



# FCC Test Report

## FCC Part 15.247 for DSSS systems

For the  
**Hewlett Packard Company**  
**Notebook PC**  
**Model Number: HSTNN-W26C**  
**FCC ID: QDS-BRCM1020**

**TEST REPORT #: HEWL4\_016\_07001\_FCC15\_247WLAN\_HOYAS**  
**DATE: 06/27/2007**



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.

| Company                 | Description | Model #    |
|-------------------------|-------------|------------|
| Hewlett Packard Company | Notebook PC | HSTNN-W26C |

Technical responsibility for area of testing:

**Peter Mu**

**2007-06-27    EMC & Radio    (EMC Project Engineer)**

| Date | Section | Name | Signature |
|------|---------|------|-----------|
|------|---------|------|-----------|

This report is prepared by:

**Satya Radhakrishna**

**2007-06-27    EMC & Radio    (EMC Project Engineer)**

| Date | Section | Name | Signature |
|------|---------|------|-----------|
|------|---------|------|-----------|

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**

|                               |                                                        |
|-------------------------------|--------------------------------------------------------|
| Company Name:                 | CETECOM Inc.                                           |
| Department:                   | EMC                                                    |
| Address:                      | 411 Dixon Landing Road<br>Milpitas, CA 95035<br>U.S.A. |
| Telephone:                    | +1 (408) 586 6200                                      |
| Fax:                          | +1 (408) 586 6299                                      |
| Responsible Test Lab Manager: | Lothar Schmidt                                         |

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

|                   |                         |
|-------------------|-------------------------|
| Applicant's Name: | Hewlett Packard Company |
| Address Line 1:   | 20555 SH 249            |
| Address Line 2:   | MS 1208-10              |
| City/ Zip Code    | Houston, TX 77070       |
| Country:          | U.S.A                   |
| Contact Person:   | Glenn Meyer             |
| Phone No.:        | 281-514-9391            |
| Fax:              | 281-518-0979            |
| e-mail:           | Glenn.meyer@hp.com      |

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

|                         |                                                       |
|-------------------------|-------------------------------------------------------|
| Manufacturer's Name:    | Hewlett Packard Company                               |
| Manufacturer's Address: | 20555 SH 249, MS 1208-10, Houston, TX<br>77070, U.S.A |

### **3 Equipment under Test (EUT)**

#### **3.1 Specification of the Equipment under Test**

|                             |                                            |
|-----------------------------|--------------------------------------------|
| Product Type                | Notebook PC                                |
| Marketing Name:             | HP Compaq 2701p notebook PC                |
| Model No:                   | HSTNN-W26C                                 |
| HW Version:                 | 1.0                                        |
| SW Version :                | N/A                                        |
| Min/Nominal/Max Voltage:    | 18.5 V/19 V/ 19 V                          |
| Type(s) of Modulation:      | OFDM                                       |
| Antenna Type:               | Stamped metal, 3.9dBi/2.4GHz               |
| Output Power <sup>1</sup> : | <b>27.3 dBm (0.537W)</b> EIRP WLAN 802.11g |



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

All testing was performed on the product referred to in Section 3 as EUT. EUT contains Broadcom BCM94311MCG WLAN module, FCC ID: QDS-BRCM1020 that supports the following mode and frequency bands:

2400-2483.5MHz: 802.11b, 802.11g

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT operating under 802.11b/g mode in the 2400-2483.5MHz range as specified by requirements listed in FCC rules Part 15.247 of Title 47 of the Code of Federal Regulations. The maximization of portable equipment is conducted in accordance with ANSI C63.4

**5 Measurements****5.1.1 MAXIMUM PEAK OUTPUT POWER  
(RADIATED)**

§ 15.247 (b) (1)

**EIRP:****802.11b**

| TEST CONDITIONS         |                                   |                  | MAXIMUM PEAK OUTPUT POWER (dBm) |       |       |
|-------------------------|-----------------------------------|------------------|---------------------------------|-------|-------|
| Frequency (MHz)         |                                   |                  | 2412                            | 2437  | 2462  |
| Chain A                 | $T_{\text{nom}}(23)^{\circ}$<br>C | $V_{\text{nom}}$ | 21.3                            | 21.72 | 21.3  |
| Chain B                 | $T_{\text{nom}}(23)^{\circ}$<br>C | $V_{\text{nom}}$ | 19.6                            | 20.69 | 20.92 |
| Measurement uncertainty |                                   |                  | $\pm 0.5\text{dBm}$             |       |       |

**802.11g**

| TEST CONDITIONS         |                                   |                  | MAXIMUM PEAK OUTPUT POWER (dBm) |       |       |
|-------------------------|-----------------------------------|------------------|---------------------------------|-------|-------|
| Frequency (MHz)         |                                   |                  | 2412                            | 2437  | 2462  |
| Chain A                 | $T_{\text{nom}}(23)^{\circ}$<br>C | $V_{\text{nom}}$ | 27.3                            | 26.59 | 26.74 |
| Chain B                 | $T_{\text{nom}}(23)^{\circ}$<br>C | $V_{\text{nom}}$ | 23.13                           | 25.37 | 25.02 |
| Measurement uncertainty |                                   |                  | $\pm 0.5\text{dBm}$             |       |       |

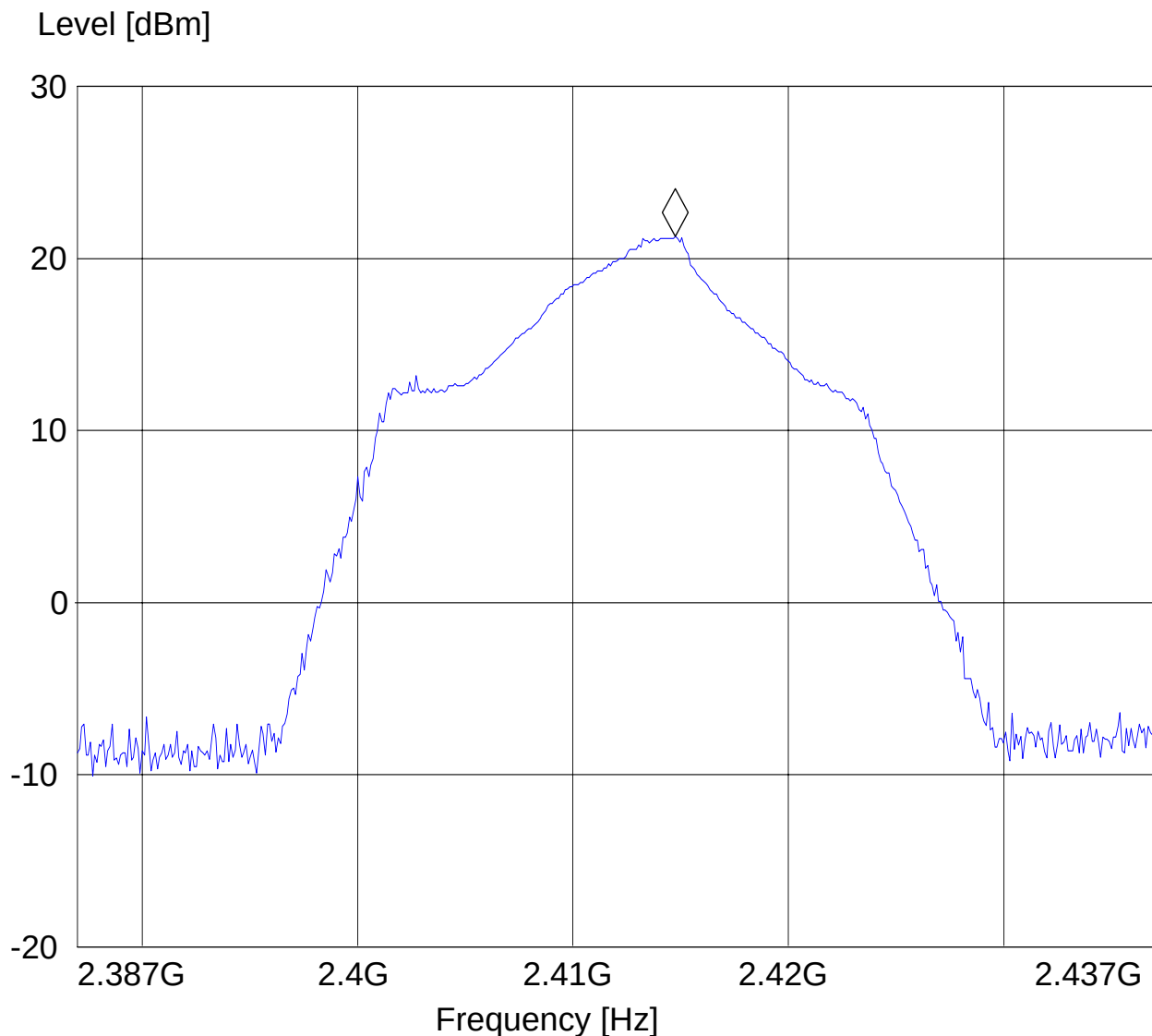
**EIRP: 2412MHz (802.11b) Chain A****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11b, 1 Mbps, ch 1, chain a  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

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

Short Description: EIRP  
Unit: dBm Detector: MaxPeak RBW: 10MHZ VBW: 10MHZ

Marker: 2.41475511 GHz 21.3 dBm





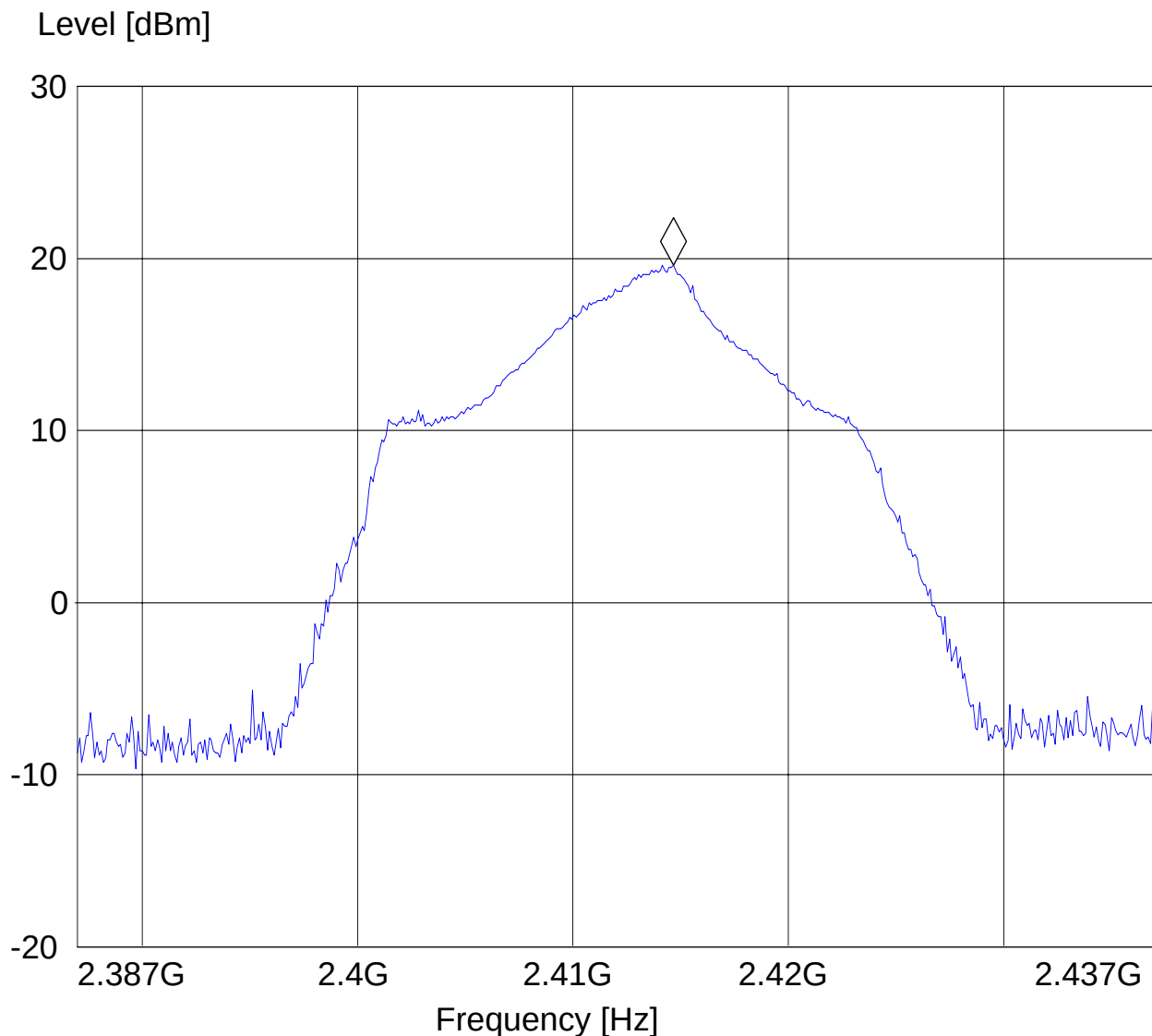
**EIRP: 2412MHz (802.11b) Chain B****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11b, 1 Mbps, ch 1, chain b  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Satya Radhakrishna  
Power Supply: AC Adapter

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

Short Description: EIRP  
Unit: dBm Detector: MaxPeak RBW: 10MHZ VBW:10MHZ

Marker: 2.414655311 GHz 19.6 dBm



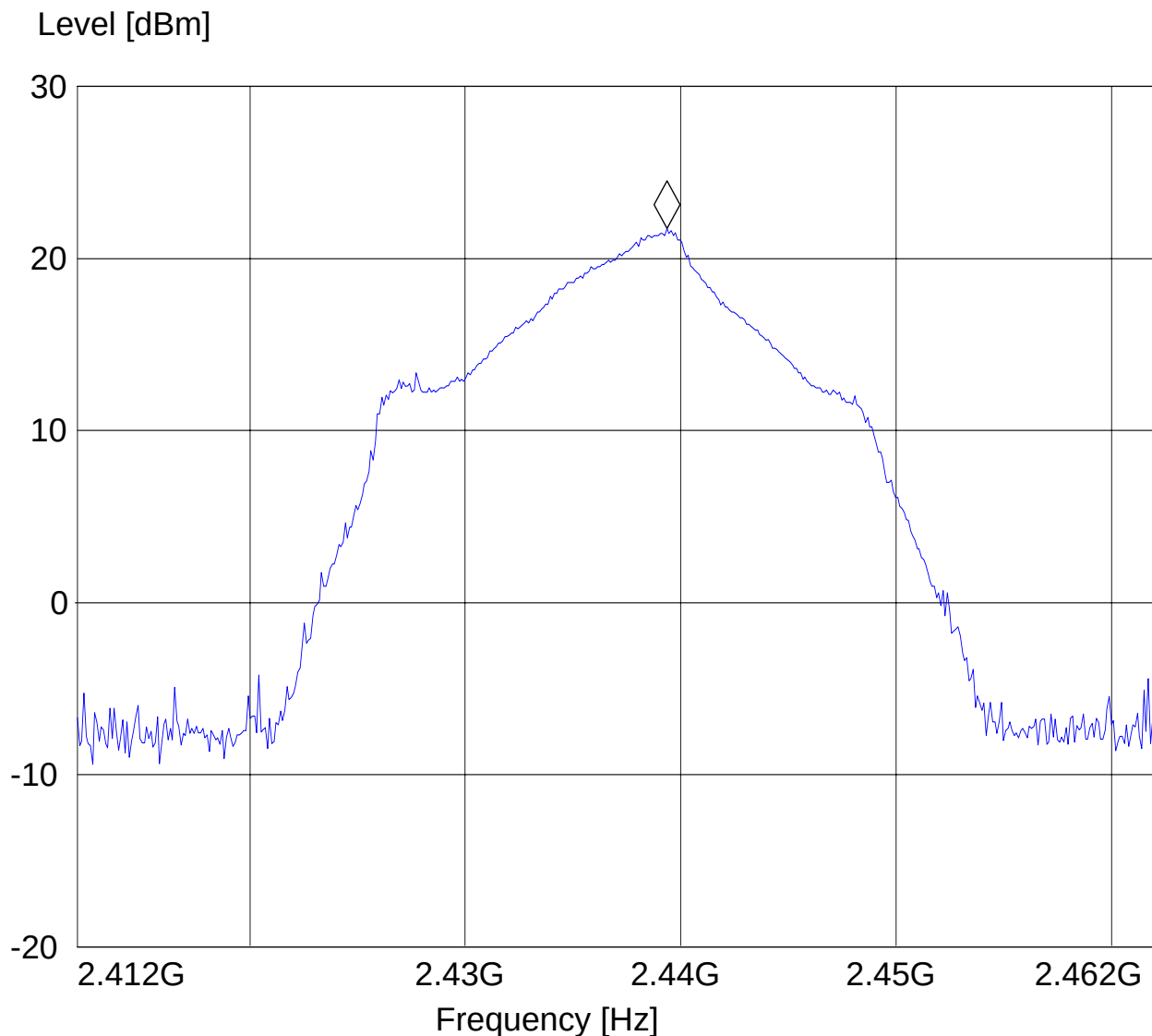
**EIRP: 2437MHz (802.11b) Chain A****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11b, 1 Mbps, ch 6, chain a  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

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

Short Description: EIRP  
Unit: dBm Detector: MaxPeak RBW: 10MHZ VBW:10MHZ

Marker: 2.439354709 GHz 21.72 dBm



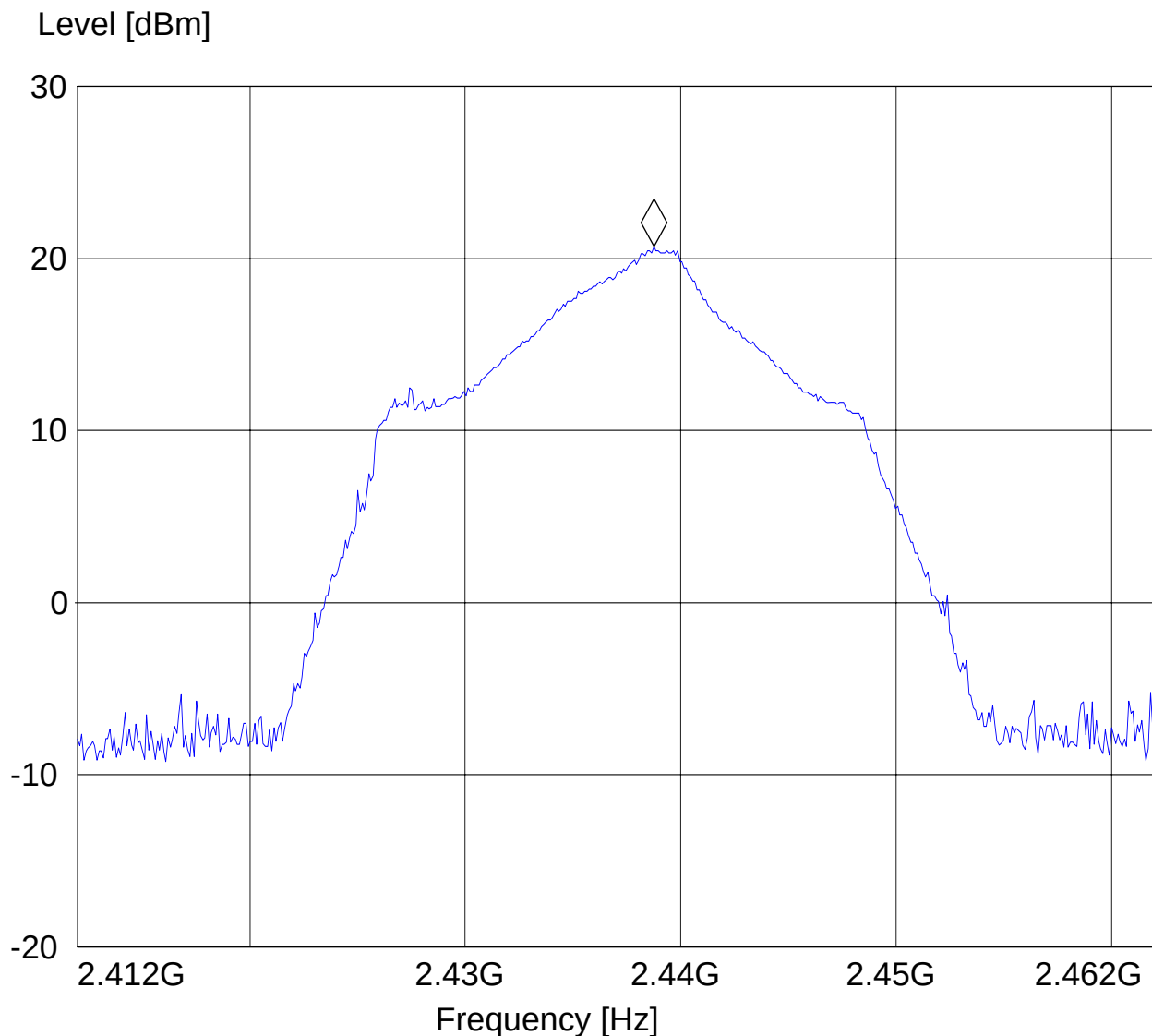
**EIRP: 2437MHz (802.11b) Chain B****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11b, 1 Mbps, ch 6, chain b  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Satya Radhakrishna  
Power Supply: AC Adapter

