Emissions Testing
Performed
On the
Ademco-Alarm Device Mfg. Co.
Personal Transmitter, Telephone Receiver
Model: 9500
To
FCC Part 15, Subpart B, Class B

Date of Test: July 10, 2000

Job #: J20019218

Contact: Mr. Harry Pashkoff

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This report is designed to show compliance with the FCC Part 15, Subpart B Rules for an unintentional radiator. The test procedures, as described in American National Standards Institute C63.4-1992, were employed. A description of the product and operating configuration, the various provisions of the rules, the methods for determining compliance, and a detailed summary of the results are included within this test report.

1.0 Introduction and Conclusions

On July 10, 2000, we tested the Personal Transmitter, Telephone Receiver, Model: 9500, to determine if it was in compliance with the FCC Part 15 Class B emissions limits. We found that the unit met the requirements when tested as received.

Table 1 shows the radiated emissions results. No radiated emissions were detected above the 22 μV noise floor of the receiver, which is at least 6 dB below the applicable limit.

Table 2 shows the Quasi-Peak line-conducted results. No line-conducted emissions were detected above the 22 μV noise floor of the receiver, which in this case are 27.1 dB below the applicable limit at 0.450 and 1.150 MHz.

In summary, this report verifies that the Personal Transmitter, Telephone Receiver, Model: 9500, is compliant with the FCC Part 15 Class B requirements when production units conform to the initial sample. Please address all questions and comments concerning this report to Michael Murphy, EMC Staff Engineer.

2.0 Description of the Product

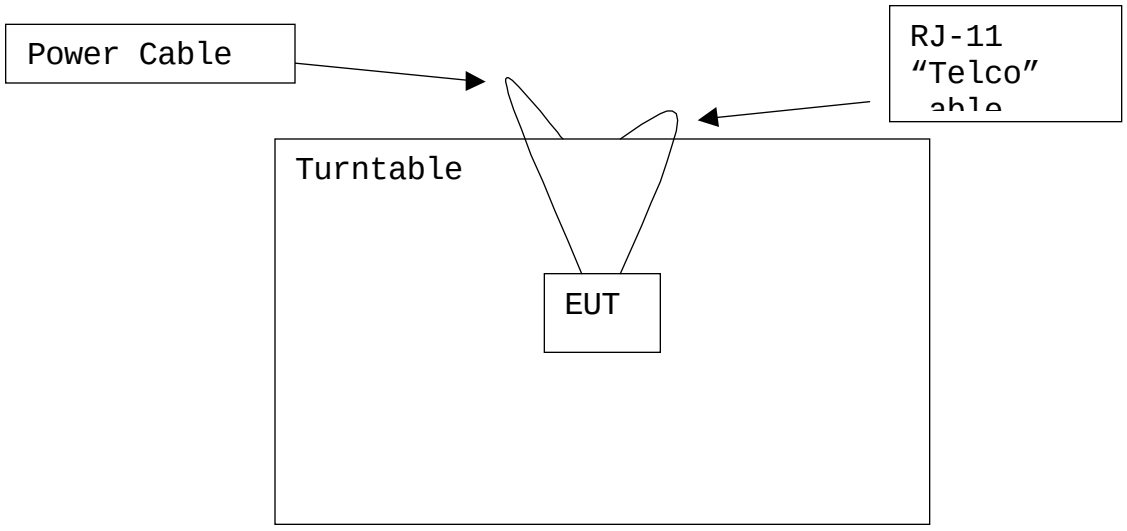
The EUT is a receiver telephone, which is designed to receive signals from a key fob style transmitter. When activated the transmitter sends a signal to the EUT which then automatically dials the emergency service number and relays a voice message to send assistance to the calling address.

2.1 Brief Description and Received Condition

A production version of the sample was received on July 10, 2000 in good condition.

2.2 System Block Diagram

The diagram shown below details the placement of the equipment under test on the turntable.



2.3 System Test Configuration

Equipment Under Test: Personal Transmitter, Telephone Receiver

Model: 9500

Serial Number: Not Available

FCC Identifier: 448-112-1307

Key fob transmitter information below.

Description: Personal Transmitter, Key Fob Style (See Section 6, Photo # 1)

Model: 320

Serial Number: N94

FCC Identifier: BDZ135BD

Support Equipment:

No support equipment required for operation

Cables:

QTY	Description	Shield Description	Hood Description	Length (m)
1	RJ-11 Telco Cable	None	Plastic	2.0

2.4 Justification

The system was configured for testing in a typical fashion, as a customer normally would use it, and within the confines as outlined in C63.4 (1992).

The arrangement of the cables dangling from the rear of the table was varied to the extent possible to produce maximum emissions.

For maximum emissions, the system was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed.

2.5 Description of how EUT was exercised during test

EUT was exercised by using the key fob transmitter to send signals to the receiver. As the phone dialed the emergency service number and sent an answering message the spectrum was scanned for radiated emissions.

2.6 Modifications Required for Compliance

No modifications were implemented by Intertek Testing Services.

3.0 Radiated Emission

3.1 Radiated Emissions Limits

The following table are the radiated emission limits for FCC Part 15 Subpart B Section 15.109:

Class A

Frequency (MHz)	Field Strength Limit		
	µV/m at 10m	dBµV/m at 10m	dBµV/m at 3m
30 to 88	90	39.1	49.6
88 to 216	150	43.5	54.0
216 to 960	210	46.4	56.9
Above 960	300	49.5	60.0

(1) Determined using a 20 dB/decade extrapolation. The specified test distance is 10 meters, however measurements at another distance is allowed provided measurements are not made in the near-field and it can be determined the emissions can be measured at that distance (See Section 15.31 (f)(1) of the FCC's rules).
(2) The tighter limit applies at the band-edge.

