



**FCC 47 CFR PART 15 SUBPART C  
INDUSTRY CANADA RSS-210 ISSUE 8**

**CERTIFICATION TEST REPORT**

**FOR**

**Motion Sensor**

**MODEL NUMBER: FGMS-001**

**FCC ID: 2AA9MFGMS002**

**REPORT NUMBER: 10340736A**

**ISSUE DATE: December 29, 2014**

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NVLAP Lab code: 100414-0

Revision History

| Rev. | Issue<br>Date | Revisions     | Revised By |
|------|---------------|---------------|------------|
| --   | 12/29/14      | Initial Issue | M.Ferrer   |

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** Fibar Group sp. z.o.o  
Ul. Lotnicza 1  
Poznan, Poland 60-453

**EUT DESCRIPTION:** Motion Sensor

**MODEL:** FGMS-001

**SERIAL NUMBER:** Prototype

**DATE TESTED:** November 25, 2014 – December 18, 2014

| APPLICABLE STANDARDS                    |              |
|-----------------------------------------|--------------|
| STANDARD                                | TEST RESULTS |
| CFR 47 Part 15 Subpart C                | Pass         |
| INDUSTRY CANADA RSS-210 Issue 8 Annex 8 | Pass         |
| INDUSTRY CANADA RSS-GEN Issue 4         | Pass         |

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL LLC based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL CCS By:



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WiSE STAFF ENGINEER  
UL Verification Services Inc.

Tested By:



MICHAEL FERRER  
WiSE Program Manager  
UL Verification Services Inc.

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 4, and RSS-210 Issue 8.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 333 Pfingsten Road, Northbrook, IL 60062 USA.

UL NBK is accredited by NVLAP, Laboratory Code 100414-0. The full scope of accreditation can be viewed at <http://ts.nist.gov/Standards/scopes/1004140.htm>

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. SAMPLE CALCULATION

Sample Calculations

Radiated Field Strength and Conducted Emissions data contained within this report is calculated on the following basis:

Field Strength (dBuV/m) = Meter Reading (dBuV) + AF (dB/m) - Gain (dB) + Cable Loss (dB)

Conducted Voltage (dBuV) = Meter Reading (dBuV) + Cable Loss (dB) + LISN IL (dB)

Conducted Current (dBuA) = Meter Reading (dBuV) + Cable Loss (dB) - Transducer Factor (dBohms)

### 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| Test               | Range       | Equipment         | Uncertainty k=2 |
|--------------------|-------------|-------------------|-----------------|
| Radiated Emissions | 30-200MHz   | Bicon 10m Horz    | 4.27dB          |
| Radiated Emissions | 30-200MHz   | Bicon 10m Vert    | 4.28dB          |
| Radiated Emissions | 200-1000MHz | LogP 10m Horz     | 3.33dB          |
| Radiated Emissions | 200-1000MHz | LogP 10m Vert     | 3.39dB          |
| Radiated Emissions | 30-200MHz   | Bicon 3m Horz     | 3.30dB          |
| Radiated Emissions | 30-130MHz   | Bicon 3m Vert     | 4.84dB          |
| Radiated Emissions | 130-200MHz  | Bicon 3m Vert     | 4.94dB          |
| Radiated Emissions | 200-1000MHz | LogP 3m Horz      | 3.46dB          |
| Radiated Emissions | 200-1000MHz | LogP 3m Vert      | 4.98dB          |
| Radiated Emissions | 1-6GHz      | Horn              | 5.02dB          |
| Radiated Emissions | 6-18GHz     | Horn              | 5.34dB          |
| Radiated Emissions | 18-26GHz    | Horn              | 6.60dB          |
| Conducted Ant Port | 30MHz-26GHz | Spectrum Analyzer | 2.94            |

Uncertainty figures are valid to a confidence level of 95%.

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a Motion Detector that contains a 900MHz transceiver. EUT is battery powered.

The radio module is manufactured by Fibar Group.

### 5.2. MAXIMUM OUTPUT E-FIELD STRENGTH

The transmitter has a maximum output peak E-field as follows:

| Frequency Range<br>(MHz) | Mode | Output PK E-field Strength<br>(dBuV/m) |
|--------------------------|------|----------------------------------------|
| 908-916                  | TX   | 87.48                                  |

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an wire type 1/4L antenna.

### 5.4. WORST-CASE CONFIGURATION AND MODE

The EUT was set in worst axis as found in preliminary testing.

## 5.5. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

| Support Equipment List |              |          |               |             |
|------------------------|--------------|----------|---------------|-------------|
| Description            | Manufacturer | Model    | Serial Number | FCC ID      |
| Motion Sensor          | Fibar        | FGMS-001 | -             | 2AA9MFMS002 |
|                        |              |          |               |             |
|                        |              |          |               |             |
|                        |              |          |               |             |
|                        |              |          |               |             |
|                        |              |          |               |             |

