



**DATE: 09 May 2014**

**I.T.L. (PRODUCT TESTING) LTD.**

**FCC Radio Test Report**

for

**Visonic Ltd.**


Equipment under test:

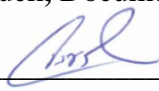
**Wireless PIR Detector**

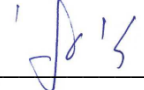
**V-Motion MCW (315)**

**V-PET MCW (315)\***

\*See customer's declaration on page 5.

Written by:   
R. Pinchuck, Documentation

Approved by:   
A. Sharabi, Test Engineer

Approved by:   
I. Raz, EMC Laboratory Manager

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This report relates only to items tested.



# Measurement/Technical Report for Visonic Ltd.

## Wireless PIR Detector

V-Motion MCW (315)

V-PET MCW (315)\*

\* See customer's declaration on page 5.

**FCC ID: WP3VMOTIONMCW**

**IC: 1467C-VMOTIONMCW**

This report concerns:

Original Grant:

Class I change:

Class II change:       X

Equipment type:

Part 15 Security/Remote Control Transceiver

Limits used:

47CFR15 Section 15.231 (a-d)

Measurement procedure used is ANSI C63.4-2003.

Application for Certification

prepared by:

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Applicant for this device:

(different from "prepared by")

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# TABLE OF CONTENTS

<b>1.</b>	<b>GENERAL INFORMATION</b>	<b>4</b>
1.1	Administrative Information	4
1.2	List of Accreditations	6
1.3	Product Description	7
1.4	Test Methodology	7
1.5	Test Facility	7
1.6	Measurement Uncertainty	8
<b>2.</b>	<b>SYSTEM TEST CONFIGURATION</b>	<b>9</b>
2.1	Justification	9
2.2	Special Accessories	9
2.3	Equipment Modifications	9
2.4	Configuration of Tested System	9
<b>3.</b>	<b>RADIATED MEASUREMENT TEST SET-UP PHOTO</b>	<b>10</b>
<b>4.</b>	<b>AVERAGE FACTOR CALCULATION</b>	<b>12</b>
4.1	Test Instrumentation Used, Average Factor Calculation	14
<b>5.</b>	<b>PERIODIC OPERATION</b>	<b>15</b>
5.1	Specification	15
5.2	Requirements	15
5.3	Results	15
5.4	Test Equipment Used, Periodic Operation	19
<b>6.</b>	<b>FIELD STRENGTH OF FUNDAMENTAL</b>	<b>20</b>
6.1	Test Specification	20
6.2	Test Procedure	20
6.3	Measured Data	20
6.4	Test Instrumentation Used, Field Strength of Fundamental	24
<b>7.</b>	<b>RADIATED EMISSION, 9 KHZ – 30 MHZ</b>	<b>25</b>
7.1	Test Specification	25
7.2	Test Procedure	25
7.3	Measured Data	25
7.4	Test Instrumentation Used, Radiated Measurements	26
7.5	Field Strength Calculation	26
<b>8.</b>	<b>SPURIOUS RADIATED EMISSION 30 MHZ – 3500 MHZ</b>	<b>27</b>
8.1	Test Specification	27
8.2	Test Procedure	27
8.3	Test Data	28
8.4	Test Instrumentation Used, Radiated Measurements	30
<b>9.</b>	<b>BANDWIDTH</b>	<b>31</b>
9.1	Test procedure	31
9.2	Results table	32
9.3	Test Equipment Used, Bandwidth	34
<b>10.</b>	<b>11. APPENDIX A - CORRECTION FACTORS</b>	<b>35</b>
10.1	Correction factors for CABLE	35
10.2	Correction factors for CABLE	36
10.3	Correction factors for CABLE	37
10.4	Correction factors for LOG PERIODIC ANTENNA	38
10.5	Correction factors for LOG PERIODIC ANTENNA	39
10.6	Correction factors for BICONICAL ANTENNA	40
10.7	Correction factors for ACTIVE LOOP ANTENNA	41
<b>11.</b>	<b>COMPARISON REQUIREMENTS FCC WITH INDUSTRY CANADA</b>	<b>42</b>



# 1. General Information

## 1.1 Administrative Information

Manufacturer:	Visonic Ltd.
Manufacturer's Address:	24 Habarzel ST. Tel Aviv 69710 Israel Tel: +936-03-645-6789 Fax: +936-03-645-6788
Manufacturer's Representative:	Arick Elshtein
Equipment Under Test (E.U.T):	Wireless PIR Detector
Equipment Model No.:	V-Motion MCW (315) V-PET MCW (315)*
Equipment Serial No.:	Not designated
Date of Receipt of E.U.T:	01.04.14
Start of Test:	01.04.14
End of Test:	08.05.14
Test Laboratory Location:	I.T.L (Product Testing) Ltd. Kfar Bin Nun, ISRAEL 99780
Test Specifications:	FCC Part 15 Subpart C RSS-210

\*See customer's declaration on following page.



Visonic Ltd.  
24 Habarzel Street  
P.O.Box 22020  
Tel-Aviv 69710, Israel

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Fax: +972 3 645 6788  
www.visonic.com

**Declaration of Similarity**

To:  
ITL: Israel Test Laboratory  
Israel

10/2/2013

Attention: Mr. David Shidlowski , Mr Shmuel Gnatt

Please be advised that Visonic wireless intrusion detector V-PET MCW is a variant of V-MOTION MCW.

V -PET MCW has a pet immune lens, while V-MOTION MCW has a normal detection lens.

