

# SUPPLEMENTARY TEST REPORT FROM RADIO FREQUENCY INVESTIGATION LTD.

Test Of: Basys Technology Ltd.  
418MHz PAT

To: F.C.C. Part 15: 1998  
Subpart C. (Intentional Radiators)  
Section 15.231

**Supplementary Test Report Serial No:**  
RFI/EMCB1/SUP38788A

**This report is supplementary to**  
**RFI Test Report No. RFI/EMCB1/RP38788A**

|                                                                                                                                                                                                                             |                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>This Supplementary Test Report Is Issued Under<br/>The Authority Of Brian Watson Technical Director:</b><br><br> | <b>Checked By:</b><br><br> |
| <b>Tested By:</b><br><br>                                                                                           | <b>Release Version No:   PDF01</b>                                                                                                  |
| <b>Issue Date: 29 July 1999</b>                                                                                                                                                                                             | <b>Test Date: 19 July 1999</b>                                                                                                      |

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## **1. Client Information**

### **1.1. Applicant Details**

|                      |                                                |
|----------------------|------------------------------------------------|
| <b>Company Name:</b> | Basys Technology Ltd                           |
| <b>Address:</b>      | Mumby Road<br>Gosport<br>Hampshire<br>PO12 1AF |
| <b>Contact Name:</b> | Mr S Grant                                     |

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## **2. Equipment Under Test (EUT)**

The following information (with the exception of the Date of Receipt) has been supplied by the client:

### **2.1. Identification Of Equipment Under Test (EUT)**

|                                    |                                                    |
|------------------------------------|----------------------------------------------------|
| <b>Brand Name:</b>                 | Basys Technology Ltd                               |
| <b>Model Name or Number:</b>       | 418MHz PAT (Modified unit for continuous transmit) |
| <b>Unique Type Identification:</b> | 63-20-36                                           |
| <b>Serial Number:</b>              | None stated by client                              |
| <b>Country of Manufacture:</b>     | UK                                                 |
| <b>FCC ID Number:</b>              | Awaiting Certification by the FCC                  |
| <b>Date of Receipt:</b>            | 4 May 1999                                         |

### **2.2. Description Of EUT**

The equipment under test was a radio based short to long range tagging system for the protection and monitoring of assets and the management of personnel movement.

### **2.3. Modifications Incorporated In EUT**

Two EUT samples were supplied for test purposes. The first device was left unmodified to enable bandwidth and timing measurement tests to be performed. The second device was modified to enable a continuous transmit unmodulated carrier which would enable electric field strength measurements to be performed.

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#### **2.4. Additional Information Related To Testing**

|                                        |                                  |
|----------------------------------------|----------------------------------|
| <b>Power Supply Requirement:</b>       | Internal battery supply of 3.0 V |
| <b>Intended Operating Environment:</b> | Commercial premises              |
| <b>Weight:</b>                         | 0.071 Kg                         |
| <b>Dimensions:</b>                     | 60 mm x 107 mm x 25 mm           |
| <b>Interface Ports:</b>                | None                             |

#### **2.5. Support Equipment**

No support equipment was used to exercise the EUT during testing.

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### **3. Summary Of Test Results**

#### **3.1. Radiated Emissions**

| <b>Range Of Measurements</b>                  | <b>Specification Reference</b>              | <b>Compliance Status</b> |
|-----------------------------------------------|---------------------------------------------|--------------------------|
| Electric Field Strength,<br>30 MHz to 5.0 GHz | Section 15 of C.F.R. 47: 1998 Clause 15.231 | Complied                 |

#### **3.2. Location Of Tests**

All the measurements described in this report were performed at the premises of Radio Frequency Investigation Ltd., Ewhurst Park, Ramsdell, Basingstoke, Hampshire, RG26 5RQ.

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## **4. Measurements, Examinations And Derived Results**

### **4.1. General Comments**

4.1.1. This section contains test results only.

4.1.2. The measurement uncertainties stated were calculated in accordance with the requirements of UKAS Document NIS 81 with a confidence level of 95%.

4.1.3. This supplementary test report is issued as an addendum to test report RFI/EMCB1/RP38788A.

4.1.4. Additional tests were performed on the 418MHz PAT as requested by the FCC.

4.1.5. Tests for radiated emissions were performed as stated in Section 5.2 of RFI Test Report RFI/EMCB1/RP38788A.

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## EMC Department

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**4.2. Test Results For Radiated Emissions: Continuous Transmit****4.2.1. Electric Field Strength Measurements: Fundamental Frequency**

4.2.1.1. The client has stated that the fundamental frequency of the EUT is 418 MHz.

4.2.1.2. Electric field strength measurements were performed with the EUT operated in both high and low power modes as stated in Section 5.2 of RFI Test Report RFI/EMCB1/RP38788A.

