



FCC Test Report

FCC Part 15.247 for FHSS systems

CANADA RSS-210

No.: EMC_SOUND_002_06001_FCC15_RSS210_BT

**for the
Sound ID**

DSP Bluetooth Headset with user selectable presets

Model Number: SM100

FCC ID: U3NSM100

IC-ID: 6975A-SM100

TEST REPORT #:EMC_SOUND_002_06001_FCC15_RSS210_BT
DATE: 2/27/2007



**FCC listed#
101450**

**IC recognized #
3925**

CETECOM Inc.

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

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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



Test Report Cover Sheet/Performance Test Data

TEST REPORT NUMBER: EMC_SOUND_002_06001_FCC15_RSS210_BT

EQUIPMENT MODEL NUMBER: SM100

CERTIFICATION NO: 6975A-SM100

MANUFACTURER : 6975A

TESTED TO RADIO STANDARDS SPECIFICATION NO. : RSS 210

OPEN AREA TEST SITE INDUSTRY CANADA NUMBER: **3463**

FREQUENCY RANGE (or fixed frequency): 2402 to 2480 MHz

R.F. POWER IN WATTS: 0.00096W

OCCUPIED BANDWIDTH (99% BW): 877.76 KHz

TYPE OF MODULATION: GFSK

EMISSION DESIGNATOR (TRC-43): 878KFXD

ANTENNA INFORMATION: CHIP ANTENNA

TRANSMITTER SPURIOUS (worst case): 41.11 dBuV/m @ 17.454GHz

RECEIVER SPURIOUS (worst case): 40.54 dBuV/m @17.148GHz

ATTESTATION:

DECLARATION OF COMPLIANCE: I declare that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

Signature:

Val Tankov

Project Engineer

CETECOM Inc.

411 Dixon Landing Road

Milpitas, CA 95035

Date: 2007-02-27



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Test Report #: **EMC_SOUND_002_06001_FCC15_RSS210_BT**

Date of Report : **2/27/2007**

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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 #
Sound ID	DSP Bluetooth Headset with user selectable presets	SM100

Technical responsibility for area of testing:

3/13/2007 EMC & Radio

Lothar Schmidt
(Test Lab Manager)

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:	EMC
Address:	411 Dixon Landing Road Milpitas, CA 95035 U.S.A.
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Responsible Project Manager:	Val Tankov

2.2 Identification of the Client

Applicant's Name:	Sound ID
Address:	3430 West Bayshore Rd. Palo Alto, CA 94303, USA
Contact Person:	Ahmad Shamsoddini
Phone No.	(650) 384 3014
Fax:	(650) 320 8753
e-mail:	ashamsoddini@soundid.com

2.3 Identification of the Manufacturer

Manufacturer's Name:	Sound ID
Manufacturer's Address:	3430 West Bayshore Rd., Palo Alto, Ca 94303 USA



3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Product Type	DSP Bluetooth Headset with user selectable presets
Marketing Name:	Sound ID SM100 EarModule
Model No:	SM100
FCC-ID:	U3NSM100
IC-ID :	6975A-SM100
Frequency Range:	2402 MHz to 2480 MHz
Number of Channels	79
Type(s) of Modulation:	GFSK
Antenna Type:	Integral
Output Power:	-0.18 dBm (0.96mW) Conducted peak power



4 Subject Of Investigation

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

Unless otherwise noted during the testing process the EUT was tested on a single channel using PRBS9 payload using DH5 packets, all data in this report shows the worst case between horizontal and vertical polarization for above 1GHz.

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT as specified by requirements listed in FCC rules Part 15.247 of Title 47 of the Code of Federal Regulations and Industry Canada – RSS 210. The maximization of portable equipment is conducted in accordance with ANSI C63.4.



5 Measurements

5.1 RESTRICTED BAND EDGE COMPLIANCE RADIATED §15.247/15.205

5.1.1 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			

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.

**5.1.2 Results Lower Restricted Band 2310 MHz to 2390 MHz****GFSK (2402MHz) PEAK****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: EarModule Gen2

Customer: Sound ID

Test Mode: BT Ch. 0

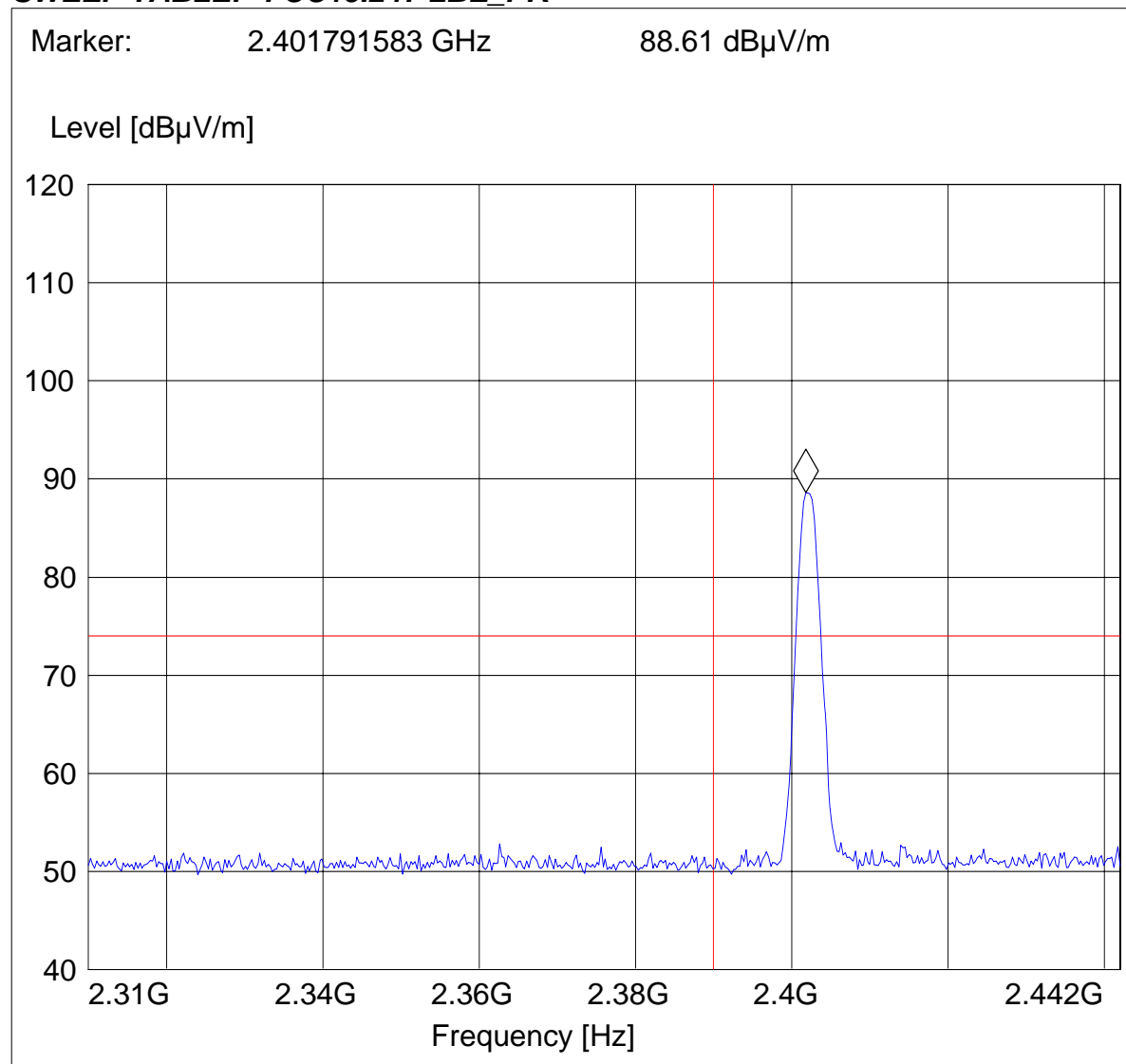
Ant Orientation: H

EUT Orientation: V

Test Engineer: Val Tankov

Voltage: Battery

Comments: PK at 99°

SWEEP TABLE: "FCC15.247 LBE_PK"

**GFSK (2402MHz) AVG****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: EarModule Gen2

Customer: Sound ID

Test Mode: BT Ch. 0

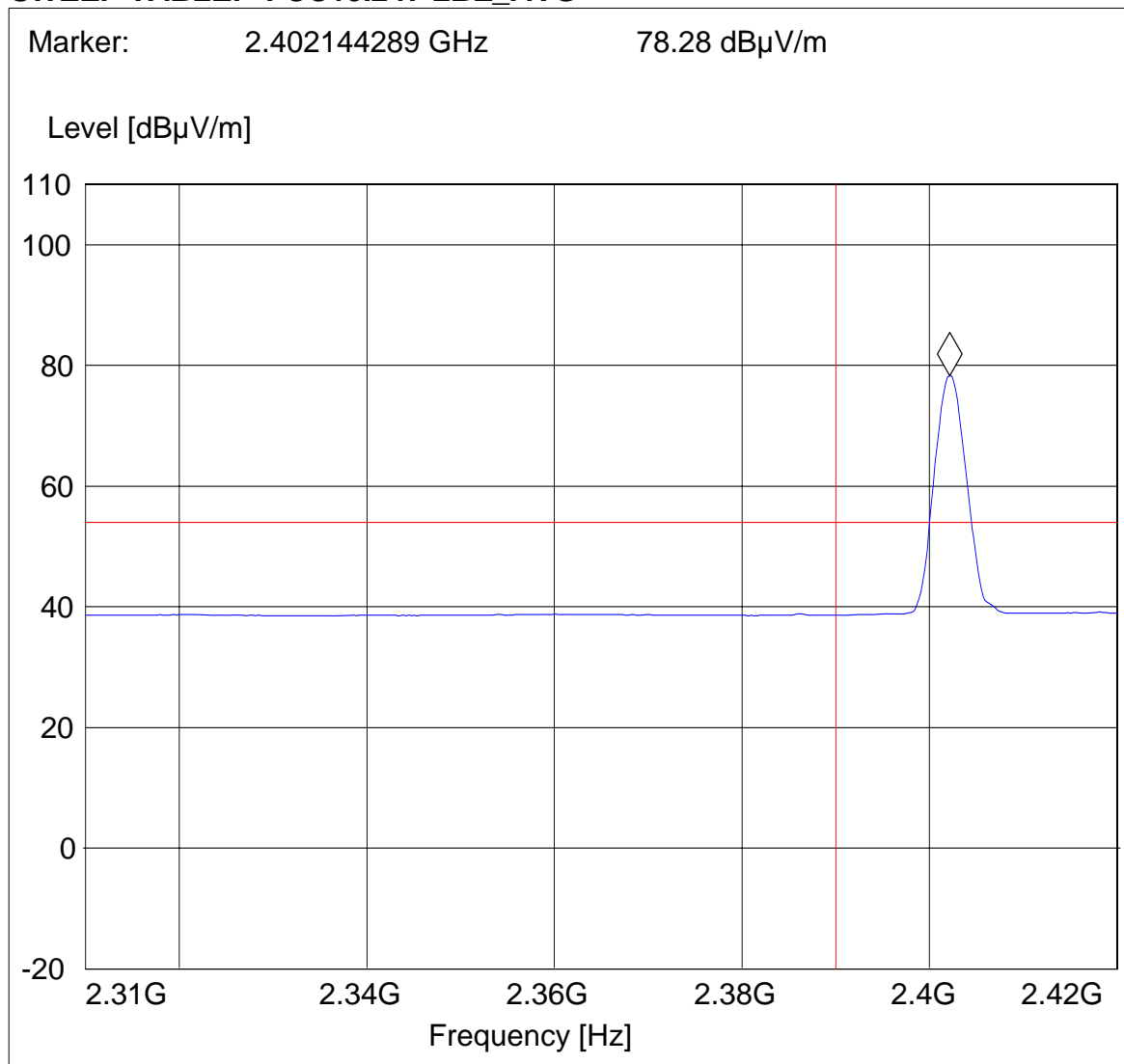
Ant Orientation: H

EUT Orientation: V

Test Engineer: Val

Voltage: Battery

Comments: PK at 99°

SWEEP TABLE: "FCC15.247 LBE_AVG"

**5.1.3 Results Upper Restricted Band 2483.5 MHz to 2500 MHz****GFSK (2480MHz) PEAK****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: EarModule Gen2

Customer: Sound ID

Test Mode: BT Ch. 78

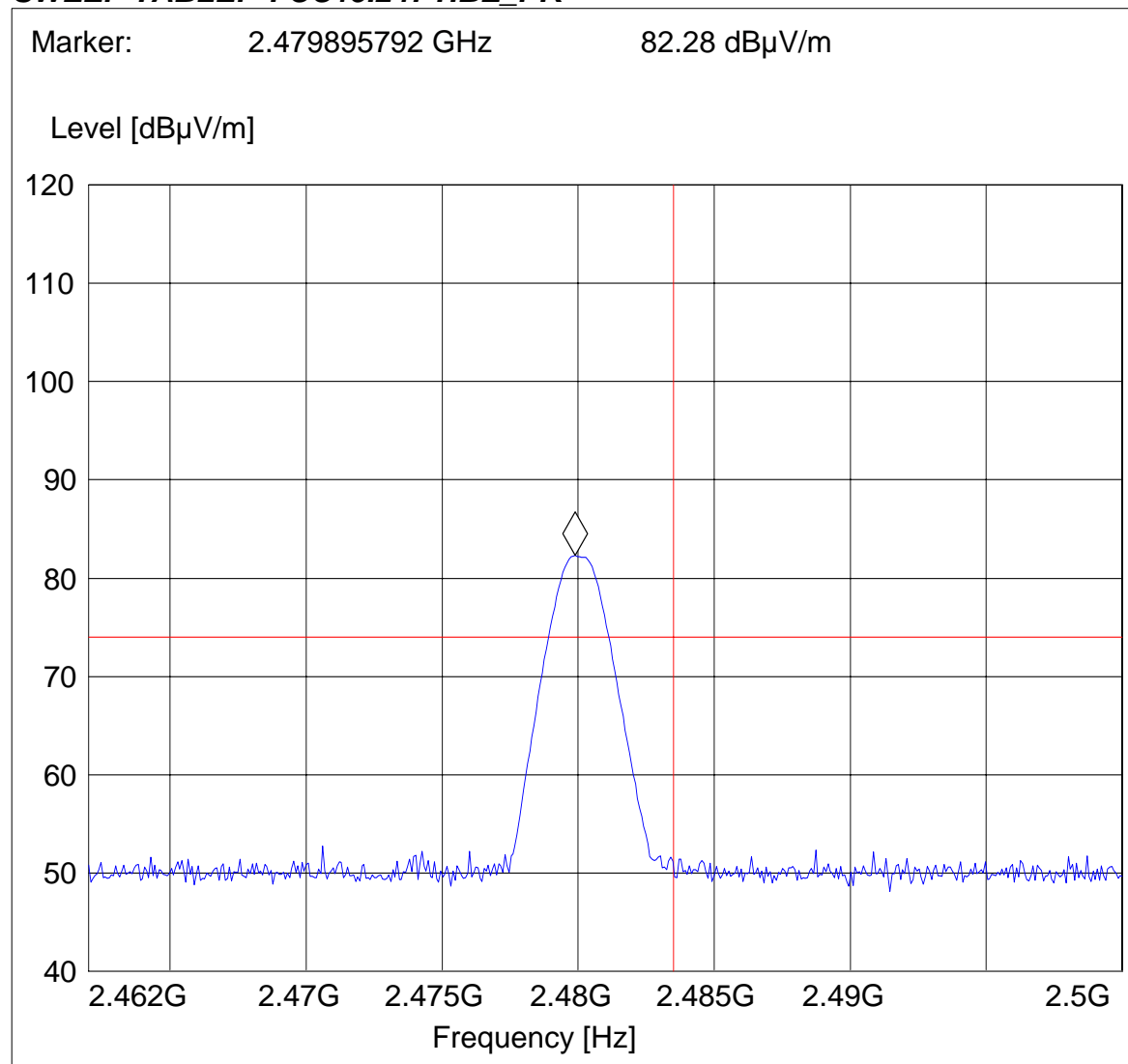
Ant Orientation: H

EUT Orientation: V

Test Engineer: Val

Voltage: Battery

Comments: PK at 320°

SWEEP TABLE: "FCC15.247 HBE_PK"

**GFSK (2480MHz) AVG****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: EarModule Gen2

Customer: Sound ID

Test Mode: BT Ch. 78

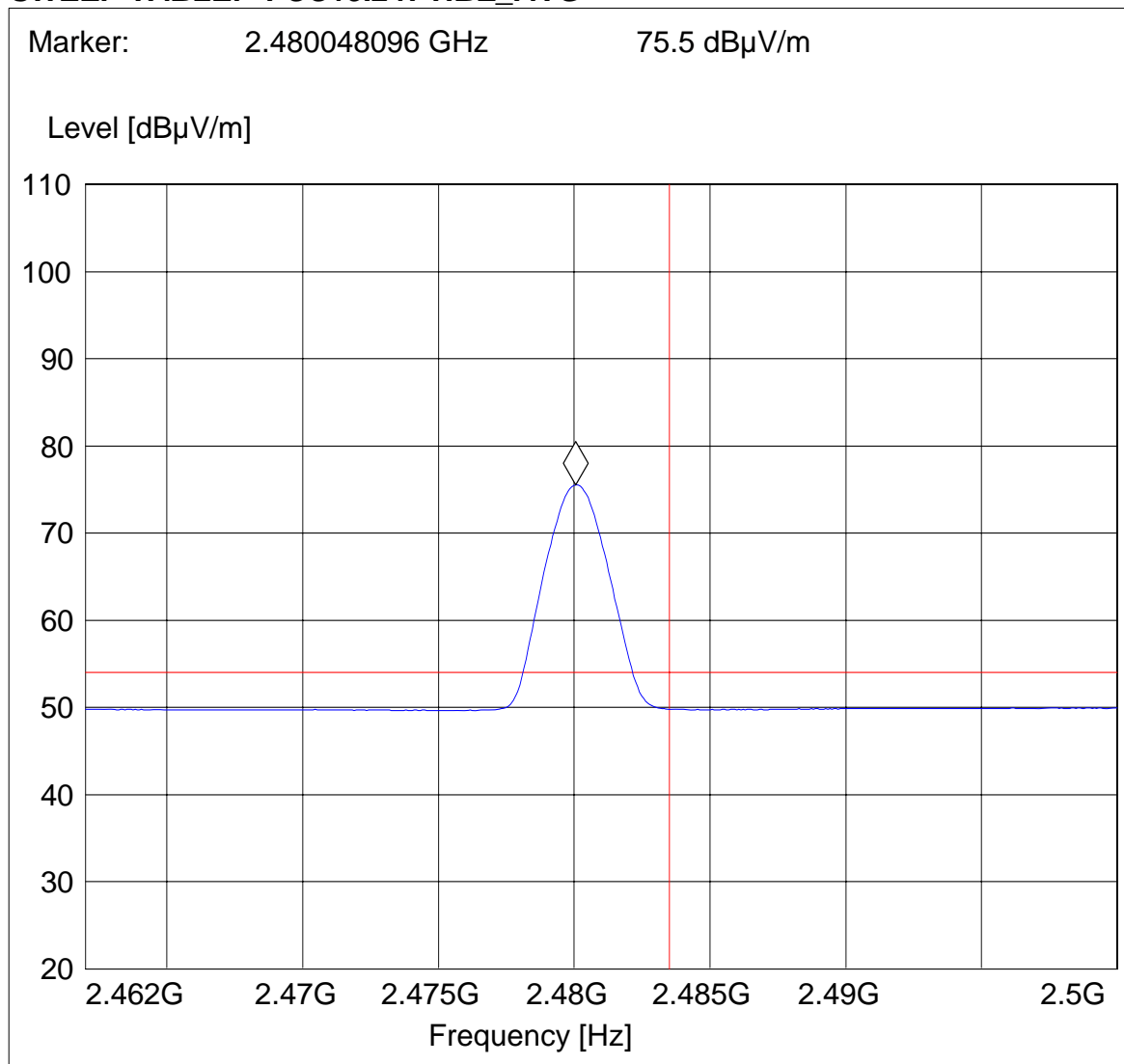
Ant Orientation: H

EUT Orientation: V

Test Engineer: Val

Voltage: Battery

Comments: Rotation 360°

SWEEP TABLE: "FCC15.247 HBE_AVG"

5.2 TRANSMITTER SPURIOUS EMISSIONS RADIATED § 15.247/15.205/15.209

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			

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

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



5.2.2 RESULTS

30MHz – 1GHz

Antenna: vertical

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

CETECOM Inc.

