

# TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: Honeywell  
Wireless Motion Detector

To: FCC Part 15 Subpart C: 2006 (Sections 15.249),  
RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

**Test Report Serial No:**  
RFI/RPT2/RP73154JD01A

**Supersedes Test Report Serial No:**  
RFI/RPT1/RP73154JD01A

This Test Report Is Issued Under The Authority  
Of Steve Flooks, Service Leader:

  
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Test of: **Honeywell**  
**Wireless Motion Detector**  
To: **FCC Part 15 Subpart C: 2006 (Sections 15.249),**  
**RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007**

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Test of: Honeywell  
Wireless Motion Detector  
To: FCC Part 15 Subpart C: 2006 (Sections 15.249),  
RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

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**Table of Contents**

1. Customer Information .....	4
2. Equipment Under Test (EUT) .....	5
3. Test Specification, Methods and Procedures.....	6
4. Deviations from the Test Specification .....	7
5. Operation of the EUT During Testing .....	8
6. Summary of Test Results .....	9
7. Measurements, Examinations and Derived Results .....	10
Appendix 1. Test Equipment Used .....	19
Appendix 2. Test Configuration Drawing.....	20

**Test of:** Honeywell  
Wireless Motion Detector  
**To:** FCC Part 15 Subpart C: 2006 (Sections 15.249),  
RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

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## **1. Customer Information**

<b>Company Name:</b>	Honeywell Inc.
<b>Address:</b>	The Arnold Centre Paycocke Road Basildon Essex SS14 3EA
<b>Contact Name:</b>	Mr Michael Garrard

**Test of:** Honeywell  
 Wireless Motion Detector  
**To:** FCC Part 15 Subpart C: 2006 (Sections 15.249),  
 RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

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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 customer:

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

<b>Description:</b>	916.8 MHz PIR Movement Detector
<b>Brand Name:</b>	Honeywell Inc
<b>Model Name or Number:</b>	51598SL
<b>Serial Number:</b>	Tx002
<b>Hardware Version Number:</b>	Rev A
<b>Software Version Number:</b>	1.8
<b>FCC ID:</b>	HS9-51598SL
<b>Country of Manufacture:</b>	Malaysia
<b>Date of Receipt:</b>	13 July 2008

### **2.2. Description of EUT**

The equipment under test was a Wireless Motion Detector.

### **2.3. Modifications Incorporated in the EUT**

The EUT was modified to transmit constantly at full power.

### **2.4. Support Equipment**

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

### **2.5. Additional Information Related to Testing**

<b>Power Supply Requirement:</b>	V-Nom 9.0 V, V-Min 6.4 V and V-Max 9.0 V		
<b>Intended Operating Environment:</b>	Residential		
<b>Equipment Category:</b>	Short Range Device		
<b>Type of Unit:</b>	Transmitter		
<b>Channel Spacing:</b>	Single Channel device		
<b>Modulation Type:</b>	FSK		
<b>Data Rate:</b>	None Stated		
<b>Transmitter Frequency Range:</b>	916.8 MHz		
<b>Transmitter Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Single Channel	Not Applicable	916.8

**Test of:** Honeywell  
 Wireless Motion Detector  
**To:** FCC Part 15 Subpart C: 2006 (Sections 15.249),  
 RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

---

### **3. Test Specification, Methods and Procedures**

#### **3.1. Test Specifications**

<b>Reference:</b>	FCC Part 15 Subpart C: 2006 (Sections 15.249).
<b>Title:</b>	Code of Federal Regulations, Part 15 (47CFR215) Radio Frequency Devices.

<b>Reference:</b>	RSS-210 Issue 7 June 2007
<b>Title:</b>	Low-power Licence-exempt Radio communication Devices (All Frequency Bands): Category I Equipment.

<b>Reference:</b>	RSS-Gen Issue 2 June 2007
<b>Title:</b>	General Requirements and Information for the Certification of Radio communication Equipment

#### **3.2. Methods and Procedures**

The methods and procedures used were as detailed in:

ANSI C63.2 (1996)

Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

ANSI C63.4 (2003)

Title: American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

ANSI C63.5 (1988)

Title: American National Standard for the Calibration of antennas used for Radiated Emission measurements in Electromagnetic Interference (EMI) control.

