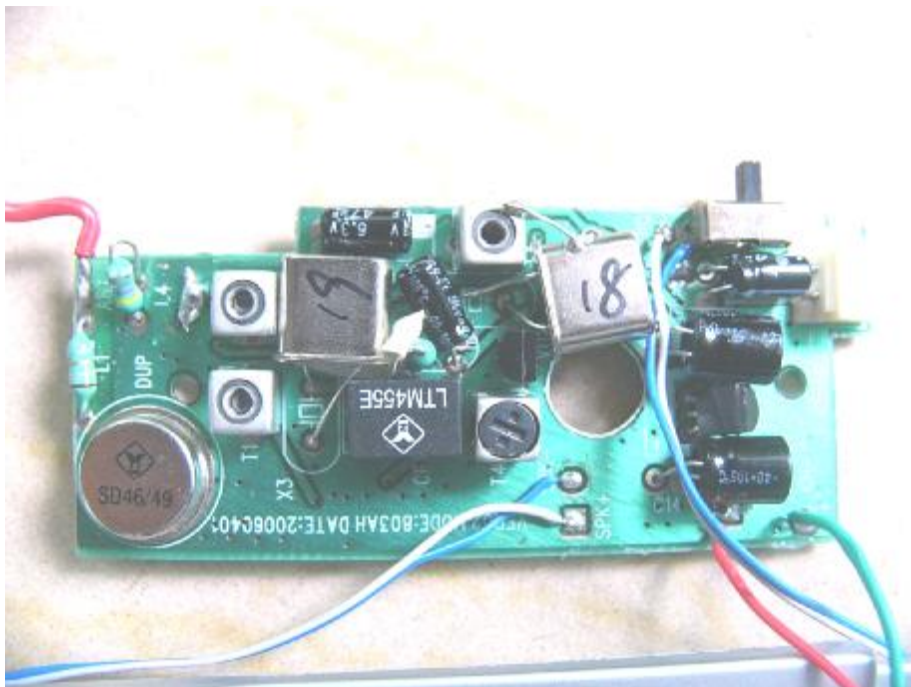
Handset view



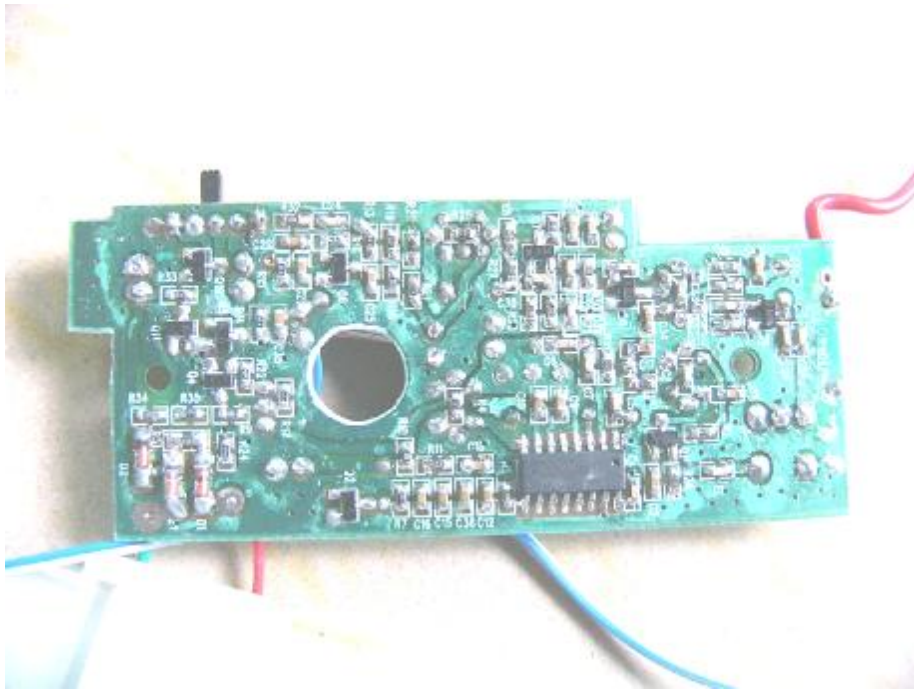
Handset inside whole view



Handset Main board component side



