



# FCC Test Report

## FCC Part 15.407 for UNII Devices/ CANADA RSS-210 issue 5 for Lelean Devices

for the  
**SONY Corporation**  
**Notebook PC**  
**Model Number: VAIO-VGN TZ**

**FCC ID: AK8PCG4L1L**

**IC-ID: 409B-PCG4L1L**

**TEST REPORT #: SONYE\_016\_07001\_15.407A\_AK8PCG4L1**  
**DATE: 4/25/2007**



**FCC listed#**  
**101450**

**IC recognized**  
**#**  
**3925**

### **CETECOM Inc.**

411 Dixon Landing Road • Milpitas, CA 95035 • U.S.A.

Phone: + 1 (408) 586 6200 • Fax: + 1 (408) 586 6299 • E-mail: [info@cetecomusa.com](mailto:info@cetecomusa.com) • <http://www.cetecom.com>

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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## **TABLE OF CONTENTS**

|          |                                                                            |           |
|----------|----------------------------------------------------------------------------|-----------|
| <b>1</b> | <b>Assessment</b>                                                          | <b>3</b>  |
|          | <b>Technical responsibility for area of testing:</b>                       | <b>3</b>  |
|          | EMC & Radio                                                                | 3         |
| <b>2</b> | <b>Administrative Data</b>                                                 | <b>4</b>  |
| 2.1      | Identification of the Testing Laboratory Issuing the SAR Assessment Report | 4         |
| 2.2      | Identification of the Client                                               | 4         |
| 2.3      | Identification of the Manufacturer                                         | 4         |
| <b>3</b> | <b>Equipment under Test (EUT)</b>                                          | <b>5</b>  |
| 3.1      | Specification of the Equipment under Test                                  | 5         |
| <b>4</b> | <b>Subject Of Investigation</b>                                            | <b>6</b>  |
| <b>5</b> | <b>Measurements</b>                                                        | <b>7</b>  |
| 5.1      | <b>MAXIMUM PEAK OUTPUT POWER § 15.407 (RADIATED)</b>                       | <b>7</b>  |
| 5.1.1    | EIRP 802.11 (a) MODE:                                                      | 7         |
| 5.2      | <b>RESTRICTED BAND EDGE COMPLIANCE RADIATED §15.407(b)/15.205</b>          | <b>14</b> |
| 5.2.1    | LIMITS                                                                     | 14        |
| 5.2.2    | <b>802.11 (a) MODE (5180MHz) Chain A</b>                                   | 15        |
| 5.2.3    | <b>802.11 (a) MODE (5180MHz) Chain B</b>                                   | 17        |
| 5.2.4    | <b>802.11 (a) MODE (5320MHz) Chain A</b>                                   | 19        |
| 5.2.5    | <b>802.11 (a) MODE (5320MHz) Chain B</b>                                   | 21        |
| 5.3      | <b>TRANSMITTER SPURIOUS EMISSIONS RADIATED § 15.407(b)/15.205/15.209</b>   | <b>23</b> |
| 5.3.1    | LIMITS                                                                     | 23        |
| 5.3.2    | RESULTS <b>802.11 (a) MODE Chain A</b>                                     | 24        |
| 5.3.3    | RESULTS <b>802.11 (a) MODE Chain B</b>                                     | 32        |
| 5.4      | <b>RECEIVER SPURIOUS RADIATION § 15.209/RSS210</b>                         | <b>40</b> |
| 5.4.1    | LIMITS                                                                     | 40        |
| 5.4.2    | RESULTS                                                                    | 41        |
| 5.5      | <b>AC POWER LINE CONDUCTED EMISSIONS § 15.107/207</b>                      | <b>45</b> |
| 5.5.1    | LIMITS                                                                     | 45        |
| 5.5.2    | RESULTS                                                                    | 46        |
| <b>6</b> | <b>TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS</b>                       | <b>47</b> |
| 6.1      | <b>BLOCK DIAGRAMS</b>                                                      | <b>48</b> |

## 1 Assessment

**The following is in compliance with the applicable criteria specified in FCC rules Part 15.407 of the Code of Federal Regulations and in compliance with the applicable criteria specified in Industry Canada rules RSS210.**

| Company          | Description | Model # |
|------------------|-------------|---------|
| SONY Corporation | Notebook PC |         |

**Technical responsibility for area of testing:**

2007-04-25 **EMC & Radio** **Lothar Schmidt**  
(Test Lab Manager)

**Date**                      **Section**                      **Name**                      **Signature**

**This report is prepared by:**

2007-04-25 **EMC & Radio** **Pete Krebill**  
(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 Issuing the SAR Assessment Report**

|                               |                                                        |
|-------------------------------|--------------------------------------------------------|
| Company Name:                 | CETECOM Inc.                                           |
| Department:                   | SAR                                                    |
| 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: | SONY Corporation                                 |
| Address:          | 1-7-1 Konan, Minato-ku,<br>Tokyo 108-0075, Japan |
| Contact Person:   | Michio Kobayashi                                 |
| Phone No.         | +81-263-72-5696                                  |
| Fax:              | +81-263-72-9755                                  |
| e-mail:           | Michio.Kobayashi@jp.sony.com                     |

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

|                         |                                                        |
|-------------------------|--------------------------------------------------------|
| Manufacturer's Name:    | Sony EMCS Corporation                                  |
| Manufacturer's Address: | 5432 Toyoshima, Azumino-Shi, Nagano 399-<br>8282 Japan |

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

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

|                             |                                      |
|-----------------------------|--------------------------------------|
| Product Type                | Notebook PC                          |
| Marketing Name:             | VAIO-VGN TZ                          |
| Model No:                   | PCG-4L1L                             |
| FCC-ID:                     | AK8PCG4L1L                           |
| IC-ID :                     | 409B-PCG4L1L                         |
| Frequency Range:            | 5180 MHz to 5320 MHz                 |
| Type(s) of Modulation:      | OFDM                                 |
| Antenna Type:               | PIFA                                 |
| Output Power <sup>1</sup> : | 23.83 dBm (0.242W) EIRP WLAN 802.11a |



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

All testing was performed on the product referred to in Section 3 as EUT.

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 15.407 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 MAXIMUM PEAK OUTPUT POWER § 15.407 (RADIATED)

#### 5.1.1 EIRP 802.11 (a) MODE:

| TEST CONDITIONS         |                         |                      | MAXIMUM PEAK OUTPUT POWER (dBm) |       |       |
|-------------------------|-------------------------|----------------------|---------------------------------|-------|-------|
| Frequency (MHz)         |                         |                      | 5180                            | 5260  | 5320  |
| Chain A                 | T <sub>nom</sub> (23)°C | V <sub>nom</sub> VDC | 22.61                           | 22.88 | 23.83 |
| Chain B                 | T <sub>nom</sub> (23)°C | V <sub>nom</sub> VDC | 19.11                           | 18.26 | 18.59 |
| Measurement uncertainty |                         |                      | ±0.5dBm                         |       |       |



