

# EMC Technologies (NZ) Ltd

Test Report No **60629.1a**

Report date: 27 July 2006

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## **TEST REPORT**

### **AnzAcare Wireless Body Fluid Detecting Alarm**

*tested to*

### **47 Code of Federal Regulations**

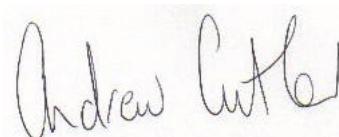
#### **Part 15 - Radio Frequency Devices**

#### **Subpart B – Unintentional Radiators**

#### **Subpart C – Intentional Radiators**

*for*

**AnzAcare Ltd**



This Test Report is issued with the authority of:

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**Andrew Cutler - General Manager**



All tests reported  
herein have been  
performed in accordance  
with the laboratory's  
scope of accreditation

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## 1. STATEMENT OF COMPLIANCE

The **AnzAcare Wireless Body Fluid Detecting Alarm** complies with FCC Part 15 Subpart B as an Unintentional Radiator and Subpart C as an Intentional Radiator when the methods, as described in ANSI C63.4 - 2003, are applied.

## 2. RESULTS SUMMARY

The results from testing are summarised in the following table:

Receiver

Clause	Parameter	Result
15.101	Equipment authorisation requirement.	Certification or Declaration of Conformity required for receivers.
15.103	Exempted devices.	Not applicable as the device is a receiver and is not a digital device.
15.107	Conducted limits	Not applicable. Internal battery powered device.
15.109	Radiated emission limits	Complies.
15.111	Antenna power conduction limit for receivers.	Not applicable. Receiver does not have terminals for the connection of an external antenna.

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## Transmitter

Clause	Parameter	Result
15.201	Equipment authorisation requirement.	Certification required.
15.203	Antenna requirement	Complies. Antenna integral.
15.204	External PA and antenna modifications	Not applicable. No external devices.
15.205	Restricted bands of operation	Complies. Device transmits periodically on 433.9100 MHz.
15.207	Conducted limits	Not applicable. Device is powered using an internal battery.
15.209	Radiated emission limits.	Not applicable. All emissions from the device are related to the transmitter fundamental and the resulting harmonic emissions.
15.231(a)	General requirements	Transmitter is operated manually with a switch that deactivates the transmitter within 5 seconds of being released.
15.231(b)	Field strength of emissions	Complies with a 3.9 dB margin at 867.820MHz (horizontal). Measurement falls within the window of uncertainty.
15.231(c)	Bandwidth	Complies.

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## **3. INTRODUCTION**

This report describes the tests and measurements for the purpose of determining compliance with the specification under the following conditions:

**The test sample was selected by the client.**

**This report relates only to the sample tested.**

**This report contains no corrections or erasures.**

Measurement uncertainties with statistical confidence intervals of 95% are shown below test results. Both class A and Class B uncertainties have been accounted for, as well as influence uncertainties where appropriate.

## **4. CLIENT INFORMATION**

**Company Name** AnzAcare Ltd

**Address** PO Box 569

**City** Nelson

**Country** New Zealand

**Contact** Dr Anthony E Page

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## 5. DESCRIPTION OF TEST SAMPLE

<b>Brand Name</b>	AnzAcare
<b>Model Number</b>	Wireless
<b>Product</b>	Body Fluid Detecting Alarm
<b>Manufacturer</b>	AnzAcare Ltd
<b>Country of Origin</b>	New Zealand
<b>Serial Number</b>	JUN06-T1, JUN06-R1
<b>FCC ID</b>	Not yet determined

## 6. METHODS AND PROCEDURES

### Standard

The sample was tested in accordance with 47 CFR Part 15 Subpart B and C.

### Methods and Procedures

The measurement methods and procedures as described in ANSI C63.4 - 2003 were used.

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## 7. RESULTS

### Section 15.109 Radiated emission limits.

Radiated emissions testing was carried out over the frequency range of 30 MHz to 2750 MHz as the receiver operate on 433.9100 MHz.

Testing was carried out at the laboratory's open area test site - located at Driving Creek, Orere Point, Auckland, New Zealand

The receiver was placed on the test tabletop, which is a total of 0.8 m above the test site ground plane, with measurements being made over a distance of 3 metres when powered using an internal DC battery

The receiver was operating in receive mode with the alarm activated.

