FCC Test Report

Test report no.: EMC_597FCC15.247_2003_1002

FCC Part 15.247 for FHSS systems / CANADA RSS-210
Model: 1001
FCC ID: C3K1002
IC: 3048A-1002

Deutscher Akkreditierungs Rat DAR

TTI-P-G 081/94-A0

Accredited according to **ISO/IEC 17025**

Bluetooth™

Bluetooth Qualification Test Facility (BQTF)

CTIA Authorized Testing Laboratory

FCC listed # 101450

IC recognized # 3925

***CETECOM* Inc.**

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Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

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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: Harpreet Sidhu

1.2 Testing laboratory

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E-mail: lothar.schmidt@cetecomusa.com
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1.3 Details of applicant

Name	**:**	**Microsoft Corporation**
Street	**:**	**One Microsoft Way**
City / Zip Code	**:**	**Redmond 98052**
Country	**:**	**USA**
Contact	**:**	**Robert Lawrence**
Telephone	**:**	**+1 425 705 5369**
Tele-fax	**:**	**+1 425 939 7329**
e-mail	**:**	**roblaw@microsoft.com**

1.4 Application details

Date of receipt test item	:	2003-12-15
Date of test	:	2003-12-15/16, 2004-01-05 to 26

1.5 Test item

Manufacturer	:	Flextronics Industrial (Shenzhen) Company Ltd.
Street	:	Block C9, 2nd Industrial Zone
City / Zip Code		Xixang Shenzhen Guangdong 51826
Country		People's Republic of China
Marketing Name	:	Microsoft® Keyboard Elite for Bluetooth®
Model No.	:	1002
Description	:	Bluetooth Input Device (Keyboard)
FCC-ID	:	C3K1002
IC ID	:	3048A-1002

Additional information

Test Sample	:	#69 for Radiated measurements #60, 72 for Conducted measurements
Frequency	:	2402MHz – 2480MHz
Type of modulation	:	GFSK
Number of channels	:	79
Antenna	:	PCBA Printed
Power supply	:	4 Volts: 3 standard AA 1.5V alkaline batteries
Output power	:	3.23dBm (2.10mW) conducted peak power
Extreme vol. Limits	:	Critical: 2.7V, Max: 4.5V
Extreme temp. Tolerance	:	0ºC-40ºC

1.6 Test standards: FCC Part 15 §15.247 (DA00-705) / RSS 210

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:

Date	Section	Name	Signature
2004-02-26	EMC & Radio	Lothar Schmidt (Manager)	

Responsible for test report and project leader:

Date	Section	Name	Signature
2004-02-26	EMC & Radio	Harpreet Sidhu (EMC Engineer)	

2.2 Test report

TEST REPORT

Test report no.: EMC_597FCC15.247_2003_1002
(Model: 1002)

TEST REPORT REFERENCE

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TEST & OPERATING MODES

TEST MODES

Test mode-1(Transmitting at single frequency)
EUT is set to Transmit at particular channel frequency with highest output power using certain key combinations.

Test mode-2 (Hopping mode)
EUT is set to enter into special test mode using certain key combinations. This test mode enables EUT to establish air link with BT test system CMU-200. After the link being established, EUT is forced into hopping mode from CMU-200 with choice of different packet types. (DHI, DH3, DH5)

Test mode-3 (Normal operation)
EUT is set to communicate with Bluetooth Transceiver (model# 1003) over an air link. BT Transceiver is plugged into USB port of Desktop PC (Dell S/No. DBM7N21). To present worst-case scenario and to comply with ANSI C63.4 requirements BT Mouse (model# 1001) was also set to communicate with BT transceiver over air link. The BT link between EUT and Transceiver is evidenced by repetitive typing of following characters in notepad on monitor (Dell S/No. 8164560) screen,
"BT RF test pattern"
BT link between Mouse and Transceiver is evidenced by cursor drawing a diamond shape continuously in Mousetrap window on monitor screen.

Test mode-4 (Receive/standby mode)
For BT devices this mode corresponds to transmitter standby mode.
EUT is set to receive mode by putting transmitter into standby mode using certain key combinations.

OPERATING MODES

Op. mode-1
Transmit @ 2402MHz

Op. mode-2
Transmit @ 2441 MHz

Op. mode-3
Transmit @ 2480MHz

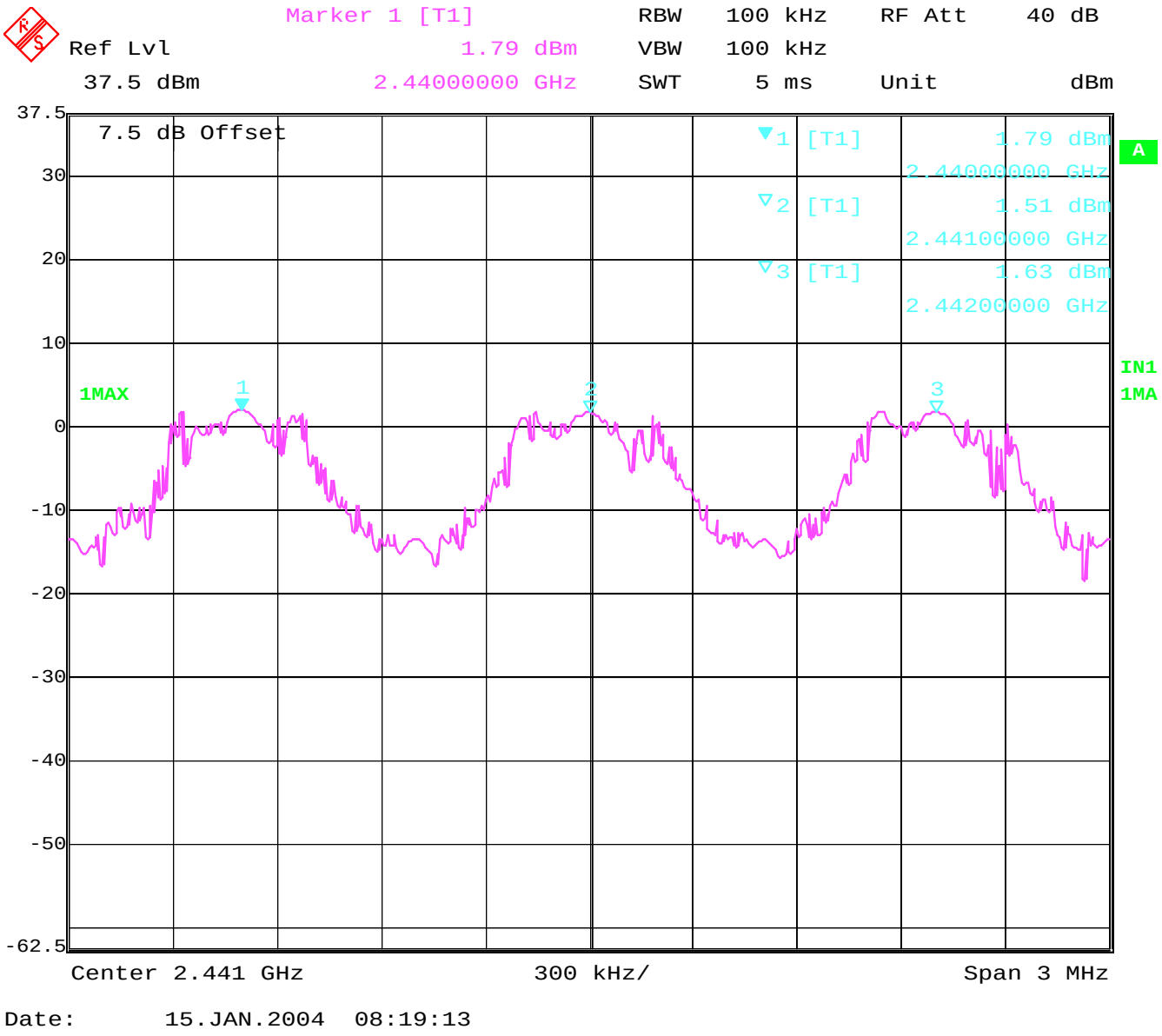
Op. mode-4
Hopping mode

Op. mode-5
Normal operation

Op. mode-6
Receive/standby mode

CARRIER FREQUENCY SEPERATION §15.247(a)

Test mode-2
Op. mode-4

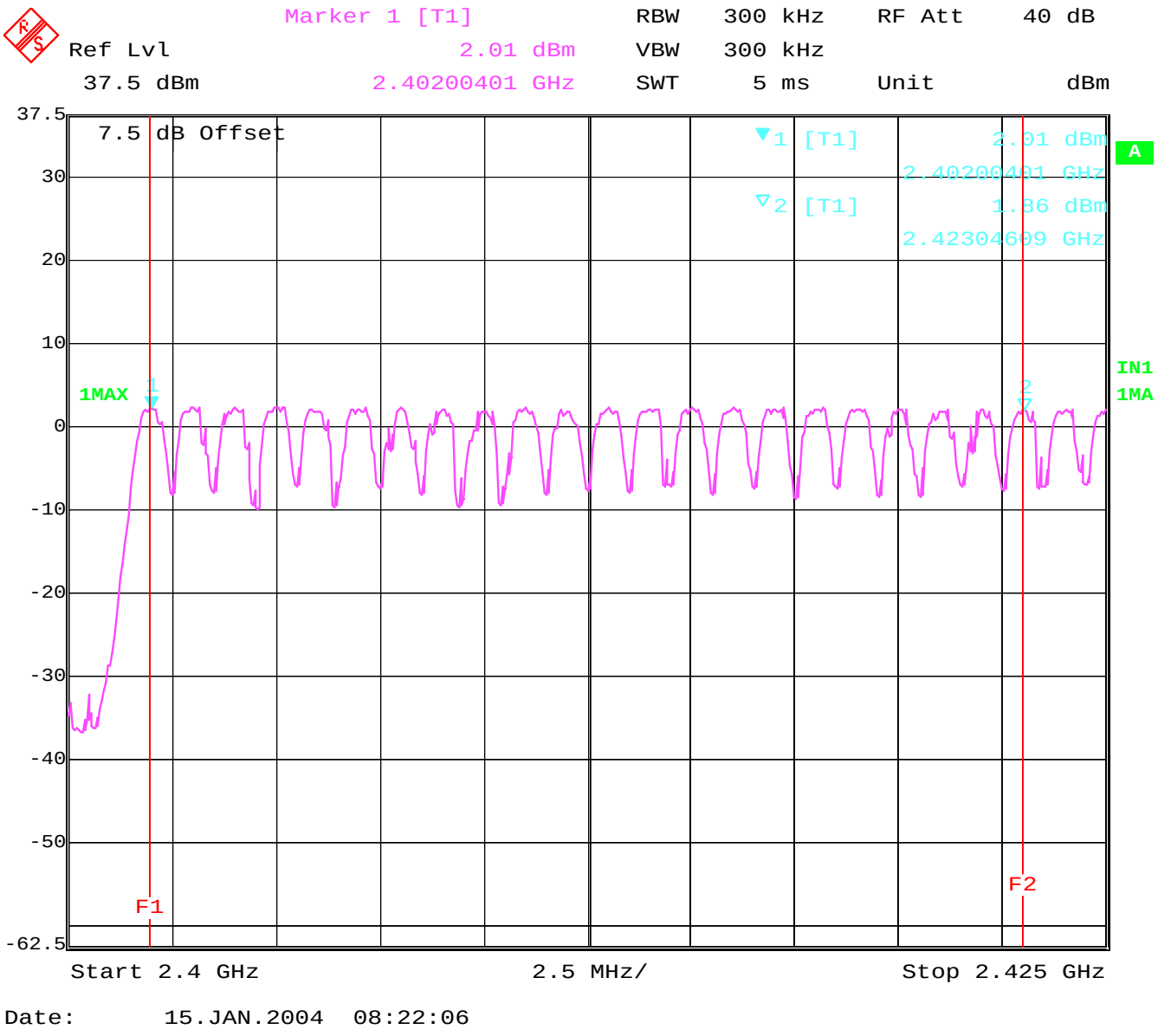


NUMBER OF HOPPING CHANNELS §15.247(a)

Test mode-2
Op. mode-4

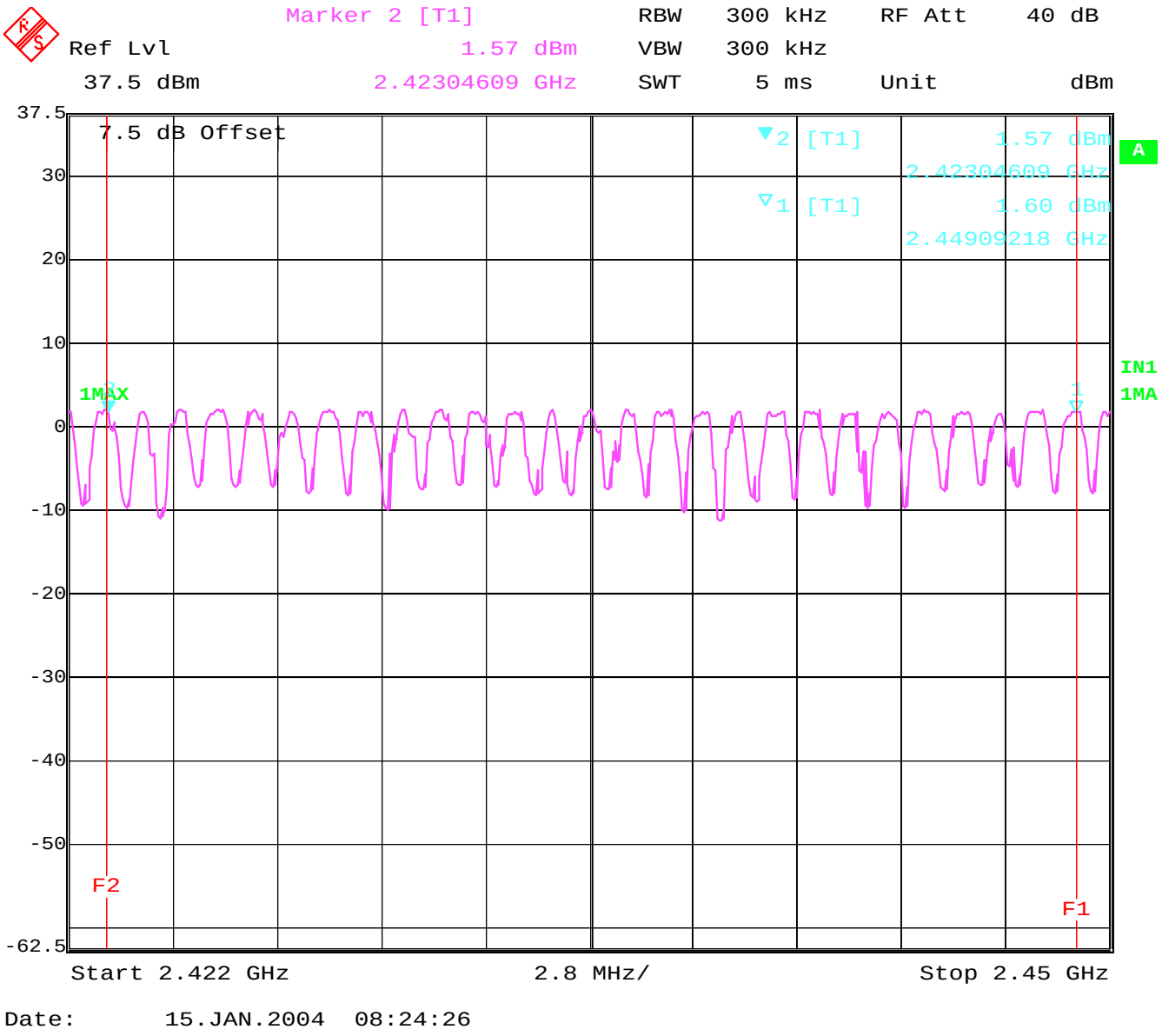
The number of hopping channels is 79 (see next 4 plots)
The right red line corresponds to the left red line from the next plot.