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

Short Description: EIRP  
Unit: dBm Detector: MaxPeak RBW: 10MHZ VBW:10MHZ

Marker: 2.438753507 GHz 20.69 dBm



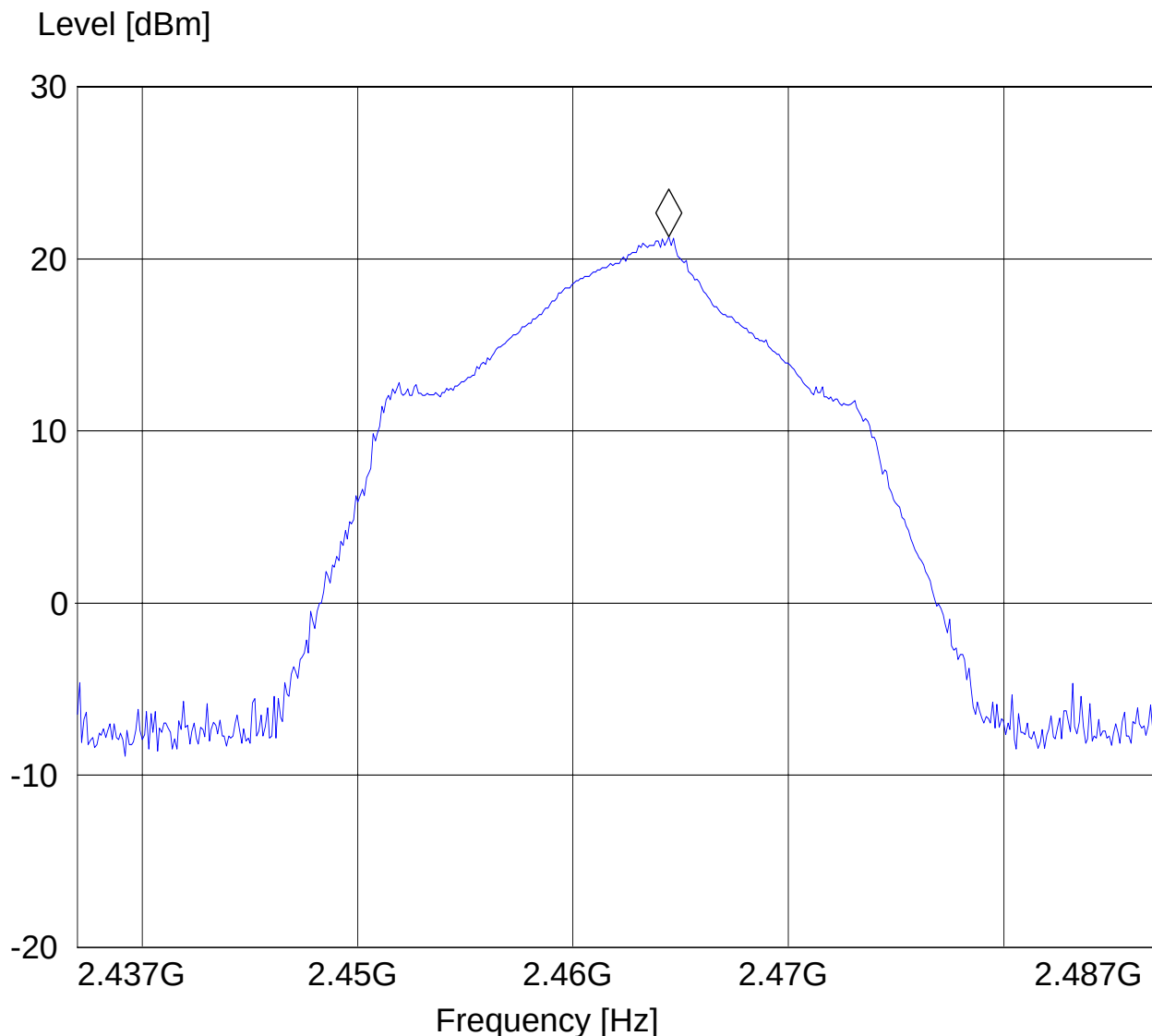
**EIRP: 2462MHz (802.11b) Chain A****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11b, 1 Mbps, ch 11, chain a  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

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

Short Description: EIRP  
Unit: dBm Detector: MaxPeak RBW: 10MHZ VBW:10MHZ

Marker: 2.46445491 GHz 21.3 dBm



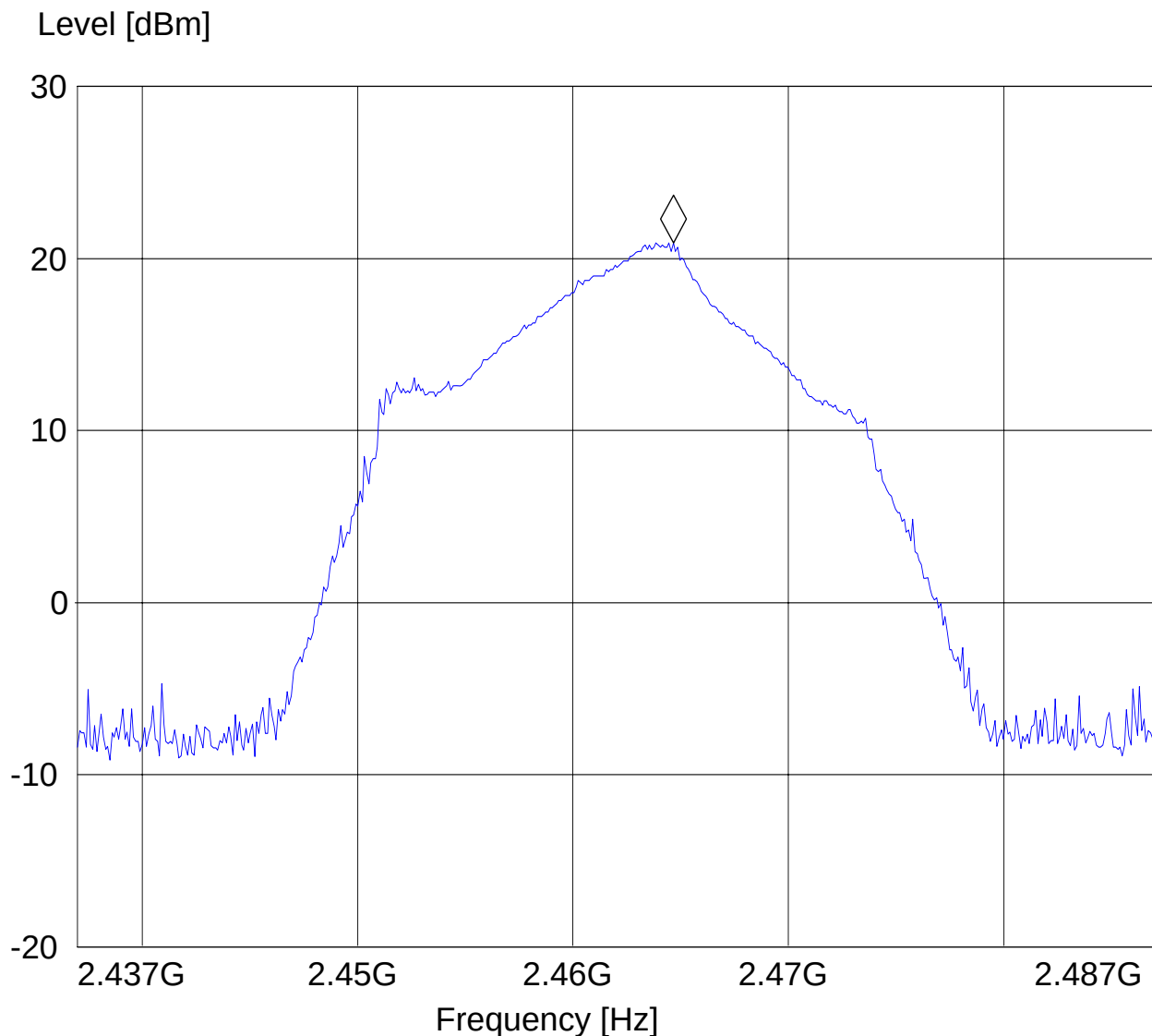
**EIRP: 2462MHz (802.11b) Chain B****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11b, 1 Mbps, ch 11, chain b  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Satya Radhakrishna  
Power Supply: AC Adapter

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

Short Description: EIRP  
Unit: dBm Detector: MaxPeak RBW: 10MHZ VBW:10MHZ

Marker: 2.464655311 GHz 20.92 dBm



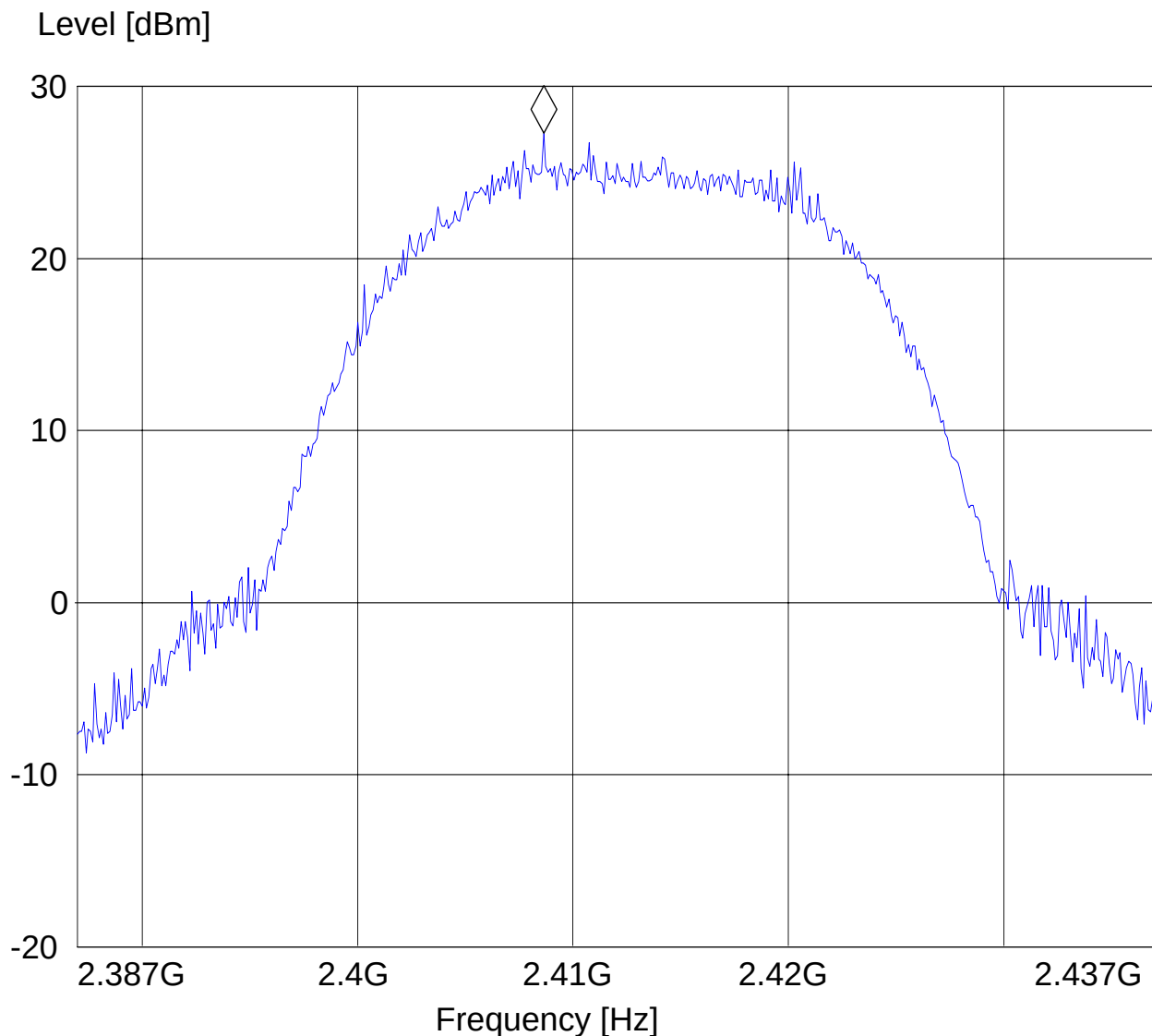
**EIRP: 2412MHz (802.11g) Chain A****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 1, chain a  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

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

Short Description: EIRP  
Unit: dBm Detector: MaxPeak RBW: 10MHZ VBW:10MHZ

Marker: 2.408643287 GHz 27.3 dBm



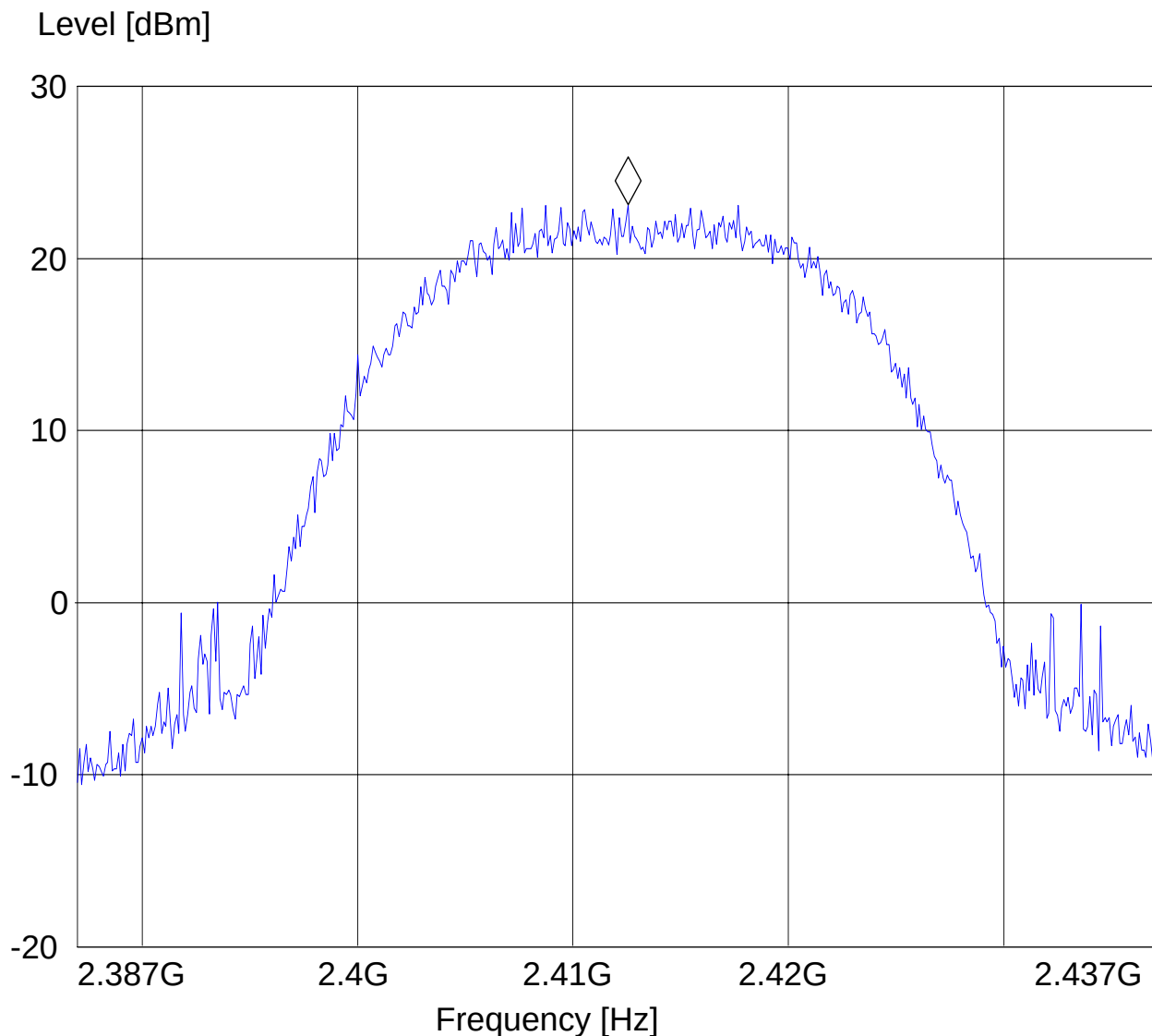
**EIRP: 2412MHz (802.11g) Chain B****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 1, chain b  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Satya Radhakrishna  
Power Supply: AC Adapter

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

Short Description: EIRP  
Unit: dBm Detector: MaxPeak RBW: 10MHZ VBW:10MHZ

Marker: 2.412551102 GHz 23.13 dBm



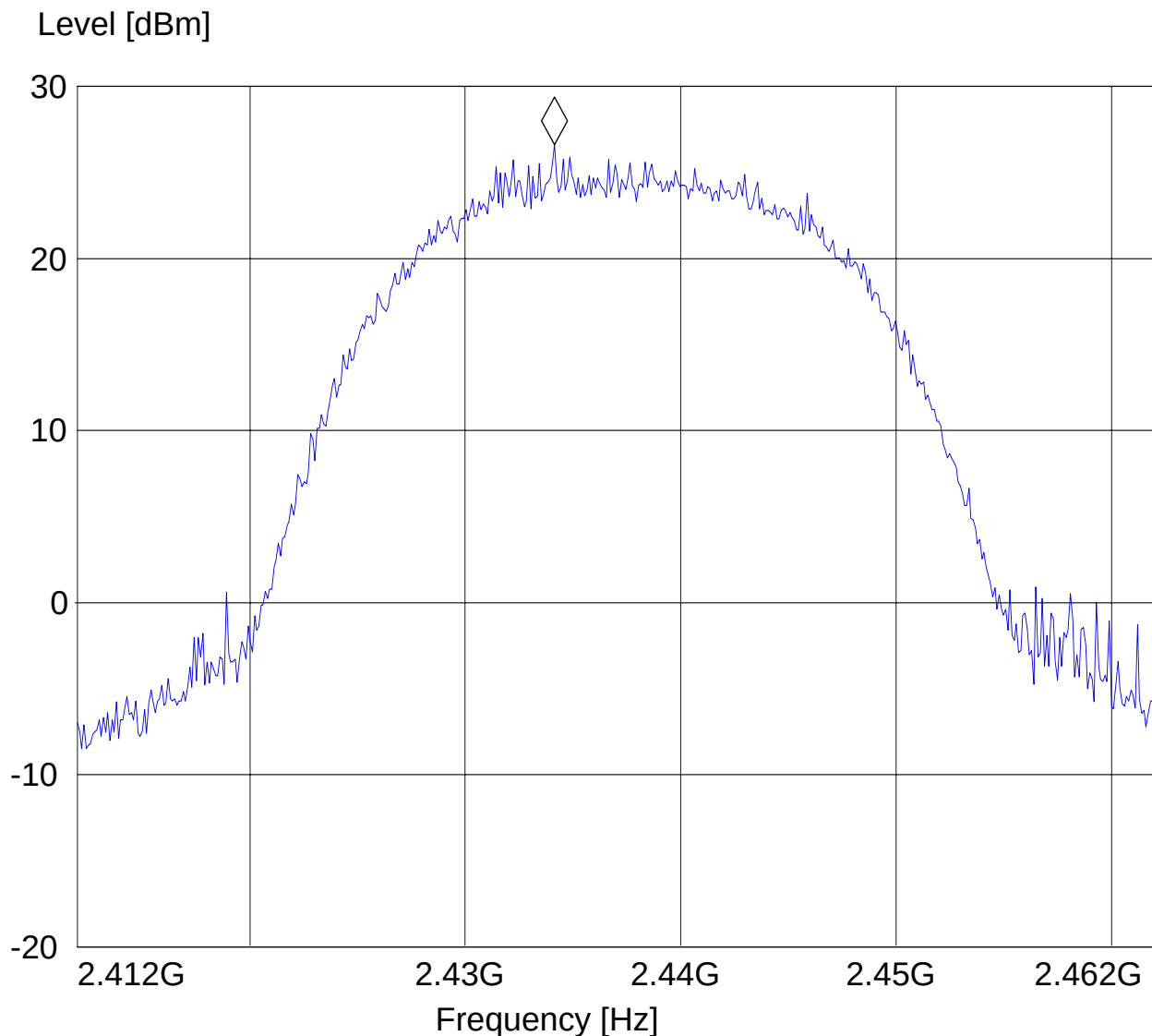
**EIRP: 2437MHz (802.11g) Chain A****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 6, chain a  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

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

Short Description: EIRP  
Unit: dBm Detector: MaxPeak RBW: 10MHZ VBW:10MHZ

Marker: 2.434144289 GHz 26.59 dBm





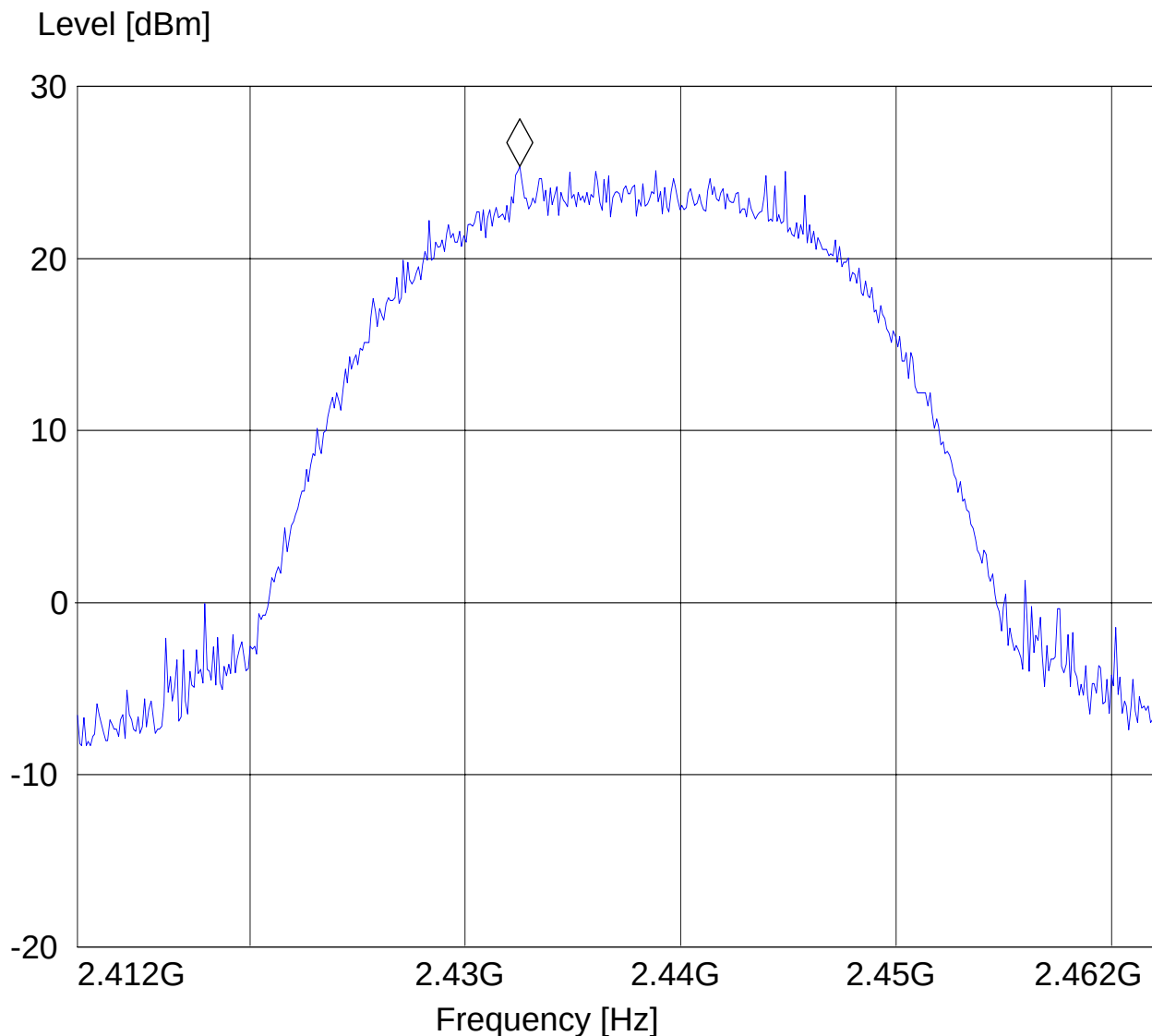
**EIRP: 2437MHz (802.11g) Chain B****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 6, chain b  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Satya Radhakrishna  
Power Supply: AC Adapter