3.2 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF - AG
where FS = Field Strength in dBµV/m
RA = Receiver Amplitude (including preamplifier) in dBµV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB/m
AG = Amplifier Gain in dB

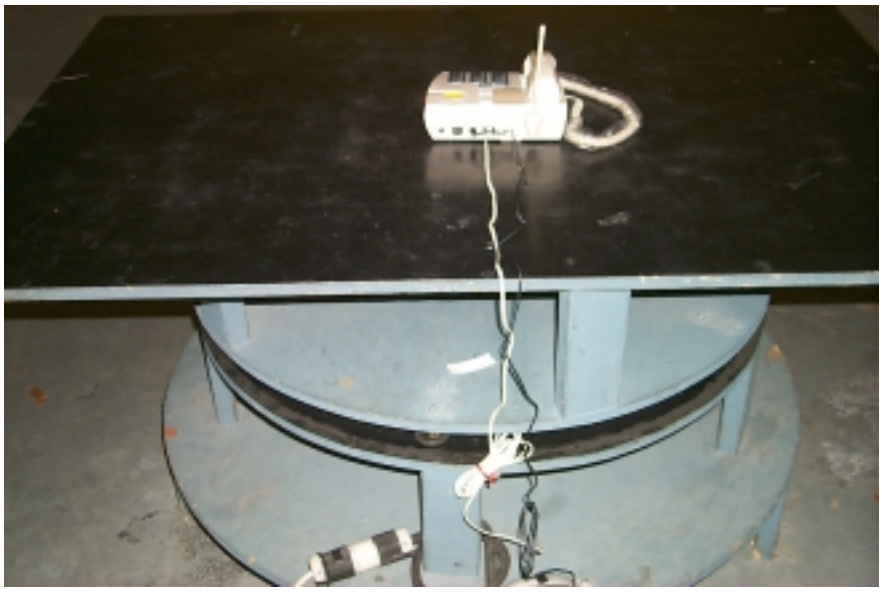
In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

Assume a receiver reading of 52.0 dBµV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dBµV/m. This value in dBµV/m was converted to its corresponding level in µV/m.

RA = 52.0 dBµV
AF = 7.4 dB/m
CF = 1.6 dB
AG = 29.0 dB
FS = 32 dBµV/m

Level in µV/m = $[10^{(32\ dB\mu V/m)/20)}]$ = 39.8 µV/m

3.3 Configuration Photographs - Worst-Case Radiated Emission



3.4 Test Data

The following results were obtained when the device was tested as described in this report.

Radiated Emissions / Interference

Table: 1

Company:	**Ademco**	Tested by:	Andy Bellezza
Model:	**9500**	Location:	Site 3C
Job No.:	**J20019218**	Detector:	HP 8542E
Date:	07/10/00	Antenna:	LOG3 12-16-99 H10
Standard:	EN55022	PreAmp:	None
Class:	B Group: None	Cable(s):	3C-3m 3-1-00
Notes:		Distance:	**3** meters

Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB
No emissions detected above the 22 uV noise floor of the analyzer which is at least 6 dB below the applicable limit.									

END

4.0 AC Mains Line-Conducted Emissions

4.1 Line-Conducted Emission Limits

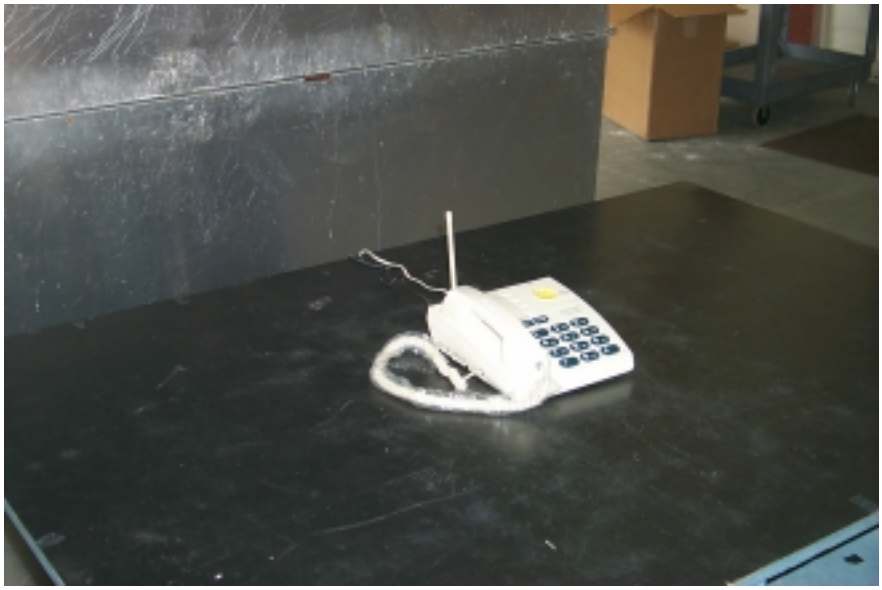
The following table is the line-conducted emission limits for FCC Part 15 Subpart B Section 15.107:

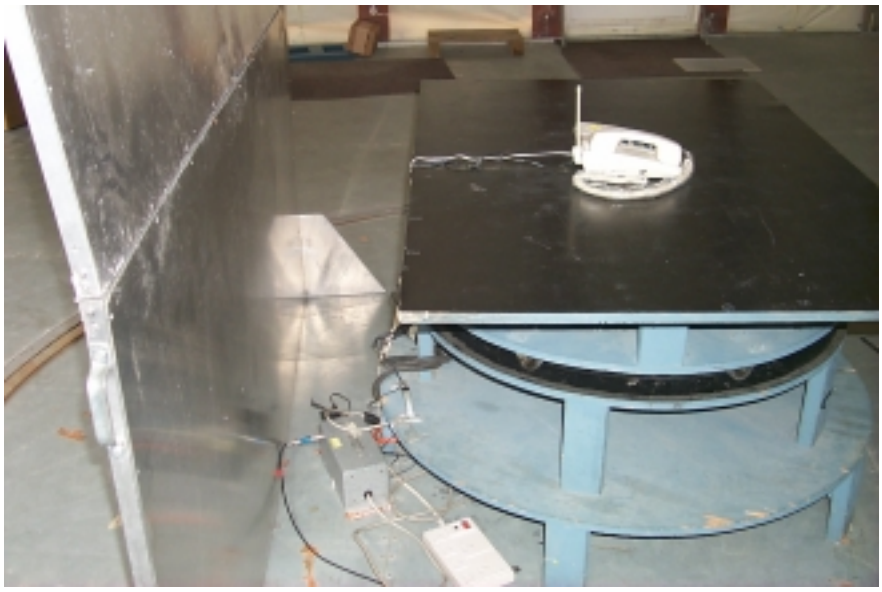
Class A

Frequency (MHz)	Conducted Limit	
	µV	dBµV
0.45 to 1.705	1000	60
1.705 to 30	3000	69.5

(3) The tighter limit applies at the band-edge.

4.2 Configuration Photographs - Worst-Case Line-Conducted Emission





4.3 Test Data

The following results were obtained when the device was tested as described in this report.

Conducted Emissions / Interference

Table: 2

Company: Ademco-Alarm Device Mfg. Co.
Model: 9500
Job No.: J20019218
Date: 07/10/00
Standard: FCC Part 15
Class: B Group: None
Notes:
System Loss: Includes the Cable and LISN loss.

Tested by: Andy Bellezza
Location: Site 2C
Detector: HP 8542E
Cable(s): 2C-10M
Limiter: No

	Frequency MHz	Reading Side A dB	Reading Side B dB	Attenuator Factor dB	System Loss dB	Quasi-Peak Net dB(uV)	Quasi-Peak Limit dB(uV)	Quasi-Peak Margin dB
NF	0.450	18.0	20.0	0.0	0.9	20.9	48.0	-27.1
NF	1.150	19.0	20.0	0.0	0.9	20.9	48.0	-27.1
NF	10.150	17.0	17.0	0.0	0.4	17.4	48.0	-30.6
NF	20.150	17.0	19.0	0.0	0.1	19.1	48.0	-28.9
NF	25.150	18.0	17.0	0.0	0.1	18.1	48.0	-29.9
NF	29.150	17.0	18.0	0.0	0.1	18.1	48.0	-29.9

NF = Noise floor of the measuring receiver.

END

5.0 Miscellaneous Information

5.1 Site Description

Site 2 C is a 3 and 10 meter sheltered EMI measurement range located in a light commercial environment in Boxborough, Massachusetts. It meets the technical requirement of ANSI C63.4-1992 and CISPR 22:1997/EN 55022:1994 for radiated and conducted emission measurements. The sheltered structure is entirely fiberglass and plastic, with outside dimensions of 13.0 meters by 22.4 meters. The structure resembles a Quonset hut with a center ceiling height of 6.5 meters.

The testing floor is covered by galvanized sheet metal groundplane that is earth-grounded via copper rods around the perimeter of the site. The joints between individual metal sheets are bridged with 1 cm metal strips to provide low RF impedance contact throughout. The sheets of metal are screwed in place with stainless steel, round-head screws every 1.2 cm. Site illumination and HVAC are provided from beneath the gound reference plane through flush entry ports, the port covers are electrically bonded to the ground plane

A flush metal turntable with 4.7-meter diameter 11,000 kg load capacity is provided for floor standing equipment. A wooden turntable .80 cm high is used for tabletop equipment. The turntable is electrically connected to the ground plane with three copper straps. The straps are connected to the turntable at the center of it with ground braid. The copper straps are directly connected to the groundplane at the edges of the turntable. The turntable is located at the south end of the structure and the antennas are mounted3 and 10 meters away to the north. The antenna mast is non-conductive with remote control of the antenna height and polarization. The antenna height is adjustable from 1 to 4 meters.

All final radiated emission measurements are performed with the testing personnel and measurement equipment located below the ground reference plane. The site has a full basement underneath the turntable where support equipment may be remotely located. Operation of the antenna, turntable and equipment under test is controlled by remote controls that manipulate the antenna height and polarization with a turntable control. Test personnel are located below the elipse when measurements are performed, however the site maintains the ability of having personnel manipulate cables while monitoring test equipment. Ambient radiated emissions are 6 dB or more below the relevant FCC emission limits.