Handset Main board solder side



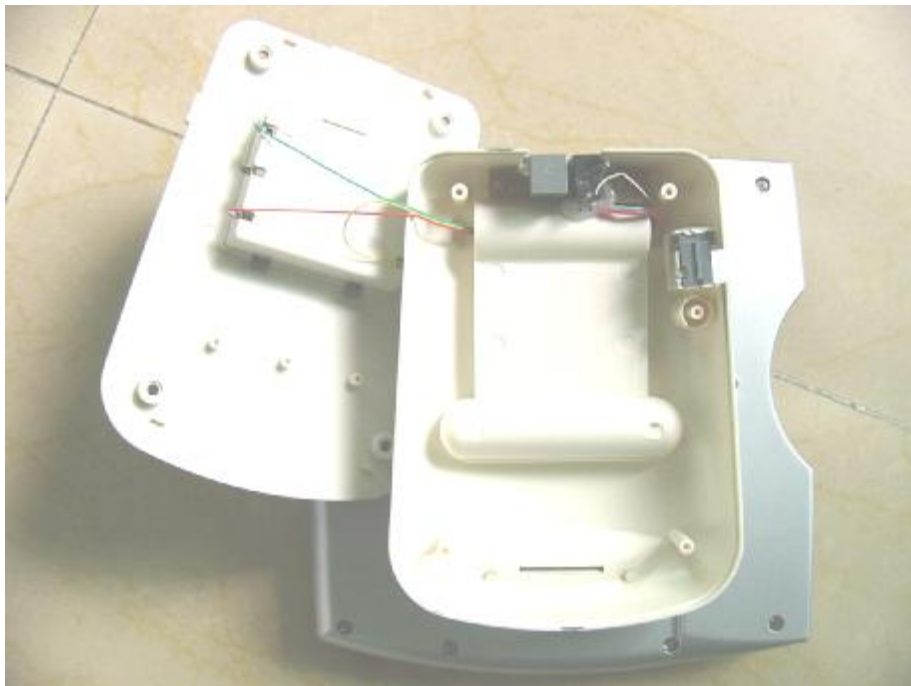
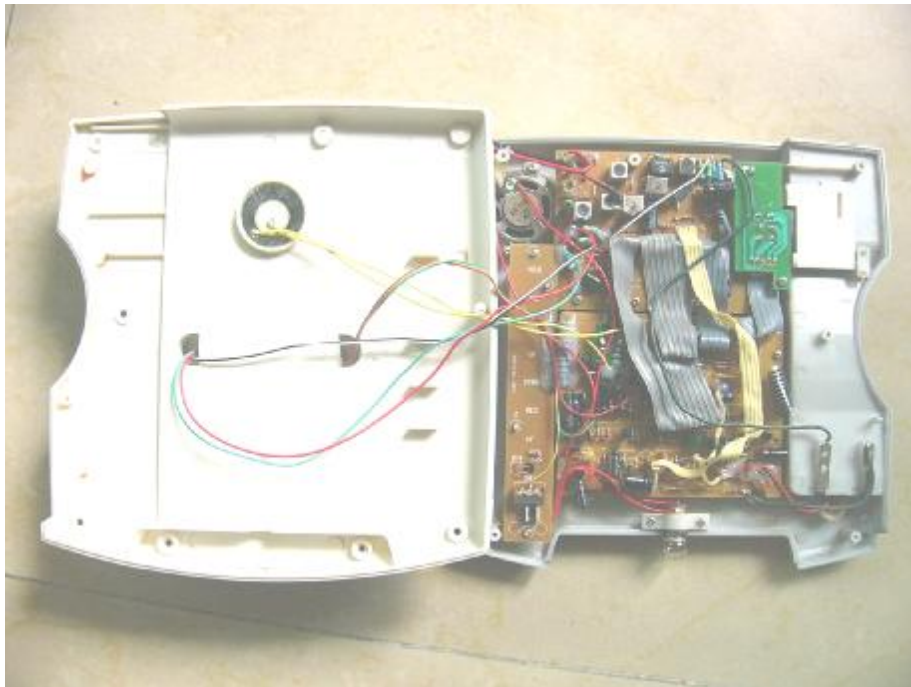
Base top view



