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MEMBER ACIL


FCC/IC Test Report
on

Polhemus G4 Hub RF Transceiver
Model: G4

| | |
|---|---|
| **Customer Name:** | Alken, Inc. dba Polhemus |
| **Customer P.O:** | 10320 |
| **Date of Report:** | December 23, 2010 |
| **Test Report No:** | R-5306N-4, Rev. A |
| **Test Start Date:** | May 12, 2010 |
| **Test Finish Date:** | December 22, 2010 |
| **Test Technician:** | M. Seamans |
| **Laboratory Supervisor:** | T. Hannemann |
| **Branch Manager:** | S. Wentworth |
| **Report Prepared By:** | J. Ramsey |

## Technical Information

| Applicant | | Manufacturer | |
|---|---|---|---|
| Name: | Alken, Inc. dba Polhemus | Name: | Polhemus |
| Address: | 40 Hercules Drive | Address: | 40 Hercules Drive |
| City, State, Zip: | Colchester, VT 05445 | City, State, Zip: | Colchester, VT 05445 |
| Date of Report: | November 30, 2010 | | |

**Test Specification**:

FCC Rules and Regulations Part 15, Subpart C, Para. 15.247

Radio Standards Specification, RSS-210, Issue 7, June, 2007 and RSS-GEN, Issue 2, June 2007

**Test Procedure**: ANSI C63.4:2003, FCC Public Notice DA 00-705

## Test Sample Description

TEST SAMPLE: G4 Hub RF Transceiver

BRANDNAME: Polhemus

MODEL(s): G4

FCC ID: YJUG4HUB01

IC: 9183A-G4HUB01

TYPE: 2.4 GHz Frequency Hopping Spread Spectrum Transmitter

POWER REQUIREMENTS: 1.5 VDC via internal battery

FREQUENCY BAND OF OPERATION: 2400 to 2483.5 MHz

ANTENNA: Integral PCB Trace Antenna with Gain of 0 dBi

**Support Equipment**

| Description | Manufacturer | Model Number | Serial Number |
|---|---|---|---|
| Netbook PC | Acer | NAV50 | LUSALOD2760080E9FD1601 |

## Tests Required/Performed

| FCC Part 15, Subpart C | Industry Canada RSS-210 Issue 7, June 2007 | Test Method | Test Results |
|---|---|---|---|
| 15.247(a)(1) | A8.1(b) | Channel Separation | Complied |
| 15.247(a)(1) | A8.1(a) | 20 dB Bandwidth | Complied |
| 15.247(a)(1) (iii) | A8.1 (d) | Number of Hopping Channels and Time of Occupancy | Complied |
| 15.247(b)(1) | A8.4 (2) | Peak Conducted Output Power | Complied |
| 15.247 (d) | A8.5 | Out Of Band Conducted Spurious/Band Edge Emissions | Complied |
| 15.247(d) | A8.5 | Restricted Band/Band Edge Transmitter Radiated Emissions | Complied |
| 15.207 | RSS GEN 7.2.2 | Conducted Emissions, 150 kHz to 30 MHz | Not Applicable – The EUT is battery powered |
| N/A | RSS GEN 7.2.3/4.10 | Receiver Spurious Emissions | Complied |

### General Test Requirements

1. The measurement procedures of ANSI C63.4:2003 were utilized as specified in FCC Part 15, Subpart C, Section 15.31(a)(3) and IC RSS-GEN Section 4.1.
2. All radiated emissions measurements were performed on an Open Area Test Site (OATS), listed with the FCC and IC, in accordance with FCC Section 15.31(d) and IC Section 4.2.
3. All measurements were performed at the specified 3 meter test distance as required by FCC Section 15.31(f) and IC Section 7.25.
4. The EUT was rotated throughout 360 degrees for all radiated emissions measurements as specified in FCC Section 15.31(f)(5) and IC Section 4.3(h).
5. All readily accessible EUT controls were adjusted in such a manner as to maximize the level of emissions in accordance with FCC Section 15.31(g) and IC Section 4.3(h).
6. Appropriate accessories were attached to all EUT ports during the performance of radiated emissions measurements as required by FCC Section 15.31(i) and IC Section 4.3(d).
7. The EUT operated over the frequency range of 2400 MHz to 2483.5 MHz. Testing was performed with the device operating at 3 frequencies, 1 at the top, 1 in the middle and 1 at the bottom of the range of operation in accordance with FCC Section 15.31(m) and IC Section 4.3(f)(g).
8. The frequency spectrum was investigated from the lowest frequency generated in the device up to the $10^{th}$ harmonic of the highest fundamental frequency in accordance with FCC Section 15.33(a)(1) and IC Section 4.9.

## Certification and Signatures

We certify that this report is a true representation of the results obtained from the tests of the equipment stated. We further certify that the measurements shown in this report were made in accordance with the procedures indicated and vouch for the qualifications of all Retlif Testing Laboratories personnel taking them.

Scott Wentworth
Branch Manager
NVLAP Approved Signatory

Todd Hannemann
Laboratory Supervisor
NARTE Certified: ATL-0255-T

**Non-Warranty Provision**
The testing services have been performed, findings obtained and reports prepared in accordance with generally accepted laboratory principles and practices. This warranty is in lieu of all others, either expressed or implied.

**Non-Endorsement**
This test report contains only findings and results arrived at after employing the specific test procedures and standards listed herein. It is not intended to constitute a recommendation, endorsement or certification of the product or material tested. This test report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

## Revision History

Revisions to this document are listed below; the latest revised document supersedes all previous issues of this document.

| Revision | Date | Pages Affected |
|---|---|---|
| - | November 29, 2010 | Original Release |
| A | December 23, 2010 | All |

## Requirements and Test Results

**Requirement:**
**FCC Section 15.247 (a)(1)**
**Channel Separation and 20 dB Bandwidth**
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

**IC Section A8.1(b)**
**Frequency Hopping Systems**
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 0.125 W. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

- Results:
  The maximum 20 dB bandwidth of the hopping channel was 1.2 MHz. The carrier frequencies were separated by 4.005 MHz which exceeds the 20 dB bandwidth and complies with the requirements specified above.

**Requirements and Test Results (con't)**

**FCC Section 15.247 (a)(1)(iii)/IC RSS-210, Section A8.1(d)**
**Number of Channels and Occupancy Time**

Frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

- Results

  The frequency hopping system uses 20 Channels. The average time of occupancy did not exceed 0.4 seconds in an 8 second period which meets the above requirements.

**Requirements and Test Results (con't)**

**FCC Section 15.247 (b)(1) and (4)**
**Peak Conducted Output Power**
(1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

(4) The conducted output power limit specified in Paragraph (b) of Section 15.247 is based on the use of antenna with directional gains that do not exceed 6 dBi. Except as shown in Paragraph (c) of Section 15.247, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in Paragraph (b)(1), (b)(2) and (b)(3) of Section 15.247, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**IC Section A8.4(2)**
**Transmitter Output Power and e.i.r.p. Requirements**
For frequency hopping systems operating in the band 2400-2483.5 MHz employing at least 75 hopping channels, the maximum peak conducted output power shall not exceed 1 W; for all other frequency hopping systems in the band, the maximum peak conducted output power shall not exceed 0.125 W. Except as provided in Section A8.4(5) of RSS-210, the e.i.r.p. shall not exceed 4 W.

- Results
  The maximum peak conducted output power of the frequency hopping system was measured to be -0.28 dBm (1.06 milliwatts) which meets the 0.125 W conducted power limit. The frequency hopping system utilizes a transmitting antenna with a directional gain of 0 dBi. Therefore the frequency hopping system also meets the specifed e.i.r.p requirements.

**Requirements and Test Results (con't)**

**FCC Section 15.247 (d)**
**Spurious Emissions**
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under Paragraph (b)(3) of Section 15.247, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

**IC Section A8.5**
**Out-of-Band Emissions**
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under Section A8.4(4) of RSS-210, the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 of RSS-210 is not required.

- Results
  The antenna conducted spurious emissions complied with the above requirement.

**Requirements and Test Results (con't)**

**FCC Section 15.247 (d)**
**Field Strength of Transmitter Spurious Radiation**

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

**FCC Section 15.209(a)**
**Radiated Emission Limits, General Requirements**
Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in Table 2.

**IC RSS-210, 2.9(b)**
**General Field Strength Limits**
Table 2 shows the general field strength limits of unwanted emissions, where applicable, for transmitters operating in accordance with the provisions specified in this RSS.

Table 1 - Radiated Emission Limits

| Frequency of Emission (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 30 to 88 | 100 | 3 |
| 88 to 216 | 150 | 3 |
| 216 to 960 | 200 | 3 |
| Above 960 | 500 | 3 |

- Results:
  No radiated harmonic or spurious emissions were observed in any restricted band of operation and radiated emissions from the EUT complied with the limits specified in Table 1. Compliance at the band edges was verified.

**Requirements and Test Results (con't)**

Field Strength Measurement & Calculation:

The following spectrum analyzer settings were used:

RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f ≤ 1 GHz

VBW ≥ RBW

Detector Function = Peak

Trace = Max Hold

Sweep = Auto

The maximized peak field strength of the emission was calculated as follows.

$P_C = M_R + C_F$

Where:
$P_C$ = Corrected Peak Reading in dBµV/m
$M_R$ = Uncorrected Meter Reading in dBµV
$C_F$ = Correction Factor in dB (Pre-Amp + Antenna Factor + Cable Loss)

The average field strength of the emission was obtained as follows:

All instrument settings were as specified above but with the VBW reduced to 10 Hz. The corrected peak reading was then compared to the average limit specified in 15.209. If the dwell time per channel of the hopping frequency was less than 100 msec, then the reading obtained with the 10 Hz VBW was further adjusted by a duty cycle correction factor derived from 20log (dwell time/100 msec).

$A_F = P_C - D_F$

Where:

$A_F$ = Average Field Strength in dBµV/m
$P_C$= Corrected Peak Reading in dBµV/m
$D_F$ = Duty Cycle Factor in dB (if applicable)

**Requirements and Test Results (con't)**

**Requirement:**

**FCC Section 15.207(a) - Conducted Limits**

**The EUT is battery powered - Not Applicable**

**IC RSS-GEN, Section 7.2.2:**
**Transmitter and Receiver AC Power Lines Conducted Emission Limits**

**The EUT is battery powered - Not Applicable**

**RSS-Gen , 4.10/7.2.3**
**Receiver Spurious Emissions**

**Receiver Spurious Radiated Emission Limits, General Requirements**
The radiated spurious emissions from a receiver shall not exceed the field strength levels specified in Table 2. The receiver shall be operated in the normal receive mode near the mid point of the band.

**RSS-Gen, 6.0(a)**
**General Field Strength Limits**

Table 2 shows the general field strength limits of spurious emissions for receivers,

Table 2 - Radiated Emission Limits

| Frequency of Emission (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 30 to 88 | 100 | 3 |
| 88 to 216 | 150 | 3 |
| 216 to 960 | 200 | 3 |
| Above 960 | 500 | 3 |

- Results:
  No receiver spurious emissions were observed and EUT complied with the limits specified in Table 2.

## Requirements and Test Results (con't)

**15.247 (i)** RF Exposure

Spread Spectrum Transmitters operating under 15.247 are categorically excluded from routine environmental evaluation for demonstrating RF exposure compliance with respect to MPE or SAR limits however per 15.247(i) must be operated in a manner that ensures the public is not exposed to RF energy levels in access of the commission's guidelines. The user/installation manual contains the proper cautionary statements and specifies that the device be installed and operated so that a minimum separation distance of 20m will maintained Based on the transmitter power and maximum antenna gain (see calculation below) the 20cm separation distance exceeds the calculated distance for acceptable MPE power density levels to meet both the Occupational/Controlled Exposure and the General Population/Uncontrolled Exposure requirements of 1.1310. The calculation below uses the more stringent General Population MPE Limits.

$$S = \frac{PG}{4Dsq}$$

D = Minimum Separation Distance in cm

S = Max allowed Power Density in mW/cmsq

Per 1.1310 For Frequency of 2400MHz = 1mW/cmsq

Power = Max Power Input to Antenna = 1.06 mW

Gain = Max Power Gain of Antenna = 0dBi = 1 numeric

$$1\text{mW/cmsq} = \frac{1.06 \times 1}{4\ (3.14) \times Dsq} = \frac{1.0600000}{12.56 \times Dsq}$$

$$Dsq = \frac{1.06}{12.56 \times 1} = 0.0844$$

D = sq. root 0.0844 = 0.291cm

**RSS 102** RF Exposure

Per RSS-102, Section 2.5 transmitters operating in the 2.2 GHz to 3GHz range are exempt from routine SAR and RF Exposure evaluation provided that the output power is less than or equal to 20 mW for general public use and 100 mW for controlled use and the maximum e.i.r.p is less than or equal to 5 W. The EUT operates above 1.5GHz with a maximum ouput power less than 20 mW and a maximum e.i.r.p. of less than 5W.

# Equipment List

## FCC Section 15.247(a)(1) / IC Section A8.1(b)
## Channel Separation

| EN | Manufacturer | Description | Range | Model No. | Cal Date | Due Date |
|---|---|---|---|---|---|---|
| 3130 | NARDA | 20DB ATTENUATOR | DC - 18 GHz | 768-20 | 1/11/2010 | 1/11/2011 |
| 4895 | AGILENT / HP | SPECTRUM ANALYZER | 9kHz – 22GHz | 8593EM | 12/29/2009 | 12/29/2010 |

## FCC Section 15.247(a)(1) / IC Section A8.1(b)
## 20 dB Bandwidth

| EN | Manufacturer | Description | Range | Model No. | Cal Date | Due Date |
|---|---|---|---|---|---|---|
| 3130 | NARDA | 20DB ATTENUATOR | DC - 18 GHz | 768-20 | 1/11/2010 | 1/11/201 |
| 4895 | AGILENT / HP | SPECTRUM ANALYZER | 9kHz – 22GHz | 8593EM | 12/29/2009 | 12/29/2010 |

## FCC Section 15.247 (a)(1)(iii) / IC Section A8.1(d)
## Number of Channels and Occupancy Time

| EN | Manufacturer | Description | Range | Model No. | Cal Date | Due Date |
|---|---|---|---|---|---|---|
| 3130 | NARDA | 20DB ATTENUATOR | DC - 18 GHz | 768-20 | 1/11/2010 | 1/11/201 |
| 4895 | AGILENT / HP | SPECTRUM ANALYZER | 9kHz – 22GHz | 8593EM | 12/29/2009 | 12/29/2010 |

## FCC Section 15.247 (a)(1) / IC Section A8.4(2)
## Peak Conducted Output Power

| EN | Manufacturer | Description | Range | Model No. | Cal Date | Due Date |
|---|---|---|---|---|---|---|
| 3130 | NARDA | 20DB ATTENUATOR | DC - 18 GHz | 768-20 | 1/11/2010 | 1/11/201 |
| 4895 | AGILENT / HP | SPECTRUM ANALYZER | 9kHz – 22GHz | 8593EM | 12/29/2009 | 12/29/2010 |

## FCC Section 15.247 (d)/ IC Section A8.5
## Out of Band / Band Edge Conducted Spurious Emissions

| EN | Manufacturer | Description | Range | Model No. | Cal Date | Due Date |
|---|---|---|---|---|---|---|
| 3130 | NARDA | 20DB ATTENUATOR | DC - 18 GHz | 768-20 | 1/11/2010 | 1/11/2011 |
| R425B | AGILENT / HP | SPECTRUM ANALYZER | 100 Hz - 26.5 GHz | E7405A;A | 5/11/2009 | 6/11/2010 |