**EIRP 802.11 (a) Mode (5180) Chain A**

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

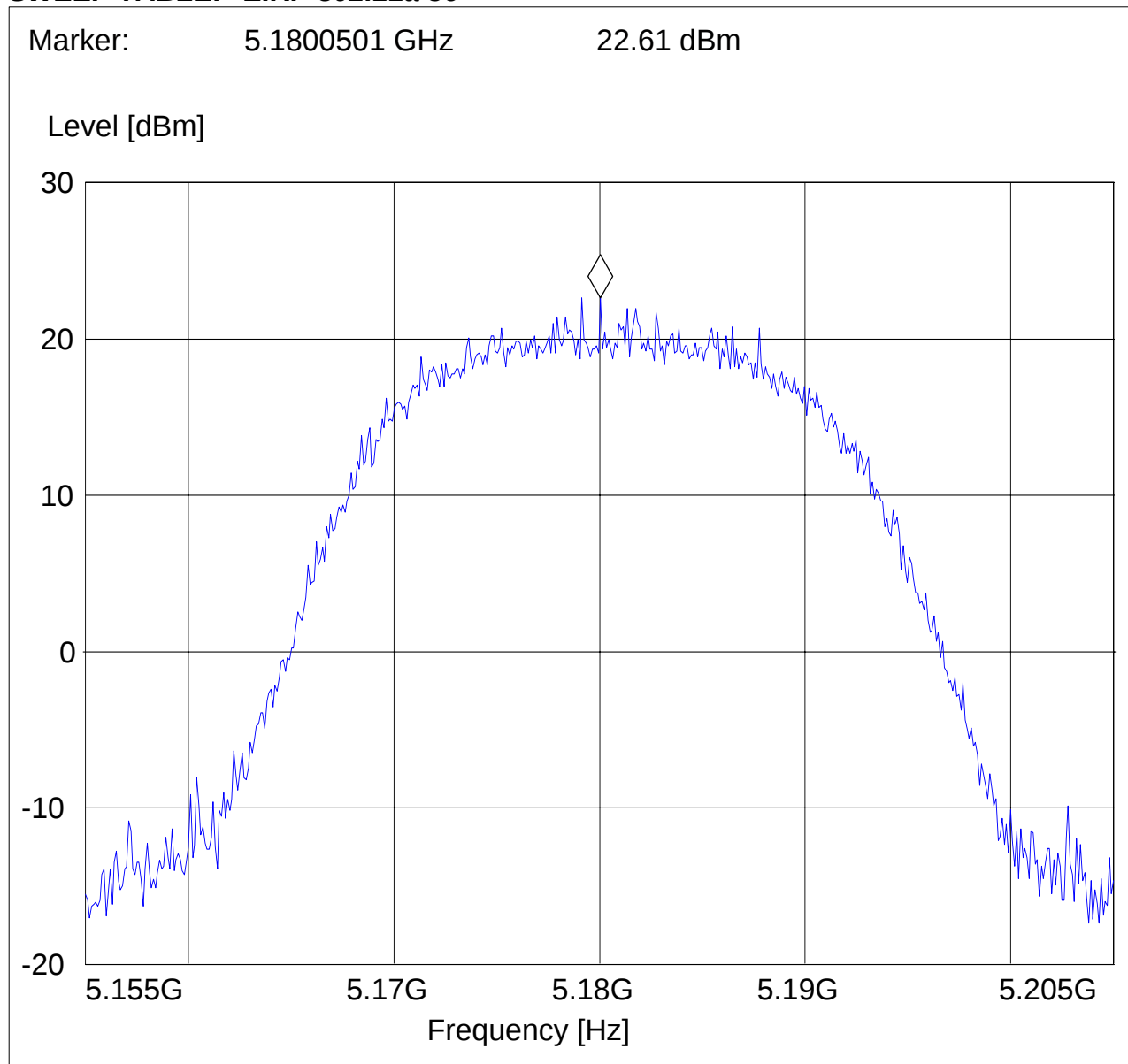
Test Mode: 802.11a ch36

ANT Orientation: H

EUT Orientation: H

Test Engineer: Satya R

***SWEEP TABLE: "EIRP 802.11a 36"***



**EIRP 802.11 (a) Mode (5260MHz) Chain A**

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

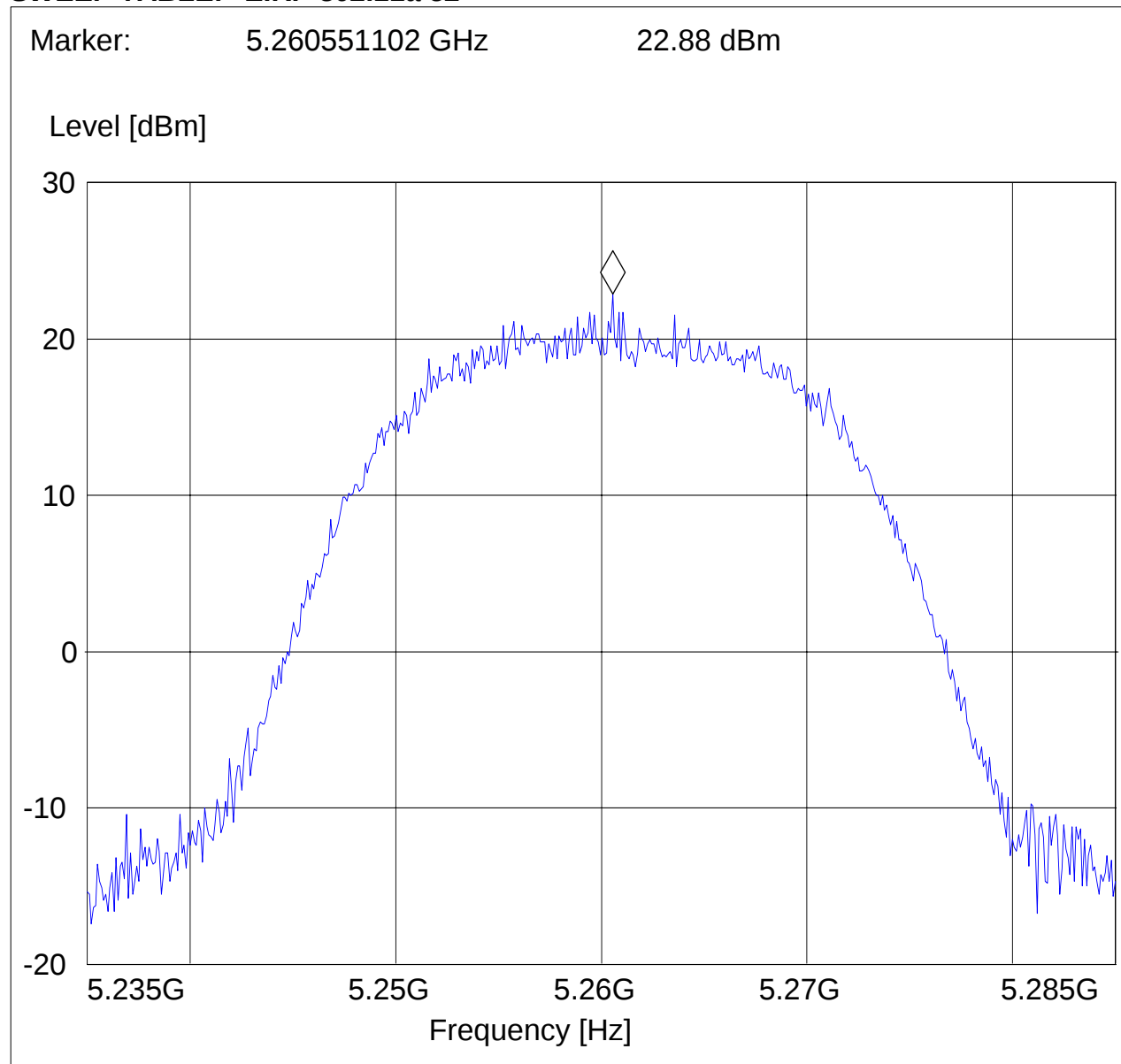
Test Mode: 802.11a ch52

ANT Orientation: H

EUT Orientation: H

Test Engineer: Satya R

***SWEEP TABLE: "EIRP 802.11a 52"***





**EIRP 802.11 (a) Mode (5320MHz) Chain A**

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

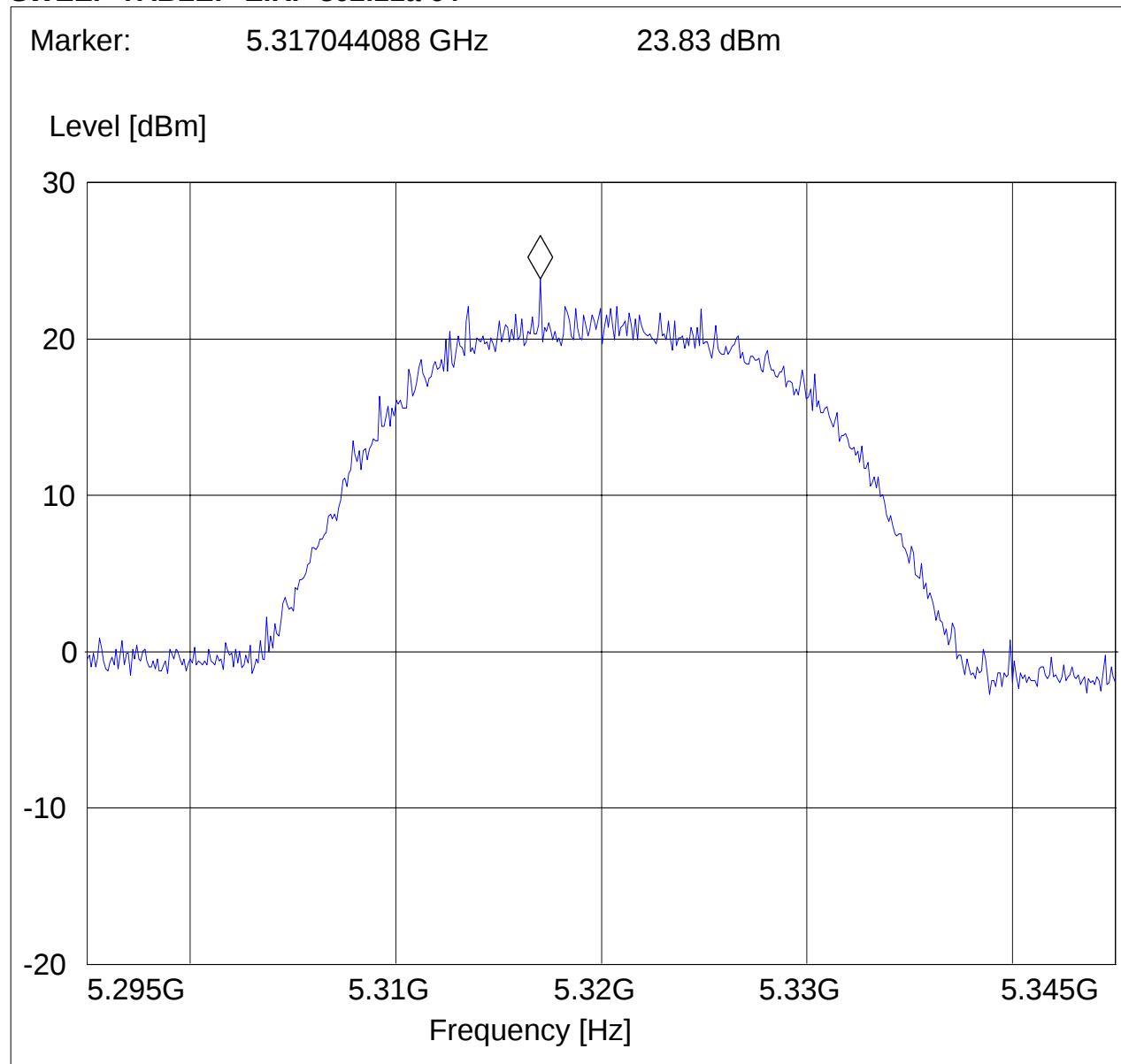
Test Mode: 802.11a ch64

ANT Orientation: H

EUT Orientation: H

Test Engineer: Satya R

***SWEEP TABLE: "EIRP 802.11a 64"***





**EIRP 802.11 (a) Mode (5180) Chain B**

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

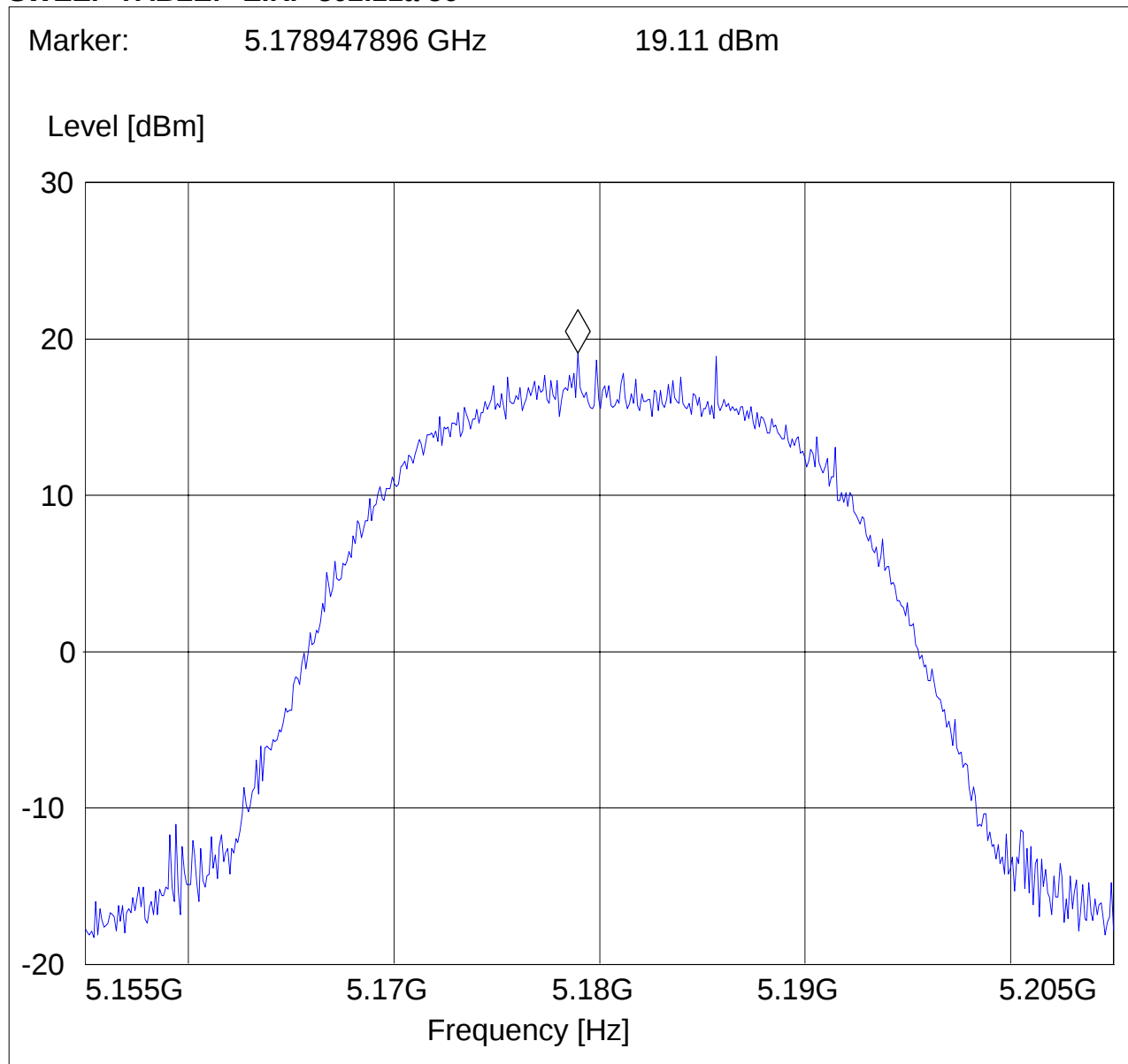
Test Mode: 802.11a, ch 36

ANT Orientation: V

EUT Orientation: H

Test Engineer: Ed

***SWEEP TABLE: "EIRP 802.11a 36"***





**EIRP 802.11 (a) Mode (5260MHz) Chain B**

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

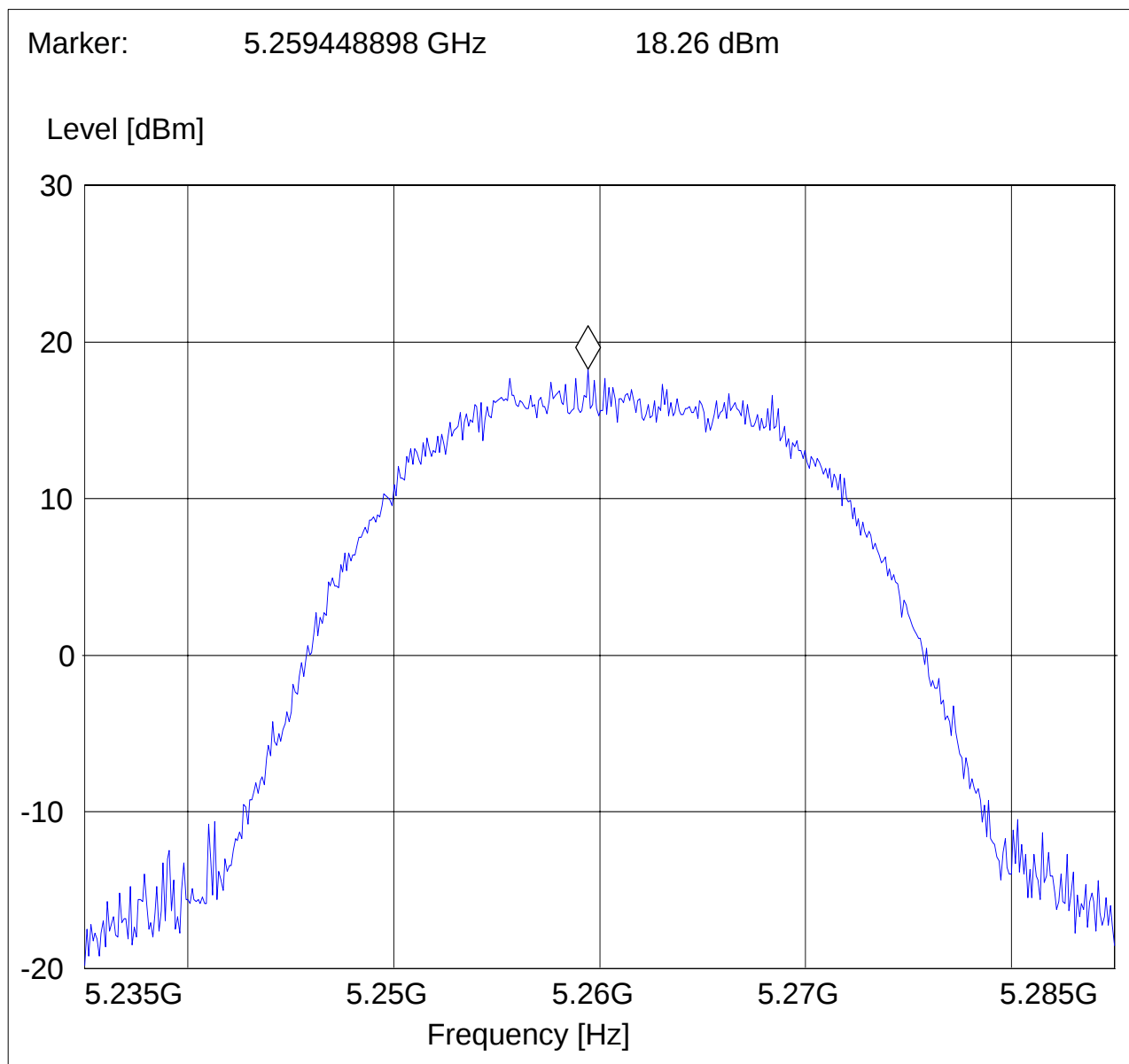
Test Mode: 802.11a, ch 52

ANT Orientation: V

EUT Orientation: H

Test Engineer: Ed

***SWEEP TABLE: "EIRP 802.11a 52"***





**EIRP 802.11 (a) Mode (5320MHz) Chain B**

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

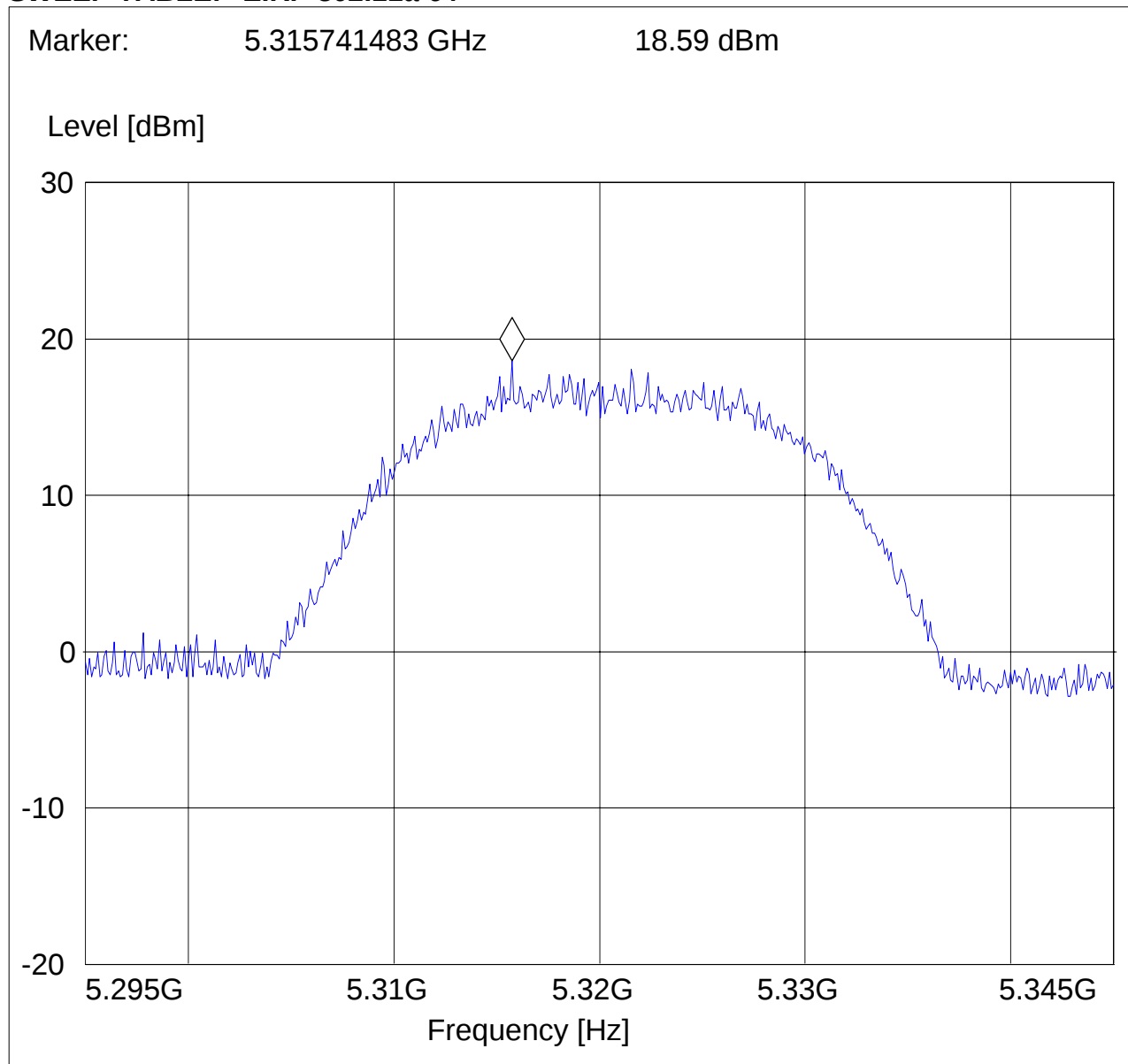
Test Mode: 802.11a, ch 64

ANT Orientation: V

EUT Orientation: H

Test Engineer: Ed

***SWEEP TABLE: "EIRP 802.11a 64"***



## 5.2 RESTRICTED BAND EDGE COMPLIANCE RADIATED §15.407(b)/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



## 5.2.2 802.11 (a) MODE (5180MHz) Chain A

PEAK

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

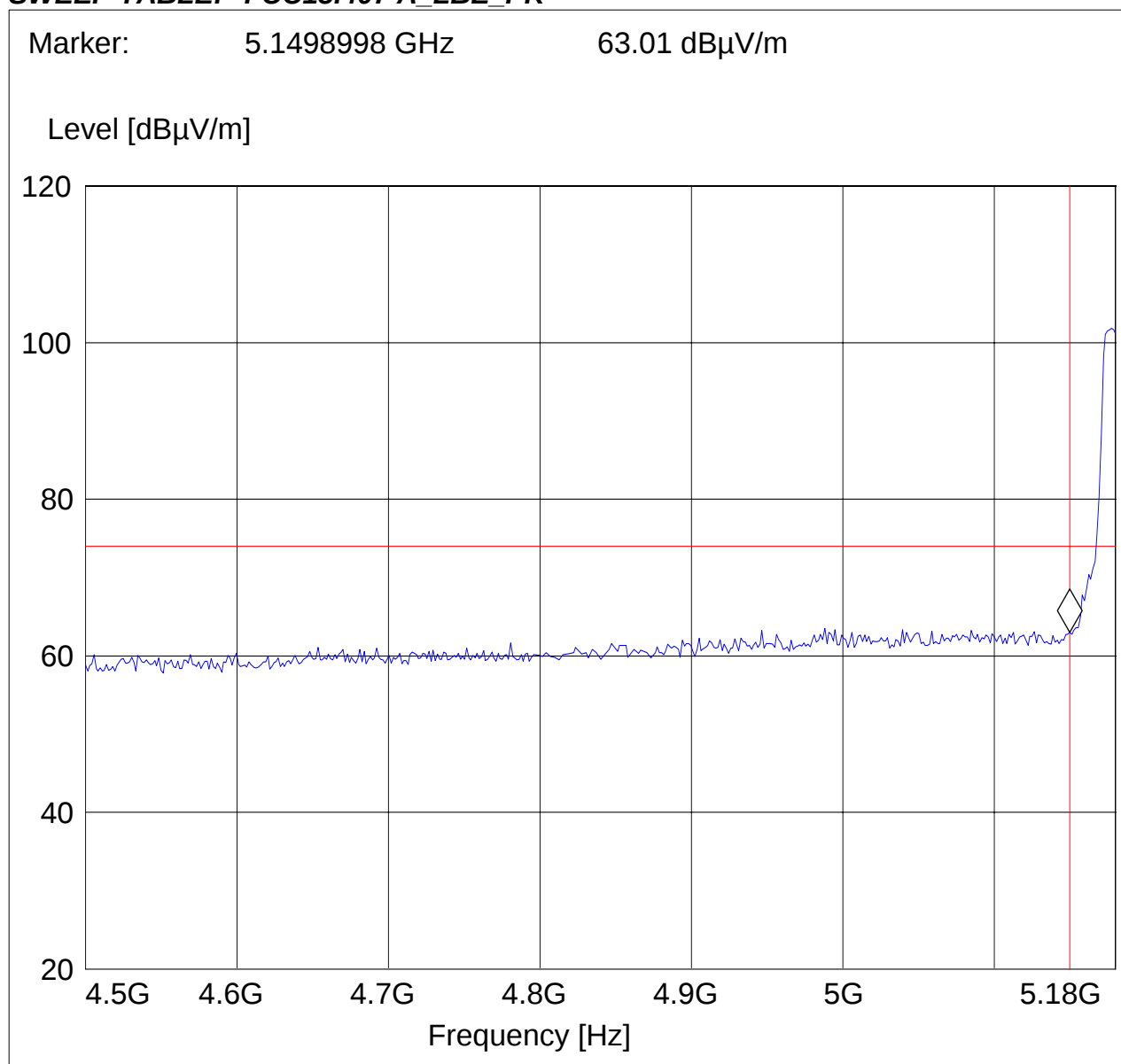
Test Mode: 802.11a, ch 36, chain A

ANT Orientation: H

EUT Orientation: H

Test Engineer: Ed

### SWEEP TABLE: "FCC15.407 A\_LBE\_PK"





**802.11 (a) MODE (5180MHz) Chain A**

**AVG**

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

