FCC Test Report

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

Broadcom Corporation

Model Number: BCM94318MPAGH

FCC ID: QDS-BRCM1017

IC-ID: 4324A-BRCM1017

TEST REPORT #: EMC_INTE1_003_07002_15.407A
DATE: 6/1/2007

ilac-MRA A2LA ACCREDITED Certificate # 2135.01

Bluetooth

Bluetooth Qualification Test Facility (BQTF)

CTIA Authorized Test Lab
LAB CODE 20020328-00

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 ◆ 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

TABLE OF CONTENTS

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 #
Broadcom Corporation	WLAN Mini PCI Card	BCM94318MPAGH

Technical responsibility for area of testing:

		Peter Mu	I am approving this document
6/1/2007	**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.

This report is prepared by:

		Satya Radhakrishna	Satya Radhakrishna I am the author of this document
6/1/2007	**EMC & Radio**	**(EMC Project Engineer)**	
Date	**Section**	**Name**	**Signature**

2 Administrative Data

2.1 Identification of the Testing Laboratory

Company Name:	CETECOM Inc.
Department:	EMC
Address:	411 Dixon Landing Road Milpitas, CA 95035 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:	Broadcom Corporation
Address:	190 Mathilda Place Sunnyvale, CA, USA
Contact Person:	Daniel Lawless
Phone No.	408-922-5810
Fax:	408-543-3399
e-mail:	dlawless@broadcom.com

2.3 Identification of the Manufacturer

Manufacturer's Name:	Broadcom Corporation
Manufacturer's Address:	190 Mathilda Place, Sunnyvale, CA 94086 USA

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Product Type	WLAN
Marketing Name:	BCM94318MPAGH
Model No:	BCM94318MPAGH
FCC-ID:	QDS-BRCM1017
IC-ID :	4324A-BRCM1017
Frequency Range:	5470-5725MHz
Number of Channels	9
Type(s) of Modulation:	OFDM
Antenna Type:	Hitachi ZRS 5.1dB max gain (this antenna has the highest specified gain in both 2.4 and 5GHz band and is used in testing. Intermec CV60 antenna with 1dBi nominal gain. This antenna will ship in the final integration.
Output Power[1]:	21.2 dBm (0.132W) 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)		5500	5600	5700
T_{nom}(23)°C	V_{nom}VDC	21.2	20.11	18.17
Measurement uncertainty		±0.5dBm		

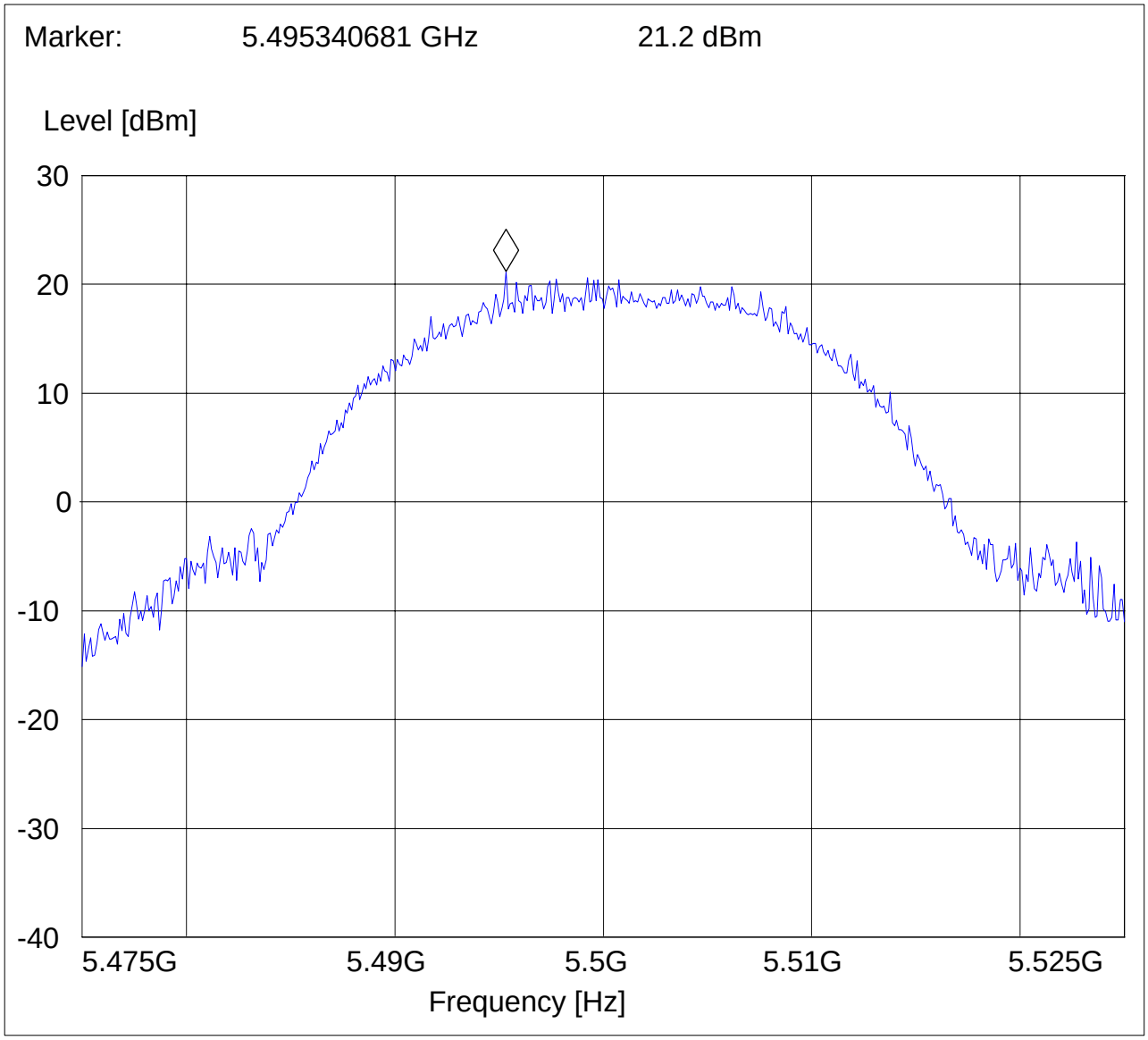
EIRP 802.11 a Ch 100 (5500 MHz)

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

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       wlan, ch 100
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Ed
Power Supply:    AC Adapter/laptop
Comments:
```

SWEEP TABLE: "EIRP 802.11a_100"

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



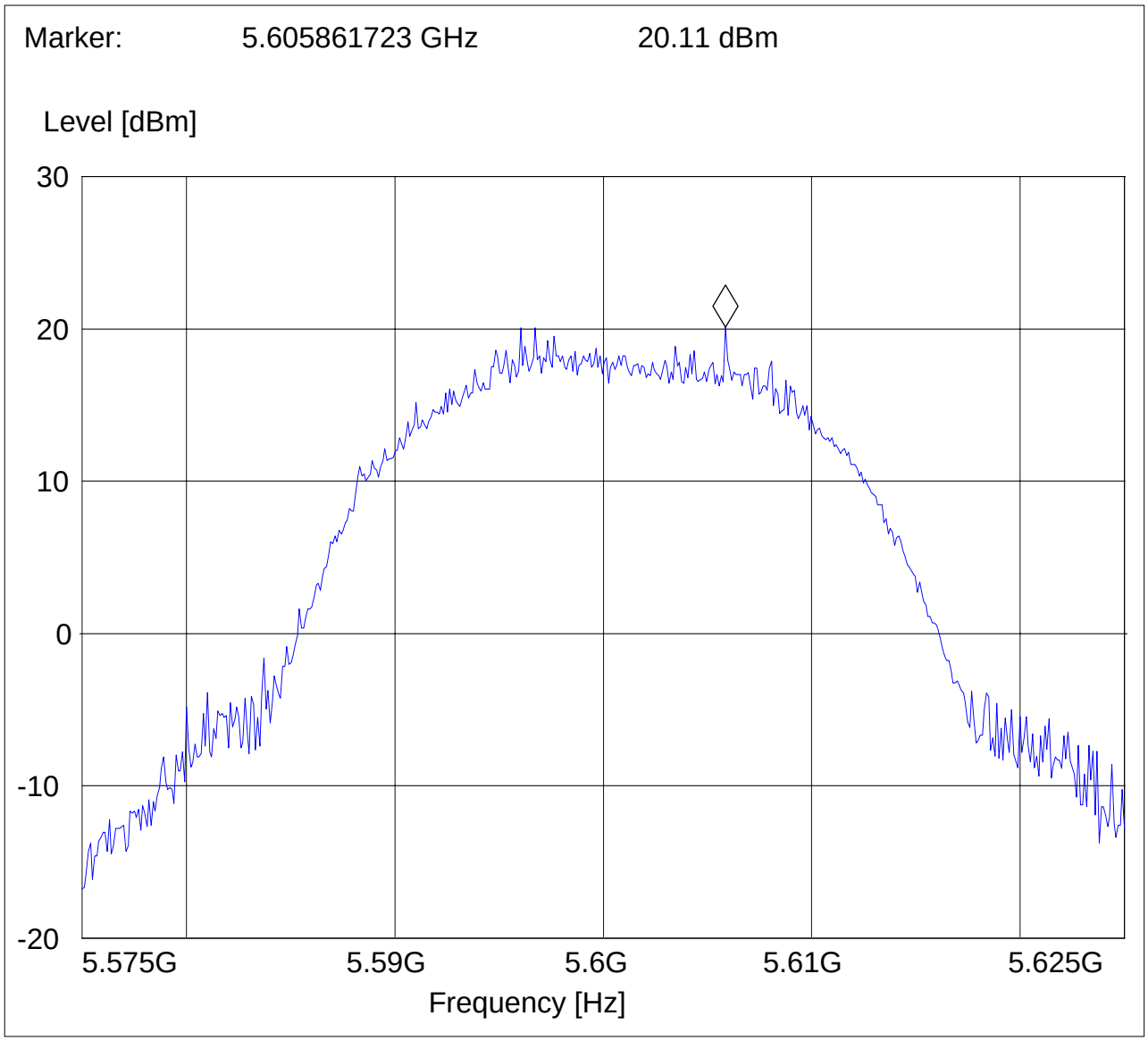
EIRP 802.11 a Ch120 (5600 MHz)

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

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       WLAN, ch 120
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Ed
Power Supply:    AC Adapter/laptop
```

SWEEP TABLE: "EIRP 802.11a_120"

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



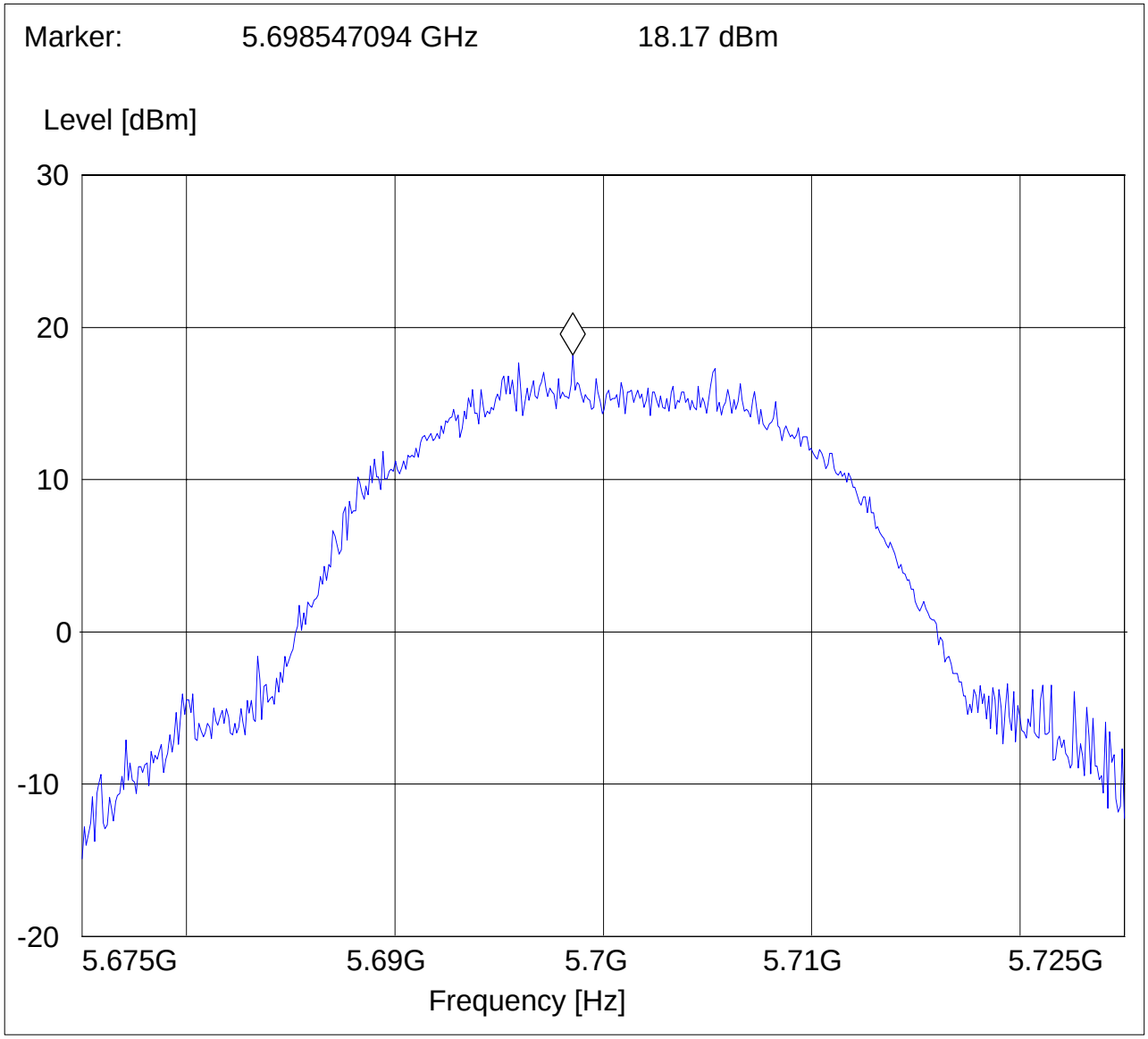
EIRP 802.11 a Ch140 (5700 MHz)

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

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       WLAN, ch 140
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Ed
Power Supply:    AC Adapter/laptop
```

SWEEP TABLE: "EIRP 802.11a_140"

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



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
[1]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	([2])
13.36 - 13.41			

***PEAK LIMIT= 74dBuV/m**
***AVG. LIMIT= 54dBuV/m**

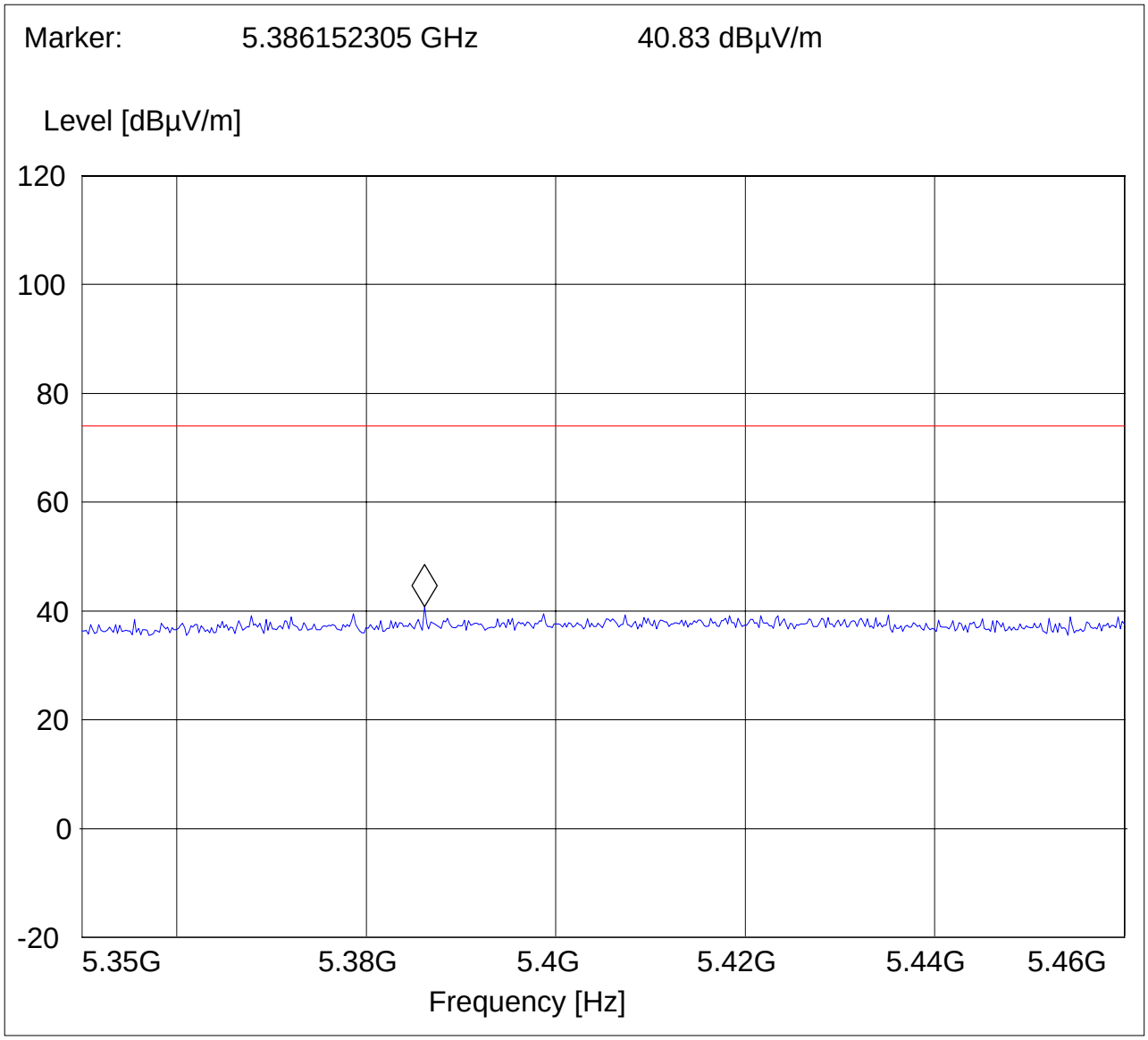
5.2.2 802.11 (a) MODE (5500MHz)-PEAK

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

```
EUT / Description: Broadcom WLAN module
Manufacturer:      Intermec
Test mode:         WLAN Ch100 Tx
ANT Orientation:   V
EUT Orientation:   H
Test Engineer:     Peter Mu
Voltage:           laptop and AC Adaptor
```

SWEEP TABLE: "FCC15.407 LBE pk"

```
Unit:     dBµV/m
          Detector:         Mode:
Curve 1:  MaxPeak           MaxHold  VBW: 1MHz  RBW: 1MHz
```



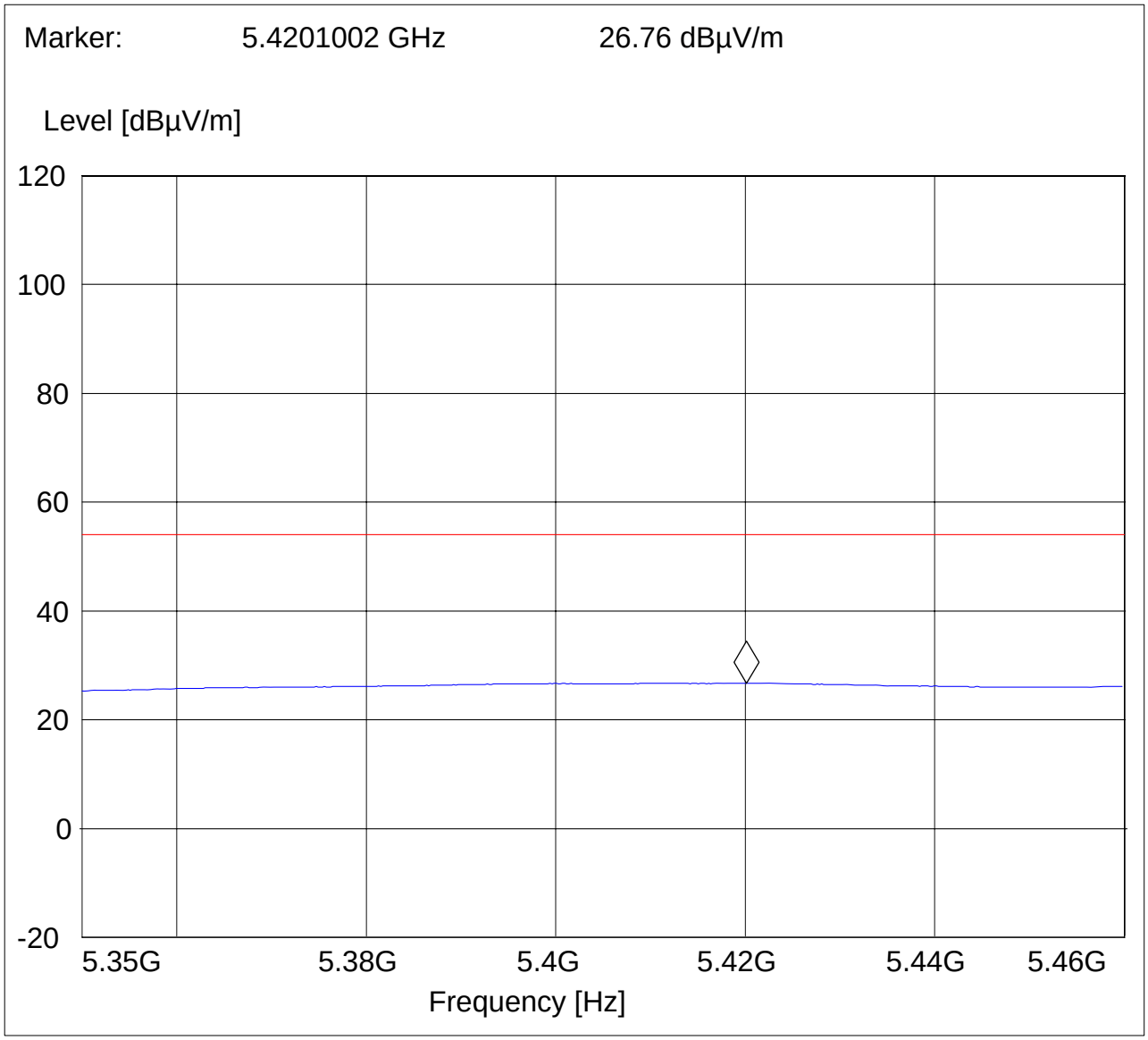
802.11 (a) MODE (5500MHz)-AVERAGE

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

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       WLAN ch100 Tx
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Peter Mu
Power Supply:    laptop and AC Adaptor
```

SWEEP TABLE: "FCC15.407 LBE_AVG"

```
Unit:     dBµV/m
          Detector:         Mode:
Curve 1:  MaxPeak           MaxHold   VBW: 1MHz   RBW: 1MHz
```



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
[1]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	([2])
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

30MHz – 1GHz

Antenna:

Note: This plot is valid for low, mid, high channels horizontal and vertical polarities (worst-case plot). This plot is for the unit with modem turned on and operating in test fixture.