Plot 1: Total 22



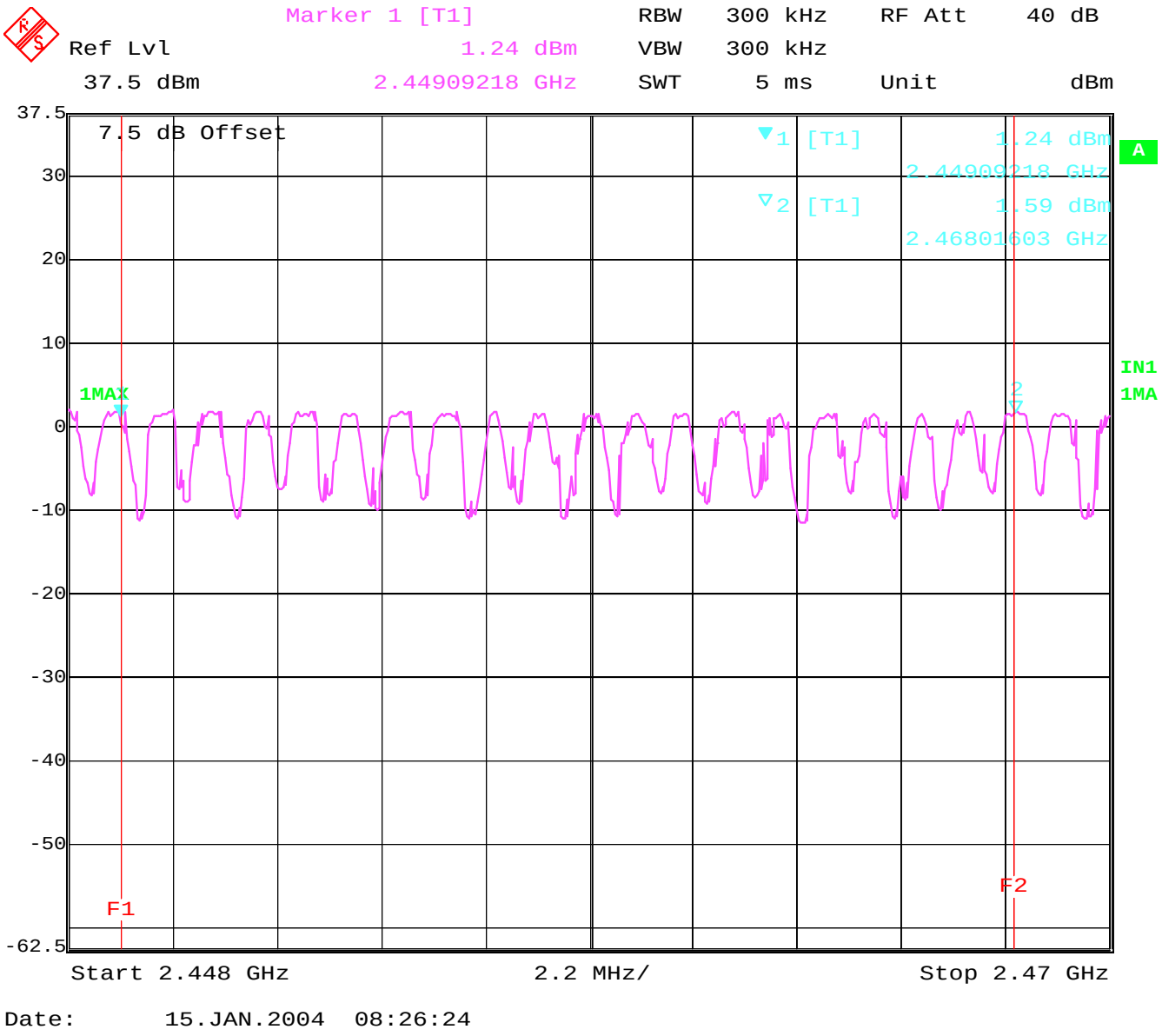
Plot 2: Total 26

Test mode-2
Op. mode-4



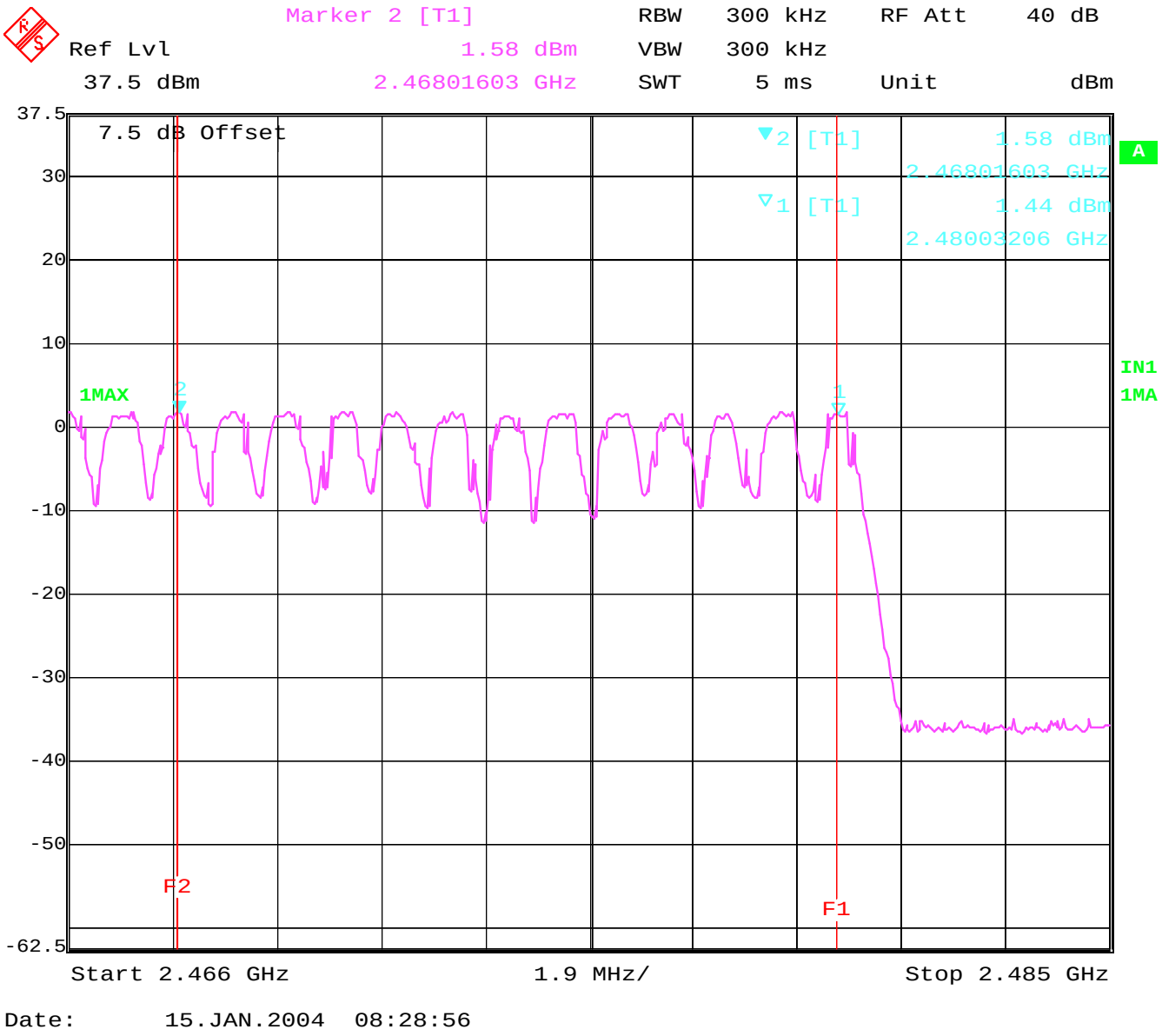
Plot 3: Total 19

Test mode-2
Op. mode-4



Plot 4: Total 12

Test mode-2
Op. mode-4



TIME OF OCCUPANCY (DWELL TIME) §15.247(a)

DH1 – Packet

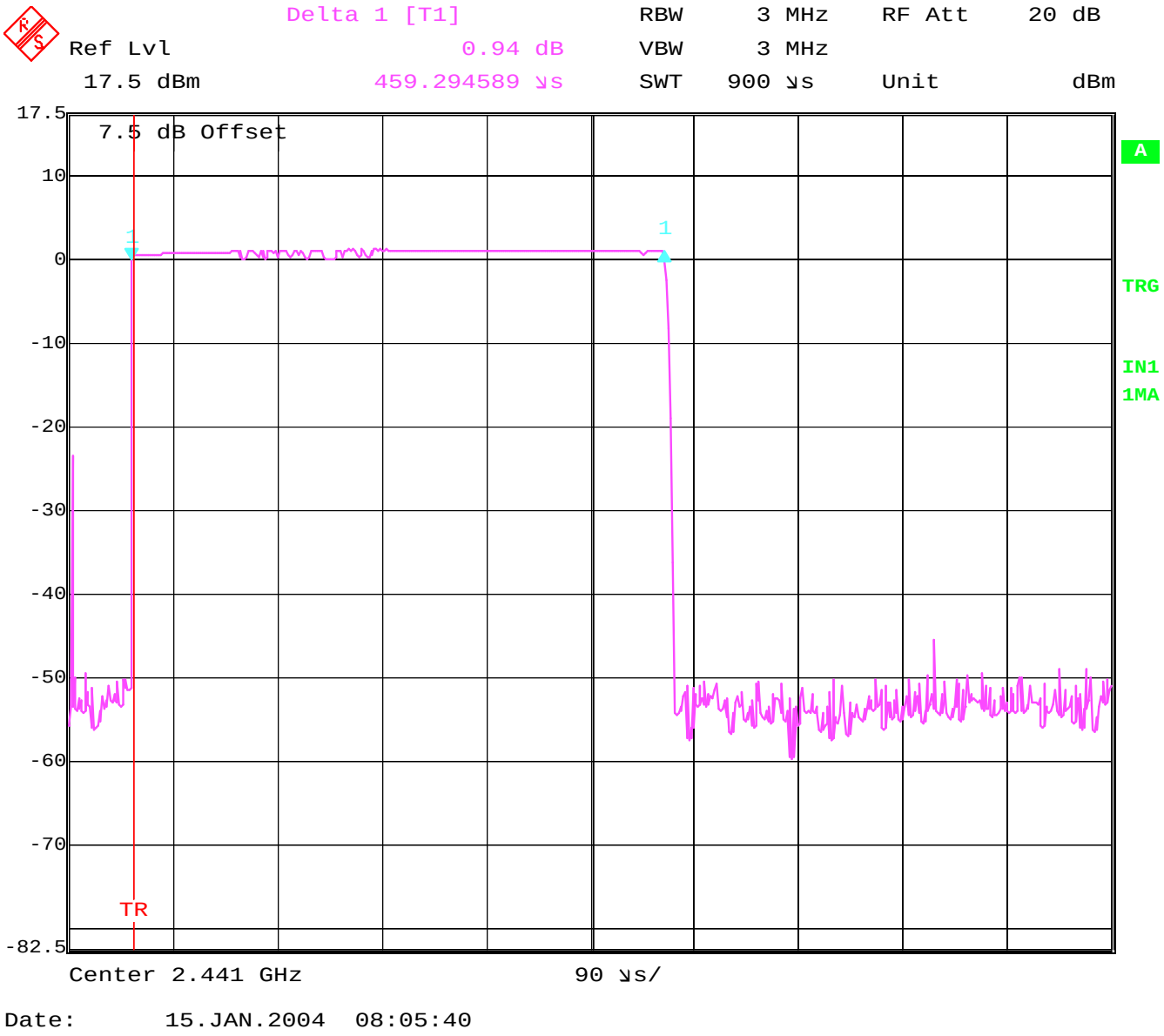
Test mode-2

Op. mode-4

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 31.6 seconds you have 320.108 times of appearance.

Each Tx-time per appearance is 459.29µs.

<u>So we have 320.108 * 459.29µs = 147.02ms per 31.6 seconds.</u>



TIME OF OCCUPANCY (DWELL TIME) §15.247(a)

DH3 – Packet

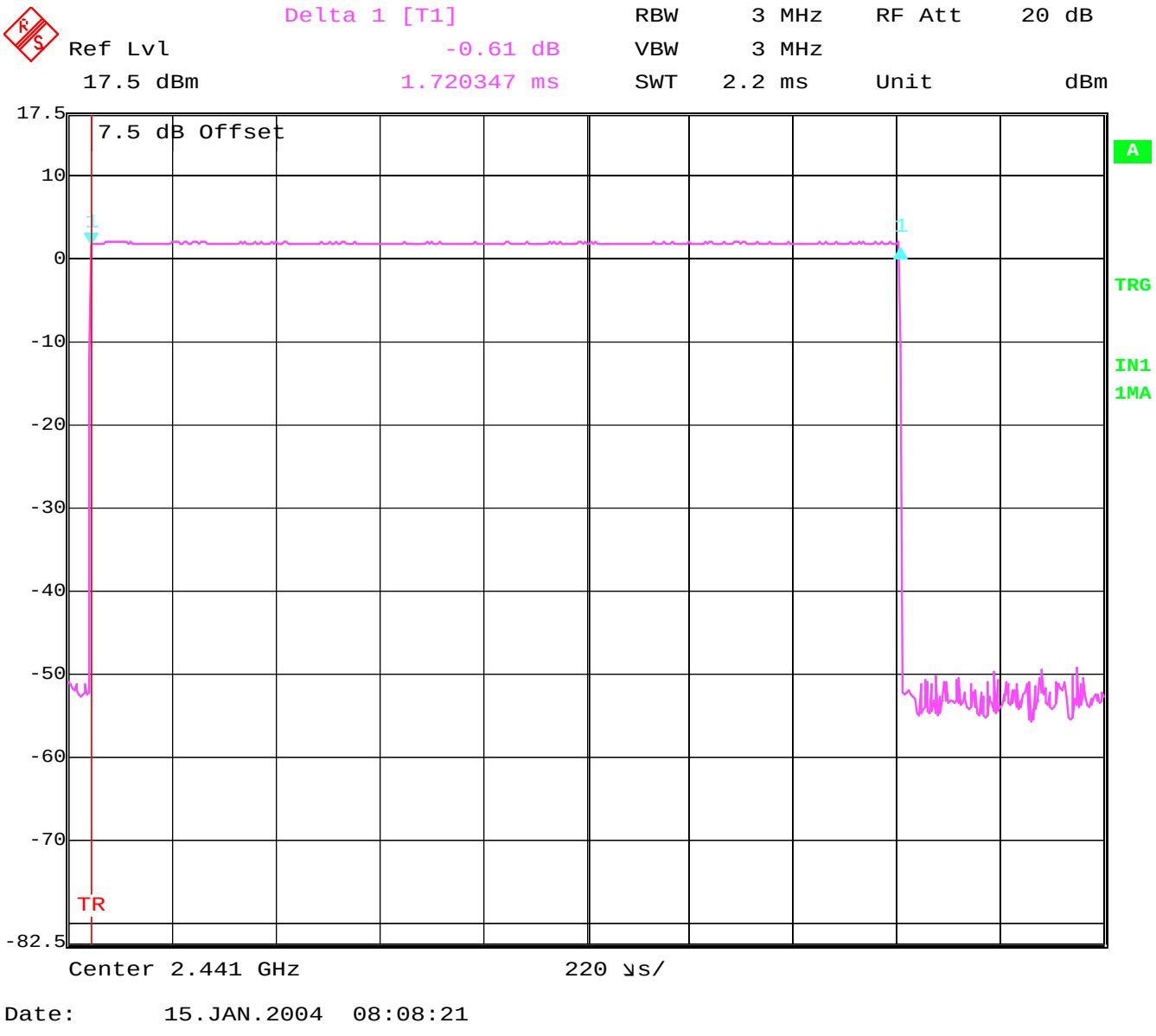
Test mode-2

Op. mode-4

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 1.72ms.

So we have 161.16 * 1.71ms = 277.19ms per 31.6 seconds.



TIME OF OCCUPANCY (DWELL TIME) §15.247(a)

DH5 – Packet

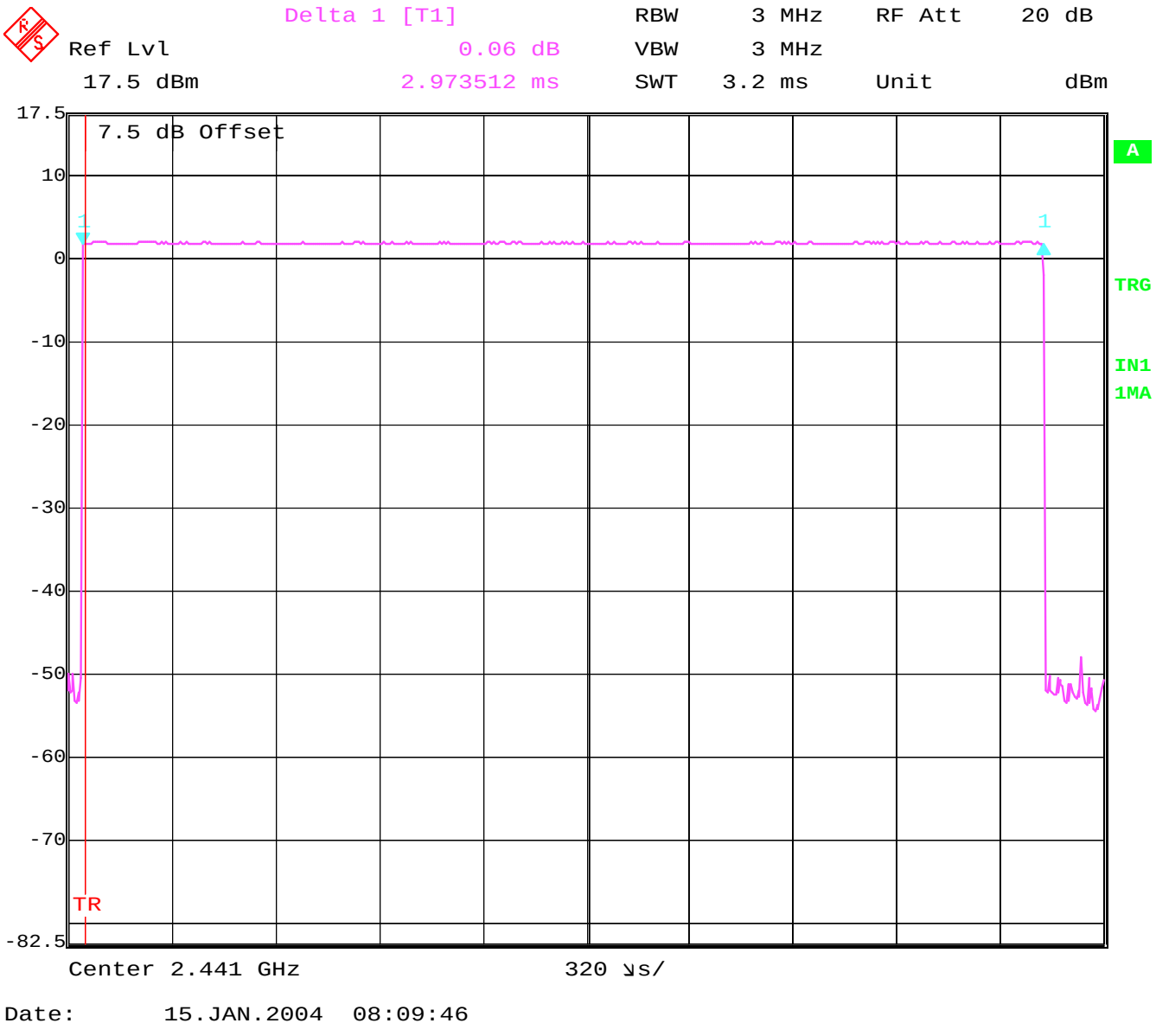
Test mode-2

Op. mode-4

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 2.97ms.

So we have 106.176 * 2.97ms = 315.34ms per 31.6 seconds.



SPECTRUM BANDWIDTH OF FHSS SYSTEM §15.247(a)
20 dB bandwidth
Test mode-1

TEST CONDITIONS		20 dB BANDWIDTH (kHz)		
Frequency (MHz)		2402	2441	2480
T_{nom}(23)°C	V_{nom}(4.0)VDC	945.89	949.89	949.89

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

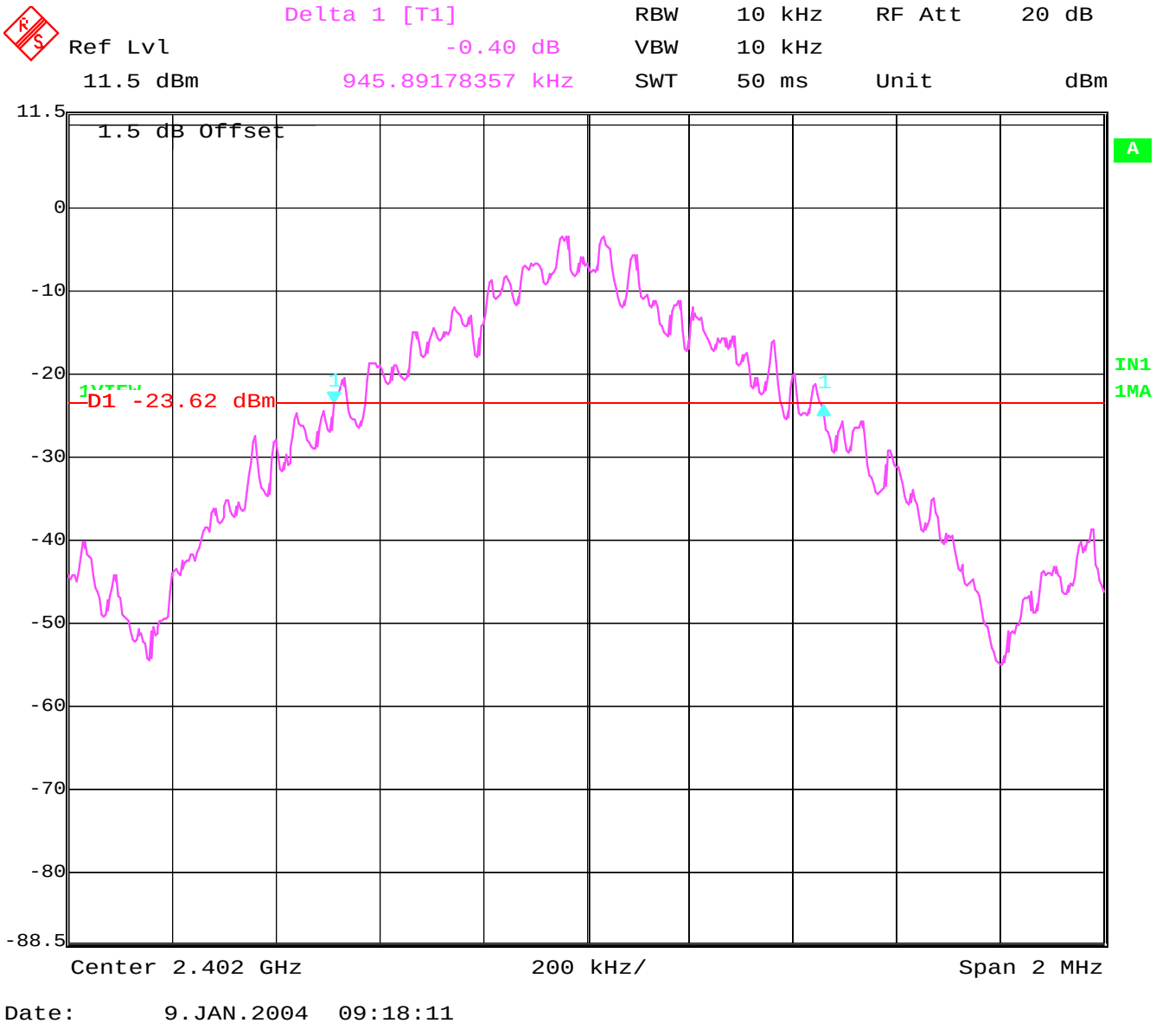
LIMIT **SUBCLAUSE §15.247(a) (1)**

The maximum 20dB bandwidth shall be at maximum 1000 KHz

SPECTRUM BANDWIDTH OF FHSS SYSTEM §15.247(a)

