TEST REPORT FROM:

COMMUNICATION CERTIFICATION LABORATORY
1940 W. Alexander Street
Salt Lake City, Utah
84119-2039

Type of Report: Certification

TEST OF: CT-P7000

FCC ID: P5UCHN-43078-WT

To FCC PART 15, Subpart C
Sections 15.214 and 15.249

Test Report Serial No: 73-7748

Applicant:

Coby Electronics Co., Ltd.
Unit C-E, 8/F, Po Shau Centre, 115 How Ming Street
Kwun Tong, Kowloon, Hong Kong

Date of Test: May 13, 2002

Issue Date: June 3, 2002

CERTIFICATION OF ENGINEERING REPORT

This report has been prepared by Communication Certification Laboratory to determine compliance of the device described below with the certification requirements of FCC Part 15, Subpart C Sections 15.214 and 15.249. This report may be reproduced in full, partial reproduction may only be made with the written consent of the laboratory. The results in this report apply only to the sample tested.

- Applicant: Coby Electronics Co., Ltd.
- Manufacturer: Coby Electronics Co., Ltd.
- Trade Name: Coby
- Model Number: CT-P7000
- FCC ID: P5UCHN-43078-WT

On this 3rd day of June 2002, I, individually, and for Communication Certification Laboratory, certify that the statements made in this engineering report are true, complete, and correct to the best of my knowledge, and are made in good faith.

Although NVLAP has recognized that the Communication Certification Laboratory EMC testing facilities are in good standing, NVLAP does not endorse the product described in this report.

COMMUNICATION CERTIFICATION LABORATORY

_____

Tested by: Jeffrey L. Draney
EMC Technician

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SECTION 1.0 CLIENT INFORMATION

1.1 Client Information:

Company Name: Coby Electronics Co., Ltd.
Unit C-E, 8/F, Po Shau Centre, 115 How Ming Street
Kwun Tong, Kowloon, Hong Kong

Contact Name: Mike Khadivar
Contact Company: Encore Communication Laboratories Inc.

SECTION 2.0 EQUIPMENT UNDER TEST (EUT)

2.1 Identification of EUT:

Trade Name:	Coby
Model Name or Number:	CT-P7000
Serial Number:	None
Options Fitted:	N/A
Country of Manufacture:	China

2.2 Description of EUT:

The CT-P7000 is a 50 channel cordless telephone operating in the 2400 – 2483.5 MHz band. The Handset operates between 2473.99 and 2476.45 MHz, and the Base operates between 2402.55 and 2405.00 MHz. The CT-P7000 telephone uses digital security that randomly selects a code from 0 to 65536 each time the handset is placed in the base charger.

2.3 Modification Incorporated/Special Accessories on EUT:

There were no modifications or special accessories required to comply with the specification.

Signature: _____

Typed Name: Mike Khadivar

Title: _____

SECTION 3.0 TEST SPECIFICATION, METHODS & PROCEDURES

3.1 Test Specification:

Title: FCC PART 15, Subpart C (47 CFR 15).
Section 15.249

Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz and 24.0-24.25 GHz.

Purpose of Test: The tests were performed to demonstrate Initial compliance.

3.2 Methods & Procedures:

3.2.1 § 15.249

(a) The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902 – 902 MHz	50	500
2400 – 2483.5 MHz	50	500
5725 – 5875 MHz	50	500
24.0 – 24.25 GHz	250	2500

(b) Field strength limits are specified at a distance of 3 meters.

(c) Emissions radiated outside of the specified frequency bands, except for harmonics; shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.

(d) As shown in § 15.35(b), for frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

(e) Parties considering the manufacture, importation, marketing or operation of equipment under this section should also not the requirements in § 15.37(d).

3.2.2 § 15.207 Conducted Limits

(a) For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 450 kHz to 30 MHz shall not exceed 250 microvolts. Compliance with the provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

3.2.3 § 15.214 Cordless Tlelphones

(d) Cordless telephones shall incorporate circuitry which makes use of a digital security code to provide protection against unintentional access to the public switched telephone network by the base unit and unintentional ringing by the handset. These functions shall operate such that each access of the telephone network or ringing of the handset is preceded by the transmission of a code word. Access to the telephone network shall occur only if the code transmitted by the handset matches the code set in the base unit. Similarly, ringing of the handset shall occur only if the code transmitted by the base unit matches the code set in the handset. The security code required by this Section may also be employed to perform other communications functions, such as providing telephone billing information. This security code system is to operate in accordance with the following provisions.

(1) There must be provision for at least 256 possible discrete digital codes. Factory-set codes must be continuously varied over at least 256 possible codes as each telephone is manufactured. The codes may be varied either randomly, sequentially, or using another systematic procedure.

(2) Manufacturers must use one of the following approaches for facilitating variation in the geographic distribution of individual security codes:

(i) Provide a means for the user to readily select from among at least 256 possible discrete digital codes. The cordless telephone shall be either in a non-operable mode after manufacture until the user selects a security code or the manufacturer must continuously vary the initial security code as each telephone is produced.

(ii) Provide a fixed code that is continuously varied among at least 256 discrete digital codes as each

telephone is manufactured.

(iii) Provide a means for the cordless telephone to automatically select a different code from among at least 256 possible discrete digital codes each time it is activated.

(iv) It is permissible to provide combinations of fixed, automatic, and user-selectable coding provided the above criteria are met.

(3) A statement of the means and procedures used to achieve the required protection shall be provided in any application for equipment authorization of a cordless telephone.

The CT-P7000 telephone uses digital security that randomly selects a code from 0 to 65536 each time the handset is placed in the base charger.

3.3 Test Procedure

The line conducted and radiated emissions testing was performed according to the procedures in ANSI C63.4 (1992). Testing was performed at CCL's Wanship open area test site #2, located at 550 West Wanship Road, Wanship, UT. This site has been fully described in a report submitted to the FCC, and was accepted in a letter dated October 23, 2000 (90504).

CCL participates in the National Voluntary Laboratory Accreditation Program (NVLAP) and has been accepted under NVLAP Lab Code:100272-0, which is effective until September 30, 2002.