# FCC Section 15.247 (d)/ RSS GEN 7.2.3

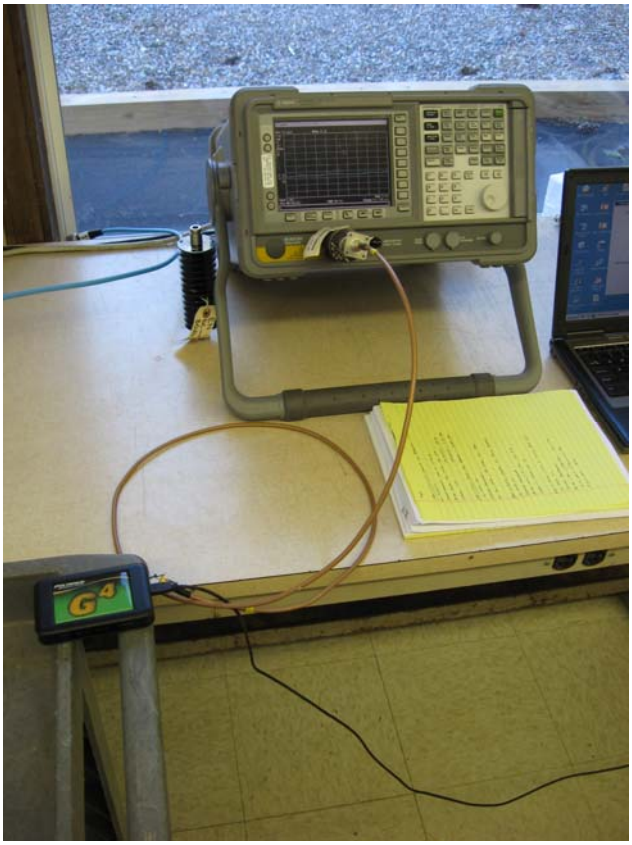
## Field Strength of Transmitter Spurious Radiation/Receiver Spurious Emissions

| EN | Manufacturer | Description | Range | Model No. | Cal Date | Due Date |
|---|---|---|---|---|---|---|
| 1034 | AGILENT / HP | SIGNAL GENERATOR | 10 MHz - 20 GHz | 8341B | 6/26/2009 | 6/26/2010 |
| 3001 | EMPIRE DEVICES | TUNED DIPOLE ANTENNA | 200 MHz - 400 MHz | T2 | 12/3/2007 | 12/3/2010 |
| 3117 | BK PRECISION | DC POWER SUPPLY | 0-30 Vdc, 3.0 A | 1630 | Calibrate Before Use | |
| 3430 | MCS | HORN ANTENNA | 18 GHz - 26.5 GHz | K-5039 | 1/14/2010 | 1/14/2011 |
| 4003 | TENSOR | DOUBLE RIDGE GUIDE | 1 - 18 GHz | 4015 | 3/9/2010 | 3/9/2011 |
| 4029 | RETLIF | OPEN AREA TEST SITE | 3 / 10 Meters | RNH | Inspect Before Use | |
| 4029B | RETLIF | TEST SITE ATTENUATION | 3 / 10 Meters | RNH | 6/25/2009 | 6/25/2010 |
| 4984A | MICROLAB / FXR | HIGH GAIN HORN | 1.0 - 1.7 GHz | L638A | 1/14/2010 | 1/14/2011 |
| 4984B | MICROLAB / FXR | HIGH GAIN HORN | 1.7 - 2.6 GHz | R638A | 1/14/2010 | 1/14/2011 |
| 4984C | MICROLAB / FXR | HIGH GAIN HORN | 2.6 - 3.95 GHz | S638A | 1/14/2010 | 1/14/2011 |
| 4984D | MICROLAB / FXR | HIGH GAIN HORN | 3.95 - 5.85 GHz | H638A | 1/14/2010 | 1/14/2011 |
| 4984E | MICROLAB / FXR | HIGH GAIN HORN | 5.8 - 8.2 GHz | C638A | 1/14/2010 | 1/14/2011 |
| 4984F | MICROLAB / FXR | HIGH GAIN HORN | 8.2 - 12.4 GHz | X638A | 1/14/2010 | 1/14/2011 |
| 4984G | MICROLAB / FXR | HIGH GAIN HORN | 12.4 GHz - 18 GHz | Y638A | 1/14/2010 | 1/14/2011 |
| 5072 | MITEQ | PRE-AMPLIFIER | 18 GHz-40 GHz | JS4-18004000-30 | 12/11/2009 | 12/11/2010 |
| 530A | MARCONI | SIGNAL GENERATOR | 10 kHz - 1.2 GHz | 2023 | 8/19/2009 | 8/19/2010 |
| 8165 | EMCO | BICONILOG | 26 - 2000 MHz | 3142 | 11/12/2009 | 11/12/2010 |
| R425B | AGILENT / HP | SPECTRUM ANALYZER | 100 Hz - 26.5 GHz | E7405A;A | 5/11/2009 | 6/11/2010 |

## Radiated Band Edge Emissions

| EN | Manufacturer | Description | Range | Model No. | Cal Date | Due Date |
|---|---|---|---|---|---|---|
| 3258 | EMCO | DOUBLE RIDGE GUIDE | 1 - 18 GHz | 3115 | 1/14/2010 | 1/14/2011 |
| 4029 | RETLIF | OPEN AREA TEST SITE | 3 / 10 Meters | RNH | 8/21/2009 | 8/21/2012 |
| 4029B | RETLIF | TEST SITE ATTENUATION | 3 / 10 Meters | RNH | 6/25/2009 | 12/25/2010 |
| 5070 | ROHDE & SCHWARZ | EMI TEST RECEIVER | 20 Hz - 40 GHz | ESIB40 | 1/14/2009 | 3/14/2011 |
| 5070F | MICRO-COAX | COAXIAL CABLE | 10 kHz - 18 GHz | UFB311A2-0720-50U50U | 1/5/2010 | 1/5/2011 |

**FCC Section 15.247(a)(1) / IC Section A8.1(b)**
**Channel Separation**
**Test Photographs**



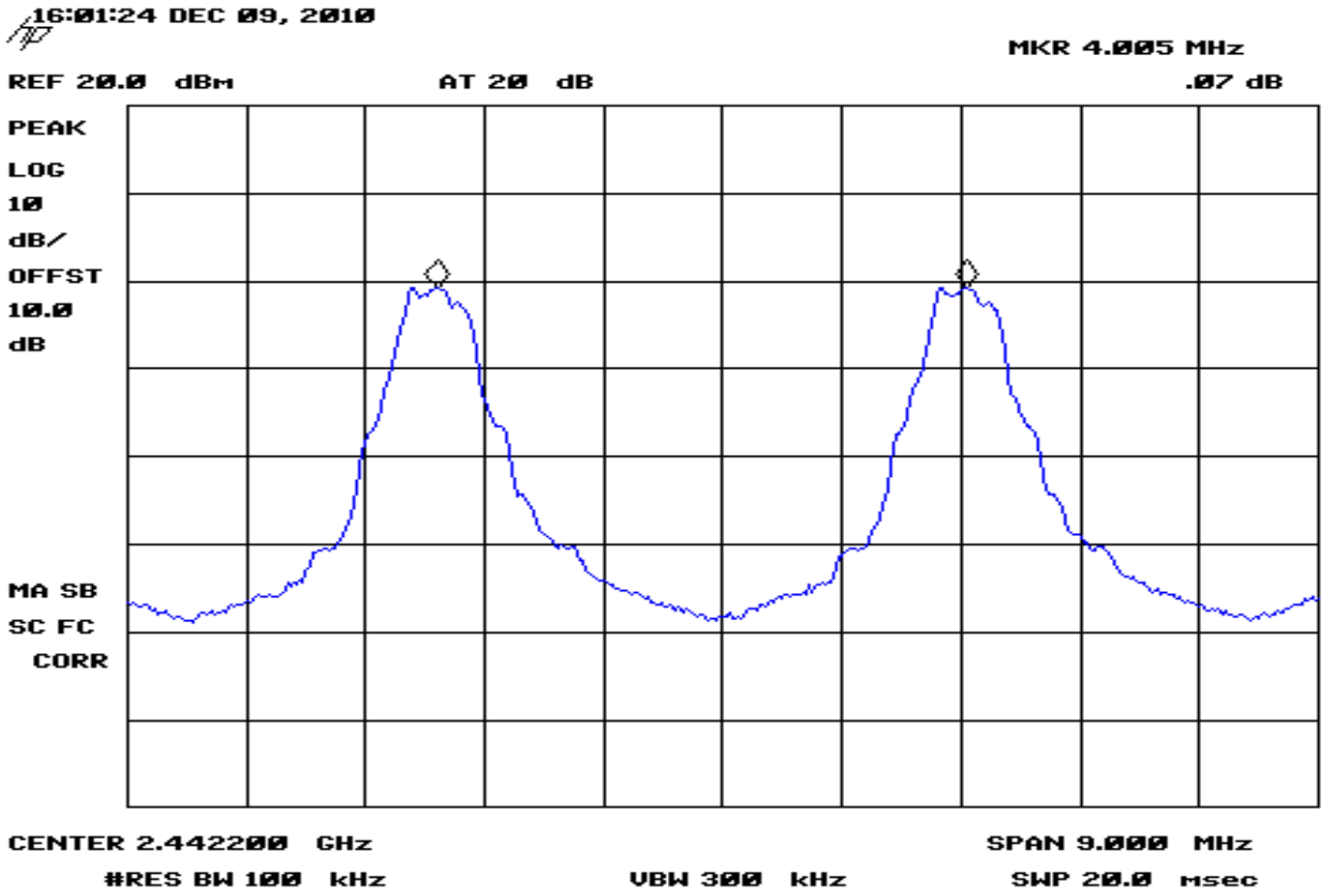
Test Setup

**FCC Section 15.247(a)(1) / IC Section A8.1(b)**
**Channel Separation**
**Test Data**

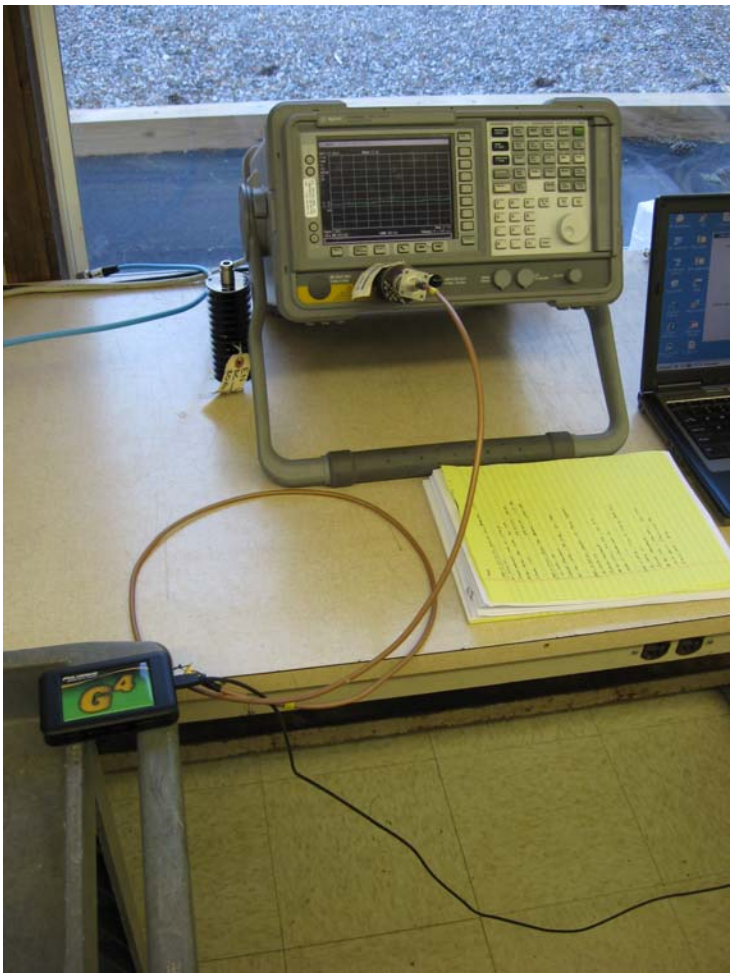
# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **Carrier Frequency Separation** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(a)(1) | | **Date:** | 12/9/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | Frequency Tested: Frequency Hopping 2402.0-2483.5 MHz; Frequency Separation: 4.0050 MHz | | | | |