AC mains power is brought to the equipment under test through a power line filter, to remove ambient conducted noise. 50 Hz (240 VAC single phase), 60 Hz power (120 VAC single phase, 208 three phase), and 60 Hz (480 VAC three phase) are available. Conducted emission measurements are performed with a Line Impedance Stabilization Network (LISN) or Artificial Mains Network (AMN) bonded to the ground reference plane. A removable vertical groundplane (2 meters by 2meters area) is used for line-conducted measurements for tabletop equipment. The vertical groundplane is electrically connected to the reference groundplane.

5.2 Test Procedure Reference

For radiated emissions testing:

ITS Standard Operating Procedure, Addendum 1, Sections 5.1.2, 5.2 and 5.3

For line-conducted emissions testing

ITS Standard Operating Procedure, Addendum 1, Section 5.1.1, 5.2 and 5.3

5.3 Labeling - USA

Class A Labelling and
Instruction Manual Requirements

Devices subject to Class A verification must be labelled with the following statement:

> **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.**

In addition, for a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

> **Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.**
>
> **NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.**

If shielded cables or other specialized accessories are necessary for the unit to achieve compliance, a statement similar to the following should be added:

> **Shielded cables must be used with this unit to ensure compliance with the Class A FCC limits.**

5.4 Labeling - Canada

Canadian Emissions Requirements

The intent of the amendment is to establish Canadian Regulations which are harmonized with the existing FCC Regulations. As such, no retesting is required and devices which have been tested and comply with the FCC Specifications (Class A or B) also comply with the Canadian Specification (Class A or B).

A record of the measurements and results shall be retained by the manufacturer or importer for a period of at least five years and made available for examination on the request of the Canadian Government.

A written notice indicating compliance must accompany each unit of digital apparatus to the end user. The notice shall be in the form of a label that is affixed to the apparatus. Where because of insufficient space or other restrictions, it is not feasible to affix a label to the apparatus, the notice may be in the form of a statement included in the user's manual.

This Class [*] digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe [*] est conforme à la norme NMB-003 du Canada.

[*] Insert either "A" or "B" but not both as appropriate for the equipment requirements.

5.5 Test Report Certification

Company Name: Ademco-Alarm Mfg. Co.
165 Eileen Way
Syosset, NY 11791

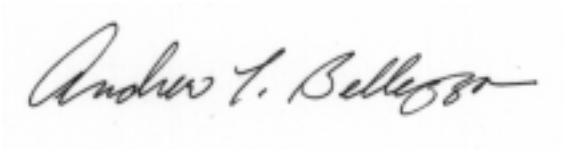
Attention: Mr. Harry Pashkoff

Model No.: 9500

Report Date: December 19, 2000

Test Site Location: Site 2C
INTERTEK TESTING SERVICES NA INC.
70 Codman Hill Road
Boxborough, Massachusetts 01719

We attest to the accuracy of this report:



Signature	Signature
Andrew J. Bellezza	Michael Murphy
Testing Performed By	Reviewer
Sr. Project Engineer	EMC Staff Engineer
Title	Title

5.6 Equipment List

The following equipment was used to make measurements for emissions testing:

Description	Manufacturer	Model	Serial #	Cal Due
EMI RECEIVER	HEWLETT PACKARD	HP8542E	3520A00125	11/12/2000
LISN	SOLAR	8012-50-R-24-BNC	837929	10/05/2000
BROADBAND ANTENNA	EMCO	3142	9711-1223	10/12/2000