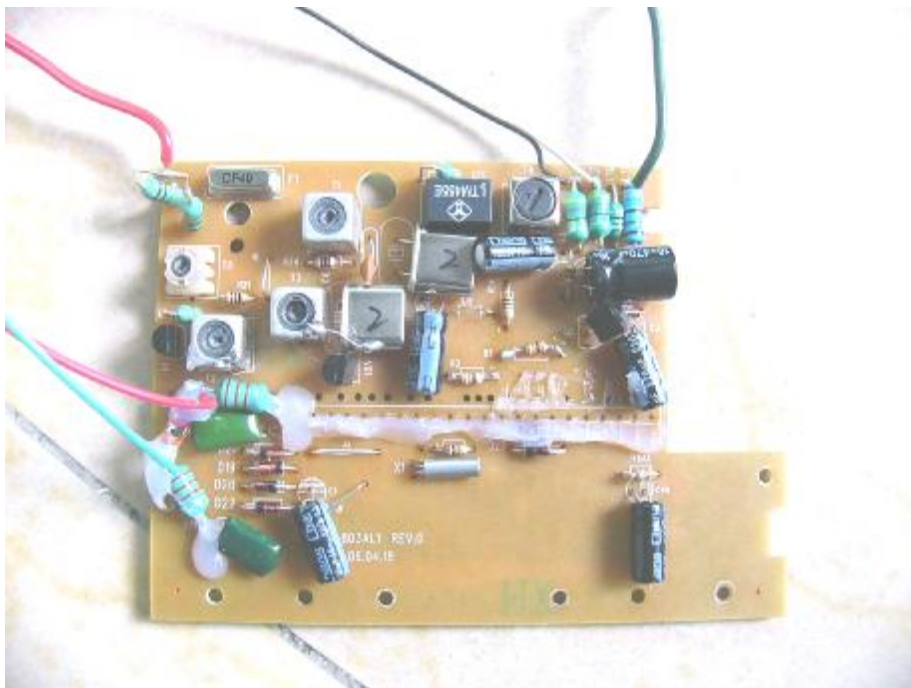
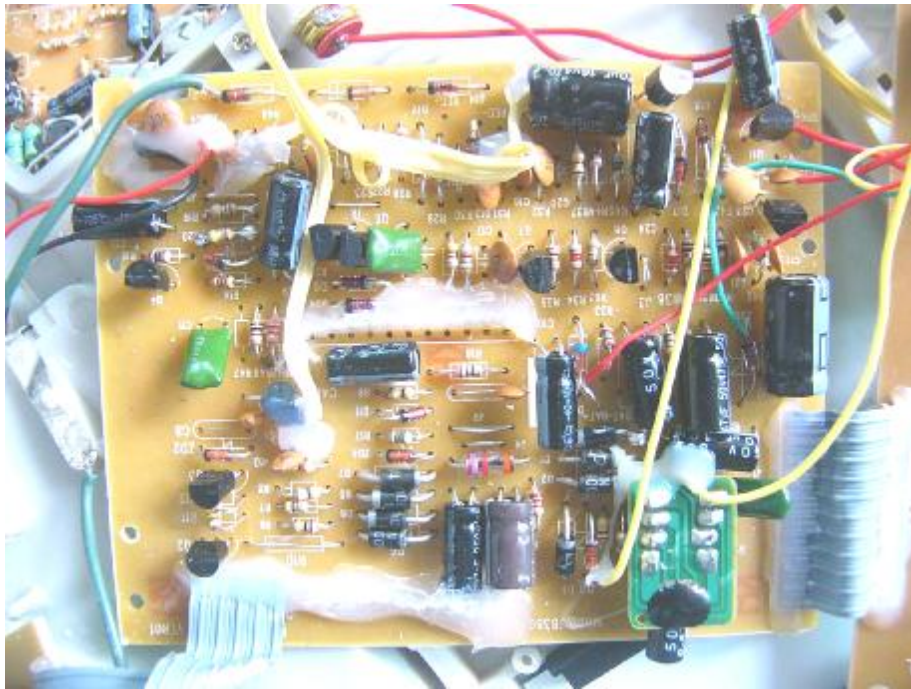
Base bottom view