411 Dixon Landing Road, Milpitas CA 95035, USA

EUT: EarModule Gen2

Customer: Sound ID

Test Mode: BT Ch. 0

Ant Orientation: V

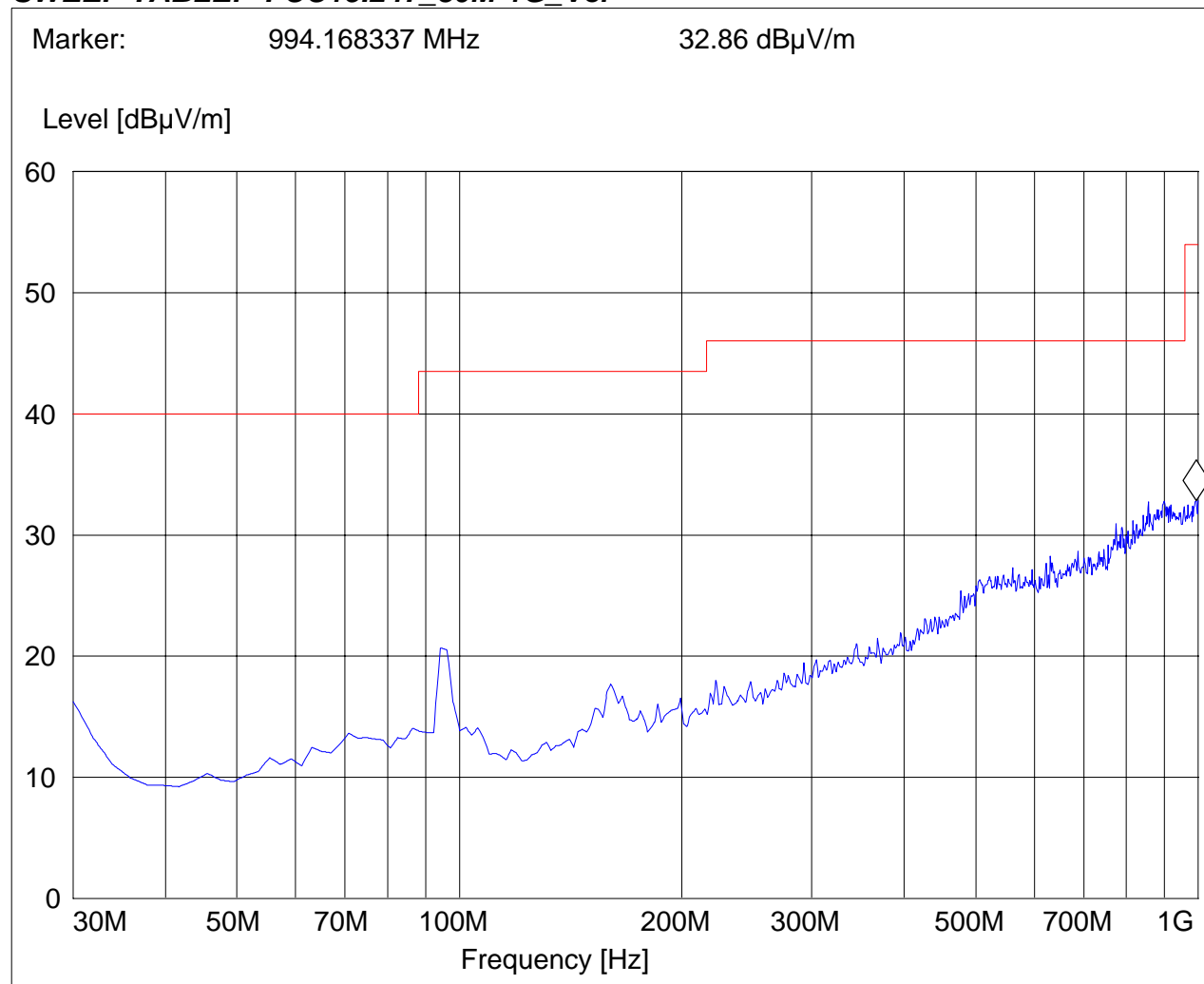
EUT Orientation: V

Test Engineer: Val

Voltage: Battery

Comments: Rotation 360°

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



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

EUT: EarModule Gen2

Customer: Sound ID

Test Mode: BT Ch. 0

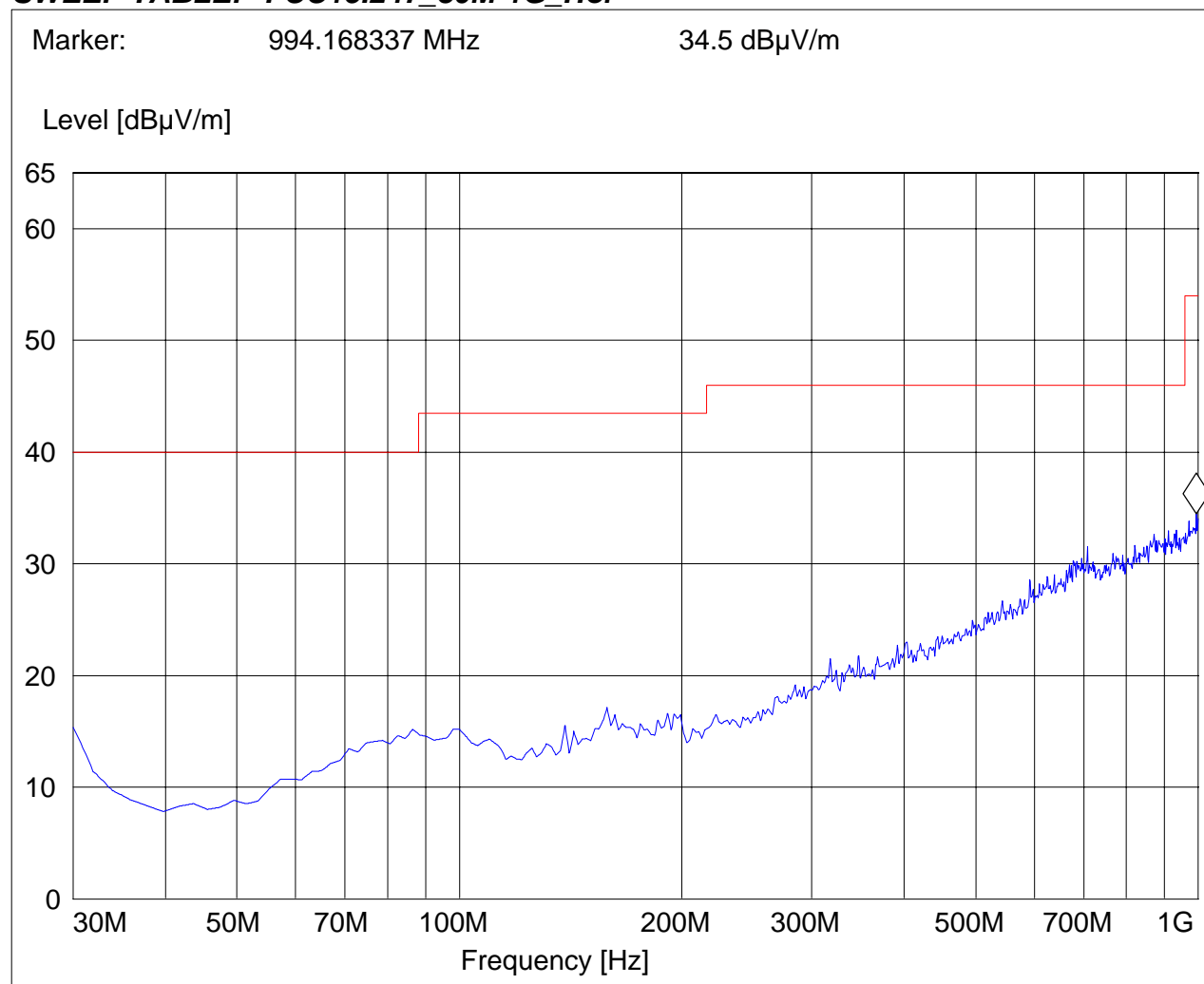
Ant Orientation: H

EUT Orientation: V

Test Engineer: Val

Voltage: Battery

Comments: Rotation 360°

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

**1-3GHz (2402MHz)****Note: The peak above the limit line is the carrier freq.****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: EarModule Gen2

Customer: Sound ID

Test Mode: BT Ch. 0

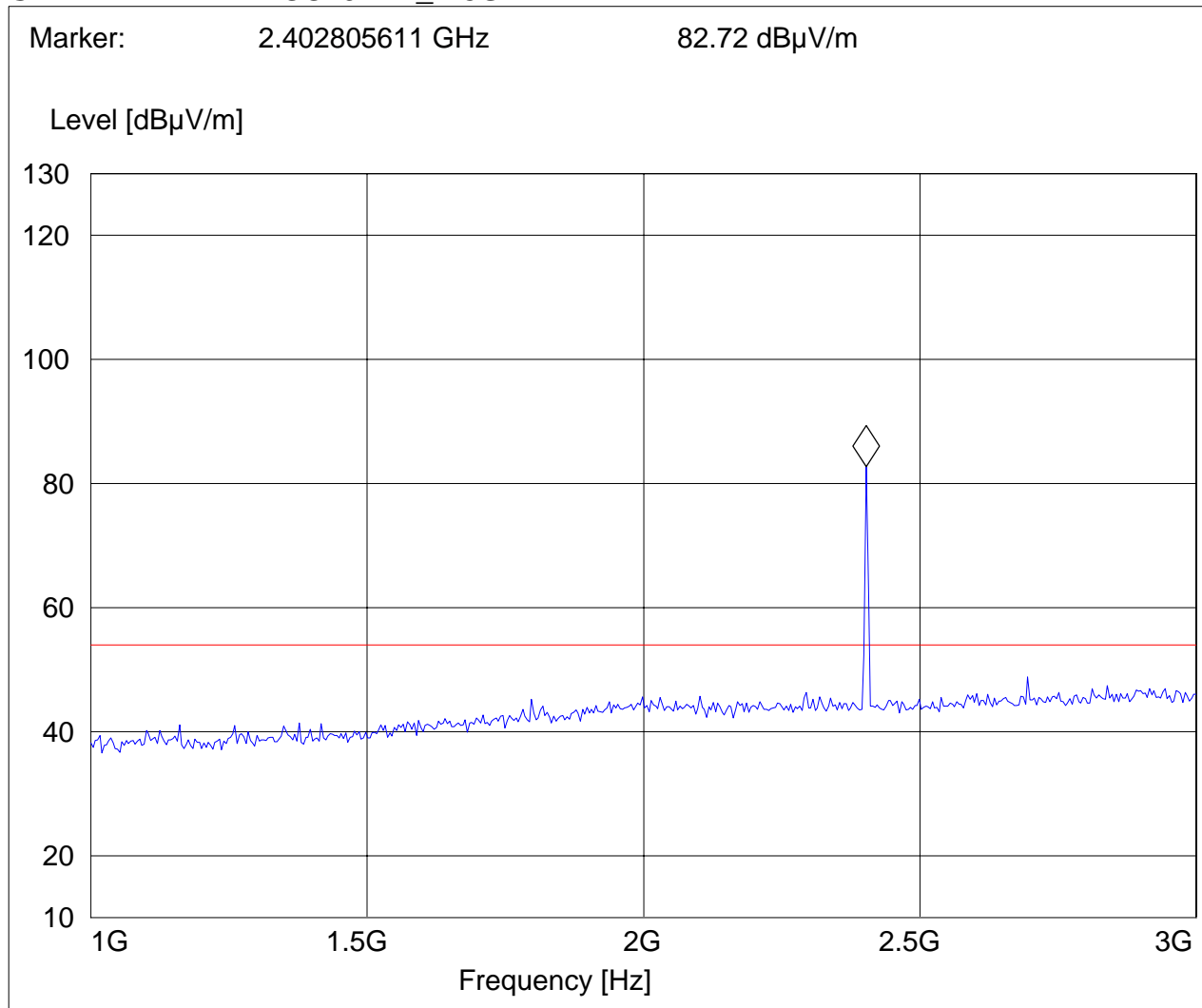
Ant Orientation: V

EUT Orientation: V

Test Engineer: Val

Voltage: Battery

Comments: ROTATION 360°, MARKER ON CH.0

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

**1-3GHz (2441MHz)****Note: The peak above the limit line is the carrier freq.****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: EarModule Gen2

Customer: Sound ID

Test Mode: BT Ch. 39

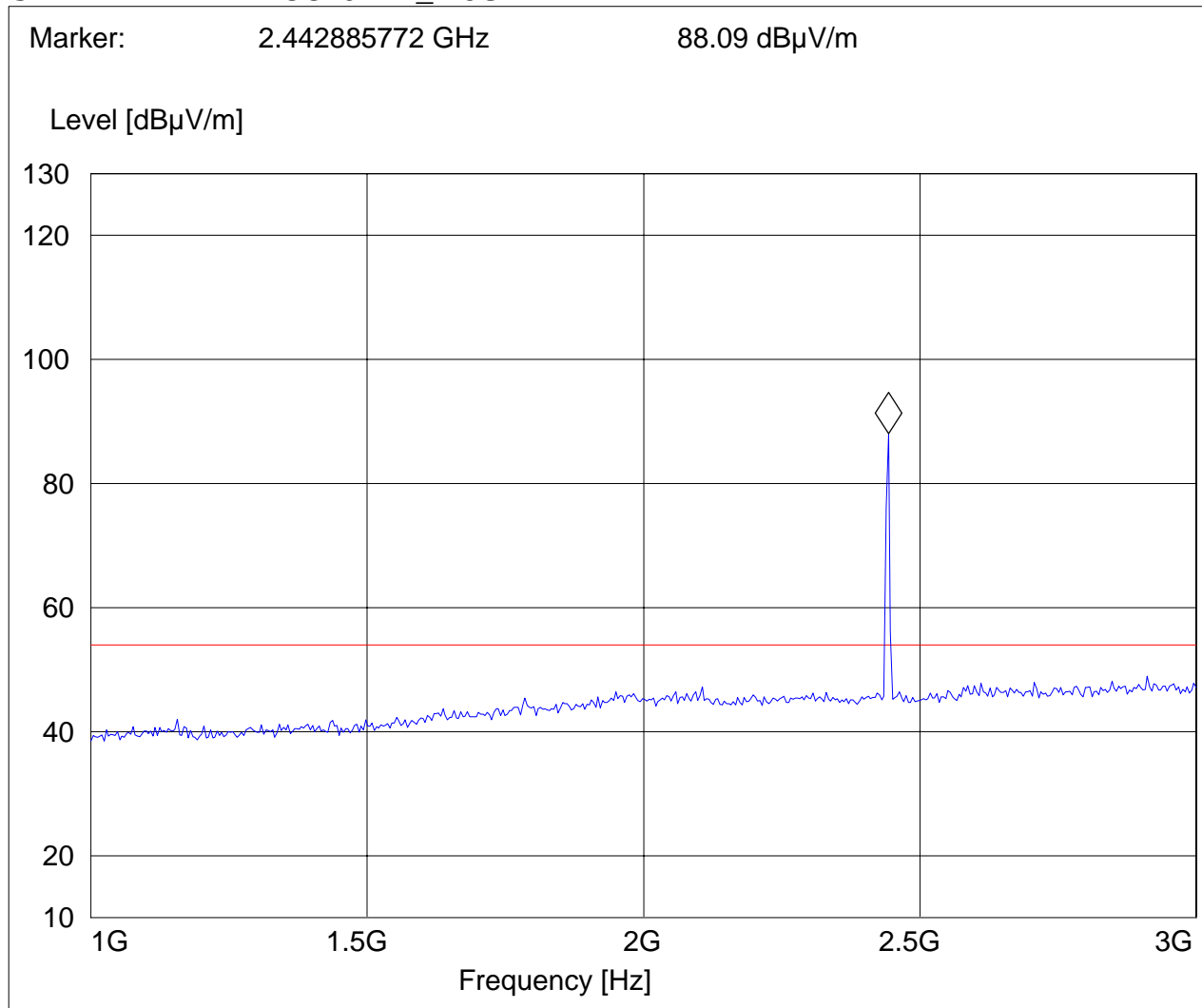
Ant Orientation: V

EUT Orientation: V

Test Engineer: Val

Voltage: Battery

Comments: Rotation 360°, MARKER ON CH.39

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

**1-3GHz (2480MHz)****Note: The peak above the limit line is the carrier freq.****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: EarModule Gen2

