



# FCC Test Report

## FCC Part 15.247 for DSSS systems/ CANADA RSS-210

FOR:

Handheld PC

MODEL #: PCG-1J1L

SONY CORPORATION  
6-7-35, KITASHINAGAWA, SHINAGAWA-KU  
TOKYO 141-0001  
JAPAN

FCC ID: AK8PCG1J1L  
IC ID: 409B-PCG1J1L

TEST REPORT #: SONYE\_005\_06001\_15.247BG  
DATE:



TTI-P-G 081/94-A0

Accredited according to ISO/IEC 17025



Bluetooth Qualification  
Test Facility  
(BQTF)



FCC listed # 101450

IC recognized # 3925

**CETECOM Inc.**

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CETECOM Inc. is a Delaware Corporation with Corporation number: 2113686  
Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

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**1 Assessment**

The following is in compliance with the applicable criteria specified in FCC rules Part 15.247 of the Code of Federal Regulations and in compliance with the applicable criteria specified in Industry Canada rules RSS210.

| Company    | Description | Model #              |
|------------|-------------|----------------------|
| SONY CORP. | HANDHELD PC | PCG-1J1L<br>PCG-1K1L |



Pete Krebill  
Project Leader



Lothar Schmidt  
Test Lab Manager

The test results of this test report relate exclusively to the test item specified in Identification of the Equipment under Test. The CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM Inc USA.

## **2 Administrative Data**

### **2.1 Identification of the Testing Laboratory Issuing the EMC Test Report**

|                               |                                                                 |
|-------------------------------|-----------------------------------------------------------------|
| Company Name:                 | <b>CETECOM Inc.</b>                                             |
| Department:                   | <b>EMC</b>                                                      |
| Address:                      | <b>411 Dixon Landing Road<br/>Milpitas, CA 95035<br/>U.S.A.</b> |
| Telephone:                    | <b>+1 (408) 586 6200</b>                                        |
| Fax:                          | <b>+1 (408) 586 6299</b>                                        |
| Responsible Test Lab Manager: | <b>Lothar Schmidt</b>                                           |
| Responsible Project Leader:   | <b>Pete Krebill</b>                                             |
| Date of test:                 | <b>3/31/2006</b>                                                |

### **2.2 Identification of the Client**

|                   |                                             |
|-------------------|---------------------------------------------|
| Applicant's Name: | <b>SONY Corporation</b>                     |
| Street Address:   | <b>6-7-35, Kitashinagawa, Shinagawa-ku,</b> |
| City/Zip Code     | <b>Tokyo 141-0001</b>                       |
| Country           | <b>Japan</b>                                |
| Contact Person:   | <b>Takumi Ozawa</b>                         |
| Phone No.         | <b>81-3-5795-8716</b>                       |
| Fax:              | <b>81-3-5795-8981</b>                       |
| e-mail:           | <b>ozawa@sm.sony.co.jp</b>                  |

### **2.3 Identification of the Manufacturer**

|                        |                                     |
|------------------------|-------------------------------------|
| Manufacturer's Name:   | <b>Sony EMCS Corporation</b>        |
| Manufacturers Address: | <b>5432 Toyoshima, Azumino-shi,</b> |
| City/Zip Code          | <b>Nagano 399-8282,</b>             |
| Country                | <b>Japan</b>                        |

### 3 Equipment under Test (EUT)

#### 3.1 Identification of the Equipment under Test

|                         |                                                                                  |
|-------------------------|----------------------------------------------------------------------------------|
| Marketing Name:         | <b>PCG-1J1L</b><br><b>PCG-1K1L (identical device with different memory size)</b> |
| Description:            | <b>Handheld PC</b>                                                               |
| Model No:               | <b>PCG-1J1L</b>                                                                  |
| FCC ID:                 | <b>AK8PCG1J1L</b>                                                                |
| IC ID:                  | <b>409B-PCG1J1L</b>                                                              |
| Frequency Range:        | <b>2400-2483.5MHz</b>                                                            |
| *Type(s) of Modulation: | <b>CCK , OFDM</b>                                                                |
| Number of Channels:     | <b>11</b>                                                                        |
| Antenna Type:           | <b>λ/monopole (Inverted F Antenna)</b>                                           |
| Output Power:           | <b>b mode: 0.013 W EIRP @ 2462 MHz</b><br><b>g mode: 0.012 W EIRP @ 2462 MHz</b> |

**\*This report contains data for 802.11b/g modes, for all 802.11a mode data please see reports SONYE\_005\_06001\_15.247A and SONYE\_005\_06001\_15.407A.**

#### 3.2 Identification of Accessory equipment

| TYPE       | MANF. | MODEL      |
|------------|-------|------------|
| AC ADAPTER | SONY  | VGP-AC16V7 |



#### **4 Subject Of Investigation**

All testing was performed on the PCG-1J1L referred to as EUT. The EUT carries a pre-certified WLAN module with FCC ID# PD9WM3945ABG. This test report contains full radiated testing as per FCC15.247 on the EUT with the pre-certified WLAN module. All conducted measurements are covered under *test report# INTEL-050901F*

During the testing process the EUT was tested in b mode with 1Mbps data rate and in g mode with 6Mbps data rate which yielded the worst case results. All data in this report shows the worst case between horizontal and vertical polarization for above 1GHz.

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT as specified by requirements listed in FCC rules Part 15.247 of Title 47 of the Code of Federal Regulations and Industry Canada rules RSS210.

## 5 Measurements

### 5.1 MAXIMUM PEAK OUTPUT POWER § 15.247 (RADIATED)

#### 5.1.1 LIMIT SUB CLAUSE § 15.247 (b) (1) (2) (3) (4)

| Frequency range | RF power output |
|-----------------|-----------------|
| 2400-2483.5 MHz | 36dBm EIRP      |

\*limit is based upon antenna gain of less than or equal to 6dBi.

#### 5.1.2 EIRP b MODE:

| TEST CONDITIONS         |                      | MAXIMUM PEAK OUTPUT POWER (dBm) |       |       |
|-------------------------|----------------------|---------------------------------|-------|-------|
| Frequency (MHz)         |                      | 2412                            | 2437  | 2462  |
| T <sub>nom</sub> (23)°C | V <sub>nom</sub> VDC | 9.98                            | 10.46 | 11.28 |
| Measurement uncertainty |                      | ±0.5dBm                         |       |       |

#### 5.1.3 EIRP g MODE:

| TEST CONDITIONS         |                      | MAXIMUM PEAK OUTPUT POWER (dBm) |      |       |
|-------------------------|----------------------|---------------------------------|------|-------|
| Frequency (MHz)         |                      | 2412                            | 2437 | 2462  |
| T <sub>nom</sub> (23)°C | V <sub>nom</sub> VDC | 9.84                            | 10.6 | 10.68 |
| Measurement uncertainty |                      | ±0.5dBm                         |      |       |

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## EIRP b Mode (2412MHz)

**CETECOM Inc.**

**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2412 MHz b mode

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

Sweep: eirp

### ***SWEEP TABLE: "EIRP RLAN CH1"***

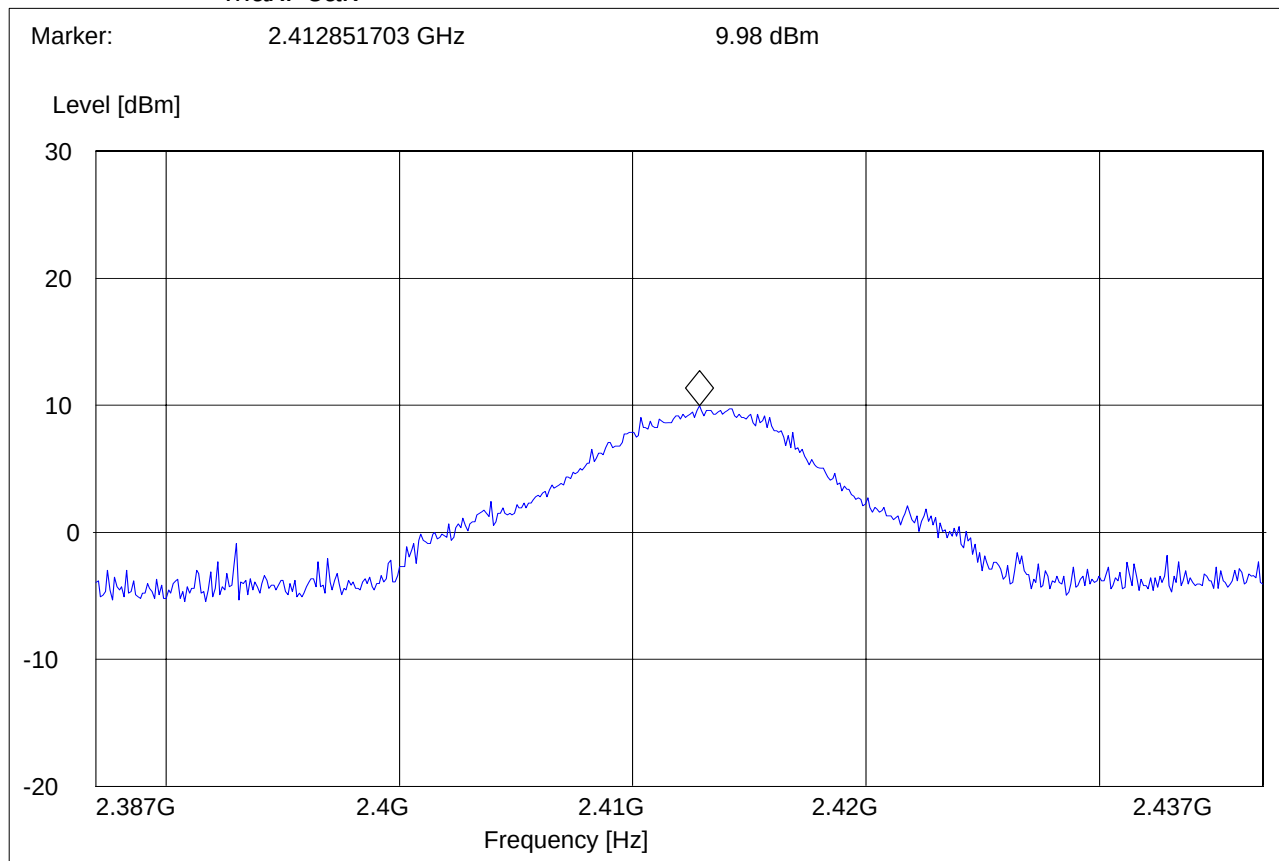
Short Description: EIRP RLAN channel-2412 MHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

2.4 GHz 2.4 GHz MaxPeak Coupled 10 MHz DUMMY-DBM

MaxPeak



**EIRP b Mode (2437MHz)****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2437 MHz b mode

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

Sweep: eirp

**SWEEP TABLE: "EIRP RLAN CH6"**

Short Description: EIRP RLAN channel-2437 MHz

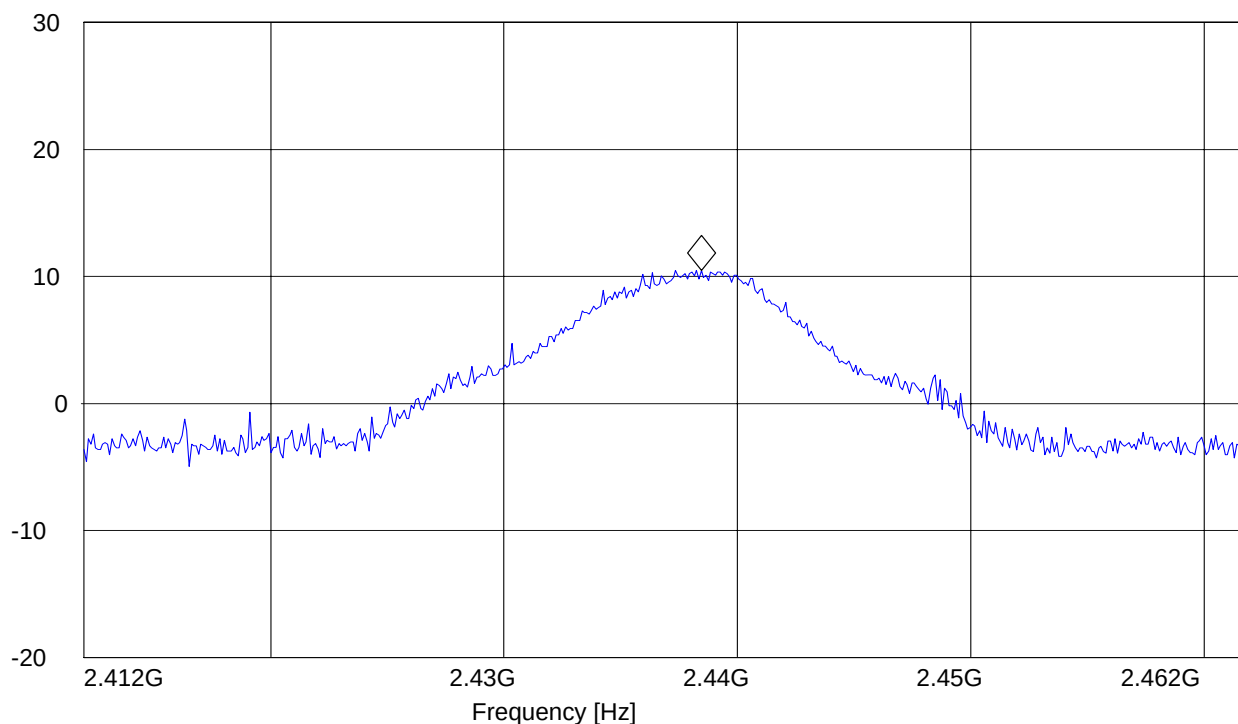
Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

2.4 GHz 2.5 GHz MaxPeak Coupled 10 MHz DUMMY-DBM

Marker: 2.438452906 GHz 10.46 dBm

Level [dBm]



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Date of Report:

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## EIRP b Mode (2462MHz)