For radiated emissions testing that is performed at distances closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

SECTION 4.0 OPERATION OF EUT DURING TESTING

4.1 Operating Environment:

Base Unit

Power Supply: 120 VAC
AC Mains Frequency: 60 Hz
Output Rating: 9 VDC 300mA

Remote Unit

Battery: 3.6 V Ni-Cd 600mAh

4.2 Operating Modes:

Each mode of operation was exercised to produce worst-case emissions. The worst-case emissions were with the CT-P7000 off-hook and transmitting with the same type of modulation that would be used under normal operation.

4.3 EUT Exercise Software:

No exercise software was required to produce the worst-case emissions.

SECTION 5.0 SUMMARY OF TEST RESULTS

5.1 FCC PART 15, Subpart C Sections 15.249

5.1.1 Summary of Tests:

Section	Test Performed	Frequency Range (MHz)	Result
15.249 Base Unit	Radiated Emissions – Transmitting at 2.402 & 2.405 GHz	30 to 24,000	Complied
15.249 Handset	Radiated Emissions – Transmitting at 2.474 & 2.476 GHz	30 to 24,000	Complied
15.207 Base Unit	Line Conducted Emissions (Hot Lead to Ground)	0.45 to 30	Complied
15.207 Base Unit	Line Conducted Emissions (Neutral Lead to Ground)	0.45 to 30	Complied
15.207 Handset	Line Conducted Emissions (Hot Lead to Ground)	0.45 to 30	Not Applicable
15.207 Handset	Line Conducted Emissions (Neutral Lead to Ground)	0.45 to 30	Not Applicable

5.2 Result

In the configuration tested, the EUT complied with the requirements of the specification.

SECTION 6.0 MEASUREMENTS, EXAMINATIONS AND DERIVED RESUTLS

6.1 General Comments:

This section contains the test results only. Details of the test methods used and a list of the test equipment used during the measurements can be found in Appendix 1 of this report.

6.2 Test Results:

6.2.1 Radiated Interference Level Data - (Vertical Polarity) (Base Unit Transmitting at 2402.55 MHz)

Frequency (MHz)	Detector	Receiver Reading ($dB\mu V$)	Correction Factor (dB/m)	Field Strength ($dB\mu V/m$)	Limit ($dB\mu V/m$)	Margin (dB)
2402.55	Peak	52.8	31.2	84.0	94.0	-10.0
4805.10	Peak	8.3	37.1	45.4	54.0	-8.6
7207.65	Peak	11.5	41.3	52.8	74.0	-21.2
7207.65	Average	-2.2	41.3	39.1	54.0	-14.9
Note: No emissions above the 3rd harmonic were detected.						

RESULT

The EUT complied with the specification limit by a margin of 8.6 dB.

6.2.2 Radiated Interference Level Data - (Horizontal Polarity) (Base Unit Transmitting at 2402.55 MHz)

Frequency (MHz)	Detector	Receiver Reading (dBμV)	Correction Factor (dB/m)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2402.55	Peak	48.8	31.2	80.0	94.0	-14.0
4805.10	Peak	7.8	37.1	44.9	54.0	-9.1
7207.65	Peak	9.7	41.3	51.0	74.0	-23.0
7207.65	Average	-2.2	41.3	39.1	54.0	-14.9
Note: No emissions above the 3rd harmonic were detected.						

RESULT

The EUT complied with the specification limit by a margin of 9.1 dB.

6.2.3 Radiated Interference Level Data - (Vertical Polarity) (Base Unit Transmitting at 2405.00 MHz)

Frequency (MHz)	Detector	Receiver Reading (dBμV)	Correction Factor (dB/m)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2405.00	Peak	50.5	31.2	81.7	94.0	-12.3
4810.00	Peak	8.1	37.1	45.2	54.0	-8.8
7215.00	Peak	10.9	41.3	52.2	74.0	-21.8
7215.00	Average	-2.2	41.3	39.1	54.0	-14.9
Note: No emissions above the 3rd harmonic were detected.						

RESULT

The EUT complied with the specification limit by a margin of 8.8 dB.

6.2.4 Radiated Interference Level Data - (Horizontal Polarity) (Base Unit Transmitting at 2405.00 MHz)

Frequency (MHz)	Detector	Receiver Reading (dBμV)	Correction Factor (dB/m)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2405.00	Peak	46.9	31.2	78.1	94.0	-15.9
4810.00	Peak	6.0	37.1	43.1	54.0	-10.9
7215.00	Peak	9.7	41.3	51.0	74.0	-23.0
7215.00	Average	-2.2	41.3	39.1	54.0	-14.9
Note: No emissions above the 3rd harmonic were detected.						

RESULT

The EUT complied with the specification limit by a margin of 10.9 dB.

6.2.5 Radiated Interference Level Data - (Vertical Polarity) (Handset Transmitting at 2474.00 MHz)

Frequency (MHz)	Detector	Receiver Reading (dBμV)	Correction Factor (dB/m)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2474.00	Peak	37.6	31.5	69.1	94.0	-24.9
4948.00	Peak	6.3	37.5	43.8	54.0	-10.2
7422.00	Peak	9.0	41.8	50.8	74.0	-23.2
7422.00	Average	-2.8	41.8	39.0	54.0	-15.0
Note: No emissions above the 3rd harmonic were detected.						

RESULT

The EUT complied with the specification limit by a margin of 10.2 dB.

6.2.6 Radiated Interference Level Data - (Horizontal Polarity) (Handset Transmitting at 2474.00 MHz)

Frequency (MHz)	Detector	Receiver Reading (dBμV)	Correction Factor (dB/m)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2474.00	Peak	35.1	31.5	66.6	94.0	-27.4
4948.00	Peak	6.0	37.5	43.5	54.0	-10.5
7422.00	Peak	10.6	41.8	52.4	74.0	-21.6
7422.00	Average	-2.2	41.8	39.1	54.0	-14.9
Note: No emissions above the 3rd harmonic were detected.						

RESULT

The EUT complied with the specification limit by a margin of 10.5 dB.

6.2.7 Radiated Interference Level Data - (Vertical Polarity) (Handset Transmitting at 2476.45 MHz)

Frequency (MHz)	Detector	Receiver Reading (dBμV)	Correction Factor (dB/m)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2476.45	Peak	39.7	31.5	71.2	94.0	-22.8
4952.90	Peak	5.2	37.5	42.7	54.0	-11.3
7429.35	Peak	9.4	41.8	51.2	74.0	-22.8
7429.35	Average	-2.7	41.8	39.1	54.0	-14.9
Note: No emissions above the 3rd harmonic were detected.						