ANSI C63.7 (1988)

Title: American National Standard Guide for Construction of Open Area Test Sites for performing Radiated Emission Measurements.

CISPR 16-1: (1999)

Title: Specification For Radio Disturbance and Immunity Measuring Apparatus and Methods. Part 1: Radio Disturbance and Immunity Measuring Apparatus.

#### **3.3. Definition of Measurement Equipment**

The measurement equipment used complied with the requirements of the standards referenced in the Methods & Procedures section above. Appendix 1 contains a list of the test equipment used.

Test of: Honeywell  
Wireless Motion Detector  
To: FCC Part 15 Subpart C: 2006 (Sections 15.249),  
RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

---

#### **4. Deviations from the Test Specification**

There were no deviations from the test specification.

Test of: Honeywell  
Wireless Motion Detector  
To: FCC Part 15 Subpart C: 2006 (Sections 15.249),  
RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

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## **5. Operation of the EUT During Testing**

### **5.1. Operating Modes**

The EUT was tested in the following operating modes, unless otherwise stated:

The EUT was operated as a stand alone piece of equipment

Transmitter Modes:

Testing was performed at full power on the assigned frequency of operation.

Receiver/Idle Modes:

No receiver testing was performed.

### **5.2. Configuration and Peripherals**

The EUT was tested in the following configuration:

For all tests the EUT was powered using a 9V alkaline battery.

**Test of:** Honeywell  
Wireless Motion Detector  
**To:** FCC Part 15 Subpart C: 2006 (Sections 15.249),  
RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

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## **6. Summary of Test Results**

Range of Measurements	FCC Part 15 Reference	IC RSS Reference	Port Type	Result
Transmitter Fundamental Field Strength	15.249(a)	RSS-210 A2.9	Antenna	Complied
Transmitter 20 dB Bandwidth	2.1049	RSS-Gen 4.6.1	Antenna	Complied
Transmitter Radiated Spurious Emissions	15.249(a)(d)(e) & 15.209	RSS-Gen 4.9 RSS-210 2.2	Antenna	Complied
Transmitter Band Edge Radiated Emissions	15.249(d) & 15.209	RSS-210 2.2	Antenna	Complied

### **6.1. Location of Tests**

All the measurements described in this report were performed at the premises of RFI Global Services Ltd, Ewhurst Park, Ramsdell, Basingstoke, Hampshire, RG26 5RQ, England.

Test of: Honeywell  
Wireless Motion Detector  
To: FCC Part 15 Subpart C: 2006 (Sections 15.249),  
RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

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## **7. Measurements, Examinations and Derived Results**

### **7.1. General Comments**

7.1.1. This section contains test results only.

7.1.2. Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%.  
Please refer to Section 8 for details of measurement uncertainties.

**Test of:** Honeywell  
Wireless Motion Detector  
**To:** FCC Part 15 Subpart C: 2006 (Sections 15.249),  
RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

---

## **7.2. Test Results**

### **7.2.1. Transmitter Fundamental Field Strength Section 15.249(a)**

Ambient Temperature: 21°C

Relative Humidity: 45%

Tests were performed in accordance with C63.4 Section 8 and relevant annexes.

#### **Results:**

##### **Battery Powered Devices**

Frequency (MHz)	Antenna Polarity	Q-P Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
916.812	Horizontal	86.0	94.0	8.0	Complied

Test of: Honeywell  
Wireless Motion Detector  
To: FCC Part 15 Subpart C: 2006 (Sections 15.249),  
RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

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### 7.2.2. Transmitter 20 dB Bandwidth: Section 2.1049

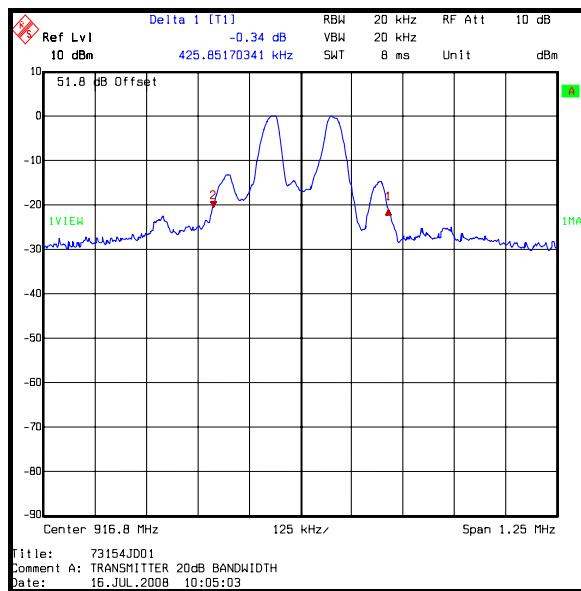
Ambient Temperature: 19°C

Relative Humidity: 45%

Tests were performed using the 99% channel bandwidth function of the measurement analyser.