6.0 Certification Photographs

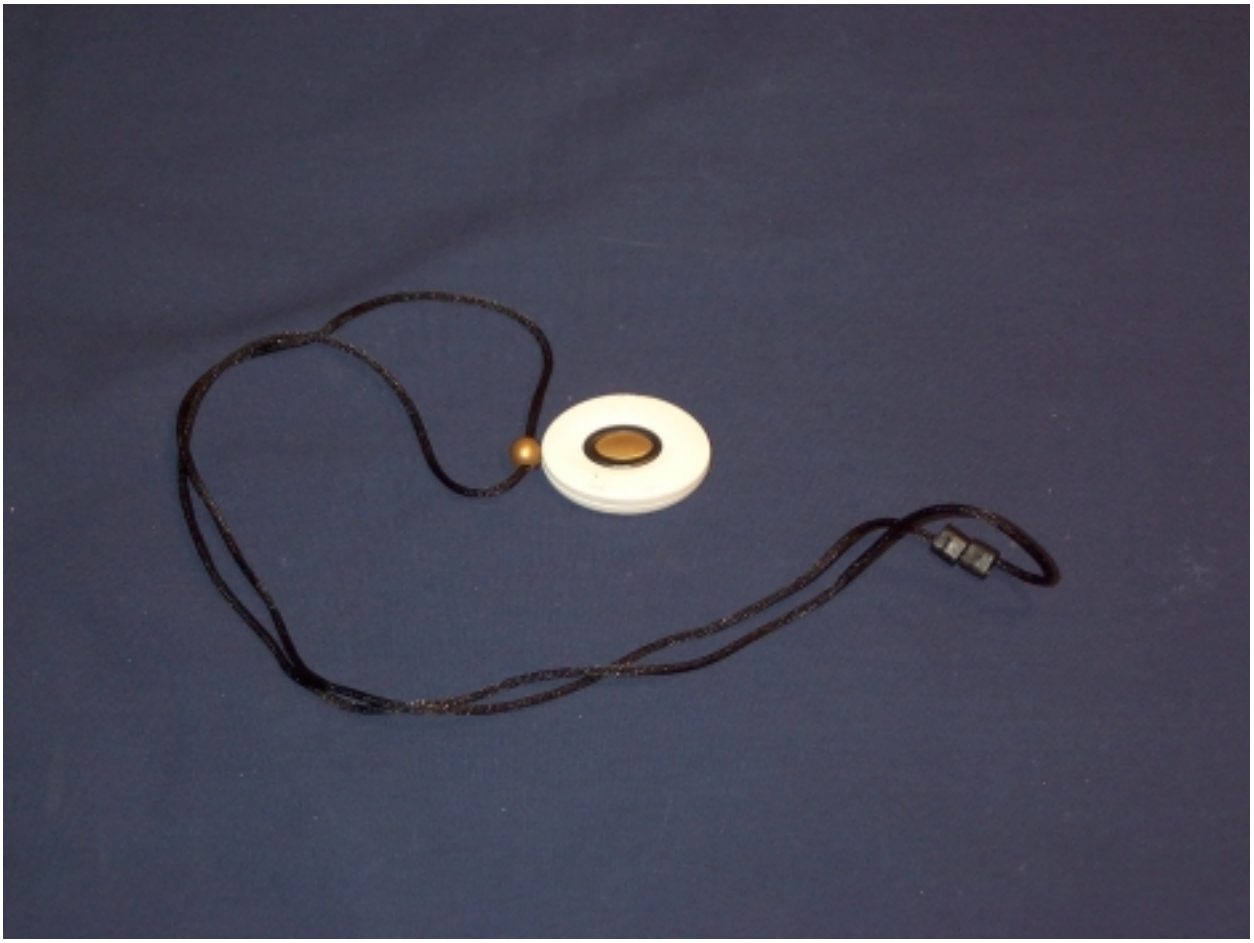


Photo 1: Key fob transmitter used with model 9500.

Cert Photos continued.

Photo 2: Oblique of 9500, showing RJ-11 POTS connection cable and “cube” style wall x-frmer.

Cert photos continued.

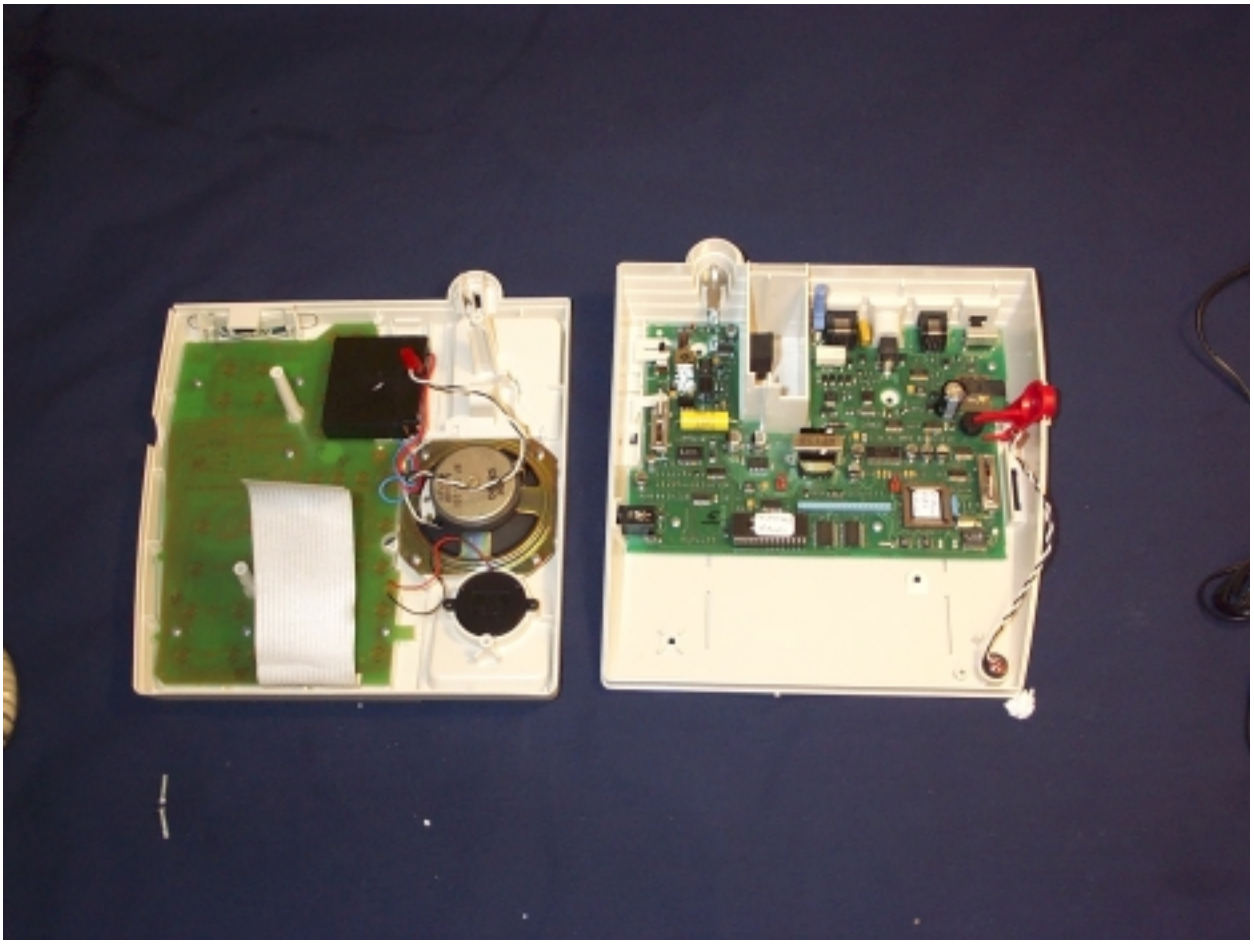


Photo 3: Top cover removed from EUT showing circuit boards. (Board on left is keypad circuit board. Board on the right is the main board)

Cert photos continued.