4.2.1.3. For high power operation, radiated emission limits stated in section 15.231 (b) were followed: Field strength limit for the fundamental is 3750 uV/m at 260 MHz rising linearly to 12500 uV/m at 470 MHz. Therefore this gives a limit at 418 MHz of 10351.4 uV/m. This level equates to 80.3 dBuV/m. This limit is specified using an Average detector at a test distance of 3m.

4.2.1.4. For low power operation, radiated emission limits stated in section 15.231 (e) were followed: Field strength limit for the fundamental is 1500 uV/m at 260 MHz rising linearly to 5000 uV/m at 470 MHz. Therefore this gives a limit at 418 MHz of 4133.4 uV/m. This level equates to 72.3 dBuV/m. This limit is specified using an Average detector at a test distance of 3m.

4.2.1.5. The following table lists frequencies at which emissions were measured using a Peak detector (results incorporate antenna factors and cable losses).

**High Power**

| Frequency (MHz) | Ant. Pol. | Average Level (dBmV/m) | Average Limit (dBmV/m) | Margin (dB) | Result   |
|-----------------|-----------|------------------------|------------------------|-------------|----------|
| 417.994         | Vert      | 73.8                   | 80.3                   | 6.5         | Complied |

| Frequency (MHz) | Ant. Pol. | Peak Level (dBmV/m) | Peak Limit (dBmV/m) | Margin (dB) | Result   |
|-----------------|-----------|---------------------|---------------------|-------------|----------|
| 417.994         | Vert      | 74.3                | 80.3                | 6.0         | Complied |

**Low Power**

| Frequency (MHz) | Ant. Pol. | Average Level (dBmV/m) | Average Limit (dBmV/m) | Margin (dB) | Result   |
|-----------------|-----------|------------------------|------------------------|-------------|----------|
| 418.007         | Vert      | 71.2                   | 72.3                   | 1.1         | Complied |

| Frequency (MHz) | Ant. Pol. | Peak Level (dBmV/m) | Peak Limit (dBmV/m) | Margin (dB) | Result   |
|-----------------|-----------|---------------------|---------------------|-------------|----------|
| 418.007         | Vert      | 71.7                | 72.3                | 0.6         | Complied |

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## **Appendix 1. Photographs of EUT**

This appendix contains the following photographs:

| Photo Reference Number | Title                                             |
|------------------------|---------------------------------------------------|
| PHT\38788ETF01\001     | Front, bottom and left hand side view of the EUT. |
| PHT\38788ETF01\002     | Rear, top and right hand side view of EUT.        |
| PHT\38788ETF01\003     | View of MPT label.                                |
| PHT\38788ETF01\004     | View of Identity label.                           |
| PHT\38788ETF01\005     | Overall internal view of EUT.                     |
| PHT\38788ETF01\006     | Internal view of EUT displaying bottom of case.   |
| PHT\38788ETF01\007     | Top view of PCB.                                  |
| PHT\38788ETF01\008     | Bottom view of PCB.                               |

These pages are not included in the total number of pages for this report.