### I/O CABLES

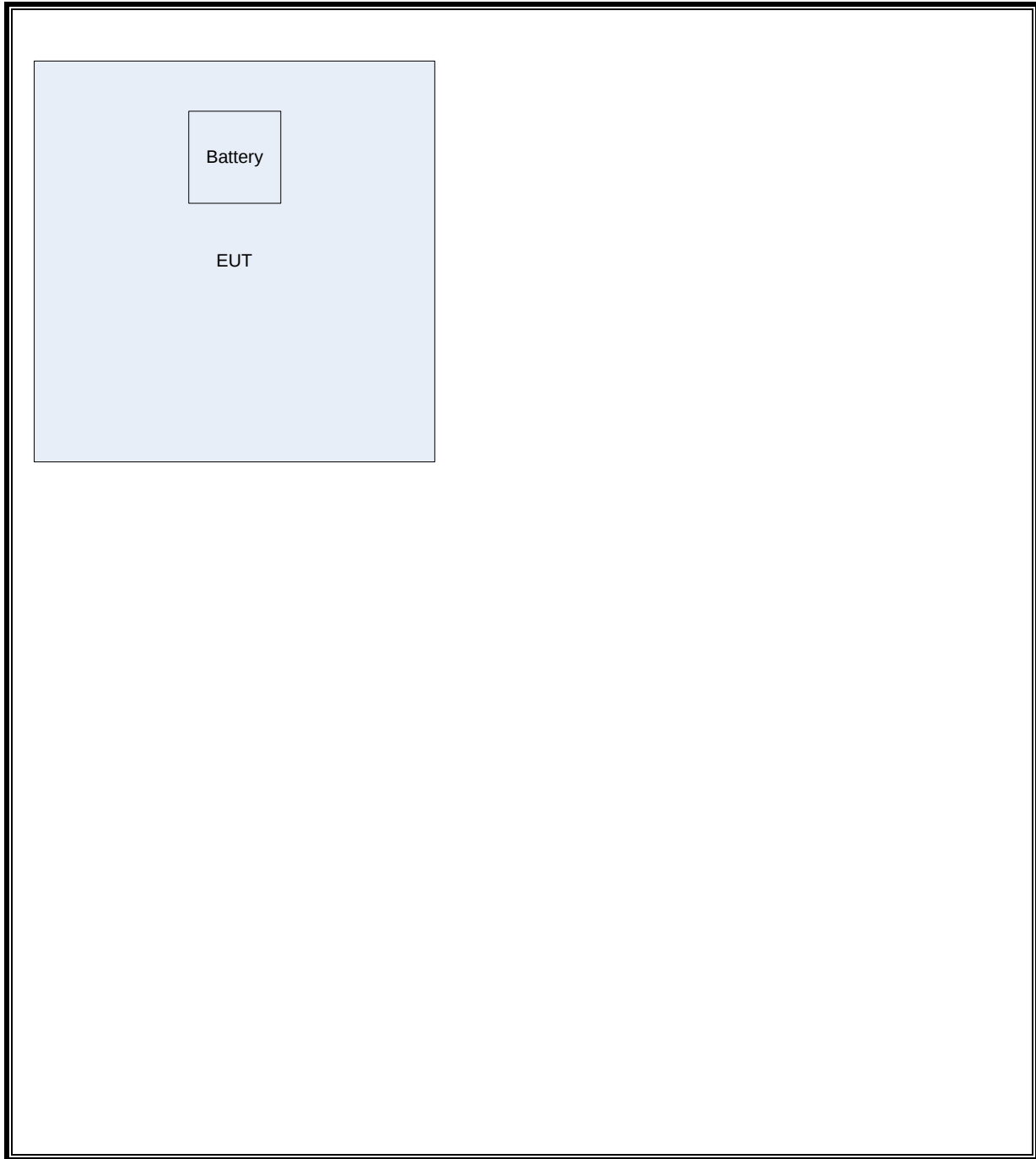
None

### TEST SETUP

The EUT is a standalone product. 3 separate EUT samples were preprogrammed with 100% duty cycle for Lo, Mid, and Hi channels.

Duty Cycle was declared by the manufacturer as worst case of 5ms over 100ms, -26.02dB.

**SETUP DIAGRAM FOR TESTS**



## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| Test Equipment List |                 |          |         |          |          |
|---------------------|-----------------|----------|---------|----------|----------|
| Description         | Manufacturer    | Model    | Asset   | Cal Date | Cal Due  |
| EMI Test Receiver   | Rohde & Schwarz | ESCI     | EMC4328 | 20131215 | 20141230 |
| Bicon Antenna       | Chase           | VBA6106A | EMC4078 | 20140401 | 20150401 |
| Log-P Antenna       | Schaffner       | UPA6109  | EMC4258 | 20131211 | 20141231 |
| Spectrum Analyzer   | Rhode & Schwarz | ESU      | EMC4323 | 20131215 | 20141230 |
| Antenna Array       | UL              | BOMS     | EMC4276 | 20141014 | 20151030 |
| EMI Test Receiver   | Agilent         | N9030A   | EMC4360 | 20131221 | 20141221 |
| Near Field Antenna  | EMCO            | -        | -       | -        | -        |

## 7. TEST RESULTS

### 7.1.1. 99% BANDWIDTH and 20dB Bandwidth

#### LIMITS

None; for reporting purposes only.