RESULT

The EUT complied with the specification limit by a margin of 11.3 dB.

6.2.8 Radiated Interference Level Data - (Horizontal Polarity) (Handset Transmitting at 2476.45 MHz)

Frequency (MHz)	Detector	Receiver Reading (dBμV)	Correction Factor (dB/m)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2476.45	Peak	40.2	31.5	71.7	94.0	-22.3
4952.90	Peak	6.8	37.5	44.3	54.0	-9.7
7429.35	Peak	10.3	41.8	52.1	74.0	-21.9
7429.35	Average	-2.8	41.8	39.0	54.0	-15.0
Note: No emissions above the 3rd harmonic were detected.						

RESULT

The EUT complied with the specification limit by a margin of 9.7 dB.

6.2.9 Conducted Disturbance at Mains Ports Data (Hot Lead)

Frequency (MHz)	Detector	Measured Level ($dB\mu V$)	Limit ($dB\mu V$)	Margin (dB)
0.45	Peak (Note 1)	38.0	48.0	-10.0
0.65	Peak (Note 1)	34.0	48.0	-14.0
0.74	Peak (Note 1)	33.4	48.0	-14.6
0.89	Peak (Note 1)	28.3	48.0	-19.7
16.77	Peak (Note 1)	24.8	48.0	-23.2
21.0	Peak (Note 1)	21.1	48.0	-26.9
25.17	Peak (Note 1)	26.2	48.0	-21.8

Note 1: The reference detector used for the measurements was peak and the data was compared to the quasi-peak limit.

Note 2: The reference detector used for the measurements ware quasi-peak and average. The level of the emission measured using the quasi-peak detector was 6 dB, or more, higher than the level of the same emission measured with average detection; therefore, the quasi-peak level was reduced by 13 dB for comparison to the limits, as per FCC § 15.107 (d).

Measurement Uncertainty

The measurement uncertainty (with a 95% confidence level) for this test was: ± 3.3 dB.

RESULT

The EUT complied with the specification limit by a margin of 10.0 dB.

6.2.10 Conducted Disturbance at Mains Ports Data (Neutral Lead)

Frequency (MHz)	Detector	Measured Level ($dB\mu V$)	Limit ($dB\mu V$)	Margin (dB)
0.45	Peak (Note 1)	41.7	48.0	-6.3
0.51	Peak (Note 1)	37.3	48.0	-10.7
0.70	Peak (Note 1)	38.0	48.0	-10.0
0.80	Peak (Note 1)	33.3	48.0	-14.7
16.77	Peak (Note 1)	24.3	48.0	-23.7
25.17	Peak (Note 1)	25.8	48.0	-22.2

Note 1: The reference detector used for the measurements was peak and the data was compared to the quasi-peak limit.

Note 2: The reference detector used for the measurements ware quasi-peak and average. The level of the emission measured using the quasi-peak detector was 6 dB, or more, higher than the level of the same emission measured with average detection; therefore, the quasi-peak level was reduced by 13 dB for comparison to the limits, as per FCC § 15.107 (d).

Measurement Uncertainty

The measurement uncertainty (with a 95% confidence level) for this test was: $\pm$ 3.3 dB.

RESULT

The EUT complied with the specification limit by a margin of 6.3 dB.

6.3 Sample Field Strength Calculation:

The field strength is calculated by adding the Correction Factor (Antenna Factor + Cable Factor), to the measured level from the receiver. The receiver amplitude reading is compensated for any amplifier gain. The basic equation with a sample calculation is shown below:

FS = RA + CF Where

FS = Field Strength
RA = Receiver Amplitude Reading (Receiver Reading - Amplifier Gain)
CF = Correction Factor (Antenna Factor + Cable Factor)

Assume a receiver reading of 42.5 dBμV is obtained from the receiver, an amplifier gain of 26.5 dB and a correction factor of 8.5 dB. The field strength is calculated by subtracting the amplifier gain and adding the correction factor, giving a field strength of 24.5 dBμV/m, FS = (42.5 - 26.5) + 8.5 = 24.5 dBμV/m

APPENDIX A TEST PROCEDURES AND TEST EQUIPMENT

Radiated Interference Emissions:

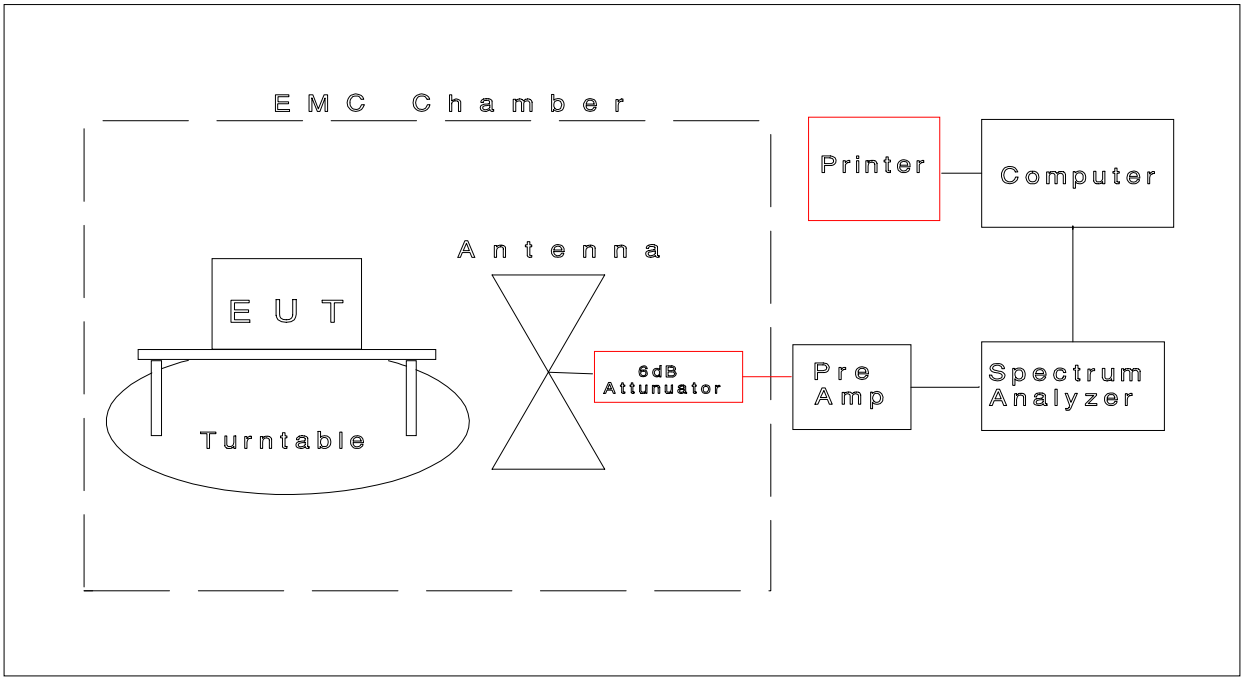
The radiated emission from the intentional radiator was measured using a spectrum analyzer with a quasi-peak adapter for peak and quasi-peak readings. A preamplifier with a fixed gain of 28 dB and a power amplifier with a fixed gain of 22 dB were used to increase the sensitivity of the measuring instrumentation. The quasi-peak adapter uses a bandwidth of 120 kHz, with the spectrum analyzer's resolution bandwidth set at 1 MHz, for readings in the 30 to 1000 MHz frequency range. For peak emissions above 1000 MHz the spectrum analyzer’s resolution bandwidth was set to 1 MHz and the video bandwidth was set to 3 MHz. For average emissions above 1000 MHz the spectrum analyzer’s resolution bandwidth was set to 1 MHz and the video bandwidth was set to 10 Hz.