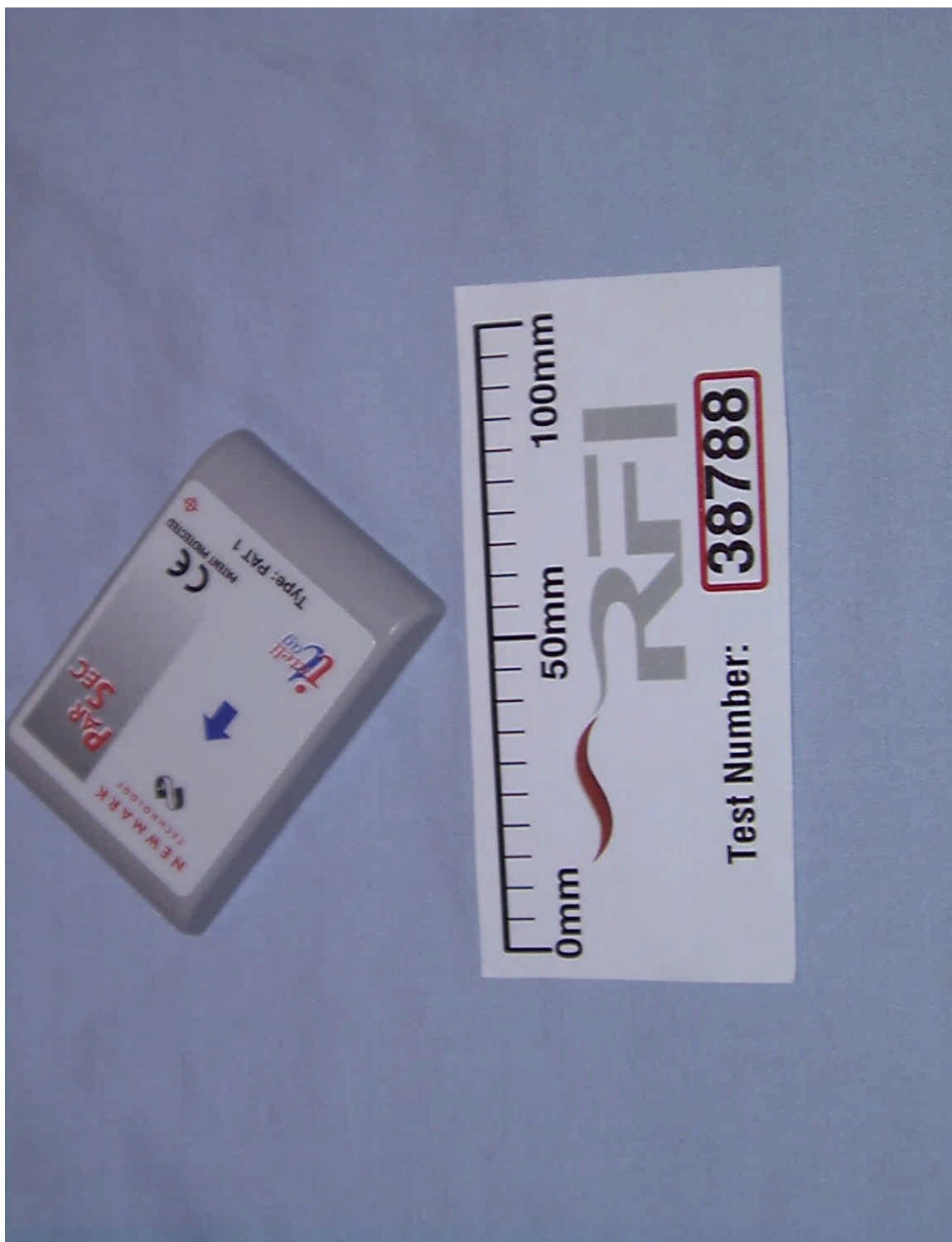
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PHT\38788ETF01\001 Front, bottom and left hand side view of the EUT.

