RHEIN TECH LABORATORIES, INC.

Engineering Solutions & Electromagnetic Compatibility Services

Intentional Radiated Emissions Test Report - FCC Part 15.231 & RSS-210

Test Lab:	Applicant:
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FCC ID	CFS8DL5816ST	**Test Report Date**	May 1, 2015
IC	573F-5816ST	**RTL Work Order Number**	2015054
Model #	5816S	**RTL Quote Number**	QRTL15-054

American National Standard Institute	ANSI C63.10-2009: American National Standard for Testing Unlicensed Wireless Devices
FCC Rule Part(s)	15.231 Periodic operation in the band 40.66–40.70 MHz and above 70 MHz (10-01-14)
IC Rule Part	RSS-210 Issue 8 Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this test report. No modifications were made to the equipment during testing in order to achieve compliance with these standards. Furthermore, there was no deviation from, additions to, or exclusions from, the applicable parts of FCC Part 2, FCC Part 15, IC RSS-210, IC RSS-Gen and ANSI C63.10.

Signature: _____ Date: May 1, 2015

Typed/Printed Name: Desmond A. Fraser Position: President

These tests are accredited and meet the requirements of ISO/IEC 17025 as verified by ANAB. Refer to certificate and scope of accreditation AT-1445.

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1 General Information

1.1 Scope

Applicable Standards:

- FCC Part 15.231: Periodic operation in the band 40.66–40.70 MHz and above 70 MHz
- Industry Canada RSS-210 Issue 8 Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

1.2 Description of EUT

Equipment Under Test	5816S
Power Supply	3 VDC battery
Frequency Range	345 MHz
Antenna Connector Type	Internal
Antenna Type	Internal

1.3 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report and approved by the Federal Communications Commission to perform AC line conducted and radiated emissions testing.

1.4 Modifications

No modifications were required for compliance.

2 Test Information

2.1 Description of Test Modes

In accordance with FCC 15.31(m) the following frequencies were tested:

Table 2-1: Frequencies Tested

Channel	Frequency
N/A	345.00 MHz

2.2 EUT Disposition

The EUT was adapted to continuously transmit for testing purposes.

2.3 Test Result Summary

Table 2-2: Test Result Summary – FCC Part 15, Subpart C (Section 15.231), IC RSS-210/RSS-Gen

FCC Reference	Test	Pass/Fail or N/A
FCC 15.231	Radiated Emissions	Pass

2.4 Related Submittal(s)/Grant(s)

This report is to support an application for certification under FCC ID: CFS8DL5816ST, IC: 573F-5816ST.