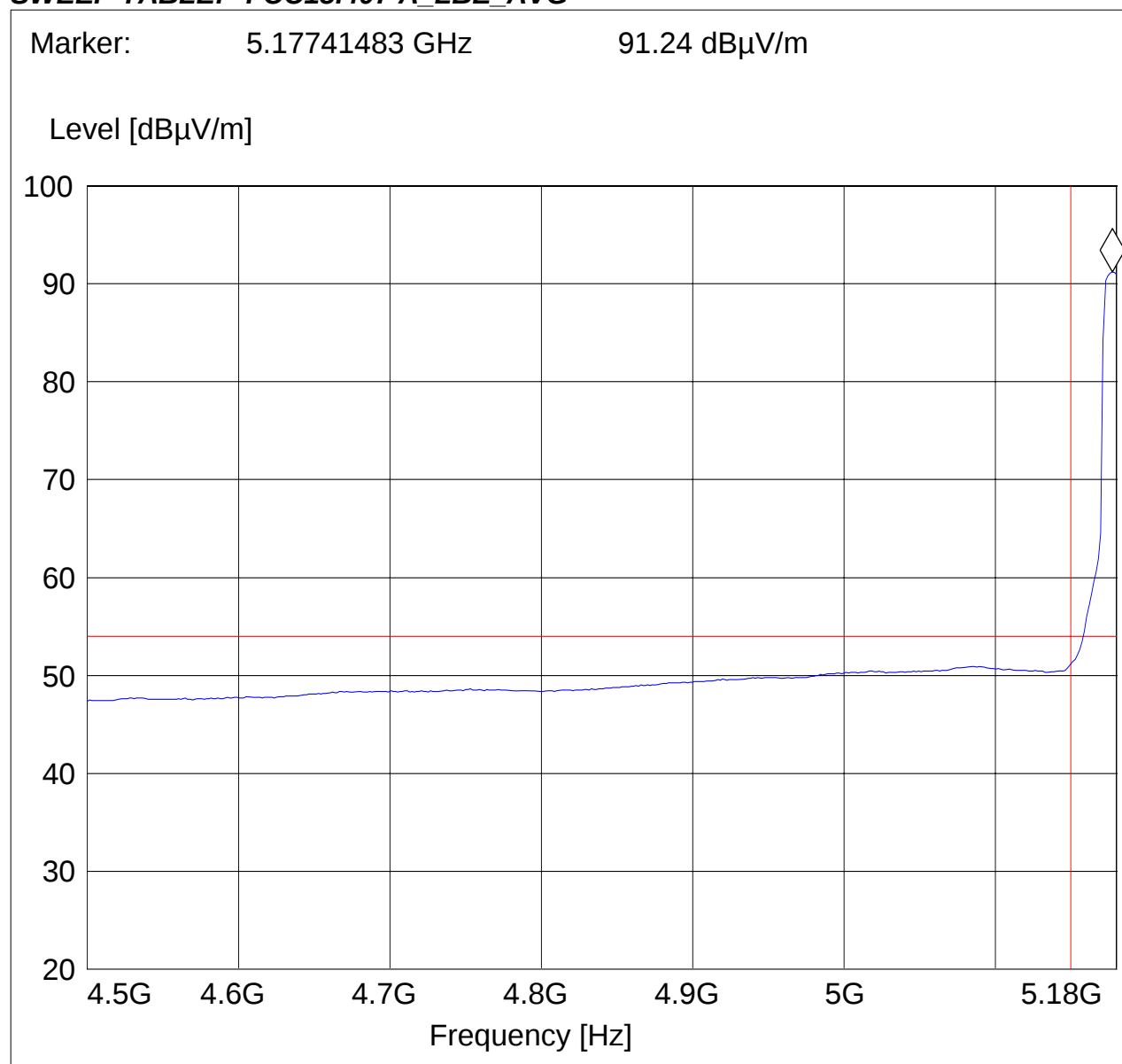
Test Mode: 802.11a, ch 36, chain A

ANT Orientation: H

EUT Orientation: H

Test Engineer: Ed

***SWEEP TABLE: "FCC15.407 A\_LBE\_AVG"***





5.2.3 802.11 (a) MODE (5180MHz) Chain B

PEAK

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

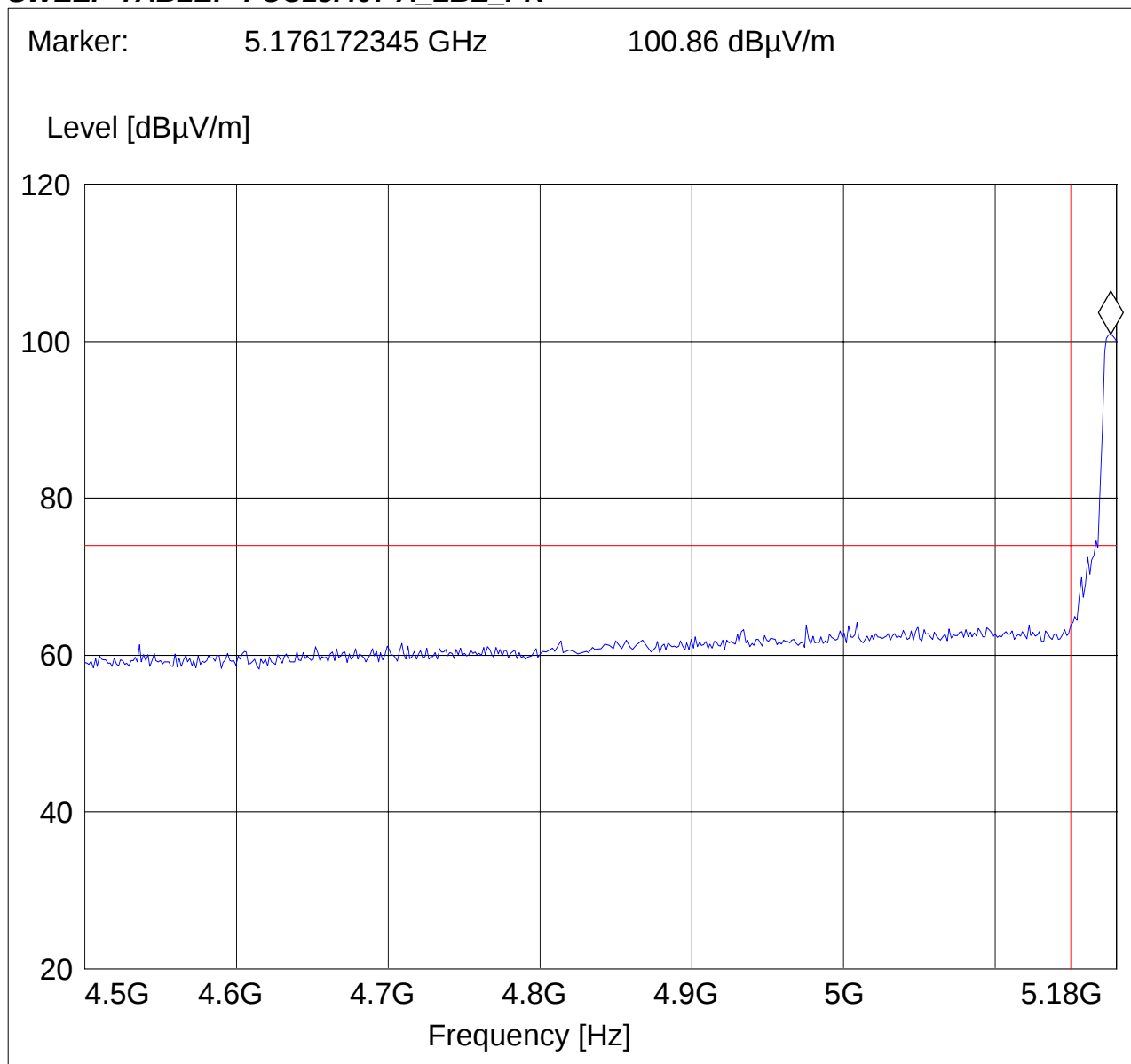
Test Mode: 802.11a, ch 36, chain B

ANT Orientation: V

EUT Orientation: H

Test Engineer: Ed

**SWEEP TABLE: "FCC15.407 A\_LBE\_PK"**





**802.11 (a) MODE (5180MHz) Chain B**

**AVG**

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

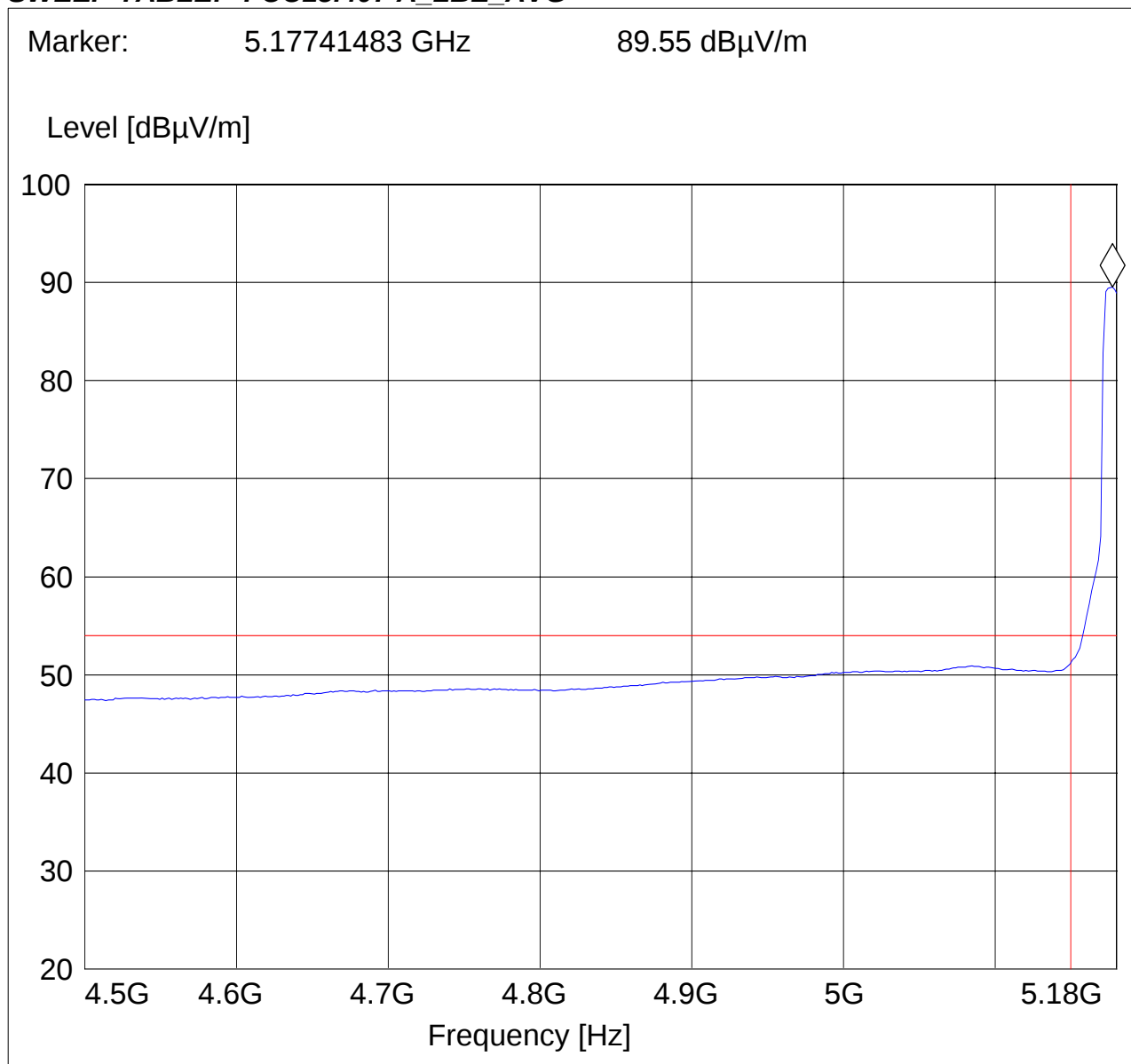
Test Mode: 802.11a, ch 36, chain B

ANT Orientation: V

EUT Orientation: H

Test Engineer: Ed

***SWEEP TABLE: "FCC15.407 A\_LBE\_AVG"***



**5.2.4 802.11 (a) MODE (5320MHz) Chain A**

**PEAK**

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

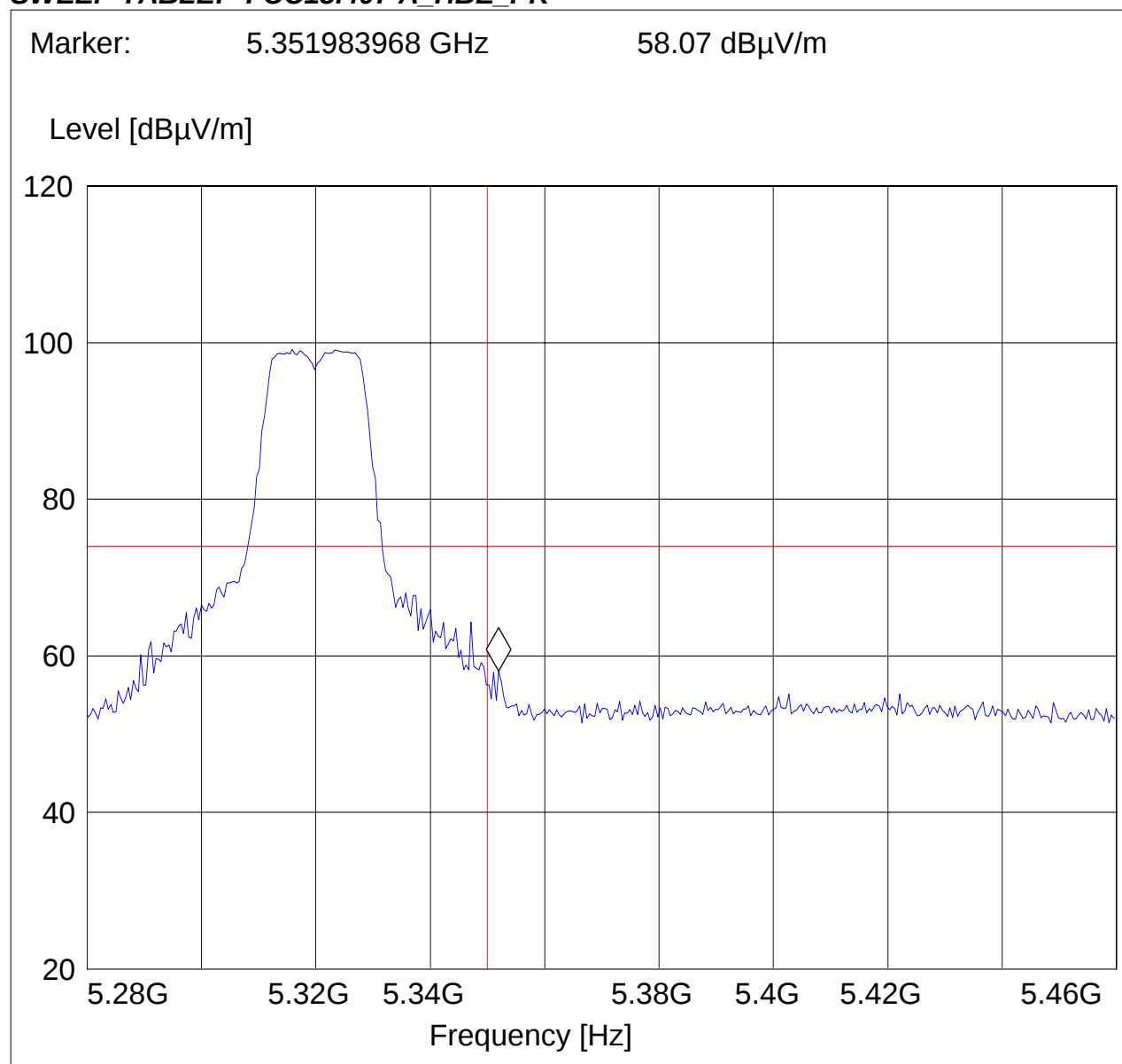
Test Mode: 802.11a, ch 52, chain A

ANT Orientation: H

EUT Orientation: H

Test Engineer: Ed

***SWEEP TABLE: "FCC15.407 A\_HBE\_PK"***





**802.11 (a) MODE (5320MHz) Chain A**

**AVG**

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

Test Mode: 802.11a, ch 64, chain A

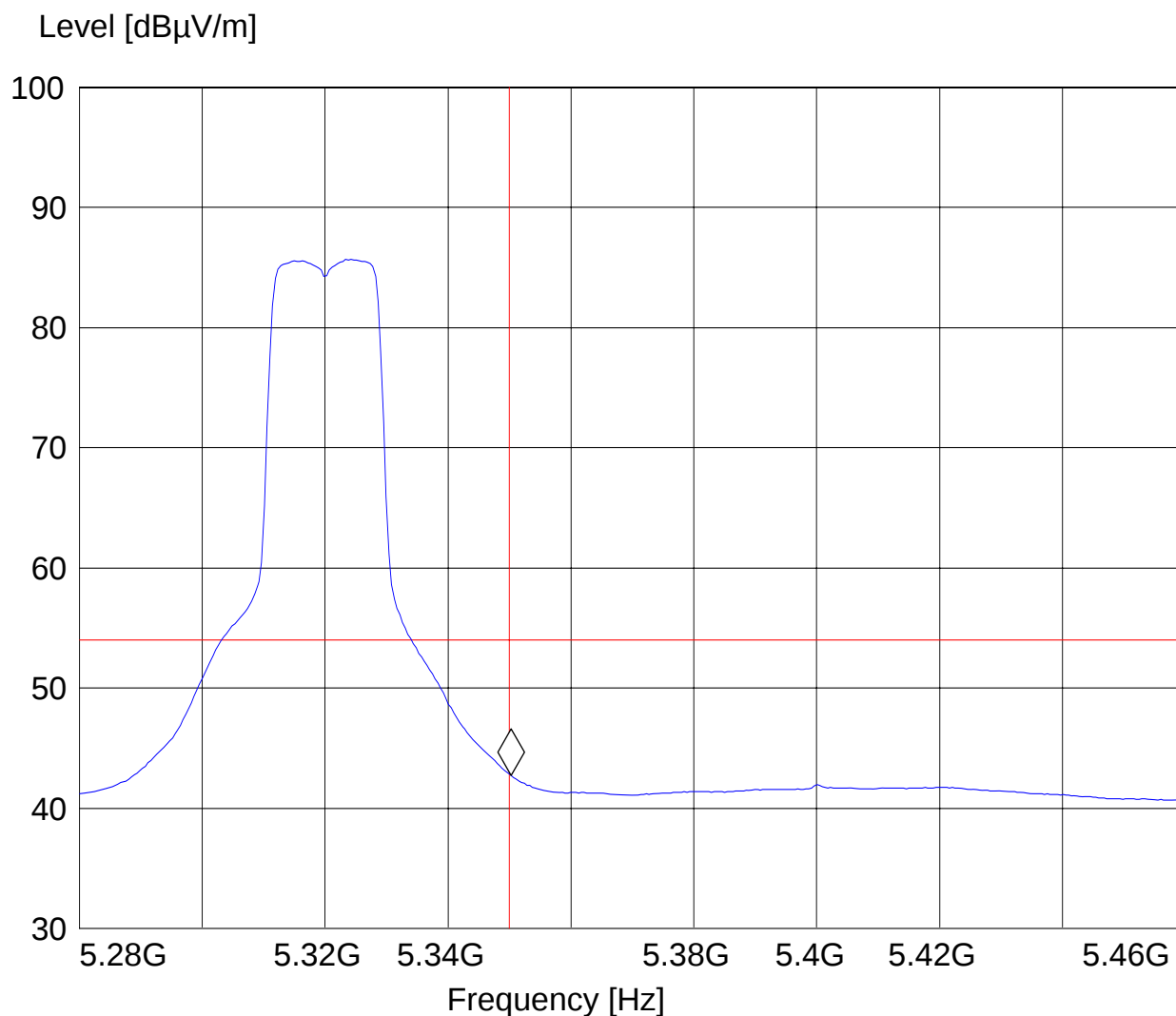
ANT Orientation: H

EUT Orientation: H

Test Engineer: Ed

***SWEEP TABLE: "FCC15.407 A\_HBE\_AVG"***

Marker: 5.350220441 GHz 42.72 dB $\mu$ V/m



**5.2.5 802.11 (a) MODE (5320MHz) Chain B**

**PEAK**

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

Test Mode: 802.11a, ch 64, chain B

ANT Orientation: V

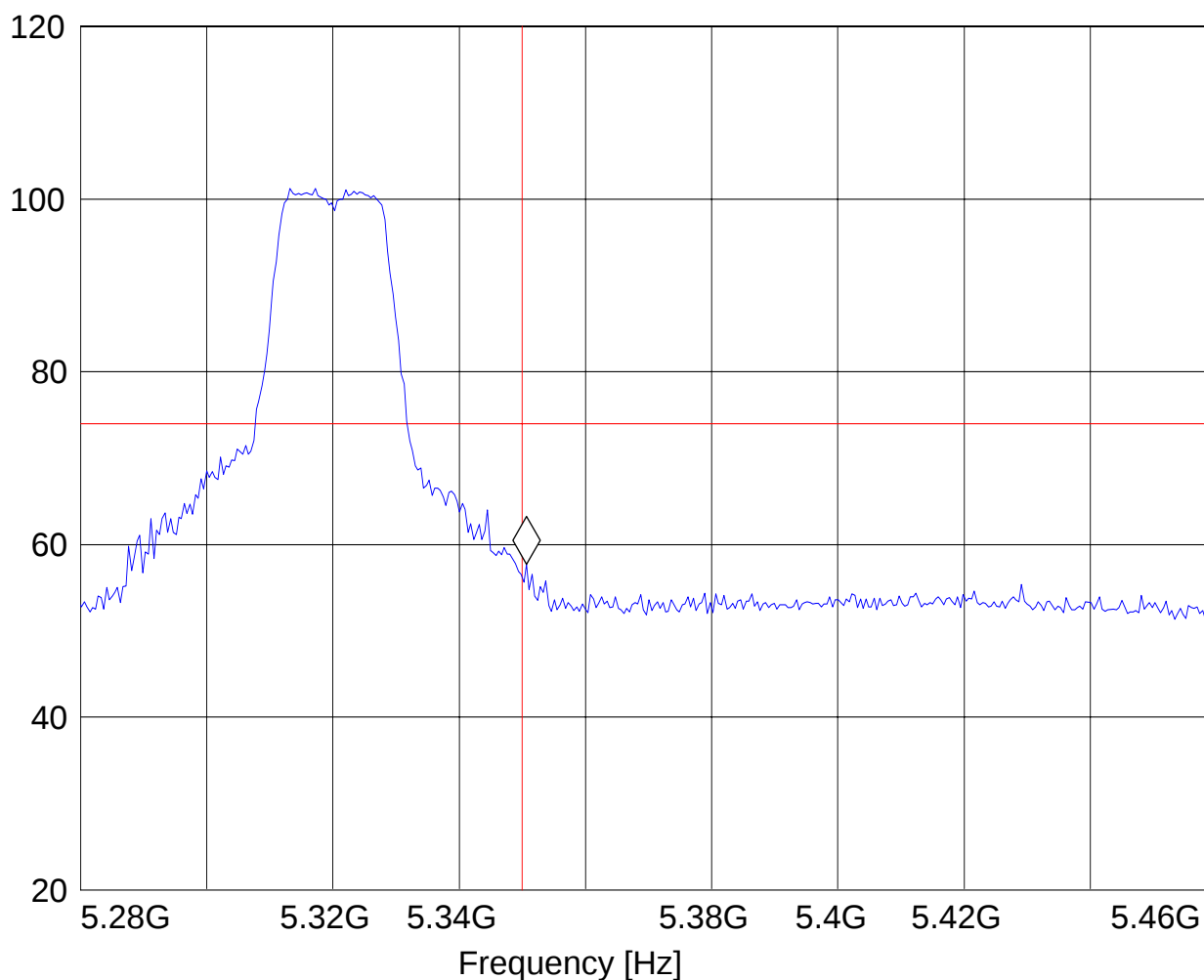
EUT Orientation: H

Test Engineer: Ed

***SWEEP TABLE: "FCC15.407 A\_HBE\_PK"***

Marker: 5.350661323 GHz 57.74 dB $\mu$ V/m

Level [dB $\mu$ V/m]





**802.11 (a) MODE (5320MHz) Chain B**

**AVG**

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

Test Mode: 802.11a, ch 64, chain B

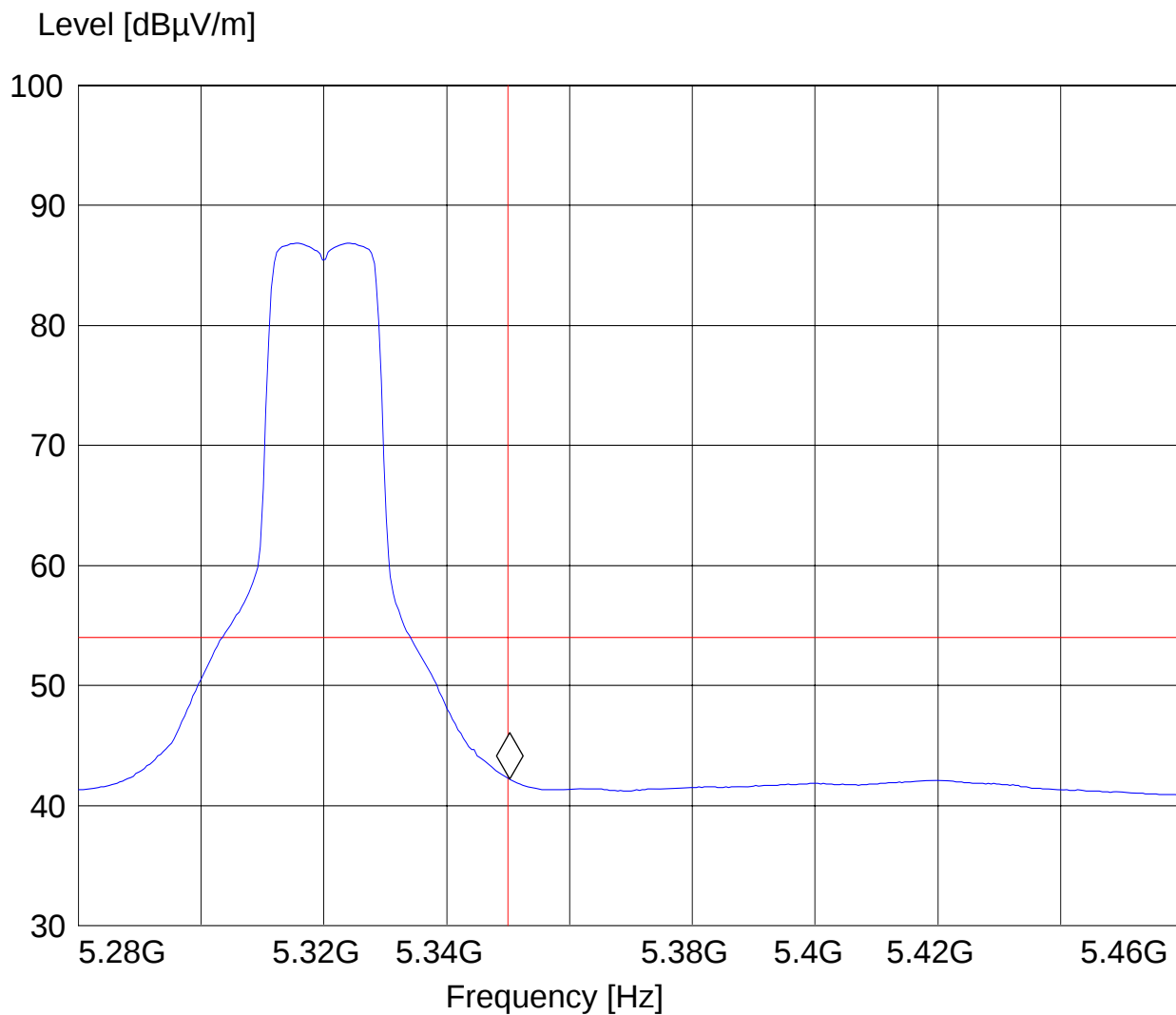
ANT Orientation: V

EUT Orientation: H

Test Engineer: Ed