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       WLAN ch120 Tx
ANT Orientation: H
EUT Orientation: H
Test Engineer:   Peter Mu
Power Supply:    New platform
```

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

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

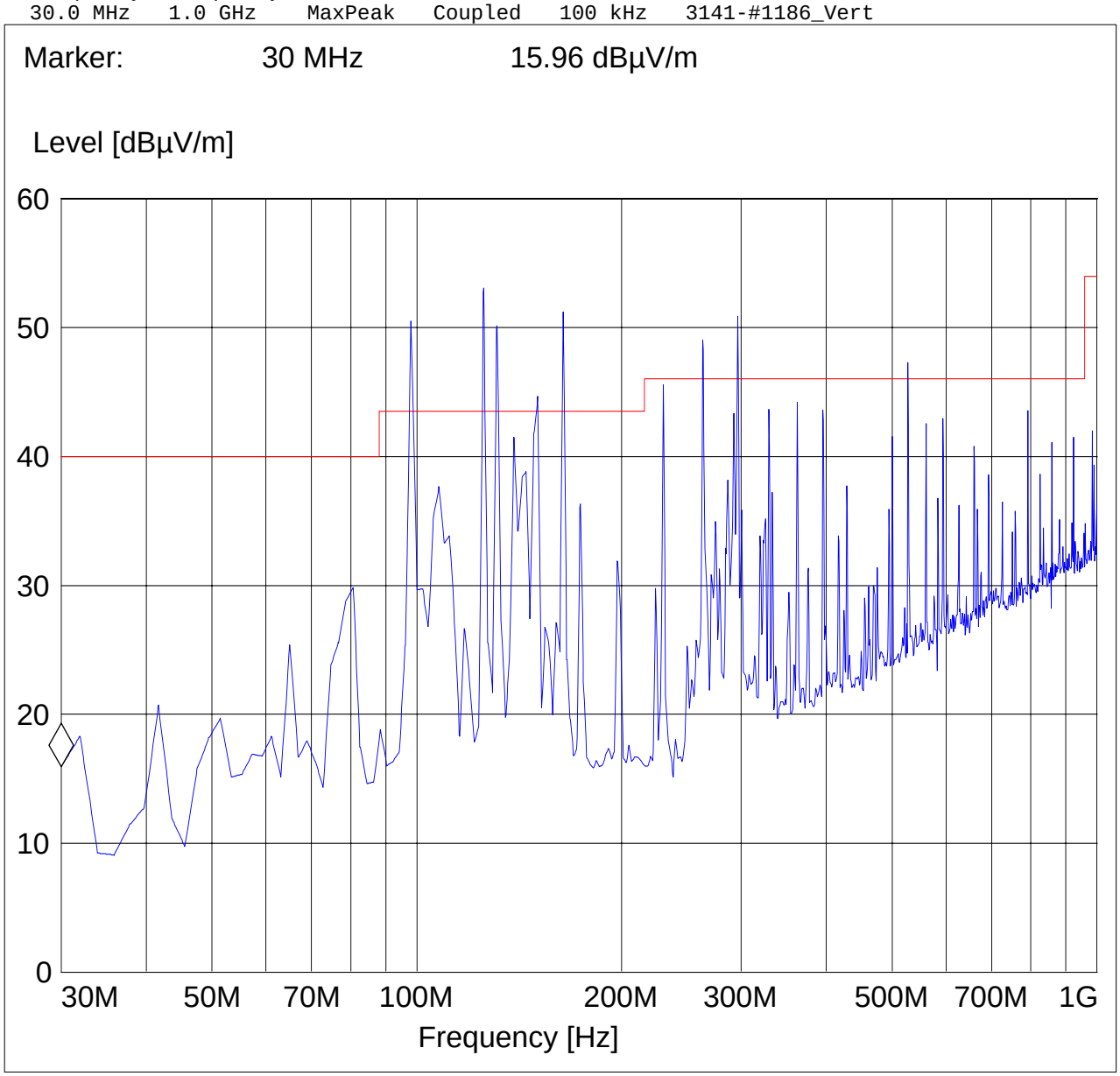


Table 1

Frequency(MHz)	**Level(dBµV/m)**
98.036072	50.47
125.25050501	52.71
131.082164	49.98
150.521042	44.68
164.128257	51.22
263.266533	49.06
296.3312625	50.87
527.635271	47.28

Note: The frequencies at which emissions were observed over the limit have been identified as emission from the hosting laptop and test fixture and not due to the radio module itself. Please see the same emissions captured when the radio module is disconnected from the test fixture. All emissions over the limits remain. This proofs that the radio does not generate emission in the 30M-1GHz band over the specified limit and therefore complies with FCC part 15 rule.

30MHz – 1GHz, NO WLAN Module, Test Fixture only.
Antenna:
Note: This plot is valid for low, mid, high channels horizontal and vertical polarities (worst-case plot). This plot is for the unit with no WLAN modem present in text fixture.

```
EUT:             Broadcom WLAN module
Customer:        Intermec
ANT Orientation: H
EUT Orientation: H
Test Engineer:   Peter Mu
Power Supply:    New platform
Comments:        no WLAN module
```

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

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

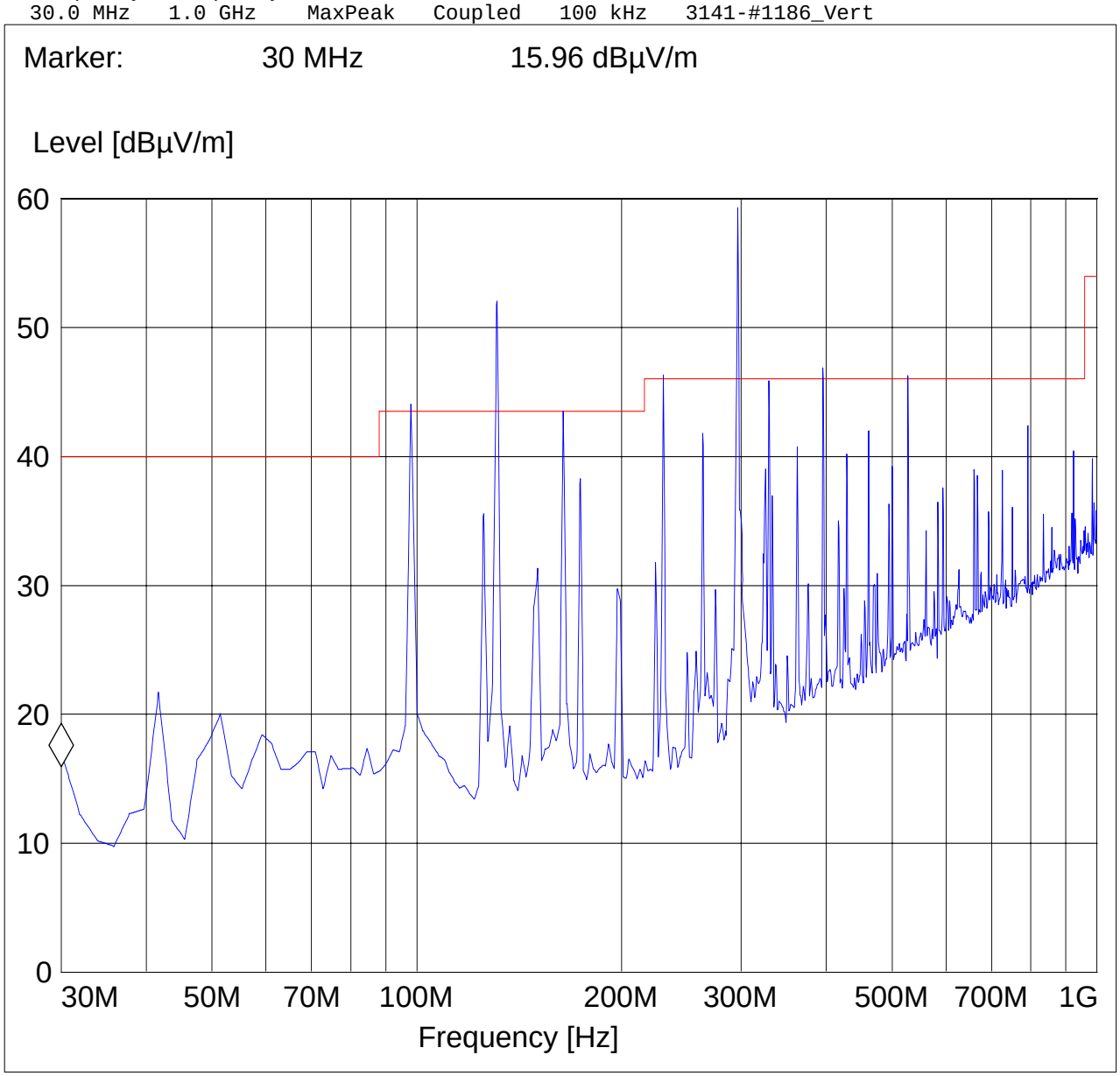


Table 2

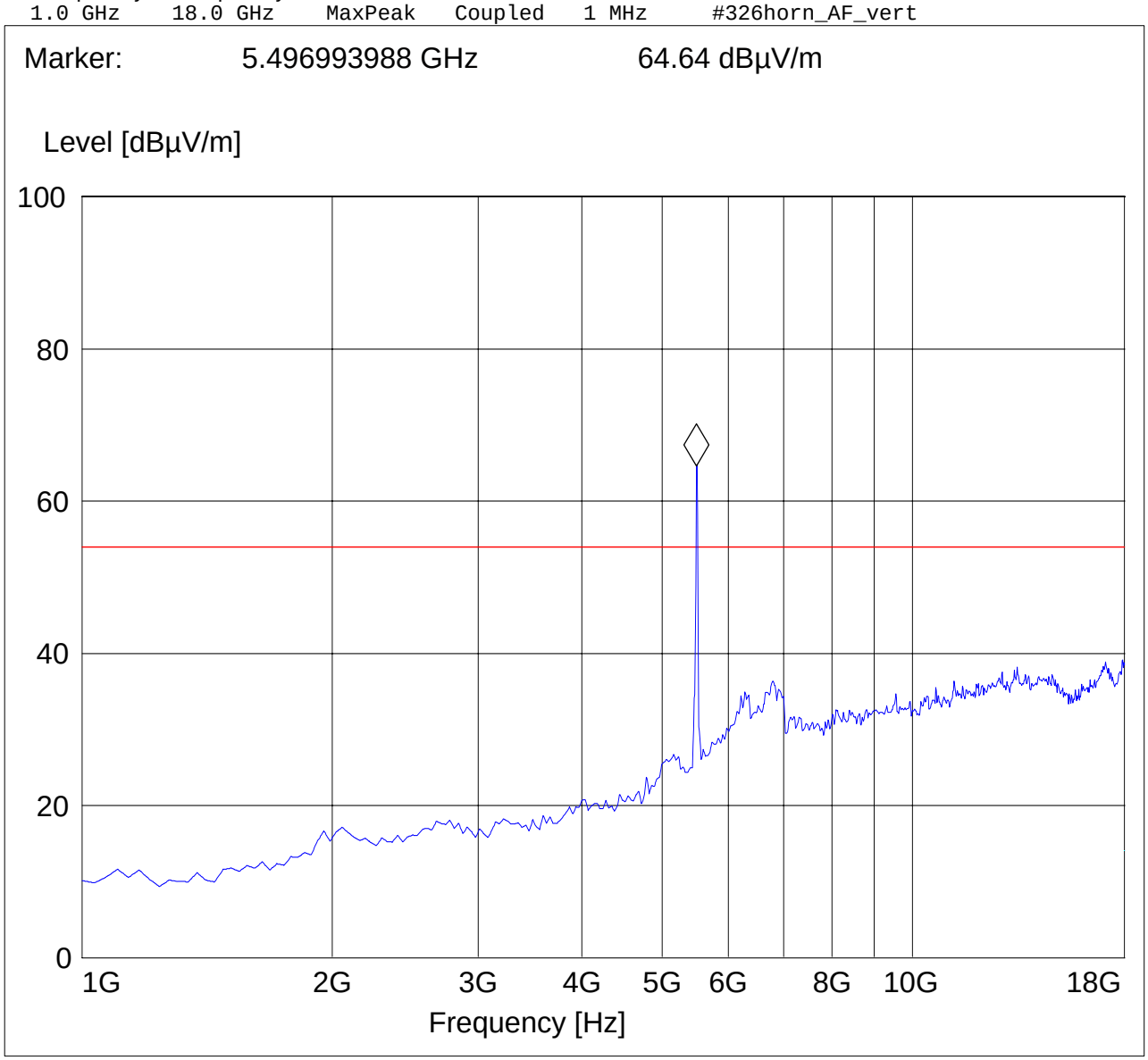
Frequency(MHz)	**Level(dBµV/m)**
98	44.06
125	35.34
131	51.81
150	31.32
164	43.48
230	46.31
263	41.78
296	59.29
329	45.87
395	46.87
527	46.25

1-18GHz Channel 100 (5500MHz)
Note: The peaks above the limit line is the carrier frequency

```
EUT / Description: Broadcom WLAN module
Manufacturer:      Intermec
Test mode:         WLAN, ch 100
EUT:               H
Antenna:           V
Test Engineer:     Ed
Voltage:           AC adapter/laptop
Comments:          Marker is placed on transmitter signal 5500MHz
```

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

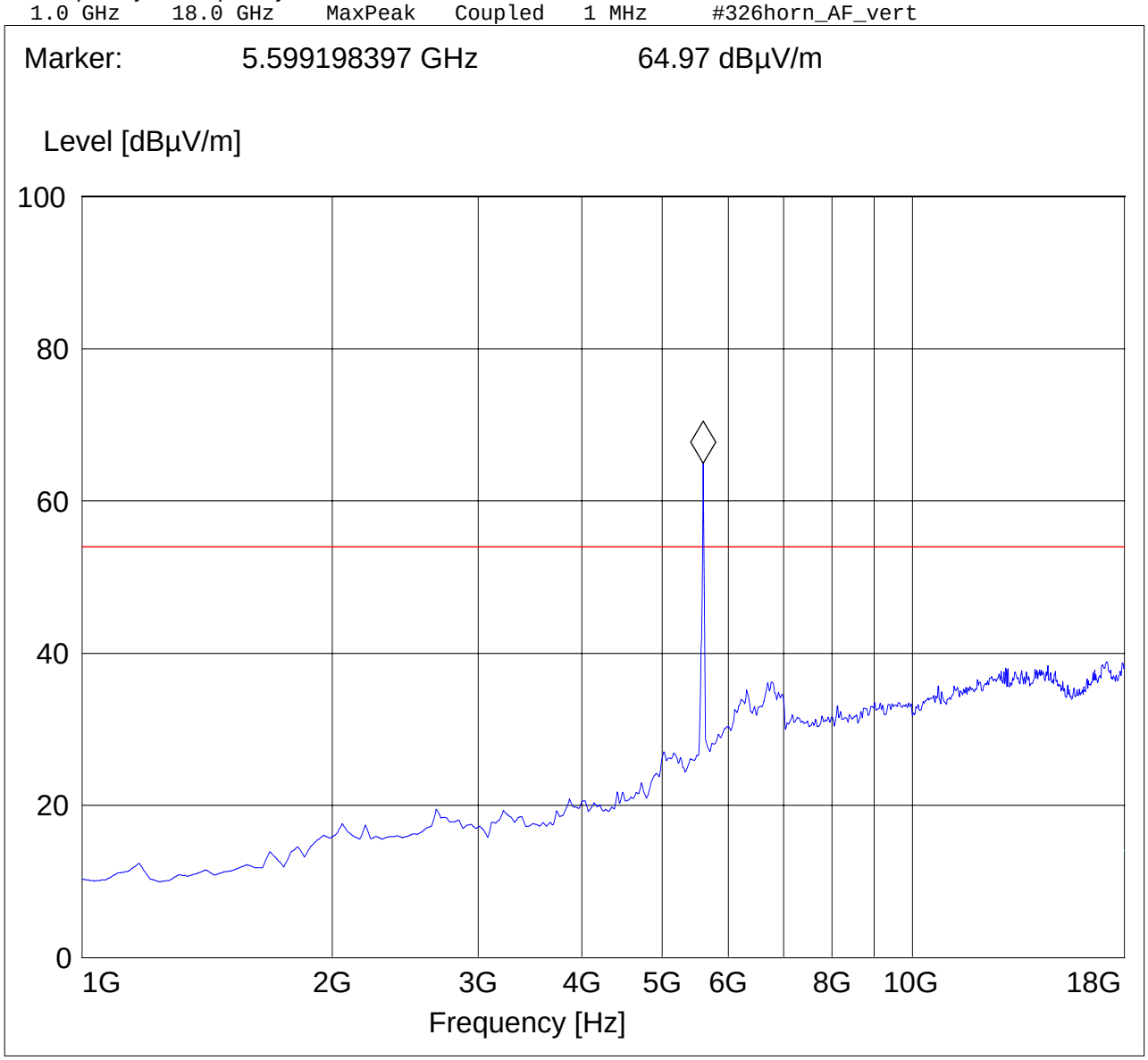


1-18GHz Channel 120 (5600MHz)
Note: The peaks above the limit line is the carrier frequency

```
EUT / Description: Broadcom WLAN module
Manufacturer:      Intermec
Test mode:         WLAN, ch 120
EUT:               H
Antenna:           V
Test Engineer:     Ed
Voltage:           AC adapter/laptop
Comments:          Marker is placed on transmitter signal 5600MHz
```

SWEEP TABLE: "FCC 15.407 1-18G"

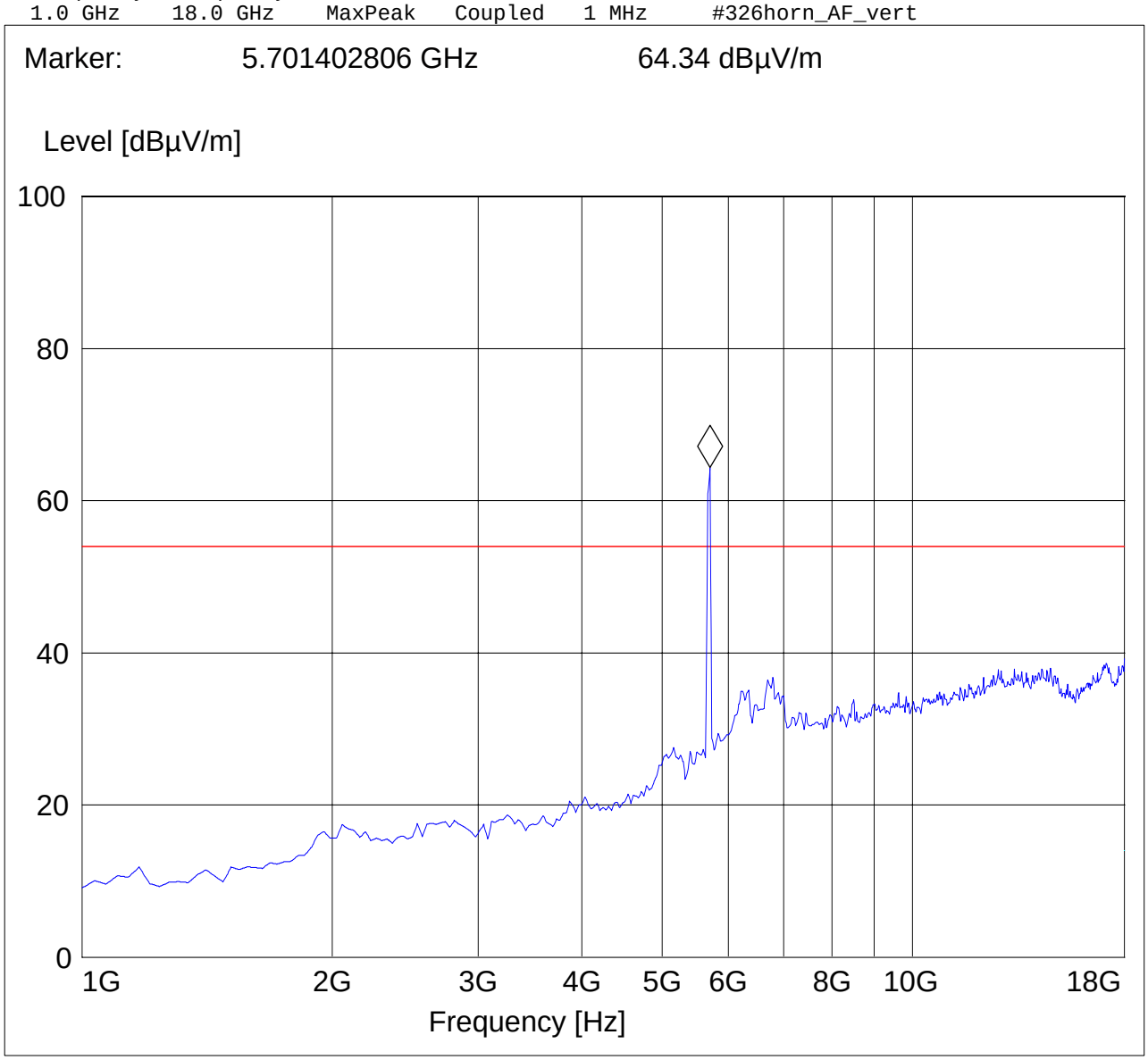
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert



1-18GHz Channel 140 (5700MHz)
Note: The peaks above the limit line is the carrier frequency

```
EUT / Description: Broadcom WLAN module
Manufacturer:      Intermec
Test mode:         WLAN, ch 140
EUT:               H
Antenna:           V
Test Engineer:     Ed
Voltage:           AC adapter/laptop
Comments:          Marker is transmitter signal 5700MHz.

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
```

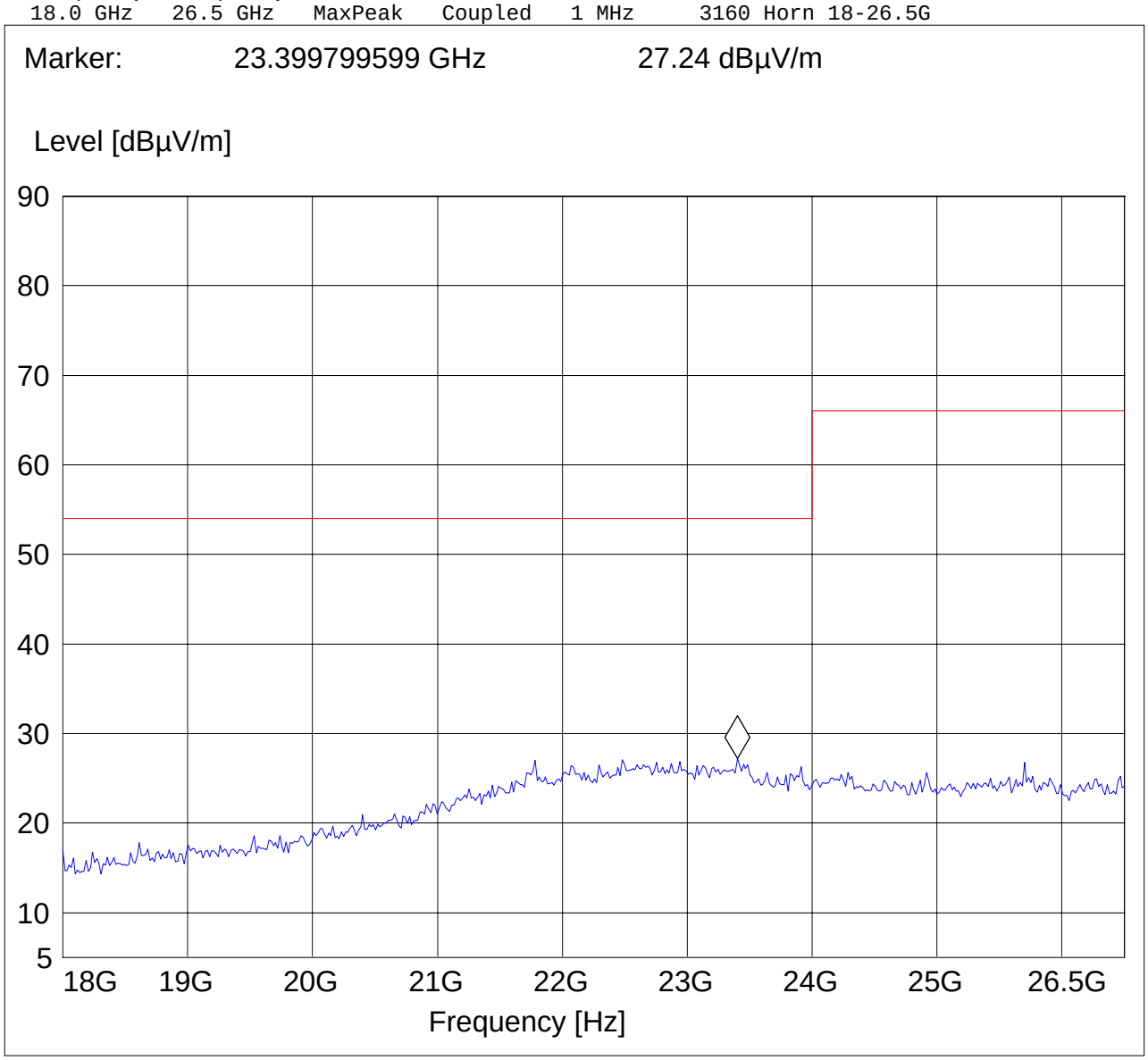


18-26.5 GHz Channel 100 (5500MHz)

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       WLAN, ch 100, TX
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Ed
Power Supply:    laptop/ac adapter
```

SWEEP TABLE: "FCC 15.407 18-26.5G"