**FCC Section 15.247(a)(1) / IC Section A8.1(a)**
**20 dB Bandwidth**
**Test Photographs**



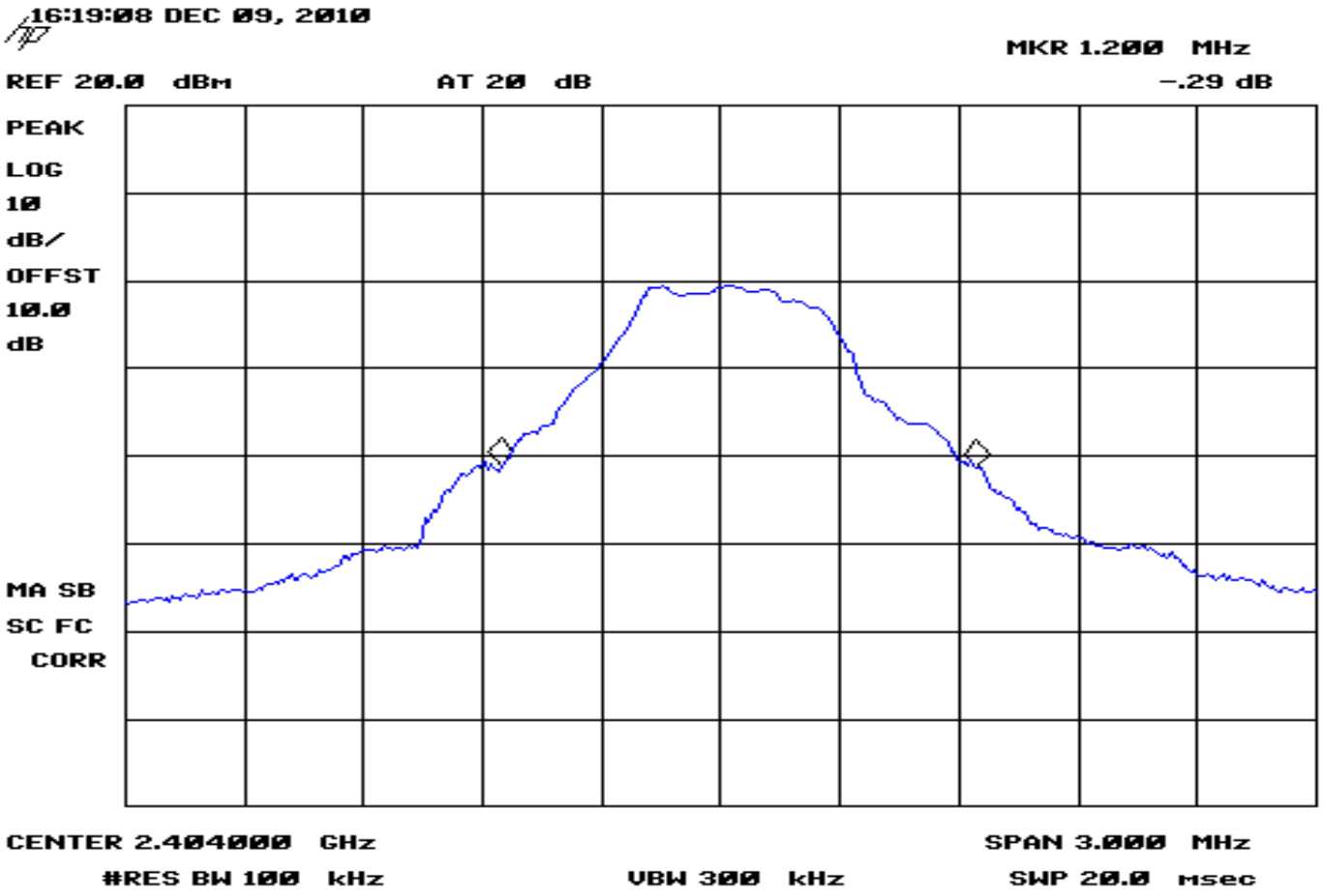

Test Setup

**FCC Section 15.247(a)(1) / IC Section A8.1(a)**
**20 dB Bandwidth**
**Test Data**

# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

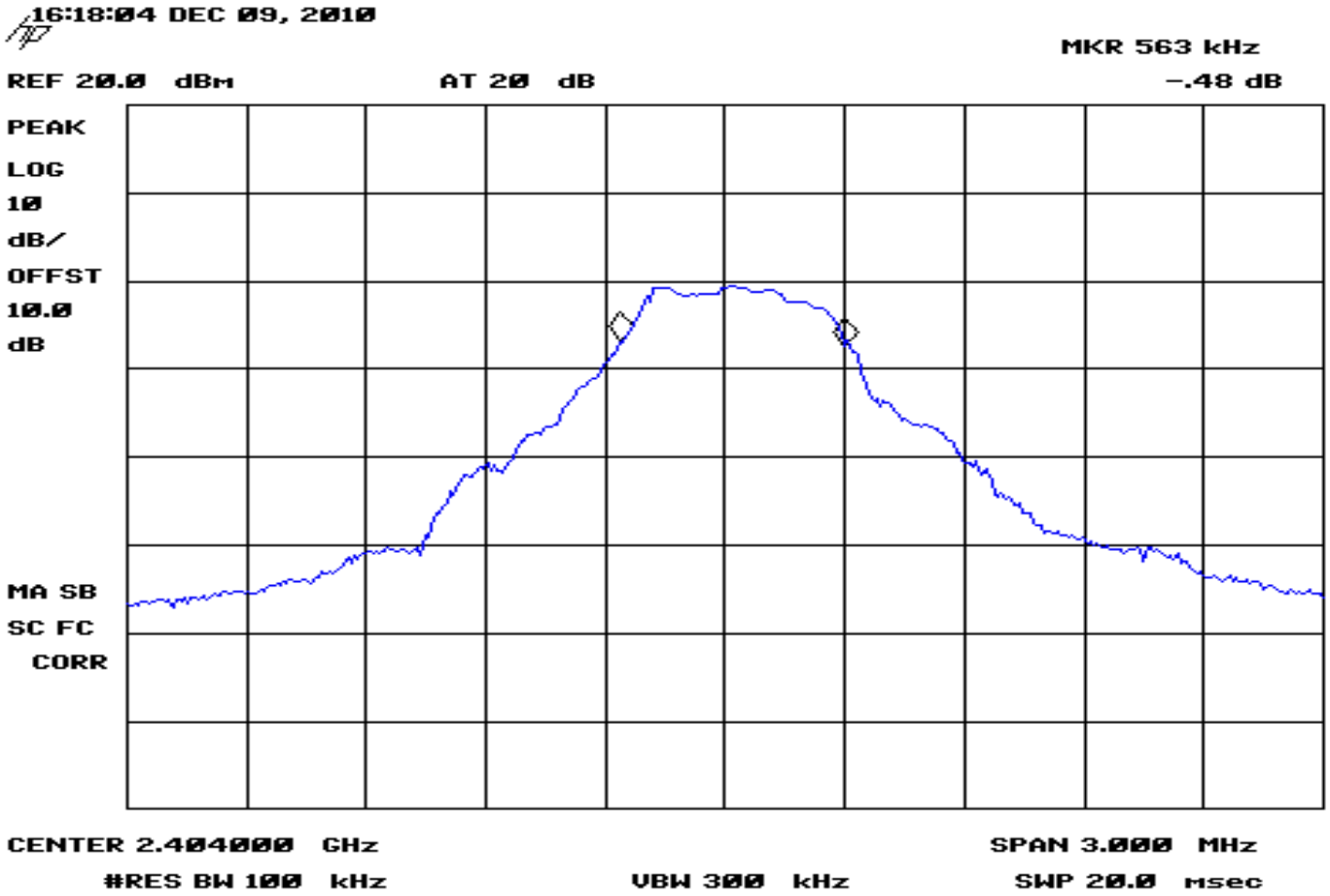
| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **20 dB Bandwidth** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(a)(1)(i) | | **Date:** | 12/9/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | Frequency Tested: 2.40400 GHz 20dB Bandwidth: 1.20 MHz | | | | |



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

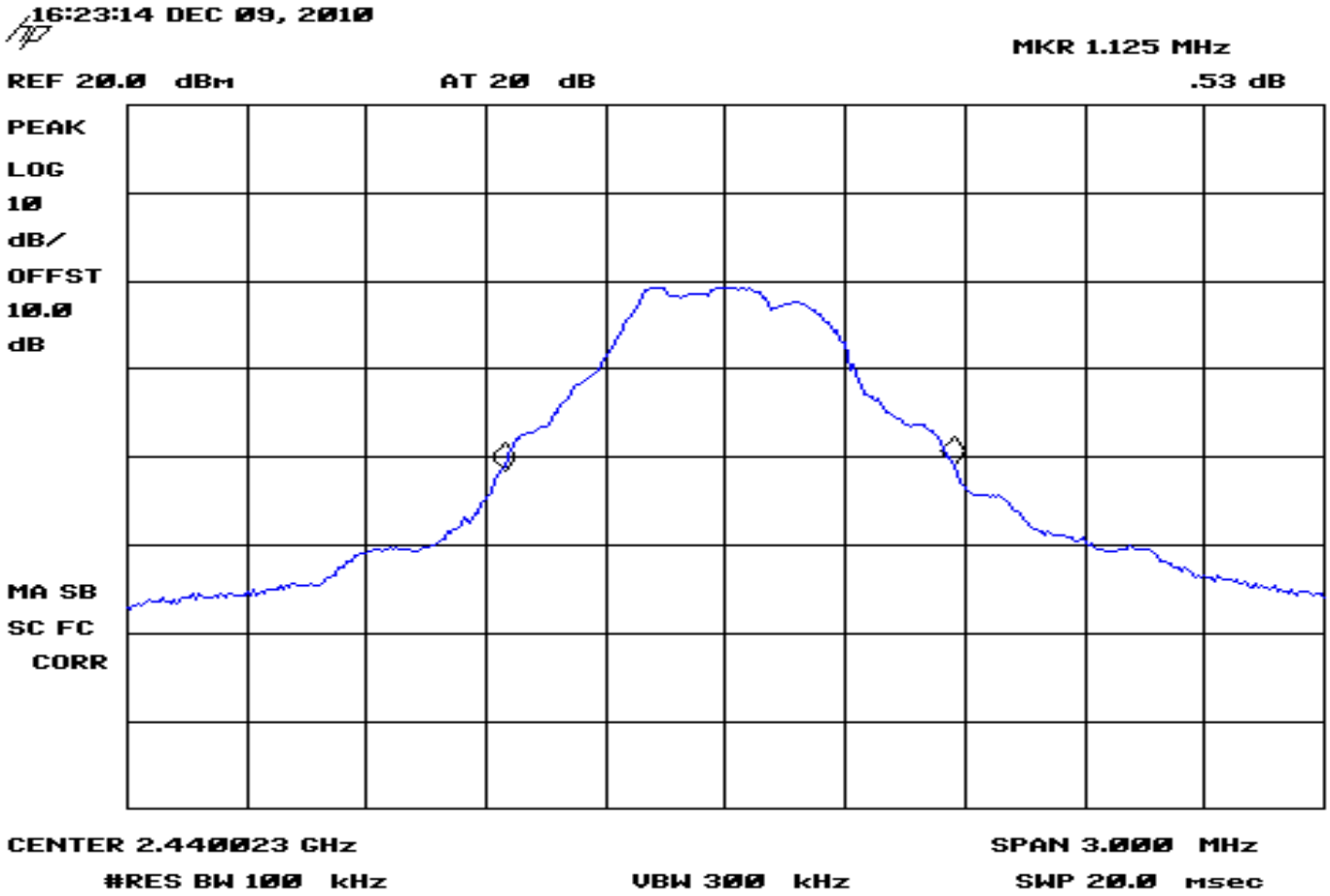
| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **6 dB Bandwidth** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(a)(1)(i) | | **Date:** | 12/9/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | Frequency Tested: 2.40400 GHz 6dB Bandwitdh: 563 kHz | | | | |



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

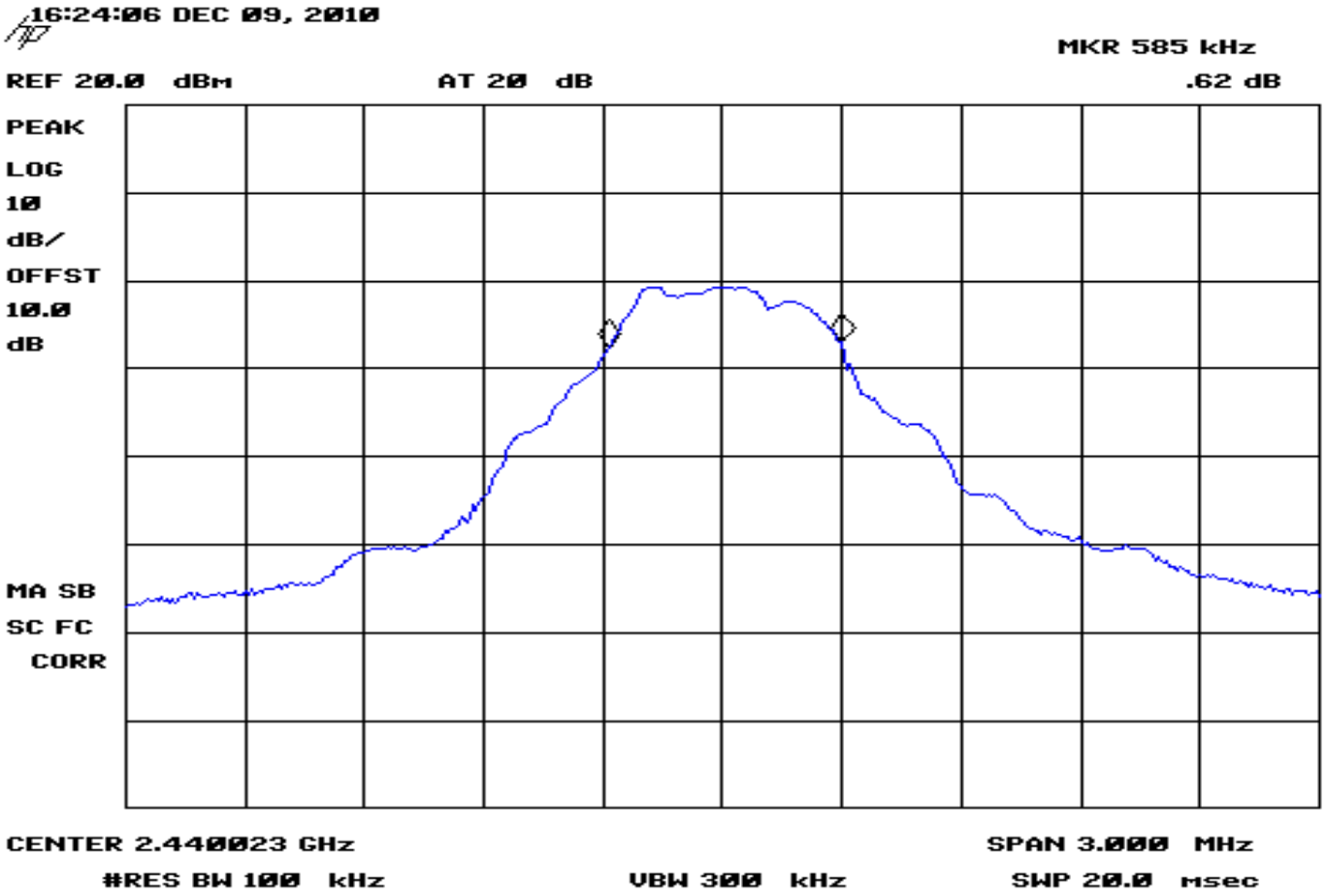
| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **6 dB Bandwidth** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(a)(1)(i) | | **Date:** | 12/9/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | Frequency Tested: 2.440023 GHz 20dB Bandwidth: 1.125 MHz | | | | |



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

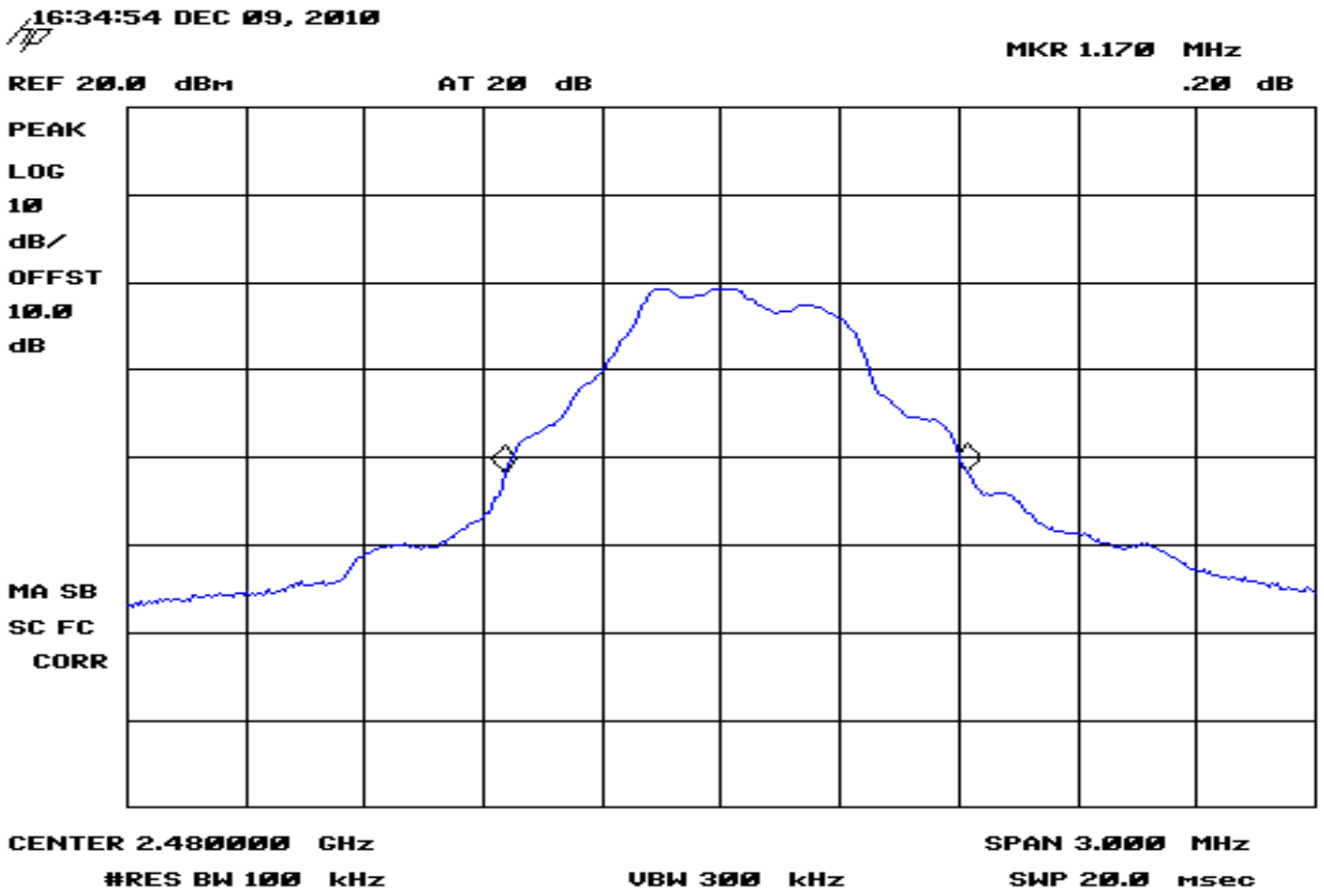
| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **6 dB Bandwidth** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(a)(1)(i) | | **Date:** | 12/9/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | Frequency Tested: 2.440023 GHz 6dB Bandwidth: 585 kHz | | | | |