***SWEEP TABLE: "FCC15.407 A\_HBE\_AVG"***

Marker: 5.350220441 GHz 42.18 dB $\mu$ V/m



### 5.3 TRANSMITTER SPURIOUS EMISSIONS RADIATED § 15.407(b)/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 for spurious in restricted bands**

**\*AVG. LIMIT= 54dBuV/m for spurious in restricted bands**

**\*PEAK LIMIT= 68.2dBuV/m for spurious NOT in restricted bands**

#### 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 802.11 (a) MODE Chain A

30MHz – 1GHz

Antenna:

Note: This plot is valid for low, mid, high channels horizontal and vertical polarities (worst-case plot).

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

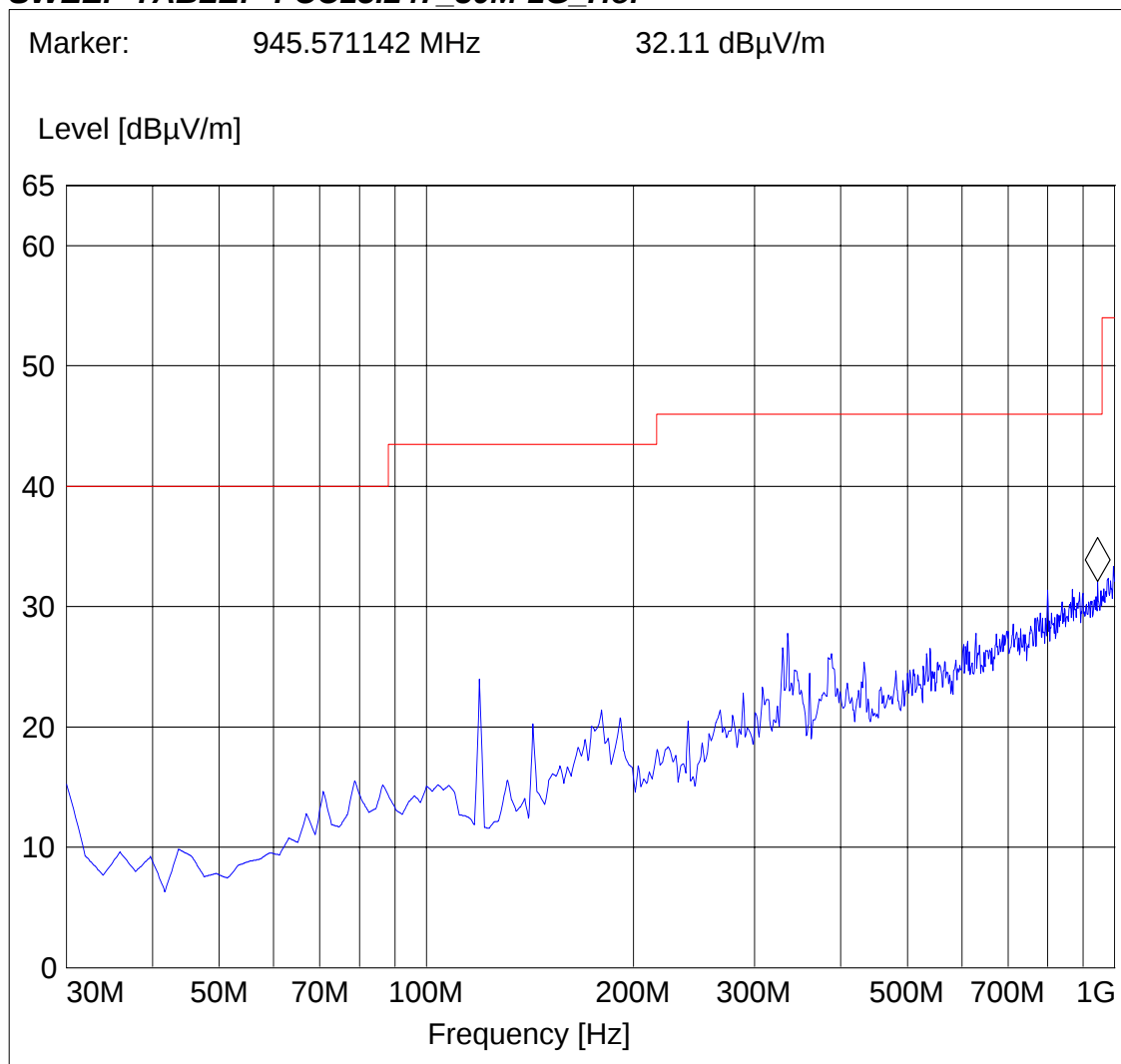
Test Mode: 802.11a ch36

ANT Orientation: H

EUT Orientation: H

Test Engineer: Satya R

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



Test Report #: SONYE\_016\_07001\_15.407A\_AK8PCG4L1  
Date of Report: 4/25/2007 Page 25 of 48

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**1-18GHz (5180MHz) Chain A**

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

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

Test Report #: SONYE\_016\_07001\_15.407A\_AK8PCG4L1  
Date of Report: 4/25/2007 Page 26 of 48

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**1-18GHz (5260MHz) Chain A**

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

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

Test Report #: SONYE\_016\_07001\_15.407A\_AK8PCG4L1  
Date of Report: 4/25/2007 Page 27 of 48

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**1-18GHz (5320MHz) Chain A**

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

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



**18-26.5GHz (5180MHz) Chain A**

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

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

Test Mode: 802.11a, ch 36

ANT Orientation: H

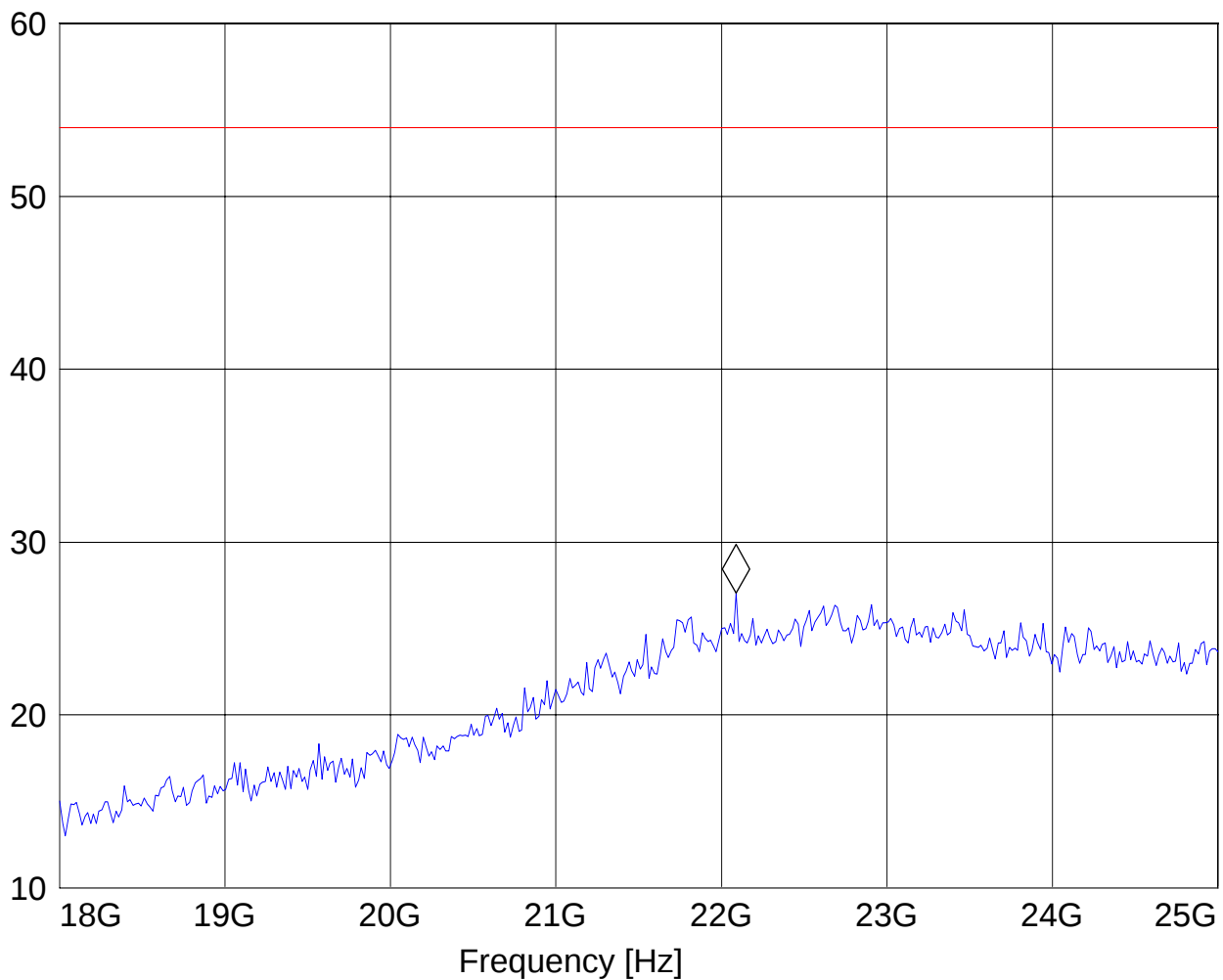
EUT Orientation: H

Test Engineer: Ed

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

Marker: 22.088176353 GHz 27.04 dB $\mu$ V/m

Level [dB $\mu$ V/m]