**CETECOM Inc.**

**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2462 MHz b mode

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

Sweep: eirp

### ***SWEEP TABLE: "EIRP RLAN CH11"***

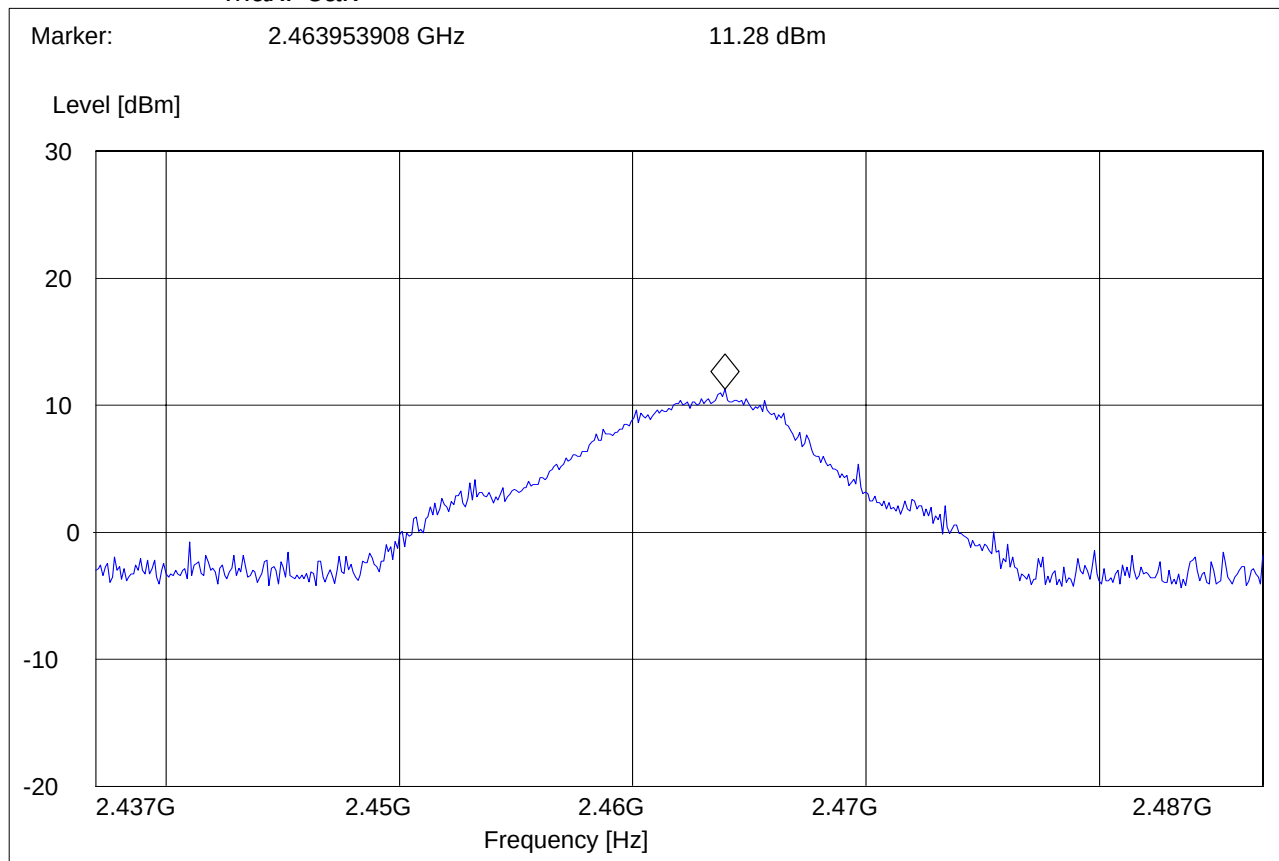
Short Description: EIRP RLAN channel-2462 MHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

2.4 GHz 2.5 GHz MaxPeak Coupled 10 MHz DUMMY-DBM

MaxPeak



**EIRP g Mode (2412MHz)****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2412MHz

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

Sweep: closed EIRP

***SWEEP TABLE: "EIRP RLAN CH1"***

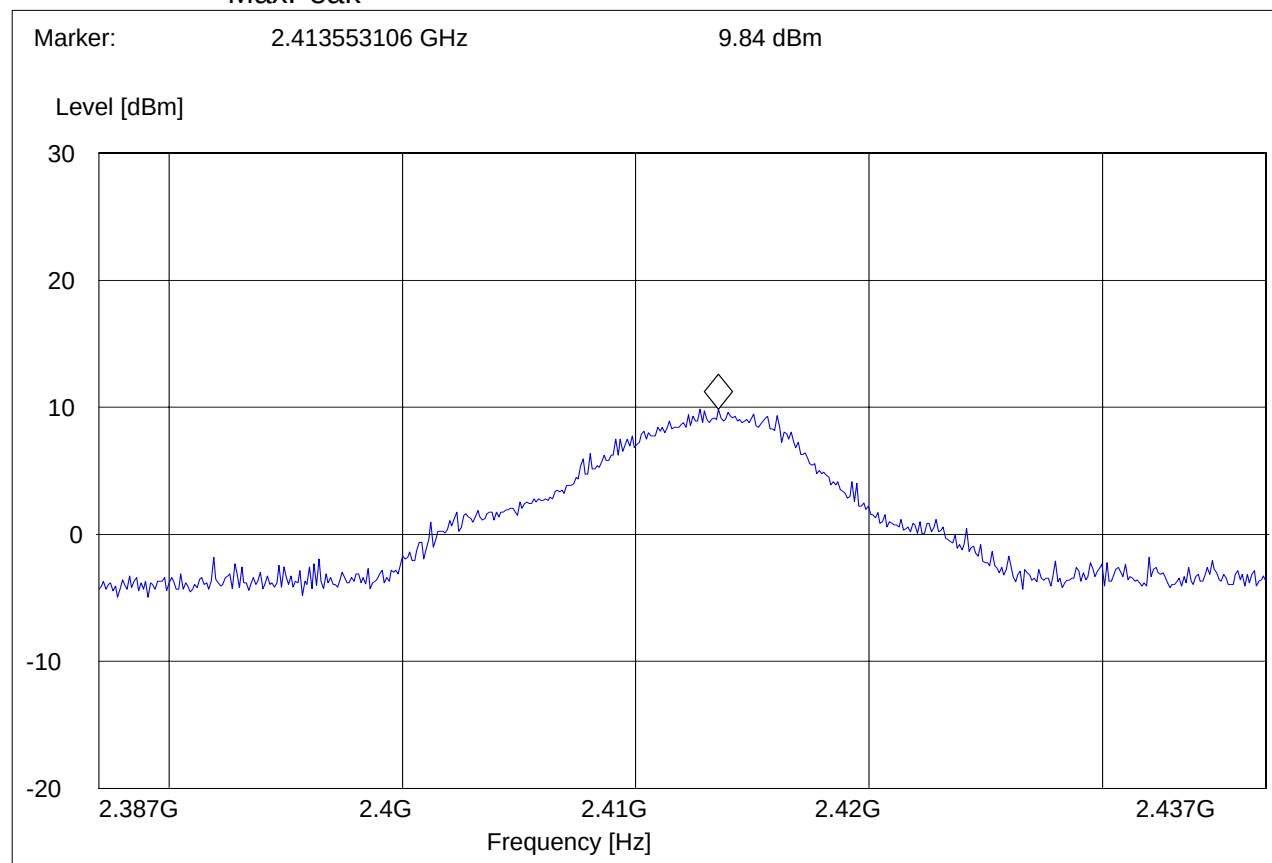
Short Description: EIRP RLAN channel-2412 MHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

2.4 GHz 2.4 GHz MaxPeak Coupled 10 MHz DUMMY-DBM

MaxPeak



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## EIRP g Mode (2437MHz)

**CETECOM Inc.**

**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2437MHz

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

Sweep: closed

### ***SWEEP TABLE: "EIRP RLAN CH6"***

Short Description: EIRP RLAN channel-2437 MHz

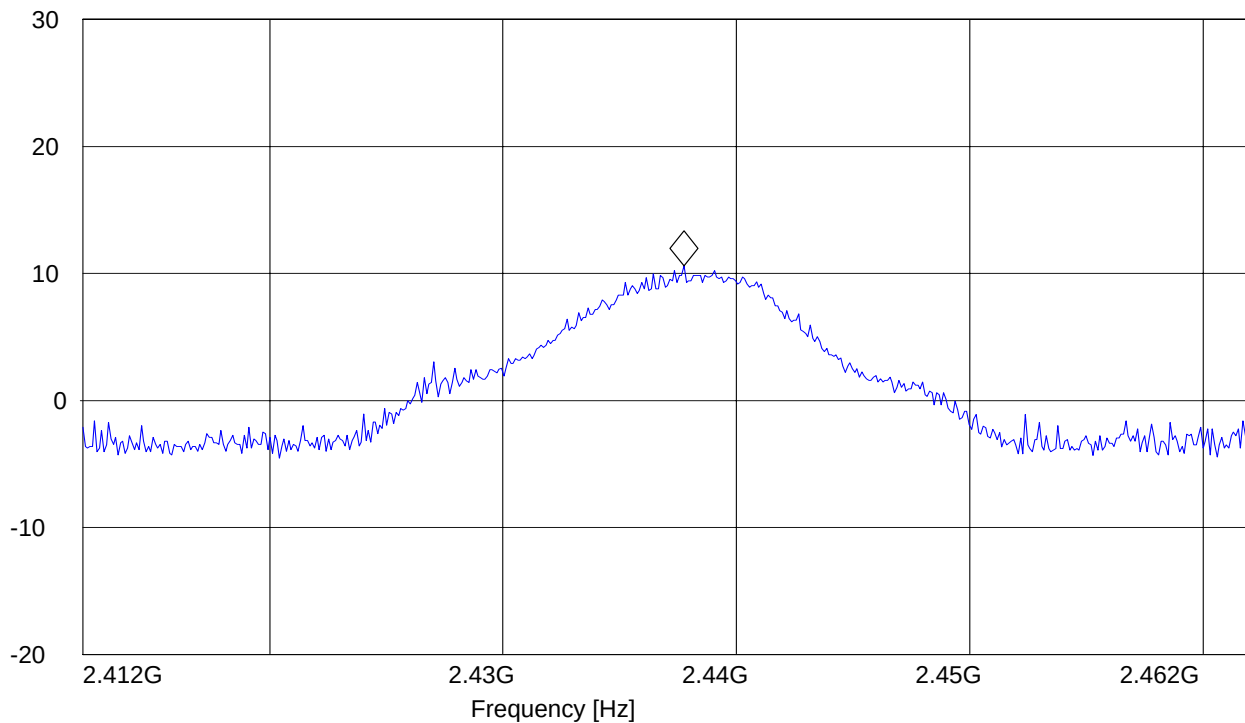
Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

2.4 GHz 2.5 GHz MaxPeak Coupled 10 MHz DUMMY-DBM

Marker: 2.437751503 GHz 10.6 dBm

Level [dBm]



**EIRP g Mode (2462MHz)****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2462MHz

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

Sweep: closed

**SWEEP TABLE: "EIRP RLAN CH11"**

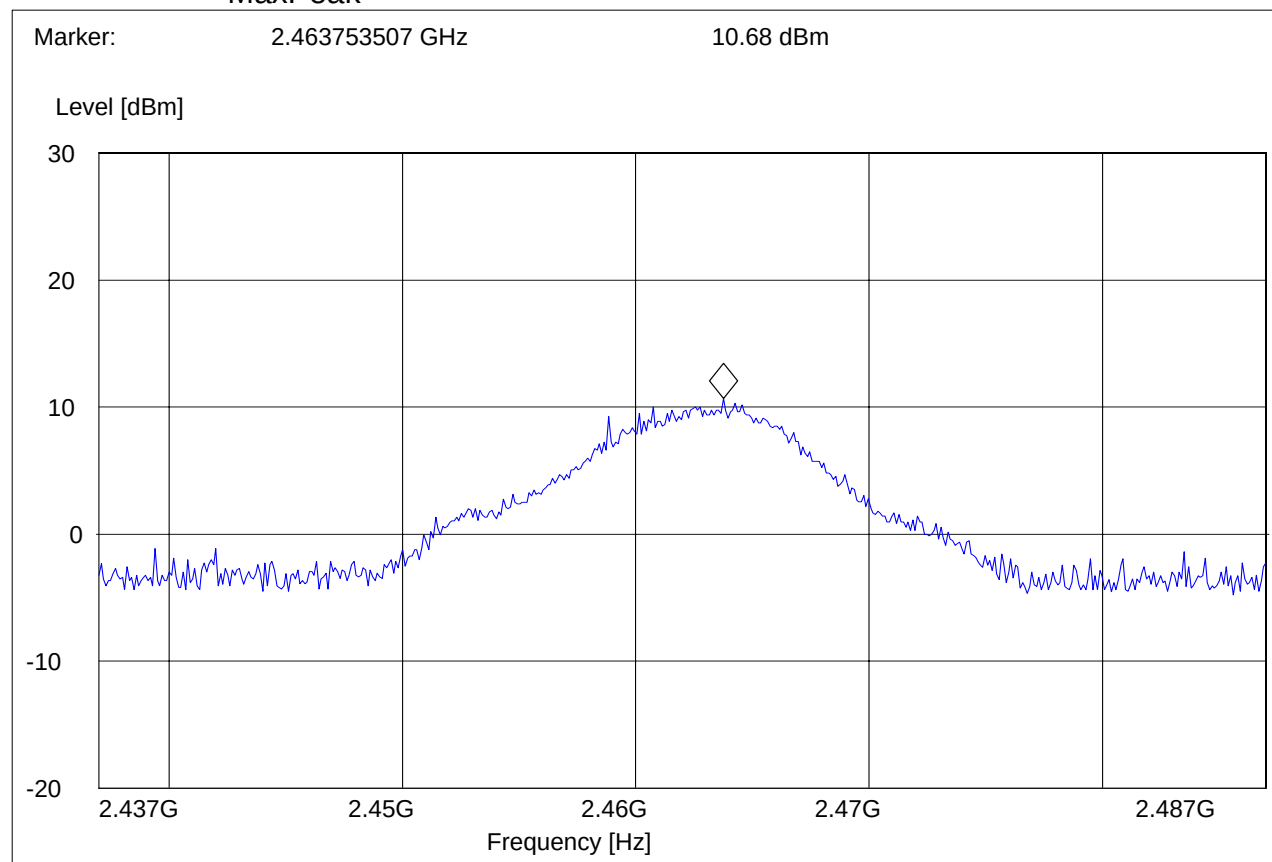
Short Description: EIRP RLAN channel-2462 MHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

2.4 GHz 2.5 GHz MaxPeak Coupled 10 MHz DUMMY-DBM

MaxPeak



## 5.2 RESTRICTED BAND EDGE COMPLIANCE RADIATED §15.247/15.205

### 5.2.1 LIMITS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz                        | MHz                   | MHz             | GHz              |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110              | 16.42 - 16.423        | 399.9 - 410     | 4.5 - 5.15       |
| <sup>1</sup> 0.495 - 0.505 | 16.69475 - 16.69525   | 608 - 614       | 5.35 - 5.46      |
| 2.1735 - 2.1905            | 16.80425 - 16.80475   | 960 - 1240      | 7.25 - 7.75      |
| 4.125 - 4.128              | 25.5 - 25.67          | 1300 - 1427     | 8.025 - 8.5      |
| 4.17725 - 4.17775          | 37.5 - 38.25          | 1435 - 1626.5   | 9.0 - 9.2        |
| 4.20725 - 4.20775          | 73 - 74.6             | 1645.5 - 1646.5 | 9.3 - 9.5        |
| 6.215 - 6.218              | 74.8 - 75.2           | 1660 - 1710     | 10.6 - 12.7      |
| 6.26775 - 6.26825          | 108 - 121.94          | 1718.8 - 1722.2 | 13.25 - 13.4     |
| 6.31175 - 6.31225          | 123 - 138             | 2200 - 2300     | 14.47 - 14.5     |
| 8.291 - 8.294              | 149.9 - 150.05        | 2310 - 2390     | 15.35 - 16.2     |
| 8.362 - 8.366              | 156.52475 - 156.52525 | 2483.5 - 2500   | 17.7 - 21.4      |
| 8.37625 - 8.38675          | 156.7 - 156.9         | 2690 - 2900     | 22.01 - 23.12    |
| 8.41425 - 8.41475          | 162.0125 - 167.17     | 3260 - 3267     | 23.6 - 24.0      |
| 12.29 - 12.293             | 167.72 - 173.2        | 3332 - 3339     | 31.2 - 31.8      |
| 12.51975 - 12.52025        | 240 - 285             | 3345.8 - 3358   | 36.43 - 36.5     |
| 12.57675 - 12.57725        | 322 - 335.4           | 3600 - 4400     | ( <sup>2</sup> ) |
| 13.36 - 13.41              |                       |                 |                  |