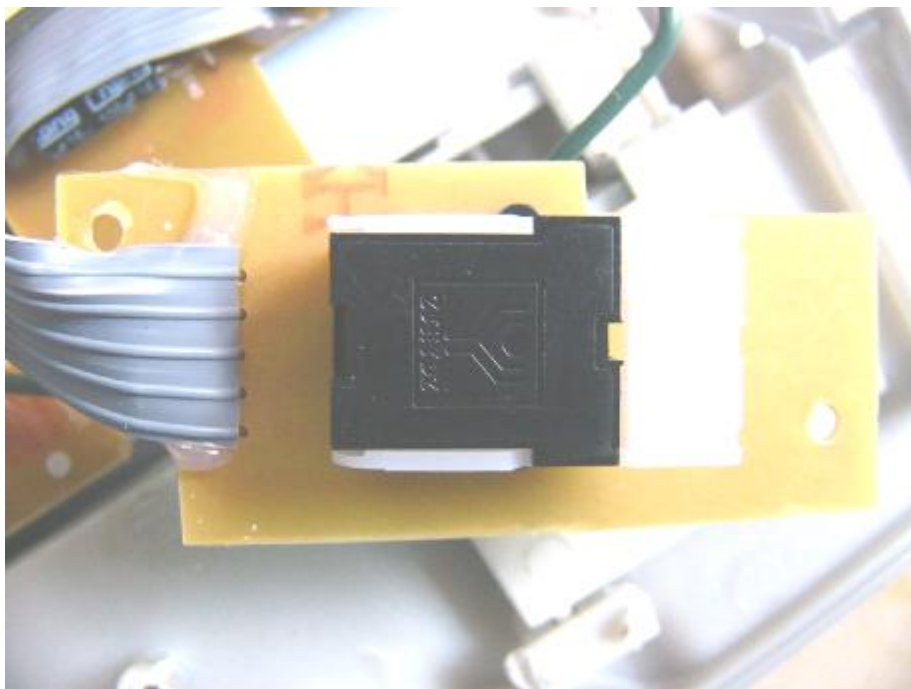
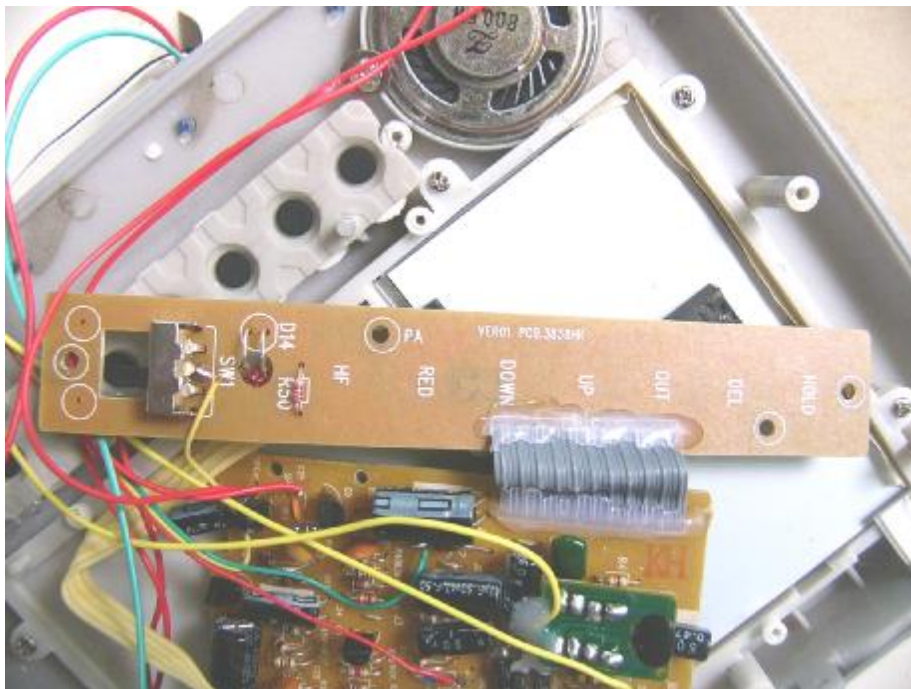