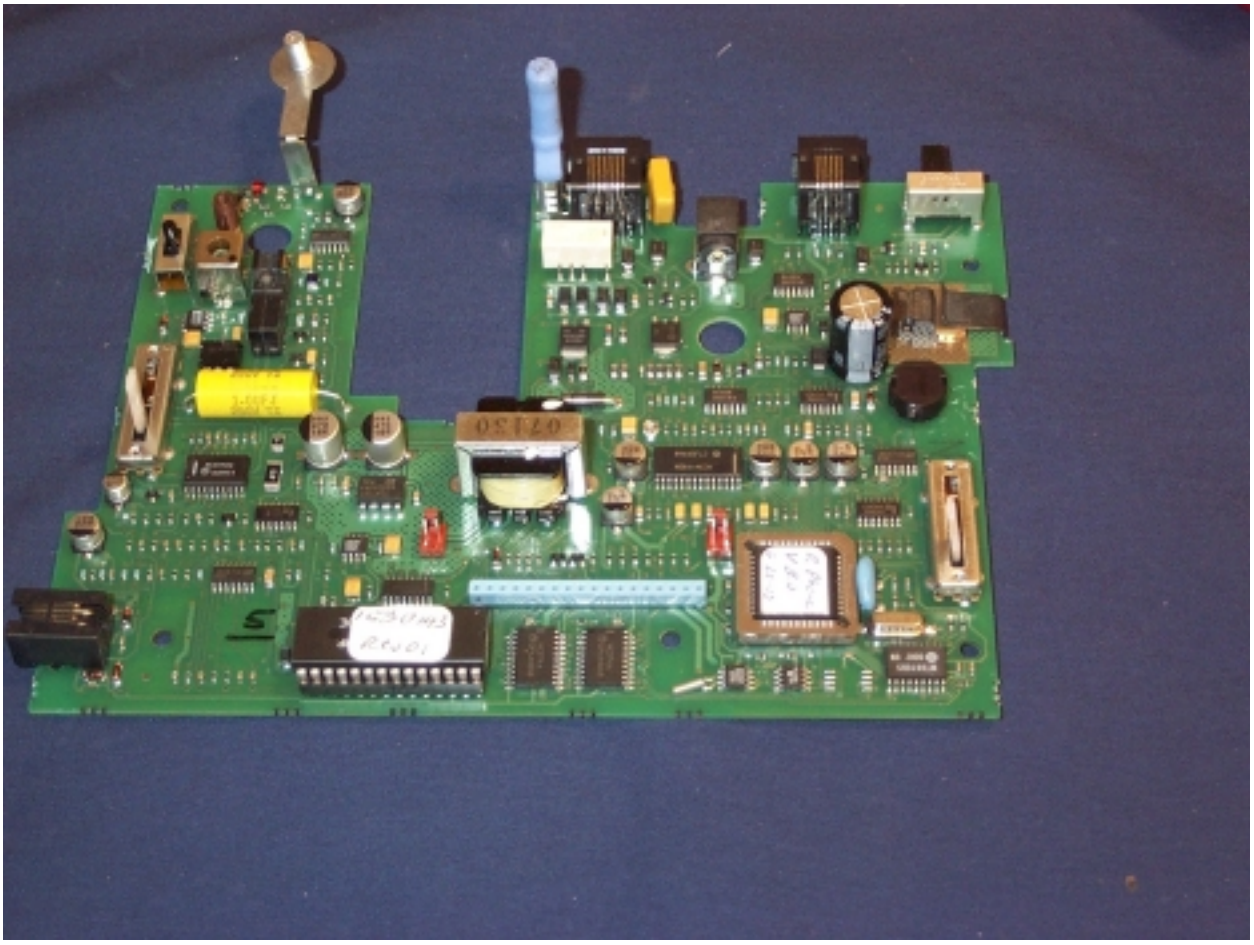


Photo 5: Close-up of top side of main circuit board.

Cert photos continued.