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



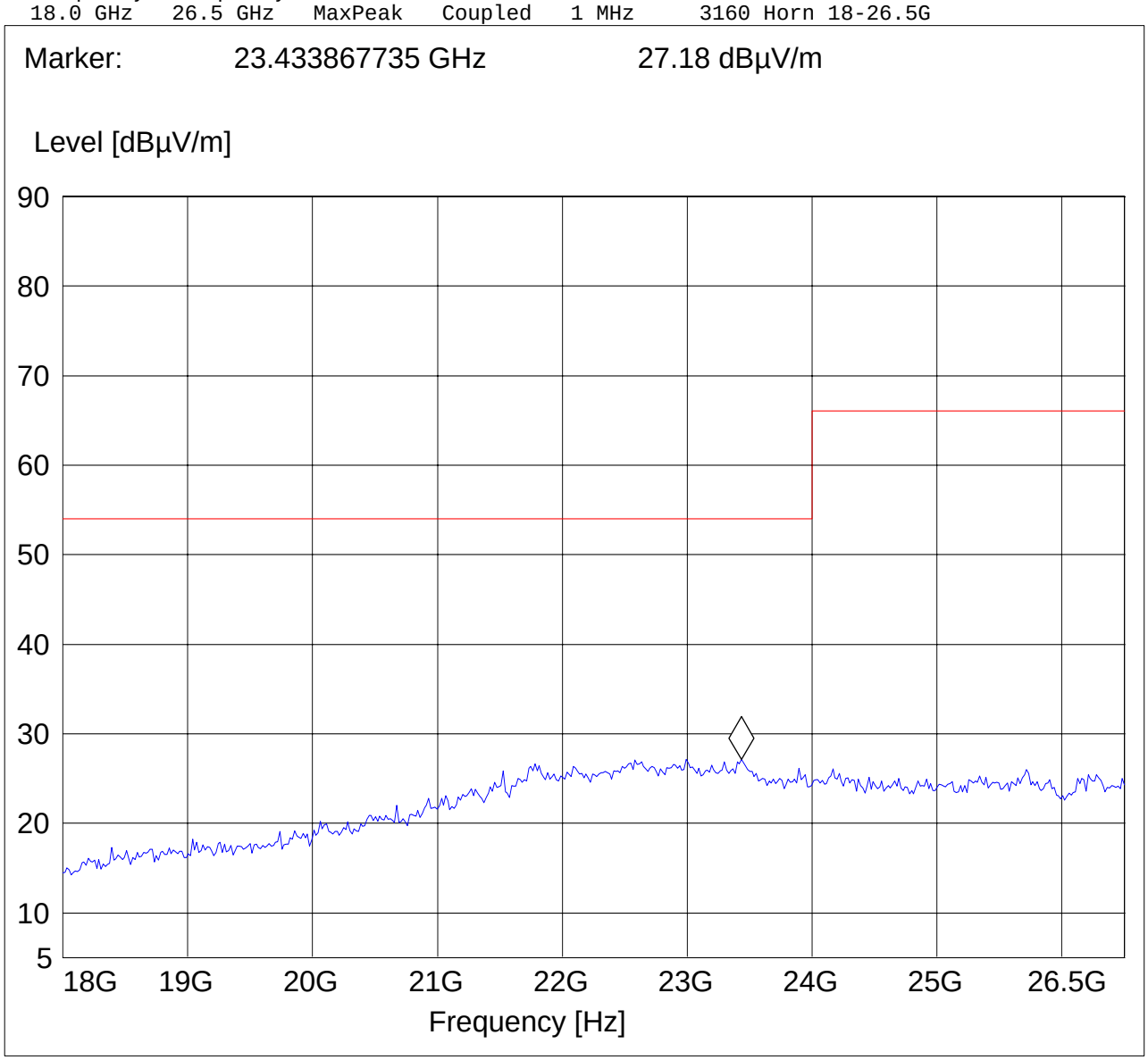
18-26.5 GHz Channel 120 (5600MHz)

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

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       WLAN, ch 120, Tx
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Ed
Power Supply:    laptop/ac adapter
```

SWEEP TABLE: "FCC 15.407 18-26.5G"

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



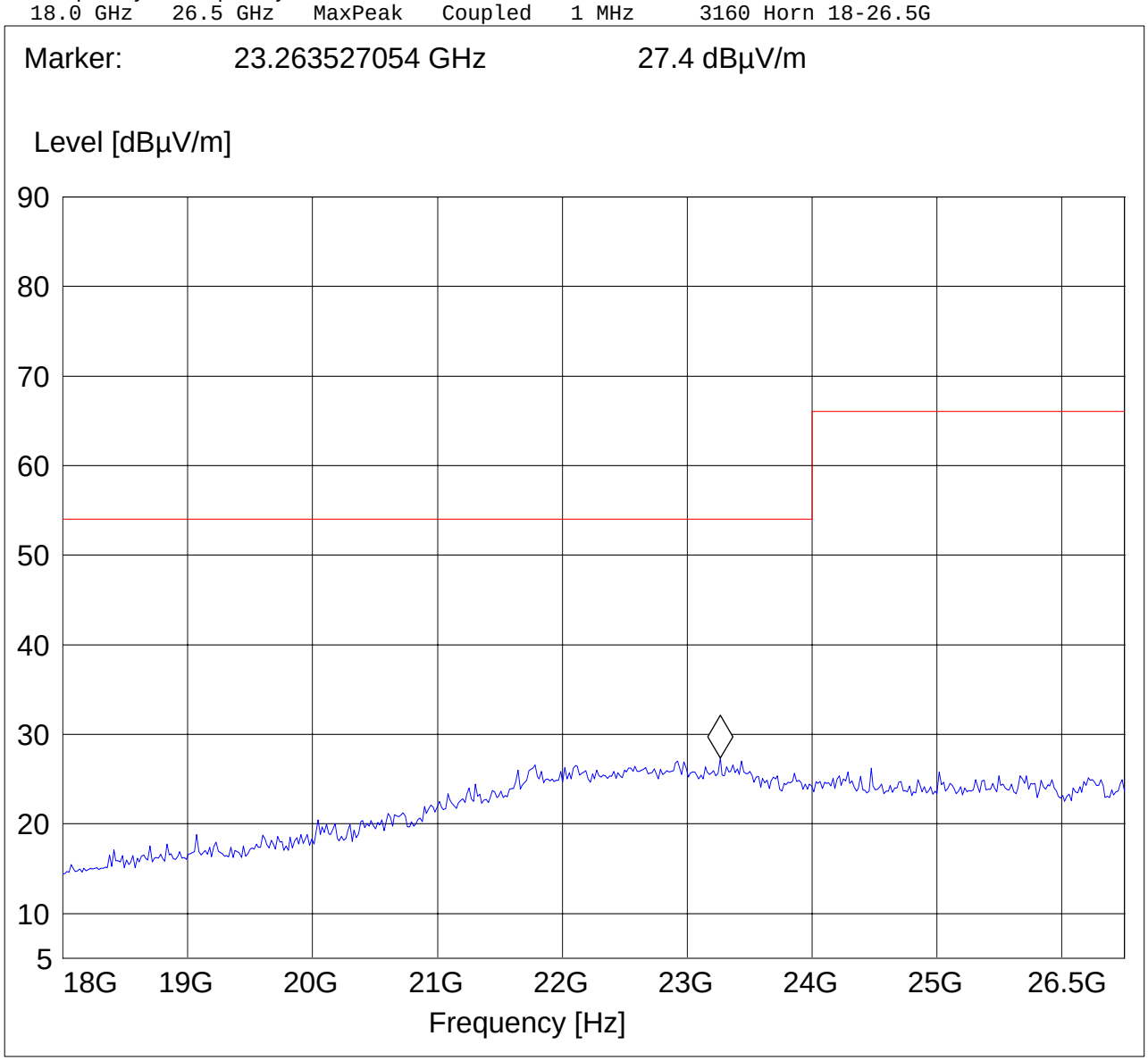
18-26.5 GHz Channel 140 (5700MHz)

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

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       WLAN, ch 140, Tx
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Ed
Power Supply:    laptop/ac adapter
```

SWEEP TABLE: "FCC 15.407 18-26.5G"

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

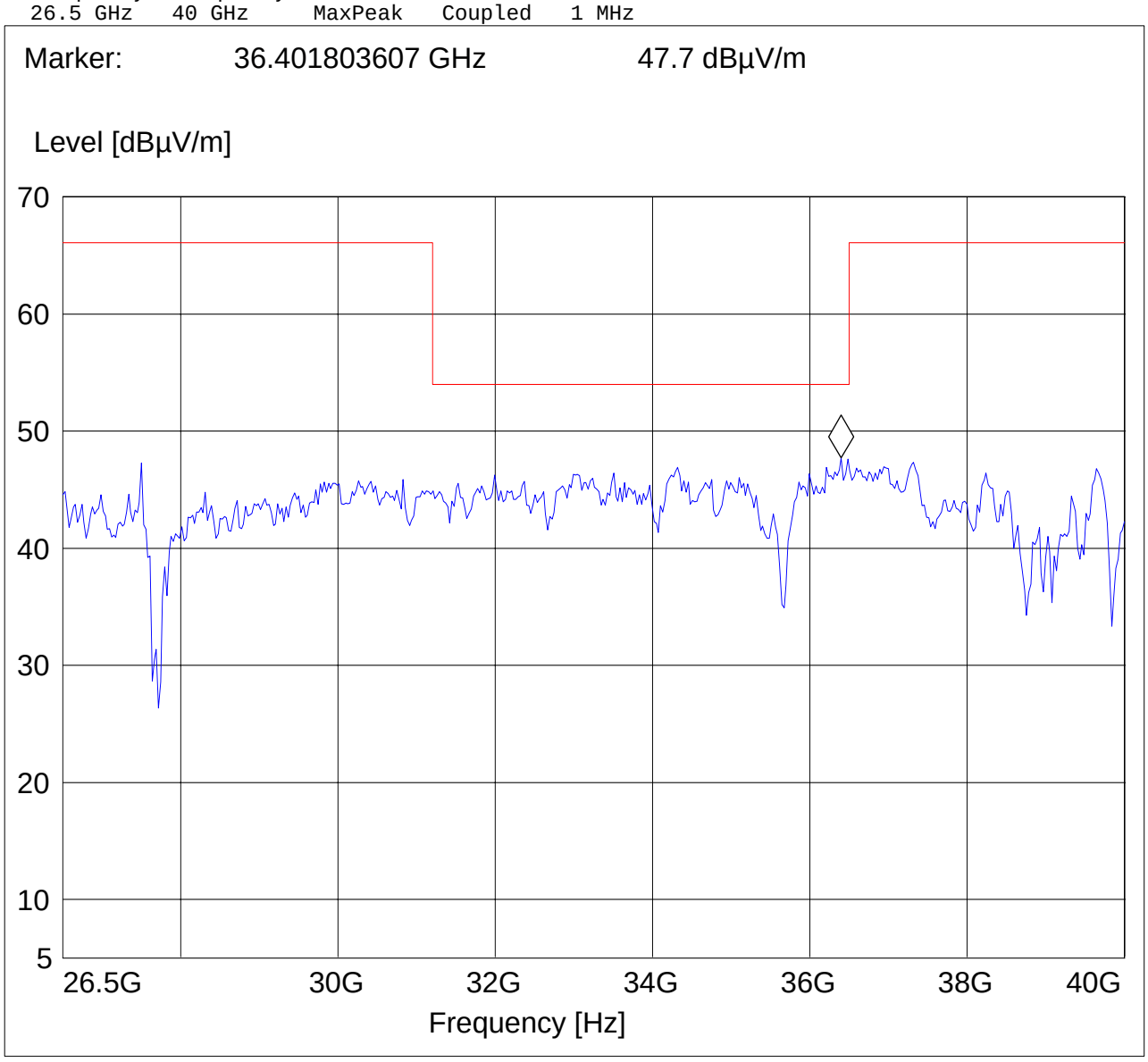


26.5-40 GHz Channel 100(5500MHz)

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       WLAN, ch 100, TX
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Ed
Power Supply:    laptop/ac adapter
```

SWEEP TABLE: "FCC 15.407 26.5-40G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
26.5 GHz	40 GHz	MaxPeak	Coupled	1 MHz	

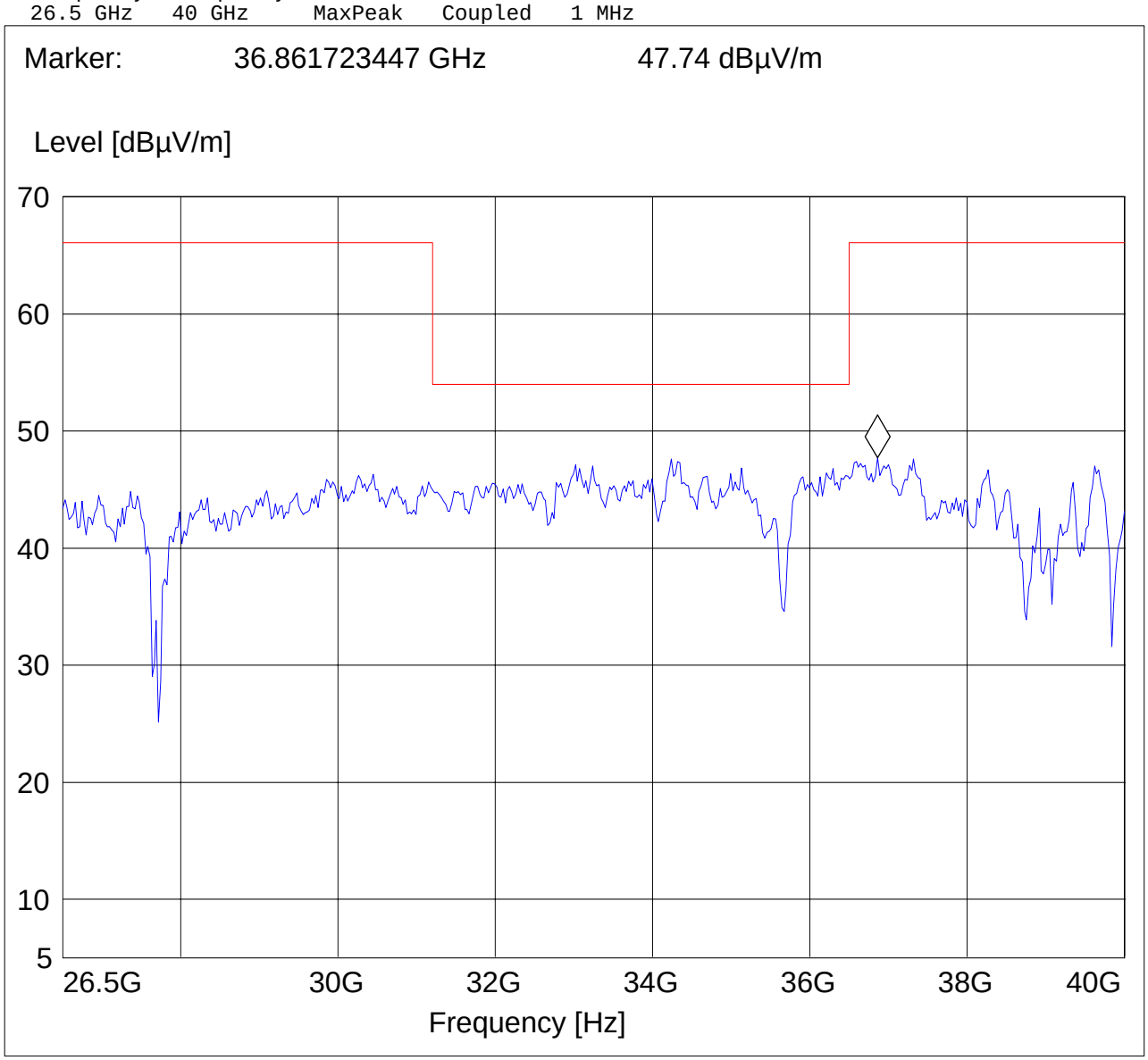


26.5-40 GHz Channel 120(5600MHz)

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       WLAN, ch 120, TX
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Ed
Power Supply:    laptop/ac adapter
```

SWEEP TABLE: "FCC 15.407 26.5-40G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
26.5 GHz	40 GHz	MaxPeak	Coupled	1 MHz	

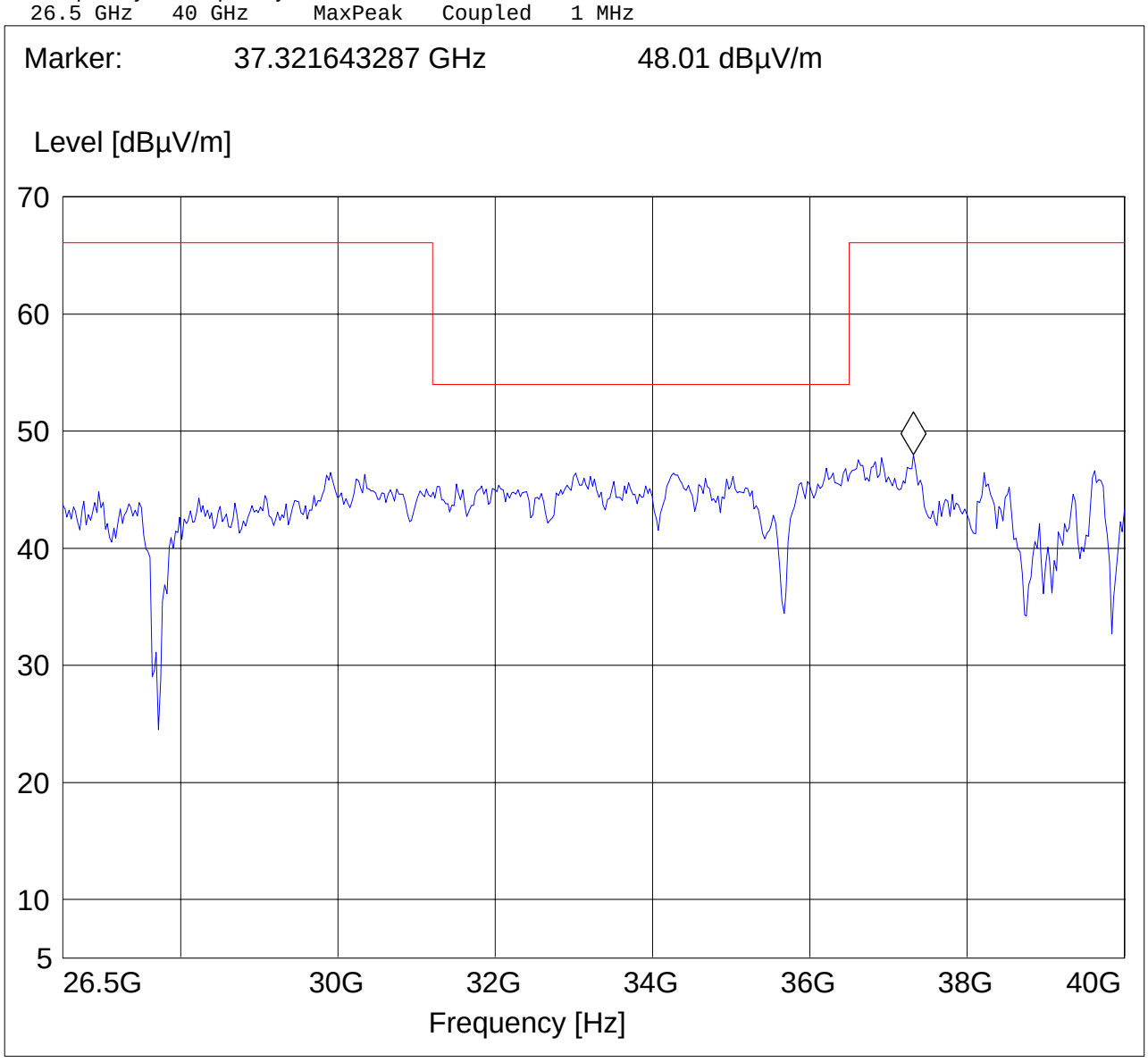


26.5-40 GHz Channel 140(5700MHz)

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       WLAN, ch 140, TX
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Ed
Power Supply:    laptop/ac adapter
```

SWEEP TABLE: "FCC 15.407 26.5-40G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
26.5 GHz	40 GHz	MaxPeak	Coupled	1 MHz	



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.

The frequencies at which emissions were observed over the limit have been identified as emission from the hosting laptop and test fixture and not due to the radio module itself. Please see the same emissions captured when the radio module is disconnected from the test fixture. All emissions over the limits remain. This proofs that the radio does not generate emission in the 30M-1GHz band over the specified limit and therefore complies with FCC part 15 rule.

5.4.2 RESULTS

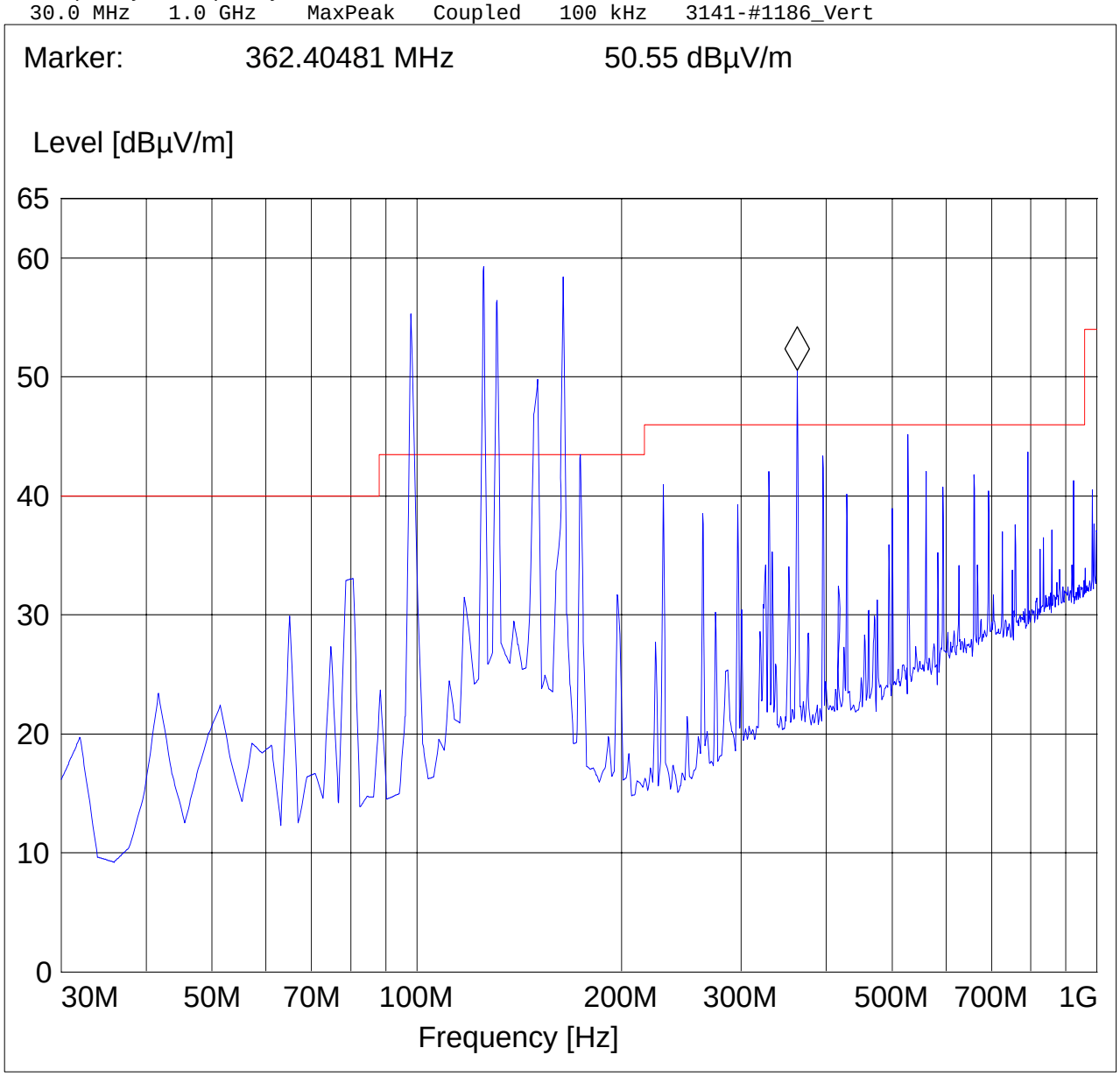
30MHz – 1GHz

Antenna: horizontal

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       WLAN ch120 Tx
ANT Orientation: H
EUT Orientation: H
Test Engineer:   Peter Mu
Power Supply:    New platform
```