**18-26.5GHz (5260MHz) Chain A**

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

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

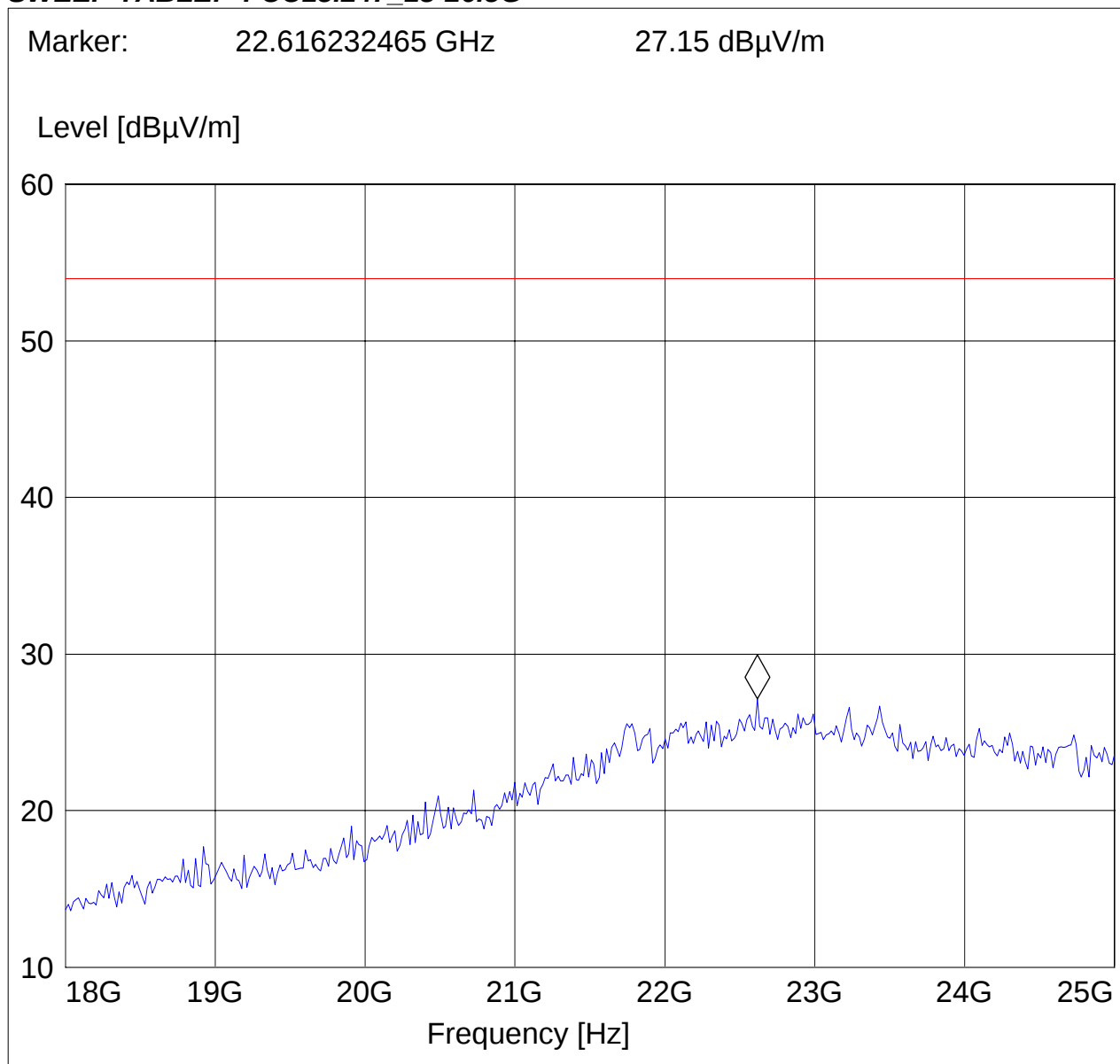
Test Mode: 802.11a, ch 52

ANT Orientation: H

EUT Orientation: H

Test Engineer: Ed

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





**18-26.5GHz (5320MHz) Chain A**

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

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

Test Mode: 802.11a, ch 64

ANT Orientation: H

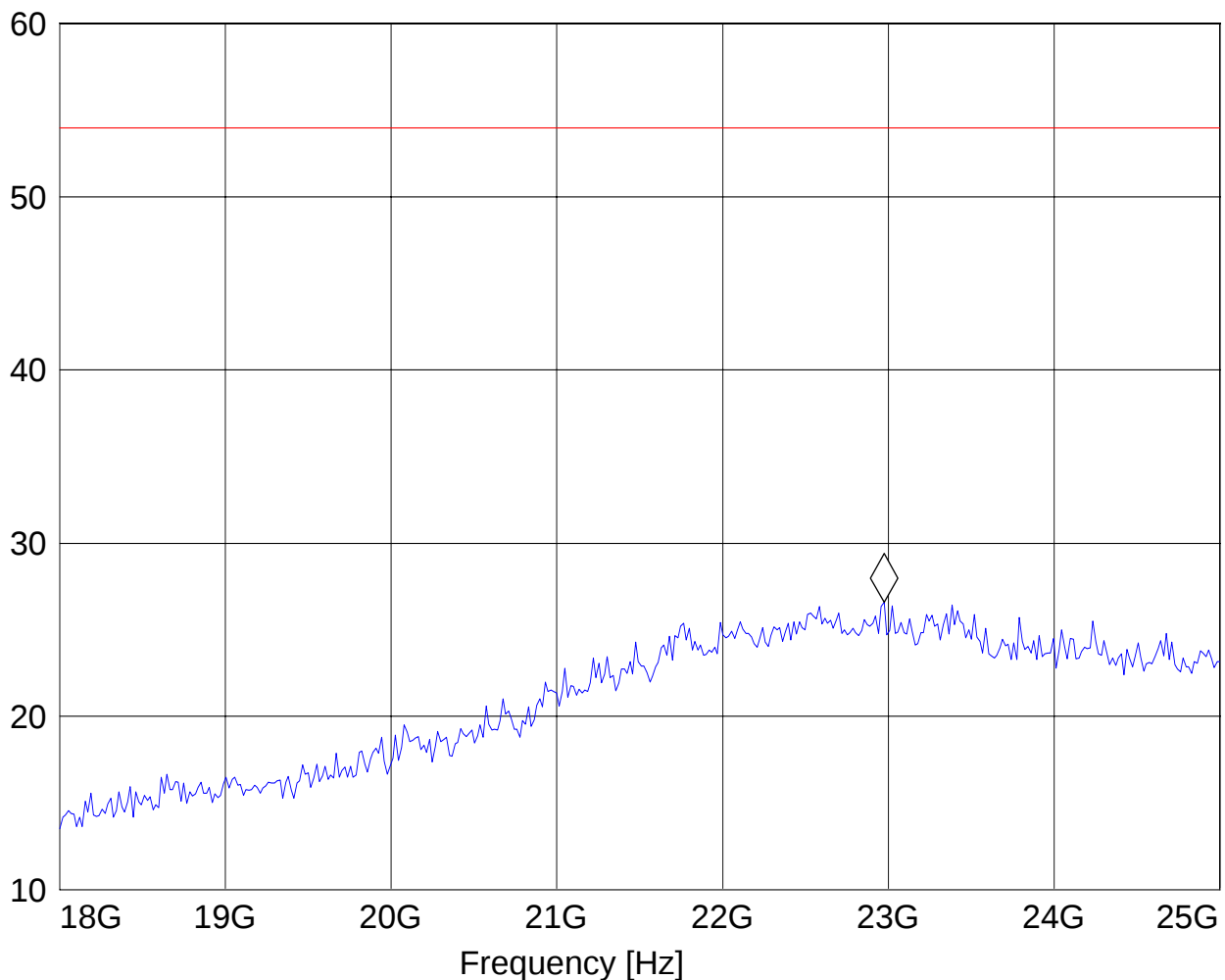
EUT Orientation: H

Test Engineer: Ed

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

Marker: 22.973947896 GHz 26.61 dB $\mu$ V/m

Level [dB $\mu$ V/m]





**26-40GHz Chain A**

**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**

EUT / Description: ES725

Manufacturer: Sony Electronics

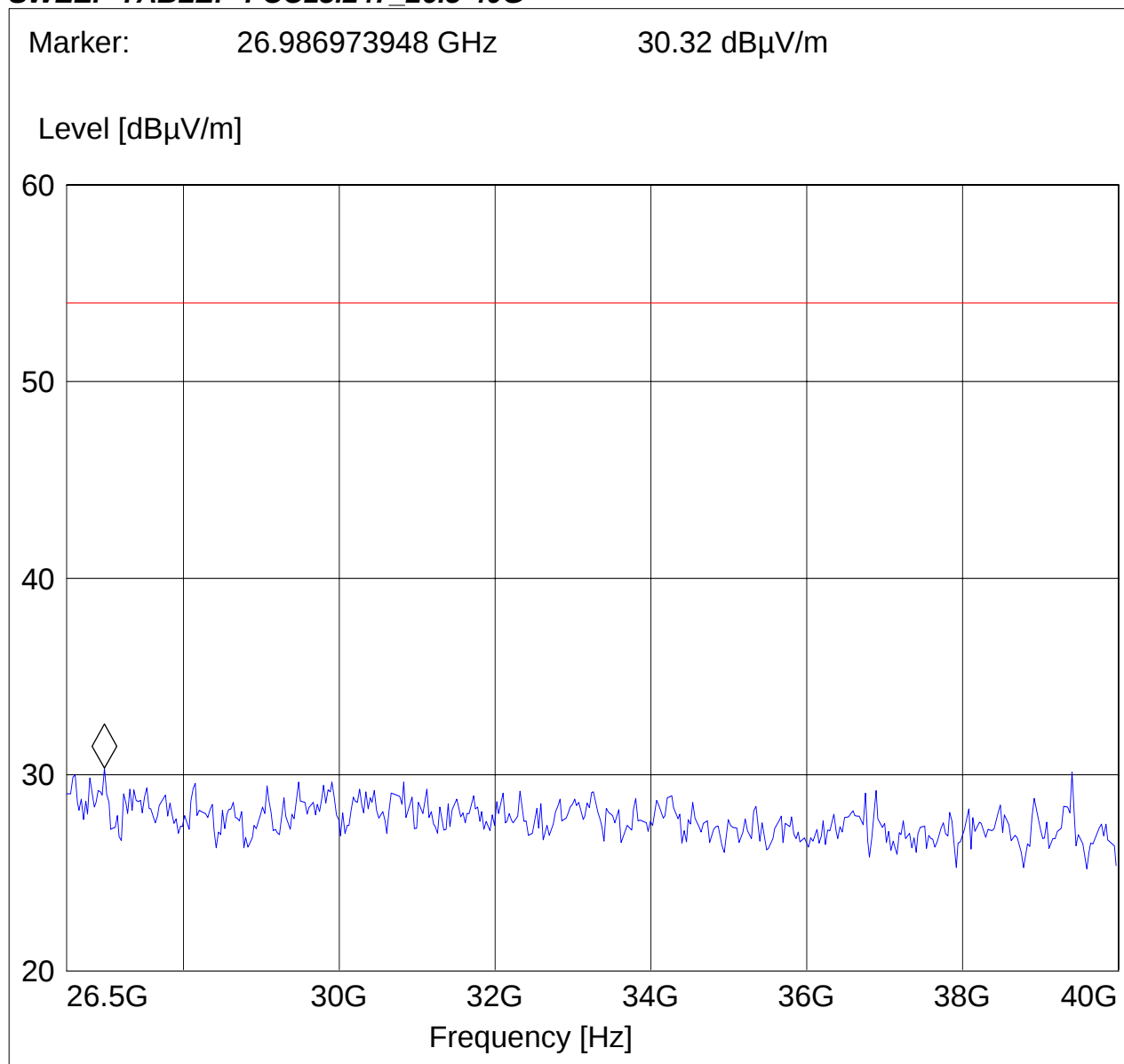
Test mode: 802.11a, Ch 52

EUT: H

Antenna: H

Test Engineer: Peter Mu

***SWEEP TABLE: "FCC15.247\_26.5-40G"***



### 5.3.3 RESULTS 802.11 (a) MODE Chain B

30MHz – 1GHz

Antenna:

Note: This plot is valid for low, mid, high channels horizontal and vertical polarities (worst-case plot).