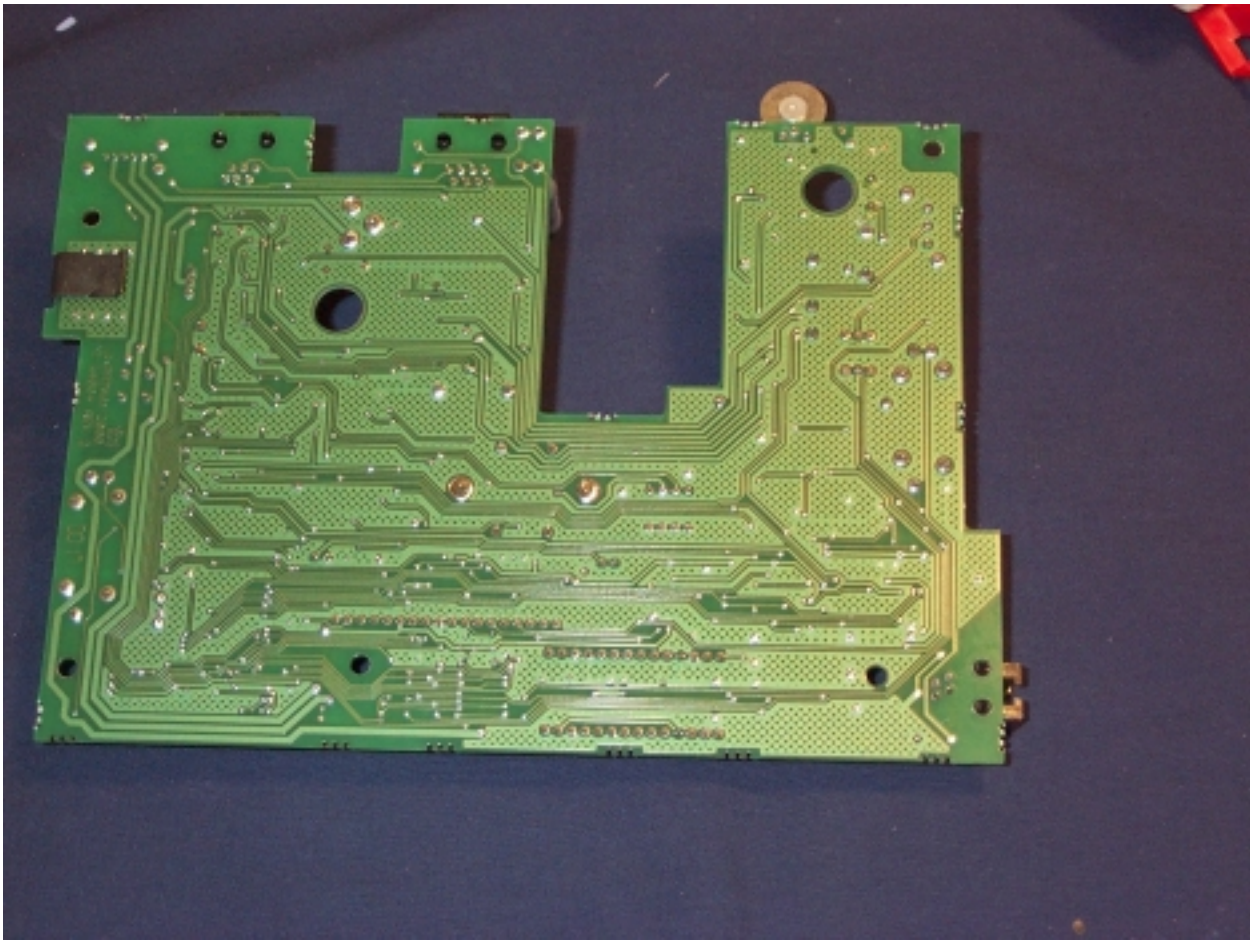


Photo 6: Close-up of bottom side of main circuit board.

Cert photos continued.