**\*PEAK LIMIT= 74dBuV/m**

**\*AVG. LIMIT= 54dBuV/m**

**5.2.2 b MODE (2412MHz)****PEAK****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2412 MHz b mode

Antenna: H

EUT: V

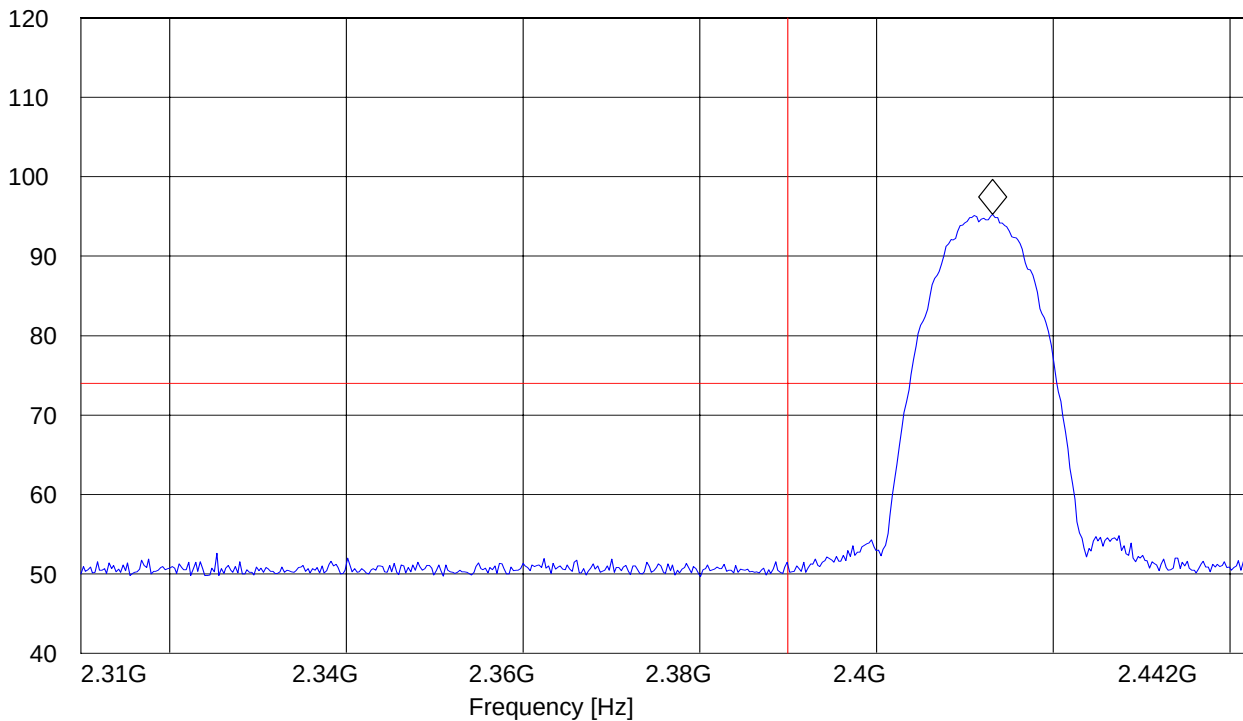
Test operator: Pete

Voltage: AC/DC

Sweep: lbe pk

**SWEEP TABLE: "FCC15.247 LBE\_PK"**

| Start     | Stop      | Detector | Meas.   | IF     | Transducer       |
|-----------|-----------|----------|---------|--------|------------------|
| Frequency | Frequency |          | Time    | Bandw. |                  |
| 2.3 GHz   | 2.4 GHz   | MaxPeak  | Coupled | 1 MHz  | #326horn_AF_vert |

Marker: 2.413166333 GHz 95.23 dB $\mu$ V/mLevel [dB $\mu$ V/m]

**AVG****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2412 MHz b mode

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

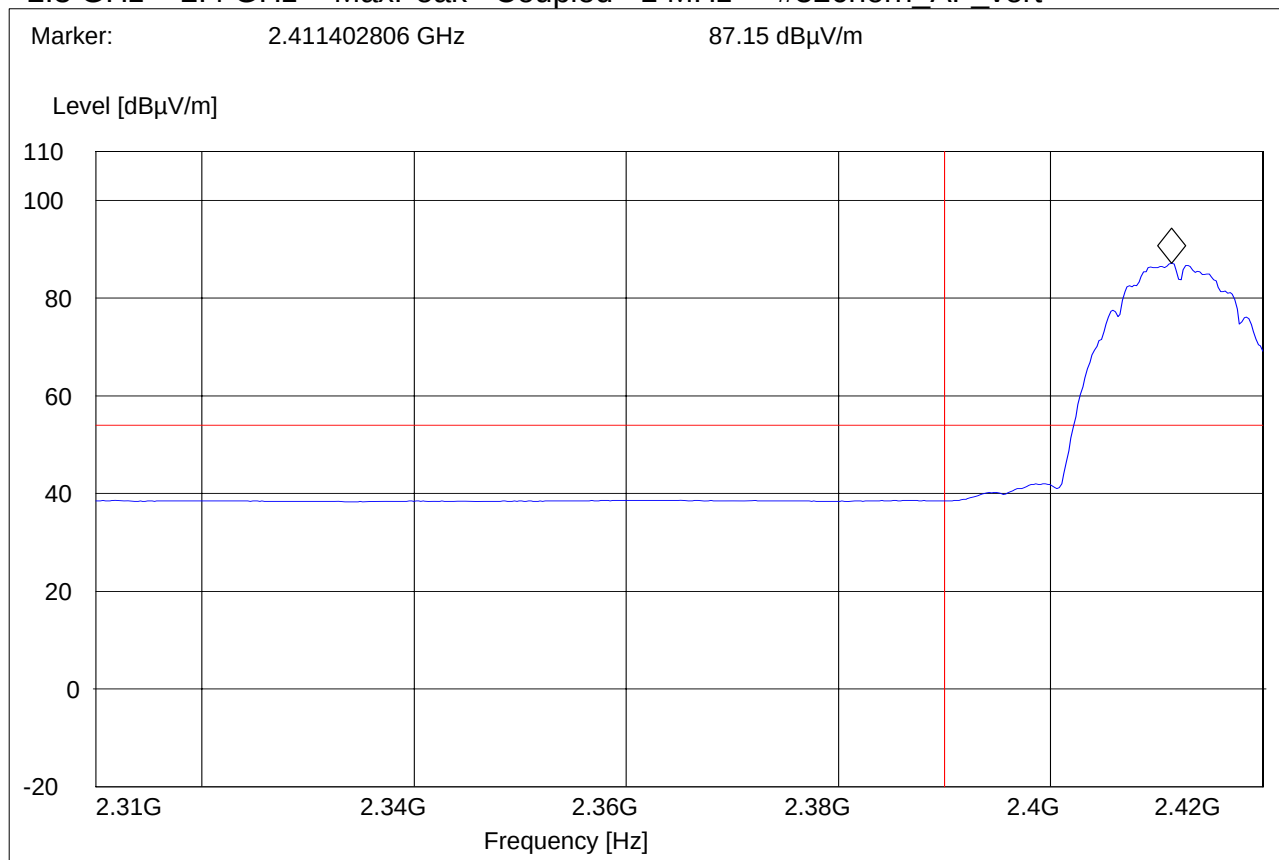
Sweep: lbe avg

**SWEEP TABLE: "FCC15.247 LBE\_AVG"**

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

2.3 GHz 2.4 GHz MaxPeak Coupled 1 MHz #326horn\_AF\_vert



**5.2.3 b MODE (2462MHz)****PEAK****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2462 MHz b mode

Antenna: H

EUT: V

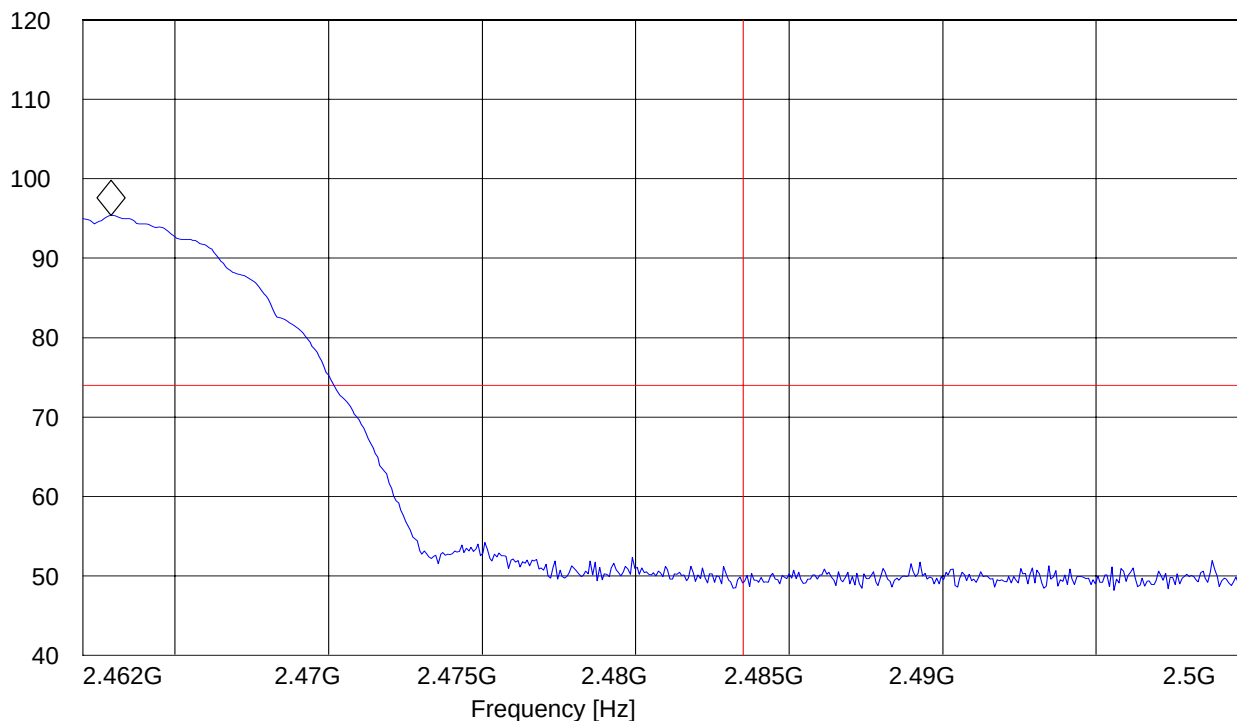
Test operator: Pete

Voltage: AC/DC

Sweep: hbe pk

**SWEEP TABLE: "FCC15.247 HBE\_PK"**

| Start     | Stop      | Detector | Meas.   | IF     | Transducer       |
|-----------|-----------|----------|---------|--------|------------------|
| Frequency | Frequency |          | Time    | Bandw. |                  |
| 2.5 GHz   | 2.5 GHz   | MaxPeak  | Coupled | 1 MHz  | #326horn_AF_vert |

Marker: 2.462913828 GHz 95.38 dB $\mu$ V/mLevel [dB $\mu$ V/m]