#### Results:

Transmitter 20 dB Bandwidth (kHz)
425.852



**Test of:** Honeywell  
Wireless Motion Detector  
**To:** FCC Part 15 Subpart C: 2006 (Sections 15.249),  
RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

### 7.2.3. Transmitter Radiated Emissions: Section 15.249(a)(d)(e) & Section 15.209

Ambient Temperature: 23°C      Relative Humidity: 38%

#### 7.2.4. Electric Field Strength Measurements: 30 MHz to 1000 MHz

Tests were performed using the test methods detailed in ANSI C63.4 Section 8

## **Results:**

Frequency (MHz)	Antenna Polarity	Q-P Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
867.247	Vertical	35.7	46.0	10.3	Complied

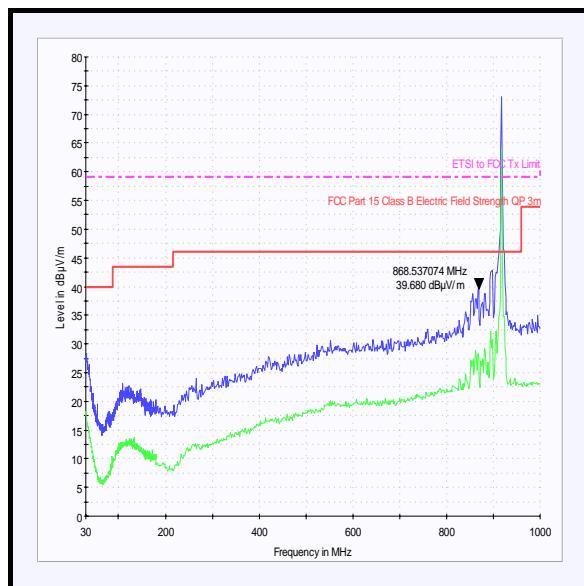
**Note(s):**

1. No other spurious emissions were detected within 20dB of the limit.

Test of: Honeywell  
Wireless Motion Detector  
To: FCC Part 15 Subpart C: 2006 (Sections 15.249),  
RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

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**Transmitter Radiated Emissions: Section 15.249(a)(d)(e) & Section 15.209 (Continued)**



*Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.*

**Test of:** Honeywell  
Wireless Motion Detector  
**To:** FCC Part 15 Subpart C: 2006 (Sections 15.249),  
RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