Base inside whole view

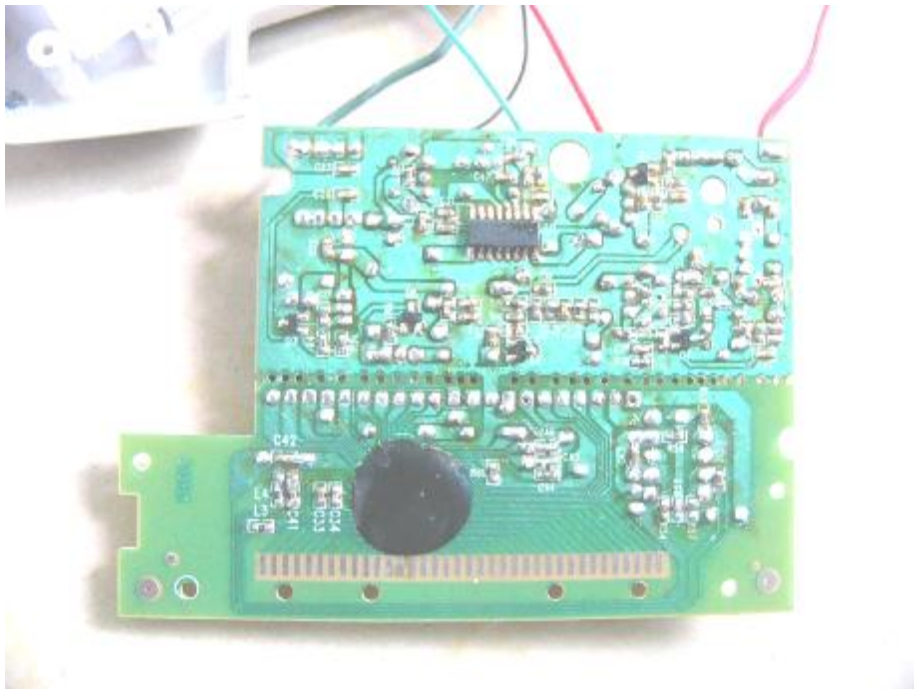
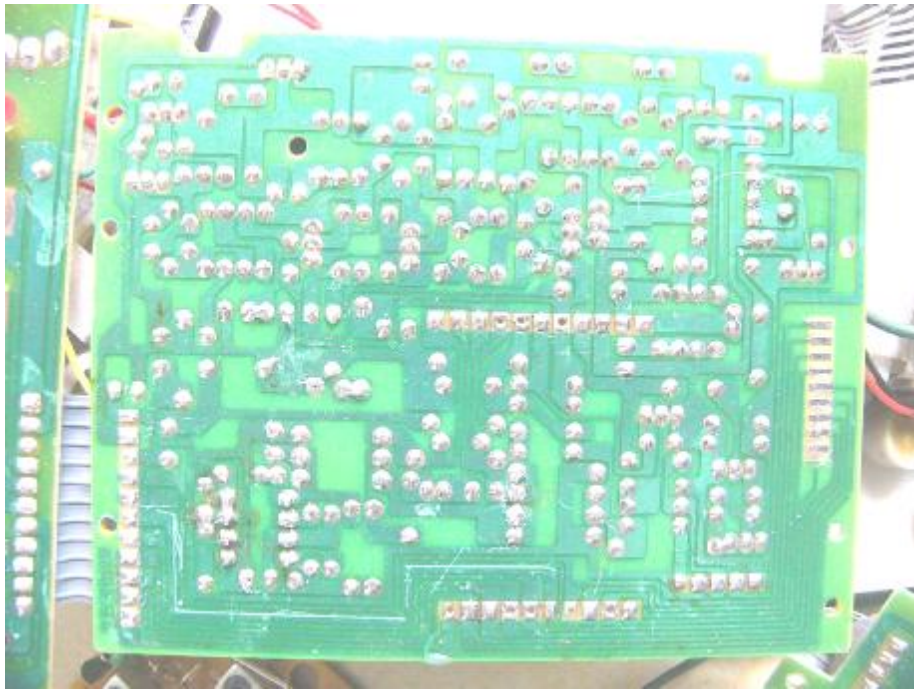


