

CETECOM Inc.



CETECOM Inc.

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Issued test report consists of 65 Pages

Page 1 (65)

**FCC LISTED, REG. NO.: 101450
&
RECOGNIZED BY INDUSTRY CANADA
IC – 3925**

**Test report no.: 375FCC15.247-2002
FCC Part 15.247 for FHSS systems / CANADA RSS-210
(T60X)
Tested with (T608)**

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- 1 General information**
 - 1.1 Notes**

The test results of this test report relate exclusively to the test item specified in 1.5. 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.

TEST REPORT PREPARED BY:

EMC Engineer: Philip Kim

1.2 Testing laboratory

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E-mail: lothar.schmidt@cetecomusa.com

Internet: www.cetecom.com

1.3 Details of applicant

Name : **Sony Ericsson Mobile Communication**
Street : **7001 Development Drive**
City / Zip Code : **Research Triangle Park, NC 27709**
Country : **USA**
Contact : **Patrick Bowen**
Telephone : **+1 (919) 472 1527**
Tele-fax : **+1 (919) 472 6382**
e-mail : **Patrick.bowen@sonyericsson.com**

1.4 Application details

Date of receipt of application : 11/13/02
Date of receipt test item : 11/13/02
Date of test : 11/13/02

1.5 Test item

Manufacturer : See Applicant
Street Address :
City / Zip Code :
Country :
Marketing Name :
Model No. : T60x (x can be any number from 0-9) tested model **T608**
Description : **Blue Tooth Transceiver built in CDMA mobile phone.**
FCC-ID : PXITR-CA0802

Additional information

Frequency : 2402-2480MHz
Type of modulation : GFSK
Number of channels : 79
Antenna : Integral
Power supply : Battery
Output power : -2.65 dBm
Extreme vol. Limits : N/A
Extreme temp. Tolerance :

1.6 Test standards: **FCC Part 15 §15.247 (DA00-705)**


Note: All radiated measurements were made in all three orthogonal planes. The values reported are the maximum values.

2 Technical test


2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests Performed	
Final Verdict: (only "passed" if all single measurements are "passed")	Passed

Technical responsibility for area of testing:

2002-11-18	EC & Radio	Lothar Schmidt (Manager)	
Date	Section	Name	Signature

Responsible for test report and project leader:

2002-11-18	EMC & Radio	Philip Kim (EMC Engineer)	
Date	Section	Name	Signature

2.2 Test report

TEST REPORT

**Test report no. : EMC375FCC15.247/2002
(T60x)
Test with model T608**

TEST REPORT REFERENCE

LIST OF MEASUREMENTS		PAGE
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ANTENNA GAIN**§ 15.204**

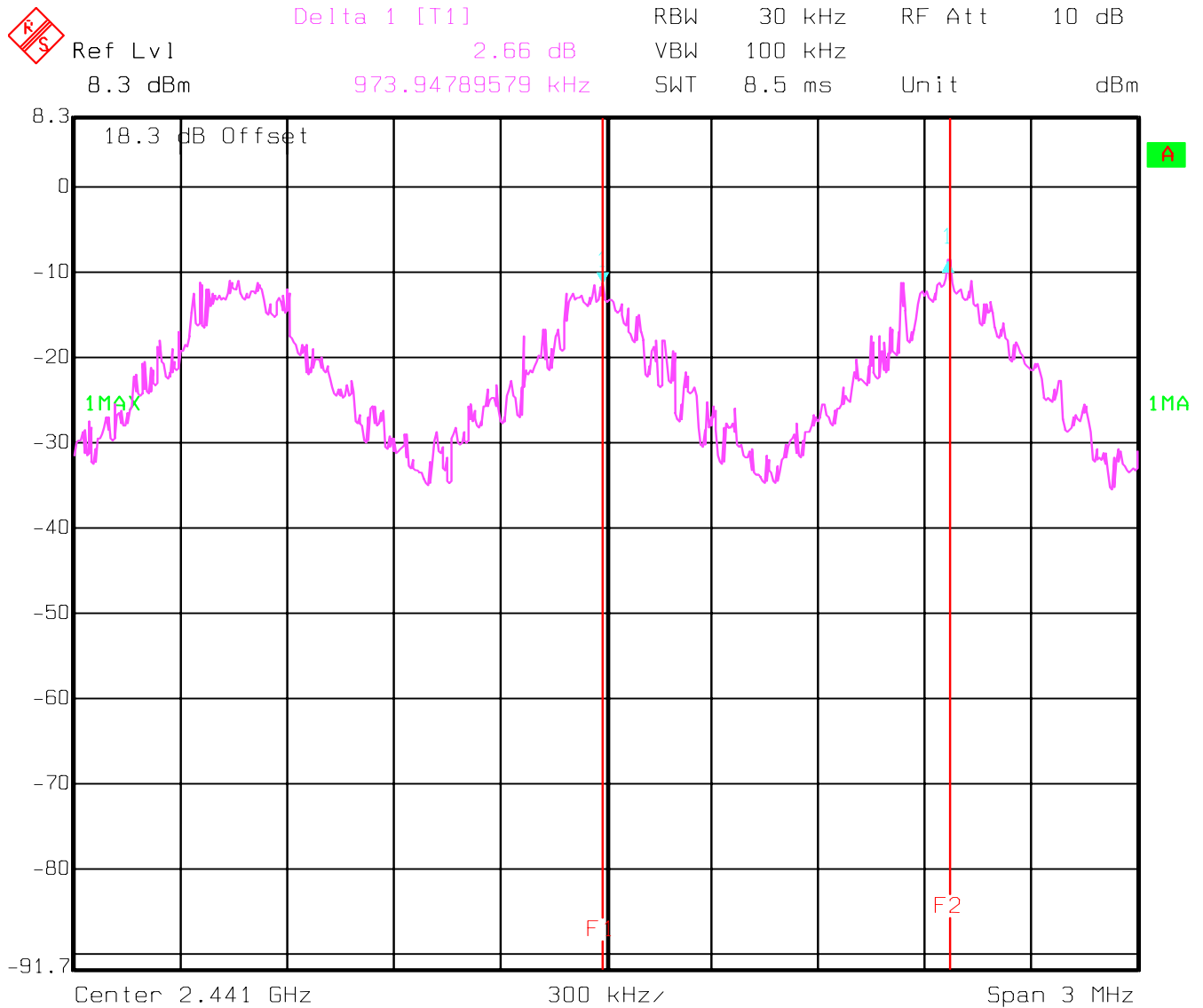
The antenna gain of the complete system is calculated by the difference of conducted power of the module and the radiated power in EIRP.

	Low channel	Mid channel	High channel
Conducted Power	-5.74 dBm	-6.13 dBm	-5.77 dBm
Radiated Power (EIRP)	-8.68 dBm	-2.65 dBm	-6.64 dBm
Antenna Gain	-2.94 dBi	-3.48 dBi	0.87 dBi

The calculated antenna gain is between **-3.48 dBi** and **0.87 dBi**.

CARRIER FREQUENCY SEPERATION

§15.247(a)



Date: 13.NOV.2002 02:57:07

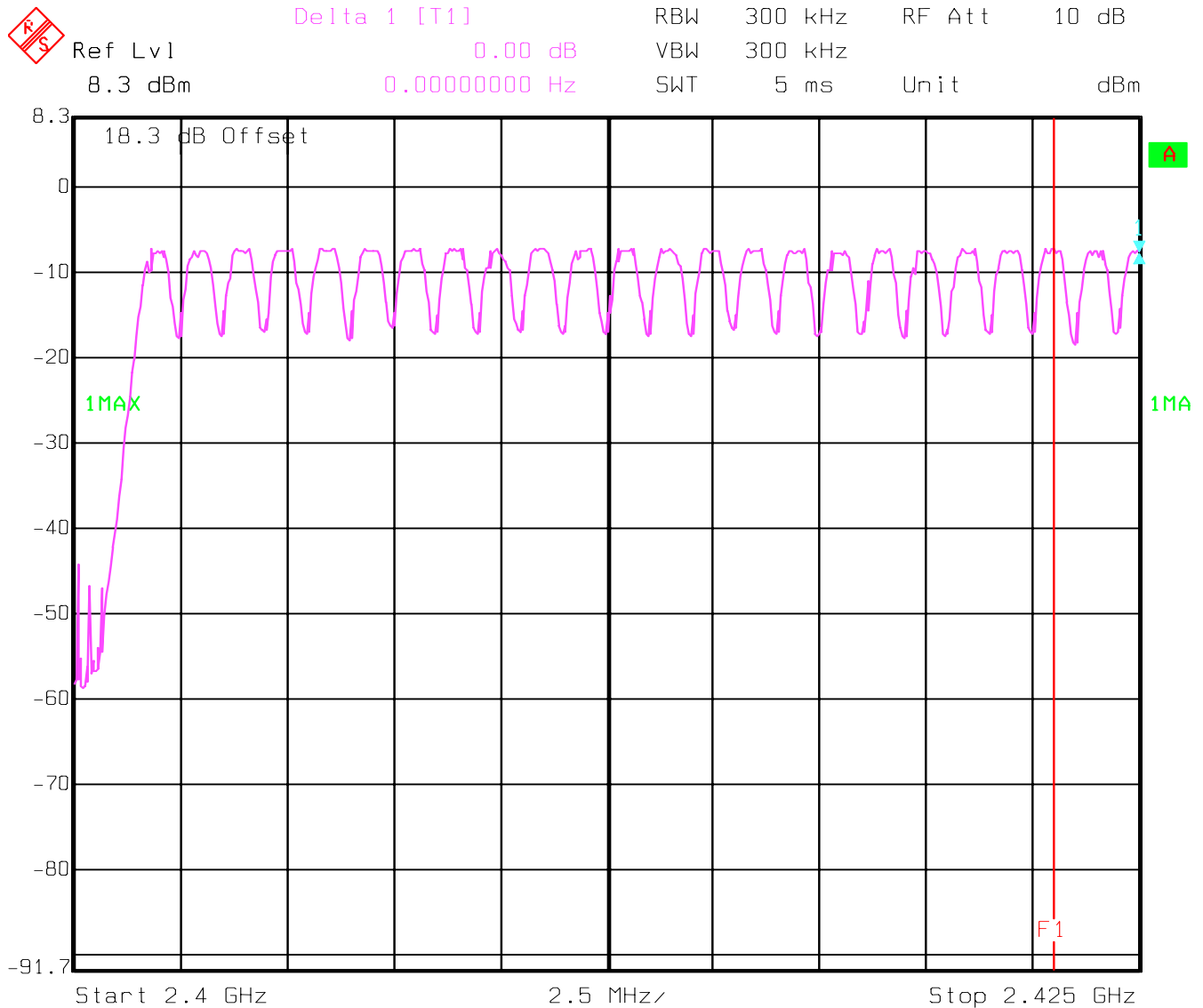
NUMBER OF HOPPING CHANNELS

§15.247(a)

The number of hopping channels is 79 (see next 4 plots)

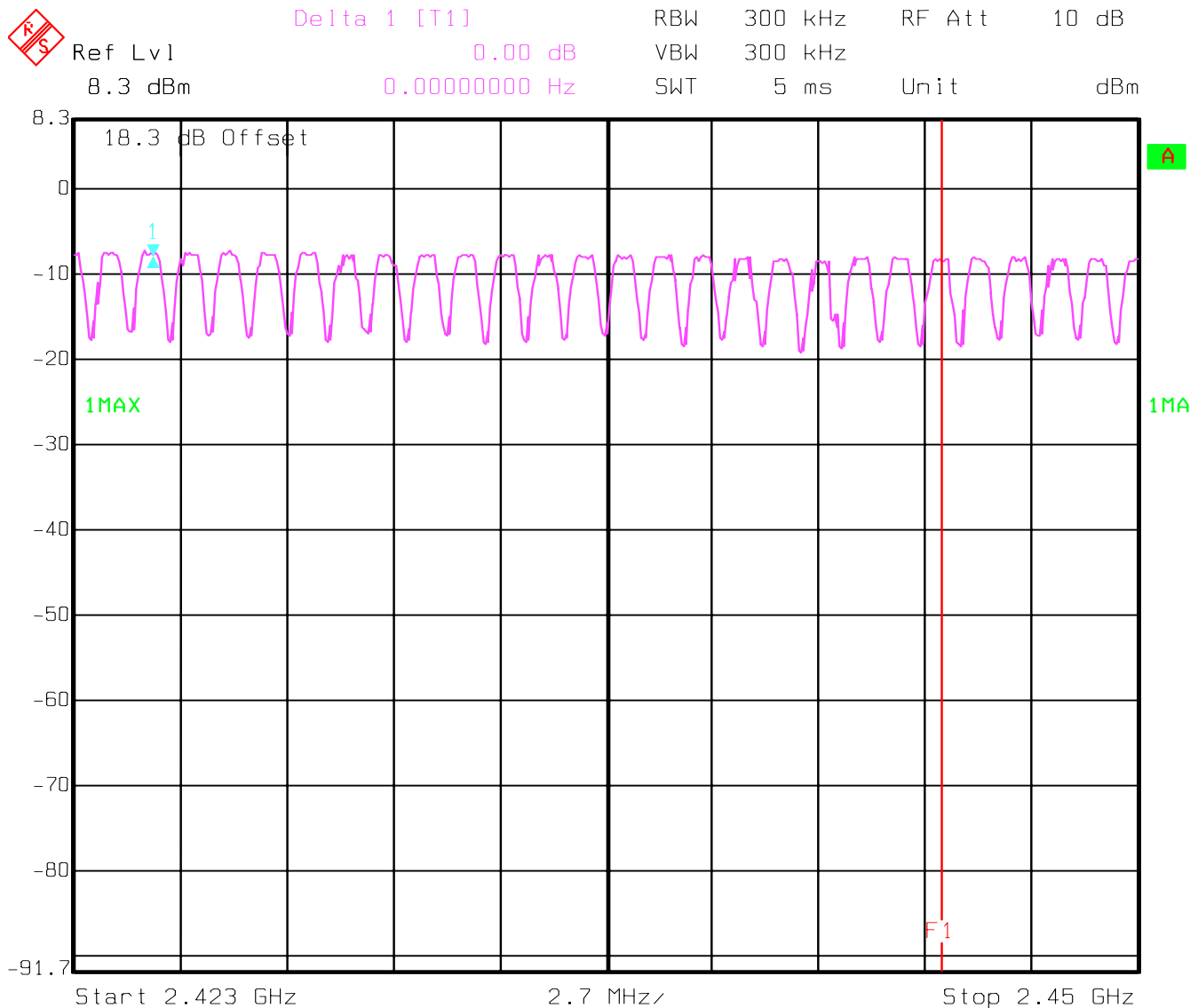
The right red line corresponds to the left red line from the next plot.

Plot 1: Total 22



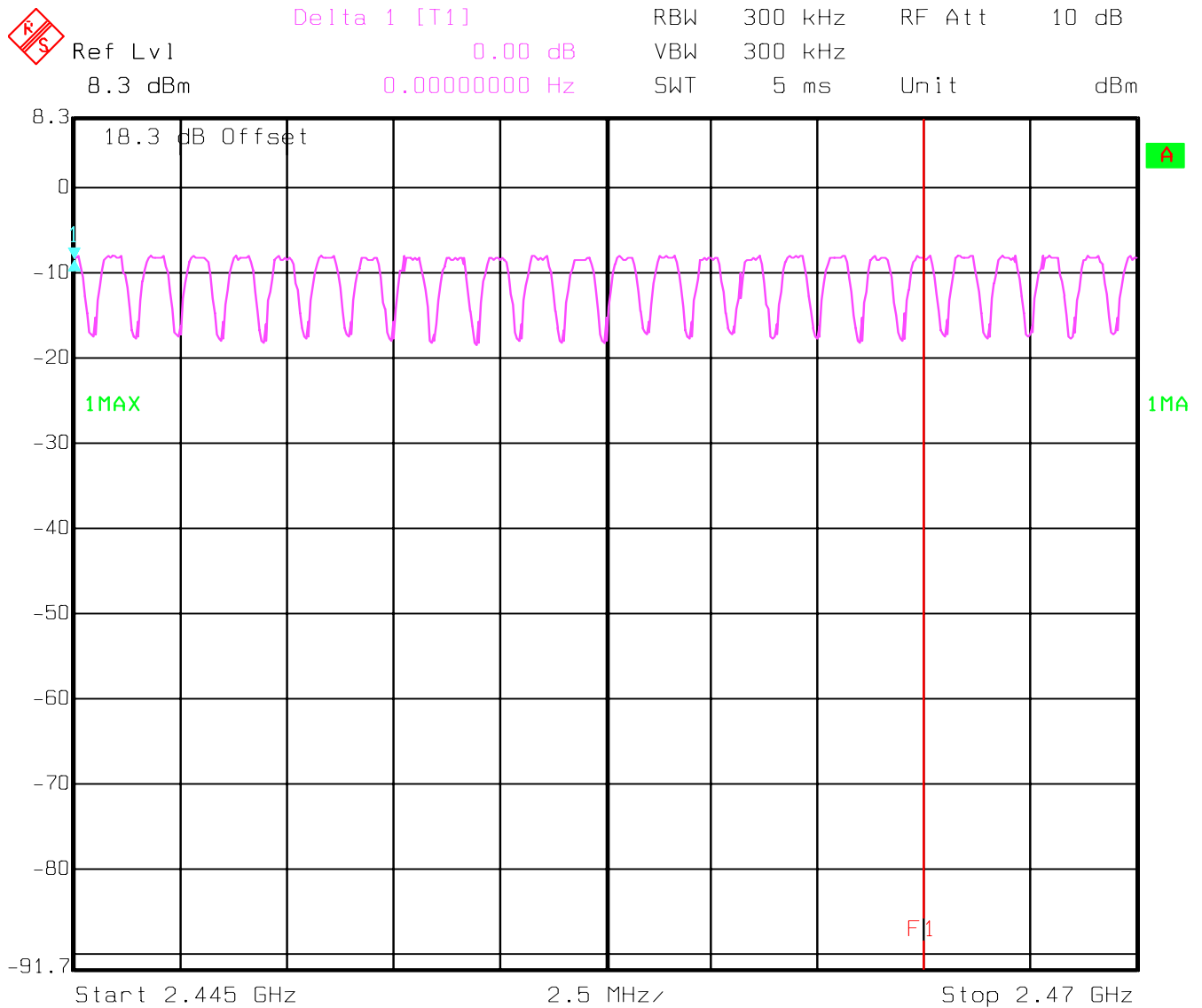
Date: 13.NOV.2002 03:03:22

Plot 2: Total 22



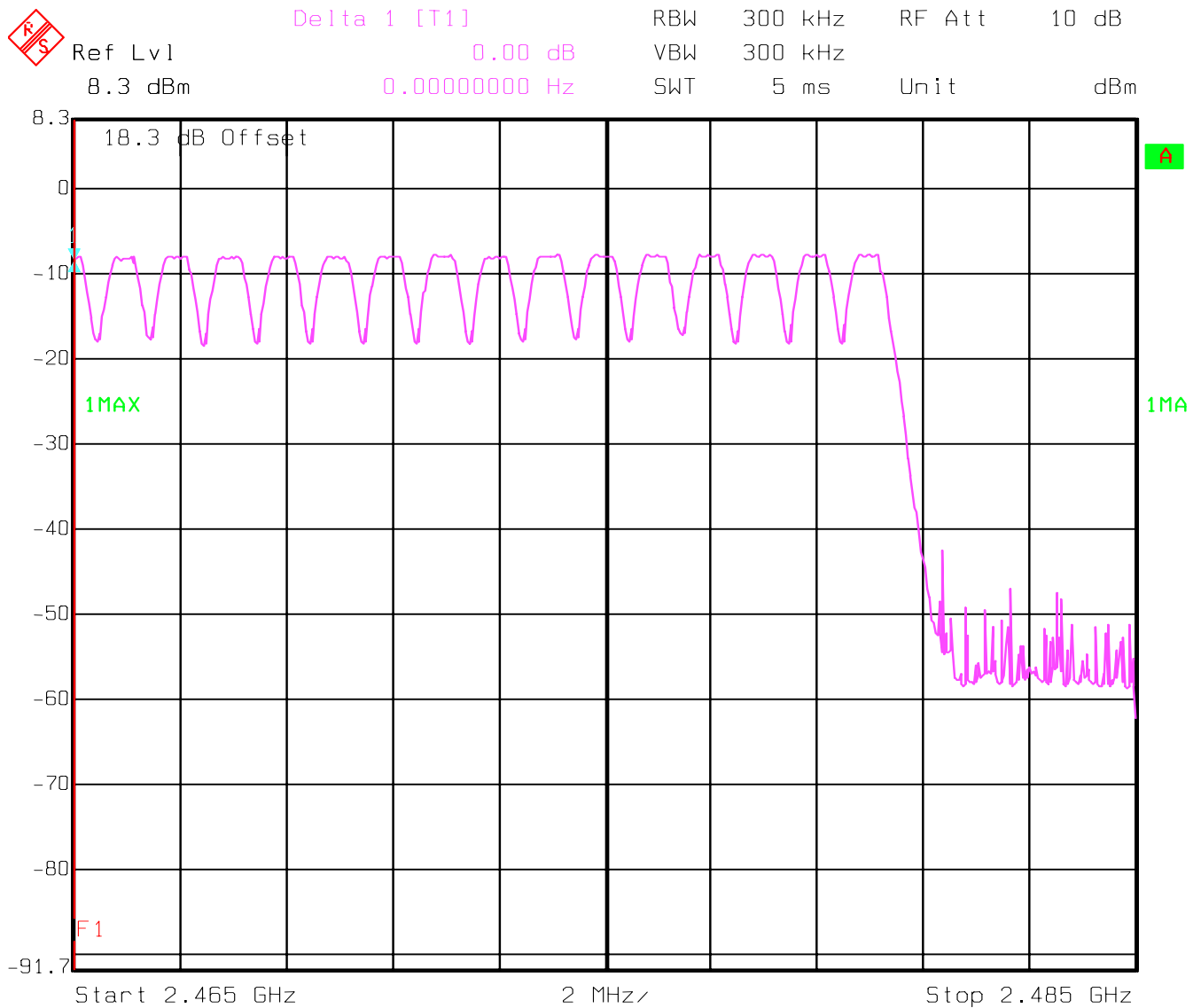
Date: 13.NOV.2002 03:01:43

Plot 3: Total 20



Date: 13.NOV.2002 03:05:53

Plot 4: Total 15



Date: 13.NOV.2002 03:09:17

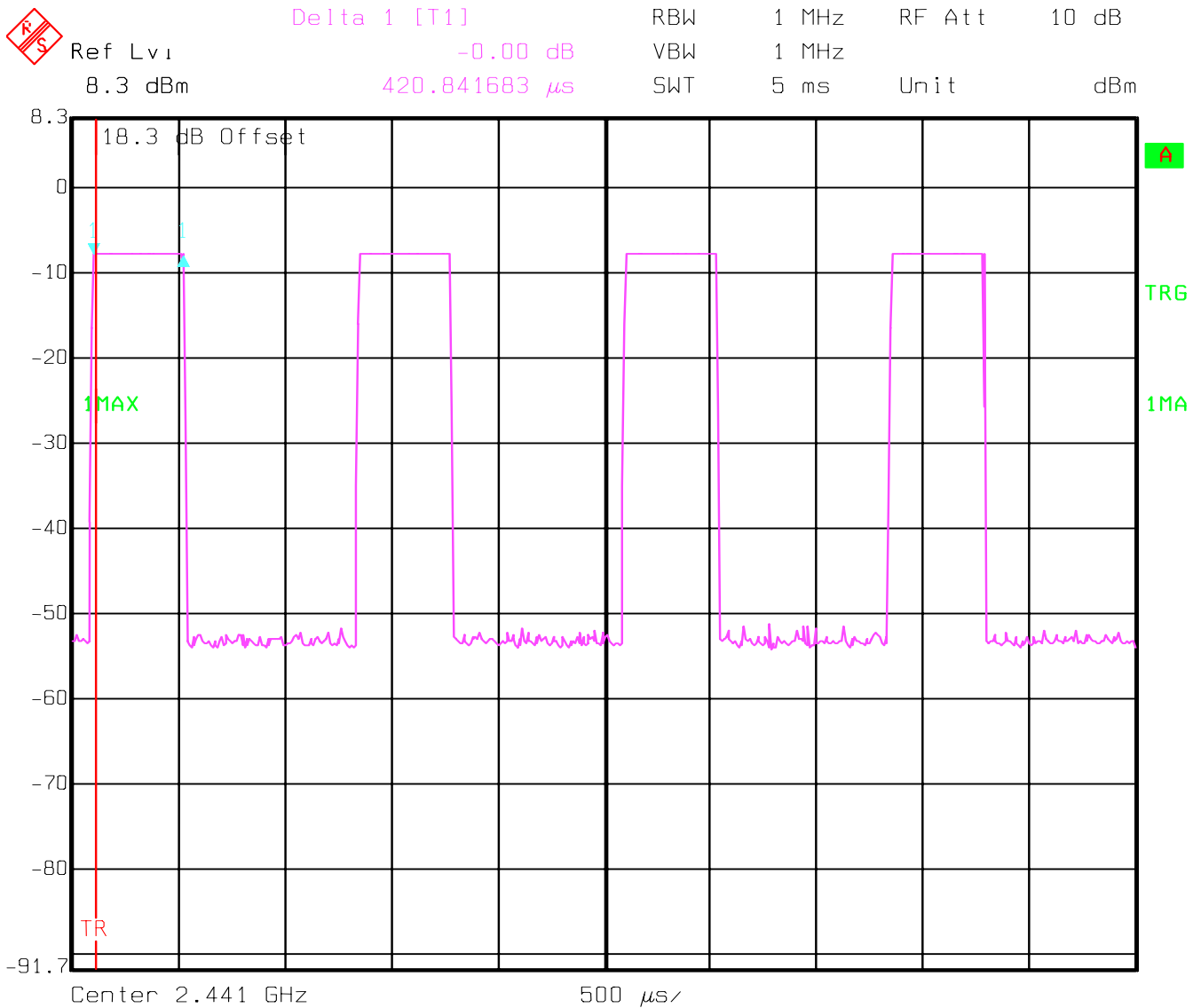
TIME OF OCCUPANCY (DWELL TIME)
DH1 – Packet

§15.247(a)

The system makes worst case 1600 hops per second or 1 time slot has a length of 625µs 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 30 seconds you have 303.9 times of appearance .