Customer: Sound ID

Test Mode: BT Ch. 78

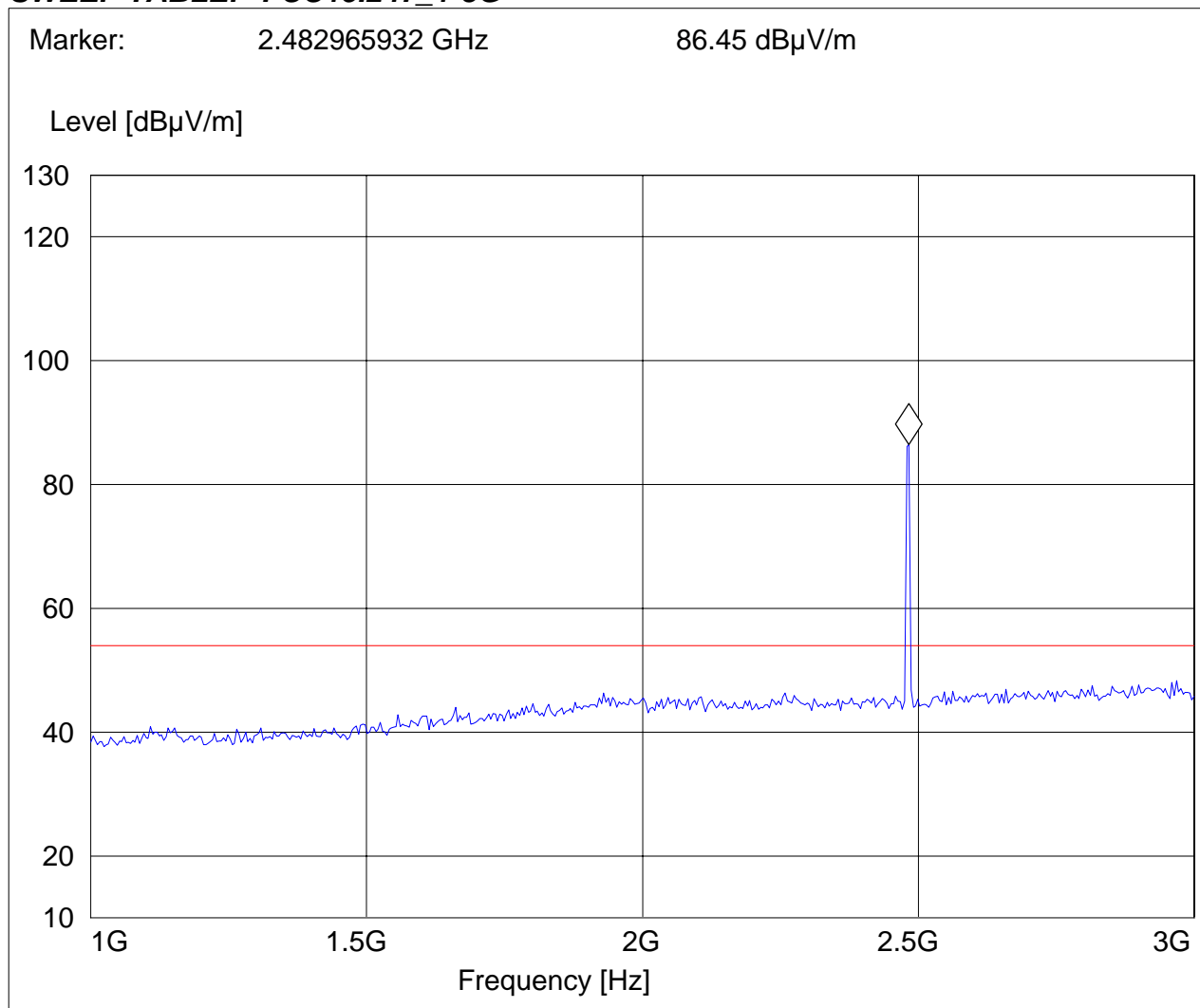
Ant Orientation: V

EUT Orientation: V

Test Engineer: Val

Voltage: Battery

Comments: Rotation 360°, MARKER ON CH.78

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

**3-18GHz (2402MHz)****Note: Peak Reading****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: EarModule Gen2

Customer: Sound ID

Test Mode: BT Ch. 0

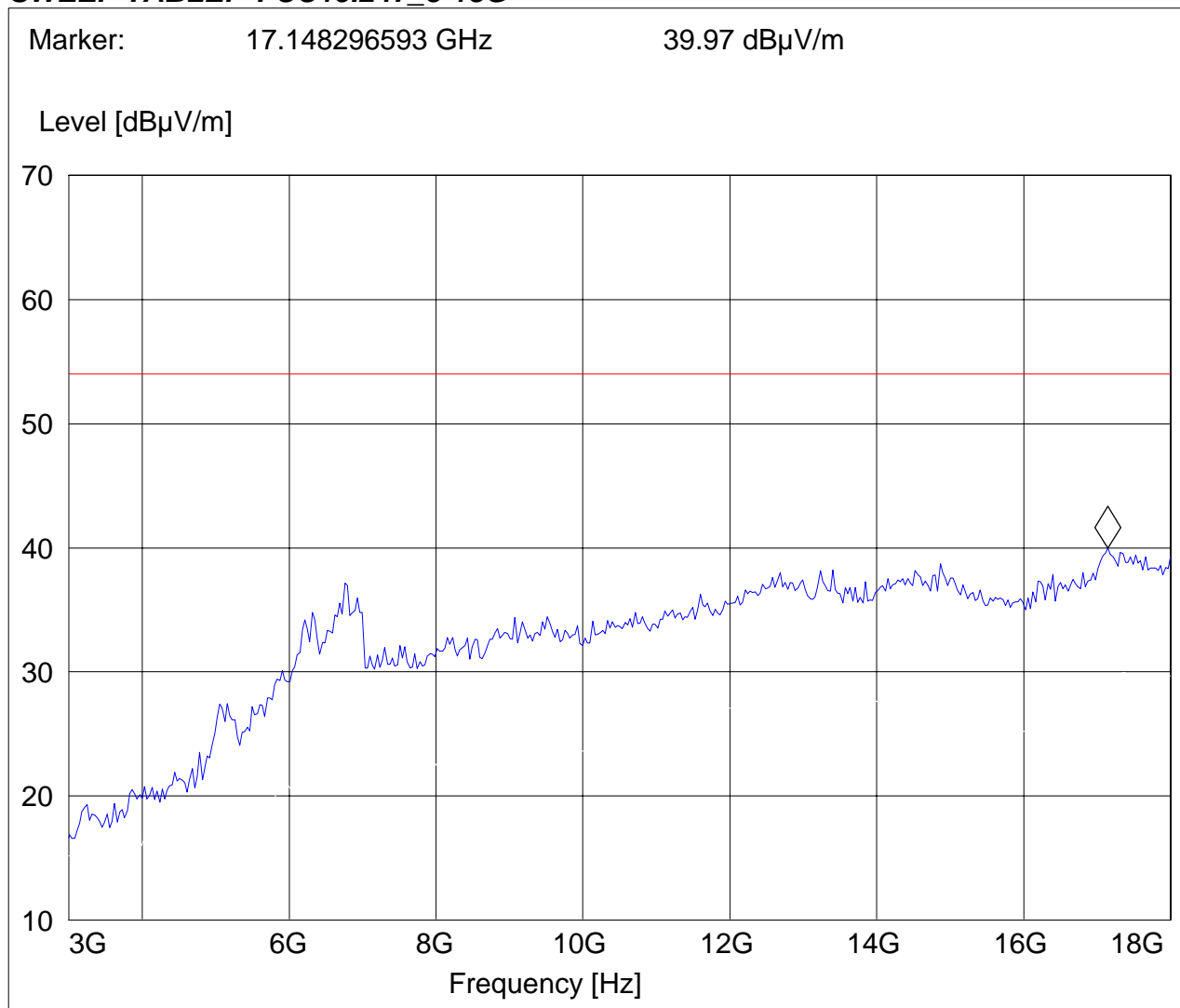
Ant Orientation: V

EUT Orientation: V

Test Engineer: Val

Voltage: Battery

Comments: Rotation 360°

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

**3-18GHz (2441MHz)****Note: Peak Reading****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: EarModule Gen2

Customer: Sound ID

Test Mode: BT Ch. 39

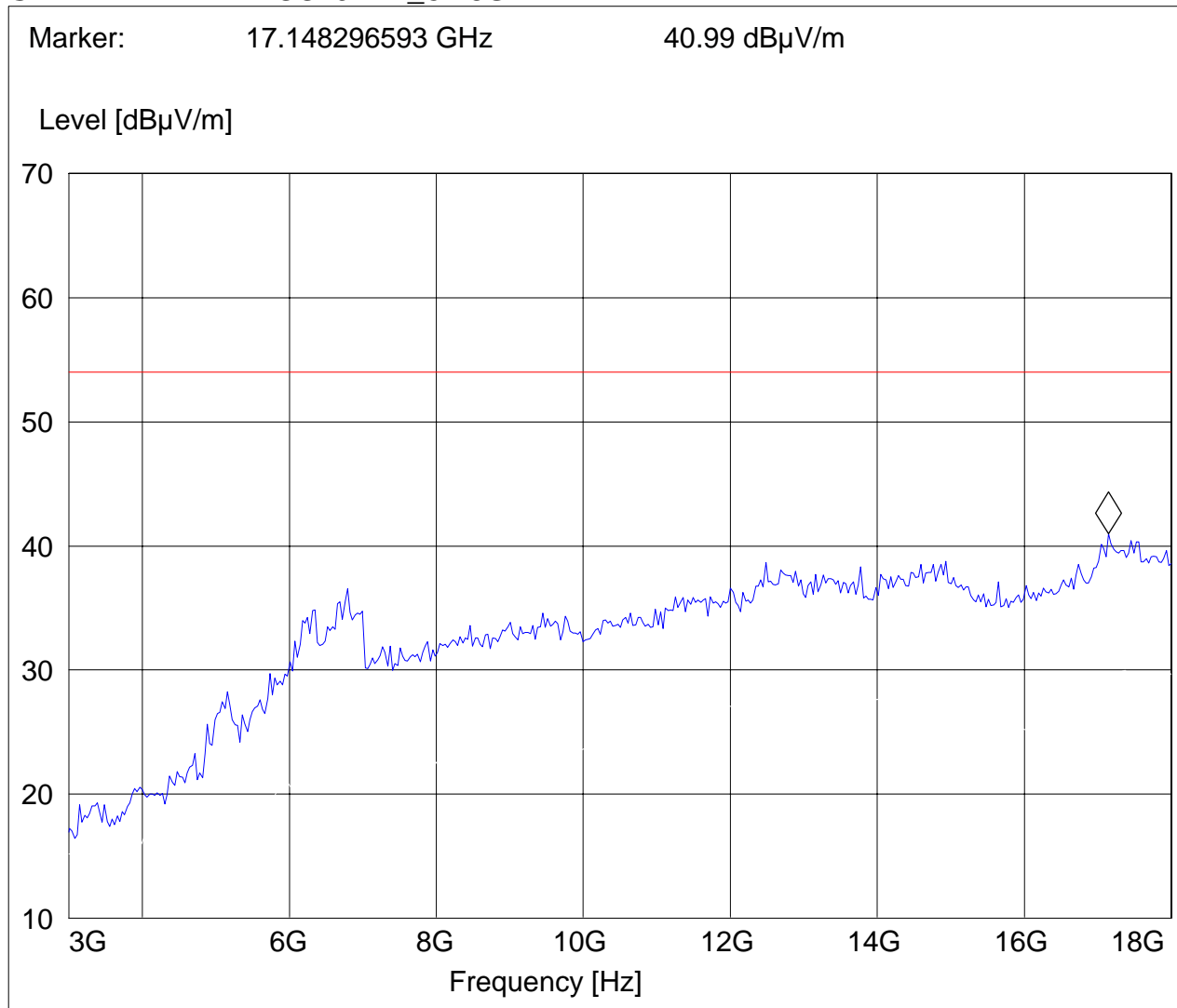
Ant Orientation: V

EUT Orientation: V

Test Engineer: Val

Voltage: Battery

Comments: Rotation 360°

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

**3-18GHz (2480MHz)****Note: Peak Reading****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT: EarModule Gen2

Customer: Sound ID

Test Mode: BT Ch. 78

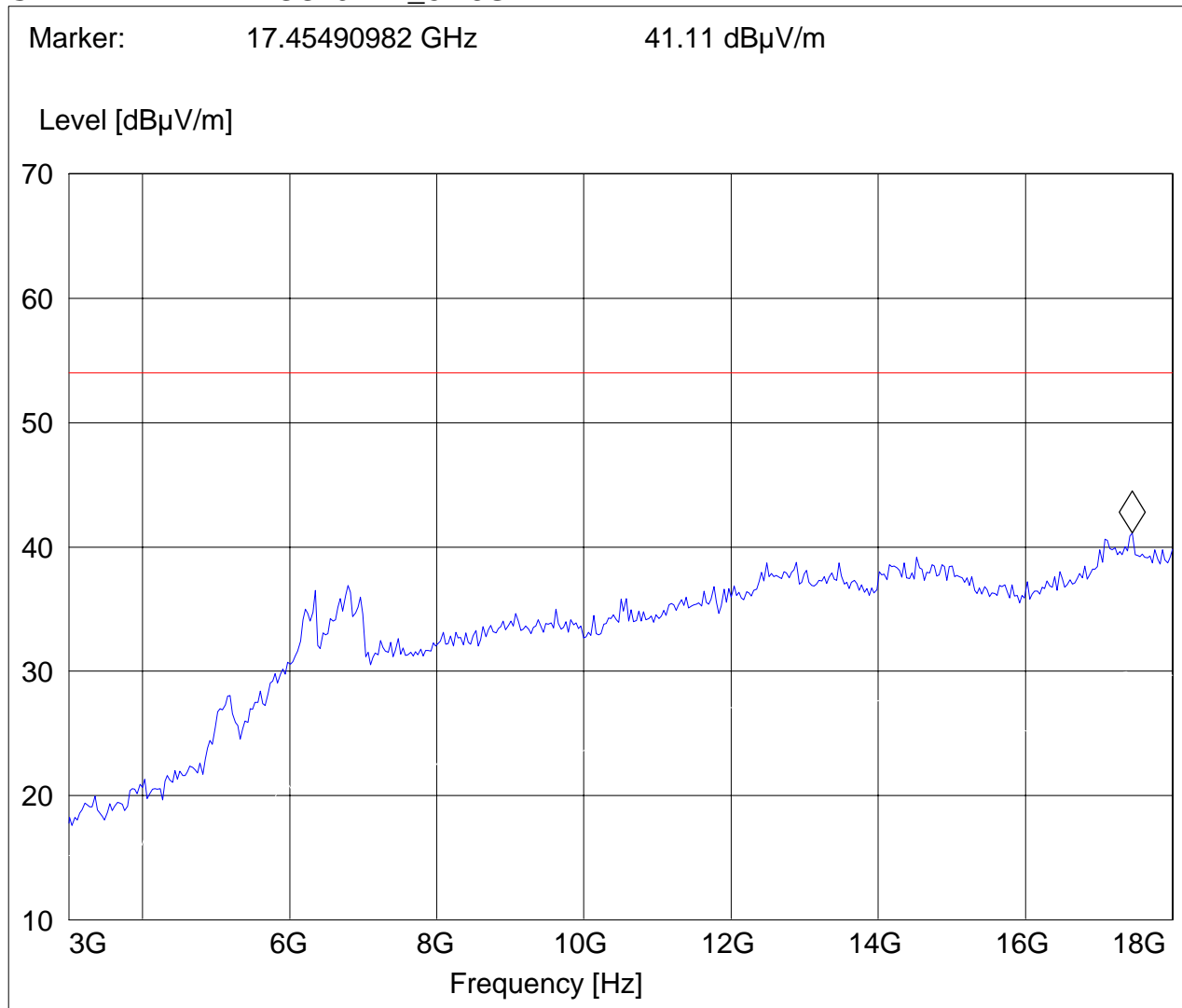
Ant Orientation: V

EUT Orientation: V

Test Engineer: Val

Voltage: Battery

Comments: Rotation 360°

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

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

EUT: EarModule Gen2

Customer: Sound ID

Test Mode: BT Ch. 0

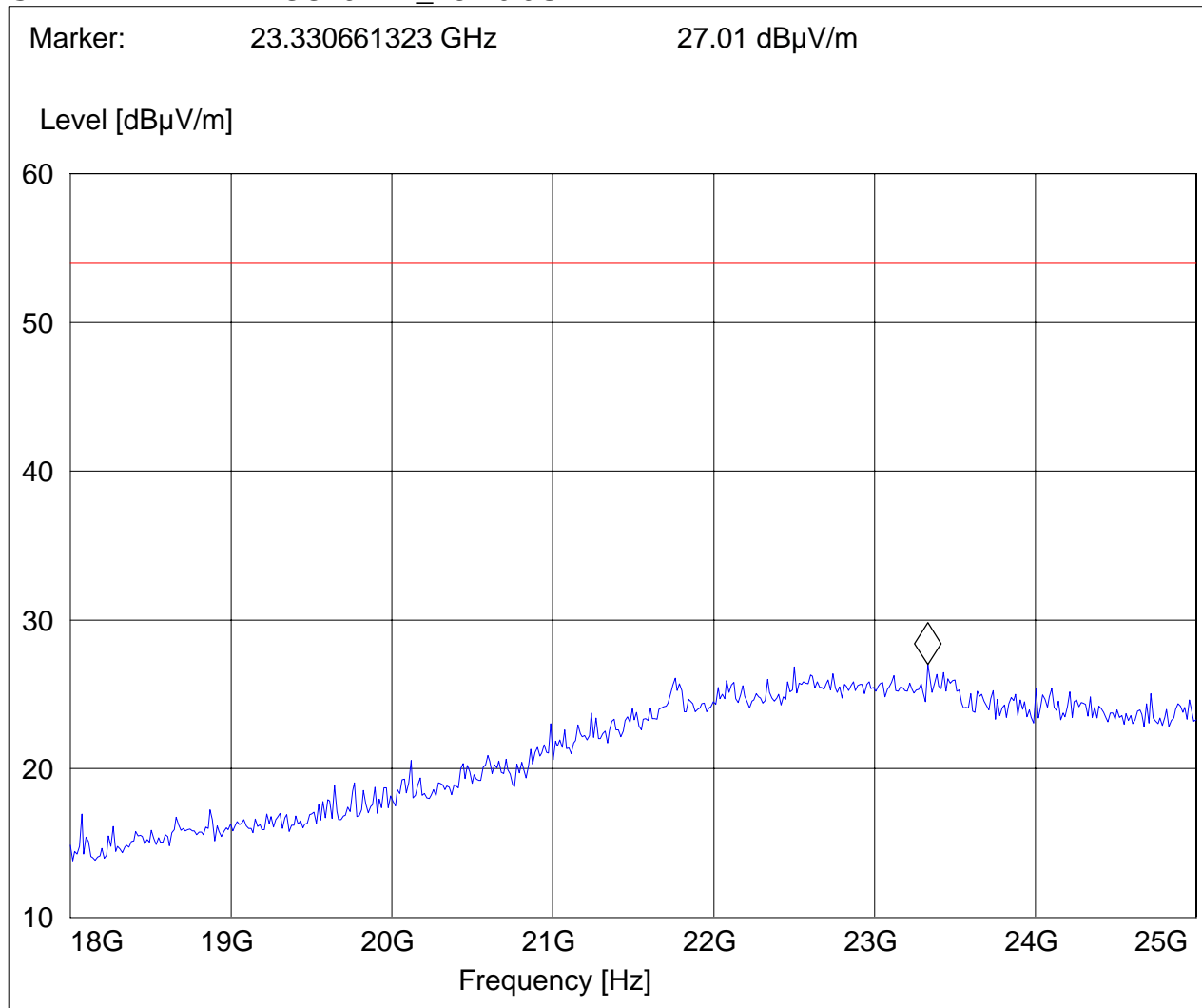
Ant Orientation: V

EUT Orientation: V

Test Engineer: Val

Voltage: Battery

Comments: ROTATION 360°

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

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