20 dB bandwidth
Test mode-1
Op. mode-1

Lowest Channel: 2402MHz



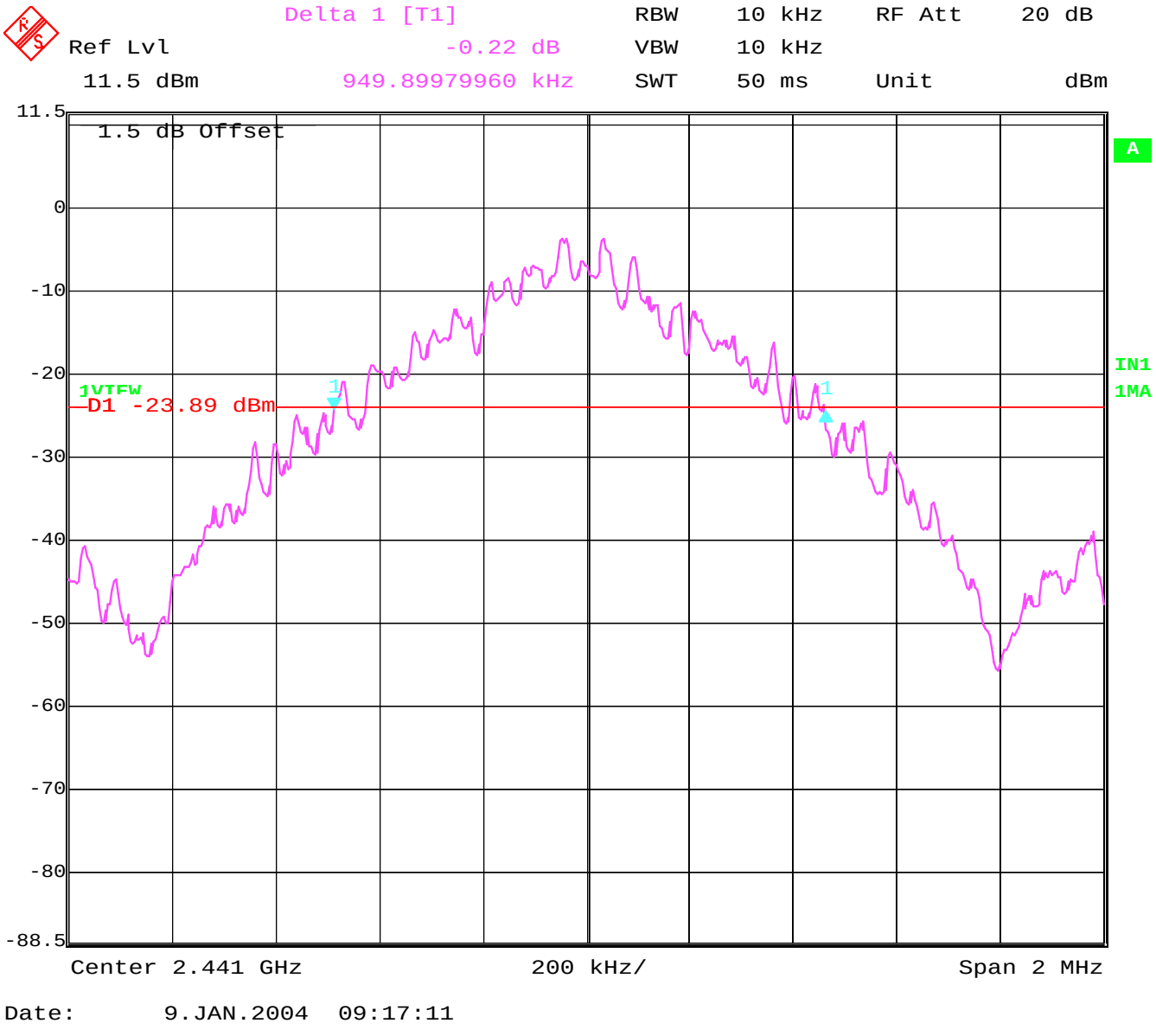
SPECTRUM BANDWIDTH OF FHSS SYSTEM §15.247(a)

20 dB bandwidth

Test mode-1

Op. mode-2

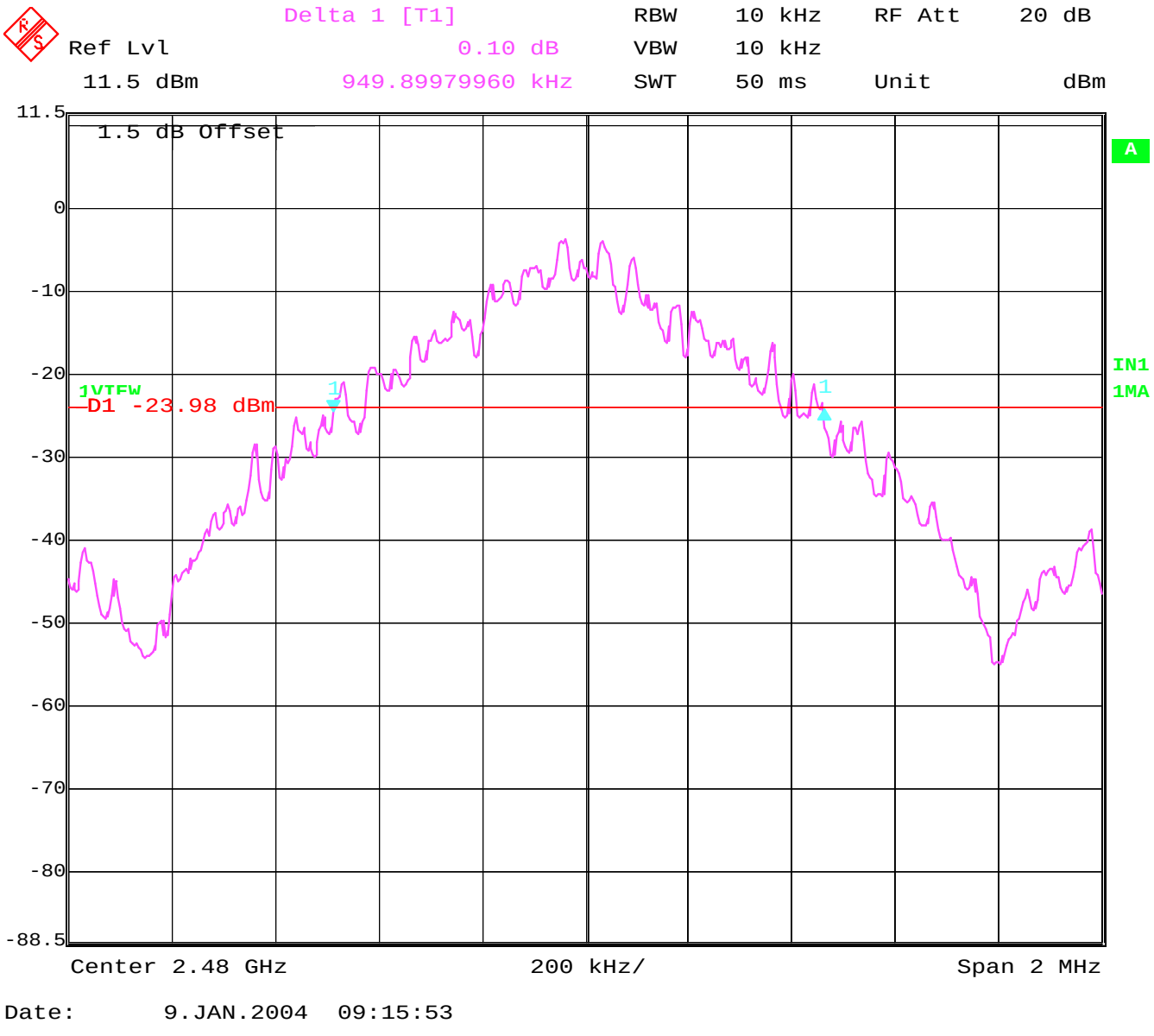
Mid Channel: 2441MHz



SPECTRUM BANDWIDTH OF FHSS SYSTEM §15.247(a)

20 dB bandwidth
Test mode-1
Op. mode-3

Highest Channel: 2480MHz



POWER SPECTRAL DENSITY §15.247 (d)

Test mode-1

TEST CONDITIONS		POWER SPECTRAL DENSITY (dBm)		
Frequency (MHz)		2402	2441	2480
T_{nom}(23)°C	V_{nom}(4.0)VDC	-9.10	-9.40	-9.32

LIMIT **SUBCLAUSE §15.247(d)**

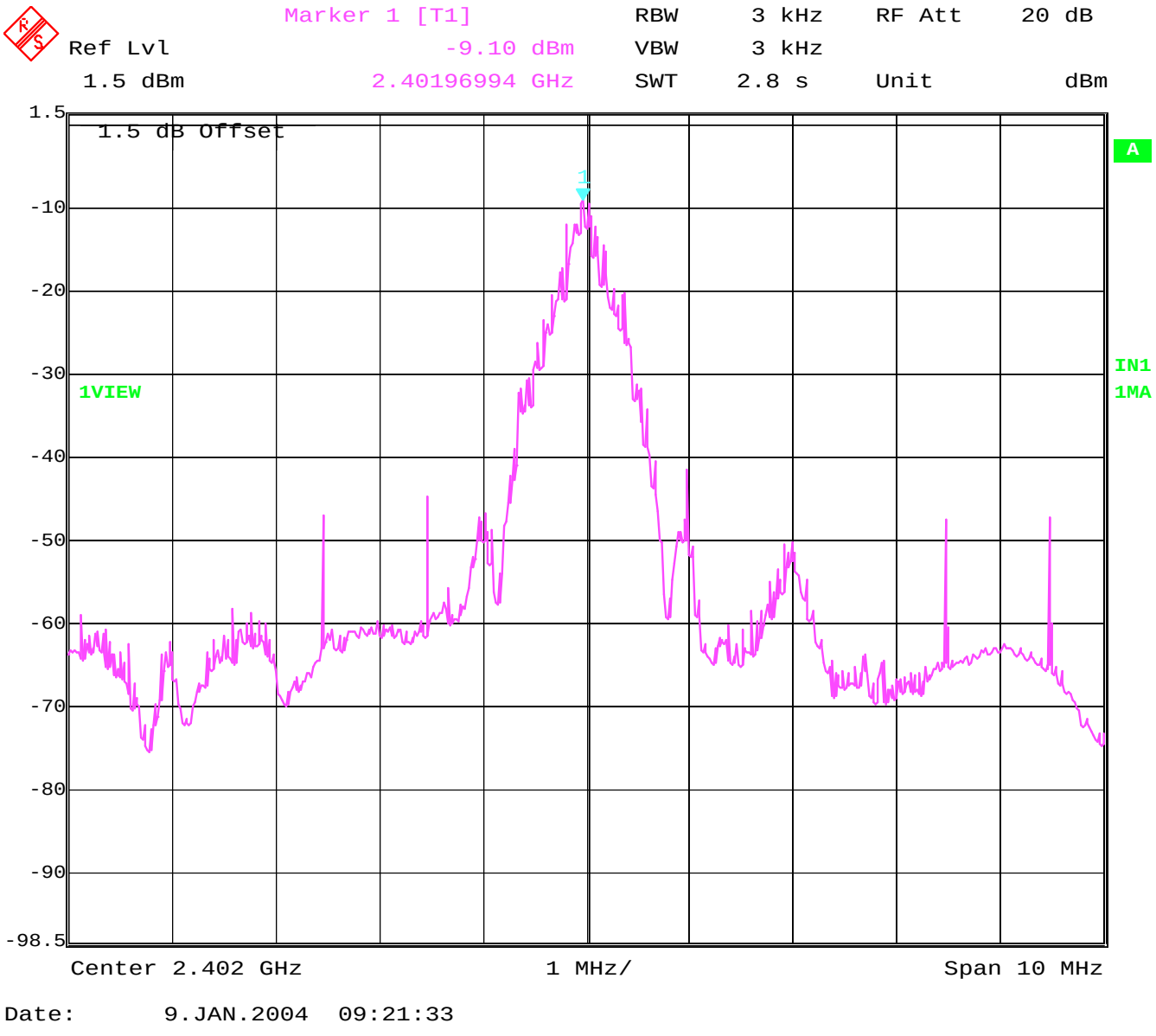
The peak power spectral density shall not be greater than 8 dBm in any 3 kHz band

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

POWER SPECTRAL DENSITY §15.247(d)

Test mode-1
Op. mode-1

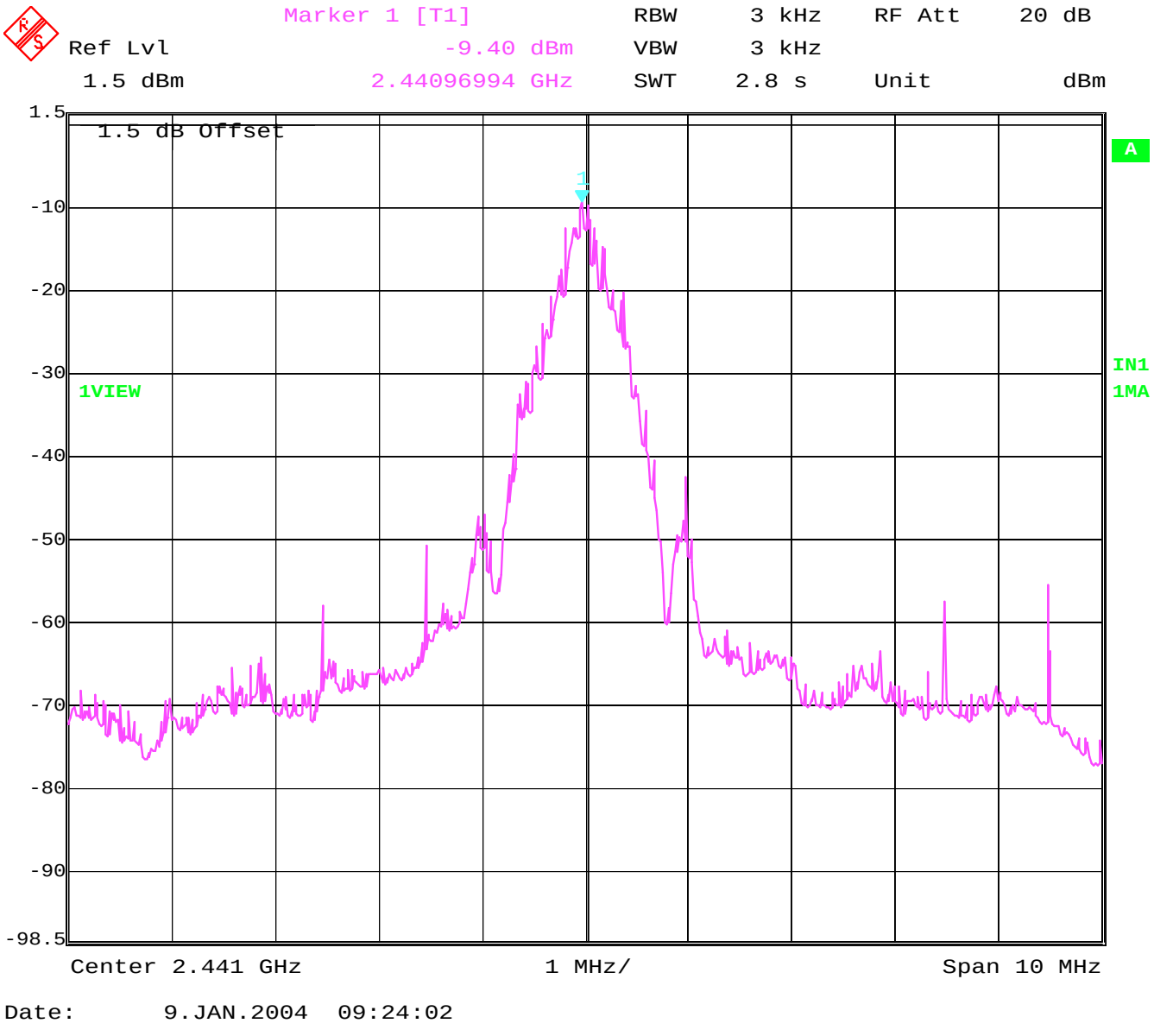
Lowest Channel: 2402MHz



POWER SPECTRAL DENSITY §15.247(d)

Test mode-1
Op. mode-2

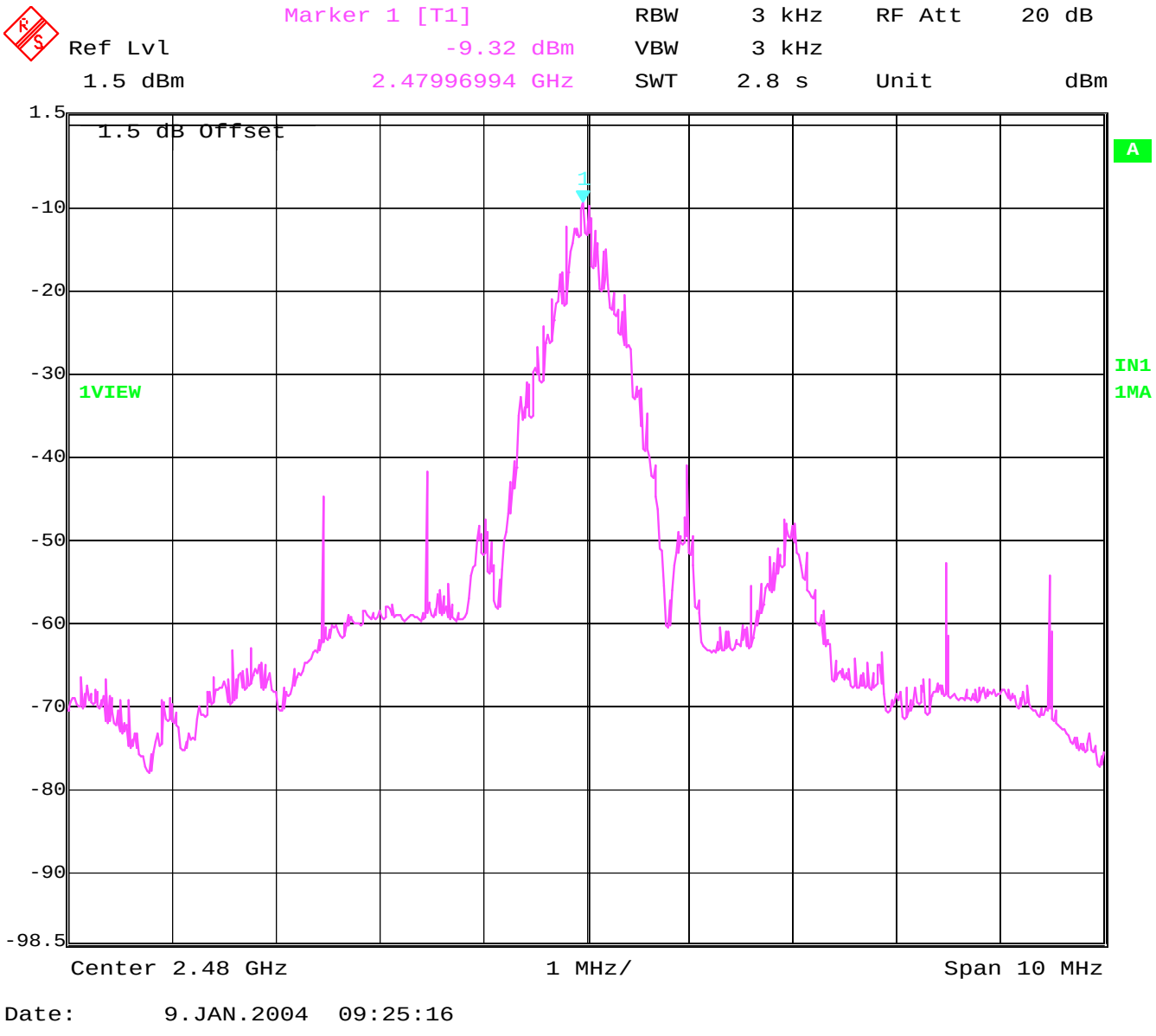
Middle Channel: 2441MHz



POWER SPECTRAL DENSITY §15.247(d)