Regards

Arick Elshtein  
Standard Manager



## **1.2 List of Accreditations**

The EMC laboratory of I.T.L. is accredited by the following bodies:

1. The American Association for Laboratory Accreditation (A2LA) (U.S.A.), Certificate No. 1152.01.
2. The Federal Communications Commission (FCC) (U.S.A.), Registration No. 90715.
3. The Israel Ministry of the Environment (Israel), Registration No. 1104/01.
4. The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) (Japan), Registration Numbers: C-1350, R-1285.
5. Industry Canada (Canada), IC File No.: 46405-4025; Site No. IC 4025B-1.

I.T.L. Product Testing Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this test report have been determined in accordance with I.T.L.'s terms of accreditation unless stated otherwise in the report.

### **1.3 Product Description**

The V-motion MCW and V-Pet MCW (pet immune) are microprocessor controlled wireless digital PIR detectors.

The detectors features are as follows:

- Cylindrical lens with uniform detection sensitivity throughout its operating range, up to 12 meters (40 ft).
- V-motion MCW includes wall creep zone protection.
- In V-Pet MCW, Target Specific Imaging™ (TSI) technology is used for distinction between human beings and pets weighing up to 27 kg (60lb).
- Incorporates a fully supervised PowerCode transmitter.
- The advanced True Motion Recognition™ algorithm (patented) allows distinguishing between the true motion of an intruder and any other disturbances which may cause false alarms.
- Sophisticated frequency domain digital signal processing.
- No vertical adjustment is needed.
- An on-board motion event jumper determines whether 1 or 2 consecutive motion events trigger an alarm.
- After detection, the detector disarms itself to save battery power. It rearms (reverts to the ready state) if there is no subsequent detection throughout the following 2-minute period.
- An optional version provides better protection for systems compliant with DD243. After initial detection, the detector is capable of 6 additional detections for a period of 5 minutes. Further detection is possible only if no movement occurs during the following 2 minutes. The detector will revert to the initial state if there is no movement for an additional 5 minutes.
- Very low current consumption.
- Microprocessor-controlled temperature compensation.
- Sealed chamber protects the optical system.
- Front and back tamper protection
- White light protection.
- Elegantly styled, sturdy case.

### **1.4 Test Methodology**

Radiated testing was performed according to the procedures in ANSI C63.4: 2003. Radiated testing was performed at an antenna to EUT distance of 3 meters.

### **1.5 Test Facility**

The radiated emissions tests were performed at I.T.L.'s testing facility at Kfar Bin-Nun, Israel. This site is a FCC listed test laboratory (FCC Registration No. 90715, date of listing November 21, 2012). I.T.L.'s EMC Laboratory is also accredited by A2LA, certificate No. 1152.01.



## **1.6 Measurement Uncertainty**

Radiated Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4)  
for open site 30-1000 MHz:

Expanded Uncertainty (95% Confidence, K=2):

$\pm 4.98$  dB



## 2. System Test Configuration

### 2.1 Justification

The product was originally authorized for FCC Certification under FCC ID: WP3VMOTIONMCW and IC Certification under IC: 1476C-VMOTIONMCW.

The Class II Permissive Change to the original product is as follows:

1. The Murata saw resonator p/n: SARCC315M00KXL0R12 was replaced with the RFM saw resonator p/n: RO3073E-1 13.

### 2.2 Special Accessories

No special accessories were needed.

### 2.3 Equipment Modifications

No modifications were needed in order to achieve compliance

### 2.4 Configuration of Tested System

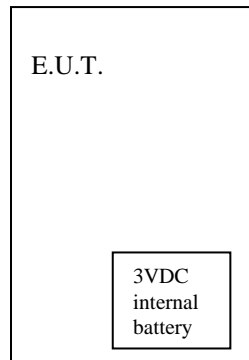


Figure 1 Configuration of Tested System

### 3. Radiated Measurement Test Set-up Photo



Figure 2 Radiated Emission Test Setup



Figure 3 Radiated Emission Test Setup



**Figure 4 Radiated Emission Test Setup**



**Figure 5 Radiated Emission Test Setup**

## 4. Average Factor Calculation

1. Burst duration = 92 msec
2. Time between bursts = 8 msec
3. Average Factor =  $20 \log \left[ \frac{\text{Pulse duration}}{\text{Pulse period}} \times \frac{\text{burst duration}}{100 \text{msec}} \times \text{Num of burst within 100msec} \right]$

NOTE – [Pulse duration /Pulse period] considered ½ as worst case since unit operates with random ON/OFF keying modulation

$$\text{Average Factor} = 20 \log \left[ \frac{1}{2} \times \frac{92}{100} \right] = -6.7 \text{ dB}$$