EUT: EarModule Gen2

Test Mode: BT RECIEVE

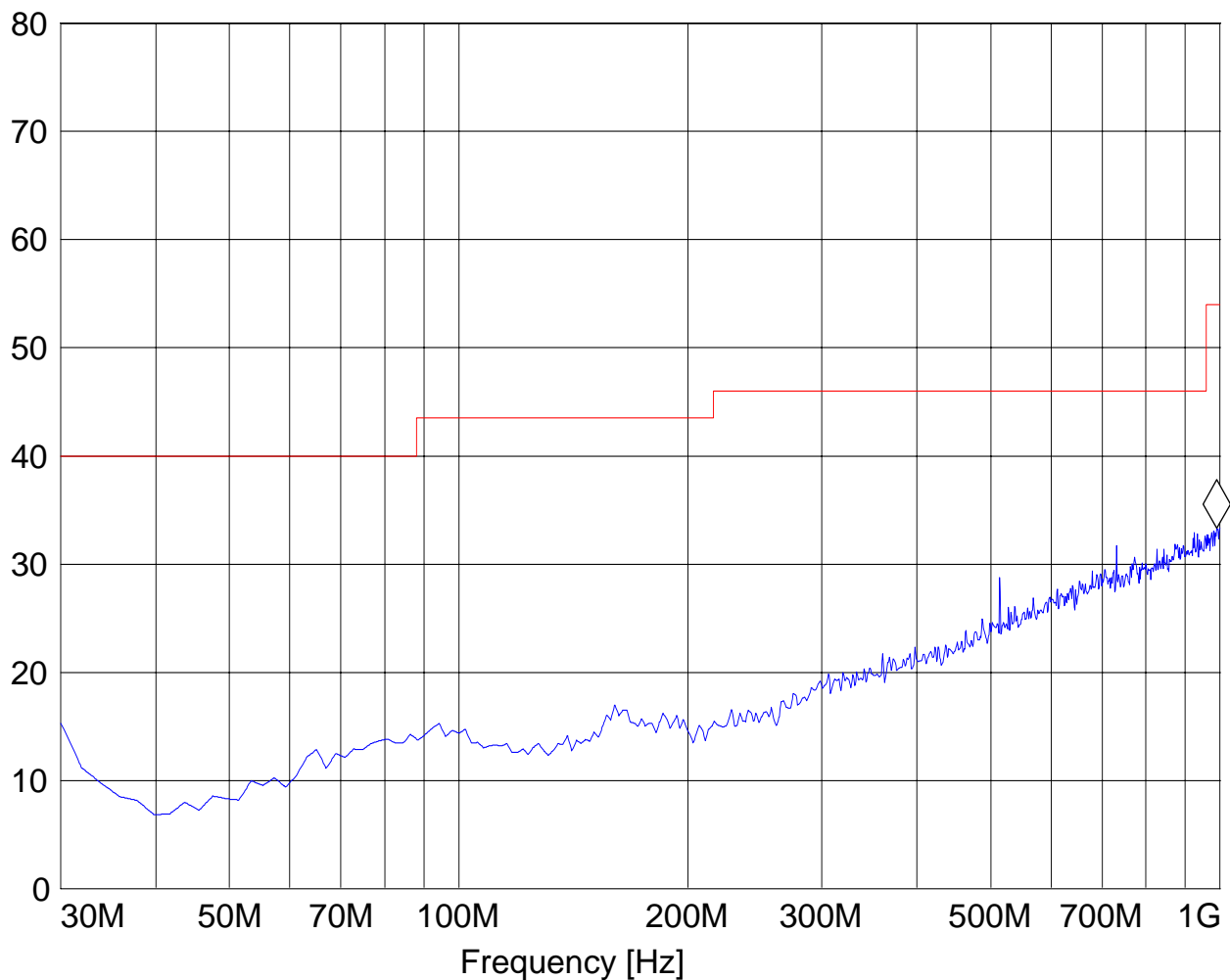
Ant Orientation: H

EUT Orientation: V

Test Engineer: Val

Voltage: Battery

Comments: ROTATION 360°

SWEEP TABLE: "CANDA RE_30M-1G_Hor"Marker: 990.280561 MHz 33.33 dB μ V/mLevel [dB μ V/m]

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

EUT: EarModule Gen2

Test Mode: BT RECIEVE

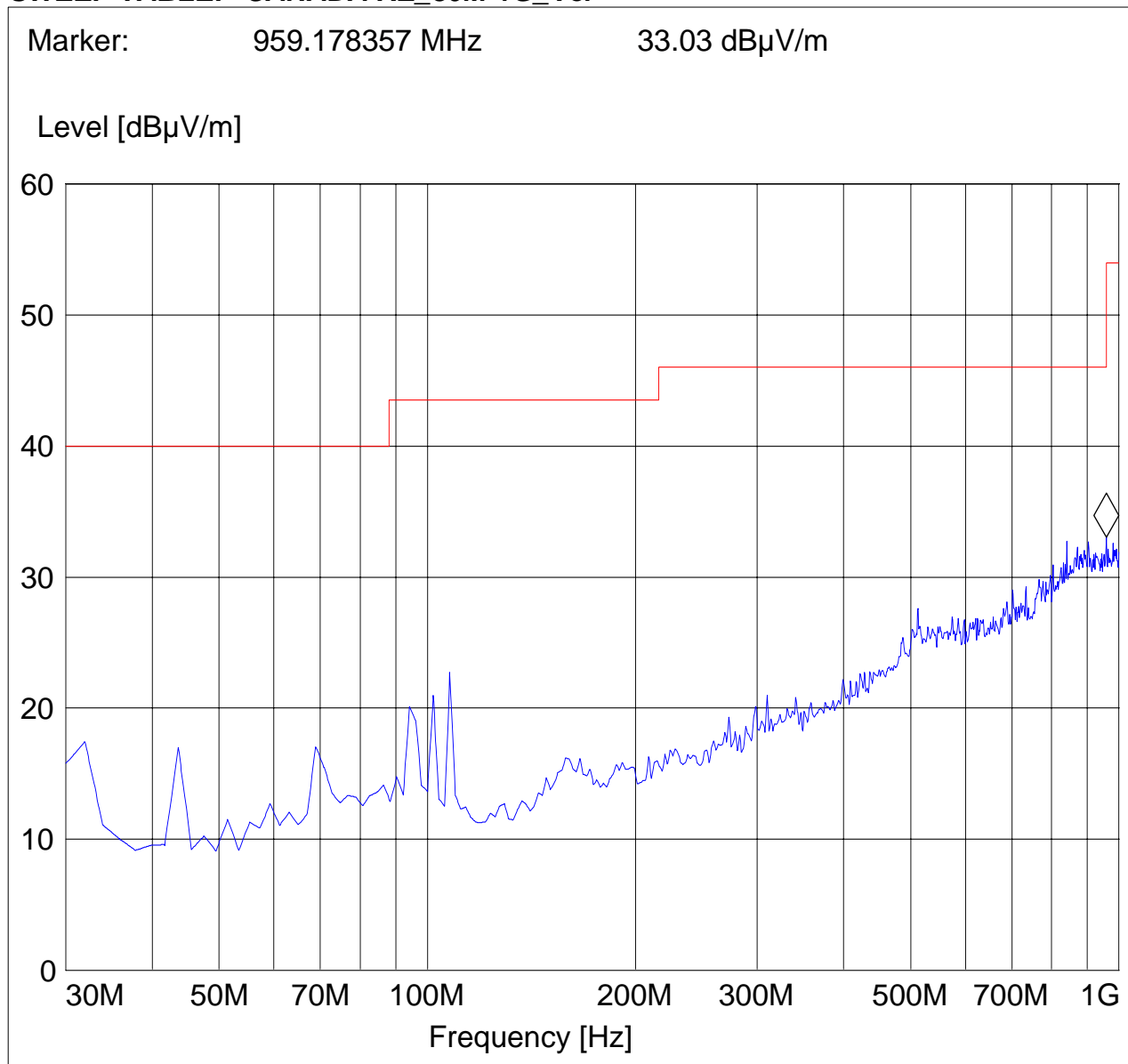
Ant Orientation: V

EUT Orientation: V

Test Engineer: Val Tankov

Voltage: Battery

Comments: ROTATION 360°

SWEEP TABLE: "CANADA RE_30M-1G_Ver"

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

EUT: EarModule Gen2

Test Mode: BT RECIEVE

Ant Orientation: H

EUT Orientation: V

Test Engineer: Val

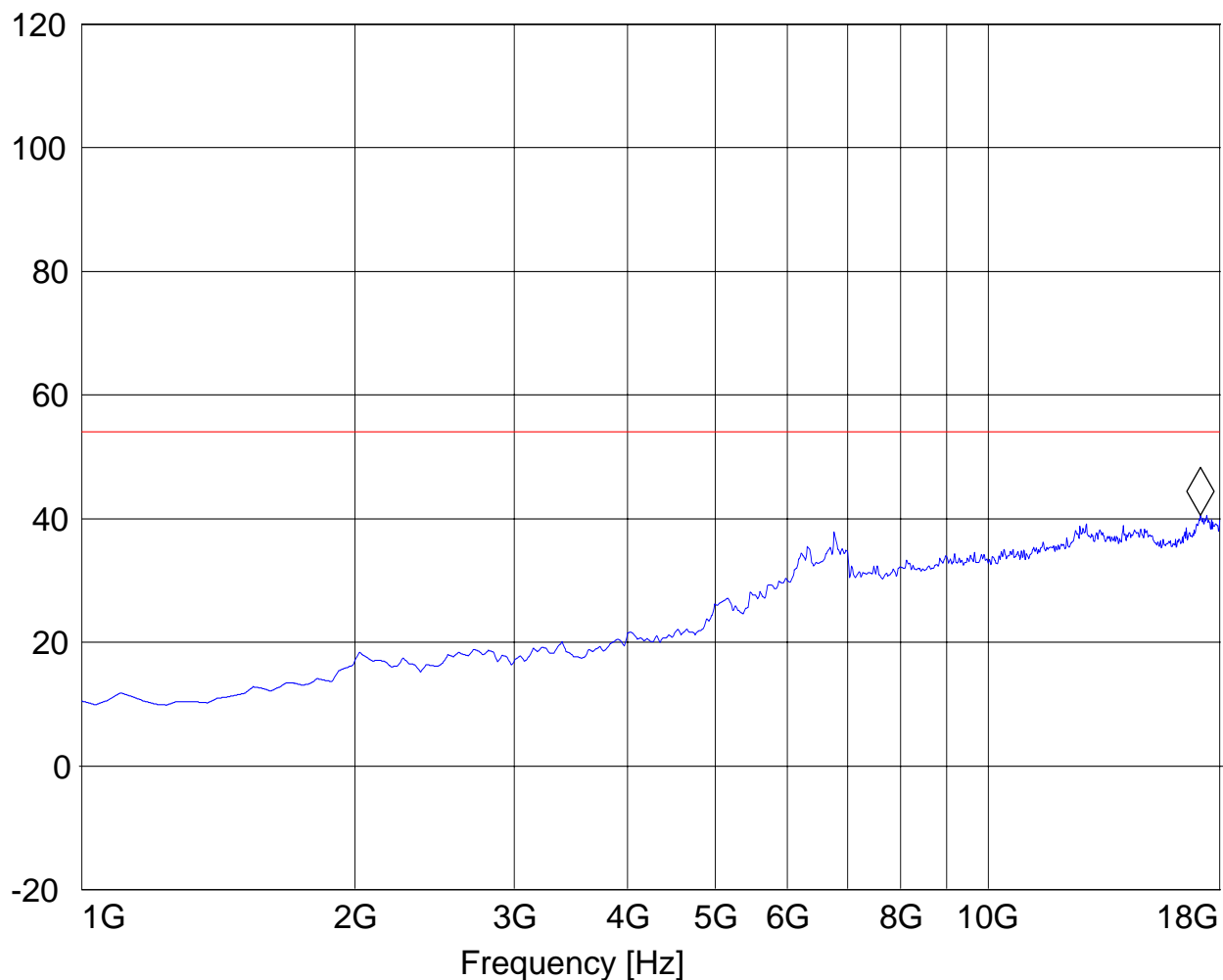
Voltage: Battery

Comments: ROTATION 360°

SWEEP TABLE: "CANADA RE_1-18G"

Marker: 17.148296593 GHz 40.54 dBμV/m

Level [dBμV/m]



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

EUT: EarModule Gen2

Test Mode: BT RECIEVE

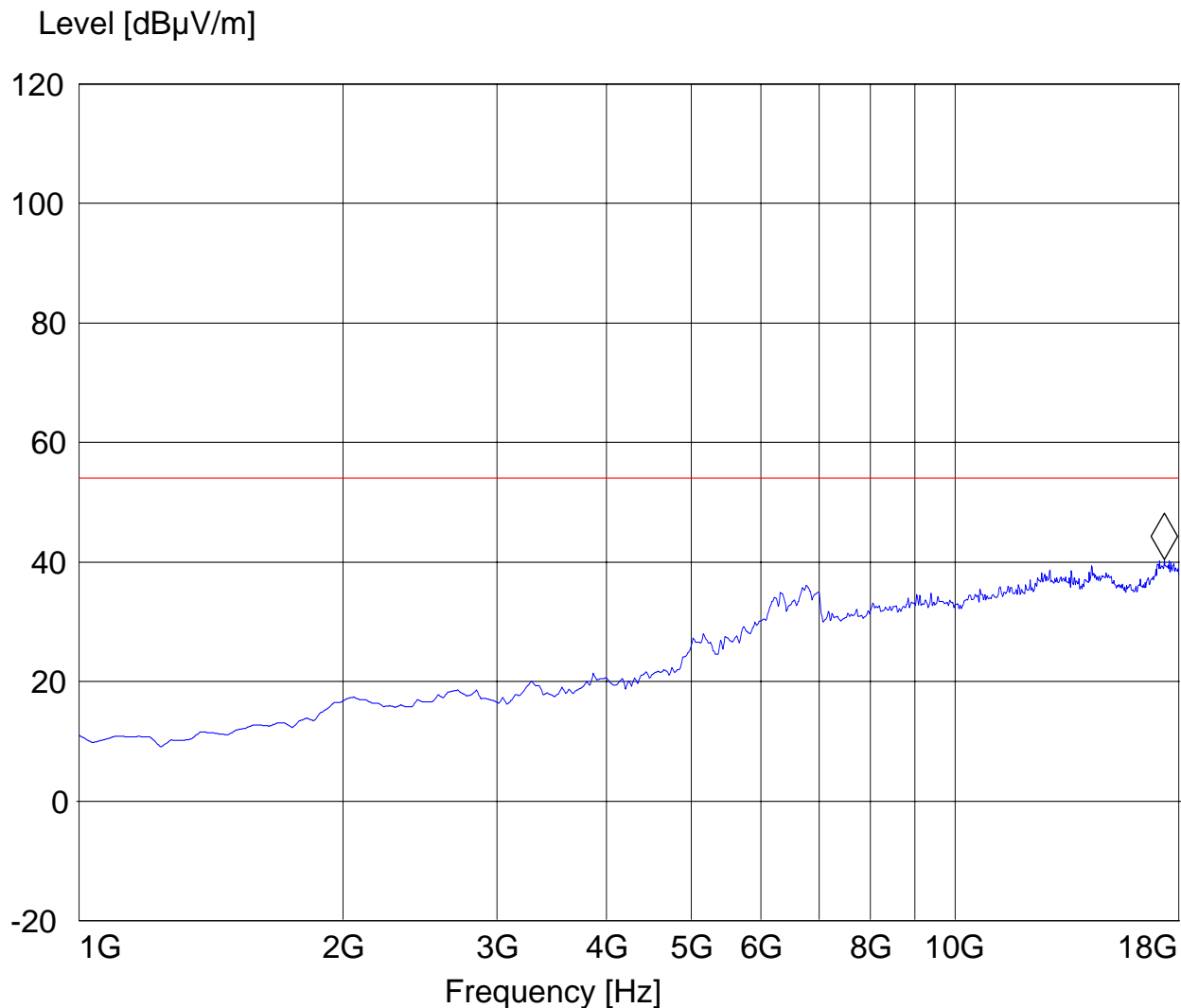
Ant Orientation: V

EUT Orientation: V

Test Engineer: Val Tankov

Voltage: Battery

Comments: ROTATION 360°

SWEEP TABLE: "CANADA RE_1-18G"Marker: 17.318637275 GHz 40.48 dB μ V/m



Note: This plot is valid for both polarities (worst-case plot)

CETECOM Inc.

411 Dixon Landing Road, Milpitas CA 95035, USA

EUT: EarModule Gen2

Test Mode: BT RECIEVE

Ant Orientation: V

EUT Orientation: V

Test Engineer: Val Tankov

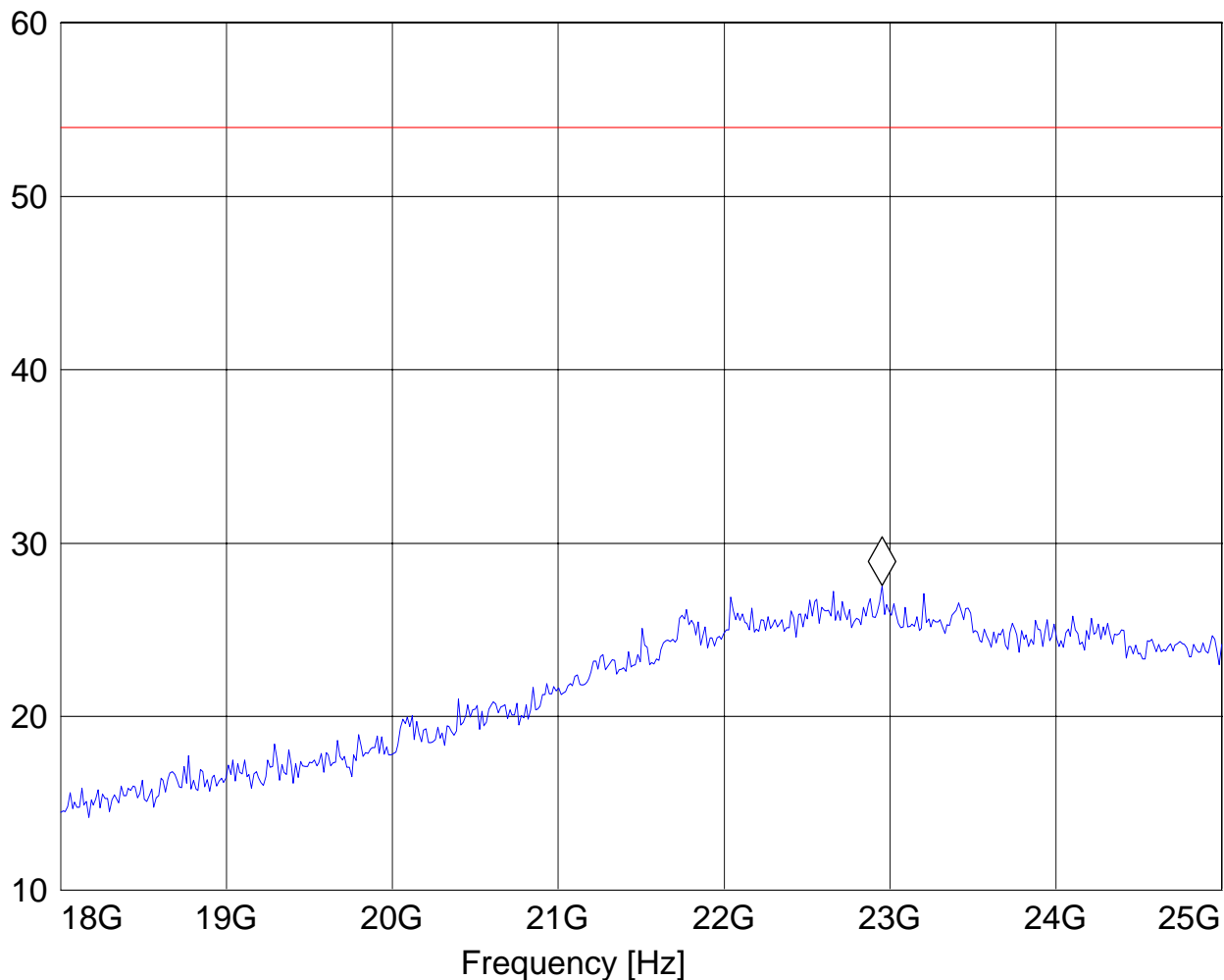
Voltage: Battery

Comments: ROTATION 360°

SWEEP TABLE: " CANADA RE_18-26.5G"

Marker: 22.951903808 GHz 27.58 dB μ V/m

Level [dB μ V/m]





5.3 Radiated Output Power

CETECOM Inc.