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

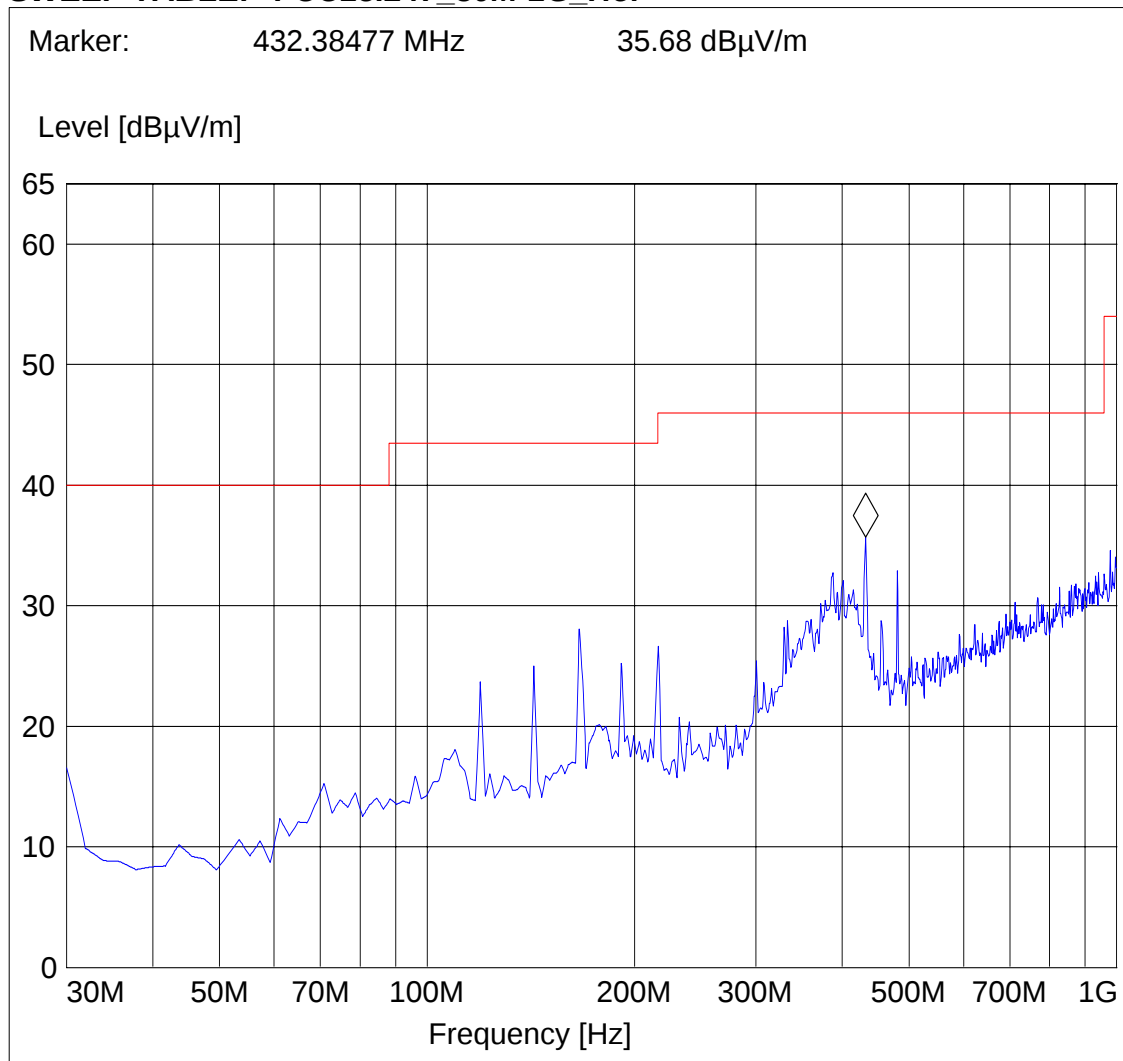
Test Mode: 802.11a ch36

ANT Orientation: H

EUT Orientation: H

Test Engineer: Satya R

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



**1-18GHz (5180MHz) Chain B**

**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**

EUT / Description: ES725

Manufacturer: Sony Electronics

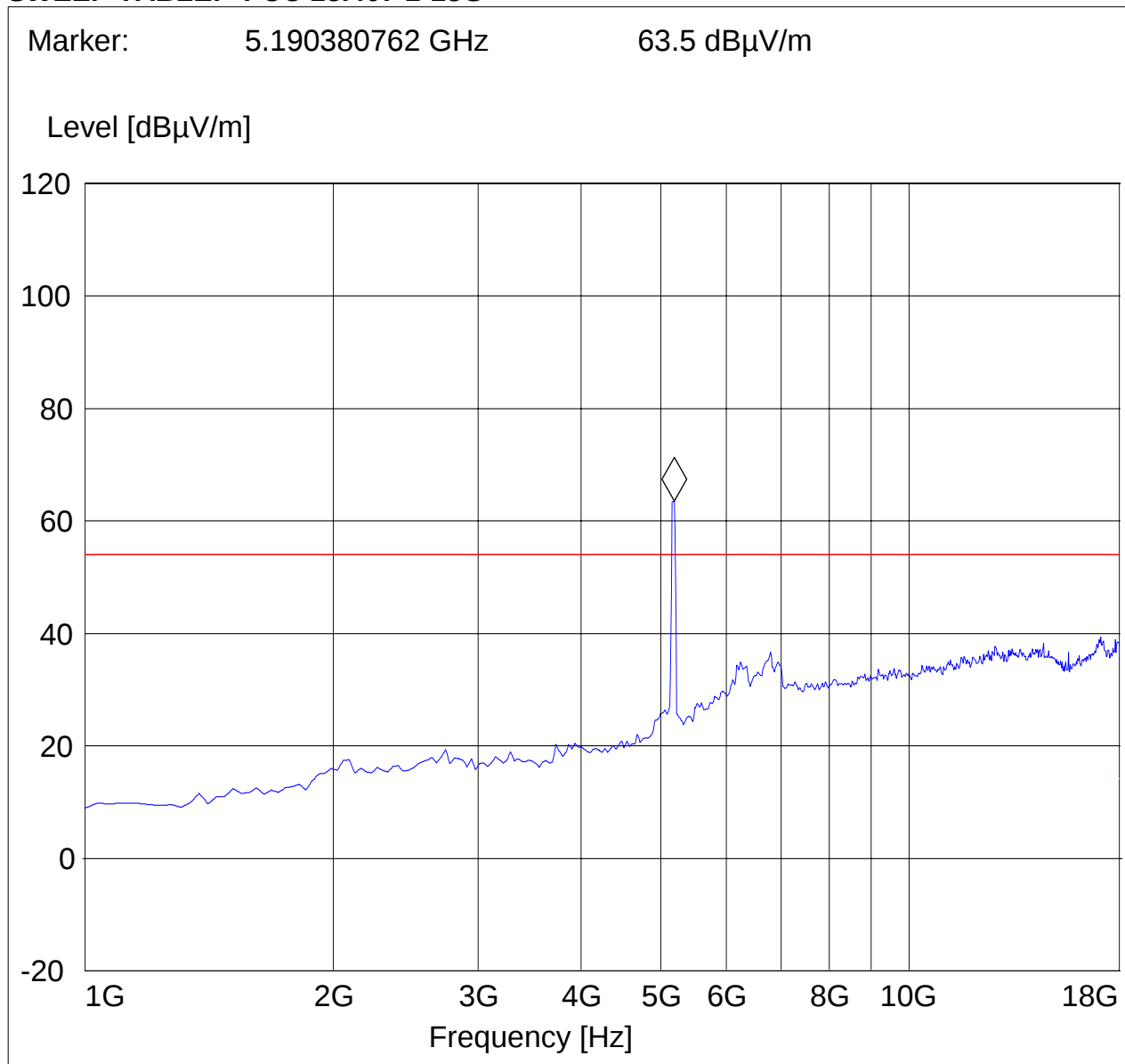
Test mode: 802.11a, Ch 36, chain B

EUT: H

Antenna: V

Test Engineer: Pete K

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





**1-18GHz (5260MHz) Chain B**

**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**

EUT / Description: ES725

Manufacturer: Sony Electronics

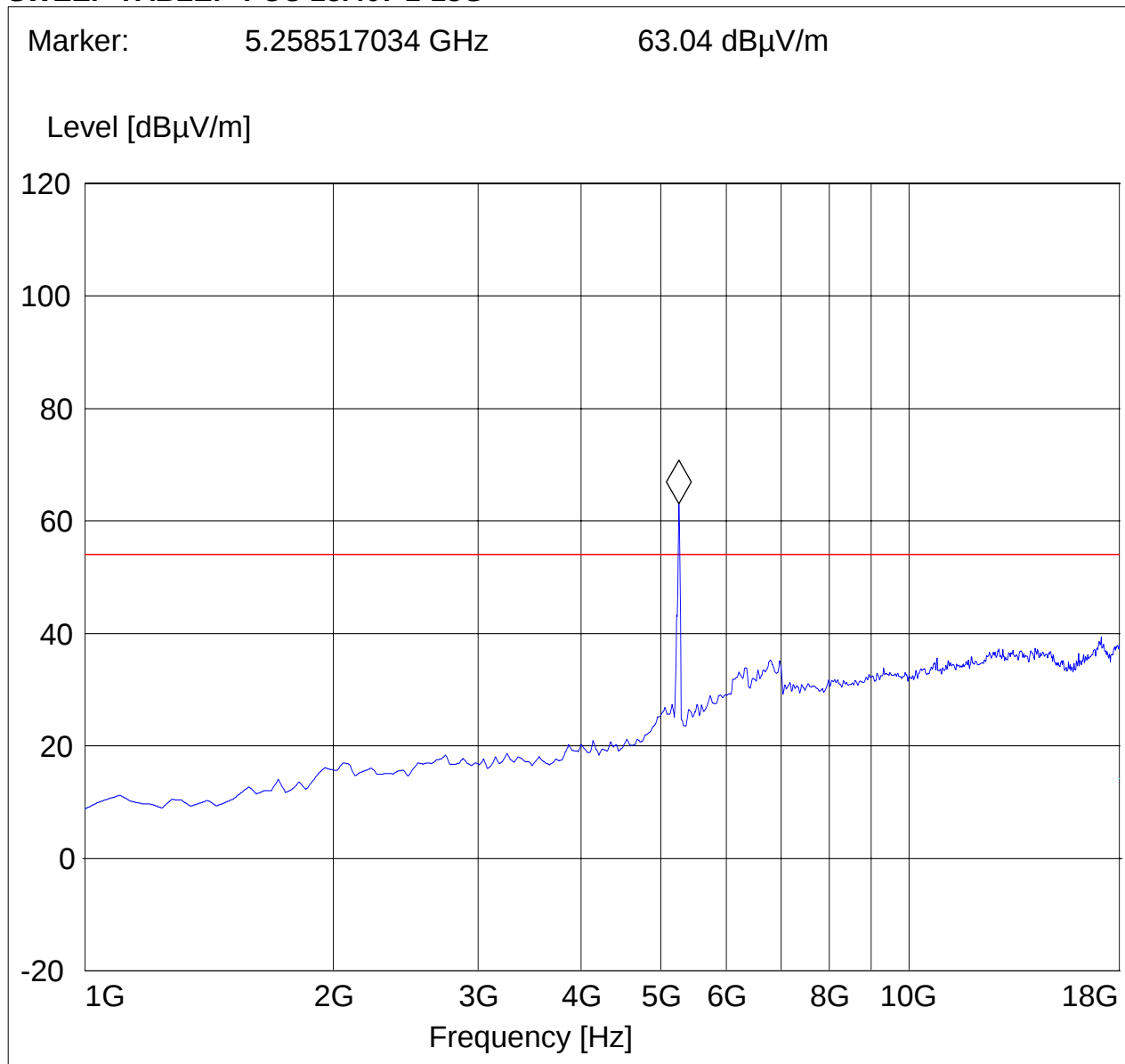
Test mode: 802.11a, Ch 52, chain B

EUT: H

Antenna: V

Test Engineer: Pete K

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





**1-18GHz (5320MHz) Chain B**

**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**

EUT / Description: ES725

Manufacturer: Sony Electronics

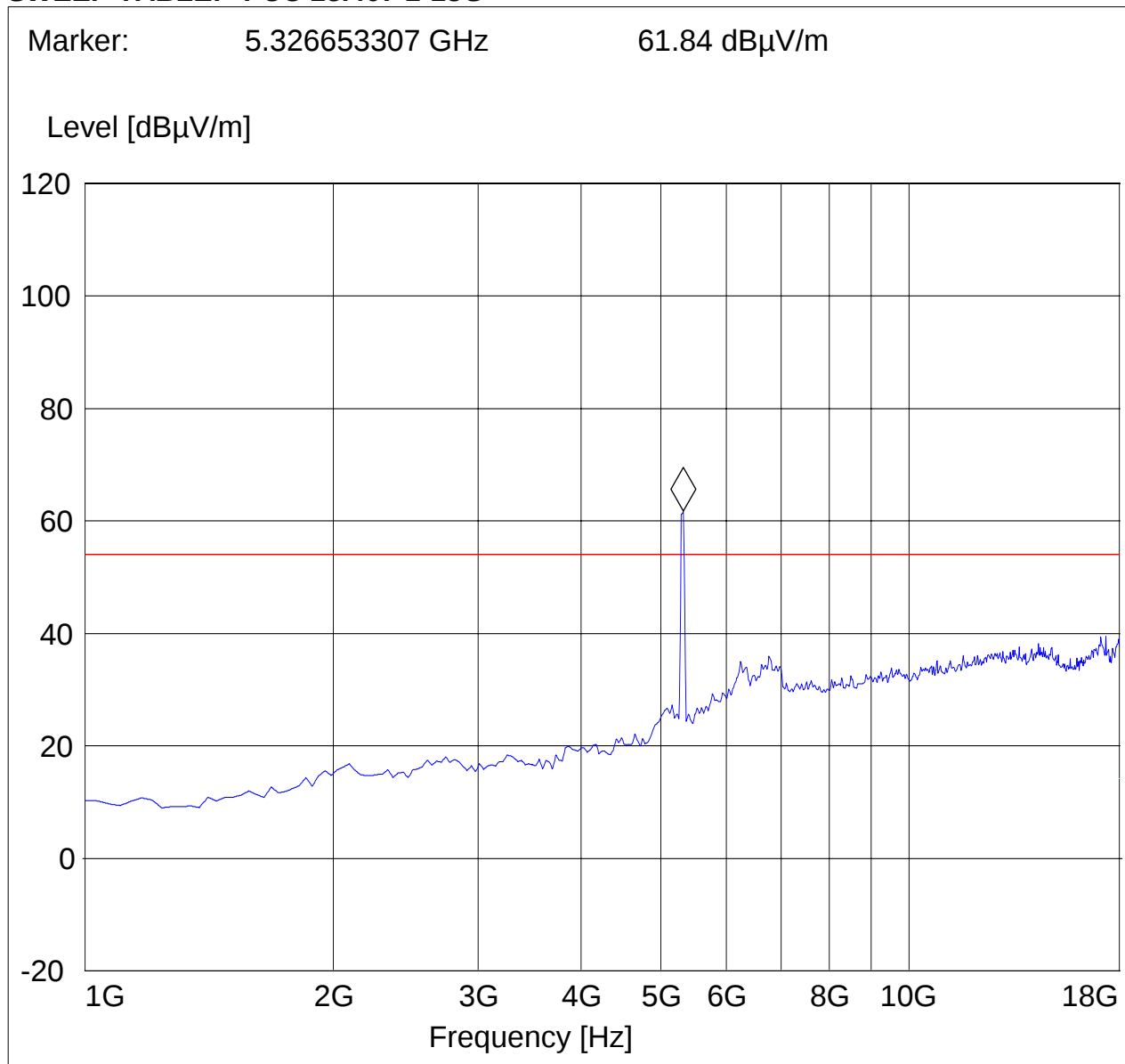
Test mode: 802.11a, Ch 64, chain B

EUT: H

Antenna: V

Test Engineer: Pete K

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





**18-26.5GHz (5180MHz) Chain B**

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

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

Test Mode: 802.11a, ch 36

ANT Orientation: V

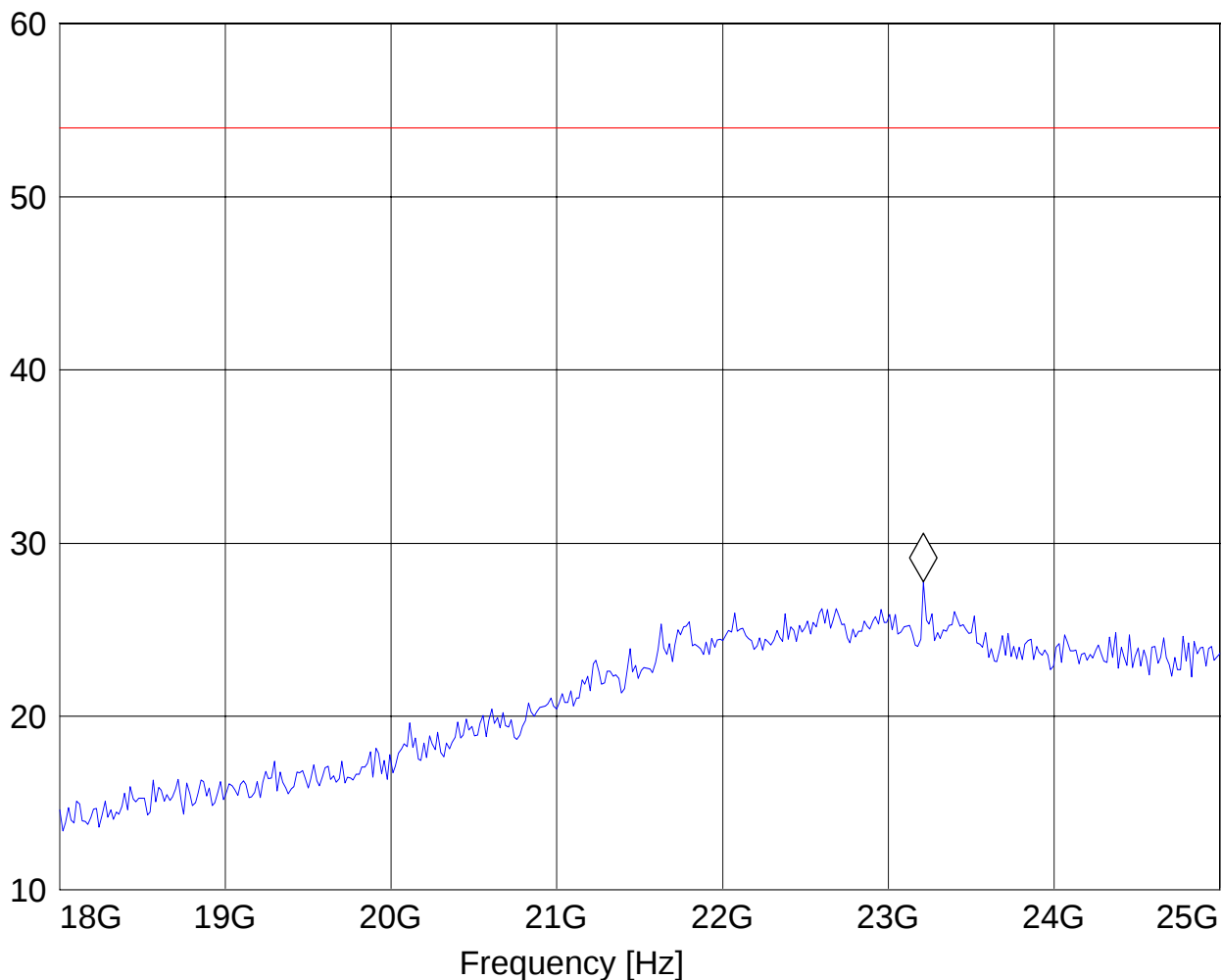
EUT Orientation: H

Test Engineer: Ed

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

Marker: 23.21242485 GHz 27.76 dB $\mu$ V/m

Level [dB $\mu$ V/m]