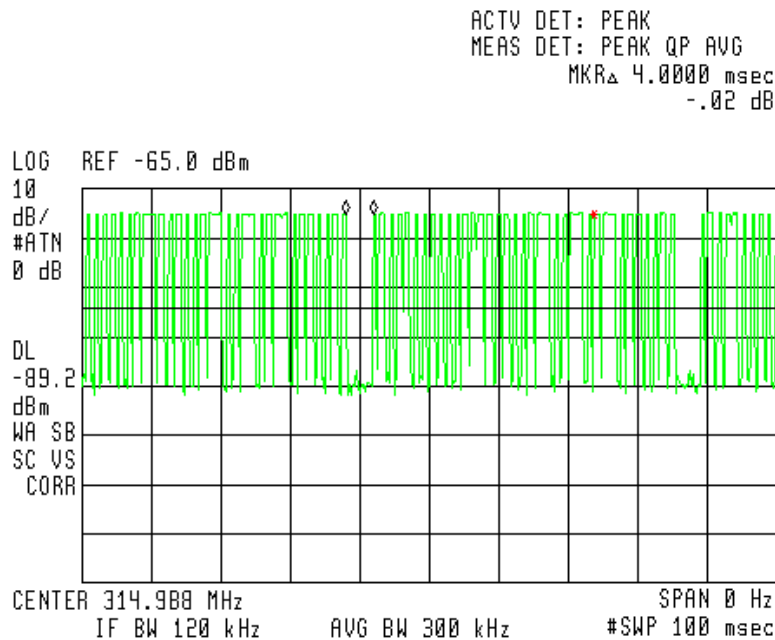
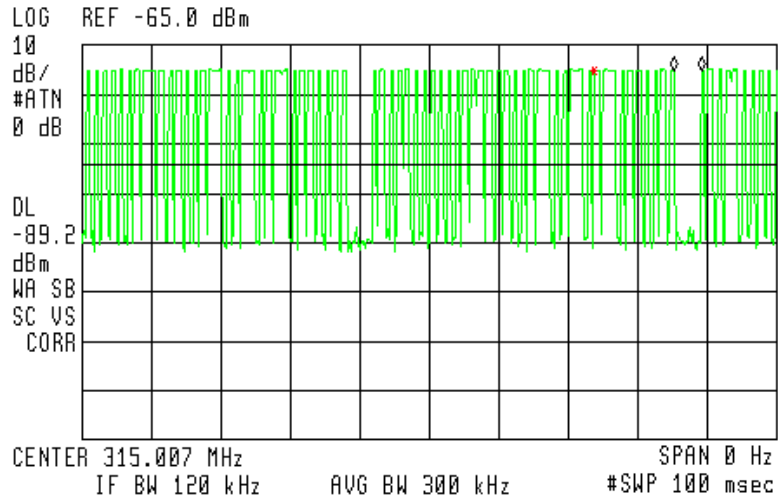


Figure 6. OFF Time within 100msec (#1)



ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR $\Delta$  4.0000 msec  
.07 dB



**Figure 7. OFF Time within 100msec (#2)**



#### 4.1 Test Instrumentation Used, Average Factor Calculation

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
Spectrum Analyzer	HP	8592L	3826A01204	February 28, 2014	1 Year
Antenna Bioconical	EMCO	3104	2606	August 30, 2013	1 year
Antenna Log Periodic	ARA	LPD-2010/A	1038	April 2, 2013*	1 year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A

\*All tests using ARA Antenna Log Periodic model #: LPD-2010/A serial#: 1038 were performed on April 1, 2014.

## 5. Periodic Operation

### 5.1 Specification

F.C.C., Part 15, Subpart C, Section 15.231(a)

### 5.2 Requirements

Requirement	Rationale	Verdict
Continuous transmissions are not permitted.	N/A	Complies
A manually operated transmitter shall be deactivated within not more than 5 seconds after releasing the switch.	N/A.	Complies
An automatically operated transmitter shall cease operation within 5 seconds after activation.	See Figure 8 to Note: The spectrum analyzer needs to finish 2 sweep cycles in order to complete measurement and to eliminate the asterisk. Concerning the above plot, only one sweep is necessary in order to measure the actual transmission cycle on the configured sweep and therefore the asterisk still appears.  <b>Figure 10.</b>	Complies
Periodic transmissions at regular predetermined intervals are not permitted.	N/A	Complies
Polling or supervised transmissions to determine system integrity of transmitter used in security or safety applications shall not exceed more than 2 seconds per hour.	See Figure 11.	Complies


### 5.3 Results

JUDGEMENT: Passed

The EUT met the FCC Part 15, Subpart C, Section 15.231(a) specification requirements.



TEST PERSONNEL:

Tester Signature: \_\_\_\_\_ 

Date: 09.05.14

Typed/Printed Name: A. Sharabi



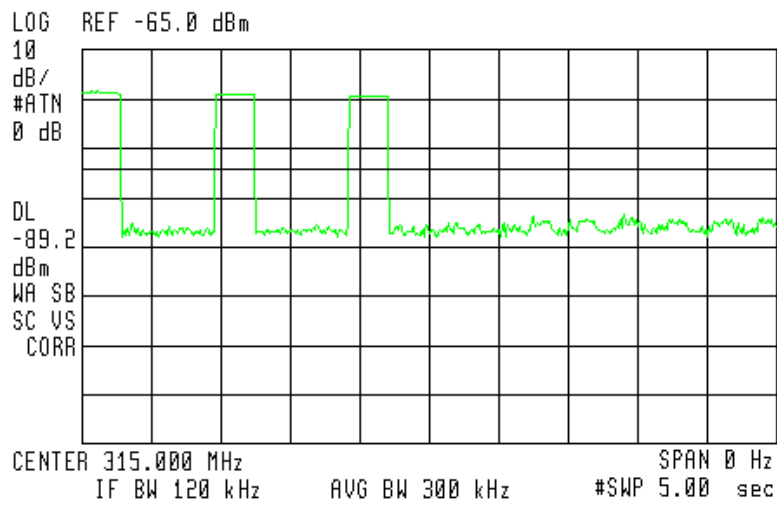
## Periodic Operation

E.U.T Description    Wireless PIR Detector  
 Type                    V-Motion MCW (315)  
 Serial Number:        Not designated

Specification: F.C.C., Part 15, Subpart C, 15.231(a)