411 Dixon Landing Road, Milpitas CA 95035, USA

EUT: EarModule Gen2

Customer: Sound ID

Test Mode: BT Ch. 0

Ant Orientation: H

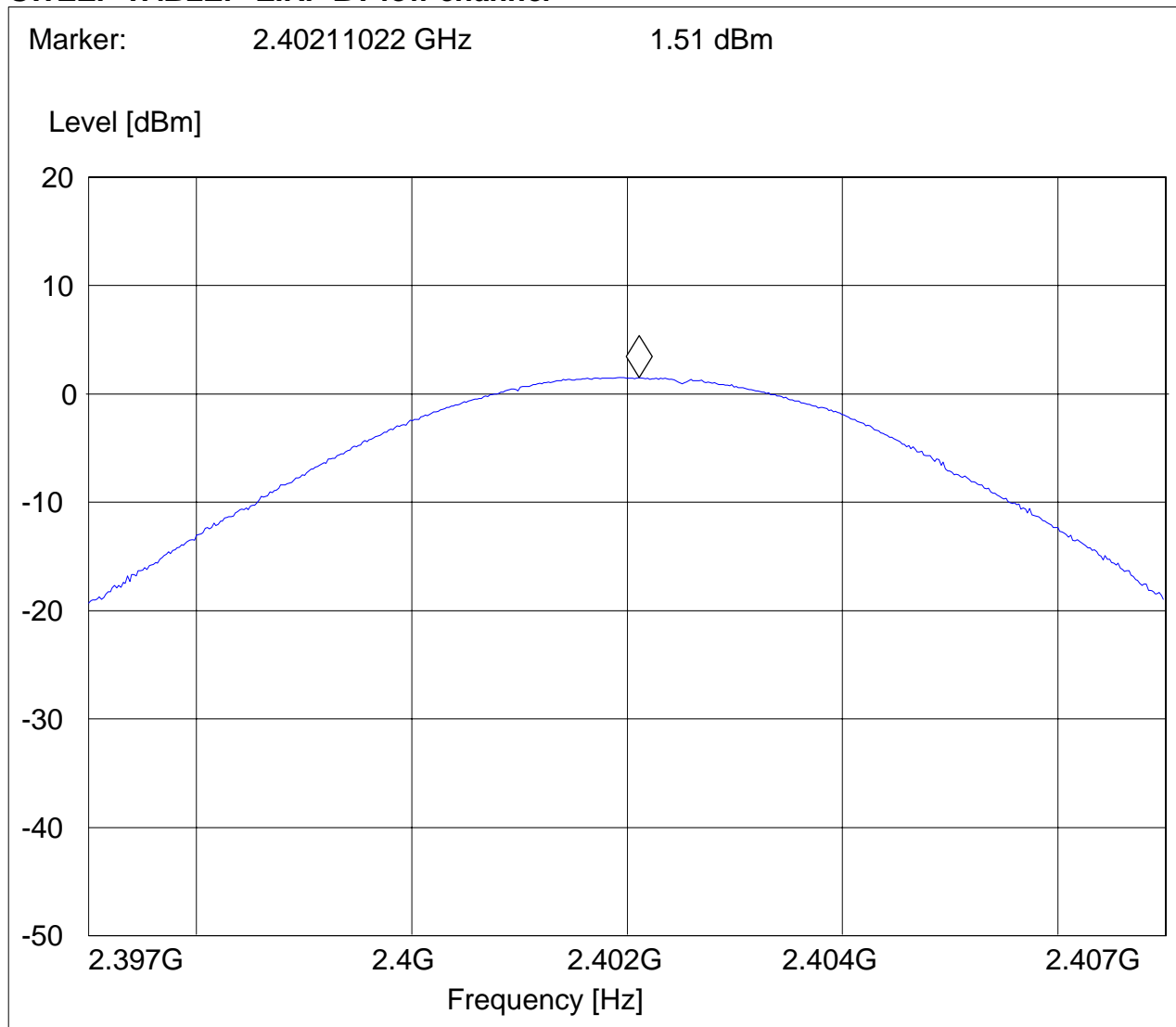
EUT Orientation: V

Test Engineer: Val Tankov

Voltage: Battery

Comments: TT 90°

SWEEP TABLE: "EIRP BT low channel"



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

EUT: EarModule Gen2

Customer: Sound ID

Test Mode: BT Ch. 39

Ant Orientation: H

EUT Orientation: V

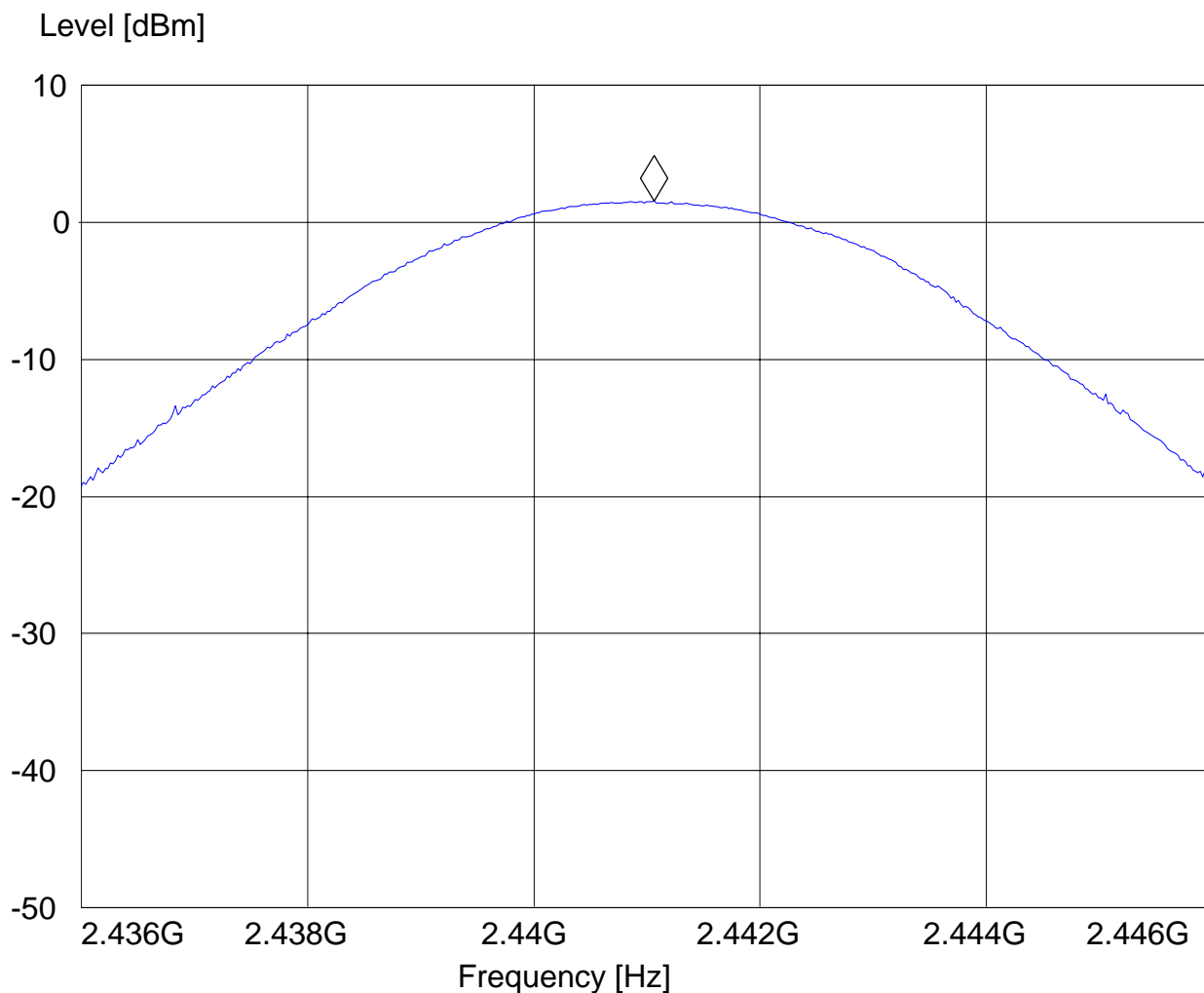
Test Engineer: Val

Voltage:: Battery

Comments:: TT 90°

SWEEP TABLE: "EIRP BT mid channel"

Marker: 2.441062124 GHz 1.53 dBm



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

EUT: EarModule Gen2

Customer: Sound ID

Test Mode: BT Ch. 78

Ant Orientation: H

EUT Orientation: V

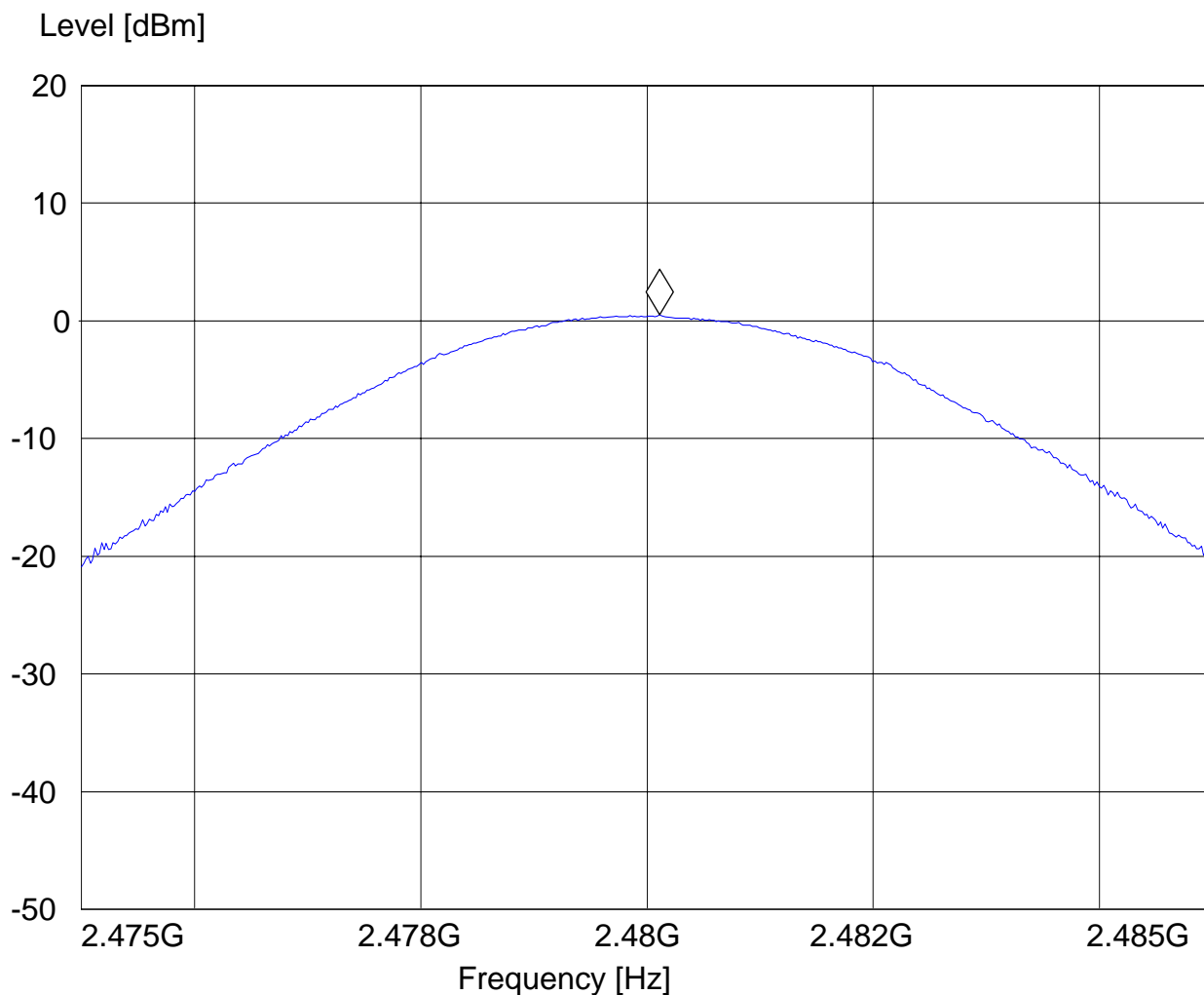
Test Engineer: Val

Voltage: Battery

Comments: TT 90°

SWEEP TABLE: "EIRP BT high channel"

Marker: 2.48011022 GHz 0.5 dBm





6 Measurements (CONDUCTED)

6.1 MAXIMUM PEAK OUTPUT POWER § 15.247 (CONDUCTED)

6.1.1 LIMIT SUB CLAUSE § 15.247 (b) (1)

Frequency range	RF power output
2400-2483.5 MHz	30dBm

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

Notes:

1. Measurements were performed with a spectrum analyzer.

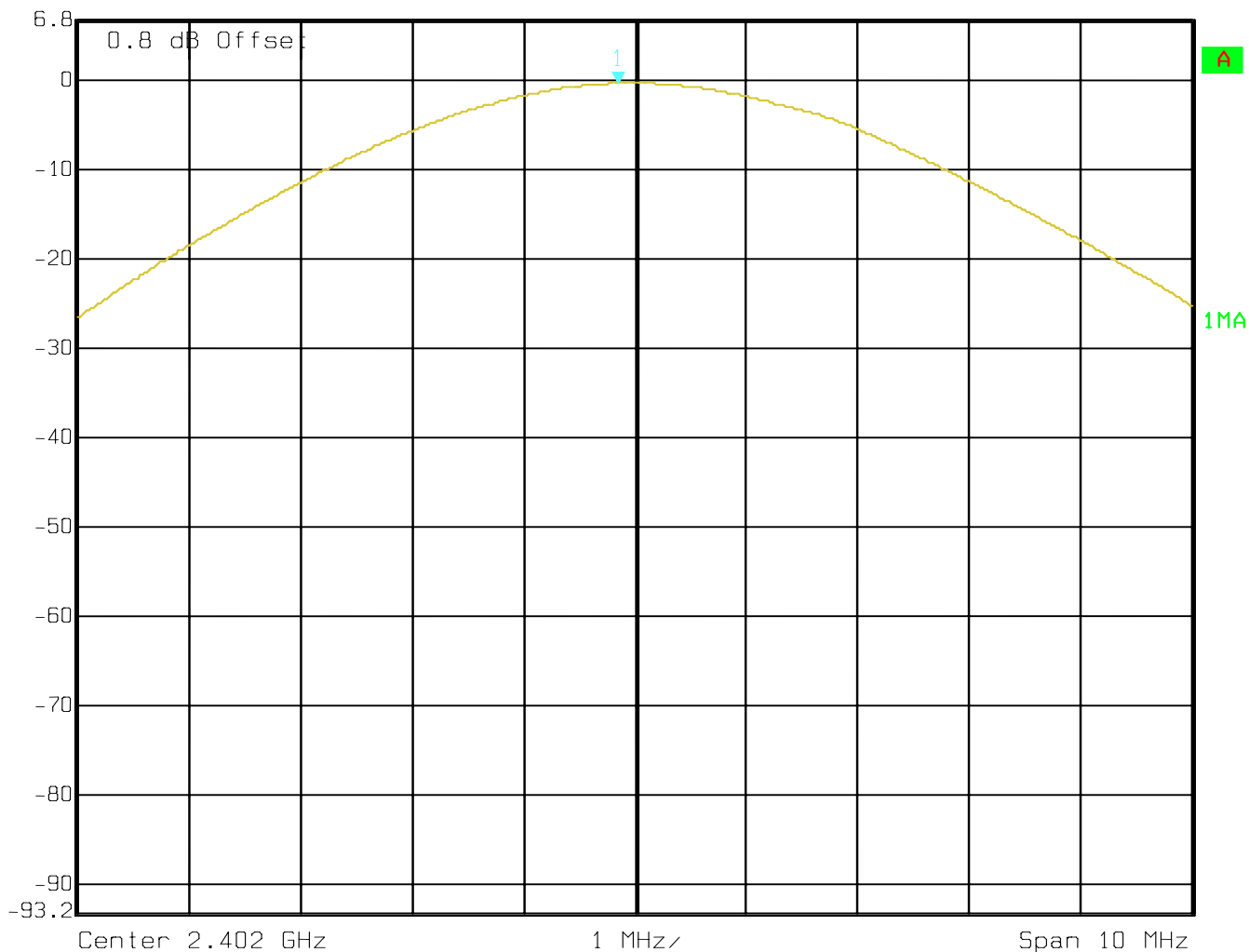
6.1.2 RESULTS:

GFSK

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (dBm)		
Frequency (MHz)		2402 MHz	2441 MHz	2480 MHz
T _{nom} (23)°C	V _{nom} VDC	-0.40	-0.40	-0.18

GFSK (2402 MHz)


 Marker 1 [T1] RBW 3 MHz RF Att 30 dB
 Ref Lvl -0.40 dBm VBW 3 MHz
 6.8 dBm 2.40184970 GHz SWT 5 ms Unit dBm