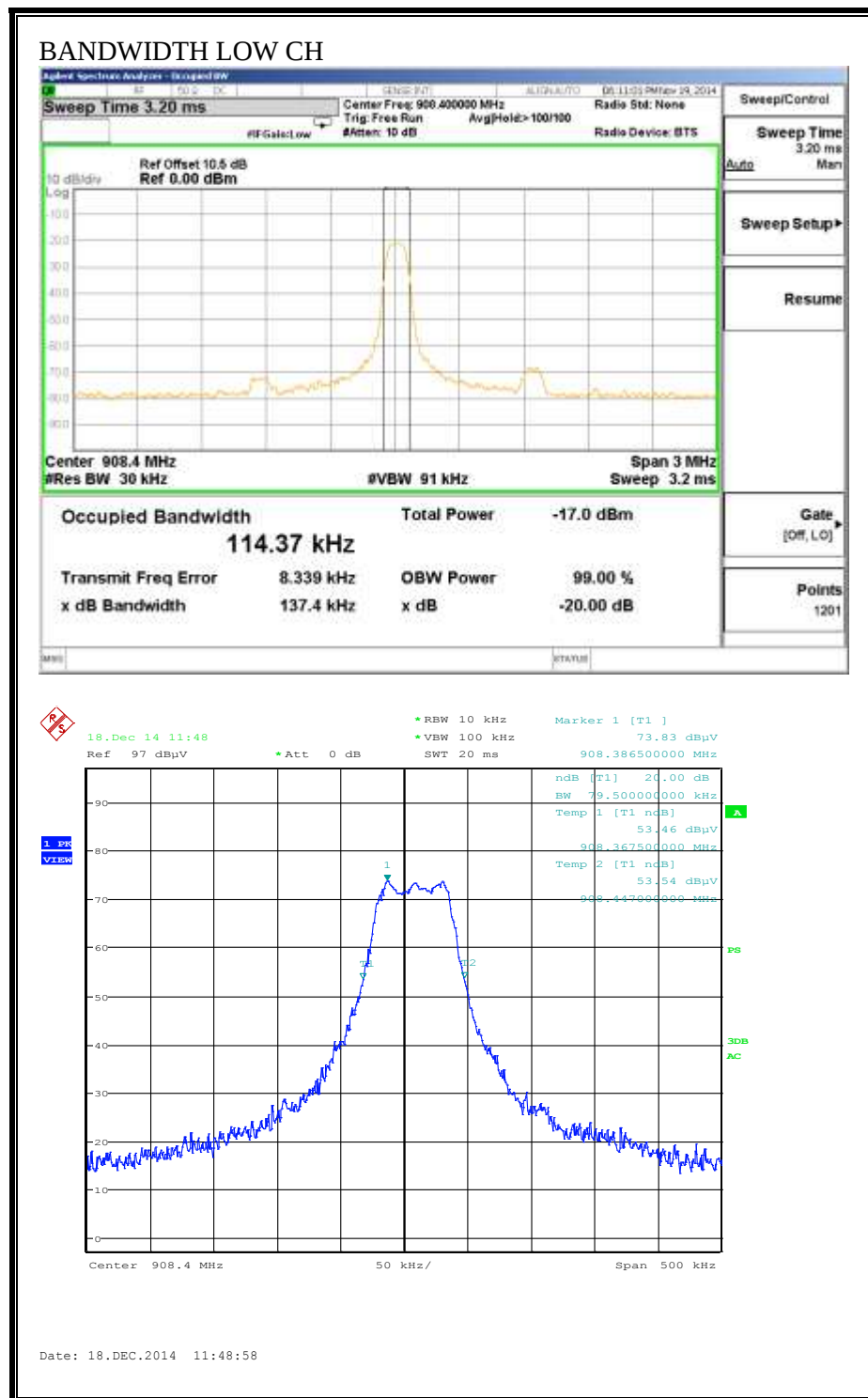
#### TEST PROCEDURE

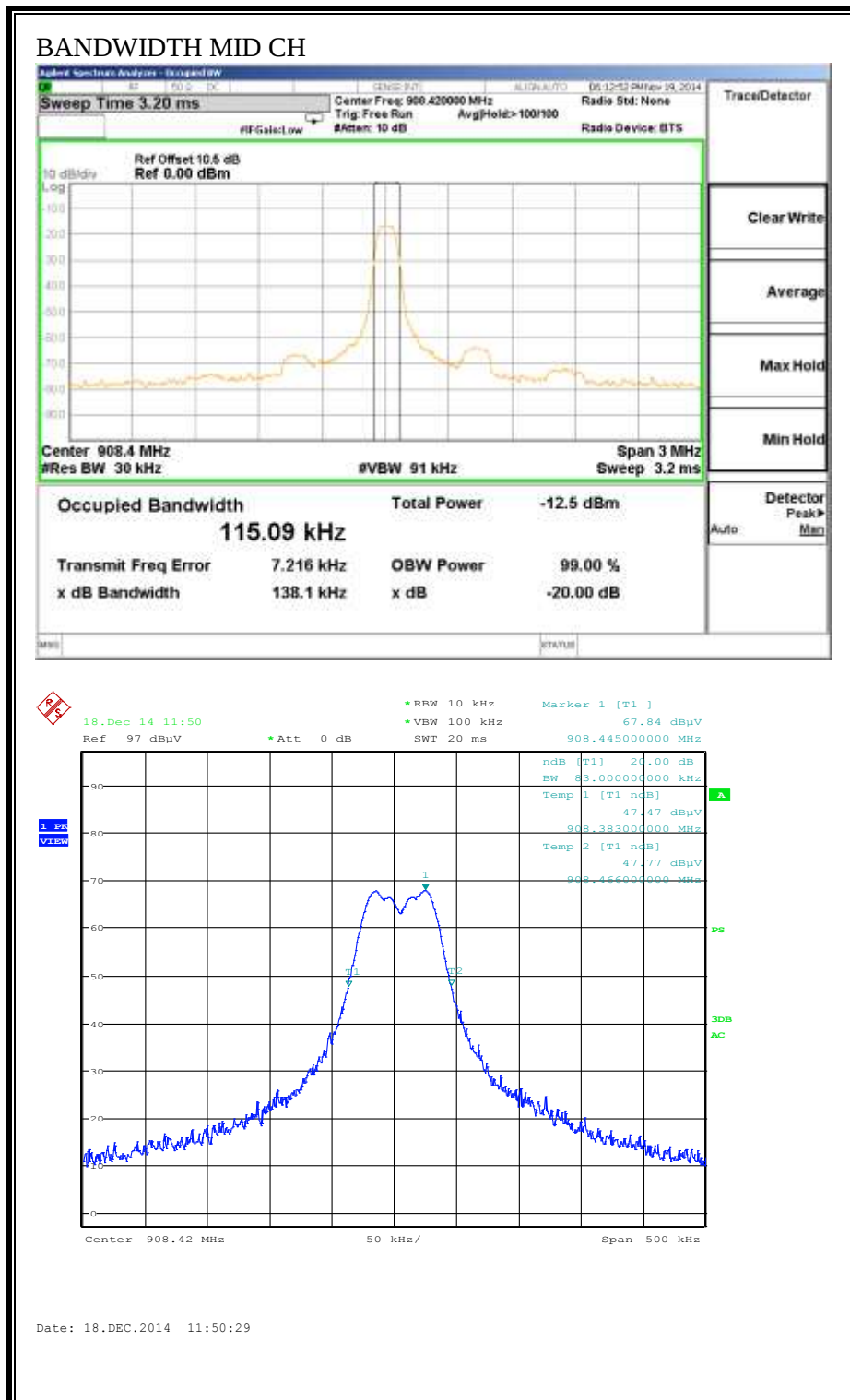
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% and 20dB bandwidth function is utilized.