Test mode-1
Op. mode-3

Highest Channel: 2480MHz



MAXIMUM PEAK OUTPUT POWER (Conducted) § 15.247 (b) (1)

Test mode-1

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (dBm)		
Frequency (MHz)		2402	2441	2480
T_{nom}(23)°C	V_{nom}(4.0)VDC	3.23	2.81	2.81
Measurement uncertainty		±0.5dBm		

RBW / VBW: 3 MHz

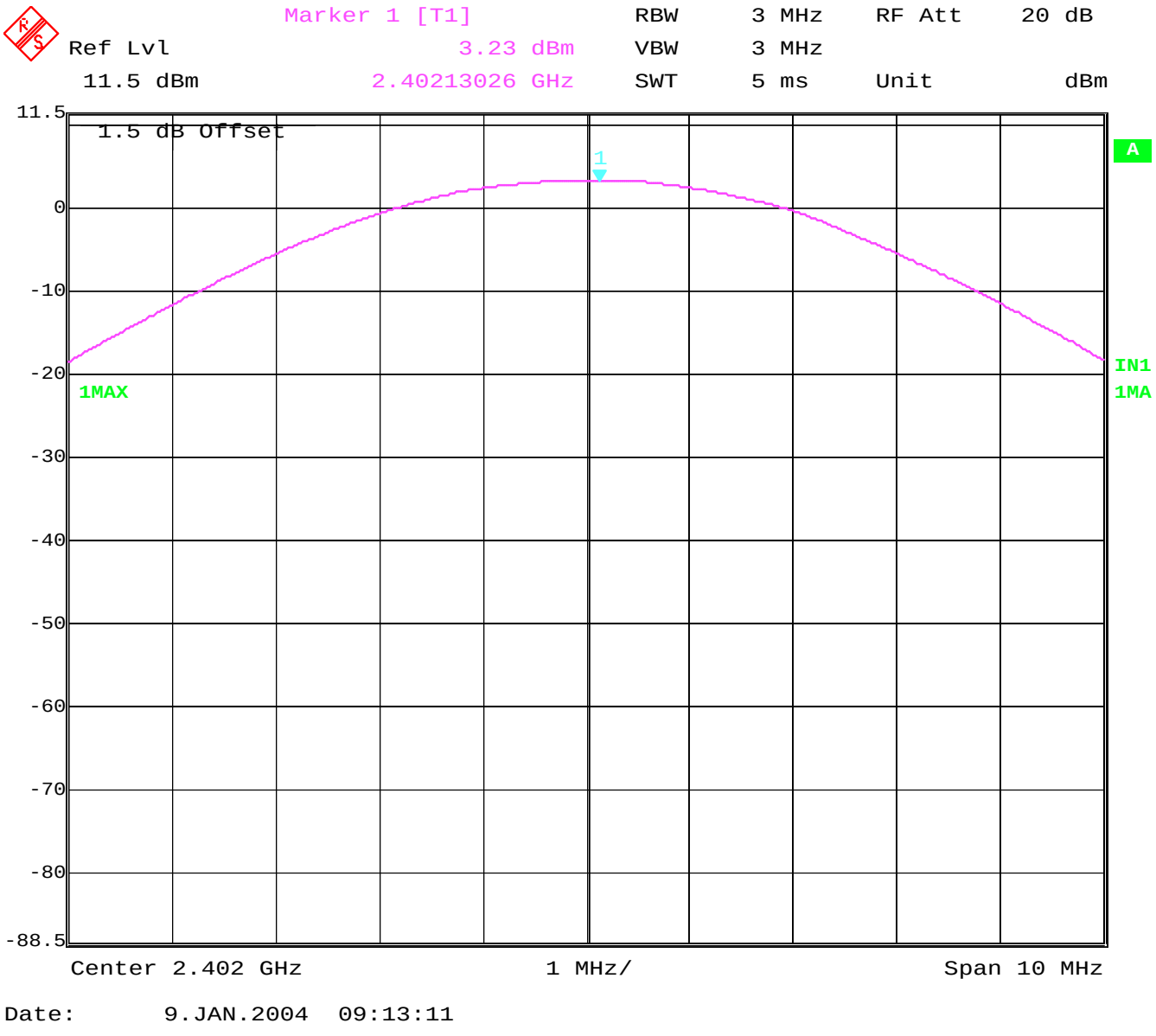
LIMIT SUBCLAUSE § 15.247 (b) (1)

Frequency range	RF power output
2400-2483.5 MHz	1.0 Watt

PEAK OUTPUT POWER (CONDUCTED) §15.247 (b)

Test mode-1
Op. mode-1

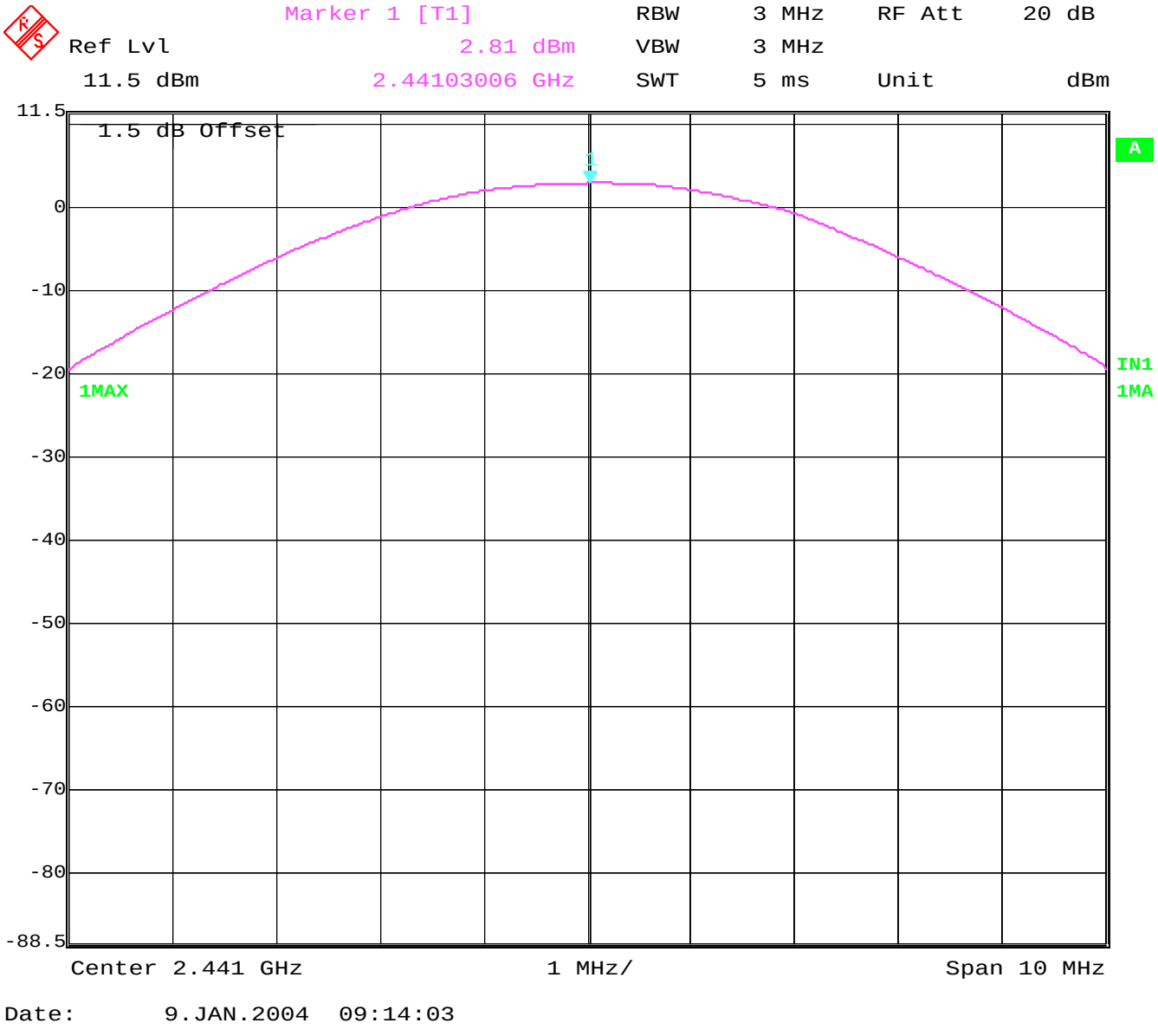
Lowest Channel: 2402MHz



PEAK OUTPUT POWER (CONDUCTED) §15.247 (b)

Test mode-1
Op. mode-2

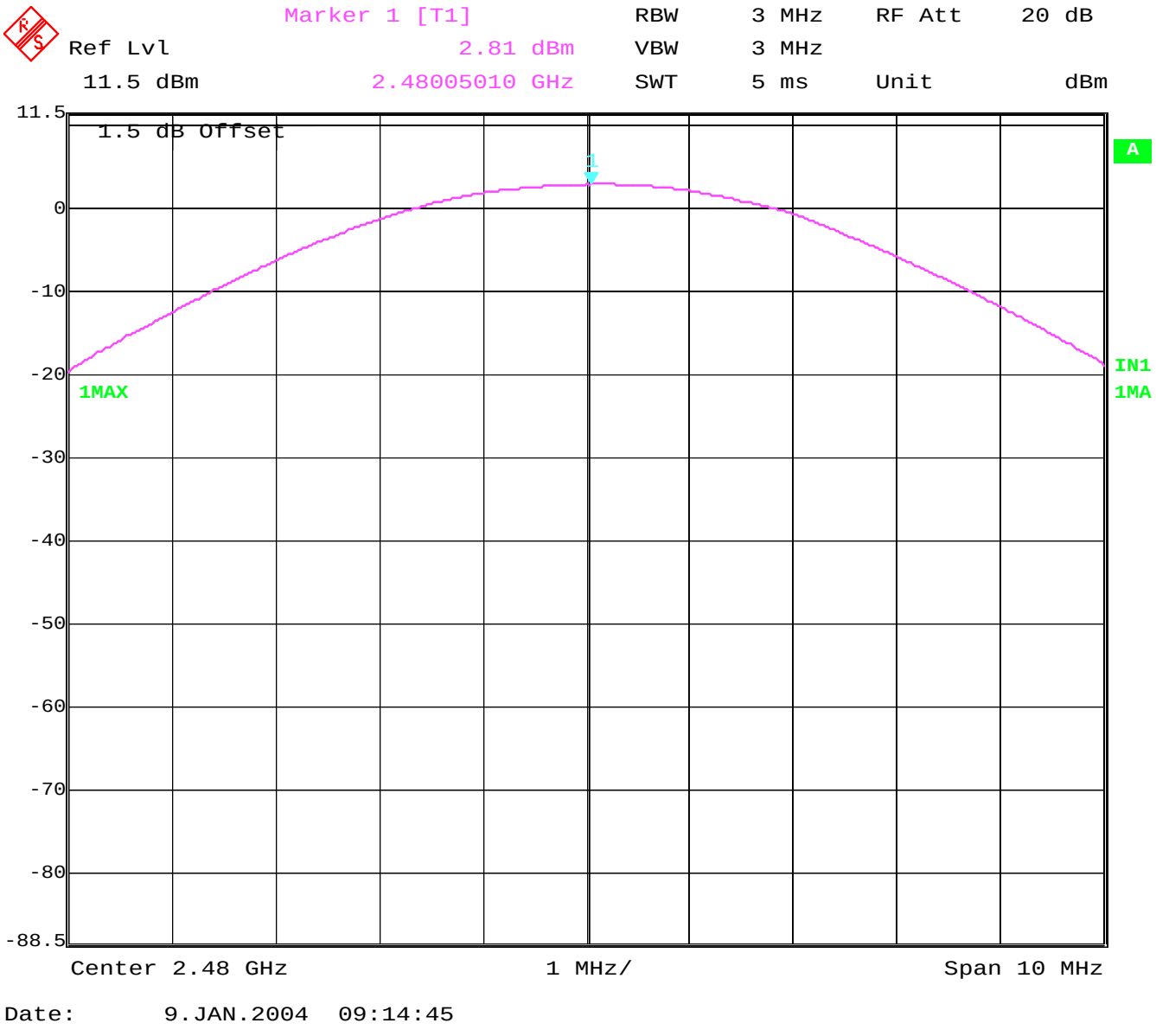
Mid Channel: 2441MHz



PEAK OUTPUT POWER (CONDUCTED) §15.247 (b)

Test mode-1
Op. mode-3

Highest Channel: 2480MHz



MAXIMUM PEAK OUTPUT POWER (RADIATED) **§ 15.247 (b) (1)**

Test mode-1
Op. mode-1/2/3

EIRP:

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (dBm)		
Frequency (MHz)		2402	2441	2480
T_{nom}(23)°C	V_{nom}(4.0)VDC	*3.07	*2.69	*2.86
Measurement uncertainty		±0.5dBm		

***EIRP measurements were done in Antenna pattern measurement chamber.**
For details refer to test report# *Antenna_MSKBBT*

LIMIT **SUBCLAUSE § 15.247 (b) (1)**

Frequency range	RF power output
2400-2483.5 MHz	1.0 Watt

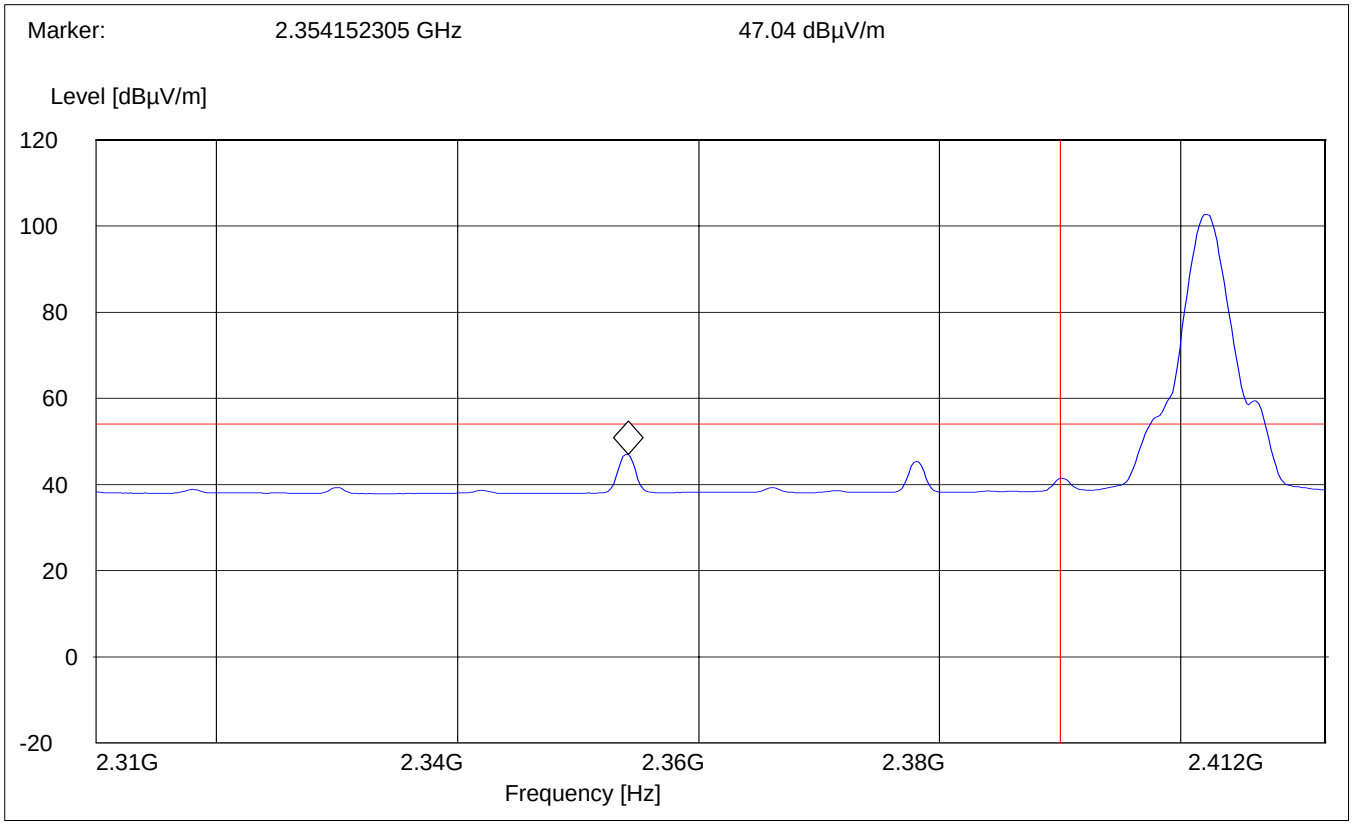
BAND EDGE COMPLIANCE §15.247 (c)

Test mode-1
Op. mode-1

Low frequency section (spurious in the restricted band 2310 – 2390 MHz)
Average Measurement
(This plot is valid for both Hopping ON & OFF)

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



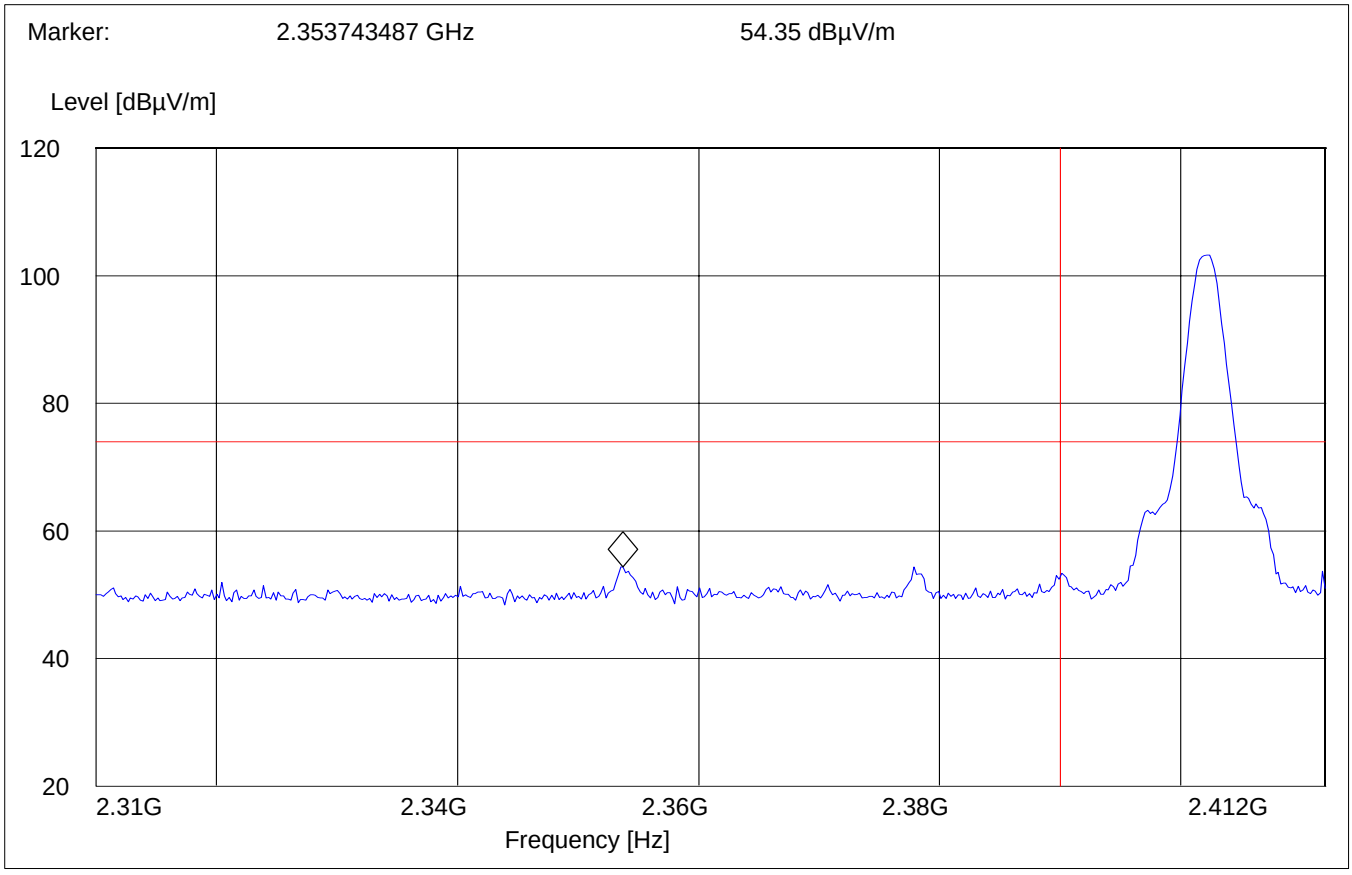
BAND EDGE COMPLIANCE §15.247 (c)