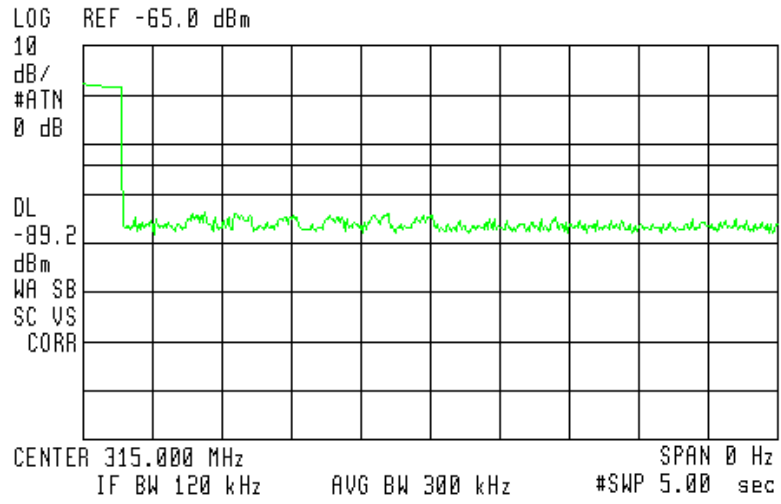
ACTV DET: PEAK  
 MEAS DET: PEAK QP AVG



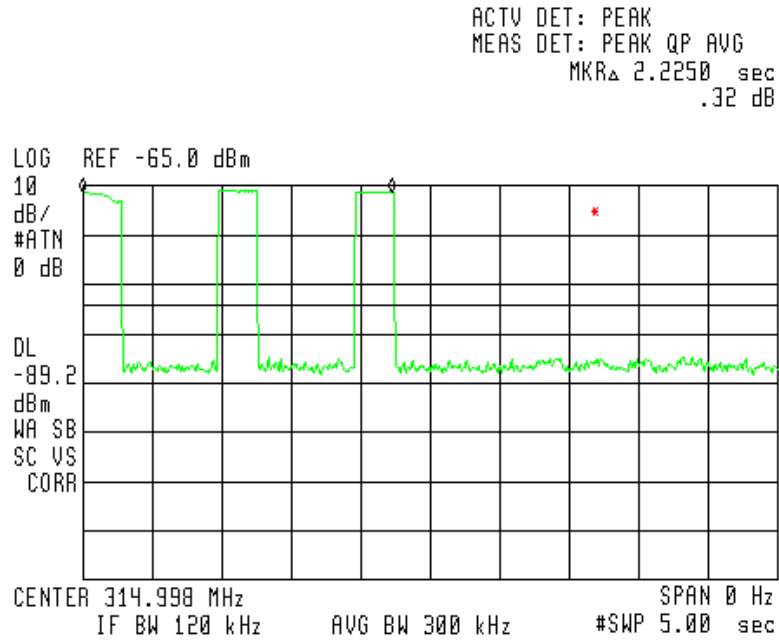
**Figure 8. Automatic operated transmission – Tamper ON**



ACTV DET: PEAK  
MEAS DET: PEAK QP AVG

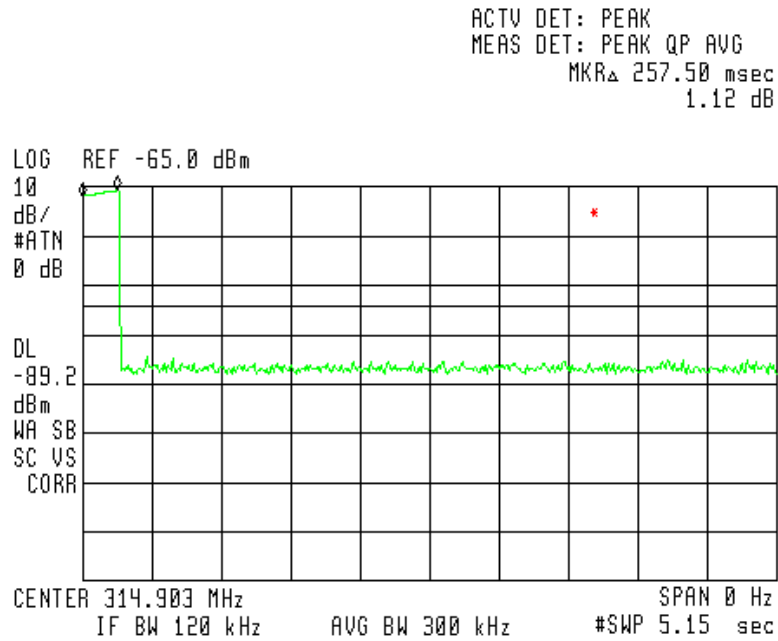


**Figure 9. Automatic operated transmission – Tamper OFF**



Note: The spectrum analyzer needs to finish 2 sweep cycles in order to complete measurement and to eliminate the asterisk. Concerning the above plot, only one sweep is necessary in order to measure the actual transmission cycle on the configured sweep and therefore the asterisk still appears.

**Figure 10. Automatic operated transmission – Alarm**



Note: The spectrum analyzer needs to finish 2 sweep cycles in order to complete measurement and to eliminate the asterisk. Concerning the above plot, only one sweep is necessary in order to measure the actual transmission cycle on the configured sweep and therefore the asterisk still appears.

**Figure 11. Supervision transmission – (275msec Once an Hour<2sec)**

#### 5.4 Test Equipment Used, Periodic Operation

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
Spectrum Analyzer	HP	8592L	3826A01204	February 28, 2014	1 Year

## 6. Field Strength of Fundamental

### 6.1 Test Specification

F.C.C., Part 15, Subpart C, Section 15.231(b)

### 6.2 Test Procedure

The E.U.T. operation mode and test set-up are as described in Section 3.

The E.U.T. was placed on a non-conductive table, 0.8 meters above the O.A.T.S. ground plane.

The EMI receiver was set to the E.U.T. Fundamental Frequency (315.0 MHz) and Peak Detection.

The turntable and antenna mast were adjusted for maximum level reading on the EMI receiver.