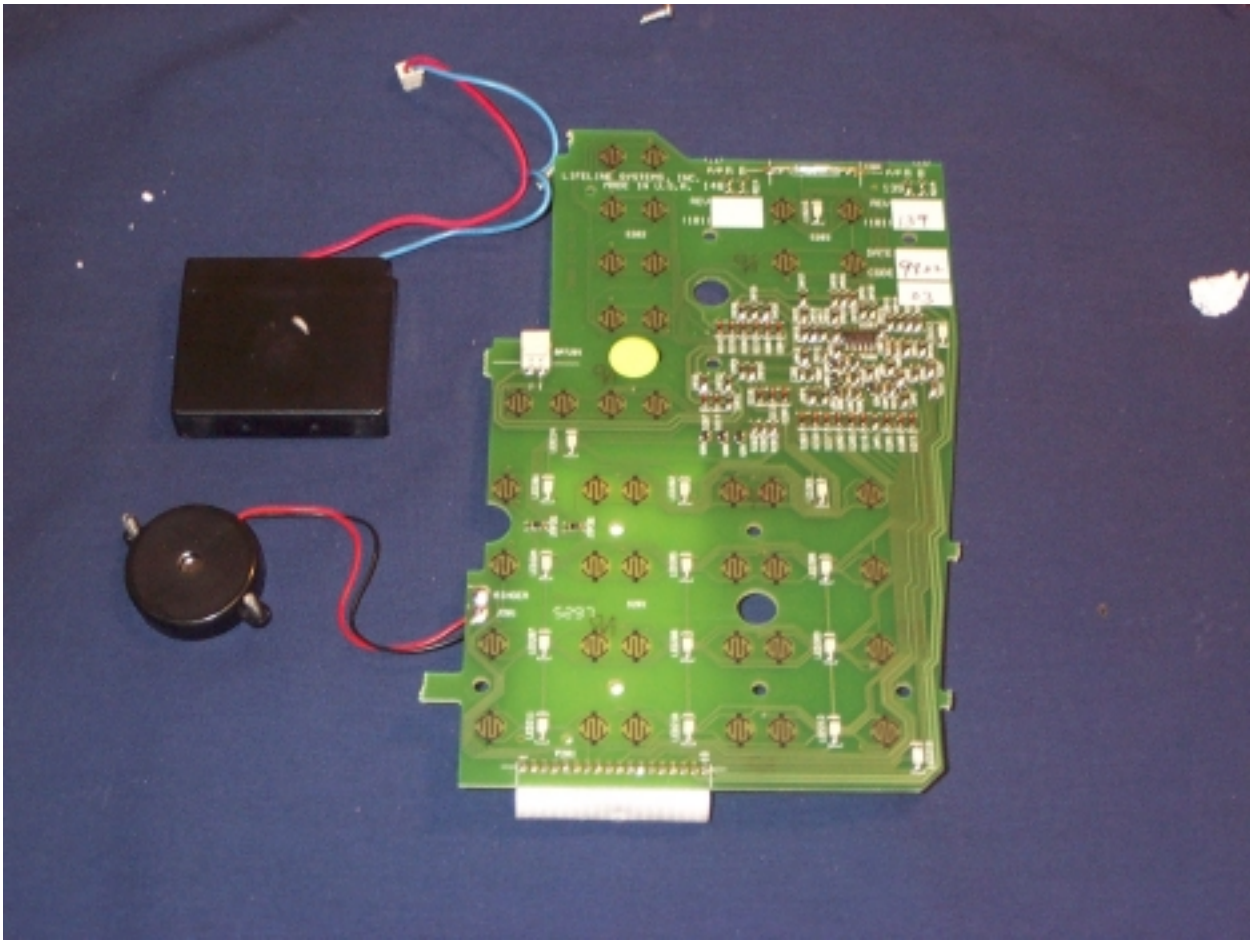


Photo 7: Close-up of top side of keypad circuit board. (Ringer speaker is to the left, NiCd memory back up battery is shown in the upper left)

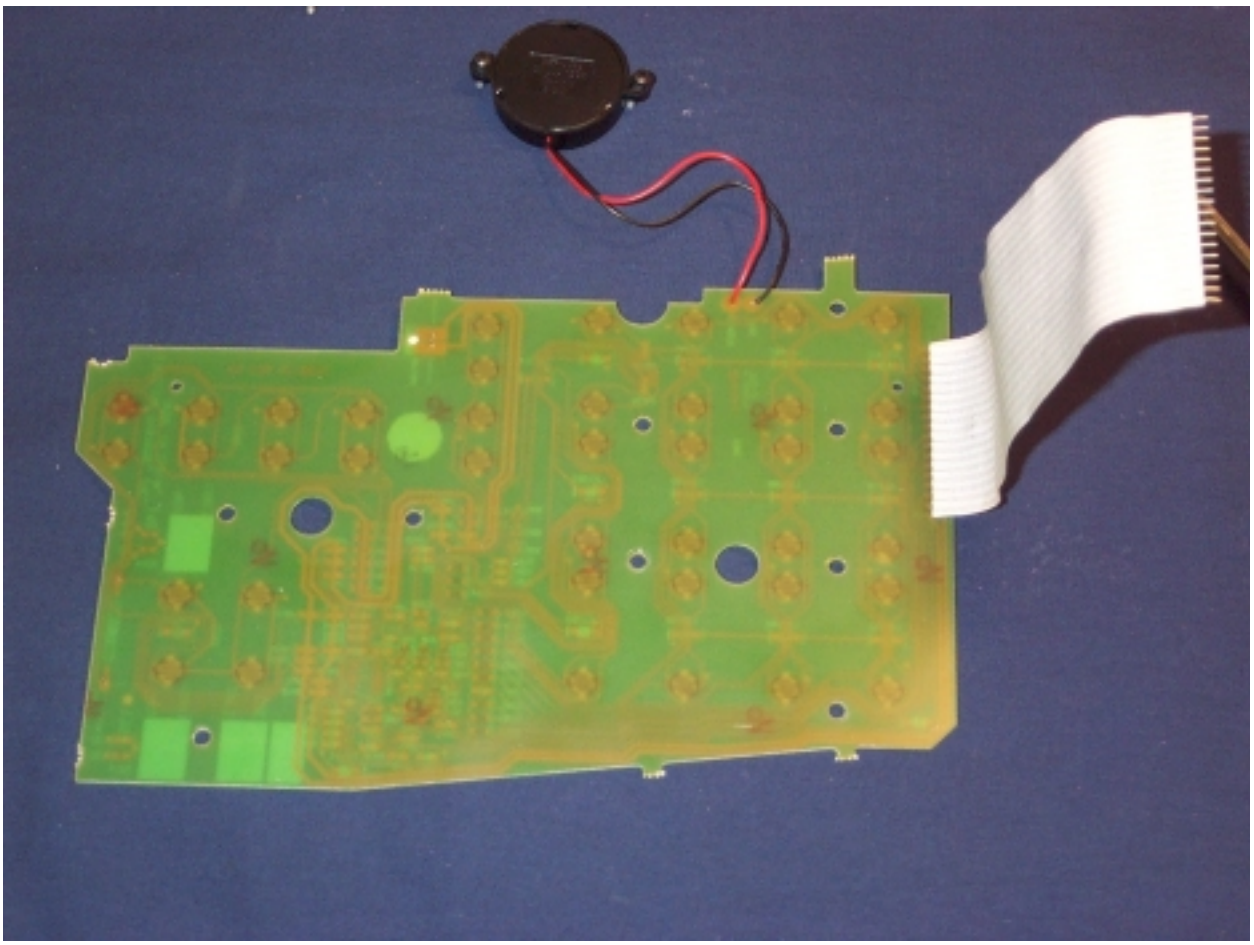


Photo 8: Back side of keypad circuit board. (Ringer speaker is shown at the top of the photo)