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

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

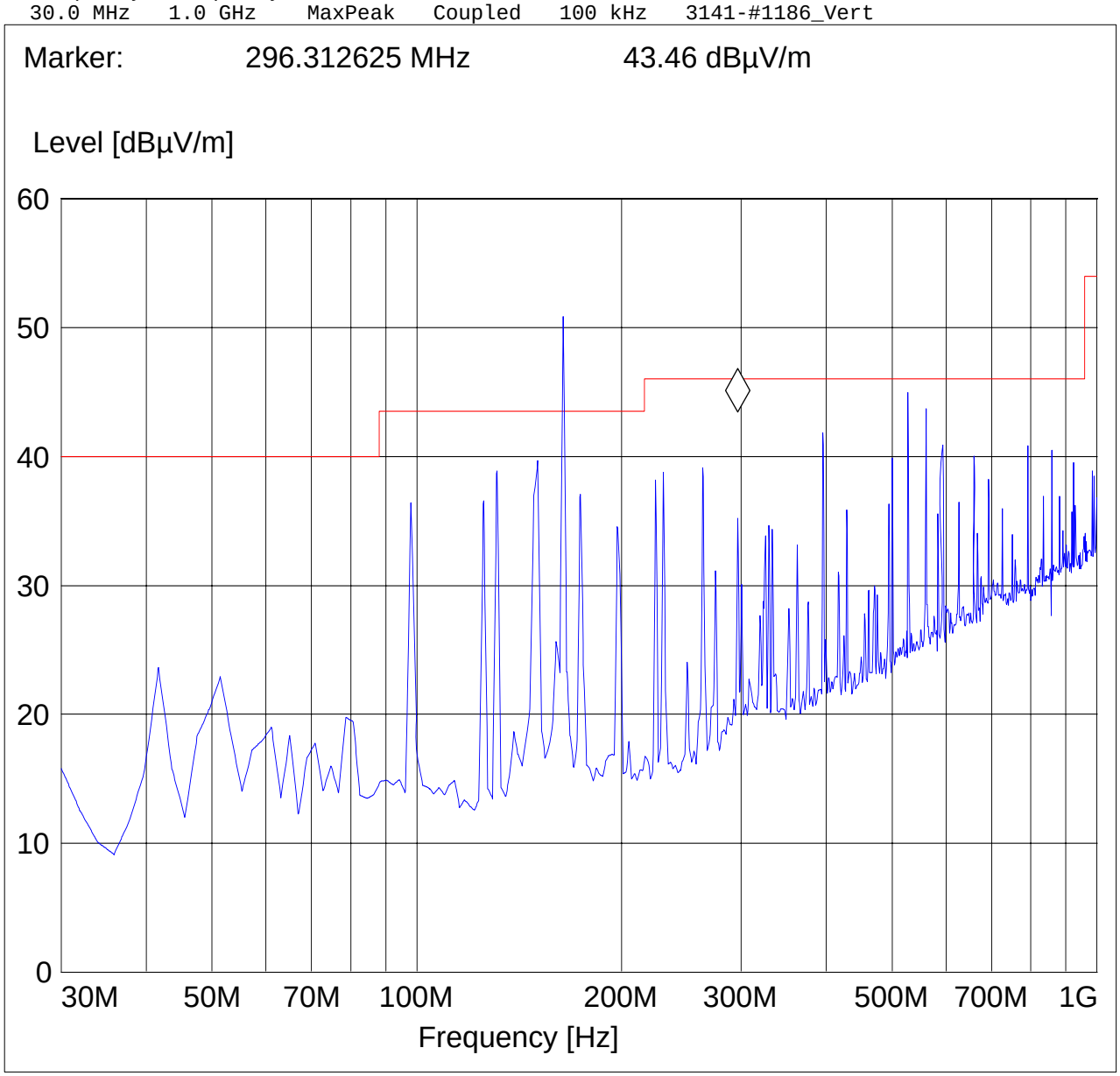


30MHz – 1GHz

EUT: Broadcom WLAN module
Customer: Intermec
Test Mode: WLAN ch120 Tx
ANT Orientation: H
EUT Orientation: H
Test Engineer: Peter Mu
Power Supply: New platform
Comments: ANTENNA REMOVED

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

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



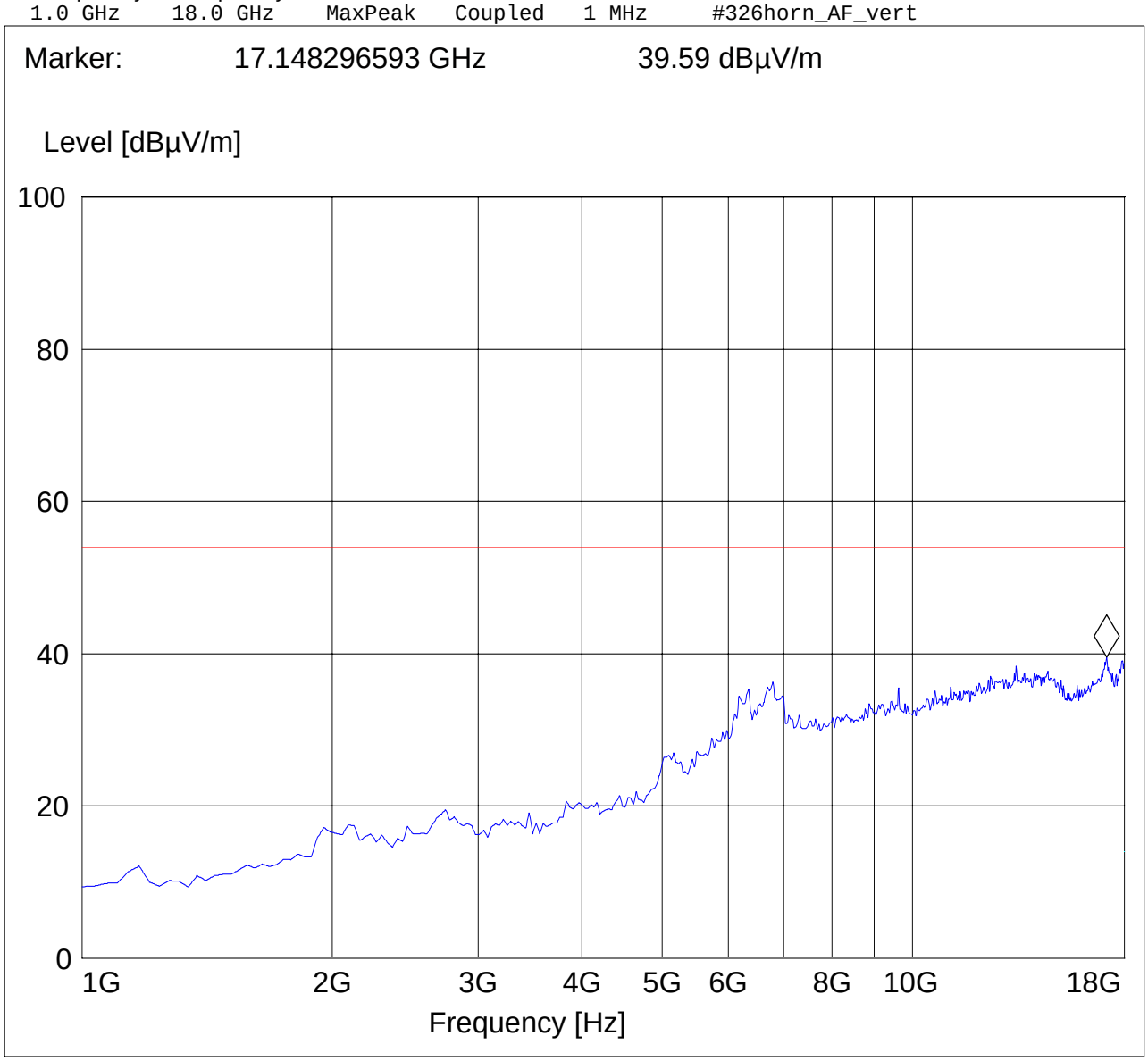
1-18GHz Channel 100

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

```
EUT / Description: Broadcom WLAN module
Manufacturer:      Intermec
Test mode:         WLAN, ch 100, receive
EUT:               H
Antenna:           V
Test Engineer:     Ed
Voltage:           AC adapter/laptop
```

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



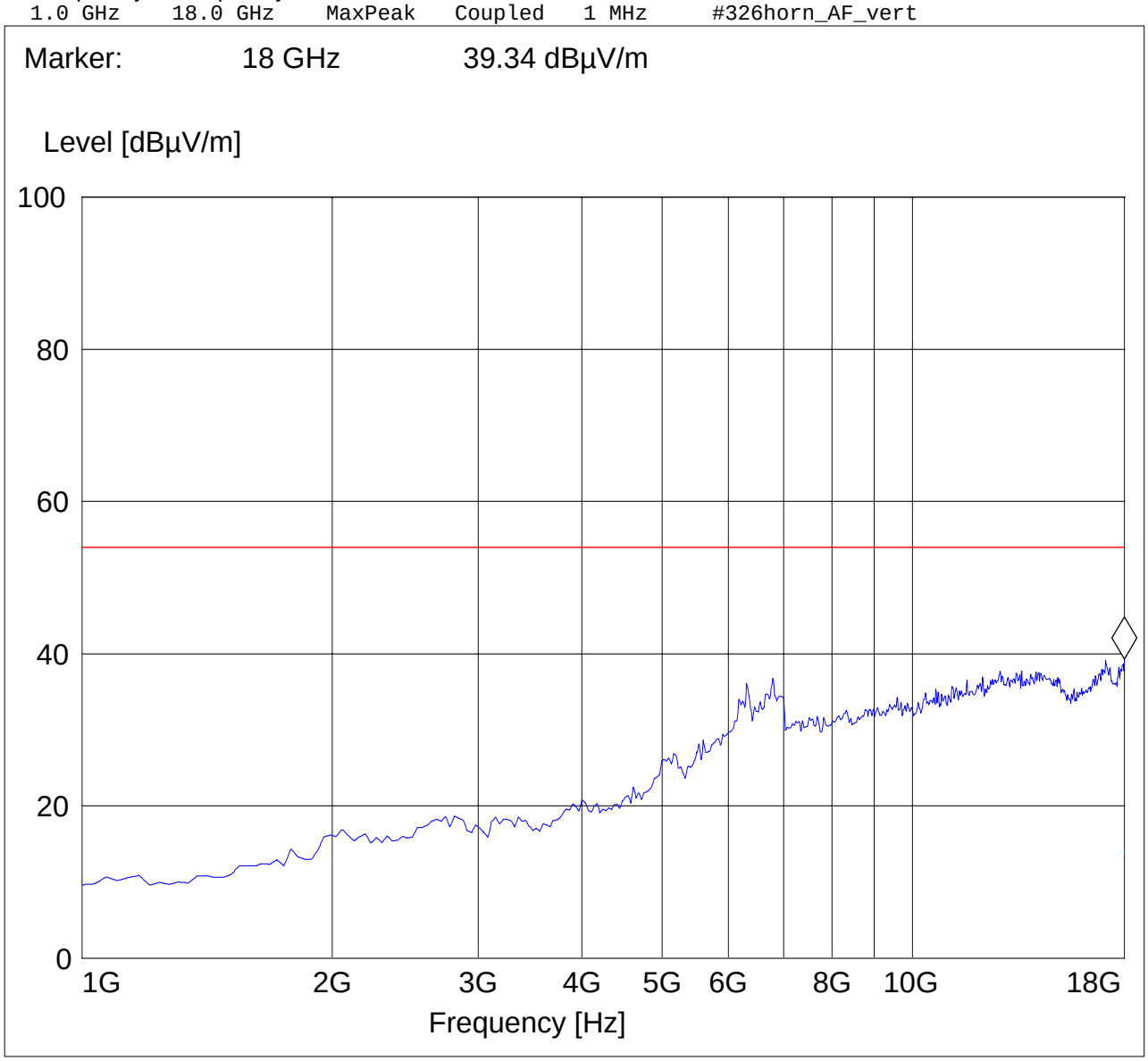
1-18GHz Channel 120

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

```
EUT / Description: Broadcom WLAN module
Manufacturer:      Intermec
Test mode:         WLAN, ch 120, receive
EUT:               H
Antenna:           V
Test Engineer:     Ed
Voltage:           AC adapter/laptop
```

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



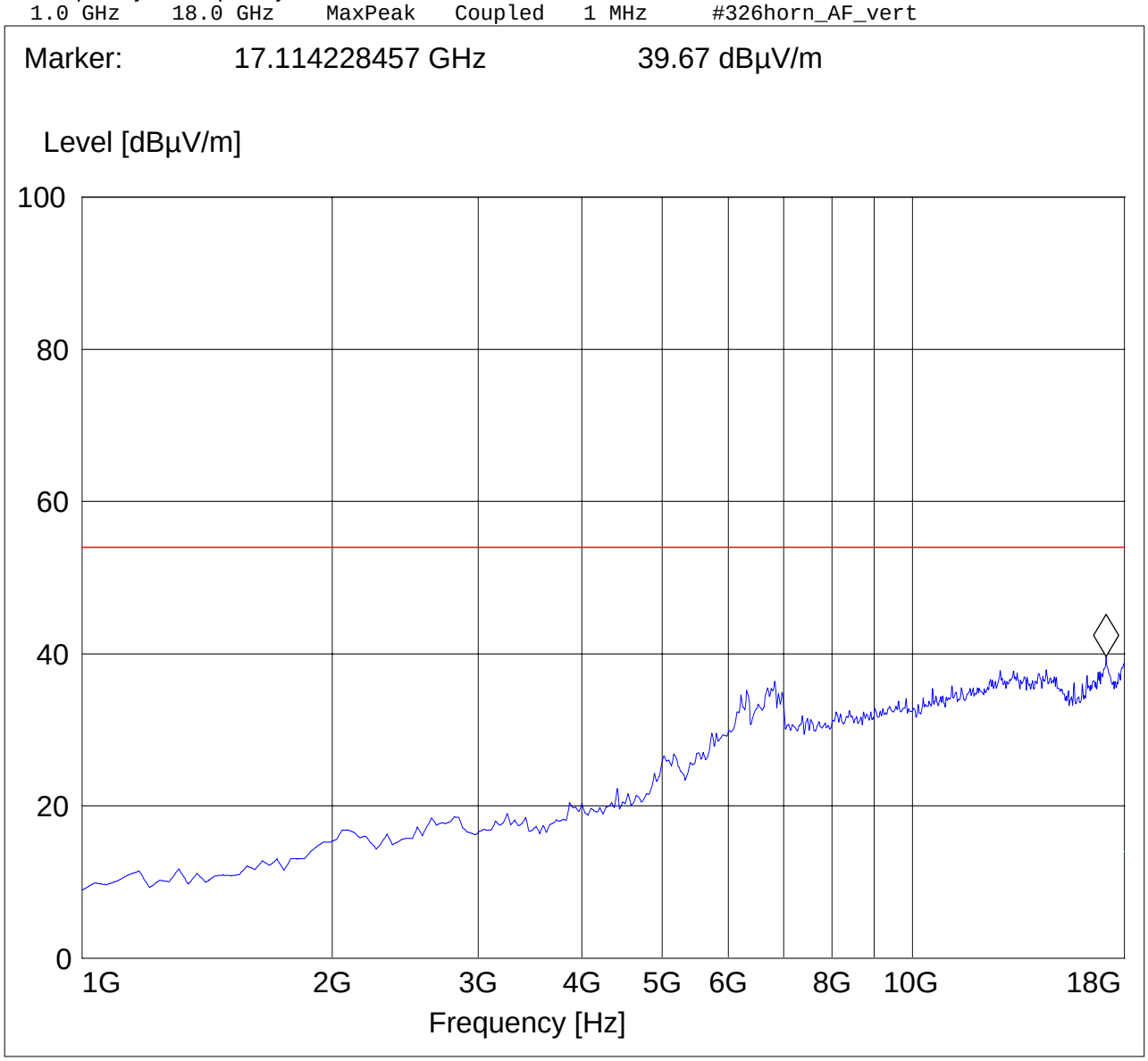
1-18GHz Channel 140

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

```
EUT / Description: Broadcom WLAN module
Manufacturer:      Intermec
Test mode:         WLAN, ch 140, receive
EUT:               H
Antenna:           V
Test Engineer:     Ed
Voltage:           AC adapter/laptop
```

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



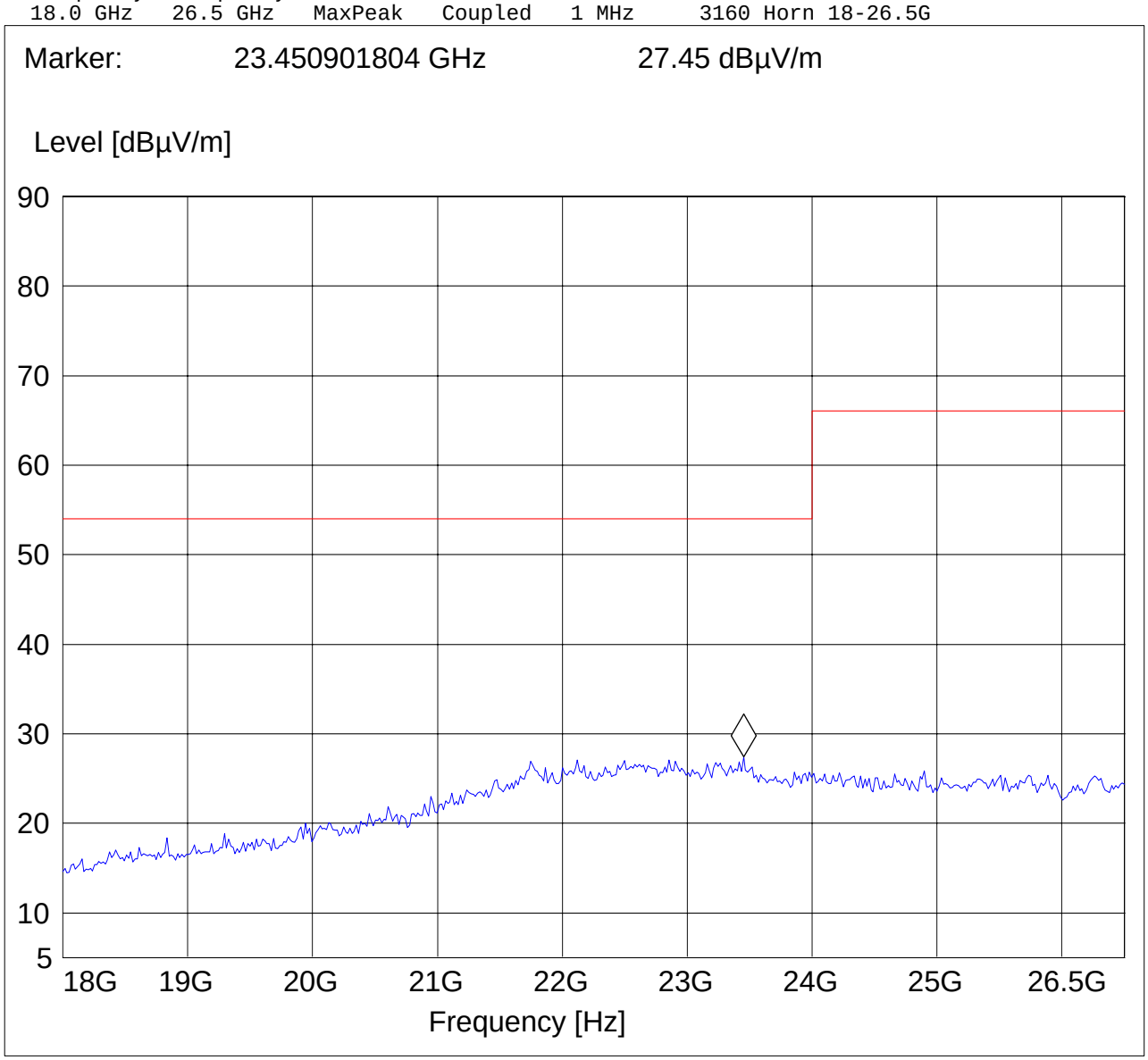
18-26.5GHz Channel 100

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

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       WLAN, ch 100, receive
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Ed
Power Supply:    laptop/ac adapter
```

SWEEP TABLE: "FCC 15.407 18-26.5G"

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



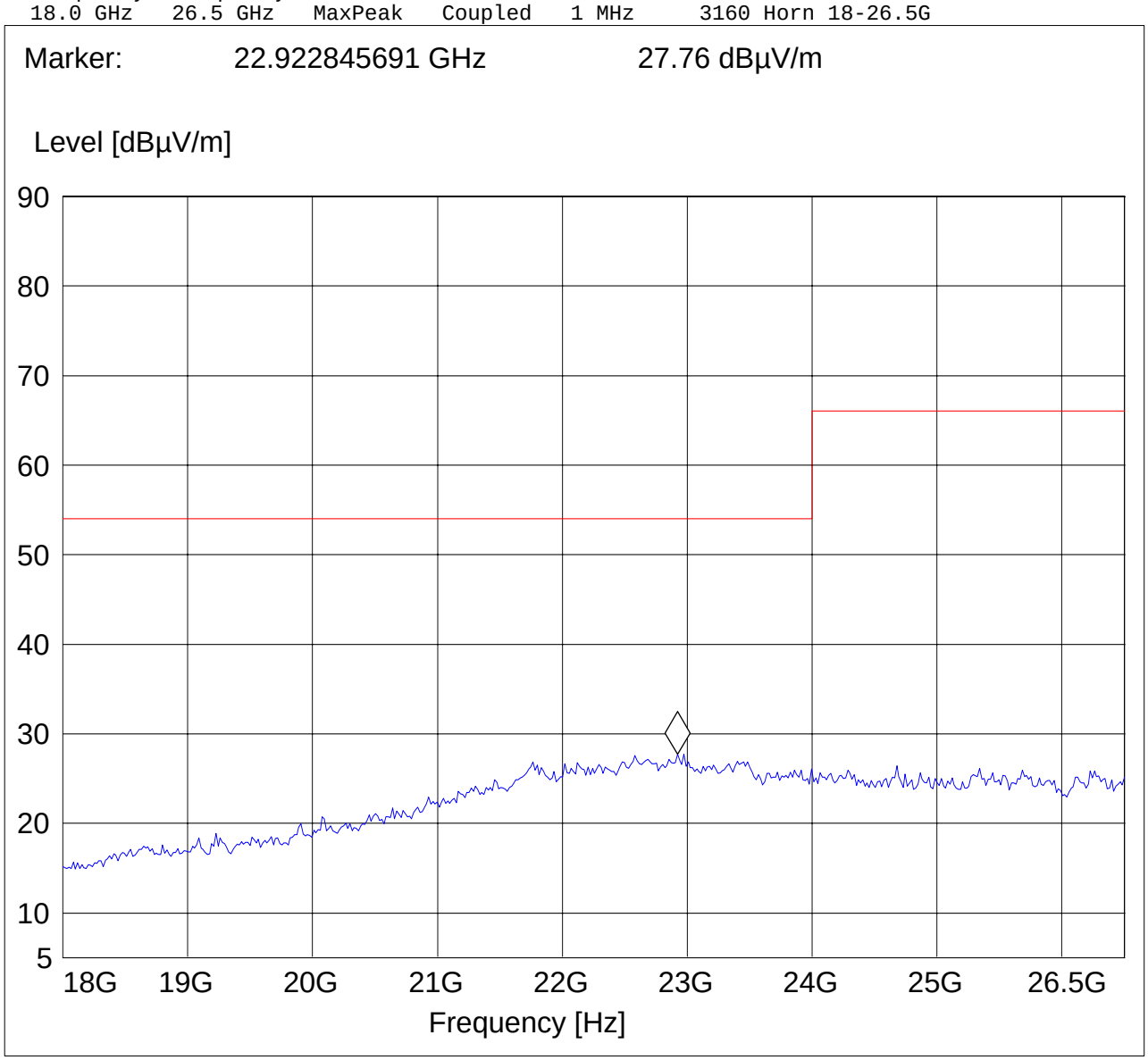
18-26.5GHz Channel 120

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

EUT: Broadcom WLAN module
Customer: Intermec
Test Mode: WLAN, ch 120, receive
ANT Orientation: V
EUT Orientation: H
Test Engineer: Ed
Power Supply: laptop/ac adapter

SWEEP TABLE: "FCC 15.407 18-26.5G"

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



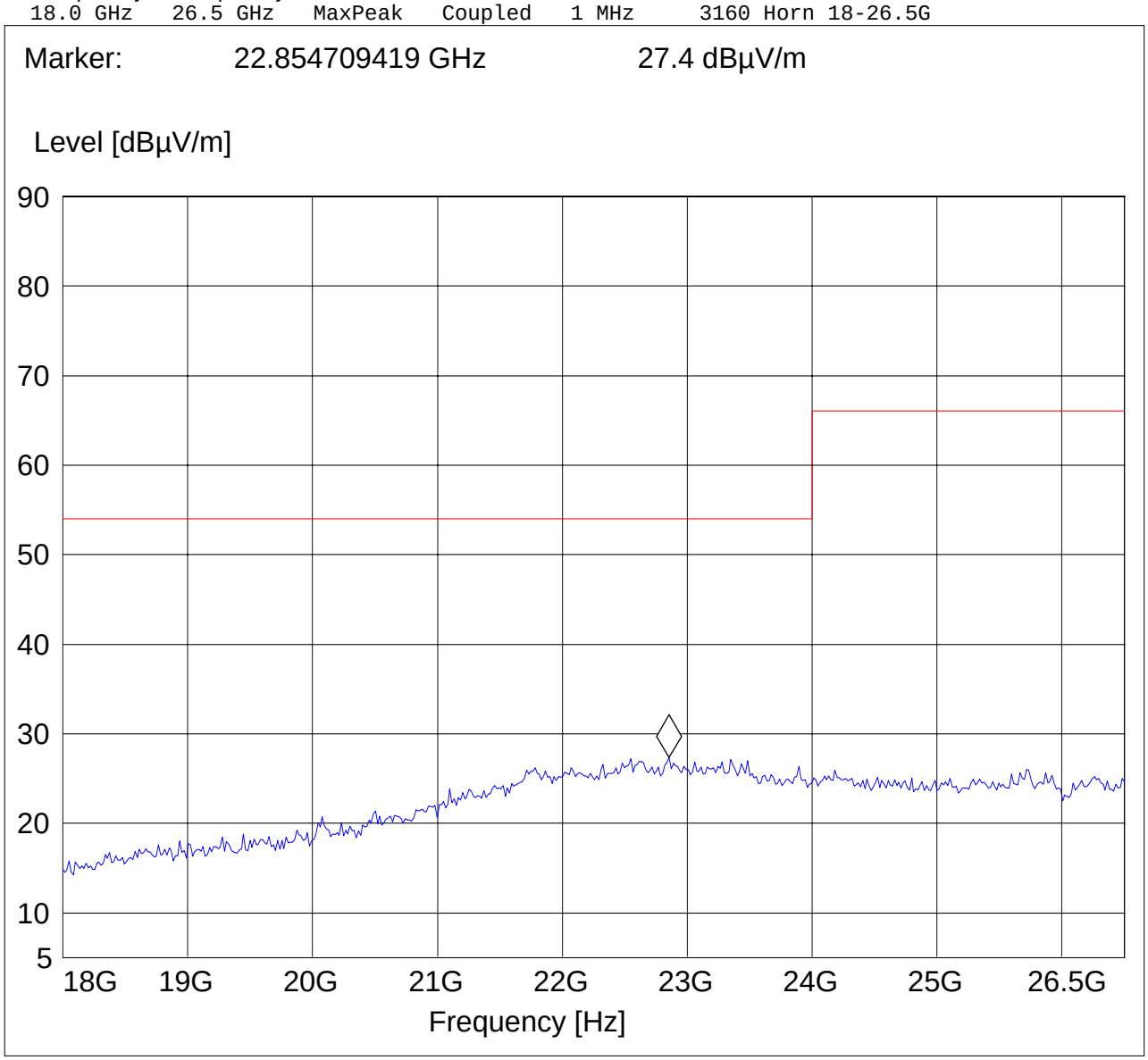
18-26.5GHz Channel 140

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

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       WLAN, ch 140, receive
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Ed
Power Supply:    laptop/ac adapter
```