Each Tx-time per appearance is 421 µs.

So we have 303.9 * 420.84 µs = 128 ms per 30 seconds.



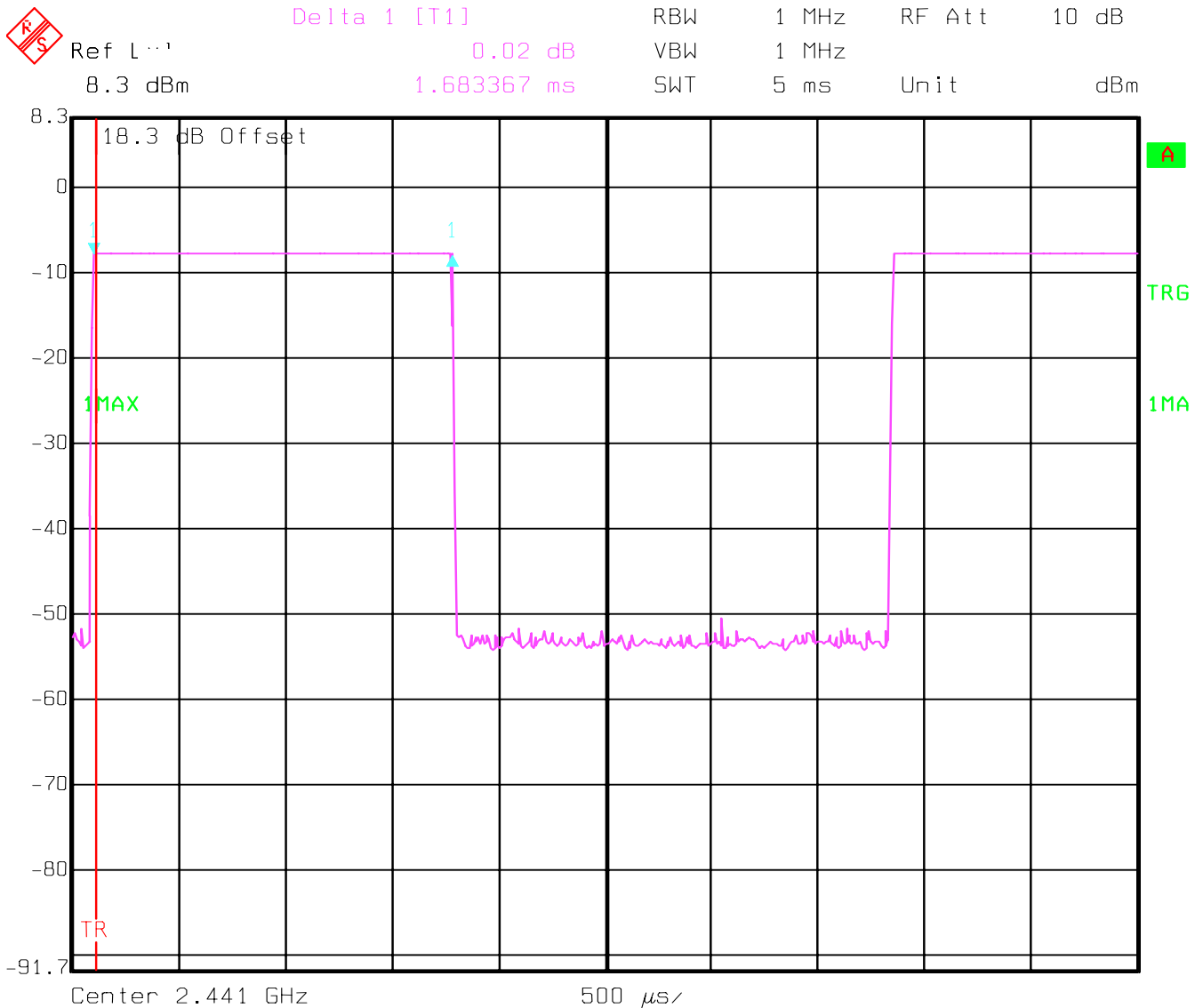
TIME OF OCCUPANCY (DWELL TIME)
DH3 – Packet

§15.247(a)

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 30 seconds you have 153 times of appearance .

Each Tx-time per appearance is 1.68 ms.

So we have 153 * 1.683 ms = 257ms per 30 seconds.



**SPECTRUM BANDWIDTH OF FHSS SYSTEM
20 dB bandwidth**

§15.247(a)

TEST CONDITIONS		20 dB BANDWIDTH (kHz)		
Frequency (MHz)		2402	2440	2480
T_{nom}(23)°C	V_{nom}(3.8)VDC	921.84	925.85	921.84

RBW / VBW as provided in the "Measurement Guidelines" (DA 00-705, March 30, 2000)

LIMIT

SUBCLAUSE §15.247(a) (1)

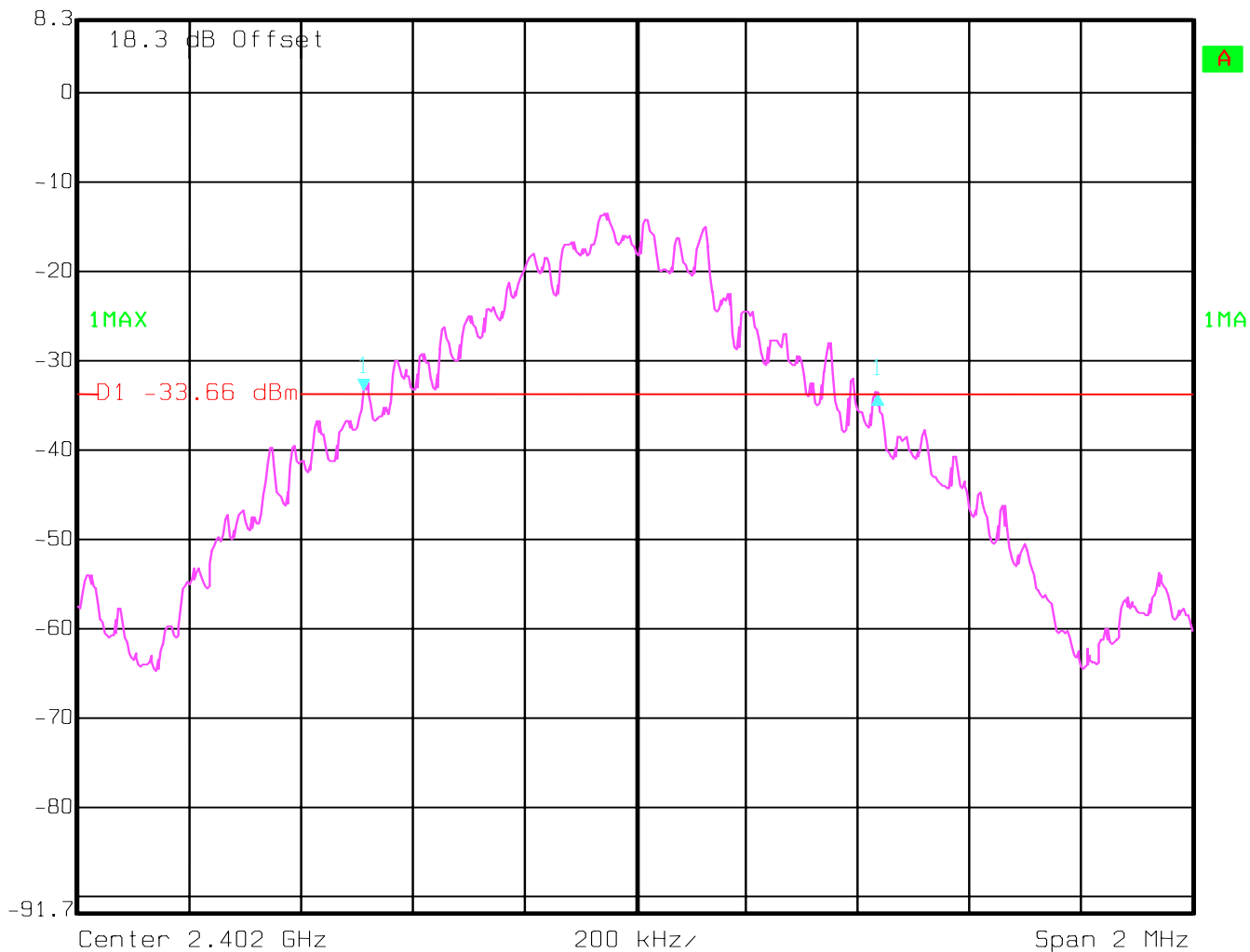
The maximum 20dB bandwith shall be at maximum 1000 KHz

SPECTRUM BANDWIDTH OF FHSS SYSTEM
20 dB bandwidth

§15.247(a)

Lowest Channel: 2402MHz

	Delta 1 [T1]	RBW	10 kHz	RF Att	10 dB
	Ref Lvl	-0.23 dB	VBW	10 kHz	
	8.3 dBm	921.84368738 kHz	SWT	50 ms	Unit dBm



Date: 13.NOV.2002 03:41:13

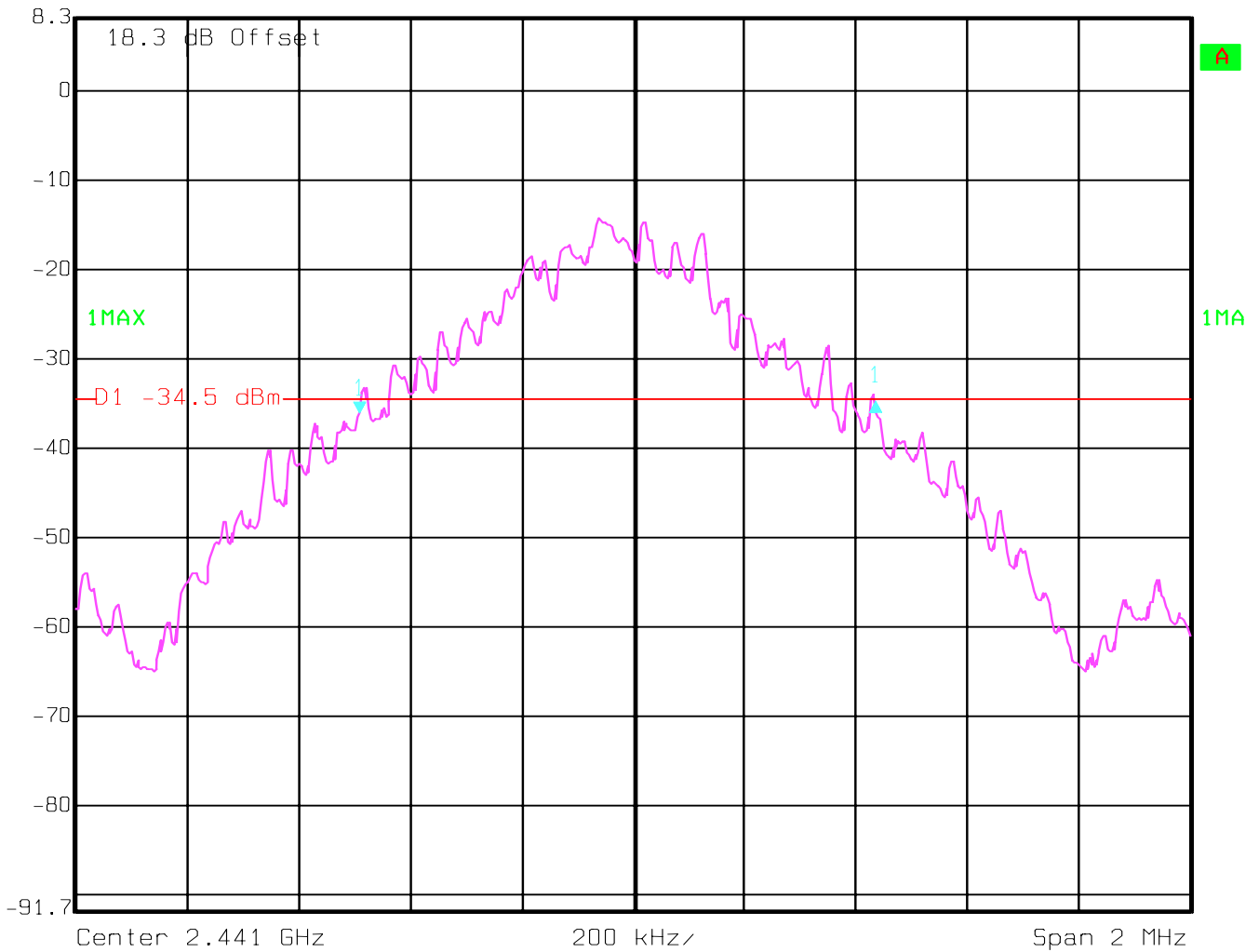
SPECTRUM BANDWIDTH OF FHSS SYSTEM
20 dB bandwidth

§15.247(a)

Mid Channel: 2440MHz



Delta 1 [T1] RBW 10 kHz RF Att 10 dB
Ref Lvl 1.55 dB VBW 10 kHz
8.3 dBm 925.85170341 kHz SWT 50 ms Unit dBm



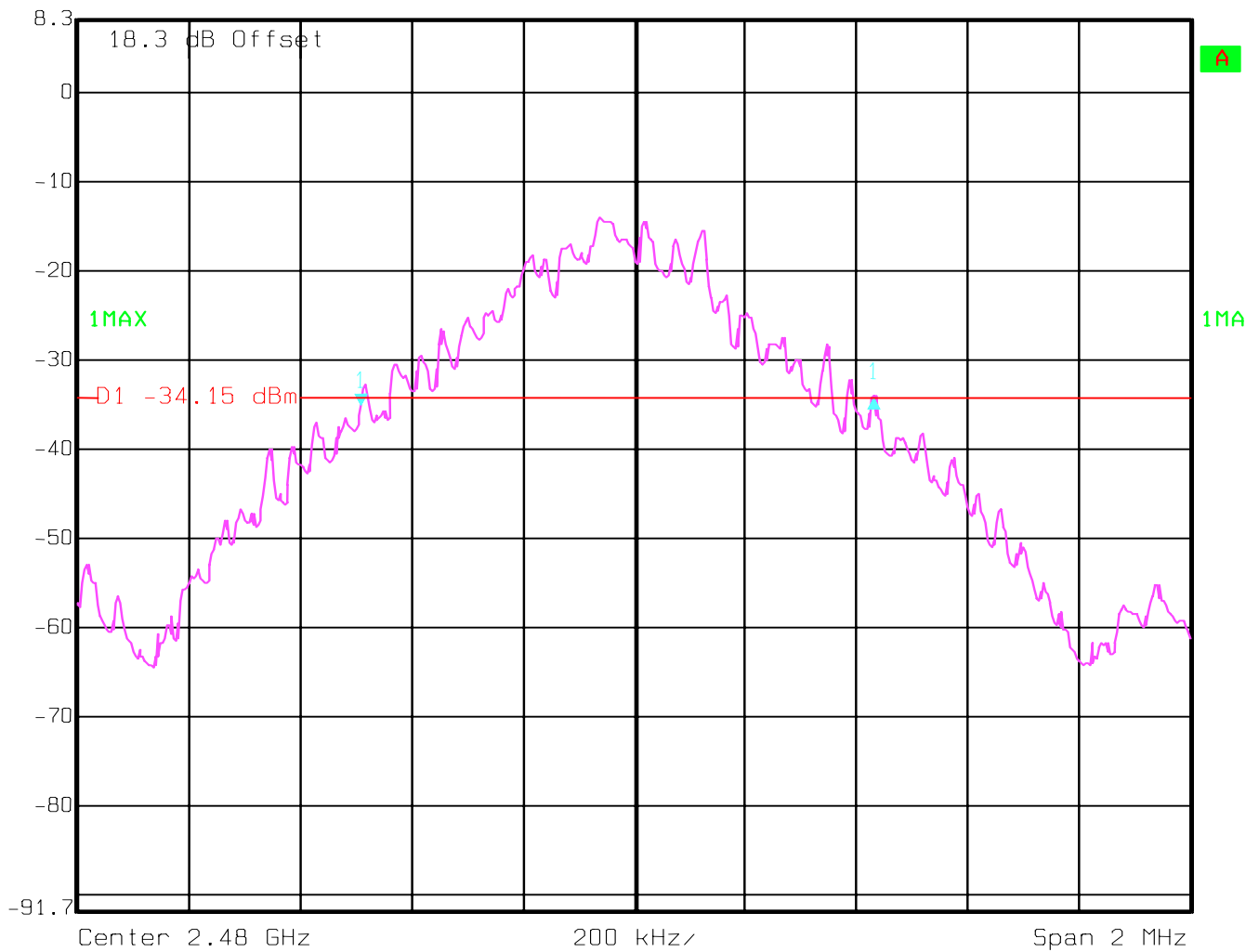
Date: 13.NOV.2002 03:44:41

SPECTRUM BANDWIDTH OF FHSS SYSTEM
20 dB bandwidth

§15.247(a)

Highest Channel: 2480MHz

 Ref Lvl 8.3 dBm
Delta 1 [T1] 1.14 dB
921.84368737 kHz
RBW 10 kHz RF Att 10 dB
VBW 10 kHz
SWT 50 ms Unit dBm



Date: 13.NOV.2002 03:48:11

POWER SPECTRAL DENSITY

§15.247 (d)

TEST CONDITIONS		POWER SPECTRAL DENSITY (dBm)		
		2402	2440	2480
Frequency (MHz)				
T _{nom} (23)°C	V _{nom} (3.8)VDC	-18.97	-20.12	-19.56

LIMIT

SUBCLAUSE §15.247(d)

The peak power spectral density shall not be greater than 8 dBm in any 3 kHz band

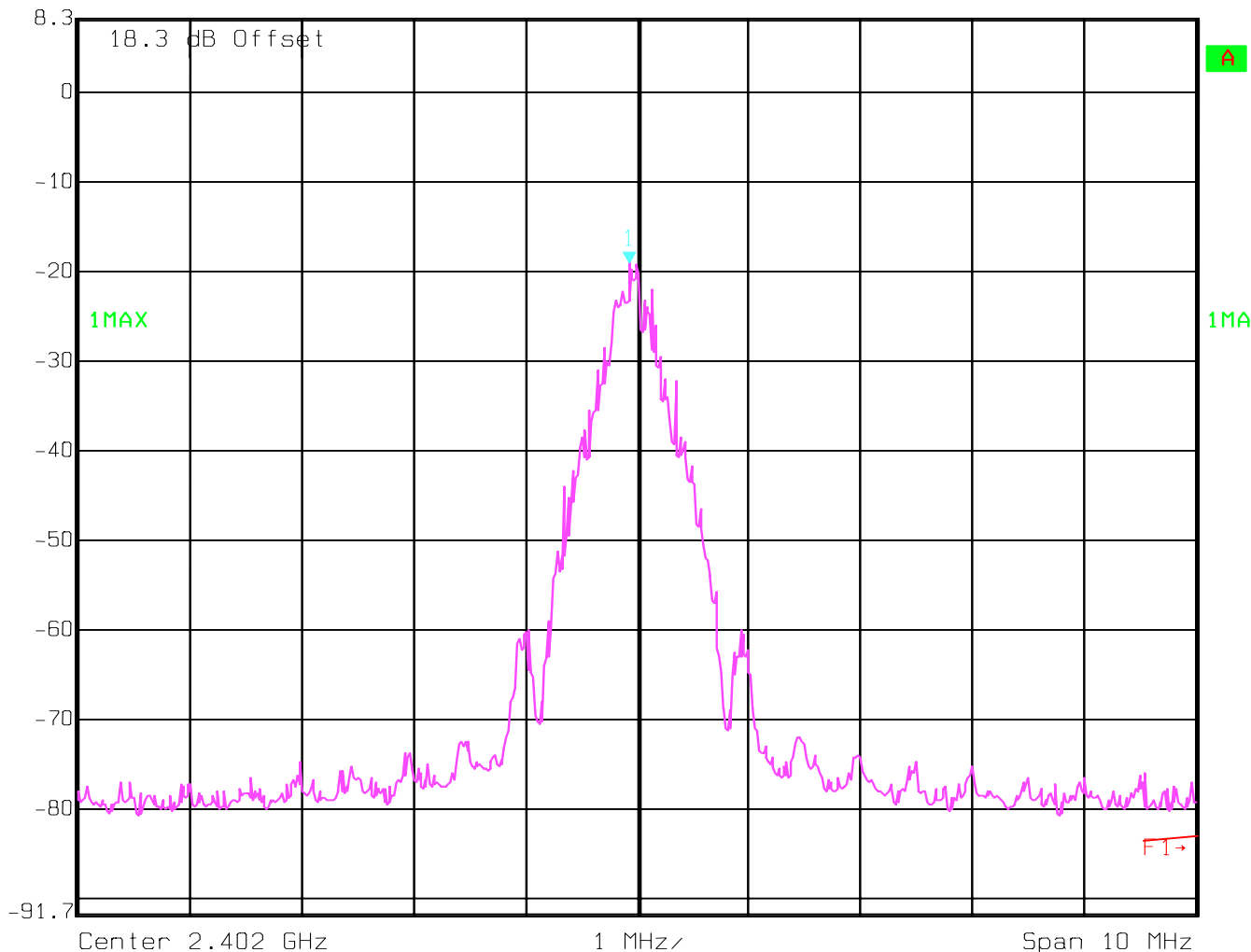
ANALYZER SETTINGS: RBW=3KHz , VBW=3KHz

POWER SPECTRAL DENSITY

§15.247(d)

Lowest Channel: 2402MHz

	Ref Lvl	Marker 1 [T1]	RBW	3 kHz	RF Att	10 dB
	8.3 dBm	-18.97 dBm	VBW	3 kHz		
		2.40192986 GHz	SWT	2.8 s	Unit	dBm