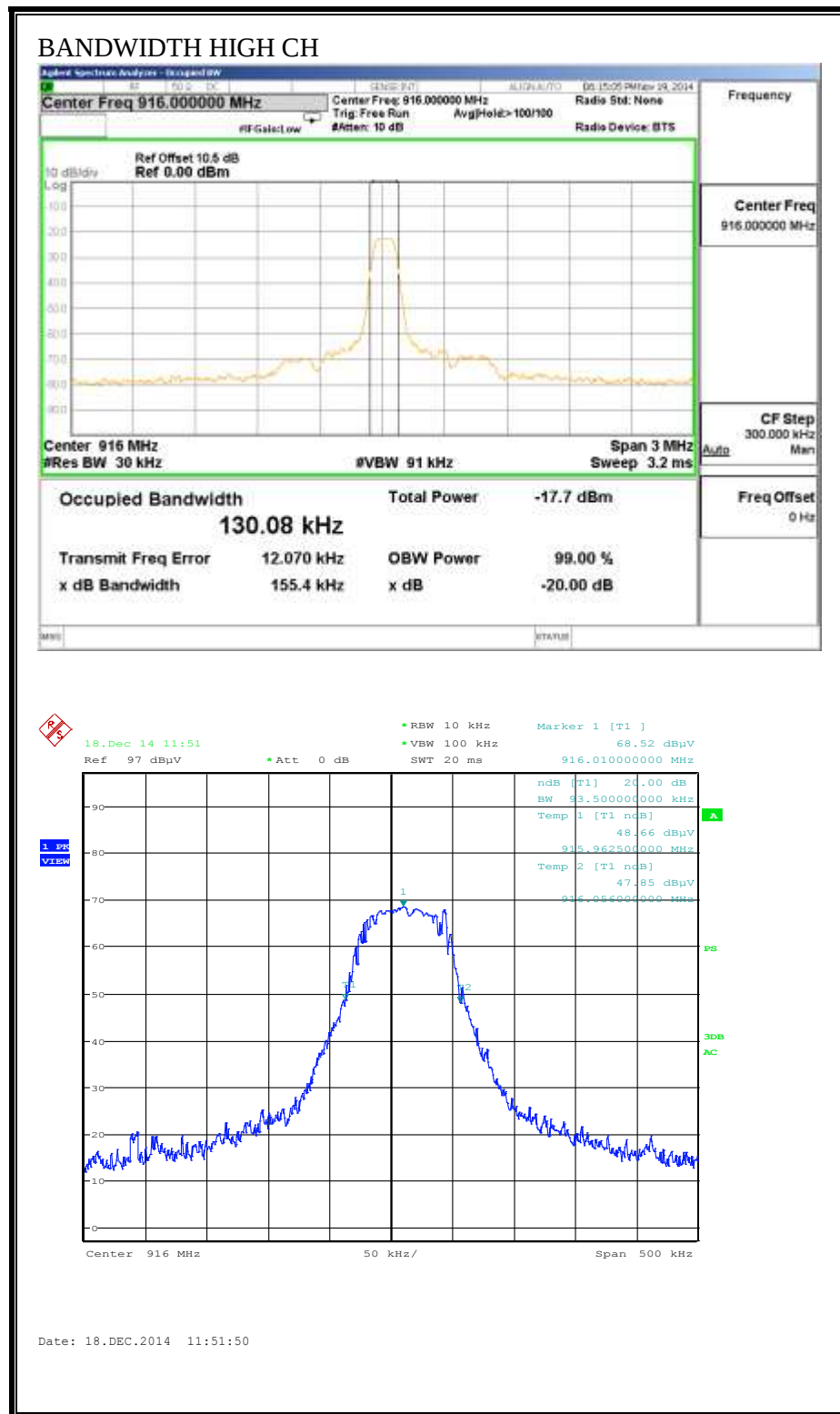
#### RESULTS

| Channel | Frequency<br>(MHz) | 99% Bandwidth<br>(kHz) | 20dB Bandwidth<br>(kHz) |
|---------|--------------------|------------------------|-------------------------|
| Low     | 908.40             | 114.37                 | 79.5                    |
| Middle  | 908.42             | 115.09                 | 83                      |
| High    | 916.00             | 130.08                 | 93.5                    |

# **99% and 20dB BANDWIDTH**







## 7.2. RADIATED EMISSIONS

### LIMIT

IC RSS-210, A2.9  
FCC 15.249

Operation within the bands 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHz, and 24.0–24.25 GHz.

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

| Fundamental frequency | Field strength of fundamental (millivolts/meter) | Field strength of harmonics (microvolts/meter) |
|-----------------------|--------------------------------------------------|------------------------------------------------|
| 902–928 MHz .....     | 50                                               | 500                                            |
| 2400–2483.5 MHz ..... | 50                                               | 500                                            |
| 5725–5875 MHz .....   | 50                                               | 500                                            |
| 24.0–24.25 GHz .....  | 250                                              | 2500                                           |

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.

| Frequency (MHz)   | Field strength (microvolts/meter) | Measurement distance (meters) |
|-------------------|-----------------------------------|-------------------------------|
| 0.009–0.490 ..... | 2400/F(kHz)                       | 300                           |
| 0.490–1.705 ..... | 24000/F(kHz)                      | 30                            |
| 1.705–30.0 .....  | 30                                | 30                            |
| 30–88 .....       | 100 **                            | 3                             |
| 88–216 .....      | 150 **                            | 3                             |
| 216–960 .....     | 200 **                            | 3                             |
| Above 960 .....   | 500                               | 3                             |

\*\* Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54–72 MHz, 76–88 MHz, 174–216 MHz or 470–806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

## RESULTS

### 7.2.1. FUNDAMENTAL FREQUENCY RADIATED EMISSION

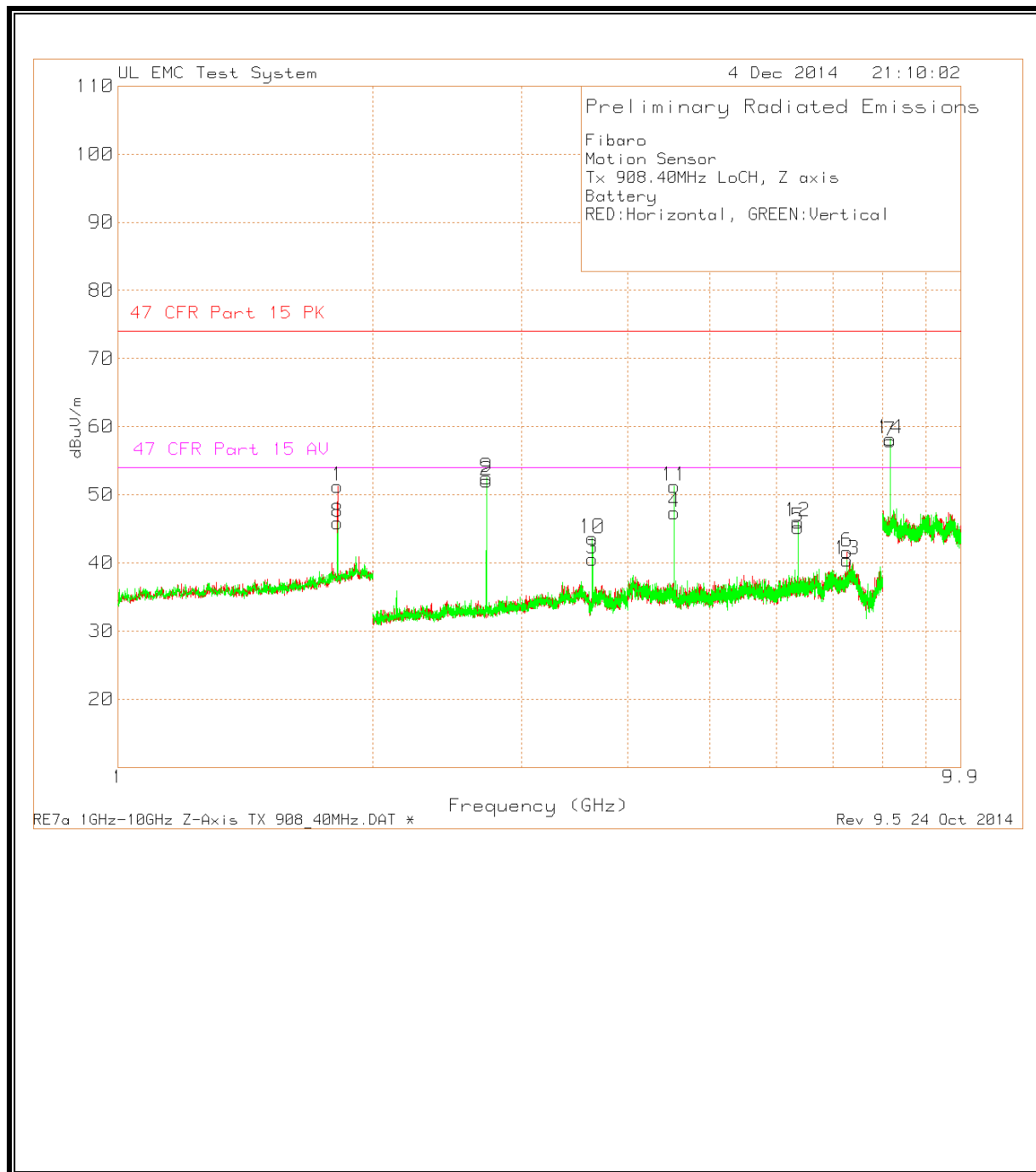
Fibaro  
Motion sensor  
Z Axis  
Battery