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

Short Description: EIRP  
Unit: dBm Detector: MaxPeak RBW: 10MHZ VBW:10MHZ

Marker: 2.432541082 GHz 25.37 dBm



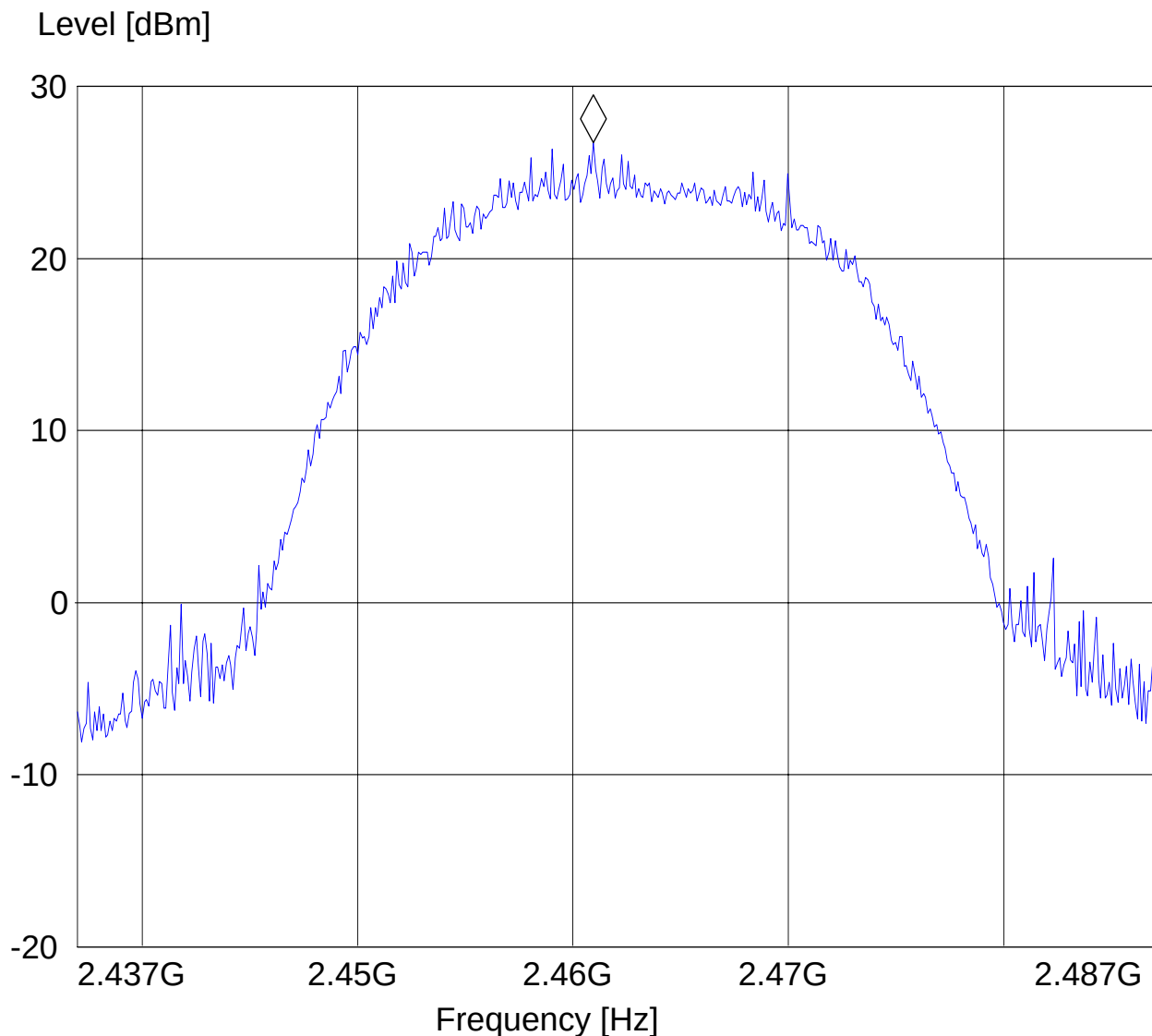
**EIRP: 2462MHz (802.11g) Chain A****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 11, chain a  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

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

Short Description: EIRP  
Unit: dBm Detector: MaxPeak RBW: 10MHZ VBW:10MHZ

Marker: 2.460947896 GHz 26.74 dBm



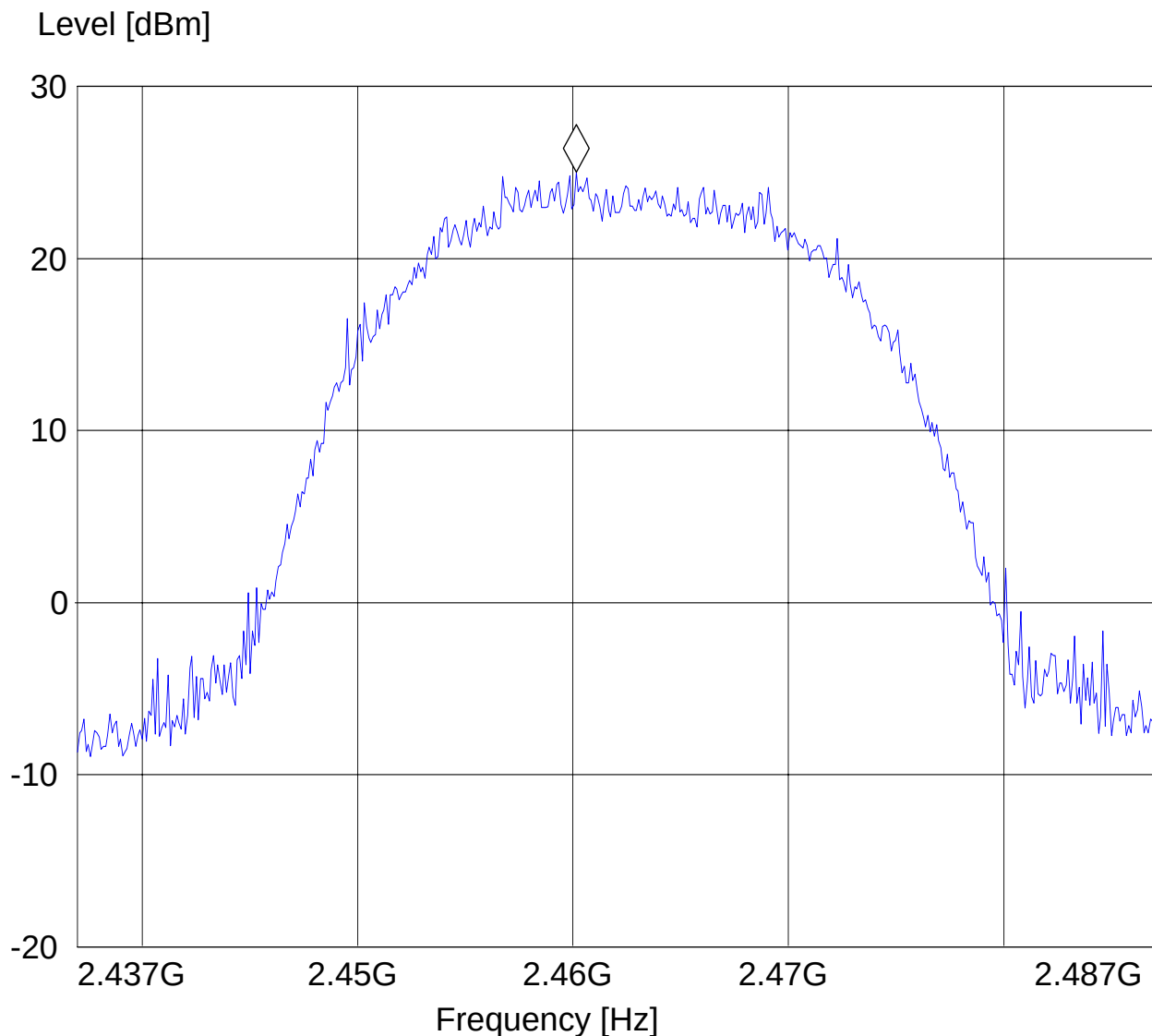
**EIRP: 2462MHz (802.11g) Chain B****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 11, chain b  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Satya Radhakrishna  
Power Supply: AC Adapter

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

Short Description: EIRP  
Unit: dBm Detector: MaxPeak RBW: 10MHZ VBW:10MHZ

Marker: 2.460146293 GHz 25.02 dBm



## 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**

#### Notes:

1. Radiated emissions are maximized by rotating the EUT 360° at 0.5 meter height increments between 1 and 4 meters.
2. Measurements were performed with the EUT in X, Y and Z orientations with the measurement antenna in both horizontal and vertical polarity. The plots below show the results of the worst case orientation and polarity.

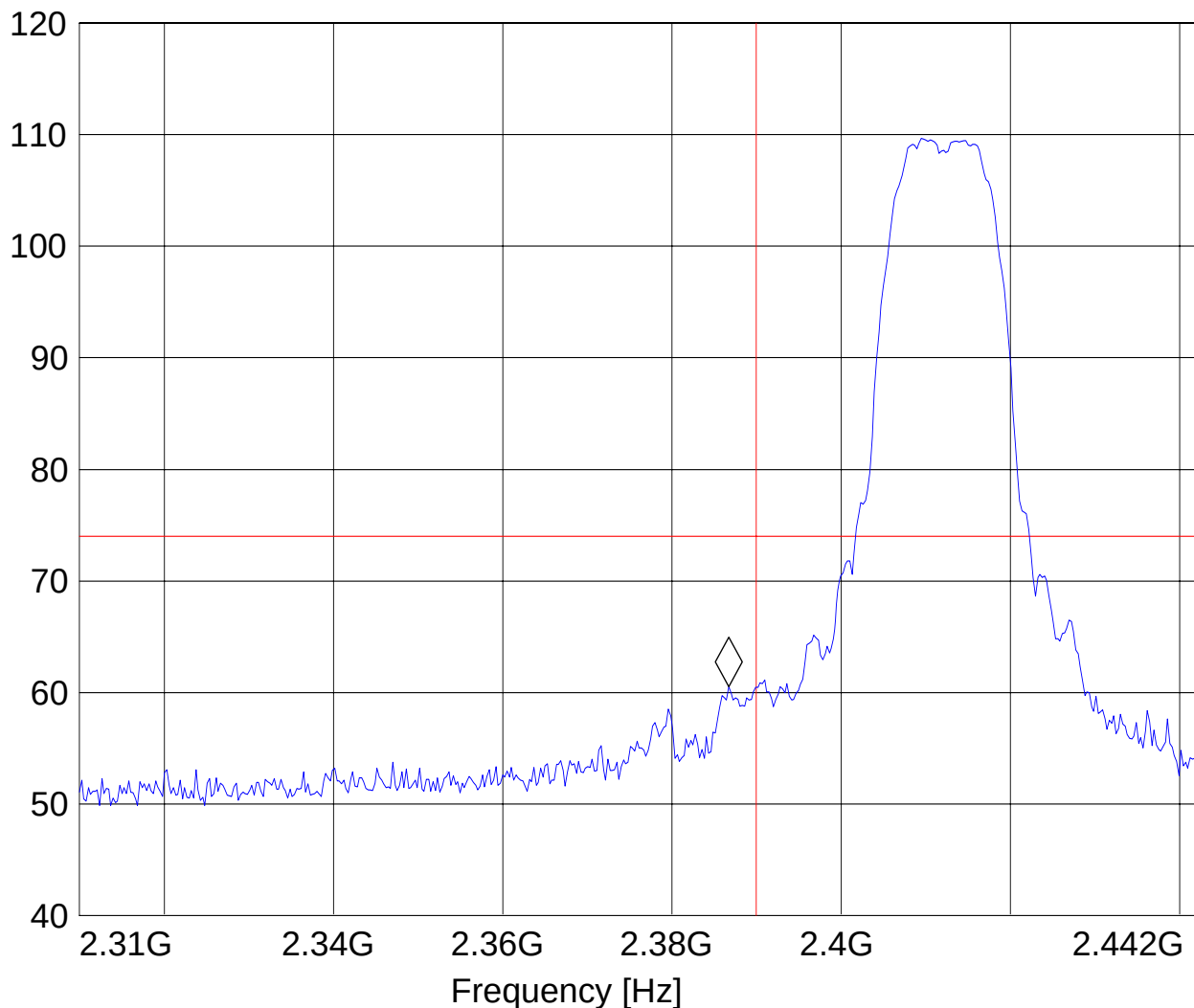
**5.2.2 Results Lower Restricted Band 2310 MHz to 2390 MHz****802.11b (2412MHz) PEAK Chain A****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11b, 1 Mbps, ch 1, chain A  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Satya Radhakrishna  
Power Supply: AC Adapter

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

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

Marker: 2.386713427 GHz 60.55 dB $\mu$ V/m

Level [dB $\mu$ V/m]

**802.11b (2412MHz) AVG Chain A****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

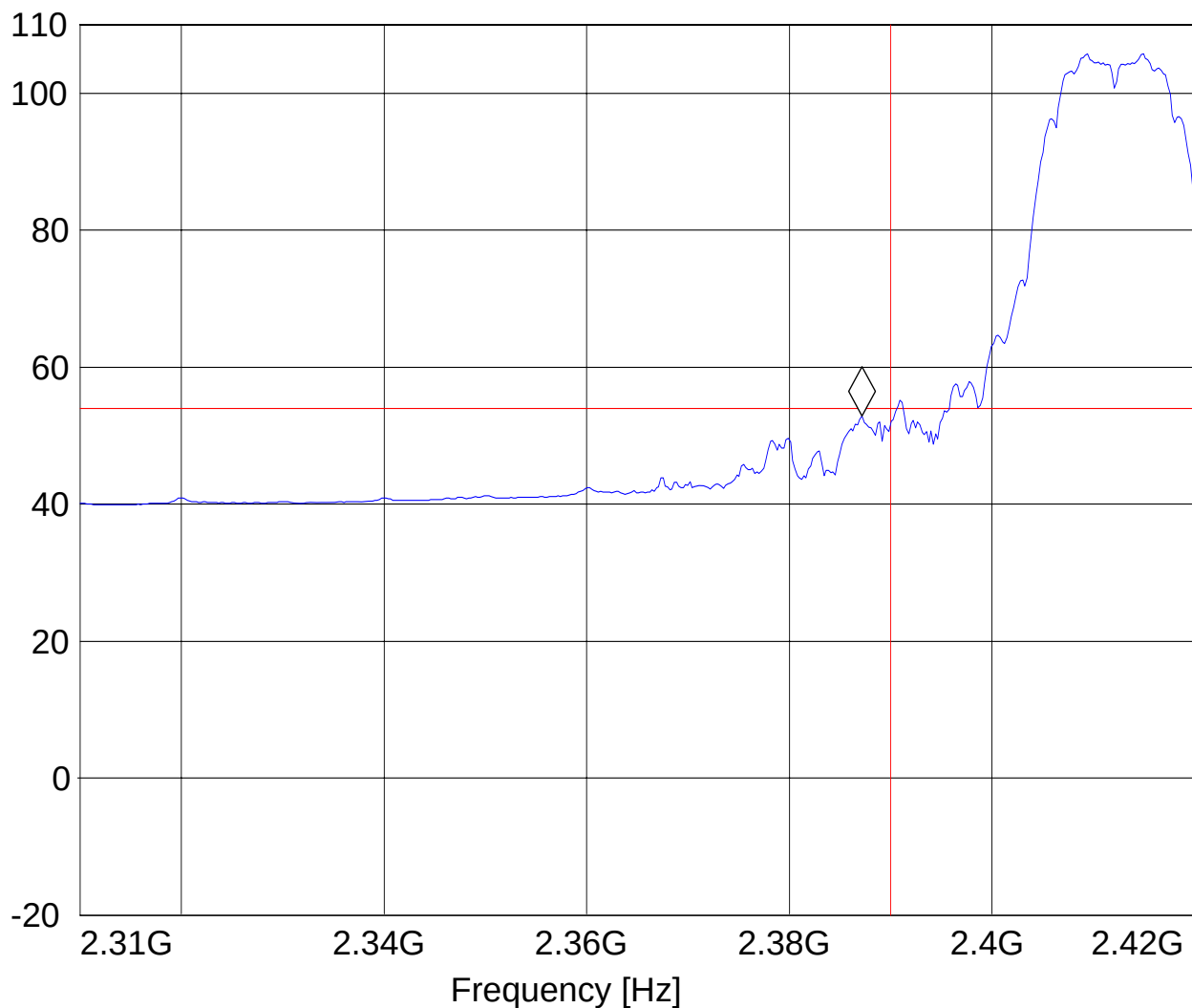
EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11b, 1 Mbps, ch 1, chain A  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Satya Radhakrishna  
Power Supply: AC Adapter

***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 |

Marker: 2.387154309 GHz 52.87 dBμV/m

Level [dBμV/m]



**802.11b (2412MHz) PEAK Chain B****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

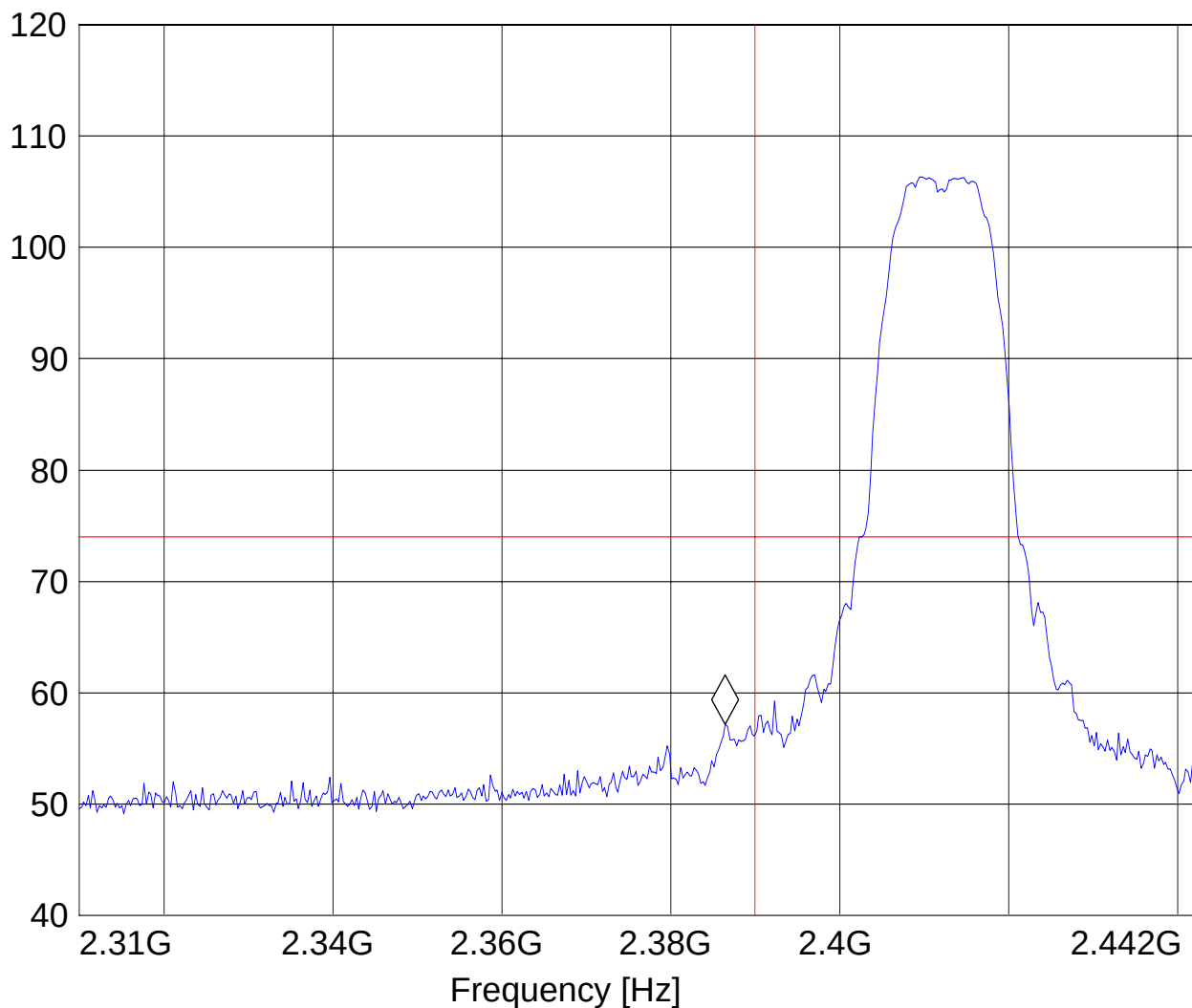
EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11b, 1 Mbps, ch 1, chain b  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Satya Radhakrishna  
Power Supply: AC Adapter

**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: 2.386448898 GHz 57.15 dBμV/m

Level [dBμV/m]