SWEEP TABLE: "FCC 15.407 18-26.5G"

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



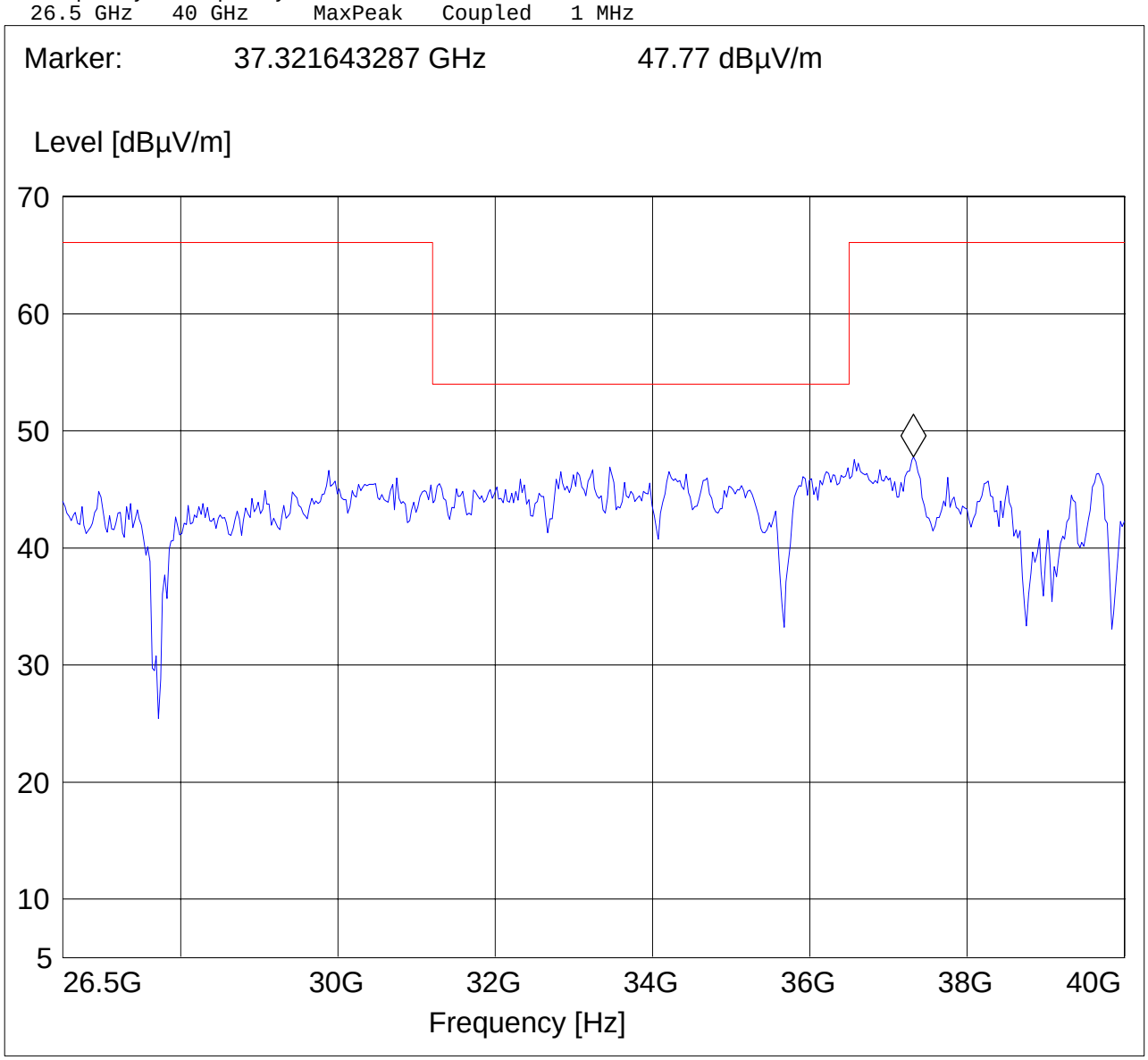
26.5-40GHz Channel 100

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

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       WLAN, ch 100, Receive
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Ed
Power Supply:    laptop/ac adapter
```

SWEEP TABLE: "FCC 15.407 26.5-40G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
26.5 GHz	40 GHz	MaxPeak	Coupled	1 MHz	



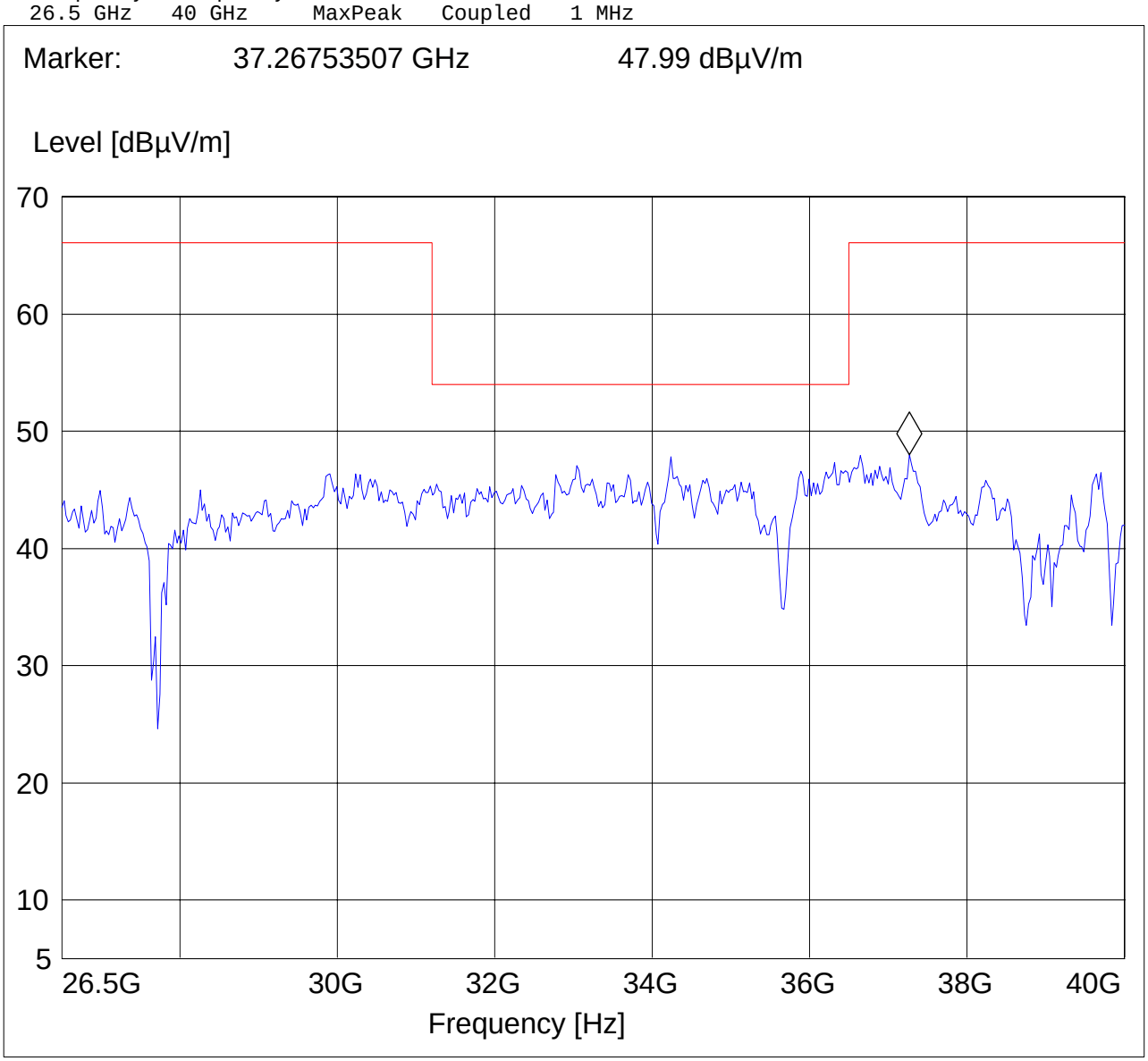
26.5-40GHz Channel 120

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

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       WLAN, ch 120, Receive
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Ed
Power Supply:    laptop/ac adapter
```

SWEEP TABLE: "FCC 15.407 26.5-40G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
26.5 GHz	40 GHz	MaxPeak	Coupled	1 MHz	



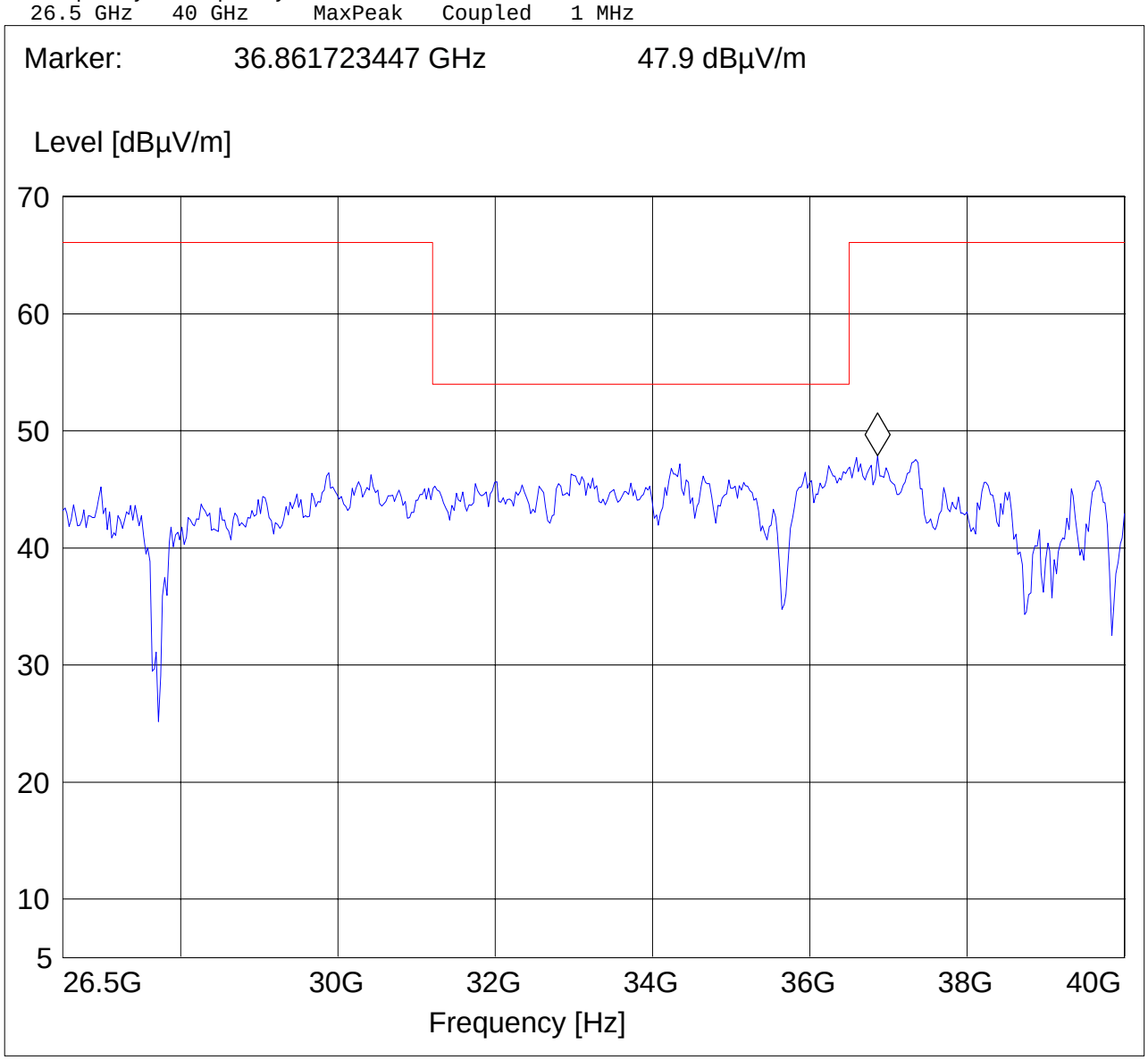
26.5-40GHz Channel 140

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

```
EUT:             Broadcom WLAN module
Customer:        Intermec
Test Mode:       WLAN, ch 140, Receive
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Ed
Power Supply:    laptop/ac adapter
```

SWEEP TABLE: "FCC 15.407 26.5-40G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
26.5 GHz	40 GHz	MaxPeak	Coupled	1 MHz	



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 (dBµV)	
	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		

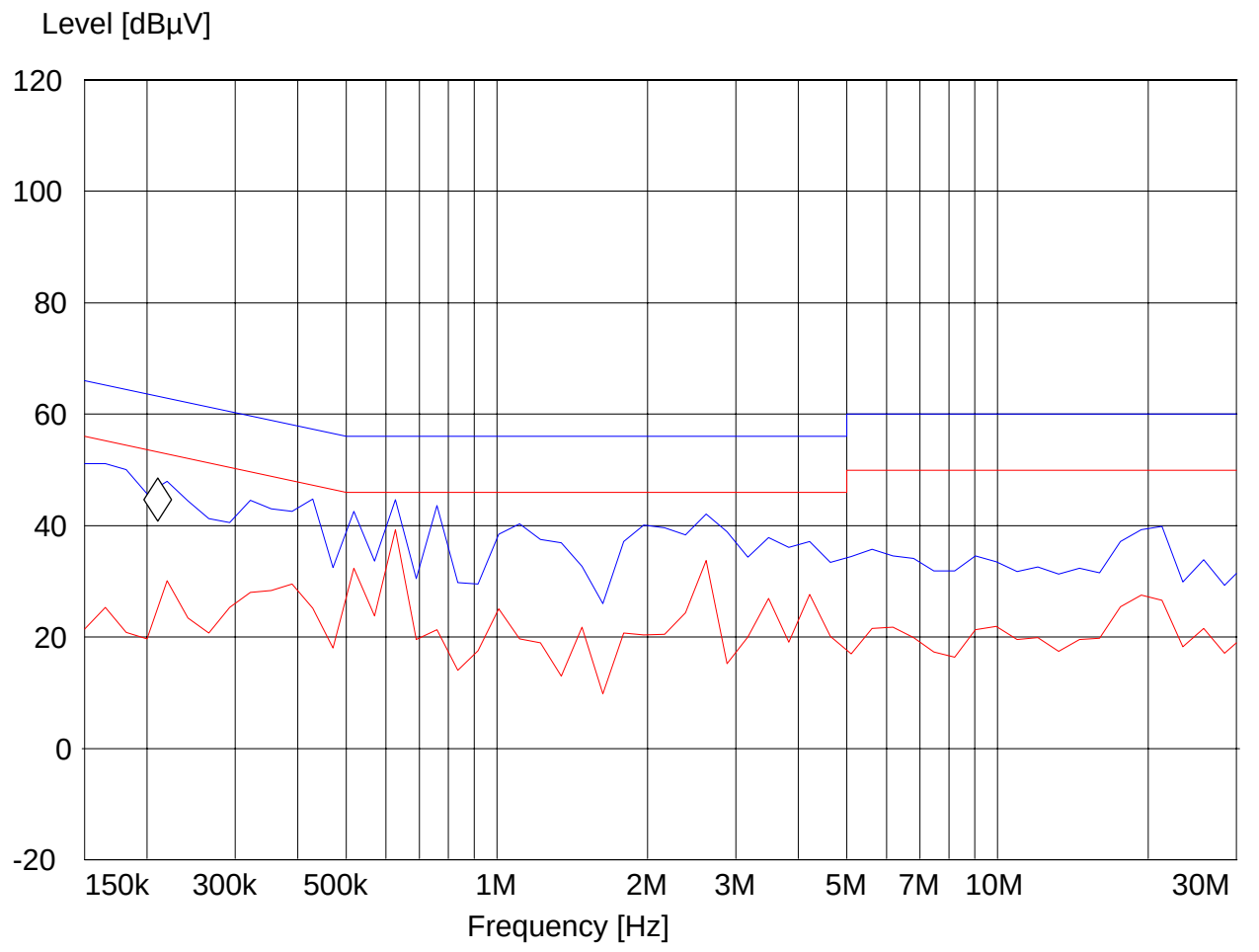
ANALYZER SETTINGS: RBW = 10KHz VBW = 10KHz

EUT: Broadcom WLAN module
Customer: Intermec
Test Mode: WLAN, ch 100
Test Site: Cetecom Inc.
Operator: Satya Radhakrishna
Comment: L1
Start of Test: 6/4/2007 / 6:12:31PM

SWEEP TABLE: "55022 cond"

Short Description: EN 55022 for 150KHz-30MHz
Unit: dBµV **RBW = 10KHz** **VBW = 10KHz**

Marker: 209.82 kHz 40.81 dBµV N



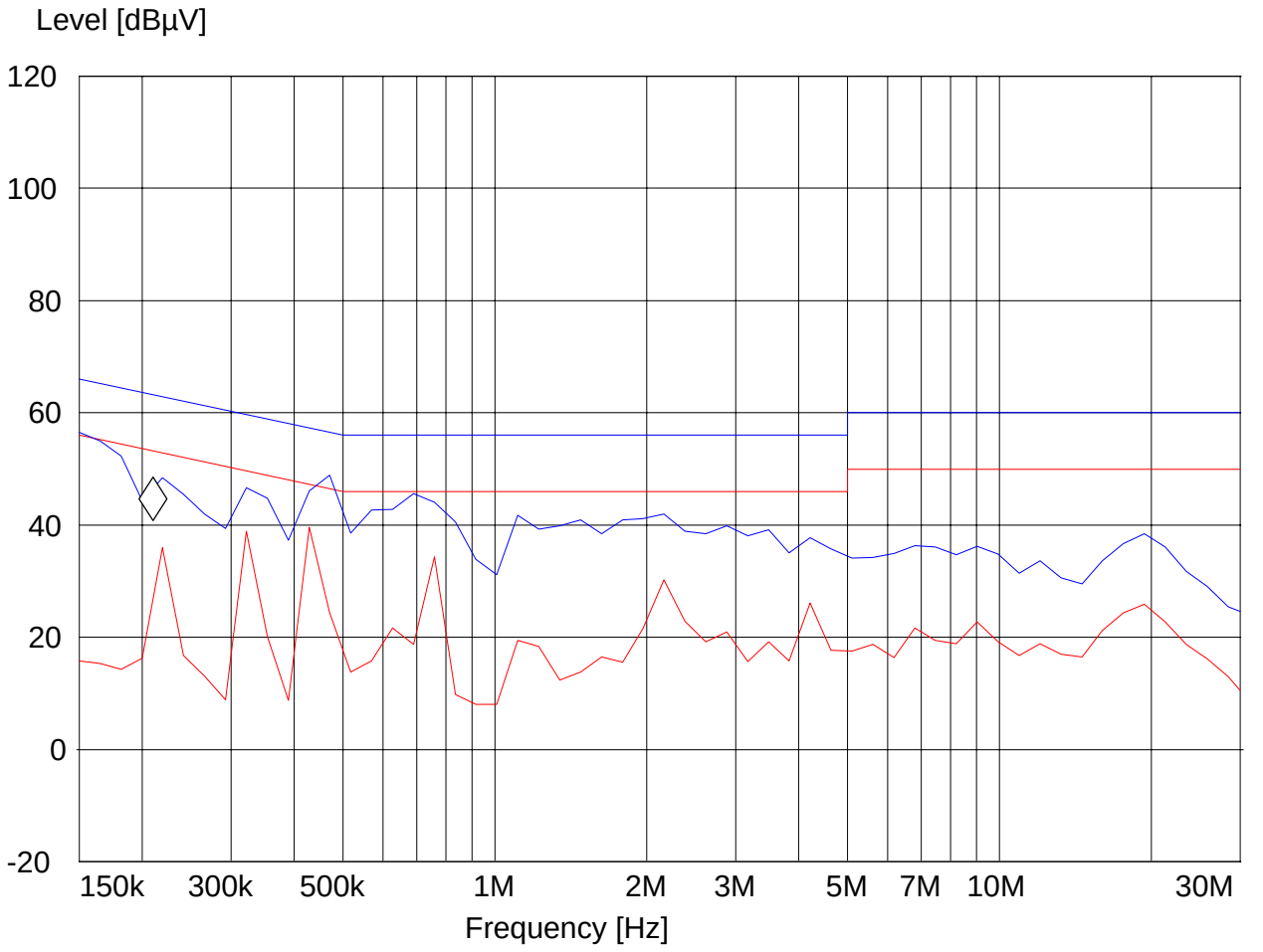
MES 55022 cond MaxPk
MES 55022 cond Avg
LIM EN 55022 V AV Voltage AV Limit
LIM EN 55022 V QP Voltage QP Limit