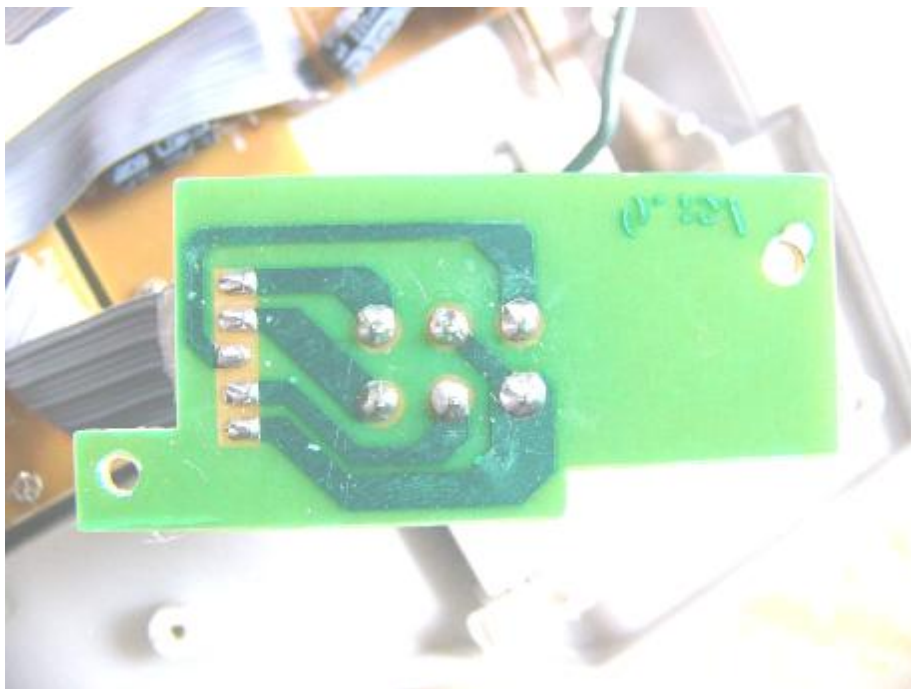
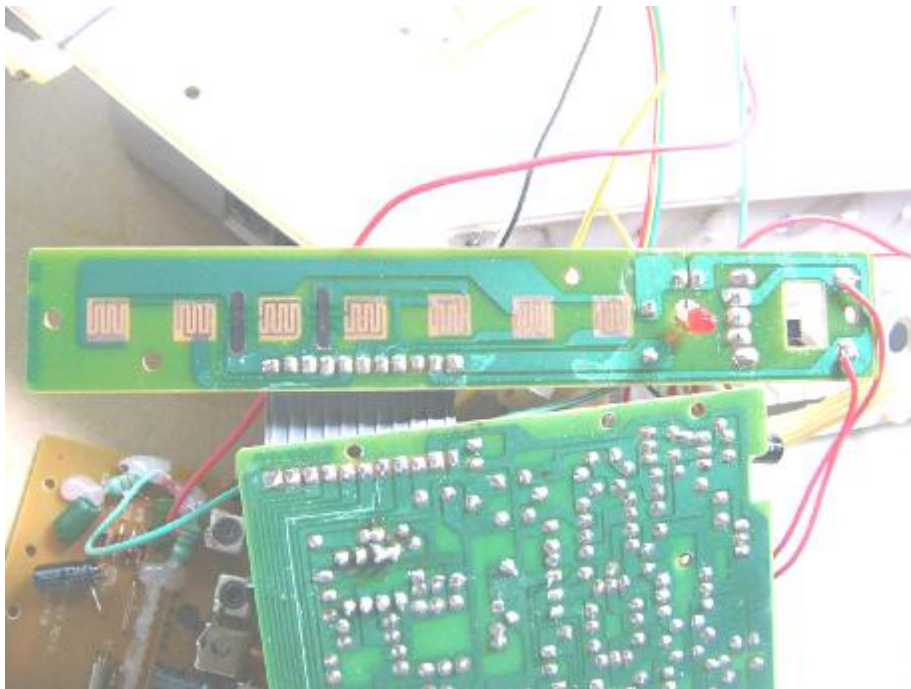
Base Main board component side