| Radiated Emission Data |                               |                 |             |             |                          |         |        |   |   |   |   |
|------------------------|-------------------------------|-----------------|-------------|-------------|--------------------------|---------|--------|---|---|---|---|
| Notes                  | Test                          | Meter           | Transducer  | Gain/Loss   | Corrected                | Limit:1 | 2      | 3 | 4 | 5 | 6 |
|                        | Frequency (MHz)               | Reading         | Factor (dB) | Factor (dB) | Reading dB(uVolts/meter) |         |        |   |   |   |   |
| =====                  |                               |                 |             |             |                          |         |        |   |   |   |   |
| =====                  |                               |                 |             |             |                          |         |        |   |   |   |   |
|                        | LogP Horizontal 200 - 1000MHz |                 |             |             |                          |         |        |   |   |   |   |
|                        | 908.39813                     | 49.65dBuV QP    | 22.9        | 10          | 82.55                    | -       | 94     | - | - | - | - |
|                        | Azimuth: 92                   | Height:125 Vert |             |             | Margin (dB):             | -       | -11.45 | - | - | - | - |
|                        | 908.39813                     | 52.84dBuV QP    | 22.9        | 10          | 85.74                    | -       | 94     | - | - | - | - |
|                        | Azimuth: 61                   | Height:153 Horz |             |             | Margin (dB):             | -       | -8.26  | - | - | - | - |
|                        | 908.41375                     | 54.58dBuV QP    | 22.9        | 10          | 87.48                    | -       | 94     | - | - | - | - |
|                        | Azimuth: 315                  | Height:165 Horz |             |             | Margin (dB):             | -       | -6.52  | - | - | - | - |
|                        | 908.41375                     | 50.28dBuV QP    | 22.9        | 10          | 83.18                    | -       | 94     | - | - | - | - |
|                        | Azimuth: 108                  | Height:133 Vert |             |             | Margin (dB):             | -       | -10.82 | - | - | - | - |
|                        | 916.00638                     | 53.26dBuV QP    | 23.3        | 10          | 86.56                    | -       | 94     | - | - | - | - |
|                        | Azimuth: 312                  | Height:163 Horz |             |             | Margin (dB):             | -       | -7.44  | - | - | - | - |
|                        | 916.00638                     | 50.23dBuV QP    | 23.3        | 10          | 83.53                    | -       | 94     | - | - | - | - |
|                        | Azimuth: 141                  | Height:137 Vert |             |             | Margin (dB):             | -       | -10.47 | - | - | - | - |