Test mode-1
Op. mode-1

Low frequency section (spurious in the restricted band 2310 – 2390 MHz)
Peak Measurement
(This plot is valid for both Hopping ON & OFF)

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

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



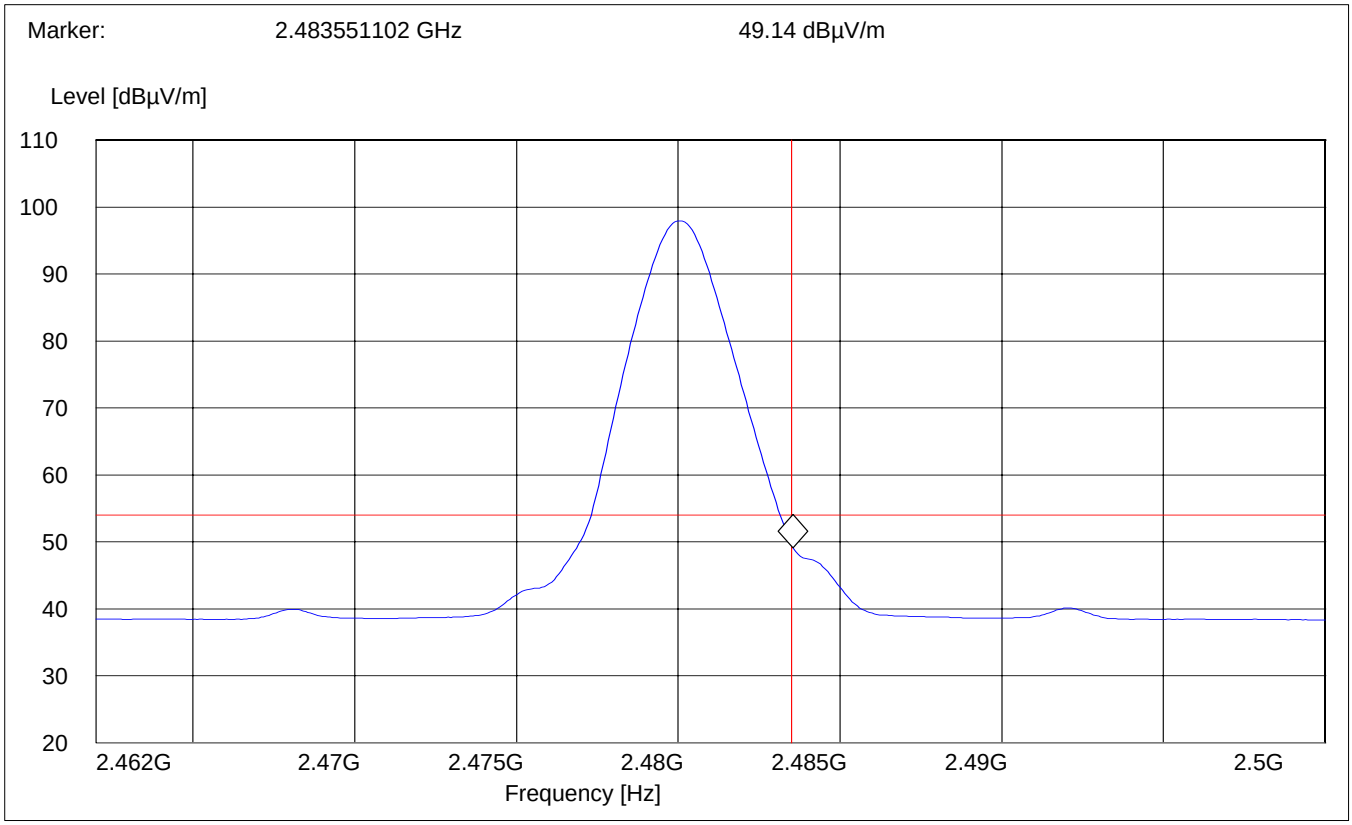
BAND EDGE COMPLIANCE §15.247 (c)

Test mode-1
Op. mode-3

High frequency section (spurious in the restricted band 2483.5 – 2500 MHz)
Average Measurement
(This plot is valid for both Hopping ON & OFF)

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

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



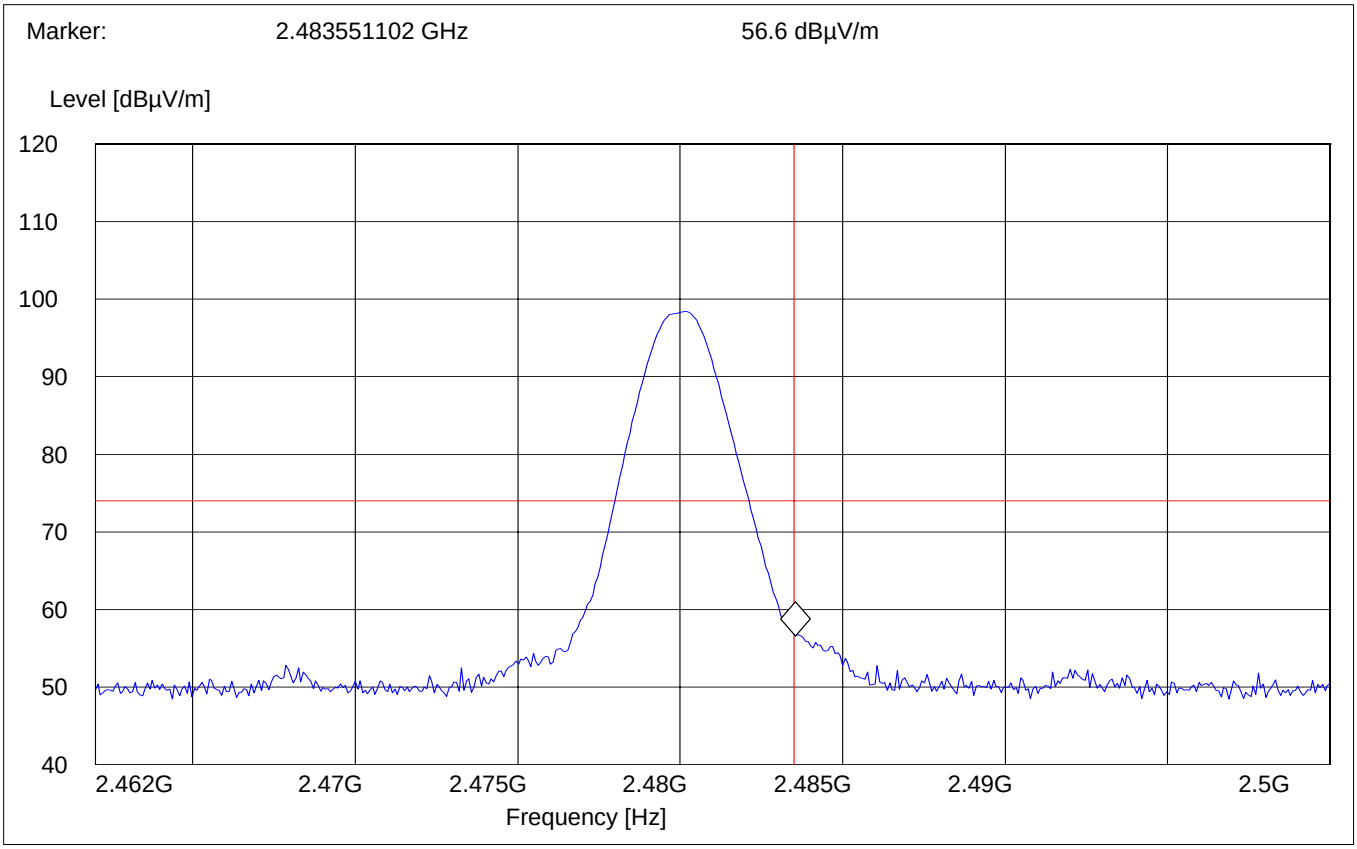
BAND EDGE COMPLIANCE §15.247 (c)

Test mode-1
Op. mode-3

High frequency section (spurious in the restricted band 2483.5 – 2500 MHz)
Peak Measurement
(This plot is valid for both Hopping ON & OFF)

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

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



EMISSION LIMITATIONS § 15.247 (c)

Transmitter (Conducted)

Test mode-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 that 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)).

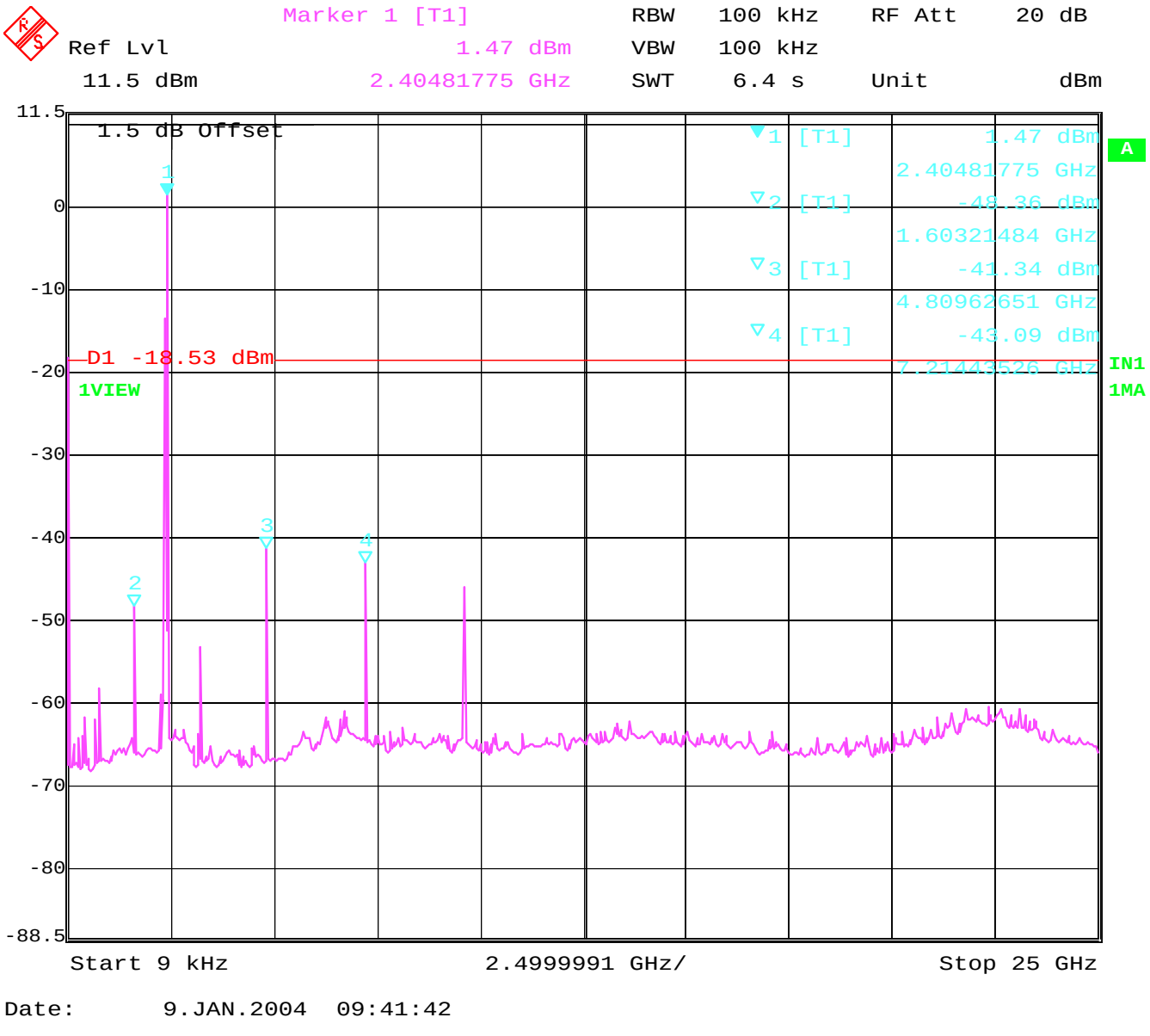
Transmit at Lowest channel Frequency 2402MHz	
Frequency (MHz)	**Peak Level (dBm)**
751.51	-58.28
1603.21	-48.36
3206.42	-53.35
-4809.62	-41.34
7214.43	-43.09
9619.24	-46.02
Transmit at Middle channel Frequency 2441MHz	
Frequency (MHz)	**Peak Level (dBm)**
801.61	-54.75
1603.2	-46.89
3256.5	-53.13
4859.7	-39.79
7314.63	-43.41
9769.54	-48.74
Transmit at Highest channel Frequency 2480MHz	
Frequency (MHz)	**Peak Level (dBm)**
801.61	-55.12
1653.31	-45.52
3306.62	-55
4959.92	-37.9
7414.83	-46.44
9919.8	-49.6

EMISSION LIMITATIONS - Conducted (Transmitter) § 15.247 (c)

Test mode-1
Op. mode-1

Lowest Channel (2402MHz): 9KHz - 25GHz

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

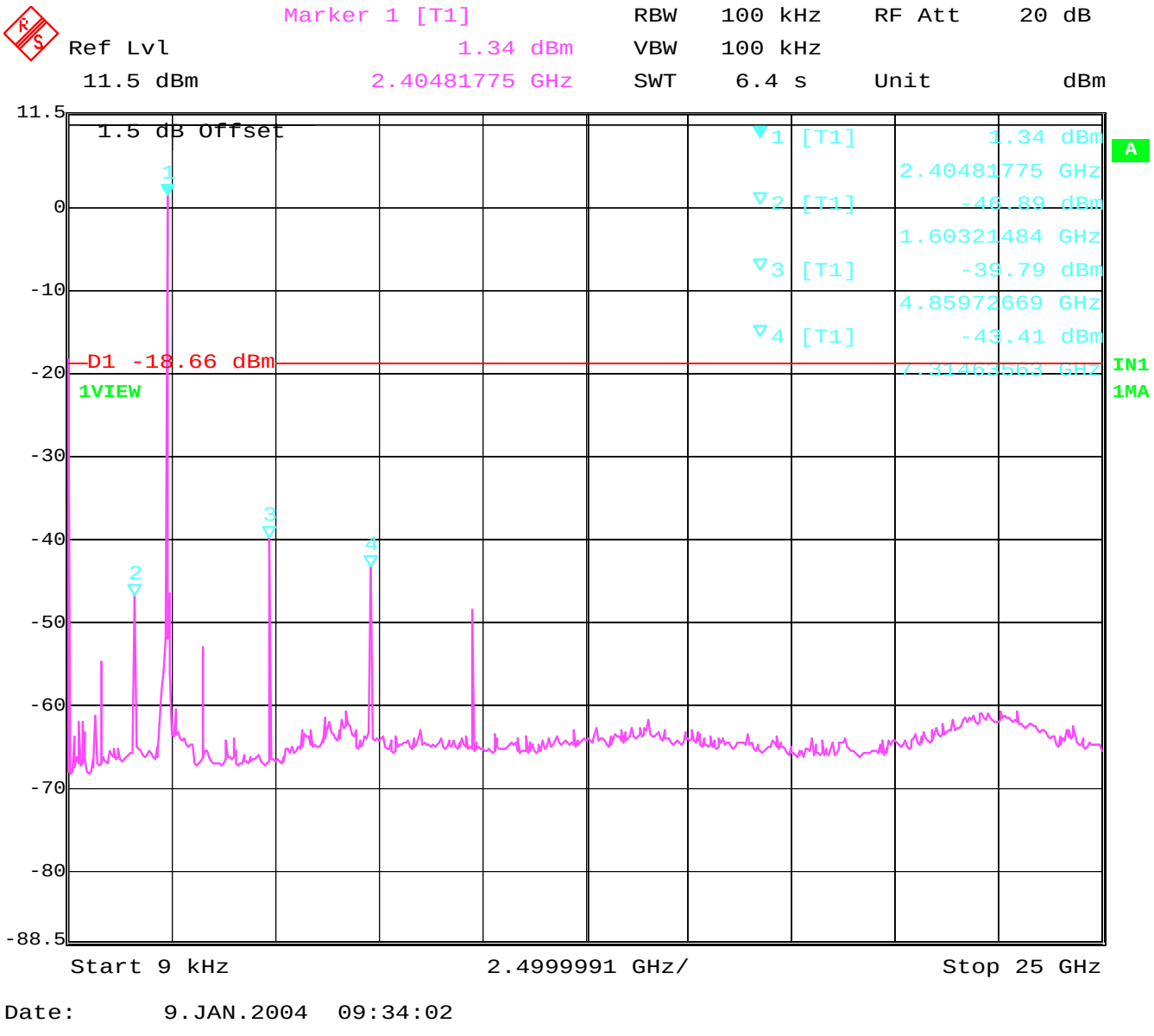


EMISSION LIMITATIONS - Conducted (Transmitter) § 15.247 (c)

Test mode-1
Op. mode-2

Mid Channel (2441MHz): 9KHz - 25GHz

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

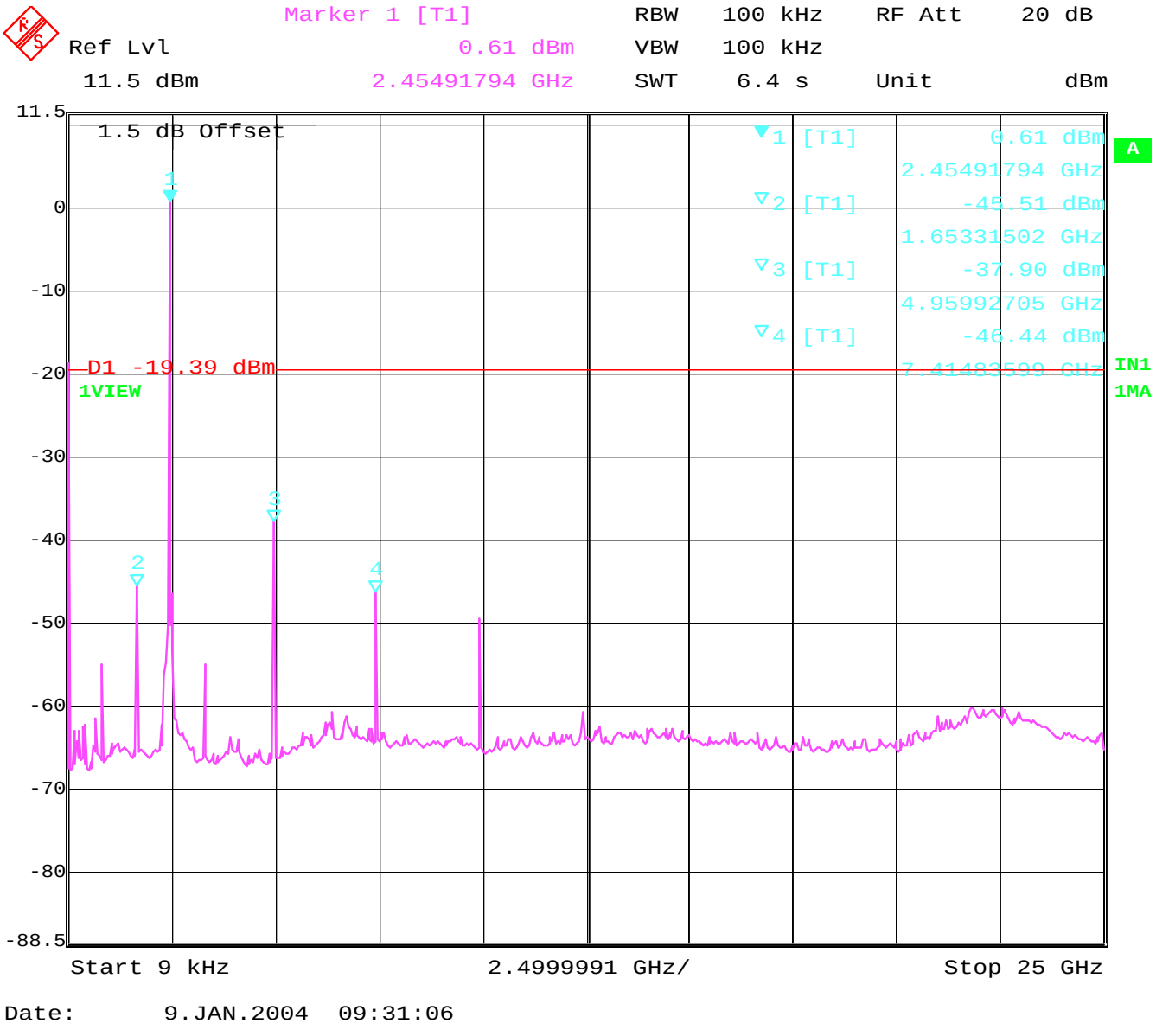


EMISSION LIMITATIONS - Conducted (Transmitter) § 15.247 (c)

Test mode-1
Op. mode-3

Highest Channel (2480MHz): 9KHz - 25GHz

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



EMISSION LIMITATIONS **§ 15.247 (c)**
Transmitter (Radiated)

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 that 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 3 and 26.5 GHz very short cable connections to the antenna was used to minimize the noise level.