**18-26.5GHz (5260MHz) Chain B**

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

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

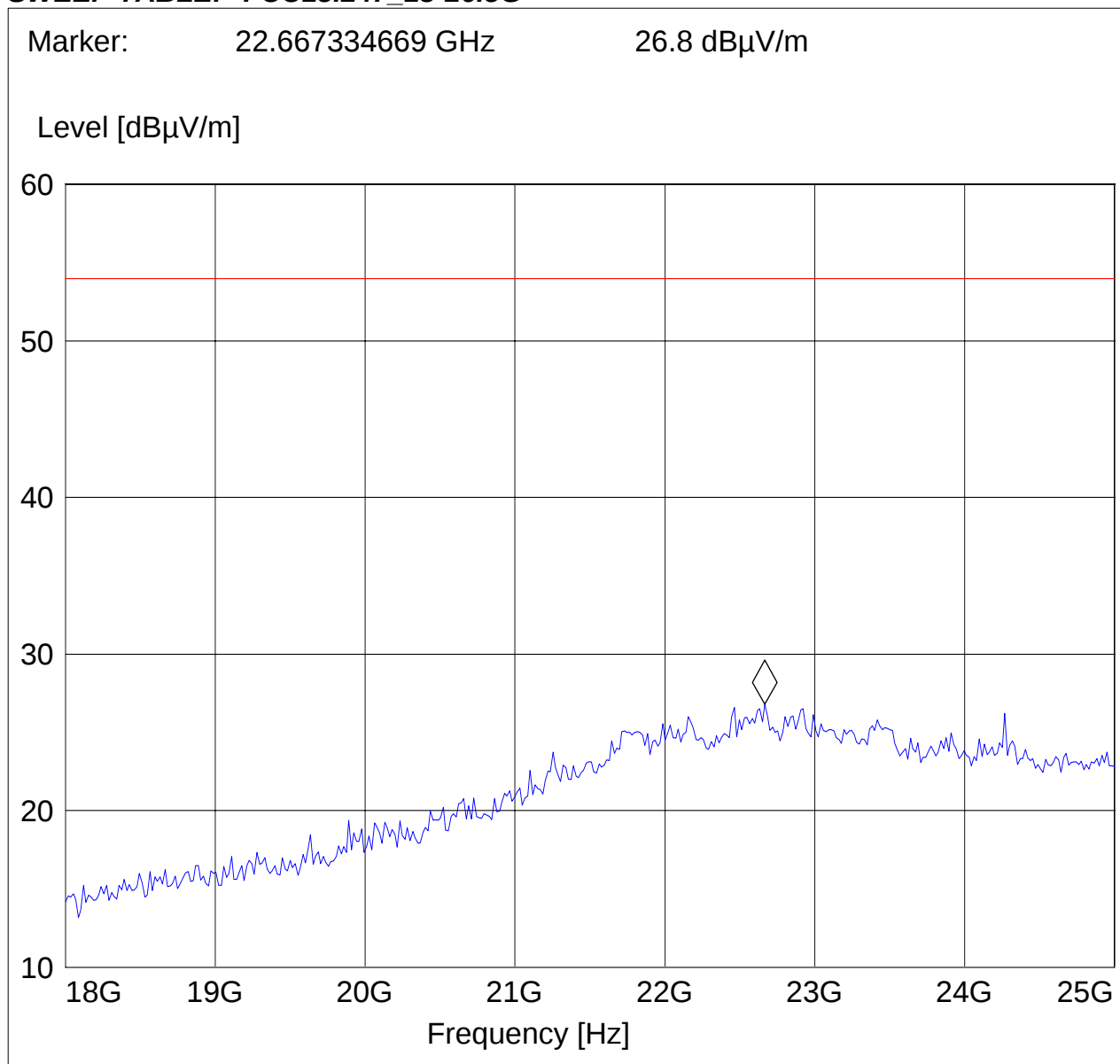
Test Mode: 802.11a, ch 52

ANT Orientation: V

EUT Orientation: H

Test Engineer: Ed

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





**18-26.5GHz (5320MHz) Chain B**

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

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

Test Mode: 802.11a, ch 64

ANT Orientation: V

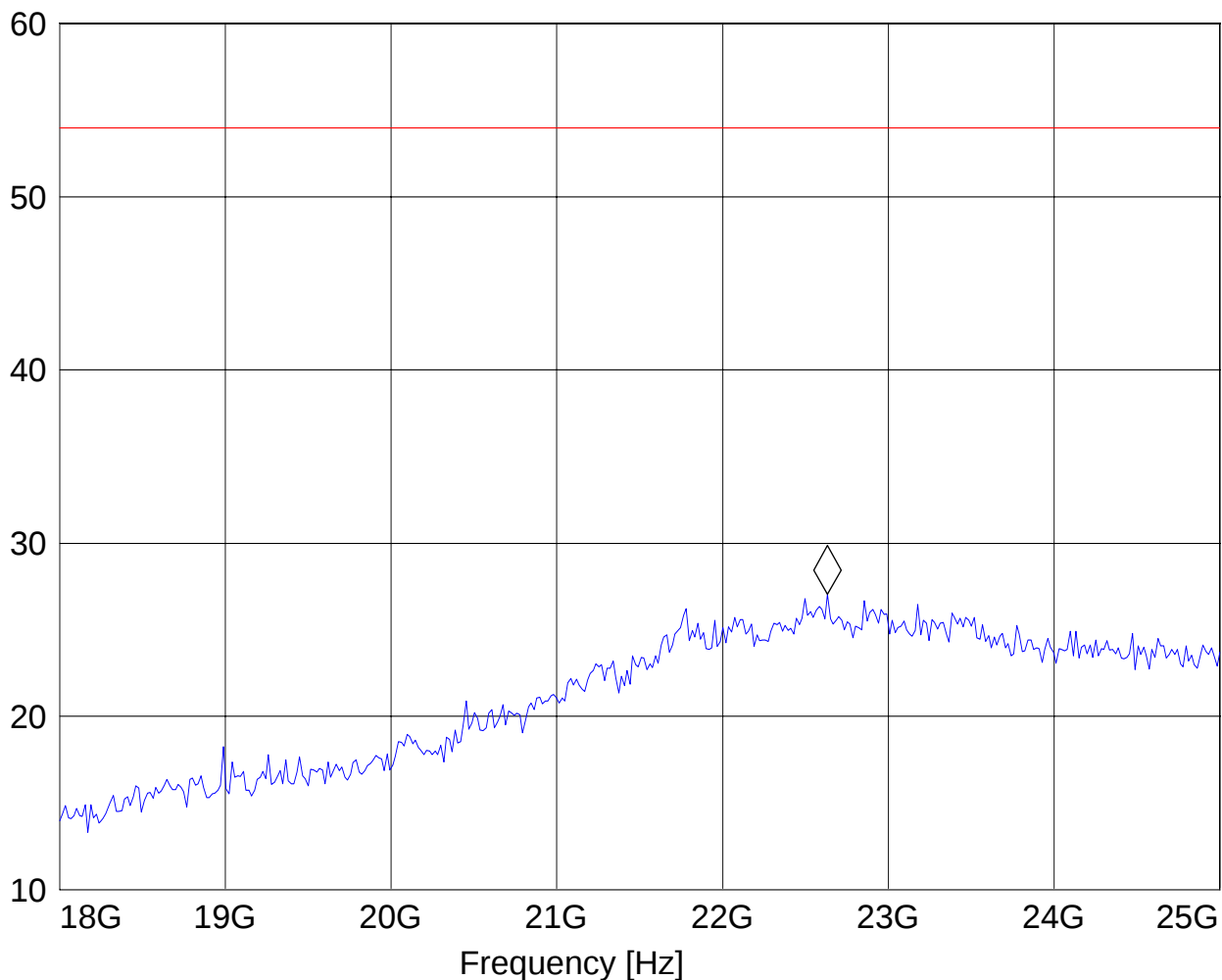
EUT Orientation: H

Test Engineer: Ed

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

Marker: 22.633266533 GHz 27.07 dB $\mu$ V/m

Level [dB $\mu$ V/m]





## 26-40GHz 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**

EUT / Description: ES725

Manufacturer: Sony Electronics

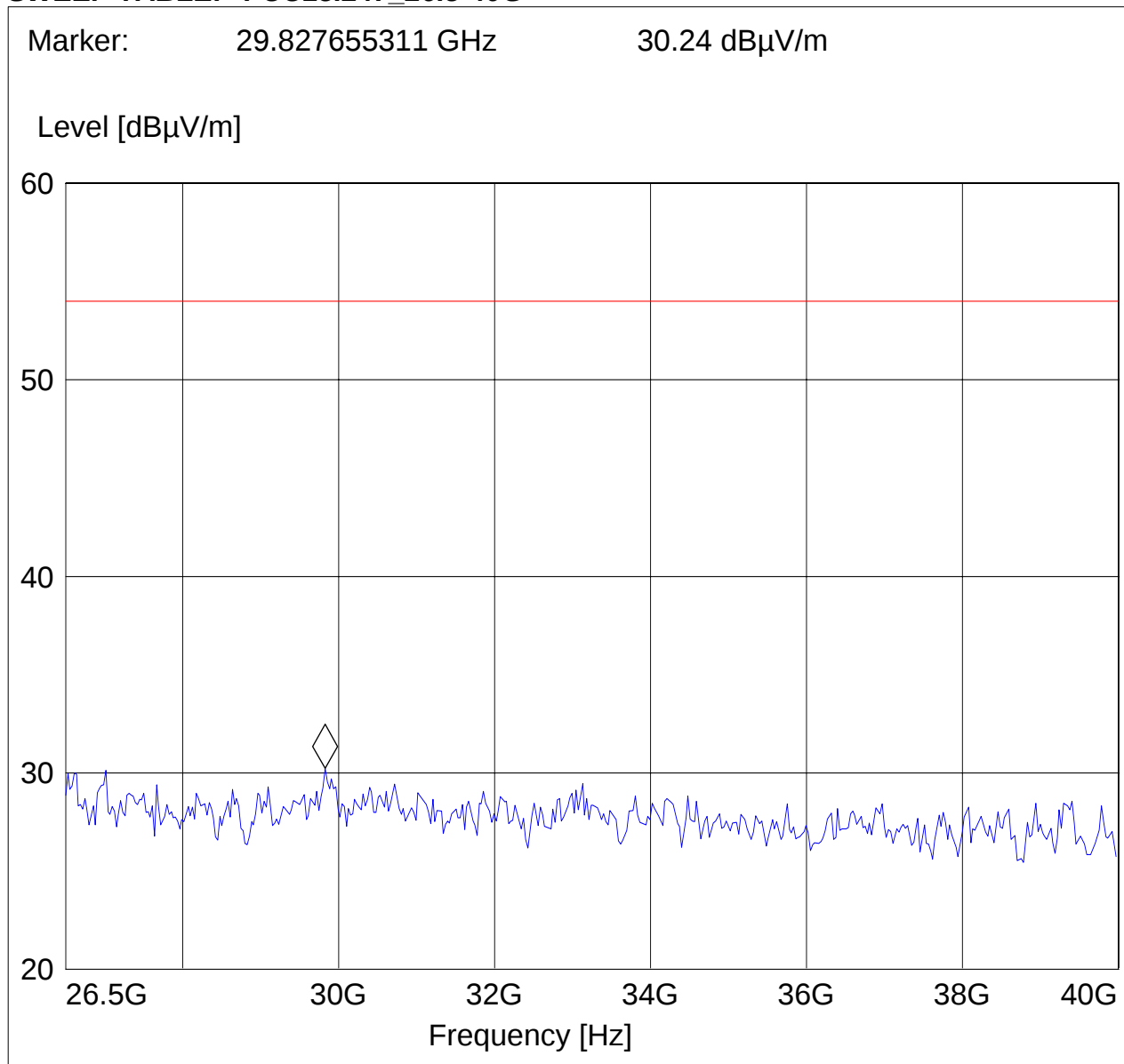
Test mode: 802.11a, Ch 52, CHAIN B

EUT: H

Antenna: H

Test Engineer: Peter Mu

### ***SWEEP TABLE: "FCC15.247\_26.5-40G"***



## 5.4 RECEIVER SPURIOUS RADIATION § 15.209/RSS210

### 5.4.1 LIMITS

| Frequency (MHz) | Field strength ( $\mu\text{V/m}$ ) | 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

Note: This plot is valid for horizontal and vertical polarities (worst-case plot).

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

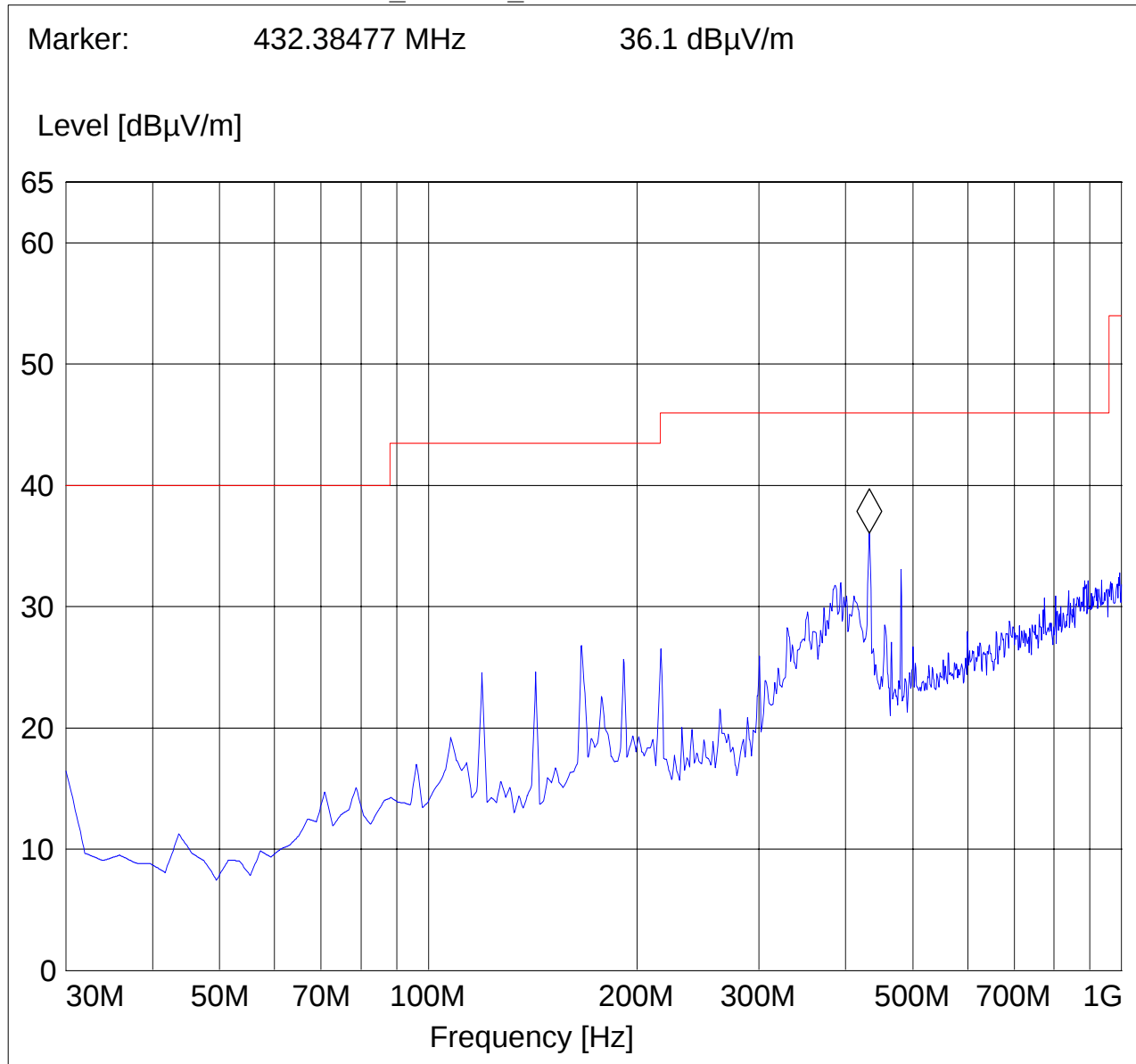
Test Mode: 802.11a receive

ANT Orientation: H

EUT Orientation: H

Test Engineer: Satya R

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





**1-18GHz**

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

**CETECOM Inc.**

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

EUT / Description: ES725

Manufacturer: Sony Electronics

Test mode: 802.11a, Ch 52, chain AB, RX Mode

EUT: H

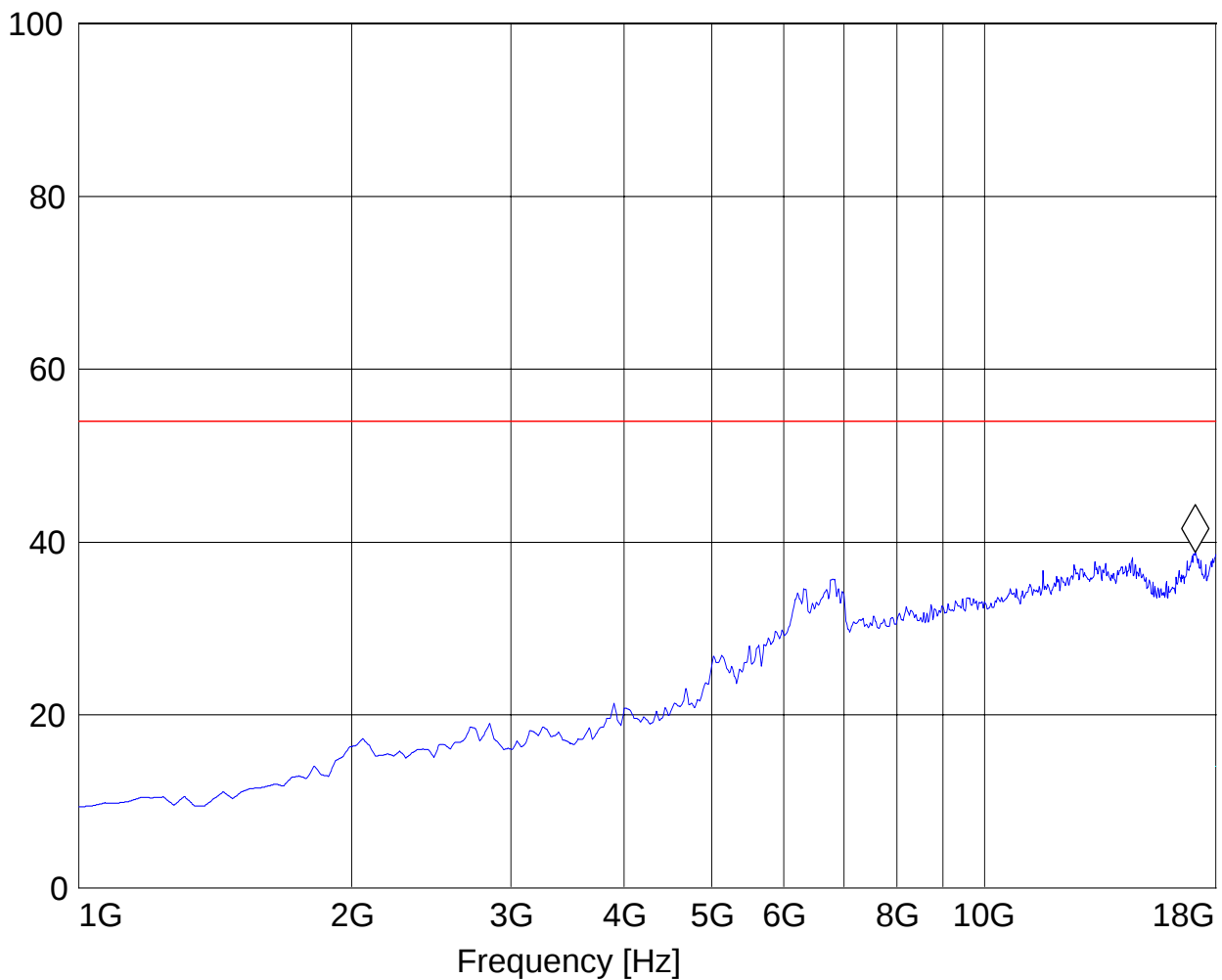
Antenna: V

Test Engineer: Ed

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

Marker: 17.080160321 GHz 38.85 dB $\mu$ V/m

Level [dB $\mu$ V/m]