LIMIT 2: CFR 47 Part 15 Class B 3m

QP - Quasi-Peak detector

## 7.2.2. HARMONICS AND SPURIOUS EMISSIONS ABOVE 1GHz

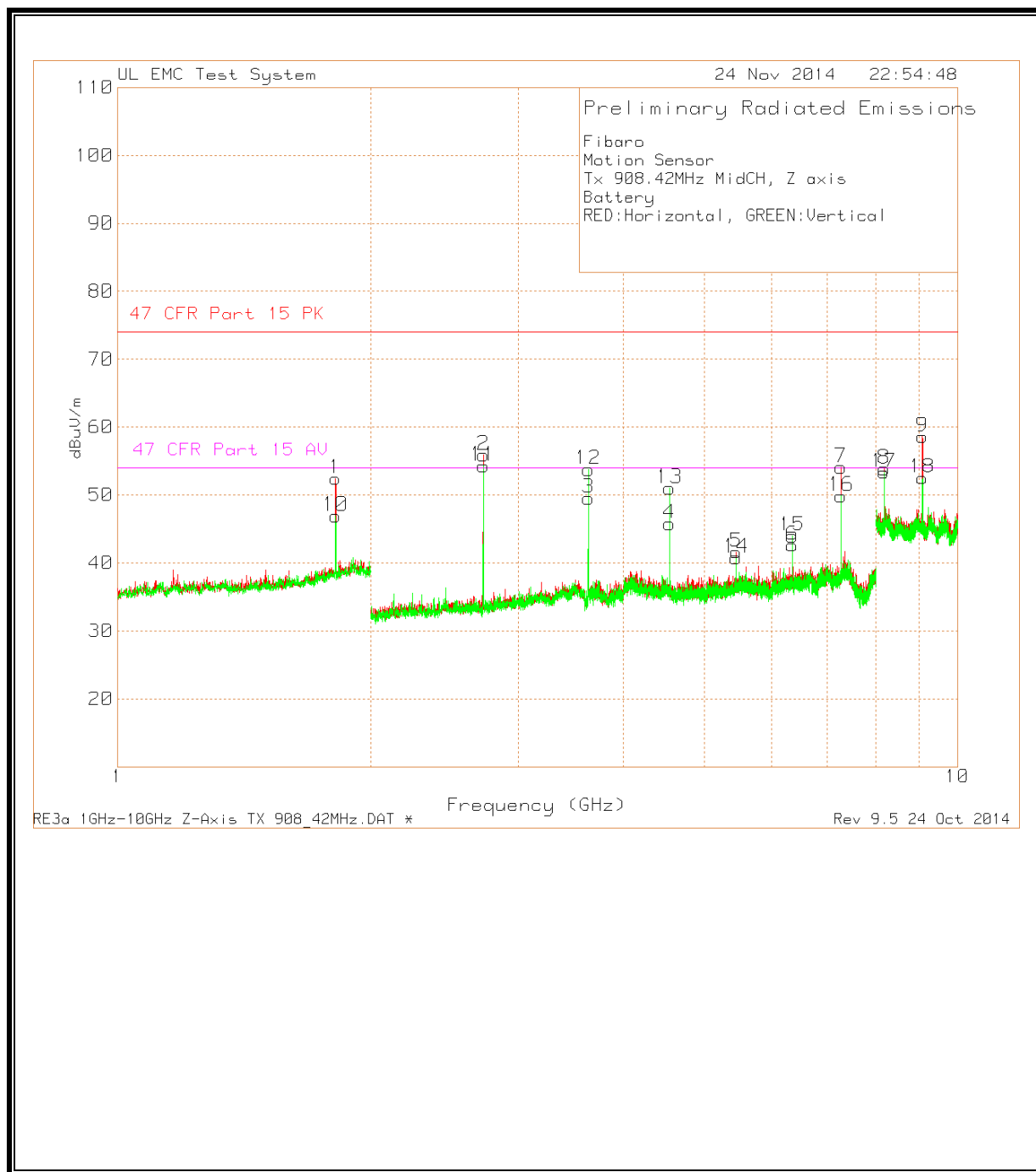


Fibaro  
Motion Sensor  
Tx 908.40MHz LoCH, Z axis  
Battery  
RED:Horizontal, GREEN:Vertical

| Radiated Emission Data       |                  |                              |                             |                      |                   |        |   |   |   |   |
|------------------------------|------------------|------------------------------|-----------------------------|----------------------|-------------------|--------|---|---|---|---|
| Test<br>Frequency<br>(GHz)   | Meter<br>Reading | Transducer<br>Factor<br>(dB) | Gain/Loss<br>Factor<br>(dB) | Corrected<br>Reading | Limit:1<br>dBuV/m | 2      | 3 | 4 | 5 | 6 |
| =====                        |                  |                              |                             |                      |                   |        |   |   |   |   |
| =                            |                  |                              |                             |                      |                   |        |   |   |   |   |
| 2 - 4GHz 2 - 4MHz            |                  |                              |                             |                      |                   |        |   |   |   |   |
| 2.7252                       | 82.64dBuV Pk     | 22.1                         | -51.33                      | 53.41                | 74                | -      | - | - | - | - |
| Azimuth: 359 Height:108 Horz |                  |                              |                             | Margin (dB):         | -20.59            | -      | - | - | - | - |
| 2.7252                       | 81.85dBuV Av     | 22.1                         | -51.33                      | 26.6*                | -                 | 54     | - | - | - | - |
| Azimuth: 359 Height:108 Horz |                  |                              |                             | Margin (dB):         | -                 | -26.6  | - | - | - | - |
| 2.7252                       | 82.15dBuV Pk     | 22.1                         | -51.33                      | 52.92                | 74                | -      | - | - | - | - |
| Azimuth: 0 Height:113 Vert   |                  |                              |                             | Margin (dB):         | -21.08            | -      | - | - | - | - |
| 2.7252                       | 81.36dBuV Av     | 22.1                         | -51.33                      | 26.11*               | -                 | 54     | - | - | - | - |
| Azimuth: 0 Height:113 Vert   |                  |                              |                             | Margin (dB):         | -                 | -27.89 | - | - | - | - |
| 8 - 12GHz 8 - 10MHz          |                  |                              |                             |                      |                   |        |   |   |   |   |
| 8.1758                       | 71.4dBuV Pk      | 36.3                         | -48.24                      | 59.46                | 74                | -      | - | - | - | - |
| Azimuth: 324 Height:121 Horz |                  |                              |                             | Margin (dB):         | -14.54            | -      | - | - | - | - |
| 8.1756                       | 68.83dBuV Av     | 36.3                         | -48.25                      | 30.86*               | -                 | 54     | - | - | - | - |
| Azimuth: 324 Height:121 Horz |                  |                              |                             | Margin (dB):         | -                 | -23.14 | - | - | - | - |
| 8.1758                       | 71.19dBuV Pk     | 36.3                         | -48.24                      | 59.25                | 74                | -      | - | - | - | - |
| Azimuth: 64 Height:105 Vert  |                  |                              |                             | Margin (dB):         | -14.75            | -      | - | - | - | - |
| 8.1757                       | 68.82dBuV Av     | 36.3                         | -48.25                      | 30.85*               | -                 | 54     | - | - | - | - |
| Azimuth: 64 Height:105 Vert  |                  |                              |                             | Margin (dB):         | -                 | -23.15 | - | - | - | - |

LIMIT 1: 47 CFR Part 15 PK  
LIMIT 2: 47 CFR Part 15 AV

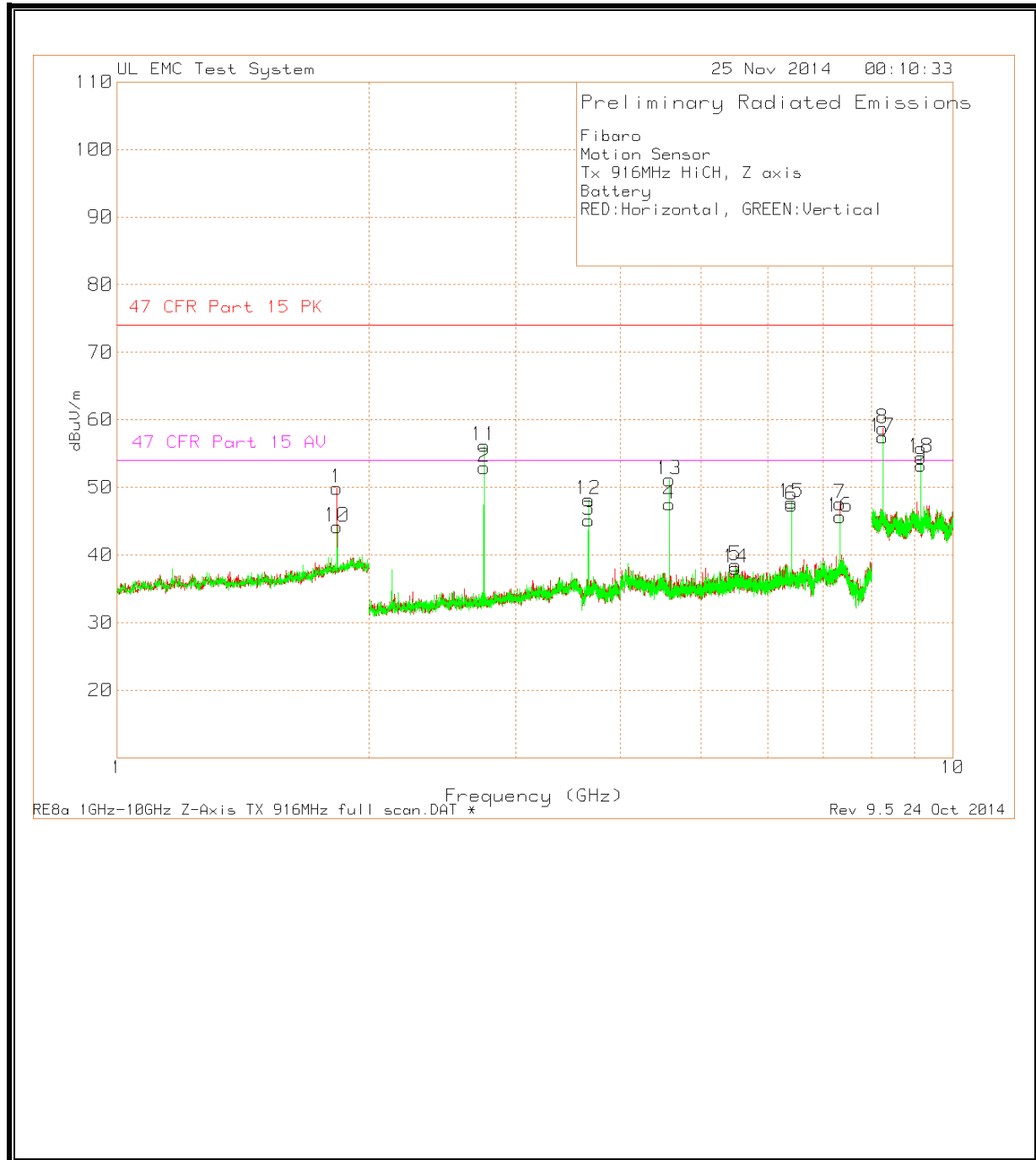
Pk - Peak detector  
Av - Average detection  
\* Duty Cycle relaxation included