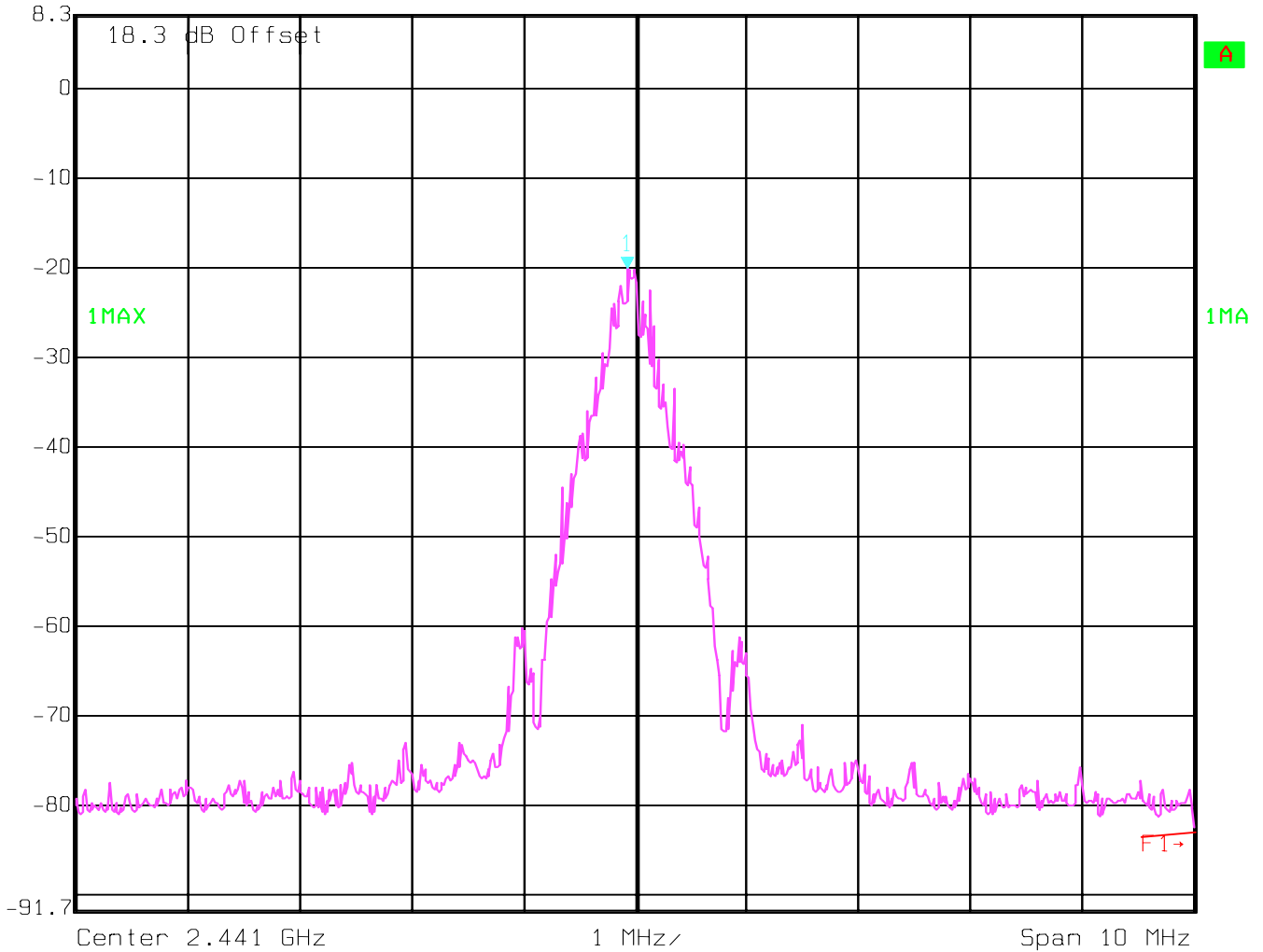
Date: 13.NOV.2002 03:21:06

POWER SPECTRAL DENSITY

§15.247(d)

Middle Channel: 2440MHz

	Ref Lvl	Marker 1 [T1]	RBW	3 kHz	RF Att	10 dB
	8.3 dBm	-20.12 dBm	VBW	3 kHz		
		2.44092986 GHz	SWT	2.8 s	Unit	dBm



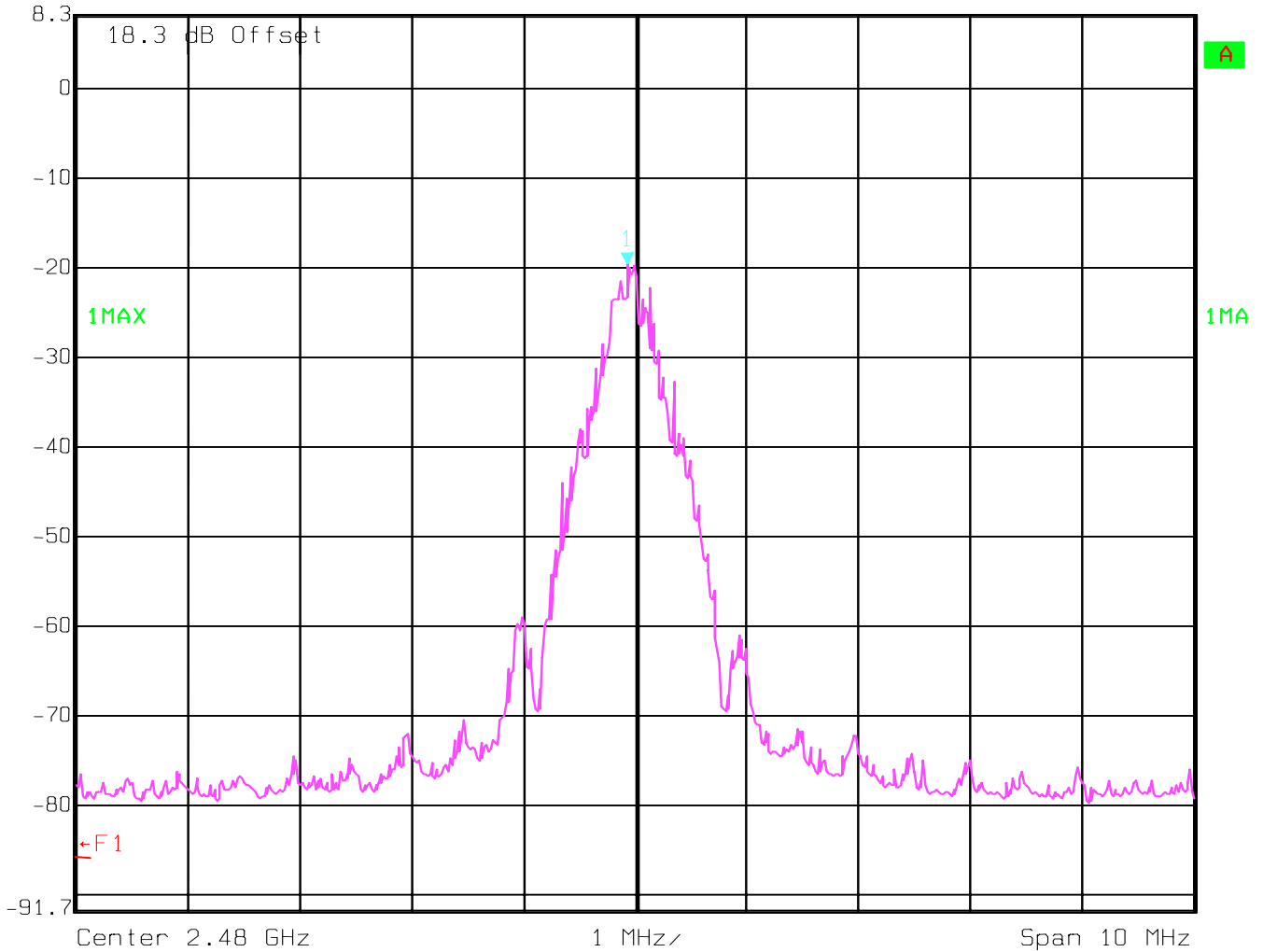
Date: 13.NOV.2002 03:23:02

POWER SPECTRAL DENSITY

§15.247(d)

Highest Channel: 2480MHz

	Ref Lvl	Marker 1 [T1]	RBW	3 kHz	RF Att	10 dB
	8.3 dBm	-19.50 dBm	VBW	3 kHz		
		2.47992986 GHz	SWT	2.8 s	Unit	dBm



Date: 13.NOV.2002 03:29:02

**MAXIMUM PEAK OUTPUT POWER
(conducted)**

§ 15.247 (b) (1)

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (dBm)		
		2402	2440	2480
Frequency (MHz)				
T _{nom} (23)°C	V _{nom} (3.8)VDC	-5.74	-6.13	-5.77
Measurement uncertainty		±0.5dBm		

RBW / VBW : 3 MHz

LIMIT

SUBCLAUSE § 15.247 (b) (1)

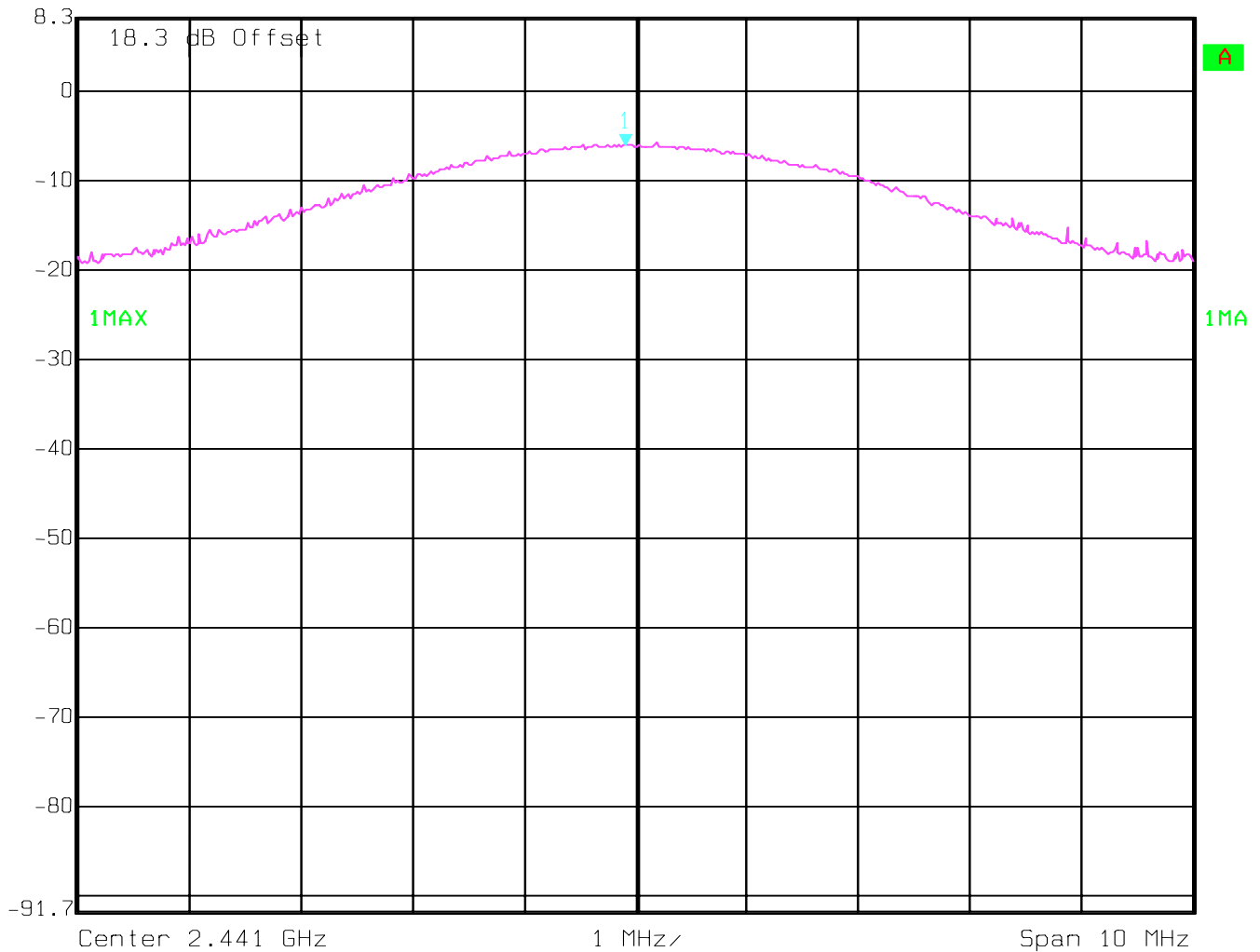
Frequency range	RF power output
2400-2483.5 MHz	1.0 Watt

PEAK OUTPUT POWER (CONDUCTED)

§15.247 (b)

Lowest Channel: 2402MHz

	Marker 1 [T1]	RBW	3 MHz	RF Att	40 dB
	Ref Lvl	-6.05 dBm	VBW	3 MHz	
	8.3 dBm	2.44090982 GHz	SWT	5 ms	Unit

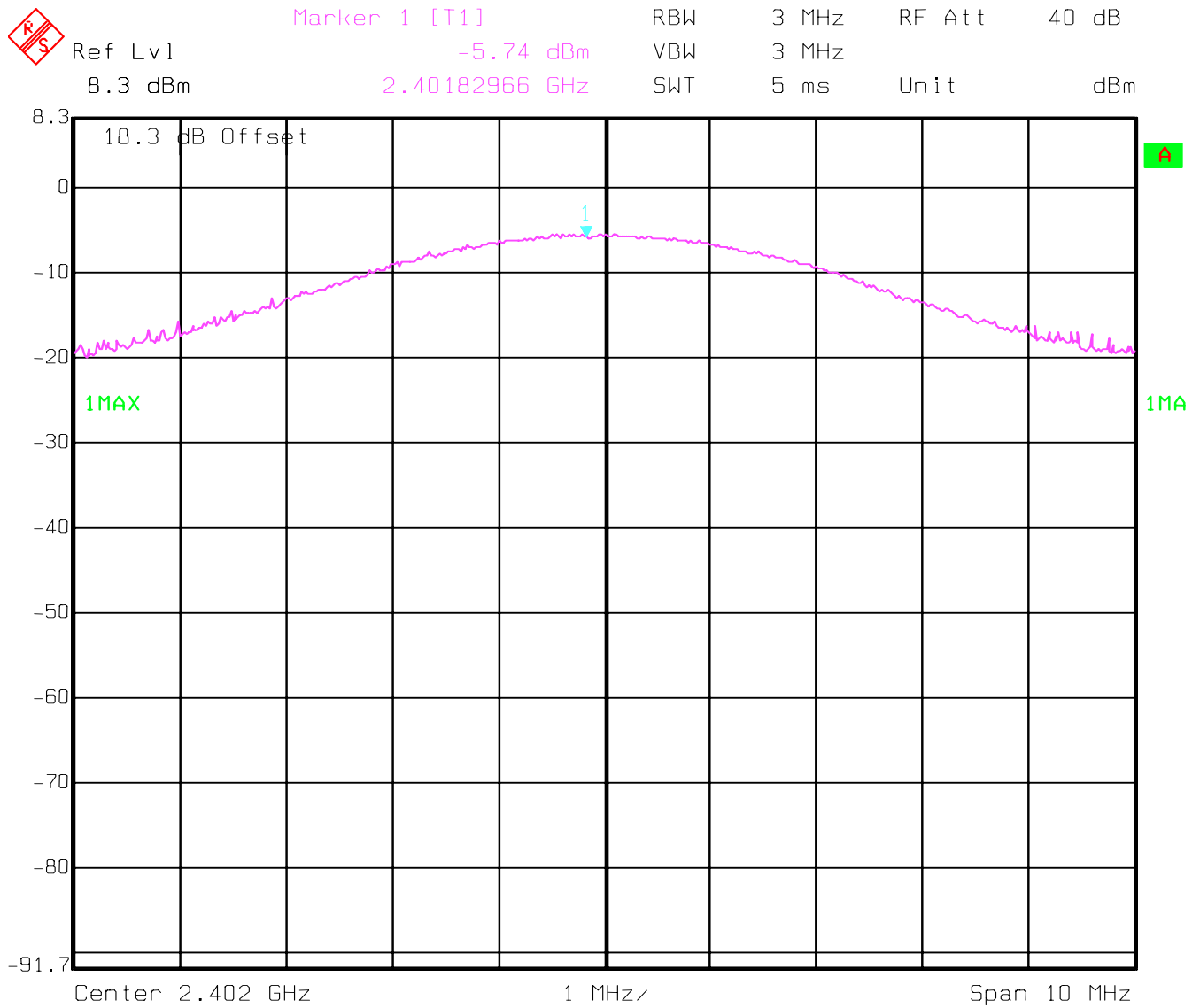


Date: 13.NOV.2002 02:03:53

PEAK OUTPUT POWER (CONDUCTED)

§15.247 (b)

Mid Channel: 2440MHz



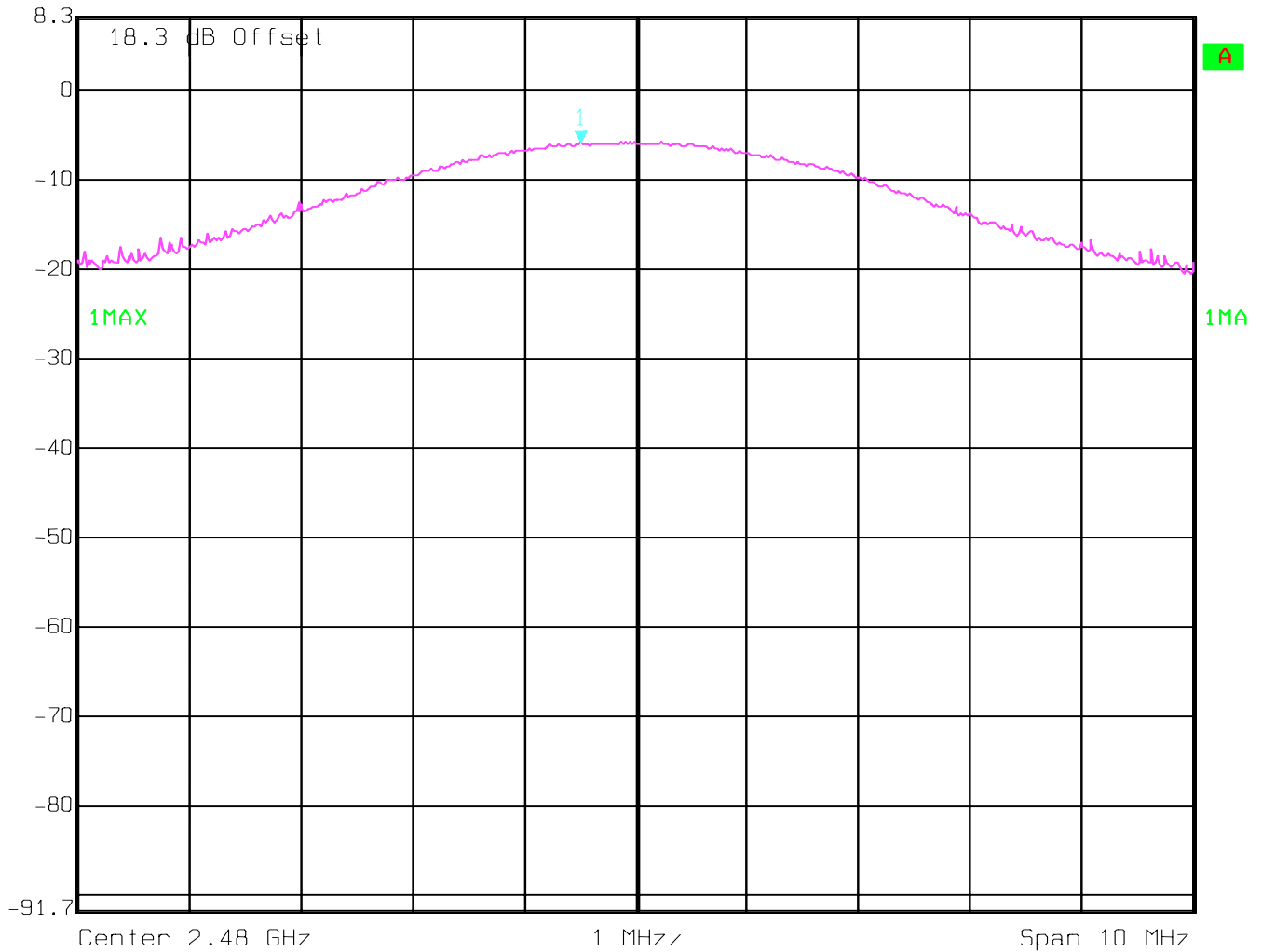
Date: 13.NOV.2002 02:19:03

PEAK OUTPUT POWER (CONDUCTED)

§15.247 (b)

Highest Channel: 2480MHz

	Ref Lvl	Marker 1 [T1]	RBW	3 MHz	RF Att	40 dB
	8.3 dBm	-5.77 dBm	VBW	3 MHz		
		2.47950902 GHz	SWT	5 ms	Unit	dBm



Date: 13.NOV.2002 02:23:43

**MAXIMUM PEAK OUTPUT POWER
(RADIATED)**

§ 15.247 (b) (1)

EIRP:

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (dBm)		
		2402	2440	2480
T _{nom} (23)°C	V _{nom} (3.8)VDC	-8.68	-2.65	-6.64
Measurement uncertainty		±0.5dBm		

RBW/VBW : 3 MHz

Note: All radiated measurements were made in all three orthogonal planes. The values reported are the maximum values.

LIMIT

SUBCLAUSE § 15.247 (b) (1)

Frequency range	RF power output
2400-2483.5 MHz	1.0 Watt

PEAK OUTPUT POWER (RADIATED)

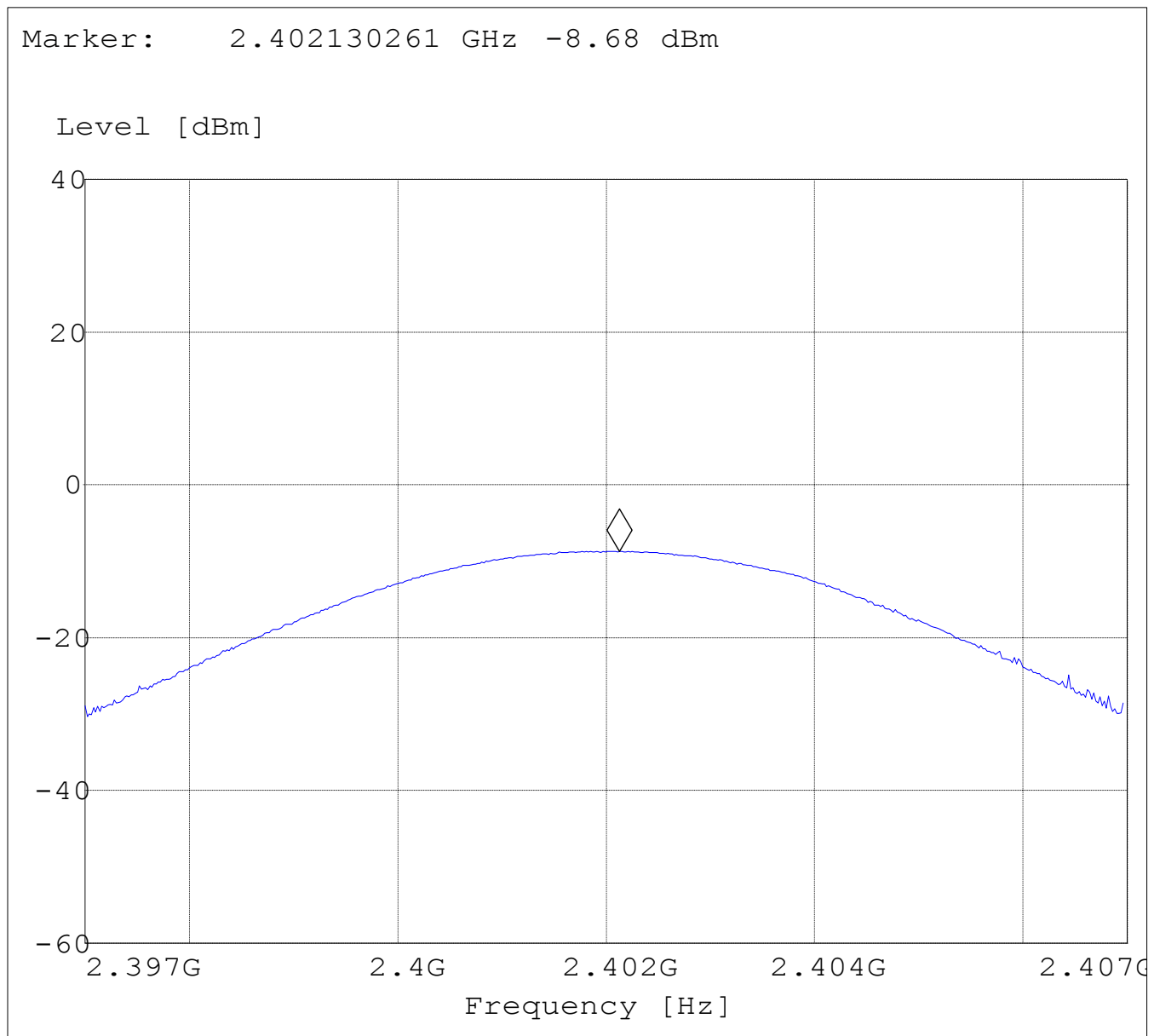
§15.247 (b) (1)