The measurement was performed for vertical and horizontal polarizations of the test antenna.

The average result is:

Peak Level(dB $\mu$ V/m) + E.U.T. Duty Cycle Factor, in 100msec time window (dB)

### 6.3 Measured Data

JUDGEMENT: Passed by 16.46dB

The EUT met the FCC Part 15, Subpart C, Section 15.231(b) specification requirements.

The details of the highest emissions are given in *Figure 12* to *Figure 14*.

TEST PERSONNEL:

Tester Signature: \_\_\_\_\_ Date: 09.05.14

Typed/Printed Name: A. Sharabi



## Field Strength of Fundamental

E.U.T Description    Wireless PIR Detector  
Type                      V-Motion MCW (315)  
Serial Number:        Not designated

Specification: F.C.C., Part 15, Subpart C, 15.231(b)

Antenna Polarization: Horizontal/Vertical

Test Distance: 3 meters

Detector: Peak

<b>Freq.</b> (MHz)	<b>Pol.</b> V/H	<b>Peak Reading</b> (dB $\mu$ V/m)	<b>Average Factor</b> (dB)	<b>AVG Result</b> (dB $\mu$ V/m)	<b>AVG Specification</b> (dB $\mu$ V/m)	<b>Margin</b> (dB)
315.0	H	65.76	-6.7	59.06	75.62	-16.56
315.0	V	65.86	-6.7	59.16	75.62	-16.46

**Figure 12. Field Strength of Fundamental. Antenna Polarization: HORIZONTAL/VERTICAL. Detector: Peak**

Notes:

1. Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.
2. "Peak Reading." (dB $\mu$ V/m) included the "Correction Factors".
3. "Correction Factors" (dB) = Test Antenna Correction Factor(dB) + Cable Loss.
4. "Average Result" (dB $\mu$ V/m)=Peak Reading (dB $\mu$ V/m)+ Average Factor (dB)

## Field Strength of Fundamental

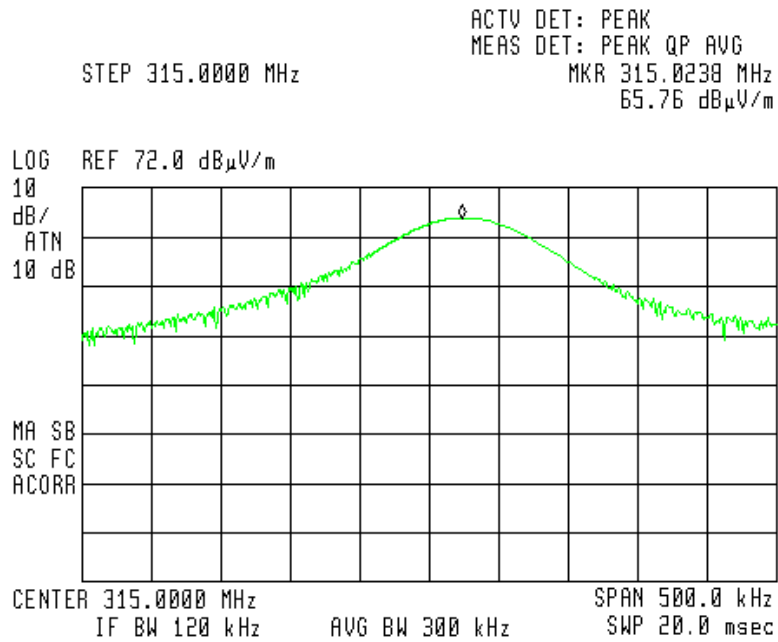
E.U.T Description    Wireless PIR Detector  
 Type                    V-Motion MCW (315)  
 Serial Number:        Not designated

Specification: F.C.C., Part 15, Subpart C, 15.231(b)

Antenna Polarization: Horizontal

Test Distance: 3 meters

Detector: Peak



**Figure 13. Field Strength of Fundamental. Antenna Polarization: HORIZONTAL.  
 Detectors: Peak**

## Field Strength of Fundamental

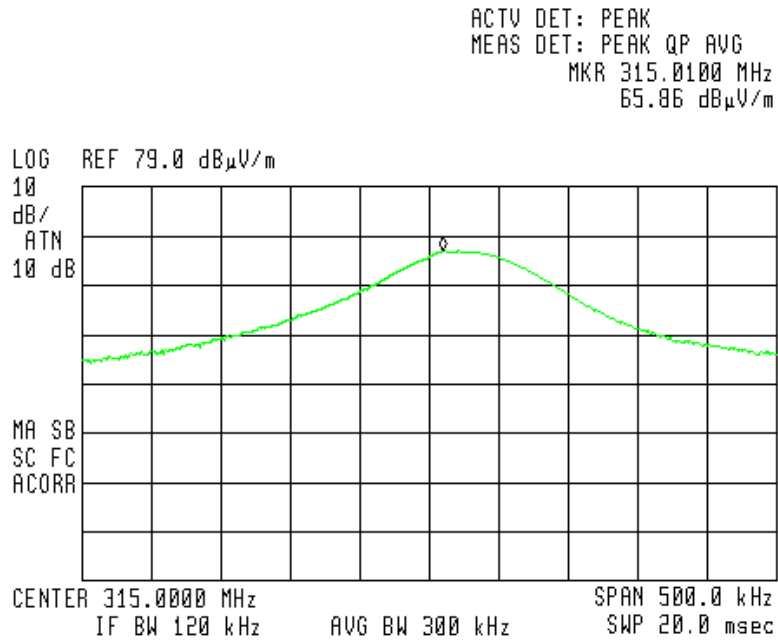
E.U.T Description    Wireless PIR Detector  
Type                    V-Motion MCW (315)  
Serial Number:        Not designated

Specification: F.C.C., Part 15, Subpart C, 15.231(b)

Antenna Polarization: Vertical

Test Distance: 3 meters

Detector: Peak



**Figure 14. Field Strength of Fundamental. Antenna Polarization: VERTICAL. Detectors: Peak**





#### 6.4 Test Instrumentation Used, Field Strength of Fundamental

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	January 15, 2014	1 year
RF Section	HP	85420E	3705A00248	January 15, 2014	1 year
Antenna Log Periodic	ARA	LPD-2010/A	1038	April 2, 2013*	1 year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A
Printer	HP	LaserJet 2200	JPKG19982	N/A	N/A

\*All tests using ARA Antenna Log Periodic model #: LPD-2010/A serial#: 1038 were performed on April 1, 2014.