EUT: Broadcom WLAN module
Customer: Intermec
Test Mode: WLAN, ch 100
Test Site: Cetecom Inc.
Operator: Satya Radhakrishna
Comment: N
Start of Test: 6/4/2007 / 6:25:42PM

SWEEP TABLE: "55022 cond"

Short Description: EN 55022 for 150KHz-30MHz
Unit: dBµV **RBW = 10KHz** **VBW = 10KHz**

Marker: 209.82 kHz 40.81 dBµV 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

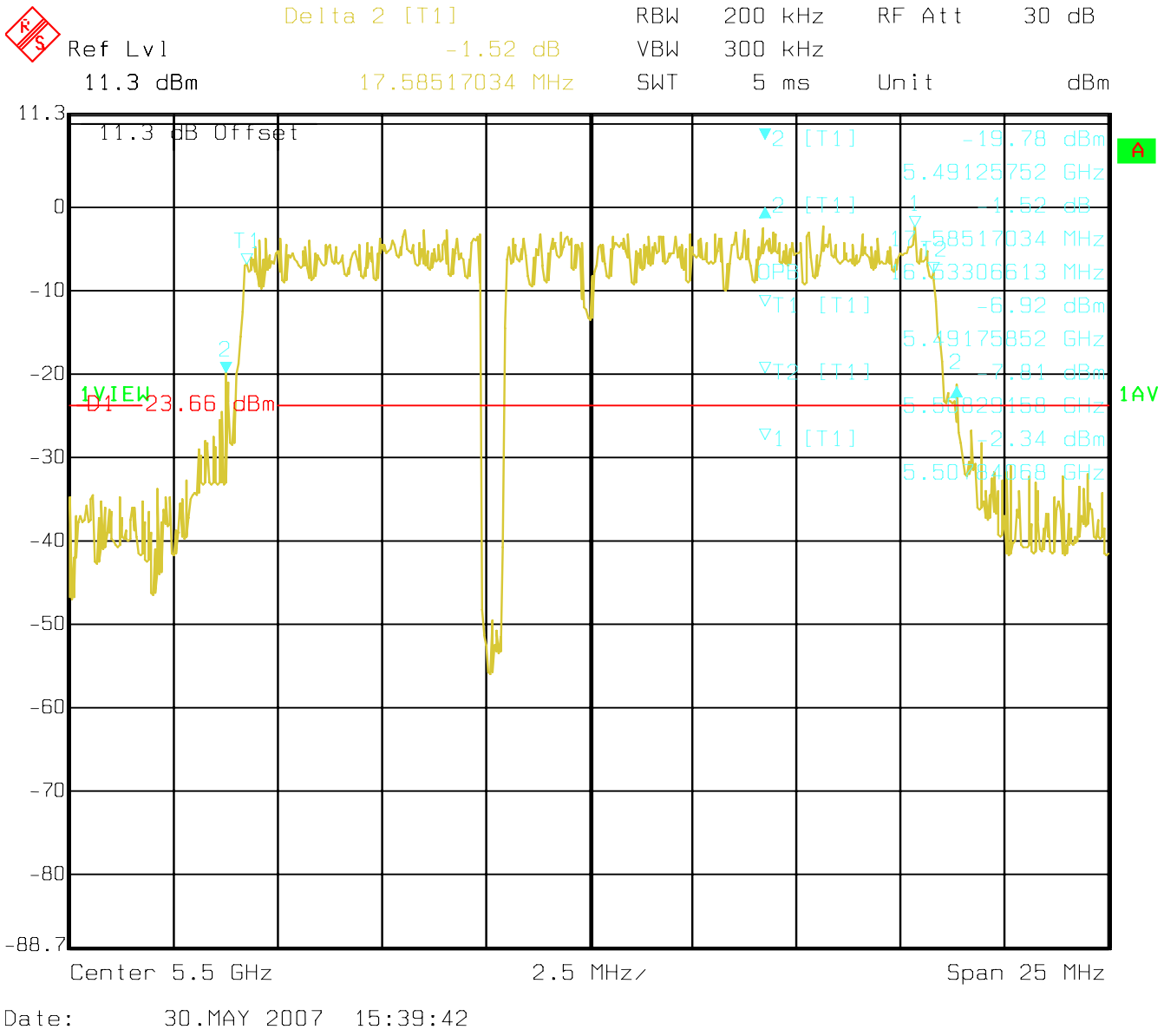
5.6 CONDUCTED MEASUREMENTS

5.7 SPECTRUM BW (26dB BW AND 99% BW)

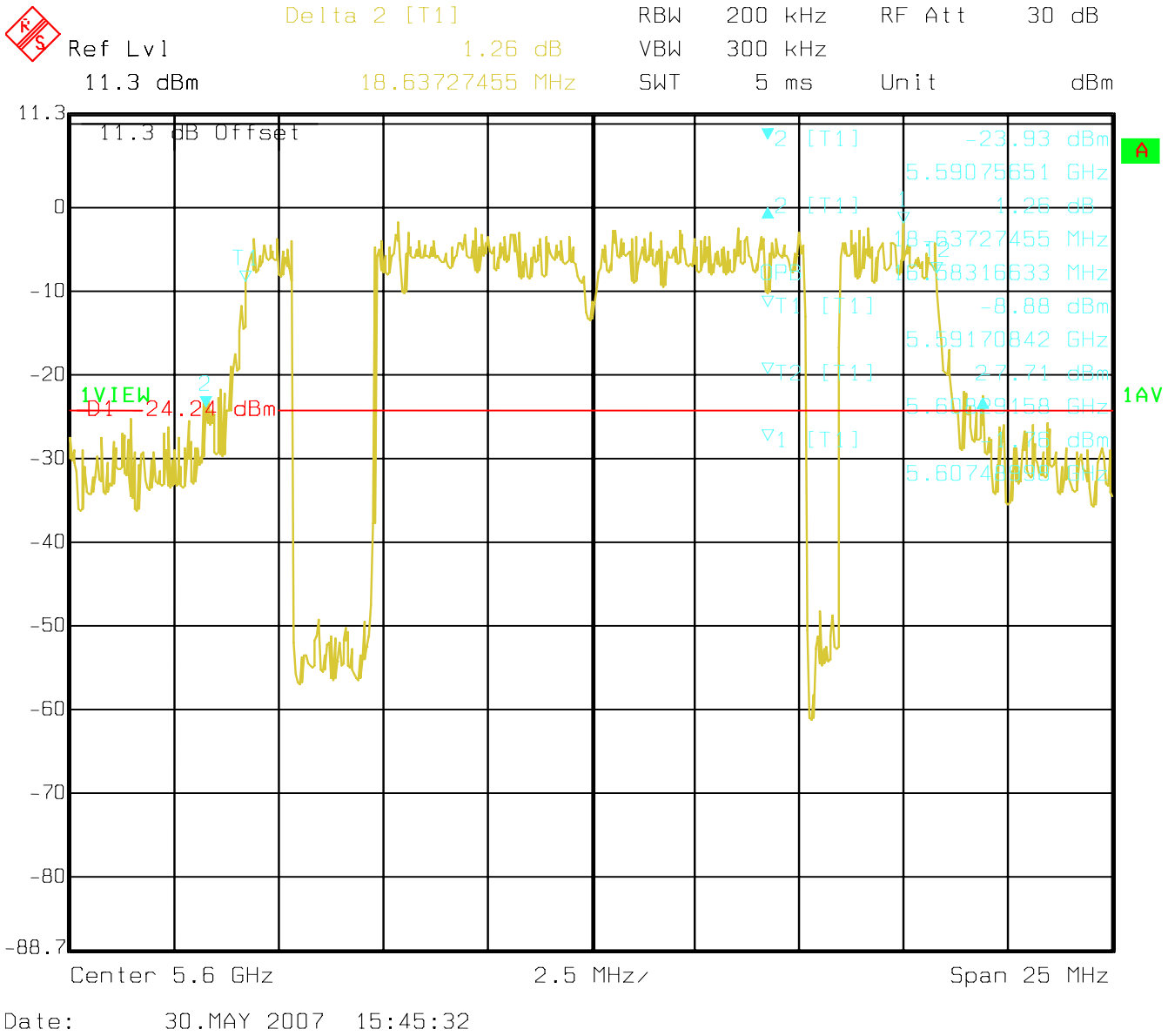
FCC Part 15 Subpart C §15.407(a)
IC RSS-210 §9.2(2)
IC RSS-Gen 4.4
Measurement Method FCC Public notice DA-02-2138A1

Channel No.	Center Frequency (MHz)	26dB BW (MHz)	99% BW (MHz)	Result Saved
100	**(5500MHz)**	**17.585**	**16.633**	26BW-1
120	**(5600MHz)**	**18.637**	**16.683**	26BW-2
140	**(5700MHz)**	**19.339**	**16.483**	26BW-3

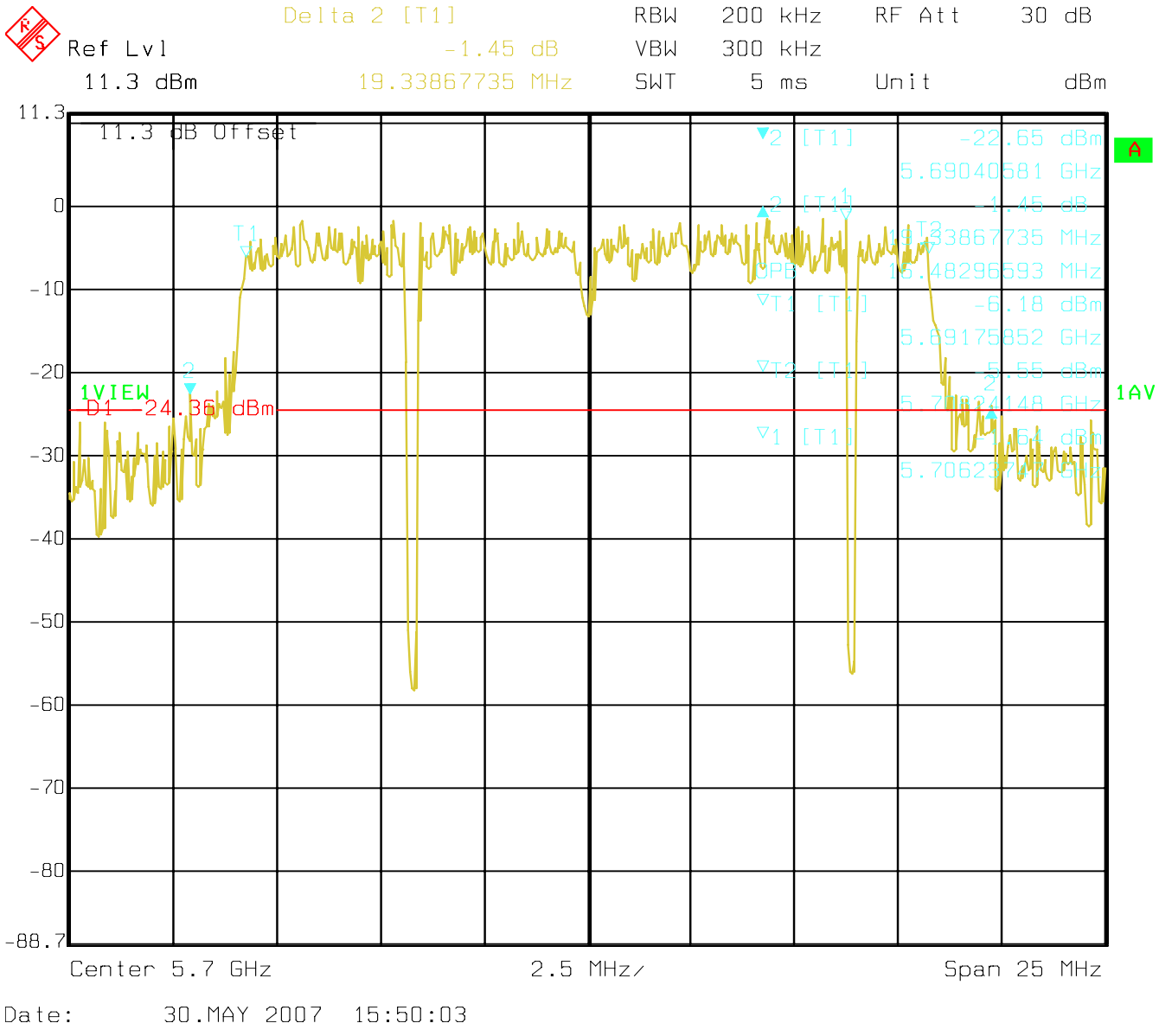
802.11a Ch 100(5500 MHz) 26dB and 99% Bandwidth



802.11a Ch 120(5600 MHz) 26dB and 99% Bandwidth



802.11a Ch 140(5700 MHz) 26dB and 99% Bandwidth



5.8 CONDUCTED PEAK POWER

5.8.1 LIMIT SUB CLAUSE FCC Part 15 Subpart C §15.407 (a) (2)

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26 dB Emission Bandwidth(EBW) in megahertz.

Limit calculated to be 23.86 dBm

5.8.2 Measurement Method FCC Public notice DA-02-2138A1

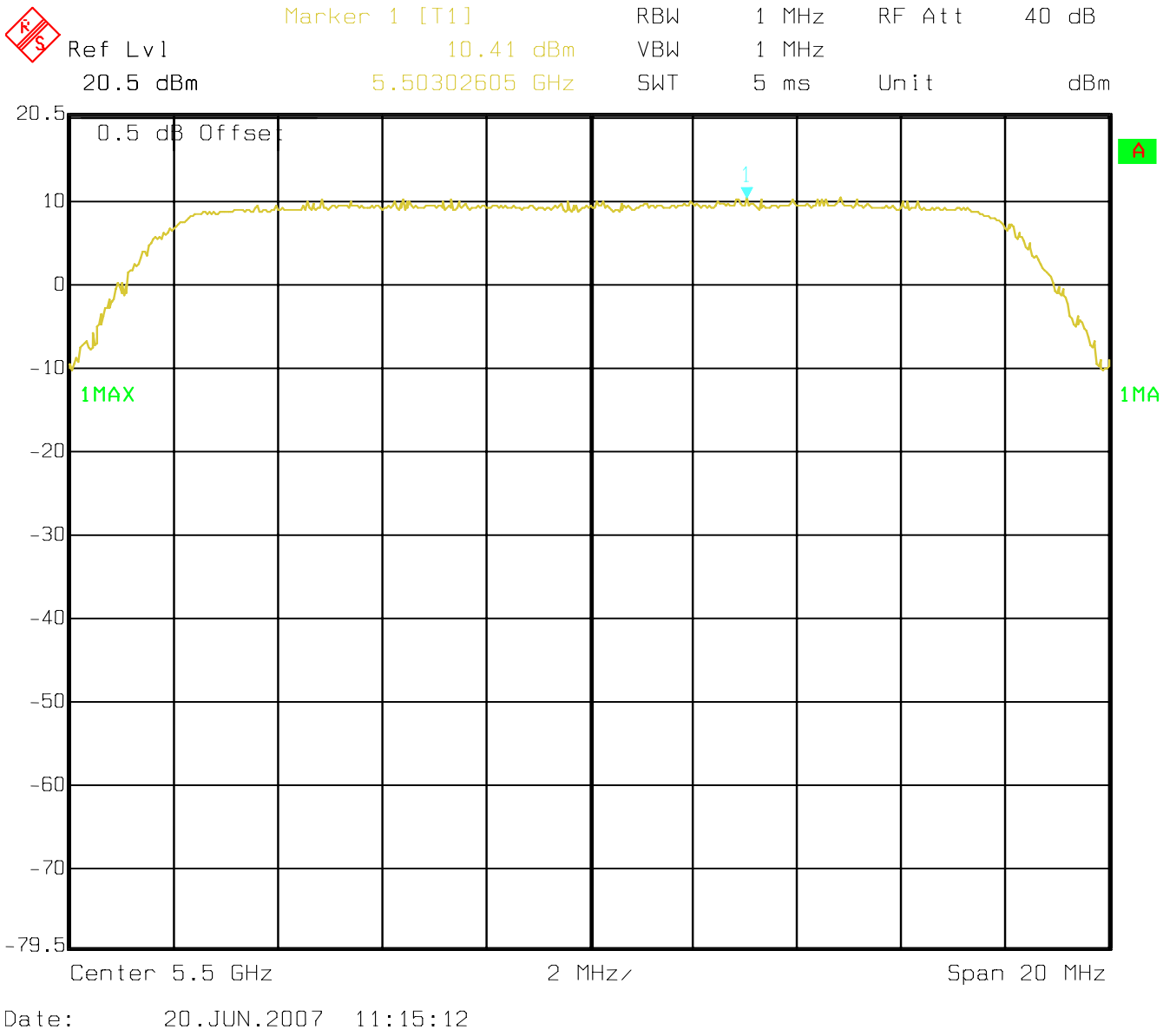
Since the sweep time is greater than the transmission pulse duration "T" and the Emission Bandwidth(EBW) is greater than the largest available Resolution Bandwidth, Method #3 as specified in FCC Public notice DA-02-2138A1 (August 30, 2002)

According to Method #3, power is computed by applying a correction factor of 10 log (EBW/1 MHz) to the spectral peak of the emission.

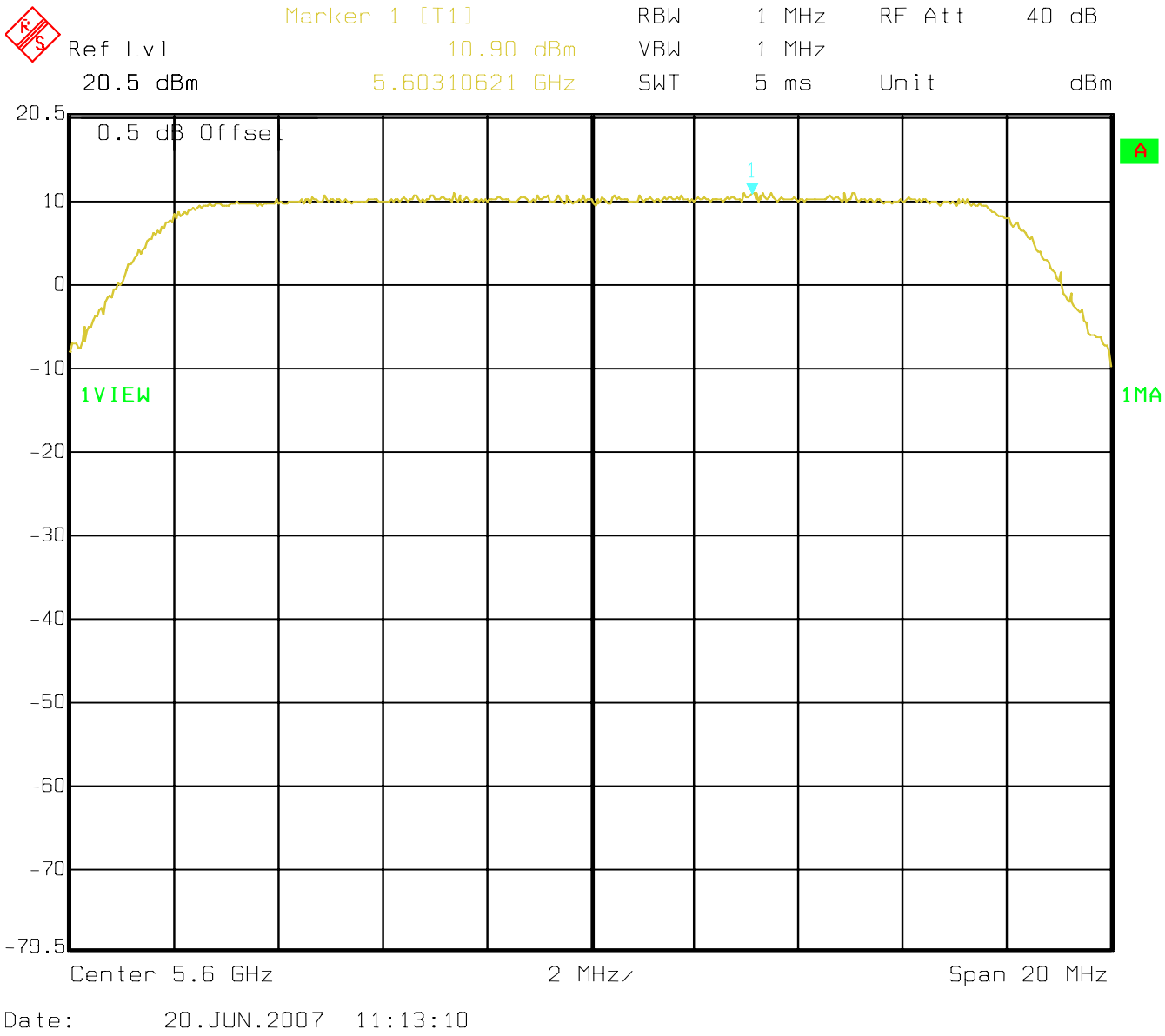
5.8.2 RESULTS

Channel No.	Frequency (MHz)	Peak (dBm)= [Measured power+10 log (EBW/1MHz)] dBm	Result
Low	5500	[10.41+10log(17.585/1)]= 22.86	PASS
Mid	5600	[10.90+10log(18.637/1)]= 23.60	PASS
High	5700	[10.71+10log(19.339/1)]= 23.57	PASS

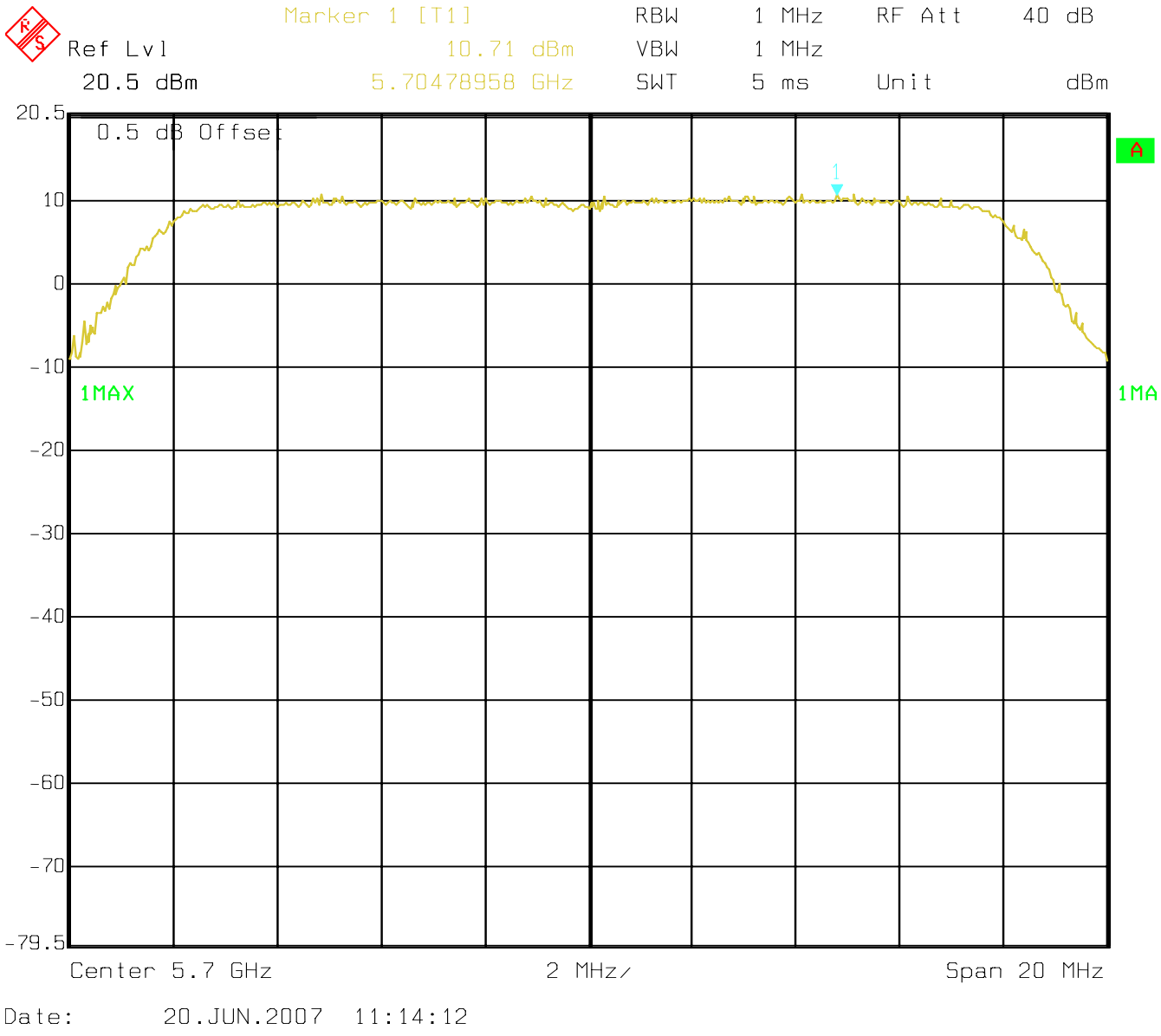
802.11a Ch 100(5500 MHz) Conducted peak power



802.11a Ch 120(5600 MHz) Conducted peak power



802.11a Ch 140(5700 MHz) Conducted peak power



5.9 PEAK POWER SPECTRAL DENSITY – FCC 15.407 (a)(5)

5.9.1 Measurement Method

The "noise marker" function built in the spectrum analyzer is used to measure the power density per Hz. 10 log(1Mhz/1Hz) = 60dBm is then added to calculate the power per MHz.