**802.11b (2412MHz) AVG Chain B****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

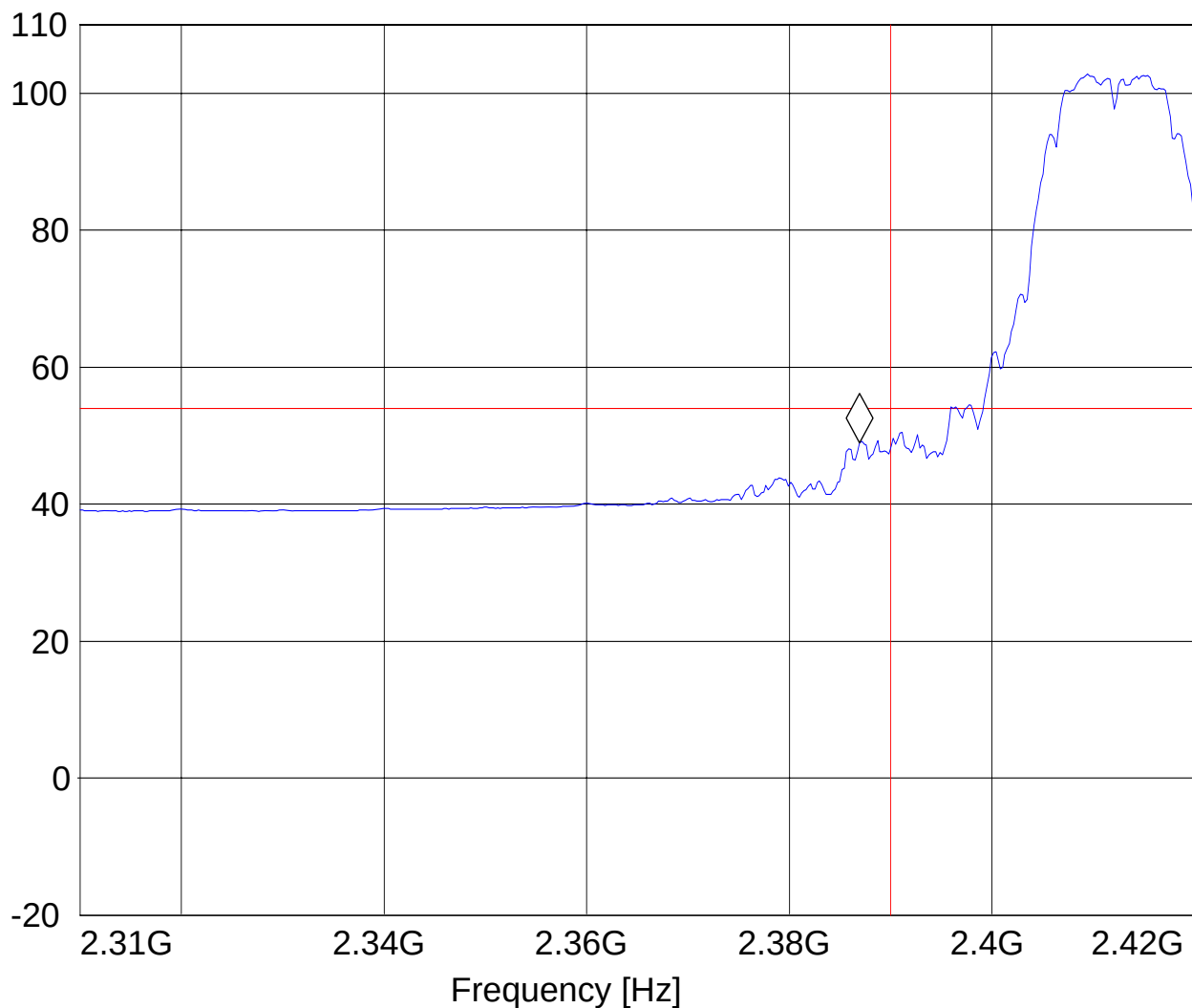
EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11b, 1 Mbps, ch 1, chain b  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Satya Radhakrishna  
Power Supply: AC Adapter

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

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

Marker: 2.386933868 GHz 48.98 dBμV/m

Level [dBμV/m]





**802.11g (2412MHz) PEAK Chain A****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

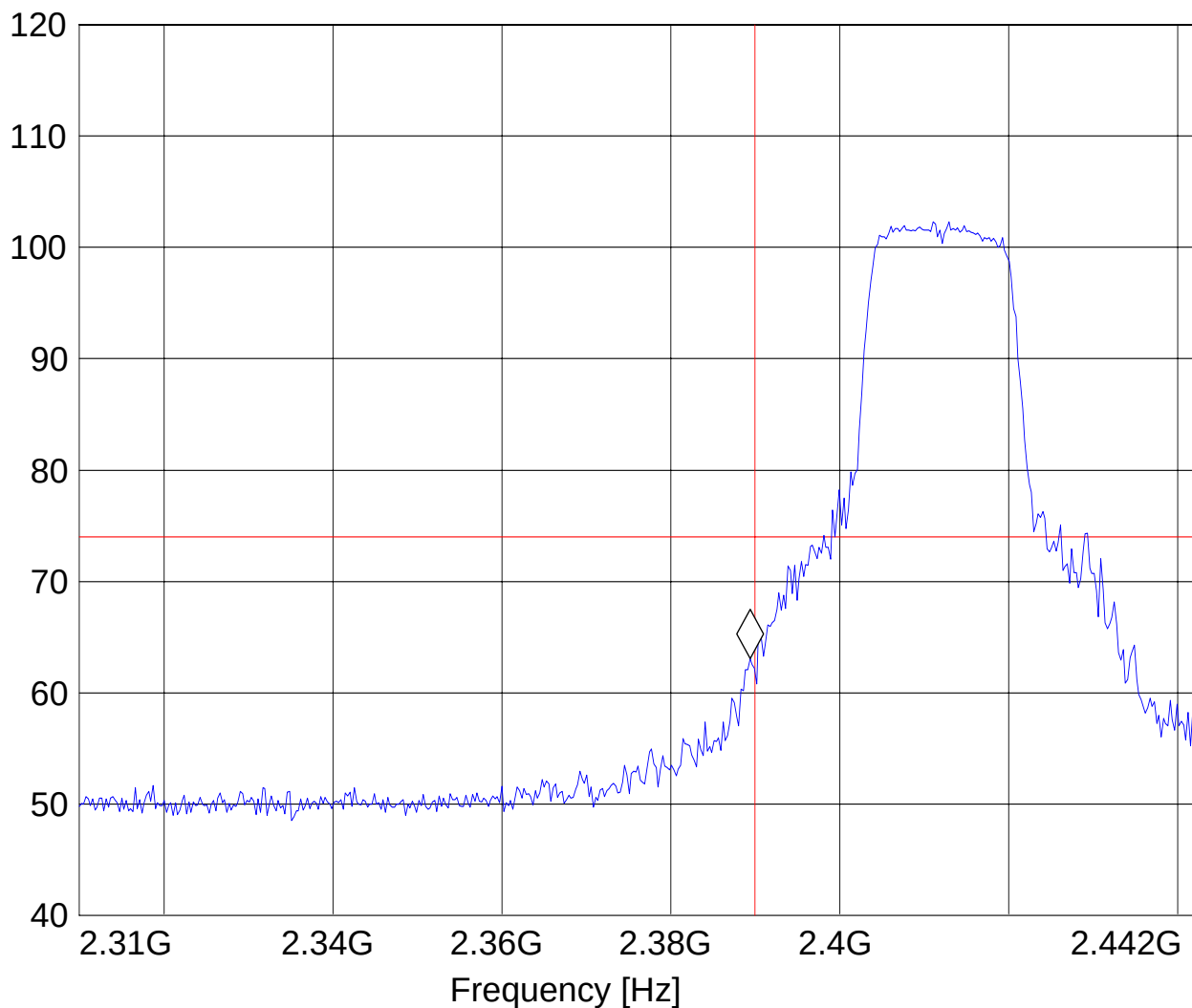
EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 1, chain a  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

**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: 2.389358717 GHz 63.09 dBμV/m

Level [dBμV/m]



**802.11g (2412MHz) AVG Chain A****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

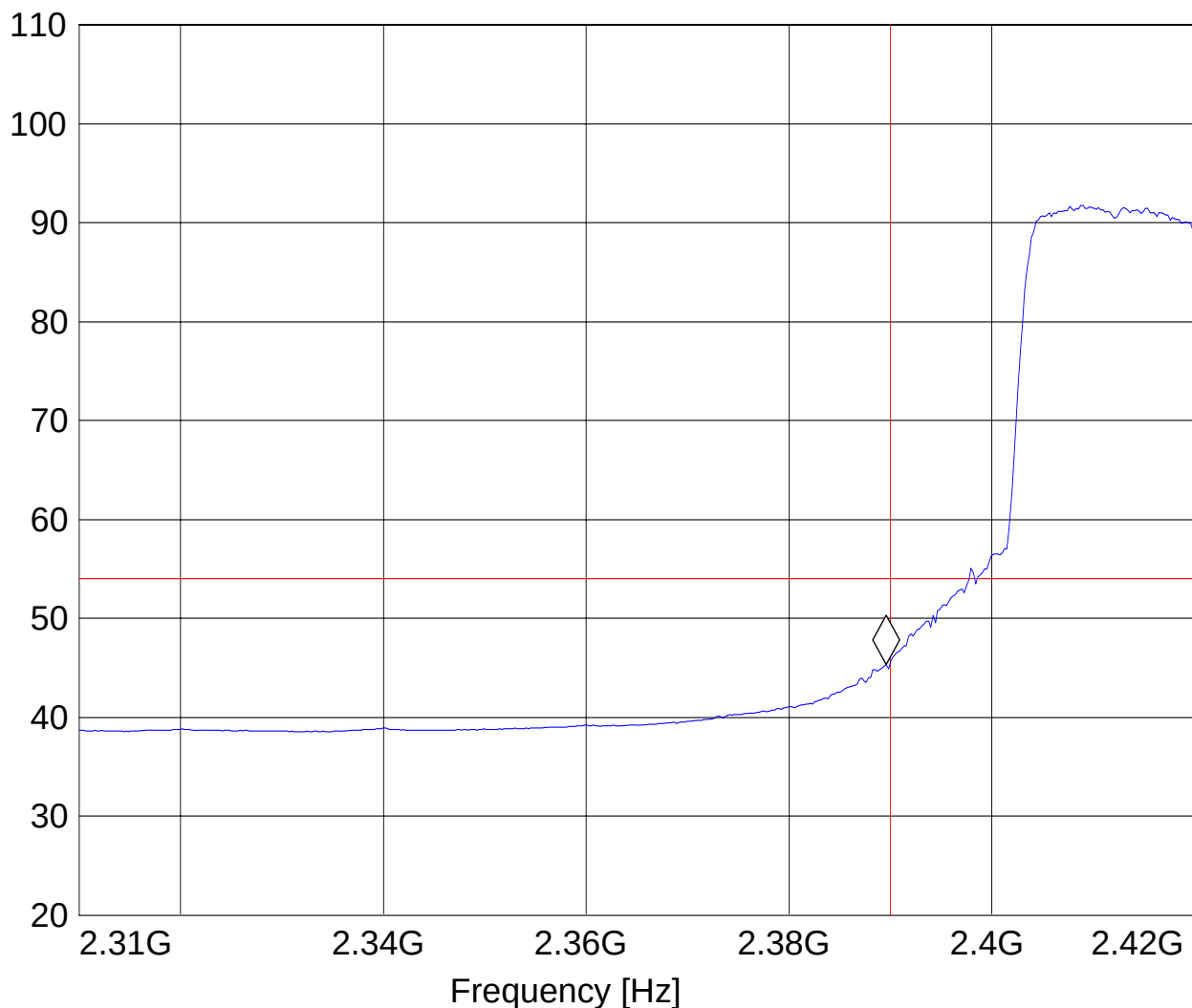
EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 1, chain a  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

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

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

Marker: 2.389579158 GHz 45.38 dBμV/m

Level [dBμV/m]



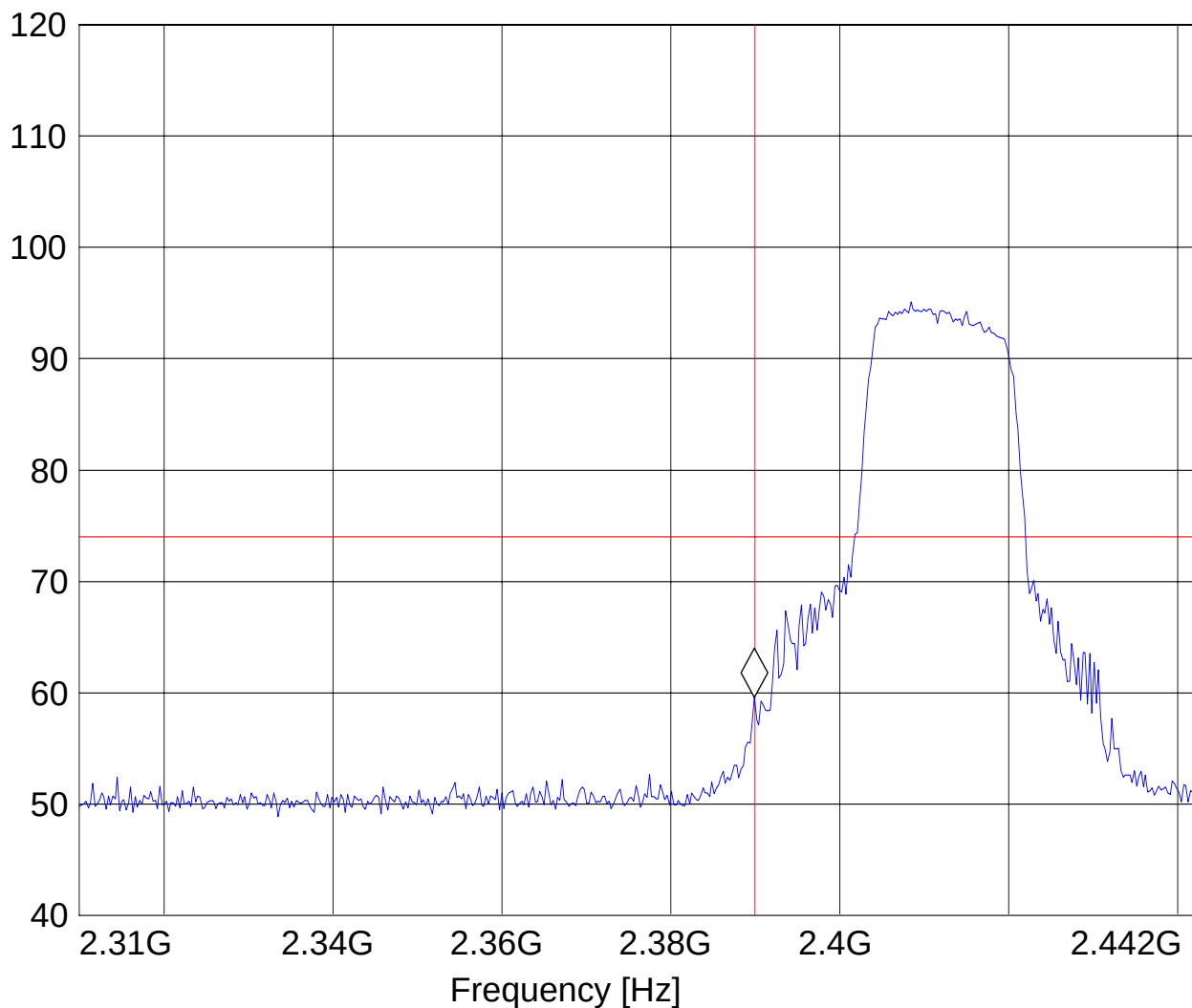
**802.11g (2412MHz) PEAK Chain B****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 1, chain b  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

**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: 2.389887776 GHz 59.6 dB $\mu$ V/m

Level [dB $\mu$ V/m]

**802.11g (2412MHz) AVG Chain B****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

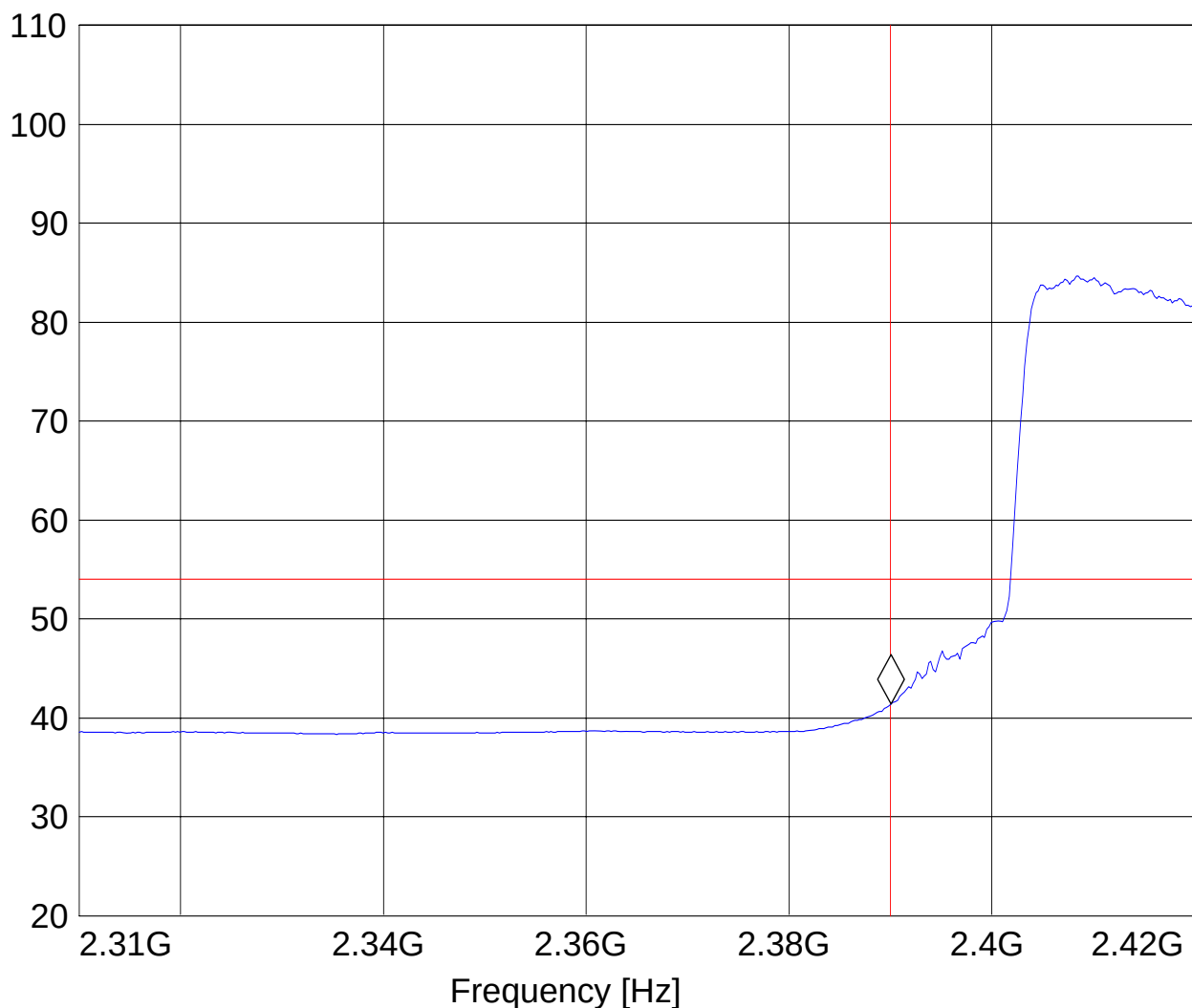
EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 1, chain b  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

***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 |

Marker: 2.39002004 GHz 41.4 dBμV/m

Level [dBμV/m]



**5.2.3 Results Upper Restricted Band 2483.5 MHz to 2500 MHz****802.11b (2462MHz) PEAK Chain A****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas

Customer: HP Texas

Test Mode: WLAN 802.11b, 1 Mbps, ch 11, chain a

ANT Orientation: H

EUT Orientation: H

Test Engineer: Satya Radhakrishna

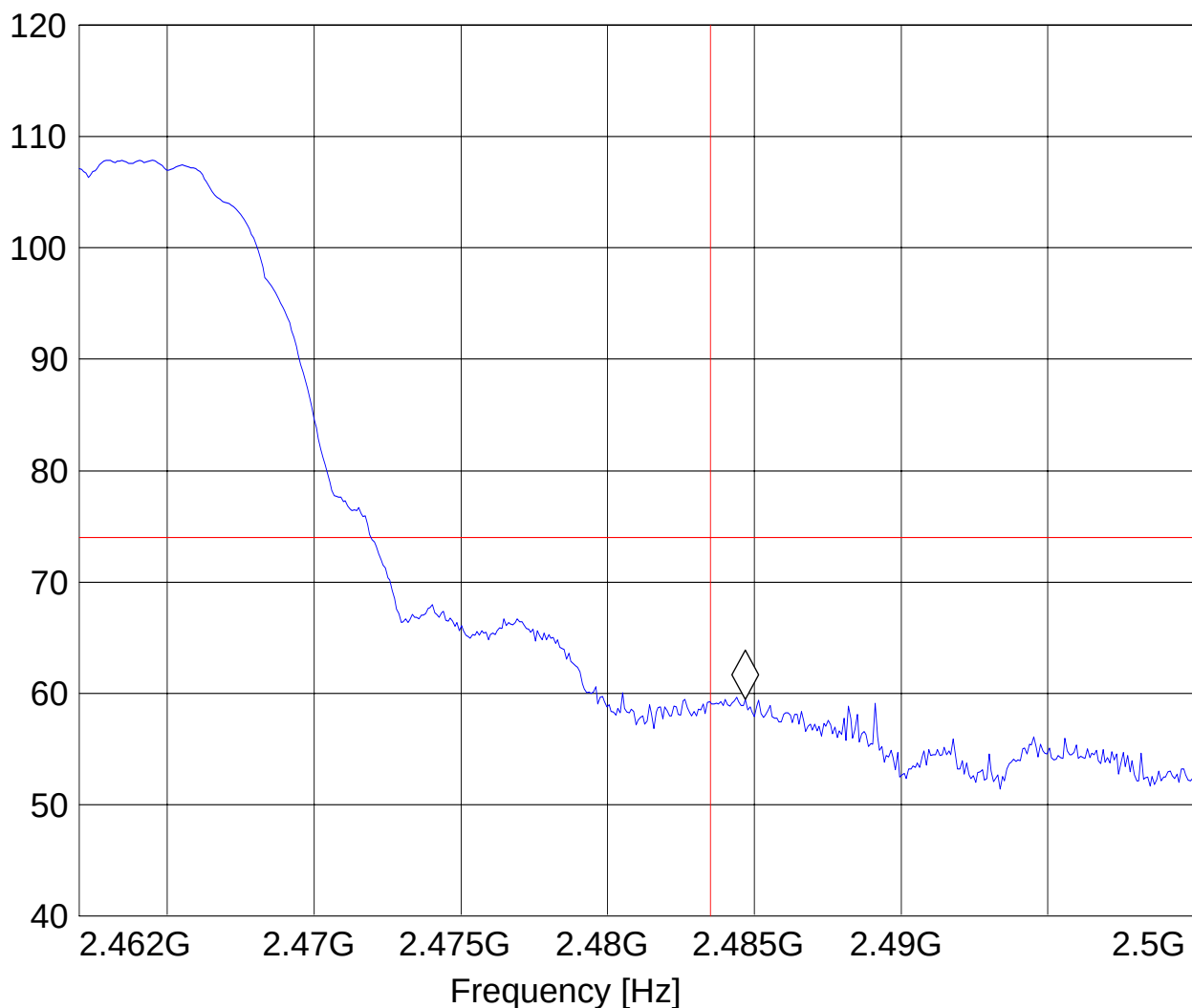
Power Supply: AC Adapter

**SWEEP TABLE: "FCC15.247 HBE\_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: 2.484693387 GHz 59.45 dBμV/m

Level [dBμV/m]