Lowest Channel: 2402MHz

SWEEP TABLE: "EIRP BT low channel"

Short Description:		EIRP Bluetooth channel-2402MHz		
Start	Stop	Detector	Meas.	IF
Frequency	Frequency	Time	BW	
2.397GHz	2.407GHz	MaxPeak	Coupled	3 MHz

Marker: 2.402130261 GHz -8.68 dBm



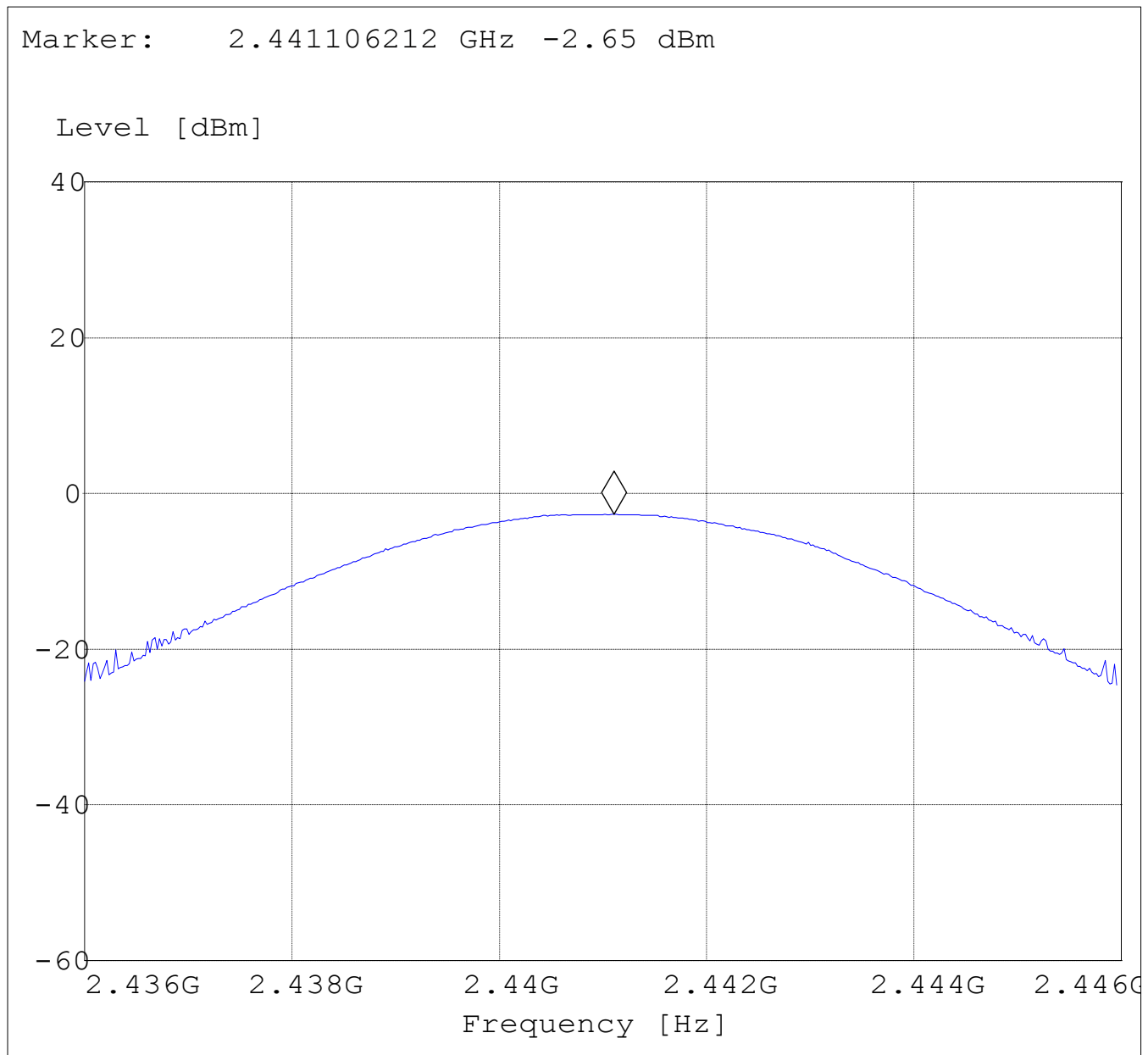
PEAK OUTPUT POWER (RADIATED)

§15.247 (b) (1)

Mid Channel: 2441MHz

SWEEP TABLE: "EIRP BT Mid channel"

Short Description:		EIRP Bluetooth channel-2441MHz		
Start	Stop	Detector	Meas.	IF
Frequency	Frequency		Time	BW
2.435GHz	2.445GHz	MaxPeak	Coupled	3 MHz



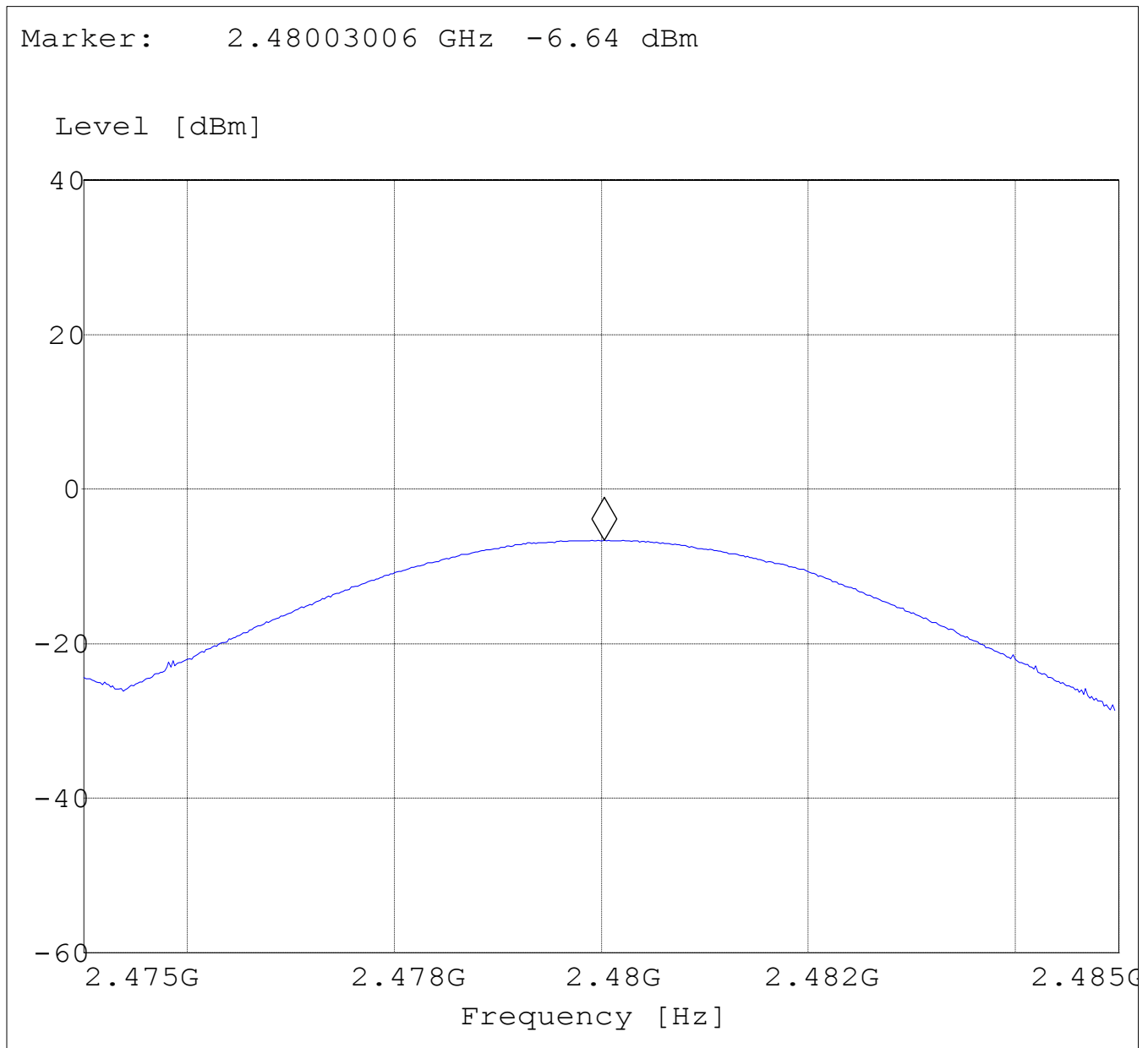
PEAK OUTPUT POWER (RADIATED)

§15.247 (b) (1)

Highest Channel: 2480MHz

SWEEP TABLE: "EIRP BT High channel"

Short Description:		EIRP Bluetooth channel-2480MHz		
Start	Stop	Detector	Meas.	IF
Frequency	Frequency		Time	BW
2.475GHz	2.485GHz	MaxPeak	Coupled	3 MHz



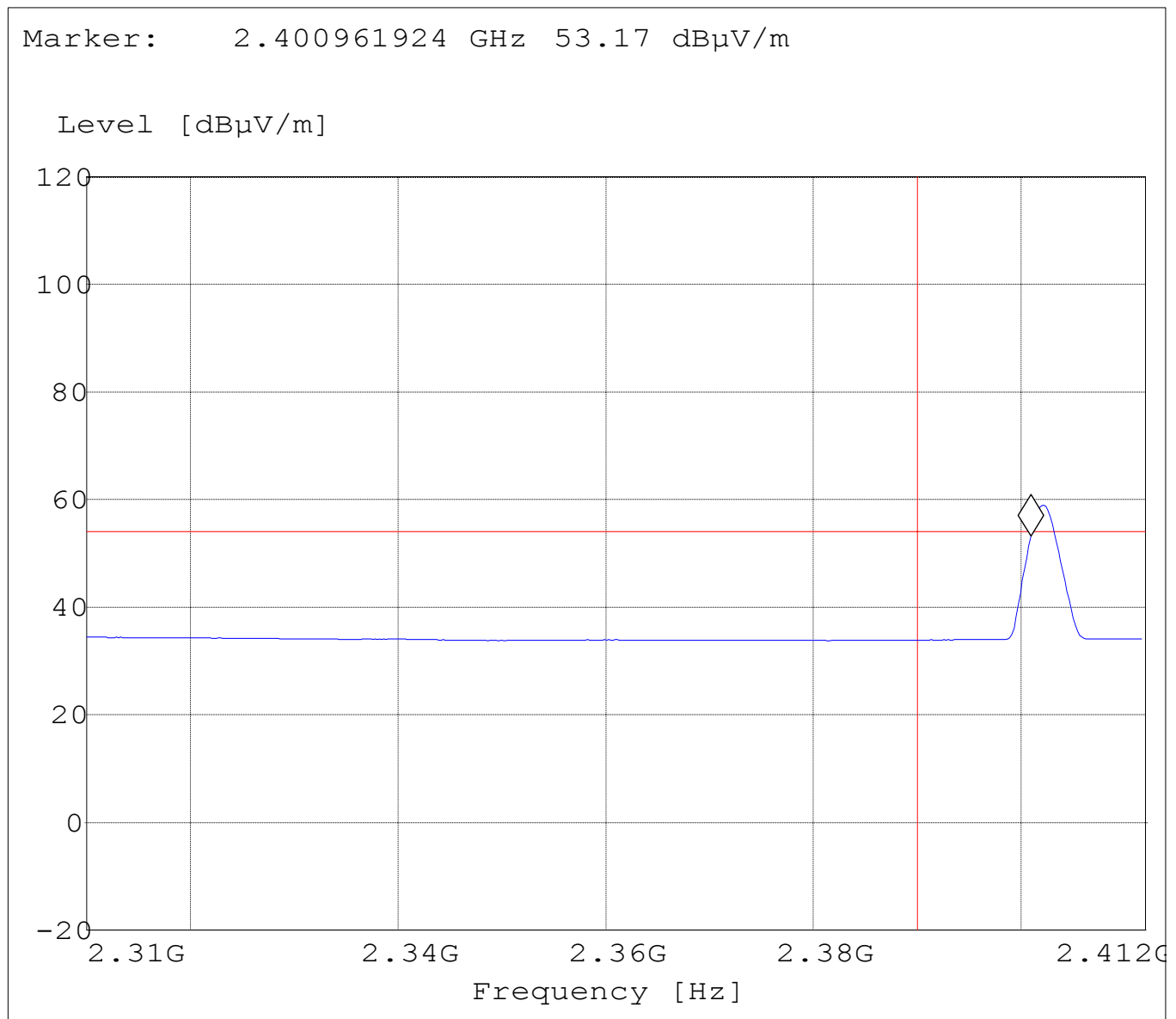
BAND EDGE COMPLIANCE

§15.247 (c)

**Low frequency section (spurious in the restricted band 2310 – 2390 MHz)
(Hopping – OFF, Average measurement)**

Operating condition : Tx at 2402MHz
 SWEEP TABLE : "FCC15.247 LBE_AVG"
 Short Description : FCC15.247 BT Low-band-edge
 Limit Line : 54dBμV

Start Frequency	Stop Frequency	Detector	Meas. Bandw.	RBW	VBW	Transducer
2.31 GHz	2.412 GHz	MaxPeak	Coupled	1 MHz	10Hz	#326 horn (dBi)



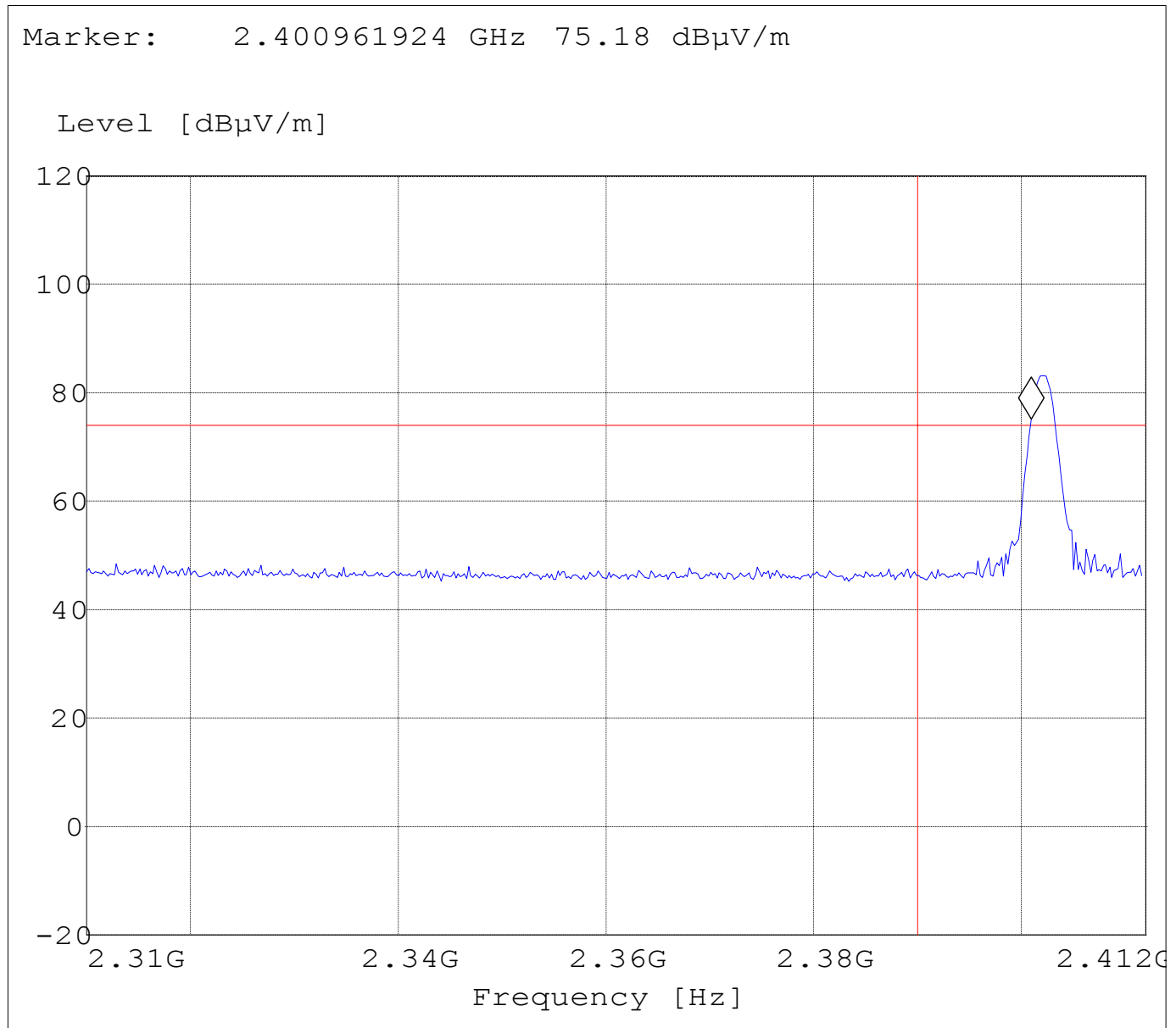
BAND EDGE COMPLIANCE

§15.247 (c)

**Low frequency section (spurious in the restricted band 2310 – 2390 MHz)
(Hopping – OFF, Peak measurement)**

Operating condition : Tx at 2402MHz
 SWEEP TABLE : "FCC15.247 LBE_Pk"
 Short Description : FCC15.247 BT Low-band-edge
 Limit Line : 74dB μ V

Start Frequency	Stop Frequency	Detector	Meas. Bandw.	RBW	VBW	Transducer
2.31 GHz	2.412 GHz	MaxPeak	Coupled	1 MHz	1MHz	#326 horn (dBi)



BAND EDGE COMPLIANCE

§15.247 (c)

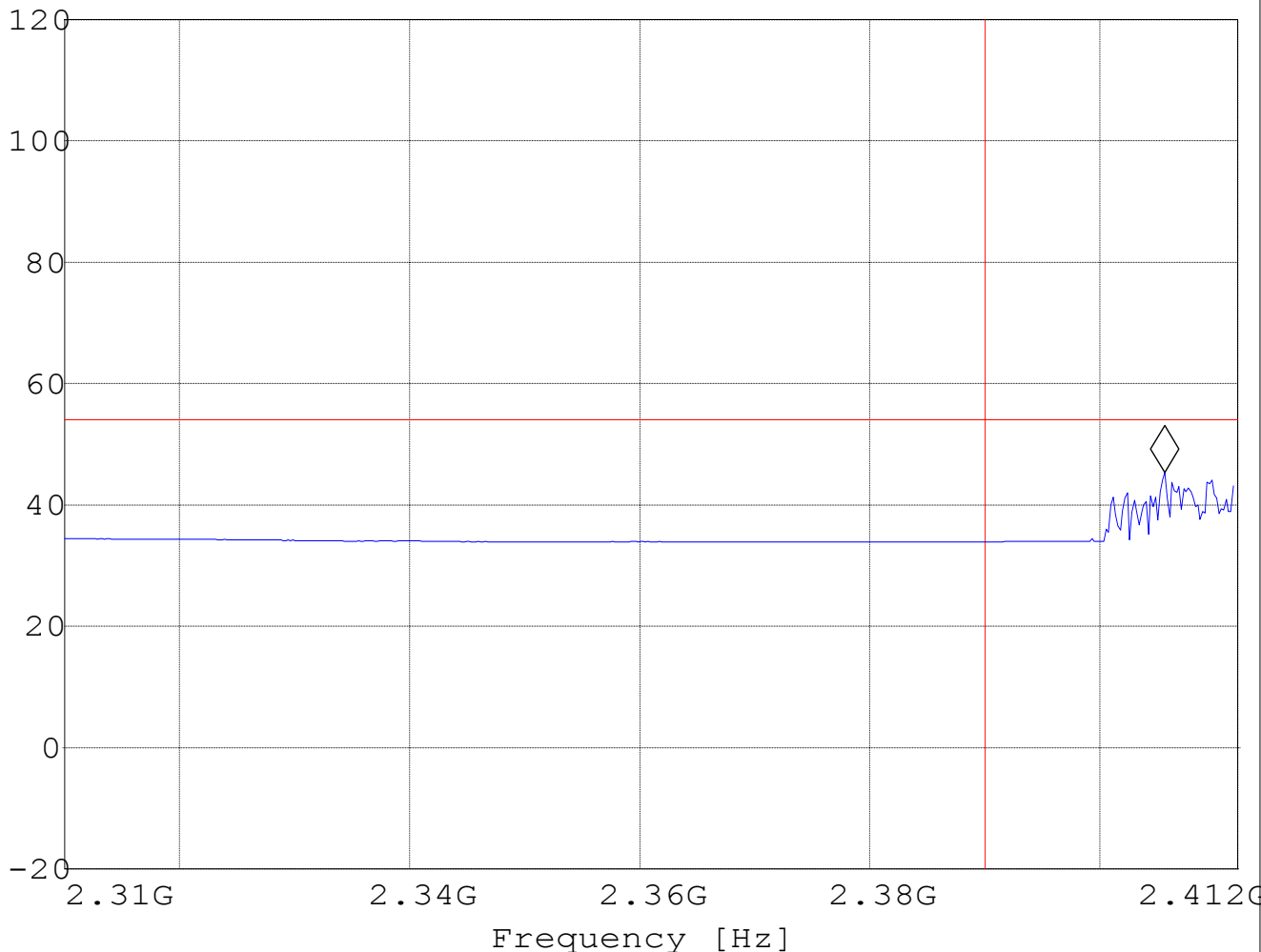
**Low frequency section (spurious in the restricted band 2310 – 2390 MHz)
(Hopping – ON, Average measurement)**

Operating condition : Tx at 2402MHz
 SWEEP TABLE : "FCC15.247 LBE_AVG"
 Short Description : FCC15.247 BT Low-band-edge
 Limit Line : 54dB μ V

Start Frequency	Stop Frequency	Detector	Meas. Bandw.	RBW	VBW	Transducer
2.31 GHz	2.412 GHz	MaxPeak	Coupled	1 MHz	10Hz	#326 horn (dBi)

Marker: 2.405663327 GHz 45.33 dB μ V/m

Level [dB μ V/m]



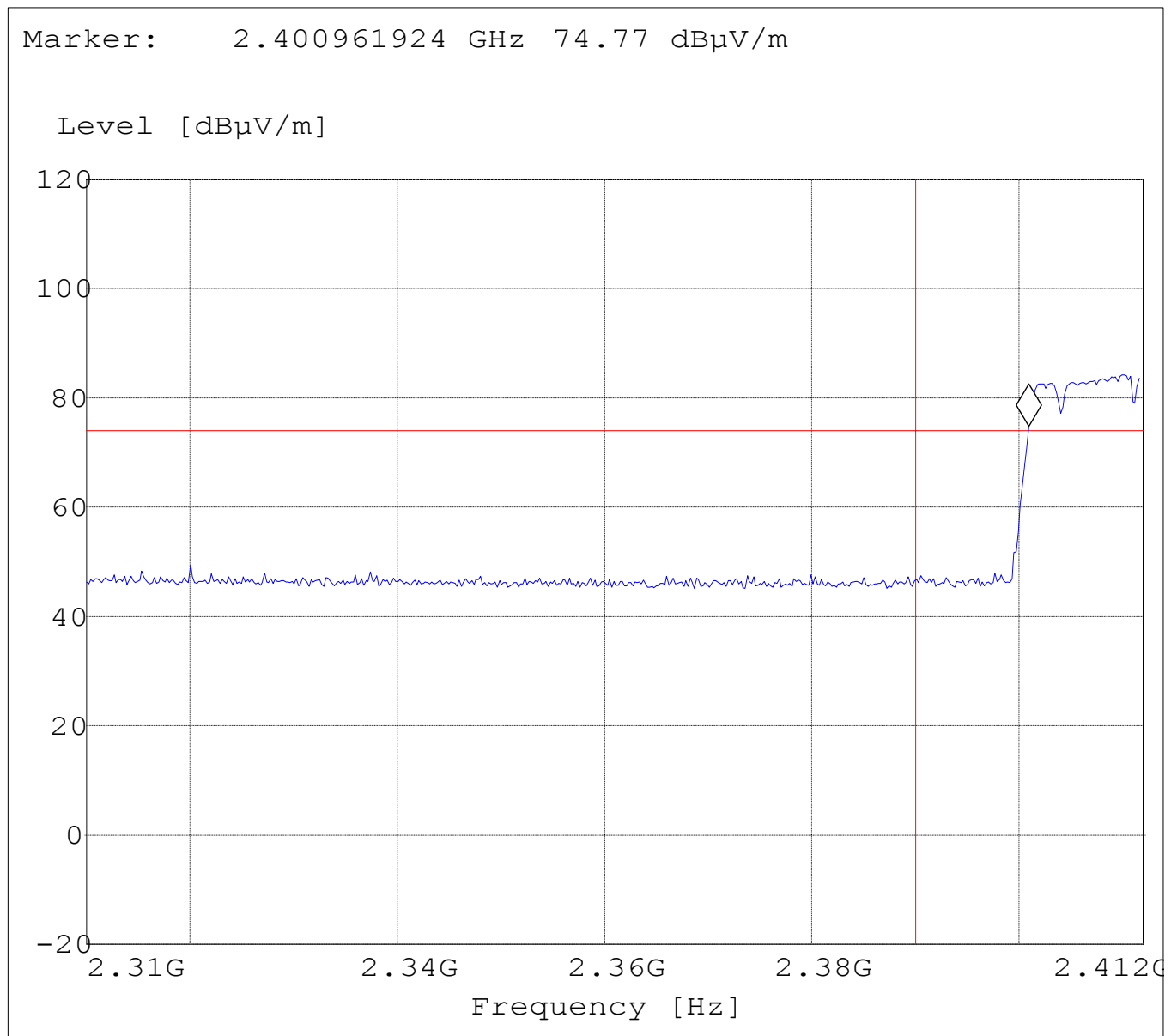
BAND EDGE COMPLIANCE

§15.247 (c)