2. All measurements are done in peak mode unless specified with 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

EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c)

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

Transmit at Lowest channel Frequency 2402MHz			
Frequency (MHz)	**Level (dBµV/m)**		
	Peak	**Quasi-Peak**	**Average**
239.93	40.86		
1601.2	52.9		45.29
3180	50.33		29.06
4803	61.72		38.42
7200	65.76		42.86
9613	67.83		45.13
Transmit at Middle channel Frequency 2441MHz			
Frequency (MHz)	**Level (dBµV/m)**		
	Peak	**Quasi-Peak**	**Average**
1625.2	53.57		42.48
3240	49.17		28.28
4863	62.96		39.60
7328	64.96		41.23
9763	62.98		40.31
12208	47.46		
Transmit at Highest channel Frequency 2480MHz			
Frequency (MHz)	**Level (dBµV/m)**		
	Peak	**Quasi-Peak**	**Average**
1653.3	54.45		47.06
3300	44.49		24.55
4953	63.43		41.21
7448	59.41		33.96
9913	59.97		38.77

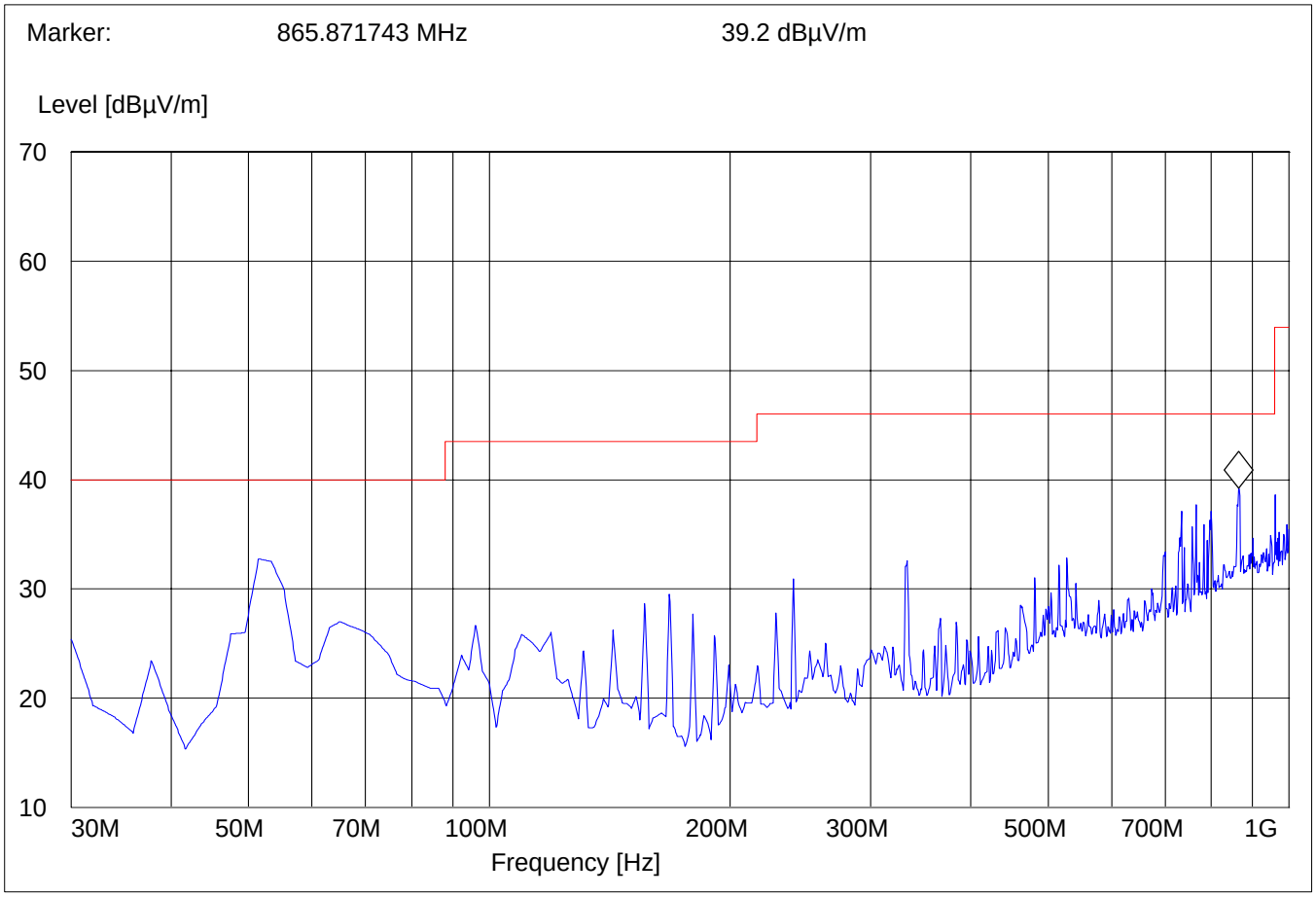
EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c)

30MHz – 1GHz
Test mode-3
Op. mode-5

Note:

1. **This plot is valid for low, mid & high channels (worst-case plot)**
2. **Rx antenna polarity: vertical**

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



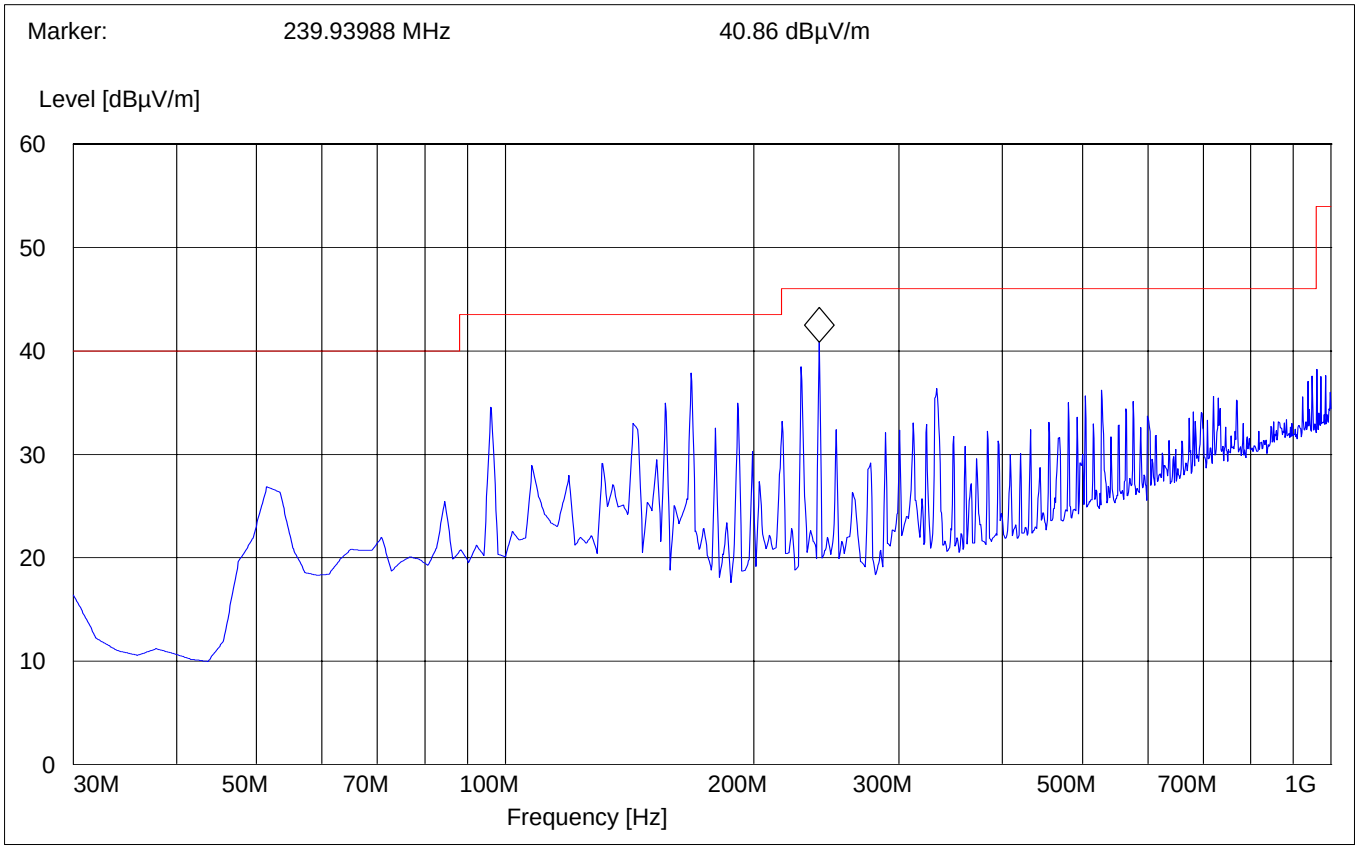
EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c)

30MHz – 1GHz
Test mode-3
Op. mode-5

Note:

1. **This plot is valid for low, mid & high channels (worst-case plot)**
2. **Rx antenna polarity: Horizontal**

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



EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c)

Lowest Channel (2402MHz): 1GHz – 3GHz

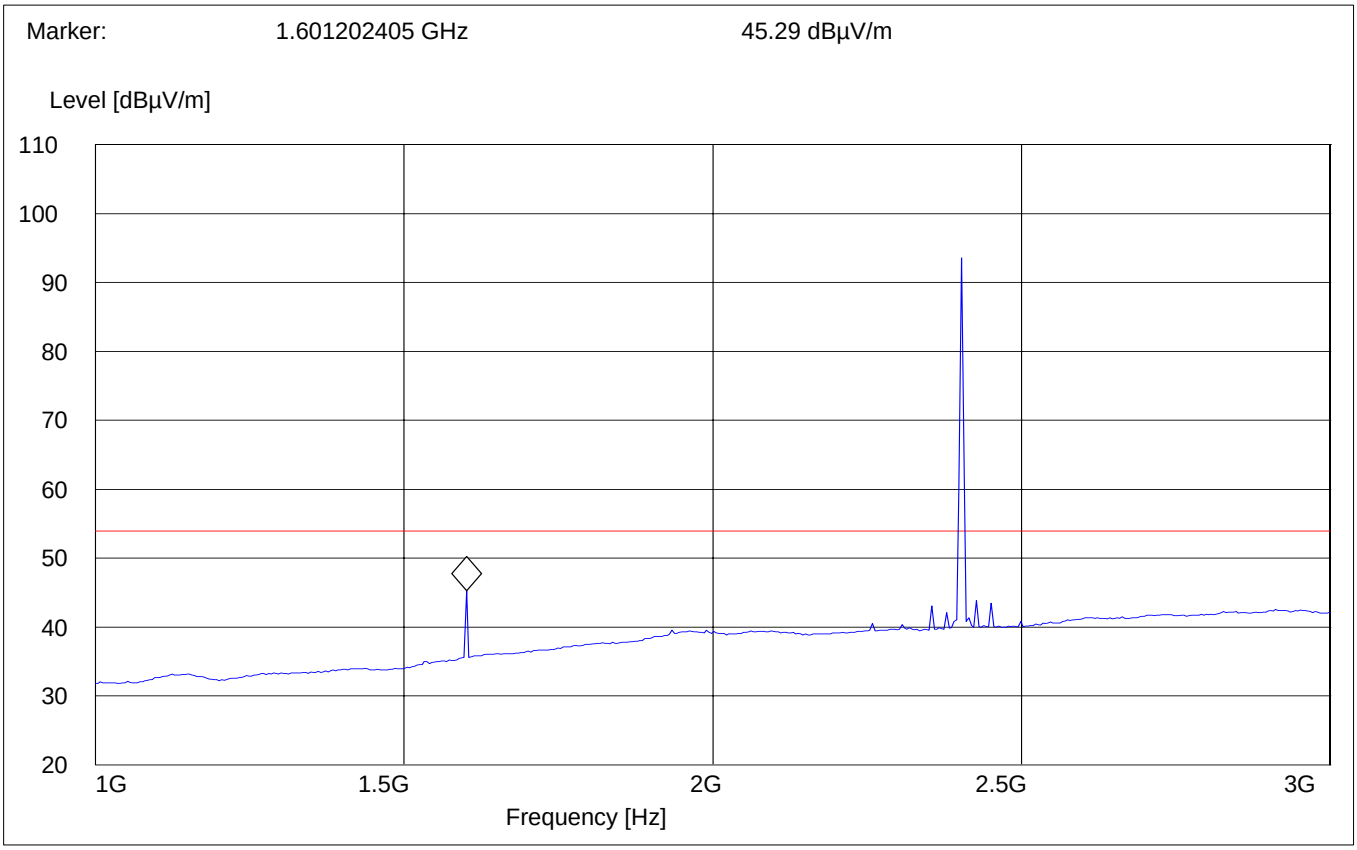
Test mode-1

Op. mode-1

Average measurement

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

SWEEP TABLE:		"BT Spuri hi 1-3G"				
Short Description:		Bluetooth Spurious 1-3GHz				
Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW	VBW	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	10Hz	#326 horn (dBi)



EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c)

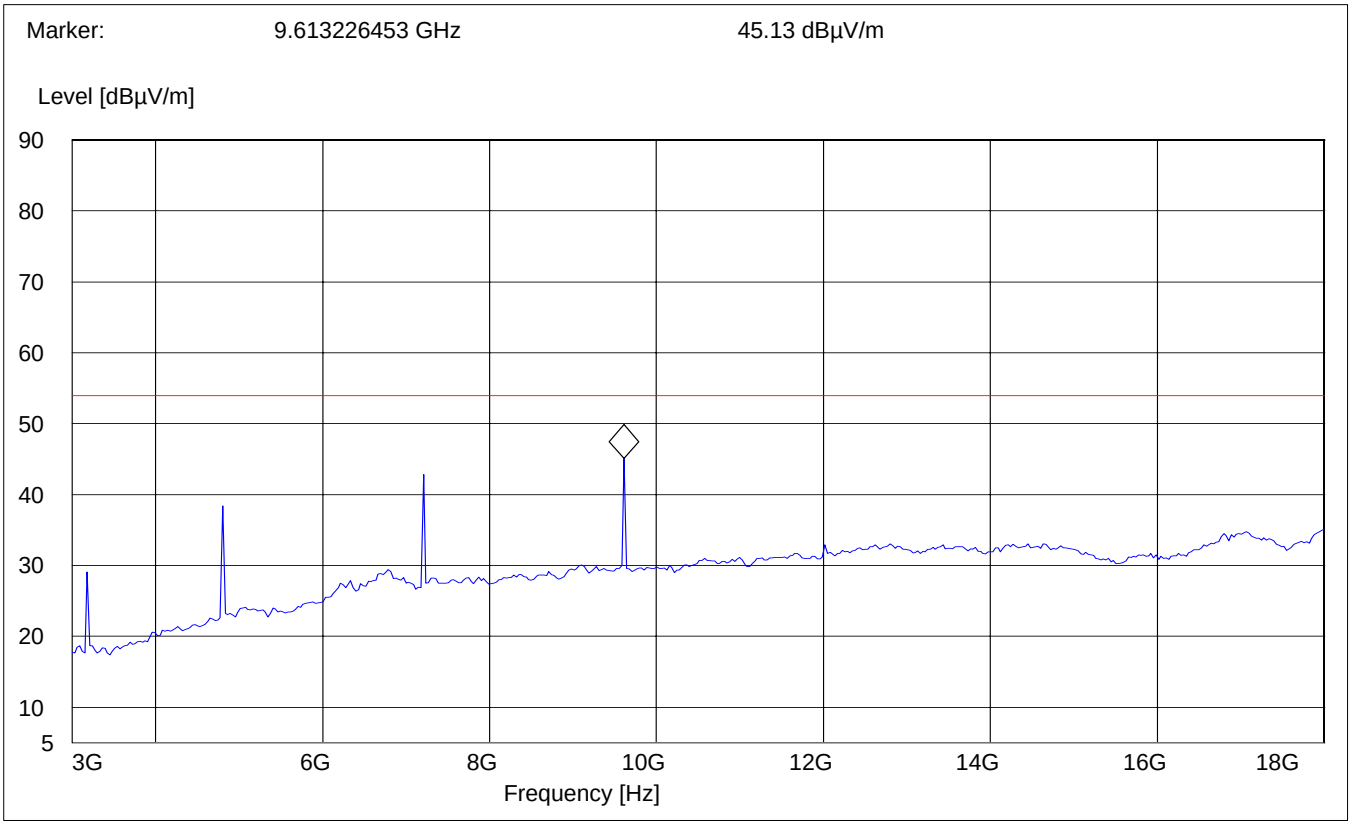
Lowest Channel (2402MHz): 3GHz – 18GHz

Test mode-1

Op. mode-1

Average measurement

SWEEP TABLE:		"BT Spuri hi 3-18G"					
Short Description:		Bluetooth Spurious 3-18 GHz					
Start	Stop	Detector	Meas.	RBW		Transducer	
Frequency	Frequency	Time	Bandw.		VBW		
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	10Hz		#326 horn (dBi)



EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c)