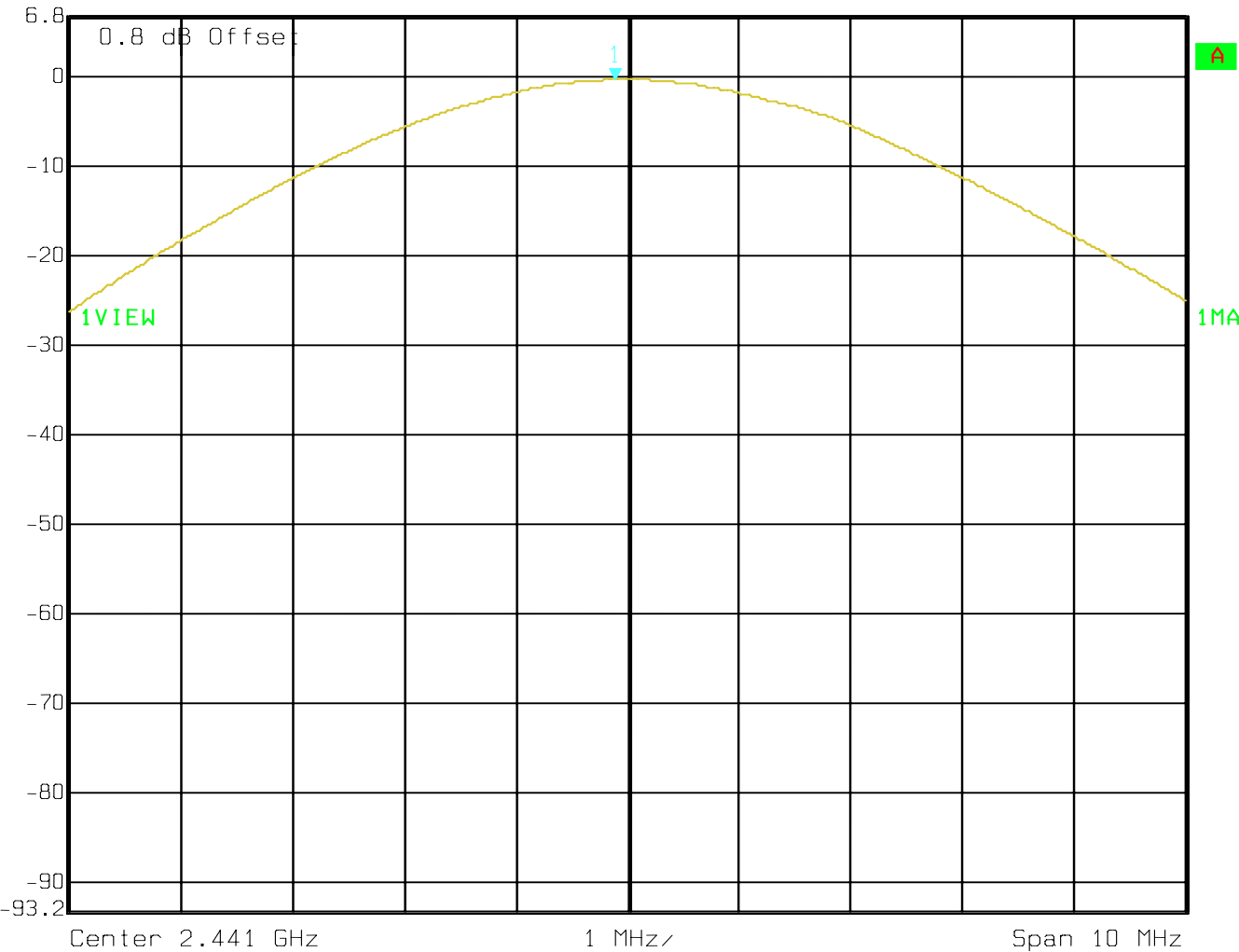
Date: 15.FEB.2007 10:37:36



GFSK (2441 MHz)



Ref Lvl 6.8 dBm
Marker 1 [T1] -0.40 dBm
2.44088978 GHz
RBW 3 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm

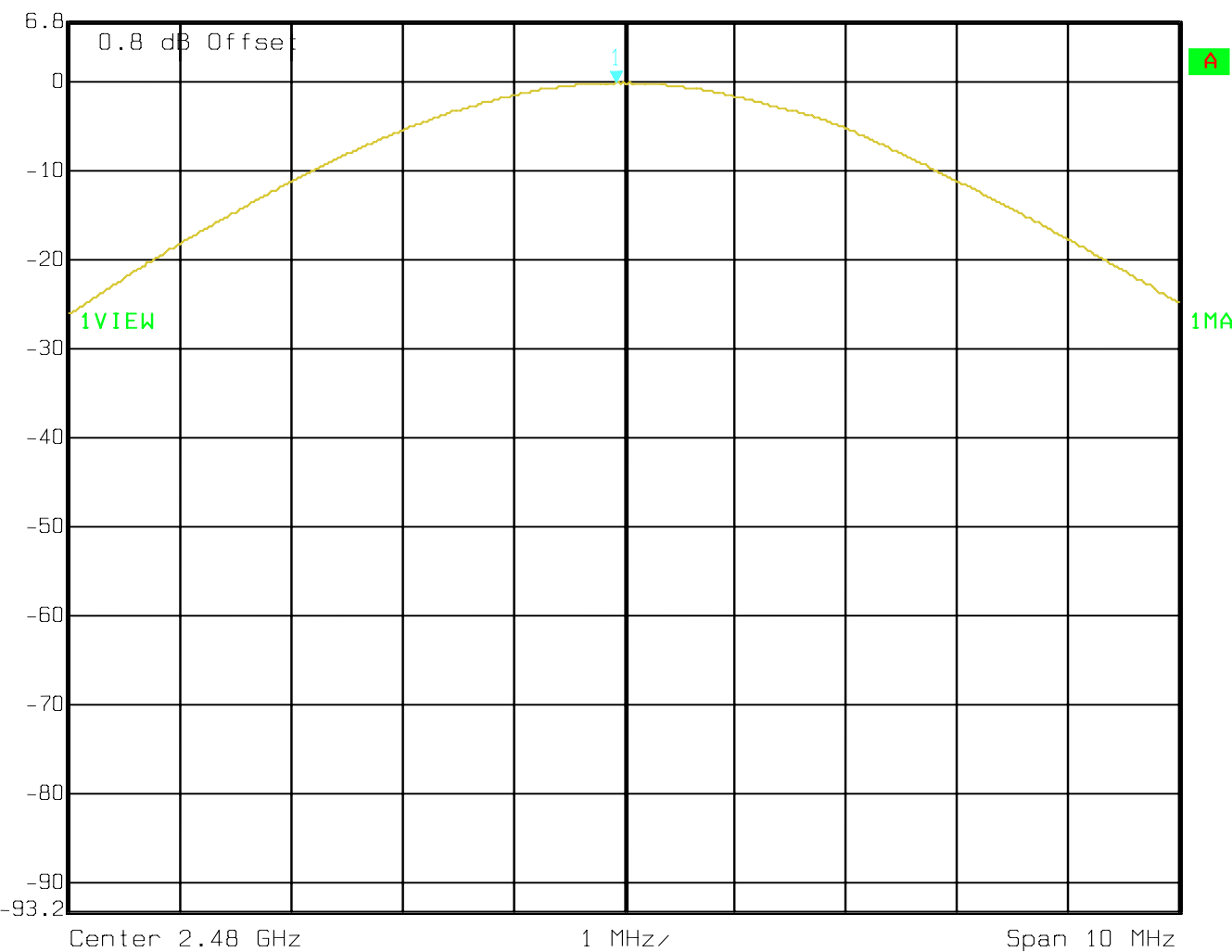


[



GFSK (2480 MHz)

 Ref Lvl 6.8 dBm Marker 1 [T1] -0.18 dBm RBW 3 MHz RF Att 30 dB
2.47992986 GHz VBW 3 MHz Unit dBm
SWT 5 ms



[

6.2 20dB BANDWIDTH

Notes:

1. Measurements were performed with a spectrum analyzer.

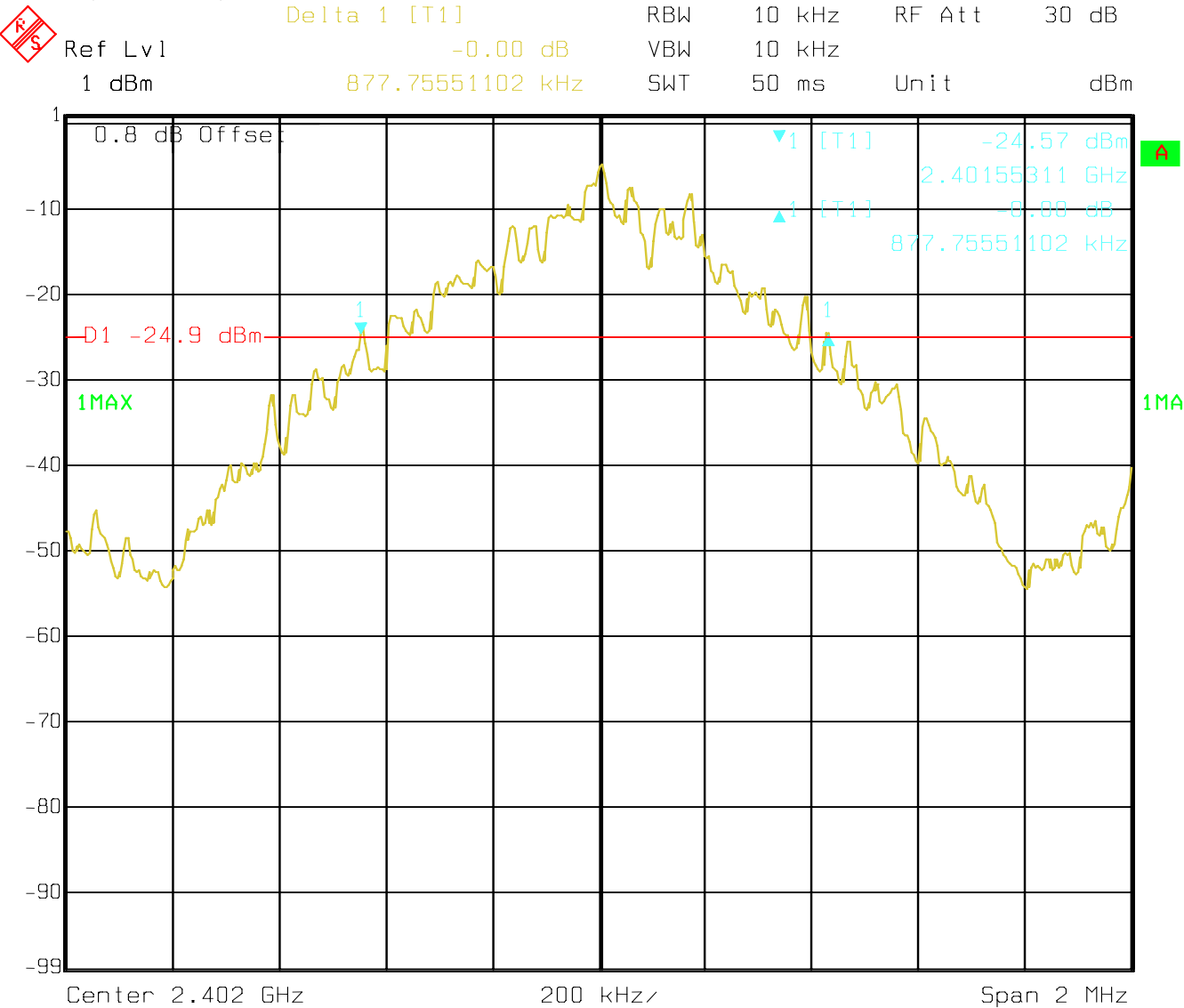
6.2.1 RESULTS:

GFSK

TEST CONDITIONS		BANDWIDTH		
		(kHz)		
Frequency (MHz)		2402 MHz	2441 MHz	2480 MHz
T _{nom} (23)°C	V _{nom} VDC	877.76	877.76	877.76



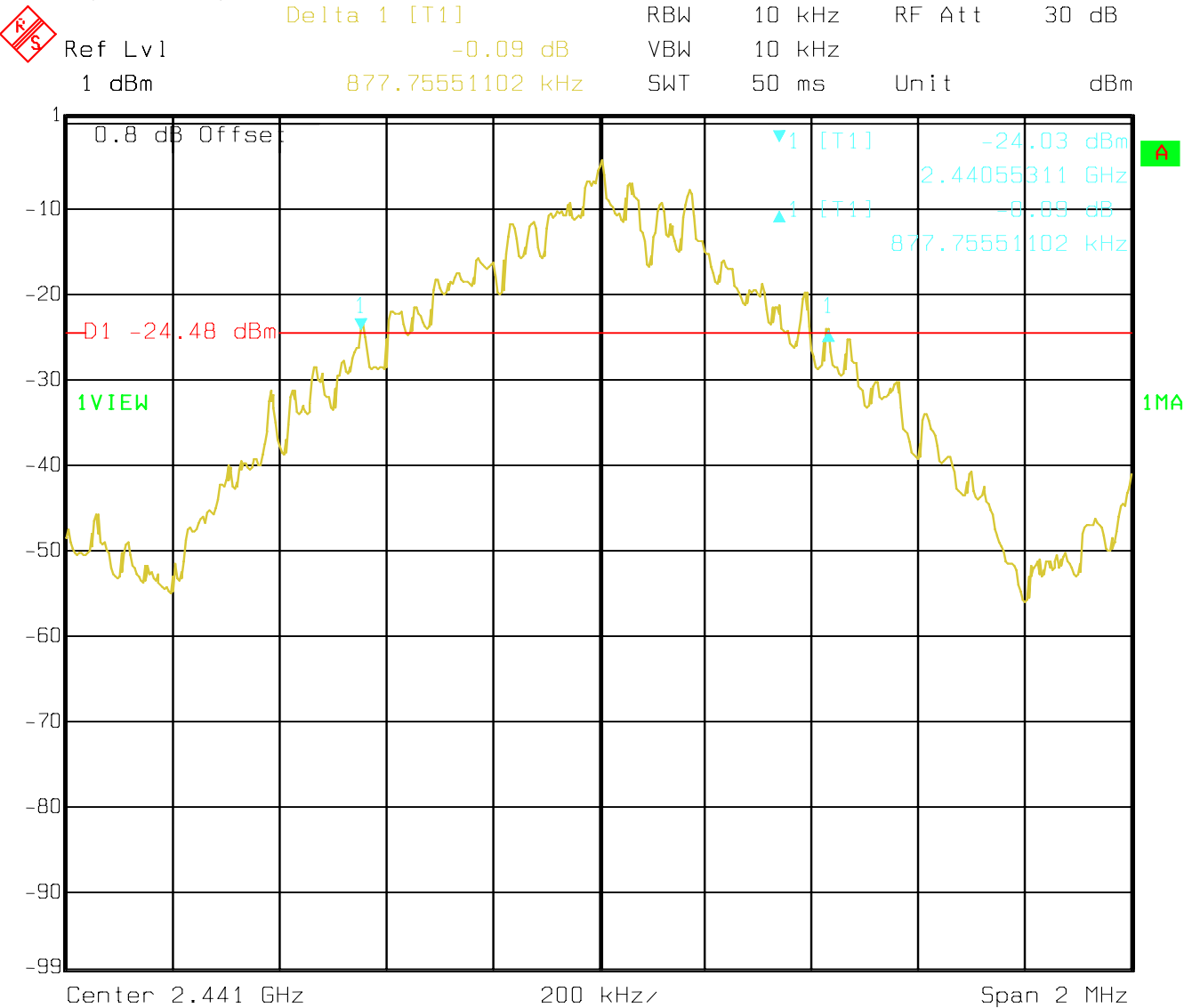
GFSK (2402 MHz)



[



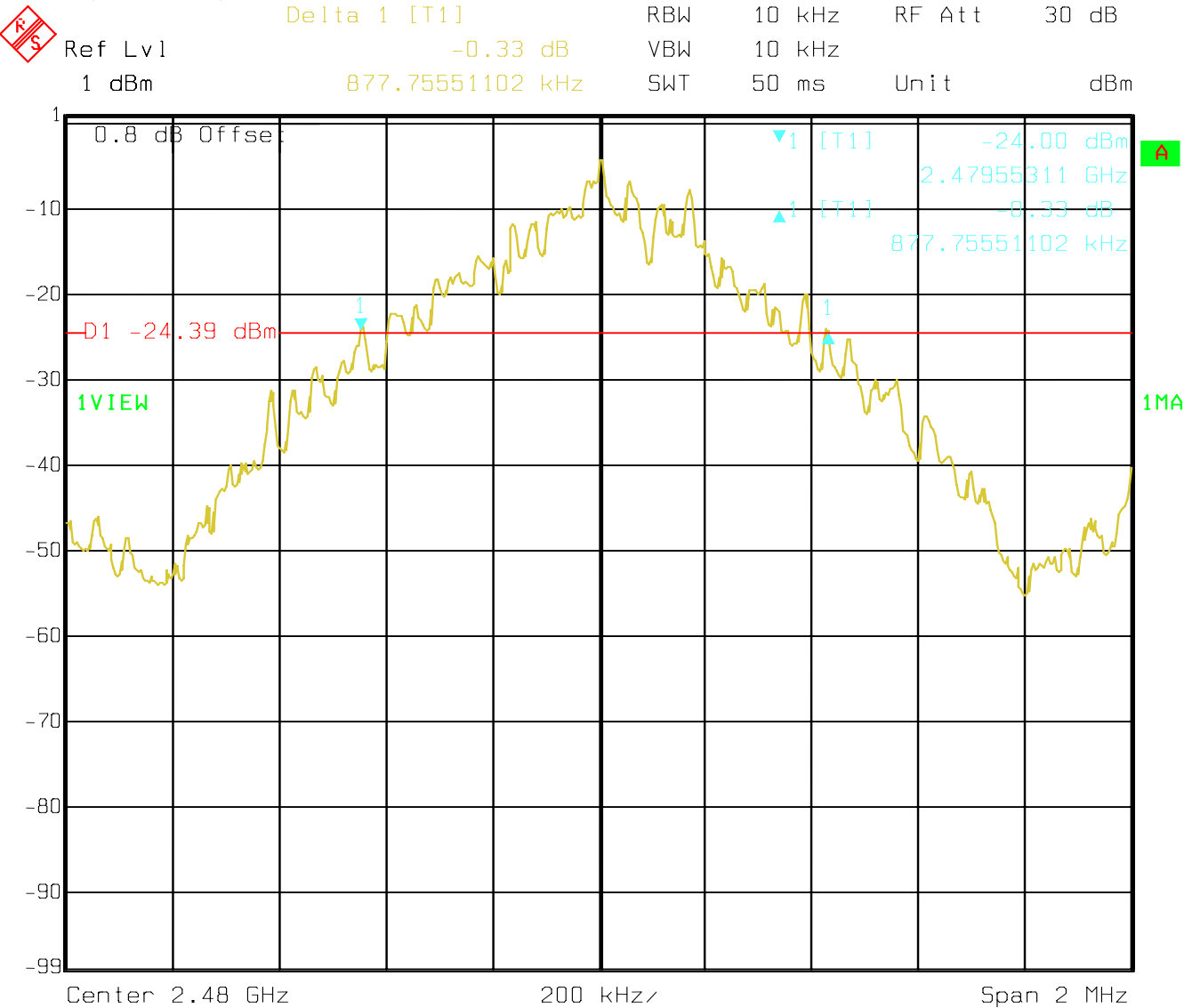
GFSK (2441 MHz)



[



GFSK (2480 MHz)





6.3 EMISSION LIMITATIONS

§ 15.247 (c) (1)

Transmitter (Conducted)