**AVG****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2462 MHz b mode

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

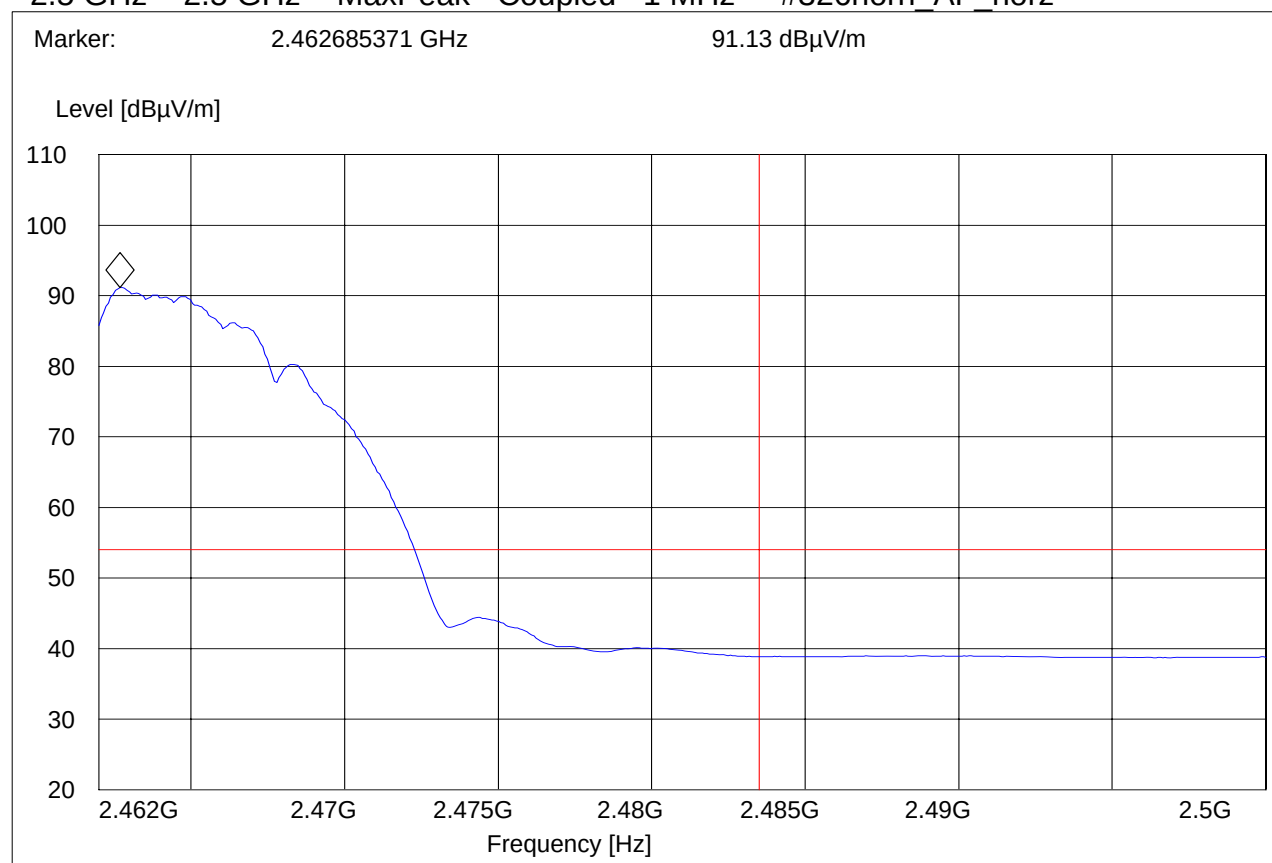
Sweep: hbe avg

**SWEEP TABLE: "FCC15.247 HBE\_AVG"**

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

2.5 GHz 2.5 GHz MaxPeak Coupled 1 MHz #326horn\_AF\_horz



**5.2.4 g MODE (2412MHz)****PEAK****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2412MHz

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

Sweep: closed

**SWEEP TABLE: "FCC15.247 LBE\_PK"**

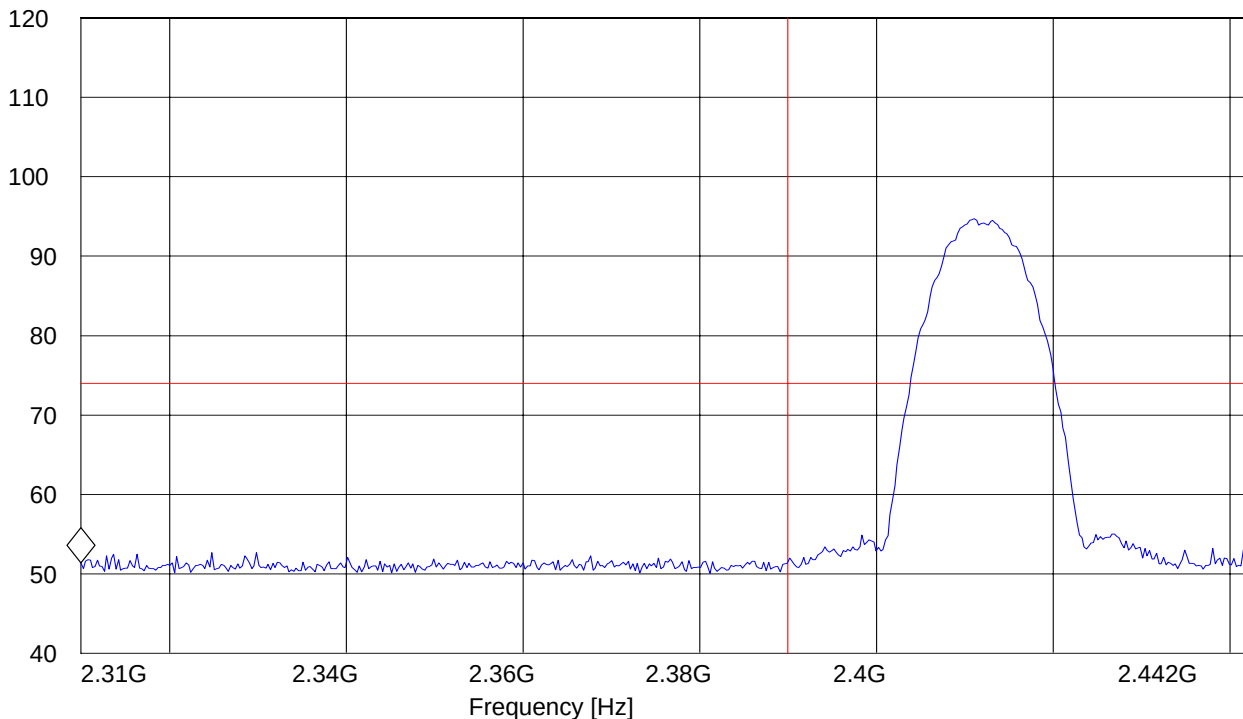
Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

2.3 GHz 2.4 GHz MaxPeak Coupled 1 MHz #326horn\_AF\_vert

Marker: 2.31 GHz 51.39 dBμV/m

Level [dBμV/m]



**AVG****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2412MHz

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

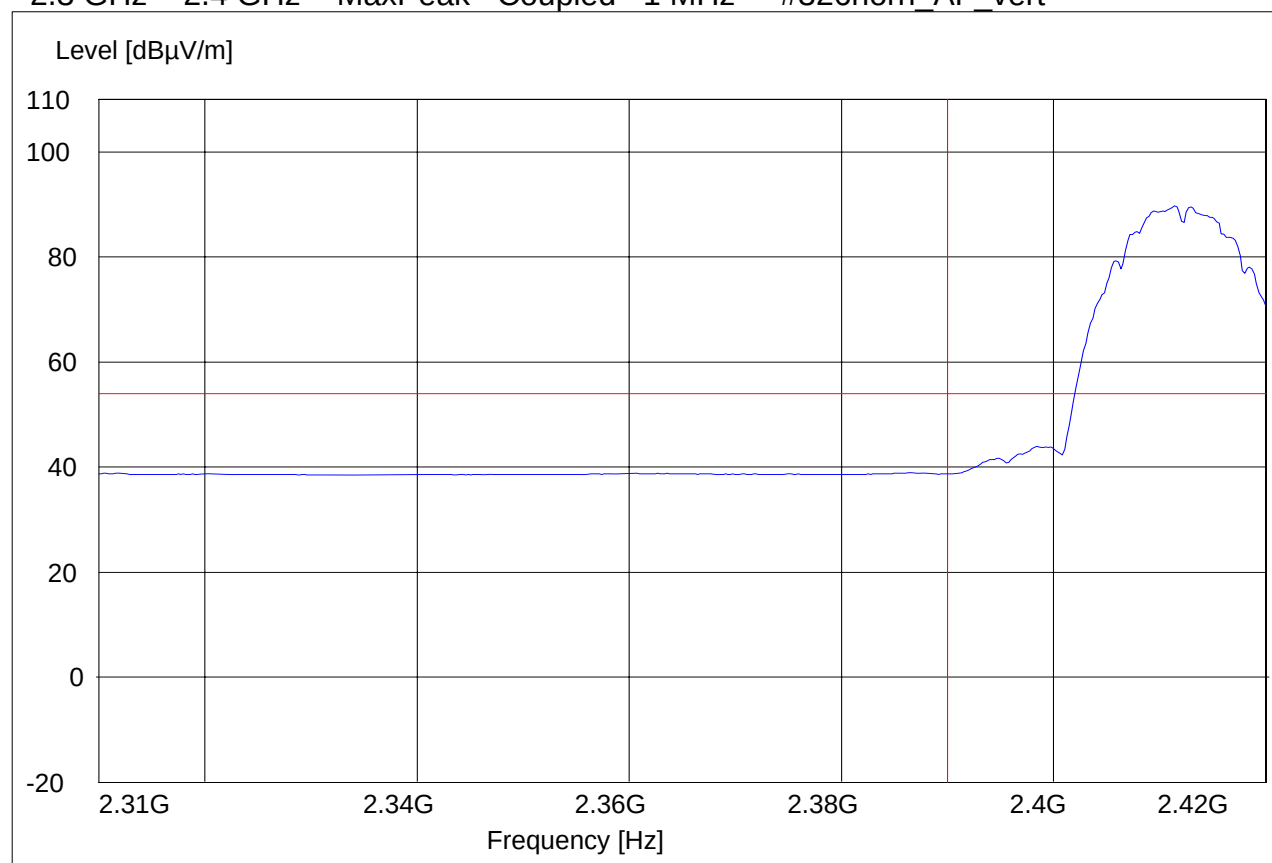
Sweep: closed avg

**SWEEP TABLE: "FCC15.247 LBE\_AVG"**

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

2.3 GHz 2.4 GHz MaxPeak Coupled 1 MHz #326horn\_AF\_vert



**5.2.5 g MODE (2462MHz)****PEAK****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2462MHz

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

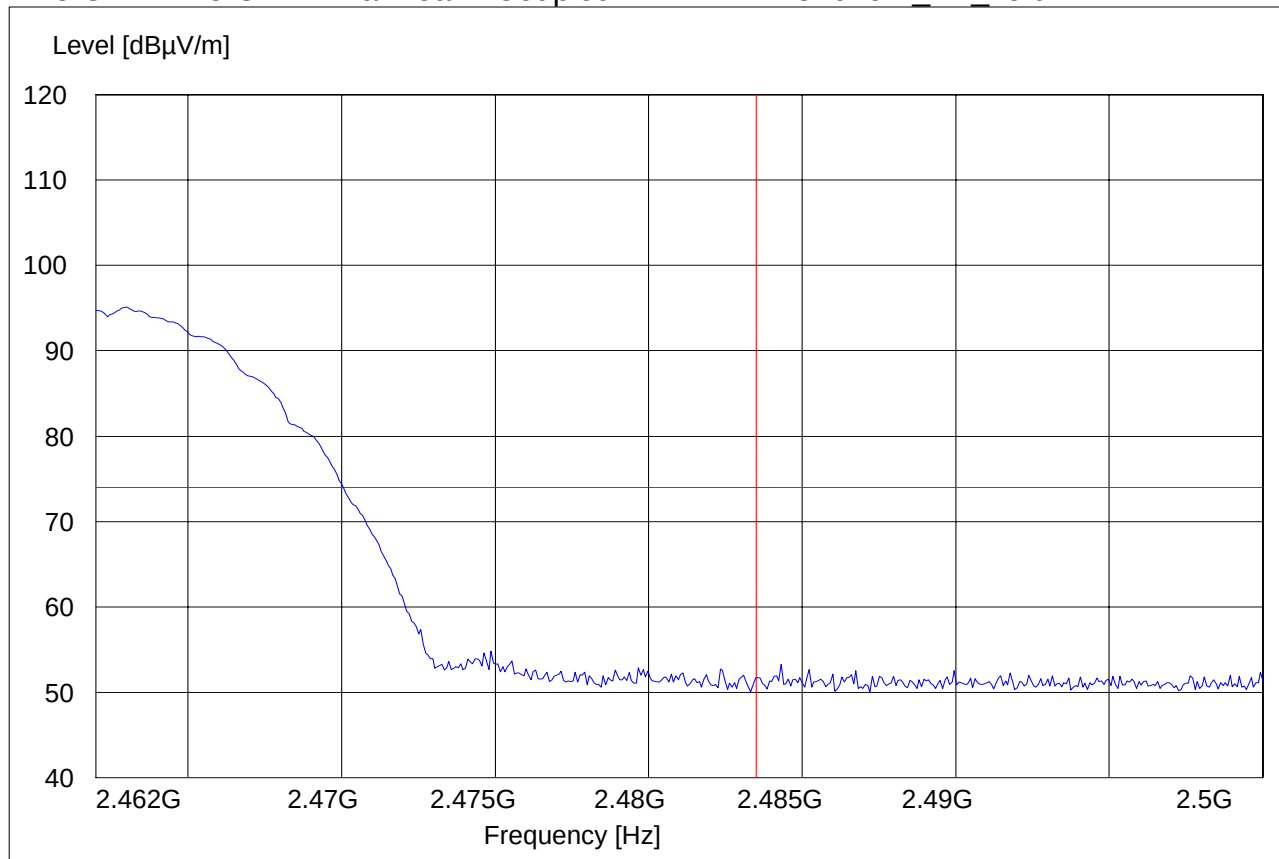
Sweep: closed

**SWEEP TABLE: "FCC15.247 HBE\_PK"**

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

2.5 GHz 2.5 GHz MaxPeak Coupled 1 MHz #326horn\_AF\_vert



**AVG****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2462MHz

Antenna: H

EUT: V

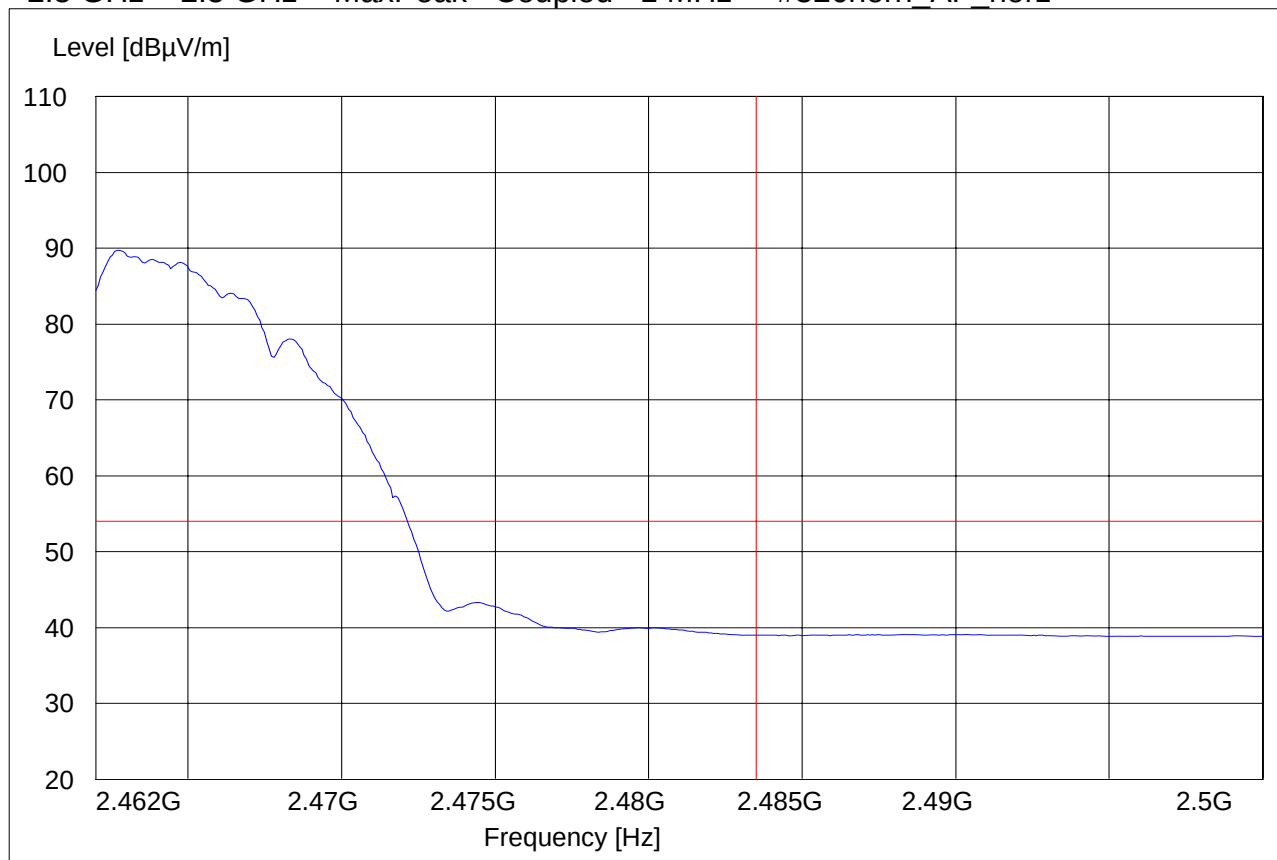
Test operator: Pete

Voltage: AC/DC

Sweep: closed avg

**SWEEP TABLE: "FCC15.247 HBE\_AVG"**

| Start     | Stop      | Detector | Meas.   | IF     | Transducer       |
|-----------|-----------|----------|---------|--------|------------------|
| Frequency | Frequency |          | Time    | Bandw. |                  |
| 2.5 GHz   | 2.5 GHz   | MaxPeak  | Coupled | 1 MHz  | #326horn_AF_horz |



### 5.3 TRANSMITTER SPURIOUS EMISSIONS RADIATED § 15.247/15.205/15.209

#### 5.3.1 LIMITS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz                        | MHz                   | MHz             | GHz              |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110              | 16.42 - 16.423        | 399.9 - 410     | 4.5 - 5.15       |
| <sup>1</sup> 0.495 - 0.505 | 16.69475 - 16.69525   | 608 - 614       | 5.35 - 5.46      |
| 2.1735 - 2.1905            | 16.80425 - 16.80475   | 960 - 1240      | 7.25 - 7.75      |
| 4.125 - 4.128              | 25.5 - 25.67          | 1300 - 1427     | 8.025 - 8.5      |
| 4.17725 - 4.17775          | 37.5 - 38.25          | 1435 - 1626.5   | 9.0 - 9.2        |
| 4.20725 - 4.20775          | 73 - 74.6             | 1645.5 - 1646.5 | 9.3 - 9.5        |
| 6.215 - 6.218              | 74.8 - 75.2           | 1660 - 1710     | 10.6 - 12.7      |
| 6.26775 - 6.26825          | 108 - 121.94          | 1718.8 - 1722.2 | 13.25 - 13.4     |
| 6.31175 - 6.31225          | 123 - 138             | 2200 - 2300     | 14.47 - 14.5     |
| 8.291 - 8.294              | 149.9 - 150.05        | 2310 - 2390     | 15.35 - 16.2     |
| 8.362 - 8.366              | 156.52475 - 156.52525 | 2483.5 - 2500   | 17.7 - 21.4      |
| 8.37625 - 8.38675          | 156.7 - 156.9         | 2690 - 2900     | 22.01 - 23.12    |
| 8.41425 - 8.41475          | 162.0125 - 167.17     | 3260 - 3267     | 23.6 - 24.0      |
| 12.29 - 12.293             | 167.72 - 173.2        | 3332 - 3339     | 31.2 - 31.8      |
| 12.51975 - 12.52025        | 240 - 285             | 3345.8 - 3358   | 36.43 - 36.5     |
| 12.57675 - 12.57725        | 322 - 335.4           | 3600 - 4400     | ( <sup>2</sup> ) |
| 13.36 - 13.41              |                       |                 |                  |

**\*PEAK LIMIT= 74dBuV/m**

**\*AVG. LIMIT= 54dBuV/m**

#### NOTE:

1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3 and 25 GHz very short cable connections to the antenna was used to minimize the noise level.