**Transmitter Radiated Emissions: Section 15.249(a)(d)(e) & Section 15.209 (Continued)**

Ambient Temperature: 20 to 23°C      Relative Humidity: 38 to 48%

### **7.2.5. Electric Field Strength Measurements (Frequency Range: 1 to 13 GHz)**

## Results:

## Highest Peak Level:

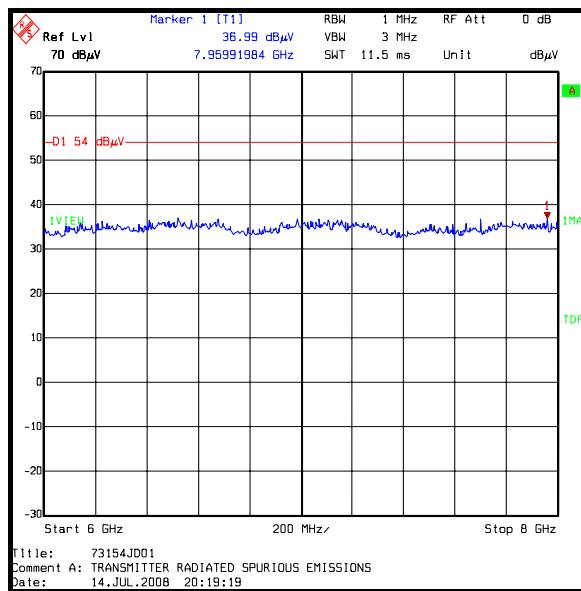
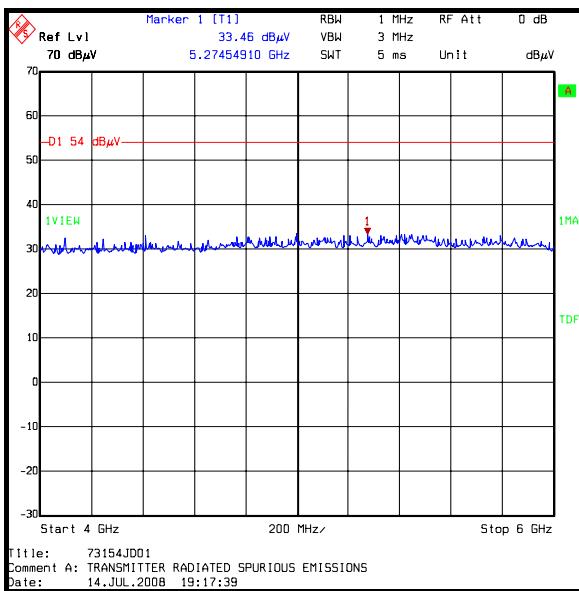
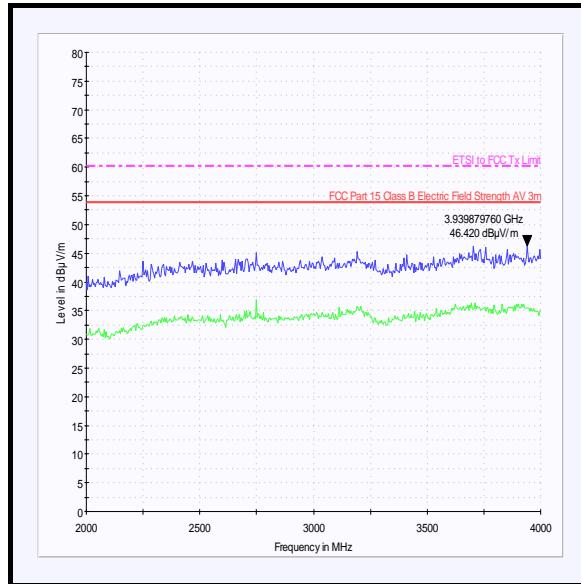
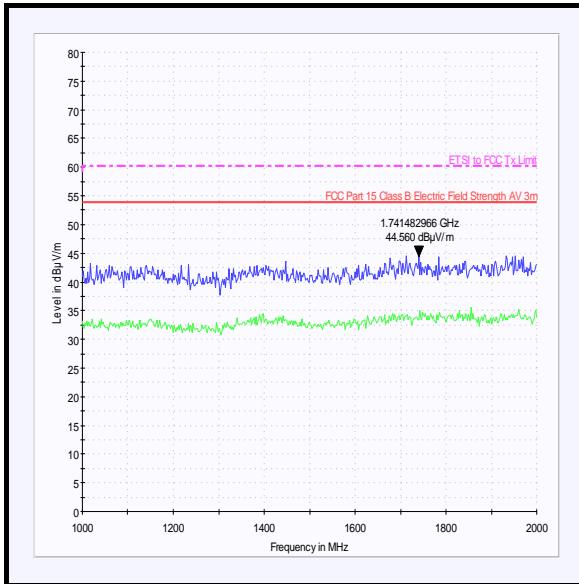
Frequency (MHz)	Antenna Polarity	Detector Level (dB $\mu$ V)	Antenna Factor (dB)	Actual Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
3939.880	Vertical	52.5	-6.1	46.4	54.0	7.6	Complied

**Note(s):**

1. The result was measured using a peak detector and compared against the average limit as the average result was below the receiver noise floor.
2. No other spurious emissions were detected within 20dB of the limit.