When an emission is located, it is positively identified and its maximum level is found by rotating the automated turntable, and by varying the antenna height, where appropriate, with an automated antenna tower.

The emission is measured in both vertical and horizontal antenna polarisations.

The emission level was determined in field strength by taking the following into consideration:

$$\text{Level (dB}\mu\text{V/m)} = \text{Receiver Reading (dB}\mu\text{V)} + \text{Antenna Factor (dB)} + \text{Coax Loss (dB)}$$

No emissions could be detected from the receiver over the range of 30 MHz to 2750 MHz when a Quasi Peak, Average or Peak detector was utilised.

**Result:** Complies.

Measurement uncertainty with a confidence interval of 95% is:

- Free radiation tests (30 - 2750 MHz)  $\pm$  4.1 dB

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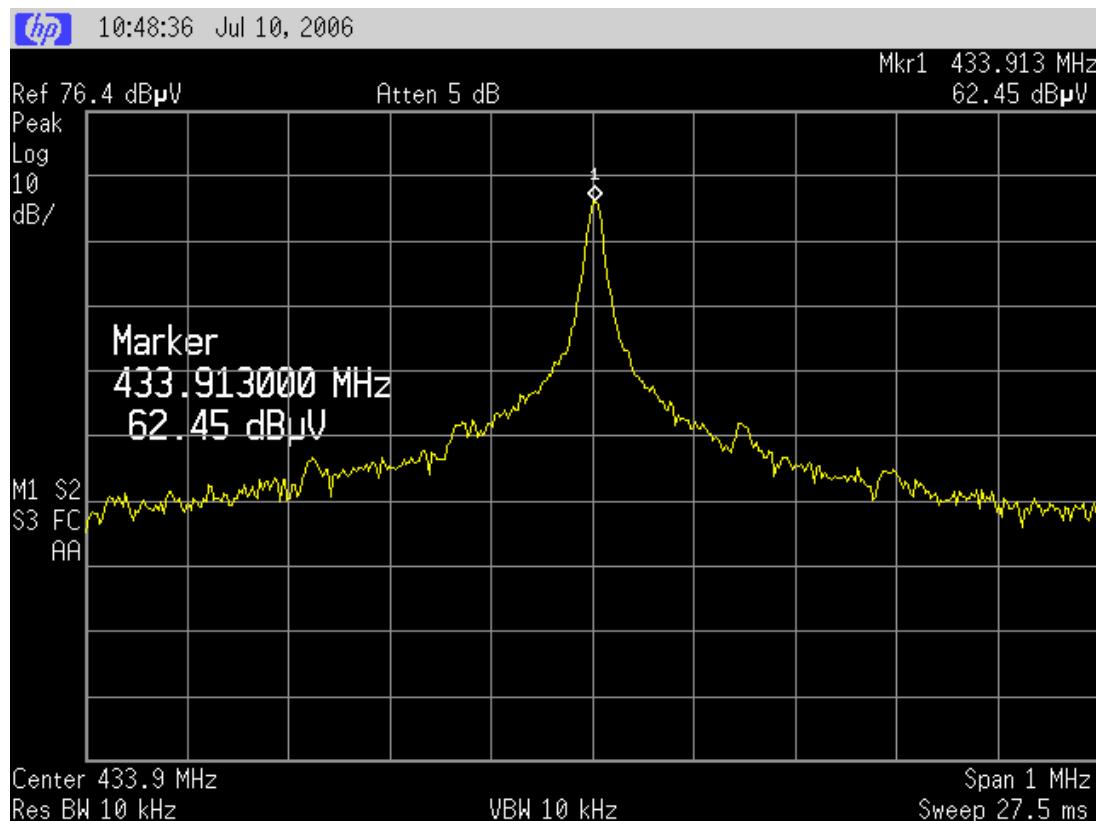
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## Section 15.205: Restricted bands of operation.

The transmitter transmits on 433.9100 MHz.

This falls between the restricted bands of 399.9 - 410 MHz and 608 – 614 MHz.