Fibaro  
Motion Sensor  
Tx 908.42MHz MidCH, Z axis  
Battery  
RED:Horizontal, GREEN:Vertical

| Radiated Emission Data       |                  | Transducer<br>Factor<br>(dB) | Gain/Loss<br>Factor<br>(dB) | Corrected<br>Reading dBuV/m | Limit:1 | 2      | 3 | 4 | 5 | 6 |
|------------------------------|------------------|------------------------------|-----------------------------|-----------------------------|---------|--------|---|---|---|---|
| Test<br>Frequency<br>(GHz)   | Meter<br>Reading |                              |                             |                             |         |        |   |   |   |   |
| =====                        |                  |                              |                             |                             |         |        |   |   |   |   |
| =                            |                  |                              |                             |                             |         |        |   |   |   |   |
| 2 - 4GHz 2 - 4MHz            |                  |                              |                             |                             |         |        |   |   |   |   |
| 2.7252                       | 85.1dBuV Pk      | 22.1                         | -51.33                      | 55.87                       | 74      | -      | - | - | - | - |
| Azimuth: 360 Height:108 Horz |                  |                              |                             | Margin (dB):                | -18.13  | -      | - | - | - | - |
| 2.7253                       | 84.91dBuV Av     | 22.1                         | -51.33                      | 29.66*                      | -       | 54     | - | - | - | - |
| Azimuth: 360 Height:108 Horz |                  |                              |                             | Margin (dB):                | -       | -24.34 | - | - | - | - |
| 2.7252                       | 84.12dBuV Pk     | 22.1                         | -51.33                      | 54.89                       | 74      | -      | - | - | - | - |
| Azimuth: 0 Height:113 Vert   |                  |                              |                             | Margin (dB):                | -19.11  | -      | - | - | - | - |
| 2.7253                       | 83.97dBuV Av     | 22.1                         | -51.33                      | 28.72*                      | -       | 54     | - | - | - | - |
| Azimuth: 0 Height:113 Vert   |                  |                              |                             | Margin (dB):                | -       | -25.28 | - | - | - | - |
| 3.6337                       | 77.01dBuV Pk     | 23.3                         | -50.39                      | 49.92                       | 74      | -      | - | - | - | - |
| Azimuth: 258 Height:101 Horz |                  |                              |                             | Margin (dB):                | -24.08  | -      | - | - | - | - |
| 3.6337                       | 75.34dBuV Av     | 23.3                         | -50.39                      | 22.23*                      | -       | 54     | - | - | - | - |
| Azimuth: 258 Height:101 Horz |                  |                              |                             | Margin (dB):                | -       | -31.77 | - | - | - | - |
| 3.6338                       | 82.55dBuV Pk     | 23.3                         | -50.38                      | 55.47                       | 74      | -      | - | - | - | - |
| Azimuth: 149 Height:109 Vert |                  |                              |                             | Margin (dB):                | -18.53  | -      | - | - | - | - |
| 3.6337                       | 81.6dBuV Av      | 23.3                         | -50.39                      | 28.49*                      | -       | 54     | - | - | - | - |
| Azimuth: 149 Height:109 Vert |                  |                              |                             | Margin (dB):                | -       | -25.51 | - | - | - | - |
| 4 - 8GHz 4 - 8MHz            |                  |                              |                             |                             |         |        |   |   |   |   |
| 7.2673                       | 70.99dBuV Pk     | 30.2                         | -46.12                      | 55.07                       | 74      | -      | - | - | - | - |
| Azimuth: 322 Height:101 Horz |                  |                              |                             | Margin (dB):                | -18.93  | -      | - | - | - | - |
| 7.2674                       | 68.62dBuV Av     | 30.2                         | -46.12                      | 26.68*                      | -       | 54     | - | - | - | - |
| Azimuth: 322 Height:101 Horz |                  |                              |                             | Margin (dB):                | -       | -27.32 | - | - | - | - |
| 7.2671                       | 68.88dBuV Pk     | 30.2                         | -46.13                      | 52.95                       | 74      | -      | - | - | - | - |
| Azimuth: 21 Height:104 Vert  |                  |                              |                             | Margin (dB):                | -21.05  | -      | - | - | - | - |
| 7.2674                       | 66.27dBuV Av     | 30.2                         | -46.12                      | 24.33*                      | -       | 54     | - | - | - | - |
| Azimuth: 21 Height:104 Vert  |                  |                              |                             | Margin (dB):                | -       | -29.67 | - | - | - | - |
| 8 - 12GHz 8 - 10MHz          |                  |                              |                             |                             |         |        |   |   |   |   |
| 9.0842                       | 71.79dBuV Pk     | 36.2                         | -49.36                      | 58.63                       | 74      | -      | - | - | - | - |
| Azimuth: 314 Height:111 Horz |                  |                              |                             | Margin (dB):                | -15.37  | -      | - | - | - | - |
| 9.0842                       | 70.6dBuV Av      | 36.2                         | -49.36                      | 31.42*                      | -       | 54     | - | - | - | - |
| Azimuth: 314 Height:111 Horz |                  |                              |                             | Margin (dB):                | -       | -22.58 | - | - | - | - |
| 9.0843                       | 67dBuV Pk        | 36.2                         | -49.36                      | 53.84                       | 74      | -      | - | - | - | - |
| Azimuth: 31 Height:104 Vert  |                  |                              |                             | Margin (dB):                | -20.16  | -      | - | - | - | - |
| 9.0842                       | 65.48dBuV Av     | 36.2                         | -49.36                      | 26.3*                       | -       | 54     | - | - | - | - |
| Azimuth: 31 Height:104 Vert  |                  |                              |                             | Margin (dB):                | -       | -27.7  | - | - | - | - |
| 8.1759                       | 68.45dBuV Pk     | 36.3                         | -48.23                      | 56.52                       | 74      | -      | - | - | - | - |
| Azimuth: 318 Height:101 Horz |                  |                              |                             | Margin (dB):                | -17.48  | -      | - | - | - | - |
| 8.1758                       | 63.62dBuV Av     | 36.3                         | -48.24                      | 25.66*                      | -       | 54     | - | - | - | - |
| Azimuth: 318 Height:101 Horz |                  |                              |                             | Margin (dB):                | -       | -28.34 | - | - | - | - |
| 8.1755                       | 68.16dBuV Pk     | 36.3                         | -48.25                      | 56.21                       | 74      | -      | - | - | - | - |
| Azimuth: 68 Height:105 Vert  |                  |                              |                             | Margin (dB):                | -17.79  | -      | - | - | - | - |
| 8.1757                       | 63.3dBuV Av      | 36.3                         | -48.24                      | 25.34*                      | -       | 54     | - | - | - | - |
| Azimuth: 68 Height:105 Vert  |                  |                              |                             | Margin (dB):                | -       | -28.66 | - | - | - | - |