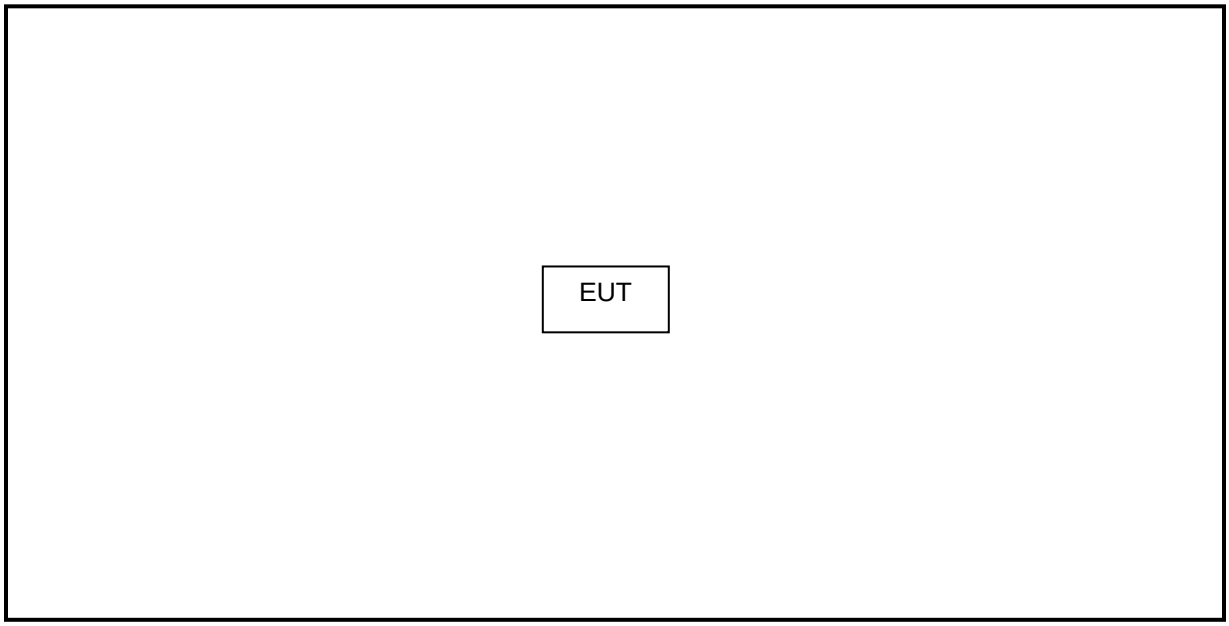
2.5 Test System Details

The test samples were received on March 19, 2015. The FCC identifiers for all applicable equipment, plus descriptions of all cables used in the tested system, are identified in the following tables.

Table 2-3: Equipment Under Test

Part	Manufacturer	Model #	Serial Number	FCC ID	RTL Bar Code
Wireless Door/Window Transmitter	Honeywell International	5816S	A038-6305	CFS8DL5816ST	21578

2.6 Configuration of Tested System



3 Radiated Emissions – FCC 15.209; IC RSS-210

3.1 Limits of Radiated Emissions Measurement

The data and limits presented in this report are for radiated emissions per 15.231(b)(2) which references 15.35(b), and peak limiting for restricted bands per 15.209(e), which again references 15.35(b)(2). No average data is presented in this report. Data (if any) is also presented for spurious, non-harmonic radiated emissions per 15.209.

3.2 Radiated Emissions Measurement Test Procedure

Procedure: C63.10-2009 6.5, 6.6

Before final measurements of radiated emissions were made on the open-field three/ten meter range, the EUT was scanned indoors at a one meter distance. This was done in order to determine the emissions spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements on the open-field range, at each frequency, in order to ensure that maximum emission amplitudes were attained.

Radiated fundamental and spurious emissions were tested at three meters. The EUT was placed on a nonconductive turntable 0.8 meters above the ground plane. The spectrum was examined from 9 kHz to the 10th harmonic of the highest fundamental transmitter frequency (344.9 MHz).

The EUT was tested in the three orthogonal planes with the receive antenna in both polarities. The emissions were maximized; that is, the measurement antenna height was varied between 1 and 4 m, and the EUT was rotated through 360° on a rotating turntable until the maximum emissions were found. Both horizontal and vertical measurement antenna polarizations were used. A resolution bandwidth of 100 kHz was used for frequencies less than 1000 MHz, and a resolution bandwidth of 1 MHz was used for frequencies greater than or equal to 1000 MHz. The video bandwidth was set to a value at least three times greater than the resolution bandwidth.

Table 3-1: Radiated Emissions Test Equipment

RTL Bar Code	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900930	Hewlett Packard	85662A	Spectrum Analyzer Display Section	3144A20839	4/21/16
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771	4/21/16
900932	Rhein Tech Laboratories	8449B OPT H02	Amplifier (1 – 26.5 GHz)	3008A00505	9/5/15
900905	Rhein Tech Laboratories	PR-1040	Amplifier (30 - 2000 MHz)	N/A	9/5/15
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	4/20/17
900791	Chase	CBL6112	Antenna (30 MHz – 2 GHz)	2099	6/11/17

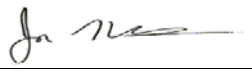
3.3 Radiated Emissions Test Results

3.3.1 Radiated Emissions Harmonics/Spurious

Table 3-2: Radiated Emissions Harmonics/Spurious

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Analyzer Reading (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/ Fail
345.000	Peak	H	74.2	16.0	90.2	97.3	-7.1	Pass
690.000	Peak	H	65.9	-4.4	61.5	77.3	-15.8	Pass
1,035.000	Peak	H	55.7	0.3	56.0	74.0	-18.0	Pass
1,380.000	Peak	V	58.6	4.7	63.3	74.0	-10.7	Pass
1,725.000	Peak	H	68.1	7.4	75.5	77.3	-1.8	Pass
2,070.000	Peak	V	85.2	-11.2	74.0	77.3	-3.3	Pass
2,415.000	Peak	V	79.2	-10.4	68.8	77.3	-8.5	Pass
2,760.000	Peak	V	72.8	-9.2	63.6	74.0	-10.4	Pass
3,105.000	Peak	V	78.7	-9.1	69.6	77.3	-7.7	Pass
3,450.000	Peak	V	66.6	-8.5	58.1	77.3	-19.2	Pass