**802.11b (2462MHz) AVG Chain A****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

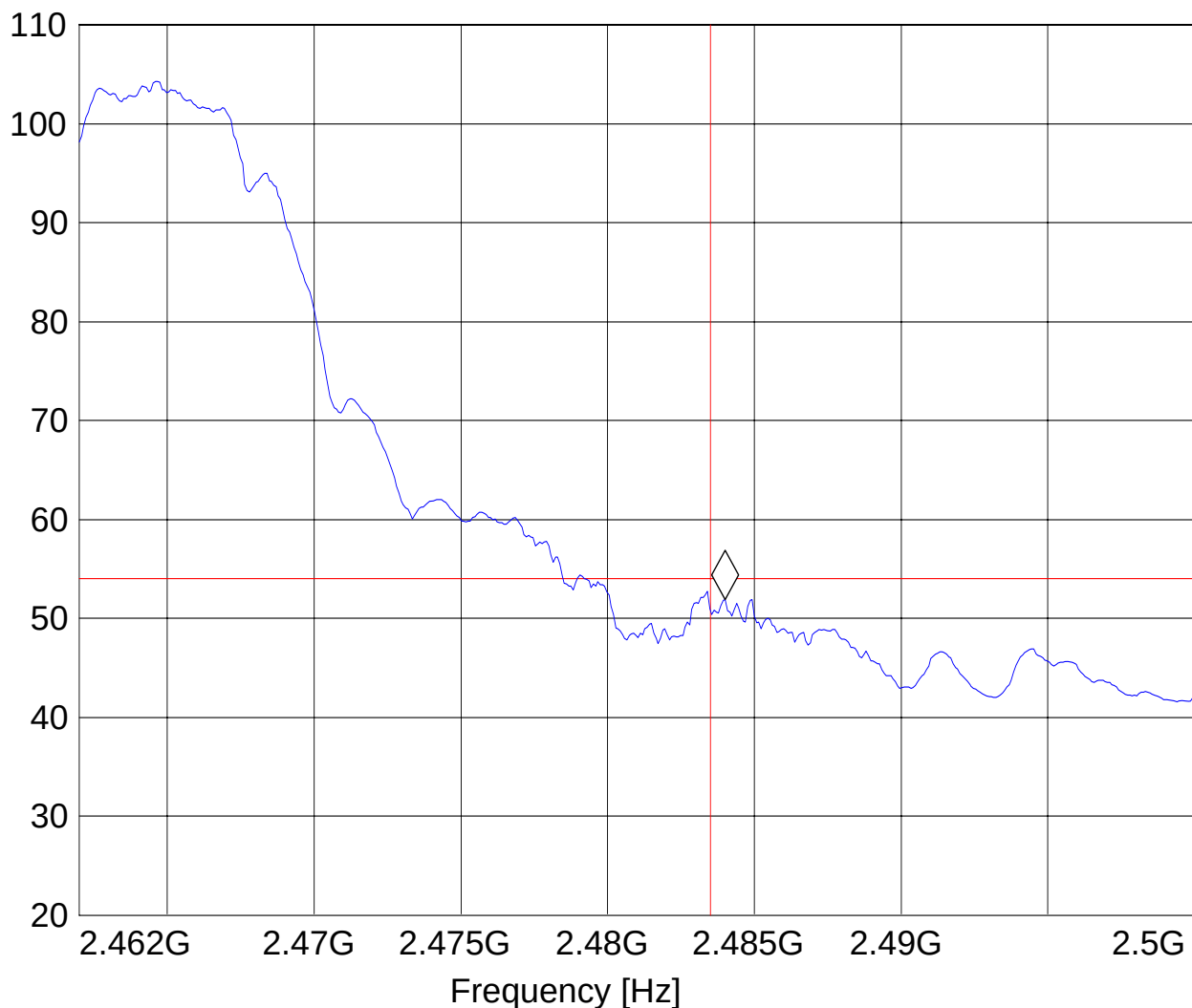
EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11b, 1 Mbps, ch 11, chain a  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Satya Radhakrishna  
Power Supply: AC Adapter

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

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

Marker: 2.484008016 GHz 51.9 dBμV/m

Level [dBμV/m]



**802.11b (2462MHz) PEAK Chain B****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

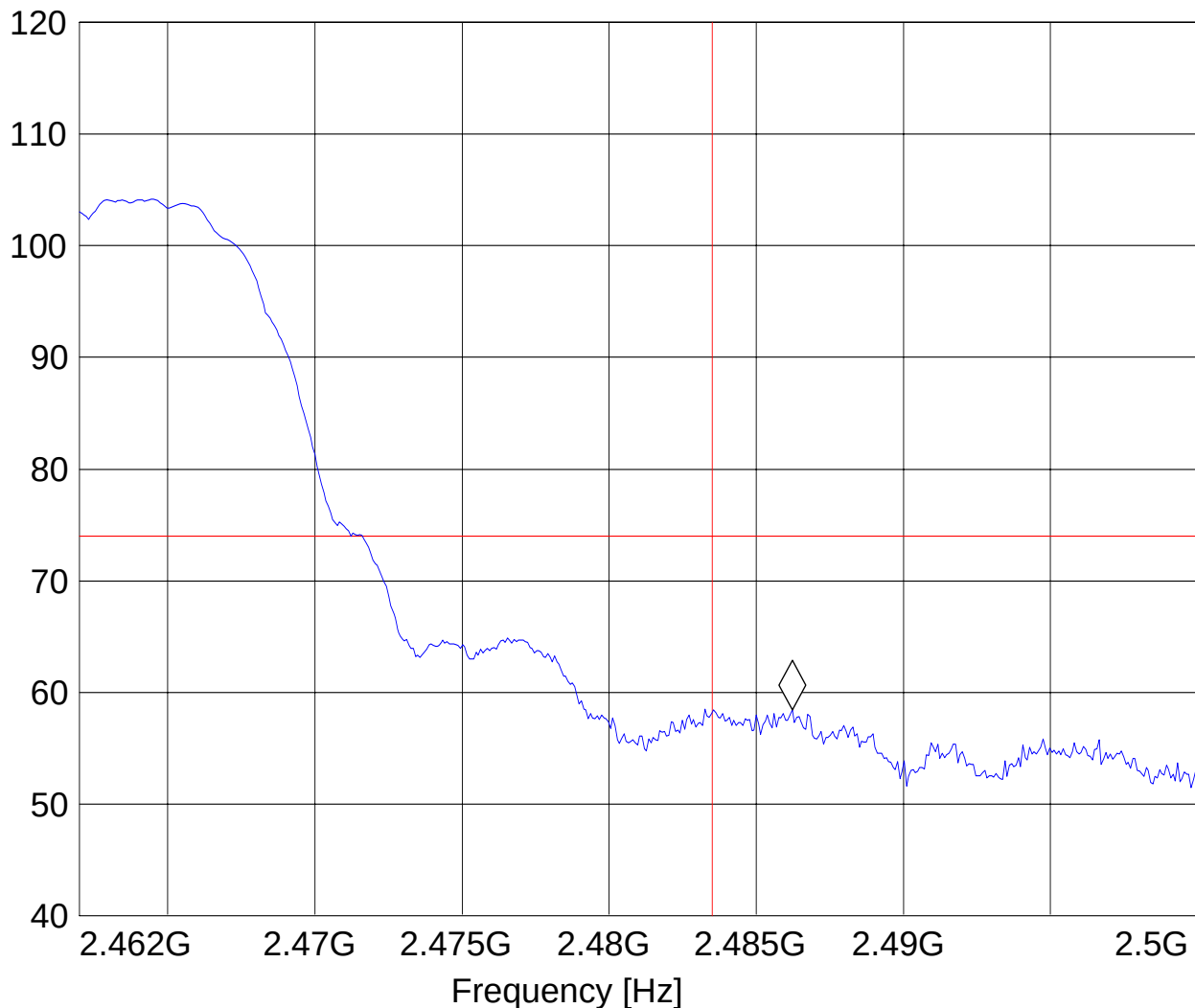
EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11b, 1 Mbps, ch 11, chain b  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Satya Radhakrishna  
Power Supply: AC Adapter

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

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

Marker: 2.486216433 GHz 58.42 dBμV/m

Level [dBμV/m]



**802.11b (2462MHz) AVG Chain B****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

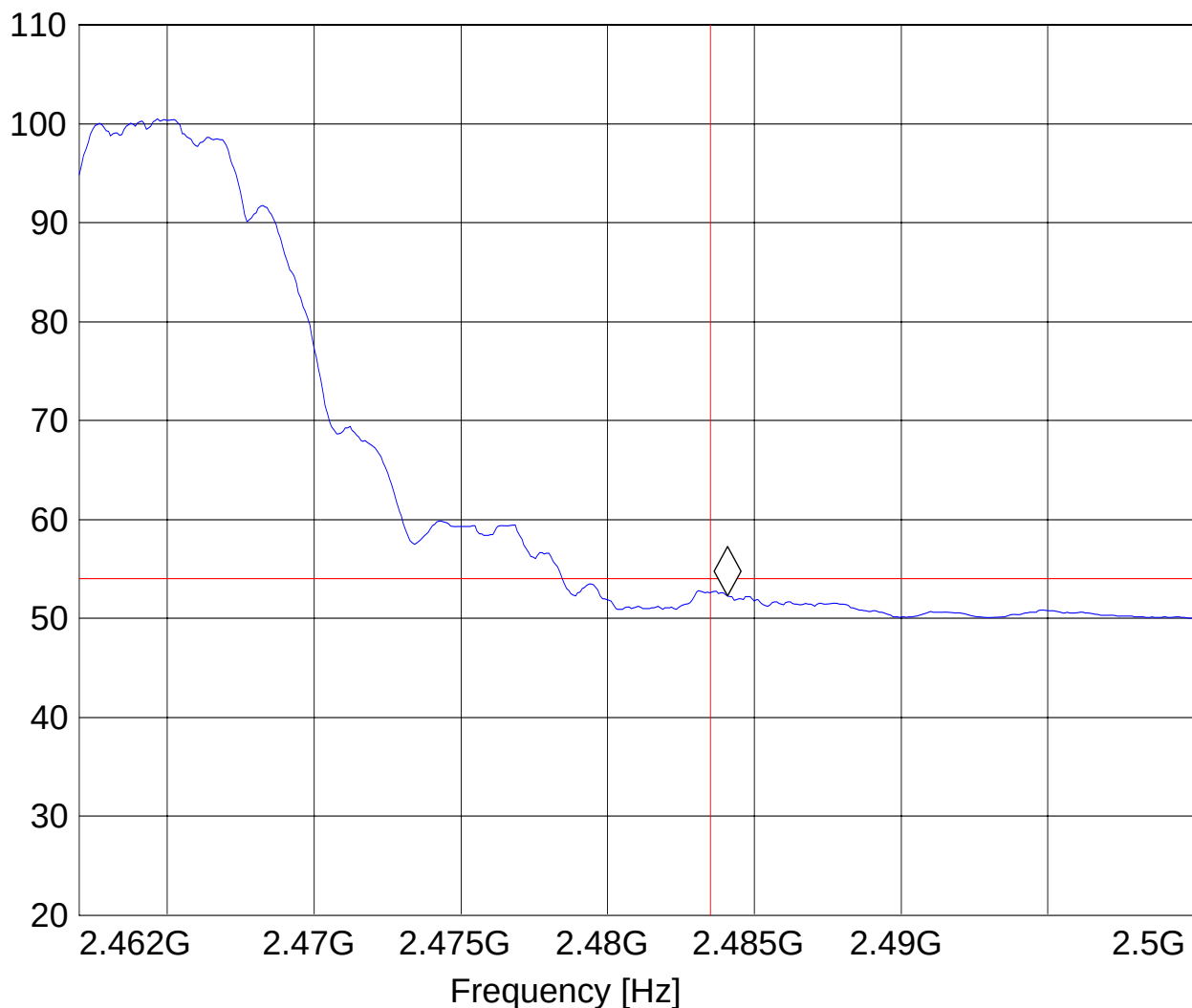
EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11b, 1 Mbps, ch 11, chain b  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Satya Radhakrishna  
Power Supply: AC Adapter

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

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

Marker: 2.484084168 GHz 52.29 dBμV/m

Level [dBμV/m]





**802.11g (2462MHz) PEAK Chain A****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

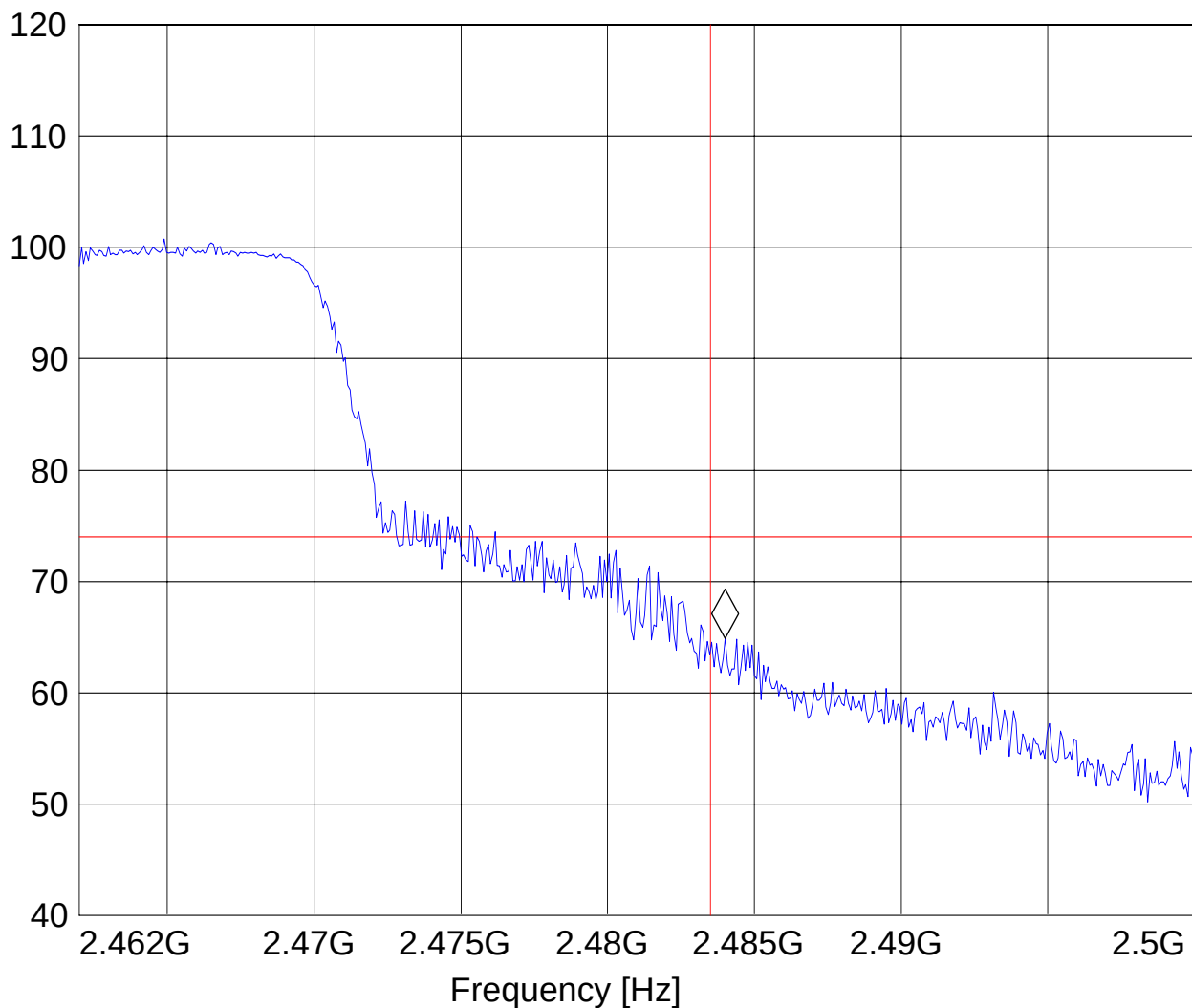
EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 11, chain a  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

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

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

Marker: 2.484008016 GHz 64.87 dBμV/m

Level [dBμV/m]



**802.11g (2462MHz) AVG Chain A****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

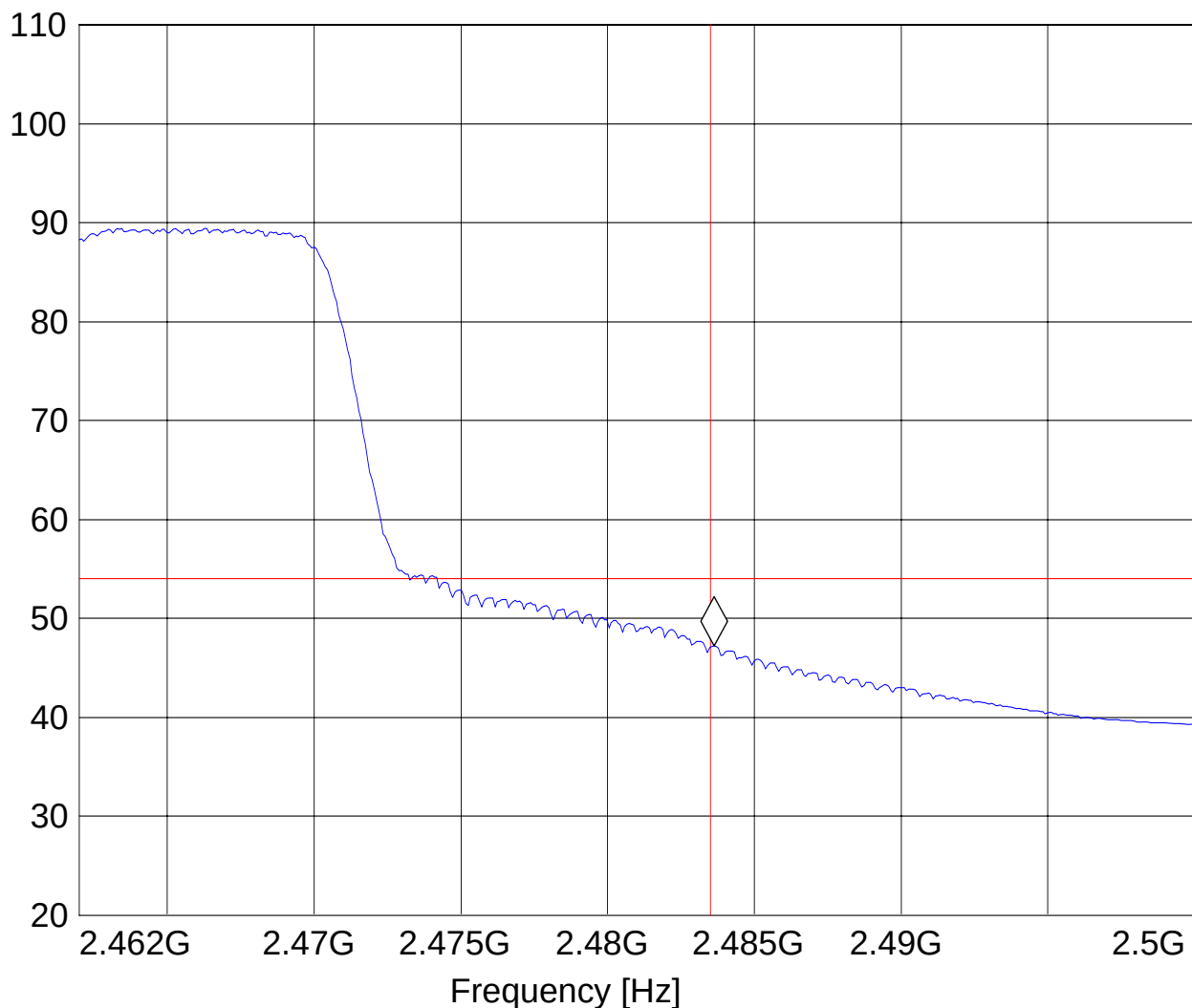
EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 11, chain a  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

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

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

Marker: 2.483627255 GHz 47.21 dBμV/m

Level [dBμV/m]



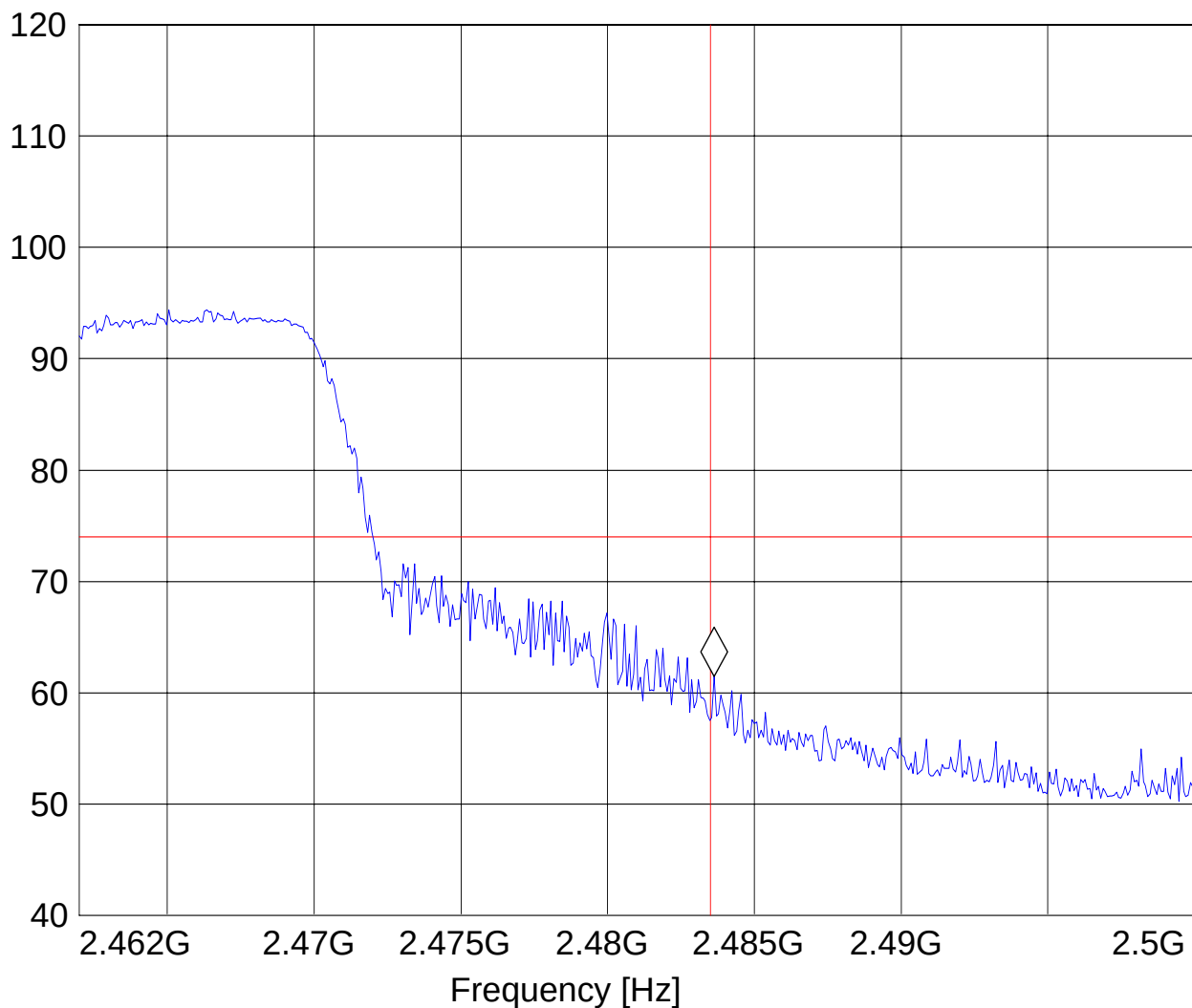
**802.11g (2462MHz) PEAK Chain B****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 11, chain b  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