**Low frequency section (spurious in the restricted band 2310 – 2390 MHz)
(Hopping – ON, Peak measurement)**

Operating condition : Tx at 2402MHz
 SWEEP TABLE : "FCC15.247 LBE_Pk"
 Short Description : FCC15.247 BT Low-band-edge
 Limit Line : 74dB μ V

Start Frequency	Stop Frequency	Detector	Meas. Bandw.	RBW	VBW	Transducer
2.31 GHz	2.412 GHz	MaxPeak	Coupled	1 MHz	1MHz	#326 horn (dBi)



BAND EDGE COMPLIANCE

§15.247 (c)

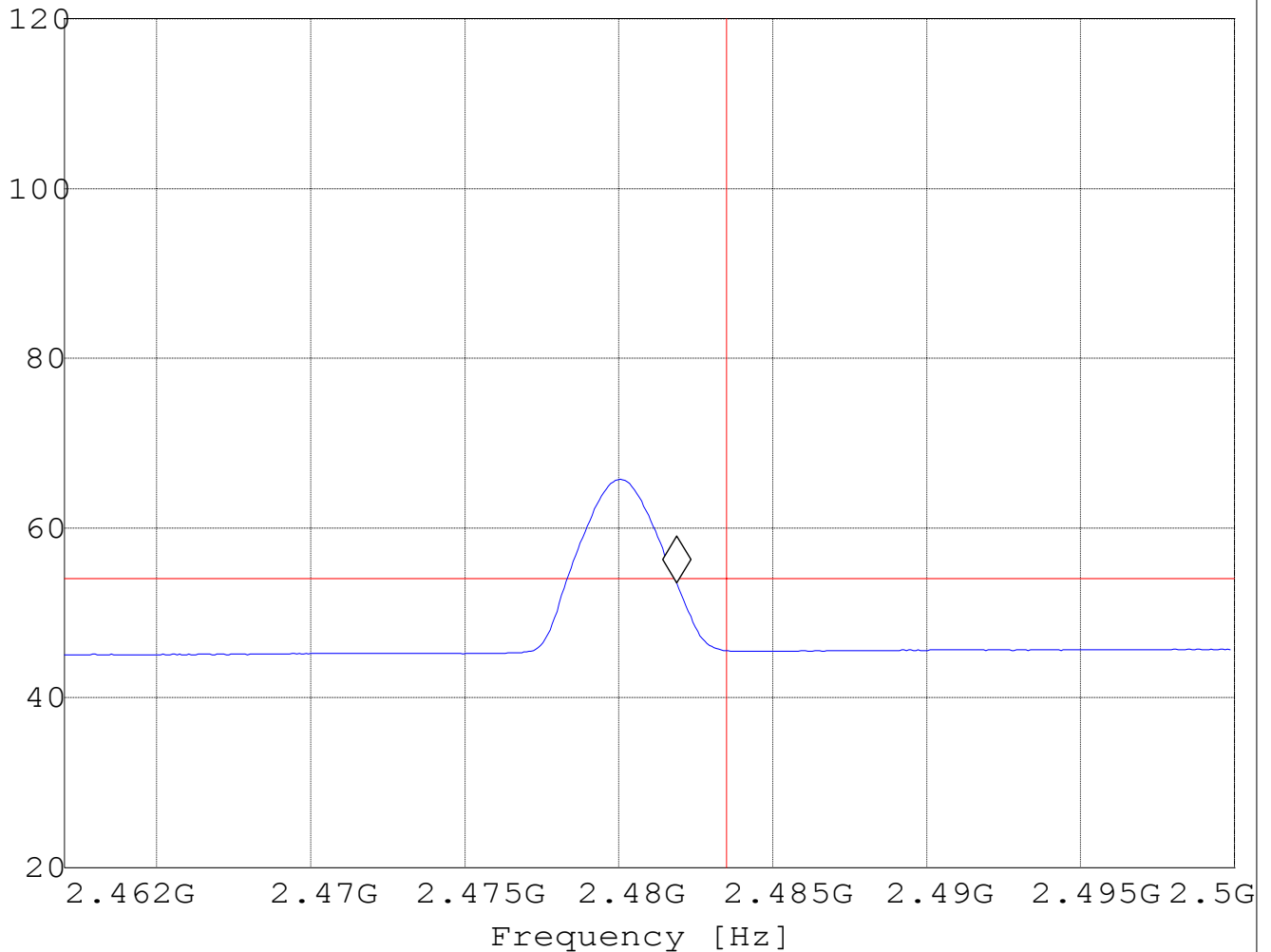
**High frequency section (spurious in the restricted band 2483.5 – 2500 MHz)
(Hopping – OFF, Average measurement)**

Operating condition : Tx at 2480MHz
SWEEP TABLE : "FCC15.247 HBE_AVG"
Short Description : FCC15.247 BT High-band-edge
Limit Line : 54dB μ V

Start Frequency	Stop Frequency	Detector	Meas. Bandw.	RBW	VBW	Transducer
2.472 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	10Hz	#326 horn (dBi)

Marker: 2.481875752 GHz 53.53 dB μ V/m

Level [dB μ V/m]



BAND EDGE COMPLIANCE

§15.247 (c)

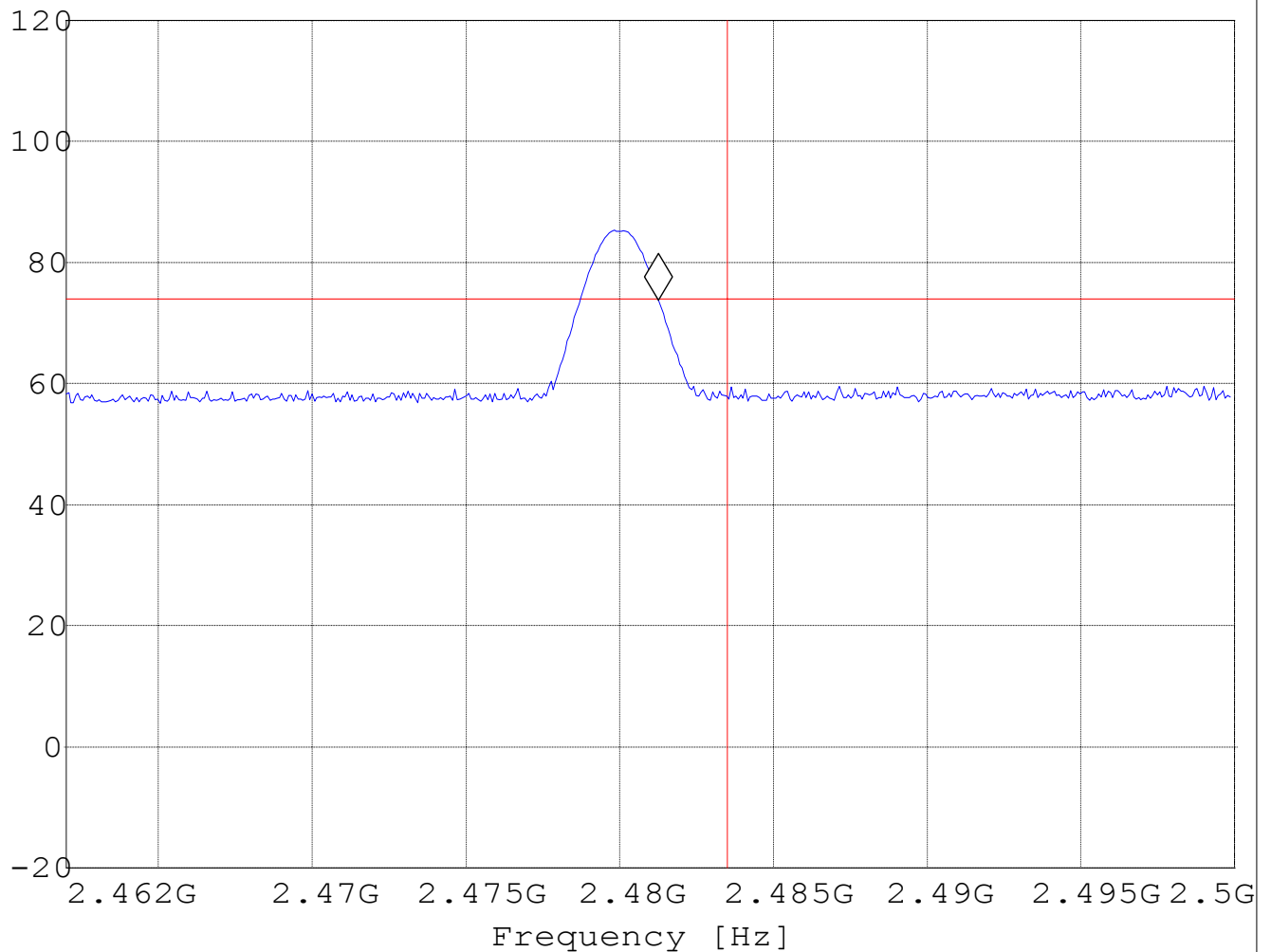
**High frequency section (spurious in the restricted band 2483.5 – 2500 MHz)
(Hopping – OFF, Peak measurement)**

Operating condition : Tx at 2480MHz
 SWEEP TABLE : "FCC15.247 HBE_PK"
 Short Description : FCC15.247 BT High-band-edge
 Limit Line : 74dB μ V

Start Frequency	Stop Frequency	Detector	Meas. Bandw.	RBW	VBW	Transducer
2.472 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	1MHz	#326 horn (dBi)

Marker: 2.481266533 GHz 73.72 dB μ V/m

Level [dB μ V/m]



BAND EDGE COMPLIANCE

§15.247 (c)

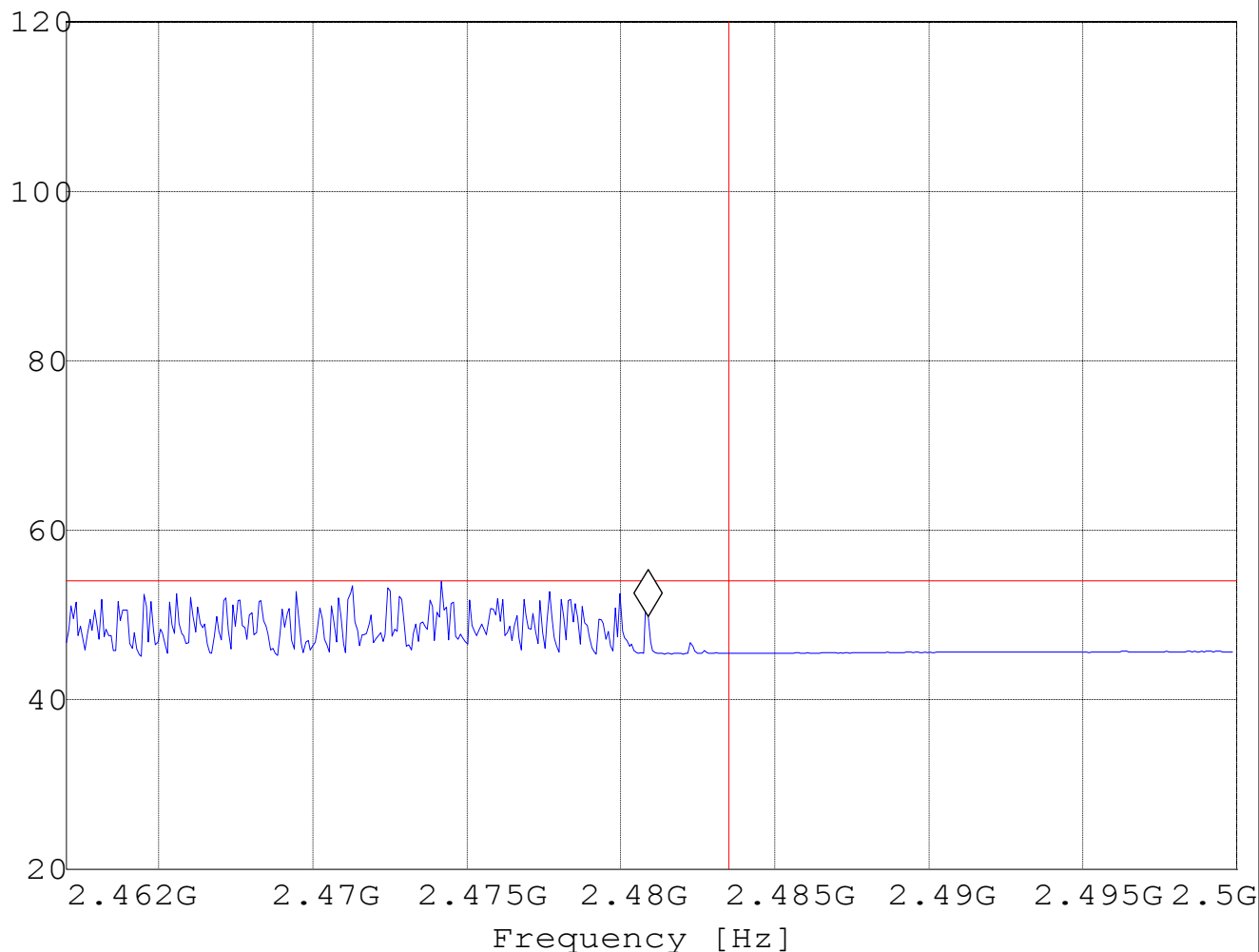
**High frequency section (spurious in the restricted band 2483.5 – 2500 MHz)
(Hopping – ON, Average measurement)**

Operating condition : Tx at 2480MHz
 SWEEP TABLE : "FCC15.247 HBE_AVG"
 Short Description : FCC15.247 BT High-band-edge
 Limit Line : 54dB μ V

Start Frequency	Stop Frequency	Detector	Meas. Bandw.	RBW	VBW	Transducer
2.472 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	10Hz	#326 horn (dBi)

Marker: 2.480885772 GHz 49.88 dB μ V/m

Level [dB μ V/m]



BAND EDGE COMPLIANCE

§15.247 (c)

High frequency section (spurious in the restricted band 2483.5 – 2500 MHz)

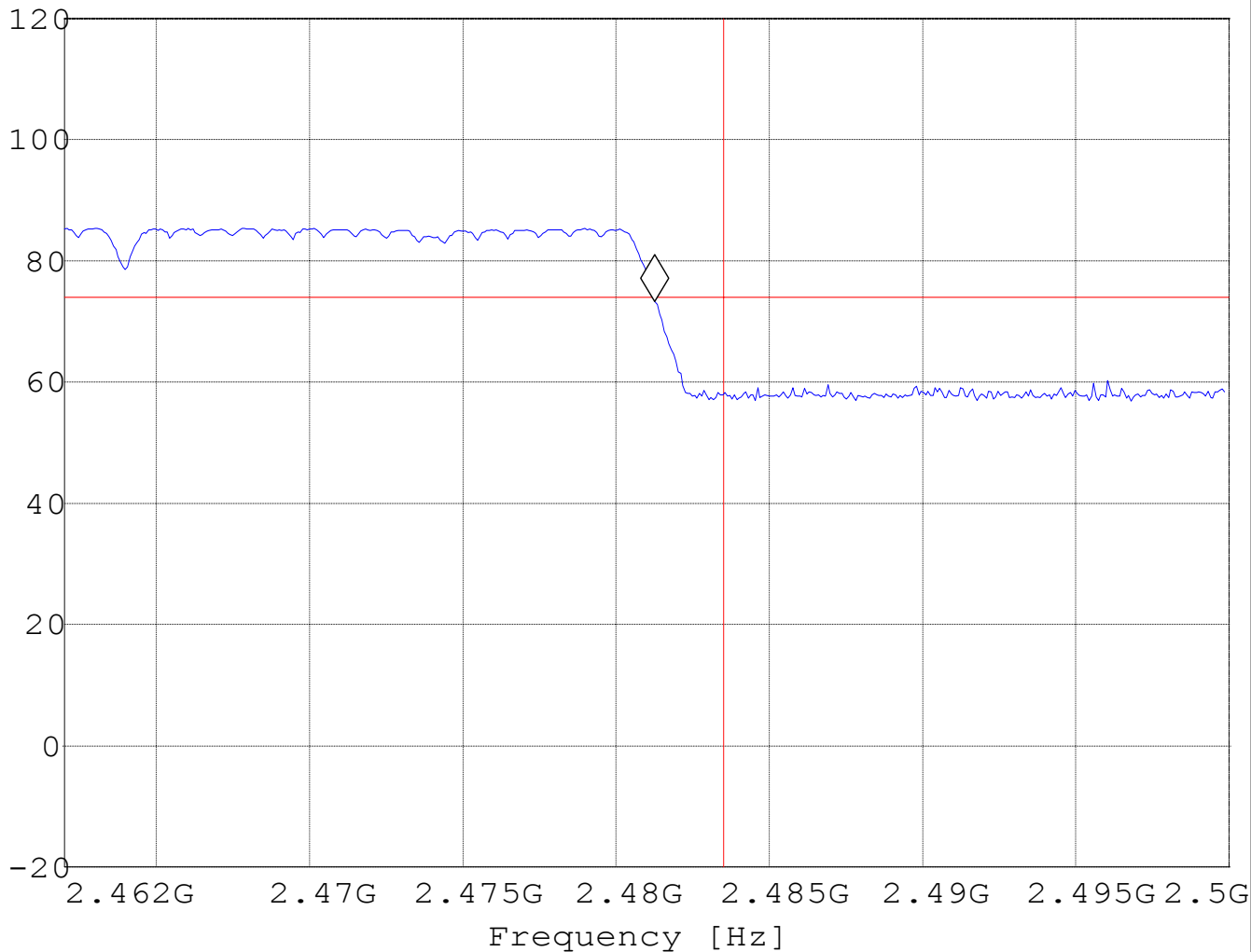
(Hopping – ON, Peak measurement)

Operating condition : Tx at 2480MHz
 SWEEP TABLE : "FCC15.247 HBE_PK"
 Short Description : FCC15.247 BT High-band-edge
 Limit Line : 74dB μ V

Start Frequency	Stop Frequency	Detector	Meas. Bandw.	RBW	VBW	Transducer
2.472 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	1MHz	#326 horn (dBi)

Marker: 2.481266533 GHz 73.25 dB μ V/m

Level [dB μ V/m]



**EMISSION LIMITATIONS
Transmitter (Conducted)
LIMITS**

§ 15.247 (c) (1)

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)).

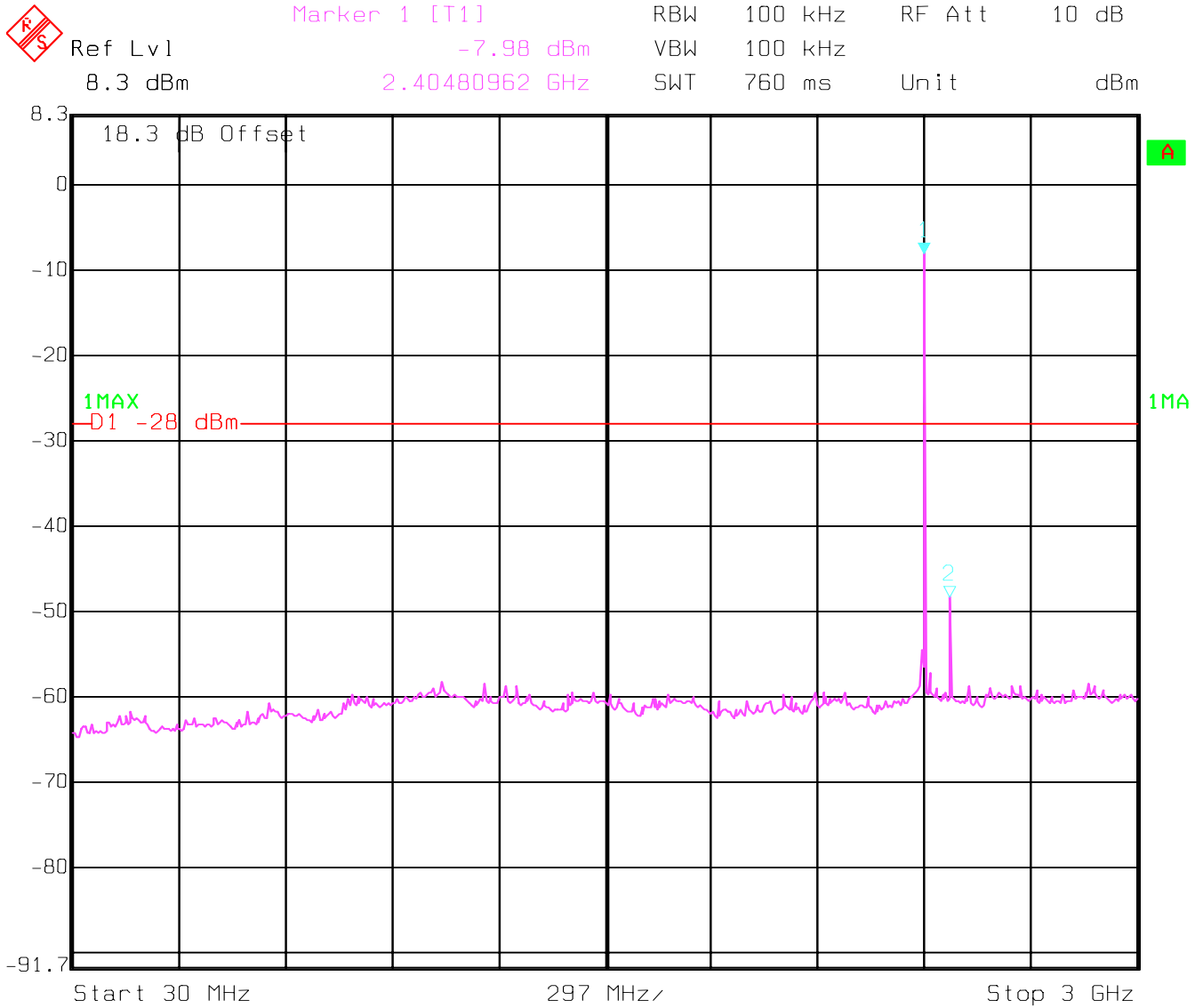
NOTE: Frequency resolution is not fine enough to show the exact frequency of the carrier, refer to plots under EIRP.

EMISSION LIMITATIONS - Conducted (Transmitter)

§ 15.247 (c) (1)

Lowest Channel(2402MHz): 30MHz - 3GHz

NOTE: The peak above the limit line is the carrier frequency.