LIMITS

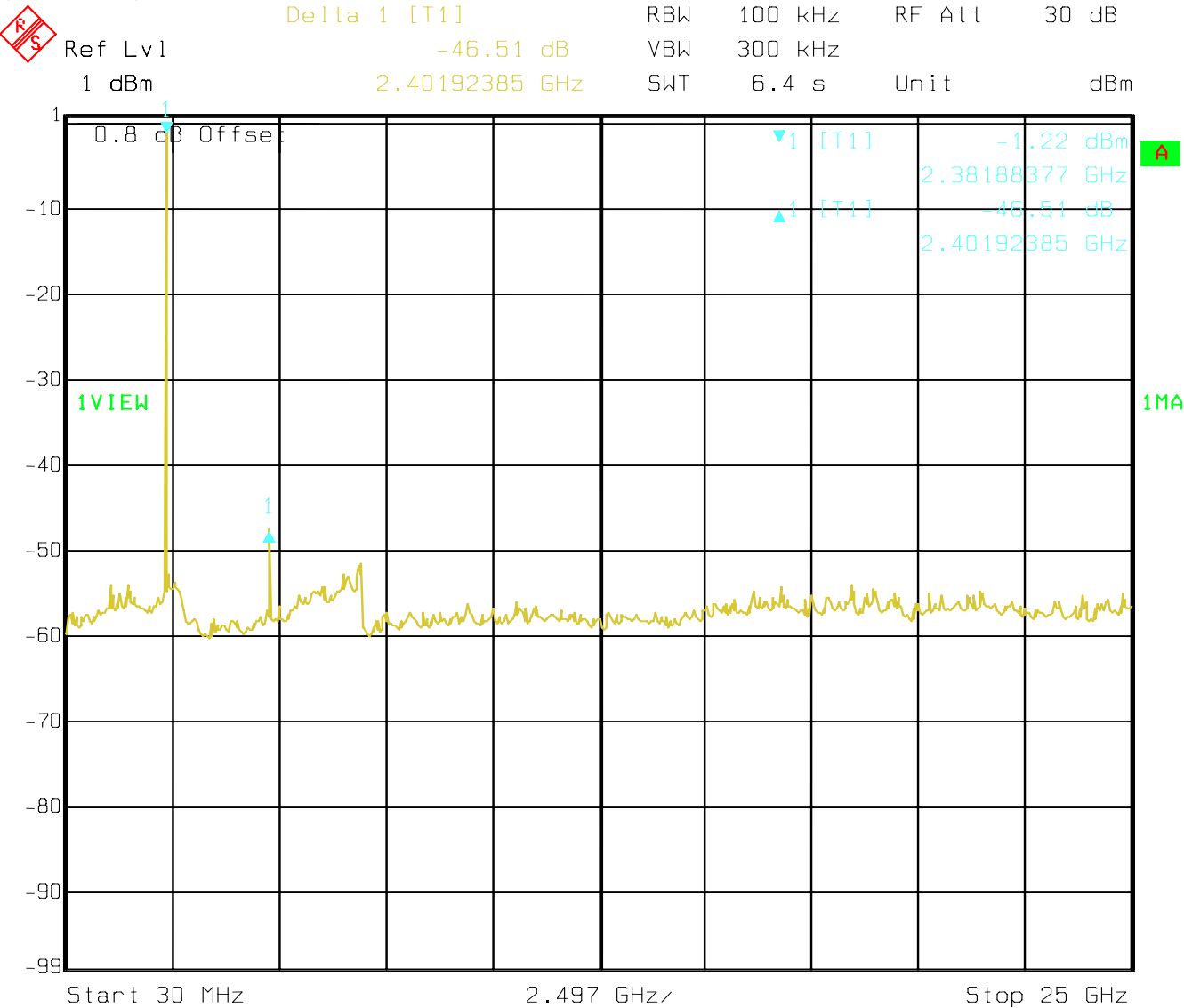
In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions, which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Notes:

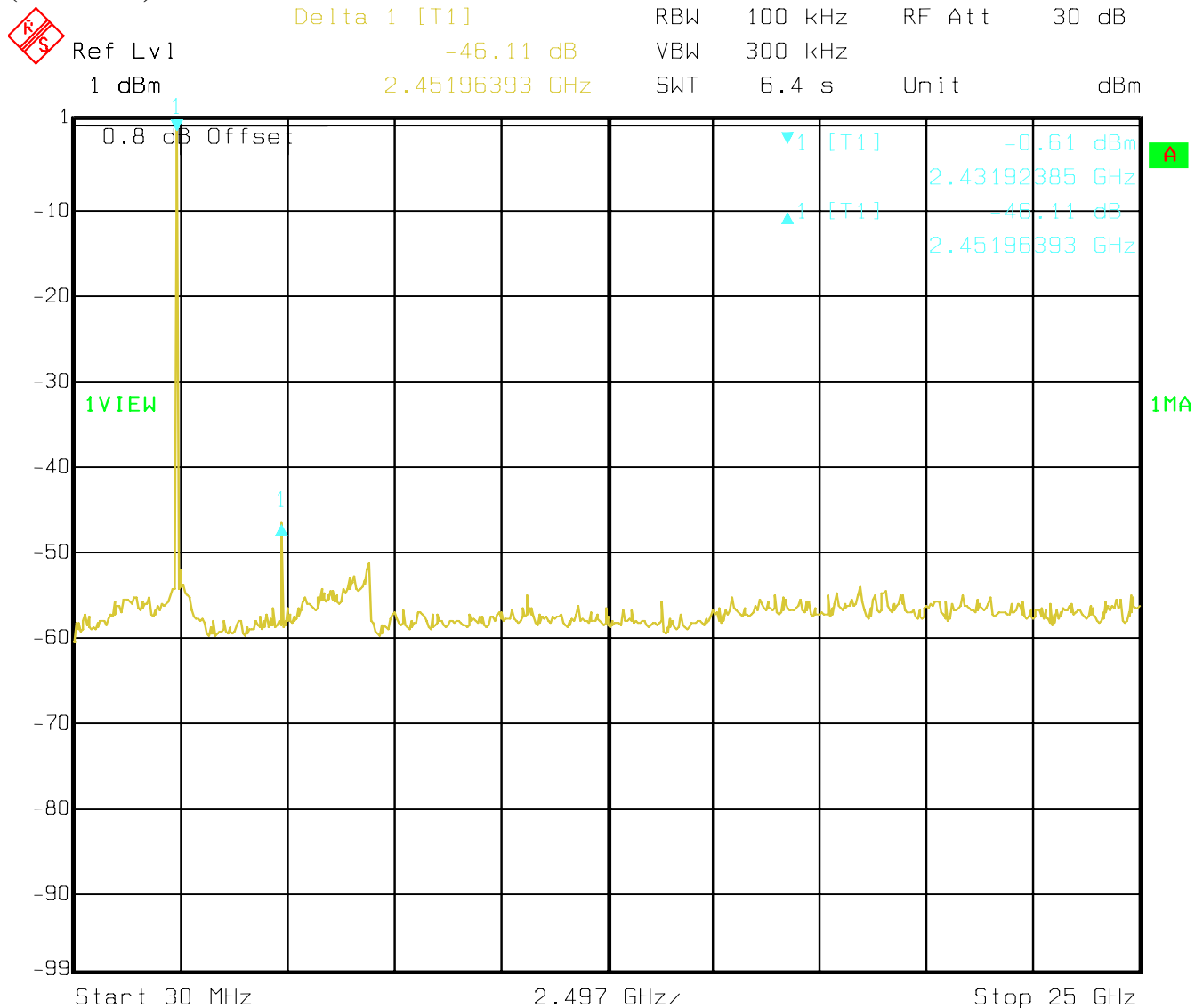
1. Measurements were performed with a spectrum analyzer.
2. During measurements the equipment was configured as shown in the block diagram of section 8 of this report.



(2402 MHz)



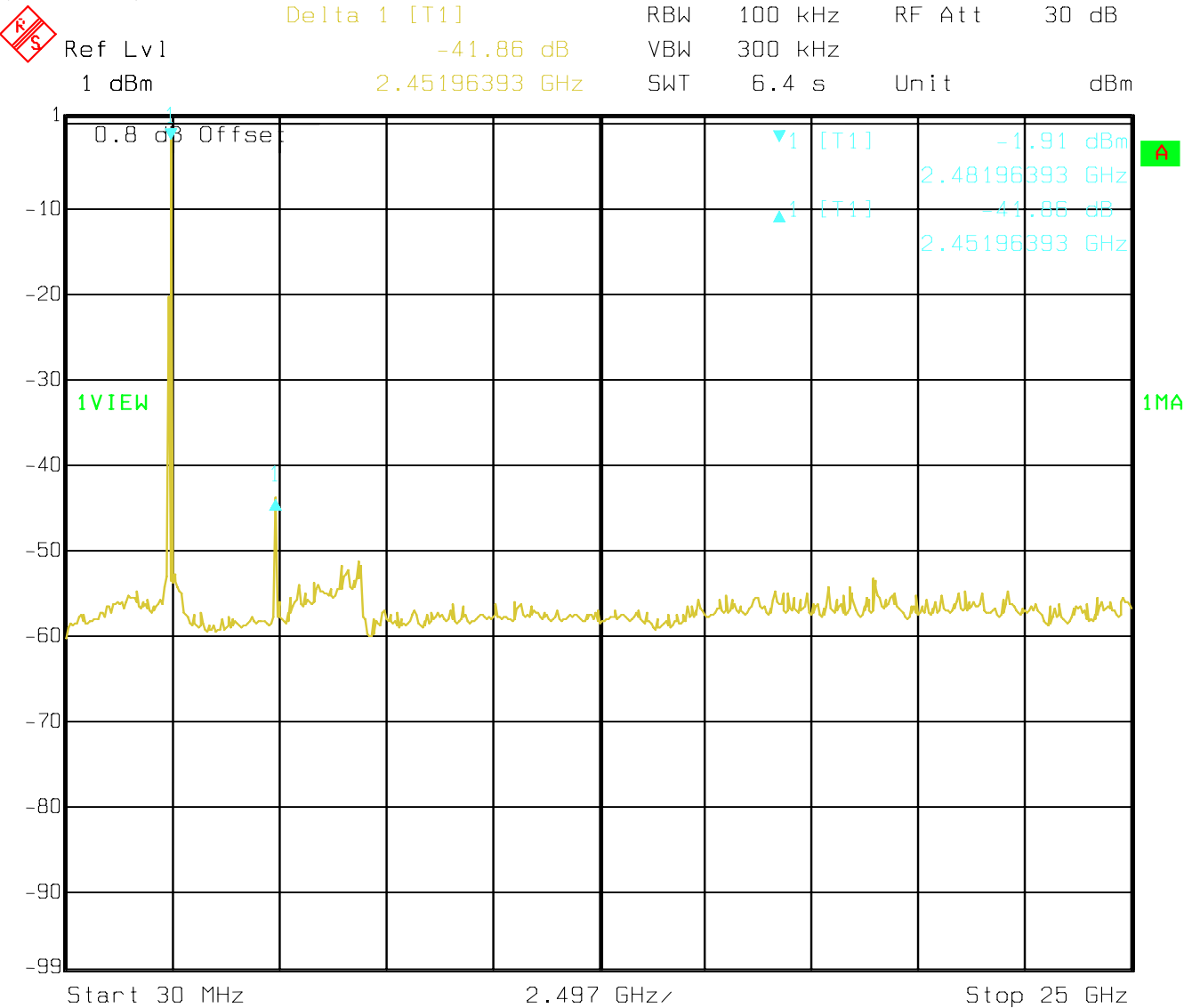
(2441 MHz)



Date: 15.FEB.2007 14:38:01



(2480 MHz)



6.4 CARRIER FREQUENCY SEPARATION

6.4.1 LIMIT SUB CLAUSE § 15.247 (a) (1)

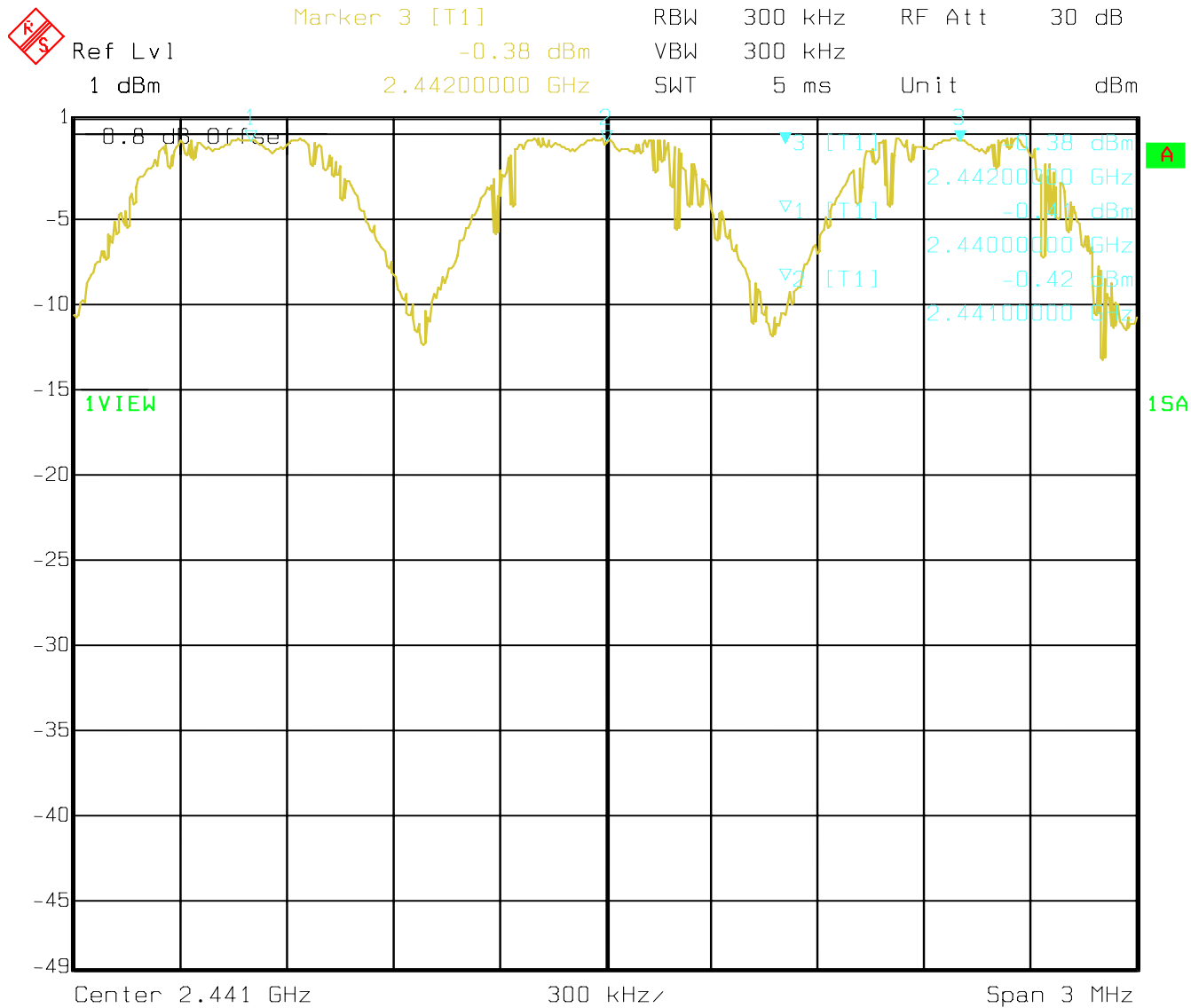
(a)(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Notes:

1. Measurements were performed with a spectrum analyzer.
2. During measurements the equipment was configured as shown in the block diagram of section 8 of this report.

6.4.2 RESULTS:

TEST CONDITIONS		SEPARATION (MHz)
$T_{nom}(23)^{\circ}C$	$V_{nom} VDC$	1



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6.5 NUMBER OF HOPPING CHANNELS

6.5.1 LIMIT SUB CLAUSE § 15.247 (a) (1) (iii)

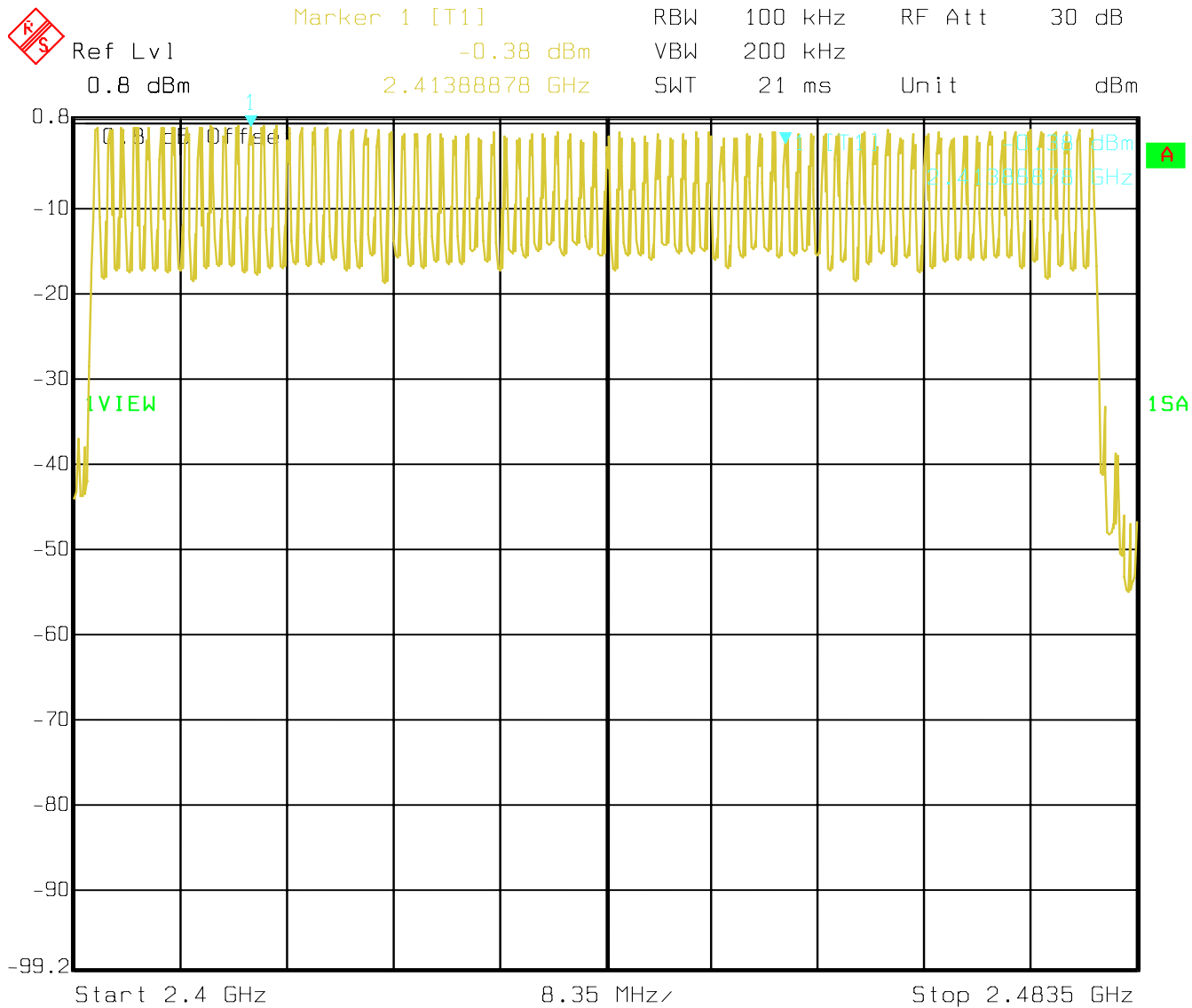
NUMBER OF CHANNELS
> 15

Notes:

1. Measurements were performed with a spectrum analyzer.
2. During measurements the equipment was configured as shown in the block diagram of section 8 of this report.