2. All measurements are done in peak mode using an average limit , unless specified with the plots.

#### **Results for the radiated measurements below 30MHz according § 15.33**

| Frequency    | Measured values                       | Remarks                                   |
|--------------|---------------------------------------|-------------------------------------------|
| 9KHz – 30MHz | No emissions found, caused by the EUT | This is valid for all the tested channels |

**5.3.2 RESULTS b MODE (worst case)****30MHz – 1GHz****Antenna: vertical****Note: This plot is valid for low, mid, high channels (worst-case plot)****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2412 MHz

Antenna: V

EUT: V

Test operator: Pete

Voltage: AC/DC

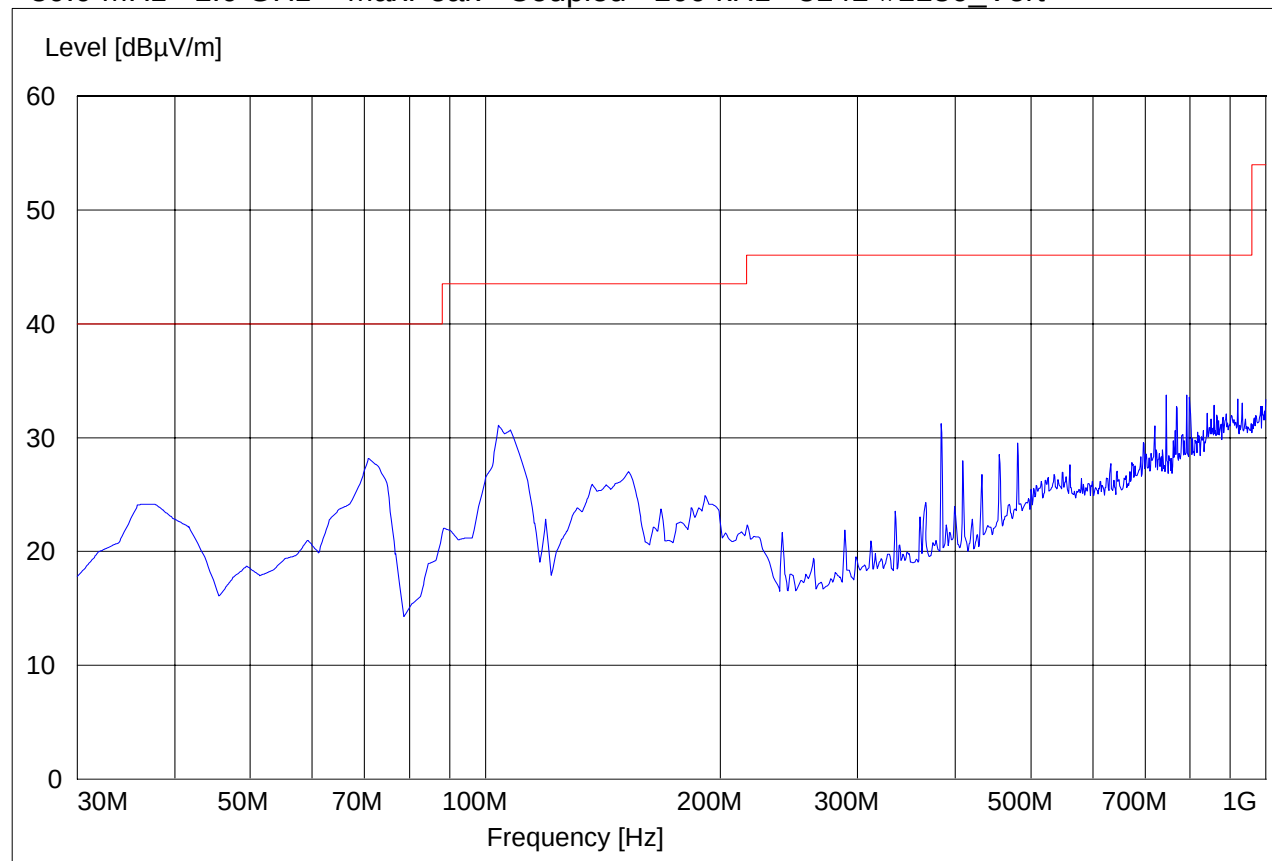
Sweep: closed

***SWEEP TABLE: "FCC15.247\_30M-1G\_Ver"***

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

30.0 MHz 1.0 GHz MaxPeak Coupled 100 kHz 3141-#1186\_Vert



**30MHz – 1GHz****Antenna: horizontal****Note: This plot is valid for low, mid, high channels (worst-case plot)****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2412 MHz

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

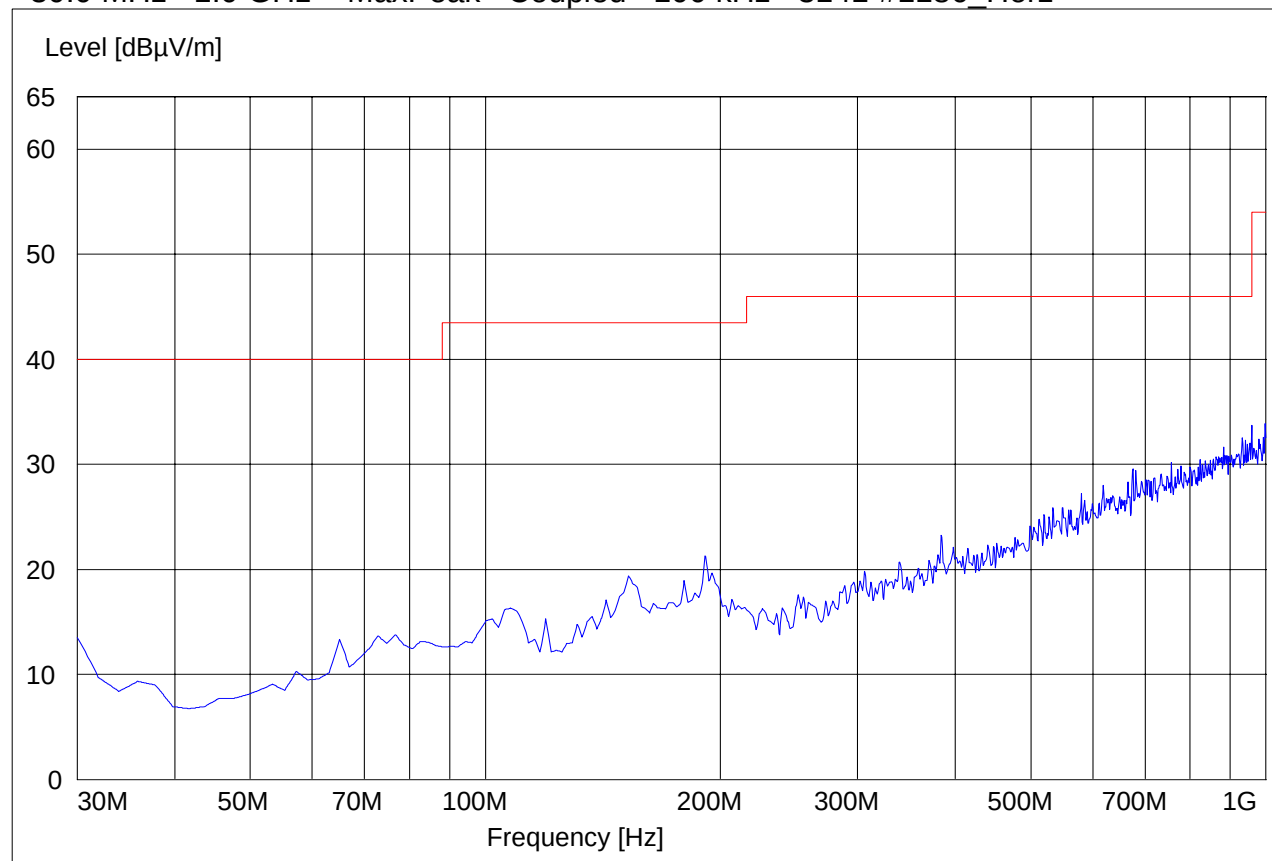
Sweep: closed

***SWEEP TABLE: "FCC15.247\_30M-1G\_Hor"***

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

30.0 MHz 1.0 GHz MaxPeak Coupled 100 kHz 3141-#1186\_Horz



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### 1-3GHz (2412MHz)

**Note: The peaks above the limit line is the carrier freq.**

**Note: Peak Reading vs. Average limit**

**CETECOM Inc.**

**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2412MHz

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

Sweep: closed marked signal is TX ch1

### **SWEEP TABLE: "FCC15.247\_1-3G"**

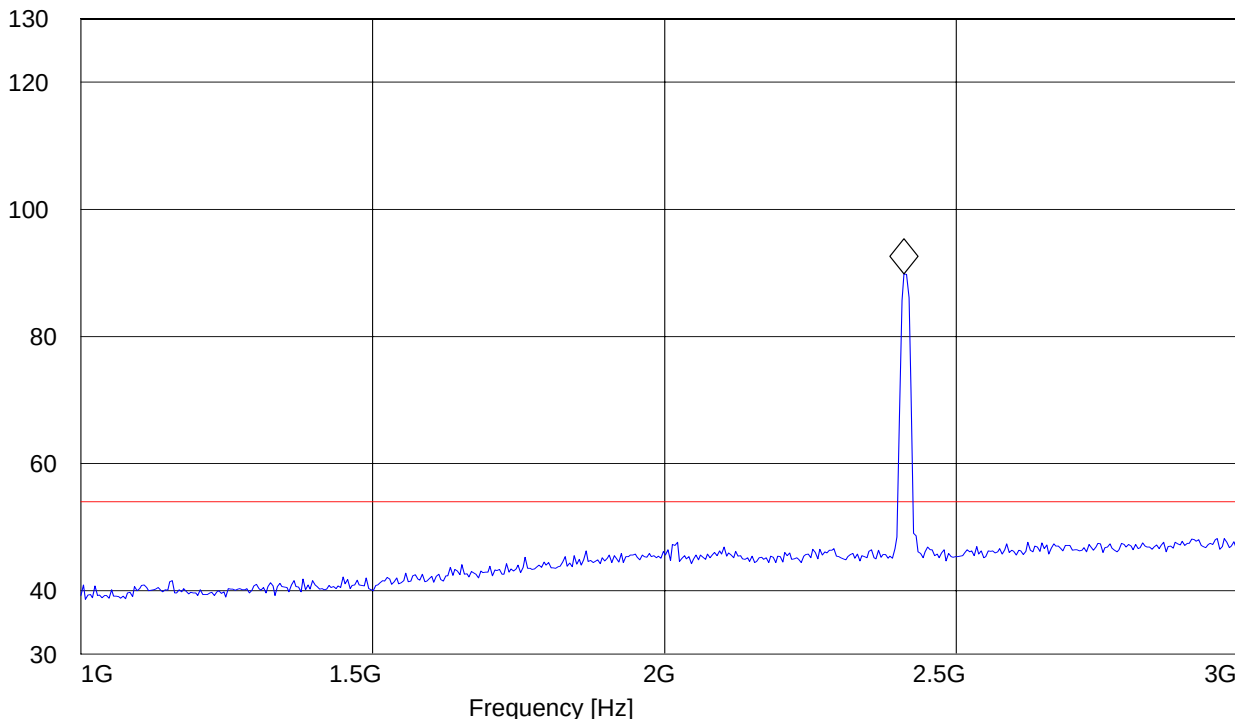
| Start | Stop | Detector | Meas. | IF | Transducer |
|-------|------|----------|-------|----|------------|
|-------|------|----------|-------|----|------------|

| Frequency | Frequency | Time | Bandw. |
|-----------|-----------|------|--------|
|-----------|-----------|------|--------|

|         |         |         |               |                  |
|---------|---------|---------|---------------|------------------|
| 1.0 GHz | 3.0 GHz | MaxPeak | Coupled 1 MHz | #326horn_AF_vert |
|---------|---------|---------|---------------|------------------|

Marker: 2.410821643 GHz 89.87 dBμV/m

Level [dBμV/m]



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1-3GHz (2437MHz)

Note: The peaks above the limit line is the carrier freq.