**Result:** Complies.

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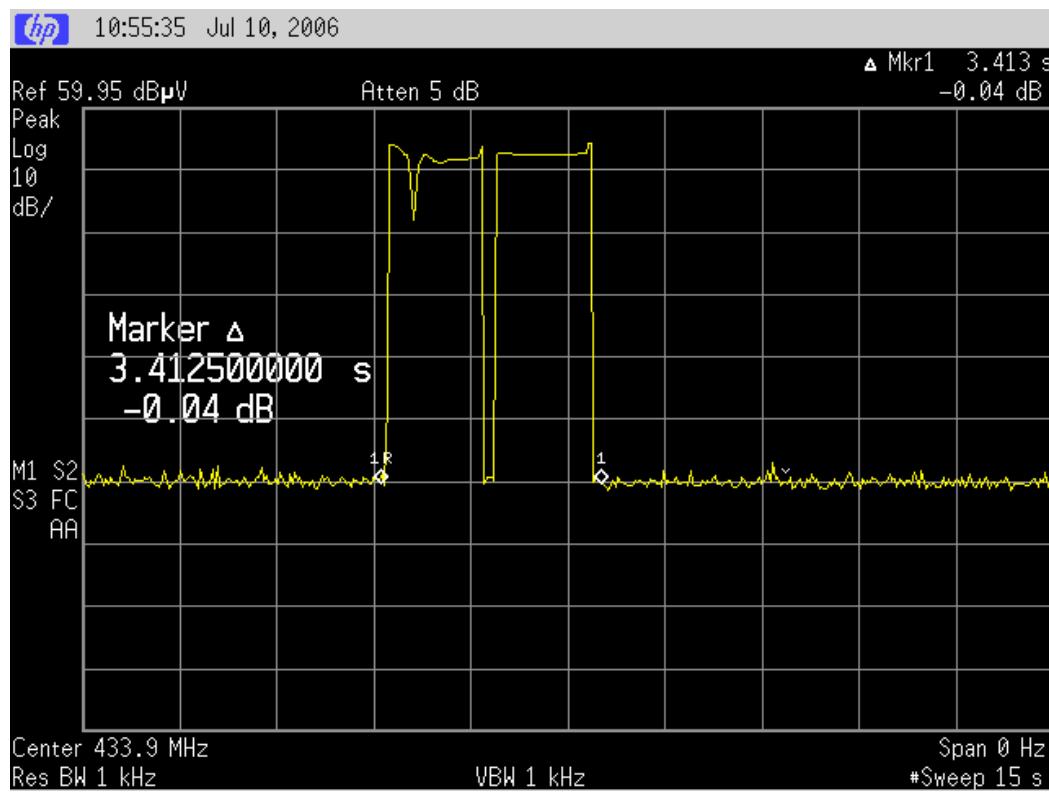
## Section 15.231(a)(2) General requirements and field strength of emissions.

The device tested is used to sense body fluid, which then automatically activates an audible alarm.

The sensor is worn by the patient and typical uses will be:

- bedwetting treatment
- diabetes hypoglycaemic attack alert
- blood leakage monitor during haemodialysis

The transmitter was observed to cease transmission 3.4 seconds after being activated.



**Result:** Complies.

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## Section 15.231(b) Field strength of emissions.

Radiated emissions testing was carried out over the frequency range of 30 MHz to 4340 MHz as the transmitter operates on 316 MHz.

Testing was carried out at the laboratory's open area test site - located at Driving Creek, Orere Point, Auckland, New Zealand

This site conforms to the requirements of CISPR 16, Part 1, Clause 16, and ANSI C63.4 - 1992.

The device was placed on the test tabletop, which is a total of 0.8 m above the test site ground plane with testing was carried out over a distance of 3 metres.

When an emission is located, it is positively identified and its maximum level is found by rotating the automated turntable, and by varying the antenna height, where appropriate, with an automated antenna tower.

The emission is measured in both vertical and horizontal antenna polarisations, where appropriate.

The emission level was determined in field strength by taking the following into consideration:

$$\text{Level (dB}\mu\text{V/m)} = \text{Receiver Reading (dB}\mu\text{V)} + \text{Antenna Factor (dB)} + \text{Coax Loss (dB)}$$

The limits as described in Section 15.231 have been applied as follows:

Fundamental 260 – 470 MHz =  $41.6667 \times 433.9 \text{ MHz} - 7083.3333 = 10995.848 \text{ uV/m}$ .

This is then convert to dBuV/m using  $20 \times \log (10995.848) = 80.8 \text{ dBuV/m}$

The spurious emission limit is 20 dB below the fundamental emission level (60.8 dBuV/m)

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## Fundamental emission.