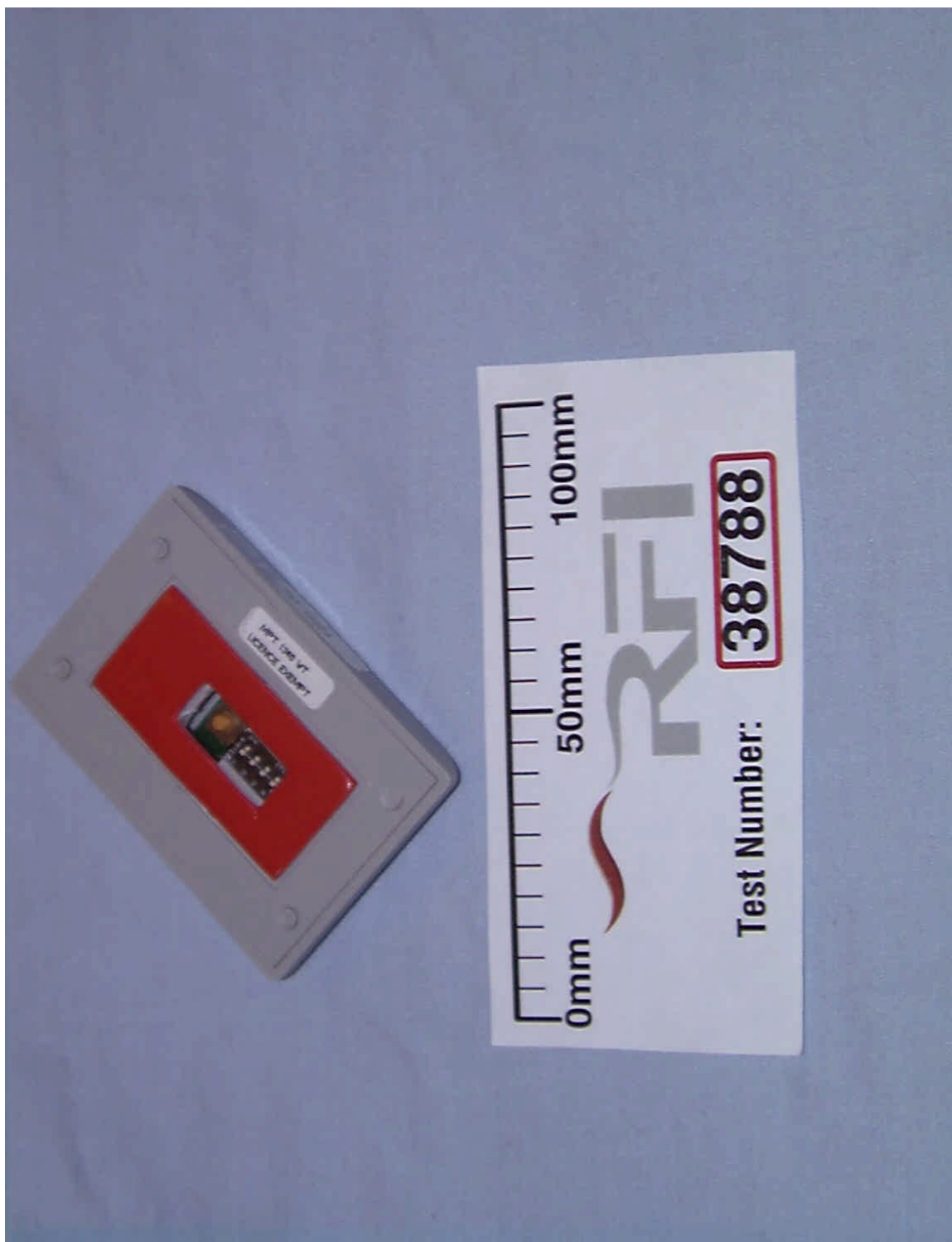


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PHT\38788ETF01\002 Rear, top and right hand side view of EUT.

