

## TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: SleepMinder BM08

FCC ID: YAKBM08

To: FCC Part 15.209/15.245(b): 2010

**Test Report Serial No:**  
RFI-RPT-RP80172JD03A

This Test Report Is Issued Under The Authority  
Of Chris Guy, Head of Global Approvals:



**Checked By:**

Ian Watch

**Signature:**



**Date of Issue:**

14 January 2011

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**1. Customer Information**




<b>Company Name:</b>	Compliance Engineering Ireland Ltd
<b>Address:</b>	Ratoath Road Ashbourne Co Meath Ireland

## **2. Summary of Testing**

### **2.1. General Information**

<b>Specification Reference:</b>	47CFR15.209
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 15 Subpart B (Radio Frequency Devices) - Section 15.209
<b>Specification Reference:</b>	47CFR15.245
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 15 Subpart B (Radio Frequency Devices) - Section 15.245
<b>Site Registration:</b>	FCC: 209735
<b>Location of Testing:</b>	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH, England
<b>Test Dates:</b>	21 December 2010 to 22 December 2010

### **2.2. Summary of Test Results**

<b>FCC Reference (47CFR)</b>	<b>Measurement</b>	<b>Result</b>
Part 15.209/15.245(b)	Transmitter Radiated Spurious Emissions	
<b>Key to Results</b>  = Complied  = Did not comply		

### **2.3. Methods and Procedures**

<b>Reference:</b>	ANSI C63.4 (2009)
<b>Title:</b>	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
<b>Reference:</b>	ANSI C63.10 (2009)
<b>Title:</b>	American National Standard for Testing Unlicensed Wireless Devices

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

Customer requested radiated spurious emissions tests from 26 GHz to the frequency of the 5<sup>th</sup> harmonic (52.75 GHz) only.

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

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

<b>Description:</b>	Field Disturbance Sensor / Device, Motion Sensor Module
<b>Brand Name:</b>	SleepMinder
<b>Model Name or Number:</b>	BM08
<b>Serial Number:</b>	A10
<b>Hardware Version Number:</b>	L3d
<b>Software Version Number:</b>	ver3
<b>FCC ID Number:</b>	YAKBM08

#### **3.2. Description of EUT**

The equipment under test was a Field Disturbance Sensor / Device, Motion Sensor Module operating on a single channel in the 10500 MHz to 10550 MHz band.

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

No modifications were applied to the EUT during testing.

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

<b>Tested Technology:</b>	Motion sensor	
<b>Category of Equipment:</b>	Field Disturbance Sensor	
<b>Type of Equipment</b>	Transmitter	
<b>Intended Operating Environment:</b>	Residential / Commercial	
<b>Highest Internally Generated Clock or Oscillator Frequency:</b>	4 MHz	
<b>Modulation Type:</b>	50% duty cycle pulsed wave. Transmit pulse ~500nS width with PRF of ~1MHz.	
<b>Power Supply Requirement:</b>	Nominal	9 VDC from PP3 battery
<b>Transmit Frequency Range:</b>	10.525 GHz	
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Frequency (GHz)</b>
	Single Channel	10.525

#### **3.5. Support Equipment**

The following support equipment was used to exercise the EUT during testing:

None.

## **4. Operation and Monitoring of the EUT during Testing**

### **4.1. Operating Modes**

The EUT was tested in the following operating mode(s):

- Constantly transmitting.

### **4.2. Configuration and Peripherals**

The EUT was tested in the following configuration(s):

- A new battery was used for testing. Voltage was monitored periodically throughout the test and the battery replaced as required.

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

### **5.1. General Comments**

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 6. Measurement Uncertainty* for details.