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

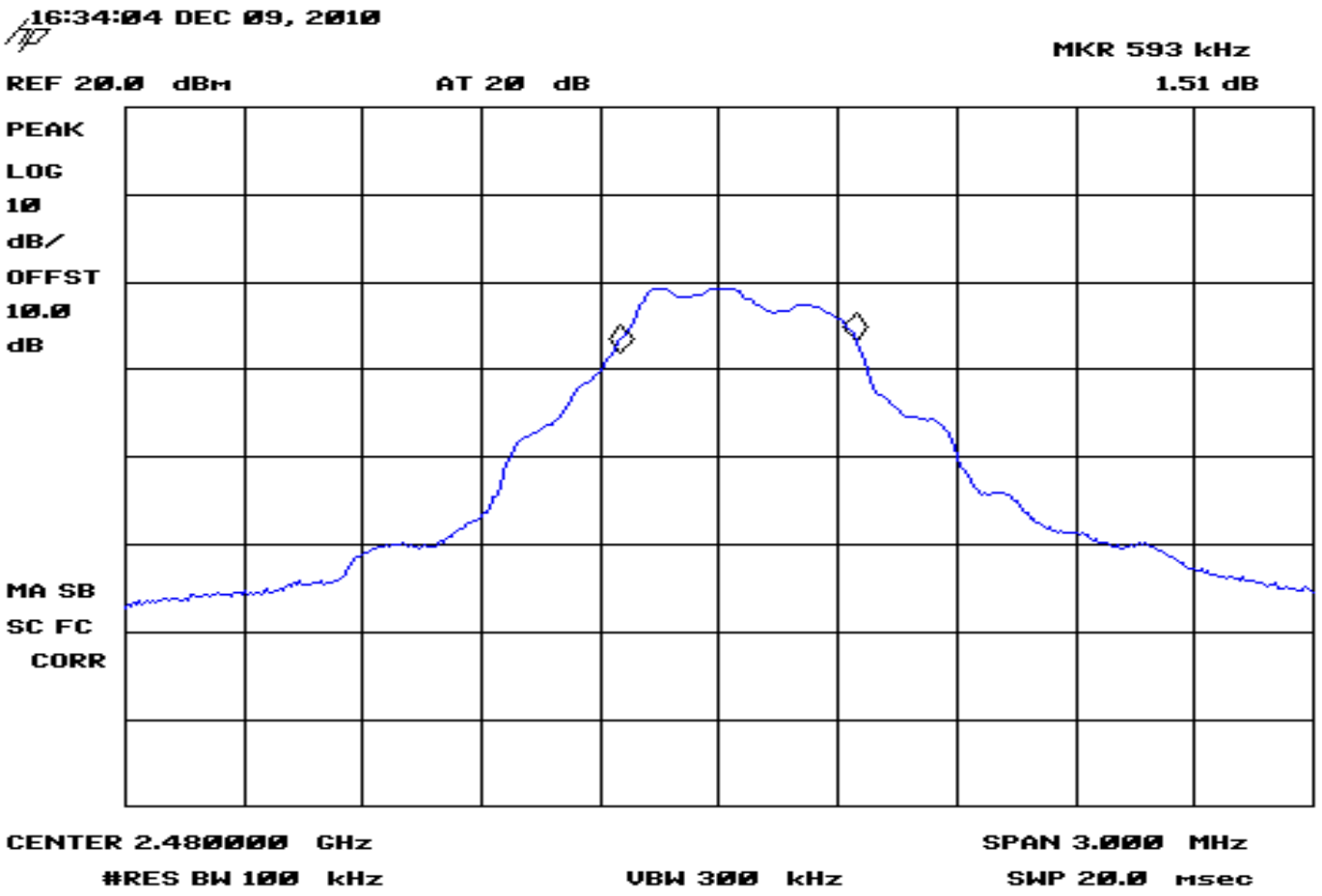
| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **6 dB Bandwidth** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(a)(1)(i) | | **Date:** | 12/9/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | Frequency Tested: 2.48000 GHz 20dB Bandwidth: 1.17 MHz | | | | |



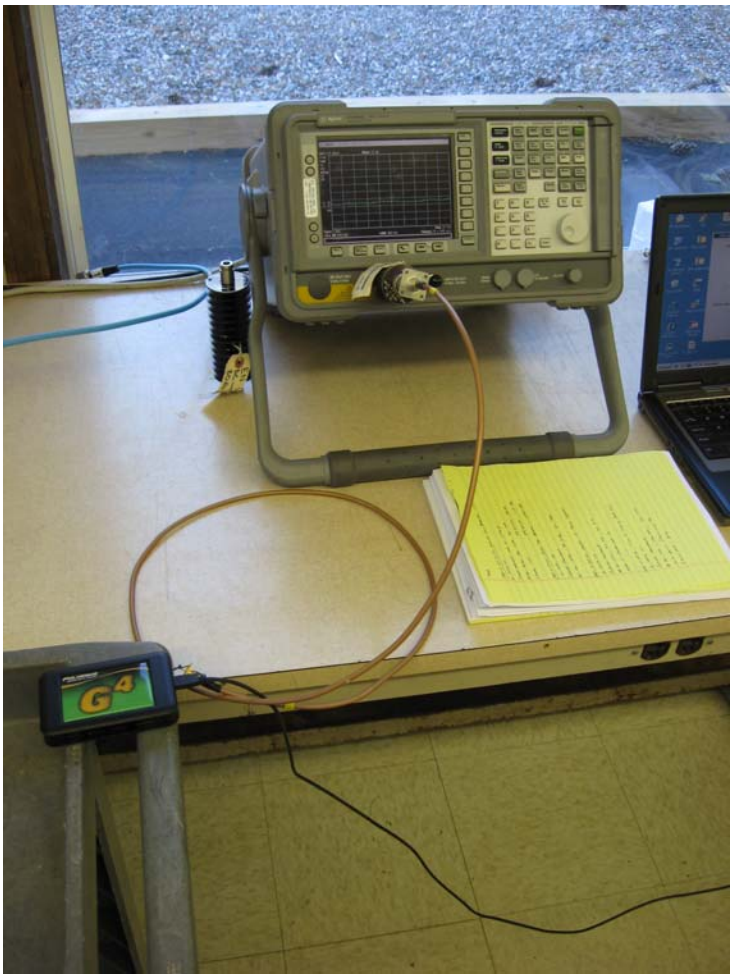
# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **6 dB Bandwidth** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(a)(1)(i) | | **Date:** | 12/9/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | Frequency Tested: 2.48000 GHz 6dB Bandwidth: 593 kHz | | | | |



**FCC Section 15.247 (a)(1) )(iii) / IC Section A8.1(d)**
**Number of Channels and Occupancy Time**
**Test Photographs**



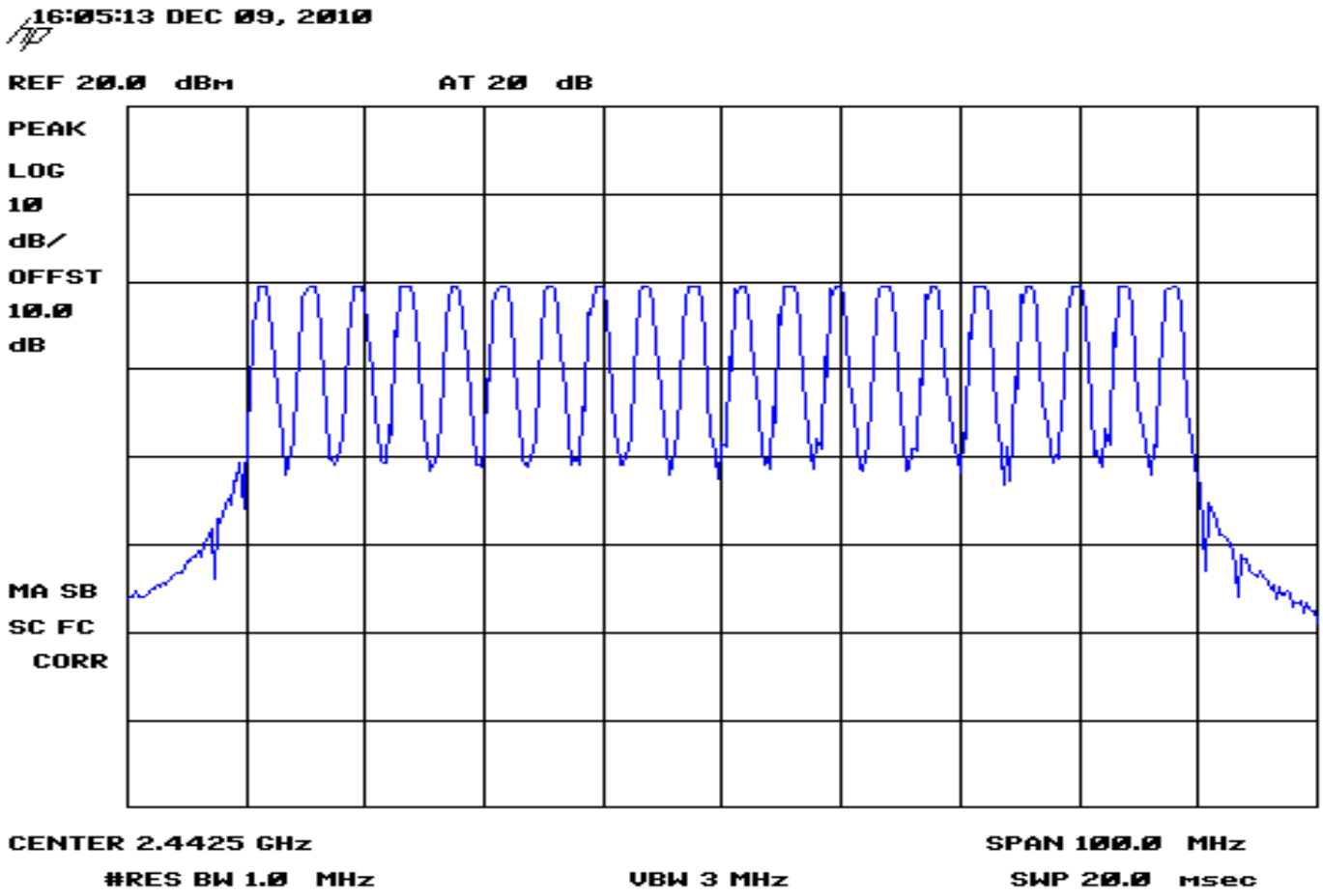

Test Setup

**FCC Section 15.247 (a)(1) )(iii) / IC Section A8.1(d)**
**Number of Channels and Occupancy Time**
**Test Data**

# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

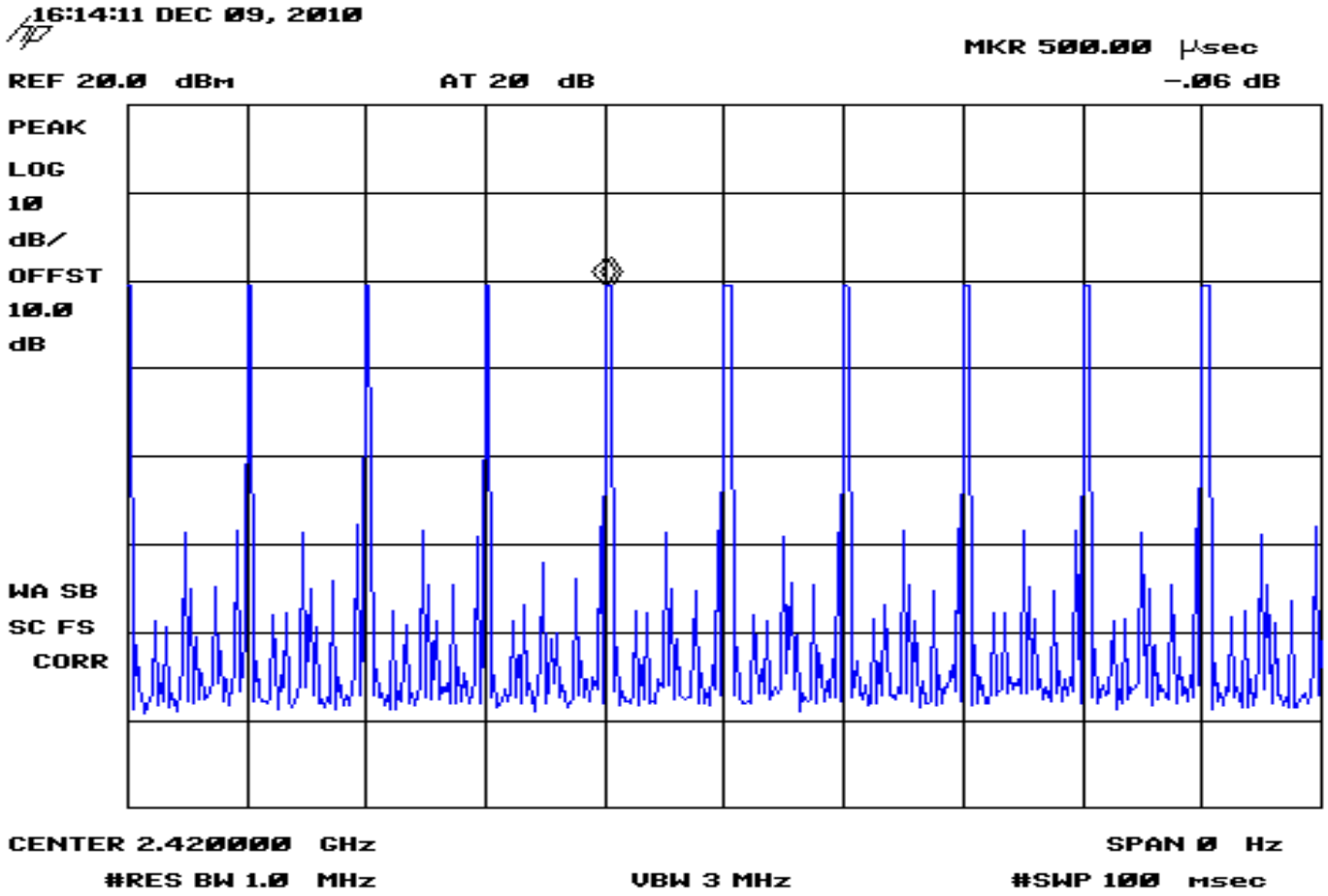
| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **Number of Hopping Frequencies** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(a)(1)(i) | | **Date:** | 12/9/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | Frequency Tested: Frequency Hopping 2402.0-2483.5 MHz, Number of Hopping Frequencies: 20 | | | | |