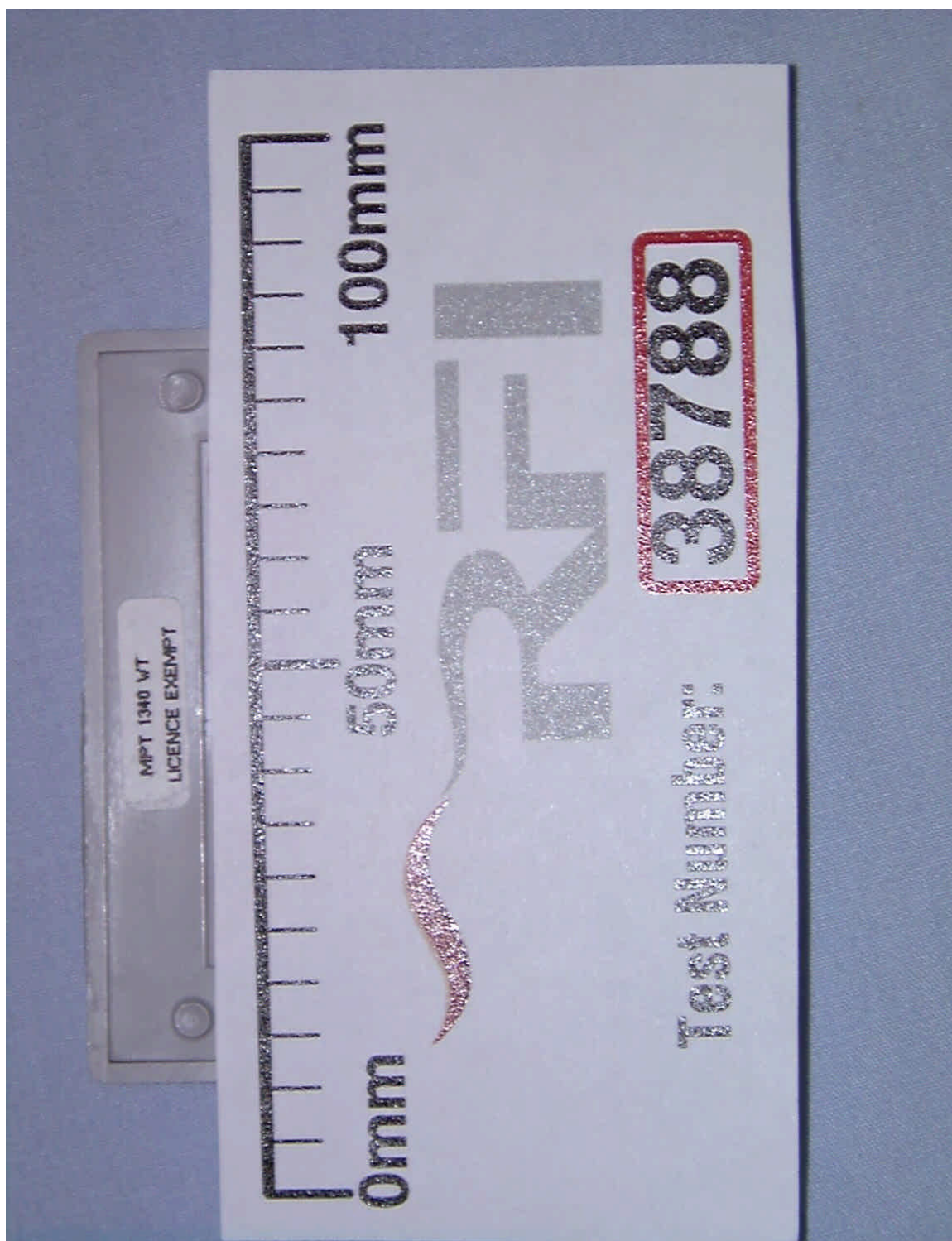


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PHT\38788ETF01\003 View of MPT label.