Frequency MHz	Level dBuV/m	Limit dBuV/m	Margin dB	Antenna	Detector
433.910	71.0	80.8	-9.8	Vertical	Quasi Peak
433.910	70.5	80.8	-10.3	Horizontal	Quasi Peak

## Spurious emissions

Frequency MHz	Level dBuV/m	Limit dBuV/m	Margin dB	Antenna	Detector
867.820	56.0	60.8	-4.8	Vertical	Quasi Peak
867.820	56.9	60.8	-3.9	Horizontal	Quasi Peak
1301.730	50.0	60.8	-10.8	Vertical	Average
1301.730	51.6	60.8	-9.2	Horizontal	Average
1735.640	42.1	60.8	-18.7	Vertical	Average
1735.640	42.5	60.8	-18.3	Horizontal	Average
2169.550	44.1	60.8	-16.7	Vertical	Average
2169.550	42.8	60.8	-18.0	Horizontal	Average
2603.460	33.6	60.8	-27.2	Vertical	Average
2603.460	33.0	60.8	-27.8	Horizontal	Average
3037.370	-	60.8	-	Vert/Hort	Peak
3471.280	-	60.8	-	Vert/Hort	Peak
3905.190	-	60.8	-	Vert/Hort	Peak
4339.100	-	60.8	-	Vert/Hort	Peak

## **Result:** Complies.

Measurement uncertainty with a confidence interval of 95% is:

- Free radiation tests  $(30 - 4500 \text{ MHz}) \pm 4.1 \text{ dB}$

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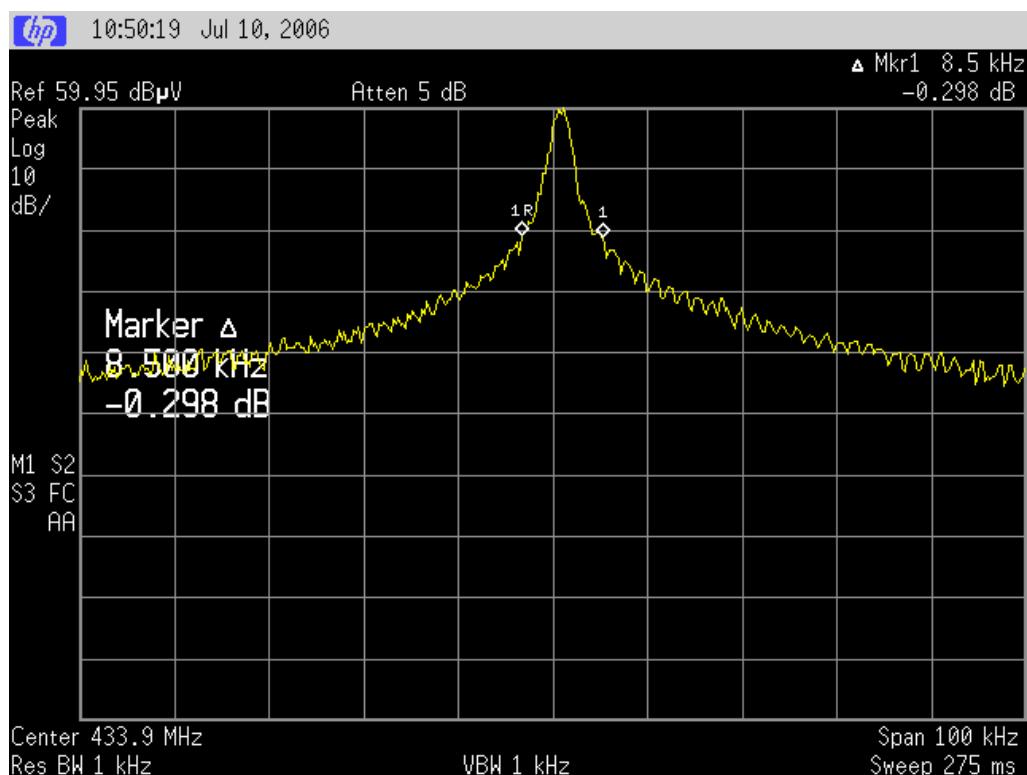
## Section 15.231(c) Bandwidth.