## 7. Radiated Emission, 9 kHz – 30 MHz

### 7.1 Test Specification

9 kHz-30 MHz, FCC, Part 15, Subpart C, Section 209

### 7.2 Test Procedure

The E.U.T. operation mode and test set-up are as described in Section 3.

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The configuration tested is shown in Figure 1

The frequency range 9 kHz-30 MHz was scanned.

The emissions were measured using a computerized EMI receiver complying with CISPR 16 requirements. The specification limits and applicable correction factors are loaded to the receiver via a 3.5" floppy disk.

In the frequency range 9 kHz-30MHz, the loop antenna was rotated on its vertical axis. The antenna height (center of loop) was 1 meter at a distance of 3 meters.

The E.U.T. was operated at the frequency of 315 MHz. This frequency was measured using a peak detector.

### 7.3 Measured Data

JUDGEMENT: Passed

The EUT was tested and it met the requirements of the FCC Part 15, Subpart C specification.

No signals were detected in frequency range 9 kHz-30 MHz.

TEST PERSONNEL:

Tester Signature: \_\_\_\_\_ 

Date: 09.05.14

Typed/Printed Name: A. Sharabi

#### 7.4 Test Instrumentation Used, Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	January 15, 2014	1 year
RF Section	HP	85420E	3705A00248	January 15, 2014	1 year
Active Loop Antenna	EMCO	6502	9506-2950	November 4, 2013	1 year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A

#### 7.5 Field Strength Calculation

The field strength is calculated directly by the EMI Receiver software, and a "Correction Factors" data disk, using the following equation:

$$FS = RA + AF + CF$$

- FS: Field Strength [dB $\mu$ v/m]
- RA: Receiver Amplitude [dB $\mu$ v]
- AF: Receiving Antenna Correction Factor [dB/m]
- CF: Cable Attenuation Factor [dB]

No external pre-amplifiers are used.

## 8. Spurious Radiated Emission, 30 MHz – 3500 MHz

### 8.1 Test Specification

30 - 3500 MHz, F.C.C., Part 15, Subpart C

### 8.2 Test Procedure

The E.U.T. operation mode and test set-up are as described in Section 3. See Section 3.1 Justification of the System Test Configuration concerning the E.U.T. orientation for this test.

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The configuration tested is shown in *Figure 1*.

The signals from the list of the highest emissions were verified and the list was updated accordingly.

The levels of the emissions within the frequency ranges of the restricted bands (Section 15.205 of FCC Part 15) were compared to the limits of the table in Section 15.209 (a), General Requirements.

The emissions were measured using a computerized EMI receiver complying with CISPR 16 requirements. The specification limits and applicable correction factors are loaded to the receiver via a 3.5" floppy disk.

In the frequency range 2.9 – 3.5 GHz, a spectrum analyzer including a low noise amplifier was used. The test distance was 3 meters. During peak measurements, the I.F. bandwidth was 1 MHz, and video bandwidth 3 MHz. During average measurements, the I.F. bandwidth was 1 MHz and video bandwidth was 100 Hz.

The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization. Verification of the E.U.T emissions was based on the following methods: turning the E.U.T on and off; using a frequency span less than 10 MHz; observation of the signal level during turntable rotation. (Background noise is not affected by the rotation of the E.U.T.)

The emissions were measured at a distance of 3 meters.



### 8.3 Test Data

JUDGEMENT: Passed by 16.42 dB

The EUT met the requirements of the F.C.C. Part 15, Subpart C specification.

The margin between the emission level and the specification limit was 16.42 dB in the worst case at the frequency of 954.0 MHz, horizontal and vertical polarization.

TEST PERSONNEL:

Tester Signature:  Date: 09.05.14

Typed/Printed Name: A. Sharabi

## Radiated Emission

E.U.T Description    Wireless PIR Detector  
 Type                    V-Motion MCW (315)  
 Serial Number:        Not designated

Specification: FCC Part 15, Subpart C

Antenna Polarization: Horizontal/Vertical      Frequency range: 30 MHz to 3500 MHz  
 Antenna: 3 meters distance                        Detector: Peak

Frequency (MHz)	Peak Reading (dB $\mu$ V/m)	Average Factor (dB $\mu$ V/m)	Average Result (dB $\mu$ V/m)	Antenna Polarity (H/V)	Average Specification (dB $\mu$ V/m)	Margin (dB)
630.0	39.5	-6.7	32.8	H	55.62	-22.82
630.0	40.7	-6.7	34.0	V	55.62	-21.62
954.0	45.9	-6.7	39.2	H	55.62	-16.42
954.0	45.9	-6.7	39.2	V	55.62	-16.42

**Figure 15. Radiated Emission. Antenna Polarization: Horizontal/Vertical  
 Detector: Peak**

Notes:

1. Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.
2. "Peak Reading." (dB $\mu$ V/m) included the "Correction Factors".
3. "Correction Factors" (dB) = Test Antenna Correction Factor(dB) + Cable Loss.
4. "Average Result" (dB $\mu$ V/m)=Peak Reading (dB $\mu$ V/m)+ Average Factor (dB)



#### 8.4 Test Instrumentation Used, Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3906A00276	January 15, 2014	1 year
RF Section	HP	85420E	3705A00248	January 15, 2014	1 year
Low Noise Amplifier	DBS MICROWAVE	LNA-DBS- 0411N313	013	August 21, 2013	1 Year
Spectrum Analyzer	HP	8592L	3826A01204	February 28, 2014	1 Year
Antenna Bioconical	EMCO	3104	2606	August 30, 2013	1 year
Antenna Log Periodic	ARA	LPD-2010/A	1038	April 2, 2013*	1 year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A
Printer	HP	LaserJet 2200	JPKG19982	N/A	N/A

\*All tests using ARA Antenna Log Periodic model #: LPD-2010/A serial#: 1038 were performed on April 1, 2014.

## 9. Bandwidth

### 9.1 Test procedure

The transmitter unit operated with normal modulation. The spectrum analyzer was set to 120 kHz resolution BW and center frequency of the transmitter fundamental. The spectrum bandwidth of the transmitter unit was measured and recorded. The BW was measured at 20Bc points.

The EUT was set up as shown in *Figure 1*, and its proper operation was checked. The transmitter occupied bandwidth was measured with the EMI receiver as frequency delta between reference points on the modulation envelope.





## 9.2 Results table


E.U.T Description: Wireless PIR Detector  
Model: V-Motion MCW (315)  
Serial Number: Not designated  
Specification: F.C.C. Part 15, Subpart C: (15.231(c))

Bandwidth Reading kHz	Specification (kHz)	Margin (kHz)
147.6	787.5	639.9

Figure 16 Bandwidth

JUDGEMENT: Passed by 639.9 kHz

TEST PERSONNEL:

Tester Signature: \_\_\_\_\_ 

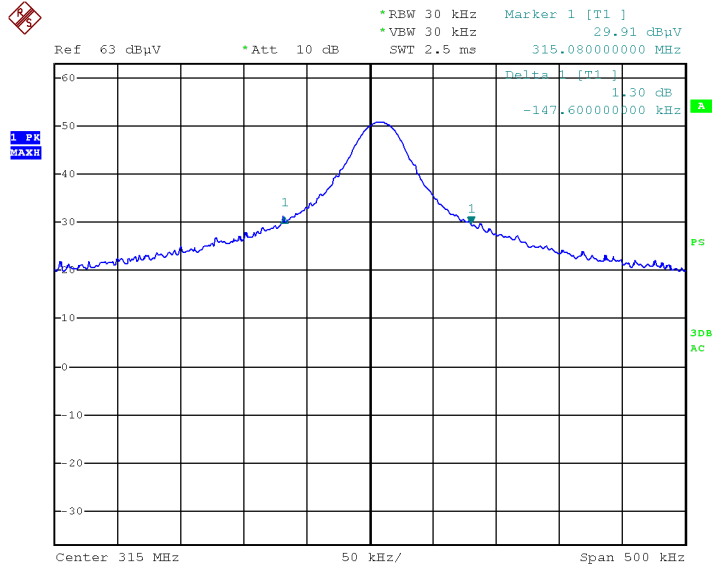
Date: 09.05.14

Typed/Printed Name: A. Sharabi

(1) 0.25% of the E.U.T. fundamental frequency, Section 15.231(c).

# Bandwidth

E.U.T Description    Wireless PIR Detector  
 Type                    V-Motion MCW (315)  
 Serial Number:        Not designated



Date: 8.MAY.2014 12:10:49

Figure 17 Bandwidth

**9.3 Test Equipment Used, Bandwidth**

<b>Instrument</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration</b>	<b>Period</b>
EMI Receiver	R&S	ESCI7	100724	December 17, 2013	1 year
Antenna Biconical	EMCO	3110B	9912-3337	August 30, 2014	1 year
Antenna Mast	ETS	2070-2	9608-1497	N/A	N/A
Turntable	ETS	2087	-	N/A	N/A
Mast & Table Controller	ETS/EMCO	2090	9608-1456	N/A	N/A

**Figure 18 Test Equipment Used**

## 10. APPENDIX A - CORRECTION FACTORS

### 10.1 Correction factors for CABLE

from EMI receiver  
to test antenna  
at 3 meter range.

FREQUENCY (MHz)	CORRECTION FACTOR (dB)	FREQUENCY (MHz)	CORRECTION FACTOR (dB)
10.0	0.3	1200.0	7.3
20.0	0.6	1400.0	7.8
30.0	0.8	1600.0	8.4
40.0	0.9	1800.0	9.1
50.0	1.1	2000.0	9.9
60.0	1.2	2300.0	11.2
70.0	1.3	2600.0	12.2
80.0	1.4	2900.0	13.0
90.0	1.6		
100.0	1.7		
150.0	2.0		
200.0	2.3		
250.0	2.7		
300.0	3.1		
350.0	3.4		
400.0	3.7		
450.0	4.0		
500.0	4.3		
600.0	4.7		
700.0	5.3		
800.0	5.9		
900.0	6.3		
1000.0	6.7		

**NOTES:**

1. The cable type is RG-214.
2. The overall length of the cable is 27 meters.
3. The above data is located in file 27MO3MO.CBL on the disk marked "Radiated Emission Tests EMI Receiver".