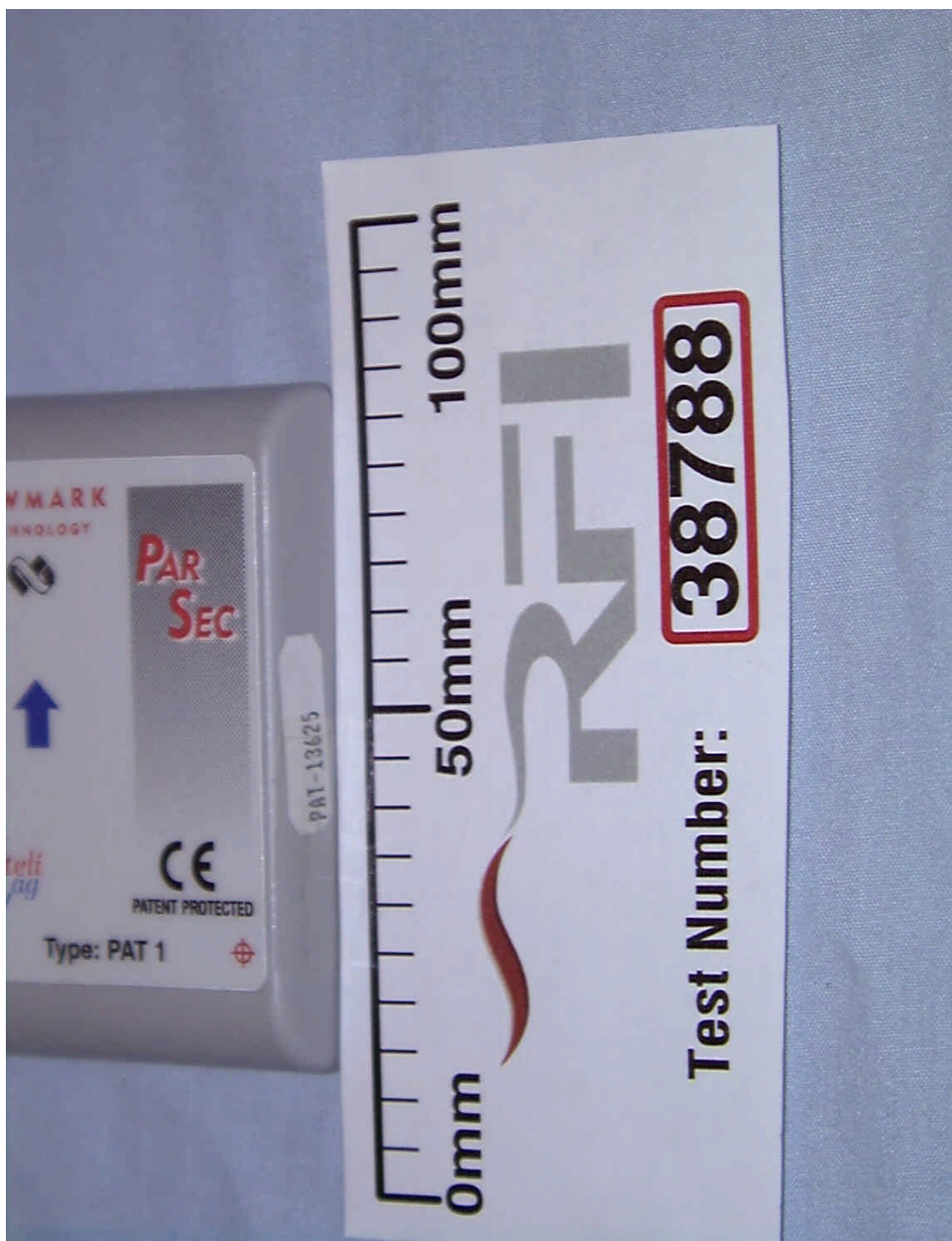


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PHT\38788ETF01\004 View of Identity label.