Middle Channel (2441MHz): 1GHz – 3GHz

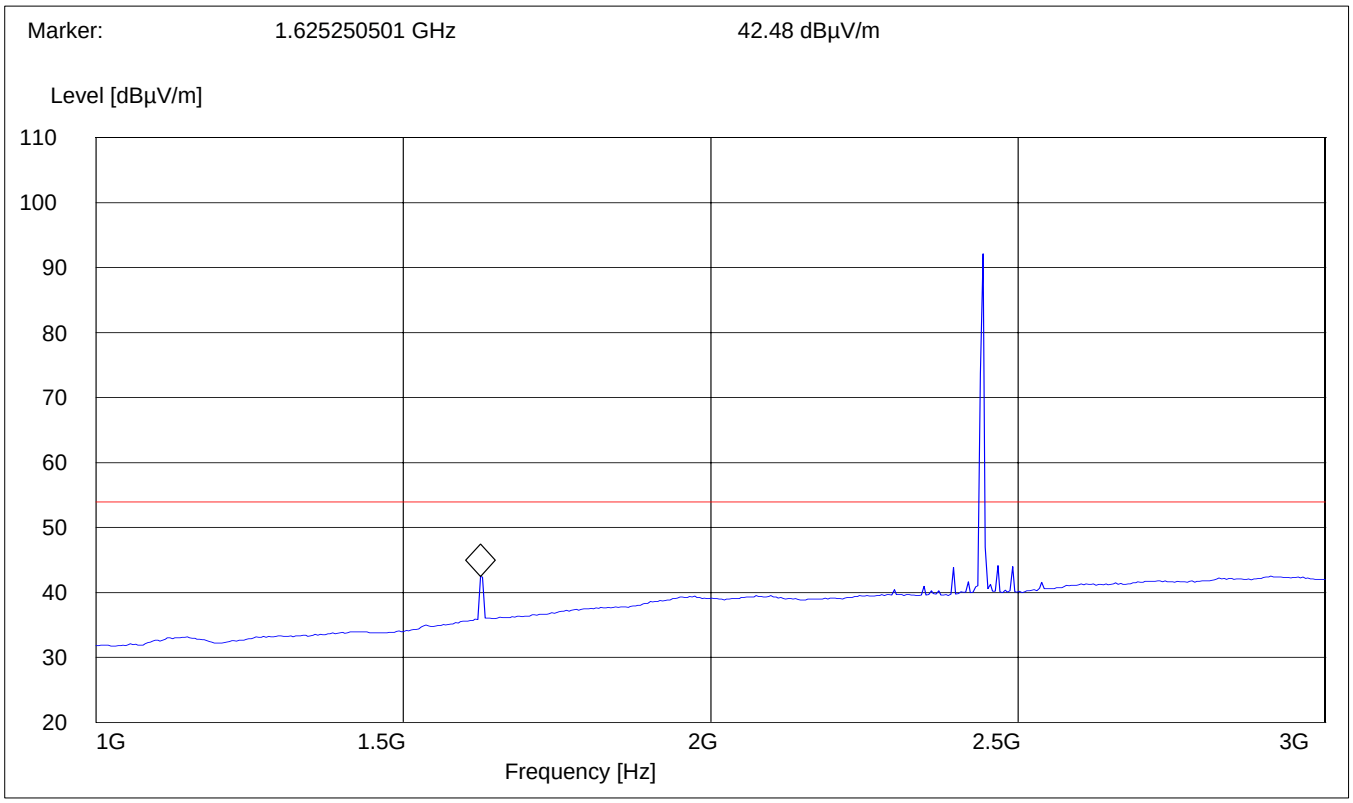
Test mode-1

Op. mode-2

Average measurement

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

SWEEP TABLE:		"BT Spuri hi 1-3G"				
Short Description:		Bluetooth Spurious 1-3GHz				
Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW	VBW	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	10Hz	#326 horn (dBi)



EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c)

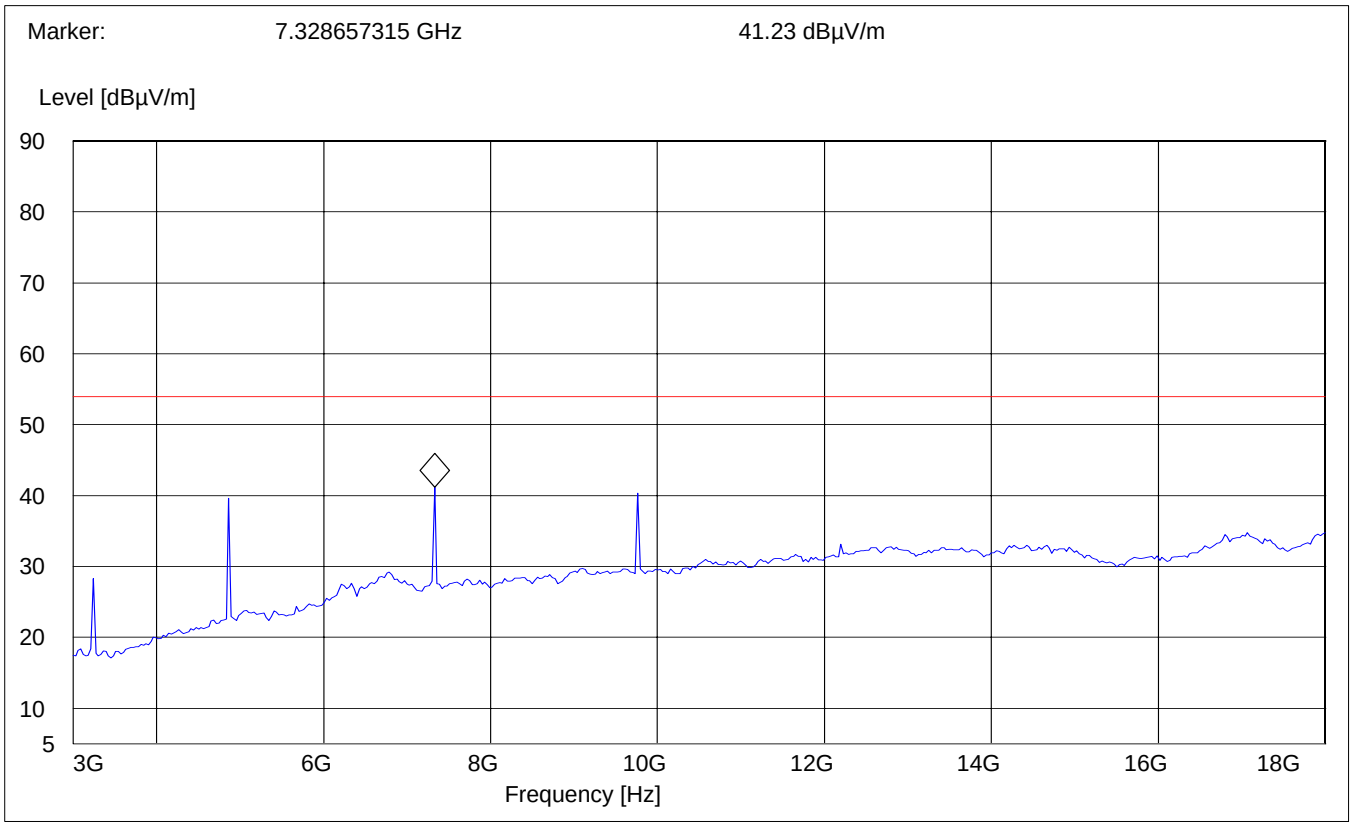
Middle Channel (2441MHz): 3GHz – 18GHz

Test mode-1

Op. mode-2

Average measurement

SWEEP TABLE:		"BT Spuri hi 3-18G"				
Short Description:		Bluetooth Spurious 3-18GHz				
Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW	VBW	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	10Hz	#326 horn (dBi)



EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c)

Highest Channel (2480MHz): 1GHz – 3GHz

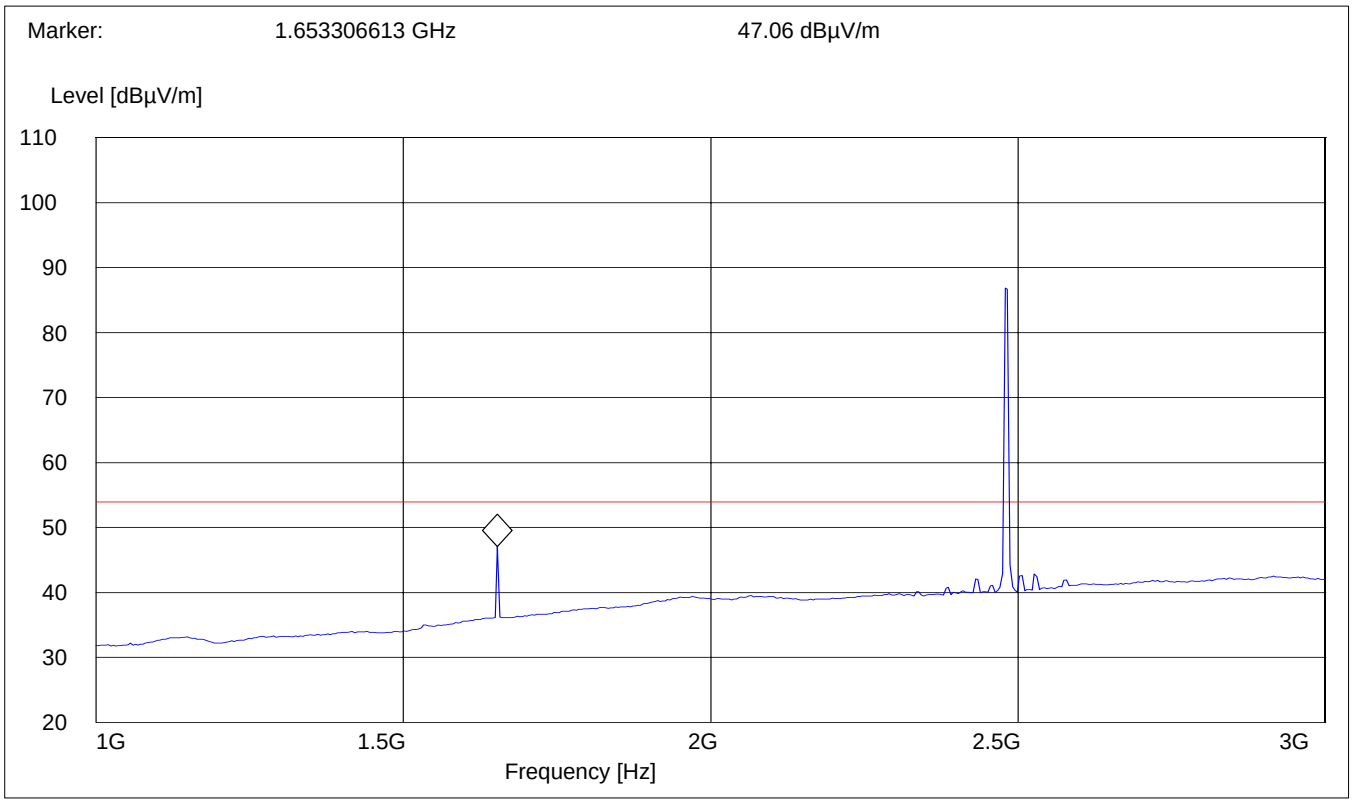
Test mode-1

Op. mode-3

Average measurement

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

SWEEP TABLE:		"BT Spuri hi 1-3G"				
Short Description:		Bluetooth Spurious 1-3GHz				
Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW	VBW	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	10Hz	#326 horn (dBi)



EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c)

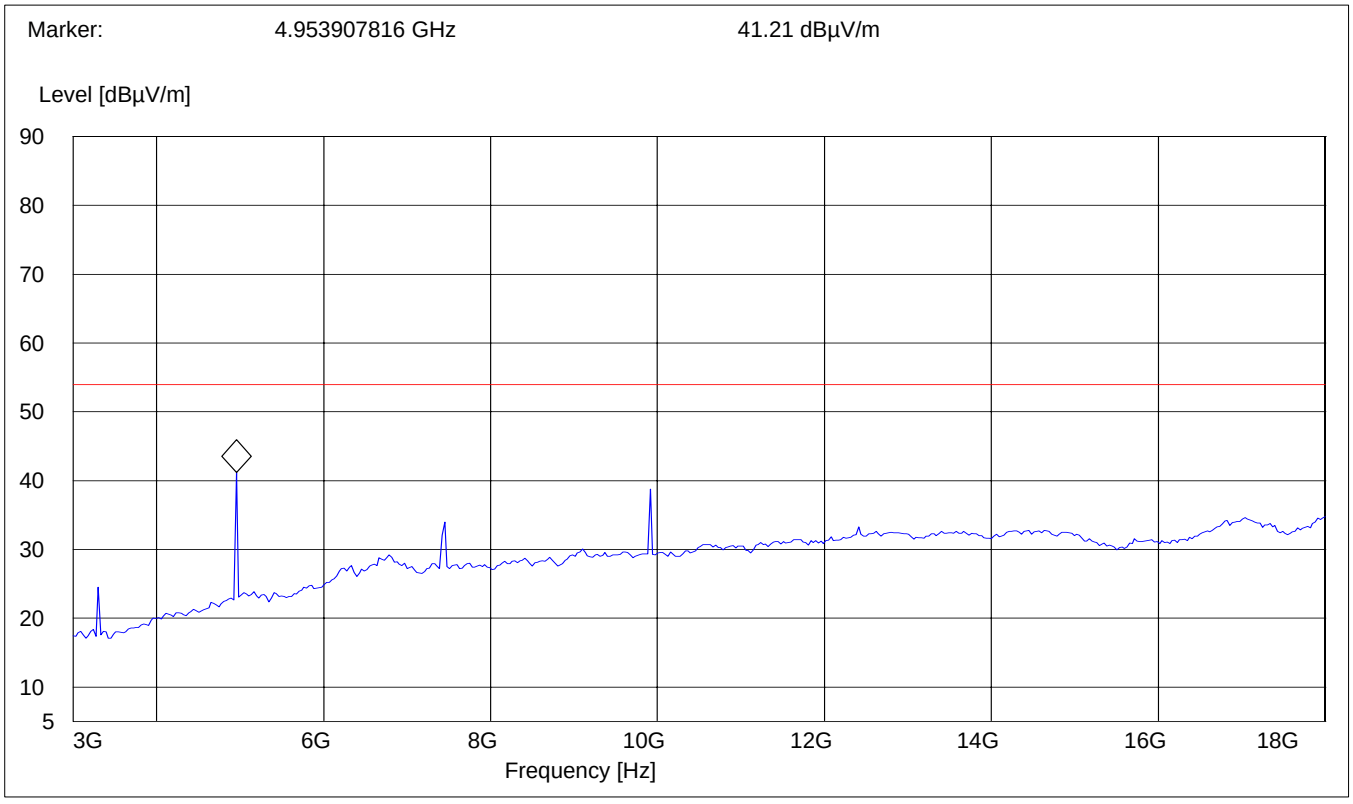
Highest Channel (2480MHz): 3GHz – 18GHz

Test mode-1

Op. mode-3

Average measurement

SWEEP TABLE:		"BT Spuri hi 3-18G"				
Short Description:		Bluetooth Spurious 3-18GHz				
Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW	VBW	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	10Hz	#326 horn (dBi)



EMISSION LIMITATIONS - Radiated (Transmitter) § 15.247 (c)

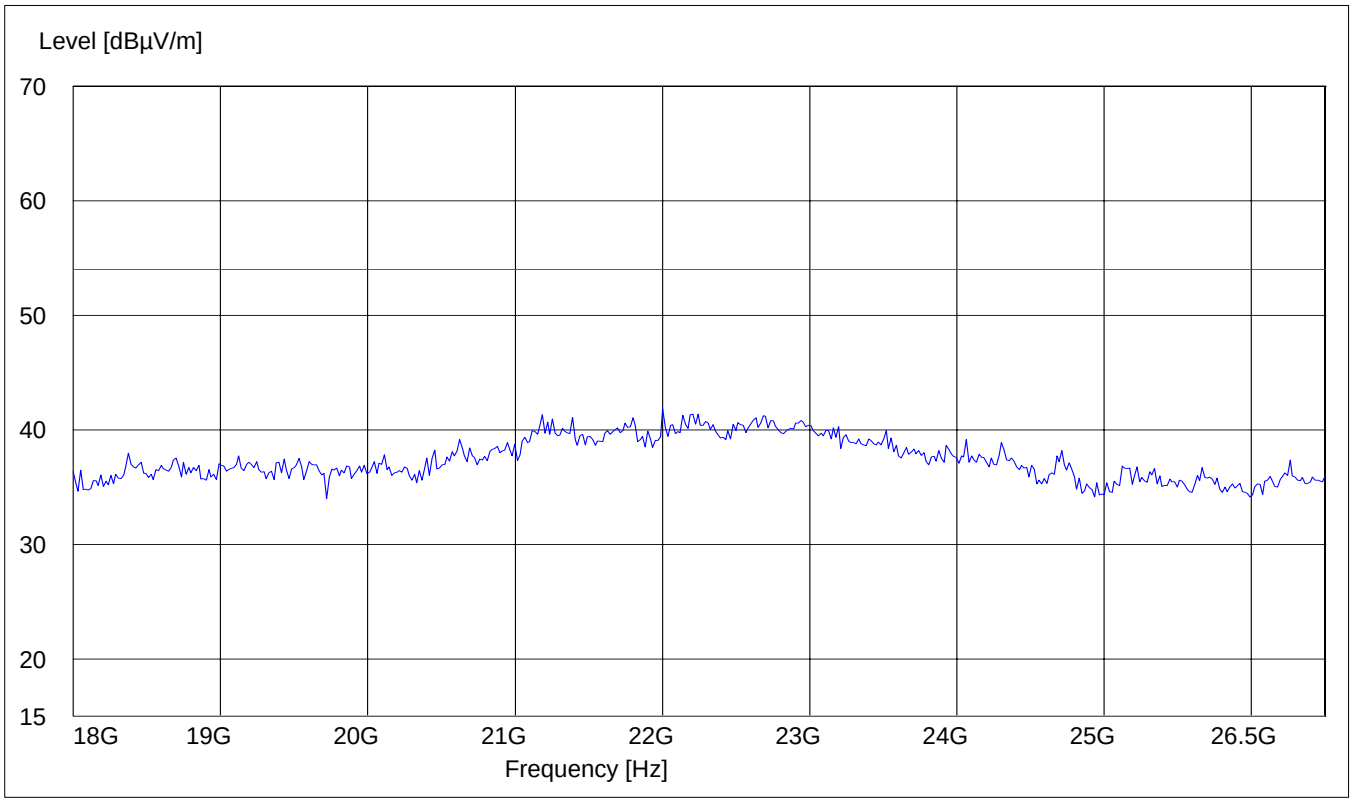
18GHz – 26.5GHz

Test mode-1

Op. mode-2

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

SWEEP TABLE:		"BT Spuri hi 18-26.5G"			
Short Description:		Bluetooth Spurious 18-26.5GHz			
Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW VBW	Transducer
18 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	#141 horn (dBi)



CONDUCTED EMISSIONS **§ 15.107/207**

Test not applicable – EUT is battery operated

RECEIVER SPURIOUS RADIATION § 15.209

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 26.5 GHz very short cable connections to the antenna was used to minimize the noise level.
2. All measurements are done in peak mode unless specified with the plots.