6.5.2 RESULTS:

TEST CONDITIONS		NUMBER OF CHANNELS
T_{nom}(23)°C	V_{nom} VDC	79



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**6.6 TIME OF OCCUPANCY (DWELL TIME)****6.6.1 LIMIT SUB CLAUSE § 15.247 (a) (1) (i) (ii) (iii)**

FREQUENCY RANGE	AVERAGE TIME OF OCCUPANCY PER 31.6 SECONDS (LIMIT)
2400-2483.5	0.4 SECONDS

Notes:

1. Measurements were performed with a spectrum analyzer.
2. During measurements the equipment was configured as shown in the block diagram of section 8 of this report.

6.6.2 RESULTS:

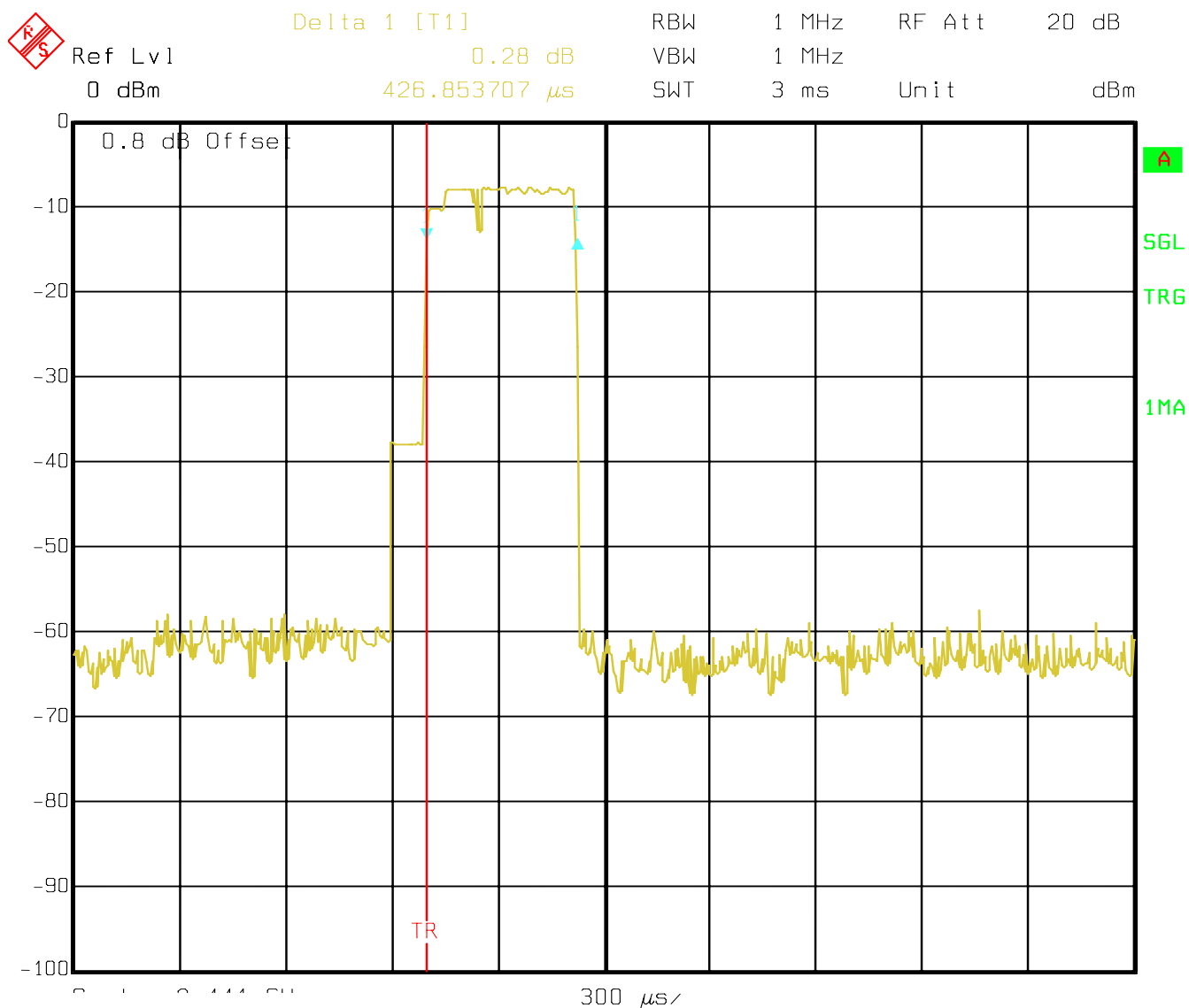
TEST CONDITIONS		TIME OF OCCUPANCY IN 31.6 SECONDS		
PACKET TYPE		DH1	DH3	DH5
T_{nom}(23)°C	V_{nom} VDC	136 mS	271 mS	308 mS

(DH1)

The system makes worst case 1600 hops per second or 1 time slot has a length of 625 μ s with 79 channels. A DH1 Packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 800 hops per second with 79 channels. So you have each channel 10.13 times per second and so for 31.6 seconds you have 320.108 times of appearance.

Each Tx-time per appearance is 361 μ s.

So we have $320.108 * 426.8\mu s = 136ms$ per 31.6 seconds.



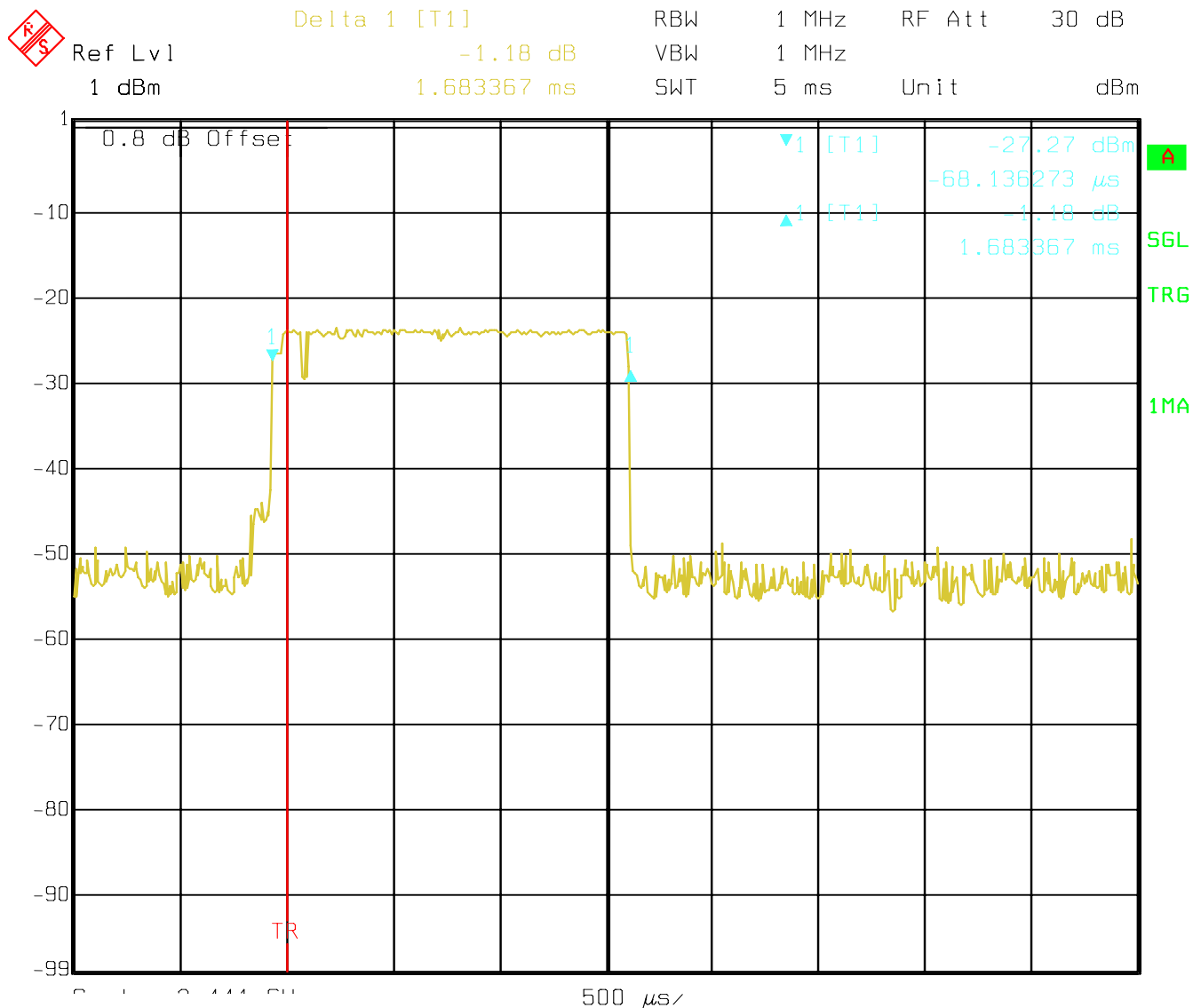
Date: 23.FEB.2007 12:08:15

(DH3)

A DH3 Packets need 3 time slots for transmit and 1 for receiving, then the system makes worst case 400 hops per second with 79 channels. So you have each channel 5.1 times per second and so for 31.6 seconds you have 161.16 times of appearance.

Each Tx-time per appearance is 1.6ms.

So we have $161.16 * 1.68\text{ms} = 271\text{ms}$ per 31.6 seconds.



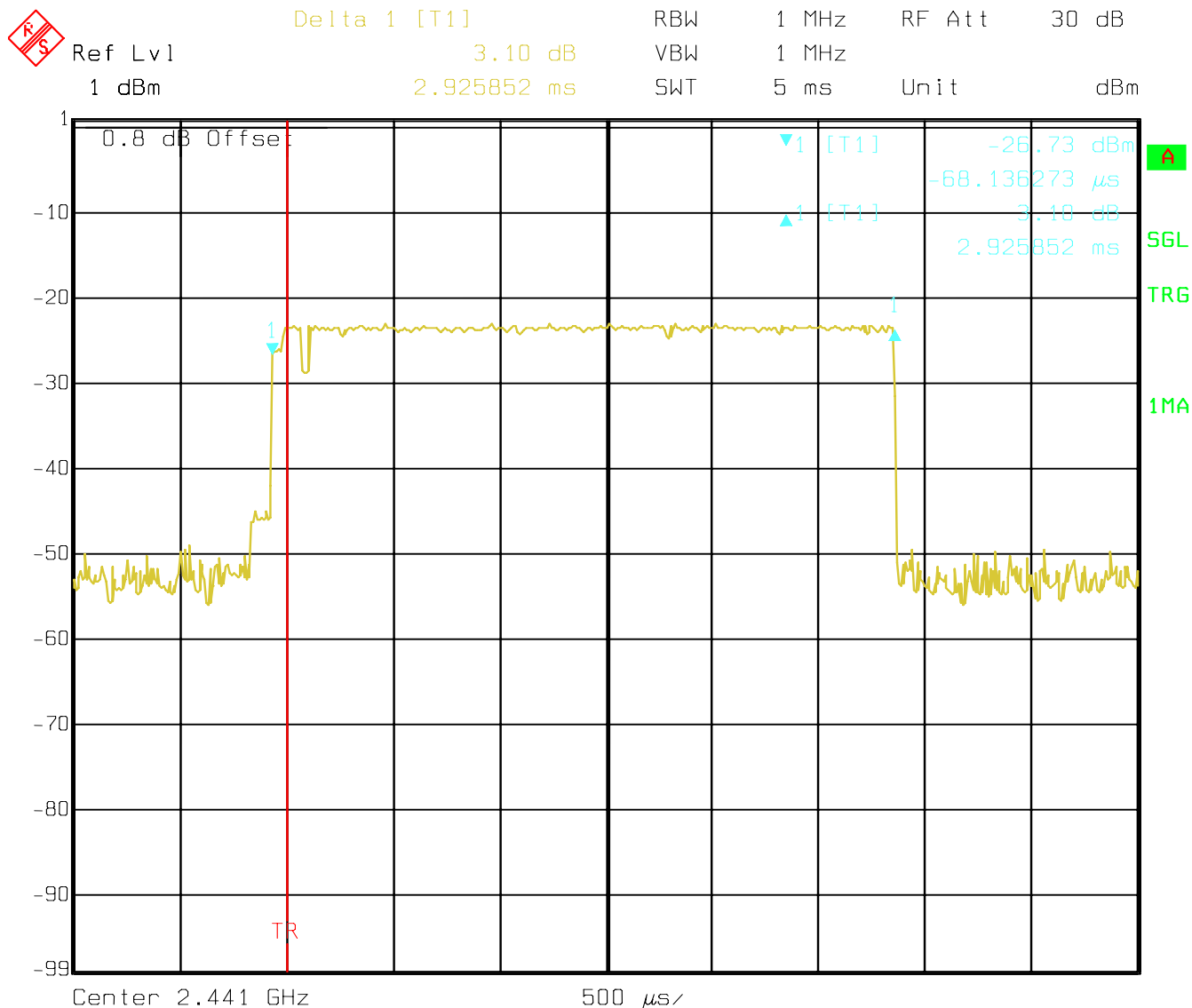
Date: 15.FEB.2007 14:56:48

(DH5)

At DH5 Packets you need 5 time slots for transmit and 1 for receiving, then the system makes worst case 266.7 hops per second with 79 channels. So you have each channel 3.36 times per second and so for 30 seconds you have 106.176 times of appearance.

Each Tx-time per appearance is 2.9ms.

So we have $106.176 * 2.9\text{ms} = 308\text{ms}$ per 31.6 seconds.



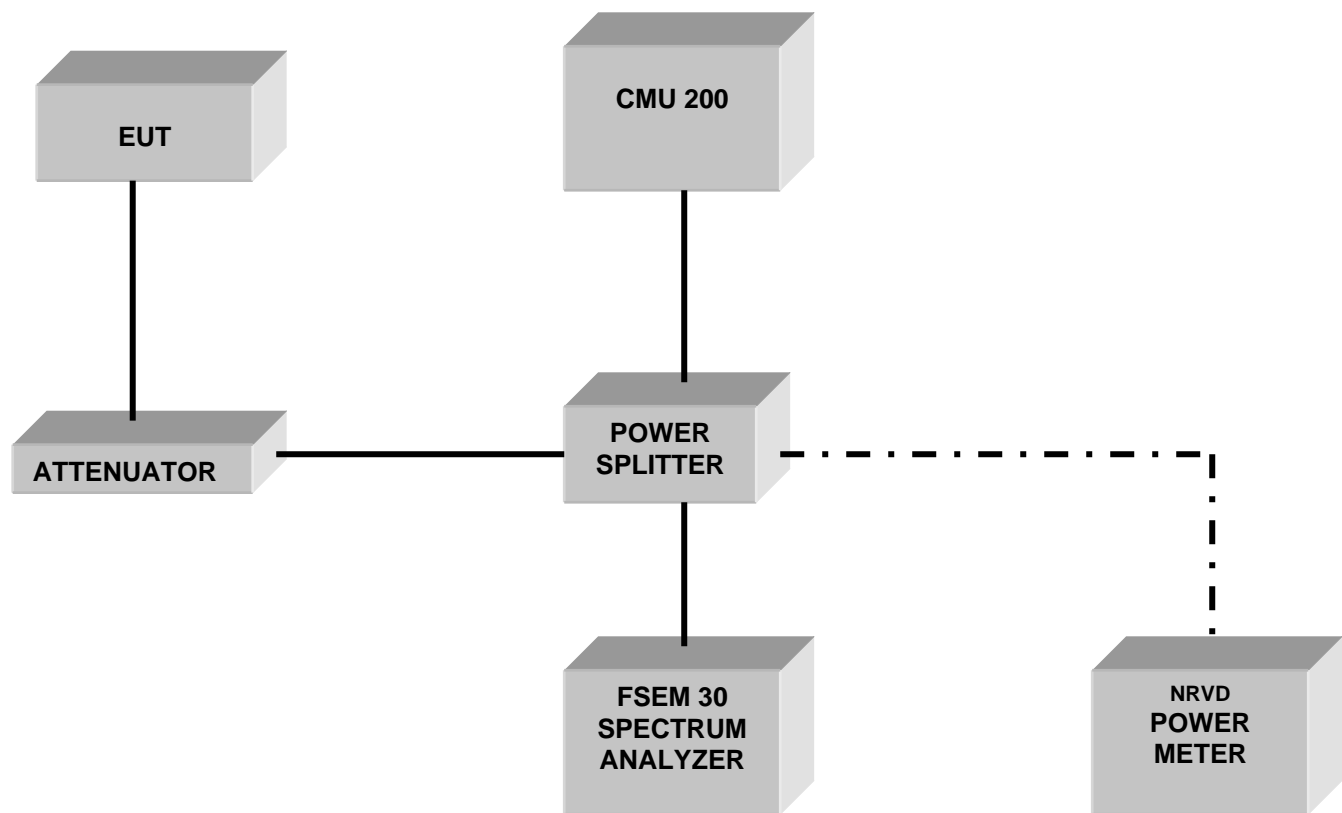
Date: 15.FEB.2007 14:50:05

**7 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS**

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal Due	Interval
01	Spectrum Analyzer	FSEM 30	Rohde & Schwarz	100017	August 2007	1 year
02	Signal Generator	SMY02	Rohde & Schwarz	836878/011	May 2007	1 year
03	Power-Meter	NRVD	Rohde & Schwarz	0857.8008.02	May 2007	1 year
04	Biconilog Antenna	3141	EMCO	0005-1186	June 2007	1 year
05	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	June 2007	1 year
06	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	June 2007	1 year
07	Power Splitter	11667B	Hewlett Packard	645348	n/a	n/a
08	Climatic Chamber	VT4004	Voltsch	G1115	May 2007	1 year
19	High Pass Filter	5HC2700	Trilithic Inc.	9926013	n/a	n/a
10	High Pass Filter	4HC1600	Trilithic Inc.	9922307	n/a	n/a
11	Pre-Amplifier	JS4-00102600	Miteq	00616	May 2007	1 year
12	Power Sensor	URV5-Z2	Rohde & Schwarz	DE30807	May 2007	1 year
13	Universal Radio Comm. Tester	CMU 200	Rohde & Schwarz	832221/06	May 2007	1 year
14	Loop Antenna	6512	EMCO	00049838	July 2007	2 years

8 BLOCK DIAGRAMS

Conducted Testing



Radiated Testing

ANECHOIC CHAMBER