Date: 13.NOV.2002 02:46:48

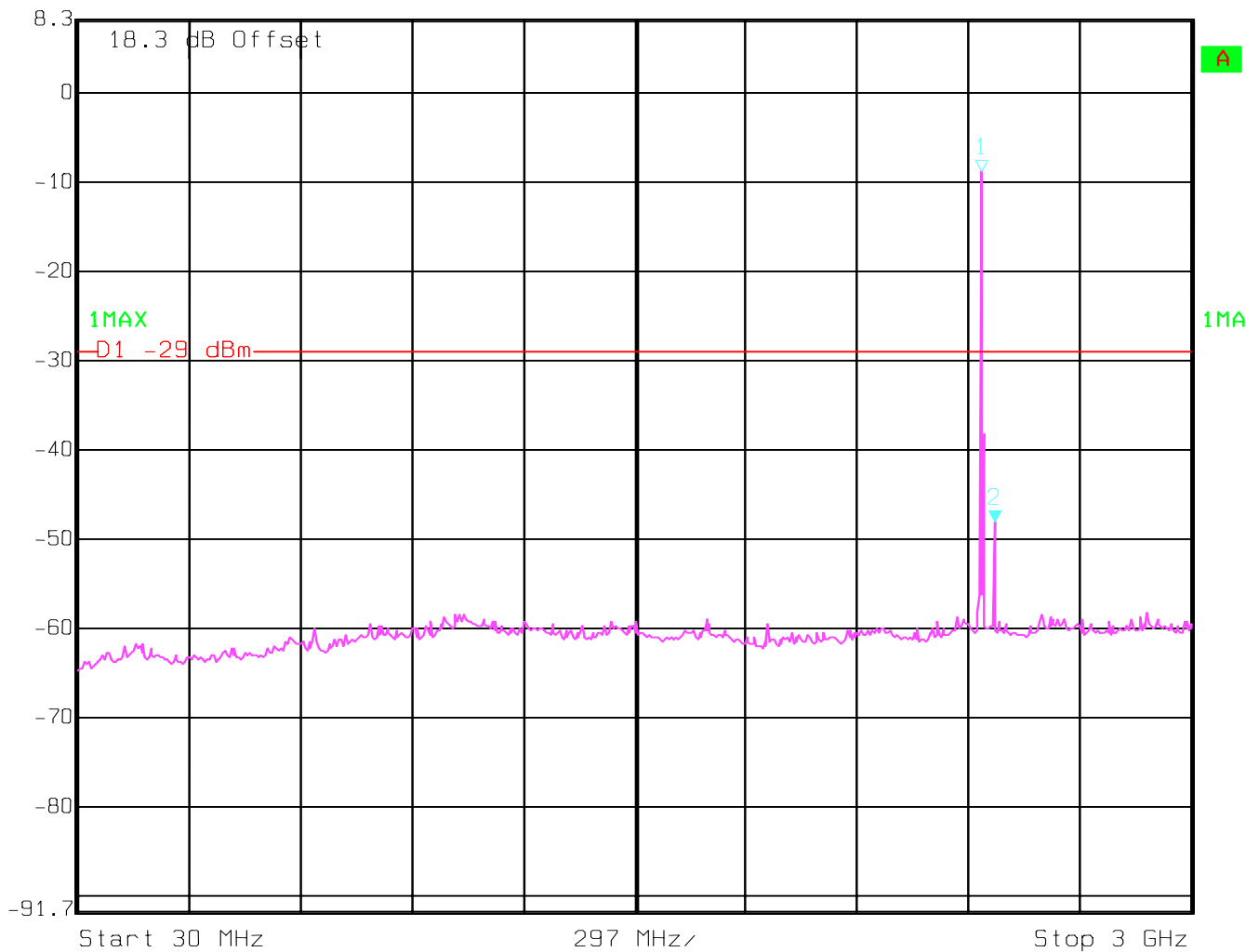
EMISSION LIMITATIONS - Conducted (Transmitter)

§ 15.247 (c) (1)

Mid Channel(2440MHz): 30MHz - 3GHz

NOTE: The peak above the limit line is the carrier frequency.

	Ref Lvl	Marker 2 [T1]	RBW	100 kHz	RF Att	10 dB
	8.3 dBm	-48.13 dBm	VBW	100 kHz		
		2.47623246 GHz	SWT	760 ms	Unit	dBm



Date: 13.NOV.2002 02:38:02

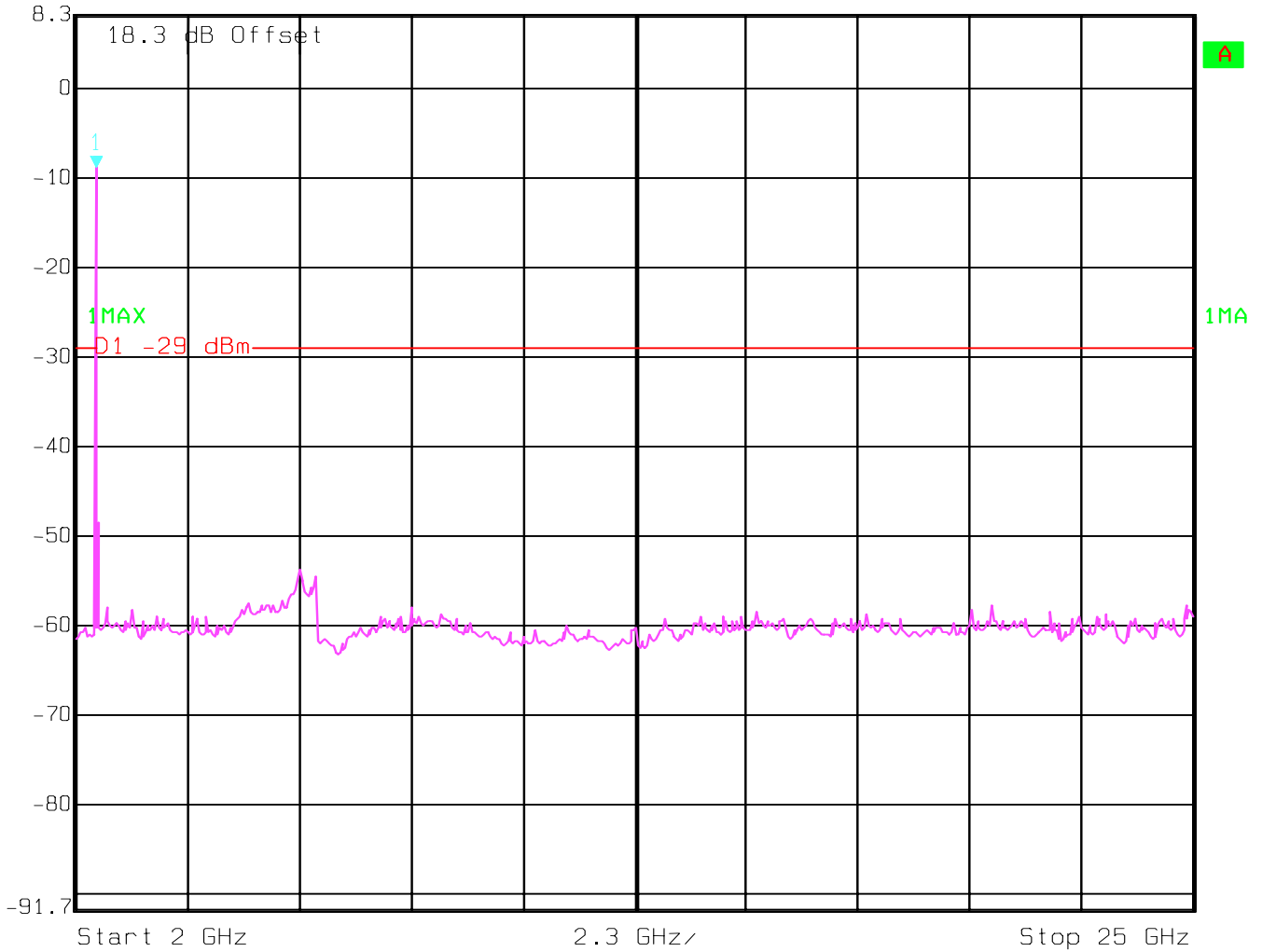
EMISSION LIMITATIONS - Conducted (Transmitter)

§ 15.247 (c) (1)

Mid Channel(2440MHz): 2GHz - 25GHz

NOTE: The peak above the limit line is the carrier frequency.

	Ref Lvl	Marker 1 [T1]	RBW	100 kHz	RF Att	10 dB
	8.3 dBm	-8.94 dBm	VBW	100 kHz		
		2.41482966 GHz	SWT	5.8 s	Unit	dBm



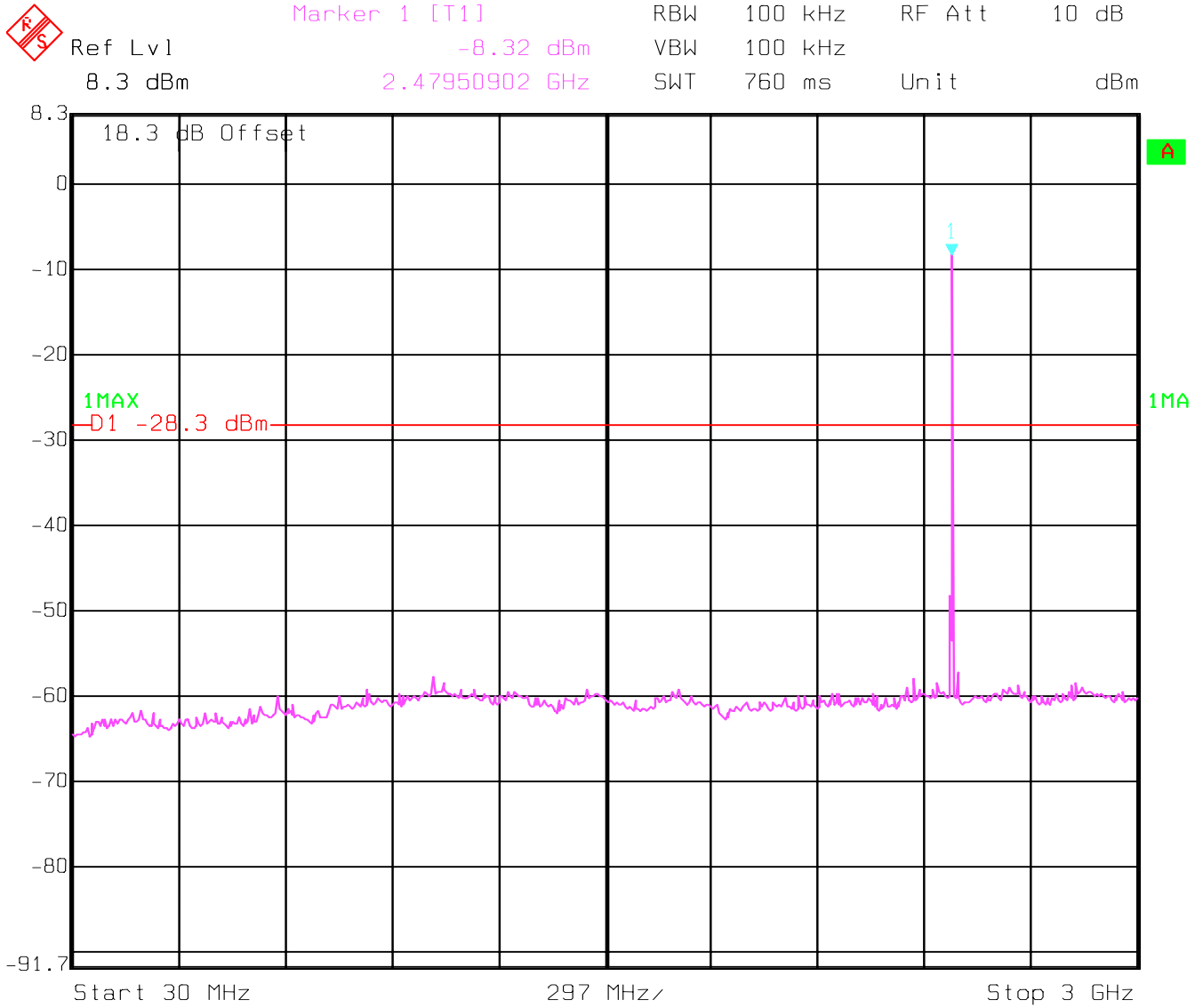
Date: 13.NOV.2002 02:40:05

EMISSION LIMITATIONS - Conducted (Transmitter)

§ 15.247 (c) (1)

Highest Channel(2480MHz): 30MHz - 3GHz

NOTE: The peak above the limit line is the carrier frequency.



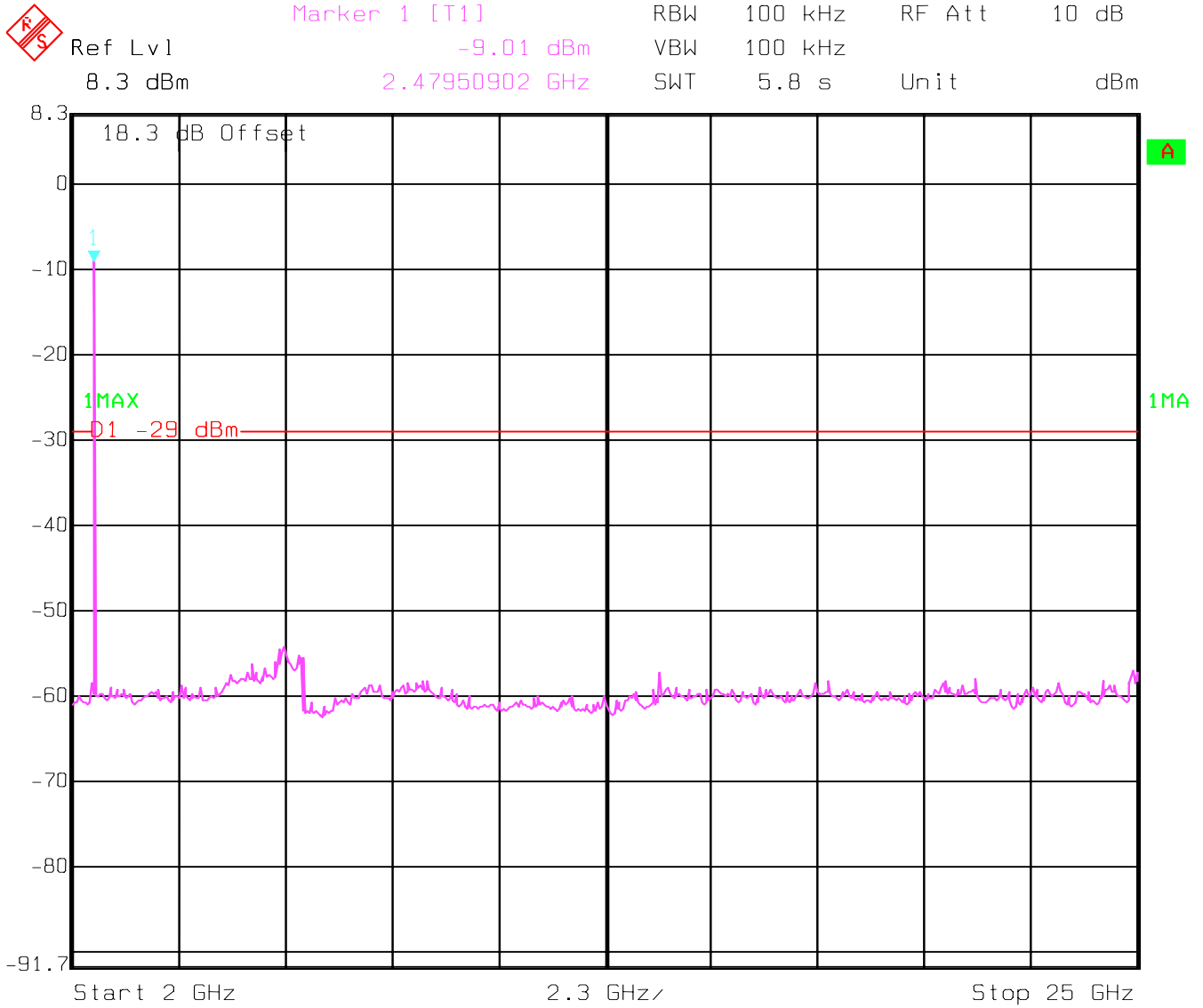
Date: 13.NOV.2002 02:30:44

EMISSION LIMITATIONS - Conducted (Transmitter)

§ 15.247 (c) (1)

Highest Channel(2480MHz): 2GHz - 25GHz

NOTE: The peak above the limit line is the carrier frequency.



Date: 13.NOV.2002 02:33:45

**EMISSION LIMITATIONS
Transmitter (Radiated)**

§ 15.247 (c) (1)

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)).

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 18 and 25 GHz very short cable connections to the antenna was used to minimize the noise level.
2. Frequency resolution is not fine enough to show the exact frequency of the carrier, refer to plots under EIRP.

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

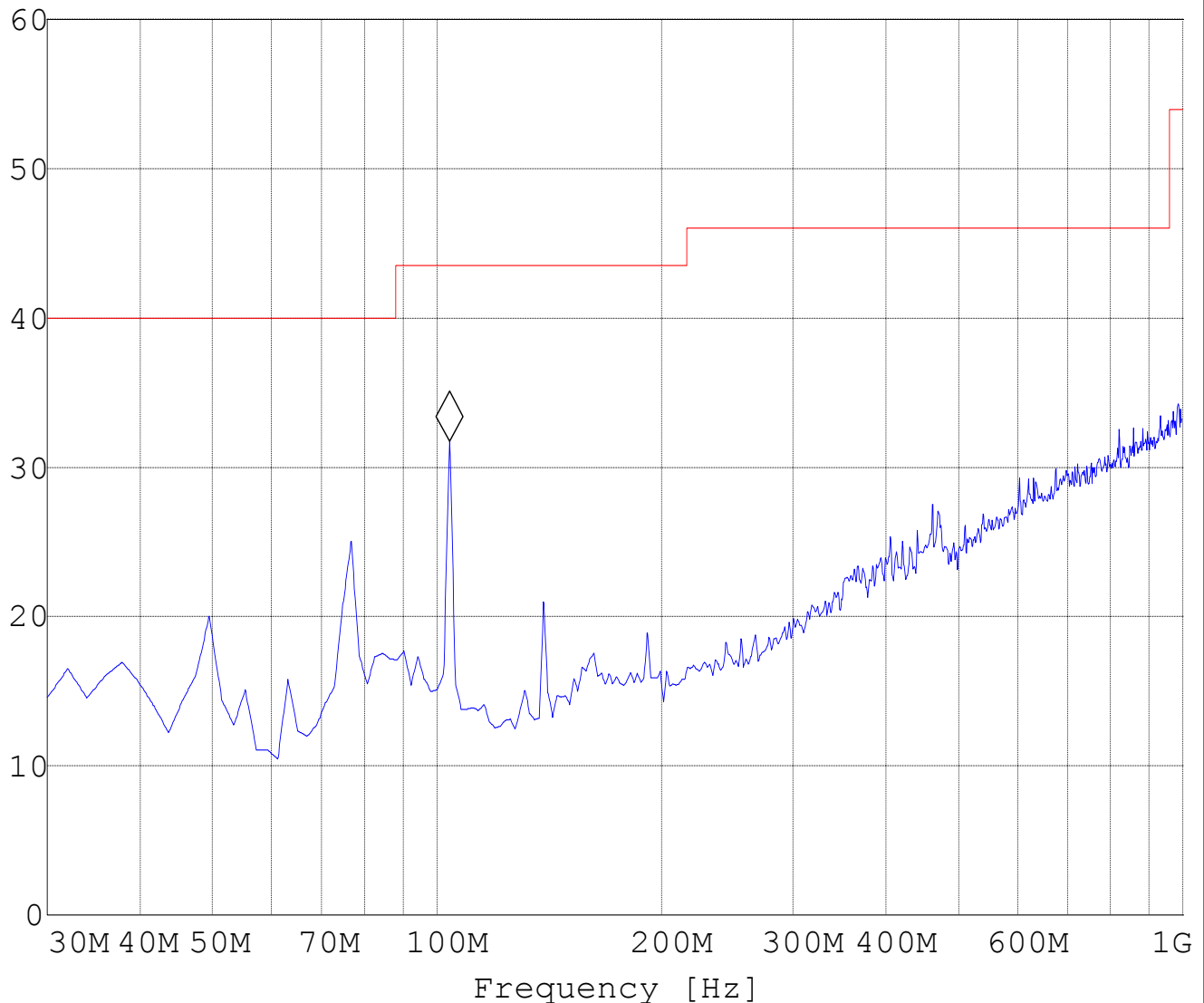
EMISSION LIMITATIONS - Radiated (Transmitter)
Lowest Channel(2402MHz): 30MHz – 1GHz

§ 15.247 (c) (1)

SWEEP TABLE:		"BT Spuri hi 30-1G"			
Short Description:		Bluetooth 30MHz-1GHz			
Start	Stop	Detector	Meas.	RBW	Transducer
Frequency	Frequency		Time	VBW	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186

Marker: 103.867735 MHz 31.75 dBµV/m

Level [dBµV/m]



EMISSION LIMITATIONS - Radiated (Transmitter)

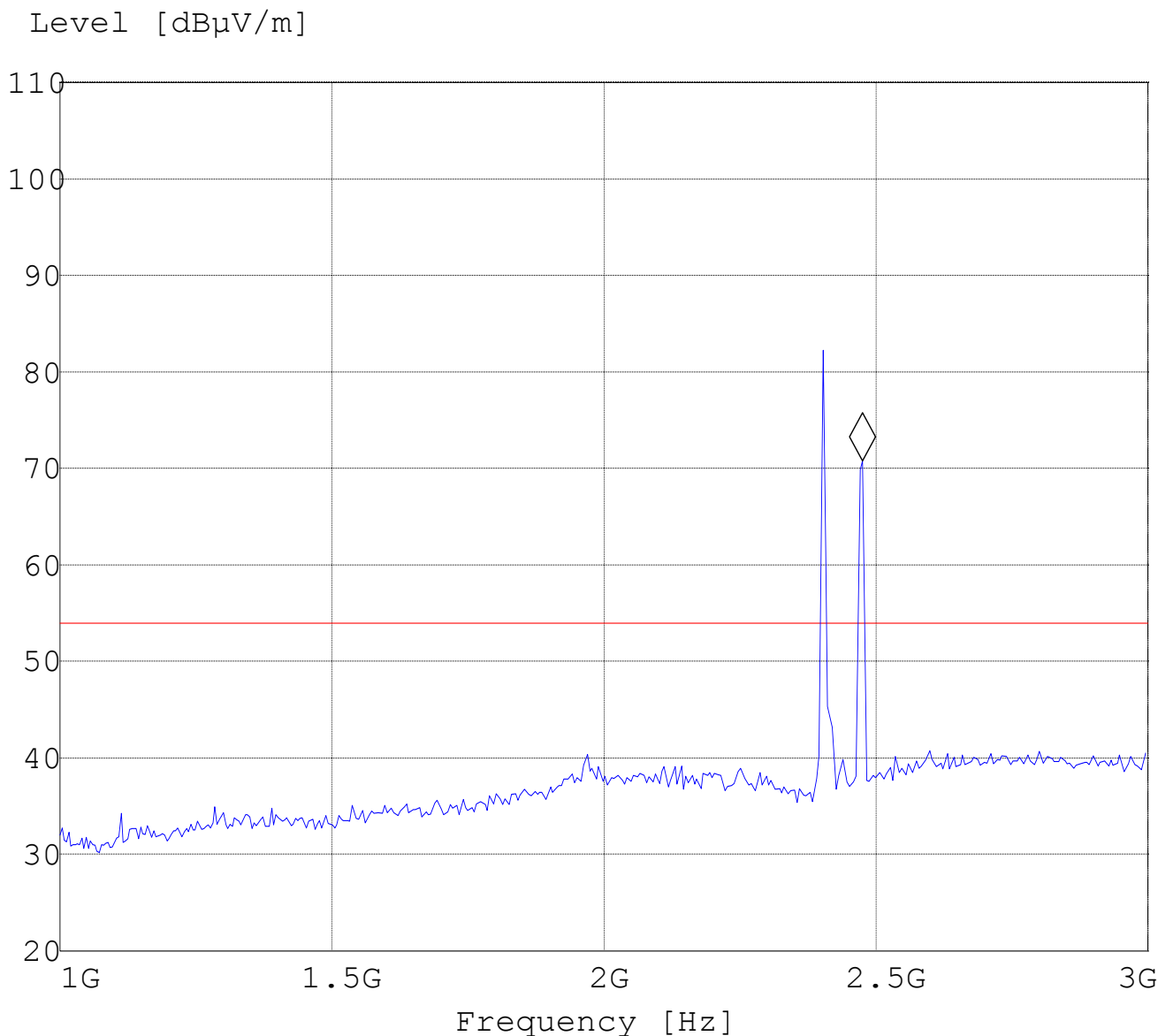
§ 15.247 (c) (1)

Lowest Channel(2402MHz): 1GHz – 3GHz

NOTE: The peak above the limit is the carrier frequency. Marked frequency is downlink of our base station.