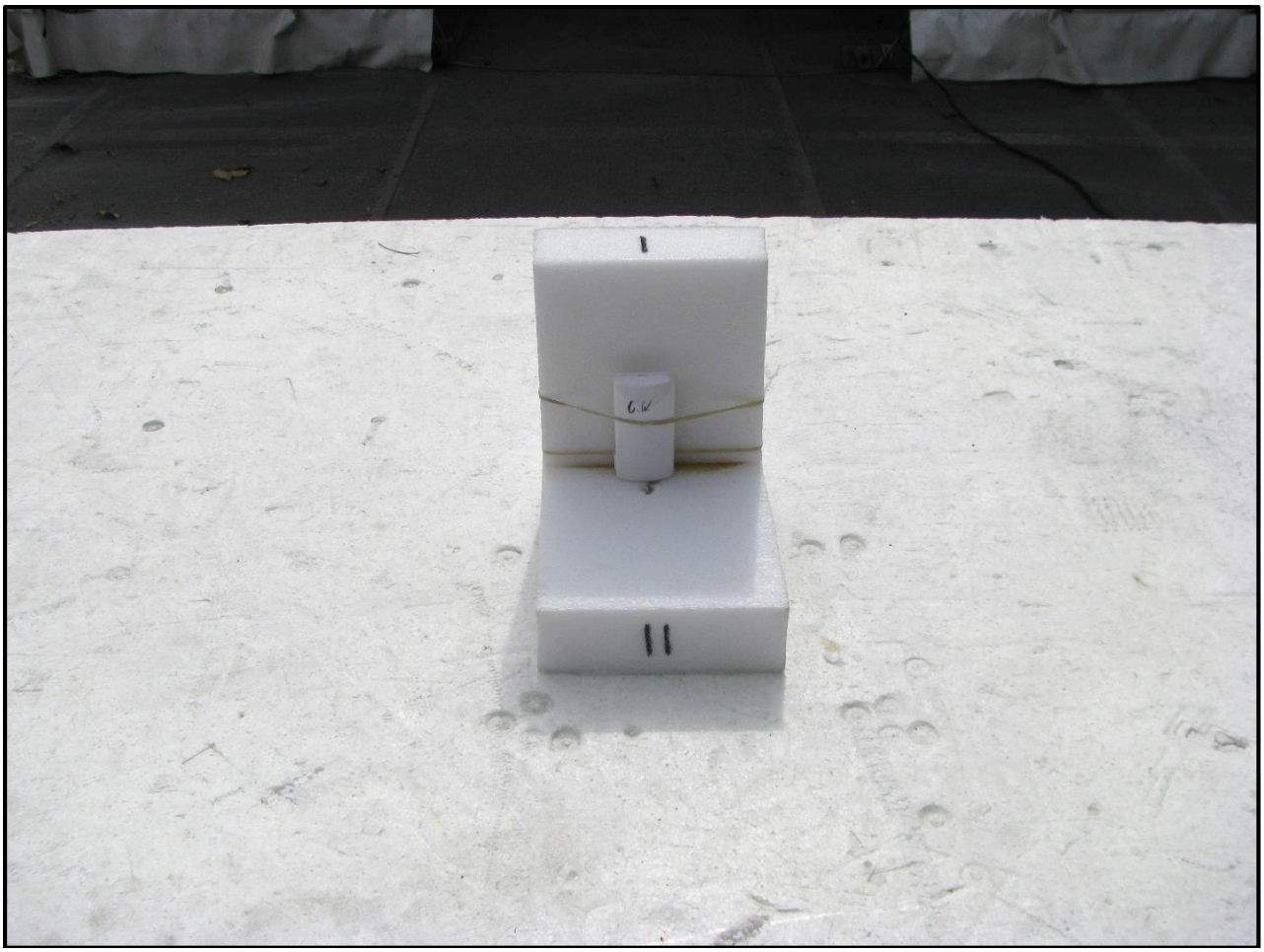
Test Personnel:

Jon Wilson		March 20, 2015
EMC Test Engineer	Signature	Date of Test

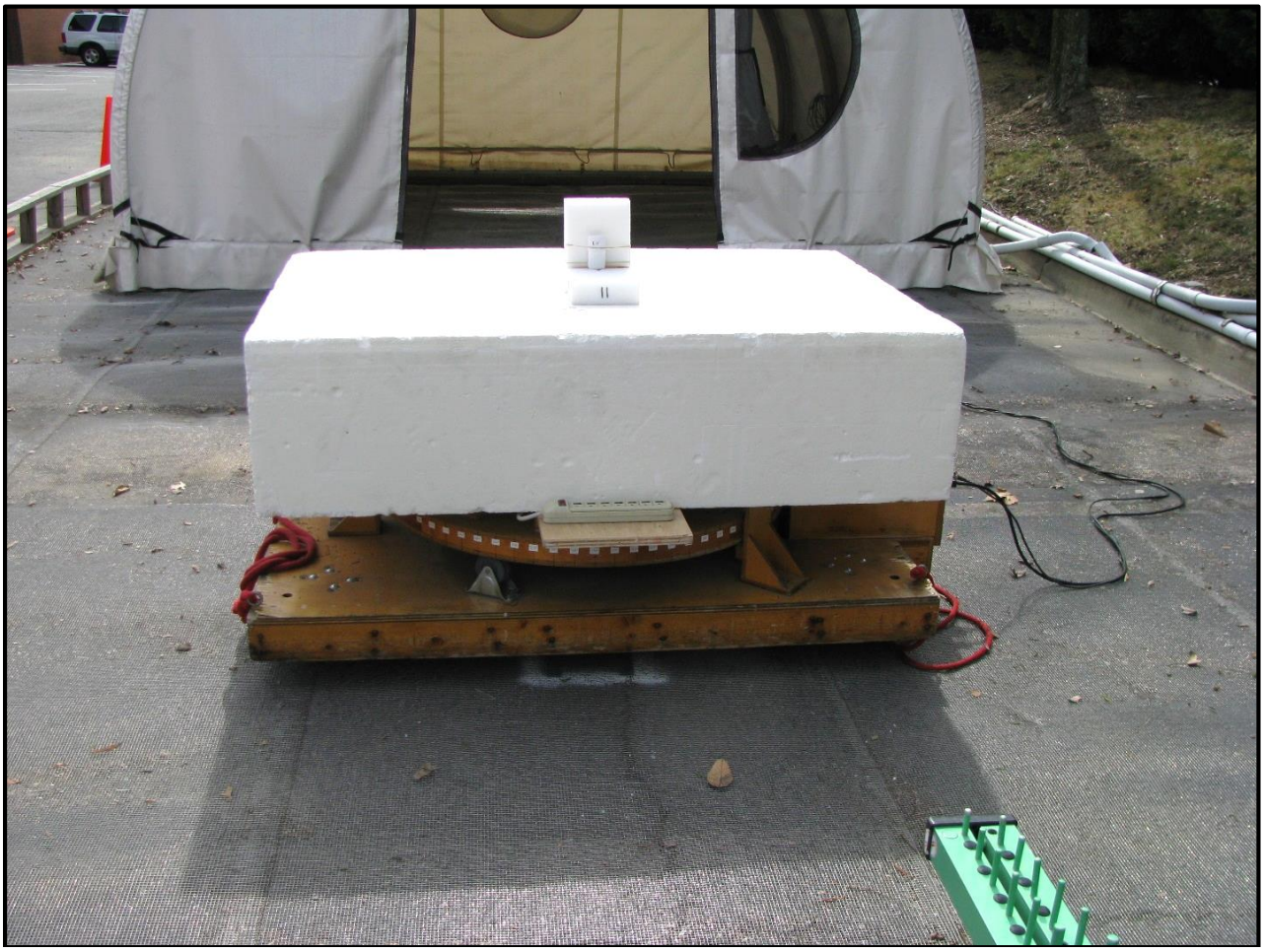
4 Conclusion

The data in this measurement report shows that the Honeywell International Model 5816S, FCC ID: CFS8DL5816ST, IC: 573F-5816ST, complies with the applicable intentional radiated emissions requirements of Parts 2 and 15 of the FCC rules and regulations and RSS-210 of the Industry Canada rules and regulations.