**Test of:** Honeywell  
 Wireless Motion Detector  
**To:** FCC Part 15 Subpart C: 2006 (Sections 15.249),  
 RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

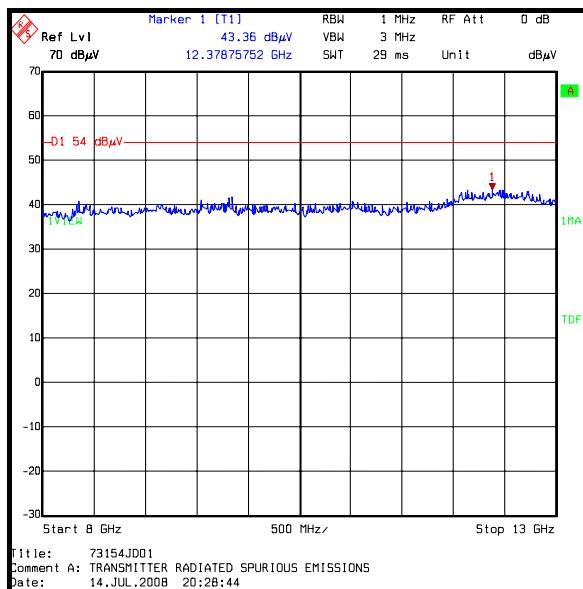
**Transmitter Radiated Emissions: Section 15.249(a)(d)(e) & Section 15.209 (Continued)**



*Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.*

Test of: Honeywell  
Wireless Motion Detector  
To: FCC Part 15 Subpart C: 2006 (Sections 15.249),  
RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

---

**Transmitter Radiated Emissions: Section 15.249(a)(d)(e) & Section 15.209 (Continued)**

*Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.*

**Test of:** Honeywell  
Wireless Motion Detector  
**To:** FCC Part 15 Subpart C: 2006 (Sections 15.249),  
RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

## **7.2.6. Transmitter Radiated Emissions at Band Edges: Section 15.249(d) & 15.209**

Ambient Temperature: 22°C      Relative Humidity: 41%

Tests were performed using the test methods detailed in ANSI C63.4 Section

## Results: (902 to 928MHz)

## Electric Field Strength Measurements

## Bottom Band Edge

Frequency (MHz)	Q-P Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
902	37.8	46.0	8.2	Complied

## Top Band Edge

Frequency (MHz)	Q-P Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
928	42.3	46.0	3.7	Complied

**Test of:** Honeywell  
 Wireless Motion Detector  
**To:** FCC Part 15 Subpart C: 2006 (Sections 15.249),  
 RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

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### Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
A059	Antenna	EMCO	3146	8902-2378	07 Feb 2008	12
A1534	Pre Amplifier	Hewlett Packard	8449B OPT H02	3008A00405	Calibrated before use	-
A253	Antenna	Flann Microwave	12240-20	128	17 Nov 2006	36
A254	Antenna	Flann Microwave	14240-20	139	17 Nov 2006	36
A255	Antenna	Flann Microwave	16240-20	519	17 Nov 2006	36
A490	Antenna	Chase	CBL6111A	1590	07 Feb 2008	12
M003	Spectrum Monitor	Rohde & Schwarz	EZM	883 580/008	Calibration not required	-
M023	Test Receiver	Rohde & Schwarz	ESVP	872 991/027	28 May 2008	12
M1242	Spectrum Analyser	Rohde & Schwarz, Inc.	FSEM30	845986/022	29 Nov 2007	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	06 Feb 2008	12
M1391	Thermometer/ Hygrometer	Oergon Scientific	BAR629HGU	N/A	18 Jun 2008	12
S201	Open Area Test Site	RFI	1	None	09 May 2008	12
S202	Site 2	RFI	2	S202-15011990	28 Jan 2008	12
S212	Emissions Screened Room	RFI	12	None	Verified before use	-

**NB** In accordance with UKAS requirements, all the measurement equipment is on a calibration schedule.

**Test of:** Honeywell  
Wireless Motion Detector  
**To:** FCC Part 15 Subpart C: 2006 (Sections 15.249),  
RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

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## **Appendix 2. Test Configuration Drawing**

This appendix contains the following drawings:

Drawing Reference Number	Title
DRG\73154JD01\EMIRAD	Test configuration for measurement of radiated emissions.

**Test of:** Honeywell  
 Wireless Motion Detector  
**To:** FCC Part 15 Subpart C: 2006 (Sections 15.249),  
 RSS-210 Issue 7 June 2007 and RSS-Gen Issue 2 June 2007

DRG\73154JD01\EMIRAD