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

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

Marker: 2.483627255 GHz 61.47 dB $\mu$ V/m

Level [dB $\mu$ V/m]

**802.11g (2462MHz) AVG Chain B****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

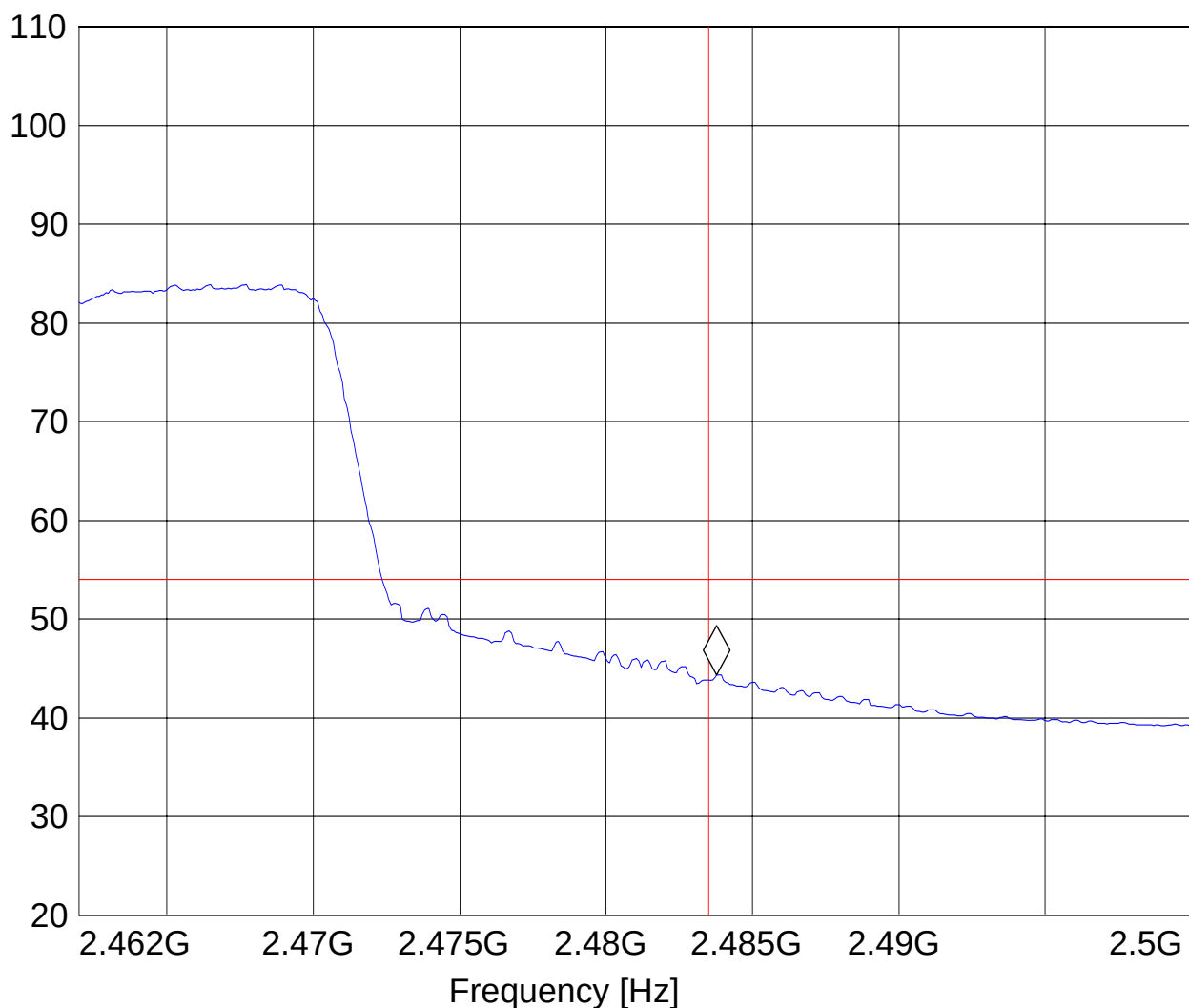
EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 11, chain b  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

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

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

Marker: 2.483779559 GHz 44.34 dBμV/m

Level [dBμV/m]



### 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**

#### Notes:

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.
3. Radiated emissions are maximized by rotating the EUT 360° at 0.5 meter height increments between 1 and 4 meters.
4. Measurements were performed with the EUT in X, Y and Z orientations with the measurement antenna in both horizontal and vertical polarity. The plots below show the results of the worst case orientation and polarity
5. After maximization it is determined that 802.11g mode has worse case emission and only this mode is reported here.

#### **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

#### 30MHz – 1GHz Chain A, Antenna: vertical

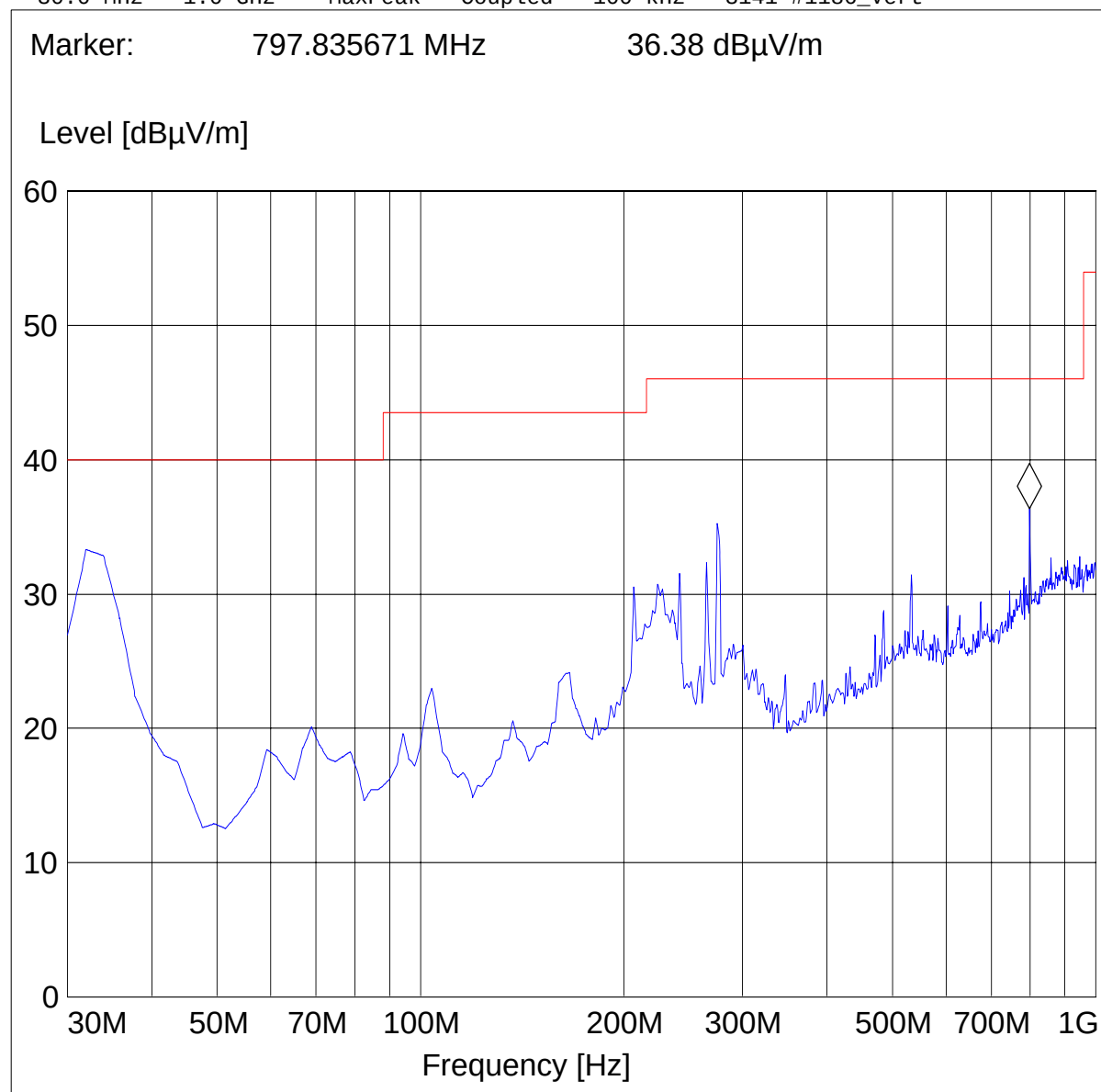
Note: This plot is valid for low, mid, high channels (worst-case plot)

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

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 6, chain a  
ANT Orientation: V  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

#### **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 |

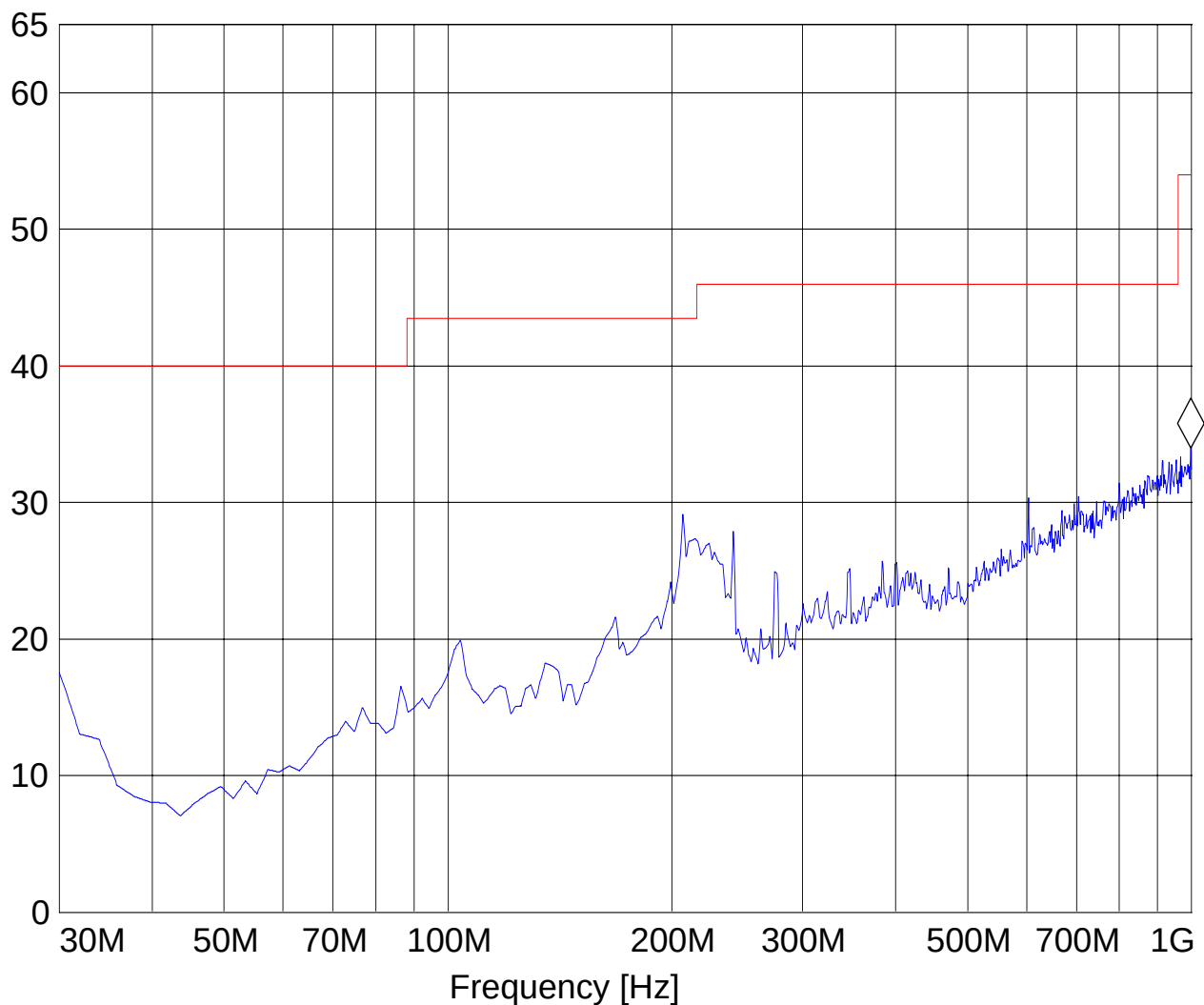


**30MHz – 1GHz Chain A, Antenna: horizontal****Note: This plot is valid for low, mid, high channels (worst-case plot)****CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 11, chain a  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

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

| Start<br>Frequency | Stop<br>Frequency | Detector | Meas.<br>Time | IF<br>Bandw. | Transducer      |
|--------------------|-------------------|----------|---------------|--------------|-----------------|
| 30.0 MHz           | 1.0 GHz           | MaxPeak  | Coupled       | 100 kHz      | 3141-#1186_Vert |

**Marker: 998.056112 MHz 33.98 dBμV/m****Level [dBμV/m]**

**1-18GHz (2412MHz) Chain A****Note:** The peak above the limit line is the carrier freq. **Note:** Peak Reading vs. Average limit**CETECOM Inc., 411 Dixon Landing Road; Milpitas, CA 95035**

EUT / Description: Hoyas

Manufacturer: HP Texas

Test mode: WLAN 802.11g, 6 Mbps, ch 1, chain a

ANT Orientation: H

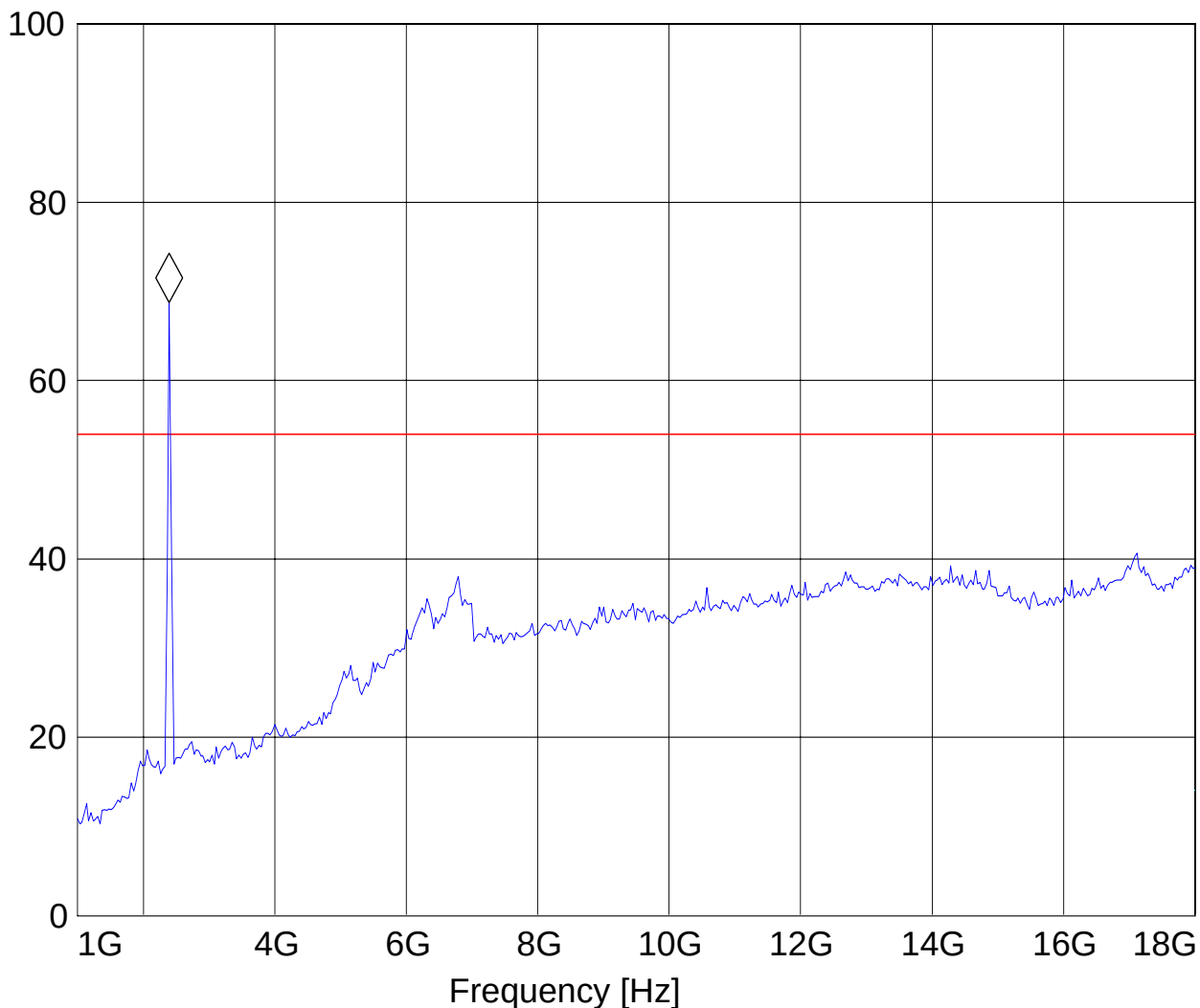
EUT Orientation: H

Test Engineer: Ed

Voltage: AC Adapter

**SWEEP TABLE: "FCC 15.407 1-18G"**

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

Marker: 2.396793587 GHz 68.76 dB $\mu$ V/mLevel [dB $\mu$ V/m]



**1-18GHz (2437MHz) Chain A**

**Note:** The peak above the limit line is the carrier freq. **Note:** Peak Reading vs. Average Limit  
**CETECOM Inc., 411 Dixon Landing Road; Milpitas, CA 95035**

EUT / Description: Hoyas

Manufacturer: HP Texas

Test mode: WLAN 802.11g, 6 Mbps, ch 6, chain a

ANT Orientation: H

EUT Orientation: H

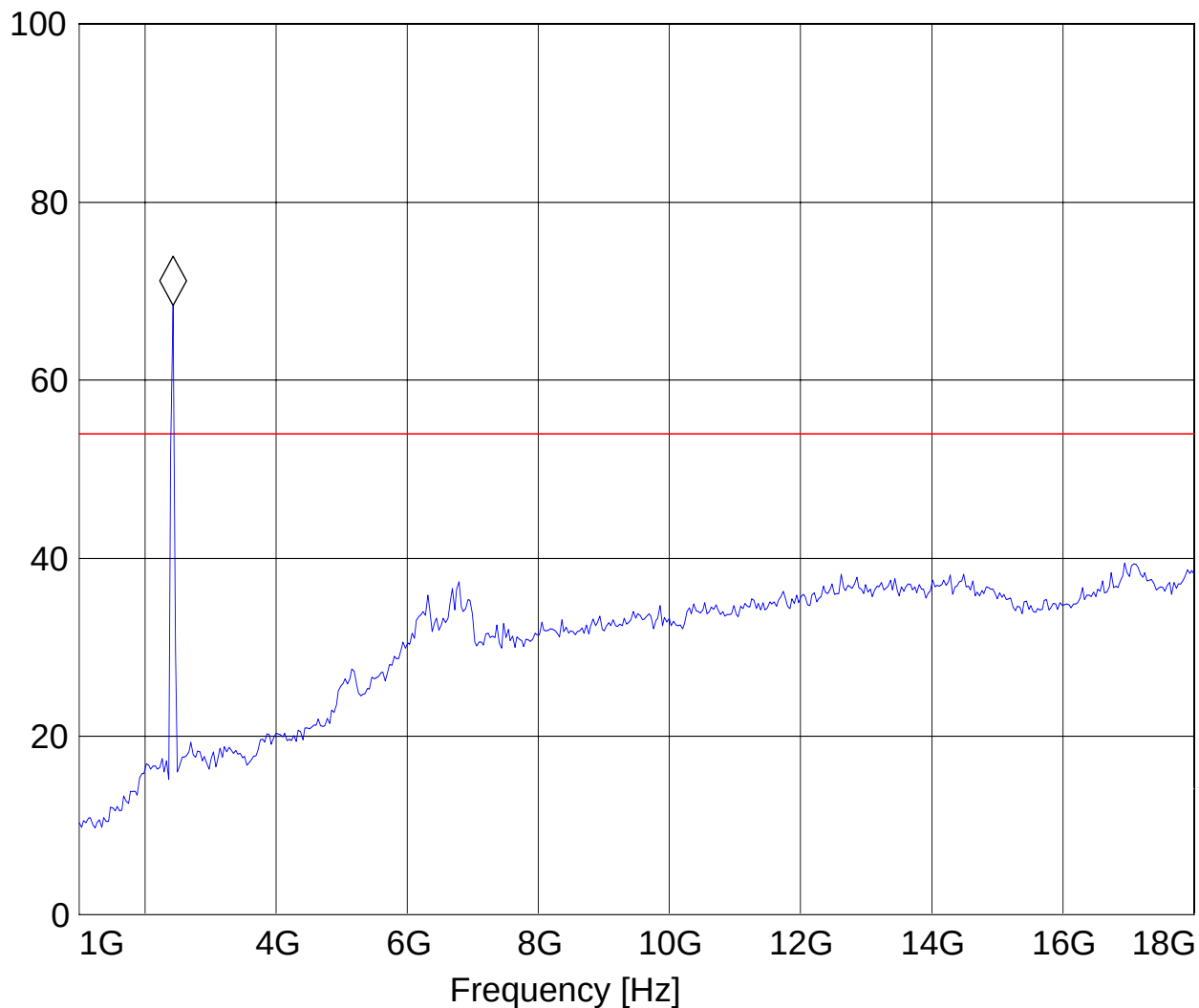
Test Engineer: Ed

Voltage: AC Adapter

***SWEEP TABLE: "FCC 15.407 1-18G"***

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

Marker: 2.430861723 GHz 68.41 dB $\mu$ V/m

Level [dB $\mu$ V/m]

**1-18GHz (2462MHz) Chain A****Note:**The peak above the limit line is the carrier freq.**Note:**Peak Reading vs. Average Limit**CETECOM Inc., 411 Dixon Landing Road; Milpitas, CA 95035**