LIMIT 1: 47 CFR Part 15 PK  
LIMIT 2: 47 CFR Part 15 AV  
Pk - Peak detector  
Av - Average detection  
\* Duty Cycle relaxation included



Fibaro  
Motion Sensor  
Tx 916MHz HiCH, Z axis  
Battery  
RED:Horizontal, GREEN:Vertical

| Radiated Emission Data |                 |            |           |              |         |        |   |   |   |   |   |
|------------------------|-----------------|------------|-----------|--------------|---------|--------|---|---|---|---|---|
| Test                   | Meter           | Transducer | Gain/Loss | Corrected    | Limit:1 | 2      | 3 | 4 | 5 | 6 |   |
| Frequency              | Reading         | Factor     | Factor    | Reading      | dBuV/m  |        |   |   |   |   |   |
| (GHz)                  |                 | (dB)       | (dB)      |              |         |        |   |   |   |   |   |
| =====                  |                 |            |           |              |         |        |   |   |   |   |   |
| =                      |                 |            |           |              |         |        |   |   |   |   |   |
| 2 - 4GHz 2 - 4MHz      |                 |            |           |              |         |        |   |   |   |   |   |
| 2.7479                 | 83.47dBuV Pk    | 22.1       | -51.24    | 54.33        | 74      | -      | - | - | - | - | - |
| Azimuth: 360           | Height:108 Horz |            |           | Margin (dB): | -19.67  | -      | - | - | - | - | - |
| 2.748                  | 82.8dBuV Av     | 22.1       | -51.24    | 27.64*       | -       | 54     | - | - | - | - | - |
| Azimuth: 360           | Height:108 Horz |            |           | Margin (dB): | -       | -26.36 | - | - | - | - | - |
| 2.748                  | 86.69dBuV Pk    | 22.1       | -51.24    | 57.55        | 74      | -      | - | - | - | - | - |
| Azimuth: 0             | Height:113 Vert |            |           | Margin (dB): | -16.45  | -      | - | - | - | - | - |
| 2.748                  | 86.34dBuV Av    | 22.1       | -51.24    | 31.18*       | -       | 54     | - | - | - | - | - |
| Azimuth: 0             | Height:113 Vert |            |           | Margin (dB): | -       | -22.82 | - | - | - | - | - |
| 8 - 12GHz 8 - 10MHz    |                 |            |           |              |         |        |   |   |   |   |   |
| 8.2438                 | 71.25dBuV Pk    | 36.4       | -47.02    | 60.63        | 74      | -      | - | - | - | - | - |
| Azimuth: 315           | Height:121 Horz |            |           | Margin (dB): | -13.37  | -      | - | - | - | - | - |
| 8.2441                 | 68.71dBuV Av    | 36.4       | -47.03    | 32.06*       | -       | 54     | - | - | - | - | - |
| Azimuth: 315           | Height:121 Horz |            |           | Margin (dB): | -       | -21.94 | - | - | - | - | - |
| 8.2441                 | 70.89dBuV Pk    | 36.4       | -47.03    | 60.26        | 74      | -      | - | - | - | - | - |
| Azimuth: 57            | Height:113 Vert |            |           | Margin (dB): | -13.74  | -      | - | - | - | - | - |
| 8.2441                 | 68.28dBuV Av    | 36.4       | -47.03    | 31.63*       | -       | 54     | - | - | - | - | - |
| Azimuth: 57            | Height:113 Vert |            |           | Margin (dB): | -       | -22.37 | - | - | - | - | - |
| 9.1601                 | 71.21dBuV Pk    | 36.3       | -49.71    | 57.8         | 74      | -      | - | - | - | - | - |
| Azimuth: 302           | Height:131 Horz |            |           | Margin (dB): | -16.2   | -      | - | - | - | - | - |
| 9.1601                 | 68.09dBuV Av    | 36.3       | -49.71    | 28.66*       | -       | 54     | - | - | - | - | - |
| Azimuth: 302           | Height:131 Horz |            |           | Margin (dB): | -       | -25.34 | - | - | - | - | - |
| 9.1599                 | 69.41dBuV Pk    | 36.3       | -49.71    | 56           | 74      | -      | - | - | - | - | - |
| Azimuth: 39            | Height:110 Vert |            |           | Margin (dB): | -18     | -      | - | - | - | - | - |
| 9.1601                 | 65.11dBuV Av    | 36.3       | -49.71    | 25.68*       | -       | 54     | - | - | - | - | - |
| Azimuth: 39            | Height:110 Vert |            |           | Margin (dB): | -       | -28.32 | - | - | - | - | - |

LIMIT 1: 47 CFR Part 15 PK  
LIMIT 2: 47 CFR Part 15 AV

Pk - Peak detector  
Av - Average detection  
\* Duty Cycle relaxation included

### 7.2.3. WORST-CASE BELOW 1 GHz

#### SPURIOUS EMISSIONS 30 TO 1000 MHz