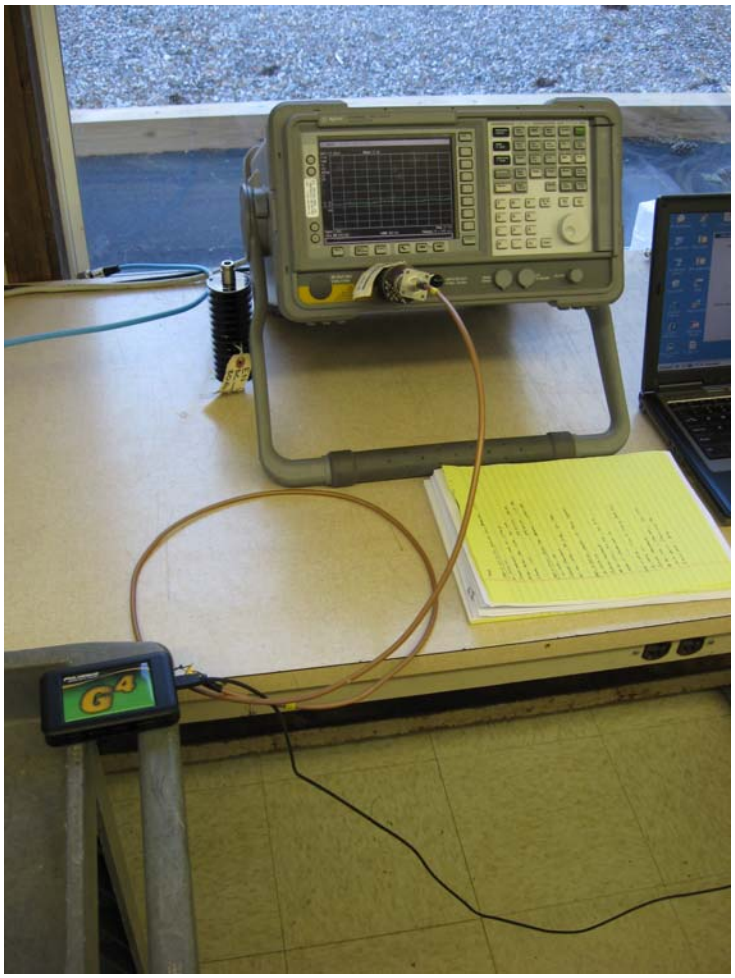
# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **Time of Occupancy(Dwell Time)** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(a)(1)(i) | | **Date:** | 12/9/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | Frequency Hopping: Dwell Time in 8 Second Period; 400 ms | | | | |



**FCC Section 15.247 (b)(1) / IC Section A8.4(2)**
**Peak Conducted Output Power**
**Test Photographs**



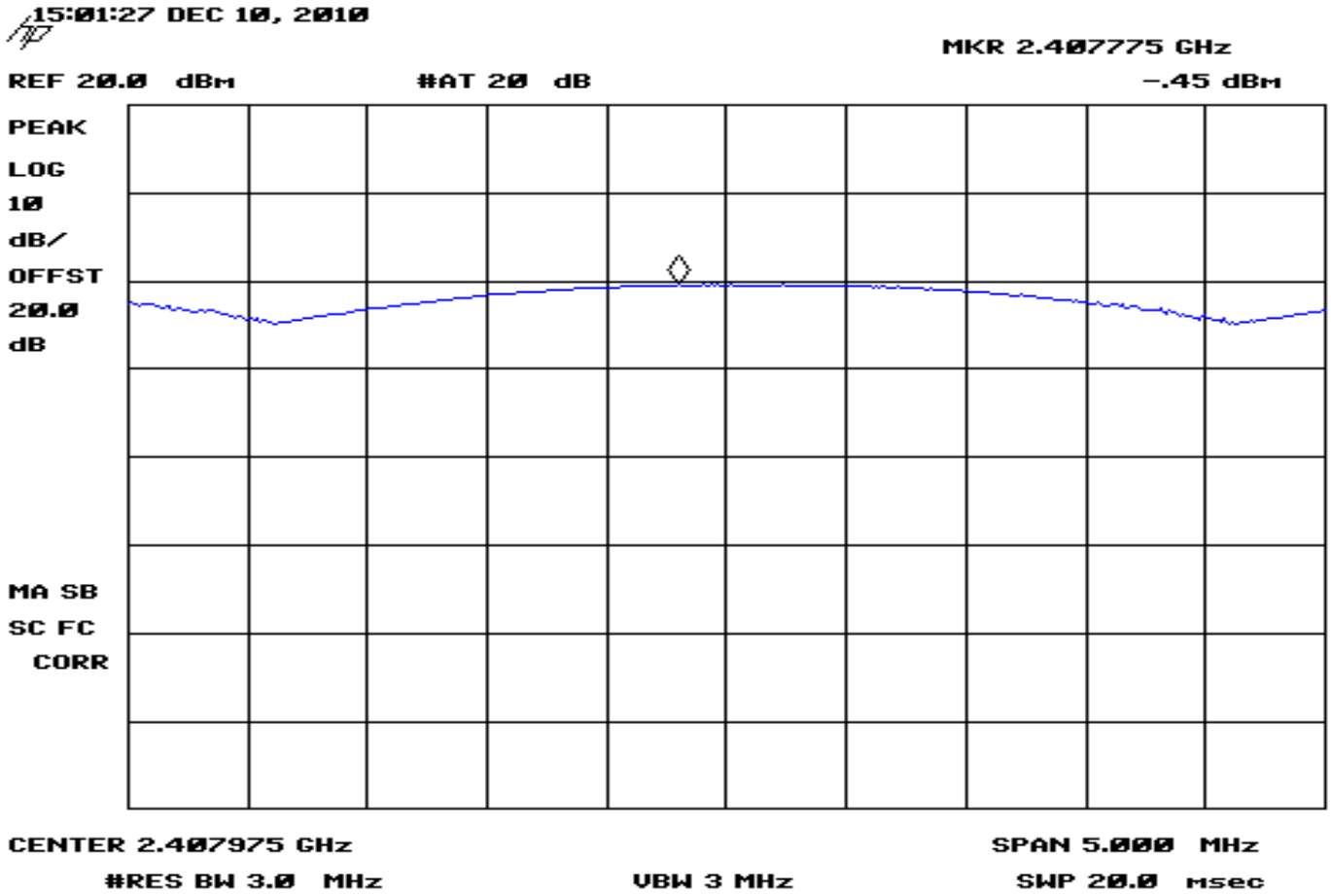

Test Setup

**FCC Section 15.247 (b)(1) / IC Section A8.4(2)**
**Peak Conducted Output Power**
**Test Data**

# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

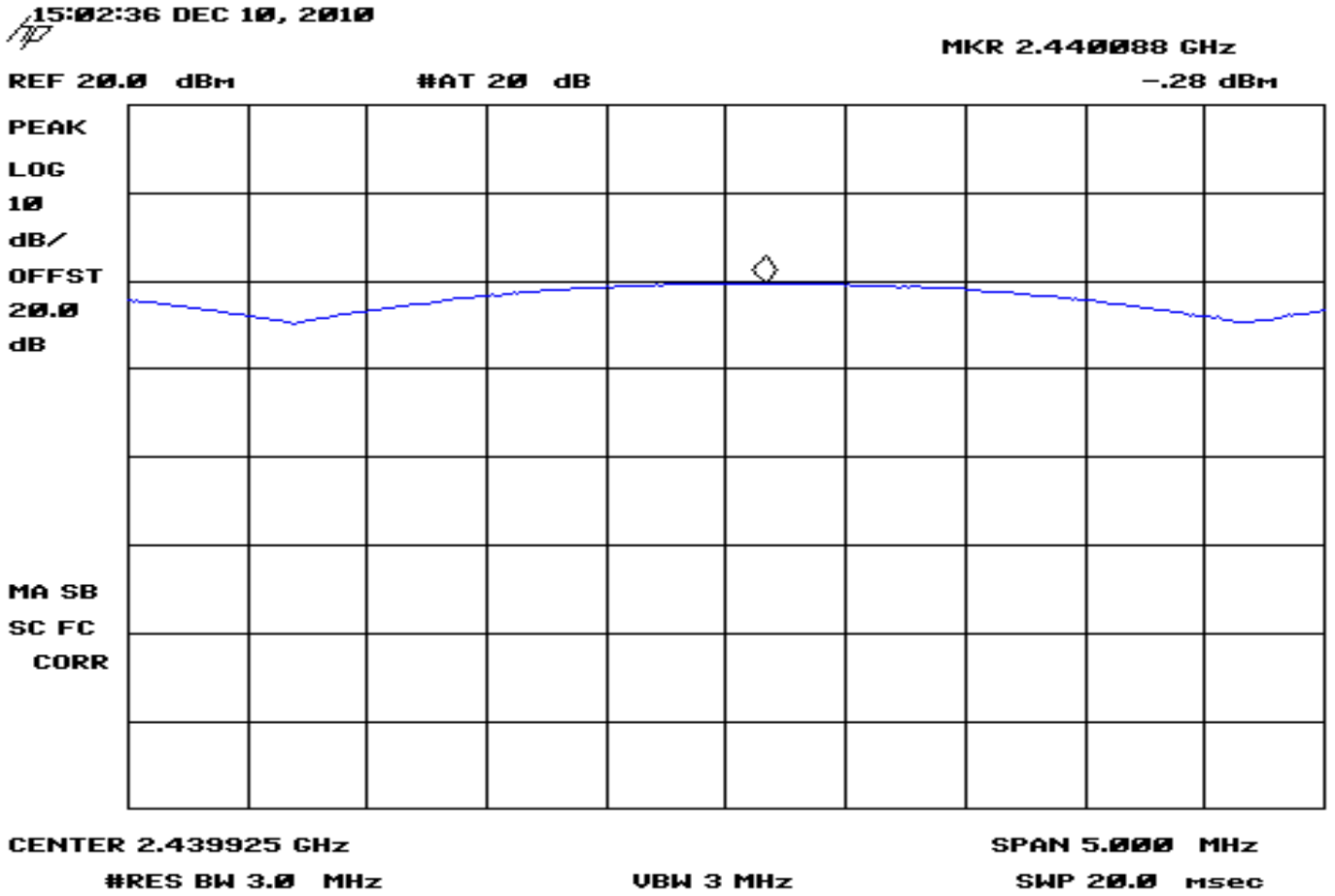
| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **Peak Power Output** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(b)(1) | | **Date:** | 12/10/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | Transmitting at 2.403750 GHz | | | | |



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

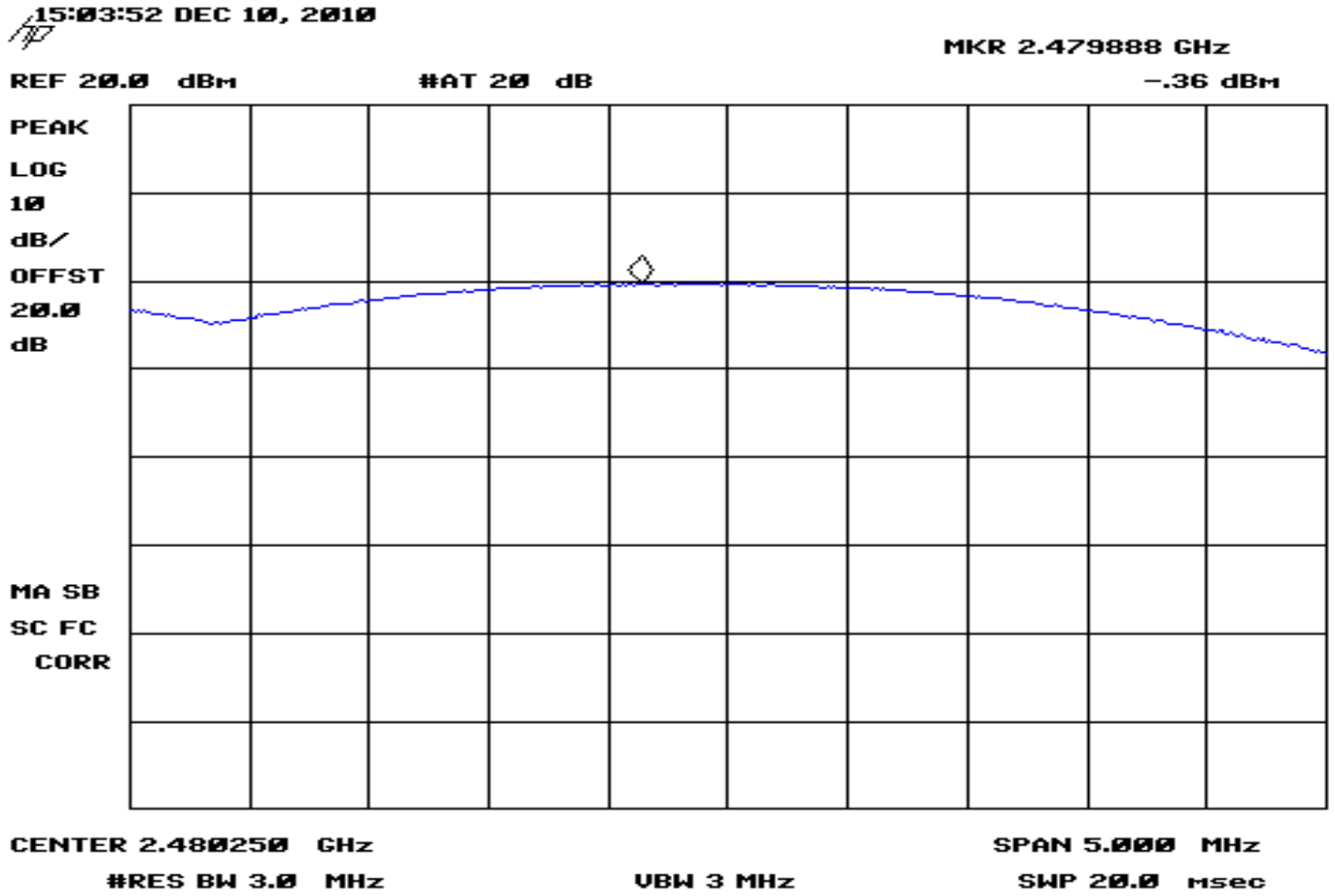
| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **Peak Power Output** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(b)(1) | | **Date:** | 12/10/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | Transmitting at 2.439925 GHz | | | | |