**18-26.5GHz**

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

**CETECOM Inc.**

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

EUT: ES725

Customer: Sony

Test Mode: 802.11a, ch 52, Chain AB, RX Mode

ANT Orientation: V

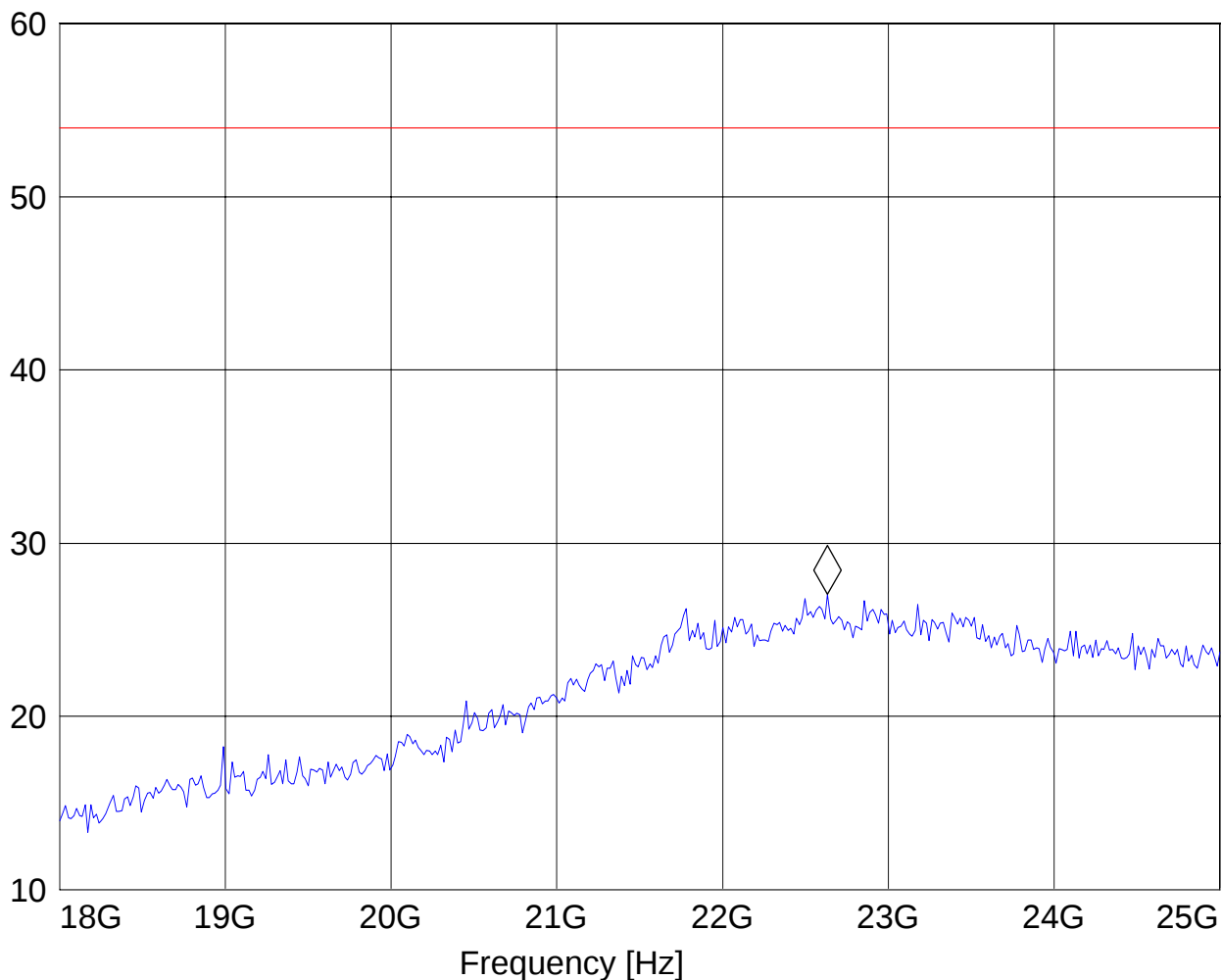
EUT Orientation: H

Test Engineer: Ed

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

Marker: 22.633266533 GHz 27.07 dB $\mu$ V/m

Level [dB $\mu$ V/m]





**26.5-40GHz**

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

**CETECOM Inc.**

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

EUT / Description: ES725

Manufacturer: Sony Electronics

Test mode: 802.11a, Ch 52, RX

EUT: H

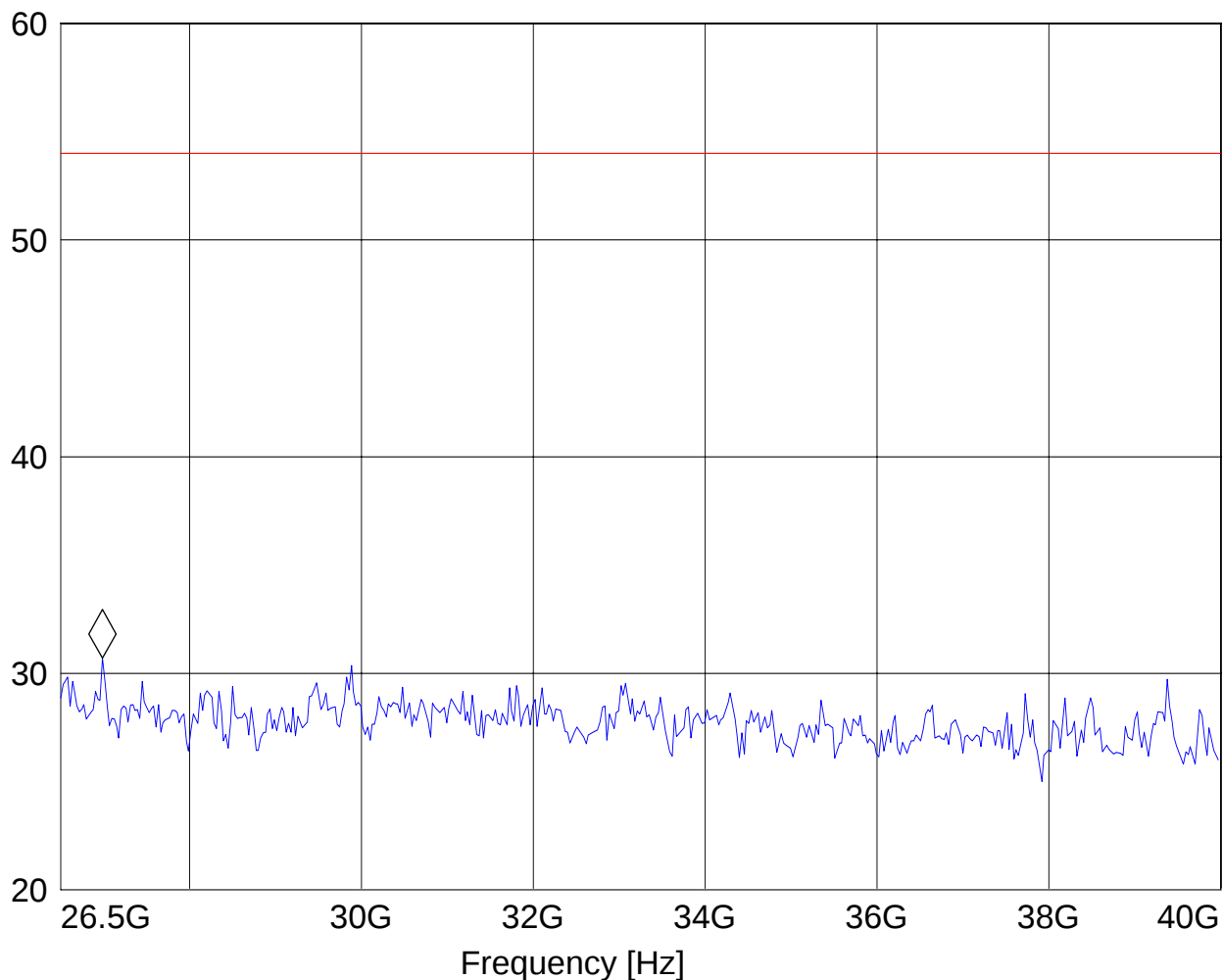
Antenna: H

Test Engineer: Peter Mu

**SWEEP TABLE: "FCC15.247\_26.5-40G"**

Marker: 26.986973948 GHz 30.68 dB $\mu$ V/m

Level [dB $\mu$ V/m]



## 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

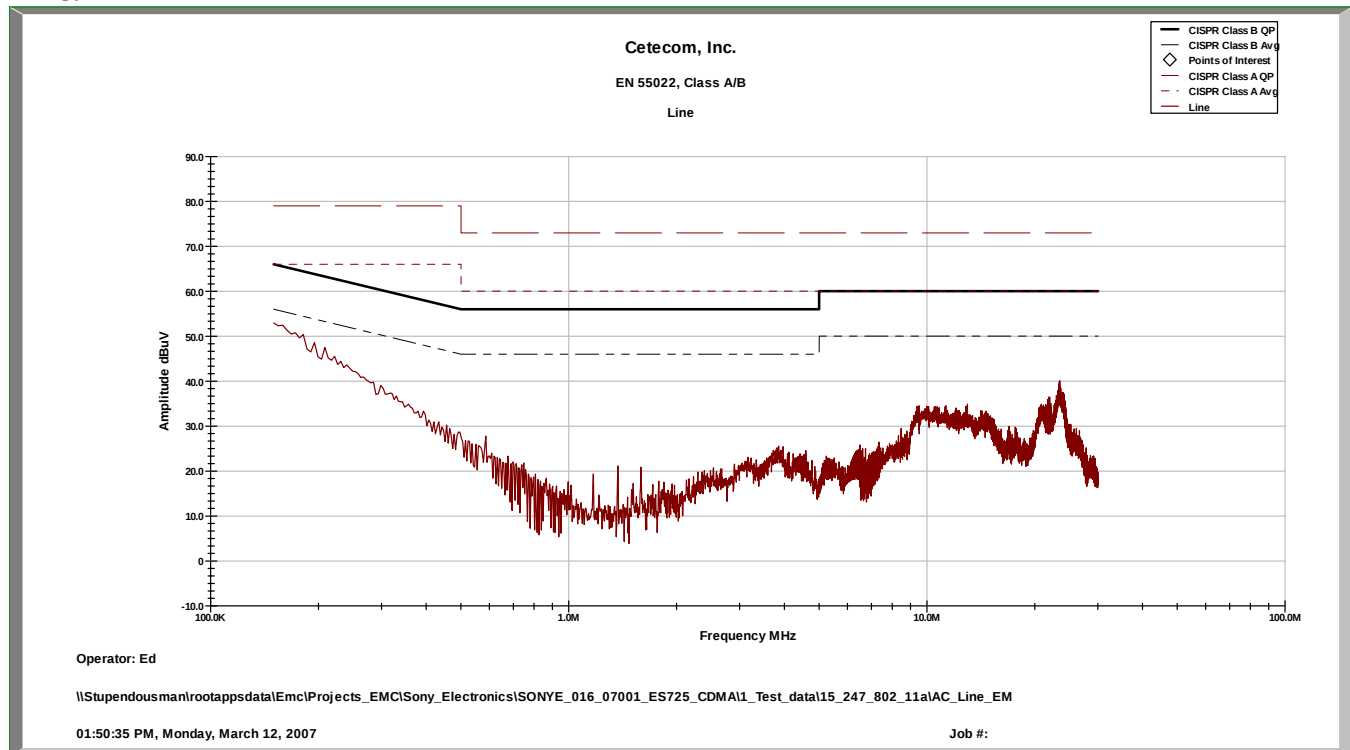
| Frequency of Emission (MHz)                 | Conducted Limit (dB $\mu$ V) |           |
|---------------------------------------------|------------------------------|-----------|
|                                             | Quasi-Peak                   | Average   |
| 0.15 – 0.5                                  | 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

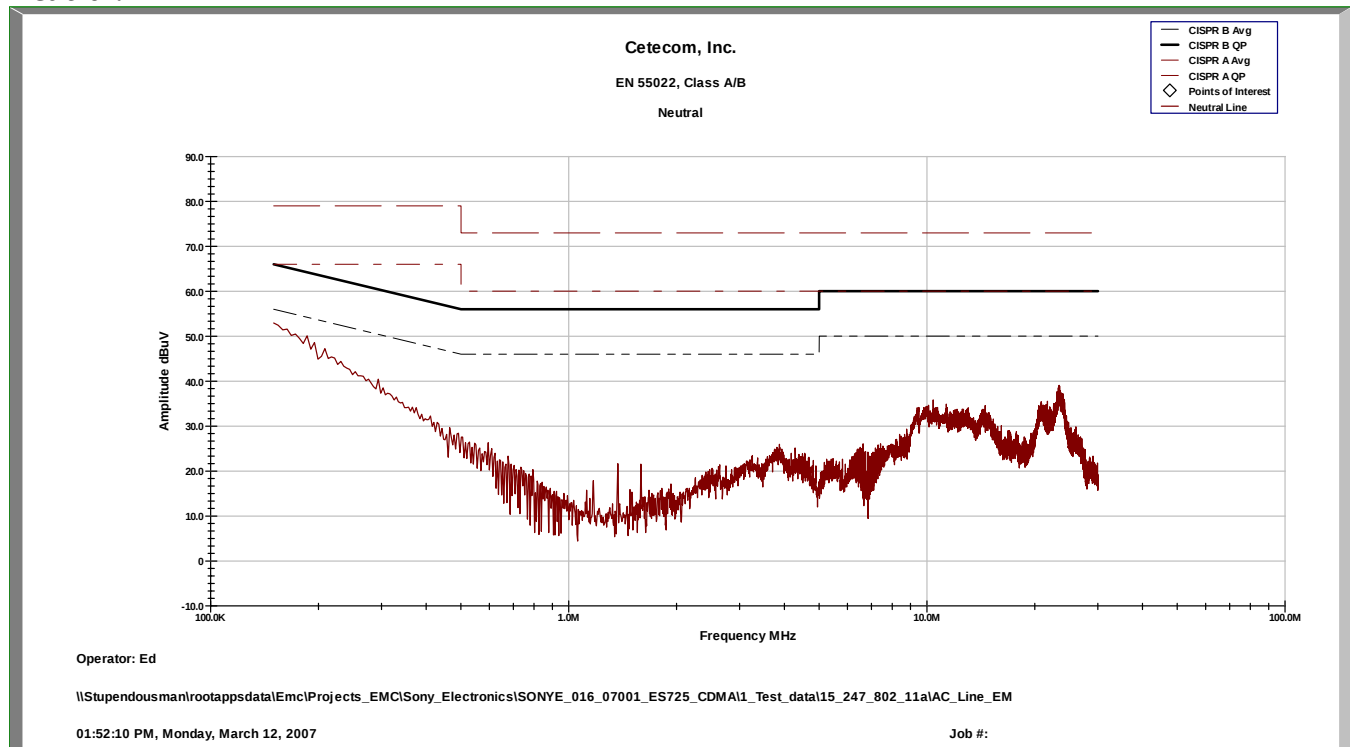
VBW = 10KHz

## 5.5.2 RESULTS

### Line:



### Neutral:





## 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 2007    | 1 year   |
| 02 | Spectrum Analyzer            | FSEM 30      | Rohde & Schwarz | 100017       | August 2007 | 1 year   |
| 03 | Signal Generator             | SMY02        | Rohde & Schwarz | 836878/011   | May 2007    | 1 year   |
| 04 | Power-Meter                  | NRVD         | Rohde & Schwarz | 0857.8008.02 | May 2007    | 1 year   |
| 05 | Biconilog Antenna            | 3141         | EMCO            | 0005-1186    | June 2007   | 1 year   |
| 06 | Horn Antenna (1-18GHz)       | SAS-200/571  | AH Systems      | 325          | June 2007   | 1 year   |
| 07 | Horn Antenna (18-26.5GHz)    | 3160-09      | EMCO            | 1240         | June 2007   | 1 year   |
| 08 | Power Splitter               | 11667B       | Hewlett Packard | 645348       | n/a         | n/a      |
| 09 | Climatic Chamber             | VT4004       | Voltsch         | G1115        | May 2007    | 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 2007    | 1 year   |
| 13 | Power Sensor                 | URV5-Z2      | Rohde & Schwarz | DE30807      | May 2007    | 1 year   |
| 14 | Digital Radio Comm. Tester   | CMD-55       | Rohde & Schwarz | 847958/008   | May 2007    | 1 year   |
| 15 | Universal Radio Comm. Tester | CMU 200      | Rohde & Schwarz | 832221/06    | May 2007    | 1 year   |
| 16 | LISN                         | ESH3-Z5      | Rohde & Schwarz | 836679/003   | May 2007    | 1 year   |
| 17 | Loop Antenna                 | 6512         | EMCO            | 00049838     | July 2007   | 2 years  |

## 6.1 BLOCK DIAGRAMS

### Radiated Testing

#### ANECHOIC CHAMBER