5.9.2 Limit:

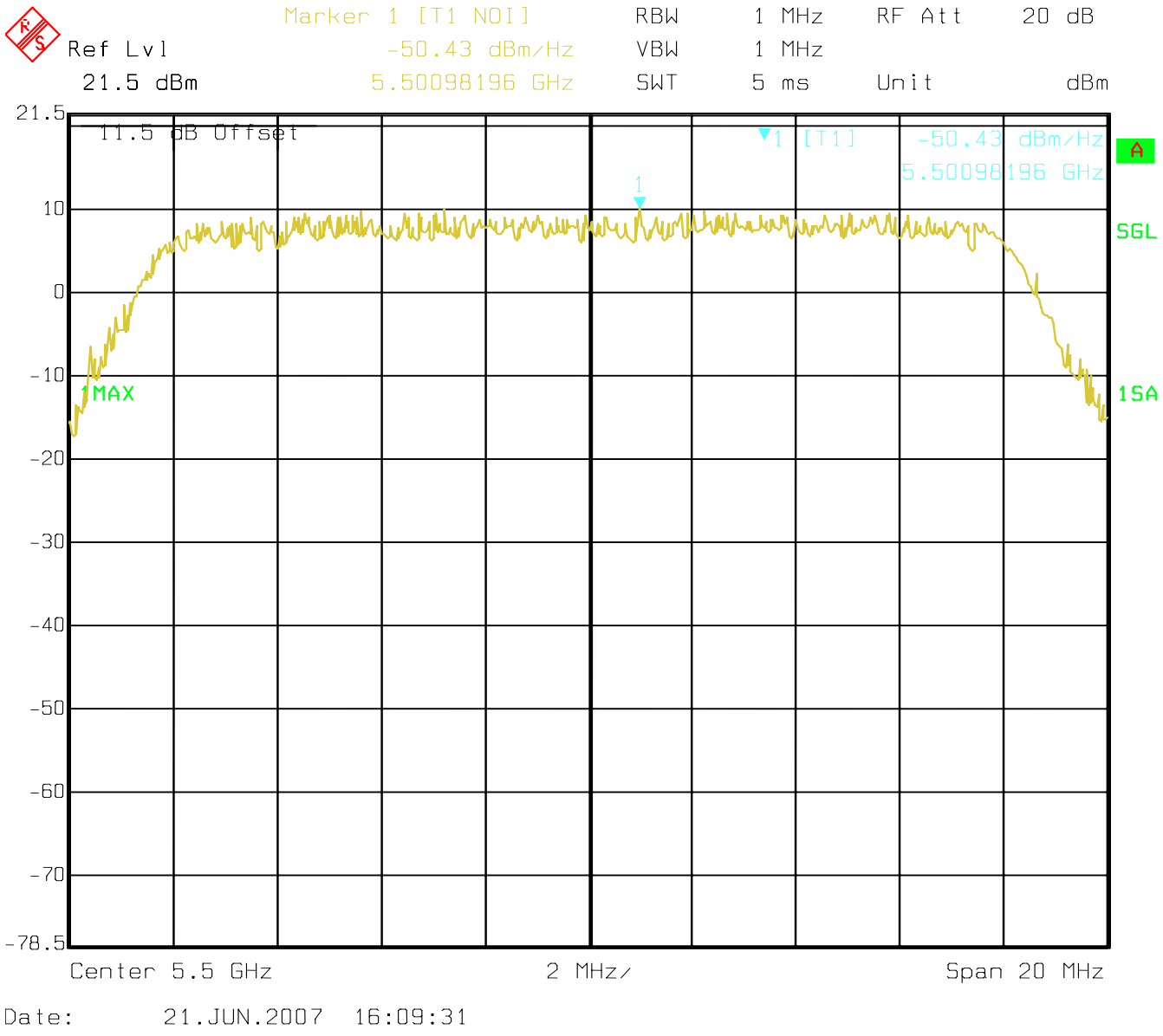
15.407 (a)(2): 11dBm in any 1MHz band.

5.9.3 Measurement Results:

Channel No.	Frequency **(MHz)**	PPSD (dBm)	Result (Fail/Pass)
100	**5500**	**9.57**	**PASS**
120	**5600**	**10.27**	**PASS**
140	**5700**	**10.48**	**PASS**

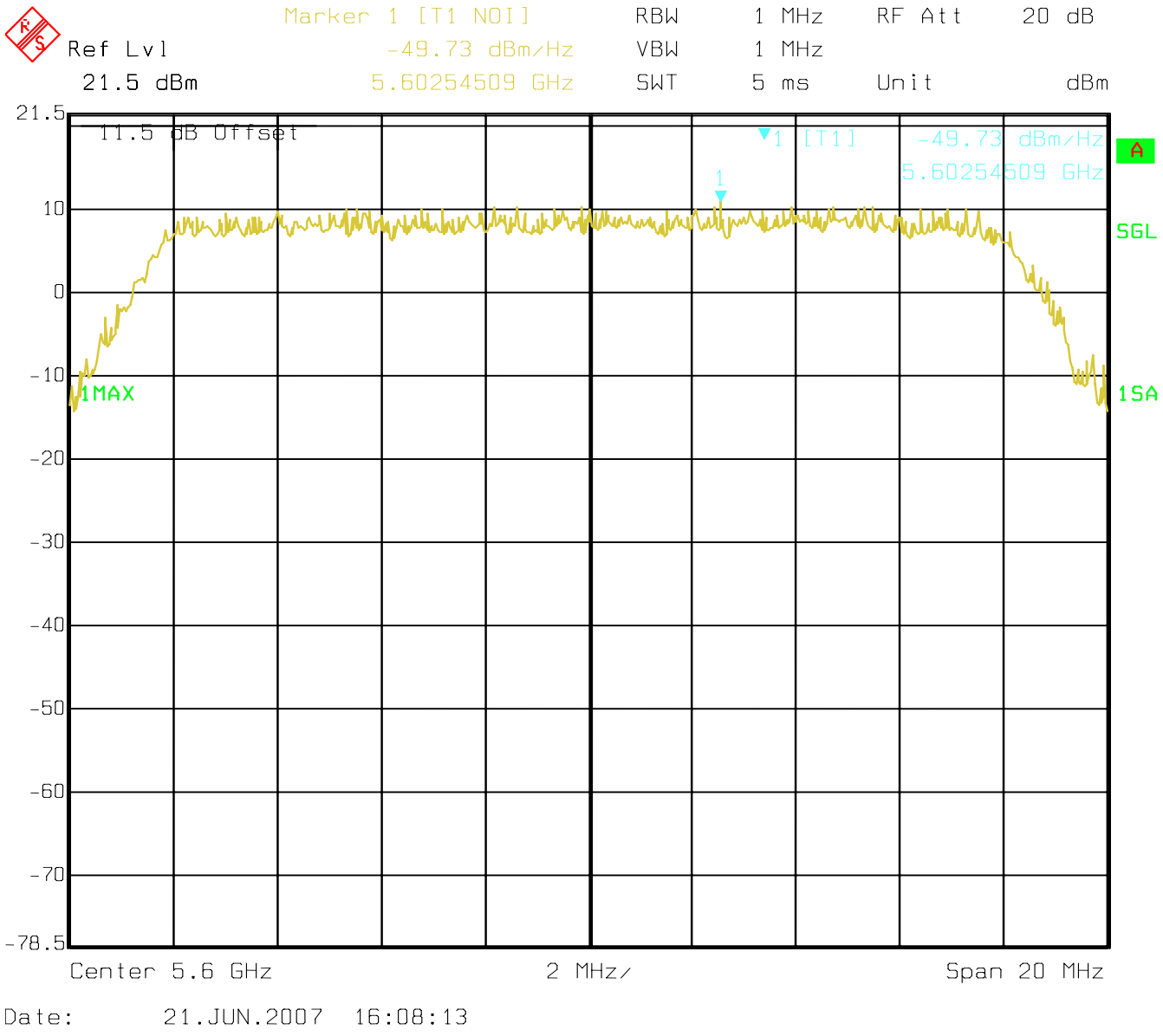
802.11a Ch 100(5500 MHz) Peak Power Spectral Density

-50.43dBm/Hz + 60dBm = 9.57dBm/Mhz



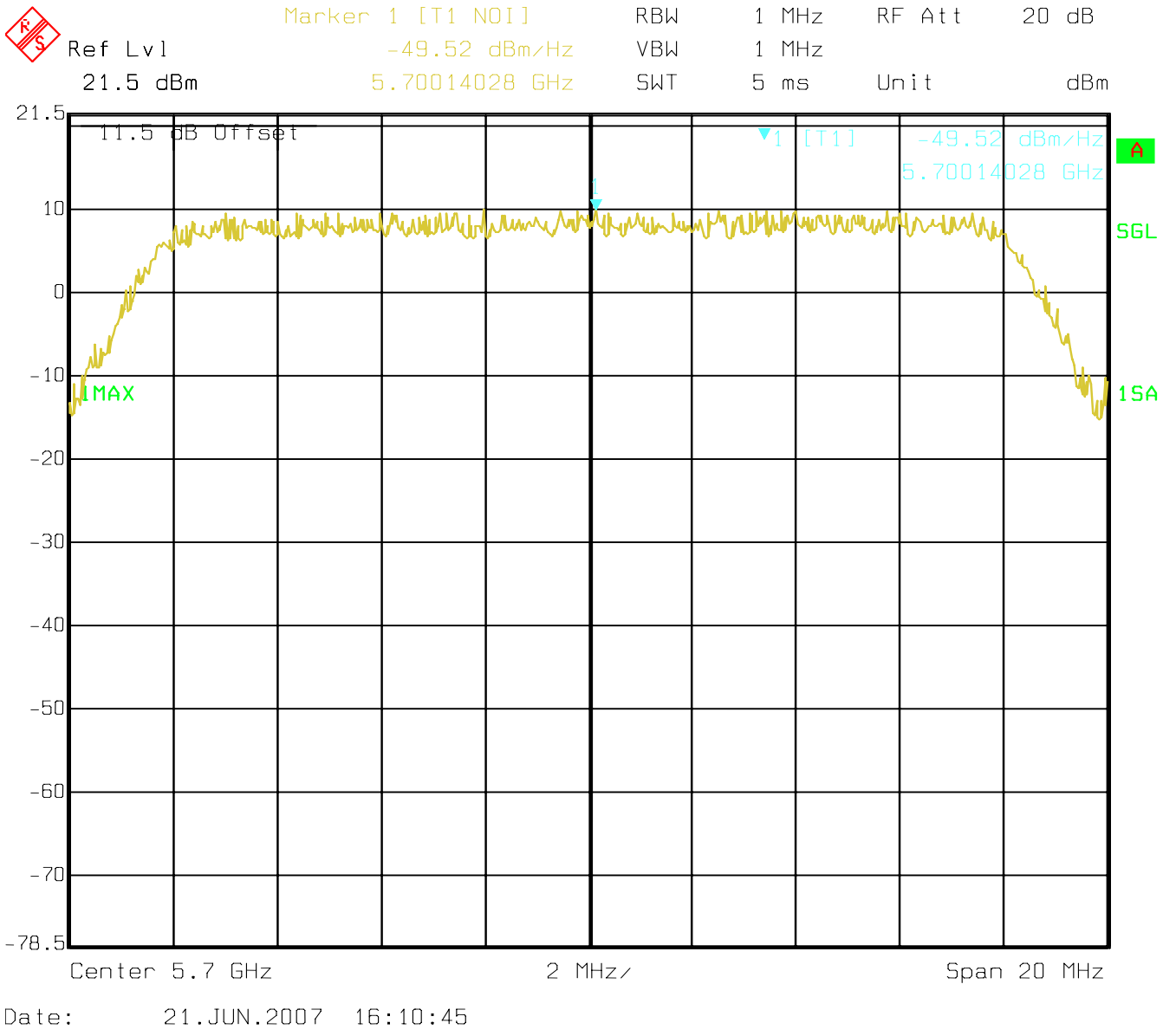
802.11a Ch 120(5600 MHz) Peak Power Spectral Density

-49.73dBm/Hz + 60dBm = 10.27dBm/Mhz



802.11a Ch 140(5700 MHz) Peak Power Spectral Density

-49.52dBm/Hz + 60dBm = 10.48dBm/Mhz



5.10 PEAK EXCURSION RATIO

5.11 LIMIT SUB CLAUSE FCC Part 15 Subpart C §15.407 (a) (6)

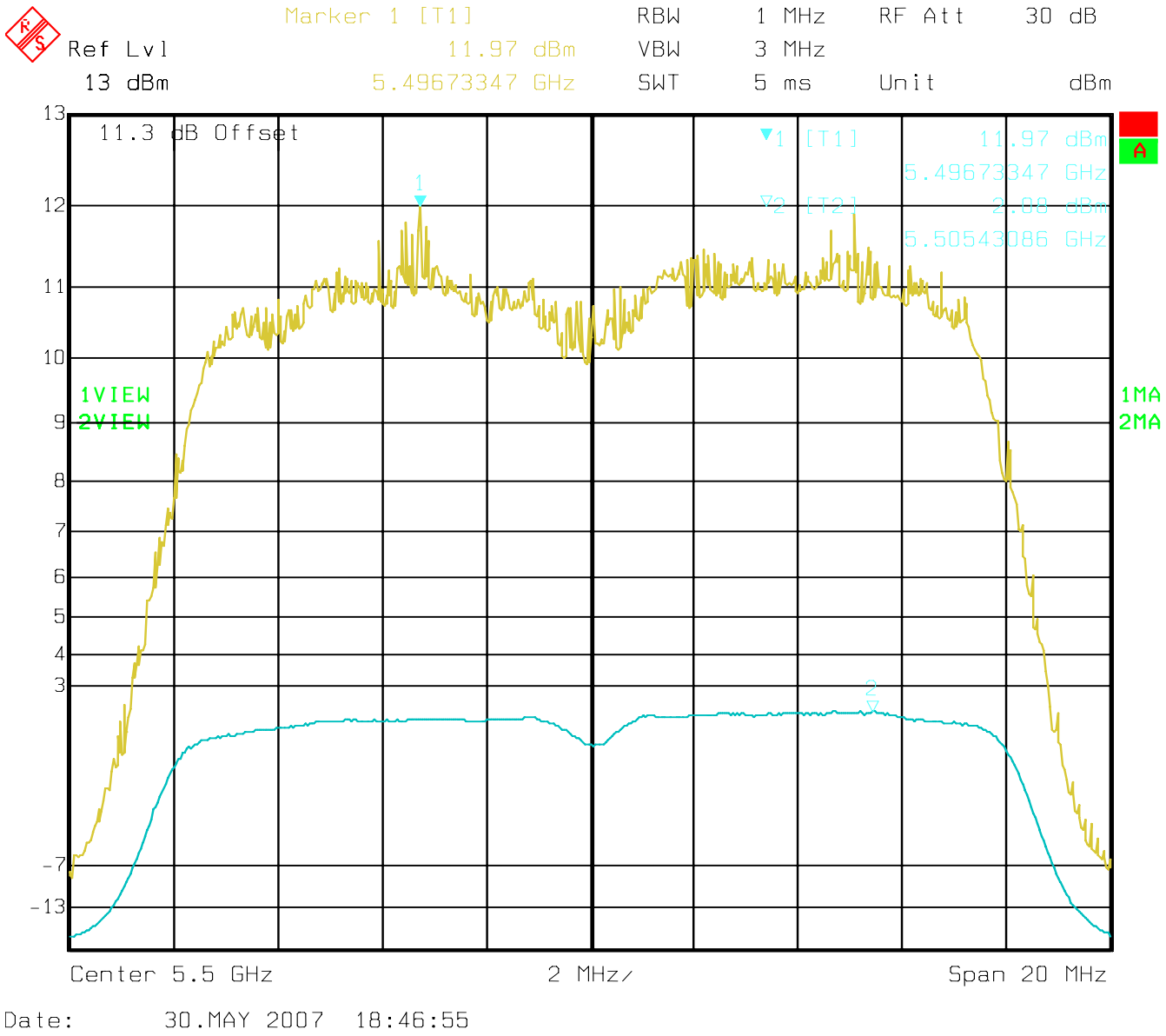
The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed **13 dB** across any 1 MHz bandwidth or the emission bandwidth whichever is less.

5.12 MEASUREMENT METHOD FCC PUBLIC NOTICE DA-02-2138A

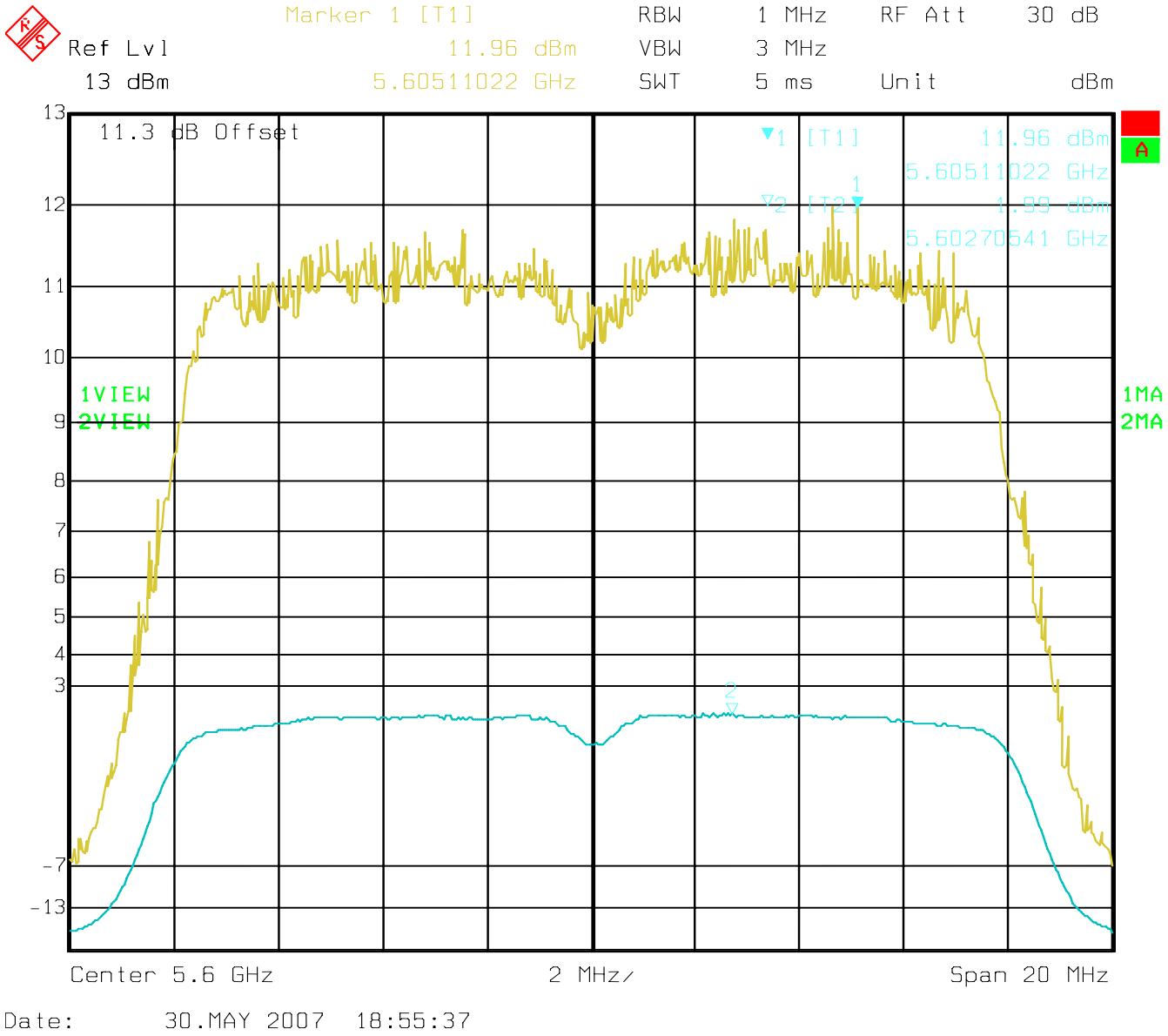
Measurement Method is according to FCC Public notice DA-02-2138A, since Method #3 was used to measure the conducted peak power, Method #3 is used for the second trace.