EUT / Description: Hoyas

Manufacturer: HP Texas

Test mode: WLAN 802.11g, 6 Mbps, ch 11, chain a

ANT Orientation: H

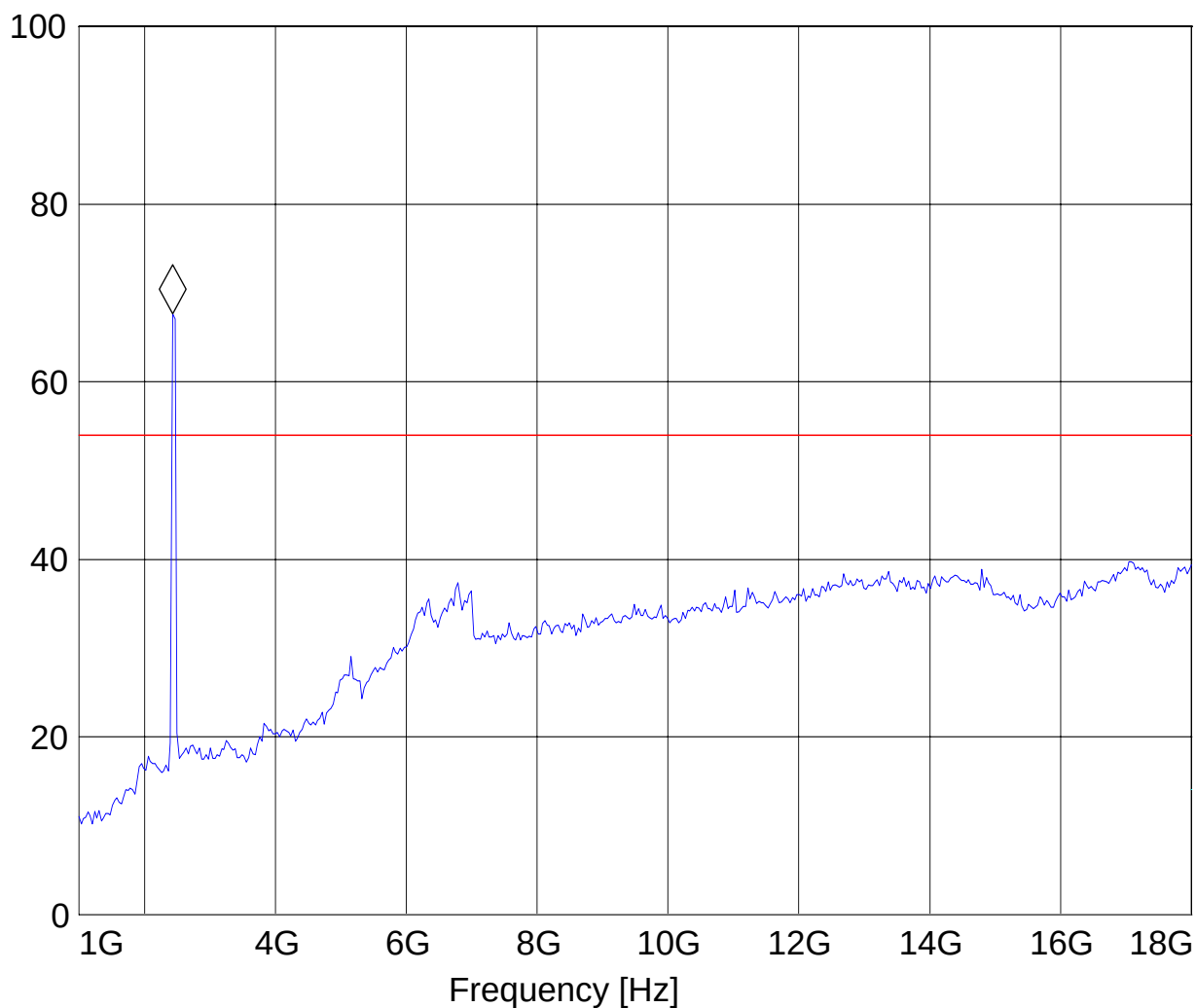
EUT Orientation: H

Test Engineer: Ed

Voltage: AC Adapter

**SWEEP TABLE: "FCC 15.407 1-18G"**

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

Marker: 2.430861723 GHz 67.68 dB $\mu$ V/mLevel [dB $\mu$ V/m]

**18-25GHz Chain A**

**Note: This plot is valid for low, mid, high channels (worst-case plot) Note: Peak Reading vs. Average limit**

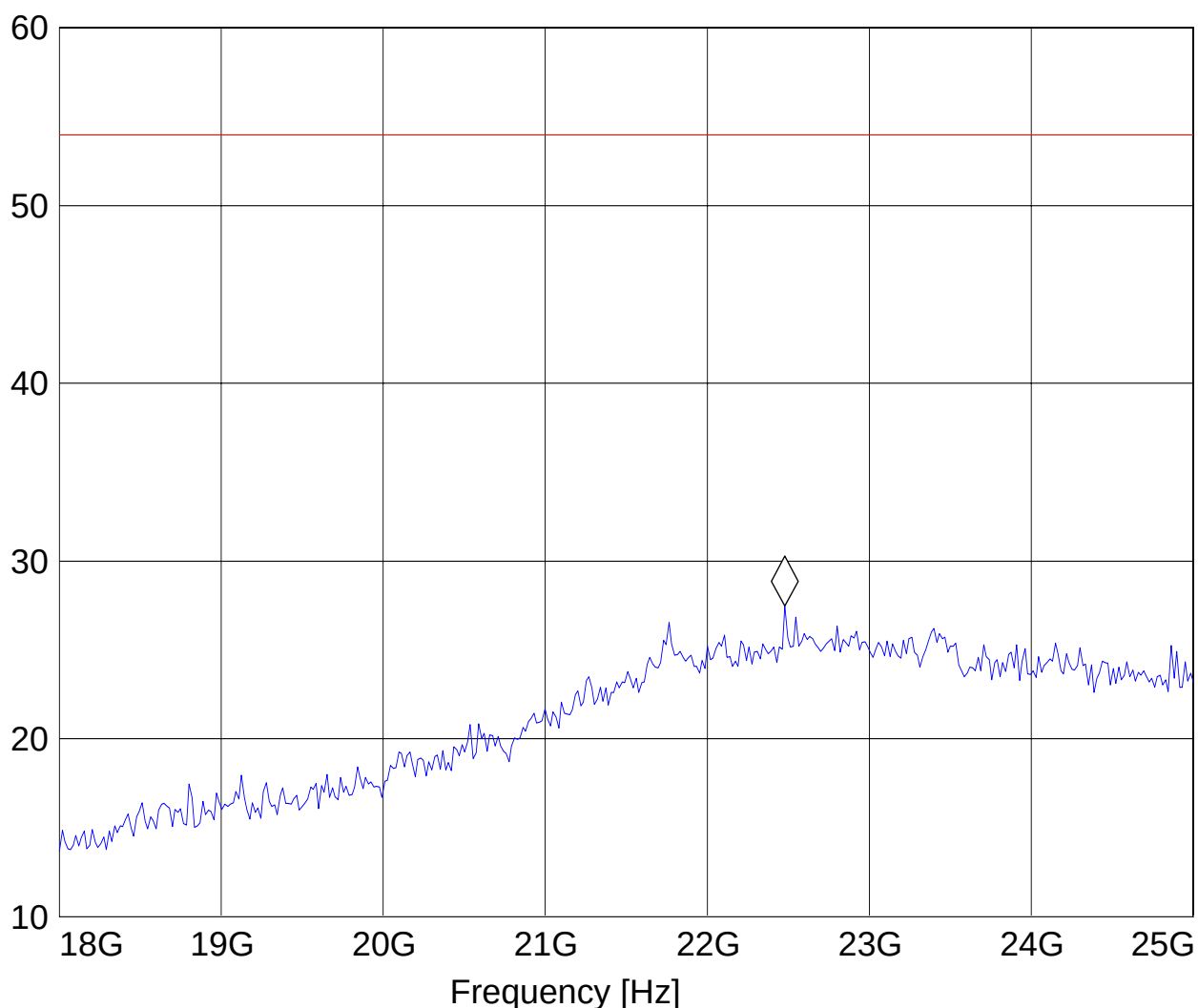
EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 11, chain a  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

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

| Start Frequency | Stop Frequency | Detector | Meas. Time | IF Bandw. | Transducer         |
|-----------------|----------------|----------|------------|-----------|--------------------|
| 18.0 GHz        | 25.0 GHz       | MaxPeak  | Coupled    | 1 MHz     | 3160 Horn 18-26.5G |

Marker: 22.47995992 GHz 27.46 dB $\mu$ V/m

Level [dB $\mu$ V/m]



**30MHz – 1GHz Chain B****Antenna: vertical****Note: This plot is valid for low, mid, high channels (worst-case plot)**

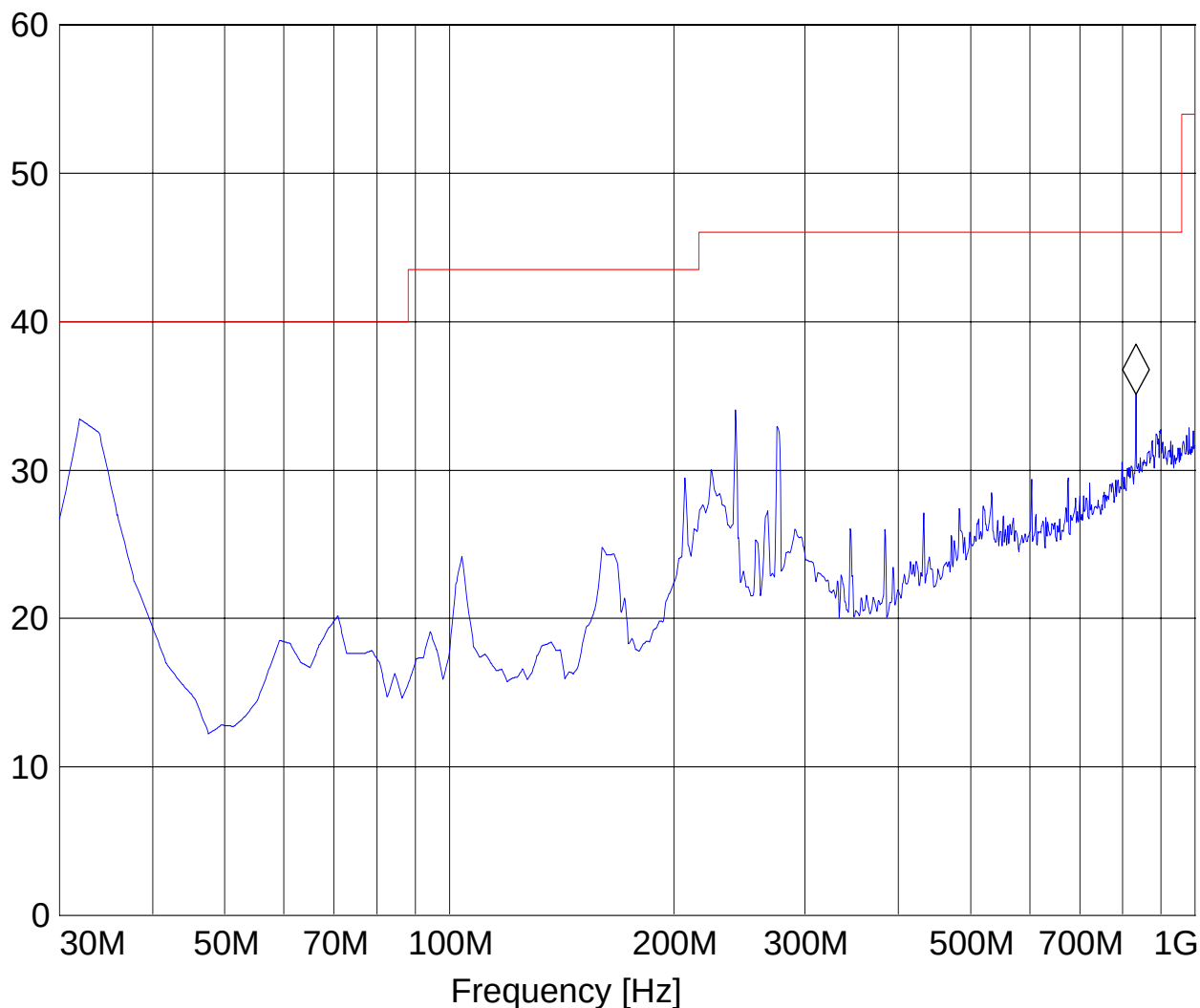
EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 6, chain b  
ANT Orientation: V  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

**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 |

Marker: 832.825651 MHz 35.08 dBμV/m

Level [dBμV/m]



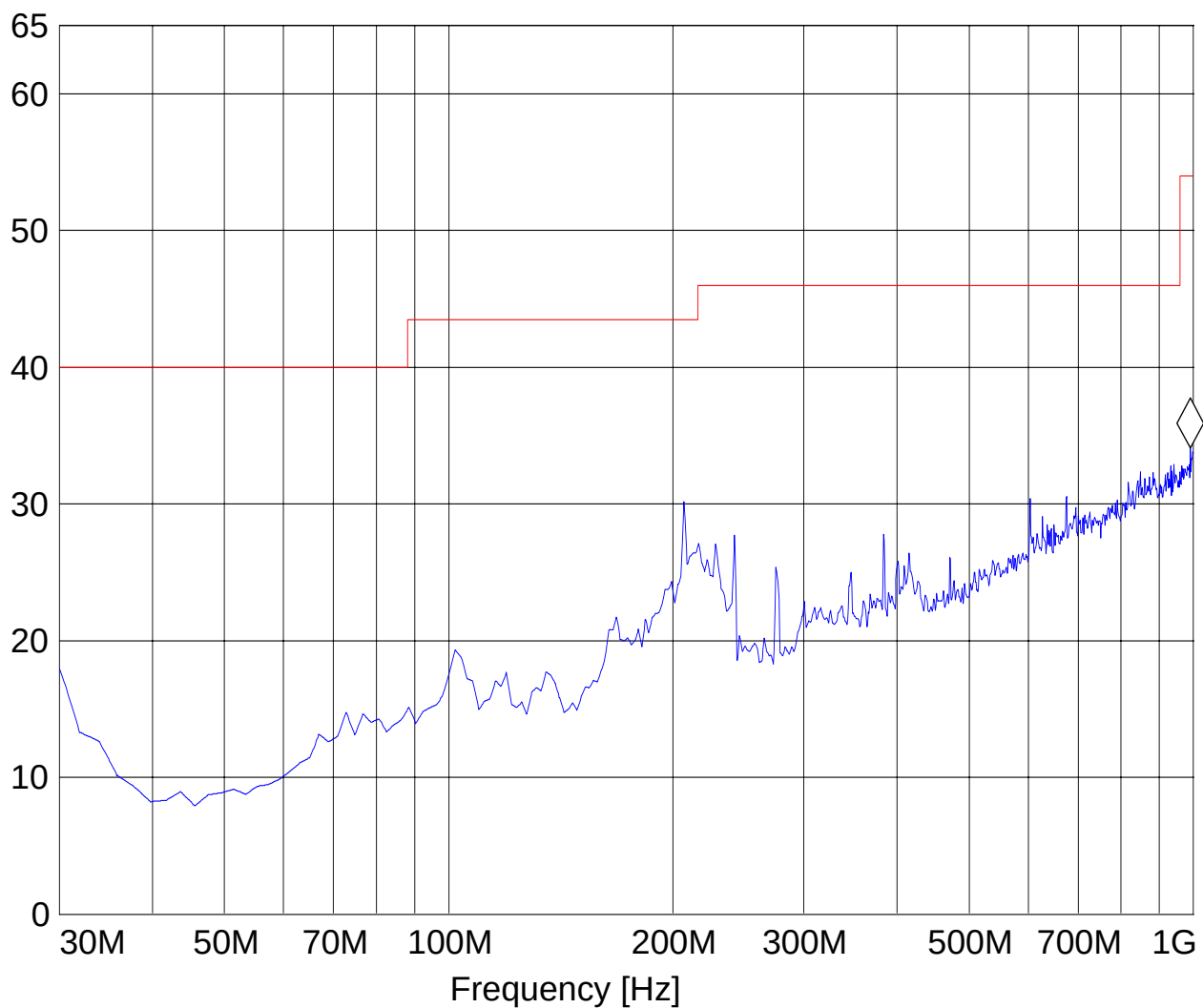
**30MHz – 1GHz Chain B****Antenna: horizontal****Note: This plot is valid for low, mid, high channels (worst-case plot)**

EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 11, chain b  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

**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_Vert |

Marker: 990.280561 MHz 34.1 dB $\mu$ V/m

Level [dB $\mu$ V/m]

**1-18GHz (2412MHz) Chain B**

**Note:** The peak above the limit line is the carrier freq. **Note:** Peak Reading vs. Average Limit

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

EUT / Description: Hoyas

Manufacturer: HP Texas

Test mode: WLAN 802.11g, 6 Mbps, ch 1, chain b

ANT Orientation: H

EUT Orientation: H

Test Engineer: Ed

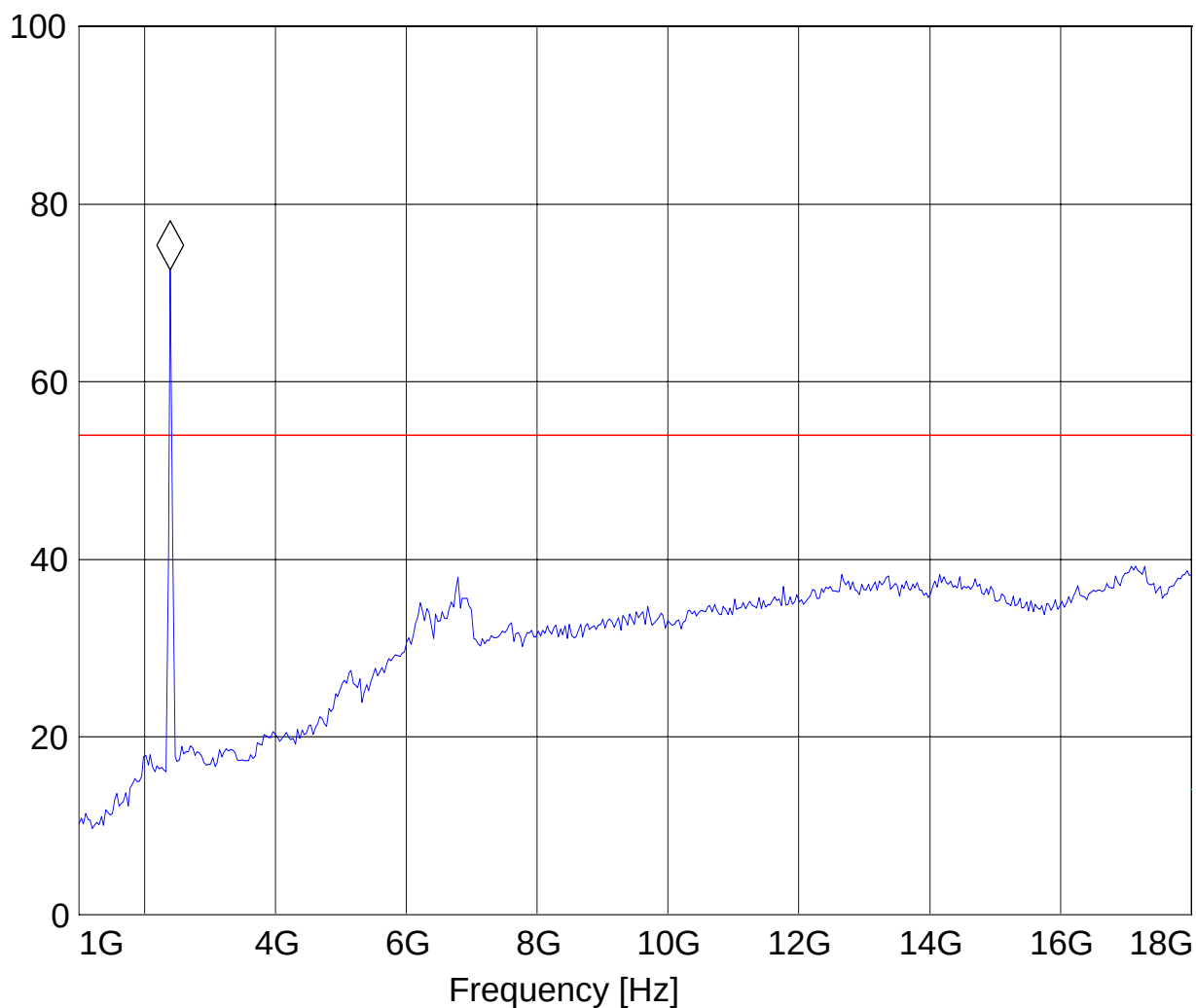
Voltage: AC Adapter

***SWEEP TABLE: "FCC 15.407 1-18G"***

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

Marker: 2.396793587 GHz 72.55 dB $\mu$ V/m

Level [dB $\mu$ V/m]



**1-18GHz (2437MHz) Chain B**

**Note:**The peak above the limit line is the carrier freq.**Note:**Peak Reading vs. Average Limit  
**CETECOM Inc., 411 Dixon Landing Road; Milpitas, CA 95035**