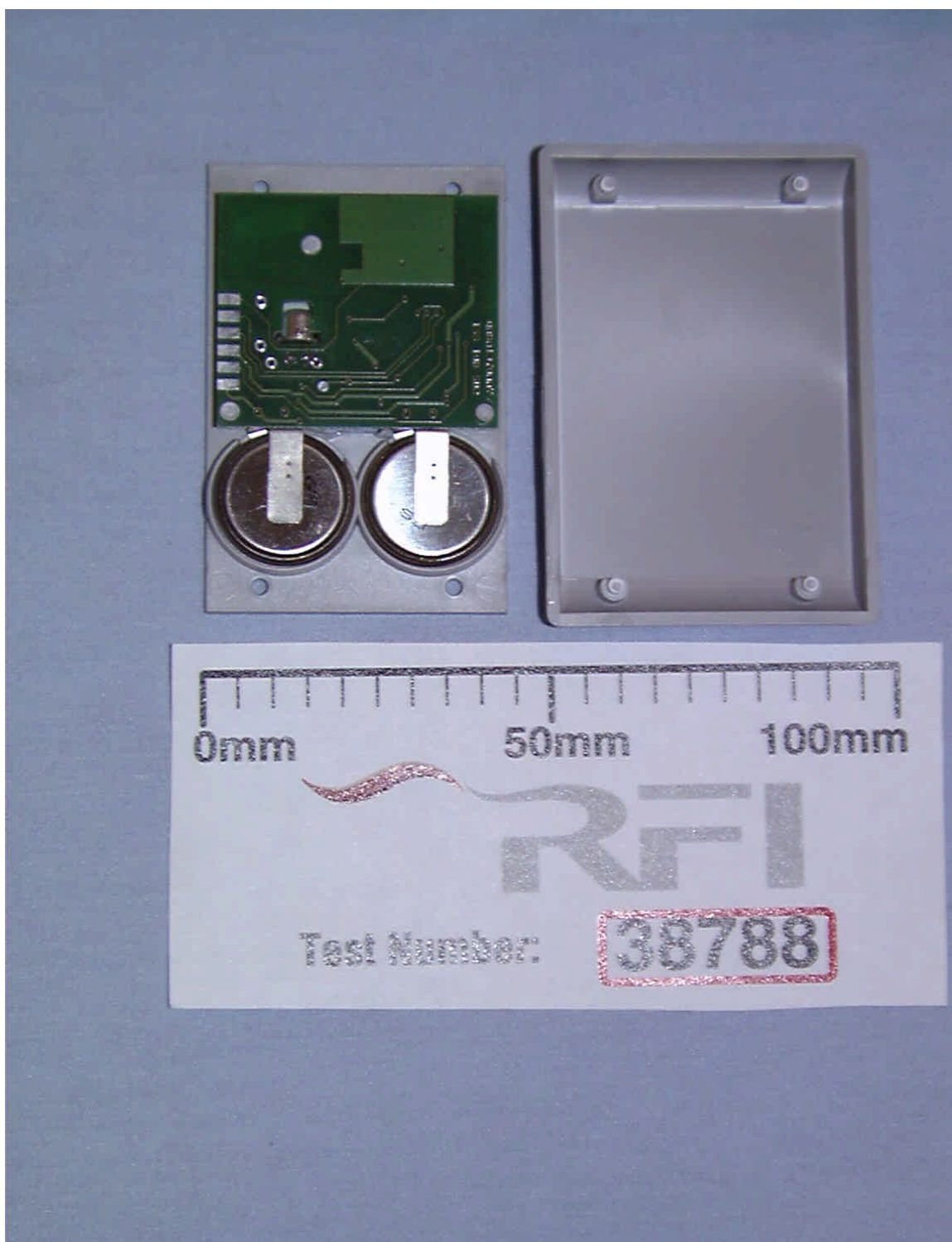


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PHT\38788ETF01\005 Overall internal view of EUT.

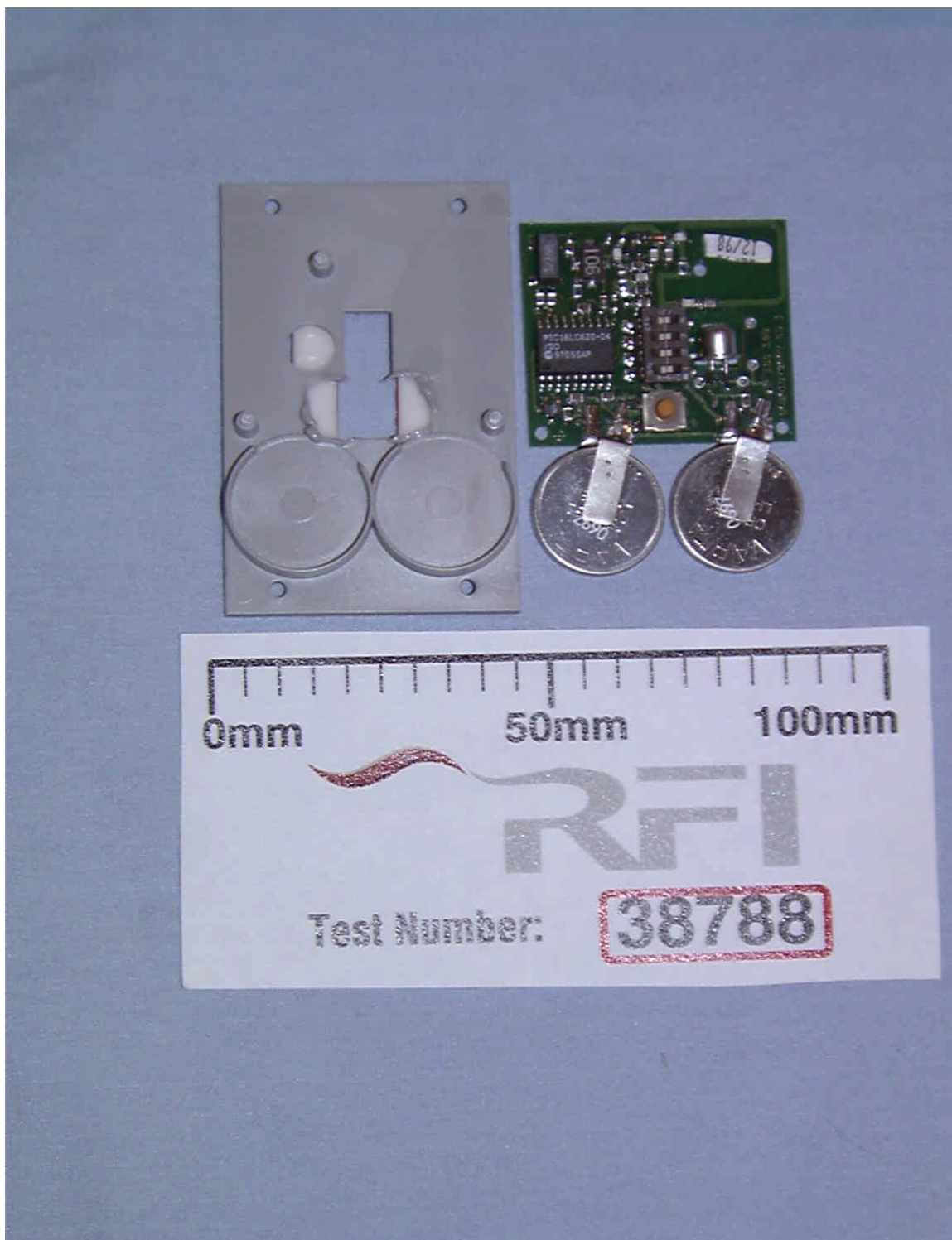


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PHT\38788ETF01\006 Internal view of EUT displaying bottom of case.