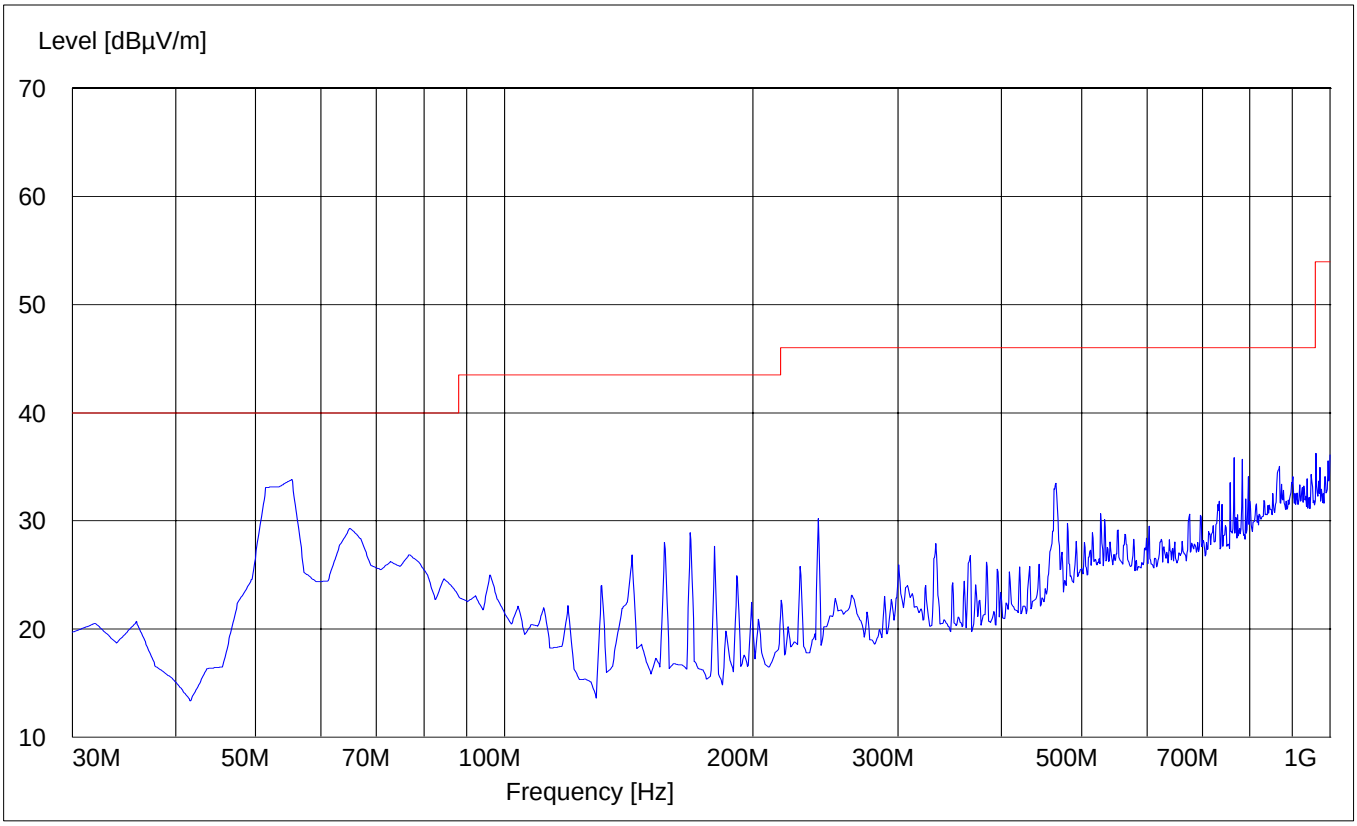
RECEIVER SPURIOUS RADIATION § 15.209

30MHz – 1GHz
Test mode-3
Op. mode-5

Note:

1. **This plot is valid for low, mid & high channels (worst-case plot)**
2. **Rx antenna polarity: Vertical**

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



RECEIVER SPURIOUS RADIATION § 15.209

30MHz – 1GHz

Test mode-3

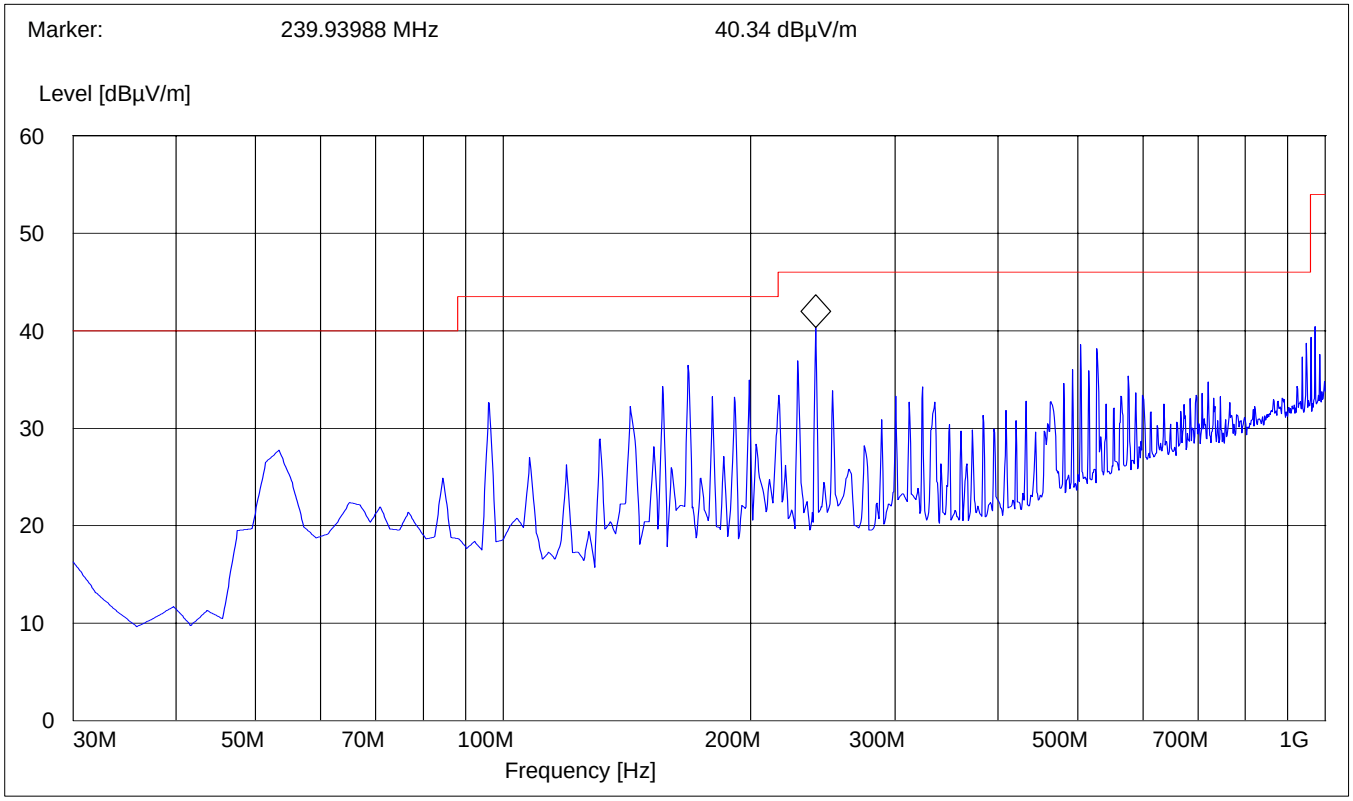
Op. mode-5

Note:

1. **This plot is valid for low, mid & high channels (worst-case plot)**
2. **Rx antenna polarity: Horizontal**

SWEEP TABLE: "BT Spuri hi 30-1G"
Short Description: Bluetooth 30MHz-1GHz

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



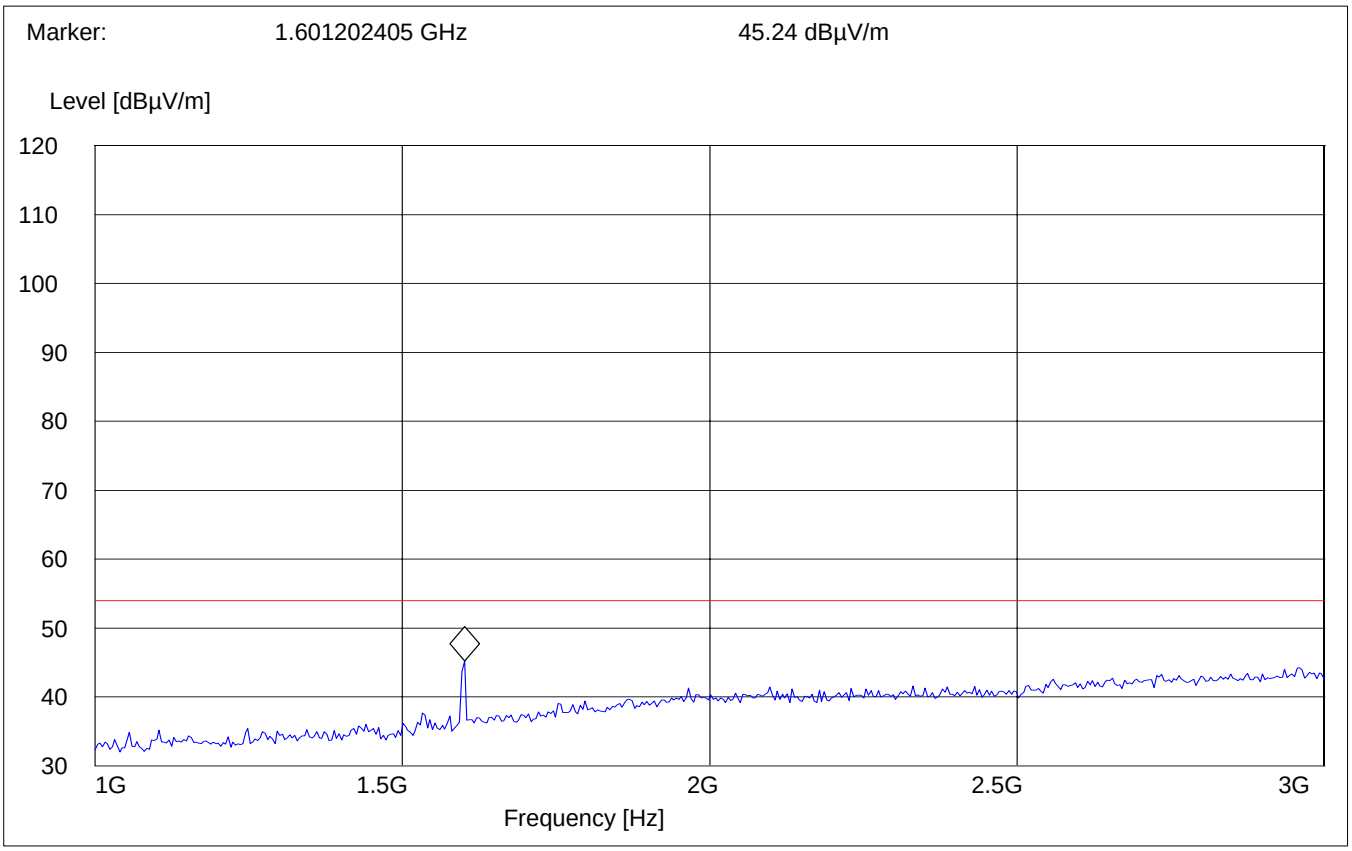
RECEIVER SPURIOUS RADIATION § 15.209

1GHz – 3GHz

Test mode-4

Op. mode-6

SWEEP TABLE:		"BT Spuri hi 1-3G"			
Short Description:		Bluetooth Spurious 1-3GHz			
Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW VBW	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326 horn (dBi)



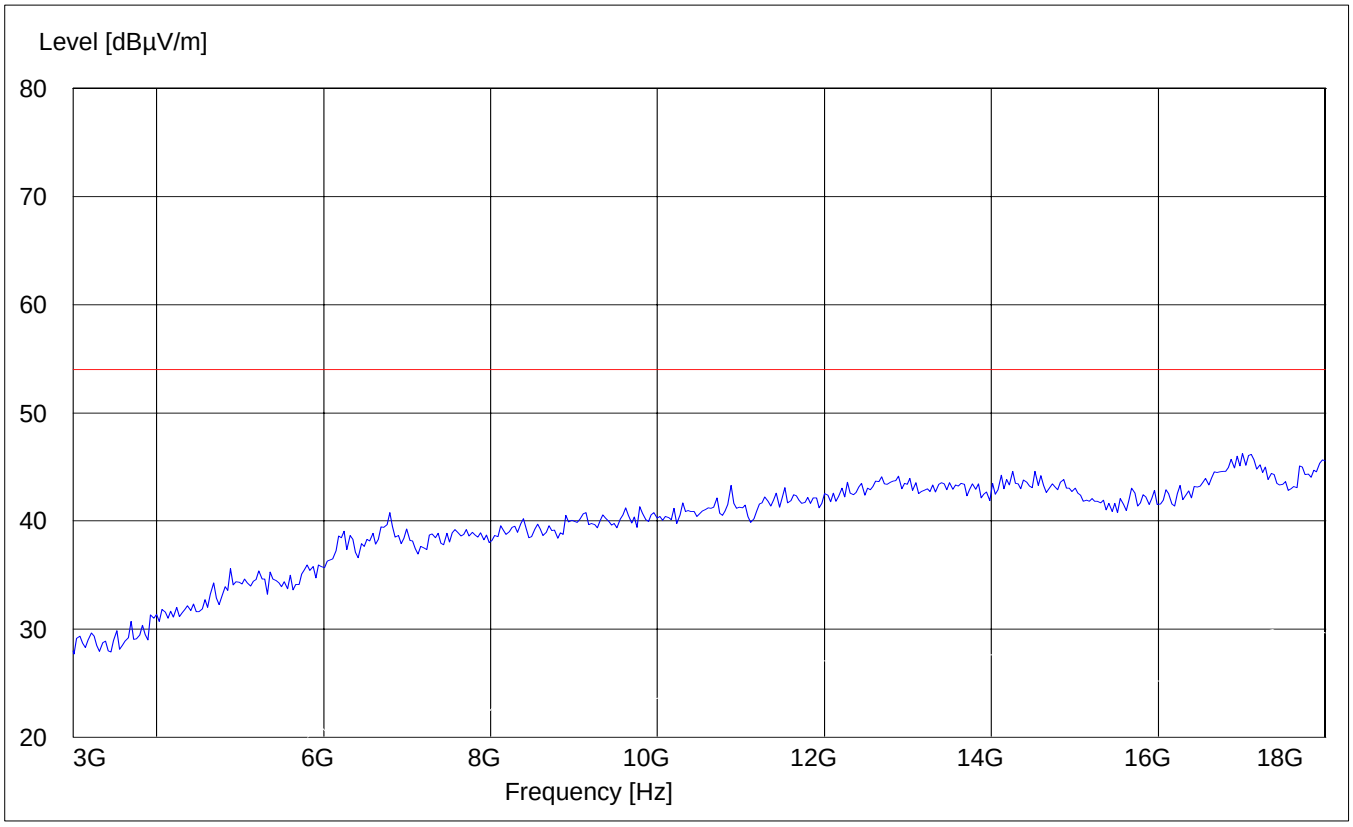
RECEIVER SPURIOUS RADIATION § 15.209

3GHz – 18GHz

Test mode-4

Op. mode-6

SWEEP TABLE:		"BT Spuri hi 3-18G"			
Short Description:		Bluetooth Spurious 3-18 GHz			
Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW VBW	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326 horn (dBi)



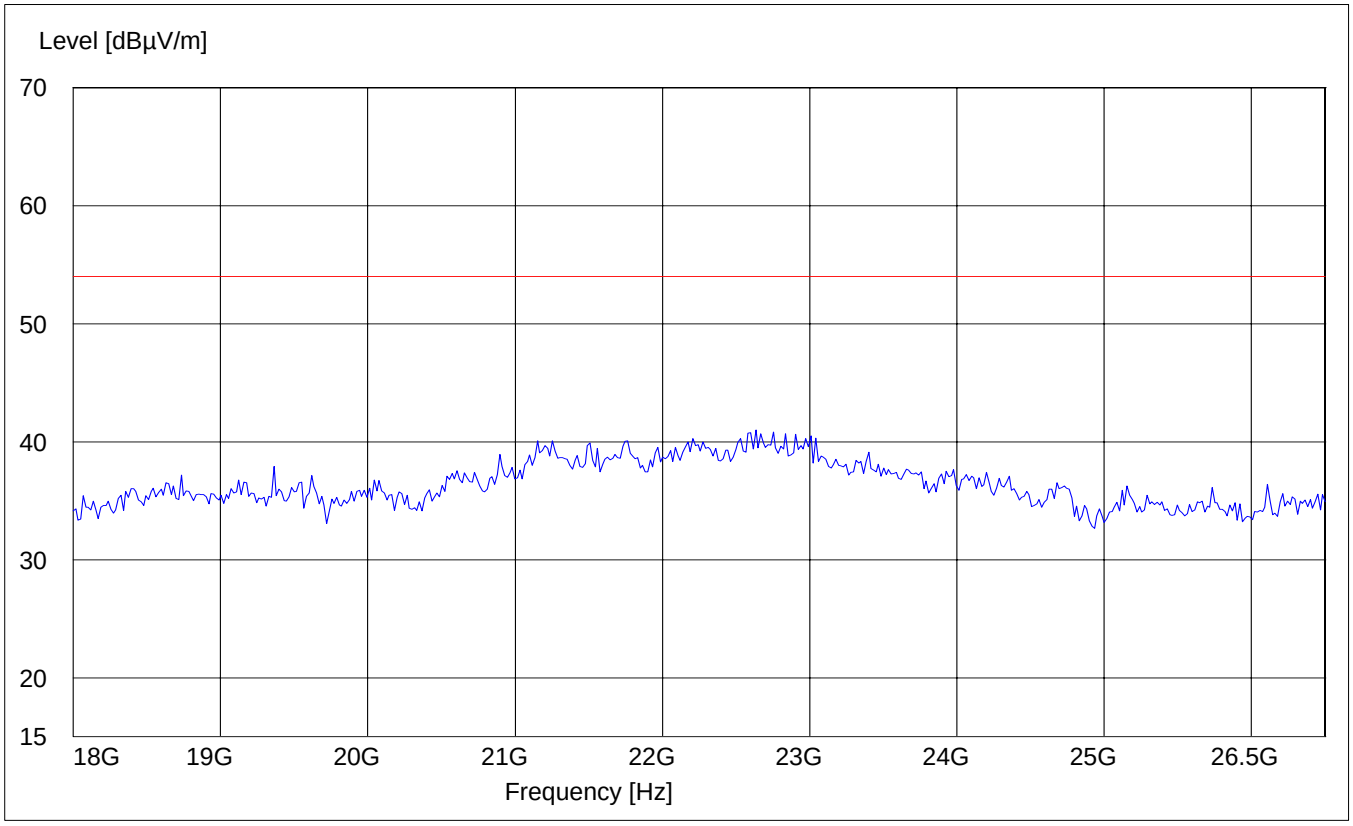
RECEIVER SPURIOUS RADIATION § 15.209

18GHz – 26.5GHz

Test mode-4

Op. mode-6

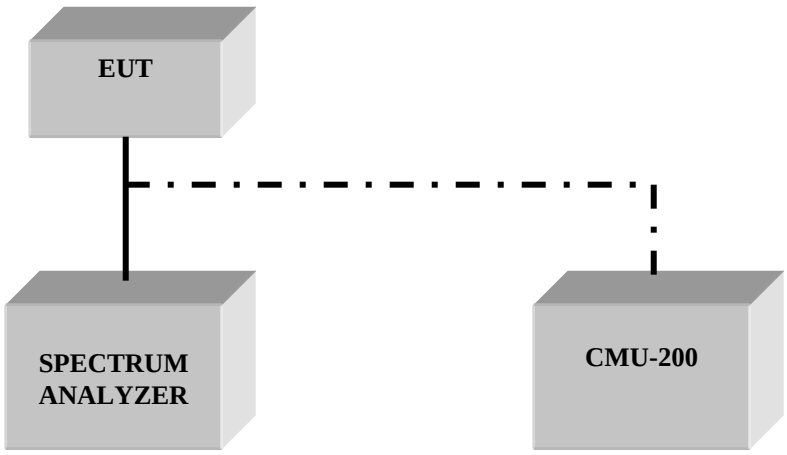
SWEEP TABLE:		"BT Spuri hi 18-25G"			
Short Description:		Bluetooth Spurious 18-25GHz			
Start Frequency	Stop Frequency	Detector Time	Meas. Bandw.	RBW VBW	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	#326 horn (dBi)



TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

No	Instrument/Ancillary	Type	Manufacturer	Serial No.
01	Spectrum Analyzer	ESIB 40	Rohde & Schwarz	100107
02	Spectrum Analyzer	FSEM 30	Rohde & Schwarz	826880/010
03	Biconilog Antenna	3141	EMCO	0005-1186
04	Horn Antenna (700M-18GHz)	SAS-200/571	AH Systems	325
05	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240
06	2-3GHz Band reject filter	BRM50701	Microtronics	6
07	Pre-Amplifier	TS-ANA	Rohde & Schwarz	--
08	Pre-Amplifier	JS4-00102600	Miteq	00616

BLOCK DIAGRAMS
Conducted Testing



Radiated Testing