The bandwidth of the emission should not be greater than 0.25% of the centre frequency at the -20 dB points.

Centre frequency = 433.9 MHz.

0.25% of 433.9 MHz is 1.085 MHz.

The plot below shows a bandwidth of 8.5 kHz at the -20 dB points.



**Result:** Complies.

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## 8. TEST EQUIPMENT USED

Instrument	Manufacturer	Model	Serial No	Asset Ref
Aerial Controller	EMCO	1090	9112-1062	RFS 3710
Aerial Mast	EMCO	1070-1	9203-1661	RFS 3708
Biconical Antenna	Schwarzbeck	BBA 9106	-	RFS 3612
Log Periodic Antenna	Schwarzbeck	VUSLP 9111	9111-228	3785
Measurement Receiver	Rohde & Schwarz	ESCS 30	847124/020	E1595
Spectrum Analyser	Hewlett Packard	E7405A	US39150142	3776
Horn Antenna	Electrometrics	RGA-60	6234	E1494
Coax Cable	Sucoflex	104PA	2545/4PA	-
Turntable	EMCO	1080-1-2.1	9109-1578	RFS 3709
VHF Balun Antenna	Schwarzbeck	VHA 9103		RFS 3603

## 9. ACCREDITATIONS

Testing was carried out in accordance with EMC Technologies Ltd registration with the Federal Communications Commission as a listed facility, registration number: 90838, which was updated on February 23<sup>rd</sup>, 2004.

All testing was carried out in accordance with the terms of EMC Technologies (NZ) Ltd International Accreditation New Zealand (IANZ) Accreditation to NZS/ISO/IEC 17025.1999.

All measurement equipment has been calibrated in accordance with the terms of the EMC Technologies (NZ) Ltd International Accreditation New Zealand (IANZ) Accreditation to NZS/ISO/IEC 17025.1999.

International Accreditation New Zealand has Mutual Recognition Arrangements for testing and calibration with 46 accreditation bodies in 34 economies. This includes NATA (Australia), UKAS (UK), SANAS (South Africa), NVLAP (USA), A2LA (USA), SWEDAC (Sweden). Further details can be supplied on request.