Note: Peak Reading vs. Average limit

**CETECOM Inc.**

**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2437MHz

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

Sweep: closed marked signal is TX ch 6

**SWEEP TABLE: "FCC15.247\_1-3G"**

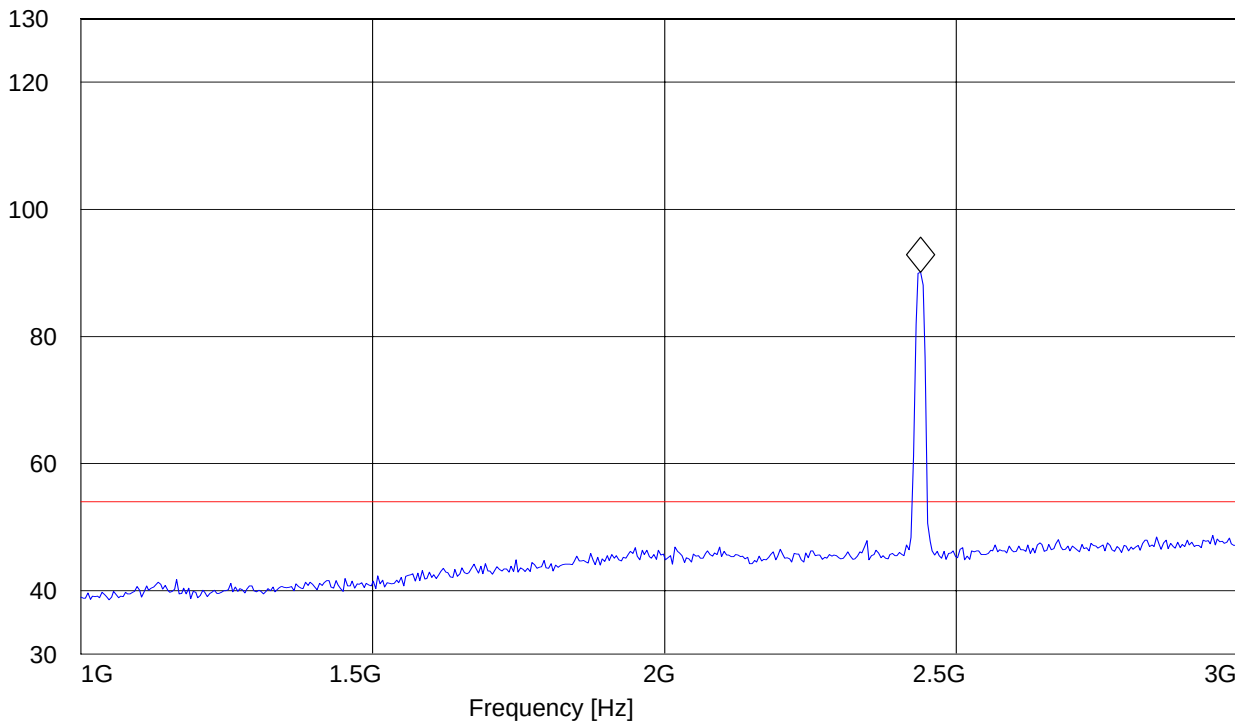
Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

1.0 GHz 3.0 GHz MaxPeak Coupled 1 MHz #326horn\_AF\_vert

Marker: 2.438877756 GHz 90.06 dBμV/m

Level [dBμV/m]



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1-3GHz (2462MHz)

Note: The peaks above the limit line is the carrier freq.

Note: Peak Reading vs. Average limit

**CETECOM Inc.**

**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX 2462MHz

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

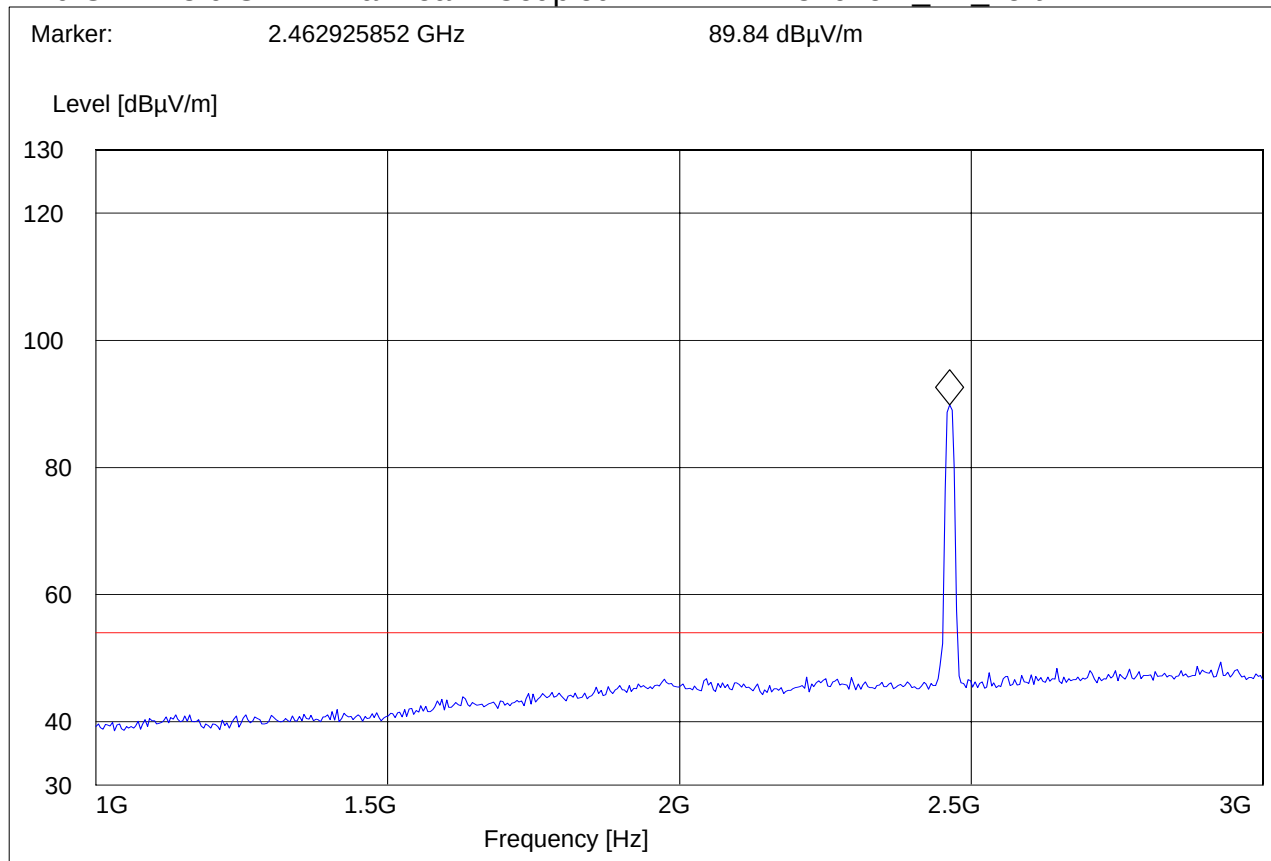
Sweep: closed marked signal is TX ch11

**SWEEP TABLE: "FCC15.247\_1-3G"**

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

1.0 GHz 3.0 GHz MaxPeak Coupled 1 MHz #326horn\_AF\_vert



**3-18GHz (2412MHz)****Note: Peak Reading vs. Average limit****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX2412 MHz

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

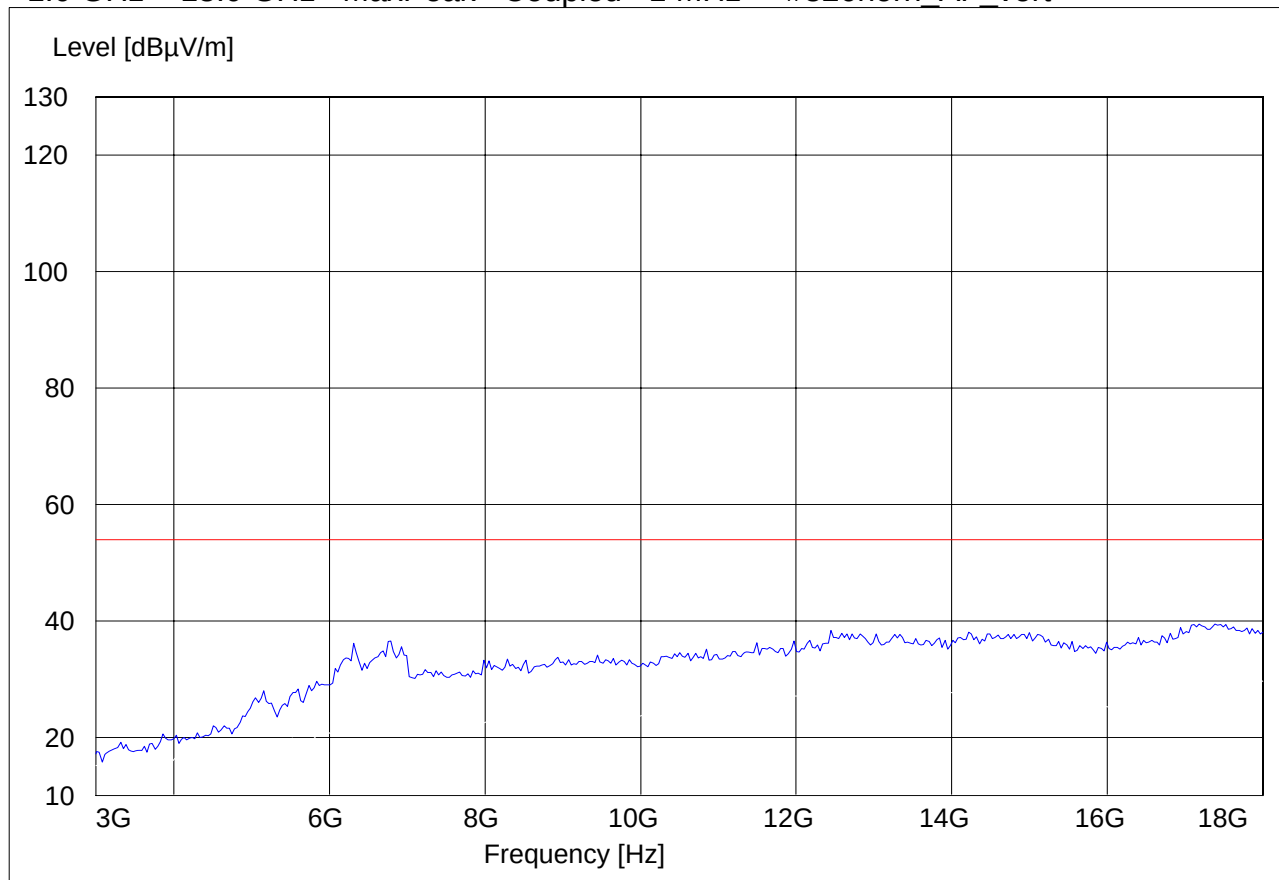
Sweep: closed

**SWEEP TABLE: "FCC15.247\_3-18G"**

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

1.0 GHz 18.0 GHz MaxPeak Coupled 1 MHz #326horn\_AF\_vert



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3-18GHz (2437MHz)

Note: Peak Reading vs. Average limit

**CETECOM Inc.**

**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX2437 MHz

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

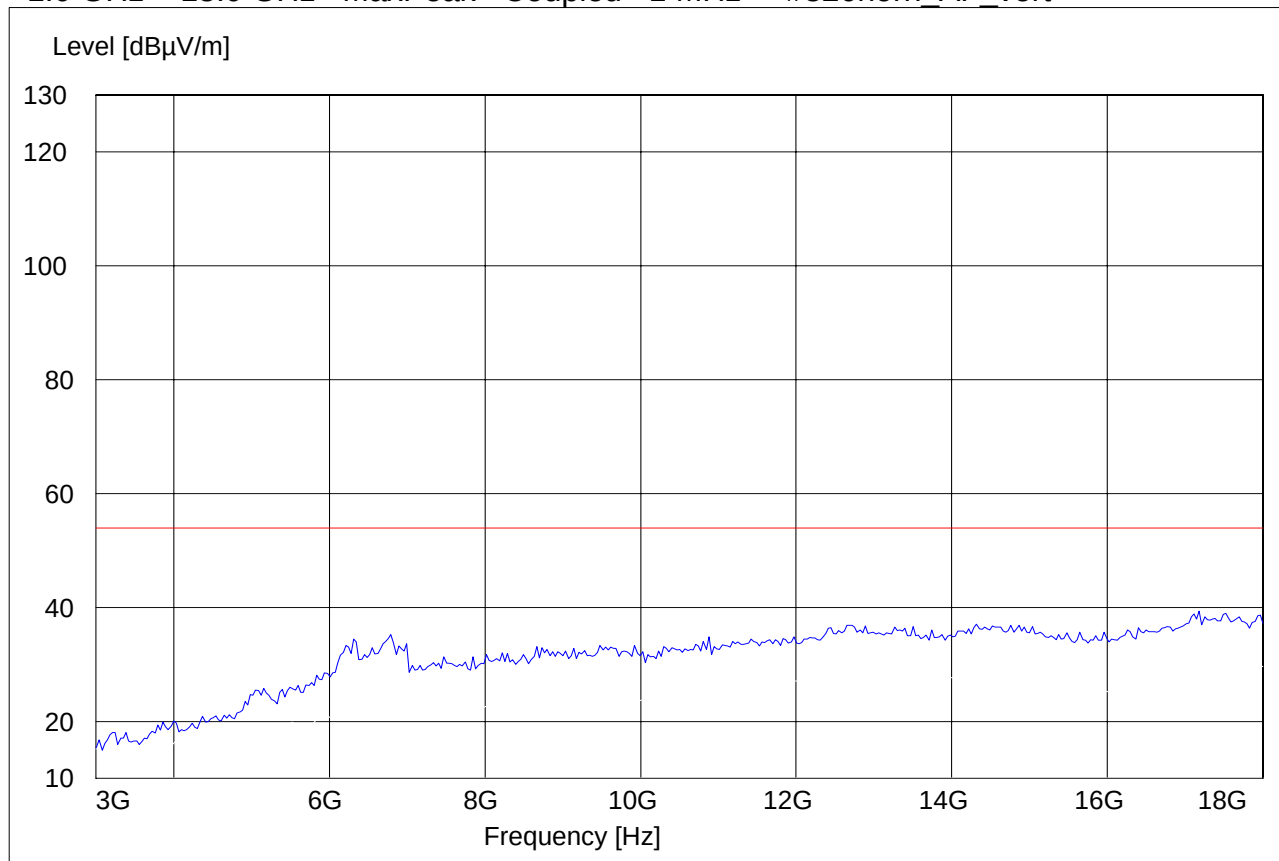
Sweep: closed

**SWEEP TABLE: "FCC15.247\_3-18G"**

| Start | Stop | Detector | Meas. | IF | Transducer |
|-------|------|----------|-------|----|------------|
|-------|------|----------|-------|----|------------|

| Frequency | Frequency | Time | Bandw. |
|-----------|-----------|------|--------|
|-----------|-----------|------|--------|

|         |          |         |         |       |                  |
|---------|----------|---------|---------|-------|------------------|
| 1.0 GHz | 18.0 GHz | MaxPeak | Coupled | 1 MHz | #326horn_AF_vert |
|---------|----------|---------|---------|-------|------------------|



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3-18GHz (2462MHz)