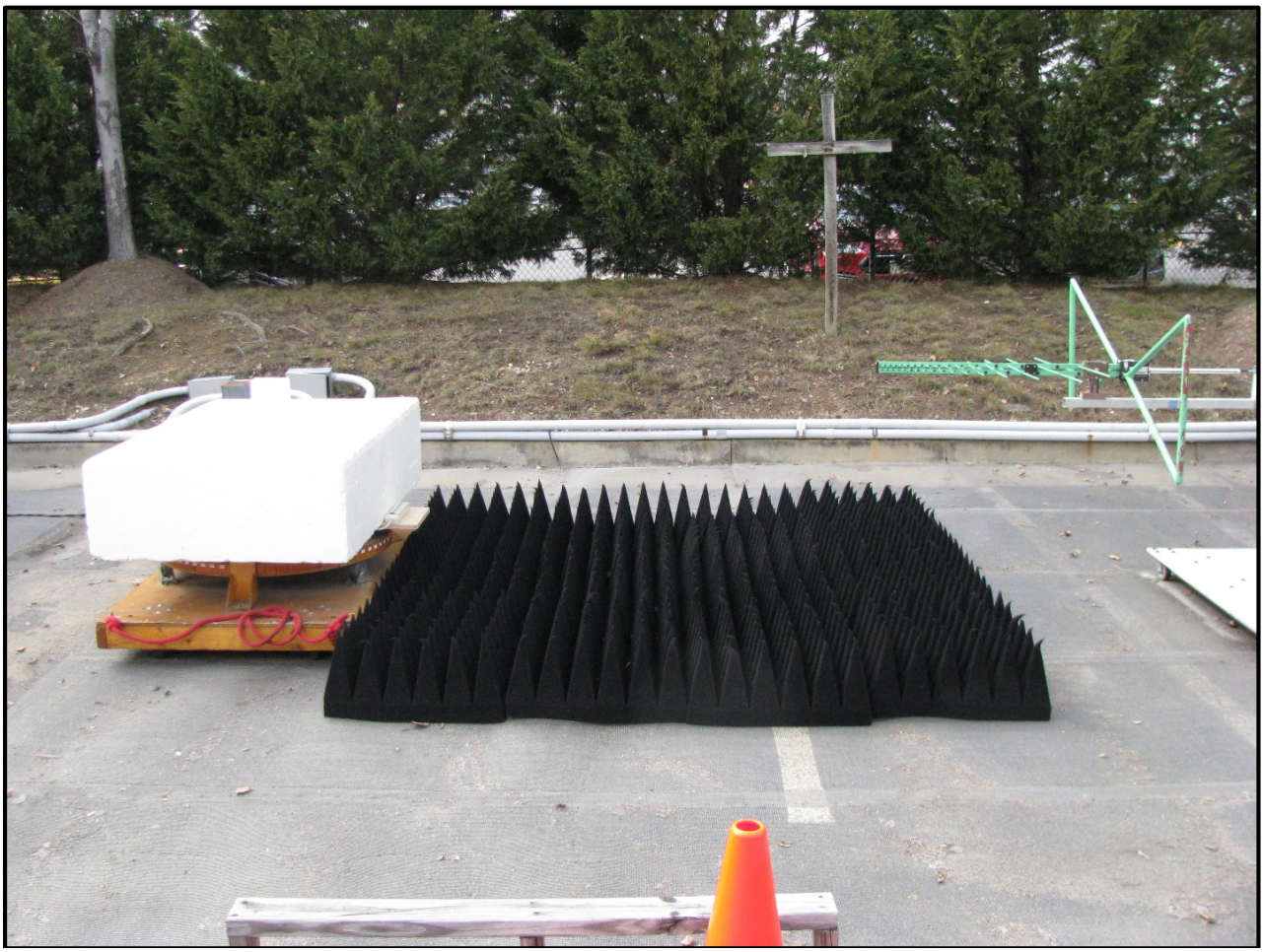
Appendix A: Test Configuration Photographs