SWEEP TABLE:		"BT Spuri hi 1-8G"			
Short Description:		Bluetooth Spurious 1-8 GHz			
Start	Stop	Detector	Meas.	RBW	Transducer
Frequency	Frequency	Time	Bandw.	VBW	
1.0 GHz	8.0 GHz	MaxPeak	Coupled	1 MHz	#326 horn (dBi)

Marker: 2.4749499 GHz 70.74 dBµV/m



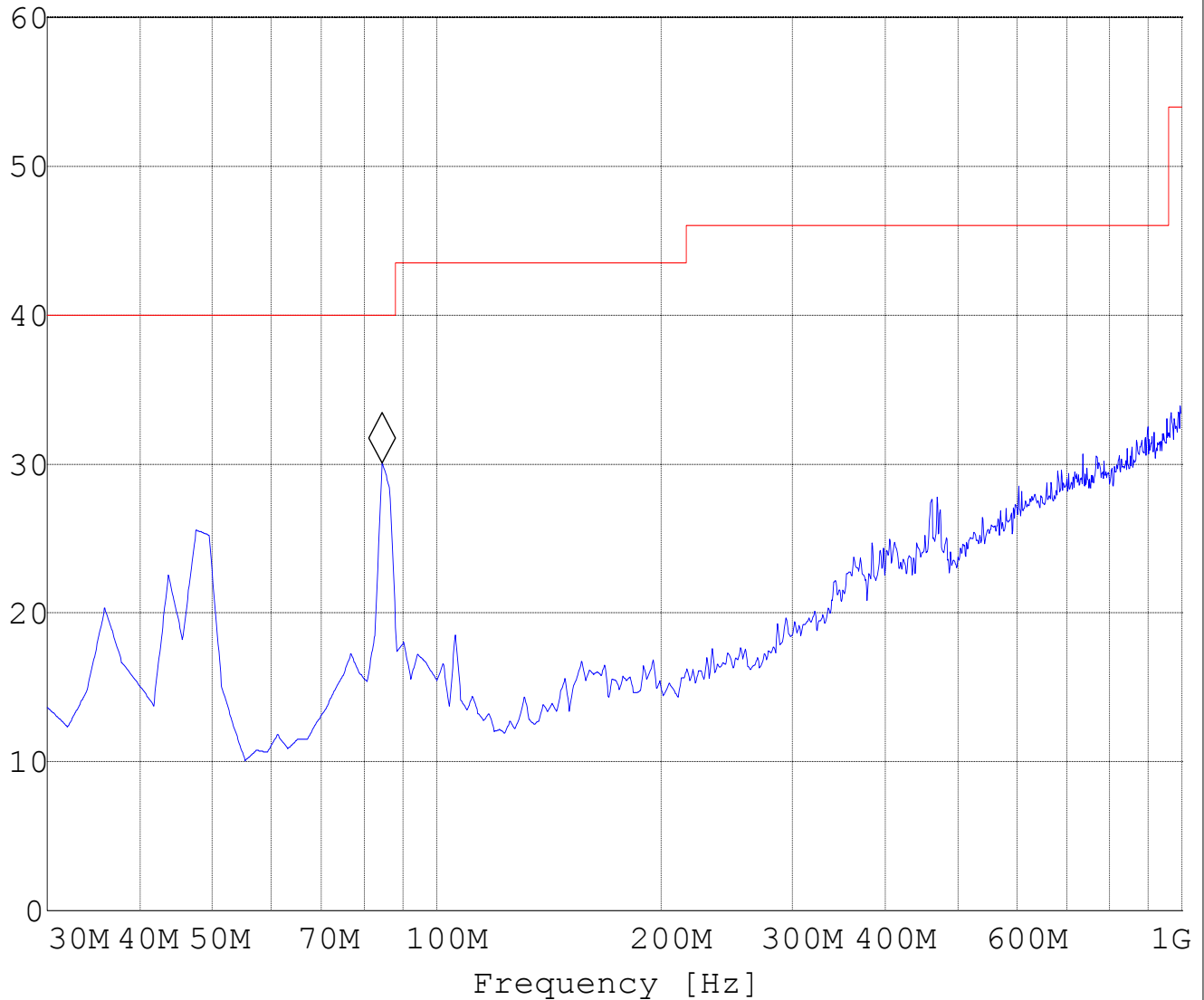
EMISSION LIMITATIONS - Radiated (Transmitter)
Middle Channel(2440MHz): 30MHz – 1GHz

§ 15.247 (c) (1)

SWEEP TABLE:		"BT Spuri hi 30-1G"			
Short Description:		Bluetooth 30MHz-1GHz			
Start	Stop	Detector	Meas.	RBW	Transducer
Frequency	Frequency		Time	VBW	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186

Marker: 84.428858 MHz 30.06 dBµV/m

Level [dBµV/m]



EMISSION LIMITATIONS - Radiated (Transmitter)

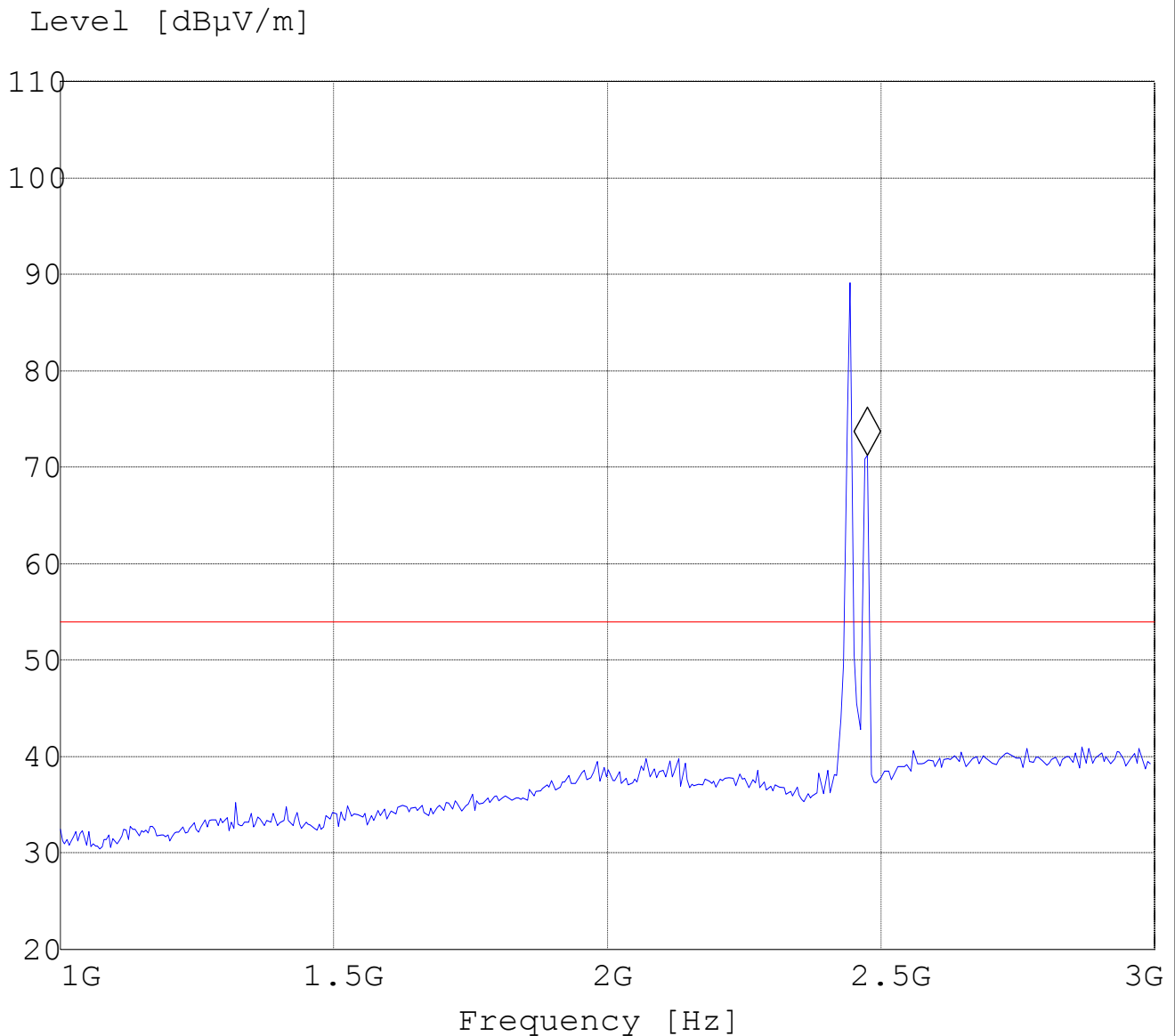
§ 15.247 (c) (1)

Middle Channel(2440MHz): 1GHz – 3GHz

NOTE: The peak above the limit is the carrier frequency. Marked frequency is downlink of our base station.

SWEEP TABLE:		"BT Spuri hi 1-8G"			
Short Description:		Bluetooth Spurious 1-8GHz			
Start	Stop	Detector	Meas.	RBW	Transducer
Frequency	Frequency	Time	Bandw.	VBW	
1.0 GHz	8.0 GHz	MaxPeak	Coupled	1 MHz	#326 horn (dBi)

Marker: 2.4749499 GHz 71.2 dBµV/m



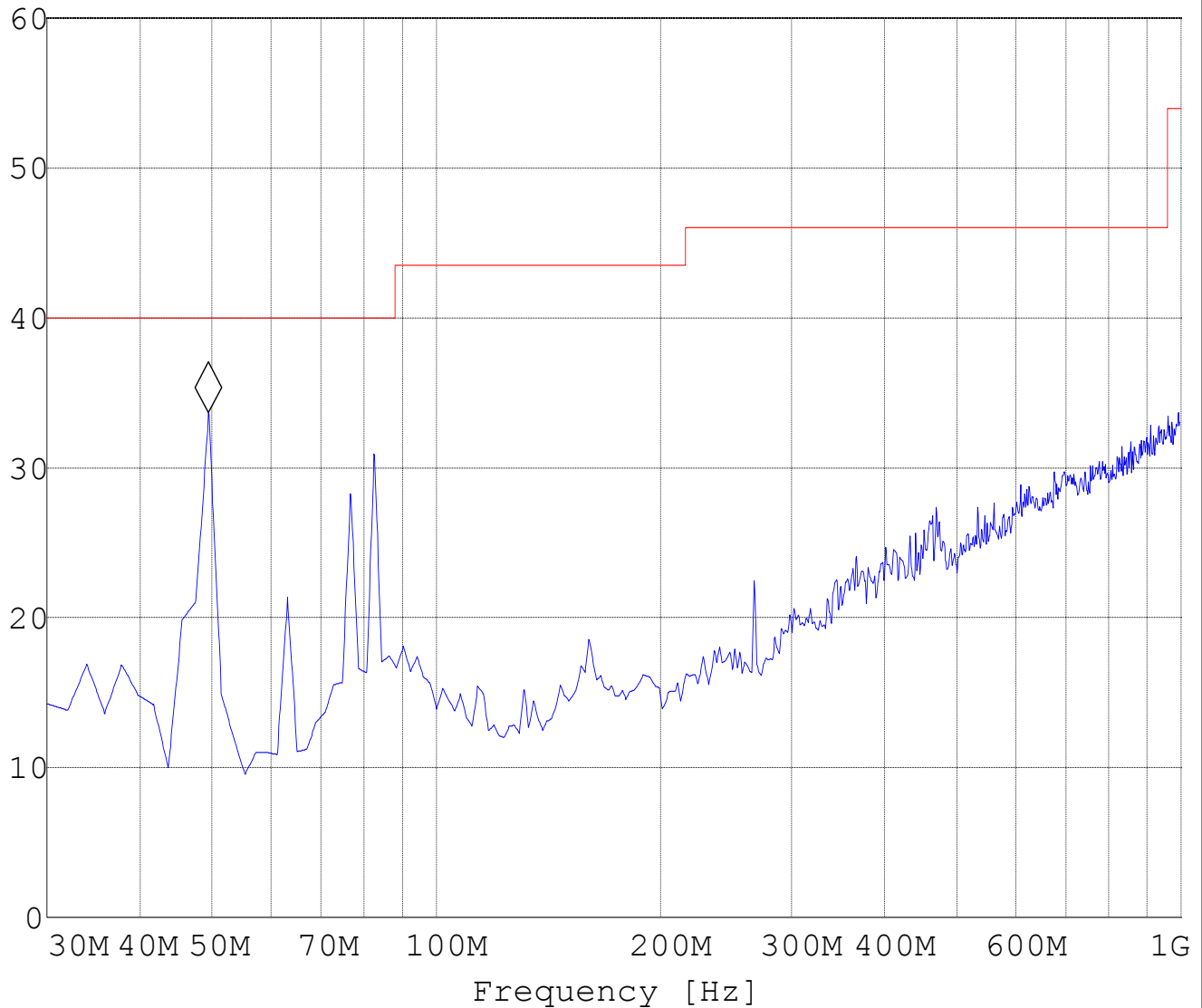
EMISSION LIMITATIONS - Radiated (Transmitter)
Highest Channel(2480MHz): 30MHz – 1GHz

§ 15.247 (c) (1)

SWEEP TABLE:		"BT Spuri hi 30-1G"			
Short Description:		Bluetooth 30MHz-1GHz			
Start	Stop	Detector	Meas.	RBW	Transducer
Frequency	Frequency		Time	VBW	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186

Marker: 49.438878 MHz 33.68 dBµV/m

Level [dBµV/m]



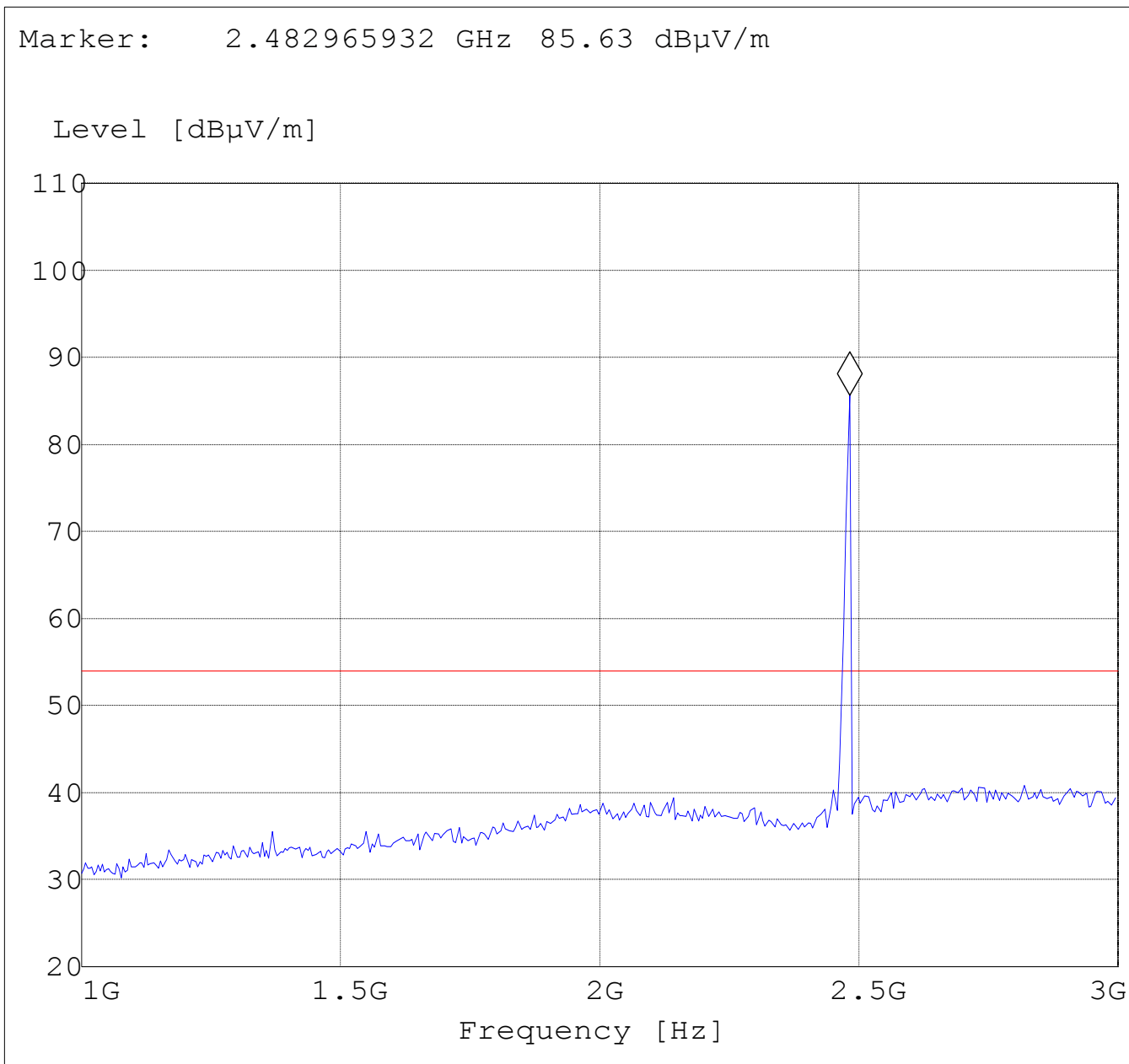
EMISSION LIMITATIONS - Radiated (Transmitter)

§ 15.247 (c) (1)

Highest Channel(2480MHz): 1GHz – 3GHz

NOTE: The peak above the limit is the carrier frequency.

SWEEP TABLE:		"BT Spuri hi 1-8G"			
Short Description:		Bluetooth Spurious 1-8GHz			
Start	Stop	Detector	Meas.	RBW	Transducer
Frequency	Frequency	Time	Bandw.	VBW	
1.0 GHz	8.0 GHz	MaxPeak	Coupled	1 MHz	#326 horn (dBi)



EMISSION LIMITATIONS - Radiated (Transmitter)

§ 15.247 (c) (1)

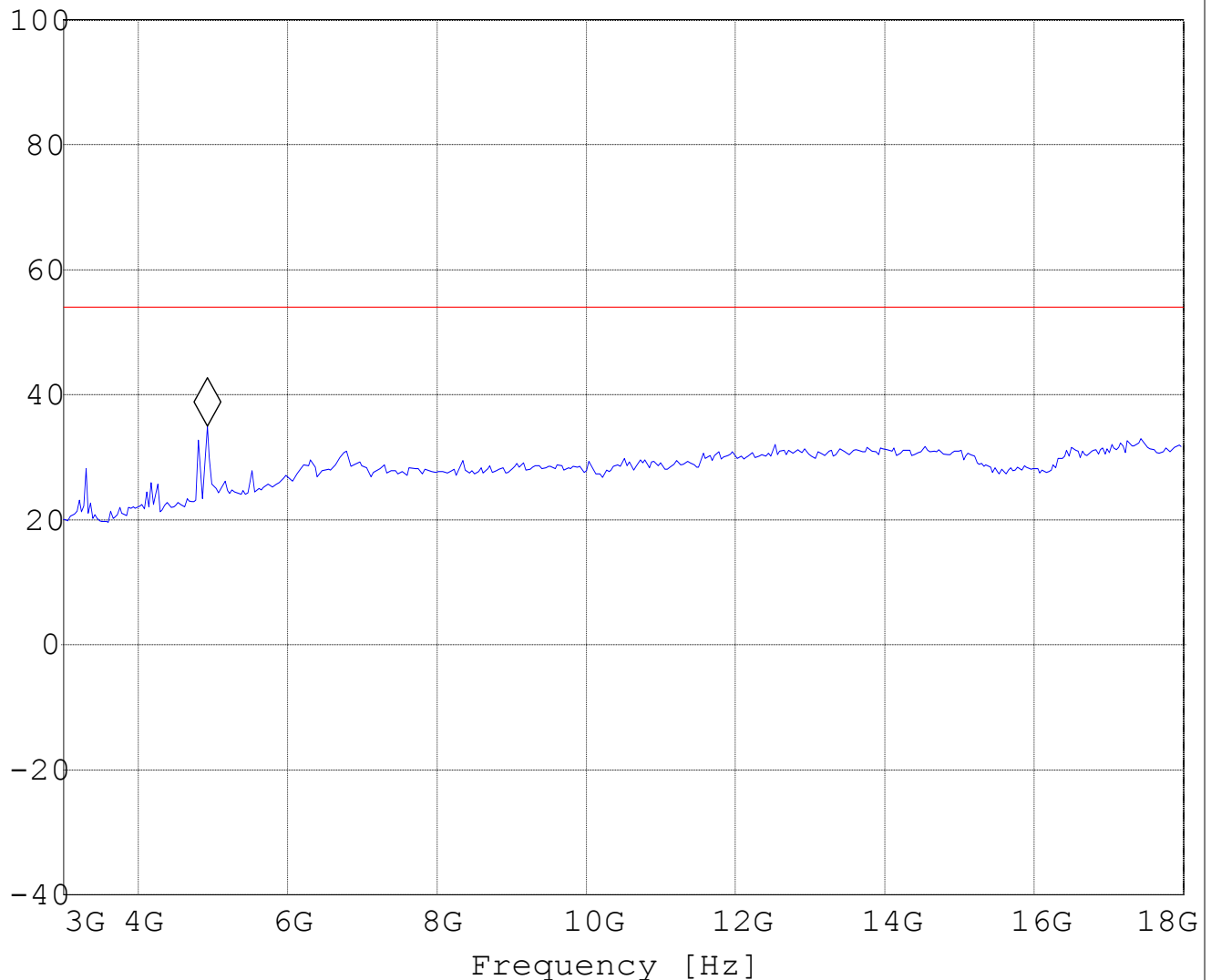
3GHz – 18GHz

(This plot is valid for all three channels)

SWEEP TABLE:		"BT Spuri hi 8-18G"			
Short Description:		Bluetooth Spurious 8-18GHz			
Start	Stop	Detector	Meas.	RBW	Transducer
Frequency	Frequency	Time	Bandw.	VBW	
8.0 GHz	18 GHz	MaxPeak	Coupled	1 MHz	#326 horn (dBi)

Marker: 4.923847695 GHz 34.99 dB μ V/m

Level [dB μ V/m]



EMISSION LIMITATIONS - Radiated (Transmitter)

§ 15.247 (c) (1)

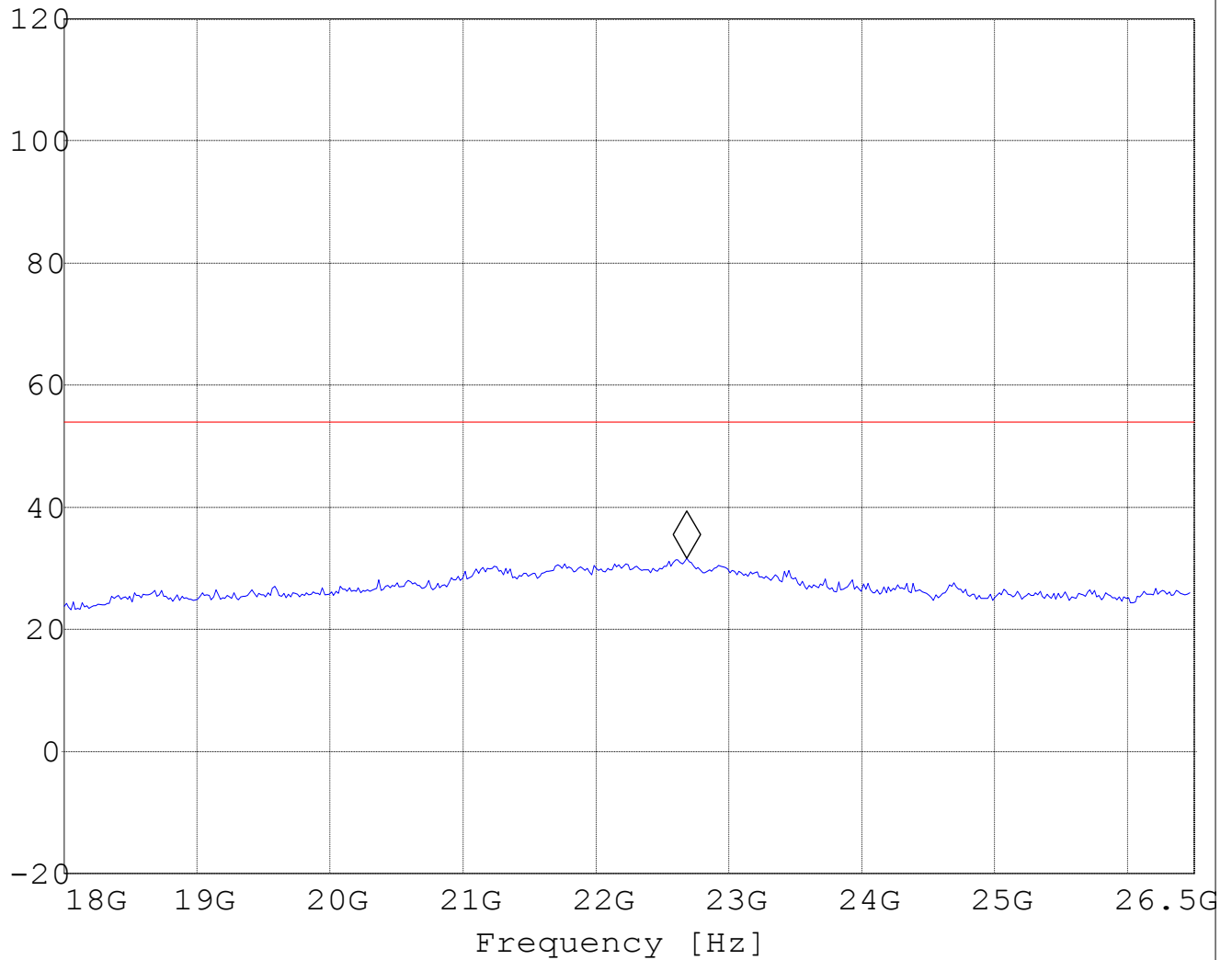
18GHz – 26.5GHz

(This plot is valid for all three channels)