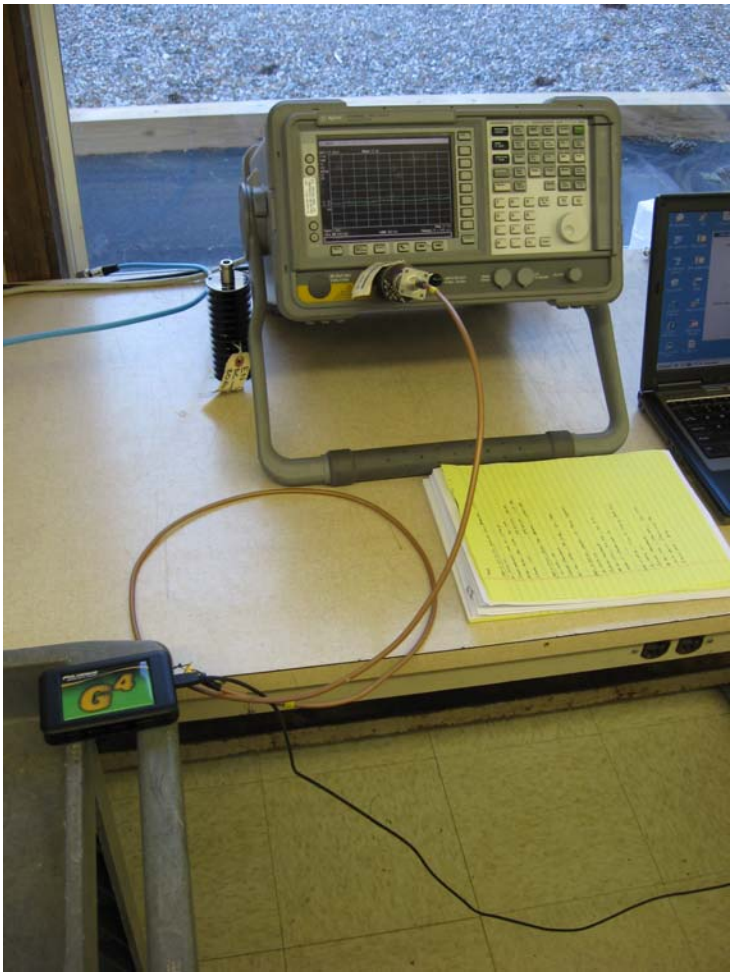
# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **Peak Power Output** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(b)(1) | | **Date:** | 12/10/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | Transmitting at 2.480250 GHz | | | | |



**FCC Section 15.247 (d)/ IC Section A8.5**
**Out of Band Spurious Emissions**
**Test Photographs**



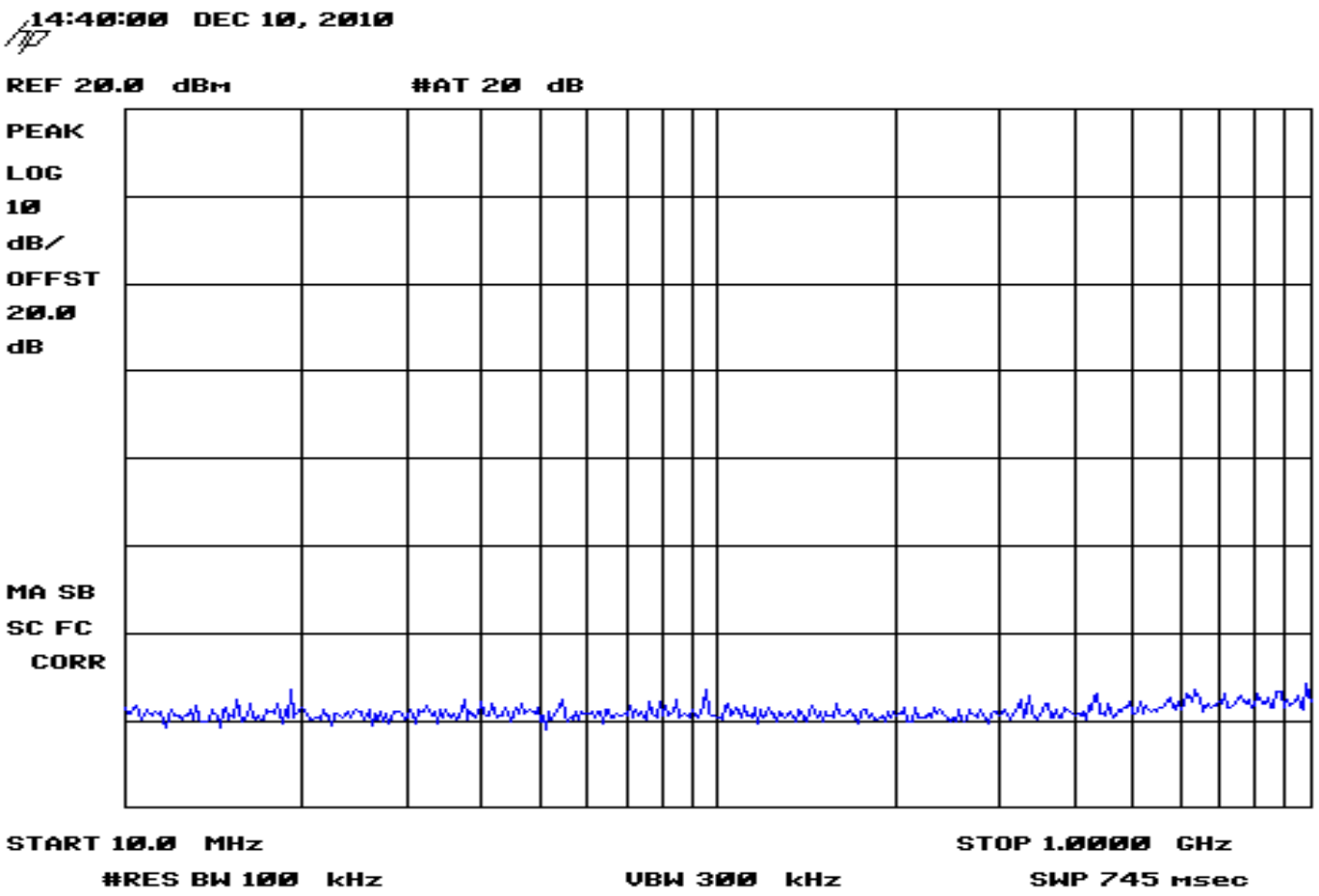

**Test Setup**

**FCC Section 15.247 (d)/ IC Section A8.5**
**Out of Band Spurious Emissions**
**Test Data**

# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

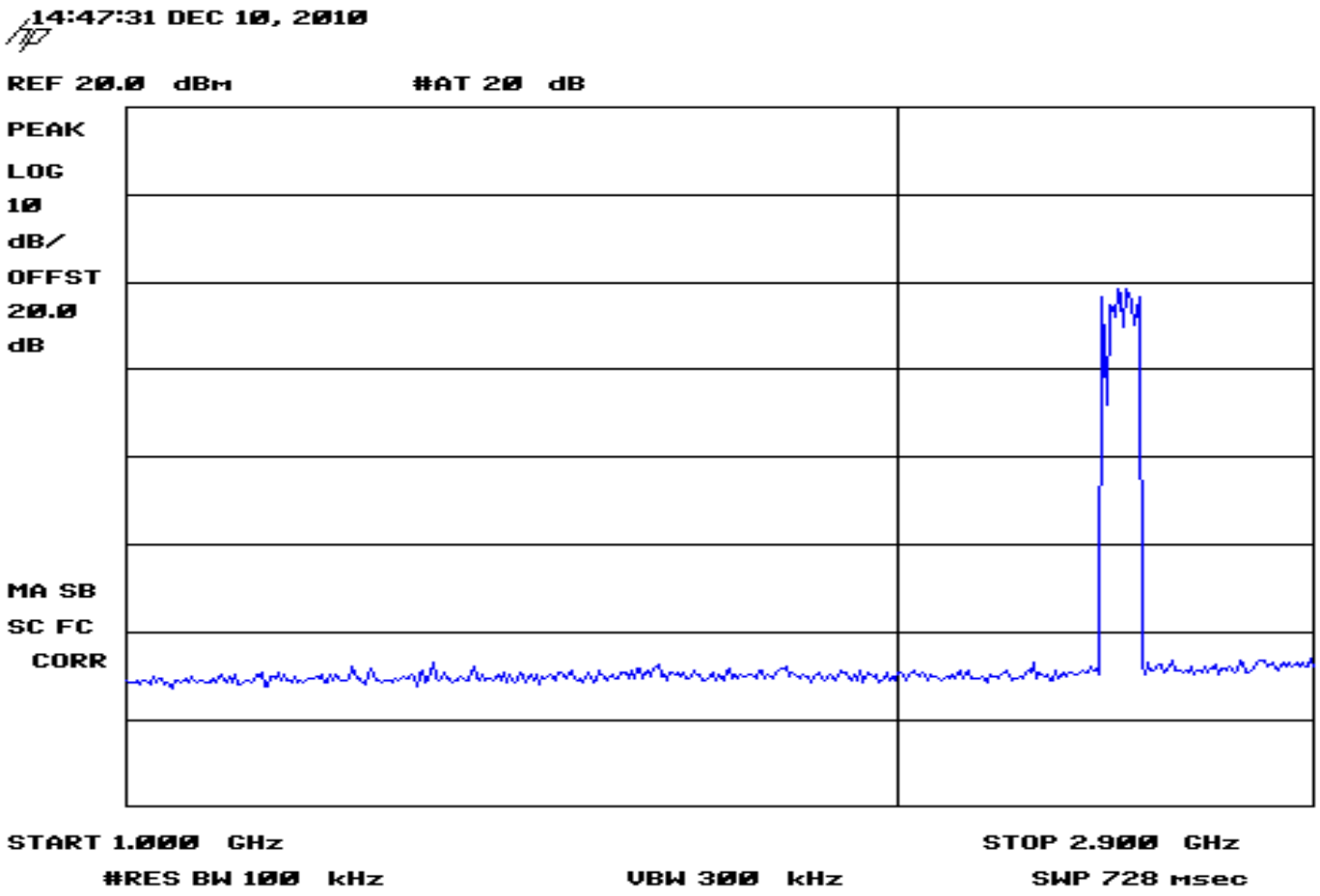
| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **Out of Band 10MHz to 25GHz** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(c) | | **Date:** | 12/10/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | | | | | |



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

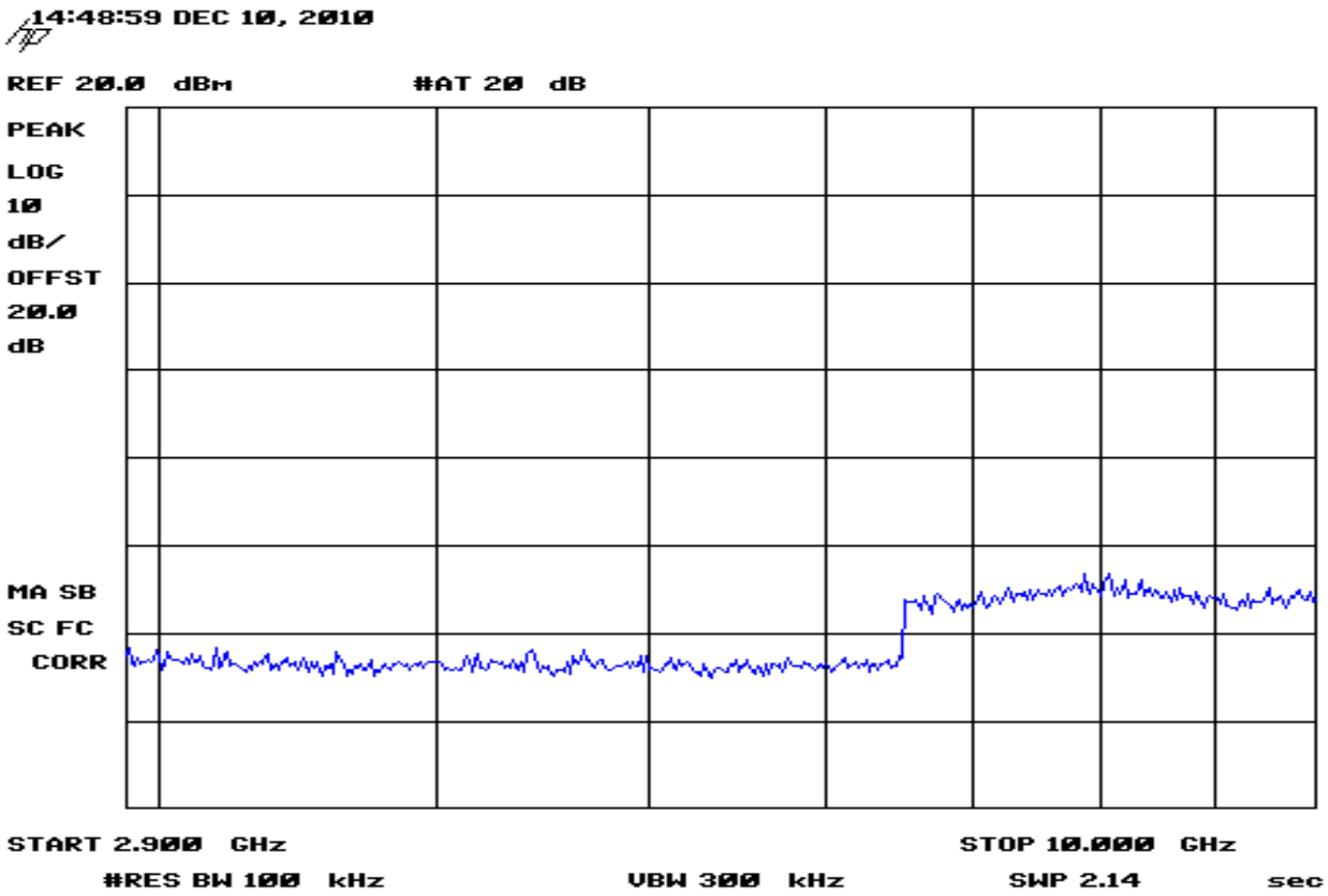
| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **Out of Band 10MHz to 25GHz** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(c) | | **Date:** | 12/10/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | | | | | |



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

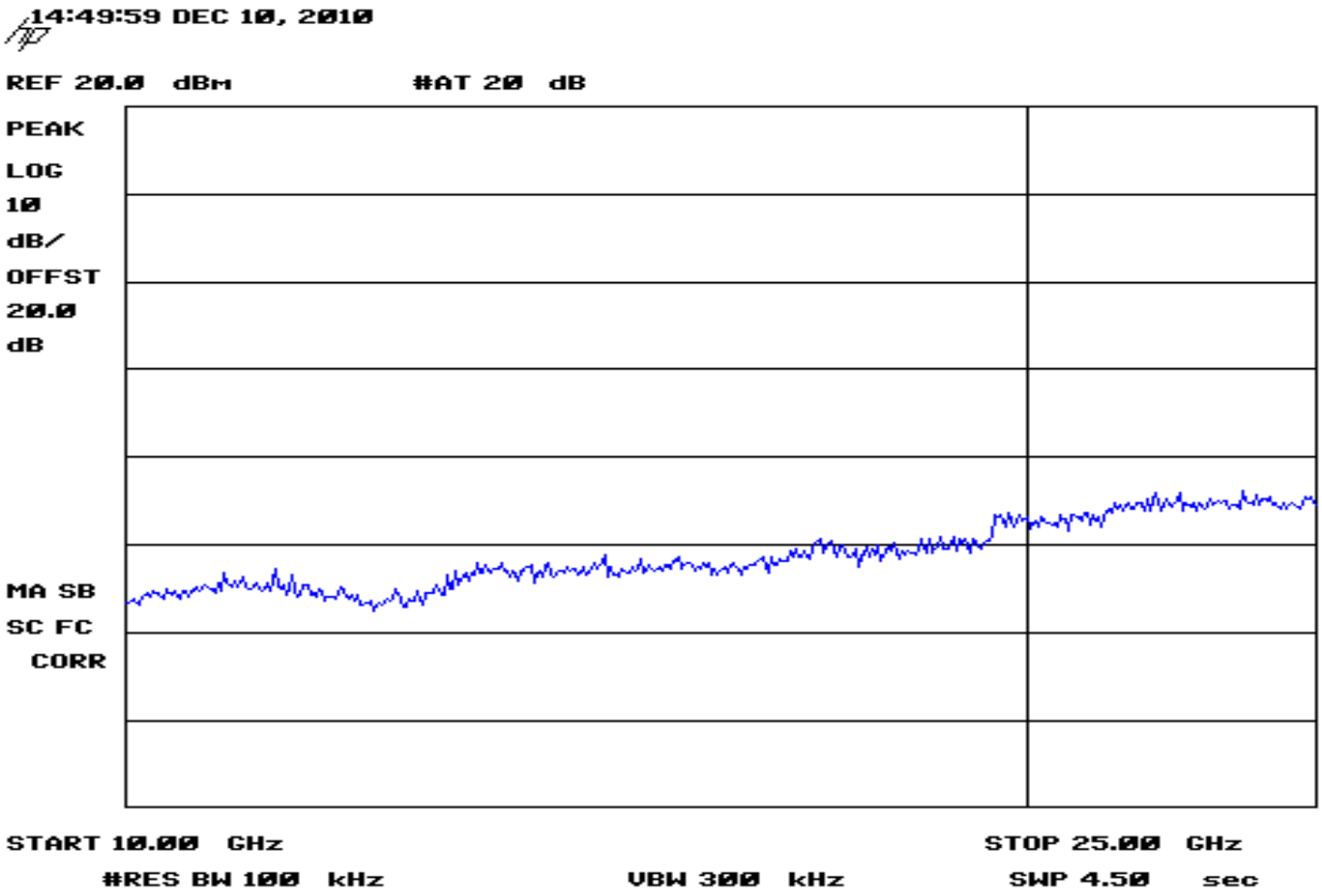
| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **Out of Band 10MHz to 25GHz** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(c) | | **Date:** | 12/10/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | | | | | |