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## 10. PHOTOGRAPHS

Transmitter external view



Receiver External View



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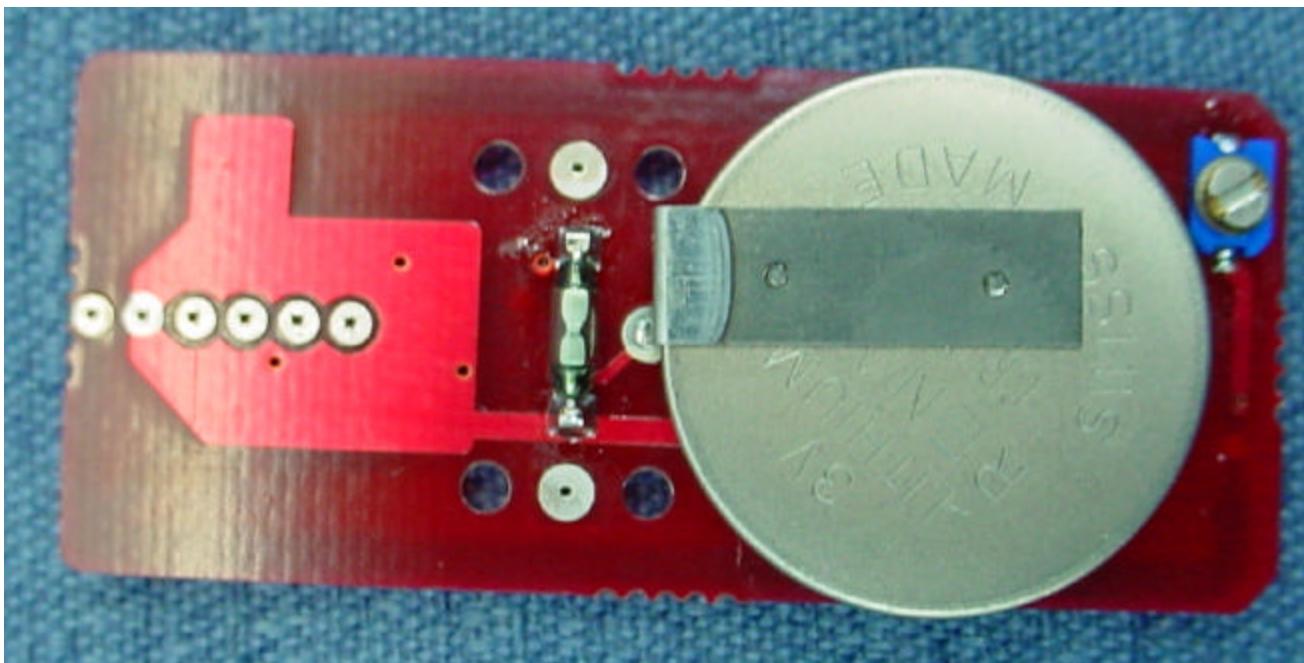
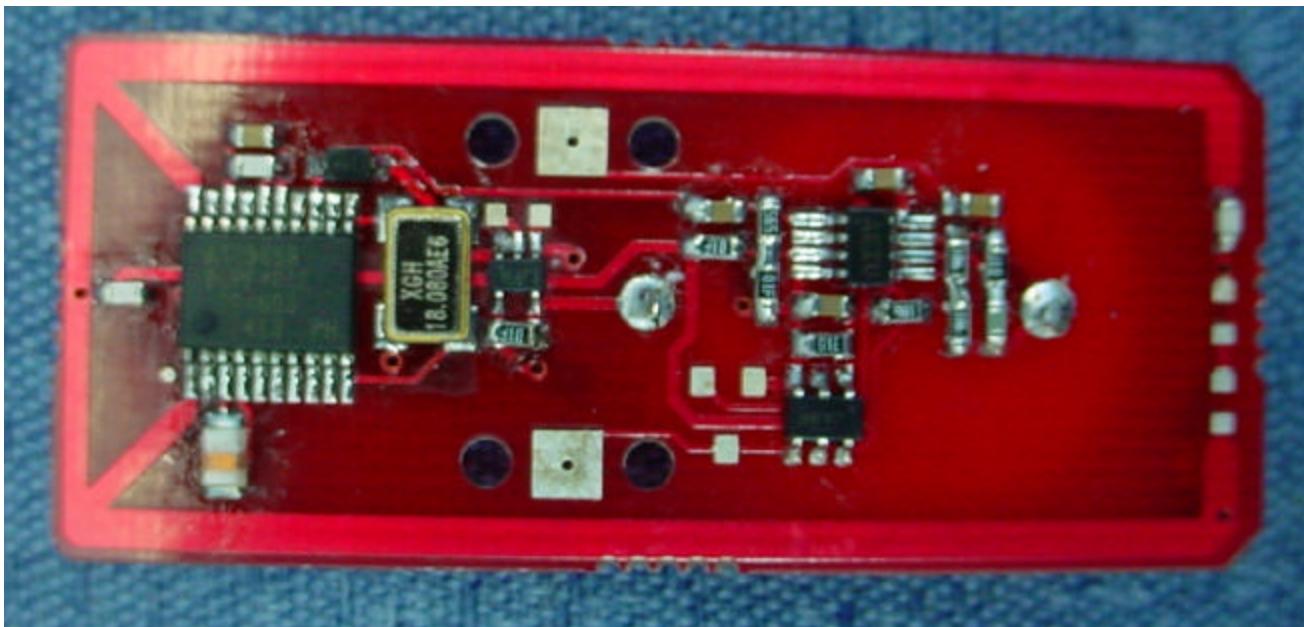
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## Transmitter internal views