SWEEP TABLE:		"BT Spuri hi 18-25G"			
Short Description:		Bluetooth Spurious 18-25GHz			
Start	Stop	Detector	Meas.	RBW	Transducer
Frequency	Frequency	Time	Bandw.	VBW	
18 GHz	25 GHz	MaxPeak	Coupled	1 MHz	#141 horn (dBi)

Marker: 22.684368737 GHz 31.69 dBµV/m

Level [dBµV/m]



CONDUCTED EMISSIONS

§ 15.107/207

Measured with AC/DC power adapter

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

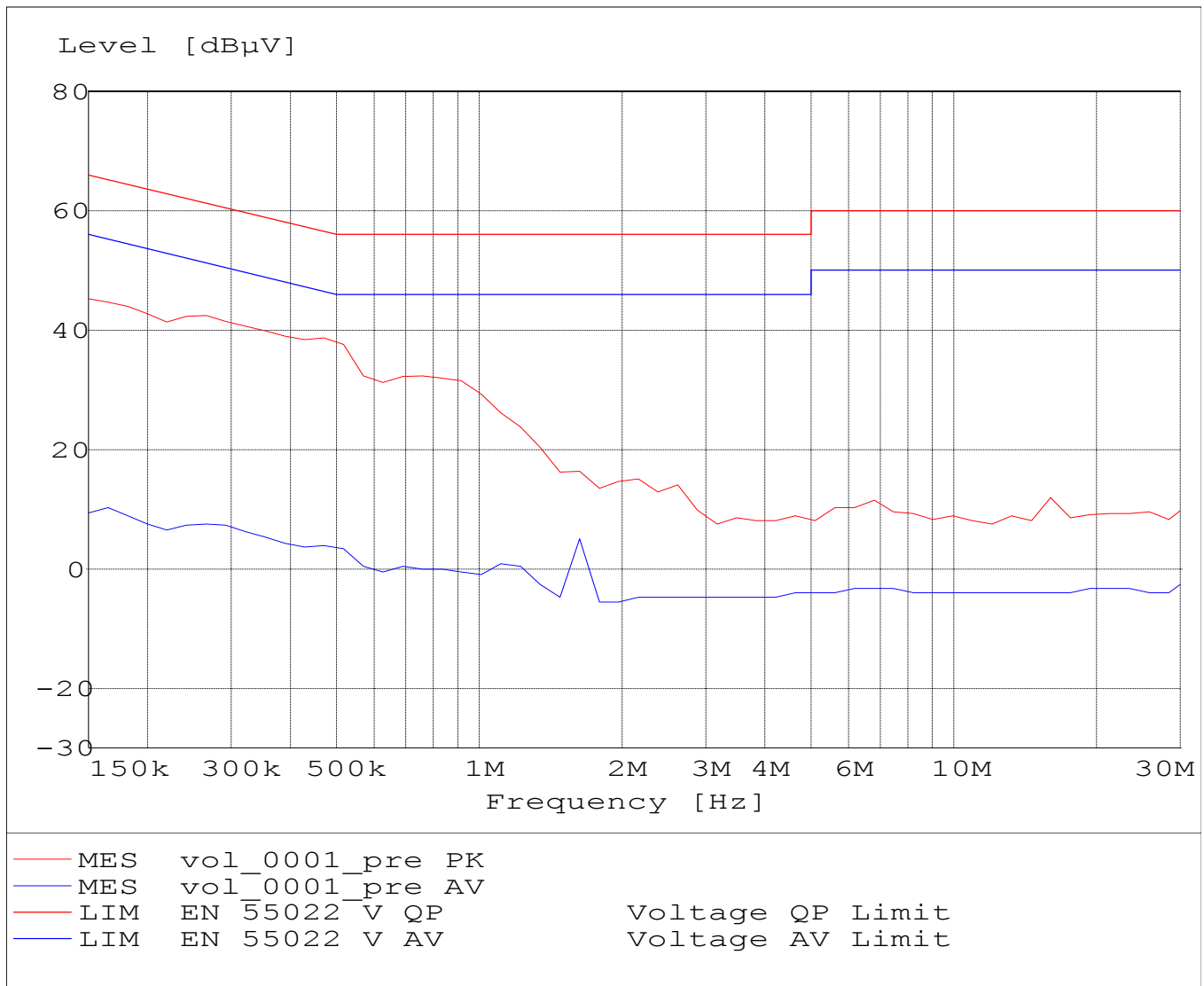
Limit

Frequency of Emission (MHz)	Conducted Limit (dB μ 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



RECEIVER SPURIOUS RADIATION

§ 15.209

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:

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 18 and 25 GHz very short cable connections to the antenna was used to minimize the noise level.

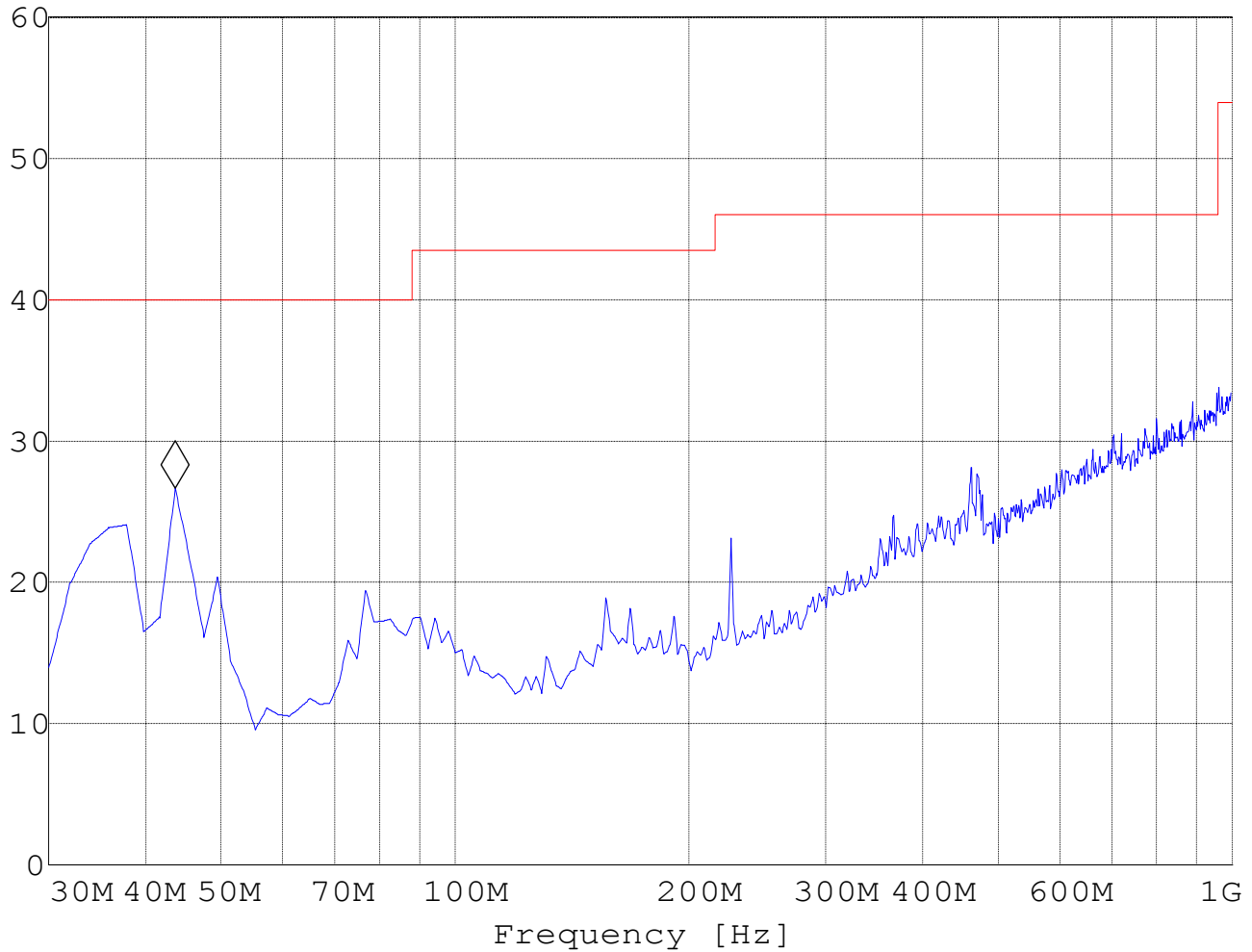
RECEIVER SPURIOUS RADIATION
30MHz – 1GHz

§ 15.209

SWEEP TABLE:		"BT Spuri hi 30-1G"			
Short Description:		Bluetooth 30MHz-1GHz			
Start	Stop	Detector	Meas.	RBW	Transducer
Frequency	Frequency		Time	VBW	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186

Marker: 43.607214 MHz 26.64 dBµV/m

Level [dBµV/m]



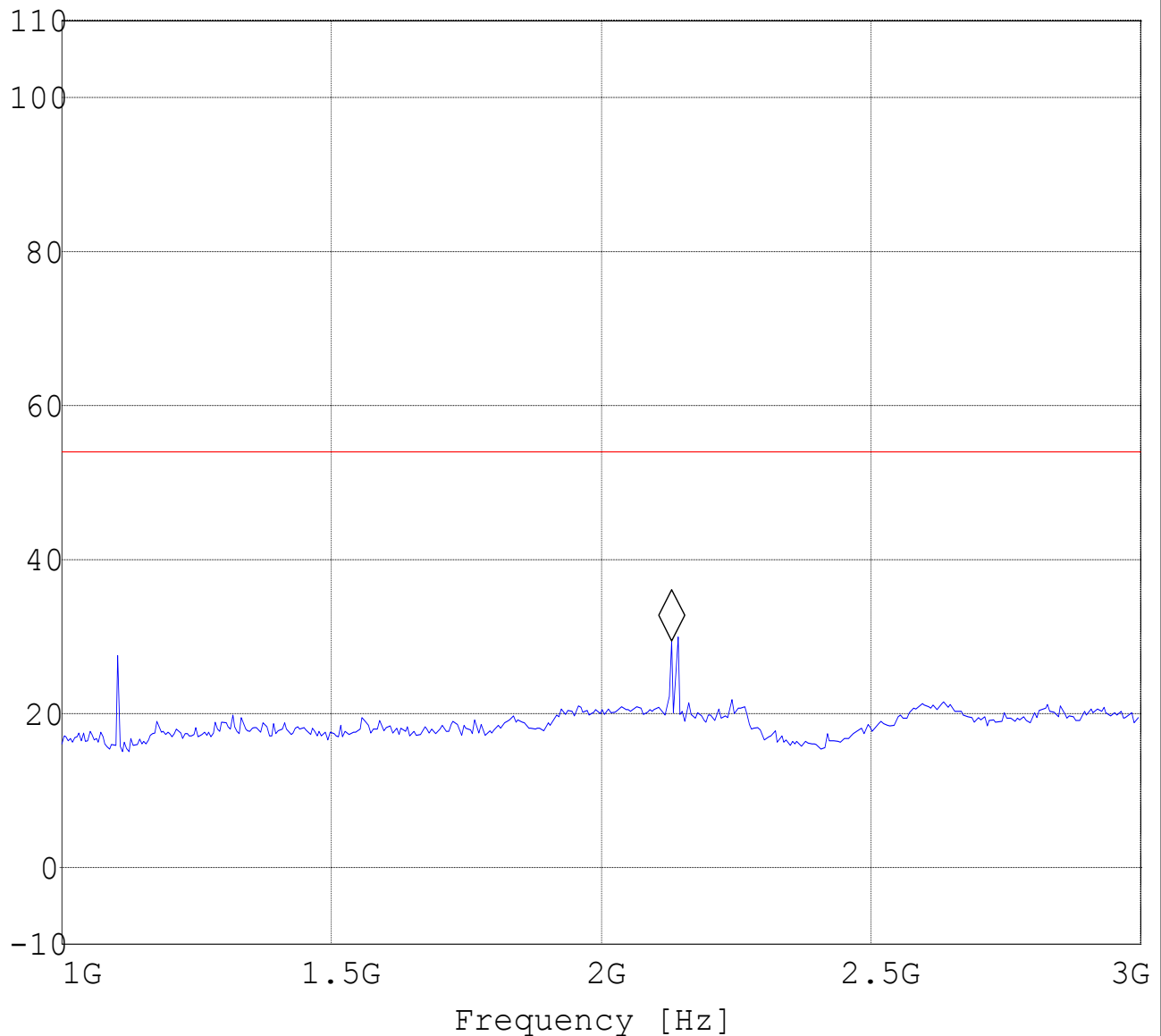
RECEIVER SPURIOUS RADIATION
1GHz – 3GHz

§ 15.209

SWEEP TABLE:		"BT Spuri hi 1-8G"			
Short Description:		Bluetooth Spurious 1-8 GHz			
Start	Stop	Detector	Meas.	RBW	Transducer
Frequency	Frequency	Time	Bandw.	VBW	
1.0 GHz	8.0 GHz	MaxPeak	Coupled	1 MHz	#326 horn (dBi)

Marker: 2.130260521 GHz 29.46 dB μ V/m

Level [dB μ V/m]



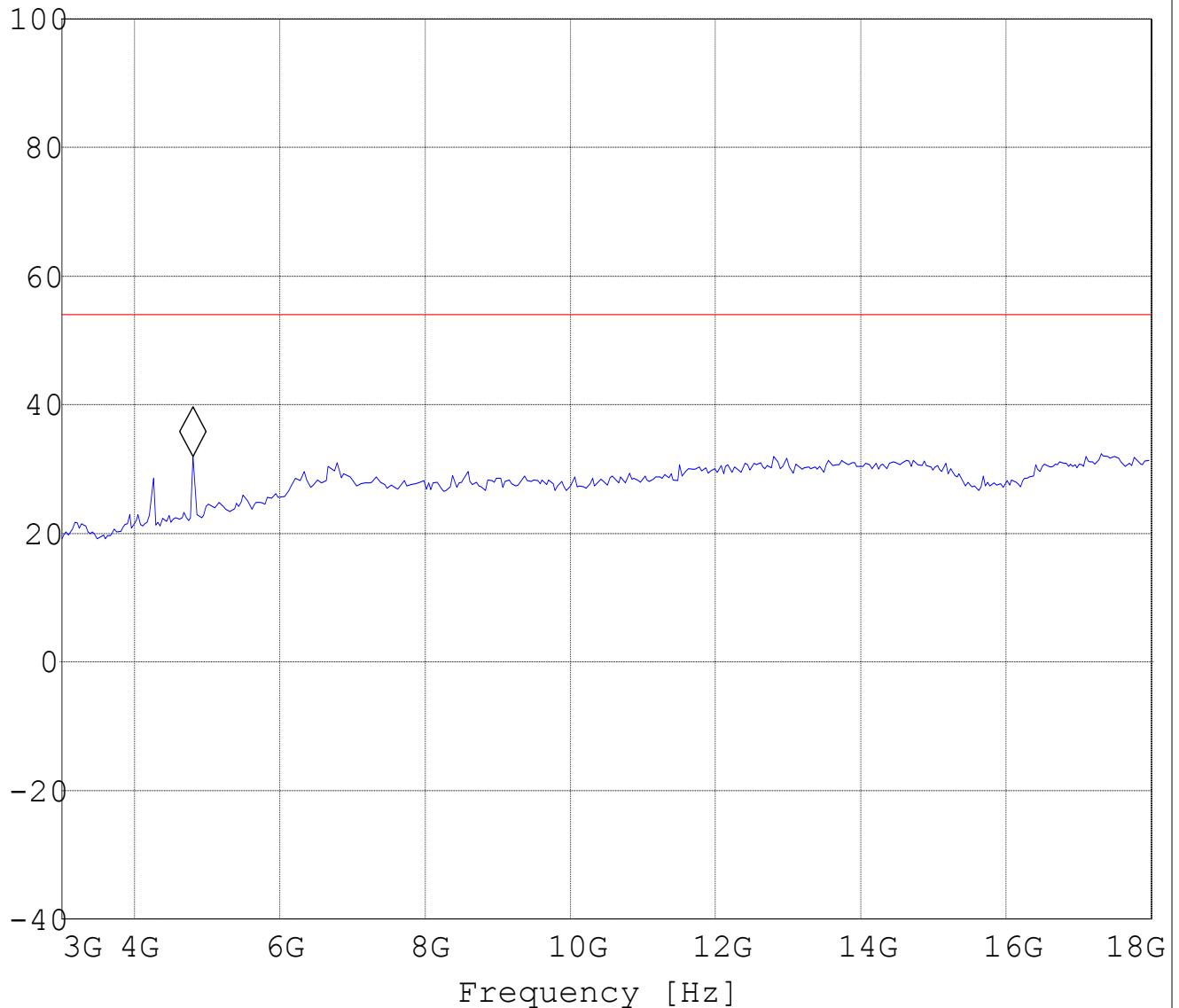
RECEIVER SPURIOUS RADIATION
3GHz – 18GHz

§ 15.209

SWEEP TABLE:		"BT Spuri hi 8-18G"			
Short Description:		Bluetooth Spurious 8-18GHz			
Start	Stop	Detector	Meas.	RBW	Transducer
Frequency	Frequency	Time	Bandw.	VBW	
8.0 GHz	18 GHz	MaxPeak	Coupled	1 MHz	#326 horn (dBi)

Marker: 4.803607214 GHz 31.95 dB μ V/m

Level [dB μ V/m]

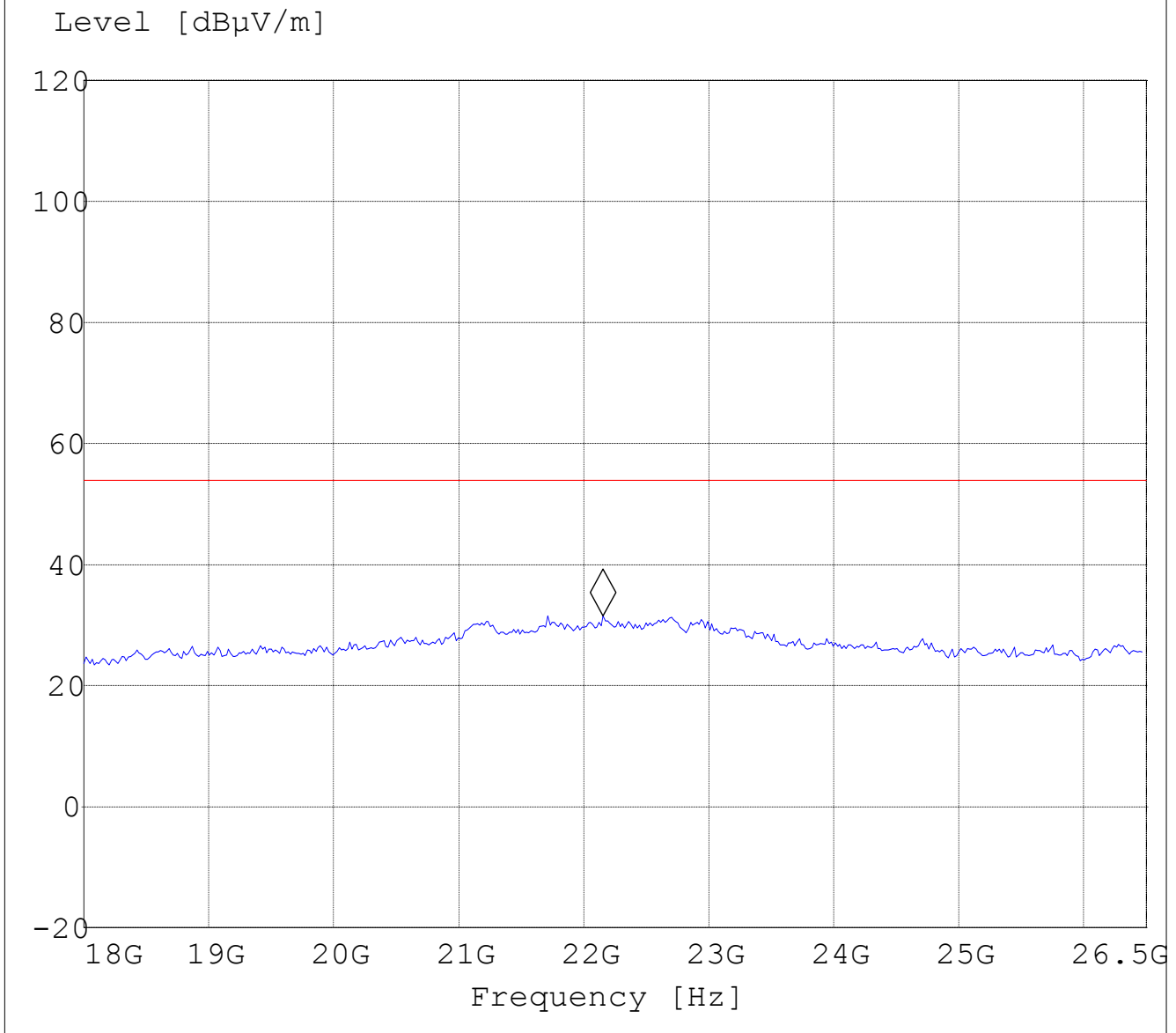


RECEIVER SPURIOUS RADIATION
18GHz – 26.5GHz

§ 15.209

SWEEP TABLE:		"BT Spuri hi 18-25G"			
Short Description:		Bluetooth Spurious 18-25GHz			
Start	Stop	Detector	Meas.	RBW	Transducer
Frequency	Frequency	Time	Bandw.	VBW	
18 GHz	25 GHz	MaxPeak	Coupled	1 MHz	#141 horn (dBi)

Marker: 22.156312625 GHz 31.5 dB μ V/m

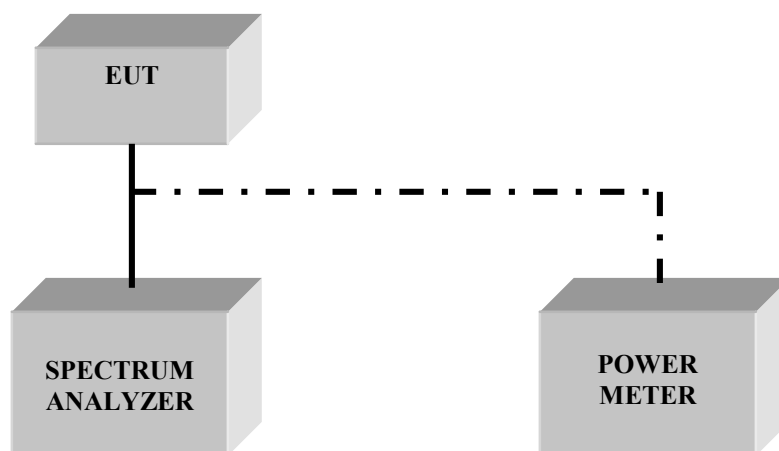


TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal due date
01	Spectrum Analyzer	ESIB 40	Rohde & Schwarz	100107	6/4/2003
02	Spectrum Analyzer	FSEM 30	Rohde & Schwarz	826880/010	5/1/2003
04	Power-Meter	NRVD	Rohde & Schwarz	0857.8008.02	5/1/2003
06	Biconilog Antenna	3141	EMCO	0005-1186	11/3/2003
07	Horn Antenna	SAS-200/571	AH Systems	325	8/12/2003
11	Power Sensor	URV5-Z2	Rohde & Schwarz	DE30807	5/1/2003
12	LISN	ESH3-Z5	Rohde & Schwarz	836679/003	2/28/2003

This list shows all the devices used for testing.

BLOCK DIAGRAMS
Conducted Testing



Radiated Testing

ANECHOIC CHAMBER