EUT / Description: Hoyas

Manufacturer: HP Texas

Test mode: WLAN 802.11g, 6 Mbps, ch 6, chain b

ANT Orientation: H

EUT Orientation: H

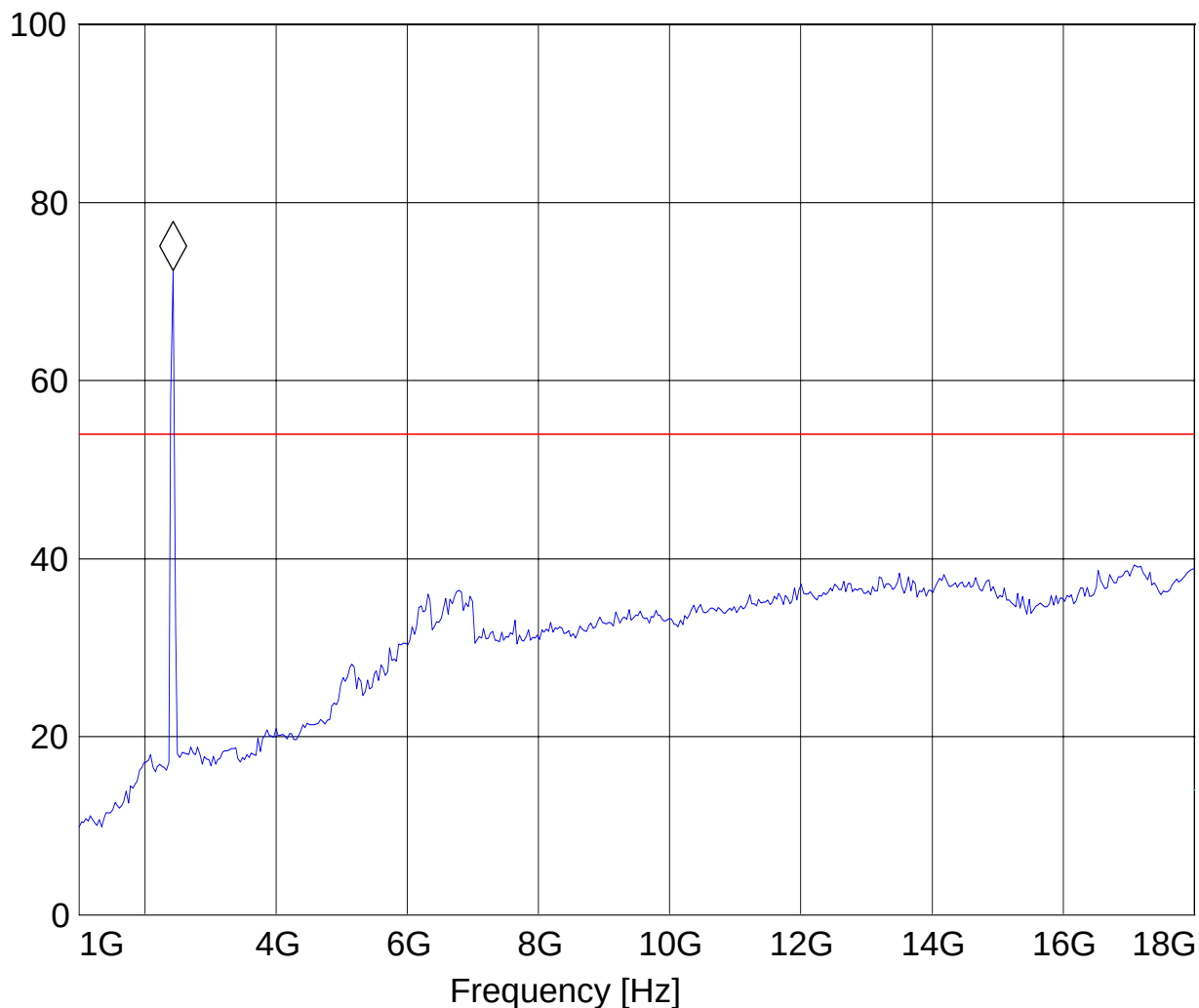
Test Engineer: Ed

Voltage: AC Adapter

***SWEEP TABLE: "FCC 15.407 1-18G"***

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

Marker: 2.430861723 GHz 72.34 dB $\mu$ V/m

Level [dB $\mu$ V/m]

**1-18GHz (2462MHz) Chain B**

**Note:** The peak above the limit line is the carrier freq. **Note:** Peak Reading vs. Average Limit  
**CETECOM Inc., 411 Dixon Landing Road; Milpitas, CA 95035**

EUT / Description: Hoyas

Manufacturer: HP Texas

Test mode: WLAN 802.11g, 6 Mbps, ch 11, chain b

ANT Orientation: H

EUT Orientation: H

Test Engineer: Ed

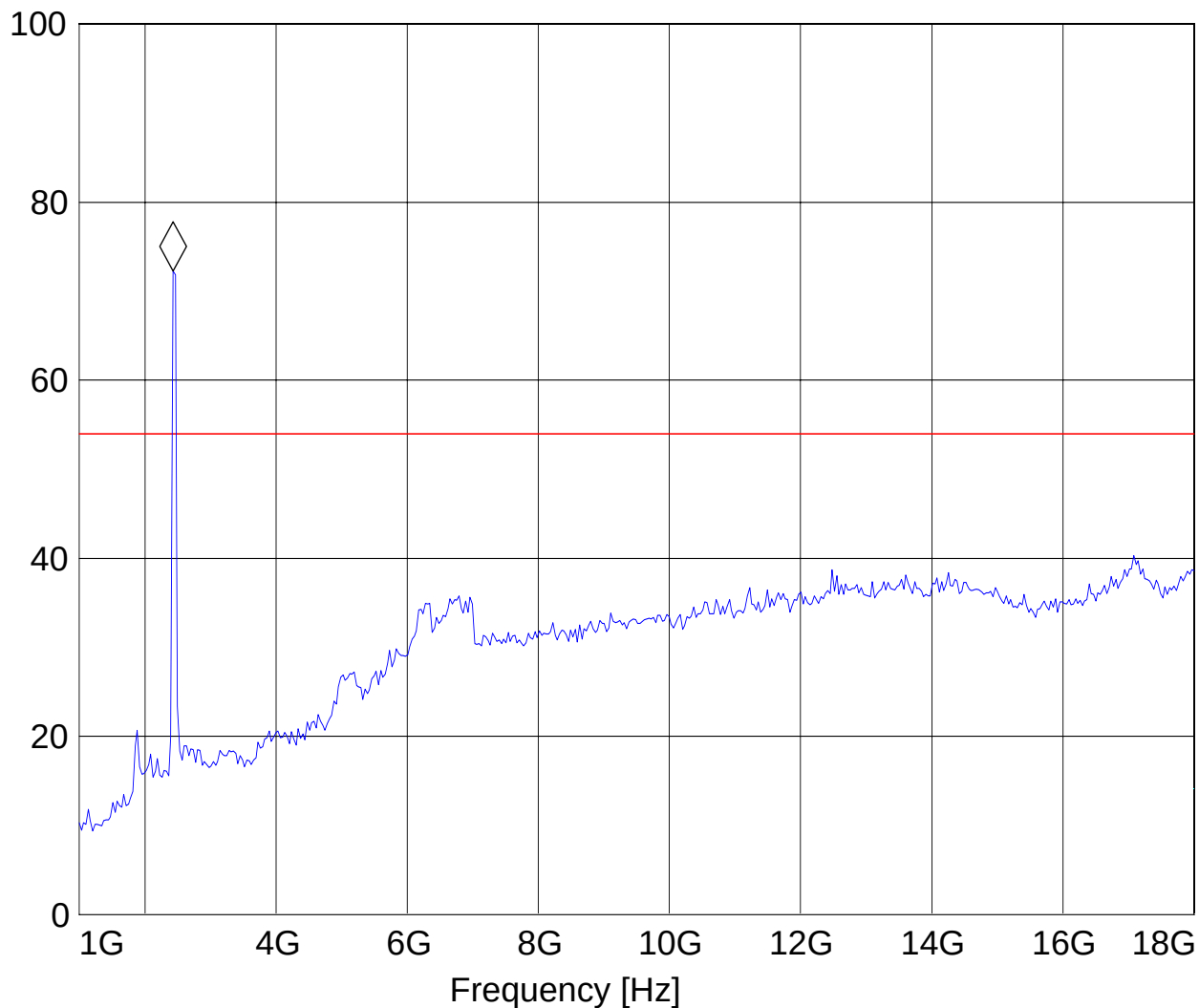
Voltage: AC Adapter

**SWEEP TABLE: "FCC 15.407 1-18G"**

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

Marker: 2.430861723 GHz 72.27 dBμV/m

Level [dBμV/m]





**18-25GHz Chain B**

**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**

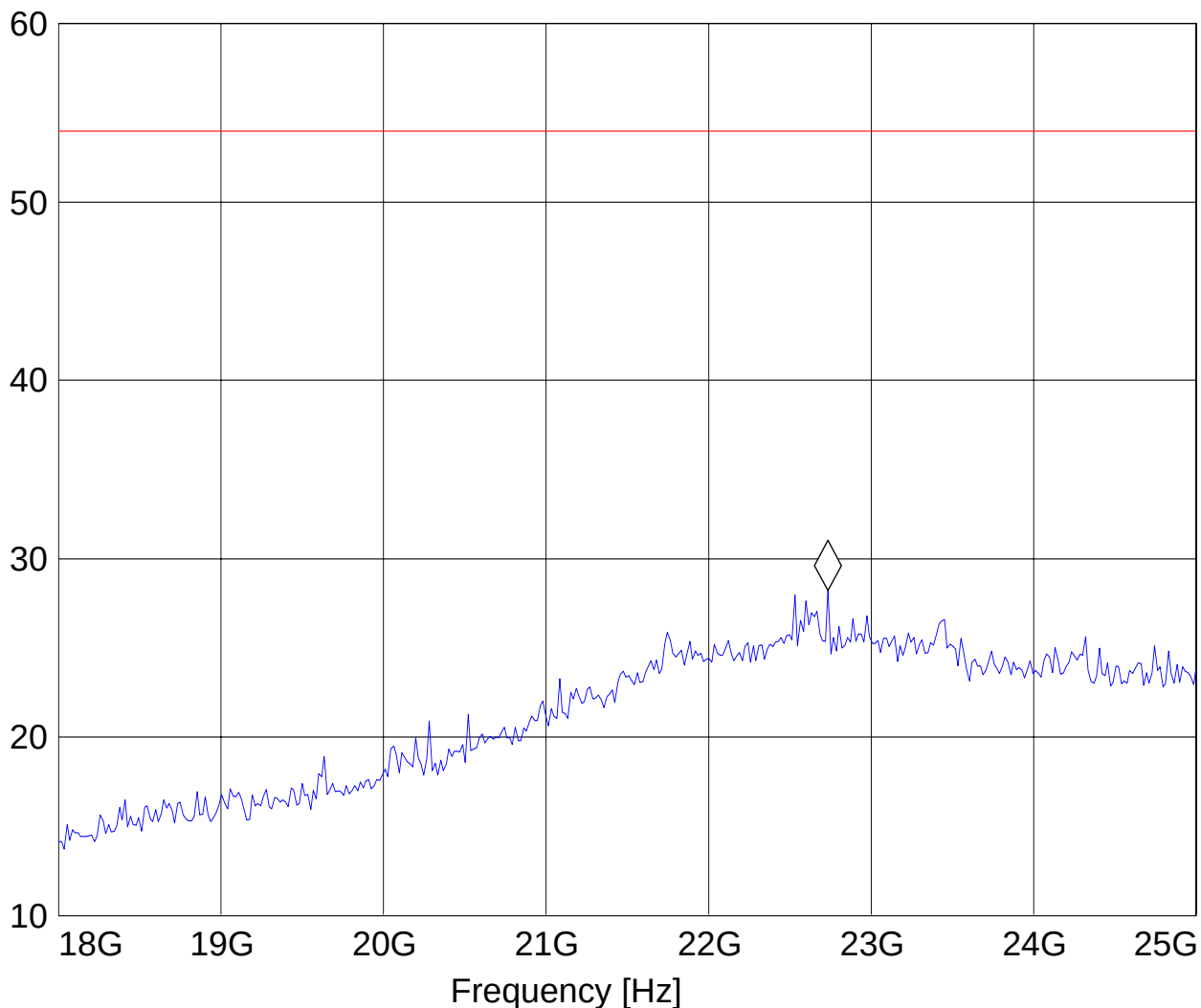
EUT: Hoyas  
Customer: HP Texas  
Test Mode: WLAN 802.11g, 6 Mbps, ch 11, chain b  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: Ed  
Power Supply: AC Adapter

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

| Start<br>Frequency | Stop<br>Frequency | Detector | Meas.<br>Time | IF<br>Bandw. | Transducer         |
|--------------------|-------------------|----------|---------------|--------------|--------------------|
| 18.0 GHz           | 25.0 GHz          | MaxPeak  | Coupled       | 1 MHz        | 3160 Horn 18-26.5G |

Marker: 22.735470942 GHz 28.22 dB $\mu$ V/m

Level [dB $\mu$ V/m]





## 5.4 AC POWER LINE CONDUCTED EMISSIONS § 15.107/207

### 5.4.1 Limits

**Technical specification: 15.107 / 15.207 (Revised as of August 20, 2002)**

§15.107 (a) Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

#### 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**

**5.4.2 Results, Line:**

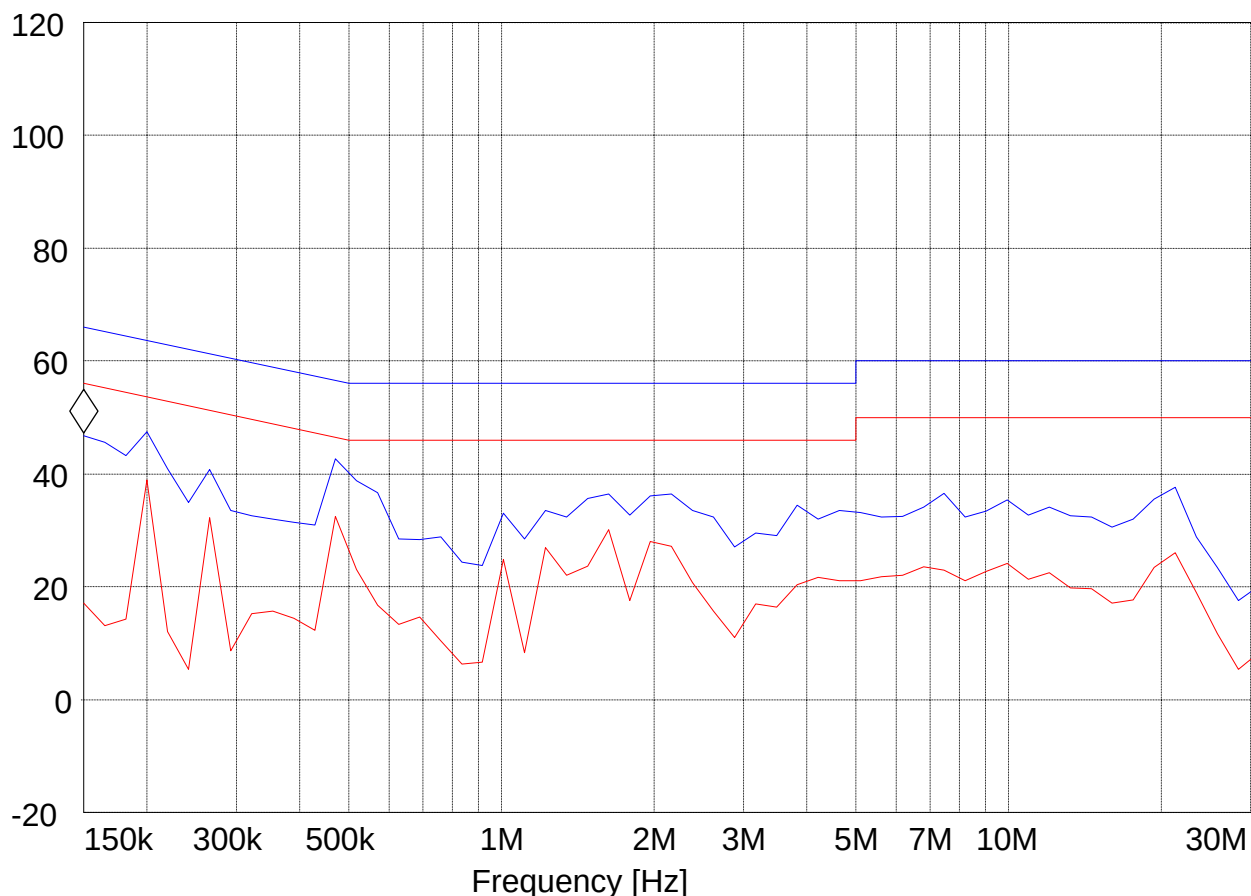
EUT: Hoyas  
Manufacturer: HP Teaxas  
Operating Condition: WLAN 802.11g, 6 Mbps, ch 6, chain b  
Test Site: Cetecom Inc.  
Operator: Pete K  
Comment: 120V, L  
Start of Test: 6/14/2007 / 5:58:10PM

**SWEEP TABLE: "55022 cond"**

| Short Description: |           | EN 55022 for 150KHz-30MHz |         |        |            |
|--------------------|-----------|---------------------------|---------|--------|------------|
| Start              | Stop      | Detector                  | Meas.   | IF     | Transducer |
| Frequency          | Frequency |                           | Time    | Bandw. |            |
| 150.0 kHz          | 30.0 MHz  | MaxPeak                   | Coupled | 10 kHz | None       |

Marker: 150 kHz 47.2 dBμV L

Level [dBμV]



MES 55022 cond MaxPk  
MES 55022 cond Avg  
LIM EN 55022 V AV Voltage AV Limit  
LIM EN 55022 V QP Voltage QP Limit

**Neutral:**

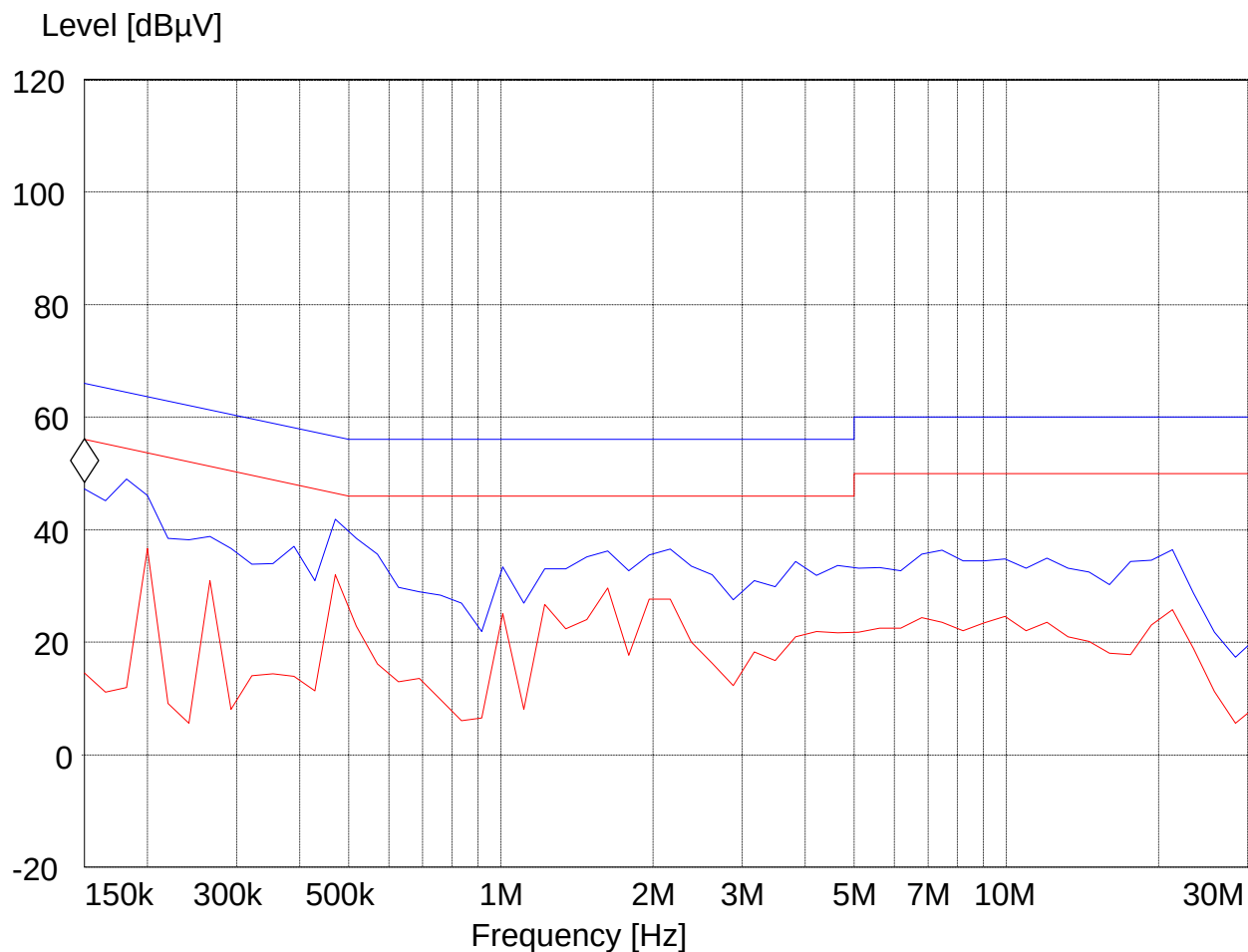


EUT: Hoyas  
Manufacturer: HP Texas  
Operating Condition: WLAN 802.11g, 6 Mbps, ch 6, chain b  
Test Site: Cetecom Inc.  
Operator: Ed  
Comment: 120V, N  
Start of Test: 6/14/2007 / 5:53:52PM

***SWEEP TABLE: "55022 cond"***

| Short Description: |           | EN 55022 for 150KHz-30MHz |         |        |            |
|--------------------|-----------|---------------------------|---------|--------|------------|
| Start              | Stop      | Detector                  | Meas.   | IF     | Transducer |
| Frequency          | Frequency |                           | Time    | Bandw. |            |
| 150.0 kHz          | 30.0 MHz  | MaxPeak                   | Coupled | 10 kHz | None       |

Marker: 150 kHz 48.42 dB $\mu$ V N



|                      |                  |
|----------------------|------------------|
| MES 55022 cond MaxPk |                  |
| MES 55022 cond Avg   |                  |
| LIM EN 55022 V AV    | Voltage AV Limit |
| LIM EN 55022 V QP    | Voltage QP Limit |

**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 2008    | 1 year   |
| 02 | Spectrum Analyzer            | FSEM 30      | Rohde & Schwarz | 100017       | August 2008 | 1 year   |
| 03 | Signal Generator             | SMY02        | Rohde & Schwarz | 836878/011   | May 2008    | 1 year   |
| 04 | Power-Meter                  | NRVD         | Rohde & Schwarz | 0857.8008.02 | May 2008    | 1 year   |
| 05 | Biconilog Antenna            | 3141         | EMCO            | 0005-1186    | June 2008   | 1 year   |
| 06 | Horn Antenna (1-18GHz)       | SAS-200/571  | AH Systems      | 325          | June 2008   | 1 year   |
| 07 | Horn Antenna (18-26.5GHz)    | 3160-09      | EMCO            | 1240         | June 2008   | 1 year   |
| 08 | Power Splitter               | 11667B       | Hewlett Packard | 645348       | n/a         | n/a      |
| 09 | Climatic Chamber             | VT4004       | Voltsch         | G1115        | May 2008    | 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 2008    | 1 year   |
| 13 | Power Sensor                 | URV5-Z2      | Rohde & Schwarz | DE30807      | May 2008    | 1 year   |
| 14 | Digital Radio Comm. Tester   | CMD-55       | Rohde & Schwarz | 847958/008   | May 2008    | 1 year   |
| 15 | Universal Radio Comm. Tester | CMU 200      | Rohde & Schwarz | 832221/06    | May 2008    | 1 year   |
| 16 | LISN                         | ESH3-Z5      | Rohde & Schwarz | 836679/003   | May 2008    | 1 year   |
| 17 | Loop Antenna                 | 6512         | EMCO            | 00049838     | July 2008   | 2 years  |

## 7 BLOCK DIAGRAMS

### Radiated Testing

#### ANECHOIC CHAMBER