A biconilog antenna was used to measure the frequency range of 30 to 1000 MHz and a Double Ridge Guide Horn antenna was used to measure the frequency range 1 GHz to 24 GHz, at a distance of 3 meters from the EUT. The readings obtained by these antennas are correlated to the levels obtained with a tuned dipole antenna by adding antenna factors.

Type of Equipment	Manufacturer	Model Number	Serial Number	Date of Last Calibration
Wanship Open Area Test Site #2	CCL	N/A	N/A	12/28/2001
Test Software	CCL	Radiated Emissions	Revision 1.3	N/A
Spectrum Analyzer	Hewlett Packard	8566B	2332A02726	11/28/2001
Quasi-Peak Detector	Hewlett Packard	8565A	2043A00287	11/29/2001
Biconilog Antenna	EMCO	3142	9601-1008	12/26/2001
Double Ridged Guide Antenna	EMCO	3115	9604-4779	05/17/2002
3 Meter Radiated Emissions Cable Wanship Site #2	CCL	Cable K	N/A	12/26/2001
10 Meter Radiated Emissions Cable Wanship Site #2	CCL	Cable L	N/A	12/26/2001
Pre/Power-Amplifier	Hewlett Packard	8447F	3113A05161	09/19/2001
Preamp	Hewlett Packard	8449B	3008A00990	4/16/02
6 dB Attenuator	Hewlett Packard	8491A	32835	12/26/2001

An independent calibration laboratory or CCL personal calibrates all the equipment listed above every 12 months following outlined calibration procedures. All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to tractability is on file and is available for examination upon request.

Radiated Emissions Test



Conducted Disturbance at Mains Ports:

The conducted disturbance at mains ports from the intentional radiator was measured using a spectrum analyzer with a quasi-peak adapter for peak, quasi-peak and average readings. The quasi-peak adapter uses a bandwidth of 9 kHz, with the spectrum analyzer's resolution bandwidth set at 100 kHz, for readings in the 450 kHz to 30 MHz frequency ranges.

The conducted disturbance at mains ports measurements are performed in a screen room using a (50 Ω/50 μH) Line Impedance Stabilization Network (LISN).

Where mains flexible power cords are longer than 1 m, the excess cable is folded back and forth as far as possible so as to form a bundle not exceeding 0.4 m in length.

Where the EUT is a collection of intentional radiator with each intentional radiator having its own power cord, the point of connection for the LISN is determined from the following rules:

a) Each power cord, which is terminated in a mains supply plug, shall be tested separately.

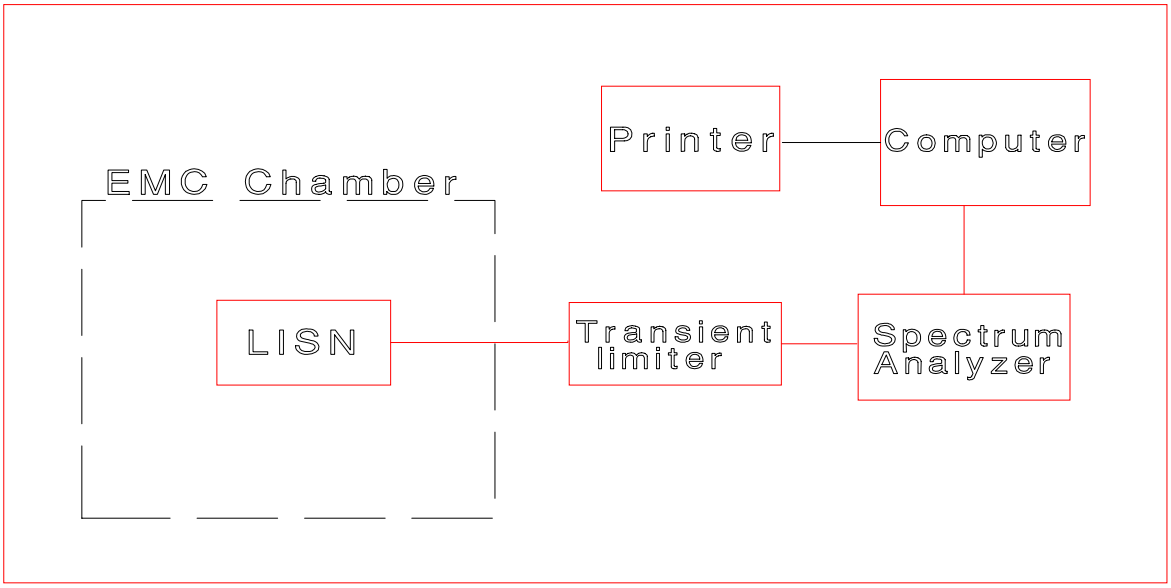
b) Power cords, which are not specified by the manufacturer to be connected via a host unit, shall be tested separately.
c) Power cords which the manufacturer to be connected via a host unit specifies or other power supplying equipment shall be connected to that host unit and the power cords of that host unit connected to the LISN and tested.
d) Where a special connection is specified, the necessary hardware to effect the connection is supplied by the manufacturer for the testing purpose.
e) When testing equipment with multiple mains cords, those cords not under test are connected to an artificial mains network (AMN) different than the AMN used for the mains cord under test.