Photograph 1: Radiated Emissions

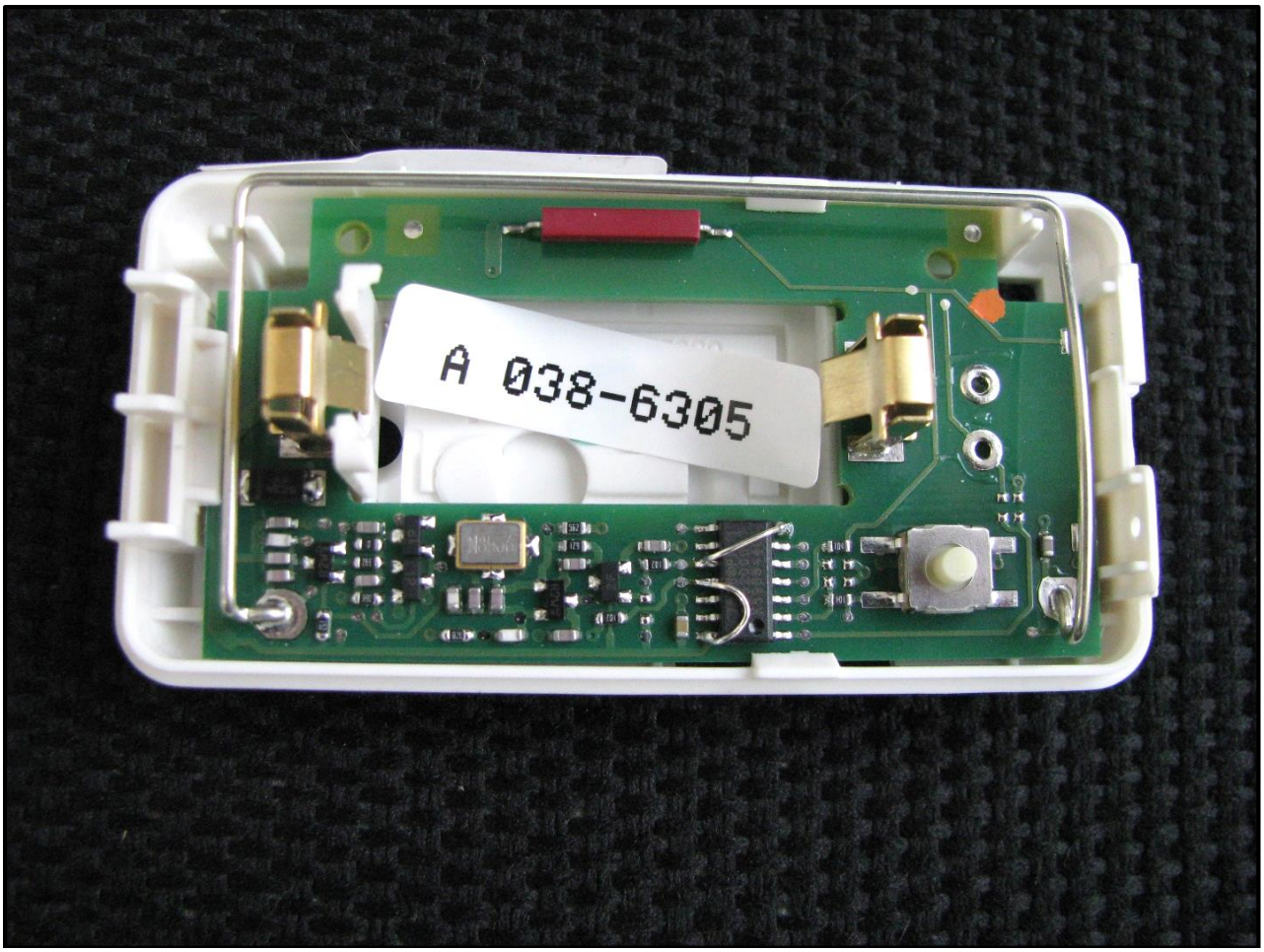


Photograph 2: Radiated Emissions



Photograph 3: Radiated Emissions

Appendix B: EUT Photograph



Photograph 4: EUT