Base Main board solder side





9. FCC ID Label

FCC ID: T6E1607428

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The Label must not be a stick-on paper label. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

The remained portion of label statement required by FCC is attached in the user's manual.

Proposed Label Location on EUT

EUT Bottom View/Proposed FCC ID Location



10. Test Equipment

The following test equipments were used during the radiated & conducted emission test:

Equipment/ Facilities	Manufacturer	Model #	Serial No.	Date of Cal.	Due Date
Turntable	KMO	KSZ001T	200306	NCR	NCR
Antenna Tower	KMO	KSZ002AT	200307	NCR	NCR
OATS	KMO	KSZSITE001	N/A	July 06, 2005	July 06, 2006
EMI Test Receiver	Rohde & Schwarz	ESPI3	100180	Oct.18, 2005	Oct.18, 2006
Signal Generator	Rohde & Schwarz	SMT03	100059	Feb.10, 2006	Feb.10, 2007
Signal Generator	FLUKE	PM5418+Y/C	LO747012	Feb.10, 2006	Feb.10, 2007
Signal Generator	FLUKE	PM5418TX	LO738007	Feb.10, 2006	Feb.10, 2007
Loop Antenna	SCHWARZBECK	FMZB1516	113	Jan. 30, 2006	Jan. 30, 2007
Loop Antenna	Rohde & Schwarz	HFH2-Z2	872096/16	Jan. 30, 2006	Jan. 30, 2007
Bilog Antenna	Chase	CBL6111C	2576	Feb.01, 2006	Feb.01, 2007
Ultra Broadband Antenna	Rohde & Schwarz	HL 562	100110	June.05, 2005	June.05, 2006
AMN	Rohde & Schwarz	ESH3-Z5	100196	Oct. 23,2005	Oct. 23, 2006
AMN	Rohde & Schwarz	ESH3-Z5	100197	Oct. 23,2005	Oct. 23, 2006
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	N/A	N/A	N/A
Absorbing Clamp	Rohde & Schwarz	MDS-21	N/A	Oct. 29,2005	Oct. 29,2006
KMO Shielded Room	KMO	KMO-001	N/A	N/A	N/A
EMI Test Receiver	Rohde & Schwarz	ESCS30	100003	Feb. 27, 2006	Feb.27, 2007
AMN	Rohde & Schwarz	ESH3-Z5	100002	Feb.10, 2006	Feb.10, 2007
LISN	Kyoritsu	KNW-407	8-1441-8	Feb.10, 2006	Feb.10, 2007
EMI Test Receiver	Rohde & Schwarz	ESI26	838786/013	Feb.10, 2006	Feb.10, 2007
Bilog Antenna	Chase	CBL6112B	2591	Feb.10, 2006	Feb.10, 2007
Horn Antenna	Rohde & Schwarz	HF906	100014	Feb.10, 2006	Feb.10, 2007
Power Meter	Rohde & Schwarz	NRVD	100041	Feb.10, 2006	Feb.10, 2007
Radio Communication Test Set	Rohde & Schwarz	CMS 54	846621/024	Feb.10, 2006	Feb.10, 2007
Modulation Analyzer	Hewlett-Packard	8901B	2303A00362	Feb.10, 2006	Feb.10, 2007
SOHO Telephone Switching System	IKE	2000-108C	N/A	Feb.10, 2006	Feb.10, 2007
Temperature Chamber	TABAI	PSL-4GTW	N/A	Feb.10, 2006	Feb.10, 2007
3m Semi-Anechoic Chamber	Albatross Projects	9mX6mX6m	N/A	Feb.10, 2006	Feb.10, 2007