Desktop intentional radiators are placed on a non-conducting table at least 0.8 meters from the metallic floor. The equipment is placed a minimum of 40 cm from all walls. Floor standing equipment is placed directly on the earth grounded floor.

Type of Equipment	Manufacturer	Model Number	Serial Number	Date of Last Calibration
Wanship Open Area Test Site #2	CCL	N/A	N/A	12/28/2001
Test Software	CCL	Conducted Emissions	Revision 1.2	N/A
Spectrum Analyzer	Hewlett Packard	8566B	2332A02726	11/28/2001
Quasi-Peak Detector	Hewlett Packard	8565A	2043A00287	11/29/2001
LISN	EMCO	3825/2	9305-2099	01/30/2002
Conductance Cable Wanship Site #2	CCL	Cable J	N/A	12/26/2001
Transient Limiter	Hewlett Packard	11947A	3107A02266	12/26/2001

An independent calibration laboratory or CCL personal calibrates all the equipment listed above every 12 months following outlined calibration procedures. All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to tractability is on file and is available for examination upon request.

Line Conducted Emissions Test



APPENDIX B PHOTOGRAPHS:

Front view of the Handset Radiated Emissions

Front view of the Base Radiated Emissions

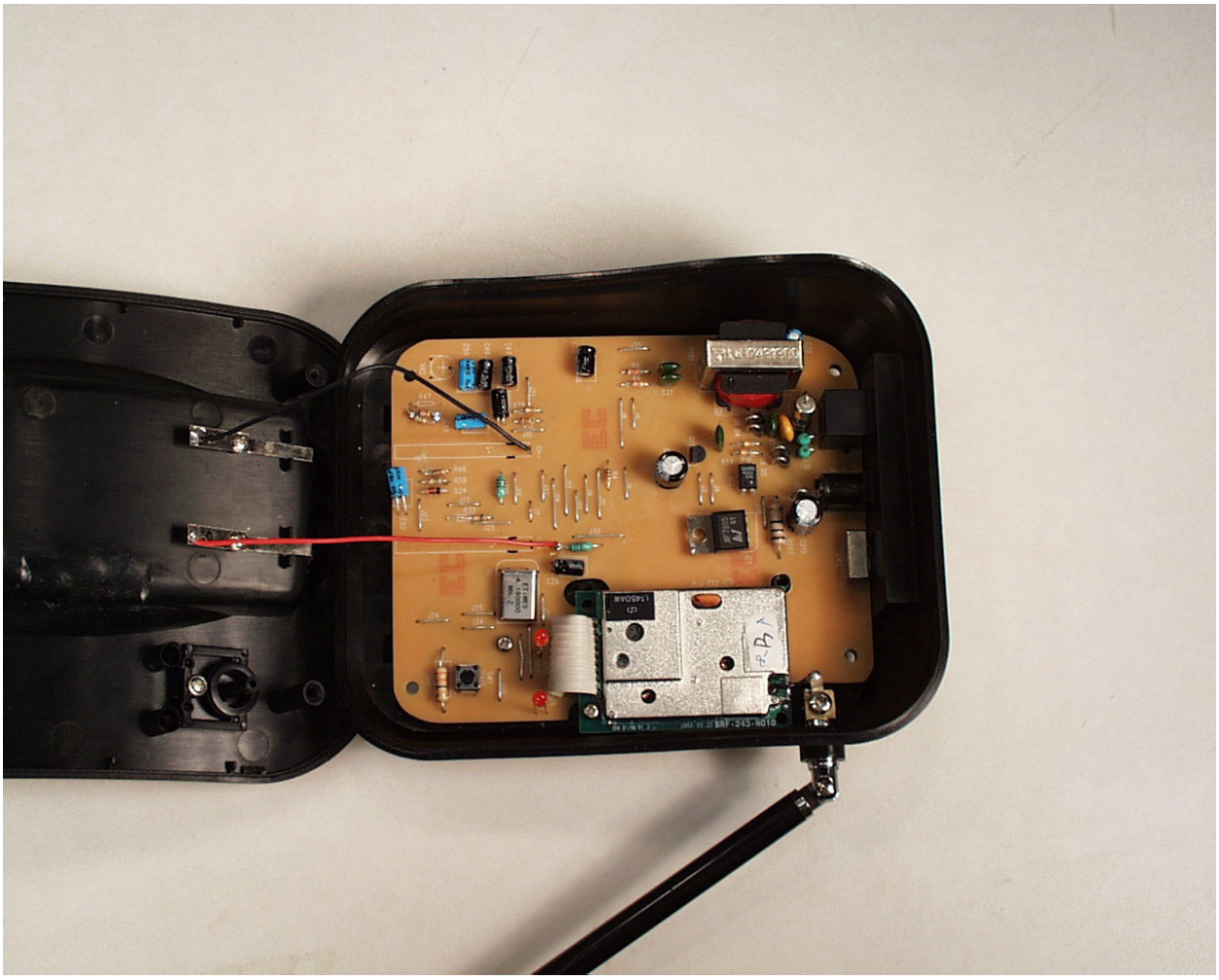
Conducted Emissions Base Unit

Front View of the Hanset

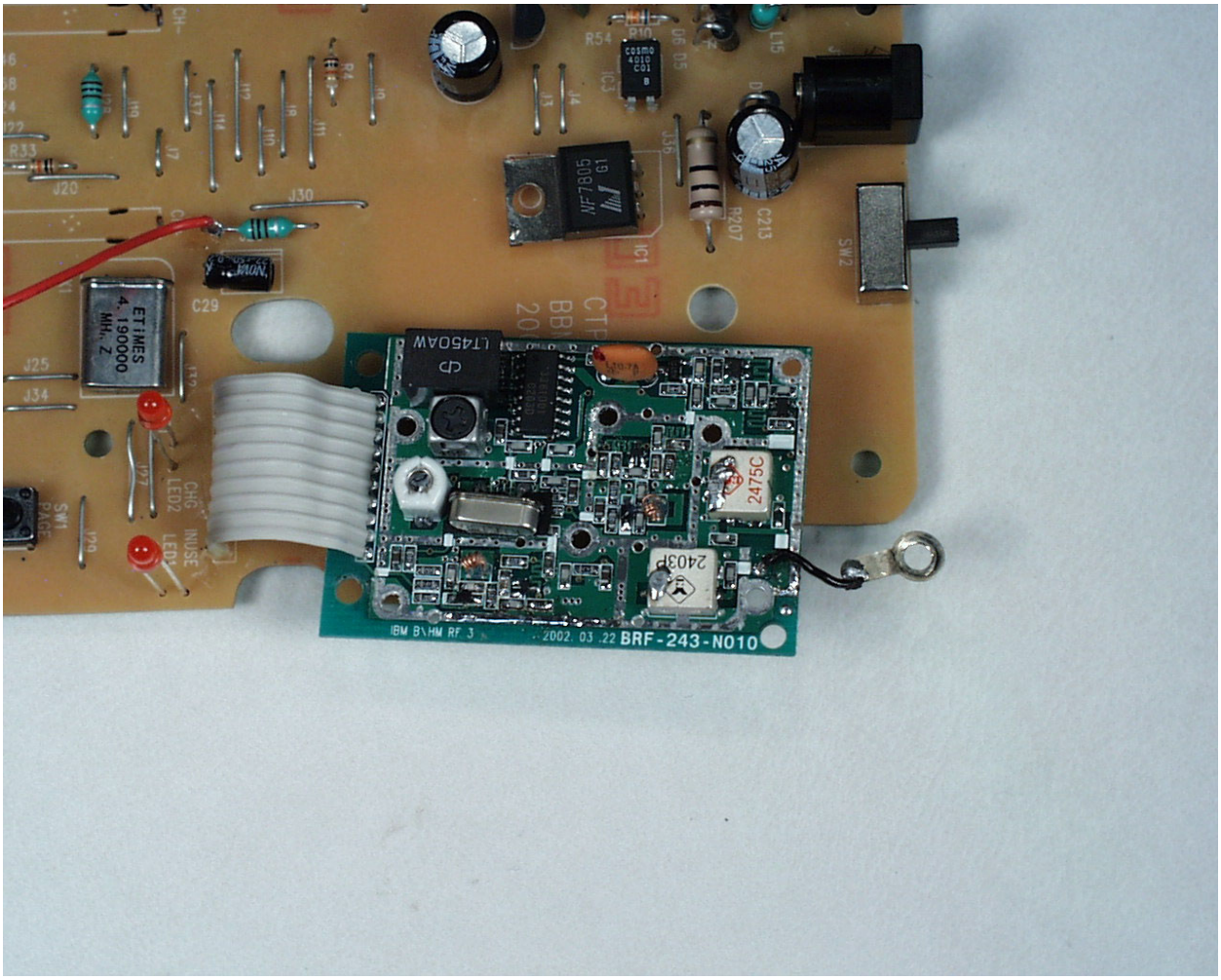