Channel No.	Frequency (MHz)	Ratio(dB)	Result (Fail/Pass)
Low	5500	9.89	PASS
Mid	5600	9.97	PASS
High	5700	9.74	PASS

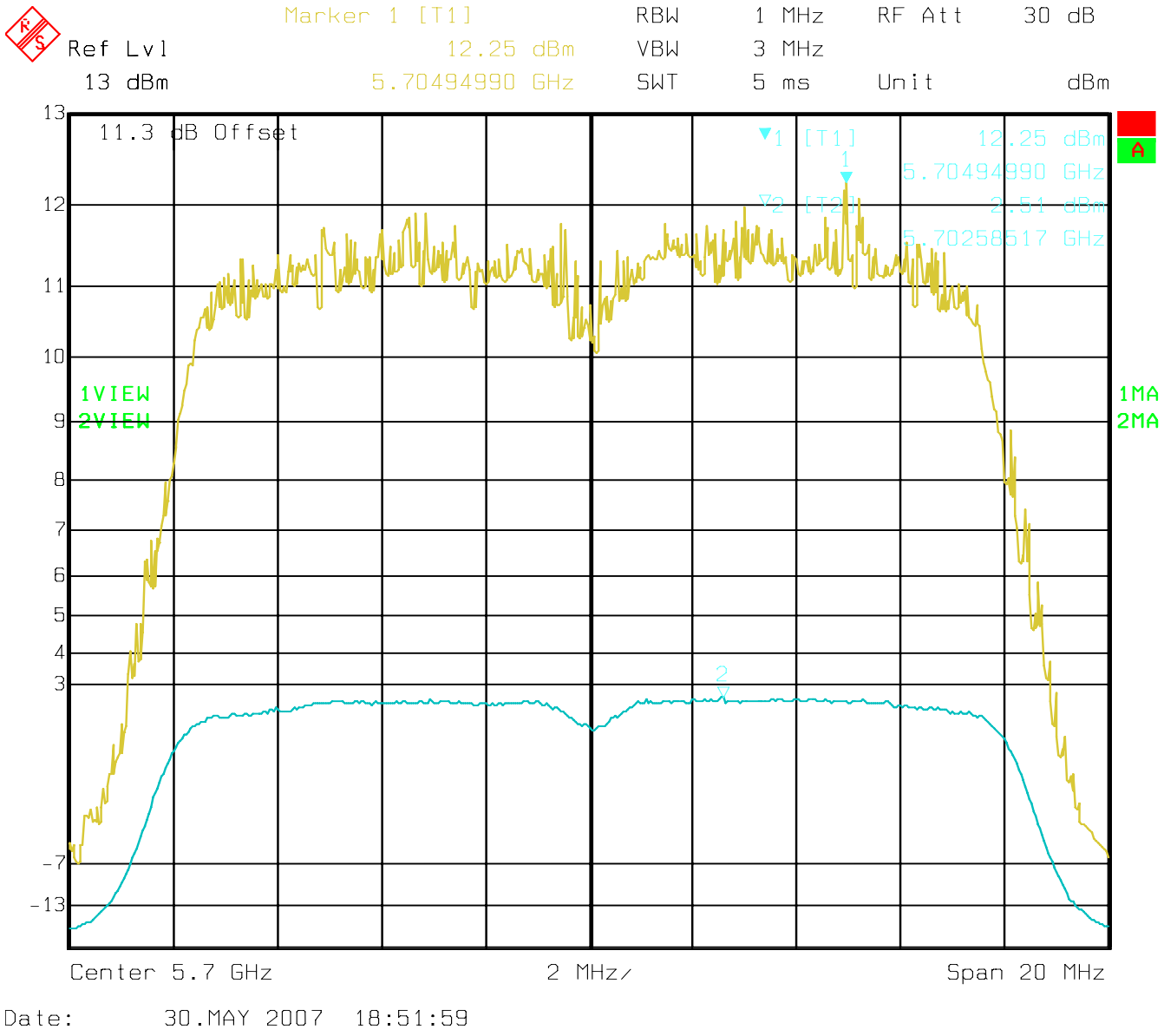
802.11a Ch 100(5500 MHz) Peak Excursion Ratio



802.11a Ch 120(5600 MHz) Peak Excursion Ratio



802.11a Ch 140(5700 MHz) Peak Excursion Ratio



5.13 CONDUCTED SPURIOUS EMISSION

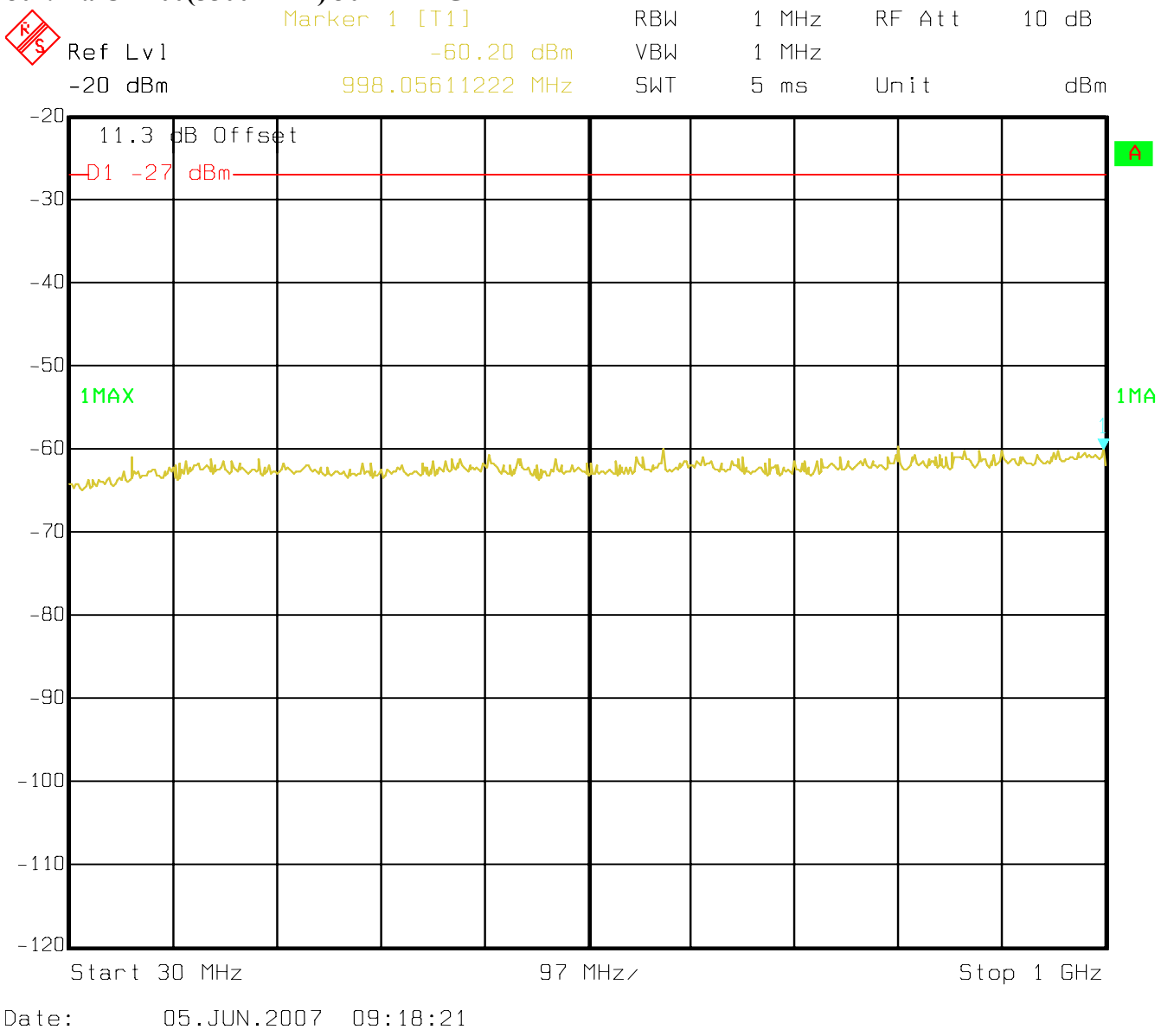
5.13.1 LIMIT SUB CLAUSE FCC Part 15 Subpart C §15.407 (b) (3)

For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz**.**

5.13.1 RSS General (4.7)

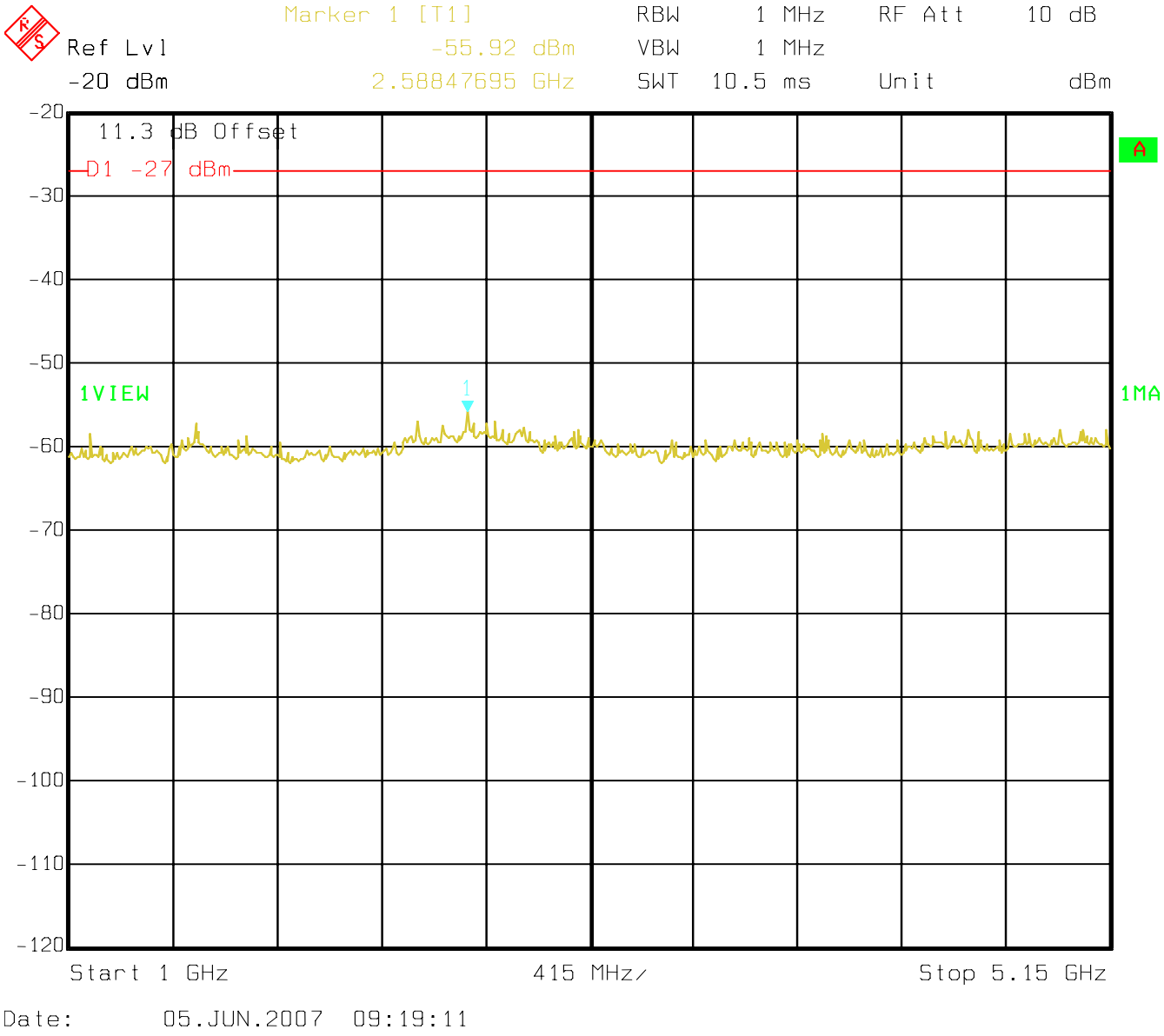
The search for unwanted emissions shall be from the lowest frequency internally generated or used in the device (local oscillator, intermediate or carrier frequency), or from 30 MHz, whichever is the lowest frequency, to the 5th harmonic of the highest frequency generated without exceeding 40 GHz.

802.11a Ch 100(5500 MHz) 30MHz-1GHz

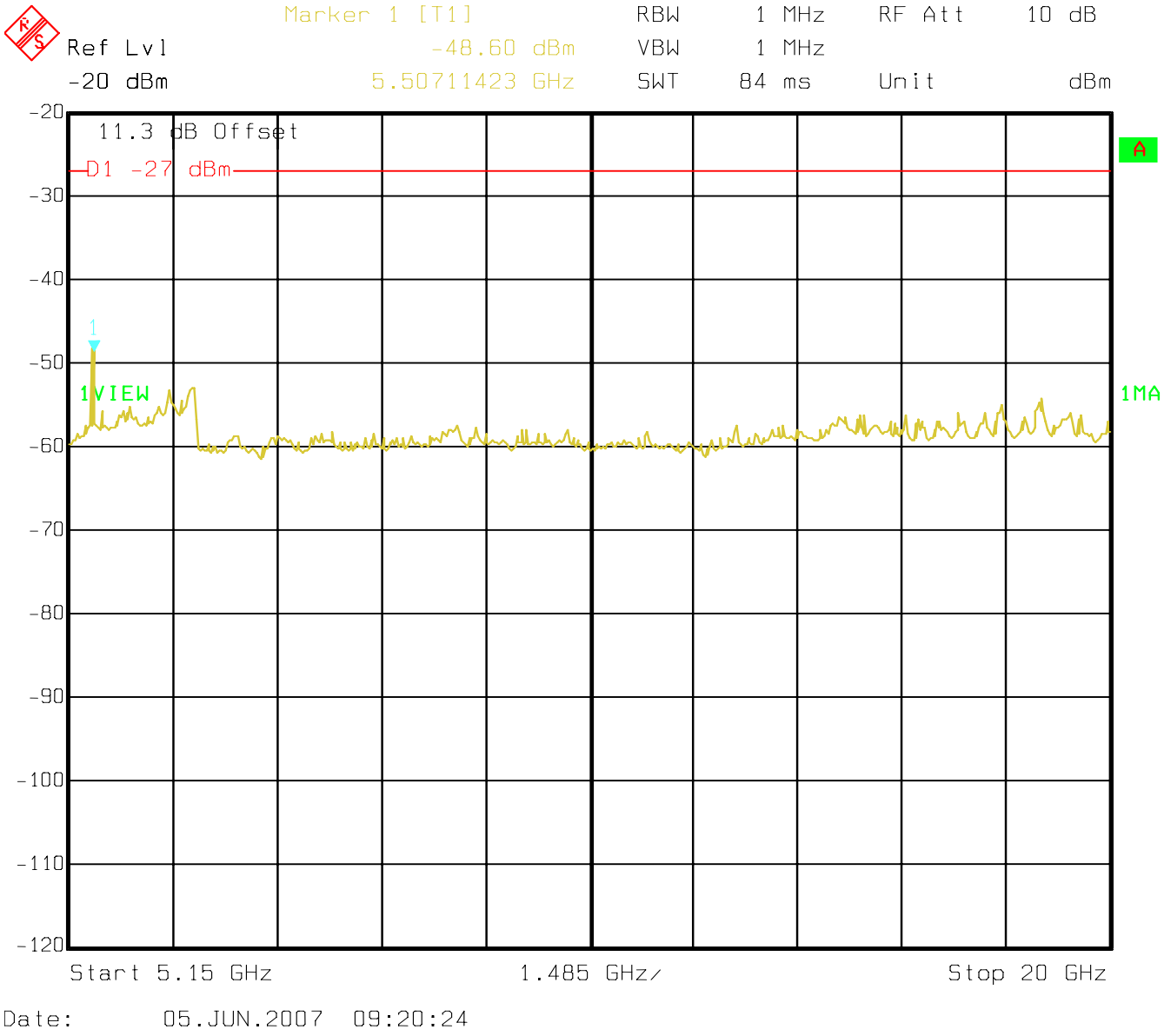


Date: 05.JUN.2007 09:18:21

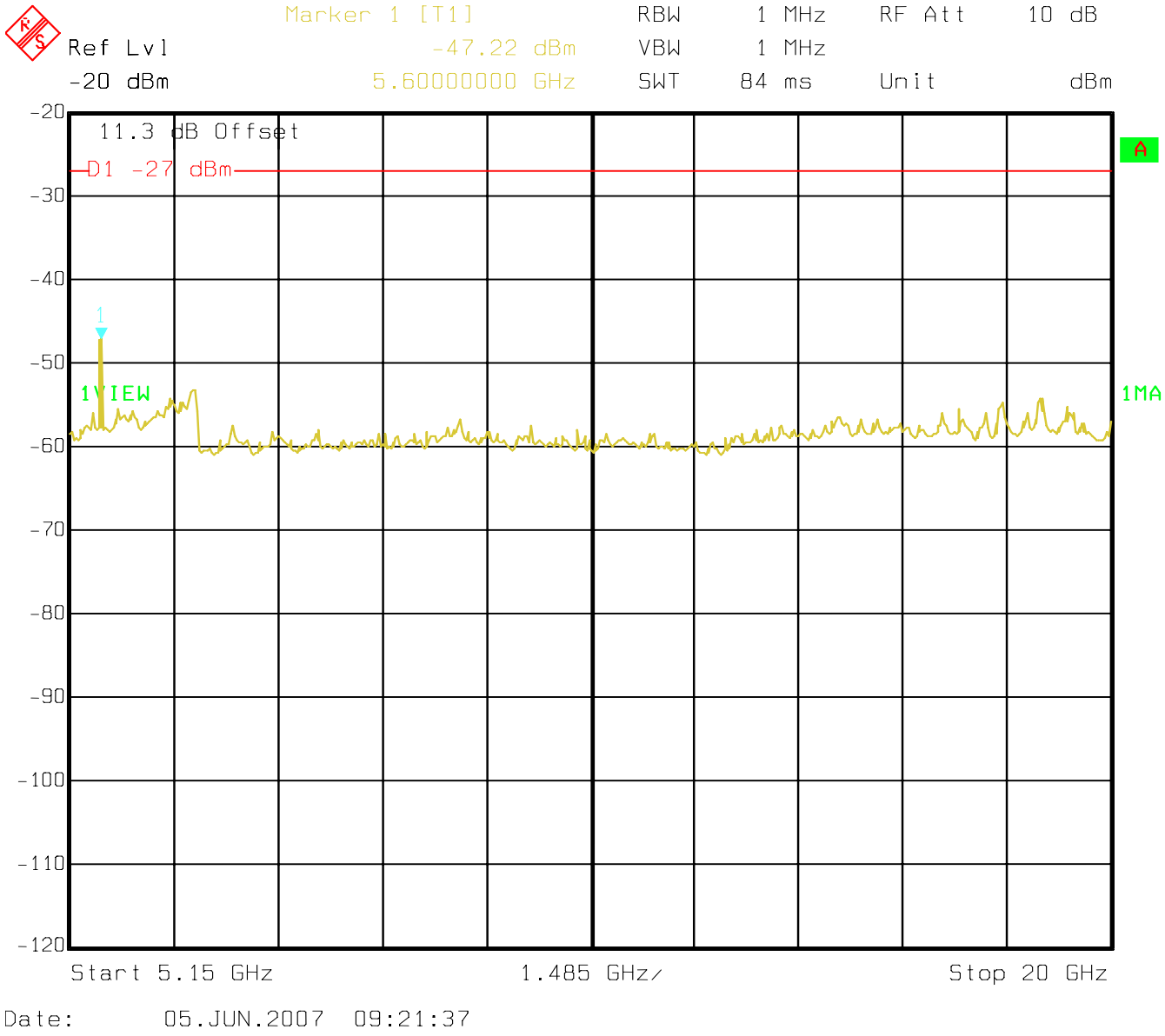
802.11a Ch 100(5500 MHz) 1-5.15 GHz



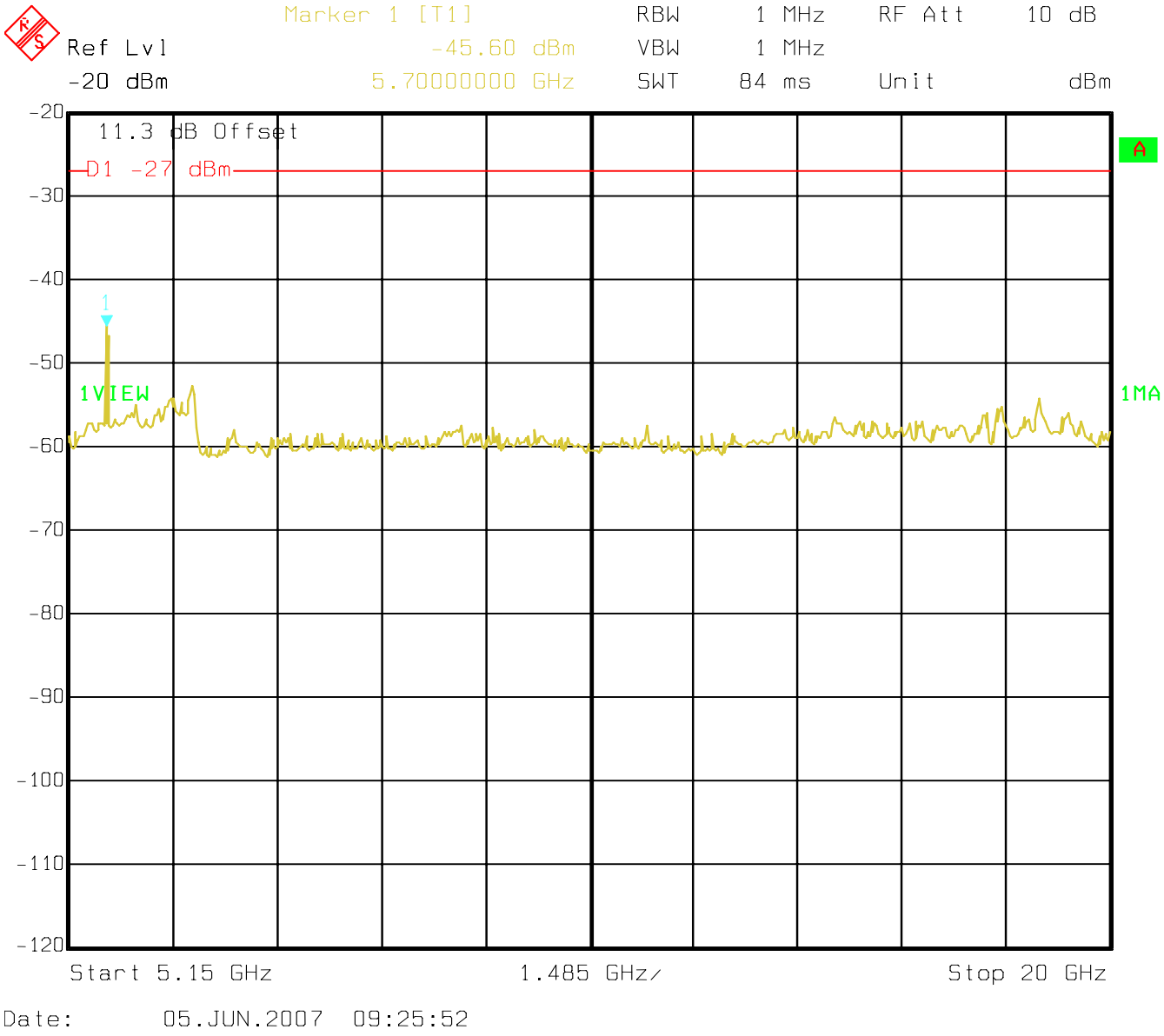
802.11a Ch 100(5500 MHz) 5-20 GHz



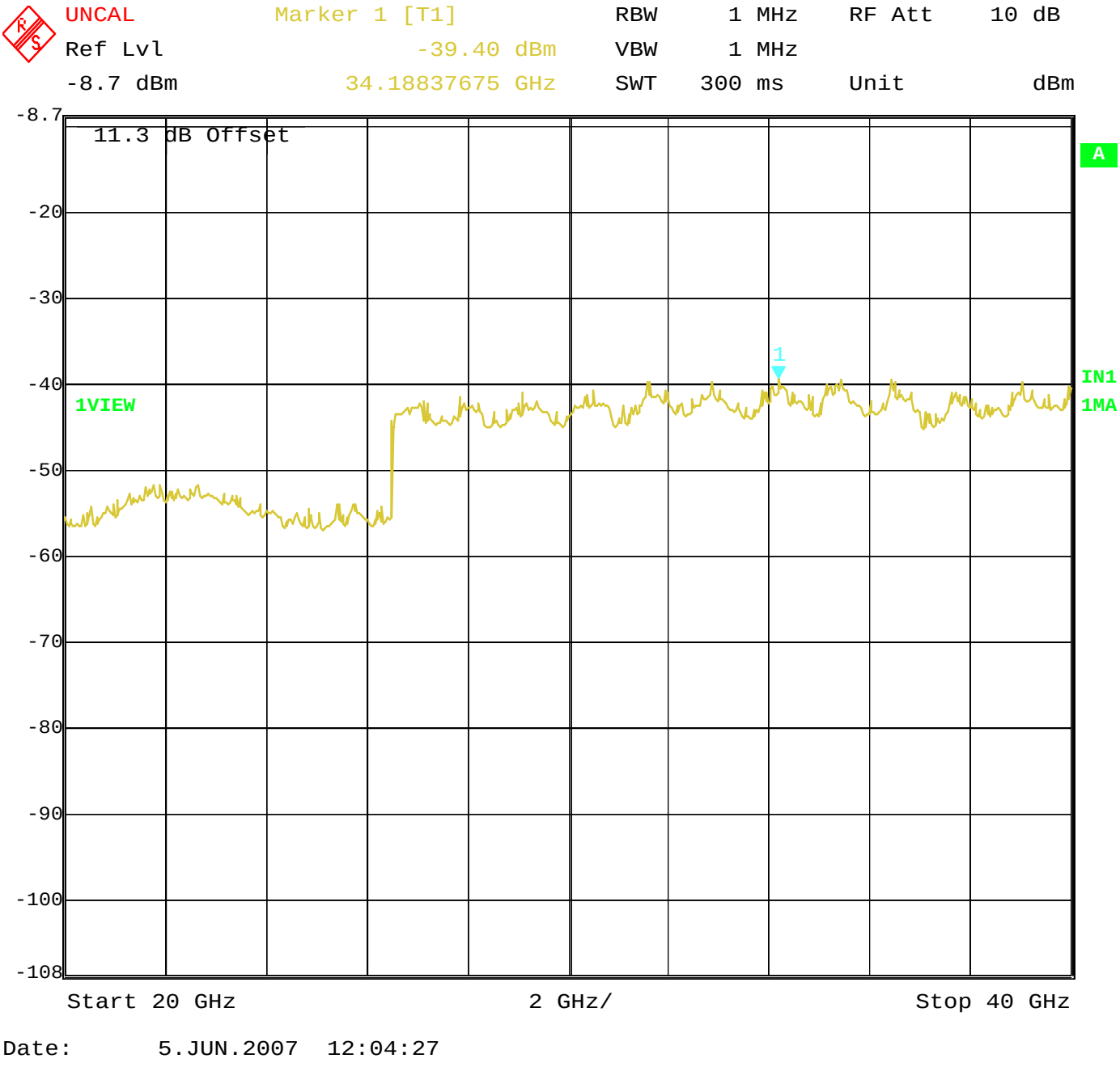
802.11a Ch 120(5600 MHz) 5-20 GHz



802.11a Ch 140(5700 MHz) 5-20 GHz



802.11a Ch 120(5700 MHz) 20-40 GHz



5.14 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

5.15 BLOCK DIAGRAMS

Radiated Testing