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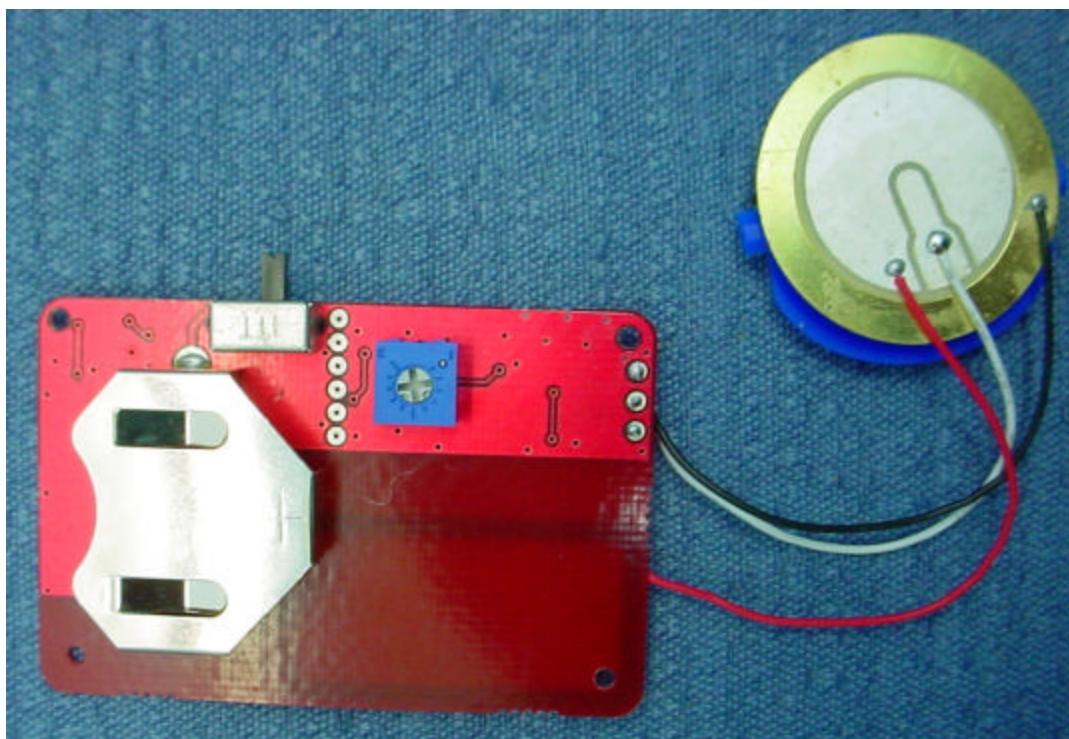
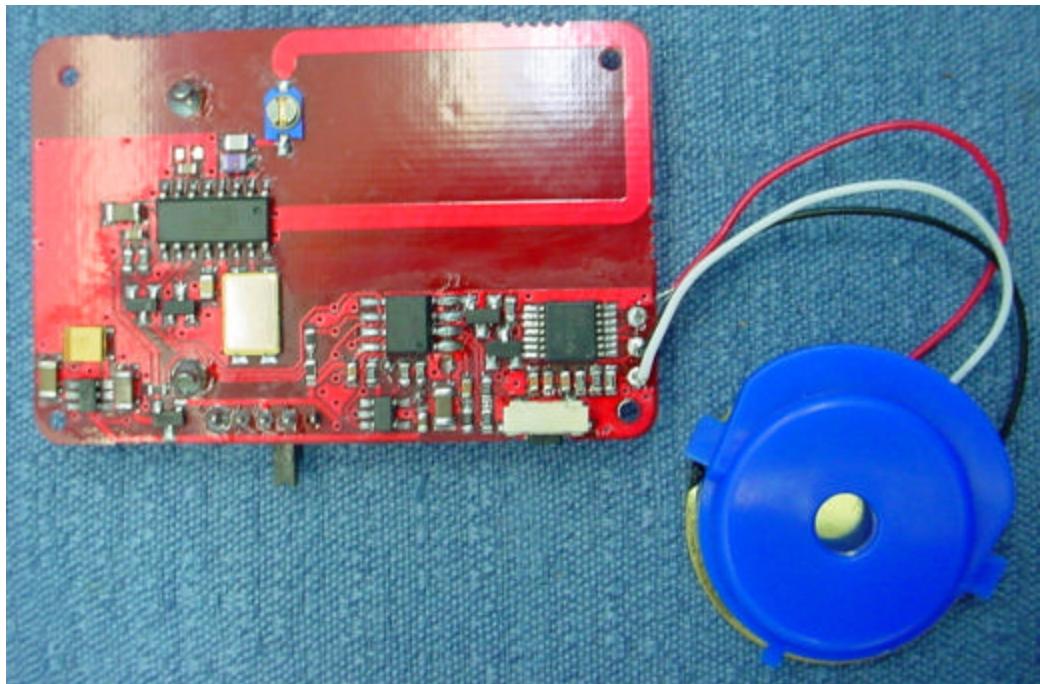
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**Receiver Internal View**



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## Receiver and Transmitter under test



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