Note: Peak Reading vs. Average limit

**CETECOM Inc.**

**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX2462 MHz

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

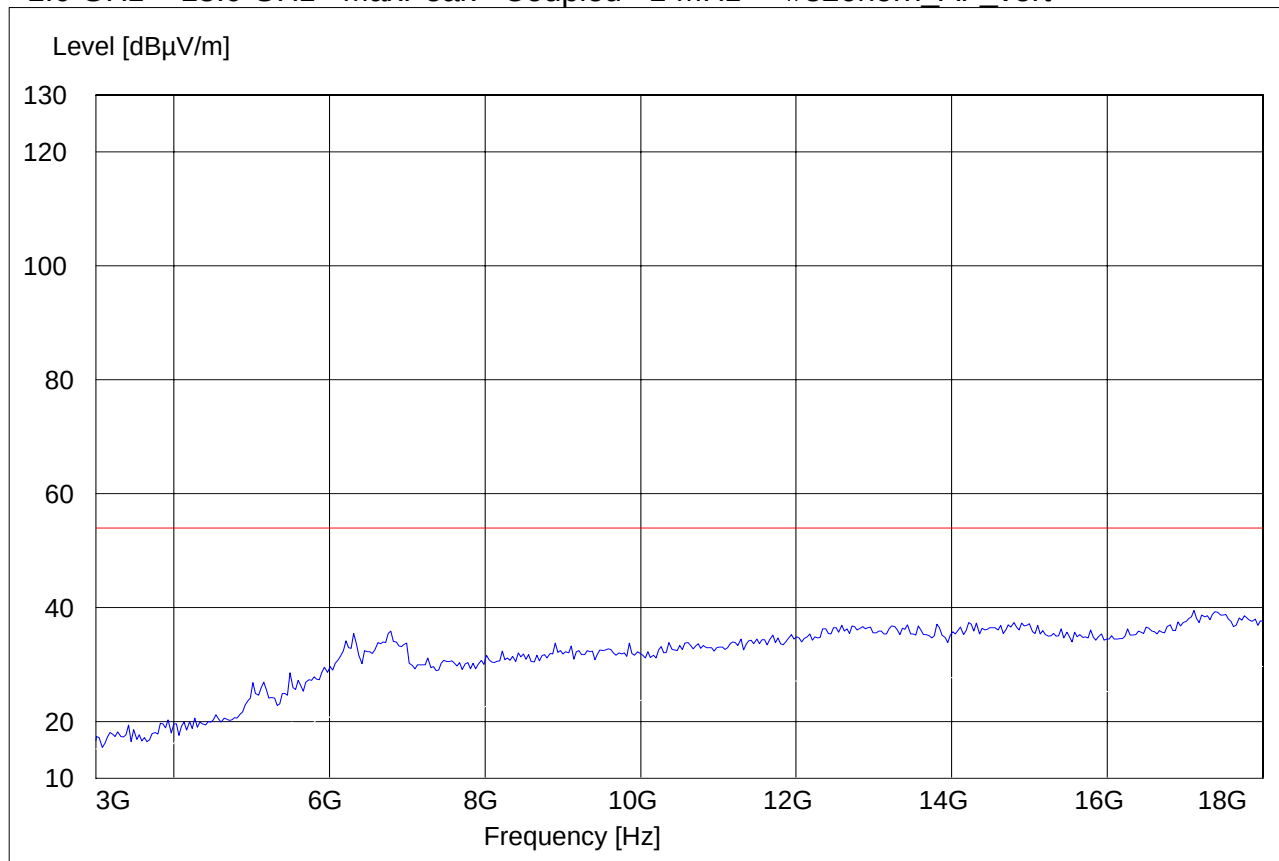
Sweep: closed

**SWEEP TABLE: "FCC15.247\_3-18G"**

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

1.0 GHz 18.0 GHz MaxPeak Coupled 1 MHz #326horn\_AF\_vert



**18-25GHz****Note: This plot is valid for low, mid, high channels (worst-case plot)****Note: Peak Reading vs. Average limit****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: TX2412 MHz

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

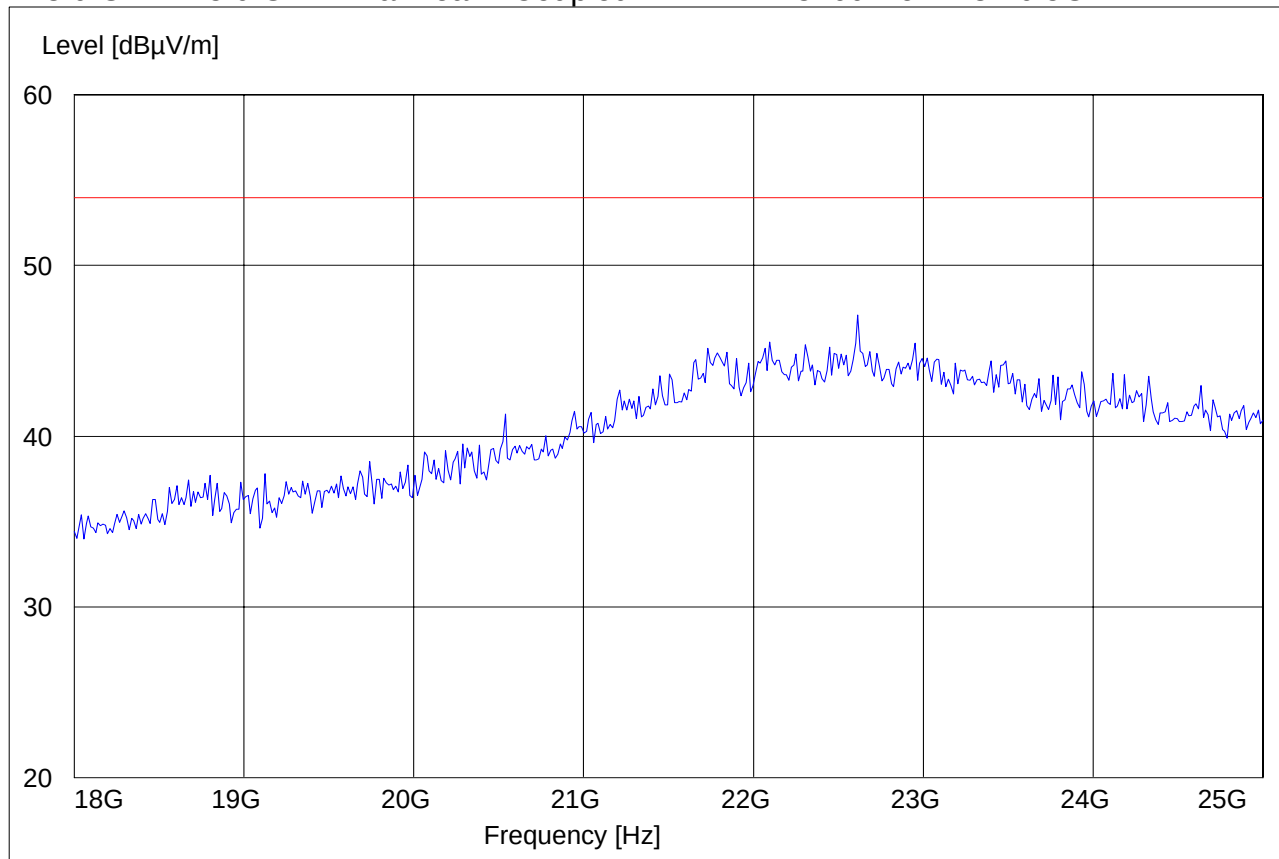
Sweep: closed

**SWEEP TABLE: "FCC15.247\_18-26.5G"**

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

18.0 GHz 25.0 GHz MaxPeak Coupled 1 MHz 3160 Horn 18-26.5G



**5.4 RECEIVER SPURIOUS RADIATION § 15.209/RSS210****5.4.1 LIMITS**

| Frequency (MHz) | Field strength (µV/m) | Measurement distance (m) |
|-----------------|-----------------------|--------------------------|
| 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                        |

**NOTE:**

1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3 and 25 GHz very short cable connections to the antenna was used to minimize the noise level.

2. All measurements are done in peak mode using an average limit , unless specified with the plots.



## 5.4.2 RESULTS

30MHz – 1GHz

Antenna: vertical (worst case)

**CETECOM Inc.**

**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: RX

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

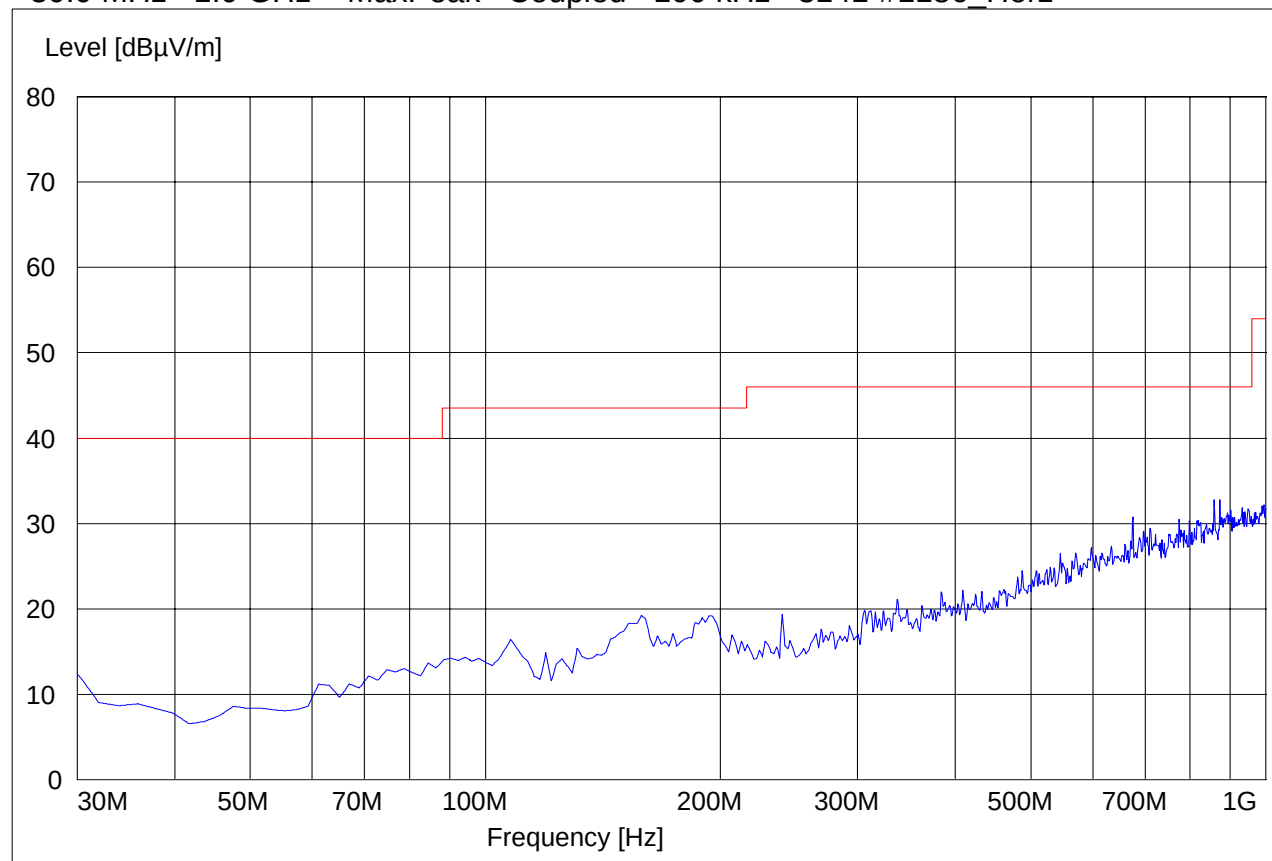
Sweep: closed

### ***SWEEP TABLE: "CANDA RE\_30M-1G\_Hor"***

| Start | Stop | Detector | Meas. | IF | Transducer |
|-------|------|----------|-------|----|------------|
|-------|------|----------|-------|----|------------|

| Frequency | Frequency | Time | Bandw. |
|-----------|-----------|------|--------|
|-----------|-----------|------|--------|

|          |         |         |         |         |                 |
|----------|---------|---------|---------|---------|-----------------|
| 30.0 MHz | 1.0 GHz | MaxPeak | Coupled | 100 kHz | 3141-#1186_Horz |
|----------|---------|---------|---------|---------|-----------------|



Test Report #: SONYE\_005\_06001\_15.247BG

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### 1-3GHz

**Note: Peak Reading vs. Average limit**

**CETECOM Inc.**

**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: RX

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

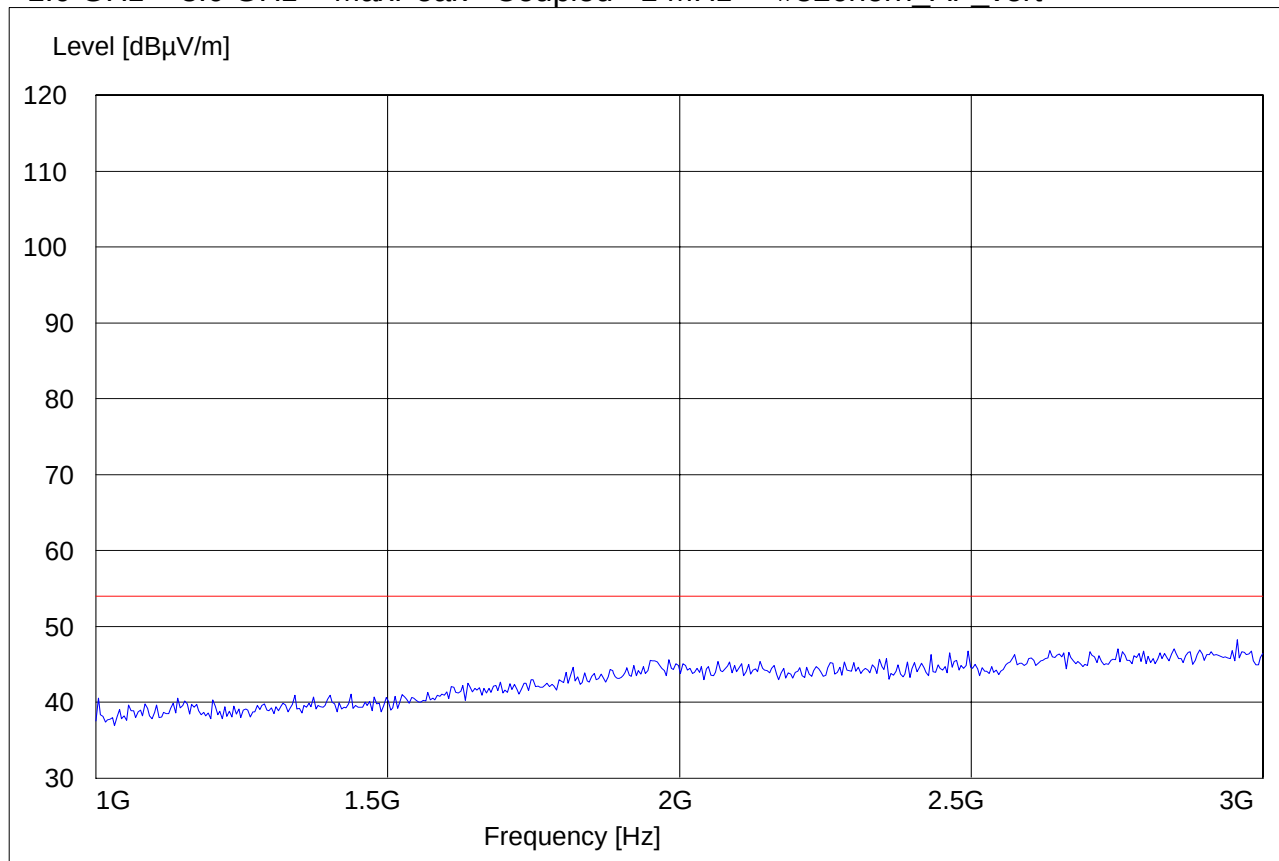
Sweep: closed

### **SWEEP TABLE: "CANADA RE\_1-3G"**

| Start | Stop | Detector | Meas. | IF | Transducer |
|-------|------|----------|-------|----|------------|
|-------|------|----------|-------|----|------------|

| Frequency | Frequency | Time | Bandw. |
|-----------|-----------|------|--------|
|-----------|-----------|------|--------|

|         |         |         |               |                  |
|---------|---------|---------|---------------|------------------|
| 1.0 GHz | 3.0 GHz | MaxPeak | Coupled 1 MHz | #326horn_AF_vert |
|---------|---------|---------|---------------|------------------|