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

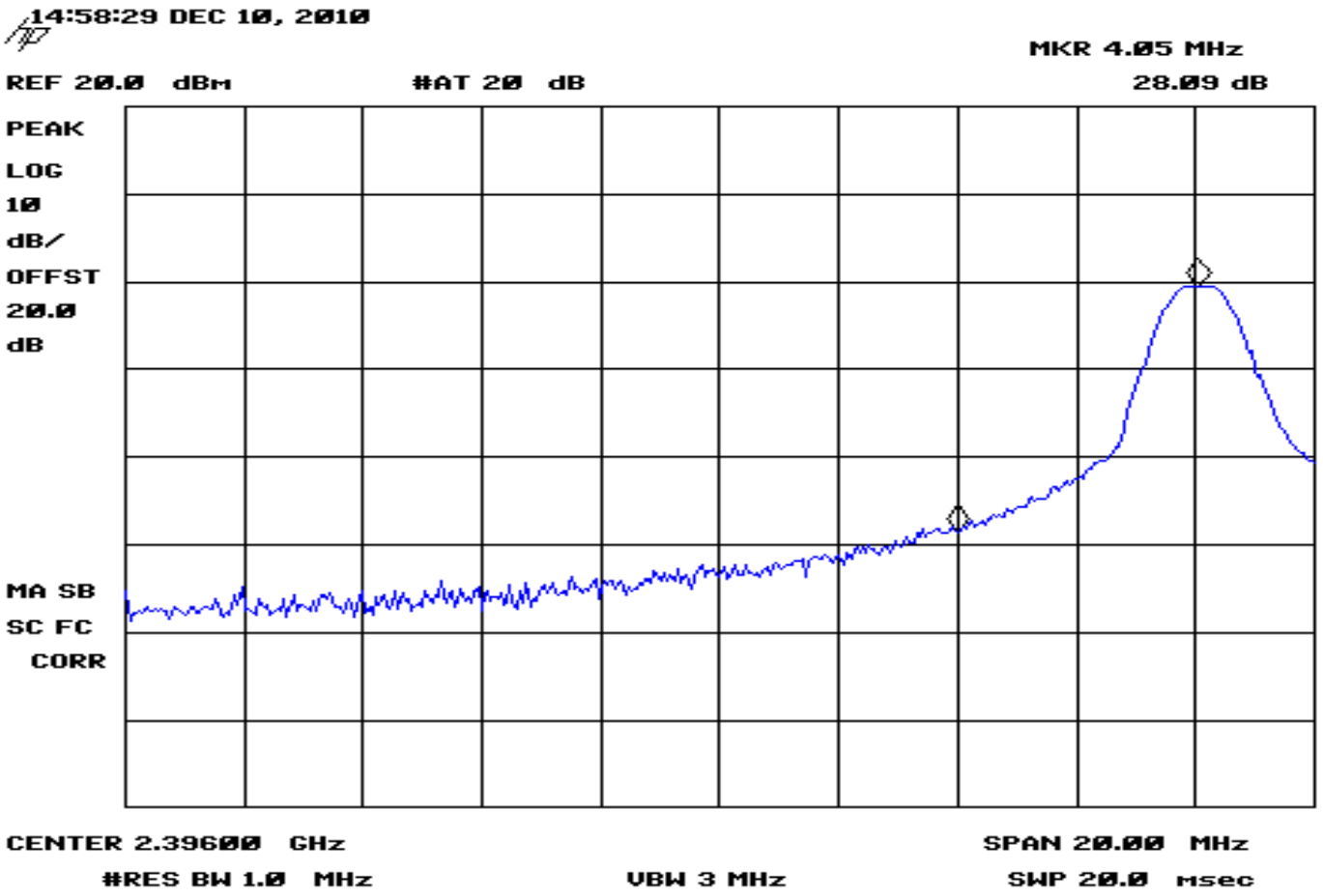
| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **Out of Band 10MHz to 25GHz** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(c) | | **Date:** | 12/10/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | | | | | |



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

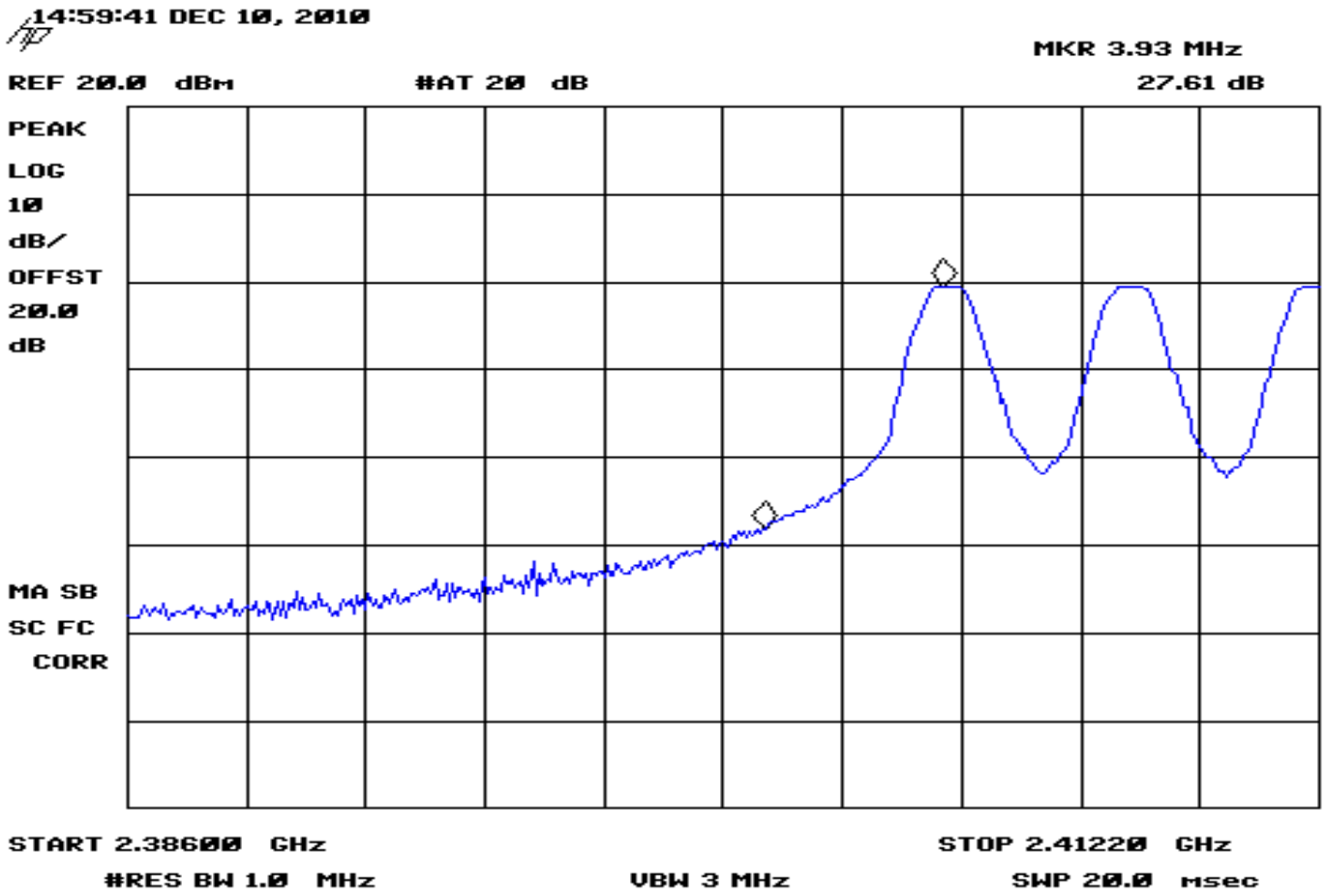
| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **Band-edge Compliance** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(c) | | **Date:** | 12/10/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | No Frequency Hopping | | | | |



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

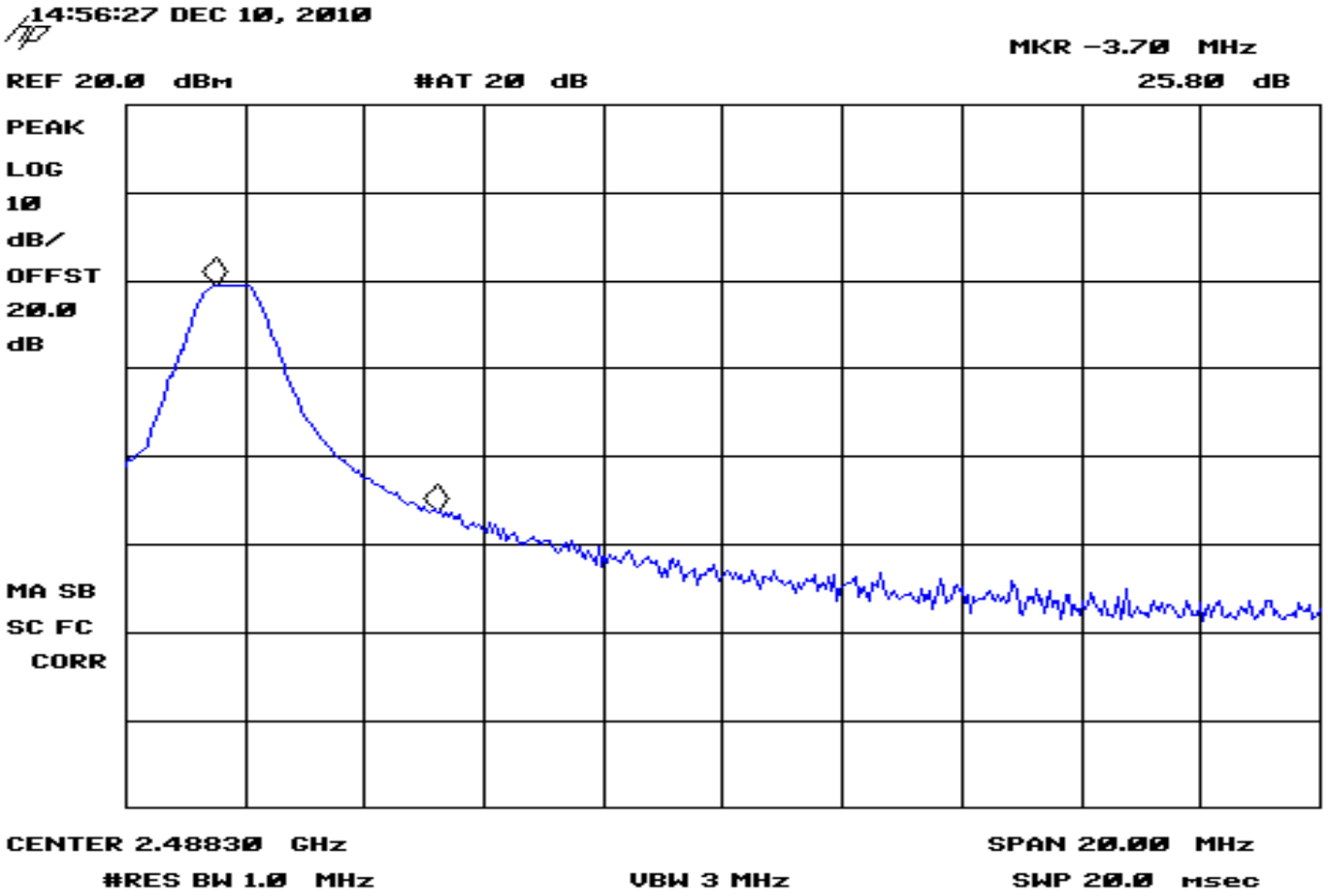
| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **Band-edge Compliance** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(c) | | **Date:** | 12/10/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | | | | | |



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

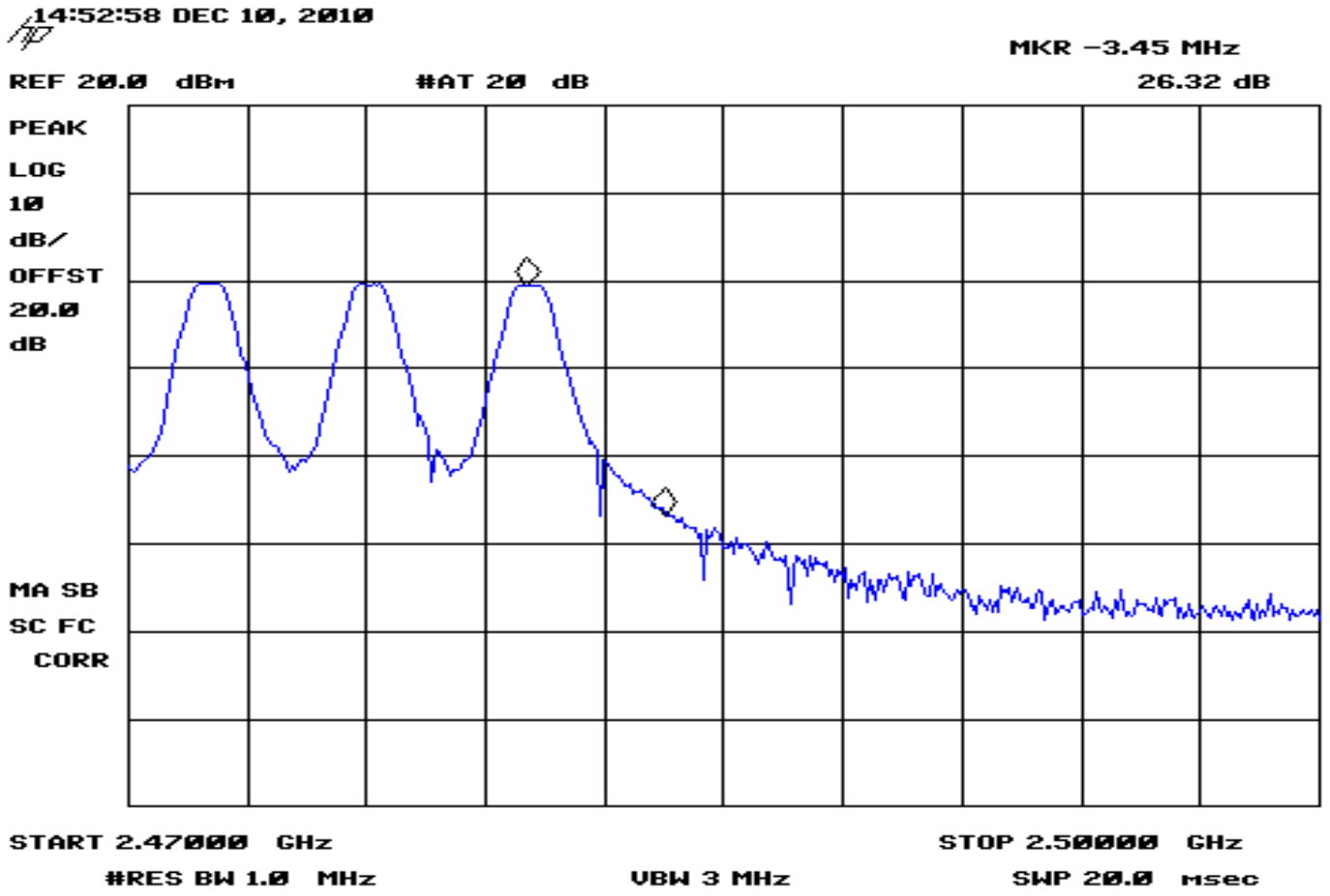
| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **Band-edge Compliance** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(c) | | **Date:** | 12/10/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | No Frequency Hopping | | | | |



# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

| | | | | | |
|---|---|---|---|---|---|
| **Test Method:** | **Band-edge Compliance** | | | | |
| **Customer:** | Polhemus | **Test Sample:** | G4 Hub: Motion Tracking Device | **Job No:** | R-5306N-4 |
| **Model No:** | G4 | **Serial No:** | N/A | **Technician:** | T. Hannemann |
| **Test Specification:** | FCC Part 15, Subpart C | Paragraph: 15.247(c) | | **Date:** | 12/10/2010 |
| **Operating Mode:** | Transmitting | | | | |
| **Notes:** | | | | | |



**FCC Section 15.247 (d)**
**Field Strength of Spurious Radiation**

**RSS GEN 7.2.3**
**Receiver Spurious Emissions**

**Test Photographs**

Test Setup

Test Setup


30 to 1000 MHz

1 to 1.7 GHz

1.7 to 2.6 GHz

2.6 to 3.95 GHz

3.95 to 5.8 GHz

5.2 to 8.2 GHz

8.2 to 12.4 GHz

12.4 to 18 GHz

18 to 25 MHz

**FCC Section 15.247 (d)**
**Field Strength of Transmitter Spurious Radiation/Bandedge**
**Test Data**

# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

| | | | |
|---|---|---|---|
| **Test Method:** | **Transmitter Spurious Emissions 30 MHz - 25 GHz** | | |
| **Customer** | Polhemus | **Job No.** | R-5306N-4 |
| **Test Sample** | G4 Hub: Motion Tracking Device | | |
| **Model No.** | G4 | **Serial No.** | N/A |
| **Test Specification:** | FCC Part 15 Subpart C<br>15.247 | | |
| **Operating Mode:** | Transmitting at 2.40375 GHz | | |
| **Technician:** | M. Seamans | **Date:** | May 12, 2010 |
| **Notes:** | Test Distance: 3 Meters | | |

| Test Frequency | Antenna Position | Turntable Position | Uncorrected Reading | Correction Factor | Corrected Reading | | | | | Limit at 3 Meters |
|---|---|---|---|---|---|---|---|---|---|---|
| MHz | (H/V) - Height | Degrees | dBuV | dB | dBuV/m | | | | | dBuV/m |
| 30.00 | - | - | - | - | - | | | | | 40.0 |
| \| | - | - | - | - | - | | | | | \| |
| 88.00 | - | - | - | - | - | | | | | 40.0 |
| 88.00 | - | - | - | - | - | | | | | 43.5 |
| \| | - | - | - | - | - | | | | | \| |
| 216.00 | - | - | - | - | - | | | | | 43.5 |
| 216.00 | - | - | - | - | - | | | | | 46.0 |
| \| | - | - | - | - | - | | | | | \| |
| 960.00 | - | - | - | - | - | | | | | 46.0 |
| 960.00 | - | - | - | - | - | | | | | 54.0 |
| \| | - | - | - | - | - | | | | | \| |
| 25000.00 | - | - | - | - | - | | | | | 54.0 |

No emissions were observed above the noise floor of the test equipment which was a minimum of 10 dB below the specified limits throughout the frequency range.

# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

| | | | |
|---|---|---|---|
| **Test Method:** | **Transmitter Spurious Emissions 30 MHz - 25 GHz** | | |
| **Customer** | Polhemus | **Job No.** | R-5306N-4 |
| **Test Sample** | G4 Hub: Motion Tracking Device | | |
| **Model No.** | G4 | **Serial No.** | N/A |
| **Test Specification:** | FCC Part 15 Subpart C 15.247 | | |
| **Operating Mode:** | Transmitting at 2.439925 GHz | | |
| **Technician:** | M. Seamans | **Date:** | May 12, 2010 |
| **Notes:** | Test Distance: 3 Meters | | |

| Test Frequency | Antenna Position | Turntable Position | Uncorrected Reading | Correction Factor | Corrected Reading | | | | | Limit at 3 Meters |
|---|---|---|---|---|---|---|---|---|---|---|
| MHz | (H/V) - Height | Degrees | dBuV | dB | dBuV/m | | | | | dBuV/m |
| 30.00 | - | - | - | - | - | | | | | 40.0 |
| \| | - | - | - | - | - | | | | | \| |
| 88.00 | - | - | - | - | - | | | | | 40.0 |
| 88.00 | - | - | - | - | - | | | | | 43.5 |
| \| | - | - | - | - | - | | | | | \| |
| 216.00 | - | - | - | - | - | | | | | 43.5 |
| 216.00 | - | - | - | - | - | | | | | 46.0 |
| \| | - | - | - | - | - | | | | | \| |
| 960.00 | - | - | - | - | - | | | | | 46.0 |
| 960.00 | - | - | - | - | - | | | | | 54.0 |
| \| | - | - | - | - | - | | | | | \| |
| 25000.00 | - | - | - | - | - | | | | | 54.0 |

No emissions were observed above the noise floor of the test equipment which was a minimum of 10 dB below the specified limits throughout the frequency range.

# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

| | | | |
|---|---|---|---|
| **Test Method:** | **Transmitter Spurious Emissions 30 MHz - 25 GHz** | | |
| **Customer** | Polhemus | **Job No.** | R-5306N-4 |
| **Test Sample** | G4 Hub: Motion Tracking Device | | |
| **Model No.** | G4 | **Serial No.** | N/A |
| **Test Specification:** | FCC Part 15 Subpart C<br>15.247 | | |
| **Operating Mode:** | Transmitting at 2.48025 GHz | | |
| **Technician:** | M. Seamans | **Date:** | May 12, 2010 |
| **Notes:** | Test Distance: 3 Meters | | |

| Test Frequency | Antenna Position | Turntable Position | Meter Reading | Correction Factor | Corrected Reading | | | | | Limit at 3 Meters |
|---|---|---|---|---|---|---|---|---|---|---|
| MHz | (H/V) - Height | Degrees | dBuV | dB | dBuV/m | | | | | dBuV/m |
| 30.00 | - | - | - | - | - | | | | | 40.0 |
| \| | - | - | - | - | - | | | | | \| |
| 88.00 | - | - | - | - | - | | | | | 40.0 |
| 88.00 | - | - | - | - | - | | | | | 43.5 |
| \| | - | - | - | - | - | | | | | \| |
| 216.00 | - | - | - | - | - | | | | | 43.5 |
| 216.00 | - | - | - | - | - | | | | | 46.0 |
| \| | - | - | - | - | - | | | | | \| |
| 960.00 | - | - | - | - | - | | | | | 46.0 |
| 960.00 | - | - | - | - | - | | | | | 54.0 |
| \| | - | - | - | - | - | | | | | \| |
| 25000.00 | - | - | - | - | - | | | | | 54.0 |

No emissions were observed above the noise floor of the test equipment which was a minimum of 10 dB below the specified limits throughout the frequency range.

# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

| | | | |
|---|---|---|---|
| **Test Method:** | **Band-edge Compliance** | | |
| **Customer** | Polhemus | **Job No.** | R-5306N-4 |
| **Test Sample** | G4 Hub: Motion Tracking Device | | |
| **Model No.** | G4 | **Serial No.** | N/A |
| **Test Specification:** | FCC Part 15 Subpart C<br>15.247 | | |
| **Operating Mode:** | Continuously Transmitting at band edge | | |
| **Technician:** | T.Hannemann | **Date:** | December 22, 2010 |
| **Notes:** | Test Distance: 3 Meters<br>Average Detector | | |

| Test Frequency | Antenna Position | Turntable Position | Uncorrected Reading | Correction Factor | Corrected Reading | | | | | Limit at 3 Meters |
|---|---|---|---|---|---|---|---|---|---|---|
| MHz | (H/V) - Height | Degrees | dBuV | dB | dBuV/m | | | | | dBuV/m |
| 2400.00 | V-1m | 0.0 | 10.00 | 29.88 | 39.88 | * | | | | 54.0 |
| 2483.50 | V-1m | 0.0 | 10.00 | 30.31 | 40.31 | * | | | | 54.0 |

* Measurement represents the noise floor of the measurement instrument, as no EUT emissions were observed.

**RSS GEN 7.2.3**
**Receiver Spurious Emissions**
**Test Data**

# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

| | | | |
|---|---|---|---|
| **Test Method:** | **Receiver Spurious Emissions 30 MHz - 25 GHz** | | |
| **Customer** | Polhemus | **Job No.** | R-5306N-4 |
| **Test Sample** | G4 Hub: Motion Tracking Device | | |
| **Model No.** | G4 | **Serial No.** | N/A |
| **Test Specification:** | RSS-Gen<br>15.247 | | |
| **Operating Mode:** | Receiving at 2.40375 GHz | | |
| **Technician:** | M. Seamans | **Date:** | May 12, 2010 |
| **Notes:** | Test Distance: 3 Meters | | |

| Test Frequency | Antenna Position | Turntable Position | Uncorrected Reading | Correction Factor | Corrected Reading | | | | | Limit at 3 Meters |
|---|---|---|---|---|---|---|---|---|---|---|
| MHz | (H/V) - Height | Degrees | dBuV | dB | dBuV/m | | | | | dBuV/m |
| 30.00 | - | - | - | - | - | | | | | 40.0 |
| \| | - | - | - | - | - | | | | | \| |
| 88.00 | - | - | - | - | - | | | | | 40.0 |
| 88.00 | - | - | - | - | - | | | | | 43.5 |
| \| | - | - | - | - | - | | | | | \| |
| 216.00 | - | - | - | - | - | | | | | 43.5 |
| 216.00 | - | - | - | - | - | | | | | 46.0 |
| \| | - | - | - | - | - | | | | | \| |
| 960.00 | - | - | - | - | - | | | | | 46.0 |
| 960.00 | - | - | - | - | - | | | | | 54.0 |
| \| | - | - | - | - | - | | | | | \| |
| 25000.00 | - | - | - | - | - | | | | | 54.0 |

No emissions were observed above the noise floor of the test equipment which was a minimum of 10 dB below the specified limits throughout the frequency range.

# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

| | | | |
|---|---|---|---|
| **Test Method:** | **Receiver Spurious Emissions 30 MHz - 25 GHz** | | |
| **Customer** | Polhemus | **Job No.** | R-5306N-4 |
| **Test Sample** | G4 Hub: Motion Tracking Device | | |
| **Model No.** | G4 | **Serial No.** | N/A |
| **Test Specification:** | RSS-Gen<br>15.247 | | |
| **Operating Mode:** | Receiving at 2.439925 GHz | | |
| **Technician:** | M. Seamans | **Date:** | May 12, 2010 |
| **Notes:** | Test Distance: 3 Meters | | |

| Test Frequency | Antenna Position | Turntable Position | Uncorrected Reading | Correction Factor | Corrected Reading | | | | | Limit at 3 Meters |
|---|---|---|---|---|---|---|---|---|---|---|
| MHz | (H/V) - Height | Degrees | dBuV | dB | dBuV/m | | | | | dBuV/m |
| 30.00 | - | - | - | - | - | | | | | 40.0 |
| \| | - | - | - | - | - | | | | | \| |
| 88.00 | - | - | - | - | - | | | | | 40.0 |
| 88.00 | - | - | - | - | - | | | | | 43.5 |
| \| | - | - | - | - | - | | | | | \| |
| 216.00 | - | - | - | - | - | | | | | 43.5 |
| 216.00 | - | - | - | - | - | | | | | 46.0 |
| \| | - | - | - | - | - | | | | | \| |
| 960.00 | - | - | - | - | - | | | | | 46.0 |
| 960.00 | - | - | - | - | - | | | | | 54.0 |
| \| | - | - | - | - | - | | | | | \| |
| 25000.00 | - | - | - | - | - | | | | | 54.0 |

No emissions were observed above the noise floor of the test equipment which was a minimum of 10 dB below the specified limits throughout the frequency range.

# RETLIF TESTING LABORATORIES

## EMISSIONS DATA SHEET

| | | | |
|---|---|---|---|
| **Test Method:** | **Receiver Spurious Emissions 30 MHz - 25 GHz** | | |
| **Customer** | Polhemus | **Job No.** | R-5306N-4 |
| **Test Sample** | G4 Hub: Motion Tracking Device | | |
| **Model No.** | G4 | **Serial No.** | N/A |
| **Test Specification:** | RSS-Gen<br>15.247 | | |
| **Operating Mode:** | Receiving at 2.48025 GHz | | |
| **Technician:** | M. Seamans | **Date:** | May 12, 2010 |
| **Notes:** | Test Distance: 3 Meters | | |

| Test Frequency | Antenna Position | Turntable Position | Meter Reading | Correction Factor | Corrected Reading | | | | | Limit at 3 Meters |
|---|---|---|---|---|---|---|---|---|---|---|
| MHz | (H/V) - Height | Degrees | dBuV | dB | dBuV/m | | | | | dBuV/m |
| 30.00 | - | - | - | - | - | | | | | 40.0 |
| \| | - | - | - | - | - | | | | | \| |
| 88.00 | - | - | - | - | - | | | | | 40.0 |
| 88.00 | - | - | - | - | - | | | | | 43.5 |
| \| | - | - | - | - | - | | | | | \| |
| 216.00 | - | - | - | - | - | | | | | 43.5 |
| 216.00 | - | - | - | - | - | | | | | 46.0 |
| \| | - | - | - | - | - | | | | | \| |
| 960.00 | - | - | - | - | - | | | | | 46.0 |
| 960.00 | - | - | - | - | - | | | | | 54.0 |
| \| | - | - | - | - | - | | | | | \| |
| 25000.00 | - | - | - | - | - | | | | | 54.0 |

No emissions were observed above the noise floor of the test equipment which was a minimum of 10 dB below the specified limits throughout the frequency range.