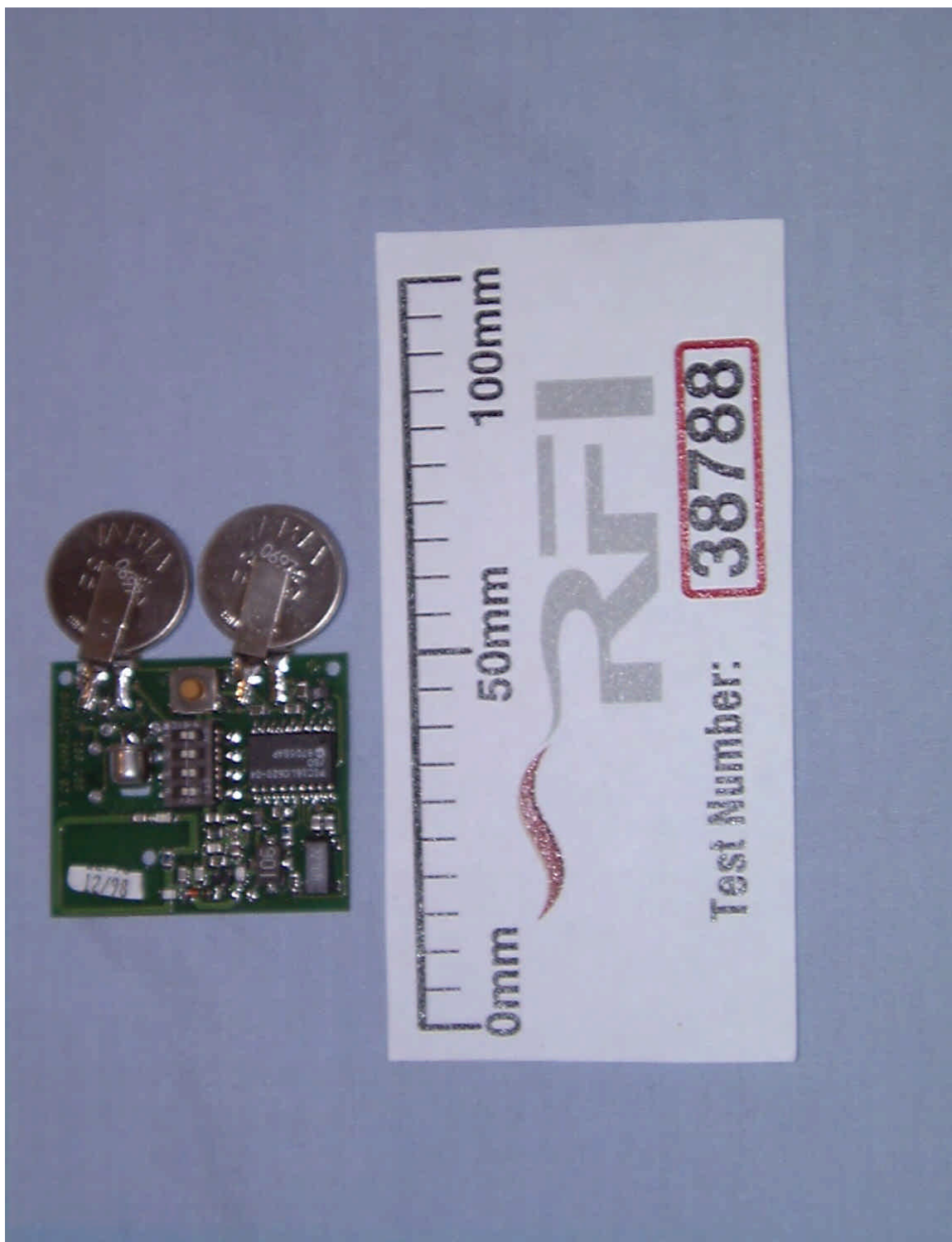


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PHT\38788ETF01\007 Top view of PCB.



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PHT\38788ETF01\008 Bottom view of PCB.