**3-18GHz****Note: Peak Reading vs. Average limit****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: RX

Antenna: H

EUT: V

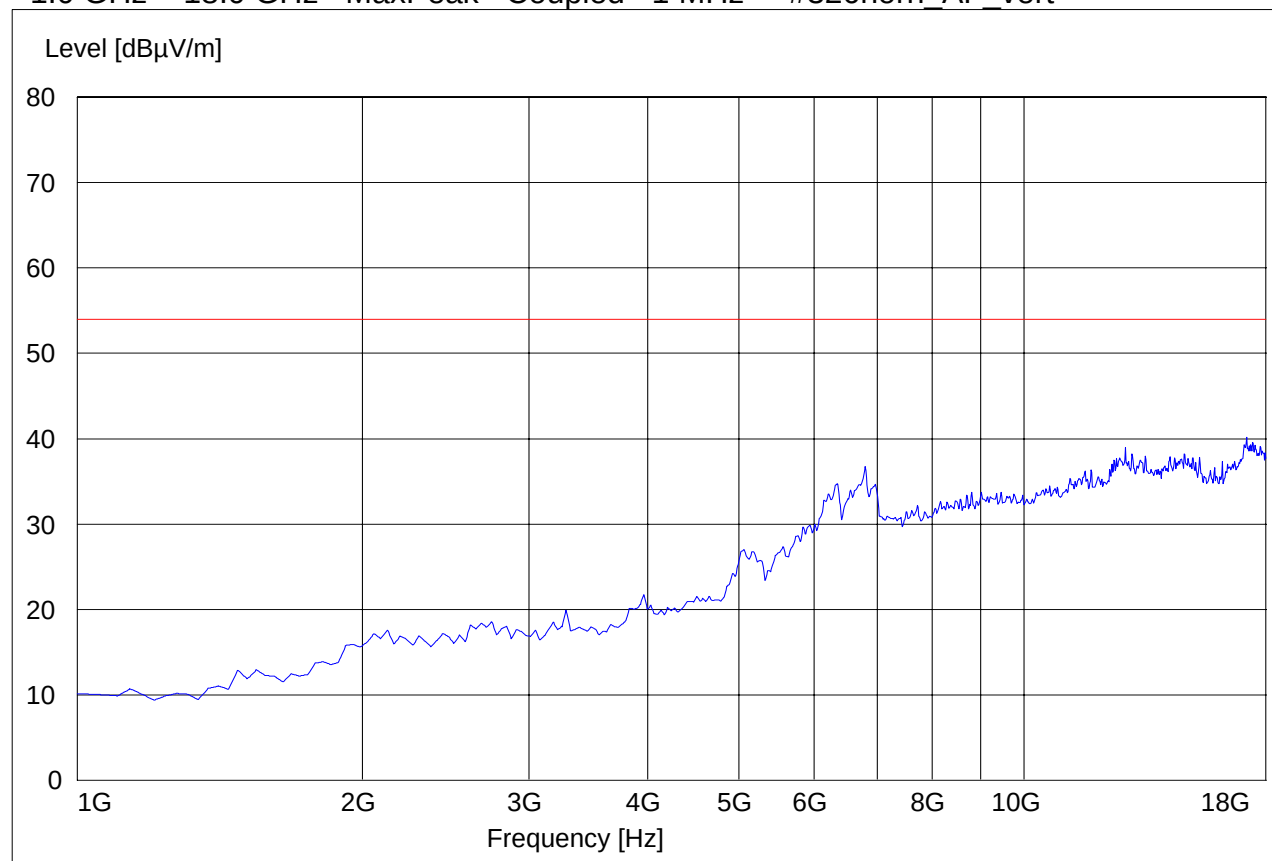
Test operator: Pete

Voltage: AC/DC

Sweep: closed

**SWEEP TABLE: "CANADA RE\_3-18G"**

| Start     | Stop      | Detector | Meas.   | IF     | Transducer       |
|-----------|-----------|----------|---------|--------|------------------|
| Frequency | Frequency |          | Time    | Bandw. |                  |
| 1.0 GHz   | 18.0 GHz  | MaxPeak  | Coupled | 1 MHz  | #326horn_AF_vert |



**18-25GHz****Note: Peak Reading vs. Average limit****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Handheld E

Customer: Sony Electronics

Operating Mode: RX

Antenna: H

EUT: V

Test operator: Pete

Voltage: AC/DC

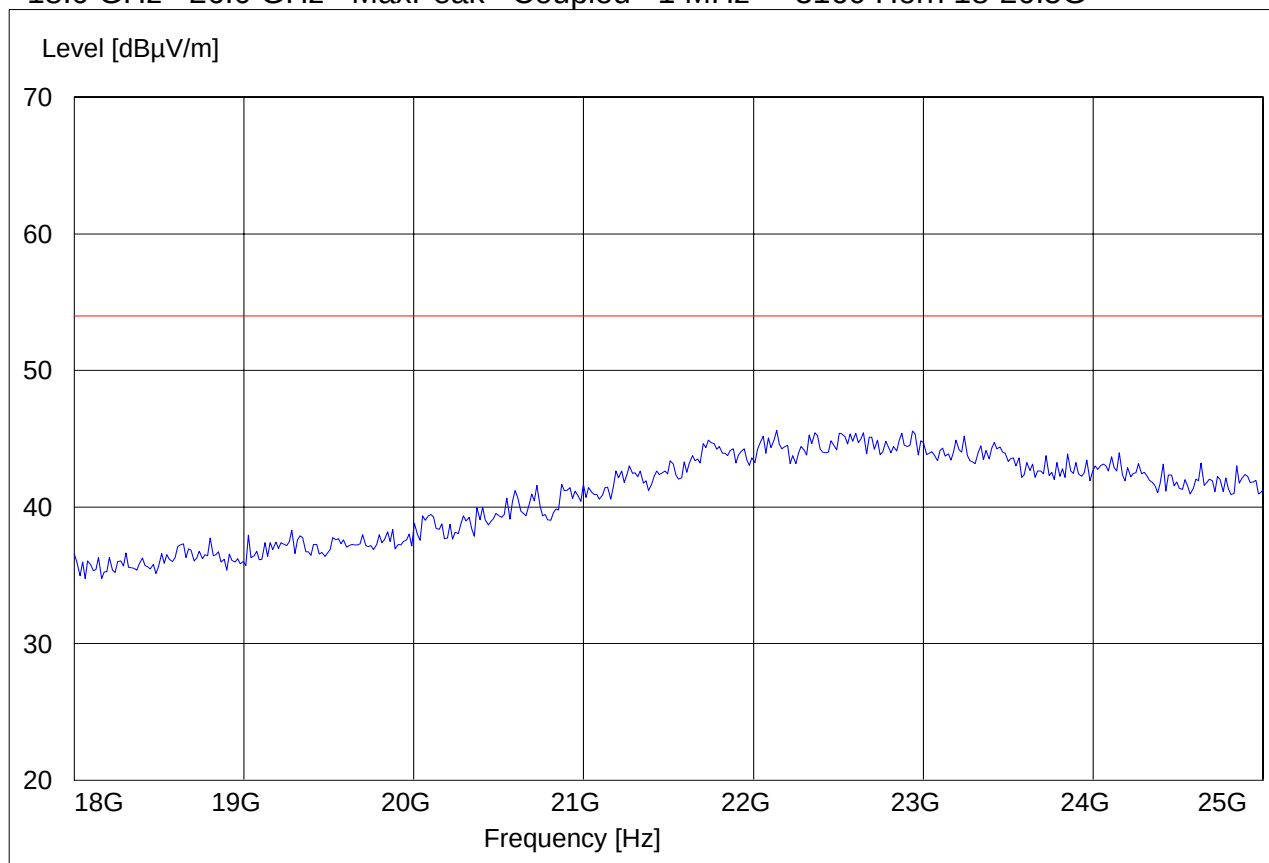
Sweep: closed

**SWEEP TABLE: "CANADA RE\_18-26.5G"**

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

18.0 GHz 26.0 GHz MaxPeak Coupled 1 MHz 3160 Horn 18-26.5G



**5.5 AC POWER LINE CONDUCTED EMISSIONS § 15.107/207****5.5.1 LIMITS****Technical specification: 15.107 / 15.207 (Revised as of August 20, 2002)****Limit**

| Frequency of Emission (MHz)                 | Conducted Limit (dB $\mu$ V) |           |
|---------------------------------------------|------------------------------|-----------|
|                                             | Quasi-Peak                   | Average   |
| 0.15 – 0.5                                  | 66 to 56*                    | 56 to 46* |
| 0.5 – 5                                     | 56                           | 46        |
| 5 – 30                                      | 60                           | 50        |
| * Decreases with logarithm of the frequency |                              |           |

**ANALYZER SETTINGS: RBW = 10KHz****VBW = 10KHz**

## 5.5.2 RESULTS

### LISN

**411 Dixon Landing Road, CA 95035**

EUT / Description: Handheld E

Manufacturer: Sony Electronics

Test Engineer: Mike

Phase: Mike

Comment: EN55022

AC/DC adapter

Start of Test: 4/5/2006 / 1:43:51PM

### SWEEP TABLE: "EN 55022 Voltage"

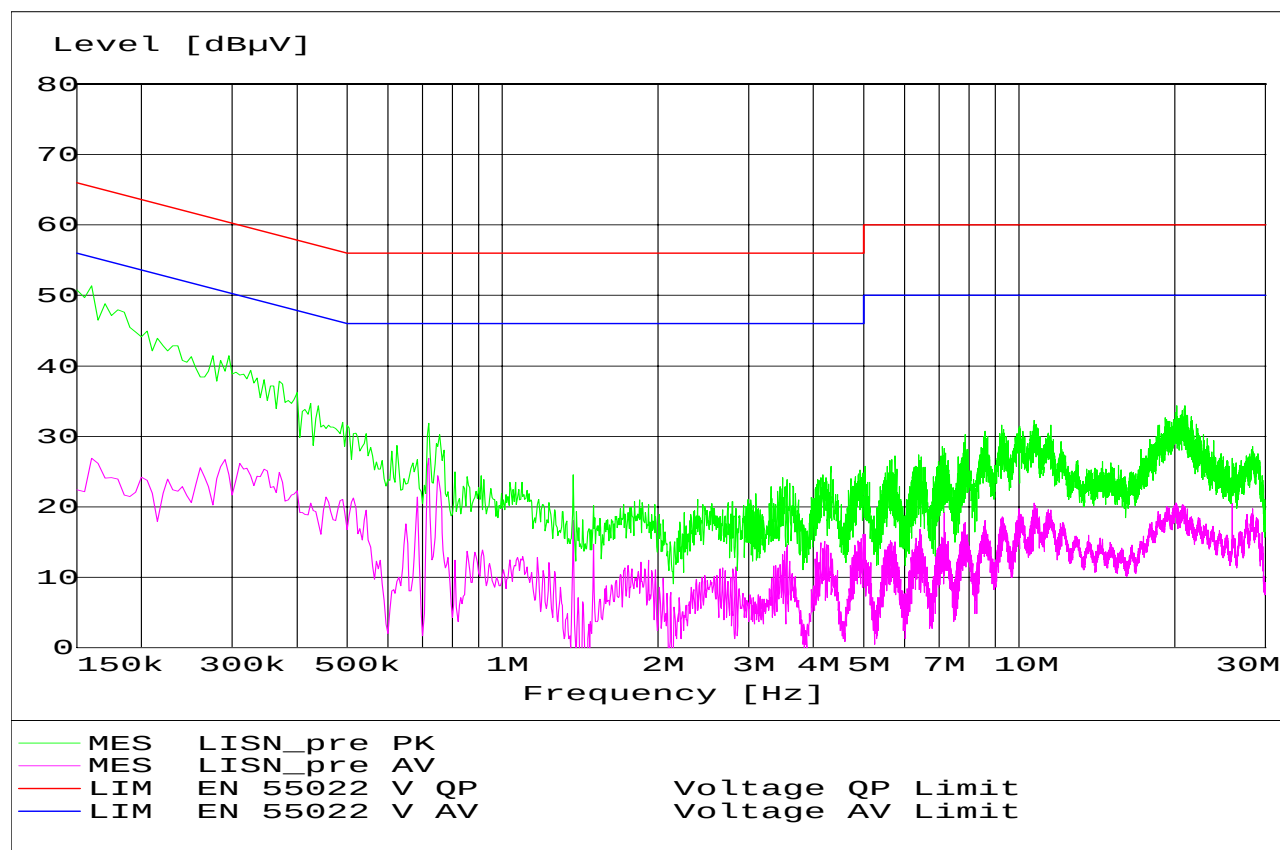
Short Description: EN 55022 Voltage

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

150.0 kHz 30.0 MHz MaxPeak Coupled 9 kHz None

Average



## 5.6 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

| No | Instrument/Ancillary         | Type         | Manufacturer    | Serial No.   | Cal Due     | Interval |
|----|------------------------------|--------------|-----------------|--------------|-------------|----------|
| 01 | Spectrum Analyzer            | ESIB 40      | Rohde & Schwarz | 100107       | May 2006    | 1 year   |
| 02 | Spectrum Analyzer            | FSEM 30      | Rohde & Schwarz | 100017       | August 2006 | 1 year   |
| 03 | Signal Generator             | SMY02        | Rohde & Schwarz | 836878/011   | May 2006    | 1 year   |
| 04 | Power-Meter                  | NRVD         | Rohde & Schwarz | 0857.8008.02 | May 2006    | 1 year   |
| 05 | Biconilog Antenna            | 3141         | EMCO            | 0005-1186    | June 2006   | 1 year   |
| 06 | Horn Antenna (1-18GHz)       | SAS-200/571  | AH Systems      | 325          | June 2006   | 1 year   |
| 07 | Horn Antenna (18-26.5GHz)    | 3160-09      | EMCO            | 1240         | June 2006   | 1 year   |
| 08 | Power Splitter               | 11667B       | Hewlett Packard | 645348       | n/a         | n/a      |
| 09 | Climatic Chamber             | VT4004       | Voltsch         | G1115        | May 2006    | 1 year   |
| 10 | High Pass Filter             | 5HC2700      | Trilithic Inc.  | 9926013      | n/a         | n/a      |
| 11 | High Pass Filter             | 4HC1600      | Trilithic Inc.  | 9922307      | n/a         | n/a      |
| 12 | Pre-Amplifier                | JS4-00102600 | Miteq           | 00616        | May 2006    | 1 year   |
| 13 | Power Sensor                 | URV5-Z2      | Rohde & Schwarz | DE30807      | May 2006    | 1 year   |
| 14 | Digital Radio Comm. Tester   | CMD-55       | Rohde & Schwarz | 847958/008   | May 2006    | 1 year   |
| 15 | Universal Radio Comm. Tester | CMU 200      | Rohde & Schwarz | 832221/06    | May 2006    | 1 year   |

## 5.7 BLOCK DIAGRAMS

### Radiated Testing