## **5.2. Test Results**

### **5.2.1. Transmitter Radiated Spurious Emissions**

#### **Test Summary:**

<b>Test Engineer:</b>	Andrew Edwards and Nick Steele	<b>Test Date:</b>	21 December 2010 & 22 December 2010
<b>Test Sample Serial No:</b>	A10		

<b>FCC Part:</b>	15.209 and Part 15.245(b)
<b>Test Method Used:</b>	As detailed in ANSI C63.4 Section 8 and relevant annexes
<b>Frequency Range:</b>	26.5 GHz to 53 GHz

#### **Environmental Conditions:**

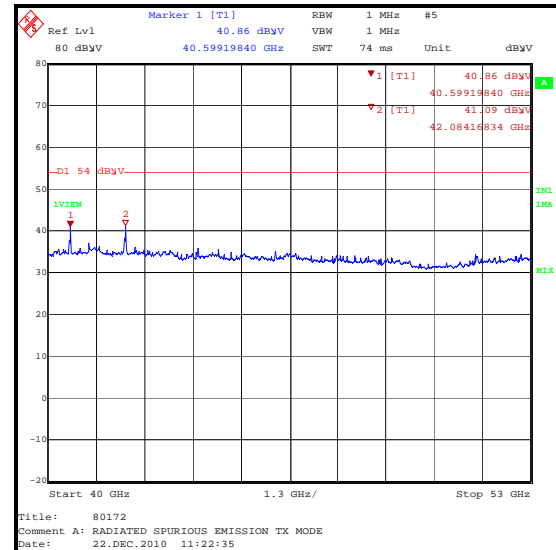
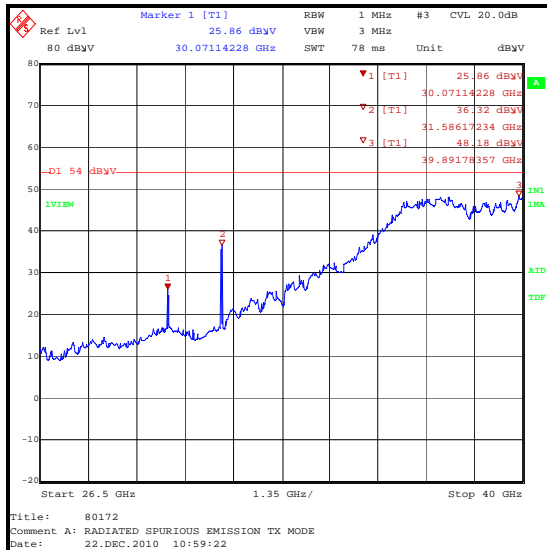
<b>Temperature (°C):</b>	23
<b>Relative Humidity (%):</b>	22

#### **Results:**

<b>Frequency (MHz)</b>	<b>Antenna Polarity</b>	<b>Level (dB<math>\mu</math>V/m)</b>	<b>Limit (dB<math>\mu</math>V/m)</b>	<b>Margin (dB)</b>	<b>Result</b>
31586.172	Vertical	36.3	97.5	61.2	Complied

#### **Note(s):**

1. The pre-scan plots show the Part 15.209 general limits.
2. The emission recorded in the above table is the third harmonic of the fundamental and falls into the Part 15.205 Restricted band of operation between 31.2 and 31.8 GHz. Therefore the Part 15.245(b)(1)(ii) average limit of 77.5 dB $\mu$ V/m applies (7.5 mV/m). The test was performed with a peak detector, therefore the average limit was increased by 20 dB to 97.5 dB $\mu$ V/m in accordance with Part 15.35(b).
3. All other emissions were at least 20 dB below the appropriate limits.

**Transmitter Radiated Spurious Emissions (continued)**

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

## **6. Measurement Uncertainty**

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
Radiated Spurious Emissions	26.5 GHz to 60 GHz	95%	±2.94 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

**Appendix 1. Test Equipment Used**

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A1785	Low Noise Amplifier	Farran Technology	FLNA-28-30	FTL 6483	Calibrated Before Use	-
A202	Antenna	Flann Microwave Ltd	24240-20	116	11 May 2013	36
A203	Antenna	Flann Microwave Ltd	22240-20	343	11 May 2013	36
A366	Isolator	MRI	FRR-400	169	Calibrated Before Use	-
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	05 Sep 2011	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESI26	100046K	22 Apr 2011	12
M1247	Harmonic Mixer	Rohde & Schwarz	FS-Z60	100046	Calibrated Before Use	-
M1390	Harmonic Mixer	Farran Technology	WHMP 28	FTL1677B	Calibrated Before Use	-

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