**10.2 Correction factors for CABLE  
from EMI receiver  
to test antenna  
at 3 meter range.**

FREQUENCY (GHz)	CORRECTION FACTOR (dB)
1.0	1.2
2.0	1.6
3.0	2.0
4.0	2.4
5.0	3.0
6.0	3.4
7.0	3.8
8.0	4.2
9.0	4.6
10.0	5.0
12.0	5.8

*NOTES:*

- 1. The cable type is RG-8.*
- 2. The overall length of the cable is 10 meters.*

**10.3 Correction factors for CABLE**  
**from spectrum analyzer**  
**to test antenna above 2.9 GHz**

FREQUENCY (GHz)	CORRECTION FACTOR (dB)	FREQUENCY (GHz)	CORRECTION FACTOR (dB)
1.0	1.9	14.0	9.1
2.0	2.7	15.0	9.5
3.0	3.5	16.0	9.9
4.0	4.2	17.0	10.2
5.0	4.9	18.0	10.4
6.0	5.5	19.0	10.7
7.0	6.0	20.0	10.9
8.0	6.5	21.0	11.2
9.0	7.0	22.0	11.6
10.0	7.5	23.0	11.9
11.0	7.9	24.0	12.3
12.0	8.3	25.0	12.6
13.0	8.7	26.0	13.0

**NOTES:**

1. The cable type is SUCOFLEX 104 E manufactured by SUHNER.
2. The cable is used for measurements above 2.9 GHz.
3. The overall length of the cable is 10 meters.

**10.4 Correction factors for LOG PERIODIC ANTENNA  
Type LPD 2010/A  
at 3 range.**

**Distance of 3 meters**

<b>FREQUENCY</b> (MHz)	<b>AFE</b> (dB/m)
200.0	9.1
250.0	10.2
300.0	12.5
400.0	15.4
500.0	16.1
600.0	19.2
700.0	19.4
800.0	19.9
900.0	21.2
1000.0	23.5

*NOTES:*

1. Antenna serial number is 1038.
2. The above lists are located in file number 38M30.ANT for a 3 meter range, .
3. The files mentioned above are located on the disk marked "Radiated Emission Test EMI Receiver".

**10.5 Correction factors for**

**LOG PERIODIC ANTENNA**

**Type SAS-200/511  
at 3 meter range.**

FREQUENCY (GHz)	ANTENNA FACTOR (dB)
1.0	24.9
1.5	27.8
2.0	29.9
2.5	31.2
3.0	32.8
3.5	33.6
4.0	34.3
4.5	35.2
5.0	36.2
5.5	36.7
6.0	37.2
6.5	38.1

FREQUENCY (GHz)	ANTENNA FACTOR (dB)
7.0	38.6
7.5	39.2
8.0	39.9
8.5	40.4
9.0	40.8
9.5	41.1
10.0	41.7
10.5	42.4
11.0	42.5
11.5	43.1
12.0	43.4
12.5	44.4
13.0	44.6

**NOTES:**

1. Antenna serial number is 253.
2. The above lists are located in file number SAS3M0.ANT for a 3 meter range.
3. The files mentioned above are located on the disk marked "Antenna Factors".





**10.6 Correction factors for BICONICAL ANTENNA  
Type BCD-235/B,  
at 3 meter range**

<b>FREQUENCY (MHz)</b>	<b>AFE (dB/m)</b>
20.0	19.4
30.0	14.8
40.0	11.9
50.0	10.2
60.0	9.1
70.0	8.5
80.0	8.9
90.0	9.6
100.0	10.3
110.0	11.0
120.0	11.5
130.0	11.7
140.0	12.1
150.0	12.6
160.0	12.8
170.0	13.0
180.0	13.5
190.0	14.0
200.0	14.8
210.0	15.3
220.0	15.8
230.0	16.2
240.0	16.6
250.0	17.6
260.0	18.2
270.0	18.4
280.0	18.7
290.0	19.2
300.0	19.9
310	20.7
320	21.9
330	23.4
340	25.1
350	27.0

**NOTES:**

- 1. Antenna serial number is 1041.*
- 2. The above list is located in file 19BC10M1.ANT on the disk marked "Radiated Emissions Tests EMI Receiver".*



**10.7 Correction factors for ACTIVE LOOP ANTENNA**

**Model 6502  
S/N 9506-2950**

<b>FREQUENCY</b> (MHz)	<b>Magnetic Antenna Factor</b> (dB)	<b>Electric Antenna Factor</b> (dB)
.009	-35.1	16.4
.010	-35.7	15.8
.020	-38.5	13.0
.050	-39.6	11.9
.075	-39.8	11.8
.100	-40.0	11.6
.150	-40.0	11.5
.250	-40.0	11.6
.500	-40.0	11.5
.750	-40.1	11.5
1.000	-39.9	11.7
2.000	-39.5	12.0
3.000	-39.4	12.1
4.000	-39.7	11.9
5.000	-39.7	11.8
10.000	40.2	11.3
15.000	-40.7	10.8
20.000	-40.5	11.0
25.000	-41.3	10.2
30.000	42.3	9.2



## 11. Comparison requirements FCC with Industry Canada

<b>FCC Specification</b>	<b>According FCC Standard</b>	<b>IC Standard</b>
Periodic Operation	FCC Part 15.231 (a)(1-5)	RSS- 210 Issue 8 Section 2.5 Annex 1, A1.1.1
Field Strength of Fundamental	FCC Part 15.231 (b)	RSS- 210 Issue 8 Section 2.5 Annex 1 A1.1.2
Spurious Emissions	FCC Part 15.231 (b)	RSS GEN Issue 3 7.2.2 (Table3)
Bandwidth	FCC Part 15.231 (c)	RSS- 210 Issue 8 Section 2.5 Annex 1 A1.1.3