Back View of the Handset

Front View of the Base

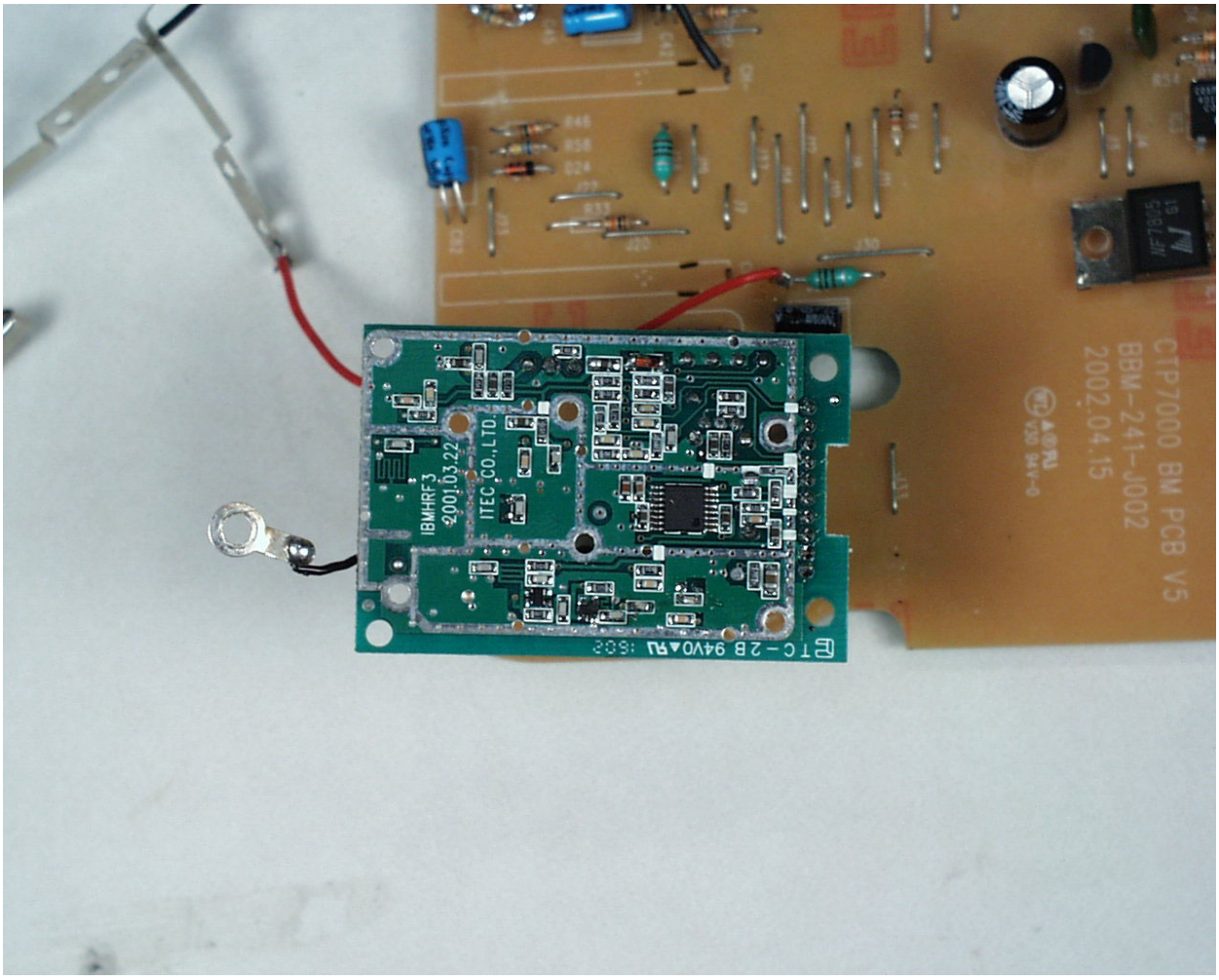
Back View of the Base



Inside View of the Base

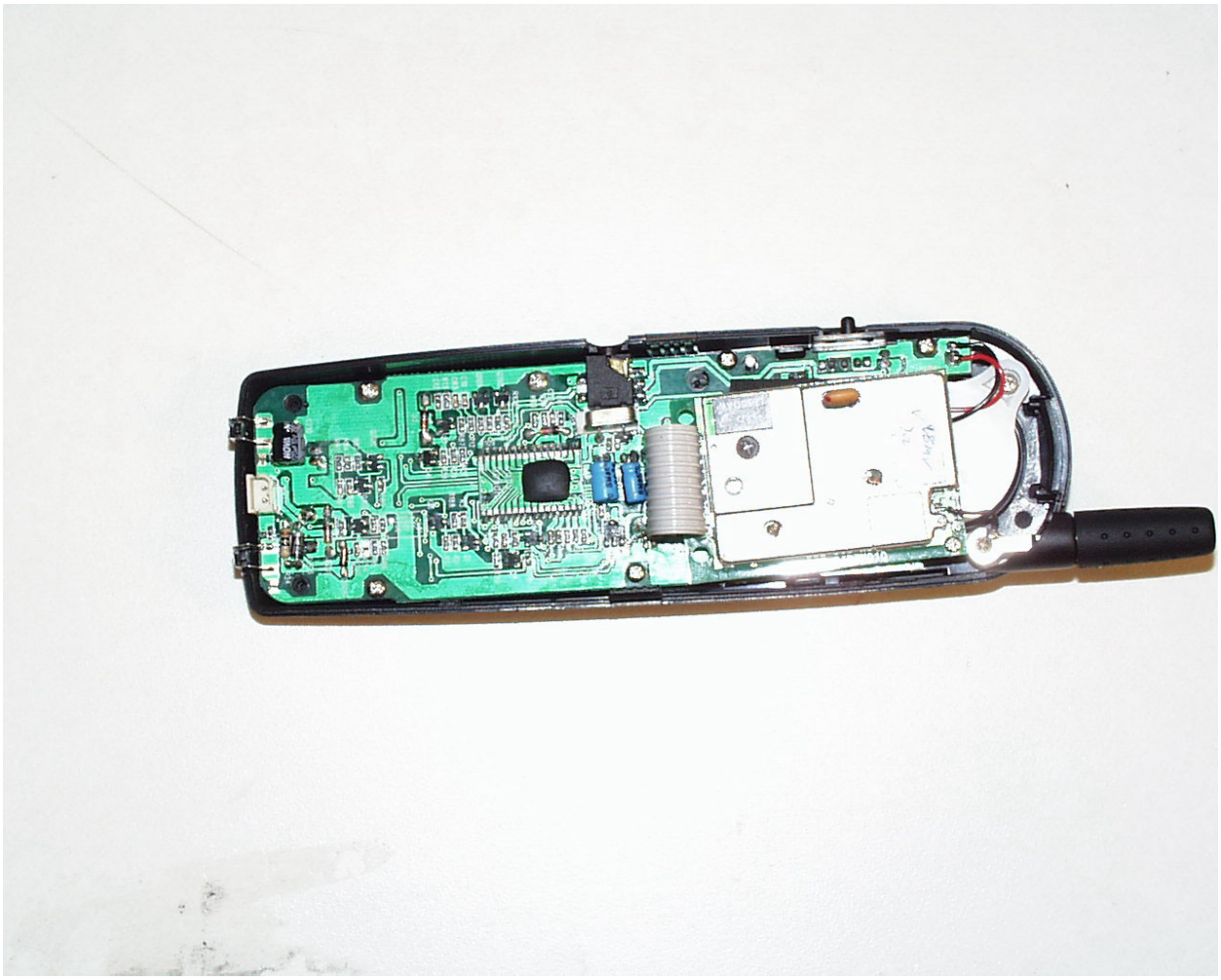


Side A of the Base RF PCB

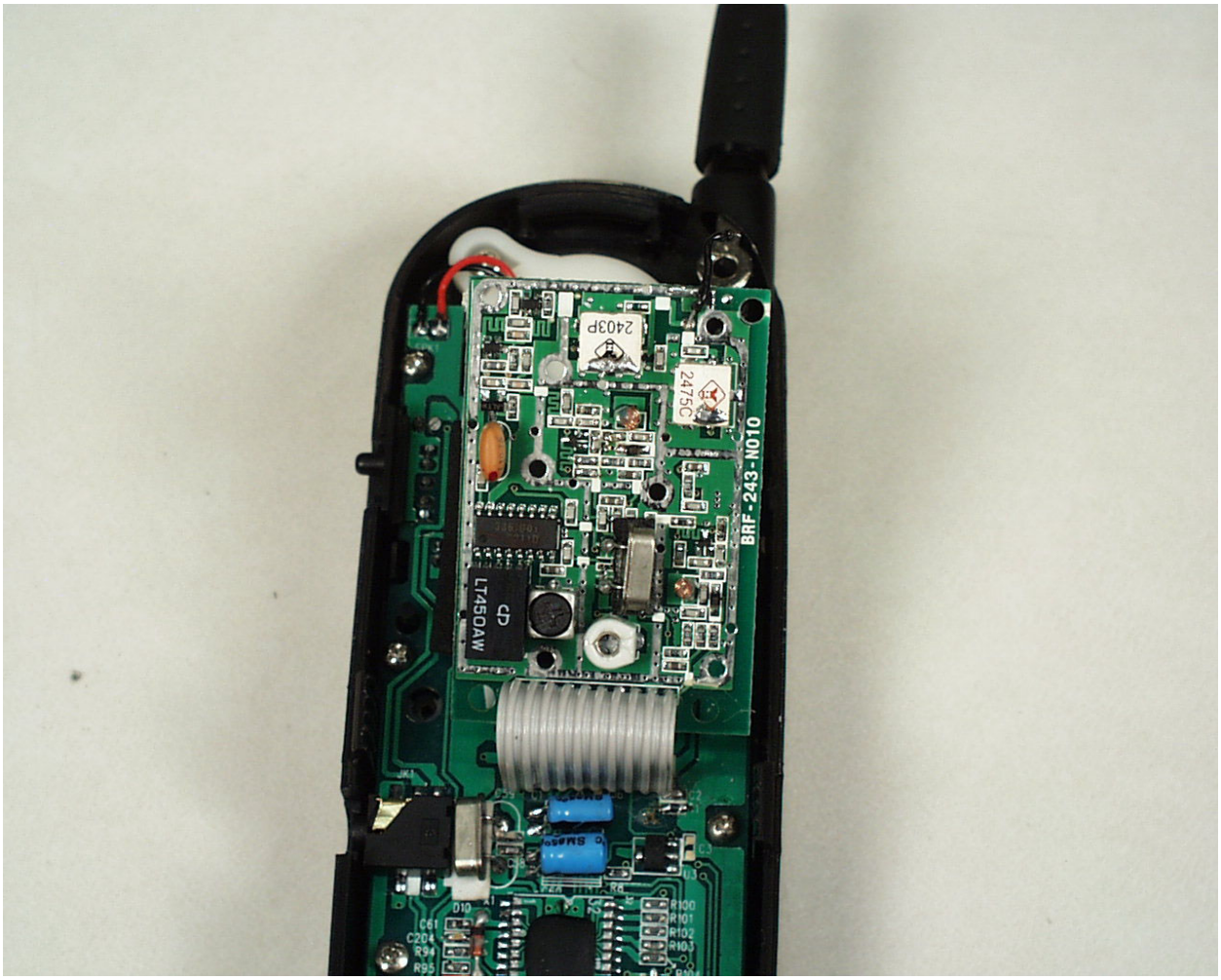


Side B of the Base RF PCB

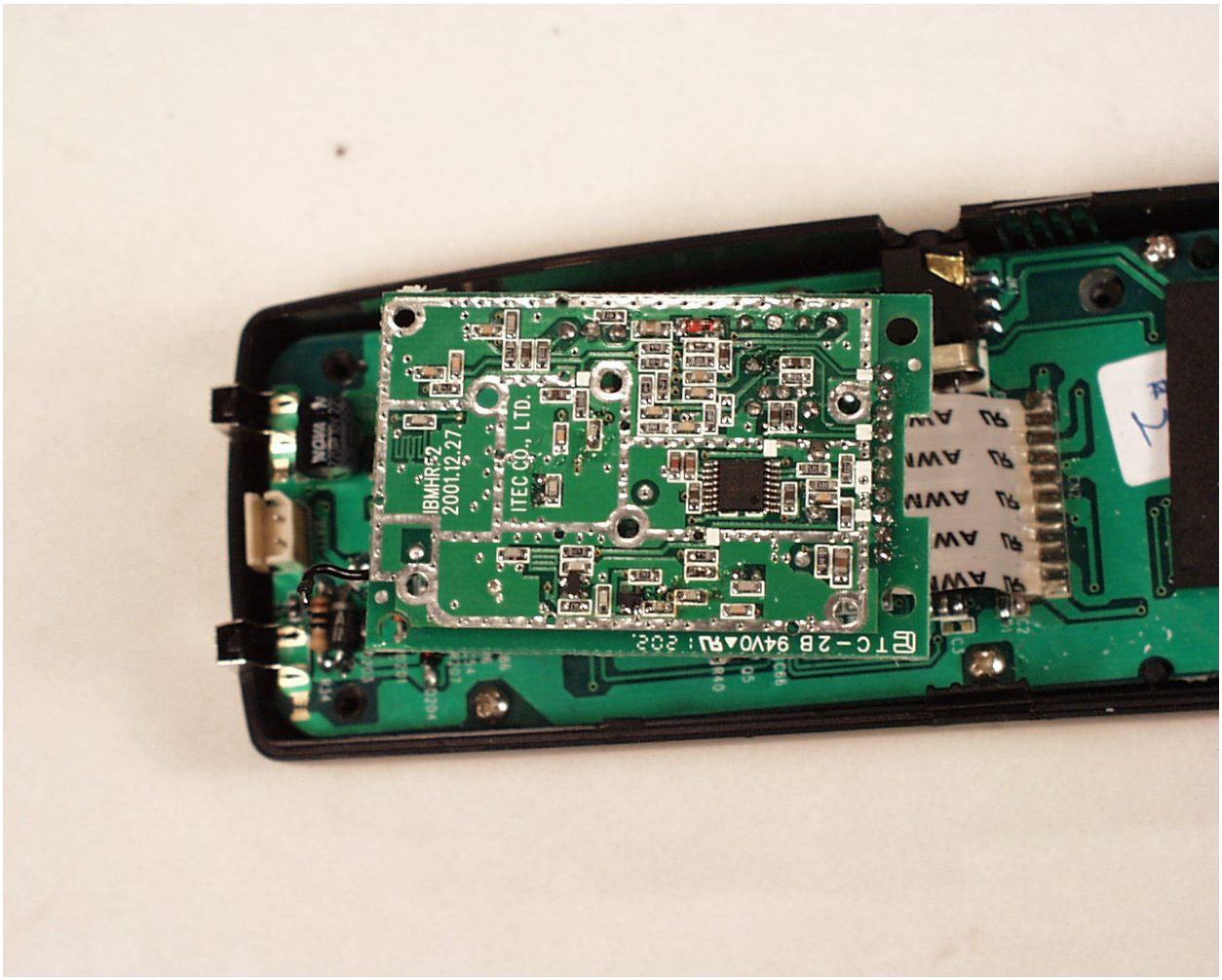
Base Transformer



Inside View of the Handset



Side A of the Handset RF PCB



Side B of the Handset RF PCB